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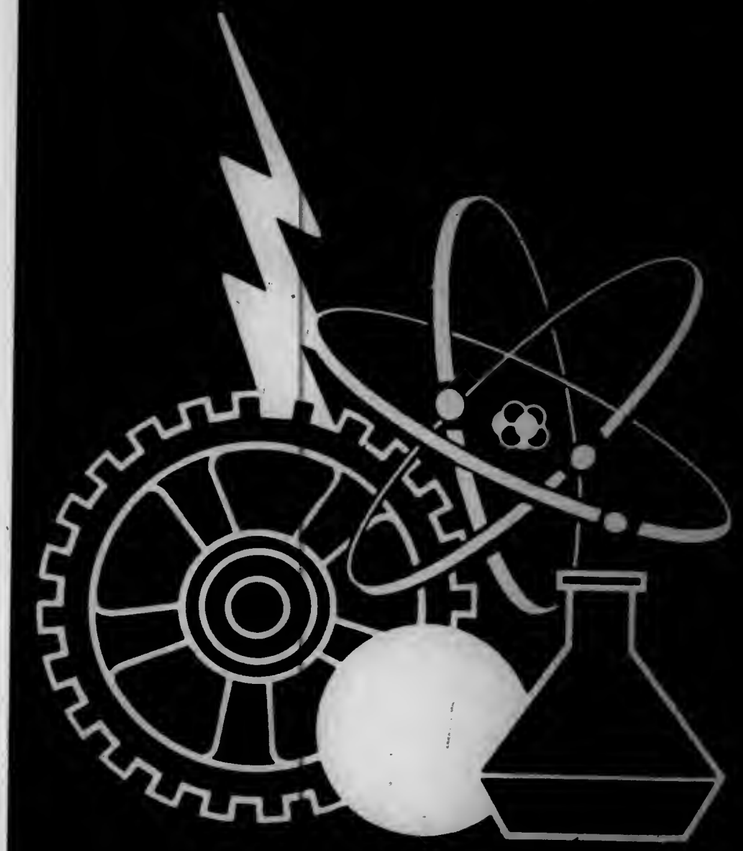
OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

July 1, 1997



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OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE
July 1, 1997 Volume 1200 Number 1

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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1194 O.G. 618, on January 21, 1997.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on September 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective May 1, 1997, due to a change in the exchange rate of the U.S. dollar with regard to the German mark, and was announced in the *Official Gazette* at 1197 O.G. 69, on April 22, 1997.

International fees were changed, effective on May 1, 1997, due to a change in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1197 O.G. 69, on April 22, 1997.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective October 1, 1996, and were announced in the *Official Gazette* at 1189 O.G. 62, on August 20, 1996.

The schedule of PCT fees (in U.S. dollars), effective May 1, 1997, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	230.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
— No corresponding prior U.S. national application filed	680.00
— Corresponding prior U.S. national application filed	440.00
— Supplemental search fee, per additional invention (payable only upon invitation)	200.00
European Patent Office as ISA	1425.00
International fees	
Basic fee	530.00
Basic supplemental fee (for each page over 30)	10.00
Designation fee per country or region	
— For the first 11 national or regional offices designated	128.00
— For each designation in excess of 11 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
— Designation fee	128.00
— Confirmation fee	64.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
— USPTO was ISA in PCT Chapter I	480.00
— Additional examination fee, per additional invention (payable only upon invitation)	140.00
— USPTO was not ISA in PCT Chapter I	730.00
— Additional examination fee, per additional invention (payable only upon invitation)	260.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
— All claims presented satisfied provisions of PCT Article 33(2) to (4)	48.00	96.00
— All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	350.00	700.00
USPTO was ISA but not IPEA	385.00	770.00
USPTO was neither ISA nor IPEA		
— Search report has not been prepared by the European Patent Office or the Japanese Patent Office	520.00	1040.00
— Search report has been prepared by the European Patent Office or the Japanese Patent Office	455.00	910.00
Other National fees		
— For each independent claim in excess of 3	40.00	80.00
— For each claim in excess of 20	11.00	22.00
— For each application containing a multiple dependent claim	130.00	260.00
— Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
— Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

March 31, 1997

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on June 28, 1994 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,323,490 through 5,325,536
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on June 26, 1990 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,935,964 through 4,937,878
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on June 24, 1986 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,596,053 through 4,597,107
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1996, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $510.00
By other than a small entity $1,020.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,025.00
By other than a small entity $2,050.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on applications filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,540.00
By other than a small entity $3,080.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:
(1) unavoidable $680.00
(2) unintentional $1,600.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED April 23, 1997
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 32,477	06/918,140	08/18/87
(4,512,907)	(06/577,257)	(04/23/85)
Re. 32,744	07/045,017	09/06/88
(4,513,072)	(06/415,466)	(04/23/85)
Re. 33,088	06/889,319	10/10/89
(4,513,295)	(06/544,325)	(04/23/85)
Re. 33,642	07/257,197	07/23/91
(4,512,341)	(06/443,473)	(04/23/85)
Re. 33,886	07/479,927	04/14/92
(4,822,326)	(07/180,948)	(04/18/89)
Re. 34,016	07/625,300	08/04/92
(4,821,888)	(07/114,576)	(04/18/89)
4,512,038	06/251,285	04/23/85
4,512,046	06/472,617	04/23/85
4,512,057	06/605,043	04/23/85
4,512,059	06/521,590	04/23/85
4,512,062	06/451,871	04/23/85
4,512,064	06/570,219	04/23/85
4,512,066	06/239,414	04/23/85
4,512,067	06/591,238	04/23/85
4,512,105	06/577,192	04/23/85
4,512,111	06/436,731	04/23/85
4,512,116	06/502,146	04/23/85
4,512,118	06/554,964	04/23/85
4,512,120	06/351,944	04/23/85
4,512,123	06/459,616	04/23/85
4,512,131	06/538,133	04/23/85
4,512,133	06/348,409	04/23/85
4,512,138	06/354,589	04/23/85
4,512,142	06/552,472	04/23/85
4,512,150	06/518,516	04/23/85
4,512,152	06/529,983	04/23/85
4,512,156	06/495,197	04/23/85
4,512,162	06/573,346	04/23/85
4,512,168	06/242,038	04/23/85
4,512,173	06/512,472	04/23/85
4,512,178	06/479,762	04/23/85
4,512,191	06/455,271	04/23/85
4,512,193	06/426,735	04/23/85
4,512,195	06/516,555	04/23/85
4,512,196	06/538,021	04/23/85
4,512,198	06/636,515	04/23/85
4,512,199	06/482,531	04/23/85
4,512,200	06/556,524	04/23/85
4,512,211	06/475,574	04/23/85
4,512,223	06/452,340	04/23/85
4,512,224	06/481,077	04/23/85
4,512,228	06/444,202	04/23/85
4,512,229	06/631,571	04/23/85
4,512,230	06/488,289	04/23/85
4,512,233	06/552,923	04/23/85
4,512,240	06/499,828	04/23/85
4,512,244	06/554,601	04/23/85
4,512,252	06/362,478	04/23/85
4,512,255	06/472,393	04/23/85
4,512,265	06/366,789	04/23/85
4,512,266	06/594,005	04/23/85
4,512,267	06/573,470	04/23/85

Patent Number	Serial Number	Issue Date
4,512,273	06/514,819	04/23/85
4,512,278	06/522,741	04/23/85
4,512,281	06/529,779	04/23/85
4,512,282	06/547,759	04/23/85
4,512,283	06/549,341	04/23/85
4,512,290	06/494,767	04/23/85
4,512,294	06/576,277	04/23/85
4,512,298	06/438,358	04/23/85
4,512,299	06/560,762	04/23/85
4,512,306	06/512,026	04/23/85
4,512,308	06/425,816	04/23/85
4,512,311	06/588,358	04/23/85
4,512,313	06/500,918	04/23/85
4,512,319	06/554,756	04/23/85
4,512,323	06/573,021	04/23/85
4,512,325	06/588,739	04/23/85
4,512,327	06/583,932	04/23/85
4,512,330	06/460,167	04/23/85
4,512,333	06/496,908	04/23/85
4,512,339	06/257,373	04/23/85
4,512,354	06/517,331	04/23/85
4,512,358	06/526,608	04/23/85
4,512,360	06/445,137	04/23/85
4,512,363	06/411,407	04/23/85
4,512,364	06/462,068	04/23/85
4,512,373	06/492,791	04/23/85
4,512,379	06/404,089	04/23/85
4,512,392	06/458,994	04/23/85
4,512,397	06/562,456	04/23/85
4,512,398	06/512,292	04/23/85
4,512,406	06/385,705	04/23/85
4,512,407	06/561,970	04/23/85
4,512,417	06/575,719	04/23/85
4,512,418	06/515,821	04/23/85
4,512,421	06/538,287	04/23/85
4,512,430	06/515,473	04/23/85
4,512,435	06/475,965	04/23/85
4,512,436	06/510,062	04/23/85
4,512,442	06/595,174	04/23/85
4,512,445	06/413,857	04/23/85
4,512,452	06/283,663	04/23/85
4,512,457	06/496,899	04/23/85
4,512,463	06/576,445	04/23/85
4,512,470	06/571,979	04/23/85
4,512,480	06/522,406	04/23/85
4,512,486	06/428,426	04/23/85
4,512,491	06/570,985	04/23/85
4,512,492	06/560,382	04/23/85
4,512,496	06/636,911	04/23/85
4,512,511	06/566,338	04/23/85
4,512,519	06/432,861	04/23/85
4,512,520	06/493,724	04/23/85
4,512,524	06/551,322	04/23/85
4,512,526	06/645,524	04/23/85
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4,512,534	06/407,501	04/23/85
4,512,535	06/591,915	04/23/85
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4,512,628	06/499,642	04/23/85
4,512,635	06/337,085	04/23/85
4,512,652	06/525,855	04/23/85
4,512,654	06/534,095	04/23/85
4,512,660	06/484,810	04/23/85
4,512,666	06/583,576	04/23/85
4,512,671	06/452,967	04/23/85
4,512,674	06/404,987	04/23/85
4,512,685	06/300,308	04/23/85
4,512,690	06/550,796	04/23/85
4,512,696	06/510,987	04/23/85
4,512,698	06/465,121	04/23/85
4,512,699	06/495,380	04/23/85
4,512,705	06/495,523	04/23/85
4,512,716	06/430,245	04/23/85
4,512,720	06/484,202	04/23/85
4,512,722	06/543,067	04/23/85
4,512,726	06/347,184	04/23/85
4,512,750	06/483,843	04/23/85
4,512,767	06/480,327	04/23/85
4,512,776	06/565,188	04/23/85
4,512,780	06/549,746	04/23/85
4,512,786	06/486,819	04/23/85
4,512,790	06/369,275	04/23/85
4,512,792	06/512,265	04/23/85
4,512,794	06/507,721	04/23/85
4,512,799	06/575,202	04/23/85
4,512,813	06/482,942	04/23/85
4,512,818	06/616,692	04/23/85
4,512,832	06/389,567	04/23/85
4,512,835	06/501,737	04/23/85
4,512,841	06/596,189	04/23/85
4,512,842	06/574,525	04/23/85
4,512,845	06/510,201	04/23/85
4,512,848	06/577,174	04/23/85
4,512,855	06/633,502	04/23/85
4,512,859	06/453,174	04/23/85
4,512,869	06/610,411	04/23/85
4,512,870	06/557,610	04/23/85
4,512,878	06/467,032	04/23/85
4,512,879	06/515,574	04/23/85
4,512,880	06/489,491	04/23/85
4,512,886	06/542,248	04/23/85
4,512,887	06/443,761	04/23/85
4,512,888	06/394,290	04/23/85
4,512,895	06/433,639	04/23/85
4,512,900	06/561,030	04/23/85
4,512,908	06/510,947	04/23/85
4,512,920	06/575,978	04/23/85
4,512,930	06/371,670	04/23/85
4,512,946	06/529,784	04/23/85
4,512,968	06/555,111	04/23/85
4,512,974	06/447,984	04/23/85
4,512,979	06/341,741	04/23/85
4,512,988	06/585,058	04/23/85
4,512,997	06/552,747	04/23/85
4,513,001	06/477,680	04/23/85
4,513,010	06/495,111	04/23/85
4,513,015	06/347,110	04/23/85
4,513,022	06/614,006	04/23/85
4,513,023	06/468,936	04/23/85
4,513,025	06/377,120	04/23/85
4,513,027	06/578,505	04/23/85
4,513,040	06/488,241	04/23/85
4,513,043	06/433,602	04/23/85
4,513,049	06/488,890	04/23/85
4,513,056	06/478,050	04/23/85
4,513,062	06/589,540	04/23/85
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4,513,103	06/544,300	04/23/85
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4,513,111	06/473,369	04/23/85
4,513,115	06/512,566	04/23/85
4,513,116	06/481,366	04/23/85
4,513,119	06/487,170	04/23/85
4,513,127	06/650,750	04/23/85
4,513,132	06/480,789	04/23/85
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4,513,164	06/579,947	04/23/85
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4,513,168	06/602,033	04/23/85
4,513,169	06/515,237	04/23/85
4,513,184	06/532,693	04/23/85
4,513,186	06/452,263	04/23/85
4,513,189	06/390,138	04/23/85
4,513,193	06/447,269	04/23/85
4,513,201	06/515,822	04/23/85
4,513,202	06/378,090	04/23/85
4,513,205	06/465,192	04/23/85
4,513,209	06/348,311	04/23/85
4,513,213	06/439,715	04/23/85
4,513,217	06/559,434	04/23/85
4,513,221	06/352,682	04/23/85
4,513,223	06/395,417	04/23/85
4,513,231	06/464,396	04/23/85
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5,204,104	07/772,438	04/20/93
5,204,105	07/508,070	04/20/93
5,204,120	07/900,195	04/20/93
5,204,128	07/796,090	04/20/93
5,204,129	07/712,854	04/20/93
5,204,147	07/662,932	04/20/93
5,204,152	07/862,311	04/20/93
5,204,154	07/844,518	04/20/93
5,204,159	07/677,431	04/20/93
5,204,163	07/514,806	04/20/93
5,204,164	07/661,232	04/20/93
5,204,172	07/743,400	04/20/93
5,204,173	07/621,083	04/20/93
5,204,183	07/816,915	04/20/93
5,204,196	07/841,055	04/20/93
5,204,200	07/651,444	04/20/93
5,204,206	07/535,620	04/20/93
5,204,216	07/648,533	04/20/93
5,204,221	07/648,881	04/20/93
5,204,222	07/742,732	04/20/93
5,204,232	07/666,914	04/20/93
5,204,236	07/842,481	04/20/93
5,204,238	07/669,562	04/20/93
5,204,249	07/783,024	04/20/93
5,204,256	07/892,634	04/20/93
5,204,258	07/360,847	04/20/93
5,204,259	07/344,237	04/20/93
5,204,260	07/516,325	04/20/93
5,204,261	07/690,433	04/20/93
5,204,262	07/662,291	04/20/93
5,204,263	07/766,829	04/20/93
5,204,266	07/383,645	04/20/93
5,204,269	07/863,135	04/20/93
5,204,296	07/412,957	04/20/93
5,204,298	07/795,950	04/20/93
5,204,308	07/681,958	04/20/93
5,204,309	07/814,933	04/20/93
5,204,316	07/502,712	04/20/93
5,204,320	07/789,208	04/20/93
5,204,326	07/493,359	04/20/93
5,204,327	07/435,659	04/20/93
5,204,328	07/789,378	04/20/93
5,204,330	07/624,709	04/20/93
5,204,333	07/839,685	04/20/93
5,204,336	07/879,675	04/20/93
5,204,338	07/698,097	04/20/93
5,204,341	07/805,694	04/20/93
5,204,342	07/860,949	04/20/93
5,204,349	07/760,284	04/20/93
5,204,351	07/389,809	04/20/93
5,204,352	07/102,445	04/20/93
5,204,353	07/814,216	04/20/93
5,204,354	07/826,726	04/20/93
5,204,357	07/310,183	04/20/93
5,204,358	07/818,598	04/20/93
5,204,362	07/675,170	04/20/93
5,204,364	07/499,390	04/20/93
5,204,365	07/705,400	04/20/93
5,204,366	07/713,179	04/20/93
5,204,371	07/792,574	04/20/93
5,204,374	07/679,710	04/20/93
5,204,379	07/598,412	04/20/93
5,204,405	07/684,140	04/20/93
5,204,409	07/832,262	04/20/93
5,204,410	07/606,415	04/20/93
5,204,414	07/548,376	04/20/93
5,204,423	07/718,966	04/20/93
5,204,434	07/709,571	04/20/93
5,204,438	07/820,823	04/20/93
5,204,440	07/627,087	04/20/93
5,204,442	07/651,171	04/20/93
5,204,446	07/503,239	04/20/93
5,204,449	07/296,229	04/20/93
5,204,451	07/567,481	04/20/93
5,204,454	07/732,566	04/20/93
5,204,459	07/853,069	04/20/93
5,204,462	07/776,372	04/20/93
5,204,463	07/754,835	04/20/93
5,204,464	07/665,681	04/20/93
5,204,468	07/737,883	04/20/93
5,204,473	07/883,812	04/20/93
5,204,475	07/730,996	04/20/93
5,204,482	07/650,320	04/20/93
5,204,483	07/862,213	04/20/93
5,204,487	07/762,569	04/20/93
5,204,501	07/838,343	04/20/93
5,204,503	07/809,456	04/20/93
5,204,507	07/746,034	04/20/93
5,204,516	07/728,440	04/20/93
5,204,521	07/845,283	04/20/93
5,204,522	07/694,783	04/20/93
5,204,567	07/905,089	04/20/93
5,204,573	07/731,639	04/20/93
5,204,599	07/822,708	04/20/93
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5,204,616	07/589,715	04/20/93
5,204,619	07/801,910	04/20/93
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5,204,623	07/824,975	04/20/93
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5,204,644	07/826,518	04/20/93
5,204,649	07/825,098	04/20/93
5,204,652	07/706,347	04/20/93
5,204,679	07/929,974	04/20/93
5,204,684	06/700,941	04/20/93
5,204,688	07/703,055	04/20/93
5,204,701	07/814,588	04/20/93
5,204,705	07/731,740	04/20/93
5,204,711	07/712,100	04/20/93
5,204,744	07/637,734	04/20/93

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			5,204,864	07/568,399	04/20/93
5,204,750	07/765,205	04/20/93	5,204,867	07/713,135	04/20/93
5,204,773	07/810,266	04/20/93	5,204,870	07/806,208	04/20/93
5,204,777	07/825,204	04/20/93	5,204,875	07/728,906	04/20/93
5,204,786	07/540,247	04/20/93	5,204,883	07/693,894	04/20/93
5,204,792	07/851,718	04/20/93	5,204,884	07/671,009	04/20/93
5,204,797	07/691,319	04/20/93	5,204,885	07/693,667	04/20/93
5,204,807	07/930,442	04/20/93	5,204,891	07/785,122	04/20/93
5,204,811	07/673,921	04/20/93	5,204,898	07/734,781	04/20/93
5,204,816	07/668,832	04/20/93	5,204,924	07/761,333	04/20/93
5,204,817	07/652,879	04/20/93	5,204,929	07/754,659	04/20/93
5,204,818	07/883,229	04/20/93	5,204,930	07/821,106	04/20/93
5,204,820	07/782,172	04/20/93	5,204,976	07/685,816	04/20/93
5,204,840	07/391,096	04/20/93	5,204,983	07/583,611	04/20/93
5,204,859	07/654,949	04/20/93	5,204,991	07/734,238	04/20/93

Patents Reinstated Due to the Acceptance of a Late Maintenance Fee From 4/25/97

Patent Number	Serial Number	Filing Date	Issue Date	Granted Date
Re. 32,734	06/920,227	10/16/86	08/23/88	04/25/97
4,426,021	06/318,600	11/05/81	01/17/84	04/25/97
4,771,689	06/779,474	09/25/85	09/20/88	04/29/97
4,780,544	06/881,415	07/02/86	10/25/88	04/25/97
4,788,253	07/000,627	04/17/87	11/29/88	04/25/97
4,799,607	06/920,030	10/16/86	01/24/89	04/25/97
4,801,803	07/027,197	03/17/87	01/31/89	04/30/97
4,816,646	07/170,903	03/21/88	03/28/89	04/30/97
4,957,230	07/410,828	09/22/89	09/18/90	04/25/97
4,982,907	07/187,286	04/28/88	01/08/91	04/25/97
4,998,737	07/398,172	08/23/89	03/12/91	04/29/97
5,002,280	07/502,780	04/02/90	03/26/91	04/29/97
5,002,633	07/473,230	01/31/90	03/26/91	04/25/97
5,003,078	07/352,327	05/16/89	03/26/91	04/25/97
5,082,626	07/230,303	08/08/88	01/21/92	04/30/97
5,124,892	07/624,024	12/07/90	06/23/92	04/25/97
5,133,123	07/584,733	09/19/90	07/28/92	04/25/97
5,133,428	07/680,524	04/04/91	07/28/92	04/28/97

Patents Reinstated Due to the Acceptance of a Late Maintenance Fee From 5/02/97

Patent Number	Serial Number	Filing Date	Issue Date	Granted Date
4,523,913	06/545,152	10/25/83	06/18/85	05/07/97
4,619,486	06/618,492	06/08/84	10/28/86	05/09/97
4,744,069	06/829,066	02/13/86	05/10/88	05/05/97
4,881,280	07/279,431	12/02/88	11/21/89	05/05/97
5,117,834	07/563,106	08/06/90	06/02/92	05/07/97
5,130,208	07/696,613	05/07/91	07/14/92	05/07/97
5,159,654	07/782,557	10/25/91	10/27/92	05/09/97

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

4,834,983, Re. S.N. 08/792,456, Jan. 31, 1997, Cl. 514/184, PHARMACEUTICAL COMPOSITIONS, Robert C. Hider, et. al., Owner of Record: *British Technology Group Limited, London, England,* Attorney or Agent: Leonard C. Mitchard, Ex. Gp.: 1205

5,088,218, Re. S.N. 08/819,141, March 17, 1997, Cl. 40/411, STRUCTURE OF THE ROTARY TYPE CRYSTAL BALL, J. H. Liv, Owner of Record: *Inventor,* Attorney or Agent: Harold L. Novick, Ex. Gp.: 3509

5,579,233, Re. S.N. 08/811,612, March 5, 1997, Cl. 364/479, METHOD OF ON-SITE REFUELING USING ELECTRONIC IDENTIFICATION TAGS, READING PROBE, AND A TRUCK ON-BOARD COMPUTER, Robert R. Burns, Owner of Record: *Inventor,* Attorney or Agent: Thomas J. Nikolui, Ex. Gp.: 2306

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,321,232, Reexam. No. 90/004,642, May 16, 1997, Cl. 422/023, PACKAGE AND STERILIZING PROCESS FOR SAME, Roger M. Bithell, Owner of Record: *Abtox, Inc., Mundelein, Ill.,* Attorney or Agent: Patrick F. Bright, Bright & Lorig, Los Angeles, Calif., Ex. Gp.: 1312, Requester: Owner

4,476,531, Reexam. No. 90/004,637, May 15, 1997, Cl. 364/431.01, ENGINE ANALYZER WITH DIGITAL WAVEFORM DISPLAY, Joseph A. Marino, et. al., Owner of Record: *SPX Corp., Muskegon, Mich.,* Attorney or Agent: R. Bruce Bower, Finnegan, Henderson, Farabow, Garrett & Dunner, Washington, D.C., Ex. Gp.: 2304, Requester: Harold V. Stotland & J. Terry Stratman, Emrich & Dithmar, Chicago, Ill.

4,502,915, Reexam. No. 90/004,629, Apr. 30, 1997, Cl. 156/643.1, TWO STEP PLASMA PROCESS FOR SELECTIVE ANISOTROPIC ETCHING OF POLYCRYSTALLINE SILICON WITHOUT LEAVING RESIDUE, Duane E. Carter, et. al., Owner of Record: *Texas Instruments Inc., Dallas, Tex.,* Attorney or Agent: Mark A. Valetti, Texas Instruments, Inc., Dallas, Tex., Ex. Gp.: 1109, Requester: Owner

4,624,140, Reexam. No. 90/004,635, May 15, 1997, Cl. 073/304C, LIQUID MEDIUM CAPACITIVE DISPLACEMENT SENSOR, Jack A. Ekchian, et. al., Owner of Record: *Jack A. Ekchian, Belmont, Mass.,* Attorney or Agent: Gilbert H. Hennessey, Fish & Richardson, Boston, Mass., & Kenway & Crowley, Marblehead, Mass., Ex. Gp.: 3108, Requester: Macklanburg-Duncan Co., Oklahoma City, Okla., c/o Mary M. Lee, McKinney, Stringer & Webster, Oklahoma City, Okla.

4,636,214, Reexam. No. 90/004,639, May 6, 1997, Cl. 623/016, IMPLANTATION OF ARTICULATING JOINT PROSTHESIS, Charles A. Homsy, Owner of Record: *Tranquil Prospects Ltd., Tortola, British Virgin Islands,* Attorney or Agent: William A. Blake, Jones Tullar & Cooper, Arlington, Va., Ex. Gp.: 3308, Requester: Owner

4,774,987, Reexam. No. 90/004,643, May 19, 1997, Cl. 144/208.9, APPARATUS FOR FEEDING ROUNDWOOD INTO A ROTATING DEBARKING DRUM, Matti Sepling, Owner of Record: *Andritz-Patentverwaltungs-Gesellschaft MBH, Graz, Australia,* Attorney or Agent: David S. Abrams, Roylance, Abrams, Berdo & Goodman, Washington, D.C., Ex. Gp.: 3201, Requester: William H. Needle, Needle & Rosenberg, Atlanta, Ga.

5,080,895, Reexam. No. 90/004,638, May 16, 1997, Cl. 424/157.1, SPECIFIC ANTIBODY-CONTAINING SUBSTANCE FROM EGGS AND METHOD OF PRODUCTION AND USE THEREOF, Hideo Tokoro, Owner of Record: *Ghen Corp., Gifu-Shi, Japan,* Attorney or Agent: Platon N. Mandros, Burns, Doane, Swecker & Mathis, Alexandria, Va., Ex. Gp.: 1815, Requester: Owner

5,167,554, Reexam. No. 90/004,633, May 14, 1997, Cl. 441/131, INFLATABLE HUMAN SUPPORT STRUCTURE WITH LIQUID SQUIRTER, Leon H. Tager, et. al., Owner of Record: *Poolmaster, Inc., Menlo Park, Calif.,* Attorney or Agent: Flehr Hohbach Test Albritton & Herbert, San Francisco, Calif., Ex. Gp.: 3102, Requester: Brian L. Wamsley, Londa and Traub, New York, N.Y.

5,222,985, Reexam. No. 90/004,640, May 6, 1997 Cl. 623/023, IMPLANTATION OF ARTICULATING JOINT PROSTHESIS, Charles A. Homsy, Owner of Record: *Tranquil Prospects Ltd., Tortola, British Virgin Islands,* Attorney or Agent: William A. Blake, Jones, Tullar & Cooper, Arlington, Va., Ex. Gp.: 3308, Requester: Owner

5,446,640, Reexam. No. 90/004,644, May 19, 1997, Cl. 362/407, CHRISTMAS LIGHT, Mei Mei Lin, Owner of Record: *Inventor,* Attorney or Agent: None, Ex. Gp.: 3406, Requester: You-Jen Chang & Tzu Ling Cheng, Taipei, Taiwan

5,456,976, Reexam. No. 90/004,634, May 15, 1997, Cl. 442/221, RESILIENTLY PADDED LAMINATE CONSTRUCTION AND INJECTION MOLDED THERMOPLASTIC ARTICLES FACED THEREWITH, Louis J. LaMarca, II, Owner of Record: *The Haartz Corp., Acton, Mass.,* Attorney or Agent: David E. Brook, Hamilton Brook Smith & Reynolds, Lexington, Mass., Ex. Gp.: 1314, Requester: Owner

5,514,318, Reexam. No. 90/004,628, Apr. 30, 1997, Cl. 264/132, PROCESS FOR MANUFACTURING ORNAMENTED PLASTIC FRAME MEMBERS FOR PICTURE FRAMES, Robert Detenon, Owner of Record: *Robobond Limited Woolwich, London, UK,* Attorney or Agent: Jody L. Factor, Chicago, Ill., Ex. Gp.: 1307, Requester: Owner

5,514,389, Reexam. No. 90/004,631, May 13, 1997, Cl. 426/231, SYSTEM AND METHOD FOR PASTEURIZING CITRUS JUICE USING MICROWAVE ENERGY, Seifollah Nikdel, et. al., Owner of Record: *Florida Dept. of Citrus, Lake Alfred, Fla.,* Attorney or Agent: Allen, Dyer, Doppelt, Franjola & Milbrath, Orlando, Fla., Ex. Gp.: 1302 Requester: Stephan A. Pendorf, Dominik & Stein, Tampa, Fla.

5,541,054, Reexam. No. 90/004,636, May 15, 1997, Cl. 430/572, SPECTRAL SENSITIZING DYES FOR PHOTOTHERMOGRAPHIC ELEMENTS, James R. Millen, et. al., Owner of Record: *Imation Corp., Arlene K. Musser, St. Paul, Minn.,* Attorney or Agent: Imation Corp., Arlene K. Musser, St. Paul, Minn., Ex. Gp.: 1113, Requester: Owner

5,562,054, Reexam. No. 90/004,630, May 12, 1997, Cl. 111/134, SEEDING MACHINERY, John W. Ryan, Owner of Record: *Ausplow Pty. Ltd., Bibra Lake, Western Australia, Australia,* Attorney or Agent: Clifford J. Mass, Ladas & Parry, New York, N.Y., Ex. Gp.: 3501, Requester: Owner

5,569,034, Reexam. No. 90/004,641, May 15, 1997, Cl. 433/105, DENTAL HANDPIECE PROFIDING LOW SPEED, HIGH TORQUE ROTARY OUTPUT USING PLURAL STAGE PLANETARY GEAR REDUCTION, Moshe Meller, et. al., Owner of Record: *MTI Precision Products, Inc., Lakewood, N.J.,* Attorney or Agent: Frishauf Holtz Goodman Langer & Chick, New York, N.Y., Ex. Gp.: 3303, Requester: Malcolm B. Wittenberg, Crosby, Heafey, Roach & May, Oakland, Calif.

5,576,409, Reexam. No. 90/004,632, May 13, 1997 Cl. 528/049, INTERNAL MOLD RELEASE COMPOSITIONS, Paul W. Mackey, Owner of Record: *Imperial Chemical Industries, PLC, Millbank, London, England,* Attorney or Agent: Imperial Chemical Industries, PLC - Law Dept., Millbank, London, England, Ex. Gp.: 1206, Requester: N. Denise Brown, Bayer Corp., Pittsburgh, Pa.

Notice of Expiration of Trademark Registrations Due To Failure to Renew.

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED March 31, 1997 DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date
111,086	71/093,633	06/27/1916
111,094	71/093,211	06/27/1916
111,143	71/090,961	06/27/1916
111,146	71/093,681	06/27/1916
111,148	71/092,348	06/27/1916
336,005	71/373,458	06/23/1936

Reg. Number	Serial Number	Reg. Date
336,039	71/375,016	06/23/1936
336,056	71/375,401	06/23/1936
336,059	71/375,406	06/23/1936
336,068	71/374,913	06/23/1936
336,092	71/374,859	06/23/1936
336,093	71/374,860	06/23/1936
336,101	71/374,343	06/23/1936
611,817	71/657,106	09/06/1955
629,325	71/699,538	06/26/1956
629,330	71/692,116	06/26/1956
629,334	71/683,881	06/26/1956
629,340	71/692,469	06/26/1956
629,341	71/692,947	06/26/1956
629,344	71/693,250	06/26/1956
629,346	71/693,375	06/26/1956
629,354	71/691,993	06/26/1956
629,356	71/693,709	06/26/1956
629,357	71/693,273	06/26/1956
629,362	71/676,867	06/26/1956
629,375	71/669,927	06/26/1956
629,378	71/679,911	06/26/1956
629,386	71/696,230	06/26/1956
629,388	71/677,988	06/26/1956
629,413	71/693,525	06/26/1956
629,418	71/694,088	06/26/1956
629,420	71/677,926	06/26/1956
629,434	71/681,152	06/26/1956
629,441	71/685,788	06/26/1956
629,442	71/685,789	06/26/1956
629,444	71/686,980	06/26/1956
629,445	71/687,313	06/26/1956
629,447	71/692,476	06/26/1956
629,451	71/678,635	06/26/1956
629,453	71/681,168	06/26/1956
629,461	71/686,164	06/26/1956
629,462	71/686,165	06/26/1956
629,463	71/689,873	06/26/1956
629,482	71/698,129	06/26/1956
629,492	71/700,464	06/26/1956
629,493	71/700,465	06/26/1956
629,501	71/698,963	06/26/1956
629,502	71/699,296	06/26/1956
629,511	71/676,617	06/26/1956
629,515	71/697,068	06/26/1956
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629,524	71/697,789	06/26/1956
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629,581	71/694,408	06/26/1956
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629,605	71/689,987	06/26/1956
629,621	71/697,921	06/26/1956
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629,635	71/696,684	06/26/1956
629,642	71/657,164	06/26/1956
629,646	71/672,176	06/26/1956
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629,662	71/693,019	06/26/1956
629,673	71/634,536	06/26/1956
629,675	71/693,153	06/26/1956
629,691	71/681,415	06/26/1956
629,694	71/693,527	06/26/1956
629,699	71/695,303	06/26/1956
629,701	71/676,903	06/26/1956
629,702	71/697,908	06/26/1956
629,709	71/687,721	06/26/1956
629,710	71/687,723	06/26/1956
629,714	71/661,265	06/26/1956
629,722	71/685,596	06/26/1956
629,732	71/686,515	06/26/1956
629,734	71/698,388	06/26/1956
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1,041,740		
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1,041,743		
1,041,745		
1,041,750		
71/676,911		06/26/1956
71/683,034		06/26/1956
71/688,936		06/26/1956
71/677,774		06/26/1956
71/675,345		06/26/1956
73/031,147		12/23/1975
73/033,287		06/22/1976
73/040,144		06/22/1976
73/050,597		06/22/1976
73/050,614		06/22/1976
73/056,324		06/22/1976
73/057,772		06/22/1976
73/059,457		06/22/1976
73/067,820		06/22/1976
73/068,213		06/22/1976
73/044,912		06/22/1976
73/062,753		06/22/1976
73/050,513		06/22/1976
73/050,514		06/22/1976
73/061,259		06/22/1976
73/061,643		06/22/1976
73/063,155		06/22/1976
73/063,393		06/22/1976
73/063,395		06/22/1976
73/066,233		06/22/1976
73/062,626		06/22/1976
73/065,201		06/22/1976
73/065,811		06/22/1976
73/065,888		06/22/1976
73/068,485		06/22/1976
73/068,657		06/22/1976
73/069,238		06/22/1976
73/021,504		06/22/1976
73/039,905		06/22/1976
73/043,334		06/22/1976
73/059,859		06/22/1976
73/062,108		06/22/1976
73/063,120		06/22/1976
73/063,851		06/22/1976
73/064,285		06/22/1976
73/065,135		06/22/1976
73/062,202		06/22/1976
73/063,374		06/22/1976
73/012,616		06/22/1976
73/053,892		06/22/1976
73/054,082		06/22/1976
73/059,605		06/22/1976
73/061,767		06/22/1976
73/062,360		06/22/1976
73/067,650		06/22/1976
73/069,558		06/22/1976
73/069,757		06/22/1976
73/070,772		06/22/1976
73/071,880		06/22/1976
73/046,026		06/22/1976
73/054,322		06/22/1976
73/054,324		06/22/1976
73/059,879		06/22/1976
73/069,302		06/22/1976
73/070,856		06/22/1976
73/004,414		06/22/1976
73/065,017		06/22/1976
73/065,039		06/22/1976
73/065,043		06/22/1976
73/065,871		06/22/1976
73/065,872		06/22/1976
73/068,200		06/22/1976
73/067,931		06/22/1976
73/037,273		06/22/1976
73/042,092		06/22/1976
73/054,828		06/22/1976
73/055,820		06/22/1976
73/057,270		06/22/1976
73/039,835		06/22/1976
73/064,693		06/22/1976
73/018,679		06/22/1976
73/040,949		06/22/1976
73/048,751		06/22/1976
73/053,739		06/22/1976

Reg. Number	Serial Number	Reg. Date
1,041,756	73/060,436	06/22/1976
1,041,757	73/060,460	06/22/1976
1,041,758	73/066,592	06/22/1976
1,041,759	73/070,305	06/22/1976
1,041,762	73/058,872	06/22/1976
1,041,763	73/065,531	06/22/1976
1,041,764	73/065,876	06/22/1976
1,041,765	73/065,896	06/22/1976
1,041,768	73/066,586	06/22/1976
1,041,770	73/024,918	06/22/1976
1,041,772	73/027,267	06/22/1976
1,041,777	73/054,179	06/22/1976
1,041,778	73/056,655	06/22/1976
1,041,781	73/061,408	06/22/1976
1,041,787	73/020,148	06/22/1976
1,041,793	73/063,298	06/22/1976
1,041,797	73/011,921	06/22/1976
1,041,800	73/047,074	06/22/1976
1,041,801	73/052,300	06/22/1976
1,041,802	73/056,208	06/22/1976
1,041,803	73/041,071	06/22/1976
1,041,804	73/050,952	06/22/1976
1,041,805	73/052,256	06/22/1976
1,041,806	73/054,088	06/22/1976
1,041,807	73/021,944	06/22/1976
1,041,810	73/055,283	06/22/1976
1,041,811	73/056,518	06/22/1976
1,041,812	73/022,471	06/22/1976
1,041,813	73/039,508	06/22/1976
1,041,816	73/045,353	06/22/1976
1,041,817	73/045,520	06/22/1976
1,041,818	73/045,521	06/22/1976
1,041,819	73/048,196	06/22/1976
1,041,820	73/053,475	06/22/1976
1,041,823	73/054,888	06/22/1976
1,041,824	73/054,889	06/22/1976
1,041,825	73/054,987	06/22/1976
1,041,827	73/055,390	06/22/1976
1,041,831	73/055,641	06/22/1976
1,041,833	73/055,913	06/22/1976
1,041,835	73/056,109	06/22/1976
1,041,837	73/056,217	06/22/1976
1,041,838	73/056,225	06/22/1976
1,041,839	73/056,399	06/22/1976
1,041,840	73/056,415	06/22/1976
1,041,841	73/056,780	06/22/1976
1,041,842	73/056,943	06/22/1976
1,041,843	73/057,249	06/22/1976
1,041,845	73/062,246	06/22/1976
1,041,847	73/055,539	06/22/1976
1,041,849	73/059,937	06/22/1976
1,041,860	73/056,617	06/22/1976
1,041,862	73/059,688	06/22/1976
1,041,863	73/059,689	06/22/1976
1,041,864	73/059,690	06/22/1976
1,041,865	73/060,976	06/22/1976
1,041,867	73/061,621	06/22/1976
1,041,869	73/063,869	06/22/1976
1,041,873	73/067,484	06/22/1976
1,041,876	73/069,557	06/22/1976
1,041,877	73/070,482	06/22/1976
1,041,884	73/063,999	06/22/1976
1,041,885	73/067,106	06/22/1976
1,041,886	73/067,113	06/22/1976
1,041,887	73/067,294	06/22/1976
1,041,889	73/025,601	06/22/1976
1,041,891	73/051,315	06/22/1976
1,041,893	73/060,121	06/22/1976
1,041,896	73/061,652	06/22/1976
1,041,897	73/062,194	06/22/1976
1,041,899	73/066,309	06/22/1976
1,041,900	73/066,311	06/22/1976
1,041,901	73/068,210	06/22/1976
1,041,903	73/059,381	06/22/1976
1,041,904	73/064,427	06/22/1976
1,041,905	73/064,428	06/22/1976
1,041,906	73/064,430	06/22/1976
1,041,907	73/064,432	06/22/1976
1,041,908	73/064,434	06/22/1976
1,041,909	73/064,435	06/22/1976
1,041,910	73/064,436	06/22/1976
1,041,911	73/064,438	06/22/1976
1,041,912	73/064,439	06/22/1976
1,041,913	73/064,440	06/22/1976
1,041,914	73/064,441	06/22/1976
1,041,915	73/064,839	06/22/1976
1,041,918	73/065,648	06/22/1976
1,041,920	73/066,038	06/22/1976
1,041,923	73/058,771	06/22/1976
1,041,925	73/066,417	06/22/1976
1,041,929	73/058,007	06/22/1976
1,041,935	73/066,425	06/22/1976
1,041,936	73/066,527	06/22/1976
1,041,939	73/040,358	06/22/1976
1,041,941	73/056,417	06/22/1976
1,041,945	73/059,693	06/22/1976
1,041,946	73/047,683	06/22/1976
1,041,949	73/059,924	06/22/1976
1,041,951	73/041,034	06/22/1976
1,041,953	73/054,577	06/22/1976
1,041,954	73/055,336	06/22/1976
1,041,955	73/059,978	06/22/1976
1,041,956	73/059,979	06/22/1976
1,041,957	73/062,038	06/22/1976
1,041,959	73/015,710	06/22/1976
1,041,966	73/012,018	06/22/1976
1,041,967	73/054,045	06/22/1976
1,041,968	73/058,550	06/22/1976
1,041,970	73/008,204	06/22/1976
1,041,973	73/025,571	06/22/1976
1,041,980	73/050,942	06/22/1976
1,041,989	73/059,396	06/22/1976
1,041,998	72/466,427	06/22/1976
1,042,001	72/425,349	06/22/1976
1,042,003	72/415,610	06/22/1976
1,042,004	72/439,804	06/22/1976
1,042,005	73/028,472	06/22/1976
1,042,006	73/028,379	06/22/1976
1,042,009	73/054,756	06/22/1976

Service by Publication

A petition to cancel the registrations identified below having been filed, and the notice of such proceeding sent by certified mail to registrants at their last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days of this publication, the cancellation will proceed as in the case of default.

Auto-Caddy Inc., Los Altos, Calif., Reg. No. 1,725,424, for the mark "CONDOR", Canc. No. 25,156.

Dillon Manufacturing Co., Inc., New York, N.Y., Reg. No. 715,817, for the mark "MERIT", Canc. No. 26,055.

International Ragdoll Cat Association, Inc., Riverside, Calif., Reg. No. 1,632,504, for the mark "HONEY BEAR", Canc. No. 25,856.

Automodes, Inc., Brookline, Mass., Reg. No. 1,696,904, for the mark "AUTOMODES", Canc. No. 25,951.

Ferranti International PLC, Cheshire, Great Britain, Reg. No. 1,240,976, for the mark "FERRANTI AUTOFIL AND DESIGN", Can. No. 25,854.

JEAN BROWN
Technical Program Manager
Trademark Trial
and Appeal Board, for
ROBERT M. ANDERSON
Deputy Assistant Commissioner
for Trademarks

Reclassification Alert Report

This report is a summary of classification changes which became effective by issuance of Classification Orders from April through June 1997.

- subclasses established or abolished (major changes)
- subclass title, indent, or position change
- changes to existing classes and subclass definitions (minor changes)

This Reclassification Alert Report may appear from time to time in the Official Gazette and is intended to provide an interim notice of classification changes pending publication of the Manual of Classification and revisions thereto.

The general public may purchase copies of Classification Orders or Classification Definitions by contacting the Editorial Division at 703-305-6101 or 703-305-5099. Payment can be made through a Deposit Account, or by check made payable to "Commissioner of Patents and Trademarks" and sent to:

Chief, Editorial Division
Office of Classification Support
U.S. Patent and Trademark Office
Crystal Mall 2, Room 303
Washington, D.C. 20231

RECLASSIFICATION ALERT REPORT
April—June 1997

Class	First Subclass	Last Subclass	Action	Order Number
5			DEFN. CHANGE	1641
8			DEFN. CHANGE	1644
15			DEFN. CHANGE	1642
24	909		ESTABLISH	1644
24	910		ESTABLISH	1644
29			DEFN. CHANGE	1643
33			DEFN. CHANGE	1639
33			DEFN. CHANGE	1642
49			DEFN. CHANGE	1642
52			DEFN. CHANGE	1641
65			DEFN. CHANGE	1643
73	1	6	ABOLISH	1639
73	1.01	1.09	ESTABLISH	1639
73	1.11	1.19	ESTABLISH	1639
73	1.21	1.29	ESTABLISH	1639
73	1.31	1.39	ESTABLISH	1639
73	1.41	1.49	ESTABLISH	1639
73	1.51	1.59	ESTABLISH	1639
73	1.61	1.69	ESTABLISH	1639
73	1.71	1.79	ESTABLISH	1639
73	1.81	1.89	ESTABLISH	1639
75			DEFN. CHANGE	1643
91			DEFN. CHANGE	1639
92			DEFN. CHANGE	1639
95			DEFN. CHANGE	1639
101			DEFN. CHANGE	1644
106			DEFN. CHANGE	1643
106	19	32	ABOLISH	1644
106	31.01	31.09	ESTABLISH	1644
106	31.1		ESTABLISH	1644
106	31.11	31.19	ESTABLISH	1644
106	31.2		ESTABLISH	1644
106	31.21	31.29	ESTABLISH	1644
106	31.3		ESTABLISH	1644
106	31.31	31.39	ESTABLISH	1644
106	31.4		ESTABLISH	1644
106	31.41	31.49	ESTABLISH	1644
106	31.5		ESTABLISH	1644
106	31.51	31.59	ESTABLISH	1644
106	31.6		ESTABLISH	1644
106	31.61	31.69	ESTABLISH	1644
106	31.7		ESTABLISH	1644
106	31.71	31.79	ESTABLISH	1644
106	31.8		ESTABLISH	1644
106	31.81	31.89	ESTABLISH	1644
106	31.9		ESTABLISH	1644
106	31.91	31.97	ESTABLISH	1644
108			DEFN. CHANGE	1641
127			DEFN. CHANGE	1644

Class	First Subclass	Last Subclass	Action	Order Number
132			DEFN. CHANGE	1641
137			DEFN. CHANGE	1642
138			DEFN. CHANGE	1642
138			DEFN. CHANGE	1643
156			DEFN. CHANGE	1643
156			DEFN. CHANGE	1644
166	272	274	ABOLISH	1642
166	270.1		ESTABLISH	1642
166	270.2		ESTABLISH	1642
166	272.1	272.7	ESTABLISH	1642
166	400	403	ESTABLISH	1642
166	263		TITLE CHANGE	1642
166	268		TITLE CHANGE	1642
166	270		TITLE CHANGE	1642
166	300		TITLE CHANGE	1642
166	263		POSITION CHANGE	1642
166	269		POSITION CHANGE	1642
166	271		POSITION CHANGE	1642
206			DEFN. CHANGE	1641
208			DEFN. CHANGE	1642
210	751		ABOLISH	1642
210	170		TITLE CHANGE	1642
210	747		TITLE CHANGE	1642
210			DEFN. CHANGE	1644
211	13		ABOLISH	1641
211	41		ABOLISH	1641
211	126	133	ABOLISH	1641
211	181		ABOLISH	1641
211	13.1		ESTABLISH	1641
211	26.1		ESTABLISH	1641
211	26.2		ESTABLISH	1641
211	41.1		ESTABLISH	1641
211	41.11	41.18	ESTABLISH	1641
211	41.2	41.9	ESTABLISH	1641
211	85.1		ESTABLISH	1641
211	85.11	85.14	ESTABLISH	1641
211	85.2	85.9	ESTABLISH	1641
211	126.1		ESTABLISH	1641
211	126.11	126.16	ESTABLISH	1641
211	126.2	126.9	ESTABLISH	1641
211	127.1		ESTABLISH	1641
211	128.1		ESTABLISH	1641
211	129.1		ESTABLISH	1641
211	130.1		ESTABLISH	1641
211	131.1		ESTABLISH	1641
211	131.2		ESTABLISH	1641
211	132.1		ESTABLISH	1641
211	133.1	133.6	ESTABLISH	1641
211	181.1		ESTABLISH	1641
211	26		TITLE CHANGE	1641
211	40		TITLE CHANGE	1641
211	65		TITLE CHANGE	1641
220			DEFN. CHANGE	1641
229			DEFN. CHANGE	1641
241			DEFN. CHANGE	1643
248			DEFN. CHANGE	1641
250			DEFN. CHANGE	1642
251			DEFN. CHANGE	1642
252			DEFN. CHANGE	1643
264	56	67	ABOLISH	1643
264	600	683	ESTABLISH	1643
264	910		ESTABLISH	1643
264			DEFN. CHANGE	1644
294			DEFN. CHANGE	1641
297			DEFN. CHANGE	1641
299			DEFN. CHANGE	1642
303	DIG. 9		ESTABLISH	1642
312			DEFN. CHANGE	1641
313			DEFN. CHANGE	1643
324			DEFN. CHANGE	1639
324			DEFN. CHANGE	1642
327			DEFN. CHANGE	1639
337			DEFN. CHANGE	1639
340			DEFN. CHANGE	1639
340			DEFN. CHANGE	1642
347			DEFN. CHANGE	1644

Class	First Subclass	Last Subclass	Action	Order Number
348			DEFN. CHANGE	1642
356			DEFN. CHANGE	1639
356			DEFN. CHANGE	1641
361			DEFN. CHANGE	1641
364			DEFN. CHANGE	1642
368			DEFN. CHANGE	1639
374			DEFN. CHANGE	1639
385			DEFN. CHANGE	1641
392			DEFN. CHANGE	1642
396			DEFN. CHANGE	1639
399			DEFN. CHANGE	1639
401			DEFN. CHANGE	1644
405	52		TITLE CHANGE	1642
405	60		TITLE CHANGE	1642
405	74		TITLE CHANGE	1642
427			DEFN. CHANGE	1644
428			DEFN. CHANGE	1644
429			DEFN. CHANGE	1643
432			DEFN. CHANGE	1643
435			DEFN. CHANGE	1644
436			DEFN. CHANGE	1644
445			DEFN. CHANGE	1643
501			DEFN. CHANGE	1643
501	95	98	ABOLISH	1645
501	95.1	95.3	ESTABLISH	1645
501	96.1	96.5	ESTABLISH	1645
501	97.1	97.4	ESTABLISH	1645
501	98.1	98.6	ESTABLISH	1645
505			DEFN. CHANGE	1643
507			DEFN. CHANGE	1642
588			DEFN. CHANGE	1642
607	97		ABOLISH	1642

Certificates of Correction
For the Week of July 1, 1997

				5,581,326	5,597,546	5,604,700	5,613,973
				5,581,557	5,597,815	5,604,852	5,614,142
				5,581,621	5,598,092	5,604,877	5,614,278
D. 376,164	5,446,912	5,530,377	5,555,790	5,581,793	5,598,190	5,605,173	5,614,891
D. 378,532	5,448,062	5,531,166	5,556,438	5,581,827	5,598,518	5,605,459	5,615,117
Re. 32,940	5,458,748	5,531,940	5,556,783	5,582,346	5,598,532	5,606,132	5,615,532
4,719,201	5,459,655	5,532,151	5,557,492	5,582,678	5,598,544	5,606,516	5,615,700
4,724,537	5,462,166	5,532,701	5,559,054	5,582,846	5,598,574	5,606,662	5,615,732
4,992,550	5,462,938	5,533,791	5,559,127	5,584,687	5,599,234	5,606,704	5,615,839
5,020,002	5,462,963	5,534,000	5,560,012	5,585,777	5,599,247	5,607,609	5,615,917
5,070,443	5,465,774	5,535,040	5,561,366	5,586,065	5,599,353	5,607,661	5,616,505
5,073,933	5,468,879	5,535,157	5,562,746	5,586,428	5,599,549	5,607,961	5,616,986
5,097,483	5,471,255	5,535,336	5,563,052	5,587,268	5,599,823	5,608,261	5,617,841
5,101,365	5,472,290	5,536,648	5,564,473	5,587,766	5,599,874	5,608,590	5,617,917
5,184,016	5,473,745	5,536,859	5,565,459	5,587,840	5,600,110	5,608,671	5,618,167
5,238,593	5,475,872	5,537,259	5,565,651	5,589,343	5,600,228	5,608,705	5,619,607
5,241,072	5,480,856	5,537,425	5,568,620	5,589,620	5,600,346	5,608,817	5,619,888
5,242,840	5,481,733	5,538,961	5,569,276	5,589,915	5,600,413	5,609,044	5,620,555
5,256,243	5,482,861	5,539,770	5,570,156	5,590,247	5,600,603	5,609,178	5,621,110
5,323,165	5,493,512	5,539,996	5,570,901	5,591,899	5,600,664	5,609,313	5,621,295
5,331,950	5,493,572	5,540,322	5,571,793	5,592,305	5,600,759	5,609,329	5,621,707
5,332,429	5,494,354	5,541,646	5,572,447	5,592,425	5,600,916	5,609,361	5,621,977
5,332,758	5,495,001	5,542,574	5,572,642	5,592,680	5,601,399	5,609,431	5,621,997
5,338,872	5,499,978	5,543,415	5,573,195	5,592,825	5,601,794	5,609,606	5,622,071
5,351,617	5,502,459	5,543,488	5,573,575	5,593,469	5,601,866	5,609,800	5,622,091
5,352,680	5,503,133	5,543,690	5,574,161	5,593,675	5,601,870	5,609,883	5,622,407
5,358,972	5,504,166	5,544,071	5,575,287	5,593,777	5,602,177	5,609,961	5,622,533
5,367,657	5,504,570	5,544,293	5,576,076	5,593,885	5,602,255	5,611,204	5,623,327
5,368,584	5,504,949	5,544,585	5,576,089	5,594,530	5,602,282	5,611,253	5,624,606
5,371,162	5,505,025	5,546,471	5,576,611	5,594,531	5,602,284	5,611,483	5,624,685
5,372,441	5,508,193	5,546,598	5,576,949	5,594,580	5,602,290	5,611,554	5,625,587
5,376,935	5,512,102	5,547,436	5,577,104	5,594,981	5,602,636	5,611,701	5,625,957
5,379,384	5,521,368	5,549,420	5,577,906	5,595,476	5,602,768	5,611,813	5,626,940
5,381,376	5,521,867	5,549,822	5,578,190	5,595,529	5,603,238	5,611,918	5,627,738
5,386,038	5,522,020	5,549,870	5,578,279	5,595,721	5,603,370	5,611,993	5,628,310
5,389,493	5,522,515	5,549,977	5,579,038	5,595,848	5,603,412	5,613,054	5,629,395
5,423,647	5,523,989	5,551,060	5,579,130	5,595,984	5,603,459	5,613,095	
5,432,010	5,524,231	5,553,451	5,579,851	5,596,440	5,604,013	5,613,132	
5,436,628	5,525,570	5,553,549	5,580,039	5,596,618	5,604,056	5,613,180	
5,439,938	5,526,825	5,554,295	5,580,767	5,597,075	5,604,080	5,613,438	

Summary of Final Decisions
Issued by the
Trademark Trial and Appeal Board
May 12 - May 16, 1997

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
5-15	OPP	89,866	American Airlines, Inc. v. United Server Ass'n. for Healthcare	2(d)	Opposition Sustained	"AAdvantage" (and design) [providing a program of bonus flights for frequent travelers]; "AAdvantage Gold" (and design) [transportation of passengers by air with door-to-door service]; "AAdvantage Platinum" (and design) [transportation of passengers by air, namely, providing a program of bonus flights for frequent travellers]	"BENEFITS ADVANTAGE" [arranging group discounts on airfare, hotels and motels, child care, grocery coupon programs, preferred shopping services, long distance telephone services, maintenance medications, vision care, mortgage acceleration programs and movie passes]		No
5-15	EX	74/605,105	Media Arts Group, Inc.	2(e)(1)	Refusal Reversed		"CINEMACLIPS" [commemorative collages]		No

(1)EX = EX PARTE APPEAL; OPP = OPPOSITION; CANC = CANCELLATION; CU = CONCURRENT USE; (SJ) = SUMMARY JUDGMENT; (R) = REQ. FOR RECONSIDERATION

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Special box designations should be used to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded to the appropriate area without being opened. Only the specified type of document should be placed in an envelope addressed to one of these special boxes. If any documents other than the specified type identified for each special box are addressed to that box, they will be significantly delayed in reaching the appropriate area for which they are intended.

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Washington, D.C. 20231

Box Designations	Explanation
Box 7	Reissue applications for patents involved in litigation and subsequently filed related papers.
Box 12	Contributions to the Examiner Education Program.
Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box Comments Patents	Public comments regarding patent related regulations and procedures.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or materials related to the Disclosure Document Program.
Box Design	The filing of all design patent applications and any communications relating thereto.
Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62).
Box Issue Fee	All communications following the receipt of a PTOL–85, "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box Missing Parts	Response to the Notice to File Missing Parts of Application and associated papers and fees.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box PATENT APPLICATION	New patent applications and associated papers and fees.
Box Patent Ext.	Applications for patent term extension and any communications relating thereto.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Provisional Patent Application	The filing of all provisional patent applications and any communications relating thereto.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return post card or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

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Arlington, Virginia 22202-3513

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Box TTAB FEE	Oppositions, cancellation petitions, and ex parte appeals.
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Box STATUS NO FEE	Written status inquiries.
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Box 6	Mail for the Office of Procurement.
Box 8	All papers for the Office of the Solicitor *except* communications relating to *pending litigation and disciplinary proceedings*; papers relating to pending litigation in court cases shall be mailed only to Office of the Solicitor, P.O. Box 15667, Arlington, Virginia 22215 and papers relating to pending disciplinary proceedings before the Administrative Law Judge or the Commissioner shall be mailed only to the Office of the Solicitor, P.O. Box 16116, Arlington, Virginia 22215.
Box 9	Coupon orders for U.S. patent and trademark copies.
Box 10	Orders for certified copies of PTO documents.
Box 11	Electronic Ordering Service (EOS).
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 16	Deposit Account Replenishment Checks.
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box Assignment	All assignment documents except those filed with new applications.
Box EEO	Mail for the Office of Civil Rights.
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box M Fee	Correspondence regarding patent maintenance fees and related matter.
Box OED	Mail for the Office of Enrollment and Discipline.

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All information is available for use by the public free of charge.

In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

Since there are variations in the scope of patent and trademark collections among the PTDLs, and their hours of service to the public vary, anyone contemplating use of these collections at a particular library is urged to contact that library in advance about its collections, services, and hours in order to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(334) 844-1747
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Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7010
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	(415) 557-4500
	Sunnyvale Center for Innovation, Invention and Ideas	(408) 730-7290
Colorado	Denver Public Library	(303) 640-6249
Delaware	Newark: University of Delaware Library	(302) 831-2965
Dist. of Columbia	Washington: Howard University Libraries	(202) 806-7252
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami-Dade Public Library	(305) 375-2665
	Orlando: University of Central Florida Libraries	(407) 823-2562
	Tampa Campus Library, University of South Florida	(813) 974-2726
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Hawaii	Honolulu: Hawaii State Public Library System	(808) 586-3477
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 747-4450
	Springfield: Illinois State Library	(217) 782-5659
Indiana	Indianapolis-Marion County Public Library	(317) 269-1741
	West Lafayette Siegesmund Engineering Library, Purdue University	(317) 494-2872
Iowa	Des Moines: State Library of Iowa	(515) 281-4118
Kansas	Wichita: Ablah Library, Wichita State University	(316) 689-3155
Kentucky	Louisville Free Public Library	(502) 574-1611
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maine	Orono: Raymond H. Fogler Library, University of Maine	(207) 581-1678
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 405-9157
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Media Union Library, University of Michigan	(313) 647-5735
	Big Rapids: Abigail S. Timme Library, Ferris State University	(616) 592-3602
	Detroit: Great Lakes Patent and Trademark Center	(313) 833-3379
Minnesota	Minneapolis Public Library and Information Center	(612) 372-6570
Mississippi	Jackson: Mississippi Library Commission	(601) 359-1036
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4281
Nebraska	Lincoln: Engineering Library, University of Nebraska-Lincoln	(402) 472-3411
Nevada	Reno: University of Nevada, Reno Library	(702) 784-6500 Ext. 257
New Hampshire	Concord: New Hampshire State Library	(603) 271-2239
New Jersey	Newark Public Library	(201) 733-7782
	Piscataway: Library of Science and Medicine, Rutgers University	(908) 445-2895
New Mexico	Albuquerque: University of New Mexico General Library	(505) 277-4412
New York	Albany: New York State Library	(518) 474-5355
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Ohio	Akron - Summit County Public Library	(303) 643-9075
	Cincinnati and Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Portland: Paul L. Boley Law Library, Lewis & Clark College	(503) 768-6786
Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Puerto Rico	Mayaquez General Library, University of Puerto Rico	(787) 832-4040 Ext. 3459
Rhode Island	Providence Public Library	(401) 455-8027
South Carolina	Clemson University Libraries	(803) 656-3024
South Dakota	Rapid City: Devereaux Library, South Dakota School of Mines and Technology	(605) 394-6822
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8877
	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
	Lubbock: Texas Tech University	Not Yet Operational
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Vermont	Burlington: Bailey/Howe Library, University of Vermont	Not Yet Operational
Virginia	Richmond: James Branch Cabell Library, Virginia Commonwealth University	(804) 828-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
West Virginia	Morgantown: Evansdale Library, West Virginia University	(304) 293-2510
Wisconsin	Madison: Kurt F. Wendt Library, University of Wisconsin Madison	(608) 262-6845
	Milwaukee Public Library	(414) 286-3051
Wyoming	Casper: Natrona County Public Library	(307) 237-4935

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PATENT EXAMINING CORPS

BRUCE A. LEHMAN, Commissioner
LAWRENCE J. GOFFNEY Jr., Assistant Commissioner for Patents
EDWARD R. KAZENSKE, Deputy Assistant Commissioner for Patents
STEPHEN G. KUNIN, Deputy Assistant Commissioner for Patent Policy

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, ENGINEERING AND DESIGNS, GROUP 1100—THEODORE MORRIS, Director	308-0661	12/15/95
ORGANIC CHEMISTRY, DRUG, BIO-AFFECTING AND BODY TREATING COMPOSITION, GROUP 1200/2900—JOHN E. KITTLE, Director	308-1235	09/20/95
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—RICHARD V. FISHER, Director	308-0651	10/09/95
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—MARY LEE, Acting Director	308-2351	11/06/95
BIOTECHNOLOGY, GROUP 1800—JOHN J. DOLL, Director	308-0196	03/22/95
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—STEWART LEVY, Director	308-1782	05/01/95
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	04/28/95
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—JOSEPH J. ROLLA, Director	305-3900	07/07/95
SPECIAL COMPUTER APPLICATIONS: COMPUTER GRAPHICS, BUSINESS PRACTICES, & DIAGNOSTIC TESTING, GROUP 2400—GERALD GOLDBERG, Director	305-3900	07/17/95
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	07/06/95
TELECOMMUNICATIONS, GROUP 2600—NICHOLAS P. GODICI, Director	305-3900	05/12/95
DESIGN, GROUP 2900—JOHN E. KITTLE, Director	308-0661	05/02/95
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—JOHN F. TERAPANE, JR., Director	308-1113	09/11/95
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—ETHEL CROSS, Director	308-1148	08/18/95
MEDICAL INSTRUMENTS, DIAGNOSTIC EQUIPMENT AND TREATMENT DEVICES; SURGERY AND SURGICAL SUPPLIES; AMUSEMENT AND EXERCISING DEVICES; ANIMAL HUSBANDRY; SPORTING GOODS; TOBACCO PRODUCTS AND MANUFACTURING EQUIPMENT; AND PRINTING, GROUP 3300—J.J. LOVE, Director	308-0858	10/12/95
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	08/14/95
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-2168	11/17/95

*A communication from the examiner should have been received in most applications filed prior to this date.

Patents will Expire as Follows:
(1) The term of any utility or plant patent that is in force on or results from an application filed before June 8, 1995 is the greater of the 20 year term provided in 35 U.S.C. 154(a)(2) or 17 years from grant subject to any terminal disclaimers. 35 U.S.C. 154(c)(1).
(2) All utility and plant patents granted on applications having an actual United States filing date on or after June 8, 1995 are granted for a term which begins on the date on which the patent is granted and ends 20 years from the date on which the application was filed in the United States. If the application contains a specific reference to an earlier application under 35 U.S.C. 120, 121 or 365(c), the patent term ends twenty years from that date on which the earliest application was filed. 35 U.S.C. 154(a)(2).
(3) All design patents are granted for a term of 14 years from the date of the grant.
However, the term of any patent may have been curtailed by disclaimer under the provisions of 35 U.S.C. 153, have lapsed due to failure to pay maintenance fees, or have been extended under the provisions of 35 U.S.C. 154, 155, or 156. Thus, if more reliable information is needed with respect to a particular patent, then the specific patent file should be reviewed to determine the actual date of patent expiration.

TRADEMARK OPERATION

Bruce A. Lehman, Commissioner
Philip G. Hampton, II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Office
Condition of Trademark Applications as of June 1, 1997

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 101—Ron Williams, Managing Attorney, (703) 308–9101—4th Floor Foods, Beverages, Wines & Spirits—Int. Classes 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/09/96	03/06/97
Law Office 102—Myra Kurzbard, Managing Attorney, (703) 308–9102—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/25/96	03/03/97
Law Office 103—Michael A. Szoke, Acting Managing Attorney, (703) 308–9103—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/31/96	05/15/97
Law Office 104—Sidney Moskowitz, Managing Attorney, (703) 308–9104—6th Floor Unwrought metals, Industrial Equipment, Tools, Installation, Vehicles, Firearms, Musical Instruments, Building Materials & Floor Coverings—Int. Classes 6, 7, 8, 11, 12, 13, 15, 19, 27 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/15/96	03/05/97
Law Office 105—Thomas Howell, Managing Attorney, (703) 308–9105—6th Floor Chemicals, Paints, Lubricants, Pharmaceuticals, Medical Apparatus & Tobacco—Int. Classes 1, 2, 4, 5, 10, 34 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/14/96	04/07/97
Law Office 106—Mary Sparrow, Managing Attorney, (703) 308–9106—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/01/96	01/30/97
Law Office 107—Thomas Lamone, Managing Attorney, (703) 308–9107—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/06/97	03/27/97
Law Office 108—David Shallant, Managing Attorney, (703) 308–9108—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/08/96	02/20/97
Law Office 109—Deborah Cohn, Managing Attorney, (703) 308–9109—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/13/97	04/17/97
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Terron Simms, Director, (703) 308-9100		
Trademark Assistance Center—(703) 308-9000		
Pre-Examination—Alan Lambert, Supervisor, (703) 308-9401 ext. 188		
Intent-To-Use—(ITU)—(703) 308-9500		
Post Registration Section—Mary Bowman, Supervisor, (703) 308-9500 ext. 126		
Affidavits Under Sections 8 & 15 (All Classes)	05/06/97	—0—
Renewals (All Classes)	05/05/97	—0—
Section 12(c) Publications (All Classes)	03/13/97	—0—

1. ** Assigned to all Law Office

2. Applicants with inquiries concerning the status of their applications and a touch telephone should call (703) 305–8747 from 6:30 a.m. to Midnight EST, Monday through Friday. This automated voice system will provide the current status of your applicatioo. Applicants are urged not to file unnecessary inquiries concerning the status of their applications. See SECTION 411 of the TRADEMARK MANUAL OF EXAMINING PROCEDURE.

3. * These dates identify the oldest unassigned new case in each Law Office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examining attorney.

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REEXAMINATIONS

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B2 4,393,203 (3243rd)

PROCESS OF PREPARING ALKYLPOLYSACCHARIDES

Mark H. K. Mao, Cincinnati; Larry E. Miller, Madeira, and John M. Weeman, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Reexamination Request No. 90/003,353, Mar. 8, 1994.
Reexamination Certificate for Patent 4,393,203, issued Jul. 12, 1983, Ser. No. 371,693, Apr. 26, 1982.
Reexamination Certificate B1 4,393,203, issued May 31, 1994.
Int. Cl.[6] **C07G** *3/00;* **C07H** *1/00;* **C08B** *37/00*
U.S. Cl. 536—124

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–9** and **12–19** is confirmed.

Claims **10** and **11** are determined to be patentable as amended.

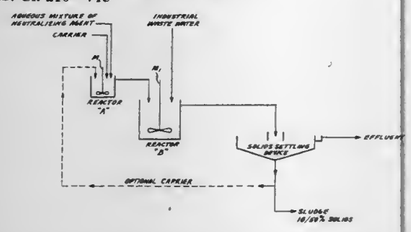
1. In the process of removing fatty alcohol containing from about 12 to 18 carbon atoms from a mixture of said alcohol with a C_{12} to C_{18} alkyl polysaccharide wherein saccharide chain length is greater than one on the average and less than about 20 saccharide moieties, and wherein said mixture contains no C_1 to C_5 short chain alcohols or auxiliary solvents, the improvement which comprises heating the mixture under a vacuum of from about 0.1 to about 20 mm of mercury in a thin film evaporator which provides, in operation, a Reynolds number of at least about 20,000 a film thickness of less than about 10 mm and a film temperature of from about 140° C. to about 200° C., wherein fatty alcohol removable is continued under the aforesaid conditions so as to avoid decomposition of, and any appreciable change in the color of, said alkylpolysaccharide and continued to the extent that no more than about 2% of said fatty alcohol remains in said mixture.

B2 4,465,597 (3244th)

TREATMENT OF INDUSTRIAL WASTEWATERS

Stewart T. Herman, Hellertown; James B. Pfeiffer, Bethlehem; Richard T. Sewald, Sr., Bethlehem, and Charles J. Sterner, Bethlehem, all of Pa., assignors to Tetra Technologies, Inc., The Woodlands, Tex.

Reexamination Request No. 90/004,094, Jan. 11, 1996.
Reexamination Certificate for Patent 4,465,597, issued Aug. 14, 1984, Ser. No. 291,439, Aug. 10, 1981.
Reexamination Certificate B1 4,465,597, issued Apr. 25, 1995.
Int. Cl.[6] **C02F** *1/62*
U.S. Cl. 210—713



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **2**, **6–8**, **14–16**, **20–23** and **26** is confirmed.

Claim **3** was previously cancelled.

Claims **1**, **12**, **13**, **17–19**, **24**, **25** and **27** are cancelled.

Claims **4**, **5**, **9**, **10** and **11** are determined to be patentable as amended.

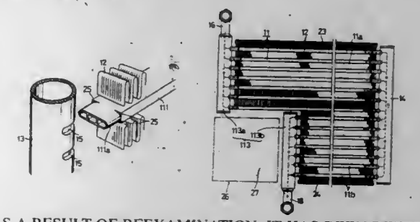
2. The improved method for treating acidic wastewater of claim **1** wherein the acidic wastewater to be treated also contains dissolved salts which are precipitated as insoluble calcium compounds.

B1 4,825,941 (3245th)

CONDENSER FOR USE IN A CAR COOLING SYSTEM

Ryoichi Hoshino; Hironaka Sasaki, and Takayuki Yasutake, all of Oyamashi, Japan, assignors to Showa Aluminum Corporation, Osaka, Japan

Reexamination Request No. 90/003,821, May 8, 1995.
Reexamination Certificate for Patent 4,825,941, issued May 2, 1989, Ser. No. 77,815, Jul. 27, 1987.
Claims priority, application Japan, Jul. 29, 1986, 61-179763; Sep. 19, 1986, 61-144775; Nov. 4, 1986, 61-263138
Int. Cl.[6] **F28B** *1/00*
U.S. Cl. 165—110



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1**, **5**, **6** and **8** are determined to be patentable as amended.

Claims **2**, **3**, **4**, and **7**, dependent on an amended claim, are determined to be patentable.

1. A condenser adapted for use in the car cooling system, the condenser comprising:

a pair of headers provided in parallel with each other;

a plurality of tubular elements whose opposite ends are connected to the headers;

fins provided in air paths present between one tube and the next;

wherein each header is made of an aluminum pipe having a circular cross-section;

wherein each of the tubular elements is made of a flat hollow aluminum tube made by extrusion; and

wherein the opposite ends of the tubular elements are inserted in slits produced in the headers, and liquid-tightly soldered therein;

wherein the soldering substance is previously coated in the headers or the tubular elements or both;

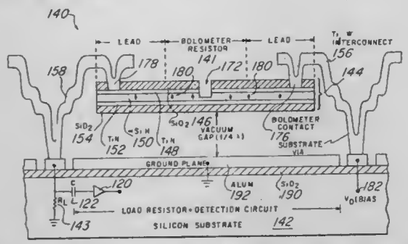
wherein at least one of the headers is internally divided by a partition into at least two groups of coolant passageways, wherein one group is located toward the inlet whereas the other is located toward the outlet, thereby enabling the flow of coolant to make at least one U-turn in the header;

wherein the opposite ends of the partition are inserted in a semi-circular slit produced in the header and soldered therein; and

wherein the partition is disc-shaped, having a larger circular portion and a smaller circular portion, the partition is inserted in the header through the slit with the larger circular portion being secured in the slit and with the smaller circular portion being kept in contact with the inside wall surface of the

header, *the portion of the partition disposed in the header being without any perforation.*

B1 5,021,663 (3246th)
INFRARED DETECTOR
Larry J. Hornbeck, Van Alstyne, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Reexamination Request No. 90/004,242, May 14, 1996.
Reexamination Certificate for Patent 5,021,663, issued Jun. 4, 1991, Ser. No. 597,280, Oct. 15, 1990.
Continuation of Ser. No. 231,797, Aug. 12, 1988, abandoned.
Int. Cl.[6] G01J *5/20;5/22;5/02*
U.S. Cl. 250—349



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **8–12** and **14** is confirmed.

Claims **6**, **19**, **21**, **24** and **29** are cancelled.

Claims **1**, **3**, **4**, **13**, **15**, **17**, **18**, **20**, **22**, **25**, **27**, **28**, **30** and **31** are determined to be patentable as amended.

Claims **2**, **5**, **7**, **16**, **23** and **26**, dependent on an amended claim, are determined to be patentable.

New claims **32–38** are added and determined to be patentable.

1. An array of bolometers for detecting radiation in a spectral range, comprising:

(a) a substrate including an array of bolometer circuit elements *sets* adjacent a [first] surface; *and*

(b) an array of resistors, each of said resistors having leads and spaced from said surface by about one quarter wavelength of the center of said spectral range, said resistor plus *said* leads being formed from a stack including a first conductive layer, a resistive layer, and a second conductive layer with said second conductive layer the closest layer to said surface, each of said resistors further oriented to receive radiation, and located over and electrically connected to a corresponding [set] *one* of said circuit elements *sets, wherein the sheet resistance of said first and second conductive layers provides at least 50% absorption in said spectral range.*

B1 5,098,797 (3247th)
STEEL ARTICLES HAVING PROTECTIVE DUPLEX COATINGS AND METHOD OF PRODUCTION
Roger W. Haskell, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Reexamination Request No. 90/003,925, Aug. 25, 1995.
Reexamination Certificate for Patent 5,098,797, issued Mar. 24, 1992, Ser. No. 516,450, Apr. 30, 1990.
Int. Cl.[6] B32B *15/04*
U.S. Cl. 428—621

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:



Claim **1** is determined to be patentable as amended.

Claims **2–5**, dependent on an amended claim, are determined to be patentable.

New claim **6** is added and determined to be patentable.

1. A corrosion resistant [composite article] *turbine component* comprising a steel substrate body [and a protective duplex coating bonded thereto, said coating comprising], a sacrificial metallic undercoat [on] *bonded to* the substrate body of substantially uniform thickness between about 0.2 mil and about two mils and being more active in a galvanic series than iron, and an overcoat of ceramic material [on] *bonded to* the *sacrificial metallic* undercoat, *wherein said overcoat contains particulate material applied to said sacrificial metallic undercoat using a ceramic slurry composition.*

B1 5,304,251 (3248th)
CRYSTALLINE LACTULOSE TRIHYDRATE AND A METHOD FOR ITS MANUFACTURE
Mamoru Tomita; Seiichi Shimamura; Yoshitaka Tamura; Teruhiko Mizota; Satoshi Nakano, and Itsuko Suzawa, all of Kanagawa, Japan, assignors to Morinaga Milk Industry Co., Ltd., Tokyo, Japan
Reexamination Request No. 90/004,172, Mar. 7, 1996.
Reexamination Certificate for Patent 5,304,251, issued Apr. 19, 1994, Ser. No. 926,308, Aug. 10, 1992.
Claims priority, application Japan, Aug. 9, 1991, 3-200928
Int. Cl.[6] C13F *3/00;* **C07H** *3/00;* **C08B** *37/00*
U.S. Cl. 127—42

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **2** is cancelled.

Claims **1** and **3** are determined to be patentable as amended.

1. A crystalline lactulose trihydrate having the molecular formula of $C_{12}H_{22}O_{11}.3H_2O$, *wherein said crystalline lactulose trihydrate has the following physical and chemical properties:*

1) elementary analysis (in molar ratio): carbon: hydrogen: oxygen is :12:28:14;

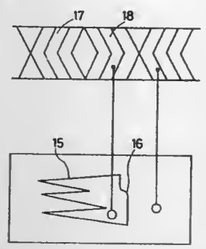
2) molecular weight: 396 dalton as determined by the cryoscopic method

3) moisture content: 13.6% by weight as determined by the Karl Fischer method;

4) starting point of melting: 58°–60° C. as determined by the capillary method; and

5) specific rotation: exhibiting mutarotation, but −43°±0.3° in specific rotation as measured at 20° C. in a 1% by weight aqueous solution in an equilibrium state.

B1 5,347,381 (3249th)
FERROELECTRIC LIQUID CRYSTAL DISPLAY DEVICE WITH MOLECULES BETWEEN HAIRPIN AND LIGHTNING DEFECTS FOLLOWING THE LIGHTNING DEFECTS
Tokihiko Shinomiya, Nara; Tsugiko Taniguchi, Kitakatsuragi; Tomoaki Kuratate, Nara, and Kenichi Nakagawa, Fujinomiya, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Reexamination Request No. 90/003,956, Sep. 13, 1995.
Reexamination Certificate for Patent 5,347,381, issued Sep. 13, 1994, Ser. No. 823,857, Jan. 22, 1992.
Claims priority, application Japan, Jan. 25, 1991, 3-007879; Jan. 31, 1991, 3-032395
Int. Cl.[6] G02F *1/141;1/13*
U.S. Cl. 349—134



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **3** is cancelled.

Claim **1** is determined to be patentable as amended.

Claims **2** and **4**, dependent on an amended claim, are determined to be patentable.

1. A ferroelectric liquid crystal device comprising:

upper and lower substrates, each being provided with electrodes on their respective surfaces, the substrates arranged with the electrode provided surfaces opposing each other,

an insulating film formed on the electrodes on each of the substrates,

an orientation film *comprising an organic polymer, the film being* formed on the insulating film and subjected to a uniaxial orientation treatment, the orientation film on each of the two substrates being arranged, wherein the orientation directions are the same,

a liquid crystal composition with a chiral smectic C phase injected between the two substrates,

drive means for switching an optical axis of the liquid crystals in the liquid crystal composition by selectively applying a voltage to the electrodes,

means for optically identifying the switching of the optical axis, in which when the drive means is operated, the liquid crystal composition can reverse its molecular direction near the substrate and show a chevron structure which bends in a dogleg shape as a layer structure when it shows the chiral smectic C phase wherein molecules of the liquid crystal composition that are arrayed in a field between a lightning defect and a hairpin defect appear to follow the lightning defect and to oppose a direction of the uniaxial orientation treatment and wherein a pretilt angle θ_p of the liquid crystal composition to the orientation film is [between 8°] *15° or more* and *less than* 35°

wherein a stable C1U orientation of 95% or more is obtained.

B1 5,425,806 (3250th)
POURABLE WATER DISPERSIBLE THICKENING COMPOSITION FOR AQUEOUS SYSTEMS AND A METHOD OF THICKENING SAID AQUEOUS SYSTEMS
Joseph G. Doolan, Hightstown, and Charles A. Cody, Robbinsville, both of N.J., assignors to Rheox, Inc., Hightstown, N.J.
Reexamination Request No. 90/004,521, Jan. 15, 1997.
Reexamination Certificate for Patent 5,425,806, issued Jun. 20, 1995, Ser. No. 242,747, May 12, 1994.
Int. Cl.[6] C09D *7/12;101/28*
U.S. Cl. 106—203.1

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **2** is cancelled.

Claims **1** and **8** are determined to be patentable as amended.

Claims **3–7** and **9–12**, dependent on an amended claim, are determined to be patentable.

PG,3

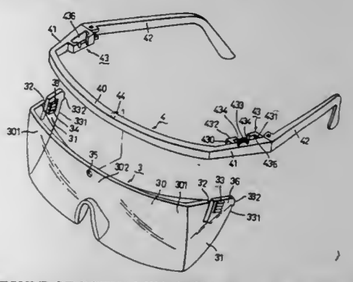
1. A pourable at 25° C. water dispersible associative thickener composition with diminished volatile organic content for aqueous systems comprising:

(a) from about 15 to 40% by weight of an associative thickener polymer *selected from the group consisting of polyurethanes, polyesters, modified cellulosics, polyesterurethanes, polyetheralpha olefins and polyetherpolyols;*

(b) from about 30 to 85% water, and

(c) from about 1 to 30% of one or more surfactants selected from the group consisting of anionic and nonionic surfactants.

B1 5,457,503 (3251st)
SPECTACLES WITH HIGH EFFICIENT ANGLE ADJUSTMENT
Jimmy Chen, 3F, No. 92, Ning-Po-Hsi St., Taipei, Taiwan
Reexamination Request No. 90/004,200, Apr. 1, 1996.
Reexamination Certificate for Patent 5,457,503, issued Oct. 10, 1995, Ser. No. 352,347, Dec. 8, 1994.
Int. Cl.[6] G02C *1/04*
U.S. Cl. 351—105



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–2** and **3** are cancelled.

[**1**. A pair of spectacles comprising:

an eye-protecting piece including an elongated transparent plate to be disposed in front of a user's eyes, said transparent plate having two opposed ends and an upper edge portion extending between said opposed ends, said eye-protecting piece further including a pair of side plates extending symmetrically from said two opposed ends of said transparent plate, thereby forming two free end portions, each of said side plates having an upper section with a top edge, an elongated notch extending downwardly from said top edge and a plurality of continuously-formed parallel ridges projecting from an inner surface of said upper section and defining a plurality of

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parallel grooves that extend between said elongated notch and a corresponding one of said free end portions; and

a U-shaped frame member provided on said upper edge portion of said transparent plate and on said top edges of said side plates, said frame member having an elongated intermediate portion with two opposed ends and a protuberance extending into an opening formed through said upper edge portion of said transparent plate, and two side portions extending along said side plates from said opposed ends of said intermediate portion, each of said side portions having an inner surface formed with a hollow rectangular sleeve constituted by a first wall portion extending perpendicularly from said side portion and located adjacent to a respective one of said ends of said intermediate portion, a second wall portion spaced farther away from said respective one of said ends of said intermediate portion than said first wall portion and extending perpendicularly from said side portion, and a third wall portion interconnecting said first and second wall portions, said third wall portion having a resilient projection extending toward said side portion, a portion of said upper section between said notch and said free end portion of said side plate extending into said rectangular sleeve such that said first wall portion is received slidably in said notch, said second wall portion engages said free end portion of said side plate and said resilient projection engages one of said grooves.]

STATUTORY INVENTION REGISTRATIONS

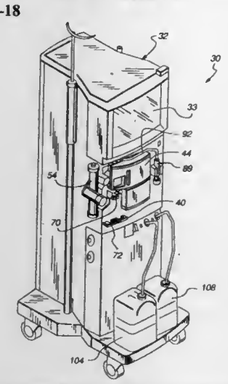
PUBLISHED JULY 1, 1997

A statutory invention registration is not a patent. It has the defensive attributes of a patent but does not have the enforceable attributes of a patent. No article or advertisement or the like may use the term patent, or any term suggestive of a patent, when referring to a statutory invention registration. For more specific information on the rights associated with a statutory invention registration see 35 U.S.C. 157.

H1658
TECHNIQUE FOR AUTOMATICALLY PREPARING A DIALYSIS MACHINE AT A PREDETERMINED DATE AND TIME

Steve Love, 314 Bluebird Dr., Bailey, Colo. 80421; Eric Zimmerman, 11243 W. Dorado Ave., Littleton, Colo. 80127; Jim Rosa, 11183 Conifer Mountain Rd., Conifer, Colo. 80433, and Catherine DiMuzio, 810 Medea Way, Denver, Colo. 80209

Filed Jun. 7, 1995, Ser. No. 484,013
Int. Cl.[6] B08B *7/04*
U.S. Cl. 134—18 **17 Claims**



1. A method of cleaning and disinfecting a dialysis machine with hot water, said dialysis machine including a dialysate preparation line and a waste disposal line adapted to be connected to a dialyzer, and said method comprising the steps of:

connecting a bypass line between the dialysate preparation line and the waste disposal line to transmit the heated water between the dialysate preparation and waste disposal lines;

connecting a first recirculation line to the dialysate preparation line and connecting a second recirculation line to the waste disposal line to recirculate the hot water through both the dialysate preparation and waste disposal lines; and

programing the dialysis machine to perform the following steps at a predetermined date and time:

heating a supply of water;

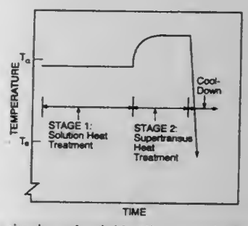
pumping the heated water through the dialysate preparation line, the bypass line, the waste disposal line and each of the recirculation lines; and

pumping the heated water down a waste drain within the waste disposal line to dispose of the heated water.

H1659
METHOD FOR HEAT TREATING TITANIUM ALUMINIDE ALLOYS

Sheldon L. Semiatin, Dayton, Ohio; David S. Lee, Chesterfield, Mo., and Dennis M. Dimiduk, Beavercreek, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 8, 1995, Ser. No. 437,858
Int. Cl.[6] C22F *1/18*
U.S. Cl. 148—669 **7 Claims**



(a) providing titanium aluminide alloy material having a recrystallized microstructure of gamma phase grains in a matrix of alpha-2 phase or lamellar alpha-2 plus gamma phase;

(b) heating said material at a temperature 30 to 60 centigrade degrees below the alpha transus temperature of said alloy whereby a microstructure having equiaxed alpha phase grains surrounded by fine gamma phase grains is produced within said alloy;

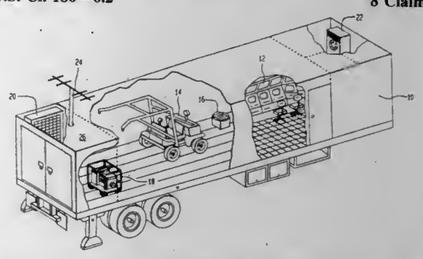
(c) thereafter heating said alloy at a temperature 20 to 50 centigrade degrees above the alpha transus temperature of said alloy to dissolve said fine gamma phase grains to produce in said alloy substantially single phase equiaxed alpha grain structure of grain size in the range of 50 to 250 μm; and

(d) thereafter cooling said alloy to transform the microstructure of said alloy to fully lamellar alpha-2 plus gamma phase.

H1660
PROCESS FOR AUTONOMOUSLY LOCATING AND RETRIEVING TOXIC HEAVY METAL AND RADIOACTIVE CONTAMINANTS

Richard S. Herman, Clifton, and Gasper J. Sacco, Succasunna, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 26, 1996, Ser. No. 613,755
Int. Cl.[6] B62D *63/00*
U.S. Cl. 180—6.2 **8 Claims**



1. A process for locating, marking and retrieving depleted uranium rounds from contaminated proving ground areas which steps include:

outfitting a trailer with a base console having the electronic capability of reading a generic map and developing therefrom a search map plot for establishing the boundaries and topological features of said contaminated area to be autonomously searched;

providing a mobile platform carried by said trailer for autonomously operating in said contaminated area on remotely transmitted instruction of said base console;

providing a mobile generator for supplying the electric power for said base console;

surveying the accurate location of a fixed multi-channel global positioning receiver for use by operators stationed at said base console;

outfitting said mobile platform with a mobile second multichannel global positioning receiver that is slaved to said fixed global positioning receiver for accurately determining the distance of said mobile receiver to said fixed receiver;

outfitting said mobile platform with a plurality of low level radiation detection cameras for sensing the location of said depleted uranium rounds and for transmitting their initial position to said base console;

remotely instructing the movement of said mobile platform, by teleoperation from said base console, to begin searching the contaminated area for depleted uranium rounds along inertial specifically computerized map paths having boundary nodal point limits generated by said base console and remotely instructing said mobile platform to return to said trailer.

H1661

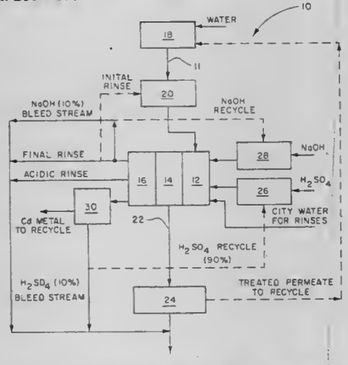
ION EXCHANGE REMOVAL OF CATIONS UNDER CHELATING/COMPLEXING CONDITIONS

Jennie L. Koff, and Daniel A. Zarate, both of Oxnard, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 30, 1994, Ser. No. 300,288

Int. Cl.[6] B01J *49/00*

U.S. Cl. 210—670 **23 Claims**



19. A process for removing cations from a negatively charged chelate or complex of the cation with an anion, the complex being dissolved in an aqueous feed stream having a pH greater than 7.0, comprising passing the aqueous feed stream over a cationic chelating ion exchange resin in the sodium form to release said cation from the complex, binding said cation to the resin and forming an anionic effluent containing the anion as a soluble salt, the effluent being substantially free of said cation.

H1662

CHEMICALLY MODIFIED LYMPHOKINE AND PRODUCTION THEREOF

Osamu Nishimura, 123-502, 2 Higashitoyonakacho 5-chome, Toyonaka, Osaka, Japan, and Masahiko Fujino, 10-7, Hibarigaoka 2-chome, Takarazuka, Hyogo, Japan

Continuation of Ser. No. 407,419, Sep. 14, 1989, which is a division of Ser. No. 919,544, Oct. 14, 1986, which is a continuation of Ser. No. 707,063, Mar. 15, 1985, abandoned. This application Apr. 5, 1990, Ser. No. 519,280

Claims priority, application WIPO, Mar. 6, 1984, PCT/JP84/00085; Dec. 5, 1984, PCT/JP84/00575

Int. Cl.[6] A61K *38/20;38/21;* **C07K** *14/55;14/555*

U.S. Cl. 252—182.12 **1 Claim**

1. A process of making an activated polyethylene glycol methyl ether aldehyde for the modification of proteins, the process comprising the steps of:

(a) dissolving a polyethylene glycol methyl ether aldehyde in a 0.2M phosphate buffer at pH 7.0; and

(b) adding sodium cyanoborohydride to the solution obtained in step (a).

H1663

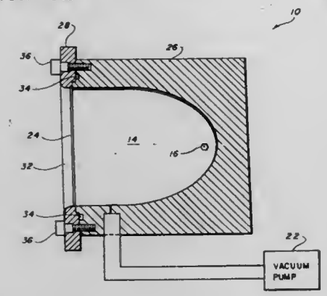
CONTROLLABLE IMPLOSIVE SOUND PROJECTOR

Nai-Chyuan Yen, Alexandria, Va., assignor to United States of America, Washington, D.C.

Filed Aug. 14, 1996, Ser. No. 701,907

Int. Cl.[6] H04R *1/20*

U.S. Cl. 367—146 **18 Claims**



1. An implosive sound projector comprised of:

a housing having a geometrically shaped cavity therein with an open end;

an end cap having an internal and external face sealing said open end of the cavity capable of being fractured when a predetermined differential pressure is applied across the end cap;

means for creating a vacuum within said cavity, the vacuum creating a differential pressure between the internal and external faces of the end cap when the projector is submerged in a medium; and,

means for fracturing the end cap upon reaching the predetermined differential pressure, allowing the medium to enter the cavity upon fracture causing a shock wave to be generated that propagates along the cavity walls focused to a point within the cavity where it collapses and creates a impulse wave which propagates out of the open end of the cavity into free space as a pressure wave.

H1664

ANALYTICAL ELEMENT FOR IMMUNOASSAY AND METHOD FOR ITS PREPARATION

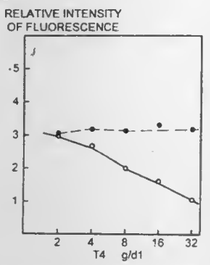
Yukio Sudo, and Nobuhito Masuda, both of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 8, 1989, Ser. No. 320,771

Claims priority, application Japan, Mar. 9, 1988, 63-055589; Mar. 10, 1988, 63-57308; Mar. 17, 1988, 63-64121

Int. Cl.[6] G01N *33/543*

U.S. Cl. 436—518 **20 Claims**



1. A dry analytical element for immunoassay using an antigen-antibody reaction and comprising at least two integrated water-permeable layers, the water-permeable layers containing components participating in the antigen-antibody reaction, one of said components being an antigen, the other of said components being a labeled antibody, wherein at least one of the water-permeable layers is a porous layer, said porous layer containing one of the components but not containing the other component, and a water-permeable layer located distal from the liquid-receiving face of the analytical element as compared to the porous layer, and which contains the other of the components but does not contain the component contained in such porous layer.

H1665

LIQUID DISHWASHING DETERGENT

Ernest H. Brumbaugh, 11029 Crooked Lake Dr., NE., Rockford, Mich. 49341

Continuation of Ser. No. 353,091, Dec. 9, 1994, abandoned. This application Mar. 19, 1996, Ser. No. 618,345

Int. Cl.[6] C11D *1/06*

U.S. Cl. 510—218 **9 Claims**

1. A liquid dishwashing detergent composition comprising, per 100 parts by weight:

a. 2 to 70 parts by weight of the combination of a secondary alkyl sulfate selected from the group consisting of C_{14} or C_{16} secondary alkyl sulfates and their salts with the secondary alkyl sulfates being substantially free from other carbon length secondary alkyl sulfates with an ether sulfate having the formula $RO(C_2H_4O)_xSO_3M$ wherein R is alkyl or alkenyl of about 10 to about 20 carbon atoms, x is from 1 to 30, and M is a water soluble cation;

b. 0 to 20 parts of additives; and,

c. water comprising the balance.

174–431 O.G.–97–2: QL3

H1666

METHOD OF CROSS-LINKING POLY(ETHYLENE OXIDE) AND POLY[OXYMETHYLENE-OLIGO(OXYETHYLENE)] WITH ULTRAVIOLET RADIATION

John D. Stenger-Smith, Ridgecrest, Calif.; Michael Mead Lerner, Corvallis, Oreg.; Steven Edward Sloop, Corvallis, Oreg.; John Patrick Lemmon, Corvallis, Oreg.; Andrew Leonard Tipton, Woburn, Mass., and Thomas Summer Stephens, Inyokern, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 15, 1995, Ser. No. 536,301

Int. Cl.[6] C08F *2/46;* **C08J** *3/28*

U.S. Cl. 522—3 **16 Claims**

1. A method of cross-linking poly[oxymethylene-oligo(oxyethylene)] comprising the following steps:

(a) dissolving said poly[oxymethylene-oligo(oxyethylene)] in a sufficient amount of polar organic solvent to form a solution;

(b) casting said solution to form a film;

(c) cutting said film to a predetermined thickness;

(d) drying the film; and

(e) irradiating said film with Ultraviolet radiation in a wavelength range

from about 190–350 nm for a predetermined amount of time.

H1667

SOLID POWDER COATING COMPOSITION

Jacques L. Poincloux, and Rajesh Turakhia, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 2, 1993, Ser. No. 116,088

Int. Cl.[6] C08F *20/00*

U.S. Cl. 525—438 **16 Claims**

1. A solid powder coating composition comprising:

(1) 20 to 80 phr of an epoxy resin component that contains on average more than two epoxy groups per molecule;

(2) 80 to 20 phr of an essentially linear acid-terminated polyester resin component.

H1668

POLYMERIC PERFLUOROALKYLETHER-LINKED QUINOXALINES

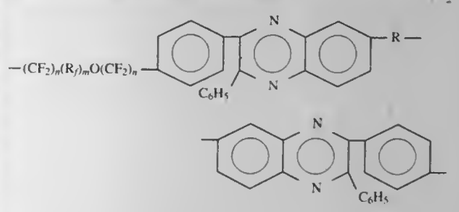
Kazimiera J. L. Paciorek, Corona del Mar; Steven R. Masuda; Wen-Huey Lin, both of Laguna Niguel, all of Calif., and William M. Warner, Riverside, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 16, 1996, Ser. No. 586,532

Int. Cl.[6] C08G *12/00*

U.S. Cl. 528—125 **12 Claims**

1. A process for preparing a perfluoroalkylether-linked quinoxaline having repeating units of the formula:

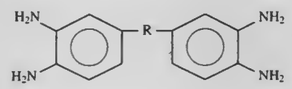


wherein R_f is selected from the group consisting of —OCF_2CF_2—, —$OCF_2CF_2CF_2$—, —$OCF_2CF_2CF_2CF_2$—, —$OCF_2CF(CF_3)$— and —$OCF_2CF_2OCF_2CF(CF_3)$—; wherein n has a value of 2 to 4, and m has a value of 1 to 20; and wherein R is a single bond, —O—, —S—, —$C_6H_4O-C_6H_4$—, or —SO_2—, which comprises the steps of:

(a) preparing a perfluoroalkylether diiodide of the formula $I(CF_2)_n(R_f)_m(CF_2)_nI$;

(b) reacting the perfluoroalkylether diiodide with 4-iodobenzil to produce the tetraketone $C_6H_5C(O)C(O)C_6H_4(CF_2)_n(R_f)_m(CF_2)_nC_6H_4C(O)C(O)C_6H_5$; and

(c) reacting the resulting tetraketone with a tetraamine of the formula



wherein R is as defined above.

H1669

COPOLYESTER-ETHER POLYMERS

James C. Matayabas, Jr.; James T. Tanner, III, both of Kingsport, Tenn., and Robert M. Finch, Richmond, Va., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Nov. 4, 1996, Ser. No. 742,396

Int. Cl.[6] C08G *63/66*

U.S. Cl. 528—300 **3 Claims**

1. A segmented copolyester-ether polymer comprising:

(a) 99.5 to 33 percent by weight hard segment residues of polybutylene terephthalate and

(b) 0.5 to 67 percent by weight soft segment residues of a polyether polyol comprising:

(i) n units of residue (1) having the formula:

$$-CH_2-CH-CH_2- \quad (1)$$
$$\quad\quad |$$
$$\quad\quad CH_2CH_3$$

and

(ii) m units of residue (2) having the formula:

$$-O-CH_2-CH_2-CH_2-CH_2- \quad (2)$$

wherein the total value of n+ m is in the range 2 to 70, m/(n+ m) is in the range 0.05 to 0.98.

H1670

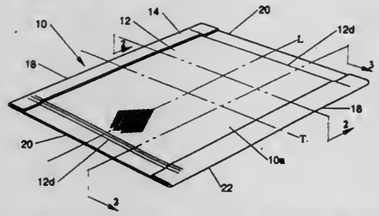
ABSORBENT ARTICLE HAVING A NONWOVEN AND APERTURED FILM COVERSHEET

Mohammed Iqbal Aziz, Jl. Kemang Timur IV No. 10, Kelurahan Bangka I, Jakarta Seltan, Indonesia; Sharon Darlene Kirkpatrick, 6100 Center Hill Rd., Cincinnati, Ohio 45224; Robert William Ruuska, 6100 Center Hill Rd., Cincinnati, Ohio 45224, and Robert Eugene Askin, II, 6100 Center Hill Rd., Cincinnati, Ohio 45224

Continuation of Ser. No. 322,910, Oct. 13, 1994, abandoned, which is a division of Ser. No. 72,660, Jun. 4, 1993, abandoned, which is a continuation of Ser. No. 794,745, Nov. 9, 1991, abandoned. This application Jun. 19, 1995, Ser. No. 492,352

Int. Cl.[6] A61F *13/15*

U.S. Cl. 604—367 **7 Claims**



1. A liquid pervious topsheet for an absorbent article, said topsheet comprising a fibrous nonwoven material and an apertured plastic film placed together so that at least a portion of the fibers of said nonwoven material are embedded in some portion of said film, wherein said film is treated with a surfactant to enhance the overall permeability of said topsheet.

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 35,543

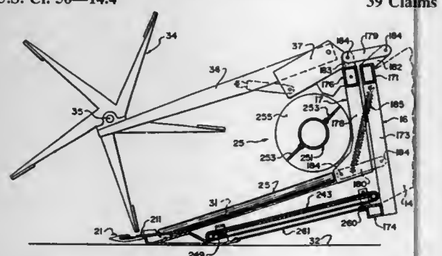
HEADER FOR A COMBINE HARVESTING MACHINE

Roger L. Patterson, Manitoba, Canada, assignor to MacDon Industries Ltd., Winnipeg, Canada

Original No. 5,005,343, dated Apr. 9, 1991, Ser. No. 380,536, Jul. 17, 1989. Continuation of Ser. No. 209,901, Jun. 22, 1988, abandoned. Application for reissue Apr. 8, 1993, Ser. No. 43,724

Int. Cl.[6] A01D *34/40*

U.S. Cl. 56—14.4 **39 Claims**



21. A header for a combine harvesting machine comprising a header frame, a mounting frame including means for mounting the mounting frame fixedly on the machine for transportation of the header frame in a working direction across a field including a standing crop to be harvested, said header frame including a portion thereof extending outwardly to at least one side of the mounting frame, means mounting said header frame on the mounting frame for limited vertical floating movement of the header frame relative to the mounting frame and pivotal floating movement of the header frame relative to the mounting frame about an axis generally parallel to the working direction such that each end of the header frame can float independently of movement of the other end of the header frame, a knife arrangement extending transversely across a front edge of the header frame for cutting the standing crop, means defining a feed opening through which the cut crop is guided to pass, means for transporting said cut crop inwardly from the said at least one end of the header frame and for feeding said cut crop through said feed opening, a fixed member fixed relative to the mounting frame and defining an edge extending across the feed opening adjacent a lower edge of the feed opening, said header frame including a header frame member fixed relative to the header frame and defining an edge extending partly along the header frame rearwardly of said knife arrangement and substantially parallel to the edge of the mounting frame member leaving an opening between the edge of the mounting frame member and the edge of the fixed member which opening varies as the header frame moves relative to the mounting frame, said means for transporting comprising at least one first draper assembly mounted on said header frame and including a pair of draper guide rollers arranged with the respective axis of rotation extending generally parallel to the working direction, one of said rollers being spaced from the opening to said at least one side thereof and the other of said rollers being arranged adjacent said opening to define an end of the draper assembly, and a draper canvas arranged rearwardly of said knife arrangement so as to receive the cut crop therefrom and constrained by the rollers to move transversely of the frame from said at least one end to carry crop toward said feed opening, a second draper assembly including a front draper guide roller and a rear draper guide roller with respective axes thereof extending transversely to said working direction and a second draper canvas mounted on said front and rear draper guide rollers and arranged rearwardly of said knife arrangement and at said end of said at least one first draper assembly so as to carry said cut crop rearwardly of the frame from said end to said feed opening to pass therethrough and a flexible pan member arranged underneath said second draper assembly with a forward end thereof in engagement with said header frame member at a position rearwardly of said knife arrangement and a rearward end thereof in engagement with said fixed member, said vertical movement and pivotal movement of said header frame being accommodated by flexing of said pan member, means attaching the respective end of said flexible pan member to one of said header frame member and said fixed member, and contact maintaining means maintaining the respective end of the flexible pan member substantially continually in contact with the other of said beader frame member and fixed member during said vertical movement and pivotal movement of said header frame.

Re. 35,544

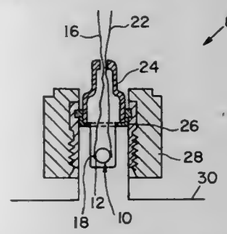
APPARATUS FOR MONITORING MOISTURE IN A GAS STREAM

James T. Snow, Nashua, N.H., assignor to Millipore Corporation, Bedford, Mass.

Original No. 5,477,716, dated Dec. 26, 1995, Ser. No. 281,286, Jul. 27, 1994. Continuation-in-part of Ser. No. 958,384, Oct. 8, 1992, Pat. No. 5,339,675. Application for reissue Jun. 27, 1996, Ser. No. 671,231

Int. Cl.[6] B01J *29/00;* **G01N** *31/06*

U.S. Cl. 73—24.01 **14 Claims**



1. A sensing device for measuring water content in a stream of purified gases which comprises:

a piezoelectric material having an effective mass of a coating [non-crystalline metal oxide] on at least one surface of said sensing device, with said coating formed of a composition *selected from the group consisting of a non-crystalline metal oxide, a crystalline, non-zeolite metal oxide and mixtures thereof, said coating being* chemically reactive with water to form a metal hydroxide product, said coating having a mass which permits said material to vibrate in response to applied alternating electrical current,

means for applying an alternating electrical current to said piezoelectric material and means for measuring frequency of vibration of said piezoelectric material.

Re. 35,545

CERAMIC VALVE

Jimmie D. Chrysler, Wyoming, Mich., assignor to Amerikam, Inc., Grand Rapids, Mich.

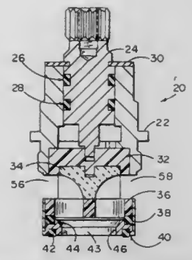
Original No. 5,174,324, dated Dec. 29, 1992, Ser. No. 643,796, Jan. 22, 1991. Continuation of Ser. No. 90,884, Jul. 12, 1993, abandoned. Application for reissue Jun. 10, 1994, Ser. No. 257,940

Int. Cl.[6] F16K *27/06*

U.S. Cl. 137—315 **17 Claims**

15. A ceramic valve cartridge comprising:

a generally cylindrical rigid valve body including an opening on first and second opposite ends of said body;



an actuator stem carried by said body, a portion of said actuator stem projecting through the opening on said first end of said body, and rotating within said body;

a disc stack carried within said body comprising a rotating ceramic disc and a fixed ceramic disc, said stem and said rotating ceramic disc being operably connected, and said fixed ceramic disc being positioned adjacent said rotating ceramic disc;

a sealing means positioned adjacent said fixed ceramic disc; and

an inflexible retainer force fit onto the second end of said valve body, said retainer having a stepped annular recess frictionally secured proximate said second end of said body with a portion of said stepped annular recess of said retainer frictionally engaging said valve body and an adjacent portion of said stepped annular recess of said retainer abutting said valve body to positively locate said retainer relative to said valve body, said retainer securing said sealing means and said disc stack within said valve body whereby to assure a predetermined force on the disc stack.

Re. 35,546

Patent Not Issued For This Number

Re. 35,547

ANTILOCK BRAKE CONTROL APPARATUS

Masaru Sakuma, and Toshio Takayama, both of Nakakoma-gun, Japan, assignors to Tokico Ltd., Japan

Original No. 5,125,723, dated Jun. 30, 1992, Ser. No. 610,519, Nov. 8, 1990. Application for reissue Jun. 29, 1994, Ser. No. 269,041

Claims priority, application Japan, Nov. 10, 1989, 1-293342

Int. Cl.[6] B60T *8/64*

U.S. Cl. 303—156 **5 Claims**

1. An antilock brake control apparatus comprising

a) a vehicle wheel speed sensor;

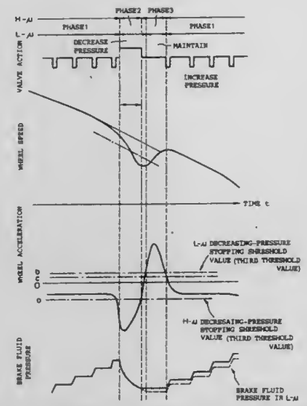
b) a modulator to set one mode for the vehicle wheel brake fluid, the mode selected from the group consisting of an increasing pressure mode, a decreasing pressure mode and a holding pressure mode,

c) a controller for controlling said modulator, which makes a decision to determine of slippage is occurring based on vehicle wheel speed data from said vehicle wheel speed sensor, said controller selecting

decreasing pressure mode on the detection of the initiation of vehicle slip,

holding pressure mode on the detection of the recovery tendency of wheel slip, and

increasing pressure mode on the detection of the termination of wheel slip, by comparing said vehicle wheel speed data with a standard threshold value for mode selection, said standard threshold value including a transition threshold value for determining the transition from said **[**holding**]** *decreasing* pressure mode to said **[**increasing**]** *holding* pressure mode,



said transition threshold value being selected from at least two threshold values, High-μ for high frictional level condition and Low-μ for low frictional level condition, said High-μ being set as a lower barrier **[**in case of a**]** *to* transition from said **[**holding**]** *decreasing* pressure mode to said **[**increasing**]** *holding* pressure mode than the Low-μ;

said controller having:

means for a first determination, said means comparing the period of instability from the initiation of slippage to the termination of that slippage, with a previously set first threshold value;

a means for a second determination, said means comparing the length of the period in which severe wheel slip is occurring with a previously fixed second threshold value; and

a means for a third determination, said means comparing a maximum rotational acceleration of the vehicle wheel speed data with a previously fixed acceleration threshold value; and

a condition changing means for changing the conditions for the transition from the decreasing pressure mode **[**and**]** *to* the holding pressure mode, *by selecting one out of said at least two threshold values,* based on the results of the means for the first, second and third determinations,

wherein said condition changing means selects the High-μ when the first determination means determines that the period of instability from the initiation of slippage to the termination of that slippage is smaller than a previously set first threshold value; or the third determination means determines that the maximum rotational acceleration of the vehicle wheel calculated from the vehicle wheel speed data exceeds the previously fixed acceleration threshold value, and said condition changing means selects the Low-μ when the second determination means determines that the length of the period in which severe wheel slip is occurring exceeds a previously fixed second threshold value.

Re. 35,548

COLOR DISPLAY TUBE SYSTEM WITH REDUCED SPOT GROWTH

Albertus A. S. Sluyterman; Lambert J. Stil, and Marinus L. A. Vrinten, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Original No. 5,027,042, dated Jun. 25, 1991, Ser. No. 591,344, Oct. 1, 1990. Application for reissue Feb. 25, 1993, Ser. No. 26,147

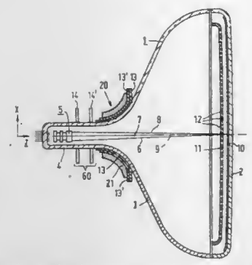
Claims priority, application Netherlands, Oct. 2, 1989, 8902436; Aug. 24, 1990, 9001868

Int. Cl.[6] G09G *1/28;* **H01J** *29/70*

U.S. Cl. 315—368.28 **9 Claims**

1. A colour display tube system comprising

(a) an evacuated envelope having a neck, a cone and a display window,



(b) an electron gun in the neck, which gun has a beam-forming part for generating a central electron beam and first and second outer electron beams whose axes are co-planar, and a first and a second electrode system which in operation jointly constitute a main lens and are connectable to means for supplying an energizing voltage, and

(c) a deflection unit for generating first and second deflection fields for deflecting the electron beams in the horizontal and vertical directions and for scanning the display window by means of convergent beams,

characterized in that a first convergence influencing element is arranged between the beam-forming part of the electron gun and a side of the deflection unit facing the display window for generating a magnetic field exerting a force on each outer electron beam having a component in the plane of the electron beams directed towards the central electron beam, and in that a second convergence influencing element is arranged between the first convergence influencing element and the beam-forming part of the electron gun for generating a magnetic field exerting a force on each outer electron beam having a component in the plane of the electron beams directed away from the central electron beam.

Re. 35,549

SOLDERABLE LEAD

Jack Seidler, Flushing, N.Y., assignor to North American Specialties Corporation, Flushing, N.Y.

Original No. 5,090,926, dated Feb. 25, 1992, Ser. No. 661,252, Feb. 26, 1991. Application for reissue Oct. 12, 1993, Ser. No. 135,461

Int. Cl.[6] H01R *4/02*

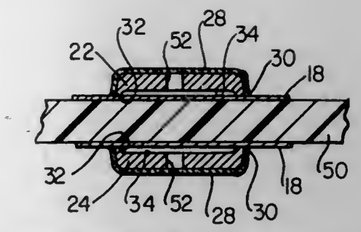
U.S. Cl. 439—876 **15 Claims**

8. A solderable lead for connection to a device having a conductive area, comprising:

a substantially flat elongated conductive body having a body portion intended for soldering to said conductive area, said body portion having a first surface facing said conductive area and a second surface opposite said first surface;

a plating-like substantially uniform thickness layer of solder formed from a band of solder overlying said body portion on said second surface, said solder layer having a portion extending around the edge of said body portion and covering substantially the entire thickness of said edge, to be immediately adjacent said first surface, but not covering said first surface;

whereby upon heating said body in juxtaposition to said conductive area said solder will liquify and migrate to form a soldered joint between said body portion and said conductive area.



Re. 35,550

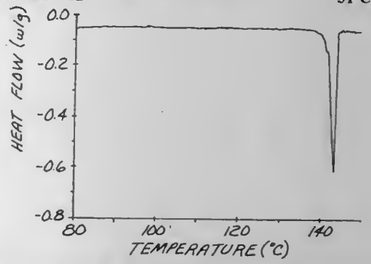
THERMAL DYE TRANSFER MATERIALS

Susan K. Jongewaard, St. Paul; Terrance P. Smith, Woodbury, and Krzysztof A. Zaklika, St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Original No. 4,857,503, dated Aug. 15, 1989, Ser. No. 193,947, May 13, 1988. Application for reissue Aug. 15, 1991, Ser. No. 746,112

Int. Cl.[6] B52B *9/00*

U.S. Cl. 503—227 **31 Claims**



1. A thermal dye transfer element comprising a substrate having on one side thereof a layer of a polymeric binder having a mixture of at least two *yellow* dyes therein, said dyes being capable of forming a eutectic composition and at least one pair of said dyes being present within said binder in a ratio which is between 0.25 and 4.0 times the ratio of said pair of dyes in a eutectic point composition, said mixture of dyes comprising at least 20% by weight of said layer and said eutectic composition has a melting point which is at least 5° C. lower than the lowest melting temperature of any of said dyes in said eutectic composition.

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PLANT PATENTS

GRANTED JULY 1, 1997

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

9,937

APRICOT TREE "EARLI-AUTUMN"

Chris Floyd Zaiger, 929 Grimes Ave.; Leith Marie Gardner, 1207 Grimes Ave.; Gary Neil Zaiger, 1907 Elm Ave., and Grant Gene Zaiger, 4005 California Ave., all of Modesto, Calif. 95358

Filed Dec. 19, 1995, Ser. No. 575,707

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—39 **1 Claim**

1. A new and distinct variety of apricot tree, substantially as illustrated and described, characterized by its large size, vigorous semi-spreading growth and a productive and regular bearer of medium size, yellow flesh, semi-freestone fruit with good flavor and eating quality; the fruit is further characterized by having good handling and shipping quality, having a high degree of soluble solids (average 16.0 Brix), and ripening in the late maturity season.

9,938

PEACH TREE "SNOW DANCE"

Chris Floyd Zaiger, 929 Grimes Ave.; Leith Marie Gardner, 1207 Grimes Ave.; Gary Neil Zaiger, 1907 Elm Ave., and Grant Gene Zaiger, 4005 California Ave., all of Modesto, Calif. 95358

Filed Mar. 25, 1996, Ser. No. 620,555

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—42.1 **1 Claim**

1. A new and distinct variety of peach tree, substantially as illustrated and described, characterized by its large size, vigorous, upright growth and being a productive and regular bearer of large, firm, white flesh, clingstone fruit with a mild, sub-acid, sweet flavor with good eating quality; the fruit is further characterized by having good handling and shipping quality, holding firm on the tree 4 to 5 days after maturity and, in comparison to the white flesh Sugar May Peach (U.S. Plant Pat. No. 8,034), the fruit is approximately 13 days earlier in maturity.

9,939

PEACH TREE 'P.F. 27A'

Paul Jan Friday, Coloma, Mich., assignor to Paul J. Friday, Coloma, Mich.

Filed Dec. 18, 1995, Ser. No. 572,874

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—43.2 **1 Claim**

1. A new and distinct variety of peach tree substantially as illustrated and described as a medium size tree with a distinct short stubby growth pattern, a consistent bearer of highly colored, large fruit for the very late peach growing season, said fruit at maturity being of spherical shape with firm flesh and red skin color covering 60% to 80% of the fruit, said maturity occurring about the same date as the Fayette peach.

9,940

'P.F. 25' PEACH TREE

Paul Jan Friday, Coloma, Mich., assignor to Paul J. Friday, Coloma, Mich.

Filed Dec. 18, 1995, Ser. No. 574,400

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—43.2 **1 Claim**

1. A new and distinct variety of peach tree substantially as illustrated and described as large size, vigorous and upright in growth, a regular and productive beared of large size, yellow flesh freestone fruit with good flavor and shipping quality and having a late season maturity date of about Sep. 8, 1995.

9,941

CARNATION PLANT VARIETY NAMED 'CFPC WHITE SCULPTURE'

Walter H. Jessel, Jr., Gonzales, Calif., assignor to California Florida Plant Co., L.P., Salinas, Calif.

Filed Apr. 2, 1996, Ser. No. 626,478

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—70.3 **1 Claim**

1. A new and distinct variety of carnation plant substantially as shown and described.

9,942

SPATHIPHYLLUM PLANT NAMED ILLUSION

Wim A. J. Brouwer, Nootdorp, Netherlands, assignor to Milestone Agriculture Inc., Apopka, Fla.

Filed Apr. 4, 1996, Ser. No. 627,460

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—88.1 **1 Claim**

1. A new and distinct cultivar of Spathiphyllum plant named Illusion, as illustrated and described.

9,943

SPATHIPHYLLUM PLANT NAMED STEPHANIE

Daniel Cornelis, Merelbeke, Belgium, assignor to Milestone Agriculture Inc., Apopka, Fla.

Filed Apr. 8, 1996, Ser. No. 628,952

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—88.1 **1 Claim**

1. A new and distinct cultivar of Spathiphyllum plant named Stephanie, as illustrated and described.

9,944

SPATHIPHYLLUM PLANT NAMED DOMINO

Daniel Cornelis, Merelbeke, Belgium, assignor to Milestone Agriculture, Inc., Apopka, Fla.

Filed Apr. 8, 1996, Ser. No. 629,008

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—88.1 **1 Claim**

1. A new and distinct cultivar of Spathiphyllum plant named Domino, as illustrated and described.

9,945

GUZMANIA PLANT NAMED 'PURPLE KNIGHT'

Mitch Rabin, Goulds, Fla., assignor to Twyford International, Inc., Santa Paula, Calif.

Filed Feb. 5, 1996, Ser. No. 597,031

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—88.8 **1 Claim**

1. A new and distinct cultivar of Guzmania plant named 'Purple Knight', as illustrated and described.

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PATENTS

GRANTED July 1, 1997

ERRATA

For CLASS	See PATENT NO.
473–448	5,642,879
473–417	5,642,880
473–537	5,642,881
473–549	5,642,882
473–586	5,642,887
128–630	5,642,936
205–781	5,643,429
442–019	5,643,660
442–325	5,643,661
442–361	5,643,662
514–228	5,643,784
396–284	5,644,378
349–122	5,644,415
349–086	5,644,416
455–421	5,644,620
455–463	5,644,621
455–422	5,644,622
455–423	5,644,623
455–031	5,644,626
375–375	5,644,743
455–344	5,644,785

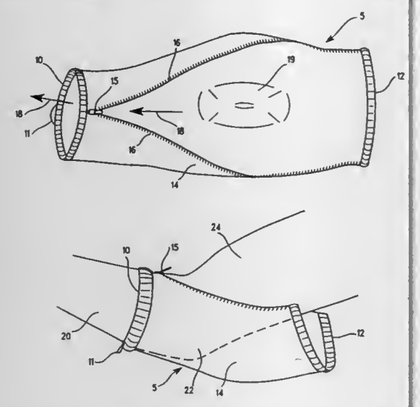
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PATENTS

GRANTED JULY 1, 1997

GENERAL AND MECHANICAL

5,642,525
ELBOW PROTECTIVE GARMENT
Linda J. Ketola, 4015 B Palm Bay Clr., West Palm Beach, Fla. 33406
Filed Dec. 8, 1995, Ser. No. 570,002
Int. Cl.[6] A41D *13/08*
U.S. Cl. 2—16 **4 Claims**



1. A protective bandage for covering and protecting an elbow of a person, and for positioning and securing said protective bandage about said elbow without sliding contact between said protective bandage and said elbow, said protective bandage comprising:

a body having a length and a width defining a loose fitting body, an upper end and a lower end defining said length, and an opening extending along said length including said upper end and said lower end;

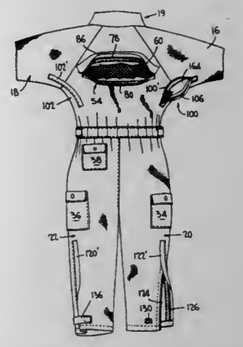
a lower cuff means, circumferentially closed, connected to said lower end for holding said body closed at said lower end and for securing said protective bandage about a forearm of said person, below said elbow covered by said body of said protective bandage;

an upper cuff means connected to said upper end of said body for securing said protective bandage on said person, above said elbow covered by said body, said opening extending across a circumference of said upper cuff means for opening said upper cuff means with said body for permitting direct access to said lower cuff means when said body and said upper cuff means are open;

a closure means connected to said body along said opening extending from said lower end to and including said upper end for closing said body about said elbow, said closure means connected to said upper cuff means for closing said upper cuff means for securing said protective bandage above said elbow; and

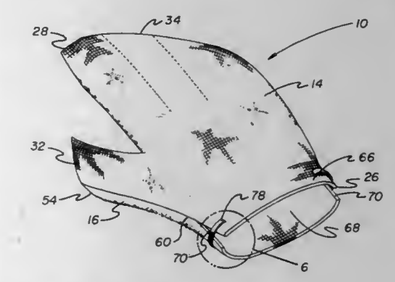
a pull means connected to said lower cuff means and extending therefrom for exerting a moving force on said lower cuff means, when pulled, for moving and for positioning said protective bandage on said person prior to closing said body and said upper cuff means about said elbow.

5,642,526
CONVERTIBLE GARMENT HAVING A VENTILATION OPENING AND A STORAGE POUCH
Robert E. Thompson, Rte. 3, Box 358, Cuthbert, Ga. 31740
Filed Jun. 10, 1996, Ser. No. 661,106
Int. Cl.[6] A41D *15/00;1/00*
U.S. Cl. 2—79 **16 Claims**



1. A convertible garment comprising a torso portion having a front part and a back part, a pair of sleeve portions extending from said torso portion, a pair of leg portions extending from said torso portion, said back part having a ventilation opening formed therethrough, closure means for selectively opening and closing said ventilation opening, a storage pouch disposed within said garment, said storage pouch when pulled through said ventilation opening defining a volume therewithin for storing the garment, said storage pouch having opening means formed therethrough to permit free flow of air through the storage pouch to provide ventilation for the garment both when the garment is worn and said ventilation opening is open and when the garment is stored within said storage pouch and the ventilation opening is closed.

5,642,527
GLOVE SANDER
Craig P. Savage, 3513 Aster La., Rowlett, Tex. 75088
Filed Feb. 9, 1996, Ser. No. 599,333
Int. Cl.[6] A41D *19/00*
U.S. Cl. 2—161.8 **3 Claims**



3. A glove sander comprising:

a glove having a top section and a palm section, the top section being formed of a flexible fabric having abrasive layer and an outer layer, an inner layer and a lining therebetween, the palm section of the glove being formed of a flexible fabric having an abrasive layer and an outer layer, an inner layer and a lining therebetween;

a top stitching being used to attached the palm section to the top section, the top stitching forming an interior area being capable of encasing a hand of a wearer, and the top stitching forming a reinforced edge around the glove;

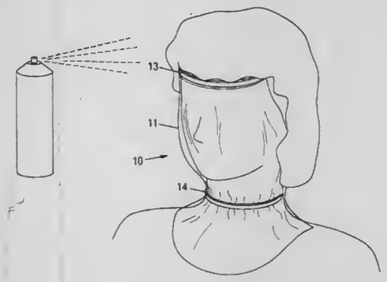
the interior area of the glove having a pair of finger dividers formed by separate additional top stitching being extended from the top end of the top section to midway the glove, and

the pair of finger dividers being capable of separating three of the four fingers encased within the glove, while the thumb being positioned in a thumb enclosure of the glove;

a wrist cover being formed when the top section and the palm section are attached by the top stitching, the wrist cover allowing access to the interior area of the glove, the wrist cover having a pair of side vents being formed near the cover, the pair of side vents being formed where the top stitching ends along the outer edge; and

a closure strap having two ends being exterior the glove and overlapping the vents, and the closure strap capable of allowing the glove to slide onto the hand while allowing the glove to remain around the hand.

5,642,528
PROTECTIVE FACE COVERING
Helen A. Dering, 18 Woodgreen Ct., Santa Rosa, Calif. 95409
Filed Oct. 30, 1995, Ser. No. 550,010
Int. Cl.[6] A42B *3/18*
U.S. Cl. 2—174 **1 Claim**



1. A flexible transparent contoured plastic face screen assembly for the protection of the face, ears and neck of a user from hair spray and other airborne substances, said plastic face screen assembly comprising:

(a) a semi-circular spring headband of plastic or metal composition for being slipped around a wearer's forehead at the wearer's hairline,

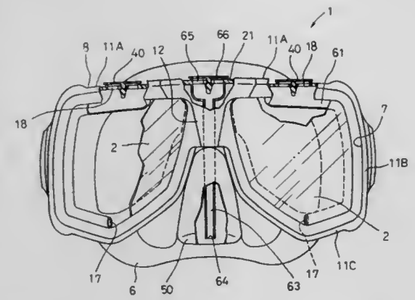
(b) a flexible transparent rectangular sheet of plastic material extending downwardly from said headband substantially proportioned to cover a user's face, ears and neck without disturbing the hairdo of a user,

(c) the face screen further including a hem arranged along a top edge of the sheet for insertion of said semi-circular spring headband, and

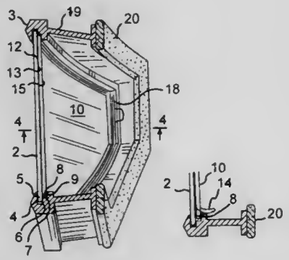
(d) a separate unattached semi-circular spring neckband for securing a lower portion of said draped rectangular sheet around the neck of a user.

5,642,529
DIVING FACE MASK
Taro Fujima, Higashi-Murayama, Japan, assignor to Tabata Co., Ltd., Tokyo, Japan
Filed Sep. 28, 1995, Ser. No. 535,861
Claims priority, application Japan, Oct. 7, 1994, 6-244191
Int. Cl.[6] A61F *9/02*
U.S. Cl. 2—428 **9 Claims**

1. A diving face mask comprising a main frame formed with a lens frame having a top, transversely opposite sides curving downwards respectively from transversely opposite ends of said top, a bottom being continuous with said opposite sides and opposed to said top, and a lens holding portion, and a tubular skirt extending rearwards from said lens holding portion; a front lens held by said lens holding portion; a strap connected to both sides of said main frame used to maintain the mask on a wearer's face; and a purge valve mounted on said main frame and adapted to be opened outwards; wherein said purge valve is provided at a predetermined location in a zone defined along said top of said lens frame, and a tubular water purge channel is provided along the inner periphery of said main frame inside said front lens, said tubular water purge channel having an outlet at one end being in fluid-communication with said purge valve and an inlet at the other end opening into the interior of said main frame at the bottom of said main frame.



5,642,530
NON-FOGGING GOGGLES
Gerald R. Parks, Chula Vista, Calif., assignor to John R. Gregory, Bonita, Calif.
Filed May 3, 1996, Ser. No. 642,647
Int. Cl.[6] A61F *9/02*
U.S. Cl. 2—435 **8 Claims**



1. A non-fogging eyewear assembly which comprises:

a transparent lens having inner and outer faces;

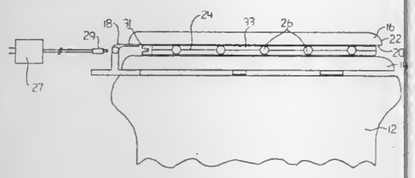
a frame having a section surrounding and holding said lens;

an anti-fogging sheet of transparent film releasably held against the inner face of lens in the absence of any adhesive bonding between said lens and said sheet;

finger-actionable means for rapidly peeling said sheet off said inner face; and

means for rapidly force-fitting said sheet against said inner face.

5,642,531
METHOD OF WARMING A TOILET SEAT
Anna Marie Holtom, #18, 4516 - 48 Avenue, Sylvan Lake, Alberta, Canada; James A. Holtom, Box 9074, Sylvan Lake, Canada, and Darin L. Holtom, #32 4402 - 48 Ave, Sylvan Lake, Alberta, Canada
Filed Feb. 29, 1996, Ser. No. 608,606
Int. Cl.[6] A47K *13/30*
U.S. Cl. 4—237 **1 Claim**



1. A method of warming a toilet seat, comprising the steps of:

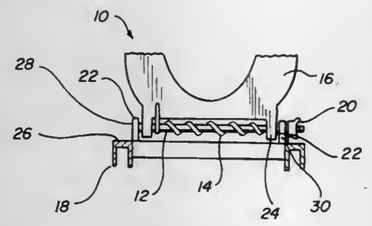
firstly, providing a toilet having a toilet seat and a pivotally mounted toilet seat cover having a lower surface and a peripheral edge, the toilet seat cover being pivotally movable between a substantially vertical raised position and a substantially horizontal lowered position in which the lower surface of the toilet seat cover overlies the toilet seat;

secondly, securing a string of low voltage lights to the lower surface of the toilet seat cover adjacent the peripheral edge;

thirdly, pivoting the toilet seat cover to a position parallel to the toilet seat when the toilet seat is not in use, such that the low voltage lights are in close proximity to the toilet seat; and

fourthly, supplying low voltage to said lights continuously and non-intermittently such that heat generated by the low voltage lights warms the toilet seat continuously in preparation for use.

5,642,532
SELF-RAISING COMMODE SEAT
Stephen P. Morant, 3304 Ole Miss Dr., Kenner, La. 70065
Filed Feb. 27, 1996, Ser. No. 607,879
Int. Cl.[6] A47K *13/10*
U.S. Cl. 4—246.1 **1 Claim**



1. A self-raising commode seat comprising:

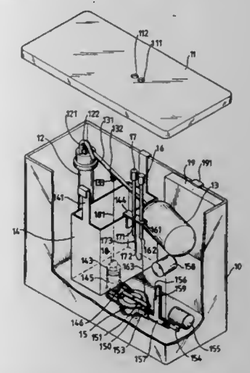
a commode having a top wall having a first flange bolt having a threaded aperture and a second flange bolt having a bore formed therethrough;

a commode seat having a pair of spaced connecting arms;

a biasing mechanism in connection between said top wall of said commode and said commode seat for biasing said commode seat in an upright position, said biasing mechanism including a helical spring and a shaft, said helical spring having a coiled portion terminating in a first and second spring end, said coiled portion being positioned over a section of said shaft, said first spring end extending from said coiled portion in a direction tangential to said coiled portion terminating in contact with said commode seat, said shaft having a first threaded end, a second threaded end and a hole formed through the side thereof having said second spring end of said helical spring disposed therein, said first threaded end of said shaft being rigidly connected to said first flange bolt threaded aperture and said second threaded end of said shaft being positioned through said bore of said second flange bolt; and

a dampening mechanism in connection between said commode seat and said biasing mechanism for adjusting the rate at which said commode seat is raised, said damping mechanism including a first pad positioned around said shaft and positioned between said first flange bolt and one of said pair of spaced connecting arms of said commode seat, a second pad positioned around said shaft and positioned between said second flange bolt and a remaining connecting arm of said pair of spaced connecting arms of said commode seat, and a tension adjusting mechanism threadably engaging said second threaded end of said shaft in a manner such that tightening said tension adjusting mechanism squeezes said first pad between said first flange bolt and said one of said pair of spaced connecting arms of said commode seat and said second pad between said second flange bolt and said remaining connecting arm of said commode seat.

5,642,533
WATER SAVING TOILET
Andy Y. Young, 1598 Loch Lomond La., San Jose, Calif. 95129-3737
Filed Nov. 16, 1995, Ser. No. 559,075
Int. Cl.[6] E03D *1/14*
U.S. Cl. 4—325 **6 Claims**



1. A water saving toilet comprising a water tank assembly and a bowl assembly, said water tank assembly including:

a water tank which is a box body having an open top portion;

a lid for covering over the water tank and provided with a pair of holes each for a primary lever and a secondary lever;

a water supplying tube connectable to an external water pipe through the water tank and provided on the top portion with an arcuated and angularly extending water outlet tube and a pivotal seat;

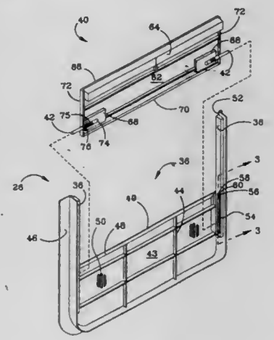
a float ball coupled to a float arm, the distal end thereof being pivotally connected to the pivotal seat on the top of the water supplying tube;

a water discharging valve positioned on a water discharging tube communicating with the bowl assembly and provided on the top surface with an actuating plate and having a pivotal seat extending from one side;

a primary control seat and a secondary control seat both having a horizontal and a vertical tabs pivoted to the pivotal seat on the side of the water discharging tube by a pin, the vertical tabs being formed, respectively with a primary and secondary retaining grooves;

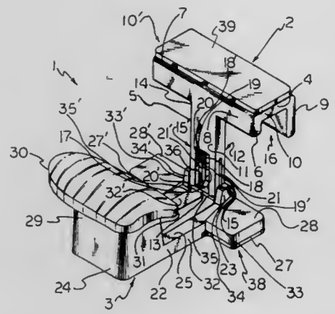
a primary and a secondary float connected to one end of the horizontal tabs of the primary and secondary control seat, respectively;
a primary and a secondary lever connected to a primary and a secondary control wire, respectively;
said bowl assembly including:
a bowl; and
a discharging line system; characterized in that a regulation container has a pair of fixed retaining plates for fastening on the top edge of the water tank such that the regulation container is positioned within the water tank, and the regulation container is provided on a bottom with An opening, a locating seat having a central passage and being fitted into the opening on the bottom of the regulation container, said locating seat extending into the discharging tube, and a fixing seat having a pair of fitting holes, said fixing seat being retained in position on a top edge of the regulation container; a ball valve is positioned on the locating seat in the regulation container which is connected to an adjusting wire, a distal end of the adjusting wire being coupled to a set screw on the float arm such that the distance between the ball valve and the locating seat can be adjusted by turning the set screw; and said discharging line system of said bowl assembly including a primary discharging line and a secondary discharging line wherein said secondary discharging line is connected at one end to the bowl and at another end to said primary discharging line.

5,642,534
SPA WEIR GATE
Manuel Sanchez, 2989 Oakbrook Dr., Riverside, Calif. 92503; Michael S. Deans, 1606 Woodcreek Cir., Athens, Tenn. 37303; Wilbur R. Holmes, 135 Commodore Dr., Jupiter, Fla. 33477, and Susan L. Holmes, 4340 Deodar Dr., Yorba Linda, Calif. 92686
Filed Sep. 29, 1995, Ser. No. 536,375
Int. Cl.[6] E04H *4/14*
U.S. Cl. 4—507 **18 Claims**



1. A weir gate for use with a spa, said spa having an opening to a recessed filter cavity, comprising:
a pair of spaced juxtaposed guides;
a lower gate that is fixed to and spans said guides in a generally vertical plane when said guides are vertically disposed in said opening, said lower gate having an upper edge;
a floating gate that is disposed between said guides, said floating gate having upper and lower edges; and
a latch mechanism that holds the floating gate in an upper position with its lower edge adjacent said lower gate's upper edge so that the floating gate pivots within a plane that is generally orthogonal to said vertical plane to draw surface water in said spa over the floating gate's upper edge into the recessed filter cavity, said latch mechanism being releasable so that said floating gate can be moved to a lower position, said latch mechanism reengaging the floating gate at said lower position and holding it adjacent said lower gate to provide access to said filter cavity through said opening.

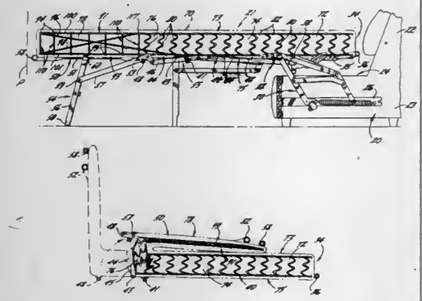
5,642,535
SEATING AND KNEELING APPLIANCE
Deidre M. Frawley, 210 W. Henry St., Palmyra, N.J. 08065, and Mark A. Frawley, 1214B Upper State Rd., North Wales, Pa. 19454
Filed Jan. 3, 1996, Ser. No. 582,321
Int. Cl.[6] A47K *3/00*
U.S. Cl. 4—559 **2 Claims**



1. A seating and kneeling appliance comprising in combination:
(A.) a forward unit of unitary construction having a T-shaped configuration, said T-shaped configuration comprised of
(i) a top rest and,
(ii) an upper support shaft;
said top rest having a bottom, a top surface, a near wall, a distal wall, and two essentially identical opposing ends;
said upper support shaft having a seat side and a forward side, a bottom, a top end, and two identical side walls;
said top rest being integrally surmounted on the top end of the upper support shaft such that the near wall of the top rest is essentially centered on the upper support shaft;
said top rest having an inverted L-shaped construction to provide a deep channel in the bottom of the top rest, said deep channel formed from the top rest near wall and the top rest distal wall;
said support shaft having an enlarged opening in the seat side and extending through the forward side and near the upper support shaft bottom end, said enlarged opening providing side interior walls therein;
each of the said side interior walls having a side interior wall top end and a side interior wall bottom end and a slotted opening therein that extends essentially from the side interior top end to the side interior bottom end, each said slotted opening passing through the support shaft side walls;
(B.) a lower unit of unitary construction having a flat T-shaped configuration comprised of a central support shaft having a U-shaped configuration, a central support shaft front end and a central support shaft back end having a central support shaft top surface, a central support shaft top surface, and identical central support shaft side walls;
said central support shaft having essentially identical pad rests mounted integrally, laterally thereon, near the central support shaft front end, each said pad rest being surmounted by pads;
said central support shaft having a seat surmounted on the central support back end on the central support top surface, said seat being surmounted by a pad, said seat having a seat front end;

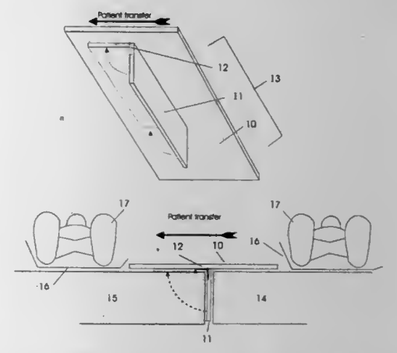
said central support shaft having an enlarged opening therethrough, beginning at the seat front end and extending through the central shaft front end, to form two, essentially identical side shafts having front terminal ends;
each of the front terminal ends being integrally surmounted by a pin block, each said pin block having a pin block inside surface; each said pin block having essentially centered, and securely anchored therein, a pin, such that when the components (A.) and (B.) are combined, one of the pins is insertable in each of the respective slotted openings in the interior side walls of the upper support shaft, such that said (A.) and said (B.) are connected together, and each is rotational with respect to the other.

5,642,536
FOLDABLE BED WITH COLLAPSIBLE SINUOUS SPRINGS AND PIVOTABLE LEG
John E. Miller, Tupelo, Miss., assignor to Parma Corporation, Denton, N.C.
Division of Ser. No. 455,515, May 31, 1995, Pat. No. 5,539,940, which is a division of Ser. No. 344,894, Nov. 25, 1994, Pat. No. 5,539,944. This application May 2, 1996, Ser. No. 642,151
Int. Cl.[6] A47C *27/04;17/26*
U.S. Cl. 5—13 **5 Claims**



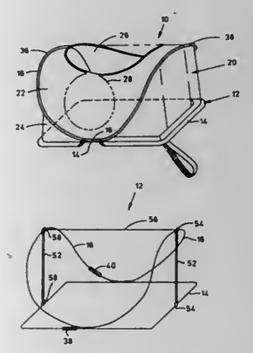
1. A foldable bed movable between an unfolded extended and generally horizontal position and a folded position, said bed comprising:
a frame comprising a head section, a body section, a cavity section, and a seat section;
means pivotally interconnecting each of said frame sections for pivotal movement between the unfolded position, in which said head, body, cavity, and seat sections are serially and horizontally aligned, and the folded position, in which said body and seat sections are generally horizontal, said seat section overlies said body section, said cavity section is generally upright and between said seat and body sections, and said head section is disposed generally vertically;
a mattress carried by said frame and movable therewith between the unfolded and folded positions, said mattress comprising a head section overlying said frame head section, a body section overlying said frame body section, a cavity section overlying said frame cavity section, and a seat section overlying said frame seat section; and
a leg pivotally interconnected with said frame comprising a cross-member extending along the width dimension of said frame, said leg cross-member being configured so that, in the unfolded position, said leg cross-member supports said frame beneath said seat section, and, in the folded position, said leg cross-member contacts and compresses said mattress head section away from said seat section.

5,642,537
PORTABLE PATIENT TRANSFER BOARD
David I. Johnson, 1723 Alberta, Little Rock, Ark. 72227
Continuation of Ser. No. 429,837, Apr. 27, 1995, abandoned. This application Dec. 1, 1995, Ser. No. 566,280
Int. Cl.[6] A01C *7/10*
U.S. Cl. 5—81.1 HS **2 Claims**



1. A portable patient transfer board, comprising an elongated board comprising a top surface and a bottom surface and a rotatable anchor fin attached to the bottom surface of the board by a hinge that allows the fin to be deployed to a fixed position perpendicular to the bottom surface or to fold down to a second position parallel to the bottom surface.

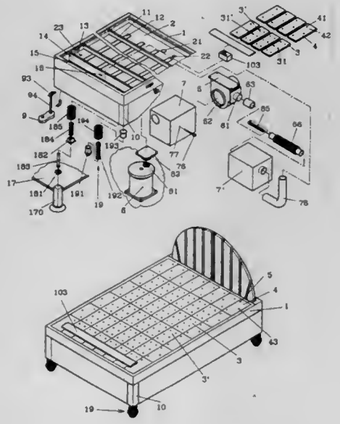
5,642,538
SELF-ERECTING PLAY YARD STRUCTURE
Robert McAllister, Encinitas, Calif., assignor to Creative Toy Products, Inc., Solana Beach, Calif.
Filed Sep. 18, 1995, Ser. No. 531,156
Int. Cl.[6] A17D *7/00*
U.S. Cl. 5—99.1 **20 Claims**



1. A portable play yard operable for transforming between a collapsible configuration and an expanded configuration comprising:
a frame formed from a flexible material formed into two loops including a first bottom planar loop forming a rectangular shape and a second elevated loop contacting the first loop at two points and elevated from the first loop at other points;
an envelope made of laminar material attached at selected points to said frame to form a partially enclosed play area; and

said envelope including a floor portion substantially enclosing the first loop, and a top substantially enclosing the second loop, wherein the top has an opening permitting access to said enclosed play area.

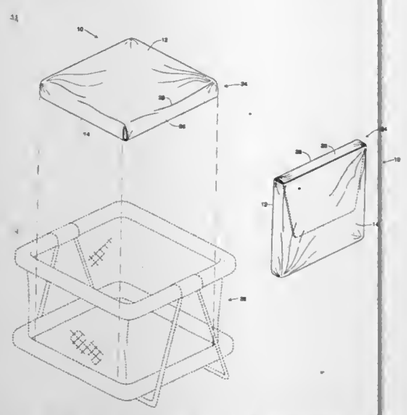
5,642,539
MULTI-FUNCTION HEALTHFUL BED
Shang-Tai Kuo, No. 21 Lane 351 An Chung Road, Sec 6 Tainan, Taiwan
Filed Nov. 22, 1995, Ser. No. 562,136
Int. Cl.[6] A47C *21/04*
U.S. Cl. 5—423 **1 Claim**



1. A multi-function healthful bed comprising:
a bed frame having a bottom edge connected to a bottom bed board, four longitudinal bars are contained in a space defined by said bed frame, four upper lateral bars are located on said four longitudinal bars, a separating lateral elongate board is situated parallel to said four upper lateral bars near a first side of said bed frame, and a small hole in a first side of said bed frame to receive an air adjusting valve for a massage bar;
a bottom bed board connected to a bottom edge of said bed frame, said bottom bed board includes a large hole in a front portion of said bottom bed board to receive an air tube of a blower, said bottom bed board further includes an air hole to receive an air tube from an air conditioner, said bottom bed board further includes an exhaust air hole to exhaust saturated air from an air chamber defined by said bottom board, an upper bed board, and said bed frame;
said upper bed board comprises a plurality of small bed boards and four small corner bed boards situated on said four lateral bars of said bed frame, each said small bed board having a plurality of threaded holes to receive air valves;
said four upper small corner bed boards are located at corners of said upper bed board on said lateral bars, each said corner upper small bed board has a plurality of threaded holes to receive air exit valves for fixing air exit valves therein and a bolt hole to receive a bolt, said bolt having a center through hole with a female thread for a nut and for a spanner to engage;
a support plate located below said bottom bed board, said support plate has four corner feet to elevate said support plate, said support plate receiving a blower, two mufflers and an eccentric motor thereon;
four swayable rods located on said corner feet of said support plate to support said bottom bed board and said bed frame, said swayable rods comprising a lower and an upper sustaining base, a short rod, a coil spring, a bellow-like tube, and an upper positioning disc, said lower sustaining base is located on said corner foot and has an upward semicircular depression, said upper sustaining base is located on said lower sustaining base and has a curved through groove, said short rod has a lower spherical end to movably engage said lower sustaining base and said upper sustaining base, a top of said short rod engages a center hole of said upper positioning disc;
elastic feet supporting each of said four feet of said bed frame, each of said elastic feet includes a rollable means, a strong coil spring, an upper positioning disc and a bellow-like tube; said rollable means includes an upper center recess to receive a lower end of said coil spring, said elastic feet thereby elastically supporting said bottom bed board and said bed frame;
a plurality of air valves comprising a cylindrical portion with a male thread, an annular gasket, a ball, and a spring; said male thread of said cylindrical portion engages one of said threaded holes of said upper small bed board or one of said threaded holes of said upper small corner bed board or one of a plurality of threaded holes in said massage bar, said cylindrical portion further includes a female thread, an upper annular edge, and an annular groove under said upper annular edge to receive an annular gasket therein, said spring includes an upper helical portion, a lower round portion, and a vertical lower ring portion;
said blower includes an air exit connected an air tube connected to said large hole of said bottom board, and an air inlet connected to a first one of said two mufflers, said air tube includes an electric heater in an interior thereof and an insulating fiber wound around an outer surface;
said two mufflers each include a muffling chamber with a plurality of separating plates therein, a water chamber to store water, said water chamber has a groove in an upper inner wall to receive a water plate gate, said water plate gate has a lateral rod extending through a hole in one wall so as to push and pull said water plate gate into and out of said gate groove to open and close said water chamber, said first muffler is connected to said air inlet of said blower, a second one of said mufflers is connected to said air tube and to said large hole of said bottom bed board via a soft tube;
said eccentric motor is connected to a bottom center of said bottom bed board, said eccentric motor includes an eccentric bearing located in a round recess of a square plate that is secured firmly to a bottom of said bottom bed board, said eccentric bearing slides in said round recess of said square plate, thereby swaying said bottom bed board together with said bed frame when said eccentric motor rotates;
said massage bar has an air chamber inside and is connected to a flexible air tube connected to an air adjustable valve fixed in said hole in said bed frame;
an air percolating plate formed from a net-holed plate and situated on said upper bed board under a pillow, said air percolating plate receives the weight of a user of said bed and contacts and compresses said air valves of said upper bed board;
a foot swayer is contained in a small chamber of said air chamber, said small chamber is formed by said lateral elongate board dividing said air chamber; and
heated air is pumped into said air chamber when warming of said bed is desired, and cooled air is pumped into said air chamber when cooling of said bed is desired, when said user lies on said bed, said air valves in said upper bed board are opened to allow said air in said air chamber to flow around said user.

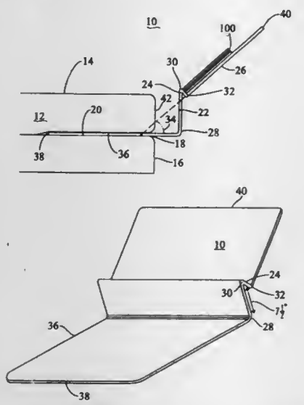
5,642,540
PAD COVER WITH FLAP LACKING FASTENERS
Lorraine S. Culver, and Gregory B. Culver, both of 12737 Audi Ct., Boise, Id. 83713
Filed Jan. 19, 1996, Ser. No. 591,424
Int. Cl.[6] A47G *9/00*
U.S. Cl. 5—499 **2 Claims**

1. A cover for a generally rectangular playpen pad comprising:
a. a top panel and a bottom panel configured to encase the pad, leaving an opening at a first end of the cover;
b. a flap having a communicating edge between the flap and the top panel, the communicating edge positioned at the first end of the cover;
c. the flap including a distal end;



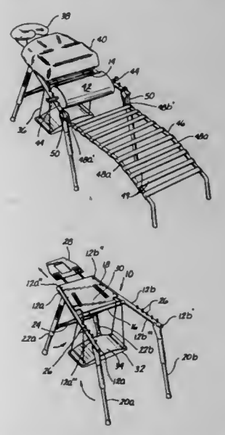
d. the flap having two sides, the sides substantially parallel to each other at the communicating edge, the sides extending in parallel relationship to each other for a distance at least equal to the thickness of the pad to be encased by the cover, the sides then extending in converging relationship to the distal end;
e. the flap having a distal edge at the distal end;
f. the distal edge being parallel to the communicating edge and at least half as long as the communicating edge;
g. the flap extending at least halfway along the bottom panel of the cover when the flap is tucked inside the cover; and
h. the flap being devoid of fasteners, whereby the pad may be inserted into the cover, the flap may be tucked inside the cover between the bottom panel and the pad, and the pad may be placed on a playpen floor with the bottom panel and the flap positioned between the pad and the playpen floor, thus preventing a small child positioned on the pad from easily removing the cover from the pad while having no fastener which may harm the child.

5,642,541
BEDSIDE READING TABLE
William B. Corbin, 4920 Highway 161, Springfield, Tenn. 37172
Filed Feb. 27, 1995, Ser. No. 394,446
Int. Cl.[6] A47B *23/00*
U.S. Cl. 5—507.1 **13 Claims**



1. A reading table received by a space between a mattress and a box spring of a bed comprising:
a. a base received by said space;
b. a neck attached to said base;
c. a sill attached to said neck;
d. a tray attached to said sill; and
e. wherein said tray is aligned at an acute tray angle from said base.

5,642,542
PORTABLE APPARATUS FOR SUPPORTING A PATIENT FOR MASSAGE TREATMENT
George Kometani, 12429 Stanwood Pl., Los Angeles, Calif. 90066
Filed May 7, 1996, Ser. No. 646,038
Int. Cl.[6] A47B *7/00*; **A61F** *5/00*
U.S. Cl. 5—620 **10 Claims**



1. Apparatus for supporting a patient undergoing a massage, bodywork or other type of physical therapy above a floor surface, said apparatus comprising:
a frame, said frame being formed by a first pair of similar rectilinear side members spaced from each other and laterally co-aligned in a common plane, each side member having a first forward end and second after end; and a pair of parallel first and second transverse members, also spaced from each other, each transverse member also having a first end and second end, the first and second ends of the first transverse member being secured to, and to extend between, the first ends of the side members, to join and retain said first ends of the side members in a fixed spaced apart relationship to each other; and the first and second ends of the second transverse member being secured to the side members, each forming a junction therewith, intermediate of the first and second ends of the side members equidistantly from the first transverse member, thereby to leave a portion of each of said side members extending rearwardly beyond the junction of the ends of the second transverse member with the side members; said first and second transverse members and the portions of the side members extending between the first and second transverse members defining a planar area;
a first pair of legs, one end of each leg being hingedly connected adjacent the first end of one of the side members to swing between a first position adjacent said one side member and a second position extending downwardly below said one side member to support the frame above the floor surface;
a second pair of legs, each leg being hingedly connected to the second end of a side member to swing between a first position in substantial abutment with a side member and a second position extending downwardly below the last said side member to support the frame above the floor surface;

substantially planar means disposed to cover the planar area between the side members and the transverse members, and said planar means being supported by the side members;

and a patient knee support comprising a horizontal planar member of a predetermined width and length with a pair of laterally extending opposite ends, said member having an area greater than would be occupied by a person's knees, said member being suspended above the floor surface by first and second flexible elements each having a first and second end, each of said flexible elements being looped over the second transverse member of the frame and having its first and second ends spaced apart from each other and secured to one of the laterally extending ends of the knee support;

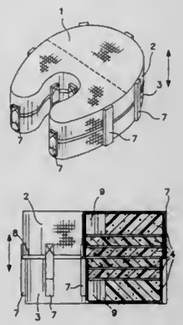
whereby a patient may be positioned for massage treatment of the back, shoulder and neck areas by kneeling on the knee support member and bending over the second transverse member to rest on the planar members supported between the side members and the first and second transverse members.

5,642,543

ADJUSTABLE ERGONOMIC PILLOW

James Benjamin Huntley, P.O. Box 55287, Washington, D.C. 20040

Filed May 6, 1996, Ser. No. 643,606
Int. Cl.[6] A47G *9/02*
U.S. Cl. 5—640 **8 Claims**



1. An adjustable pillow comprising:

a top cover, having a top surface portion and a side portion, and a bottom cover having a bottom surface portion and a side portion, said side portion of said top cover fitting slidable over the said side portion of said bottom cover such that the top edge of the side portion of said bottom cover is covered by said side portion of said top cover, wherein said top cover can be raised or lowered with respect to said bottom cover to increase or decrease the space between said top surface portion of said top cover and said bottom surface portion of said bottom cover;

at least one compressible replaceable insert positioned between said top and bottom covers; and

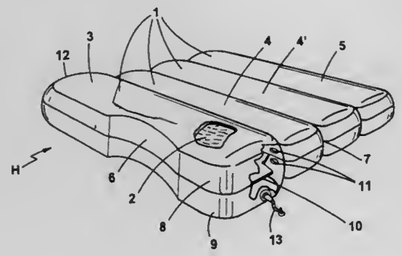
holding means attached to said side portions of said top and bottom covers for holding said top and bottom covers together such that the distance between said top, surface portion of said top cover and said bottom surface portion of said bottom cover is variable, wherein said holding means are releasable to provide access to the space between said top and bottom covers to permit the insertion or removal of said compressible inserts, whereby the number of inserts therebetween can be increased or decreased, thereby increasing or decreasing the height of the pillow.

5,642,544

HYDRAULIC PILLOW

Rosario Castro Mñoz, Pintor Astorza Y Triay, 14 - 1º A, E-03015 Alicante, Spain

PCT No. PCT/ES95/00112, § 371 Date Jun. 7, 1996, § 102(e) Date Jun. 7, 1996, PCT Pub. No. WO96/11617, PCT Pub. Date Apr. 25, 1996
PCT Filed Oct. 10, 1995, Ser. No. 656,173
Claims priority, application Spain, Oct. 14, 1994, 9402714 U
Int. Cl.[6] A47G *9/00;* **A47C** *27/10*
U.S. Cl. 5—644 **2 Claims**



1. A hydraulic pillow having a parallelepiped shape with slightly curved-convex faces and curved edges, said pillow comprising:

an upper liquid-filled cavity divided into a plurality of upper compartments in communication with each over by means of tubing interconnecting said plurality of upper compartments, said tubing disposed at most distant internal edges of said plurality of upper compartments, thereby attaining distribution of liquid among said plurality of upper compartments and restricting rapid travel of the liquid from one side of said hydraulic pillow to another side of said hydraulic pillow,

a lower cavity divided into a plurality of lower compartments in communication with each over by means of tubing interconnecting said plurality of lower compartments, said tubing disposed at most distant internal edges of said plurality of lower compartments, thereby attaining distribution of air among said plurality of compartments and restricting rapid travel of the air from one side of said hydraulic pillow to another side of said hydraulic pillow, and said lower cavity having a valve in the form of safety mouthpiece located at a bottom region of said cavity for pneumatic adjustment of height and/or hardness characteristics of said hydraulic pillow for anatomical adaptation to a user's neck, head and respiratory system, and

corresponding first compartments of said upper cavity and said lower cavity are relatively slightly larger than other compartments of said upper cavity and said lower cavity and define a concave depression in a frontal surface approximately at an axis, said concave depression contributing to attaining anatomical preshaping for a human body part to which said hydraulic pillow is applied.

5,642,545

FITTED CRIB PADS ADAPTED TO COVER HORIZONTAL AND VERTICAL RAILS

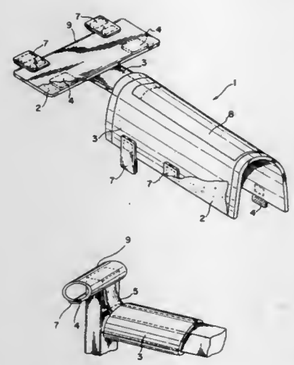
Bridget Howard, 13400 Wilshire, Detroit, Mich. 48213

Filed May 13, 1996, Ser. No. 645,062
Int. Cl.[6] A47C *21/00*
U.S. Cl. 5—663 **6 Claims**

1. A protective pad assembly (**1**) for use with a structure having at least one horizontal rail and at least one vertical rail, said pad assembly comprising:

an inverted U-shaped body comprising two arms (**3**) and a top portion interconnecting said arms,

said body made up of two interconnected outer parts with a soft material (**2**) positioned between said outer parts,



fastening means (**4, 7**) spaced along said arms, whereby said fastening means (**4, 7**) are adapted to be connected together to fasten said body to said at least one horizontal rail,

a second body (**9**) made up of two interconnected outer parts with a soft material (**2**) positioned between said outer parts,

said second body connected to one end of said inverted U-shaped body,

said second body having a longitudinal axis which is perpendicular to a longitudinal axis of said inverted U-shaped body,

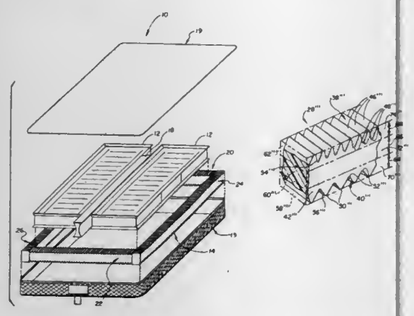
said second body having fastening means (**4, 7**) spaced therealong, whereby said fastening means on said second body are adapted to be connected together to fasten said second body to said at least one vertical rail.

5,642,546

INFLATABLE MATTRESS WITH IMPROVED BORDER SUPPORT WALL

John J. Shoenhair, New Hope, Minn., assignor to Select Comfort Corporation, Minneapolis, Minn.

Filed Sep. 19, 1995, Ser. No. 538,404
Int. Cl.[6] A47C *27/08;27/10*
U.S. Cl. 5—680 **7 Claims**



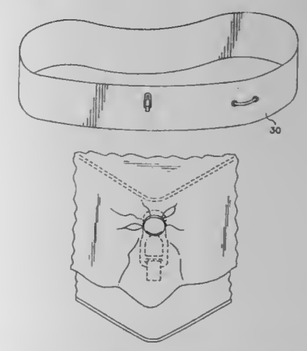
1. A fluid-filled body support, comprising a bladder for holding a fluid, and a border wall made of a foam material, the foam material having an inverse load deflection rating and a density, the border wall having an upper surface and a lower surface, the upper surface having upper surface convolutions, the border wall foam material having the inverse load deflection rating being between about 60 to about 80 pounds and the single density being between about 1.0 and 2.0 pounds per cubic foot; the upper surface convolutions having an amplitude being between about 0.5 inch to about 1.5 inch, a wavelength being between about 0.5 inch to about 1.5 inch, and a wavelength/amplitude ratio determined by dividing the wavelength by the amplitude and being between about 0.5 to about 2.0.

5,642,547

BED SHEET ATTACHMENT DEVICE FOR A MATTRESS, AND METHOD

William B. Hutton, and Deanice B. Hutton, both of 330 Riverside Dr., St. Helens, Oreg. 97051

Filed Jul. 12, 1996, Ser. No. 679,653
Int. Cl.[6] A47C *21/02*
U.S. Cl. 5—692 **6 Claims**



1. A mattress having top and bottom surfaces and a peripheral border connecting the top and bottom surfaces, and an attachment device for attaching an article of bedding to the mattress, said attachment device comprising:

a gripper plate having a generally flat major portion with a first opening extending therethrough, the opening having a first length region and a second length region, the first length region being between the second length region and an end of the major portion and being narrower than the second length region, of the opening,

a strip of elastic material attaching the gripper plate to the border of the mattress substantially halfway between the top and bottom surfaces of the mattress, and

a stud having a base portion, a head portion and a neck portion connecting the base portion and the head portion, the head and base portions each being too large to pass through second region of the opening but at least the base portion being sized to pass through the first region of the opening and the neck portion being sufficiently narrow to enter the second region of the opening.

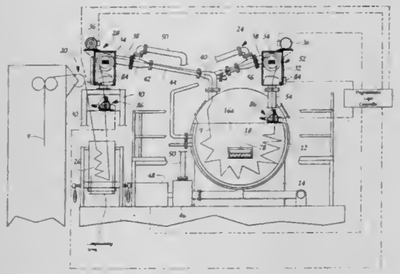
5,642,548

APPARATUS AND METHOD FOR WET PROCESSING TRAVELING TEXTILE MATERIAL

Charles Anthony Osbourn, Fort Oglethorpe, Ga., assignor to Gaston County Dyeing Machine Company, Stanley, N.C.

Filed Feb. 20, 1996, Ser. No. 603,725
Int. Cl.[6] D06B *3/28*
U.S. Cl. 8—152 **18 Claims**

1. Apparatus for wet processing an indeterminate length of traveling textile material, the apparatus comprising a plurality of material processing chambers, means for transporting the material sequentially through the chambers, means associated with each chamber for detecting the entrance of a leading end of the material into the respective chamber, means associated with each chamber for measuring the length of the material entering the respective chamber after the detecting means of the respective chamber



detects the entrance of the leading end of the material, and data processing means associated with each detecting means and each measuring means for receiving data signals therefrom, for computing at least periodically the length of the material momentarily resident in each respective chamber and for comparing the respective computed lengths for the respective chambers with one another, and for adjustably controlling the transporting means to maintain predetermined relative lengths of the material within the respective chambers.

13. A method of wet processing an indeterminate length of traveling textile material, the method comprising the steps of transporting the material sequentially through a plurality of material processing chambers, detecting the entrance of a leading end of the material into each respective chamber, measuring the length of the material entering each respective chamber after the entrance of the leading end of the material thereinto is detected, computing at least periodically the length of the material momentarily resident in each respective chamber, comparing the respective computed lengths for the respective chambers with one another, and adjustably controlling the transporting of the material to maintain predetermined relative lengths of the material within the respective chambers.

5,642,549

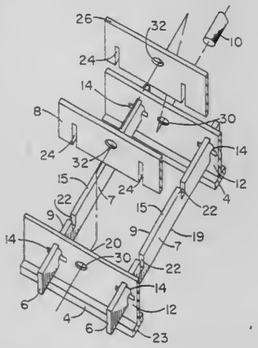
WELDLESS GRATINGS OR GRIDS FOR BRIDGE DECKS

Ronald W. Mangone, New Kensington, Pa., assignor to Mangone Enterprises, New Kensington, Pa.

Filed Oct. 10, 1995, Ser. No. 541,732

Int. Cl.[6] E04C *2/42*

U.S. Cl. 14—73 **27 Claims**



1. A weldless grating comprising:

(a) a plurality of longitudinally extending primary load bearing members having an upper portion, a lower portion and a web located between said upper portion and said lower portion, the primary load bearing member having a plurality of spaced-apart openings in said web, the openings in each of said primary load bearing members being aligned with the openings in adjacent primary load bearing members;

(b) a plurality of secondary load bearing members having an upper edge and a lower edge, the secondary load bearing members provided with first slots extending downwardly through the upper edge to provide top slots and with upwardly extending slots through the lower edge to provide bottom slots located substantially opposite said top slots,

the secondary load bearing members positioned in the aligned openings in said web of the primary load bearing members, said top and bottom slots in said secondary load bearing member forming a locking engagement with said web surrounding said openings in said primary load bearing members,

the secondary load bearing members provided with secondary downwardly extending slots through said upper edge, secondary downwardly extending slots located between primary load bearing members;

(c) a plurality of tertiary load bearing members positioned in the secondary slots in the secondary load bearing members; and

(d) a rod extending through said tertiary load bearing members and said primary load bearing members locking said tertiary load bearing members in the slots in said secondary load bearing members and locking said secondary load bearing members in the openings in said primary load bearing members to form said weldless grating.

5,642,550

APPARATUS FOR REMOVING IMAGE FORMING SUBSTANCE FROM IMAGE HOLDING MEMBER

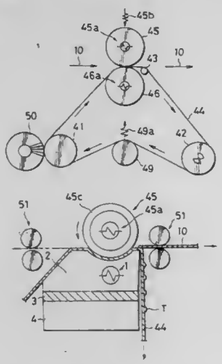
Tohru Maruyama, Fujisawa; Masatoshi Saito, Machida; Taro Terashi; Hisao Watanabe, both of Sagamihara; Shigeru Fujita, Machida; Masaru Shinkai, Yokohama, and Tomoaki Sugawara, Warabi, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Feb. 7, 1995, Ser. No. 385,159

Claims priority, application Japan, Feb. 28, 1994, 6-55091; Feb. 28, 1994, 6-55094; Nov. 14, 1994, 6-305649

Int. Cl.[6] B08B *1/02*; **G03G** *21/00*

U.S. Cl. 15—102 **5 Claims**



1. An apparatus for removing an image forming substance from an image holding member in which the image forming substance on the image holding member is heated to be melted or softened, comprising:

a separating belt having an adhesive force, with respect to the image forming substance, which is stronger than that between the image holding member and the image forming substance, and which comes in contact with the image forming substance and separates and removes the image forming substance from the image holding member when the separating belt and the image holding member are separated from each other; and

heating-maintaining means for maintaining heating of the separating belt until the image holding member is separated from the separating belt.

5,642,551

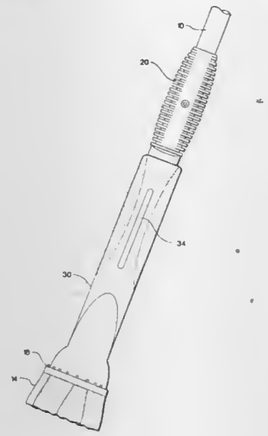
TWIST MOP

Robert A. Cann, Amherst, Mass., and Luis R. Agrela, Cumberland, R.I., assignors to Easy Day Manufacturing Company, Holliston, Mass.

Filed Jul. 19, 1996, Ser. No. 684,176

Int. Cl.[6] A47L *13/142*

U.S. Cl. 15—120.1 **13 Claims**



1. A mop, comprising:

a handle;

a mop head; and

a wringing grip slidably and rotatably mounted on said handle, said mop head being coupled between said wringing grip and said handle such that upon rotation of said wringing grip relative to said handle, said mop head is wrung;

said wringing grip having a compressible region that is constructed and arranged to compress upon application of an inwardly radial force, such that said wringing grip engages said handle;

whereby said wringing grip, when compressed against said handle, facilitates wringing of said mop head by inhibiting said wringing grip from rotating relative to said handle.

5,642,552

RETRACTABLE HANDLE POSITIONING MECHANISM FOR WHEELED SUITCASES

King-Sheng Wang, No. 569, Ching-Kuo Rd., Ta-Chia Chen, Taichung Hsien, Taiwan

Continuation-in-part of Ser. No. 239,236, May 6, 1994, abandoned. This application Sep. 21, 1995, Ser. No. 531,398

Int. Cl.[6] B25G *1/04*

U.S. Cl. 16—115 **2 Claims**

1. A retractable handle positioning mechanism for a suitcase having a shell comprising:

a base frame fastened to the shell of the suitcase to hold a retractable handle, said base frame having two laterally spaced apart axle holes, a chamber in the middle between said two axle holes, a front opening communicating with said chamber, a stub rod on said base frame located inside said chamber, a top button slot communicating with said chamber having a width W, a lock hole communicating with each of said axle holes and two mounting flanges extending from opposite sides of said base frame laterally outwardly of said two axle holes;

a first spring mounted on said stub rod inside said chamber;

a trapezoidal press button having a substantially rectangular cross-sectional configuration located in said chamber and supported on said first spring, a portion of said press button disposed in said top button slot, the press button having at least two side wings extending from opposite sides of the press button, the distance between distal ends of the side wings being greater than the width W of the top button slot to prevent the press button from passing completely through the top button slot;

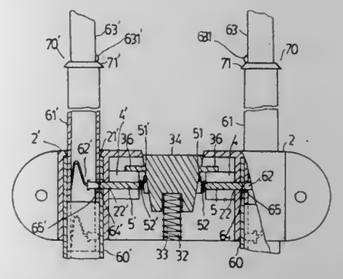
two locating blocks bilaterally mounted inside said chamber of said base frame, each having a bolt hole communicating between said chamber and the lock hole of one axle housing;

two headed bolts, each headed bolt having a bolt body sliding in the bolt hole of one locating block, and a beveled head bearing against one side of said trapezoidal press button;

a second spring respectively mounted around the bolt body of each headed bolt and extending between the beveled head of each headed bolt and one of said locating blocks so as to bias the beveled head against the press button; and

a retractable handle fastened to said base frame, and operated by means of the control of said trapezoidal press button between an extended position and a retracted position,

whereby when said trapezoidal press button is pressed, the headed bolts are forced laterally outwards by said trapezoidal press button in opposite directions to push spring-supported retainer rods away from lock holes of said base frame, thereby permitting inside tubes of said retractable handle to be moved between said extended position and said retracted position.



5,642,553

IMAGING APPARATUS FOR SCANNING A CLOTHED ROLL IN A FIBER PROCESSING MACHINE AND METHOD

Ferdinand Leifeld, Kempen, Germany, assignor to Trützschler GmbH & Co. KG, Mönchengladbach, Germany

Filed Apr. 3, 1996, Ser. No. 627,067

Claims priority, application Germany, Apr. 13, 1995, 195 14 039.7

Int. Cl.[6] D01G *15/00*

U.S. Cl. 19—98 **18 Claims**

1. In a fiber processing apparatus including

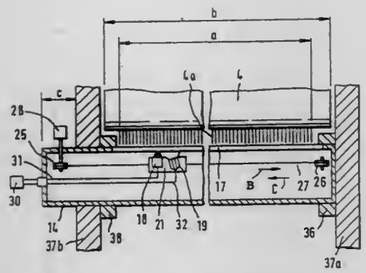
a rotary roll carrying a clothing and having an axis and a length measured parallel to said axis; and

an imaging apparatus including

an illuminating device directing a light beam onto a surface area of said clothing;

a camera for sensing the light of the surface area lit by said illuminating device; and

an evaluating device connected to said camera for examining reflected local light intensity changes during rotation of said roll;



the improvement comprising

(a) means for presenting to the camera consecutive areas of the clothing surface along the entire roll length; and

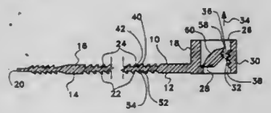
(b) means for triggering an operation of at least one of said camera and said illuminating device as a function of an rpm of said roll.

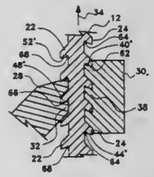
5,642,554

CABLE TIE HAVING ENHANCED LOCKING ENGAGEMENT BETWEEN PAWL AND RATCHET TEETH ON TONGUE

Soren Christian Sorensen, and Jens Ole Sorensen, both of Cayman, Cayman Islands, assignors to GB Electrical, Inc., Milwaukee, Wis.

Filed Dec. 29, 1995, Ser. No. 580,657
Int. Cl.[6] B65D *63/00*
U.S. Cl. 24—16 PB **12 Claims**





1. A tie comprising an elongated tongue with two ends and two broad sides, a locking head at one end of the tongue, a tip at the other end of the tongue and a set of ratchet teeth extending along one broad side of the tongue, wherein the locking head has sides defining an opening for receiving the tip of the tongue, the sides including a movable pawl within the locking head opening that is hinged at one side of said opening and an abutment surface that is across the opening from the pawl, wherein the pawl has at least one pawl tooth disposed for locking engagement with the set of ratchet teeth when the tip of the tongue has been inserted through said opening with the set of ratchet teeth facing the pawl,

wherein the at least one pawl tooth has a locking surface extending toward an apex of said tooth at an angle inclined toward the direction of said insertion for locking engagement with the set of ratchet teeth when the tongue has been inserted through the opening with the set of ratchet teeth facing the pawl;

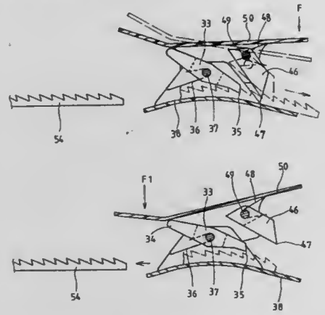
wherein the side of the pawl including the at least one tooth converges toward the opposite side of the pawl in said direction of insertion wherein the abutment surface also converges toward the opposite side of the pawl in said direction of insertion.

5,642,555

PRESS-TYPE FASTENER

Ching-mau Lin, P.O. Box 453, Taichung, Taiwan

Filed Mar. 13, 1996, Ser. No. 615,721
Int. Cl.[6] A43C *11/00*
U.S. Cl. 24—70 SK **1 Claim**



1. A press-type fastener, which comprises:

a retaining bottom base provided with a plurality of lugs each having a pivoting hole;

a retaining block fastened pivotally with said retaining bottom base by a shaft received in said pivoting holes of said lugs of said retaining bottom base, said retaining block provided with an axial hole, a cut, a plate, a retaining edge, and a position-limiting spring received in said cut such that one end of said spring is engaged with said lugs and that another end of said spring urges a bottom of said cut;

a press top base provided with a plurality of ears each having a pin hole and a pivoting hole;

an action toothed block having a pin hole, a slot, a toothed edge, and a retrieving spring received in said slot such that one end of said retrieving spring urges a top of said slot and that another end of said retrieving spring urges a bottom of said press top base, said action toothed block being fastened pivotally with said press top base by a pin received in said pin hole of said action toothed block and in said pin holes of said lugs of said press top base; and

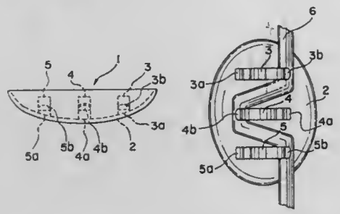
a one-way toothed belt capable of being fastened and unfastened by said action toothed block.

5,642,556

DETACHABLE BELTLOOP CONCHOS

Steve Alexander, 1250 Rusty La., Las Cruces, N. Mex. 88005

Filed Apr. 30, 1996, Ser. No. 640,151
Int. Cl.[6] A44B *11/00*
U.S. Cl. 24—163 K **1 Claim**



1. A decorative ornament adapted to be attached to belt loops on a pair of pants comprising:

a body member having a front, back, sides and ends,

said sides and ends forming an area,

at least three prongs attached to said back of said body member,

all portions of said at least three prongs being positioned within the area defined by said sides and ends,

each of said prongs having a first end and a second end,

each of said first ends being permanently attached to said back of said body member,

two of said prongs having their first ends attached adjacent a first side of said back of said body member,

the remaining prong having its first end attached to an opposite side of said back of said body member,

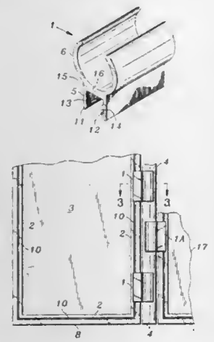
each of said second ends of said prongs being free and spaced from said back of said body member.

5,642,557

PANEL DISPLAY SYSTEM

Christopher Mark Clews, Green Bay, New Zealand, assignor to C J Distributors Limited, Auckland, New Zealand

Continuation of Ser. No. 303,376, Sep. 9, 1994, abandoned. This application Mar. 14, 1996, Ser. No. 615,895
Int. Cl.[6] A44B *21/00*
U.S. Cl. 24—339 **8 Claims**



1. A panel display system for displaying a plurality of panels, said panel display system comprising:

a) at least one generally planar panel, each of said panels comprising a groove formed along at least one edge of the panel upon both sides thereof;

b) at least one rod;

c) a plurality of clips for attaching said panel(s) and rod(s) to one another, each of said clips comprising:

i) a first jaw for releasably attaching said clip to one of said panels, said jaw comprising ribs formed upon opposite internal surfaces thereof and configured to engage the grooves formed in said panels;

ii) a substantially arcuate second jaw for releasably attaching said clip to one of said rods, said second jaw formed integrally with said first jaw; and

d) wherein two panels are thus interconnectable via attachment to a common one of said rods utilizing a plurality of said clips.

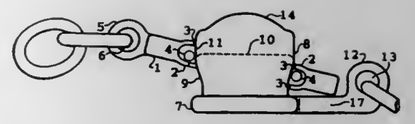
5,642,558

JEWELRY CLASP

Lawrence Edward Bodkin, Sr., P.O. Box 16482, 1149 Molokai Rd., Jacksonville, Fla. 32216

Filed Jun. 23, 1995, Ser. No. 494,053
Int. Cl.[6] A44B *17/00*
U.S. Cl. 24—674 **9 Claims**

1. In a clasp permitting elective connection and disconnection of ends of a chain, the improvement comprising a forcibly engageable and disengageable fastener having a stud part with a projection thereon and a socket part, acting in combination with a structure



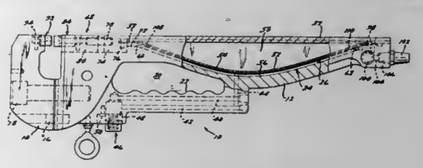
including two support-bodies, one said body being permanently secured to each said fastener part, said fastener parts having a direction of engagement and of disengagement that parallel said projection of said stud part, each said body having connective means for permanently joining its said fastener part to ends of a chain, at positions causing pulling stress from the ends to be received, by a closed clasp, in a direction generally perpendicular to the direction of disengagement, said socket part including an opening, accessible from either side for receiving said stud part, said projection having an outer end and being long enough to enter one side of said socket opening, pass through and extend out of the other side of said socket opening, when the fastener is engaged, far enough to locate said outer end of said protection readily accessible to pressure and to respond to such pressure by moving, relative to said socket opening, in the direction of disengagement, said projection including a maximum cross section dimension extension part having a length extending along the direction of engagement and disengagement of said clasp to cause contact between said socket part and said maximum cross section dimension extension part of said projection when a substantial tilting movement of said socket part relative to said projection is made which prevents fastener disengagement, said outer end of said projection in the engaged fastener, acts to temporarily lock said socket part against said projection to cause stopping of a relative movement in the direction of disengagement that includes a substantial tilting of said socket part relative to said projection, so that disengagement is thereby limited to a relative movement of said stud and socket parts in which their axes remain sufficiently aligned to avoid the stopping of a relative movement, said support body of said socket part having edges that extend beyond an edge of said support body of said stud part, when said fastener is engaged, so that said edges of support body of said socket may be contacted for support by fingers on two opposing sides, without blocking said socket opening, or the relative movement of said projection on said stud part, while pressure is applied to said outer end of the said projection to facilitate maintaining of said axes in sufficient alignment to avoid the substantial tilting and the stopping and to thus permit movement, once initiated, to continue until fastener disengagement is effected and said clasp is opened.

5,642,559

PORTABLE SHEET MATERIAL JOINING TOOL

Edwin G. Sawdon, St. Clair, Mich., assignor to BTM Corporation, Marysville, Mich.

Division of Ser. No. 246,575, May 20, 1994, Pat. No. 5,431,089, which is a continuation of Ser. No. 32,020, Mar. 16, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 488,100
Int. Cl.[6] B23P *11/00*
U.S. Cl. 29—33 K **12 Claims**



1. A portable sheet material joining tool comprising;

a body having an arcuate chamber formed therein;

a resilient arcuate shaped ram having first and second ends disposed within the chamber thereby defining a working chamber;

a seal disposed adjacent the ram and sealing against the walls of the working chamber;

valve means for selectively controlling the flow of pressured fluid into the working chamber whereby the resilient ram is caused to deflect in a first direction and said first and second ends are caused to translate in a direction substantially perpendicular to said first direction such that a force is generated along the direction of translation;

an anvil secured to the body; and

sheet material joining tooling comprising a die assembly having a first portion and a second portion, said first portion secured to the anvil, and said second portion operatively connected to an end of the ram whereby the translational movement of the end causes the second portion to move relatively toward the first portion whereby a number of pieces of sheet material disposed between the first and second portions are deformed and joined.

5,642,560

METHOD OF MANUFACTURING AN ELECTROMAGNETIC CLUTCH

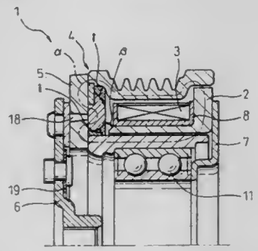
Yasuo Tabuchi, Anjo; Junichi Ohguchi, Toyoake, and Masashi Tobayama, Ohbu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Oct. 13, 1995, Ser. No. 542,966

Claims priority, application Japan, Oct. 14, 1994, 6-249139

Int. Cl.[6] H01F *41/02*

U.S. Cl. 29—607 **9 Claims**



1. A method of producing a rotor for an electromagnetic clutch comprising the steps of:

(a) providing a first cylindrical member;

(b) forming the first cylindrical member into a first body including a restricted portion which extends circumferentially along the first body and has an inner diameter smaller than that of the first cylindrical member, a V-shaped groove on the outer surface of the restricted portion, opposite cylindrical end portions which have a diameter substantially equal to that of the first cylindrical member, and a pair of annular connecting portions which connect the end portions to the respective ends of the restricted portion;

(c) providing a second cylindrical member which has a diameter smaller than that of the first cylindrical member;

(d) forming the second cylindrical member into a second body which comprises a cylindrical portion which has a diameter substantially equal to that of the second cylindrical member, a flange portion connected to the cylindrical portion and having a diameter larger than the inner diameter of one end portion of the first body, and an annular groove between the flange portion and the cylindrical portion, the flange portion including an inclined surface along the periphery of the flange portion;

(e) assembling the first and second bodies by fitting the flange portion of the second body into one of the end portions of the first body;

(f) filling a non-magnetic material within the annular groove and a space between the inclined surface of the flange portion of the second body and the end portion of the first body; and

(g) machining the outer end of the assembled first and second bodies where the flange portion is fitted into the end portion of the first body to provide an friction surface and to expose the non-magnetic material on the friction surface.

5,642,561

METHODS OF PRODUCING THIN PROFILE BATTERIES AND BATTERY TERMINAL HOUSING MEMBERS

Mark E. Tuttle, Boise; Rickie C. Lake, Eagle, and John D. Fisher, Boise, all of Id., assignors to Micron Communications, Inc., Boise, Id.

Filed Feb. 9, 1996, Ser. No. 599,347

Int. Cl.[6] H01M *2/08*

U.S. Cl. 29—623.2 **39 Claims**



1. A method of forming a battery terminal housing member comprising the following steps:

providing an electrically conductive sheet having an exposed surface;

providing a discrete solid gasket body;

providing adhesive intermediate the conductive sheet exposed surface and the gasket body, and adhering the gasket body and conductive sheet together with the adhesive;

positioning the conductive sheet with the gasket body adhered thereto between first and second forming members; and

moving at least one of the forming members in the direction of the other to bear one of the forming members against the gasket body to simultaneously bend the solid gasket body and conductive sheet into a battery terminal housing member shape, the adhesive retaining the solid gasket body fast against the conductive sheet outer surface during and after bending.

5,642,562

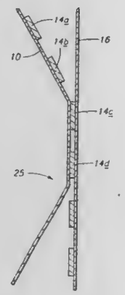
METHOD OF FORMING BUTTON-TYPE BATTERY LITHIUM ELECTRODES WITH HOUSING MEMBER

Mark E. Tuttle, Boise, Id., assignor to Micron Communications, Inc., Boise, Id.

Continuation of Ser. No. 538,985, Oct. 5, 1995, Pat. No. 5,542,959, which is a division of Ser. No. 271,012, Jul. 6, 1994, Pat. No. 5,480,462, which is a continuation-in-part of Ser. No. 205,611, Mar. 2, 1994, Pat. No. 5,547,781, and a continuation-in-part of Ser. No. 206,051, Mar. 2, 1994, Pat. No. 5,486,431. This application Jun. 6, 1996, Ser. No. 660,034

Int. Cl.[6] H01M *6/02*

U.S. Cl. 29—623.3 **4 Claims**



1. A method of forming a plurality of discrete battery terminal housing members comprising the following steps:

providing a release liner sheet having elemental lithium adhered thereto, the adhered elemental lithium being in the form of a series of discrete patterns having a size and shape of the lithium electrodes being formed;

providing an electrically conductive sheet having an exposed surface, the exposed surface being divisible into a plurality of areas;

laminating the release liner sheet with the electrically conductive sheet to adhere the series of discrete elemental lithium patterns onto the respective sheet areas;

pulling the release liner sheet from the electrically conductive sheet and discrete lithium patterns, leaving the discrete lithium patterns adhering to the electrically conductive sheet; and

cutting and forming a plurality of discrete battery terminal housing members from the areas of the electrically conductive sheet, with each of the discrete battery terminal housings bearing one of the discrete lithium patterns.

5,642,563

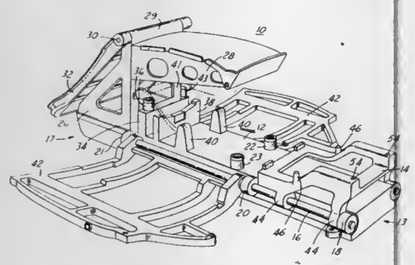
SINGLE STATION ASSEMBLY APPARATUS FOR AUTOMOTIVE MULTI-PANEL COMPARTMENT

Roy E. Bonnett, Bloomfield, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sep. 25, 1995, Ser. No. 533,232

Int. Cl.[6] B23P *21/00*

U.S. Cl. 29—771 **17 Claims**



1. An assembly apparatus for constructing a multi-panel vehicle compartment by mounting body panels with respect to a single base for movement into an assembled position, the apparatus comprising:

a base for receiving an underbody member thereon;

roof support means in generally planar alignment with said base for receiving a roof inner panel on an upper surface thereof;

roof holder means axially mounted with respect to said roof support means for receiving a roof outer panel thereon and for rotating said roof outer panel onto said roof inner panel;

side support means rotatably mounted on opposing side edges of said base for swingably positioning a pair of body side panels in juxtaposition with said underbody member, said roof outer panel, and said roof inner panel; and

a slidable tray for holding a body front end portion to slidingly engage said body front end portion with said underbody member and said pair of body side panels.

5,642,564

METHOD OF JOINING STIFF PLATE PROFILE MEMBERS INTO BROAD LAMELLAE OR PANELS

Kjeld Balslev Lund-Hansen, Krajbjergvej 3, DK-8541, Skødstrup, Denmark

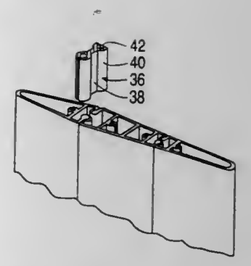
Continuation of Ser. No. 245,471, May 18, 1994, abandoned, which is a continuation of Ser. No. 689,780, Jun. 28, 1991, abandoned. This application Jul. 20, 1995, Ser. No. 504,667

Claims priority, application Denmark, Nov. 17, 1988, 6410/88

Int. Cl.[6] B23P *11/02*

U.S. Cl. 29—897.32 **11 Claims**

1. A method of edgewise joining of hollow extruded profile elements, each having opposed edges extending along at least one lateral side edge, for forming long and wide lamella of panel elements, the hollow extruded profile elements being placed in an



edge to edge alignment and connected by joining elements, the opposed edges of each hollow extruded profile element each being provided with an edge projection, each edge projection projecting inwardly from one of the opposed edges toward a central portion of the hollow extruded profile element and toward an edge projection diffused on an opposite side of said central portion, and each joining element including U-shaped or C-shaped flanges along opposite edges thereof for interconnecting adjacent hollow extruded profile elements to each other, the method comprising the steps:

positioning the hollow extruded profile elements so as to dispose edge projections of one hollow extruded profiled element in alignment with edge projections of an adjacent hollow extruded profile element; and

positioning one joining element such that one of the flanges connects one pair of aligned edge projections of the hollow extruded profile elements and the opposite flange connects the other pair of aligned edge projections of the hollow extruded profile elements, to thereby connect the hollow extruded profile elements to each other.

5,642,565

HAND PROPELLED LONGITUDINAL AXIAL GYROSCOPIC PROJECTILE

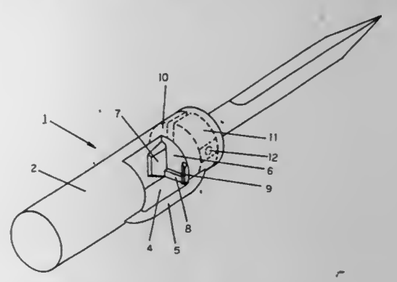
Francisco Tovar Riestra, Camino Real, s/n, 36600 Villagarcia de Arosa, Spain

Filed Sep. 18, 1995, Ser. No. 529,584

Claims priority, application Spain, Dec. 15, 1994, 9402558

Int. Cl.[6] A63B *65/02*

U.S. Cl. 30—123 **13 Claims**



1. A hand propelled, internally driven, gyroscopic projectile having a longitudinal axis, the projectile comprising:

a frontally positioned striking part; and

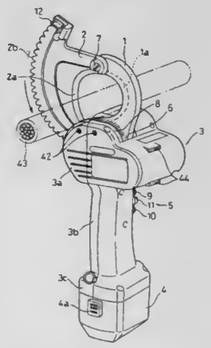
a rearwardly positioned handle having a front end and a rear end, the front end being attached to the striking part such that the handle and striking part are axially aligned along the longitudinal axis;

the handle having an open cavity for receiving a thrower's finger,

the cavity having a receptacle comprising a finger resting surface for contacting the finger when the projectile is thrown

and raised protruberences shaped for positioning the finger on the resting surface during throwing of the projectile, the resting surface being transverse and off center with respect to the longitudinal axis of the projectile such that the thrower's finger contact with the resting surface causes the projectile to rotate around the longitudinal axis and maintains the striking part leading when thrown.

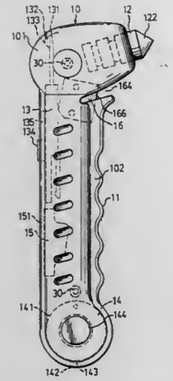
5,642,566
ELECTRIC POWERED CABLE CUTTER
Shigeru Hirabayashi, Matsumoto, Japan, assignor to Izumi Products Company, Nagano-ken, Japan
Filed Jun. 1, 1996, Ser. No. 661,737
Int. Cl.[6] B26B *15/00*
U.S. Cl. 30—228 **13 Claims**



1. An electric cable cutter for cutting a cable comprising:
a housing;
an electric motor provided in said housing;
a planetary reduction gear driven by said electric motor, provided in said housing;
a stationary blade fixed at said planetary reduction gear, provided in said housing so as to project from an opening of said housing;
a moving blade having a first blade at an inner rib and a gear at an outer rib, provided in said housing so as to project from said opening of said housing, pivotally placed at said stationary blade with a shaft, said moving blade being rotated by said planetary reduction gear;
a power source for said electric motor; and
a switch for turning on and off said electric motor.

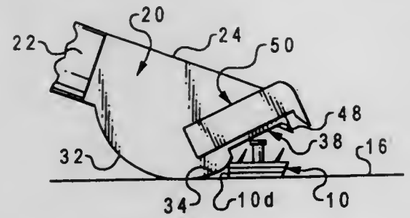
5,642,567
EMERGENCY ESCAPE APPARATUS FOR USE IN A CAR
Yung-Fa Lin, Taipei Hsien, Taiwan, assignor to Jia Shin Industrial Co., Ltd., Pan-Chiao, Taiwan
Filed Nov. 6, 1995, Ser. No. 553,899
Int. Cl.[6] B25F *1/00*
U.S. Cl. 30—366 **6 Claims**

1. An emergency escape apparatus for use in a car, comprising:
an elongated body having a head portion and a handle portion which is connected integrally to said head portion, said elongated body having a channel which extends toward and which is communicated with an exterior of said elongated body;
a rigid striking member fixed to said head portion, said striking member having a tapered end which extends out of said head portion; and
a needle member receiyed slidably in said channel of said elongated body, said needle member having a sharp end



which is extendible from and retractable into said elongated body.

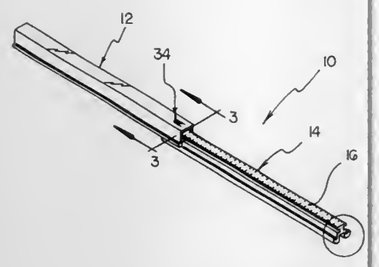
5,642,568
TACK STRIP INSTALLATION TOOL
Jay T. Lapka, 310 W. North Ave., Industry, Ill. 61440
Filed Jan. 18, 1996, Ser. No. 588,266
Int. Cl.[6] G01B *1/00*
U.S. Cl. 33—526 **12 Claims**



1. A device for grasping and positioning a tack strip comprising:
a flat head having a curved perimetric edge surface;
a tack-strip grasping notch formed in said bead and opening to said edge surface;
said notch being bounded by first and second walls and a third wall the latter comprising the edge of an elongated blade;
said first and second walls intersecting substantially perpendicularly; and,
said blade confronting said first wall and intersecting said second wall at an obtuse angle.

5,642,569
TELESCOPING MEASURING DEVICE
Gordon M. Palmer, 2828 Alice Street, Abbotsford, Canada
Filed Oct. 2, 1995, Ser. No. 537,446
Int. Cl.[6] G01B *3/08*
U.S. Cl. 33—809 **1 Claim**

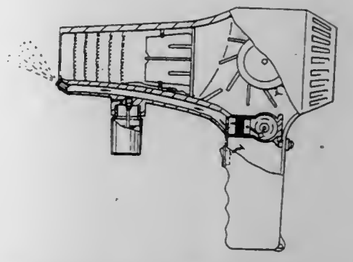
1. A telescoping measuring device comprising:
an elongated first member;
an elongated second member slidably received at least partially within the first member;
measurement indicia printed along the second member which can be interpreted relative to the first member to indicate an overall length of the device read at an intersection of the first



and second members so as to indicate a distance between an end of the first member and an end of the second member;
wherein the first member comprises an elongated planar first top wall having substantially spaced and parallel longitudinal edges from which a first pair of lateral walls project so as to reside in a substantially spaced and parallel orientation relative to one another, the first pair of lateral walls projecting from the planar first top wall and each terminating in a lower longitudinal edge oriented so as to extend in a substantially spaced and parallel orientation relative to the respective longitudinal edge of the first top wall; and a pair of longitudinal interior projections extending from interior surfaces of the first pair of lateral walls and projecting towards one another so as to reside in a substantially spaced and parallel orientation relative to the planar first top wall, with the second member extending between the pair of first longitudinal interior projections and the planar first wall top wall;
wherein the lower longitudinal edges of the first pair of lateral walls are shaped so as to define enlarged lower edges having a transverse thickness substantially greater than a transverse thickness of a majority of the first pair of lateral walls;
wherein the second member comprises an elongated planar second top wall positioned between the first lateral walls of the first member; a T-shaped member extending from an upper surface of the second top wall of the second member so as to reside between the first top wall and the longitudinal interior projections to slidably couple the second member relative to the first member; a second pair of lateral walls projecting from respectively opposed longitudinal edges of the second top wall and extending into a substantially spaced and parallel orientation relative to one another, the second pair of lateral walls each terminating in a lower longitudinal edge which is preferably shaped so as to define an enlarged lower edge having a transverse thickness which is substantially greater than a thickness of a major portion of the second pair of lateral walls;
a fixed detent assembly coupled to the first member and engagable to the second member for precluding the second member from separating from the first member;
wherein the fixed detent assembly comprises a detent tab projecting downwardly from an interior surface of the planar first top wall of the first member; a detent projection extending upwardly from the T-shaped member and operating to engage the detent tab of the first member so as to preclude the sliding of the second member outwardly thereof.

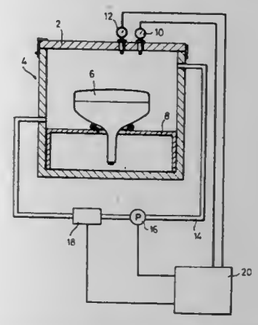
5,642,570
STRUCTURE OF HAIR DRIER
Tzung Sheng Lee, 1F, No. 20, Kang Shen Rd., Beei Tou District, Taipei, Taiwan
Filed Apr. 9, 1996, Ser. No. 629,545
Int. Cl.[6] A45D *20/12;20/08*
U.S. Cl. 34—98 **4 Claims**

1. An electric hair drier for expelling a stream of heated air and a mist of a liquid composition comprising:



(a) a barrel portion having formed therein a heat stream passageway for the expulsion of said heated air stream there through;
(b) a conduit portion coupled to said barrel portion defining an elongate air passageway external to said heat stream passageway for the passage of said liquid composition therethrough, said conduit portion having an outlet end;
(c) a liquid container detachably coupled to said conduit portion for storing therein said liquid composition, said liquid container having a dip tube for the passage of said liquid composition between said liquid container and said air passageway;
(d) automatic pump means coupled to said conduit portion adapted for pumping said liquid composition through said air passageway, said automatic pump means including a piston member and a motor for imparting reciprocating motion to said piston member; and,
(e) a nozzle assembly coupled to said conduit portion adjacent said outlet end thereof for the pressurized expulsion of said liquid composition therethrough, said nozzle assembly having defined therein an inner chamber adapted for communication with said air passageway of said conduit portion, said nozzle assembly including resiliently biased valve means for selectively blocking said communication between said inner chamber and said air passageway responsive to said automatic pump means.

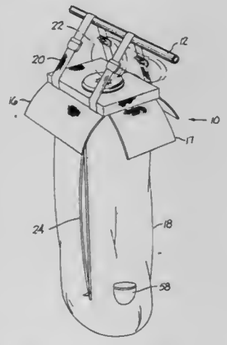
5,642,571
COATING LAYER DRYING SYSTEM FOR A CATHODE RAY TUBE
Dae-in Park, Kyungsangnam-do, Rep. of Korea, assignor to Samsung Display Devices Co., Ltd., Kyungki-do, Rep. of Korea
Filed Apr. 12, 1996, Ser. No. 631,027
Claims priority, application Rep. of Korea, Apr. 18, 1995, 95-7891
Int. Cl.[6] F26B *19/00*
U.S. Cl. 34—202 **11 Claims**



1. A coating layer drying system for a cathode ray tube (CRT) comprising:

a furnace;
a pedestal for receiving a CRT bulb, the pedestal being installed inside the furnace;
a hose having both ends connected to the furnace;
a heater connected to the hose for maintaining a predetermined temperature inside the furnace; and
a pump connected to the hose for maintaining a predetermined pressure inside the furnace.

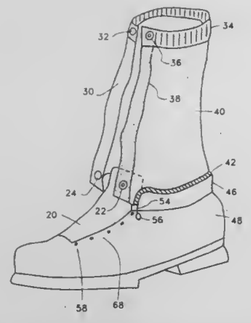
5,642,572
PORTABLE GARMENT DRYER WITH CARRYING CASE
Roberta J. Manning, Louisville, Ky., assignor to Synergist LLC, Louisville, Ky.
Filed Apr. 29, 1996, Ser. No. 638,772
Int. Cl.[6] F26B *9/00*
U.S. Cl. 34—621 **10 Claims**



3. A portable garment dryer comprising
(a) a base member having means defining an opening therethrough, said means adapted to receive in an air tight relationship and, together with said base member, support a barrel of a hair drying unit adjacent a first side of said base member;
(b) a substantially enclosed air permeable garment bag attached to said base member and substantially circumscribing said opening on a second side opposite said first side of said base member, said bag being made of a material sufficiently flexible to permit said bag to be folded in a substantially flat configuration against the second side of said base member when not in use, said bag having a selectively openable and closable slit for insertion and removal of a garment;
(c) at least one support element attached to said base member for securing said base member to a support structure in a position allowing said garment bag to hang free beneath said base member and permitting the barrel of the hair dryer unit to be placed in said opening from said first side thereof;
(d) an enclosing means attached to said base member for enclosing said garment bag when folded against said first side of said base member and securing said bag in said substantially flat configuration; and
(e) garment hanging means positioned within said garment bag for hanging garments therefrom.

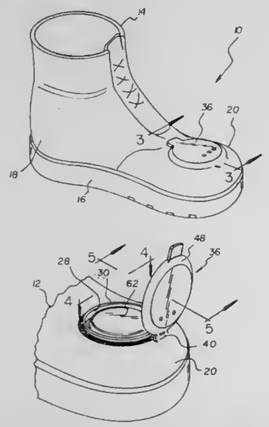
5,642,573
SHOE WITH INTEGRAL STORABLE GAITER
Jeffrey P. Brown, 4878 Monroe Ave., San Diego, Calif. 92115
Filed Oct. 2, 1995, Ser. No. 538,292
Int. Cl.[6] A41D *17/00;* **A43B** *5/00*
U.S. Cl. 36—2 R **18 Claims**

1. In a shoe of the type comprising a sole, an outer surface, an instep portion, a tongue, an ankle collar, and lacing flaps, and an integral gaiter being of flexible foldable material and having a lower end, an upper end, and front fastening flaps, which, when



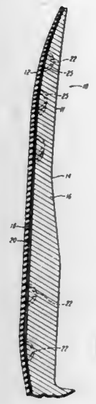
fastened, close the gaiter around a leg of a shoe wearer, wherein the improvement comprises said gaiter being attached to an interior surface of an outer side of a closeable, concealing, and protective storage pouch in said ankle collar for storing said gaiter when not in use, with said gaiter and said shoe forming a single, functional, article of footwear.

5,642,574
HEATED INSULATION BOOT
Larry C. Caddy, 2305 Vondera St., Munhall, Pa. 15120
Filed Jul. 1, 1996, Ser. No. 673,570
Int. Cl.[6] A43B *7/02*
U.S. Cl. 36—2.6 **7 Claims**



2. A heated insulation boot for maintaining warmth for a wearers feet comprising; in combination:
a boot portion having an open upper portion, a closed lower sole portion, a heel portion and an insulated toe portion, an upper portion of the insulated toe portion having an integral circular recess formed therein;
a cover portion having a generally circular configuration, the cover portion having a flexible member coupled to the upper portion of the insulated toe portion of the boot portion adjacent to the circular recess; and
a heating packet removably positioned within the circular recess of the insulated toe portion of the boot portion wherein the insulated toe portion comprising an interior gel lining, an intermediate insulating lining and an exterior lining, the circular recess formed therein extends through the exterior lining and the intermediate insulating lining thereof to abut the interior gel lining.

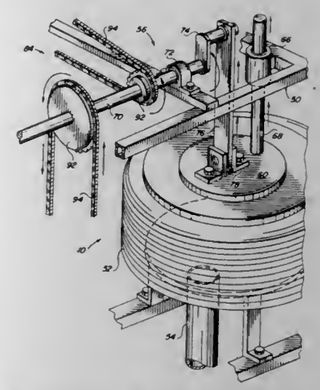
5,642,575
MIDSOLE CONSTRUCTION
Edward J. Norton, 92 Middleton Rd., Boxford, Mass. 01921, and Zenon O. Smotrycz, 51 Avalon Rd., Reading, Mass. 01867
Filed Aug. 25, 1995, Ser. No. 519,486
Int. Cl.[6] A43B *13/18*
U.S. Cl. 36—27 **5 Claims**



1. A sole structure for footwear comprising, in combination,
a midsole having an energy absorbing, compressible cellular foam cushion having an undersurface extending over a predetermined foot area, a plurality of mutually spaced discrete recesses formed in the cushion, each recess having a closed periphery in said undersurface spaced inwardly from the outer extremities of said area and having a continuous wall extending from and sloping inwardly of said periphery to a ceiling, said cushion having a thickness extending over said ceiling, and a sheet comprising a layer of resilient material which tends to return to its original shape after shock deformation, said sheet being bonded to said undersurface over said area and forming an integral dome extending into each recess, each dome extending continuously from said undersurface around the entire periphery of the recess and in bonded contact with the wall thereof, and
an outsole extending over said area and secured to said undersurface, the outsole having an aperture at and around the periphery of each recess, the outsole being formed and adapted to transmit shock forces into said cushion around the periphery of said recesses, whereby said forces deflect the domes with a spring-like action.

5,642,576
SUCTION DREDGE PUMP APPARATUS
Joe Chrisman, P.O. Box 97, Fort Towson, Okla. 74735
Filed Feb. 2, 1996, Ser. No. 595,638
Int. Cl.[6] F04B *19/00*
U.S. Cl. 37—317 **21 Claims**

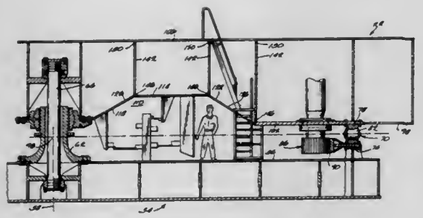
1. A suction dredge pump apparatus for pumping a fluid mixture of water, sand, gravel and dirt, said pump apparatus comprising:
(a) a manifold including
(i) a body defining a plurality of compartments separate from one another, each of said compartments having first and second opposite ends and a bottom extending between said first and second opposite ends and inclined downward from said first end to said second end of said each compartment,
(ii) a plurality of intake valves each disposed at said first end of a respective one of said compartments of said body to provide flow communication from a source of the fluid



mixture exterior of said body through said each intake valve into said respective one of said compartments of said body, and
(iii) a plurality of outlet valves each disposed at said second end of a respective one of said compartments of said body to provide flow communication from each of said compartments to a discharge area exterior of said body such that a flow of the fluid mixture entering said compartments of said body through said intake valves from the source exterior of said body will flow by gravity down said inclined bottom of said body and exit said compartments through said outlet valves to the discharge area; and
(b) pump means connected to each of said compartments of said manifold body for producing a vacuum condition and a positive pressurized condition at separate times in each of said compartments and for cycling between said vacuum condition and said positive pressurized condition so as to cause entry of the flow of the fluid mixture into each of said compartment via a corresponding one of said intake valves upon producing said vacuum condition therein and exit of the flow of fluid mixture from each of said compartments via a corresponding one of said outlet valves upon producing said positive pressurized condition therein, said pump means including
(i) a plurality of drums deformable between expanded and contracted conditions and having opposite ends which are sealably closed, each of said drums including a deformable vehicle tire carcass and a pair of plate members attached to and sealably closing opposite ends of said tire carcass to form said opposite ends of said drum,
(ii) a plurality of conduits each extending between and connected to tops of said compartments of said manifold body and one of said closed ends of said drums, and
(iii) actuating means connected to the other of said closed ends of said drums for producing deformation of said drums between said expanded and contracted conditions so as to cause vacuum suction flow of the fluid mixture into said compartments of said manifold body via said intake valves and pressurized flow of the fluid mixture from said compartments of said manifold body via said outlet valves.

5,642,577
DRAGLINE WITH HIGH HEADROOM BETWEEN UPPER AND LOWER STRUCTURES
Harvey J. Kallenberger, Wind Lake, Wis., assignor to Harnischfeger Corporation, St. Francis, Wis.
Filed Sep. 29, 1995, Ser. No. 536,701
Int. Cl.[6] E02F *3/58*
U.S. Cl. 37—397 **10 Claims**

1. A dragline comprising
a lower support structure having a generally horizontal upper surface, and



an upper structure having a generally horizontal lower surface facing said upper surface of said lower structure, said upper structure being supported above said lower structure for rotation relative to said lower structure about a generally vertical axis, and said lower surface of said upper structure having therein an upwardly extending recess surrounding said axis to provide access space for a person working on the dragline, said recess being defined at least in part by an upper wall above and generally parallel to said lower surface, and by a plurality of generally planar facets surrounding said axis, each of said facets extending transversely to said upper wall and to said lower surface,

a boom extending from said upper structure, said boom having thereon a sheave,

a bucket,

a hoist rope extending over said sheave to said bucket for causing vertical movement of said bucket, and

a drag rope connected to said bucket for causing horizontal movement of said bucket.

5,642,578

FLAT-IRON COMPRISING A THERMAL DETECTOR WHICH MEASURES A FABRIC TEMPERATURE

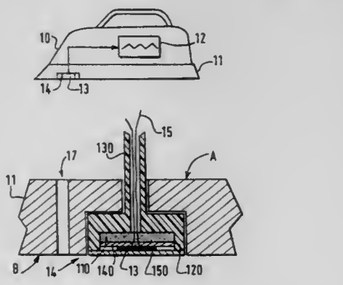
Jean-Pierre Hazan, Sucy, France; Adriaan Netten, Singapore, Singapore, and Jean-Louis Nagel, Limeil-Brevannes, France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 27, 1995, Ser. No. 579,652

Claims priority, application France, Dec. 29, 1994, 94 15871

Int. Cl.[6] D06F *75/26*

U.S. Cl. 38—77.7 **26 Claims**



1. A operation of the flat-iron comprising a soleplate (**11**) to be moved over a fabric, heating means (**12**) for heating the soleplate, a thermal detector (**13**) for measuring a temperature of the fabric during ironing and for controlling the flat-iron, fixing means (**14**) for connecting the detector to the soleplate while thermally insulating it from the soleplate, wherein the fixing means comprise a flexible cellular plate (**110**) of low effusivity, the cellular plate being effective to thermally insulate the detector from the soleplate and to press the detector flexibly against the fabric during ironing, the cellular plate being connected to the soleplate through a rigid thermally insulating support (**120**).

5,642,579

STEAM IRON HAVING A FABRIC TEMPERATURE SENSOR FOR CONTROLLING STEAM PRODUCTION

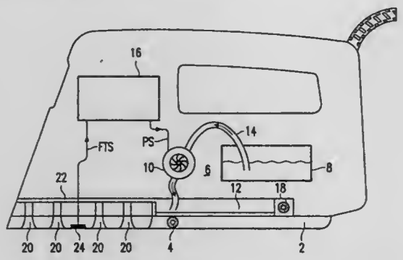
Adriaan Netten, and Hong W. C. Tse, both of Singapore, Singapore, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 23, 1996, Ser. No. 590,255

Claims priority, application European Pat. Off., Jan. 23, 1995, 95200147

Int. Cl.[6] D06F *75/26*

U.S. Cl. 38—77.7 **16 Claims**



1. A steam iron comprising a soleplate (**2**) provided with steam vents (**20**) for passing steam to a fabric to be ironed and a steam generator (**6**) comprising a water tank and a steam chamber (**12**) for supplying an adjustable amount of steam to the steam vents (**20**), wherein the steam iron further comprises a fabric temperature sensor (**24**) for detecting the temperature of the fabric to be ironed and control means (**16**) responsive to a signal (FTS) from the fabric temperature sensor (**24**) for controlling the amount of steam generated in the steam generator and passing to the steam vents (**20**).

5,642,580

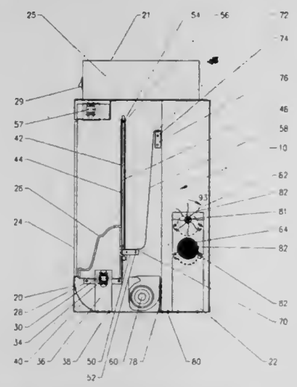
FLAME SIMULATING ASSEMBLEY

Kristoffer Hess, Cambridge; David Miller MacPherson, Paris, and Ignazio Gallo, Cambridge, all of Canada, assignors to Dimplex North America Limited, Cambridge, Canada

Filed May 17, 1996, Ser. No. 649,510

Int. Cl.[6] G09F *19/00*

U.S. Cl. 40—428 **37 Claims**



26. A flame simulating assembly comprising:

a light source;

a flame effect element formed of a single sheet of a substantially opaque material having means for transmitting light from said light source to produce a flame effect, said flame effect element being adapted to move in response to an airflow;

an airflow generator;

a screen having a partially reflecting surface and a diffusing surface, said flame effect element extending proximate to said diffusing surface wherein said transmitted light produces an image on the screen which resembles moving flames; and

a simulated fuel bed positioned adjacent to said partially reflecting surface wherein an image of the fuel bed is displayed on the screen and wherein the image of moving flames appears to emanate between the simulated fuel bed and its image in the screen.

5,642,581

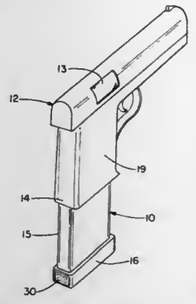
MAGAZINE FOR A FIREARM INCLUDING A SELF-CONTAINED AMMUNITION COUNTING AND DISPLAY SYSTEM

Michael A. Herold, 367 High Grove Blvd., Akron, Ohio 44312; Mark D. Herold, 3980 Englewood Dr., Stow, Ohio 44224, and George R. King, 352[r] Cameo Dr. #96, Oceanside, Calif. 92056

Filed Dec. 20, 1995, Ser. No. 580,080

Int. Cl.[6] F41A *9/62*

U.S. Cl. 42—1.02 **16 Claims**



1. An ammunition magazine for a firearm, said magazine comprising:

an upper portion for containing at least one round of ammunition, said upper portion of said magazine including an ammunition follower movably positioned therein for supporting said at least one round of ammunition within said upper portion of said magazine, said upper portion of said magazine also including a follower spring for biasing said follower toward an end of said upper portion of said magazine;

sensing means provided as a part of said ammunition magazine for sensing the position of said follower within said upper portion of said magazine; and,

a circuit, including a display element, said circuit provided as a part of said ammunition magazine and connected to said sensing means for determining and displaying to a firearm user information regarding the number of rounds of ammunition in said upper portion of said magazine based upon the position of said ammunition follower within said upper portion of said magazine, whereby

said ammunition magazine provides a self-contained ammunition counting and display system, independent from a firearm.

5,642,582

BASE PAD FOR HAND GUN MAGAZINE

Beven Grams, 2435 Norse Ave., Costa Mesa, Calif. 92627

Filed Apr. 3, 1996, Ser. No. 627,052

Int. Cl.[6] F41A *9/65*

U.S. Cl. 42—50 **19 Claims**

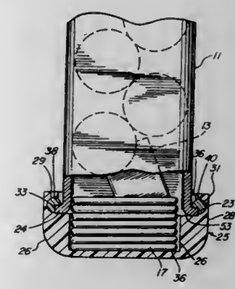
1. An improved base pad for attachment to the open bottom of a multiple round magazine tube, said magazine tube having a spring-loaded follower for feeding rounds to the top of the magazine, and a lip on two sides at its bottom, said base pad comprising:

a five-sided container having two opposite sides, two opposite ends, and a bottom, said container shaped to follow the contour and sized to fit over the bottom of said magazine tube;

a ledge inside said container, raised some distance from the bottom, said magazine tube resting on said ledge;

a pair of channels formed through one end of said container and along both sides above said ledge; and

pins located in said channels holding the sides of said magazine tube to said ledge by overlaying the lip, on both sides at the bottom, of said magazine tube.



5,642,583

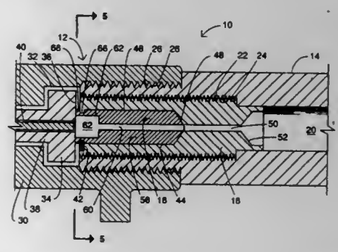
LOCK-ACTION MUZZLE LOADER

Henry C. Ball, 1315 Fairmont, Greensboro, N.C. 27403, and Millard C. Marion, 159 Wolfetrail Rd., Greensboro, N.C. 27406, assignors to Henry C. Ball, and Millard C. Marion, Greensboro, N.C.

Continuation of Ser. No. 317,210, Oct. 3, 1994, Pat. No. 5,511,334. This application Apr. 12, 1996, Ser. No. 630,693

Int. Cl.[6] F41C *9/08*

U.S. Cl. 42—51 **3 Claims**



1. An ejectable firing module for use in a muzzle-loading firearm, said firearm including a breech loading receiver including a locking mechanism movable between an open position and a locked position; a barrel having a breech end engaging said receiver and a bore extending from said breech end for receiving a powder charge; and a firing module receiving plug within the breech of said barrel, said firing module comprising:

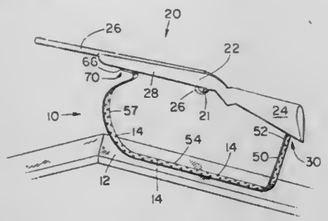
(a) a generally cylindrical body having a back end and a front end, wherein the front end of said body forms a tapered complementary seal with said firing module receiving plug;

(b) an igniter chamber at the back end of said body;

(c) an axially aligned flame bore extending from said igniter chamber to the front end of said body; and

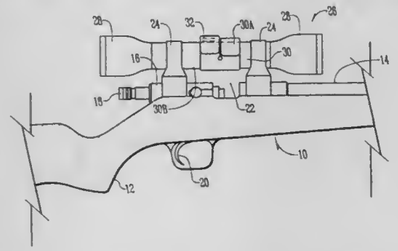
(d) an annular shoulder about said body and spaced from said back end to define a radial flange at the back end of said module to permit said firing module to be ejected.

5,642,584
GUN SLING
Richard G. Baggenbach, Box 11, Bloomfield, Iowa 52537
Filed May 28, 1996, Ser. No. 654,056
Int. Cl.[6] F41C *23/02*
U.S. Cl. 42—85 16 Claims



1. A sling for use with a firearm having a hand grip section and butt section, the sling comprising:
a nonlinear rigid body having a front end, a back end, and a firearm engagement section located along the body between the front and back ends;
a releasable connector at the back end of the rigid body;
a pivotable connector at the front end of the rigid body;
wherein the rigid body is shaped to form a loop for receiving a user's shoulder once the front end is affixed to the hand grip section with the pivotable connector and the back end is affixed to the butt section with the releasable connector, and wherein the rigid body is shaped such that as the back end of the rigid body is released from the butt section and the rigid body is pivoted on the pivotable connector, the firearm engagement section can be brought into contact with the firearm to allow the back end of the rigid body to be planted and thus support the firearm during firing.

5,642,585
SCOPE PROTECTOR FOR MUZZLELOADING RIFLES
Lindell Dale Watley, Centerville, Iowa, assignor to Modern Muzzleloading, Inc., Centerville, Iowa
Filed Oct. 27, 1995, Ser. No. 549,085
Int. Cl.[6] F41A *35/04;* F41G *11/00;* B65D *65/06*
U.S. Cl. 42—96 18 Claims



1. A scope protector for muzzleloading rifles which have an elongated scope with a center portion located in spaced relation over an openable breech on the rifle, comprising:
an elongated strip of flexible sheet material having a center portion, inner and outer side surfaces, and opposite ends,
a first fastening element on the outer surface at one end of said strip,
a second fastening element on the inner surface at the other end of said strip,
the length of said strip being slightly greater than the circumference of the center portion of said scope so that said fastening elements can be superimposed on each other in mating relationship to hold said strip on said scope when said strip is wrapped around the center portion of said scope whereupon the entire length of said strip extends completely around the shape of the center portion of said scope in spaced relation to said openable breech so that said scope will be protected from residue moving upwardly from said breech when said rifle is fired.

5,642,586
METHOD OF IMPROVING GROWTH CHARACTERISTICS OF PLANTS OF THE FAMILY ORCHIDACEAE
Jerome A. Rodder, 775 Sunshine Dr., Los Altos, Calif. 94024
Continuation-in-part of Ser. No. 188,046, Jan. 26, 1994, abandoned. This application Apr. 3, 1995, Ser. No. 417,151
Int. Cl.[6] A01G *7/00;* C05F *11/10;* C05G *3/00*
U.S. Cl. 47—58 3 Claims

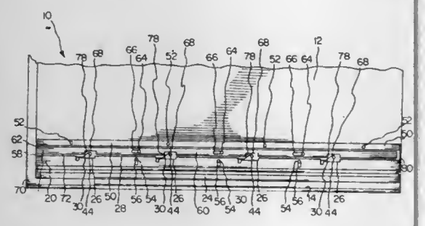
1. A method of improving the flowering, shoot growth and glossiness of the foliage of an orchid plant which comprises applying to the roots of said plant an aqueous solution containing methanol together with a fertilizer and repeating said application at intervals during the growth cycle of the plant.

5,642,587
COMPRESSED DORMANCY PROCESS FOR INCREASED PLANT GROWTH
Harry W. Janes, Sayreville; Gerald E. Gore, North Branch; Wayne K. Wittman, Cranbury, and Harry T. Roman, East Orange, all of N.J., assignors to GRoW International Corp., North Branch, N.J.
Continuation-in-part of Ser. No. 304,587, Sep. 12, 1994, abandoned, which is a continuation-in-part of Ser. No. 61,992, May 17, 1993, abandoned. This application Aug. 22, 1995, Ser. No. 517,704
Int. Cl.[6] A01G *7/00;23/00;* A01H *7/00;3/02;* C12P *17/02*
U.S. Cl. 47—58 19 Claims

1. A method of growing, harvesting, and processing the plant *Taxus* X *Media* 'Hicksii' and related Taxus species, comprising the steps of:
a) planting plant cuttings of said plant in a growing media in a greenhouse to propagate said plants;
b) harvesting a part of each of said plants after the formation of the primary and secondary root systems have taken place;
c) processing said harvested plant parts to extract Taxol or Taxotere from said plant parts;
d) placing the remaining unharvested plants in a cool storage area for 20 to 40 days to initiate the growth cycle, wherein the temperature is maintained at 33 to 40 degrees F. and the relative humidity is maintained at 75 to 95%, and lighting is maintained for less than 8 hours per day;
e) removing said unharvested plants from said cool storage area and returning said plants to said greenhouse for 20 to 40 days of growth;
f) harvesting a part of each of said unharvested plants;
g) processing said harvested plant parts of step (f) to extract Taxol or Taxotere from said plant parts;
h) again placing said unharvested plants in a cool storage area for 20 to 40 days to again initiate a new growth cycle, wherein the temperature, relative humidity, and lighting are maintained as in step d) above;
i) removing said unharvested plants from said cool storage area and returning said plants to said greenhouse for 20 to 40 days of growth;
j) harvesting and processing a part of each of said plants as recited in steps f) and g) above;
k) repeating steps h), i), and j) above at least one more time;

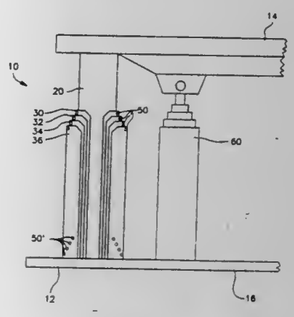
l) harvesting all of said plants;
m) processing a predetermined number of said harvested plants to extract Taxol or Taxotere from the entire plant; and
n) transplanting the remaining harvested plants outside of said greenhouse to grow additional stock to provide a source of new plant cuttings to transplant into said greenhouse.

5,642,588
CAM SPRING AUTOMATIC DOOR SEALING APPARATUS
David A. Sowers, Coral Springs, Fla., assignor to Perfect Seal L.C., Coral Springs, Fla.
Filed Apr. 18, 1996, Ser. No. 634,655
Int. Cl.[6] E06B *7/20*
U.S. Cl. 49—307 15 Claims



1. A sealing apparatus for use with a door which swings over a threshold between an open position and a closed position and has a door lower end spaced above said threshold and defining a gap between the door lower end and the threshold when the door is in the closed position, and has a door face and a door frame, for closing the gap between the door lower end and the threshold, comprising:
a mechanism mounting member;
a gate member for closing said gap;
a leaf spring having a leaf spring first end and a leaf spring second end, said leaf spring first end being secured to said gate member with securing means, and said leaf spring second end being secured to said mounting member with anchoring means, wherein a segment of said leaf spring angles upwardly and laterally to form a spring cam surface;
means for guiding said gate member to move up and down relative to said door;
a cam engaging member positioned above and substantially parallel with said gate member, said cam engaging member having a protruding end extending laterally from said door toward said door frame to abut said door frame as said door is closed, said cam engaging member having a cam engaging element positioned adjacent to said spring cam surface;
means for guiding said cam engaging member to move laterally relative to said door;
such that closing said door causes said door frame to depress said cam engaging member protruding end, thereby sliding said cam engaging member horizontally in one lateral direction and causing said cam engaging element to abut and deflect said spring cam surface to pivot said leaf spring downwardly and to thereby lower the attached said gate member to make sealing contact with said threshold,
and such that opening said door permits the resilient force of said leaf spring on said cam engaging element to drive said cam engaging member in the other lateral direction such that said protruding end once again protrudes from said door, and such that said leaf spring resiliently pivots upwardly into its initial position, lifting said gate member out of sealing contact with said threshold.

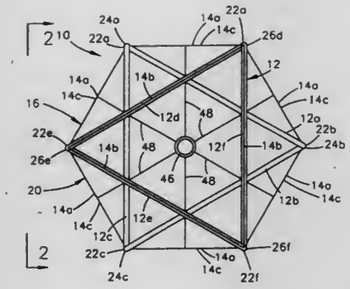
5,642,589
COLUMN STRUCTURE FOR BEARING A PORTABLE STAGE ROOF
Yvan Miron, Montreal; Daniel Toutant, St-Martyrs-Canadiens, and Marius Choulnard, Montreal, all of Canada, assignors to Canada Inc., Montreal, Canada
Continuation of Ser. No. 264,782, Jun. 23, 1994, abandoned. This application Mar. 12, 1996, Ser. No. 614,083
Int. Cl.[6] E04H *3/26;* B66C *23/06*
U.S. Cl. 52—7 3 Claims



1. A column structure for bearing a portable stage roof movable vertically above a chassis, the column structure comprising:
two opposite pairs of telescopic columns located between the roof and the chassis, each column comprising:
a substantially vertical central beam connected to the roof;
a plurality of C-shaped beams operatively fitted into each other and concentric with the central beam, each C-shaped beam having a slotted side aligned with the slotted side of the other C-shaped beams, the slotted sides of the column facing the slotted sides of the other column of the same pair; and
a plurality of pairs of upper rollers, each pair of upper rollers being operatively connected to an upper end of a corresponding C-shaped beam, each upper roller of a pair being connected to opposite sides of the corresponding C-shaped beam and engaged with an adjacent interior beam for rolling thereon upon raising or lowering of the roof; and
transverse members, each having one end connected to a respective C-shaped beam of one respective column and another end connected to the corresponding C-shaped beam of the other column of a same pair.

5,642,590
DEPLOYABLE TENDON-CONTROLLED STRUCTURE
Robert E. Skelton, West Lafayette, Ind., assignor to Dynamic Systems Research, Inc., LaJolla, Calif.
Filed Oct. 31, 1995, Ser. No. 551,010
Int. Cl.[6] E04B *7/08*
U.S. Cl. 52—81.1 20 Claims

1. A deployable structure having a first configuration and a deployed configuration in which the deployable structure defines opposing first and second polygon-shaped ends and a polygon-shaped midsection, the first and second polygon-shaped ends each having "X" number of corners, the midsection having "2X" number of corners so as to establish at the midsection "X" number of odd-numbered corners alternating with "X" number of even-numbered corners, the odd-numbered corners of the midsection corresponding with the corners of the first polygon-shaped end, the even-numbered corners of the midsection corresponding with the corners of the second polygon-shaped end, the deployable structure comprising:



a first plurality of rigid compression members forming a first tier of the deployable structure, each of the first plurality of rigid compression members having a first end and an oppositely-disposed second end, the first ends of the first plurality of rigid compression members being located at corners of the first polygon-shaped end corresponding to different odd-numbered corners of the midsection, each of the second ends of the first plurality of rigid compression members being located at one of the odd-numbered corners of the midsection corresponding to a different corner of the first polygon-shaped end than that of its corresponding first end;

a second plurality of rigid compression members forming a second tier of the deployable structure, each of the second plurality of rigid compression members having a first end and an oppositely-disposed second end, the first ends of the second plurality of rigid compression members being located at different even-numbered corners of the midsection, each of the second ends of the second plurality of rigid compression members being located at one of the corners of the second polygon-shaped end corresponding to a different even-numbered corner of the midsection than that of its corresponding first end, such that each of the first ends of the second plurality of rigid compression members is disposed between two second ends of the first plurality of rigid compression members;

a first plurality of elastic tension members, each of the first plurality of tension members interconnecting one of the second ends of the first plurality of rigid compression members with an adjacent one of the first ends of the second plurality of rigid compression members;

a second plurality of elastic tension members, each of the second plurality of tension members interconnecting one of the second ends of the second plurality of rigid compression members with an adjacent one of the second ends of the second plurality of rigid compression members;

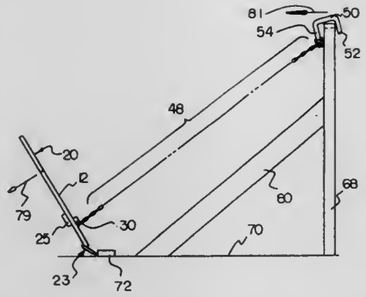
means for articulating the deployable structure between the first and deployed configurations, the articulating means being in communication with at least one of the first and second plurality of rigid compression members and first and second plurality of elastic tension members;

means for sensing the deployed structure at its first and deployed configurations and at intermediate configurations therebetween; and

feedback means for communicating an output of the sensing means to the articulating means.

5,642,591
MULTI-PURPOSE HAND TOOL APPARATUS
Rod Eddie, 14 Bridge St., Cornwall, N.Y. 12518
Filed Mar. 18, 1996, Ser. No. 617,963
Int. Cl.[6] E04G *21/26*
U.S. Cl. 52—127.2 **13 Claims**

1. A multi-purpose hand tool apparatus, comprising:



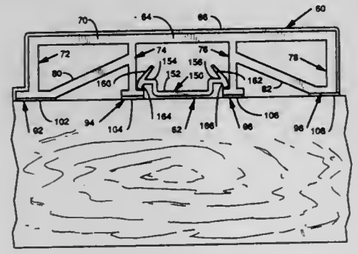
an elongated shank which includes a first shank end portion, a second shank end portion, and an intermediate shank portion, wherein said elongated shank has a first side and a second side,

a first U-shaped tool attached to said first shank end portion,

a second U-shaped tool attached to said second shank end portion, and

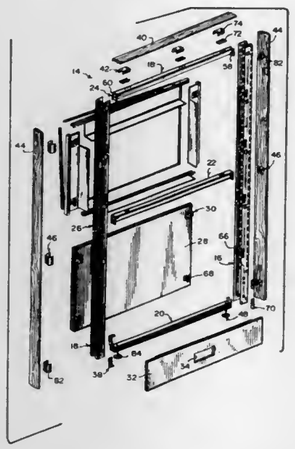
wherein said second U-shaped tool member is oriented at an oblique orientation angle with respect to said elongated shank.

5,642,592
PLASTIC EXTRUSIONS FOR USE IN FLOOR ASSEMBLIES
Thomas Andres, North Versailles, Pa., assignor to Thermal Industries, Inc., Pittsburgh, Pa.
Division of Ser. No. 397,002, Mar. 1, 1995. This application Feb. 12, 1996, Ser. No. 598,583
Int. Cl.[6] E04F *15/22*
U.S. Cl. 52—177 **13 Claims**



1. A plastic extrusion for use in a floor assembly that is secured to a rigid underlying support by means of a snap connector, said extrusion having a pair of resilient leg members which are adapted to bend outwardly when said extrusion is being pressed onto said snap connector and then snap inwardly to interlock with said snap connector in order to secure said extrusion to said snap connector and said rigid underlying support surface, said extrusion being made of a first extruded material and including an exposed surface and a base section underlying said exposed surface, said base section having at least a portion thereof including a second extruded material which is interposed between said plastic extrusion and said rigid underlying support when said plastic extrusion is secured to said rigid underlying support, said second extruded material resisting undesired squeaking sounds from occurring when weight bearing loads move on said floor assembly and said first extruded material has a hardness greater than the hardenss of said second extruded material.

5,642,593
KNOCKDOWN AND REASSEMBLE OFFICE PARTITION
Steven J. Shieh, 60 Commerce Pl., Hicksville, N.Y. 11801
Filed Jan. 17, 1996, Ser. No. 587,958
Int. Cl.[6] E04B *2/82*
U.S. Cl. 52—239 **1 Claim**



1. A knockdown and reassemble office partition which comprises:

a) a pair of side frame members;

b) a top frame member;

c) a bottom frame member;

d) an intermediate frame member;

e) means for securing in a removable manner each of said side frame members vertically to one end of said top frame member, said bottom frame member and said intermediate frame member which are positioned horizontally, so as to form a rigid structural framework comprising a plurality of brackets in which each said bracket having two holes therethrough is attached to opposite ends of said top frame member, said bottom frame member and said intermediate frame member, said pair of side frame members having a plurality of apertures in end faces therethrough which align with said holes in said brackets. and a plurality of bolts to extend through said apertures in said end faces of said side frame members and into said holes in said brackets;

f) a plurality of panels and means for mounting each of said panels in a removable manner to said side frame members to conceal said rigid structural framework, said pair of side frame members having a plurality of Openings in outer faces therethrough and each of said panels having panel clips, a panel clip being located at each corner of said panel so that said panel clips snap into respective openings in said pair of side frame members;

g) a raceway cover and an aperture therethrough for an electrical outlet and means for attaching said raceway cover in a removable manner to one outer face on both of said side frame members below said lowermost panel to conceal the wiring of the electrical outlet with a raceway location in said rigid structural framework, said raceway cover attaching means including raceway clips in which two of said raceway clips are affixed to each bottom end of said one outer face on said frame members so that said raceway cover snaps into place on said raceway clips;

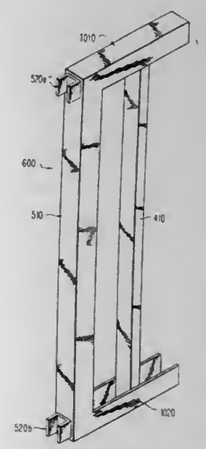
h) a top cap and means for affixing in a removable manner said top cap to said top frame member to conceal said top frame member comprising said top frame member having a plurality of top openings therethrough and a plurality of top cap clips attached to the underside of said top cap in which said top cap clips snap into said respective top openings in said top frame member;

i) a pair of side covers and means for fastening in a removable manner each of said side covers to one said side frame member to conceal said side frame members comprising each of said side frame members having a plurality of apertures in said end face and a plurality of side cover clips attached to an inner surface of each said side cover in which said side cover clips can snap into the respective apertures in said end faces of said side frame members;

j) means for leveling said bottom frame member on a floor so that said rigid structural framework can stand in an upright position on the floor comprising a plurality of adjustable feet threaded into a bottom surface of said bottom frame member to adjust the height thereof; and

k) means for joining abutting side frame members of adjacent office partitions together in a removable manner so that at least two said office partitions form a work area in an office comprising a plate bent to form flat surfaces arranged to connect to a plurality of said abutting side frame members.

5,642,594
PREFABRICATED BUILDING SYSTEM
Alfredo Sucre F, Calle Altagracia, Res. Las Tabaqueras, Torre 2, Apt. 1-A, Sector Sorocaima, La Trinidad, Caracas, Venezuela
Continuation-in-part of Ser. No. 132,095, Oct. 5, 1993, Pat. No. 5,513,473. This application Oct. 5, 1994, Ser. No. 320,422
The portion of the term of this patent subsequent to Oct. 5, 2013, has been disclaimed.
Int. Cl.[6] E04C *2/08*
U.S. Cl. 52—270 **22 Claims**



1. A panel for a prefabricated construction system, said panel comprising:

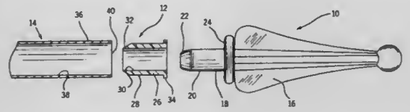
an upper stud having a first end and a second end;

a lower stud having a first end juxtaposed with said first end of said upper stud and a second end juxtaposed with said second end of said upper stud; and

a first vertical stud joining said first juxtaposed ends of said upper and lower studs; wherein

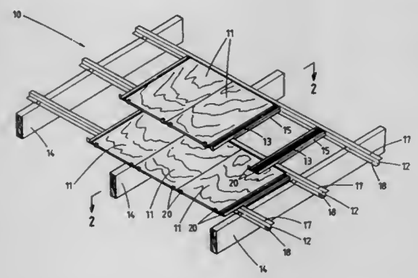
said first vertical stud is dimensioned and shaped to be directly interconnected with another stud and has two parallel sides having a pair of juxtaposed free ends and two converging sides joining said juxtaposed free ends and forming a vertex directed away from said parallel sides.

5,642,595
FINIAL ATTACHMENT ARRANGEMENT FOR A WINDOW COVERING SUPPORT ROD
James L. Daniels, and Christopher T. Chiles, both of Freeport, Ill., assignors to Newell Operating Company, Freeport, Ill.
Filed Feb. 20, 1996, Ser. No. 603,446
Int. Cl.[6] E04C *3/00*
U.S. Cl. 52—301 **15 Claims**



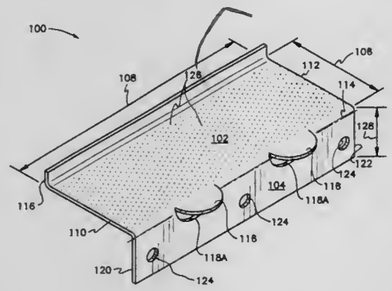
1. A window covering support comprising in combination:
a hollow support tube terminating in open ends;
a pair of decorative finials, one of the decorative finials being supported within each end of the support tube, each finial including a decorative portion and a generally cylindrical support post extending from the decorative portion into an end of the support tube; and
a pair of support sleeves, one of the support sleeves being lodged within each end of the support tube intermediate the support tube and the support post of a respective finial, the support sleeves being compressed by the support tube and the finial support posts to maintain a tight fit therebetween and thereby to support and retain the finial on the support tube.

5,642,596
SHINGLE ROOFING ASSEMBLY
Richard Waddington, 22 Eden Street, Adelaide, South Australia, Australia
PCT No. PCT/AU94/00203, § 371 Date Oct. 20, 1995, § 102(e) Date Oct. 20, 1995, PCT Pub. No. WO94/24384, PCT Pub. Date Oct. 27, 1994
PCT Filed Apr. 19, 1994, Ser. No. 535,156
Claims priority, application Australia, Apr. 22, 1993, PL8397
Int. Cl.[6] E04D *1/34*
U.S. Cl. 52—546 **14 Claims**



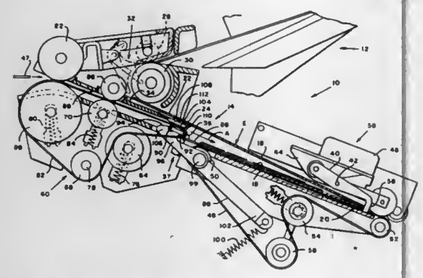
1. An improved fixing system for securing roof tiles/shingles to a roof structure comprising:
a plurality of elongate tile/shingle support battens arranged to be secured to the roof structure positioned on an incline in spaced apart parallel relationship for supporting rows of tiles/shingles transversely of the battens, with each said tile/shingle having an upper end portion supported by one support batten and a lower end portion supported by an adjacent lower batten, said lower end portion overlapping the upper end portion of an adjacent lower tile;
a plurality of spaced apart parallel joining strips each extending between a pair of adjacent said battens and supported thereby, each said strip having a length such that a lower end portion projects beyond the lower one of said pair of adjacent battens, wherein opposite edge portions of each said tile/shingle are supported by a pair of adjacent said strips with an upper surface of each said strip being in contact with and supporting adjacent edge portions of adjacent tiles/shingles positioned in edge-to-edge relationship; and
locking means associated with each said strip for securing the lower end portion of a respective said tile/shingle against upward lift; and
securing means for securing the strips to the battens;
wherein said locking means comprises a pair of transversely spaced apart upstanding tabs or tongues at the bottom end of the strip integrally formed therewith, said tabs or tongues being arranged to be crimped over the lower edge portions of adjacent side-by-side shingles so as to restrain same against upward lifting movement.

5,642,597
DRYWALL MOUNTING BRACKET
Gary J. Hendrickson, 10 Meetinghouse Rd., Carlisle, Pa. 17013-1728
Filed Jun. 21, 1996, Ser. No. 667,608
Int. Cl.[6] E04B *1/38*
U.S. Cl. 52—715 **5 Claims**



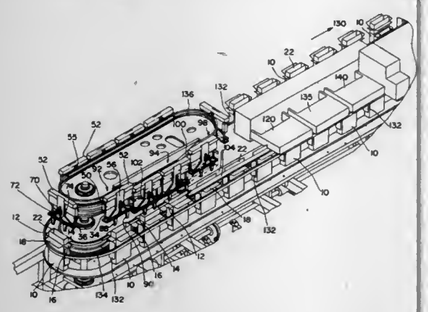
1. A paneling attachment bracket for supporting paneling on a frame, comprising:
a flat base panel for engaging paneling and for receiving fasteners fastening the paneling to said bracket, said base panel having
a depth dimension,
a width dimension,
first and second lateral edges generally aligned with said depth dimension,
a reinforcing flange disposed parallel to said width dimension and projecting upwardly from said base panel, and
a joint disposed parallel to said width dimension and located on a lateral side opposite that of said flange;
a flat extension disposed in coplanar relation with respect to said flat base panel, said extension connected to and extending from said bracket at said joint of said flat base panel; and
a flat fastening panel
joined to said base panel at said joint,
disposed perpendicularly to said extension and to said base panel and depending from said base panel,
having a third lateral edge occupying a plane in common with said first lateral edge of said base panel and a fourth lateral edge occupying a plane in common with said second lateral edge of said base panel, and
having a plurality of apertures for receiving fasteners.

5,642,598
COLLATION FEEDING MECHANISM FOR ENVELOPE INSERTING MACHINE
Joseph A. Cannaverde, Seymour, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.
Filed Dec. 26, 1995, Ser. No. 577,674
Int. Cl.[6] B65B *43/26;39/00*
U.S. Cl. 53—284.3 **10 Claims**



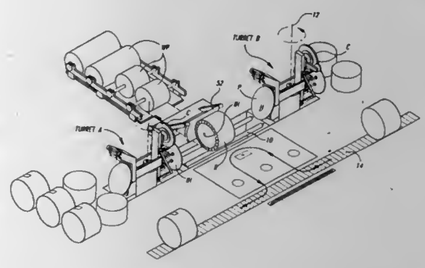
1. An envelope inserting machine for inserting collations of varying thickness into successive envelopes fed seriatim to a predetermined inserting position and held thereat with the throat of the envelopes open, each envelope having a front wall, a back wall and a flap secured to the upper edge of the front wall along a crease line, said inserting machine comprising:
A. means for positioning successive envelopes at said predetermined inserting position with said crease line disposed at a predetermined location,
B. means at said inserting position for opening the throat of each successive envelope fed to said inserting position, and
C. rotary feeding means for feeding successive collations of varying thickness along a feed path to said inserting position and for inserting said collations into said envelopes while maintaining a grip on said collations until said collations are fully inserted into said envelopes with the trailing edge of said collations disposed at or beyond said crease line of said envelopes,
whereby said collations will be fully inserted into said envelopes regardless of whether said collations consist of one or a plurality of sheets.

5,642,599
AUTOMATIC PACKAGING MACHINE FOR BOXES WITH PAPER END LINERS
Stevan Tisma, Elk Grove Village, Ill., assignor to Tisma Machinery Corporation, Elk Grove Village, Ill.
Continuation of Ser. No. 337,771, Nov. 14, 1994. This application Mar. 26, 1996, Ser. No. 622,255
Int. Cl.[6] B65B *7/00*
U.S. Cl. 53—373.6 **11 Claims**



1. An automatic packaging system comprising a first continuously non-stop moving conveyor, a box having end flaps, said box being carried by said first continuously non-stop moving conveyor, a narrow strip secured to and in at least one end of said box, said narrow strip having two spaced parallel edges, one of said edges being sealed to and around an entire inside perimeter of said box and near said at least one end of said box, the other of said two edges being a projecting edge of said narrow strip extending out of said box approximately as far as outer edges of said end flaps when they are extended in line with sides of said box thereby forming a somewhat "bag-like" opening in said box, a second continuously non-stop moving conveyor carrying a pair of spreading fingers moving in synchronism with boxes as they are being carried while said first conveyor is continuously moving, means for moving said spreading fingers toward and away from said boxes whereby said spreading fingers may be inserted into or removed from said somewhat "bag-like" opening formed by said narrow strip sealed to the inside perimeter of said box, means for moving said spreading fingers together for insertion into said somewhat "bag-like" opening and for moving them apart for closing said projecting edges of said narrow strip when said spreading fingers are inserted into said boxes, said closed projecting edge being held in an upstanding position by said spreading fingers, and means for sealing said projecting edges in a single step while said fingers are holding said spread and closed edge in said position in order to close said somewhat "bag-like" opening whereby said narrow strip forms a sealed somewhat bag-like cuff for said box without requiring a full bag that fills the entire box.

5,642,600
METHOD AND APPARATUS FOR WRAPPING, CRIMPING AND HEADING PAPER ROLLS AT A SINGLE STATION
Steven C. Hooper, Hoquiam, and Jon E. Skjonsby, Aberdeen, both of Wash., assignors to Lamb-Grays Harbor Company, Hoquiam, Wash.
Division of Ser. No. 512,818, Aug. 9, 1995, Pat. No. 5,533,321. This application Apr. 5, 1996, Ser. No. 630,926
Int. Cl.[6] B65B *61/00*
U.S. Cl. 53—415 **21 Claims**



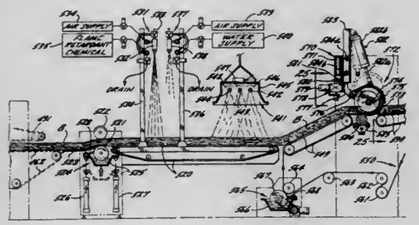
1. A method of attaching a head to an end of a paper roll which is to be wrapped with a protection wrapper, the method comprising the steps of:
attaching a head to a suction cup, the suction cup being adapted to hold the head in a desired position in which the head engages the end of the paper roll at a desired location;
engaging the head with the end of the paper roll at the desired location; and
pressurizing the suction cup with a positive air pressure between the suction cup and the head, the positive pressure providing an air bearing that detaches the head from the suction cup and holds the head against the end of the roll to prevent relative movement between the head and the roll.

5,642,601

METHOD OF FORMING THERMAL INSULATION

James Henry Thompson, Jr., and Michael Kinard Maffett, both of Greenwood, S.C., assignors to Greenwood Mills, Inc., Greenwood, S.C.

Filed Nov. 28, 1995, Ser. No. 563,706
Int. Cl.[6] B65B *63/02;63/04;63/08*
U.S. Cl. 53—431 70 Claims



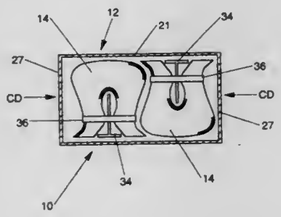
1. A method of forming thermal insulation comprising:
(a) forming cotton fibers into a relatively loose mass,
(b) impregnating the cotton fibers with a liquid fire retardant,
(c) drying the impregnated cotton fibers,
(d) blending the cotton fibers with springy fibers having greater stiffness and resilience than the cotton fibers to provide increased bulk or loft,
(e) blending the cotton fibers with bonding thermoplastic fibers having a predetermined melting temperature,
(f) forming the blended fibers into a composite web having a predetermined thickness to provide a desired insulation value and having a low density,
(g) heating the composite web to a temperature to soften the bonding fibers and to cause the same to bond the cotton and springy fibers in to a self-sustaining batt of insulation material, and
(h) severing the bonded composite web into predetermined lengths to form individual batts of insulation material.

5,642,602

DISPENSING PACKAGE FOR DISCRETE STAGE COMPRESSED COTTON PADS, COMPRESSED COTTON PADS THEREFOR, AND METHOD OF DISPENSING SUCH COTTON PADS

Mark Douglas Young, West Chester; John Paul Erspamer, Cincinnati; Mark Edwin Forry, Hamilton, and Charles John Berg, Jr., Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 458,958, Jun. 2, 1995, Pat. No. 5,507,130. This application Mar. 8, 1996, Ser. No. 611,339
Int. Cl.[6] B65B *1/24*
U.S. Cl. 53—438 6 Claims



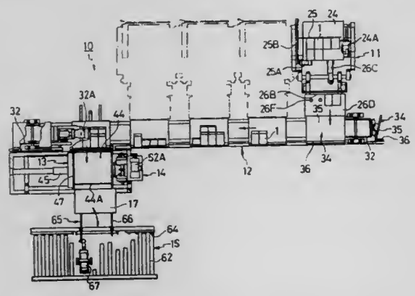
1. A method of packaging cotton pads for later dispensing said method comprising the steps of:
providing a plurality of cotton pads in a stack, said stack having a free height;
compressing said stack of cotton pads in a first stage of compression until a first stage compression height is attained, said first stage compression height being less than said free height;
restraining said cotton pads with a first stage restraint, so that said first stage of compression is maintained;
compressing said stack of cotton pads in a second stage of compression until a second stage compression height is attained, said second stage compression height being less than said first stage compression height;
restraining said cotton pads with a second stage restraint, so that said second stage of compression is maintained;
each of said first stage of compression and second stage of compression being independently releasable when said first stage restraint and second stage restraint are released respectively, each of said first stage restraint and second stage restraint also being independently releasable;
releasing said second stage restraint, whereby said cotton pads rebound to a height greater than said second stage compression height;
releasing said first stage restraint; and
installing said plurality of cotton pads into a dispensing package.

5,642,603

METHOD AND APPARATUS FOR ACCOMMODATING GOODS IN CONTAINER

Nobuhiro Tanaka, Miyashiro-machi, Japan, assignor to Kao Corporation, Tokyo, Japan

Division of Ser. No. 266,515, Jun. 27, 1994, Pat. No. 5,515,664. This application Feb. 9, 1996, Ser. No. 599,155
Claims priority, application Japan, Jun. 30, 1993, 5-183171
Int. Cl.[6] B65B *35/30*
U.S. Cl. 53—445 14 Claims



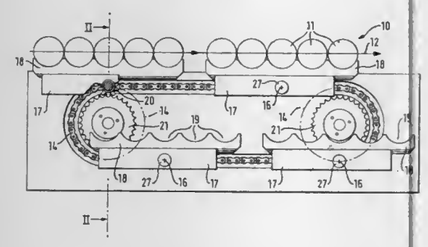
1. A goods accommodation method, comprising the steps of:
successively moving and positioning a plurality of goods receptacles along a conveying line at goods delivery portions of goods delivery units;
successively receiving and accommodating a required type of box-shaped goods delivered from the goods delivery portion of an ordered one of the goods delivery units in requested quantities on each of the goods receptacles which have a goods reception surface inclined downward from a goods reception side towards an opposite side having a stopper wall for stopping received goods; and
leaning the required type of goods against the stopper wall, thereby causing the required kind of goods received on the goods receptacle to gather on the goods reception surface at the side of the stopper wall on the inclined goods reception surface and holding the goods in a delivery state.

5,642,604

SPACING CONVEYOR MECHANISM

Rolf Müller, Mehring, Germany, assignor to Riverwood International Corporation, Atlanta, Ga.

Filed Oct. 20, 1995, Ser. No. 545,894
Claims priority, application United Kingdom, Oct. 20, 1994, 9421196
Int. Cl.[6] B65B *35/30*
U.S. Cl. 53—448 9 Claims



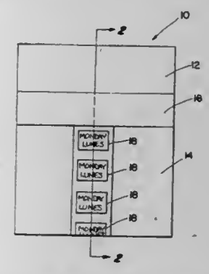
9. A method of forming a series of articles moving in an article feed direction along an article feed path extending through a packaging machine into groups of articles, said method comprising the steps of:
positioning a first spaced pair of drive sprockets with respect to the article feed path;
encircling said drive sprockets with an endless drive chain moving along a generally circuitous path with respect to the feed path, positioning a first elongated portion of said drive chain parallel and adjacent the article feed path, and moving said first portion of the drive chain in the article feed direction;
carrying a spaced series of article conveyors on said drive chain, each said article conveyor including a carriage pivotally fastened to said drive chain, and an article engaging member constructed and arranged to engage a plurality of the articles fastened to said carriage;
positioning said article conveyors on said drive chain in a substantially parallel orientation with respect to one another and the article feed path;
positioning a second pair of spaced drive sprockets concentrically with respect to one each of the sprockets of said first pair of sprockets, said second drive sprockets being spaced from each respective one of the sprockets of said first pair of sprockets;
affixing a toothed cog to each one of said carriages, each said cog being extended away from each respective one of said carriages, and engaging said second drive sprockets with said cog and sequentially rotating each said carriage about said cog at a predetermined speed relative to the speed of said drive chain when there is a change in direction of the drive chain along the circuitous path;
maintaining each said article conveyor in said substantially parallel orientation with respect to the others of said article conveyors and to the article feed path throughout the movement of said article conveyors along the circuitous path of the drive chain in response thereto; and
sequentially moving each said article conveyor along said first portion of the drive chain, engaging a plurality of the articles moving along the article feed path with said article engaging members, and forming the articles into groups of articles of a predetermined group size.

5,642,605

FOOD PORTION INVENTORY DEVICE WITH IMPRINTED PREDETERMINED DATA INDICIA

Mark Tenner, 370 Fowling St., Playa del Rey, Calif. 90293, and D'Shawn Kerrins, 1461 Regatta Rd., Laguna Beach, Calif. 92651

Continuation of Ser. No. 435,000, May 4, 1995, abandoned, which is a continuation of Ser. No. 48,114, Apr. 14, 1993, abandoned. This application Mar. 25, 1996, Ser. No. 622,612
Int. Cl.[6] B65B *61/02*
U.S. Cl. 53—469 3 Claims



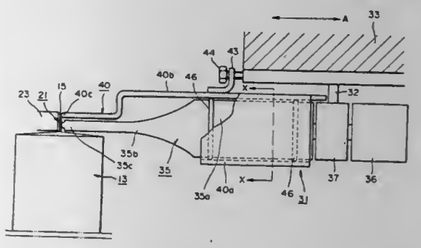
1. A method for controlling an inventory of perishable food items in a restaurant comprising the steps of:
dividing a mass of portionable food in said restaurant into a plurality of portions;
selecting from a set of bags having different weekday names imprinted thereon a plurality of bags having imprinted thereon the name of the weekday on which said food has been divided into said plurality of portions;
placing each of said plurality of portions of food into a separate one of said plurality of bags having printed thereon said weekday name;
closing said bags; and
storing said closed food portion containing bags among other closed food portion containing bags having different weekday names imprinted thereon.

5,642,606

SEALING APPARATUS FOR PACKAGING CONTAINERS

Per Ohlsson, Tokyo, Japan, assignor to Tetra Laval Holdings & Finance S.A., Switzerland

PCT No. PCT/JP94/01161, § 371 Date Dec. 11, 1995, § 102(e) Date Dec. 11, 1995, PCT Pub. No. WO95/02537, PCT Pub. Date Jan. 26, 1995
PCT Filed Jul. 15, 1994, Ser. No. 553,671
Claims priority, application Japan, Jul. 15, 1993, 5-175073
Int. Cl.[6] B65B *43/26*
U.S. Cl. 53—565 6 Claims



1. A sealing apparatus for sealing packaging containers by fusing a pair of facing sealant layers of a sealing fin portion to form a gable-top for each packaging container terminating at a free end of the sealing fin portion, said sealing apparatus comprising:

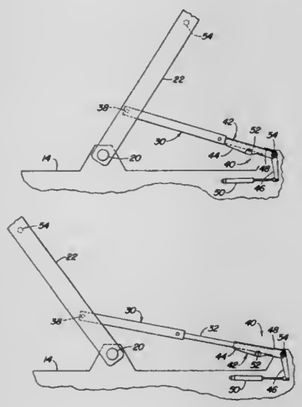
(a) an anvil for supporting said sealing fin portion,
(b) an ultrasonic horn, composed of a columnar portion, a converging portion and a tip portion,
(c) pressing means for pressing said sealing fin portion between said anvil and said tip portion of said horn,
(d) ultrasonic means for generating ultrasonic vibration and for transmitting the ultrasonic vibration to said sealing fin portion through said horn, and
(e) ultrasonic vibration absorbing means for pressing against the sealing fin portion at a position on the sealing fin portion intermediate the tip portion of said horn and the free end of said sealing fin portion and for preventing the free end portion from vibrating by absorbing ultrasonic vibration.

5,642,607

CONTROL DEVICE FOR SELECTIVELY LIMITING STROKE OF SWING ACTUATOR FOR IMPLEMENT MID-MOUNTED PIVOT TONGUE

Roger Dale Stephenson, Ottumwa, Iowa; Mark Alan Jordan, Fowler, Ind., and Stephen Kenneth Parsons, Ottumwa, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Feb. 28, 1996, Ser. No. 608,384
Int. Cl.[6] A01B *73/00*
U.S. Cl. 56—15.1 **10 Claims**



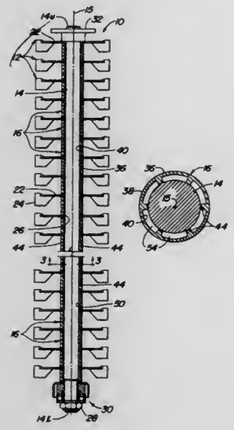
1. In a towed implement including a wheel-supported main frame, an elongate header suspended from the main frame, a tongue extending over the header and having a rear end pivotally mounted to the main frame at a location midway between opposite ends of the frame, and a two-way hydraulic tongue-swing actuator connected between the frame and the tongue for pivoting the tongue within a normal operating range, the improvement comprising: said tongue-swing actuator having a cylinder and piston rod dimensioned so as to undergo extension and retraction through a partial stroke sufficient for pivoting the tongue within said normal operating range and through a complete stroke for pivoting said tongue beyond said normal operating range to a transport position wherein the tongue is operable for effecting endwise transport of the implement; a stroke-control device; means mounting said stroke-control device to one of said main frame and tongue-swing actuator for movement between a stroke-limiting position, wherein said stroke-control device constrains said tongue-swing actuator to operate within said partial stroke, and a stroke-freeing position wherein said stroke-control allows said tongue-swing actuator to operate within said complete stroke so as to swing said tongue beyond said normal operating range to said transport position.

5,642,608

SHAFT STRUCTURE FOR A COTTON HARVESTER DOFFER COLUMN

Leon Franklin Sanderson, Des Moines, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Nov. 1, 1995, Ser. No. 551,492
Int. Cl.[6] A01D *46/08*
U.S. Cl. 56—28 **16 Claims**



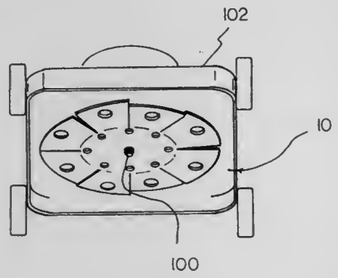
6. A spacer for supporting cotton doffers in vertically offset relation on an upright spindle shaft of preselected radius, the spacer comprising:
a cylindrical body having an inner wall and an outer wall, the walls having radii greater than the preselected radius of the shaft; and
shaft support structure extending radially inwardly from the inner wall and terminating in shaft contacting surfaces lying generally on an imaginary cylindrical surface of radius approximately equal to the preselected radius to provide centralizing support of the spacer on the shaft.

5,642,609

MULTI-CUTTING EDGE MULCHING LAWN MOWER BLADE

Gerald Steven Morrison, 661 N. Coles Ave., Maple Shade, N.J. 08052

Filed Feb. 26, 1996, Ser. No. 607,297
Int. Cl.[6] A01D *34/64;34/10*
U.S. Cl. 56—255 **1 Claim**



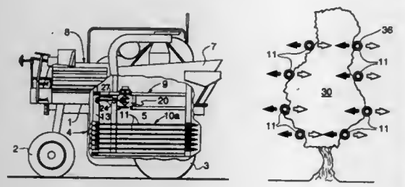
1. A multi-cutting edge mulching lawn mower blade for creating a high vacuum mulching arrangement for a lawn mower comprising, in combination:
a central disk member having a central aperture formed therethrough, the central aperture being dimensioned for rotatable coupling with a spindle shaft of the lawn mower, the central disk member having a plurality of outer apertures arranged in a circular configuration inwardly of a peripheral edge of the disk member;
a plurality of first blade members each having interior edges extending outwardly from the peripheral edge of the central disk member, each of the first blade members having a cutting edge formed on the interior edges thereof, each of the first blade members having a through hole formed through a central portion thereof;
a plurality of second blade members each having inner edges extending outwardly from the peripheral edge of the central disk member, each of the second blade members positioned between first blade members in an alternating arrangement, each of the second blade members having a cutting edge formed on the inner edges thereof wherein each cutting edge of the second blade members being disposed above each cutting edge of the first blade members, each of the second blade members having a circular opening formed through a central portion thereof.

5,642,610

SHAKER MEMBERS FOR GRAPE HARVESTER

Luc Camiel Dupon, Ardooie, Belgium; Jean-Paul Marcel Lucieu Martin, Le Fenouiller, and Daniel Henri André Marie Le Nevé , Challans, both of France, assignors to New Holland North America, Inc., New Holland, Pa.

Filed Jul. 12, 1995, Ser. No. 501,693
Claims priority, application United Kingdom, Jul. 12, 1994, 9414004
Int. Cl.[6] A01D *46/26*
U.S. Cl. 56—340.1 **9 Claims**



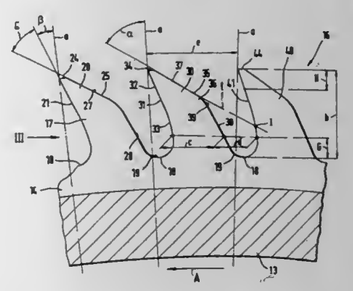
1. A machine for harvesting fruits, berries and the like, from fruit trees and bushes planted in rows, the machine comprising:
a straddling chassis (**1**) capable of moving across a field;
a shaker assembly (**5**), mounted on the chassis (**1**) and including at least one pair (**10***a*, **10***b*) of elongated shaker members (**11**) which extend generally in the longitudinal direction of the machine and which are spaced transversely from one another and situated respectively on opposite sides of the central fore-and-aft axis (**12**) of the machine so as to define an active shaking zone (**1**), each shaker member being formed by a rod (**11**) of single continuous flexible material; and
a control mechanism (**20**) operatively connected to the rods (**11**) to drive them synchronously with a reciprocating motion in a direction extending transversely relative to said fore-and-aft axis (**12**); and
characterized in that each rod (**11**) has at least one cavity (**36**) throughout a substantial portion thereof to reduce the weight of such rod.

5,642,611

MOUNTING FOR AN OPENING ROLLER

Fritz Stahlecker, Josef-Neidhart-Strasse 18, 73337 Bad Überkingen, Germany, assignor to Fritz Stahlecker, Bad Überkingen, and Hans Stahlecker, Süssen, both of Germany

Filed Mar. 11, 1996, Ser. No. 612,821
Claims priority, application Germany, Mar. 17, 1995, 195 09 743.2
Int. Cl.[6] D01H *4/00*
U.S. Cl. 57—408 **27 Claims**



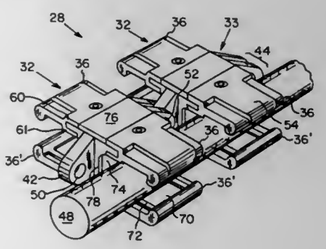
1. A mounting for an opening roller of an open-end spinning machine comprising a plurality of teeth arranged one behind the other in a plurality of rows extending essentially in circumferential direction,
wherein tooth faces and tooth backs of the teeth are inclined in rotational direction, the tooth back being more inclined in an area of a tooth tip than at a tooth base, the tooth face forming an angle to a roller radial plane of between 10° and 30°,
and wherein the tooth back is inclined at the tooth tip to the radial plane such that an extension of the tangent to the tooth back at the tooth tip intersects the tooth face of a following tooth at an intersecting point which is between one fifth and four fifths of a tooth height from the tooth tip to the tooth base.

5,642,612

REPLACEABLE TIP CABLE HANDLER

Ceiriog Hughes, 8447 Edwood Rd., Pittsburgh, Pa. 15237

Filed Dec. 19, 1995, Ser. No. 574,726
Int. Cl.[6] F16G *13/16*
U.S. Cl. 59—78.1 **32 Claims**



1. A cable handler for receiving and handling a flexible member, comprising:
a flexible chain having a plurality of links adapted to retain and protect the flexible member, each of said links includes:
a body adapted to interconnect with adjacent links; and

two tips extending from a side of said body, said two tips forming a first set, wherein one of said tips is removably secured to said body and wherein said tips are spaced apart from each other and are adapted to receive and retain the flexible member therebetween.

5,642,613

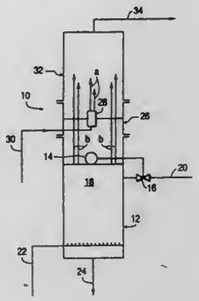
COMBUSTION METHOD FOR POWER GENERATION

Ahmad R. Shouman, 1006 Bloomdale Dr., Las Cruces, N. Mex. 88005

Division of Ser. No. 216,021, Mar. 21, 1994, Pat. No. 5,491,968. This application Feb. 12, 1996, Ser. No. 600,161

Int. Cl.[6] F02C *3/28*

U.S. Cl. 60—39.05 **2 Claims**



1. A method for generating combustible gas from coal, including the steps of

(a) supplying coal, water and a source of oxygen at an optimum system pressure and temperature above the saturation temperature corresponding to the partial pressure of the steam present in gaseous products of combustion to a wet oxidation reactor;

(b) maintaining the level of liquid in the wet oxidation reactor at a preselected optimum level to promote oxidation of said coal;

(c) controlling the supply of oxygen so that the combustion of said coal in said wet oxidation reactor at said optimum pressure and temperature is incomplete to produce combustible gaseous products; and

(d) cooling said gaseous products and then directing said gaseous products to a storage and distribution system.

5,642,614

GAS TURBINE COMBINED CYCLE SYSTEM

Carl Richard Bozzuto, Enfield, Conn.; Joseph David Bianca, Feeding Hills, Mass., and Walter Franklin Siddall, Suffield, Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Division of Ser. No. 175,972, Dec. 30, 1993, Pat. No. 5,467,591. This application Jun. 7, 1995, Ser. No. 472,429

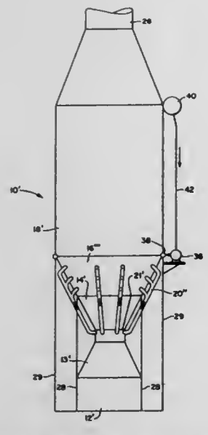
Int. Cl.[6] F02C *6/18;7/00*

U.S. Cl. 60—39.182 **10 Claims**

1. A gas turbine combined cycle system, comprising:

a vertically oriented turbine which emits an exhaust gas,

a steam generator for receiving the exhaust gas, the steam generator being above the turbine and having a water side which includes forced circulation means, and



a vertically oriented diffuser duct between the turbine and the steam generator for reducing the flow velocity of the exhaust gas prior to entry into the steam generator.

5,642,615

TURBOFAN ENGINE WITH A FLOATING POD

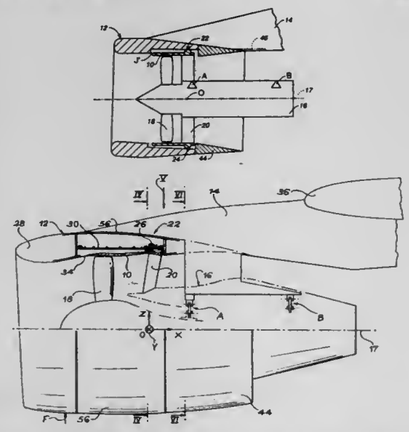
Alain Porte, Colomiers, and Danilo Ciprian, Aussonne, both of France, assignors to Aerospatiale Societe Nationale Industrielle, Paris, France

Filed Mar. 20, 1996, Ser. No. 618,840

Claims priority, application France, Mar. 21, 1995, 95 03276

Int. Cl.[6] F02K *3/02*

U.S. Cl. 60—226.1 **17 Claims**



1. Fan jet engine incorporating a rotary assembly, including a fan, and a fixed assembly, mounted on a strut for attaching the fan jet engine to a wing member, said fixed assembly including a central portion, a fan stator case surrounding the fan, at least one set of arms connecting the central portion to the fan stator case, and a pod surrounding the central portion and radially separated from the fan stator case by a gap, the pod cooperating with the fan stator case solely by centering means located in a plane in the vicinity of the arms and oriented radially with respect to a longitudinal axis of the central portion, which is characterized in that a rear portion of the pod has two covers directly articulated to the strut and incorporating a knife received in a groove formed on an intermediate portion of the pod, when the covers are closed, so that forces applied radially to the pod lead to a limited swivelling movement of said pod with respect to the fan stator case, about the intersection point of said plane with said longitudinal axis, and the forces not taken up by the centring means are transmitted directly to the strut without passing through the central portion.

5,642,616

FLUID PRESSURE CONTROL SYSTEM FOR HYDRAULIC EXCAVATORS

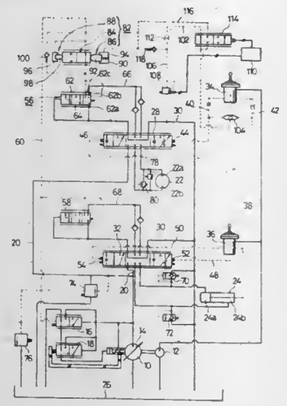
Hee Woo Park, Seoul, Rep. of Korea, assignor to Daewoo Heavy Industries Ltd., Incheon, Rep. of Korea

Filed Sep. 6, 1995, Ser. No. 524,314

Claims priority, application Rep. of Korea, Sep. 6, 1994, 94-22344

Int. Cl.[6] F16D *31/02*

U.S. Cl. 60—426 **7 Claims**



1. A fluid pressure control system for hydraulic excavators having an upper swing frame and a boom, which comprises: a fluid reservoir; a variable displacement pump in communication with the reservoir for discharging a variable volume of pressurized working fluid;

a hydraulic swing motor rotatably driven by virtue of the working fluid to cause rotation of the upper swing frame;

a first flow control valve operable to control flow of the working fluid with respect to the swing motor;

a joy stick adapted for pivotal movement to change the position of the first flow control valve with the use of a pilot fluid;

a first pressure compensator valve positioned downstream of the first flow control valve to compensate the fluid pressure acting on the swing motor;

a hydraulic cylinder adapted for extension and retraction by virtue of the working fluid to cause elevational movement of the boom;

a second flow control valve operable to control flow of the working fluid with respect to the hydraulic cylinder;

a second pressure compensator valve located downstream of the second flow control valve to compensate the fluid pressure acting on the hydraulic cylinder;

a load sensing valve in communication with the first and second pressure compensator valves via a load sensing line and responsive to a load sensing pressure developed in the load sensing line for regulating the discharge volume of the working fluid; and a wing torque regulator lying midway of the load sensing line between the load sensing valve and the first pressure compensator valve to selectively allow and inhibit a fluid communication between the first pressure compensator valve and the load sensing valve depending on the pressure of the pilot fluid, wherein the swing torque regulator comprises a spool shiftable between a first position in which the first pressure compensator valve is allowed to communicate with the load sensing valve and a second position in which the first pressure compensator valve is disconnected from the load sensing valve, a first spool actuator for applying the pilot pressure to one end of the spool to urge the spool into the first position and a second spool actuator for applying the load sensing pressure to the other end of the spool to bias the spool into the second position.

5,642,617

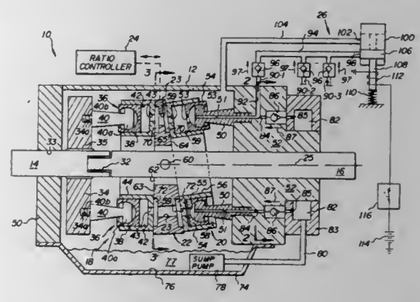
CONTINUOUSLY VARIABLE HYDROSTATIC TRANSMISSION WITH NEUTRAL-SETTING HYDRAULIC CIRCUIT

Robert Francis Larkin, and Donald Mark Purcell, both of Pittsfield, Mass., assignors to Martin Marietta Corporation, Bethesda, Md.

Filed Oct. 16, 1995, Ser. No. 543,545

Int. Cl.[6] F16D *39/00*

U.S. Cl. 60—488 **8 Claims**



5. A continuously variable hydrostatic transmission comprising:

a housing;

a hydraulic fluid sump in the housing;

a sump pump disposed in the sump;

an input shaft journaled in the housing for receiving input torque from a prime mover;

an output shaft journaled in the housing for imparting output torque to a load;

a hydraulic pump unit drivingly coupled to the input shaft;

a hydraulic motor unit grounded to the housing;

a wedge-shaped swashplate operatively positioned between the hydraulic pump and motor units, the swashplate including:

diametrically opposed high and low hydraulic fluid pressure sides,

diametrically opposed, first and second semi-annular surface cavities, the first surface cavity located in the low pressure side of the swashplate, and the second surface cavity located in the high pressure side of the swashplate, and

ports, located in the first and second surface cavities, for accommodating pumped hydraulic fluid exchanges between the hydraulic pump and motor units;

a coupling pivotally connecting the swashplate to the output shaft, such that torque acting on the swashplate is coupled to the output shaft;

first, second, and third angularly spaced fluid connections for continuously providing fluid communication between the sump pump and the load pressure side of the swashplate through at least one of the first, second, and third fluid connections;

first, second, and third one-way check valves respectively included in the first, second, and third fluid connections for interrupting the fluid communication between the sump pump and the high fluid pressure side of the swashplate;

a transmission ratio controller for adjusting an angular orientation of the swashplate about a pivot axis of the coupling to vary a transmission ratio of the transmission; and

a transmission neutral-setting hydraulic circuit including:

first, second, and third fluid circuit branches respectively connected into the first, second, and third fluid connections at locations downstream from the first, second, and third check valves, such that at least one of the first, second, and third fluid circuit branches is always in fluid communication with the low pressure side of the swashplate and another one of the first, second, and third circuit branches is always in fluid communication with the high pressure side of the swashplate,

fourth, fifth, and sixth one-way check valves respectively included in the first, second, and third fluid circuit branches, and

a neutral-setting fluid control valve commonly connected to the first, second, and third circuit branches and selectively operable to simultaneously vent the first, second, and third circuit branches to the sump, whereby to substantially equalize the fluid pressures in the high and low pressure sides of the swashplate, and thereby reduce the torque acting on the swashplate to essentially zero, regardless of the angular orientation of the swashplate set by the ratio controller.

5,642,618

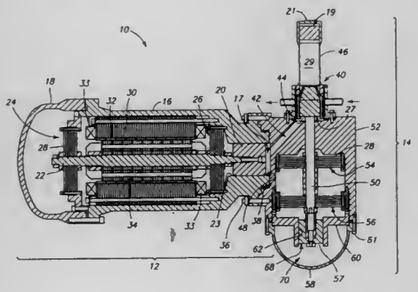
COMBINATION GAS AND FLEXURE SPRING CONSTRUCTION FOR FREE PISTON DEVICES

Laurence B. Penswick, Richland, Wash., assignor to Stirling Technology Company, Kennewick, Wash.

Filed Jul. 9, 1996, Ser. No. 675,995

Int. Cl.[6] F02G *1/04*

U.S. Cl. 60—520 **20 Claims**



1. A displacer assembly for use in a thermal regenerative machine, comprising:

a housing having a displacer bore;

a displacer carried in the displacer bore;

a flexure bearing assembly configured to carry the displacer in axial reciprocation within the displacer bore, forming a clearance seal there between;

a gas spring bore formed within the displacer assembly and communicating with a gas spring volume defined by a volume forming member; and

a gas spring piston carried within the gas spring bore and configured to form a clearance seal there between, the gas spring piston and the gas spring bore cooperating with the volume forming member to form a gas spring there between;

one of the gas spring bore and the gas spring piston being carried in fixed relation with the housing, with the other of the bore and the gas spring piston being carried by the displacer for relative reciprocation there between.

5,642,619

GAS GENERATING DEVICE

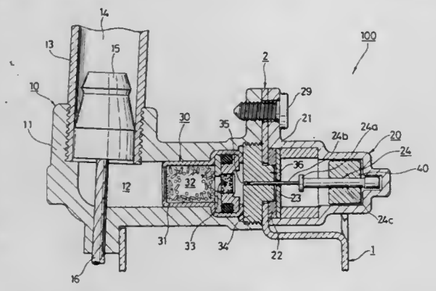
Masuo Matsuki, and Haruyuki Ikesue, both of Kanagawa, Japan, assignors to NSK Ltd., Tokyo, Japan

Continuation of Ser. No. 311,927, Sep. 26, 1994, abandoned. This application Feb. 13, 1996, Ser. No. 600,892

Claims priority, application Japan, Sep. 30, 1993, 5-57367 U

Int. Cl.[6] F01B *29/08*

U.S. Cl. 60—632 **8 Claims**



1. A gas generating device for use in a vehicle in the event of a collision, said gas generating device comprising:

a hammer pin;

a gas generator having a detonator, which is accommodated in a housing for being fired when struck by said hammer pin, and a gas-generating chemical reagent arranged in adjacent to said detonator; and

a hammer pin trigger device for causing said hammer pin to strike said detonator;

wherein said gas generator has a cover arranged to substantially close an opening in said detonator, said opening facing said hammer pin trigger device, said cover having a hammer pin insertion hole configured to receive said hammer pin, and said hammer pin insertion hole of said cover having an inner diameter not greater than 1 mm to prevent leakage of high-temperature and high-pressure gas, which is produced as a result of explosive burning of said gas-generating chemical reagent, to the side of said hammer pin trigger device.

5,642,620

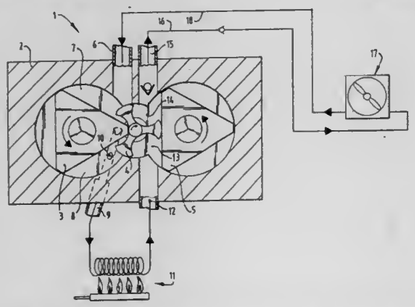
HOT GAS MOTOR AND COMPRESSOR UNIT

Albert Bakker, Vrijdomstreekje 3, 9503 AT Stadskanaal, Netherlands

Filed Apr. 30, 1996, Ser. No. 640,997

Int. Cl.[6] F01B *25/02*

U.S. Cl. 60—682 **10 Claims**



1. Hot gas motor comprising a compressor with an inlet and an outlet, an expander with an inlet and an outlet, wherein the compressor outlet and the expander inlet are mutually connected by a connecting channel comprising a gas heating device, wherein the compressor is of the rotation type with at least one male rotor mounted in a first cylindrical chamber in a housing and having a profile with protruding parts, which engages in a female rotor which has a profile with recesses co-acting therewith and which is mounted in a second cylindrical chamber intersecting the first cylindrical chamber and wherein the expander is formed by the female rotor and at least one male rotor having a profile with protruding parts co-acting therewith, and wherein the rotors are mutually coupled for rotation.

5,642,621

DUAL HEAD COMBUSTION CHAMBER

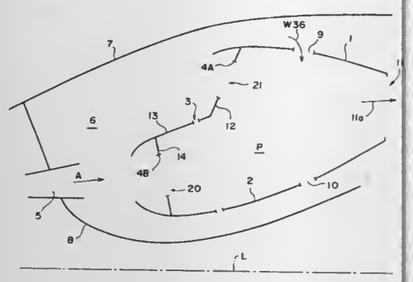
Jean-Paul Daniel Alary, St Maur Des Fosses; Denis Roger Henri Ansart, Bois le Roi; Yves Francois André Salan, Savigny S/Orge, and Denis Jean Maurice Sandelis, Nangis, all of France, assignors to Socoiete Nationale D'Etude et de Construction de Moteurs D'Aviation S.N.E.C.M.A., Paris Cedex, France

Filed Nov. 21, 1995, Ser. No. 561,275

Claims priority, application France, Nov. 23, 1994, 94 14014

Int. Cl.[6] F02C *7/22*

U.S. Cl. 60—747 **7 Claims**



1. A generally annular combustion chamber extending around a central axis and comprising:

a) a low power head having N number of fuel/air injector assemblies arranged in a generally annular array and spaced apart in a circumferential direction, the fuel/air injector assemblies having an air permeability of P1 and supplying a fuel/air mixture to the combustion chamber during low power operation wherein the air permeability P1 ranges from 10% to 12% of the total air flow entering the combustion chamber; and,

b) a high power head having N number of first fuel/air injector assemblies and N number of second fuel/air injector assemblies, the first and second fuel/air injector assemblies arranged in a generally annular array radially spaced from the low power head, each of the N number of second fuel/air injector assemblies aligned with a fuel/air injector assembly of the low power head along a line extending radially from the central axis, the second fuel/air injector assemblies having an air permeability of P2 such that P2>P1 and supplying a fuel/air mixture to the combustion chamber during high power operation, the first fuel/air injection assemblies each located circumferentially between adjacent second fuel/air injector assemblies and having an air permeability of P1, the first fuel/air injector assemblies supplying fuel/air mixture to the combustion chamber during low power operation.

5,642,622

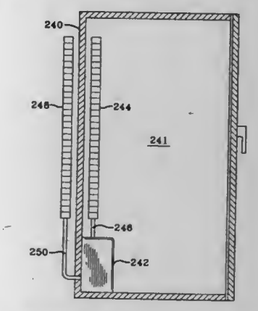
REFRIGERATOR WITH INTERIOR MOUNTED HEAT PUMP

David M. Berchowitz, and Dale E. Kiikka, both of Athens, Ohio, assignors to Sunpower, Inc., Athens, Ohio

Filed Aug. 17, 1995, Ser. No. 516,355

Int. Cl.[6] F25B *9/00*

U.S. Cl. 62—6 **32 Claims**



1. A cooling apparatus comprising:

(a) a receptacle having thermally insulated walls defining a receptacle interior, the receptacle including a closure;

(b) a mechanical heat pump mounted within the receptacle interior;

(c) a heat transporting apparatus, having an external portion which is positioned outside the receptacle and an internal portion connected to the heat pump for transporting heat energy from the heat pump to an exterior of the receptacle.

5,642,623

GAS CYCLE REFRIGERATOR

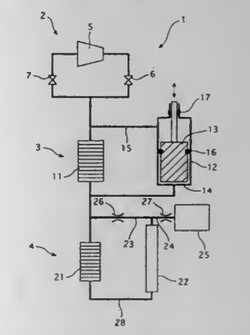
Yu Hiresaki; Jin Lin Gao, both of Tokyo, and Yoichi Matsubara, Funabashi, all of Japan, assignors to Suzuki Shokan Co., Ltd., Tokyo, Japan

Filed Nov. 2, 1995, Ser. No. 554,322

Claims priority, application Japan, Feb. 23, 1995, 7-035276

Int. Cl.[6] F25B *9/00*

U.S. Cl. 62—6 **14 Claims**



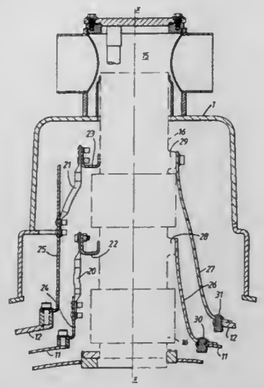
1. A gas recycle refrigerator, comprising:

a first stage refrigeration part having a first stage regenerator to which refrigerant gas is supplied, a cylinder connected to a cold end of the first stage regenerator, and a piston which is received within the cylinder and varies the volume of an expansion room formed in the cylinder; and

a second stage refrigeration part having a second stage regenerator connected to the cold end of the first stage regenerator, and

a pulse tube connected to a cold end of the second regenerator.

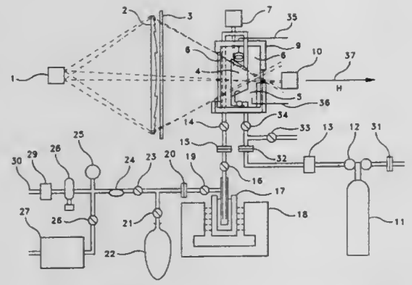
5,642,624
SUPER-CONDUCTING MAGNETS
Russell Peter Gore, Abingdon, England, assignor to Oxford Magnet Technology Limited, Oxford, England
Filed Feb. 1, 1996, Ser. No. 595,084
Claims priority, application United Kingdom, Feb. 10, 1995, 9502766
Int. Cl.[6] F25B *19/00*
U.S. Cl. 62—51.1 **11 Claims**



1. A super-conducting electro-magnet for use in an MRI system comprising a helium vessel within which magnet windings are positioned, a vacuum chamber within which the helium vessel is contained, at least one thermal shield positioned between the helium vessel and the vacuum chamber, a service turret having a neck tube which is arranged to extend through the thermal shield within the vacuum chamber so as to communicate with the helium vessel for filling purposes, the thermal shield being thermally coupled to the service turret neck tube by means of a plurality of flexible connector strips fabricated from laminated conductive material which at one end are secured to the thermal shield and which at the other end thereof are secured to the service turret neck tube, sufficient strips being provided substantially to surround the service turret neck tube thereby to provide a substantially continuous thermally conductive junction between the service turret neck tube and the thermal shield.

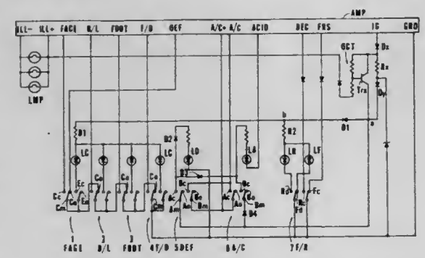
5,642,625
HIGH VOLUME HYPERPOLARIZER FOR SPIN-POLARIZED NOBLE GAS
Gordon D. Cates, Jr., Skillman, N.J.; Bastiaan Driehuys, Bristol, Pa.; William Happer, Princeton, N.J.; Hunter Middleton, Princeton, N.J.; Eli Miron, Princeton, N.J.; Brian Saam, Princeton, N.J., and Daniel Walter, Chicago, Ill., assignors to The Trustees of Princeton University, Princeton, N.J.
Filed Mar. 29, 1996, Ser. No. 622,863
Int. Cl.[6] B01D *8/00*
U.S. Cl. 62—55.5 **62 Claims**

25. A method for hyperpolarizing ^{129}Xe, comprising: hyperpolarizing ^{129}Xe in a target gas, wherein said target gas comprises:
a) a fluorescence-quenching gas, for quenching alkali-metal fluorescence,
b) a buffer gas, for pressure-broadening the optical absorption spectrum of alkali metal atoms, and
c) xenon comprising ^{129}Xe in at least natural isotopic abundance;



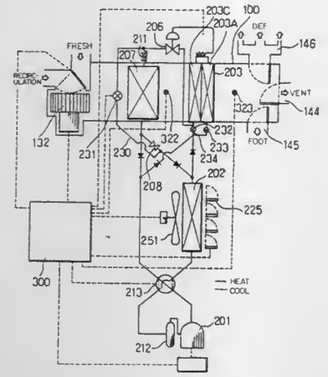
under conditions sufficient to induce hyperpolarization of said ^{129}Xe by spin exchange with alkali metal atoms, thereby providing hyperpolarized ^{129}Xe.

5,642,626
CONTROL CIRCUIT FOR A VEHICLE AIR CONDITIONING SYSTEM
Hideki Uno, Toyota; Yoshizo Ito, Nagoya, and Yoshiyuki Muramatsu, Anjo, all of Japan, assignors to Kojima Press Industry Co., Ltd., Aichi, Japan
Filed Mar. 28, 1996, Ser. No. 622,999
Claims priority, application Japan, Apr. 4, 1995, 7-104761
Int. Cl.[6] B60H *1/32*
U.S. Cl. 62—127 **15 Claims**



1. A control circuit for a vehicle air conditioning system having a compressor for dehumidifying air and a plurality of vents disposed in said vehicle for controlling the air dehumidified by said compressor and introduced into a compartment of said vehicle, comprising:
a compressor circuit for activating said compressor;
a defroster circuit for shifting an air outlet to a vent for removing fog from windows of said vehicle;
a first indicator circuit for indicating a condition of said compressor being activated;
a second indicator circuit for indicating a defroster mode;
a plurality of mode switches for shifting said vents in accordance with a plurality of control modes including said defroster mode, each of said mode switches having first switching means and second switching means actuated together in response to operation of each of said mode switches, said mode switches being arranged such that when one of said mode switches is turned on, the rest of said mode switches are turned off; and
third switching means including contacts provided at each "off" side of one of said first switching means and second switching means provided in the rest of said mode switches, said contacts being connected in series;
said first, second and third switching means being provided for connecting or disconnecting said defroster circuit, compressor circuit, first indicator circuit and second indicator circuit.

5,642,627
AUTOMOTIVE AIR CONDITIONER HAVING CONDENSER AND EVAPORATOR PROVIDED WITHIN AIR DUCT
Kunio Iritani, Anjo; Shigeo Numazawa, Nagoya; Kenichi Fujiwara, Kariya; Yasushi Yamanaka, Aichi; Akira Isaji, Nishio, and Nobunao Suzuki, Toyohashi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Division of Ser. No. 138,207, Oct. 20, 1993, abandoned, which is a division of Ser. No. 873,430, Apr. 24, 1992, Pat. No. 5,299,431. This application Nov. 1, 1994, Ser. No. 332,062
Claims priority, application Japan, Apr. 26, 1991, 3-97290; Oct. 1, 1991, 3-253947; Dec. 3, 1991, 3-319417; Dec. 27, 1991, 3-247130; Mar. 17, 1992, 4-060616
Int. Cl.[6] F25D *21/06;17/06*
U.S. Cl. 62—156 **26 Claims**

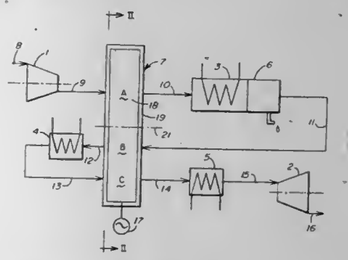


1. An automotive air conditioner, comprising:
a duct defining a blasting air passageway;
a blower for blasting air into said duct;
an evaporator disposed in said duct for evaporating refrigerant to cool air;
a heater disposed in said duct for causing refrigerant of a high temperature and air to exchange heat with each other to heat the air;
a compressor for compressing and discharging refrigerant;
decompressing means for decompressing and expanding refrigerant;
an outside heat exchanger for causing air outside of said duct and refrigerant to exchange heat with each other; and
changing over means for changing over a flow of refrigerant flowing through said outside heat exchanger between (1) refrigerant which flows in the order of said outside heat exchanger, said heater, said decompressing means and said evaporator and (2) refrigerant which flows in the order of said heater, said decompressing means, said evaporator and said outside heat exchanger.

5,642,628
REFRIGERATOR MULTIPLEX DAMPER SYSTEM
Walter Whipple, III, Amsterdam; Thomas Arthur Brownell, Charlton, both of N.Y., and Rollie Richard Herzog, Louisville, Ky., assignors to General Electric Company, Schenectady, N.Y.
Continuation of Ser. No. 301,761, Sep. 7, 1994, abandoned. This application May 9, 1996, Ser. No. 647,346
Int. Cl.[6] F25D *17/04;* **F24F** *7/00*
U.S. Cl. 62—186 **29 Claims**

1. A refrigerator comprising a plurality of compartments cooled by a refrigeration apparatus for generating a flow of cooling air, said refrigerator comprising:
at least a first compartment cooled to a first temperature;
at least a second compartment cooled to a second temperature; and
a multiplex damper system disposed in a refrigeration apparatus cooling-air passage so as to direct the cooling-air flow from said refrigeration apparatus to selected refrigerator compartments;
said multiplex damper system comprising a single movable control damper mounted in said refrigeration apparatus cooling-air passage and further comprising a drive control system responsive to cooling demands of said respective compartments and that is coupled to said single control damper so as to selectively dispose said control damper in a plurality of respective air flow positions, said plurality of air flow positions comprising a range of positions comprising a first compartment-only air flow position, at least one divided flow to both first and second compartments air flow position, and a second compartment-only air flow position.

5,642,629
COOLED AIR CYCLE SYSTEM AND METHOD FOR OPERATING SUCH A SYSTEM
Henrik Öhman, Täby, Sweden, assignor to Svenska Rotor Maskiner AB, Stockholm, Sweden
Filed Oct. 11, 1995, Ser. No. 540,705
Claims priority, application Sweden, Feb. 20, 1995, 9500609
Int. Cl.[6] F25D *9/00*
U.S. Cl. 62—401 **9 Claims**



1. A cold air cycle system comprising:
an air compressor (**1**) which compresses air;
an expander (**2**) arranged to expand air compressed by said compressor;
a conduit (**9–15**) arranged relative to said compressor (**1**) and expander (**2**) to conduct said compressed air from said compressor (**1**) to said expander (**2**);
a heat exchanger arranged in heat exchanging relation with said conduit (**9–15**) for withdrawing heat from said compressed air, said heat exchanger including a first heat exchanger unit (**3**) and a second heat exchanger unit (**4**); and

a water separator device (**6**) arranged in communication with said conduit to withdraw water from said compressed air;

and wherein:

said conduit includes a cyclically movably regenerative drying device (**7**), said drying device (**7**) including a water adsorbing section (**18**) and a driving device (**17**), said driving device (**17**) being arranged and operated to cyclically establish contact between said compressed air and at least a part of said water adsorbing section (**18**) at at least first and second locations (A,B) of said conduit (**9–15**), said first location (A) being upstream of said first heat exchanger unit (**3**) and said water separator device (**6**), and said second location (B) being downstream of said first heat exchanger unit (**3**) and said water separator device (**6**);

said second heat exchanger unit (**4**) of said heat exchanger is downstream of said second location (B);

said driving device (**17**) also establishes contact between said compressed air and said at least a part of said adsorbing section (**18**) at a third location (C), said third location (C) being downstream of said second heat exchanger unit (**4**) but upstream of said expander (**2**); and

said air compressed by said compressor (**1**) is at a raised temperature due to compression supplied to said first location (A) for adsorbing water adsorbed in said second and third locations (B,C).

5,642,630

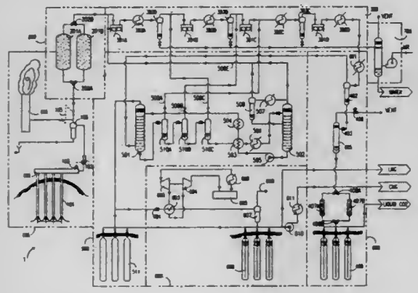
PROCESS FOR SOLIDS WASTE LANDFILL GAS TREATMENT AND SEPARATION OF METHANE AND CARBON DIOXIDE

Fawzy T. Abdelmalek, 12807 Willowyck Dr., St. Louis, Mo. 63146, and Michael J. Rutsch, 8329 S. 75 East Ave., Tulsa, Okla. 74133

Filed Jan. 16, 1996, Ser. No. 586,248

Int. Cl.[6] F25J *3/00*

U.S. Cl. 62—632 **9 Claims**



1. A process for Landfill gas treatment and separation of methane gas and carbon dioxide gas contained therein, and for producing liquid natural gas, liquid carbon dioxide, and compressed natural gas products, the process that comprises;

gathering a landfill gas stream from solids waste treatment landfill site with a vacuum collection system and pressurizing the collected gas stream to above atmospheric pressure;

cleaning the landfill gas stream flowing from said gas collection system to remove condensed water vapor and trace sulfur and hydrocarbon compounds contained therein;

conducting the cleaned landfill gas flowing from the said gas cleaning step into a four stage gas compressor;

increasing the pressure and simultaneously cooling the landfill gas stream at each compression stage, wherein the first stage compression increases the gas pressure from approximately atmospheric pressure to approximately 70 psig, the second stage compression cylinder increases the gas pressure to approximately 240 psig, the third stage compression increases the gas pressure to approximately 630 psig and the fourth stage compression increases the gas pressure to above 1800 psig;

intercooling the compressed landfill gas stream flowing from the first to the second compression stage, from the second to the third compression stage, and from the third to the forth compression stage to maintain a near ambient temperature to effect cooling, condensing and removing water vapor and heavy hydrocarbon vapors contained in the gas stream flowing from a lower pressure to a succeeding higher pressure stage;

cooling the compressed landfill gas stream flowing from the fourth compression stage at above 1800 psig to approximately 20° F. temperature to substantially condense most of the carbon dioxide vapor contained therein;

separating liquid carbon dioxide from a methane rich gas stream;

scrubbing the methane rich gas stream flowing from the fourth compression stage with a solvent fluid injected at about 50° F. and approximately 1800 psig into a contactor vessel to absorb most of the carbon dioxide remaining in the gas mixture forming a CO_2-rich solvent fluid stream and a purified compressed methane gas stream;

conducting the CO_2-rich solvent fluid flowing from the contactor vessel at approximately 1800 psig into a first flash vessel to decrease its pressure to approximately 630 psig;

recycling a gas mixture stream released from the first flash vessel at approximately 630 psig to the suction of the forth stage compression;

conducting the CO_2-rich solvent flowing from the first flash vessel at approximately 630 psig to a second flash vessel where its pressure is decreased to approximately 240 psig;

recycling a second gas mixture stream released from the second flash vessel at approximately 240 psig to the suction of the third stage compression;

conducting the CO_2-rich solvent flowing from the second flash vessel at approximately 240 psig to a third flash vessel where its pressure is decreased to approximately 70 psig;

recycling a third gas mixture stream released from the third flash vessel at approximately 70 psig to the suction of the second stage compression;

heating the CO_2-rich solvent fluid flowing from the third flash vessel to a relatively higher temperature;

spraying the heated CO_2-rich solvent into a regenerator vessel operating at near atmospheric pressure to release most of the carbon dioxide remaining in the solvent fluid;

recycling the gas mixture stream flowing from the regenerator vessel to enter the suction of the first stage compression;

pumping a CO_2-lean solvent fluid flowing from the regenerator vessel to increase its pressure from near atmospheric pressure to above 1800 psig;

conducting the pressurized CO_2-lean solvent fluid into a reverse heat exchanger where the CO_2-rich solvent stream flowing from the third solvent flash vessel is heated and the CO_2-lean solvent stream flowing from the regenerator vessel is cooled;

further cooling the CO_2-lean solvent stream flowing from said reverse heat exchanger to a temperature below 50° F. before entering the contactor vessel to repeat the process of scrubbing the methane rich gas stream flowing from the carbon dioxide condensing step;

transporting and storing the purified methane gas flowing from the gas contractor vessel to a high pressure gas storage vessel;

treating the carbon dioxide liquid stream flowing from the fourth compression stage to remove most of the dissolved hydrocarbon contaminants contained therein through the steps of expansion in a flash vessel from above 1800 psig to approximately 200 psig and by physical adsorption of gases in an activated carbon bed.

transporting and storing the purified liquid carbon dioxide into a liquid carbon dioxide storage vessel.

5,642,631

CROCHET MACHINE FOR WARP KNITTING WORKINGS AND PROCESS PUT INTO PRACTICE THEREBY

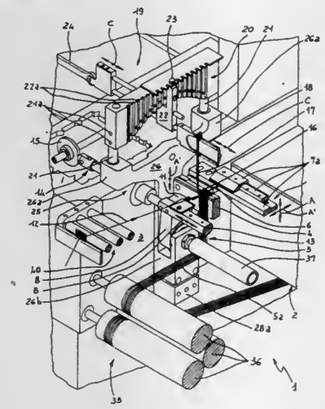
Luigi Omodeo Zorini, COMEZ S.p.A.—Via Enrico Fermi 5, Cilavegna (Pavia), Italy

Filed May 9, 1996, Ser. No. 647,876

Claims priority, application European Pat. Off., Feb. 6, 1996, 96830050

Int. Cl.[6] D04B *23/00*

U.S. Cl. 66—82 R **15 Claims**



1. A crochet machine for warp knitting workings, comprising:

a bearing base (**2**) having two side standards (**3**);

a plurality of needles (**6**) disposed consecutively in side by side relation along a needle bar (**4**) extending between the side standards (**3**) each needle having a longitudinal axis;

a plurality of eye-pointed needles (**11**) disposed consecutively in side by side relation parallelly to the needle bar (**4**) and in front of said plurality of needles (**6**), and each of the eye-point needles arranged to engage a respective warp thread (**12**);

needle longitudinal-movement means (**7**) to impart a reciprocating movement ("A") to the plurality of needles (**6**) along a longitudinal extension; and

eye-pointed needle transverse-movement means (**14**) to impart to the eye-pointed needles a reciprocating motion ("B") substantially parallel to the longitudinal extension of the needle bar (**4**), further comprising needle transverse-movements means (**25**) to transmit to the plurality of needles (**6**) an alternated crossing movement ("A'") substantially perpendicular to the longitudinal movement ("A") of the plurality of needles (**6**) and the transverse movement ("B") of the eye-pointed needles (**11**), such that the eye-pointed needles, with respect to the plurality of needles, perform a relative movement circumscribing the longitudinal axes of the plurality of needles themselves, through a combination of the crossing movement ("A") and the transverse movement ("B") of the eye-pointed needles.

5,642,632

COATED KNITTING PARTS OF KNITTING MACHINE

Takanori Nanya, Sayama, and Nobuyuki Yoshino, Kawagoe, both of Japan, assignors to Cltizen Watch Co., Ltd., Tokyo, Japan

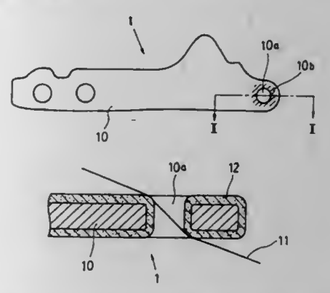
PCT No. PCT/JP94/00855, § 371 Date Aug. 11, 1995, § 102(e) Date Aug. 11, 1995, PCT Pub. No. WO95/16809, PCT Pub. Date Jun. 22, 1995

PCT Filed May 30, 1994, Ser. No. 501,024

Claims priority, application Japan, Dec. 17, 1993, 5-067453 U

Int. Cl.[6] D04B *15/06;15/38;* **H05H** *1/24*

U.S. Cl. 66—104 **7 Claims**



1. Knitting parts of a knitting machine each of said parts having a metallic portion to be brought into contact with a knitting yarn when fitted to said knitting machine to perform knitting, characterized in that said metallic portion having a coating of a compound plating layer made of a non-electrolytic nickel alloy including minute silicon particles dispersed therein, at least on a surface of said portion which is in contact with said knitting yarn during knitting, each minute silicon particle having a coating of hard carbon film.

5,642,633

ELASTIC BAND, IN PARTICULAR UPHOLSTERY BAND

Günter Pedall, Munchberg, Germany, assignor to Münchberger Band- Und Gurtweberei GmbH, Münchberg, Germany

PCT No. PCT/EP94/02249, § 371 Date Feb. 27, 1996, § 102(e) Date Feb. 27, 1996, PCT Pub. No. WO95/06149, PCT Pub. Date Mar. 2, 1995

PCT Filed Jul. 8, 1994, Ser. No. 600,923

Claims priority, application Germany, Aug. 27, 1993, 43 28 951.7

Int. Cl.[6] D04B *23/08*

U.S. Cl. 66—193 **5 Claims**

1. An elastic band produced by crocheting, in particular an upholstery band, the elastic band having a longitudinal direction and comprising:

rubber threads running in the longitudinal direction;

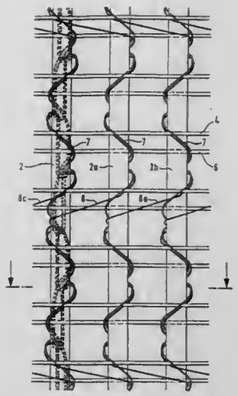
front and back weft threads made of relatively inelastic textile material, said front weft threads located on one side of the rubber threads and running transversely thereto, and said back weft threads located on the opposing side of the rubber threads and running transversely thereto;

weave threads made of relatively inelastic textile material;

wherein for each rubber thread, a first weave thread is provided which always loops around the same rubber thread and the front and back weft threads associated with the same rubber thread;

wherein for each rubber thread a second weave thread is provided which loops around only its respective rubber thread and the weft thread on one side of the rubber thread; and

wherein each second weave thread repeatedly: loops around a first rubber thread and a small, odd number of successive weft



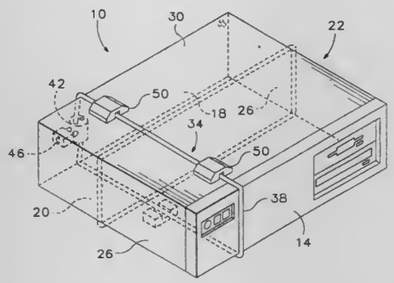
threads on said one side of the rubber threads, then jumps to a second and neighboring rubber thread and loops with it and an equal number of small, odd number of successive weft threads on said one side of the rubber threads, and then jumps back to the first rubber thread.

5,642,634

APPARATUS FOR SECURING A COMPUTER CASE

Robert C. Perry, 5755 SW. Willow La., Lake Oswego, Oreg. 97035-5340

Filed May 9, 1996, Ser. No. 647,376
Int. Cl.[6] E05B *73/00*
U.S. Cl. 70—18 **20 Claims**



1. In combination, a personal computer system unit comprising a chassis having a front panel, a rear panel, and a base that connects the rear panel to the front panel, and a cover that fits to the chassis and is releasably secured thereto by at least one screw, the cover having a top wall and two side walls and engaging the chassis in a manner such that on removing the screw, the cover can be removed from the chassis by displacing the cover relative to the chassis,

and a securing apparatus for preventing unauthorized removal of the cover from the chassis, said securing apparatus comprising

a tough, flexible, elongate cable having two regions spaced apart along the length of the cable,

a security connector connecting the two spaced apart regions of the cable together to form a strap that extends around the system unit, the strap having a first length segment that passes across the rear panel of the chassis, a second length segment that passes under the base of the chassis, and at least a third length segment connecting the first segment and the second segment, and

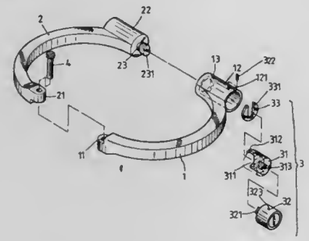
a guide means secured to the cover or the chassis and guiding the strap relative to the system unit and preventing removal of the strap from the system unit.

5,642,635

LOCK FOR A VEHICLE WHEEL

Su Wen-Chyun, No. 5, Alley 3, Lane 88, Wu-Chyuan Rd., Shen-Kang Hsiang, Taichung Hsien, Taiwan

Filed Oct. 19, 1995, Ser. No. 545,500
Int. Cl.[6] E05B *67/10*
U.S. Cl. 70—46 **4 Claims**



1. A lock for securing a vehicle or a component thereof comprising:

(a) a first half-collar having distal first and second ends, said second end having a plug member protruding along a first coupling axis therefrom, said plug member terminating in a lobe portion, said lobe portion having an elongate contour extending in a direction transverse to said first coupling axis;

(b) a second half-collar having distal first and second ends, said first end being pivotally coupled to said first end of said first half-collar, said second end having formed thereon a substantially tubular locking bed defining an inner chamber extending along a second coupling axis, said locking bed having adjacent one axial end thereof a leading edge formed by a flange portion extending radially inward into said inner chamber; and,

(c) a lock assembly coaxially received within said locking bed of said second half-collar for lockingly engaging said plug member of said first half-collar, said lock assembly including:

(i) a lock cylinder having cam means adapted for key-actuated rotation about said second coupling axis;

(ii) a follower coupled to said cam means of said lock cylinder, said follower being adapted to rotate about said second coupling axis responsive to said rotation of said cam means, said follower having formed at an axial end thereof a counterbore adapted to coaxially receive therein said lobe portion of said first half-collar plug member; and,

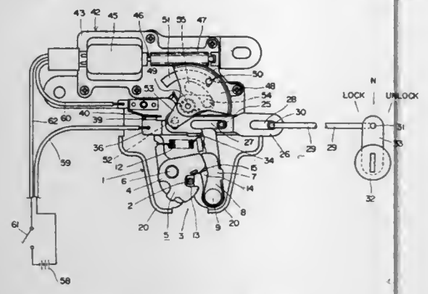
(iii) a substantially planar clip disk coaxially captured between said follower and said leading edge of said locking bed adapted to rotate about said second coupling axis responsive to said rotation of said follower, said clip disk having formed therethrough a substantially radially extended elongate slot adapted for selective passage therethrough of said first half-collar plug member lobe portion along said second coupling axis when said elongate slot and said lobe portion are oriented to extend in substantially parallel radial directions relative to said second coupling axis.

5,642,636

LOCKING DEVICE FOR TRUNK LIDS

Jiro Mitsui, Kofu, Japan, assignor to Mitsui Kinzoku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 184,214, Jan. 21, 1994, abandoned. This application Jul. 12, 1996, Ser. No. 679,010
Claims priority, application Japan, Jan. 22, 1993, 5-004845 U; Jan. 29, 1993, 5-006631 U; Mar. 23, 1993, 5-088213
Int. Cl.[6] B60R *25/00;* **E05C** *17/44*
U.S. Cl. 70—237 **6 Claims**



1. A locking device for trunk lids comprising:

a base plate having a circumferential wall;

a latch rotatably mounted on the base plate for engaging with a striker, said latch having a step portion;

a ratchet rotatably mounted on the base plate and having a pawl for engaging with the step portion of said latch;

a spring provided between said latch and said ratchet; and

a ratchet cover substantially covering said ratchet and having a first cushion portion and a second cushion portion with sufficient elasticity;

wherein said first cushion portion collides against said latch before said pawl engages with said step portion, and said second cushion portion collides against said circumferential wall when said ratchet is released from said latch;

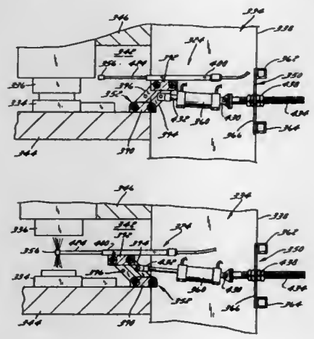
wherein said first cushion portion and said second cushion portion are respectively arranged on opposite sides of said ratchet.

5,642,637

LUBRICATOR ASSEMBLY FOR PRESSES USABLE IN DIE FORGING

James R. Crum, Clintonville, Wis., assignor to Walker Forge Inc., Racine, Wis.

Filed May 31, 1996, Ser. No. 655,978
Int. Cl.[6] B21B *45/04;45/02;* **B21C** *43/00*
U.S. Cl. 72—43 **16 Claims**



1. A lubricator assembly for lubricating a die press usable in die forging, said die press including a bolster having a rear surface and an opening, and a die assembly mounted on said bolster within said opening, said die assembly including a first, stationary die and a second, movable die aligned with said first die, said lubricator assembly comprising:

(A) a support frame mountable on said bolster behind said first and second dies, said support frame including mounting plates attached to said rear surface of said bolster on either side of said opening;

(B) a movable lubricating arm assembly which is coupled to said support frame and at least a portion of which is movable toward and away from said dies, said lubricating arm assembly including a lube arm having a first end and having a second end;

(C) a lubricating nozzle supported on said second end of said lube arm; and

(D) an actuator having a first end pivotally attached to said support frame and a second end pivotally attached to said lubricating arm assembly, wherein, upon extension of said actuator, said actuator drives said nozzle to move through an arc from a first position in which said nozzle is located behind said first and second dies to a second position in which said nozzle is positioned between said first and second dies, wherein

said lubricating arm assembly comprises a swing arm assembly;

said support frame includes a swing arm support wbich is supported on and located between said mounting plates,

said swing arm assembly is mounted on said swing arm support so as to be pivotable about a horizontal axis, said swing arm assembly including a) a support arm, said support arm extending downwardly from said swing arm support and having a first end supported on said swing arm support and having a second end, and b) a lube arm, said lube arm extending forwardly from said support arm and having a first end which is non-pivotally mounted on said second end of said support arm and a second end which supports said nozzle,

said actuator comprises a cylinder having a first end pivotally attached to said support frame and a second end pivotally attached to said support arm at a location between said first and second ends thereof, and wherein

upon extension of said cylinder, said nozzle swings upwards and forwards from a first position in which said nozzle is located behind said first and second dies and beneath an upper surface of said first die to a second position in which said nozzle is positioned vertically between said first and second dies.

5,642,638

PROCESS FOR THE ROLLING OF HALLOW INGOTS ON A ASSEL ROLLING MILL

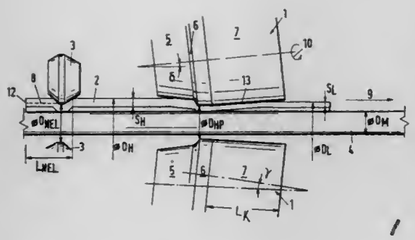
Jürgen Pietsch, Mönchengladbach, and Ingo Baade, Tünisvorst, both of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Germany

Filed Aug. 24, 1995, Ser. No. 518,670
Claims priority, application Germany, Aug. 24, 1994, 44 31 410.8
Int. Cl.[6] B21B *19/06*
U.S. Cl. 72—98 **14 Claims**

1. A method of reducing the outside diameter and wall thickness of a cylindrical hollow ingot having a front end, a back end and an outside diameter, the front end of which is to be fed into an Assel rolling mill, the method comprising:

providing a plurality of prereduction rolls in advance of said Assel rolling mill, the outer surfaces of said rolls being oriented around said ingot in a circular pattern having a diameter;

feeding said ingot at a constant speed through said circle of prereduction rolls; and



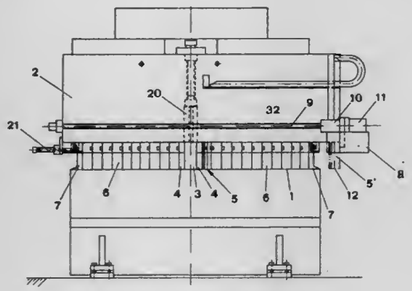
reducing said diameter so as to advance said prereduction rolls against said ingot proximate said back end at a constant pressure over a desired length of said ingot as measured along the longitudinal axis of said ingot from said back end so as to produce a cone shaped region on said ingot, said desired length being approximately 1.0 to 1.25 times said outer diameter of said ingot.

5,642,639

BLANK HOLDER HAVING VARIABLE ASSEMBLY

Antonio Codatto, Lonigo, Italy, assignor to Sapim Amada S.p.A., Lonigo, Italy

Filed Jul. 18, 1995, Ser. No. 503,735
Claims priority, application Italy, Jul. 27, 1994, VI94A0120
Int. Cl.[6] B21D *5/04;11/20*
U.S. Cl. 72—319 **9 Claims**



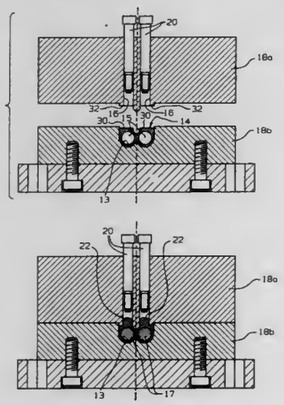
1. A blank holder having variable assembly for use in a folding machine for the production of sheet panels, the blank holder having a center and two ends, which comprises a central element (**3**), placed in the center of said blank holder, a plurality of additional elements (**6**) having identical thickness, a pair of expander elements (**4**) located adjacent said central elements, two extremity members (**7**), located at said ends of said blank holder, at least one programmer carriage (**8,15**), said carriage being movable along said blank holder and being operable to modify the length of said blank holder, and at least one plurality (n−1) of successive incremental elements (**5,14**) placed adjacent said expander elements, said additional elements (**6**) being located adjacent said incremental elements, said incremental elements having a thickness, each of said successive elements having a thickness equal to double the thickness of the incremental preceding element, whereby when the thickness of the thinner incremental element is represented by the value (p), each of said successive incremental elements has a thickness equal to $2^{(n-1)}$×p, the thickness of said additional elements being equal to double the thickness of the element of greater thickness of said plurality of the incremental elements.

5,642,640

BACK EXTRUSION PROCESS FOR FORMING A MANIFOLD PORT

Jeffrey Lee Insalaco, Brandon; William Marv Johnson, Pelshatchie, and David Michael Halbig, Brandon, all of Miss., assignors to Norsk Hydro A. S., Oslo, Norway

Filed Dec. 13, 1995, Ser. No. 571,721
Int. Cl.[6] B21D *28/28;* **B21J** *5/12*
U.S. Cl. 72—334 **20 Claims**



1. A method for forming a manifold port, the method comprising the steps of:

providing a manifold having a passage formed therein, the passage defining a first wall at a first region of the manifold and a second wall at an oppositely-disposed second region of the manifold;

positioning the manifold within a die cavity in a first die half, the die cavity conforming to the second wall of the manifold;

mating a second die half with the first die half so as to back extrude a portion of the first wall into a cavity defined exclusively within the second die half, the portion of the first wall forming a raised portion on the manifold; then

forcing a punch through the cavity in the second die half and into the raised portion in a direction toward the manifold so as to back extrude the raised portion, the punch causing the raised portion to flow in a direction opposite to the direction of the punch so as to form a riser having an internal bore defined by the punch and an outer surface defined by the cavity in the second die half, and

removing the manifold from the second die half.

5,642,641

DOME SHAPED EXTRUDED LOCATION FEATURE TOOL FOR MAKING THE LOCATION FEATURE AND METHOD FOR LOCATING ADJOINING PLATES USING THE LOCATION FEATURE

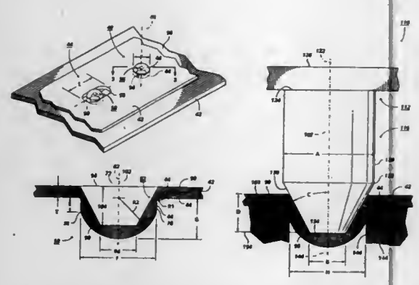
David E. Maxfield, Jr., Webster, and Daniel L. Coughlin, Jr., Elba, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 235,997, May 2, 1994, abandoned. This application May 21, 1996, Ser. No. 653,376
Int. Cl.[6] B21D *22/04*
U.S. Cl. 72—358 **18 Claims**

1. A locating feature for engagement with a member, comprising:

a plate including opposed parallel surfaces; and

a protrusion extending outwardly from said plate, said protrusion including a substantially linear portion extending normally from said plate, and a dome shaped portion extending from said linear portion, said exterior of said protrusion



extending from one of the opposed surfaces, said protrusion having an interior defined by only a conofrustical pocket therein opposed to the dome shaped portion of said protrusion and extending immediately from the other of the opposed parallel surfaces.

14. A tool for forming a locating feature on a plate, comprising;

a pinch having a body defining a cylindrical body diameter thereof and a substantially conofrustical stem extending directly from the body, the stem defining a first end of said punch and the stem defining a tip diameter thereof the stem defining an included angle; thereof and

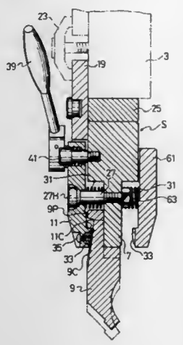
a die bushing having a surface for supporting a plate and defining and aperture therein with the stem of the punch being extendible, at least partially, into the aperture, the aperture defining an aperture diameter thereof, so that said punch and said die bushing may be used for forming a protrusion in said plate having opposed surfaces, the protrusion extending outwardly from the plate the protrusion having an exterior including a substantially linear portion extending normally from the plate, and a dome shaped portion extending from the linear portion, the protrusion having an interior defined by only a conofrustical pocket therein opposed to the dome shaped portion of the protrusion and extending immediately from a surface of the first plate, when said punch and said die bushing contact opposed surfaces of the plate.

5,642,642

UPPER TOOL AND UPPER TOOL HOLDING DEVICE FOR PRESS BRAKE

Susumu Kawano, Kanagawa, Japan, assignor to Amada Metrecs Company, Limited, Kanagawa, Japan

Continuation of Ser. No. 239,323, May 6, 1994, Pat. No. 5,513,514. This application Oct. 18, 1995, Ser. No. 544,655
The portion of the term of this patent subsequent to Jun. 17, 2014, has been disclaimed.
Int. Cl.[6] B21D *37/04*
U.S. Cl. 72—482.91 **12 Claims**



1. An upper tool for a press brake, said upper tool for attaching to an upper tool holding device mounted on an upper table of the press brake, said upper tool comprising:

a mounting portion, said mounting portion positioned adjacent a first end of said upper tool;

a work processing portion, said work processing portion positioned adjacent a second end of said upper tool;

a projection portion, said projection portion positioned at said first end;

a clamping surface;

a sliding surface, said clamping surface and said sliding surface extending from said first end and divergingly away from each other toward said second end; and

a contact surface, said contact surface extending substantially perpendicular with respect to said sliding surface and coupled to an end of said sliding surface between said first and second ends;

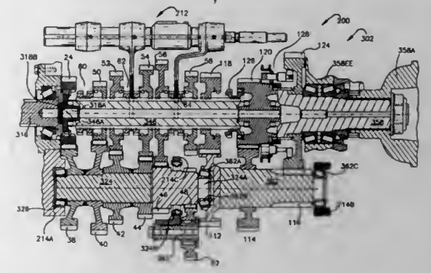
wherein said clamping surface extends along a length of said upper tool beyond said contact surface.

5,642,643

REDUCED-LENGTH, HIGH-CAPACITY COMPOUND TRANSMISSION

Joseph D. Reynolds, Climax, and Alan C. Stine, Kalamazoo, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 345,092, Nov. 28, 1994, Pat. No. 5,546,823. This application Feb. 13, 1996, Ser. No. 600,581
Int. Cl.[6] F16H *3/08;3/04*
U.S. Cl. 74—331 **17 Claims**



1. A compound vehicular change gear transmission (**200**) comprising a multiple speed main transmission section (**212**) connected in series with a multiple speed auxiliary transmission section (**302**), said main and auxiliary transmission sections contained within a common transmission housing (**214**) defining a forward end wall (**214A**) and a rearward end wall (**214B**);

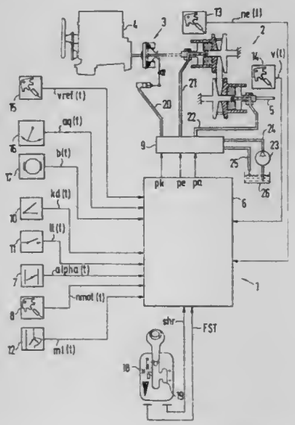
said main transmission section comprising an input shaft (**316**) supported for rotation in said housing by input shaft bearing means (**318B**) carried by said forward end wall, at least one input gear (**24**) mounted to said input shaft, a mainshaft (**346**) generally coaxial with said input shaft and extending into said auxiliary transmission section, a plurality of substantially identical main section countershafts (**324**) rotatably supported in said housing and driven by said input shaft, a plurality of main section countershaft gears (**38, 40, 42, 44, 46**) fixed to each of said main section countershafts, a plurality of mainshaft gears (**50, 52, 54, 56**) surrounding said mainshaft and constantly meshed with pairs of said main section countershaft gears and main section clutch means (**60, 62, 64**) carried by said mainshaft for selectively fixing said mainshaft gears to said mainshaft for rotation therewith;

said auxiliary transmission section comprising a plurality of substantially identical auxiliary section countershafts (**362**) coaxial with said main section countershafts and rotatably supported in said housing, an output shaft (**358**) generally

coaxial with said mainshaft and rotatably supported in said housing by output shaft bearing means (**358E**) carried by said rearward end wall (**214B**), an auxiliary section countershaft gear (**112, 114, 116**) fixed to each of said auxiliary section countershafts, at least one auxiliary section central gear (**118, 120, 124**) generally coaxial with said output shaft and constantly meshed with a pair of said auxiliary section countershaft gears and auxiliary section clutch means (**126, 128**) for selectively clutching at least one of said auxiliary section central gears and said mainshaft to said output shaft; said transmission characterized by:

the coaxial ones of said main section and auxiliary section countershafts being independently rotatable in said housing with bearing means (**362B**) therebetween and together defining a coaxial assembly of countershafts rotatably supported in said housing solely by bearing means (**326, 362C**) mounted in said forward end wall and in said rearward end wall and intermediate bearing means (**324B**) mounted in an intermediate (**214C**) housing wall axially aligned with one of said main section clutch means.

5,642,644
CONTROL SYSTEM AND CONTROL PROCESS FOR AN INFINITELY VARIABLE TRANSMISSION
Patric Lardy, Weil der Stadt, and Joseph Petersmann, Wimshelm, both of Germany, assignors to Dr. Ing. h.c.F. Porsche AG, Germany
Filed Nov. 21, 1995, Ser. No. 561,311
Claims priority, application Germany, Nov. 24, 1994, 44 41 875.2
Int. Cl.[6] F16H *59/06;* **B60K** *41/16*
U.S. Cl. 74—335 **10 Claims**



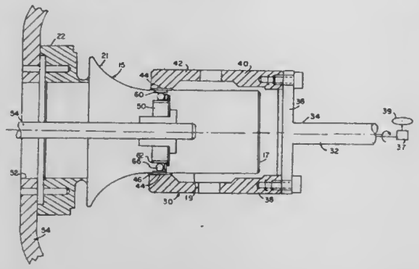
1. In a control system for an infinitely variable transmission, of the type having a first operating mode, which automatically selects a transmission ratio, and a second operating mode in which a transmission ratio can be selected directly by a driver, an arrangement for damping shifting of said transmission between selected transmission ratios, said arrangement comprising:

first means operative when said transmission is in said first operating mode for providing damping of said shifting of said transmission at a first level; and

second means operative when said transmission is in said second operating mode for providing damping of said shifting of said transmission at a second level;

wherein a degree of damping provided at said first level is greater than a degree of damping provided at said second level.

5,642,645
HERMETICALLY SEALED HARMONIC DRIVE TRANSMISSION MANUFACTURE
Steven J. Foley, Stoneham, and Joseph A. Michaud, Peabody, both of Mass., assignors to Teijin Seiki Boston, Inc., and Harmonic Drive Technologies, both of Peabody, Mass.
Filed Sep. 25, 1995, Ser. No. 533,394
Int. Cl.[6] F16H *1/00; 1/32*
U.S. Cl. 74—640 **2 Claims**



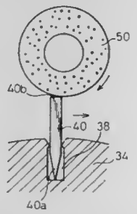
1. A harmonic drive transmission device for the transmission of rotary energy from an input source to an output mechanism within a wall of a sealed housing while providing a hermetically sealed relationship to said output shaft within said sealed housing, said wall of said sealed housing having an inner side, said harmonic drive transmission device further comprising:

an input shaft having a wave generator arranged at one end thereof, said wave generator rotatively disposed within a unitary flexspline having a unitary diaphragm and mounting flange therewith;

a circular spline rotatively supported around said flexspline in a gear tooth motion communicating relationship therewith;

said flexspline having a side wall, said diaphragm and said mounting flange all of which are machined from a single solid forging of steel, so that the arrangement of gear teeth engage one another in an advancing wave, to permit rotary motion to be provided to an output shaft, which output shaft actuates a mechanism within a hermetically sealed contamination-free production housing.

5,642,646
METHOD FOR MANUFACTURING ROTARY CUTTING TOOL AND ROTARY CUTTING TOOL
Kintaro Aihara, Chiba, Japan, assignor to Nippon Petrochemicals Company, Limited, Tokyo, Japan
Filed Jan. 16, 1996, Ser. No. 585,746
Int. Cl.[6] B21K *5/00*
U.S. Cl. 76—115 **13 Claims**



1. A method for manufacturing a rotary cutting tool for forming transverse slits in a sheet, said method comprising the steps of:

preparing a cylindrical body having an axis, an outer circumferential surface and grooves arranged on the outer circumferential surface generally parallel to the axis, the grooves having bottom surfaces, preparing cutting blades each having a cutting edge and a base surface opposite the cutting edge;

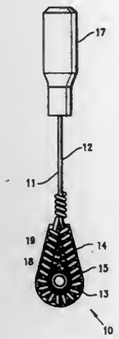
fitting the cutting blades in the grooves with the cutting edges seated on the bottom surfaces of the grooves;

machining the base surfaces of the cutting blades with a tool;

removing the cutting blades from the grooves; and

fitting again the cutting blades in the initially fitted grooves with the base surfaces seated on the bottom surfaces of the grooves.

5,642,647
BOLT AND NUT HOLDER
Robert Peruski, 6686 Orchard Lake Rd., West Bloomfield, Mich. 48322
Filed Dec. 29, 1995, Ser. No. 581,438
Int. Cl.[6] B25B *9/00*
U.S. Cl. 81—13 **11 Claims**



1. A tool for engaging a variety of bolts and nuts comprising a slender elongated body, said body having a straight portion and at least one adjoining loop-shaped end portion; a plurality of thin resilient wires arranged radially around the loop-shaped end portion and having end portions attached to the loop-shaped end portion, said thin wires extending inwardly toward the center of said loop-shaped end portion; and a wire for retaining said thin inward extending wires to said loop-shaped end portion, said wire being coiled tightly around said end portions of said thin wires and said body's loop-shaped end portion.

5,642,648
CAR DOOR LATCH RELEASE TOOL
Adulbert Wendt, Bergheim, Germany; Alan Goeke, Hinsdale, and Giles Kalvelage, II, Hanover Park, both of Ill., assignors to HPC, Inc., Schiller Park, Ill.
Continuation of Ser. No. 529,088, Sep. 15, 1995, abandoned. This application Jul. 29, 1996, Ser. No. 681,881
Int. Cl.[6] B25B *33/00*
U.S. Cl. 81—15.9 **12 Claims**

1. A tool for releasing the latch of locked doors of vehicles when the door window is closed, said vehicle having a latching linkage rod within the door cavity, said tool comprising:

an elongate one-piece tube having a distal end and a proximal end, said tube being of uniform dimension over its length and said tube being relatively rigid and having a gradual arcuate bend at the distal end thereof;

a thin one-piece rod reciprocally mounted in said tube having distal and proximal ends projecting outwardly from the distal and proximal ends of the tube, said tube being of uniform dimension over its length,



said tube and rod being in close fitting sliding relationship with one another over the length of the tube;

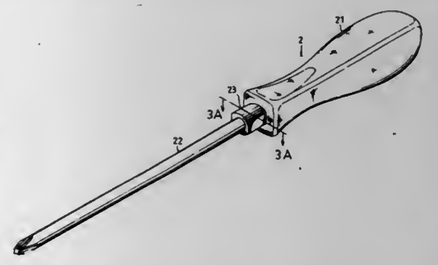
hook means on the outwardly projecting distal end of said thin rod adapted to engage the linkage rod;

a slot in the distal end of said tube adapted to sheathe portions of said book means in a retracted position; and

an operating handle on the outwardly projecting maximal end of the thin rod and adapted to reciprocate said rod relative to said tube so that said hook means is movable between said retracted position, a linkage rod engaging position spaced from the distal end of said tube and a linkage rod gripping position adjacent the distal end of said tube,

said tube being insertable into the door cavity alongside the window and movable for engaging said linkage rod with said hook means in said engaging position, and said rod being thereafter reciprocable by said operating handle to move said hook means into said gripping position wherein said hook means cooperates with the distal end of said tube to positively grip said linkage rod for unlatching movement thereof.

5,642,649
SCREWDRIVER WITH WRENCH ENGAGING COLLAR
Chih-Ching Hsieh, No. 64, Lane 107, Liang Tsun Rd., Fong Yuan City, Taichung Hsien, Taiwan
Filed Oct. 9, 1996, Ser. No. 728,528
Int. Cl.[6] B25B *13/00*
U.S. Cl. 81—58.1 **1 Claim**



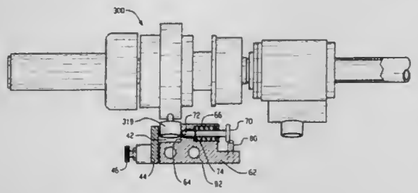
1. A screwdriver comprising a blade, and a handle at one end of said blade, said blade having a collar raised around the peripery and connected to said handle through which said blade can be gripped and turned with an open end wrench, wherein said collar has a rear side connected to said handle, a front side disposed in parallel to said rear side, a top side curved outwards, a bottom side curved outwards opposite to said top side, and two opposite straight lateral sides bilaterally connected in parallel between said top side and said bottom side.

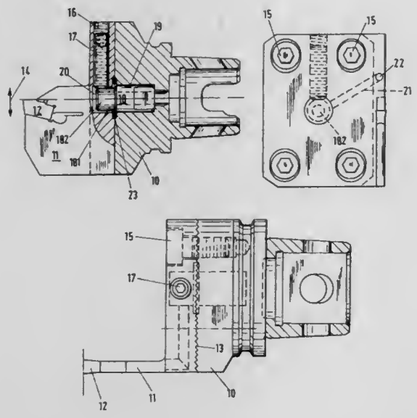
5,642,650

STOCK DEPLETION SENSOR

Michael S. Roote, Chesterland; Richard M. Amendolea, Canfield, and Frederick A. McLaughlin, Columbiana, all of Ohio, assignors to Tri-Vision International Corporation, Twinsburg, Ohio

Filed Nov. 7, 1995, Ser. No. 554,722
Int. Cl.[6] B23B *5/08*
U.S. Cl. 82—126 **18 Claims**





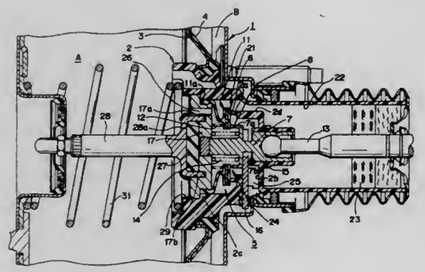
1. A multi-spindle bar fed machine comprising:
a plurality of work spindles mounted on an indexing head, each of said spindles having:
a chuck and a reciprocating feed tube with feed fingers adapted to grip stock in said tube and move said stock through said chuck when said chuck is open; and to slide over said stock when said chuck is closed; and
a connecting member linked to said feed tube;
wherein said machine further comprises a stock feeding member and a stock depletion sensor, said sensor comprising:
a body mounted on said stock feeding member and adapted to press against said connecting member and move said feed tube away from said chuck;
a contact member biased to extend from said body and contact said connecting member with a biasing force greater than a force required to move said feed tube away from said chuck when there is no stock in said feed tube, but less than a force required to move said feed tube away from said chuck when stock is gripped by said fingers and gripped by said chuck; and
means for detecting a position of said contact member.

5,642,651

MODULAR TOOL SYSTEM

Rainer Von Haas, Geesthacht, Germany, assignor to Widia GmbH, Essen, Germany

PCT No. PCT/DE94/00272, § 371 Date Oct. 30, 1995, § 102(e) Date Oct. 30, 1995, PCT Pub. No. WO94/22623, PCT Pub. Date Oct. 13, 1994
PCT Filed Mar. 11, 1994, Ser. No. 532,637
Claims priority, application Germany, Apr. 5, 1993, 43 11 109.2
Int. Cl.[6] B23B *29/03;29/08*
U.S. Cl. 82—152 **10 Claims**



1. A modular tool system comprising:
a first support having a first support face and formed with a first bore of a predetermined diameter opening at the face and defining a first axis;
a second support having a second support face and formed with a second bore of the predetermined diameter opening at the second face and defining a second axis, the two faces being engaged together with the bores opening into each other;
a machining tool mounted on one of the supports;
a bolt having a first end of the predetermined diameter and a second end of a diameter smaller than the predetermined diameter, the bolt being engageable in the bores in an adjustment position with its first end snugly fitted in the first bore and its second end loosely received in the second bore and in a centering position with its first end engaged snugly in both bores; and
an adjustment screw threaded in the second support and bearing transversely of the axes on the second end of the bolt in the adjusting position thereof to transversely shift the second support on screwing of the screw in the second support.

5,642,652

BOOSTER

Hidefumi Inoue, and Masahiro Ikeda, both of Saitama-ken, Japan, assignors to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Jul. 22, 1996, Ser. No. 681,307
Claims priority, application Japan, Aug. 4, 1995, 7-219490
Int. Cl.[6] F15B *9/10*
U.S. Cl. 91—376 R **4 Claims**

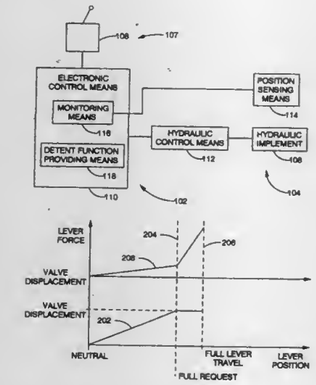
1. A booster including a tubular valve body slidably disposed within a shell and having its outer periphery at its rear end projecting externally of the shell, a power piston mounted on the valve body, a constant pressure chamber and a variable pressure chamber formed across the power piston, a valve mechanism formed within the valve body for controlling opening or closing of a flow path within the valve body in response to a forward or retracting movement of an input shaft, a constant pressure passage for providing a communication between the constant pressure chamber and the valve mechanism, a variable pressure passage for providing a communication between the variable pressure chamber and the valve mechanism, and an atmospheric passage formed by a space defined between an inner periphery of the valve body and an outer periphery of the input shaft and extending from the valve mechanism to a rear opening for providing a communication between the valve mechanism and the atmosphere, the valve mechanism including a first valve seat formed on the valve body, a second valve seat formed on a valve plunger which is slidably fitted in the valve body and located radially inward of the first valve seat, a valve element adopted to be seated upon either valve seat, a first spring for urging the valve element toward either valve seat, and a second spring for returning the valve plunger and its associated input shaft to their inoperative positions;
the improvement wherein both valve seats are formed so as to face forward while the valve element is disposed so as to face rearward in opposing relationship with respect to both valve seats, a combination of the first valve seat and a seat area of the valve element which is seated thereon defining an atmosphere valve which opens or closes the atmospheric passage, and a combination of the second valve seat on the valve plunger and a seat area of the valve element which moves into or out of engagement therewith defining a vacuum valve which opens or closes the constant pressure passage.

5,642,653

METHOD AND APPARATUS FOR PROVIDING DETENTS ON AN ELECTRONIC CONTROL HANDLE

Eric A. Hutchison, Peoria, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Oct. 23, 1995, Ser. No. 547,049
Int. Cl.[6] F15B *13/044*
U.S. Cl. 91—459 **16 Claims**



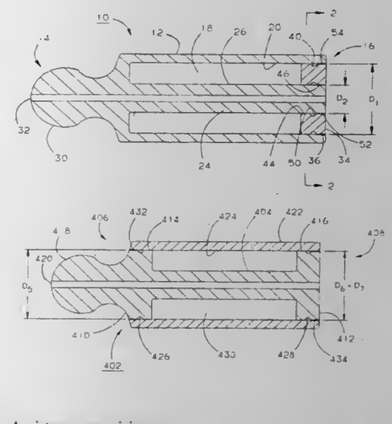
1. An apparatus for providing a detent function on a hydraulic system, the hydraulic system including a hydraulic implement movable between first and second implement positions, comprising:
control input means, operable by an operator between first and second control positions, for producing a control input signal indicative of desired movement of the hydraulic implement between the first and second implement positions;
electronic control means, coupled to said control input means, for receiving said control input signal and responsively producing a valve actuation signal;
hydraulic control means, coupled between said electronic control means and the hydraulic implement, for receiving the valve actuation signal and responsively providing hydraulic fluid flow to the hydraulic implement;
wherein said electronic control means includes:
means for monitoring said control input signal and responsively producing an active detent signal if said control input signal follows a preset pattern; and
means for receiving said active detent signal and automatically providing a detent function by actuating said hydraulic control means at full displacement in response to receiving said active detent signal.

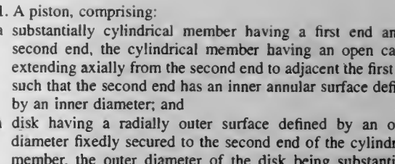
5,642,654

PISTON AND METHOD OF MANUFACTURING THE SAME

Mahendra B. Parekh; Leon Kitzmiller, both of Rockford; Richard C. Costello, Kirkland; C. Allen Grow, Rockford; Gordon Pinchott, Rockford; Dennis O'Leary, Rockford; Louis M. MacDougall, Rockford; David W. Okey, Rockford, and Edward J. Fowler, Rockford, all of Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Sep. 1, 1994, Ser. No. 299,726
Int. Cl.[6] F16J *1/00*
U.S. Cl. 92—260 **26 Claims**

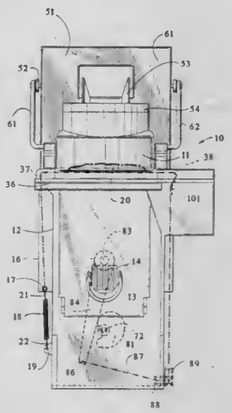




1. A piston, comprising:
a substantially cylindrical member having a first end and a second end, the cylindrical member having an open cavity extending axially from the second end to adjacent the first end such that the second end has an inner annular surface defined by an inner diameter; and
a disk having a radially outer surface defined by an outer diameter fixedly secured to the second end of the cylindrical member, the outer diameter of the disk being substantially equal to the inner diameter of the inner annular surface of the second end of the cylindrical member, the radially outer surface of the disk having a circumferentially extending recessed area for receiving particles produced while fixedly securing the disk to the second end of the cylindrical member.

10. A piston, comprising:
a substantially cylindrical member having a first end and a second end, the cylindrical member having an open cavity extending axially from the second end to adjacent the first end such that the second end has an inner annular surface defined by an inner diameter, the inner annular surface having a circumferentially extending recessed area; and
a disk having a radially outer surface defined by an outer diameter fixedly secured to the second end of the cylindrical member, the outer diameter of the disk being substantially equal to the inner diameter of the inner annular surface of the second end of the cylindrical member, the recessed area of the inner annular surface of the second end of the cylindrical member being adapted to receive particles produced while fixedly securing the disk to the second end of the cylindrical member.

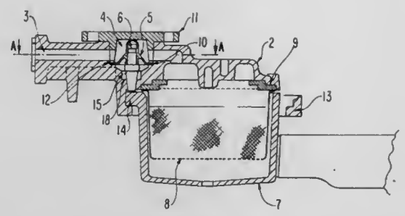
5,642,655
APPARATUS FOR ADVANCING FILTER TAPE IN A BEVERAGE BREWER, 'WINDOW BLIND' DESIGN
Alan M. King, 465 Cote St. Antoine Rd., Westmount, Canada
Filed Apr. 29, 1996, Ser. No. 639,735
Int. Cl.[6] A47J *31/24*
U.S. Cl. 99—289 T **5 Claims**



1. A beverage brewing machine comprising in combination,
an upper brewing chamber adapted to receive hot water and a beverage material and having an open lower end,
a lower chamber with an lower open upper end normally in registration and sealed with said open end,
a movable flexible filter tape mounted between said upper and lower chambers and said chambers normally clamping said portion therebetween,
a reciprocable piston mounted in said lower chamber for forcing air through said filter into said upper chamber and then providing negative pressure to withdraw brewed beverage through said filter into the lower chamber and is then expelled by gravity into the awaiting cup,
means for separating and sealing said upper and lower chambers so as to unclamp said filter,
where said piston is driven by a connecting rod which has one end pivotally connected thereto, a crank arm pivotally connected to the second end of said connecting rod, a driving shaft connected to said crank arm, and a driving means connected to said driving shaft, and
means for moving said filter tape when it is unclamped including spring biasing means connected to one end of said tape, and filter tape pulling means attached to the other end of said tape.

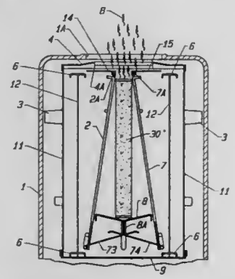
5,642,656
ESPRESSO MACHINE HAVING A SAFETY DEVICE
Walter Braendle, Uttwil, Switzerland, assignor to Eugster/Frismag AG, Romanshorn, Switzerland
Filed Jul. 12, 1996, Ser. No. 679,516
Claims priority, application Germany, Jul. 14, 1995, 295 11 371.5
Int. Cl.[6] A47J *31/24*
U.S. Cl. 99—295 **4 Claims**

1. An espresso machine utilizing steam pressure and having a filter holder for holding a filter strainer which, with the assistance of a handle, can be detachably locked on a housing of the espresso machine via a bayonet coupling or the like, said espresso machine comprising a discharge section having a water conduit, there being a chamber in said water conduit, and a locking member arranged in said chamber, which locking member, in the presence of a predetermined pressure in the chamber, locks the filter holder on the



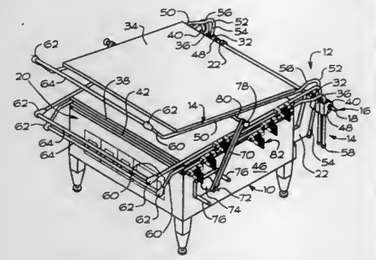
housing of the espresso machine and releases the filter holder as soon as the pressure in the chamber has fallen below a predetermined value.

5,642,657
TOASTER WITH COVER FOR REDUCED ENERGY CONSUMPTION
Pat Hok-Kwong Yeung; Miu-Choy Yeung, and Eric Wah Ho, all of Hong Kong, Hong Kong, assignors to SEMK Industrial (Holding) Co. Ltd., Hong Kong
Filed Sep. 12, 1995, Ser. No. 527,349
Int. Cl.[6] A47J *37/08*
U.S. Cl. 99—334 **14 Claims**



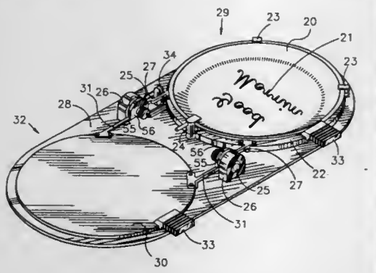
1. A toaster, including:
a frame enclosing a toasting volume, wherein the frame defines an opening for admitting an object into the toasting volume;
a carriage assembly;
a member rigidly attached to the carriage assembly, wherein the member is translatably engaged with the frame so that the carriage assembly is movable relative to the frame between a raised position and a lowered position in the toasting volume in response to translation of the member relative to the frame;
a mechanical link assembly having a first configuration and a second configuration, wherein the mechanical link assembly enters the first configuration in response to the carriage assembly moving to the lowered position and engaging a portion of said mechanical link assembly, and wherein the mechanical link assembly enters the second configuration in response to the carriage assembly moving to the raised position; and
a cover attached to the mechanical link assembly, wherein the mechanical link assembly holds the cover in a first position at least partially covering the opening when the mechanical link assembly is in the first configuration, and wherein the mechanical link assembly holds the cover in a second position uncovering the opening when the mechanical link assembly is in the second configuration, wherein the cover includes a first plate slidably mounted to the frame and a second plate slidably mounted to the frame, and wherein the mechanical link assembly includes:
means for sliding the first plate and the second plate into positions at least partially covering the opening in response to movement of the carriage assembly into the lowered position.

5,642,658
ADJUSTABLE HINGE APPARATUS
Benno E. Liebermann, 2805 Lime Kiln La., Louisville, Ky. 40222
Filed Jul. 1, 1996, Ser. No. 673,925
Int. Cl.[6] A22C *7/00;* **A47J** *27/62;37/06;37/12*
U.S. Cl. 99—349 **14 Claims**



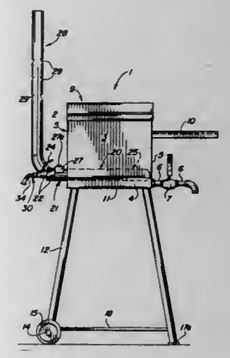
1. An adjustable floating hinge apparatus for use with a cooking or staging grill defining a housing having a heating surface and at least one plate for heating food articles thereinbetween, comprising:
said housing including a pair of brackets extending outwardly therefrom;
a support rod supported by said bracket;
at least two longitudinal members, each of said longitudinal members having a downwardly directed ninety degree bend defining a horizontal first end and a vertical second end, said longitudinal members being spaced apart from one another for supporting said plate thereon; and
at least one hinge block set, each of said hinge block sets comprising one hinge block having a pivot aperture for cooperative engagement with said support rod extending therethrough for pivoting movement therewith, said hinge block having a sliding aperture for cooperative engagement with a longitudinal member extending therethrough for sliding movement therewith.

5,642,659
PANCAKE AND EGG COOKER
Albert J. Sesona, 7731 Manassas Ct. North, Jacksonville, Fla. 32277, and Ernesto E. Blanco, 36 Sandrick Rd., Belmont, Mass. 02178
Filed Apr. 1, 1996, Ser. No. 625,903
Int. Cl.[6] A47J *37/07*
U.S. Cl. 99—376 **17 Claims**



11. A manually operated cooking grill comprising a cooking dish, a cooking dish holder ring, a cooking dish cover and a base plate of heat transferable material having a first and a second cooking position spaced apart from each other, said first position being located for said cooking dish to rest thereon while held by said ring, said second position being located where said cover rests thereon, said dish being releasably secured to said ring by a plurality of perimeter tabs on said ring; common pivot means for said cover and said holder ring permitting said dish to rest upon and be heated at said first position and be turned over with said cover resting upon and being heated at said second position, and an automatic pivotable catch body adapted to contact a stop pin attached to said ring and preventing pivoting of said ring until said cover is closed upon said dish.

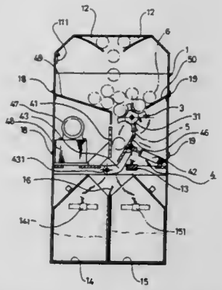
5,642,660
GAS FIRED DEEP FAT FRYER
Robert R. Killgore, Rt. 3, Box 1255, and Kelly G. Goodwin, 313 Spring St., both of Haynesville, La. 71038-9803
Filed Feb. 22, 1996, Ser. No. 605,616
Int. Cl.[6] A47J *27/00;37/12*
U.S. Cl. 99—403 **13 Claims**



1. A gas fired deep fat fryer comprising a tank for holding a cooking medium; a single, U-shaped heating loop located in said tank; a tube stub extending from one end of said heating loop; gas orifice means disposed in said tube stub, said gas orifice means connected to a source of fuel; lid means provided on said tank for removably closing said tank and covering the cooking medium; hinge means connected to said tank and said lid means for hingedly connecting said lid means to said tank; a handle provided on said lid means for engaging said tank and supporting said lid means in substantially horizontal configuration when said lid means is pivoted substantially 180 degrees on said hinge means to expose the cooking medium in said tank; and a stack extending from the opposite end of said heating loop, whereby heat is applied to said U-shaped heating loop for heating the cooking medium in said tank responsive to burning of the fuel in said tube stub at said gas orifice means.

5,642,661
RECYCLING/CRUSHING APPARATUS FOR CANS
Tien-Shui Tu, 74-28, Shui-Yuan Road, Shan-Ting Tsun, Ta-Liao, Hsiang, Kaohsiung, Taiwan
Filed Feb. 14, 1996, Ser. No. 601,517
Int. Cl.[6] B30B *9/32*
U.S. Cl. 100—91 **9 Claims**

1. A recycling/crushing apparatus for cans comprising:
a frame housing having an inlet defined in an upper end thereof;
a feeding means mounted in the frame housing and below the inlet and including an intermittently rotatable axle, a ratchet wheel mounted on the axle to rotate therewith, and a cylindrical wheel mounted on the axle to rotate therewith and having a plurality of annular recesses defined in an outer periphery thereof for receiving cans;
a crushing means mounted in the frame housing and below the feeding means and including a fixed plate, a movable plate,



and means for actuating the movable plate to move relative to the fixed plate between a first, closed position for crushing a can therebetween and a second, open position at which a crushed can will fall;

a linking means interconnected between the movable plate and the ratchet wheel of the feeding means, whereby rotation of the ratchet wheel is prohibited when the movable plate is in the first, closed position, and when the movable plate is moved from the first, closed position to the second, open position, the ratchet wheel rotates through a pre-determined angle via transmission of the linking means, thereby feeding a can in one of the recesses of the cylindrical wheel into a place defined between the movable plate and the fixed plate for subsequent crushing; and

a container mounted below the crushing means for receiving crushed cans.

5,642,662

GUIDE ELEMENTS FOR THE PRESSURE RAM OF WASTE MATERIAL PRESSES

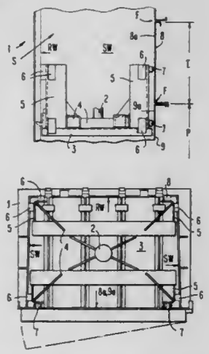
Hermann Schwelling, Hartmannweg 5, 88682 Salem, Germany

Filed Dec. 21, 1995, Ser. No. 576,806

Claims priority, application Germany, Dec. 21, 1994, 9420409 U

Int. Cl.[6] **B30B** *15/04;9/30*

U.S. Cl. 100—245 **7 Claims**



1. A guide arrangement for guiding a pressure ram of a waste material press, the waste material press having a filling chute and a pressing chute with a rear wall, side walls and front doors, the front doors having inner sides, the pressure ram comprising a pressure plate and a bending-stiff auxiliary frame attached to the pressure plate, the auxiliary frame having corners, upwardly extending brackets having upper and lower ends being mounted at the corners of the auxiliary frame, guide elements being mounted on the brackets at the upper and lower ends thereof so as to face one of the rear wall, the side walls and the inner sides of the front doors, wherein the guide elements facing the rear wall and the side walls are slide blocks and the guide elements facing the inner sides of the front doors are roller bodies.

5,642,663

APPARATUS FOR CONTROLLING A LINKAGE DRIVE SECTION IN A STENCIL PRINTING MACHINE

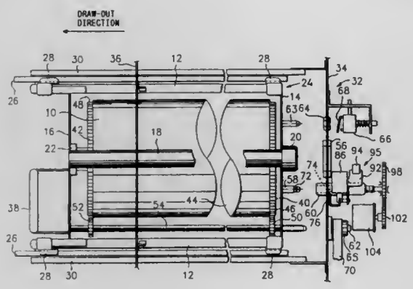
Yoshikazu Hara, Tokyo, Japan, assignor to Riso Kagaku Corporation, Tokyo, Japan

Continuation of Ser. No. 402,332, Mar. 10, 1995, Pat. No. 5,553,537. This application Feb. 9, 1996, Ser. No. 599,356

Claims priority, application Japan, Mar. 10, 1994, 6-40098

Int. Cl.[6] **B41L** *13/04*

U.S. Cl. 101—116 **4 Claims**



1. A stencil printing machine comprising:

a printing drum;

a printing machine frame;

a printing drum holding device which rotatably supports said printing drum, and which is suspended from said printing machine frame in such a manner that said device is movable along an axis of said printing drum to move said printing drum between an operating position in said printing machine and a draw-out position outside said printing machine;

print image position adjusting means for finely adjusting the position of said printing drum in the direction of the axis of said printing drum with respect to said printing machine frame, said print image position adjusting means having a first coupling element provided on the side of said printing drum holding device, a second coupling element provided on the side of said printing machine frame, and a linkage drive section provided on the side of said second coupling element for driving said second coupling element along the direction of the axis of said printing drum with respect to said printing machine frame, one of said first and second coupling elements having a lateral groove which is extended perpendicular to the direction of the axis of said printing drum, while the other being provided with a movable locking piece which is selectively engaged with said lateral groove to prevent the relative movement of said first and second coupling elements in the direction of the axis of said printing drum;

a first detector for detecting whether or not said printing drum is located near a standard position with respect to said printing machine frame when said printing drum is set in said printing machine frame;

a second detector for detecting whether or not said locking piece is engaged with said lateral groove; and

a controller for controlling said linkage drive section such that said controller detects, in response to a signal from said first detector, whether or not said printing drum is located near a standard position with respect to said printing machine frame when said printing drum is set in said printing machine frame; detects, in response to a signal from said second detector, whether or not said locking piece is engaged with said lateral groove; moves said second coupling element a first distance in a first direction in parallel with the direction of the axis of said printing drum when said controller detects that said printing drum is located near said standard position and that said locking piece is not engaged with said lateral groove; and then, moves said second coupling element a second distance in a second direction opposite to said first direction.

5,642,664

HOLDING DEVICE FOR A CHAMBER DOCTOR BLADE

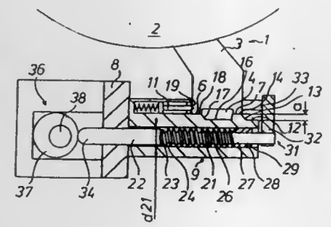
Georg Schneider, Würzburg, Germany, assignor to Koenig & Bauer-Albert Aktiengesellschaft, Germany

Filed Nov. 9, 1995, Ser. No. 555,418

Claims priority, application Germany, Nov. 10, 1994, 44 40 040.3

Int. Cl.[6] **B41L** *27/00*

U.S. Cl. 101—123 **4 Claims**



1. A holding device for a chamber doctor blade in a printing press comprising:

a chamber doctor blade base body having spaced front and rear lower sliding faces;

a plurality of spaced chamber doctor blade holders, each of said chamber doctor blade holders having base body guide surfaces upon which said sliding faces of said base body are supported, and an upper bore and a lower bore;

a plurality of spring loaded pressure elements, each said spring loaded pressure element being slideably supported in one of said upper bores in said holders, each said spring loaded pressure element having a first spring exerting a first spring force, each said spring loaded pressure element engaging said base body to urge said base body to a retracted position on said holders away from a screen surface ink roller;

a plurality of spring biased tappets, each said spring biased tappet being slideably supported in one of said lower bores in one of said holders, each said tappet having a second spring exerting a second spring force greater than said first spring force, each said spring biased tappet having a first end with a pressure lever arm and a pressure cam engaging said base body to urge said base body to a working position toward a screen surface ink roller; and

an adjusting device usable to concurrently shift said plurality of spring biased tappet in said holders in a direction of a longitudinal axis of each of said tappets between said working position and said retracted position, said adjusting device including a rotatable adjusting shaft with a plurality of eccentric disks spaced along said adjusting shaft, each of said eccentric disks being in engagement with a second end of a corresponding one of said tappets, rotation of said adjusting shaft causing said tappets to slide in said bores to move said base body on said spaced holders.

5,642,665

STENCIL STAMP ASSEMBLY AND METHOD FOR PREPARATION THEREOF

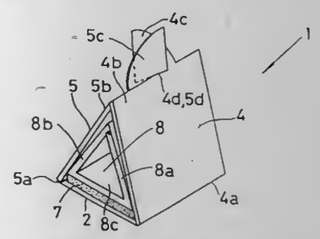
Mariko Horie, Ibaraki-ken, Japan, assignor to Riso Kagaku Corporation, Tokyo, Japan

Filed May 3, 1996, Ser. No. 642,639

Claims priority, application Japan, May 8, 1995, 7-109667

Int. Cl.[6] **B41L** *13/02*

U.S. Cl. 101—125 **9 Claims**



1. A stencil stamp assembly comprising:

a stencil sheet having a perforation area with an image perforated therein;

at least two plate members having lower end portions permanently fixed to said stencil sheet at at least two positions with said perforation area sandwiched therebetween and upper end portions connected with each other, said plate members serving as operating portions for printing;

an ink holding portion for holding ink located on an upper surface of the perforation area of said stencil sheet;

a space surrounded by an upper surface of the ink holding portion and inner surfaces of the plate members; and

a center member freely movably situated in the space and having at least three flat surfaces contacting the inner surfaces of said plate members and the upper surface of said ink holding portion so that when the plate members are pushed for printing, the center member situated in the space pushes the ink holding portion to allow the ink to pass through the perforation area to thereby perform printing.

5,642,666

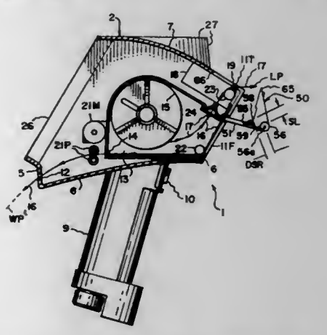
HAND-HELD LABEL PRINTER

Alfred J. Petteruti; Robert A. Petteruti, and Steven F. Petteruti, all of East Greenwich, R.I., assignors to Comtec Information Systems, Inc., Warwick, R.I.

Filed Nov. 28, 1995, Ser. No. 563,417

Int. Cl.[6] **B41F** *1/08*

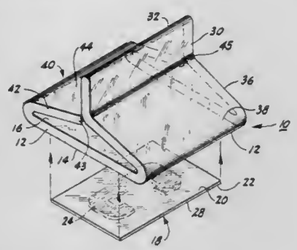
U.S. Cl. 101—288 **23 Claims**



19. A label applicator system for a hand-held label printer having a housing with a front wall with an opening, sidewalls, and

a top wall with an opening, and which applies, to a surface, labels peelably disposed on web stock which is transported to said top cover opening, a plurality of separate label applicator mechanisms for handling labels of different sizes each comprising means pivotly and selectively exchangeably disposing different ones of said plurality of mechanisms in its entirety in said sidewalls proximate to said front wall and extending thereacross, said applicator mechanisms each having means for receiving a label of one of said different sizes peeled from said web stock during said transport of said web stock to said top cover opening, said applicator mechanisms each having means defining a label path therethrough and having means for applying said labels to said surface for labeling said surface.

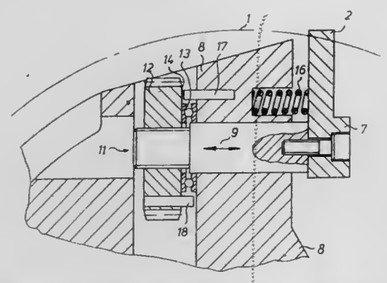
5,642,667
STAMPING STRUCTURE
Michael Sastre, 4442 Palm Ave., Sacramento, Calif. 95842
Filed Dec. 13, 1995, Ser. No. 571,521
Int. Cl.[6] B41K *1/56*
U.S. Cl. 101—405 **8 Claims**



1. A stamping device comprising:
a. a translucent base member, said base member including a surface;
b. an imprinting element, said imprinting element being fixed to said surface of said base member;
c. a handle, said handle including a grasping element;
d. a translucent connecting structure, said structure resiliently linking said handle to said base member, said handle and said connecting structure being located over said base member, said imprinting element being visible through said base member and connecting member, and
e. a translucent flange resiliently linked to said base and extending toward said handle for location over said base member, said imprinting element being visible through said translucent flange, said translucent flange including a surface free of said handle and linked connecting structure, said translucent flange selectively contacting said handle and linking connecting structure upon the application of a predetermined force to said handle.

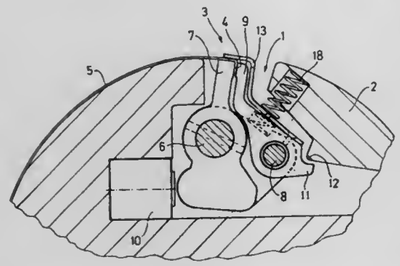
5,642,668
CYLINDER ELEMENT ADJUSTING DEVICE
Johannes Georg Schaede, Wurzburg, and Peter Eugen Wagner, Grüsfeld, both of Germany, assignors to Koenig & Bauer-Albert Aktiengesellschaft, Wurzbugr, Germany
Filed Apr. 26, 1996, Ser. No. 638,542
Claims priority, application Germany, Apr. 28, 1995, 195 15 632.3
Int. Cl.[6] B41F *21/00*
U.S. Cl. 101—415.1 **7 Claims**

1. A cylinder element adjusting device for adjusting elements on a cylinder of a rotary printing press comprising:
at least a first threaded bolt disposed in said cylinder for displacement, said threaded bolt being in engagement with said element to be adjusted;



a gear wheel carried by said threaded bolt and being rotatable to effect said displacement of said threaded bolt;
at least one drive ratchet engageable with said gear wheel and operable to rotate said gear wheel; and
a work cylinder which can be charged by a pressure medium, said work cylinder being operable to move said drive ratchet.

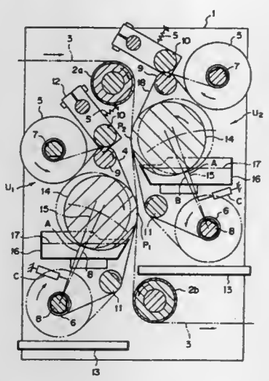
5,642,669
DEVICE FOR TENSIONING A PRINTING PLATE ON PLATE CYLINDERS OF ROTARY PRINTING PRESSES
Willi Becker, Bammental, Germany, assignor to Heidelberger Druckmaschinen Aktiengesellschaft, Heidelberg, Germany
Filed Apr. 26, 1996, Ser. No. 639,188
Claims priority, application Germany, Apr. 29, 1995, 195 15 843.1
Int. Cl.[6] B41F *1/28*
U.S. Cl. 101—415.1 **20 Claims**



1. A device for clamping a printing plate on a plate cylinder in a rotary printing press, the plate cylinder having a recess therein for accommodating the device, said device comprising:
clamping means for clamping a printing plate to a plate cylinder, said clamping means comprising first clamping means, second clamping means and third clamping means;
said first clamping means for clamping an angled end of a printing plate to a plate cylinder;
said first clamping means being at least partially disposed within the recess;
said first clamping means comprising a first resiliance;
said second clamping means for clamping a non-angled end of a printing plate to the plate cylinder;
said second clamping means being at least partially disposed within the recess;
said second clamping means comprising a second resiliance;
said second resiliance being substantially greater than said first resiliance;
said second resiliance providing a resiliance sufficient for clamping and holding a non-angled end of a printing plate to the plate cylinder;
biasing means;

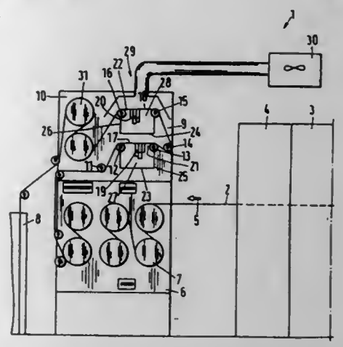
said biasing means being disposed between the plate cylinder and at least one of: said first clamping means and said second clamping means;
said biasing means for applying a force to at least one of: said first clamping means and said second clamping means;
said third clamping means comprising at least one clamping element;
said third clamping means comprising a first shaft;
said first shaft being disposed within the recess;
said at least one clamping element being disposed on said first shaft;
said clamping means further comprising means for pivotally mounting said first clamping means and second clamping means to said at least one clamping element;
said pivotal mounting means comprising a second shaft;
said second shaft being disposed offset from said first shaft;
said biasing means being disposed to apply a force to said first clamping means, said second clamping means, and said third clamping means to clamp and tension a printing plate disposed on the plate cylinder;
said biasing means disposed to apply a force to said clamping means between said first shaft and said second shaft;
said biasing means comprising at least one compression spring; and
said compression spring being disposed between the plate cylinder and said first clamping means.

5,642,670
PAPER SURFACE CLEANING DEVICE
Hideo Takeuchi, Chiba-ken, Japan, assignor to Comtec Co., Ltd., Japan
Filed Mar. 15, 1995, Ser. No. 404,371
Claims priority, application Japan, Mar. 18, 1994, 6-048904
Int. Cl.[6] B41F *35/02*
U.S. Cl. 101—423 **9 Claims**



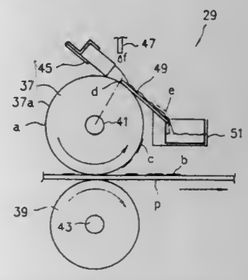
1. A paper surface cleaning device for cleaning or wiping off foreign matters such as fine paper dusts or paper wastes on a surface of a printing paper which comprises:
a) a cleaning sheet which is in contact with the surface of the printing paper and which comprises band-like cloth having meshes which have a water holding capacity;
b) roller means for absorbing water to form a water film on a surface of the roller means and for pushing the cleaning sheet to the surface of the printing paper while supplying the water film to the cleaning sheet, the roller means having, as its surface, a wettability;
c) feeding means for feeding the cleaning sheet along a running path of the printing paper with a velocity different from that of the printing paper; and
d) a water pan for accommodating dampening water into which the roller means is dipped.

5,642,671
METHOD AND APPARATUS FOR PRINTING A MATERIAL WEB
Stefan Winheim, Frankfurt, Germany, assignor to V.I.B. Apparatebau GmbH, Maintal, Germany
Division of Ser. No. 521,306, Aug. 30, 1995. This application Apr. 24, 1996, Ser. No. 640,283
Claims priority, application Germany, Sep. 2, 1994, 44 31 252.0
Int. Cl.[6] B41F *35/00*
U.S. Cl. 101—424.1 **10 Claims**



1. An apparatus for printing a paper web traveling in a travel direction, the apparatus comprising a printing unit, a drying section following the printing unit, a cooling section following the drying section, a steam operated moistening and heating section following the cooling section, and an after-cooling section following the moistening section.

5,642,672
PRINT IMAGE TREATMENT DEVICE
Takashi Isozaki; Takahito Tojima; Ryuji Higa, and Sadanao Okuda, all of Ibaraki-ken, Japan, assignors to Riso Kagaku Corporation, Tokyo, Japan
Filed Mar. 18, 1996, Ser. No. 617,093
Claims priority, application Japan, Mar. 29, 1995, 7-071896
Int. Cl.[6] B41F *35/02*
U.S. Cl. 101—424.2 **8 Claims**



1. A print image treatment device comprising:
a contact member on a surface of which an excessive ink removing liquid not dissolving in a printing ink forming a

print image and having a surface tension lower than that of the printing ink is applied, said contact member being driven to rotate;

a facing member for bringing a printed surface of a printing body into contact with the excessive ink removing liquid on the contact member by nipping and carrying the printing body having been printed between the contact member and the facing member;

supply means for supplying the excessive ink removing liquid to the contact member; and

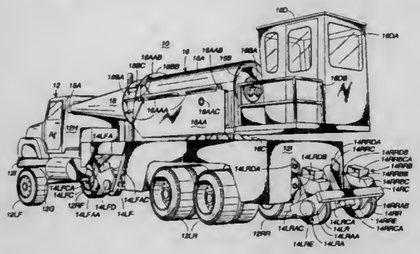
cleaning means for removing an excessive ink with the excessive ink removing liquid, a dimension where the contact member and the facing member contact in the direction of the printing body to be carried being specified to be 0.5 mm or over.

5,642,673

SNOW AND ICE MELTING DEVICE

Bobby D. Lucky, Sr., 103 Winchester Rd. NE., Huntsville, Ala. 35810

Filed Apr. 8, 1996, Ser. No. 629,104
Int. Cl.[6] B61F *19/00*
U.S. Cl. 104—279 **25 Claims**



1. A snow and ice melting device (**10**) which is transportable on a roadway and a railroad track (**20**), the snow and ice melting device (**10**) comprising:

A) a road transport vehicle (**12**) having a road transport vehicle housing (**12H**) mounted on a road transport vehicle chassis (**12I**) containing a fuel tank therein, the road transport vehicle (**12**) comprises:

1) a road transport vehicle power means (**12A**) operatively connected to at least one road transport road wheel, and

2) a road transport vehicle railroad track converter (**12E**) is hydraulically coupled to a road transport vehicle hydraulic power means (**12F**) which is hydraulically coupled to a railroad track transport vehicle hydraulic means (**14A**),

B) a railroad track transport vehicle (**14**) integrally mounted on the road transport vehicle chassis (**12I**), the railroad track transport vehicle (**14**) comprises:

1) a railroad track transport vehicle hydraulic means up-down converter (**14AA**) which is hydraulically coupled to the railroad track transport vehicle hydraulic means (**14A**), the railroad track transport vehicle hydraulic means up-down converter (**14AA**) is hydraulically connected to a railroad track transport vehicle left front wheel hydraulic piston (**14LFC**), a railroad track transport vehicle right front wheel hydraulic piston (**14RFC**), a railroad track transport vehicle left rear wheel hydraulic piston, and a railroad track transport vehicle right rear wheel hydraulic piston (**14RRC**), the railroad track transport vehicle left front wheel hydraulic piston (**14LFC**) is securely attached to a railroad track transport vehicle left front wheel hydraulic piston plate (**14LFCA**), the railroad track transport vehicle right front wheel hydraulic piston (**14RFC**) is securely attached to a railroad track transport vehicle right front wheel hydraulic piston plate, the railroad track transport vehicle left rear wheel hydraulic piston (**14LRC**) is securely attached to a railroad track transport vehicle left rear wheel hydraulic piston plate (**14LRCA**), the railroad track transport vehicle right rear wheel hydraulic piston (**14RRC**) is securely attached to a railroad track transport vehicle right rear wheel hydraulic piston plate (**14RRCA**),

2) a railroad track transport vehicle hydraulic means forward-reverse converter (**14AB**) which is hydraulically coupled to the railroad track transport vehicle hydraulic means (**14A**), the railroad track transport vehicle hydraulic means forward-reverse converter (**14AB**) is hydraulically coupled to at least one railroad track transport vehicle wheel power means which is selected from a group consisting of railroad track transport vehicle left front wheel power means (**14LFB**) mechanically coupled to a railroad track transport vehicle left front wheel (**14LF**), railroad track transport vehicle right front wheel power means (**14RFB**) mechanically coupled to a railroad track transport vehicle right front wheel (**14RF**), railroad track transport vehicle left rear wheel power means mechanically coupled to a railroad track transport vehicle left rear wheel (**14LR**), and railroad track transport vehicle right rear wheel power means (**14RRB**) mechanically coupled to a railroad track transport vehicle right rear wheel (**14RR**), the railroad track transport vehicle left front wheel (**14LF**) is rotatably mounted via a railroad track transport vehicle left front wheel axle (**14LFD**) on a railroad track transport vehicle left front wheel stanchion (**14LFA**) which is pivotally mounted via a railroad track transport vehicle left front wheel stanchion pivot means (**14LFAD**) on the road transport vehicle chassis (**12I**), the railroad track transport vehicle right front wheel (**14RF**) is rotatably mounted by a railroad track transport vehicle right front wheel axle (**14RFD**) on a railroad track transport vehicle right front wheel stanchion (**14RFA**) which is pivotally mounted by a railroad track transport vehicle right front wheel stanchion pivot means (**14RFAD**) on the road transport vehicle chassis (**12I**), the railroad track transport vehicle left rear wheel (**14LR**) is rotatably mounted via a railroad track transport vehicle left rear wheel axle (**14LRE**) on a railroad track transport vehicle left rear wheel stanchion (**14LRA**) which is pivotally mounted on the road transport vehicle chassis (**12I**), the railroad track transport vehicle right rear wheel (**14RR**) is rotatably mounted by a railroad track transport vehicle right rear wheel axle (**14RRE**) on a railroad track transport vehicle right rear wheel stanchion (**14RRA**) which is pivotally mounted on the road transport vehicle chassis (**12I**), and

3) a railroad track transport vehicle hydraulic means clockwise/counterclockwise converter is hydraulically coupled to the railroad track transport vehicle hydraulic means; and

C) a melter (**16**) movably mounted on the railroad track transport vehicle (**14**), the melter (**16**) comprises:

1) a melter housing (**16A**) within which a melter heat generating means (**16B**) having a melter heat generating means air intake (**16BA**) is securely positioned,

2) a melter rotator (**16C**) is mounted on the road transport vehicle chassis (**12I**) and hydraulically coupled to the railroad track transport vehicle hydraulic means clockwise/counterclockwise converter, and

3) a melter lift mounted on the meter rotator and hydraulically coupled to the railroad track transport vehicle hydraulic means.

5,642,674

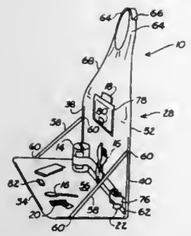
PORTABLE EATING TABLE

Freddie W. Joye, Sr., Waynesboro, and Lane I. Spector, Gladwyne, both of Pa., assignors to Fredlane Enterprises, Inc., Waynesboro, Pa.

Filed Jun. 17, 1996, Ser. No. 664,563
Int. Cl.[6] A47B *23/00*
U.S. Cl. 108—43 **12 Claims**

1. A portable eating table for supporting and holding articles and which is pendent from a user's neck and rests against the user's chest when disposed in the operative position, comprising:

a first article supporting portion for holding articles and having a first front side and a first back side;



a second article supporting portion having a second front side and a second back side and pivotably attached to the first supporting portion so that the second supporting portion can support articles thereon when pivoted away from the first supporting portion;

a rear slit which divides the first back side into a first pocket member for the first article supporting portion and which divides the second back side into a second pocket member for the second article supporting portion;

a first flat insert member for disposition within the first pocket member for creating a planar shape and providing dimensional stability to the first article supporting portion;

a second flat insert member for disposition within the second pocket member for creating a planar shape and providing dimensional stability to the second article supporting portion; and

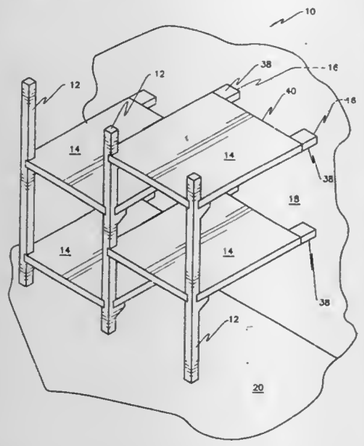
attachment means for delimiting the pivotable movement of the second article supporting portion from the first article supporting portion.

5,642,675

PROPPED KNOCKDOWN FURNITURE

William T. Webb, 1621 H St., Geneva, Nebr. 68361

Filed Jun. 28, 1995, Ser. No. 495,896
Int. Cl.[6] A47B *5/00*
U.S. Cl. 108—48 **2 Claims**



1. An item of furniture for placement in proximity to a wall comprising:

a front portion, a rear portion, and two sides;

at least two substantially vertical legs located proximate said front portion with at least one horizontal member having a rear edge removably attached therebetween; and where

said rear portion of each said horizontal member includes a plurality of rearwardly disposed tabs extending beyond said rear edge, each of said tabs having thereon a further, rearwardly disposed vertically oriented wall engagement portion; whereby

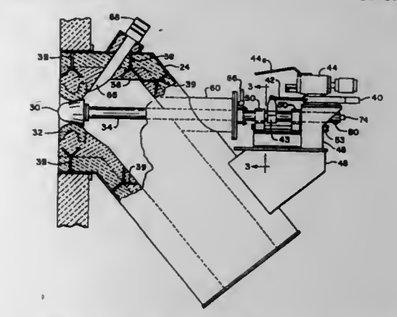
said item of furniture is placed such that said rearward facing vertically oriented wall engagement portions are in contact with, but not secured to, a wall and that said vertical legs are in contact with, but not secured to, the ground, and whereby said item of furniture is freely tiltable in a forward direction.

5,642,676

ASH CONTROL VALVE FOR A CIRCULATING FLUIDIZED BED COMBUSTOR

Yoram Schaker, South Windsor, Conn.; Joseph D. Dombrowski, Bethel Park, Pa., and Raymond C. Germain, Wilbraham, Mass., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Sep. 25, 1995, Ser. No. 533,570
Int. Cl.[6] F23J *1/02*
U.S. Cl. 110—169 **12 Claims**



1. An ash control valve apparatus, for use in a system that includes a fluidized-bed system, which comprises:

a housing;

a seat in said housing for passage of particulate material;

a plug dimensioned and configured for mating engagement with said seat; and

means for moving said plug from a first position wherein said plug is disposed in seated engagement with said seat and a second position wherein said plug is disposed in spaced relationship to said seat;

said means for moving said plug including means for mounting said plug, said means for mounting said plug including an elongated tube to which said plug is fixed, said means for mounting including a plurality of axially extending ribs disposed on the circumference of said elongated tube and a plurality of channels disposed in a bore in said plug, means in said plug cooperating with said plurality of channels to define a bayonet type receiving structure dimensioned and configured for receiving said plurality of axially extending ribs and allowing relative rotational movement between said plug and said ribs to produce locking engagement therebetween.

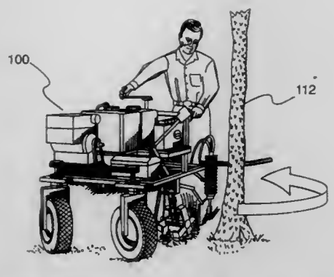
5,642,677

WALK-BEHIND SELF-PROPELLED MULTI-FUNCTIONAL NURSERY DEVICE

Thomas A. Meyer, 1609 Hobe Rd., Woodstock, Ill. 60098

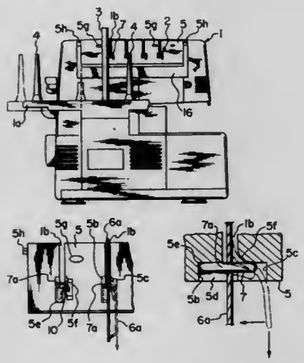
Filed Dec. 27, 1995, Ser. No. 579,101
Int. Cl.[6] A01B *33/02*; **A01C** *23/00*
U.S. Cl. 111—118 **19 Claims**

1. A combination nursery device being a walk-behind, self-propelled, nursery device capable of cultivating; and applying fertilizer and pesticides, comprising:



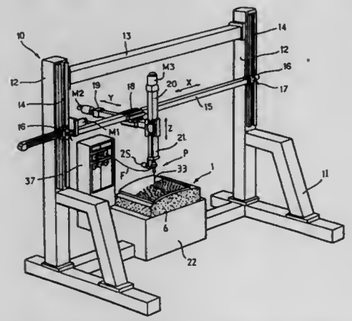
(a) a frame supporting the nursery device;
(b) the nursery device including a guide means and a driving means to support the frame;
(c) an engine being supported on the frame;
(d) the guide means being controlled by a steering means;
(e) the engine being connected to the driving means through an electric clutch assembly;
(f) an electric switch assembly being connected to the electric clutch assembly for selective operation thereof;
(g) the electric clutch assembly including a reverse clutch and at least one forward clutch;
(h) a tilling assembly being mounted below the frame;
(i) the driving means including a pair of driving wheels mounted on a rearward portion of the frame;
(j) the guide means including a pair of guiding wheels oppositely disposed from the pair of driving wheels and mounted on a forward portion of the frame;
(k) the pair of guiding wheels being controlled by the steering means; and
(l) the tilling assembly being connected to a positioning device for raising or lowering the tilling assembly.

5,642,678
THREAD GUIDE DEVICES OF A SEWING MACHINE
Masanori Mizunuma, and Shinji Kojima, both of Utsunomiya, Japan, assignors to The Singer Company N.V., Curaco, Netherlands Antilles
Filed Jun. 13, 1996, Ser. No. 663,483
Claims priority, application Japan, Jun. 14, 1995, 7-170497
Int. Cl.[6] B65H *57/08;* **D05B** *47/00*
U.S. Cl. 112—302 **3 Claims**



1. Thread guide devices of a sewing machine including thread guide plates each disposed between each thread spool and a tension device respectively of a body for guiding each thread from each thread spool, said thread guide plates each comprising a base end portion attached to one end of each thread guide groove portion which is opened at an upper end of the body, a tip end portion having an inclination portion which is elastically brought into contact with a rear wall of the body at a front surface of the inclination portion, and a thread accommodation space defined in a lower end portion of the thread guide groove portion.

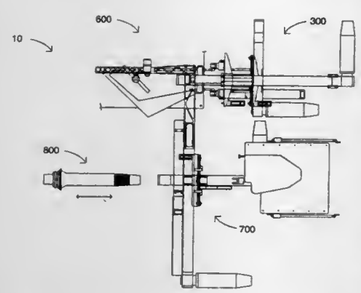
5,642,679
MACHINE FOR PRODUCING A REINFORCEMENT FOR A COMPOSITE COMPONENT
François Monget, Merignac, and Georges Cahuzac, Le Bouscat, both of France, assignors to Societe Nationale Industrielle et Aerospatiale, Paris, France
Division of Ser. No. 421,562, Apr. 13, 1995, Pat. No. 5,543,005. This application Mar. 29, 1996, Ser. No. 624,225
Claims priority, application France, Apr. 18, 1994, 94 04581
Int. Cl.[6] D05B *69/02;73/00;85/00;19/00*
U.S. Cl. 112—470.13 **6 Claims**



1. A machine for implementing a method for producing a reinforcement for a composite component, said machine comprising a stand provided with a subframe and with uprights each having a slideway for mounting a transverse bar on which is mounted a carriage, which can move in a first, X, direction, equipped with a first arm extending in a second, Y, direction orthogonal to the X direction and carrying a second arm able to slide transversely with respect to the plane defined by said bar and said first arm in a third, Z, direction, motor means for driving said carriage and said first and second arms, and a thread-stitching tool mounted on the second arm, comprising, at its end, a needle, wherein said stitching tool also constitutes a tool for laying down the thread and is mounted on a rotary support (**41**, **53**) at the lower end of which is arranged said needle (**33**).

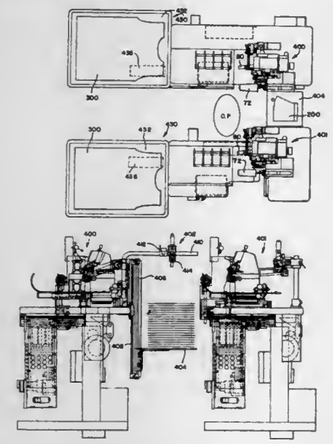
5,642,680
AUTOMATIC CUFF SETTER
Ken J. Thompson, Lexington; John R. Everhart, Winston-Salem; Wayne G. Foster, Winston-Salem, and David S. Trotter, Winston-Salem, all of N.C., assignors to Sara Lee Corporation, Winston-Salem, N.C.
Filed Jul. 21, 1995, Ser. No. 505,404
Int. Cl.[6] D05B *21/00*
U.S. Cl. 112—470.14 **46 Claims**

1. An apparatus for automatically setting a cuff to a garment piece by a sewing machine for a sweat suit or the like, said apparatus comprising:
(a) a transfer system for moving said cuff and garment piece to said sewing machine; and
(b) a cuff setter including
(c) an elongated tube having a front end and a rear end for receiving said garment piece over said front end of said tube and
(d) a spreader assembly for engaging and spreading said cuff,



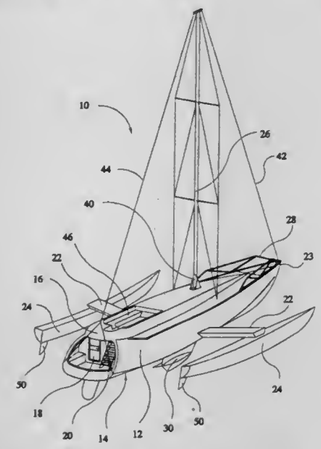
(e) said cuff setter rotating said cuff and garment piece together in the direction of sewing to attach said cuff to said garment piece.

5,642,681
SEWING SLEEVES ON SHIRT BODIES
Maximilian Adamski, Jr., and Steve J. Pagett, both of Tega Cay, S.C., assignors to Union Special Corp., Huntley, Ill.
Continuation of Ser. No. 311,330, Sep. 23, 1994. This application Sep. 8, 1995, Ser. No. 525,490
Int. Cl.[6] D05B *25/00;27/10;35/10*
U.S. Cl. 112—475.09 **12 Claims**



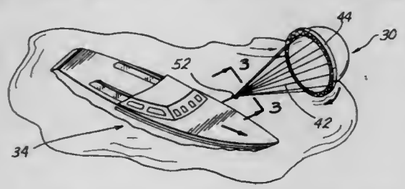
4. A method for sewing sleeves on shirt bodies using two sewing machines having automatic sew cycles, comprising the steps of:
(1). locating a first and a second sewing machine having material handling mechanisms, relative to each other such that their directions of loading are substantially opposite and there is an operator work station between the machines;
(2). presenting a first sleeve at the operator work station for easy grasp by an operator;
(3). sensing the operator grasping the sleeve;
(4). releasing the sleeve to the operator in response to sensing the operator grasping the sleeve;
(5). initiating a cycle to acquire another sleeve to be presented at the operator station for easy grasp by an operator;
(6). sensing when the operator loads a first sleeve on the material handling mechanism of the first sewing machine;
(7). moving a first loader tray carrying shirt bodies to the work station where the shirt bodies can be easily grasped by the operator;
(8). grasping a shirt body and loading it on the material handling mechanism of said first machine;
(9). initiating the automatic sew cycle for the first sewing machine;
(10). presenting a second sleeve at the operator station for easy grasp by an operator;
(11). sensing the operator grasping the second sleeve;
(12). releasing the second sleeve to the operator in response to sensing the operator grasping the sleeve;
(13). initiating a cycle to acquire another sleeve to be presented at the operator station for easy grasp by an operator;
(14). sensing when the operator loads the second sleeve on the material handling mechanism of the second sewing machine;
(15). moving a second loader tray carrying shirt bodies to the work station where the shirt bodies can be easily grasped by the operator:
(16). grasping a second shirt body and loading it on the material handling mechanism of said second sewing machine;
(17). sensing the second shirt body being loaded on the second sewing machine;
(18). initiating the automatic sew cycle for the second sewing machine;
(19). completing the automatic sew cycle for said first sewing machine;
(20). moving the first load tray toward the work station to a position overlaying said first shirt body;
(21). attaching the first shirt body and attached first sleeve to said first loader tray;
(22). moving said first load tray in a direction away from said work station and sliding the attached first shirt body and sleeve off said material handling mechanism of said first sewing machine;
(23). presenting a third sleeve at the operator station for easy grasp by an operator;
(24). sensing the operator grasping the third sleeve;
(25). releasing the third sleeve to the operator in response to sensing the operator grasping the sleeve;
(26). initiating a cycle to acquire another sleeve to be presented at the operator station for easy grasp by an operator;
(27). sensing when the operator loads the third sleeve on the material handling mechanism of the first sewing machine;
(28). grasping the first shirt body and attached sleeve:
(29). loading the first shirt body and attached sleeve on the material handling mechanism of said first machine for attachment of the other sleeve;
(30). initiating the automatic sew cycle for the first sewing machine;
(31). completing the automatic sew cycle for said second sewing machine;
(32). moving the second load tray toward the work station to a position overlaying said second shirt body;
(33). attaching the second shirt body and attached first sleeve to said second loader tray;
(34). moving said second load tray in a direction away from said work station and sliding the attached second shirt body and attached first sleeve off said material handling mechanism of said second sewing machine;
(35). presenting a fourth sleeve at the operator station for easy grasp by an operator;
(36). sensing the operator grasping the fourth sleeve;
(37). releasing the fourth sleeve to the operator in response to sensing the operator grasping the sleeve;
(38). initiating a cycle to acquire another sleeve to be presented at the operator station for easy grasp by an operator;
(39). loading the fourth sleeve on the material handling mechanism of the second sewing machine;
(40). sensing when the operator loads the fourth sleeve on the material handling mechanism of the first sewing machine;
(41). grasping the second shirt body and attached sleeve;
(42). loading the second shirt body and attached sleeve on the material handling mechanism of said second sewing machine for attachment of the other sleeve;
(43). initiating the automatic sew cycle for the second sewing machine.

5,642,682
RECOVERABLE TRIMARAN
Wayne M. Pierce, 301 Main St., Vestal, N.Y. 13850
Filed Jan. 19, 1996, Ser. No. 588,788
Int. Cl.[6] B63B *1/00*
U.S. Cl. 114—61 **26 Claims**



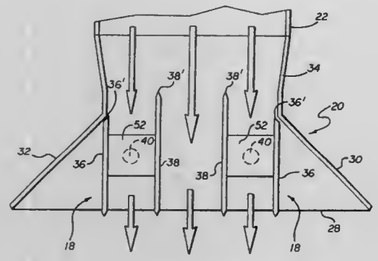
1. A recoverable, trimaran watercraft, comprising:
a watercraft including a main hull having a longitudinal axis wherein said main hull comprises a substantially cylindrical geometry;
means defining a pair of longitudinal lower quadrant hollows supported by said main hull and disposed parallel to and below said longitudinal axis;
means defining a main hatch, located substantially proximate said longitudinal axis of said main hull, situated above the waterline of said watercraft, regardless of the vertical orientation thereof;
means defining a pair of hollow sockets supported by said main hull, below said longitudinal axis, for respectively receiving a respective one of a pair of ama beams therein; and
a pair of retractable amas, each having said ama beams extending from and supported by said respective hollow sockets supported by said main hull, said retractable amas providing form stability when extended from said main hull, allowing said watercraft to be righted when each ama is retracted adjacent said main hull and nested substantially in said longitudinal hollows via retraction of its respective ama beam.

5,642,683
PARACHUTE-TYPE SAIL FOR BOATS
Norman Bedford, 6801 W. Dry Creek Rd., Healdsburg, Calif. 95447
Filed Apr. 26, 1996, Ser. No. 635,413
Int. Cl.[6] B63H *9/04*
U.S. Cl. 114—103 **15 Claims**



1. In combination a water going vessel and a sail comprising:
a water going vessel;
a parachute-type sail that includes a canopy;
a line tethering the parachute type sail to the vessel, said line being affixed to a location substantially on the periphery of the vessel;
swivel means operatively connected to the line for allowing rotation of the sail relative to the line without winding up the line, and
means for moving the location to which the tethering line is affixed about the periphery of the vessel, at the option of an operator.

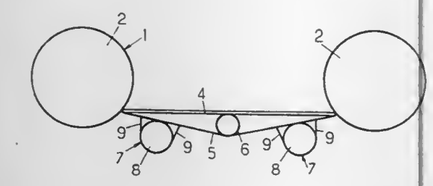
5,642,684
THRUST DIRECTOR UNIT FOR A MARINE VESSEL
Charles M. Aker, Lake Forest, Calif., assignor to Omnithruster Inc., Orange, Calif.
Filed Jun. 17, 1996, Ser. No. 664,525
Int. Cl.[6] B63H *25/46*
U.S. Cl. 114—151 **15 Claims**



1. A thrust director unit for a marine vessel, comprising:
housing means for mounting at one side of a hull of a marine vessel and defining an open flow passage therethrough for passage of a water flow between an inlet and an outlet, said outlet having a diverging cross sectional shape defined by diverging fore and aft walls interconnected by generally parallel top and bottom walls;
deflector vane means mounted within said outlet and comprising at least two deflector vanes rotatably supported between said top and bottom walls and movable therein between a sideward thrust position for discharging the water flow in a direction generally normal to a centerline of the marine vessel and at least one alternative thrust position for discharging the water flow in an angular direction relative to the centerline of the marine vessel;
said deflector vane means cooperating with said top and bottom walls of said housing means to define a substantially nondiverging discharge flow path and to isolate said fore an aft walls from the water flow when said deflector vane means is in said sideward thrust position; and
actuator means for moving said deflector vane means between said sideward and alternative thrust positions.

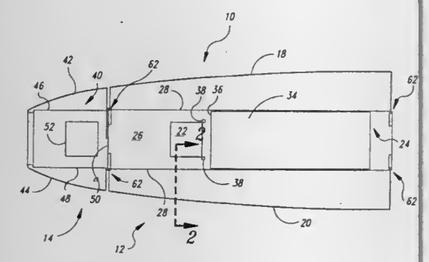
5,642,685
INFLATABLE SMALL CRAFT
Gérard Garnier, Rochefort-sur-Mer, France, assignor to Zodiac International, Issy les Moulineaux, France
Filed Feb. 20, 1996, Ser. No. 603,101
Claims priority, application France, May 19, 1995, 95 05993
Int. Cl.[6] B63B *7/08*
U.S. Cl. 114—345 **8 Claims**

1. An inflatable small craft including at least one inflatable tube forming two substantially parallel branches meeting towards the front to form a stem, a bottom sheet forming a V-shaped hull held



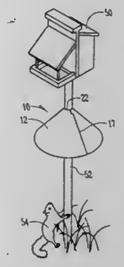
taut by a longitudinal keel which is interposed between a bottom which is rigid in the transverse direction held along said two branches and said bottom sheet which is connected to said tube along the peripheral edges of the bottom, two auxiliary floats extending under the bottom substantially parallel to the said two branches while being spaced from and offset towards the center with respect to said branches, said two auxiliary floats being secured to the bottom sheet underneath said sheet.

5,642,686
COLLAPSIBLE BOAT
William W. Jeswine, Seattle, Wash., assignor to Eagle Premier Ltd., Douglas, United Kingdom
Filed Dec. 22, 1995, Ser. No. 572,906
Int. Cl.[6] B63B *7/00*
U.S. Cl. 114—354 **26 Claims**



1. A collapsible boat comprising:
a) a central hull section including a rigid and non-foldable bottom having port and starboard edges, the bottom having a bottom surface that forms the central bottom surface of the boat's hull;
b) a port side lateral hull wall pivotally connected to the central hull section along its port side for movement between an extended position where the port side lateral hull wall is extended upward and outward from the bottom of the central hull section and a retracted position where the port side lateral hull wall is retracted inward to reduce the width of the boat;
c) a port side brace pivotally connected to the central hull section for movement between an engaged position where the port side brace connects to the port side lateral hull wall to keep the port side lateral hull wall in its extended position and a retracted position to permit the port side lateral hull wall to retract;
d) a starboard side lateral hull wall pivotally connected to the central hull section along its starboard side for movement between an extended position where the starboard side lateral hull wall is extended upward and outward from the bottom of the central hull section and a retracted position where the starboard side lateral hull wall is retracted inward to reduce the width of the boat; and
e) a starboard side brace pivotally connected to the central hull section for movement between an engaged position where the starboard side brace connects to the starboard side lateral hull wall to keep the starboard side lateral hull wall in its extended position and a retracted position to permit the starboard side lateral hull wall to retract.

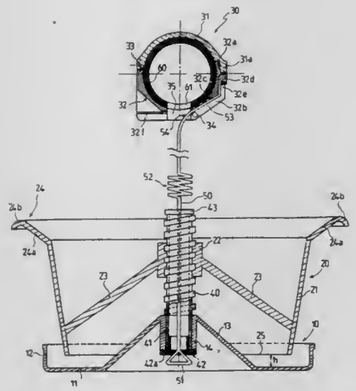
5,642,687
SQUIRREL BAFFLER
Link Nylen, Des Moines, and Ron Rainey, Ellston, both of Iowa, assignors to Woodlink, Ltd., Mount Ayr, Iowa
Filed May 23, 1996, Ser. No. 652,133
Int. Cl.[6] A01K *39/00*
U.S. Cl. 119—52.3 **13 Claims**



1. A squirrel baffler for preventing squirrels and other predators from reaching a bird feeder which is supported by a pole comprising:
a pair of T-shaped brackets wherein each generally T-shaped bracket has two flanges and a center section between the flanges with an arm extending substantially perpendicular from each center section, wherein each of the flanges connectively receives a fastening means;
fastening means for connecting the flanges of each T-shaped bracket such that the T-shaped brackets can form a continuous structure around a pole supporting a bird feeder;
a generally conical shaped flexible sheet member above and supported by said T-shaped brackets wherein said sheet member terminates at two ends forming two interlocking members running substantially the vertical length of the sheet member and further providing that the interlocking members are biased.

5,642,688
APPARATUS FOR FEEDING ANIMALS SUCH AS FOWL
Anita Bannier, 1, rue Paul Le Flem—F—35200; Bruno Le Roy, and Nicolas Le Roy, both of 48, rue Monsieur Vincent—F—35200, all of Rennes, France
Filed Dec. 12, 1994, Ser. No. 354,210
Claims priority, application France, Dec. 17, 1993, 93 15529; Jul. 22, 1994, 94 09385
Int. Cl.[6] A01K *39/012*
U.S. Cl. 119—53 **20 Claims**

1. A device for feeding animals, such as poultry, said device being adapted to be supplied with feed by a conveyor tube (**60**) from which it is suspended, said device comprising: a plate (**10**, **110**), a receptacle (**20**, **120**) communicating with said plate (**10**, **110**), means for connecting said conveyor tube (**60**) with an inside area of said receptacle (**20**, **120**), an outer periphery of said plate being in communication with said inside area of said receptacle so that said feed falls on said periphery, and means for regulating a level of feed on the outer periphery of said plate (**10**, **110**) when it



falls from the inside area of said receptacle (**20**, **120**), both said plate (**10**, **110**) and said receptacle (**20**), **120**) having an open top so that both can function as feeding troughs to enable said animals to pick up feed therefrom.

5,642,689

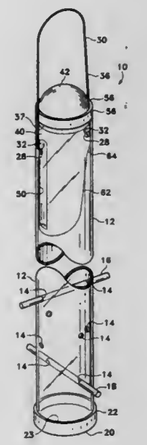
TUBULAR BIRD FEEDER WITH A SELF-CONTAINED SEED SCOOP

William H. Harvey, 10569 Foster, Overland Park, Kans. 66212

Filed Aug. 7, 1995, Ser. No. 511,682

Int. Cl.[6] A01K *39/01*

U.S. Cl. 119—57.8 **8 Claims**



2. A bird feeder comprising:

a. a tubular body having a bottom end cap fastened thereto at a bottom end of said tubular body;

b. a top cap comprising a scoop removably inserted into an upper end of said tubular body wherein said scoop of said top cap further comprises a depending scoop portion having a smaller diameter than said tubular body of said bird feeder, wherein said scoop further comprises a cut-away portion of said tubular scoop body, said cut-away portion tapering from a narrow opening at an upper scoop end to a wider opening at a lower scoop end.

5,642,690

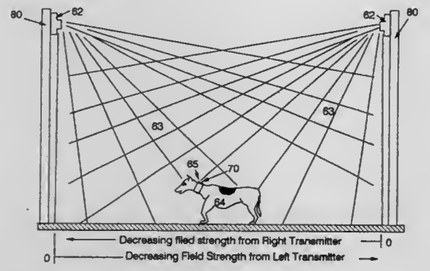
ANIMAL CONTAINMENT SYSTEM

Frank A. Calabrese, Waynesboro; Kenneth B. Shockey, N. Greencastle; Franklin O. Wisman, Chambersburg, and David A. McCarney, Waynesboro, all of Pa., assignors to Industrial Automation Technologies, Inc., Waynesboro, Pa.

Continuation-in-part of Ser. No. 126,325, Sep. 24, 1993, abandoned, which is a continuation-in-part of Ser. No. 14,810, Feb. 8, 1993, Pat. No. 5,335,626, which is a continuation of Ser. No. 867,892, Apr. 13, 1992, abandoned, which is a continuation-in-part of Ser. No. 94,075, Sep. 4, 1987, Pat. No. 5,113,962, which is a continuation of Ser. No. 820,644, Jan. 21, 1986, abandoned. This application Oct. 4, 1994, Ser. No. 317,710

Int. Cl.[6] A01K *3/00*

U.S. Cl. 119—721 **23 Claims**



1. An animal containment system comprising

a stationary transmitter including

means for defining a first curtain of energy having a first code to be entered by an animal approaching an off limits area and

a second curtain of energy adjacent said first curtain and having a second code, said second curtain to be entered after the animal passes through said first curtain approaching the off limits area, and

at least one receiver to be carried by an animal to be contained including

means responsive to said first code when the animal is within said first curtain for issuing a warning signal and responsive to said second code when the animal is within said second curtain for issuing a discipline signal.

5,642,691

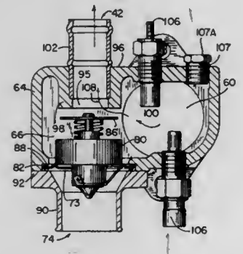
THERMOSTAT ASSEMBLY FOR A MARINE ENGINE WITH BYPASS

Bruce A. Schroeder, Stillwater, Okla., assignor to Brunswick Corporation, Lake Forest, Ill.

Filed Jan. 30, 1996, Ser. No. 594,347

Int. Cl.[6] F01P *7/14*

U.S. Cl. 123—41.09 **11 Claims**



1. A thermostat assembly for an internal combustion engine in a marine propulsion system having a closed loop cooling system, comprising:

a housing adapted to be mounted to a horizontal top surface of an engine over a thermostat coolant port from the engine;

an inlet into said housing for introducing coolant to said housing, the inlet being contained in a horizontal plane when the housing is mounted to the engine;

a thermostat outlet in said housing providing a flow path to a heat exchanger for removing heat from the coolant;

a bypass outlet in said housing providing a flow path from said housing to a circulating pump for circulating coolant to the engine without flowing the coolant through the heat exchanger, wherein the bypass outlet is contained in a first vertical plane, the thermostat outlet is contained in a second vertical plane and the bypass outlet and the thermostat outlet are directed in opposite directions along a horizontal axis;

a first passage in said housing that communicates between said inlet and said bypass outlet and said thermostat outlet; and

a thermostat horizontally mounted in said thermostat outlet to control the flow of coolant through said thermostat outlet, the thermostat also having a restricting plate to control flow of coolant through said bypass outlet without restricting flow through said bypass outlet until the engine is operating above normal engine operating temperature.

5,642,692

VALVE CONTROL MECHANISM

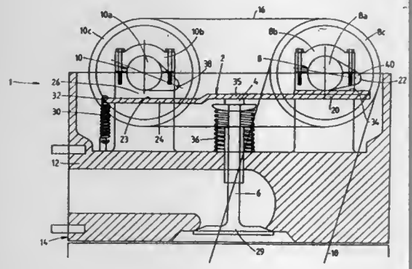
Donald Charles Wride, 35 Helen Terrace, Valley View, South Australia, 5093, Australia

Continuation of Ser. No. 140,011, Jun. 2, 1994, Pat. No. 5,555,860. This application Oct. 23, 1995, Ser. No. 565,210

Claims priority, application Australia, Apr. 24, 1991, PK5759/91

Int. Cl.[6] F01L *1/04;1/18;* **F02D** *13/02*

U.S. Cl. 123—90.16 **8 Claims**



1. A control mechanism for an engine valve comprising first and second rotatable cams which engage a lever at two respectively different follower regions, the lever having a zone of application linked to the valve by a valve linkage whereby a rocking movement of the lever caused by a rotation of the cams causes opening and closing of the valve, wherein the valve has an operational cycle with a duration of one full revolution of said first cam, each said operational cycle includes an active period during which both cams engage simultaneously with said lever to actuate said valve, and a inactive period during which said first cam is in continuous engagement with said lever and said second cam is spaced by a gap from its respective follower region on said lever, the width of the gap affecting a lift amount and a duration of opening and closing of the valve, and during a full duration of said inactive period said valve is not actuated, and means for biasing said lever into contact with said first cam and said valve linkage at least during the inactive period.

5,642,693

ROCKER ARM AND METHOD OF MANUFACTURING SAME

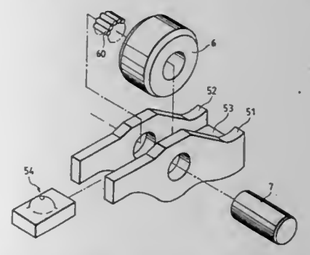
Kazuyuki Kotani, Osaka, Japan, assignor to Koyo Seiko Co., Ltd., Osaka, Japan

Continuation of Ser. No. 271,778, Jul. 7, 1994, abandoned. This application Mar. 26, 1996, Ser. No. 621,706

Claims priority, application Japan, Jul. 7, 1993, 5-167791

Int. Cl.[6] F01L *1/18*

U.S. Cl. 123—90.41 **18 Claims**



10. A rocker arm adapted to be driven by a cam, said rocker arm comprising:

a main body including a pair of integral side walls and an integral connecting portion, said side walls having first and second ends and extending parallel to each other and defining a longitude, and said connecting portion connecting said side wags to each other at said first end with respect to said longitude, said side walls and said connecting portion being formed in a single piece, and said connecting portion forming a valve-engaging portion; and

a pivot engageable plate formed as a separate piece from said main body and adapted to be fixed on said side walls at said second end opposite from said first end with respect to said longitude, said pivot engageable plate having a planar part and a semi-spherical part circumscribed by said planar part.

5,642,694

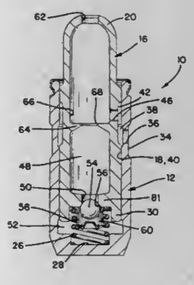
INTEGRAL FORMED OIL COLUMN EXTENDER FOR HYDRAULIC LASH ADJUSTER

Lowell Eugene Dura, Belmont; William Paul Vukovich, Kentwood, and Robert L. Kauffman, Jr., Lake Odessa, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 24, 1996, Ser. No. 658,901

Int. Cl.[6] F01L *1/24*

U.S. Cl. 123—90.43 **3 Claims**



1. A hydraulic lash adjuster comprising a cylindrical follower body, a tubular plunger slidingly received within said follower body, said plunger and said cylindrical follower body cooperating to define a high pressure chamber therebetween, said plunger

including an axially extending passage having an inner wall defining an interior reservoir for supplying fluid to said high pressure chamber through a valved opening disposed therebetween, said axially extending passage having a port through which fluid flows into and out of said interior reservoir, and a radially inwardly extending annular shelf formed from and one-piece with said inner wall of said axially extending passage, said annular shelf disposed between said valved opening and said port, said annular shelf operable to define a baffle to limit fluid flow out of said port when said lash adjuster is operated at an angle from vertical.

5,642,695

HEATING MODULE FOR A COMBUSTION ENGINE

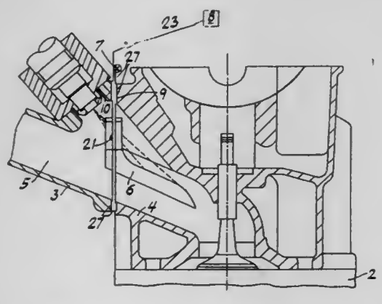
Karl-Heinz Spies, Birkenau; Joachim Heinemann, Groxheimertal, and Uwe Meinig, Weinheim, all of Germany, assignors to Firma Carl Freudenberg, Weinheim, Germany

Filed Mar. 26, 1996, Ser. No. 622,711

Claims priority, application Germany, Mar. 30, 1995, 195 11 685.2

Int. Cl.[6] F02M *31/04*; **F02F** *11/00*

U.S. Cl. 123—142.5 E **8 Claims**



1. A heating module for a combustion engine, said heating module being arranged between an induction pipe and a cylinder head of said combustion engine, the heating module being connectable with connecting terminals to an electric current source, comprising:

at least one foil-like thin plate made of a metallic material;

a conductor made of electrically conductive material secured to said at least one plate;

sealing devices on a side of said heating module facing said induction pipe and a side of said heating module facing said cylinder head; and

at least one electrically heatable heating element.

5,642,696

ENGINE STARTING SYSTEM FOR MOTOR VEHICLE

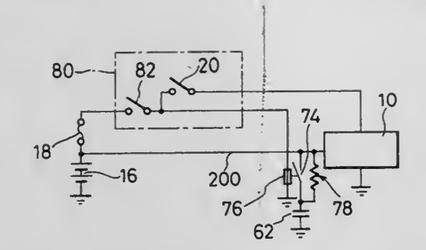
Fujio Matsui, Sagamihara, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 20, 1995, Ser. No. 575,615

Claims priority, application Japan, Jan. 17, 1995, 7-005231

Int. Cl.[6] F02N *11/08*

U.S. Cl. 123—179.1 **14 Claims**



1. An engine starting system of a vehicle having an engine, a starter for starting said engine, a battery for supplying a current to said starter, main electrical pass for electrically connecting said battery with said starter, a main switch for selectively opening and closing said main electrical pass and a key switch for operating said main switch, comprising:

a first electrical connection line for electrically connecting said main electrical pass with ground;

a capacitor interposed on said first electrical connection line for storing electricity and when said main switch is opened and for supplying a lock current to said starter when said main switch is closed;

switching means interposed between said capacitor and said main electrical pass for closing said electrical connection line when said key switch is closed and for opening said electrical connection line when said key switch is opened;

a second electrical connection line connected in parallel with said switching means; and,

a regulating resistor interposed on said second electrical connection line for regulating current, wherein said key switch comprises a multi-stage switch for closing at least said switching means and said main switch and said multi-stage switch is constituted such that said switching means are closed before said main switch is closed.

5,642,697

INTAKE MANIFOLD FOR AN INTERNAL COMBUSTION ENGINE

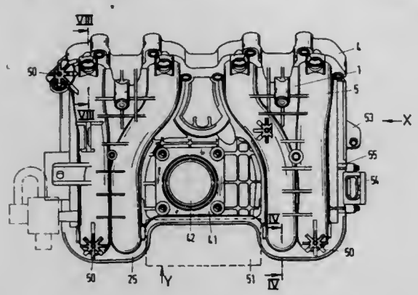
Hans-Ulrich Jahrens, Braunschweig, and Günter Söhlke, Gifhorn, both of Germany, assignors to Volkswagen AG, Wolfsburg, Germany

Filed Jun. 6, 1996, Ser. No. 659,436

Claims priority, application Germany, Jun. 7, 1995, 195 20 667.3

Int. Cl.[6] F02B *27/02*; **F02M** *35/10*

U.S. Cl. 123—184.21 **11 Claims**



1. An intake manifold for an internal combustion engine comprising two half-shells joined along a common parting plane to provide a central air-collecting region and to form outer pipe walls of cylinder-specific tubular intake ducts, a plurality of inserts mounted in the half-shells providing inner pipe walls of the intake ducts which communicate with the central air-collecting region, each of the half-shells being formed on both sides of each pipe wall with wall sections which are substantially parallel to each other and the inserts having corresponding parallel wall sections which engage parallel wall sections of the half-shell in which they are mounted so as to overlap therewith in an overlap region, and a seal arranged between mutually facing wall sections of each insert and the corresponding half-shell at an end of the wall overlap region which is remote from the corresponding intake duct.

5,642,698

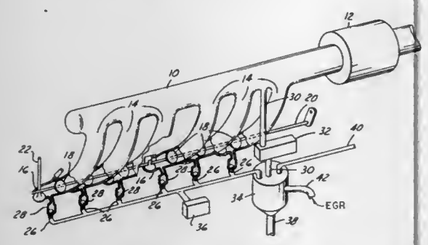
INDUCTION SYSTEM FOR INTERNAL COMBUSTION ENGINE

Roy Edward Diehl, Northville, and Matt Adrian Vance, Dearborn, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Aug. 19, 1996, Ser. No. 697,100

Int. Cl.[6] F02M *35/10*

U.S. Cl. 123—184.42 **16 Claims**



1. An induction system for a multicylinder internal combustion engine, comprising:

a log for receiving air drawn into the engine;

a plurality of runners extending from the log to a plurality of intake ports associated with the cylinders of the engine;

a plurality of throttle plates situated within said runners, with at least one throttle plate in each runner;

an antireversion air manifold system supplied with air by said log and having a main passage and a plurality of branches, with at least one branch extending from the main passage to each of said runners at a location between the throttle plate and the intake port; and

a plurality of flow control valves, with one flow control valve being positioned in each of said branches such that airflow is allowed within said branches in the direction from said main passage into said ports, but reversion flow is prevented from said ports into said main passage.

5,642,699

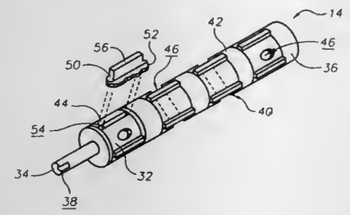
ROTARY VALVE SYSTEM

Gary I. Brown, 3425 W. Maule, Las Vegas, Nev. 89118

Filed Mar. 14, 1996, Ser. No. 615,116

Int. Cl.[6] F01L *7/16*

U.S. Cl. 123—190.2 **1 Claim**



1. In a rotary valve system for an internal combustion engine having a plurality of combustion cylinders, a plurality of fuel injectors and a crankshaft, the improvement comprising:

a valve assembly rotatably mounted within said internal combustion engine engine in communication between said plurality of cylinders and said plurality of fuel injectors, said valve assembly being in operational connection with said crankshaft in a manner such. that rotation of said crankshaft causes said valve assembly to rotate; said valve assembly including an elongated core formed of hardened steel and having a shaft end and a blunt end, said shaft end having a key way formed therein for connection with a belt pulleys, said blunt end being adapted for rotatable connection with an engine head structure,

said valve assembly being divided into four cylinder sections, each said cylinder section being mounted adjacent one of said plurality of cylinders of said engine, each said cylinder section being bracketed by a pair of sealed bearing assemblies to facilitate the rotation thereof,

each said cylinder section having a port including two open ends formed transversely through said valve assembly so as to intersect the longitudinal axis thereof, and

a pair of vane seals bracketing each said open end of each said port, each said vane seal being disposed atop a steel wave spring that is positioned within a slot formed longitudinally along an outer surface of said valve assembly and having a stainless steel strip mounted atop a surface thereof, each said vane seal and each said wave spring being secured within its respective said slot by a said pair of sealed bearing assemblies.

5,642,700

SLIDING CONTACT-MAKING STRUCTURES IN INTERNAL COMBUSTION ENGINE AND METHOD FOR PRODUCING SAME

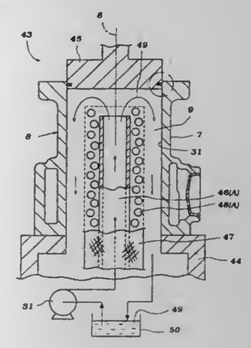
Hirohiko Ikegaya, and Yasuyuki Murase, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Division of Ser. No. 480,451, Jun. 7, 1995. This application Apr. 15, 1996, Ser. No. 631,994

Claims priority, application Japan, Dec. 26, 1994, 6-337889

Int. Cl.[6] F02F *5/00*

U.S. Cl. 123—193.2 **9 Claims**



1. A method for forming a plating coating on the inside surface of a cylinder unit of an internal combustion engine, comprising the steps of:

(a) sealing one end of a cylinder unit on the side of a crankshaft by fitting a cover having a sealing portion circumferentially provided on the side into the inside of the cylinder unit, wherein the sealing portion circumferentially touches the inside surface of the cylinder unit near said end of the cylinder, and a gap is formed circumferentially by the side of the cover, the sealing portion and the inside surface of the cylinder unit;

(b) inserting an electrode inside said cylinder unit from the other end of the cylinder unit;

(c) permitting a plating liquid containing a dispersoid substance-forming material to flow in a path formed by the inside surface of the cylinder unit, the electrode and the cover; and

(d) impressing a voltage between said inside surface of the cylinder unit and said electrode to give an electric current density therebetween so as to form a plating coating on said

surface of the cylinder unit, wherein said electrode is positive while said inside surface of the cylinder unit is negative,

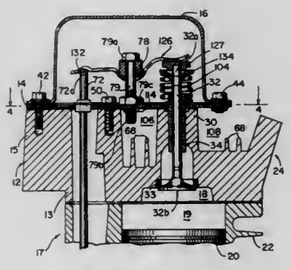
whereby the thickness of said plating coating on the inside surface of the cylinder unit is tapered off in the axial direction in the vicinity of the circumferential gap.

5,642,701

ENGINE CYLINDER HEAD ASSEMBLY HAVING PLANAR AND CAST COMPONENTS

Denis A. Oswald, Hartford; Mark W. Emmer, Pewaukee; Daniel W. Edmonds, and Robert S. Johnson, both of Milwaukee, all of Wis., assignors to Briggs & Stratton Corporation, Wauwatosa, Wis.

Filed Jan. 22, 1996, Ser. No. 589,798
Int. Cl.[6] F01M *9/10*
U.S. Cl. 123—193.5 **27 Claims**



1. A cylinder head assembly for an internal combustion engine, comprising:

a cast member, including

a lower end that is interconnected with an engine cylinder;

an upper end;

first means for receiving an intake valve and an exhaust valve;

second means for receiving an intake valve push rod and an exhaust valve push rod;

a substantially planar member interconnected with the upper end of said cast member, including

third means for receiving said intake valve and said exhaust valve; and

fourth means for receiving said intake valve push rod and said exhaust valve push rod.

5,642,702

GENERATOR SET

Toshifumi Kouchi; Tadafumi Hirose, and Yoshio Tanaka, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

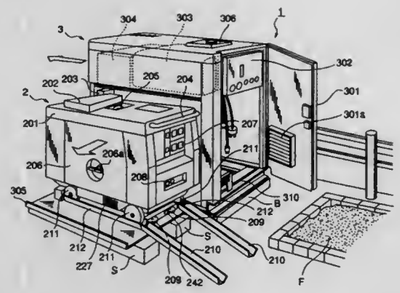
Filed Jul. 17, 1996, Ser. No. 682,098
Claims priority, application Japan, Jul. 21, 1995, 7-207794
Int. Cl.[6] F02B *77/00*
U.S. Cl. 123—198 E **13 Claims**

1. A generator set comprising:

a portable engine generator having wheels for moving said portable engine generator;

a permanent soundproof housing for housing said portable engine generator in a manner such that said portable engine generator can be operated therein; and

generator takeout means for taking said portable engine generator out of said permanent soundproof housing by permitting said portable engine generator to be pulled out of said permanent soundproof housing in a direction transverse to a direction of advance of said wheels, and thereafter permitting said portable engine generator to move in said direction of advance of said wheels.

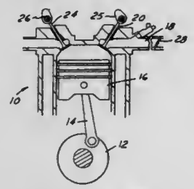


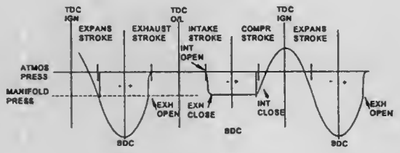
5,642,703

INTERNAL COMBUSTION ENGINE WITH INTAKE AND EXHAUST CAMSHAFT PHASE SHIFTING FOR CYLINDER DEACTIVATION

William F. Stockhausen, Northville, and Julian A. LoRusso, Grosse Ile, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 16, 1995, Ser. No. 543,744
Int. Cl.[6] F02B *77/00*
U.S. Cl. 123—198 F **20 Claims**





1. A four-stroke cycle, multi-cylinder reciprocating internal combustion engine having a crankshaft and a plurality of pistons reciprocably contained within a plurality of cylinders, said engine comprising:

at least one intake poppet valve and at least one exhaust poppet valve for each engine cylinder;

a camshaft for operating said intake valves and said exhaust valves;

a camshaft phaser coupled to said camshaft for adjusting the timing of the camshaft with respect to the rotational position of the crankshaft; and,

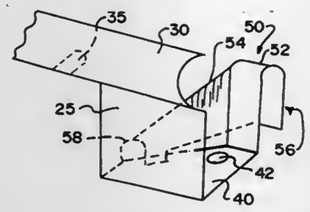
a controller, connected to said camshaft phaser, for deactivating at least some of the cylinders by operating said camshaft phaser such that for the cylinders which are to be deactivated, the camshaft timing is adjusted such that said intake valve and said exhaust valve open and close at points which are approximately symmetrical about a rotational position of the crankshaft at which the direction of motion of the cylinder's piston changes.

5,642,704

ENGINE WIRING HARNESS SUPPORT WITH INTEGRAL OIL SPILL DEFLECTOR

Kenneth J. Gogots, Elmhurst; Robert L. Rowells, Elmwood Park, and Franco Franchi, Wood Dale, all of Ill., assignors to Navistar International Transportation Corp., Chicago, Ill.

Filed Mar. 22, 1996, Ser. No. 620,620
Int. Cl.[6] F02B *77/00*
U.S. Cl. 123—198 R **5 Claims**



1. A wiring harness support and integral oil spill deflector for all injectors of a diesel engine having a HEUI fuel injection system comprising:

a longitudinally extending segment of material that adapted to extend the across all injectors of the HEUI fuel injection system;

said longitudinally extending segment of material including an apertured mounting section for each injector;

each apertured mounting section adapted to be secured to an injector by a connecting device extending through the aperture formed therein;

said wiring harness support and integral oil spill deflector including an oil deflector that has a downwardly opening trough with a closed top and first and second ends, said first end adapted to be at the level of the injector discharge port, said downwardly opening trough with a closed top adapted to extend downwardly from said first end to said second end such that oil flowing therethrough is directed downwardly from the injector discharge port; and

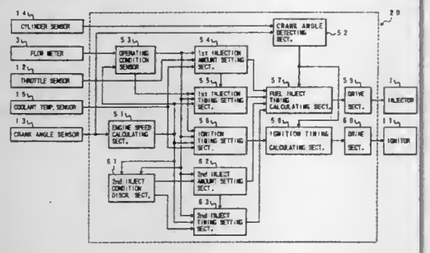
said longitudinally extending segment of material includes a coextensive channel portion that is connected to each apertured mounting section that is adapted to receive a wiring harness that includes wires extending to each injector.

5,642,705

CONTROL SYSTEM AND METHOD FOR DIRECT FUEL INJECTION ENGINE

Koji Morikawa, and Akira Akimoto, both of Tokyo-To, Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 28, 1995, Ser. No. 535,636
Claims priority, application Japan, Sep. 29, 1994, 6-235690; Dec. 22, 1994, 6-319917; Sep. 13, 1995, 7-235727
Int. Cl.[6] F01N *3/02;* **F02B** *3/04;* **F02D** *41/40;43/04*
U.S. Cl. 123—300 **41 Claims**



17. A catalyst activation control system for a direct fuel injection into a spark ignition multicylinder engine having a catalyst disposed in an engine exhaust system for said engine, said injection being into a combustion chamber of each cylinder for selectively performing a stratification combustion and uniform combustion, comprising:

engine operating condition detecting means for detecting various engine operating conditions;

primary fuel combustion means for performing a primary combustion by spark-igniting a primary fuel directly injected through an injector into each cylinder depending on said engine operating conditions; and

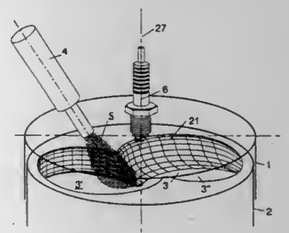
catalyst activating means for injecting a subsidiary fuel into each cylinder during the expansion stroke of the primary fuel combustion so as to fire the subsidiary injection fuel by flame propagation of the primary fuel combustion without spark-igniting whereby an exhaust gas temperature can be raised for catalyst activation.

5,642,706

INTERNAL COMBUSTION ENGINE WITH SPARK IGNITION

Martin Wirth, and Walter Piock, both of Hitzendorf, Austria, assignors to AVL Gesellschaft Für Verbrennungskraftmaschinen Und Messtechnik M.B.H. Prof.Dr.Dr.h.c. Hans List, Graz, Austria

Filed May 2, 1996, Ser. No. 641,751
Claims priority, application Austria, May 3, 1995, 757/95
Int. Cl.[6] F02B *5/00*
U.S. Cl. 123—305 **12 Claims**



1. An internal combustion engine with spark ignition comprising at least one reciprocating piston having a piston head and a longitudinal axis and a combustion chamber substantially located in the piston, said combustion chamber having a bottom, a wall and a central axis in its centre being parallel to said longitudinal axis of said piston, whereby there are edges between said wall and said piston head, with at least one fuel delivery device per cylinder for direct introduction of fuel into said combustion chamber, said combustion chamber being divided into at least two partial chambers by restrictions extending to said bottom of said combustion chamber, said partial chambers being shaped asymmetrically as seen from above and being arranged rotation-symmetrically relative to said central axis of said combustion chamber, with a minimum distance at said restrictions of said wall of said combustion chamber and a maximum distance in concave-shaped areas of said wall of said combustion chamber, measured in a cutting plane directly below said piston head, departing from said central axis of said combustion chamber, wherein the ratio between said minimum distance and said maximum distance being at least 0.2 and at most 0.5, and said wall of each partial combustion chamber being inclined relative to said longitudinal axis of the piston in the area of said minimum distance and, with respect to the swirl flow, downstream of the restriction, said inclination decreasing continuously until the area of maximum distance is reached, wherein said fuel delivery device is placed in an eccentric position relative to said centre of said combustion chamber, from where said fuel may be introduced in a direction, which is inclined relative to said central axis of said combustion chamber, and wherein said ignition device is located approximately in said centre of said combustion

chamber, and wherein said restrictions are provided with guide faces located approximately parallel to said central axis of said combustion chamber and directed towards said centre of said combustion chamber, whose smallest distance from said centre of said combustion chamber is 0–0.2 times the piston diameter.

5,642,707

METHOD AND DEVICE FOR CONTROLLING THE IDLING SPEED OF AN INTERNAL COMBUSTION ENGINE

Patrice Cerf, Tournefeuille; Jean-Michel Le Quellec, Toulouse, and Bernard Demaya, Valence d'Agen, all of France, assignors to Siemens Automotive S.A., Toulouse Cedex, France

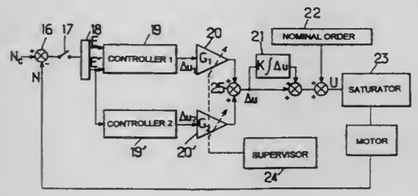
PCT No. PCT/EP95/02155, § 371 Date Apr. 1, 1996, § 102(e) Date Apr. 1, 1996, PCT Pub. No. WO95/02121, PCT Pub. Date Jan. 19, 1995

PCT Filed Jul. 1, 1994, Ser. No. 581,603

Claims priority, application France, Jul. 6, 1993, 93 08275

Int. Cl.[6] F02M *3/00*

U.S. Cl. 123—339.23 **15 Claims**



1. A method of controlling a speed of an internal combustion engine in a deceleration phase, wherein the engine includes a controlled actuator affecting the engine speed, the method which comprises:

determining a setpoint speed of the engine and an error signal as a difference between the setpoint speed and an actual speed of the engine;

defining actual states of the engine as pairs of specific values of the error signal and a time derivative thereof;

defining predetermined ideal states of the engine as pairs of specific values of the error signal and a time derivative thereof which allow the engine to regain the setpoint speed without correcting the actuator control, through a monotonic, rapid, and smooth variation of the speed; and

correcting the actuator control as a function of a difference between the actual state and the ideal state of the engine.

5,642,708

METHOD OF MODIFYING THE MOTION OF AN OUTPUT-VARYING CONTROL ELEMENT

Axel Heinrich, Meine; Frank Schulze, Vordorf, and Uwe Waschatz, Meine, all of Germany, assignors to Volkswagen AG, Wolfsburg, Germany

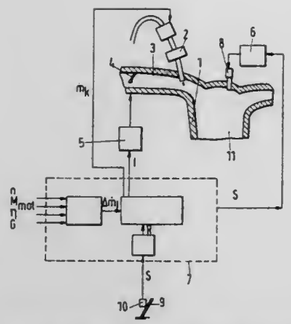
Filed Apr. 23, 1996, Ser. No. 636,838

Claims priority, application Germany, Apr. 29, 1995, 195 15 855.5

Int. Cl.[6] F02D *9/10;11/04*

U.S. Cl. 123—357 **10 Claims**

1. A method of modifying the motion of an output-varying control element of an internal combustion engine for a motor vehicle, wherein the position of a gas pedal is detected and, depending on the position of the gas pedal, a control parameter for the output-varying control element is determined, comprising the steps of determining prospectively an optimal value for the output variation of the engine per cycle at least as a function of selected operating parameters of the engine, and obtaining a control parameter for modifying the output-varying control element for ensuing



cycles based on an optimal value of the output variation and using the control parameter to control the motion of the output-varying control element.

5,642,709

ENGINE POWER TRAIN CONTROL METHOD AND CONTROL APPARATUS FOR A VEHICLE

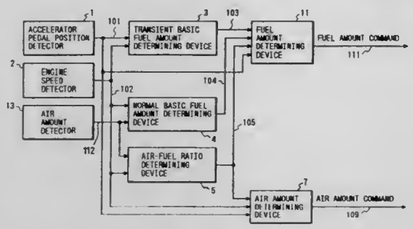
Naoyuki Ozaki, Hitachinaka; Matsuo Amano, Hitachi; Hiroshi Ohnishi, Hitachinaka, and Toshimichi Minowa, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 25, 1995, Ser. No. 506,484

Claims priority, application Japan, Jul. 25, 1994, 6-172292

Int. Cl.[6] F02D *41/18;41/26*

U.S. Cl. 123—361 **20 Claims**



1. An engine power train control method for a vehicle having an engine and an automatic transmission, comprising the step of:

determining a fuel amount fed to the engine according to a position of an accelerator pedal of the vehicle and an engine speed of the engine for a fixed period during a transition between a first air-fuel ratio for a lean-burn operation and a second air-fuel ratio for a non-lean-burn operation of the engine.

5,642,710

GOVERNOR MECHANISM

Daniel Jeremy Hopley, Gillingham, and Adrian Mark Greaney, Rainham, both of England, assignors to Lucas Industries public limited Company, England

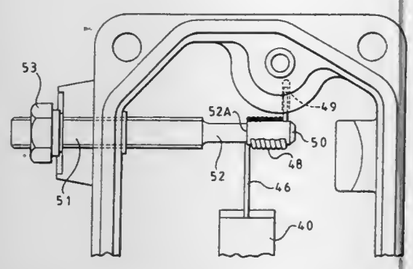
Filed Jun. 17, 1996, Ser. No. 664,816

Claims priority, applicatioo United Kingdom, Jul. 1, 1995, 9513445

Int. Cl.[6] F02D *31/00*

U.S. Cl. 123—373 **6 Claims**

1. A governor mechanism for use with a fuel pumping apparatus for supplying fuel to an internal combustion engine, the governor mechanism including an output member which is coupled to a fuel control member of the pumping apparatus, a centrifugal weight



mechanism which is coupled to the output member and which is driven in timed relationship with the associated engine, the weight mechanism acting with increasing engine speed to reduce the amount of fuel delivered by the pumping apparatus and resilient means including a leaf spring operable to oppose the movement of the output member by the weight mechanism, wherein said leaf spring has one end operatively coupled to the output member and its opposite end coupled to a torsion spring and means operable to adjust the effective number of turns and/or a part turn of the torsion spring acting in series with the leaf spring.

5,642,711

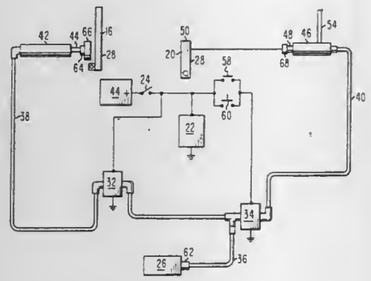
APPARATUS FOR AUTOMATICALLY CONTROLLING OPERATION OF THE THROTTLE ASSEMBLY OF A MOTOR VEHICLE ENGINE SYSTEM DURING OPERATION OF POWER TAKE-OFF EQUIPMENT

William Boner, Trenton, N.J., and Warren Kimble, Levittown, Pa., assignors to Automated Waste Equipment Co., Inc., Trenton, N.J.

Filed Feb. 15, 1996, Ser. No. 601,905

Int. Cl.[6] F02D *7/00*

U.S. Cl. 123—379 **20 Claims**



1. An apparatus for automatically controlling operation of the throttle assembly of a motor vehicle engine system, which includes an accelerator pedal and a fuel pump, during operation of power-take-off equipment including a power-take-off switch, which comprises:

A. a blocker valve means being pneumatically controlled and being operable to move to an opened position responsive to operation of a power-take-off means to facilitate blocking of operation of an accelerator pedal of a motor vehicle and being operable to move to a closed position during normal vehicle operation without operation of the power-take-off means;

B. a throttle valve means being pneumatically controlled and being operable to move to an opened position to allow controlled operation of the fuel pump of a motor vehicle engine system to control motor operating speed, said throttle valve means being operable to move to a closed position during normal vehicle operation without power-take-off;

C. a primary pneumatic line means being in fluid flow communication with a supply of pressurized air and further being in fluid flow communication with said blocker valve means and with said throttle valve means to supply pressurized air thereto;

D. a blocker pneumatic line means extending from said blocker valve means and being in fluid flow communication therewith to receive pressurized air therefrom responsive to said blocker valve means being in the opened position;

E. a throttle pneumatic line means extending from said throttle valve means and being in fluid flow communication therewith to receive pressurized air therefrom responsive to said throttle valve means being in the opened position;

F. a blocker cylinder means in fluid flow communication with said blocker pneumatic line means to receive pressurized air therefrom, said blocker cylinder means including a blocker piston means movably mounted therein, said blocker piston means being movable to a blocking position to restrict operation of the motor vehicle accelerator pedal responsive to operation of the power-take-off equipment with said blocker valve means being in the opened position and with pressurized air being supplied to said blocker cylinder means through said blocker pneumatic line means;

G. a throttle cylinder means in fluid flow communication with said throttle pneumatic line means to receive pressurized air therefrom, said throttle cylinder means including a throttle piston means movably mounted therein, said throttle piston means being selectively movable to a operating position to facilitate operation of the fuel pump to urge operation the vehicle motor at a desired operating speed thereof to facilitate operation of power-take-off equipment responsive to said throttle valve means being in the opened position with pressurized air being supplied to said throttle cylinder means through said throttle pneumatic line means; and

H. a fuel pump operating means attached to the fuel pump of the vehicle and to said throttle piston means to facilitate control of operation of the fuel pump by the throttle piston means to selectively control motor operating speed.

5,642,712

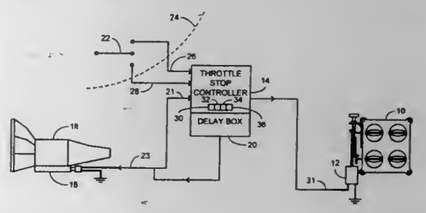
ADJUSTABLE TIME OPERATED THROTTLE BASED ON ACTUAL RACE CONDITIONS

Sam Biondo, Valley Stream, N.Y., assignor to Biondo Racing Products, Inc., Valley Stream, N.Y.

Filed Mar. 12, 1996, Ser. No. 614,367

Int. Cl.[6] F02D *9/02*

U.S. Cl. 123—398 **44 Claims**



1. A time operated throttle for use on a drag racing vehicle comprising:

means for establishing prior to launch of said vehicle a first predetermined period of time during which said throttle will be closed based on an anticipated speed of said vehicle; and

means for modifying said first predetermined period of time based on one or more actual race conditions sensed subsequent to launch.

5,642,713

PROCESS FOR CONTROLLING A PISTON INTERNAL COMBUSTION ENGINE BY MAINTAINING THE RUNNING LIMIT

Guenter Schmitz, and Heinrich Mayer, both of Aachen, Germany, assignors to FEV Motorentechnik GmbH & Co. Kommanditgesellschaft, Aachen, Germany

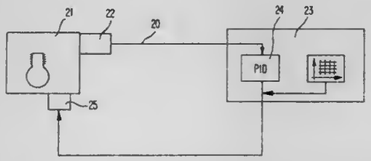
PCT No. PCT/EP95/00338, § 371 Date Oct. 4, 1995, § 102(e) Date Oct. 4, 1995, PCT Pub. No. WO95/21322, PCT Pub. Date Aug. 10, 1995

PCT Filed Jan. 31, 1995, Ser. No. 525,784

Claims priority, application Germany, Feb. 1, 1994, 44 02 938.1

Int. Cl.[6] F02D *41/04;43/00*

U.S. Cl. 123—435 **23 Claims**



1. A process for controlling a piston internal combustion engine by maintaining a running limit thereof comprising the steps of:

detecting in at least one cylinder, over at least one work cycle and without reference to a crankshaft position of the engine, a measured variable which is influenced by a conversion of fuel into energy;

setting the measured variable in relation to a detected, stored measured variable of at least one previously intercepted work cycle; and

producing an adjusting signal from any deviation between the measured variable and the stored measured variable of the at least one previously intercepted work cycle for inputting the adjusting signal to an engine regulation system.

5,642,714

FUEL SYSTEM

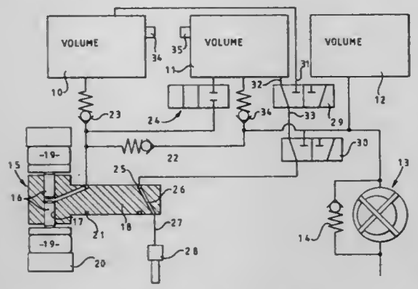
Paul Buckley, Rainham, England, assignor to Lucas Industries, West Midlands, England

Filed Nov. 6, 1995, Ser. No. 554,112

Claims priority, application United Kingdom, Nov. 12, 1994, 9422864

Int. Cl.[6] F02M *47/00;41/16*

U.S. Cl. 123—447 **13 Claims**



1. A fuel system for supplying fuel to an injection nozzle, the fuel system comprising a first accumulator arranged to store fuel at a first pressure, pump means for charging the first accumulator with fuel, the first accumulator being arranged to receive fuel from the pump means through a non-return valve, and control valve means operable to connect the first accumulator to the nozzle, wherein a second accumulator arranged to store fuel at a second pressure lower than the first pressure, the valve means being operable to select which of the first and second accumulators is used to supply fuel to the nozzle, and a two-way valve interposed between the second accumulator and the pump means and operable to allow fuel to flow from the pump means to the second accumulator when the fuel pressure in the first accumulator has attained a predetermined value.

5,642,715

DISTRIBUTOR TYPE FUEL INJECTION PUMP

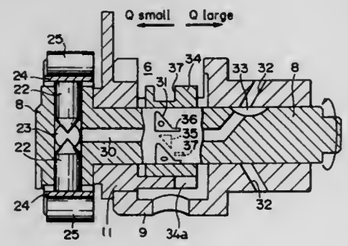
Toru Yamakawa; Ken'ichi Kubo; Hiroshi Ishiwata, and Jun Matsubara, all of Higashimatsuyama, Japan, assignors to Zexel Corporation, Tokyo, Japan

Filed Mar. 29, 1996, Ser. No. 623,955

Claims priority, application Japan, Apr. 3, 1995, 7-101743

Int. Cl.[6] F02M *41/00*

U.S. Cl. 123—450 **13 Claims**



1. A distributor type fuel injection pump comprising:

a fuel chamber;

a fuel distribution member rotatably mounted in said fuel chamber for rotation in synchronization with an engine,

said distribution member defining a compression space, and a flow passage providing fluid communication between said fuel chamber and said compression space; and

a control sleeve slidably mounted on an external peripheral surface of said distribution member, said control sleeve being relatively movable along an axial direction of said distribution member, wherein:

a plurality of first through holes are formed in one of said distribution member and said control sleeve, and a plurality of slits extend in an axial direction of said distribution member from said plurality of first through holes, respectively;

a second through hole, which can communicate with said plurality of first through holes, is formed in the other of said distribution member and said control sleeve; and

a third through hole, also formed in the other of said distribution member and said control sleeve, communicates with said slits during part of a force feed period.

5,642,716

DEVICE FOR REGULATING THE SUPPLY OF PRESSURIZED FLUID TO A PRESSURIZED FLUID ACCUMULATOR, FOR EXAMPLE FOR MOTOR VEHICLES

Mario Ricco, Via Ferrannini, Italy, assignor to Elasis Sistema Ricerca Fiat Nel Mezzogiorno Societe Consortile Per Azioni, Italy

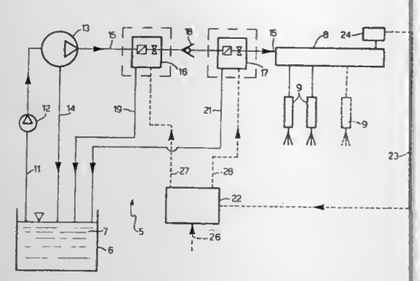
Filed Mar. 26, 1996, Ser. No. 622,072

Claims priority, application Italy, Mar. 28, 1995, TO95A0240

Int. Cl.[6] F02M *41/00*

U.S. Cl. 123—456 **9 Claims**

1. A device for controlling the pressure of a fluid supplied to a pressurised fluid accumulator (8), for example for rotor vehicles,



comprising a pressurisation pump (13) for supply of the fluid to the accumulator (8); at least one element (9) connected to the accumulator (8) operable to utilise the fluid; and valve means (16, 18) operable to regulate the pressure of the fluid in the accumulator (8); wherein the valve means (16–18) is operable to regulate the flow of the fluid of the accumulator (8), with a pressure sensor (24) being provided to detect the pressure of the fluid in the accumulator (8) and to condition automatic control means (22) in such a way as to control actuation of the valve means (16–18) as a function of the thus-detected pressure of the fluid; wherein the fluid comprises the fuel in an internal combustion engine and the element comprises a fuel injector (9); the pump (3) being disposed in a duct (11, 15) between a fuel reservoir (6) and the accumulator (8); wherein the valve means (16–18) includes at least a first solenoid valve (16) disposed in a portion (15) of the duct (11, 15) disposed between the pump (13) and the accumulator (8); wherein the control means includes an electronic control unit (22) operable to control the actuation of the first solenoid valve (16); the pressure sensor (24) being operable to detect the pressure of the fuel in the accumulator (8) and to signal it to the unit (22); wherein the first solenoid valve (16) normally discharges pumped fuel into the reservoir (6); the first solenoid valve (16) being actuated to supply the pumped fuel to the accumulator (8) until the pressure thereof is reestablished, and wherein the valve means (16–18) includes a second solenoid valve (17) disposed in the portion (15) of the duct (11–15) between the first solenoid valve (16) and the accumulator (8), the second solenoid valve (17) also being actuated under the control of the unit (22); and with a non-return valve (18) being provided between the two solenoid valves (16–17).

5,642,717

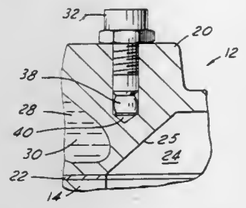
TEMPERATURE SENSING SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Dale M. Gilman, Clawson, and Lang So Ngo, Dearborn, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Apr. 7, 1996, Ser. No. 673,544

Int. Cl.[6] F02D *7/00*

U.S. Cl. 123—481 **17 Claims**



1. A temperature sensing system for sensing cylinder head temperature in an internal combustion engine, with the engine having a cylinder block having a piston reciprocally housed in a cylinder formed therein, and a cylinder head having a fire deck, with the cylinder head being mounted to the cylinder block so as to close the outer end of the cylinder thereby defining a combustion chamber between the cylinder head fire deck and the top of the piston, with said system comprising:

a temperature sensor having an elongate portion in operative contact with the cylinder head for sensing the temperature of the cylinder head such that, when installed, said elongate portion is axially deformed by a predetermined amount, to provide a thermally conductive engagement with the cylinder head.

5,642,718

IN-TANK FUEL PUMP APPARATUS HAVING IMPROVED STRUCTURE FOR DISSIPATING ELECTROSTATIC CHARGES

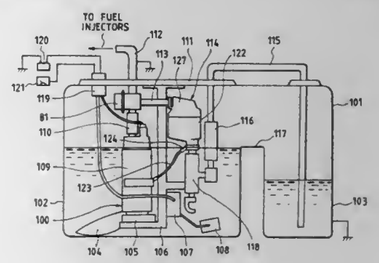
Hideyuki Nakai, Oobu; Kenji Okabe, Kariya; Katsuhisa Yamada, Okazaki, and Yukihiro Okane, Toyota, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, and Toyota Kidosha Kabushiki Kaisha, Toyota, both of Japan

Filed Jul. 18, 1996, Ser. No. 683,462

Claims priority, application Japan, Jul. 18, 1995, 7-181475

Int. Cl.[6] F02M *37/04*

U.S. Cl. 123—497 **8 Claims**



1. A fuel pump apparatus comprising:

a fuel pump retained within the fuel tank through retaining means for pumping out fuel stored within the fuel tank from an inlet and discharging the fuel through an outlet communicating with a fuel supply line and a fuel return line connected to the fuel tank, said fuel pump having a pump housing made of a conductive material insulated from a ground terminal of a power source for said fuel pump;

a filter for removing foreign substances contained in part of the fuel discharged from said fuel pump delivered to the fuel return line, said filter including a filter casing made of a conductive material which is electrically insulated from the ground terminal of the power source for said fuel pump and is supported by the retaining means; and

electrical connection means for electrically connecting the pump housing of said fuel pump and the filter casing of said filter.

5,642,719

AUTOMOTIVE FUEL DELIVERY MODULE WITH FUEL LEVEL ACTUATED RESERVOIR

Bradley A. Brown, Leonard, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sep. 11, 1995, Ser. No. 526,724

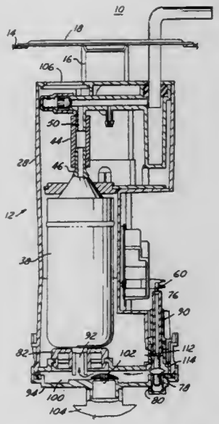
Int. Cl.[6] F02M *37/04;* **E03B** *11/00*

U.S. Cl. 123—509 **14 Claims**

1. A fuel delivery system comprising:

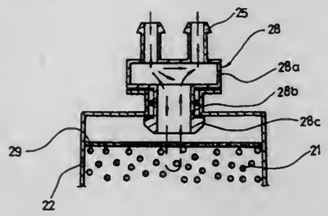
(1) a fuel pump having a pump inlet and a pump outlet in fluid communication with a fuel metering system of an internal combustion engine;

(2) a fuel reservoir having a fuel source in fluid communication therewith and a reservoir outlet;



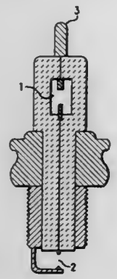
(3) a chamber connecting said pump inlet and said reservoir outlet;
(4) tank valve means in said chamber in fluid communication with a fuel tank for permitting fuel flow from said tank to said chamber;
(5) reservoir supply valve means between said reservoir outlet and said chamber for allowing fuel flow from said reservoir to said chamber when fuel in said fuel tank falls below a predetermined level, and for preventing fuel from flowing from said reservoir to said chamber when fuel in said fuel tank is above said predetermined level; and
(6) a fuel level sender for actuating the supply valve means.

5,642,720
STRUCTURE FOR GUIDING FUEL EVAPORATION GAS IN CANISTER FOR AUTOMOBILES
Wan Tae Kim, Seoul, Rep. of Korea, assignor to Kia Motors Corporation, Seoul, Rep. of Korea
Filed Jul. 15, 1996, Ser. No. 679,561
Claims priority, application Rep. of Korea, Jun. 14, 1996, 1996-15819
Int. Cl.[6] F02M *25/08*
U.S. Cl. 123—518 **1 Claim**



1. A structure for guiding fuel evaporation gas in a canister for automobiles, said canister comprising an upper case, a bottom cover closing an open bottom of said upper case, a filter horizontally arranged in an upper section inside said upper case, active charcoal filling a space defined between the filter and the bottom cover, and an air inlet nipple provided on the center of said bottom cover for allowing fresh air to flow into said canister, wherein the improvement comprises:
a mounting nipple provided on a top center of said upper case of the canister;
an evaporation gas guide unit fitted into said mounting nipple, said gas guide unit comprising:
a nipple holder provided with evaporation gas inlet and outlet nipples; and
a fitting part fitted into said mounting nipple thereby mounting the gas guide unit to said upper case of the canister;
a purge control valve mounted to a hose extending from said gas outlet nipple toward a suction manifold of an engine, said valve being controlled by an engine control unit.

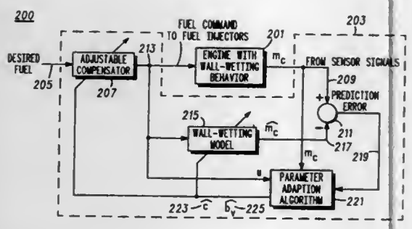
5,642,721
DOUBLE IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINES, IGNITION PLUG FOR DOUBLE IGNITION SYSTEMS, AND ELECTRIC SPARK GENERATOR
Kaname Ikeya, 21-24, Nishisakado 3-chome, Sakado City, Japan
PCT No. PCT/JP92/01697, § 371 Date Jan. 21, 1994, § 102(e) Date Jan. 21, 1994, PCT Pub. No. WO93/14544, PCT Pub. Date Jul. 22, 1993
Continuation of Ser. No. 190,004, Jan. 21, 1994, abandoned. This PCT application Dec. 25, 1992, Ser. No. 544,058
Claims priority, application Japan, Jan. 6, 1992, 4-046421
Int. Cl.[6] F02P *15/00*; **H01T** *13/46*
U.S. Cl. 123—627 **10 Claims**



1. A double ignition spark plug constructed by a process comprising the steps of:
making an iron base;
forming an insulator extending through said iron base;
forming an ignition spark gap at said iron base by extending a first conductor through said insulator and extending towards a portion of said iron base;
forming a cavity in said insulator;
extending said first conductor into said cavity;
extending a second conductor into said cavity and forming a space between said first and second conductors within said cavity;
evacuating said cavity of substantially all gases;
providing a connecting terminal on said insulator;
and connecting said second conductor to said conducting terminal.

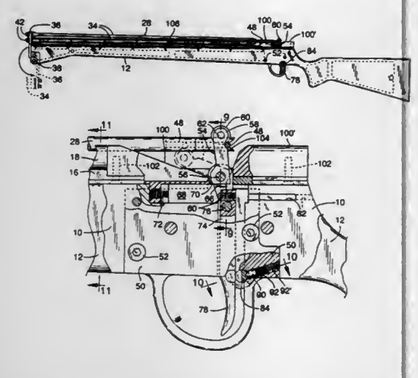
5,642,722
ADAPTIVE TRANSIENT FUEL COMPENSATION FOR A SPARK IGNITED ENGINE
Darren A. Schumacher, Yosilanti, and Kevin J. Bush, Northville, both of Mich., assignors to Motorola Inc., Schaumburg, Ill.
Filed Oct. 30, 1995, Ser. No. 550,442
Int. Cl.[6] F02D *41/14*
U.S. Cl. 123—673 **40 Claims**

1. A method of adaptive transient fuel compensation for a cylinder in a multi-cylinder engine comprising the steps of: estimating fuel puddle dynamics for the cylinder of the multi-cylinder



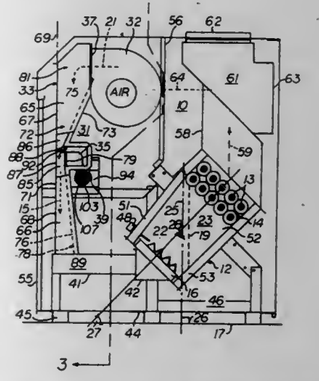
engine by determining parameters of a wall-wetting dynamic model every engine cycle of the multi-cylinder engine; and
adjusting fuel delivery to the cylinder of the multi-cylinder engine dependent on the estimated fuel puddle dynamics using a lead compensator with adjustable zero tuning and a fixed pole tuning while the estimate of a first wall-wetting parameter is small and a wall-wetting dynamics zero identified dependent on the first and a second wall-wetting parameters is invertible, and adjusting fuel delivery using a lead compensator with adjustable zero tuning and a fixed pole while the estimate of the first wall-wetting parameter is large, and adjusting fuel delivery using a lead compensator with adjustable zero tuning and a fixed pole while a wall-wetting dynamics zero, identified dependent on the first and second wall-wetting parameters, is not invertible.

5,642,723
ELASTIC BAND PROJECTILE SLINGER
Howard W. Hogan, 3131 S. Shore Dr., Albany, Oreg. 97321
Filed Nov. 13, 1995, Ser. No. 557,366
Int. Cl.[6] F41B *7/04*
U.S. Cl. 124—22 **15 Claims**



1. An elastic band projectile slinger, comprising:
a) an elongated base member having front and rear ends,
b) a projectile guide track extending along the base member and configured to support and guide a projectile for movement toward the front end of the base member,
c) an elongated elastic band member forming a pair of elongated strands having front and rear ends,
d) an elastic band anchor member mounted on the front end of the base member for substantially 180° pivotal movement between an upright position projecting above the guide track and a retracted position extending below the guide track,
e) attaching means on the anchor member securing the front end of the elastic band member thereto,
f) an elastic band latch member mounted on the base member adjacent the rear end thereof for movement between an operative position retaining the rear end of the elastic band member when the elastic band member is stretched rearwardly from the upright position of the anchor member to engage said latch member, and a release position disengaged from the elastic band member, whereby the elastic band member is caused to contract forwardly from said stretched condition and thrust the rear end of the elastic band member forwardly of the front end of the base member and pivot the anchor member to said retracted position,
g) projectile engaging means on the rear end of the elastic band member for engaging a projectile supported on the guide track when the rear end of the elastic band member is retained in the latch member, and
h) a trigger member mounted on the base member adjacent the rear end thereof for movement between a cocked position securing the elastic band latch member in said operative position and an uncocked position disengaging the latch member for movement to said release position.

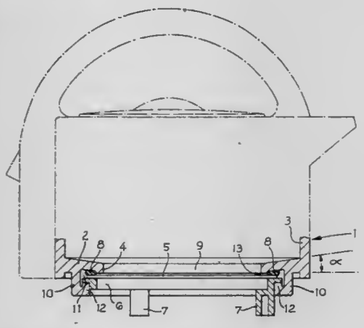
5,642,724
FLUID MIXING SYSTEMS AND GAS-FIRED WATER HEATER
William F. Raleigh, Santa Clarita, Calif., assignor to Teledyne Industries, Inc., Los Angeles, Calif.
PCT No. PCT/US93/11500, § 371 Date Sep. 29, 1994, § 102(e) Date Sep. 29, 1994, PCT Pub. No. WO95/14889, PCT Pub. Date Jun. 1, 1995
PCT Filed Nov. 29, 1993, Ser. No. 313,090
Int. Cl.[6] F24H *1/00*
U.S. Cl. 126—350 R **59 Claims**

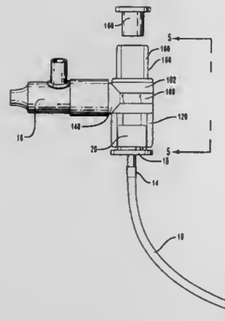


16. In a method of constructing and operating a gas-fired heater having a gas burner, combustion chamber and heat exchanger assembly for heating fluid in the heat exchanger by combustion of an air/gas mixture, with the gas burner located closer to ground than the heat exchanger which can produce condensate and scale falling toward ground,
the improvement comprising in combination:
tilting the combustion chamber and heat exchanger assembly relative to ground so that substantially all condensate and scale falling from the heat exchanger misses the gas burner;
providing said air/gas mixture with substantially all the air needed for a combustion; and

force-feeding said air/gas mixture with substantially all said air to said gas burner for combustion thereof.

5,642,725
LIQUID HEATING APPARATUS
James Henry Sharples, Radcliffe, United Kingdom, assignor to Pifco Limited, Manchester, England
Filed Jul. 6, 1995, Ser. No. 498,942
Claims priority, application United Kingdom, Jul. 7, 1994, 9413661
Int. Cl.[6] F24D *1/00*
U.S. Cl. 126—369 **8 Claims**



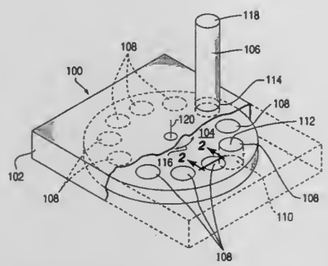


1. A heating apparatus for a liquid comprising:
a vessel having a base wall and a side wall;
a planar electrical heating element secured to the base wall to form an integral part of a liquid-retaining lower portion of the vessel; and
a sealing means affixed around a periphery of said heating element for insulating the base wall from said heating element, said base wall of the vessel surrounds the heating element and is inclined toward the heating element such that any liquid retained in the vessel is directed onto the heating element.

5,642,726
REDUCED INTERNAL VOLUME NEONATAL SUCTION ADAPTOR
Warren D. Owens, Salt Lake City; Cary P. Jenkins, West Jordan, both of Utah, and Ken Hargett, Galveston, Tex., assignors to Alcove Medical, Inc., Salt Lake City, Utah
Continuation-in-part of Ser. No. 324,687, Oct. 18, 1994, abandoned. This application Apr. 9, 1996, Ser. No. 631,675
Int. Cl.[6] A61M *16/00*
U.S. Cl. 128—200.26 **20 Claims**

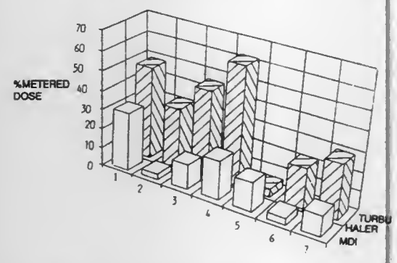
1. An adaptor for use in a neonatal ventilation circuit, said adaptor comprising:
a central housing disposed about and substantially defining a central chamber and means for substantially reducing the internal volume of said central chamber;
an endotracheal connector secured to and extending from said central housing, said endotracheal connector having a passage which is in fluid communication with said central chamber and means for removably securing an endotracheal tube to said endotracheal connector, while at the same time substantially minimizing the deadspace produced by said connection;
a suction access tube secured to and extending from said central housing, said suction access tube having a suction access passage which is in fluid communication with said central chamber, said suction access tube having means for removably securing a suction tube to said suction access tube while allowing passage of a suction catheter through said suction tube and at the same time minimizing the deadspace produced by said connection; and
a ventilation connector secured to and extending from said central housing, said ventilation connector comprising a tube having a ventilation passage which is in fluid communication with said central chamber, said ventilation connection further having means for removably securing a ventilator while at the same time substantially minimizing the deadspace produced by said connection.

5,642,727
INHALER APPARATUS USING A TRIBO-ELECTRIC CHARGING TECHNIQUE
Pabitra Datta, and Nitin V. Desai, both of Mercer, N.J., assignors to David Sarnoff Research Center, Inc., Princeton, N.J.
Filed Jul. 25, 1995, Ser. No. 506,703
Int. Cl.[6] A61M *15/00;16/10*
U.S. Cl. 128—203.15 **18 Claims**



1. An inhaler apparatus comprising:
a container portion for electrostatically retaining a predefined dose of medicament powder, where said medicament is tribo-electrically charged, and wherein the container portion defines at least one cavity containing one or more beads to which the predefined dose of medicament powder is electrostatically adhered and
an extracting means, attached to said container portion, for extracting said medicament powder from said container portion and from adherence to said beads.

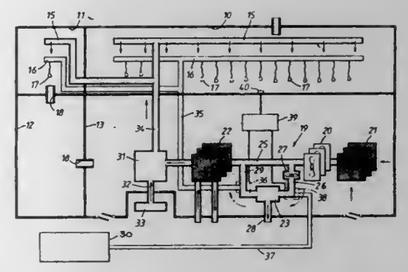
5,642,728
SYSTEM FOR DISPENSING PHARMACEUTICALLY ACTIVE COMPOUNDS
Jan Andersson, Södra Sandby; Hans Jägfeldt; Eva Trofast, both of Lund, and Kjell Wetterlin, Södra Sandby, all of Sweden, assignors to AB Astra, Sodertalje, Sweden
Continuation of Ser. No. 165,402, Dec. 10, 1993, abandoned. This application May 29, 1996, Ser. No. 654,006
Claims priority, application Sweden, Dec. 11, 1992, 9203743
Int. Cl.[6] A61M *15/00*
U.S. Cl. 128—203.15 **4 Claims**



1. A method for dispensing a dose of a pharmaceutically active compound selected from the group consisting of salbutamol and a salt, hydrate or ester of salbutamol, which method comprises
(1) identifying a patient in need of treatment with said compound;
(2) providing a breath-actuated, dry powder inhaler device containing a powder comprising said compound, wherein
(a) said powder stored within said device consists essentially of agglomerates of primary particles, at least 80% of said primary particles having a diameter of less than about 10 microns,
(b) said device comprises a metered dose of said compound sufficient to produce a predetermined clinically predetermined effective result in said patient, said metered dose containing an amount of said compound less than or equal to 70% by weight of the amount of said compound which would be required to produce said predetermined equivalent clinically effective result were the compound administered by a standard pressurized metered dose inhaler; and
(c) said device comprises a means for using air turbulence to obtain substantial deagglomeration of the primary particles prior to their exiting said device, so that of said metered dose, at least 40% exits said device in the form of unagglomerated particles less than about 10 microns in diameter, and
(3) administering said metered dose to the patient by causing the patient to inhale through said device, thereby creating sufficient air turbulence in said device to cause said metered dose of agglomerated primary particles to be substantially deagglomerated prior to exiting said device, such that at least 40% of said metered dose exits said device in the form of unagglomerated particles less than about 10 microns in diameter.

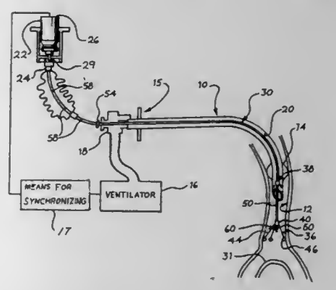
5,642,729
GAS SUPPLY SYSTEMS
Ronald F. Cassidy, Waterlooville, United Kingdom, assignor to Pall Corporation, East Hills, N.Y.
Continuation of Ser. No. 207,686, Mar. 9, 1994, Pat. No. 5,531,220. This application Mar. 6, 1996, Ser. No. 611,907
Claims priority, application United Kingdom, Mar. 10, 1993, 9304858
Int. Cl.[6] A61M *16/00*; B01D *53/00*
U.S. Cl. 128—204.29 **17 Claims**

1. A gas supply system for an aircraft comprising:



a gas adsorption system having an outlet for providing gas to an enclosed space within an aircraft and an inlet;
a source of gas from outside the enclosed space; and
an inlet valve connected to the inlet of the adsorption system and switchable between a first position fluidly connecting the inlet and the enclosed space and a second position fluidly connecting the inlet and the source of gas.

5,642,730
CATHETER SYSTEM FOR DELIVERY OF AEROSOLIZED MEDICINE FOR USE WITH PRESSURIZED PROPELLANT CANISTER
George Baran, Ontario, Canada, assignor to Trudell Medical Limited, Canada
Filed Jun. 17, 1994, Ser. No. 261,490
Int. Cl.[6] A61M *16/00*
U.S. Cl. 128—207.14 **26 Claims**



1. An improved system for the delivery of an aerosolized medicine to a patient's respiratory system comprising:
a pressurized canister that contains a mixture of fine particles of a medicine and a propellant in a liquid state and further that has an outlet from which the medicine and propellant can exit the canister;
an endotracheal tube having a ventilation lumen;
an extension catheter having a proximal end and a distal end and a lumen extending from the proximal end to a distal orifice located at said distal end, said extension catheter located in said ventilation lumen of said endotracheal tube, and extending distally of a distal end of said endotracheal tube into an air flow passage of the patient; and
a connection between said proximal end of said extension catheter and said outlet of said pressurized canister to provide a fluid connection between said canister and said lumen of said extension catheter to permit liquid medicine and propellant to be conveyed from said canister through said lumen of said extension catheter and out said distal orifice of said extension catheter where the propellant evaporates and an aerosol of the liquid medical agent is generated.

5,642,731

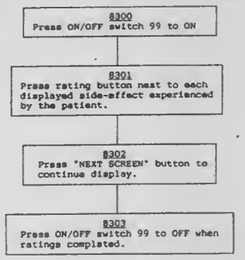
METHOD OF AND APPARATUS FOR MONITORING THE MANAGEMENT OF DISEASE

Bruce A. Kehr, Potomac, Md., assignor to InforMedix, Inc., Rockville, Md.

Continuation-in-part of Ser. No. 556,626, Jul. 23, 1990, which is a continuation-in-part of Ser. No. 464,877, Jan. 17, 1990, Pat. No. 5,200,891. This application Dec. 2, 1994, Ser. No. 352,828

Int. Cl.[6] G04B *47/00*; A61B *5/00*; G06F *17/00*

U.S. Cl. 128—630 57 Claims



1. The method of storing information relating to a patient, comprising:

providing a medical monitoring device,

providing said device with a memory for storing information,

providing medication for at least one disease,

giving take-medication signals at times when said medication should be taken by the patient,

storing in said memory a list of responses that may be experienced by the patient's body during the period over which said medication is being taken for said disease,

programming said device to display, for the patient, the responses on said list,

making a selection, by said patient, of at least one of said responses, and

storing a signal in said memory that represents said selection.

5,642,732

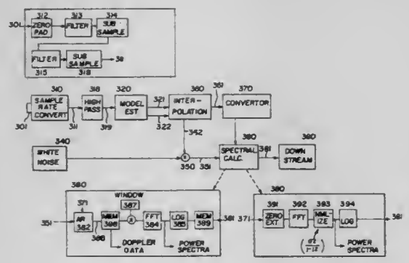
APPARATUS AND METHOD FOR ESTIMATING MISSING DOPPLER SIGNALS AND SPECTRA

John S. Wang, Santa Clara, Calif., assignor to Acuson Corporation, MountainView, Calif.

Filed May 3, 1995, Ser. No. 434,395

Int. Cl.[6] A61B *8/00*

U.S. Cl. 128—661.07 37 Claims



1. In an ultrasound imaging system, a method comprising the steps of

receiving a sequence of Doppler signals, said sequence of Doppler signals having at least one region comprising data and at least one gap;

determining a first set of parameters of a Doppler signal model in response to said sequence of Doppler signals, whereby said Doppler signal model approximates said sequence of Doppler signals in said region comprising data;

determining a second set of parameters of said Doppler signal model, responsive to said first set of parameters, for said gap;

synthesizing a set of Doppler information for said gap in response to said second set of parameters; and

combining a set of Doppler information for said region comprising data with said set of Doppler information for said gap.

5,642,733

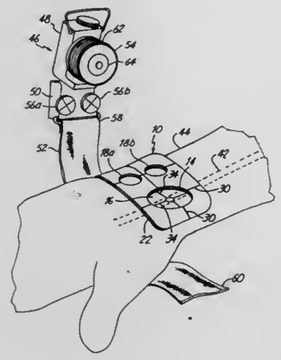
BLOOD PRESSURE SENSOR LOCATOR

G. Kent Archibald, Vadnais Heights; Orland H. Danielson, Roseville, and Roger J. Woessner, St. Paul, all of Minn., assignors to Medwave, Inc., St. Paul, Minn.

Filed Apr. 8, 1996, Ser. No. 628,082

Int. Cl.[6] A61B *5/02*

U.S. Cl. 128—672 25 Claims



1. A blood pressure sensor locator for locating a blood pressure sensing device over an underlying artery of a patient, the locator being separate from the sensing device, the locator comprising:

a flexible base;

means for coupling the flexible base in a selected position adjacent an anatomy of the patient proximate the underlying artery; and

a guide opening through the flexible base and configured to locate and align the sensing device over the underlying artery when the sensing device is connected to the patient; so that the sensing device can be attached to and removed from the patient without disturbing the position of the flexible base.

5,642,734

METHOD AND APPARATUS FOR NONINVASIVELY DETERMINING HEMATOCRIT

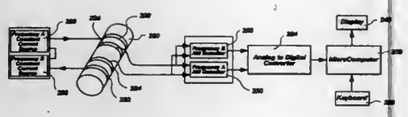
Paul Ruben, Murray, and Allan L. Kaminsky, Holladay, both of Utah, assignors to Microcor, Inc., Murray, Utah

Continuation-in-part of Ser. No. 425,404, Apr. 20, 1995, Pat. No. 5,526,808, which is a continuation of Ser. No. 298,795, Aug. 31, 1994, abandoned, which is a continuation of Ser. No. 114,131, Aug. 30, 1993, abandoned, which is a continuation of Ser. No. 592,851, Oct. 4, 1990, abandoned. This application Feb. 16, 1996, Ser. No. 602,700

Int. Cl.[6] A61B *5/00*

U.S. Cl. 128—693 85 Claims

22. A system for noninvasive determination of hematocrit of blood in a body portion of a patient, the system comprising:



signal generation means for producing alternating and quadrature signals at various frequencies;

processing, sensing, and application means for providing first signals through the body portion in response to the alternating signals, and sensing the first signals being applied and producing first indicating signals in response thereto, and sensing second signals over a section of the body portion and producing second indicating signals in response thereto;

processing and demodulation means for receiving and mixing the first indicating signals and the alternating and quadrature signals to produce inphase and quadrature first representing signals, and receiving the second indicating signals and mixing the second indicating signals and the alternating and quadrature signals to produce inphase and quadrature second representing signals; and

evaluation means for receiving and processing the inphase and quadrature first representing signals and inphase and quadrature second representing signals to determine the hematocrit.

5,642,735

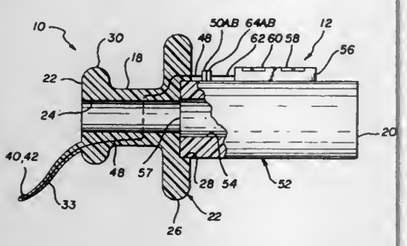
TEMPERATURE SENSING DEVICE FOR MEDICAL PATIENTS WITH RELEASABLE HOUSING

Kenneth D. Kolbly, 1541 Nancy St., Barstow, Calif. 92312

Filed Mar. 16, 1995, Ser. No. 405,222

Int. Cl.[6] A61B *5/00*

U.S. Cl. 128—736 9 Claims



1. A portable device for measuring the temperature of a patient, the device comprising:

a temperature sensing device comprising:

a first housing having first and second ends, said first end adapted for insertion into the mouth of the patient, said first housing having an aperture extending from said first end to said second end,

a plurality of temperature sensors mounted externally on said first end of said first housing;

a hollow tubular member comprising:

a second housing having first and second ends, and an aperture extending there through, said first end of said second housing adapted to releasably engage said second end of said first housing, and

first electrical circuit means for processing the input temperature signals from said plurality of temperature sensors and providing an output signal proportional thereto; and

display means for displaying the temperature of the patient upon receipt of said output signal; and

second electrical circuit means for electrically coupling said plurality of temperature sensors to said electrical circuit means, said second electrical circuit means having means to electrically disconnect said plurality of temperature sensors from said first electrical circuit means upon disengagement of said first and second housings.

5,642,736

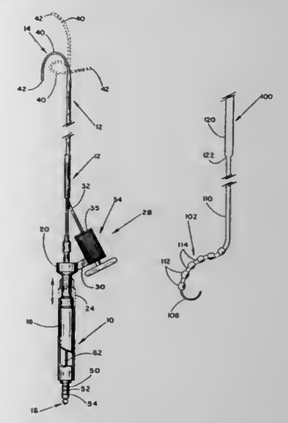
BIPLANAR DEFLECTABLE CATHETER FOR ARRHYTHMOGENIC TISSUE ABLATION

Boaz Avitall, 4868 N. Ardmore Ave., Milwaukee, Wis. 53217

Continuation of Ser. No. 194,853, Feb. 14, 1994, abandoned, which is a continuation of Ser. No. 989,804, Dec. 11, 1992, Pat. No. 5,327,905, which is a continuation-in-part of Ser. No. 909,867, Jul. 7, 1992, Pat. No. 5,354,297, which is a continuation-in-part of Ser. No. 835,553, Feb. 14, 1992, abandoned. This application Aug. 19, 1996, Ser. No. 699,204

Int. Cl.[6] A61B *5/00*; A61M *25/00*

U.S. Cl. 128—772 7 Claims



1. A vascular cardiac mapping and ablation device comprising:

(a) a flexible, tubular vascular catheter including a distal catheter section having an electroded area, a distal tip and containing a continuous lumen;

(b) wherein at least a portion of the distal catheter section is predisposed to assume a predetermined non-linear shape, such that the shape is resumed upon the release of distorting force upon deployment of the distal catheter section;

(c) a plurality of spaced electrodes suitable for both mapping and ablation carried by the electroded area of the distal catheter section; and

(d) internally mounted, externally operable manipulation control means fixed to said distal catheter section and contained in said continuous lumen for directly controlling manipulation of said electroded area for addressing a precise area of interest.

5,642,737

DEVICE FOR ALLEVIATING SNORING

Scotty M. Parks, 7815 McCallum #9103, Dallas, Tex. 75252

Filed May 6, 1996, Ser. No. 643,743

Int. Cl.[6] A61F *5/56*

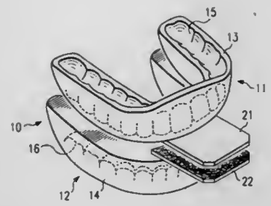
U.S. Cl. 128—848 7 Claims

1. An anti-snore device for alleviating snoring of a wearer comprising:

an upper member adapted to positioned within the mouth of said wearer and over the upper dental contour of said wearer;

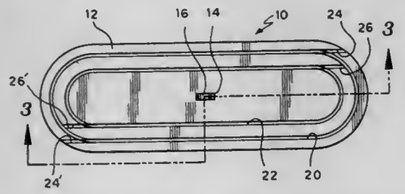
a lower member adapted to positioned within the mouth of said wearer and over the lower dental contour of said wearer; and

a latching means for securing said upper member to said lower member in a position wherein said lower member is forward with respect to said upper member, said means comprising:



hook tape comprised of two elements, a hook element and a pile element, one of said two elements carried by one of said members and the other of said two elements carried by the other of said members.

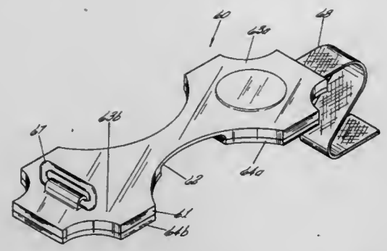
5,642,738
ANTI-SNORING DEVICE WITH REDUCIBLE SIZE
Frank T. Lilly, Jr., 1024 Leslie La., Azle, Tex. 76020
Filed Jul. 11, 1996, Ser. No. 678,230
Int. Cl.[6] A61F *5/56*
U.S. Cl. 128—848 **13 Claims**



1. An anti-snoring device for insertion between the lips and gums, comprising:
a flexible, elongate membrane having a perimeter, a generally uniform thickness and opposed faces;
a handle integral with said membrane, said handle being located centrally of one of said faces of said membrane to allow said membrane to flex along the entire length thereof; and
a first score groove in one of said faces of said membrane, said first score groove being in parallel relation with the entirety of the perimeter of said membrane.

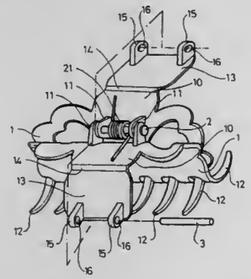
5,642,739
MAGNETIC ARM BAND FOR TENNIS ELBOW
Donald O. Fareed, 801 Buena Vista Ave., Santa Barbara, Calif. 93108
Continuation-in-part of Ser. No. 441,985, May 16, 1995, abandoned, which is a continuation of Ser. No. 226,028, Apr. 11, 1994, abandoned. This application Jun. 24, 1996, Ser. No. 669,580
Int. Cl.[6] A61F *5/37*
U.S. Cl. 128—881 **5 Claims**

1. A device operable for treating inflamed soft tissue within a body extremity of a mammal consisting of:
(a) a flexible band adapted to adjustably encircle and apply transaxial compression to a body extremity and comprising a flexible, nonextensible elastomeric sheet shaped to form two identical, relatively broad compression plates having a flexible, relatively narrow connecting portion therebetween, said compression plates having an arcuate concave skin-facing surface and a elastically deformable liner affixed thereto and coextensive therewith, each said liner having a recess therewithin and providing, in operation, means for elevating said narrow connecting portion above underlying skin, said band portion further comprising a flexible strap having a fixed end



affixed to said upper surface of one of said means operable for adjustably and releasably fastening said band portion in an encircling position around the body extremity.

5,642,740
HAIR HOLDER
Chin-Chin Chen, No. 48, Dwan Ming St., Kaohsiung, Taiwan
Filed Oct. 24, 1995, Ser. No. 547,598
Int. Cl.[6] A45D *8/20*
U.S. Cl. 132—277 **6 Claims**



1. A hair holder comprising:
a pair of bodies including a middle portion pivotally coupled together at a pivot shaft, said bodies each including a lower portion having a plurality of teeth extended therefrom and each including an upper portion having a handle formed therein,
means for biasing said handles away from each other and for biasing said teeth toward each other, and
a pair of panels each including a first edge pivotally coupled to said handles and each including a second edge pivotally coupled together so as to allow said panels to rotate relative to each other and to rotate relative to said handles and so as to allow said panels to shield said pivot shaft and said biasing means.

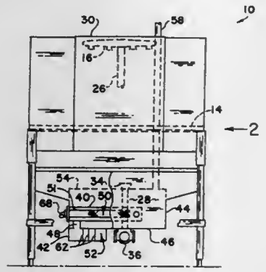
5,642,741
TOOTHPICK
Bongsik Choi, 120-214, Kwangan 1 Dong, Namgu, Pusan, Rep. of Korea
Filed Nov. 1, 1995, Ser. No. 548,372
Claims priority, application Rep. of Korea, Nov. 1, 1994, 94-28978
Int. Cl.[6] A61C *15/00*
U.S. Cl. 132—329 **12 Claims**

1. A toothpick comprising:
an inner-teeth inserting portion having a metal wire spirally twisted and having an overall circumferential surface covered with synthetic resin; and



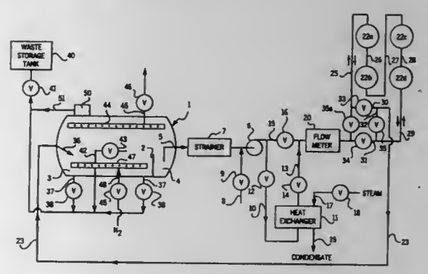
a main body fixed to one end of said inter-teeth inserting portion for grasping
wherein said circumferential surface has a uniform maximum diameter along its length.

5,642,742
WAREWASHER TANK HEATING SYSTEM AND CONTROLS THEREFOR
Lars Noren, and Doug Noren, both of Santa Rosa, Calif., assignors to The Stero Company, Petaluma, Calif.
Continuation-in-part of Ser. No. 322,929, Oct. 13, 1994, Pat. No. 5,511,570. This application Feb. 28, 1996, Ser. No. 607,091
Int. Cl.[6] B08B *3/10*
U.S. Cl. 134—57 D **21 Claims**



16. In a warewasher having an enclosable wash/rinse chamber, an open-topped water tank at the bottom of said chamber, said tank having a bottom wall and side walls for containing water therein at an approximate predetermined fill level during an idle period between successive washing periods, at least one wash arm, a water pump having an inlet adjacent the bottom of said tank, and conduit means interconnecting said pump and said wash arm for recirculating water by means of said pump during a wash period from said pump inlet to said wash arm onto ware in said chamber and enabling returning of the water to said tank through said open top during water recirculation, the improvement including a tank heating system for maintaining water temperature within a predetermined elevated range, comprising:
a hollow, elongated heat exchange tube immersed in water in said tank a distance below said fill level and below a level to which water descends while being recirculated by said pump during a wash period, said heat exchange tube having an outer surface in primary heat exchange relationship with water in said tank;
said heat exchange tube extending between a pair of walls of said tank and having an inlet end and an outlet end to provide a passageway for conducting an air/gas fuel mixture through said heat exchange tube;
a hollow, elongated infrared gas burner positioned generally centrally within said heat exchange tube and mounted adjacent the inlet end of said tube, said burner including a permeable outer combustion surface spaced a short distance from the internal surface of said hollow tube and providing a shallow burning zone at said permeable outer surface;
an igniter closely adjacent the combustion surface of said burner essentially at said inlet end of said heat exchange tube;
an air blower including an air conducting conduit for inducing air to flow into said hollow burner and through said combustion surface when said blower is activated;
water temperature sensing means in said tank for initiating activation of said air blower and igniter in response to the water temperature decreasing below said predetermined temperature range;
a gas supply including a supply line connected to said conduit intermediate said blower and said burner;
valve means in said supply line for connecting and disconnecting said gas supply relative to said conduit;
control means for activating said valve means to an open gas flow condition in response to activation of both said air blower and said igniter;
said air flow and gas providing an ignitable air/gas mixture to said burner for combustion of said mixture at said burning zone by means of said igniter;
at least one secondary heat exchanger in intimate contact with the exterior of at least one wall of said tank below said predetermined fill level;
an exhaust stack for venting combustion products to the exterior of said warewasher;
said secondary heat exchanger having baffle means therein forming a labyrinthine passageway communicating at one end thereof with the outlet end of said primary heat exchanger and at the opposite end thereof with an entrance end of said exhaust stack; and
means intermediate said combustion outer surface and the vented end of the exhaust stack for inducing sufficient back pressure within said heat exchangers to maximize heat transfer from said water heating system to water within the tank.

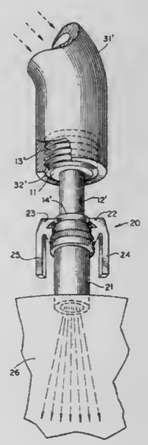
5,642,743
PRESSURIZED CLOSED FLOW CLEANING SYSTEM
Randy L. Ranes, League City, Tex., assignor to United Laboratories International LLC, St. Charles, Ill.
Division of Ser. No. 311,064, Sep. 23, 1994, Pat. No. 5,540,784. This application May 22, 1996, Ser. No. 651,639
Int. Cl.[6] B08B *3/10*
U.S. Cl. 134—108 **16 Claims**



1. A continuous closed pressurized system for cleaning the internal surfaces of equipment, comprising a closed pressure vessel containing an aqueous cleaning solution including a combination

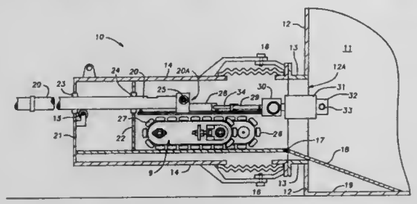
of enzymes and a surfactant, a supply conduit connecting said pressure vessel with equipment to be cleaned for supplying cleaning solution from said pressure vessel to said equipment, a return conduit connecting said equipment with said pressure vessel for returning cleaning solution from said equipment to said pressure vessel, said pressure vessel and said supply conduit and said equipment and said return conduit comprising a closed flow system, heating means in said supply conduit for heating said cleaning solution to a temperature above the boiling point of water, pumping means for continuously pumping said solution through said closed flow system to thereby remove oil and solid contaminants from said equipment with said oil and solid contaminants being returned to said pressure vessel through said return conduit, said oil separating from said aqueous cleaning solution in said pressure vessel as an upper oil layer, reverse flow means connecting said supply conduit with said return conduit for reversing the flow of solution through said equipment, separating means in said pressure vessel for separating solid contaminants from said aqueous cleaning solution, and oil draining means connected to said pressure vessel for selectively draining oil from said oil layer.

5,642,744
UROSTOMY COLLECTOR CLEANING ATTACHMENT
Gavin S. O'Laughlin, 4939 Lake Shore Dr., Richton Park, Ill. 60471, and Patrick K. O'Laughlin, 22600 Sherman Rd., Chicago Heights, Ill. 60411
Filed May 3, 1996, Ser. No. 642,785
Int. Cl.[6] B08B *3/02;9/08*
U.S. Cl. 134—166 R **3 Claims**



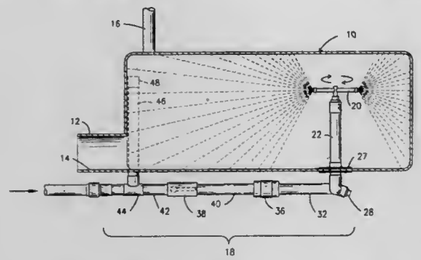
1. In combination with a standard urostomy collector having a standard urostomy collector connector, the standard urostomy collector connector having a first securing jaw and having a second securing jaw, a new urostomy collector cleaning attachment comprising:
- a hollow nozzle which can be removably fitted into the standard urostomy collector connector;
- a hose barb on the nozzle which can be removably secured by the first securing jaw of the standard urostomy collector connector and by the second securing jaw of the standard urostomy collector connector; and
- a faucet connector attached to the nozzle, the faucet connector for removably connecting the nozzle to a standard household water faucet so that water from the faucet can flow through the nozzle, through the standard urostomy collector connector to the standard urostomy collector.

5,642,745
TANK CLEANING SYSTEM USING COLLAPSIBLE ROBOTIC TANK ENTRY VEHICLE
Kenneth Charles Landry, and Kermit Ray Arnold, both of League City, Tex., assignors to Landry Service Co., Bacliff, Tex.
Division of Ser. No. 342,340, Nov. 29, 1994. This application Apr. 19, 1996, Ser. No. 634,147
Int. Cl.[6] B08B *3/02;9/093*
U.S. Cl. 134—167 R **7 Claims**



1. A system for cleaning storage tanks having a relatively small access opening therein, comprising:
- an insertion chamber sized and adapted to attach to a storage tank access opening; said insertion chamber housing
- a dual tracked collapsed hydraulically operated vehicle said vehicle movable in collapsed state from said insertion chamber into said tank, said vehicle carrying a controllable articulatable nozzle means capable of nozzle rotation of 360° in each of two planes perpendicular to each other, when said vehicle is in a non-collapsed open operating within said tank position, for spraying a cleaning fluid inside said tank and said vehicle being capable of remotely controlled expansion from being collapsed to the open operating position inside said tank upon moving into said tank.

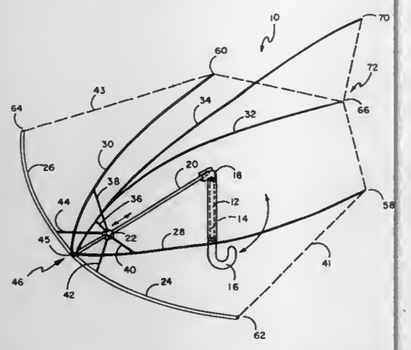
5,642,746
FLUSHING SYSTEM FOR A HOLDING TANK OF A RECREATIONAL VEHICLE
Norman C. Sayce, 5151 4th St. N., Lot 337, St. Petersburg, Fla. 33703
Filed Feb. 23, 1996, Ser. No. 606,395
Int. Cl.[6] B08B *3/04;3/02*
U.S. Cl. 134—168 R **4 Claims**



1. A flushing system for a holding tank of a recreational vehicle, which tank is connected by a drain to a sewer system, comprising in combination,
- a) a holding tank for receiving effluent from the recreational vehicle's equipment, and having a bottom, top and sides,
- b) a drain line for said holding tank,
- c) a flushing system carried by said tank including,
  - 1) a small pipe sealingly entering said tank and having a spray head on the outer end thereof,
  - 2) a supply line connected to said small pipe and having a one way valve therein allowing fluid to flow only toward said small pipe,

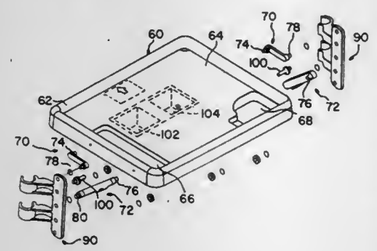
- 3) said supply line also having an on-off valve therein and an air entrapped line confluently connected thereto with said entrapment line having a sealed outer end and extending from said supply line and connected means on the upstream end of said supply line for connecting to a source of water,
- d) and means securing said flushing system to said tank.

5,642,747
HAND-HELD AERODYNAMIC UMBRELLA
Salvatore A. Rizzotti, 2 Elizabeth La., West Yarmouth, Mass. 02673
Continuation-in-part of Ser. No. 383,796, Feb. 6, 1995, Pat. No. 5,555,903. This application Sep. 12, 1996, Ser. No. 712,771
Int. Cl.[6] A45B *3/00*
U.S. Cl. 135—16 **5 Claims**



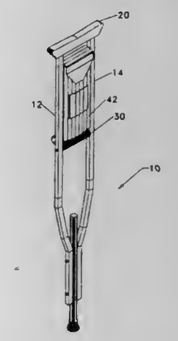
1. An hand-held umbrella for use outdoors where wind conditions can occur, comprising:
- a vertically disposed pole having a top;
- a horizontally disposed shaft having a first end and a second end, said second end rotatably attached to said top of said pole, disposing said shaft perpedicular to said pole;
- a canopy having a front portion and a rear portion;
- means to attach said front portion of said canopy to said first end of said horizontally disposed shaft; and
- means to rotate said horizontally disposed shaft above said pole to allow said front portion of said canopy to face into the wind.

5,642,748
WALKER TRAY
Shane Obitts, Elyria, Ohio, assignor to Invacare Corporation, Elyria, Ohio
Filed Nov. 13, 1995, Ser. No. 559,182
Int. Cl.[6] A45B *3/00*
U.S. Cl. 135—66 **10 Claims**



1. A walker having a tray selectively positioned between storage and operative positions comprising:
- a walker frame having plural legs in spaced apart relation and handle portions at upper ends thereof adapted for gripping by a user;
- a tray having opposed mid-portion edges and opposed front edges and further including a pivoting linkage assembly for securing the tray to the frame and selectively moving the tray between storage and operative positions, the pivoting linkage assembly including a pair of first link arms connected at first ends to the opposed mid-portion edges of the tray and at second ends to the frame, and a pair of second link arms connected at first ends to the opposed front edges of the tray and to the frame at second ends, the pivoting linkage assembly permitting movement of the tray from the operative position disposed in a generally horizontal plane to the storage position disposed in a generally vertical plane wherein the first link arms rotate about the second ends through approximately 180° from the storage position to the operative position of the tray.

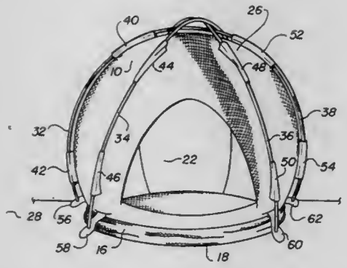
5,642,749
CRUTCH CLUTCH HOLDER
Joyce F. Perryman, 1169 Market St., #502, San Francisco, Calif. 94103
Filed Feb. 21, 1996, Ser. No. 604,641
Int. Cl.[6] A45B *3/00*
U.S. Cl. 135—66 **12 Claims**



1. For attachment to a crutch having a pair of vertical side rails with a top arm pad and a handle therebelow, a clutch comprising:
- a compartment presenting front and back walls with side walls therebetween, the front and back walls having a width approximating a width between the side rails of the crutch;
- a first fastener means along said side walls of said compartment;
- a second complementary fastener means located along the side rails below the arm pad and above the handle for engagement with said first fastener means to position said clutch between the arm pad and the handle of the crutch.

5,642,750
TENT HAVING A CONTINUOUS SEAMLESS PERIPHERAL SURFACE AND CONTAINING AN INTEGRAL SELF-INFLATING FLOOR
Judith A. Brown, 2870 S. Spur, Santa Fe, N. Mex. 87505, and Jon C. Hagerty, P.O. Box 183, Chelsea, Vt. 05038
Filed Feb. 5, 1996, Ser. No. 595,411
Int. Cl.[6] E04B *1/34*
U.S. Cl. 135—137 **20 Claims**

1. A tent comprising:
- a) a continuous shell of impermeable pliable material having a substantially hollow interior volume,



b) a planar impermeable pliable sheet peripherally attached to said shell in said interior volume wherein said sheet divides said interior volume into first and second sub-volumes, said sheet forming an interior floor of said tent,

c) a valve communicating between said second sub-volume and the outside environment,

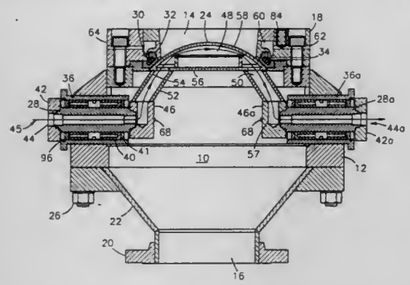
d) means for mechanically expanding said second sub-volume when said valve is open, said means for mechanically expanding said second sub-volume further comprising means for applying an external force to the surface of said second sub-volume for expansion of said second sub-volume and having no additional internal means within said second sub-volume for aiding said expansion of said second sub-volume, whereby air from said outside environment is drawn into said second sub-volume, and

e) means for closing said valve trapping said air in said second sub-volume to form an inflated sub-volume contiguous to said floor of said tent, whereby the external surface of said tent is peripherally seamless and whereby said inflated sub-volume serves as a self-inflated mattress for said tent.

5,642,751
VALVE ASSEMBLY

Michael F. Crawley, 317 Calderwood Hwy., Maryville, Tenn. 37801

Filed Sep. 14, 1995, Ser. No. 528,345
Int. Cl.[6] F16K *49/00;25/00*
U.S. Cl. 137—340 **25 Claims**

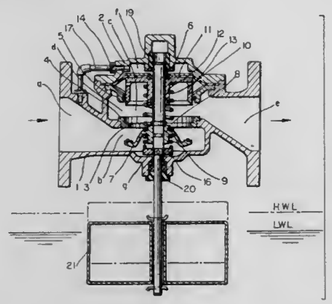


1. A valve assembly for handling granular or abrasive materials at high temperatures and/or pressures comprising a housing having an inlet and an outlet wherein the ratio of the outlet diameter to inlet diameter is no less than 1:1 for unrestricted flow of materials through the valve assembly; a spherical closure member within said housing; a valve seat within said housing with which the closure member matably engages in a first position in closing relationship with the outlet; an elongated shaft drivably connected to the closure member for rotating the closure member about the shaft axis between a second position in an open relationship with the outlet and the first position to facilitate a flow of material therethrough from the inlet to the outlet of the valve assembly by rotation of the shaft to move the closure member between the first and second positions; an annular recess in the housing adjacent the valve seat containing a resilient inflatable sealing ring, said ring being dimensioned so as to sealably contact the closure member when the closure member is in the first position upon inflation of the ring; a fluid inlet for supplying a fluid under pressure to the sealing ring to inflate said sealing ring; and a shaft channel in said housing containing a shaft seal and a shaft bearing, said shaft seal and shaft bearing having apertures therein for receiving the shaft therethrough in the shaft channel to provide sealed rotation of the shaft about the shaft axis with respect to the housing, said shaft having an outer end projecting from the shaft channel with an external hub disposed on the outer end of the shaft and dimensioned and arranged to engage the housing to restrict longitudinal movement of the shaft in the channel, the hub being connected to the outer end of the shaft by axial connection means which engages the hub and shaft together so as to restrict axial movement of one with respect to the other in a manner which limits the imposition of any radially directed impact forces upon the shaft associated witb connection of the hub to the shaft.

5,642,752
CONTROLLABLE CONSTANT FLOW REGULATING LIFT VALVE

Hiroshi Yokota; Shingo Yokota, and Kunio Ogura, all of Hiroshima, Japan, assignors to Kabushiki Kaisha Yokota Seisakusho, Hiroshima-Ken, Japan

PCT No. PCT/JP94/01372, § 371 Date Jan. 16, 1996, § 102(e) Date Jan. 16, 1996, PCT Pub. No. WO95/06214, PCT Pub. Date Mar. 2, 1995
PCT Filed Aug. 19, 1994, Ser. No. 578,648
Claims priority, application Japan, Aug. 23, 1993, 5-207702; Dec. 3, 1993, 5-304144
Int. Cl.[6] F16K *17/30*
U.S. Cl. 137—413 **2 Claims**



1. A controllable constant flow regulating lift valve having flow regulating valve means formed on an upstream side (inlet side) of the valve, sliding valve means provided for automatic flow restriction regulating operation and formed on a downstream side (outlet side) of the valve, and a flow damping chamber (c) defined between the flow regulating valve means and the slide valve means; said controllable constant flow regulating lift valve comprising:

a partition wall (**5**) of a valve body (**1**); a slide valve element (**10**) slidably fitted in the partition wall (**5**) with a sealing member (**14**) attached to the slide valve element (**10**) for sealing; a valve seat member (**4**) disposed opposite to the slide valve element (**10**) so as to form a slide valve opening (d) between the valve seat member (**4**) and the slide valve element (**10**); a valve spindle (**6**); a flow regulating valve element (**7**); a balancing spring (**13**) extended between an end wall (**11**) of the slide valve element (**10**) and the flow regulating valve element (**7**) in parallel to the spindle (**6**) and exerting a predetermined force for expanding the valve opening (d); a sealed chamber (f) formed between the end wall (**11**) and a valve bonnet (**2**) and connected to the inlet side (a) via a connecting passage (**17**),

the pressure receiving area of the flow regulating valve element (**7**) and that of the end wall (**11**) being substantially equal to each other,

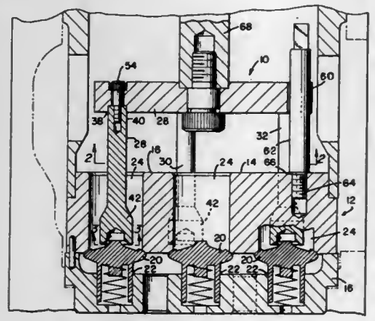
a boss (**8**) of the flow regulating valve element (**7**) and a boss (**12**) of the slide valve element (**10**) being formed so as to come into contact with each other when the flow regulating valve element (**7**) is almost seated on a valve seat (**3**) formed on the valve seat member (**4**), and

the flow regulating valve element (**7**) being supported so as to be able to be moved away from the valve seat (**3**) by variation of the pressure in the flow damping chamber (c).

5,642,753
VALVE UNLOADER ASSEMBLY

Ethan P. Thistle, Corning; Michael A. DeCerbo, Painted Post, both of N.Y., and John R. Metcalf, Houston, Tex., assignors to Dresser-Rand Company, Corning, N.Y.

Filed Jul. 1, 1996, Ser. No. 674,058
Int. Cl.[6] F16K *15/00*
U.S. Cl. 137—512.1 **13 Claims**



1. A valve unloader assembly, comprising:

a plate; and

a plurality of fingers (a) coupled to, and (b) extending perpendicularly from said plate; wherein

each finger, of said plurality thereof, is separately detachable from said plate;

said fingers, of said plurality thereof, have first, mounting ends, and second, valve-engaging ends;

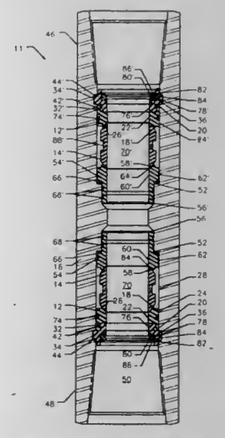
said first ends have means for fastening mounting hardware thereto; and

each finger, at said second end thereof, has a center relief formed therein.

5,642,754
METHOD OF SECURING A VALVE SEAT MEMBER WITHIN A TUBULAR HOUSING AND A BALL VALVE ASSEMBLY

Glen Irvin Rabby, Alberta, Canada, assignor to Hi-Kalibre Equipment Ltd., Edmonton, Canada

Filed Apr. 16, 1996, Ser. No. 633,057
Claims priority, application Canada, Apr. 28, 1995, 2148175
Int. Cl.[6] F16K *5/06*
U.S. Cl. 137—613 **8 Claims**



7. A dual ball valve assembly, comprising:

a tubular valve housing having a first end, a second end, an interior surface defining an interior bore, a first shoulder that projects from the interior surface into the interior bore spaced from the first end, a second shoulder that projects from the interior surface into the interior bore spaced from the second end, first female mating means in the interior surface spaced from the first shoulder toward the first end and second female mating means in the interior surface spaced from the second shoulder toward the second end;

a first valve seat member having a first face, a second face, an interior surface and an exterior surface, the second face having a first arcuate valve seat, the first valve seat member being disposed within the interior bore and engaging the second shoulder projecting from the interior surface of the tubular valve housing thereby precluding movement of the first valve seat member along the interior bore in a first axial direction toward the first end of the tubular valve housing, the first arcuate valve seat being oriented toward the second end of the tubular valve housing;

a first ball having an aperture extending therethrough engaging the first arcuate valve seat;

a second valve seat member having a first face, a second face, an interior surface and an exterior surface, the first face of the second valve seat member having a second arcuate valve seat, the interior surface of the second valve seat member having female mating means;

a first split ring having an interior surface and an exterior surface, the exterior surface having first male mating means that engage the female mating means of the second valve seat member and second male mating means that engage the second female mating means in the interior surface of the tubular valve housing;

means for locking the first split ring in position; and

means for rotating the first ball;

a third valve seat member having a first face, a second face, an interior surface and an exterior surface, the second face having a third arcuate valve seat, the third valve seat member being disposed within the interior bore and engaging the first shoulder projecting from the interior surface of the tubular valve housing thereby precluding movement of the third valve seat member along the interior bore in a second axial direction toward the second end of the tubular valve housing, the third arcuate valve seat being oriented toward the first end of the tubular valve housing;

a second ball having an aperture extending therethrough engaging the third arcuate valve seat;

a fourth valve seat member having a first face, a second face, an interior surface and an exterior surface, the first face of the fourth valve seat member having a fourth arcuate valve seat, the interior surface of the fourth valve seat member having female mating means;

a second split ring having an interior surface and an exterior surface, the exterior surface having first male mating means that engage the female mating means of the fourth valve seat

member and second male mating means that engage the first female mating means in the interior surface of the tubular valve housing;

means for locking the second split ring in position; and

means for rotating the second ball.

5,642,755

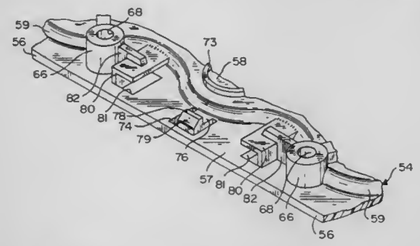
FAUCET

Darren M. Mark, Castaic; Donald J. Segien, Jr., Chatsworth, and Curtis S. Woolley, Granada Hills, all of Calif., assignors to Emhart Inc., Newark, Del.

Filed Sep. 28, 1995, Ser. No. 535,692

Int. Cl.[6] E03C *1/04*

U.S. Cl. 137—801 **19 Claims**



1. A faucet, which comprises:

a putty plate;

a throat plate attached to the putty plate to form an assembly thereof;

a housing formed in a shell-like configuration with an opening;

the assembly of the putty plate and the throat plate being connected to the housing at the opening thereof;

a ledge formed on the putty plate;

a tab formed in the ledge thereof and joined to the ledge on one side thereof to facilitate attachment of the putty plate to the throat plate; and

a latch bar located on the tab.

5,642,756

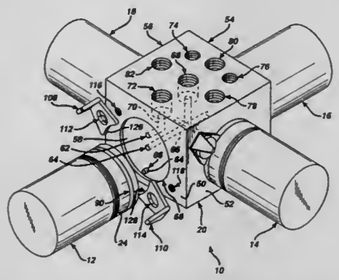
VALVE MANIFOLD ASSEMBLY

John Lawrence, Mendham, and Istvan Sandor, Kinnelon, both of N.J., assignors to Bio-Chem Valve Inc., Boonton, N.J.

Filed Feb. 29, 1996, Ser. No. 610,123

Int. Cl.[6] F16K *11/10*

U.S. Cl. 137—884 **9 Claims**



1. In a valve-manifold assembly for processing fluids, comprising at least one valve member and one manifold member, wherein each said valve member includes a manifold mount body portion having a first port and at least a second port, a valve actuating means operable upon a moveable member means moveable between a first and second position, a diaphragm means connected to said moveable member means for sealing closed said first port when said moveable member means is in said first position, an internal channel means within each said valve member providing for fluid flow between said first port and at least said second port when said moveable member means is in said second position, and wherein the manifold member includes at least one face portion including respective interface segments to which are secured the respective manifold mount body portions of said respective valve members, each of said respective interface segments including a third and fourth port, said manifold member further including a common passageway for fluid flow extending between a means for connecting to a first external device and said third port of each of said respective interface portions, at least two individual passageways each individual passageway entending between said fourth port of each of said respective interface portions, and a respective means for connecting to a corresponding respective external device, wherein the improvement comprises:

(a) each of said respective interface segments including a respective first alignment means;

(b) each of said respective manifold mount body portions including a respective second alignment means;

each of said respective interface segments including a counterbored portion having a perimeter substantially identical in shape and dimension to the perimeter of said manifold mount body portion, each said manifold mount body portion nesting in its respective counterbored portion when said valve member is secured to the interface segment,

said first and second alignment means cooperating to ensure that each of the ports in each said interface segment aligns with the proper one of the ports for the corresponding valve member;

(c) said respective sealing means disposed circumferentially about said aligned ports, said sealing means precluding fluid leakage when each said valve member is secured to said respective interface segment; and,

(d) means for clamping each said valve member to said manifold member at each respective interface.

5,642,757

MOTOR CONTROLLED DRIVE FOR SHED-FORMING SYSTEMS IN WEAVING LOOMS

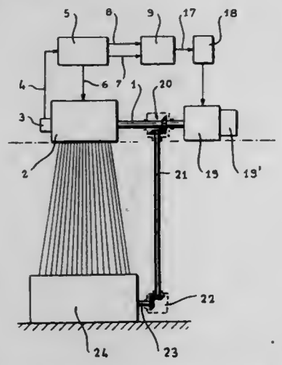
Jean-Paul Froment, Doussard, and Patrick Iltis, Saint-Jorioz, both of France, assignors to Staubli Faverges, Faverges, France

Filed Apr. 1, 1996, Ser. No. 626,040

Claims priority, application France, Apr. 5, 1995, 95 04289

Int. Cl.[6] D03C *3/32;3/00;* **D03D** *51/02*

U.S. Cl. 139—1 E **5 Claims**



1. A system for driving the shed-forming system in a weaving loom having a primary loom drive shaft and wherein the shed-forming system includes an input drive shaft, a controller for reading weaving input programs and thereby controlling the movement of components of a harness including a heddle dependent upon the weaving input programs and a detector for detecting the rotational position of the input drive shaft for inputting detected rotational information to the controller, the system for driving comprising, a motor for directly driving the input drive shaft at variable speeds, and a synchronization drive shaft for drivingly connecting the primary loom drive shaft to the input drive shaft whereby the input drive shaft is subject to drive inputs from both said motor and the primary loom drive shaft.

5,642,758

FRAME FOR SUPPORTING THE RETURN LEVERS CONNECTED TO HEDDLE FRAMES

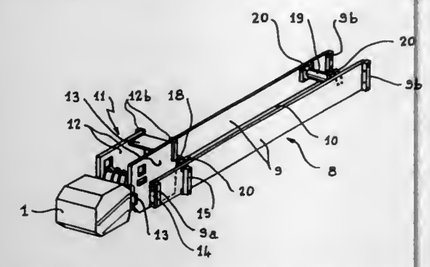
Joseph Palau, Duingt, and Jean-Paul Froment, Doussard, both of France, assignors to Staubli Faverges, Faverges, France

Filed Apr. 17, 1996, Ser. No. 633,528

Claims priority, application France, Apr. 26, 1995, 95 05241

Int. Cl.[6] D03C *9/00*

U.S. Cl. 139—57 **7 Claims**



1. In a weaving loom having vertically extending support structures to which heddle frames are moveably mounted and in which the heddle frames are connected to return levers of a drawing system, the improvement comprising,

a generally U-shaped beam having bottom and opposing side walls and first and second end portions, said opposing side walls having upper and lower portions,

means for mounting said beam to the vertical support structures, and

pivot pins extending between and supported by said side walls of said beam for mounting the return levers to said beam.

5,642,759

METHOD FOR AVOIDING WEAVING A FAULTY WEFT THREAD DURING REPAIR OF WEFT THREAD FAULT

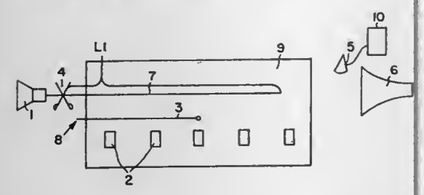
Adnan Wahboud, and Werner Birner, both of Lindau-Bodolz, Germany, assignors to Lindauer Dornier Gesellschaft mbH, Lindau, Germany

Filed Jun. 10, 1996, Ser. No. 661,480

Claims priority, application Germany, Jun. 9, 1995, 195 21 106.5

Int. Cl.[6] D03D *51/08;51/34*

U.S. Cl. 139—116.2 **13 Claims**



1. A method for avoiding weaving a faulty weft thread, which has been inserted into a loom shed of an air jet loom, into a cloth being produced on said loom, wherein said loom has a weft insertion nozzle and a thread cutting device at an insertion side of said loom shed and a weft thread arrival sensor at a downstream side of said loom shed opposite said insertion side, and wherein said method comprises the following steps:

(a) sensing with said sensor a failure of said faulty weft thread to arrive at said sensor;

(b) interrupting a weaving operation of said loom upon sensing said failure; and

(c) inserting into said loom shed a repair thread for removing said faulty weft thread, wherein said repair thread has a length insufficient to reach said sensor.

5,642,760

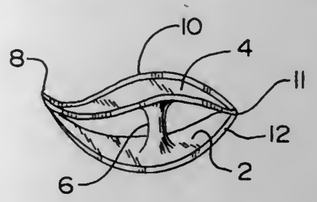
FLANGED TATTING SHUTTLE WITH IMPROVED GRIP

Deborah Arens, 13716 NE. 50 Ave., Vancouver, Wash. 98686

Filed Mar. 8, 1996, Ser. No. 613,169

Int. Cl.[6] D03D *35/00*

U.S. Cl. 139—197 **2 Claims**



1. An improved shuttle for tatting comprising: upper and lower halves, each half having a relatively flat surface and having a front tip, a back tip and a middle portion, a means for holding thread in connection with said upper and lower halves and near said middle portion of each half, each of said flat surfaces having an outer edge extending from said front tip to said back tip, a pair of flanges each in connection with said outer edge so as to form a partially enclosed area between said surfaces, said flanges extending at right angles to said surface whereby, said flanges improve the grip of a user's fingers on said surfaces and make the tatting process easier.

5,642,761

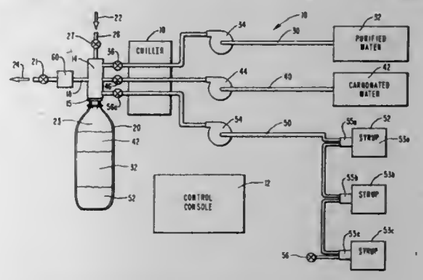
LIQUID PROPORTIONING APPARATUS AND METHOD

Ben F. Holbrook, Kaysville, Utah, assignor to Fountain Fresh, Inc., Salt Lake City, Utah

Filed Feb. 21, 1996, Ser. No. 604,707

Int. Cl.[6] B65B *03/00*

U.S. Cl. 141—104 **15 Claims**



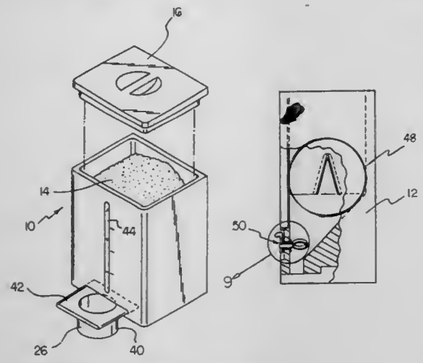
1. A liquid proportioning apparatus comprising:

a fill bead;

a container sealingly attached to said fill head;

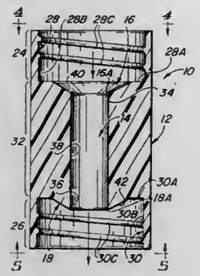
a pressure sensor in fluid communication with the interior of said container;
pressurization means for pressurizing said container with a gas to a first pressure setting on said pressure sensor;
injection means for introducing a first liquid into said container, said first liquid compressing said gas in said container to a second pressure setting as sensed by said pressure sensor;
pressure release means for releasing said pressure in said container; and
fill means for filling said container with a second liquid.

5,642,762
LAUNDRY SOAP DISPENSER
Joe David Greenberg, and Craig Jamieson Anderson, both of 850 Parker Street, White Rock, B.C., Canada
Filed Nov. 6, 1995, Ser. No. 553,916
Int. Cl.[6] B65B *1/00*
U.S. Cl. 141—358 **1 Claim**



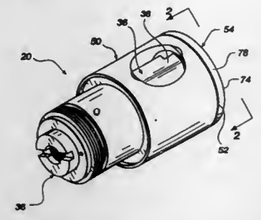
1. A laundry soap dispenser comprising:
a container having a hollow interior within which a particulate detergent can be positioned, the container including a front wall and a lower surface, with a dispensing aperture directed through the lower surface of the container and into fluid communication with an interior thereof, the container is shaped so as to define a central channel extending through the front wall thereof and along the lower surface of the container over the dispensing aperture, with a valve plate movably mounted to the lower surface of the container within the central channel and normally positioned over the dispensing aperture so as to preclude fluid communication therethrough, the container is further shaped so as to define a pair of flange channels extending laterally outwardly in opposite directions from respectively opposed longitudinal sides of the central channel, with the valve plate being shaped so as to define valve plate flanges projecting from respectively opposed sides thereof which are slidably received within the flange channels of the container so as to movably mount the valve plate over the dispensing aperture, the container includes a viewing window directed therethrough enabling an individual to visually ascertain a level of detergent within the container when detergent is positioned therein;
a measuring cup adapted to be abuttingly engaged with the valve plate so as to bias the valve plate from over the dispensing aperture to permit fluid communication from the interior of the container through the dispensing aperture and into the measuring cup, the measuring cup is shaped so as to define a closed cylindrical container having an open upper end from which a substantially rectangular cup flange orthogonally projects, the cup flange being shaped so as to extend substantially radially outwardly from an exterior surface of the cylindrical container and being aligned with an upper edge thereof such that the cup flange can be slidably positioned within the flange channels to abuttingly engage the valve plate to effect uncovering of the dispensing aperture;
at least one spring mounted relative to the container and engaging the valve plate so as to position the valve plate over the dispensing aperture;
a lid removably coupled to an open upper end of the container;
an agitator assembly directed through the front wall of the container and positioned proximal to the aperture thereof, the agitator assembly includes an axle rotatably directed through the front wall of the container; a crank mounted to the axle; and an agitator mounted to the axle and within the container, the crank is rotatably coupled to the axle so as to be rotatable relative to the axle about an axis directed orthogonally through an axis of rotation of the axle, the container is shaped so as to define a front wall recess directed into the front wall thereof, with the crank being positioned at least partially within the front wall recess;
an inverted V-shaped blade incorporated into interior walls and being centrally disposed within the container, the blade providing a means of piercing and spreading bags for which particulate material is obtained and emptying contents into dispenser.

5,642,763
LIQUID DRAINING DEVICE HAVING UPPER FUNNEL AND LOWER DRIP GUIDE FEATURES
Lloyd Kurtz, 610 N. Main, Ellinwood, Kans. 67526-1441
Filed Sep. 6, 1995, Ser. No. 524,393
Int. Cl.[6] B65B *1/04*
U.S. Cl. 141—375 **11 Claims**



1. A liquid draining device for use between a pair of first and second narrow neck containers, said device comprising:
(a) a body having a pair of opposite top and bottom end portions defining a pair of opposite top and bottom end cavities adapted for receiving respective open neck ends of the first and second narrow neck containers, a middle portion extending between said top and bottom end portions, and a central passageway extending through said middle portion between and open at said top and bottom end cavities and having opposite spaced apart upper and lower end sections and an intermediate section extending between said upper and lower end sections;
(b) an upper funnel substantially concave in shape relative to said top end portion of said body and formed by a continuous uninterrupted top annular surface on said middle portion of said body extending inwardly and downwardly from a bottom of said top end cavity to said upper end section of said central passageway being spaced below said bottom of said top end cavity, said continuous uninterrupted top annular surface intersecting and forming an upper annular edge with said upper end section of said central passageway, said concave shape and continuous uninterrupted configuration of said top annular surface causing a liquid draining from the open neck end of the first narrow neck container disposed in an inverted relation above said bottom of said top end cavity to be received by said upper funnel and drain from said upper annular edge at any location thereabout into said upper end section of said central passageway; and
(c) a lower drip guide substantially convex in shape relative to said top end portion of said body and formed by a continuous uninterrupted bottom annular surface on said middle portion of said body extending outwardly and upwardly from said lower end section of said central passageway to a top of said bottom end cavity being spaced above said lower end section of said central passageway, said continuous uninterrupted bottom annular surface intersecting and forming a lower annular edge with said lower end section of said central passageway, said convex shape and continuous uninterrupted configuration of said bottom annular surface causing liquid draining downward through said central passageway to discharge from any location about said lower annular edge of said lower drip guide into the open neck end of the second narrow neck container disposed in an upright relation below said top of said bottom end cavity, said upper annular edge of said upper funnel and lower annular edge of said lower drip guide being vertically spaced from one another at opposite ends of said central passageway.

5,642,764
STABILIZING OF CAM IN AUTOMATED BEVERAGE FILLING MACHINERY
Terry E. Nish, Salt Lake City, Utah, assignor to Servi-Tech, Inc., Salt Lake City, Utah
Division of Ser. No. 422,376, Apr. 14, 1995, Pat. No. 5,586,379, which is a division of Ser. No. 168,692, Dec. 16, 1993, abandoned. This application Jun. 10, 1996, Ser. No. 662,559
Int. Cl.[6] B67C *3/00*
U.S. Cl. 141—392 **7 Claims**



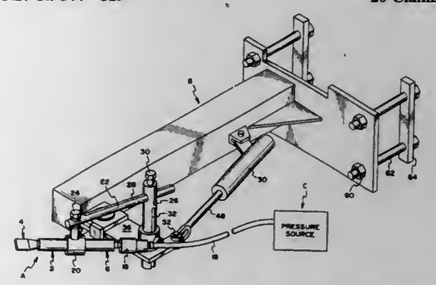
1. Automatic beverage filling machinery by which a precise predetermined quantity of beverage is automatically placed in a container by eliminating eccentric cam rotation, comprising:
at least one fill valve for automatically filling a container comprising a can or a bottle with a precise predetermined quantity of beverage;
a hybrid cam assembly comprising a housing, a cam comprising a standard camming end rotatably supported by the housing, a second normally-cantilevered end comprising a non-electrical rotatable end bearing assembly converting said second end to a non-cantilevered end and a central unsupported portion;
the rotatable end bearing assembly further comprising a non-rotatable end support which is interposed between the second end and the housing;
the end bearing assembly collectively comprising mating male and female parts one of which rotates with the cam and the other of which does not.

5,642,765
ROTOR FOR LAND CLEARING DEVICE
Stanley L. Brown, Lenox, Iowa, assignor to Brown Bear Corporation, Corning, Iowa
Filed May 16, 1996, Ser. No. 648,623
Int. Cl.[6] A01G *23/08*
U.S. Cl. 144—34.1 **10 Claims**

1. A rotor assembly for cutting and clearing brush and trees comprising:
a cylinder;
a plurality of anchors each having a top edge, a bottom edge, a first side, and a second side, each of said anchors being attached to said cylinder proximate said bottom edges and extending from said cylinder with said first and second sides of adjacent anchors facing;
a plurality of cutting elements each mounted between said first and second sides of adjacent anchors, each of said cutting elements cutting through an effective cutting area as said cylinder rotates; and
said anchors being spaced apart and offset on said cylinder so that no gaps exist between said effective cutting areas of said cutting elements.



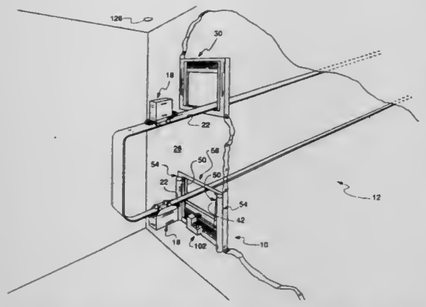
5,642,766
METHOD AND APPARATUS FOR REMOVING SAWDUST
William J. MacCauley, III, Atglen, Pa., assignor to John Rock & Company, Inc., Downingtown, Pa.
Filed Dec. 5, 1995, Ser. No. 567,277
Int. Cl.[6] B27G *19/00*
U.S. Cl. 144—329 **20 Claims**



1. An apparatus for removing sawdust from a kerf of a workpiece resulting from a saw blade having a cutting portion extending in substantially a horizontal plane cutting the workpiece, comprising:
a) a nozzle for providing a fluid at a predetermined pressure in a kerf of a workpiece, said nozzle having first and second ends, said first end of said nozzle being adapted to be positioned adjacent the kerf of a workpiece; and,
b) a support member operably associated with said nozzle for supporting said nozzle adjacent a saw blade having a cutting portion extending in substantially a horizontal plane, said support member supports said first end of said nozzle in substantially the same horizontal plane as the saw blade and the kerf of the workpiece.

5,642,767
UP CLOSING FIRE DOOR
Gopi Nair, Aurora, Colo., assignor to TransLogic Corporation, Denver, Colo.
Filed Dec. 13, 1995, Ser. No. 571,406
Int. Cl.[6] E05F *15/20*
U.S. Cl. 160—8 **18 Claims**

1. An upwardly closing fire door assembly comprising:



door means, moveable between a closed position and an open position, for: (a) partitioning a first space from a second space when said door means is in said closed position, and (b) providing an opening between the first and second spaces when said door means is in said open position; and

counterweight means for moving said door means with a weighted portion of said counterweight means, wherein said counterweight means actuates said door means between said open and closed positions by gravitational induced movement of said weighted portion;

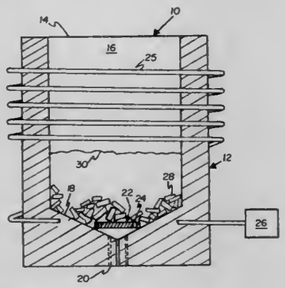
wherein said counterweight means includes a cable and pulley means, operatively connected to said door means and said weighted portion, for transferring said gravitational induced movement into an upward movement of said door means.

5,642,768

APPARATUS FOR MELTING AND POURING METAL AND METAL ALLOYS

Paul Shiels, 2717 Moriningside, NE., Albuquerque, N. Mex. 87110; Louis E. Bell, 3302 La Bambla, NW., and Martin Gaigl, 3400 Alvardo, NE., both of Albuquerque, N. Mex. 87110

Filed Oct. 3, 1995, Ser. No. 538,438
Int. Cl.[6] B22D *41/00;27/02*
U.S. Cl. 164—335 **10 Claims**



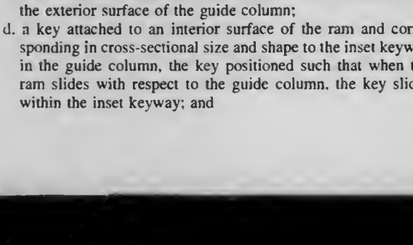
1. An apparatus for melting and pouring metal and metal alloys which comprises in combination: a crucible for containing the metal having a generally cylindrical inferior with an opening to the outside of said crucible at the upper end thereof suitable for introducing the metal into said crucible, and a tapered portion at the lower end thereof opening, through at least one orifice, to the outside of said crucible; a cylindrical disk having at least one hole therethrough having a chosen diameter and adapted to contact the tapered portion of the interior of said crucible in such a manner that the metal, in its molten state, cannot pass through the at least one orifice of said crucible without having passed through the at least one hole of said disk, and such that said disk is not substantially heated by said crucible; and means for heating said crucible, whereby the diameter of the at least one hole in said cylindrical disk is selected such that no metal in its molten state is dispensed through the at least one orifice in said crucible unless a chosen level of the metal in its molten state is maintained in the cylindrical interior of said crucible on the side of said disk located away from the at least one orifice in said crucible.

5,642,769

CONTINUOUS CASTING MOLD

Heinrich Thöne, Losenstein, and Franz Wimmer, Riedau, both of Austria, assignors to Voest-Alpine Industrieanlagenbau GmbH, Austria

Filed Dec. 12, 1995, Ser. No. 571,071
Claims priority, application Austria, Dec. 21, 1994, 2379/94
Int. Cl.[6] B22D *11/04;11/16*
U.S. Cl. 164—416 **20 Claims**



1. In a continuous casting mold arrangement of the type comprising a continuous casting mold having an oscillation means, a stationary supporting structure and guiding means supporting said casting mold relative to said stationary supporting structure said guiding means comprising disc-shape springs peripherally surrounding said casting mold and adapted to support the continuous casting mold relative to said stationary supporting structure, the improvement wherein at least one disc-shaped spring is an annular disc peripherally surrounding said continuous casting mold, said annular disc having an inner edge region and an outer edge region, and being by the inner edge region connected with the continuous casting mold and by the outer edge region connected with the stationary supporting structure.

5,642,770

NON-FERROUS METAL CASTING ROTATIONAL CONTROL APPARATUS

James A. Imthurn, Post Falls, Id.; Len J. Wiater, and Graham T. Beaven, both of Spokane, Wash., assignors to Wagstaff, Inc., Spokane, Wash.

Filed Jul. 31, 1995, Ser. No. 509,183
Int. Cl.[6] B22D *11/00;11/08;11/12*
U.S. Cl. 164—420 **16 Claims**

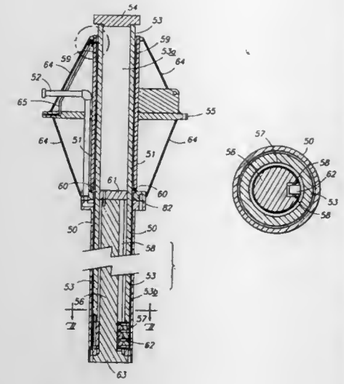
1. An internal rotational guidance apparatus for use in combination with a vertical non-ferrous metal mold table assembly, comprising:

a. a vertically oriented elongated enclosure with a hollow interior;

b. an elongated guide column within the enclosure, the guide column including a longitudinally inset keyway in an exterior surface of the guide column;

c. an elongated ram with a hollow interior and which is inserted downward into the hollow interior of the enclosure and over the exterior surface of the guide column;

d. a key attached to an interior surface of the ram and corresponding in cross-sectional size and shape to the inset keyway in the guide column, the key positioned such that when the ram slides with respect to the guide column, the key slides within the inset keyway; and



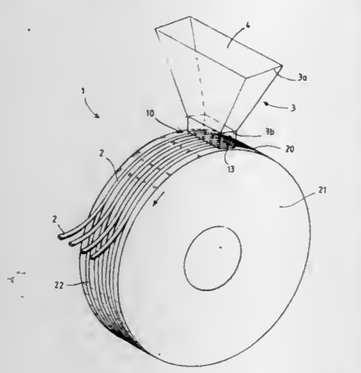
e. a hydraulic feed and bleed assembly to provide pressure control to raise and lower the ram.

5,642,771

PROCESS AND DEVICE FOR MANUFACTURING AT LEAST ONE METAL STRIP OF SMALL WIDTH AND METAL STRIP OBTAINED BY THIS PROCESS

Christian Forest, Nevers, France, assignor to Imphy S.A., Puteaux, France

Continuation of Ser. No. 230,840, Apr. 21, 1994, abandoned.
This application Mar. 25, 1996, Ser. No. 627,753
Claims priority, application France, Apr. 28, 1993, 93 05042
Int. Cl.[6] B22D *11/06*
U.S. Cl. 164—463 **17 Claims**



1. A process of manufacturing at least one metal strip of small width from a molten material held in a metallurgical vessel at a temperature above a melting point of said molten material, comprising the steps of:

subjecting the molten material to a pressure at least equal to atmospheric pressure;

ejecting the molten material through at least one orifice in a lower part of a nozzle fastened to said vessel and onto a moving cooling surface located beneath said nozzle, said at least one orifice being elongated in the direction of movement of said cooling surface;

providing at least one groove in said cooling surface, wherein a width of a top of said at least one groove is between 1.5 and 5 times a maximum width of said at least one orifice;

permitting said molten material to solidify in said at least one groove in said cooling surface, said at least one groove being elongated in said direction of movement, said at least one groove facing and being in longitudinal alignment with said at least one orifice.

5. An apparatus for manufacturing at least one metal strip of small width by ejecting molten metal, comprising:

a metallurgical vessel containing a molten material at a temperature above a melting point of said molten material;

a nozzle connected to a lower part of said metallurgical vessel, said nozzle having at least one orifice for ejection of the molten material; and

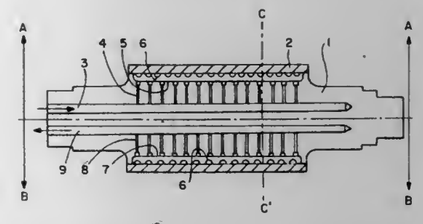
a moving cooling surface located beneath said nozzle and facing said at least one orifice, said cooling surface having at least one elongated groove in alignment with said at least one orifice for receiving the ejected molten material so that the ejected molten material can solidify thereon, said at least one orifice being elongated in the direction of movement of said cooling surface, said at least one groove being in longitudinal alignment with said at least one orifice wherein a width of a top of said at least one groove is between 1.5 and 5 times a maximum width of said at least one orifice.

5,642,772

PROCESS AND DEVICE FOR CORRECTING THE OVALIZATION OF ROLLS FOR THE CONTINUOUS CASTING OF METAL STRIP

Jacques Charpentier, Saint Julien de Ratz, and Marcel Cortes, Froges, both of France, assignors to Pechiney Rhenalu, Courbevoie, France

Filed Jul. 10, 1995, Ser. No. 500,155
Claims priority, application France, Jul. 29, 1994, 94 09667
Int. Cl.[6] B22D *11/124;11/06;11/12*
U.S. Cl. 164—485 **10 Claims**



1. In a process for continuous casting of metal strip between casting rolls, a process for cooling the casting rolls, wherein each said casting roll comprises an outer metal casing having an external face which contacts liquid metal for casting the strip and an internal face, a central roll body disposed within the outer metal casing adjacent said internal face, and a cooling circuit comprising a first cooling fluid port, a second cooling fluid port and a fluid connection means between said first and second ports which comprises said internal face;

said process for cooling comprising:

supplying cooling fluid to the roll through the first cooling fluid port, permitting the cooling fluid to be heated in contact with said internal face, and removing the heated cooling fluid from the roll through the second cooling fluid port;

stopping the flow of cooling fluid to the roll through the first cooling fluid port; and

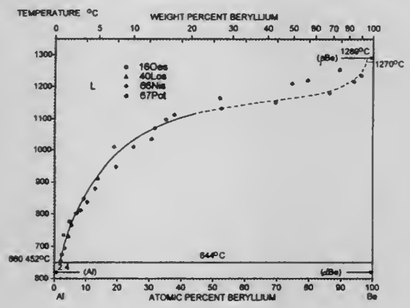
subsequently, supplying cooling fluid to the roll through the second cooling fluid port, permitting the cooling fluid to be heated in contact with said internal face, and removing the heated cooling fluid from the roll through the first cooling fluid port.

5,642,773

ALUMINUM ALLOYS CONTAINING BERYLLIUM AND INVESTMENT CASTING OF SUCH ALLOYS

Fritz C. Grensing, Perrysburg; James M. Marder, Shaker Heights, and Jere H. Brophy, Chagrin Falls, all of Ohio, assignors to Brush Wellman Inc., Cleveland, Ohio

Division of Ser. No. 221,395, Mar. 31, 1994, Continuation-in-part of Ser. No. 156,356, Nov. 23, 1993, abandoned, which is a continuation of Ser. No. 770,187, Oct. 2, 1991, abandoned.
This application Oct. 24, 1994, Ser. No. 328,351
Int. Cl.[6] B22C *9/04*; B22D *21/04*; C22F *1/04*
U.S. Cl. 164—516 12 Claims



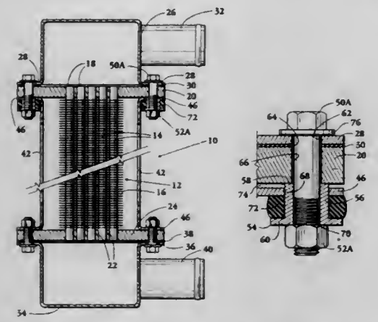
1. A method for making an aluminum alloy containing beryllium comprising the steps of:
(a) providing a solid aluminum component and a solid beryllium component to form an alloy charge;
(b) melting the charge of step (a) in a refractory-lined furnace pot within a vacuum melting furnace;
(c) pouring the liquid melt from step (b) into a disposable shell mold;
(d) freezing said melt within said disposable shell mold; and
(e) removing said disposable shell mold.

5,642,774

HEAT EXCHANGER MOUNTING SYSTEM

Jeffrey J. Christenson, Juneau, Wis., assignor to Touchstone, Inc., Jackson, Tenn.

Filed Jun. 5, 1996, Ser. No. 658,483
Int. Cl.[6] F28F *7/00*
U.S. Cl. 165—82 4 Claims



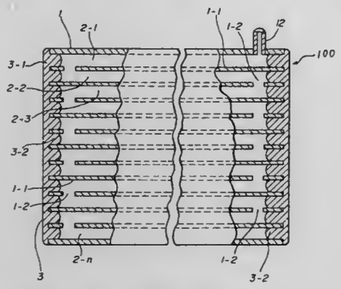
1. A heat exchanger mounting system having means to accommodate thermal expansion comprising:
a heat exchanger core formed as an assembly of a plurality of closely spaced apart, paralleled tubes having upper and lower ends and an upper and a lower header, each header having openings therethrough that sealably accept the ends of the tubes so that the headers are paralleled to each other and spaced apart by the length of the tubes, each header having an inner surface and an outer surface, the heat exchanger core having opposed sides;
an upper tank having a circumferential horizontally extending flange;
a lower tank having a circumferential horizontally extending flange;
a gasket positioned between said upper tank flange and said upper header;
a first and a second side frame, each having an upper and a lower end and each having a horizontally extending flange at each end thereof, the side frames being positioned adjacent said opposed sides of said heat exchanger core with said side frame flanges juxtaposed to said upper and lower headers; said upper and lower tank flanges, said upper and lower headers, said side frame flanges and said gasket spaced apart aligned openings therethrough, the openings in said side frame flanges being of greater diameter than said openings in said header;
a bolt extending through each of said aligned openings, each bolt having a threaded portion at one end;
a spacer received on each of said bolts, each spacer having a tubular portion having an inner end that extends through said opening in said side frame upper end flange to engage said upper header, and an enlarged diameter radially extending portion that is spaced from and paralleled to said upper header;
a nut received on the threaded portion of each of said bolt whereby said beader, said gasket and said tank flanges are held in close contact with each other; and
a tubular elastomeric member received on said spacer between said side frame upper horizontal flange and each of said spacer radial portion whereby said upper header may be displaced relative to said side frame flange in response to elongation of said heat exchange core.

5,642,775

RIBBON-LIKE PLATE HEAT PIPES

Hisateru Akachi, Sagamihara, Japan, assignor to Actronics Kabushiki Kaisha, Isehara, and Hisetaru Akachi, Sagamihara, both of Japan

Filed Feb. 16, 1996, Ser. No. 602,310
Claims priority, application Japan, Feb. 16, 1995, 7-065311
Int. Cl.[6] F28D *15/00*
U.S. Cl. 165—104.14 26 Claims



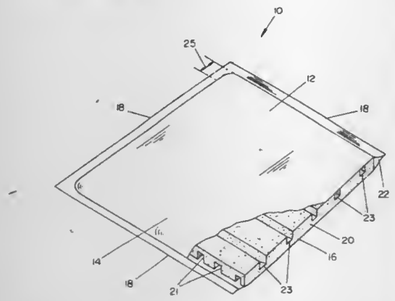
1. A ribbon-like plate heat pipe, comprising:
a plate having a plurality of tunnels arranged parallel to each other and defined by a plurality of partitions;
means for closing ends of said plate, said ends closing means being disposed up to a predetermined depth of said plurality of tunnels from each end of said plate; and
means for ensuring communication of said plurality of tunnels with each other to form a serpentine container having a predetermined turns, said serpentine container being filled with a predetermined amount of a predetermined working fluid.

5,642,776

ELECTRICALLY INSULATED ENVELOPE HEAT PIPE

George A. Meyer, IV, Conestoga, and Scott D. Garner, Lititz, both of Pa., assignors to Thermacore, Inc., Lancaster, Pa.

Filed Feb. 27, 1996, Ser. No. 607,897
Int. Cl.[6] F28D *15/00*
U.S. Cl. 165—104.26 13 Claims



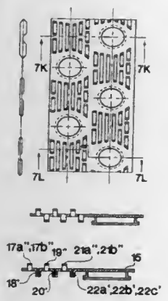
1. A heat pipe comprising:
a metal foil casing comprising two metal foil sheets joined and sealed together around the peripheral edges of the foil sheets to form an envelope, with non-condensible gases evacuated from the envelope;
a sheet of foam material enclosed within the envelope so that the foil sheets are in contact with the sheet of foam and the edges of the foam sheet are adjacent to the peripheral edges of the envelope with transverse channels formed on opposite surfaces of the foam sheet;
an electrically insulating coating covering the outside surfaces of the envelope; and
a vaporizable liquid within the envelope.

5,642,777

FIN TUBE HEAT EXCHANGER

Tae Wook Kang, and Kam Gyu Lee, both of Busan, Rep. of Korea, assignors to LG Electronics Inc., Seoul, Rep. of Korea

Filed Jan. 23, 1996, Ser. No. 590,320
Claims priority, application Rep. of Korea, Jan. 23, 1995, 1995-1079
Int. Cl.[6] F28D *1/04*
U.S. Cl. 165—146 7 Claims



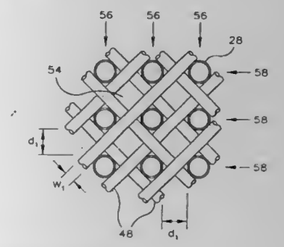
1. A fin tube heat exchanger for use in an air conditioner, said fin tube heat exchanger comprising:
a plurality of fin plates spaced at regular intervals, disposed in parallel with one another and adapted to allow air to flow therebetween;
a plurality of heat exchange tubes extending through said fin plates in a direction perpendicular to planes in which said fin plates lie; and
each of said fin plates having a plurality of raised strips formed in upper and lower rows on said fin plates, said raised strips in said lower row having a projecting height which is lower than a projecting height of said raised strips in the upper row, and a plurality of embossed projection parts formed on said fin plates which have similar area and shape to said raised strips, but different height from said raised strips.

5,642,778

ROD BAFFLE HEAT EXCHANGERS

Cecil C. Gentry, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 9, 1996, Ser. No. 630,086
Int. Cl.[6] F28F *9/00*
U.S. Cl. 165—162 9 Claims



6. An apparatus comprising:
a plurality of parallel tubes with a common axis of alignment arranged in a pitch to form a plurality of parallel major tube rows and a plurality of parallel major tube columns such that a plurality of diagonal lanes is formed between adjacent tubes, said diagonal lanes not running parallel to said tube columns or said tube rows and having a width which is less than the distance between adjacent tube columns or between adjacent tube rows;
at least one outer ring surrounding said plurality of tubes in a plane about normal to said common axis of alignment of said plurality of tubes; and
a plurality of rods each having a first end and a second end wherein each said rod is fixedly secured at its first and second end to one of said outer rings so that each said outer ring has a plurality of said rods secured thereto in a parallel equally spaced relation wherein each of said rods extends along one of said diagonal lanes so as to be in supportive contact with each said tube adjacent to said lane.

5,642,779

HEAT SINK AND A PROCESS FOR THE PRODUCTION OF THE SAME

Yoshiyuki Yamamoto; Takashi Tsuno; Takahiro Imai, and Naoji Fujimori, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

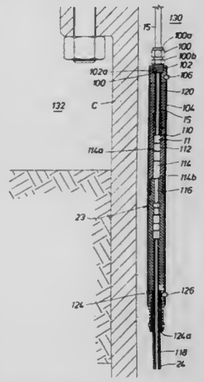
Filed Jun. 9, 1994, Ser. No. 257,288
Claims priority, application Japan, Jun. 30, 1909, 5-162093; Jun. 14, 1993, 5-141691
Int. Cl.[6] H01L *23/373*
U.S. Cl. 165—185 9 Claims

1. A heat sink comprising:
a plate-shaped diamond substrate;
a plurality of fins having a heat conductivity of at least 1 (W/cm·K) and formed of diamond or polycrystalline cubic boron nitride resulting from a gaseous phase synthesis operation; and



said fins being separate elements from said substrate and being joined thereto to extend therefrom, with a part of each said fin being embedded in said substrate, said substrate comprising a first layer of spaced diamond members sandwiching therebetween said embedded parts of said fins and a second layer grown over said spaced diamond members and ends of said embedded parts of said fins.

5,642,780
STAND OFF FOR ELECTRICAL CONNECTION IN AN UNDERGROUND WELL
Boyd B. Moore, 427 Mignon, Houston, Tex. 77024
Division of Ser. No. 448,575, Apr. 29, 1993, which is a continuation-in-part of Ser. No. 651,633, Feb. 6, 1991, Pat. No. 5,289,882. This application Feb. 16, 1996, Ser. No. 602,885
Claims priority, application WIPO, Apr. 29, 1993, PCT/US93/04032
Int. Cl.[6] H01R *4/00*
U.S. Cl. 166—65.1 **8 Claims**



1. A stand off for providing a fluid-tight seal for an electrical connection in a well between an electrical conductor extending from down hole of the well and a power source conductor extending from an above-ground power source enclosed by and extending through and further into the well bore, the power source conductor extending down hole to a connector for connecting the power source conductor to the electrical conductor, the stand off comprising:

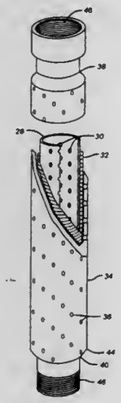
a rigid tube adapted to extend through a wellhead barrier of the well, and terminating at a lower end;

a rubber boot surrounding the rigid tube;

an electrical insulative tubular body having a hole forming a first inner surface surrounding the power source conductor between the lower end of the rigid tube and the connector, the rubber boot surrounding the tubular body;

a tubular extension lip integrally formed at one end of said tubular body having a second, larger hole being coaxial with said first hole and forming a second inner surface, and an internal shoulder formed between said first and second inner surfaces, the lip surrounding a portion of the rigid tube adjacent the lower end and the internal shoulder engaging the lower end of the rigid tube for preventing the rubber boot from extruding between said tubular body and the rigid tube when pressurized.

5,642,781
MULTI-PASSAGE SAND CONTROL SCREEN
Bennett M. Richard, Kingwood, Tex., assignor to Baker Hughes Incorporated, Houston, Tex.
Filed Oct. 7, 1994, Ser. No. 320,034
Int. Cl.[6] E21B *43/08*
U.S. Cl. 166—231 **29 Claims**



1. An apparatus for controlling sand production within a wellbore completed to a subterranean reservoir comprising:

a first supporting member formed with a series of perforations thereon, said supporting member having a first end and a second end;

a screen mounted over said first supporting member;

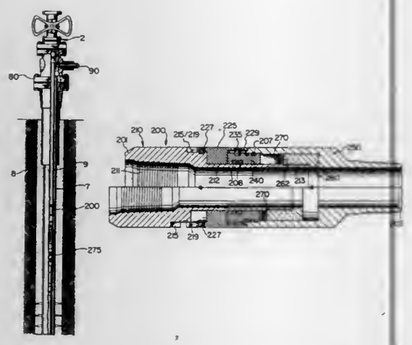
a jacket member mounted over said screen presenting exterior and interior surfaces and defining at least one opening extending from the exterior to the Interior surface through the jacket member for presenting first, second and third passageway portions, with the first passageway portion extending generally radially outwardly from the exterior surface, with second passageway portion extending generally along the direction of the interior surface and generally perpendicular to the first passageway portion, and with the third passageway portion extending generally radially Inwardly from the interior surface and generally perpendicular to the second passageway, with the first passageway portion being spaced from the third;

wherein production fluid from the reservoir approaches said jacket member and is directed into the first passageway generally radially, then changes direction and flows in the direction of the Interior surface of said jacket member, and then changes direction again and flows away from the Interior surface radially and directly toward said screen.

5,642,782
DOWNHOLE CLUTCH ASSEMBLY
Allan D. Grimshaw, Alberta, and Dwayne S. Norman, Calgary AB, both of Canada, assignors to Dynamic Oil Tools Inc., Calgary, Canada
Division of Ser. No. 580,125, Dec. 28, 1995. This application Feb. 23, 1996, Ser. No. 605,894
Int. Cl.[6] E21B *17/10;23/00*
U.S. Cl. 166—237 **8 Claims**

1. A clutch for providing a rotatable connection between the downhole end of a tubing string and a tubing anchor adapted for connection to an internal surface of a well bore, said clutch comprising:

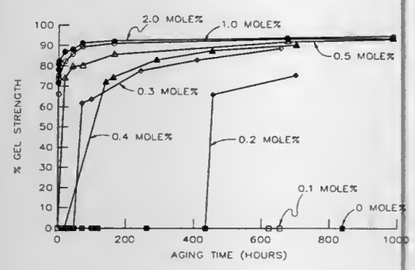
a first tubular sub having an uphole and a downhole end, said uphole end being adapted for connection to the downhole end of a tubing string;



a second tubular sub having an uphole and a downhole end, the uphole end of said second tubular sub being disposed annularly about said downhole end of said first tubular sub, the downhole end of said second tubular sub being adapted for connection to a tubing anchor; and

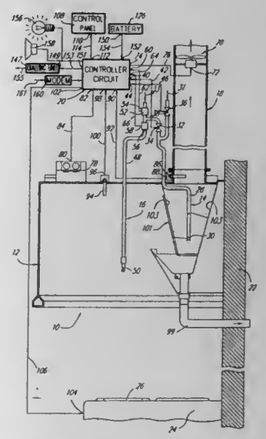
connector means disposed between said first and second tubular subs, said connector means being adapted to initially prevent relative rotation between said first and second tubular subs for transmission of torque through said clutch means to a tubing anchor connected thereto, said connector means actuatable thereafter to permit relative rotation between said first and second tubular subs.

5,642,783
PROCESS FOR TREATING OIL-BEARING FORMATION
Ahmad Moradi-Araghi, and Iqbal Ahmed, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Continuation-in-part of Ser. No. 422,394, Apr. 14, 1995, Pat. No. 5,547,025. This application May 17, 1996, Ser. No. 649,569
Int. Cl.[6] E21B *33/138;43/22*
U.S. Cl. 166—295 **25 Claims**



1. A process comprising injecting a gelling composition into a subterranean formation wherein said composition comprises a carboxylate-containing polymer, a crosslinking agent and a liquid wherein said polymer forms gels, in the presence of said crosslinking agent; said crosslinking agent does not contain a gelation-delaying agent; said crosslinking agent comprises at least one metal compound whose metal moiety is selected from the group consisting of Ti, Fe, At, Zr, and combinations of any two or more thereof; and said polymer contains an effective mole % of carboxylate groups and effective molecular weight to effect the delaying of gelation of said composition.

5,642,784
EXHAUST HOOD APPARATUS
Christian Guay, Quebec, and Guy Leblond, Ste-Claire, both of Canada, assignors to Sani Metal Ltd., Canada
Filed Feb. 21, 1996, Ser. No. 604,498
Int. Cl.[6] A62C *3/00*
U.S. Cl. 169—61 **26 Claims**



1. An exhaust hood apparatus for use at a cooking station for exhausting air containing cooking by-products to an external environment through an exhaust duct having an exhaust fan, said exhaust hood apparatus comprising:

a hood positioned over said cooking station; said hood being connected to said exhaust duct through a plenum chamber; said exhaust fan drawing air from said hood and forcing said air to said external environment through said exhaust duct;

washing means mounted in said plenum chamber;

a first valve assembly connecting said washing means to a first water source;

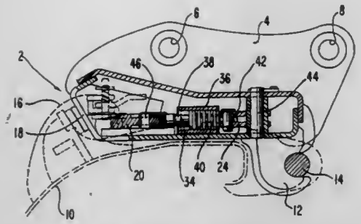
fire detecting means mounted in said hood for detecting uncontrolled fires;

controller means for controlling the operation of the exhaust hood apparatus; said controller means being electrically connected to at least (a) said exhaust fan, (b) said valve assembly, and (c) said fire detecting means; said controller means being at least so configured as to energize said exhaust fan and to open said first valve assembly, thereby activating said washing means when an uncontrolled fire is detected by said fire detecting means; whereby a portion of the water exiting said washing means is drawn in said exhaust duct through said plenum chamber by said exhaust fan, thereby cooling both said exhaust duct and said plenum chamber.

5,642,785
IMPLEMENT COUPLING FOR EXCAVATORS OR LOADERS
Kaj Dam-Rasmussen, Hoerhavevej 62 M, DK-8270 Hoejbjerg, Denmark
PCT No. PCT/DK94/00166, § 371 Date Oct. 25, 1995, § 102(e) Date Oct. 25, 1995, PCT Pub. No. WO94/25689, PCT Pub. Date Nov. 10, 1994
PCT Filed Apr. 25, 1994, Ser. No. 537,800
Claims priority, application Denmark, Apr. 26, 1993, 0473/93
Int. Cl.[6] A01B *71/00;* **E02F** *3/00;3/96*
U.S. Cl. 172—272 **20 Claims**

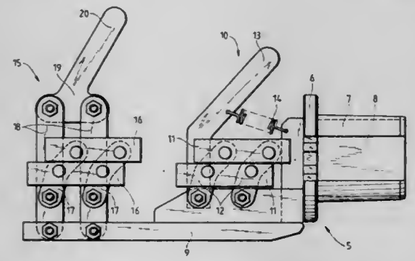
1. A mechanism for coupling an implement to an arm comprising:

a coupling mechanism for attachment to the arm;



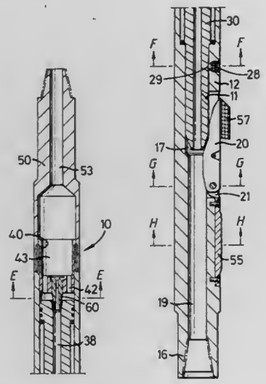
a locking mechanism which is part of the implement;
a splice which is movable relative to the implement between a forward locking position which engages the locking mechanism to prevent disconnection of the implement from the arm and a rear position permitting disconnection of the implement from the arm; and
a pivotable swinging mechanism coupled to the locking splice and pivoted about a first pivot axle for moving the splice between the forward and rear positions, the pivotable swinging mechanism comprising a first member coupled to the splice and to a second pivot axle carried by the pivotable swinging mechanism at a distance spaced from the first axle and a second member which is rotatable into a position substantially parallel to the first member having an end part for preventing movement of the splice from the forward position to the rear position so as to position the splice in the forward locking position.

5,642,786
SECURING AND TENSIONING DEVICE FOR A TOWING CABLE CONNECTED TO A PERCUSSION BORING MACHINE
Franz-Josef Puttmann, and Alfons Hesse, both of Lennestadt, Germany, assignors to Tracto-Technik Paul Schmidt Spezialmaschinen KG, Lennestadt, Germany
Filed Jul. 28, 1995, Ser. No. 508,663
Claims priority, application Germany, Jul. 30, 1994, 44 27 119.8
Int. Cl.[6] E21B *11/02*
U.S. Cl. 175—171 **15 Claims**



1. A securing and tensioning device for a towing cable that is secured to a percussion boring machine and connects a pipe that is to be pulled in to the percussion boring machine, said device comprising:
a thrust member bearing on the free end of the pipe that is to be pulled in;
a clamping unit that is adjacent to the thrust member and clamps when a force acts on the towing cable in the direction of the pipe that is to be pulled in; and
a tensioning unit, arranged coaxially with the clamping unit, that clamps when a force acts in the direction of the pipe that is to be pulled in and is movable in the direction opposite to that of the pipe that is to be pulled in.

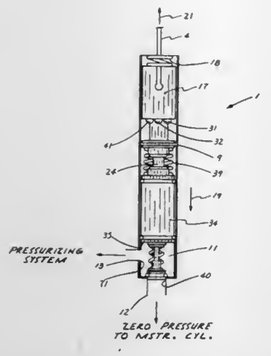
5,642,787
SECTION MILLING
Christopher P. Hutchinson, Houston, Tex., assignor to Weatherford U.S., Inc., Houston, Tex.
Filed Sep. 22, 1995, Ser. No. 532,473
Int. Cl.[6] E21B *10/26*
U.S. Cl. 175—269 **16 Claims**



1. A milling apparatus comprising
a hollow mill body,
at least one blade within the hollow mill body the or each blade having a blade body, a top, a bottom, and a cutter with a cutting surface,
the or each blade bottom rotatably secured by a securement to the hollow mill body for rotation outwardly from the hollow mill body,
means for moving the at least one blade from the body, the means for moving the at least one blade from the body comprising a wash tube movably disposed in the hollow mill body above the at least one blade, the wash tube movable downwardly in response to the force of fluid flowing into the section milling apparatus to contact the at least one blade and move the top of the at least one blade outwardly from the hollow mill body as the at least one blade rotates about its securement, and
means for indicating when cut out has been achieved by the at least one blade.

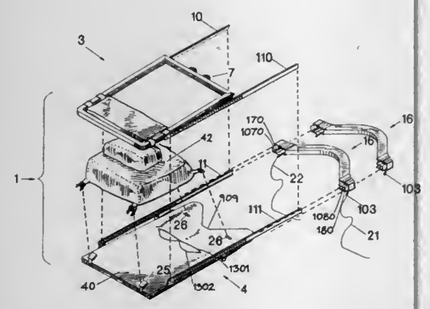
5,642,788
DISMOUNT BRAKING DEVICE FOR A SNOWMOBILE
David E. Mabbott, Route 1 Box 1542, Hermiston, Oreg. 97838
Filed Nov. 8, 1995, Ser. No. 555,184
Int. Cl.[6] B60T *7/14*
U.S. Cl. 180—272 **18 Claims**

1. A brake activation system comprising:
a. a housing, the housing having a longitudinal axis and a centrally located bore that is symmetrical about the longitudinal axis, the housing being formed to include a first section and a second section;
b. a chamber adapted to contain hydraulic fluid, the chamber having an inlet port, an outlet port and a volume, the chamber being located within the housing, the inlet port of the chamber being fluidly interconnected to a master cylinder and the outlet port of the chamber being fluidly interconnected to a brake mechanism;
c. a piston, the piston being generally cylindrical and coaxial with the longitudinal axis of the housing, the piston being located within the housing and being substantially surrounded by the second section of the housing;
d. a piston rod, the piston rod being affixed to the piston;



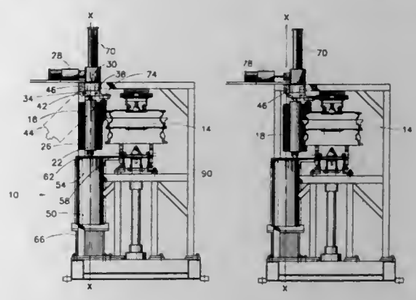
e. a trigger, the trigger being located within the housing and being substantially surrounded by the a first section of the housing, the trigger gripping the piston rod in first, armed configuration, thereby retaining the piston in a first position, the trigger releasing the piston rod in a second, unarmed configuration so that the piston may travel to a second position within the housing, thereby altering the volume of the chamber and thus activating the brake mechanism; and
f. a trigger support, the trigger support being located within the housing, the trigger support being formed with a radially extending shoulder that acts as a barrier between the trigger and the piston.

5,642,789
CAM ADJUSTABLE CLIMBING TREE STAND
James Clifford Maxwell, 2560 Coles Bend Rd., Smiths Grove, Ky. 42171
Filed Jan. 5, 1996, Ser. No. 583,305
Int. Cl.[6] A01M *31/02*
U.S. Cl. 182—135 **20 Claims**



1. A combined backpack frame and climbing wildlife stand enabling a user to employ said combination to climb a selected one of a tree and a pole, said combination having a plurality of utilization modes including a backpack mode, a climbing mode, and a wildlife stand mode, said combination comprising:
a platform assembly means to provide a backpack frame in said backpack mode, a climbing device in said climbing mode, and a platform in said stand mode;
a seat assembly means detachably connected to said platform assembly means to encircle said selected one of a tree and a pole with a V-bar gripper means attached to a pair of support arms which are attached to said seat assembly means to assist said platform assembly means in climbing said selected one of a tree and a pole when in said climbing mode and to provide a seat and a safety rail in said stand mode;
said platform assembly means having a V-bar gripper means attached to a pair of support arms which are attached to said platform assembly means to encircle said selected one of a tree and a pole to assist said seat assembly means in climbing;
said V-bar gripper means having a V-shaped bar to grip the tree and a housing assembly at each end of the V-bar gripper;
said housing assemblies each further comprising a clutch assembly and a track to releasably engage said support arm; and
said track further comprising a locking means functioning to releasably engage a support arm of said seat assembly means and said support arm of said platform assembly means when said platform assembly means is in said backpack mode.

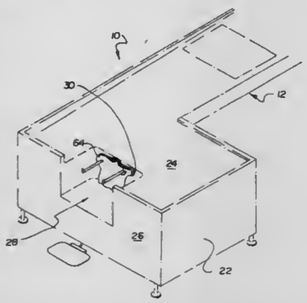
5,642,790
AUTOMATIC WHEEL LUBRICATOR
Thomas J. Kane, 693 Ridgecrest Rd., Akron, Ohio 44303, and Thomas E. Kane, 141 N. Rose Blvd #3, Akron, Ohio 44302
Filed Sep. 19, 1996, Ser. No. 710,564
Int. Cl.[6] F16N *7/12*
U.S. Cl. 184—102 **18 Claims**

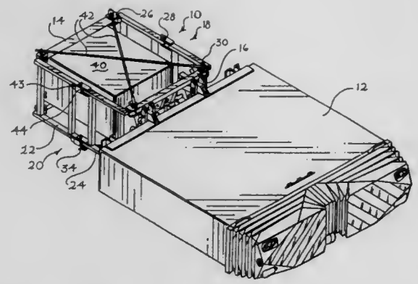


1. A lubrication apparatus for applying an associated lubricant to an associated object, said lubrication apparatus comprising:
a brush for applying said associated lubricant to said associated object, said brush being rotatable about a central axis;
a housing for holding said brush, said brush being mounted to said housing;
application means for applying said associated lubricant to said brush;
a chamber positioned below said brush, a top portion of said chamber having an opening, said brush being insertable into said opening of said chamber;
vertical movement means for moving said brush in a generally vertical direction along said central axis in and out of said chamber through said opening; and,
horizontal movement means for moving said brush in a generally horizontal direction transverse to said central axis to contact said object.

15. A method of lubricating an associated object with an associated lubricant, said method comprising the steps of:
applying said associated lubricant to a brush from a chamber;
moving said brush to a vertical position equal that of said associated object;
moving said brush horizontally to contact said associated object; and,
lubricating said associated object by rotating said associated object and said brush.

5,642,791
PLASTIC BAG PACKING SYSTEM
Elizabeth Zerlin, and Richard Ackerman, both of 48 Acorn Pond Dr., Roslyn, N.Y. 11576
Filed Jan. 29, 1996, Ser. No. 593,065
Int. Cl.[6] A47F *9/04;* **B65B** *67/12*
U.S. Cl. 186—66 **4 Claims**





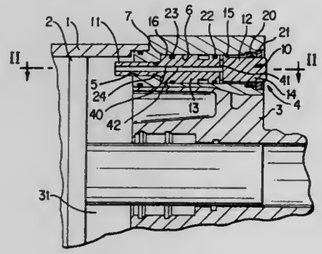
2. A plastic bag packing system adapted for use in association with a retail store check out counter having a generally rectangular shaped front section with a front wall, the front wall having a generally rectangular shaped recess extending therein, the recess having a rear wall including a centrally positioned horizontal rod, the apparatus comprising:

an electrically powered motor including a rotation device, a pinion gear being operatively coupled to the rotation means and extending from the motor, a plurality of wires electrically coupling the motor to an electrical source and an activation device, a rack formed in an elongated configuration and including a plurality of grooves, the rack having a forward end and a rearward end coupled to the pinion gear such that rotation of the pinion gear causes the rack to move rearward or forward upon engagement of the motor; and

a retractable arm assembly comprising two forwardly extending horizontal arms and a horizontal rear bar, the rear bar being coupled to the forward end of the rack, the arms being slidably positioned through the rear wall of the recess in the check out counter, the forward end of each arm including an upturned knob, each arm having an upper surface including a rubber heel affixed adjacent to the upturned knob thereof, each rubber heel having a rear end elevated a short distance from the upper surface of the arm in an angled orientation.

an energy-absorbing, deformable element mounted between the side frames and interposed between the front and rear sections, said energy-absorbing element compressed between the front and rear sections as the hinges pivot in a high-energy impact to decelerate the front section.

5,642,793
INDICATOR DEVICE FOR SIGNALLING THAT THE WEAR LIMIT HAS BEEN REACHED FOR SERVO-OPERATED CLUTCHES
Knut Tore Ljøsne, Kongsberg, Norway, assignor to Kongsberg Automotive AS, Norway
PCT No. PCT/NO93/00195, § 371 Date Jun. 7, 1995, § 102(e) Date Jun. 7, 1995, PCT Pub. No. WO94/15111, PCT Pub. Date Jul. 7, 1994
PCT Filed Dec. 20, 1993, Ser. No. 448,558
Claims priority, application Norway, Dec. 21, 1992, 92 4957
Int. Cl.[6] F16D *66/02*
U.S. Cl. 192—30 W **8 Claims**



1. An indicator device for signalling that the wear limit has been reached for a servo-operated clutch having a servo piston and a servo housing, the servo piston designed to reciprocate in the servo housing for disengaging and engaging the clutch; the servo housing having a rear end wall, a cylinder space located between the servo piston and the rear end wall, and a control for controlling the supply of a pressurized fluid to the cylinder space; the servo piston having a rest position in which it is located when the clutch is engaged, an increase in clutch wear causing the rest position of the servo piston to gradually move towards the rear end wall of the housing; and wherein the indicator comprises a through-going bore provided in the end wall, which bore extends in the piston's direction of movement, a slide valve slidable in the bore and movable between a first position, wherein the front end of the slide valve projects into the cylinder space, and a second position wherein the slide valve is shifted rearward of the servo piston in relation to the first position, the bore having a front bore section of a first diameter and a rear bore section of a second diameter greater than the first diameter of the front bore section, the slide valve having a rear valve section and a front valve section having a diameter approximate that of the diameter of the contiguous front

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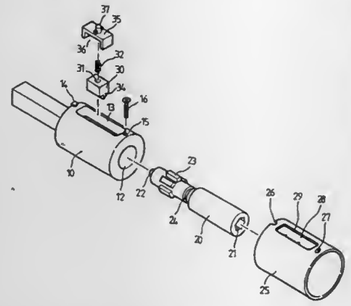
5,642,792
HIGHWAY CRASH CUSHION
David L. June, Sutter, Calif., assignor to Energy Absorption Systems, Inc., Chicago, Ill.
Filed Mar. 12, 1996, Ser. No. 614,336
Int. Cl.[6] F16F *7/12*
U.S. Cl. 188—377 **15 Claims**

1. In a highway crash cushion comprising a rear section adapted for mounting to a high-resistance object, and a front section facing an anticipated direction of impact along an impact axis, the improvement comprising:

a linkage mounted to the front and rear sections to support the front section in use, said linkage comprising two side frames, each side frame comprising first and second end portions and at least one hinge, each hinge pivotable about a respective hinge axis, said hinge axes oriented when the crash cushion is in a use orientation such that said front section is supported by the linkage as the hinges pivot, said side frames remaining connected at the first end portion to the front section and at the second end portion to the rear section as the hinges pivot; and

bore section, the front valve section near the rear valve section containing a front packing which sealingly abuts against the inside of the front bore section when the slide valve is located in the first position, a return channel extending outwardly from the rear bore section near the front bore section to a return reservoir for the pressurized fluid, the rear valve section having a diameter which generally over the entire length of the rear valve section approximates the diameter of the contiguous rear bore section, and at its rear having a reduced diameter such that the cross-sectional area of the thereby formed, radially extending, annular slide valve surface is larger than the cross-sectional area of the front valve section, the rear end of the rear bore section containing a rear packing which abuts sealingly against the rear valve section, and together with the slide valve and the servo housing define a pressure chamber, and a channel extending from the cylinder space to the pressure chamber.

5,642,794
RATCHET MECHANISM
Cheng-Hsung Chuang; Chen-Niu Huang; Mu-Tung Lai, and Jui-Feng Chang, all of P.O. Box 63-99, Taichung, Taiwan
Filed Mar. 11, 1996, Ser. No. 613,018
Int. Cl.[6] B25B *23/00;* **F16D** *41/18*
U.S. Cl. 192—43 **5 Claims**



1. A ratchet mechanism comprising:

a barrel including a bore formed therein and including a slot formed therein and communicating with said bore,

a rod rotatably received in said bore and including a gear formed thereon,

a slide slidably engaged in said slot and including a first and a second ratchet teeth arranged in an opposite manner for engaging with said gear,

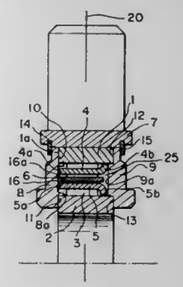
a pusher including a depression formed therein for engaging with said slide so as to move said slide along said slot and including a knob extended upward therefrom,

a biasing means engaged between said pusher and said slide for biasing said ratchet teeth to engage with said gear,

a sleeve engaged on said barrel and including a groove formed therein for aligning with said slot of said barrel and for engaging with said knob so as to allow said knob to be extended outward of said sleeve, said groove including a first end, a middle portion and a second end, said sleeve being engaged with said pusher for retaining said pusher in said slot, and

means for securing said sleeve to said barrel, said first ratchet tooth being caused to engage with said gear in order to allow said rod and said gear to rotate in an active direction when said knob is moved to said first end of said groove, said second ratchet tooth being caused to engage with said gear in order to allow said rod and said gear to rotate in a reverse direction when said knob is moved to said second end of said groove, and said first and said second ratchet teeth being caused to engage with said gear simultaneously in order to lock said rod when said slide is pushed to said middle portion of said groove.

5,642,795
ONE-WAY CLUTCH
Yoshihisa Miura, and Tetsuaki Numata, both of Nara, Japan, assignors to Koyo Seiko Co., Ltd., Japan
Filed Nov. 27, 1995, Ser. No. 562,935
Int. Cl.[6] F16D *41/07;* **F16H** *45/00*
U.S. Cl. 192—45.1 **20 Claims**



11. A one-way clutch comprising:

a first ring;

a second ring spaced from the first ring to define an annular space therebetween;

a plurality of engaging members disposed in the annular space;

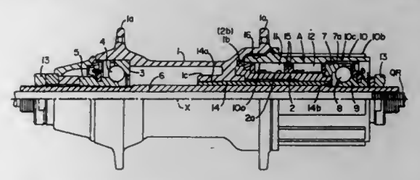
holding means for holding the engaging members;

biasing means for biasing the engaging members in one direction;

a pair of annular retaining members disposed on opposite sides of the first and second rings to close the annular space, each annular retaining member having an inner surface provided with first and second stepped portions at first and second inner peripheral end surfaces thereof, respectively, the first stepped portion of each of the annular retaining members receiving an end of the first ring, the second stepped portion of each of the annular retaining members receiving an end of the second ring, and at least one of the annular retaining members having an annular recess at the inner surface thereof for receiving an end of the holding means; and

securing means for axially securing the annular retaining members.

5,642,796
BICYCLE HUB
Koshi Tabe, Sakai, Japan, assignor to Shimano, Inc., Osaka, Japan
Filed Jul. 27, 1995, Ser. No. 508,605
Claims priority, application Japan, Aug. 2, 1994, 6-181043
Int. Cl.[6] F16D *41/28*
U.S. Cl. 192—64 **12 Claims**



1. A bicycle hub comprising:

a hub body (**1**);

an inner member (**2**) coupled to the hub body (**1**) for rotation therewith;

an outer member (**10**) disposed about the inner member (**2**) for rotation relative to the inner member (**2**);

wherein the outer member (**10**) is adapted to be coupled to a chain gear for rotation therewith;

a first plurality of clutch rollers (**11**) disposed between an outer circumferential surface (**2***a*) of the inner member (**2**) and an inner circumferential surface (**10***a*) of the outer member (**10**);

a second plurality of clutch rollers (**12**) disposed between an outer circumferential surface (**2***a*) of the inner member (**2**) and an inner circumferential surface (**10***a*) of the outer member (**10**);

wherein the first plurality of rollers (**11**) are disposed in series with the second plurality of rollers (**12**) along a rotational axis of the hub body (**1**);

wherein the first plurality of clutch rollers (**11**) are disposed axially inwardly of the second plurality of clutch rollers (**12**);

wherein the hub body (**1**) includes an insertion recess (**16**) which opens toward one end of the hub body (**1**), and wherein an end of the inner member (**2**), an end of the outer member (**10**), and an end of the first plurality of clutch rollers (**11**) are disposed in the insertion recess (**16**);

wherein the outer circumferential surface (**2***a*) of the inner member (**2**) and the inner circumferential surface (**10***a*) of the outer member (**10**) are shaped so that

(i) when the first plurality of clutch rollers (**11**) and the second plurality of clutch rollers (**12**) are disposed in a first position, the inner member (**2**) and the outer member (**10**) rotate together; and

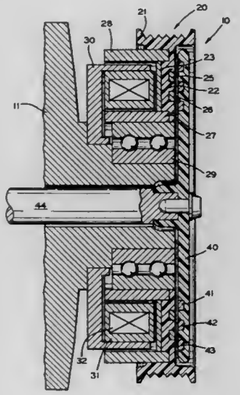
(ii) when the first plurality of clutch rollers (**11**) and the second plurality of clutch rollers (**12**) are disposed in a second position, the inner member (**2**) and the outer member (**10**) can rotate relative to each other.

5,642,797

MOLDED PLASTIC ROTOR ASSEMBLY FOR ELECTROMAGNETIC FRICTION CLUTCH

John H. Wall, Kennesaw, Ga., assignor to Dana Corporation, Toledo, Ohio

Filed Feb. 8, 1996, Ser. No. 597,433
Int. Cl.[6] F16D *27/112*
U.S. Cl. 192—84.961 **26 Claims**



1. A rotor assembly for an electromagnetic clutch comprising:

an inner tube formed from a magnetically permeable material;

an outer tube formed from a magnetically permeable material and disposed about said inner tube;

a rotor plate formed from a material which is not magnetically permeable and extending between said inner and outer tubes, said rotor plate having a pulley formed integrally therewith which is located directly radially outwardly from said rotor plate; and

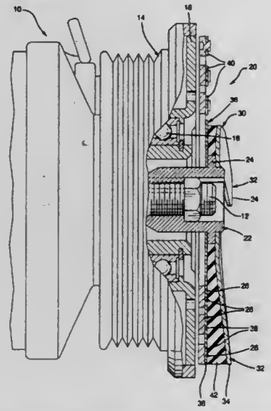
a generally annular ting formed from a magnetically permeable material and carried on said rotor plate.

5,642,798

ELECTROMAGENTIC COMPRESSOR CLUTCH WITH COMBINED TORQUE CUSHION AND ARMATURE COOLING

Hugh James Muirhead, and Richard Lee Marker, both of Lockport, N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 22, 1996, Ser. No. 620,187
Int. Cl.[6] F16D *27/06*
U.S. Cl. 192—84.961 **3 Claims**



1. An electromagnetic clutch assembly in combination with an automotive air conditioning compressor having a central drive shaft and a powered rotor supported for free rotation about said drive shaft, said powered rotor having a generally annular friction disk coaxial to said drive shaft and facing in one axial direction ralative a generative to said compressor, said clutch assembly comprising,

a generally cylindrical, central hub fixed to said drive shaft,

a generally annular armature of magnetic material having an outer edge with a diameter comparable to said friction disk so as to be capable of being supported in an operative position generally coaxial thereto with an outer face exposed to ambient air and an inner face axially spaced from said friction disk with a predetermined gap sufficiently small to allow said armature inner face to be electromagnetically pulled into engagement with said friction disk so as to rotate therewith when said clutch is actuated,

a multi lobed, substantially rigid armature support having an inner edge fixed to said hub and a plurality of rigid, generally radially directed lobes extending continuously from said inner edge, radially outwardly and along said armature outer face to outer ends located substantially at the outer edge of said armature, each of said lobes further being sufficiently axially thick to disturb a substantial volume of ambient air as they rotate but being sufficiently narrow to leave most of said armature outer face exposed to ambient air, and,

axially flexible and circumferentially and radially stiff spring means fixing said armature non turnably to said armature support lobes in said operative position such that said armature may be pulled electromagnetically against said friction disk and released to return to said operative position,

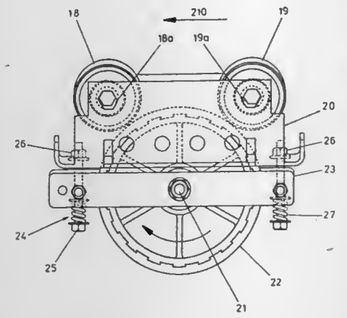
whereby, when said clutch is actuated and said armature engages and rotates with said friction disk, said armature support lobes co rotate to translate power to said shaft and concurrently disturb and pull ambient air toward and into said armature outer face in fan like fashion, thereby cooling said armature.

5,642,799

CONVEYOR INCLUDING A BRAKING DEVICE

Jonathan Warrilow, Wyberton, Great Britain, assignor to Dexion Group PLC, Hemel Hempstead, United Kingdom

Filed Feb. 16, 1996, Ser. No. 602,995
Int. Cl.[6] B65G *13/00*
U.S. Cl. 193—35 A **10 Claims**



1. A brake device for a conveyor, comprising:

a conveyor;

a freely rotatable idler roller mounted on said conveyor, said idler roller defining a load-supporting surface;

a brake roller mounted below said load-supporting surface;

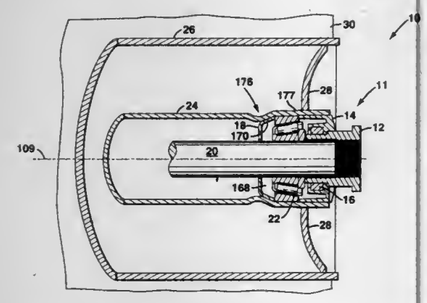
a biasing member urging said brake roller upwardly; wherein, when a load is supported on said idler roller, it pushes said idler roller downwardly against the brake roller, which, in turn, pushes said brake roller downwardly, against the bias of said biasing member, so that the magnitude of the braking force is related to the weight of the load on the load-supporting surface.

5,642,800

BELT CONVEYOR IDLER ROLL SEAL

Charles F. East, Van Vleet, Miss., assignor to FMC Corporation, Chicago, Ill.

Filed Mar. 5, 1996, Ser. No. 611,359
Int. Cl.[6] B65G *13/00*
U.S. Cl. 193—37 **16 Claims**



1. An idler roll for use in belt conveyer systems comprising:

a rotatable outer seal member disposed on at least one end of said idler roll, said outer seal member comprising at least one blade, said at least one blade being disposed on an exterior of said outer seal member;

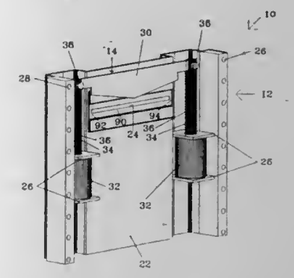
wherein said at least one blade repels particles.

5,642,801

BLADE FOR REMOVING TETHERS FROM BILL

Benard Burson, Jr., 3000 Skylark Dr., Austin, Tex. 78757

Division of Ser. No. 372,601, Jan. 13, 1995, Pat. No. 5,553,696.
This application Mar. 7, 1996, Ser. No. 612,225
Int. Cl.[6] G07F *9/02*
U.S. Cl. 194—203 **10 Claims**



1. A security device for a bill changer, comprising:

a support having a bill insertion slot therethrough and adapted to be securely attached to a front surface of a bill changer with said insertion slot aligned with a bill accepting slot of the bill changer and with said insertion slot having a length,

movable blade means mounted at a first position on said support and adjacent said insertion slot for detaching foreign objects extending from an inserted bill, and

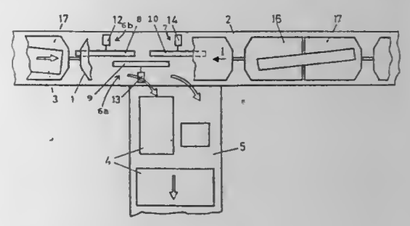
actuator means connected with said blade means for moving the blade means across the length of said insertion slot to a second position wherein said blade means covers said bill accepting slot, said actuator means moving said blade means in response to a validation signal caused by validation of an inserted bill by the bill changer, whereby said blade means detaches any foreign objects from an inserted bill and simultaneously covers the bill accepting slot to block further insertions.

5,642,802

CONVEYOR APPARATUS HAVING PIVOTABLE LOAD-BEARING ELEMENTS

Willi Maier, Kloten, and Hans Schuhmacher, Niederglatt, both of Switzerland, assignors to Grapha-Holding AG, Hergiswil, Switzerland

Filed Jan. 22, 1996, Ser. No. 589,405
Claims priority, application Switzerland, Jan. 27, 1995, 00224/95
Int. Cl.[6] B65G *47/38*
U.S. Cl. 198—370.04 **12 Claims**



1. A conveyor apparatus, comprising:

an endless track having an unloading station;

pivotable load-bearing elements mounted for traveling along the endless track and being pivotable for being unloaded at the unloading station; and

two switching elements spaced apart in a direction of travel along the endless track, disposed at the unloading station and being switchable individually between an inactive state and an active state for causing pivoting of the load-bearing elements, wherein one of the switching elements comprises first and second switching parts that are staggered in the direction of travel along the track so that a load-bearing element located in a region of the unloading station can be selectively pivoted for being unloaded by one or the other of the first and second switching parts and the other one of the two switching elements.

5,642,803

ARTICLE LOADING APPARATUS AND METHOD THEREFOR

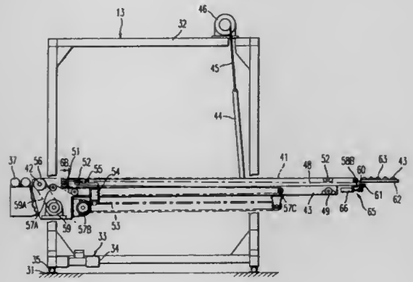
Nobuhiro Tanaka, Saitama, Japan, assignor to Kao Corporation, Tokyo, Japan

Continuation of Ser. No. 207,742, Mar. 9, 1994, abandoned. This application Oct. 7, 1996, Ser. No. 720,898

Claims priority, application Japan, Mar. 19, 1993, 5-083792

Int. Cl.[6] B65G *47/04*

U.S. Cl. 198—535 **14 Claims**



1. An article loading apparatus defining a conveying path by which an article is capable of being conveyed toward a side where the article is to be loaded, said apparatus comprising:

an extendable and swingable loading conveyor extending and swinging said conveying path, said loading conveyor having a conveyor belt and a movable frame supporting said conveyor belt;

an article transfer carrier mounted at an end portion of said movable frame and having an article sliding surface, said article transfer carrier being connected to a distal end of said loading conveyor;

a mechanism telescoping said movable frame and said conveyor belt in a direction towards and away from said article transfer carrier; and

a posture control device keeping said article sliding surface of said article transfer carrier at a substantially constant posture with respect to a horizontal plane and including an angular drive cylinder connected to one of said movable frame and said article transfer carrier and an angle detector provided on one of the article transfer carrier and said movable frame wherein said article sliding surface comprises a plurality of ball casters, said ball caster permitting sliding of the article from the conveyor belt without suppressing a conveyance inertia applied to the article by the conveyor belt and wherein the ball casters permit rotation of the article on the ball casters.

5,642,804

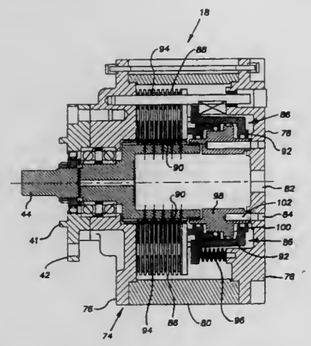
PULLEY BRAKE

John K. Kellis, Winfield, Ala., assignor to Continental Conveyor & Equipment Co., L.P., Winfield, Ala.

Filed Jul. 23, 1996, Ser. No. 685,166

Int. Cl.[6] B65G *23/00*

U.S. Cl. 198—832.2 **14 Claims**



1. A braked pulley assembly for an endless conveyor, comprising:

a pulley body, said pulley body being generally hollow and cylindrical in shape;

a gearbox mounted within the hollow interior of the pulley body, said gearbox having an input shaft and a body, said gearbox body being concentric with said pulley body and secured to said pulley body for common rotation therewith, said gearbox body being operably interconnected to said input shaft such that rotation of said input shaft is communicated to said gearbox body and said pulley;

a hydraulic brake mounted laterally adjacent said pulley body and having an output shaft, said output shaft being aligned with said input shaft and being mechanically coupled to said gearbox input shaft for mutual rotation about a common axis, said hydraulic brake being operable in either an actuated, non-braking mode or an at-rest, braking mode;

wherein switching of said hydraulic brake from said actuated to said non-actuated modes of operation decreases a rotational speed of said brake output shaft and causes a rotational speed of the gearbox and the pulley body to decrease.

5,642,805

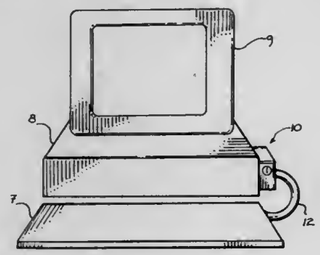
INPUT DEVICE LOCK

Brian Tefft, 2121 W. Main #3114, Mesa, Ariz. 85202

Filed Oct. 12, 1995, Ser. No. 542,391

Int. Cl.[6] H01H *27/06*

U.S. Cl. 200—43.08 **12 Claims**



7. A computer keyboard lock for switching a line effectuating data transmission of a computer keyboard cable comprising:

a) a lock switch connected to the line effectuating data transmission of the keyboard cable, the lock switch having a key receiving portion enabling switching between an on position and an off position;

b) a key received by and switching the lock switch between the on position and the off position, the key insertable into and removable from the key receiving portion only when in the off position; and

c) a rigid enclosure surrounding a portion of the keyboard cable where the lock switch connects to the line carrying the data, the lock switch mounted to the enclosure such that the lock switch connection to the line effectuating data transmission is inside the enclosure and the key receiving portion is outside the enclosure;

whereby a computer keyboard is unable to send or receive data but is still acknowledged by a computer as being connected when the key receiving portion is in the off position, no lines in the keyboard cable other than the line effectuating data transmission are affected, and the computer keyboard functions normally when the key is inserted into the key receiving portion and is switched to the on position.

5,642,806

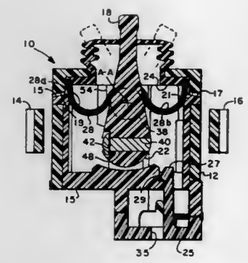
ROCKER ACTUATED SWITCH ASSEMBLY

Margaret Karadimas, Bloomingdale, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed Mar. 7, 1996, Ser. No. 612,150

Int. Cl.[6] H01H *21/24*

U.S. Cl. 200—557 **9 Claims**



1. A rocker actuated switch assembly comprising:

(a) housing means including a pair of oppositely disposed generally parallel side walls;

(b) a rocker member mounted in said housing means for pivotal movement about an axis extending in a first direction and having a lever portion thereof extending exteriorly of said housing means through an opening therein and in a direction generally normal to said axis, said rocker member having an electrical contact member thereon disposed on a side of said axis opposite said lever portion, wherein upon a user effecting said pivotal movement said contact is moved in opposite directions thereby providing an electrical switching function; and,

(c) a centering spring received over said lever portion of said rocker, said spring having a generally thin, flat transverse section with portions of contra curvature intermediate the ends thereof, with one end frictionally engaging said housing means on each of said oppositely disposed side walls, wherein said spring is operative upon user movement of said rocker about said axis in either a clockwise or anti-clockwise direction to return said rocker to a neutral or centered position.

5,642,807

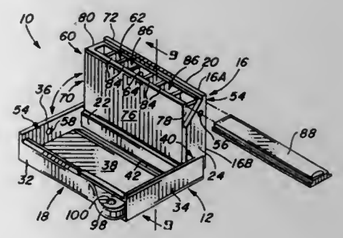
ARTICLE EMPLOYING MODIFIED MUSICAL RECORDING TAPE CARTRIDGE STORAGE CASE FOR STORING SMALL LOOSE ITEMS

George W. Barnes, 1701 E. 3rd, Hutchinson, Kans. 67502

Continuation-in-part of Ser. No. 395,054, Feb. 27, 1995, abandoned. This application Jan. 22, 1996, Ser. No. 589,816

Int. Cl.[6] A45C *11/32*

U.S. Cl. 206—38.1 **16 Claims**



1. An article for storing small loose items, said article comprising:

(a) a lid having a main front wall, an auxiliary back wall, a pair of side walls and an end wall disposed between and interconnecting an end portion of said main front wall to said auxiliary back wall so as to define a pocket located adjacent to and along a first end of said lid;

(b) means on said lid defining an elongated enclosed compartment extending from said pocket to an open end of said compartment located adjacent to and along a second end of said lid opposite from said first end thereof; and

(c) a body having a pair of side walls, an end wall extending between and connected to corresponding first ends of said side wall and a main back wall connected at one end to and extending outwardly from said end wall and connected to and extending between said side walls and defining an open end of said body opposite from said end wall of said body, said main back wall adjacent to said opposite open end of said body being relieved so as to define a void extending between corresponding second opposite ends of said side walls such that with said lid and body disposed in a closed position with respect to one another said auxiliary back wall of said lid lies in said void and in coplanar relationship with said main back wall of said body, said end wall of said lid closes said open end of said body, and said elongated enclosed compartment is enclosed by said side walls and end wall of said body and disposed between said main back wall of said body and said main front wall of said lid;

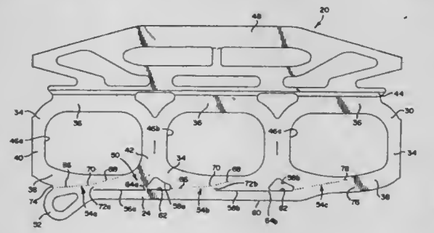
(d) wherein said enclosed compartment defining means is a separate insert receptacle which fits at a closed end into said pocket of said lid and extends therefrom to an opposite open end disposed adjacent to an opposite other end of said main front wall of said lid;

(e) wherein said insert receptacle terminates at said open end thereof just short of said other end of said main front wall of said lid so as to leave a protruding lip exposed thereon which overlaps with said end wall of said body when said lid and body are disposed in said closed condition with respect to one another;

(f) wherein said insert receptacle has interconnected front and rear walls and a pair of opposite side walls with an end wall closing said one end thereof;

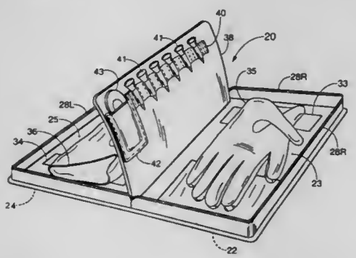
(g) wherein said insert receptacle includes a plurality of spaced partitions dividing the compartment into individual slots.

5,642,808
INDIVIDUAL APERTURE—CONTINUOUS ZIP STRIP
Leslie S. Marco, Bloomingdale, and Robert C. Olsen, Medinah, both of Ill., assignors to Illinois Tool Works Inc., Glenview, Ill.
Filed Feb. 28, 1996, Ser. No. 608,522
Int. Cl.[6] B65D *75/00*
U.S. Cl. 206—150 **8 Claims**



1. A carrier device for carrying a plurality of containers comprising: at least one container engaging portion formed from a flexible material, said container engaging portion comprising a plurality of bands disposed in a row, each said band defining an aperture therein for holding a single container therein, said bands having an outer margin portion extending longitudinally of said row, separating means on said outer margin portion for separating a separable portion of said outer margin portion from the remainder of said outer margin portion, said separable portion defining a zip strip, said separating means comprising a perforation line respectively associated with and inwardly directed towards each said aperture and an elongated slit between adjacent perforation lines, each said perforation line directing tearing forces into the respective apertures, said tearing forces being formed by pulling said zip strip to separate said zip strip from the remainder of the outer margin portion along said perforation lines and said slits.

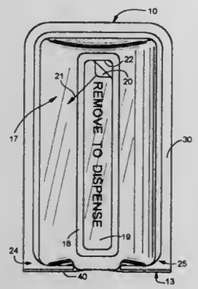
5,642,809
GOLD ACCESSORY CASE
Michael M. Mayville, 6646 E. Lovers La., Suite 1303, Dallas, Tex. 75214
Filed Oct. 24, 1995, Ser. No. 547,382
Int. Cl.[6] B65D *85/18*
U.S. Cl. 206—204 **9 Claims**



1. A golf glove conditioning container comprising:
first and second opposed panels of like dimensions, said panels having outer surfaces and absorbent inner surfaces;
means flexibly joining said opposed panels along a common boundary, so that said panels may be opened apart or closed together with facing inner surfaces to provide an enclosed interior space;
means for retaining a golf glove against each said inner surface; and
a third absorbent panel centrally positioned between, and sized to cover, said gloves so that each glove is pressed between two absorbent surfaces in an unventilated enclosure.

9. A method for storing and conditioning golf gloves comprising the steps of:
providing a pair of flexibly connected panels having absorbent inner surfaces which fold from facing to coplanar positions;
flattening a golf glove a against each facing inner surface;
interposing a flap having absorbent surfaces between the flattened gloves, the flap dimensions being substantially equal to or greater than the dimensions of the flattened gloves;
providing a fastener to selectively hold the facing panels together so as to form an unventilated enclosure; and
holding each glove tightly between the absorbent surfaces.

5,642,810
CONTAINER/DISPENSER FOR ROLLED PLASTIC BAGS
Rex Warner, Burnsville; Cyndi M. Meadows, Apple Valley, and Dennis Shafer, Wayzata, all of Minn., assignors to Carlisle Plastics, Inc., Phoenix, Ariz.
Filed Jan. 2, 1996, Ser. No. 582,108
Int. Cl.[6] B65D *85/66*
U.S. Cl. 206—389 **5 Claims**



1. A package comprising:
a container of clear plastic formed into first and second side sections, each having a top wall, a cylindrical side wall and a bottom wall;
a hinge interconnecting said bottom walls of said side sections;
one of said side sections defining an elongated removable strip to form a dispensing opening when said strip is removed, said side sections forming interlocking portions maintaining said side sections in closed relation to form a cylindrical container, said bottom walls each forming a foot outwardly of said hinge, said hinge and each foot cooperating to form a base for supporting said container in an upright position on a flat shelf;
a plurality of flexible, flat items in a roll inside said container; and
a sheet insert bearing printed matter between said roll and said cylindrical side wall of at least one of said side sections.

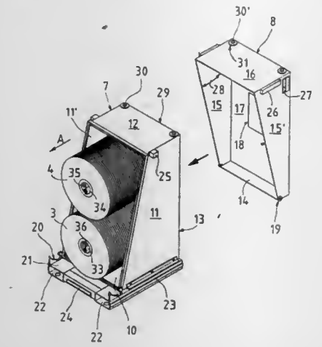
2. The package of claim 1 wherein each of said side sections includes a generally cylindrical sidewall and a peripheral flange, the peripheral flange of one side section engaging the corresponding peripheral flange of the other side section, said peripheral flanges extending on three sides of said container except for said hinge side, one of said peripheral flanges forming a tongue, and the other of said peripheral flanges forming a cavity for said tongue.

3. The apparatus of claim 1 wherein each foot extends below the associated bottom wall of a section and having a bottom surface extending substantially in the same horizontal plane as said hinge, said each foot extends crosswise of said hinge.

4. The apparatus of claim 1 wherein the cylindrical sidewall of one of said side sections defines an axially elongated recess extending substantially the entire height of said container sidewall and spaced equally distant from said flanges, and a die-cut portion forming said removable strip in said recess.

5. The article of claim 4 wherein the width of said strip is sufficient such that when said strip is removed, a user may gain access to the interior of said package with one's fingers to locate and remove the free edges of an outer bag on said roll or to gain access to ties within said package.

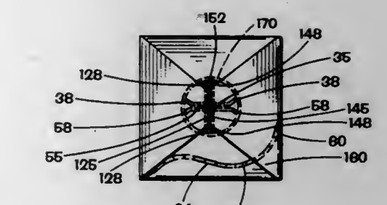
5,642,811
RECEIVING DEVICE FOR ARTICLES, IN PARTICULAR STRIP MATERIALS WOUND UP AS WOUND ROLLS
Dietmar Hübner, Oberkirch; Rainer Müll; Kurt Zwintzscher, both of Willstätt; Wolfgang Martiny, Oberkirch; Hartmut Thiele, München, and Ekkehard Hirschberg, Offenburg, all of Germany, assignors to BASF Magnetics GmbH, Mannheim, Germany
PCT No. PCT/EP94/02809, § 371 Date Mar. 1, 1996, § 102(e) Date Mar. 1, 1996, PCT Pub. No. WO95/07533, PCT Pub. Date Mar. 16, 1995
PCT Filed Aug. 25, 1994, Ser. No. 605,043
Claims priority, application Germany, Sep. 4, 1993, 9313349 U
Int. Cl.[6] B65D *85/66*
U.S. Cl. 206—391 **14 Claims**



1. In a receiving device for articles with a through-opening, the receiving device having an L-shape basic frame and, fastened thereon, at least one horizontal receiving spindle and a container body for complete enclosure of the articles, the container body comprising two shell bodies, namely, a fixed shell body, fastenable on the basic frame, and a mobile shell body, both shell bodies together forming bottom, top, and rear side walls having outer contours, each shell body having a front opening and a means for locking together with the other shell body with the front openings facing each other, thereby forming a receiving container which is closed on all sides, the improvement comprising the front opening of the mobile shell body having a contour which is larger than the outer contour of the rear wall of the fixed body so that the mobile shell body can be slipped with its front opening over the rear wall, parts of the top wall and side walls of the fixed shell body in a pickaback configuration, for the purpose of reducing overall volume of the receiving device and of removing the articles therefrom.

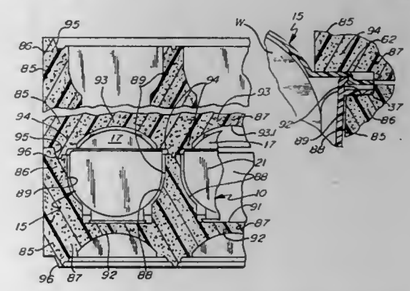
5,642,812
CABLE AND PARTS CONTAINER
Leon A. Hale, 217 Bayou View Dr., El Lago, Tex. 77586
Filed Aug. 25, 1995, Ser. No. 519,388
Int. Cl.[6] B65D *85/04;25/10*
U.S. Cl. 206—396 **10 Claims**

1. A box for containing parts and a cable reel with cable thereon, the box comprising



a box member having interconnected sides folded to form the box, the box member further comprising a bottom, a top, a front wall, a back wall and a left-side wall and a right-side wall interconnecting with said bottom and said top, a first spindle portion protruding into the interior of the substantially try right regular hollow container through a first hole in said left-side wall, and a second spindle portion protruding into the interior of the substantially right regular hollow container through a second hole in said right-side wall,
a flexible tongue connected to the box member and contained within the box upon folding of the interconnected sides forming the box,
the flexible tongue dividing the box into a first compartment and a second compartment,
the first compartment for holding the cable reel,
the second compartment for holding the parts, and
the second compartment comprising an enclosed space apart from the first compartment, the flexible tongue positioned for retaining the parts in the second compartment.

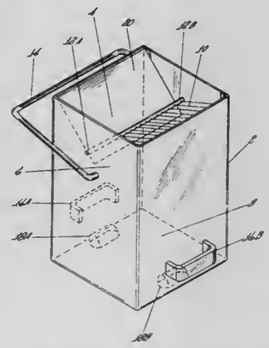
5,642,813
WAFER SHIPPER AND PACKAGE
David L. Nyseth, Plymouth, Minn., assignor to Fluoroware, Inc., Chaska, Minn.
Division of Ser. No. 276,096, Jul. 15, 1994, Pat. No. 5,575,394.
This application Apr. 5, 1996, Ser. No. 628,862
Int. Cl.[6] B65D *19/00*
U.S. Cl. 206—597 **19 Claims**



1. A package for shipping semiconductor wafers comprising
a multiplicity of shipping containers confining and engaging such semiconductor wafers and supporting and maintaining the wafers spaced from each other, each of the containers being closed to isolate the confined wafers against contamination,
a plurality of stacked and nesting cover trays molded of cushioning foamed plastic and comprising upper portions having open top storage compartments each receiving and conforming to the shape of a single said shipping container, the cover tray supporting the shipping containers in the compartments, the cover trays comprising upper and lower faces with interfitting nesting deformations formed therein receiving adjacent cover trays in stacked relation, and
the cover trays also comprising lower portions having bottom panels underlying the storage compartments to overlie and

confine shipping containers in the compartments of a cover tray below the bottom panel.

5,642,814
LITTER SEPARATOR FOR HOUSEHOLD PETS
Lawrence Farrell Nelson, 105 E. Valerio St., Santa Barbara, Calif. 93101
Continuation of Ser. No. 332,099, Oct. 31, 1994, abandoned. This application May 28, 1996, Ser. No. 654,022
Int. Cl.[6] B07B *1/00;* **A01K** *29/00*
U.S. Cl. 209—235 **1 Claim**



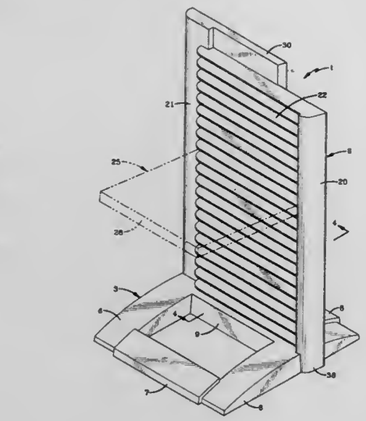
1. A device for separating a mixture comprising animal droppings and an absorbent litter wherein said animal droppings comprise a plurality of discrete members having a first size, and said litter comprises a plurality of discrete elements having a substantially uniform second size which second size is different from said first size, the device comprising:

(a) an open top container having a flat non-porous bottom portion disposed within a horizontal plane, and a side wall portion integral with said bottom portion and extending substantially vertically upward therefrom and terminating in a container rim, said bottom portion and said wall portion, in combination, forming a container having an open top portion bounded by said container rim;

(b) a fixed baffle portion comprising a flat sheet disposed within said open top container, at least a portion of said flat sheet disposed within said open top container, at least a portion of said flat sheet being rigidly affixed to the side wall portion thereof and wherein said flat sheet lies in a plane which is inclined with respect to said horizontal plane and wherein said flat sheet is dimensioned to provide an open space between said fixed baffle portion and said side wall; and

(c) a sieve portion pivotally attached to said baffle and said side wall portion and disposed within said open top container to provide a porous barrier across said open space, said porous barrier having openings therein dimensioned to permit passage of said litter having said second size therethrough while preventing passage of the animal droppings therethrough.

5,642,815
STORAGE AND DISPLAY DEVICE
Larry K. Mundorf, North Canton; Christopher G. Gallagher, Akron; John P. Hoerger, Minerva, and James T. Weisburn, Massillon, all of Ohio, assignors to Alpha Enterprises, Inc., North Canton, Ohio
Filed May 22, 1995, Ser. No. 445,897
Int. Cl.[6] A47G *29/00*
U.S. Cl. 211—40 **20 Claims**



1. A device for storing and displaying a plurality of recorded media, including:

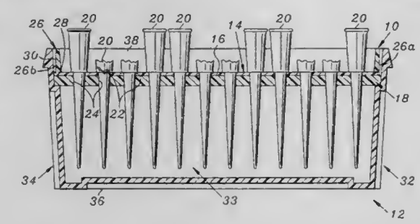
a base;

a rack having a plurality of vertically spaced shelves forming a plurality of vertically spaced slots for slidably receiving the recorded media therein; first means for mounting the rack on the base whereby the rack is held by the base and extends upwardly from a substantially horizontal support surface on which the base is mounted;

second means for mounting the rack without the base on a substantially vertical surface; and

a cover plate adapted to be mounted on a lower end of the rack when said rack is mounted on the vertical surface by the second means.

5,642,816
PIPETTE TIP RACK REFILL PLATE HOLD DOWN APPARATUS
Christopher Kelly, Larkspur, and Kenneth Rainin, Piedmont, both of Calif., assignors to Rainin Instrument Co., Inc., Emeryville, Calif.
Filed Oct. 25, 1995, Ser. No. 548,233
Int. Cl.[6] A47F *7/00*
U.S. Cl. 211—60.1 **17 Claims**

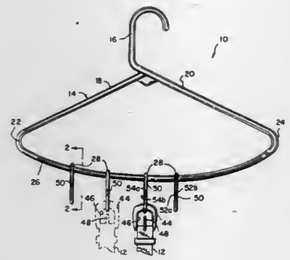


1. In a reusable tip rack for successively receiving and securing separate arrays of pipette tips each carried by a flat support plate adapted to rest on a top of a pipette tip support tray of the tip rack with an array of pipette tips extending through an array of holes in the top of the support tray, a manually releasable latch mechanism for releasably securing a support plate flat on the top of the support tray, comprising:

a laterally extending locking surface on one of the support plate or the support tray; and

a manually releasable locking surface on one of the other of the support plate or the support tray for releaseably engaging the locking surface to releaseably secure the support plate flat on the top of the support tray.

5,642,817
HANGING DEVICE FOR BELTS
Sonja F. O'Brien, 5880 Lakeview Dr., Greendale, Wis. 53129
Filed Mar. 28, 1996, Ser. No. 622,993
Int. Cl.[6] A47F *1/04;7/00*
U.S. Cl. 211—60.1 **13 Claims**



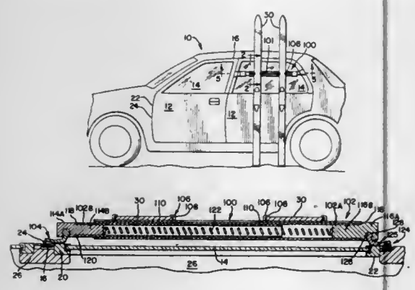
1. A hanging device for supporting a plurality of belts, comprising:

a hanger having a hook portion and a body portion depending therefrom, the body portion including first and second arms diverging from the hook portion, and a support rod interconnecting the arms such that the body portion defines a closed loop;

a ring member, the ring member defined by first and second segments, each segment terminating at a first manually separable end such that the ring member is manipulatable between a first configuration wherein the first ends of each segment abut and the ring member forms a closed loop, and a second configuration wherein the first ends are separated so as to allow the ring member to be positioned about the support rod, each segment further terminating at a second end; and

a pin extending through and interconnecting the second ends of each segments such that each segment pivots about the pin as the ring member is manipulated between its first and second configuration.

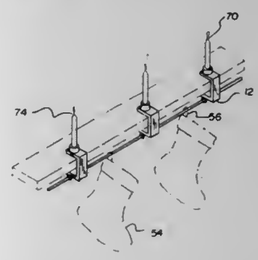
5,642,818
STRUCTURE FOR SUPPORTING ARTICLES AGAINST VEHICLES
Adam Brent, 2631 W. Estes, Chicago, Ill. 60645, and Jill R. Shimabukuro, Chicago, Ill., assignors to Adam Brent, Chicago, Ill.
Filed Jun. 13, 1995, Ser. No. 489,893
Int. Cl.[6] A47F *5/00*
U.S. Cl. 211—70.5 **19 Claims**



1. An article support structure for attachment to an automobile and for supporting an elongated article in a substantially upright position, comprising:

an elongated support beam having two opposing ends, the support beam including engagement means disposed at said two opposing ends for engaging a portion of the exterior surface of said automobile in the vicinity of a door of said automobile, the engagement means including articulation means for permitting limited movement of said engagement means with respect to said support beam, to thereby be adaptable to engage different contoured surfaces of said automobile, and article support means extending outwardly from said support beam cooperating with said support beam to define a support area along said support beam which supportingly engages said article and supports it in said upright position.

5,642,819
CHRISTMAS STOCKING HOLDER
Ernesto Ronia, 24828 19th Place S., Des Moines, Wash. 98198
Filed Mar. 13, 1996, Ser. No. 614,674
Int. Cl.[6] A47F *5/00*
U.S. Cl. 211—86.01 **6 Claims**



1. A new and improved Christmas stocking and candle holder, comprising, in combination:

a plurality of C-shaped brackets, each bracket having an upper linear segment with an interior end and an exterior free end, a lower linear segment parallel with the upper linear segment, the lower segment having an interior end and an exterior free end, and a vertical segment coupling the upper and lower segments adjacent to the interior ends thereof, each of the C-shaped brackets having a T-shaped channel in the lower segment extending from the exterior free end thereof with an elongated slot extending downwardly from the upper surface of the lower segment and overlying the channel;

a plurality of nuts, each nut having female threads formed therein positioned in and supported by the channel of the lower segment;

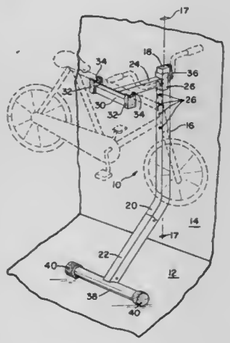
a plurality of bolts, each bolt having a threaded exterior surface extending upwardly from beneath the lower surface of the lower segment into the channel and threadedly coupled within the nut, the bolt having an essentially circular eye extending downwardly from the channel, the circular eye of each bolt having a common axis in alignment with the axes of the other bolts;

an elongated dowel with a circular cross section positioned through the eyes of the dowels to provide a region for supporting a Christmas stocking between the dowels when the dowels are positioned on a planar surface;

a plurality of bowls, each bowl having a lower planar surface coupled to the upper surface of an associated upper segment,

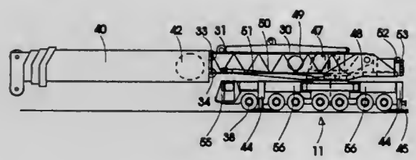
each bowl also having a cylindrical recess extending downwardly from the upper surface of an associated bowl;
a candle of a cylindrical configuration having an upper end with a wick and a lower end positioned within each recess; and
a Christmas stocking with a loop at the upper end positioned on the dowel for being supported thereby.

5,642,820
PORTABLE STORAGE SUPPORT STRUCTURE
James P. Angeles, Boulder, Colo., assignor to LifeGear, Inc., Rockaway Township, N.J.
Filed Oct. 18, 1995, Ser. No. 544,931
Int. Cl.[6] A47F *5/00*
U.S. Cl. 211—103 **6 Claims**



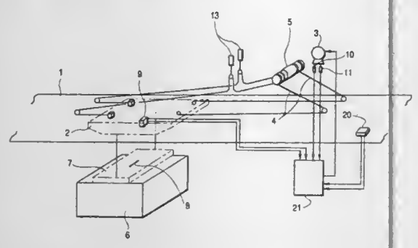
1. Portable storage support structure adapted for resting on a horizontal surface and leaning against a vertical surface, comprising:
an elongated first member having a major axis oriented generally vertically, said first member having an upper end and a lower end;
an elongated second member secured to the lower end of said first member and extending downwardly and away from said major axis of said first member so that said first and second members together define a first plane;
a support bar;
means for securing said support bar to said first member between said first member upper and lower ends, with said support bar lying within said first plane and extending generally orthogonally to said first member major axis, and wherein the projection of the distal end of said support bar on a second plane which is orthogonal to said first member major axis is closer to said first member major axis than is the projection on said second plane of the distal end of said second member;
first friction means secured to said first member upper end for providing sliding frictional resistance between said first member upper end and said vertical surface;
second friction means secured to said second member distal end for providing sliding frictional resistance between said second member distal end and said horizontal surface;
a holder bar secured at a central location to said support bar distal end, said holder bar having two ends, and said holder bar extending orthogonally to said first plane; and
a pair of holding members each secured to a respective one of said holder bar ends;
whereby an article to be held by said structure is disposed on said pair of holding members so that the weight of said article increases the frictional resistance between said first and second friction means and said vertical and horizontal surfaces, respectively, to maintain the position of said structure.

5,642,821
MOBILE CRANE WITH IMPROVED BOOM CONSTRUCTION
Werner Häfliger, Wissenbach 209, 8932 Mettmenstetten, Switzerland
Continuation of Ser. No. 291,574, Aug. 16, 1994, abandoned, which is a continuation of Ser. No. 130,878, Oct. 4, 1993, abandoned. This application Jan. 11, 1996, Ser. No. 584,146
Claims priority, application Switzerland, Oct. 6, 1992, 03112/92
Int. Cl.[6] B66C *23/26*
U.S. Cl. 212—177 **15 Claims**



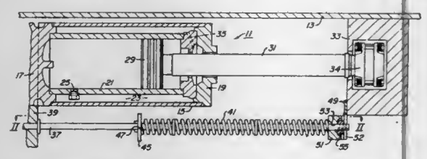
1. A self-propelled mobile crane comprising:
a self-propelled lower crane carrying chassis having at least five wheel axles;
an upper load lifting and carrying chassis mounted on said lower chassis to pivot about a vertical axis relative thereto;
a main boom mounted on said upper chassis to pivot about a horizontal axis relative thereto, said main boom comprising a single integral elongated member that is longitudinally structurally rigid and non-extendible, said member having at a forward free end terminating, when lowered, approximately above one end of said chassis and in attachment devices;
at least one hoisting cylinder mounted to pivot said main boom about said horizontal axis to selected positions including position whereat said main boom extends horizontally in a horizontal plane, said hoisting cylinder being mounted at a location lower than said main boom, such that when said hoisting cylinder is operated to pivot said main boom about said horizontal axis said hoisting cylinder is subjected to a compression stress by said main boom;
a separate boom supported on a separate conveyance vehicle, said separate boom being selectively connectable to said attachment devices at said free end of said main boom and removable from said separate conveyance vehicle, such that said separate boom can be rigidly joined to said free end of said main boom as a longitudinal extension thereof, whereby crane lifting and carrying operations can be performed from said separate boom, said separate boom being completely removable and separable from said main boom with the thus separated separate boom then being supported again on said separate conveyance vehicle for transport thereby separate from self-propelled movement of said lower chassis;
said main boom having pivotally mounted at said free end thereof at least one lifting device operable to enable crane lifting and carrying operations to be performed by said main boom, in any relative position of rotation of said upper chassis and said main boom about said vertical axis, when said separate boom is completely removed from and not joined to said free end of said main boom;
said mobile crane being movable by self-propelling of said lower chassis when said separate boom is completely removed from said main boom.

5,642,822
SUSPENDED LOAD VIBRATION PREVENTING APPARATUS
Tadaaki Monzen; Susumu Kono, both of Tokyo; Yoshiaki Ohkubo, Hiroshima; Toshiyuki Fujii, Hiroshima, and Kouji Uchida, Hiroshima, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 8, 1996, Ser. No. 629,090
Claims priority, application Japan, Apr. 24, 1995, 7-098239
Int. Cl.[6] B66C *13/06*
U.S. Cl. 212—275 **9 Claims**



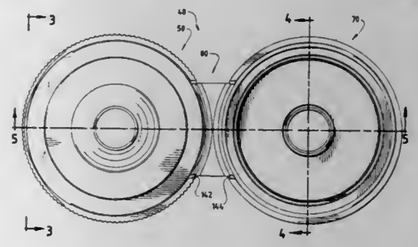
1. A suspended load swaying and vibration preventing apparatus for use with a crane having a structural body, a trolley horizontally movably mounted on the structural body, a trolley drive device for moving the trolley relative to the structural body and a load suspended from the trolley by ropes, said suspended load swaying and vibration preventing apparatus comprising:
a trolley detector for detecting motion parameters of horizontal movement of the trolley,
an image sensor for detecting motion parameters of swaying of the suspended load;
a structural body vibration detector for detecting motion parameters of vibration of the structural body; and
a controller for calculating a trolley velocity in accordance with detection signals from said trolley detector, said image sensor and said structural body vibration detector and for outputting a velocity command to the trolley drive device.

5,642,823
RAILCAR SHOCK ABSORBER WITH NEUTRAL POSITION
Harry B. Kalina, Arlington; Charles T. Bomgardner, Burleson, and Richard N. Hodges, Arlington, all of Tex., assignors to FM Industries, Inc., Fort Worth, Tex.
Filed Jun. 9, 1996, Ser. No. 666,920
Int. Cl.[6] B61G *9/08*
U.S. Cl. 213—43 **18 Claims**



1. A railcar shock absorber, comprising in combination:
a cylinder which has a buff end and a draft end and containing a liquid and gas fluid under gas pressure for absorbing shock due to buff and draft movement;
a piston carried in the cylinder;
a piston shaft extending from the piston sealingly through the draft end of the cylinder, the gas pressure urging the piston toward the draft end of the cylinder while restoring from a buff shock;
one of the piston shaft and the cylinder adapted to be secured stationarily to a frame of the railcar and the other of the piston shaft and the cylinder adapted to be secured to a coupling for coupling to adjacent railcars; and
spring means for stopping further restoring movement of the piston toward the draft end of the cylinder at a selected neutral position spaced from the draft end of the cylinder, and for allowing the piston to move from the neutral position toward the draft end of the cylinder if a draft shock occurs of sufficient magnitude while the piston is in the neutral position.

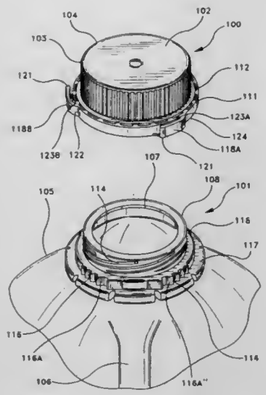
5,642,824
CLOSURE WITH MULTIPLE AXIS BISTABLE HINGE STRUCTURE
John M. Hess, III, Waukesha; Nicholas J. Jelich, Oconomowoc, and Bruce M. Mueller, Brookfield, all of Wis., assignors to AptarGroup, Inc., Crystal Lake, Ill.
Filed Dec. 7, 1995, Ser. No. 568,806
Int. Cl.[6] B65D *47/08*
U.S. Cl. 215—235 **18 Claims**



1. A closure for a container opening, said closure comprising:
a base for mounting to said container over said opening and defining a discharge aperture communicating with said opening;
a lid movable between a closed position occluding said aperture and an open position spaced from said aperture; and
a bistable, snap-action hinge structure that includes a web having a central portion between two wider ends wherein an arcuate film hinge connects said base to said web along one side of said web between said ends and an arcuate film hinge connects said lid to said web along another side of said web between said ends, said web being free of any other film hinge between said two arcuate film hinges, said hinge structure including at least one abutment surface located so that when said lid is in said closed position the abutment surface (1) extends adjacent said web central portion from one of said film hinges toward the other film hinge more than one-half the shortest distance between said film hinges and (2) contacts said web central portion whereby the position of said web is controlled upon the closing and opening of said lid.

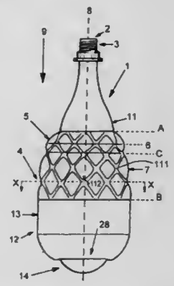
5,642,825
CONTAINER CLOSURE HAVING PERIPHERAL TAMPER-INDICATOR
Emanuel Erick Wohlgemuth, North Bellmore, N.Y., assignor to Superseal Corporation, Condado, Puerto Rico
Filed Aug. 21, 1995, Ser. No. 517,065
Int. Cl.[6] B65D *41/47*
U.S. Cl. 215—256 **11 Claims**

1. In combination, a blow-molded plastic container having an opening, a handle and a cap,
said cap comprising a cover portion for closing said opening and an integral tamper-indicating ring frangibly connected thereto at a tear line,
said cover portion and said container including cooperative means for allowing removable and replaceable engagement therebetween,



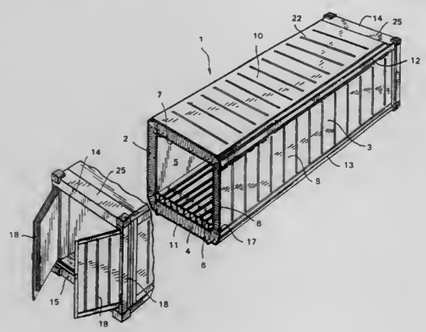
said frangible ring and said container including cooperative means for denying removal of said cover portion unless said cover portion and ring are disconnected at said tear line, said cooperative means comprising mating lugs disposed in said frangible ring and said container, wherein the mating lugs on the container comprises first and second pairs of ratcheted lugs, the first pair of ratcheted lugs being sloped in a first direction and the second pair of ratcheted lugs being sloped in a second direction opposite to the first direction, and wherein said frangible ring comprises three pull-tabs having a grasping end and a connection end coupling the pull-tabs to the frangible ring, the pull-tabs facilitating complete disconnection of said ring from said cover portion, and three tear-initiation grooves transversing said ring, each adjacent one of said pull-tabs, said pull-tabs and said tear-initiation grooves being symmetrically disposed about said ring such that the connection ends of the pull-tabs are spaced 120° apart along the frangible ring, whereby one or more of said pull-tabs is convenient to right-handed users and one or more of said remaining pull-tabs is convenient to left-handed users, regardless of said cap's rotational position relative to said container handle and said user.

5,642,826
COLLAPSIBLE CONTAINER
David Murray Melrose, Auckland, New Zealand, assignor to CO2PAC Limited, Auckland, New Zealand
Continuation of Ser. No. 232,180, Apr. 29, 1994, abandoned. This application Aug. 5, 1996, Ser. No. 693,848
Claims priority, application New Zealand, Nov. 1, 1991, 240448
Int. Cl.[6] B65D *1/02;1/46*
U.S. Cl. 215—382 **10 Claims**



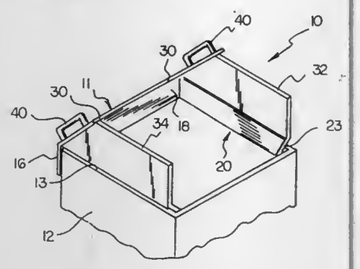
1. A semi-rigid container having a longitudinal axis extending from a neck portion to a base portion and a transverse axis perpendicular to said longitudinal axis, said container comprising a side wall connecting the neck portion to the base portion, the side wall of said container including a semi-rigid folding portion having a plurality of panel means for providing rigidity against a collapsing force in the direction of said longitudinal axis and tending to move said neck portion towards said base portion, said panel means being flexible against a force in the direction of said transverse axis, whereby the outside surface of said folding portion folds relative to a remaining portion of said container by progressively inverting and thereby reducing the internal volume of said container, and wherein said folding portion includes an initiator portion for defining where folding will commence, the initiator portion of the folding portion of the side wall including a zone angled to be substantially more perpendicular relative to the longitudinal axis of the container than any other zone in the folding portion.

5,642,827
REFRIGERATED CONTAINER AND A GABLE FRAME
Kurt Bo Madsen, Tønder, Denmark, assignor to Maersk Container Industri AS, Tinglev, Denmark
PCT No. PCT/DK94/00447, § 371 Date Aug. 12, 1996, § 102(e) Date Aug. 12, 1996, PCT Pub. No. WO95/15288, PCT Pub. Date Jun. 8, 1995
PCT Filed Dec. 1, 1994, Ser. No. 649,725
Claims priority, application Denmark, Dec. 2, 1993, 1348/93
Int. Cl.[6] B65D *33/04*
U.S. Cl. 220—1.5 **7 Claims**



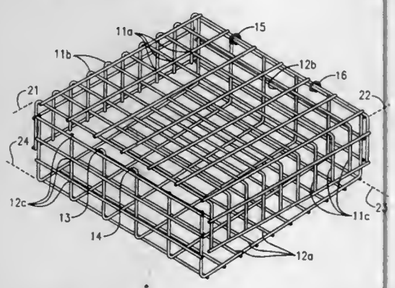
1. A double-walled refrigerated container (**1**) having an inner cladding (**2**) and an outer cladding (**3**) comprising horizontal and vertical sheet members (**6, 7, 8; 9, 10, 11**) to form the internal and external, respectively, wall, roof and bottom faces of the claddings as well as an intermediate, bonded insulation layer (**4**) of plastics foam, said sheet members (**9, 10, 11**) of the outer cladding (**3**) being attached to the load receiving frame of the container (**1**), which comprises upper and lower longitudinal girders (**12, 13**) as well as upper and lower transverse girders (**14, 15**) and vertical corner posts (**16**) at the gables, characterized in that the interconnected upper and lower transverse girders (**14, 15**) and vertical corner posts (**16**) provide an outer gable frame (**14, 15, 16**) with which the sheet members (**9, 10, 11**) of the outer cladding are connected, and that it includes an inner gable frame (**19***a, b, c*) of sheet material with which the sheet members (**6, 7, 8**) of the inner cladding are connected as well as an intermediate, annular and bonded insert (**20**) of an elastically resilient material between the outer and inner gable frames.

5,642,828
REFUSE CONTAINER ATTACHMENT APPARATUS
Andris P. Sorens, 992 E 21st Pl., Tulsa, Okla. 74129
Filed Jun. 29, 1996, Ser. No. 688,193
Int. Cl.[6] B65D *21/02*
U.S. Cl. 220—4.03 **11 Claims**



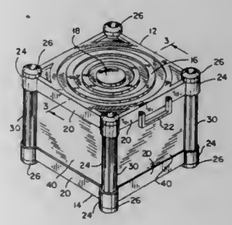
1. An apparatus, comprising:
a central base unit which includes a base center portion, an outer base wall downwardly depending from an outer side of said base center portion, and an inner base wall downwardly depending from an inner side of said base center portion,
a first side unit which includes a rear end and a front end, wherein said rear end of said first side unit is connected to a first end of said central base unit, and
a second side unit which includes a rear end and a front end, wherein said rear end of said second side unit is connected to a second end of said central base unit,
wherein said first side unit slopes downwardly toward said second side unit,
wherein said second side unit slopes downwardly toward said first side unit, and
wherein said inner base wall of said base center portion slopes downwardly toward said front ends of said first side unit and said second side unit.

5,642,829
CONTAINERS
Stewart Hardison, Bainbridge, N.Y., assignor to Perky-P Co., A Colorado Partnership, Denver, Colo.
Filed May 17, 1996, Ser. No. 650,913
Int. Cl.[6] B65D *21/00*
U.S. Cl. 220—4.22 **3 Claims**



1. A container comprising first and second generally U-shaped pieces formed from substantially planar wire mesh having a pair of rows of wire extending in mutually perpendicular directions, each of said U-shaped pieces having a central length and leg lengths at opposite ends of the central length;
and means for attaching together two edges of the central lengths of the two pieces to allow rotation of said pieces relative to each other about a hinge axis,
at least one of said wires in one of said rows of one of said pieces extending to be capable upon relative rotation of said first and second pieces of resiliently engaging a wire of said rows of said second piece to lock said two pieces together.

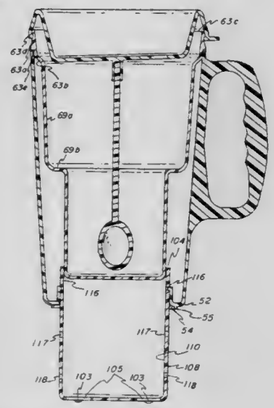
5,642,830
COLLAPSIBLE CONTAINER WITH LATCH MECHANISM
Hensley Foster, Jackson, Wis., assignor to Badger Case, Inc., Cedarburg, Wis.
Continuation-in-part of Ser. No. 393,062, Feb. 22, 1995, Pat. No. 5,529,199. This application Jun. 21, 1996, Ser. No. 668,285
Int. Cl.[6] B65D *19/18*
U.S. Cl. 220—4.28 **8 Claims**



1. A container having an assembled condition in which the container is used and a disassembled condition in which the elements of the container are collected into an integral unit, said container comprising:
a top member having a central wall portion, peripheral side wall portions extending from said central wall portion, and corners, a receptacle being formed in each of said corners of said top member and extending normal to the central wall portion of said top member;
a bottom member having a central wall portion, peripheral side wall portions extending from said central wall portion, and corners, a receptacle being formed in each of the corners of each of the bottom member and extending normal to the central wall portion, the receptacles formed in said top and bottom members being aligned when said top and bottom members are placed in a position in which said peripheral wall portions of each member extend toward each other;
a columnar member received in each of said aligned pairs of cylindrical receptacles in said top and bottom members when said case is in the assembled condition, each of said columnar members extending from one of said receptacles in said top member to a corresponding one of said receptacles in the bottom member, each of said columnar members having at least a pair of peripherally spaced slots extending along said columnar members parallel to the axis thereof and each columnar member having a pair of internally mounted rods;
a plurality of side members having ends, each of said side members having one end inserted in a slot in a columnar member in one corner of said top and bottom members and another end inserted in a slot in a columnar member positioned in a corner adjacent to said one corner so that each of said side members extends between two adjacent corners of said top and bottom members; and
a plurality of latch members, each latch member engaging one of the internal mounted rods in the columnar member,
said peripheral side walls of said top and bottom members being placed in abutment when said container is in the disassembled condition, said latch members of said top and bottom members being contiguous when said peripheral side wall portions of said top member and bottom member are placed in abutment, said latch members containing means for releasably

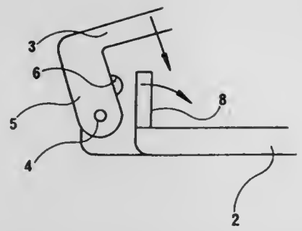
securing said latch members together, when contiguous to retain the top member and the bottom member in an integral unit when said container is in the disassembled condition, said columnar members and side members being storable within the top and bottom members when the container is in the disassembled condition.

5,642,831
BEVERAGE CONTAINER WITH VERTICALLY ADJUSTABLE BASE
L. Grant Lynd, Canal Winchester, Ohio, assignor to National Packaging Corporation, Columbus, Ohio
Filed Oct. 20, 1995, Ser. No. 546,565
Int. Cl.[6] B65D *8/06;25/24*
U.S. Cl. 220—8 **15 Claims**



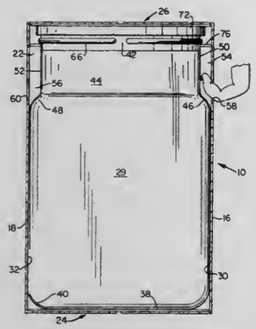
1. A drinking container comprising
a liquid containing portion having a bottom surface,
a first wall member;
a second wall member, and
a slidably displaceable sleeve member located adjacent said liquid containing portion, said sleeve member having a sidewall and a bottom surface, said sleeve member in a first position having its bottom surface spaced apart from said bottom surface of said liquid containing portion a first distance, said sleeve member in a second position having its bottom surface spaced apart from said bottom surface of said liquid containing portion a second distance, said sleeve member retained between said first and second wall members.

5,642,832
CASE WITH HINGED CLOSURE THAT ASSISTS OPENING
Bernard Favre, Chevilly-Larue, France, assignor to L1R France, Chevilly-Larue, France
Filed Oct. 19, 1995, Ser. No. 545,098
Claims priority, application France, Oct. 19, 1994, 94 12476
Int. Cl.[6] B65D *43/16*
U.S. Cl. 220—260 **5 Claims**



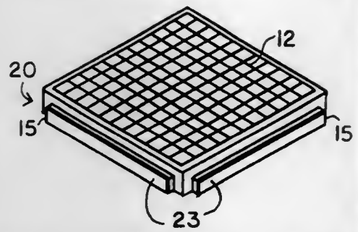
1. Case for cosmetic products comprising a base and a lid hinged on one edge of said base at an axis of articulation and having a hinged closure, said base having adjacent the hinge of the case at least one relatively flexible tongue of limited elasticity being made of one piece construction with the base, said base extending in a longitudinal plane and said tongue (a) extending away from said base toward said lid at a first angle relative to said longitudinal plane when said lid is in an open mode relative to said base and (b) extending away from said hinged closure at a second angle relative to said base when said lid is in a closed mode relative to said base, said first angle being greater than said second angle, said lid having a top and a rear extending from said top toward said base, said rear having, facing said at least one tongue, at least one relatively rigid protuberance disposed between the top and said axis of articulation such that, during said closed mode, said at least one protuberance on the lid will come into abutment against said at least one tongue of the base resiliently urging said tongue from said first angle to said second angle, and said at least one rigid protuberance being made of one piece construction with the lid.

5,642,833
COMPOSITE PACKAGE FOR SCOOPABLE PRODUCTS
Carl D. Ring, Oakland, Tenn., assignor to Ring Can Corporation, Oakland, Tenn.
Continuation of Ser. No. 413,112, Mar. 29, 1995, abandoned. This application Jun. 17, 1996, Ser. No. 664,793
Int. Cl.[6] B65D *90/04*
U.S. Cl. 220—441 **7 Claims**



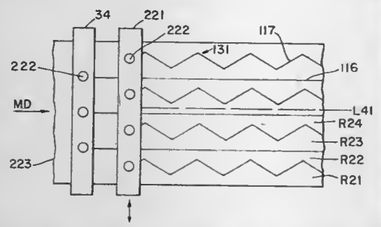
1. A composite package comprising an outer rectangular paperboard box having vertical front, rear, and side walls and an upper foldable flap assembly connected to said vertical walls, an inner thin-walled plastic jar having a lower generally rectangular portion fitting within said box and an upper portion of slightly reduced cross-sectional size provided with a large open mouth, a lid removably connected over said mouth, said lid being separate from but normally covered by said flap assembly, said upper portion having wall sections spaced inwardly from opposed walls of said box to provide finger receiving spaces therebetween, said opposed walls having finger receiving openings adjacent said spaces to facilitate handling of said box, means permitting complete removal of said upper flap assembly from said walls to provide access to said lid, said removal means being located between said upper flap assembly and said finger receiving openings.

5,642,834
SECONDARY CONTAINMENT RESERVOIR DEVICE
Mark D. Shaw, 9820 Preston Trail, Ponte Vedra Beach, Fla. 32082; J. Tad Heyman, 11858 Olde Oaks Court N., Jacksonville, Fla. 32223; Laurence M. Bierce, 105 Sandra Rd., Jacksonville, Fla. 32211, and Jesse Ehredt, 1711 Duffton Ln., Painesville, Ohio 44077
Filed Aug. 21, 1995, Ser. No. 517,148
Int. Cl.[6] B65D *25/00*
U.S. Cl. 220—720 **18 Claims**



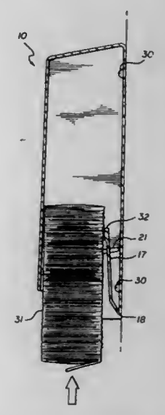
1. A secondary containment reservoir device having an expandable liquid retention capacity comprising a bottom and side walls joined to form a reservoir to retain liquids and an expandable liquid retention means mounted externally to said side walls and communicating with said reservoir through an inlet port, said retention means comprising a bladder composed of a non-rigid, liquid-impermeable material stored within a housing in a low volume configuration which automatically expands to receive liquid from said reservoir.

5,642,835
SHEET PRODUCTS FOR USE IN A POP-UP DISPENSER AND METHOD FOR FORMING
Terrill A. Young, Cincinnati, and Charles J. Berg, Jr., Wyoming, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Dec. 15, 1995, Ser. No. 572,805
Int. Cl.[6] B65G *59/00*
U.S. Cl. 221—1 **20 Claims**



1. An improved method of forming a strata of overlapping sheets suitable for use in a pop-up dispensing system, said method comprising the steps of:
forming a plurality of ribbons each having a longitudinal axis and opposed first and second side portions and first and second side edges spaced transversely from said longitudinal axis, wherein said first side edge has one or more knee-like protrusions, and said second side edge is either substantially parallel with said longitudinal axis or includes one or more knee-like protrusions extending outwardly from said longitudinal axis;
phasing adjacent ribbons in a direction parallel to their longitudinal axis such that a knee-like protrusion of a first side edge of one ribbon is aligned with either the substantially parallel second side edge or a corresponding knee-like protrusion of a second side edge of an adjacent ribbon;
overlapping at least a portion of said knee-like protrusion of said first side portion with said second side portion of adjacent phased ribbons to form a strata of overlapped ribbons, creating a series of areas of greatest overlap adjoining areas of least overlap;
folding said strata of overlapped ribbons to form a stack of folded interleaved ribbons; and
cutting said stack of folded interleaved ribbons across said longitudinal axis to form blocks of individual interleaved sheets.

5,642,836
SINGLE PIECE TOWEL DISPENSER
Frank Merriweather, Jr., 131 ½ E. 220th St., Carson, Calif. 90745
Filed Sep. 5, 1995, Ser. No. 523,356
Int. Cl.[6] B65H *1/00*
U.S. Cl. 221—62 **2 Claims**

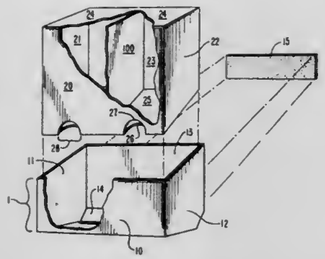


1. A towel dispenser consisting of a single unitary molded piece and having
a container with a front, a back, right and left sides, and a top, forming a box with an open bottom,
means defining a slot in each of said sides, and
a bottom member joined to said back with a living hinge and having opposed tabs extending laterally for riding in said respective slots, and an access opening for passage of a towel from the interior of said container,
with said bottom member moving from an initial position out of said box to a dispensing position with said tabs in said slots for closing said bottom and supporting towels thereon, and to an upward loading position into the box for insertion of towels upward into said box past said bottom member, with said bottom member returning to said dispensing position following insertion of said towels.

5,642,837
VITAMIN PACKET DISPENSER UNIT
Kim G. Hayes, Salt Lake City, and Mark J. Crapo, Sandy, both of Utah, assignors to Weider Nutrition Group, Inc., Salt Lake City, Utah
Filed Jun. 30, 1995, Ser. No. 510,997
Int. Cl.[6] B65H *1/00*
U.S. Cl. 221—197 **20 Claims**

15. A packet dispensing system comprising:
a) at least one inner carton, said inner carton comprising a front panel, a back panel, two side panels, a sloping bottom panel,

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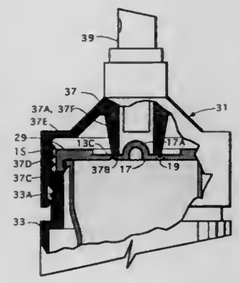
and at least one vertical internal divider positioned parallel to said side panels, wherein the front edge of said bottom panel is lower than the back edge of said bottom panel, wherein said at least one internal divider divides said inner carton into at least two internal compartments, wherein said inner carton has a multiplicity of dispensing openings at its lower front portion, each of said openings corresponding to and centered on one of said internal compartments, wherein a plurality of packets are contained within each said internal compartment and wherein said packets can be withdrawn one at a time from said internal compartment through said dispensing openings;

b) an outer holder comprising a front panel, a back panel, and two side panels, which together form a container with an top opening and a bottom opening, and a sloping bottom panel, wherein the front edge of said bottom panel is lower than the back edge of said bottom panel, wherein the back edge of said bottom panel is attached to the bottom edge of said back panel, and wherein said bottom panel covers only the rear portion of said bottom opening; and

c) a fastener affixed to the back panel of said outer holder, said fastener adapted for fastening said outer holder removably to a vertical surface;

wherein said outer holder is slightly larger than said at least one inner carton so that said inner carton can be removably inserted into said outer holder and held securely upright therein, wherein said bottom panel prevents said at least one inner carton from slipping out of said bottom opening, and wherein said lower front portion of said inner carton projects from said bottom opening of said outer holder, whereby said dispensing opening is accessible.

5,642,838
FRANGIBLE SEALING LID FOR SPILE ACCESS
William Robert Stoody, 39345 Calle San Clemente, Murrieta, Calif. 92562
Filed Dec. 28, 1995, Ser. No. 579,830
Int. Cl.[6] B67D *5/00*
U.S. Cl. 222—83 **15 Claims**



7. A lid having a spile access means, for sealing closure and automatic sealed access of a filled container, which comprises:

a laminate having a base material and a polymer film bottom surface;

and a plastic access panel that includes, a breakout area having a frangible periphery, an outwardly facing top surface, a downwardly facing bottom, a perimeter flange and a hinge;

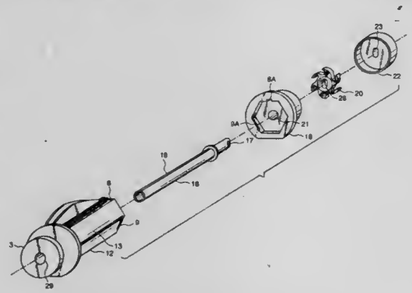
said access panel perimeter flange being bonded to said polymer film surface;

said frangible periphery having a thin membrane that is sealingly continuous, between said breakout area and said top surface, with said breakout area being in a normally closed state;

said breakout area being positionable from said closed state to a displaced state wherein said frangible periphery membrane is in a prescribed yielded state providing a sealable opening having a downwardly turned annular sealing lip;

and, wherein said hinge hingingly secures said displaced breakout area to said opening.

5,642,839
SQUEEZING HOLDER FOR A TUBE
Wan Ki Lee, 11722 Westshore Ct., Cupertino, Calif. 95104
Filed Jun. 20, 1996, Ser. No. 667,829
Int. Cl.[6] B65D *35/34*
U.S. Cl. 222—99 **11 Claims**



1. A holder for squeezing a soft tube comprising:

a main housing having a longitudinal slot and a hollow interior;

an elongated center tube gripper having a first end, a second end and a longitudinal slot for receiving a closed end of a soft tube and being received at said first end by said main housing and having a key section at said second end;

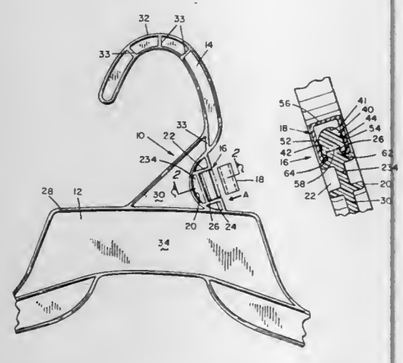
a cover being assembled with said main housing at a first end of said housing and having a plurality of fixed teeth, said cover receiving said key section of said center tube gripper; and

rotating means for rotating said center tube gripper so that the soft tube inserted into said longitudinal slot of said center tube gripper is wound thereon, whereby a flattened wound portion of the soft tube is stored inside of the main housing, said rotating means further comprising:

a rotation handle for manually rotating said center tube gripper, said rotation handle receiving said key section of said center tube gripper; and

a one-way-rotation disc placed inside said cover, having a plurality of flexible teeth, and receiving said key section of said center tube gripper through a central aperture thereof, wherein said plurality of flexible teeth deflect and slide over said plurality of fixed teeth when said center tube gripper is rotated in one direction only and, when the center tube gripper is rotated in an opposite direction, the flexible teeth cooperate with the fixed teeth to prevent said center tube gripper from unwinding the tube therefrom.

5,642,840
GARMENT HANGER WITH IRREMOVABLE INFORMATION TABS
Abraham Abdi, 2738 N. Talbot, Orange, Calif. 92667
Filed Sep. 14, 1995, Ser. No. 528,261
Int. Cl.[6] A47G *25/14*
U.S. Cl. 223—85 **4 Claims**



1. A hanger including a removal resistant tab, comprising:

a body,

a hook member connected to said body and forming an angle therebetween,

a tab holder formed integrally with said hanger and disposed within said angle formed between said body and said hook member,

said tab holder having a free edge spaced away from said hanger,

a narrow slot formed in said tab holder adjacent to but spaced away from said free edge,

said tab holder includes a thin wall within said slot,

a tab adapted to be joined to said tab holder,

said tab having a C-shape with a face member and two spaced apart, parallel legs extending perpendicularly from opposite edges of said face member, said spaced apart legs terminating in a foremost edge spaced away from said face member,

said legs of said tab are biased toward each other,

finger means disposed on the inner surfaces of each of said legs adjacent said foremost edge thereof for cooperatively engaging said narrow slot to thereby lock said tab to said tab holder,

said finger means extend toward each other and substantially perpendicularly from the inner end of each of said spaced apart legs,

said finger means on said legs of said tab abut against said thin wall when said information tab is mounted on said tab holder,

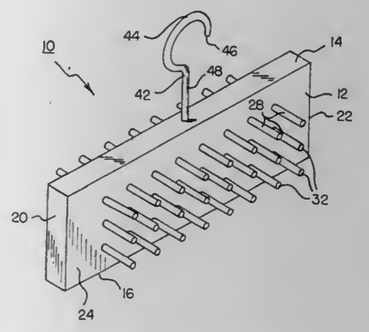
the thickness of said face member, said legs and said finger means of said tab is equal and uniform,

said slot having a width and height which are equivalent to the length and thickness, respectively, of said tab such that said finger means fit snugly within said slot, and

edge guards formed on opposite sides of said tab holder,

said edge guards spaced apart in order to be disposed adjacent to the sides of said tab without engaging said tab when said tab is joined to said tab holder in order to prevent a grasp on said tab sufficient to remove said tab from said tab holder.

5,642,841
APPARATUS AND METHOD FOR HANGING A PLURALITY OF BOTH BELTS AND TIES
Terry Lewis Beaty, 3061 Chemehuevi Pl., Lake Havasu City, Ariz. 86406
Filed Jul. 1, 1996, Ser. No. 674,171
Int. Cl.[6] A47G *25/14*
U.S. Cl. 223—85 **2 Claims**



1. A closet belt and tie hanger with plural rows and columns of dowels comprising, in combination:

a closet with a cross bar situated therein;

a plurality of belts each with a first end having a buckle situated thereon and second end;

a plurality of ties each with a first end having a pair of thick end portions and an intermediate thin portion thus defining two halves situated between the intermediate portion and each of the thick ends;

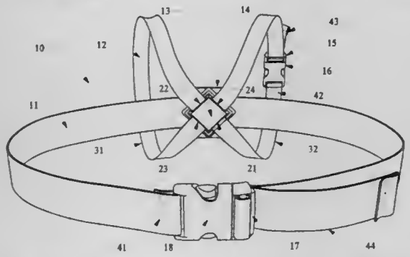
a rectangular block having a long length of about twelve inches, an intermediate height of about three and one-half inches, and a short thickness of about one inch with circular apertures in three parallel rows of eight columns extending therethrough, the apertures being separated by regular horizontal intervals and vertical intervals, wherein the horizonal intervals are approximately 1 and ½ inches and the vertical intervals are approximately ¾ of an inch;

a plurality of cylindrical dowels having a length of less than four inches, each dowel coupled in each aperture and extending from the block perpendicularly on each side thus defining three parallel rows of eight columns of less than 1 and ½ inch posts for allowing the belts and ties to be serpentinely situated between the rows, wherein the length of the post forms a 3 to 2 ratio with respect to the thickness of the block; and

a curved metal hanger hook pivotally coupled to the block and projecting upwardly therefrom for placement thereof in a closet, the metal hanger having a lower linear extent and a curved upper extent with an opening for the placement thereof on the cross bar of the closet;

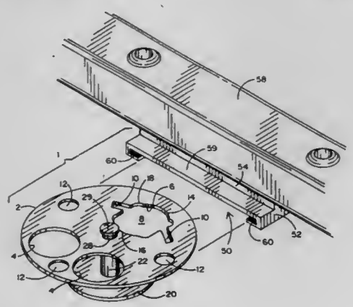
wherein each of the ties may be situated on one of the columns of the posts wherein one of the halves thereof is situated serpentinely between the posts of the column and further the belts may be situated sertpentinely between another of the columns of the posts wherein the buckle of the belt is situated adjacent a top post of the column and further angled slightly offset from a vertical axis.

5,642,842
CONVERTIBLE SLING/WAISTBELT FOR CARRYING IN-LINE SKATES, BOOTS, AND SHOES
Curt Michael Taras, Sacramento, Calif., assignor to Spaztech Designs, Antelope, Calif.
Filed Jan. 16, 1996, Ser. No. 585,644
Int. Cl.[6] A45F *3/14*
U.S. Cl. 224—250 **5 Claims**



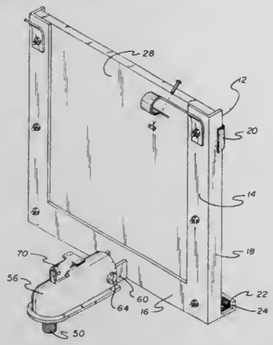
1. An article carrier for carrying footwear having toe and ankle portions, said carrier comprising:
a slotted guide patch having a first side including slotted guide means and a second side;
a first strap having first and second ends, said first end being guided through said slotted guide means in a crisscross manner to thereby form first and second loops in a figure eight configuration, said first loop being closed and defined between said first and second ends of said first strap, and said second loop being open and including said first and second ends of said first strap, said first and second ends of said first strap including an adjustable closure means for closing said second loop wherein said first loop is adapted to wrap around the toe of the footwear and said second loop is adapted to wrap around the ankle portion of the footwear; and
a second strap having opposing free ends and passing through both of said first and second loops and directly adjacent said second side, said free ends having an adjustable closure means for attaching together said free ends thereby forming a third loop with an adjustable circumference allowing said second strap to be selectively used as either a shoulder strap or a waist strap for attachment to a user.

5,642,843
PULL OUT AND ROTATABLE CUP AND CAN HOLDER
Wayne L. Leivan, 19911 Edgewood La., Huntington Beach, Calif. 92649
Filed Jul. 30, 1996, Ser. No. 688,538
Int. Cl.[6] B60N *3/10*
U.S. Cl. 224—281 **10 Claims**



1. A cup and can holder, comprising:
a round base plate having a first side and a second side, a first opening having a first size to receive a can being formed through the first side of said round base plate, and a second opening having a second size to receive a cup being formed through said second side;
frame means adapted to be mounted on a substantially flat support surface to receive therewithin said round base plate, said round base plate being slidable partially out of said frame means to expose either said first opening through said first side of said round base plate for receiving the can or said second opening through said second side of said round base plate for receiving the cup depending upon whether said first side or said second side of said round base plate slides out of said frame means; and means by which to support said round base plate for rotating relative to said frame means after said round base plate slides partially out of said frame means so that said first and second openings are correspondingly rotated.

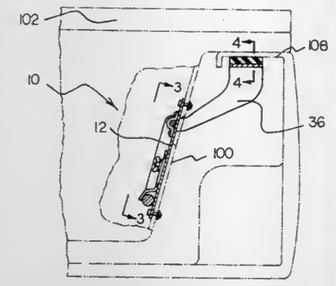
5,642,844
TREE STAND CARRIER FOR AN ATV
Roger Rector, P.O. Box 343, Rutherford College, N.C. 28671
Filed Dec. 4, 1995, Ser. No. 567,049
Int. Cl.[6] B60R *7/00*
U.S. Cl. 224—401 **4 Claims**



2. A tree stand carrier for an ATV comprising:
a U-shaped support comprised of a pair of vertical supports and a horizontal support joined at lower ends of the pair of vertical supports, each of the pair of vertical supports having an outwardly extending edge portion thereby forming a vertical chamber, the horizontal support having an upwardly extending edge portion thereby forming a horizontal chamber, the vertical chamber and the horizontal chamber each having at least one pad disposed therein, the U-shaped support having means for securement to an ATV, the means for securement to an ATV comprising a pair of curved metal bands secured to a rear portion of an upper end of the pair of vertical supports for securement of the U-shaped support to an ATV rack.

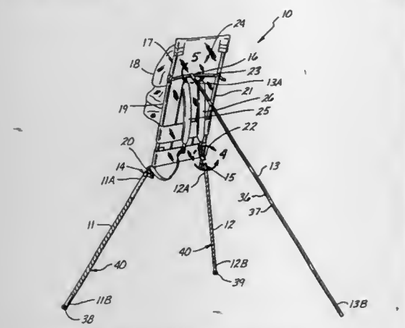
5,642,845
TOOL BOX LOCKING DEVICE
Micheal Van Kooten, 15 Lawrence Street, Brantford, Ontario, Canada
Filed Feb. 5, 1996, Ser. No. 596,739
Int. Cl.[6] B60R *7/00;9/00;11/00*
U.S. Cl. 224—404 **4 Claims**

2. A tool box locking device for a tool box having end portions adapted to rest on side rails of a truck bed, said locking device adapted to secure said rails between said end portions of said tool box and said locking device, said locking device comprising:



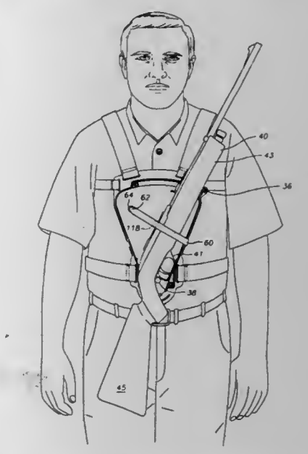
a base plate adapted to be secured to opposing side walls in an interior of a tool box, the base plate having a pair of slots formed therethrough on opposing sides thereof;
a pivot shaft secured to the base plate between the pair of slots formed therethrough, the pivot shaft having end portions extending over the pair of slots through the base plate;
a U-shaped handle having free ends thereof pivotally coupled with the end porions of the pivot shaft;
a U-shaped locking bar adapted to be positionable at an exterior of the tool box with free ends thereof extending inwardly of the tool box through slots therein and through the slots of the base plate and pivotally coupled with the free ends of the U-shaped handle said locking bar being pivotable into engagement with said rail thereby securing said rail between said end portions and said locking device;
a locking mechanism for selectively locking of the U-shaped handle.

5,642,846
BACKPACK SUPPORT APPARATUS
John T. Morrow, Morrow Plumbing, 212 W. Graham Ave., Lake Elsinore, Calif. 92530
Filed Oct. 16, 1995, Ser. No. 543,341
Int. Cl.[6] A45F *4/00*
U.S. Cl. 224—576 **14 Claims**



1. A backpack support apparatus, comprising:
means in the form of first, second, and third poles for supporting a backpack frame in an upright position above a selected support surface; and
means in the form of first, second, and third couplings for removably coupling respective ones of the first, second, and third poles to the backpack frame;
wherein the first coupling is adapted to be mounted on a lower right portion of the backpack frame and to engage an end of the first pole with the backpack frame in the upright position so that the first pole extends downwardly and sideways to the right from the backpack frame to the support surface as a first supporting leg;
wherein the second coupling is adapted to be mounted on a lower left portion of the backpack frame and to engage an end of the second pole with the backpack frame in the upright position so that the second pole extends downwardly and sideways to the left from the backpack frame to the support surface as a second supporting leg;
wherein the third coupling is adapted to be mounted on an upper portion of the backpack frame and to engage an end of the third pole with the backpack frame in the upright position so that the third pole extends downwardly and forwardly from the backpack frame to the support surface as a third supporting leg; and
wherein the first coupling is adapted to engage the end of the first pole and the second coupling is adapted to engage the end of the second pole so that the first and second poles are removable from the first and second couplings when a user removes weight from the first and second poles by lifting the backpack frame upwardly;
wherein the first coupling includes a first stub adapted to loosely engage the end of the first pole and the second coupling includes a second stub adapted to loosely engage the end of the second pole so that the first and second poles are free to fall away from the first and second couplings under influence of gravity when the user removes weight from the first and second poles by lifting the backpack frame upwardly; and
wherein the first and second stubs are adapted to fit loosely into the ends of the first and second poles.

5,642,847
FIREARM SUPPORT
Attilio Alexander DeMeo, Brooklyn, and Joseph Corso, Staten Island, both of N.Y., assignors to Rapid Draw Inc., Staten Island, N.Y.
Filed Jul. 3, 1996, Ser. No. 674,899
Int. Cl.[6] A45F *5/00;* **F41C** *33/02*
U.S. Cl. 224—623 **15 Claims**



1. A firearm support for supporting a firearm adjacent to a user's chest, comprising:
a) a base assembly;
b) a harness, secured to said base assembly, for securing said base assembly adjacent to the chest of the user;
c) support means, rigidly fixed to said base assembly, for supporting the firearm adjacent to and against the base assembly by allowing the firearm to rest upon said support means, said support means further having a first support pin and a second support pin, protruding outward from the base assembly, thus

permitting any configuration firearm to rest upon and be supported by said support pins; and

d) securing means, located upon said base assembly, for detachably securing and holding the firearm adjacent to and against the base assembly upon the support means.

5,642,848

TOOL FOR DRIVING FASTENING ELEMENTS INTO A RECEIVING MATERIAL

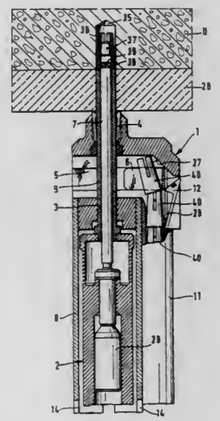
Ralf Ludwig, Sennwald, and Hans Gschwend, Buchs, both of Switzerland, assignors to Hilti Aktiengesellschaft, Furstentum, Liechtenstein

Continuation of Ser. No. 345,892, Nov. 28, 1994, abandoned. This application Aug. 19, 1996, Ser. No. 699,179

Claims priority, application Germany, Nov. 29, 1993, 43 40 570.3

Int. Cl.[6] B25C *1/00*

U.S. Cl. 227—116 **11 Claims**



1. Tool for driving fastening elements into a receiving material comprising an axially elongated housing (**1**) having a first axis and an axially elongated driving device (**2**) having a second axis positioned within said housing for directing blows to a fastening element with said first and second axes disposed in parallel relation, said housing (**1**) having a leading driving end from which fastening elements are driven and a throughbore (**3**) extending in the direction of said first axis with an opening at said driving end, an axially extending radially expandable sleeve-like section (**4**) coaxial with and at a leading end of said throughbore and having a first end adjacent said leading driving end and a second end spaced inwardly from said leading driving end and tapering toward said first end of said section (**4**), said section being slotted in the axial direction, a source of fastening elements mounted on said housing, a channel (**5**) located within said housing inwardly of said second end of said section (**4**) and extending substantially perpendicularly to and opening into said throughbore (**3**), a slide (**6**) for receiving fastening elements from said source located within said channel (**5**) and displaceable therein, upon actuation of said tool, perpendicularly of said throughbore (**3**) toward and away from said throughbore for feeding fastening elements (**40**) into said throughbore, said driving device (**2**) comprising a ram (**7**) axially displaceable through said throughbore (**3**), means acting on said ram (**7**) for applying multiple blows thereto, said housing having a guide (**8**) extending in the direction of said first axis of said housing and through which said driving device (**2**) is axially displaceable, so that a leading end of said driving device projects axially outwardly from said first end of said sleeve-like section (**4**) and from said leading driving end of said housing and radially expands said sleeve-like section and said ram (**7**) arranged to direct multiple blows to an expansion member (**37**) within said fastening element.

5,642,849

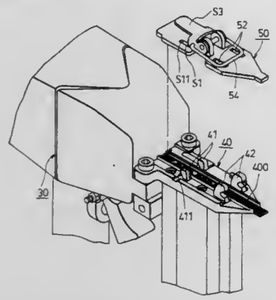
BARREL UNIT WITH A REMOVABLE COVER PLATE FOR A NAIL DRIVING GUN

Robert Chen, Taichung Hsien, Taiwan, assignor to Lih Jie Industrial Co., Ltd., Taichung, Taiwan

Filed Dec. 1, 1995, Ser. No. 566,246

Int. Cl.[6] B25C *1/04*

U.S. Cl. 227—123 **2 Claims**



1. A barrel unit to be installed on a front end of a nail driving gun, said barrel unit comprising:

an elongated base plate having a top side formed with a longitudinal discharge groove, a pair of upwardly extending positioning lugs which are disposed respectively on opposite sides of said discharge groove and which are located at a rear portion of said base plate, and a pair of upwardly extending hooking lugs which are disposed respectively on opposite sides of said discharge groove and which are located at a front portion of said base plate, each of said positioning lugs having a rearwardly inclining rear end surface; and

an elongated cover plate formed with a pair of first slots and a pair of second slots which permit extension of a respective one of said positioning lugs and said hooking lugs therethrough, each of said first slots having a rearwardly inclining end wall surface which abuts against said rear end surface of the respective one of said positioning lugs when said cover plate is superimposed on said base plate, said cover plate further having an operating lever which is mounted pivotally thereon, and a U-shaped fastener which has two ends connected pivotally to said operating lever and which is pivotable so as to engage said hooking lugs on said base plate when said cover plate is superimposed on said base plate, said operating lever being pivotable so as to pull said fastener to engage tightly said hooking lugs.

5,642,850

MODULAR SOLDERING NOZZLE

Steven P. Sadler, Billerica, and Patrizio Vinciarelli, Boston, both of Mass., assignors to VLT Corporation, San Antonio, Tex.

Division of Ser. No. 420,553, Apr. 11, 1995, Pat. No. 5,560,537. This application Apr. 30, 1996, Ser. No. 640,018

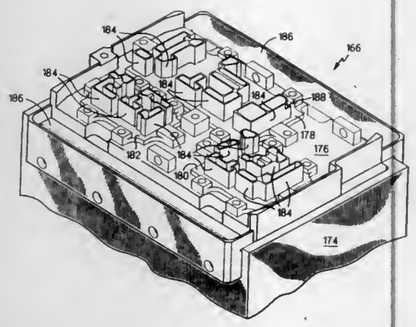
Int. Cl.[6] H05K *3/34*

U.S. Cl. 228—37 **7 Claims**

1. A solder fountain comprising

a solder manifold for containing solder, the solder manifold having a first aperture,

a solder well plate having second apertures, the solder well plate being mounted above the solder manifold with the second apertures above the first aperture,



modular solder well plates mounted above the second apertures, and

a solder chimney mounted to each of the modular solder well plates, the solder chimneys providing passageways from the solder manifold to a top of the solder chimneys where solder is applied to the parts,

wherein the parts are of different part types, and

wherein each of the modular solder well plates corresponds to one of the different part types.

5,642,851

METHOD OF PRODUCING A CIRCULAR FIBRE-REINFORCED METAL ARTICLE, AND APPARATUS FOR USE IN SAID METHOD

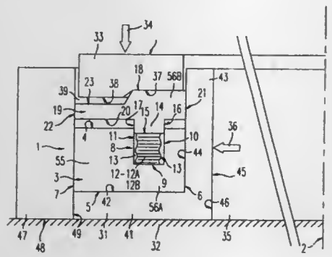
Jean-Claude Berthelemy, Mennecy; Gilles Jean-Michel Bessenay, Paris; Gérard Philippe Gauthier, Saint Michel Sur Orge; Daniel Georges Girault, Melun, and Ludovic Edmond Camille Molliex, Paris, all of France, assignors to Societe Nationale D'Etude et de Construction de Moteurs D'Aviation "Snecma" , Paris, France

Division of Ser. No. 351,703, Dec. 8, 1994, Pat. No. 5,562,245. This application Mar. 20, 1996, Ser. No. 618,715

Claims priority, application France, Dec. 8, 1993, 93-14698

Int. Cl.[6] B23K *20/02*

U.S. Cl. 228—44.3 **1 Claim**



1. An isothermal forging apparatus, comprising:

an annular former having an L-shaped cross-section whereby said former has first and second arms, said first arm being disposed horizontally and defining a base of said former, and said second arm being disposed vertically at the end of said first arm nearer the geometric axis of- said former and defining a vertical wall of said former;

a band extending around said former and made of a material having a low coefficient of thermal expansion;

an annular plunger which fits between said band and said vertical wall of said former in order to transmit an axial pressing force; and,

a radially expansible mandrel disposed inwardly of said vertical wall for applying a centrifugal pressure thereto.

5,642,852

METHOD OF ULTRASONIC WELDING

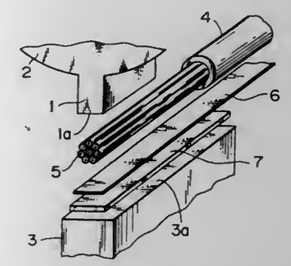
Masataka Suzuki; Hiroyuki Ashiya; Yoshiyuki Tanaka; Shinobu Mochizuki, and Koji Koike, all of Haibara-gun, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Apr. 29, 1996, Ser. No. 638,753

Claims priority, application Japan, Apr. 28, 1995, 7-106039

Int. Cl.[6] H01L *21/607*

U.S. Cl. 228—110.1 **7 Claims**



1. A method of ultrasonic welding for connecting by welding a low strength conductive member such as a flat conductor to another bonding member between a horn tip and an anvil comprising the steps of:

placing a conductive protective member with higher strength than said low strength conductive member between said low strength conductive member and said horn tip or said anvil; and

welding said low strength conductive member sandwiched between said protective member and said another bonding member.

5,642,853

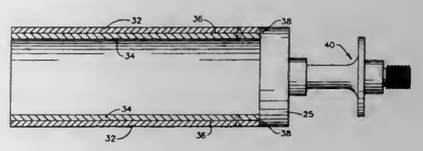
METHOD FOR BONDING STEEL TO COPPER

David Seung-Kyu Lee, Brookfield, Wis., assignor to General Electric Company, Milwaukee, Wis.

Filed Aug. 30, 1995, Ser. No. 521,001

Int. Cl.[6] B23K *20/227*

U.S. Cl. 228—127 **15 Claims**



1. A method for bonding dissimilar metals of an x-ray tube comprises the steps of:

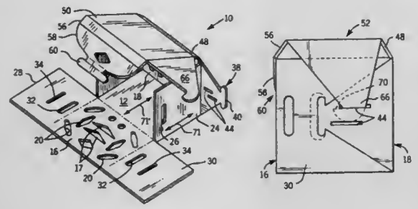
providing a copper tubular component;

providing a steel tubular component;

applying a bonding process; and

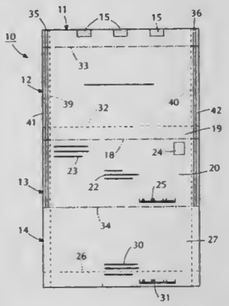
using an interlayer material, the interlayer material at least partially comprised of nickel, to bond the copper and steel tubular components during the bonding process.

5,642,854
CORN CONTAINER
Roger C. Hatton, 2727 Bacom Point Rd., Pahokee, Fla. 33476
Filed May 9, 1996, Ser. No. 647,185
Int. Cl.[6] B65D *5/42;5/66*
U.S. Cl. 229—149 **11 Claims**



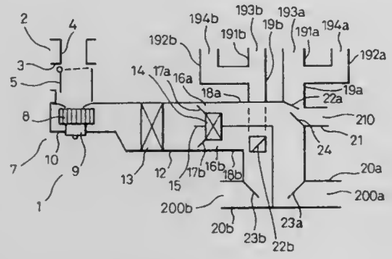
1. A container for ears of corn folded from a single sheet of polymeric carton stock, the container comprising:
a bottom having a longitudinal dimension substantially equal to the length of an ear of corn;
a front and back upstanding sidewalls attached at lower edges to the bottom and longitudinally opposed across the bottom, the front sidewall having a tab receiving slot;
a left and right upstanding sidewall attached at lower edges to the bottom and transversely opposed across the bottom;
a lid hingeably attached at a first edge to a top edge of the back sidewalls and having a locking nose tab attached to a second edge of the lid opposite the first edge;
wherein the nose tab may be locked into the tab receiving slot on the front upstanding side wall to allow the lid to compressibly hold a plurality of contained ears of corn.

5,642,855
COMPOSITE OUTGOING MAILER AND RETURN ENVELOPE FORM
Irving R. Michlin, 1617 Strawberry Dr., Roanoke, Va. 24018
Filed Sep. 4, 1996, Ser. No. 706,232
Int. Cl.[6] B65D *27/06*
U.S. Cl. 229—305 **23 Claims**



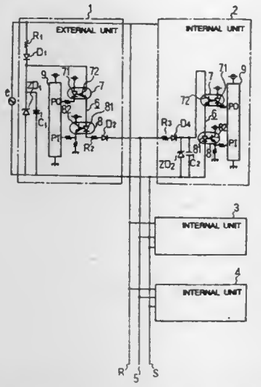
1. A composite outgoing mailer and return envelope form, said form comprising
a first panel defining a sealing flap for an outgoing mailer;
a second panel contiguous to aid first panel for receiving printed information thereon and defining a back panel for the outgoing mailer;
a third panel contiguous to said second panel and defining a front panel of a return envelope; and
a fourth panel contiguous to said third panel defining a front panel of the outgoing mailer, said fourth panel having a transverse line of weakening to separate said fourth panel into a back panel for the return envelope and a removable tear-off panel.

5,642,856
AIR CONDITIONER
Katsuhiko Samukawa, Obu, and Yuji Honda, Okazaki, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed Oct. 18, 1995, Ser. No. 544,466
Claims priority, application Japan, Oct. 19, 1994, 6-253912
Int. Cl.[6] B60H *1/00*
U.S. Cl. 236—49.3 **10 Claims**



1. An air conditioner having:
a blowing means for generating an air flow.
first and second air passages for leading the air from said blowing means to first and second air conditioning zones in a compartment, respectively, and
first and second temperature regulating means for regulating the air temperature in said first and second air passages, respectively,
wherein the temperatures of the conditioned air respectively blown to said first and second air conditioning zones can be separately controlled by separately regulating said first and second temperature regulating means,
said air conditioner comprising:
a first face air outlet and a first foot air outlet which are arranged at the downstream end of said first air passage, said first face air outlet being for blowing the conditioned air directing to the upper half of an air conditioner user's body in said first air conditioning zone and said first foot air outlet being for blowing the conditioned air directing to the foot area of the air conditioner user in said first air conditioning zone;
a second face air outlet and a second foot air outlet which are arranged at the downstream end of said second air passage, said second face air outlet being for blowing the conditioned air directing to the upper half of the air conditioner user's body in said second air conditioning zone and said second foot air outlet being for blowing the conditioned air directing to the foot area of the air conditioner user in said second air conditioning zone;
an air volume proportion regulating means for regulating a proportion between the air volume blown from said first and second face air outlets and the air volume blown from said first and second foot air outlets; and
an air volume proportion setting means for setting said air volume proportion in said air volume proportion regulating means;
whereby a variable range of the blowing temperature to said first and second air conditioning zones is made changeable in response to the air volume proportion set by said air volume proportion setting means.

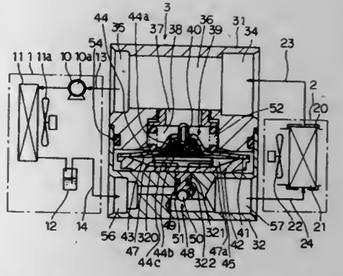
5,642,857
CONTROL APPARATUS FOR MULTI-AIR-CONDITIONER
Hidekazu Totsuka; Kenshi Kawagishi; Yasunori Shida; Kazuyuki Mitsushima, and Yukihiko Iwata, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 28, 1996, Ser. No. 607,928
Claims priority, application Japan, Mar. 30, 1995, 7-072606
Int. Cl.[6] F24F *11/02*
U.S. Cl. 236—51 **20 Claims**



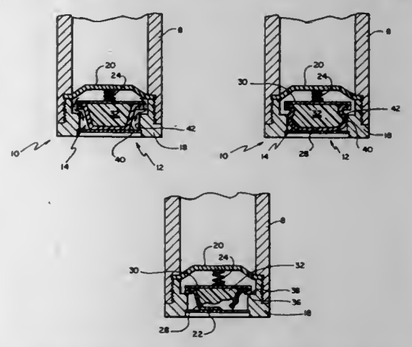
1. A control apparatus for a multi-air-conditioner having an external unit supplied with electric power from an AC electric power supply and a plurality of internal units, a first AC power supply line and a second AC power supply line for supplying the plurality of internal units with electric power from the external unit and a signal line for transmitting data to control an operation of the multi-air-conditioner, the control apparatus comprising:
a DC electric power supply provided with the external unit for rectifying the AC electric current from the AC electric power supply to a DC electric current;
an external transmitting/receiving circuit provided with the external unit and connected with the DC electric power supply;
a plurality of internal transmitting/receiving circuits respectively provided with the plurality of internal units and connected serially with the external transmitting/receiving circuit via the signal line;
wherein the DC electric power supply, the external transmitting/receiving circuit, the signal line, the plurality of internal transmitting/receiving circuits and the first AC power supply line form a closed circuit; and
wherein the plurality of internal transmitting/receiving circuits are connected in parallel with each other between the signal line and the first AC power supply line.

5,642,858
THERMAL EXPANSION VALVE
Nobuharu Kakehashi, Toyoake; Yoshitaka Tomatsu, Chiryu; Hiroshi Kishita, Anjo; Yasushi Yamanaka, Nakashima-gun, and Kenichi Fujiwara, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed Mar. 21, 1996, Ser. No. 619,213
Claims priority, application Japan, Mar. 22, 1995, 7-062256; Oct. 12, 1995, 7-264189
Int. Cl.[6] F25B *41/04*
U.S. Cl. 236—92 B **11 Claims**

1. A thermal expansion valve for a refrigerating cycle having an evaporator for evaporating refrigerant, said thermal expansion valve expanding refrigerant flowing thereinto by decompressing said refrigerant according to overheat of refrigerant at an exit of said evaporator, said thermal expansion valve comprising:
a housing having a throttle passage therein for expanding said refrigerant thereinto from the high-pressure side liquid refrigerant circuit;
a valve element provided within said housing for adjusting opening degree of said throttle passage; and
a thermosensitive element movably disposed within said housing, said thermosensitive element including a case and a pressure responding member disposed within said case and displacing according to temperature and pressure of the refrigerant at the exit of said evaporator; wherein,
said case of said thermosensitive element is integrally connected to the valve element, and
said thermosensitive element and said valve element are so constructed as to integrally move according to the displacement of said pressure responding member.



5,642,859
TEMPERATURE-SENSITIVE SAFETY VALVE ASSEMBLY
Rand H. Ackroyd, Methuen, Mass., assignor to Watts Investment Company, Wilmington, Del.
Filed Apr. 17, 1996, Ser. No. 633,902
Int. Cl.[6] G05D *23/12*
U.S. Cl. 236—93 B **4 Claims**



1. A temperature sensitive safety valve assembly for use at a faucet outlet, said safety valve assembly comprising:
a housing adapted to be mounted at a faucet outlet and having an inner surface defining an axial bore for flow of water towards the faucet outlet;
a first retainer mounted to said housing in an upstream region and a second retainer mounted to said housing in a downstream region;
a safety valve element disposed within said axial bore, generally between said first retainer and said second retainer, said safety valve element comprising an elastic bellows mounted to a

rigid cap, said bellows and cap together defining a volume, said volume containing a body of temperature sensitive material; and

a spring mounted between said first retainer and said safety valve element and bearing upon said cap to urge said safety valve element towards engagement of said bellow upon said second retainer;

said rigid cap defining a seal surface and said housing further defining an opposed seat surface;

said bellows, at temperatures below a predetermined temperature, having a first condition in which said body of said temperature sensitive material contained within said volume allows external surfaces of said bellows to remain spaced from contact with surrounding surfaces of said housing, thereby to permit flow of water through said housing, towards said faucet outlet, said bellows, in said first condition, maintaining said seal surface of said cap spaced from sealing engagement with said seat surface of said housing;

said bellows, at temperatures above the predetermined temperature, having a second condition in which said body of said temperature sensitive material contained within said volume urges said external surfaces of said bellows into contact with surrounding surfaces of said housing, thereby to restrict flow of water through said housing, towards said faucet outlet, said bellows, in said second condition, maintaining said seal surface of said cap spaced from sealing engagement with said seat surface of said housing, and

said bellows having a third condition in which loss of at least a portion of said body of said temperature sensitive material from within said volume allows said spring to urge said seal surface of said cap into engagement with said seat surface of said housing, thereby to restrict flow of water through said housing, towards said faucet outlet.

5,642,860

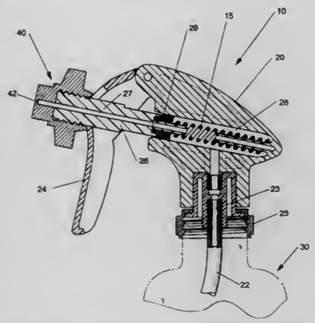
PUMP SPRAYER FOR VISCOUS OR SOLIDS LADEN LIQUIDS

Stephan G. Bush; Dimitris I. Collias, and Stephen F. Evans, all of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 604,556, Feb. 21, 1996, abandoned, which is a continuation-in-part of Ser. No. 499,753, Jul. 7, 1995. This application Apr. 1, 1996, Ser. No. 625,833

Int. Cl.[6] B05B *9/043*

U.S. Cl. 239—333 **17 Claims**



1. A hand holdable spray delivery system for dispensing a liquid, said spray delivery system comprising:

(a) a container housing said liquid, said liquid having a viscosity greater than about 60 centipoise;

(b) a manually actuated pump device mounted on said container, said pump device including an inlet passage, a pump chamber, and a discharge passage having a distal end, all being connected in liquid communication so that said liquid can be pumped from within said container, through said inlet passage, into said pump chamber and through said discharge passage upon manual actuation of said pump device;

(c) a spray nozzle including a housing having an inlet side and an exit side, said housing having an internal recess through said inlet side that terminates in an elongated orifice at said exit side, said spray nozzle is constructed of an elastomeric material allowing said elongated orifice to resiliently distort during use, said internal recess being attached in liquid communication to said distal end of said discharge passage such that said liquid passing through said discharge passage flows through said spray nozzle and converges toward said elongated orifice and is dispensed therefrom in a dispersed spray.

5,642,861

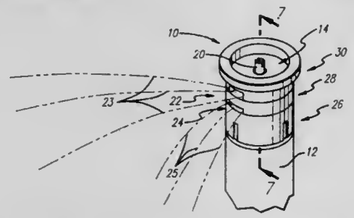
PLASTIC SPRAY NOZZLE WITH IMPROVED DISTRIBUTION

Jeffrey M. Ogi, Rancho Cucamonga, and David S. Worcester, Mission Viejo, both of Calif., assignors to Camsco Manufacturing Corp., Azusa, Calif.

Filed Sep. 1, 1995, Ser. No. 522,593

Int. Cl.[6] B05B *1/14*

U.S. Cl. 239—568 **23 Claims**



15. In a part-circle plastic spray head type irrigation sprinkler having a body adapted to be coupled to a source of pressurized water and a primary spray outlet adapted to receive water from the source through a generally vertical water flow passageway and to disperse a high pressure, high velocity fan shaped spray laterally outwardly over an arcuate shaped area, the improvement comprising:

a laterally opening secondary spray outlet formed in said body below said primary spray outlet, and a tortious water flow pathway extending laterally between said vertical passageway and said secondary outlet, said tortious pathway being formed to induce turbulence into water flowing between said passageway and said secondary outlet and defined by a first laterally directed portion extending radially outwardly from said water passageway, a second generally vertically directed portion extending from the radially outer end of said first portion, and a third portion extending radially outwardly from the outer end of said second portion and parallel with said first portion, said third portion terminating at said secondary outlet, whereby water dispersed from said secondary spray outlet has a substantially lower pressure and velocity than that dispersed by said primary spray outlet.

5,642,862

FUEL INJECTION VALVE HAVING A GUIDE DIAPHRAGM AND METHOD FOR ASSEMBLING

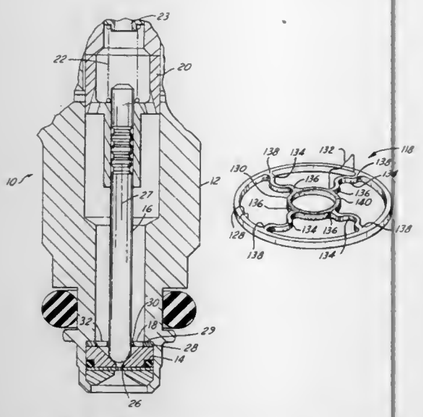
Russell J. Wakeman, Canton, Mich., and John Bergstrom, Singapore, Singapore, assignors to Siemens Automotive Corporation, Auburn Hills, Mich.

Filed Jul. 28, 1995, Ser. No. 508,495

Int. Cl.[6] B05B *1/30;* **F02M** *51/00*

U.S. Cl. 239—585.4 **5 Claims**

4. A fuel injection valve for an engine fuel injection system, said fuel injection valve comprising:



a valve seat adapted to be fixedly secured to a valve body;

a valve needle reciprocally movable in an axial direction and cooperatively engageable with said valve seat; and

a diaphragm that aligns said needle with said valve seat;

said diaphragm having an outer zone adapted to be secured to the valve body, an inner zone, and an axially resilient intermediate zone radially extending from said outer zone to said inner zone; and

characterized in that said inner zone is attached to said needle to move in unison with said needle to avoid frictional sliding contact between said needle and said diaphragm; said diaphragm is constructed from silicon and is formed by chemically micro-machining the silicon.

5,642,863

METHOD OF EXTRACTING METALS FROM ORE MATERIAL

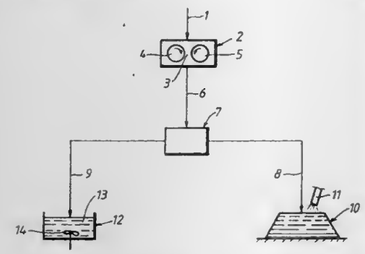
Norbert Patzelt, Beckum, and Johann Knecht, Wadersloh, both of Germany, assignors to Krupp Polysius AG, Beckum, Germany

Filed Mar. 29, 1996, Ser. No. 626,209

Claims priority, application Germany, Apr. 4, 1995, 195 12 498.7

Int. Cl.[6] B02C *19/12*

U.S. Cl. 241—24.13 **19 Claims**



1. Method of extracting metals from ore material, wherein this ore material is subjected to material bed comminution (**2**) in the grinding gap (**3**) between two rolls (**4**, **5**) which are pressed against one another with high pressure and can be driven in opposite directions and comminuted material is leached by the addition of leaching fluid, characterised in that comminuted material (**6**) from the material bed comminution (**2**) is divided into oversize material (**8**) and fine material (**9**) in the classification in a classification stage (**7**), whereupon at least a fraction of the oversize material is subjected to heap leaching (**10**) and at least a fraction of the fine material is subjected to tank leaching (**12**) using a stirring movement.

5,642,864

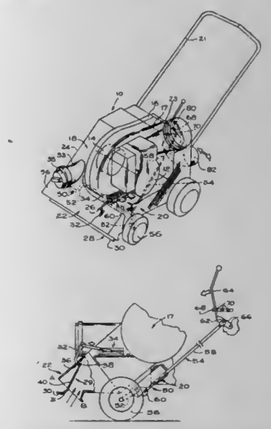
CHIPPER VACUUM SHREDDER SYSTEM AND APPARATUS

Tommy A. Middlesworth, Sheboygan Falls; Donald G. Penkoske, West Bend, and Gerald C. Burmesch, Belgium, all of Wis., assignors to Simplicity Manufacturing, Inc., Port Washington, Wis.

Filed Nov. 18, 1994, Ser. No. 342,390

Int. Cl.[6] B02C *21/02;23/24*

U.S. Cl. 241—58 **20 Claims**



1. A yard waste chipper vacuum shredder system, comprising:

a mobile platform;

a chipper-shredder mechanism carried on said mobile platform;

a motor coupled to said chipper-shredder mechanism;

a vacuum mechanism carried by said mobile platform, said vacuum mechanism generating air flow for moving the yard waste to said chipper-shredder mechanism;

an intake passage in fluid communication with said vacuum mechanism; and

adjusting means including a baffle structure disposed substantially within said passage for adjusting velocity of the air flow upstream of said vacuum mechanism, said baffle structure being adjustable between a first position blocking substantially a majority of said passage and a second position allowing substantially unimpeded flow in said passage.

5,642,865

ARRANGEMENT FOR VARYING THE TAPE TENSION IN A MAGNETIC-TAPE APPARATUS

Wolfgang Fell, and Werner Maack, both of Seeheim, Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 268,077, Jun. 22, 1994, abandoned. This application Feb. 29, 1996, Ser. No. 608,976

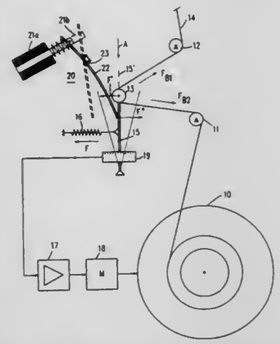
Claims priority, application Germany, Jun. 30, 1993, 43 21 703.6

Int. Cl.[6] B65H *59/38*

U.S. Cl. 242—334.6 **21 Claims**

1. An arrangement for varying the tape tension in a tape apparatus, comprising:

a pivotably supported sensing lever having a tape engaging portion pivotable from a neutral position through a pivoting range;

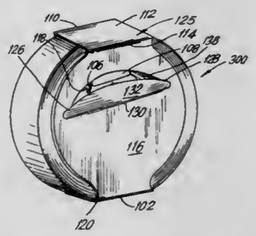


biasing means for biasing said tape engaging portion of said sensing lever against the tape with a biasing force (F), the tape tension acting on said sensing lever in a direction opposite said biasing force (F) whereby the position of said sensing lever within said pivoting range varies with the tape tension;

a control device comprising sensing means for sensing the position of said sensing lever within said pivoting range and tape tension control means coupled to said sensing means for controlling the tape tension to return said sensing lever to said neutral position; and

an actuating mechanism, separately activateable from said biasing means, and comprising a resilient pivotable actuating lever which extends into the pivoting range of the sensing lever upon activation of the actuating mechanism and causes said sensing lever to be deflected in opposition to the biasing force (F) acting on the sensing lever by said biasing means.

5,642,866
ROLL OF TAPE PLUS HOLDER
Detlef Nieding, Schenefeld, Germany, assignor to Beiersdorf Aktiengesellschaft, Hamburg, Germany
Filed Mar. 4, 1996, Ser. No. 564,532
Int. Cl.[6] B65D *85/67*
U.S. Cl. 242—588.4 **8 Claims**



1. A holder for a roll of tape having a circular hollow core, comprising first and second spaced faces,

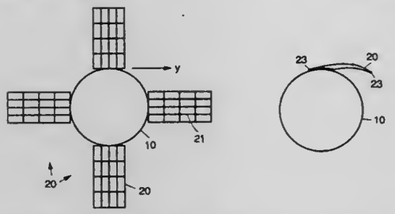
a first connector connecting the tops of said first and second faces,

a second connector connecting the bottoms of said first and second faces, means for securing said holder into a loop, wherein said faces plus connectors in lateral elevation define a rectangle of a height and width to receive a roll of tape,

first and second aligned openings in said first and second faces respectively at a location higher than the center of said tape roll, and

an inwardly foldable first flap on at least one of said faces, said flap being of a dimension so that upon inward folding it prevents the roll from being withdrawn from said holder an extension of one of said connectors extending along one of said faces beyond said first flap, said extension just behind said first flap having a second flap which is also inwardly foldable, said second flap being positioned so that inward folding of said first flap causes inward folding of said second flap as well, inward folding of said second flap causing said second flap to engage said hollow tubular core to secure said core to said holder.

5,642,867
AERODYNAMIC LIFTING AND CONTROL SURFACE AND CONTROL SYSTEM USING SAME
Ralph H. Klestadt, Tucson, Ariz., assignor to Hughes Missile Systems Company, Los Angeles, Calif.
Filed Jun. 6, 1995, Ser. No. 471,469
Int. Cl.[6] B64C *3/38;3/56;* **F42B** *10/16*
U.S. Cl. 244—49 **15 Claims**



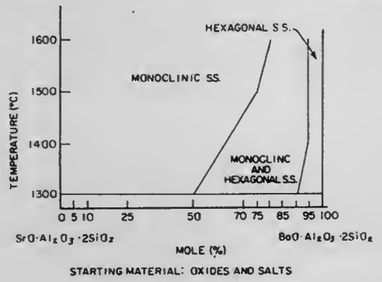
1. An aerodynamic lifting and control surface comprising:

a plurality of four outer panels arranged end-to-end to form an external box-shaped structure, with the outer panels joined one to another by separate spring hinge assemblies;

an internal grid structure located within the external box-shaped structure and comprising a plurality of separate grid plates connected to each other and further connected at opposite ends to separate outer panels, with each of said grid plates extending substantially parallel to one of the outer panels when the spring hinge assemblies are unconstrained,

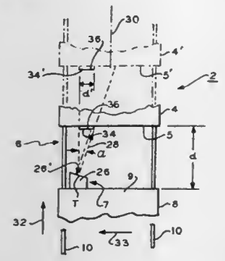
whereby the external box-shaped structure may be compressed into a thin parallelogram shape when the spring hinge assemblies are constrained.

5,642,868
CERAMIC MATERIAL
Inna G. Talmy, Silver Spring, Md., and Deborah A. Haught, Sterling, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed May 2, 1990, Ser. No. 518,604
Int. Cl.[6] B64C *1/10*
U.S. Cl. 244—121 **20 Claims**



1. A radome comprising a ceramic material selected from the group consisting Of monoclinic $BaO{\cdot}Al_2O_3{\cdot}2SiO_2$, monoclinic $SrO{\cdot}Al_2O_3{\cdot}2SiO_2$, and monoclinic solid solutions comprising from more than zero to less than 100 mole percent $SrO{\cdot}Al_2O_3{\cdot}2SiO_2$ with the remainder being $BaO{\cdot}Al_2O_3{\cdot}2SiO_2$.

5,642,869
APPARATUS FOR DETECTING THE DISTANCE BETWEEN TWO OBJECTS
John Miller, Auburn, N.Y., assignor to TeleEngineering, Inc., New Foundland, N.J.
Filed Dec. 1, 1995, Ser. No. 565,882
Int. Cl.[6] B61L *23/34*
U.S. Cl. 246—182 B **23 Claims**



1. Apparatus for sensing a predetermined distance between two objects exhibiting relative movement along a path of a given direction, the apparatus comprising:

beam generating means for generating and transmitting an electromagnetic radiation beam from one of the objects and arranged to be inclined relative to the direction of the path a given angle of inclination value and directed generally toward the other of said objects;

an electromagnetic radiation beam reflector arranged to be secured to said other of the objects in a position for receiving the transmitted beam incident thereon when the objects are spaced apart a distance approximately no greater than said predetermined distance and for reflecting the incident beam; and

beam detecting means for receiving the reflected beam, said detecting means including means responsive to the reflected beam incident thereon for generating an output signal manifesting the objects at said predetermined distance;

said path defining an axis, said apparatus including means for spacing the reflector effective reflector surface from said axis a distance different than the spacing of said transmitted beam at said beam generating means from said axis and which difference in spacing manifests the predetermined distance.

5,642,870
SWITCH STAND
Ike Sargis, 6532 Albert Ave., Morton Grove, Ill. 65008
Continuation of Ser. No. 268,478, Jun. 30, 1994, abandoned, which is a continuation of Ser. No. 926,063, Aug. 5, 1992, abandoned. This application Nov. 22, 1995, Ser. No. 562,241
Int. Cl.[6] B61L *5/02*
U.S. Cl. 246—406 **26 Claims**

1. A switch stand comprising:

a base;

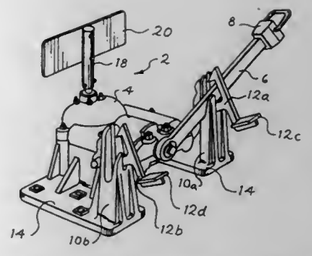
a housing resting on said base;

a shaft mounted for rotational movement within said housing;

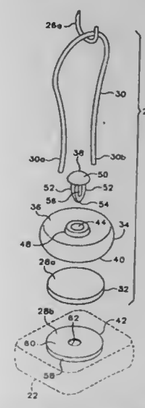
a first cradle upstanding from said base;

a second cradle upstanding from said base; and

a lever arm affixed to said shaft, said lever arm including a handle defining a closed area, said lever arm and handle movable arcuately between a first position contacting said first cradle and a second position contacting said second cradle, said first position and said second position separated by an angle 120 degrees or less.



5,642,871
SUSPENDABLE MAGNETIC SOAP HOLDER ASSEMBLY
Bruce Repert, and Eva Repert, both of Beaverton, Oreg., assignors to Constanta Corporation, Beaverton, Oreg.
Filed Jul. 3, 1996, Ser. No. 675,735
Int. Cl.[6] A47K *5/04*
U.S. Cl. 248—686 **18 Claims**



1. An apparatus for magnetically suspending a bar of soap from a raised holding member, said apparatus comprising:

(a) a buoyant body having a top side and a bottom side;

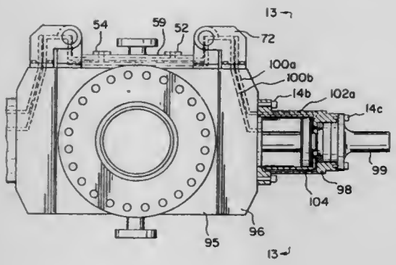
(b) a magnet attached to said bottom side of said buoyant body;

(c) a flexible suspender removably interconnected with said top side of said buoyant body, said flexible suspender adapted to be releaseably coupled to said raised holding member; and

(d) a metallic soap-holding cap adapted to be removably interconnectable with said bar of soap, said soap-holding cap magnetically interconnecting with said magnet.

5,642,872
LOW PROFILE AND LIGHTWEIGHT HIGH PRESSURE BLOWOUT PREVENTER
Charles D. Morrill, Humble, Tex., assignor to Hydril Company, Houston, Tex.
Division of Ser. No. 372,397, Jan. 13, 1995, abandoned. This application Feb. 9, 1996, Ser. No. 598,812
Int. Cl.[6] E21B *33/06*
U.S. Cl. 251—1.3 **5 Claims**

1. A housing for a ram-type blowout preventer for an oil or gas well, comprising



a body with a central vertical opening for allowing the presence of drilling or production tubing therethrough, said body also including a pair of opposing guideways transverse to said vertical opening for the operation of a pair of rams to close and open said vertical opening,

a bonnet bolted on each side of said body, each of said bonnets including a guideway extension contiguously in line with an opposing guideway and including a guideway extension contiguously in line with one of said opposing guideways of said body for respectively accommodating the drive end of one of said pair of rams, and

a hinge plate for supporting on said body on a selected side thereof both of the pair of said bonnets to permit said pair of bonnets to be unbolted and swung apart from said body toward said hinge plate.

5,642,873

FLUID-FILLED ELASTIC MOUNT HAVING PUSHING MEMBER FOR CONTROLLING FLUID COMMUNICATION THROUGH ORIFICE PASSAGE

Rentaro Kato, Kasugai, Japan, assignor to Tokai Rubber Industries, Ltd., Japan

Filed Mar. 20, 1996, Ser. No. 618,772

Claims priority, application Japan, Mar. 29, 1995, 7-071612

Int. Cl.[6] F16M *5/00;* **B60G** *13/00*

U.S. Cl. 267—140.14 **13 Claims**

1. A fluid-filled elastic mount comprising:

a first and a second mounting member which are spaced apart from each other;

an elastic body which elastically connects said first and second mounting members;

a partition member supported by said second mounting member and cooperating with said elastic body to define a pressure-receiving chamber filled with a non-compressible fluid;

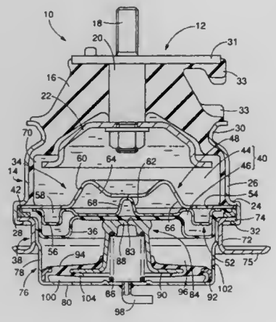
a flexible diaphragm cooperating with said partition member to define an equilibrium chamber on one of the opposite sides of said partition member remote from said pressure-receiving chamber, said equilibrium chamber being filled with the non-compressible fluid;

said partition member having a first orifice communicating with said pressure-receiving chamber and said equilibrium chamber so as to permit flows of said fluid therebetween, said partition member further having at least one communication hole which is open to a central portion of said diaphragm for fluid communication of said first orifice with said equilibrium chamber;

a cover member including a cylindrical portion and a bottom portion, said bottom portion closing one of opposite axial ends of said cylindrical portion, said cover member being supported by said second mounting member at the other axial end of said cylindrical portion so as to partially define a space between said diaphragm and said bottom portion;

a pushing member accommodated in a central portion of said space such that said pushing member is displaceable in a direction toward and away from said communication hole with said diaphragm being interposed therebetween;

a biasing member disposed between said pushing member and said bottom portion of said cover member, for forcing said pushing member onto said diaphragm so that said diaphragm closes said communication hole of said partition member;



an annular rubber plate disposed in a radial space defined by and between an outer peripheral portion of said pushing member and said cylindrical portion of said cover member, such that said rubber plate is free from internal stresses, said rubber plate cooperating with said pushing member to divide said space within said cover member into a static pressure chamber partially defined by said diaphragm, and an air-tightly closed operating chamber partially defined by said bottom portion of said cover member;

said pushing member being sucked toward said bottom portion of said cover member by a negative pressure applied to said operating chamber, so that said diaphragm is displaced away from said communication hole so as to open said communication hole for fluid communication of said first orifice with said equilibrium chamber.

5,642,874

Patent Not Issued For This Number

5,642,875

COIL SPRING WITH FLATTENED CONVOLUTIONS

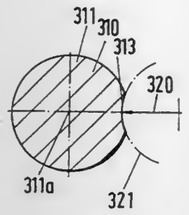
Albert Albers, Bühl, and Robert Felger, Bühl-Neusatz, both of Germany, assignors to LuK Lamellen und Kupplungsbau GmbH, Bühl, Germany

Continuation of Ser. No. 206,455, Mar. 4, 1994, abandoned. This application Sep. 25, 1995, Ser. No. 533,110

Claims priority, application Germany, Mar. 5, 1993, 43 06 908.8

Int. Cl.[6] F16F *1/06*

U.S. Cl. 267—167 **32 Claims**



1. A torque transmitting device comprising coaxial first and second components at least one of which is rotatable relative to the other of said components; and a coil spring interposed between said components to undergo compression and to thus store energy in response to rotation of said at least one component relative to said other component, said spring having an arcuate longitudinal axis at least when in a stressed condition and including a plurality of elongated neighboring convolutions which move toward and against each other in response to rotation of said at least one component relative to said other component, said neighboring convolutions having radially inner portions abutting one another and radially outer portions which are spaced apart from each other when said spring is compressed, each of said convolutions having a substantially circular cross section and an external surface including at least one flat over a minor portion of the respective cross section and extending along the length of the respective convolution in a position to abut a neighboring convolution when said convolutions are moved against each other and to thus oppose movements of abutting neighboring convolutions relative to each other in the radial direction of the abutting convolutions, each of said cross sections having a larger first diameter substantially parallel to and a smaller second diameter transverse to the respective flat, the ratio of said second diameter to said first diameter being between about 0.92 and 0.98 to one.

5,642,876

VARIABLE SHEET SETS STAPLING AND REGISTRATION POSITIONS SYSTEM

Joseph J. Ferrara, Webster; Stephen D. Cipolla, Fairport; William E. Kramer, Wolcott; Raymond A. Naramore, and L. James Rolph, both of Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 12, 1996, Ser. No. 689,616

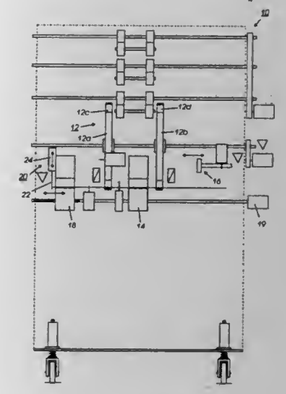
Int. Cl.[6] B65H *39/05*

U.S. Cl. 270—58.01 **7 Claims**

1. In an on-line printed sheets sets output handling system and finishing system for the printed sheets sequentially outputted by a reproduction system, in which the printed sheets are registered and compiled in neatly superposed sets which are optionally fastened together by said finishing system, and wherein said finishing system is laterally repositionable by a finisher lateral movement repositioning system to provide variable set finishing;

the improvement comprising:

a sheet lateral registration system for said printed sheets output which is repositionable with said finishing system,



said sheet lateral registration system having a sheet registration member for engaging and laterally registering said printed sheets for said registration and compiling,

said sheet lateral registration system providing movement of said sheet registration member to selectable variable lateral sheet registration positions,

said sheet registration member being repositioned by said finisher lateral movement repositioning system.

5,642,877

PAPER SHEET FEEDING APPARATUS AND GATE FORMING MEMBER THEREFOR

Ronald J. Green, E4465 Kinnamin Rd., Reedsburg, Wis. 53959

Filed Feb. 23, 1996, Ser. No. 606,213

Int. Cl.[6] B65H *3/04*

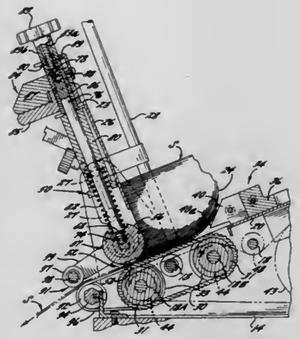
U.S. Cl. 271—35 **14 Claims**

1. An apparatus for serially feeding paper sheets in a forward direction from the bottom of a generally vertical stack of such sheets and comprising:

a frame,

means mounted to said frame for supporting the generally vertical stack of sheets and so that the stack defines a forward side composed of aligned forward edges of the sheets, and a bottom, said supporting means including endless belt means

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and means rotatably mounting said endless belt means so as to have an upper run positioned to extend across the bottom of said stack;

drive means for rotating said endless belt means so that said upper run moves in the forward direction;

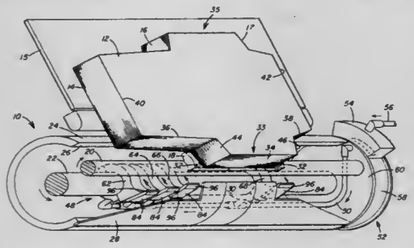
a gate forming member mounted to said frame and positioned above said upper run of said belt means and adjacent the forward side of said stack and so as to define a nip which forms a gap between said gate forming member and said upper run for permitting the lowermost sheet of the stack to pass forwardly from the stack through said nip, said gate forming member comprising a generally cylindrical roll defining a central axis and an outer peripheral surface which is concentric to said central axis, said outer peripheral surface having a plurality of annular grooves extending about the circumference thereof, with said annular grooves being concentric to said central axis, a relief extending axially along the length of said outer peripheral surface so as to intersect each of said grooves and with said relief positioned directly opposite said nip, and a rihg disposed in each of said grooves, with said rings being composed of a material having a higher coefficient friction than the material of said roll and being sized so as to be exposed on the portion of the outer peripheral surface defined by said relief and lying entirely within the grooves in the remaining portion of the outer peripheral surface so as to be non-exposed.

5,642,878

METHOD AND APPARATUS FOR SEPARATING SHEETS FED FROM THE BOTTOM OF A STACK

Eliot S. Smithe, Duncansville, and Stephen M. Wagner, Ashville, both of Pa., assignors to F. L. Smithe Machine Company, Inc., Duncansville, Pa.

Filed May 4, 1995, Ser. No. 434,770
Int. Cl.[6] B65H *3/06;5/08;3/12;3/14*
U.S. Cl. 271—109 **20 Claims**



1. Apparatus for separating blanks from the bottom of a stack comprising,

a stack supporting member for retaining in a preselected position a stack of individual blanks,

a feed cylinder rotatably positioned beneath a front edge of the stack, said feed cylinder having a peripheral opening,

a suction separating mechanism positioned adjacent to said peripheral opening of said feed cylinder,

said suction separating mechanism having suction ports extending beyond said peripheral opening of said feed cylinder for applying a suction force on a lower surface of a bottom blank of the stack to deflect an intermediate portion of a leading edge of the bottom blank downwardly into said cylinder peripheral opening during a portion of the rotation of said feed cylinder,

means in said feed cylinder for engaging an upper surface of the bottom blank adjacent to the deflected leading edge thereof and further bend the bottom blank leading edge downwardly while a trailing edge of the blank remains fixed relative to the stack, and

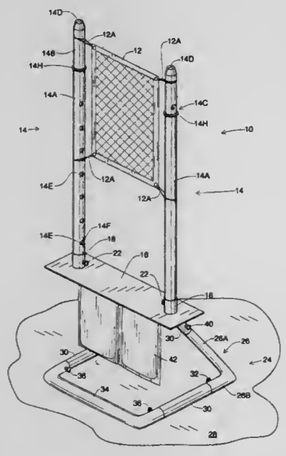
a source of air under pressure directed from within said feed cylinder outwardly through said peripheral opening into contact with a lateral portion of the leading edge of the bottom blank as said feed cylinder rotates to urge the blank leading edge lateral portion downwardly in a path following the movement of the blank leading edge intermediate portion to provide evenly and controlled separation of the bottom blank from the stack.

5,642,879

SPORTS PRACTICE APPARATUS

Diego Rodriguez, 135 Sunglo, San Antonio, Tex. 78221

Filed Jun. 4, 1996, Ser. No. 659,094
Int. Cl.[6] A63B *69/00*
U.S. Cl. 473—448 **4 Claims**



1. An apparatus for practicing basketball shots over a net, the net being stretched between two net support assemblies when the apparatus is assembled and ready for use, wherein:

a. the net support assemblies each comprise a sleeve and a telescoping member configured to slidingly fit within the sleeve;

b. a means for fixing the telescoping member at a plurality of positions within the sleeve;

c. a sleeve support means having a first attachment means for separably attaching the sleeves to the sleeve support means such that the sleeves and the telescoping members extend substantially upwardly from the sleeve support means when the apparatus is assembled and ready for use;

d. a floor stand assembly;

e. the sleeve support means having a second attachment means for separably attaching the floor stand assembly thereto

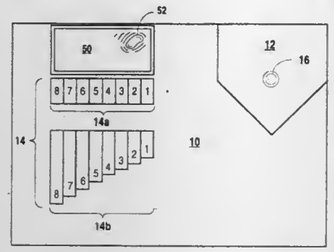
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5,642,880

BATTING TRAINING DEVICE

Katherine O. Wiseman, 6781 FM 1102, New Braunfels, Tex. 78132, and Anne O. Christian, 17309 Sandy Cliffs, Houston, Tex. 77090

Continuation-in-part of Ser. No. 523,013, Sep. 1, 1995, Pat. No. 5,536,004. This application Jul. 16, 1996, Ser. No. 682,183
Int. Cl.[6] A63B *69/00*
U.S. Cl. 473—417 **9 Claims**



1. A training kit for use in conjunction with a batting Tee for teaching a baseball batter to utilize a proper batting position and a proper batting stride to hit a ball with a bat, said kit comprising:

a mat comprising:

a first indicia for designating home plate;

a plurality of second indicia sequentially located for correctly positioning said batter relative to said first indicia; and

means for temporarily indicating a position of said batter subsequent to said batter hitting said ball; and

a plurality of third indicia for attachment to said batting Tee in a specific order, wherein said batting Tee is adjusted to a height equivalent to a specific distance perpendicular from said mat, said specific distance being the distance to a point located in the strike zone for said batter,

wherein said specific distance measured by said batting Tee identifies one of said plurality of third indicia on said batting Tee which correlates to one of said plurality of second indicia and indicates the proper distance said batter should stand from said first indicia to attain said proper batting position.

5,642,881

TRI-HOLLOW RACKET WITH TRAVERSE RIBS

Patrick Stennett, Springfield, Mass., assignor to Lisco, Inc., Tampa, Fla.

Filed Feb. 2, 1996, Ser. No. 595,779
Int. Cl.[6] A63B *49/12*
U.S. Cl. 473—537 **8 Claims**

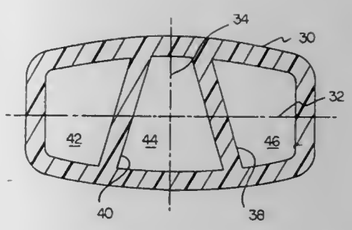
1. A tennis racket with improved playing characteristics comprising, in combination:

a frame fabricated of extruded aluminum with a common cross-section along its entire length, the frame having free ends with frame portions adjacent to the free ends shaped parallel with each other for a short extent to constitute a handle, the frame being shaped in a curved configuration remote from the handle with a central opening therewithin to form a head, the opening having a central axis, the frame also being shaped with a transition zone between the head and the handle and a throat piece in the transition zone, the cross-section of the frame being of an exterior closed curved configuration with a major axis parallel with the central axis and a minor axis perpendicular to the major axis, the cross-section of the frame also having two straight interior ribs of a common thickness throughout their lengths and spaced from each other dividing the cross-sectional configuration into three linear openings with the ribs being angled equally and oppositely with respect to the minor axis and forming common angles of about 15 degrees with respect to the minor axis along their entire lengths, the ribs being of a common length greater than the length of the minor axis within the frame;

a plurality of holes extending through the head of the frame;

a plurality of strings in a grid-like configuration extending through the holes in the head to define a hitting area; and

a pallet located on the handle for gripping by a user.

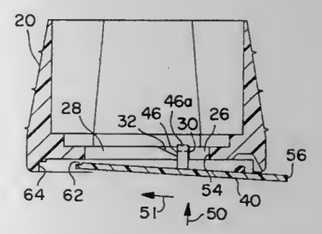


5,642,882

BUTT CAP FOR SPORTS RACQUET

Michael F. Guerzini, Bordentown, N.J., assignor to Prince Sports Group, Inc., Bordentown, N.J.

Filed Mar. 13, 1996, Ser. No. 615,672
Int. Cl.[6] A63B *49/08*
U.S. Cl. 473—549 **5 Claims**

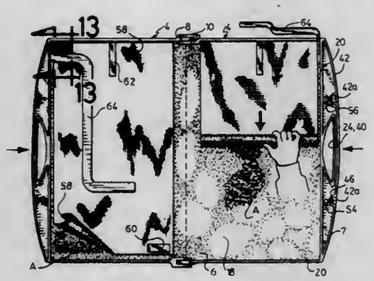


1. A sliding trap door butt cap for use on a sports racquet such as a tennis racquet, said cap comprising:

a cap base having a bottom with an outer surface and an inner surface, with at least one guide opening in said bottom forming a first guide surface, said opening including a keyway and a guide ramp portion on said inner surface, having its smaller end adjacent said keyway and increasing in height along said first guide surface away from said keyway; and

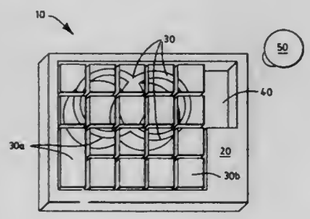
a cap plate having lower and upper surfaces, at least one engagement member on said upper surface, said engagement member having a first portion extending from said upper surface substantially perpendicular thereto and a second portion extending at an angle relative to said first portion, wherein said second portion is sized so as to pass through said keyway, wherein said first portion is sized so as to be moveable within said guide opening along said first guide surface, and wherein said second portion is positioned so as to engage said ramp surface when said first portion is moved along said first guide surface, so as to draw the cap plate toward the cap base.

5,642,883
PUZZLE HOLDER
Marcel Rioux, Piedmont, Canada, assignor to Madisco Inc., Ste-Adele, Canada
Filed Feb. 6, 1996, Ser. No. 602,875
Int. Cl.[6] A63F *9/10*
U.S. Cl. 273—157 R **16 Claims**



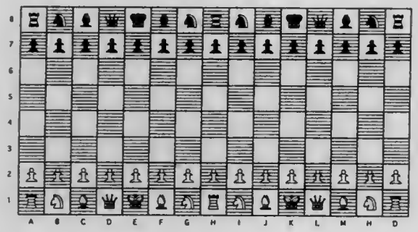
1. A jig-saw puzzle holder for puzzles having a number of pieces to be assembled, comprising two substantially co-extensive work panels, each having an interior and an exterior surface, a liner sheet covering and secured to the interior surfaces of both panels for supporting individual pieces as they are assembled thereon, two flexible cover sheets, each associated with one panel and substantially co-extensive therewith, said cover sheets releasably adhering to said liner sheet upon application of pressure on said cover sheets against said liner sheet so that said cover sheets cover and engage pieces of a partially assembled puzzle resting on said liner sheet, the portions of said cover sheets surrounding said pieces directly adhering to said liner sheet and holding said pieces in position against shifting and wherein each of said two panels have an inner and an outer edge, and further including hinge means hinging said panels to each other about their inner edges, said panels foldable about said hinge means to enclose said liner and cover sheets and for enclosing pieces held between the same, from a substantially coplanar open position wherein the two panels and said liner sheet form a smooth joint to permit shifting across said joint partially assembled or individual puzzle pieces.

5,642,884
HOLOGRAPHIC IMAGE RECONSTRUCTION PUZZLE
David E. Pitcher, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Mar. 27, 1996, Ser. No. 624,877
Int. Cl.[6] A63F *9/12*
U.S. Cl. 273—157 R **6 Claims**



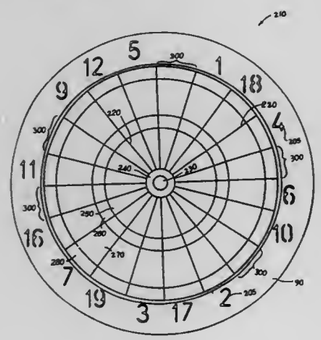
1. A puzzle solved by arranging scrambled visual information in a predetermined visually recognizable pattern, the puzzle comprising a plurality of puzzle pieces arrangeable to form at least one surface according to said predetermined visually recognizable pattern, at least one of said pieces bearing a reflection hologram designed to reconstruct a first form of visual image information when observed at a first viewing angle and a second form of visual image information when observed at a second viewing angle, said first and second forms of visual image information being different in type a the puzzle piece absent recordations of forms of visual image information sequentially reconstructable at viewing angles intermediate said first and second viewing angles.

5,642,885
CHESS-LIKE GAME
John Bruce Gustin, R.R. 1, Box 279, Poughquay, N.Y. 12570
Filed Jul. 10, 1996, Ser. No. 677,816
Int. Cl.[6] A63F *3/02*
U.S. Cl. 273—261 **16 Claims**



1. A board game comprising:
a rectangular game board having a playing surface divided into a grid of squares consisting of 120 equally sized squares, said squares being arranged fifteen left to right and eight top to bottom, and alternating in color to form a checkered pattern; and
a plurality of game pieces consisting of sixty game pieces which may be placed on said equally sized squares.

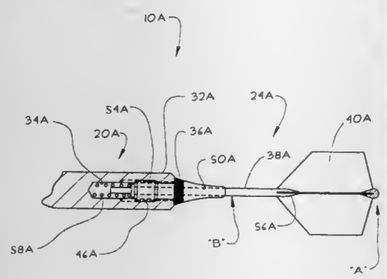
5,642,886
METHOD OF PLAYING A SIMULATED GOLF GAME
Arthur M. Yancey, Jr., 609 Thornton Ave., Dalton, Ga. 30722
Filed Jul. 9, 1996, Ser. No. 677,414
Int. Cl.[6] F41J *3/00*
U.S. Cl. 273—408 **11 Claims**



8. An improved game apparatus for use in connection with a simulated golf game, said apparatus including:

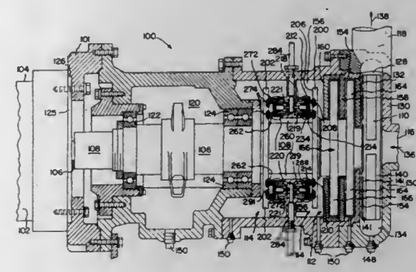
a) a dart having a body with a tip at one end; and
b) a dart board having a generally circular playing surface that is adapted to receive the tip of a dart, said surface having:
i) at least eighteen wedge-shaped zones;
ii) a plurality of annular rings; and
iii) a generally circular bullseye located generally at the center thereof;
c) said board being adapted for use in connection with a simulated golf game by assigning:
i) a par value to each wedge-shaped zone; and
ii) a score with respect to par value to the bullseye; and
iii) a score with respect to par value to each annular ring; and
iv) an ordered sequence for the wedge-shaped zones; so that each wedge-shaped zone may represent a hole of a simulated golf course and the sequence assigned for the wedge-shaped zones may correspond to an ordered sequence of holes on the simulated golf course representing a round of golf played on such course;
d) wherein the improvement comprises an annular ring that is disposed outside of the playing surface o the dart board, which annular ring:
i) is provided with a plurality of different identifying indicia that are spaced so that an indicia is provided for each wedge-shaped zone; and
ii) may be rotated with respect to the dart board so as to change the indicia assigned to each wedge-shaped zone;
whereby said indicia may be used to identify the sequence of holes on the simulated golf course for a round of simulated golf, and whereby the ring may be rotated with respect to the dart board to change the sequence of holes.

5,642,887
GAME DART WITH RETRACTABLE FLIGHT SECTION
Mihkel Orav, 12210 Bean Rd., Munson, Ohio 44024
Filed Jun. 4, 1996, Ser. No. 657,535
Int. Cl.[6] A63B *65/02*
U.S. Cl. 473—586 **7 Claims**



1. A game dart comprising (i) a body section defining a forward end and a rearward end, (ii) a point section having a pointed tip extending axially outwardly from the forward end of said body section, (iii) a flight section extending axially outwardly from the rearward end of said body section and having at least one portion axially movable in said body section from a first axially rearward position to a second axially forward position, and (iv) mounting means associated with said flight section portion and said body section for mounting said at least one portion of said flight section to said body section with limited relative axial movement therebetween and effective to releasably retain said at least one portion of said flight section in, and resiliently bias said at least one portion of said flight section toward, the axially rearward position thereof.

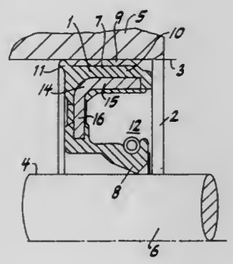
5,642,888
TEMPERATURE AND PRESSURE RESISTANT ROTATING SEAL CONSTRUCTION FOR A PUMP
Robert E. Rockwood, Windham, N.H., assignor to Environamics Corporation, Hudson, N.H.
Division of Ser. No. 200,012, Feb. 22, 1994, Pat. No. 5,494,299. This application Dec. 8, 1995, Ser. No. 570,001
Int. Cl.[6] F16J *15/34*
U.S. Cl. 277—15 **12 Claims**



1. A seal construction for sealing a rotating shaft against passage of a fluid to be sealed against along said rotating shaft, said seal construction comprising:
first and second rotatable sealing flanges each fixedly mounted on said shaft and rotatable therewith about a central axis of said shaft, said first and second sealing flanges each having a forward and a rear surface, each of said surfaces extending in a generally radial direction with respect to said central axis, said forward surface of said first rotatable sealing flange to be exposed to the fluid to be sealed against;
a first stationary sealing means for creating a fluid seal between said rear surface of said first rotatable sealing flange and said first stationary sealing means, said first stationary sealing means comprising: a first engaging member having a forward surface located for sealing engagement with said rear surface of said first sealing flange, said first engaging member being spaced radially outwardly from and extending circumferentially around said rotating shaft; and a first biasing means for normally urging said forward surface of said first engaging member into sealing engagement with said rear surface of said first sealing flange;
a second stationary sealing means for creating a fluid seal between said front surface of said second rotatable sealing flange and said second stationary sealing means, said second stationary sealing means comprising: a second engaging member having a rear surface located for sealing engagement with said front surface of said second sealing flange, said second engaging member being spaced radially outwardly from and extending circumferentially around said rotating shaft; and a second biasing means for normally urging said rear surface of said second engaging member into sealing engagement with said front surface of said second sealing flange;
a first annular fluid passageway extending between and interfacing said first and second stationary sealing means, said first annular fluid passageway being substantially parallel to said central axis and being located radially inward from said first and second stationary sealing means, whereby said first annular fluid passageway is disposed between said central axis and said first and second stationary sealing means; and
a stationary gland disposed between said first and second stationary sealing means, said gland including first, second, third, and fourth fluid passages defined therein, said first and second gland passages being in communication with a first barrier chamber disposed radially outward of said first engaging member and said third and fourth gland passages in communication with a second barrier chamber located radially outward of said second engaging member, wherein said

first and second gland passages allow a barrier fluid to be circulated to and from said first barrier chamber and said second and third gland passages enable barrier fluid to be circulated to and from said second barrier chamber.

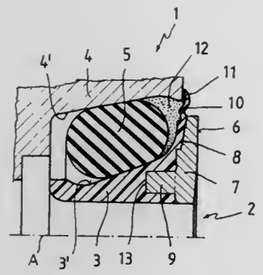
5,642,889
SEALING RING
Franz Pauler, Laudenbach; Ulrich Dahlhaus, Edingen-Neckarhausen, and Rolf Vogt, Oftersheim, all of Germany, assignors to Firma Carl Freudenberg, Germany
Filed Mar. 8, 1996, Ser. No. 612,642
Claims priority, application Germany, Mar. 17, 1995, 19 509 771.8
Int. Cl.[6] F16J *15/32*
U.S. Cl. 277—37 **9 Claims**



1. A sealing ring insertible into a radial space between two relatively movable cylindrical surfaces of a first and a second machine part, said cylindrical surfaces surrounding one another coaxially, said sealing ring comprising:
a first part statically sealing against said cylindrical surface of said first machine part, said first part fixing said sealing ring to said first machine part, said first part comprising a retaining ring made of an elastomeric material, said retaining ring comprising at least one axial relief groove;
a second part dynamically sealing against said second machine part; and
an annular sealing lip seal situated adjacent one end of said relief groove and engageable with said cylindrical surface of said first machine part, said annular lip seal elastically deforming away from said first machine part when acted upon by a pressure differential above a preselected minimum pressure.

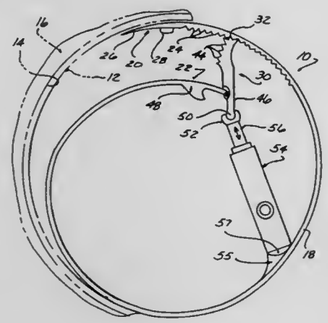
5,642,890
SLIDE RING SEAL ASSEMBLY
Hans-Henning Zutz, Wermelskirchen, Germany, assignor to AE Goetze GmbH, Burscheid, Germany
Filed Mar. 21, 1996, Ser. No. 619,409
Claims priority, application Germany, Mar. 30, 1995, 195 11 708.5
Int. Cl.[6] F16J *15/38*
U.S. Cl. 277—92 **6 Claims**

1. A slide ring seal assembly having an assembly axis and comprising
(a) a slide ring arranged coaxially with said assembly axis and having
(1) a slide face for engaging a slide face of an additional slide ring;
(2) a plastic part having a conical face surrounding said assembly axis and axially extending from said slide face;



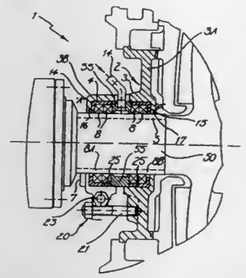
(b) an annular elastic body surrounding and engaging said conical face and being adapted to be compressed, in an installed state, by said conical face and a face of a machine component; and
(c) an annular sealing body formed on said plastic part as a one-piece, integral member therewith for sealingly contacting a machine component in the installed state at a location spaced from said slide ring for preventing penetration and access of dirt to said annular elastic body through a clearance between said slide ring and the machine component.

5,642,891
RADIALLY EXPANDABLE LOCKING DEVICE FOR A PIPE SEAL
William O. Skinner, 5520 S. Bend Dr., Fort Wayne, Ind. 46804
Filed Jun. 19, 1996, Ser. No. 665,826
Int. Cl.[6] F16J *15/00;* **B65D** *63/02*
U.S. Cl. 277—101 **5 Claims**



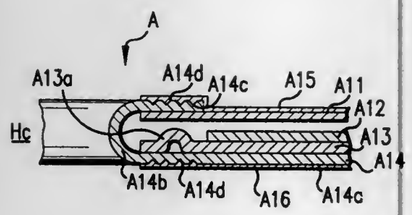
1. A radial expansion device comprising:
a band wrapped to have respective ends formed to overlap with each other, an outer end having a series of serrations formed along the length of an inside surface thereof;
a band link pivotally connected to the other end lying within said outer end;
said band link having a series of serrations on one side thereof configured to mate with said serrations on the inside of said outer end, said band link further formed with an end feature adapted to be received in one of said outer end serrations with said link pivoted on said band inner end to extend in a radial direction at an angle to said band inner end, said link pivoting to bring said serrations thereon into mating engagement with said band outer end serrations as said link is pivoted to extend circumferentially causing spreading of said band ends by a toggle effect between said link and said band outer end.

5,642,892
GLAND SEAL ASSEMBLY HOUSING
Kevin Edward Burgess, Carlingford, Australia, assignor to Warman International Limited, Artarmon, Australia
PCT No. PCT/AU94/00114, § 371 Date Sep. 12, 1995, § 102(e) Date Sep. 12, 1995, PCT Pub. No. WO94/20757, PCT Pub. Date Sep. 15, 1994
PCT Filed Mar. 10, 1994, Ser. No. 525,704
Claims priority, application Australia, Mar. 12, 1993, PL7758/93
Int. Cl.[6] F16J *15/16*
U.S. Cl. 277—105 **7 Claims**



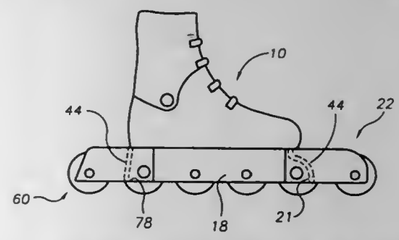
1. A gland seal assembly for a slurry pump, said gland seal assembly comprising:
a pump casing; and a housing having a main body including a bore therethrough for receiving a rotatable shaft, said main body being comprised of a fast part and a second part, one of said parts being secured to said pump casing, each of said first and second parts having a packing receiving zone defined by said bore, said packing receiving zones, in the assembled position, define an annular gap between an inner wall surface of said bore and an outer surface of said rotatable shaft, said first part and said second part being spaced apart from one another, each of said first and second parts further including a radially extending abutment flange, each abutment flange forming an end wall for the respective packing receiving zone, said abutment flanges being disposed remote from one another in the assembled position;
at least one packing ring being disposed within each of said packing receiving zones;
a lantern ring assembly disposed between said first part and said second part; and
an adjustment means for causing relative movement between said abutment flanges in the axial direction of the bore.

5,642,893
METAL LAMINATE GASKET WITH COATING FLOW PREVENTING DENTS
Tsunekazu Udagawa, Ichikawa, Japan, assignor to Ishikawa Gasket Co., Ltd., Tokyo, Japan
Filed Jan. 11, 1996, Ser. No. 584,022
Int. Cl.[6] F16J *15/08*
U.S. Cl. 277—235 B **9 Claims**



1. A metal laminate gasket for an internal combustion engine, said engine having engine parts and a hole to be sealed, comprising:
a main portion formed of at least two outer metal plates extending substantially throughout an entire area of the engine and piled one on the other, each outer metal plate having one outer surface facing one of the engine parts,
means for defining a first hole corresponding to the hole of the engine, said defining means being formed of a metal plate attached to the outer metal plates, said defining means having a flat inner surface portion facing inwardly of the gasket, an outer surface portion facing outwardly of the gasket, and a plurality of dents formed in the outer surface portion near the first hole to surround the same, said dents extending from the outer surface portion toward the flat inner surface portion without deforming the flat inner surface portion, and
a coating applied onto the dents of the defining means and one of the outer surfaces of the metal plates, said coating being filled in the dents and covering a substantial area of the outer surface so that the coating does not substantially flow to thereby improve sealing around the first hole.

5,642,894
KIT FOR ADDING WHEELS TO AN IN-LINE ROLLER SKATE
Gaspar Sanabria, 3131 N. Mason Rd., Katy, Tex. 77449-3854
Filed Mar. 22, 1996, Ser. No. 620,365
Int. Cl.[6] A63C *17/06*
U.S. Cl. 280—11.27 **4 Claims**



1. A kit for adding wheels to an in-line roller skate having a wheel support channel member, said kit comprising:
a front wheel connecting assembly having a front support channel member having a first wheel rotatably secured at a front wheel end thereof and first and second mating formations formed within a front skate channel receiving passageway provided at a front skate mating end thereof, said front skate channel receiving passageway being defined on two sides thereof by opposed first and second passageway sidewalls, said first mating formation including a first formation portion of said first passageway sidewall that is defined by a first mating formation wall that extends from said first passageway sidewall and that is contoured to correspond to a profile of a front end side edge of said wheel support channel member of an existing in-line roller skate, said first formation portion of said first passageway sidewall having a first securing bolt receiving aperture formed therethrough, said second mating formation including a second formation portion of said second passageway sidewall that is defined by a second mating formation wall that extends from said second passageway sidewall and that is contoured to correspond to a profile of a front end side edge of said wheel support channel member of an existing in-line roller skate, said second formation portion of said second passageway sidewall having a second securing bole receiving aperture formed therethrough that is concentrically aligned with said first securing bolt receiving aperture;
a rear wheel connecting assembly having a rear support channel member having a second wheel rotatably secured at a rear wheel end thereof and third and fourth mating formations

formed within a rear skate channel receiving passageway provided at a rear skate mating end thereof, said rear skate channel receiving passageway being defined on two sides thereof DV opposed third and fourth passageway sidewalls, said third mating formation including a third formation portion of said third passageway sidewall that is defined by a third mating formation wall that extends from said third passageway sidewall and that is contoured to correspond to a profile of a rear end side edge of said wheel support channel member of an existing in-line roller skate, said third formation portion of said third passageway sidewall having a third securing bolt receiving aperture formed therethrough, said fourth mating formation including a fourth formation portion of said fourth passageway sidewall that is defined by a fourth mating formation wall that extends from said fourth passageway sidewall and that is contoured to correspond to a profile of a rear end side edge of said wheel support channel member of an existing in-life roller skate, said fourth formation portion of said fourth passageway sidewall having a fourth securing bolt receiving aperture formed therethrough that is concentrically aligned with said third securing bolt receiving aperture;

a first securing assembly having a portion thereof adapted to pass through said first and second securing bolt receiving apertures; and

a second securing assembly having a portion thereof adapted to pass through said third and fourth securing bolt receiving apertures.

5,642,895

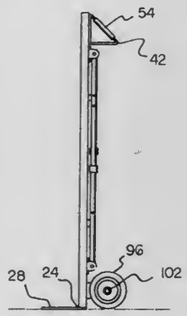
CONVERTIBLE WORK BENCH TO HAND TRUCK APPARATUS

Richard Wunder, 49 E. Prescott Ave., Colonia, N.J. 07067-1410

Filed Oct. 23, 1995, Ser. No. 546,814

Int. Cl.[6] B62B *1/04*

U.S. Cl. 280—30 **8 Claims**



1. A new and improved convertible work bench to hand truck apparatus for using as a work table and for transporting heavy items comprising in combination:

a generally rectangular table having a top surface, a bottom surface and a pair of long edges with short edges therebetween, the top surface of the table being smooth, the table having a length of 54½ inches and a width of about 16 inches, the table having a thickness of about 1 inch for strength, one of the short edges of the table having a generally rectangular projection extending above the top surface thereof, the projection being perpendicular the top surface of the table and having a width equal to the width of the table, the projection having a length of about 12 inches and a thickness being about seventy-five percent less than the thickness of the table;

the back surface of the table having a plurality of large U-shaped support brackets, a plurality of small U-shaped support brackets, a plurality of leg retainers and a pair of triangular handles attached thereto, each support bracket being attached to the bottom surface of the table with a pair of screws, each leg retainer being attached to the bottom surface with a pair of screws, each handle being position adjacent another of the short ends of the table and opposite the projection, each handle having a base portion being attached to the back surface with a pair of screws, each handle having a flexible grip thereon;

a plurality of legs with each leg having a foot end and a connecting end being rotatably coupled with one of each support brackets of the table, each leg having a leg brace rotatably coupled thereto with a rivet, the leg brace being a sectional leg brace having a table end being coupled to the bottom surface of the table with one of the small support brackets, the leg brace having a mid section foldable at a pivot pin coupling the sections;

the plurality of legs form a first support leg and a second support leg when a support bar connects a parallel pair of the plurality of legs, each support leg being capable of resting in a parallel plane on the back surface of the table, each support leg extending vertically and downward from the back surface for supporting the table above a receiving surface when each foot end being positioned on the receiving surface;

a wheel mount having an elongated rigid bracket being secured to the bottom surface of the table adjacent the projection, the bracket having a length of about 15 inches and extending along the width of the back surface, a pair of spaced stems with one of each stem extending from an end of the elongated bracket, a pair of wheels rotatably coupled to the stems with an axle that extends the lenght of the elongated bracket and positioned through one of each stem; and

the wheels being positionable in parallel planar alignment with the handles, the pair of wheels being above the receiving surface when each support leg being position on the receiving surface, the pair of wheels supporting the table along a vertical plane when each support leg being in the resting position along the back surface.

5,642,896

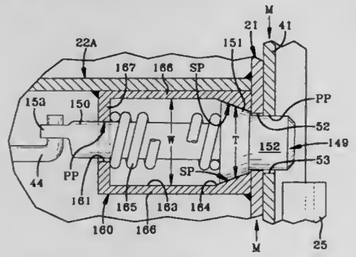
LOCKING PINS FOR MOVABLE SUBFRAME OF TRACTOR-TRAILERS

Phillippi Randsome Pierce; Scott Allen Dilling, and John Edward Ramsey, all of Canton, Ohio, assignors to The Boler Company, Itasca, Ill.

Filed Aug. 30, 1996, Ser. No. 705,787

Int. Cl.[6] B62D *53/06*

U.S. Cl. 280—149.2 **8 Claims**



1. A retractable locking pin mechanism of a subframe structure for a vehicle trailer, said subframe structure being movably mounted on spaced-apart, parallel elongated rails mounted on the bottom of said trailer, said trailer rails each being formed with a plurality of openings, said subframe structure including a pair of spaced-apart, parallel elongated main members, said main members each including means for movably engaging a respective one of said trailer rails, said main members each further being formed with at least one locking pin opening, said main member opening being selectively alignable with its respective trailer rail openings, for passage of a generally complementary-sized and shaped locking pin through the respective aligned openings for locking the subframe structure in a selected position relative to the vehicle trailer, said retractable locking pin mechanism including means for extending said pins to a locked position and a retraction mechanism for retracting the pins to an unlocked position, wherein the improvement comprises a locking pin including:

a) a generally cylindrical-shaped first end for extending through its respective aligned main member and trailer rail openings when the pin is in the extended locked position, for selectively positioning the subframe structure relative to the vehicle trailer;

b) a second end attached to said retraction mechanism;

c) a tapered midsection disposed between said first and second ends; and

d) a receptacle mounted on said subframe structure, said receptacle formed with a tapered opening which is aligned with said respective main member opening, so that upon movement of said pin to an extended locked position, said tapered midsection nests firmly in said tapered receptacle opening, whereby said locking pin is generally easily retracted by said retraction mechanism when said pin becomes jammed due to misalignment of said subframe main member and trailer rail openings.

5,642,897

SKI BRAKE AND DEVICE FOR MODIFYING THE NATURAL PRESSURE DISTRIBUTION OF A SKI OVER ITS SLIDING SURFACE AND A SKI EQUIPPED THEREWITH

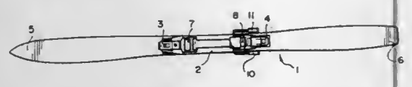
Bernard Couderc, Annecy, and Pierre Szafranski, Pringy, both of France, assignors to Salomon S.A., Metz-Tessy, France

Continuation-in-part of Ser. No. 12,436, Feb. 2, 1993, Pat. No. 5,397,149. This application Aug. 18, 1994, Ser. No. 291,909

Claims priority, application France, Feb. 18, 1992, 92 01958; Feb. 18, 1992, 92 01959

Int. Cl.[6] A63C *7/10*

U.S. Cl. 280—605 **32 Claims**



1. A ski brake adapted to brake the movement of a ski upon release of a boot that is held on the ski by at least one binding element of a front binding element and a rear binding element, the front binding element and the rear binding element each having a base to be affixed to the ski, the ski having a base with a lower surface and an upper surface, said ski brake comprising:

two braking arms mounted for movement in the vicinity of the rear binding element between a lowered working position in which said braking arms project beneath the lower surface of the base of the ski and a raised resting position in which said braking arms are positioned along lateral edges of the base of the ski;

an activation mechanism for returning said braking arms from said working position to said resting position during engagement of the boot in the at least one binding element;

an elastic return mechanism for elastically returning said braking arms into said working position during release of the boot;

said activation mechanism including:

a rear lever rigidly connected to said braking arms, said rear lever forming an extension of the braking arms beyond the upper surface of the base of the ski, said rear lever being mounted for movement about a transverse axis in the vicinity of the rear binding element; and

a front lever having a rear end portion, said rear lever and a predeterminate area of said rear end portion of said front lever forming a pivotal and slidable connection, said front lever being pivotally connected to an element associated with a front binding and adapted to be affixed with respect to the ski in the vicinity of the front binding element, said front and rear levers assuming a lowered substantially coplanar position when the braking arms are in their resting position, and said elastic return mechanism functioning to bias the connection between said front and rear levers upwardly away from the upper surface of the ski to a raised non-coplanar position and to move said braking arms into said lowered working position.

5,642,898

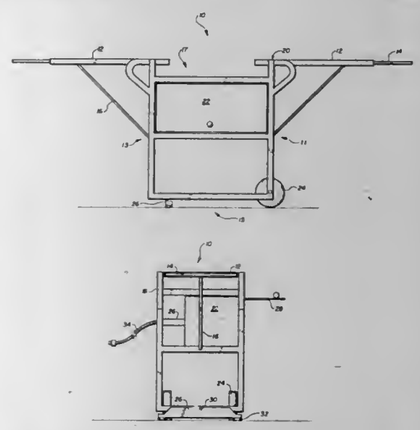
TOOL CART

Robert W. Wise, 365 Bly Rd., Petaluma, Calif. 94954

Filed Jul. 11, 1995, Ser. No. 500,680

Int. Cl.[6] B62B *1/12*

U.S. Cl. 280—652 **5 Claims**



1. A tool cart comprising:

a first pair of vertical rails and a second opposing pair of vertical rails, said first and second pair of vertical rails having a top end and an opposing base end;

a top pair of horizontal rails extending from said first pair of vertical rails to said second pair of vertical rails proximate said top end;

an intermediate pair of horizontal rails extending from said first pair of vertical rails to said second pair of vertical rails between said top end and said base end;

a base pair of horizontal rails extending from said first pair of vertical rails to said second pair of vertical rails at said base end;

a first cross member extending between said first pair of vertical rails;

a second cross member extending between said second pair of vertical rails, each said cross member and each said pair of horizontal rails having pre-drilled holes for selectively mounting equipment onto the tool cart;

a plurality of cross braces extending between said base pair of horizontal rails;

a first horizontally extendable wing member pivotally connected to said first pair of vertical rails at said top end;

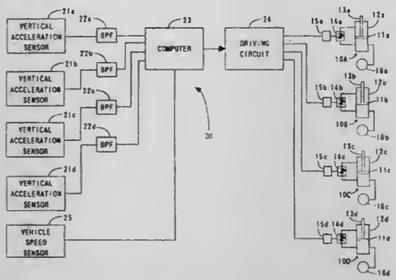
a second horizontally extendable wing member pivotally connected to said second pair of vertical rails at said top end, said first and second wing member being pivotable between a retracted position for storing the tool cart and an extended position for providing a work surface, said first and second wing member each being supported by a brace when in said extended position; and

further comprising vibration dampening means for dissipating vibrational forces transmitted by equipment mounted onto the tool cart, said vibration dampening means including:

a housing disposed on one of said plurality of cross braces;

a rod partially contained within said housing;
a spring disposed around said rod; and
a plate resting upon said spring and surrounding said rod.

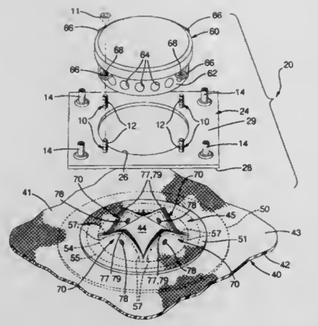
5,642,899
DAMPING FORCE CONTROL SYSTEM FOR AUTOMOTIVE VEHICLE
Hideo Inoue, Asigarakami-gun; Hajime Kamimae, Okazaki; Mitsuhiko Morita, Susono, and Hiroyoshi Kojima, Nishio, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan
Filed Aug. 8, 1995, Ser. No. 512,324
Claims priority, application Japan, Aug. 8, 1994, 6-186097; Jun. 9, 1995, 7-143601
Int. Cl.[6] B60G *17/00*
U.S. Cl. 280—707 **8 Claims**



1. A damping force control system for an automotive vehicle having a semiactive damper mechanism provided between an unsprung mass and a sprung mass of the vehicle to dampen vertical vibration of the sprung mass, said control system including control means for switching over the semiactive damper mechanism from a low damping state to a high damping state in response to an increase of vertical vibration of the sprung mass, wherein the control system comprises:
detection means for detecting vertical velocity of the sprung mass and for producing an input signal indicative of an absolute value of the detected vertical velocity;
determination means responsive to the input signal from the detection means for determining whether or not the absolute value of the detected vertical velocity has exceeded a preselected magnitude of approximate zero; and
means for permitting switchover of said damper mechanism from the low damping state to the high damping state upon lapse of a predetermined time after it has been determined by the determination means that the absolute value of the detected vertical velocity exceeded the preselected magnitude.

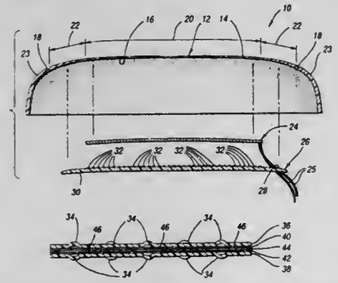
5,642,900
AIR BAG ATTACHMENT TO MODULE
Muklesh Chunibhai Patel, Bellbrook, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 31, 1995, Ser. No. 551,271
Int. Cl.[6] B60R *21/16*
U.S. Cl. 280—728.2 **8 Claims**

1. A method of attaching an air bag to an air bag module, the module including an inflator for discharging inflator gas to inflate the air bag, the method comprising the steps of:
providing the air bag made of a flexible fabric air bag material;
cutting the air bag material into flap portions which cooperatively form the shape of an air bag opening for receiving inflator gas therethrough;
folding back the flap portions to open the air bag opening;
fastening the flap portions to the module; and



sewing a seam around a perimeter of each of the flap portions prior to cutting the air bag material into flap portions.

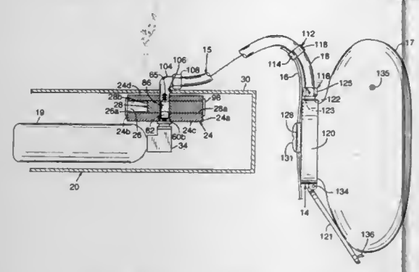
5,642,901
THERMOPLASTIC AIR BAG COVER HAVING A MEMBRANE SWITCH WITH ENHANCED ACTIVATION
David A. Bowman, Shelby Township, and David J. Davis, Troy, both of Mich., assignors to Larry J. Winget, Leonard, Mich.
Continuation-in-part of Ser. No. 451,452, May 26, 1995, Pat. No. 5,542,694, and a continuation-in-part of Ser. No. 451,458, May 26, 1995, abandoned. This application Aug. 1, 1995, Ser. No. 509,993
Int. Cl.[6] B60R *21/20*
U.S. Cl. 280—728.3 **11 Claims**



1. A relatively flexible thermoplastic air bag cover comprising:
a front panel adapted to overlie an undeployed air bag, the front panel having a front outer surface and a rear inner surface and being separable along a prescribed tear pattern upon deployment of the air bag, the front panel having a switch location area;
a membrane switch lying behind the rear inner surface in the switch location area of the front panel and having a first plurality of spaced, individual switch activation locations spaced apart from one another in two mutually orthogonal directions;
a back plate having a top surface and a bottom surface and being secured to the rear inner surface of the front panel in containing relationship to the membrane switch and forming a hollow compartment for the membrane switch in the switch location area; and
a second plurality of switch activating members spaced apart from one another in two mutually orthogonal directions and having distal end surfaces, the switch activating members being integrally formed at and projecting from the top surface of the back plate at the switch activation locations, wherein the membrane switch is activated by depression of the front panel at its front outer surface in the switch location area and

wherein each of the switch activating members has a height and a width so that at least one of the switch activating members enhances activation of the membrane switch at its respective switch activation location wherein the membrane switch includes top and bottom surface layers and intermediate first and second conductive layers separated by an insulating layer having apertures formed completely therethrough and wherein the first plurality of spaced, individual switch activation locations are defined by a third plurality of raised domes integrally formed in at least one of the top and bottom surface layers adjacent the apertures in the insulating layer.

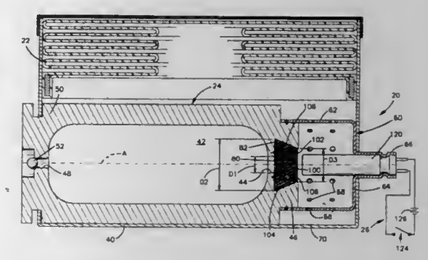
5,642,902
RETROFIT AIRBAG SYSTEM FOR VEHICLES
John Josh France, 30600 Merry La., Lebanon, Oreg. 97355
Filed Sep. 14, 1995, Ser. No. 527,960
Int. Cl.[6] B60R *21/26;21/18*
U.S. Cl. 280—737 **12 Claims**



1. An activation system for inflating an airbag in a vehicle, comprising:
a pressurized gas source adapted to be connected through a flow conduit to said airbag;
a gas-impermeable burstable membrane extending across the flow conduit; and
a control member mounted for shifting along an activation axis that is generally aligned with the vehicle direction of travel solely in response to a selected vehicle deceleration, between a first position in which the control member extends across the flow conduit and supports the membrane such that the membrane seals the flow conduit, and a second position wherein the control member support for the membrane is removed such that the membrane is immediately burst to permit gas flow through the flow conduit to the airbag.

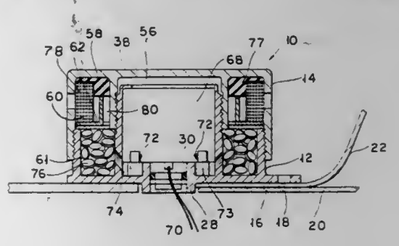
5,642,903
CONSUMABLE CLOSURE SUPPORT FOR AIR BAG INFLATOR
Paul S. Headley, Mesa, Ariz., assignor to TRW Inc., Lyndhurst, Ohio
Filed Sep. 15, 1995, Ser. No. 529,271
Int. Cl.[6] B60R *21/26*
U.S. Cl. 280—737 **15 Claims**

1. An apparatus for inflating an inflatable vehicle occupant restraint, said apparatus comprising:
a container for holding a fluid under pressure, said container having an opening through which the fluid flows to inflate the restraint;
a closure extending across and adjacent the opening, the pressure of the fluid acting on said closure;
a member made of a consumable material supporting said closure in position to block fluid flow through the opening, said member becoming ineffective to support said closure in position to block fluid flow through the opening after a predetermined amount of said member is consumed, said closure



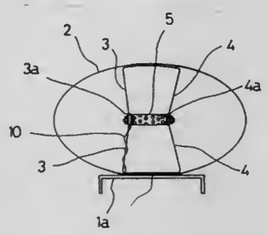
being ineffective to block fluid flow through the opening when said member is ineffective to support said closure; and
actuatable means for, upon actuation, initiating consumption of said member.

5,642,904
TWO PIECE INFLATOR HOUSING
Torbjorn Thuen, Morris Plains, and Allen Breed, Boonton Township, Morris County, both of N.J., assignors to Breed Automotive Corporation, Boonton Township, N.J.
Continuation of Ser. No. 304,414, Sep. 12, 1994, Pat. No. 5,549,916, which is a division of Ser. No. 728,890, Jul. 10, 1991, Pat. No. 5,201,542. This application Aug. 5, 1996, Ser. No. 693,870
Int. Cl.[6] B60R *21/28*
U.S. Cl. 280—741 **16 Claims**



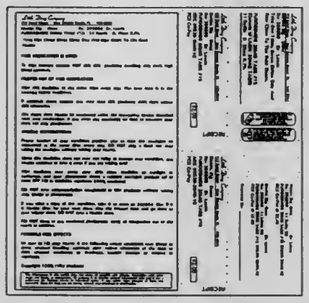
1. An inflator for a motor vehicle passenger restraint system, said inflator comprising:
a first member having a first member base, a first member circular inner wall mounted transversely on said first member base, and a first member circular outer wall mounted transversely on said base annularly around said first member inner wall, said first member walls being threaded and being formed integrally with said first member base;
a second member having a second member base, a second member circular inner wall mounted transversely on said second member base, and a second member circular outer wall mounted transversely on said second member base annularly around said second member inner wall, said second member walls being threaded and being formed integrally with said second member base;
said first and second members being coupled by threadedly engaging said first member inner wall and said second member inner wall and by threadedly engaging said first member outer wall and said second member outer wall to form at least one chamber;
gas generator means disposed in said chamber; and
gas generator activating means for activating said gas generator means to produce an inflator gas.

5,642,905
AIRBAG APPARATUS FOR VEHICLE
Kiyoshi Honda, Wako, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 3, 1995, Ser. No. 511,053
Claims priority, application Japan, Oct. 8, 1994, 6-208207
Int. Cl.[6] B60R *21/16*
U.S. Cl. 280—743.2 **4 Claims**



1. An airbag apparatus for a vehicle having an airbag inflated by a gas flowing out from an inflator having opposite ends and a gas permeable housing between said opposite ends when a deceleration of the vehicle exceeds a predetermined value for protecting an occupant in the vehicle, comprising an elongated member with at least one end fixed to an inner surface of said air bag, said inflator being fixed at at least one of said opposite ends to said elongated member and held in said air bag by said elongated member.

5,642,906
METHOD OF LABELLING PRESCRIPTION CONTAINERS
Richard W. Foote, Daytona Beach, and Richard Young, Bradenton, both of Fla., assignors to Automatic Business Products Company, Inc., New Smyrna Beach, Fla.
Continuation-in-part of Ser. No. 121,415, Sep. 16, 1993, abandoned. This application Jul. 20, 1995, Ser. No. 504,765
Int. Cl.[6] B42D *15/00*
U.S. Cl. 283—67 **8 Claims**



1. A method for use by a pharmacist in labeling a container for a prescription drug to be dispensed to a customer, comprising the steps of:

I. providing blank form for printing on at least one label to be affixed to the container, the form comprising:

(a) at least two labels releasably adhered to a backing sheet, each of said labels being provided with a printable surface upon which may be printed information relating to the prescription drug;

(b) adhesive means on the surface of each of said labels that is opposite the printable surface for affixing said labels to said container; and

(c) means for connecting said labels such that:

(1) the removal of one of the labels from the backing sheet will simultaneously remove from the backing sheet the other label to which it is connected; and

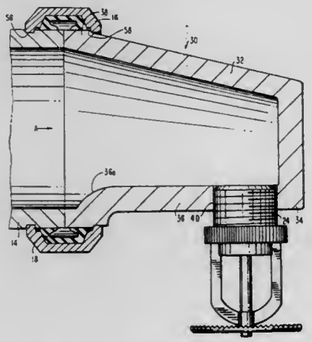
(2) the two removed labels optionally may be readily separated from each other prior to affixing any of said labels to said container;

II. printing information concerning a prescription on at least one of said labels;

III. simultaneously removing from the backing sheet at least said two labels; and

IV. affixing at least one of said two labels to said prescription drug container.

5,642,907
END FITTING FOR SPRINKLER SYSTEM
Douglas R. Dole, Whitehouse Station, N.J., assignor to Victaulic Company of America, Easton, Pa.
Filed May 20, 1996, Ser. No. 650,192
Int. Cl.[6] F16L *17/035*
U.S. Cl. 285—112 **9 Claims**



1. An end fitting for a water supply pipe of a sprinkler system, said end fitting including:

an elongate hollow body member having a side wall;

attachment means at one end of said hollow body member for attaching said hollow body member to an end of a said supply pipe; and,

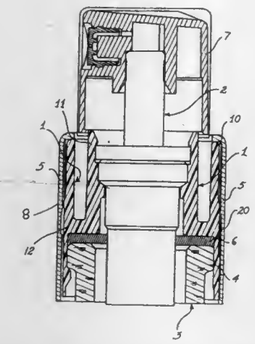
a closure for an opposite end of said elongate hollow body member;

said side wall converging from said one end of said hollow body member to said opposite end thereof to provide a bore of said hollow body member of progressively decreasing transverse cross-sectional area from said one end of said hollow body member to said opposite end thereof; and,

means for the attachment of a sprinkler head to said body member at a position spaced from said one end.

5,642,908
SLEEVE FOR THE FIXING OF A MANUAL PUMP GROUP TO A GLASS BOTTLE
Francesco Mascitelli, Pescara, Italy, assignor to SAR S.p.A., San Giovanni Teatino, Italy
Filed Oct. 17, 1995, Ser. No. 543,920
Claims priority, application Italy, Oct. 17, 1994, RM94A0672; Sep. 26, 1995, RM940211 U
Int. Cl.[6] F16L *55/00*
U.S. Cl. 285—148.19 **4 Claims**

1. A sleeve assembly for fixing a manual pump assembly to a bottle, the bottle having a neck (**3**) which is enlarged at a mouth-



piece (**4**) of the bottle and an undercut (**4***a*) between the neck (**3**) and the mouthpiece (**4**), the sleeve assembly comprising:

an upper part (**1***a*),

said upper part (**1***a*) having an external tubular element (**10**) and an internal tubular element (**11**),

said external tubular element (**10**) and said internal tubular element (**11**) being coaxial,

a base transversal element (**12**) joining a lower end of the external tubular element (**10**) to a lower end of the internal tubular element (**11**) to form a groove (**13**) with a U-shaped cross-section between the external tubular element (**10**) and the internal tubular element (**11**),

a sealing annular gasket (**6**) engaged to said base transversal element (**12**) when the sleeve assembly is assembled on the mouthpiece (**4**),

a lower tubular part (**16**) coaxial with and integrally joined to said upper part (**1***a*),

a plurality of facings (**15**) equidistantly spaced on an outer periphery of the lower tubular part (**1***b*),

each of said plurality of facings (**15**) acting to thin a tubular wall and enhance an elasticity of said lower tubular part (**1***b*),

a plurality of rounded projections (**16**) equidistantly spaced on an inner periphery of the lower tubular part (**1***b*) opposite respectively to the plurality of facings (**15**), and

a plurality of step projections (**20**), located between each of said plurality of facings (**15**),

wherein said external tubular element (**10**) is adapted to receive thereon a metal cover (**5**) for constraining said sleeve (**1**) on said neck (**3**) and said internal tubular element (**11**) and groove (**13**) are adapted to receive and constrain the pump assembly (**2**), and

wherein when the sleeve assembly (**1**) is assembled on the bottle to the mouthpiece (**4**), the plurality of rounded projections (**16**) are engaged on the undercut (**4***a*) and the plurality of step projections (**20**) form a perimeter rest surface for the metal cover (**5**).

5,642,909
LATCH SYSTEM
David A. Swan, Shoreview, and Robert Gerald Lau, Anoka, both of Minn., assignors to Federal-Hoffman, Inc., Anoka, Minn.
Filed Mar. 1, 1996, Ser. No. 609,356
Int. Cl.[6] E05C *9/12*
U.S. Cl. 292—39 **19 Claims**

1. A latch system for an enclosure having a door, comprising:

a latch bar for mounting on a first side of the door;

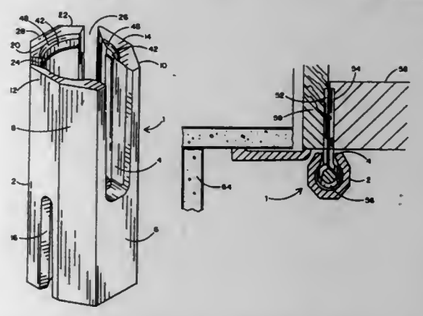
actuating means for mounting on a second side of the door;

a rack member mounted on the latch bar having a plurality of teeth formed therein; and,

wherein the door includes an orifice formed therein and wherein the rack member is extendable from the first side of the door through the orifice to engage the actuating means on the second side of the door.



5,642,910
MULTI-POSITION DOOR HINGE LOCK
Gary J. Betherum, 36332 Via Alamo, San Juan Capistrano, Calif. 92675
Filed Aug. 20, 1996, Ser. No. 697,133
Int. Cl.[6] E05C *19/18*
U.S. Cl. 292—288 **14 Claims**



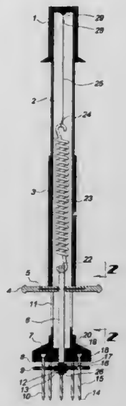
1. A hinge lock to be coupled to a hinge assembly of a door that is rotatable between opened and closed positions relative to a doorway, the hinge assembly including a pair of hinge plates that are adapted to be rotated relative to one another when the door is rotated from said closed position to said opened position and a hinge pin located between the pair of hinge plates around which the hinge plates are rotated, said hinge lock comprising:

a body having a hollow interior in which to receive the hinge pin when said hinge lock is coupled to the hinge assembly;

a first longitudinal channel formed in said body in which to receive the pair of hinge plates when the door is rotated to a closed position across the doorway and the pair of hinge plates are correspondingly rotated into face-to-face alignment with one another; and

second and third longitudinal channels formed in said body in which to receive respective ones of the pair of hinge plates when the door is rotated to an opened position relative to the doorway and the pair of hinge plates are correspondingly rotated to form an angle of 90 degrees.

5,642,911
LITTER RETRIEVING TOOL
Donald F. Gatch, P.O. Box 402, Hardeeville, S.C. 29927
Filed Oct. 16, 1995, Ser. No. 543,292
Int. Cl.[6] A01D *9/06*
U.S. Cl. 294—61 **2 Claims**

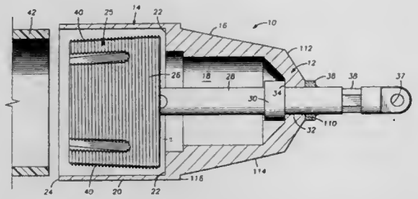


1. A litter gathering device comprising of a vertically attached handle on top of an elongated hollow tubular member, and attached on the lower end of the elongated hollow tubular member is a flange having a short threaded shaft on the underneath side where a rubber plate is attached in a thread relation having a plurality of spikes projecting from said rubber plate and reciprocally and slidably arranged in said elongated hollow tubular member is a slidable shaft, and attached to the lower end of said slidable shaft is a discharge plate having a plurality of holes matching the plurality of spikes making the discharge plate slidable over the plurality of spikes, and on said slidable shaft is a smaller shaft which is mounted transversely and the ends protrude through slots in said elongated hollow tubular member and on each end of the said smaller transversely mount shaft are attached flanges, and at the upper end of said slidable shaft is a hole where a coiled spring is attached, and attached at the top of said coiled spring is a wire containing a twisted loop in the end, and said wire is pulled tight, normally urging said discharge plate against said rubber plate containing plurality of spikes and the other end of said wire is bent over a groove at the top of said elongated hollow tubular member, said wire is then pulled along the outside of said elongated hollow tubular member and pushed back through a hole found near the top of said elongated hollow tubular member and on the same side as said groove, attaching said wire to the top of said elongated hollow tubular member, and mounting over the tied wire at the top of said elongated hollow tubular member is said handle, and mounting slidable over said elongated hollow tubular member, and between said handle and said flanges is a larger diameter tubular member.

5,642,912
PULLING ATTACHMENT FOR PLASTIC PIPE AND SLIP LINING HEAD
Robert O. Parish, II, Cleveland, Tex., assignor to TTI Trenchless Technologies, Inc., Conroe, Tex.
Filed Oct. 24, 1994, Ser. No. 327,556
Int. Cl.[6] E21B *31/12;* **B66C** *1/10*
U.S. Cl. 294—86.12 **12 Claims**

1. An attachment for attaching plastic pipe to a pulling head comprising:

a body having an inner cavity, said body having a front end and a back end and a cylindrical portion with an inside diameter which is essentially the same as the outside diameter of said pipe; and



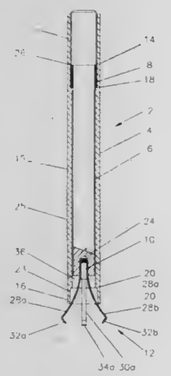
a wedging means located in said cavity which rotates within said body and moves relative to said body and enters said pipe and wedges said pipe against said cylindrical portion of said body, said wedging means comprising

a self-threading tap located within said cylindrical portion of said body;

a rotatable shaft fixed to said tap and extending through said front end of and rotatable relative to said body; and

means on said shaft to retain said tap within said cylindrical portion of said body.

5,642,913
METHOD AND APPARATUS FOR REMOVING POLISH FROM A NAIL
Kelly M. Brown, Rte. 3, Box 53E, Duncan, Okla. 73533
Filed May 2, 1996, Ser. No. 642,109
Int. Cl.[6] A45D *29/17;* **B25B** *9/00*
U.S. Cl. 294—100 **16 Claims**



1. A tool for grasping, holding and releasing a solid object, said tool comprising a sleeve, a plunger, a biasing means and a gripping means wherein:

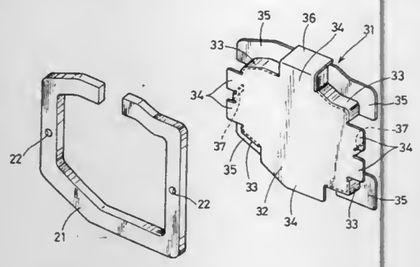
said sleeve is an elongated hollow cylinder having an open upper portion, an open lower portion and an open central portion intermediate said upper portion and said lower portion wherein the inside diameter of said central portion is less than the inside diameter of said upper portion and less than the inside diameter of said lower portion;

said plunger comprises a first upper end and a second lower end and is contained in and adapted to axially slide solely within the interiors of said upper portion and said central portion of said sleeve;

said biasing means is contained in and adapted to axially slide solely within the interior of said upper portion of said sleeve; and

said gripping means is detachably fastened to said second lower end of said plunger and is contained in and adapted to axially slide within the interior of said lower portion of said sleeve.

5,642,914
SUPPORT STRUCTURE FOR SUPPORTING FOAMABLE MATERIAL ON HOLLOW STRUCTURAL MEMBER
Yoshihiro Takabatake, Toyota, Japan, assignor to Neo-Ex Lab. Inc., Aichi-ken, Japan
Filed Mar. 22, 1996, Ser. No. 621,679
Claims priority, application Japan, Mar. 24, 1995, 7-066309; Apr. 20, 1995, 7-095390
Int. Cl.[6] B62D *29/04*
U.S. Cl. 296—187 **7 Claims**



1. A support structure for supporting a foamable material in a cavity of a hollow structural member so that the foamable material blocks the cavity of the hollow structural member when it is foamed by external heating, comprising:

a support member including a main body having an external dimension smaller than the dimension of a transverse cross section of the cavity, a foamable material receiving wall provided on said main body, and a restriction flange extending from at least one of said main body and said foamable material receiving wall, said support member being disposed in the cavity in such a manner that said restriction flange is substantially perpendicular to the longitudinal direction of the cavity;

the foamable material having a substantially annular configuration and being profiled substantially to conform to the configuration of the transverse cross section of the cavity, the foamable material being arranged along said foamable material receiving wall of said support member.

5,642,915
ROOF HATCH FOR LARGE-CAPACITY VEHICLES SUCH AS MOTOR BUSES
Werner Ackermann, and Hans-Herward Römer, both of Wuppertal, Germany, assignors to Gebr. Happich GmbH, Wuppertal, Germany
Filed Sep. 27, 1995, Ser. No. 534,509
Claims priority, application Germany, Oct. 25, 1994, 44 37 983.8; Dec. 10, 1994, 44 44 038.3
Int. Cl.[6] B60J *7/00*
U.S. Cl. 296—214 **5 Claims**

1. A roof hatch for positioning in the roof of a vehicle, the hatch comprising:

an inner hatch frame;

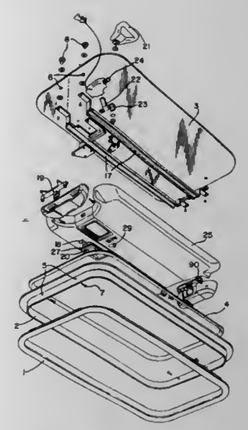
an outer hatch frame opposite the inner frame, the inner and outer hatch frames defining the periphery of an open area;

a hatch cover made of breakable glass over the open area defined by the inner and outer frames;

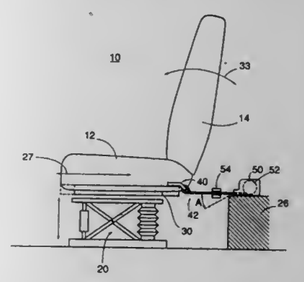
a sealing frame between the outer hatch frame and the hatch cover;

means for mounting the hatch cover on the outer hatch frame; and

an inner cover arranged below the hatch cover, the inner cover having a window-like opening defined in the inner cover making the hatch cover accessible through the inner cover, thereby to have access to the hatch cover for breaking the hatch cover into pieces in an emergency, the inner cover substantially covering the surface of the hatch cover and being positioned and dish shaped so as to catch and hold broken pieces of the hatch cover.



5,642,916
LOCKING AND TENSIONING FOR A SLIDABLE SEAT
Niels Dybro, Utica, and Mark C. Woodick, Romeo, both of Mich., assignors to AlliedSignal Inc., Morristown, N.J.
Filed Aug. 22, 1995, Ser. No. 517,883
Int. Cl.[6] B60N *2/42;* **B60R** *21/00*
U.S. Cl. 297—216.18 **3 Claims**



1. A safety system comprising: an occupant seat (**10**) having a seat cushion (**12**) and a back rest (**14**) and support means (**28,30**) adapted to be mounted to a floor of a vehicle for locating the seat at an elevated position above the floor and for supporting the seat portion such that the seat is permitted to move fore and aft and in up and down directions in response to forces imparted thereto; and

first restraint means (**50,54**), for restraining the seat during an emergency from moving forward from its pre-emergency position, the first restraining means being mounted behind and remote from the seat and the support means at a height generally equal to the height of a bottom portion of the seat cushion above the floor, and comprising a spring biased reel, and a flexible member (**42**) wound thereon, an end of the flexible member extends from the reel and is connected to the seat, the spring biased reel maintaining the flexible member in a generally taut condition as the seat moves and locking means is activated during an emergency for preventing protraction of the flexible member from the reel.

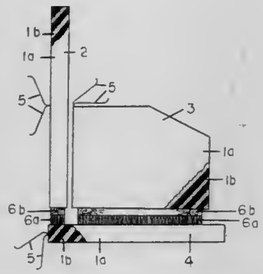
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5,642,917

HIGHCHAIR/FEEDING CHAIR BOOSTER CUSHION

Debra Ann Geiger, Crestview Apts. Bldg. 3, Apt. 1B, 971 Hwy. 9 N., Parlin, N.J. 08859

Continuation of Ser. No. 409,000, Mar. 23, 1995, abandoned. This application Jul. 8, 1996, Ser. No. 676,898
Int. Cl.[6] A47D *15/00*
U.S. Cl. 297—219.12 1 Claim



1. A highchair booster cushion for sizing a highchair to a child comprising:

a. a back panel, two interchangeable side panels and a seat panel, said panels being formed of a pliable material covered by a vinyl resin incorporated material

b. elongated strip fastening means, said elongated strip fastening means is located on a top surface of the seat panel at outermost edges of a rear position and two side portions, complimentary elongated fastening means located at the bottom of the back panel, and at the bottom of both side panels, whereby the elongated strip fastening means provides for a flush disengagable mounting between the seat panel to the back panel and both side panels

c. means for securing said highchair booster cushion to the highchair as to allow for the structure to be anchored on the highchair; said seat panel, back panel and both side panels individually have their own means for securing to the highchair whereby the seat panel, back panel and both of the side panels may be individually used or removed.

5,642,918

MOVEABLE HEADREST

Manabu Sakamoto, Yokohama, and Koichi Iwasaki, Ayase, both of Japan, assignors to Ikeda Bussan Co., Ltd., Ayase, Japan

Filed Feb. 21, 1996, Ser. No. 604,649
Claims priority, application Japan, Feb. 21, 1995, 7-56746
Int. Cl.[6] A47C *7/36;1/10*
U.S. Cl. 297—408 4 Claims

1. A moveable headrest comprising:

a moveable upper headrest frame;

a lower headrest frame shaft fixedly connected to a headrest stay, said lower headrest frame shaft having a pair of shaft ends and an intermediate shaft portion spanning between said shaft ends;

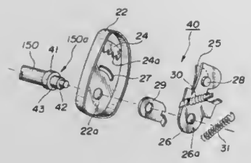
a pair of base members rotatably supported on said shaft ends and fixedly connected to said moveable upper headrest frame;

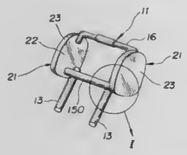
a ratchet-and-pawl mechanism attached to at least one of said base members for selectively engaging said upper headrest frame with said lower headrest frame shaft and for allowing forward-and-backward angular adjustment of said moveable headrest; and

a cover for hermetically covering said ratchet-and-pawl mechanism;

said ratchet-and-pawl mechanism including:

a toothed ratchet attached to the associated base member; and





a pawl bracket having a pawl engageable with said toothed ratchet and fixedly connected to said associated shaft end,

wherein the base member associated with said ratchet-and-pawl mechanism has a circular through-opening,

wherein said associated shaft end has an essentially annular stepped portion abutting a perimeter of said circular through-opening, a small-diameter portion, and a medium-diameter portion between said stepped portion and said small-diameter portion, and

whereio said pawl bracket has a circular bore and is fixedly connected to said small-diameter portion by all-around welding, said medium-diameter portion having a diameter substantially identical to a diameter of said intermediate shaft portion adjacent said annular stepped portion, the associated base member being sandwiched between said annular stepped portion and said pawl bracket, with said stepped portion in sliding contact with the perimeter of said through-opening and an outer peripheral surface of said medium-diameter portion in sliding contact with the periphery of said through-opening.

5,642,919

MODULAR UNIT AND METHOD FOR PRODUCING SEATS

Nilo Gioacchini, Pelago, Italy, assignor to Castelli S.p.A., Dell'Emilia, Italy

Continuation of Ser. No. 160,822, Dec. 3, 1993, abandoned. This application May 17, 1996, Ser. No. 650,031
Claims priority, application Italy, Dec. 4, 1992, BO92A0427
Int. Cl.[6] A47C *1/12*
U.S. Cl. 297—451.8 10 Claims

1. A modular unit for use as part of a seat assembly including seat portions, the modular unit comprising:

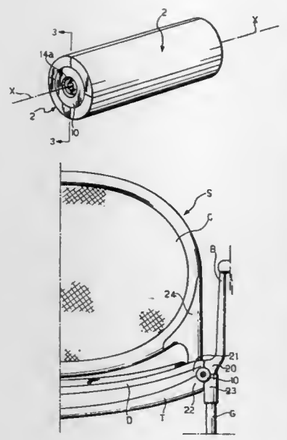
a plurality of spatially complementary elongated elements having opposite end portions, said complementary elements when grouped together forming a member having a longitudinal axis; and

connection means for rigidly connecting adjacent end portions of said complementary elements together to form said member;

wherein at least some of said complementary elements are capable of being associated with seat portions of the seat assembly;

wherein each said complementary element includes means defining a longitudinal groove extending from one end portion to an opposite end portion such that when said complementary elements are grouped together to form said member, said longitudinal grooves communicate and define a longitudinal through hole extending along said axis;

wherein said end portions of each complementary element has two end faces at opposite ends thereof and each said end face has an inclined portion, each said inclined portion being inclined generally in the direction of said axis;



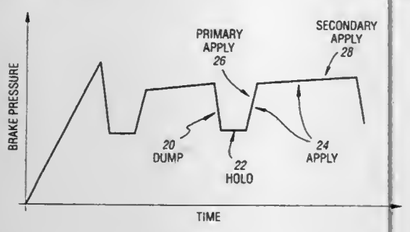
and wherein said connection means comprises a pair of locking elements, said locking elements having at least one surface which is inclined relative to said axis and which is capable of co-operating with said inclined portions of said complementary elements when said complementary elements are grouped together into said member in order to connect said complementary elements to form said member.

5,642,920

METHOD AND SYSTEM FOR ANTILOCK BRAKING ON A DEFORMABLE SURFACE

Mark Luckevich, Ann Arbor; Bernard W. Johnson, Brighton, both of Mich., and Dan Negrin, Wiesbaden, Germany, assignors to Kelsey-Hayes Co., Livonia, Mich.

Division of Ser. No. 382,841, Feb. 3, 1995, Pat. No. 5,547,267. This application Jul. 12, 1996, Ser. No. 679,533
Int. Cl.[6] B60T *8/68*
U.S. Cl. 303—156 12 Claims



1. For use with a vehicle having an antilock brake system (ABS) including a pressure-responsive brake, a method for controlling the brake during an ABS event, the method comprising:

performing an ABS brake pressure cycle including a pressure apply stage and a pressure dump stage, the ABS brake pressure cycle having an activation condition based upon a slip threshold parameter;

measuring a time duration of the pressure dump stage of the ABS cycle; and

varying the slip threshold parameter in dependence upon the measured time duration of the pressure dump stage wherein varying the slip threshold parameter includes

computing a threshold modification quantity in dependence upon the measured time duration of the pressure dump stage, including calculating an average dump time quantity based upon the measured dump time of a plurality of ABS cycles, and computing a gain quantity as a function of the average dump time quantity, and

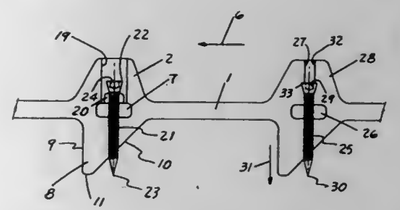
modifying a predetermined base threshold quantity by the threshold modification quantity to form the slip threshold parameter.

5,642,921

ADJUSTABLE HEIGHT STUD FOR USE IN A SNOWMOBILE TRACK

Edward H. Webb, 17003 County Rd. 181, Paynesville, Stearns County, Minn. 56362; Allan H. Remmel, Box 183—408 Sunrise La., Grove City, Stearns County, Minn. 56243, and Darwin L. Miller, 6513 82nd Ave. Northeast, Spicer, Stearns County, Minn. 56288

Filed Oct. 19, 1995, Ser. No. 545,350
Int. Cl.[6] B62D *55/26*
U.S. Cl. 305—179 3 Claims



1. A method of installing an adjustable height ice stud in a flexible snowmobile track, the flexible track being formed to include at least one internal laterally extending track stiffening member, the flexible track being formed to include a raised region adjacent to the laterally extending track stiffening member, comprising the steps of:

a. drilling a first hole within the raised region of the track overlying the track stiffening member, the hole having a first diameter;

b. rotatably inserting the ice stud within the hole; and

c. continuing rotation of the ice stud so as to pierce and tap the stiffening member and rigidly affix the ice stud to the stiffening member.

5,642,922

AUTOMATED TELLER MACHINE MONITOR MOUNT

Natarajan Ramachandran, Uniontown; Gerald T. Sedlock, North Canton; Kim Raymond Lewis, Stow; Charles D. Price, III, Salem, and Richard Calvin Lute, Jr., Mogadore, all of Ohio, assignors to InterBold, North Canton, Ohio

Division of Ser. No. 213,404, Mar. 15, 1994. This application Sep. 19, 1995, Ser. No. 529,960
Int. Cl.[6] A47B *51/00*
U.S. Cl. 312—7.2 41 Claims

1. An adjustable monitor mount for a monitor including a screen in a machine for conducting transactions on an automated basis, comprising:

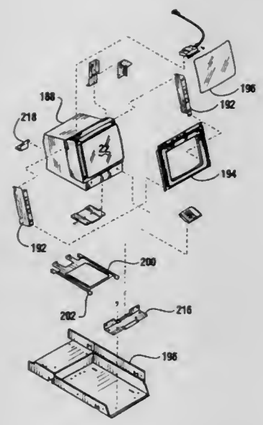
fascia, wherein said fascia includes a screen opening;

a base surface;

a slide bracket movably mounted on said base surface;

a guide in operative connection with said base surface and said slide bracket, wherein said guide enables movement of said slide bracket along a first direction generally in alignment with the screen opening;

a pivot bracket supported on said slide bracket, wherein said pivot bracket is mounted for rotational movement about an axis, said axis extending generally perpendicular of said first



direction, wherein said monitor is supported on said pivot bracket, whereby said monitor is movably positionable;

a front plate positioned between the monitor and the fascia, and wherein the front plate is movably mounted relative to the monitor, and wherein the front plate includes an access opening, wherein said screen is enabled to be viewed through the screen opening and the access opening, and wherein the front plate is engageable with the fascia in gapless relation.

5,642,923

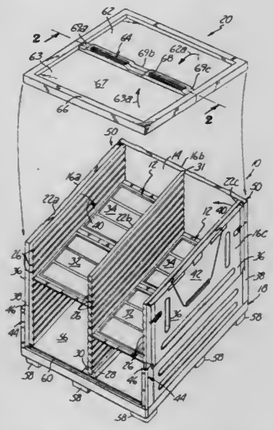
REMOVABLE SHELF SYSTEM FOR A TRANSPORT CONTAINER

Patrick E. Meacham, Lakeville; Mark W. Wallace, Minneapolis; Carl R. Nyberg, Bloomington, all of Minn.; William W. Thompson, Midlothian, Va., and James P. Bland, Chesterfield, Mo., assignors to Temp Top Container Systems, Inc., Edina, Minn.

Filed Oct. 20, 1995, Ser. No. 546,105

Int. Cl.[6] A47B *43/00*

U.S. Cl. 312—258 **20 Claims**



1. A removable shelf system for a transport container comprising:

a plurality of shelves;

opposed shelf supports;

means for supporting the shelf supports in an upright position within an inner cavity of the container; and

means for removably supporting the shelves relative to the shelf supports,

wherein the shelves are formed of first and second interlocking shelf portions having opposed ends which opposed ends include offset raised ledge portions and lowered ledge portions, the raised ledge portions including a protrusion and the lowered ledge portions including a socket, the lowered ledge portion of an end of the first interlocking shelf portion being aligned with the raised ledge portion of an adjacent end of the second interlocking portion for insertion of the protrusion into the socket and the raised ledge portion of the first interlocking shelf portion being aligned with the lowered ledge portion of the second interlocking shelf portion for insertion of the protrusion into the socket to connect adjacent ends of the first and second interlocking shelf portions.

5,642,924

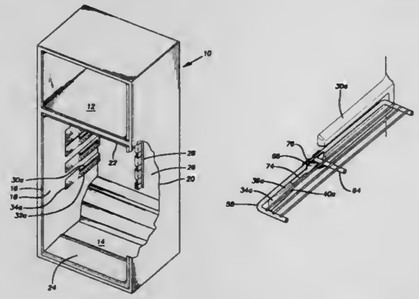
SHELF SYSTEM FOR A REFRIGERATOR CABINET

Chad A. Wohlrab, Greenville; John A. Powers, Sand Lake, and Michael C. Fessenden, Belmont, all of Mich., assignors to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Feb. 29, 1996, Ser. No. 608,685

Int. Cl.[6] A47B *96/04*

U.S. Cl. 312—408 **23 Claims**



1. A refrigerator cabinet comprising a liner having substantially parallel sidewalls and a rear wall, the liner substantially defining a cooling compartment, each sidewall having a plurality of shelf supports mounted thereon, each shelf support on one sidewall having a corresponding shelf support in the same horizontal plane on the other sidewall, a bracket mounted on the rear wall, the bracket being adapted to support one side of a cantilever half shelf at a plurality of different heights such that at each such height, the other side of such cantilever half shelf may be supported by one of said shelf supports, each shelf support including a supporting rail having a front portion and a rear portion with said front portion and said rear portion being separated by a gap, each supporting rail (1) being capable of supporting one side of a sliding shelf having a depending stop in said gap and (2) being capable of permitting the sliding shelf to slide forward a travel distance of at least two inches until forward motion is stopped by the depending stop engaging the front portion of the supporting rail, each supporting rail also being capable of supporting one side of a cantilever half shelf having an element cooperating with the front portion of the supporting rail to prevent swinging of the cantilever half shelf.

5,642,925

FILM CARRIER AND PROJECTION APPARATUS

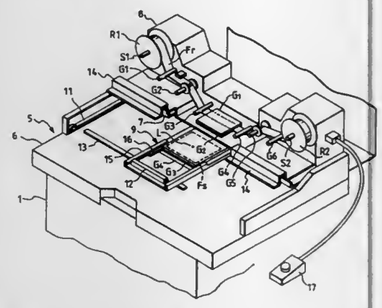
Yasuhiro Yamamoto, Yokohama, and Toshio Iwaya, Shiki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 14, 1995, Ser. No. 502,064

Claims priority, application Japan, Jul. 22, 1994, 6-192217; Aug. 1, 1994, 6-198993; Oct. 17, 1994, 6-277071; Oct. 17, 1994, 6-277073

Int. Cl.[6] G03B *21/11*

U.S. Cl. 353—25 **32 Claims**



26. A film carrier comprising:

a base stage having a light path for projecting an image of a film;

a roll carrier disposed on said base stage for moving a roll film between positions within said light path and outside said light path, said roll carrier comprising a supply portion for supplying the roll film and a winding portion for winding the roll film transferred from said supply portion, said roll carrier being movable in a direction perpendicular to the transfer direction so as to move said roll film between said positions within said light path and outside said light path; and

a sheet carrier disposed on said base stage for moving a sheet film between within said light path and outside said light path, said sheet carrier comprising a pair of transparent plates for holding the sheet film in a flat state, said sheet carrier being movable in the transfer direction of the roll film.

5,642,926

PROJECTOR OF REFLECTION TYPE

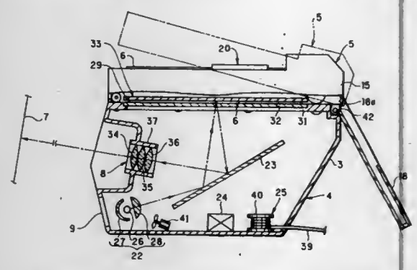
Masaaki Nomura, and Soichiro Kimura, both of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 18, 1996, Ser. No. 715,630

Claims priority, application Japan, Sep. 27, 1995, 7-248971

Int. Cl.[6] G03B *21/14*

U.S. Cl. 353—103 **17 Claims**



1. A projector of a reflection type, including a transparent stage plate on which a transparent original sheet is set, a light source for illuminating said original sheet through said stage plate, a Fresnel mirror laid on an upside of said original sheet for reflecting light from said original sheet in a convergent manner, a mirror disposed under said stage plate and inclined for reflecting said light from said Fresnel mirror away from said stage plate, and a projecting lens upon which said light from said mirror is incident and which projects an image of said original sheet to a screen, said projector comprising:

a housing for containing said Fresnel mirror in movable fashion;

an inserting slot, formed in said housing, for inserting said original sheet into said housing during supply of said original sheet;

a sheet detector for detecting a front edge of said original sheet inserted through said inserting slot;

a position detector for detecting that said original sheet is set on said stage plate;

an ejector switch operated for ejection of said original sheet;

a mirror shifter, disposed in said housing, for shifting said Fresnel mirror from a set position to a raised position in response to a signal from said sheet detector or said ejector switch, and for shifting said Fresnel mirror from said raised position to said set position in response to a signal from said position detector, wherein said Fresnel mirror in said set position is laid on said original sheet, and said Fresnel mirror in said raised position is raised away from said stage plate; and

a sheet feeder mechanism, disposed in said housing, for moving said original sheet from said inserting slot to said stage plate during said supply, and for moving said original sheet out of said housing during said ejection of said original sheet.

5,642,927

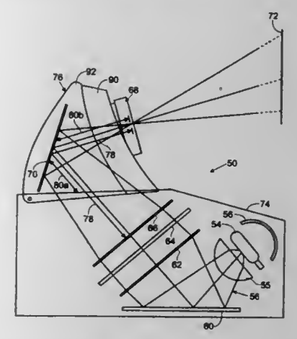
LCD PROJECTOR WITH RETRACTABLE PROJECTION-LENS ASSEMBLY

David K. Booth, Tigard, and Arlie R. Conner, Tualatin, both of Oreg., assignors to Lightware, Inc., Beaverton, Oreg.

Filed Nov. 22, 1995, Ser. No. 567,174

Int. Cl.[6] G03B *21/14*

U.S. Cl. 353—119 **33 Claims**



12. A liquid crystal display (LCD) projector comprising;

an LCD panel;

a main projector housing encasing the light source and LCD panel;

a projection lens assembly through which light received from the light source through the LCD panel is directed toward a display screen to form a display image, the light passing through the projection lens assembly in a projection direction; and

a retractable carrier for carrying the projection lens assembly between operating and stowed positions in respective first and second directions transverse to the projection direction the projection lens assembly in the operating position being func-

tional to receive light from the LCD and direct the light toward the display screen, wherein the retractable carrier positions the projection lens assembly in its operating position outside the main projector housing;

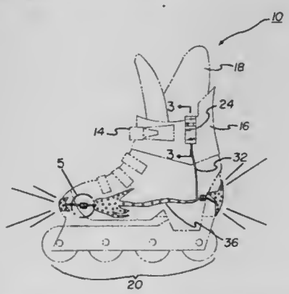
the retractable carrier first and second carrier components that are pivotally coupled together by a first hinge, the first carrier component supporting the projection lens assembly and the second carrier component being pivotally coupled relative to the main body housing by a second hinge.

5,642,928

DECORATIVE LIGHT STRIPS FOR IN-LINE SKATES

Anthony E. Hylton, 145 Steeles Ave. East, North York, Ontario, Canada

Filed Feb. 7, 1996, Ser. No. 598,120
Int. Cl.[6] B60Q *1/00*
U.S. Cl. 362—61 **12 Claims**



12. Decorative light strips for use with skates comprising:

a power means:

a flexible lower layer having an adhesive bottom surface for adhering to a skate;

lighting means securely situated on a top surface of the lower layer and connected to the power means, the lighting means adapted to actuate upon the receipt of power; and

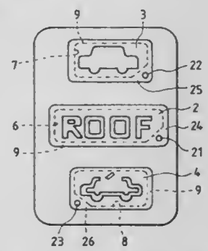
a flexible transparent upper layer with a similar size and shape as the lower layer, the upper layer having an adhesive bottom surface for adhering to the lighting means thereby securing each component with respect to each other.

5,642,929

LIGHTED KNOB

Hiroshi Ushimaru, Miyagi-ken, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed May 30, 1996, Ser. No. 655,524
Claims priority, application Japan, Jun. 21, 1995, 7-154744
Int. Cl.[6] F21V *33/00*
U.S. Cl. 362—85 **3 Claims**



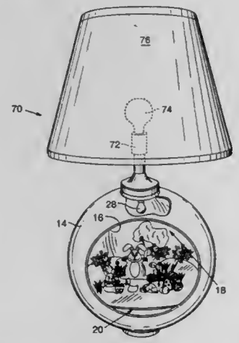
1. A lighted knob, comprising: a knob case having at least one translucent section; an indicating member which indicates a code by light transmission at least at a part attached in said translucent section; a light source for illuminating said indicating member from said translucent section; an incorrect assembly preventive light section formed in said indicating member; and a shield section which is formed on said knob case, and shields said incorrect assembly preventive light section when said indicating member is properly attached to said light translucent section of said case.

5,642,930

THREE-DIMENSIONAL SCENERY THEME LAMP

Jackie C. Brown, Sr., 1544 SE. 174th Ave., Portland, Oreg. 97233

Filed Sep. 20, 1995, Ser. No. 530,941
Int. Cl.[6] F21P *1/02*
U.S. Cl. 362—124 **14 Claims**



1. A three-dimensional interactive lamp comprising:

a one-piece, integrally formed, housing including a display chamber defined within the one-piece housing, the chamber being bounded on one side by an opening permitting user viewing of an interior region of the chamber from outside the housing, the opening also permitting user access to the interior region;

a platform rotatably and removably mounted interiorly of the chamber in the interior region, the platform being capable of supporting a plurality of objects thereon for rotating the objects and for providing three-dimensional scenery within the interior region of the chamber, the platform further being removable from the one-piece housing through the opening therein; and

a light source mounted to an interior wall of the chamber for selectively illuminating the platform.

5,642,931

TAXI WAND

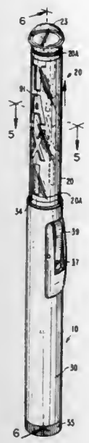
Evan E. Gappelberg, New York, N.Y., assignor to TaxiWand Inc., New York, N.Y.

Filed Jan. 18, 1996, Ser. No. 588,126
Int. Cl.[6] F21L *7/00*
U.S. Cl. 362—186 **19 Claims**

1. A battery-powered beacon for hailing taxis comprising:

(i) a tubular handle portion essentially comprising an open ended electrically conductive inner tube inside an open ended outer tube, the inner and outer tube generally spaced apart from one another but attached to one another by means of a short tubular fit-in piece at a lower end of a space between the inner and outer tubes,

said tubular handle portion having a detachable bottom to allow insertion into the inner tube of batteries that rest on a spring in an electrically conductive detachable bottom,



a top of said inner tube receiving a bulb that is in contact with a descending metallic clip, said bulb contacting a terminal of the batteries, lighting up and transmitting light into a light element when an electric circuit is completed,

(ii) a tubular light element of transparent plastic having a layer of reflective material adhesively attached to the inside thereof, having a translucent substantially semispherical plastic cover at its top, a lower lip of said light element, when fully extended, contacting the inner tube and the descending metallic clip to complete an electric circuit, said tubular light element, in a closed position, sitting on a coil spring and engaged to and telescoped within the handle portion between the inner tube and the outer tube and, in an open position, springing up to complete an electric circuit when button means on the handle portion are pressed thus causing light to radiate through the translucent plastic cover and

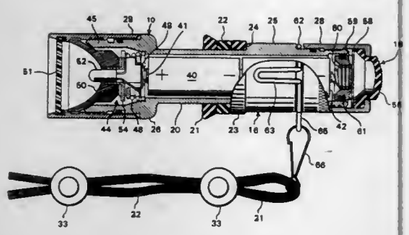
(iii) button means on the handle portion whose protruding member catches an annular groove in the light element in a closed position and, when the button is pushed, releases the protruding member from the light element.

5,642,932

COMBAT-ORIENTED FLASHLIGHT

John Wallace Matthews, Corona del Mar, Calif., assignor to Laser Products Corporation, Fountain Valley, Calif.

Filed Dec. 22, 1994, Ser. No. 361,755
Int. Cl.[6] F21L *7/00*
U.S. Cl. 362—206 **51 Claims**



1. In a method of providing a flashlight including an elongate battery barrel having a front end and a tail end opposite said front end, with a mode of operation enabling switching of said flashlight at a thumb area of a human hand while retaining said flashlight with fingers of said human hand during switching of said flashlight at said thumb area, the improvement comprising in combination:

locating at said front end of said elongate battery barrel a lamp assembly including a lamp and lamp reflector pointing longitudinally away from said elongate battery barrel;

providing said battery barrel at said tail end with a tail-end switch for said flashlight;

providing said battery barrel with a reduced diameter portion spaced from said tail-end switch; and

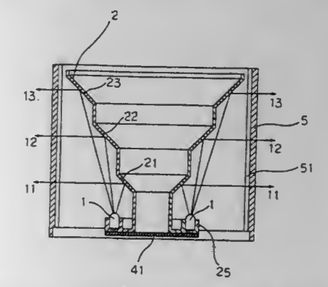
providing said battery barrel with a retention element projecting from said reduced diameter portion beyond a maximum lateral dimension of said barrel for retention of the flashlight between two adjacent ones of said fingers of the human hand during switching of said flashlight at said thumb area.

5,642,933

LIGHT SOURCE STRUCTURE FOR SIGNAL INDICATION LAMP

Shozo Hitora, Kitakatsuragi-gun, Japan, assignor to Patlite Corporation, Osaka, Japan

Filed Sep. 14, 1995, Ser. No. 527,892
Claims priority, application Japan, Dec. 29, 1993, 5-353877
Int. Cl.[6] F21V *13/08*
U.S. Cl. 362—243 **3 Claims**



1. A light source structure for a signal indication lamp comprising light emitting diodes and a plurality of reflector members for reflecting a light from said light emitting diodes to a predetermined angle of projection said reflector members being spacedly provided at a predetermined distance from one another and disposed within an effective emission angle of said light emitting diodes, and wherein a plurality of said light emitting diodes are circularly disposed, and a plurality of said reflector members are formed in a stepwise fashion so that signal light is projected through a diffusion filter that covers a circumference of said reflector members.

5,642,934

ADJUSTABLE OUTDOOR LIGHT

Eric Haddad, East Berlin, Pa., assignor to Hadco Division of The Genlyte Group Incorporated, Littlestown, Pa.

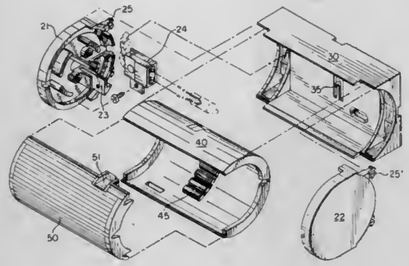
Filed Sep. 13, 1995, Ser. No. 527,406
Int. Cl.[6] F21V *21/29*
U.S. Cl. 362—287 **4 Claims**

1. A low profile, adjustable outdoor light fixture, comprising:

a mounting bracket for mounting said light fixture to a desired surface;

a lamp housing comprising a front edge, a first side edge, a second side edge, and a means for adjustably locking said housing to said mounting bracket;

said lamp housing further comprising an exterior convex surface and an interior concave surface, and said means for adjustably locking said housing to said mounting bracket comprises a series of spaced depressions formed in said exterior convex surface, wherein said spaced depressions protrude into said



concave surface and sequentially engage said locking knob of said mounting bracket to provide said adjustable angles or directions of illumination;

a lens cover attached to said front edge;

a first end cap attached to said first side edge and a second end cap attached to said second side edge; and

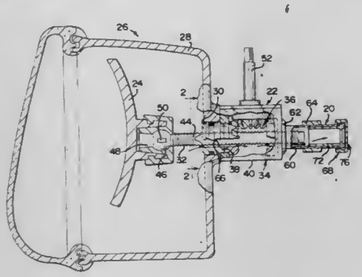
said mounting bracket being adapted for connection to said first and second end caps, said mounting bracket comprising a locking knob, wherein said means for adjustably locking said housing to said mounting bracket incrementally engages said locking knob to provide adjustable angles or directions of illumination for said outdoor light fixture.

5,642,935

HEADLAMP ADJUSTOR WITH VENT TUBE

Karl R. Schmitt, Rockford, Ill., assignor to Textron Inc., Providence, R.I.

Filed Jul. 31, 1995, Ser. No. 509,130
Int. Cl.[6] F21V *29/00*
U.S. Cl. 362—294 **27 Claims**



1. A venting structure for use with a headlamp adjustor mechanism which is used to effect pivotal motion of a movable headlamp component in a headlamp arrangement, said headlamp adjustor mechanism being adapted to be mounted to a sealed stationary component of the headlamp arrangement, said headlamp adjustor mechanism including an adjusting screw member having an end adapted for operable engagement with the movable component, a housing member connected to the stationary component, said housing member having an axial bore in which said adjusting screw member is operatively engaged, said venting structure comprising:

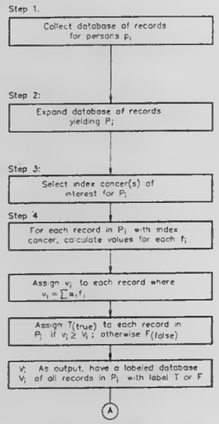
a vent passageway through the headlamp adjustor mechanism; a vent which is connected to said headlamp adjustor mechanism and is in communication with said vent passageway, said vent allowing air to pass outwardly from the inside of the sealed stationary component to the exterior of said sealed component while allowing air to pass from the exterior of said sealed component to the inside of the sealed stationary component.

5,642,936

METHODS FOR IDENTIFYING HUMAN HEREDITARY DISEASE PATTERNS

Steven Evans, Omaha, Nebr., assignor to OncorMed, Gaithersburg, Md.

Filed Jan. 29, 1996, Ser. No. 593,446
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—630 **5 Claims**



1. A method for determining the existence of a hereditary disease risk in a patient, comprising the steps of:

assembling a computer a database made up of a plurality of records each pertaining to an individual and containing a history of at least one specific disease in a family of that individual, said history including a plurality of parameters relating to each family member identified in said history;

defining a plurality of functions each pertaining to said parameters and assigning predetermined weights to said functions based on values of said parameters;

for each record in said database, summing the weights obtained for each of said functions to obtain a total value for each of said functions, identifying said record as presenting a hereditary pattern if the total value is above a predetermined threshold, and grouping said identified record into a subset of records;

for each record in said database, applying expert knowledge generated rules to independently identify records as presenting hereditary patterns;

comparing said independently identified records with said subset of records, and validating defined functions if a predetermined minimum percentage of records in said subset are consistent with said independently identified records; and

using and displaying said validated functions as a recognizer of hereditary disease patterns in a family history of said patient.

5,642,937

PRESSURE-DIFFERENTIAL LIQUID STIRRER

Ching Fu Kuan, No. 12, Alley 18, Lane 136, Er Jiu Road., Ta Pu Lee, San Hsia, Taipei Hsien, Taiwan

Filed Apr. 23, 1996, Ser. No. 636,521
Int. Cl.[6] B01F *13/02*
U.S. Cl. 366—106 **6 Claims**

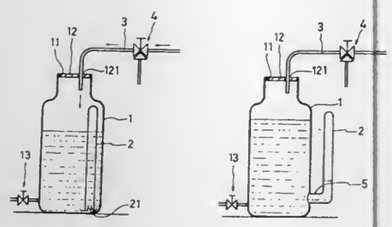
1. A pressure-differential liquid stirrer comprising:

a liquid tank which holds the liquid to be stirred, said liquid tank having a top opening, a bottom wall, and a sealing cover covering said top opening, said sealing cover having a hole;

a single-outlet tube with a single outlet opening vertically disposed inside said liquid tank, the tube having a bottom end forming the single outlet opening facing the bottom wall of said liquid tank and spaced from the bottom wall by a gap for permitting the liquid to flow between said liquid tank and single-outlet tube the tube having a sealed opposite end located below the sealing cover;

an air pipe having one end inserted through the hole of said sealing cover into the inside of said liquid tank and ending above the liquid in the liquid tank, and an opposite end; and

an air control device coupled to said opposite end of said air pipe and controlled to force compressed air into said liquid tank and to release air out of said liquid tank so as to force the liquid to be stirred.

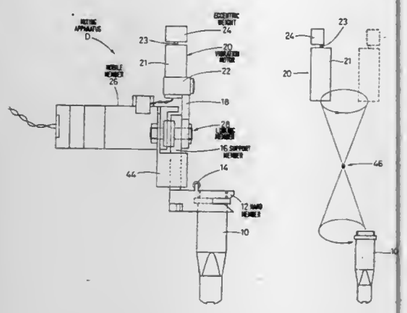


5,642,938

MIXING APPARATUS FOR MIXING LIQUID CONTAINED IN VESSEL

Masayuki Nakagawa, Kako-gun, and Hisaaki Inoue, Himeji, both of Japan, assignors to TOA Medical Electronics Co., Ltd., Hyogo, Japan

Filed May 7, 1996, Ser. No. 646,034
Claims priority, application Japan, May 9, 1995, 7-110965
Int. Cl.[6] B01F *11/00*
U.S. Cl. 366—110 **10 Claims**



1. A mixing apparatus for mixing liquid contained in a vessel, comprising:

a support member;

a hand member fixed to the support member, the hand member holding the vessel;

a mobile member which supports the support member;

a vibrating unit mounted on the support member, the vibrating unit vibrating the support member; and

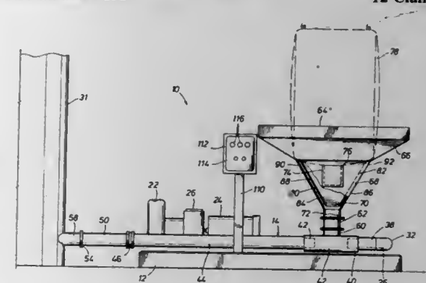
a linking member movably disposed between the support member and the mobile member, the linking member linking the support member to the mobile member such that the support member makes conical revolution movement with respect to the mobile member when the vibrating unit is driven, thereby enabling conical revolution movement of the vessel held by the hand member.

5,642,939

LIQUID MIXING, CONVEYING AND CIRCULATING SYSTEM FOR PULVERULENT MATERIAL

Mathis P. Comardo, 5301 Nolda, Houston, Tex. 77007

Filed Apr. 24, 1996, Ser. No. 639,313
Int. Cl.[6] B01F *15/02*
U.S. Cl. 366—132 **12 Claims**



1. A liquid mixing, conveying and circulating system for pulverulent material for mixing with a liquid in preparation for use, comprising:

(a) a liquid mixture supply vessel from which a liquid/pulverulent material mixture is periodically withdrawn for use, said liquid supply vessel having a mixture circulation inlet and a mixture circulation outlet;

(b) a hopper having hopper wall means and a charging opening for receiving pulverulent material said hopper having a pulverulent material discharge opening;

(c) air bypass means for conducting air through said hopper to said discharge opening and being arranged to prevent blockage of air flow by pulverulent material and thus ensure flow of the pulverulent material from said hopper through said pulverulent material discharge opening and to direct air flow into said charging opening and to said discharge opening for transporting any air entrained particulate near said charging opening into said hopper;

(d) a liquid circulating conduit having inlet and discharge ends for circulating connection with the circulation inlet and outlet of said liquid mixture supply vessel; and

(e) a circulation pump being located in said liquid circulating conduit and upon being energized, continuously circulating liquid/pulverulent material mixture from said liquid mixture supply vessel, through said liquid circulating conduit and back to said liquid mixture supply vessel; and

(f) mixing means being located in said liquid circulating conduit and having a pulverulent material inlet being connected in receiving relation with said pulverulent material discharge opening of said hopper, said pulverulent material being mixed with liquid being circulated within said liquid circulating conduit by said circulation pump responsive to flow of said liquid therethrough.

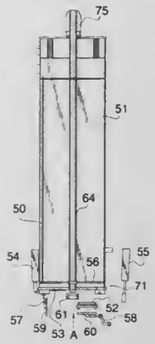
5,642,940

APPARATUS FOR THE PREPARATION OF MIXTURES, ESPECIALLY DYE SOLUTIONS

Mario Scatizzi, Pistoia; Mauro Anguillese, Carmignano, and Moreno Bartalucci, Montemurlo, all of Italy, assignors to Tecnorama S.r.L, Prato, Italy

Filed Feb. 15, 1996, Ser. No. 602,250
Claims priority, application Italy, Mar. 21, 1995, PT95A0002
Int. Cl.[6] B01F *15/02*
U.S. Cl. 366—150.1 **11 Claims**

1. Apparatus for the preparation of mixtures, especially dye solutions starting from a product in powder, granules or microperals form to be dissolved in a liquid solvent, comprising means for withdrawing a predetermined batch of product at a withdrawal station (SP) and for transferring the product thus metered from said



withdrawal station (SP) to a separate dissolution station (SD), means (MD) for the dissolution of the product in said solvent which are disposed in said dissolution station (SD) and programmable electronic means (MP) for operating said means for the withdrawal, transfer and dissolution of the product, wherein said means (MD) for dissolving the product comprise, in combination:

a fixed horizontal plate, with an annular seal housed in a corresponding channel of the lower surface of the plate making up a tight-sealing element for the mouth of a corresponding cylindrical vessel containing the product to be dissolved: said vessel being associated to a vertical operating cylinder for driving same vessel from a lower to an upper position to cause the mouth thereof to match the seal of said plate and vice versa;

a doctor blade supported by a vertical shaft which is in fixed spatial position and goes through a central hole of said plate to be supported by the latter, so as to make the doctor blade lie in a position below the plate, the same shaft being associated to a corresponding driving member for moving the doctor blade: said vessel being kept in fixed spatial position during the rotation of the doctor blade;

a lump-breaking body carried by a rod passing through a corresponding hole of said plate, so as to make the lump-breaking body lie in a position below the plate: said rod being associated to a corresponding driving member;

one or more conduits with valves for the supply of hot or cold water or other solvent into the vessel as the latter is in lifted position;

at least a conduit dipping into the vessel as the latter is in lifted condition, with a valve and an in-line pump for the withdrawal of the solution from the vessel.

5,642,941

HIGH SPEED LINEAR GUIDANCE DEVICE

Roger Mouezy, La Roche sur Yon, France, assignor to Sepro Robotique, La Roche sur Yon, France

Filed Jul. 20, 1995, Ser. No. 504,655

Claims priority, application France, Jul. 22, 1994, 94 09085

Int. Cl.[6] F16C *29/04;29/12*

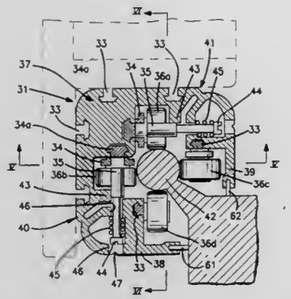
U.S. Cl. 384—57 **8 Claims**

1. A linear guidance device comprising:

a rail defining a path of movement of a movable assembly and rollers secured to said movable assembly;

the rollers being mounted in an elastically deformable block (**20**, **30**, **31**) so as to apply the rollers (**36***a*–**36***d*) to the rail (**17**, **27**, **42**) while exerting a predetermined and substantially constant contact pressure on the guidance rail (**17**, **27**, **42**);

the elastically deformable block (**31**) comprising at least two rigid portions (**37**, **38** or **39**) interconnected by means forming an elastic hinge (**40** or **41**),



the means forming an elastic hinge comprising at least one wall (**40** or **41**) of small thickness constituting a region of deformation and permitting relative pivoting between said two rigid portions (**37–38**, **37–39**); and

means for adjustment (**44**, **45**) of the contact pressure of the rollers on the guidance rail;

said adjustment means comprising an elastic means (**44**, **45**) applying the force of a spring (**45**) to said elastically deformable block (**31**).

5,642,942

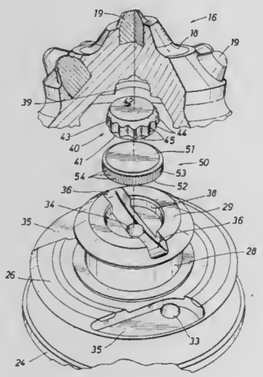
THRUST PLUGS FOR ROTARY CONE AIR BITS

Robert Wagoner, Ponca City, Okla., assignor to Smith International, Inc., Houston, Tex.

Filed Mar. 26, 1996, Ser. No. 622,646

Int. Cl.[6] F16C *33/00*

U.S. Cl. 384—95 **18 Claims**



1. A radially disposed thrust bearing apparatus for fluid cooled and lubricated rotary cone rock bits comprising,

a first, non-rotating, radially aligned thrust bearing disc retained within a retention socket formed in the end of an axially aligned bearing cantilevered from a leg of the rock bit,

a second apposing, non-rotating, radially aligned thrust bearing disc is positioned adjacent to the first thrust bearing disc and retained within a socket formed by a rotary cone retained on the bearing extending from the leg, at least one of the thrust bearing discs is formed from a relatively brittle carbide, the carbide disc having substantially large valley and peak undulations formed around a peripheral edge of the disc to form a robust peripheral edge for the carbide disc that substantially resists cracking when the carbide disc is placed within its disc retention socket.

5,642,943

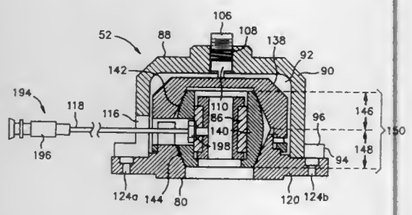
SELF-ALIGNING AIR BEARING FOR USE WITH SERVO-TRACK WRITER

Wally Szeremeta, Mission Viejo, Calif., assignor to Western Digital Corporation, Irvine, Calif.

Filed Feb. 28, 1996, Ser. No. 608,395

Int. Cl.[6] F16C *32/06*

U.S. Cl. 384—100 **21 Claims**



1. A self-aligning air bearing useful for supporting a journal shaft of a rotary apparatus having a center axis of rotation in a servo-track writer (STW) system for writing of servo-information in a plurality of tracks on a plurality of magnetic disk surfaces in a plurality of mounted head-disk assemblies (HDAs), the STW system including air supply means, the self-aligning air bearing comprising:

air delivery means coupled to the air supply means for delivering air at a predetermined pressure;

a bottom race having an inner annular shoulder defining upwardly sloping walls and an opening to allow passage of the air delivery means;

a top race configured to mate with the bottom-race member, the top race having internal downwardly sloping walls and an opening to allow passage of the air delivery means, the respective sloping walls of the top race and the bottom race forming an internal chamber upon mating;

a sleeve disposed within the internal chamber and having an internal bore and an opening to allow passage of the air delivery means; and

an air gland disposed within the cylindrical bore of the sleeve and having a second bore for receiving the journal shaft therethrough, the second bore having a center axis, the air gland being coupled to the air delivery means and having at least one opening for passing pressurized air into the second bore to create an air film for the substantially frictionless support of the journal shaft as it rotates, wherein the pressurized air causes the air gland and the sleeve to move within the internal chamber until the second bore center axis is aligned to coincide with the center axis of rotation.

5,642,944

AUXILIARY BEARING SYSTEM

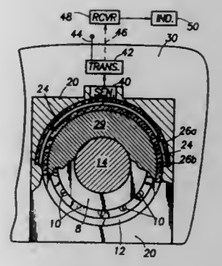
Wilbur Leslie Dublin, Jr., Georgetown, and Dan McCay Arnold, Katy, both of Tex., assignors to W. L. Dublin, Jr., Georgetown, Tex.

Filed Mar. 6, 1996, Ser. No. 611,364

Int. Cl.[6] F16C *21/00*

U.S. Cl. 384—102 **17 Claims**

1. An auxiliary bearing system for receiving loading of a primary bearing, the auxiliary bearing comprising:



(a) a shim sleeve cooperating with said primary bearing such that said shim sleeve renders said primary bearing load bearing when said shim sleeve is rigid; and

(b) at least one auxiliary bearing, wherein said at least one auxiliary bearing becomes load bearing when said shim sleeve radially deforms when exposed to heat above a predetermined temperature.

5,642,945

BEARING ASSEMBLY

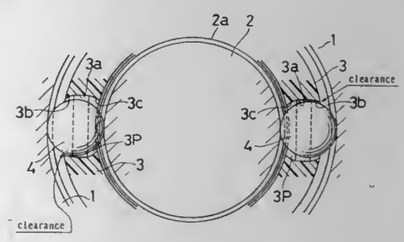
Shinji Abe, Osaka, Japan, assignor to Koyo Seiko Co., Ltd., Osaka, Japan

Filed Aug. 4, 1995, Ser. No. 511,615

Claims priority, application Japan, Aug. 26, 1994, 6-225884

Int. Cl.[6] F16C *33/66;33/38*

U.S. Cl. 384—470 **1 Claim**



1. A ball bearing assembly comprising:

an inner ring;

an outer ring;

a plurality of balls disposed between said inner and outer rings;

an annular ball retainer mounted between said inner and outer rings with a portion of said annular retainer forming a radially extending shoulder for guiding said annular retainer relative to one of said inner ring or said outer ring;

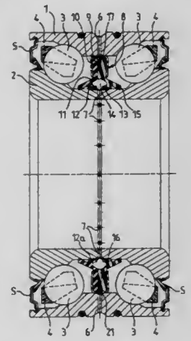
said annular retainer defining a plurality of pockets for supporting said balls in spaced relationship, with each of said pockets having a central cylindrical portion and inner and outer portions with spherical configurations such that said central cylindrical portion transitions smoothly into said inner and outer portions and such that the diameter of said central cylindrical portion is smaller than the diameters of the inner and outer portions so that a clearance is always maintained between said inner and outer portions of said pockets and associated balls when said ball retainer is deflected relative to said inner and outer rings.

5,642,946

ROLLING-CONTACT BEARING EQUIPPED WITH A SEALING DEVICE FOR THE PASSAGE OF FLUID

Claude Caillault, Saint-Roch, and Christophe Houdayer, Tours, both of France, assignors to SKF France, France

Filed Oct. 20, 1995, Ser. No. 546,264
Claims priority, application France, Nov. 17, 1994, 94 13778
Int. Cl.[6] F16C *33/78*
U.S. Cl. 384—486 **20 Claims**



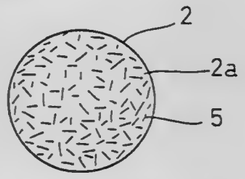
1. A rolling-contact bearing, comprising:
a rotating race and a non-rotating race, each defining a channel for the passage of fluid;
a plurality of rolling bodies positioned between the rotating race and the non-rotating race; and
a sealing device mounted between the rotating race and the non-rotating race and defining a sealed intermediate chamber in communication with the channels for the passage of the fluid,
wherein, the sealing device comprises two flexible coaxial seals held against each other by means of a metal reinforcing member, each of the seals comprising a ring of axial teeth separated from each other by circumferential gaps, the dimensions of the teeth and of the gaps being such that when the two seals of the sealing device are held against each other, the teeth of one of the seals are disposed between the teeth of the other seal of the device and form radial channels for the flow of fluid through the sealing device.

5,642,947

BALLS FOR BALL BEARING

Yoshinobu Akamatsu, Kuwana; Kikuo Maeda, Mie; Katsuyoshi Yoshimura, Kuwana, and Katsunori Makino, Mie, all of Japan, assignors to NTN Corporation, Osaka, Japan

PCT No. PCT/JP95/01620, § 371 Date Aug. 6, 1996, § 102(e) Date Aug. 6, 1996, PCT Pub. No. WO96/19678, PCT Pub. Date Jun. 27, 1996
PCT Filed Aug. 14, 1995, Ser. No. 687,483
Claims priority, application Japan, Dec. 22, 1994, 6-319984
Int. Cl.[6] F16C *33/32*
U.S. Cl. 384—491 **2 Claims**



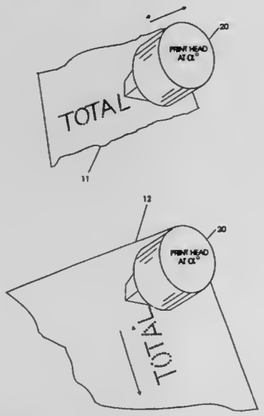
1. A ball for a ball bearing having a surface formed with a multitude of microscopic needle-shaped recesses extending in random directions and present in a dispersed manner, said ball having a centerline average roughness of 0.005 μm to 0.012 μm.

5,642,948

BIAXIAL PRINTER FOR PORTRAIT AND LANDSCAPE PRINTING

Richard Hunter Harris, Raleigh; Michael John Kinney, Cary, and Kevin Hunter Vorhees, Raleigh, all of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 444,474, May 19, 1995, Pat. No. 5,533,817. This application Apr. 10, 1996, Ser. No. 630,803
Int. Cl.[6] B41J *2/255*
U.S. Cl. 400—124.28 **7 Claims**



1. A printer comprising:
a print head having a column of printing elements arranged at an angle relative to a direction of travel of said print head;
means operable for positioning a print receivable medium in a direction normal to said direction of travel of said print head;
means operable for performing portrait mode printing by said print head on said print receivable medium by moving said print head in said direction of travel in order to print characters on said print receivable medium in said portrait mode; and
means operable for performing landscape mode printing by said print head on said print receivable medium by moving said print receivable medium in said direction normal to said direction of travel of said print head while said print head remains stationary in order to print characters on said print receivable medium in said landscape mode,
wherein said angle of printing elements is such that printing in portrait mode is in a larger font size than printing in landscape mode.

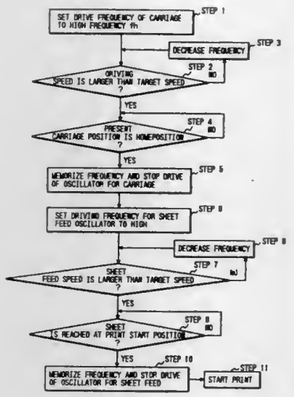
5,642,949

SHEET FEEDING APPARATUS HAVING VIBRATION ACTUATORS

Shinji Yamamoto, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 80,710, Jun. 24, 1993, abandoned. This application Aug. 2, 1995, Ser. No. 510,183
Claims priority, application Japan, Jun. 25, 1992, 4-167943
Int. Cl.[6] B41J *19/30*
U.S. Cl. 400—322 **19 Claims**

1. A printing apparatus comprising:
a carriage;



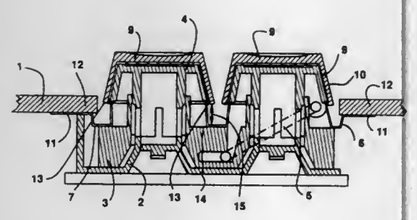
a vibration driven actuator serving as a driving source for driving the carriage, said actuator having various characteristics effecting the moving speed of said carriage
means for providing a driving frequency to said actuator;
control means for detecting at least one of said characteristics effecting the moving speed of said carriage before said carriage starts to execute a normal printing operation, and for controlling said means for providing a driving frequency in response to the at least one detected characteristic to obtain a desired moving speed of said carriage after the start of the normal printing operation.

5,642,950

KEYBOARD WITH A PROTECTIVE FOIL

Gerhard Hochgesang, and Werner Lorz, both of Bad Neustadt, Germany, assignors to Preh-Werke GmbH & Co. KG, Bad Neustadt, Germany

Filed Jan. 26, 1996, Ser. No. 592,671
Claims priority, application Germany, Feb. 21, 1995, 195 05 852.6
Int. Cl.[6] B41J *5/12*
U.S. Cl. 400—490 **8 Claims**



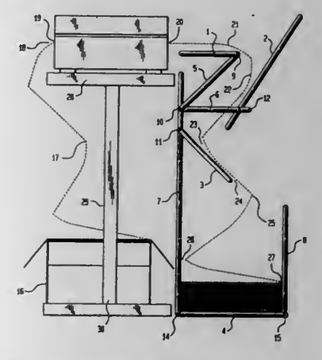
1. A keyboard having individual keys with a protective foil for use in cash registers and the like, of a type in which the protective foil is supported above the keys of the keyboard by a housing; wherein:
the protective foil has a substantially uniform thickness of between 50 μm and 100 μm and is a formed part to have dome-shaped vaults extending upwardly from a foil floor at respective individual keys;
each key is arranged to extend inside a cavity formed by a respective vault;
wherein is further included replaceable caps for respective keys which are mounted on the respective keys above the foil of the respective vaults so that the dome-shaped vaults are between the caps and the keys.

5,642,951

ADJUSTABLE CONTINUOUS FEED PRINTER PAPER COLLECTION DEVICE

Efren Belizario, 32 Carlson Pkwy., Cedar Grove, N.J. 07009

Filed Feb. 20, 1996, Ser. No. 603,993
Int. Cl.[6] B41J *15/04*
U.S. Cl. 400—613.2 **3 Claims**



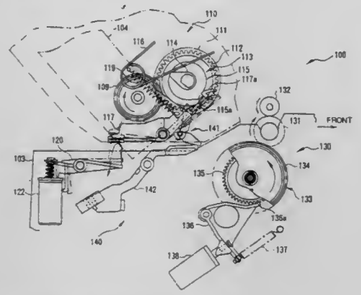
2. An improved adjustable paper collection device of the type comprising a means for passing continuous feed paper discharged from a printer downward toward a collection basket, the improvement comprising:
an accepting means including a platform for receiving discharge of the continuous feed paper from the printer;
an inward guiding panel, the inward guiding panel positioned to receive the discharge of the continuous feed paper from the accepting means, the inward guiding panel having an angle of declination from about 70 to 80 degrees relative to the horizontal, the inward guiding panel positioned at an inward angle relative to the discharge of the continuous feed paper to engage the discharge of the continuous feed printer paper from the accepting means and urge the continuous feed paper in a downward direction; and
an outward guiding panel having an angle of declination from about 40 to 60 degrees relative to the horizontal, the outward guiding panel positioned below the inward guiding panel, the outward guiding panel positioned to engage the continuous feed paper discharged from the inward guiding panel, the outward guiding panel being in a downward position such that the discharge is encouraged to fold along perforated lines;
a back wall panel having an anterior portion, a first connecting means for connecting the platform to the anterior portion, the platform positioned to accept discharge of the continuous feed paper from the printer, a second connecting means for connecting the inward guiding panel to the back wall, a third connecting means for connecting the outward guiding panel to the back wall; and
a collection means for collecting the continuous feed paper as the continuous feed paper is discharged form the outward guiding panel, the collection means comprising a frontal wall panel and a base, the frontal wall and back wall panel oppositely opposed on each side of the base defining a cavity therein to permit receipt of the continuous feed paper.

5,642,952

SHEET-SUPPLY UNIT CAPABLE OF CONTROLLING SHEET-FEED OPERATIONS AND SHEET ALIGNMENT OPERATIONS USING A SINGLE SOLENOID

Yoshiya Tomatsu, Kasugai, and Yoshiteru Hattori, Visai, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Jul. 3, 1996, Ser. No. 675,691
Claims priority, application Japan, Jul. 6, 1995, 7-195991; Feb. 15, 1996, 8-028228
Int. Cl.[6] B41J *13/10*
U.S. Cl. 400—624 **15 Claims**



1. A sheet-supply unit comprising:
a drive source for supplying rotational drive power;
a supply roller supplying one sheet at a time to a sheet transport pathway when rotated;
a partial gear provided so as to rotate integrally with the supply roller and be capable of receiving transmission of rotational drive power from the drive source;
a lever pivotable between a transmission mode wherein rotational drive power from the drive source is transmitted to the partial gear and a non-transmission mode wherein rotational drive power from the drive source is prevented from being transmitted to the partial gear;
a pair of resist rollers disposed in the sheet transport pathway for stopping and aligning a sheet supplied by the supply roller and for transporting the aligned sheet, and capable of receiving rotation drive power from the drive source;
an actuator capable of switching between a first mode and a second mode; and
a switching mechanism for, based on the mode of the actuator, pivoting the lever into the transmission mode so that rotational drive power from the drive source is transmitted to the partial gear and so that the supply roller rotates to supply a sheet towards the pair of resist rollers and for temporarily preventing, directly before the supplied sheet reaches the pair of resist rollers, transmission of rotational drive power from the power source to the pair of resist rollers so that the supplied sheet abuts against and is aligned by the pair of resist rollers.

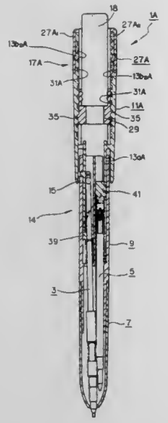
5,642,953

MULTIPLEX WRITING IMPLEMENT

Seiichi Kobayashi, and Naoki Sekiguchi, both of Yokohama, Japan, assignors to Mitsubishi Pencil Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 328,829, Oct. 25, 1994, abandoned. This application Sep. 18, 1995, Ser. No. 529,585
Claims priority, application Japan, Nov. 2, 1993, 5-063401 U; Nov. 2, 1993, 5-063402 U; Apr. 22, 1994, 6-106273
Int. Cl.[6] B43K *27/00*
U.S. Cl. 401—30 **1 Claim**

1. A multiplex writing implement having a longitudinal axis defining an axial direction, said writing implement comprising:



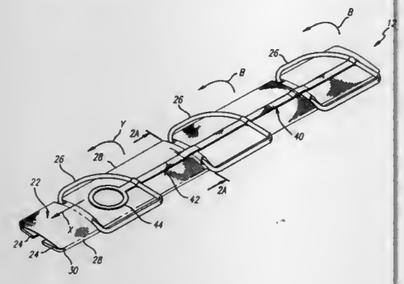
a plurality of writing elements of different types each having a tip portion and rearwardly extending remaining parts;
a writing element selecting mechanism for selecting, as desired, one writing element from said plurality of writing elements; and
a delivering mechanism which delivers a stick-shaped article;
wherein said writing element selecting mechanism comprises:
a front barrel having a front portion accommodating at least each of said tip portions of said writing elements therein, and a rear portion;
a middle barrel integrally joined to said rear portion of said front barrel such that said front barrel and said middle barrel are prevented from rotating and falling off relative to each other, said middle barrel accommodating the remaining parts of said writing elements and further including a rear portion;
a rear barrel disposed on said rear portion of said middle barrel, said rear barrel being rotatable clockwise or counterclockwise relative to said middle barrel and fixed in the axial direction, said rear barrel defining a hollowed space therein and an inner peripheral projection extending inwardly within said rear barrel; and
a single-piece cylindrical cam fitted inside said hollowed space of said rear barrel and spaced from said inside wall of said rear barrel, said cylindrical cam having an outside peripheral projection and a rear portion having a pair of slits extending in the axial direction, said cylindrical cam being slidable in the axial direction and rotatable upon engaging said outside peripheral projection with said inner peripheral projection of said rear barrel and rotating said rear barrel whereupon said cylindrical cam pushes forward one of said writing elements so as to project the tip portion of said one of said writing elements from said front portion of said front barrel and retracts the tip portion of the other writing element inside said front barrel; and wherein said delivering mechanism for delivering a stick-shaped article comprises:
a crown rotatably fitted between said rear barrel and said cylindrical cam, said crown having an inside peripheral surface with a screw groove formed therein, said crown being integrally engaged with said cylindrical cam and serving as a knocking member for at least one of said writing elements; and
a single-piece stick-shaped article holder accommodated in said crown and in said rear portion of said cylindrical cam, said article holder having screw-projections extending through said slits of said rear portion of said cylindrical cam and engaging with said screw groove of said crown so that said stick-shaped article holder is advanced upon rotation of said crown, with said screw-projections being guided by said slits.

5,642,954

SPACE-SAVING COLLAPSIBLE RING BINDER

Sydney Hudspith, Glendale, Calif., assignor to Avery Dennison Corporation, Pasadena, Calif.

Filed May 15, 1996, Ser. No. 648,413
Int. Cl.[6] B42F *3/04*
U.S. Cl. 402—36 **24 Claims**



1. A ring binder comprising:
a) a cover portion including:
(1) a front cover;
(2) a back cover; and
(3) a spine having a pair of longitudinal edges, the front cover being pivotally attached to one of the longitudinal edges of the spine and the back cover being pivotally attached to the other longitudinal edge of the spine;
b) a binder portion attached to the cover portion, the binder portion including:
(1) a pair of longitudinally extending, centrally pivotal toggling plates;
(2) a longitudinally extending resilient cover plate engaging outer edges of the toggling plates for applying inwardly directed force to the toggling plates;
(3) a plurality of paper-retaining rings formed of two ring portions and pivotally secured to the toggling plates to permit full collapsing of the rings against the cover plate in a collapsed position;
(4) means for securing the rings in an upright position.

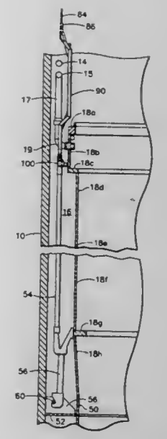
5,642,955

STRONGBACK FOR REMOTELY INSTALLING TIE ROD ASSEMBLY IN ANNULUS BELOW CORE SPRAY PIPING IN BOILING WATER REACTOR

Grant Clark Jensen, Morgan Hill, Calif., assignor to General Electric Company, San Jose, Calif.

Filed Sep. 22, 1995, Ser. No. 532,945
Int. Cl.[6] G21C *19/00*
U.S. Cl. 403—24 **13 Claims**

1. A strongback comprising:
a first end member having a mating portion of a coupling, said mating portion of said first end member being generally located at a first axial position along a strongback axis;
a second end member having a mating portion of a coupling, said mating portion of said second end member being generally located at a second axial position along said strongback axis, said first and second axial positions being mutually separated by at least a first predetermined distance;
a first rigid linear member having a longitudinal axis generally parallel to said strongback axis and having first and second ends;
a second rigid linear member having a longitudinal axis generally parallel to said strongback axis and having first and second ends, said second rigid linear member being offset from said first rigid linear member by a second predetermined distance;



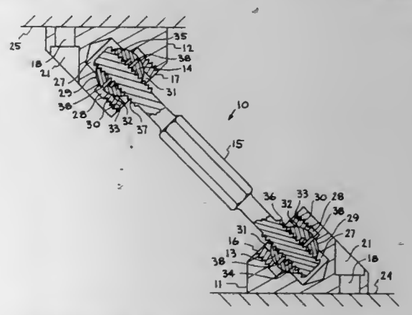
a third rigid linear member disposed at an oblique angle relative to said strongback axis and having a first end connected to said second end of said first rigid linear member and a second end connected to said first end of said second rigid linear member;
a fourth rigid linear member disposed at an oblique angle relative to said strongback axis and having a first end connected to said first end member and a second end connected to said first end of said first rigid linear member;
a fifth rigid linear member disposed at an oblique angle relative to said strongback axis and having a first end connected to said second end of said second rigid linear member and a second end connected to said second end member.
wherein said first, second and third rigid linear members lie in a plane which is offset from said strongback axis.

5,642,956

ADJUSTABLE LINK FOR KINEMATIC MOUNTING SYSTEMS

Layton C. Hale, Livermore, Calif., assignor to Regents of the University of California, Oakland, Calif.

Filed Jan. 25, 1996, Ser. No. 590,375
Int. Cl.[6] F16C *11/06*
U.S. Cl. 403—122 **15 Claims**



1. An adjustable link for a kinematic mounting system, comprising:
a pair of internally threaded spheres,
a pair of socket support members for retaining said spheres,

a pair of adjustable means for retaining said spheres in said socket support members, and

a connecting link having threads at each end thereof, said threaded ends of said connecting link being adjustably mounted in said internally threaded spheres,

said connecting link being provided with a constrained layer damping arrangement for dissipating vibrational energy.

5,642,957

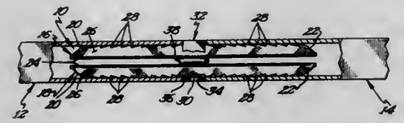
TUBULAR MEMBER CONNECTOR

Fredric Lange, 13690 Elm Creek Rd., Osseo, Minn. 55369-9343

Filed Nov. 9, 1995, Ser. No. 555,002

Int. Cl.[6] F16B *7/04*

U.S. Cl. 403—297 **21 Claims**



1. Connector for a tubular member having annular cross sections, an inside surface, and a free end, comprising, in combination: first and second jaw members insertable into the tubular member in a longitudinal insertion direction through the free end; means for biasing the first and second jaw members apart; and means for separating the first and second jaw members while inserted into the tubular member a distance sufficient to allow the jaw members to grip the inside surface of the tubular member with sufficient force to prevent relative movement between the first and second jaw members and the tubular member, with the separating means being operable from outside of the tubular member, wherein the separating means comprises a screw extending between the first and second jaw members, with the threading of the screw causing the first and second jaw members to separate, and wherein the biasing means comprises an O-ring positioned between the first and second jaw members and around the screw.

5,642,958

ENGAGEMENT STRUCTURE OF CONNECTING SHELL

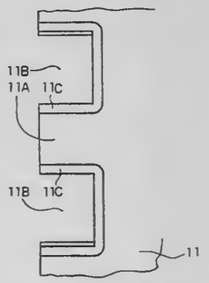
Shinichi Sugiyama, Fuji, Japan, assignor to Jatco Corporation, Japan

Filed Sep. 19, 1995, Ser. No. 529,974

Claims priority, application Japan, Sep. 29, 1994, 6-259515

Int. Cl.[6] F16H *3/44;1/28*

U.S. Cl. 403—359 **6 Claims**



1. An engagement structure between a clutch drum having a plurality of grooves formed by cutting out an end of a cylindrical outer periphery of the clutch drum at an equal interval and a connecting shell disposed intersecting said clutch drum and having a plurality of protrusions formed by cutting out a circumferential part of the connecting shell at an equal interval, said protrusions being engaged with said grooves, the improvement comprising the thickness of three successive edges of said grooves of said clutch drum are continuously formed to be thicker than the clyindrical outer periphery thereof.

5,642,959

SUPPORT DEVICE FOR A SUBSTANTIALLY PANEL-LIKE COMPONENT

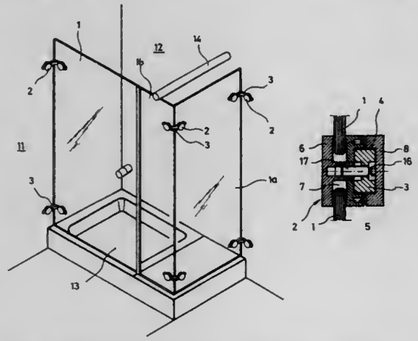
Hans-Gerd Greferath, Bad Salzuflen, Germany, assignor to Temotrans, B.V., Purmerend, Netherlands

Filed Aug. 29, 1995, Ser. No. 520,682

Claims priority, application Germany, Aug. 29, 1994, 9413972 U

Int. Cl.[6] A47K *3/22;* **E06B** *3/02;3/54;* **E05D** *15/06*

U.S. Cl. 403—388 **20 Claims**



1. In combination with a panel-like component, a support device comprising:

a bearing element fastened to the component, the bearing element having a recess formed on a side opposite the component;

a support rail with opposing first and second sides, the first side or which is arranged within the recess in the bearing element, the support rail further having a bore therethrough; and,

a fastener having a shank extending through the bore in the support rail and fastened to the bearing element, the fastener further having a head which is larger than the bore in the support rail and disposed on the second side of the support rail whereby when tightened the fastener will hold the support rail in fixed relation to the bearing element and the component.

5,642,960

FASTENING ELEMENT

Luciano Salice, Carimate, Italy, assignor to Arturo Salice S.p.A., Novedrate, Italy

Filed Aug. 2, 1995, Ser. No. 510,322

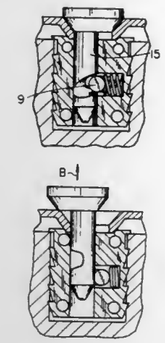
Claims priority, application Germany, Aug. 9, 1994, 44 282 13.3; Sep. 2, 1994, 44 313 22.5

Int. Cl.[6] F16B *1/04;13/00;12/24;21/02*

U.S. Cl. 403—407.1 **20 Claims**

1. A fastening element for a member, the element having a dowel-like bushing which can be fixed in a bore formed in the fastening element wherein the bushing has an axial bore, an axially rotatable retaining pin having a slotted broadened head, the pin being supported in the bushing's axial bore and which can fix the member to be fastened between the slotted broadened head and the dowel bushing, comprising

a shank for the retaining pin, said shank being provided with at least one substantially transversely extending groove having a base, a spring-loaded snap-in locking element for selective



engagement within said groove in order to lock said retaining pin in the bushing and for disengagement with said groove to unlock said retaining pin from said bushing.

5,642,961

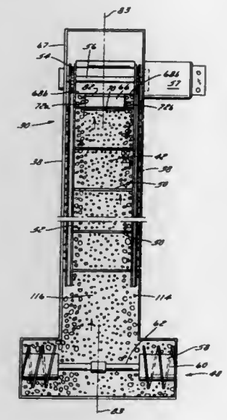
METHOD FOR CONVEYING AND DESEGREGATING AGGREGATE

Thomas R. Campbell, Chattanooga, Tenn., assignor to Astec Industries, Inc., Chattanooga, Tenn.

Division of Ser. No. 314,349, Sep. 29, 1994, Pat. No. 5,553,968. This application Apr. 16, 1996, Ser. No. 633,059

Int. Cl.[6] E01C *19/00*

U.S. Cl. 404—81 **11 Claims**



3. A method for remixing and conveying segregated aggregate, said method comprising the steps of:

a. receiving onto a conveyor having a lateral axis and a longitudinal axis aggregate that has segregated into a laterally-oriented segregation with larger aggregate and smaller aggregate aligned along said lateral axis;

b. conveying said segregated aggregate on said conveyor; and

c. reorienting said smaller aggregate and said larger aggregate along said longitudinal axis by conveying said smaller aggregate a shorter distance along a longitudinal axis of said conveyor before being discharged than said larger aggregate, thereby reorienting said larger and smaller aggregate from the laterally-oriented segregation to a longitudinally-oriented segregation.

5,642,962

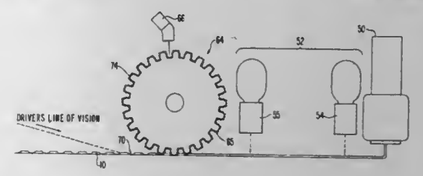
APPARATUS FOR APPLYING A NIGHT-VISIBLE TRAFFIC STRIPE TO A ROAD

Forrest C. Marcato, Pike Road, Ala., assignor to The Rainline Corporation, Montgomery, Ala.

Division of Ser. No. 181,115, Jan. 13, 1994, Pat. No. 5,511,896, which is a continuation-in-part of Ser. No. 5,057, Jan. 15, 1993, Pat. No. 5,439,312. This application Feb. 29, 1996, Ser. No. 609,934

Int. Cl.[6] E01F *9/08*

U.S. Cl. 404—94 **30 Claims**



22. In an apparatus for applying a traffic stripe including at least one vehicle and applying means for applying the traffic stripe, the improvement comprising:

applying means for applying a first reflective material over said traffic stripe;

deformation means disposed rearward of said first applying means for forming interval grooves in said traffic stripe when said deformation means passes thereover; and

applying means for applying a predetermined quantity of an anti-adhesion agent to prevent adhesion of said applied traffic stripe onto said deformation means;

wherein said anti-adhesion agent comprises a second reflective material.

5,642,963

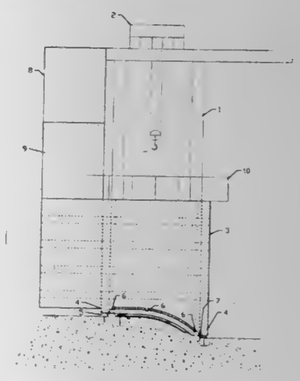
SPILLWAY GATE SYSTEM

Henry K. Obermeyer, 303 W. County Rd. 74, Wellington, Colo. 80549

Filed Aug. 24, 1995, Ser. No. 519,046

Int. Cl.[6] E02B *5/08*

U.S. Cl. 405—100 **3 Claims**



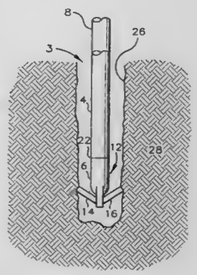
1. A spillway gate system comprising:

(a) a spillway including abutments at opposite ends thereof; wherein at least one of said abutments includes a cavity therein having a bottom surface;

(b) a removable bulkhead covering each said cavity in said abutment;

(c) a plurality of water control gates hinged to said spillway;
(d) a service crane movable along said spillway and including a dewatering caisson; and
(e) means for sealing said caisson to said gates and to said bottom surface of said cavity.

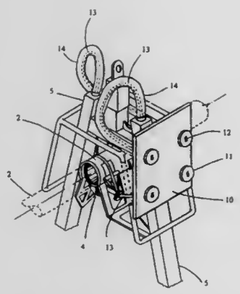
5,642,964
IN-GROUND CONDUIT SYSTEM FOR GEOTHERMAL APPLICATIONS
Jimmie G. DeMasters, Wylie, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Division of Ser. No. 336,447, Nov. 9, 1994, Pat. No. 5,533,356.
This application Mar. 5, 1996, Ser. No. 611,297
Int. Cl.[6] E02D *5/74*
U.S. Cl. 405—154 **1 Claim**



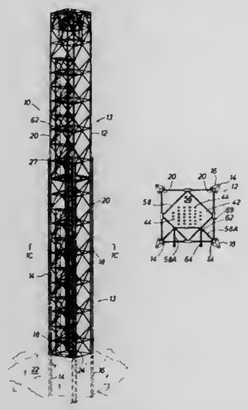
1. U-bend fitting comprising:
U-shaped pipe having a vertex, a first member and a second member substantially parallel to said first; and
at least one wing member mounted onto said U-shaped pipe in the area of the vertex; and wherein said at least one wing member comprises a first wing member and a second wing member formed from a length of material having a first end portion and a second end portion wherein said length of material is crimped at a point between said first end portion and said second end portion and wherein the resulting crimped section is mounted in the area of the vertex of said U-shaped member such that said first end portion forms said first wing member and said second end portion forms said second wing member.

5,642,965
INTERFACE SYSTEM FOR OPERATION OF REMOTE CONTROL VEHICLE
Ney Robinson Salvi Dos Reis, and Carlos Henrique Guimaraes Da Cunha, both of Rio, Brazil, assignors to Petroleo Brasileiro S.A.- Petrobras, Rio de Janeiro, Brazil
Filed Aug. 12, 1994, Ser. No. 288,782
Claims priority, application Brazil, Aug. 12, 1993, 9303365
Int. Cl.[6] B63C *11/10*
U.S. Cl. 405—191 **6 Claims**

1. An interface system for deep sea equipment having torque application points spaced a part, comprising; at least one panel (**10**) having terminals (**11**) fitted with releasable connectors (**12**) mounted on said panel, said connectors (**12**) being individually connected by a flexible torque-transmitting drive (**13**) to the various points of the apparatus where torque is to be applied at a deep sea location, whereby various torque—application points are centralized within said at least one panel (**10**) for applying a torque using a torquing tool.



5,642,966
COMPLIANT TOWER
Denby Grey Morrison; Susan Lyon Smolinski, both of Houston, Tex.; Peter William Marshall, Northumberland, England; David Amstrong Huete, Spring, Tex., and Romulo Gonzalez, Slidell, La., assignors to Shell Oil Company, Houston, Tex.
Continuation of Ser. No. 175,470, Dec. 30, 1993, abandoned.
This application Oct. 23, 1995, Ser. No. 553,740
Int. Cl.[6] E02B *17/00*
U.S. Cl. 405—195.1 **12 Claims**

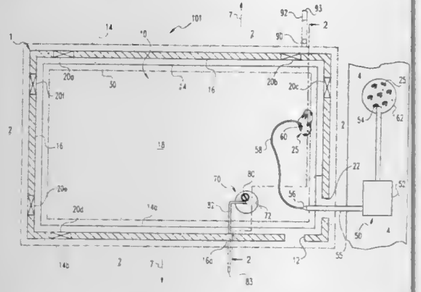


1. A compliant tower for conducting hydrocarbon development operations from a plurality of wells to a deepwater offshore reservoir, comprising:
a foundation;
a wide-bodied compliant framework, comprising:
a plurality of vertically extending legs secured to the foundation; and
a plurality of horizontal bracing interconnecting the legs in a manner maintaining a substantially wide, open riser suspension corridor extending substantially the entire length of the compliant framework;
a topside facility supported by the compliant framework;
a plurality of freely suspended production risers extending through the riser suspension corridor from the vicinity of the topside facility to communicate with the reservoir, said production risers being spaced to provide clearance to prevent interference between the production risers and between the production risers and the horizontal bracing in response to normal flexure of the compliant tower and normal environmental loads on the production risers; and
a riser support assembly supporting the production risers near their upper ends to provide the principal load transfer between the riser and the compliant framework and thereby supporting the production risers in tension, said riser support assembly being configured to accommodate relative motion between the production risers and the topside facility.

10. A method for conducting hydrocarbon reservoir development operations from a compliant tower comprising simultaneously conducting drilling operations from a suspended drilling riser and conducting production operations through a plurality of freely suspended production risers, the drilling and production risers being spaced apart within the substantially open interior of a compliant framework as necessary to prevent riser interference.

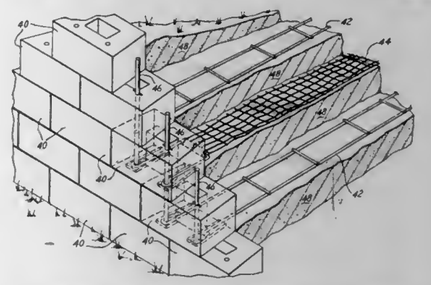
11. A method for reducing the environmental loading of a compliant tower, comprising:
installing a compliant framework having a plurality of legs and horizontal bracing substantially limited along the compliant framework to structurally interconnect the legs and leaving a substantially open interior; and
freely suspending small diameter, top tensioned risers, supported without substantial connection to the horizontal bracing along the compliant framework and extending through the substantially open interior of the compliant framework;
whereby the compliant tower is substantially transparent to wave action and the shear and moment requirements to accommodate environmental loading is defined by the legs, the small diameter risers, and horizontal bracing which is substantially limited.

5,642,967
CRAWL SPACE MOISTURE CONTROL METHOD
Kenneth L. Swain, 701 Park Ave., Greenwood, Ind. 46143, and Greg B. Key, 5106 Shelby St., Indianapolis, Ind. 46227
Filed Sep. 14, 1995, Ser. No. 528,346
Int. Cl.[6] F02B *11/00*
U.S. Cl. 405—229 **23 Claims**



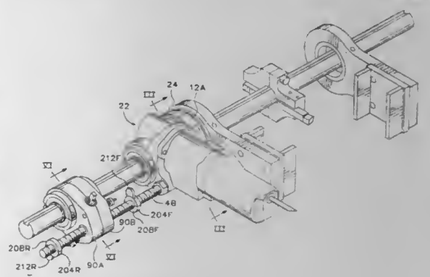
1. A method of reducing moisture damage to a building having a foundation crawl space with a floor, comprising the steps of:
(1) forming a pit in the floor for collecting water in the crawl space;
(2) pneumatically moving an aggregate to a selected position within the crawl space;
(3) establishing an aggregate bed on the floor using at least a portion of the aggregate moved in step (2);
(4) configuring the aggregate bed to drain water into the pit for collection; and
(5) positioning a moisture barrier over the aggregate bed and floor to reduce exposure of the building to moisture from the crawl space.

5,642,968
MODULAR BLOCK RETAINING WALL CONSTRUCTION AND COMPONENTS
Peter L. Anderson, Centreville; Michael J. Cowell, Leesburg, and Dan J. Hotek, Chantilly, all of Va., assignors to Societe Civile des Brevets Henri C. Vidal, England
Continuation of Ser. No. 40,904, Mar. 31, 1993, Pat. No. 5,507,599. This application Oct. 24, 1995, Ser. No. 547,646
Int. Cl.[6] E02D *29/02*
U.S. Cl. 405—286 **17 Claims**



1. An improved wall construction comprising, in combination:
facing members of a mechanically stabilized earthen work:
compacted particulate;
a stabilizing element adapted for interaction with compacted particulate and the facing members, said stabilizing element comprising:
a first tensile member including a horizontal loop at one end and a reinforcing bar extending from the loop;
a second tensile member also including a horizontal loop at one end and also including a reinforcing bar extending from the loop, said loops lying in the same horizontal plane, said bars being generally parallel and also lying in the same horizontal plane as the loops, said bars extending a sufficient distance for frictional interaction, at least in part, with the particulate, said bars and loops being separated from one another and maintained in such separation by at least one cross member connecting the bars, said cross member attached to the bars and spaced from the loops by a distance which maintains the cross member in the particulate when the element is combined with a facing member.

5,642,969
PORTABLE MACHINE TOOL
David S. Strait, Lyle, Wash., assignor to Climax Portable Machine Tools, Inc., Newberg, Oreg.
Filed Jul. 13, 1995, Ser. No. 502,311
Int. Cl.[6] B23B *41/00*
U.S. Cl. 408—124 **21 Claims**



1. A machine tool comprising:

a mounting member for attachment to a workpiece, the mounting member including a bearing portion that has an external surface of circular cross section and is formed with at least one aperture in its external surface, and

a utility device having an internal peripheral surface that defines a cylindrical cavity for receiving the bearing portion of the mounting member in a manner that allows the utility device to move axially and rotationally relative to the mounting member, a clamp means actuable when the utility device is fitted to the bearing portion of the mounting member for releasably retaining the utility device against axial and rotational movement relative to the bearing portion, and at least one spring-loaded detent member that projects into the cylindrical cavity from said peripheral surface and is receivable in the aperture of the bearing portion for retaining the operating assembly against axial and rotational movement relative to the bearing portion in the event that the clamp means is not actuated.

5,642,970

METHOD OF PRODUCING A CURVED GROOVE IN A WORKPIECE

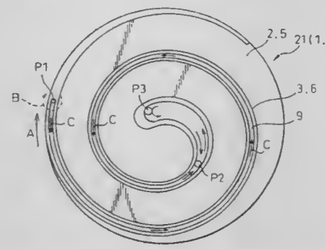
Yukio Yamaguchi, Okazaki; Masaaki Enya, Toyohashi; Takahiro Yamazaki, Nishio, and Tatsuo Miura, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 26, 1996, Ser. No. 638,483

Claims priority, application Japan, Apr. 26, 1995, 7-102357; Jan. 24, 1996, 8-010358

Int. Cl.[6] B23C *3/00;* **B23P** *15/00*

U.S. Cl. 409—132 **26 Claims**



1. A method of producing a curved groove, in a workpiece, to receive a mechanical seal element therein by using a milling cutter comprising the steps of:

setting said milling cutter so as to perform an up milling of an inner side wall of said curved groove with respect to a center of curvature of said groove;

rotating said milling cutter in a direction against a direction of a relative feed between said milling cutter and said workpiece;

setting said milling cutter to perform a down milling of an outer side wall of said curved groove confronting said inner side wall; and

providing a relative feed between said milling cutter and said workpiece to permit said milling cutter to produce said curved groove from a first end thereof to an opposite second end thereof in a one way cutting manner in which said rotating milling cutter does not return from said second end to said first end.

5,642,971

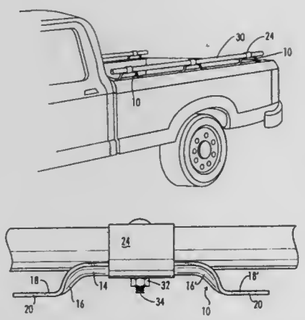
RAIL SYSTEM FOR PICK-UP TRUCK BEDS

Hans L. Ragsdale, 516 Elaine Dr., Nashville, Tenn. 37204

Filed Sep. 1, 1995, Ser. No. 522,731

Int. Cl.[6] B60P *7/06*

U.S. Cl. 410—106 **6 Claims**



4. A truck bed rail system including:

a. multiple brackets with means for mounting each bracket on a side panel of a truck bed and causing a section of each bracket to be spaced from the panel on which it is mounted;

b. each bracket having a profile over at least a portion of said section for mating with the profile of the outer perimeter of a section of pipe;

c. multiple sections of pipe with each section of pipe having an outer perimeter with a profile, said sections of pipe mounted in engaged relationship with said brackets to overly the side panels of a truck bed; and

d. means for releasably attaching said sections of pipe to said brackets includes sleeves fitted about the sections of said brackets whereby said pipe can be received within said sleeve to hold the sections of pipe in engagement with said brackets, thereby permitting a damaged section of pipe to be removed from said system and replaced with a new section of pipe.

5,642,972

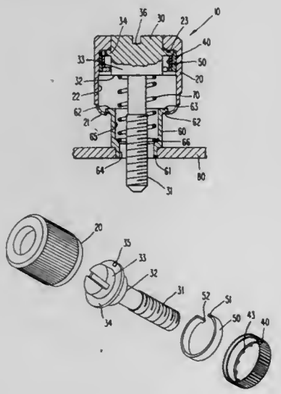
ONE-DIRECTION CAPTIVE SCREW FASTENER

Thomas J. Ellis, Wilmington, Del., and Harry L. Dickerson, Newtown Square, Pa., assignors to Southco, Inc., Concordville, Pa.

Filed Nov. 6, 1995, Ser. No. 554,563

Int. Cl.[6] F16B *21/18*

U.S. Cl. 411—353 **2 Claims**



1. A captive fastener for attachment to a panel, that is hand tightenable, but requires a tool to loosen once hand tightened, comprising:

(a) a screw comprising:

(i) a head with a recess means to facilitate rotation;

(ii) a threaded portion;

(b) a substantially hollow knob having a central longitudinal axis coaxial with said screw,

(c) said screw rotatably disposed along said central longitudinal axis of said knob;

(d) a ratchet wheel, coaxially disposed along the internal circumferential surface of said hollow knob, having a plurality of internally disposed ratchet teeth, said teeth disposed to allow rotation in one direction only;

(e) a C-spring disposed coaxially with said ratchet wheel, connected to said screw such that rotation of said screw causes rotation of said C-spring, said C-spring additionally having a pawl extending from said C-spring in matable connection with one of said ratchet teeth on said ratchet wheel;

(f) a hollow ferrule, through which said screw slides, comprising a first and a second end, and a panel attachment means on said second end to attach said ferrule to a top side of said panel; and

(g) a screw captivation means wherein said first end of said ferrule is slidably and rotatably attached to said knob such that when said threaded shaft is in a retracted position, said threaded shaft captivation means prevents said ferrule and said knob from separating;

whereby, one of said plurality of teeth of said ratchet wheel engages said pawl when hand tightening the captive screw with said knob in a clockwise direction, and said teeth of said ratchet wheel allow said pawl to slip over said teeth when rotating the knob in a counterclockwise direction such that the screw does not rotate.

5,642,973

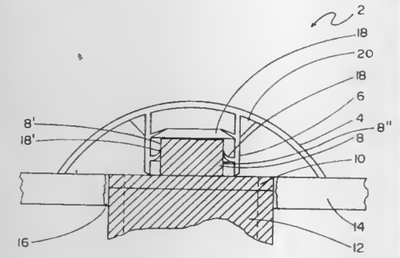
PLUMBING CLEANOUT COVER

Daniel Glenn Pretty, 10765 Okanagan Centre Road West, Okanagan Centre, British Columbia, Canada

Filed Dec. 26, 1995, Ser. No. 578,425

Int. Cl.[6] F16B *37/14*

U.S. Cl. 411—431 **7 Claims**



1. A releasably mountable cleanout cover for releasable mounting onto a plumbing access cover exposed within an aperture in a wall, said plumbing access cover having a cover plate and having a smooth sided protruding cap protruding therefrom, said protruding cap having opposed, smooth, side surfaces extending generally perpendicular to said cover plate, said cover comprising:

an aperture covering member having an exterior surface, circumferential edges, and an interior surface for covering said aperture in said wall,

a hollow mounting tube rigidly mounted to and generally centered on, said interior surface, said hollow mounting tube extending longitudinally and generally perpendicularly outwardly from said interior surface, a longitudinally spaced apart array of opposed inwardly extending resilient flanges having inwardly disposed resiliently bendable tips, said resilient flanges being spaced longitudinally apart within said hollow mounting tube for sliding resilient deformation over said opposed, smooth, side surfaces on said protruding cap when said protruding cap is translated in a first direction so as to be snugly journalled in said hollow mounting tube and thereby snugly retained between said opposed inwardly extending resilient flanges, and so as to resiliently bend said inwardly disposed resiliently bendable tips of said opposed inwardly extending resilient flanges in said first direction so as to engage said tips in flush frictional engagement with said opposed, smooth side surfaces.

5,642,974

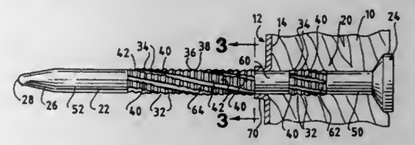
FASTENER AND BUILDING ASSEMBLY COMPRISING WORKPIECE, SUBSTRATE, AND FASTENER

William L. Gabriel, Barrington; Lawrence S. Shelton, Morton Grove; Henry A. Sygnator, Arlington Heights, and Elizabeth J. Eckmann, Chicago, all of Ill., assignors to Illinois Tool Works Inc., Glenview, Ill.

Continuation of Ser. No. 293,003, Aug. 19, 1994, Pat. No. 5,489,179. This application Dec. 12, 1995, Ser. No. 571,213

Int. Cl.[6] F16B *15/06;15/08*

U.S. Cl. 411—453 **2 Claims**



1. A fastener having an elongate shank defining an axis, the fastener having an enlarged head formed at one end of the shank, the shank having a grooved portion formed with helical grooves defining helical ribs and a cylindrical portion between the grooved portion and the tip, the helical grooves having rounded crests, the grooved and cylindrical portions defining an imaginary cylinder having a constant diameter along the grooved and cylindrical portions, wherein the grooved portion is formed with annular grooves defining annular rings.

5,642,975

DEVICE FOR FITTING SHOP WINDOWS

Benoit Dov Epstein, Manoir de Beauvoir, F-14140 Tortisambert, France

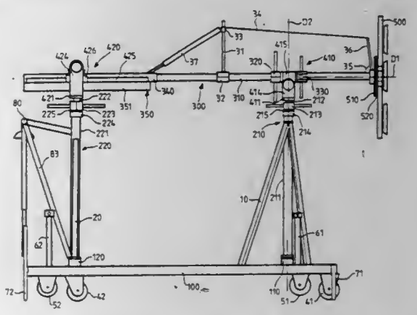
PCT No. PCT/FR94/01171, § 371 Date Jul. 15, 1996, § 102(e) Date Jul. 15, 1996, PCT Pub. No. WO95/09788, PCT Pub. Date Apr. 13, 1995

PCT Filed Oct. 6, 1994, Ser. No. 624,580

Claims priority, application France, Oct. 6, 1993, 93 12093

Int. Cl.[6] E04G *21/14*

U.S. Cl. 414—11 **27 Claims**



1. A device for fitting shop windows, characterised in that said device comprises:

a base provided with roller means,

two independently operable vertical hoisting means fixed to said base,

a ram supported by both said hoisting means and positioned at a top point of each hoisting means, the ram comprising axial translation means,

a suction cap structure positioned at one end of said ram,

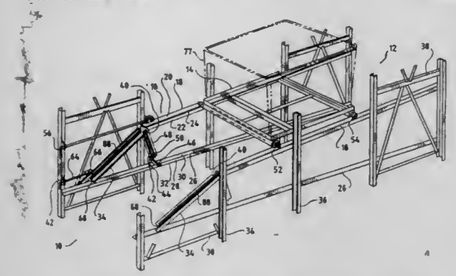
two independently operated translation means for transverse translation of the ram with respect to the ram's longitudinal axis,

means for rotating said suction cap structure, firstly about the axis of said ram and secondly about an axis parallel to the direction of the vertical motion of the hoisting means.

5,642,976
UNLOADING DEVICE

Anthony N. Konstant, Winnetka, Ill., assignor to Konstant Products, Inc., Skokie, Ill.

Division of Ser. No. 335,301, Oct. 21, 1994, Pat. No. 5,567,103.
This application Apr. 18, 1996, Ser. No. 635,433
Int. Cl.[6] B65G *1/08*
U.S. Cl. 414—276 **7 Claims**



1. An unloading system having an unloading front end and loading rear end comprising:

a two-tiered rail system having a set of parallel feed rails and a set of parallel return rails positioned below said feed rails;

said feed rails having sections of increased angularity near said front end;

at least one cart having a load bearing surface adapted to carry a unit load and further including a speed reducer for controlling said cart's descent down said sections of increased angularity;

said cart further including a support means for attachment of front and rear wheels, said wheels positioned on said cart for rolling engagement with said feed rails and said return rails of said two-tiered rail system;

a first set of passageways located above said return rails, said first passageways adapted to permit said rear wheels of said cart to move from rolling engagement with said feed rails to rolling engagement with said return rails;

a second set of passageways located above said return rails, said second passageways adapted to permit said front wheels of said cart to move from rolling engagement with said feed rails to rolling engagement with said return rails; and

said rail system adapted for said cart to be supported on said sections of increased angularity during the unloading of said unit load.

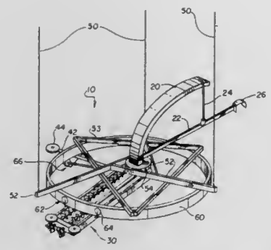
5,642,977
SILO UNLOADER

Gregg W. Hanson, Willmar, and Howard D. Jacobson, Lake Lillian, both of Minn., assignors to Hanson Silo Company, Lake Lillian, Minn.

Filed Feb. 27, 1996, Ser. No. 608,842
Int. Cl.[6] B65G *65/46*
U.S. Cl. 414—320 **18 Claims**

1. A silo unloader for removing silage from a tower silo by propelling silage out of a drop chute opening, the unloader comprising:

a frame suspended within the silo from an upper portion thereof;



an auger arm rotatably attached to the frame having a first auger and a second auger for moving the silage to a collection point, the first auger and the second auger positioned substantially parallel to one another wherein the first auger operates over only a portion of the auger arm and has a first auger shaft extending over the remaining length of the auger arm, while the second auger operates over the entire length of the auger arm, the second auger further has a mechanism for directing silage from the collection point to an exit point directly adjacent the second auger;

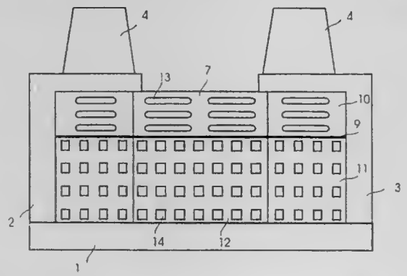
a closed bottom blower attached to the frame and positioned above the first auger, the blower having an inlet for receiving silage and an outlet, the inlet positioned above the second auger at an angle such that the inlet is at the exit point; and

a projection spout attached to the frame and aligned with the blower outlet to receive silage from the blower and direct it to the drop chute opening.

5,642,978
DEVICE FOR HANDLING DISK-SHAPED OBJECTS IN A HANDLING PLANE OF A LOCAL CLEAN ROOM

Berndt Lahne; Klaus Schultz; Werner Scheler; Michael Heitmann, and Axel Gaglin, all of Jena, Germany, assignors to Jenoptik GmbH, Jena, Germany

Continuation of Ser. No. 331,524, Nov. 3, 1994, abandoned.
This application Jun. 3, 1996, Ser. No. 656,698
Claims priority, application Germany, Mar. 29, 1993, 43 10 149.6
Int. Cl.[6] H01L *21/00*
U.S. Cl. 414—331 **13 Claims**



1. A device for handling disk-shaped objects in a handling plane of a local clean room, said device comprising:

work stations situated substantially in the handling plane for processing and inspecting the disk-shaped objects;

an air processing system for generating a substantially laminar air flow, said air processing system being positioned on a side of said device;

a magazine which can be adjusted vertically relative to the handling plane and work station by a plurality of drive elements;

an intermediate base dividing the local clean room into two partial spaces, a first partial space and a second partial space; and

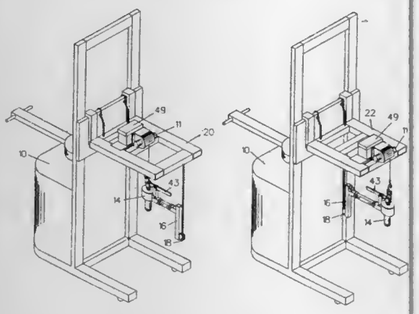
means for generating an air flow component from said substantially laminar air flow and directing said airflow component from said first partial space on one side of said intermediate base into said second partial space on the other side of said intermediate base;

wherein (i) said laminar air flow is introduced separately into said first and second partial space from said side on which said air processing system is positioned and (ii) a direction of said air flow component is substantially perpendicular to a direction of said laminar air flow.

5,642,979
ROLL HANDLING APPARATUS FOR FORK LIFT TRUCKS

Ralph E. Cullen, Arden Hills, and John Robert Sjolund, Crosslake, both of Minn., assignors to N.R.S. Systems, Inc., Crosslake, Minn.

Continuation-in-part of Ser. No. 370,370, Jan. 9, 1995, Pat. No. 5,513,944. This application Jan. 17, 1996, Ser. No. 591,216
Int. Cl.[6] B66F *9/18*
U.S. Cl. 414—607 **1 Claim**



1. An apparatus for lifting and rotating a roll of material having an accessible axial core opening, comprising:

a rectangular frame comprised of four or more frame members of varying size welded together and designed to fit onto the forks of a conventional fork lift truck, each member comprising a rectangular tube;

an "L" shaped arm;

a probe having first and second ends, the first end constructed for insertion into the core opening of a said roll and including gripping means comprising expansion means for expanding and gripping the inside of the core opening, said second end being connected to said arm;

a first flexible vertical support means having first and second ends and being pivotally connected to a pivot point on said arm at said first end of said support means and connected to said frame at said second end of said support means;

a second flexible vertical support means having first and second ends, said second end of said second support means being connected to said probe through a pivoting lever that assures that an axial force is applied to the probe during lifting and turning;

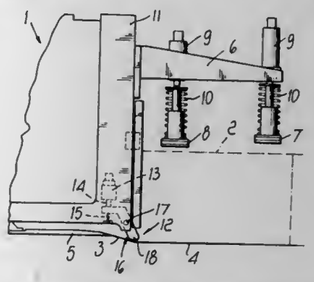
control and power means connected to said frame and operatively connected to said first end of said second support means to permit controlled extension and retraction of the second support means to thereby provide for rotation of a handled said roll from vertical to horizontal or the reverse;

wherein said control and power means comprises an electric hoist, and said first support means comprises a chain.

5,642,980
DEVICE FOR PICKING UP STACKS OF PRODUCTS FROM A SUPPORT

Alver Tacchi, and Antonio Gamberini, both of Bologna, Italy, assignors to G.D. S.p.A., Bologna, Italy

Filed Apr. 4, 1996, Ser. No. 627,536
Claims priority, application Italy, Apr. 28, 1995, BO95A0188
Int. Cl.[6] B65G *59/02*
U.S. Cl. 414—796.9 **14 Claims**



1. Device for picking up stacks of products from a platform, comprising:

a head for picking up a stack of products from said platform, said head being movable along perpendicular axes and including a supporting bracket;

presser elements for pressing on an upper region of said stack, said presser elements being mounted on said bracket of said heed and being operatable for acting independently on said upper region, at least in proximity of a first end, side of said stack;

a flexible lamina-mounted at a lower base of said head, said lamina being slidingly movable with a reciprocating motion at the base of said head to fit in an insertion region between said stack and said platform; and

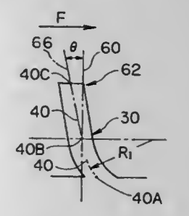
additional presser elements operatable for engaging a lower region of a second end side of the stack, said second end side of the stack engageable by said additional presser means being opposite to said first end side; and wherein

said additional presser elements exert on said stack a pressure for easing said second end side up from said platform at least at the region of insertion of said lamina between, the stack and said platform.

5,642,981
REGENERATIVE PUMP

Eisuke Kato, and Takashi Nagai, both of Oobu, Japan, assignors to Aisan Kogyo Kabushiki Kaisha, Aichi, Japan

Continuation of Ser. No. 506,774, Jul. 26, 1996, abandoned.
This application Aug. 26, 1996, Ser. No. 697,289
Claims priority, application Japan, Aug. 1, 1994, 6-180318
Int. Cl.[6] F04D *17/06*
U.S. Cl. 415—55.1 **1 Claim**



1. A regenerative pump comprising:

a housing;

an impeller rotatably mounted inside of the housing by means of a shaft, said impeller including a flat disc-shaped base plate whose both sides being rotated within a plane perpendicular to a central axis of rotation of said shaft, a plurality of concave channels formed along the peripheral edges on both sides of said base plate and blades positioned between these concave channels in a substantially radial direction of said base plate; and

a pump chamber formed in the housing for accommodating said impeller, said pump chamber including inner plane side wall opposite to both flat side surfaces of said base plate of the impeller, a cylindrical inner peripheral wall opposite to the tip ends of said blades, and arcing grooved wall surfaces connecting said inner plane side wall to said cylindrical inner peripheral wall as well as forming a fluid passage connecting an inlet port to an outlet port, both being formed in said housing,

the improvement being characterized in that

a surface of each blade of said impeller facing forward in the direction of rotation of the impeller is formed in a concave,

a configuration of each of said blades in a plane perpendicular to a central axis of rotation of the impeller is formed such that a first set of center points of thickness in a peripheral direction thereof located in a radially outer portion of the blades are positioned at least in rear positions in the direction of rotation of the impeller in relation to a second set of center points of thickness in the peripheral direction thereof located in a radially inner portion of the blade, and

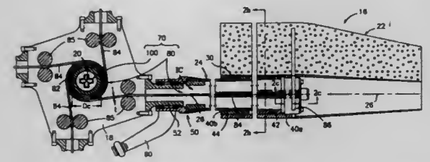
said first set of center points of thickness in the peripheral direction located in said radially outer portion of the blade are positioned in a row on a straight line which cross one radial line of the base plate at an angle greater than zero degrees and not greater than five degrees.

5,642,982

RETRACTION/EXTENSION MECHANISM FOR VARIABLE DIAMETER ROTORS

David G. Matuska, Huntington, and Edward W. Gronenthal, Shelton, both of Conn., assignors to Sikorsky Aircraft Corporation, Stratford, Conn.

Filed Dec. 11, 1995, Ser. No. 570,579
Int. Cl.[6] F04D *29/18*
U.S. Cl. 416—87 **22 Claims**



1. A retraction/extension mechanism (**70**) for a Variable Diameter Rotor system (**10**), the Variable Diameter Rotor system (**10**) having a plurality of rotor blade assemblies (**16**) mounted to and rotating with a rotor hub assembly (**18**) about an axis of rotation (**20**), each rotor blade assembly (**16**) having inboard and outboard blade sections (**24**, **22**) wherein the outboard blade section (**22**) telescopically mounts to the inboard blade section (**24**), the retraction/extension mechanism (**70**), comprising:

a reeling assembly (**80**) disposed internally of the rotor hub assembly (**18**) and each rotor blade assembly (**16**), said reeling assembly (**80**) disposed in combination with the outboard blade section (**22**) of each rotor blade assembly (**16**); and

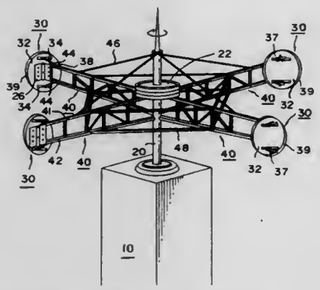
an epicyclic gear train (**100**) disposed in combination with the rotor hub assembly (**18**) and said reeling assembly (**80**), said epicyclic gear train (**100**) being operative for driving said reeling assembly (**80**) so as to effect telescopic transition of the outboard blade sections (**22**) with respect to the inboard blade sections (**24**).

5,642,983

SAIL SYSTEM FOR WIND TURBINES

Jung Han Chung, Jukong Apt. 704-111, Dungchoo-dong, Kangseo-ku, Seoul, Rep. of Korea

Filed Nov. 22, 1995, Ser. No. 562,271
Claims priority, application Rep. of Korea, Nov. 26, 1994, 1994-31375
Int. Cl.[6] F03D *3/06*
U.S. Cl. 416—119 **4 Claims**



1. A sail system for wind turbines, comprising:

a) a support;

b) a vertical shaft rotatably held by said support;

c) a plurality of support arms radially extending from said shaft, each of said support arms having a tip portion;

d) a hinge operably secured to each said tip portion;

e) a sail pivotably secured to each respective said tip portion through each respective said hinge;

f) at least one longitudinal slit horizontally formed in either the upper or lower portion of each said sail;

g) a holding rod pivotably secured to each said arm, said rod extending through said at least one slit of the respective said sail, each said holding rod having a stopper at its free end portion projecting out of said at least one respective longitudinal slit; and

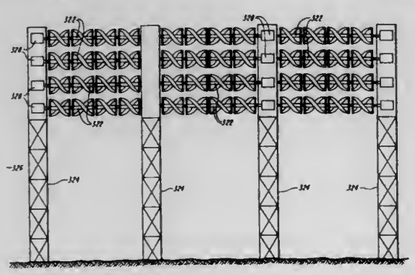
h) a spring fitted over each said holding rod between each said respective stopper and each said respective sail.

5,642,984

HELICAL TURBINE ASSEMBLY OPERABLE UNDER MULTIDIRECTIONAL FLUID FLOW FOR POWER AND PROPULSION SYSTEMS

Alexander M. Gorlov, Brookline, Mass., assignor to Northeastern University, Boston, Mass.

Continuation-in-part of Ser. No. 241,762, Apr. 22, 1994, Pat. No. 5,451,137, which is a continuation-in-part of Ser. No. 179,965, Jan. 11, 1994, Pat. No. 5,451,138. This application May 30, 1995, Ser. No. 452,824
Int. Cl.[6] F04D *29/32*
U.S. Cl. 416—176 **17 Claims**



1. A system for harnessing the energy of a multidirectional fluid flow comprising:

a rotatable shaft;

a generator in communication with said rotatable shaft; and

a plurality of helical turbine modules supported on said rotatable shaft, each turbine module comprising a turbine capable of unidirectional rotation under multidirectional fluid flow, said turbine further comprising:

at least one turbine blade support member fixedly mounted to said rotatable shaft for rotation therewith in a plane perpendicular to said shaft; and

plurality of turbine blades having a fixed helical configuration and mounted to said turbine blade support member for rotation about an axis of said rotatable shaft, each blade having an airfoil shape having a leading edge and a trailing edge and an airfoil profile lying in a plane parallel to a component of the fluid flow, each of said blades fixedly mounted to said blade support member to be radially spaced from said rotatable shaft for rotation in the plane perpendicular to said shaft in a direction of said leading edge; and

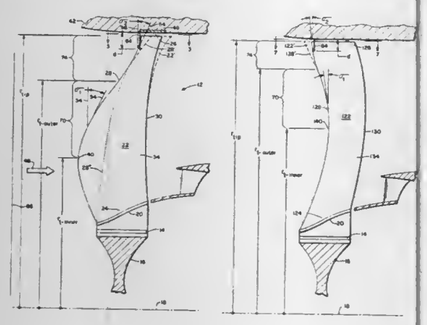
a further plurality of turbine blades having a helical configuration and mounted concentrically with said plurality of turbine blades to said turbine blade support member for rotation about said axis of said rotatable shaft.

5,642,985

SWEPT TURBOMACHINERY BLADE

David A. Spear, Manchester; Bruce P. Biederman, Meriden, both of Conn., and John A. Orosa, Palm Beach Gardens, Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Nov. 17, 1995, Ser. No. 559,965
Int. Cl.[6] F01D *5/14*
U.S. Cl. 416—238 **3 Claims**



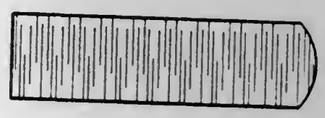
1. A turbomachinery blade for a turbine engine having a cascade of blades rotatable about a rotational axis so that each blade in the cascade has a leading neighbor and a trailing neighbor, and each blade cooperates with its neighbors to define flow passages for a working medium gas, the blade cascade being circumscribed by a case, and under some operational conditions an endwall shock extends a limited distance radially inward from the case and also extends axially and circumferentially across the flow passages, and a passage shock also extends across the flow passages, the turbomachinery blade including an airfoil having a leading edge, a trailing edge, a root, a tip and an inner transition point located at an inner transition radius radially inward of the tip, the blade characterized in that at least a portion of the leading edge radially outward of the inner transition point is swept and a section of the airfoil radially coextensive with the endwall shock extending from the leading neighbor intercepts the endwall shock so that the endwall shock and the passage shock are coincident.

5,642,986

FLEXIBLE IMPELLER WITH ONE-PIECE HUB

Mitchell Rose, South Euclid, Ohio, assignor to The Scott Fetzer Company, Westlake, Ohio

Continuation-in-part of Ser. No. 495,362, Jun. 28, 1995. This application Mar. 27, 1996, Ser. No. 623,331
Int. Cl.[6] F04D *29/38*
U.S. Cl. 416—240 **20 Claims**



1. A fan impeller comprising:

a plurality of pliable blades for centrifugally displacing a volume of air upon rotation of the impeller; and

a hub for retaining said plurality of blades, wherein said hub secures the impeller to a motor-driven shaft for producing rotation, and wherein the hub further comprises:

a main hub body formed with a hub base; and

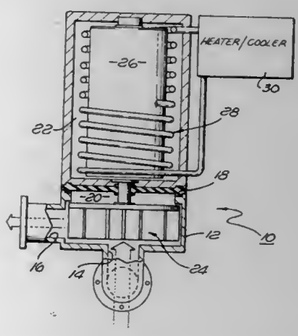
a plurality of prongs which extend in an axial direction from the hub base to define a plurality of respective channels between the prongs and the main hub body, wherein the respective blades are received and retained by the channels, wherein the main hub body includes ribs between the respective prongs so that the respective channels are generally U-shaped.

5,642,987

PUMP MOTOR ASSEMBLY FOR A TWO-PHASE FLUID

Todd Taricco, P.O. Box 1547, Zephyr Cove, Nev. 89448

Filed Mar. 8, 1996, Ser. No. 614,815
Int. Cl.[6] F04B *17/03*
U.S. Cl. 417—53 **13 Claims**

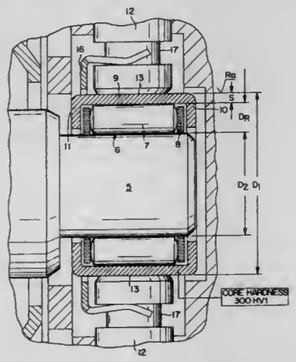


1. A method for pumping a liquefied gas, comprising the steps of:

a) providing a pump assembly that includes a housing assembly that has a motor chamber and a pump chamber, said pump chamber being in fluid communication with an inlet port and an outlet port of said housing assembly, a pumping device located within said pump chamber, and a motor that drives said pumping device, said motor being located within said motor chamber;

b) introducing a liquid gas to said pump chamber through said inlet port, wherein a portion of the liquefied gas flows into said motor chamber above a critical temperature of said liquefied gas;
c) driving said pumping device to pump the liquid gas from said inlet port to said outlet port; and,
d) heating the liquefied gas within said motor chamber.

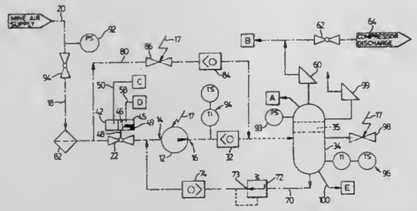
5,642,988
RADIAL PISTON PUMP
Helmut Zorn, Herzogenaurach, Germany, assignor to INA Walzlager Schaeffler KG, Germany
Continuation-in-part of Ser. No. 484,586, Jun. 7, 1995, abandoned, which is a continuation of Ser. No. 72,594, Jun. 4, 1993, abandoned, which is a continuation of Ser. No. 896,109, Jun. 9, 1992, abandoned. This application Nov. 21, 1995, Ser. No. 561,446
Claims priority, application Germany, Feb. 15, 1991, 42 04 631.9
Int. Cl.[6] F04B *27/04*
U.S. Cl. 417—273 **3 Claims**



1. A radial piston pump (**1**), with a rotating pump shaft (**3**), an end section of which has a pivot (**5**) extending eccentrically to a longitudinal center axis of the pump shaft (**3**), there being arranged on the pivot (**5**) a rolling bearing on whose outer ring (**9**) are supported by their plane end faces (**13**) pump plungers (**12**) in star arrangement in a pump housing (**2**) and extending radially to the pump shaft (**3**), characterized in that the rolling bearing is designed as a needle bearing (**6**) with the needle elements rolling directly against the shaft pivot (**5**), the outer ring (**9**) being produced as a deep-drawn sheet metal ring with chiplessly formed edges (**10,11**) on both sides, in which needle shaped rolling elements (**7**) are guided via a cage (**8**) and in which the outer ring (**9**) is made with a core hardness of at least 300 HVl and a quotient Q_1 out of a thickness "s" of the outer ring (**9**) and an outer diameter D_1 of the outer ring (**9**) is expressed as Q_1=s: D_1 and is between 0.085 and 0.06.

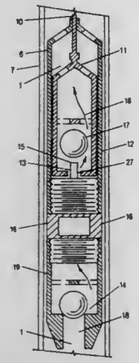
5,642,989
BOOSTER COMPRESSOR SYSTEM
David Keddie, Mississauga, Canada, assignor to National Compressed Air Canada Limited, Ontario, Canada
Filed Oct. 13, 1995, Ser. No. 542,586
Int. Cl.[6] F04B *49/00*
U.S. Cl. 417—298 **13 Claims**

1. A booster compressor system, comprising:
a screw compressor having a suction inlet and a high pressure outlet;



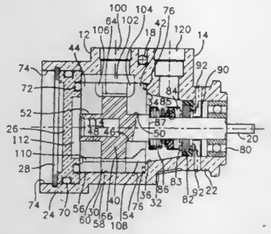
an inlet line connected between said suction inlet and a system inlet for connection to an air supply source at a supply pressure,
an intake valve in said inlet line;
an intake valve controller comprising a proportional regulator having a pressure inlet in fluid communication with said high pressure outlet and a delivery outlet outputting a valve control pressure signal, said proportional regulator being a negative signal proportional regulator for delivering a pressure at said delivery outlet which is inversely proportional to a pressure at said pressure inlet, said delivery outlet valve control pressure signal arranged for urging said intake valve toward a valve open position.

5,642,990
TRAVELING VALVE BALL DISPLACING TOOL
Charles G. Short, HC 31 Box 51V50, Midland, Tex. 79707
Filed Dec. 27, 1995, Ser. No. 579,363
Int. Cl.[6] F04B *53/10*
U.S. Cl. 417—444 **5 Claims**



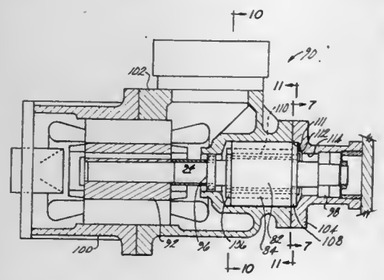
1. A downhole pump apparatus having a pump plunger reciprocatingly received within a pump barrel; a traveling valve seat comprising an intermediate planar perforate cage member within said plunger forming an opening into said plunger for the flow of produced fluid; a caged traveling valve ball received in said traveling valve seat within said plunger; a standing valve assembly forming an inlet into said downhole pump; a traveling valve ball displacing tool containing internal flow passageways for conducting fluid flow from said standing valve assembly inlet to said traveling valve seat opening; said standing valve assembly being separated from said barrel by said traveling valve ball displacing tool; said traveling valve ball displacing tool having opposed ends with a removable and replaceable flat-topped stinger having radiused edges extending from one end in aligned relationship respective to the traveling valve seat to displace said caged traveling valve ball each reciprocation of the plunger and thereby allow a fluid flow through the pump; said pump barrel and said standing valve assembly being removably affixed to said traveling valve ball displacing tool.

5,642,991
SLIDING VANE PUMP WITH PLASTIC HOUSING
Ronald Clinton Singleterry, Bell Buckle, and William M. Larson, Murfreesboro, both of Tenn., assignors to Procon Products, Murfreesboro, Ind.
Filed Mar. 11, 1996, Ser. No. 614,318
Int. Cl.[6] F04C *2/344;15/00;* **F16L** *39/02*
U.S. Cl. 418—104 **27 Claims**



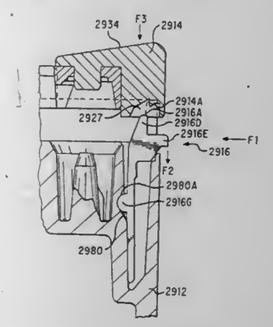
1. A sliding vane pump having a housing and a cartridge assembly enclosed by said housing, said cartridge assembly comprising a plurality of vane elements confined to radial displacement within a rotor body, said radial displacement of said vane elements being biased outwardly from a rotor body rotational axis and against a stationary cam ring having external and internal perimeter surfaces whereby distal ends of said vane elements slidably engage the internal perimeter surface of said cam ring, said vane confining rotor body and cam ring being confined axially between stationary partition walls, a fluid inlet port opening through said housing to the interior surface of said cam ring, discharge flow channels through at least one of said partition walls to release discharge fluid flow from said cam ring interior surface into a discharge chamber within said housing that is axially displaced from said cartridge assembly, a drive shaft secured at one end thereof to said rotor body and extending from said rotor body along a respective rotational axis that is coaxial with said rotor body rotational axis, the extension of said drive shaft from said rotor body passing through said discharge chamber and an aperture in said housing, and pressure sealing means secured to said drive shaft to seal said aperture with the force of fluid pressure in said discharge chamber.

5,642,992
MULTI-ROTOR HELICAL SCREW COMPRESSOR
David N. Shaw, 200 D Brittany Farms Rd., New Britain, Conn. 06053
Filed Oct. 30, 1995, Ser. No. 550,253
Int. Cl.[6] F04C *18/16*
U.S. Cl. 418—152 **13 Claims**



1. A helical-screw rotary compressor comprising:
a first rotor;
at least two second rotors axially aligned with said first rotor, said first rotor in communication with said second rotors whereby said first rotor drives said second rotors, said second rotors being generally equally spaced about said first rotor;
a discharge side plate disposed at a discharge end of said first rotor, said discharge side plate being generally cylindrical and having an outside diameter about the same as a crest diameter of said first rotor; and
a compressor housing having said first and second rotors disposed therein, said compressor housing comprising,
(1) an induction housing portion,
(2) a main housing portion, and
(3) a discharge housing portion, said discharge housing portion including,
(a) an inner circumferential surface for receiving said discharge side plate with a clearance being defined between said inner circumferential surface and an outer circumference of said discharge side plate,
(b) a countersunk surface depending from said inner circumferential surface and terminating at an opening, said countersunk surface depending from said inner circumferential surface allows said clearance to be sealed by a liquid in said compressor, and
(c) at least two discharge porting schemes, each positioned for communication with a discharge port area of each corresponding said second rotor.

5,642,993
SELECTIVELY ACTUATABLE LIGHTER
James M. McDonough, Guilford, Conn., and Michel Doucet, Bains/s/Oust Redon, France, assignors to BIC Corporation, Milford, Conn.
Continuation-in-part of Ser. No. 723,989, Jul. 1, 1991, Pat. No. 5,456,598, which is a continuation-in-part of Ser. No. 609,668, Nov. 6, 1990, abandoned, which is a continuation of Ser. No. 239,734, Sep. 2, 1988, Pat. No. 5,002,482. This application Jun. 5, 1995, Ser. No. 462,988
Int. Cl.[6] F23D *11/36*
U.S. Cl. 431—153 **20 Claims**



1. A flame producing lighter which comprises:
a housing defining a longitudinal axis and a reservoir for containing fuel under pressure;
valve means arranged for selective actuation between a normally closed position which prevents exit of said fuel from said reservoir, and an open position which permits exit of said fuel from said reservoir through said valve means;
valve actuation means having a depressible portion with a cavity formed therein, said depressible portion being movable along said longitudinal axis for actuating said valve means to and from said open and closed positions;
means for selectively producing sparks at a location proximate a gaseous medium exit opening of said valve means thereby selectively causing ignition of said fuel; and
means normally positioned for preventing actuation of said valve actuation means to the open position by positioning an interfering portion to interfere with the movement of said valve actuating means, said valve actuation prevention means

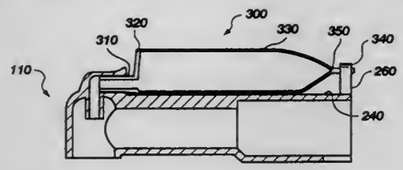
movable generally along said longitudinal axis and movable out of a normal position into a second position cooperating with said cavity of said actuating means such that actuation of said valve means to the open position is permitted, said valve actuation prevention means being movable to said second position only by application of a user-applied force directly to said actuation prevention means resulting in a user moving said interfering portion of said actuation prevention means inward, toward the longitudinal axis, to a position out of interference with said valve actuation means, followed by a downward movement along said longitudinal axis into said second position.

5,642,994

TEETH CLEANING IMPLEMENT WITH INTEGRATED FLUID DISPENSER

E. Terry Chipian, Sandy; Eric Simon, and Alexander Theodore, both of Salt Lake City, all of Utah, assignors to Propheze, Inc., Salt Lake City, Utah

Filed Jun. 26, 1995, Ser. No. 494,838
Int. Cl.[6] A61C *1/10;1/12;17/02*
U.S. Cl. 433—82 **36 Claims**



1. A removable prophylactic headpiece assembly used in cleaning teeth, said headpiece comprising:
a removable headpiece with an attaching end, a top surface, and a working end, having a central bore beginning at the attaching end and extending therethrough along a lengthwise axis defining a drive bore;
a prophy cup bore extending through the removable headpiece at generally a ninety degree angle relative to the central bore, being fluidly coupled to the central bore at the working end, and defining a prophy cup axis which exits at a prophy cup port at the working end;
a lumen which partially extends into and terminates at a lumen port end within the prophy cup bore, opposite to the prophy cup port, and parallel to the prophy cup axis, wherein the lumen defines a hollow passage that exits the headpiece at a container port at the top surface of the headpiece;
a dispensing container coupled to the container port;
said top surface of the headpiece providing a support means for resting the dispensing container thereon, said support means extending generally the length of the headpiece; and
a securing means for coupling the dispensing container to the top surface support means to enable a manually operable dispensing actuator to dispense a fluid from said dispensing container.

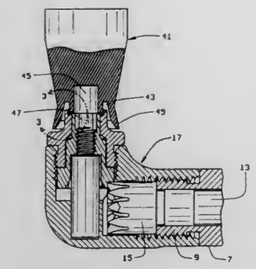
5,642,995

DENTAL PROPHYLAXIS ANGLE WITH SEAL PROTECTOR

Ronald L. Bailey, Harvester, Mo., assignor to Young Dental Manufacturing Company, Earth City, Mo.

Filed Aug. 16, 1995, Ser. No. 515,826
Int. Cl.[6] A61C *1/05;1/16;3/06*
U.S. Cl. 433—115 **22 Claims**

1. A dental prophylaxis angle comprising a body having a hollow stem thereon, a rotatable bur tube extending into the hollow stem, the hollow stem having a knife edge which extends axially above an axial end of the bur tube, and a protector wall which surrounds the knife edge.

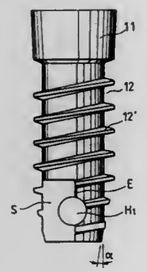


5,642,996

ENDOSSEOUS IMPLANT

Masaaki Mochida, Yamato; Norio Kaneko, Yokohama, and Nobuhiro Tanaka, Zama, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 325,618, Oct. 19, 1994, abandoned. This application Jul. 1, 1996, Ser. No. 673,096
Claims priority, application Japan, Oct. 20, 1993, 5-261437; Apr. 6, 1994, 6-068224; Apr. 7, 1994, 6-069211
Int. Cl.[6] A61C *8/00*
U.S. Cl. 433—174 **19 Claims**



5. An endosseous implant comprising:
a collar portion; and
a main body portion formed under said collar portion, having male threads with a height from 0.2 to 0.4 mm and a pitch from 0.8 to 1.7 mm provided about said main body portion, a tip portion at the end of said main body portion, and a niche formed in the tip portion, the niche of said main body portion having a cutting surface and a clearance surface, and the surface of said main body portion including the male threads, the tip portion, and the niche having a roughness not exceeding 10 to 100 μm.

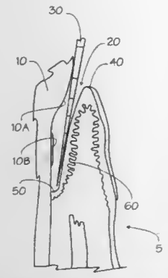
5,642,997

LASER EXCISIONAL NEW ATTACHMENT PROCEDURE

Robert H. Gregg, II, 10929 South St., #106-B, Cerritos, Calif. 90703, and Delwin K. McCarthy, P.O. Box 3054, Hemet, Calif. 92546

Filed Feb. 1, 1996, Ser. No. 595,310
Int. Cl.[6] A61C *3/00*
U.S. Cl. 433—215 **10 Claims**

1. An excisional new attachment procedure comprising the steps of:



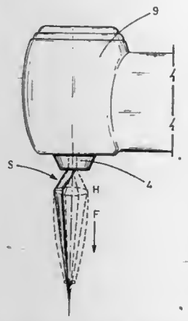
a) anesthetizing a gingival tissue corresponding to a targeted tooth, of a patient the tooth having a tooth surface;
b) measuring a depth of a pocket in the gingival tissue, from an upper gingival margin to a mucogingival junction;
c) ablating and vaporizing an interior epithelial lining of the pocket, to the depth of the pocket on all sides of the tooth to prepare a new pocket tissue surface;
d) cleaning the tooth surface of all foreign matter, to the depth of the pocket on all sides of the tooth;
e) lasing the pocket to remove granulation tissue, and to: disinfect, assist in hemostatis, cauterize free nerve endings, and seal lymphatics, of the pocket tissue surface, and to prepare the pocket tissue surface for welding, and to desensitize the tooth;
f) rinsing the pocket to remove debris; and
g) irrigating the pocket with a bactericidal solution;
h) eliminating occlusal interferences;
i) lasing the pocket tissue surface to adapt the pocket tissue surface for tissue welding;
j) approximating the pocket tissue surface with the tooth surface; and
k) maintaining the pocket tissue surface in contact with the tooth surface to advance adhesion.

5,642,998

ENDODONTIC INSTRUMENT FOR RAPID MECHANICAL WIDENING OF THE CANAL MOUTH AND SPECIFIC RECTIFICATION OF THE FIRST TWO THIRDS

Francesco Riitano, Via S. Giovanni Bosco, II, Palazzo Sangiuliano - I-88068, Italy

Filed Jun. 6, 1996, Ser. No. 656,988
Claims priority, application Italy, Jun. 6, 1995, RM95A0377
Int. Cl.[6] A61C *5/02*
U.S. Cl. 433—224 **14 Claims**



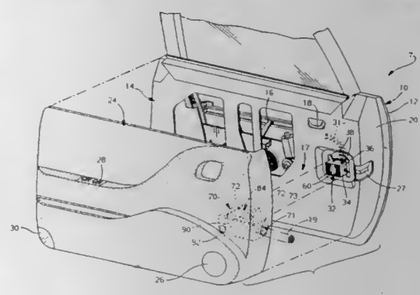
14. An endodontic method for rapid mechanical widening of the canal mouth and rectification of the first two thirds of dental root canals, comprising:
(a) providing an instrument, the instrument comprising:
a head (**2**, **3**, **4**) for engagement in an attachment device of a contra-angle (**9**) or a handpiece for mechanical operation, the head defining a head axis (Y—Y), and
an elongated conical tine (**1**) defining a tine axis (Y'—Y') and including a material-removing surface and a tip (**5***), said tine being joined to said head (**2**, **3**, **4**) with a neck part (**5**),
wherein said tine (**1**) is disaligned with respect to said head (**2**, **3**, **4**), such that the tine axis (Y'—Y') and the head axis (Y—Y) define an angle (α) therebetween;
and wherein said axes (Y—Y; Y'—Y') of said head and said tine intersect at a point adjacent to said tip (**5***) of said tine, such that said tip is disposed generally on said head axis (Y—Y);
(b) providing a rotary driver (**9**) including means for mounting the instrument by the head thereof and rotating the instrument about the head axis (Y—Y); and
(c) rotating the instrument about the head axis (Y—Y).

5,642,999

VEHICLE DOOR MODULAR CONNECTION SYSTEM

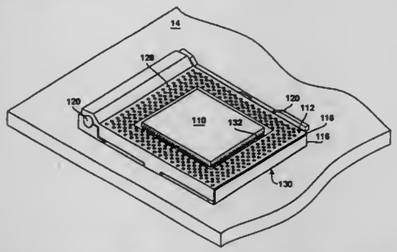
Richard Louis Kidd, Stow; Philip Jerome Engler, Leavittsburg, and Marc Lynn Mansell, Youngstown, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 23, 1995, Ser. No. 553,731
Int. Cl.[6] H01R *33/00*
U.S. Cl. 439—34 **6 Claims**



1. A vehicle door and signal connection arrangement comprising:
a first door panel having defined therein a H-shaped aperture defined by two parallel slots joined by a cross slot;
a first connective member having a body mounting a plurality of leads extending therethrough, the first connective member having a bore extending therethrough and also being received in the cross slot and rigidly connected to the first door panel;
a second door panel extending generally laterally adjacent the first door panel with fingers extending toward the first door panel, at least one of the fingers having a stop formed therein, at least a first and second finger having a portion received in one of the respective parallel slots;
a second connective member having a body mounting a plurality of leads extending therethrough for mating with the leads of the first connective member, the second connective member having a bore extending therethrough aligned with the bore of the first connective member, the second connective member being slidably mounted on the fingers of the second door panel and entrapped on the fingers by the stop; and
a fastener extending through the first and second connective members, causing the connective members to mate with one another and pulling the second door panel to positionally set the second door panel with respect to the first door panel.

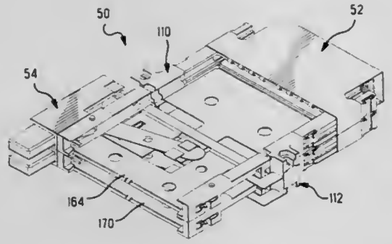
5,643,000
METHOD AND APPARATUS FOR PROVIDING PROCESSOR FIELD UPGRADABILITY TO A MOTHERBOARD
Dave Dent, Beaverton, Oreg., assignor to Intel Corporation, Santa Clara, Calif.
Continuation of Ser. No. 313,431, Sep. 27, 1994, abandoned.
This application Jul. 31, 1996, Ser. No. 691,859
Int. Cl.[6] H01R *9/09*
U.S. Cl. 439—69 **5 Claims**



1. A method for providing processor field upgradability to a motherboard of a computer system, said method comprising the steps of:
(a) surface mounting an original microprocessor package having a rectangular external dimension of length L_1 by width W_1 onto a first area of the motherboard, resulting in said original microprocessor package being in direct electrical contact with internal circuitry of the motherboard; and
(b) wave soldering a processor upgrade socket having a center cut out with a complementary rectangular internal dimension of length L_2 by width W_2 onto a second area of the motherboard, resulting in said processor upgrade socket being independently in direct electrical contact with said internal circuitry of the motherboard, the first area being encircled by the second area, and the internal dimension of length L_2 by width W_2 being larger than the external dimension of length L_1 by width W_1 in length as well as in width, allowing the center cut out to define a cavity having sufficient planar area to accommodate the original microprocessor package, the processor upgrade socket further having a top surface exposing a plurality of electrical receptacles for receiving an upgrade microprocessor package, which, when installed, occupies a spatial position above the original microprocessor package, and places the original microprocessor package in an open state.

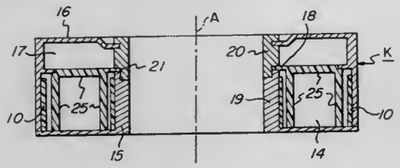
5,643,001
MEMORY CARD CONNECTOR
John Wilson Kaufman, Hershey; Edgar Charles Gorman, Harrisburg, and Robert Wayne Elicker, Dillsburg, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.
Filed Jul. 26, 1996, Ser. No. 686,788
Int. Cl.[6] H01R *13/635*
U.S. Cl. 439—159 **14 Claims**

1. A memory card connector arranged to be secured to a mounting surface comprising:
(a) an insulated housing having a plurality of electrical contacts therein;
(b) two spaced apart side walls extending from opposite ends of said housing defining first and second adjacent memory card receiving cavities therebetween, each of said first and second memory card receiving cavities having first and second major sides extending from said first side wall to said second side wall, each said cavity arranged to receive a memory card therewithin;
(c) a first lateral member extending between said first and second cavities along a portion of said second major side of said first cavity interconnecting said two side walls and a



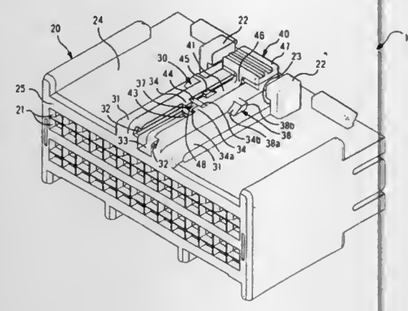
second lateral member extending along a portion of said second major side of said second cavity interconnecting said two side walls;
wherein said first major side of said first cavity is open;
wherein when the memory card connector is secured to said mounting surface, said second lateral member is adjacent said mounting surface and said open first major side of said first cavity is away from said mounting surface;
the memory card connector being adapted to receive a memory card of standard height within said second cavity and concurrently receive a raised profile memory card within said first cavity, wherein a portion of said raised profile memory card extends through said open first major side of said first cavity.

5,643,002
DEVICE FOR TRANSMITTING SIGNALS BETWEEN TWO TERMINALS
Klaus-Uwe Wolf, Erlangen, and Friedrich Schauer, Heroldsberg, both of Germany, assignors to Alcatel Kabel AG & Co, Germany
Filed Mar. 19, 1996, Ser. No. 618,324
Claims priority, application Germany, Mar. 30, 1995, 195 11 654.2
Int. Cl.[6] H01R *35/04*
U.S. Cl. 439—164 **7 Claims**



1. A device for transmitting signals between two terminals, the device comprising:
(a) an essentially circular cassette comprising a stator which supports one of the terminals and a rotor which is able to rotate around its axis and with respect to the stator and which supports the other terminal;
(b) at least one line stored in the cassette and being wound in turns, the at least one line being operationally connected between both terminals, the turns of the line are subdivided into an inner winding area and an outer winding area with different winding directions between which an approximately U-shaped reversing area is located; and
(c) a one-piece ring-shaped guide located between the two winding areas and encompassing the reversing area of the turns, the ring-shaped guide mounted for rotation in the peripheral direction of the cassette and having at least its inner periphery adapted to receive the turns of the inner winding area, the ring-shaped guide having a full rib-like collar extending radially inwardly from an inner wall of the ring-shaped guide, the rib-like collar having a lower face which lies against a corresponding surface of the rotor.

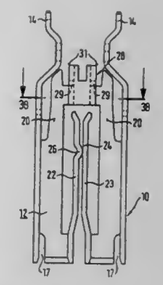
5,643,003
HOUSING LATCH WITH CONNECTOR POSITION ASSURANCE DEVICE
John Mark Myer, Millersville, and John Raymond Shuey, Mechanicsburg, both of Pa., assignors to The Whitaker Corporation, Wilmington, Del.
Filed Jun. 2, 1995, Ser. No. 458,605
Int. Cl.[6] H01R *13/627*
U.S. Cl. 439—352 **67 Claims**



1. An electrical connector housing assembly which includes a connector position assurance device (CPA) and a connector housing with at least one contact receiving aperture therein which extends from a mating face of said housing, said assembly further includes:
a deflectable housing latch formed on said connector housing, said housing latch includes at least one groove formed in a deflectable beam thereof for slidably receiving a respective portion of said CPA;
said CPA respective portion comprises a flange, said CPA flange is slidably movable in said groove between first and second positions relative to said housing latch, and said CPA includes a deflectable, resilient beam;
whereby, a deflecting force which, when applied to said housing latch, causes said housing latch to deflect relative to said housing, will also cause said CPA to be displaced relative to said housing when said CPA is in said first position.

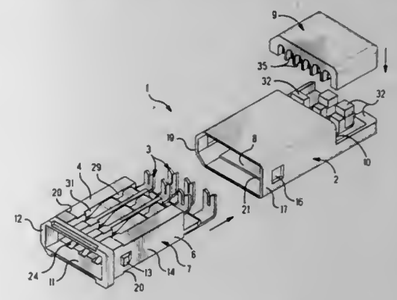
5,643,004
ELECTRIC CONNECTION CONTACT IN A SINGLE PIECE
Hans-Dieter Otto, Wipperfürth; Thomas Wabnitz, Solingen, and Ralf Korte, Wuppertal, all of Germany, assignors to Quante Aktiengesellschaft, Wuppertal, Germany
Continuation of Ser. No. 256,573, Apr. 13, 1995, abandoned.
This application Aug. 14, 1996, Ser. No. 698,223
Claims priority, application Germany, Sep. 4, 1992, 9211917 U
Int. Cl.[6] H01R *4/24*
U.S. Cl. 439—397 **5 Claims**

1. Connection contact in a single piece with two insulation displacement contacts (**14**) respectively comprising an insulation contact slot (**16**), a contact and guiding surface (**20**), and a shearing element, said connection contact comprising
two contact legs (**22,23**) connected at one of their ends with respectively one insulation displacement contact (**14**),
a home contact (**24**) formed between the free ends of the contact legs, and
a section (**27**) linking the insulation displacement contacts (**14**), characterized in that
the linking section (**27**) is designed in the form of a substantially U-shaped or V-shaped loop (**28**), said loop being at least partially sharp-edged,



respectively one leg (**30**) of the U- or V-shaped loop (**28**) being arranged as a lead-shearing element after an insulation displacement contact (**14**).

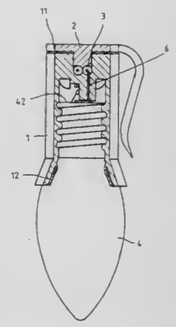
5,643,005
CONNECTOR FOR AN ELECTRICAL CABLE
Charles Harry Weidler, Lancaster; Hurley Chester Moll, Jr.; David Alan Griesemer, both of Harrisburg; Robert Neil Whiteman, Jr., Middletown, and Michael David Long, Harrisburg, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.
Continuation of Ser. No. 290,325, Aug. 12, 1994, abandoned.
This application Aug. 21, 1995, Ser. No. 524,175
Int. Cl.[6] H01R *4/24*
U.S. Cl. 439—405 **17 Claims**



1. An electrical connector comprising: electrical contacts, forward facing mating contact portions on the contacts, an insulator, the contacts being on opposite sides of the insulator, electrical terminals on the contacts, the terminals on the contacts on a first side of the insulator being shorter, the terminals on the contacts on a second side of the insulator being longer, the longer terminals projecting across the insulator and in a row of terminals rearward of the shorter of terminals, and further wherein; the insulator supports the shorter terminals, and the housing supports the longer terminals.

5,643,006
SAFE LIGHT BULB SOCKET STRUCTURE
Shou Jing Wang, 8-2, Pai Tea Fen, 1 Lind, Pai Tea Li, and Sher Yea Tai, 2F, No. 2, Lane 86, Hsin Kang Street, both of Chupei City, Hsinchu Hsien, Taiwan
Filed Dec. 26, 1995, Ser. No. 577,004
Int. Cl.[6] H01R *4/24*
U.S. Cl. 439—419 **1 Claim**

1. A safe light bulb socket structure, comprising:

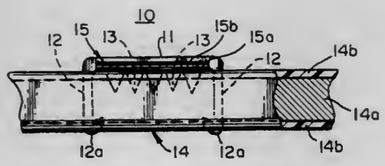


a socket shell having a cavity extending from a closed first end to an open second end thereof, said socket shell having a longitudinally extended substantially cylindrical wall extending between said first and second ends and encircling said cavity, said cylindrical wall having an internal surface with threads formed therein for coupling with a threaded base portion of a lamp, said first end of said socket shell having a wire receiving groove formed therein and extending transversely between a pair of opposing openings formed in said cylindrical wall, said first end having a pair of spaced parallel slotted openings extending between said wire receiving groove and said cavity, said first end of said socket shell being circumscribed by a thin displaceable rib integrally formed on an edge of said cylindrical wall at said second end and extending concentrically therefrom, said displaceable rib circumscribing a perimeter of said pair of opposing openings formed in said cylindrical wall, said internal surface of cylindrical wall having an integrally formed thin annular appendage extending therefrom disposed adjacent said second end of said socket shell for displaceably contacting a bulb portion of the lamp to define a watertight seal therebetween;

a pair of contacts respectively disposed in said pair of slotted openings, each of said pair of contacts having an insulation piercing end extending into said wire receiving groove and an opposing end angularly formed for conductive contact with a respective lamp terminal at a bottom end of the base portion of the lamp; and,

a socket cap secured to said second end of said socket shell and forming a closure for said wire receiving groove, said socket cap pressing said displaceable rib to form a watertight seal therebetween.

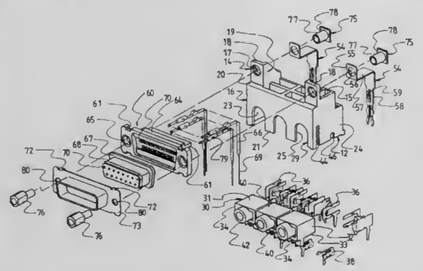
5,643,007
TRANSFORMER TAP CONNECTOR
Harold R. Younger, Halifax, Va., assignor to ABB Power T&D Company Inc., Raleigh, N.C.
Filed Sep. 13, 1996, Ser. No. 713,658
Int. Cl.[6] H01R *4/24*
U.S. Cl. 439—421 **3 Claims**



1. An electrical connector for piercing, securing and making electrical contact between a wire having a conductor and outer insulation and a flat wire having a flat conductor and outer insulation comprising:

a substantially U-shaped metal body having a back and a pair of legs depending therefrom, said legs being spaced apart a distance at least as great as the width of the flat wire, a plurality of metal piercing teeth depending from said back intermediate said pair of legs, said teeth having a length greater than the thickness of the flat wire and adequate to pierce the flat wire conductor and outer insulation and penetrate the outer insulation and conductor of said first-named wire so as to make electrical contact between said conductor and said flat conductor, and said pair of legs having a length and shape for penetrating the outer insulation and conductor of said first named wire for securing said flat wire and said first named wire together and maintaining electrical contact between the conductors of said wires.

5,643,008
SYSTEM FOR ARRANGEMENT OF DIFFERENT INPUT/OUTPUT CONNECTORS
Haw-Chan Tan, and Frank C. Ma, both of Diamond Bar, Calif., assignors to Hon Hai Precision Ind. Co., Ltd., Taiwan
Filed Sep. 6, 1995, Ser. No. 524,333
Int. Cl.[6] H01R *13/60*
U.S. Cl. 439—541.5 **22 Claims**



1. A system for arrangement of different Input/Output connectors, comprising:

a bracket including an upper section and a lower section;

a first connector means loaded to the upper section from the top and secured to the upper section;

a second connector means loaded to the lower section from the bottom and secured to the lower section; and

said first connector means and said second connector means including a plurality of contacts extending downward, respectively; wherein

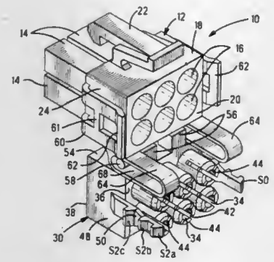
said lower section comprises a front wall, a rear wall and two side walls defining therein a cavity facing downward for allowing bottom loading of the second connector means, and said second connector means is an audio jack assembly including a body composed of a plurality of units which are retained in said cavity by lugs of the bracket.

5,643,009
ELECTRICAL CONNECTOR HAVING A PIVOT LOCK
Jeffrey Allen Dinkel; Richard E. Orstad, both of Greensboro, and Michael Paul Trull, Winston-Salem, all of N.C., assignors to The Whitaker Corporation, Wilmington, Del.
Filed Feb. 26, 1996, Ser. No. 606,709
Int. Cl.[6] H01R *13/424*
U.S. Cl. 439—595 **11 Claims**

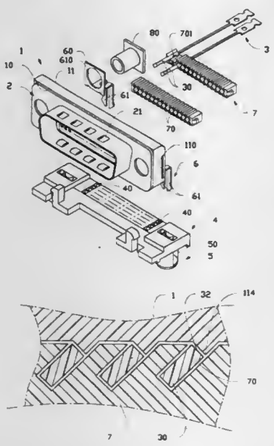
1. An electrical connector comprising:

a connector housing having contact receiving passages to receive contacts therein and a guide member;

a lock housing having a pivot member wherein the pivot member and the guide member cooperate to secure the lock housing to the connector housing and to allow the lock housing to rotate and move longitudinally with respect to the connector housing, the lock housing having a first position with respect to the connector housing wherein the contacts can be loaded into the housing, the lock housing having a second position wherein the contacts are secured within the housing for electrical connection with a matable connector.



5,643,010
HIGH PIN DENSITY ELECTRICAL CONNECTOR
Kun-Tsan Wu, Tu-Chen, Taiwan, assignor to Hon Hai Precision Ind. Co., Ltd., Taiwan
Filed Dec. 12, 1995, Ser. No. 590,520
Int. Cl.[6] H01R *13/514*
U.S. Cl. 439—598 **12 Claims**



1. An electrical connector comprising:

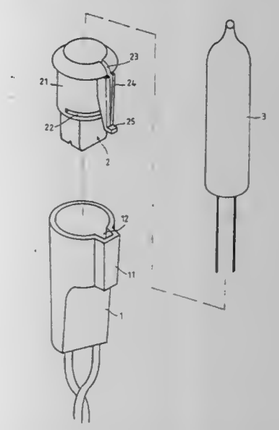
an insulative body having at least a cavity therein;

at least a pin support member shaped to be complemental to said cavity and adapted to be received in said cavity;

a plurality of spaced slots formed in said pin support member for receiving a corresponding number of pin members therein, respectively;

said insulation body including around said cavity a plurality of engaging means projecting into the corresponding slots of the pin support member, respectively, for substantially abutting against the corresponding pin members in the slots whereby the pin members can not be moved laterally from the slot, and wherein said engaging means are a series of serrated sections formed along a circumference of said cavity in said insulation body.

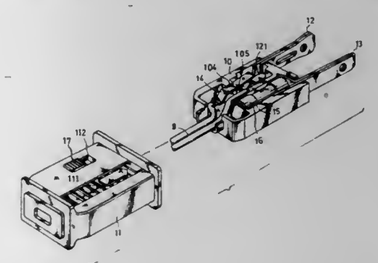
5,643,011
SECURING STRUCTURE OF DECORATIVE LIGHT BULB SOCKET
Chin-Sung Tsai, No. 65, Shien-cheng 11 St., Chupei, Hsinchu Shien, Taiwan
Filed Apr. 18, 1996, Ser. No. 634,235
Int. Cl.[6] H01K *1/00*
U.S. Cl. 439—619 **1 Claim**



1. A securing structure for a decorative light bulb socket comprising a socket and a light bulb holder suitable for receiving a light bulb and characterized in that:

the socket having a projection with an inner channel on its side to receive the light bulb holder of which a slot and a vertical gap being formed on its base and two lips disposed beside the gap having their ends connected together forming a locking terminal which is placed at a bottom of the projection of the socket when assembling and the gap is thus closed and thereof obtaining a tightly securement among the light bulb, the holder, and the socket.

5,643,012
SAFETY PLUG WITH SWITCH MEANS
Chao-Lin Mai, No. 1, Alley 2, Lane 94, Po Ai Street, Hsinchu City, and Pen-Li Chiu, No. 72, Alley 6, Lane 315, Chung Chang North Rd., Sanchung City, Taipei Hsien, both of Taiwan
Filed Mar. 29, 1996, Ser. No. 625,416
Int. Cl.[6] H01R *13/68*
U.S. Cl. 439—622 **8 Claims**



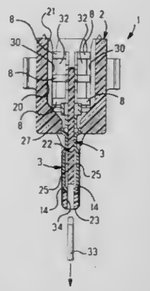
1. A safety plug comprising a base having first longitudinal trough and a second longitudinal trough, a first metal contact plate and a first metal blade respectively mounted in said first longitudinal trough, a second metal contact plate and a second metal blade respectively mounted in said second longitudinal trough, a cartridge fuse connected between said second metal contact plate and said second metal blade, a housing covered on said base, and an electric wire having two conductors respectively connected to said first metal contact plate and said second metal contact plate, wherein said first metal blade has a rear contact strip retained inside said first longitudinal trough and spaced from said first metal contact plate; said housing has a switch mounting hole for mounting a switch; said base comprises a post and projecting strip disposed inside said first longitudinal trough to hold said first metal contact plate in a suspended position above the rear contact strip of said first metal blade; a switch is mounted in the switch mounting hole of said housing, having a bottom projection pressed on said first metal contact plate and moved between a first position, in which said first metal contact plate is forced into contact with the rear contact strip of said first metal blade to close the circuit, and a second position, in which said first metal contact plate is released from the rear contact strip of said first metal blade to cut off the circuit.

5,643,013

ELECTRICAL CONNECTOR

Charles Harry Weidler, Lancaster, and Edward Eugene Knisley, Jr., Middletown, both of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed May 24, 1995, Ser. No. 453,128
Int. Cl.[6] H01R *19/00*
U.S. Cl. 439—660 **2 Claims**



1. An electrical connector of the type having a housing, conductive contacts in the housing having forward sections extending along opposed sides of a divider to contact tips adjacent a mating end of the housing, and shallow channels along the divider receiving forward sections of respective said contacts, the shallow channels being defined by slender core pins during molding, characterized in that:

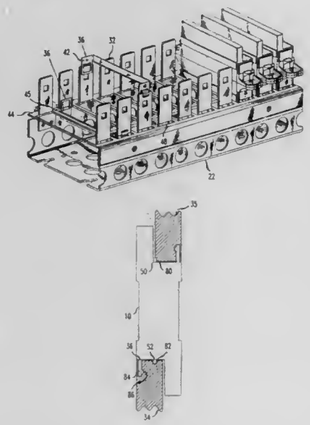
the mating end includes therethrough core pin openings formed by small core pins during housing molding, said core pin openings communicating with ends of the channels, the small core pins enabling engagement thereagainst by the slender channel-forming core pins for support thereof during molding; the small core pin openings being smaller in circumference than the widths of the channels to prevent falling of tips of the contacts into the openings upon assembly.

5,643,014

MOUNTING OF PROTECTORS IN CONNECTOR BLOCKS

Wayne Scott Filus, Lebanon; Antonio Albino Figueiredo, Belleville; Adam Stuart Kane, Morristown; Theodore Edward Kluska, Glen Rock; Wayne David Larsen, Indianapolis, and Jeremia Patrick Starace, Nutley, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed May 17, 1995, Ser. No. 442,898
Int. Cl.[6] H01R *13/64*
U.S. Cl. 439—680 **27 Claims**



1. A mounting arrangement for use in a modular connecting block system, wherein connector modules having insulation displacement connecting terminals on front and rear sides thereof are insertable into a mounting bracket to form a connecting block, and wherein said connector modules are adapted to receive polarity sensitive insertable current and voltage limiting circuit protection devices on said front and rear sides of said connector modules for protecting individual pairs of said terminals, said arrangement comprising:

a connector module housing for housing said connecting terminals, said housing including,

first exclusion means disposed on said front side of said connector module housing; and

second exclusion means disposed on said rear side of said connector module housing, said second exclusion means being disposed at a different location than said first exclusion means relative to said insertable protection devices, wherein said first exclusion means mates with front-only mountable ones of said protection devices and said second exclusion means mates with rear-only mountable ones of said protection devices, thereby excluding a front-only mountable protection device from insertion into said rear side of said connector module and excluding a rear-only mountable protection device from insertion into said front side of said connector module.

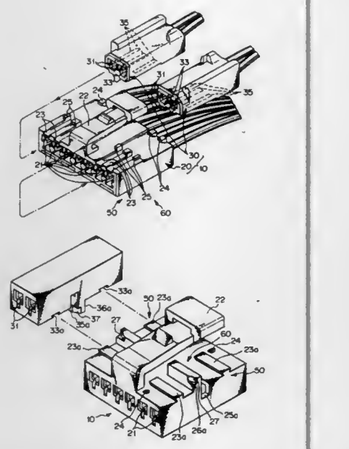
5,643,015

ASSEMBLED CONNECTOR

Shigekazu Wakata, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Japan

Filed Mar. 6, 1996, Ser. No. 611,655
Claims priority, application Japan, Mar. 9, 1995, 7-079462; Jun. 26, 1995, 7-183410
Int. Cl.[6] H01R *13/502*
U.S. Cl. 439—701 **5 Claims**

1. An assembled connector comprising:



a main housing having a plurality of terminal-containing chambers juxtaposed in the interior thereof and being provided on a top portion with a lock arm adapted to engage with a mating connector;

a plurality of subhousings having a plurality of terminal-containing chambers juxtaposed in the interior thereof and being adapted to be detachably coupled to said main housing;

a coupling mechanism for coupling each of said subhousings to said main housing in a manner of slide engagement; and

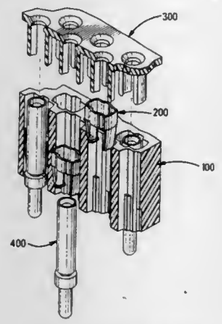
a retainer mechanism for engaging with a terminal at a regular position in each terminal-containing chamber to hold said terminal in the regular position.

5,643,016

ELECTRICAL CONNECTOR ASSEMBLY WITH CONTACT RETENTION AND REMOVAL SYSTEM

John Phillip Huss, Jr., Harrisburg, Pa., assignor to The Whitaker Corporation, Wilmington, Del.

Filed Jul. 28, 1995, Ser. No. 506,994
Int. Cl.[6] H01R *13/426*
U.S. Cl. 439—744 **13 Claims**



1. An electrical connector assembly adapted to releasably retain a plurality of electrical contacts, said electrical connector assembly comprising, in combination:

an insulating housing having an upper surface, a lower surface, and a plurality of electrical contact receiving cavities extending therebetween and arranged therein in a predetermined pattern, said cavities being defined within said insulating housing by a plurality of surrounding internal structures comprising (i) at least two opposing longitudinal slots having opposing recesses disposed within said slots in spaced-away relation to said upper surface and said lower surface of said insulating housing, and (ii) at least one ledge protruding into said cavity above said recesses;

a retention clip disposed within each of said cavities, said retention clip comprising a plurality of cantilevered spring members projecting downwardly from an annular portion of said clip wherein a first pair of said spring members are disposed in opposing outwardly protruding relation to one another on a first pair of opposing walls of said annular portion, each of said first pair of spring members further including an outwardly protruding latch disposed at a free end thereof and adapted to releasable engage a portion of said recess when said retention clip is positioned within said insulating housing and further wherein a second pair of said spring members is disposed in opposing inwardly protruding relation to one another on a second pair of opposing walls of said annular portion, each of said second pair of spring members including an inwardly protruding latch disposed at a free end thereof and adapted to releasably engage a portion of said electrical contact when said retention clip is positioned within said insulating housing and said electrical contact is disposed within said cavity;

said electric contacts each comprise an upper mating portion having an outer surface, a lower mating portion and a circumferential groove disposed therebetween, said groove being adapted to releasably engage said latch of said second pair of spring members when said electrical contact is positioned within said cavity; and

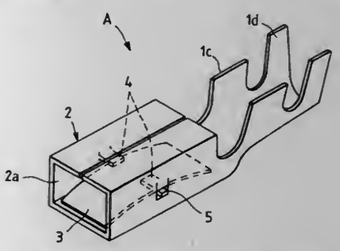
a spacer-cap ~~releasably attached~~ to said upper surface of said insulating housing, said spacer-cap comprising a plate having an upper surface, a lower surface, and a plurality of bores extending therebetween, said plurality of bores being disposed within said plate in a pattern corresponding to said predetermined pattern of cavities in said insulating housing, said spacer-cap further including a plurality of cantilevered beams projecting downwardly from said lower surface in surrounding relation to said bores and extending into said cavities, whereby said beams engage said outer surface of said upper mating portion of said electrical contacts so as to provide for stable positioning thereof within said cavity.

5,643,017

FEMALE TERMINAL AND METHOD OF PRODUCING THE SAME

Keishi Jinno, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

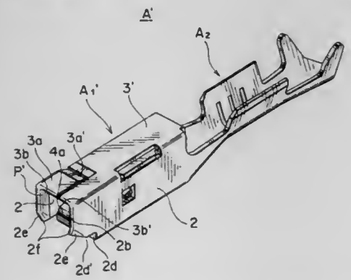
Filed Jan. 31, 1995, Ser. No. 381,066
Claims priority, application Japan, Jan. 31, 1994, 6-009538
Int. Cl.[6] H01R *13/187*
U.S. Cl. 439—843 **4 Claims**



1. In a female terminal wherein a resilient contact piece is mounted within a receptive portion formed by bending an electrically-conductive metal sheet, the improvement wherein a retaining projection and a retaining hole are formed in each of a pair of upwardly bent side walls which define said receptive

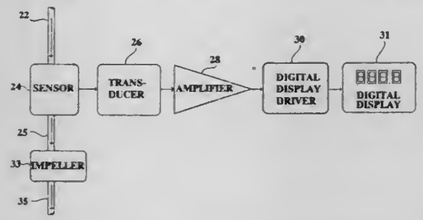
portion; and said resilient contact piece includes retaining ends which are retained against upward movement by said retaining projections, respectively such that said resilient contact piece is thereby fixedly secured in said receptive portion.

5,643,018
TERMINAL FOR WATERPROOF CONNECTORS
Hitoshi Sakai, and Naoto Sugie, both of Haibara-gun, Japan, assignors to Yazaki Corporation, Tokyo, Japan
Filed Apr. 19, 1995, Ser. No. 424,101
Claims priority, application Japan, Apr. 20, 1994, 6-081400; Dec. 2, 1994, 6-299608
Int. Cl.[6] H01R *13/11*
U.S. Cl. 439—852 **6 Claims**



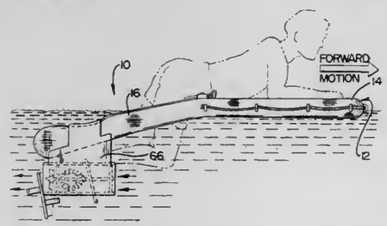
6. A terminal for waterproof connectors including a receptor portion for receiving a mating terminal, said receptor portion comprising:
a bottom plate;
lateral walls extending upright at opposite sides of said bottom plate; and
a slanting, inwardly bent insertion guide surface extending from a first intermediate height of a front end of each of said lateral walls to a lower height thereof disposed above a retracted front end said bottom plate so as to provide a cutaway portion therebelow, by means of which front lower edges of said lateral walls are displaced inwardly of a contour of said receptor portion.

5,643,019
METHOD AND APPARATUS FOR MONITORING WATER FLOW IN A WATER JET PROPULSION SYSTEM
Michael L. Barnett, Rte. #1, Box 3700, Coquille, Oreg. 97423, and Larry G. Brader, 538 SW. 283rd St., Federal Way, Wash. 98023
Filed Nov. 16, 1995, Ser. No. 558,361
Int. Cl.[6] B63H *11/02*
U.S. Cl. 440—2 **8 Claims**



1. A method for remotely and instantaneously monitoring a propulsion water flow rate in a water jet propulsion system comprising the steps of:
a) sensing an instantaneously variable propulsion water flow rate using a flow sensor located in a propulsion water intake pipe;
b) providing a first signal to establish an instantaneously sensed propulsion water flow rate;
c) transducing the first signal to provide a second flow rate signal proportionally variable in relation to the first signal; and
d) translating the second flow rate signal to provide a third flow rate signal, proportionally variable in relation to the first signal to provide an instantaneous indication of the instantaneously variable propulsion water flow rate, whereby an operator of the water jet propulsion system can monitor the third flow rate signal and thereby remotely instantaneously monitor the propulsion water flow rate in the water jet propulsion system.

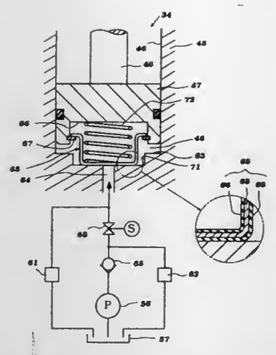
5,643,020
PERSONAL WATERCRAFT
Herman R. Harris, 305 Idlewood Dr., Kannapolis, N.C. 28083
Filed Aug. 13, 1996, Ser. No. 696,324
Int. Cl.[6] B63H *16/20*
U.S. Cl. 440—31 **28 Claims**



1. A personal watercraft for supporting or transporting a person along water, comprising:
a frame having a substantially planar fore portion and an aft portion, said aft portion extending in a plane offset from the plane in which said fore portion extends for supporting at least a portion of the person's upper body above a surface of the water;
a substantially planar support mounted on said fore portion of said frame and having a substantially flat portion for receiving the body of a user;
a drive shaft rotatably mounted on said aft portion of said frame and having offset portions on which pedals are mounted for receiving the feet of the user so that the user may rotate said drive shaft; and
at least one impeller having a thrust axis offset from said plane of said aft portion and being rotatably connected to said drive shaft and mounted on said aft portion of said frame;
whereby pedaled rotation of said drive shaft causes said impeller to generate thrust for propelling the personal watercraft in the desired direction.

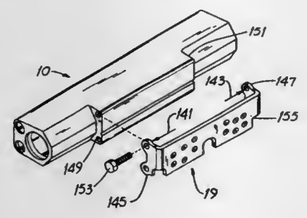
5,643,021
TRIM SYSTEM FOR OUTBOARD MOTOR
Takayuki Osakabe, Hamamatsu, Japan, assignor to Sansbin Kogyo Kabushiki Kaisha, Hamamatsu, Japan
Filed Dec. 23, 1994, Ser. No. 363,745
Claims priority, application Japan, Dec. 30, 1993, 5-354046
Int. Cl.[6] B63H *5/12*
U.S. Cl. 440—61 **5 Claims**

1. A hydraulic trim adjustment mechanism for a marine outboard drive having a propulsion unit and mounted on a watercraft hull for movement relative to said hull through a plurality of trim-adjusted positions for adjusting the trim of said propulsion unit relative to said hull, a hydraulic trim motor interposed between said propulsion unit and said hull for effecting hydraulic trim adjustment, said hydraulic trim motor comprising a cylinder member adapted to be



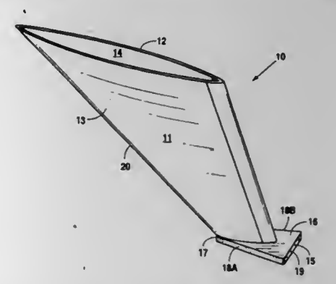
affixed relative to said hull and defining blind cylinder bore closed by an end wall adjacent the hull and having an open end facing the propulsion unit, a piston received in said cylinder bore and defining a fluid chamber with said end wall, a piston rod affixed to said piston and extending through said open end to a location for engaging the propulsion unit for effecting trim movement of the propulsion unit upon the pressurization of said fluid chamber, a hydraulic system for selectively pressurizing and depressurizing said fluid chamber for effecting trim adjustment, and position-responsive valve means cooperating between said end wall and said piston for isolating said chamber from said hydraulic system when said components are in a trimmed down condition for establishing a fluid lock within said fluid chamber for hydraulic damping of engagement between said components comprising a port formed in said end wall through which said hydraulic system communicates with said fluid chamber, a valve element resiliently supported by said piston for engagement with said port for closing said port upon movement of said piston toward said end wall to a first relative position for establishing a fluid lock within said fluid chamber for hydraulically resisting continued movement of said piston toward said end wall, said valve element being yieldably biased relative to said piston for permitting continued movement of said piston toward said end wall after said valve element closes said port and the fluid in said fluid chamber is compressed, said piston and said end wall having positively engaging stop means for effecting a positive stop upon continued movement of said piston toward said end wall.

5,643,022
STEERING CYLINDER WITH ENGINE-CLEARANCE FEATURES AND METHOD FOR MAKING THE CYLINDER
Jerald G. Wagner, Venice, Fla., assignor to IMO Industries, Inc., Sarasota, Fla.
Filed Sep. 1, 1995, Ser. No. 522,508
Int. Cl.[6] B63H *20/12*
U.S. Cl. 440—61 **17 Claims**



1. In combination, a tiltable outboard boat engine and a hydraulic cylinder coupled to the engine for steering, the cylinder including a cylinder housing with first and second housing ends, the improvement wherein:
the cylinder is rigidly mounted on the engine;
the cylinder includes a mid-section having a cross-sectional area;
the cylinder includes a reduced-dimension relief portion extending from the mid-section to the first housing end, the relief portion having a maximum cross-sectional area that is less than the cross-sectional area of the mid-section, thereby preventing the engine from contacting the cylinder first end when the engine is tilted.

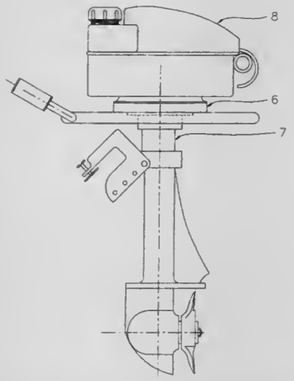
5,643,023
MARINE ENGINE GEAR CASE COVER
Joe Sober, P.O. Box 90891, Austin, Tex. 78709-0891
Continuation of Ser. No. 70,502, Jun. 2, 1993, abandoned, which is a continuation of Ser. No. 831,405, Feb. 5, 1992, abandoned. This application Apr. 5, 1996, Ser. No. 628,402
Int. Cl.[6] B63H *21/00*
U.S. Cl. 440—76 **4 Claims**



1. A skeg cover for covering the skeg on a marine engine, comprising:
a sheet bent along its centerline to form a first wall and a second wall;
the first wall and the second wall oppose each other and are sealed along their adjacent edges to form an opening at the top;
a skid plate connected to one end of said first and second walls forming a pocket comprising the walls and the skid plate;
the skid plate including two sides and a rear-end, said sides being integrally and directly connected to the rear end and converging linearly forward from the rear end toward the centerline of the first and second walls immediately adjacent to the first and second walls; and
at least one side terminating in a point on the centerline.

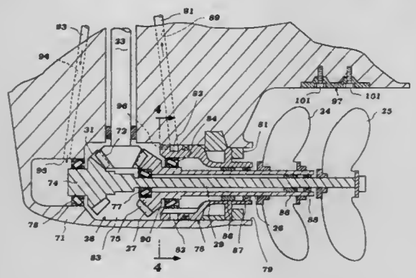
5,643,024
ADAPTER PLATE
Harold Theodore Roberson, Jr., P.O. Box 974, Ft. Smith, Ark. 72902
Filed Aug. 8, 1996, Ser. No. 694,250
Int. Cl.[6] B63H *21/14*
U.S. Cl. 440—76 **1 Claim**

1. An outboard marine drive adapter plate to attach a four cycle vertical sham internal combustion engine to a marine outboard lower drive unit comprising a cylindrical body member having a top and a bottom, the top having a flat circular raised peripheral edge portion and a recessed circular central portion forming a cavity to accommodate an oil pan and an oil pump of a four cycle



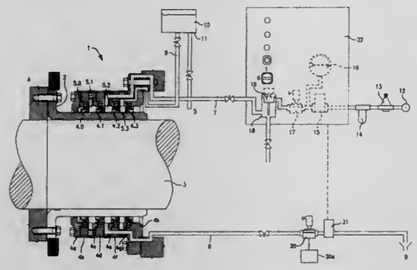
engine, the bottom being substantially flat and parallel to the top flat circular peripheral edge portion, wherein the flat circular peripheral edge portion includes holes to accommodate the attachment of a four cycle engine, wherein the bottom of the body member in a portion directly below the recessed circular central portion has holes to accommodate the attachment of a marine outboard lower drive unit, wherein the recessed circular central portion includes a hole to accommodate a drive shaft of a four cycle vertical shaft internal combustion engine, the outboard marine drive adapter plate allowing the attachment and use of a four cycle vertical shaft internal combustion engine of various sizes and horsepower ranges to a marine outboard lower drive unit of various sizes and shapes.

5,643,025
TRANSMISSION LUBRICATION SYSTEM
Takayoshi Suzuki, Shizuoka-ken, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan
Filed Jan. 30, 1996, Ser. No. 593,895
Claims priority, application Japan, Jan. 31, 1995, 7-013871
Int. Cl.[6] B63H *21/10*
U.S. Cl. 440—88 **10 Claims**



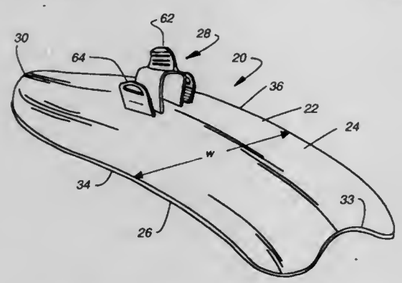
1. A marine propulsion transmission system comprised of a final drive consisting of a pair of intermeshing bevel gears, one of said bevel gears being fixed for rotation to a marine propulsion device drive shaft, said gears being contained within a gear casing, a lubricant pump disposed vertically above said gear casing and driven along with one of said gears for pumping lubricant, and a pick-up Conduit extending from the inlet of said pump to a position in said gear case disposed below the axis of rotation of said propulsion device shaft.

5,643,026
SAFETY DEVICE FOR SEAL SYSTEMS FOR PROPELLER SHAFTS ON SHIPS
Günter Pietsch; Holger Hillig, both of Hamburg; Bodo Voss, Buxtehude, and Ernst-Peter Von Bergen, Ablefeld, all of Germany, assignors to Blohm + Voss Holding AG, Hamburg, Germany
Filed Sep. 25, 1995, Ser. No. 533,554
Claims priority, application Germany, Sep. 24, 1994, 44 34 247.1
Int. Cl.[6] B63H *23/36*
U.S. Cl. 440—112 **20 Claims**



1. A ship comprising:
a propeller shaft;
a seal system to seal said propeller shaft of said ship against the outside water;
said seal system defining a first annular space around said propeller shaft;
a discharge line for the discharge of liquids from said first annular space;
a gas pressure source for providing a gas under pressure;
means for receiving a gaseous pressure medium into said first annular space; said means for receiving comprising a feed line for supply of the gas from said gas pressure source; and
a safety device comprising:
sensing means for sensing the accumulation of liquids in said feed line; and
a valve in said feed line, controlled by said sensing means, to close said feed line.

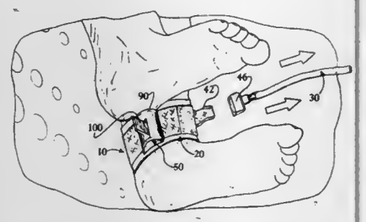
5,643,027
FREESTYLE STROKE SWIM TRAINING PADDLE
Marc P. Evans, Reno, Nev., and Peter M. Cazalet, Campbell, Calif., assignors to Endurance Sport Technology Group, Inc., Chappaqua, N.Y.
Filed Feb. 2, 1996, Ser. No. 597,490
Int. Cl.[6] A63B *31/10*
U.S. Cl. 441—58 **11 Claims**



1. A swim training paddle for attachment to the hand of a swimmer, the hand having a palm and fingers extending therefrom, said paddle comprising:

a main body member having an upper surface and defining a length, a front edge adapted to be adjacent the fingers, and a rear edge adapted to be adjacent the palm; and
said main body member defining an airfoil shape along its length, said rear edge of said main body defining a leading edge, said airfoil shape defined by a chord, CL, measured in a straight line between the front and rear edges, a maximum height, TL, from the chord to said upper surface, and a location of the maximum height, ML, as measured from said leading edge, where TL is closer to said leading edge than to said front edge.

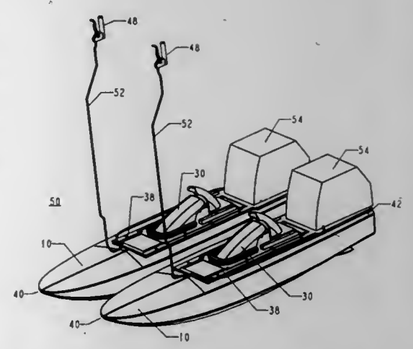
5,643,028
QUICK-RELEASE SURF LEASH ASSEMBLY
James J. Craig, 777 NE. Harbour Dr., Boca Raton, Fla. 33431
Filed Oct. 27, 1995, Ser. No. 549,371
Int. Cl.[6] B63B *35/79*
U.S. Cl. 441—75 **12 Claims**



1. A surfboard leash assembly for connection between a surfboard and a person's lower leg, said assembly comprising:
an ankle band structured to be secured about the person's lower leg and including an outer facing side and an inner facing side,
an elongate flexible cord including a first end and an opposite second end,
attachment means for releasably attaching said first end of said cord to said ankle band, and
lock means on said ankle band for locking engagement with said attachment means and including a foot-actuated switch having at least one pressure application surface structured and disposed for engagement with the bottom of the person's foot for applying pressure thereto, said switch being movable in response to pressure applied to said pressure application surface between a locked position to cause the lock means to engage said attachment means, maintaining said first end of said cord attached to said ankle band, and at least one unlocked position to cause the lock means to disengage said attachment means and release said first end so that said cord disconnects from said ankle band.

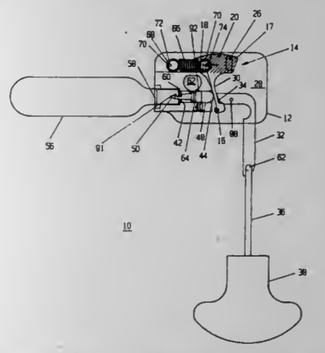
5,643,029
MOTORIZED SURF BOOTS
Keith M. Rudofsky, 2520 Allenwood-Lakewood Rd., Howell, N.J. 07731
Filed Jul. 15, 1996, Ser. No. 678,606
Int. Cl.[6] B63B *35/83*
U.S. Cl. 441—76 **16 Claims**

1. Apparatus comprising:
a pair of boards of predetermined length, width and cross-section, with each comprising a single floatation chamber defined by top, bottom and side surfaces;
a pair of motors, each having a centrifugal clutch and of a rating not exceeding 5.0 horsepower;
first means respectively securing each of said motors at a rear end of each of said pair of boards, and on said top surface thereof;



a pair of foot supports, each including front and rear bindings;
second means respectively positioning each of said foot supports on said top surface of each of said pair of boards, positioned between said motor secured at said top surface and a front end of said second board;
and a pair of throttle controls respectively coupled forwardly from each of said pair of motors a distance to extend at least to said foot support and to a height to be held in the hand of a user of said apparatus;
with said throttle controls being adjustable to vary the horsepower delivered to said boards at any given instant of time.

5,643,030
GAS CARTRIDGE SAFETY INFLATOR APPARATUS
Dennis Brown, 1358 Hooper Ave., Suite 240, Toms River, N.J. 08753
Filed Jul. 17, 1996, Ser. No. 683,775
Int. Cl.[6] B63C *9/125*
U.S. Cl. 441—94 **15 Claims**



1. Apparatus adapted to receive and puncture a gas cartridge for the filling of an inflatable device, comprising:
a first arm having a cam surface at one end thereof, a lanyard secured at a second end thereof, and a tab coupled to said lanyard for rotating said arm when pulled;
a second arm having a shaft proximate to said cam surface, a head at one end thereof divided into first and second visually distinct sections, and a pin at a second end thereof about which said shaft is actuable to rotate;
a housing enclosing said first and second arms, and including a chamber defined by front and rear internal walls;
a spring secured at a first end within said housing, and at a second end to said second arm;

a window in said housing for viewing said first and second visually distinct sections of said head of said second arm;

an inflation pin within said chamber, quiescently positioned to extend beyond said rear internal wall, and movable in direction towards and through said front internal wall, and towards and through said rear internal wall;

with said pin having a head end of cone-shaped cross-section to bear against a gas cartridge introduced into said housing, a barrel end to bear against said shaft of said second arm, and a body including a vent means;

wherein said first visually distinct section is viewable through said window prior to said tab being pulled, and wherein said second visually distinct section is viewable through said window after said tab is pulled;

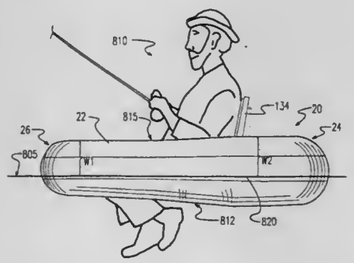
and wherein said pin forms a round hole in a cap of said cartridge when brought against said cartridge to bear against said cap upon pulling of said tab.

5,643,031

AQUATIC VEHICLE

Vernon K. Fenton, Riverton, Wyo., and Sheldon D. Larson, Rexburg, Id., assignors to X-Stream Unlimited, Inc., Riverton, Wyo.

Filed Apr. 29, 1996, Ser. No. 639,725
Int. Cl.[6] B63C *9/08*
U.S. Cl. 441—130 **16 Claims**



1. A floatable aquatic vehicle for receiving and suspending an individual in a seated, floating, configuration in water comprising:

a support frame comprising a continuously arcuate enclosure having a first radius of curvature at a first side and a smaller radius of curvature at an opposing second side, the first and second sides being joined together to form a perimeter having an egg-shaped configuration;

flexible cover means for encasing buoyant float means and defining a central opening for receiving the individual; and

means for coupling the support frame to the flexible cover means so that the frame supports the cover means at the opening.

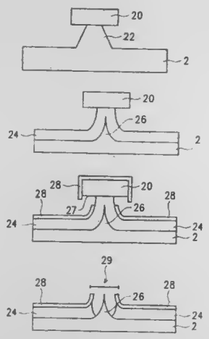
5,643,032

METHOD OF FABRICATING A FIELD EMISSION DEVICE

Huang-Chung Cheng, Hsinchu, and Tzu-Kun Ku, Taipei, both of Taiwan, assignors to National Science Council, Taipei, Taiwan

Filed May 9, 1995, Ser. No. 438,147
Int. Cl.[6] H01J *9/02*
U.S. Cl. 445—24 **15 Claims**

1. A self-aligned method for fabricating a field emission device on a silicon substrate comprising:



(a) forming a capping layer overlying a portion of said silicon substrate;

(b) etching and patterning said portion of said silicon substrate into a silicon pedestal having sidewalls;

(c) forming a dielectric layer over said sidewalls of said silicon pedestal and said silicon substrate, thereby sharpening said silicon pedestal into a silicon tip;

(d) forming a metal layer over said capping layer and over a first portion of said dielectric layer such that a second portion of said dielectric layer remains exposed; and

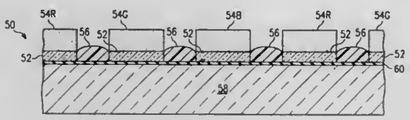
(e) etching said second exposed portion of said dielectric layer and removing said capping layer and said metal layer thereon to expose a portion of said silicon tip.

5,643,033

METHOD OF MAKING AN ANODE PLATE FOR USE IN A FIELD EMISSION DEVICE

Bruce E. Gnade; Daron G. Evans; Scott R. Summerfelt, and Jules D. Levine, all of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 247,951, May 24, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 475,123
Int. Cl.[6] H01J *9/02*
U.S. Cl. 445—24 **19 Claims**



1. A method of fabricating an anode plate for use in a field emission device, said method comprising the steps of:

providing a substantially transparent substrate having spaced-apart, electrically conductive regions on a surface thereof;

providing a substantially opaque, electrically insulating material comprising a solution of tetraethylorthosilicate (TEOS) and a solvent, said solution further including impurities which reduce its transmissivity to visible light;

coating said surface with said substantially opaque material;

removing said opaque material from areas overlying said conductive regions; and

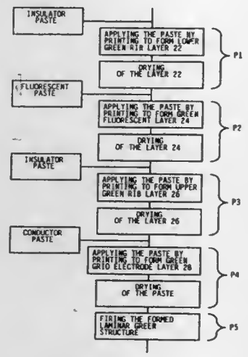
applying luminescent material on said conductive regions.

5,643,034

FLUORESCENT DISPLAY TUBE WHEREIN GRID ELECTRODES ARE FORMED ON RIBS CONTACTING FLUORESCENT SEGMENTS, AND PROCESS OF MANUFACTURING THE DISPLAY TUBE

Jun Mohri, Ogori, and Noboru Endoh, Fukuoka-ken, both of Japan, assignors to Noritake Co., Limited, Aichi-ken, and Kyusbu Noritake Co., Ltd., Fukuoka-ken, both of Japan

Division of Ser. No. 293,923, Aug. 22, 1994, Pat. No. 5,568,012. This application Mar. 28, 1996, Ser. No. 623,231
Int. Cl.[6] H01J *9/02*
U.S. Cl. 445—24 **7 Claims**



1. A process of manufacturing a fluorescent display tube comprising a substrate, a plurality of anodes formed on the substrate, fluorescent layers formed on the respective anodes, cathodes located above said fluorescent layers, ribs formed of an electrically insulating material on the substrate so as to surround at least a portion of a periphery of each of said anodes and having a larger height from the substrate than said fluorescent layers, and grid electrodes formed on the respective ribs to control activation of said fluorescent layers; said process characterized by comprising the steps of:

laminating said plurality of layers of said ribs by repeating a screen printing operation using said insulator paste and a drying operation following said screen printing operation, a predetermined number of times corresponding to said plurality of layers, such that said anodes are held in contact with said ribs;

forming said fluorescent layers by screen printing using a fluorescent paste including a fluorescent material, such that said fluorescent layers are held in contact with side surfaces of said ribs; and

forming said grid electrodes on upper end faces of said ribs, by screen printing using a conductor paste including an electrically conductive material.

5,643,035

BUBBLE PRODUCING DEVICE HAVING A ROTATABLE TURBINE WHEEL WITH PIN MEMBERS

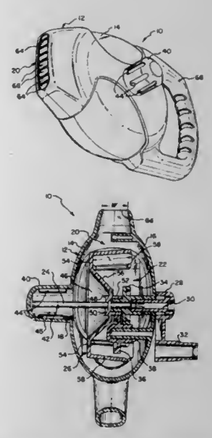
Theodore B. Freese, Westminster, Colo.; Michael J. Nickel, Cincinnati, Ohio, and James S. Panzarella, Denver, Colo., assignors to Gerry Baby Products Company, Thornton, Colo.

Filed Nov. 13, 1995, Ser. No. 554,975
Int. Cl.[6] A63H *33/28*
U.S. Cl. 446—15 **15 Claims**

1. A device for producing bubbles, comprising:

(a) a housing having an entry port and an exit port, wherein a chamber is defined therein in flow communication with said entry and exit ports;

(b) a drive shaft located within said housing chamber;



(c) a turbine wheel plate mounted in a rotatable manner to said drive shaft, said turbine wheel plate having a circumference, and said turbine wheel plate including a plurality of elongated, slender pin members oriented essentially perpendicular to said turbine wheel plate and extending in free-standing relation along said circumference; and

(d) rotating means for rotating said turbine wheel plate, said rotating means including a hand crank, and a gear drive between said hand crank and said drive shaft to provide a mechanical advantage for rotating said turbine wheel plate faster than rotation of said hand crank;

wherein water and bubble solution entering said housing chamber through said entry port is mixed with air to produce bubbles in said housing chamber which flow through said exit port.

5,643,036

TOY VEHICLE AND ENERGIZER-LAUNCHER

Dexter Chih-Teh Liu, Portsmouth, R.I., and Douglas Melville, Jr., Simsbury, Conn., assignors to LCD International, L.L.C., Newport, R.I.

Filed Nov. 18, 1994, Ser. No. 342,294
Int. Cl.[6] A63H *17/045;29/00;29/02*
U.S. Cl. 446—23 **10 Claims**



1. A toy vehicle comprising:
(a) a rotatably mounted axle;
(b) at least one drive wheel mounted on said axle for rotation;
(c) a flywheel mounted on said axle for rotation and disposed within said one drive wheel;
(d) only one of the drive wheel and the flywheel being fixed to the axle so as to rotate as one with the axle; and
(e) a slip clutch drivingly coupling together the drive wheel and the flywheel, the slip clutch including a flexible pawl on one of the drive wheel and the flywheel extending from the one of the drive wheel and the flywheel to and being biased against a remaining one of the drive wheel and the flywheel and a surface of the remaining one of the drive wheel and the flywheel extending generally radially with respect to the axle, the surface being fixed with a remainder of the remaining one of the drive wheel and the flywheel, the surface being contacted by the biased, flexible pawl and being engaged by contact with the biased, flexible pawl to releasably drivingly couple together the flywheel and the drive wheel.

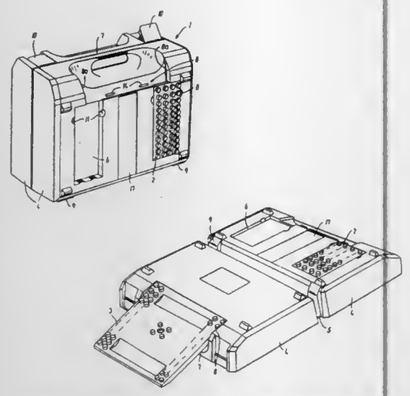
5,643,037
PUPPET-LIKE TOY
Randice Lisa Altschul, 36 Cecilia Ave., Cliffside Park, N.J. 07010, assignor to Randice Lisa Altschul, Cliffside Park, N.J.
Filed Nov. 22, 1995, Ser. No. 562,174
Int. Cl.[6] A63H *3/14*
U.S. Cl. 446—28 **2 Claims**



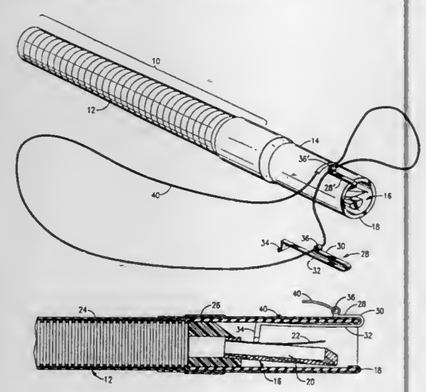
1. An animal-like toy for being coupled to a child of predetermined stature to enable the child to manipulate the toy through selected imitative movements into life-like configurations, including erect, active and cuddling configurations, to assume an identity related to the toy while maintaining the child's own identity, the toy comprising:
a trunk stuffed with a compliant material providing the trunk with a compliance comforting to the child while rendering the toy easily manipulated by the child through the selected imitative movements, the trunk having a front, a back and a height corresponding to the stature of a child;
a plurality of appendages extending from the trunk, each appendage having a first end and a second end, the first end of each appendage being integrated with the trunk at a corresponding affixation location such that each appendage extends from the corresponding affixation location toward the second end of the appendage;
at least two appendages of the plurality of appendages simulating arms and having hollow portions therein, each hollow portion extending from the first end toward the second end of the corresponding appendage, the two arm-simulating appendages being located on the trunk for receiving corresponding arms of the child within the hollow portions of the simulated-arm appendages, the hollow portions each having an entrance at the corresponding affixation location adjacent the back of the trunk and being closed adjacent the second ends of the simulated-arm appendages such that upon placement of the arms of the child within the hollow portions the child will be located behind the trunk and the corresponding arms of the child will extend in a direction from the back toward the front of the trunk while being enveloped within the hollow portions, hidden from view from the front of the trunk, to couple the arms of the child with the arm-simulating appendages; and
at least two further appendages of the plurality of appendages simulating legs and carrying simulated feet at the corresponding second ends thereof, the simulated feet each having a front end and a back end and further hollow portions fully within the simulated feet, the two leg-simulating appendages being located on the trunk and extending from the trunk to place the simulated feet in position for receiving corresponding feet of the child slipper-like, within the simulated feet, the further hollow portions each having an entrance adjacent the corresponding back ends of the simulated feet and terminating short of the corresponding front ends such that upon placement of the feet of the child within the further hollow portions the child will be located behind the trunk and the feet of the child will extend in the direction from the back toward the front of the trunk while being enveloped within the further hollow portions, hidden from view from the front of the trunk, to couple the feet of the child with the simulated feet;
a strap extending from each simulated foot in a direction from the front of the trunk toward the back of the trunk for placement around the child adjacent the feet of the child to further secure the simulated feet to the child;
the height of the trunk, the extent of the arm-simulating appendages and the extent of the leg-simulating appendages enabling simultaneous placement of the arms and feet of the child within the respective hollow portions and further hollow portions, with the child located behind the trunk and the arms and feet of the child hidden from view from the front of the trunk such that the toy is manipulated readily through the selected imitative movements into life-like configurations, including erect, active and cuddling configurations, so that the child is able to assume the identity related to the toy while maintaining the child's own identity.

5,643,038
RECEPTACLE FOR A CONSTRUCTIONAL BUILDING SET
Flemming Højberg Olsen, Espergærde, and Per Brømso, Copenhagens, both of Denmark, assignors to Interlego AG, Baar, Switzerland
Filed Sep. 21, 1995, Ser. No. 531,721
Claims priority, application Denmark, Sep. 29, 1994, 1126/94
Int. Cl.[6] A63H *33/04*
U.S. Cl. 446—75 **4 Claims**

1. In combination, a receptacle in the form of a trunk for the storage of building elements for a constructional building set and at least one plate-shaped building element incorporated in said constructional building set,
said receptacle including side faces and a handle,
said receptacle being formed of portions hinged to one another and having a surface formed with a first recess to receive therein said plate-shaped building element,
complementary retention means in the form of projections and grooves provided along a portion of a periphery of said first recess and on said plate-shaped building element, said projections and grooves cooperating to establish a temporary retention of said plate-shaped building element in said recess,
said surface of said receptacle and said plate-shaped building element being formed so that when said plate-shaped building element is retained in said recess, said surface and an outer surface of said plate-shaped building element are substantially aligned at the same level,
said receptacle being provided with a second recess in the area around said handle, said second recess consisting of an end wall having two side walls which extend at right angles thereto and between which said plate-shaped building element can be retained, said end wall forming an engagement face on which said plate-shaped building element can rest, said end wall forming an angle of between 10° and 40° with one of the side faces of said receptacle, projections being provided at said end wall on which the plate-shaped building element having complementary grooves is retained through its weight.

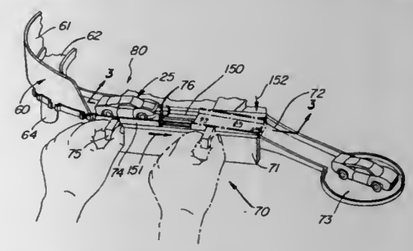


5,643,039
GAME CALL WITH TUNING CLIPS
David J. McIntyre, 555 Viele Rd., Red Creek, N.Y. 13143
Filed Jul. 29, 1996, Ser. No. 688,111
Int. Cl.[6] A63H *5/00*
U.S. Cl. 446—208 **7 Claims**



1. A game call comprising:
an elongated sound tube having a proximal end;
a tubular mouthpiece having a distal end coupled to the proximal end of the sound tube;
a reed holder assembly disposed within said mouthpiece defining an airway from said mouthpiece into said sound tube and generating sound when air passes therethrough; including an elongated reed holder extending proximal-distally within said mouthpiece and a vibratory reed disposed longitudinally on a radial face of said reed holder, said reed having a free proximal end and a distal end affixed to said reed holder, wherein the sound generated thereby has a tone that depends on the effective vibrating length of said reed; and
at least one tuning clip for selectively limiting the effective vibrating length of said reed, said tuning clip being removably installed onto said tubular mouthpiece such that the tuning clip can be removed or replaced without disassembly of the sound tube and the mouthpiece, and such that said reed operates at a deeper tone with the tuning clip removed and at a higher tone with the tuning clip installed.

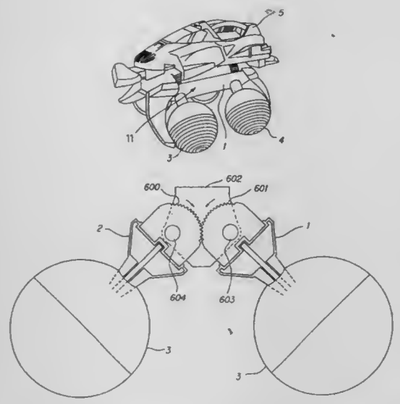
5,643,040
TOY VEHICLE PLAYSET HAVING VEHICLE RECEIVING AND HOLDING STATION
Keith A. Hippely, Manhattan Beach; Larry R. Wood, Redondo Beach; Brian E. Walsh, Mission Hills, and Terence A. Choy, Lawndale, all of Calif., assignors to Mattel, Inc., El Segundo, Calif.
Filed Feb. 10, 1995, Ser. No. 387,049
Int. Cl.[6] A63H *29/00;17/44;18/00*
U.S. Cl. 446—429 **7 Claims**



1. For use in combination with a free-wheeling nonpowered toy vehicle, a toy vehicle playset comprising:
a trackway for guiding said toy vehicle forwardly along a travel path in a travel direction and having an end portion;
a housing coupled to said end portion of said trackway defining a receiving position proximate said end portion and a discharge position spaced from said receiving position;
a shuttle slidable and displaceable upon said housing in a forward direction in said travel direction between a generally horizontal orientation at said receiving position proximate said end portion of said trackway and a downwardly inclined orientation at said discharge position; and
a toy vehicle stop means operative when said shuttle is in said receiving position for retaining a toy vehicle upon said shuttle and for releasing a retained toy vehicle from said shuttle when said shuttle is moved to said discharge position to allow said toy vehicle to roll from said shuttle as it tilts.

5,643,041
TOY VEHICLE HAVING ADJUSTABLE LOAD CLEARANCE
Kenzi Mukaida, Tokyo, Japan, assignor to Nikki Co., Ltd., Tokyo, Japan
Filed May 31, 1995, Ser. No. 456,000
Claims priority, application Japan, Jan. 10, 1995, 7-002111
Int. Cl.[6] A63H *30/04*
U.S. Cl. 446—455 **32 Claims**

1. A toy vehicle comprising:
a body;
a chassis on which said body is mounted through connecting members and being provided with at least front and rear tires,



said chassis being divided on a center axis along a longitudinal direction of said chassis into two parts comprising left and right side portions;

a means provided on said center axis for coupling said left and right side portions of said chassis to hinge said left and right side portions with each other;

a drive mechanism being provided to each of said left and right side portions of said chassis to connect with each of said tires through each said drive mechanism; and

at least one first drive unit being provided to each said driving mechanism for simultaneously driving said tires;

a second drive unit being provided to said coupling means for making said left and right side portions of said chassis hinge.

5,643,042

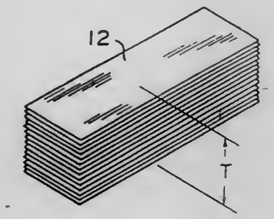
STACKED CONFETTI

James O. Watkins, 14920 Mt. Nebo Rd., Poolesville, Md. 20837

Continuation-in-part of Ser. No. 80,534, Jun. 24, 1993, Pat. No. 5,403,225, which is a continuation of Ser. No. 51,355, Apr. 23, 1993, Pat. No. 5,352,148. This application Mar. 29, 1995, Ser. No. 413,095

Int. Cl.[6] A63H *37/00*

U.S. Cl. 446—475 **6 Claims**



1. An unwrapped stack of confetti comprising:

(a) a plurality of at least 100 individual, unconnected pieces of confetti;

(b) each of said individual pieces of confetti being of the same shape and substantially the same size;

(c) each of said plurality of individual pieces of confetti consisting of a single layer of tissue paper;

(d) each of said individual pieces of tissue paper confetti having an elongated tetragonal shape;

(e) each of said individual pieces of confetti having a width and a length, said length being greater than said width;

(f) said lengths being in the order of 1 to 4 inches and said widths being in the order of ¼ to 1 inch;

(g) each of said individual pieces of confetti having a central axis extending along its length and a pair of faces;

(h) said plurality of individual pieces of confetti being stacked together in face-to-face relationship to form an unconnected stack with said lengths aligned parallel to each other to form an aligned, unwrapped stack of tetragonal-shaped confetti, said stack comprising a concentrated mass for projection high into the air and for bursting in the air into individual pieces of confetti each of which pieces rotates about said axis and floats slowly downwardly.

5,643,043

BRASSIERE FOR FEMALE ATHLETES

Trish Winsche Pflum, c/o Dr. Francis Pflum 20 W. 13th St., New York, N.Y. 10011

Filed May 31, 1995, Ser. No. 454,824

Int. Cl.[6] A41B *3/00;3/12*

U.S. Cl. 450—86 **6 Claims**



1. A brassiere for a female athlete comprising:

left and right breast cups for supporting the breasts of the female;

means for securing the breast cups to the female;

the brassiere further having a mid-point between the breast cups for being disposed over the sternum and between the breasts of the female, and each cup having an upper fabric panel edge extending a length from the mid-point to an outer point, the outer point for being disposed over the upper lateral portion of each breast;

left and right elastic members disposed over each respective upper fabric panel edge, each elastic member having a relaxed-length that is shorter than the length of the respective upper fabric panel edge, and each elastic member having an inner end fixed to the mid-point, an outer end, and an interior longitudinal surface;

means for variably and removably fixing the outer end of each elastic member to the outer point of each respective breast cup; and

means for fastening the interior longitudinal surface of each elastic member to the upper fabric panel edge of each respective breast cup;

wherein the elastic members provide a force that pushes down on the breasts when the brassiere is secured on the female and the outer ends are fixed to the outer points and the interior longitudinal surfaces are fastened to the upper fabric panel edges.

5,643,044

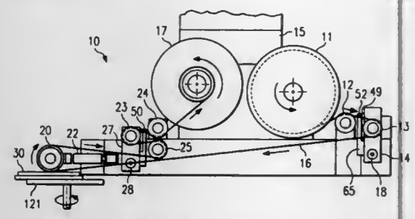
AUTOMATIC CHEMICAL AND MECHANICAL POLISHING SYSTEM FOR SEMICONDUCTOR WAFERS

Douglas E. Lund, 13304 Purple Sage, Dallas, Tex. 75240

Filed Nov. 1, 1994, Ser. No. 333,036

Int. Cl.[6] B24B *49/00;51/00*

U.S. Cl. 451—5 **8 Claims**



1. A method of polishing a semiconductor wafer having a substrate and a surface film, said method comprising the steps of:

holding said semiconductor wafer without requiring that said wafer have a central aperture;

polishing one surface of said wafer to a microscopically smooth surface;

determining the thickness of said surface film, in real time, while polishing said wafer; and

automatically controlling said polishing step with a control computer, said automatic controlling step including the steps of:

providing measurements of said surface film thickness to said control computer in real time; and

stopping said polishing step when the thickness of said surface film, averaged over the entire surface of said wafer, achieves a predefined value.

5,643,045

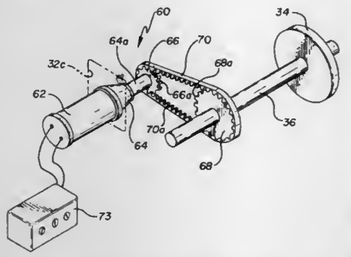
RETROFIT KIT FOR DRIVING THE REGULATING WHEEL OF A CENTERLESS GRINDER

Thomas J. Kirt, 38629 Moravian Dr., Clinton Township, Macomb County, Mich. 48036

Filed May 4, 1995, Ser. No. 434,859

Int. Cl.[6] B24B *49/00;5/18*

U.S. Cl. 451—5 **7 Claims**



1. For use with a centerless grinder comprising a base, a grinding wheel mounted on the base and operative to perform a grinding operation on a workpiece, a slide mounted on the base and including a housing defining an interior space, a regulating wheel housing carried by the slide, a spindle mounted on the regulating wheel housing, a regulating wheel mounted on the spindle in a position adjacent to and facing the grinding wheel and operative to contact the workpiece and rotate it in a direction opposite to that of the grinding wheel, and drive means for the regulating wheel, a retrofit kit for the regulator wheel drive means comprising:

a gear motor comprising an electric motor and a speed reducer driven by the electric motor and having an output shaft;

a first sprocket for mounting on the output shaft of the speed reducer;

a second sprocket for mounting on the spindie;

an endless member for training around the first and second sprockets;

a mounting bracket assembly operative to mount the gear motor on the slide housing with the electric motor positioned exteriorally of the slide housing and the speed reducer extending through an opening in the slide housing into the interior space of the slide housing to position the first sprocket within the interior space of the slide housing so as to allow the endless member to be trained around the first and second sprockets within the interior space of the slide housing to drive the regulator wheel in response to energization of the electric motor; and

a drive controller for connection to the electric motor and operative to control the output speed of the motor in small increments whereby to selectively drive the regulator wheel spindle at a multiplicity of drive speeds as determined by the setting of the controller, the speed reduction ratio of the speed reducer, and the relative diameters of the first and second sprockets.

5,643,046

POLISHING METHOD AND APPARATUS FOR DETECTING A POLISHING END POINT OF A SEMICONDUCTOR WAFER

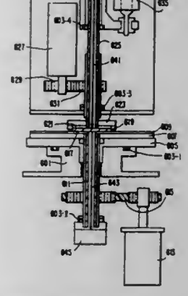
Ichiro Katakabe; Naoto Miyashita, both of Kanagawa-ken, and Tatsuo Akiyama, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 17, 1995, Ser. No. 390,529

Claims priority, application Japan, Feb. 21, 1994, 6-022486; Jan. 14, 1995, 7-021075

Int. Cl.[6] B24B *49/04;49/12;7/22*

U.S. Cl. 451—6 **9 Claims**



1. A polishing apparatus comprising:

a polishing plate having a polishing cloth;

first driving means having a first drive shaft for rotating said polishing plate;

a suction plate having a suction cloth for fixing of a semiconductor wafer on which a polishing film and a stopper film are formed, said suction plate and said suction cloth having respective openings of prescribed diameters substantially at their central portions;

second driving means having a second drive shaft adapted to rotate said suction plate and said wafer for polishing said wafer, said second drive shaft being hollow;

infrared light supplying means for supplying infrared light to said semiconductor wafer; and

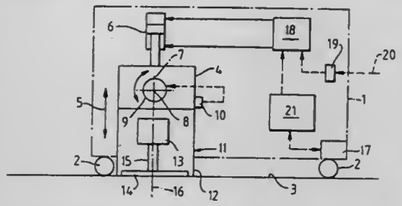
means for detecting a polishing end point of said polishing film by detecting a variation of the intensity of said infrared light supplied to said semiconductor wafer.

5,643,047

MOBILE FLOOR GRINDING VEHICLE

Leonard James Beckett, High Wycombe, and Kevin Dare, Huddersfield, both of Great Britain, assignors to Concrete Grinding Ltd., High Wycombe, United Kingdom

Continuation of Ser. No. 30,389, Mar. 31, 1993, abandoned.
This application Jul. 26, 1995, Ser. No. 507,716
Claims priority, application United Kingdom, Aug. 1, 1990, 9016897
Int. Cl.[6] B24B *49/12*
U.S. Cl. 451—6 **12 Claims**



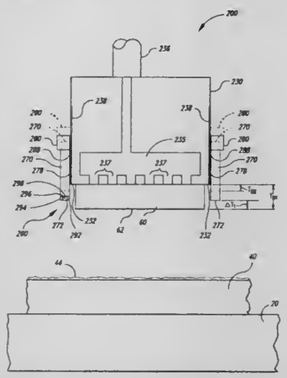
1. A mobile floor grinding vehicle comprising a vehicle body having two sides and movable in a predetermined direction of travel over a floor, a rigid support arm mounted pivotally to each side of said vehicle body and having a free end, a grinding tool being mounted at the free end of each of said pivotally mounted support arms, drive means for driving each grinding tool to grind the floor to a desired contour, means coupled to the support arms for operating the support arms to position the grinding tools in respective grinding positions on the floor, so that a pair of parallel tracks may be formed in the floor by said grinding tools to a said desired contour, means for providing a set of values representative of said desired contour and control means for controlling the grinding depth of each grinding tool with respect to the floor in response to predetermined signals derived from said set of values.

5,643,048

ENDPOINT REGULATOR AND METHOD FOR REGULATING A CHANGE IN WAFER THICKNESS IN CHEMICAL-MECHANICAL PLANARIZATION OF SEMICONDUCTOR WAFERS

Ravi Iyer, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Feb. 13, 1996, Ser. No. 600,461
Int. Cl.[6] B24B *37/04*
U.S. Cl. 451—6 **31 Claims**



1. An endpoint regulator for controlling the endpoint of a semiconductor wafer in semiconductor chemical-mechanical planarization processes, comprising:

a chuck having a mounting surface to which the wafer is attachable; and

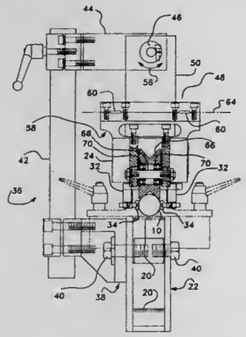
a spacer connected to the chuck and substantially surrounding the chuck around the periphery of the wafer, the spacer having a polish-stop face extending axially downwardly with respect to the mounting surface, wherein one of the polish-stop face or the mounting surface is selectively spaceable with respect to the other to space the polish-stop face apart from the mounting surface by a distance equal to a desired post-planarization thickness of the wafer, whereby the polish-stop face is adapted to engage a planarizing surface of a semiconductor polishing pad when the thickness of the wafer is substantially at the desired post-planarization thickness to substantially prevent further planarization of the wafer.

5,643,049

FLOATING CONTACT GAGE FOR MEASURING CYLINDRICAL WORKPIECES EXITING A GRINDER

Karl J. Liskow, Ypsilanti, Mich., assignor to Control Gaging, Inc., Ann Arbor, Mich.

Filed Jul. 31, 1995, Ser. No. 509,436
Int. Cl.[6] B24B *49/03;* **G01B** *5/10*
U.S. Cl. 451—10 **12 Claims**



1. A gage for measuring cylindrical work pieces having a circular cross section, a generally uniform diameter and a longitudinal axis as they exit a grinding machine and move along a predetermined path of travel generally parallel to the axis of the work pieces, the gage comprising:

a pair of spaced contacts for engagement with opposite sides of the work pieces to measure the diameter of the work pieces as the work pieces move along the path of travel; and

means for mounting the contacts for movement in two directions mutually orthogonal to one another and to the path of travel of the work piece to maintain engagement between the contacts and each work piece and track along the cross-section of each work piece to measure the diameter of each work piece as the work pieces move along the path of travel without the necessity of holding each work piece stationary in a fixture.

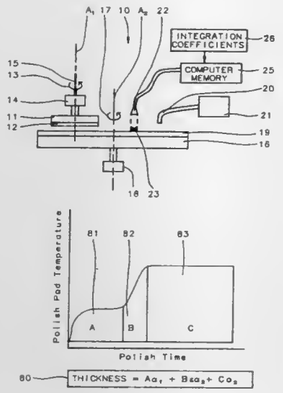
5,643,050

CHEMICAL/MECHANICAL POLISH (CMP) THICKNESS MONITOR

Lai-Juh Chen, Hsin-Chu, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed May 23, 1996, Ser. No. 652,218
Int. Cl.[6] B24B *49/00;51/00*
U.S. Cl. 451—10 **29 Claims**

1. A method of chemical/mechanical planarization (CMP) of a semiconductor substrate comprising:



planarizing the semiconductor substrate by holding the semiconductor substrate on a rotating platen against a rotating polishing pad in the presence of a polishing slurry;

controlling the temperature of the polishing slurry in the temperature range between about 10° to 30° C.;

dispensing said temperature controlled slurry onto said rotating polishing pad;

measuring by infrared detection means the temperature of said rotating polishing pad at a selected polishing pad location which is abrading the surface of said semiconductor substrate;

storing in a computer memory the temperature of the polishing pad versus polish time;

storing in the computer memory integration coefficients for CMP removal chemistry and underlying pattern density; and

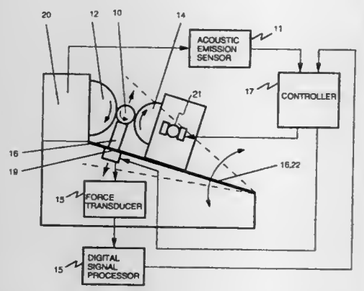
computing the thickness of the removed layer vesus polish time by integrating the stored temperature change versus polish time data with time and applying the stored integration coefficients.

5,643,051

CENTERLESS GRINDING PROCESS AND APPARATUS THEREFOR

Shiping Steven Zhou, Shrewsbury, Mass.; Joseph R. Gartner, Willington, and Trevor D. Howes, Mansfield Center, both of Conn., assignors to The University of Connecticut, Storrs, Conn.

Filed Jun. 16, 1995, Ser. No. 491,027
Int. Cl.[6] B24B *49/00*
U.S. Cl. 451—11 **17 Claims**



1. In a method for minimizing the roundness error in a workpiece having a generally circular periphery during centerless grinding of the workpiece in a grinding machine having a bed mounting a grinding wheel and two spaced workpiece supports, the steps comprising:

(i) rotatably supporting a workpiece on the upper surface of a first workpiece support, between a grinding wheel and a second workpiece support, said first support rotatably supporting the workpiece in contact with said grinding wheel and said second support, with an d-setup angle being defined by a first imaginary line extending through the axis of said grinding wheel and the workpiece and a second imaginary line extending through the axis of the workpiece and the point of contact with said first support, and a β-setup angle being defined by said first line and a third imaginary line extending across the axis of the workpiece and the point of contact with said second support, and α-setup angle and β-setup angle cooperating with a cutting ratio to define the transfer function of a lobing loop system in a complex s-plane;

(ii) determining the characteristic equation of said transfer function of said lobing loop system;

(iii) transforming said characteristic equation from said complex s-plane to the complex u-plane so that the frequency and the growth rate of the surface waves of said lobing loop system are independent of the workpiece rotational speed;

(iv) determining the distribution of the characteristic roots of said characteristic equation representing said lobing loop system in terms of the frequency and the growth rate of said surface waves of said lobing loop system;

(v) rotating said grinding wheel and rotating said workpiece against the grinding surface of said grinding wheel;

(vi) detecting and determining the magnitude and frequency of grinding disturbances causing surface waves in said workpiece;

(vii) combining said distribution of said characteristic roots and said grinding disturbances to determine the response of said lobing loop system;

(viii) determining the preferable wave frequencies of said distribution of said characteristic roots having relative low growth rates based upon said β-setup angle; and

(ix) adjusting said β-setup angle so that said preferable wave frequencies are at or near the frequencies of said grinding disturbances to minimize the workpiece roundness error by minimizing the response of said lobing loop system under said grinding disturbances.

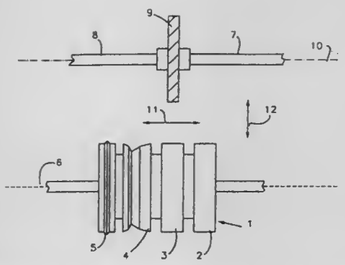
5,643,052

METHOD FOR RENEWING GRINDING WHEEL SURFACES AND DISK AND MACHINE FOR CARRYING OUT SAID METHOD

Luc Delattre, Maxence; Pascal Daboudet, Bouffemont, and Jean-Luc Labat, Barrois, all of France, assignors to Essilor International, Creteil, France

PCT No. PCT/FR93/00497, § 371 Date Nov. 22, 1994, § 102(e) Date Nov. 22, 1994, PCT Pub. No. WO93/24274, PCT Pub. Date Dec. 9, 1993
PCT Filed May 21, 1993, Ser. No. 325,280
Claims priority, application France, May 26, 1992, 92 06 413
Int. Cl.[6] B24B *49/00;51/00*
U.S. Cl. 451—21 **15 Claims**

1. A method for renewing grinding wheel surfaces in a machine for grinding ophthalmic lenses, comprising one or several diamond grinding wheels, gripping means designed to receive an ophthalmic lens and control means, and comprising a step for detecting whether a surface of the grinding wheel needs renewing, and in which surface renewal is carried out using a disk of an abrasive



material fitted on the grinding machine in the place of a lens in said gripping means for said lenses, further comprising a step for automatically detecting the presence and the composition and contour of disks fitted in said gripping means.

5,643,053

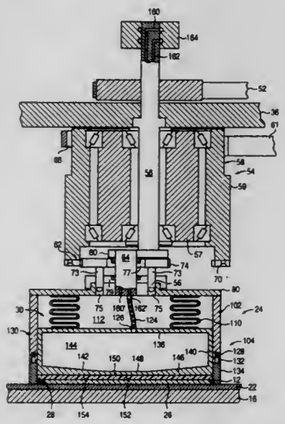
CHEMICAL MECHANICAL POLISHING APPARATUS WITH IMPROVED POLISHING CONTROL

Norm Shendon, San Carlos, Calif., assignor to Applied Materials, Inc., Santa Clara, Calif.

Continuation-in-part of Ser. No. 173,846, Dec. 27, 1993. This application Mar. 2, 1994, Ser. No. 205,276

Int. Cl.[6] B24B *1/00*

U.S. Cl. 451—28 **23 Claims**



11. A method of polishing a substrate, comprising:

rotating a polishing pad;

placing a substrate in a carrier having a variable biasing portion, said variable biasing portion including a pressurizable chamber;

positioning the carrier to position the substrate on the polishing pad;

biasing the substrate against the polishing pad; and

pressurizing said chamber to provide different loading pressures between the substrate and the polishing pad at the center and edge portions of the substrate to evenly polish the surface of the substrate on the polishing pad.

5,643,054

MACHINE PART WITH IMPROVED SURFACE TEXTURE FOR ROLLING CONTACT AND/OR SLIDING CONTACT

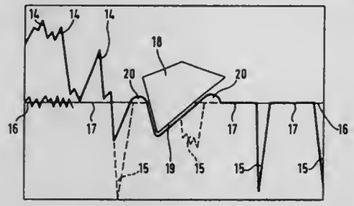
Peter Bach, Herzogenaurach; Ludwig Kern, Erlangen, and Ernst Strian, Kunreuth, all of Germany, assignors to INA Wälzlager Schaeffler KG, Herzogenaurach, Germany

Filed Mar. 4, 1996, Ser. No. 610,711

Claims priority, application Germany, Apr. 7, 1995, 195 13 254.8

Int. Cl.[6] B24B *1/00*

U.S. Cl. 451—34 **9 Claims**



9. A method of making a surface of a machine part for rolling contact and/or sliding contact upon another element; comprising the steps of:

honing an outer surface of the machine part to exhibit peaks and pits;

plateau-honing the surface through removal of the peaks to the level of a mean profile line for formation of plateaus that are interrupted by pits which cross each other;

pushing grit into the plateau-like configuration for displacing material, with displaced material being received and at least partially filling the pits, and forming mounds above the mean profile line; and

removing the mounds to a level of the mean profile line without altering the configuration of the pits.

5,643,055

SHAPING METALS

Geoffrey Robert Linzell, Hatfield, England, assignor to Ball Burnishing Machine Tools Ltd., Hatfield, England

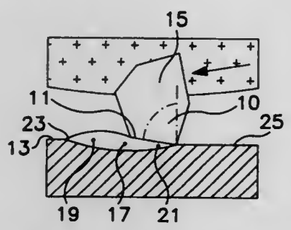
PCT No. PCT/GB93/01096, § 371 Date Feb. 24, 1995, § 102(e) Date Feb. 24, 1995, PCT Pub. No. WO93/24272, PCT Pub. Date Dec. 9, 1993

PCT Filed May 27, 1993, Ser. No. 347,320

Claims priority, application United Kingdom, May 27, 1992, 9211232

Int. Cl.[6] B24B *1/00*

U.S. Cl. 451—36 **16 Claims**



1. A method for shaping a metal workpiece by removing material therefrom by continuously rubbing a surface of said workpiece with a tool in a friction inducing-manner so as to cause the formation of micro-welds between the workpiece and the tool and the subsequent breaking of the micro-welds, the method comprising the steps of: promoting the formation of micro-welds by effecting said rubbing in the presence of an anti-lubricating agent in a quantity and in a form such that actual rubbing friction enhancement occurs, and at least some of the workpiece material at said surface in frictional contact with said tool is sheared from the surface by the continuing motion of said tool, and discarded.

5,643,056

REVOLVING DRUM POLISHING APPARATUS

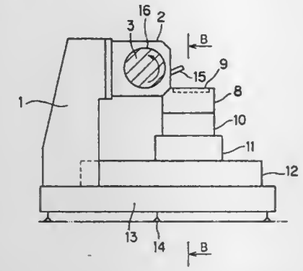
Masayoshi Hirose; Seiji Ishikawa; Norio Kimura; Yoshimi Sasaki; Kouki Yamada; Fujio Aoyama; Noburu Shimizu, all of Tokyo, Japan, and Katsuya Okumura, Poughkeepsie, N.Y., assignors to Ebara Corporation, Tokyo, and Kabushiki Kaisha Toshiba, Kawasaki, both of Japan

Filed Oct. 30, 1995, Ser. No. 550,117

Claims priority, application Japan, Oct. 31, 1994, 6-290644; Jul. 20, 1995, 7-206590

Int. Cl.[6] B24B *1/00*

U.S. Cl. 451—41 **39 Claims**



1. A polishing apparatus for polishing a surface of an object to a uniform polish, said apparatus comprising:

a seat member to support an object to be polished;

a revolving drum confronting said seat member and a surface of the object, said drum having mounted on an outer circumferential surface thereof a polishing material;

revolving means for revolving said drum;

a pressing device to cause said polishing material on said drum and the surface of the object to be in pressing contact;

supply means for supplying a polishing solution to said polishing material, thereby to achieve polishing of the surface of the object;

first moving means for moving one of said drum and said seat member in a direction orthogonal to an axis of said drum;

second moving means for moving one of said drum and said seat member in a direction parallel to said drum axis; and

rotation means for rotating said seat member and the object.

5,643,057

METHOD AND APPARATUS FOR UNIFORMLY TEXTURIZING OBJECTS USING ABRASIVE BLASTING

Larry Z. Isaacson, Atlanta, Ga., assignor to Masonry Processes, Inc., Atlanta, Ga.

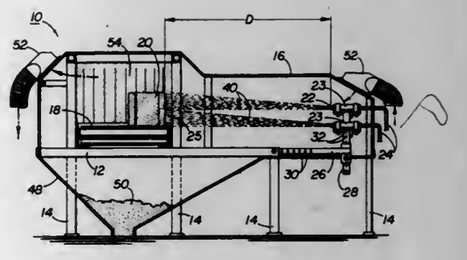
Filed Jun. 16, 1995, Ser. No. 491,525

Int. Cl.[6] B24C *3/08;3/18*

U.S. Cl. 451—81 **23 Claims**

1. A method of uniformly texturizing an object having at least one face, comprising the steps of:

a. calculating a placement distance to dispose the discharge end of at least one sandblasting nozzle from the face of the object based on the relative speed of movement of either one of the object or the nozzle, the size of the nozzle, the air pressure feeding particles through the discharge end of the nozzle, the material composition of the object, and the desired appearance of the face of the object after texturizing;



b. disposing the discharge end of the nozzle at the placement distance;

c. moving a selected one of the face of the object or the discharge end of the nozzle in front of the other; and

d. subjecting the face of the object to a spray of particles from the discharge end of the nozzle generated by air pressure at a selected particle feed rate so as to uniformly texturize the face of the object to obtain the desired appearance,

wherein the calculating step utilizes the equation $F=(E+10)(D)^{0.5}(R)(N)^2(P)$ to calculate the placement distance, D, wherein P is the pressure of the air carrying the blast media, N is the size of the nozzle, R is the speed of movement of either one of the object or the nozzle relative to the other, F is a constant based on the materials from which the object is constructed, and E is a rating for the desired appearance of the texturized face.

5,643,058

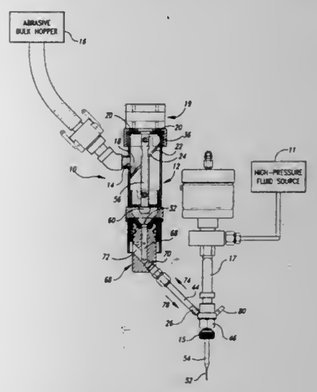
ABRASIVE FLUID JET SYSTEM

Glenn A. Erichsen, Everett; John C. Massenburg, Seattle; Chip Burnham, Tukwila; Thomas Harry O'Connor, Buckley; Rhonda R. Smith, Seattle; Katherine Zaring, and Robert P. Many, both of Kent, all of Wash., assignors to Flow International Corporation, Kent, Wash.

Filed Aug. 11, 1995, Ser. No. 513,381

Int. Cl.[6] B24B *7/00;9/00*

U.S. Cl. 451—99 **37 Claims**



29. An abrasive fluid jet system comprising:

an air isolator having a port through which a volume of abrasive is introduced into the air isolator;

a discharge orifice being provided in a surface of the air isolator through which abrasive may exit the air isolator;

an adapter coupled to the discharge orifice, the adapter having a first port and second port provided at an angle relative to each other of 30°–60°, such that abrasive flowing from the air isolator passes through the first port, turns substantially 30°–60°, and flows through the second port to the feedline, a first vent being provided in the adapter to discharge from the system any fluid or abrasive that may flow upstream as a result of a clog occurring downstream; and

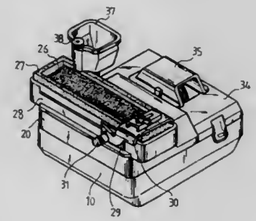
a feedline coupled to the adapter and to a cutting head, the cutting head having a mixing chamber into which the abrasive from the air isolator and a high-pressure fluid jet are introduced, the abrasive and the high-pressure fluid jet being mixed and discharged as an abrasive fluid jet through a mixing tube coupled to the cutting head.

5,643,059

RECIPROCATING GRINDER

Chao-Hsin Chen, Fong Yuen, Taiwan, assignor to American Machine & Tool Company, Inc. of Pennsylvania, Royersford, Pa.

Filed Apr. 13, 1995, Ser. No. 421,203
Int. Cl.[6] B24B *9/04;7/00*
U.S. Cl. 451—164 **9 Claims**



1. A grinding mechanism comprising:

a base,

a track means horizontally provided in said base,

a slide slidably engaged on said track means,

a grinding means secured on top of said slide,

means for moving said slide and said grinding means in a reciprocating action along said track means,

a cover secured on top of said base, and

said cover including a channel provided on top thereof for slidably receiving said grinding means and including a peripheral slot formed around said channel.

5,643,060

SYSTEM FOR REAL-TIME CONTROL OF SEMICONDUCTOR WAFER POLISHING INCLUDING HEATER

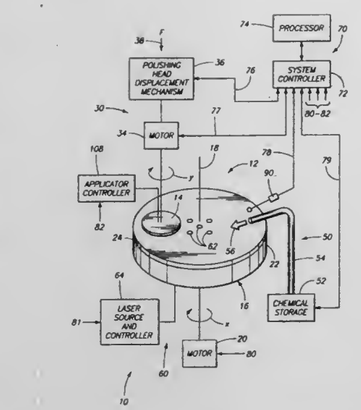
Gurtej S. Sandhu, and Trung Tri Doan, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation-in-part of Ser. No. 112,759, Aug. 25, 1993, Pat. No. 5,486,129. This application Oct. 24, 1995, Ser. No. 547,377
Int. Cl.[6] B24B *5/00*
U.S. Cl. 451—285 **22 Claims**

1. A system for polishing a semiconductor wafer, the system comprising:

a platen subassembly defining a polishing area;

a polishing head selectively supporting a semiconductor wafer and holding a face of the semiconductor wafer in contact with the platen subassembly to polish the wafer face; and



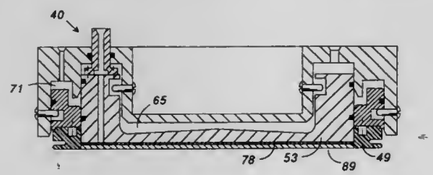
a heater supported by the polishing head and controllably heating the wafer while the wafer face is being polished.

5,643,061

PNEUMATIC POLISHING HEAD FOR CMP APPARATUS

Paul David Jackson, Scottsdale, and Stephen Charles Schultz, Gilbert, both of Ariz., assignors to Integrated Process Equipment Corporation, Phoenix, Ariz.

Filed Jul. 20, 1995, Ser. No. 504,686
Int. Cl.[6] B24B *37/04*
U.S. Cl. 451—289 **20 Claims**



1. Chemical-mechanical polishing apparatus including a slurry coated polishing pad and a polishing head for receiving a semiconductor wafer and for holding the wafer against the polishing pad, wherein said polishing head comprises:

a carrier plate having an inner cylindrical wall and an outer cylindrical wall, said walls being concentric and having a common axis;

a first piston fitting within and engaging said outer cylindrical wall and defining a first chamber between said carrier plate and said first piston, said first piston movable in a direction parallel to said axis and having a lower edge;

a second piston fitting within and engaging said inner cylindrical wall, said second piston movable in a direction parallel to said axis and defining a second chamber, separate from said first chamber;

a retaining ring attached to the lower edge of said first piston and surrounding said second piston;

a first pneumatic fitting for coupling said first chamber to a source of air or vacuum;

a second pneumatic fitting for coupling said second chamber to a source of air or vacuum;

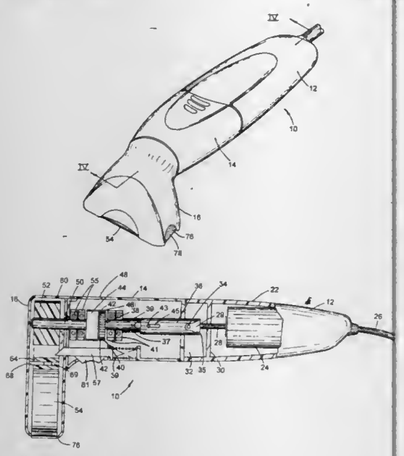
whereby said first piston and said second piston are independently movable and can press a wafer against the polishing pad with a force independent of the force applied to said retaining ring.

5,643,062

MANICURE MACHINE

James R. Joseph, 6497 College Ave., SE., Kentwood, Mich. 49548, and Mark W. Groves, Columbus, Ohio, assignors to James R. Joseph, Kentwood, Mich.

Filed May 23, 1995, Ser. No. 447,363
Int. Cl.[6] B24B *23/00;27/08*
U.S. Cl. 451—355 **26 Claims**



1. A manicure machine, comprising:

a housing adapted to be held in the palm of a hand and manually manipulated;

a motor mounted in said housing, and having an output shaft;

a drive roller operatively connected to and driven by the output shaft of said motor;

a flexible belt disposed within a cartridge which is detachably secured to said manicure machine, said cartridge defining an opening to expose an abrasive surface of said belt, said flexible belt passing around said drive roller and around bearing surfaces on said cartridge when said drive roller is rotated; said flexible belt having an abrasive outer surface for manicuring nails; and

an arcuate platen disposed inwardly of said belt adjacent said opening, said arcuate platen having a concave surface opposing an inner side of said belt.

5,643,063

CLAMPING MECHANISM FOR A POWERED SANDER

Albert I. Uzumcu, 1500 Brookside Dr., Hoffman Estates, Ill. 60194; Raymond R. Esparza, 5700 W. Gunnison, Chicago, Ill. 60630; Matthew H. Malone, 8610 W. Grand Ave., River Grove, Ill. 60171, and Jose Nieto, 2812 S. Homan Ave., Chicago, Ill. 60623

Filed Aug. 1, 1996, Ser. No. 693,805
Int. Cl.[6] B24B *23/00;27/08*
U.S. Cl. 451—356 **5 Claims**

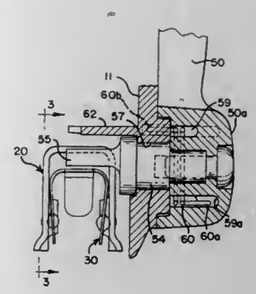
1. A clamping mechanism for a powered reciprocating sander of the type having a housing mounting a motor connected to a plunger for reciprocating the same along a first axis, said clamping mechanism comprising:

(a) a carrier connected to said plunger for reciprocating therewith, said carrier having a recess open at the bottom thereof;

(b) a holder pivotally mounted to said carrier for swinging movement about a second axis perpendicular to said first axis, said holder being swingable about said second axis back and forth between a first position wherein said holder is substantially nested within the recess in said carrier and a second position wherein a substantial portion of said holder extends out of and away from said recess, said holder being provided with a cavity for receiving a portion of a contour sanding member;

(c) detent means on one of said carrier and said holder for compressing said holder when the latter is in said first position thereby to impart a clamping force to a contour sanding member received within the cavity of said holder; and

(d) an ejection means mounted on said housing and adapted for engagement with said holder for moving the same from its first position to its second position.

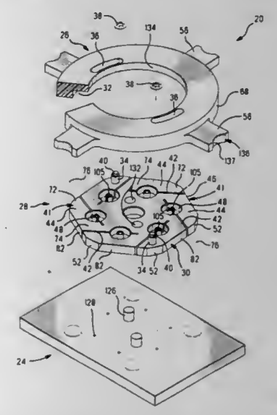


5,643,064

UNIVERSAL POLISHING FIXTURE FOR POLISHING OPTICAL FIBER CONNECTORS

Soren Grinderslev, Hummelstown; Nancy Lebeis Miller, Harrisburg, and Randall B. Paul, Elizabethville, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Jun. 19, 1996, Ser. No. 668,028
Int. Cl.[6] B24B *19/00*
U.S. Cl. 451—378 **25 Claims**



1. A polishing fixture for polishing articles retained in said fixture, said fixture comprising:

an article holding plate having at least one edge;

a plurality of slots in said holding plate extending from said edge into said holding plate;

a plurality of clamping assemblies, each of said clamping assemblies including a movable beam between each of said plurality of slots and a corresponding portion of said edge; and

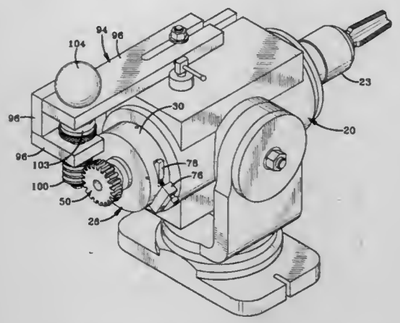
a force transmitting body and a force receiving body coupled with said fixture for imposing forces on said clamping assemblies to move said beams to clamp portions of said articles in said clamping assemblies.

5,643,065

INDEXING MECHANISM FOR ROTATABLY MOUNTED WORK HOLDING SPINDLE

Lowell E. Whitesel, 6243 Clover Valley Rd., Johnstown, Ohio 43031

Filed Apr. 12, 1996, Ser. No. 630,992
Int. Cl.[6] B24B *41/06*
U.S. Cl. 451—403 **5 Claims**



1. An indexing mechanism for a spindle having one end adapted to releasably grip a tool and rotationally supported within a work-head housing; and a second end comprising, in combination,

a) an indexing housing fixed to said second end of said spindle and rotatably mounted about the axis of a shaft different from said spindle extending through said indexing housing parallel to the axis of rotation of said spindle;

b) an indexing plate having a circumferentially extending outer surface provided with a plurality of recesses spaced from one another about said outer surface; said plate being mounted in said housing in fixed rotational relationship to said shaft;

c) an indexing finger mounted in a fixed position on said indexing housing and including an end portion biased for selective releasably fixed, sequential engagement with said recesses in said indexing plate upon rotation of said indexing housing relative said indexing plate in a first rotational direction to releasably fix the rotational angular relationship between said indexing plate and said spindle, said finger and said recesses being conformed to prevent rotation of said indexing housing relative to said indexing plate in a second rotational direction opposite said first direction;

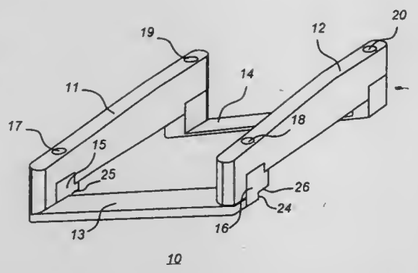
d) a rotary actuator mounted in a fixed position adjacent said work-head housing and operatively connected to one end of said shaft for preventing rotation of said shaft independent of rotation of said actuator, whereby rotation of said actuator causes rotation of said shaft, said indexing plate, said indexing housing and said spindle as a unit.

5,643,066

FIXTURE FOR SKI EDGE FINISHING TOOL

James H. Vermillion, 14220 Orchard Ave., Caldwell, Id. 83605

Filed Jul. 11, 1996, Ser. No. 678,720
Int. Cl.[6] B24B *21/18*
U.S. Cl. 451—442 **23 Claims**



1. A fixture for positioning an abrasive tool on the running surface of a ski for beveling a ski edge comprising:

a pair of arm members which lie in parallel spaced apart relationship;

a cross member attached near a first end of a first of the pair arm members and a first end of a second of the pair of arm members, the cross member extending between the first and second arm members;

an indexing mechanism for indexing the fixture against a marginal side of the ski;

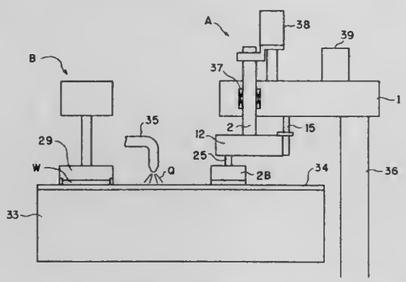
a tool shim having a top face, a bottom face, and a predetermined thickness, extending between and attached to a second end of the first arm member and a second end of the second arm member, the tool shim top face lying in a plane parallel to the running surface of the ski, the plane of the top face of the tool shim having a higher elevation than the elevation of the running surface of the ski, the tool shim being configured so that the bottom face may be held in sliding contact with the running surface of the ski at a predetermined and fixed distance from the indexing mechanism, the tool shim being further configured so that the abrasive tool is held at an angle relative to the running surface of the ski.

5,643,067

DRESSING APPARATUS AND METHOD

Seiji Katsuoka, Atsugi; Kunihiko Sakurai, Yokohama, and Tetsuji Togawa, Fujisawa, all of Japan, assignors to Ebara Corporation, Tokyo, Japan

Filed Dec. 13, 1995, Ser. No. 571,598
Claims priority, application Japan, Dec. 16, 1994, 6-334164
Int. Cl.[6] B24B *21/18;33/00;47/26;55/00*
U.S. Cl. 451—444 **35 Claims**



31. A method of dressing a polishing surface of a polishing cloth mounted on a table, said method comprising:

contacting said polishing surface with a dressing tool mounted on an attachment shaft that is driveably connected to a drive shaft; and

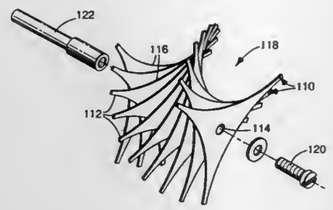
moving said table in a plane parallel to said polishing cloth while causing said dressing tool to rotate about an axis of said attachment shaft and to orbit about an axis of said drive shaft.

5,643,068

ABRADING WHEEL HAVING INDIVIDUAL SHEET MEMBERS

Robert E. Ward, Sr., St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 335,598, Nov. 8, 1994, abandoned, which is a continuation of Ser. No. 127,336, Sep. 27, 1993, abandoned. This application May 26, 1995, Ser. No. 450,158
Int. Cl.[6] B24D *18/00*
U.S. Cl. 451—526 **18 Claims**



1. A method of forming an abrasive sheet member, comprising the steps of:

a) providing an abrasive sheet material;

b) providing a cutting apparatus adapted to cut an abrasive sheet member, the abrasive sheet member having at least three projecting ends each projecting end including a respective end edge, wherein each of the end edges comprises a straight line, wherein each projecting end tapers to a narrowest width at the end edge, wherein each projecting end is separated from each adjacent projecting end by a boundary having a radius of curvature with a center of curvature located outside the sheet member, and wherein the radius of curvature of at least one of the boundaries is greater than a radius of a circle intersecting a point on each boundary; and

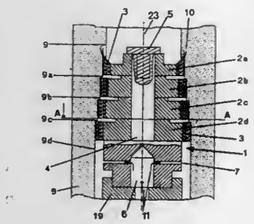
c) cutting an abrasive sheet member from the sheet material with the cutting apparatus.

5,643,069

DRILL FOR DRILLING BRITTLE MATERIALS

Uwe Christiansen, Gelnhausen; Dagobert Knieling, Hanau, and Andreas Schultheis, Langenselbold, all of Germany, assignors to Heraeus Quarzglas GmbH, Hanau, Germany

Filed Sep. 21, 1995, Ser. No. 531,413
Claims priority, application Germany, Sep. 23, 1994, 44 34 025.7
Int. Cl.[6] B23F *21/03*
U.S. Cl. 451—540 **16 Claims**



1. Drill for brittle materials, said drill comprising a drill rod having a forward end and a longitudinal axis of rotation,

a drill head mounted at said forward end of said drill rod,

a first drill crown mounted on said drill head distally with respect to said drill rod, said first drill crown having first cutting means which, when said drill is rotated, describes a first envelope circle, said first cutting means having a diamond coating with an average particle size in the range of 200–1,000 μm,

at least one additional drill crown including a second drill crown mounted behind said first drill crown, said second drill crown having second cutting means which, when said drill is rotated, describes a second envelope circle coaxial to and larger than said first envelope circle, said second cutting means having a diamond coating with an average particle size in the range of 200–300 μm wherein said drill crowns are replaceable disks, said cutting means comprising a plurality of segments mounted on the circumference of each disk, said diamond coatings being provided on said segments.

5,643,070

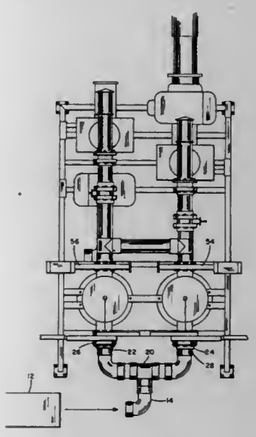
Patent Not Issued For This Number

5,643,071

APPARATUS FOR COLLECTING SAUSAGE CASINGS

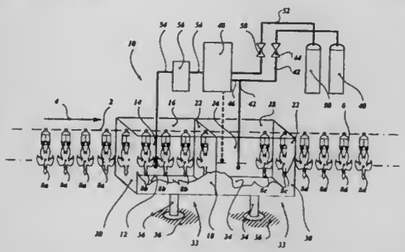
Jeffrey A. Williams, Calhoun, Ga., and Charles E. Miller, West Point, Miss., assignors to Sara Lee Corporation, Winston-Salem, N.C.

Filed Nov. 9, 1995, Ser. No. 556,202
Int. Cl.[6] A22C *13/00*
U.S. Cl. 452—50 **13 Claims**



1. Apparatus for collecting sausage casings or the like from a station where the casings are peeled from the sausage or the like comprising: plural tank means for receiving the peeled casings from the station where casings are peeled; conduit means connecting the peeling station with the plural tank means; means selectively opening one of the plural tank means while closing the other tank means including means selectively separating the peeled casing when one tank means is activated and the other tank means is deactivated; and a vacuum source for selectively creating a vacuum communicating with the plural tank means, conduit means and actuating means to move peelings selectively to each of the tank means for subsequent discharge.

5,643,072
METHOD AND DEVICE FOR STUNNING OF POULTRY
Jenneke A. C. Lankhaar, Bokhoven, and Adrianus J. van den Nieuwelaar, Gemert, both of Netherlands, assignors to Stork PMT B.V., Netherlands
PCT No. PCT/NL93/00284, § 371 Date Jun. 6, 1995, § 102(e) Date Jun. 6, 1995, PCT Pub. No. WO94/15469, PCT Pub. Date Jul. 21, 1994
PCT Filed Dec. 30, 1993, Ser. No. 448,389
Claims priority, application Netherlands, Dec. 30, 1992, 9202289; Feb. 9, 1993, 9300254
Int. Cl.[6] A22B *3/00*
U.S. Cl. 452—66 **24 Claims**



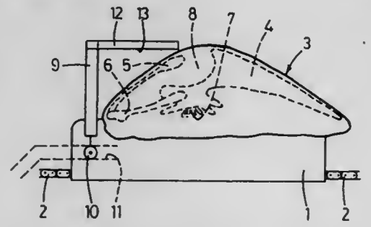
1. A device for stunning poultry, comprising a first chamber and a second chamber and having one or more openings through which the poultry can be taken into the first and second chambers, respectively, and removed therefrom, the first chamber comprising sealing means for generally sealing the openings of the first chamber, and being provided with means for feeding in a first stunning gas or gas mixture which is mixed with oxygen in a concentration of at least 15% by volume fed in by oxygen supply means, and the second chamber being provided with means for feeding in a second stunning gas or gas mixture, and mechanical conveying means being provided for taking the poultry into and out of the first and second chambers.

5,643,073
SKINNING APPARATUS
Hugh J. Tice, 414 Buckhorn Tr, Hamilton, Ala. 35570
Filed Mar. 11, 1996, Ser. No. 615,335
Int. Cl.[6] A22B *5/16*
U.S. Cl. 452—125 **4 Claims**



1. A skinning apparatus for aiding in the removal of a hide from the carcass of a game animal, said skinning apparatus comprising:
a back plate segment, said back plate segment being generally flat;
a first aperture formed within said back plate, said first aperture being a circular hole;
a second aperture formed within said back plate and situated under said first aperture, said second aperture being a key-shaped hole and forming the orifice through which the hide of the animal can be inserted;
a plate key insert being generally flat and being passable through said second aperture; and
a slot formed within said plate key insert for receiving a section of animal hide.

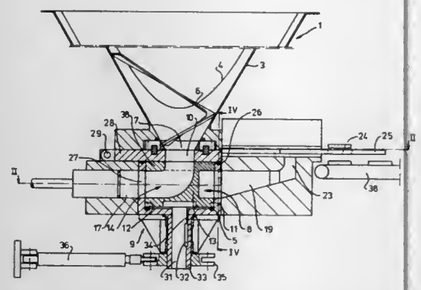
5,643,074
METHOD AND APPARATUS FOR FILLETING THE BREAST PIECE OF SLAUGHTERED POULTRY
Leonardus Mattheus Petrus Linnenbank, Oostzaan, Netherlands, assignor to Machinefabriek Meyn B.V., Oostzaan, Netherlands
Filed Oct. 25, 1995, Ser. No. 547,883
Claims priority, application Netherlands, Oct. 26, 1994, 9401773
Int. Cl.[6] A22C *21/00*
U.S. Cl. 452—165 **8 Claims**



1. An apparatus for filleting the breast piece of slaughtered poultry wherein the breast piece included the sternum and the wishbone defined by both clavicles, comprising:
a conveying apparatus defining conveying path for the slaughtered poultry;
at least one carriage member configured with said conveying apparatus, said carriage member having a shape for supporting the breast piece as it conveyed along said conveying path;
a cutting device operably disposed along said conveying path for cutting loose the breast flesh from the breast piece;
a automatically actuated pressure device configured with said carriage member and movable relative thereto, said pressure device automatically movable to an operative position and having a shape so that in said operative position said pressure device engages the wishbone of the breast piece pressing the wishbone inwardly relative to the breast piece prior to the breast flesh being cut loose by said cutting device.

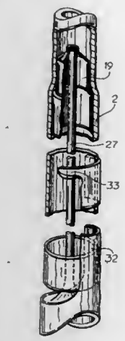
5,643,075
SHAPING MACHINE
Poul Lygum, Bakel, Netherlands, assignor to Tetra Laval Food Koppens B.V., Bakel, Netherlands
PCT No. PCT/NL94/00165, § 371 Date Nov. 8, 1995, § 102(e) Date Nov. 8, 1995, PCT Pub. No. WO95/02337, PCT Pub. Date Jan. 26, 1995
PCT Filed Jul. 13, 1994, Ser. No. 545,803
Claims priority, application Netherlands, Jul. 15, 1993, 9301248
Int. Cl.[6] A22C *7/00*
U.S. Cl. 452—174 **12 Claims**

1. Shaping machine for dividing a deformable mass, such as a meat product, into separately shaped portions, comprising a stock



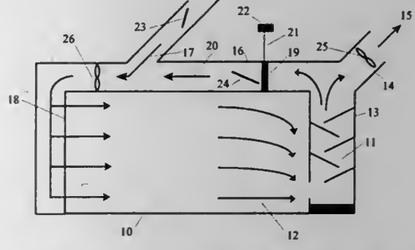
container, a shaping plate provided with shaped recesses, at least two piston-cylinder units for alternately feeding in the mass from the stock container to said shaping plate and also means for removing the shaped portions from the shaping plate, characterized in that valve means are provided for connecting the cylinders alternately to the stock container.

5,643,076
PLUG FOR CLOSING THE GULLET OF A SLAUGHTERED ANIMAL AND DEVICE FOR POSITIONING SAME
Erwin Herman Gerardus Heurman, Brinkstraat 187, NL-7512 ED Enschede; Gerrit-Jan Hofte Koesveld, Windmolenweg 54, NL-7548 BM Boekelo, and Johan Gerrit Roerink, Broekheurnerweg 94 A, NL-7418 PZ Haaksbergen, all of Netherlands
PCT No. PCT/NL94/00032, § 371 Date Sep. 20, 1995, § 102(e) Date Sep. 20, 1995, PCT Pub. No. WO94/17669, PCT Pub. Date Aug. 18, 1994
PCT Filed Feb. 7, 1994, Ser. No. 500,970
Claims priority, application Netherlands, Feb. 8, 1993, 9300244; Oct. 4, 1993, 9301700
Int. Cl.[6] A22C *21/00*
U.S. Cl. 452—176 **8 Claims**



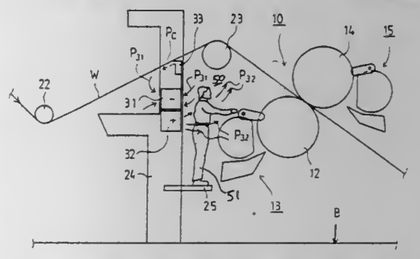
1. A plug for closing a tubular member opening at the outside of a slaughtered animal and adapted to be inserted into the gullet of the slaughtered animal from which the head has been removed, the plug comprising:
a plug body comprising a biodegradable material having an outer surface and a bottom, with the outer surface being less hygroscopic than a remainder of the plug body;
wherein the plug has the general shape of a beaker such that the plug can be inserted into the gullet with the bottom of the plug positioned toward a front of the gullet, wherein the plug co-acts with a gullet wall for closure,
wherein the plug has at least two parts with different inner diameters, and wherein inner surfaces of the at least two parts mutually connect via a step.

5,643,077
CONTINUALLY OPTIMIZED, VARIABLE FLOW RATE VENTILATION SYSTEM
Jacqueline Ayer, 16900 Algonquin St. 1-203, Huntington Beach, Calif. 92649
Filed Jun. 16, 1995, Ser. No. 491,226
Int. Cl.[6] B05B *15/12*
U.S. Cl. 454—54 **20 Claims**



1. A method for processing ventilation air from a work area contaminated with hazardous constituents or air pollutants comprising the steps of:
1) monitoring concentrations of the hazardous constituents or air pollutants in air within a recirculation duct;
2) inputting monitor data to a central controller;
3) continually adjusting first and second flow varying means by said central controller for the air to atmosphere and the air to the recirculation duct to both deliver a selected flow rate through the work area and optimize the recirculation flow rate to ensure safe concentration levels in the recirculation duct according to monitor data and allowable concentration levels set in said central controller.

5,643,078
METHOD AND SYSTEM FOR AIR-CONDITIONING A COATING STATION FOR A PAPER WEB OR EQUIVALENT
Paavo Sairanen, Turku; Jan Lindström, Naantali, both of Finland, and Osmo Lamminpää , Knoxville, Tenn., assignors to Valmet Corporation, Helsinki, Finland
Filed Nov. 28, 1995, Ser. No. 563,628
Claims priority, application Finland, Dec. 2, 1994, 945685
Int. Cl.[6] F24F *3/00*
U.S. Cl. 454—66 **15 Claims**



1. A method for air-conditioning a coating station for a paper web, the coating station including a working area in which a person works to operate a coating device, comprising the steps of:

directing cool and dry air into the working area in the direct vicinity of the person to ventilate the working area and provide breathing air for the person, and

removing hot and moist air as a suction flow from the working area from the direct vicinity of the person.

5,643,079

INSIDE AND OUTSIDE AIR SWITCHING APPARATUS FOR AUTOMOTIVE AIR CONDITIONER

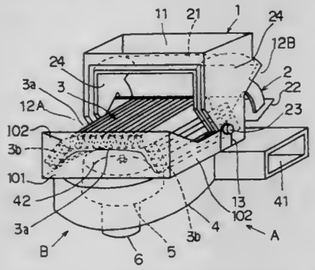
Manabu Miyata, Obu; Koji Ito, Nagoya; Teruhiko Kameoka, Okazaki; Kazushi Shikata; Koji Matsunaga, both of Kariya, and Hikaru Sugi, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Feb. 8, 1996, Ser. No. 598,318

Claims priority, application Japan, Feb. 9, 1995, 7-021640

Int. Cl.[6] B60H *3/06*

U.S. Cl. 454—139 **12 Claims**



1. An inside and outside air switching apparatus for automotive air conditioner comprising:

a blower fan;

a blower case for housing said blower fan, said case having an inlet port at an upstream side of said blower fan and an outlet port at a downstream side of said blower fan and forming an air passage for introducing air sucked from said inlet port to said outlet port;

an inside and outside air switching case disposed at an upstream side of said inlet port and having an inside air inlet and outside air inlet which are connected to said inlet port;

a rotary door having a rotary shaft and being rotatably supported in said inside and outside air switching case with said rotary shaft as a center to open and close said inside air inlet and said outside air inlet; and

a filter disposed in said inside and outside air switching case at a downstream side of said inside air inlet and said outside air inlet, independently from said rotary door, wherein

said filter is disposed so as to cross an airflow from said inside air inlet and said outside air inlet to said inlet port, and

said filter is made of a filter element formed in a corrugated configuration by folding and is deformable to shorten a width of said filter in the axis direction of said rotary door.

5,643,080

AIR OUTLET MEMBER

Yoshiyuki Kondoh, Tsuchiura; Tsuyoshi Sakyo, Shimoinayoshi; Yoshimi Iwase, Mitsukaido; Sadahisa Tomita, Mito; Kazunori Komatsu, Ami-machi, and Kazuhisa Tamura, Ishioka, all of Japan, assignors to Hitachi Construction Machinery Co., Ltd., Japan

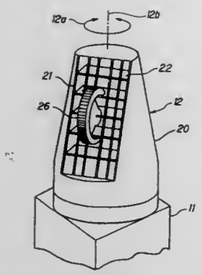
Filed Dec. 19, 1995, Ser. No. 574,918

Claims priority, application Japan, Dec. 28, 1994, 6-327284

Int. Cl.[6] B60H *1/34*

U.S. Cl. 454—155 **19 Claims**

1. An air outlet member comprising an air release portion and a plurality of fins configured to guide air to said air release portion, said air outlet member configured to be connected to a duct portion



which extends in an extending direction, wherein said fins of said air outlet member have guide surfaces, respectively; said fins are arranged so that said guide surfaces generally face said extending direction of said duct portion; each two adjacent fins have end portions located on a side opposite to said air release portion, and said end portions are arranged with a stepping difference in depth therebetween so that said end portion of said fin located farther from said duct portion is located on a deeper side than said end portion of said fin located closer to said duct portion.

5,643,081

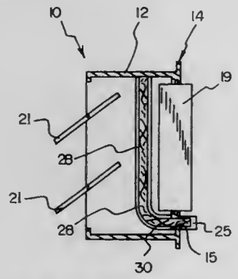
VENT SCREEN AND VENT APPARATUS

James A. Klein, Rte. 1 Box 24, Miller City, Ill. 62962-9608

Filed Jul. 11, 1996, Ser. No. 678,236

Int. Cl.[6] F24F *13/28*

U.S. Cl. 454—284 **11 Claims**



1. A vent screen and vent apparatus, comprising:

a vent duct,

an exterior grill connected to one end of said vent duct, wherein said exterior grill includes a screen access opening,

a vent screen support assembly connected to said vent duct between said vent duct and said exterior grill, wherein said vent screen support assembly includes a transverse screen support portion supported by said vent duct and a longitudinal screen support portion connected to said transverse screen support portion, and

a vent screen installed through said screen access opening and supported by said vent screen support assembly.

5,643,082

COOL AIR STREAM GENERATING APPARATUS

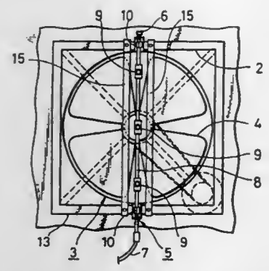
Seizo Furukawa, Hyuga, Japan, assignor to Kabushiki Kaisha Tsunetome-Dengyo, Japan

Continuation-in-part of Ser. No. 286,687, Aug. 5, 1994, abandoned. This application Jan. 11, 1996, Ser. No. 584,527

Int. Cl.[6] F24F *6/14*

U.S. Cl. 454—337 **9 Claims**

1. A cool air stream generating apparatus comprising:



a blower provided with a frame for being attached to a window of a building to be cooled for introducing environment air into an interior of said building therethrough;

a pressurized water feeding tube;

a spray nozzle disposed on said pressurized water feeding tube connected to a water delivering tube for ejecting water in the form of mist particles into the interior of said building, said water delivering tube being located on the interior side of said blower, and between said spray nozzle and said blower there being kept a small gap or a short distance; and

said gap being formed by two rod-shaped members attached to said frame.

5,643,083

CONTROL DEVICE FOR GAME OPERATION STATE DATA

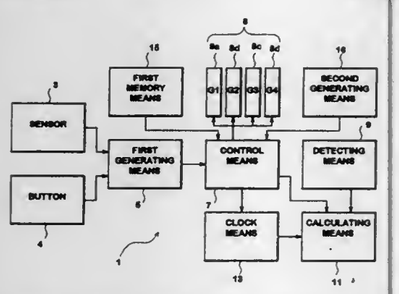
Yoshihiko Hasegawa, Suita, Japan, assignor to SNK Corporation, Japan

Filed Apr. 10, 1995, Ser. No. 419,024

Claims priority, application Japan, Apr. 15, 1994, 6-077020

Int. Cl.[6] A63F *9/24*

U.S. Cl. 463—1 **15 Claims**



1. A game operation state data control device for a game machine comprising:

a sensor for outputting a throw-in signal when a valuable object is thrown in said game machine,

a button for outputting a game start signal when operated by a player,

a first generating means for generating a game start enabling signal upon receiving said throw-in signal and said game start signal,

a control means for starting a game program upon receiving said game start signal,

a detecting means for detecting current game state data,

a clock means for generating time data designating current time,

a calculating means for calculating game operation state data according to said time data and said current game state data, and

a game operation state data storing means for storing said game operation state data not so as to decide whether said player can play said game machine but to analyze running state data of said game machine.

5,643,084

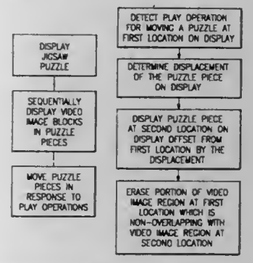
MOVING VIDEO JIGSAW PUZZLE

Richard M. Mirsky, Culver City, Calif., assignor to Basic Software Limited Partnership 95, a Limited Partnership, Van Nuys, Calif.

Filed Sep. 8, 1995, Ser. No. 526,105

Int. Cl.[6] A63F *9/06*; **G09B** *25/00*

U.S. Cl. 463—9 **47 Claims**



1. A method of generating a game which is a jigsaw puzzle game on a display and controlling play of the game in response to play operations, the method comprising the steps of:

(a) displaying the jigsaw puzzle game on the display, the game comprising a plurality of puzzle pieces positioned on the display, wherein each puzzle piece comprises a video image region on the display;

(b) sequentially displaying a plurality of video image blocks in the video image region of at least one puzzle piece to generate a moving video image in the video image region of the puzzle piece; and

(c) moving one or more puzzle pieces on the display in response to play operations to solve the game; and

wherein the step of displaying each puzzle piece further comprises the step of excluding from the video image region of the puzzle piece any portion of the video image region which overlaps the video image region of another puzzle piece already displayed, whereby image flicker in overlapping puzzle pieces is eliminated.

5,643,085

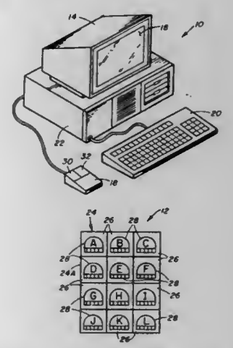
TWO-DIMENSIONAL CYCLIC GAME FOR CREATING AND IMPLEMENTING PUZZLES

Sergey K. Aityan, 8242 Bryant Dr., Huntington Beach, Calif. 92647, and Alexander V. Lysyansky, 21 Tecoma Cir., Littleton, Colo. 80127

Filed Sep. 25, 1995, Ser. No. 533,116

Int. Cl.[6] A63F *9/06*

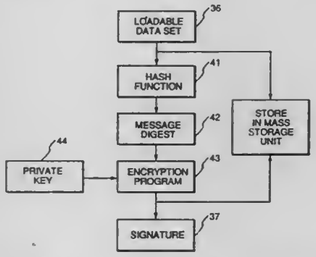
U.S. Cl. 463—9 **21 Claims**



1. A two-dimensional cyclic game for creating and implementing a puzzle-type game, said game comprising:

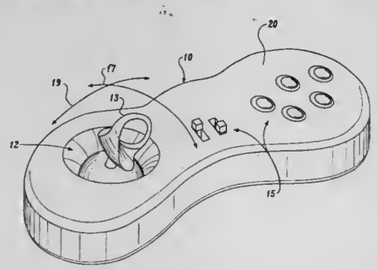
(a) a two-dimensional playing field having a border enclosing said playing field;
(b) a plurality of sites defined on said playing field within said border thereof; and
(c) a plurality of game objects occupying said plurality of sites on said playing field, said game objects being movable relative to said sites to restore said game objects from an initial pattern to a final pattern through performance of a succession of moves of said game objects;
(d) said game objects being movable in a plurality of selected groups thereof relative to a plurality of sets of said sites on said playing field wherein said sites of each set are the same in number as said game objects of said selected group that occupy said sites and wherein said game objects in each of said selected groups on said sites of respective ones of said sets thereof extend between spaced first and second portions of said border of said playing field and are movable simultaneously between said sites of said respective ones of said sets about a portion of an endless cyclic path in a given direction over said playing field through a cyclic translational move;
(e) said game objects in each of said groups, with reference to the given direction of the cyclic translational move of said group of game objects and with reference to said sites in said respective ones of said sets thereof occupied by said each group of game objects, including a leading game object occupying a first one site being located adjacent to said first portion of said border of said playing field and a trailing game object occupying a second one site being located adjacent to said second portion of said border of said playing field wherein, as said selected one group of game objects is moved relative to said sites of said respective one set during a given one cyclic translational move of said selected one group, said leading game object of said selected one group leaves said playing field from said first one site adjacent to said first portion of said border and reenters said playing field to said second one site thereof adjacent to said second portion of said border of said playing field simultaneously as said trailing game object moves from said second one site to another one of said sites of said respective one set.

5,643,086
ELECTRONIC CASINO GAMING APPARATUS WITH IMPROVED PLAY CAPACITY, AUTHENTICATION AND SECURITY
Allan E. Alcorn, Portola Valley; Michael Barnett, Santa Clara; Louis D. Giacalone, Jr., Palo Alto, and Adam E. Levinthal, Redwood City, all of Calif., assignors to Silicon Gaming, Inc., Palo Alto, Calif.
Filed Jun. 29, 1995, Ser. No. 497,662
Int. Cl.[6] A63F 9/24
U.S. Cl. 463—29 **19 Claims**



1. An electronic gaming apparatus for providing authentication of a data set of a casino type game, said system comprising:
first means for storing a casino game data set and a signature of said casino game data set, said signature comprising an encrypted version of a unique first abbreviated bit string computed from the casino game data set;
second means for storing an authentication program capable of computing a second abbreviated bit string from the casino game data set stored in said first storing means and capable of decrypting an encrypted signature stored in said first storing means to recover the first abbreviated bit string;
processing means for enabling the authentication program to compute an abbreviated bit string from the casino game data set stored in said first storing means and for enabling the authentication program to decrypt the encrypted signature stored in said first storing means to provide a decrypted abbreviated bit string; and
means for comparing the computed second abbreviated bit string with the decrypted abbreviated bit string to determine whether a match is present.

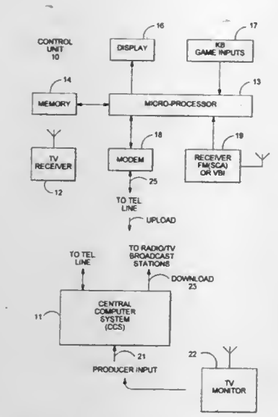
5,643,087
INPUT DEVICE INCLUDING DIGITAL FORCE FEEDBACK APPARATUS
Beth A. Marcus, Lexington; Elaine Chen, Boston; Bin An, and Timothy Osborne, both of Arlington, all of Mass., assignors to Microsoft Corporation, Redmond, Wash.
Continuation-in-part of Ser. No. 245,957, May 19, 1994. This application Jul. 29, 1994, Ser. No. 283,065
Int. Cl.[6] A63F 9/24
U.S. Cl. 463—38 **14 Claims**



1. An input device including digital force feedback apparatus, for use in one of a video gaming and a virtual reality environment, comprising:
a housing having a size sufficiently small to be supported by one hand of an operator;
a moveable structure having at least two degrees-of-freedom of motion attached to said housing and comprising at least one cradle that is moveable by a digit of an operator; and
at least one actuator disposed in said housing, said at least one actuator being attached to said moveable structure to provide force feedback to a digit of an operator disposed in said cradle along at least two degrees-of-freedom.

5,643,088
GAME OF SKILL OR CHANCE PLAYABLE BY REMOTE PARTICIPANTS IN CONJUNCTION WITH A COMMON GAME EVENT INCLUDING INSERTED INTERACTIVE ADVERTISING
Eric E. Vaughn, Sunnyvale, and Mark K. Berner, Santa Clara, both of Calif., assignors to Interactive Network, Inc., Sunnyvale, Calif.
Filed May 31, 1995, Ser. No. 454,925
Int. Cl.[6] A63F 9/24
U.S. Cl. 463—40 **3 Claims**

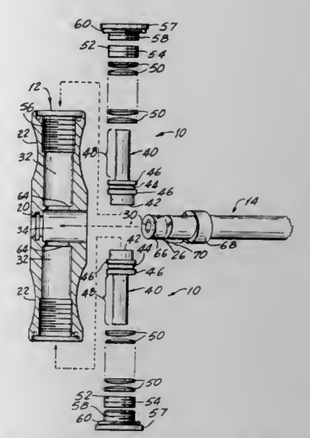
1. A game of skill or chance played simultaneously by several participants remote from each other in conjunction with at least one common game where interactive advertising is inserted into the game comprising:
communication means for providing to each participant said common game along with said interactive advertising;
control unit means associated with each remote participant for receiving game and interactive ad inputs by such participant



said control unit means including keyboard means and a visual display said control unit means including a game data stream and an interactive ad data stream which may be selectively associated with said keyboard means and visual display;
central computer system means for transmitting and downloading game messages and interactive ad messages to all of said control unit means and for receiving uploaded game data and interactive ad data from said control unit means which are related to said inputs, said control unit means continuing to process both said interactive ad and game messages on said respective data streams irrespective of which data stream said keyboard means and said display are associated with; said central computer system means also including means for transmitting an additional switching message for transmission and downloading to said control unit means, said control unit means including a third switching message data stream means for receiving said switching message and in response to such message associating said keyboard means and visual display with a selected game data stream or interactive ad data stream in accordance with said message, the unselected data stream continuing to process in the background.

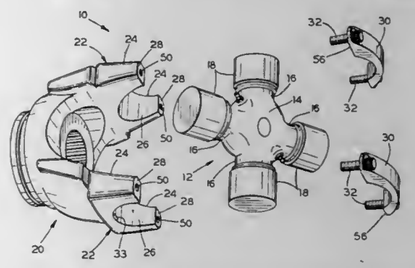
5,643,089
NON-JARRING TORQUE WRENCH WITH REMOVABLE OUTPUT SHAFT
Scott R. Hummel, 1818 Jennings St., Bethlehem, Pa. 18017, assignor to Scott R. Hummel, Bethlehem, Pa.
Filed Oct. 19, 1995, Ser. No. 545,356
Int. Cl.[6] F16D 7/04
U.S. Cl. 464—37 **17 Claims**

1. In a torque wrench comprising:
(A) a housing;
(B) an output shaft mounted within said housing for rotation about the central longitudinal axis thereof relative to said housing;
(C) a clutch cam located within said housing and operatively connected to said output shaft for rotation therewith about said shaft central longitudinal axis, said clutch cam having an outer surface disposed along and about said shaft central longitudinal axis;
(D) a clutch follower mounted within said housing and bearing on said cam outer surface for movement toward and away from said shaft central longitudinal axis along an axis which is substantially transverse to said shaft central longitudinal axis; and
(E) means for resiliently biasing said clutch follower into driving engagement with said cam outer surface, whereby rotation of said housing about said shaft central longitudinal axis will cause rotation of said output shaft;



said clutch follower being movable by said cam outer surface against the biasing of said biasing means for disengagement of said clutch follower and said cam at a predetermined maximum torque on said output shaft;
the improvement wherein said cam outer surface extends in series from a flat causing increasing resistance to rotation, through an arc causing maximum resistance to rotation, to an extended arc causing diminishing resistance to rotation, said cam outer surface having a minimum radius from an axis of rotation of said cam at said flat causing increasing resistance, a maximum radius greater than said minimum resistance from the axis of cam rotation at said arc causing maximum resistance, and intermediate radii from the axis of cam rotation at said extended arc causing diminishing resistance.

5,643,090
STRAP FOR RETAINING A BEARING CUP IN A UNIVERSAL JOINT ASSEMBLY
Johnny N. Smith, Toledo, Ohio, assignor to Dana Corporation, Toledo, Ohio
Filed Dec. 26, 1995, Ser. No. 578,266
Int. Cl.[6] F16D 3/40
U.S. Cl. 464—130 **8 Claims**



1. A yoke and retainer assembly for a universal joint comprising:
a yoke including a body having an arm extending therefrom, said arm having a curved surface formed therein which defines a pair of spaced apart yoke faces, each of said yoke faces having a threaded bore formed therein;
a retainer strap having a first end, a second end, an inner surface extending from said first end to said second end, and an outer surface extending from said first end to said second end, said inner surface including first and second retainer faces extending respectively from said first and second ends and a curved

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inside surface extending from said first retainer face to said second retainer face, said outer surface including a smoothly and continuously curved outside surface extending from said first end to said second end, said retainer strap having a first hole formed therethrough which extends from said first retainer face to a first recessed area formed in said outside surface and a second hole formed therethrough which extends from said second retainer face to a second recessed area formed in said outside surface, said first and second retainer faces of said retainer strap abutting said yoke faces of said yoke arm, said curved inside surface of said retainer strap being aligned with said curved surface of said yoke arm, said first and second holes formed through said retainer strap being aligned with said threaded bores formed in said yoke arm; and

first and second threaded fasteners including head portions respectively received within said first and second recessed areas formed in said curved outside surface of said retainer strap and threaded shank portions extending respectively through said first and second holes formed through said retainer strap into cooperation with said threaded bores formed in said yoke arm so as to secure said retainer strap to said yoke.

5,643,091

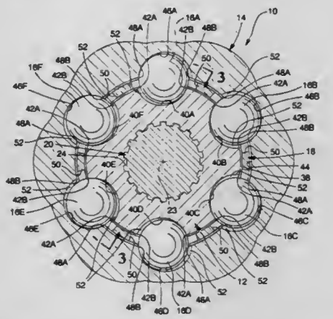
STROKING CONSTANT VELOCITY UNIVERSAL JOINT HAVING LOW STROKE LOAD

Keith Allen Kozlowski, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 355,469, Dec. 14, 1994, abandoned. This application Jun. 26, 1996, Ser. No. 675,426

Int. Cl.[6] F16D *3/223*

U.S. Cl. 464—144 **1 Claim**



1. A crossed groove stroking constant velocity universal joint comprising:

an inner joint member having a plurality of inner ball grooves of predetermined width oblique to a centerline of said universal joint in alternating ones of a right hand lead direction and a left hand lead direction,

an outer joint member having a plurality of outer ball grooves of said predetermined width oblique to said centerline of said universal joint in alternating ones of a right hand lead direction and a left hand lead direction,

said right hand lead outer ball grooves facing and cooperating with said left hand lead inner ball grooves in defining a first plurality of crossed pairs of inner and outer ball grooves and said left hand lead outer ball grooves facing and cooperating with said right hand lead inner ball grooves in defining a second plurality of crossed pairs of inner and outer ball grooves,

an annular ball cage between said inner and said outer joint members having a plurality of ball windows therein, and

a plurality of spherical bearing balls seated in respective ones of said first plurality and said second plurality of crossed pairs of inner and outer ball grooves and in respective ones of said ball windows so that said bearing balls are confined to the homokinetic plane of said universaid joint for constant velocity operation,

each of said bearing balls having a diameter less than said predetermined width of said inner and said outer ball grooves so that a predetermined running clearance is defined between each of said bearing balls and said inner and said outer ball grooves of the corresponding crossed pair, and

adjacent ones of said right hand lead and said left hand lead outer ball grooves being circumferentially offset in opposite directions from said left hand lead and said right hand lead inner ball grooves paired therewith when viewed in the homokinetic plane of said universal joint by an mount substantially equal to said predetermined running clearance so that in a neutral mode of said universal joint corresponding to substantially zero torque transfer between said inner joint member and said outer joint member, each of said bearing balls rolls only against one side of each of said inner and said outer ball grooves of the corresponding crossed pair.

5,643,092

ASSEMBLY FOR AXIALLY FIXING A SPLINED HUB ON A SPLINED SHAFT

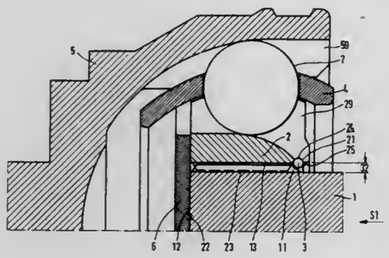
Sobhy Labib Girguis, Magdalenenstrasse 19, D-53842 Troisdorf, Germany

Filed Aug. 18, 1995, Ser. No. 517,007

Claims priority, application Germany, Aug. 18, 1994, 44 29 256.2

Int. Cl.[6] F16D *3/224*

U.S. Cl. 464—145 **15 Claims**



1. An axial shaft/hub attachment assembly comprising:

a member provided with a hub formed internally with hub splines axially spaced from a hub opening at one side of said hub, and a groove between said opening and said hub splines;

a shaft having a portion provided with shaft splines received in said hub and interfitting with said hub splines, said shaft being insertable in and withdrawable from said hub from said one side; and

a snap ring engaged between said hub and said shaft for axially fixing said hub on said shaft, said shaft being formed with a stop surface located alongside said shaft splines on a side thereof corresponding to said one side of said hub and braced against said snap ring, said groove of said hub being formed with an annular flank forming a holding surface braced against said snap ring, said snap ring being disposed between said holding surface and said stop surface, said opening having a radius greater than a radius of the shaft at a location surrounded by said opening by an amount at least equal to a radial width of the snap ring, enabling said snap ring to be introduced through said opening after insertion of said shaft in said hub.

5,643,093

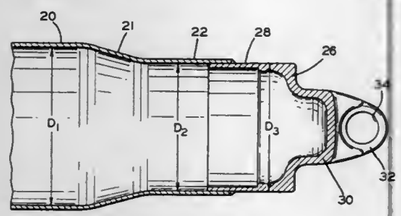
ALUMINUM DRIVESHAFT HAVING REDUCED DIAMETER END PORTION

Douglas E. Breese, Northwood, Ohio, assignor to Dana Corporation, Toledo, Ohio

Filed Oct. 19, 1995, Ser. No. 545,481

Int. Cl.[6] F16C *3/02*

U.S. Cl. 464—183 **7 Claims**



1. A drive line assembly comprising:

a driveshaft robe formed from a metallic material and including a homogeneous diameter reducing portion having a substantially uniform wall thickness, said diameter reducing portion including an axially extending cylindrical first end extending from said driveshaft tube, said diameter reducing portion further including an axially extending cylindrical second end, said axially extending cylindrical first end of said diameter reducing portion defining a first diameter, said axially extending cylindrical second end of said diameter reducing portion defining a second diameter, said first diameter being larger than said second diameter; and

a tube yoke formed from a metallic material and including an axially extending cylindrical end portion having a substantially uniform wall thickness which is co-axial with and permanently fixed to said axially extending cylindrical second end portion of said diameter reducing portion of said driveshaft tube, said tube yoke further including a pair of opposed lug ears extending from said end portion and having respective orifices formed therethrough.

5,643,094

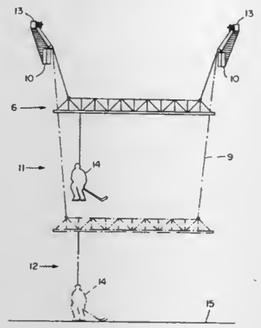
INTERACTIVE ICE AND ROLLER HOCKEY TRAINING, COACHING, AND PLAYING RINKS

Vincent J. Macri, 5 Timber Brook La., Durham, N.H. 03824; Robert O. Magaw, Two Langdon Rd., Carle Place, N.Y. 11514, and Paul Zilber, 38 Melony Ave., Plainview, N.Y. 11803

Filed Jan. 20, 1995, Ser. No. 375,606

Int. Cl.[6] A63C *19/10*

U.S. Cl. 472—92 **15 Claims**



1. A skating rink comprising:

a skating surface;

a plurality of mechanized robots in human form comprising an armature covered by impact padding, and a substance to provide weight to the robot;

a support assembly over the skating surface;

a suspension member for each robot connecting each robot to the support assembly such that each robot is suspended over the skating surface by a corresponding suspension member;

movement means coupled to each suspension member for moving each suspension member and corresponding robot; and

a processor for providing command signals to command the movement means to move the plurality of mechanized robots in individual patterns over the skating surface.

5,643,095

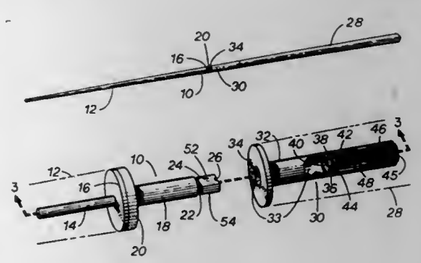
BILLIARD CUE HAVING AN AXIAL ALIGNING SHAFT-HANDLE CONNECTOR

Frederick Ernest Probst, 1218 Vitalia St., Santa Fe, N. Mex. 87501

Continuation-in-part of Ser. No. 354,243, Dec. 12, 1994, abandoned. This application Jun. 16, 1995, Ser. No. 491,406

Int. Cl.[6] A63D *15/08*

U.S. Cl. 473—44 **10 Claims**



1. A billiard cue, comprising:

a) a first wooden cue member symmetrical about a first axis,

b) a second wooden cue member symmetrical about a second axis,

c) a connector having elongated male and female members, said female connector member having a cylindrical female cavity portion joined to said first wooden member; said female cavity portion having an open end, a closed end and an axis aligned along said first axis, said female connector member having a first circumferential flange positioned at said open end of said cavity,

d) said female connector member further having a pair of opposed bulkheads transversely extending partially across said female cavity portion intermediate the end thereof; a spring loaded axially moveable slide having a detent pin attached thereto, said detent pin being transversely oriented across said female cavity portion in a region between said bulkheads and said closed end of said cavity; spring means positioned between said closed end and said slide axially urging said slide into contact with said bulkhead and a second end of said spring in contact with said closed end of said cavity,

e) said male connector member having a first cylindrical male non-threaded portion joined to said second wooden cue member; the axis of said non-threaded male portion being aligned along said second axis,

f) said male connector member further having a second male portion aligned with said first portion, said second portion being adapted to provide a snug fit in said female cavity portion whereby said first axis and said second axis of said first and said second cue members are mutually axially

aligned when said male connector member second portion is inserted into said cavity of said female connector member; said male connector member having a circumferential flange intermediate said first and second portions;

g) said second male portion having a transverse notch at the end thereof, and further having a partial flattened segment for passing between said opposed bulkheads and having a partial cylindrical segment, whereby said partial flattened segment becomes captive between said opposed bulkheads and said slide when said second male portion is inserted into said female cavity portion and said first wooden cue member or said second wooden cue member is rotated by a single 90 degree rotation relative to the other cue member causing said detent pin to engage said notch for a quick connection by temporarily locking said male member to said female member under pressure of said spring,

h) a ring of rigid material circumferentially located about said first axis intermediate said first and second portions and when said second portion of said male member is locked to said female cavity, said ring then being in facial contact with said first flange and said second flange, and

i) said pin being disconnected from said notch by a further single 90 degree rotation of said first cue member relative to said second cue member.

5,643,096

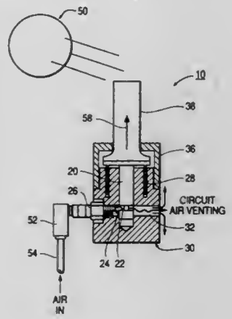
SENSOR APPARATUS FOR ACTIVATING A PNEUMATIC CIRCUIT

Richard D. Lowe, 253 Bovie Hill Rd., Hoosick Falls, N.Y. 12090

Filed Mar. 11, 1996, Ser. No. 613,456

Int. Cl.[6] A63B *57/00*

U.S. Cl. 473—135 **11 Claims**



1. An apparatus for sensing the presence or absence of an object, comprising:

a plunger adapted to receive the object, said plunger having a groove formed therein, said groove being adapted to receive a controlling lever of a valve;

a valve for controlling air flow in a pneumatic actuating circuit, said valve having a lever operatively coupled thereto for venting and preventing air flow through said valve, said lever being operatively engaged with said groove of said plunger; and

a spring having a predetermined tension, said plunger being operatively coupled to said spring, wherein said spring forces said plunger into an operative position when no object is present, said operative position causing said groove to actuate said lever of said valve to vent air through said valve.

5,643,097

HIP ROTATION TRAINING DEVICE

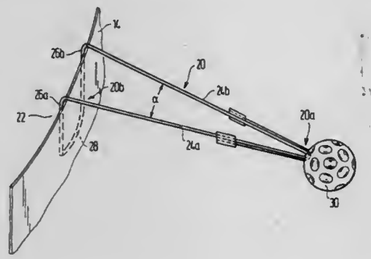
Jurgen Bechler, Dachauer Str. 140e, D-80637 Munchen, and Hery J. Beer, Schiessstattstr. 56a, D-82515 Wolfratsbausen, both of Germany

Filed Jan. 29, 1996, Ser. No. 592,940

Claims priority, application Germany, Jun. 13, 1995, 195 21 493.5

Int. Cl.[6] A63B *69/36*

U.S. Cl. 473—215 **9 Claims**



1. A device enabling a person to observe his hip rotation during the execution of a swing motion, said device comprising:

a continuous length of wire formed so as to constitute first and second straight parts, first free ends of said straight parts enclosing an acute angle forming radially outer ends,

angled parts at second ends of each of said first and second straight parts and a part connecting said angled parts,

said angled and connecting parts enabling fastening in the hip region of the person by means of a belt so that the angled parts are aligned substantially parallel to a body axis of the person, said first and second straight parts form an arm which extends substantially perpendicular to the body axis,

hip rotation being indicated by movement of said radially shaped end.

5,643,098

GOLF PUTTER TRAINING TOOLS

Deanna J. Monahan, 2545 N. 22th Dr., Phoenix, Ariz. 85009, and Paula A. Brooks, 5233 W. Harmont Dr., Glendale, Ariz. 85302

Filed Dec. 18, 1995, Ser. No. 574,294

Int. Cl.[6] A63B *69/36*

U.S. Cl. 473—230 **10 Claims**



1. A golf putter training tool, for training a user's putting stroke along a putting surface, comprising, in combination:

a. golf putter means comprising

i. golf putter shaft means; and

ii. putter body means including a front putting portion, a bottom portion, and a pair of end portions;

b. connected to said putter body means and situate adjacent a first said end portion, first wheel means constructed and arranged to roll during a said putting stroke;

c. said golf putter training tool being constructed and arranged to assist a said user in making said putting stroke flat and in a straight line;

d. connected to said putter body means and situate adjacent a second said end portion, second wheel means constructed and arranged to roll during a said putting stroke;

e. wheel axis means having an axis of rotation;

f. said first wheel means and second wheel means both having a same radius and being constructed and arranged to rotate about said axis of rotation; and

g. unitary frame means removably attachable to said putter body means, said first and second wheel means being attached to said unitary frame means;

h. wherein said radius of said first and second wheel means is larger than a distance from said bottom portion to said axis of rotation; and

i. wherein said unitary frame means is removably attached to said putter body means by spring clip means.

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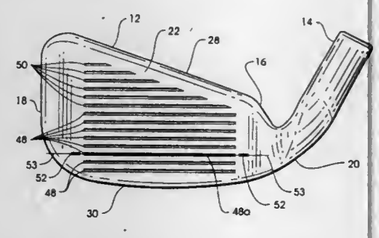
GOLF CLUB HEAD WITH VISUAL INDICATORS

John A. Solheim, Phoenix, Ariz., assignor to Karsten Manufacturing Corporation, Phoenix, Ariz.

Continuation of Ser. No. 574,449, Dec. 15, 1995, abandoned. This application Oct. 11, 1996, Ser. No. 729,515

Int. Cl.[6] A63B *53/04;69/36*

U.S. Cl. 473—238 **4 Claims**



1. A golf club head comprising:

a body having a heel end, a toe end, a front face arranged for impact with a golf ball;

a plurality of generally parallel grooves formed in said front face, said grooves being of equal length and being elongated in a heel to toe direction extending between said heel and toe ends of said body, said grooves forming and lying inside a rectangular shape on said front face; and

a pair of visual indicators disposed on said front face outside said rectangular shape for positioning the golf club head so that said grooves lie perpendicular to an intended target line, said pair of visual indicators being located on an imaginary line extending substantially parallel to said grooves in said heel to toe direction, one of said visual indicators being located outside said rectangular shape adjacent said heel end of said body, the other visual indicator being located outside said rectangular shape adjacent said toe end of said body.

5,643,100

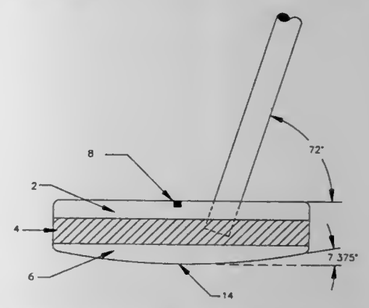
GOLF PUTTER

Luanne Byers Zabytko, 1711 Cleaver La., Wilmington, Del. 19803-4003; Nyra W. Whelchel, 1323 W. 10th St., Wilmington, Del. 19806; George W. Dougherty, Jr., 100 Dayett Mills Rd., Newark, Del. 19702, and Sharon K. Bockover, 4030 N. Pomona Rd., Tucson, Ariz. 85705

Filed May 2, 1995, Ser. No. 432,829

Int. Cl.[6] A63B *53/04;69/36*

U.S. Cl. 473—250 **19 Claims**



9. A golf putter comprising a club shaft and gripping portion at one end of said shaft; a putter head attached to the other end of said shaft via a shaft receiver cavity on the putter head wherein the putter head comprises a club head body having a front face ball striking surface with a sweet spot; a top; a sole wherein said sole has a cavity for weight insertion and said cavity is located directly behind the sweet spot; a heel; a toe; and a rear, wherein the front face has at least one visible horizontal element aligned in the center of the front face to form a single surface alignment aid and further wherein the top containing an inlaid line formed at a 90° angle to the horizontal alignment aid to form, in combination with said horizontal alignment aid, a two dimensional alignment system.

5,643,101

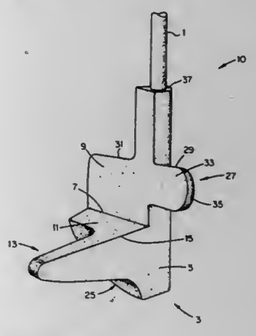
GOLF PUTTER

Newman C. Foley, 422 Meredith Rd., Albert Lea, Minn. 56007

Filed Mar. 28, 1996, Ser. No. 623,033

Int. Cl.[6] A63B *53/04;69/36*

U.S. Cl. 473—251 **5 Claims**



1. A golf putter comprising:

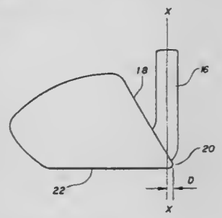
a) a shaft; and

b) a putter head having an upper and a lower portion, the upper portion including a hosel connecting said shaft to the upper portion, an axis of said shaft intersecting each of said upper and lower portions;

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c) the upper portion further comprising a planar upper front face and a planar side face, each of the planar upper front face and the planar side face aligned with the axis of the shaft;
d) the lower portion disposed beneath said upper portion, the lower portion including;
i) a curved bottom face, a planar top face which intersects the planar side face of the upper portion to form a sighting line and a planar lower front face; and
e) an elongated portion extending from said lower portion, the elongated portion having an upper top face coincident with the planar top face of the lower portion and a forward face coincident with the planar lower front face of the lower portion, the planar lower front face, the planar upper front face and the forward face being in the same plane and being forward of the axis of the shaft for golf ball contact, the planar lower front face and the forward face sized to form a striking face, a center portion thereof aligned with the sighting line.

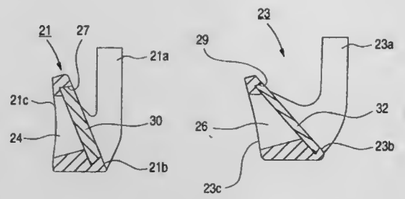
5,643,102
GOLF CLUB SET HAVING PROGRESSIVELY OFFSET FACES
James C. Hsien, 4601 Stillwater Ct., Concord, Calif. 94521
Continuation-in-part of Ser. No. 121,191, Sep. 15, 1993, Pat. No. 5,433,439. This application Jul. 17, 1995, Ser. No. 503,437
Int. Cl.[6] A63B *53/04*
U.S. Cl. 473—290 **11 Claims**



1. A set of golf clubs comprising:
a plurality of progressively numbered wood clubs; each wood club having:
a wood shaft having a vertical axis;
a wood head joined to said wood shaft, said wood head having a bottom leading edge, and a wood face which is rearwardly inclined at an angle relative to said vertical axis of said wood shaft, said angle of said wood face increasing with an increase in progressive numbering of said wood club; and
a wood face progression value, said wood face progression value being a distance between said vertical axis of said wood shaft and said bottom leading edge of said wood face,
said wood clubs being divided into a predetermined number of wood groups ranging from two to seven, said wood clubs in each one of said wood groups having progressive wood numbers corresponding to said angle of said wood face, said wood clubs in any one wood group having an equivalent wood face progression value while said wood face progression value between said wood groups decreases within the range of from 1/32 inch to 3/16 inch as said progressive wood numbers increase.

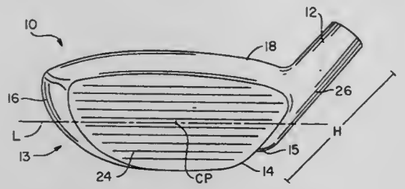
5,643,103
GOLF CLUB SET
Yuichi Aizawa, Tokyo, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan
Filed Mar. 27, 1996, Ser. No. 622,986
Claims priority, application Japan, Mar. 27, 1995, 7-067900
Int. Cl.[6] A63B *53/04*
U.S. Cl. 473—290 **7 Claims**

1. A golf club set comprising:



a plurality of golf clubs having respective club face loft angles, and each being constructed so that a separate face plate made of a material lower in specific gravity and elastic modulus than that of a head body is mounted on a face portion of the head body, and
wherein the face plates of the golf clubs increase in thickness as the club face loft angles of the golf clubs decrease, and
wherein said material of each said separate face plate has a specific gravity of about 20% to about 60% of the specific gravity of said head body.

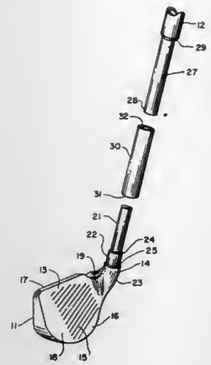
5,643,104
METAL WOOD TYPE GOLF CLUB HEAD WITH IMPROVED HOSEL CONSTRUCTION
Anthony J. Antonious, 7738 Calle Facil, Sarasota, Fla. 34238
Filed Dec. 23, 1994, Ser. No. 362,897
Int. Cl.[6] A63B *53/04*
U.S. Cl. 473—305 **34 Claims**



1. A metal wood type golf club head comprising:
a main shell body having a toe, heel, upper surface, bottom surface, and ball striking face; and
a hosel connected to the main shell body and having at least an outer portion between said upper surface and said bottom surface outside the outer surface of the main shell body of the club head at the heel of the club head.

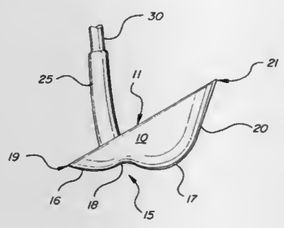
5,643,105
GOLF CLUB WITH MALE HOSEL AND REINFORCING SLEEVE
Dwight J. Niswander, Camarillo, Calif., assignor to Wilson Sporting Goods Co., Chicago, Ill.
Filed Feb. 23, 1996, Ser. No. 605,952
Int. Cl.[6] A63B *53/02*
U.S. Cl. 473—308 **12 Claims**

1. A golf club comprising a clubhead and a shaft, the clubhead having a body with a striking face and a hosel extending from the body, the hosel having a cylindrical end portion and a second



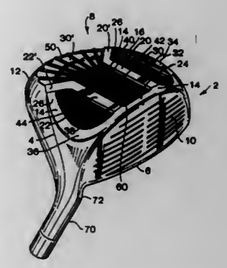
cylindrical portion between the cylindrical end portion and the body and a radially extending shoulder between the cylindrical end portion and the second cylindrical portion, the cylindrical end portion and the second cylindrical portion being concentric and the diameter of the second cylindrical portion being greater than the diameter of the cylindrical end portion, the cylindrical end portion of the hosel being inserted into and secured to a lower end portion of the shaft, so that the shaft abuts said radially extending shoulder, and a sleeve extending over the lower end portion of the shaft and over the second cylindrical portion of the hosel.

5,643,106
GOLF CLUB HEAD
William Baird, 2373 N. Linden Rd., Flint, Mich. 48504
Filed Apr. 24, 1995, Ser. No. 427,746
Int. Cl.[6] A63B *53/04*
U.S. Cl. 473—328 **5 Claims**



1. A drag-reducing golf club head, comprising a body including both a striking face and a sole, said sole having at least one recessed channel disposed therein and oriented approximately parallel to the longitudinal axis of said club heads, said channel separating at least first and second downwardly facing bounce surfaces extending across the principal surface of said sole and disposed approximately parallel with respect to each other to define along a lateral cross-section of said golf club head a double-convex profile said bounce surfaces each being approximately parallel to the longitudinal axis of said club head and having a greater cross-sectional area than said channel, said bounce surfaces further defining a significantly reduced area of contact between said sole and a fixed plane of reference tangential to a point on each of said at least first and second bounce surfaces such that contact between said sole and said fixed plane of reference is reduced as said club head moves through an arc to which said fixed plane of reference is tangential.

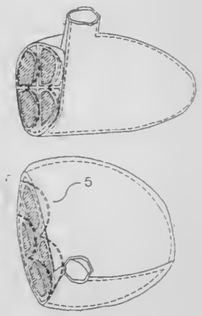
5,643,107
GOLF CLUB HEAD SET
Geoffrey W. Gorman, Richmond, Va., assignor to Dunlop Maxfli Sports Corporation, Greenville, S.C.
Continuation-in-part of Ser. No. 349,670, Dec. 5, 1994, Pat. No. 5,441,263. This application Aug. 14, 1995, Ser. No. 514,605
Int. Cl.[6] A63B *53/04*
U.S. Cl. 473—328 **13 Claims**



1. A set of golf club heads, comprising at least a first and second golf club head, each having a toe portion, a heel portion, a top portion, a sole portion, a front face bounded by said toe, heel, top and sole portions, and a rear wall bounded by said toe, heel, top and sole portions, a peripheral wall depending from the periphery of said sole portion to define a sole cavity in the sole portion, and two struts extending from a portion of said peripheral wall adjacent said front face to a portion of said peripheral wall adjacent said rear wall, said struts being substantially parallel to each other adjacent said portion of said peripheral wall adjacent said front face and diverging from each other toward said portion of said peripheral wall adjacent said rear wall, said struts defining therebetween and in cooperation with said portion of said peripheral wall adjacent said front face a central portion of said sole cavity, said first golf club head having a loft of less than a loft of the second golf club head, and said central portion of said sole cavity of said first golf club head having a depth of less than a depth of said sole cavity of said second golf club head, wherein a location of a center of gravity in said first golf club head is lower in said first golf club head than a location of the center of gravity in said second club head.

5,643,108
STRUCTURE FOR GOLF CLUB HEAD AND THE METHOD OF ITS MANUFACTURE
Jung-Ho Cheng, Taipei, Taiwan, assignor to National Science Council, Taipei, Taiwan
Filed Aug. 31, 1995, Ser. No. 521,735
Int. Cl.[6] A63B *53/04*
U.S. Cl. 473—329 **11 Claims**

1. A golf club head, comprising:
a striking face having a predetermined thickness; and
a bulb connected to said striking face and having an interior surface, said interior surface of said bulb and said striking face defining a first hollow chamber,
said bulb including a first section having a first thickness, a second section having a second thickness, and a third section having a third thickness, said first section being interposed between said striking face and said second section, said second section being interposed between said first section and said third section,



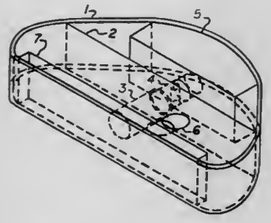
said first thickness of said first section is greater than said thickness of said striking plate, and said thickness of said striking plate is greater than said second thickness and said third thickness of said second and third sections, respectively.

5,643,109

TENSIONED BAND GOLF PUTTER HEAD

Arthur S. Rose, P.O. Box 69604, Seattle, Wash. 98168, and Guy T. Andrews, P.O. Box 3130, Kent, Wash. 98032

Filed Jun. 10, 1996, Ser. No. 662,441
Int. Cl.[6] A63B *53/04*
U.S. Cl. 473—329 **1 Claim**



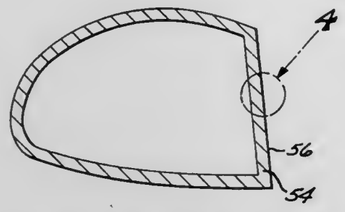
1. A golf putter head comprising:
(a) a continuous band of flexible material;
(b) a rectangular block having top, bottom, front and rear surfaces and two spaced apart rounded ends, said block having a threaded aperture located equidistant between said two rounded ends and perpendicular to a plane containing the front surface, said block having a smooth aperture on said top surface adapted to accept a golf club shaft;
(c) a tensioning jack screw having a threaded end adapted to screw into the threaded aperture of said rectangular block and an other end opposite to said threaded end adapted to mount a tensioning shoe; and
(d) a tensioning shoe of metallic construction being substantially rectangular with a rounded rear surface and a front surface containing an aperture adapted to accept said jack screw at a longitudinal mid-point of the front surface of said tensioning shoe;
(e) whereby, said continuous band is supported and tensioned by the cooperation of said rectangular block, said jack screw and said tensioning screw.

5,643,110

GOLF WOOD CLUB WITH SMOOTH GROOVE-FREE FACE

Lawrence Y. Igarashi, 30231 Tomas Rd., Rancho Santa Margarita, Calif. 92688

Division of Ser. No. 360,884, Dec. 21, 1994, Pat. No. 5,480,153, which is a continuation-in-part of Ser. No. 250,798, May 27, 1994, abandoned. This application Dec. 29, 1995, Ser. No. 578,156
Int. Cl.[6] A63B *53/04*
U.S. Cl. 473—330 **28 Claims**



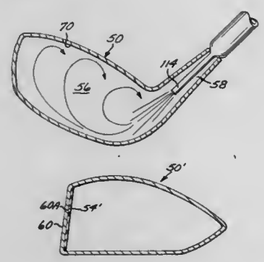
1. A golf wood-type club, comprising a hollow club head body and a rigid metal, non-resilient ball-impacting faceplate having a ball-impacting surface which is smooth and free of grooves and indentations, thereby minimizing any impartation of spin to a golf ball upon impact with said ball-impacting face.

5,643,111

GOLF CLUBS WITH ELASTOMERIC VIBRATION DAMPENER

Lawrence Y. Igarashi, 30231 Tomas Rd., Rancho Santa Margarita, Calif. 92688

Continuation-in-part of Ser. No. 461,574, Jun. 2, 1995. This application Jul. 13, 1995, Ser. No. 502,262
Int. Cl.[6] A63B *53/04*
U.S. Cl. 473—332 **37 Claims**



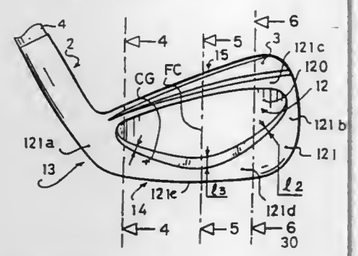
1. A vibration-dampened hollow "wood"-type golf club, comprising:
a club shaft; and
a "wood"-type club head, comprising a hollow shell defining a ball striking surface and head body, the shell having an inner surface defining a hollow cavity, said inner surface including a surface region opposed to and at least as large in area as the ball striking surface, and a vibration dampener consisting of a thin layer of an elastomeric material adhered to and covering substantially the entire area of said surface region, the thin layer for dampening vibrations caused by the impact of the ball striking surface with a golf ball, wherein said thin layer of elastomeric material is attached to said surface region of said inner surface without any intermediate coating or adhesive between said thin layer and said surface region of said inner surface.

5,643,112

IRON WITH IMPROVED MASS DISTRIBUTION

Philippe Besnard, Yverdon, Switzerland; Larry Tang, Casabasa, Calif.; Richard L. Rugge, Encinitas, Calif.; Jim Sieleman, San Diego, Calif., and Franck Dumontier, Vista, Calif., assignors to Taylor Made Golf Co., Inc., Carlsbad, Calif.

Continuation of Ser. No. 521,733, Aug. 31, 1995, Pat. No. 5,544,885. This application Aug. 9, 1996, Ser. No. 689,568
Int. Cl.[6] A63B *53/04*
U.S. Cl. 473—350 **17 Claims**



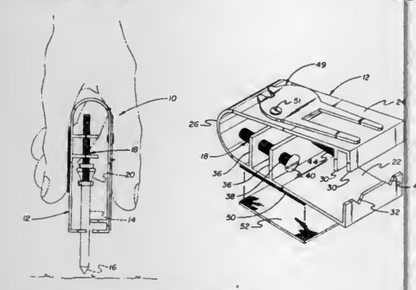
1. A golf club head comprising:
a face portion including a golf ball striking surface;
a toe;
a sole adapted to rest on the ground at address;
an upper edge portion;
a heel;
a rear portion having a main cavity extending towards said face portion and a peripheral mass belt extending around said main cavity defining a heel perimeter portion, a toe perimeter portion, an upper perimeter portion, and a lower perimeter portion;
said upper perimeter portion of said peripheral mass belt comprising an elongated recess extending from said heel to said toe;
said elongated recess being progressively connected to the upper edge portion along an undercut, said undercut having a height that generally increases in a direction toward said toe and a thickness with respect to the striking face that increases progressively in a direction toward said upper edge portion.

5,643,113

ADJUSTABLE TEE SETTING DEVICE

John Rodgers, 3808 Morningside Dr. N., Ellenton, Fla. 34222

Filed Sep. 15, 1995, Ser. No. 528,929
Int. Cl.[6] A63B *57/00*
U.S. Cl. 473—386 **1 Claim**



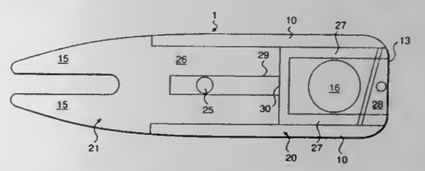
1. An adjustable tee setting device comprising:
a clamp means for clamping a shaft of a golf tee;
a positioning means adjustably mounted relative to the clamp means for engaging a head of the golf tee so as to adjustably position the golf tee relative to the clamp means such that a predetermined amount of the shaft thereof projects beyond the clamp means for forced insertion into a ground surface;
the clamp means comprising a first clamp plate; a second clamp plate resiliently pivotally mounted to the first clamp plate by a resilient hinge extending therebetween; a first engaging plate mounted to a lower end of the first clamp plate and projecting towards the second clamp plate; at least one second engaging plate mounted to the lower end of the second clamp plate and projecting towards the first clamp plate, the first engaging plate including a receiving aperture directed thereinto which operates to receive a portion of the shaft of the golf tee when clamped between the clamp plates;
the positioning means comprising at least one mounting plate coupled to an interior surface of one of the clamp plates; an adjustment screw threadably directed through the mounting plate and aligned with the receiving aperture of the first engaging plate such that a longitudinal axis directed through the adjustment screw projects through the receiving aperture;
the resilient hinge being an integral bend extending between upper ends of the clamp plates; the at least one second engaging plate comprising a pair of second engaging plates coupled to the second clamp plate and positioned so as to extend along opposed sides of the first engaging plate as the second clamp plate is biased towards the first clamp plate;
the first engaging plate including a second receiving aperture directed thereinto in a spaced orientation relative to the first receiving aperture; a second positioning means including a second adjustment screw threadably directed through the mounting plate and aligned with the second receiving aperture of the first engaging plate such that a longitudinal axis directed through the second adjustment screw projects through the second receiving aperture;
a golfing tool being mounted to the clamp means, the golfing tool being pivotally mounted to an offset portion of the second clamp plate by a pivot axle directed through and pivotally secured through both the golfing tool and the second clamp plate, the pivot axle frictionally retains the golfing tool in a desired angular orientation relative to the clamp means thereof; and
a mounting means for securing the device to an object, the mounting means comprising a first portion of hook and loop fabric fastening material coupled to an exterior surface of one of the clamp plates; and a second portion of hook and loop fabric fastening material configured for securing to an auxiliary object, whereby cooperative engagement of the first portion of hook and loop fabric fastening material with the second portion thereof will removably mount the device relative to the object when the second portion of hook and loop fabric fastening material is coupled to the object.

5,643,114

GOLF ACCESSORY

Ira Marcus, Fort Lauderdale, Fla., assignor to Jenny Wyatt Enterprises, Inc., Fort Lauderdale, Fla.

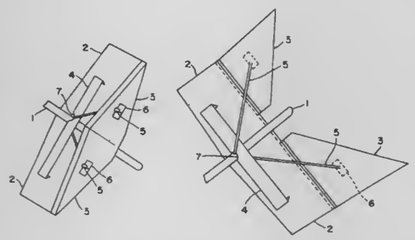
Filed Sep. 13, 1996, Ser. No. 714,795
Int. Cl.[6] A63B *57/00*
U.S. Cl. 473—408 **19 Claims**



1. A golf accessory which includes a ball-mark repairer and cigar cutter which comprises:
a body having an upper surface, a lower surface and a peripheral edge;

a pair of elongate, generally parallel legs extending from a section of the peripheral edge of the body;
a generally circular hole extending through the body from the upper surface to the lower surface, the hole being sufficiently large to receive the butt end of a cigar; and
a cutting blade slidably mounted in the body such that the blade can be slidably moved across said generally circular hole for cutting the end of a cigar inserted in said hole and a means for actuating said cutting blade for sliding movement across said generally circular hole to cut off the end of a cigar.

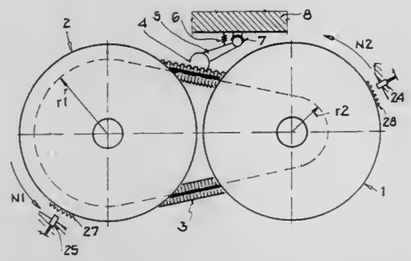
5,643,115
ARROW DECELERATOR
Jerome Michael Dudley, 210, N. Pleasant Ave., Galesburg, Ill. 61401
Filed Apr. 8, 1996, Ser. No. 629,004
Int. Cl.[6] F42B *6/06*
U.S. Cl. 473—578 **1 Claim**



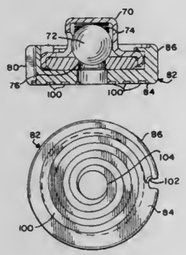
1. A arrow attachable plastic decelerater device comprizing in combination; a elongated inverted quarter channel member having a length with a fore and aft end and midway of same having angularly extending double walled vanes connected by a notched bridge member from which a elastic member's two ends extend rearwardly through the midsections of a pair of triangular shaped foam plastic flexable wing panels, each panel's hingable edge attached to the trailing edges of a vane while elastic ends are secured by slitted keepers on the backs of said wing panels thus forming a barrier as the trailing vertical edges of the wing panels meet above the quarter channel to prevent a flow of air between said vanes and slow the forward movement of a arrow, said wing panels of said decelerater device open rearwardly on arrow's departure from a bow as air is forced against said wing panels while elastic member stretches and wing panels flex at the vane-wing panel juncture and said wing panels gradually close as arrow's momentum begins to slow, resulting in a shortened flight for said arrow.

5,643,116
DEVICE FOR DETERMINING BELT ROTATIONAL SPEED OF CONTINUOUSLY VARIABLE TRANSMISSION
Michael Genzel, Rosstal; Gerhard Hettich, Dietenhofen, and Norbert Ramm, Brunswick, all of Germany, assignors to Temic Telefunken microelectronic GmbH, Heilbronn, Germany
Filed Nov. 8, 1995, Ser. No. 554,238
Claims priority, application Germany, Nov. 11, 1994, 44 40 278.3
Int. Cl.[6] F16H *63/42*
U.S. Cl. 474—11 **6 Claims**

1. Device for determining the rotational speed of a transfer element arranged between two sets of variable-diameter pulleys (**1**, **2**) in the transmission case (**8**) of a continuously variable transmission system, wherein a sensor (**10**, **16**) is arranged in a sliding stock (**4**, **15**), the said sensor being secured to a spring (**6**) loaded rocker arm (**5**) which, together with the spring (**6**) is itself connected to the transmission case (**8**) in a swivelling joint (**7**), whereby the sliding stock (**4**, **15**) is positioned relative to the transfer element (**3**) in such a way that interval markings along the transfer element (**3**) can be detected by the sensor (**10**, **16**).

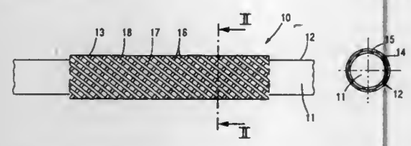


5,643,117
HYDRAULIC TENSIONER WITH CHECK VALVE VENT
Stanley K. Dembosky, Ithaca, N.Y., assignor to Borg-Warner Automotive, Inc., Sterling Heights, Mich.
Filed Dec. 8, 1995, Ser. No. 569,729
Int. Cl.[6] F16H *7/08*
U.S. Cl. 474—110 **10 Claims**



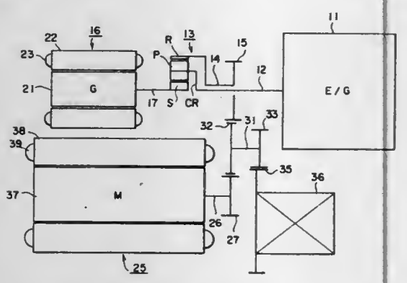
1. A hydraulic chain tensioner comprising:
a housing having a generally cylindrical bore;
a hollow piston slidably received within said bore to define a fluid chamber with said bore;
a spring biasing the piston in the protruding direction from said bore; and
a check valve to permit the flow of hydraulic fluid from an external source of hydraulic fluid through a valve inlet and into the fluid chamber and prevent flow in the reverse direction, said check valve including a disc portion, said disc portion being positioned against the inlet from said external source of fluid into said chamber, said disc portion having at least one channel formed on the surface of said disc positioned against said inlet and at least one channel formed along the periphery of said disc, said surface channel and said periphery channel establishing a connection between said fluid chamber and said valve inlet.

5,643,118
BELT
Hartwig Basse, Nordenham, Germany, assignor to Norddeutsche Seekabelwerke GmbH, Nordenham, Germany
Continuation of Ser. No. 264,464, Jun. 23, 1994, abandoned. This application Feb. 7, 1996, Ser. No. 598,059
Claims priority, application Germany, Jun. 24, 1993, 43 20 974.2
Int. Cl.[6] F16G *1/00*
U.S. Cl. 474—237 **16 Claims**



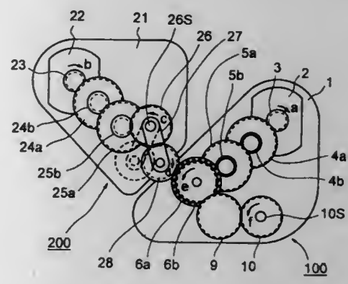
1. A belt comprising:
a main body having a smooth circumferential surface; and
a tube surrounding the circumferential surface of the main body, wherein the tube and the main body are each separately formed as individual parts.

5,643,119
HYBRID VEHICLE POWERTRAIN
Kozo Yamaguchi, and Yoshinori Miyaishi, both of Aichi-ken, Japan, assignors to Kabushikikaisha Equos Research, Japan
Filed Dec. 19, 1995, Ser. No. 574,914
Claims priority, application Japan, Dec. 28, 1994, 6-328676
Int. Cl.[6] B60K *6/04*
U.S. Cl. 475—5 **14 Claims**



1. A hybrid vehicle powertrain, comprising:
an internal combustion engine for driving an engine output shaft and thereby generating mechanical energy;
a generator for converting said mechanical energy into electricity;
an electric motor driven by said electricity to output rotational power at a motor output shaft;
a differential gear unit including at least three elements, the first connecting to said generator, the second connecting to a first gear and the third connecting to said internal combustion engine;
a second gear connected to said motor output shaft; and
a counter shaft connected to an output differential gear unit and having mounted thereon a third gear meshing with the first and second gears; and
wherein said internal combustion engine, differential gear unit and generator are aligned on a first axis, said electric motor is aligned on a second axis parallel to the first axis, said counter shaft is aligned on a third axis parallel to the first and second axes, said output differential gear unit is aligned on a fourth axis parallel to the first, second and third axes, and the third axis is disposed inside of a triangle defined by the first, second and fourth axes viewed on end.

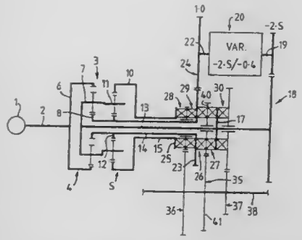
5,643,120
MOTOR DRIVE SYSTEM
Nobuharu Murashima, Nara; Junichi Tanii, Izumi; Yoshito Konishi, Sakai, and Ken Tanino, Kobe, all of Japan, assignors to Minolta Co., Ltd., Osaki, Japan
Continuation of Ser. No. 309,650, Sep. 21, 1994, abandoned. This application Oct. 24, 1996, Ser. No. 740,072
Claims priority, application Japan, Sep. 30, 1993, 5-265474
Int. Cl.[6] F16H *1/32;3/34;59/14;59/40*
U.S. Cl. 475—5 **13 Claims**



1. An electric motor drive system comprising:
a first electric motor;
a first drive unit having a load driving shaft which is driven by a driving force of the first electric motor, the first electric motor being mounted in said first drive unit;
a first drive transmission mechanism being mounted in said first drive unit which transmits the driving force of said first electric motor to said load driving shaft;
a second drive unit having a second electric motor;
a second drive transmission mechanism which is mounted in said second drive unit connectable to and disconnectable from said first drive transmission mechanism, to transmit a driving force of said second drive unit to said first drive unit when the second drive transmission mechanism is connected to the first drive transmission mechanism; and
a drive controller which disconnects said second drive transmission mechanism from said first drive transmission mechanism to transmit only the driving force of said first drive unit to said load driving shaft when a high torque is not required, and also for connecting said second drive transmission to said first drive transmission mechanism to combine the driving forces of said first and second drive units to effect control when a high starting torque and high-speed drive in a steady state are required, to thereby transmit the combined driving forces to said load driving shaft.

5,643,121
CONTINUOUSLY-VARIABLE-RATIO TRANSMISSIONS
Christopher John Greenwood, Lancashire, and Thomas George Fellows, Oxford, both of United Kingdom, assignors to Torotrak (Development) Limited, London, England
PCT No. PCT/GB94/00782, § 371 Date Oct. 11, 1995, § 102(e) Date Oct. 11, 1995, PCT Pub. No. WO94/24462, PCT Pub. Date Oct. 27, 1994
PCT Filed Apr. 14, 1994, Ser. No. 535,024
Claims priority, application United Kingdom, Apr. 15, 1993, 9307821
Int. Cl.[6] F16H *37/08*
U.S. Cl. 475—72 **8 Claims**

1. A continuously-variable-ratio transmission (CVT) comprising a ratio-varying unit (**20**), and an epicyclic unit (**3**) having an input (**2**) and three concentrically-arranged outputs (**13**, **14**, **15**) and comprising first (**4**) and second (**5**) epicyclic gears so arranged that two of the components (**7**,**8**) of the first epicyclic gear are each commoned with a component (**11**, **12**) of the second epicyclic gear



to constitute two of the outputs (**13**, **14**) of the epicyclic unit, these two outputs being connected respectively in a fixed ratio to opposite ends (**19**, **22**) of the ratio-varying unit, in which said two outputs of the epicyclic unit are connectable to an output shaft (**38**) by way of a plurality of ratio combinations, in which a plurality of clutches (**26**–**30**) are provided to engage the outputs and ratio combinations in different ways whereby the continuously-variable-ratio transmission can operate in a plurality of regimes, one of said regimes including a geared neutral condition, in which the epicyclic and ratio-varying unit ratios are chosen so that the changes between those regimes are all synchronous and that at a first given ratio-varying unit ratio all epicyclic components rotate at the same speed, whereby alternate regime changes occur at that first given ratio-varying unit ratio, and in which the second (**5**) of the two epicyclic gears is arranged so that the second epicyclic gear recirculates power only in the regime including the geared neutral condition, and runs idle in all other regimes.

5,643,122

POWER TRANSMISSION WITH 5-STAGE PLANETARY GEAR UNIT

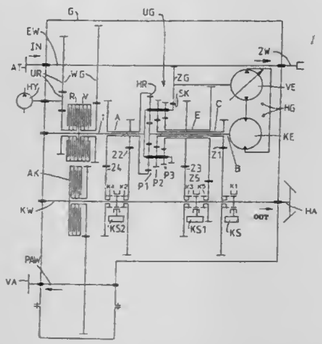
Nils Fredriksen, Harsewinkel, Germany, assignor to Claas Kommanditgesellschaft auf Aktien, Harsewinkel, Germany

Filed Nov. 30, 1995, Ser. No. 565,067

Claims priority, application Germany, Dec. 5, 1994, 44 43 267.4

Int. Cl.[6] F16H *47/04*

U.S. Cl. 475—80 **13 Claims**



1. A power transmission, comprising a 5-shaft planetary transmission unit having first, second, third, fourth and fifth transmission shafts; a reverse mechanism and a coupling through which said first transmission shaft is connectable with a drive; a hydrostatic adjusting mechanism through which said second transmission shaft is connectable to said drive; and stage gears and associated stage couplings arranged so that said third, said fourth, and said fifth transmission shafts are each connected with a power take off through a respective one of said stage gears and said stage couplings, said hydrostatic adjusting mechanism being connected through said reverse mechanism and said coupling to the drive.

5,643,123

ELECTRONIC AND HYDRAULIC CONTROL SYSTEM OF A 4-SPEED AUTOMATIC TRANSMISSION FOR AUTOMOTIVE VEHICLE AND METHOD FOR CONTROLLING HYDRAULIC PRESSURE

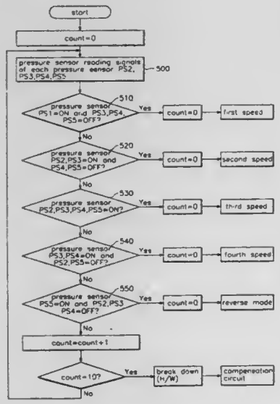
Jaeduk Jang, and Taekyun Kim, both of Kyungki-do, Rep. of Korea, assignors to Hyundai Motor Company, Rep. of Korea

Division of Ser. No. 499,061, Jul. 6, 1995. This application Jul. 16, 1996, Ser. No. 680,984

Claims priority, application Rep. of Korea, Jul. 7, 1994, 94-16312; Jul. 7, 1994, 94-16314

Int. Cl.[6] F16H *59/70;61/12*

U.S. Cl. 475—119 **10 Claims**



1. A method for controlling hydraulic pressure for an automatic transmission, comprising the steps of:

(A) reading each signal from pressure sensors (PS**2**, PS**3**, PS**4**, and PS**5**);

(B) determining if the pressure sensor (PS**2**) is in an "ON" state and if other pressure sensors (PS**3**, PS**4**, and PS**5**) are in "OFF" states;

(C) determining if the pressure sensors (PS**2** and PS**3**) are in "ON" states and if the pressure sensors (PS**4** and PS**5**) are in "OFF" states when the condition of step "B" is not satisfied;

(D) determining if all of the pressure sensors (PS**2**, PS**3**, PS**4**, and PS**5**) are in "ON" states when the condition of step (C) is not satisfied;

(E) determining if the pressure sensors (PS**3** and PS**4**) are in "ON" states and if the pressure sensors (PS**2** and PS**5**) are in "OFF" states when the condition of step (D) is not satisfied;

(F) determining if the pressure sensors (PS**2**, PS**3** and PS**4**) are in "OFF" states and if the pressure sensor (PS**5**) is in an "ON" state when the condition of step (E) is not satisfied; and

(G) determining whether an electronic and a hydraulic control system malfunction when the condition of step (F) is not satisfied.

5,643,124

GEAR SHIFT CONTROL APPARATUS

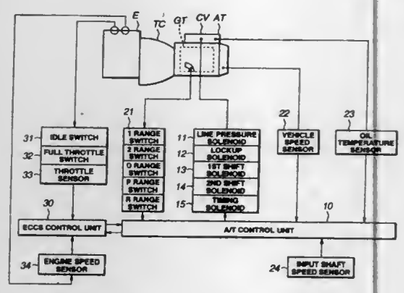
Hideharu Sugiyama; Ikuo Hirose, and Yoshifumi Fujita, all of Shizuoka, Japan, assignors to Jatco Corporation, Fuji, Japan

Filed Nov. 20, 1995, Ser. No. 560,589

Claims priority, application Japan, Nov. 30, 1994, 6-297025

Int. Cl.[6] F16H *61/08*

U.S. Cl. 475—123 **3 Claims**



1. A gear shift control apparatus for use in an automotive vehicle including an internal combustion engine and an automatic transmission having an input shaft, an output shaft and a friction element operable on a hydraulic pressure applied thereto in an engaged and disengaged state, the apparatus comprising:

first sensor means sensitive to a speed of rotation of the transmission input shaft for producing a first sensor signal indicative of a sensed input shaft speed;

second sensor means sensitive to a speed of rotation of the transmission output shaft for producing a second sensor signal indicative of a sensed output shaft speed; and

a control unit coupled to the first and second sensor means for changing the hydraulic pressure between first and second levels, the control unit including means for calculating a gear ratio obtained in the automatic transmission based on the sensed input and output speeds, means for setting a reference gear ratio at a greater value as at least one of the sensed input shaft speed and the sensed output shaft speed increases, and means for changing the hydraulic pressure from the first level to the second level to change the friction element from the disengaged state to the engaged state so as to effect a change from a higher gear to a lower gear when the calculated gear ratio reaches the reference gear ratio.

5,643,125

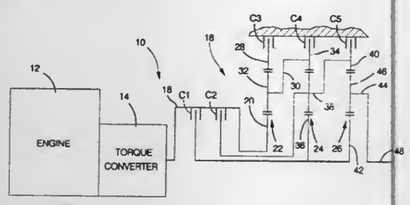
ELECTRO-HYDRAULIC CONTROL SYSTEM IN A POWER TRANSMISSION

Charles Francis Long, Pittsboro; Jeffrey Jay Cole, Plainfield, and Phillip Franklin McCauley, Zionsville, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 13, 1995, Ser. No. 542,574

Int. Cl.[6] F16H *61/06*

U.S. Cl. 475—127 **2 Claims**



1. A transmission control comprising:

a source of fluid pressure including a regulator valve (**50**), a main pressure passage (**52**) and a knockdown passage (**142**);

a plurality of fluid operated selectively engageable torque transmitting means for establishing a plurality of forward power paths and a reverse power path, an input member and an output member;

electro-hydraulic control means for supplying fluid from said main pressure passage of said source for controlling the engagement from said torque transmitting means and disengagement of the torque transmitting means including a relay valve (**64**); and

a signal control valve (**110**) cooperating with the relay valve to direct a control signal through said knockdown passage to the pressure source to establish a first pressure level in said main pressure passage during the establishment of the forward power paths and to exhaust the knockdown passage to provide a second pressure level in said main pressure passage, higher than the first pressure level, during the establishment of the reverse power path.

5,643,126

LUBRICATING OIL SUPPLY STRUCTURE IN PLANETARY GEAR MECHANISM

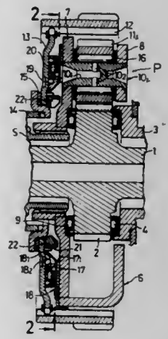
Takashi Hotta; Kinji Marumo, and Michio Kojima, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 1, 1996, Ser. No. 627,673

Claims priority, application Japan, Mar. 31, 1995, 7-06342

Int. Cl.[6] F16H *57/04*

U.S. Cl. 475—159 **14 Claims**



1. A lubricating oil supply structure in a planetary gear mechanism for supplying a lubricating oil to oil passages which open into ends of a plurality of pinion shafts fixed to a planetary carrier, thereby lubricating pinions which are rotatably carried on outer peripheries of the pinion shafts, said structure comprising,

oil reservoirs for retaining the lubricating oil formed in a side of said planetary carrier to which said oil passages face;

a rotatable member rotatably mounted in an opposed relation to said side of said planetary carrier; and

an annular lubricating oil supply member having a fin and being fixed to said rotatable member such that said lubricating oil supply member is located radially inside said oil reservoirs.

5,643,127

VEHICLE POWER TRANSMISSION HAVING FLUID-TIGHT ENCLOSURE ACCOMMODATING LUBRICATING POINTS AND STORING LUBRICATING OIL DELIVERED FROM MECHANICAL OIL PUMP

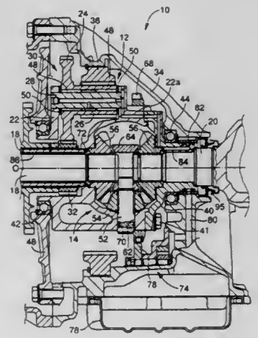
Kinya Yoshii; Eiji Ichioka; Takeharu Koide, all of Toyota, and Yoshihiko Sasaki, Okazaki, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, and Aisin AW Co., Ltd., Anjo, both of Japan

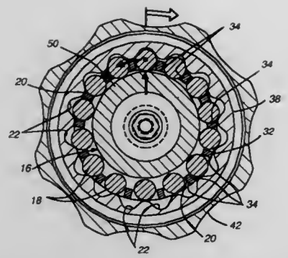
Filed Feb. 29, 1996, Ser. No. 609,916

Claims priority, application Japan, Mar. 6, 1995, 7-045423; May 25, 1995, 7-126412

Int. Cl.[6] F16H *1/00;57/04;* B60K *17/346*

U.S. Cl. 475—160 10 Claims





I. A power transmission system for a motor vehicle, in which all of rotating elements thereof are stopped upon stopping of the vehicle, and which comprises a lubricating device including an oil sump for storing a lubricating oil and a mechanically operated oil pump which is driven by one of said rotating elements to pressurize the lubricating oil received from said oil sump and deliver the pressurized lubricating oil to predetermined lubricating points within the power transmission system, wherein an improvement comprises:

said lubricating device having a substantially fluid-tight enclosure in which said lubricating points are disposed and which stores, in a substantially fluid-tight manner, a mass of said lubricating oil pressurized by and delivered from said mechanically operated oil pump.

5,643,128

HARMONIC DRIVE USING GUIDED, FLOATING CAM DRIVEN CYLINDERS AS POWER TRANSMITTING ELEMENTS

Othar P. Kennedy, Colorado Springs, Colo., assignor to AMI Industries, Colorado Springs, Colo.

Filed Feb. 1, 1996, Ser. No. 595,230

Int. Cl.[6] F16H *13/08*

U.S. Cl. 475—168 26 Claims

I. A device for rotating a first structure relative to a second structure, comprising:

first, second, and third cylinders, said first cylinder being coaxially located within said second cylinder, and said second cylinder being coaxially located within said third cylinder;

a cam rotatably carried by said third cylinder to extend within said first cylinder; and

bearings held between said first and second cylinders for selectively engaging regions of said first and second cylinders and a face of said cam for forcing rotational movement between said first and second cylinders when said cam is rotated, and for resisting rotational movement between said first and second cylinders when a rotational force is applied between said first and second cylinders.

5,643,129

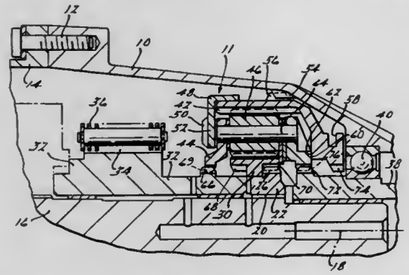
SPEED REDUCTION GEARSET AND TORQUE SPLIT DIFFERENTIAL MECHANISM

John A. Richardson, Windsor, Canada, assignor to Ford Motor Company, Dearborn, Mich.

Filed Jul. 31, 1995, Ser. No. 509,370

Int. Cl.[6] F16H *48/10;3/50*

U.S. Cl. 475—204 6 Claims



I. A speed reduction and differential mechanism assembly, comprising:

an input shaft;

first and second output shafts;

a planetary gearset comprising a sun gear, ring gear, carrier and planet gears rotatably supported on the carrier and in continuous meshing engagement with the sun gear and ring gear; and

means for shifting the gearset between positions spaced mutually along the input shaft, a first position where the input shaft driveably engages the sun gear, the first and second output shafts driveably engage the carrier and the ring gear is held against rotation; a second position where the input shaft driveably engages the carrier, the sun gear driveably engages the first output shaft, and the ring gear driveably engages the second output shaft.

5,643,130

POWER TRAIN OF AN AUTOMATIC TRANSMISSION FOR VEHICLE

Donghoon Park, Jeongja-dong, Rep. of Korea, assignor to Hyundai Motor Company, Seoul, Rep. of Korea

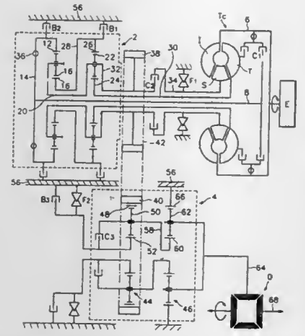
Filed Aug. 15, 1995, Ser. No. 515,230

Claims priority, application Rep. of Korea, Aug. 18, 1994, 94-20392

Int. Cl.[6] F16H *3/00;37/00*

U.S. Cl. 475—204 29 Claims

1. A power train of an automatic transmission for a vehicle comprising:



a torque converter for changing a torque speed of power from an engine;

a first shift part operationally connected to said torque converter, said first shift part including a compound planetary gear unit with first and second simple planetary gear units mounted on an input shaft for carrying out a first shift operation, said first simple planetary gear unit including a first sun gear surrounded by and engaged with a plurality of first pinion gears carried by a first planetary carrier, a first ring gear surrounding and internally engaged with said first pinion gears, and said second simple planetary gear unit including a second sun gear surrounded by and engaged with a plurality of second pinion gears carried by a second planetary carrier, and a second ring gear surrounding and internally engaged with said second pinion gears;

a second shift part operationally connected to said first shift part, said second shift part including third and fourth simple planetary gear units, operationally connected to one another, for carrying out a second shift operation, said third simple planetary gear unit including a third sun gear surrounded by and engaged with a plurality of third pinion gears carried by a third planetary carrier, and a third ring gear surrounding and internally engaged with said third pinion gears, and said fourth simple planetary gear unit including a fourth sun gear surrounded by and engaged with a plurality of fourth pinion gears carried by a fourth planetary carrier, and a fourth ring gear surrounding and internally engaged with said fourth pinion gears; and

a differential gear for transferring output of said second shift part to a vehicle axle.

5,643,131

CONTINUOUSLY VARIABLE TRANSMISSION WITH WIDE TRANSMISSION RATIO RANGE

Walter Kuhn, Friedrichshafen, and Hartmut Herter, Meckenbeuren, both of Germany, assignors to ZF Friedrichshafen AG, Friedrichshafen, Germany

PCT No. PCT/EP94/00832, § 371 Date Sep. 14, 1995, § 102(e) Date Sep. 14, 1995, PCT Pub. No. WO94/21941, PCT Pub. Date Sep. 29, 1994

PCT Filed Mar. 16, 1994, Ser. No. 513,978

Claims priority, application Germany, Mar. 19, 1993, 43 08 761.2

Int. Cl.[6] F16H *37/02*

U.S. Cl. 475—210 9 Claims

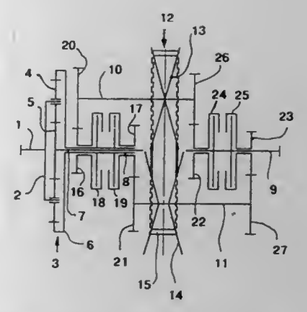
1. A continuously variable transmission comprising

a driving shaft (**1**) and a driven shaft (**9**);

a first intermediate shaft (**10**) and a second intermediate shaft (**11**);

a first gear (**20**) and a second gear (**26**) supported by said first intermediate shaft (**10**);

a third gear (**21**) and a fourth gear (**27**) supported by said second intermediate shaft (**11**);



two first shifting elements (**18**, **19**) to establish a driving connection of said driving shaft to one of said first and third gears (**20** or **21**);

two second shifting elements (**24**, **25**) to establish a driving connection of one of said second and fourth gears (**26** or **27**) to said driven shaft;

a variometer (**12**) which interconnects said first and second intermediate shafts in a manner such that the input power of the transmission is transmitted to said driven shaft (**9**) through both a planetary transmission branch (**5**, **7**, **9**) having a constant ratio and through said variometer which provides a transmission branch having a continuously variable ratio;

said planetary transmission having a web (**2**) in driving connection with said driving shaft (**1**), a small main gear (**5**) in driving connection with said driving shaft (**1**), and a large main gear (**6**) non-rotatably connected with a hollow shaft (**8**), in order to establish

(i) in a first ratio range, via one of said first shifting elements (**18**), the driving connection with said first gear (**20**) and,

(ii) in a second ratio range, via the other of said first shifting elements (**19**), the driving connection with said third (**21**);

and, in the first ratio range, via one of said second shifting elements (**25**), establishing the driving connection of said fourth gear (**27**) to said driven shaft; and

in the second ratio range, via the other of said second shifting elements (**24**), establishing the driving connection of said second gear (**26**) to said driven shaft,

wherein said hollow shaft (**8**) supports two gears (**16**, **17**), which respectively mesh with said first and third gears (**20**, **21**); and

said driven shaft (**9**) supports two additional gears (**22**, **23**), which respectively mesh with said second and fourth gears (**26**, **27**).

5,643,132

TOROIDAL CONTINUOUS VARIABLE TRANSMISSION

Eiji Inoue, Sagamihara, Japan, assignor to Isuzu Motors Limited, Tokyo, Japan

Filed Mar. 12, 1996, Ser. No. 614,010

Claims priority, application Japan, Mar. 14, 1995, 7-080858; Mar. 14, 1995, 7-080859

Int. Cl.[6] F16H *15/38*

U.S. Cl. 476—10 2 Claims

I. A toroidal continuous variable transmission comprising:

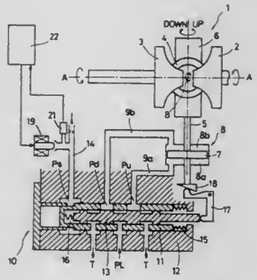
an input disk mounted on an input shaft;

an output disk disposed opposite the input disk;

power rollers that continuously change the rotation of the input disk according to changes in a tilt angle of the power rollers with respect to the input disk and the output disk and transmit it to the output disk;

trunnions that rotatably support the power rollers and tilt the power rollers about a tilt shaft as the trunnions are displaced in the axial direction of the tilt shaft from the neutral position;

a hydraulic cylinder having two cylinder chambers to displace the trunnions in the axial direction of the tilt shaft;



a control valve to regulate oil pressure supplied to the hydraulic cylinder, the control valve comprising a sleeve slidably installed in a valve case and a spool slidably inserted in the sleeve, the control valve being adapted to control the oil pressure supplied to the hydraulic cylinder by the relative displacement between the sleeve and the spool;

a precess cam moved together with the trunnions to displace the spool axially;

a solenoid valve to supply working oil for displacing the sleeve axially;

an oil temperature sensor to detect the temperature of the working oil; and

a controller which determines an amount of correction for an output signal to the solenoid valve according to the working oil temperature, corrects the output signal to the solenoid valve by the correction amount according to a target transmission ratio, and outputs the corrected output signal to the solenoid valve.

5,643,133

CHANGE GEAR CONTROL DEVICE USING ACCELERATION AND GEAR RATIO AS PARAMETERS FOR AUTOMATIC TRANSMISSION IN A MOTOR VEHICLE AND THE METHOD THEREFOR

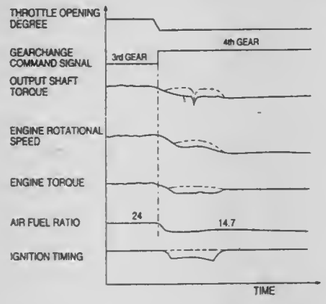
Toshimichi Minowa, Toukai-mura; Hiroshi Kimura, Hitachi; Yoshiyuki Yoshida, Yokohama; Yoshishige Ohyama, and Yutaka Nishimura, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 107,018, Aug. 17, 1993, Pat. No. 5,470,290, which is a continuation-in-part of Ser. No. 840,816, Feb. 25, 1992, Pat. No. 5,235,876. This application Feb. 1, 1994, Ser. No. 189,782

Claims priority, application Japan, Feb. 25, 1991, 3-50148

Int. Cl.[6] F16H *61/04;59/18;* **B60K** *41/08*

U.S. Cl. 477—107 **10 Claims**



1. A method of controlling an internal combustion engine of a motor vehicle which is operated with air fuel mixture gas having air fuel ratio ranging from a fuel rich air fuel ratio to a fuel lean air fuel ratio depending on driving conditions of the motor vehicle and which is equipped with an automatic transmission of which gear change is determined based on a vehicle speed and an engine torque comprising the steps of:

(A) detecting gear ratio change when a shift-up command is generated while throttle opening degree is unchanged;
maintaining a fuel lean air fuel ratio unchanged; and
retarding ignition timing for the engine during gear change operation in response to the detection of the gear ratio change;

(B) detecting an instant when an engine torque exceeds a predetermined level when the throttle opening degree is increased without causing gear shifting; and
reducing air fuel ratio in response to the detection of engine torque exceeding the predetermined level;

(C) detecting gear ratio change when the throttle opening degree is increased and a shift-down command is generated; and
delaying the timing of air fuel ratio reduction toward the end of gear change operation in response to detection of the gear ratio change;

(D) detecting gear ratio change when the throtile opening degree is decreased and shift-up command is generated; and
delaying the timing of air fuel ratio reduction toward the end of gear change operation in response to the detection of the gear ratio change;

(E) detecting gear ratio change when the throttle opening degree is decreased and a shift-up command is generated;
reducing air fuel ratio in response to the shift-up command; and
retarding ignition timing for the engine during gear change operation in response to the detection of the gear ratio change.

5,643,134

HYDRAULIC CONTROL SYSTEM OF AN AUTOMATIC TRANSMISSION FOR AUTOMATIVE VEHICLES

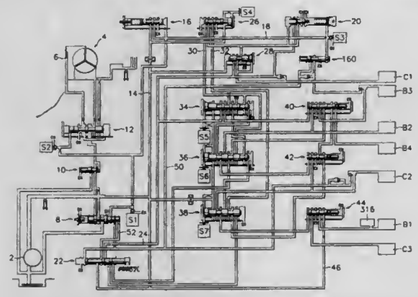
Jaeduk Jang, Kyungki-do, Rep. of Korea, assignor to Hyundai Motor Company, Rep. of Korea

Filed May 15, 1996, Ser. No. 647,743

Claims priority, application Rep. of Korea, May 26, 1995, 95-13459

Int. Cl.[6] F16H *61/26*

U.S. Cl. 477—130 **8 Claims**



1. A hydraulic control system of an automatic transmission for automotive vehicles, comprising:

a hydraulic pump for generating hydraulic pressure by receiving driving force from an engine when the engine is running;

a pressure control valve varying hydraulic pressure supplied from the hydraulic pump according to a vehicle's driving state;

a solenoid supply valve supplying first, second, third solenoid valves with line pressure to be supplied along a line pressure conduit from the pressure control valve;

a manual valve interconnected with a shift select lever and supplying hydraulic pressure to a drive pressure conduit at the "D" range and to a reverse pressure conduit at the "R" range while varying each port of the valves;

a torque control regulator valve for changing torque pressure by a duty control of the third solenoid valve as receiving drive pressure from the manual valve;

a control switch valve for selectively supplying torque pressure to a first torque pressure conduit or a second torque pressure conduit in accordance with an on/off operation of a fourth solenoid valve as receiving torque pressure from the torque control regulator valve;

an N–D control valve for supplying drive pressure to a fifth friction member after feeding torque pressure thereto to prevent shift shock, the fifth friction member being applied together with a first friction member which is applied by receiving line pressure during an initial shift operation when the shift selector lever is shifted from the "N" range to the "D" range;

a 1–2 speed shift valve for supplying drive pressure fed from the manual valve to the fifth friction member through a second clutch valve and torque pressure fed from the first and second torque pressure conduits in a 1–2 speed shift operation at the "D" range in accordance with an on/off control of a fifth solenoid valve;

a 2–3 speed shift valve for feeding torque pressure fed from the 1–2 shift valve and part of the hydraulic pressure fed to a third friction member to a second friction member through a third clutch valve when shifting from a second speed to a third speed at "D" range while changing ports by an on/off control of a sixth solenoid valve, and for providing a passage through which drive pressure and torque pressure of a manual valve when shifting from a third speed of the "D" range to a first speed of the "L" range;

a 3–4 speed shift valve for supplying a torque pressure fed from the 2–3 shift valve and part of the hydraulic pressure fed to the second friction member to a third friction member through a fourth clutch valve, for obstructing the hydraulic pressure supply of the first friction member when shifting from a third speed to a fourth speed at "D" range while changing ports by an on/off control of a seventh solenoid valve, and for supplying hydraulic pressure fed to a second torque pressure conduit to a seventh friction member through the third clutch valve and the second clutch valve when manually shifting from a fourth speed of "D" range to a second speed of "2" range; and

an N–R control valve for supplying hydraulic pressure fed from manual valve through a reverse pressure conduit to a sixth friction member while changing a port by control of a third solenoid valve at "R" range.

5,643,135

APPARATUS FOR CONTROLLING CONCURRENT RELEASING AND ENGAGING ACTIONS OF FRICTIONAL COUPLING DEVICES FOR SHIFTING VEHICLE AUTOMATIC TRANSMISSION

Atsushi Tabata, Okazaki, and Nobuaki Takahashi, Toyota, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Feb. 13, 1996, Ser. No. 601,156

Claims priority, application Japan, Feb. 20, 1995, 7-030668

Int. Cl.[6] F16H *61/10;61/06*

U.S. Cl. 477—154 **16 Claims**

1. A shift control apparatus for controlling an automatic transmission of a motor vehicle having an engine, said transmission having a plurality of operating positions and including two hydraulically operated frictional coupling devices one and the other of which are released and engaged, respectively, to effect a clutch-to-clutch shift-up action of said transmission from one of said operating positions to another of said operating positions, said shift control apparatus comprising:

learning shift-point compensating means for effecting learning compensation of a shift-up boundary line used for determining whether said clutch-to-clutch shift-up action should take place, so that a speed of said engine does not exceed a predetermined upper limit during said clutch-to-clutch shift-up action if said shift-up action takes place according to the compensated shift-up boundary line, said shift control apparatus further comprising:

engine overshoot detecting means for detecting an amount of overshoot of the speed of said engine during said clutch-to-clutch shift-up action of said automatic transmission; and

inhibiting means for determining whether said amount of overshoot of the speed of said engine is larger than a predetermined threshold, and inhibiting an operation of said learning shift-point compensating means if said amount of overshoot is larger than said predetermined threshold.

5,643,136

SLIP CONTROL APPARATUS FOR MOTOR VEHICLE LOCK-UP CLUTCH

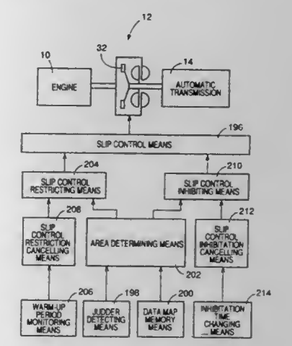
Katsumi Kono, Toyota, and Shinya Nakamura, Owariasahi, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jul. 19, 1995, Ser. No. 504,758

Claims priority, application Japan, Jul. 22, 1994, 6-171245

Int. Cl.[6] F16H *61/14*

U.S. Cl. 477—169 **16 Claims**



1. An apparatus for controlling an amount of slip of a lock-up clutch disposed between a pump impeller and a turbine impeller in a fluid-filled power transmitting device in a power transmitting system of a motor vehicle, wherein said pump impeller is connected to an engine and said fluid-filled power transmitting device is operated with a working fluid, said apparatus including slip control means for controlling the amount of slip of said lock-up clutch such that an actual slip speed of said lock-up clutch coincides with a predetermined target slip speed, said apparatus comprising:

judder detecting means for detecting an occurrence of a judder of said lock-up clutch during a slip control operation of the lock-up clutch by said slip control means;

memory means for storing area data representative of a first area and a second area of a running condition of the vehicle represented by an amount of load acting on said engine and a temperature of said working fluid, said first and second areas being defined such that said lock-up clutch is likely to experience said judder while said running condition is in said first area, and less likely to experience said judder while said running condition is in said second area than while said running condition is in said first area; and

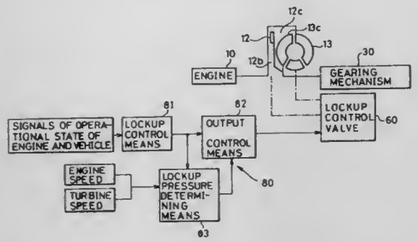
slip control restricting means for establishing a restricted slip control mode if said running condition upon detection of said judder by said judder detecting means is in said first area, said slip control restricting means operating in said restricted slip control mode, so as to inhibit said slip control means from effecting said slip control operation of said lock-up clutch when the running condition of the vehicle is in said first area, and to permit said slip control means to effect said slip control operation when said running condition is in said second area.

5,643,137

LOCKUP CONTROL APPARATUS FOR AUTOMATIC TRANSMISSION AND THE METHOD THEREOF

Hosei Suzuki, Tokyo, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Japan

Filed Oct. 17, 1995, Ser. No. 544,316
Claims priority, application Japan, Oct. 27, 1994, 6-263528
Int. Cl.[6] F16H *45/02*
U.S. Cl. 477—169 **9 Claims**



1. A lockup clutch control apparatus of an automatic transmission of a vehicle having a torque converter interposed between an engine and a gearing mechanism for hydraulically transmitting power from said engine to said gearing mechanism, a lockup clutch interposed between said engine and said gearing mechanism for bypassing said torque converter and mechanically transmitting power from said engine to said gearing mechanism, a lockup clutch control valve hydraulically connected to said lockup clutch for controlling engagement of said lockup clutch, a duty solenoid valve connected to said lockup clutch control valve for controlling said lockup clutch control valve, operating condition detecting means for sensing an operating condition of said engine and said vehicle and for generating an operating signal indicative thereof, an engine speed sensor for detecting a speed of said engine and for generating an engine speed signal indicative thereof, and a turbine speed sensor for detecting a turbine speed of a turbine in said torque converter and for producing a turbine speed signal indicative thereof, comprising:

lockup control means responsive to said operating signal for determining if said lockup clutch is to be engaged based on said operating condition of said engine and said vehicle and for outputting a control signal indicative thereof;

lockup pressure determining means responsive to said engine speed signal, said turbine speed signal and said control signal for selecting a duty ratio of said duty solenoid valve at a predetermined value when said engine speed is approximately equal to said turbine speed and for generating a pressure signal indicative thereof; and

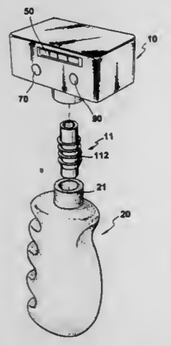
output control means responsive to said control signal and said pressure signal for gradually changing said duty ratio until reaching said predetermined value and then for maintaining said duty ratio at said predetermined value so as to gradually and securely engage said lockup clutch at a minimum pressure thereto without shock.

5,643,138

ELECTRONIC HAND-MUSCLE DEVELOPER

Tien-Tsai Huang, No. 4, Lane 30, Wu-Chang St., Pan-Chiao City, Taiwan

Filed Dec. 28, 1995, Ser. No. 579,743
Int. Cl.[6] A61B *5/11*
U.S. Cl. 482—4 **8 Claims**



1. An electronic hand-muscle developer comprising:

a casing having a connector;

a hollow flexible grip filled with air and connected to said connector;

a pressure inductor mounted in said connector to detect pressure from said hollow flexible grip;

a pressure converter circuit mounted in said casing and connected to said pressure inductor to convert a pressure signal representative of the pressure detected by said pressure inductor into a frequency signal having a variable frequency representative of the detected pressure;

a microprocessor mounted in said casing to receive the frequency signal from said pressure converter, and to calculate a value from the frequency signal; and

a liquid crystal display connected to said microprocessor to display the value calculated by said microprocessor.

5,643,139

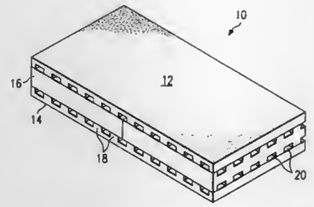
CONTOURED LANDING SURFACE SYSTEM AND METHOD OF MAKING THEREOF

Roger Neal Stout, Huntington Beach, and Troy Robinson, Villa Park, both of Calif., assignors to Sport Supply Group, Inc., Farmers Branch, Tex.

Continuation of Ser. No. 85,975, Jun. 30, 1993, abandoned. This application Jun. 1, 1995, Ser. No. 631,035
Int. Cl.[6] A63B *6/00*
U.S. Cl. 482—14 **22 Claims**

1. A landing surface block for use in athletics having a longitudinal axis and a transverse axis, comprising:

a top layer formed from a single piece of compressible material having top and bottom surfaces, the bottom surface of the top layer having a plurality of ridges oriented along the transverse axis of the landing surface and defining a plurality of spaces therebetween;



at least one middle layer having top and bottom surfaces, each surface of the middle layer having a plurality of ridges oriented along the longitudinal axis of the landing surface and defining a plurality of spaces therebetween, the top surface of the middle layer positioned below the bottom surface of the top layer and attached thereto to define a first network of air channels along the longitudinal and the transverse axes of the landing surface between the top and middle layers;

a bottom layer formed from a single piece of material having top and bottom surfaces, the top surface of the bottom layer having a plurality of ridges oriented along the transverse axis of the landing surface and defining a plurality of spaces therebetween, the top surface of the bottom layer positioned below the bottom surface of the middle layer and attached thereto to define a second network of air channels along the longitudinal and the transverse axes of the landing surface between the middle and bottom layers;

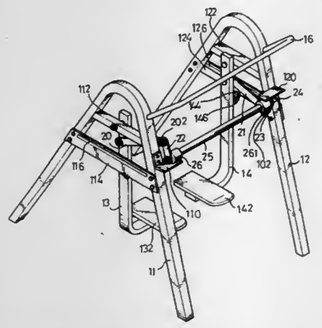
wherein the first and second networks displace a volume of air in response to an applied landing force to cushion the applied landing force.

5,643,140

SWING EXERCISER

Chien-lung Tsai, No. 7, Lane 46, Talien N. Rd., Peltun Dist., Taichung, Taiwan

Filed Sep. 23, 1996, Ser. No. 717,634
Int. Cl.[6] A63B *22/00*
U.S. Cl. 482—51 **4 Claims**



1. A swing exerciser comprising:

a first stand and a second stand, said first stand having a first upper rod and a first lower rod transversely disposed thereto, said second stand having a second upper rod and a second lower rod disposed transversely thereto;

a first swing member having one end pivotally connected to said first upper rod and the other end of said first swing member having a first plate disposed thereto, a second swing member having one end pivotally connected to said second upper rod and the other end of said second swing member having a second plate disposed thereto;

a shaft rotatably connected between said first stand and said second stand;

a first link assembly comprising a first long link which has one end thereof pivotally connected to said first swing member and a first short link which has one end thereof fixedly connected to said shaft, the other end of each of said first long link and said first short link being pivotally connected with each other, and

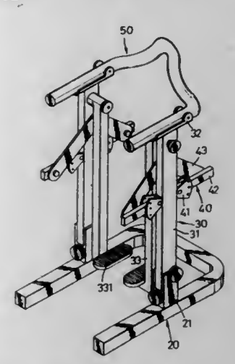
a second link assembly comprising a second long link which has one end thereof pivotally connected to said second swing member and a second short link which has one end thereof fixedly connected to said shaft, the other end of each of said second long link and said second short link being pivotally connected with each other wherein a pivotal point between said first short link and said first long link is located above said shaft and a pivotal point between said second short link and said second long link is located beneath said shaft.

5,643,141

LEG EXERCISER

Sunny Lee, No. 257-8, Chung-Cheng Rd., Tsao-Tun Chen, Nan-Tou Hsien, Taiwan

Filed Aug. 6, 1996, Ser. No. 693,339
Int. Cl.[6] A63B *22/04;21/02*
U.S. Cl. 482—52 **4 Claims**



1. A leg exerciser, comprising:

a base;

two aligned posts fixed on said base;

a handle fixed on upper end portions of said posts;

two aligned swing arms respectively pivoted to the upper end portions of said posts, each of said swing arms having a pedal fastened to a lower end portion thereof, and an upper band retainer fastened to an upper end portion of said swing arm; and

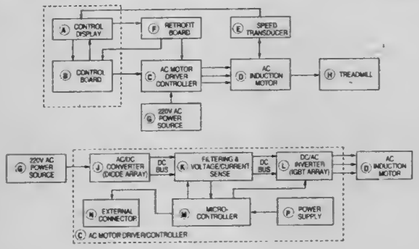
two resistance adjusting mechanisms disposed on said posts respectively so as to adjust resistance to swinging movement of said swing arms, each of said resistance adjusting mechanisms including:

two adjusting rods mounted pivotally on one of said posts in such a manner that each of said adjusting rods is pivotable about a horizontal axis and that each of said adjusting rods is locked on a selected one of several angular positions on a corresponding one of said posts, one of said two adjusting rods extending forward from a corresponding one of said posts, the other one of said two adjusting rods extending rearward from the corresponding one of said posts, each of said adjusting rods having an inner end portion pivoted to a corresponding one of said posts at a position below said upper band retainers, and an outer end portion provided with a lower band retainer; and

two inclined and tautened resilient band units having upper end portions retained on said upper band retainer of a

corresponding one of said swing arms, and lower end portions respectively retained on said lower band retainers of said two adjusting rods, said resistance adjusting mechanisms being adjustable to vary distance between said upper band retainer and said lower band retainers on one of said posts, so as to provide different resistances to forward and rearward movement of each of said swing arms.

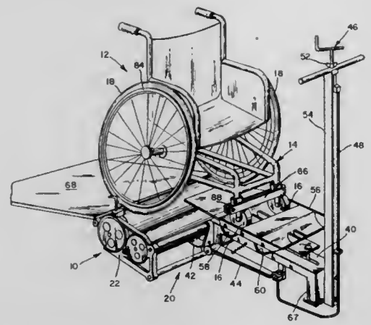
5,643,142
AC MOTOR DRIVEN TREADMILL
Mark Salerno, Huntington, N.Y., and Eric R. Dick, Carrollton, Tex., assignors to JAS Manufacturing Co., Inc., Carrollton, Tex.
Filed May 1, 1995, Ser. No. 431,774
Int. Cl.[6] A63B *21/00*
U.S. Cl. 482—54 **9 Claims**



1. In an exercise treadmill energized from an external electrical power source having a frame and a drive belt engaging a drive roller, the drive roller mounted to the frame and engaging an endless walking belt, a drive arrangement comprising:
an AC induction motor having a shaft with a first end and a second end, the first end extending outward in a first direction from said AC motor and said second end extending outward in a second, opposite direction from said AC motor;
an AC motor driver/controller operatively connected to the external power source and said AC induction motor for providing variable voltage and variable frequency to said AC induction motor to control the rotation thereof;
programmable circuit means cooperating with said AC motor driver/controller for adjustably controlling the rotational speed of said AC motor, said programmable circuit means comprising means to provide a gradual slowing of the drive belt in the event of a sudden power failure to said AC induction motor; and
means for engaging said AC induction motor to the drive roller, said drive roller engaging means joining to the shaft of said AC induction motor at the first end thereof;
a first flywheel located on the first end of the shaft of said AC induction motor, said first flywheel integral with said drive roller engaging means;
a second flywheel located on the second end of the shaft of said AC induction motor;
wherein said AC induction motor and said AC motor driver/controller are matched to power the treadmill walking belt.

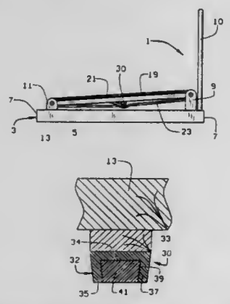
5,643,143
WHEELCHAIR TRAINER
Jerome M. Burak, Chatsworth, and Douglas Mayes, Los Angeles, both of Calif., assignors to D&J Development Workshop, Inc., Van Nuys, Calif.
Filed Jan. 31, 1996, Ser. No. 594,126
Int. Cl.[6] A63B *22/02*
U.S. Cl. 482—54 **17 Claims**

1. Wheelchair trainer apparatus, comprising the combination of:



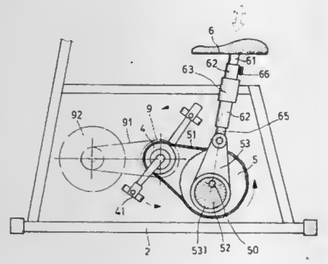
a wheelchair having two rear drive wheels and two front caster wheels;
a frame;
a first roller having a longitudinal axis and mounted to said frame for being rotatably driven about said axis of said first roller;
a second roller having a longitudinal axis and mounted to said frame for being rotatably driven about said axis of said second roller and with said axes of said rollers parallel to one another and horizontally spaced apart by a predetermined distance; and
a support secured to said frame including a first trough parallel to said axes for receiving said wheelchair front caster wheels in a first position such that said wheelchair drive wheels contact said first roller for rotatably driving said first roller with the center of each of said drive wheels directly vertically above said axis of said first roller, said support further including a second trough parallel to said first trough and horizontally spaced therefrom by said predetermined distance for alternatively receiving said wheelchair front caster wheels in a second position such that said wheelchair drive wheels contact said second roller for rotatably driving said second roller with the center of each of said drive wheels directly vertically above said axis of said second roller.

5,643,144
LUBRICATION SYSTEM FOR TREADMILL
James A. Trulaske, St. Louis, Mo., assignor to True Fitness Technology, Inc., O'Fallong, Mo.
Filed Apr. 29, 1996, Ser. No. 638,844
Int. Cl.[6] A63B *22/02*
U.S. Cl. 482—54 **8 Claims**



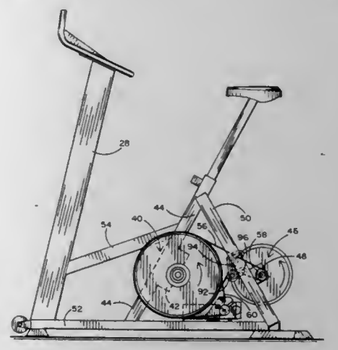
1. In a treadmill having a stationary deck and a pair of rollers at approximately each end of the deck, one of said rollers being a drive roller, and the other comprising an idler roller, and an endless belt entrained around the drive and idler rollers, a solid lubricant lubrication system for the endless belt entrained around the drive and the idler roller as spaced apart from one another with said belt having an upper reach and a lower reach extending between the rollers, the belt having an inner surface and an outer surface, said stationary deck between the reaches and disposed to support a user positioned on the outer surface of the upper reach, the upper reach being in a sliding relationship with an upper surface of the deck, the solid lubrication comprising a channel formed from a solid lubricating material, the channel having a quantity of solid wax therein, the channel being affixed to a lower surface of the deck and disposed so that the channel and the solid wax are in frictional contact with the inner surface f the lower reach as the belt traverses a continuous path.

5,643,145
EXERCISE BIKE
Chung-Yen Lo, and Fu-Shun Chien, both of No. 1-2, Lane 975, Chun-Jih Road, Tao-Yuan City, Taiwan
Filed Sep. 18, 1996, Ser. No. 715,449
Int. Cl.[6] A63B *23/04*
U.S. Cl. 482—57 **5 Claims**



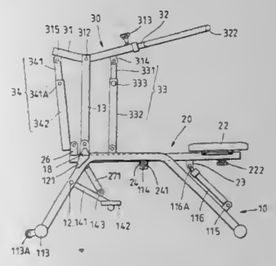
1. An exercise bike, comprising:
a main frame;
a handlebar mounted at an upper front end of said main frame and provided with a meter panel;
a driving wheel mounted at a middle section of said main frame at a suitable position and having both sides thereof respectively provided with a pedal;
a rotary wheel mounted at a rear section of said main frame at a suitable position and supported by a central shaft positioned on said main frame, said rotary wheel being connected to said driving wheel via a transmission element;
a seat having a seat post extending downwardly therefrom, said seat post being fitted into an elevating rod; and
a housing for concealing those components which may easily hurt the user and giving an integral appearance to the exercise bike, wherein
said rotary wheel has a circular driving element eccentrically disposed at one side thereof, said circular driving element being so configured as to just fit into a shaft hole at a bottom end of a driving arm, which is locked to an outer side of said driving element by use of a positioning element, a top end of said driving arm being provided with a pivot hole; said elevating rod at the lower side of said seat is passed through a tube secured to said main frame and has a lower rim thereof provided with a spring and a stop rod pivotally connected to said pivot hole of said driving arm by a pivot element; whereby the user's weight may be utilized as a load in exercising to provide resistance and the user may move up and down naturally and rhythmically with the operation of the exercise bike.

5,643,146
STATIONARY EXERCISE DEVICE HAVING LOAD-CONTROLLING BRAKING SYSTEM
Duane P. Stark, Dana Point; Michael T. Sweeney, and James S. Sweeney, Jr., both of Laguna Beach, all of Calif., assignors to Tectrix Fitness Equipment, Irvine, Calif.
Continuation of Ser. No. 100,275, Aug. 2, 1993, abandoned. This application Mar. 6, 1996, Ser. No. 611,806
Int. Cl.[6] A63B *23/04*
U.S. Cl. 482—63 **24 Claims**



1. A stationary exercise cycle, comprising:
a rotor having an outer brake-engaging portion and a central hub portion;
a driving unit for the rotor which includes user-driven pedals, arms carrying the pedals, and a rotating element whose axis of rotation coincides with the axis of rotation of the rotor;
a one-way clutch between the rotating element and the hub of the rotor which permits the rotating element to drive the rotor but not to be driven by the rotor;
a braking device adapted to engage the outer portion of the rotor for the purpose of resisting its rotation in order to create a load opposing the user's effort;
a momentum-storing device; and
a connection between the momentum-storing device and the rotor which tends to maintain the rotating speed of the rotor.

5,643,147
MULTIPURPOSE EXERCISE MACHINE
Ching-Lien Huang, 2F, No. 14, Ning Hsia E. 5 St., Taichung, Taiwan
Filed May 29, 1996, Ser. No. 654,768
Int. Cl.[6] A63B *69/06*
U.S. Cl. 482—72 **7 Claims**



1. A multipurpose exercise machine comprising:
a main frame composed of two arcuate frames and two frame rods;

a loading frame provided with a seat fastened therewith and two pedals fastened pivotally therewith, said loading frame fastened pivotally with said main frame; and

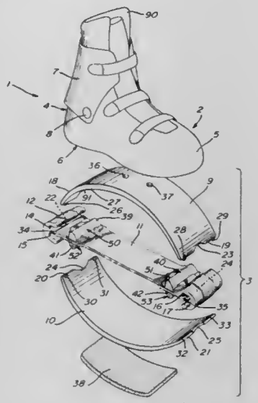
an operation frame comprising a curve rod fastened pivotally with said frame rods, a first length adjustable driving rod and a second length adjustable driving rod, with said first driving rod and said second driving rod being pivotally fastened at respective first ends thereof with said loading frame and at respective second ends there of to said operation frame, said curve rod provided at one end thereof with an actuating rod fastened therewith, wherein said first and second length adjustable driving rods comprise means for enabling said multipurpose exercise machine to be adjusted for use for different exercises including horse-riding type exercises and arm building exercises.

5,643,148

SPORTING AND EXERCISING DEVICE HAVING A FOOT RECEIVING PORTION AND AN ANTICOLLAPSE SPRING PORTION

Denis Naville, Genève, Switzerland, assignor to Denis Naville S.A., Geneva, Switzerland

Filed Jul. 9, 1996, Ser. No. 678,508
Claims priority, application Canada, Jan. 10, 1996, 2166939
Int. Cl.[6] A63B *25/10*
U.S. Cl. 482—77 **8 Claims**



1. A sporting and exercising device comprising an upper foot-receiving portion, and a lower spring portion fastened to the foot-receiving portion, the spring portion comprising:

an upper spring layer arched upwardly and comprising first and second opposite ends;

a lower spring layer arched downwardly and comprising first and second opposite ends;

an intermediate, substantially elastic elongate member having first and second opposite ends;

first means for connecting the first end of the intermediate member to both the first end of the upper spring layer and the first end of the lower spring layer, and second means for connecting the second end of the intermediate member to both the second end of the upper spring layer and the second end of the lower spring layer; and

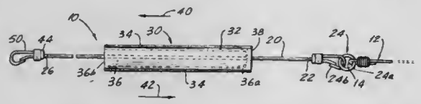
first and second shock absorbing means mounted longitudinally remote from each other between the upper spring layer and the intermediate member, and third and fourth shock absorbing means mounted longitudinally remote from each other between the lower spring layer and the intermediate member.

5,643,149

FITNESS ROPE

Christine Grimaldi, East Hampton, N.Y.; Matthew Grimaldi, Los Angeles, Calif., and Stephen Hall, Surrey, Canada, assignors to Authentic Fitness Products, Inc., Van Nuys, Calif.

Filed Mar. 6, 1996, Ser. No. 611,652
Int. Cl.[6] A63B *21/02;5/22*
U.S. Cl. 482—82 **8 Claims**



1. A fitness rope for use in both jumprope and stretching exercises, comprising:

(A) a stretchable length of resiliently elastic rope;

(B) at each end of said stretchable rope length,

(i) a segment of flexible material secured at one end thereof to said stretchable rope length end, and

(ii) a hollow handle of greater rigidity than said flexible segment, said handle being disposed at least in part about said flexible segment, slidable along a limited length of said flexible segment and rotatable relative to said flexible segment; and

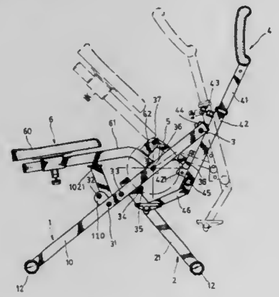
(C) adjacent the other end of each of said flexible segments, means for releasably joining both said ends of said flexible segment together to define a loop, including a respective one of said handles as a part thereof, said loop being configured and dimensioned to receive a limb or a support for use in stretching exercises.

5,643,150

FOLDABLE EXERCISER HORSE

Kuo-Ron Lee, No. 61, Mei Chou Erh Road, Yi Lan City, Taiwan

Filed Mar. 22, 1996, Ser. No. 620,166
Int. Cl.[6] A63B *21/00*
U.S. Cl. 482—96 **5 Claims**



1. A foldable exerciser horse comprising:

a) an upper supporting frame, a lower supporting frame, a seat assembly and a handle bar assembly;

b) the upper supporting frame including two parallel members having a pair of top ends and a pair of lower ends, a first shaft pivotally connecting the top ends to a middle neck portion of the handle bar assembly for permitting the handle bar assembly to pivot about the first shaft relative to the upper supporting frame, a pair of lugs on a top middle portion of the parallel members, a first pin extending between the lugs, a first pillar having a first end and a second end, a second shaft pivotally connecting the first end of the first pillar between the parallel members, whereby when the exerciser horse is disposed in an extended position, the first pillar projects upwardly from between the parallel members and engages the first pin;

c) the lower supporting frame including an upwardly extending second pillar having an upper end and a lower end, a transversely extending rod connected to the lower end of the second pillar, and means secured to the rod for supporting the lower supporting frame in a stable position on a floor;

d) the seat assembly including a top saddle, an arm member having a downwardly bent front end, a pair of lugs projecting outwardly from a top surface of the bent front end, a link having a first end and a second end, a third shaft pivotally connecting the first end of the link between the two lugs, the second end of the link being pivotally connected to the handle bar assembly, thereby permitting the seat assembly to be moved during movement of the handle bar assembly; and

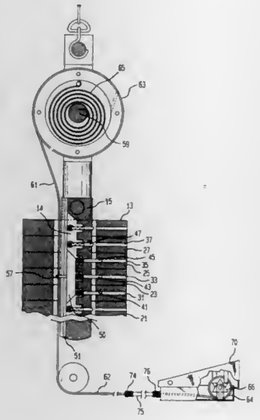
e) the handle bar assembly including an outer stem, an inner stem slidably received within the outer stem, and a locating bolt positioned adjacent a top end of the outer stem for securing the position of the inner stem relative to the outer stem.

5,643,151

WEIGHT RELEASE MECHANISM FOR WEIGHT-LIFTING EQUIPMENT

Salvatore G. Naimo, 20 Private Rd., Edison, N.J. 08817

Filed Feb. 27, 1995, Ser. No. 394,823
Int. Cl.[6] A63B *21/06*
U.S. Cl. 482—98 **12 Claims**



10. A hollow-body lifting bar disposable for movement within a weight stack composed of a plurality of separate weights, said lifting bar comprising:

a plurality of pin means extendible from within said lifting bar for removably securing a portion of said weight stack to said lifting bar and retractable within said lifting bar, wherein each pin means corresponds to one of said separate weights of said weight stack, whereby the total weight carded by the lifting bar is determined by the portion of said weight stack removably secured to said lifting bar by said pin means, wherein the extension of a pin means from within said lifting bar secures said corresponding separate weight of said weight stack to said lifting bar and the retraction of said pin means within said lifting bar removes said separate weight from said lifting bar;

key means within said lifting bar for extending and retracting one or more of said pin means from within said lifting bar; and

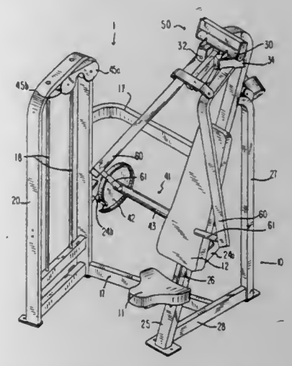
means for moving said key means within said lifting bar, mechanically operated with a hand-control or a foot-pedal, thereby contacting said key means with one or more of said pin means to sequentially add or remove said separate weights from said weight stack, wherein said hand-control or foot-pedal is capable being operated to move said key means when said weight stack is being lifted.

5,643,152

CHEST PRESS EXERCISE MACHINE AND METHOD OF EXERCISING

Roy Simonson, Colorado Springs, Colo., assignor to Cybex International, Inc., Ronkonkoma, N.Y.

Continuation-in-part of Ser. No. 396,670, Mar. 1, 1995. This application Mar. 7, 1995, Ser. No. 399,581
Int. Cl.[6] A63B *21/062;21/078;21/02*
U.S. Cl. 482—100 **28 Claims**



1. A chest press apparatus for exercising the muscles of the torso of a user by resisting displacement of the user's limb comprising:

a frame;

means for engaging the user's limb such that outward displacement of the user's limb causes displacement of the engagement means;

means for mounting the engagement means to the frame for rotation about at least two axes, said at least two axes being skew in relation to one another so as to provide a lateral resistance component to the displacement of the engagement means;

a weight stack displacably mounted to the frame; and

means for connecting the engagement means to the weight stack such that outward displacement of the engagement means causes displacement of the weight stack.

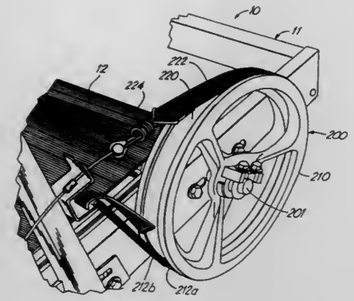
5,643,153

FLYWHEEL RESISTANCE MECHANISM FOR EXERCISE EQUIPMENT

James E. Nylen, Champlin; Steven A. Rose, Minneapolis, and Terrence D. Wood, Fridley, all of Minn., assignors to Nordic Track, Inc., Chaska, Minn.

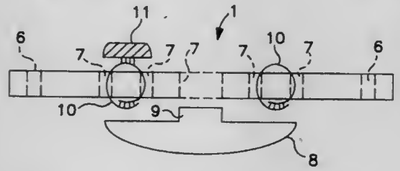
Continuation of Ser. No. 9,458, Jan. 27, 1993, abandoned. This application Nov. 10, 1994, Ser. No. 337,134
Int. Cl.[6] A63B *69/18*
U.S. Cl. 482—110 **13 Claims**

1. A method of manufacturing a flywheel designed to rotate subject to frictional resistance created by contact between a drag strap and an outer cylindrical surface on the flywheel, comprising the steps of cutting a groove into the circumference of the flywheel to create an outer cylindrical surface disposed between a pair of



peripheral flanges, and preparing the outer cylindrical surface to have a surface roughness of between fifty and one hundred and twenty microinches.

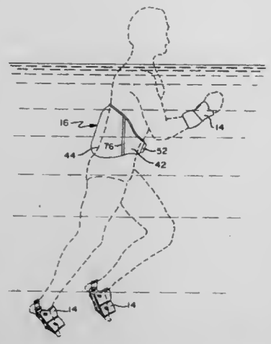
5,643,154
WATER AND LAND THERAPY AND FITNESS DEVICE
Brian J. Awbrey, 151 Merrimac St., Suite 202, and Kipp K. Dye, 151 Merrimac St., Suite 203, both of Boston, Mass. 02114
Filed Mar. 27, 1995, Ser. No. 410,718
Int. Cl.[6] A63B *31/00*
U.S. Cl. 482—111 **4 Claims**



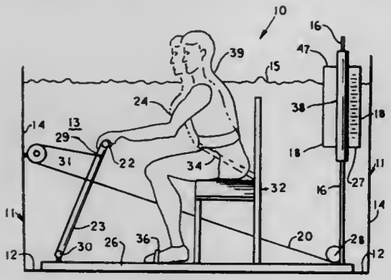
1. A device for use as an aquatic training board, comprising:
a rigid or semi-pliable, non-skid platform having a periphery, an upper surface, a lower surface, a plurality of flow-through openings therethrough, and at least two handles formed by diametrically opposed disposition about said periphery of at least two apertures capable of accommodating an adult human hand,
at least one conventional strap inserted through at least one of said flow-through holes such that an individual can insert at least one hand or foot through said at least one strap, and
at least one modular flotation cell attached to said at least one conventional strap.

5,643,155
AQUATIC EXERCISE DEVICE
Charles Kallassy, 4074 S. Better Dr., Dallas, Tex. 75229
Continuation of Ser. No. 146,873, Nov. 2, 1993, abandoned. This application Oct. 11, 1995, Ser. No. 541,036
Int. Cl.[6] A63B *31/00*
U.S. Cl. 482—111 **6 Claims**

1. An aquatic exercise device adapted for a human body, comprising:
at least two substantially identical flexible sheets of gas impermeable material being sealed together to form a plurality of separate variably inflatable chambers, each of said chambers having an outlet means for selectively inflating, deflating and sealing said chamber;
means for permitting a user to duplicate running, when said chambers are inflated and said device is placed in water, so that the motion of the user's arms are unimpeded, said permitting means including a strip formed between at least two of said chambers to define a hinge therebetween, said at least two of said chambers, when inflated, cooperating with said hinge and adapted to conform said device closely to the contours of at least a torso portion of a human body; and
means for attaching said at least two sheets to the human body.



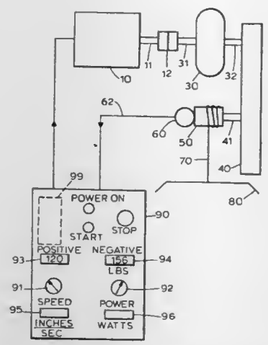
5,643,156
FLOAT RESISTANCE MEMBER METHOD AND APPARATUS FOR AQUATIC EXCERISE
Kenneth Lochbaum, 3002 E. 38th St., Erie, Pa. 16510
Filed Dec. 11, 1995, Ser. No. 570,504
Int. Cl.[6] A63B *21/008*
U.S. Cl. 482—111 **21 Claims**



1. A resistance member for an aquatic exercise device comprising a float;
a first guide member fixed to said float;
a first post fixed in a generally upright position and slidably engaging said first guide member;
a flexible cord attached to said float at a first end whereby when a second end of said cord is attached to said exercise device said float will be directed by said first guide member along said post and a resistance force from said float will be applied to said exercise device through said cord.

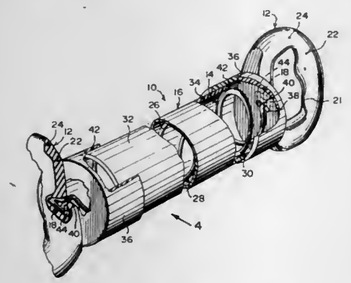
5,643,157
FLUID COUPLING DRIVEN EXERCISE DEVICE
Joseph Seliber, 7437 N. Washtenaw Ave., Chicago, Ill. 60645
Filed Feb. 22, 1996, Ser. No. 605,764
Int. Cl.[6] A63B *21/008*
U.S. Cl. 482—112 **9 Claims**

1. An exercise device comprising a variable speed rotary driving means, an adjustable speed control means for controlling the speed



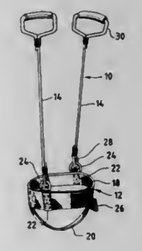
of said variable speed rotary driving means, an exercise link offering resistance to motion of a user, a fluid coupling connected to the variable speed rotary driving means through an input shaft, and a torque multiplying means driven by the fluid coupling through an output shaft, said fluid coupling transmitting torque from the input shaft to the output shaft, said torque multiplying means being connected to said exercise link, said fluid coupling imparting resistance to said exercise link, the resistance to motion of said exercise link being a function of the direction of said exercise link and the speed of said variable speed rotary driving means.

5,643,158
UPPER BODY SHAPING EXERCISE DEVICE
David Clementi, 84 Mayflower Ave., Massapequa Park, N.Y. 11762
Filed Jun. 12, 1995, Ser. No. 489,629
Int. Cl.[6] A63B *21/00*
U.S. Cl. 482—121 **5 Claims**



1. An improved upper body shaping exercise device which comprises:
a) a pair of handles of D-shaped configuration in which each said handle can be grasped and twisted by one hand of a person;
b) means comprising a single elongated steel spring extending between and joining said handles for highly resisting the twisting of said handles in opposite directions by the hands of said person to exercise the hands, arms and shoulders of said person;
c) elongated cylindrical housing means enclosing said steel spring the ends of which housing means being open and spaced from said handles; and
d) end cap means mounted on each said handle comprising a cylindrical member closed at one end, the closed end being attached to a handle and the open end enclosing an end of said cylindrical housing means, said closed end of said cylindrical member having a slot to allow one end of said steel spring to extend therethrough and enter said handle folding back upon itself into a generally triangular configuration embedded into said handle to prevent said spring from coming loose during twisting.

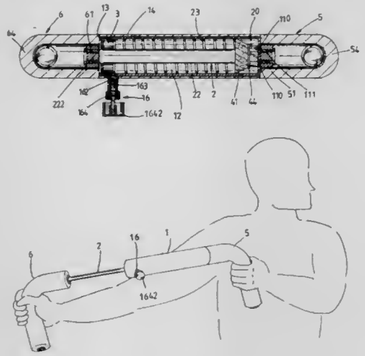
5,643,159
THERAPEUTIC EXERCISE DEVICE
Jerry A. Iavarone, 1250 W. Lake St., Addison, Ill. 60101, assignor to Jerry A. Iavarone, Addison, Ill.
Filed Feb. 20, 1996, Ser. No. 603,786
Int. Cl.[6] A63B *21/02*
U.S. Cl. 482—125 **14 Claims**



1. A therapeutic exercise device for maintaining the lateral alignment of exercised limbs, said exercise device comprising:
an adjustable ankle harness comprising an ankle encircling band having first and second ends for joining together;
a heel loop fixed across a bottom portion of said ankle encircling band;
a plurality of elastic elements, said elements each having a lower end and an upper end, said lower end of a first one of said elastic elements being disposed with said ankle encircling band at a top portion thereof, said lower end of a second one of said elastic elements being disposed with said ankle encircling harness at a top portion thereof and opposite said first element wherein said first and second elements are disposed directly across from each other on said ankle encircling band; and
a handle disposed at the upper end of each of said first and second elastic elements.

5,643,160
CHEST DEVELOPER
Ma-Li Hsu Huang, No. 76-4, Chu Kwang Rd., Chungho City, Taipei Hsien, Taiwan
Filed Jan. 19, 1996, Ser. No. 588,883
Int. Cl.[6] A63B *21/05;23/12*
U.S. Cl. 482—126 **4 Claims**

1. A chest developer comprising:
a cylinder made from rigid metal and covered with a polyurethane covering, said cylinder comprising a close end at one end, an open end at an opposite end, an axial hole defined between said close end and said open end, a coupling rod extending outwards from said close end and having an outer thread, and two air holes through said close end for permitting outside air to be drawn into said axial hole;
an arched fixed handle covered with a polyurethane covering, having an inner thread at one end threaded onto the outer thread of the coupling rod of said cylinder;
an arched movable handle covered with a polyurethane covering, having an inner thread at one end;
a piston rod inserted into the axial hole of said cylinder and reciprocated by said arched movable handle, said piston rod



comprising an outer thread at one end fastened with a nut and a pair of washers to hold a piston, and a second outer thread at an opposite end threaded into the inner thread of said arched movable handle, said piston having a tapered outer wall gradually reducing toward the close end of said cylinder;

a sealing end cap mounted around said piston rod and fixedly secured to the open end of said cylinder;

a compression spring mounted within the axial hole of said cylinder and stopped between said piston and said sealing end cap, said compression spring being compressed when said arched movable handle is pulled outwards relative to said arched fixed handle.

5,643,161

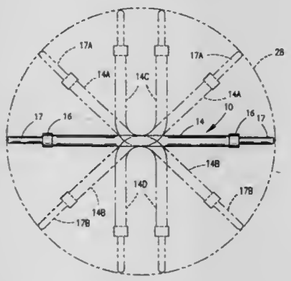
ISOTONIC/ISOMETRIC EXERCISE AND THERAPY SYSTEM

James R. Gordon, Benton, Ill., assignor to Gordon Research & Development, Inc., Pinckneyville, Ill.

Continuation-in-part of Ser. No. 364,280, Dec. 27, 1994, Pat. No. 5,522,783. This application Jan. 23, 1995, Ser. No. 376,385

Int. Cl.[6] A63B *23/14;21/045*

U.S. Cl. 482—127 **6 Claims**



1. A physical therapy and exercise system for therapy exercises by a human being, for use in exercises which entail bending or twisting, the system comprising:

a plurality of elongated, resilient, bendable and twistable therapy and exercise rods formed of an elastomer, each of the exercise rods in the system having different resilience characteristics, and each of the exercise rods having two handles, one handle secured to each end of the exercise rod.

5,643,162

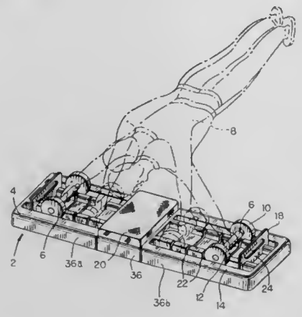
EXERCISE APPARATUS

Jeffrey A. Landers, 29-23 212 St., Bayside, N.Y. 11360, and Milton Phillip Chernack, New York, N.Y., assignors to Jeffrey A. Landers, New York, N.Y.

Filed Dec. 14, 1994, Ser. No. 355,480

Int. Cl.[6] A63B *21/00*

U.S. Cl. 482—131 **10 Claims**



1. An apparatus for performing lateral extension type exercises, comprising a central body portion and a guide means comprising two sections, one of said sections extending laterally from one side of the central body portion and the other of said sections extending laterally from an opposite side of the central body portion, a pair of grip means, each grip means being movable in conjunction with one section of guide means along a path defined thereby, and stop means for preventing further movement of the grip means along the path, said stop means being adjustable as to location along the length of the guide means, wherein the grip means comprises an axle shaft and a pair of wheels rotatably secured to either end thereof, and the guide means comprises a pair of spaced apart rails, each of said rails comprising a longitudinal base portion and two spaced apart parallel side portions extending upwardly from the base portion so as to laterally retain the width of the wheel in either lateral direction.

5,643,163

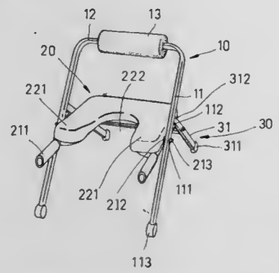
GYMNASTIC APPARATUS

David Chen, P.O. Box 63-150, Taichung, Taiwan

Filed May 14, 1996, Ser. No. 645,745

Int. Cl.[6] A63B *23/00*

U.S. Cl. 482—142 **6 Claims**



1. A gymnastic apparatus comprising:

a waist stand made from a substantially U-shaped frame rod, said waist stand comprising two parallel end rod sections each having a triangular projection, and a transverse intermediate rod section joined between said parallel end rod sections;

a shoulder rack pivoted to said waist stand and connected between said end rod sections for supporting the player's shoulders, said shoulder rack comprising a shoulder cushion at a top side thereof and two handgrips bilaterally disposed in front of said shoulder cushion and substantially aligned with a horizontal plane formed by said shoulder rack, said shoulder cushion having two bearing portions for supporting the player's shoulders and defining a mouth for the passing of the player's head; and

a back support pivoted to said waist stand to support said waist stand in a sloping position and to support said shoulder cushion in a horizontal position.

5,643,164

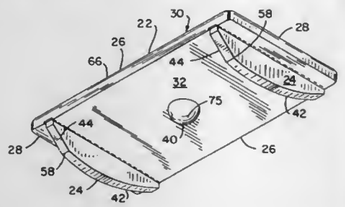
LOWER EXTREMITIES EXERCISE BOARD

Joseph J. Teff, 1336 Stratford Ct., Middleton, Wis. 53562

Filed Dec. 22, 1995, Ser. No. 577,500

Int. Cl.[6] A63B *21/00*

U.S. Cl. 482—146 **4 Claims**



1. An exercise board for rocking on a floor comprising:

a) a rectangular board having an upper surface having a first short side and a second short side and two long sides, the upper surface providing a place upon which a person may stand for performing an exercise;

b) a first rocker connected beneath the board and closely spaced parallel to the first short side; and

c) a second rocker connected beneath the board and closely spaced parallel to the second short side, and spaced from the first rocker, wherein each rocker has a lower profile for engaging the floor, and the lower profile of the first rocker is substantially the same as the lower profile of the second rocker, and wherein the lower profile has an arcuate portion which adjoins a planar portion at a ridge, wherein the arcuate portion extends along more than half the length of the rocker, and wherein the planar portion defines an angle of about 45° to the upper surface, so that when the exercise board is tilted to bring the planar portions of the rocker profiles into engagement with the floor the upper surface is held in a static position at an angle of about 45° to the floor and further comprising a substantially hemispherical projection which is fixed beneath the board which is spaced between the first rocker and the second rocker and wherein there is sufficient space around the projection for placing a foot over the projection to stretch the foot without interference with the first and second rockers.

5,643,165

FRUSTROCONICAL EXERCISING DEVICE

Thomas A. Klekamp, 302 Dean Cir., Bolingbrook, Ill. 60440

Filed Feb. 9, 1996, Ser. No. 599,039

Int. Cl.[6] A63B *22/16*

U.S. Cl. 482—146 **1 Claim**

1. A new and improved saucer for use in exercising various muscle groups, comprising, in combination:

a frustroconical base having a lower end of a first diameter, an upper end of an enlarged diameter and a tapering sidewall therebetween, a seating recess formed within the upper end of the base, the upper end comprising an outer peripheral portion, an inner peripheral portion, a forward portion and a rearward portion;

a first recessed pin having a first orientation positioned within the outer peripheral portion at the rearward portion, a second and a third recess pin of a second orientation positioned within the outer peripheral portion at the forward portion of the upper end of the base;

a first strap having an end secured adjacent to the first recessed pin and having a length comprising a first portion of a hook fastener and a second portion of a pile fastener, the first strap adapted to be threaded through the second recessed pin such that the first portion of the strap comes into contact with the second portion of the strap;

a second strap having an end secured at the outer peripheral portion of the rearward portion of the upper end of the base at a location opposite from the first recessed pin, the second strap having a first portion of a hook fastener and a second portion of a pile fastener, the second strap adapted to be threaded through the first recessed pin such that the first portion of the second strap comes into contact with the second portion of the second strap;

a third strap having an end secured over the end of the second strap, the third strap having a first portion of a hook fastener and a second portion of a pile fastener, the third strap adapted to be threaded through the third recessed pin such that the first portion of the third strap comes into contact with the second portion of the third strap; and

a seat cushion disposed within the seating recess formed within the upper end of the base.

5,643,166

APPARATUS FOR MAKING WOOD TUBING

Mark G. Jarrett, St. Clair Shores, Mich., assignor to Hollowood, Inc., Clinton Township, Mich.

Filed Jul. 26, 1995, Ser. No. 507,107

Int. Cl.[6] B31C *3/00*

U.S. Cl. 493—304 **11 Claims**

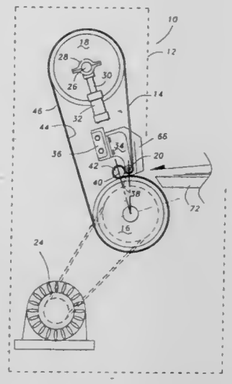
1. Apparatus for forming a tube from flat material comprising:

a support roller rotatable about a first longitudinally extending axis,

an idler roller rotatable about a third axis parallel to said first axis and being disposed in closely spaced relation to said support roller to form a gap,

a belt trained to travel around said rollers and into and out of said gap to form a loop at one side of said gap,

a cylindrical mandrel disposed in said loop for rotation by said belt about a third axis, said belt having directly opposite interior and exterior surfaces in simultaneous contact with said drive roller and with said mandrel at a line of contact disposed in a first plane passing through the said first and third axes and with said opposite interior and exterior surfaces of said belt being in simultaneous contact with said idler roller and said mandrel at a line of contact disposed in a second



plane passing through said second and third axes to form a first portion of a material conveying path between said belt and said mandrel and extending from said first plane to said second plane.

a shoe member disposed to extend longitudinally at one side and in fixed relation to said mandrel and forming a guide surface in proximity to said mandrel and extending circumferentially of said mandrel from said second plane toward said first plane to define a second portion of a material conveying path between said guide surface and said mandrel, said first and second material conveying paths forming a substantially continuous path around said mandrel so that flat material fed into said gap in proximity to said first plane is bent and moved through said material conveying paths around said mandrel, and

said shoe and said idler roller being supported for movement as a unit to open said gap for removal of said mandrel.

5,643,167

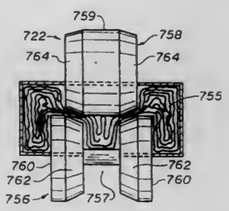
CUSHIONING CONVERSION MACHINE FOR CONVERTING SHEET-LIKE MATERIAL INTO A CUSHIONING PRODUCT

James A. Simmons, Painesville Township, Ohio, assignor to Ranpak Corp., Concord Township, Ohio

Continuation-in-part of Ser. No. 221,624, Apr. 1, 1994. This application Jun. 7, 1995, Ser. No. 482,649

Int. Cl.[6] B65H *45/00*

U.S. Cl. 493—464 **11 Claims**



1. A method for producing a cushioning product, said method comprising the steps of providing a multilayer stock material, and converting the multilayer stock material into a strip of dunnage; wherein the converting step includes feeding the stock material through a shaping member having converging sidewalls so as to cause the layers of stock material to be folded on itself to form a relatively narrow cushioning strip, feeding the folded portion of the narrow cushioning strip through a pair of cooperating rollers which engage the narrow cushioning strip, one of the rollers having a central annular recess on its periphery and the other having a central annular raised portion on its periphery projecting into the recess in the other roller to form a generally U-shaped passage between the rollers for the narrow cushioning strip.

5,643,168

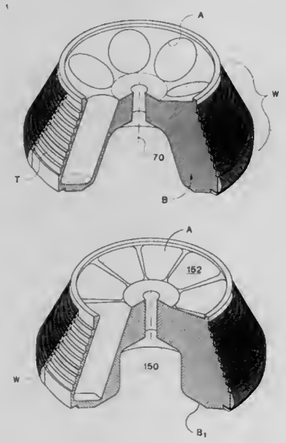
COMPRESSION MOLDED COMPOSITE MATERIAL FIXED ANGLE ROTOR

Alireza Piramoon, Santa Clara; Robert Wedemeyer, Palo Alto, and Michel Mark Fournier, Sacramento, all of Calif., assignors to Piramoon Technologies, Inc., Mt. View, Calif.

Filed May 1, 1995, Ser. No. 431,544

Int. Cl.[6] B04B *5/02;7/08*

U.S. Cl. 494—16 **7 Claims**



1. A fixed angle centrifuge rotor body comprising:

a frustum shaped peripheral contour about a central spin axis between a base end and an apex end;

angled sample tube apertures defined in the rotor body extending from openings in the apex end adjacent the spin axis of the rotor body to bottom portions of the sample tube apertures more remote from the spin axis of the rotor body;

the rotor body formed from resin cured about discontinuous composite fibers to form resin cured discontinuous composite fibers with a major axis of the discontinuous composite fibers disposed normal to the spin axis of the rotor body interior of the rotor body;

the discontinuous composite fibers exceeding 40 weight percent of the resin cured discontinuous composite fibers and having no visible layering between respective fibers;

the resin cured discontinuous composite fibers having minor vertical excursion parallel to the spin axis of the rotor body and relatively no kinking along their respective length; and,

the resin cured discontinuous composite fibers disposed parallel to surfaces of and about the sample tube apertures in the rotor body.

5,643,169

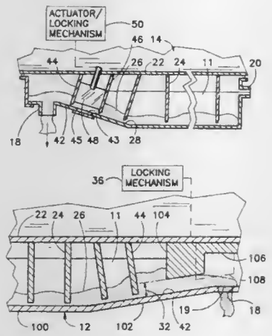
DECANTER CENTRIFUGE WITH ADJUSTABLE GATE CONTROL

Woon-Fong Leung, Sherborn; Ascher H. Shapiro, Jamaica Plain, and Robert S. Yarnell, Franklin, all of Mass., assignors to Baker Hughes Incorporated, Houston, Tex.

Filed Jun. 6, 1995, Ser. No. 468,205

Int. Cl.[6] B04B *1/20;11/00*

U.S. Cl. 494—53 **26 Claims**



1. A decanter centrifuge comprising:

a bowl rotatable about a longitudinal axis, said bowl having a cake discharge opening at one end and a liquid phase discharge opening;

a conveyor having at least a portion disposed inside said bowl for rotation about said longitudinal axis at an angular speed different from an angular rotational speed of said bowl, said conveyor including a helical screw disposed inside said bowl for scrolling a deposited solids cake layer along an inner surface of said bowl towards said cake discharge opening, said helical screw including a plurality of screw wraps, said screw wraps including a last screw wrap which is most proximate to said cake discharge opening, said screw wraps further including a penultimate screw wrap disposed next to said last screw wrap on a side thereof opposite said cake discharge opening;

a feed element extending into said bowl and said conveyor for delivering a feed slurry into a pool inside said bowl; and

an adjustable gating element mounted to said conveyor between said penultimate screw wrap and said cake discharge opening, said gating element being spaced a variable and adjustable predeterminable distance from said inner surface of said bowl.

5,643,170

METHOD FOR ISOLATING, IMMOBILIZING AND RENDERING WASTE NON-LEACHABLE

Miles W. Dean, P.O. Box 201341, Anchorage, Ak. 99520

Continuation of Ser. No. 319,169, Oct. 6, 1994, Pat. No. 5,569,811. This application May 29, 1996, Ser. No. 655,179

Int. Cl.[6] A62D *3/00;* **B09B** *3/00;* **G21F** *9/34*

U.S. Cl. 588—252 **19 Claims**

1. An encapsulation material to isolate and render immobile contaminated solids which comprises a mixture of a molten paraffinic hydrocarbon having from about 20 to about 35 carbon atoms which is normally solid at ambient conditions and a sufficient amount of zeolite to capture the amount of contaminant present on the solids.

5,643,171

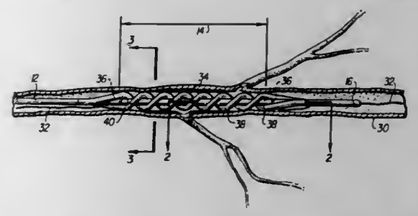
METHOD AND APPARATUS FOR UNIFORM RADIATION TREATMENT OF VASCULAR LUMENS

Anthony J. Bradshaw, Missouri City, and Albert E. Raizner, Houston, both of Tex., assignors to NeoCardia, LLC, Houston, Tex.

Continuation-in-part of Ser. No. 57,322, May 4, 1993. This application Nov. 15, 1994, Ser. No. 339,950

Int. Cl.[6] A61N *5/00*

U.S. Cl. 600—1 **24 Claims**



1. An apparatus for localized intravascular radiotherapy of a tortuous blood vessel, such as a coronary artery, comprising:

a catheter comprising an elongate member having a proximal section and a distal section, the distal section including a distal tip, said catheter being sized and of sufficient flexibility for introduction into a lumen of a patient's vascular system and advancement therethrough until the distal tip is disposed near a predetermined target area of tissue along the wall of the tortuous blood vessel, said elongate member having a longitudinal bore, the longitudinal bore having an opening in the proximal section and terminating proximate to the distal tip to form a treatment channel within said catheter for advancement of a radioactive source wire therein; and

means for substantially centering the treatment channel radially within the lumen of the tortuous blood vessel over a predetermined length of treatment channel despite curvature of the blood vessel, in at least said predetermined target area;

whereby a radioactive source wire, including a distal end having a radioactive source assembled thereto, when advanced along the treatment channel until the radioactive source is disposed at the target area, will have said radioactive source maintained substantially at the radial center of the lumen throughout the target area for delivery of a substantially uniform dosage of radiation to tissue at the wall of the blood vessel in the target area circumferentially about said source throughout a predetermined treatment interval.

5,643,172

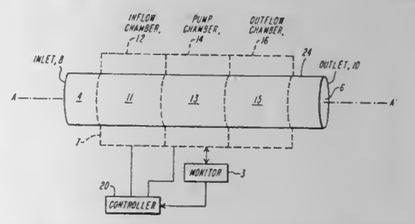
TUBULAR CIRCULATORY ASSIST DEVICE

Robert T. V. Kung, Andover, Mass., and Gerard Champsaur, Lyons, France, assignors to Abiomed R & D, Inc., Danvers, Mass.

Filed Mar. 6, 1995, Ser. No. 398,900

Int. Cl.[6] A61M *1/12*

U.S. Cl. 600—16 **9 Claims**



1. A circulatory support apparatus for insertion into a pathway to provide pulsatile fluid flow through said pathway, comprising:

a tube formed of a flexible and restrictable material elongated along a first axis, said tube having an inlet for coupling to said pathway, an outlet for coupling to said pathway, an outer circumferential surface, a lumen within said tube connecting the inlet and the outlet and extending beyond said outlet at one end to form a lumen extension, said tube having first, second, and third segments,

first restricting means for selectively restricting the diameter of said lumen in said first segment of said tube distal the inlet,

second restricting means for restricting the diameter of said lumen in said second segment of said tube proximal the outlet,

third restricting means for selectively restricting the diameter of said lumen in said third segment of said tube positioned between said first and said second restricting means,

a first controller coupled with said first restricting means and said third restricting means for sequentially controlling said first restricting means and said third restricting means, such that restriction of said lumen in said third segment is phase delayed with respect to restriction of said lumen in said first segment, and

a second controller for passively controlling the restriction of said second restricting means to maintain flow through said second restricting means within a predetermined range.

5,643,173

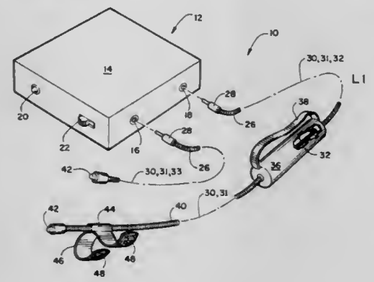
METHOD AND APPARATUS FOR STRESS RELIEF

William F. Welles, 8343 Foothill Blvd., Pine Valley, Calif. 91962

Filed Sep. 1, 1995, Ser. No. 522,626

Int. Cl.[6] A61M *21/00*

U.S. Cl. 600—26 **8 Claims**



1. Stress relief apparatus comprising:

a square wave generator assembly having means for emitting an electrical square wave pattern in the 100 HZ–200 KHZ range;

a source of electrical power connected to said square wave generator assembly;

a first light emitting diode (LED);

a first closed circuit for transmitting an electrical current from said square wave generator assembly to said first LED; said first closed circuit having a preselected length L1;

a first human body ground member and means for transmitting an electrical square wave to said first human body ground member from said square wave generator assembly;

a second light emitting diode (LED);

a second closed circuit for transmitting an electrical current from said square wave generator assembly to said second LED, said second closed circuit having a preselected length L1; and

a second human body ground member and means electrically connecting it to ground in said square wave generator assembly.

5,643,174

ENDOSCOPIC GUIDE TUBE WITH EMBEDDED COIL SPRING

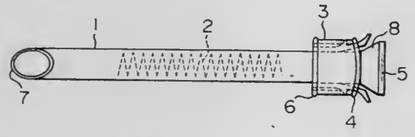
Manabu Yamamoto, Tokyo; Zenetu Suzuki, and Yasunobu Izumi, both of Akita, all of Japan, assignors to Sumitomo Bakelite Company Limited, Tokyo, Japan

Filed Aug. 8, 1994, Ser. No. 286,199

Claims priority, application Japan, Aug. 18, 1993, 5-204279; Dec. 15, 1993, 5-314754

Int. Cl.[6] A61B *1/04*

U.S. Cl. 600—114 **20 Claims**



1. A guide tube for an endoscope, the guide tube comprising:

a tube body having a throughhole penetrated therethrough in an axial direction and a mouthpiece provided at a rearward end of the tube body, the tube body including a tube wall and an inner surface; and

a coil spring substantially completely embedded in the tube wall such that individual coils are surrounded by tube wall material and the inner surface is substantially smooth so as to prevent catching of the endoscope as it passes;

the tube body being cut at a slant to the axial direction at a forward end;

the mouthpiece having one of a circular cross-sectional shape and an elliptical cross-sectional shape, and including a rib at the forward end and a flange at the rearward end, the flange including a sealing film member with a slit or a perforation at the center.

5,643,175

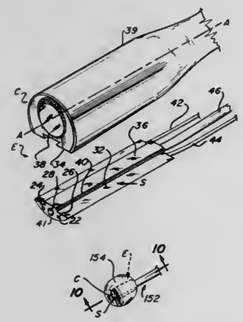
STERILIZABLE ENDOSCOPE WITH SEPARABLE DISPOSABLE TUBE ASSEMBLY

Edwin L. Adair, 317 Paragon Way, Castle Pines Village, Colo. 80104

Continuation-in-part of Ser. No. 333,360, Nov. 2, 1994, Pat. No. 5,489,256, which is a continuation of Ser. No. 938,629, Sep. 1, 1992, abandoned. This application Feb. 5, 1996, Ser. No. 596,775

Int. Cl.[6] A61B *1/00*

U.S. Cl. 600—133 **6 Claims**



1. An improved endoscope comprising:

a first segment comprising a substantially cylindrical capsule including distal and proximal ends and a first curved exterior surface, said capsule further including a transparent window at said distal end and a first substantially planar mating surface opposite said first exterior surface;

an image sensor mounted adjacent said window and within said first segment;

at least one image transmitting cable connectable to said image sensor and extending proximally from said first segment for transmitting an image signal from said image sensor to a video control unit and then to a remote image display device;

at least one light transmitting fiber having a distal end adjacent said window within said first segment and extending proximally from said first segment for transmitting light to a surgical site from a remote light source;

a second segment comprising a separable disposable channel section having at least one longitudinal opening for transmitting fluids or for receiving an operative instrument and further having a second curved exterior surface and a second substantially planar mating surface opposite said second exterior surface, said second substantially planar mating surface being releasably attachable to said first substantially planar mating surface of said capsule such that there is formed a substantially planar interface between said first and second segments;

an umbilicated balloon catheter having a tubular wall with an inflatable balloon adjacent a distal end thereof, said distal end of said balloon catheter being positioned distally beyond said distal end of said first segment; and

wherein said first and second segments, when attached along said first and second mating surfaces, together form a cylindrical endoscope having a substantially contiguous smooth curved exterior surface and a substantially circular cross-sectional shape, such that after use on a patient, said second segment is disposable while said first segment is sterilizable for reuse with a new second segment on another patient.

5,643,176

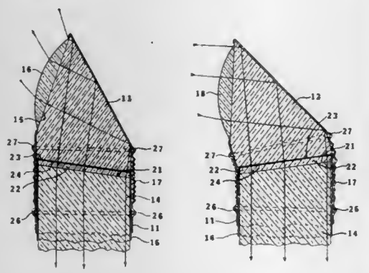
ENDOSCOPIC INSTRUMENT WITH VARIABLE VIEWING ANGLE

Maxim D. Persidsky, San Francisco, Calif., assignor to Power Analytics Corporation, West Sacramento, Calif.

Filed Feb. 1, 1995, Ser. No. 381,806

Int. Cl.[6] A61B *1/06*

U.S. Cl. 600—173 **15 Claims**



1. An endoscopic instrument comprising: an axially elongated image guide having an inclined surface at one end thereof, a prism having a surface in rotational contact with the inclined surface for directing optical images from an external field of view through the image guide, and means for rotating the image guide relative to the prism with the inclined surface of the image guide in contact with the surface of the prism to thereby tilt the prism relative to the rod and change the field of view from which images are directed through the image guide.

5,643,177

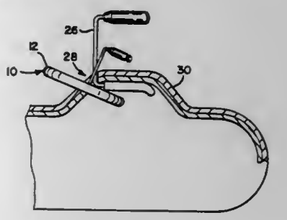
METHOD FOR USING AN ABDOMINAL LIFT DEVICE

Mark S. Ortiz, Milford, and Mark G. Steckel, Maineville, both of Ohio, assignors to Ethicon, Inc., Cincinnati, Ohio

Division of Ser. No. 108,895, Aug. 18, 1993, Pat. No. 5,398,671. This application Dec. 29, 1994, Ser. No. 365,752

Int. Cl.[6] A61B *1/32;1/313*

U.S. Cl. 600—204 **3 Claims**



1. A method for establishing a pneumoperitoneum comprising the following steps:

a) creating an opening in the abdominal wall extending into the peritoneal cavity;

b) inserting a starter lift device into the opening and lifting the starter lift so as to slightly lift the abdominal wall thereby creating a space under the wall;

c) inserting a separate abdominal lift device into said opening, said abdominal lift device having a curved lift portion terminating in a free end, and said insertion step being initiated by inserting said free end through said opening and into the space under the abdominal wall;

d) thereafter rotating the abdominal lift device until the curved lift portion is fully inserted within the peritoneal cavity;

e) removing the starter lift device; and

f) elevating the abdominal lift device in order to create an open space in the peritoneal cavity.

5,643,178

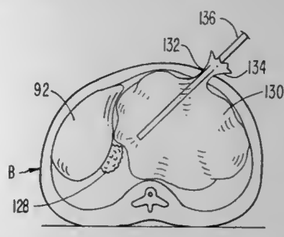
METHOD FOR PERITONEAL RETRATION

Frederic H. Moll, San Francisco, and Albert K. Chin, Palo Alto, both of Calif., assignors to Origin Medsystems, Inc., Menlo Park, Calif.

Division of Ser. No. 62,707, May 18, 1993, Pat. No. 5,520,609, which is a continuation of Ser. No. 706,781, May 29, 1991, abandoned. This application May 26, 1995, Ser. No. 452,066

Int. Cl.[6] A61B *17/02*

U.S. Cl. 600—204 **4 Claims**



1. A method for lifting the abdominal wall for peritoneal retraction, said method comprising:

(a) inserting a balloon through a small laparoscopic incision of limited area in the abdominal wall, said balloon being expansible from the exterior of the abdominal wall laterally beyond the limited area of the laparoscopic incision to interiorly engage an extensive area of the abdominal wall, and being fabricated of a generally inelastic flexible material shaped to

expand laterally into engagement with an extended area of the abdominal wall upon inflation; and,

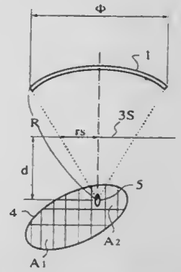
(b) expanding the balloon against the abdominal wall to impart lifting force to the abdominal wall through the balloon.

5,643,179

METHOD AND APPARATUS FOR ULTRASONIC MEDICAL TREATMENT WITH OPTIMUM ULTRASONIC IRRADIATION CONTROL

Katsuhiko Fujimoto, Kanagawa-ken, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 28, 1994, Ser. No. 365,149
Claims priority, application Japan, Dec. 28, 1993, 5-336806
Int. Cl.[6] A61B *8/00*
U.S. Cl. 601—2 **20 Claims**



1. An ultrasonic medical treatment apparatus, comprising:

an applicator having an ultrasonic wave generation source for irradiating ultrasonic waves to a treatment target portion within a body to be examined;

energy obtaining means for obtaining an ultrasonic energy of the ultrasonic waves irradiated at a tissue boundary surface of the body to be examined; and

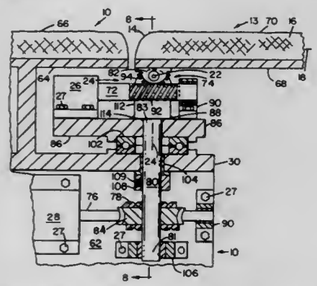
control means for controlling the applicator such that the ultrasonic energy at the tissue boundary surface obtained by the energy obtaining means becomes less than a prescribed threshold.

5,643,180

PASSIVE BODY-MOTION GENERATING, APPARATUS AND PROCEDURE

William A. McIlwain, 7 S. Briarcliff Rd., Bristol, Tenn. 37620

Continuation of Ser. No. 977,820, Nov. 17, 1992, abandoned.
This application Jan. 17, 1995, Ser. No. 373,473
Int. Cl.[6] A61H *1/00*
U.S. Cl. 601—24 **9 Claims**



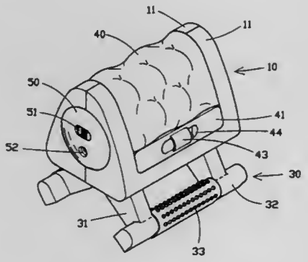
1. A passive body-motion generating device particularly adapted for moving a patient's legs independently of each other through natural hip joint articulation, said device comprising body support means, a pair of leg support means each having a proximal end, a distal end and a longitudinal rest axis, separate, independently operable hinge means pivotally connecting the proximal end of each said leg support means to said body support means, each said hinge means having first and second axes of rotation oriented at substantially right angles to each other, said first axis of rotation affording a generally vertical pivotal action to the leg support means, said second axis of rotation affording a generally lateral pivotal action to the leg support means, and independently operable first and second power means on said device associated with each said hinge means for independently operating the same and moving the leg support means independently about each of its said two axes of rotation either one at a time or in tandem, the tandem rotation about said two axes being operative to selectively describe a plane or a curved surface with the leg support means, wherein said first power means has first drive shaft means connected to linkage means which is connected to the leg support means, and said second power means has second drive shaft means provided with first gear means, hinge pin means pivotally mounted on said body support means and having a pivotal connection to the leg support means to provide said generally vertical pivotal action thereto, and second gear means on said hinge pin means engaging said first gear means for rotating said hinge pin means by said second power means to provide said generally lateral pivotal action to the leg support means.

5,643,181

MULTIPURPOSE MASSAGING APPARATUS

Kenny Lin, 7F, No. 11, Lane 93, Tai-Lin Road, Sec. 2, Tai-Shan Hsiang, Taipei Hsien, Taiwan

Filed Jan. 29, 1996, Ser. No. 593,402
Int. Cl.[6] A61H *15/00*
U.S. Cl. 601—112 **3 Claims**



1. A multipurpose massaging apparatus comprising:

a housing, said housing comprising two symmetrical half shells connected together by screws, having a top open chamber, two opposite bottom holes, two projecting blocks at two opposite lateral sides outside said bottom holes, and two end caps respectively mounted on said projecting blocks;

a rotatable massaging barrel mounted in said top open chamber of said housing, said massaging barrel comprising pairs of triangular blocks raised from the periphery, a plurality of pivots respectively and horizontally mounted in each pair of triangular blocks, and a plurality of rotary elements respectively rotated about said pivots of said massaging barrel;

a motor for driving said massaging barrel in rotation in said top open chamber of said housing;

an electrical socket mounted in one of said two end caps of said housing for connection to a power supply;

an on/off switch mounted on said one of said two end cads of said housing and electrically connected to said motor and said electrical socket;

a flexible cover mounted on said housing and covering said rotary elements of said massaging barrel; and

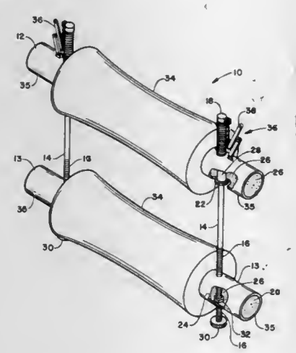
two stands respectively mounted in said bottom holes of said housing and movable relative to each other between a collapsed position, in which said two stands are close together to allow said massaging apparatus to be hand held, and an extended position, in which said two stands are spatially disposed to support said massaging apparatus on a surface, each of said two stands comprising an elongated horizontal base and two parallel connecting bars perpendicularly extending from said base, each connecting bar having a top end inserted into one of said two opposite bottom holes of said housing and rotatable about a respective pivot axis, said top end of each of said two parallel connecting bars having a slope and an arched portion at two opposite sides, said arched portion of said connecting bars of one of said two stands being stopped against said arched portion of the other of said two stands when said stands are moved to said extended position, said slopes of said connecting bars of said two stands being respectively stopped against said two projecting blocks of said housing and said elongated horizontal bases thereof being abutted against each other when said two stands are moved to said collapsed position.

5,643,182

ROLLER MASSAGER

James E. Engel, 8148 Genesee Ave., No. 58, San Diego, Calif. 92122

Filed Oct. 16, 1995, Ser. No. 543,804
Int. Cl.[6] A61H *15/00*
U.S. Cl. 601—119 **19 Claims**



1. A roller massager for simultaneously massaging opposite sides of bodily extremities, torso and back which comprises:

first and second spaced elongated shafts;

two spaced generally parallel tension rods penetrating through said first and second shafts;

at least one massage roller surrounding a central portion of each of said first and second shafts between said tension rods;

said massage rollers being rotatable relative to said shafts;

at least one of said first and second shafts having handle portions extending beyond tension rod penetration locations;

said first shaft being lockable to said tension rods at a selected position;

said second shaft being slidable along said tension rods; and

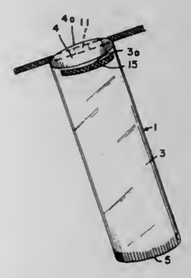
compression spring means for biasing said second shaft toward said first shaft.

5,643,183

WATERPROOF COVER FOR CASTS AND BANDAGES

Joseph C. Hill, 41 High Ridge Rd., Boxford, Mass. 01921

Filed Jun. 29, 1995, Ser. No. 496,362
Int. Cl.[6] A61F *5/00*
U.S. Cl. 602—3 **13 Claims**



1. A waterproof cover for casts and bandages to be placed on extremities of a user said cover comprising:

an elongated sleeve of waterproof plastic, said sleeve having a length greater than its width, said sleeve having a face side (**3**) and an obverse side (**4**) and a distal end (**5**) and a proximal end (**7**);

means for sealing together the distal ends of the face and obverse sides of said sleeve to form a water tight seal;

a first strip (**15**) disposed on and permanently attached to the proximal end of the face side of said sleeve, said first strip (**15**) having an array of plastic hooks disposed thereon, said first strip (**15**) extending substantially across the entire width of said face side (**3**) of said sleeve and said hooks facing outwardly from said sleeve;

a second strip (**9**) disposed on the proximal end (**7**) of said obverse side (**4**) of said sleeve, said second strip (**9**) having a face side, an obverse side and a medial section, said strip further having two distal ends, a covering of soft fleece forming loops disposed on the entire length of said face side of said second strip, said second strip having a length greater than the width of said sleeve, said greater length forming extensions at said distal ends, the fleece on each of said extensions directly engaging the hooks on said first strip (**15**);

means (**11**) for joining said medial section of said second strip to said first strip on said obverse side of said sleeve thereby leaving the distal ends of said second strip (**9**) unrestricted in movement and to allow portions of said obverse side of said sleeve to be folded and gathered about said sleeve directly beneath each of said distal ends of said second strip and secured in place by attaching each of said distal ends of said second strip to said first strip, thereby to form a water resistant cover when placed upon an extremity of a user.

5,643,184

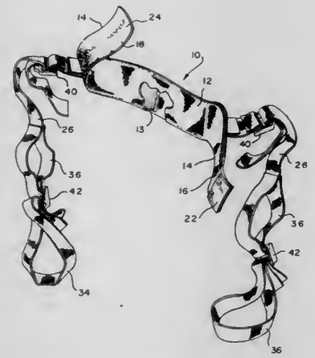
BACK SUPPORT WITH KNEE AND FOOT ENGAGING STRAPS

Victor Toso, 2438 Como Ave., SE., St. Paul, Minn. 55108

Continuation of Ser. No. 106,567, Aug. 16, 1993, abandoned.
This application Oct. 16, 1995, Ser. No. 543,643
Int. Cl.[6] A47C *20/00;* **A61F** *5/00*
U.S. Cl. 602—19 **20 Claims**

1. A back support device and integrally formed attachment member for supporting the lower back region of a user in a seated position comprising:

a back support panel spanning the lower back region of a user, the back support panel is sized to substantially span the width of a lower back of a user and also to span the height of the lumbar portion of the user, accordingly, the back support panel includes support elements designed to provide support and comfort to the user;



a pair of elongated straps having thick ends attached to and extending from opposite ends of said back support panel; said straps including a means for engaging the knees of the user formed proximate a mid portion of said elongated straps and said straps including means for engaging the feet of the user at the free ends of said elongated straps; said integrally formed attachment member including an adjustable belt extending from said opposite sides of said back support panel proximate said fixed ends of said elongated straps and said opposite ends of said back support panel, wherein said belt is distinct from the back support panel and said pair of straps;

said belt including an adjustable closure to be fastened around the waist of the user to maintain the back supporting member in place against the lower back region of the user; and,

whereby the force of said user's legs on the straps pulls said back supporting panel against the lower back of said user, enabling said user to sit upright comfortably for extended periods of time.

5,643,185

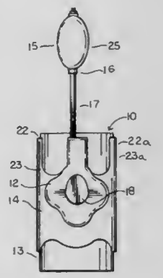
KNEE AND ELBOW JOINT BRACE

Randy C. Watson, 599 Lake Tahoe Blvd. Aspen Building, Suite B-1, South Lake Tahoe, Calif. 96150, and Richard L. Bajocchi, 630 Alma Way, Zephyr Cove, Nev. 89448

Filed Oct. 31, 1995, Ser. No. 550,608

Int. Cl.[6] A61F *5/00*

U.S. Cl. 602—26 **3 Claims**



1. A knee and elbow joint brace apparatus, for use in providing a lightweight protection and support unit for individuals desiring firm protection and support, comprising:

flexible means;

said flexible means comprising stretchable wrapping portion to be positioned around the back of the joint area of an individual;

said flexible means further comprising a brace that can expand as necessary to enable the apparatus to fit around the limbs of an individual;

said flexible means having at least one sizing means for tightening or loosening said flexible means as desired by the individual using the apparatus;

said sizing means comprising at least one open and closed loop strapping device to permit tightening and loosening said apparatus;

a pneumatic chamber attached to said flexible means to be positioned over the joint area forming an encircling means around the joint area;

said pneumatic chamber comprising an expandable unit that is attached to said front portion of said flexible means to create an encircling unit around the joint area;

said pneumatic chamber having mesh means for attaching and positioning said pneumatic chamber to said apparatus;

said mesh means of said pneumatic chamber comprising which covers at least part of the top of said pneumatic chamber and is attached to said flexible material;

said pneumatic chamber having an aperture located at the center of said pneumatic chamber to be positioned over the joint to allow freedom of movement by said joint;

said aperture in said center of said pneumatic chamber comprising a circular configuration at its lower portion and comprising an oblong shape at its upper portion for providing superior biomedical function of the joint being supported;

said aperture having reinforcement for assisting in sealing and shaping said center aperture of said pneumatic chamber;

said pneumatic chamber further having air flow direction means for assisting the ideal shape for said pneumatic chamber;

said air flow direction means of said pneumatic chamber comprising reinforced layers forming flaring outside edges on said pneumatic chamber;

said pneumatic chamber further having valving means for permitting the inflation and deflation of said pneumatic chamber as desired by the individual using said apparatus; and

shape enhancing means for maintaining the shape of said knee and elbow joint brace apparatus.

5,643,186

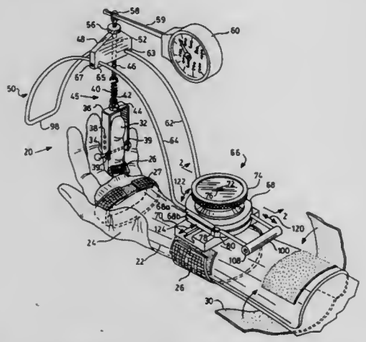
ARCUATE DYNAMIC TRACTION SPLINT

Shrikant J. Chinchalkar, 172 Charterhouse Crescent, Ancaster, Ontario, Canada

Filed Sep. 21, 1995, Ser. No. 531,510

Int. Cl.[6] A61H *1/00*

U.S. Cl. 602—32 **30 Claims**



30. A dynamic traction device for treating a finger having an injured joint, and cooperating with traction means adapted to be secured to the finger distal to the injured joint, the traction means having a free end adapted to be placed in tension so as to apply a distraction force to the injured joint, the device comprising:

an arcuate track formed into an arch having a selected radius of curvature which exceeds the length of the injured finger, and which extends between a distal end spaced from the fingertip and a proximal end adjacent the associated wrist;

a yoke adapted to support said traction means in tension, the yoke being mounted to the track to slidingly engage the track so as to be movable along said arch;

and track securing means adapted to secure said track to a wrist, the track securing means being slidably mounted for translational movement across the wrist onto a supporting base and adapted to adjust the relative transverse position of the arcuate track to the base and thereby to position the arch over a finger with an injured joint.

5,643,187

DRESSING

Roland Næstoft, Allerød, and Hanne Jensen, Copenhagen, both of Denmark, assignors to Coloplast A/S, Denmark

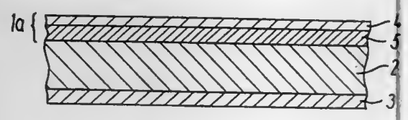
PCT No. PCT/DK93/00011, § 371 Date Jan. 11, 1995, § 102(e) Date Jan. 11, 1995, PCT Pub. No. WO93/13813, PCT Pub. Date Jul. 22, 1993

PCT Filed Jan. 15, 1993, Ser. No. 256,593

Claims priority, application Denmark, Jan. 17, 1992, 0054/92

Int. Cl.[6] A61F *13/00*

U.S. Cl. 602—43 **22 Claims**



1. A dressing comprising a skin friendly, pressure-sensitive adhesive layer which is coated on one side with a non-adhesive flexible polymer film and characterized in that the polymer film consists of two film layers in the direction away from the adhesive layer, the outermost film layer having a thickness not exceeding 10 μm and being of a material which is hard relative to the innermost film layer and said innermost film layer being thicker than said outermost film layer.

5,643,188

LINER-PROTECTED ADHESIVE STRIP

Robert J. Oliveira, 200 Crestview Dr., Maplewood, Minn. 55119

Continuation of Ser. No. 61,807, May 17, 1993, abandoned, which is a continuation-in-part of Ser. No. 803,576, Dec. 9, 1991, abandoned. This application Nov. 21, 1994, Ser. No. 343,351

The portion of the term of this patent subsequent to Apr. 29, 2013, has been disclaimed.

Int. Cl.[6] B65D *73/00*; A61F *13/00*; A61B *19/02*

U.S. Cl. 602—54 **10 Claims**

1. As a new article of manufacture, a pressure-sensitive adhesive-coated strip having first and second end portions, the adhesive at the first end portion being in contact with sheet of release liner and the adhesive at the second end portion being in contact with the second wing of a folded release liner having ends with a single fold therebetween forming first and second wings, the first wing extending beyond both the second wing of the folded release liner and the second end portion of the adhesive-coated strip, the folded release liner overlying the sheet release liner, the sheet release liner and the folded release liner being treated so that the adhesion of the adhesive-coated strip to the folded release liner is greater than the adhesion of the adhesive-coated strip to the sheet release liner, whereby a user can grip the distal portion of the first wing and lift it so as to peel the first end portion of the adhesive-coated strip from the sheet release liner, apply said first end portion to a first desired location, and then pull on said distal portion to peel the folded release liner from the second end portion of the adhesive-coated strip and apply the second end portion to a second desired location.

5,643,189

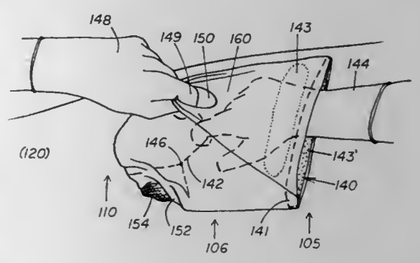
COMPOSITE WOUND DRESSING INCLUDING INVERSION MEANS

Michael A. Masini, 4817 Hillway Ct., Ann Arbor, Mich. 48105

Filed Dec. 7, 1994, Ser. No. 350,822

Int. Cl.[6] A61F *13/00*

U.S. Cl. 602—58 **13 Claims**



1. A composite wound dressing, comprising:

an absorbent pad having a patient-facing surface and a second surface facing away from the patient;

a non-stick layer covering the patient-facing surface of the absorbent pad; and

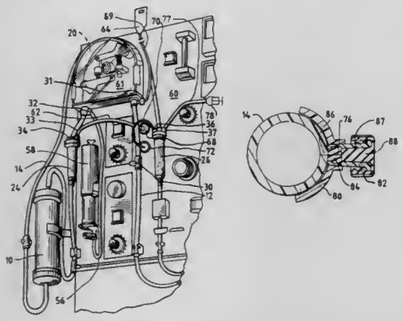
a fluid-impermeable layer having a first surface which faces the patient and a second surface which faces away from the patient, the area of the fluid-impermeable layer being greater than that of the absorbent pad, the second surface of the absorbent pad being affixed to the first surface of the fluid-impermeable layer such that the fluid-impermeable layer extends beyond the area of the pad around at least a portion of its periphery, the first surface of the fluid-impermeable layer which extends beyond the periphery of the absorbent pad further including an adhesive layer for securement of the dressing directly to the patient.

5,643,190

FLOW-THROUGH TREATMENT DEVICE

David S. Utterberg, Seattle, Wash., assignor to Medisystems Technology Corporation, Las Vegas, Nev.

Filed Jan. 17, 1995, Ser. No. 373,598
Int. Cl.[6] A61M *37/00*
U.S. Cl. 604—4 22 Claims



1. A flow-through blood treatment device, which comprises: a housing, a blood inlet, a blood outlet, at least one membrane in the housing defining a blood flow path between said blood inlet and outlet on one side of said membrane, and a second flow path defined on the other side of said membrane; at least one of said blood inlet and outlet being connected to blood flow tubing, said blood flow tubing carrying a connector, spaced from said housing, for access to the vascular system of a patient, said blood flow tubing defining at least one locking connection site along its length permitting repeated, temporary connection and subsequent disconnection with branch conduits communicating with said blood flow tubing, said branch conduits being adapted for connection with sources of additive solutions or measuring devices, said blood flow tubing being free of permanently attached, flexible branch tubings, said locking connection site comprising a piercable elastomer, resealable partition, said partition being positioned adjacent to the lumen of said blood flow tubing whereby a substantial recess which might cause stagnant blood is prevented.

5,643,191

CARDIOPLEGIA DELIVERY SYSTEM AND METHOD FOR CONVERTING FROM WARM CARDIOPLEGIA TO COLD CARDIOPLEGIA

Gerald D. Buckberg, Los Angeles; Russell A. Heimstaedt, Irvine, and John M. Taylor, Trabuco Canyon, all of Calif., assignors to Sorin Biomedical Inc., Irvine, Calif.

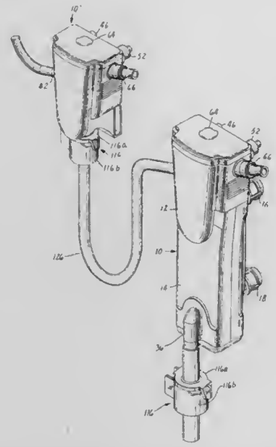
Filed Jan. 26, 1995, Ser. No. 381,690
Int. Cl.[6] A61M *37/00;* A61F *7/12*
U.S. Cl. 604—4 6 Claims

1. A cardioplegia delivery system for delivering cardioplegia fluid including blood, a blood and cardioplegia solution mixture, or cardioplegia solution, the system comprising:

a first delivery unit having a housing with cardioplegia fluid inlet and outlet ports, the cardioplegia fluid outlet port being adapted for connection in a manner allowing delivery of the cardioplegia fluid to a patient, the delivery unit further having an air removal element within the housing;

a second delivery unit having a housing defining a cardioplegia fluid flow path having cardioplegia fluid inlet and outlet ports at opposite ends thereof, the second delivery unit further having an air removal element within the housing and a heat exchange element adjacent the cardioplegia fluid flow path; and

a disconnect valve having first and second detachable portions, the first portion having a shut-off valve configured to block the flow of cardioplegia fluid through the first portion when



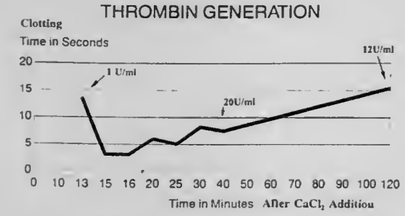
the first portion is detached from the second portion the first portion being connected to the inlet of the first delivery unit, the second portion being connected to the outlet of the second delivery unit.

5,643,192

AUTOLOGOUS FIBRIN GLUE AND METHODS FOR ITS PREPARATION AND USE

Jack Hirsh, Hamilton; Marilyn Johnston, Millagrove, and Kevin Teoh, Ancaster, all of Canada, assignors to Hamilton Civic Hospitals Research Development, Inc.

Filed Apr. 6, 1995, Ser. No. 417,880
Int. Cl.[6] A61M *37/00*
U.S. Cl. 604—4 15 Claims



1. An improved fibrin glue of the type including a fibrinogen component recovered from a single donor in combination with a thrombin component, wherein the improvement comprises thrombin in the thrombin component obtained solely from the same single donor.

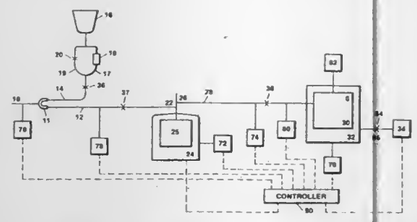
5,643,193

APPARATUS FOR COLLECTION WASHING AND REINFUSION OF SHED BLOOD

Jean Papillon, St. Germain-En-Laye, and Etienne Pages, Saint Avertin, both of France, assignors to Haemonetics Corporation, Braintree, Mass.

Filed Dec. 13, 1995, Ser. No. 571,496
Int. Cl.[6] A61M *37/00*
U.S. Cl. 604—6 14 Claims

1. An apparatus for processing blood from a surgical site on a patient, the apparatus comprising:



a. a centrifuge, for separating the blood into a plurality of components and isolating at least one of the components, the centrifuge comprising

i. a centrifuge bowl having an inlet port, a floor, a separation chamber, and an outlet port through which fluid exits the centrifuge bowl; and

ii. means for rotating the centrifuge bowl;

b. a receptacle for receiving fluid from the outlet port;

c. a first conduit for conveying blood from the site to the inlet port;

d. a second conduit for conveying fluid from the outlet port to the receptacle; and

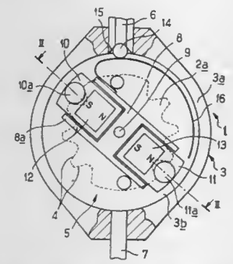
e. a vacuum source, coupled to the separation chamber through the interior of the receptacle.

5,643,194

SUBCUTANEOUS VALVE AND DEVICE FOR EXTERNALLY SETTING IT

Philippe Negre, Bures-sur-Yvette, France, assignor to Sophysa, Orsay, France

Filed Jun. 26, 1995, Ser. No. 494,793
Claims priority, application France, Jun. 24, 1994, 94 07790
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—8 6 Claims



1. A subcutaneous valve structure for the external regulation of fluid flow,

a) said subcutaneous valve structure, including a body with a periphery and comprising a substantially cylindrical and flat internal chamber having a central axis and a lateral wall;

b) an inlet pipe with an inner end and a drain pipe formed in the lateral wall of said chamber and adapted to be connected respectively to a catheter for supplying a fluid and to a catheter for draining a fluid from said chamber;

c) a non-return valve formed at the inner end of the inlet pipe and comprising a moveable valve element and a valve seat, said moveable valve element closing said valve when the valve element is engaged in the valve seat;

d) a rotor mounted in said chamber to rotate about said central axis;

e) a curved leaf spring fixed to said rotor generally parallel to the lateral wall of the chamber and urging the valve element into the valve seat;

f) locking means for locking the rotor in predetermined selected positions;

g) two micromagnets of predetermined polarities mounted in spaced relation in the rotor on opposite sides of said central axis;

h) the micromagnets being mounted to move linearly in said rotor in a substantially radial direction to actuate said locking means;

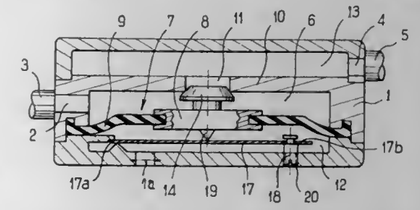
i) whereby said locking means cannot be altered by strong external unidirectional magnetic fields and whereby said locking means can be locked only by an applied bidirectional magnetic field of predetermined strength.

5,643,195

DEVICE FOR REGULATING THE FLOW OF CEREBROSPINAL FLUID IN A DRAINAGE CIRCUIT

Jean-Baptiste Drevet, 45 boulevard Saint-Michel 75005, Paris, and Serge Glories, Le Laurier Palaja 11570, Cazilhac, both of France

PCT No. PCT/FR93/01176, § 371 Date May 17, 1995, § 102(e) Date May 17, 1995, PCT Pub. No. WO94/12222, PCT Pub. Date Jun. 9, 1994
PCT Filed Nov. 30, 1993, Ser. No. 424,490
Claims priority, application France, Nov. 30, 1992, 92 14413
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—9 16 Claims



1. A device for regulating the flow of an organic liquid between a production site and a resorption site of a patient in a drainage circuit that extends between the two sites, one of the sites being a site of small pressure variation and the other being a site of large pressure variation as a function of the position of the patient, the device comprising a valve for implanting beneath the skin and for connecting by a first duct to one of the sites and by a second duct to the other site, the valve comprising a body defining an internal passage interconnecting the two ducts, a member for adjusting the section of said passage, and control means coupled to said adjustment member for moving said adjustment member between a first position in which the passage is closed and second positions in which the passage is opened to a controlled extent, wherein the control means comprise a first chamber formed in the body and closed in sealed manner by a diaphragm, a second chamber formed in the body and separated from said first chamber by the diaphragm, which second chamber forms a portion of the internal passage and is connected to the duct coming from the site having small pressure variation, means for coupling the diaphragm to the adjustment member, resilient means separate from said diaphragm for returning the adjustment member towards said first position and means for adjusting said resilient means.

5,643,196

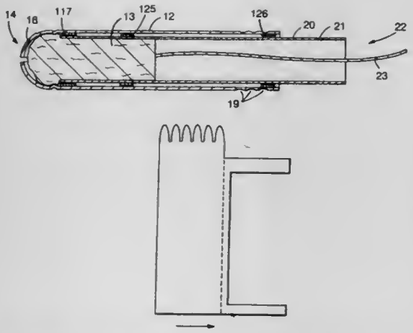
TAMPON APPLICATOR

William M. Child, Monson, and Warren Tarr, Turners Falls, both of Mass., assignors to Tambrands Inc., White Plains, N.Y.

Filed Mar. 3, 1995, Ser. No. 398,142
Int. Cl.[6] A61F *13/20*
U.S. Cl. 604—14 16 Claims

1. An insertion device for inserting material into a body cavity, comprising:

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an elongate tubular holder, shaped for insertion into the body cavity and having an expulsion end which is adapted to allow said material to be expelled therethrough and a second end opposite the expulsion end;

an elongate tubular plunger, adapted to hold telescopically at least a portion of the material to be inserted, dimensioned to fit telescopically and slidably within a portion of said holder, and having a first end for contacting the material and a second end providing a finger grip; and

a retaining structure, disposed within said tubular holder;

wherein the tubular holder comprises a convolutely wound cylindrical tube, and the retaining structure comprises a convolutely wound cylindrical tube coaxially disposed within the tubular holder, and wherein the tubular holder and retaining structure are integral unsevered portions of the same piece of material.

5,643,197

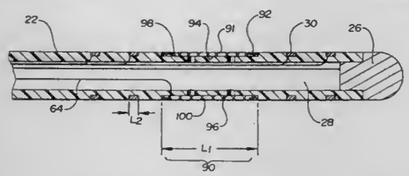
FLUID COOLED AND PERFUSED TIP FOR A CATHETER

Gregory G. Brucker, Minneapolis, Minn.; Jerome Philip Saul, Newton, Mass., and Steven D. Savage, Brooklyn Center, Minn., assignors to Angeion Corporation, Minneapolis, Minn.

Continuation-in-part of Ser. No. 171,213, Dec. 21, 1993, Pat. No. 5,462,521. This application Dec. 21, 1994, Ser. No. 361,329

Int. Cl.[6] A61B *17/20*

U.S. Cl. 604—20 **8 Claims**



1. A catheter tip for ablation of tissue comprising:

a) an elongate shaft having shaft walls defining a shaft inner lumen and shaft wall outer surfaces, the shaft having a proximal attachment end portion and a distal tip portion;

b) an electrode portion comprised of porous metal having portions mechanically connected to said shaft and electrically connected to a conductor within said shaft, said electrode placed circumferentially around a portion of said shaft and having an inner surface facing toward said shaft and an outer surface facing away from said shaft; and

c) shaft wall structures defining fluid flow apertures extending from the shaft inner lumen to the shaft wall outer surfaces; the apertures allowing the flow of fluid from the shaft inner lumen to the porous metal electrode inner surface, and the porous metal electrode defining fluid flow apertures suitable for the flow of said fluid through the fluid flow apertures to create a protective layer of fluid around the electrode outer surface.

5,643,198

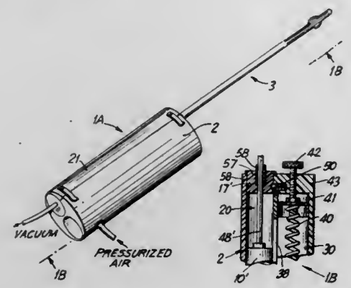
POWER-ASSISTED LIPOSUCTION INSTRUMENT AND CANNULA ASSEMBLY THEREFOR

Robert L. Cucin, New York, N.Y., assignor to Rocin Laboratories, Inc., New York, N.Y.

Continuation of Ser. No. 627,240, Dec. 14, 1990, Pat. No. 5,348,535. This application Sep. 16, 1994, Ser. No. 307,000

Int. Cl.[6] A61B *17/20*

U.S. Cl. 604—22 **4 Claims**



1. A powered liposuction device comprising:

(A) a hand-holdable housing having a longitudinal extent, a cylindrically-shaped cannula cavity extending along a substantial portion of said longitudinal extent, and a reciprocation means reciprocatable within said hand-holdable housing and being operated associated within an actuation means; and

(B) a cannula assembly operably connectable to said hand-holdable housing, and including;

(1) a hollow inner cannula having a distal end, and proximal end, and at least one inner suction aperture about said inner cannula distal end, said inner cannula proximal end further including an outlet port and a continuous passageway communicating said inner suction aperture with said outlet port, said inner cannula having an inner cannula base portion extending from said inner cannula proximal end and being releasably connectable to said hand-holding housing;

(2) a hollow outer cannula having a distal end, a proximal end, and at least one outer elongated suction aperture disposed about said outer cannula distal end, said outer cannula having an outer cannula base extending from said outer cannula proximal end and having a cylindrically shaped portion being releasibly received within said cylindrically-shaped cannula cavity, and said cylindrically-shaped portion having a notch means for releasibly engaging said actuation means, and said hollow inner cannula being disposed within at least a portion of said hollow outer cannula so as to enable sliding movement between said hollow outer and inner cannulas while permitting aspiration through said outer and inner suction apertures, along said continuous passageway and out of said outlet port,

(3) alignment means, operably associated with said hollow inner cannula, for aligning said hollow inner and outer cannulas so that said inner suction aperture is in registration with at least a portion of said outer elongated suction aperture as said hollow inner and outer cannulas are caused to undergo said sliding movement, and

(4) said hollow inner cannula being operably associated with said actuation means, and said hollow outer cannula being supportable in an essentially stationary position with respect to said hand-holdable housing so that said actuation means can effectuate relative sliding movement between said hollow inner and outer cannulas when said reciprocation means reciprocates, and that the location of said aspiration is periodically displaceable a distance equal to a substantial portion of the longitudinal extent of said hand-holding housing.

5,643,199

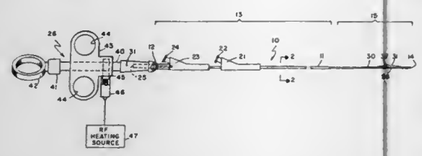
APPARATUS FOR PERFORMING DIAGNOSTIC AND THERAPEUTIC MODALITIES IN THE BILIARY TREE

Christopher A. Rowland, Marlborough, Mass.; Michael G. Vergano, Cumberland, R.I.; Bryan P. Eddy, Broomfield, Colo., and Peter B. Cotton, Charleston, S.C., assignors to Boston Scientific Corporation, Natick, Mass.

Division of Ser. No. 242,168, May 13, 1994, Pat. No. 5,547,469. This application May 14, 1996, Ser. No. 649,739

Int. Cl.[6] A61B *17/22*

U.S. Cl. 604—22 **5 Claims**



1. Apparatus for the diagnosis of objects in the biliary tree by means of a contrast agent delivered from a source, said apparatus being directed through the working channel of a duodenoscope and comprising:

A. catheter means for being directed through the working channel and the sphincter of Oddi into the biliary tree, said catheter means having proximal and distal ends and proximal and distal portions adjacent to said proximal and distal ends respectively and having first, second and third generally parallel lumens with said first lumen being larger than said second and third lumens, said lumens extending between said proximal and distal portions, each of said lumens having a proximal port and a distal port at said proximal and distal portions of said catheter means, said distal port of said first lumen being located at said distal end of said catheter means,

B. sphincterotomy means for cutting the sphincter of Oddi, said sphincterotomy means including a cutting wire extending through said second lumen and externally of said catheter means through said distal port along a length that is coextensive with a part of said distal portion of said catheter means and handle means attached to said catheter means proximal portion and a proximal portion of said cutting wire exiting said proximal port of said second lumen for operating said cutting wire, and

C. means for connecting the proximal port of said third lumen to the contrast agent source, said distal port of said third lumen being located at the distal end of said catheter.

5,643,200

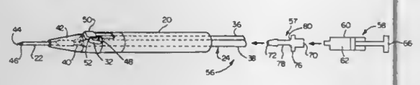
DEVICE AND METHOD FOR BACKFLUSHING AN IRRIGATION-ASPIRATION HANDPIECE TIP

James J. Edwards, 2139 W. Royalton Rd., Broadview Heights, Ohio 44147

Filed Mar. 15, 1995, Ser. No. 404,595

Int. Cl.[6] A61M *1/00*

U.S. Cl. 604—27 **15 Claims**



1. A system for backflushing an irrigation-aspiration handpiece tip and aspiration tube connected therewith for cleaning after use for aspiration, said system comprising:

a source of backflushing fluid;

a means for injecting said fluid through said aspiration tube of said irrigation-aspiration handpiece tip while disconnected from an irrigation-aspiration source; and

a means for connecting said means for injecting to said aspiration tube of said irrigation-aspiration handpiece tip to couple said backflushing fluid thereto to backflush said irrigation-aspiration handpiece tip.

5,643,201

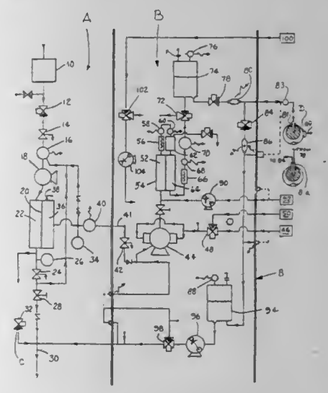
CONTINUOUS PERITONEAL DIALYSIS APPARATUS

Alan M. Peabody, 5-B Sugar Creek Villas, Greer, S.C. 29650; James T. Boag, 3405 E. John St., Seattle, Wash. 98112, and Ted M. Walters, 303 Brighton Rd., Anderson, S.C. 29621

Continuation of Ser. No. 653,078, Feb. 8, 1991, abandoned, which is a continuation-in-part of Ser. No. 200,624, May 31, 1988, Pat. No. 5,004,459, which is a continuation-in-part of Ser. No. 858,645, May 2, 1986, Pat. No. 4,747,822, which is a continuation-in-part of Ser. No. 840,142, Mar. 17, 1986, Pat. No. 4,718,890, which is a continuation-in-part of Ser. No. 629,130, Jul. 9, 1984, Pat. No. 4,586,920. This application Oct. 25, 1994, Ser. No. 328,664

Int. Cl.[6] A61M *1/00*

U.S. Cl. 604—31 **28 Claims**



1. A system for performing a continuous peritoneal dialysis process which includes a fill cycle and a drain cycle during which body waste fluid is removed, said system comprising:

continuous source of sterilized dialysis fluid which contains an osmotic substance;

an inflow line connected to said source of dialysis fluid for delivering said dialysis fluid from said source to a peritoneal cavity of a patient during the fill cycle, and an inflow delivery means disposed in said inflow line for controlling the inflow of said dialysis fluid;

an outflow line adapted to be operatively connected to the peritoneal cavity for draining dialysis fluid from the peritoneal cavity of the patient during the drain cycle, and an outflow delivery means disposed in said outflow line for controlling the outflow of said dialysis fluid;

means in communication with said inflow line for measuring an inflow of said dialysis fluid through said inflow line and generating an inflow signal;

means in communication with said outflow line for measuring an outflow of said dialysis fluid through said outflow line and generating an outflow signal;

control means communicating with said delivery means for receiving said inflow and outflow signals for controlling said inflow and outflow delivery means in response to said inflow and outflow signals to control the amount of said inflow and outflow of dialysis fluid; and

sensor means communicating with said outflow line determining the amount of the body waste fluid removed from the peritoneal cavity during said inflow and outflow of said dialysis fluid, and proportioning means operatively associated with said sensor means for adjusting the amount of said osmotic substance contained in said dialysis fluid during subsequent fill and drain cycles in order to remove a desired body weight.

5,643,202

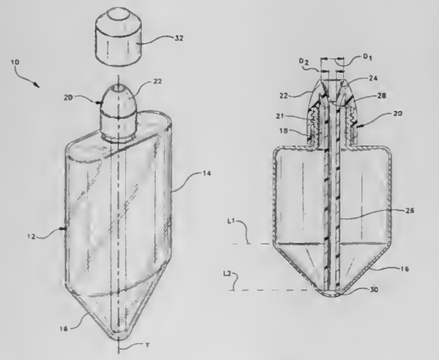
NASOPHARYNGEAL WASH COLLECTION DEVICE

Stefan Gravenstein, Madison; Peter Alan Shult, Stoughton; Barbara Ann Miller, Madison, all of Wis., and James Norman Lowder, Pleasanton, Calif., assignors to Specollector, Inc., Stoughton, Wis., and Becton Dickinson and Company, Franklin Lakes, N.J.

Filed Sep. 14, 1995, Ser. No. 527,970

Int. Cl.[6] A61M *31/00*

U.S. Cl. 604—54 **20 Claims**



1. A self-contained manual device for delivering and collecting fluid, comprising:

a container for holding said fluid, said container including

an opening for transfer of said fluid to and from said container, said opening being surrounded by a neck, said container also including means for pooling said fluid, said pooling means distally spaced from said opening;

a nozzle removably securable to said neck, said nozzle configured to facilitate discharge and collection of said fluid;

means for pressurizing and depressurizing the interior volume of said container; and

fluid communication means extending between said nozzle and said pooling means for providing a flow path for said fluid whereby pressurization of said interior volume results in discharge of said fluid from said container and depressurization of said interior volume results in aspiration of said fluid into said container;

in combination with a cap sized to removably engage said neck when said nozzle is removed.

5,643,203

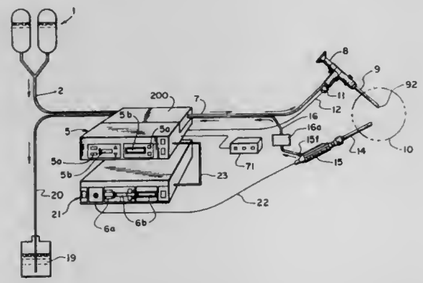
FLUID MANAGEMENT SYSTEM

David G. Beiser, Brookline; Steven B. Woolfson, Boston, both of Mass., and Kenneth W. Krause, Sandown, N.H., assignors to Smith & Nephew Dyonics Inc., Andover, Mass.

Division of Ser. No. 255,281, Jun. 7, 1994, which is a continuation of Ser. No. 867,981, Apr. 13, 1992, abandoned, which is a continuation-in-part of Ser. No. 748,249, Aug. 21, 1991, abandoned, and a continuation-in-part of Ser. No. 838,465, Feb. 19, 1992, abandoned, which is a continuation-in-part of Ser. No. 748,249, Aug. 21, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 479,110

Int. Cl.[6] A61M *31/00*

U.S. Cl. 604—66 **18 Claims**



1. Apparatus for supplying liquid to a body cavity during an endoscopic procedure, which comprises:

a) liquid supply means for supplying liquid under pressure;

b) conduit means, including an inlet coupled to said liquid supply means and an outlet for delivering said liquid under pressure to said body cavity;

c) pressure signal generating means for generating a body cavity pressure signal representing a pressure in said body cavity, including:

pressure sensor means in communication with said liquid under pressure at a location upstream of said conduit means outlet for producing a sensed pressure signal indicative of a sensed pressure at said upstream location; and

pressure signal processing means responsive to said sensed pressure signal for generating said body cavity pressure signal from said sensed pressure signal as a function of the pressure drops between said liquid supply means to said pressure sensor means and between said pressure sensor means to said body cavity; and

d) control means coupled to said liquid supply means and responsive to said body cavity pressure signal for increasing or decreasing the pressure of said liquid under pressure delivered by said liquid supply means to thereby maintain said pressure in said body cavity at a predetermined value.

5,643,204

PILL SWALLOWING DEVICE AND METHOD

Charles L. Cover, 633 Charles Hamilton Dr., Collierville, Tenn. 38017

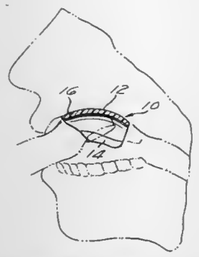
Filed Mar. 15, 1996, Ser. No. 616,680

Int. Cl.[6] A61J *7/00*

U.S. Cl. 604—77 **14 Claims**

1. A device for placement inside a user's mouth to facilitate pill swallowing, said device comprising:

a flexible shield sized and configured as a flat pattern that is formable to reside within the interior of the mouth to cover a substantial portion of the roof of the mouth for shielding said roof from a pill within the mouth and facilitating substantially complete closure of the mouth for swallowing.



5,643,205

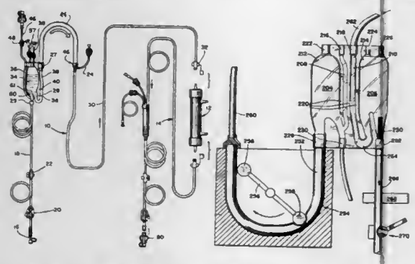
BLOOD AIR TRAP CHAMBER

David S. Utterberg, Seattle, Wash., assignor to Medisystems Technology Corporation, Las Vegas, Nev.

Division of Ser. No. 254,428, Jun. 6, 1994, Pat. No. 5,520,640, which is a continuation of Ser. No. 876,039, Apr. 30, 1992, abandoned. This application Jan. 4, 1995, Ser. No. 368,625

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—80 **20 Claims**



1. A blood chamber for blood flow sets which comprises a plastic tube which is collapsed and sealed together to define a reservoir chamber and one conduit communicating with a first end of the reservoir chamber through a first port, said one conduit extending along substantially the entire length of said reservoir chamber in laterally connected but spaced relation thereto for connection with set tubing adjacent the reservoir chamber end opposed to said first end, and a second conduit communicating with said first end of the reservoir chamber through a second port, said second conduit extending along the length of said reservoir chamber in laterally connected but spaced relation thereto for connection with set tubing adjacent the reservoir chamber end opposed to said first end, said reservoir chamber and said conduits being formed from said collapsed and sealed plastic tube.

5,643,206

METHODS AND APPARATUS FOR MIXING AND DISPENSING MULTI-PART COMPOSITIONS

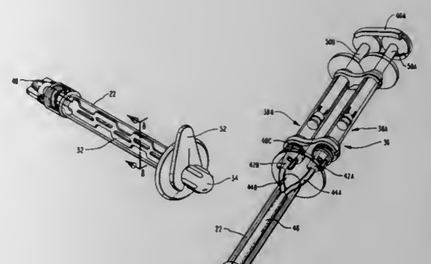
Dan E. Fischer, Sandy, Utah, assignor to Ultradent Products, Inc., South Jordan, Utah

Division of Ser. No. 270,924, Jul. 5, 1994, which is a continuation-in-part of Ser. No. 117,217, Sep. 3, 1993, Pat. No. 5,328,462. This application May 24, 1995, Ser. No. 449,330

Int. Cl.[6] A61M *37/00*

U.S. Cl. 604—82 **24 Claims**

1. A method for mixing at least two components so as to form a multi-component composition, comprising the steps of:



simultaneously placing, in a side-by-side orientation, a predetermined amount of the at least two components into a dispensing barrel of a dispensing syringe; and

rotating a paddle member to mix the at least two components contained within the dispensing barrel of the dispensing syringe in a manner such that the mixing occurs simultaneously along the entire length of the dispensing barrel, thereby resulting in the multi-component composition.

5,643,207

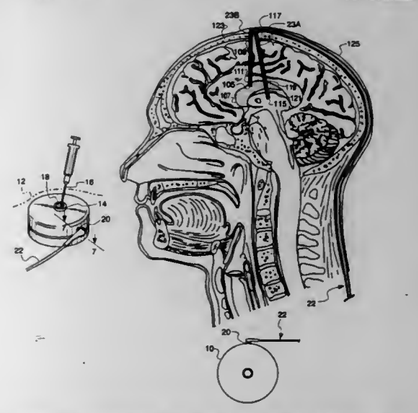
IMPLANTABLE TECHNIQUES FOR INFUSING A THERAPEUTIC AGENT WITH ENDOGENOUS BODILY FLUID

Mark T. Rise, Monticello, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Continuation of Ser. No. 430,981, Apr. 28, 1995, abandoned. This application Jun. 27, 1996, Ser. No. 670,297

Int. Cl.[6] A61M *11/00*

U.S. Cl. 604—93 **33 Claims**



1. A method for infusing an agent into an organ of a human body using said body's own endogenous fluid, said method comprising he steps of:

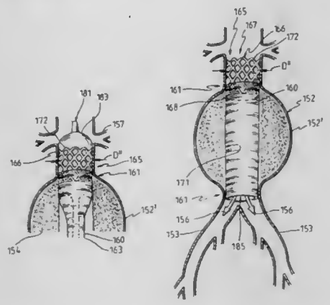
holding a quantity of said agent inside said body;

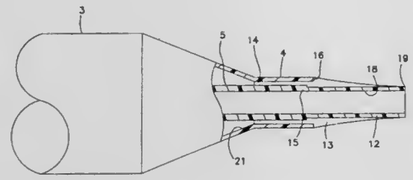
collecting a portion of said endogenous fluid;

transmitting a portion of said collected endogenous fluid into said organ; and

adding, within said body from said quantity of said agent, a predetermined dose of said agent to at least a portion of said endogenous fluid transmitted into said organ, whereby the addition of said agent to said endogenous fluid facilitates buffering and dilution of said agent before administration to said organ.

5,643,208
BALLOON DEVICE FOR USE IN REPAIRING AN ABDOMINAL AORTIC ANEURYSM
Juan C. Parodi, Mercedes 4255, Buenos Aires, Argentina
Division of Ser. No. 130,352, Oct. 1, 1993, abandoned, and a continuation-in-part of Ser. No. 535,745, Jun. 11, 1990, Pat. No. 5,360,443. This application Jun. 6, 1995, Ser. No. 466,355
Int. Cl.[6] A61M *29/00*
U.S. Cl. 604—96 **8 Claims**





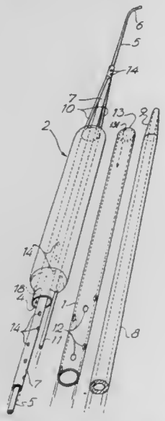
1. A balloon device for use in repairing an abdominal aortic aneurysm in an aorta having two iliac arteries associated therewith at an aortic bifurcation, comprising:
a catheter having a longitudinal axis and at least three internal passageways;
first and second inflatable balloons disposed upon the catheter and separated by a predetermined distance, each balloon connected to at least one of the internal passageways, the second balloon having first and second ends and a longitudinal axis which is substantially parallel to the longitudinal axis of the catheter, the first end of the second balloon being disposed closer to the first balloon than the second end of the second balloon;
the first and second balloons having a generally cylindrical cross-sectional configuration upon being inflated defined by an outer wall surface;
the second end of the second balloon including an end wall surface which is disposed substantially perpendicular to the longitudinal axis of a first portion of the catheter disposed within the second balloon and substantially perpendicular to the outer wall surface of the second balloon, whereby the second balloon may be readily disposed within the aortic bifurcation; and
a second portion of the catheter located adjacent the second end, and outside, of the second balloon is disposed at an angle of approximately thirty degrees with respect to the longitudinal axis of the second balloon, whereby the second portion of the catheter may be readily disposed in an iliac artery adjacent the aortic bifurcation.

5,643,209
HIGH PRESSURE BALLOON TIP
Mauricio Lintag Fugoso, Chula Vista, and Candida Naguit Figueroa, San Diego, both of Calif., assignors to Medtronic, Inc., Minneapolis, Minn.
Filed Dec. 15, 1995, Ser. No. 572,908
Int. Cl.[6] A61M *29/00*
U.S. Cl. 604—96 **8 Claims**

1. A dilatation balloon catheter with a flexible tip comprising:
a catheter body having proximal and distal ends with an outer shaft defining an inflation lumen;
the catheter body having a coaxial inner guidewire shaft defining a guidewire lumen;
the guidewire shaft having a distal tip;

an inflatable balloon mounted at the distal end of the catheter body, the balloon having an outer diameter and an inner diameter, a proximal cone end and a distal cone end extending into a distal tip, a distal end and a proximal end, the proximal end of the balloon in fluid communication with the distal end of the inflation lumen and the distal end of the balloon sealingly mounted to the guidewire shaft;
the guidewire shaft extending distal to the distal end of the balloon, the guidewire shaft having an outer diameter and a step down area, the guidewire shalt step down area beginning distal to the distal end of a balloon cone distal end, the guidewire shaft step down area having an outer diameter which is less than the outer diameter of the guidewire shaft; and
the distal end of the balloon being bonded to the guidewire shaft with an adhesive, the adhesive beginning proximal to the distal end of the balloon and filling between the inner diameter of the balloon and the outer diameter of the guidewire shafi, the adhesive extending distally from the height of the outer diameter of the balloon at the distal end of the balloon, the adhesive tapering down distally to the outer diameter of the guidewire shaft step down area not more than 1 mm proximal of the distal end of the guidewire shaft.

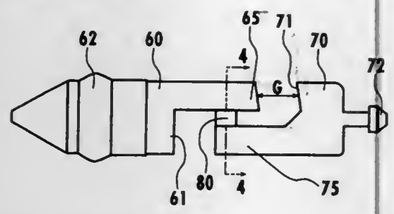
5,643,210
ANGIOPLASTY PERFUSION CATHETER
Mihai Iacob, Clinic of Cardiology, Fundeni Hospital, Sos. Fundeni 258, Sect. 2, RO - Bucharest, Romania
Continuation of Ser. No. 245,027, May 17, 1994, abandoned. This application Jun. 26, 1996, Ser. No. 671,260
Claims priority, application European Pat. Off., Jun. 23, 1993, 93110022
Int. Cl.[6] A61M *29/00*
U.S. Cl. 604—102 **13 Claims**



1. An angioplasty catheter system with a perfusion channel, comprising:

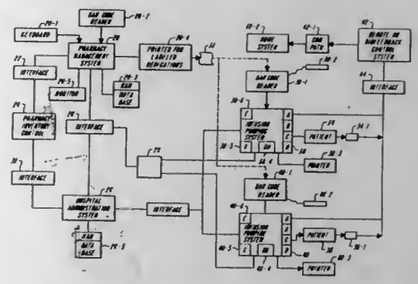
a dilatation balloon having proximal and distal ends with the proximal end being free, said balloon defining a perfusion tunnel extending therethrough between said proximal free end and said distal end;
inflation tube means connected to the balloon for inflation thereof; and
perfusion catheter means for defining the perfusion channel, said perfusion catheter means extending proximally of the balloon for longitudinal movement through the proximal free end thereof and within the perfusion tunnel.

5,643,211
NOZZLE ASSEMBLY HAVING A FRANGIBLE PLUNGER
Peter Sadowski, Woodbury, Minn.; Paul Mulhauser, New York, N.Y., and David Schiff, Highland Park, N.J., assignors to Medi-Ject Corporation, Minneapolis, Minn.
Filed Feb. 29, 1996, Ser. No. 608,799
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—110 **20 Claims**



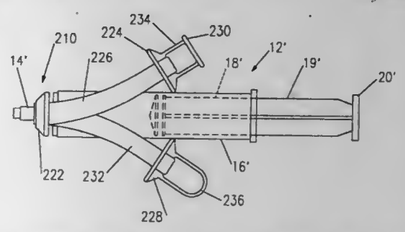
1. A nozzle assembly adapted for use with an injector device comprising:
a chamber for holding a fluid and having first and second ends with an orifice at the first end for passage of the fluid and being open at the second end; and
a plunger slidingly received in said chamber for expelling fluid out of or drawing fluid into the chamber by moving the plunger relative to the chamber, the plunger comprising first and second driving members which include respective end and base portions retained in spaced relation by a frangible connection therebetween, with the second driving member being spaced apart from the first driving member by a gap, such that when a force sufficient to break the frangible connection is applied to the second driving member in a direction toward the first driving member, the frangible connection is broken and the second driving member moves across said gap toward the first driving member, the frangible connection is broken and the second driving member moves across said gap toward the first driving member for urging the first driving member towards the chamber orifice to expel fluid therefrom, and when the second driving member is thereafter moved away from the first driving member, the first driving member remains in the chamber to prevent reuse of the nozzle assembly.

5,643,212
INFUSION PUMP MANAGEMENT SYSTEM FOR SUGGESTING AN ADAPTED COURSE OF THERAPY
James E. Coutré , 114 Stone Root La., Concord, Mass. 01742; Wayne P. Griffin, 55 Surrey La., Dracut, Mass. 01826, and Charles M. Crisler, 10 Suoridge Rd., Windham, N.H. 03087
Division of Ser. No. 882,692, May 12, 1992, Pat. No. 5,317,506, which is a division of Ser. No. 304,068, Jan. 30, 1989, Pat. No. 5,153,827. This application Mar. 7, 1994, Ser. No. 207,574
Int. Cl.[6] A61M *5/14;* **G06F** *19/00*
U.S. Cl. 604—131 **11 Claims**
1. A system for infusing fluids into a patient comprising:



means for infusing fluids into a patient in accordance with instructions to carry out a desired course of infusion therapy, including means for generating initial instructions to carry out the desired course of infusion therapy;
means for sensing physiological conditions of the patient during the course of infusion; and
means, in communication with the sensing means and the infusing means and located remotely from the infusing means, for monitoring the infusing means and for controlling the infusing means during the course of infusion in response to the sensed physiological conditions, including means for generating adapted instructions to carry out an adapted course of infusion therapy, means for displaying the adapted instructions to an operator, and means for requesting operator confirmation of the adapted instructions.

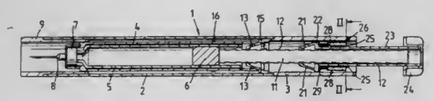
5,643,213
ELASTOMERIC SYRINGE ACTUATION DEVICE
Charles J. McPbee, Huntington Beach, Calif., assignor to I-Flow Corporation, Irvine, Calif.
Continuation-in-part of Ser. No. 300,157, Sep. 2, 1994, Pat. No. 5,558,650, which is a continuation-in-part of Ser. No. 208,729, Mar. 9, 1994, Pat. No. 5,429,607. This application Feb. 14, 1995, Ser. No. 388,382
Int. Cl.[6] A61M *31/00*
U.S. Cl. 604—131 **14 Claims**



1. A method for actuating a syringe having a barrel with a proximal end for containing a supply of fluid, an outlet tip at the proximal end of the barrel, and a plunger slidably disposed within the barrel for movement between a withdrawn position and an inserted position, the plunger having an actuation portion extending distally from the barrel to a distal end, the method comprising the steps of:
(a) providing a grommet assembly attached to first and second elastic straps, the first strap being attached to a first end cap and the second strap being attached to a second end cap, the first end cap having a distal end;
(b) seating the grommet assembly around the outlet tip;
(c) with the actuation portion in the withdrawn position, and with the flow of fluid from the outlet tip obstructed, stretching the first strap distally along the length of the barrel and the actuation portion, and engaging the first end cap against the distal end of the actuation portion;

(d) stretching the second strap distally along the length of the barrel and the actuation portion, and engaging the second end cap against the distal end of the first end cap; and
(e) removing the obstruction to fluid flow.

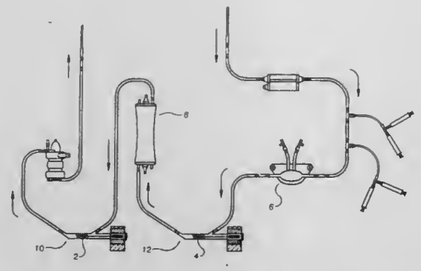
5,643,214
INJECTION DEVICES
Jeremy Marshall, and Derek Turner, both of Oxford, United Kingdom, assignors to Owen Mumford Limited, Oxford, United Kingdom
PCT No. PCT/GB94/01036, § 371 Date Jan. 18, 1995, § 102(e) Date Jan. 18, 1995, PCT Pub. No. WO94/26331, PCT Pub. Date Nov. 24, 1994
PCT Filed May 13, 1994, Ser. No. 373,322
Claims priority, application United Kingdom, May 18, 1993, 9310163
Int. Cl.[6] A61M *5/20;5/315*
U.S. Cl. 604—134 **9 Claims**



1. An injection device with an elongate barrel-ilke body for giving a sequence of injections of liquid from a capsule, the capsule being carried therein in a manner allowing longitudinal movement between limiting positions, and having a needle at one, forward end and a piston actuable through the other, rear end to cause emission of doses through the needle, the device comprising a plunger to act on the piston, spring drive means with a limited travel and with a pawl and ratchet engagement with the plunger to drive the plunger in the forward direction, manually operable priming means to energise the drive means to withdraw the capsule to its rear limit, and means for releasably holding the spring drive means energised after priming, wherein the energised spring means engages the plunger at a first position thereon and when released drives the plunger and thus the piston forwardly, the drive in a first phase carrying the capsule from a rear to a forward limit by virtue of the contents of the capsule, with escape only through the needle, forming a substantial hydraulic lock, the needle then projecting from the body, and in a second phase forcing the piston alone on to eject a dose, and wherein the priming means when operated carries the plunger rearwardly with the capsule until the spring drive means re-engages the plunger at a second position more rearward thereon than the first position.

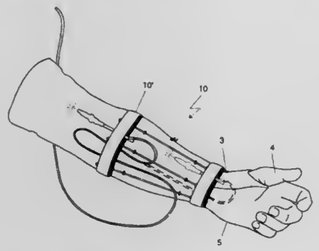
5,643,215
GAS EXCHANGE APPARATUS AND METHOD
Bradley P. Fuhrman; Mark S. Dowhy, and Lynn J. Hernan, all of Buffalo, N.Y., assignors to The Research Foundation of State University of New York, Albany, N.Y.
Filed Feb. 24, 1995, Ser. No. 393,780
Int. Cl.[6] A61B *19/00*
U.S. Cl. 604—151 **15 Claims**

1. An ECMO system comprising:
a membrane oxygenator for oxygenating blood provided to the system;
first conduit means for providing fluid communication between a circulatory system of a subject and an input of said membrane oxygenator;
second conduit means for providing fluid communication between an output of said membrane oxygenator and said circulatory system of said subject;
first pump means comprising a helical propeller disposed within said first conduit means for propelling blood toward said input of said membrane oxygenator; and



second pump means comprising a helical propeller disposed within said second conduit means for propelling blood away from said output of said membrane oxygenator.

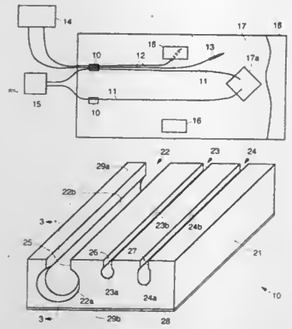
5,643,216
PATIENT BRACELET HAVING CATHETER CAPTURE INTEGRALLY FORMED THEREWITH AND METHODS OF MAKING THE SAME
James E. White, 4127 E. Churchill, Springfield, Mo. 65809
Filed Jun. 8, 1995, Ser. No. 476,845
Int. Cl.[6] A61M *25/00*
U.S. Cl. 604—174 **20 Claims**



1. In a bracelet adapted to be worn about a portion of an appendage of a patient said bracelet having means to secure said bracelet about said appendage, the improvement wherein said means to secure said bracelet comprises a plurality of projections having spaces therebetween, said plurality of projections extending from at least one surface of a first end of said bracelet and along said at least one surface in serial fashion thereof, and a plurality of grooves in an end opposite said first end, said grooves having teeth therebetween, said plurality of projections having a distance therebetween approximately twice the distance between each of said grooves, wherein at least one of said grooves is adapted to receive at least one of said plurality of projections therein.

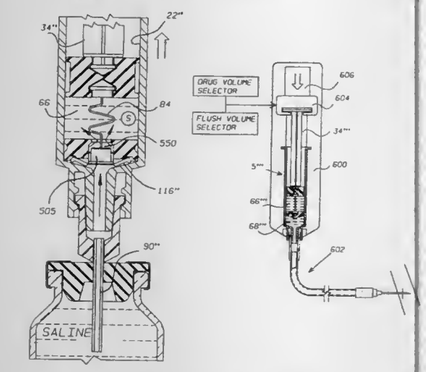
5,643,217
SURGICAL ATTACHMENT DEVICE
William R. Dobkin, 6020 Lido La., Loog Beach, Calif. 90803
Continuation of Ser. No. 369,010, Jan. 5, 1995, abandoned. This application Jan. 17, 1995, Ser. No. 373,634
Int. Cl.[6] A61M *5/14*
U.S. Cl. 604—180 **13 Claims**

1. Apparatus comprising:
a single flexible member having first and second surfaces and having a plurality of grooves formed adjacent the first surface that each extend from one lateral side of the flexible member to an opposite lateral side thereof such that distal ends of the grooves adjacent the lateral sides of the flexible member are



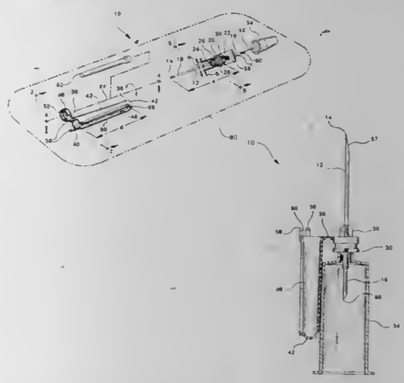
open, and wherein a first portion of each groove has a predetermined cross section for slidably securing a corresponding cylindrically shaped member therein, and wherein a second portion of each of the grooves disposed immediately adjacent the first surface is slightly smaller than the respective first portion of each of the grooves, and wherein the single flexible member comprises a plurality of lower grooves formed adjacent the second surface that are separated from respective first portions of the plurality of grooves by a plurality of hinge areas, and wherein the single flexible member is flexible at each of the hinge areas to permit opening of the grooves and passage of the cylindrically shaped members through the second portions of the grooves and into the first portions thereof secure of the cylindrically shaped members therein: and
an adhesive layer disposed on the second surface of the flexible member.

5,643,218
AUTO-FLUSHING MEDICAL FLUID INJECTION SYSTEM
Lawrence A. Lynn, 862 Curleys Ct., Columbus, Ohio 43235, and Mark E. Larkin, Columbus, Ohio, assignors to Lawrence A. Lynn, Columbus, Ohio
Division of Ser. No. 413,966, Mar. 30, 1995, Pat. No. 5,549,569, which is a division of Ser. No. 196,455, Feb. 15, 1994, abandoned. This application Aug. 20, 1996, Ser. No. 697,058
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—191 **8 Claims**



1. An automatic medical fluid injection assembly for the sequential injection of a first liquid and a second liquid, the assembly comprising:
a. a syringe defining a variable volume chamber having a distal end and an opening in said distal end, and further having an internal displacement volume and a piston to vary said internal displacement volume;
b. a chamber divider for separating said internal volume into at least proximal and distal variable volume reservoirs, said chamber divider being movable along said chamber, said proximal reservoir having a maximum volume;
c. a flow channel along said assembly, said flow channel being capable of providing flow connection between the proximal reservoir and the distal reservoir, said flow channel being in fluid communication with said conduit and said distal reservoir;
d. a valve capable of at least one disabling and enabling flow between said proximal reservoir and said distal reservoir through said flow channel;
e. an element for linking said piston and said chamber divider so that when said piston is moved away from said chamber divider, and said proximal reservoir is filled with said first liquid, said chamber divider is urged by said element away from said distal end of said chamber to enlarge said distal reservoir and to withdraw said second liquid into said distal reservoir;
f. said flow channel being sized and configured such that after said maximum volume of first liquid has been withdrawn into said proximal reservoir and said second liquid has been withdrawn into said distal reservoir, displacement of said maximum volume of first liquid through said flow channel is sufficient to displace all said second liquid from said syringe when said piston is advanced along said barrel;
g. automatic injection means, said injection means having means for automatically advancing said piston.

5,643,219
SHIELDED NEEDLE ASSEMBLY
James A. Burns, 1104 Kipling Rd., Elizabeth, N.J. 07208
Filed Sep. 23, 1994, Ser. No. 310,538
Int. Cl.[6] A61M *5/32*
U.S. Cl. 604—192 **6 Claims**



1. A needle assembly comprising:
an elongate needle having a pointed distal end, a proximal end, a passageway therethrough and defining an axis;
a hub having a proximal end, a distal end, and an outside surface with an outside diameter, said hub outside surface including a circumferential groove having an outside diameter less than said hub outside surface diameter and a raised annulus having an outside diameter greater than said hub outside surface diameter located proximally to said groove, said hub having an axial opening therethrough for receiving said needle so that said distal end of said needle projects outwardly therefrom,

said hub further including means for releasably mounting said hub on a fluid handling device;

a shield having an open end, a closed end, a sidewall having a slot from said open end toward said closed end, said shield having a first position wherein said needle is exposed for use and a second position wherein said shield substantially obstructs access to said needle; and

said shield having a mounting for holding said shield onto said hub, said mounting axially rotatable about said hub and including a hinge attached to said open end of said shield opposite said slot, said slot being sufficient to provide clearance for said needle thereby allowing said shield to pivot on said hinge from said first position displaced from said axis at which said needle is exposed to said second position at which said shield obstructs access to said needle, said open end of said shield further including at least one lug for engaging said annulus on said hub when said shield is in said second position so that said shield is locked in said second position.

5,643,220

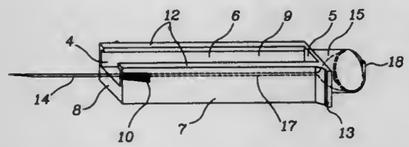
NEEDLE ASSEMBLY

Edgar Z. Cosme, 1626 Peacock La., Fullerton, Calif. 92633

Filed Aug. 19, 1996, Ser. No. 698,441

Int. Cl.[6] A61M *5/32*

U.S. Cl. 604—192 **14 Claims**



1. A needle assembly for use with a fluid delivery device, comprising:

a needle holder having a closed walled proximal end, an open distal end, a walled first and second longitudinal side, a solid base, a hollow top surface, a hollow needle embedded to the solid base, and a two ended hollow connector mounted to the needle at one end;

a sliding needle sleeve for surrounding the needle holder, the sleeve slidably movable relative to the needle holder in the direction of the length of the needle from a first position in which the needle projects outside of the needle sleeve to a second position in which the needle is within the needle sleeve;

means for engaging the needle holder with the needle sleeve;

means for interlocking the needle sleeve with the needle holder; and,

means for stopping the rearward and forward motion of the needle sleeve relative to the needle bolder.

5,643,221

CONTROLLED TARGETING LARYNGOSCOPE

James Roger Bullard, P.O. Box 14727, Augusta, Ga. 30919-0727

Continuation of Ser. No. 780,445, Oct. 17, 1991, abandoned, which is a continuation of Ser. No. 519,440, May 4, 1990, abandoned. This application Aug. 9, 1994, Ser. No. 287,711

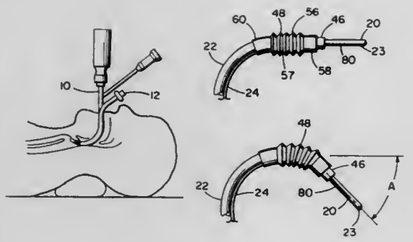
Int. Cl.[6] A61B *1/267*

U.S. Cl. 604—194 **11 Claims**

1. A laryngoscope comprising:

a frame having a body section and a rigid shaft extending from the body section, the shaft being adapted to move a patient's tongue and having an image bundle passing therethrough;

a distal end member pivotally attached to the rigid shaft with a portion of the image bundle passing therethrough;



an intubation tube installation device extending through channels in the shaft and distal end member, the device having a front end that is extendable from a front end of the distal end member; and

means for adjusting an angle of extension of the front end of the installation device from the shaft without moving the shaft.

5,643,222

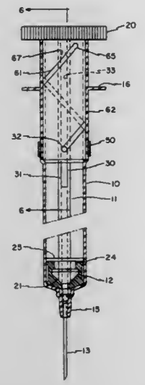
HYPODERMIC NEEDLE ASSEMBLY

Sakharam D. Mahurkar, 6171 N. Sheridan Rd., Suite 1112, Chicago, Ill. 60660

Continuation-in-part of Ser. No. 229,811, Apr. 19, 1994, Pat. No. 5,514,100, which is a division of Ser. No. 111,372, Aug. 23, 1993, Pat. No. 5,338,311. This application Jun. 23, 1995, Ser. No. 494,283

Int. Cl.[6] A61M *5/32*

U.S. Cl. 604—195 **46 Claims**



1. A needle-syringe assembly, comprising:

an elongated, generally cylindrical barrel forming a hollow nozzle located at the distal end of said barrel and opening into the interior of said barrel;

a plunger slidably mounted in said barrel and forming a longitudinal cavity;

a needle holder carrying a hollow needle on the distal end thereof, said needle holder being slidably mounted in said longitudinal cavity of said plunger, said needle holder including a lateral arm extending laterally through said plunger cavity to said barrel; and

guide means forming a spiral guide surface extending along a proximal end portion of said barrel for engaging the lateral arm of the needle holder and retracting the needle holder within the barrel in response to relative rotational movement between the barrel and the needle holder.

5,643,223

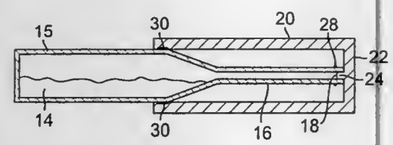
MEDICINAL DISPENSER

Richard K. Lee, 50-9, Chung-Shun Street, Chunghua City, 50013, Taiwan

Filed Sep. 12, 1995, Ser. No. 527,675

Int. Cl.[6] A61M *1/00*

U.S. Cl. 604—212 **5 Claims**



1. A medicinal dispenser comprising:

a reservoir member having an internal volume for supporting a solution and a neck portion extending from the internal volume to a distal tip having an opening for dispensing the solution from said reservoir member;

a cover member having a cap portion with an inner surface configured to seal said opening when said cover member is securely positioned over said reservoir member;

a sleeved portion extending from said cap portion, said sleeve portion extending over the length of said neck portion when said cover member is secured to said reservoir member, thereby protecting said neck portion from external contaminants, wherein said sleeve portion includes an open end sized and configured to sealingly engage an outer surface of said reservoir member; and

a first frangible seal formed between said cap portion and said distal tip of said neck portion and a second frangible seal formed between said open end of said sleeve portion and an outer surface of said reservoir member, wherein said first and second frangible seals are fractured to allow removal of said cover member from said reservoir member and to provide said opening at said distal tip portion of said neck portion.

5,643,224

SAFETY VALVE PLUG FOR DISPOSABLE PRE-FILLED SYRINGES

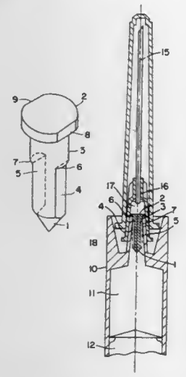
Jaime Luis Szapiro; Leonardo Szames, and Saúl Moreno, all of Tabaré 1641, Buenos Aires, Argentina

Filed Jan. 27, 1995, Ser. No. 379,169

Claims priority, application Argentina, Mar. 4, 1994, 327575; Aug. 19, 1994, 329146

Int. Cl.[6] A61M *5/315*

U.S. Cl. 604—238 **6 Claims**



1. In a syringe for dispensing a fluid from a housing to a needle, a safety valve plug for selectively isolating the fluid in the housing from the needle, said safety valve plug comprising: a disc-shaped head portion having opposed planar surfaces joined together by a sidewall surface; and a substantially cylindrical body extending from one planar surface of said head portion about a longitudinal axis substantially perpendicular to the one planar surface, the cylindrical body having a cylindrical portion extending from the one planar surface, a faceted portion extending from the cylindrical portion and a conical portion extending from the faceted portion.

5,643,225

Patent Not Issued For This Number

5,643,226

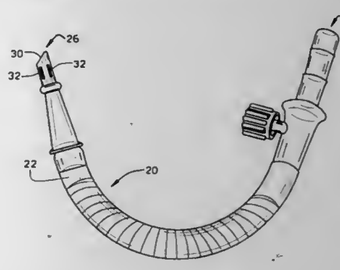
LOW VELOCITY AORTIC CANNULA

Delos M. Cosgrove, Hunting Valley; J. Frederick Cornhill, Worthington, both of Ohio; Christopher M. Boykin, Athens, Tex.; Nelson L. Huldin, Pittsfield, and William G. O'Neill, Ann Arbor, both of Mich., assignors to Minnesota Mining and Manufacturing, St. Paul, Minn., and The Cleveland Clinic Foundation, Cleveland, Ohio

Continuation-in-part of Ser. No. 21,811, Feb. 24, 1993, Pat. No. 5,354,288. This application Oct. 6, 1994, Ser. No. 319,374

Int. Cl.[6] A61M *25/00*

U.S. Cl. 604—264 **32 Claims**



1. An improved aortic cannula having a sidewall with a proximal end, a distal end, and a lumen therebetween for conducting blood, the distal end being adapted for insertion into the aorta during heart surgery to provide blood to the aorta the improvement comprising:

a cap substantially blocking axial flow through the distal end of the lumen;

a plurality of arch-shaped outlet openings in the sidewall of the cannula adjacent the distal end, each of the outlet openings having an arcuate proximal end, and a straight distal end, the distal end having a beveled configuration sloping generally outwardly in the distal axial direction; and

the distal end of the lumen being located flush with or distally beyond the distal ends of the outlet openings.

5,643,227

HEMOSTASIS CANNULA VALVE APPARATUS AND METHOD OF USING SAME

Robert C. Stevens, 18265 NW. Highway 335, Williston, Fla. 32696

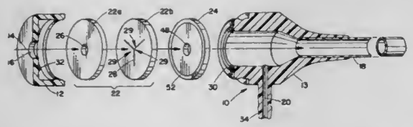
Filed Jan. 19, 1995, Ser. No. 374,919

Int. Cl.[6] A61M *5/00;25/00*

U.S. Cl. 604—264 **2 Claims**

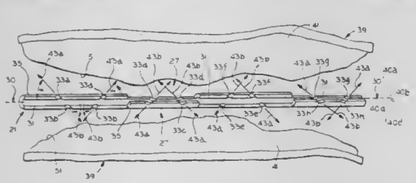
1. A hemostasis cannula comprising:

a housing having an opening on an outer first end and an introducer sheath on an inner second end of the housing; and,



a self-sealing gasket assembly mounted in the housing and including a unitary first member joined to a second member, the first member having a first surface facing said outer first end and a second surface facing said inner second end, at least three radially extending slits extending from the second surface part way into the first member, a first circular central aperture extending inwardly from said first surface and intersecting with said at least three radially extending slits, the second member having a circular second central aperture extending therethrough and substantially aligned with said first central aperture and located between said introducer sheath and said first member, and the second member joined directly to the periphery of the second surface of the first member, and wherein said first and second circular central apertures are of substantial equal diameter and related to the diameter of catheters or guidewire devices intended to be used therewith to provide a sealing and wiping action on such catheters or guidewire devices passing therethrough.

5,643,228
CATHETER
David E. Schucart, Homewood; Edward M. Goldberg, Glencoe, and Lev A. Melnyshyn, Buffalo Grove, all of Ill., assignors to Uresil Corporation, Skokie, Ill.
Filed Nov. 13, 1995, Ser. No. 557,716
Int. Cl.[6] A61M *25/00*
U.S. Cl. 604—264 **18 Claims**

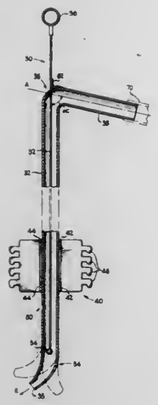


1. A catheter for introducing fluid into a blood vessel comprising:

an elongated catheter body having a sidewall defining a catheter lumen, the catheter body having a proximal portion with means for introducing fluid streams into the lumen and a distal portion adapted to be received into the vessel; and

at least two ports extending through the sidewall at oblique angles relative to the longitudinal axis of the lumen, said ports being either oriented toward one another to send corresponding streams of fluid toward each other or oriented away from each other to send one stream of fluid toward one end of the catheter and the other stream toward the opposite end of the catheter.

5,643,229
SUCTION TUBE APPARATUS
Edwin S. Sinaiko, 180 E. Pearson, Chicago, Ill. 60611
Continuation of Ser. No. 279,331, Jul. 22, 1994, abandoned. This application Feb. 20, 1996, Ser. No. 603,505
Int. Cl.[6] A61M *25/00*
U.S. Cl. 604—267 **7 Claims**



1. An improved suction tube apparatus, of the type which may be connected to a hose having a suction source attached thereto, for use, for example, during surgical procedures for the removal of blood and tissue from an operation site containing both sterile and non-sterile objects, the improved suction tube apparatus comprising:

a substantially elongated hollow tube having a first end, a second end, and a longitudinal axis;

a substantially semi-flexible suction tip having an extreme end having a diameter which is less than the diameter of the hollow tube, and further being operably, substantially contiguously, formed to the first end of the hollow tube, in fluid communication therewith;

a hose connection member operably connected to the second end of the hollow tube, in fluid communication therewith, and having a longitudinal axis;

means for reducing inadvertent non-sterile hose contact such that the hose connection member is operably arranged relative to the hollow tube such that the longitudinal axis of the hose connection member intersects the longitudinal axis of the hollow tube, with an included angle therebetween of 45° and 135° so as to help reduce the likelihood of inadvertent contact between said hose and said non-sterile objects and resulting contamination;

said means for reducing inadvertent non-sterile hose contact including an elbow portion connecting the hollow tube to the hose connection member; and

obstruction clearing means operably associated with said hollow tube for dislodging any clogging material from the interior of said hollow tube;

an aperture operably disposed in said elbow portion, and substantially aligned with the longitudinal axis of the hollow tube;

the obstruction clearing means including an obstruction clearing member, having an elongate configuration and a length exceeding a combined length of the hollow tube and the suction tip,

the obstruction clearing member further having a first end and a second end;

the obstruction clearing member further being insertingly receivable within the hollow tube, through the aperture, so as to extend along the combined length of the hollow tube and the suction tip, substantially parallel to the longitudinal axis of the hollow tube, and have a portion extending through the aperture substantially beyond the intersection of the longitudinal axes of the hollow tube and the bose connection member,

the first end of the obstruction clearing member being insertingly receivable in and through the suction tip,

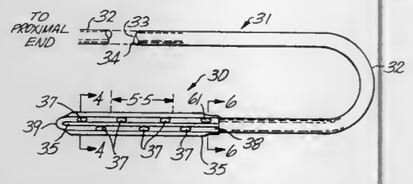
the second end of the obstruction clearing member being positioned in the portion extending through the aperture substantially beyond the intersection of the longitudinal axes of the hollow tube and the hose connection member;

the obstruction clearing member further having a push tip operably disposed at the first end thereof, the push tip being operably configured so as to be able to pass through the aperture in the elbow portion;

the obstruction clearing member further having a handle member operably disposed as the second end thereof; and

a cover member, operably disposed on the elbow portion of the apparatus, for covering and substantially closing the aperture in the elbow portion when the obstruction clearing member is not insertingly received within the hollow tube.

5,643,230
NASOGASTRIC SUCTION CATHETER
Gerald Seymour Linder, 16693 Charmel La., Pacific Palisades, Calif. 90272
Filed May 15, 1995, Ser. No. 441,548
Int. Cl.[6] A61M *5/00;25/00*
U.S. Cl. 604—280 **9 Claims**



1. A nasogastric suction catheter comprising in combination:

(a) a long, slender, flexible tube member having open proximal and distal ends, said flexible tube member having a main suction lumen and a secondary vent lumen, said lumens extending the entire length of said flexible tube member and being separate and independent one from the other;

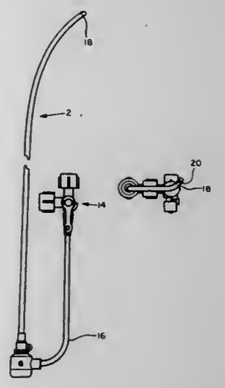
(b) means formed at the proximal end of said flexible tube member for providing spaced-apart and independent couplings to said suction and vent lumens;

(c) a short, soft, hollow distal end member having an open proximal end bonded to the distal end of said long, flexible tube member, said hollow distal end member having a cylindrical lumen with a diameter approximately equal to the outer diameter of the distal end of said flexible tube member, said hollow distal end member having a plurality of longitudinally extending and spaced-apart ridges upon the outer surface thereof, said plurality of spaced-apart ridges being parallel to each other, the space lying between said spaced-apart, parallel ridges and on the outer surface of said hollow distal end member forming troughs between said ridges, said troughs being open at each of their ends, said short, soft, hollow distal end member having a soft, rounded distal tip, said short, soft, hollow distal end member, including said soft, rounded distal tip being appreciably softer and more resilient than said long, slender, flexible tube member; and

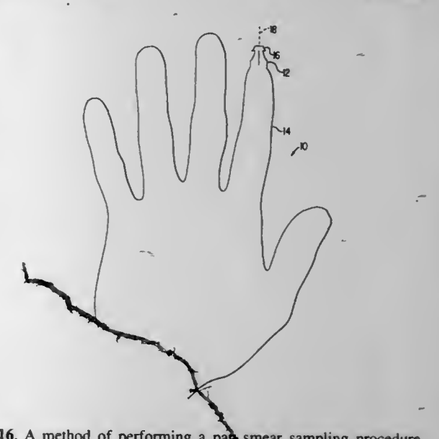
(d) a plurality of longitudinally spaced-apart suction apertures located between said parallel ridges and within the troughs of said soft, hollow distal end member, said plurality of apertures extending through the bottom of said troughs into the cylindrical lumen of said soft, hollow distal end member.

5,643,231
CORONARY SINUS CATHETER
Keith G. Lurie, Minneapolis; David G. Benditt, Edina; Jeffrey J. Shultz, Robbinsdale; John David Ockuly, and John J. Fleischhacker, both of Minnetonka, all of Minn., assignors to Daig Corporation, Minnetonka, Minn.
Continuation-in-part of Ser. No. 371,849, Jan. 12, 1995, Pat. No. 5,549,581, and a continuation-in-part of Ser. No. 106,383, Aug. 13, 1993, Pat. No. 5,423,772. This application Jun. 1, 1995, Ser. No. 457,675
Int. Cl.[6] A61M *25/00*
U.S. Cl. 604—282 **4 Claims**

1. A catheter for use in the coronary sinus comprising an elongated member comprising a generally straight, proximal section, and a curved distal section, wherein the distal section comprises a first and second curve, wherein the first curve is curved through an overall arc of about 30 to about 50 degrees, wherein the second curve is curved through an overall arc of about 50 to about 70 degrees, and wherein the second curve is curved out of a plane formed by the first curve in an overall angle from about 30 to about 90 degrees.



5,643,232
PAP SMEAR GLOVE
James P. Villotti, Jr., 1832 Whispering Pines Cir., Englewood, Fla. 34223
Filed Jan. 19, 1996, Ser. No. 588,817
Int. Cl.[6] A41D *19/00;* **A61B** *10/00;* **A61M** *35/00*
U.S. Cl. 604—292 **16 Claims**



16. A method of performing a pap smear sampling procedure using a device for performing pap smear sampling comprising a glove; and a projection extending from a finger of said glove substantially parallel to an axis of said finger, said projection having multiple extensions, extending radially from said axis, comprising the steps of:

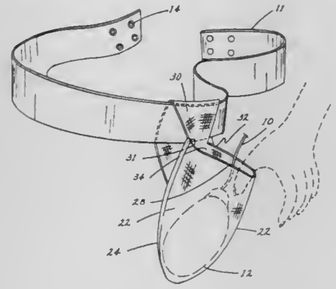
inserting said finger into a vagina of a patient so that said projection reaches into and onto an indocervix and cervix;

rotating said finger a half turn in a circular motion about an axis of said projections to remove a sample from said patient; and

withdrawing said finger from said patient.

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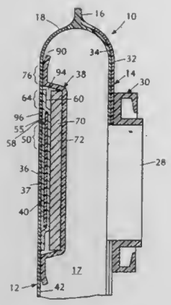
5,643,233
POST-SURGICAL DRAINAGE CONTAINER CARRIER
Nancy F. Turner, 203 Deerfield Dr., Greer, S.C. 29650
Filed Nov. 1, 1995, Ser. No. 551,566
Int. Cl.[6] A61F *5/44*; A45F *5/00*
U.S. Cl. 604—332 **4 Claims**



1. A post-surgical drainage system for draining bodily fluids from a patient after surgery, said drainage system comprising:
a drainage tube connectable to said patient for draining said bodily fluids away from said patient;
a post-surgical drainage container having connectors connecting to said drainage tube for receiving said bodily fluids;
a light-weight, washable post-surgical drainage container carrier for carrying said post-surgical drainage container at a position beneath said drainage tube enabling said bodily fluids to flow into said post-surgical drainage container;
a pouch having a pouch interior included in said post-surgical drainage container carrier for receiving and supporting said post-surgical drainage container preventing said drainage container from pulling on said drainage tube;
a front pouch sidewall and back pouch sidewall included in said pouch for defining said pouch interior;
said back pouch sidewall extending above said front pouch sidewall defining a pouch extension;
an open pouch mouth defined by said front pouch sidewall and said pouch extension, said open pouch mouth communicating with said pouch interior;
said front pouch sidewall being made from a soft, pliable material enabling said open pouch mouth to be opened to a readily applicable distance for providing access to said pouch interior for easily placing said post drainage container within said pouch interior;
said back pouch sidewall being turned onto itself to define a loop for receiving a belt and said pouch extension forms the front portion of said loop; and
said back pouch sidewall being attached to itself after defining said loop at a position beneath said pouch lip so that said pouch lip is unrestricted enabling said pouch extension to deflect into a generally angular position for extending the front of said pouch lip away from said patient.

5,643,234
OSTOMY BAG WITH MULTI-STAGE FILTER
Marc Lesko, Jackson, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.
Filed Feb. 1, 1995, Ser. No. 382,475
Int. Cl.[6] A61F *5/44*
U.S. Cl. 604—333 **10 Claims**

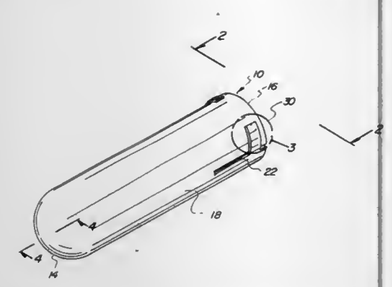
1. An ostomy bag for holding body waste that passes through a stoma comprising,
a) an envelope formed of flexible plastic sheet material defining a waste collection chamber for body waste that includes gaseous and semi-liquid waste material, said envelope having interior surface portions and a top end portion,



b) a waste inlet opening formed in said envelope proximate said top end portion, said waste inlet opening being of predetermined size and including means for fitting said opening around a stoma,
c) gas outlet means formed in said envelope proximate said top end portion and spaced from said waste inlet opening,
d) a deodorizing filter joined to said envelope in alignment with said gas outlet means for deodorizing gaseous waste material before said gaseous waste material exits from said bag through said gas outlet means, and
e) means for protecting said deodorizing filter from contact by semi-liquid waste material, and for permitting the flow of gaseous waste, and for preventing the flow of semi-liquid waste, said protection means being located in said envelope to precede the deodorizing filter such that the gaseous waste must pass through said protection means before it passes through said deodorizing filter, said protection means comprising,
--(1) a pad containing moisture absorbent polymer adjacent said deodorizing filter to absorb moisture condensation and prevent such condensate from reaching said deodorizing filter, said moisture-absorbent pad being gas-transmissible to enable gaseous waste to pass to said deodorizing filter,
(2) a liquid-impermeable membrane adjacent said moisture-absorbent pad to prevent liquid from passing through said liquid-impermeable membrane to said moisture-absorbent pad, said liquid-impermeable membrane being gas-transmissible to enable gaseous waste to pass to said moisture-absorbent pad,
(3) a barrier filter for semi-liquid waste adjacent said liquid-impermeable membrane for providing a tortuous path for semi-liquid waste to substantially prevent passage of said semi-liquid waste through said barrier filter to said liquid-impermeable membrane, said barrier filter being gas-transmissible to enable gaseous waste to pass to said liquid-impermeable membrane, and
(4) a fluid and gas-impermeable cover layer adjacent said barrier filter to cover said barrier filter, said liquid-impermeable membrane, said. moisture-absorbent pad and said deodorizing filter, said fluid and gas-impermeable cover layer being provided with fluid entry means for permitting gaseous waste to bypass the fluid and gas-impermeable cover layer to pass to said barrier filter.

5,643,235
TUBULAR DEVICE FOR THE PENIS OF AN INCONTINENT MALE
Kim A. Figuerido, 33 Leo Ave., Providence, R.I. 02904
Filed Nov. 3, 1995, Ser. No. 552,716
Int. Cl.[6] A61F *5/44*
U.S. Cl. 604—352 **1 Claim**

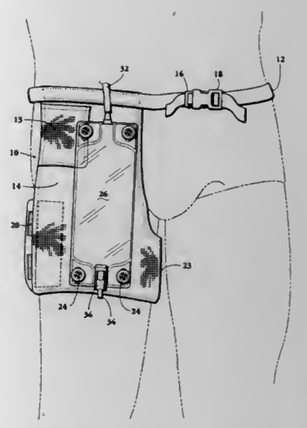
1. A tubular device for the penis of an incontinent male comprising in combination:



a tube having a closed hemispherical distal end and an open generally circular proximal end, the tube having a length being between about 6 to 7½ inches, the tube having a central axis when in use with an imperforate cylindrical wall of a diameter from about 2 inches to 2½ inches, the hemispherical distal end and the cylindrical wall constituting about seventy-five percent of the length of the tube;
a pair of axial slits extending from the proximal end, the slits having a length of about from ⅓ inch to ¼ inch from the proximal end for a distance of about twenty five percent of the length of the tube, the slits thereby dividing the proximal end into a major circumferential extent and a minor circumferential extent extending axially from the distal end at an equal distance;
a pair of lateral tabs extending from the major circumferential extent from adjacent to each slit to overlap different regions of the minor circumferential extent of the tube thereadjacent, each tab having a width of about ½ inch and a length being 1 inch from the major circumferential extent, each tab and the tube being integrally formed of a soft thin flexible rubber;
adhesive on the radially interior face of each tab for contacting the minor circumferential extent to allow the proximal end of the tube to be securely positioned at the base of the penis, the adhesive having a layer of protective covering thereon, the protective covering capable of being pulled back and off the adhesive prior to each tab being positioned on the minor circumferential extent, each tab being spaced apart from another tab when the adhesive causing each tab to be secured at the base, the adhesive allowing the tabs when positioned at the base to constrict the diameter of the proximal end about 30 to 50 percent;
a layer of liquid absorbing hydrophilic material secured to the entire interior of the tube; and
a layer of dry weave hydrophobic material secured throughout the layer of hydrophilic material over its entire extent and positionable in contact with the penis of the wearer.

5,643,236
LEG UNDERPANT FOR SUPPORTING FLUID COLLECTION BAG
Jack D. Hadley, Box 337, Dewey, Okla. 74029
Filed Apr. 12, 1995, Ser. No. 421,670
Int. Cl.[6] A61M *1/00*
U.S. Cl. 604—353 **2 Claims**

1. A holder for a urinary drainage bag for securing the bag to a wearer's leg, and waist, comprising:
a waist band;
said holder affixed to said waist band and comprised of a non-elastic twilled fabric forming a lower partial single short pant leg surrounding and substantially covering said wearer's thigh of said leg; said pant leg being split forming a wide band that encircles said thigh and has two ends with an adjustable hook and loop fastener to connect the two ends about the thigh; and
a means for attaching said urinary drainage bag to said pant leg.

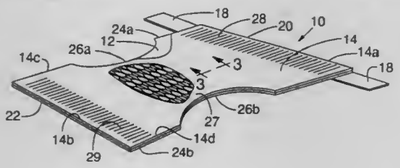


5,643,237
FACING MATERIAL WITH IMPROVED STAIN RESISTANCE
Michael R. Fechillas, East Brunswick, N.J.; Roger Boulanger, Ste-Julie, and Erol Tan, Anjou, both of Canada, assignors to Chicopee, Dayton, N.J.
Continuation of Ser. No. 424,001, Oct. 19, 1989, abandoned, which is a continuation of Ser. No. 310,561, Feb. 14, 1989, abandoned, which is a continuation of Ser. No. 869,156, May 30, 1986, abandoned. This application Apr. 14, 1992, Ser. No. 868,614
Int. Cl.[6] A61F *13/15*
U.S. Cl. 604—366 **4 Claims**



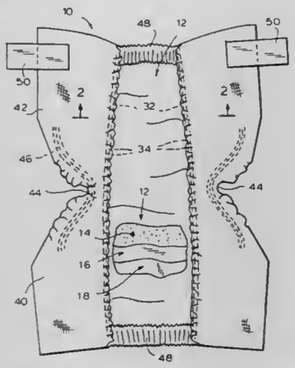
1. A nonwoven facing material with improved stain resistance, said facing material comprising a web of hydrophobic staple fibers intermittently bonded with an absorbent binder, said fibers and said binder being coated, after curing of said binder, with a repellant material, said web having a plurality of apertures therethrough, said repellant material is a fluorochemical repellant material and said web comprises from about 80% to about 95% by weight of the fibers of hydrophobic fibers and, correspondingly, from about 20% to about 5% by weight of the fibers of rayon staple fibers.

5,643,238
ABSORBENT CORE STRUCTURE COMPRISED OF STORAGE AND ACQUISITION CELLS
Andrew T. Baker, Lawrenceville, Ga., assignor to Paragon Trade Brands, Inc., Norcross, Ga.
Filed Sep. 29, 1995, Ser. No. 537,244
Int. Cl.[6] A61F *13/15;* **B32B** *31/00;7/12*
U.S. Cl. 604—368 **18 Claims**



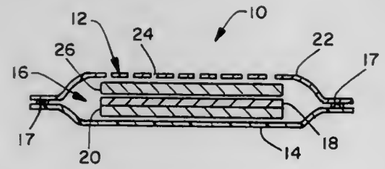
1. An absorbent core structure comprising a plurality of absorbent arrays, each absorbent array comprising (a) facing liquid-pervious sheet portions and superabsorbent material disposed between the sheet portions, the facing sheet portions being attached to each other to define a plurality of discrete liquid-absorbent storage cells that contain the superabsorbent material, wherein each absorbent array is attached to another of the absorbent arrays, and (b) a plurality of acquisition cells between the absorbent arrays that are devoid of material that would impede liquid movement therethrough, wherein the acquisition cells expand upon liquid absorption by the storage cells.

5,643,239
BREATHABLE DISPOSABLE SANITARY PRODUCT CONSTRUCTION
Carl Allen Bodford, Charlottesville, and Rahul Krishnakant Nayak, Stuarts Draft, both of Va., assignors to Poly-Bond, Inc., Waynesboro, Va.
Filed Nov. 3, 1995, Ser. No. 552,727
Int. Cl.[6] A61F *13/15;13/20*
U.S. Cl. 604—370 **24 Claims**



1. A breathable diaper, feminine hygiene, or like disposable sanitary product construction including a plurality of materials comprising, from the skin-facing side outwardly:
(A) a topsheet of liquid- and vapor-permeable hydrophilic material;
(B) a core of highly absorbent material disposed outwardly of said topsheet for absorbing fluid received through said topsheet, said core having an inner surface in fluid communication with said topsheet and an outer surface;
(C) a barrier formed of a multilayer non-woven material which is hydrophobic and vapor-permeable for limiting the outward escape of fluid therethrough while enabling the outward escape of heat and water vapor therethrough, said barrier having a base disposed adjacent said core outer surface; and
(D) a backsheet formed of a multilayer non-woven material which is hydrophobic and vapor permeable for limiting the outward escape of fluid therethrough while enabling the outward escape of heat and water vapor therethrough, said backsheet being disposed at least partially outwardly of said barrier base.

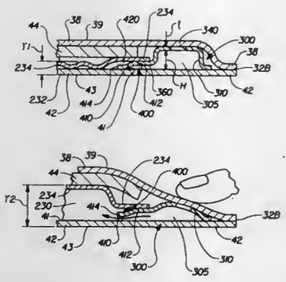
5,643,240
APERTURED FILM/NONWOVEN COMPOSITE FOR PERSONAL CARE ABSORBENT ARTICLES AND THE LIKE
Wanda Walton Jackson, Alpharetta; Monica Signoret Diaz, Woodstock; Cheryl Anne Perkins, Roswell, all of Ga.; Dawn Marie Huffman, Neenah, Wis.; Wendy Louise Bush, Maidstone, England; Cheryl Ann Mocadlo, New London, Wis., and Richard John Birtwell, Maidstone, England, assignors to Kimberly-Clark Corporation, Neenan, Wis.
Continuation of Ser. No. 484,368, Jun. 7, 1995, abandoned, which is a continuation of Ser. No. 175,652, Dec. 30, 1993, abandoned. This application Jun. 18, 1996, Ser. No. 665,710
Int. Cl.[6] A61F *13/15;13/20*
U.S. Cl. 604—378 **17 Claims**



1. A body side liner for personal care absorbent articles comprising:
an apertured film layer superimposed and in contact with a separation layer, said film layer defining apertures therein, said film layer having a percent open area of between about 10 and 30 percent based upon the surface area of said film, said separation layer comprising a fibrous nonwoven web having a bulk of between about 0.76 and 3.8 millimeters, a basis weight of between about 17 and 85 grams per square meter and an average pore size of between about 100 and 400 microns, said apertured film layer and said separation layer when used as a body side liner for a personal care absorbent article yielding a penetration rate of 12 seconds or less and a rewet which does not exceed 0.1 grams.

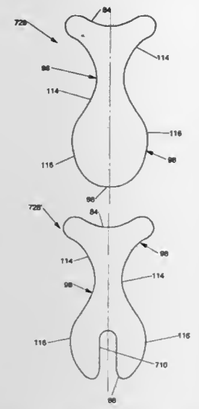
5,643,241
DISPOSABLE ABSORBENT ARTICLE HAVING A PUMP AND AN INFLATABLE COMPONENT
Nicholas Albert Ahr, Cincinnati, and Donald Carroll Roe, West Chester, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Continuation of Ser. No. 250,892, May 31, 1994, Pat. No. 5,582,604. This application May 15, 1995, Ser. No. 441,154
Int. Cl.[6] A61F *13/15;13/20*
U.S. Cl. 604—385.1 **7 Claims**

1. A disposable absorbent article comprising:
a liquid impervious backsheet;
a liquid pervious topsheet joined to the backsheet;
an absorbent core disposed intermediate the topsheet and the backsheet;
an inflatable component disposed on the absorbent article and inflatable from a first thickness to a second thickness substantially greater than the first thickness; and



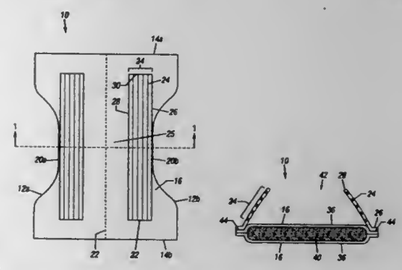
a pump disposed on the absorbent article, the pump having an inlet port for receiving air and an outlet port, and the pump being repeatably deformable to displace air through the outlet port and into the inflatable component for inflating the inflatable component.

5,643,242
ABSORBENT ARTICLES PROVIDING SUSTAINED DYNAMIC FIT
Gary Dean Lavon, Harrison; Edward Paul Carlin, Maineville; Kenneth Barclay Buell; Thomas Allen Desmarais, both of Cincinnati, all of Ohio; John Allen Chang, Paris, France; Christina-Susanne Mueller, Heidelberg, Germany, and Takako Haga, Ashiya, Japan, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Division of Ser. No. 322,633, Oct. 13, 1994, abandoned, which is a continuation of Ser. No. 72,300, Jun. 3, 1993, Pat. No. 5,358,500. This application Jun. 6, 1995, Ser. No. 470,307
Int. Cl.[6] A61F *13/15;13/20*
U.S. Cl. 604—385.1 **18 Claims**



1. An absorbent article for fitting about a wearer to contain body exudates, the wearer having a low motion zone, the absorbent article comprising a containment assembly having a front waist region, a back waist region opposed to said front waist region, a front end edge, a back end edge, longitudinal edges, a longitudinal axis, a longitudinal direction defined as the direction parallel to said longitudinal axis, a lateral axis, a lateral direction defined as the direction parallel to said lateral axis, said containment assembly comprising an absorbent core and an outer covering layer joined with said absorbent core, said front edge having, when the absorbent article is in its flat-out, uncontracted state, a planar substantially arcuate concave shape, and said back end edge having, when the absorbent article is in its flat-out, uncontracted state, a planar substantially arcuate convex shape.

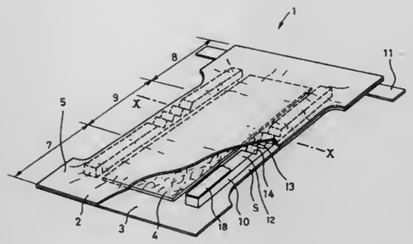
5,643,243
DISPOSABLE DIAPER WITH CUFF
Walter V. Klemp, Houston, Tex., assignor to Drypers Corporation, Houston, Tex.
Continuation-in-part of Ser. No. 312,334, Sep. 26, 1994, Pat. No. 5,536,350. This application Aug. 25, 1995, Ser. No. 519,321
Int. Cl.[6] A61F *13/15;13/20*
U.S. Cl. 604—385.2 **17 Claims**



1. A disposable garment comprising:
a topsheet;
a backsheet;
an absorptive core disposed between and attached the topsheet and backsheet; and
an elasticized unitary cuff:
a) having an edge proximal the topsheet or backsheet, the proximal edge attached to or extending from the topsheet or backsheet;
b) having an edge distal the topsheet or backsheet;
c) positioned to contact a crotch area of a wearer of the disposable garment; and
d) exhibiting planar elastication along a width between the distal edge and proximal edge;
the elasticized unitary cuff essentially constituting the sole elasticizing means for containing waste from a wearer within a crotch area of the disposable garment.

5,643,244
DISPOSABLE GARMENT FOR ABSORPTION OF BODY EXUDATES
Rumi Yamaki, Kawanoe, and Takaaki Shimada, Shita-gun, both of Japan, assignors to Uni-Charm Co., Ltd., Ehime, Japan
PCT No. PCT/JP95/00691, § 371 Date Dec. 6, 1995, § 102(e) Date Dec. 6, 1995, PCT Pub. No. WO95/27459, PCT Pub. Date Oct. 19, 1995
PCT Filed Apr. 7, 1995, Ser. No. 557,100
Claims priority, application Japan, Apr. 7, 1994, 6-069608
Int. Cl.[6] A61F *13/15*
U.S. Cl. 604—385.2 **4 Claims**

1. A disposable garment to be positioned against a wearer's crotch for absorption of body exudates with a crotch-contacting section comprising:
a liquid-permeable topsheet;
a generally flat liquid-impermeable backsheet;
a liquid-absorbent core disposed between the topsheet and the backsheet; and
a pair of body exudate leakage barriers made of a soft elastic material positioned on said backsheet and longitudinally extending on transversely opposite sides on an inner surface of said crotch-contacting section, each of said leakage barriers



including a plurality of longitudinally alternating crests and troughs disposed solely in said leakage barriers.

5,643,245

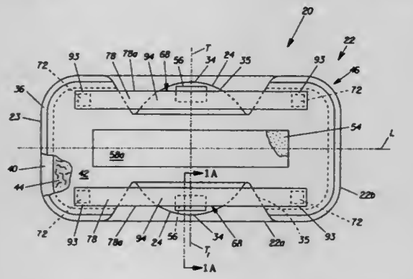
ABSORBENT ARTICLE HAVING TUCKED FLAPS

Thomas Ward Osborn, III, Cincinnati, and Bruce William Lavash, West Chester, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 68,916, May 28, 1993, abandoned, which is a continuation-in-part of Ser. No. 769,891, Oct. 1, 1991, abandoned, and Ser. No. 832,246, Feb. 7, 1992, abandoned, and Ser. No. 906,593, Jun. 30, 1992, abandoned, and Ser. No. 906,629, Jun. 30, 1992, Pat. No. 5,281,209, and Ser. No. 991,786, Dec. 17, 1992, abandoned, and Ser. No. 991,912, Dec. 17, 1992, abandoned, and Ser. No. 42,840, Apr. 5, 1993, Pat. No. 5,354,400, which is a continuation of Ser. No. 769,607, Oct. 1, 1991, abandoned. This application Jul. 11, 1995, Ser. No. 501,215

Int. Cl.[6] A61F *13/15*

U.S. Cl. 604—387 **32 Claims**



1. An absorbent article for wearing in a user's undergarment, said absorbent article having a body-facing side and a garment side, said absorbent article comprising:

a main body portion having a longitudinal centerline which divides said main body portion into a first half and a second half, and comprising:

an absorbent assembly having a first longitudinal edge, a second longitudinal edge;

a first retaining member comprising an inward longitudinal edge joined to said garment side of said absorbent assembly at a point of connection inboard of the first longitudinal edge such that at least a portion of said retaining member is decoupled from said absorbent assembly to form a first recessed area; and

a second retaining member comprising an inward longitudinal edge joined to said garment side of said absorbent assembly at a point of connection inboard of the second longitudinal edge such that at least a portion of said retaining member is decoupled from said absorbent assembly to form a second recessed area;

a first flap joined along a line of juncture to said first half of said main body portion and having a proximal edge adjacent the line of juncture and a distal edge disposed away from the line of juncture, and comprising a flap securement member joined thereto, at least a portion of said first flap being tucked into said first recessed area; and

a second flap joined along a line of juncture to said second half of said main body portion and having a proximal edge adjacent the line of juncture and a distal edge disposed away from the line of juncture, and comprising a flap securement member joined thereto, at least a portion of said second flap being tucked into said second recessed area.

5,643,246

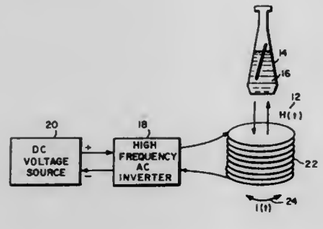
ELECTROMAGNETICALLY TRIGGERED, RESPONSIVE GEL BASED DRUG DELIVERY DEVICE

Steven B. Leeb, Belmont; E. C. Lupton, Boston; Xiaohong Yu, Boston, and George Hovorka, Boston, all of Mass., assignors to Gel Sciences, Inc., Bedford, Mass.

Filed Feb. 24, 1995, Ser. No. 393,971

Int. Cl.[6] A61K *9/22*

U.S. Cl. 604—890.1 **4 Claims**



1. A system for remotely inducing a phase transition in a gel, comprising:

a gel capable of volume change in response to an environmental stimulus;

a seed material in contact with said gel, said seed material selected from the group consisting of a magnetic receptor, an electric receptor and an electromagnetic receptor; and

means for producing said environmental stimulus in proximity to said gel, said means selected from the group consisting of means for generating a time-varying magnetic field, means for generating a time-varying electric field and means for generating an electromagnetic field;

wherein said time-varying electric field comprises a quasi-static electric field.

5,643,247

MICROPARTICLE SWITCHING DEVICES FOR USE IN IMPLANTABLE RESERVOIRS

Julio M. Fernandez, Rochester, Minn., and Chaya Nanavati, Cary, N.C., assignors to Mayo Foundation for Medical Education and Research, Rochester, Minn.

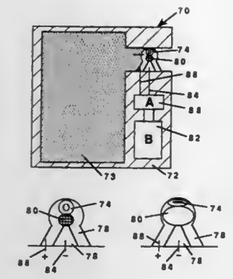
Continuation-in-part of Ser. No. 7,328, Jan. 21, 1993, abandoned. This application May 26, 1994, Ser. No. 249,435

Int. Cl.[6] A61K *9/22*

U.S. Cl. 604—891.1 **11 Claims**

1. A switching device for use with a voltage source effective to generate a voltage having a selected polarity, comprising

a polymer-matrix microparticle composed of a matrix of crosslinked polyionic polymer filaments and defining a surface,



a first chamber containing an electrolyte medium that is in contact with an interior surface region of said surface,

a second chamber containing an electrolyte medium that is in contact with an exterior surface region of said surface,

said first chamber and said second chamber being configured such that said interior surface region is substantially less than said exterior surface region, and

electrical connections adapted to connect the electrolyte medium to such a voltage source, for applying across said first chamber and said second chamber, a voltage having a selected voltage level and polarity,

whereby the device allows electric current flow between the first chamber and the second chamber when the voltage has one of two possible polarities, and substantially blocks current flow between the first chamber and the second chamber the other of two possible polarities.

5,643,248

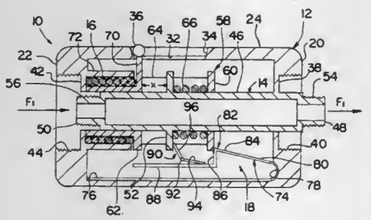
MEDICAL INSTRUMENT WITH FORCE LIMITING MECHANISM

InBae Yoon, 2101 Highland Ridge Dr., Phoenix, Md. 21131

Filed Feb. 7, 1995, Ser. No. 385,182

Int. Cl.[6] A61B *19/00*

U.S. Cl. 606—1 **35 Claims**



8. A handle for medical probes comprising

a housing having proximal and distal ends;

mounting means disposed within said housing for mounting a probe, said mounting means being movable between an extended position proximate said distal end of said housing and a retracted position proximate said proximal end of said housing;

retracting means for moving said mounting means proximally from said extended position to said retracted position;

locking means for engaging said mounting means in said extended position to prevent said retracting means from moving said mounting means to said retracted position while permitting proximal movement of said mounting means in response to a proximal force acting on said mounting means; and

releasing means for triggering release of said locking means when said proximal force exceeds a predetermined threshold to permit said retracting means to move said mounting means proximally from said extended position to said retracted position.

5,643,249

OPTICAL OPHTHALMIC TREATMENT APPARATUS

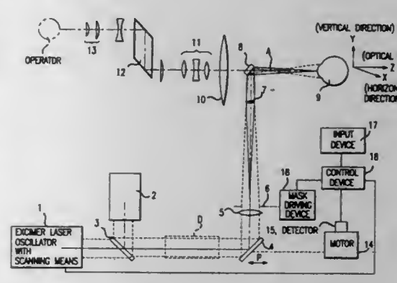
Masanori Amano, Gamagori, Japan, assignor to Nidek Co., Ltd., Japan

Continuation of Ser. No. 16,973, Feb. 12, 1993, abandoned. This application Mar. 9, 1995, Ser. No. 401,288

Claims priority, application Japan, Feb. 14, 1992, 4-014406 U

Int. Cl.[6] A61B *17/36*

U.S. Cl. 606—4 **6 Claims**



1. An ophthalmic treatment apparatus comprising:

a binocular observation optical system having right and left observation optical paths for observing an eye to be operated upon through use of a stereo microscope;

a laser beam transmitting optical system to transmit a therapeutic laser beam onto the eye;

said laser beam transmitting optical system having:

a laser source for generating an ultraviolet therapeutic laser beam;

an irradiation area confining member having an aperture which has a controllable diameter and through which the therapeutic laser beam is transmitted from said laser source;

a projection lens for projecting an aperture image of the therapeutic laser beam transmitted from said irradiation area confining member as an aperture image onto an affected part of the eye to be operated on;

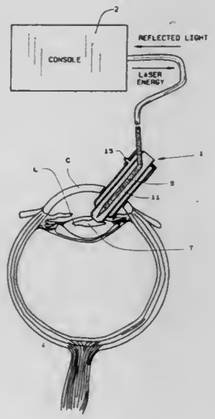
a laser beam reflecting member disposed between the right observation optical path and the left observation optical path to reflect the therapeutic laser beam of said laser beam transmitting system so that the therapeutic laser beam is directed from the projecting lens along a laser beam axis coaxial with an optical axis of an objective lens in said observation optical path;

said laser beam reflecting member being sufficiently small to be substantially non-obstructive to said right and left observation optical paths; and

a condenser member disposed at a position in a path of the therapeutic laser beam upstream from said irradiation confining member yet close to said laser beam reflecting member, said condenser member reducing a diameter of luminous flux of the therapeutic laser beam and directing the therapeutic laser beam through said irradiation confining member for

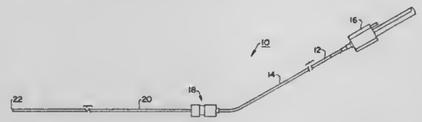
reflection from the laser beam reflection member to the eye, said condenser member sufficiently reducing a diameter of luminous flux of the therapeutic laser beam to enable said laser beam reflecting member to be sufficiently small as defined.

5,643,250
LASER PROBE HAND PIECE
Francis E. O'Donnell, Jr., 709 The Hamptons La., Town & Country, Mo. 63017
Continuation-in-part of Ser. No. 238,799, May 6, 1994, abandoned, which is a continuation of Ser. No. 925,873, Aug. 7, 1992, abandoned. This application Jun. 12, 1995, Ser. No. 489,477
Int. Cl.[6] A61N *5/06;* **A61B** *17/36*
U.S. Cl. 606—4 **15 Claims**



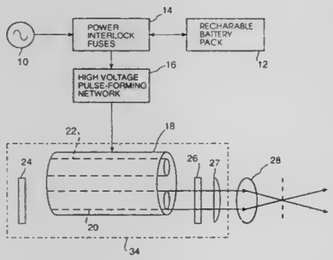
1. A laser probe hand piece utilizing laser energy for the surgical destruction and removal of cataract from the lens of an eye, while supplying an irrigating fluid thereto, comprising:
a hand piece, said hand piece having a front thereof;
a housing formed in said hand piece;
a fiber optic fiber disposed within said housing for conducting laser energy so as to break down the cataract tissue during functioning;
an energy source for delivering laser energy to the fiber optic fiber;
a housing means surrounding said housing and provided for introducing an irrigating solution to the cataract tissue during surgery;
means located on said housing for aspirating such irrigation solution and cataract tissue from the lens;
said hand piece housing cooperating with said aspirating means for aspirating such irrigating solution and cataract tissue from the lens of the eye;
said fiber optic fiber having a forwardly disposed end provided proximate the front of the hand piece and within said housing, and a sapphire laser tip provided connecting to the forwardly disposed end of the fiber optic fiber for focusing the conducted laser energy at the cataract to break down the cataract tissue, said housing means having a port formed therein, said port disposed to allow a flow of irrigating solution through said housing means to the cataract tissue, said port operatively connected to a suction device, thereby providing aspiration;
said fiber optic fiber is quartz and the sapphire laser tip being sculpted; and
a feedback loop means for shutting off that energy source unless the laser probe is in contact with such cataract tissue.

5,643,251
FIBERT OPTIC GUIDE WIRE AND SUPPORT CATHETER THEREFOR
Cecily M. Hillsman; Kevin D. Taylor, both of Colorado Springs, Colo.; Daniel J. Kasprzyk, Bethlehem, Pa., and Matthew S. Solar, Cooper City, Fla., assignors to Spectranetics Corporation, Colorado Springs, Colo.
Division of Ser. No. 225,061, Apr. 8, 1994, Pat. No. 5,514,128, which is a continuation-in-part of Ser. No. 930,934, Aug. 18, 1992, abandoned. This application Oct. 4, 1995, Ser. No. 539,079
Int. Cl.[6] A61B *17/36*
U.S. Cl. 606—7 **11 Claims**



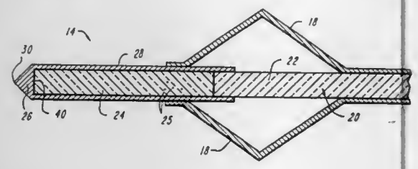
1. A method of performing angioplasty in an intravascular area comprising the steps of:
connecting a guide wire to a source of light energy;
ablating an occlusion in said intravascular area by delivering said light energy to said occlusion with said guide wire;
severing said guide wire to disconnect it from said source;
positioning a catheter proximate to said ablated occlusion with said guide wire; and
treating said occlusion with said catheter.

5,643,252
LASER PERFORATOR
Milton Waner; Stephen T. Flock, both of Little Rock, and Charles H. Vestal, Sheridan, all of Ark., assignors to Venisect, Inc., Little Rock, Ark.
Continuation-in-part of Ser. No. 968,862, Oct. 28, 1992, abandoned. This application Sep. 24, 1993, Ser. No. 126,241
Int. Cl.[6] A61B *17/36*
U.S. Cl. 606—9 **50 Claims**



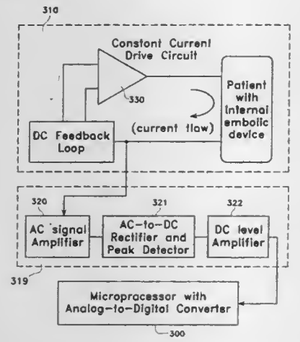
1. A laser perforator device for perforating skin comprising
a) a lasing element which emits a pulsed beam;
b) a power source;
c) a high voltage pulse-forming network linked to the power source;
d) a means for exciting the lasing element, linked to the pulse-forming network;
e) a laser cavity; and
f) a focusing means which focuses the beam from said lasing element to at least one beam shaped as an ellipse at the focal point of the beam.

5,643,253
PHOTOTHERAPY APPARATUS WITH INTEGRAL STOPPER DEVICE
Lincoln S. Baxter, Centerville; Norman Farr, Monument Beach, and Edward L. Sinofsky, Dennis, all of Mass., assignors to Rare Earth Medical, Inc., W. Yarmouth, Mass.
Filed Jun. 6, 1995, Ser. No. 468,568
Int. Cl.[6] A61B *17/36*
U.S. Cl. 606—17 **12 Claims**



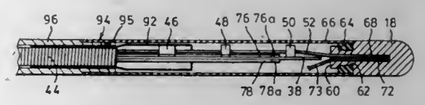
1. A phototherapeutic apparatus comprising
an optical fiber having a proximal end and a distal end, the proximal end adapted for coupling to a source of phototherapeutic radiation; and
the distal end having means for directing such radiation into biological tissue;
the apparatus further comprising a sheath surrounding said optical fiber and having a fluted region which is capable of expanding upon penetration of the optical fiber into biological tissue.

5,643,254
ENDOVASCULAR EMBOLIC DEVICE DETACHMENT DETECTION METHOD
Ronald W. Scheldrup, Menlo Park, and Laurent B. Schaller, Los Altos, both of Calif., assignors to Target Therapeutics, Inc., Fremont, Calif.
Continuation of Ser. No. 205,512, Mar. 3, 1994, abandoned. This application Nov. 21, 1995, Ser. No. 561,169
Int. Cl.[6] A61B *17/38*
U.S. Cl. 606—32 **21 Claims**



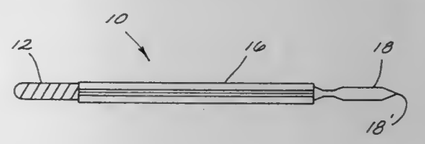
1. A method for detecting electrolytic separation of an occlusion device comprising the steps of:
(a) providing a delivery member and an occlusion device coupled to the delivery member via a linking member;
(b) delivering the occlusion device to a desired site in a mammal via the delivery member;
(c) supplying DC power with a superposed AC signal to the linking member; and
(d) monitoring the superposed AC signal to detect a change in said signal.

5,643,255
STEERABLE CATHETER WITH ROTATABLE TIP ELECTRODE AND METHOD OF USE
Leslie W. Organ, Charleston, S.C., assignor to Hicor, Inc., Charleston, S.C.
Filed Dec. 12, 1994, Ser. No. 355,290
Int. Cl.[6] A61B *50/04*
U.S. Cl. 606—41 **29 Claims**



1. A catheter comprising:
(a) a handle,
(b) a longitudinally extended shaft connected to said handle,
(c) a distal end connected to said shaft, said distal end being bendable with respect to said shaft,
(d) a tip electrode mounted on said distal end for axial rotation thereon, and at least one ring electrode mounted on said distal end adjacent to said tip,
(e) said tip electrode having a conductive portion and an insulated portion,
(f) a first control extending from said handle through said shaft and connected to said distal end and being operable for bending said distal end relative to said shaft,
(g) a second control extending from said handle through said shaft to said tip electrode and being operable for axially rotating said tip electrode, so that said conductive portion of said tip electrode may be placed against tissue and said insulated portion may be oriented to face a patient's bloodstream.

5,643,256
GOLD-PLATED ELECTROSURGICAL INSTRUMENT
R. Wilfrido Urueta, 7010 S. Santa Clara Ave., Tucson, Ariz. 85706
Filed May 19, 1995, Ser. No. 445,276
Int. Cl.[6] A61B *17/39*
U.S. Cl. 606—45 **23 Claims**



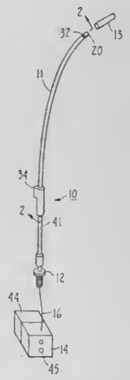
1. An electrosurgical instrument to which electric current can be applied for cauterizing tissue, said electrosurgical instrument comprising:
(a) a stainless steel portion capable of conducting said electric current and having at least one flesh-contacting surface formed thereon;
(b) a gold strike layer on said at least one flesh-contacting surface;
(c) an intermediate layer on said gold-strike layer, said intermediate layer comprising a substantially non-toxic metal having a hardness of at least about 130 on a Knoop scale and an electrical resistivity not exceeding about 15 microhm-cm at 20° C.; and
(d) a non-stick coating on said intermediate layer.

5,643,257

APPARATUS AND METHOD FOR VENOUS LIGATION

Donald Cohen, Irvine; Derek J. Daw, Costa Mesa, both of Calif.; George F. Kick, Medina, Ohio, and George M. Acosta, Long Beach, Calif., assignors to Endovascular, Inc., Costa Mesa, Calif.

Division of Ser. No. 183,994, Jan. 18, 1994, Pat. No. 5,437,664.
This application Mar. 28, 1995, Ser. No. 412,170
Int. Cl.[6] A61B *17/36*
U.S. Cl. 606—48 **5 Claims**



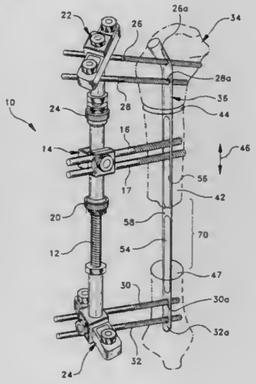
1. A method for treating a varicose vein, comprising the steps of:
(a) providing an electrode;
(b) percutaneously advancing the electrode into the varicose vein such that the electrode is juxtaposed with the wall of the varicose vein;
(c) establishing contact between the wall of the varicose vein and the electrode by manually pressing the vein; and
(d) energizing the electrode until the vein collapses around the electrode to thereby block blood flow through the vein.

5,643,258

DEVICE FOR STABILIZING LONG BONES

Bernd Robioneck, Preetz, Germany, and Giuseppe Varlaro, Pordenone, Italy, assignors to Howmedica GmbH, Schönkirchen, Germany

Filed Jul. 24, 1995, Ser. No. 506,455
Claims priority, application Germany, Aug. 10, 1994, 94 12 873.1
Int. Cl.[6] A61B *17/56*
U.S. Cl. 606—54 **9 Claims**



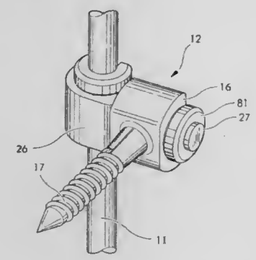
1. A device for stabilizing long bones comprising:
an external fixator comprising a longitudinally extending support rod to be spaced from and parallel to said long bone, at least three pins transversely mounted in series to said support rod along the length thereof, at least one of said pins located on said support rod intermediate two of said at least three pins being movable in a longitudinal direction; and
a locking nail for mounting in the medullary canal of said long bone which has at each of its ends at least one transverse through bore for receiving at least one of said at least two pins, and having between the ends of said nail at least one elongated longitudinally extending transverse through slot for receiving said at least one movable pin.

5,643,259

SPINE FIXATION INSTRUMENTATION

Ricardo C. Sasso, 9436 Spring Mill Dr., Indianapolis, Ind. 46260, and Daniel F. Justin, Orlando, Fla., assignors to Ricardo C. Sasso, Indianapolis, Ind.

Filed Mar. 31, 1994, Ser. No. 220,736
Int. Cl.[6] A61B *17/56*
U.S. Cl. 606—61 **8 Claims**



1. Spine fixation instrumentation comprising:
a first screw threaded at one end for insertion into bone and having a first yoke at the other end;
a rod adapted to be arranged parallel to the spine;
a first connector for fixedly connecting the screw to the rod including a second yoke and a first shaft fixedly mounted on said second yoke;
a first tapered sleeve received on said first shaft and wedged between said first yoke and said first shaft and fixing said first screw to said first connector; and
a second tapered sleeve received on said rod and wedged between said second yoke and said rod and fixing said first connector to said rod.

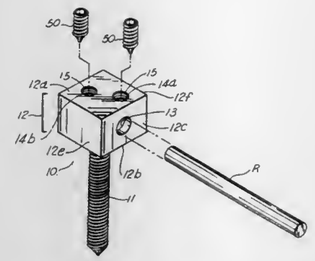
5,643,260

ORTHOPEDIC FIXATION SYSTEM

Brian J. Doherty, Atherton, Calif., assignor to Smith & Nephew, Inc., Memphis, Tenn.

Filed Feb. 14, 1995, Ser. No. 388,350
Int. Cl.[6] A61B *17/56*
U.S. Cl. 606—61 **38 Claims**

1. An orthopedic device suitable for securing an orthopedic longitudinal member, said device comprising:
(a) an orthopedic fastener having an upper head and a lower engaging means integral with said head for engaging a bone,



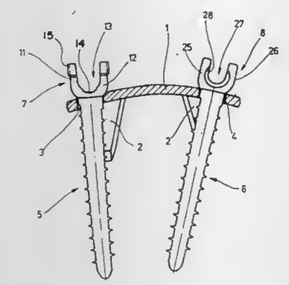
said head further comprising a transverse bore communicating therethrough for housing a longitudinal member having a substantially cylindrical surface, a lower end integral with said engaging means, and an upper end having two holes communicating with said transverse bore, wherein said two holes are oriented such that said longitudinal member is aligned between each of said two holes;
(b) two set screws, each of said two set screws adapted for engagement within each such of said two holes, wherein each of said two set screws comprises an upper body and a lower tip having a concave outer surface configured to conform to said cylindrical surface of said longitudinal member;
(c) wherein said longitudinal member is clamped between said lower tips of said two set screws thereby creating a three-point shear clamp grip within the transverse bore when said two set screws contact and engage said longitudinal member.

5,643,261

OSTEOSYNTHESIS DEVICE

Bernd Schäfer, Schorndorf, and Klaus Zielke, Bad Wildungen, both of Germany, assignors to Schafer micomed GmbH, Germany

Filed Mar. 8, 1995, Ser. No. 400,252
Claims priority, application Germany, Mar. 10, 1994, 44 07 975.3; Mar. 18, 1994, 44 09 242.3
Int. Cl.[6] A61B *17/70*
U.S. Cl. 606—61 **31 Claims**



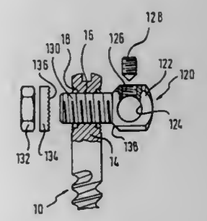
1. An osteosynthesis device which can be secured to a vertebra of a spinal column, comprising: at least two bone screws for securing said device to the vertebra; at least two elongated rods of different diameter; and a cross connecting device mounted by said screws to the vertebra, wherein said cross connecting device extends substantially transverse to said elongated rods, wherein only one of said rods is embodied as an active, variably adjustable threaded rod, and the other rod is embodied as one of a milled and longitudinally grooved rod.

5,643,262

DEVICE FOR SPINAL COLUMN

Peter Metz-Stavenhagen, and Bernd Robioneck, both of New York, N.Y., assignors to Howmedica GmbH, Schoenkirchen, Germany

Filed Jun. 1, 1995, Ser. No. 457,635
Claims priority, application Germany, Jun. 4, 1994, 9409123 U
Int. Cl.[6] A61B *17/56*
U.S. Cl. 606—61 **6 Claims**



1. A device for fixing in a selected position sections of a spinal column, comprising at least a pair of pedicle screws and a threaded rod to be connected to each pedicle screw, wherein each pedicle screw (**10**) includes an annular head (**14**) having a first face and a second face and an aperture therein, which annular head includes a first roughened portion (**18**,**20**) on at least one face thereof, wherein an adapter (**20**,**40**,**50**,**80**,**80***a*, **120**) is provided which is secured to the head (**14**) of each pedicle screw (**10**) by first screw means which passes through said aperture in said annular head, wherein a roughened portion (**28**,**46**,**54**,**92**,**96**) of the adapter cooperates with said roughened portion of the head (**14**) to counteract a rotation of the adapter with respect to the pedicle screw, wherein the adapter has a first side and a second side and a receiving opening for receiving the threaded rod, wherein the threaded rod is secured to the adapter by second screw means,
wherein the adapter (**80**,**80***a*,**120**) includes a threaded portion (**82**,**130**) which may be inserted through the annular head (**14**) of the pedicle screw (**10**) to be secured by means of a first nut (**84**,**132**) screwed on said threaded portion, and
wherein the adapter (**120**) includes a tapered clamping face (**138**) which is non-rotatably and tightly secured to the pedicle screw head (**14**) when tightening the nut (**132**), wherein a first washer (**134**) includes a roughened portion (**136**) to fixedly engage the roughened portion (**18**) of one face of the pedicle screw head (**14**) when the nut (**132**) is tightened, and
wherein the adapter (**22**,**80**) is secured by means of a second nut and a third nut (**58**,**80**,**116**,**118**) to the threaded rod (**56**,**100**) at said first side and said second side of the adapter.

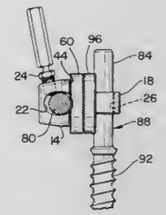
5,643,263

SPINAL IMPLANT CONNECTION ASSEMBLY

Peter Melott Simonson, 770 Claughton Island Dr., Suite 414, Miami, Fla. 33131

Filed Aug. 14, 1995, Ser. No. 515,289
Int. Cl.[6] A61B *17/56*
U.S. Cl. 606—61 **7 Claims**

1. A connection assembly for connecting a spinal implant rod to a spinal implant bolt, the assembly comprising:
a rod connecting member having an aperture for receiving a portion of the rod;



a bolt connecting member having an aperture for receiving a portion of the bolt, the rod connecting member and the bolt connecting member being engaged to one another so as to be rotatable about a connection axis;

a rod interface washer positioned over a portion of the rod connecting member;

a bolt interface washer positioned over a portion of the bolt connecting member, the rod interface washer and bolt interface washer being moveable in part between the rod connecting member and the bolt connecting member, the rod connecting washer being fixed against rotation relative to the rod connecting member and the bolt interface washer being fixed against rotation relative to the bolt connecting member; and

structure extendable into the aperture of at least one of the rod connecting member and the bolt connecting member, so as to urge one of the rod and the bolt toward the other, whereby at least one of the rod interface washer and the bolt interface washer will move substantially along said connection axis and will be pressed together between the rod and the bolt, preventing rotation of the rod interface washer and the rod connecting member relative to the bolt interface washer and the bolt connecting member, and securing the rod to the bolt.

5,643,264

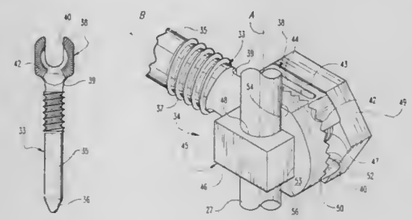
ILIAC SCREW

Michael C. Sherman, Memphis; Eddie Ray, III, Cordova, both of Tenn.; Jean Pierre Farcy, Piermont, N.Y., and Joseph Tai, Memphis, Tenn., assignors to Danek Medical, Inc., Memphis, Tenn.

Filed Sep. 13, 1995, Ser. No. 527,415

Int. Cl.[6] A61B *17/56*

U.S. Cl. 606—61 **19 Claims**



1. A bone screw for connection between a human bone and a fixation member comprising:

a smooth distal shank terminating in a smooth tip at a distal end of said bone screw;

a threaded proximal shank carrying bone engaging threads; and

a head portion adjacent said proximal shank at an opposite proximal end of said bone screw, said head portion being configured for engagement to the fixation member.

5,643,265

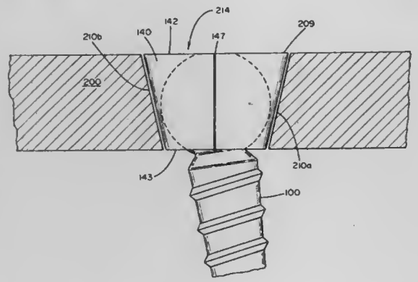
DYNAMIC COMPRESSION POLYAXIAL LOCKING SCREW PLATE ASSEMBLY

Joseph P. Errico, Hempstead, N.Y.; Thomas J. Errico, Summit, and James Ralph, Oakland, both of N.J., assignors to Fastenetix, L.L.C., Summit, N.J.

Continuation-in-part of Ser. No. 421,087, Apr. 13, 1995, Pat. No. 5,520,690. This application May 26, 1995, Ser. No. 451,930

Int. Cl.[6] A61B *17/80*

U.S. Cl. 606—70 **9 Claims**



1. A dynamic compression polyaxial locking screw plate assembly for drawing together and immobilizing a plurality of bone segments, via fixation to surfaces thereof, comprising:

an elongate plate including first and second longitudinal portions, and a middle defined therebetween;

at least one elongate hole, extending through at least one of said first and second longitudinal portions, having a remote end and a proximal end thereof and lateral sidewalls connecting said ends, each of said sidewalls including a sloped surface conformation;

means in at least the other of said first and second longitudinal portions by which said plate is securable to a first one of said plurality of said bone segments;

at least one corresponding coupling element, having a semi-spherical interior volume, said coupling element being insertable into said at least one elongate hole, slidable along said sloped surface conformations, and lockable within said elongate hole; and

at least one corresponding bone screw having a semi-spherical head and a shaft, said shaft portion being insertable through the corresponding elongate hole and into a second one of said bone segments, and said semi-spherical head portion being rotationally freely mounted within the semi-spherical interior volume of the coupling element prior to insertion and such that the shaft of the bone screw and the coupling element may be inserted into the corresponding elongate hole and said shah of the bone screw may be inserted into said second bone segment at a selected angle within a predetermined range of angles including non-perpendicular angles relative to the plate and thereby locking said coupling element and said semi-spherical head to said plate at said selected angle as said semi-spherical head and said coupling element are advanced into said elongate hole and along said sloped surface conformations toward the middle of said plate,

thereby drawing the first and second bone segments together.

5,643,266

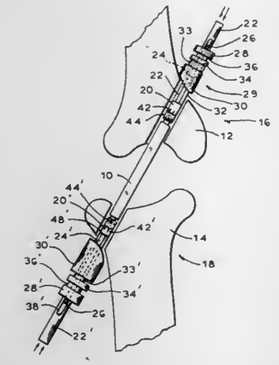
METHOD AND APPARATUS FOR SECURING LIGAMENTS

Lehmann K. Li, Milford, Conn., assignor to Li Medical Technologies, Inc., Shelton, Conn.

Filed Jun. 5, 1995, Ser. No. 465,559

Int. Cl.[6] A61B *17/56*

U.S. Cl. 606—72 **21 Claims**



1. Apparatus for reattaching a ligament or implanting a ligament replacement in bone comprising:

a first ligament attaching element for coupling to a first end of the ligament or ligament replacement;

a second ligament attaching element for coupling to a second end of the ligament or ligament replacement;

a first engaging element slidably disposed on the first ligament attaching element and having at least one longitudinally extending finger;

a second engaging element slidably disposed on the second ligament attaching element and having at least one longitudinally extending finger;

the finger of each engaging element being directed toward each other, the first attaching element and first engaging element being adapted to be inserted in a first bore in a first bone member, the second attaching element and second engaging element being adapted to be inserted in a second bore in a second bone member aligned with the first bore, with the ligament or ligament replacement disposed between the attaching elements and in general alignment with the bores;

the first and second attaching elements each having cam surfaces thereon for engaging the at least one finger of the respective engaging element;

the finger of each engaging element being adapted to be moved into engagement with the cam surface thereby to force the finger to move outwardly into engagement with the wall of the bore in the respective bone member, thereby securing the engaging element into the respective bone member with the ligament or ligament replacement attached between the first and second attaching elements;

the first attaching element comprising a first securement point for the first end of the ligament or ligament replacement, the ligament or ligament replacement being secured in the first bore without being wedged between the attaching element and the wall of the first bore, the second attaching element comprising a second securement point for the second end of the ligament or ligament replacement, the ligament or ligament replacement being secured in the second bore without being wedged between the attaching element and the wall of the second bore.

5,643,267

BONE CONNECTOR ADAPTED FOR JOINING CUT BONE ENDS

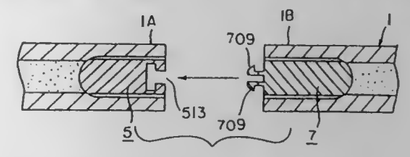
Shigeki Hitomi, Osaka-fu; Hiroshi Mizuno, Kyoto-fu, and Satoshi Ojima, Tokyo, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 28,196, Mar. 9, 1993, abandoned. This application Mar. 1, 1995, Ser. No. 396,577

Claims priority, application Japan, Mar. 10, 1992, 4-087756; May 21, 1992, 4-155754

Int. Cl.[6] A61B *17/86*

U.S. Cl. 606—73 **26 Claims**



12. A bone connector comprising:

first and second joints having a substantially circular cross-section wherein each said cross-section is substantially equal to the other in diameter, said first and second joints being adapted to be secured to cut ends of bone pieces to be interconnected;

said first and second joints each comprising threads surrounding a peripheral surface thereof for screw engaging in the cortical bone of one of the two cut bone pieces, and

wherein one of said first and second joints comprises a stepped engaging groove extending through an end surface thereof in a direction substantially perpendicular to a longitudinal axis of said one of said first and second joints, wherein said stepped engaging groove comprises a first groove having a first width meeting said end surface, and a second groove having a second width greater than said first width, said second groove positioned within said one of said first and second joints and extending from said first groove;

the other of said first and second joints comprises a pair of engaging projections fixed to and extending from an end surface of said other of said first and second joints, wherein each said engaging projection comprises a leg portion substantially perpendicular to said end surface and engageable with said first groove, and a projection which projects from said leg portion and is engageable with said second groove, wherein said engaging projections engage with said stepped engaging groove to retain said end surfaces of said first and second joints in contact with one another; and

wherein upon engaging said engaging projections with said stepped engaging groove to retain said end surfaces of said first and second joints in contact with one another, said first and second joints are adapted to maintain the cut ends of bone pieces in contact, such that the cut ends substantially encircle said end surfaces of said first and second joints.

5,643,268

FIXATION PIN FOR FIXING A REFERENCE SYSTEM TO BONY STRUCTURES

Stefan Vilsmeier, Poing; Stefan Lippstreu, Markt Schwaben, and Michael Bertram, Heimstetten, all of Germany, assignors to BrainLAB Med. Computersysteme GmbH, Poing, Germany

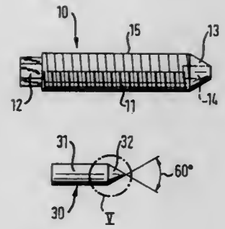
Filed Sep. 11, 1995, Ser. No. 526,515

Claims priority, application Germany, Sep. 27, 1994, 44 34 519.4

Int. Cl.[6] A61B *17/00*

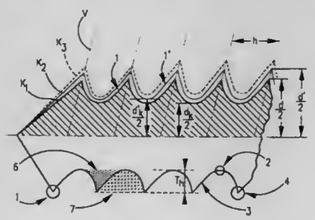
U.S. Cl. 606—73 **14 Claims**

1. Fixation pin (**10**) for fixing a reference system, especially a head ring for stereotactic treatment, to bony structures with a shaft (**15**) made of a plastic material with



an outside thread (**11**),
a coupling shoulder (**12**) for a screwdriver, and
a point holder (**13**), and with
a point (**30**) with a conical front end (**32**) held by the point holder (**13**) characterized in that
the point (**30**) is made of a semiprecious stone material.

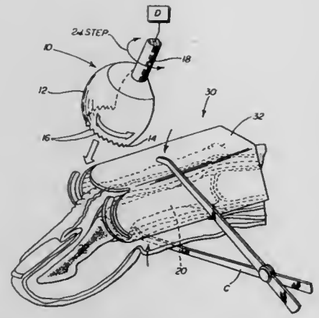
5,643,269
EXTERNALLY THREADED BODIES FOR USE AS TAPS OR SCREWS
Anton Härle, Drechslerweg 40, 48161 Münster, Germany
Continuation-in-part of Ser. No. 32,453, Mar. 17, 1993, abandoned, which is a continuation of Ser. No. 749,524, Aug. 26, 1991, abandoned. This application Sep. 16, 1994, Ser. No. 308,119
Claims priority, application Germany, Aug. 24, 1993, 40 26 777C2
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—79 **24 Claims**



1. A set of thread cutting taps each arranged to cut a final and usable female thread and each having a crest diameter and a root diameter, comprising a plurality of taps including a first tap having a first helical thread cutting ridge forming a first thread cutting thread and at least a second tap having a second helical thread cutting ridge forming a second thread cutting thread, each of said cutting threads having crest and root diameters at least one of which is smaller in said first tap than in said second tap, said cutting threads in all taps of the set having the same thread pitch independently of the differences between said diameters and said differences being sufficiently small to ensure that a female thread cut by said first tap is not damaged when such female thread is being enlarged by said second tap of the set.

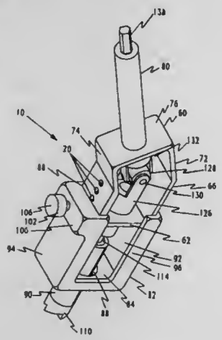
5,643,270
MULTI-PLANE CURVILINEAR SAW, GUIDE AND METHOD
C. Robert Combs, 708 Turf Ct., Lexington, Ky. 40502
Filed Aug. 3, 1995, Ser. No. 510,893
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—79 **16 Claims**

1. A multi-plane curvilinear saw for cutting an end of a bone in response to activation by power means, and particularly adapted



for providing a substantially rounded shape on the end of a bone that forms one member of a joint in a digit, comprising:
a substantially hollow, hemispherically shaped body having an arcuate exposed edge on one side;
connection means on a side opposite from said one side for connecting said body to said power means to provide activation of said arcuate exposed edge; and
cutting means disposed along said arcuate exposed edge;
whereby said cutting means upon being activated in response to said power means and positioned to engage said bone end is operative to create said rounded shape.

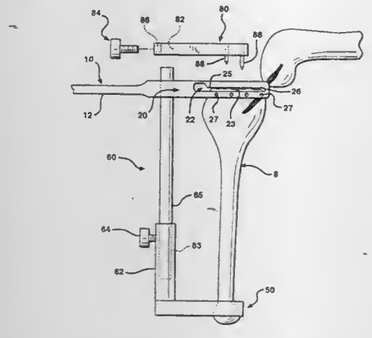
5,643,271
ANGLED ORTHOPEDIC SURFACER AND GUIDE
Gary W. Sederholm, Austin, Tex.; Kenneth A. Gustke, Tampa, Fla., and Janet L. Krevolin, Austin, Tex., assignors to Sulzer Orthopedics Inc., Austin, Tex.
Filed Sep. 9, 1994, Ser. No. 303,628
Int. Cl.[6] A61B *17/56*
U.S. Cl. 606—80 **11 Claims**



1. An orthopedic apparatus comprising
means for cutting bone,
means for receiving torsional forces, said receiving means having a first axis of rotation,
means for turning said means for cutting bone, said turning means having a second axis of rotation, said second axis being non-parallel with respect to said first axis,
a U-joint for translating said torsional forces from said receiving means to said turning means,
a housing surrounding said U-joint,
a spacer for selectively adjusting a depth of cut of said means for cutting bone, said spacer being slidingly received over said housing, and

means for securing said spacer at a selected position with respect to said means for cutting bone.

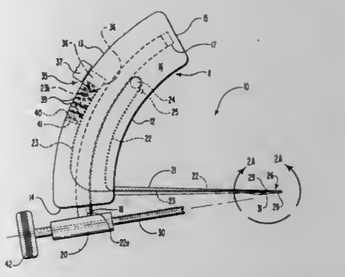
5,643,272
METHOD AND APPARATUS FOR TIBIAL RESECTION
Timothy G. Haines, Stewartsville, and David B. Goldstein, Weehawken, both of N.J., assignors to Hudson Surgical Design, Inc., Rutherford, N.J.
Continuation-in-part of Ser. No. 300,379, Sep. 2, 1994, Pat. No. 5,514,139, and Ser. No. 342,143, Nov. 18, 1994, Pat. No. 5,597,379, which is a continuation-in-part of Ser. No. 300,379. This application Jun. 7, 1995, Ser. No. 479,363
Int. Cl.[6] A61B *17/56*
U.S. Cl. 606—80 **19 Claims**



8. An apparatus for resecting a proximal human tibia comprising:
alignment means having proximal and distal ends;
distal attachment means for attaching to the tibia, the distal attachment means interconnected with the distal end of the alignment means;
fixation means for attachment to the proximal tibia, the fixation means interconnected with the proximal end of the alignment means for aligning the alignment means;
cutting guide means interconnected with the alignment means, the cutting guide means comprising cutting guides positionable in opposing relation along sides of the tibia, the cutting guides including cutting guide surfaces and fixation means for affixing the opposing cutting guides to opposing sides of the tibia; and
milling means for cutting the tibia, the milling means coacting with the cutting guide surfaces of the cutting guide means for resecting the tibia.

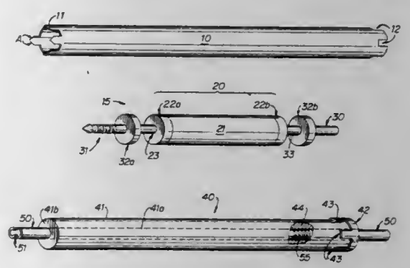
5,643,273
ACL BONE TUNNEL PROJECTION DRILL GUIDE AND METHOD FOR ITS USE
Ron Clark, 1184 E. 80 North, American Fork, Utah 84003-2968
Filed Feb. 17, 1995, Ser. No. 390,872
Int. Cl.[6] A61B *17/56*
U.S. Cl. 606—96 **12 Claims**

1. An ACL bone tunnel projection drill guide comprising, a body configured to be conveniently held by a surgeon wherein is formed a uniform arcuate shaped cavity extending therein from an end surface for receiving a curved radial arm for travel back and forth therein and including an outer slot formed along a body rear side surface; a curved radial arm; a straight wire guide tube means that is connected at its proximal end at approximately a right angle to an end of a body forward side which said wire guide tube means includes an articulating tip at its distal end and is open there-



through to contain a connecting wire and a projecting wire; a connecting wire with means for connecting a distal end thereof to said articulating tip; means for connecting a proximal end of said connecting wire to said radial arm, whereby when said radial arm is moved along said arcuate shaped cavity, said articulating tip is pivoted from an axial attitude to said wire guide tube, to an angle that is the angle formed between a distal end of said radial arm and said body end wherethrough said radial arm is fitted; a drill tube mount secured across said radial arm distal end that receives a drilling guide barrel fitted therethrough, which said drilling guide barrel aligns with a passage formed through said articulating tip; a projecting wire contained in said wire guide tube means; an actuator slide means fitted to travel within said body rear side surface slot that connects to a proximal end of said projecting wire such that movement of said actuator slide extends and retracts a distal end of said projecting wire out of and back into said articulating tip; and means for determining the distance said projecting wire extends from the distal end of said articulating tip.

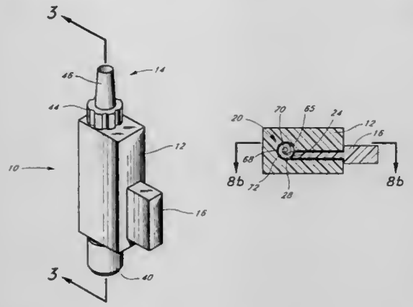
5,643,274
ORTHOPEDIC FASTENER APPLICATOR KIT
Thomas W. Sander, Winona Lake, Ind.; Robert Gangnath, Monroe, and Daniel R. Lee, New Haven, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.
Division of Ser. No. 395,277, Feb. 27, 1995, which is a continuation of Ser. No. 80,383, Jun. 21, 1993, abandoned. This application May 1, 1995, Ser. No. 432,476
Int. Cl.[6] A61B *17/58*
U.S. Cl. 606—104 **14 Claims**



1. A kit for endoscopically applying an orthopedic fastener activated by a proximally moving setting pin, said kit comprising:
a) means for drilling into bone;
b) an orthopedic fastener including a rivet portion and a setting pin movably disposed through the rivet portion, the setting pin having a proximal portion with an outer surface;
c) applicator means for applying the orthopedic fastener, the applicator including means for grasping the outer surface of the proximal portion of the setting pin; and

d) cannula means for receiving said drilling means and said applicator means.

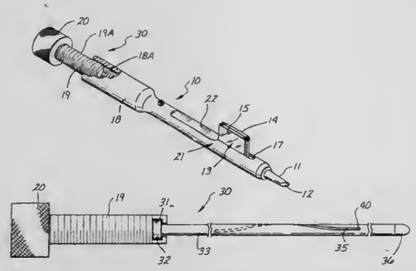
5,643,275
INTRAOCULAR LENS INJECTOR
Larry W. Blake, Coto de Caza, Calif., assignor to Pharmacia Iovision, Inc., Irvine, Calif.
Division of Ser. No. 86,930, Jul. 2, 1993. This application Jun. 6, 1995, Ser. No. 466,037
Int. Cl.[6] A61B *17/00;* **A61F** *2/16*
U.S. Cl. 606—107 **3 Claims**



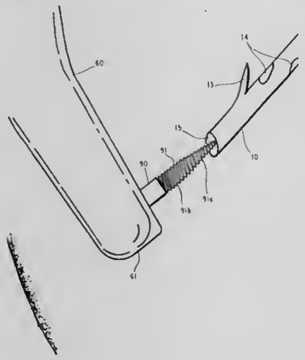
1. A method of inserting an intraocular lens into a small incision comprising the steps of:
providing an intraocular lens in an unstressed state;
rolling said lens upon itself into a tightly rolled spiral within a passageway, said passageway having an opening; said rolling step comprising:
urging said unstressed intraocular lens into said passageway through said opening;
contacting a far wall of said passageway opposite said opening with a first edge of the intraocular lens;
continually urging said intraocular lens into said passageway, as said first edge of said lens moves along said wall of the passageway until said first edge of the intraocular lens engages a second portion of the intraocular lens which has just been introduced into the passageway; continually urging said intraocular lens into said passageway, as said lens rolls upon itself into a tightly rolled spiral;
continually urging said intraocular lens into said passageway, until the entire intraocular lens has rolled upon itself and the intraocular lens is compressed to a diameter of the passageway; and
urging said tightly rolled lens into the eye of the patient.

5,643,276
APPARATUS AND METHOD FOR PROVIDING DESIRED ROTATIONAL ORIENTATION TO AN INTRAOCULAR LENS
Edward R. Zaleski, Santa Ana, Calif., assignor to Allergan, Waco, Tex.
Filed Oct. 10, 1995, Ser. No. 540,428
Int. Cl.[6] A61F *9/00*
U.S. Cl. 606—107 **19 Claims**

12. An apparatus for inserting a folded intraocular lens through an incision into an eye comprising:
a tube defining a hollow passage, said tube having an ejection opening through which said intraocular lens is passed from said hollow passage into an eye;
an injector rod longitudinally movable within said passage of said tube, said injector rod having a distal end portion which includes a forceps-like element including two spaced apart members which are substantially stationary relative to each other and are structured to engage the folded intraocular lens within said hollow passage of said tube; and
a cam race disposed on said injector rod and a cam follower disposed on said tube, said cam race and said cam follower being positioned so that said distal end portion of said injector rod is axially rotated a controlled amount as said injector rod is moved distally through said tube.



5,643,277
DEVICE FOR RETRIEVING STENTS
Nib Soehendra, Norderstedt, and Carsten Grosse, Querkamp, both of Germany, assignors to Wilson-Cook Medical, Inc., Winston-Salem, N.C.
Continuation of Ser. No. 19,984, Feb. 17, 1993, Pat. No. 5,334,208, which is a division of Ser. No. 549,601, Jul. 9, 1990, abandoned. This application Aug. 2, 1994, Ser. No. 284,349
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—108 **7 Claims**



1. In combination, a stent and instrumentation for retrieving the stent from within a patient's body, comprising:
a stent adapted to be implanted within the patient's body, said stent having a proximal end opposite a distal end, and defining a lumen therethrough, said stent including an inner wall surrounding said lumen;
an endoscope, said endoscope having a proximal end and a distal end, said endoscope being configured for positioning with said proximal end outside of the patient's body and said distal end within the patient's body proximal to the proximal end of said stent, said endoscope defining a channel therethrough; and
a retrieval cable, said retrieval cable being advanced through the channel of said endoscope, said cable including a proximal end configured for positioning outside the patient's body, and a distal end configured for positioning within the patient's body, the distal end having a threaded portion with a closed

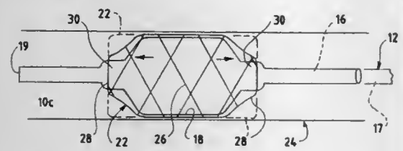
outer surface defining at least one of a generally cylindrical body portion and a tapered body portion, said threaded portion including a helical thread projecting from said at least one of said generally cylindrical body portion and said tapered body portion to form a ridge along said outer surface, at least a portion of said threaded portion being positioned within said lumen and said thread being attachedly engaged to said inner wall to thereby form an attachment between said retrieval cable and said stent and wherein the attached combination of said retrieval cable and said stent are removable through the channel of said endoscope and out of the body.

5,643,278
STENT DELIVERY SYSTEM
Bandula Wijay, Houston, Tex., assignor to Leocor, Inc., Houston, Tex.
Filed Apr. 6, 1995, Ser. No. 418,087
Int. Cl.[6] A61M *29/00*
U.S. Cl. 606—108 **23 Claims**



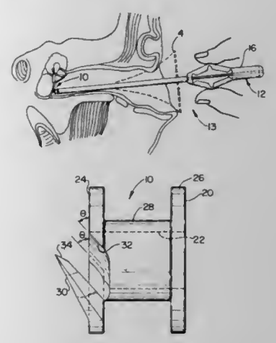
1. A stent-delivery apparatus, comprising:
an elongated support member;
an expanding member mounted to said elongated support member;
a stent mountable over said expanding member;
at least one retainer, said retainer initially overlapping said stent to releasably secure said stent until said expanding member is expanded, which triggers release of said stent by said retainer; said retainer formed primarily of a metallic structure.

5,643,279
METHOD OF CATHETER BALLOON MANUFACTURE AND USE
Thomas N. Trotta, Miami, Fla., assignor to Cordis Corporation, Miami Lakes, Fla.
Filed Mar. 12, 1996, Ser. No. 614,399
Int. Cl.[6] A61F *11/00*
U.S. Cl. 606—108 **14 Claims**



1. The method of preparing a catheter balloon for inflation and for inflating said balloon, which comprises:
(A) radially stretching at least a portion of a plastic tube to undergo work hardening, until said radially stretched tube portion exhibits a desired increase in molecular orientation;
(B) longitudinally stretching at least part of said tube portion to create a desired increased molecular orientation longitudinally relative to said tube; and
(C) thereafter inserting said tube portion as part of a catheter into a patient, in which said tube portion lumen is pressurized within said patient while being surrounded by an expansible stent for implantation within said patient, whereby said stent is expanded and implanted, and pressurizing a lumen of said tube portion to cause radial expansion of said tube portion within said patient in which a central portion of said plastic tube portion is radially expanded at least initially to a greater degree than outer portions of said tube portion.

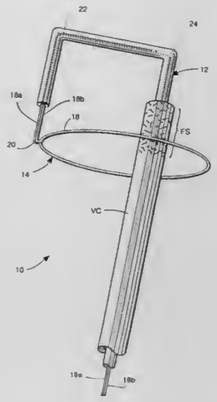
5,643,280
INTEGRAL MYRINGOTOMY TUBE AND INSERTER
Eddy H. Del Rio, Royal Palm Beach, and William E. Anspach, III, Stuart, both of Fla., assignors to The Anspach Effort, Inc., Palm Beach Gardens, Fla.
Filed Dec. 7, 1995, Ser. No. 568,915
Int. Cl.[6] A61F *11/00*
U.S. Cl. 606—109 **8 Claims**



1. An inserter and grommet combination comprising a grommet and an inserter, said inserter is adapted for implanting a grommet with an axial lumen to the tympanic membrane of an ear comprising an elongated support tube having a lumen, a distal end, and a proximal end, a pull rod concentrically disposed relative to said support rod, said pull rod having an enlarged diameter portion extending beyond the distal end of said support tube, said grommet being frictionally supported to said enlarged portion, an ejector handle having a distal end and a proximal end portion, a first annular portion formed on said distal end of the ejector handle and a second annular portion formed on said proximal end portion, finger movable to a radially inward position interconnecting said first annular portion and said second annular portion, said proximal end of said support rod being affixed to said first annular portion, said pull rod being affixed to said second annular portion, said finger means being movable radially inwardly to position said support rod to abut said grommet and pull said pull rod in an axial direction away from said grommet, whereby the rectilinear motion of the push rod and support rod relative to each other implants said grommet in said tympanic membrane.

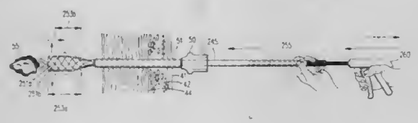
5,643,281
DEVICES FOR REMOVING FIBRIN SHEATHS FROM CATHETERS
Paul V. Suhocki, and Mark T. Ridinger, both of Durham, N.C., assignors to Duke University, Durham, N.C.
Filed Apr. 5, 1995, Ser. No. 417,019
Int. Cl.[6] A61B *17/22*
U.S. Cl. 606—113 **17 Claims**

1. A medical snare device for removing patient-internal material during a medical procedure comprising:
an elongate tubular member;
a flexible wire disposed within said tubular member and having a distal end portion which is capable of being extended beyond a terminal end of said tubular member; and
a snare loop attached to said distal end portion of said wire, wherein
said wire is formed of a shape-memory metal alloy and includes a plurality of axially separated bends to cause said wire to retroflex from a deformed condition wherein said wire is aligned with and confined by said tubular member, and into a



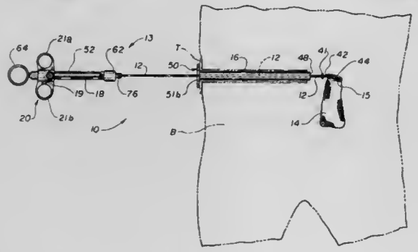
non-deformed condition wherein said distal end portion of said wire is flexed in a proximal direction such that the snare loop encircles a distal region of said tubular member in response to extension of said distal end portion of said wire beyond said terminal end of said tubular member.

5,643,282
SURGICAL INSTRUMENT AND METHOD FOR REMOVING TISSUE FROM AN ENDOSCOPIC WORKSPACE
Maciej J. Kieturakis, 372 Beverly Dr., San Carlos, Calif. 94070
Filed Aug. 22, 1994, Ser. No. 293,855
Int. Cl.[6] A61B *17/24*
U.S. Cl. 606—114 **22 Claims**



1. An instrument for removing excised tissue from the interior of a body through an incision for a cannula and for guiding a cannula into and of said incision, comprising:
an elongate tubular sleeve having proximal and distal ends and a medial portion, a sleeve wall defining an interior bore extending therethrough;
an exterior of the tubular sleeve having a first repose position with a first transverse dimension, at least a portion of said tubular sleeve being capable of a second tensioned position with an expanded second transverse dimension;
wherein at least a portion of said interior bore expands in its transverse dimension when the tubular sleeve moves to said second tensioned position from said first repose position to accommodate a cross section of excised tissue pulled through said bore to a location exterior of the body;
wherein the instrument with the tubular sleeve in the repose position is capable of being passed through the bore of said cannula thereby serving as a guide to introduce said cannula into and out of said incision;
wherein said sleeve wall comprises a plurality of flexible elements including a first set disposed in a right-hand helical configuration and a second set disposed in a left-hand helical configuration and said first and second sets are interwoven.

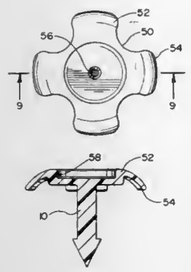
5,643,283
SURGICAL POUCH
Marlin E. Younker, 9905 Hobart Rd., Waite Hill, Ohio 44094
Continuation of Ser. No. 215,009, Mar. 21, 1994, abandoned, which is a continuation of Ser. No. 966,902, Oct. 26, 1992, abandoned, which is a continuation of Ser. No. 816,900, Jan. 3, 1992, abandoned. This application Dec. 15, 1994, Ser. No. 357,368
Int. Cl.[6] A61B *17/24*
U.S. Cl. 606—114 **21 Claims**



1. A surgical device for retrieving an object from a body, comprising,
an operating assembly including a shaft portion having a longitudinal bore extending between first and second ends, a closure portion having a support member engaged with said second end of said shaft portion, a slidable member slidably mounted on said support member for operation of said assembly, and a flexible elongate interconnecting member secured at a first end with said slidable member and engagable with said support member at a second end,
a compressible pouch for receiving the object, having a mouth portion secured adjacent said shaft portion first end, and which is movable between an open position and a closed position upon operation of said slidable member, said pouch comprising a pocket surrounding said mouth portion,
an introducer sleeve slidably mounted on said shaft portion, and having a longitudinal bore for housing said pouch, and
said interconnecting member disposed within said shaft portion and said pouch pocket such that manual movement of said slidable member with respect to said support member moves said pouch mouth portion between open and closed positions, said interconnecting member having a bend intermediate its first and second ends to form a first arm between said first end of said interconnecting member and said bend, and a second arm between said bend and said second end, of said interconnecting member, said first and second arms engaged within said shaft portion bore and said bend and portions of said first and second arms engaged within said pouch pocket, said interconnecting member second end comprising a stop for engaging said support member to permit limited movement of said second end with respect to said support member.

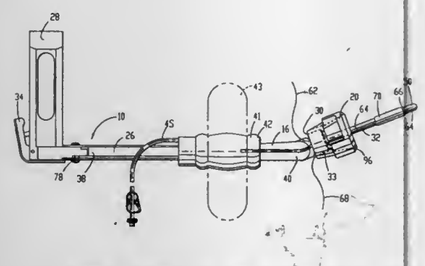
5,643,284
ANIMAL EAR TAG MOUNTING MECHANISM
Donald D. Hicks, Box 321, Geraldine, Mont. 59446
Filed Dec. 28, 1994, Ser. No. 365,343
Int. Cl.[6] A61B *17/00;* **G09F** *3/00*
U.S. Cl. 606—117 **4 Claims**

1. A securing assembly for mounting an identification tag on the ear of an animal wherein the identification tag is constructed from a relatively soft and pliable plastic having an opening therein surrounded by a hollow cylindrical socket member, said securing assembly comprising:
a relatively hard plastic piercing stud having a smooth shaft, and a pointed end with locking shoulder means adapted to be inserted through the ear of an animal and received within the socket member of the tag and be locked therein by said shoulder;



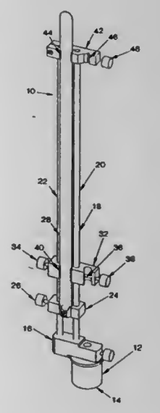
a separate resilient compressible dome shaped member secured to the piercing stud opposite the pointed end, the dome shaped member including a plurality of radially disposed cutouts therein extending from the perimeter toward the central portion thereof to permit the circulation of air beneath the dome shaped member and to permit circulation of blood through the cutouts as well as between the cutouts to facilitate healing of a wound surrounding the piercing stud while maintaining resilient interrupted contact of the perimeter of the dome shaped member with the ear of an animal.

5,643,285
VAGINAL EXTENDER FOR COLPOTOMY SURGERY
Jimmy M. Rowden, Olathe, Kans.; John E. Heaton, Kansas City, Mo., and Charles H. Kob, Mequon, Wis., assignors to Blairden Precision Instruments, Inc., Lenexa, Kans.
Filed Oct. 18, 1994, Ser. No. 324,656
Int. Cl.[6] A61B *17/42*
U.S. Cl. 606—119 **12 Claims**



1. A colpotomy assembly for use in female pelvic surgical procedures, said assembly comprising:
an elongated, rigid shaft member presenting a proximal end and a distal end, said distal end of said shaft member configured to be inserted into the vagina;
a shaft handle mounted in pivotal relationship to said proximal end;
an uterine manipulator presenting an enlarged base and an elongated, distally extending uterine manipulating tip;
means for mounting said base adjacent the distal end of said shaft member, and for opperably coupling said base and said shaft handle in order to selectively articulate said tip relative to said shaft member and in response to pivoting of said shaft handle; and
a vaginal extender having structure for bearing a patient's vaginal fornix to provide an anatomical landmark for use in making colpotomy incisions from the abdominal cavity,
said extender including structure for attachment thereof to said uterine manipulator so that the uterine manipulator and extender articulate in unison relative to said shaft member without translational shifting of said manipulator relative to said extender, in response to pivoting of said shaft handle.

5,643,286
MICRODRIVE FOR USE IN STEREOTACTIC SURGERY
Nicholas Warner, Belmont, Mass.; Moses Goddard, Tiverton, and John Mills, Wakefield, both of R.I., assignors to Cyto-Therapeutics, Inc., Providence, R.I.
Filed Jun. 24, 1994, Ser. No. 265,242
Int. Cl.[6] A61B *19/00;17/56*
U.S. Cl. 606—130 **12 Claims**



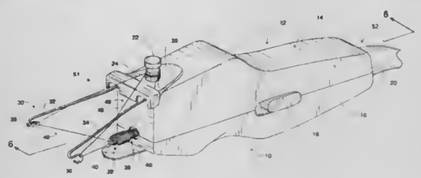
1. A method of inserting a surgical instrument into a portion of the central nervous system during stereotactic surgery comprising:
(a) attaching a surgical instrument to an instrument holding member of a microdrive apparatus wherein the microdrive apparatus is fixedly positioned relative to the central nervous system, said microdrive apparatus comprising a base member, an elongated guide member fixedly attached to the base member, an instrument holding member slidably attached to the guide member having a means for holding a surgical instrument, a stop member abutting and slidably attached to the guide member and disposed between the base member and the instrument holding member, said stop member being slidable on the guide member independent of the instrument holding member and a measuring member containing measuring indicia thereon fixedly attached to the stop member;
(b) placing the instrument holding member and the stop member together in an abutting relationship and adjusting them along the guide member so that the surgical instrument is disposed at a first predetermined position and thereafter temporarily fixedly attaching each such member to the guide member,
(c) thereafter, releasing the stop member and sliding it along the guide member to a second predetermined position which second position corresponds to a position that is a predetermined distance from a predetermined target point in the central nervous system and then fixedly attaching the stop member to the guide member at such second predetermined position;
(d) thereafter, releasing the instrument holding member and sliding it along the guide member until it reaches a position where it abuts the stop member and is as a result a predetermined distance from a predetermined target point in the central nervous system, thereby inserting the surgical instrument into the central nervous system to a predetermined target point; and
(e) thereafter, fixedly attaching the instrument holding member in the position described in step (d).

5,643,287

DEPILATORY DEVICE

Sam J. Ahad, Newhall, Calif., assignor to Capehead Enterprises, Inc., Santa Monica, Calif.

Filed May 9, 1996, Ser. No. 647,252
Int. Cl.[6] A61B *17/50*
U.S. Cl. 606—133 **5 Claims**



1. A depilatory device comprising:
a. a spring wire, said spring wire having a first arm and a second arm, said first arm and said second arm disposed in a symmetrically diverging relationship to each other, said first and second arms opposedly biased from each other;
b. said spring wire having a divergent end and a convergent end;
c. a housing having a wire mounting means for mounting said spring wire to said housing, said wire mounting means holding said convergent end of said spring wire against said housing, said first arm and said second arm extending outwardly from said housing;
d. a flexible member;
e. said first arm and said second arm each having a guide means for guidingly engaging said flexible member;
f. a motor disposed within said housing, said motor having a motor shaft, said motor shaft having a free end;
g. an engaging means for engaging said flexible member, said engaging means attached to said free end of said motor shaft;
h. an anchoring means for anchoring said flexible member to said housing, said anchoring means attached to said housing between said first arm and said second arm near said convergent end;
i. said flexible member having a first end and a second end, said flexible member threaded through said engaging means such that said flexible member is in contact with said engaging means substantially at the center of said flexible member, said flexible member further threaded through each of said guide means, said flexible member threaded around the outside of each of said first arm and said second arm, said first and second ends of said flexible member attached to said anchoring means, said flexible member thereby forming two substantially v-shaped portions, said flexible member held in tension by said first and second arms;
j. said motor connected to an alternating polarity direct current power source for rotating said motor shaft in alternating directions, thereby coiling said flexible member in alternating directions.

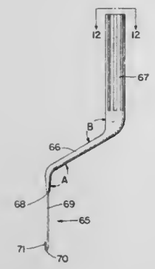
5,643,288

APPARATUS AND METHOD FOR LAPAROSCOPIC URETHROPEXY

Ronald J. Thompson, Ft. Thomas, Ky., assignor to Incont, Inc., Ft. Thomas, Ky.

Filed Jun. 14, 1995, Ser. No. 490,272
Int. Cl.[6] A61B *17/10*
U.S. Cl. 606—139 **16 Claims**

1. A suture retrieval tool for use in a urethropexy procedure, said retrieval tool comprising:



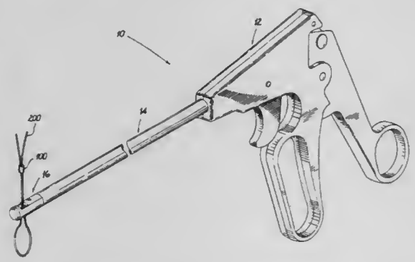
(a) a retrieving end, said retrieving end comprising a rigid, rod-like shaft and a sharp tip capable of penetrating periurethral tissue, said shaft having a longitudinal axis;
(b) a handle, said handle having a longitudinal axis; and
(c) a midshaft positioned between said retrieving end and said handle wherein said midshaft and said shaft of said retrieving end are secured to one another in an angular relationship, and wherein said handle and said midshaft are secured to one another in an angular relationship, and further wherein said angular relationships and the length of said retrieving end are such that said retrieving end may be inserted into a vagina, through the vaginal mucosa and periurethral tissue adjacent a urethra, and into the space of Retzius, with at least a portion of said handle remaining substantially outside of the vagina, such that said retrieving end may be employed to snare a suture positioned in the space of Retzius for retrieving said suture into the vagina.

5,643,289

SURGICAL CRIMPING DEVICE AND METHOD OF USE

Jude S. Sauer, Pittsford; Louis N. Rapp, Dansville, and Thomas A. Tiberio, Rochester, all of N.Y., assignors to LaserSurge, Inc., Rochester, N.Y.

Continuation of Ser. No. 201,864, Feb. 24, 1994, abandoned. This application Aug. 16, 1995, Ser. No. 515,753
Int. Cl.[6] A61B *17/10*
U.S. Cl. 606—139 **18 Claims**



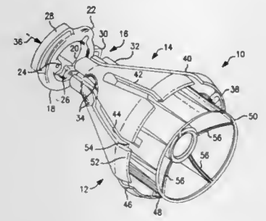
1. A surgical apparatus for applying a securing member to a length of suture material comprising:
a) a handle portion having a pivotable handle member;
b) an elongated body portion extending distally from said handle portion and defining a longitudinal axis; and
c) a tool assembly remotely operable from said handle portion and extending from a distal end portion of said elongated body portion, said tool assembly having a stationary anvil portion, a movable hammer and a securing member disposed therebetween, wherein said movable hammer deforms said securing member upon the length of suture material by moving along the longitudinal axis toward said stationary anvil portion.

5,643,290

PENILE CINCTURE BAND LOADING APPARATUS AND METHOD

Jeffrey W. Clark, Aiken, S.C.; Stephen J. Flynn, Peachtree City, Ga.; Steven C. Gamper, Atlanta, Ga.; Devin L. Moore, Decatur, Ga., and David S. Rowley, Smyrna, Ga., assignors to Osbon Medical Systems, Ltd., Augusta, Ga.

Continuation-in-part of Ser. No. 38,940, May 17, 1995. This application Jun. 7, 1995, Ser. No. 480,134
Int. Cl.[6] A61B *17/10*
U.S. Cl. 606—141 **34 Claims**



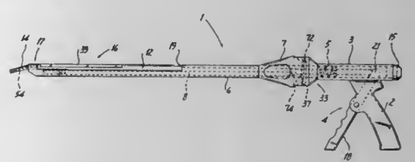
1. Improved impotence treatment system for augmenting male potency through vacuum-generated engorgement of the male sex organ and subsequent cincture thereof with a cincture band, said system comprising:
an elongated, generally cylindrical vacuum chamber adapted to cover a male sex organ, said vacuum chamber being open at a proximal longitudinal end thereof for contact with a user and for passage of the user's male sex organ therethrough into the interior of said chamber;
an elastic penile cincture band adapted to be expanded and located about said vacuum chamber proximal end for subsequent movement onto the base of a user's male sex organ for cincturing an engorged condition thereof; and
cincture band expansion means removably associated with said vacuum chamber proximal end for expanding said cincture band and for locating same onto said vacuum chamber whenever said expansion means are associated therewith, said expansion means including expanding cone means for receiving thereon a cincture band to be expanded and including corresponding actuation means matable with said cone means for being pushed by a user down onto said cone means such that a cincture band received on said cone means is expanded for subsequent cincturing of a user's engorged male sex organ;
wherein said elastic penile cincture band has an inside diameter which is generally circular over the majority of such diameter, and which includes at least one noncircular inside diameter feature, and wherein said expanding cone means includes at least one surface contour element adapted for matable receipt of such cincture band noncircular inside diameter feature, for registration of said band.

5,643,291

SURGICAL CLIP APPLICATOR

Arnold Pier, Heinsberg, and Jorg Hummen, Monchengladbach, both of Germany, assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 515,341, Aug. 15, 1995. This application Sep. 3, 1996, Ser. No. 708,278
Claims priority, application Germany, Sep. 29, 1994, 44 34 864.9
Int. Cl.[6] A61B *17/10*
U.S. Cl. 606—143 **5 Claims**



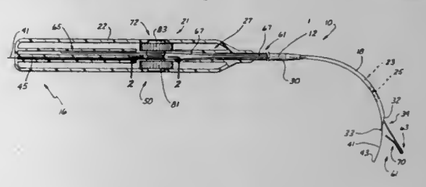
1. In combination:
(a) a surgical clip applicator comprising:
a handle,
a shaft tube mounted to the handle and defining a clip magazine-receiving region at a distal end thereof,
a connecting rod movably positioned within the shaft tube, the connecting rod extending into the handle, and a jaw member positioned at a distal end of the shaft tube; and
(b) a clip magazine containing a plurality of clips and a clip reloader,
wherein the clip magazine is removably received within the clip magazine-receiving region at the distal end of the shaft tube, the connecting rod includes a projection that engages a resilient coupling member which is operatively connected to the clip reloader so that distal movement of the connecting rod may effect distal movement of the clip reloader, and the connecting rod includes at least one camming face at a distal end thereof so that distal movement of the connecting rod may effect camming of the jaw member.

5,643,292

PERCUTANEOUS SUTURING DEVICE

Charles C. Hart, Huntington Beach, Calif., assignor to Applied Medical Resources Corporation, Laguna Hills, Calif.

Filed Jan. 10, 1995, Ser. No. 370,863
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—144 **16 Claims**



1. A suturing device for capturing a suture line, comprising:
an elongate needle having an axis, a proximal end, a sharp distal tip, and a lumen carrying a suture line extending along the axis between the proximal end and the sharp distal tip;
a handle disposed at the proximal end of the needle;
a snare operable using the handle to engage and capture the suture line, the snare including a shaft mounted for axial movement between a retracted position and a deployed position, the shaft having a proximal end coupled to the handle and a distal end extending through the lumen of the needle, and a hook formed at the distal end of the shaft and movable from a closed state within the tip of the needle when the shaft

is in the retracted position to an open state extending beyond and through the tip of the needle when the shall is in the deployed position;

a thumb wheel rotatable about an axis extending transverse to the axis of the needle; and means operable by the thumb wheel engaging the shaft of the snare for moving the hook to the open state to engage the suture line and for moving the hook to the closed state to capture the suture line.

5,643,293

SUTURING INSTRUMENT

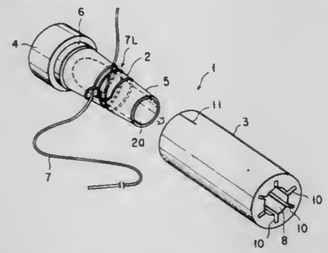
Takahiro Kogasaka; Toshihiko Suzuta, both of Hachioji; Shiro Bito, Tokyo; Minoru Tsuruta, Hachioji; Naoki Uchiyama, Kokubunji, and Kunihide Kaji, Koganei, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 21, 1994, Ser. No. 360,397

Claims priority, application Japan, Dec. 29, 1993, 5-355398; Apr. 14, 1994, 6-076038; Apr. 25, 1994, 6-086574; Dec. 6, 1994, 6-302299

Int. Cl.[6] A61B *17/00*

U.S. Cl. 606—148 **14 Claims**



1. For use with a surgical instrument and a suture having a first end portion, a second end portion, and at least one loop formed in advance at an intermediate portion between the first and second end portions so as to have a predetermined size and be suitable for application to a body tissue, a suture ligature instrument for forming a suitable knot in a piece of the suture within a body cavity with the surgical instrument, the suture ligature instrument comprising:

holding means for holding the at least one loop of the suture so as to substantially maintain a size of the at least one loop, said holding means having fastening means for fastening at least one portion of the suture; and

fixing means for fixing said holding means at a distal end portion of the surgical instrument so that when the surgical instrument is inserted into a body cavity, the holding means is inserted into the body cavity together with the at least one formed loop held by said holding means;

wherein said holding means includes a substantially cylindrical body arranged to surround a circumferential portion of the surgical instrument, said substantially cylindrical body having a first end portion arranged at a distal end of the surgical instrument, a second end portion arranged at an operating portion of the surgical instrument, an inner circumfereutial portion, and an outer circumferential portion, and at least one of said inner and outer circumferential portions being capable of holding at least one loop;

wherein said fixing means includes an extending portion extending from said second end portion of said substantially cylindrical body to fix said substantially cylindrical body on the surgical instrument; and

wherein said extending portion has a thick-walled annular structure in which an axial hole having an inner diameter substantially corresponding to an outer diameter of the surgical instrument is formed, and said fixing means has one of a plurality of incision grooves and projections that are arranged to be separate from each other along a circumferential portion of the axial hole and extending in a radial direction, thereby enabling said body to be movable on the surgical instrument in the axial direction.

5,643,294

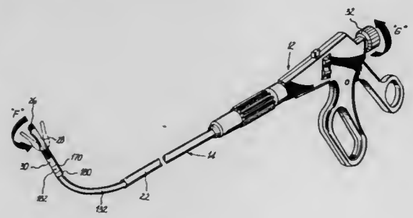
SURGICAL APPARATUS HAVING AN INCREASED RANGE OF OPERABILITY

H. Jonathan Tovey, Milford, Conn.; Boris Zvenyatsky, Bronx, N.Y., and Ernie Aranyi, Easton, Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 270,395, Jul. 5, 1994, abandoned, which is a continuation of Ser. No. 24,579, Mar. 1, 1993, abandoned. This application Mar. 28, 1996, Ser. No. 623,984

Int. Cl.[6] A61B *17/28*

U.S. Cl. 606—148 **24 Claims**



1. A surgical apparatus comprising:

a) a handle assembly;

b) a body portion extending from said handle assembly, defining a first longitudinal axis and including a resilient articulation portion;

c) a tool assembly including a tool base portion defining a second longitudinal axis and a tool configured to rotate relative to, said tool base portion about said second longitudinal axis;

d) said resilient articulation portion having a distal end portion which is movable between a first position wherein said second longitudinal axis of said tool base portion is substantially parallel to said first longitudinal axis of said body portion and a second position wherein said second longitudinal axis is substantially angularly disposed with respect to said first longitudinal axis to articulate said tool assembly, a proximal end portion of said tool base portion being fixedly and circumferentially mounted within said distal end portion of said resilient articulation portion;

e) means for effectuating remote rotation of said tool assembly about the longitudinal axis of said body portion relative to said handle assembly;

f) means for effectuating remote rotation of said tool relative to said tool base portion about said second longitudinal axis; and

g) an axial drive screw assembly operatively associated with the handle assembly including a rotatable member and a longitudinally advancable member for effectuating movement of the distal end portion of the resilient articulation portion between said first position and said second position.

5,643,295

METHODS AND APPARATUS FOR SUTURING TISSUE

InBae Yoon, 2101 Highland Ridge Dr., Phoenix, Md. 21131

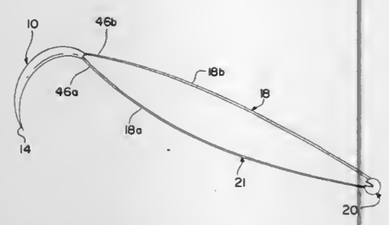
Continuation-in-part of Ser. No. 366,285, Dec. 29, 1994. This application Jan. 25, 1995, Ser. No. 377,723

Int. Cl.[6] A61B *17/04*

U.S. Cl. 606—151 **20 Claims**

1. A suturing apparatus comprising

a needle having a sharp distal end for penetrating anatomical tissue;



first and second length portions of filamentous suture material having ends received by said needle; and

a knotting element connected with first segments of said first and second length portions to form a loop with said suture material extending from said needle to said knotting element and back to said needle, said loop being contractible to confine therein second segments of said first and second length portions after said needle has penetrated the anatomical tissue and said second segments have been passed through said loop, said knotting element having a grasping site including a pair of opposed surfaces for grasping said second segments therebetween, said knotting element having a first position for receiving said second segments between said opposed surfaces, said opposed surfaces in said first position being spaced from one another to define a mouth therebetween, said mouth facing into said loop to receive said second segments passed through said ligature loop, said knotting element having a second position for non-releasably grasping said second segments between said opposed surfaces to effect a knot after said needle has been passed through said loop and said suture material has been tensioned and received between said opposed surfaces.

5,643,296

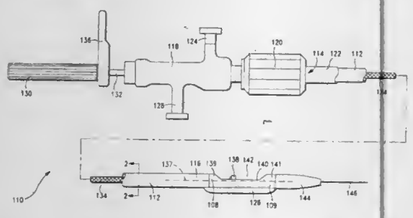
INTRAVASCULAR CATHETER WITH GUIDING STRUCTURE

Ron Ray Hundertmark, San Mateo; Brian Farley, Los Altos; Kent D. Dell, Redwood City, and Bernard H. Andreas, Fremont, all of Calif., assignors to Devices for Vasclar Intervention, Santa Clara, Calif.

Filed Dec. 16, 1994, Ser. No. 357,999

Int. Cl.[6] A61D *1/02*

U.S. Cl. 606—159 **19 Claims**



1. An assembly for use with an intravascular catheter having a proximal end and a distal end and a cable, comprising:

a housing attachable to the distal end of the intravascular catheter, the housing including an axis and a window and an inner surface having at least one slot formed parallel to the axis of the housing;

a work element slidably attached to the housing adjacent the window, the work element being fixed on the cable, the work element sliding and rotating when actuated by the cable; and

a guiding structure attached to the housing and to the work element to lock the work element in juxtaposition with the housing and prevent extension of the work element through the window, the guiding structure including at least one pin extending radially from the work element, the pin engaging the slot to permit the work element to slide along a desired path within the housing, whereby the work element is locked in juxtaposition with the housing and extension of the work element through the window is prevented.

5,643,297

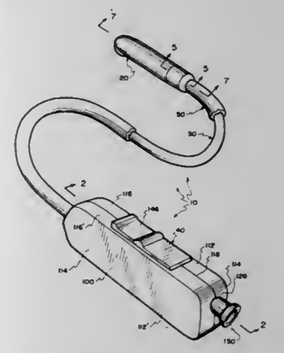
INTRA-ARTERY OBSTRUCTION CLEARING APPARATUS AND METHODS

Gregory N. Nordgren, Wilsonville, and Thomas L. Kelly, West Lin, both of Oreg., assignors to Endovascular Instruments, Inc., Vancouver, Wash.

Division of Ser. No. 973,514, Nov. 9, 1992, abandoned. This application Mar. 10, 1995, Ser. No. 401,836

Int. Cl.[6] A61B *17/32*

U.S. Cl. 606—159 **8 Claims**



1. A dottering tip which is used in conjunction with a catheter and a rotary drive cable to clear a pathway in an artery to completely constructed artery initially impassable by other atherectomy devices, said dottering tip comprising:

a connector for connecting the tip to the drive cable;

a symmetrically bulbous distal end comprising an asymmetric distribution of weight about the longitudinal axis of the tip to enhance oscillation of the tip without electrosurgical phenomenon.

5,643,298

INTRA-ARTERY OBSTRUCTION CLEARING APPARATUS AND METHODS

Gregory N. Nordgren, 29670 Jackson Way, Wilsonville, Oreg. 97070, and Thomas L. Kelly, 2368 Appaloosa Way, West Linn, Oreg. 97068

Division of Ser. No. 401,836, Mar. 10, 1995, which is a division of Ser. No. 973,514, Nov. 9, 1992, abandoned. This application May 6, 1996, Ser. No. 643,702

Int. Cl.[6] A61B *17/32*

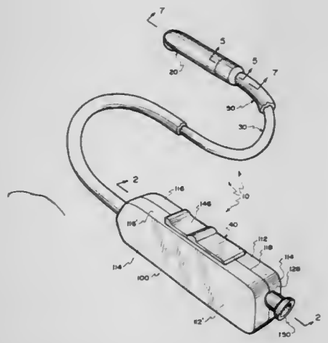
U.S. Cl. 606—159 **24 Claims**

1. A combination for concentric arterial plaque removal comprising:

a hollow catheter tube comprising a distal end;

a drive cable rotatably passing through the hollow of the catheter tube, the drive cable comprising a distal end;

a coupling comprising a stationary part non-rotatably connected to the distal end of the catheter tube, and a rotatable part



non-rotatably connected to the drive cable and rotatable in respect to the stationary part;

a rotatable cutting head for concentric plaque removal as the head is distally advanced to increase blood flow;

the coupling further comprising a site for non-rotatable connection to the head;

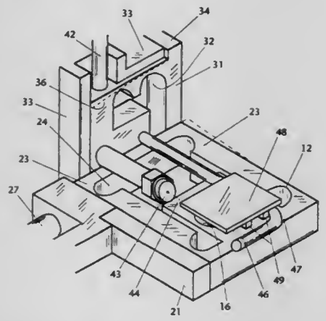
whereby rotation of the cable drive rotates the rotatable part in respect to the stationary part and the catheter tube, which rotates the head to cut in a distal direction.

5,643,299

HYDROJET APPARATUS FOR REFRACTIVE SURGERY

Scott Bair, Atlanta, Ga., assignor to Sentinel Medical, Inc., Orinda, Calif.

Filed Jan. 16, 1996, Ser. No. 586,502
Int. Cl.[6] A61B *17/32*
U.S. Cl. 606—166 **20 Claims**



1. An ophthalmic surgical device, comprising:

fixture means for releasably engaging an anterior surface portion of an eye;

liquid jet nozzle means for generating a high velocity liquid jet capable of cutting eye tissue;

bending means extending from said fixture means for undergoing translational flexure without sliding contact;

said liquid jet nozzle means extending from said bending means; and,

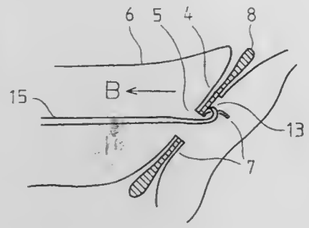
precision actuator means coupled to said bending means to flexibly translate said bending means and direct said high velocity liquid jet in cutting the eye tissue engaged in said fixture means.

5,643,300

EARDRUM UNDERSURFACE SCRAPER

Keisuke Hirata, 1920-1, Noginomori-cho 4-chome, Ogaki-shi Gifu-ken 503, Japan

Division of Ser. No. 177,403, Jan. 5, 1994, Pat. No. 5,501,700. This application May 30, 1995, Ser. No. 453,868
Claims priority, application Japan, Jan. 8, 1993, 5-32387
Int. Cl.[6] A61B *17/32;10/00*
U.S. Cl. 606—167 **9 Claims**



1. An eardrum undersurface scraper comprising:

a shaft having a longitudinal axis;

a head with at least one blade edge thereon, the blade edge being at an angle of more than 90 degrees and less than 360 degrees to the shaft, the head scraping mucosa upon insertion through a perforation in a tympanic membrane and manipulation of the scraper; and

a neck connecting the head with the shaft, the neck being curved;

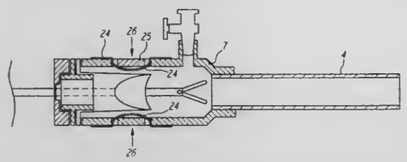
said at least one blade removes mucosa on an undersurface of the tympanic membrane through the tympanic perforation in the tympanic membrane to form a grafting bed on the tympanic membrane.

5,643,301

CANNULA ASSEMBLY WITH SQUEEZE OPERATED VALVE

Kenneth H. Mollenauer, Santa Clara, Calif., assignor to General Surgical Innovations, Inc., Palo Alto, Calif.

Filed Jun. 7, 1995, Ser. No. 475,114
Int. Cl.[6] A61B *17/32*
U.S. Cl. 606—167 **14 Claims**



4. A cannula assembly for receiving a surgical instrument comprising:

a cannula;

a valve housing on the proximal end of said cannula;

a valve disposed within said valve housing;

said valve housing having a movable wall portion; and

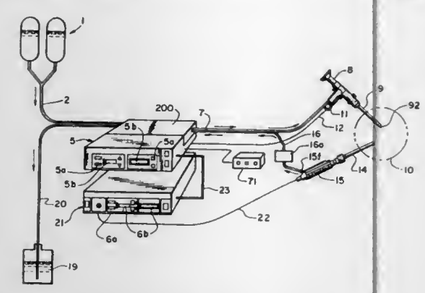
said movable wall portion adapted to be moved into contact with said valve to open said valve to permit the surgical instrument to be withdrawn from the cannula.

5,643,302

FLUID MANAGEMENT SYSTEM

David G. Beiser, Brookline; Steven B. Woolfson, Boston, both of Mass., and Kenneth W. Krause, Sandown, N.H., assignors to Smith & Nephew Dyonics Inc., Andover, Mass.

Division of Ser. No. 255,281, Jun. 7, 1994, abandoned, which is a continuation of Ser. No. 867,981, Apr. 13, 1992, abandoned, which is a continuation-in-part of Ser. No. 748,249, Aug. 21, 1991, abandoned, and Ser. No. 838,465, Feb. 19, 1992, abandoned, which is a continuation-in-part of Ser. No. 748,249. This application Jun. 7, 1995, Ser. No. 479,109
Int. Cl.[6] A61F *13/06;* **A61B** *17/32*
U.S. Cl. 606—167 **4 Claims**



1. Apparatus for supplying liquid to a body cavity during an endoscopic procedure, which comprises:

a) liquid supply means whose outflow flow rate is inherently inversely responsive to changes in the body cavity pressure;

b) means for generating a body cavity pressure signal representing the pressure in said body cavity;

c) conduit means for communicating said liquid supply means with said body cavity to deliver liquid under pressure to said body cavity;

d) control means responsive to said body cavity pressure signal for increasing or decreasing the pressure of said liquid delivered by said liquid supply means to thereby maintain said body cavity pressure at a predetermined value;

e) a liquid outflow cannula for insertion into said body cavity for transporting liquid from said body cavity;

f) a tool comprising a surgical blade, a motor for operating said blade at a desired speed, and an internal passageway for the flow of liquid through said blade and said tool;

g) a tool control means connected to said tool for generating first and second output signals representing the surgical blade in the tool and the speed of the tool motor, respectively;

h) processor means for processing said first and second output signals and for generating a third output signal;

i) means for transporting liquid from said body cavity via said liquid outflow cannula to and through said blade and said tool; and

j) means for controlling the flow rate of said liquid flowing through said blade and said tool in response to said third output signal.

5,643,303

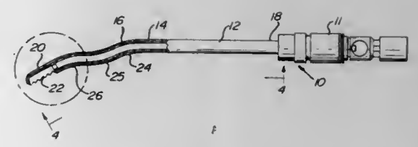
FLEXIBLE SURGICAL INSTRUMENT

John R. Donahue, 530 Rosedale Dr., Pottstown, Pa. 19464

Division of Ser. No. 8,918, Jan. 26, 1993, Pat. No. 5,593,416. This application Jun. 12, 1996, Ser. No. 662,877
Int. Cl.[6] A61B *17/32*
U.S. Cl. 606—170 **12 Claims**

1. A surgical instrument that is constructed for insertion into a body for cutting, comprising:

an outer member of a predetermined length having at least one opening in a distal region thereof;



a hollow inner member disposed within said outer member for transmitting force applied to a proximal end to rotationally move a cutting implement disposed at a distal end, said cutting implement being constructed and adapted to perform a cutting function at said opening in said outer member; and

said hollow inner member being constructed of a flexible plastic and being flexible substantially between its proximal and distal ends, said hollow inner member with said cutting implement attached extending for substantially the entire length of said outer member, and

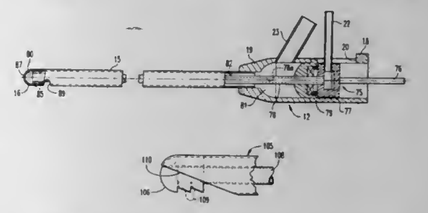
said outer member being provided with a predetermined flexibility and rigidity such that said outer member is provided with sufficient flexibility to be manually bent after manufacture by a surgeon during an operation, and provided with sufficient rigidity to retain such bend during the continued performance of the operation with the surgical instrument wherein said hollow inner member and said outer member are capable of being bent as a unit at any point between said cutting implement and substantially said proximal end.

5,643,304

METHOD AND APPARATUS FOR MINIMALLY INVASIVE TISSUE REMOVAL

Alan M. Schechter, Long Beach, Calif.; Joseph P. Mark, Indianapolis, Ind.; Frederick R. Stave, St. Joseph, Mich., and Roger White, Memphis, Tenn., assignors to Danek Medical, Inc., Memphis, Tenn.

Division of Ser. No. 319,216, Oct. 6, 1994, which is a division of Ser. No. 18,045, Feb. 16, 1993, Pat. No. 5,403,276. This application Jun. 7, 1995, Ser. No. 483,385
Int. Cl.[6] A61B *17/32*
U.S. Cl. 606—171 **2 Claims**



1. A surgical rasp for use in percutaneous tissue removal, comprising:

a handpiece;

a motor supported by said handpiece having means for producing linearly reciprocating motion;

an elongated cannula sized for introduction into the body, said cannula having a proximal and a distal end, said cannula supported by said handpiece at said proximal end and having a cutting opening at said distal end;

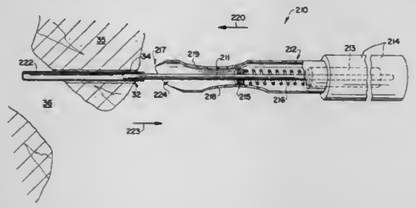
a tubular drive shaft connected to said motor and extending through said cannula to said cutting opening, said drive shaft defining and irrigation channel therethrough;

means for connecting said irrigation channel to a source of irrigation fluid to flow through said irrigation channel; and

a rasp blade mounted to said drive shaft, said rasp blade including a plurality of teeth and defining several apertures between said teeth communicating with said irrigation channel, wherein said rasp blade is slidably disposed within said can-

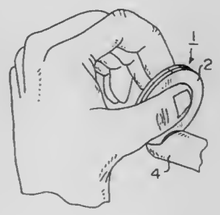
nula at said distal end with said plurality of teeth extending through said cutting opening.

5,643,305
DEVICE FOR EXCISION OF A FISTULA
Moshin Al-Tameem, King Saud University and King Khalid University Hospital, P.O. Box 7805, Riyhadh, Saudi Arabia
Filed Nov. 18, 1994, Ser. No. 341,187
Int. Cl.[6] A61B *17/32*
U.S. Cl. 606—180 **9 Claims**



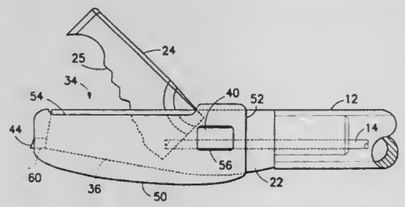
1. A device for excision of a fistula, which includes a fistulous tract, said device comprising:
a first bar having a longitudinal axis and adapted to be inserted into the fistulous tract;
a cutting tool cooperating with said first bar;
a common base fixing a proximal end of said first bar to a proximal end of said cutting tool so that said first bar does not move relative to said cutting tool and remains parallel to said cutting tool, the fistulous tract being excised by moving said device relative to the fistulous tract to thereby core the fistulous tract from surrounding tissue;
a disk-shaped stabilizer which is slidable over said first bar within a body of said cutting tool so as to maintain said first bar in parallel to said cutting tool; and
a spring for maintaining said stabilizer near a distal end of said cutting tool, wherein excised portions of the fistulous tract slide between said first bar and said cutting tool and push against said stabilizer, thereby compressing said spring as said device is advanced along said fistulous tract.

5,643,306
DISPOSABLE LANCET
Steven Schraga, Surfside, Fla., assignor to Stat Medical Devices Inc., North Miami, Fla.
Filed Mar. 22, 1996, Ser. No. 620,565
Int. Cl.[6] A61B *17/32*
U.S. Cl. 606—182 **21 Claims**



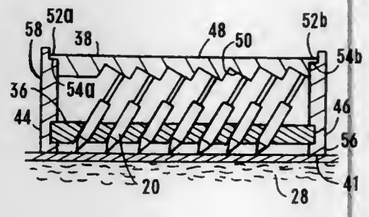
1. A single use disposable lancet device comprising:
a housing;
a spring mechanism pivotally mounted in said housing, said spring mechanism comprising a sharpened end, wherein said spring mechanism is mounted within said housing in a substantially unbiased state; and
an actuator for biasing said spring mechanism, said actuator being movable, with respect to said housing, from an initial position to a biasing position to a locked position, in that order;
said actuator including a locking device which engages said spring-mechanism for preventing movement of said actuator from said locked position;
said housing including an opening sized to permit said sharpened end to protrude therethrough exteriorly of said housing upon biasing of said spring mechanism, and said sharpened end retracting back inside of said housing in said locked position; and
said spring mechanism and said sharpened end being mounted within said housing in a substantially unbiased state when said actuator is in said initial position, said spring mechanism being biased by said actuator when said actuator is in said biased position causing said sharpened end to protrude from said housing, and said spring mechanism returning to a substantially unbiased state when said actuator is in said locked position.

5,643,307
COLPOSCOPIC BIOPSY PUNCH WITH REMOVABLE MULTIPLE SAMPLE BASKET
David Turkel, Miami, and Juergen Andrew Kortenbach, Miami Springs, both of Fla., assignors to Symbiosis Corporation, Miami, Fla.
Filed Dec. 13, 1994, Ser. No. 355,057
Int. Cl.[6] A61B *17/14*
U.S. Cl. 606—184 **20 Claims**



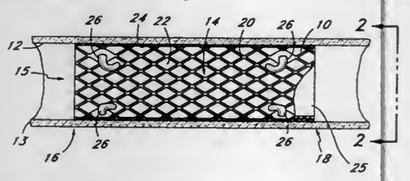
1. A surgical punch instrument for cutting tissue, and for use with a removable sleeve, comprising:
a) a hollow tube having a proximal and a distal end;
b) a push rod having a proximal and a distal end, said push rod extending substantially through said hollow tube;
c) a handle coupled to said proximal end of said tube;
d) a lever pivotally coupled to said handle and coupled to said proximal end of said push rod for imparting axial movement to said push rod relative to said tube;
e) a first jaw coupled to said distal end of said tube, said first jaw being a die and having an open top and an open bottom and at least one exterior engaging means for engaging the removable sleeve; and
f) a movable jaw pivotally coupled to said first jaw and coupled to said distal end of said push rod, said movable jaw being a punch,
wherein when said movable jaw pivots relative to said first jaw towards a closed position, said movable jaw punches the tissue and the tissue drops through said open bottom of said first jaw.

5,643,308
METHOD AND APPARATUS FOR FORMING MULTIPLE CAVITIES FOR PLACEMENT OF HAIR GRAFTS
Barry Stephen Markman, 5157 Jarom, Las Vegas, Nev. 89120
Filed Feb. 28, 1995, Ser. No. 395,455
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—187 **39 Claims**



1. A device for implanting a plurality of individual dilators into the tissue of a patient, each dilator, when removed defining a cavity to receive a graft, the device comprising:
a housing;
guide means located in said housing, said guide means comprising a plurality of passageways for receiving a plurality of dilators therein;
releasable stop means for releasably retaining each of the dilators mounted in the guide means in a fixed position in the housing; and
depressor means for simultaneously urging the dilators through the passageways and from said guide means to each be implanted into the tissue to dilate the same.

5,643,309
CARDIOVASCULAR STENT AND RETRIEVAL APPARATUS
Richard Myler, 828 Irwin Dr., Hillsborough, Calif. 94010, and Julius G. Hammerslag, 27011 Calle Esperanza, San Juan Capistrano, Calif. 92675
Continuation of Ser. No. 36,995, Mar. 25, 1993, abandoned. This application Jan. 25, 1995, Ser. No. 378,059
Int. Cl.[6] A61M *29/00*
U.S. Cl. 606—191 **14 Claims**

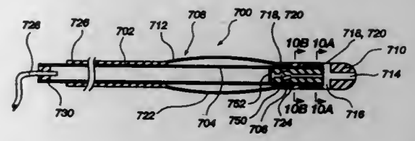


1. A tubular stent for implantation within a body lumen such as by dilatation using a dilatation balloon, said stent configured to reversibly radially expand from a first insertion diameter to a second, enlarged implanted diameter, and to radially reduce from the second, enlarged diameter to a smaller, extraction diameter, upon axial elongation thereof, said stent comprising a tubular wall of lattice elements having interstitial spaces therebetween, said stent having a proximal end, a distal end and a central lumen extending axially therethrough, at least one radially inwardly extending engagement member coupled to said tubular body and distinct from the lattice wall for engaging a removal catheter, and an outer polymer jacket substantially entirely covering the radially outward most surface of the latticed, tubular body and its interstitial spaces, for minimizing adhesion between the stent and the wall of the body lumen during a period of implantation within the body lumen.

5,643,310

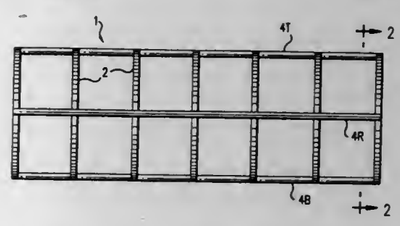
Patent Not Issued For This Number

5,643,311
UTERINE MANIPULATOR AND MANIPULATOR TIP ASSEMBLY
Steven R. Smith, Draper; Christopher A. Cutler, Centerville, and William D. Wallace, Salt Lake City, all of Utah, assignors to Clinical Innovation Associates, Inc., Murray, Utah
Division of Ser. No. 148,840, Nov. 5, 1993, Pat. No. 5,487,377. This application Sep. 22, 1995, Ser. No. 532,898
Int. Cl.[6] A61H *29/02*; **A61B** *1/313;1/303*
U.S. Cl. 606—193 **9 Claims**



1. A manipulator tip assembly for insertion into the uterus, comprising:
a resilient, tubular envelope including a mass of soft material at one end thereof having a passage therethrough from the interior to the exterior of said envelope and a thin-walled skirt extending from said soft material mass to the other end of said envelope;
a substantially rigid, tubular element inserted in said envelope, abutting and sealingly secured to said soft mass, in communication with said passage and extending beyond said skirt, which is sealingly secured thereabout in spaced relationship to said soft mass to define a balloon;
an inflation aperture extending through the wall of said tubular element to the interior of said balloon;
a first lumen extending into the interior of said tubular element and in communication with said passage; and
a second lumen extending into the interior of said tubular element and in communication with said inflation aperture.

5,643,312
STENT HAVING A MULTIPLICITY OF CLOSED CIRCULAR STRUCTURES
Robert E. Fischell, 14600 Viburnum Dr., Dayton, Md. 21036; David R. Fischell, 71 Riverlawn Dr., Fair Haven, N.J. 07704, and Tim A. Fischell, 1018 Chancery La., Nashville, Tenn. 37215
Filed Feb. 25, 1994, Ser. No. 202,128
Int. Cl.[6] A61M *29/00*
U.S. Cl. 606—198 **23 Claims**



1. A post-deployment stent structure for maintaining patency of a vessel of a human body comprising:
a multiplicity of closed and continuously formed, generally circular rings, the plane of each ring being generally parallel

to the plane of each adjacent ring, the rings having a generally common longitudinal axis which is perpendicular to the plane of each ring, at least two of the rings being spaced apart from each other; and

a multiplicity of structures forming longitudinals, at least one longitudinal being fixedly attached to at least two of the rings and at least one longitudinal being adapted to maintain an essentially unchanged shape in the absence of the multiplicity of generally circular rings and at least one of said longitudinals having an undulating shape for enhancing longitudinal flexibility of said post-deployment stent structure.

5,643,313
LAPAROSCOPIC TISSUE COMPRESSOR AND EXTRACTOR
John M. Levin, 412 Fairview Rd., Narbeth, Pa. 19072
Filed Jul. 28, 1995, Ser. No. 508,595
Int. Cl.[6] A61M *29/00*
U.S. Cl. 606—198 **2 Claims**

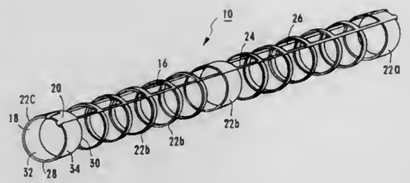


1. An apparatus for compressing and extracting internal body parts to be removed from a patient, said apparatus comprising:

means for encompassing and compressing an internal body part to be removed, said means including relatively movable overlapping sections provided by a single layer of material wound into a helix, said overlapping sections forming walls of a variable-sized chamber, said walls being of sufficient rigidity for compressing the body part to a size permitting the removal of the compressed body part from the body; and

actuation means, said means fixedly attached to said encompassing and compressing means, for tightening said helix to reduce the size of said chamber and to compress the internal body part.

5,643,314
SELF-EXPANDING STENT
Kenneth W. Carpenter, Del Mar; Leo R. Roucher, Jr., Escondido, and Eugene J. Jung, Jr., San Diego, all of Calif., assignors to Navius Corporation, San Diego, Calif.
Filed Nov. 13, 1995, Ser. No. 557,725
Int. Cl.[6] A61M *29/00*
U.S. Cl. 606—198 **9 Claims**



1. A self-expanding stent for placement in a vessel which comprises:

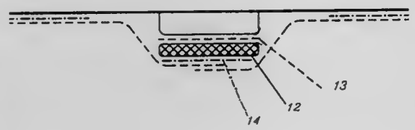
a plurality of radial bands, each said band having a first end and a second end with said first end overlapping said second end, said first end being moveable relative to said second end to iso-concentrically reconfigure each band between a contracted configuration having a first diameter and an expanded configuration having a second diameter, each said band being biased to expand from said first diameter to nearly said second diameter with said bands disposed about a common axis;

means for interconnecting each said band to an adjacent said band;

means for locking each said radial band in said expanded configuration; and

means for locking each said radial band in said contracted configuration.

5,643,315
DEVICE FOR WOUND THERAPY AND PREVENTION OF BLEEDING
Yousef Daneshvar, 21459 Woodfarm, Northville, Mich. 48167
Filed Sep. 22, 1994, Ser. No. 310,349
Int. Cl.[6] A61B *17/12*
U.S. Cl. 606—201 **16 Claims**



1. A device for wound therapy and prevention of bleeding comprising:

a transparent pressurized balloon adapted to be placed over a body skin wound wherein intact skin is immediately contiguous such a wound;

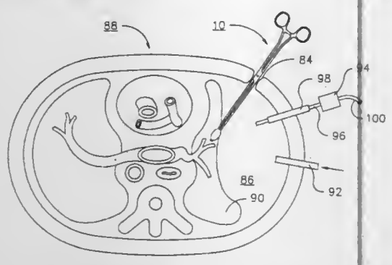
said pressurized balloon having a lower face adapted to face such a wound and immediately contiguous intact skin;

means disposed beneath said lower face of said balloon comprising an adhesive layer adapted to span such a wound and stick to such immediately contiguous intact skin; and

means for holding said balloon in place over such a wound and immediately contiguous intact skin while said adhesive layer sticks to such immediately contiguous intact skin and said balloon applies pressure against such a wound and immediately contiguous skin without obstructing a view through said balloon, wherein said means disposed beneath said lower face of said balloon comprising an adhesive layer adapted to span such a wound and stick to such immediately contiguous intact skin comprises:

an absorbent layer disposed between said adhesive layer and said lower face of said balloon.

5,643,316
METHOD OF THORACOSCOPIC SURGERY USING HINGED TISSUE GRASPING FORCEPS
Larry R. Kaiser, Wynnewood, and William H. Pilling, North Wales, both of Pa., assignors to The Trustees of the University of Pennsylvania, Philadelphia, Pa., and Pilling Co., Fort Washington, Pa.
Continuation of Ser. No. 53,920, Apr. 27, 1993, abandoned. This application Apr. 19, 1995, Ser. No. 424,124
Int. Cl.[6] A61B *17/06;17/28*
U.S. Cl. 606—205 **3 Claims**



1. A method of thoracoscopic surgery using forceps comprising a pair of elements connected at a hinge and having proximal and distal ends, with handles at the proximal ends of the elements and cooperating jaws at the distal ends of the elements, in which portions of the elements extending from the hinge to locations in the proximal direction from the hinge are substantially parallel to each other when the jaws are together, comprising the steps of:

making an incision in the chest wall of a patient just sufficient in size to receive the forceps when the jaws are together;

inserting the forceps through said incision to a position where the hinge is approximately at the location of the incision but inside the patient and said portions of the elements extend through the incision; and

operating the handles to spread the jaws of the forceps apart from each other while said portions of the elements extend through said incision, whereby the jaws are spread apart without substantially expanding the incision.

5,643,317
CLOSURE PROSTHESIS FOR TRANSCATHETER PLACEMENT
Dusan Pavcnik, Nova Gorica, Slovenia; Sidney Wallace, and Kenneth C. Wright, both of Houston, Tex., assignors to William Cook Europe S.A., Bjaeverskov, Denmark
PCT No. PCT/US92/10141, § 371 Date May 27, 1994, § 102(e) Date May 27, 1994, PCT Pub. No. WO93/10714, PCT Pub. Date Jun. 10, 1993
PCT Filed Nov. 25, 1992, Ser. No. 244,580
Int. Cl.[6] A61B *17/08*
U.S. Cl. 606—213 **19 Claims**



1. A flexible closure prosthesis and transcatheter delivery system, wherein said closure prosthesis is adapted to seal across an opening of a fluid passageway within a living body, comprising:

a flexible sealing element;

a flexible restraining element attached to said sealing element, said sealing element and said restraining element defining an integral closure prosthesis prior to delivery across the opening;

a hollow sheath;

a pusher catheter slidable within said sheath; filament means for resiliently bending said closure prosthesis, said filament means releasably connecting said closure prosthesis to said pusher catheter;

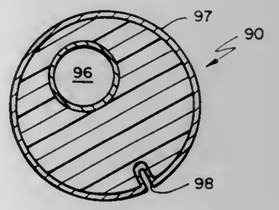
said closure prosthesis being resiliently compressible into a first insertion form constrained within said sheath for delivery adjacent the opening, said closure prosthesis resiliently expanding after release from said sheath into a first operational form large than said first insertion form;

said closure prosthesis being resiliently compressible into a second insertion form constrained by said filament means for placement across the opening, said closure prosthesis resiliently expanding after release from said filament means into a second operational form larger than said second insertion form, wherein said sealing element seals across the opening and said restraining element restrains said closure prosthesis in place across the opening;

said flexible sealing element comprising a flexible ring having an opening therethrough and a flexible diaphragm attached to said ring and covering said opening; and

said flexible restraining element comprising a plurality of hollow flexible wire segments attached to said diaphragm.

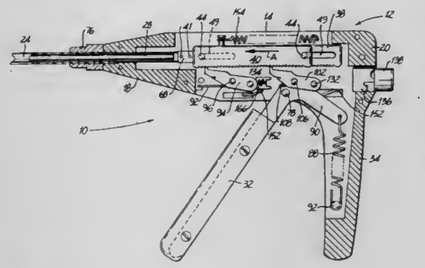
5,643,318
VASCULAR PLUG WITH VESSEL LOCATOR
Vladimir B. Tsukernik, Brookline, and William J. Shaw, Cambridge, both of Mass., assignors to Boston Scientific Corporation, Watertown, Mass.
Continuation of Ser. No. 221,355, Mar. 31, 1994, abandoned. This application Jul. 19, 1996, Ser. No. 684,333
Int. Cl.[6] A61B *17/04*
U.S. Cl. 606—214 **24 Claims**



1. A plug for treating an incision through tissue and the wall of a body lumen, comprising:

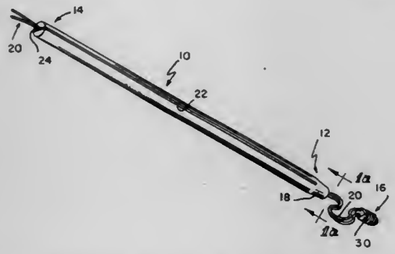
a sealing member primarily formed of a first healing promoting substance that rapidly expands upon exposure to body fluid, said sealing member having an elongate generally tubular shape and constructed to be introduced axially into the incision and be moveable axially therein, the sealing member including portions constructed to define an integral flow path extending from an opening, disposed near a distal end of the sealing member, to a proximal end of the sealing member, walls of the integral flow path being formed by a second healing promoting substance that expands less rapidly than said first healing-promoting substance, the flow path being accessed from the opening to allow body fluid to flow in contact with the walls formed of said second healing promoting substance and from the opening along the flow path to the proximal portion of the plug when a portion of said plug including said opening is exposed to the interior of said body lumen.

5,643,319
DEVICE FOR APPLYING A MENISCAL STAPLE
David T. Green, Westport; Robert J. Geiste, Milford, and Wayne C. Person, Newtown, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.
Continuation of Ser. No. 947,753, Sep. 21, 1992, abandoned, which is a continuation-in-part of Ser. No. 699,991, May 13, 1991, Pat. No. 5,269,783. This application Nov. 28, 1994, Ser. No. 345,539
Int. Cl.[6] A61F *5/04*
U.S. Cl. 606—218 **45 Claims**



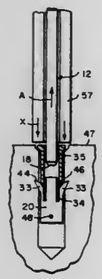
1. A surgical instrument for applying surgical fasteners to torn tissue, comprising:
a handle mechanism;
an elongated body portion extending from said handle mechanism, said body portion defining a longitudinal axis of said instrument;
means positioned adjacent a distal end of said body portion remote from said handle mechanism for releasably engaging a fastener;
advancing means including at least one shaft member associated with said handle mechanism and extending longitudinally within said body portion for linearly advancing said engaging means along said longitudinal axis to drive said fastener into said torn tissue; and
a release member associated with said advancing means said release member being moveable into operative engagement with said advancing means to release said at least one shaft member to linearly retract said engaging means along said longitudinal axis to disengage said fastener from said engaging means, said fastener being positioned in said torn tissue.

5,643,320
SOFT TISSUE ANCHOR AND METHOD
Jerry L. Lower, Bourbon, Ind., and E. Marlowe Goble, Logan, Utah, assignors to DePuy Inc., Warsaw, Ind.
Filed Mar. 13, 1995, Ser. No. 403,070
Int. Cl.[6] A61B *17/04*
U.S. Cl. 606—232 **42 Claims**



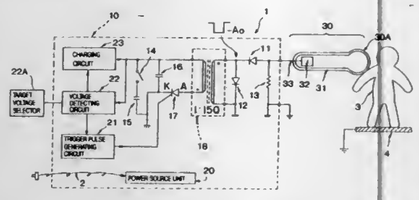
1. A preassembled disposable driver and suture anchor for threaded engagement into a bone to provide an attachment point for soft tissue, comprising: an anchor being formed to have an externally threaded body portion for engaging the bone, a distal end portion, and a proximal end portion such that, when the anchor is threaded into an opening in a bone, the distal end portion is adjacent a bottom of the opening and the proximal end portion is adjacent a mouth of the opening, a suture attached to said anchor having free ends extending outwardly from the bone opening, said driver being elongated and having a distal end means for engaging the proximal end of said anchor and a proximal end for gripping by the surgeon, said driver also having means for receiving the suture which extends away from said anchor, at least a portion of the distal end means of said driver at the proximal end of the anchor when the anchor and the driver are assembled being radially enlarged relative to the body portion of the anchor to engage the bone surrounding the mouth of the opening to limit the internal advancement of the driver such that rotation of the driver causes no axial movement between the driver and anchor until the distal end means engages the bone surrounding the mouth of the opening whereupon continued rotation of the driver produces relative axial movement between the driver and anchor to provide continued threading of the anchor into the bone by the driver and subsequently separation of the anchor from the driver.

5,643,321
SUTURE ANCHOR ASSEMBLY AND METHODS
Dennis McDevitt, Upton, Mass., assignor to Innovasive Devices, Marlborough, Mass.
Continuation-in-part of Ser. No. 337,944, Nov. 10, 1994, and Ser. No. 568,348, Dec. 6, 1995. This application Dec. 7, 1995, Ser. No. 574,463
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—232 **14 Claims**



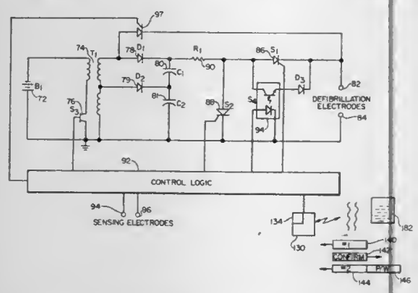
1. A suture anchoring device to affix a suture in a bone, comprising:
a tubular anchoring element for engagement with a hole drilled in a bone, the element having opposed proximal and distal ends connected by way of a central longitudinal axis, the element having defined therein an axial channel extending from the proximal to the distal end thereof, the element having inner and outer peripheral surfaces forming a wall therebetween, wherein the wall has defined in it a plurality of axially-oriented slots beginning at the proximal end of the anchoring element and extending distally, the slots in communication with the axial channel; and
a plurality of flexible wall sections further defined between the axially-oriented slots, wherein a proximal surface of a wall section comprises a first camming surface for mating with a second camming surface on an expander element, the first camming surface arranged to telescope over the second camming surface so that, when the anchoring element is disposed in the bone hole and moved proximally against the expander element, the flexible wall sections expand into the bone,
at least one of the anchoring element and the expander element including means for inhibiting excess movement of the anchoring element relative to the expander element.

5,643,322
METHOD AND APPARATUS TO REDUCE SKIN TISSUE BY USING HIGH-VOLTAGE PULSES
Yoshihiro Ito, Kyoto, and Kazushi Miyake, Tokyo, both of Japan, assignors to Institute of General Beauty & Medical Science, Tokyo, Japan
Continuation-in-part of Ser. No. 151,857, Nov. 15, 1993, abandoned. This application Mar. 20, 1995, Ser. No. 406,522
Claims priority, application Japan, Jan. 26, 1993, 5-29818
Int. Cl.[6] A61N *1/40*
U.S. Cl. 607—2 **15 Claims**



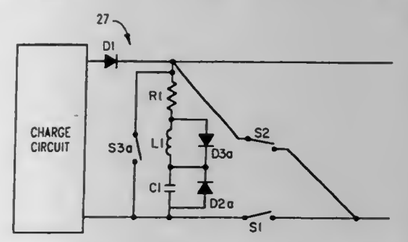
1. A method for reducing oxidized skin tissue, comprising the steps of:
providing a contact element which is connected to a high-voltage pulse generating means for generating negative high-voltage pulses;
generating negative high-voltage pulses by the high-voltage pulse generating means;
adjusting a duty ratio and a negative voltage of the negative high-voltage pulses to a pertinent ratio and a predetermined voltage, respectively;
supplying said adjusted negative high-voltage pulses into the contact element, thereby generating electrons having negative charge in the contact element; and
applying the electrons to a surface of an oxidized skin tissue through a contact portion of the contact element to reduce the oxidized skin tissue.

5,643,323
SYSTEM AND METHOD INDUCING FIBRILLATION USING AN IMPLANTABLE DEFIBRILLATOR
Mark W. Kroll, Minnetonka, and James E. Brewer, Maplewood, both of Minn., assignors to Angeion Corporation, Plymouth, Minn.
Filed Jun. 7, 1995, Ser. No. 486,761
Int. Cl.[6] A61N *1/362*
U.S. Cl. 607—2 **29 Claims**



1. A method of operating an implantable defibrillator device to induce fibrillation in a heart of a human patient, the implantable defibrillator device comprising at least two human implantable electrodes and a self-contained human implantable housing containing a battery system, a transformer system, a capacitor system and a sensing system for sensing cardiac electrical activity, all of which are connected to and controlled by a control system, the method comprising the device-implemented steps of:
(a) receiving a command in the control system to generate a fibrillation waveform for the purpose of testing the implantable defibrillator device; and
(b) operating the control system to cause the battery system, the transformer or the capacitor system to generate a continuous fibrillation waveform having a voltage of at least 5 volts and not more than 50 volts and a duration of not less than 500 milliseconds to be applied though the at least two implantable electrodes so as to induce fibrillation in the heart of the human patient.

5,643,324
EXTERNAL DEFIBRILLATOR CIRCUIT
Eric Persson, Minnetonka, Minn., assignor to SurvivaLink Corporation, Minneapolis, Minn.
Continuation of Ser. No. 31,532, Mar. 15, 1993, Pat. No. 5,405,361. This application Apr. 10, 1995, Ser. No. 419,373
Int. Cl.[6] A61N *1/39*
U.S. Cl. 607—5 **4 Claims**



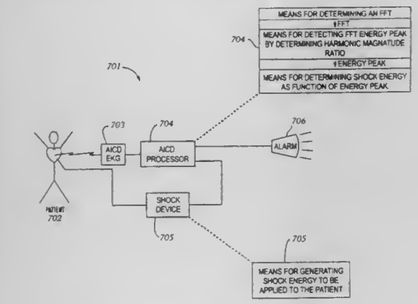
1. An external defibrillator high voltage circuit for generating defibrillation pulses, including:
a pair of electrodes;
a charging power source having first and second charge supply terminals;
first and second output terminals configured for electrical interconnection to the electrodes;
first and second charge supply terminals configured for electrical interconnection to a charging voltage supply;
N capacitors C_n where N is at least 2 and n=1 . . . N, for storing electrical energy, each capacitor having first and second terminals, and the first terminal of capacitor C_1 electrically coupled to the second charge supply terminal of the charging power source;
a plurality of diodes, including a diode interconnected between the second terminals of capacitors C_n and C_{n+1} for each of the N capacitors;
a plurality of charging semiconductor switches for interconnecting the first terminals of the N capacitors to the first charge supply terminal and simultaneously electrically interconnecting each of the N capacitors in a parallel circuit between the first and second charge supply terminals of the charging power Source to charge the capacitors to the charging voltage when switched to an electrically closed state, and electrically isolating the capacitors from each other when switched to an electrically open state;
a plurality of discharging semiconductor switches for interconnecting the second terminal of the capacitor C_n and the first terminal of the capacitor C_{n+1} for each of the N capacitors and simultaneously electrically interconnecting each of the N capacitors in a series circuit between the first and second output terminals to produce defibrillation pulses when switched to an electrically closed State, and electrically isolating the capacitors from each other when switched to an electrically open state; and
a charge dump circuit, including one or more charge dump semiconductor switches in a charge dump current flow path,

for simultaneously discharging each of the N capacitors when the charge dump semiconductor switches are switched to an electrically closed state and further including a charge dump semiconductor switch in parallel with each of the N capacitors.

5,643,325
DEFIBRILLATOR WITH SHOCK ENERGY BASED ON EKG TRANSFORM

Hrayr S. Karagueuzian; George A. Diamond; Steven S. Khan; Timothy A. Denton, all of Los Angeles, Calif., and Steven Evans, Great Neck, N.Y., assignors to Cedars-Sinai Medical Center, Los Angeles, Calif.

Division of Ser. No. 191,099, Feb. 24, 1994, Pat. No. 5,555,889, which is a continuation of Ser. No. 701,753, May 17, 1991, abandoned, and Ser. No. 716,665, Jun. 4, 1991, abandoned, which is a division of Ser. No. 541,881, Jun. 20. 1990, abandoned, said Ser. No. 701,753is a continuation-in-part of Ser. No. 541,881. This application Jan. 24, 1996, Ser. No. 590,546
Int. Cl.[6] A61N *1/39*
U.S. Cl. 607—8 **5 Claims**



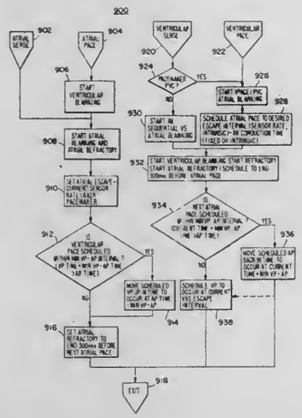
1. A defibrillator comprising
means for acquiring an EKG signal;
means for performing a frequency domain transform of said EKG signal;
means for calculating an energy peak for said frequency domain transform;
means for generating a shock energy to be applied to a patient;
means for calculating the shock energy to be applied to a patient as a function of said energy peak of said frequency domain transform; and
a shock device for applying the shock energy to be applied to a patient.

5,643,326
DUAL CHAMBER PACING WITH ATRIAL AND VENTRICULAR INDEPENDENCE

Henry L. Weiner, 1 Sommerset La., Newark, Del. 19711; H. Toby Markowitz, 1670 Ridgewood La. South, Roseville, Minn. 55113, and Michael F. Hess, 3841 Pleasant La. South, Minneapolis, Minn. 55409

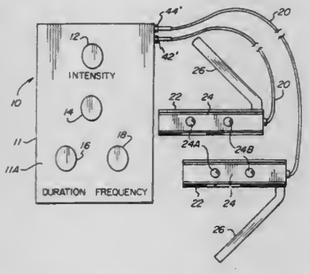
Continuation of Ser. No. 250,216, May 27, 1994, abandoned. This application Dec. 7, 1995, Ser. No. 568,440
Int. Cl.[6] A61N *1/368*
U.S. Cl. 607—14 **28 Claims**

1. A dual chamber, rate-responsive cardiac pacemaker having sensing means for sensing atrial and ventricular events, storage circuitry for holding values for an atrial lower escape interval and a ventricular lower escape interval, said intervals for defining atrial and ventricular escape rates, respectively comprising:



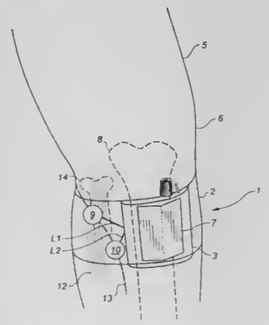
third electrodes so that cathode/anode pairs are formed between each of the first and second electrodes and the second and third electrodes, respectively, the source of electrical pulses producing pulses delivered through the channels to at least the respective first and third electrodes, the pulses through the channels to the respective first and third electrodes not overlapping in time during any portion of each pulse.

5,643,331
METHOD AND DEVICE FOR PREVENTION OF DEEP VEIN THROMBOSIS
Amiram Katz, 15 Beaver Brook Rd., Weston, Conn. 06883
Filed Nov. 21, 1995, Ser. No. 561,372
Int. Cl.[6] A61N *1/03;1/04*
U.S. Cl. 607—48 **8 Claims**



3. A method of preventing deep vein thrombosis, ankle edema and venostasis comprising the steps of
generating a square wave signal having a duration of 0.1 to 0.3 milliseconds, a frequency of 0.001 to 0.1 cycles per second, and an intensity of 1 to 20 milliamperes, and
applying said signal to a major motor nerve to electrically activate an associated muscle.

5,643,332
ASSEMBLY FOR FUNCTIONAL ELECTRICAL STIMULATION DURING MOVEMENT
Richard B. Stein, Edmonton, Canada, assignor to Neuromotion Inc., Edmonton, Canada
Filed Sep. 20, 1995, Ser. No. 530,603
Int. Cl.[6] A61N *1/18*
U.S. Cl. 607—49 **2 Claims**



1. A functional electrical stimulator for use on a body limit, comprising:
a band, mountable on the limb, for carrying stimulator components;
cathode and anode electrodes carried by the band in a fixed condition;
means, carried by the band, for reproducibly positioning the band so that the electrodes are located at specified stimulation locations;
sensor means, carried by the band in a fixed condition, for measuring the angular position of the limb during movement and emitting sensor signals indicative thereof;
control circuit means, carried by the band and connected with the sensor means and electrodes, for receiving the sensor signals, processing the sensor signals to establish values indicative of the changing angularity of the limb and to compare the established values with predetermined adjustable ON and OFF threshold values and initiating and terminating the emission of pulses through the electrodes when the established values reach the ON and OFF threshold values, to stimulate the limb; and
battery means carried by the band and connected with the sensor means and control circuit means, for supplying electrical power to them.

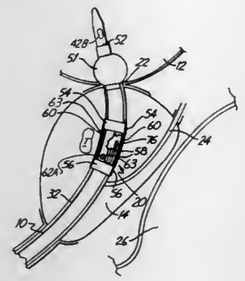
5,643,333
BIOLOGICAL ENERGY PROJECTOR
Young-Ung Yun, Room 716, The Korea Federation of Small Business Bldg. 16-2, Yoido-dong, Youngdeungpo-ku, Seoul, Rep. of Korea
Filed Nov. 15, 1994, Ser. No. 340,855
Int. Cl.[6] A61N *5/00*
U.S. Cl. 607—88 **14 Claims**

1. A biological energy projector, comprising:
an elongate housing;
means for producing light energy provided in said housing at a first end thereof, said means for producing light energy comprising an electric light source;
means for changing energy from one form to another provided at an intermediate portion of said housing, wherein said housing has a light reflecting interior surface, said light reflecting interior surface having a multiprism layer formed thereon, whereby said means for changing energy comprises said housing having said light reflecting interior surface and said multiprism layer formed on said light reflecting interior surface; and
means for adjusting energy provided at an end of said housing opposite said means for producing light energy, said means for adjusting comprising:
a color balancer having one side facing said means for producing light energy;
a plurality of stacked prism disks provided on the opposite side of said color balancer from said means for producing light energy; and
a plate member provided on the opposite side of said plurality of stacked prism disks from said color balancer and being constructed and arranged to pass energy transmitted by said plurality of stacked prism disks based on the intensity of the energy.

5,643,334
METHOD AND APPARATUS FOR THE DIAGNOSTIC AND COMPOSITE PULSED HEATING AND PHOTODYNAMIC THERAPY TREATMENT
Shimon Eckhouse, and Michael Kreindel, both of Haifa, Israel, assignors to ESC Medical Systems Ltd., Yokneam, Italy
Filed Feb. 7, 1995, Ser. No. 385,190
Int. Cl.[6] A61N *5/00*
U.S. Cl. 607—88 **46 Claims**

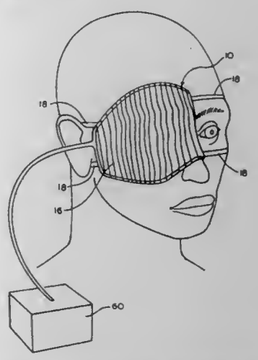
17. An apparatus for therapeutically treating cancerous cells within a tissue having a plurality of vessels for supplying blood thereto, comprising:
a housing, including a window through which light can pass;
a pulsed, noncoherent source of light disposed in the housing; and
a reflector, disposed in the housing, that directs the light through the window, wherein the light is used for photodynamic therapy and to heat the blood vessels supplying blood to the tumor, thereby limiting the supply of blood to the tumor.

5,643,335
BENIGN PROSTATIC HYPERPLASIA TREATMENT CATHETER WITH URETHRAL COOLING
John M. Reid, Minnetrista; James V. Kauphusman, Champlin, both of Minn.; Christopher H. Porter, Woodinville, Wash., and Bruce H. Neilson, Brooklyn Park, Minn., assignors to Urologix, Inc., Minneapolis, Minn.
Continuation of Ser. No. 429,311, Apr. 26, 1995, abandoned, which is a division of Ser. No. 88,901, Jul. 8, 1993, Pat. No. 5,464,437. This application May 2, 1996, Ser. No. 643,081
Int. Cl.[6] A61N *5/02*
U.S. Cl. 607—101 **9 Claims**



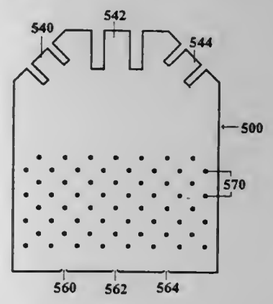
1. A method for treating a patient having benign prostatic hyperplasia within intraprostatic tissue surrounding a urethra, the method comprising:
inserting an intraurethral catheter having a catheter shaft into a prostatic portion of the urethra;
delivering heat from the catheter to the intraprostatic tissue surrounding the urethra;
supplying a fluid to a chamber to cool the urethra, the chamber defined by a substantially nondistensible sleeve bonded to spaced first and second regions of the catheter shaft which define opposite ends of a treatment region of the catheter shaft, the first and second regions having an outer diameter approximately equal to an inner diameter of the nondistensible sleeve and greater than an outer diameter of the treatment region of the catheter shaft; and
wherein the chamber exists regardless of pressure within the chamber.

5,643,336
HEATING AND COOLING PAD
Marcelo Enrique Lopez-Claros, 871 Washington St., Raleigh, N.C. 27605
Filed Jan. 9, 1995, Ser. No. 370,019
Int. Cl.[6] A61F *7/00*
U.S. Cl. 607—104 **7 Claims**



1. An anatomically conforming pad for adjusting the temperature of blood in the orbital area of a person's face, comprising:
(a) a pair of pliable membranes;
(b) temperature adjusting means, disposed between the pliable membranes, for adjusting the temperature of blood in the orbital area of a person's face;
(c) said pliable membranes being three-dimensionally, anatomically molded to fit the contours of the orbital area of the face so as to optimize heat transfer between the pad and the orbital area of the face;
(d) said pliable membranes being constructed of a material that generally retains its shape upon deformation; and
(e) a plurality of adjustable support members for shaping the pad to fit the contours of varying facial features, said adjustable support members all joined together by a universal joint.

5,643,337
WARMING BLANKET FOR PEDIATRIC USE
Thomas F. Kappel, St. Louis; Dennis S. Chivetta; Scott D. Dickerhoff, both of Ballwin, and Philip M. Metzler, St. Charles, all of Mo., assignors to Mallinckrodt Medical, Inc., St. Louis, Mo.
Continuation of Ser. No. 464,026, Jun. 5, 1995, abandoned, which is a division of Ser. No. 187,561, Jan. 26, 1994, abandoned. This application Sep. 11, 1996, Ser. No. 712,474
Int. Cl.[6] A61F *7/00*
U.S. Cl. 607—107 **1 Claim**



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1. A method of making a blanket for use with a forced air convection system, comprising:

(a) providing a first sheet of material having a periphery;

(b) providing a second sheet of material having a periphery approximately corresponding to said first sheet, said second sheet having a length dimension;

(c) punching perforations through said second sheet, which punching step consists essentially of punching perforations through only a first portion of said second sheet, said first portion extending about one-half the length of said second sheet;

(d) sealing said second sheet to said first sheet around a substantial portion of the periphery of said first and second sheets;

(e) sealing said second sheet to said first sheet at multiple welds distributed across interior surface regions of said first sheet and said second sheet, wherein said peripheral seal and said welds form an inflatable air chamber between said first sheet and said second sheet; and

(f) providing at least one inlet port in said blanket and communicating with said air chamber;

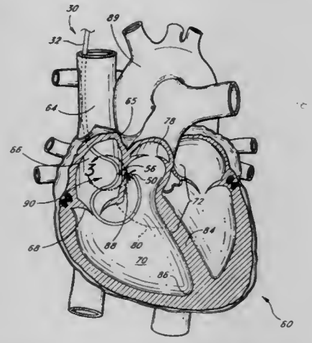
so as to provide a blanket wherein about half said second sheet is unperforated and about half of the second sheet is perforated.

5,643,338

SINGLE-PASS A-V LEAD FOR PACING WITH STIMULATION OF RIGHT VENTRICULAR OUTFLOW TRACT

Gene A. Bornzin, Simi Valley, and Brian M. Mann, Beverly Hills, both of Calif., assignors to Pacesetter, Inc., Sylmar, Calif.

Filed Apr. 3, 1996, Ser. No. 629,959
Int. Cl.[6] A61N *1/05*
U.S. Cl. 607—123 **35 Claims**



1. A single-pass A-V lead for producing an improved sequence of activation for use in a dual-chamber cardiac pacemaker comprising:

an insulated lead body having a proximal end for connection to a pacemaker and a distal end for placement within the heart, the lead body having at least one lumen adapted for the insertion of a stylet, the lumen extending axially from an exit port at the proximal end;

a right ventricular outflow tract (RVOT) pacing electrode at the distal tip of the lead body and electrically connected to a first conductor that extends within the lead body to the proximal end;

an atrial electrode on the lead body and positioned in spaced relationship to the distal tip, the atrial electrode connected to a second conductor that extends within the lead body to the proximal end; and

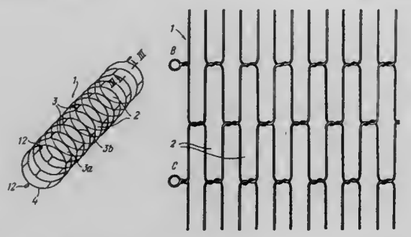
the lead body comprising a preformed ventricular portion that assumes a curved configuration when the stylet is withdrawn from the lumen, the curvature of the preformed ventricular portion being sufficient to bias the RVOT electrode against a wall of the RVOT so that ventricular stimulation occurs using the RVOT pacing electrode which results in a fastener sequence of activation than apical stimulation.

5,643,339

PROSTHETIC DEVICE FOR SUSTAINING A BLOOD-VESSEL OR HOLLOW ORGAN LUMEN

Zaza A. Kavteladze; Aleksandr P. Korshok, and Andrej A. Kadnikov, all of Moscow, Russian Federation, assignors to William Cook Europe A/S, Denmark

PCT No. PCT/DK93/00256, § 371 Date Feb. 1, 1995, § 102(e) Date Feb. 1, 1995, PCT Pub. No. WO94/03127, PCT Pub. Date Feb. 17, 1994
PCT Filed Aug. 6, 1993, Ser. No. 379,582
Claims priority, application Russian Federation, Aug. 6, 1992, 5057852
Int. Cl.[6] A61F *2/06*
U.S. Cl. 623—1 **20 Claims**



1. A prosthetic device for sustaining a vessel or hollow organ lumen, comprising:

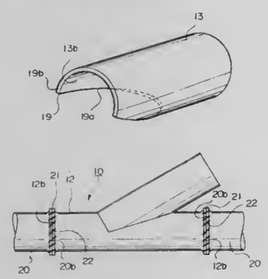
a flexible, tubular shaped frame (1) of separate first and second helical wires forming flexibly interconnected cells (2), each of the cells including first and second U-shaped sections (3) forming together an approximately elongated oval with a larger axis and a smaller axis, wherein the larger axis of the oval is directed in a circumferential direction of the tubular shaped frame and the smaller axis is directed in a direction parallel to a longitudinal axis of the tubular shaped frame, and wherein in a plane substantially perpendicular to the longitudinal axis of the tubular frame, one branch of each U-shaped wire section in one row together form a closed ring shape.

5,643,340

SYNTHETIC VASCULAR PROSTHESIS

Mioko Nunokawa, 35-5-203, Tomigaya 1-chome, Shibuya-ku, Tokyo, Japan

Filed Oct. 26, 1995, Ser. No. 548,859
Claims priority, application Japan, Oct. 27, 1994, 6-264205
Int. Cl.[6] A61F *2/06*
U.S. Cl. 623—1 **2 Claims**



1. A synthetic vascular prosthesis comprising:

a first synthetic vascular tube member defining an inner path for blood flow; and

a second synthetic tube member defining an inner path for blood flow, said second tube member being constructed separately from said first tube member,

a circumference of one end of said second tube member being connected with a circumference of an opening formed on an outer surface of said first tube member,

said circumference of said one end of said second tube member consisting of a side edge formed in a direction substantially perpendicular to an axis of said second tube member and a cut-out edge extending from said side edge in a direction inclined to both the axis of said second tube member and said side edge,

said circumference of said opening of said first tube member having a substantially identical shape as said circumference of said one end of said second tube member.

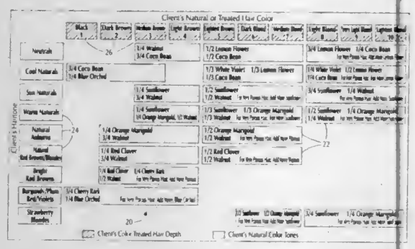
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5,643,341

SYSTEM AND METHOD FOR ON-SITE FORMULATION OF PERSONALIZED COLOR-MAINTAINING SHAMPOO PRODUCTS FOR INDIVIDUAL USERS

Leland Hirsch, Roslyn Heights, and Michael Mazzei, Manhasset, both of N.Y., assignors to Artec Systems Group, Inc., Roslyn Heights, N.Y.

Continuation of Ser. No. 218,911, Mar. 28, 1994, abandoned. This application Jul. 22, 1996, Ser. No. 681,116
Int. Cl.[6] A61K *7/13*
U.S. Cl. 8—405 8 Claims



1. A method of maintaining an individual's hair color and tone of previously color-treated hair comprising the steps of:

(1) determining an individual's hair color by visual recognition, wherein the individual's hair is color-treated, and wherein the hair color is selected from the group consisting of black, dark brown, medium brown, light brown, lightest brown, dark blonde, medium blonde, light blonde, very light blonde, and lightest blonde;

(2) determining an individual's hair tone by visually recognizing the individual's hair tonal base color, wherein the individual's hair is color-treated, and wherein the tonal base color is selected from the group consisting of grey-violet, blue-violet, yellow-beige, brown, blonde, yellow-orange, orange-brown, red-brown, red-violet, blue-red, and violet;

(3) referring to a chart which comprises two axes, wherein the first axis comprises said hair colors, and wherein the second axis comprises preselected hair tones based upon said hair tonal base colors;

(4) intersecting the individual's hair color on said first axis with the individual's hair tone on said second axis to determine a color maintenance shampoo formulation, wherein said hair color maintenance shampoo formulation comprises a mixture of at least two prepared hair color maintenance shampoos mixed in volumetric ratios according to said chart;

(5) mixing said at least two hair color maintenance shampoos in said volumetric ratios; and

(6) contacting the individual's color-treated hair with the color maintenance shampoo formulation in order to maintain the hair color and tone of previously color-treated hair.

5,643,342

FUEL PELLET AND METHOD OF MAKING THE FUEL PELLET

Michael R. Andrews, Chaffee, N.Y., assignor to PelleTech Fuels, Inc., Delevan, N.Y.

Filed Aug. 2, 1995, Ser. No. 510,303
Int. Cl.[6] C10L *5/00;7/00*
U.S. Cl. 44—530 21 Claims

1. A fuel pellets comprising:

from about 0 to about 50% by weight coal;

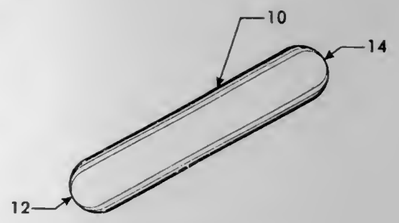
from about 0 to about 80% by weight of cellulosic material;

from about 20% to about 50% by weight of densified thermoplastic material;

the thermoplastic material being discrete particles throughout the pellet and being at least 80 Mesh;

the cellulosic material having a moisture content from about 2% to about 10% by weight; and

the cellulosic material being about 80 Mesh.



5,643,343

ABRASIVE MATERIAL FOR PRECISION SURFACE TREATMENT AND A METHOD FOR THE MANUFACTURING THEREOF

Oleg Vladimirovich Selifanov, Apt. 52, Bldg. 6 Sosny, Minsk, Belarus; Eduard Ivanovich Tochitsky, Apt. 188, Bldg. 15 Kulman Str., Minsk, Belarus, and Valerii Vladimirovich Akulich, Apt. 40, Block 2, Bldg. 66, Balkalskaia Str., Minsk, Belarus

Filed Nov. 17, 1994, Ser. No. 342,087
Claims priority, application Belarus, Nov. 23, 1993, 01013-01
Int. Cl.[6] B24D *11/00;* C09C *1/68*
U.S. Cl. 51—306 15 Claims

1. An abrasive material, comprising:

a flexible polymeric substrate, said substrate having a surface texture defined by a plurality of surface irregularities; and

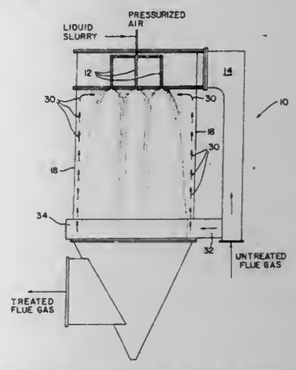
a diamond-like carbon-based material coating deposited on said textured substrate to form said abrasive surface, said diamond-like carbon-based material having a Vickers hardness of at least 5500 kilograms per square millimeter, wherein said diamond-like carbon-based material comprises at least 80 atomic percent carbon, less than 0.1 atomic percent hydrogen, and less than 0.1 atomic percent oxygen.

5,643,344

DRY SCRUBBER WITH FORCED RECIRCULATION

Thomas W. Strock, Jackson Township, Stark County, and Paul Dykshoorn, Alliance, both of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Feb. 14, 1995, Ser. No. 388,332
Int. Cl.[6] B01D *47/00*
U.S. Cl. 55—226 13 Claims



1. An improved dry scrubber apparatus for spraying a liquid into a flue gas, comprising:

a housing with an inlet for receiving the flue gas and an outlet for discharging the flue gas, said inlet of said housing being connected to a duct for supplying a flue gas stream;

a liquid source connected to at least one atomizer positioned inside said housing for spraying a liquid from said liquid source into the flue gas stream for conditioning the flue gas, the sprayed liquid entraining the flue gas and intimately mixing the liquid and the flue gas together; and

means for supplying a counterflowing gas along a length of inside walls of said housing in a direction opposite to that of the flow of liquid and flue gas through said housing, the counterflowing gas displacing a naturally occurring recirculating flow field which occurs at the inside walls of said housing due to said entrainment for preventing deposition of wet material on the inside walls.

5,643,345

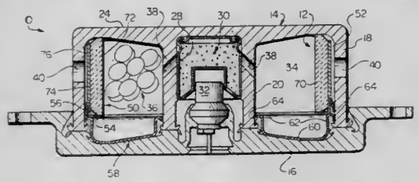
AUTOMOTIVE AIR BAG FILTER WITH SUPPORT MEMBER

Matthew A. Cox, Bountiful; Alan J. Ward, North Ogden, and Michael P. Jordan, South Weber, all of Utah, assignors to Morton International, Inc., Chicago, Ill.

Filed Sep. 18, 1995, Ser. No. 529,824

Int. Cl.[6] B01D *35/02*

U.S. Cl. 55—385.3 **15 Claims**



1. A filter for an inflatable vehicle occupant restraint inflator, said filter comprising: a tubular filter element having a substantially cylindrical interior surface and a substantially cylindrical outer surface having a predetermined diameter and a predetermined axial length and spaced radially outwardly from said inner surface, said filter element being formed of a porous, relatively brittle material subject to fracture due to hoop stress, and a tubular support member surrounding said outer surface, said support member being of an axial length equal to at least a major portion of the axial length of said outer surface and having an inner diameter substantially equal to the diameter of said outer surface for close surrounding engagement therewith, said support member having a plurality of through openings and being constructed of a material not subject to fracture due to hoop stress for supporting said filter element in such a way as to counteract hoop stress in said filter element.

5,643,346

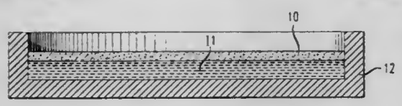
FABRICATION INCLUDING SOL-GEL FLOAT PROCESSING

Edwin Arthur Chandross, Murray Hill; David Wilfred Johnson, Jr., Bedminster; John Burnette MacChesney, Lebanon; Eliezer M. Rabinovich, Berkeley Heights, and John Thomson, Jr., Spring Lake, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 29, 1994, Ser. No. 366,197

Int. Cl.[6] C03B *8/00*

U.S. Cl. 65—17.2 **20 Claims**



1. Process for fabricating an article comprising,

gelling a sol consisting essentially of particles in a suspension medium to result in a wet gel body,

drying the wet gel body so as to substantially remove the suspension medium, thereby producing a dried gel body,

heating the dried gel body to produce a consolidated body,

CHARACTERIZED IN THAT

drying, at least during an initial period, is conducted with the body supported by flotation on a support liquid, whereby strain due to contraction is reduced.

5,643,347

PROCESS FOR MANUFACTURE OF SILICA GRANULES

Waltraud Werdecker, Hanau; Rolf Gerhardt, Hammersbach; Hartwig Schaper, Aschaffenburg, and Wolfgang Englisch, Kelkheim, all of Germany, assignors to Heracus Quarzglas GmbH, Hanau, Germany

Filed Jun. 2, 1995, Ser. No. 459,408

Claims priority, application Germany, Jul. 11, 1994, 44 24 044.9

Int. Cl.[6] C03B *19/10*

U.S. Cl. 65—21.1 **8 Claims**

1. Process for the production of silica granules comprising

providing a silica powder consisting of an amorphous silica dust having an average particle size of less than 1 μm and a BET surface area of at least 40 m^2/g,

in a first mixing phase, mixing said silica powder and a liquid at a first mixing rate until a mixture having an average silica grain size of 1–4 mm is obtained said silica content being at least 70 wt. %, and

in a second mixing phase, mixing said mixture at a second mixing rate which is greater than said first mixing rate and adding silica powder until said mixture has an average grain size of less than 1 mm and a silica content of at least 75 wt. %.

5,643,348

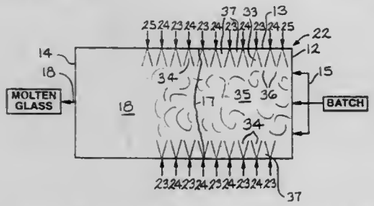
OXYGEN/FUEL FIRED FURNACES HAVING MASSIVE, LOW VELOCITY, TURBULENT FLAME CLOUDS

Donald Ellsworth Shamp, Millbury, Ohio; Thomas Fowler Stark, Littleton, Colo., and Harry Earl Swisher, Jr., Parkersburg, W. Va., assignors to Schuller International, Inc., Denver, Colo.

Continuation-in-part of Ser. No. 167,752, Dec. 15, 1993, abandoned, which is a division of Ser. No. 15,491, Feb. 9, 1993, Pat. No. 5,346,524, which is a continuation-in-part of Ser. No. 944,551, Sep. 14, 1992, abandoned. This application Jan. 23, 1995, Ser. No. 376,569

Int. Cl.[6] C03B *5/04*

U.S. Cl. 65—134.4 **17 Claims**



1. A 100 percent oxygen-fuel fired furnace for heating a material contained therein using only an oxidant containing at least about 75 percent oxygen and a fuel to supply combustion in the furnace, said furnace having no regenerative ports and no oxy-fuel burners, burners that introduce oxygen into the furnace in proximity to a fuel stream causing combustion to begin within a burner block within a wall of the furnace or to begin close to a wall of the furnace, said furnace having at least one wall and a roof, and having at least three nozzles located in the at least one wall or the roof of said furnace for directing streams of the oxidant and at least one stream of the fuel separately into said furnace, there being at least one oxidant nozzle for each fuel nozzle, said each fuel nozzle being spaced from each oxidant nozzle by at least about ten inches, said nozzles being shaped such that the oxidant and fuel streams do not mix enough to generate substantial combustion until said streams are such a distance from the at least one wall or roof in which said nozzles are located to keep said at least one wall or roof cooler than if the oxygen and fuel streams were fed into the furnace with said oxy-fuel burners.

5,643,349

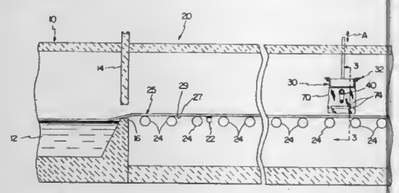
APPARATUS FOR APPLYING SO_3 TO FLOAT GLASS

Mark Piper, Boyceville; Al Slavich, Menomonie; Chris Granley, Colfax, all of Wis., and Roger O'Shaughnessy, Chaska, Minn., assignors to Cardinal IG Company, Minnetonka, Minn.

Continuation of Ser. No. 109,543, Aug. 19, 1993, abandoned. This application Feb. 27, 1995, Ser. No. 395,280

Int. Cl.[6] C03B *18/02;* **C03C** *17/00*

U.S. Cl. 65—157 **7 Claims**



1. In a float glass production apparatus in which float glass has an upper surface, an apparatus for applying SO_3 gas to the upper surface of the float glass including a downwardly open hood comprising a frame positioned above the upper surface of the glass, a mounting shaft pivotably carried by the frame and walls depending from the frame to define an enclosure, a supply of SO_3 gas, and a delivery tube in communication with the SO_3 supply and positioned within the enclosure for delivery of SO_3 gas to the upper surface of the glass, the delivery tube comprising a sparge pipe attached to the mounting shaft and rotatable therewith.

5,643,350

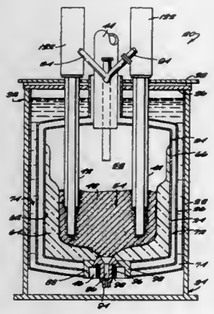
WASTE VITRIFICATION MELTER

J. Bradley Mason, Pasco, and Mark Alan Hall, Richland, both of Wash., assignors to VECTRA Technologies, Inc., Columbia, S.C.

Filed Nov. 8, 1994, Ser. No. 335,643

Int. Cl.[6] C03B *5/44;5/167*

U.S. Cl. 65—158 **22 Claims**



1. Apparatus for melting vitrifiable material, said apparatus comprising:

an inner vessel, said inner vessel having a solidified coating of vitrifiable material on its inner surface;

a first wall spaced apart from said inner vessel so as to define a first annulus therebetween;

a second wall spaced apart from said first wall so as to define a second annulus therebetween;

means within said inner vessel for heating vitrifiable material in said inner vessel;

means for introducing a coolant fluid into said first annulus; and

means for circulating coolant through said second annulus.

5,643,351

ENCAPSULATION WITH WATER SOLUBLE POLYMER

Chel W. Lew, San Antonio, Tex.; Keith Branly, Brandon, Fla., and Jesse Gaytan, San Antonio, Tex., assignors to Micro Flo Corporation, Mulberry, Fla.

Division of Ser. No. 250,766, May 27, 1994, Pat. No. 5,599,583. This application Jun. 6, 1995, Ser. No. 470,347

Int. Cl.[6] C05G *5/00;* **A01N** *25/28*

U.S. Cl. 71—64.13 **6 Claims**

1. An agriculturally useful composition comprising:

(a) an agriculturally effective active ingredient homogeneously distributed throughout and encapsulated by (b) a water-free, molten, film-forming polymer binder that is about 20–90% water soluble at 20° C., at least 20% soluble in methanol, and which forms a non-tacky solid at 20° C. wherein said composition is made by a process comprising:

mixing until homogeneous said agriculturally effective active ingredient with said water-free, molten, film-forming polymer binder, wherein said molten binder exhibits a viscosity of less than about 1000 cp;

cooling the homogeneous mixture to a temperature above the solidification temperature of said homogeneous mixture; and

forming said homogeneous mixture into particles by spraying the cooled mixture into a congealing zone at a temperature below the melting point of said polymer binder.

5,643,352

REACTIVE IRON MATERIAL FOR USE IN A HYDROGEN-GENERATING PROCESS IN AN ELECTRICAL VEHICLE

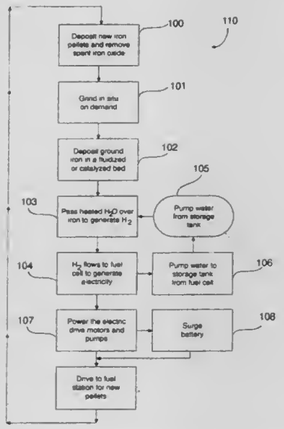
John Werth, Princeton, N.J., assignor to H Power Corporation, Belleville, N.J.

Continuation-in-part of Ser. No. 52,561, Apr. 23, 1993. This application Jun. 7, 1995, Ser. No. 477,523

Int. Cl.[6] B22F *1/00*

U.S. Cl. 75—255 **9 Claims**

1. A new iron material for use in situ with a hydrogen-air fuel cell, to generate the hydrogen to fuel said fuel cell, said iron material comprising freshly ground particles of iron ranging in diameter size from approximately 25 to 1,200 μm, with an average-sized distribution having at least twenty per cent (20%) of the particles less than 300 μm in diameter, and having an average particle density ranging approximately from about 1 to 7.8 g/cc, and a surface area greater than approximately 0.001 $meters^2/g$, said



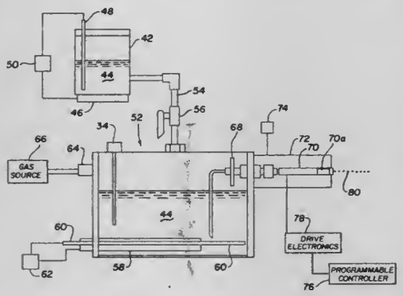
particles being in a freshly ground state in situ for enhancing their reactivity in producing hydrogen for said fuel cell.

5,643,353

CONTROLLING DEPOLING AND AGING OF PIEZOELECTRIC TRANSDUCERS

David B. Wallace, Dallas, and Ronald E. Marusak, Richardson, both of Tex., assignors to Microfab Technologies, Inc., Plano, Tex.

Filed May 31, 1994, Ser. No. 251,409
Int. Cl.[6] B22D *39/00*
U.S. Cl. 75—331 **23 Claims**



6. The method of controlling depoling and aging of a piezoelectric transducer used for ejecting liquid at elevated temperatures comprising the steps of:

(a) heating a liquid in a reservoir;

(b) providing a piezoelectric transducer ejection device for ejecting liquid from the ejection device in response to an applied electric field;

(c) transferring heated liquid from the reservoir to the ejection device;

(d) poling the piezoelectric transducer with a first electric field having a first polarity;

(e) applying a bias electric field with the same polarity as said first electric field; and

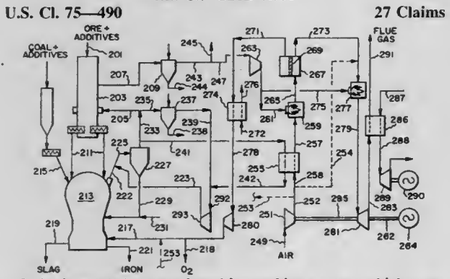
(f) applying a drive electric field which induces elastic strain in the piezoelectric transducer causing the ejection device to eject heated liquid.

5,643,354

HIGH TEMPERATURE OXYGEN PRODUCTION FOR IRONMAKING PROCESSES

Rakesh Agrawal, Emmaus; Michael Shi-Kuan Chen, Zionsville; Arthur Ramsden Smith, Telford, all of Pa.; Robert Michael Thorogood, Cary, N.C., and Thomas Joseph Ward, Orefield, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Apr. 6, 1995, Ser. No. 417,584
Int. Cl.[6] C21B *11/00*
U.S. Cl. 75—490 **27 Claims**



1. An integrated oxygen-based ironmaking process which comprises the steps of:

(a) partially oxidizing at least a portion of a carbonaceous feed with an oxidizing gas to generate hydrogen, carbon monoxide, and heat to yield a hot reducing gas comprising said hydrogen and carbon monoxide,

(b) heating iron oxide utilizing a first portion of said heat to form hot iron oxide and reacting said hot iron oxide with said hot reducing gas to yield reduced solid metallic iron and partially reacted reducing gas;

(c) compressing and heating a stream of air, wherein said heating is accomplished at least in part by utilizing a second portion of said heat to yield compressed and heated air, passing said compressed and heated air into a membrane separation zone comprising one or more oxygen-selective ion transport membranes, and withdrawing therefrom a hot oxygen permeate stream and a hot oxygen-containing non-permeate stream; and

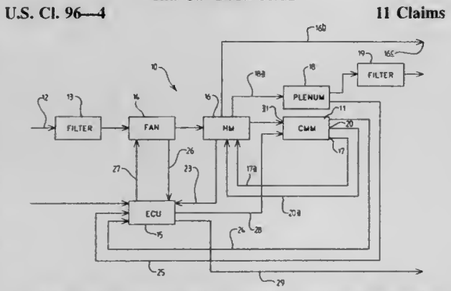
(d) utilizing at least a portion of said hot oxygen permeate stream to provide said oxidizing gas in step (a).

5,643,355

OXYGEN GENERATING DEVICE

Robert John Phillips, Honiton, and Adrian Simons, Yeovil, both of United Kingdom, assignors to Normaliar-Garrett (Holdings) Limited, Yeovil, England

Filed Feb. 7, 1996, Ser. No. 597,996
Claims priority, application United Kingdom, Feb. 9, 1905, 9502510; Aug. 16, 1995, 9516755
Int. Cl.[6] B01D *53/22*
U.S. Cl. 96—4 **11 Claims**



1. An oxygen generating device which is operable to separate gas mixture fed thereto into oxygen rich and oxygen depleted gas

components, the device comprising an inlet means to which a gas mixture containing oxygen is fed, first material which is active at an elevated temperature above a minimum operating temperature, to separate the gas mixture into oxygen rich and oxygen depleted gas components, and second material which produces a heating effect within the device when an electrical current passes therethrough to heat the gas mixture at least when the gas mixture is at a temperature below the minimum operating temperature.

5,643,356

INK FOR INK JET PRINTERS

Ronald Sinclair Nohr, Alpharetta, and John Gavin MacDonald, Decatur, both of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Continuation-in-part of Ser. No. 403,240, Mar. 10, 1995, abandoned, which is a continuation-in-part of Ser. No. 373,958, Jan. 17, 1995, which is a continuation-in-part of Ser. No. 360,501, Dec. 21, 1994, and Ser. No. 359,670, Dec. 20, 1994, abandoned, which is a continuation-in-part of Ser. No. 336,813, Nov. 9, 1994, abandoned, and Ser. No. 258,858, Jun. 13, 1994, abandoned, which is a continuation-in-part of Ser. No. 119,912, Sep. 10, 1993, abandoned, which is a continuation-in-part of Ser. No. 103,503, Aug. 5, 1993, abandoned, said Ser. No. 360,501is a continuation-in-part of Ser. No. 336,813, and Ser. No. 258,858. This application Jun. 5, 1995, Ser. No. 465,377
Int. Cl.[6] C09D *11/02*
U.S. Cl. 106—31.49 **26 Claims**

1. A mutable ink composition suitable for ink jet printing comprising a mixture of:

a colorant;

a radiation transorber;

a molecular includant; and

a liquid vehicle;

wherein the radiation transorber comprises a photoreactor covalently bonded to a wavelength selective sensitizer represented by the formula

$$R_1-\overset{\overset{O}{\|}}{C}-CH=CH-R_2$$

wherein at least one of R_1 and R_2 is an aryl group; when R_1 is an aryl group, R_2 is a hydrogen, alkyl, aryl, heterocyclic or phenyl group, the phenyl group optionally being substituted with an alkyl, halo, amino or thiol group; when R_2 is an aryl group, R_1 is a hydrogen, arkyl, aryl, heterocyclic or phenyl group, the phenyl group optionally being substituted with an akyl, halo, amino or thiol group; and

wherein the molecular includant is covalently bonded to the radiation transorber.

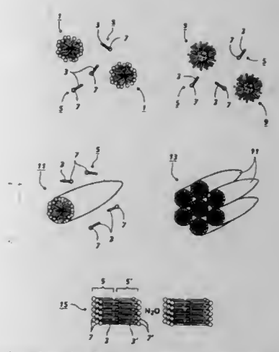
5,643,357

LIQUID CRYSTALLINE INK COMPOSITIONS

Marcel P. Breton; Raymond W. Wong, both of Mississauga, Canada; William M. Schwarz, Webster, N.Y.; Yvan Gagnon, Mississauga, Canada, and Stig E. Friberg, Potsdam, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 8, 1995, Ser. No. 569,641
Int. Cl.[6] C09D *11/02*
U.S. Cl. 106—31.25 **23 Claims**

1. An ink composition which comprises water, an oil-soluble or alcohol-soluble dye, and a surfactant, said ink exhibiting a liquid microemulsion phase at a first temperature and, at a second temperature higher than the first temperature, separating into a mixture of an aqueous liquid phase and a liquid crystalline gel phase.

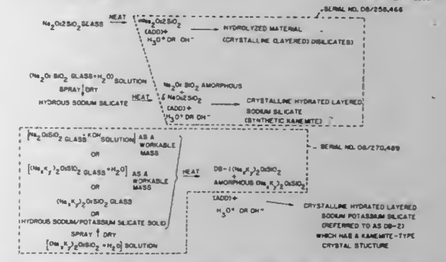


5,643,358

CRYSTALLINE HYDRATED LAYERED SODIUM AND POTASSIUM SILICATES AND METHOD OF PRODUCING SAME

Eric von Rehren Borgstedt, Louisville, Ky., and Raymond P. Denkewicz, Jr., Providence, R.I., assignors to PQ Corporation, Valley Forge, Pa.

Continuation-in-part of Ser. No. 258,466, Jun. 10, 1994, abandoned, and Ser. No. 270,489, Jul. 15, 1994. This application Nov. 3, 1994, Ser. No. 334,269
Int. Cl.[6] C01B *33/32*
U.S. Cl. 106—600 **20 Claims**



1. A process for the production of a composite product including a crystalline hydrated layered sodium and potassium silicate and an amorphous sodium and potassium silicate comprising:

producing a material including a crystalline disilicate having both sodium and potassium silicate by heating an alkali silicate for a time, and at a temperature sufficient to crystallize at least a portion of said material;

slurrying said resulting solid material with a hydrolyzing agent selected to provide hydrolyzing ions selected from H_3O^+ and OH^- to produce a composite product; and

separating said composite product from said hydrolyzing agent.

5,643,359

DISPERSION OF PLANT PULP IN CONCRETE AND USE THEREOF

Parviz Soroushian, and Jer-Wen Hsu, both of Okemos, Mich., assignors to DPD, Inc., Lansing, Mich.

Filed Nov. 15, 1995, Ser. No. 558,847
Int. Cl.[6] C04B *16/02*
U.S. Cl. 106—805 **35 Claims**

1. A process for making a cellulose fiber reinforced cement-based material using cellulose pulp derived through at least one of

mechanical, thermal and chemical pulping methods, the process comprising the steps of:

a. drying the wet cellulose pulp resulting from the pulping methods under conditions to achieve a dried fluff pulp with low fiber-to-fiber bonding therein;

b. mechanically separating the dried fluff pulp into substantially individual fibers by breaking the fiber-to-fiber bonds between the individual fibers;

c. adding the separated, substantially individual fibers to a cement-based material at a dosage ranging from about 0.3–30.0 kg per cubic meter, said cement-based material further including about 50–1500 kg per cubic meter of cement, about 50–1000 kg per cubic meter of water, and about 100–3600 kg per cubic meter of aggregate; and

d. mixing the separated, substantially individual fibers into the cement-based material so as to disperse the fibers uniformly throughout the cement-based material.

5,643,360

APPARATUS FOR A PROCESS FOR THE PROTECTION OF PLANT SEEDS

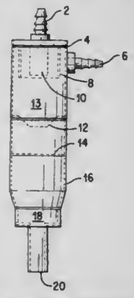
Cornélis Willem Rensiog, Oissel, and Hubert Sainsard, Louviers, both of France, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 410,645, Mar. 24, 1995, Pat. No. 5,527,760, which is a continuation of Ser. No. 182,075, Jan. 13, 1994, abandoned. This application May 31, 1995, Ser. No. 456,214

Claims priority, application France, Jul. 17, 1991, 91 09035

Int. Cl.[6] A23G *3/00*

U.S. Cl. 118—13 **7 Claims**



1. An apparatus for a process for wet-treating seeds with an acaricidal, fungicidal, insecticidal or nutritive agent which consists of a foam-formation apparatus comprising a first foam-formation chamber (**13**;**29**) equipped with a gas inlet (**6**;**24**) and an aqueous composition inlet, said composition containing at least a nonphytotoxic foaming agent (**2**;**22**)) to be admitted and containing, downstream of these openings, at least one sieve (**14**;**32**), this first chamber continuing into a second chamber for compressing and structuring the foam (**18**;**36**), which second chamber ends in an outlet nozzle for the foam (**20**;**38**).

5,643,361

PARTICULATE COATING APPARATUS WITH PARTICULATE CONTROL DEVICE

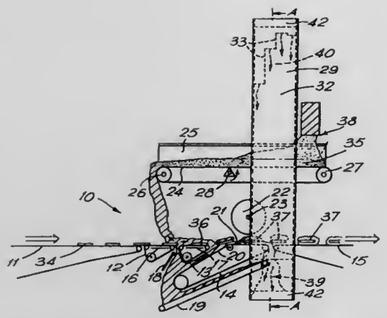
Lars Gustaf Albert Wadell, Aengelholm, Sweden, assignor to Nestec S.A., Vevey, Switzerland

Continuation of Ser. No. 547,457, Jul. 3, 1990, abandoned. This application Apr. 7, 1992, Ser. No. 865,792

Claims priority, application European Pat. Off., Aug. 1, 1989, 89114174

Int. Cl.[6] A23G *9/24*

U.S. Cl. 118—16 **7 Claims**



1. An apparatus for coating a foodstuff with particulate material comprising:

a drum capable of rotating about a substantially horizontal longitudinal axis;

a first conveyor positioned to travel to convey material through the drum;

a second conveyor positioned below the first conveyor to travel to convey material through the drum in a direction substantially opposite the first conveyor, the second conveyor comprising at least first, second and third successive endless belts, each having a horizontal upper run, and a gap between each successive pair of belts, the second belt having an inclined portion extending from its horizontal upper run towards the first belt and terminating at an end position below the horizontal upper run of the first belt such that at least a portion of an amount of material falling from the first belt is deposited upon the inclined portion of the second belt, the gap between the second and third belts being situated within the drum;

a plate which is adjustable and which is positioned at a position below the horizontal upper run of the first belt and above the inclined portion of the second belt to guide the particulate material falling from the first belt and to control an amount of particulate material falling from the first belt which is deposited upon the inclined portion of the second belt;

means for feeding particulate material onto the first conveyor; and

means for feeding a foodstuff onto the first belt;

such that in operation:

particulate material is fed from the first conveyor onto a foodstuff on the horizontal upper run of the first belt for coating the foodstuff on an upper side;

the coated foodstuff is transported to the horizontal upper run of the second belt with excess particulate material falling from the first belt;

the plate is adjusted to guide the excess particulate material falling from the first belt and to control the amount of falling particulate material deposited upon the inclined portion of the second belt and wherein the excess particulate material deposited upon the inclined portion of the second belt forms a layer of particulate material which is conveyed to the horizontal upper run of the second belt on which the coated foodstuff lies after being transported from the horizontal upper run of the first belt to the horizontal upper run of the second belt for coating the foodstuff on a bottom side;

the coated foodstuff is fed to the horizontal upper run of the third belt with further particulate material falling through the gap between the second and third belts onto an inside wall of the drum which rotates for conveying the further material to a position above the first conveyor upon which the further material falls by gravity; and

the first conveyor transports the further material back to the second conveyor.

5,643,362

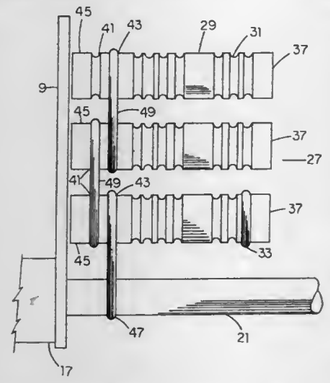
CENTERLESS TURNING LATHE FOR REFINISHING ROLLERS

John C. Garves, 15601 Bondy La., Darnestown, Md. 20878

Filed Jun. 5, 1995, Ser. No. 463,944

Int. Cl.[6] B05C *1/00*

U.S. Cl. 118—264 **18 Claims**



1. Multiple spindle apparatus for refinishing rollers comprising a first wall, a second wall, multiple rods connected between the first wall and the second wall, a first set of spindles extending inward from the first wall, a second set of spindles extending inward from the second wall, wherein each spindle in the set of spindles has at least one recess, belts for interconnecting adjacent pairs of spindles in each set, O-rings extending around each spindle and resting in the recesses of the spindles for supporting a drive shaft extending between edges of workpieces, a motor connected to the first set of spindles extending from the first wall for rotating the spindles in the first set of spindles in the same direction, a first fence extending through a first opening in the first wall, a second fence extending through a second opening in the second wall, and at least one applicator contacting plural workpieces for applying chemicals to and refinishing the workpieces.

5,643,363

EXTRUSION TYPE COATING HEAD

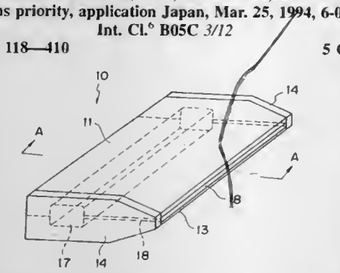
Ryuji Hosogaya, Saku; Eizo Tsunoda, Komoro; Akira Hatakeyama, Saku; Yoshihisa Osawa, Miyota-machi; Hideki Tanaka, Saku, and Seiichi Tobisawa, Hino, all of Japan, assignors to TDK Corporation, and Konica Corporation, both of Tokyo, Japan

Filed Mar. 22, 1995, Ser. No. 408,567

Claims priority, application Japan, Mar. 25, 1994, 6-077773

Int. Cl.[6] B05C *3/12*

U.S. Cl. 118—410 **5 Claims**



1. An extrusion coating head for applying a coating solution onto a support comprising,

a pocket storing the coating solution fed in the coating head temporarily for extruding the coating solution uniformly, and a slit being connected to the pocket and serving as a delivery port for extruding the coating solution,

said slit comprising inner surfaces having a center line average roughness (Ra) of 5.0 μm or less,

wherein the slit serves to permit the flow of the coating solution from said pocket along a delivery direction, each surface of the slit has a straightness (W1) in the delivery direction of the coating solution of 5 μm/10 mm or less and has a straightness (W2) in the perpendicular direction to the delivery direction of 50 μm/m or less.

5,643,364

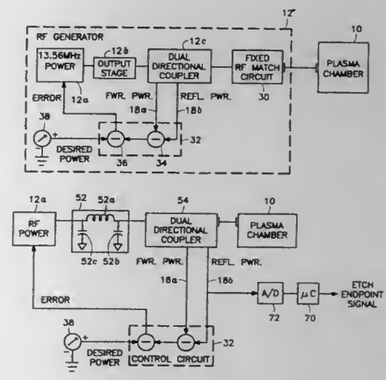
PLASMA CHAMBER WITH FIXED RF MATCHING

Jun Zhao, Milpitas; Stefan Wolff; Kenneth Smyth, both of Sunnyvale; William Nixon Taylor, Jr., Dublin, and Gerald McNutt, Los Altos Hills, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Continuation of Ser. No. 348,352, Nov. 30, 1994. This application May 2, 1996, Ser. No. 641,948

Int. Cl.[6] C23C *16/00*

U.S. Cl. 118—723 E **17 Claims**



1. A high frequency RF plasma system for processing a semiconductor substrate, comprising:

a plasma chamber adapted to receive a semiconductor substrate and a process gas therein;

a coupling device for coupling RF energy to the process gas inside the chamber;

an RF power generator mounted adjacent to the plasma chamber, including

an RF power source for producing RF energy having a frequency of at least 1 MHz, the power source having an output located at a distance from the coupling device of substantially less than an eighth of a wavelength at said frequency;

a fixed RF impedance matching circuit, having a fixed impedance, connected between the RF power source and the coupling device;

a power sensing coupler connected in series with the match circuit between the RF power source and the coupling device, said power sensing coupler having a measurement output indicating the amount of RF power delivered through the coupler; and

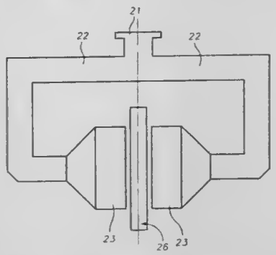
a control circuit coupled to said measurement output of said power sensing coupler and connected to said RF power circuit to govern the amount of RF power produced by said RF power circuit so as to maintain the delivered power measured by the coupler at a predetermined level.

5,643,365

METHOD AND DEVICE FOR PLASMA VAPOR CHEMICAL DEPOSITION OF HOMOGENEOUS FILMS ON LARGE FLAT SURFACES

L. M. Blinov, Moscow, Russian Federation; W. Neuberger, FT Labuan, Malaysia, and V. V. Pavlov, Moscow, Russian Federation, assignors to Ceram Optec Industries Inc, East Longmeadow, Mass.

Filed Jul. 25, 1996, Ser. No. 686,464
Int. Cl.[6] C23C *16/00*
U.S. Cl. 118—723 MW **20 Claims**



13. An apparatus for depositing by a plasma CVD process a dielectric coating having a thickness pattern on a dielectric substrate, having a surface area greater than 100 cm^2, comprising:

a deposition chamber having an essentially rectangular cross section and having means for introducing a dielectric substrate, with a substantially flat surface to be coated, into a plasma generated within said chamber;

a microwave generator system connected to said chamber, having a microwave generator attached to a waveguide and plasma horn facing an outer surface;

said plasma horn having one dimension, such that multiple microwave modes, will constructively combine at said substrate's surface;

means for introducing a reactive gas mixture containing a coating material precursor as a substantially laminar flow over said substrate's surface;

a linear plasma generated in said reactive gas mixture by said microwave generator system at said substrate's surface; and

means for having said linear plasma move across said substrate's surface so as to deposit a film having a thickness pattern over said substrate's entire surface, which is to be coated.

5,643,366

WAFER HANDLING WITHIN A VACUUM CHAMBER USING VACUUM

Sasson R. Somekh, Los Altos Hills; Philip M. Salzman, San Jose, and Oskar U. Vierny, Palo Alto, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

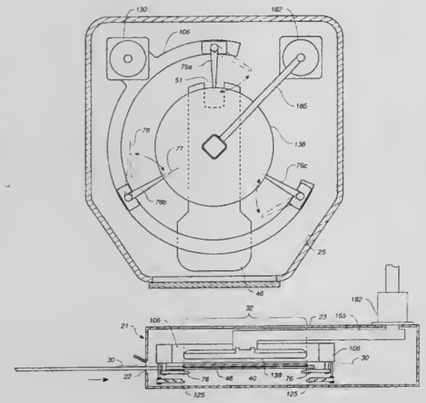
Filed Jan. 31, 1994, Ser. No. 189,951
Int. Cl.[6] C23C *16/00*
U.S. Cl. 118—721 **58 Claims**

1. A substrate processing apparatus for processing a downwardly facing substrate comprising:

a processing chamber;

a substrate mount within the chamber defining a downwardly facing substrate mounting surface adapted to engage a back face of a substrate, said mount providing a passageway between said mounting surface and a source of vacuum; and

substrate transfer apparatus having at least one set of beveled surfaces for supporting a substrate, wherein each of said at least one set of beveled surfaces are configured to support at least three points defining a plane on an edge of a front face of said substrate, wherein at least a portion of said transfer apparatus includes one set of said at least one set of beveled surfaces, wherein said portion of said transfer apparatus is



vertically movable to bring the substrate mounting surface into proximity with the back face of the substrate facing upwardly;

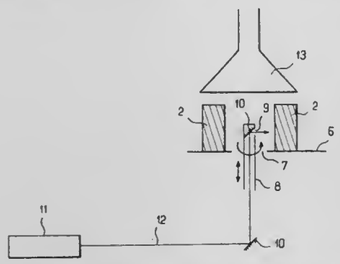
wherein when: said downwardly facing substrate mounting surface and back face of the substrate are adjacent, said passageway is in communication with said source of vacuum, and the pressure over the substrate backside is sufficiently below that of the processing chamber that the substrate is urged and held against the downwardly facing substrate mounting surface, the substrate transfer apparatus is configured to be removable from the substrate so that the downwardly facing surface of the substrate to be processed is fully exposed to the chamber.

5,643,367

METHOD AND DEVICE FOR CLEANING SOLID ELEMENTS

Charles-Henri Viel, Champforgeuil, France, assignor to Saint Gobain Emballage, Courbevoie, France

PCT No. PCT/FR94/01244, § 371 Date Nov. 15, 1995, § 102(e) Date Nov. 15, 1995, PCT Pub. No. WO95/11764, PCT Pub. Date May 4, 1995
PCT Filed Oct. 25, 1994, Ser. No. 464,622
Claims priority, application France, Oct. 26, 1993, 93 12750
Int. Cl.[6] B08B *7/00*
U.S. Cl. 134—1 **5 Claims**



1. A method of cleaning glass making molds having a first surface region coated with an essentially organic material, and a second surface region which comes in contact with hot glass during glass making and is coated with the essentially organic material and an essentially non-organic material, said method comprising:

a first cleaning step of removing the essentially organic material on the first and second regions; and

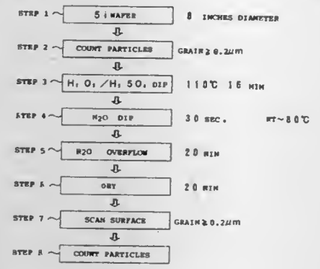
a second cleaning step, distinct from said first cleaning step, comprising a step of photo-ablation using laser impact substantially only on the essentially non-organic material on the second region.

5,643,368

PROCESS OF CLEANING A SUBSTRATE AND APPARATUS FOR CLEANING A SUBSTRATE

Kazushi Nakashima, Kasugai, Japan, assignor to Fujitsu Limited, Kanagawa, and Fujitsu VLSI Limited, Aichi, both of Japan

Filed Dec. 15, 1994, Ser. No. 356,532
Claims priority, application Japan, Jan. 19, 1994, 6-004095
Int. Cl.[6] B08B *3/12*
U.S. Cl. 134—1.3 **21 Claims**



1. A method for cleaning a hydrophilic surface of a silicon substrate comprising the steps of:

(a) contacting said hydrophilic surface with a cleaning liquid to form a first intermediate object having a cleaned surface, and having dust particles and cleaning liquid on its cleaned surface;

(b) after said step (a), contacting said cleaned surface, having said dust particles and cleaning liquid thereon, with a rinse liquid consisting essentially of pure water at a first temperature higher than a temperature at which ice forms on the dust particles up to 25° C. for a time sufficient to remove dust particles from said hydrophilic surface and to thereby form an intermediate object comprising said hydrophilic surface having cleaning fluid thereon;

(c) after said step (b), contacting said intermediate object comprising said hydrophilic surface having cleaning liquid thereon with a rinse liquid consisting essentially of pure water at a second temperature, which is higher than said first temperature, of up to 60° C., for a time sufficient to remove said cleaning liquid from said hydrophilic surface of said intermediate object; and

(d) drying said dual rinsed hydrophilic surface of said silicon substrate immediately after said step (c) without conducting any further rinsing steps after said step (c).

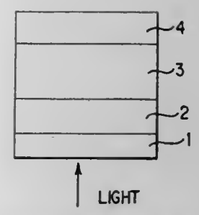
5,643,369

PHOTOELECTRIC CONVERSION ELEMENT HAVING AN INFRARED TRANSMISSIVE INDIUM-TIN OXIDE FILM

Hiroyuki Tanaka, and Kaoru Torikoshi, both of Minamiashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 271,627, Jul. 7, 1994, abandoned. This application Feb. 26, 1996, Ser. No. 607,202
Claims priority, application Japan, Jun. 24, 1993, 5-152530; Jul. 7, 1993, 5-167855
Int. Cl.[6] H01L *31/04*
U.S. Cl. 136—256 **4 Claims**

1. A photoelectric conversion device comprising a quartz substrate showing transparency to at least the near infrared region, an



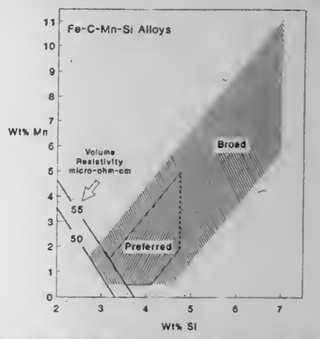
indium-tin-oxide containing transparent electrode; wherein said indium-tin-oxide containing transparent electrode is formed from a solution comprising an organic indium compound and an organic tin compound dissolved in an aliphatic hydrocarbon solvent, wherein said organic tin compound is chosen from $(R_2COO)_2Sn$, wherein R_2 is an alkyl group having 4–16 carbon atoms, or $(CH_3COCHCOCH_3)_2Sn$; and wherein said transparent electrode has 90% or more of light transmission to at least light having a wavelength in the range from 500 nm to 2,000 nm; a photoelectric conversion element having a photosensitivity to at least the near infrared region, and a second electrode, wherein said transparent electrode, said photoelectric conversion element and said second electrode are successively formed on said quartz substrate.

5,643,370

GRAIN ORIENTED ELECTRICAL STEEL HAVING HIGH VOLUME RESISTIVITY AND METHOD FOR PRODUCING SAME

Glenn Stuart Huppi, Monroe, Ohio, assignor to Armco Inc., Middletown, Ohio

Filed May 16, 1995, Ser. No. 442,459
Int. Cl.[6] H01F *1/147*
U.S. Cl. 148—111 **16 Claims**



1. A method of producing grain oriented electrical steel having an aluminum nitride inhibitor system, said method comprising the steps of:

a) providing a hot rolled strip which consists essentially of, in weight percent, 2.25 to 7% Si, 0.01–0.08% C, 0.015–0.05% Al, up to 0.01% S, greater than 0.5% Mn_{eq}, 0.001–0.011% N and balance being essentially iron and unavoidable impurities to provide a volume resistivity of at least 50 micro-ohm-cm., said steel composition balanced such that $2 \leqq \{(\%\ Si)-0.45(\%\ Mn_{eq})\} \leqq 4.4$; said % Mn_{eq} defined as (% Mn)+1.5 (% Ni)+0.5(% Cu)+0.1(% Cr);

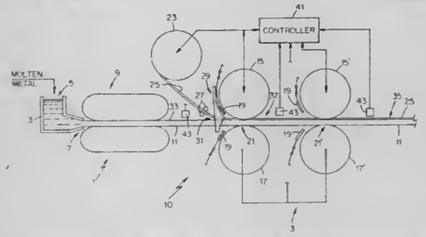
b) providing $\gamma_{1150° C.}$ in said strip of at least 5%; said $\gamma_{1150° C.}$ defined as austenite volume percent;

c) initial annealing said strip by heating said strip to a temperature of 950° to 1150° C. for a soak time of 180 seconds or less and heating said strip to a secondary soaking temperature of 775°–950° C. for a soak time of from 0–300 seconds and cooling;

d) cold rolling said annealed strip to a final thickness;

e) decarburizing said cold rolled strip to a carbon level below 0.005%;
f) nitriding said strip in one or more steps following primary recrystallization during said decarburizing and prior to secondary grain growth to provide excess nitrogen;
g) providing said strip with an annealing separator coating at a stage selected from the group of before nitriding, after nitriding or between nitriding treatments; and
h) final annealing said coated strip at a temperature of at least 1100° C. for at least 5 hours to effect secondary grain growth and purification.

5,643,371
METHOD AND APPARATUS FOR CONTINUOUSLY CLADDING AND HOT WORKING CAST MATERIAL
Rodney E. Hanneman, Midlothian, and Arthur L. Girard, Richmond, both of Va., assignors to Reynolds Metals Company, Richmond, Va.
Filed Jun. 7, 1995, Ser. No. 481,576
Int. Cl.[6] B22D *11/06*
U.S. Cl. 148—522 **8 Claims**



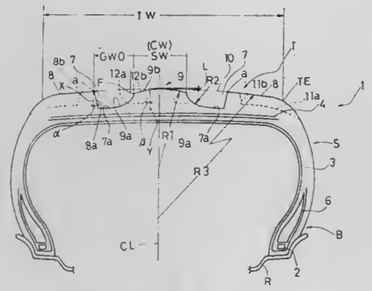
1. A method of continuously cladding a belt continuously cast material comprising the steps of:
a) providing a liner stock strip and a belt cast form;
b) positioning said liner stock strip adjacent said belt cast form as it exits a belt casting station at an elevated temperature;
c) applying said liner stock strip to said belt cast form; and
d) hot working said cast form with said liner stock strip clad thereto to a select gauge, the inherent heat in the belt cast form as it exits the belt casting station being sufficient to allow hot working and cladding of the cast form.

5,643,372
PROCESS FOR THE DESENSITISATION TO INTERCRYSTALLINE CORROSION OF 2000 AND 6000 SERIES AL ALLOYS AND CORRESPONDING PRODUCTS
Pierre Sainfort, Grenoble; Jean Domeyne, Coublevie, and Timothy Warner, Saint Martin le Vinoux, all of France, assignors to Pechiney Rhenalu, Courbevoie, France
Filed Aug. 15, 1994, Ser. No. 290,534
Claims priority, application France, Sep. 28, 1993, 93 11861
Int. Cl.[6] C22F *1/04*
U.S. Cl. 148—699 **13 Claims**



1. In a process for treating an aluminum alloy of the series AA 2000 or AA 6000 comprising solution heat treating, quenching and natural or artificial aging, wherein conventional solution heat treating is defined as solution heat treating the alloy at a temperature which is 5° to 10° C. below a known eutectics melting temperature for the alloy,
the improvement comprising solution heat treating the alloy at a temperature which is 5° to 110° C. below said conventional solution heat treating temperature in order to desensitize the alloy to intercrystalline corrosion.

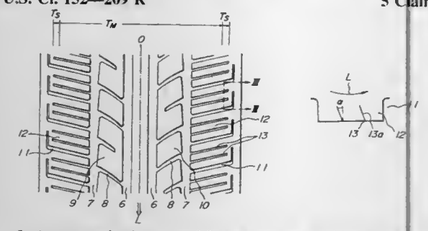
5,643,373
PNEUMATIC TIRE WITH PAIR OF GROOVES
Naoaki Iwasaki, Akashi, Japan, assignor to Sumitomo Rubber Industries, Ltd., Hyogo-ken, Japan
Filed Dec. 29, 1994, Ser. No. 365,946
Claims priority, application Japan, Dec. 29, 1993, 5-350694
Int. Cl.[6] B60C *11/04*
U.S. Cl. 152—209 R **9 Claims**



1. A pneumatic tire comprising a tread portion,
the tread portion provided with a pair of circumferential grooves extending substantially continuously in the circumferential direction of the tire,
one circumferential groove of said pair of circumferential grooves being on one side of the tire equator and the other circumferential groove of said pair of said circumferential grooves being on the other side of said tire equator to divide the tread portion into a central portion between the circumferential grooves and a pair of shoulder portions axially outwards of the circumferential grooves, each shoulder portion of said pair of shoulder portions having a top face,
the central portion having a contour comprising a central face defined by a continuous convex curve having axial edges and a pair of side faces each defined by a continuous concave curve,
each of the side faces extending axially outwardly and radially inwardly from each of the axial edges of the central face towards the bottom of the adjacent circumferential groove,
the side faces intersecting the convex central face at the axial edges to form an angle of less than 180 degrees,
the central face of the central portion substantially inscribing an imaginary line which is drawn smoothly connecting top faces of the shoulder portions with each other so as to be tangent to the top faces of the shoulder portions at the axial inner edges of the shoulder portions and to be a straight line or a convex line having a single radius of curvature,
the radius of curvature of the central face being smaller than a radius of curvature of the shoulder portions, and in the range of from 0.5 to 1.5 times the tread width,
the axial width between the axial edges of the central face being in the range of from 15 to 35% of the tread width,
in a standard condition in which the tire is mounted on a standard rim, and inflated to 70% of the maximum air pressure, and loaded with 70% of the maximum load, the footprint of the tire comprises a central part formed by said central portion and a pair of lateral parts formed by said shoulder portions, each of said lateral parts being separated from said central part by a void area which corresponds to one of the circumferential grooves, and

the central part has curved edge lines and each of the lateral parts has a straight edge line so that, on each side of the tire equator, one of the void areas is defined by the straight edge line and one of the curved edge lines and the axial width between the straight edge line and said one of the curved edge lines is minimum in the circumferential center of the footprint and increases towards both ends thereof.

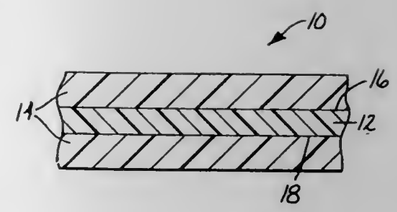
5,643,374
PNEUMATIC TIRE INCLUDING FINE GROOVES
Hiroyuki Matsumoto, Kodaira, Japan, assignor to Bridgestone Corporation, Tokyo, Japan
Filed Jun. 27, 1995, Ser. No. 495,259
Claims priority, application Japan, Jun. 29, 1994, 6-147469
Int. Cl.[6] B60C *11/12*
U.S. Cl. 152—209 R **5 Claims**



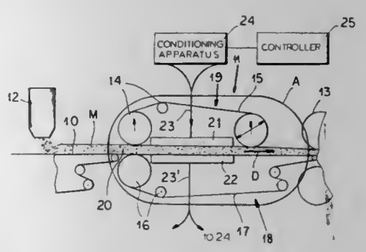
1. A pneumatic tire comprising: a carcass toroidally extending between a pair of bead portions, a belt superimposed about a crown portion of the carcass and a tread portion arranged on the belt, the tire having an equatorial plane, said tread portion having a ground contact area and side end regions when the tire is inflated under a normal internal pressure and loaded under a normal load on a flat road, each side end region being located outside of the ground contact area, said tread having a plurality of fine grooves which extend in a widthwise direction of the tread, said fine grooves being arranged on at least one side of the equatorial plane such that each fine groove includes a first portion located within a side end region and a second portion located within the ground contact area, each fine groove having a pair of walls, each of the walls of the first portion of the fine groove being inclined at an inclination angle with respect to the radial direction of the tire, the direction of inclination of said walls of the first portion being opposite to a rotating direction of the tire toward a groove bottom thereof and wherein either each of the walls of the second portion of the fine groove is inclined at an angle with respect to the radial direction of the tire which is smaller than said inclination angle and the direction of inclination of the walls of the second portion of the fine groove is inclined in a direction opposite to the rotating direction of the tire, or each of the walls of the second portion of the fine groove is inclined at an angle with respect to the radial direction of the tire and the direction of inclination of the walls of the second portion of the fine groove is in the rotating direction of the tire.

5,643,375
METHOD FOR FORMING MULTILAYERED BARRIER STRUCTURES
Debra L. Wilfong, Lake Elmo, and Richard J. Rolando, Oakdale, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Division of Ser. No. 141,211, Oct. 20, 1993, Pat. No. 5,407,713, which is a continuation-in-part of Ser. No. 967,975, Oct. 28, 1992, abandoned, which is a continuation-in-part of Ser. No. 810,001, Dec. 18, 1991, abandoned. This application Dec. 30, 1994, Ser. No. 366,817
Int. Cl.[6] B29C *47/00*
U.S. Cl. 156—244.24 **20 Claims**

1. A method for forming a multilayered structure comprising:
(a) coextruding a propylene-based material along with a non-chlorine containing organic polymer which is substantially impermeable to oxygen gas to form a multilayered extrudate;
(b) quenching the multilayered extrudate immediately after extruding to provide a multilayered structure with a core layer of the non-chlorine containing organic polymer and at least one layer of a mesophase propylene-based material proximate the core layer; and
(c) grafting a graft layer to at least a portion of the multilayered structure through exposure to a dosage of ionizing radiation.

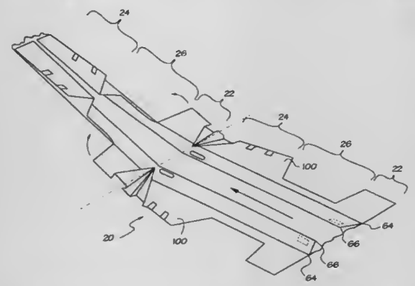


5,643,376
PREHEATING PARTICLES IN MANUFACTURE OF PRESSED BOARD
Klaus Gerhardt, Rheurdt; Armin Rapp, Kempen; Michael Schöler, Rheurdt, and Hans-Dietrich Sitzler, Nettetal-Hinsbeck, all of Germany, assignors to G. Siempelkamp GmbH & Co., Krefeld, Germany
Filed Jul. 5, 1995, Ser. No. 498,521
Claims priority, application Germany, Jul. 6, 1994, 44 23 632.8
Int. Cl.[6] B27N *1/00;3/10*
U.S. Cl. 156—62.2 **10 Claims**



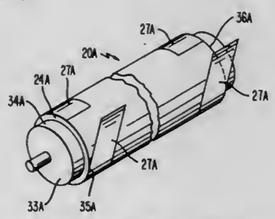
1. A method of preheating a particle mat for pressing into a pressed board, the method comprising the steps of:
passing through the mat air-conditioned treatment air having a predetermined moisture content and dew point;
heating the treatment air passing through the mat to a temperature which is greater by a dew-point differential than the dew point of the treatment air;
controlling the volume rate of flow of the treatment air and the moisture content of the treatment air such that the mat is preheated to a predetermined temperature while moisture in the treatment air is allowed to condense in the mat to at most a predetermined maximum moisture content; and
drying the mat prior to passing the treatment air through the mat by passing through the mat pretreatment air having the same dew point as the treatment air used to preheat the mat but having a higher dew-point differential so as to reduce the mat's moisture content to compensate for the moisture subsequently regained by condensation from the treatment air passed through the mat.

5,643,377
PROCESS FOR MAKING AN ABSORBENT ARTICLE HAVING INFLECTED BARRIER LEG CUFF
Stanley George Juergens, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Division of Ser. No. 260,638, Jun. 16, 1994, Pat. No. 5,496,428. This application Jun. 6, 1995, Ser. No. 466,476
Int. Cl.[6] A61F *13/15*
U.S. Cl. 156—73.1 **5 Claims**



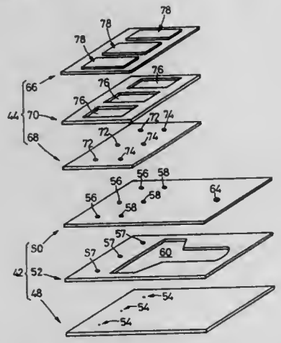
1. A method for making a wearable, absorbent article having a longitudinal centerline comprising the following order of steps:
(a) providing an absorbent web of indefinite length, the web having a topsheet, a backsheet, and a centrally positioned absorbent core between the topsheet and backsheet forming a chassis, the chassis having a first waist region, a second waist region, and a crotch region between the first and second waist regions;
(b) attaching a pair of longitudinally extending barrier leg cuffs to the chassis, each of the barrier leg cuffs having a proximal portion fixed to the topsheet and a distal portion unsecured at least to a portion of the chassis, such that the distal portion of each barrier leg cuff is oriented inwardly toward the longitudinal center line of the chassis;
(c) cutting leg notches in the crotch region of the chassis;
(d) attaching the barrier leg cuffs to the second waist region of the chassis, causing the distal portion of the leg cuff to be attached outwardly from the longitudinal centerline in the second waist region;
(e) folding the chassis and securing the barrier leg cuffs to the topsheet in the first waist region of the chassis with their distal portions extending inwardly toward the longitudinal centerline in the first waist regions; and
(f) cutting the web transversely into individual articles, wherein the steps occur in a single machine direction.

5,643,378
BELT CONSTRUCTION AND METHOD OF MAKING THE SAME
Jack D. White, Jr., Springfield, Mo., and Douglas W. Sides, Aiken, S.C., assignors to Dayco Products, Inc., Dayton, Ohio
Filed Oct. 26, 1994, Ser. No. 329,589
Int. Cl.[6] B29D *29/00;* **F16G** *5/08*
U.S. Cl. 156—87 **9 Claims**



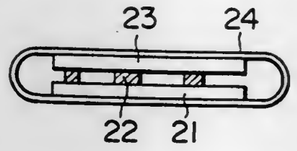
1. In a method of making an endless belt construction formed mainly of polymeric material and comprising a tension section, a compression section, and a load carrying section disposed between said tension section and said compression section and being secured thereto by a step of heat curing said belt construction, one of said sections comprising a plurality of layers of polymeric material disposed in stacked relation, the improvement comprising the step of disposing a thin narrow sheet of non-woven material between an adjacent pair of said layers of polymeric material before the step of heat curing so that said sheet is secured to said adjacent pair of said layers during the step of heat curing said belt construction, said sheet bleeding gaseous matter trapped between said adjacent pair of layers during the heat curing step, wherein said belt construction has opposite side edges, wherein the step of disposing said sheet causes said sheet to extend from one of said side edges to a point that is spaced inwardly from the other of the side edges, and wherein the step of disposing does not include covering a medial portion of one of said adjacent pair of layers with a sheet of non-woven material.

5,643,379
METHOD OF PRODUCING A PIEZOELECTRIC/ELECTROSTRICTIVE ACTUATOR
Yukihisa Takeuchi, Aichi-ken; Hideo Masumori, Anjo, and Nobuo Takahashi, Owariasahi, all of Japan, assignors to NGK Insulators, Ltd., and Seiko Epson Corporation, both of Japan
Division of Ser. No. 66,195, May 25, 1993, abandoned. This application Mar. 22, 1995, Ser. No. 408,387
Claims priority, application Japan, May 27, 1992, 4-160204; Mar. 22, 1993, 5-087997
Int. Cl.[6] B32B *31/26;31/22;31/12*
U.S. Cl. 156—89 **10 Claims**



1. A method of producing a piezoelectric/electrostrictive actuator having a base member which includes respective walls partially defining a plurality of pressure chambers, and a plurality of piezoelectric/electrostrictive elements that are formed on said respective walls, said method comprising the steps of:
preparing a first ceramic green sheet for a spacer plate, said first ceramic green sheet having a plurality of windows formed through a thickness thereof;
preparing a second ceramic green sheet for a closure plate having said respective walls;
preparing a third ceramic green sheet for a connecting plate, said third ceramic green sheet having at least one communication hole formed through a thickness thereof, said at least one communication hole corresponding to each of said plurality of windows;
preparing an unfired ceramic body consisting of said first, second and third ceramic green sheets which are laminated such that said first ceramic green sheet is interposed between said second and third ceramic green sheets;
firing said unfired ceramic body to form an integral ceramic structure as said base member in which said plurality of pressure chambers correspond to said plurality of windows and are defined by said closure plate, said connecting plate, and said spacer plate interposed between said closure and connecting plates;
subjecting an outer surface of said connecting plate that is remote from said spacer plate, to a machining operation such that a maximum waviness of said outer surface is not larger than 50 μm; and forming said piezoelectric/electrostrictive elements by a thick-film forming process on an outer surface of said closure plate remote from said spacer plate such that said elements are aligned with said pressure chambers, respectively, or on an outer surface of said second ceramic green sheet remote from said first ceramic green sheet such that said elements are aligned with said windows, respectively.

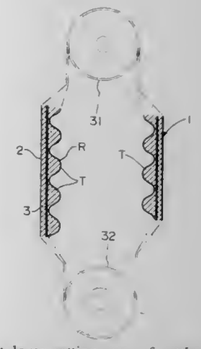
5,643,380
METHOD OF RECYCLING IMAGE-DEPOSITED RECORDING MATERIAL AND APPARATUS FOR RECYCLING THE SAME
Tadashi Saitoh; Kiyoshi Tanikawa, both of Yokohama; Kakuji Murakami, Kamakura; Toshiaki Tokita, Zama, and Shigeru Fujita, Machida, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Feb. 27, 1995, Ser. No. 394,761
Claims priority, application Japan, Feb. 25, 1994, 6-052761; Feb. 28, 1994, 6-054532; May 26, 1994, 6-112411; Feb. 2, 1995, 7-037522
Int. Cl.[6] B08B *1/02;* **G03G** *21/00*
U.S. Cl. 156—94 **68 Claims**



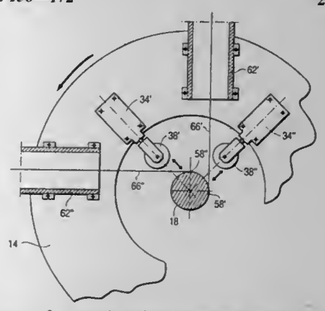
1. A method of recycling an image-deposited recording material comprising a surface portion which swells in contact with water and bears thereon deposited images comprising an image-constituting material, comprising the steps of:
(a) applying a water-containing image removal promoting liquid to said image-deposited surface portion of said recording material and sealing said image-deposited surface portion to prevent water from said removal promoting liquid from evaporating and escaping therefrom,
(b) bringing an image release member into contact with said image-deposited surface portion of said recording material to transfer said images to said image release member to remove said images from said image-deposited recording material, and
(c) applying heat to said image-deposited recording material to weaken the adhesion of said images to said surface portion of said recording material at least after said step (a).

5,643,381
METHOD OF PRODUCING BLANKET BELT FOR USE IN PRINTING MACHINE
Tomoaki Iwafune, Nagano, and Koichi Kamoi, Tokyo, both of Japan, assignors to Nagano Japan Radio Co., Ltd., Nagano-ken, and Gradco (Japan) Ltd., Toyko, both of Japan
Filed Dec. 11, 1995, Ser. No. 570,518
Claims priority, application Japan, Feb. 9, 1995, 7-046516
Int. Cl.[6] B32B *09/00*
U.S. Cl. 156—141 **7 Claims**

1. A method of producing a printing blanket belt for use in a printing machine, characterized in that the method comprises:
a reinforcement layer setting step of setting a reinforcement layer onto a cylindrical mold having a tooth shape at an outer circumferential surface thereof;
a rubber sheet setting step of setting a green rubber sheet made of a rubber material, forming a printing blanket belt on the reinforcement layer set onto the mold;
a vulcanizing step for forming teeth on said printing blanket belt on an inner surface thereof by vulcanizing an intermediate produced article obtained on the rubber sheet setting step, and obtaining an endless printing blanket belt having the reinforcement layer at an inside thereof; and
a blanket surface polishing step of working an outer blanket surface of said printing blanket belt, after vulcanizing.



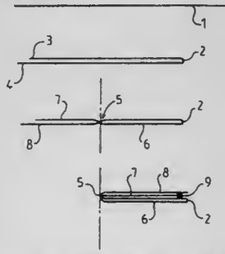
5,643,382
PROCESS AND DEVICE FOR MANUFACTURING A REINFORCED COMPOSITE ARTICLE
Didier Delimoy, Dion-Valmont, and Thierry De Bruille, Rixensart, both of Belgium, assignors to Solvay, Brussels, Belgium
Filed Sep. 13, 1995, Ser. No. 528,214
Claims priority, application Belgium, Sep. 15, 1994, 09400830; Dec. 23, 1994, 09401158
Int. Cl.[6] B65H *81/00*
U.S. Cl. 156—172 **22 Claims**



1. A process for manufacturing a composite article comprising a solid body composed of a plastic A, said process comprising the steps of:
winding at least one reinforcing tape around the solid body A;
exerting a consolidation pressure locally on the reinforcing tape at at least one position located downstream of the point where the reinforcing tape comes into contact with the solid body; and
separating the point where the reinforcing tape comes into contact with the solid body from the at least one position in which the consolidation pressure is exerted by an axial distance that is at least equal to a pitch of the wound reinforcing tape, whereby an initial contact pressure occurring between

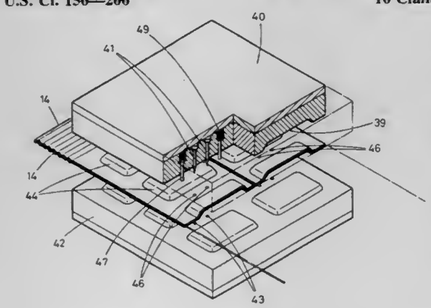
the reinforcing tape and the solid body is determined exclusively by a tensile force exerted on the reinforcing tape.

5,643,383
INFORMATION-MEDIUM SLEEVE AND PROCESS FOR MANUFACTURING IT
Jean-Luc Allegre, Villefontaine, France, assignor to Decomatic S.A., LaVerpilliere, France
Division of Ser. No. 409,982, Mar. 24, 1995, Pat. No. 5,604,016. This application Jun. 5, 1995, Ser. No. 465,224
Claims priority, application France, Mar. 29, 1994, 9403677
Int. Cl.[6] B32B *9/00*
U.S. Cl. 156—203 **10 Claims**



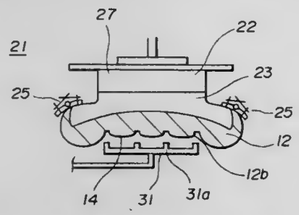
1. A process for manufacturing sleeves which are placed around a container having a perimeter in order to constitute an information medium comprising the steps of:
folding a preprinted sheet of plastic on itself along a folding line, thus forming two superposed parts of the sheet; and
fastening these two parts of the sheet together along at least one fastening zone which extends substantially parallel to the folding line whereby there is produced (a) a sleeve body which is tubular in order to encompass the perimeter of the container, and (b) first and second flap-forming parts, each flap-forming part having a first edge and at least one face, each said first edge of the first and second flap-forming parts being fixed to the sleeve body such that the first edges are parallel to a generatrix of the sleeve body and such that the first and second flap-forming parts extend along the sleeve body and hence cover at least a portion of the sleeve body.

5,643,384
METHOD OF MANUFACTURING MOLDED GOODS USING PAPER OR PULP SHEETS AS MATERIAL
Masaaki Okabe, Nagoya, Japan, assignor to Okabe Engineering Kabushiki Kaisha, Nagoya, Japan
Filed Jan. 10, 1995, Ser. No. 370,329
Claims priority, application Japan, Jul. 4, 1994, 6-176117
Int. Cl.[6] B31F *1/20;1/24;1/32;* **B32B** *31/08*
U.S. Cl. 156—206 **16 Claims**



1. A method of simultaneously manufacturing a plurality of molded goods, comprising the steps of:
providing a molding sheet comprising at least one of a pulp sheet and a paper sheet and having a plurality of predetermined molding sections to respectively form the plurality of molded goods;
forming quasi-broken portions between adjacent pairs of said predetermined molding sections of said molding sheet; and
subjecting said molding sheet to heating and pressing to mold said predetermined molding sections of said molding sheet into predetermined shapes.

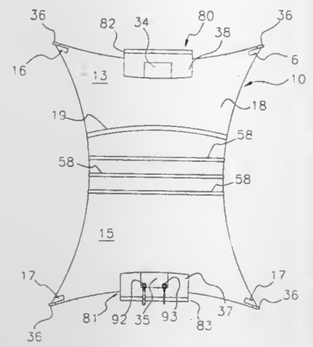
5,643,385
METHOD OF MANUFACTURING ARTICLE INCLUDING INTEGRATED COVER MATERIAL
Masanobu Kikuchi; Norio Yanagishita, and Koji Yamada, all of Ayase, Japan, assignors to Ikeda Bussan Co.,Ltd., Ayase City, Japan
Continuation of Ser. No. 289,575, Aug. 12, 1994, abandoned. This application May 6, 1996, Ser. No. 643,496
Claims priority, application Japan, Apr. 5, 1994, 6-090532
Int. Cl.[6] B32B *31/12*
U.S. Cl. 156—212 **15 Claims**



1. A method of integrally bonding an article and a cover material, comprising the steps of:
coating a main surface of said article with a heat-activated adhesive;
positioning said article on an upper mounting member such that said main surface is directed downwardly;
disposing a sheet of said cover material on a lower mounting member such that a reverse side of said cover material is faced toward said main surface of said article;
applying clamping means to said article and said cover material so as to establish a positional relationship therebetween;
directly irradiating only said main surface from below with a heating member to activate said adhesive;
wherein said main surface is formed With a patterned texture and said heating member has a configuration conforming to said pattern, and
moving together said upper and lower mounting members after said irradiating step such that said cover material is pressingly contacted with said main surface of said article for a duration sufficient to set said adhesive.

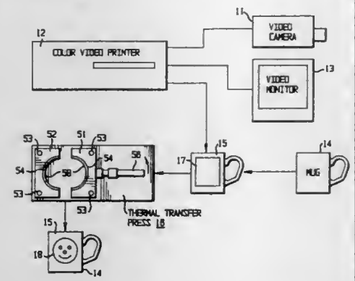
5,643,386
ASSEMBLY PROCESS FOR FABRIC BAG PLUG
Allen D. Mathison, Richfield, and Randy D. Smith, New Hope, both of Minn., assignors to Cherne Industries Incorporated, Minneapolis, Minn.
Filed Jun. 2, 1995, Ser. No. 460,077
Int. Cl.[6] F16L *55/12*
U.S. Cl. 156—218 **20 Claims**

1. An assembly process for a flexible bladderless bag plug comprising:
(a) providing a plurality of flexible material portions, each said flexible material portions being of a predetermined construction and configuration, said flexible material including at least



a first predetermined construction comprising a coated fabric material having exposed fabric ends, said coated fabric material being utilized to form a bladderless body of said flexible bag plug;
(b) bonding said flexible material portions together to form a bladderless plug body having a generally rectilinear configuration when in its deflated state whereby said plug body has fabric ends exposed to the outside of said plug body;
(c) sealing the fabric ends exposed to the outside of said plug body;
(d) forming and bonding a tethering assembly to the plug body at opposite ends thereof; and
(e) placing at least one port in said bladderless plug body.

5,643,387
INSTANT COLOR SUBLIMATION TRANSFERS
Donald C. Berghauser, and Sally H. Berghauser, both of 4664 S. Union St., Morrison, Colo. 80465
Continuation of Ser. No. 891,919, Jun. 1, 1992, abandoned, which is a continuation of Ser. No. 645,320, Jan. 24, 1991, abandoned, which is a continuation of Ser. No. 240,507, Sep. 6, 1988, abandoned. This application Aug. 9, 1993, Ser. No. 110,647
Int. Cl.[6] B32B *31/00*
U.S. Cl. 156—230 **20 Claims**

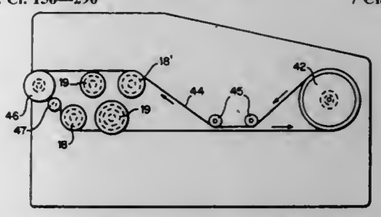


1. A process for use in combination with a color video printer of transferring a print of an image, formed substantially entirely of sublimable dyes produced by said printer in an initial step of the process by sublimation transfer of said dyes onto color video printer print paper, to a surface capable of receiving and retaining sublimable dyes, which process comprises the further steps of:
placing said print produced by sublimation transfer of sublimable dyes directly against said surface; and
heating and pressing said print at a temperature above 300° F. and with sufficient force directly against said surface so that said sublimable dyes forming said image on said print are sublimated and transferred permanently from said print directly to said surface without distortion of said image transferred thereto.

5,643,388
PROCESS OF MAKING PAPERBOARD CARRIER FOR STATIC CLING VINYL PRODUCTS
Ralph Scott Peterson, Clifton Forge, Va., assignor to Westvaco Corporation, New York, N.Y.
Filed Feb. 13, 1995, Ser. No. 387,333
Int. Cl.[6] B32B *31/00*
U.S. Cl. 156—272.6 **4 Claims**

1. A method for producing a paperboard carrier for static cling vinyl products, wherein said method is comprised of the steps of:
coating a paperboard carrier base with a layer of particulate minerals;
extruding a layer of a polymeric material substantially over said layer of particulate minerals wherein said polymeric material is further comprised of high density polyethylene;
contacting said extruded layer with a chill roll in order to substantially smooth out said extruded layer;
surface treating said extruded layer to raise a surface energy of said extruded layer to provide static such that adhesion between said paperboard carrier and said static cling vinyl products can be achieved, wherein said step of surface treating is further comprised of the step of corona discharge treating said extruded layer; and
securing a static cling vinyl product to said surface treated, extruded layer.

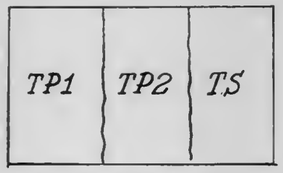
5,643,389
STACKED PRESSURE SEAL METHOD
Michael S. Kalisiak, North Tonawanda, and Eugene E. Mietlicki, Tonawanda, both of N.Y., assignors to Moore Business Forms, Inc., Grand Island, N.Y.
Division of Ser. No. 779,898, Oct. 21, 1991, Pat. No. 5,169,489. This application Aug. 24, 1992, Ser. No. 933,823
Int. Cl.[6] B32B *31/00*
U.S. Cl. 156—290 **7 Claims**



1. A method of handling business forms, each having at least first and second perpendicular strips of pressure seal adhesive of a predetermined width for fixing one part of the business form to another part, comprising the steps of:
(a) at a first vertical level and a first position automatically and continuously applying an adhesive activating compressive force substantially only at approximately the predetermined width of the first strip to activate the adhesive of the first strip to hold the parts of the business form together at that strip;
(b) automatically and continuously conveying the business forms from the first level to a second level, vertically spaced from the first level;
(c) after step (a), automatically and continuously rotating each business form approximately ninety degrees about a vertical axis;
(d) conveying the business form to a second position in substantial vertical alignment with said first position, and
(e) automatically and continuously applying an adhesive activating compressive force substantially only at approximately the

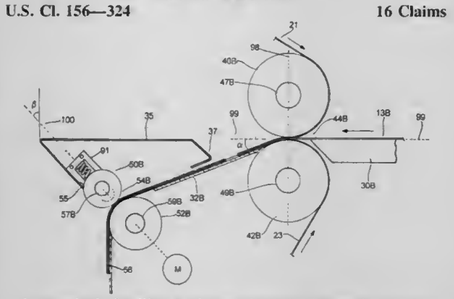
predetermined width of the second strip to activate the adhesive of the second strip to hold the parts of the business form together at that strip.

5,643,390
BONDING TECHNIQUES FOR HIGH PERFORMANCE THERMOPLASTIC COMPOSITIONS
Roderic C. Don, Newark; John W. Gillespie, Jr., Hockessin, and Steven H. McKnight, Dover, all of Del., assignors to The University of Delaware, Newark, Del.
Filed May 4, 1995, Ser. No. 434,459
Int. Cl.[6] B32B *9/00*
U.S. Cl. 156—307.1 **17 Claims**



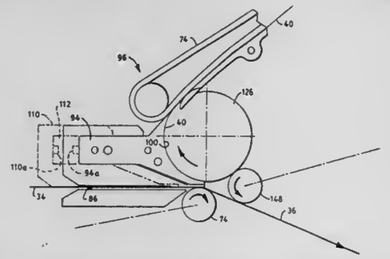
11. A process of manufacturing a layered composite material comprising:
selecting a thermoplastic material and a thermosetting monomer wherein said thermosetting monomer has similar solubility parameters to that of said thermoplastic material,
bonding said thermoplastic material directly to said thermosetting monomer and creating a layered cocured material.

5,643,391
METHOD AND APPARATUS FOR AN IMPROVED ROLLER SYSTEM FOR CALENDAR MACHINES
Cal L. Couillard, Deerfield, and Bruce Adams, Madison, both of Wis., assignors to Hunt Holdings, Inc., Wilmington, Del.
Filed Jan. 13, 1995, Ser. No. 372,511
Int. Cl.[6] B30B *3/04*
U.S. Cl. 156—324 **16 Claims**



1. A method of pulling a substrate through a laminating machine, the laminating machine having cylindrical rollers in contact with each other to form a nip through which the workpiece is fed, a feedway on the feed side of the nip for supporting the workpiece, the feedway having a substantially horizontal top surface defining a first plane, the nip lying within the first planer the axes of rotation of the rollers being parallel to the first plane, a second plane common to the axes being substantially perpendicular to the first plane, the method comprising the steps of:
supplying a laminating film and a series of workpieces to said nip;
laminating said laminating film and said series of workpieces at said nip;
providing a pair of exit pathways, a first exit pathway for guiding laminated rigid workpieces in substantially the first plane and a second exit pathway for guiding laminated flexible workpieces into cylindrical pull-rollers at an elevation different than the elevation of the first plane.

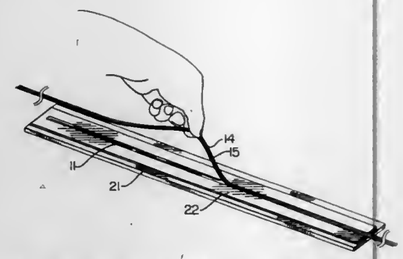
5,643,392
METHOD OF AND APPARATUS FOR DELAMINATING IMAGING MEDIA
Arthur H. Clough, Hardwick, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Dec. 19, 1994, Ser. No. 358,343
Int. Cl.[6] B32B *35/00*
U.S. Cl. 156—344 **39 Claims**



1. An apparatus for delaminating layers of a laminated sheet of imaging medium, wherein the laminated sheet includes an image substrate, an intermediate image forming layer, and an overlying peelable layer, the substrate layer being provided with a frangible tab portion located between a score line in a free surface of the substrate and an adjacent marginal edge of the medium; said apparatus comprising:
a frame assembly, peeling means operatively associated with said frame assembly at said peeling station and being operative for peeling at least a peelable layer of at least one sheet of an imaging medium from a substrate of the imaging medium at a peeling station, wherein said peeling means is adjustable for peeling different sheets of an imaging medium having different predetermined peeling characteristics; wherein said peeling means includes a first peeling means for peeling the peelable layer from a sheet medium having a first set of peeling characteristics; a second peeling means for peeling the peelable layer from a sheet medium having a second set of peeling characteristics; and, means for presenting either of said first or second peeling means to the advancing sheet at said peeling station so as to effect peeling of a corresponding one of the sheet media having the first or second peeling characteristics; respectively, and said presenting means being operable for peeling the peelable layer from the substrate as the sheet medium is advanced therepast.

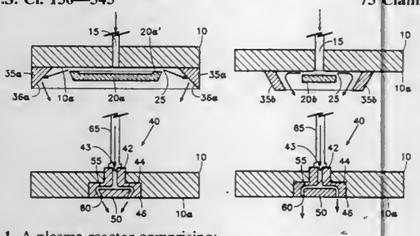
5,643,393
METHOD FOR ACCESSING OPTICAL RIBBON FIBERS IN MIDSPAN
Michael D. Genovese; Gregory A. Lochkovic, both of Conover, and Gregory A. Mills, Claremont, all of N.C., assignors to Siecor Corporation, Hickory, N.C.
Filed Jul. 25, 1996, Ser. No. 684,879
Int. Cl.[6] B32B *35/00*
U.S. Cl. 156—344 **10 Claims**

1. A method of removing the outer common coating from a length of optical fiber ribbon to provide access to one or more coated optical fibers within said optical fiber ribbon, said method comprising the steps of:
providing a strip of adhesive tape having first and second major surfaces, said first major surface having exposed adhesive thereon and said second major surface being a backing material exposing no adhesive;



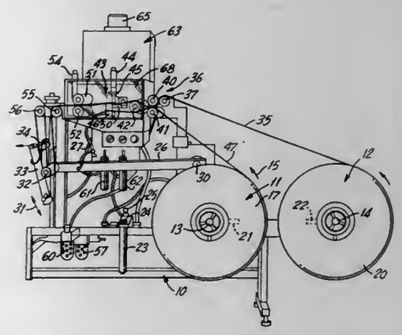
placing said first major surface of said strip onto a support surface, thereby securing said strip thereto with the said backing facing away from said support surface;
placing an amount of glue onto said backing, and placing a major lateral surface of said optical fiber ribbon onto said glue, thereby securing at least a portion of said length to said strip;
lifting at least a portion of said optical fiber ribbon length away from said support surface, thereby causing said glue to rupture a portion of said optical fiber ribbon outer common coating to initiate delamination thereof from coated optical fibers incorporated within said optical fiber ribbon length; and
propagating the delamination of said optical fiber ribbon common coating forming said ribbon major lateral surface from coated optical fibers incorporated within said optical fiber ribbon length by continued lifting of at least a portion of said optical fiber ribbon away from said support surface.

5,643,394
GAS INJECTION SLIT NOZZLE FOR A PLASMA PROCESS REACTOR
Dan Maydan, Los Altos Hills; Steve S. Y. Mak, Pleasanton; Donald Olgado, Mountain View; Gerald Zheyao Yin, Cupertino, all of Calif.; Timothy D. Driscoll, Hamilton, Mont.; Brian Shieh, Hualien, Taiwan, and James S. Papanu, San Rafael, Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.
Filed Sep. 16, 1994, Ser. No. 307,888
Int. Cl.[6] H05H *1/00*
U.S. Cl. 156—345 **73 Claims**



1. A plasma reactor comprising:
a reactor vacuum chamber having a chamber housing;
a pedestal holding a workpiece to be processed
gas injection apparatus, comprising:
a gas supply containing a processing species in a gas,
an opening in said chamber housing,
a gas feed line from said supply to said opening in said chamber housing,
gas distribution apparatus near said opening in said chamber housing, comprising:
a disk member surrounded by an annular member with a gap therebetween, said gap comprising an elongate thin slit nozzle facing the interior of said chamber, said disk member and annular member dispersing gas flow from said opening in said chamber housing to said slit nozzle, and
a plurality of spacers, each disposed between the disk member and the annular, said spacers having a thickness which spans the gap between the disk and annular members and causes said gap to be of a substantially equal width over its entire circumference, said spacers further having a cross-sectional size in the direction of gas flow which is sufficiently small so as to not significantly interfere with the flow of gas from the slit nozzle.

5,643,395
AUTOMATIC SPLICING APPARATUS
Gaylen R. Hinton, Merced, Calif., assignor to CMS Gilbreth Packaging Systems, Inc., Trevose, Pa.
Filed Sep. 1, 1992, Ser. No. 939,894
Int. Cl.[6] B32B *35/00;* **B65H** *21/00*
U.S. Cl. 156—361 **1 Claim**



1. An apparatus for splicing the leading label in a web of labels to a label in a running web of labels drawing from a roll of labels that are being applied to articles in a production line comprising: a reel for supporting the rolled web of labels for rotation thereon; another reel for supporting the running rolled web of labels for rotation thereon; a photosensitive device associated with said another reel and responsive to light reflected from said rolled running web of labels for generating a signal that corresponds to the depletion of the running web of labels; a controller coupled to said photosensitive device for controlling the speed of the running web; a brake for stopping the movement of at least a portion of the running web; further brake means coupled to said another reel for establishing a tension in the running web between said brake and said another reel; a dancer arm for establishing tension in the running web in the portion of the running web that extends beyond said brake, the running web engaging said dancer arm; means responsive to said controller for moving said dancer arm to a predetermined position in order to establish a specific length of the running web for registering the leading label in the web of labels with the labels in the running web; means for generating signals that correspond to the labels that are applied to the articles in the production line; means for transmitting said signals to said controller, said controller counting said labels to identify the label that is spliced to the running web; and ejection means coupled to said controller for removing the article in the production line to which the spliced label is applied.

5,643,396

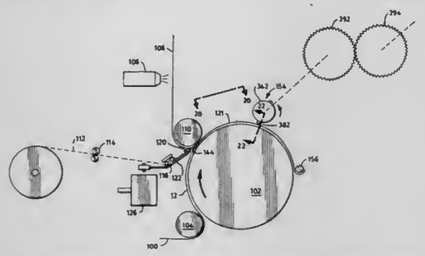
APPARATUS FOR FABRICATING GARMENTS

Gregory John Rajala, Neenah; Paul Daniel Suke, Appleton; Steven Craig Gehling, Oshkosh, and Gerald Leigh Rabe, Appleton, all of Wis., assignors to Kimberly-Clark Worldwide, Inc., Neenah, Wis.

Division of Ser. No. 381,389, Jan. 31, 1995. This application May 30, 1995, Ser. No. 453,836

Int. Cl.[6] A29C *65/08*

U.S. Cl. 156—361 **61 Claims**



1. A processing system for use in constructing a garment, as one of a series of consecutive workpieces in a continuous web, each workpiece having front and back body portions, separated by a crotch portion therebetween, the workpiece being disposed in a transverse orientation in the web, with the front and back body portions on opposing sides of the web, said processing system comprising:

(a) apparatus for stretching at least one elastic;

(b) apparatus for incorporating the at least one stretched elastic into the continuous web in stretched condition;

(c) apparatus for relieving stretch in the at least one elastic at the crotch portion of each respective workpiece in the web, while maintaining the stretch in at least one of the at least one elastic at a second portion of each respective workpiece;

(d) apparatus for folding the web such that the front and back body portions of the respective workpieces are in face-to-face relationship with each other;

(e) apparatus for forming side seam bonds, thereby joining the front body portion to the back body portion, in the web, after the folding of the web: and

(f) apparatus for severing the respective workpiece from the web after the forming of the side seam bonds, thereby to provide the garment.

5,643,397

EQUIPMENT FOR FORMING A SHEET OF LOOP MATERIAL

Michael R. Gorman, White Bear Lake; Dennis L. Becker, Vadnais Heights; Donald W. Folske, Oakdale; William L. Melbye, Maplewood; Susan K. Nestegard, Woodbury, and Ronald L. Ott, Lake Elmo, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 142,190, Oct. 26, 1993, abandoned, which is a division of Ser. No. 555,049, Jul. 18, 1990, Pat. No. 5,256,231, which is a continuation-in-part of Ser. No. 517,409, Apr. 27, 1990, abandoned, which is a continuation of Ser. No. 193,832, May 13, 1988, abandoned. This application Jun. 1, 1995, Ser. No. 457,213

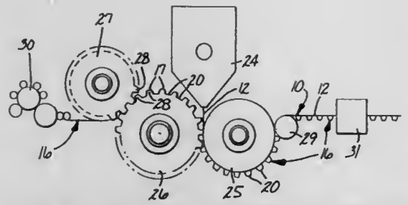
Int. Cl.[6] B32B *3/06;31/08*

U.S. Cl. 156—435 **13 Claims**

1. Equipment for forming a sheet of loop material from a sheet of fibers and thermoplastic material, said equipment comprising:

means for forming the sheet of fibers from loose fibers as a non woven sheet of randomly oriented fibers with no internal bonding except for the friction between the fibers;

first and second generally cylindrical corrugating members each having an axis and including a plurality of spaced ridges defining the periphery of the corrugating member, the ridges having outer surfaces and defining spaces between said ridges



adapted to receive portions of the ridges of the other corrugating member in meshing relationship with the sheet of fibers therebetween;

means for mounting the corrugating members in axially parallel relationship with portions of the ridges in meshing relationship;

means for rotating at least one of the corrugating members so that when the sheet of fibers is fed between the meshed portions of the ridges the sheet of fibers will be generally conformed to the periphery of the first corrugating member to form arcuate portions of the sheet of fibers in the spaces between the ridges of the first corrugating member and to form anchor portions of the sheet of fibers along the outer surfaces of the ridges of the first corrugating member, said second corrugating member having a smooth surface finish, and said first corrugating member having a surface finish that is very rough compared to the surface finish of said second corrugating member so that said sheet of fibers preferentially adheres along the surface of said first corrugating member for a predetermined distance after movement of the sheet of fibers between the first and second corrugating members; and

means for extruding the thermoplastic material as a molten sheet and positioning the molten sheet on the anchor portions of the fibers along the periphery of the first corrugating member within the predetermined distance.

5,643,398

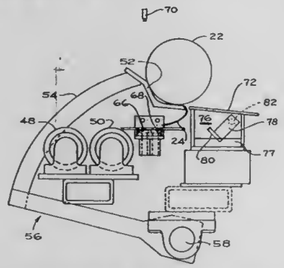
LOG TAIL SEALER

Eric J. Lumberg, Ashland, Wis., assignor to C. G. Bretting Manufacturing Company, Inc., Ashland, Wis.

Filed May 15, 1995, Ser. No. 440,701

Int. Cl.[6] B31C *13/00*

U.S. Cl. 156—446 **14 Claims**



1. A tail sealing apparatus for sealing a loose tail of wound material to a log and having a tail separator apparatus for separating the loose tail away from a log of wound material, a gluing apparatus applying glue to the log, and a tail ironing apparatus for compressing the tail against the glue on the log, wherein the gluing apparatus comprises a pivoting glue applicator having a glue transfer movable from a first position wherein the glue transfer bar is submerged in a glue reservoir to a second position out of the glue reservoir wherein the glue transfer bar is in contact with the log, and said tail sealing apparatus further comprising a log lift assembly having a plurality of fingers pivotable to move the log from the tail separator apparatus to the gluing apparatus while the tail is retained by a vacuum table intermediate the tail separator apparatus and the gluing apparatus.

5,643,399

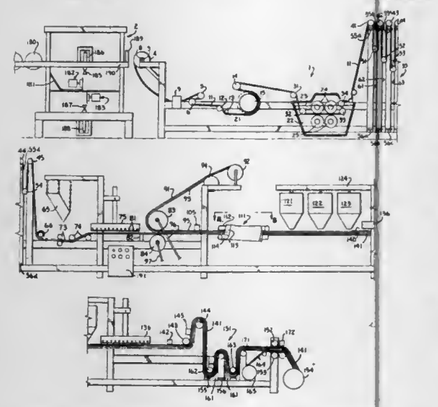
COMPOSITE ROOFING PRODUCT AND APPARATUS AND METHOD FOR CLEANING VULCANIZED RUBBER AND FOR MAKING A COMPOSITE ROOFING PRODUCT

Jesse S. Venable, Herington, Kans., assignor to Carlisle Corporation, Syracuse, N.Y.

Continuation-in-part of Ser. No. 243,703, May 17, 1994, Pat. No. 5,456,785. This application Feb. 16, 1995, Ser. No. 391,417

Int. Cl.[6] B32B *31/04*

U.S. Cl. 156—494 **9 Claims**



1. Apparatus for making a composite roofing material comprising:

a distributing means for distributing a mixture of a bonding agent and roof covering granules over a side of a vulcanized sheet;

a heater adapted to heat said side of said sheet with said granular mixture thereon to cause said bonding agent to melt and bond said roof covering granules to said rubber sheet; and

propulsion means for advancing said vulcanized sheet through a path which includes said first heater, said compressing means, said distributing means and said second heater.

5,643,400

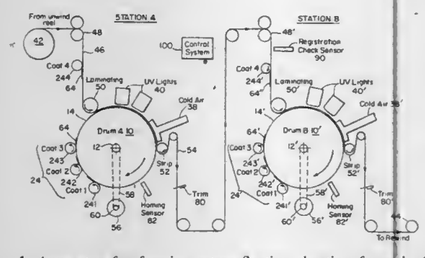
METHOD AND APPARATUS FOR PRODUCING SEAMLESS RETKOREFLECTIVE SHEETING

Gus Bernard, West Hartford; Robert B. Nilsen, Weatoque, and Michael J. Hanrahan, Danbury, all of Conn., assignors to Reflexite Corporation, Avon, Conn.

Division of Ser. No. 444,759, May 19, 1995, Pat. No. 5,558,740. This application Jul. 9, 1996, Ser. No. 678,502

Int. Cl.[6] B29C *43/26;43/28*

U.S. Cl. 156—500 **5 Claims**



1. Apparatus for forming retroreflective sheeting formed of a film upon which a seamless array of prisms is joined, said apparatus comprising at least two mold surfaces, each surface containing areas of arrays of prismatic recesses and areas of blank spaces, said apparatus including:

a first applicator for applying a prism forming material to a first such mold surface to fill the recesses with said material;

a first mechanism for transferring the material to the film to form areas of arrays of prisms on said film leaving areas of blank spaces on said film;

a second applicator for applying said prism forming material to a second such mold surface to fill the recesses in the second mold surface with said material; and

a second mechanism for transferring the material in the recesses of the second mold surface onto the areas of blank spaces in the film in such a manner as to form a seamless continuous film of retroreflective sheeting.

5,643,401

SPLICING AID FOR CONNECTING COMPONENT BELTS

Rainer Schulze-Kahlayss, Röttenbach, and Robert Hierl, Freudenberg, both of Germany, assignors to Siemens Aktiengesellschaft, München, Germany

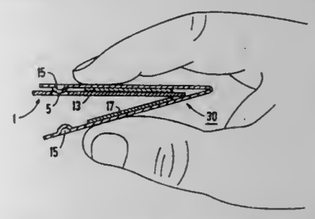
PCT No. PCT/DE93/00764, § 371 Date Feb. 27, 1995, § 102(e) Date Feb. 27, 1995, PCT Pub. No. WO94/05143, PCT Pub. Date Mar. 3, 1994

PCT Filed Aug. 20, 1993, Ser. No. 387,940

Claims priority, application Germany, Aug. 25, 1992, 9211415 U

Int. Cl.[6] B31F *5/06*

U.S. Cl. 156—505 **26 Claims**



1. A splicing aid for connecting component belts having guide holes with grid dimensions arranged in a lateral track, the splicing aid comprising a carrier, the carrier having at least two parallel tracks, a first track of the at least two parallel tracks having knobs with the same grid dimensions as the guide holes of the belt and a second track of the at least two parallel tracks having at least one detachable adhesive strip, wherein the first track abuts the second track and the first track is free of adhesive.

5,643,402

METHOD AND DEVICE FOR PRESSING INJECTION MATERIAL INTO THE JOINTS BETWEEN CONCRETE BODIES

Rene P. Schmid, Oberweningen, Switzerland, assignor to Rascor Spezialbau GmbH, Oberstenfeld-Stuttgart, Germany

PCT No. PCT/EP93/01788, § 371 Date Jan. 17, 1995, § 102(e) Date Jan. 17, 1995, PCT Pub. No. WO94/02694, PCT Pub. Date Feb. 3, 1994

PCT Filed Jul. 8, 1993, Ser. No. 374,620

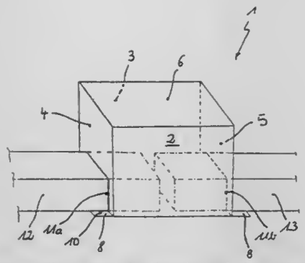
Claims priority, application Germany, Jul. 20, 1992, 42 23 844.7

Int. Cl.[6] E04F *21/165*

U.S. Cl. 156—509 **26 Claims**

1. Device for sealing joints between a primary and a secondary concrete body, comprising:

a) at least one injection conduit having certain cross-sectional dimensions and installed on a concrete surface of the primary concrete body, the injection conduit being surrounded by the secondary concrete body and forming the injection path for a

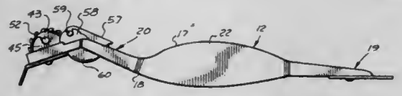


sealing medium into the interior of the concrete body, whereby the sealing medium may be discharged into the joints between the concrete body when initiating the sealing device; and

b) a target body (1) which communicates with the injection conduit and forms a hollow space inside the secondary concrete body, the target body having substantially larger dimensions compared to the cross-sectional dimensions of the injection conduit and serving as a target for a bore to be drilled into the target body (1) from the outside through the secondary concrete body after completing the concrete work on said secondary concrete body,

whereby the sealing medium is introduced into the target body (1) via the aforementioned bore and introduced from the target body into the injection conduit.

5,643,403
WALL COVERING REMOVAL SYSTEM WITH A SURFACE CLEANING APPARATUS AND A SURFACE SCARIFYING APPARATUS
Robert N. Poole, 110 E. Greenway Pky. #1105, Phoenix, Ariz. 85022, and Daniel L. Poole, Phoenix, Ariz., assignors to Robert N. Poole, Phoenix, Ariz.
Filed Dec. 19, 1994, Ser. No. 358,847
Int. Cl.[6] B32B *35/00*
U.S. Cl. 156—584 **13 Claims**



6. An apparatus for removing material from a surface comprising:

a handle having a first end and a second end;

a scarifying assembly coupled to said first end;

a first scraper blade coupled to said second end; and

a removable cover removably couplable to said handle enclosing said scarifying assembly.

5,643,404
METHOD FOR EXAMINATION OF SILICON WAFER SURFACE DEFECTS
Hisashi Muraoka, and Yuji Fukazawa, both of Yokohama, Japan, assignors to Purex Co., Ltd., and Kabushiki Kaisha Toshiba, both of Japan
Filed Sep. 18, 1995, Ser. No. 529,603
Claims priority, application Japan, Sep. 16, 1994, 6-259901
Int. Cl.[6] H01L *21/00*
U.S. Cl. 156—626.1 **9 Claims**

1. A method of examining surface defects of silicon wafer surfaces, comprising:

(A) preparing a semiconductor treating solution containing an impurity element harmful in the process of manufacturing semiconductors; the impurity elements having been labelled with a radioactive isotope;



(B) bringing a silicon wafer whose surface is laid bare, into contact with the semiconductor treating solution to obtain a harmful-element adsorbed wafer on which the labelled impurity element has been adsorbed;

(C) recording in a photostimulable phosphor layer a data of radioactivity intensity distribution present in the surface of the harmful-element adsorbed wafer; the pattern being recorded as a latent image; and

(D) reading as a visual image the data of radioactivity intensity distribution recorded in the photostimulable phosphor layer, to observe the radioactivity intensity distribution shown on the image, whereby the distribution of the surface defects being detected.

5,643,405
METHOD FOR POLISHING A SEMICONDUCTOR SUBSTRATE
Fernando A. Bello, Scottsdale; James B. Hall, Chandler; Otto Luedke, and Earl W. O'Neal, both of Scottsdale, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jul. 31, 1995, Ser. No. 509,685
Int. Cl.[6] H01L *21/302*
U.S. Cl. 156—636.1 **19 Claims**

1. A method for polishing a semiconductor substrate comprising the steps of:

providing a semiconductor substrate having a first major surface and a second major surface opposite the first major surface, the semiconductor substrate further having a deposited protective layer on the first major surface to form a protected surface;

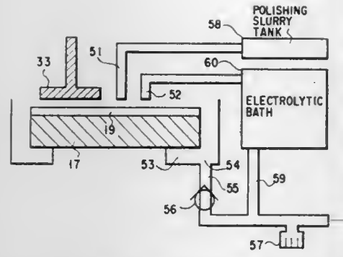
placing the semiconductor substrate onto a double sided polisher having a first plate and a second plate; and

concurrently polishing the protected surface at a first removal rate and the second major surface at a second removal rate, wherein one of the first and second plates is rotated at a slower speed thereby increasing the second removal rate, and wherein the deposited protective layer has a thickness that prevents the first major surface from being polished.

5,643,406
CHEMICAL-MECHANICAL POLISHING (CMP) METHOD FOR CONTROLLING POLISHING RATE USING IONIZED WATER, AND CMP APPARATUS
Mariko Shimomura; Naoto Miyashita, both of Yokohama, and Hiroyuki Ohashi, Kamakura, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Jun. 12, 1996, Ser. No. 661,897
Claims priority, application Japan, Jun. 13, 1995, 7-170303
Int. Cl.[6] H01L *21/304*; **B24B** *1/00*
U.S. Cl. 156—636.1 **26 Claims**

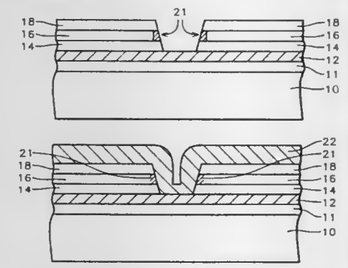
1. A CMP method of chemically mechanically polishing a semiconductor wafer, comprising:

a polishing step of polishing a to-be-polished film formed on the semiconductor wafer using a polishing pad, while supplying a working area of the polishing pad with a polishing slurry containing polishing particles; and



a supply step of supplying ionized water created by electrolyzing deionized water, to a major surface of the semiconductor wafer obtained after polishing.

5,643,407
SOLVING THE POISON VIA PROBLEM BY ADDING N_2 PLASMA TREATMENT AFTER VIA ETCHING
Hsien-Wen Chang, Hsin-Chu, Taiwan, assignor to Taiwan Semiconductor Manufacturing Company, Ltd., Hsin-Chu, Taiwan
Filed Sep. 30, 1994, Ser. No. 316,096
Int. Cl.[6] H01L *21/465*
U.S. Cl. 156—644.1 **17 Claims**



1. The method of forming the internetal dielectric layer of an integrated circuit while preventing outgassing from said intermetal dielectric layer comprising:

forming semiconductor device structures in and on a semiconductor substrate;

covering said semiconductor device structures with an insulating layer;

depositing a first metal layer over said insulating layer and patterning said first metal layer;

forming said intermetal dielectric layer comprising:

covering said patterned first metal layer with a first layer of silicon oxide;

covering said first silicon oxide layer with a layer of organic spin-on-glass material and curing said organic spin-on-glass layer to form an organic spin-on-glass silicon oxide layer; and

covering said organic spin-on-glass silicon oxide layer with a second layer of silicon oxide to complete said intermetal dielectric layer;

forming via openings through said internetal dielectric layer to underlying said patterned first metal layer which thereby exposes portions of said organic_spin-on-glass silicon oxide within said via openings;

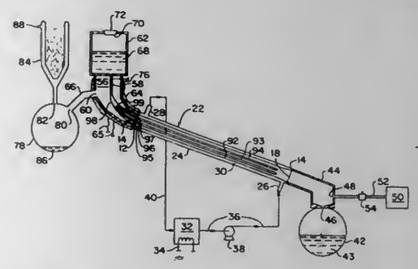
vacuum baking said semiconductor substrate to remove moisture from said exposed portions of said organic spin-on-glass silicon oxide layer within said via opening;

thereafter exposing said organic spin-on-glass layer to nitrogen atoms in a vacuum of between about 4 to 8 Torr at a temperature of between about 350° to 450° C. for between about 10 to 50 seconds wherein said exposed portions of said organic spin-on-glass layer are converted to an inorganic material and wherein said inorganic material spin-on-glass layer prevents said outgassing from said intermetal dielectric layer;

depositing a second metal layer overlying said intermetal dielectric layer and within said via openings; and

completing fabrication of said integrated circuit.

5,643,408
APPARATUS FOR DECONTAMINATING A LIQUID SURFACTANT OF DIOXANE
Yesh P. Sachdeva, Burlington, and Richard L. Gabriel, Swampscott, both of Mass., assignors to Pharm-Eco Laboratories, Inc., Lexington, Mass.
Division of Ser. No. 124,971, Sep. 21, 1993, Pat. No. 5,562,808.
This application May 16, 1995, Ser. No. 442,547
Int. Cl.[6] B01D *1/14*
U.S. Cl. 159—13.4 **11 Claims**



1. An apparatus for decontaminating a liquid surfactant of a dioxane having a vapor pressure which is higher than the vapor pressure of the surfactant, comprising:

a) an elevated reservoir for the dioxane-contaminated liquid surfactant;

b) an upper elongate inclined conduit, said upper elongate inclined conduit having an upper portion for receiving a stream of the contaminated liquid surfactant from the elevated reservoir and a lower portion for discharge of an at least partially decontaminated liquid surfactant;

c) a first heat source for heating the contaminated liquid surfactant in the upper elongate, inclined conduit in an amount sufficient to cause a first portion of the dioxane contaminant of the liquid surfactant to volatilize, thereby at least partially decontaminating the liquid surfactant;

d) a middle elongate inclined conduit, said middle elongate inclined conduit having an upper portion for receiving a stream of the at least partially decontaminated liquid surfactant from the upper elongate inclined conduit and a lower portion for discharge of a further decontaminated liquid surfactant;

e) a first conduit connector having a first narrow constriction for directing the decontaminated liquid surfactant discharged from the upper elongate inclined conduit to the middle elongate inclined conduit and a gas by-pass for diverting gas from the middle elongate inclined conduit around the first narrow constriction connector to the upper elongate inclined conduit;

f) a second heat source for heating the at least partially decontaminated liquid surfactant in the middle elongate inclined conduit in an amount sufficient to cause a second portion of the dioxane contaminant of the liquid surfactant to volatilize, thereby further decontaminating the liquid surfactant;

g) a lower elongate inclined conduit, said lower elongate inclined conduit having an upper portion for receiving a stream of the further decontaminated liquid surfactant from the middle elongate inclined conduit and a lower portion for discharge of decontaminated liquid surfactant;

h) a second conduit connector having a second narrow constriction for directing the further decontaminated liquid surfactant discharged from the middle elongate inclined conduit to the lower elongate inclined conduit and a gas by-pass for diverting gas from the lower elongate inclined conduit around second narrow constriction to the middle elongate inclined conduit;

i) a third heat source for heating the further decontaminated liquid surfactant in the lower elongate inclined conduit in an amount sufficient to cause a third portion of the dioxane contaminant of the liquid surfactant to volatilize, thereby furthermore decontaminating the liquid surfactant;

j) a gas source for directing a gas through the lower elongate inclined conduit to the middle elongate inclined conduit to the upper elongate inclined conduit to transport the volatilized dioxane out of said lower elongate inclined conduit, middle elongate inclined conduit and upper elongate inclined conduit; and

k) a receptacle for receiving the furthermore decontaminated liquid surfactant discharged from the lower elongate inclined conduit.

11. An apparatus for decontaminating a liquid surfactant of a dioxane having a vapor pressure which is higher than the vapor pressure of the surfactant, comprising:

a) an elevated reservoir for the dioxane-contaminated liquid surfactant;

b) an upper elongate inclined conduit, said upper elongated inclined conduit having an upper portion for receiving a stream of the contaminated liquid surfactant from the elevated reservoir and a lower portion for discharge of an at least partially decontaminated liquid surfactant;

c) a first heat source for heating the contaminated liquid surfactant in the upper elongate inclined conduit in an amount sufficient to cause a first portion of the dioxane contaminant of the liquid surfactant to volatilize, thereby at least partially decontaminating the liquid surfactant;

d) a lower elongate inclined conduit, said lower elongate inclined conduit having an upper portion for receiving a stream of the at least partially decontaminated liquid surfactant from the upper elongate inclined conduit and a lower portion for discharge of a decontaminated liquid surfactant;

e) a conduit connector having a narrow constriction for directing the decontaminated liquid surfactant discharged from the upper elongate inclined conduit to the lower elongate inclined conduit and a gas by-pass for diverting gas from the lower elongate inclined conduit around the narrow constriction connector to the upper elongate inclined conduit;

f) a second heat source for heating the at least partially decontaminated liquid surfactant in the lower elongate inclined conduit in an amount sufficient to cause a second portion of the dioxane contaminant of the liquid surfactant to volatilize, thereby decontaminating the liquid surfactant;

g) a gas source for directing a gas through the lower elongate inclined conduit to the upper elongate inclined conduit to transport the volatilized dioxane out of said lower elongate inclined conduit and upper elongate inclined conduit; and

h) a receptacle for receiving the decontaminated liquid surfactant discharged from the lower elongate inclined conduit.

5,643,409

METHOD FOR DEINKING WASTEPAPER

Koji Hamaguchi; Yoichi Ishibashi, and Hideaki Urushibata, all of Wakayama, Japan, assignors to Kao Corporation, Tokyo, Japan

Division of Ser. No. 861,435, Apr. 1, 1992, abandoned. This application Sep. 28, 1994, Ser. No. 313,887

Claims priority, application Japan, Apr. 5, 1991, 3-73048; Apr. 5, 1991, 3-73049

Int. Cl.[6] D21E *5/02*

U.S. Cl. 162—5 **11 Claims**

1. A method for deinking waste paper, comprising:

(I) pulping the waste paper,

(II) subjecting the pulp to at least one treatment step selected from the group consisting of kneading, dispersing, chemical mixing and refining, and

(III) subjecting the treated pulp to a flotation or washing step, wherein a deinking composition comprising water and a deinking agent selected from the group consisting of:

(i) a reaction product having a solubility parameter of 8.9 to 10.2, which is obtained from the addition reaction of an alkylene oxide to a polyfunctional alcohol having 1 to 10 carbon atoms, wherein 1 to 4 moles of alkylene oxide units are added per 1 mole of functional group, provided that the total addition of alkylene oxide does not exceed 22 moles per 1 mole of polyfunctional alcohol;

(ii) a reaction product having a solubility parameter of 8.9 to 10.2, which is obtained from the addition reaction of an alkylene oxide to a polyfunctional fatty acid having 1 to 10 carbon atoms, wherein 1 to 4 moles of alkylene oxide units are added per 1 mole of functional group, provided that the total addition of alkylene oxide does not exceed 22 moles per 1 mole of polyfunctional fatty acid; and

(iii) a partial ester mixture having a solubility parameter of 8.9 to 9.8 and a degree of esterification of 15 to 75% by mole, which is formed by reacting the reaction product of (ii) with a fatty acid having 2 to 8 carbon atoms is added during steps (I) and, (II) and/or (III).

5,643,410

BATCH PROCESS FOR PREPARING KRAFT PULP IN A BATCH DIGESTING PROCESS

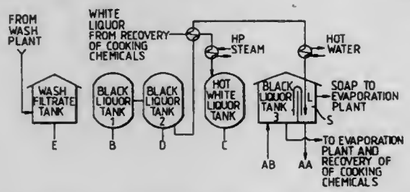
Seppo T. Hiljanen, Nakkila, and Panu O. Tikka, Kantvik, both of Finland, assignors to Sunds Defibrator Rauma Oy, Finland

Continuation of Ser. No. 760,133, Sep. 16, 1991, abandoned. This application Dec. 28, 1992, Ser. No. 997,649

Claims priority, application Finland, Jun. 28, 1991, 913160

Int. Cl.[6] D21C *9/00;9/04;7/12*

U.S. Cl. 162—37 **17 Claims**



1. A method of producing kraft pulp in a batch digesting process comprising the steps of:

charging lignocellulose-containing material to a batch digester;

pretreating said lignocellulose-containing material;

adding fresh alkaline liquor for cooking to said batch digester;

cooking said lignocellulose-containing material at a cooking temperature and cooking pressure so as to produce cooked lignocellulose-containing material and cooking liquor;

said cooking liquor being at said cooking temperature and cooking pressure and having an initial dry solids content;

displacing a portion of said cooking liquor at said cooking temperature and pressure from said batch digester to a first accumulator by supplying a washing liquid to said digester until said dry solids content of said displaced cooking liquor drops relative to said initial dry solids content, so as to obtain a first portion of displaced cooking liquor having a temperature, pressure and dry solids content substantially corresponding to said cooking temperature and pressure and said initial dry solids content of said cooking liquor; and, after said drop in dry solids content, further displacing a second portion of liquid from said digester to at least a second accumulator by supplying further washing liquid to said digester until the temperature of said displaced second portion of liquid drops to a temperature of at least about the boiling point of said cooking liquor, at atmospheric pressure, so as to obtain a second portion of displaced liquid having a dry solids content substantially lower than said initial dry solids content of said cooking liquor.

5,643,411

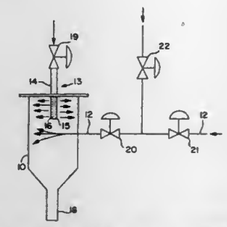
PROCESS FOR OPERATING A WOOD PULP DIGESTER SAMPLING DEVICE

Jerry C. Ford, Fernandina Beach, Fla., assignor to Rayonier Inc., Stamford, Conn.

Division of Ser. No. 960,483, Oct. 9, 1992, Pat. No. 5,366,592. This application Sep. 8, 1994, Ser. No. 302,533

Int. Cl.[6] D21C *7/12*

U.S. Cl. 162—49 **22 Claims**



STEP	19	20	21	22	PURPOSE
1	OPEN	CLOSED	OPEN	OPEN	CLEAR VALVE C TO DIGESTER
2	OPEN	OPEN	OPEN	CLOSED	TAKE SAMPLE
3	OPEN	CLOSED	OPEN	OPEN	CLEAR VALVE C TO DIGESTER
4	OPEN	OPEN	CLOSED	OPEN	CLEAR VALVE B TO SAMPLER
5	CLOSED	CLOSED	CLOSED	CLOSED	SEQUENCE COMPLETE

1. A process for pulping wood in a digester wherein control of the digester cooking process is desired by sampling and analyzing samples of wood pulp and adjusting the digester conditions based on the analysis of the wood pulp samples, comprising:

(a) automatically and systematically sampling cooked wood pulp a plurality of times from a discharge stream of the digester thereby securing a plurality of samples free from manually introduced sampler variability using a sampling operation as shown in FIG. **8** comprising the sequential steps of:

(i) opening valve means **21** and steam valve means **22** while valve means **20** is closed to clear the sampling lines to digester with steam;

(ii) opening valve means **20** and closing steam valve means **22** to take sample from digester;

(iii) closing valve means **20** and opening steam valve means **22** to clear sampling line to digester;

(iv) opening valve means **20** and closing valve means **21** to clear sampling line to sampling vessel; and

(v) closing valve means **20** and steam valve means **22** to complete the sampling sequence;

(b) obtaining at least one composite sample which is representative of the wood pulp from said digester by combining said plurality of samples free from manually introduced sampler variability;

(c) analyzing said composite sample for pulp properties necessary for digester control; and

(d) adjusting the digester for process conditions based on results obtained from an analysis of said composite sample of digester wood pulp,

wherein said sampling of said cooked wood pulp is achieved with a wood pulp sampling device comprising:

a conduit from the digester;

an array of valve means comprised of individual valve means on said conduit;

a flash vessel means interconnected via said conduit with said digester comprising an outlet means and a quench means; and

means for catching said samples of wood pulp from said outlet for said flash vessel means.

5,643,412

Patent Not Issued For This Number

5,643,413

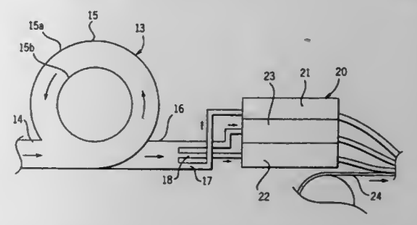
MULTI-PLY PAPER PRODUCT AND METHOD OF MAKING THE SAME

Roger P. Hoffman, Green Bay, Wis., assignor to Hoffman Environmental Systems, Inc., Green Bay, Wis.

Continuation-in-part of Ser. No. 320,574, Oct. 11, 1994, abandoned. This application Jun. 13, 1996, Ser. No. 663,556

Int. Cl.[6] D21H *11/14*

U.S. Cl. 162—125 **11 Claims**



1. A method of producing a multi-ply paperboard product from recycled cellulosic pulp, comprising the steps of forming an aqueous recycled cellulosic pulp slurry containing heavy contaminants having a specific gravity greater than 1.0 and containing lightweight contaminants having a specific gravity of less than 1.0, dividing the pulp slurry into a first pulp stream containing said heavy contaminants and a second pulp stream containing said lightweight contaminants and a third pulp stream substantially free of said contaminants, applying the third stream to a forming fabric as a base ply, applying the second stream to the outer surface of the base ply as a central ply, applying the first stream to an outer surface of the central ply as an outer ply to thereby produce a multi-ply structure, and removing water from said structure to provide a multi-ply paper product.

5,643,414

SILICA SOLS IN PAPERMAKING

Hans Erik Johansson, Kungälv, and Bo Valdemar Larsson, Partille, both of Sweden, assignors to EKA Nobel AB, Sweden

Division of Ser. No. 855,647, May 8, 1992, Pat. No. 5,368,833. This application Jun. 27, 1994, Ser. No. 265,785

Claims priority, application Sweden, Nov. 9, 1989, 8903753

Int. Cl.[6] D21H *21/10*

U.S. Cl. 162—164.6 **15 Claims**

1. A process for producing paper, comprising the steps of

(a) forming an aqueous suspension containing cellulose fibers;

(b) adding to said suspension a cationic polymer, said cationic polymer being a retention aid and/or wet-strength agent and said cationic polymer being added to said suspension in an amount of at least 0.01 kg/ton, based on dry fibers and optional filler;

(c) adding to said suspension a stable anionic silica sol having an S-value within the range of from 8 to 45 percent and containing silica particles with a specific surface area within the range of from 750 to 1000 m^2/g which are surface-modified with aluminum to a degree of from 2 to 25 percent, said silica sol being added to said suspension in an amount of at least 0.01 kg/ton, calculated as SiO_2 based on dry fibers and optional filler; and

(d) thereafter dewatering and forming paper from the obtained aqueous suspension on a wire.

5,643,415

PRECIPITATED CALCIUM CARBONATE PARTICLES FROM BASIC CALCIUM CARBONATE

Kenneth J. Wise, 235 E. 42nd St., New York, N.Y. 10017

Division of Ser. No. 709,951, Jun. 4, 1991. This application Jun. 8, 1995, Ser. No. 487,766

Int. Cl.[6] D21H *17/67*

U.S. Cl. 162—181.2 2 Claims



1. High strength paper having as a filler precipitated calcium carbonate particles having a generally prismatic shape and an average equivalent spherical diameter of between about 1.8 and about 2.5 microns.

5,643,416

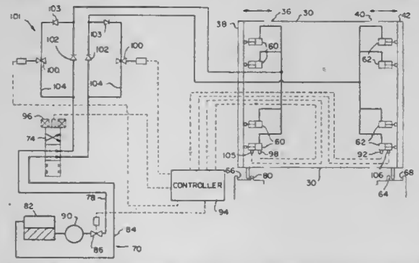
EXTENDED NIP PRESS WITH OSCILLATING BLANKET FOR EXTENDED WEAR

David V. Lange, Beloit, Wis.; David J. McCarville, Roscoe, Ill., and Jeffrey R. Garde, Orfordville, Wis., assignors to Beloit Technologies, Inc., Wilmington, Del.

Filed Jun. 7, 1996, Ser. No. 659,815

Int. Cl.[6] D21F *3/08*

U.S. Cl. 162—199 6 Claims



1. A press in a pressing section of a papermaking machine comprising:

a closed blanket extending in the cross machine direction and forming an endless loop in the machine direction;

a stationary support beam extending through the looped blanket in the cross machine direction, wherein the support beam has a first journal and a second journal spaced in the cross machine direction from the first journal;

at least one press shoe mounted on the support beam and extending in the cross machine direction within the looped blanket;

a backing roll positioned in spaced parallel relation to the blanket and the shoe to form a nip with the shoe, wherein the shoe has a concave surface opposite the backing roll, the concave surface and the backing roll forming a nip which extends in the machine direction;

a first head mounted on the first journal for rotation about the support beam, said first head being mounted to the first journal for translation motion in the cross machine direction, wherein the blanket has a first end which is clamped to the first head;

a second head mounted on the second journal for rotation, said second head being mounted for translation motion in the cross machine direction, wherein a second end of the blanket is clamped to the second head;

at least one first hydraulic piston positioned between the support beam and the first head for applying force in a cross machine direction;

at least one second hydraulic piston positioned between the support beam and the second head for applying force in a cross machine direction;

a hydraulic system for supplying hydraulic fluid at a selected rate, the hydraulic system having a supply line and a return line;

a valve for switching the supply line and the return line from a first state in which the hydraulic system supplies hydraulic fluid to the first piston and fluid is returned from the second piston, and a second state in which the hydraulic system supplies hydraulic fluid to the second piston and fluid is returned from the first piston, and structured and arranged to thereby selectably move the blanket in an oscillating back and forth motion in the cross machine direction.

5,643,417

METHOD AND APPARATUS FOR SHEET FORMATION

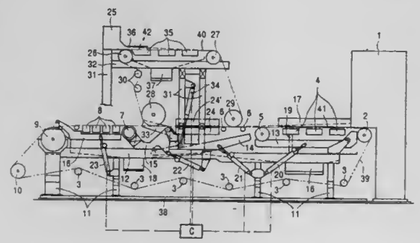
Morimasa Hanaya, Mishima, Japan, assignor to Tokushu Paper Mfg. Co., Ltd., Shizuoka-ken, Japan

Filed Feb. 2, 1995, Ser. No. 382,803

Claims priority, application Japan, Feb. 2, 1994, 6-030963

Int. Cl.[6] D21F *1/24*

U.S. Cl. 162—300 4 Claims



1. An apparatus for forming a sheet from a fiber-water suspension, the apparatus comprising:

an endless bottom wire constructed to travel while receiving the fiber-water suspension thereon, said bottom wire defining first to fourth zones corresponding to first to fourth sheet-forming stages;

a head box for supplying the fiber-water suspension onto said endless bottom wire, said first to fourth zones being located downstream of said head box;

a first tilting device pivotally mounted on a machine frame and associated with said first zone of said bottom wire for adjusting an inclination of the bottom wire at the first zone thereof;

a second tilting device pivotally mounted on said machine frame and associated with said second zone of said bottom wire for adjusting an inclination of the bottom wire at the second zone thereof;

a sheet-forming roll mounted on a pivotable frame which is pivotally mounted on said machine frame, said sheet forming roll being associated with said third zone of said bottom wire for carrying out reformation of the sheet, said sheet-forming roll having a wound portion around which said bottom wire is wound to carry the sheet therebetween;

a drive device operatively connected to said pivotable frame for shifting said sheet-forming roll;

a third tilting device pivotally mounted on said machine frame and associated with said sheet-forming roll for cooperating with said drive device to shift said sheet-forming roll relative to the bottom wire in a vertical plane to control a circumferential length of the wound portion;

a fourth tilting device pivotally mounted on said machine frame and associated with said fourth zone of said bottom wire for adjusting an inclination of the bottom wire at the fourth zone thereof;

a plurality of dewatering devices associated with each of said tilting devices and with a respective zone of said bottom wire; and

a control unit operably connected to said first, second, third and fourth tilting devices and said drive device for adjusting the inclination of said bottom wire and the circumferential length of the wound portion.

5,643,418

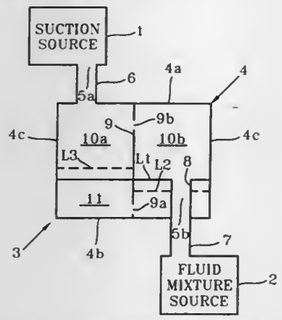
METHOD OF AND ARRANGEMENT FOR SEPARATING FLUID MIXTURES

William A. Witschi, HCR 1699, Benson, Ariz. 85602

Filed Nov. 14, 1994, Ser. No. 338,327

Int. Cl.[6] B01D *3/00*

U.S. Cl. 202—182 5 Claims



1. A device for use where a mixture containing two fluids with different condensation temperatures is at least partially separated, said device comprising a compartment having a first opening and a second opening, said first opening constituting an outlet for one of the fluids, and said second opening constituting an outlet for the liquid phase of the other of the fluids; and a partition between said openings, said partition having opposite ends, and said partition defining a liquid flow passage in a region of one of said ends and an orifice between said passage and the other of said ends, said orifice being provided to create a pressure drop between said openings, said compartment including a basin for accommodating a pool of liquid, and said compartment being provided with an overflow for liquid which collects in said basin, said compartment further including at least one wall which constitutes a bottom of said basin, and said one wall being located in the region of said one end, said overflow being located at a level between said passage and said orifice, said compartment additionally including another wall, which constitutes a top of said compartment.

3. A system for use where a mixture containing two fluids with different condensation temperatures is at least partially separated, said system comprising means for generating a flow of said two fluids; and means for establishing a flow path for said two fluids which communicates with a source of the mixture, said establishing means including a compartment having a first opening and a second opening, and connecting means for connecting said second opening to the source of the mixture, said compartment being provided with a partition between said openings, and said partition having opposite ends, said partition defining a liquid flow passage in the region of one of said ends and an orifice between said passage and the other of said ends, said orifice being provided to create a pressure drop between said openings, said compartment including a basin for accommodating a pool of liquid, and said compartment being provided with an overflow for liquid which collects in said basin, said compartment further including at least one wall which constitutes a bottom of said basin, and said one wall being located in the region of said one end, said overflow being located at a level between said passage and said orifice, said compartment additionally including another wall which constitutes a top of said compartment.

5,643,419

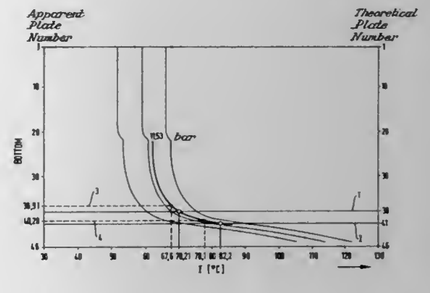
METHOD OF OPTIMIZING THE CONTROL OF THE MASS TRANSFER ZONE IN DISTILLATION COLUMNS

Hermann Rathert, Schwalbach am Taunus, Germany, assignor to Hoechst Aktiengesellschaft, Germany

Continuation of Ser. No. 191,389, Feb. 2, 1994, Pat. No. 5,487,815, which is a continuation of Ser. No. 806,739, Dec. 12, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 487,476

Int. Cl.[6] B01D *3/42*

U.S. Cl. 203—2 6 Claims



1. A method of keeping the performance of a mass transfer zone in a heated distillation column in conformity with design data for optimum separation efficiency in the use of the distillation column, said design data including a pressure dependent characteristic curve, said curve assigning to each position of the distillation column corresponding to a theoretical plate number a nominal temperature, said method comprising:

(a) feeding a distillable mixture to the distillation column and conducting a distillation process at an operating pressure to obtain a distilled product, and returning a portion of the distilled product at a reflux rate;

(b) measuring a first temperature at a first position corresponding to a first theoretical plate number within said mass transfer zone, measuring a second temperature at a second position corresponding to a second theoretical plate number within said mass transfer zone, determining a first and second apparent plate number from said first and second temperatures and said first and second positions by use of the characteristic curve at said operating pressure, determining the difference between said first and second apparent plate numbers, and determining the difference between said first and second theoretical plate numbers;

(c) using the difference between the apparent plate number difference and the theoretical plate number difference to control the column heating;

(d) selecting a virtual operating pressure and the characteristic curve corresponding to said virtual operating pressure such that the difference between a third and fourth apparent plate numbers, said plate numbers being determined from the first and second temperatures by use of the characteristic curve corresponding to said virtual operating pressure, is equal to the difference between the first and second theoretical plate numbers; and

(e) using the difference between the third apparent plate number and the first theoretical plate number or the difference between the fourth apparent plate number and the second theoretical plate number to control the reflux rate.

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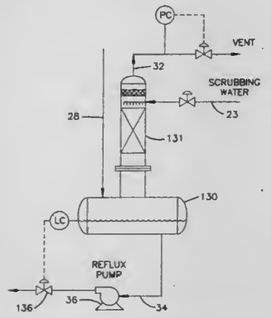
METHOD FOR TREATING PROCESS CONDENSATE

Allan D. Holiday, Overland Park, Kans., assignor to Farmland Industries, Inc., Kansas City, Mo.

Continuation-in-part of Ser. No. 323,855, Oct. 17, 1994, Pat. No. 5,498,317, which is a division of Ser. No. 116,863, Sep. 3, 1993, Pat. No. 5,385,646. This application Oct. 6, 1995, Ser. No. 539,830

Int. Cl.[6] B01D *3/38*

U.S. Cl. 203—11 **15 Claims**



1. A method for treating a chemical production plant process effluent stream of dilute contaminants, said method comprising the following steps:

stripping at least a portion of contaminants from a process effluent obtained from a chemical production plant, wherein said stripping is conducted in a stripping section to obtain a contaminant-rich vapor stream and an aqueous bottom stream of reduced contaminant content;

rectifying said contaminant-rich vapor stream in a rectification section to obtain a concentrated overhead stream;

condensing said concentrated overhead stream to obtain contaminant-rich overhead condensate and non-condensed gases comprising trace amounts of the contaminates;

scrubbing said non-condensed gases so as to recover a portion of said trace amounts of the contaminates into said contaminant-rich overhead condensate;

recycling said overhead condensate to said rectifying step to form a closed loop so as to build up the concentration of contaminants in said overhead condensate;

separating and withdrawing from said closed loop a fraction of said overhead condensate; and

reusing said fraction of the overhead condensate in the chemical production plant.

5,643,421

DEHYDRATION OF GASES WITH LIQUID DESICCANTS

Robert Sherwood Smith, Houston, Tex., assignor to OPC Engineering, Inc., Houston, Tex.

Filed Mar. 24, 1995, Ser. No. 409,867

Int. Cl.[6] B01D *3/00*

U.S. Cl. 203—12 **8 Claims**

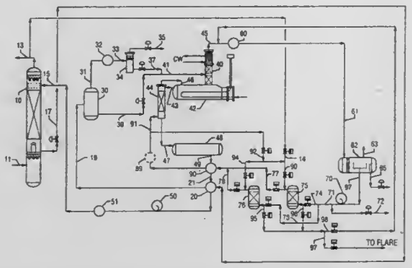
1. A method of drying a wet gas with a liquid desiccant which comprises:

contacting said wet gas with a substantially dry liquid desiccant in a contacting zone to remove water from said wet gas and form a wet liquid desiccant and a dry gas product;

heating and flashing said wet liquid desiccant to form a flash gas and a flashed wet liquid desiccant;

passing said flashed wet liquid desiccant sequentially through a first stripping zone and a second stripping zone;

passing a vaporized dry stripping agent sequentially through said second stripping zone and said first stripping zone in counter-current relation with said flashed wet liquid desiccant to strip water from said flashed liquid desiccant and form an overhead



stream from said first stripping zone and said substantially dry liquid desiccant from said second stripping zone;

maintaining said first and second stripping zones at temperatures sufficient to remove water but not decompose said flashed wet liquid desiccant;

cooling said overhead stream sufficiently to condense water and stripping agent;

separating resulting condensed stripping agent from resulting condensed water;

contacting said separated condensed stripping agent with a solid desiccant to dry said separated condensed stripping agent and form said dry stripping agent;

heating said dry stripping agent sufficiently to form a vaporized dry stripping agent;

recycling said vaporized dry stripping agent to said second stripping zone; and

recycling said substantially dry liquid desiccant from said second stripping zone to contact said wet gas in said contacting zone.

5,643,422

REACTIVE SPUTTERING SYSTEM FOR DEPOSITING TITANIUM NITRIDE WITHOUT FORMATION OF TITANIUM NITRIDE ON TITANIUM TARGET AND PROCESS OF DEPOSITING TITANIUM NITRIDE LAYER

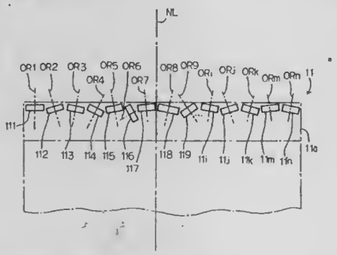
Yoshiaki Yamada, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Dec. 28, 1995, Ser. No. 580,393

Claims priority, application Japan, Dec. 29, 1994, 6-338703

Int. Cl.[6] C23C *14/34*

U.S. Cl. 204—192.15 **13 Claims**



1. A sputtering system comprising:

a vessel defining a vacuum chamber;

a wafer holder accommodated in said vacuum chamber for maintaining a substrate;

a target holder accommodated in said vacuum chamber;

a plasma generating means for generating a plasma around said target holder;

a target formed of titanium, and supported by said target holder, said target including a surface portion to be sputtered by an ion bombardment radiated from said plasma,

said surface portion having (001) crystal surfaces,

<001> directions of the (001) crystal surfaces falling within 30 degrees with respect to a normal line to said surface portion being equal to or greater than 90 percent of all the crystal surfaces forming said surface portion so that said surface portion is hardly nitrided; and

a gas supplying means supplying gaseous mixture containing nitrogen to said vacuum chamber so as to deposit a titanium nitride layer on said substrate.

5,643,423

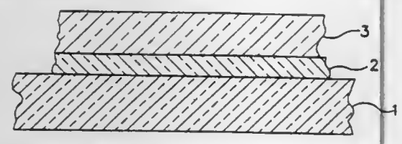
METHOD FOR PRODUCING AN ABRASION RESISTANT COATED SUBSTRATE PRODUCT

Fred M. Kimock, Macungie; Bradley J. Knapp, and Steven James Finke, both of Kutztown, all of Pa., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 924,297, Aug. 3, 1992, Pat. No. 5,268,217, which is a continuation-in-part of Ser. No. 589,447, Sep. 27, 1990, Pat. No. 5,135,808. This application Dec. 3, 1993, Ser. No. 161,896

Int. Cl.[6] C23C *14/00*

U.S. Cl. 204—192.35 **70 Claims**



1. A chemical vapor deposition method for producing an abrasion wear resistant coated substrate product comprising:

chemically de-greasing the surface of a parent substrate which is substantially optically transparent to light in the visible region of 350 to approximately 750 nanometers and which comprises a material selected from the group consisting of an amorphous material, a single crystal, polycrystalline materials, ceramic materials and mixtures thereof to remove hydrocarbon contamination;

placing said substrate into a chemical vapor deposition reactor vacuum chamber and evacuating the air from said chamber;

sputter-etching the surface of said substrate with energetic gas ions to remove traces of residual hydrocarbon and to preferentially reduce the concentration of alkali metal atoms and alkali metal oxides at the substrate surface;

chemically vapor depositing at least one composite layer having a thickness in the range of about 1 μm to about 20 μm by chemically vapor depositing during a first cycle a substantially optically transparent first interlayer at least 1 μm up to 20 μm, thick onto said substrate;

chemically vapor depositing during said first cycle a substantially optically transparent diamond-like carbon outer layer which is transparent to light in the visible region of 350 to approximately 750 nanometers and having a thickness of at least 50 Å thick onto said coated substrate;

said first interlayer comprising a substantially optical transparent material devoid of alkali metal atoms and fluorine, which first interlayer is transparent to light in the visible region of 350 to approximately 750 nanometers and is selected from the group consisting of silicon nitride, titanium nitride, tantalum nitride, hafnium nitride, zirconium nitride, boron nitride, yttrium oxide, germanium oxide, hafnium oxide, silicon oxide, silicon dioxide, tantalum oxide, titanium oxide, zirconium oxide, silicon carbide, germanium carbide, mixtures thereof, and chemically bonded combinations thereof to form a strong chemical bond to said substrate and a strong chemical bond to said diamond-like carbon outer layer;

cooling said coated substrate by extinguishing said deposition process and passing an inert gas over said substrate until the temperature of said substrate has reached substantially room temperature during said cool-down step; and

recovering a coated substrate product exhibiting greatly improved wear resistance for severe abrasive environments.

5,643,424

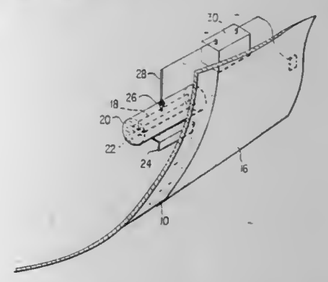
APPARATUS FOR THE PREVENTION OF FOULING AND/OR CORROSION OF STRUCTURES IN SEAWATER, BRACKISH WATER AND/OR FRESH WATER

William J. Riffe, Morehead City, N.C., and Jack D. Carter, Austin, Tex., assignors to Marine Environmental Research, Inc., Morehead City, N.C.

Division of Ser. No. 658,582, Feb. 21, 1991, Pat. No. 5,346,598, which is a continuation-in-part of Ser. No. 523,418, May 15, 1990, Pat. No. 5,055,165, which is a continuation-in-part of Ser. No. 145,275, Jan. 19, 1988, abandoned. This application Jun. 29, 1994, Ser. No. 267,379

Int. Cl.[6] C23F *13/00*

U.S. Cl. 204—196 **14 Claims**



1. A system comprising:

(a) a structure having a conductive surface containing zinc suitable for being contacted by seawater, brackish water, fresh water, or a combination of these, wherein said structure is made of zinc or of a zinc-containing alloy, or said structure is made of a conductive or non-conductive material and is equipped with a conductive zinc-containing surface layer or a conductive zinc-containing coating applied to said structure, said zinc-containing surface layer or coating forming an interfacial layer between said structure and said water when said structure is contacted by said water, said coating further containing a silicate, iron oxide, di-iron phosphide, or a mixture thereof; and

(b) means for (b1) inducing and maintaining a net negative capacitive charge on the surface of said structure or (b2) inducing and maintaining an asymmetric alternating electrostatic potential on the surface of said structure, sufficient to prevent corrosion or fouling of said structure, said means comprising at least one condenser bank attached to said structure, wherein, when said structure is contacted by said water, said at least one condenser bank is protected from contact by said water.

5,643,425

SATURATED BRINE TANK IN APPARATUS FOR PRODUCTION OF ELECTROLYZED WATER

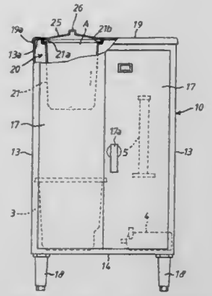
Naomoto Amano, Okazaki, and Yosuke Saito, Tokai, both of Japan, assignors to Hoshizaki Denki Kabushiki Kaisha, Aichi-Ken, Japan

Filed Mar. 14, 1996, Ser. No. 615,984

Int. Cl.[6] C25B *9/00*; **B01D** *15/00;35/00*; **C02F** *9/00*

U.S. Cl. 204—279 **3 Claims**

1. A saturated brine tank in an apparatus for production of electrolyzed water having a box-type cabinet formed to contain the vessel of a brine tank mounted thereon and covered with a lid, wherein said brine tank comprises a funnel-shaped chute formed to cover an upper opening of the vessel of said brine tank and detachably coupled at its outer periphery with the upper opening of said vessel for introducing an amount of water-soluble salt supplied into said vessel, a netted bag of fine mesh fixedly coupled at its opening end with a lower opening end of said chute to retain the salt introduced therein from said chute, an overflow pipe disposed



within the interior of said vessel outside said bag, and a communication pipe connected to the bottom of said vessel for connection to a diluted brine tank.

5,643,426
ANODE MATERIAL AND METHOD OF MANUFACTURING THE SAME

Hiroshi Imoto; Atsuo Omaru; Hideto Azuma; Yoshio Nishi; Yoshihisa Goono, all of Kanagawa, and Masayuki Nagamine, Fukushima, all of Japan, assignors to Sony Corporation, Japan

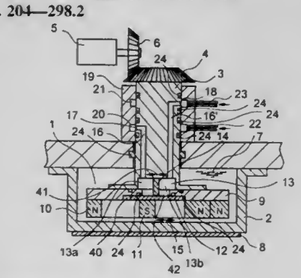
PCT No. PCT/JP93/01929, § 371 Date Aug. 23, 1995, § 102(e) Date Aug. 23, 1995, PCT Pub. No. WO95/18467, PCT Pub. Date Jul. 6, 1995
PCT Filed Dec. 28, 1993, Ser. No. 507,324
Int. Cl.[6] C25B *11/12*
U.S. Cl. 204—294 **12 Claims**

1. An anode material comprising:
non-graphitizable carbon material obtained by baking a carbon precursor,
wherein said material exhibits a portion having a stacking structure and a portion with a non-stacking structure such that a ratio (Ps) by weight of carbon in said stacking structure portion compared to said non-stacking structure portion is less than 0.59 or a stacking index (SI) of said material is less than 0.76.

5,643,427
MAGNETRON CATHODE

Masahiko Kobayashi, and Nobuyoki Takahashi, both of Fuchu, Japan, assignors to Anelva Corporation, Fuchu, Japan

Division of Ser. No. 305,837, Sep. 14, 1994, Pat. No. 5,514,257. This application Sep. 27, 1995, Ser. No. 534,646
Claims priority, application Japan, Oct. 22, 1993, 5-264770
Int. Cl.[6] C23C *14/34*
U.S. Cl. 204—298.2 **11 Claims**

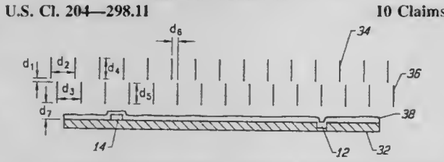


1. A magnetron cathode comprising:
a target;
a target holder;
a yoke plate within the target holder;
a sliding plate within the yoke plate;
a magnet assembly having a circular band magnet truncated by two parallel chords on the yoke plate and a trapezoidal magnet on the sliding plate, wherein said trapezoidal magnet is disposed within said truncated circular band magnet so that a longer side of said trapezoidal magnet does not overlap a center point of the truncated circular band magnet and a middle point of said longer side lies on an axis of symmetry of said truncated circular band magnet;
a main shaft for transmitting a rotary motion to rotate said magnet assembly;
a cylindrical cavity is formed within said main shaft, said cylindrical cavity containing a piston to which the sliding plate is linked so that said trapezoidal magnet is moveable relative to said circular band magnet by moving said piston; and
a rotating mechanism for rotating said main shaft.

5,643,428
MULTIPLE TIER COLLIMATOR SYSTEM FOR ENHANCED STEP COVERAGE AND UNIFORMITY

Zoran Krivokapic, Santa Clara, and David S. Bang, Palo Alto, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Feb. 1, 1995, Ser. No. 382,366
Int. Cl.[6] C23C *14/34*
U.S. Cl. 204—298.11 **10 Claims**



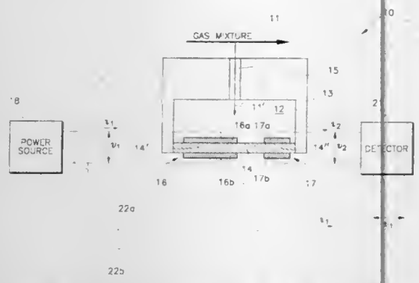
1. A physical vapor deposition collimator system for preventing dislodged target particles from a target from contacting a surface of a substrate at substantially oblique angles, the collimator system comprising:
a first tier capable of being provided between the target and substrate, with said first tier provided substantially parallel to the surface of said substrate, said first tier including a plurality of collimators; and
a second tier capable of being provided between the target and substrate, with said second tier provided adjacent and in fixed and constant relation to said first tier and being substantially parallel to said first tier, said second tier including a plurality of collimators;
wherein said first tier overlaps said second tier such that a collimator of said plurality of collimators from said first tier is staggered with respect to a closest collimator of said plurality of collimators from said second tier; and
wherein said first and second tiers together cause the target particles to be deposited in a substantially flat layer with a substantially uniform film thickness on the surface of the substrate.

5,643,429
ELECTROCHEMICAL CELLS AND METHODS USING PEROVSKITES

Eric David Wachsman, Palo Alto, Calif., assignor to Gas Research Institute, Chicago, Ill.

Continuation of Ser. No. 208,449, Mar. 9, 1994, Pat. No. 5,397,442. This application Feb. 2, 1995, Ser. No. 382,667
Int. Cl.[6] G01N *27/26*
U.S. Cl. 205—781 **15 Claims**

1. An electrochemical cell for a sensor for enabling accurate measurement of an oxygen concentration in a gas mixture, comprising:

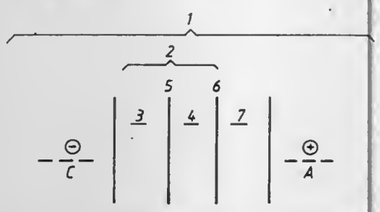


a first electrode to be exposed to said gas mixture, said first electrode having a perovskite that discriminates between oxygen and a variety of oxide compounds in said gas mixture, wherein said perovskite selectively reduces said oxygen in said gas mixture without reducing said oxide compounds;
a second electrode; and
an electrolyte interposed between said first and second electrodes for conducting ions when an electrical bias is imposed across said first and second electrodes;
wherein an electrical characteristic measured from said first and second electrodes exhibits a higher correspondence to said reduced oxygen than to said reduced oxide compounds.

5,643,430
ELECTRODIALYSIS TREATMENT

Marek Gorzynski, Düren, Germany, assignor to Eka Nobel AB, Bohus, Sweden

Filed Feb. 3, 1995, Ser. No. 383,044
Claims priority, application Sweden, Mar. 2, 1994, 9400353
Int. Cl.[6] B01D *61/44*
U.S. Cl. 204—523 **17 Claims**



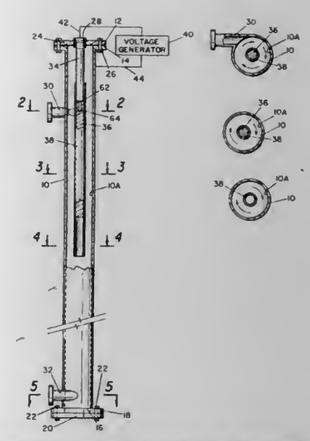
1. A process for reducing the content of organic and inorganic chlorine in an aqueous solution containing a polyaminoamide-epichlorohydrin-based resin, which comprises subjecting said aqueous solution to an electrodialysis treatment.

5,643,431
METHOD FOR AUGMENTING THE COALESCENCE OF WATER IN A WATER-IN-OIL EMULSION

Gary W. Sams, Tulsa; Floyd L. Prestridge, Sapulpa, and Merle B. Inman, Tulsa, all of Okla., assignors to National Tank Company, Houston, Tex.

Division of Ser. No. 223,056, Apr. 6, 1994, Pat. No. 5,565,078. This application Feb. 8, 1996, Ser. No. 598,499
Int. Cl.[6] C10G *33/02;* **B01D** *17/038;17/06*
U.S. Cl. 204—564 **2 Claims**

1. A method of augmenting the coalescence of water in an emulsion having a heavier water component that is relatively electrically conductive and a lighter oil component that is relatively non-conductive, comprising:
tangentially injecting the emulsion into the interior of a cylindrical vessel having a cylindrical sidewall, opposed first and second ends and a vessel cylindrical axis and tangentially



withdrawing the emulsion from the vessel interior to cause the emulsion to flow circumferentially within the vessel around the vessel cylindrical axis to thereby impart by the force of fluid flow alone, centrifugal force on the emulsion to create a first area within the vessel adjacent the vessel sidewall to which the heavier water component of the emulsion migrates and a second area within the vessel interior adjacent to the vessel cylindrical axis towards which the lighter oil component migrates; and
imposing an electrical potential on an elongated conductive electrode of external diameter less than the internal diameter of the vessel, the electrode extending concentrically along the vessel cylindrical axis, the vessel having a closure closing the vessel first end, the closure having a threaded opening therein concentric with the vessel sidewall and including an elongated tubular insulator having a conducting rod therein extending sealably through the opening to conduct electrical potential to the electrode, an externally threaded tubular hub being received on an exterior surface of the tubular insulator and positioned in the closure threaded opening, the tubular hub serving to support the insulator within the vessel, the electrical potential on the electrode thereby imposing an electric potential on the areas within the vessel having the circumferentially flowing emulsion to cause at least a portion of the water component of the emulsion to coalescence, the lighter, relatively non-electrically conductive oil component tending to concentrate in the vessel interior area adjacent the electrode permitting a higher voltage potential to be imposed on the electrode.

5,643,432
SELECTIVE ANODIZATION OF CAPACITOR ANODE BODY

Yong-Jian Qiu, Myrtle Beach, S.C., assignor to AVX Corporation, Myrtle Beach, S.C.

Filed Jul. 13, 1995, Ser. No. 502,134
Int. Cl.[6] C25D *11/12;11/26;* **H01G** *9/07*
U.S. Cl. 205—50 **9 Claims**

1. A method for forming dielectric coatings of disparate thickness on the porous anode body of a solid state capacitor comprising the steps of:
anodizing said anode body to form a first dielectric coating having a generally uniform thickness through said anode body;
impregnating said anode body having said first coating with a liquid material forming a barrier to anodization;
causing increments of said liquid material to be removed from selected areas of said first coating, thereafter subjecting said impregnated anode body to a second anodizing step thereby to form a second dielectric coating on said selected areas while the portions of said first coating in contact with said liquid

material are maintained free from said second coating and thereafter driving off the remainder of said liquid.

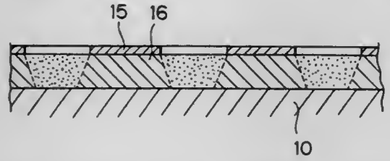
7. A capacitor formed in accordance with the method of claim 1.

5,643,433

LEAD FRAME AND METHOD FOR MANUFACTURING SAME

Katsuya Fukase; Takahiro Iijima; Masao Nakazawa, and Shinichi Wakabayashi, all of Nagano, Japan, assignors to Shinko Electric Industries Co., Ltd., Nagano, Japan

Filed Dec. 23, 1993, Ser. No. 172,286
Claims priority, application Japan, Dec. 23, 1992, 4-357014
Int. Cl.[6] C25D *1/00*
U.S. Cl. 205—78 **7 Claims**



1. A method for manufacturing a lead frame on a major surface of a matrix, comprising the steps of:

forming a resist pattern on said major surface of said matrix, the resist pattern having therein a connection cavity connecting tip ends of a plurality of inner lead cavities, the connection cavity and the inner lead cavities having a trapezoidal cross-section in a plane perpendicular to the major surface of the matrix and in which the edge of the trapezoid adjacent the major surface of the matrix is greater in dimension than the edge of the trapezoid on the side thereof remote from the major surface of the matrix;

forming an electro-deposition pattern in said connection cavity and said plurality of inner lead cavities such that tip ends of inner leads, formed in the inner lead cavities, are connected by a connecting piece formed in the connection cavity; and

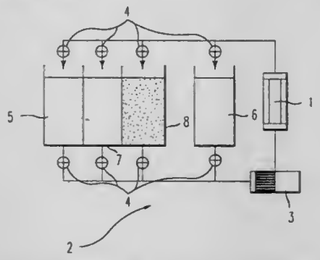
separating said electro-deposition pattern from said cavities of said resist and from said matrix while the tip ends of said inner leads are connected by said connecting piece.

5,643,434

PROCESS FOR COATING THE FACE OF A PART MADE OF ALUMINUM OR ALUMINUM ALLOY

Mohamed Benmalek, Saint Martin D'Heres, and Marc Santarini, Voiron, both of France, assignors to Aluminum Pechiney, Courbevoie, France

Filed Jan. 31, 1996, Ser. No. 594,949
Claims priority, application France, Feb. 2, 1995, 95 01405
Int. Cl.[6] C25D *15/00;11/04;11/20;5/44*
U.S. Cl. 205—109 **16 Claims**



1. A process for coating the surface of an aluminum or aluminum alloy part, comprising the following steps in the order shown:

a) electrochemically activating the surface of an aluminum or aluminum alloy part by bringing the part to anodic polarity in a bath comprising a halogenated acid salt of nickel;

b) superactivating the surface by chemical treatment; and

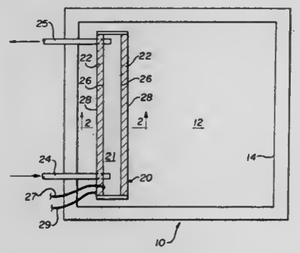
c) bringing the part to cathodic polarity in a nickel-plating bath comprising solid particles, and electrolytically depositing a nickel layer containing solid particles on the surface of the part.

5,643,435

METHOD OF FABRICATING SEMICONDUCTOR DEVICE

Glenn F. Guhman, and Madhukar L. Joshi, both of Chittenden, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 351,868, Dec. 8, 1994, abandoned. This application Jul. 1, 1996, Ser. No. 673,021
Int. Cl.[6] C25D *11/32;9/00;* **H01L** *21/465*
U.S. Cl. 205—124 **5 Claims**



1. A method of fabricating a semiconductor device, comprising:

placing a semiconductor substrate within a processing chamber of a semiconductor processing tool;

flowing an oxygen containing medium from outside said processing chamber to an interior of an electrolyte oxygen pump assembly, said electrolyte oxygen pump assembly being positioned at least partially within said processing chamber;

controllably heating within said processing chamber an electrolyte of said pump assembly with energy specifically directed toward said electrolyte and not toward said substrate;

releasing ultra-pure oxygen from said electrolyte oxygen pump assembly directly into said processing chamber; and

performing a semiconductor processing step that requires oxygen upon said semiconductor substrate.

5,643,436

ARCHITECTURAL MATERIAL USING METAL OXIDE EXHIBITING PHOTOCATALYTIC ACTIVITY

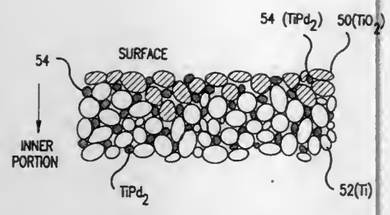
Takatoshi Ogawa; Yasuhiko Yoshioka; Nobuo Tsubouchi; Toshio Saito; Tamotsu Hasegawa, all of Tokyo; Akira Fujishima, Kawasaki, and Kazuhito Hashimoto, Yokohama, all of Japan, assignors to Takenaka Corporation, Osaka, Japan

Division of Ser. No. 120,929, Sep. 15, 1993. This application Jun. 7, 1995, Ser. No. 480,918
Claims priority, application Japan, Sep. 22, 1992, 4-252931; Nov. 6, 1992, 4-297395
Int. Cl.[6] C25D *11/04;* **C23C** *8/10;* **C22C** *32/00*
U.S. Cl. 205—324 **11 Claims**

1. A method of manufacturing an architectural material, comprising the steps of:

fabricating an alloy including a first metal for forming a metal oxide exhibiting photocatalytic activity and including a second metal for improving the photocatalytic activity of said metal oxide:

processing the fabricated alloy into a desired shape; and



subjecting the processed alloy to anodic oxidation treatment for forming said metal oxide without oxidizing said second metal to obtain a metal mixture wherein said metal oxide and said second metal are finely and uniformly dispersed.

5,643,437

CO-GENERATION OF AMMONIUM PERSULFATE ANODICALLY AND ALKALINE HYDROGEN PEROXIDE CATHODICALLY WITH CATHODE PRODUCTS RATIO CONTROL

Dennis F. Dong; Timothy Alan Mumby, both of Kingston, Canada; John R. Jackson, Wilmington, N.C., and Derek John Rogers, Kingston, Canada, assignors to Huron Tech Canada, Inc., Kingston, Canada

Filed Nov. 3, 1995, Ser. No. 553,018
Int. Cl.[6] C25B *1/30*
U.S. Cl. 205—348 **11 Claims**

1. A closed loop electrolysis process for the cogeneration of an anode product in an anolyte of an electrolytic cell comprising:

conducting electrolysis utilizing an anode in an anode compartment containing an anolyte comprising an acid and an ammonium salt,

cathodically reducing oxygen to produce hydrogen peroxide in an alkaline medium at a cathode in a cathode compartment containing a catholyte, and

passing ammonium ions to said catholyte from said anolyte through a permselective cation exchange membrane wherein

said anode product is generated at said anode and hydrogen peroxide is produced at a desired ratio of alkalinity to hydrogen peroxide by removal of ammonia from said catholyte.

2. The process of claim 1 wherein said anode is a discontinuous coating of a platinum group containing metal on a valve metal substrate and said cathode is a porous, self-draining cathode comprising a composite of a fixed bed porous matrix and a bed of loose particles of a high surface area carbon black adhered to graphite chips with a polytetrafluoroethylene binder.

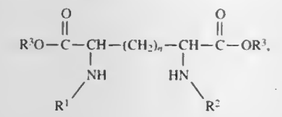
5,643,438

PROCESS FOR THE PREPARATION OF SUBSTITUTED DIAMINO-DICARBOXYLIC ACID DERIVATIVES

Johann Hiebl, and Franz Rovenszky, both of Linz, Austria, assignors to Hafslund Nycomed Pharma Aktiengesellschaft, Linz, Austria

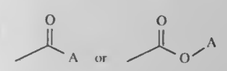
Filed Jun. 5, 1995, Ser. No. 463,267
Claims priority, application Austria, Jul. 8, 1994, 1348/94
Int. Cl.[6] C25B *3/00*
U.S. Cl. 205—435 **2 Claims**

1. Process for the production of substituted diaminodicarboxylic acid derivatives of the formula

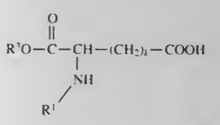


(I)

in which R^1 and R^2 in each case independently of one another are an optionally halogenated straight-chain, branched or cyclic alkyl radical having 1 to 10 carbon atoms or a radical

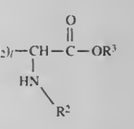


wherein A is an optionally halogenated straight-chain, branched or cyclic alkyl radical having 1 to 10 carbon atoms or a benzyl radical which is optionally mono- or polysubstituted by identical or different halogen, $-NO_2$, alkoxy or —CN substituents, or is 9-fluorenylmethyl, and R_3 is a straight-chain or branched alkyl radical having 1 to 4 carbon atoms and n is an integer from 2 to 8, by Kolbe synthesis, wherein a protected amino acid derivative of the formula



(II)

in which R^1 and R^3 have the above mentioned meaning and k is an integer, and a protected amino acid derivative of the formula



(III)

in which R^2 and R^3 have the above mentioned meaning and l is an integer;

k+l=n;

are dissolved in a solvent R^4 OH, wherein R^4 has the meaning of R_3, or a mixture of R^4 OH and a heterocyclic or aliphatic solvent containing at least one hetero atom, and the resulting solution is subjected to electrolysis on platinum gauze electrodes.

5,643,439

PROCESS FOR NEUTRALIZATION OF PETROLEUM ACIDS USING ALKALI METAL TRIALKYLSILANOLATES

Guido Sartori, Annandale; David W. Savage, Lebanon; Martin L. Gorbaty, Westfield, and Bruce Henry Ballinger, Bloomsbury, all of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Aug. 25, 1995, Ser. No. 519,278
Int. Cl.[6] C10G *21/00*
U.S. Cl. 208—47 **9 Claims**

1. A process for decreasing the acidity of an acidic crude oil, comprising: contacting an acidic crude oil with an effective amount of from about 1:1 to 10:1 molar ratio of alkali metal trialkylsilanolate at temperature of from about 50° to 170° C. to produce a treated crude oil having a reduced acidity.

5,643,440
PRODUCTION OF HIGH VISCOSITY INDEX LUBRICANTS

William S. Borghard, Yardley, Pa.; Thomas F. Degnan, Morrestown, and Dominick N. Mazzone, Wenonah, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 17,949, Feb. 12, 1993. This application Dec. 7, 1994, Ser. No. 350,556
Int. Cl.[6] C10G *69/02*
U.S. Cl. 208—58 **40 Claims**

1. A process for producing a high viscosity index lubricant having a viscosity index of at least 130 from a deoiled wax having a wax content of at least 90 wt % which comprises

(i) hydrocracking the feed at a hydrogen partial pressure of at least 800 psig over a bi-functional lube hydrocracking catalyst comprising a metal hydrogenation component on an acidic, amorphous, porous support material to hydrocrack aromatic components present in the feed at a severity which results in a conversion of not more than 50 weight percent of the feed to products boiling outside the lube boiling range;

(ii) isomerizing waxy paraffins present in the effluent from the hydrocracking step in the presence of a low acidity isomerization catalyst having an alpha value of not more than 20 and comprising a noble metal hydrogenation component on a porous support material comprising zeolite beta to isomerize waxy paraffins to less waxy isoparaffins.

5,643,441
NAPHTHA UPGRADING PROCESS

Hye Kyung C. Timken, Woodbury, N.J., and Sherri L. Riedinger, New Castle, Del., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 133,403, Oct. 8, 1993, Pat. No. 5,411,658, and Ser. No. 303,908, Sep. 24, 1994, which is a continuation-in-part of Ser. No. 133,403, which is a continuation-in-part of Ser. No. 891,124, Jun. 1, 1992, Pat. No. 5,413,696, which is a continuation-in-part of Ser. No. 850,106, Mar. 12, 1992, Pat. No. 5,409,596, which is a continuation-in-part of Ser. No. 745,311, Aug. 15, 1991, Pat. No. 5,346,609. This application Apr. 24, 1995, Ser. No. 427,512
Int. Cl.[6] C10G *69/02*
U.S. Cl. 208—89 **10 Claims**

1. A process of upgrading a sulfur-containing, thermally cracked, unsaturated coker naptha feed fraction boiling in the gasoline boiling range which comprises:

subjecting a residual feed in a coker to form a sulfur-containing coker naphtha feed fraction boiling in the gasoline boiling range within the range of C_5 to 330° F., and containing at least 1000 ppm sulfur,

contacting the sulfur-containing feed fraction with a hydrodesulfurization catalyst in a first reaction zone, operating under a combination of elevated temperature, elevated pressure and an atmosphere comprising hydrogen at a temperature of about 600 to 750 F, a pressure of about 300 to 1000 psig, a space velocity of about 1 to 5 LHSV, and a hydrogen to hydrocarbon ratio of about 1000 to 3000 standard cubic fect of hydrogen per barrel of feed, to produce an intermediate product comprising a normally liquid fraction which has a reduced sulfur content and a reduced octane number as compared to the feed;

contacting at least the gasoline boiling range portion of the intermediate product in a second reaction zone with a catalyst of acidic functionality which also includes molybdenum as a metal component having hydrogenation functionality at a temperature of about 600 to 850 F. a pressure of about 50 to 1500 psig, a space velocity of about 0.5 to 10 LHSV, and a hydrogen to hydrocarbon ratio of about 0 to 5000 standard cubic feet of hydrogen per barrel of feed to convert the gasoline boiling range portion to a product comprising a fraction boiling in the gasoline boiling range having a higher octane number than the gasoline boiling range fraction of the intermediate product.

5,643,442
MEMBRANE PROCESS FOR ENHANCED DISTILLATE OR HYDROTREATED DISTILLATE AROMATICS REDUCTION

James Sweet Sweet, Unionville, Canada; Tan Jen Chen, Kingwood, Tex., and Charles P. Darnell, Baton Rouge, La., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

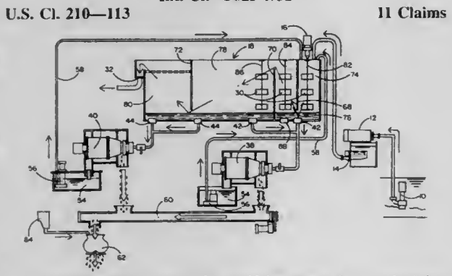
Continuation of Ser. No. 277,452, Jul. 19, 1994, abandoned. This application Jul. 10, 1995, Ser. No. 500,126
Int. Cl.[6] C10G *25/00*
U.S. Cl. 208—302 **7 Claims**

1. A method for lowering the sulfur and nitrogen content while increasing the yield of light, low aromatic content hydrocarbon product boiling in the 150° to 450° C. range recovered from hydrotreated distillate effluent, said method comprising the steps of (a) subjecting said hydrotreated distillate effluent feed to a membrane separation process in a membrane separation unit which selectively separates aromatic hydrocarbons containing heteroatoms wherein the heteroatoms are nitrogen and/or sulfur from non-aromatic hydrocarbons in the feed producing a heteroatom aromatics rich permeate and a heteroatom aromatics lean retentate, (b) recovering the heteroatom aromatics lean retentate stream as a product stream (c) passing the aromatics rich permeate to a hydrotreater wherein the heteroatom rich aromatics are saturated into non-aromatics and recovered as a non-aromatics rich hydrotreater effluent, and (d) subjecting the hydrotreater effluent from step (c) to the membrane separation process of step (a).

5,643,443
WATER PURIFICATION SYSTEM

Yukio Ishikura, Tokyo, Japan, assignor to Taiki Corporation, U.S.A., Portland, Oreg.

Filed May 19, 1995, Ser. No. 445,263
Int. Cl.[6] C02F *1/52*
U.S. Cl. 210—113 **11 Claims**



1. A transportable system for purifying water from a dredging operation comprising:

a) a container having a first compartment in fluid communication with an inlet for receiving water to be purified opening into the first compartment and an outlet for discharging purified water;

b) a means for injecting coagulating agent into the water to be purified;

c) an agitating means disposed in the first compartment for mixing the water and the coagulating agent to form sediment;

d) discharge means connected to the first compartment for collecting and delivering the sediment to a centrifugal sediment decanter, wherein the discharge means comprise at least one weight activated valve and pump;

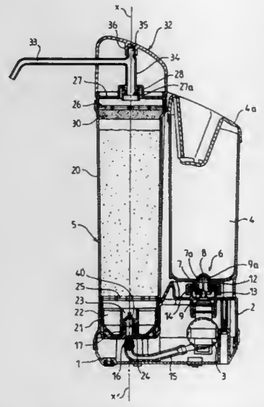
e) recirculation means for delivering water recovered from decanter to the first compartment; and

f) a conveyor configured to remove sediment recovered from the decanter which further comprises a solidification reaction accelerating agent injector and mixer.

5,643,444
DEVICE FOR FILTERING A LIQUID, PARTICULARLY WATER

Patrick Garrigues, Pierrefitte-Nestalas; Luc Gabette, Boo-Silhen, and Jean-Paul Astegno, Espoey, all of France, assignors to SEB S.A., Selongey, France

Filed Jan. 10, 1995, Ser. No. 370,385
Claims priority, application France, Jan. 10, 1994, 94 00342
Int. Cl.[6] B01D *24/16*
U.S. Cl. 210—136 **20 Claims**



1. Apparatus for filtering liquids, said apparatus comprising:

a base;

a reservoir mounted on said base for storing the liquid to be filtered;

liquid pumping means operatively associated with said reservoir;

filter means mounted on said base, said filter means having a lower portion and an upper portion located above said lower portion, said filter means being coupled to said pumping means so that liquid supplied by said pumping means circulates upwardly through said filter means from said lower portion to said upper portion;

dispensing means coupled to said filter means for dispensing filtered liquid; and

a one-way valve connected upstream of said filter means, with respect to the direction of liquid flow in said apparatus, and operable, when said pumping means are not in operation, to maintain said filter means in permanent contact with liquid previously supplied by said pumping means.

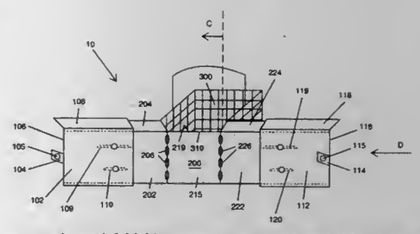
5,643,445
REMOVABLE STORM WATER SCREEN AND OVERFLOW DEVICE

Charles Billias, 119 Chipola, Cocoa Beach, Fla. 32931; Rajesh Verma, 7780 NW. 78th Ave. #1,213, Tamarac, Fla. 33321, and Ray Waton, 360 Earrusso St., Cocoa, Fla. 32926

Filed Aug. 28, 1995, Ser. No. 520,026
Int. Cl.[6] B01D *29/11*
U.S. Cl. 210—162 **13 Claims**

1. A removable storm water apparatus for being positioned within storm water collection sewers, comprising:

a left wing panel having a first side and a second side;



a central panel foldably connected to the second side of the left wing panel;

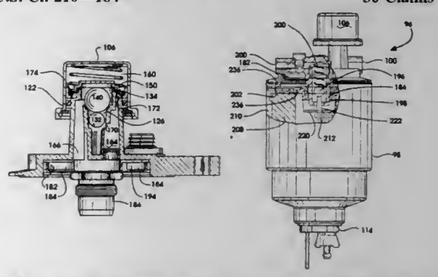
a right wing panel having a first side and a second side, the first side foldably connected to another side of the central panel; and

a removable filtering basket located behind the central panel, wherein the left wing panel, the central panel, the tight wing panel and the filtering basket are inserted within a storm water collection sewer in order to control and prevent debris from passing through the sewer.

5,643,446
FUEL FILTER AND PRIMING PUMP

Michael D. Clausen, Turlock; Russell D. Jensen, and Walter H. Stone, both of Modesto, all of Calif., assignors to Parker Hannifin Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 28,101, Mar. 8, 1993, Pat. No. 5,362,392, and a continuation-in-part of Ser. No. 97,787, Jul. 27, 1993, abandoned, which is a division of Ser. No. 683,096, Apr. 10, 1991, Pat. No. 5,244,571, which is a continuation of Ser. No. 586,827, Sep. 24, 1990, abandoned, which is a division of Ser. No. 370,097, Jun. 20, 1989, Pat. No. 4,997,555, which is a continuation of Ser. No. 242,791, Sep. 9, 1988, abandoned, which is a continuation of Ser. No. 32,834, Mar. 30, 1987, abandoned, which is a continuation-in-part of Ser. No. 784,292, Oct. 7, 1985, Pat. No. 4,692,245, which is a continuation-in-part of Ser. No. 733,808, May 14, 1985, Pat. No. 4,668,393. This application Nov. 10, 1993, Ser. No. 150,709
Int. Cl.[6] B01D *35/14*
U.S. Cl. 210—184 **30 Claims**



15. A filter in combination with a filter head including a nipple portion having a valve element therein, said filter comprising:

a generally cylindrical housing having a central axis, a first open end, and a second end;

an annular ring of filter media in said housing surrounding said central axis, said filter media having first and second ends spaced along said central axis;

a first end cap attached to said media at said first end adjacent the first end of said housing;

a second end cap attached at an annular portion thereof to said media at said second end and positioned adjacent to the second end of said housing;

wherein said ring of filter media and said first and second end caps separate a central chamber located within said ring of

filter media and first and second end caps from a peripheral chamber surrounding said ring of filter media;

said first end cap including an annular portion surrounding and defining a central opening; and

one of said first and second end caps including a longitudinally extending actuating projection extending axially in said central chamber, said longitudinally extending actuating projection having a base and a free end, said base being positioned closer to said second end cap than said free end and said free end in said central chamber positioned adjacent the central opening of said first end cap; and

a first annular resilient seal in circumferentially surrounding relation and radially outwardly spaced from said free end of said actuating projection, said seal being adjacent said central opening for engaging the nipple portion when the nipple portion extends through said central opening for engagement of the actuating projection with the valve element in the nipple portion;

whereby the free end of said actuating projection is configured and arranged to open the valve element within the nipple portion when the nipple portion is engaged with the first seal; and

wherein said base is connected to said annular portion of said one of said first and second end caps by connecting structure extending through said central chamber and between said base and the annular portion of said one of said first and second end caps, said connecting structure includes a longitudinally extending annular end cap wall supported on said annular portion of said one of said first and second end caps, said annular end cap wall in said central chamber radially disposed inwardly from said media, and wherein said base of said actuating projection is supported on said annular end cap wall;

said filter further comprising a tap plate closing the first end of said housing, said tap plate including a threaded first tap plate opening threadable onto said nipple portion at external threads on said nipple portion, and said first seal in longitudinally compressed relation between said first tap plate and said first end cap for sealing the first tap plate opening of said tap plate to the central opening of said first end cap;

said nipple portion of said filter head being extendible through said first tap plate opening into said central chamber, said valve element in said nipple portion movable between open and closed positions wherein fluid flow through said nipple portion is enabled or prevented, respectively, and wherein said actuating projection moves said valve element to said open position when said nipple portion extends through said first tap plate opening.

16. The combination according to claim **15**, wherein said first seal includes an annual radially inward extending seal projection in said central chamber, said seal projection disposed longitudinally interiorly of said tap plate, said seal projection annularly engaging said nipple portion in compressed relation when said nipple portion extends through said first tap plate opening and moves said valve element to the open position.

17. The combination according to claim **16** wherein said filter further comprises a priming pump in fluid connection with one of said peripheral or central chambers and wherein said priming pump comprises a first check valve means and a second valve means fluidly aligned so that liquid is enabled to flow only in a first flow direction therethrough into said one chamber, said check valve means each bounding a pumping area, said pumping area in fluid communication with a variable volume area.

18. The combination according to claim **17** and further comprising a heater disposed fluidly intermediate of said check valve means and said one chamber, and wherein said heater comprises an annular disk shaped member bounded by a longitudinally extending wall and whereby liquid flows over said longitudinal wall to reach said one chamber.

5,643,447

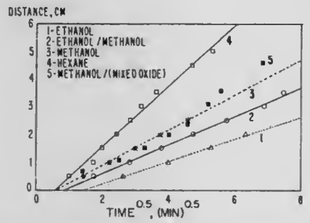
THIN LAYER CHROMATOGRAPHIC PLATES

Ovadia Lev, and Michael Tsionsky, both of Jerusalem, Israel, assignors to Yissum Research Developement Company of the Hebrew University of Jerusalem, Jerusalem, Israel

Continuation-in-part of Ser. No. 43,789, Apr. 6, 1993, abandoned. This application Jan. 20, 1995, Ser. No. 376,646

Int. Cl.[6] **B01D** *15/08*

U.S. Cl. 210—198.3 **11 Claims**



1. A planar chromatographic plate comprising a supported homogeneous thin porous film of ceramic material produced by sol gel technology, said film being provided with a porous intercalated network, having a plurality of intercalated pores, enabling capillary suction, eluent migration and chromatographic separation through the film pores, in a direction substantially parallel to the supporting substrate, whereby planar chromatographic separation of chemicals or biochemicals can be carried out therewith.

5,643,448

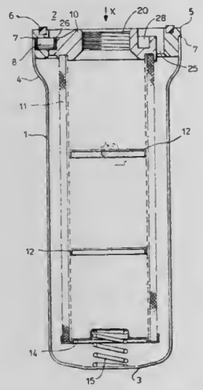
SPIN-ON FILTER ASSEMBLY INCORPORATING A RE-USABLE TUBULAR FILTER SCREEN

Henry Woods Martin, Houston, Tex.; Ian M. Cox, Tintinhull, England, and Scott A. Rodibaugh, Houston, Tex., assignors to Glacier Metal Company Limited, Northwood Hills, England

Continuation-in-part of Ser. No. 311,936, Sep. 26, 1994, abandoned. This application Aug. 16, 1995, Ser. No. 515,715

Int. Cl.[6] **B01D** *35/02*

U.S. Cl. 210—232 **8 Claims**



1. A spin on-spin off fluid filter cartridge comprising:

a generally tubular elongated casing, said casing having a long axis and being closed at one end and having an opposite, open end;

an annular member fixedly secured to said casing at said open end, said annular member defining a filter element receiving aperture, said annular member having an axially outwardly facing annular groove, an elastomeric seal in said annular groove for prevention of leakage of fluid to the environment, said seal extending circumferentially of the casing and projecting axially outwardly from the open end of the casing;

a filter element including a base ring, said base ring and said filter element being relatively dimensioned to fit through said filter element receiving aperture, said base ring having a centrally located fluid passageway and circumferentially spaced slots disposed in facing relationship said annular member, said slots and said annular member defining a plurality of passageways for passage of fluid to be filtered, said passageways being isolated from the environment by said seal;

said filter element further comprising a generally tubular filter extending within said casing from said base ring in surrounding relationship to said centrally located passageway and being spaced inwardly from the casing and said seal; and

filter element connection means internally of the casing comprising interengagable connecting elements on said annular member and said base ring for removably connecting the filter element to the casing, said interengagable connecting elements including axially facing recesses and projections interfitting within said recesses upon insertion of said filter element into said casing and upon rotation relative thereto, said connection means including filter element biasing means for yieldably urging said projections toward said recesses.

5,643,449

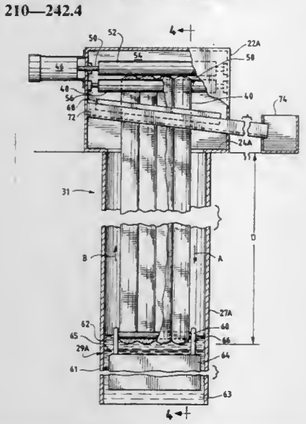
APPARATUS FOR LIFTING OIL-BASED LIQUID

Herman E. Brinkley, c/o Nu-Life Inc. of Illinois, Hi-Way One South, P.O. Box 450, Lawrenceville, Ill. 62439

Continuation-in-part of Ser. No. 81,510, Jun. 29, 1993, Pat. No. 5,403,478, which is a continuation-in-part of Ser. No. 812,406, Dec. 23, 1991, Pat. No. 5,229,006, which is a continuation-in-part of Ser. No. 700,493, May 15, 1991, Pat. No. 5,227,072. This application Nov. 28, 1994, Ser. No. 345,832

Int. Cl.[6] **C02F** *1/40;* **E02B** *15/04*

U.S. Cl. 210—242.4 **4 Claims**



1. In an apparatus for recovering an oil-based liquid from a body of liquid including a first layer of the oil-based liquid and a second layer of a second liquid having an interface with the first layer, the interface having a variable level in the body, the apparatus including an endless loop of oil-based liquid absorbent material extending downward a vertical distance into the first layer for absorbing the oil-based liquid therefrom and a drive conveying the absorbent material in a substantially vertical path from the first layer, the improvement wherein the apparatus further comprises:

a guide submerged in the body of liquid directing the absorbent material through the first layer, the guide having a buoyancy selected to maintain the absorbent material in the first layer by varying the vertical distance in response to a variation in the level of the interface, the guide including a weight and a guide roller mounted to the weight for guiding the absorbent material through the oil-based liquid, the weight having a buoyancy selected for the guide roller to float up and down in response to variations in the level of the interface to guide the absorbent material through the oil-based liquid, the guide roller being in the form of an elongated cylinder having opposite ends mounted to the weight; and

wherein the loop of absorbent material is in the form of a ribbon.

5,643,450

FILTER APPARATUS FOR FLUIDS, IN PARTICULAR FOR THERMOPLASTIC SYNTHETIC PLASTICS MATERIAL FLUID

Helmut Bacher, Bruck/Hausleiten 17; Helmuth Schulz, Badstrasse 20, both of St. Florian, Austria, and Georg Wendelin, Waldbothenweg 84, Linz, Austria

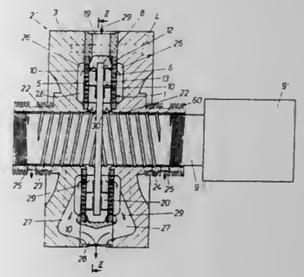
PCT No. PCT/AT94/00012, § 371 Date Aug. 2, 1995, § 102(e) Date Aug. 2, 1995, PCT Pub. No. WO94/17981, PCT Pub. Date Aug. 18, 1994

PCT Filed Feb. 2, 1994, Ser. No. 495,617

Claims priority, application Australia, Feb. 4, 1993, 195/93; Oct. 19, 1993, 2105/93; Oct. 19, 1993, 2106/93

Int. Cl.[6] **B01D** *29/64*

U.S. Cl. 210—350 **21 Claims**



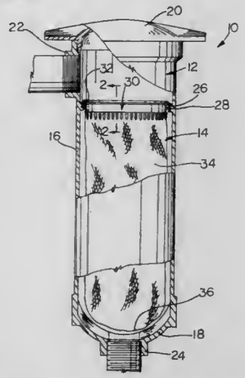
1. Filter apparatus for liquids, with continuous cleaning of the surface of the filter, comprising a housing (**2**) for a stationary, metallic, substantially planar filter (**1**), to which the liquid to be filtered is supplied through at least one upstream channel (**19**) and from which the cleaned liquid is conducted off the housing (**2**) through at least one downstream channel (**28**), at least one scraper (**8**) provided with some scraping edges (**14**) lying in a common plane and following curved lines, at least one drive means (**9'**) for rotation of the scraper so that the scraper (**8**) strokes over the upstream surface of the filter (**1**) and thereby strips off the impurities adhering thereon and carries them towards the center of the filter (**1**), wherefrom the impurities are conveyed off by at least one worm (**23,24**) through at least one conveyance channel (**22**) extending from the center of the filter and leading out of the housing (**2**), the filter (**1**) being constituted by at least two filter disks (**5,6**) disposed in parallel to each other and spaced apart from each other, that the liquid is supplied through the upstream channel (**19**) at the outer periphery of the filter disks (**5,6**), the scraper (**6**) acting upon both filter disks (**5,6**) being disposed between the filter disks, each of the scraping edges (**14**) of the scraper being formed by scraper elements (**10**) separated from each other but disposed along the lines and being pressed onto the filter disks (**5,6**), and that collection spaces (**26**) for the cleaned liquid are provided at the opposing side of the filter disks (**5,6**), which collection spaces are connected with the downstream channel (**28**) in the region of the outer periphery of the filter disks (**5,6**).

5,643,451

FILTER BAG HAVING A RIM INTERMITTENTLY BONDED TO A POROUS PORTION

James L. Harris, and James D. Jacobs, both of Hixson, Tenn., assignors to Filter Specialists, Inc., Michigan City, Ind.

Filed Jul. 30, 1996, Ser. No. 688,511
Int. Cl.[6] B01D *29/27*
U.S. Cl. 210—448 **12 Claims**



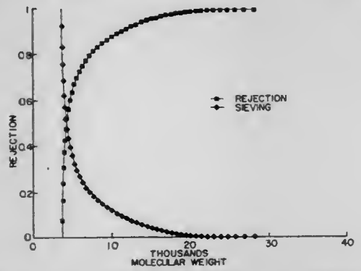
1. Liquid filter comprising a housing having an inlet for receiving fluid to be filtered and an outlet for discharging filtered fluid, said housing having a circumferentially extending wall defining a flow path between the inlet and the outlet, a filter bag supported in said flow path by said wall, said filter bag including a rim defining an open end of said bag and a porous portion extending from said rim whereby fluid from said inlet passes through said open end and then through the porous portion to said outlet, said rim and said porous portion being intermittently bonded to one another.

5,643,452

HIGH-FLUX HOLLOW-FIBER MEMBRANE WITH ENHANCED TRANSPORT CAPABILITY AND PROCESS FOR MAKING SAME

Anders Althin, Miami Lakes; Ben Fernandez, Miami; Raymond Elsen, Miami Lakes; Kees Ruzius, Miami; Lalith Silva, Miami Lakes, and George Washington, Miami, all of Fla., assignors to Althin Medical, Inc., Miami, Fla.

Continuation of Ser. No. 976,949, Nov. 16, 1992, abandoned. This application Oct. 21, 1994, Ser. No. 327,431
Int. Cl.[6] B01D *71/16*
U.S. Cl. 210—500.23 **16 Claims**



13. A process for making a hollow-fiber semi-permeable membrane adapted for purifying aqueous biological liquids, the process comprising:

(a) providing a substantially homogeneous mixture consisting substantially of 32 to 40% w/w of a cellulose acetate, 5 to 10% w/w glycerine, and 50 to 63% w/w polyethylene glycol having a molecular weight of about 150 to about 600 daltons, the mixture being at a temperature of about 165° to about 180° C. so as to melt the cellulose acetate;

(b) extruding the mixture at said temperature through an annular spinneret to produce a hot hollow fiber, the fiber having an original length and being made of a cellulosic material consisting of cellulose acetate;

(c) as the hot hollow fiber is extruded through the annular spinneret, cooling the hot hollow fiber so as to facilitate a thermally induced phase separation of the cellulose acetate in the fiber from the polyethylene glycol and the glycerine;

(d) while cooling the hot hollow fiber, longitudinally stretching the hollow fiber so as to increase its length relative to the original length by no greater than about 20 percent, thereby further facilitating the thermally induced phase separation of cellulose acetate from the polyethylene glycol and the glycerine, and providing the hollow fibers with a lumen diameter of about 175 to about 210 μm and a wall thickness of about 10 to about 35 μm;

(e) contacting the cooled hollow fiber of step (d) with water at a leach temperature of about 70° to about 85° C. so as to leach the glycerine and the polyethylene glycol from the cellulose acetate;

(f) replasticizing the hollow fibers of step (e) by contacting the fibers with an aqueous solution comprising about 30 to about 40% w/w glycerins; and

(g) removing water from the fibers of step (f) so as to confer on the fibers a glycerine concentration of about 45 to about 50% w/w and a water concentration of about 15 to about 18% w/w when the fibers are at equilibrium with the atmosphere, the fibers exhibiting a K_{uF} of 15–55 mL/hr/mmHg/m^2.

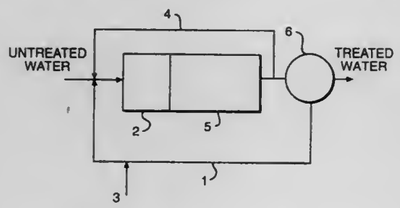
15. A hollow fiber semipermeable membrane produced by a process as recited in claim **13**.

5,643,453

PROCESS FOR THE TREATMENT OF LIQUID EFFLUENTS BY ACTIVATED SLUDGE

Michele Pannier, Croissy/Seine, and Pavel Chudoba, Le Pecq, both of France, assignors to Degremont, Rueil-Malmaison, France

Filed Jun. 1, 1995, Ser. No. 457,698
Claims priority, application France, Jun. 2, 1994, 94 06765
Int. Cl.[6] C02F *3/30;3/12*
U.S. Cl. 210—605 **11 Claims**



1. A process for treating waste water that is pretreated mechanically, comprising the steps:

providing waste water for treatment;

mixing the waste water with activated sludge;

creating a biomass in the form of flocs in suspension;

settling the resulting mixture to separate treated water from thickened sludge;

recycling the thickened activated sludge for mixing with newly provided waste water;

injecting, into the recycled sludge, a fine granular inert and inorganic material wherein particles of the material are immersed by the sludge to reform the suspended flocs with greater weight;

immediately dispersing the material in the sludge in a homogeneous manner;

creating a resulting mixed culture simultaneously including, in a single bacterial floc

(a) free heterotrophic species, that constitute the outer floc, enveloping at least one inert particle; and

(b) autotrophic species partially fixed on the at least one particle of the material and partially in the flocculated state;

the mixture of the activated sludge and of the injected material having an organic matter composition in the range of between 40 and 65%, the remainder being the inert material; and

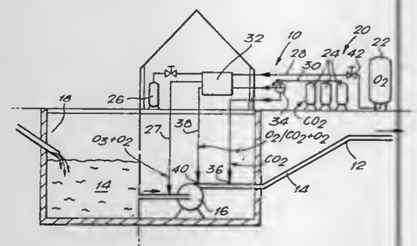
extracting excess sludge continuously and without separation of the injected material.

5,643,454

SEWAGE RESPIRATION INHIBITION

Michael E. Garrett, Woking, and Arthur G. Boon, Stevenage, both of England, assignors to The BOC Group plc, Windle Sham, England

Filed Dec. 13, 1995, Ser. No. 572,272
Claims priority, application United Kingdom, Dec. 13, 1994, 9425110
Int. Cl.[6] C02F *3/02*
U.S. Cl. 210—620 **7 Claims**



1. A method of treating sewage having bacteria contained therein to control the respiration rate of the bacteria as said sewage is being conveyed to a sewage treatment plant or during an initial phase of primary settlement, comprising the step of flushing said sewage with a gas containing carbon dioxide and an oxygen concentration greater than air and an additional controlling agent selected from the group consisting of ozone, chlorine and sodium hypochlorite.

5,643,455

CONCENTRATION OF SOLIDS IN A SUSPENSION USING HOLLOW FIBRE MEMBRANES

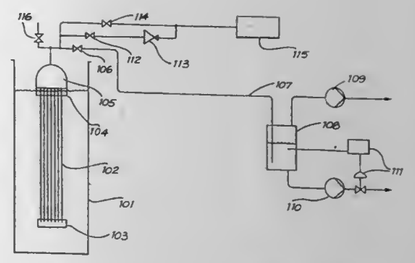
Clinton Virgil Kopp, Castle Hill; Ian Dracup Doig, Rosville Chase, both of Australia; Robert John William Streeton, Winchester, England, and Jalel Michel Darzi, Parramatta, Australia, assignors to Memtel Limited, Australia

PCT No. PCT/AU92/00419, § 371 Date Feb. 22, 1995, § 102(e) Date Feb. 22, 1995, PCT Pub. No. WO93/02779, PCT Pub. Date Feb. 18, 1993
PCT Filed Aug. 7, 1992, Ser. No. 185,912
Claims priority, application Australia, Aug. 7, 1991, PK 7646
Int. Cl.[6] B01D *61/00*
U.S. Cl. 210—636 **3 Claims**

1. A method of concentrating the solids of a liquid suspension within a vessel consisting of:

(i) applying the liquid suspension under pressure within a vessel to the outer surface of elastic, microporous, hollow fibers or tubular filter elements to induce and sustain filtration through the membrane walls wherein:

(a) some of the liquid suspension passes through the walls the fibers to be drawn off as clarified liquid or filtrate from the hollow fiber lumens, and



(b) at least some of the solids are retained on or in the hollow fibers or otherwise as suspended solids within the liquid of the vessel enclosing the tubular filter elements.

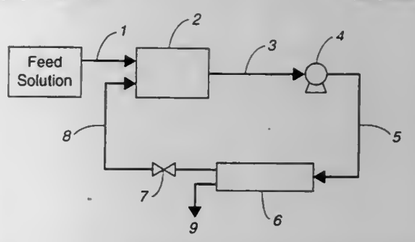
(ii) dislodging the retained solids from the fibers by applying a dislodging medium through the lumens after opening the vessel to atmospheric pressure, wherein the application of the dislodging medium is initially conducted so as to displace liquid within the hollow fiber lumens through the hollow fiber membrane with gas at a pressure below the bubble point of the pores of the fibers followed by subsequent admission to the hollow fiber lumens of gas at a pressure substantially higher than the bubble point of the pores to drive liquid retained in the membrane pores outwards allowing the gas in the lumens to follow the liquid through the fiber walls to provide effective cleaning and scouring event at the most distant point from the lumen inlet thus reducing the natural tendency in a liquid only reverse flow backwash towards preferential washing of pores near the lumen inlet.

5,643,456

PROCESS FOR THE DISPLACEMENT OF CYANIDE IONS FROM METAL-CYANIDE COMPLEXES

Barbara F. Smith, and Thomas W. Robinson, both of Los Alamos, N. Mex., assignors to The Regents of the University of California, Los Alamos, N. Mex.

Filed May 30, 1995, Ser. No. 453,597
Int. Cl.[6] B01D *15/02;61/26;* **C02F** *1/44*
U.S. Cl. 210—651 **16 Claims**



1. A process of displacing and separating cyanide ions and metal ions from metal-cyanide complexes contained in an aqueous solution comprising:

contacting the aqueous solution with a reaction solution containing a water soluble metal chelating polymer under conditions and for time sufficient to displace cyanide from the metal-cyanide complex and to form a water-soluble polymer-metal complex, the reaction solution including an effective amount of a water soluble polymer having nitrogen-, oxygen-, or sulfur-containing groups capable of binding a metal component of a metal-cyanide complex thereby forming said water-soluble polymer-metal complex as said cyanide is displaced, and,

treating the aqueous solution by ultrafiltration effective to separate cyanide, water, and other low molecular weight materials

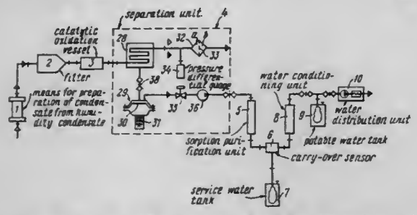
from the aqueous solution while retaining a concentrated aqueous solution of water-soluble polymer-metal complex.

5,643,457

METHOD FOR WATER RECOVERY FROM ATMOSPHERE OF HABITABLE PRESSURIZED MODULE

Grigory Khananovich Abramov; Mikhail Sergeevich Amiragov; Valery Borisovich Astafiev, all of Moscow; Sergei Valentinovich Berezkin, Moskovskaya oblast; Leonid Sergeevich Bobe, Moscow; Viktor Pavlovich Bykov, Moscow; Jury Borisovich Vasiliev, Moscow; Vladimir Mikhailovich Gordeev, Moscow; Eleonora Sergeevna Djukova, Moscow; Vladimir Mikhailovich Novikov, Moscow; Alexandr Yakovlevich Podrugin, Moscow; Nikolai Nikolaevich Protasov, Moscow; Margarita Dmitrievna Razgulina, Moscow; Nikolai Mikhailovich Samsonov, Moscow; Galina Sergeevna Sinyak, Moscow; Jury Emelyanovich Sinyak, Moscow, and Nikolai Sergeevich Farafonov, Moscow, all of Russian Federation, assignors to Aktsionernoe Obschestvo Otkrytogo Tipa, Russian Federation

Filed Jan. 6, 1995, Ser. No. 369,711
Int. Cl.[6] C02F *9/00*
U.S. Cl. 210—668 **7 Claims**



1. A method for water recovery from the atmosphere of a habitable pressurized module laden with water vapors released by the inhabitants comprising the following operations:

condensing said vapors to produce a gas-liquid mixture which contains atmospheric air and condensate;

filtering said gas-liquid mixture to separate solid particles therefrom;

catalytic oxidizing undissociating organic compounds contained in said gas-liquid mixture at the ambient temperature and pressure to transform them to dissociating organic compounds by contacting said gas-liquid mixture with a catalyst bed comprising metal-carbon catalyst, containing at least one metal of the platinum group, to which silver impregnated activated carbon is added, to obtain an oxidized mixture;

separating condensate from the oxidized mixture by passing said oxidized mixture through a static separator including a hydrophilic capillary-porous barrier having a plurality of pores therethrough;

sorption purifying said condensate by passing it through activated carbon and ion exchangers to obtain a purified condensate; and

disinfecting, mineralizing and preserving the purified condensate to a desired grade.

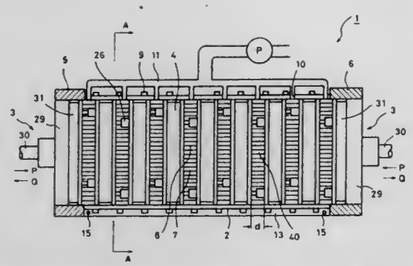
5,643,458

SLUDGE DEHYDRATING PRESS AND METHOD FOR TREATING SLUDGE

Tadayoshi Nagaoka, Mihara-machi, Japan, assignor to Nagaoka International Corporation, Japan

Filed Dec. 29, 1994, Ser. No. 365,851
Claims priority, application Japan, Jan. 12, 1994, 6-014013
Int. Cl.[6] B01D *21/02;37/00*
U.S. Cl. 210—702 **11 Claims**

10. A method for treating sludge comprising steps of:



filling respective spaces which are on both sides of each of each of one or more inner screen cases which are in an outer screen case of a sludge dehydrating press having a central axis, said press comprising an outer screen case for containing sludge to be treated, said outer screen case having a screen surface in at least a part thereof, said outer screen case being divided circumferentially into an upper section and a lower section; said lower section being further divided circumferentially into two sections of said lower section which are individually hingedly connected to said upper section;

means connected to each of said two sections of said lower section for opening and closing said two sections of said lower section; press means for pressing sludge contained in said outer screen case in a direction which is parallel to the axis of said press;

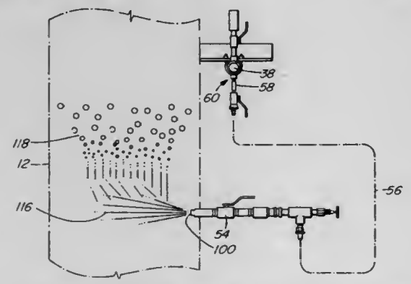
one or more inner screen cases disposed slidably in said outer screen case each comprising a screen surface comprising continuous slits and which extends in a direction crossing said direction of pressing by said press means and said one or more inner screen cases having also a space into which water extracted from the sludge flows; and positioning means for positioning said one or more inner screen cases to a predetermined position after completion of pressing by said press means; and dehydrating the sludge by pressing the sludge by said pressing means wherein sludge to be treated is subjected to a chemical pretreatment using a coagulant before the sludge is pressed.

5,643,459

FLOTATION METHOD AND APPARATUS

Gale L. Hubred, Brea, Calif.; William A. C. Meekel, Kamloops, and Harold E. Wyslouzil, Delta, both of Canada, assignors to Cominco Engineering Services Ltd., Vancouver, Canada

Filed Apr. 26, 1995, Ser. No. 429,746
Int. Cl.[6] C02F *1/24*
U.S. Cl. 210—703 **8 Claims**



1. A method of removing finely divided bodies of an insoluble substance dispersed in an aqueous medium from said medium, comprising the steps of:

causing the aqueous medium to flow upwardly in a column at a superficial velocity in the range of from about 0.05 to about 1 inch/second; generating gas bubbles of a substantially uniform size of less than about 0.005 inches at the bottom of the column;

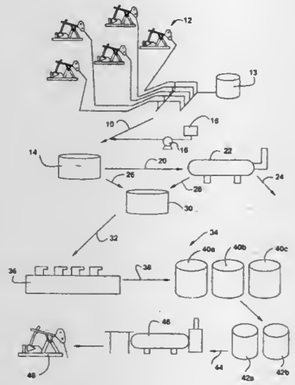
causing the gas bubbles to rise up in the column in co-current fashion with the flow of said aqueous medium at a superficial velocity in the range of from about 0.01 to about 1 inches/second in order to contact said bodies of insoluble substance and to capture said bodies and raise them to the surface of the aqueous medium in the column to form a layer of said insoluble substance on the surface of the aqueous medium.

5,643,460

METHOD FOR SEPARATING OIL FROM WATER IN PETROLEUM PRODUCTION

Robert A. Marble, Sugarland, Tex.; Manian Ramesh, Lisle, Ill., and Norman Edward Byrne, Dibden Purlieu, United Kingdom, assignors to Nalco/Exxon Energy Chemicals, L. P., Sugarland, Tex.

Continuation-in-part of Ser. No. 182,300, Jan. 14, 1994, abandoned. This application Jun. 30, 1995, Ser. No. 497,359
Int. Cl.[6] C02F *1/56*
U.S. Cl. 210—705 **8 Claims**



1. A method for separating produced oil from water in an oil field production stream containing an oil-in-water emulsion, comprising the steps of:

feeding said production stream to a free water knock out tank to separate a free water stream from a free oil stream, dehydrating the free oil stream in a heater treater to produce a clean oil product stream and a residual water stream, and treating said oil field production stream or said free oil stream with an aqueous reverse emulsion breaker agent comprising a water-soluble, cationic polymer consisting essentially of a polymerized dimethylaminoethyl acrylate quaternary salt monomer selected from methyl chloride quaternary salt, benzyl chloride quaternary salt or a combination thereof to substantially free the oil from said production stream or said free oil stream and produce free oil and water phases, wherein the free oil phase comprises less than about 50 percent by volume water, and the polymer has an intrinsic viscosity of from about 1 to about 5 dL/g.

5,643,461

HIGH PERFORMANCE DEWATERING AIDS

Roger Edgar Neff, South Stamford; Joseph Jacinto Pellon, Stamford, and Roderick Glyn Ryles, Milford, all of Conn., assignors to Cytec Technology Corp., Wilmington, Del.

Continuation of Ser. No. 786,646, Nov. 1, 1991, abandoned, which is a division of Ser. No. 477,010, Feb. 8, 1990, Pat. No. 5,405,554. This application May 24, 1995, Ser. No. 448,699
Int. Cl.[6] B01D *21/01; C02F 1/52*
U.S. Cl. 210—728 **16 Claims**

1. A method of releasing water from a dispersion of suspended solids which comprises:

A. Adding to said dispersion an effective amount of:

1. a cationic, water-soluble polymer having a molecular weight of below about one million, and

2. an unsheared, water-soluble, branched, cationic polymer having a solution viscosity of at least about 1.8 mPa.s measured in a Brookfield viscometer with a UL adapter at 25° C. on a 0.1 percent, by weight, polymer solution in 1M NaCl at 60 rpm, a solubility quotient of greater than about 30% and a branching agent content of from about 4 to about 100 molar parts per million, based on initial monomer content and

B. dewatering the mixture of the dispersion of suspended solids and the polymers.

5,643,462

COMPOSITION AND METHOD FOR WATER CLARIFICATION

Jen-Chi Chen, Morrisville; Fu Chen, Newtown; Gerald C. Walterick, Jr., Levittown, and Stephen R. Vasconcellos, Doylestown, all of Pa., assignors to BetzDearborn Inc., Trevose, Pa.

Continuation-in-part of Ser. No. 80,909, Jun. 22, 1993, abandoned. This application May 20, 1994, Ser. No. 246,544
Int. Cl.[6] B01D *21/01*
U.S. Cl. 210—730 **8 Claims**

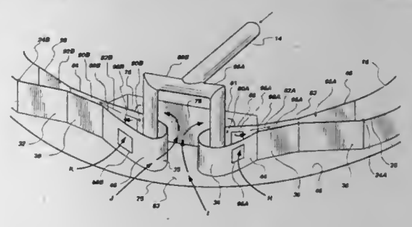
1. A method for removing contaminants from wastewater comprising adding to said wastewater a water soluble or dispersible copolymer of a tannin and a cationic monomer selected from the group consisting of methyl chloride or dimethyl sulfate quaternary salt of dimethyl aminoethyl acrylate, diethylaminoethyl acrylate, dimethylaminoethyl methacrylate, diethylaminoethyl methacrylate, dimethylaminopropyl methacrylamide, dimethylaminopropyl acrylamide, and diallyl dimethyl ammonium chloride.

5,643,463

SELF-DILUTING FEEDWELL FOR THICKENER DILUTION

Leonard J. A. Wood, Wyee; Simon D. Turner, Summerland Point; Timothy J. Laros, Marsfield, all of Australia, and Robert C. Emmett, Jr., Salt Lake City, Utah, assignors to Baker Hughes Incorporated, Houston, Tex.

Division of Ser. No. 767,072, Sep. 26, 1991, Pat. No. 5,389,250. This application Dec. 6, 1994, Ser. No. 349,817
Int. Cl.[6] B01D *21/24*
U.S. Cl. 210—739 **8 Claims**



1. A method of diluting an influent feed stream comprising:
directing an influent liquid feed stream toward a settling tank, said influent liquid feed stream being provided from a source external to and other than said settling tank;
providing a walled fluid mixing chamber for mixing therein said influent liquid feed stream with a diluent liquid;
providing a source of diluent liquid in association with said settling tank, said source of diluent liquid being in fluid communication with said walled fluid mixing chamber;
flowing said influent liquid feed stream toward an opening formed in said walled fluid mixing chamber;
discharging said influent liquid feed stream from an influent feed pipe positioned at said opening in said walled fluid chamber at a velocity sufficient to educt said diluent liquid into said opening responsive to momentum transfer between the flow of said influent feed stream and said diluent liquid;
directing said influent liquid feed Stream and said educted diluent liquid toward said settling tank.

5,643,464

PROCESS FOR PREPARING A STERILE, DRY CROSSLINKING AGENT

Woonza M. Rhee, Palo Alto; Richard A. Berg, Los Altos; Joel S. Rosenblatt, Palo Alto; Jacqueline A. Schroeder, Redwood City; Larry J. Braga, Fremont; Thomas L. Smestad, Palo Alto, and Abigail Freeman, Fremont, all of Calif., assignors to Collagen Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 287,549, Aug. 8, 1994, which is a continuation-in-part of Ser. No. 236,769, May 2, 1994, Pat. No. 5,475,052, which is a continuation-in-part of Ser. No. 198,128, Feb. 17, 1994, Pat. No. 5,413,791, which is a division of Ser. No. 922,541, Jul. 30, 1992, Pat. No. 5,328,955, which is a continuation-in-part of Ser. No. 433,441, Nov. 14, 1989, Pat. No. 5,162,430, which is a continuation-in-part of Ser. No. 274,071, Nov. 21, 1988, abandoned. This application Jun. 30, 1995, Ser. No. 497,573

Int. Cl.[6] B01J *19/08;* **A01N** *1/02;* **A61F** *2/00*

U.S. Cl. 210—748 **5 Claims**

1. A process for preparing a sterile, dry crosslinking agent comprising molding a dry crosslinking agent to form a pellet and sterilizing the pellet using e-beam irradiation, wherein the crosslinking agent is a functionally activated polyethylene glycol.

5,643,465

PROCESS FOR REDUCING THE CONTENT OF HALOGEN-CONTAINING ORGANIC COMPOUNDS IN AQUEOUS SYSTEMS

Theo Stalberg, Monheim, Germany, assignor to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP94/00808, § 371 Date Sep. 22, 1995, § 102(e) Date Sep. 22, 1995, PCT Pub. No. WO94/21564, PCT Pub. Date Sep. 29, 1994

PCT Filed Mar. 15, 1994, Ser. No. 525,698

Claims priority, application Germany, Mar. 24, 1993, 43 09 468.6

Int. Cl.[6] C02F *1/70*

U.S. Cl. 210—757 **20 Claims**

1. A process for reducing the content of halogen containing organic compounds in an aqueous system which comprises: contacting the aqueous system containing halogen containing organic compounds and from 0.001 to 5 percent by weight of the aqueous system, of at least one metal ion catalyst with an oxidation number which is not zero, with hydrogen, at a pH of from 7 to 14.

5,643,466

TREATMENT OF LIQUIDS

Malcolm Strapp, Flint, England, assignor to Gosvenor Power Services Limited, Manchester, Great Britain

PCT No. PCT/GB93/00685, § 371 Date Nov. 28, 1994, § 102(e) Date Nov. 28, 1994, PCT Pub. No. WO93/19812, PCT Pub. Date Oct. 14, 1993

PCT Filed Apr. 1, 1993, Ser. No. 313,259

Claims priority, application United Kingdom, Apr. 2, 1992, 9207236

Int. Cl.[6] B01D *57/00*

U.S. Cl. 210—763 **15 Claims**

1. A process for the removal of polychlorobiphenyls from a liquid comprising the step of passing the liquid through a catalytic bed at an elevated temperature wherein the catalytic bed comprises a carrier and one or more active metal compounds selected from the group consisting of compounds of nickel, copper, molybdenum, tungsten and chromium, the bed being prepared by precipitating the metal as a hydroxide or carbonate onto the carrier material from an aqueous solution of metal salt by addition of alkali.

5,643,467

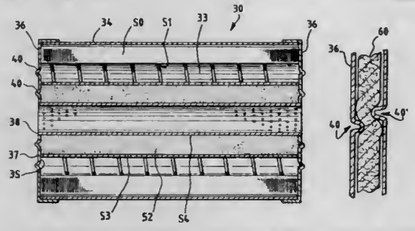
FILTER CARTRIDGE HAVING GASKET SEAL EMPLOYING PRESSURE RIDGES TO PREVENT LEAKAGE

Vincent P. Romanco, Naperville, Ill., assignor to R.R. Street & Co. Inc., Naperville, Ill.

Filed May 3, 1995, Ser. No. 434,417

Int. Cl.[6] B01D *37/00;35/00*

U.S. Cl. 210—767 **25 Claims**



1. A filter cartridge assembly for use in a filter system, the filter system including a housing for containing the filter cartridge assembly, an inlet for introducing unfiltered fluid into the housing, and an outlet extending into the housing for draining filtered fluid therefrom after filtration has occurred, the filter cartridge assembly comprising:
at least two filter cartridges to be positioned adjacent each other on the outlet within the housing, each filter cartridge including filter material configured into a tubular shape having opposite ends so as to surround the outlet when the filter cartridge is positioned thereon within the housing,
an end wall provided at each end of the filter material, each end wall having an inside surface facing the filter material, an outside surface opposite the inside surface, and an aperture formed therethrough corresponding to a cross-section of the outlet such that the outlet may be received by the apertures to position the filter cartridges thereon with adjacent end walls of the filter cartridges facing each other, and
a pressure ridge located on each end wall so as to substantially encompass the aperture formed through the end wall, the pressure ridge extending outwardly from the outside surface of the end wall, wherein the pressure ridge on each adjacent end wall is configured to substantially interlock with the pressure ridge on the facing adjacent end wall; and
a gasket placed between the adjacent end walls of the filter cartridges, the pressure ridge on each adjacent end wall in sealing engagement with the gasket to prevent leakage of unfiltered fluid between the filter cartridges.

19. A method of preventing leakage of unfiltered fluid through a filter system, the filter system including a housing for containing a filter cartridge, an inlet for introducing unfiltered fluid into the housing, and an outlet having a length extending into the housing for draining filtered fluid from the housing after filtration has occurred, the method comprising the steps of:
providing at least two filter cartridges to be positioned adjacent each other on the outlet within the housing, each filter cartridge including filter material configured into a tubular shape having opposite ends so as to surround the outlet when the filter cartridge is positioned thereon, the filter cartridge further including an end wall provided at each end of the filter material, each end wall having an inside surface facing the filter material, an outside surface opposite the inside surface, and an aperture formed therethrough corresponding to a cross-section of the outlet such that the length of the outlet may be received by the apertures to position the filter cartridges thereon within the housing with adjacent end walls of the filter cartridges facing each other;
locating a pressure ridge on each end wall so as to substantially encompass the aperture formed through the end wall, the pressure ridge extending outwardly from the outside surface of the end wall, wherein the pressure ridge on each adjacent end wall is configured to substantially interlock with the pressure ridge on the facing adjacent end wall;
positioning one of the filter cartridges on the length of the outlet with the outlet received by the apertures;
placing a gasket on the outlet adjacent one end of the filter cartridge; and
positioning another filter cartridge on the length of the outlet with the outlet received by the apertures such that adjacent end walls of the filter cartridges are facing each other with the gasket therebetween, the pressure ridges on the adjacent end walls interlocking with each other so that the pressure ridge on each adjacent end wall is in sealing engagement with the gasket to prevent leakage of unfiltered fluid to the outlet.

5,643,468

METHOD AND APPARATUS FOR DISPLACING LIQUOR FROM A SLURRY OF PARTICULATE SOLID MATERIAL

Alan Macpherson Ure, Stockton-on-Tees, United Kingdom, assignor to Imperial Chemical Industries PLC, United Kingdom

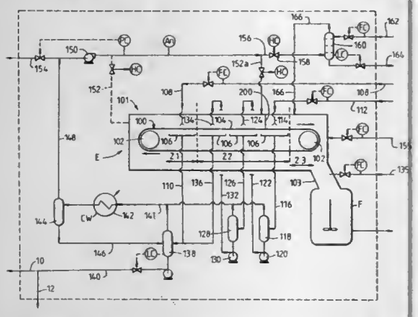
PCT No. PCT/GB94/00132, § 371 Date Jul. 20, 1995, § 102(e) Date Jul. 20, 1995, PCT Pub. No. WO94/17892, PCT Pub. Date Aug. 18, 1994

PCT Filed Jan. 24, 1994, Ser. No. 491,979

Claims priority, application United Kingdom, Feb. 5, 1993, 9302333

Int. Cl.[6] B01D *37/00;33/04*

U.S. Cl. 210—771 **24 Claims**



1. A method of displacing liquor from a particulate solid material comprising:
forming the particulate solid material into a layer on a movable filter medium;
transporting the layer by means of the filter medium through a washing zone in which the layer is contacted along the path of movement thereof with a wash medium, the wash medium serving to displace liquor from the layer and passing through the filter medium;
establishing over said layer a gaseous atmosphere from which gas passes through the layer; and supplying gas to the gaseous atmosphere so as to produce a concentration gradient within the gaseous atmosphere such that the liquor content of the gas passing through said layer increases in a direction counter-current to the direction of travel of said layer.

23. A process for the filtration and washing of terephthalic acid obtained from a reaction vessel as a slurry with an aliphatic carboxylic acid employed as solvent in the reaction, said process comprising:
(a) contacting the terephthalic acid, initially in the form of said slurry, with a filtration surface acting as a support so as to form the terephthalic acid as a layer on said surface and transporting the terephthalic acid on said filtration surface through first and second zones;
(b) initially subjecting the slurry to filtration while traversing said first zone to remove said solvent through the filtration surface and thereby produce a first drained wet deposit;
(c) thereafter subjecting the first wet deposit to a series of washing stages while traversing said second zone and effecting filtration through said filtration surface to separate from the terephthalic acid any solvent remaining in the first deposit and the wash liquor used for washing, said washing stages with the exception of the final washing stage being effected using wash liquor from a succeeding stage in countercurrent fashion so that said deposit is contacted with wash liquor of increasing purity as it progresses through said second zone;
(d) pressurising said first and second zones by means of a gas which passes through the filter medium together with the solvent and the wash liquor; and
(e) supplying said pressurising gas in such a way that, on the slurry side of the filter surface, the gas present in at least the final stage of said second zone is less contaminated with said solvent than the gas present in said first zone;
(f) separating the gas from solvent vapours entrained in the gas flow; and
(g) re-introducing the gas into the gaseous atmosphere at different locations along the path of travel of the filter surface, the gas supplied to the more downstream location or locations being subjected to a higher degree of separation from said solvent.

5,643,469

PROCESS FOR SEPARATING PHASES OF DIFFERENT DENSITIES AND CONDUCTIVITIES BY ELECTROCOALESCENCE AND CENTRIFUGATION

Isabelle Prevost, Conflans Sainte Honorine, and Alexandre Rojey, Rueil Malmaison, both of France, assignors to Institut Francais du Petrole, Rueil Malmaison, France

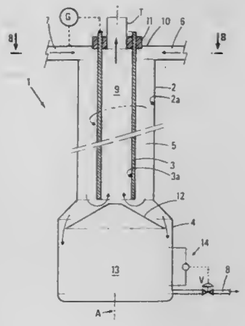
Division of Ser. No. 212,762, Mar. 15, 1994. This application Jun. 5, 1995, Ser. No. 464,099

Claims priority, application France, Mar. 15, 1993, 93 03112

Int. Cl.[6] B01D *21/26;* **B03C** *5/00*

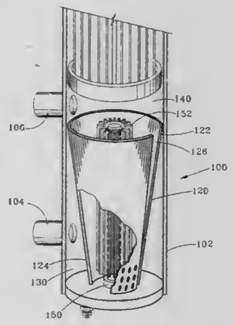
U.S. Cl. 210—787 **15 Claims**

1. A process for separating a fluid mixture containing at least a continuous phase (I) and of at least a conducting dispersed phase (II) comprising particles, the two phases having different densities and comprising liquid drops dispersed within the continuous phase, wherein the mixture to be separated is introduced into a device having at least one annular zone delimited by two substantially cylindrical parts, one part being fitted into another part, and said mixture being introduced along a periphery of the one part to produce a rotational motion of the mixture in the annular zone around the one part and to impart a centrifugal force to the mixture, simultaneously a potential difference is applied between said two substantially cylindrical parts to create a radial electric field in the annular zone for causing the particles of the dispersed



phase (II) to coalesce and to at least partially separate from the continuous phase due to the centrifugal force in the annular zone, the centrifugal force causing separation of the coalesced particles of the dispersed phase at least partially inside the annular zone, and the continuous phase and the dispersed phase being collected separately outside of the annular zone.

5,643,470
CENTRIFUGAL FLOW SEPARATOR METHOD
Bijan K. Amini, 5110 San Felipe, Houston, Tex. 77056
Filed Apr. 5, 1996, Ser. No. 628,505
Int. Cl.[6] B01D *21/26*
U.S. Cl. 210—787 **2 Claims**

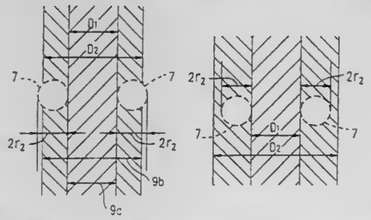


1. A method of separating more dense constituents of a fluid from less dense constituents of a fluid, a housing is provided having a first end, a second end, a wall there between and an inlet in the wall adjacent the first end, the housing comprising therein an exterior chamber and an interior chamber separated by a conical baffle, the conical baffle arranged in the housing such that the exterior chamber decreases in volume from the first end to the second end of the housing, the method comprising the steps of:

(a) impeding the flow of the fluid accepted in the exterior chamber of the housing via the inlet and causing the fluid to move in a curvilinear path by the fluid striking the conical baffle such that the fluid is effected by centrifugal force which force enhances the separation of the fluid constituents, and

(b) reducing the centrifugal force by the fluid migrating from the first end of the housing to the second end of the housing such that the fluid moves into a portion of the exterior chamber having increasing volume to further enhance the separation of the constituents of the fluid.

5,643,471
LIQUID CRYSTAL DEVICE AND METHOD FOR PRODUCING THE SAME
Noriaki Onishi, Nara; Masayuki Okamoto, Tenri; Toshiyuki Hirai, Kashihara; Nobuaki Yamada, Higashiosaka; Nobukazu Nagae, Tenri; Masahiko Kondo, Nara-ken, and Shin-ichi Terashita, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Nov. 9, 1995, Ser. No. 555,728
Claims priority, application Japan, Nov. 9, 1994, 6-275422; Feb. 7, 1995, 7-019604; Nov. 2, 1995, 7-310130
Int. Cl.[6] B44C *1/22*
U.S. Cl. 216—23 **56 Claims**



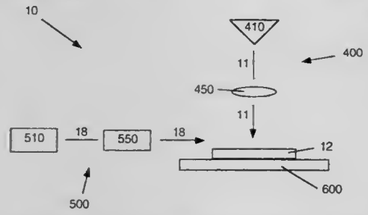
30. A method for producing a liquid crystal device comprising the steps of:

patterning a polymerizable material including spacers on one of a pair of substrates at least one of which is transparent;

attaching the pair of substrates so as to be opposed to each other and to have a uniform gap therebetween with the spacers to construct a liquid crystal cell; and

filling the liquid crystal cell with a mixture containing at least a liquid crystal material and a polymerizable material, and allowing the mixture to be phase-separated by polymerization to provide polymer regions including portions corresponding to the patterned polymerizable material and liquid crystal regions in the other portions.

5,643,472
SELECTIVE REMOVAL OF MATERIAL BY IRRADIATION
Audrey C. Engelsberg, Milton, Vt., and Donna R. Fitzpatrick, Washington, D.C., assignors to Cauldron Limited Partnership, Bethesda, Md.
Continuation-in-part of Ser. No. 45,165, Apr. 12, 1993, abandoned, which is a continuation-in-part of Ser. No. 865,039, Mar. 31, 1992, abandoned, which is a continuation-in-part of Ser. No. 611,198, Nov. 9, 1990, Pat. No. 5,099,557, which is a division of Ser. No. 216,903, Jul. 8, 1988, Pat. No. 5,024,968. This application Sep. 19, 1994, Ser. No. 306,431
Int. Cl.[6] B08B *5/00;7/00;* **B23K** *26/00*
U.S. Cl. 216—65 **13 Claims**



1. A method for selectively removing a substantially continuous layer of undesired material from a treatment surface without substantially changing the physical properties of desired material to be left on the treatment surface underlying the undesired material, comprising the steps of:

introducing across said undesired material a flow of gas substantially inert to said materials; and

irradiating said undesired material with energetic photons in a spatial and temporal concentration sufficient to release the undesired material from the treatment surface and insufficient to raise the temperature of the undesired material above the temperature at which the undesired material melts or thermally decomposes or to substantially alter the physical properties of the desired material.

5,643,473
DRY ETCHING METHOD
Shinichi Tachi, Sayama; Kazunori Tsujimoto, Higashiyamato; Sadayuki Okudaira, Ome, and Kiichiro Mukai, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Continuation of Ser. No. 191,928, Feb. 4, 1994, abandoned, which is a continuation of Ser. No. 898,150, Jun. 15, 1992, abandoned, which is a continuation of Ser. No. 598,808, Oct. 10, 1990, Pat. No. 5,147,500, which is a continuation of Ser. No. 225,813, Jul. 29, 1988, abandoned. This application May 30, 1995, Ser. No. 453,336
Claims priority, application Japan, Jul. 31, 1987, 62-190036
Int. Cl.[6] H05H *1/00;* **H01L** *21/00*
U.S. Cl. 216—67 **11 Claims**

1. A dry etching method comprising the steps of:

disposing an article to be etched in a reaction chamber of an etching apparatus, a mask having a pattern being formed on a surface of the article to be etched;

contacting the article to be etched with the plasma of an etching gas;

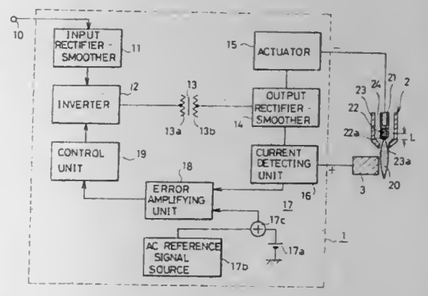
applying a bias voltage of a value to the article to be etched; and

controlling the gas pressure in the reaction chamber, controlling the bias voltage applied to the article to be etched and controlling the temperature of the article to be etched to be lower than 20° C. to simultaneously (a) etch the article with an etching rate higher than 0.5 μm/min., (b) etch the article with a ratio of the etching rate for the article to be etched to the etching rate for the mask greater than ten, and (c) etch the article with a ratio of the length of the side etching in the article to be etched to the depth of etching in the article to be etched less than 1/100, wherein the etching apparatus is a microwave plasma etching apparatus and wherein the gas pressure is controlled to be in a range from 4 to 10 m Torr, the bias voltage is applied in a range from −10 to −50 V, and the temperature of the article to be etched is controlled to be in range from −100° to −135° C.

5,643,474
THERMAL BARRIER COATING REMOVAL ON FLAT AND CONTOURED SURFACES
D. Sangeeta, Niskayuna, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Dec. 26, 1995, Ser. No. 578,803
Int. Cl.[6] C23G *1/00*
U.S. Cl. 216—96 **11 Claims**

1. A method for removing thermal barrier coatings from flat and contoured surfaces comprising the step of: treating the thermal barrier coated surface in an autoclave with an organic caustic solution at a temperature, a pressure, and a time sufficient to completely remove the thermal barrier coating from the surface without damaging an underlying bond coat or a substrate surface.

5,643,475
POWER SUPPLY APPARATUS
Kunio Karino, Suita; Haruo Moriguchi, Itami; Toshikazu Fujiyoshi, Kawanishi; Atsushi Kinoshita, Osaka, and Takashi Hashimoto, Kobe, all of Japan, assignors to Sansha Electric Manufacturing Company, Limited, Osaka, Japan
Filed Nov. 8, 1995, Ser. No. 554,657
Claims priority, application Japan, Nov. 9, 1994, 6-301460
Int. Cl.[6] B23K *10/00*
U.S. Cl. 219—121.57 **4 Claims**



1. A power supply apparatus comprising:

an inverter for converting DC power into AC power;

output developing means for rectifying and smoothing an AC output from said inverter to develop output current to be supplied between an electrode and a workpiece which form together a plasma load;

current detecting means for detecting said output current;

reference signal generating means for generating a reference signal comprising a preset DC signal and a predetermined AC signal superposed on said DC signal; and

control means for controlling said inverter in accordance with the difference between the output signal from said current detecting means and said reference signal so as to control said output current to have a predetermined, constant DC current and a predetermined AC current superposed on said DC current;

said reference signal generating means being capable of varying the frequency and amplitude of said AC signal contained in said reference signal.

5,643,476
LASER SYSTEM FOR REMOVAL OF GRAFFITI
Elsa Garmire, Manhattan Beach; Katherine X. Liu, Los Angeles, and Robert Russell, Manhattan Beach, all of Calif., assignors to University of Southern California, Los Angeles, Calif.
Filed Sep. 21, 1994, Ser. No. 310,676
Int. Cl.[6] B23K *26/04*
U.S. Cl. 219—121.68 **10 Claims**

10. A mobile laser apparatus for the removal of paint from a sign comprising:

an ablating laser;

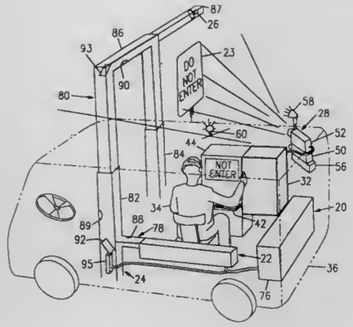
an optical sensor movably positioned to view said sign;

a laser scanner movably positioned proximate to said sign;

a laser transmission conduit connected between said ablating laser and said laser scanner;

a target indicator aligned with said laser scanner;

said optical sensor connected in spaced apart relation with said laser scanner and independently movable relative to said laser scanner; and



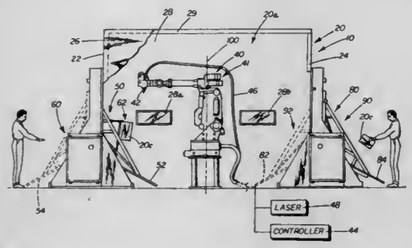
a control and feedback circuit connected to said ablating laser, optical sensor and laser scanner.

5,643,477

LASER ENCLOSURE

Christopher Thomas Gullo, Centerville; Stephen James Bolin, Troy, both of Ohio, and James Stanley Kaczmarek, Farmington Hills, Mich., assignors to Motoman Inc., West Carrollton, Ohio

Filed Jun. 30, 1995, Ser. No. 497,468
Int. Cl.[6] B23K *26/12*
U.S. Cl. 219—121.86 **20 Claims**



1. An enclosure comprising:

a housing having an inner cavity in which laser operations are capable of being performed and including a first section having a first opening through which workpieces pass into and out of said inner cavity; and

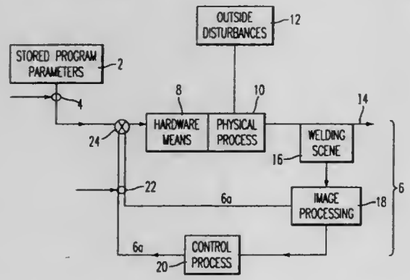
a first workpiece positioner for alternately moving said workpieces from a first workpiece loading/unloading zone, through said first opening to a first work zone within said inner cavity, said first workpiece positioner including a first workpiece holder adapted to releasably receive at least one of said workpieces and being movable from said first workpiece loading/unloading zone to said first work zone as said first positioner moves from a first loading/unloading position to a first work position, said first positioner further including a first sealing panel which sealingly mates with a first sealing portion of said first section when said first workpiece holder is located in said first workpiece loading/unloading zone and a second sealing panel which sealingly mates with a second sealing portion of said first section when said first workpiece holder is located in said first work zone and said first sealing panel is not in engagement with said first housing section.

5,643,478

COMPUTER-ASSISTED WELDING PROCESS AND SYSTEM, BASED ON A VIEW OF THE WELDING SCENE

Alain Dillet, Puteaux, and Diane de Prunele, Paris, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Continuation of Ser. No. 904,653, Jun. 26, 1992, abandoned. This application Mar. 31, 1995, Ser. No. 415,573
Claims priority, application France, Jun. 28, 1991, 91 08105
Int. Cl.[6] B23K *9/095*
U.S. Cl. 219—130.21 **17 Claims**



1. An automatic welding process in which welding parameters are processed that vary during an execution of welding, comprising:

establishing a first stage of relationships by establishing at least one data base from triplets of parameters wherein each triplet comprises a measured parameter, a controllable parameter, and a result parameter, and further wherein aid data base is constructed from data acquired during a prior welding operation between said welding parameters and storing these relationships, the first step of establishing said stages of relationship comprising establishing three data bases:

a static data base comprising, for each of the measured parameters, values obtained for the controllable parameters and the result parameters under established conditions;

a dynamic data base comprising values of the measured parameters and the result parameters during temporary variations of the controllable parameters; and

a disturbed data base comprising values of the result parameters obtained from the measured parameters and the control parameters in the presence of a disturbance to be treated; and

a second stage wherein said second stage comprises the steps of

a) employing a CCD imager to take visible image pictures of a welding scene in progress including a frontal portion of said welding scene by use of light produced by said welding scene;

b) analyzing said visible image picture-taking to measure the welding parameters affecting the relationships;

c) evaluating from these measurements and from said relationships, the correction values to be made to the welding parameters; and

d) intervening, as a function of said correction values, on the welding in progress.

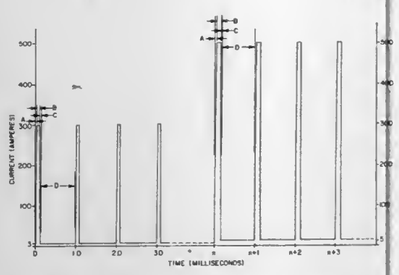
5,643,479

ELECTRIC ARC WELDING

Robert D. Lloyd, 2015 County Rd. 24, Marengo, Ohio 43334, and Daniel B. Mitchell, 2762 Cannon Cir., Lewis Center, Ohio 43035

Filed Nov. 14, 1995, Ser. No. 557,277
Int. Cl.[6] B23K *9/09*
U.S. Cl. 219—137 PS **19 Claims**

1. In an electric arc welding method of melting and spray-transferring filler material from a continuously advancing welding wire electrode for weld-bonding to a metal workpiece, the steps of:



locating a welding wire electrode having a diameter less than approximately 0.025 inch in proximity to the metal workpiece;

conducting a pulsed electric energy current comprised of squared waveform high-amplitude pulses alternated with squared waveform low-amplitude pulses through the welding wire electrode and through the metal workpiece to thereby form a welding electric arc; and

utilizing detected voltage and current amplitude changes in said pulsed high-frequency electric energy current in a feedback control mode to effect variations in pulse peak current amplitudes, time durations, and ramp-up and ramp-down current change rates of said pulsed electric energy current, and to effect consequential voltage and current stabilization in said electric welding arc,

said pulsed electric current squared waveform high-amplitude current pulses having a peak current amplitude in the range of from approximately 10 times to 500 times the peak current amplitude of said squared waveform low-amplitude current pulses, having alternated current pulses with a pulse repetition frequency in the range of from approximately 20 Hertz to approximately 5 kilohertz, having pulse current amplitude rise and fall rates between said high-amplitude current pulses and said low-amplitude current pulses in the approximate range of 10 kiloamperes per millisecond to 150 kiloamperes per millisecond, having high-amplitude current pulses with a stable peak current amplitude in the range of from approximately 0.1 ampere to approximately 2,000 amperes, and having high-amplitude current pulses each with a time duration at peak current amplitude that is less than approximately ⅓ the duration of each alternated low-amplitude current pulse.

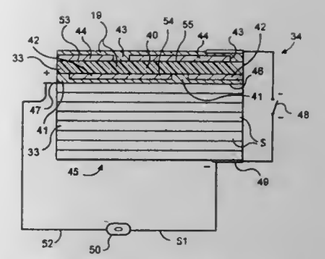
5,643,480

FIELD OF THE INVENTION

Magnus Peter Mikael Gustavsson, Halmstad, and Ronny Kent Hagman, Göteborg, both of Sweden, assignors to Nordica S.p.A., Trevignano, Italy

PCT No. PCT/SE93/00453, § 371 Date Nov. 18, 1994, § 102(e) Date Nov. 18, 1994, PCT Pub. No. WO93/23968, PCT Pub. Date Nov. 25, 1993
PCT Filed May 19, 1993, Ser. No. 338,488
Claims priority, application Sweden, May 19, 1992, 9201585
Int. Cl.[6] H05B *3/34;* **H01M** *10/50*
U.S. Cl. 219—211 **18 Claims**

1. An electric heating device comprising an electric energy source, a resistor heating unit comprising a first material stratum comprising portions of electrically conductive polymer material with PTC properties, said first material stratum having a pair of mutually oppositely arranged major surfaces, in which the polymer material with PTC properties is united with electrode material which electrically connects said electrically conductive polymer material to the energy source, and a regulator unit for regulating current supply to the resistor heating unit, wherein the electric energy source comprises a thin film battery also having a pair of mutually oppositely arranged major surfaces, and wherein said first material stratum is physically connected to said thin film battery such that the energy source and the resistor heating unit form a composed unit in which respectively one each of the major surfaces of said battery and of said first material stratum are turned to face towards one another.

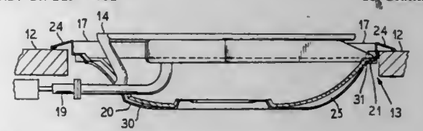


5,643,481

DOUBLE BOWL ELECTRIC COOKTOP COOLING

Bernard J. Brotzki, Dayton, and David N. Corson, Washington Township, Montgomery County, both of Ohio, assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jul. 8, 1994, Ser. No. 271,997
Int. Cl.[6] H05B *3/68;* **F24C** *5/00*
U.S. Cl. 219—461 **15 Claims**



9. An electric range, comprising:

a cooktop surface having a plurality of electric burners disposed in burner holes therein;

an oven located beneath the cooktop surface, the oven heating air and being disposed beneath the cooktop surface;

a thermally-reflective lower burner bowl further comprising a peripheral flange, a recessed peripheral ledge having a diameter less than said flange, and an access hole for permitting connection of said burner to said range, said lower burner bowl having a lower center opening to allow air heated by the oven to pass upward through the center opening; and

a thermally-transmissive upper burner bowl further comprising an access hole for permitting connection of said burners to said range and a peripheral lip for supporting said upper bowl on said ledge of said lower bowl, said peripheral lip being continuous except at said access hole, the upper burner bowl having an upper center opening in alignment with the lower center opening of the lower bowl to allow air heated by the oven to pass upward through the upper center opening.

5,643,482

SNOW MELT CONTROL SYSTEM

David Sandelman, Chatham, and Daniel E. Shprecher, Highland Lakes, both of N.J., assignors to Heat timer Corporation, Fairfield, N.J.

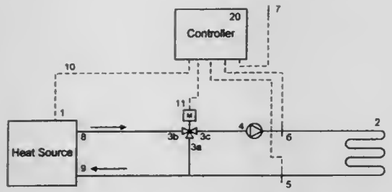
Filed Jan. 16, 1996, Ser. No. 585,484
Int. Cl.[6] H05B *1/02*
U.S. Cl. 219—497 **16 Claims**

1. A snow and ice melt control system for use with a slab to melt ice and snow from the slab, control system comprising:

a slab supply for supply fluid to said slab,

a slab return for carrying fluid away from said slab after said fluid passes through said slab.

said slab exposed to ambient outdoor weather conditions, temperature differential means to determine the temperature difference of the fluid supplied by the slab supply and the fluid returning from the slab,



said temperature difference related to the ambient outdoor weather conditions,

a controller connected to said temperature differential means to generate command signals responsive to the temperature differences between the supply and return fluids.

5,643,483

CERAMIC HEATER MADE OF FUSED SILICA GLASS HAVING ROUGHENED SURFACE

Yoshihiro Kubota, and Hiroshi Mogi, both of Gunma-ken, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Mar. 8, 1995, Ser. No. 400,847

Claims priority, application Japan, Apr. 11, 1994, 6-071787

Int. Cl.[6] H05B *3/16;* **H01C** *1/012*

U.S. Cl. 219—543 **7 Claims**



1. A ceramic heater which comprises, as an integral body:

(a) a substrate plate having two oppositely facing flat surfaces and made from an electrically insulating synthetic fused silica glass, one of the two oppositely facing flat surfaces having a surface roughness Rmax in the range from 2 μm to 200 μm; and

(b) an electric heater element comprising a layer made from an electroconductive heat-resistant material formed on an in direct contact with the surface of the substrate plate having a surface roughness Rmax in the range from 2 μm to 200 μm.

5,643,484

ELECTRICALLY HEATABLE HONEYCOMB BODY WITH RESISTANCE INCREASED BY SLITS

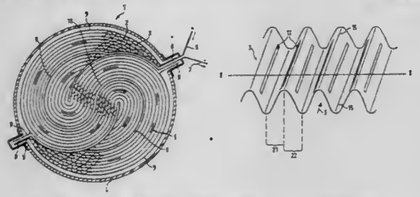
Helmut Swars, and Rolf Brück, both of Bergisch Gladbach, Germany, assignors to Emitec, Gesellschaft fuer Emissionstechnologie mbH, Lohmar, Germany

Filed Jun. 7, 1995, Ser. No. 484,523

Claims priority, application Germany, Feb. 8, 1993, 43 03 601.5

Int. Cl.[6] H05B *3/10;* **F01N** *3/10*

U.S. Cl. 219—552 **18 Claims**



1. An electrically heatable honeycomb body, comprising:

a plurality of sheet-metal layers, at least some of said sheet-metal layers having a structure defining channels along which a fluid can flow in a primary flow direction;

said sheet-metal layers including at least one first sheet-metal layer having openings of a given formation and disposition formed therein for increasing an electrical resistance of an electrically conductive path in said at least one first sheet-metal layer and defining locations without said openings in said at least one first sheet-metal layer; and

said structure of said sheet-metal layers and said formation and disposition of said openings causing sheet-metal layers adjacent to said at least one first sheet metal layer to touch primarily at said locations without said openings in said at least one first sheet-metal layer.

5,643,485

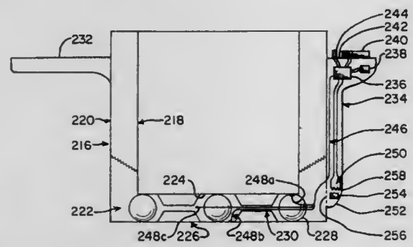
COOKING UTENSIL WITH IMPROVED HEAT RETENTION

Thomas F. Potter, Denver; David K. Benson, and Steven D. Burch, both of Golden, all of Colo., assignors to Midwest Research Institute, Kansas City, Mo.

Continuation-in-part of Ser. No. 194,932, Feb. 12, 1994, Pat. No. 5,562,154, and Ser. No. 194,933, Feb. 12, 1994, Pat. No. 5,433,056, each which is a division of Ser. No. 960,885, Oct. 14, 1992, Pat. No. 5,318,108, which is a continuation-in-part of Ser. No. 856,840, Mar. 23, 1992, Pat. No. 5,175,975, which is a continuation of Ser. No. 181,926, Apr. 15, 1988, abandoned, said Ser. No. 960,885is a continuation-in-part of Ser. No. 535,782, Jun. 12, 1990, Pat. No. 5,157,893, which is a continuation-in-part of Ser. No. 181,926. This application Nov. 21, 1994, Ser. No. 343,081

Int. Cl.[6] H05B *6/12;* **A47G** *23/04*

U.S. Cl. 219—621 **58 Claims**



1. A cooking utensil comprising:

an outer shell having an inner surface and an outer surface, said outer surface being exposable to the source of heat;

an inner shell positioned adjacent and in juxtaposed relation to the outer shell in a manner that encloses a chamber between the inner shell and the outer shell, said inner shell having an inner surface that is shaped to define a container, said chamber being evacuated to a level sufficient to inhibit heat transfer by gas molecular conduction between the inner shell and the outer shell; and

heat transfer control means operatively connected to the cooking utensil for varying heat transfer capability between the inner shell and the outer shell.

5,643,486

MOTION TRANSFER MECHANISM FOR DOMESTIC OVEN TRAY

Jean-Claude Aurensan, Falaise; Michel Guy De Matteis, Cambes-en-Plaine, and Eric Leparfait, Saint-Aubin-sur-Mer, all of France, assignors to Moulinex S.A., Bagnolet, France

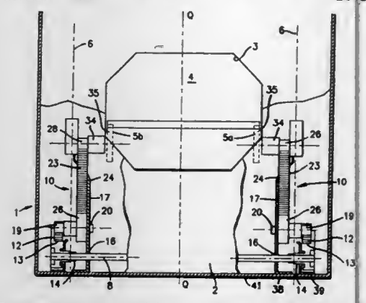
PCT No. PCT/FR94/00494, § 371 Date Oct. 26, 1995, § 102(e) Date Oct. 26, 1995, PCT Pub. No. WO94/27092, PCT Pub. Date Nov. 24, 1994

PCT Filed Apr. 29, 1994, Ser. No. 535,215

Claims priority, application France, May 6, 1993, 93 05465

Int. Cl.[6] H05B *6/78;* **F24C** *15/16*

U.S. Cl. 219—752 **10 Claims**



1. Domestic oven comprising a casing (**1**) with a vertical front face (**2**) and enclosing a heating cavity (**4**) open at its front face and designed to be closed off by a door (**6**) mounted so as to pivot about a horizontal shaft (**8**) situated in the casing, said cavity (**4**) being equipped with a plate (**5**) which supports food to be heated and which is able to move in horizontal translation under the action of at least one movement transmission mechanism (**10**) controlled by the door (**6**), disposed in the casing (**1**) and able to transform the pivoting movement of the door (**6**) into a translational movement of the food-carrying plate (**5**) such that the plate comes to occupy either an engaged position in which it is entirely contained within the cavity (**4**) when the door (**6**) is closed, or a disengaged position in which it projects transversely from the cavity (**4**) when the door (**6**) is open, wherein the transmission mechanism (**10**) includes a plurality of successive transmission stages associated with one another and each consisting of a notched belt (**12**; **23**) mounted so as to mesh on two rotating toothed wheels (**13**, **19**; **26**, **28**), of the driving and driven type respectively, which are keyed respectively on two horizontal shafts (**8**, **20**; **20**, **29**), parallel to one another, the shaft of the driving toothed wheel (**13**) of the first stage consisting of the pivot shaft (**8**) of the door (**6**) and the shaft (**29**) of the driven toothed wheel (**28**) of the last stage having one end (**33**) which projects transversely into the cavity (**4**) and which carries a rotating toothed wheel referred to as the drive wheel (**35**) meshing with teeth (**36**) formed on a lower edge of the food-carrying plate (**5**) and extending over the entire length of the plate.

5,643,487

BEAM AND PROP SYSTEM FOR SUPPORTING CONCRETE FORMWORK

William J. Malone, 6 Tortoise Court, Brampton, Ontario, Canada

Filed May 8, 1995, Ser. No. 436,762

Int. Cl.[6] E04G *11/38*

U.S. Cl. 249—18 **4 Claims**

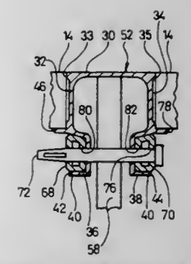
1. In a formwork frame for supporting decking and a fresh concrete floor placed on the decking, a support structure comprising:

an elongate horizontal beam, the beam comprising a horizontal top for supporting the concrete floor, a bottom, a pair of opposing sides each extending downwardly from a different lateral edge of the top, a pair of horizontal channels each recessed into a different one of the sides of the beam proximate to the bottom of the beam, and a pair of horizontal ledges each extending laterally outward from a different one of the sides and closing a different one of the channels from below, the beam comprising a central beam section and a pair of outer beam sections axially aligned with the central beam section, the central beam section located between the outer beams sections, the central beam section comprising a pair of axially opposing end surfaces which converge downward toward one another, each of the outer beam sections comprising an end surface inclined downward and axially below the central beam section such that each of the outer beam sections can be separated in a downward direction from the central beam section;

a vertical shaft for supporting the central beam section from a surface below the concrete floor;

a pair of rigid bridging members, each of the bridging members being fitted into in a different one of the channels, each of the bridging members extending from one of the outer beam sections to the other of the beam sections whereby each of the bridging members supports the pair of outer beams sections from the central beam section; and,

releasable securing means for securing the bridging members to the channels in which the bridging members are fitted, whereby, upon releasing the securing means, the outer beam sections can be separated downward from the central beam section while leaving the central beam section and the vertical shaft supporting the concrete floor.



5,643,488

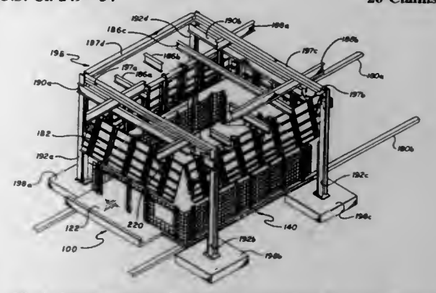
MULTI-ROOM MODULAR CONSTRUCTION SYSTEM

Ho Woo Lee, Seoul, Rep. of Korea, assignor to Daewoo Hawaii Corporation, Honolulu, Hi.

Filed Dec. 16, 1994, Ser. No. 357,458

Int. Cl.[6] B28B *7/22*

U.S. Cl. 249—34 **26 Claims**



18. A form assembly for forming vertical concrete walls for prefabricated apartment and office modules, said modules being stackable upon one another to form a building, the form assembly comprising:

a wall form comprising a plurality of internal wall forms and corresponding external wall forms;

a support structure connected to said wall form;

a plurality of hydraulic lifting cylinders connected to said support structure to raise and lower said wall form;
a hydraulic internal form mechanism connected to at least one internal form, to open and close said internal wall forms;
a hydraulic external form mechanism connected to at least one external form, to open and close said external wall forms; and
a control panel for controlling said hydraulic lifting cylinders, said hydraulic internal form mechanisms and said external form mechanisms.

5,643,489

MANUFACTURING METHOD OF FAR INFRARED RAY EMITTING MATERIAL AND FAR INFRARED RAY EMITTING PRODUCT USING THE SAME

Sung-Jun Jong, 343-13, Namjeong-li, Shindun-myeon, Leecheon-kun, Kyungki-do, DPR of Korea

Filed May 31, 1995, Ser. No. 455,346
Claims priority, application DPR of Korea, Feb. 14, 1995, 95-2703
Int. Cl.[6] G03C *3/064*
U.S. Cl. 252—1 **5 Claims**

1. A manufacturing method for a far infrared ray emitting material comprising the steps of:
agitating a predetermined quantity of materials for ½–1 hour with a stirrer having a rotativc speed of 33 revolutions per minute in a mixing vessel; and
fusing the agitated materials in a glass dissolving furnace at 1,350–1,550 degrees Celsius for 19–21 hours;
said predetermined quantity of materials comprising:
silicon oxide of 45–65%. weight, felspar oxide of 7–9% weight, borax of 10–20% weight, boric acid of 4–6% weight, potassium carbonate of 2–4% weight, nitre of 1.0–1.2% weight, aluminum hydroxide of 3.3–6.8%, weight limestone of 1.4–1.8% weight, barium carbonate of 0.8–1.0%, weight, lithium of 0.7–0.8% weight, zircon of 1.0–1.3% weight, phosphoric acid of 0.2–0.4% weight, carbon of 3.0–3.5% weight, magnesium carbonate of 0.4–0.5% weight and color fixing agent of 0.2–0.22% weight.

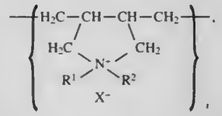
5,643,490

POLYMER SOLID ELECTROLYTE COMPOSITION

Kenichi Takahashi; Hiroyuki Akashi; Kazuhiro Noda, and Koichi Tanaka, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 323,078, Oct. 14, 1994, abandoned. This application May 30, 1996, Ser. No. 655,558
Claims priority, application Japan, Oct. 21, 1993, 5-287605
Int. Cl.[6] H01M *6/18;10/40*
U.S. Cl. 252—62.2 **9 Claims**

1. A polymer solid electrolyte composition comprising:
an organic polymer having an alkyl quaternary ammonium salt structure of the formula:



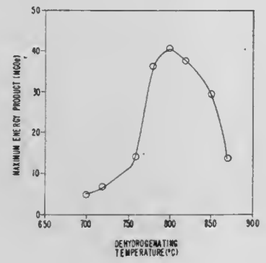
wherein R^1 and R^2 are alkyl groups, X^- is a counter ion and i is a positive integer;
a nitrogen-containing, heterocyclic quaternary ammonium salt; and
a metal salt.

5,643,491

RARE EARTH MAGNETIC POWDER, ITS FABRICATION METHOD, AND RESIN BONDED MAGNET

Yoshinobu Honkura, Aichi; Hironari Mitarai, Tokai; Chisato Mishima, Tokai; Yoshikazu Amahiro, Tokai; Hiroshi Matsuoka, Tokai, and Yoshinobu Sugiura, Handa, all of Japan, assignors to Aichi Steel Works, Ltd., Japan

PCT No. PCT/JP93/01863, § 371 Date Aug. 17, 1994, § 102(e) Date Aug. 17, 1994, PCT Pub. No. WO94/15345, PCT Pub. Date Jul. 7, 1994
PCT Filed Dec. 24, 1993, Ser. No. 290,819
Claims priority, application Japan, Dec. 28, 1992, 4-359767; Apr. 30, 1993, 5-128048; Nov. 30, 1993, 5-329924
Int. Cl.[6] H01F *1/057*
U.S. Cl. 252—62.54 **10 Claims**



1. A method of fabricating a rare earth-iron-boron based alloy magnetic powder excellent in magnetic anisotropy comprising the steps of:
homogenizing an ingot of an alloy mainly containing R, Fe and B at a temperature ranging from 800° to 1200° C. in an inert gas atmosphere, wherein R represents a rare earth element including Y;
crushing said homogenized ingot into fragments:
subjecting said fragments to hydrogenation while holding said fragments in a hydrogen gas atmosphere pressurized to a hydrogen gas pressure of from about 1.2 to 1.6 kgf/cm^2 at a temperature ranging from 750° to 950° C.;
subjecting said hydrogenated fragments to dehydrogenation while holding said hydrogenated fragments at a temperature ranging from 500° to 800° C. in a vacuum atmosphere until the pressure of the hydrogen gas becomes to the extent of 1×10^{-4} Torr or less; and
rapidly cooling said dehydrogenated fragments.

5,643,492

CONSTANT BOILING COMPOSITIONS OF HFC-32, HFC-125 AND HFC-134 A

Mark Brandon Shiflett, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 128,435, Sep. 30, 1993, abandoned, which is a continuation-in-part of Ser. No. 931,371, Aug. 18, 1992, abandoned, which is a continuation-in-part of Ser. No. 649,356, Feb. 1, 1991, Pat. No. 5,185,094, which is a continuation-in-part of Ser. No. 628,000, Dec. 17, 1990, abandoned. This application Feb. 22, 1995, Ser. No. 392,281
Int. Cl.[6] C09K *5/04*
U.S. Cl. 252—67 **1 Claim**

1. A substantially constant boiling mixture consisting essentially of a substantially constant boiling composition consisting of 5–90 weight percent pentafluoroethane, 5–59 weight percent difluoromethane, and 5–35 weight percent 1,1,1,2-tetrafluoroethane having a vapor pressure of about 186 to about 227 psia at 23.8 ° C., and wherein the vapor pressure changes less than about 10% after leakage of 50% of the initial mixture.

5,643,493

COOLANT INHIBITOR CONCENTRATE

Kevin C. Connor, Sherwood Park, and Eric H. Hillier, St.Albert, both of Canada, assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 13, 1996, Ser. No. 615,644
Int. Cl.[6] C09K *5/00;* **C23F** *11/00*
U.S. Cl. 252—75 **25 Claims**

19. An engine coolant formulation comprising an alcohol freezing depressant and a corrosion inhibitor concentrate comprising:
(a) from 20 to 90 wt % of water;
(b) from 1 to 10 wt % of a triazole;
(c) from 2 to 20 wt % of an alkali metal hydroxide;
(d) from 3 to 25 wt % of a borate, calculated as B_2O_3;
(e) from 1 to 15 wt % of an alkali metal silicate, calculated as an equivalent amount of silicate in sodium metasilicate pentahydrate;
(f) from 0.1 to 5 wt % of a silicate stabilizer; and
(g) from 0.05 to 5 wt % of an anti-foaming agent;
wherein all wt %'s are based on the total weight of the corrosion inhibitor concentrate.

5,643,494

PROCESS FOR THE PREPARATION OF AROMATIC HYDROXY CARBOXYLIC ACIDS

Siegbert Rittner, Mörfelden; Hans-Martin Rüffer, Hofheim; Jörg Schmld, Eppstein, and Thomas Wisser, Limburg, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Division of Ser. No. 245,960, May 19, 1994. This application Jun. 1, 1995, Ser. No. 456,499
Claims priority, application Germany, May 21, 1993, 43 16 937.6
Int. Cl.[6] C09K *3/00*
U.S. Cl. 252—182.31 **20 Claims**

1. A mixture comprising:
a) from 5 to 50% by weight of alkali metal carbonate;
b) from 5 to 70% by weight of an alkali metal phenolate or alkali metal naphtholate; and
c) from 5 to 95% by weight of an aliphatic or aromatic hydrocarbon or an aliphatic or aromatic ether, or a mixture of at least two of these compounds.

5,643,495

1,2,2,2-TETRAFLUOROETHYL ETHERS, AND LIQUID-CRYSTALLINE MEDIUM

Ekkehard Bartmann, Erzhausen, and Ulrich Finkenzeller, Plankstadt, both of Germany, assignors to Merck Patent Gesellschaft mit Beschrankter Haftung, Darmstadt, Germany

PCT No. PCT/EP94/00767, § 371 Date Sep. 12, 1995, § 102(e) Date Sep. 12, 1995, PCT Pub. No. WO94/21747, PCT Pub. Date Sep. 29, 1994
PCT Filed Mar. 11, 1994, Ser. No. 525,527
Claims priority, application Germany, Mar. 13, 1993, 43 08 028.6
Int. Cl.[6] C09K *19/30;19/12;* **C07C** *25/13;43/02*
U.S. Cl. 252—299.63 **15 Claims**

1. A 1,2,2,2-Tetrafluoroethyl ether of formula I

$$R-(A^1-Z^1)_m-A^2-Z^2-A^3-O-CHF-CF_3 \qquad I$$

in which
R is H, an alkyl or alkenyl radical having 1 to 15 carbon atoms which is unsubstituted, monosubstituted by CN or CF_3 or at least monosubstituted by halogen, and one or more CH_2 groups in these radicals is optionally replaced, in each case independently of one another, by —O—, —S—,



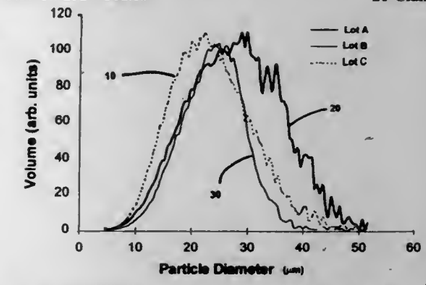
—CO—, —CO—O—, —O—CO— or —O—CO—O— in such a way that O atoms are not linked directly to one another,
A^1, A^2
and A^3 are each, independently of one another,
(a) a trans-1,4-cyclohexylene radical in which, in addition, one or more non-adjacent CH_2 groups is optionally replaced by —O— and/or —S—,
(b) a 1,4-phenylene radical in which, in addition, one or two CH groups is optionally replaced by N,
(c) a radical from the group consisting of 1,4-cyclohexenylene, 1,4-bicyclo[2.2.2.]octylene, piperidine-1,4-diyl, naphthalene-2,6-diyl, decahydronaphthalene-2,6-diyl and 1,2,3,4-tetrahydronaphthalene-2,6-diyl,
where the radicals (a) and (b) are optionally substituted by one or two fluorine atoms,
Z^1 and Z^2 are each, independently of one another, —CO—O—, —O—CO—, —CH_2O—, —OCH_2—CH_2CH_2—, —CH=CH—, —C≡C— or a single bond, one of the radicals Z^1 and Z^2 also being —$(CH_2)_4$— or —CH=CH—CH_2CH_2—, and
m is 0,1 or 2.

5,643,496

SMALL SIZE ELECTROLUMINESCENT PHOSPHOR

Nathaniel E. Brese, and Kenneth T. Reilly, both of Towanda, Pa., assignors to OSRAM Sylvania Inc., Danvers, Mass.

Filed Apr. 4, 1996, Ser. No. 628,213
Int. Cl.[6] C09K *11/54;11/56;11/58*
U.S. Cl. 252—301.65 **21 Claims**



1. An electroluminescent phosphor comprising copper activated zinc sulfide having an average particle size less than 23 micrometers and a halflife equal to or greater than the halflife of a second phosphor having a similar composition and an average particle size of at least 25 micrometers.

5,643,497

AQUEOUS ZIRCONIA SOL AND METHOD OF PREPARING SAME

Takao Kaga; Yutaka Kimura, both of Funabashi; Fumio Salto, Sodegaura, and Hiroaki Tanaka, Tokyo, all of Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan

Filed Jun. 2, 1995, Ser. No. 460,593
Claims priority, application Japan, Jun. 17, 1994, 6-135611
Int. Cl.[6] B01J *13/00*
U.S. Cl. 252—313.1 **8 Claims**

1. A method of preparing a stable aqueous sol of colloidal zirconia having a specific surface area of 5 to 200 m^2/g, a particle size of 20 to 1,500 nm and a dehydratable water content of 0.1 to 3 percent by weight, said sol containing the colloidal zirconia in an

amount of from 5 to 80 percent by weight as ZrO_2, and said sol further containing a water-soluble acid in an amount of from 0.01 to 100 milli equivalent per 1 mol of ZrO_2 of the colloidal zirconia, comprising:

calcining a colloidal zirconia of a starting aqueous zirconia sol, wherein said colloidal zirconia has a specific surface area of from 10 to 400 m^2/g, a particle size of from 20 to 500 nm, and a dehydratable water content of from 4 to 15 percent by weight, at a temperature of from 400° C. to 1,000° C. for 0.05 to 50 hours to form a calcined zirconia having a dehydratable water content of from 0.1 to 2 percent by weight, and

pulverizing the calcined zirconia in water and in the presence of a water-soluble acid, said calcined zirconia being present in the water in a concentration of from 5 to 80 percent by weight of ZrO_2 in the calcined zirconia, and said water-soluble acid being present in an amount of from 0.01 to 100 milli equivalent per 1 mol of ZrO_2 in the calcined zirconia, said pulverizing continuing until an aqueous sol containing colloidal zirconia having a particle size of from 1 to 3 times the particle size of the colloidal zirconia before calcining is formed.

5,643,498

QUATERNARY CATIONIC SURFACTANTS HAVING MULTIPLE HYDROPHOBIC AND HYDROPHILIC GROUPS

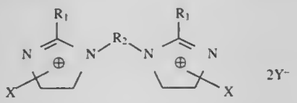
Ji Li, East Windsor; Manilal Dahanayake, Princeton Junction; Robert Lee Reierson, Cranbury, and David James Tracy, Plainsboro, all of N.J., assignors to Rhone-Poulenc Inc., Cranbury, N.J.

Filed Aug. 19, 1994, Ser. No. 292,896

Int. Cl.[6] C07D *403/12;403/10;* **B01F** *17/18;17/32*

U.S. Cl. 252—357 **20 Claims**

1. A surfactant selected from the group consisting of compounds of the formula:



wherein R_1 independently represents alkyl, hydroxy substituted or perfluorinated alkyl of from about 5 to about 22 carbon atoms; R_2 represents hydroxy substituted alkylene or alkylaryl of 1 to about 10 carbon atoms and the hydroxy substituted derivatives thereof or R_3—D—R_3 wherein R_3 independently represents alkylene of from 1 to about 6 carbon atoms and the hydroxy substituted derivatives thereof as well as aryl, and D represents —O—, —S—, —SO_2—, a polyether group [—$O(R_4)_x$—] or aryl wherein R_5 independently represents about C_2 to about C_4 alkyl with x being a number from 1 to 20 and; X independently represents an alkyl of 1 to 10 carbon atoms and the hydroxy-substituted derivatives thereof and alkylaryl; and Y independently represents an anion.

5,643,499

REDUCING GALVANIC DEGRADATION OF HYBRID METAL/COMPOSITE STRUCTURES

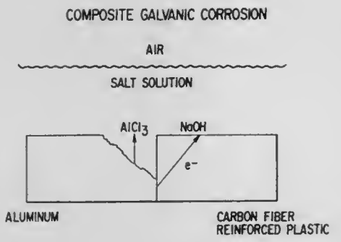
Jack D. Boyd, San Clemente, and Lawrence C. Hopper, Tustin, both of Calif., assignors to Cytec Technology Corp., West Paterson, N.J.

Continuation-in-part of Ser. No. 944,555, Sep. 14, 1992, abandoned. This application Sep. 14, 1993, Ser. No. 122,036

Int. Cl.[6] C23F *11/00;11/10*

U.S. Cl. 252—387 **15 Claims**

1. A process for reducing galvanic corrosion of a corrosible metal in a hybrid structure comprising the corrosible metal in electrical connection to conductive fibers of a conductive fiber reinforced polymer matrix composite, by incorporating into the composite an amount of an inorganic inhibitor effective to reduce



the amount of corrosion of the metal, as measured on a test specimen after 625 hours of exposure in accordance with ASTM B-117-73.

5,643,500

METHODS FOR INHIBITING WATER CORROSION IN CRUDE OIL PIPELINES

Bruno Morin, and Alan E. Goliaszewski, both of The Woodlands, Tex., assignors to BetzDearborn Inc., Trevose, Pa.

Continuation-in-part of Ser. No. 223,923, Apr. 6, 1994, abandoned. This application Jul. 24, 1995, Ser. No. 505,934

Int. Cl.[6] C23F *11/14*

U.S. Cl. 252—392 **9 Claims**

1. A method for inhibiting the corrosion of metal surfaces in oil transportation pipelines containing hydrocarbons at a temperature of about 32° F. to about 120° F. and having a separate water layer present therein under substantially anaerobic conditions, wherein said water is oxygen free and contains chloride and sulfate ions which contribute to corrosion of the metal surfaces that said water layer contacts, comprising adding to said hydrocarbons a sufficient corrosion inhibiting amount of the reaction product of an alkynediol and a polyalkylene polyamine.

5,643,501

ADDITIVES FOR POLYMER COMPOSITIONS

Angeles Lillian Buan, Crystal Lake, and Dean Laurin, Round Lake Beach, both of Ill., assignors to Baxter International Inc., Deerfield, Ill.

Continuation-in-part of Ser. No. 889,550, May 27, 1992, abandoned. This application Feb. 9, 1994, Ser. No. 194,742

Int. Cl.[6] C09K *15/06;15/10;* **C08K** *5/05*

U.S. Cl. 252—407 **9 Claims**

1. An additive system for a polyvinyl chloride formulation for improved processability while maintaining thermal stability of the formulation, the additive system consisting essentially of:

primary stabilizer of a Lewis acid metal compound selected from the group consisting of a dialkyl tin ester, a di (n-octyl) tin maleate polymer and a di (n-octyl) tin-S, S'-bis (isooctyl) mercaptoacetate in an amount of approximately 0.02 to 0.5 parts per one hundred parts of the polyvinyl chloride;

a secondary stabilizer selected from the group consisting of epoxide compounds having less than approximately 5.2 oxirane groups per molecule, in an amount of approximately 5 to 100 parts per one hundred parts of the polyvinyl chloride;

an effective amount of an external lubricant for lubrication of the polyvinyl chloride formulation;

wherein the ratio of the primary stabilizer to the secondary stabilizer limits extractables and generating build-up and plate-out during processing of the formulation; and

wherein the formulation has a water blush haze of less than 6% on a film 15 mils thick after autoclaving the formulation.

5,643,502

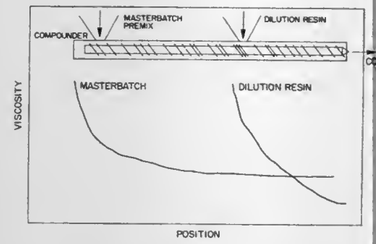
HIGH STRENGTH CONDUCTIVE POLYMERS CONTAINING CARBON FIBRILS

Paul R. Nahass, Cambridge; Stephen O. Friend, Boxford, and Robert W. Hausslein, Lexington, all of Mass., assignors to Hyperion Catalysis International, Lexington, Mass.

Continuation-in-part of Ser. No. 40,895, Mar. 31, 1993, Pat. No. 5,591,382. This application Mar. 30, 1994, Ser. No. 220,276

Int. Cl.[6] H01B *1/24*

U.S. Cl. 252—511 **37 Claims**



1. A polymeric composition comprising a polymeric binder and 0.25–50 wt % of graphic carbon fibrils, having a diameter between about 3.5 to about 500 nanometers, wherein said composition has IZOD notched impact strength greater than about 2 ft-lbs/in and volume resistivity less than about 1×10^{11} ohm-cm.

5,643,503

DEVICE FOR INTRODUCING A GAS INTO A LIQUID

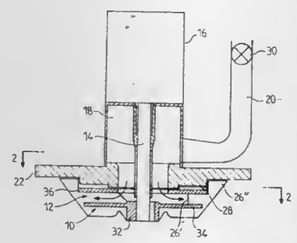
Jean-Louis Roland, 95, avenue P. Grenier 92100, Boulogne, France

Filed Mar. 22, 1996, Ser. No. 620,378

Claims priority, application France, Apr. 3, 1995, 95 03892

Int. Cl.[6] B01F *3/04*

U.S. Cl. 261—30 **10 Claims**



1. Device for introducing a gas into a liquid, of the type which comprises a drive motor, a wind box, a gas intake pipe and a radial diffusion turbine coupled to an agitator turbine, the two turbines being immersed in the liquid mass and the gas being conveyed to the centre of the diffusion turbine and distributed between the vanes thereof, wherein the said diffusion turbine has a plurality of long radial vanes alternating with shorter radial vanes, the latter not extending as far as the shaft of the said turbine so as to leave a clear space between the said shaft and the respective internal edges of the said shorter radial vanes, these two sets of vanes being fixed under a plate driven in rotation by the said shaft and the said radial vanes of the diffusion turbine laterally extend the blades of the agitator turbine as far as a region of relative depression situated behind the turbine.

5,643,504

METHOD OF MAKING A COMPOSITE GLASS AND RESIN OPTICAL ELEMENT WITH AN ASPHERIC SURFACE

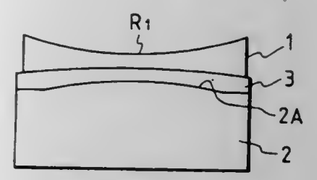
Toru Chiba, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 885,606, May 19, 1992, Pat. No. 5,400,182. This application Dec. 13, 1994, Ser. No. 355,006

Claims priority, application Japan, May 21, 1991, 3-145599; Jul. 19, 1991, 3-203483

Int. Cl.[6] B29D *11/00*

U.S. Cl. 264—1.7 **6 Claims**



1. A process for producing an optical element with an aspheric surface that comprises molding a light-transmissive resin composition as it is cured between a glass substrate and a mold having an aspheric surfaced shape, and the resin will, upon curing, develop a Rockwell hardness of 40–80 on the M scale at –40° C. to 60° C.

5,643,505

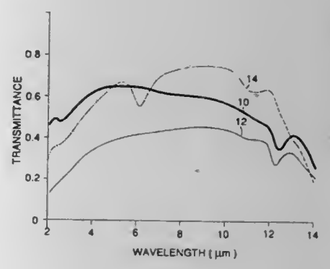
METHOD FOR MAKING LOW COST INFRARED WINDOWS

Norman H. Harris, Newhall, and Thomas K. Dougherty, Playa Del Rey, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Division of Ser. No. 232,897, Apr. 22, 1994, Pat. No. 5,575,959. This application Aug. 7, 1995, Ser. No. 511,670

Int. Cl.[6] B29D *11/00;* **B05B** *5/00;* **B05D** *5/06*

U.S. Cl. 264—1.21 **11 Claims**



1. A process for making an infrared window comprising the steps of:

(1) mixing a sulfide and a zinc salt in a liquid medium, and forming a coprecipitate comprising zinc sulfide,

(2) pressing the coprecipitate in a die,

(3) densifying the pressed coprecipitate by hot isostatic pressing to form a densified body,

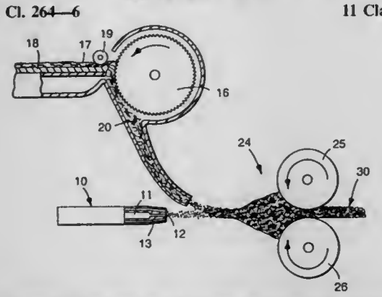
(4) depositing a layer of gallium metal on at least one surface of the densified body, and

(5) following step (4), annealing the densified body having the layer of gallium metal deposited thereon.

5,643,506
CONTINUOUS PRODUCTION OF EMULSIONS AND MICROCAPSULES OF UNIFORM PARTICLE SIZE
John K. Rourke, Chillicothe, Ohio, assignor to The Mead Corporation, Dayton, Ohio
Filed Feb. 3, 1995, Ser. No. 382,897
Int. Cl.[6] B01J *13/02;13/04*
U.S. Cl. 264—4.1 **20 Claims**

1. A process for the continuous production of an emulsion having substantially uniformly-sized particles comprising dispersing a hydrophobic phase in a hydrophilic phase containing an emulsifying agent in a volume ratio of about 45 to 95% hydrophobic phase and about 5 to 55% hydrophilic phase, adjusting the volume ration of said hydrophobic phase to said hydrophilic phase to control the particle size of said emulsion, said step of dispersing being conducted with sufficient agitation to provide an emulsion of hydrophobic phase droplets in a continuous phase of said hydrophilic phase, the residence time in said mixing apparatus being about 0.01 seconds to 5 seconds.

5,643,507
FILTER MEDIA HAVING AN UNDULATED SURFACE
Michael R. Berrigan, Oakdale, and David A. Olson, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Division of Ser. No. 291,627, Aug. 17, 1994, abandoned, which is a continuation-in-part of Ser. No. 107,918, Aug. 17, 1993, abandoned. This application May 26, 1995, Ser. No. 452,116
Int. Cl.[6] B27N *3/00*
U.S. Cl. 264—6 **11 Claims**

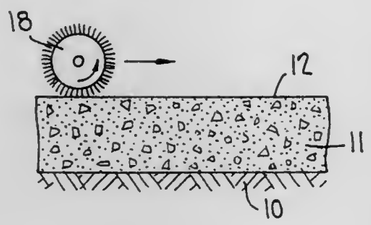


1. A method of forming a web of melt blown microfibers having one face substantially flat and the other face having periodic wrinkle-like undulations comprising extruding melt blown microfibers from an extrusion die, collecting said fibers on collector surfaces having a gap therebetween, the contacting portion of the collector surface being parallel to and moving away from said extrusion die and drawing the collected web through said gap, the surface speed of one collecting surface being at least twice that of the other collecting surface.

5,643,508
PROCESS FOR THE PREPARATION OF NANODIMENSIONAL PARTICLES OF OXIDES AND SULPHIDES OF METALS
Parthasarthy Ganguly; Neela Raghunath Pavaskar; Kunjukrishna Pillai Vijayamohanan, all of Pune; Santhi George, Kerala, and Prabhat Singh, Pune, all of India, assignors to Council of Scientific and Industrial Research, New Delhi, India
Filed Feb. 23, 1995, Ser. No. 394,675
Int. Cl.[6] C01B *31/00*
U.S. Cl. 264—29.6 **7 Claims**

1. A process for the preparation of pellets comprising nanodimensional particles of oxides and sulphides of metals in a carbonaceous matrix comprising the steps of:
(a) thoroughly mixing inorganic salts of metals with one or more polymers selected from the group consisting of polyphenylene sulphide, polyphenylene oxide, polyphenylene selenide, polyphenylene telluride and polyacrylonitrile in a solvent mixture comprising one or more solvents selected from the group consisting of acetone, water, ethanol, butanol, isopropanol, benzene and cyclohexane to form a mixture;
(b) drying the mixture to form a dried mixture;
(c) making pellets from the dried mixture by applying compaction loads of between about 4000 and 8000 psi followed by heating at a temperature of between about 400° and 800° C. in an inert atmosphere and
(d) cooling the pellets to room temperature slowly.

5,643,509
METHOD FOR FORMING A ROLLER COMPACTED CONCRETE INDUSTRIAL FLOOR SLAB
Carl N. Ytterberg, Denver, Colo., and Ernest K. Schrader, Walla Walla, Wash., assignors to Kalman Floor Company, Inc., Evergreen, Colo.
Continuation-in-part of Ser. No. 115,090, Sep. 2, 1993, abandoned. This application Jul. 24, 1995, Ser. No. 505,884
Int. Cl.[6] E04B *1/16;* **B28B** *1/08*
U.S. Cl. 264—34 **4 Claims**



1. A method for forming a roller compacted concrete monolithic industrial floor slab, comprising the steps of:
producing a no-slump concrete having a saturated surface-dry condition using a mixture of:
aggregate having a nominal maximum size aggregate in a range from ¼ inch to 1.0 inch;
150 to 700 pounds per cubic yard of cementitious material; and
150–700 pounds per cubic yard of water;
placing the no-slump concrete on the ground to form a concrete slab having a predetermined thickness;
roller compacting an upper surface of the slab prior to curing by applying rolling and vibratory forces to the surface at a frequency in the range of 10 to 50 Hz to compact the slab to substantially its maximum practically achievable density;
allowing the aggregate to remain dispersed throughout the slab from the upper surface to the bottom surface thereof without sinking into the interior of the slab; and
finishing the upper surface into a hardened, dense monolithic surface prior to curing by:
applying to the upper surface an amount of finish surface mixture of about 0.2 to 0.4 pounds per square foot of the upper surface, the finish surface mixture comprising a cementitious material coated trap rock grit in a moisture saturated condition, the grit having a size in the range of No. 4 sieve size to No. 50 sieve size, U.S. Sieve Series, and the cementitious material comprising 8 to 15 percent by weight of the grit; and
applying vibratory forces to the surface finish mixture at a frequency of 100 to 200 Hz and an amplitude of 3 to 5 mm to work the surface finish mixture into any voids in said upper surface.

5,643,510
PRODUCING FOAMED GYPSUM BOARD USING A FOAMING AGENT BLEND
Steven W. Sucech, Lake Villa, Ill., assignor to USG Corporation, Chicago, Ill.
Continuation of Ser. No. 311,687, Sep. 23, 1994, abandoned. This application Feb. 8, 1996, Ser. No. 598,413
Int. Cl.[6] B01F *17/00*
U.S. Cl. 264—40.1 **12 Claims**

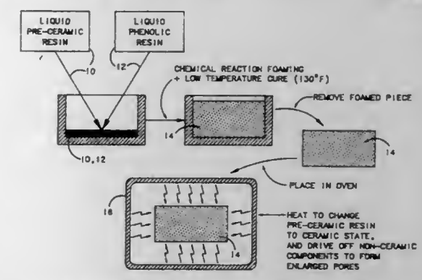


1. A process for producing foamed gypsum board which comprises the steps of:
providing an aqueous gypsum slurry;
providing a stream of a preformed first foaming agent which forms stable voids in a gypsum slurry;
providing a stream of a preformed second foaming agent which forms unstable voids in a gypsum slurry;
pumping and blending the streams of the first foaming agent and the second foaming agent together to form a blended stream of the foaming agents having a greater amount by weight of the second foaming agent and a lesser amount by weight of the first foaming agent;
mixing the blended stream of foaming agents with the gypsum slurry to produce a foamed gypsum core wherein the mixing produces a multiplicity of large voids substantially uniformly distributed throughout the foamed gypsum core; and
controlling the production of the large voids by adjusting pump settings to adjust the weight ratio of the first foaming agent to the second foaming agent until desired board core is obtained.

5,643,511
PROCESS FOR MAKING MICROPOROUS FILMS OF ULTRAHIGH MOLECULAR WEIGHT POLYETHYLENE
Pieter Boudewijn Pluyter, Utrecht, Netherlands; Paul Smith, St. Barbara, Calif.; Lambert Henri Theodoor Van Unen, Heerlen, and Hendrikus Johannes Jozef Rutten, Maastricht, both of Netherlands, assignors to DSM N.V., Heerlen, Netherlands
Continuation of Ser. No. 754,158, Sep. 3, 1991, Pat. No. 5,248,461, which is a continuation of Ser. No. 464,026, Jan. 12, 1990, abandoned. This application Jun. 29, 1993, Ser. No. 83,253
Claims priority, application Netherlands, Jan. 13, 1989, 8900078
Int. Cl.[6] B29C *67/20*
U.S. Cl. 264—41 **8 Claims**

1. A process for the preparation of microporous films of ultrahigh molecular weight polyethylene (UHMWPE) by forming a film from a solution of ultrahigh molecular weight polyethylene in an evaporable and dissolving solvent and removing that solvent from the film, wherein the solution of UHMWPE in the evaporable and dissolving solvent is formed into a film and the solvent is evaporated from the film at a temperature below the dissolution temperature and the shrinkage which can then occur in the film during evaporation is prevented in at least one direction in the plane of the film or the film is stretched in one or more directions in the plane of the film, such that porosity of the film is effected by the shrinkage prevention or by the stretching, the stretching occurring during evaporation of the solvent, after evaporation of the solvent, or a combination thereof.

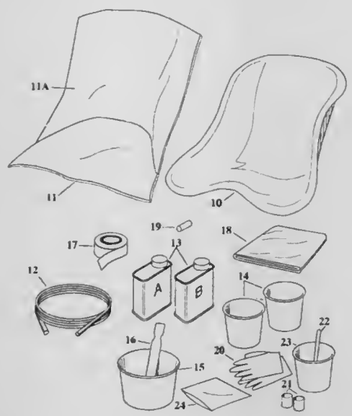
5,643,512
METHODS FOR PRODUCING CERAMIC FOAMS USING PRE-CERAMIC RESINS COMBINED WITH LIQUID PHENOLIC RESIN
David Eric Daws, Westminster; Nicholas T. Castellucci, Lomita; Harry Wellington Carpenter, Fallbrook, and Mary Wagner Colby, Whittier, all of Calif., assignors to Northrop Grumman Corporation, Los Angeles, Calif.
Filed Aug. 16, 1995, Ser. No. 515,928
Int. Cl.[6] B29C *65/00*
U.S. Cl. 264—43 **14 Claims**



1. A method of producing a ceramic foam comprising the steps of:
a) mixing a liquid pre-ceramic resin with a liquid phenolic resin;
b) allowing the resultant mixture to chemically foam;
c) curing the mixture for a time and at a temperature sufficiently to convert the mixture to a polymeric foam; and
d) heating the resultant polymeric foam for a time and at a temperature sufficiently to completely break-down polymers of the polymeric foam and convert the polymeric foam to a ceramic foam.

5,643,513
METHOD OF USING A FORM FIT SYSTEM FOR SHELL-TYPE SEATS AS USED IN HIGH-PERFORMANCE VEHICLES
David H. Searle, 2834 Rounsevel Ter., Laguna Beach, Calif. 92651
Filed Mar. 15, 1994, Ser. No. 213,156
Int. Cl.[6] B29C *44/06*
U.S. Cl. 264—46.5 **5 Claims**

1. A method of producing an individual form-fit in a shell-type seat, defined as a single surface folded or curved in such a way as to provide the human anatomy with lateral as well as vertical seat and back support, as employed in controlling a high-performance vehicle, the method comprising:
superimposing a shaped membrane made of fabric-faced, closed-cell elastomer over said shell-type seat, attaching said membrane to an edge of said shell-type seat;
applying an incipiently-reacting foam mixture between said membrane and shell-type seat; and
causing a subject whose shape is to be reproduced to sit on said membrane while the reacting foam thus contained expands upward to provide positive support for the body of the subject and flows fully between the impression of the body and shell and sets up to produce a durably upholstered, supportive and fully-contoured impression of the body by the use of an adaptable kit allowing installation of the shell-type seat in a vehicle so as to capture a proper individual ergonomic relationship of the seat to vehicle controls, the adaptable kit comprising:



(a) a shaped, closed-cell elastomer membrane with laminated fabric facing to provide a finished appearance, of oversized margins, making it adaptable to seat shells of various individual shapes;
(b) a channel-section edge trim with which to lock said membrane securely to the edge of said seat shells by folding the membrane over the edge of the seat and pressing the channel-section edge trim over the covered edge to secure the membrane;
(c) foam components that can be mixed on site to produce an expanding mixture;
(d) an overflow catch bag positioned to capture any excess foam and noxious gases escaping;
(e) handling and mixing tools to prepare the foam;
(f) a piece of chalk to mark the correct position of the cover for installation to said seat shell; and
(g) a test kit of cans, stir stick, mixing cup and a plastic bag to preview the behavior of the foam prior to introduction between said membrane and shell-type seat.

5,643,514
PROCESS FOR MANUFACTURING A SILICON CARBIDE COMPOSITION

Stephen Chwastiak, Charlotte, N.C.; Sai-Kwing Lau, Amherst; Carl H. McMurtry, Youngstown, both of N.Y., and Gajawalli V. Srinivasan, Williamsville, N.Y., assignors to The Carborundum Company, Worcester, Mass.

Continuation of Ser. No. 150,649, Nov. 4, 1993, Pat. No. 5,484,655, which is a division of Ser. No. 852,589, Mar. 17, 1992, Pat. No. 5,296,311. This application May 22, 1995, Ser. No. 447,148
Int. Cl.[6] C04B *35/577*
U.S. Cl. 264—640 **9 Claims**

1. A method for manufacturing a silicon carbide fiber reinforced reaction bonded silicon carbide composite comprising the steps of:
coating silicon carbide fibers with a composition selected from the group consisting of aluminum nitride, boron nitride, and titanium diboride;
dipping said coated fibers into a mixture comprising SiC powder, water and a surfactant;
preparing a slurry comprising SiC powder and water;
infiltrating said coated fibers with said slurry to form a cast;
drying said cast to form a green body; and



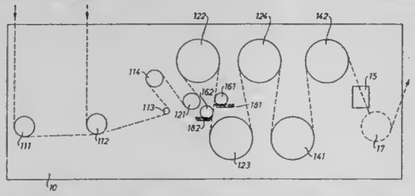


reaction bonding said green body to form a dense SiC fiber reinforced reaction bonded matrix composite.

5,643,515
METHOD AND APPARATUS FOR PRODUCING STRETCHED YARNS

John Davies, Cesate, Italy, assignor to Filteco S.p.A., Milan, Italy

Filed May 31, 1995, Ser. No. 455,118
Claims priority, application Italy, Jun. 8, 1994, MI94A1189
Int. Cl.[6] D01D *5/16;* **D02G** *1/16*
U.S. Cl. 264—103 **9 Claims**



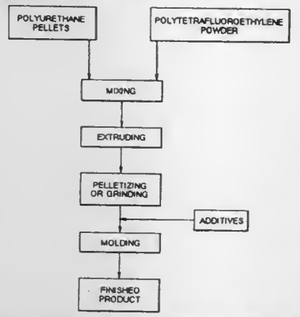
1. A method of extruding and stretching polyethylene terephthalate yarns composed of a plurality of continuous individual filaments in an integral process comprising the steps of
(a) simultaneously extruding a sufficient number of said individual filaments for forming at least eight continuous filament strands, each consisting of at least about ten filaments into an essentially vertical air quenching zone for solidification of said filaments;
(b) arranging said filaments to form a substantially planar array of parallel and mutually distanced strands in a number corresponding to step (a);
(c) together pre-stretching said filaments by passing yarn strands, while maintaining them in said array, in frictional contact with peripheral surface portions of a first and a second rotating draw cylinder, said first and said second rotating draw cylinder having parallel axes of rotation and being operated at differing speeds for achieving a pre-draw rate of from about 5 to about 20% of said substantially fully stretched state, each strand passing over said surface portions along a discrete path which is substantially defined by a plane intersecting perpendicularly with said parallel axes of rotation of said at least two rotation draw cylinders;
(d) continuously applying onto said strands an aqueous lubricant having a temperature of at least about 50° C. so as to produce an essentially continuous film of said lubricant on each side of said filaments; and
(e) passing said strands provided with said lubricant, while maintaining them in said array, in contact with peripheral surface portions of at least two additional rotating draw cylinders having axes of rotation parallel to said first and said second rotating draw cylinders and being operated at differing

speeds for achieving a substantially full stretch of said filaments, each said strand passing over said surface portions along a discrete path which is substantially defined by a plane intersecting perpendicularly with said parallel axis of rotation of said at least two additional rotation draw cylinders.

5,643,516
PROCESS FOR MANUFACTURING POLYURETHANE PRODUCTS

Irfan F. Raza, Utica, and Ronald D. Walther, Algonac, both of Mich., assignors to U.S. Farathane Corporation, Utica, Mich.

Continuation of Ser. No. 105,393, Aug. 12, 1993, abandoned. This application Sep. 19, 1994, Ser. No. 308,942
Int. Cl.[6] B29B *7/38;9/02*
U.S. Cl. 264—127 **7 Claims**

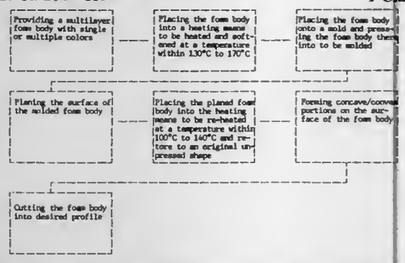


1. A process of manufacturing an article having high load absorption, durability and wear resistance properties with improved lubricity, comprising:
mixing particles of polyurethane and polytetrafluoroethylene;
extruding the mixture of polyurethane and polytetrafluoroethylene particles;
reducing the extrudate of polyurethane/polytetrafluoroethylene to particle form; and
molding the reduced extrudate of polyurethane/polytetrafluoroethylene particles to form the article.

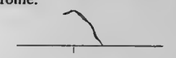
5,643,517
METHOD FOR MANUFACTURING AN INTEGRAL MULTILAYER FOAM BOARD WITH CONCAVE/CONVEX SURFACE AND MULTIPLE COLORS

Fu-Jern Wu, Changhua Hsien, Taiwan, assignor to How Goung Industry Co., Ltd., Taiwan

Filed Jul. 24, 1995, Ser. No. 506,035
Int. Cl.[6] B29C *43/20*
U.S. Cl. 264—139 **1 Claim**



1. A method for manufacturing an integral multilayer foam board with concave/convex surface and multiple colors, said method comprising the steps of: placing a multilayer foam body having multiple colors into a heating means to be heated and softened at a temperature within 130° C. to 170° C.; placing the multilayer foam body onto a mold and pressing the foam body thereinto to be molded with multiple convex portions defined by concave frame lines; and partially planing the convex portion of the foam body, placing the planed foam body into the heating means to be re-heated at a temperature within 100° C. to 140° C., thereby making the convex portions form concave portions and the frame lines become convex, the restored foam body being finally cut into a desired profile.



5,643,518
PROCESS FOR PREPARING FIBERS OF SOLUBLE WHOLLY AROMATIC POLYAMIDES

Jen-Chang Yang; Hsiao-Chuan Chang; Jin-Chyueh Lin, and Lien-Tai Chen, all of Taiwan, Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Mar. 30, 1995, Ser. No. 413,830
Int. Cl.[6] D01D *5/06;* **D01F** *6/60*
U.S. Cl. 264—184 **13 Claims**

1. A process for preparing fibers of soluble wholly aromatic polyamide comprising the following steps:
(a) extruding a polymerization mixture containing a wholly aromatic polyamide and polymerization solvent, where at least 85 mole percent of recurring structural units of said wholly aromatic polyamide is represented by one of the following formulas:

$$-[-NR_1-Ar_1NR_2-CO-Ar_2-CO-]-$$

or

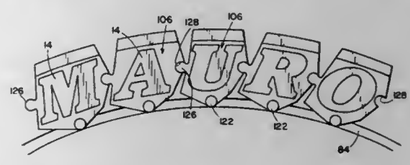
$$-[-NR_3-Ar_3-CO-]-$$

wherein Ar_1, Ar_2 and Ar_3 are aromatic radicals, and Ar_1 and A_2 are the same or
different, R_1, R_2 and R_3 are a hydrogen atom or a lower alkyl group, and R_1 and R_2 are the same or different;
through a spinneret having a plurality of capillary holes into a coagulation bath of a salt-free aqueous coagulation fluid containing from 3% to less than 40% by weight of an organic solvent to obtain coagulated and partially extracted filaments; and
(b) drawing said coagulated and partially extracted filaments in a draw bath of a salt-free draw bath fluid containing from 3% to less than 40% by weight of an organic solvent to form fibers, said draw bath fluid being held at substantially ambient temperature below 50° C. but above freezing, with more than 60% of total drawing executed in the draw bath.

5,643,519
DEVICE AND METHOD FOR PERSONALIZING TIRES

Charles R. Mauro, Wheatridge, and Donald W. Radford, Ft. Collins, both of Colo., assignors to Charles Mauro Enterprises, Inc., Wheatridge, Colo.

Continuation-in-part of Ser. No. 92,553, Jul. 16, 1993, abandoned, which is a continuation-in-part of Ser. No. 904,189, Jun. 24, 1992, Pat. No. 5,288,449. This application Apr. 19, 1995, Ser. No. 425,935
Int. Cl.[6] B29C *65/02;35/00*
U.S. Cl. 264—219 **23 Claims**



1. A device for producing raised lettering on the sidewall of an elastomeric tire comprising:

means for mounting said tire in position to expose the outer sidewall thereof;

a mold member having front and rear surfaces, an outer boundary, and an axial opening defining a radially inner boundary thereof, said mold member being sized and shaped to cover the exposed outer sidewall of said tire with said front surface when said tire is disposed on said mounting means;

a plurality of annular channels defined in said mold member front surface radially spaced between its radially inner and outer boundaries;

a plurality of support members each adapted for holding an alphanumeric elastomeric member in the form of the mirror image of a preselected alphanumeric symbol and including means for selectively interlocking said support members with each other to form a series of support members and symbols into a preselected legend for producing said raised lettering;

means for securing each said support member to any one said radially spaced channel in said mold member, said support member interlocking means providing sufficient fluctuation between interlocked support members to permit a series of interlocked support members to be positioned along any selected one of said spaced channels between the radially inner and outer boundaries of said mold member to provide selective placement of said preselected legend at any desired radial position on said elastomeric tire;

means for positioning said mold member against the outer sidewall of said tire including means for aligning and centering said mold member against said sidewall; and

electrical heating elements positioned within said mold member and disposed proximate said channels to heat and fuse said elastomeric symbols directly to the outer sidewall of said tire.

5,643,520

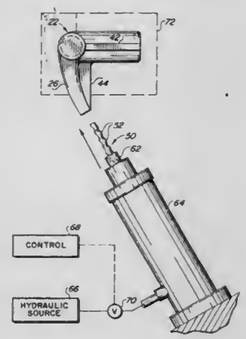
PROCESS FOR MANUFACTURING A BOW RAKE

Joseph Allen Carmien, 525 N. Maple Dr., Beverly Hills, Calif. 90210

Filed Jan. 18, 1995, Ser. No. 374,927

Int. Cl.[6] B29C *33/02;45/14;65/18*

U.S. Cl. 264—249 **11 Claims**



1. A process for manufacturing a bow rake, comprising the steps of:

molding an outer encasement over a structural skeleton to form a cross-head for the bow rake including a handle-receiving socket and a plurality of spaced-apart tines;

heating a claw;

aligning an end of a selected tine including a thermoplastic section with an end of the heated claw;

driving the heated claw into the thermoplastic section of the selected tine such that as the heated claw engages the tine the thermoplastic section is softened to permit entry of the claw whereby the thermoplastic material of the thermoplastic section flows into intimate contact around the claw and then hardens as the heat of the claw is dissipated to hold the claw in place; and

securing an end of a handle within the handle receiving socket.

5,643,521

PROCESS FOR PRODUCING SANITARY FITTINGS

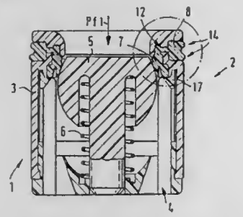
Holger Nehm, Mullheim, Germany, assignor to Dieter Wildfang GmbH, Mullheim, Germany

Continuation of Ser. No. 235,470, Apr. 29, 1994, abandoned, which is a division of Ser. No. 107,066, Aug. 17, 1993, Pat. No. 5,370,150. This application Dec. 18, 1995, Ser. No. 573,860

Claims priority, application Germany, Aug. 19, 1992, 42 27 356.0

Int. Cl.[6] B29C *45/14;33/42*

U.S. Cl. 264—255 **4 Claims**



1. A process for making a sanitary fitting comprising:

a. molding a plastic tubular body having a first end and an opposite end, the first end having a longitudinal axis, a peripheral outer seal recess about the outside of the first end at an annular groove, an inward annular enlargement at the first end, the enlargement presenting within the tubular body an annular shoulder concentric with the axis generally facing away from the first end, the shoulder being formed with a lip seal recess in the shoulder concentric with the axis and facing away from the first end, the body having internal passage means communicating between the outer seal recess and the lip seal recess,

b. closing at least the first end of the tubular body in a mold having first and second surface means aligned with and sealingly confronting respectively the outer seal recess and lip seal recess to define with the recesses cavities for forming respective seals,

c. forming a gate in only one of the first and second surface means in a position which in the finished fitting is on the exposed seal surface but not at a point on a seal-seat region of the seal,

d. injecting fluid plastic into the mold through the gate and into a space defined by the surface means, the recesses and the passage means, so that the plastic communicates to and fills both cavities through the passage means, and forms integral seals on both the outside of the tubular body at said annular groove, and the inside of the tubular body at the shoulder, and

e. permitting the plastic to set, thus forming the sanitary fitting and removing the sanitary fitting from the mold.

5,643,522

METHOD AND SYSTEM FOR CURING FIBER REINFORCED COMPOSITE STRUCTURES

James F. Park, P.O. Box 532, Park City, Utah 84060

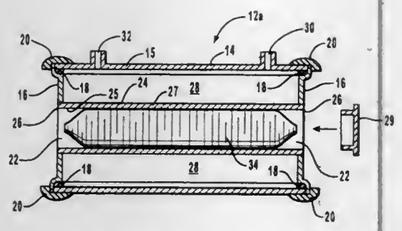
Filed Dec. 12, 1994, Ser. No. 353,917

Int. Cl.[6] B29C *35/04*

U.S. Cl. 264—313 **31 Claims**

1. A pressure vessel system for curing fiber reinforced composite structures comprising:

hollow pressure vessel means; and



resilient bladder means disposed within the pressure vessel means for releasably receiving an uncured composite structure therein, wherein the bladder means and the pressure vessel means cooperatively form an annular space therebetween;

means for circulating preheated, pressurized liquid through the annular space at a pressure higher than atmospheric pressure and in a manner sufficient to cure an uncured composite structure residing within the bladder means;

wherein the resilient bladder means is a first bladder means, the system further comprising resilient forming bladder means for encapsulating an uncured composite structure therein and maintaining said composite structure in a desired shape, said forming bladder means being configured for removable insertion into the first bladder means.

10. A method for curing composite structures comprising the steps of:

(a) encapsulating an uncured composite structure within a resilient forming bladder means for maintaining said composite structure in a desired shape, and inserting the forming bladder means and encapsulated composite structure into a first resilient bladder, said bladder being disposed within a pressure vessel having a hollow interior; and

(b) circulating preheated liquid under positive pressure higher than atmospheric pressure through the pressure vessel and around the bladder to thereby transmit heat and pressure through the bladder and onto the composite structure in a manner sufficient so that the composite structure is cured thereby.

5,643,523

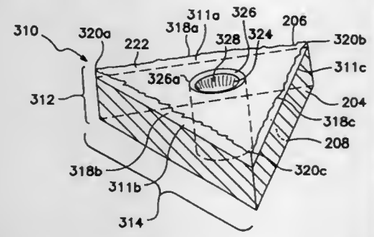
METHOD OF MANUFACTURING DIAMOND-COATED CUTTING TOOL INSERTS

Matthew A. Simpson, Sudbury, Mass., assignor to Saint-Gobain/Norton Industrial Ceramics Corp., Worcester, Mass.

Filed Apr. 18, 1995, Ser. No. 424,025

Int. Cl.[6] C23C *16/26*

U.S. Cl. 264—400 **12 Claims**



1. A method of making a diamond-coated body, comprising:

a) obtaining a substrate suitable for diamond coating;

b) coating a first surface of said substrate with a diamond layer, thereby forming a diamond-coated substrate; and

c) cutting said diamond-coated substrate into a plurality of pieces having diamond-coated surfaces, at least one of said plurality of pieces having diamond-coated surfaces having at least two flank faces which are not diamond-coated beyond said diamond-coated surface.

5,643,524

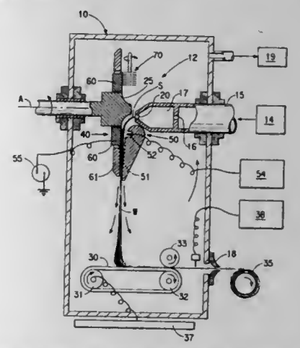
CORONA CHARGING OF FLASH SPUN PLEXIFILAMENTARY FILM-FIBRIL WEBS IN POOR CHARGING ENVIRONMENTS

Jacques Gilbert De Cauwer, Reichlange; Ottmar Niederpruem, Datheim; Michel Stachnik; Jean Francois Woll, both of Luxembourg, all of Luxembourg, and Thomas Bednarz, Richmond, Va., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 367,367, Dec. 30, 1994, abandoned. This application Jun. 2, 1995, Ser. No. 460,564

Int. Cl.[6] D01D *5/11*

U.S. Cl. 264—441 **25 Claims**



1. A process for electrostatically charging flash spun polymer plexifilamentary film fibril webs and laying such webs into a non-woven sheet, the process comprising the steps of:

mounting a target plate along a path of travel of the web wherein the target plate includes an extensive face surface which is hard and abrasion resistant and wherein a portion of the face surface is adjacent and generally parallel to the path of travel and the remaining portions of the face surface are away from the path of travel;

locating an ion gun having at least one corona source element opposite from the adjacent portion of the face surface of the target plate at a predetermined distance therefrom;

creating a corona field between the at least one corona source element and the adjacent portion of the face surface of the target plate;

moving the target plate such that other portions of the face surface of the target plate are moved adjacent the path and a formerly adjacent portion of the target plate is moved into a cleaning zone so as to provide for cleaning of the face surface of the target plate and wherein the cleaning zone is generally outside the corona field;

directing at least a portion of a plexifilamentary film-fibril web through at least a portion of the corona field so as to acquire electrostatically charged particles thereon;

scrubbing at least a portion of the face surface of the plate with a highly abrasive brush within the cleaning zone such that the highly abrasive brush cleans or removes surface polymer residue that may have collected thereon, wherein the abrasive surface of the highly abrasive brush passes across the face surface of the plate at a relative speed of at least about 2.5 meters per second.

17. A apparatus for electrostatically charging flash spun polymer plexifilamentary film-fibril web material, the apparatus comprising:

a target plate having a hard and abrasion resistant face surface and a target plate axis oriented generally perpendicular to said face surface;

means for rotating-said target plate about said target plate axis;

ion gun means spaced opposite from said face surface of said target plate at a generally predetermined distance and also spaced from said target plate axis; whereby an electrostatic charging zone is defined between said ion gun and a generally adjacent face surface portion of said target plate;

highly abrasive rotatable brush means arranged to scrub said face surface of said conductive target plate at a location generally outside of said electrostatic charging zone; and

means to rotate said rotatable brush means so that the relative speed of the scrubbing portion of said brush means and said target plate is at least about 2.5 meters per second.

5,643,525

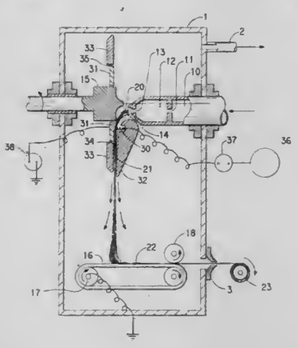
PROCESS FOR IMPROVING ELECTROSTATIC CHARGING OF PLEXIFILAMENTS

David Jackson McGinty; Ervin Townsend Powers, Jr., both of Midlothian, Va.; Hyunkook Shin, Wilmington; Roger Keith Siemionko, Hockessin, both of Del., and David Martin Taylor, Gwynedd, United Kingdom, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 37,562, Mar. 26, 1993, abandoned. This application Mar. 25, 1994, Ser. No. 218,479

Int. Cl.[6] D01D *5/11*

U.S. Cl. 264—469 **40 Claims**



1. In the process for flash-spinning plexifilamentary film-fibril strands of a fiber-forming crystalline polyolefin at a temperature of 130° C. to 300° C. and at a mixing pressure greater than autogenous pressure from a solution consisting essentially of 8 to 35 weight percent of the polyolefin and 92 to 65 weight percent of a spin liquid comprising at least one saturated C_4–C_7 hydrocarbon, electrostatically charging the strands, and laying the strands as a sheet on a continuously moving surface;

wherein the improvement comprises conducting the electrostatic charging step in an atmosphere comprising at least one charge-improving compound, such that said charge-improving compound belongs to one of groups A and B,

wherein group A comprises compounds that have an atmospheric boiling temperature of less than 100° C. and consists of one of carbon dioxide, hydrofluorocarbons, hydrochlorofluorocarbons, perfluorocarbons, alcohols, aliphatic ketones, and polar solvents; and

wherein group B consists of compounds not listed in group A that are within the following categories of compounds: compounds of the types listed in group A except having atmospheric boiling temperatures of at least 100° C.; halogen gases; acid halides; halocarbons, except fully halogenated chlorofluorocarbons, that are not listed in group A; hydroxylic compounds, ethers, carboxylic acids; esters; sulfur compounds; non-aliphatic ketones; aldehydes; nitro compounds; nitrogen oxides; nitriles; ammonia; amines; amides; and halogenated derivatives of the above compounds which do not already contain a halogen atom;

such that the atmosphere comprises at least 0.1 ppm of charge-improving compounds, up to ten weight percent of group A charge-improving compounds, and less than seventy-five weight percent of group B charge improving compounds.

5,643,526

PROCESS FOR PREPARING A COMPOSITE TUBULAR ARTICLE CONSISTING OF A VULCANIZED ELASTOMER USED IN COMBINATION WITH A THERMOPLASTIC CONTAINING POLYAMIDE BLOCKS ESPECIALLY PETROL PIPE

Marius Hert, Serquigny; Christian Dousson, St. Victor de Chretienville, and Serge Nawrot, Serquigny, all of France, assignors to Elf Atochem S. A., Puteaux, France

Division of Ser. No. 180,384, Jan. 12, 1994, abandoned. This application Jun. 2, 1995, Ser. No. 458,789

Claims priority, application France, Jan. 13, 1993, 93 00226

Int. Cl.[6] B29C *35/10*

U.S. Cl. 264—476 **12 Claims**

1. A process for the preparation of a composite tubular article consisting of an outer sheath of a vulcanized elastomer containing carboxylic acid or dicarboxcylic acid anhydride functional groups, used directly in combination with a tube of thermoplastic elastomer containing polyamide blocks having a melting point of between 120° C. and 210° C., the said article exhibiting a high peel strength of the vulcanized elastomer sheath when subjected to a separating stress, preferably higher than 2 daN/cm, comprising (a) sheathing a tubular thermoplastic elastomer containing polyamide blocks by extrusion at a temperature of between 50° C. and 120° C., with a vulcanizable elastomeric composition comprising a carboxylic acid or dicarboxcylic acid anhydride functional groups and a crosslinking system and optionally various adjuvants and fillers, and (b) vulcanizing said sheath, wherein said vulcanizing is completed in 15 minutes or less at a temperature between −5° C. and +30° C. relative to a Vicat point of said thermoplastic elastomer containing polyamide blocks.

5,643,527

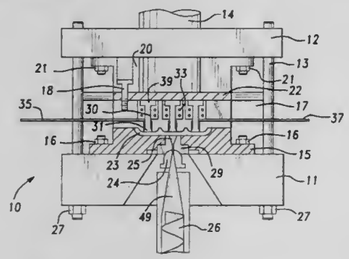
METHOD OF INJECTION MOLDING

Robert E. Carroll, Longwood, Fla., assignor to ICP Systems, Inc., Center Line, Mich.

Continuation of Ser. No. 260,609, Jun. 15, 1994, Pat. No. 5,458,846, which is a continuation of Ser. No. 16,261, Feb. 11, 1993, abandoned, which is a division of Ser. No. 798,863, Nov. 22, 1991, Pat. No. 5,273,707, which is a continuation of Ser. No. 279,849, Dec. 5, 1988, abandoned. This application Oct. 2, 1995, Ser. No. 538,081

Int. Cl.[6] B29C *45/00*

U.S. Cl. 264—500 **12 Claims**



1. A method of forming an injection molded part, comprising the steps of:

attaching a mold having a part defining cavity formed by a fixed portion and a movable portion to an injection molding machine, said mold cavity having isolated sections, said step of attaching including the step of attaching at least one gas pressure line to at least one of said isolated sections of said mold;

injecting molten thermoplastic polymer into said cavity;

introducing a gas under a predetermined pressure into said cavity through said one gas pressure line while said molten thermoplastic polymer is fluid to pressurize said thermoplastic polymer and to completely force said molten thermoplastic polymer against only one said mold portions, said introduced gas effecting the formation of a cavity portion in an external of said molten thermoplastic polymer;

cooling said thermoplastic polymer in said cavity; and

ejecting the part from said mold.

5,643,528

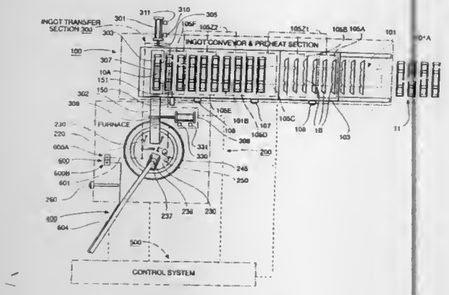
CONTROLLED MAGNESIUM MELT PROCESS, SYSTEM AND COMPONENTS THEREFOR

Brian W. Le Gras, Strathroy, Canada, assignor to Musket System Design and Control Inc., Strathroy, Canada

Filed Jun. 6, 1995, Ser. No. 467,435

Int. Cl.[6] C21D *11/00*

U.S. Cl. 266—88 **45 Claims**



1. A metal melt system comprising:

(a) An electric furnace with a crucible therein for holding a supply of molten metal and including molten metal level and temperature sensors on said furnace that provide output signals representative of the temperature and level of the molten metal in the crucible;

(b) an electrically heated preheater for heating metal ingots to a set temperature and including a temperature sensor on the preheater providing an output signal representative of the temperature in the preheater;

(c) an ingot transfer means for transferring a selected ingot from said preheater into said furnace including actuators for effecting the transfer and sensors providing output signals representative of the state of operation of said actuators and functions performed;

(d) means for withdrawing molten metal from said crucible; and

(e) programmable logic controller means receiving signals from said sensors and in response thereto, in comparison with set values, controlling power to the preheater and furnace to maintain within selected limits temperatures set therefor and controlling feeding of ingots to said furnace as required to maintain the molten metal in the furnace within a selected range of a set level.

5,643,529

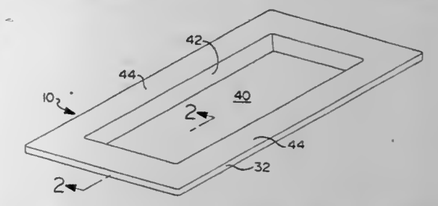
THERMAL INSULATION COVER FOR MOLTEN METAL TRANSFER CAR

Ricky R. Scriven, 13644 Ridge Rd., Milan, Mich. 48160

Continuation-in-part of Ser. No. 114,152, Sep. 1, 1993, abandoned. This application Nov. 21, 1995, Ser. No. 554,863

Int. Cl.[6] C21B *3/10*

U.S. Cl. 266—165 **5 Claims**



1. A pre-formed rigid, thermal insulation cover for a transport car comprising:

(a) a metallic lower sheet;

(b) a metallic upper sheet;

(c) a non-metallic middle sheet comprising a fused woven blend of ceramic fibers and silica sand sheet; and

wherein the lower sheet and the upper sheet are joined together and encapsulate the middle sheet, forming the unitary rigid cover.

5,643,530

NON-MAGNETIC HIGH MANGANESE CAST PRODUCT

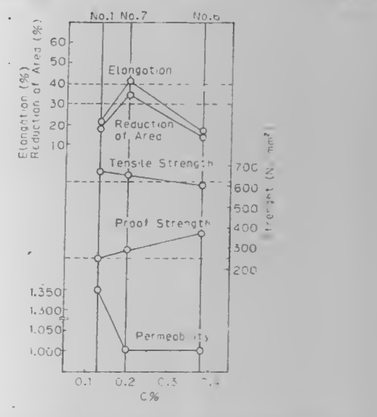
Yoshiaki Shingu, and Yasushi Ueda, both of Osaka, Japan, assignors to Kurimoto, Ltd., Japan

Continuation of Ser. No. 242,346, May 13, 1994, abandoned. This application Jul. 13, 1995, Ser. No. 501,765

Claims priority, application Japan, Jan. 7, 1994, 6-012102

Int. Cl.[6] C22C *38/58*

U.S. Cl. 420—56 **2 Claims**



1. A high manganese non-magnetic cast product containing 0.2 to 0.3%C. not more than 1.0% S_i, 11.0 to 18.0% M_n, not more than 0.1% P, not more than 0.05% S, 16.0 to 18.0% C_r, 2.5 to 6.0% N_i, not more than 0.20% N, and the remaining part composed of iron and unavoidable impurities, and without a decarburized layer, said high manganese non-magnetic cast product being used in an as cast state, wherein said cast product has a tensile strength of not less than 620 N/mm^2, a proof strength of not less than 250 N/mm^2, an elongation of not less than 40%, and a reduction of area of not less than 30%.

5,643,531

FERROUS ALLOY COMPOSITION AND MANUFACTURE AND COATING METHODS OF MECHANICAL PRODUCTS USING THE SAME

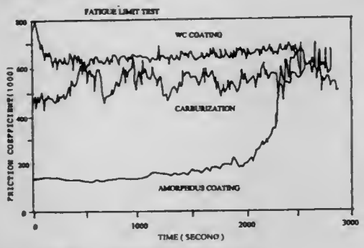
Kang-Hyung Kim; Maeng-Rob Park, both of Kyung Nam; Seung-Ho Yang, Seoul, and Yong-Kwon Chi, Kyung Nam, all of Rep. of Korea, assignors to Samsung Heavy Industry Co., Ltd., Rep. of Korea

Filed Nov. 16, 1994, Ser. No. 340,772

Claims priority, application Rep. of Korea, Dec. 12, 1989, 1993-30179; Dec. 28, 1993, 1993-30180; Dec. 28, 1993, 1993-30181; Dec. 28, 1993, 1993-30183

Int. Cl.[6] C22C *38/32;* **B32B** *15/18*

U.S. Cl. 420—64 **14 Claims**



1. A ferrous alloy composition comprising,

Cr: 18.0–42.0 wt %, Mn: 1.0–3.2 wt %, B: 3.0–4.5 wt %, Si: 1.0–3.0 wt %, C: less than 0.3wt %, inevitably incorporated impurities, and Fe for the rest of content.

5,643,532

CORROSION-RESISTANT SPRING STEEL

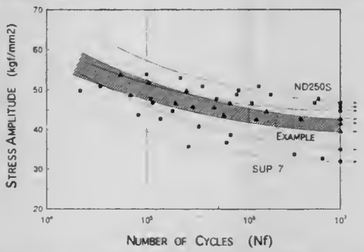
Yukio Ito, Yokkaichi, Japan, assignor to Daido Tokushuko Kabushiki Kaisha, Aichi-ken, Japan

Filed Sep. 29, 1995, Ser. No. 536,246

Claims priority, application Japan, Oct. 3, 1994, 6-239251; Aug. 21, 1995, 7-212239

Int. Cl.[6] C22C *38/42*

U.S. Cl. 420—84 **4 Claims**



1. A corrosion resistant spring steel having an alloy composition consisting of, by weight, C: 0.3 to 0.6%, Si: 1.0 to 2.0%, Mn: 0.1 to less than 0.5%, Cr: 0.4 to 1.0%, V: 0.1 to 0.3%, Ni: 1.01 to 1.2%, Cu: 0.1 to 0.3% and the balance of Fe, wherein S is not more than 0.0015%, and O is not more than 0.0015%.

5,643,533

METHOD OF PACKAGED GOODS STERILIZATION

Yoram Fishman, 2375 Third St., Riverside, Calif. 92507

Filed May 12, 1995, Ser. No. 439,764

Int. Cl.[6] A61N *2/00*

U.S. Cl. 422—1 **20 Claims**

1. A method for sterilizing goods comprising the steps of providing a quantity of goods contaminated with at least one organism selected from the group consisting of the genera pseudomonas, escherichia, serratia, klebsiella, proteus, enterobacte, actinetobacter, streptococcus, staphylococcus, aspergillus and candida albicans; and heating the goods in the absence of iodine at a temperature of approximately 117°–150° F. for a time sufficient to sterilize the goods.

5,643,534

CORROSION INHIBITOR FOR ALKANOLAMINE UNITS

Ljiliana V. Minevski, The Woodlands, Tex., assignor to BetzDearborn Inc., Trevose, Pa.

Filed Jul. 20, 1995, Ser. No. 504,634

Int. Cl.[6] C23F *11/00;* **C09K** *13/00*

U.S. Cl. 422—12 **7 Claims**

1. A method for inhibiting corrosion of metals in contact with an aqueous alkanolamine solution utilized in an amine unit for removing acid gases from a hydrocarbon, said method comprising adding to said solution from about 50 to about 5000 parts per million of a corrosion inhibiting composition comprising:

(a) from about 5 to 10 weight percent salicylic acid;

(b) from about 20 to about 30 weight percent reaction product of maleated tall oil fatty acid polyhydroxy polyalkane and ammonium or potassium hydroxide;

(c) from about 5 to about 15 weight percent tallow diamine quaternary dichloride or alkanediol or mixtures thereof;

(d) from about 15 to about 30 weight percent alkanol or alkanolamine;

(e) up to about 50 weight percent water; and

(f) up to about 10 weight percent antifoaming agent.

5,643,535

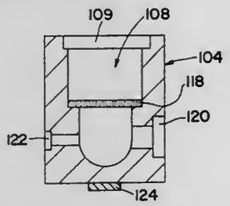
LUMINOMETER WITH REDUCED SAMPLE CROSSTALK

Rick T. Smethers, Fremont; Brian D. Warner, Martinez, and Victor P. Burolla, Livermore, all of Calif., assignors to Chiron Corporation, Emeryville, Calif.

Division of Ser. No. 411,445, Mar. 28, 1995, which is a division of Ser. No. 878,829, May 5, 1992, Pat. No. 5,401,465. This application May 11, 1995, Ser. No. 439,196

Int. Cl.[6] G01N *21/01*

U.S. Cl. 422—82.05 **2 Claims**



1. An internal calibration system for use in calibrating a photodetection head in a luminometer, said system comprising:

means for moving said photodetection head between a position for detecting sample and a position for calibration

means defining a chamber having upper and lower regions, and an upper opening in said upper region through which a calibrating intensity of light is received when said photodetection head is in the position for calibration;

a light source in the chamber's lower region for emitting light thereinto;

a photosensor in said chamber's lower region for receiving light emitted therein by the light source;

circuit means for regulating the intensity of the light source based on light measurements by the photosensor;

temperature control means for maintaining said chamber at a preselected temperature;

aperture means disposed between said upper and lower regions and beneath said upper opening for reducing light intensity in the upper region with respect to the lower region, and

diffusion means adjacent said upper opening and above said aperture means for scattering light emitted from said light source into the upper region through said aperture means

wherein said aperture means and said diffusion means provide for said photodetection head to receive said calibrating intensity of light which is a diffuse reduced light intensity as compared to the intensity of light emitted by said light source.

5,643,536

METHOD AND APPARATUS FOR METERING A REAGENT INTO A FLOWING MEDIUM

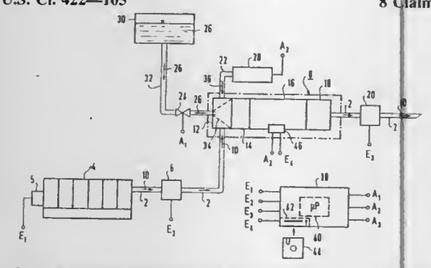
Helmut Schmelz, Prien, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Nov. 4, 1994, Ser. No. 334,866

Claims priority, application Germany, Nov. 4, 1993, 43 37 664.9

Int. Cl.[6] G05B *1/01*

U.S. Cl. 422—105 **8 Claims**



1. An apparatus for metering an ammonia reagent into a flowing medium and for reacting the ammonia reagent with an agent contained in the medium to produce a catalytic conversion of said agent, comprising:

a) a catalytic converter through which a medium is passed, said catalytic converter including a first catalytically active material in which an agent is reacted with the ammonia reagent to produce a catalytic conversion of said agent;

b) a metering device for metering the ammonia reagent into the flowing medium upstream of said catalytic converter;

c) a control unit comprising:

i) a sensor means for detecting the electrical conductivity within said first catalytically active material having the ammonia adsorbed therein;

ii) a means for calculating the thickness of the reaction zone from the electrical conductivity measured by said sensor means, the thickness of the reaction zone being defined as a depth at which the ammonia is adsorbed in said catalytically active material; and

iii) a means for controlling said metering device to adjust the quantity of ammonia to be metered into the flowing medium per unit time in response to said calculated thickness of the reaction zone.

5,643,537

FCC PROCESS AND APPARATUS WITH CONTAINED VORTEX THIRD STAGE SEPARATOR

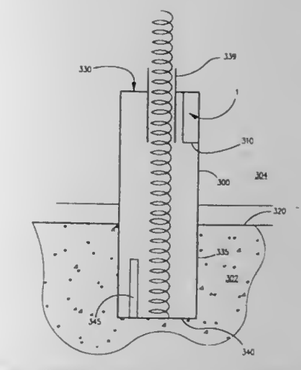
Michael F. Raterman, Doylestown, Pa., and Christopher G. Smalley, Chesterfield, N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 236,975, May 2, 1994, Pat. No. 5,538,696. This application Sep. 26, 1995, Ser. No. 533,135

Int. Cl.[6] F27B *15/09*

U.S. Cl. 422—147 **10 Claims**

1. A vertical cyclone separator comprising:



a primary cylindrical cyclone body having a diameter and a longitudinal axis disposed vertically or within 30° of vertical, said primary cyclone body having:

an open end portion having a vapor inlet for a vapor stream and entrained solids;

a cylindrical vapor outlet tube in said open end portion having an inlet extending into said primary cylindrical cyclone body and a vapor outlet tube longitudinal axis aligned with said longitudinal axis of said primary cylindrical cyclone body;

a vortex outlet at an opposite end of said primary cylindrical cyclone body for vapor and entrained solids, said vortex outlet comprising a circular opening having a center in axial alignment with said vapor outlet tube, and wherein said vortex outlet has a diameter no greater than the diameter of said primary cylindrical cyclone body;

a vortex-containment cylindrical body having cylindrical sidewalls, a length and having a diameter no greater than the diameter of said primary cyclone body at the inlet, said vortex-containment cylindrical body having a longitudinal axis axially aligned with said primary cyclone body longitudinal axis and comprising:

an open end connective with said vortex outlet of said primary cyclone body for admission of a vortex of gas and entrained solids;

a sealed end portion located at an opposing end of said cylindrical body from said open end; and

a solids and gas outlet slot in a lower portion of a sidewall of said vortex cylinder parallel to the axis of said vortex-containment cylindrical body.

5,643,538

HEAT TRANSFER AND THERMAL CLEANING ROTARY DEVICE APPLIED TO GASEOUS EFFLUENTS

Jean Morlec, Saint-Nazaire, and Jacques Bourcier, 4, rue de l'Etoile du Matin, 44600 Saint-Nazaire, both of France, assignors to Institut Francais du Petrole, Rueil Malmaison, and Jacques Bourcier, Saint-Nazaire, both of France

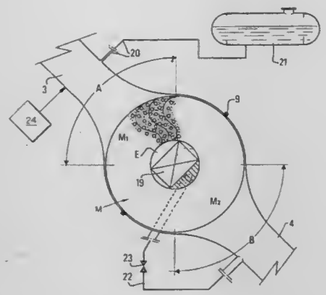
Filed May 22, 1995, Ser. No. 445,958

Claims priority, application France, May 24, 1994, 94 06282

Int. Cl.[6] F01N *3/10*

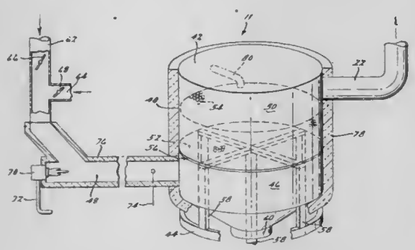
U.S. Cl. 422—173 **9 Claims**

1. A thermal cleaning rotary transfer device for processing incoming gaseous effluents laden with polluting substances which comprises a vertically disposed cage provided with a central zone, a ring containing a charge of solid materials having a heat exchange surface surrounding the central zone and being arranged vertically inside the cage, the ring and the cage being rotated with respect to one another, at least one pipe for delivering the incoming gaseous effluents to the cage, at least one discharge pipe for discharging cleaned effluents from the cage, and a catalytic reactor for burning the polluting substances in the incoming gaseous effluents, said reactor being disposed in the central zone and



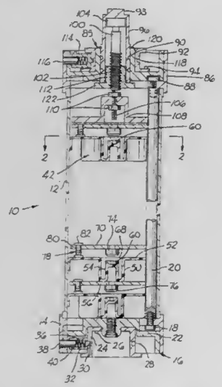
containing a catalyst selected to produce an exothermic reaction in the presence of the polluting substances, the ring comprising at least a first sector through which the incoming effluents are radially directed through the solid materials to the central zone and where a first heat transfer occurs between said effluents and said solid materials in the ring, and at least a second sector through which the cleaned effluents are radially directed from the central zone to the at least one discharge pipe and where, a second heat transfer occurs between said effluents and the solid materials in the ring.

5,643,539
REGENERATIVE INCINERATION SYSTEM
Wayne G. Collard, Swartz Creek; Sean T. Gribbon, Farmington Hills, and Kenneth R. Woodside, Northville, all of Mich., assignors to Salem Engelhard, South Lyon, Mich.
Filed Mar. 4, 1994, Ser. No. 206,870
Int. Cl.[6] B01D *53/34*
U.S. Cl. 422—178 **1 Claim**



1. A regenerative incineration system for oxidizing process emissions having suspended particulates therein comprising:
- a particulate filter having a first plenum with an input port for the admission of contaminated particulate laden process emissions at ambient temperature and heated uncontaminated air, selectively, a second plenum having an outlet port for removing contaminated particulate free process emissions, and a ceramic media filter bed positioned between the first and second plenums;
- means for heating the uncontaminated air flowing to the first plenum of said particulate filter so as to incinerate particulates directly on the ceramic media filter bed thereof;
- a fluid injection nozzle in the second plenum of said particulate filter disposed above the ceramic media filter bed therein for periodically washing incinerated particulates from the ceramic media filter bed in the form of sludge; and
- a regenerative incinerator having an inlet connected to the outlet of the second plenum of said particulate filter.

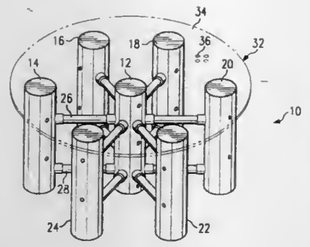
5,643,540
PROTEIN CRYSTAL GROWTH APPARATUS FOR MICROGRAVITIY
Daniel C. Carter, Decatur, and Timothy E. Dowling, Huntsville, both of Ala., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed Feb. 27, 1995, Ser. No. 394,863
Int. Cl.[6] B01D *9/00*
U.S. Cl. 422—245.1 **29 Claims**



1. A protein crystal growth assembly for use in the vapor diffusion growth of protein crystals, comprising a tray having a planar upper surface and a plurality of spaced apart growth chambers recessed below said surface, each of said growth chambers having an upstanding pedestal and an annular reservoir disposed about said pedestal for receiving precipitants, each pedestal having an upper end disposed below said upper surface, a well recessed beneath said upper end of each pedestal defining a protein crystal growth receptacle, a flexible membrane positionable on said upper surface overlying said growth chambers, a sealing plate disposed above said membrane, said sealing plate having an upper surface and a planar lower surface, a plurality of bumpers depending downwardly from said lower surface, there being one bumper corresponding to each growth chamber, and each bumper being disposed on said plate for alignment with a respective upper end of each respective pedestal for abutting and forcing portions of said membrane against said upper end to seal said well when said lower surface of said plate abuts remaining portions of said membrane to sandwich said membrane into abutting relationship with said upper surface of said tray to seal said reservoirs.

5,643,541
SALT PLATFORM
Steven M. Peddicord, 5310 Rustle Leaf, Arlington, Tex. 76017, and Donald B. Peddicord, 2811 Misty Cr., Durant, Okla. 74701
Continuation-in-part of Ser. No. 432,728, May 2, 1995, abandoned. This application May 26, 1995, Ser. No. 450,896
Int. Cl.[6] B01D *15/00*
U.S. Cl. 422—275 **18 Claims**

1. An apparatus forming part of a salt platform, comprising:
- a grid formed of acrylonitrile-butadiene-styrene plastic, the grid being circular and having a border about the outer rim thereof, at least one band extending from the outer rim through the center of the grid and a plurality of holes formed through the grid between the border and band;
- at least one vertically oriented member having an upper end, the grid having a cap portion formed thereon, the grid positioned on the upper end of the vertically oriented member with the cap portion covering the upper end of the vertically oriented member.



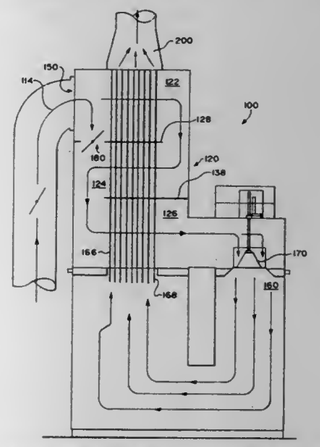
5,643,542
PROCESS FOR SIMULTANEOUSLY REDUCING THE AMOUNTS OF HYDROCARBONS, CARBON MONOXIDE AND NITROGEN OXIDES CONTAINED IN THE EXHAUST GAS FROM AN INTERNAL COMBUSTION ENGINE
Juergen Leyrer; Rainer Domesle, both of Alzenau; Egbert Lox, Hanau, and Klaus Ostgathe, Hattersheim, all of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Germany
Filed Oct. 12, 1995, Ser. No. 542,124
Claims priority, application Germany, Oct. 15, 1994, 44 36 890.9
Int. Cl.[6] B01D *47/00*
U.S. Cl. 423—212 **16 Claims**

1. A process for simultaneously reducing the amounts of hydrocarbons, oxygen-containing organic compounds, carbon monoxide and nitrogen oxides contained in the exhaust gas from an internal combustion engine operating under conditions of excess oxygen, comprising passing said exhaust gas over a catalyst consisting essentially of a gas-permeable inert carrier having a catalytically active coating containing at least one metal from the platinum group, at least one high surface area support material, and optionally at least one base metal compound, wherein said high surface area support material contains an aluminum silicate which has a specific surface area of at least 150 m^2/g after calcining, wherein the calcining is carried out for 7 hours at 950° C. in the presence of a synthetic exhaust gas containing 10 vol. % of carbon dioxide, 6 vol. % of oxygen, 10 vol. % of water vapor with the remainder being nitrogen, wherein said aluminum silicate contains 0.5 to 40 wt. % of silicon dioxide.

5,643,543
CATALYST FOR TREATMENT OF EXHAUST GASES FROM AN INTERNAL COMBUSTION ENGINE
Isabelle Guibard; Daniel Durand, both of Rueil Malmaison; Gil Mabilon, Carrieres sur Seine, and Nicolas des Courtils, Garches, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France
Filed Jan. 31, 1995, Ser. No. 381,342
Claims priority, application France, Jan. 31, 1994, 94 01125
Int. Cl.[6] B01J *8/02*
U.S. Cl. 423—213.5 **12 Claims**

1. A method for the treatment of exhaust gases, comprising contacting exhaust gases from a compression ignition engine with a catalyst comprising a support including a porous layer of at least one inorganic refractory oxide and an active phase containing at least cerium, iron and platinum, wherein said porous layer comprises at least the following percentages by weight:
- 0.3% to 4.4% of cerium;
- 0.1% to 3.5% of iron; and
- 0.0003% to less than 0.04% of platinum, and the complement to 100% being at least one inorganic refractory oxide.

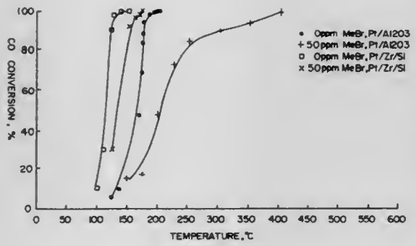
5,643,544
APPARATUS AND METHOD FOR RENDERING VOLATILE ORGANIC COMPOUNDS HARMLESS
Gary L. Henkelmann, Elgin, Ill., assignor to Applied Web Systems, Inc., Elgin, Ill.
Filed Apr. 28, 1995, Ser. No. 430,376
Int. Cl.[6] B01J *8/00*
U.S. Cl. 423—245.3 **17 Claims**



1. A modular thermal oxidizing device having a heat exchanger communicating with a combustion chamber comprising:
- (a) the heat exchanger having a hot side tube sheet at a first exchange end and a cold side tube sheet at a second exchange end;
- (b) the hot side tube sheet including at least one hot side aperture;
- (c) the cold side tube sheet including at least one cold side aperture;
- (d) the heat exchanger having at least one cooling tube;
- (e) the at least one cooling tube being secured at or near a first tube end to the at least one cold side aperture;
- (f) the at least one cooling tube being slidably mounted within the at least one hot side aperture adjacent to a second tube end;
- (g) the first tube end being oppositely disposed from the second tube end; and
- (h) the first tube end extending into the combustion chamber.

5,643,545
CATALYTIC METHOD AND DEVICE FOR CONTROLLING VOC, CO AND HALOGENATED ORGANIC EMISSIONS
James M. Chen, Edison, and Pascaline Nguyen, Holmdel, both of N.J., assignors to Engelhard Corporation, Iselin, N.J.
Division of Ser. No. 184,312, Jan. 21, 1994, Pat. No. 5,451,388. This application Jun. 8, 1995, Ser. No. 482,464
Int. Cl.[6] B01D *53/72*
U.S. Cl. 423—245.3 **9 Claims**

1. A method for treating a gas stream comprising at least one non-halogenated carbonaceous compound and at least one halogenated organic compound, the method comprising the step of:
- contacting the gas stream at a temperature of about 100° C. to about 650° C. and in the presence of oxygen with an oxidation catalyst comprising a catalytic material deposited on a low



acidity support material which is characterized, using temperature programmed desorption testing with NH_3 as the titration gas, by a measured desorption of less than about 0.04 millimoles NH_3 per gram,

such that the non-halogenated compound is selectively catalytically oxidized and the halogenated organic compound is substantially unreacted.

5,643,546

PITCH-TYPE CARBON FIBERS AND PROCESS FOR THEIR PRODUCTION

Iwao Yamamoto; Hiroyuki Aikyo; Akihiko Yoshiya, all of Yokohama, and Kazuo Shirosaki, Sagamihara, all of Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

Division of Ser. No. 315,490, Sep. 30, 1994, which is a continuation of Ser. No. 996,166, Dec. 23, 1992, abandoned. This application Oct. 26, 1994, Ser. No. 329,185

Claims priority, application Japan, Dec. 25, 1991, 3-343660; Dec. 25, 1991, 3-357039; Feb. 13, 1992, 4-026927; Feb. 14, 1992, 4-059687; Aug. 12, 1992, 4-215018

The portion of the term of this patent subsequent to Sep. 30, 2014, has been disclaimed.

Int. Cl.[6] D01F *9/12*

U.S. Cl. 423—447.2 **3 Claims**

1. A pitch-based carbon fiber made of a spinning raw material pitch, wherein the temperature at which the spinning raw material pitch shows a shearing viscosity of 200 poise is from 220° to 370° C., the spinning raw material pitch having from 5 to 40% by volume of an optically anisotropic phase relative to the entire volume, and the optically anisotropic phase being dispersed substantially in the form of optically anisotropic spherical particles of from 0.1 to 100 μm, and wherein said carbon fiber has a tensile strength of at least 329 kg/mm^2, a tensile modulus of at least 58 ton/mm^2, and a CFRP 0° compression strength at V_f 60% of 58 kg/mm^2.

5,643,547

PROCESS FOR PRODUCING CARBON FIBERS

Tetsuo Yamada, and Tomiji Hosotsubo, both of Kashima-gun, Japan, assignors to Petoca, Ltd., Tokyo, Japan

Continuation of Ser. No. 201,006, Feb. 24, 1994, abandoned. This application Jan. 17, 1995, Ser. No. 373,457

Claims priority, application Japan, Feb. 24, 1993, 5-057977

Int. Cl.[6] D01F *9/15*

U.S. Cl. 423—447.4 **2 Claims**

1. A process for producing carbon fibers, comprising melt-spinning a mesophase pitch having a mesophase content of not less than about 70%, gas-phase nitrating the mesophase pitch fibers thus obtained in an oxygen-containing gas or inert gas atmosphere containing 0.1 to 50% by volume of NO_2 at a temperature of from 60° to 95° C. for a period of not shorter than 4 hours to infusibilize the pitch fibers, and subjecting the infusibilized pitch fibers to carbonizing or to carbonizing and graphitizing to obtain carbon fibers having a tensile strength of not less than 370 kgf/mm^2.

5,643,548

DRYING AND SEPARATING PROCESS AND PLANT

Josef Bammer, Lenzing; Bernhard Blocher, Kapfenberg; Wolfgang Glaser; Heinz Loquenz, both of Graz; Walter Staufer, Seewalchen, and Peter Yaldez, Graz, all of Austria, assignors to Austrian Energy & Environment SGP/Wagner-Biro GmbH, Vienna, Austria

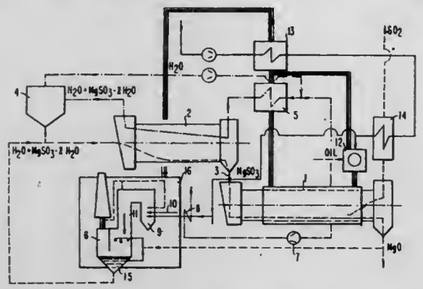
PCT No. PCT/AT93/00182, § 371 Date Aug. 9, 1995, § 102(e) Date Aug. 9, 1995, PCT Pub. No. WO94/13580, PCT Pub. Date Jun. 23, 1994

PCT Filed Dec. 2, 1993, Ser. No. 464,810

Claims priority, application Austria, Dec. 4, 1992, 2399/92

Int. Cl.[6] C01B *17/50;* **B01D** *11/04*

U.S. Cl. 423—540 **15 Claims**



1. Process for forming dried sulfur dioxide from moist magnesium sulfite, comprising the steps of:

directing a by-product comprising moist magnesium sulfite from a flue gas desulfurization tank into a dryer;

drying the moist magnesium sulfite in the dryer to generate an exhaust vapor stream and dried magnesium sulfite;

passing the dried magnesium sulfite through a solid materials lock to a cracking plant separated by the solid materials lock from the dryer;

cracking the dried magnesium sulfite in the cracking plant to form magnesium oxide, sulfur dioxide and an exhaust gas stream;

directing a portion of the exhaust vapor stream from the dryer and the exhaust gas stream removed from the cracking plant into a heat exchanger to exchange heat;

heating the dryer to a temperature of about 200° C. by circulating therethrough at least a portion of the exhaust vapor stream after it has been heated in the heat exchanger such that moisture adhering to the magnesium sulfite and water of crystallization of the magnesium sulfite is substantially eliminated in the dryer; and

removing dried sulfur dioxide from the cracking plant.

5,643,549

LEUKOSTIMULATORY AGENT FOR IN VIVO LEUKOCYTE TAGGING

Buck A. Rhodes, Albuquerque, N. Mex., assignor to Rhomed Incorporated, Albuquerque, N. Mex.

Continuation-in-part of Ser. No. 840,076, Feb. 20, 1992, Pat. No. 5,277,892. This application Jan. 11, 1994, Ser. No. 179,984

Int. Cl.[6] A61K *51/08;38/00;* **A61B** *5/055*

U.S. Cl. 424—1.69 **12 Claims**

1. A method of detecting concentrations of leukocytes in a patient, comprising the steps of:

a) administering to the patient an effective amount of a reagent comprising a leukostimulatory agent, said leukostimulatory agent selected from the group consisting of lectins and peptides, and a linked medically useful imaging ion, under conditions which allow the reagent to bind to leukocytes;

b) allowing the leukocytes to become immunologically active; and

c) detecting concentrations of leukocytes by medically useful imaging ion agent detection means.

5,643,550

METHOD OF TREATING COLORECTAL CARCINOMA LESION AND COMPOSITION FOR USE THEREIN

Sydney Welt; Chaitanya R. Divgi; Samual Yeh; Lloyd J. Old, all of New York, N.Y.; Herbert F. Oettgen, New Canaan, Conn.; Francisco X. Real, Barcelona, Spain, and Junichi Sakamoto, Chikusaku Nagoya, Japan, assignors to Sloan-Kettering Institute for Cancer Research, New York, N.Y.

Continuation of Ser. No. 20,223, Feb. 16, 1993, Pat. No. 5,431,897, which is a continuation of Ser. No. 671,132, Mar. 18, 1991, Pat. No. 5,160,723, which is a continuation of Ser. No. 673,153, Mar. 18, 1991, abandoned, which is a continuation of Ser. No. 327,765, Mar. 23, 1989, abandoned, which is a continuation-in-part of Ser. No. 118,411, Nov. 6, 1987, abandoned, which is a continuation of Ser. No. 724,991, Apr. 19, 1985, abandoned. This application Sep. 27, 1994, Ser. No. 312,633

Int. Cl.[6] A61K *51/00;49/00;35/14*

U.S. Cl. 424—1.85 **5 Claims**

1. A therapeutic composition comprising monoclonal antibody AS33 and a pharmaceutically acceptable carrier.

5,643,551

SMALL ANIMAL METASTASIS MODEL

Reiko Namikawa, Palo Alto, Calif.; Seishi Kyoizumi, Aki-gun, Japan; Emilya Shtivelman, Belmont, and Joseph M. McCune, San Francisco, both of Calif., assignors to Systemix, Inc., Palo Alto, Calif.

Continuation of Ser. No. 53,063, Apr. 26, 1993, abandoned, which is a continuation-in-part of Ser. No. 27,148, Mar. 4, 1993, abandoned. This application Oct. 26, 1994, Ser. No. 329,679

Int. Cl.[6] A01N *57/00;* **A61K** *38/00;* **C12N** *5/00;15/06*

U.S. Cl. 424—9.1 **5 Claims**

1. A method to assess the effect of a treatment directed against a metastasis of human tumors, said method comprising:

applying said treatment to a chimeric mouse host, said mouse host comprising (a) an immunodeficient mouse lacking functional lymphocytes as a result of a genetic defect in immunoglobulin and T-cell receptor gene rearrangement (b), at least one solid normal functional vascularized human fetal organ tissue comprising non-neoplastic cells capable of providing an environment for the metastasis of human tumor cells, and (c) an implanted human tumor; and

determining the effect of said treatment on metastasis of said human tumor to said human fetal organ tissue.

5,643,552

NANOPARTICULATE DIAGNOSTIC MIXED CARBONIC ANHYDRIDES AS X-RAY CONTRAST AGENTS FOR BLOOD POOL AND LYMPHATIC SYSTEM IMAGING

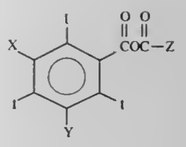
Carl R. Illig, Phoenixville, Pa., assignor to NanoSystems L.L.C., Collegeville, Pa.

Continuation of Ser. No. 401,395, Mar. 9, 1995, abandoned. This application Aug. 22, 1995, Ser. No. 524,145

Int. Cl.[6] A61K *49/04;* **C07C** *271/02;69/96;63/68*

U.S. Cl. 424—9.45 **5 Claims**

1. A method of medical x-ray diagnostic imaging the blood pool, liver, spleen, or lymph system of a mammal comprising administering to the mammal a contrast effective amount of a mixed carbonic anhydride contrast agent having the structure



wherein

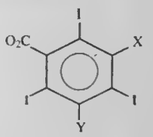
X is H, NR^1R^2 or $CONR^1R^3$,

R^1 is H or alkyl

R^2 is COR^3

R^3 is H, alkyl, hydroxyl-substituted alkyl, aryl or a steroidially derived moiety

Y is NR^1R^2 or $CONR^1R^3$ and



Z is OR^3.

5,643,553

STABLE MICROBUBBLES SUSPENSIONS INJECTABLE INTO LIVING ORGANISMS

Michel Schneider, Troinex, Switzerland; Daniel Bichon, Montpellier, France; Philippe Bussat, Collonges S/Saleve, France; Jerome Puginier, Le Chable-Beaumont, France, and Eva Hybl-Sutherland, Wiesbaden, Germany, assignors to Bracco International B.V., Netherlands

Division of Ser. No. 315,347, Sep. 30, 1994, Pat. No. 5,531,980, which is a division of Ser. No. 128,540, Sep. 29, 1993, Pat. No. 5,380,519, which is a division of Ser. No. 775,989, Nov. 20, 1991, Pat. No. 5,271,928. This application Sep. 26, 1995, Ser. No. 534,198

Claims priority, application European Pat. Off., Apr. 2, 1990, 9081029262

The portion of the term of this patent subsequent to Oct. 14, 2012, has been disclaimed.

Int. Cl.[6] A61B *8/13*

U.S. Cl. 424—9.52 **23 Claims**

1. A composition suitable for injection into the bloodstream and body cavities of living beings, comprising a suspension of stabilized air or gas microbubbles in a physiologically acceptable aqueous carrier phase having one or more dissolved or dispersed surfactants, at least one of said surfactants being a film forming saturated phospholipid present in the composition at least partially in lamellar or laminar form.

5,643,554

LIPOMELANIM COMPOSITION

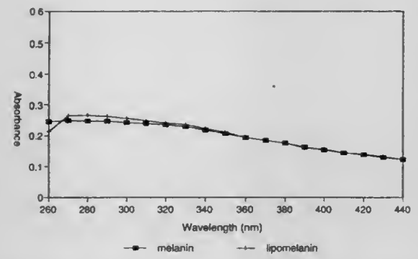
I. Avavindakshan Menon, North York, and Herbert F. Haberman, Toronto, both of Canada, assignors to DUSA Pharmaceuticals, Inc., Ontario, Canada

Filed Apr. 30, 1993, Ser. No. 54,271

Int. Cl.[6] A61K *7/42;31/20*

U.S. Cl. 424—59 **26 Claims**

1. A lipomelanin composition having a lipid moiety and a melanin moiety, the lipomelanin comprising a melanin substan-



tially covalently bonded to an unsaturated lipid, and wherein said unsaturated lipid is a fat, phosphoglyceride, or fatty acid.

5,643,555
SURFACTANT-FREE WATER-IN-OIL EMULSION
Nathalie Collin, Sceaux, and Didier Candau, Bievres, both of France, assignors to L'Oreal, Paris, France
Filed Jun. 6. 1995, Ser. No. 467,400
Claims priority, application France, Jun. 6, 1994, 94 06899
Int. Cl.[6] A61K *7/021*
U.S. Cl. 424—59 **19 Claims**

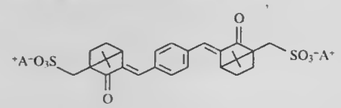
1. An emulsion comprising an aqueous phase, an oily phase, and particles of polyalkylsilsesquioxane, wherein said emulsion is free from surfactant and contains water globules having a diameter of 100 nm to 20 μm.

5,643,556
STIMULATION OF TANNING BY DNA FRAGMENTS OR SINGLE-STRANDED DNA
Barbara A. Gilchrest, Brookline; Mina Yaar, Sharon, and Mark Eller, Boston, all of Mass., assignors to Trustees of Boston University, Boston, Mass.
Continuation of Ser. No. 88,251, Jul. 7, 1993, Pat. No. 5,470,577. This application Jun. 6, 1995, Ser. No. 493,251
Int. Cl.[6] A61K *48/00;7/42;47/30*
U.S. Cl. 424—59 **22 Claims**

1. A method for protecting the epidermis of a mammal against ultraviolet damage comprising applying topically to the epidermis DNA fragments selected from the group consisting of: single-stranded DNA fragments, double-stranded DNA fragments, a mixture of single-and double-stranded DNA fragments, deoxynucleotides, dinucleotides, and dinucleotide dimers, in a sufficient quantity to stimulate melanin production.

5,643,557
SCREENING COSMETIC COMPOSITION CONTAINING A MIXTURE OF 1,4-BENZENEDI(3-METHYLIDENE-10-CAMPHOSULFONIC) ACID, PARTIALLY OR COMPLETELY NEUTRALIZED, AND METAL OXIDE NANOPIGMENTS
Martine Eteve, and Isabelle Hansenne, both of Paris, France, assignors to L'Oreal, Paris, France
Continuation of Ser. No. 897,498, Jun. 12, 1992, abandoned. This application Sep. 13, 1993, Ser. No. 119,651
Claims priority, application France, Jun. 13, 1991, 91 07255
Int. Cl.[6] A61K *7/40;7/44*
U.S. Cl. 424—60 **15 Claims**

1. A sunscreening cosmetic composition comprising, in a cosmetically acceptable carrier, 1 to 7% by weight, relative to the total weight of said composition, of a metal oxide nanopigment wherein said nanopigment consists of a titanium oxide nanopigment coated with materials selected from the group consisting of silica, silica and alumina, silica and iron oxide, alumina and silicone, alumina, alumina and aluminum stearate, alumina and aluminum laurate., iron oxide and iron stearate, zinc oxide and zinc stearate, silica and alumina and silicone, silica and alumina and aluminum stearate and silicone, triethanolamine, stearic acid, and sodium hexametaphosphate, said titanium oxide pigments having a mean diameter of less than 50 nm but greater than 5 nm, mixed with 0.1 to 10% by weight of partially or completely neutralized 1,4-benzenedi(3-methylidene-10-camphosulfonic) acid of formula



in which A denotes a hydrogen atom, an alkali metal or an $NH(R)_3^+$ group, the R radicals being identical or different and denoting a hydrogen atom or a C_1–C_4 alkyl or hydroxyalkyl radical or an M^{n+}/n group where M^{n+} is a polyvalent metal cation in which n is equal to 2 or 3 or 4.

5,643,558
METHOD OF MAKING POLYHYDRIC ALCOHOL SOLUTIONS OF ENHANCED EFFICACY ANTIPERSPIRANT ACTIVES
Stephen J. Provancal, Elmhurst, Ill.; Angel L. Carrillo, Wellesley, Mass.; Thomas J. Fluhler, Hawthorn Woods; Richard Oryszczak, Palatine, both of Ill., and Jayant N. Sane, Framingham, Mass., assignors to The Gillette Company, Boston, Mass.
Continuation-in-part of Ser. No. 333,896, Nov. 2, 1994, abandoned. This application Mar. 2, 1995, Ser. No. 397,451
Int. Cl.[6] A61K *7/34;7/38*
U.S. Cl. 424—66 **26 Claims**

I. A process of preparing a solution of an enhanced efficacy aluminum antiperspirant salt in a polyhydric alcohol which comprises

(a) providing an aqueous solution consisting essentially of about 5% to about 20% by weight of an enhanced efficacy aluminum antiperspirant salt in water, said enhanced efficacy aluminum antiperspirant salt having been prepared in situ without having been dried to a solid powder;

(b) mixing said aqueous solution with a sufficient amount of a liquid polyhydric alcohol to provide a mixed solution which has an antiperspirant salt to polyhydric alcohol weight ratio of about 1:4 to about 1.2:1; and

(c) rapidly evaporating the water from said mixed solution under vacuum to provide a liquid polyhydric alcohol solution containing about 20 to 50% enhanced efficacy aluminum antiperspirant salt and about 2 to 16% water, with the balance being said polyhydric alcohol.

5,643,559
DEODORANT COMPOSITIONS COMPRISING INHIBITORS OF ODOR-PRODUCING AXILLARY BACTERIAL EXOENZYMES
Edward Eigen, East Brunswick, and Claudia Froebe, Piscataway, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.
Continuation of Ser. No. 785,585, Oct. 30, 1991, abandoned. This application Mar. 4, 1994, Ser. No. 206,919
Int. Cl.[6] A61K *7/36*
U.S. Cl. 424—67 **9 Claims**

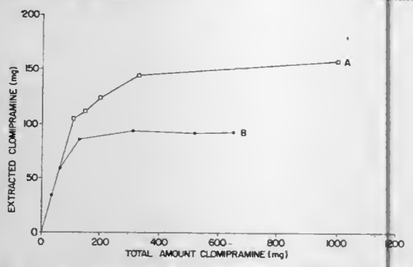
1. A deodorant composition comprising:

a deodorant active material consisting of zinc glycinate having an effective amount of Zn++ ions for inhibiting bacterial exoenzymes responsible for the production of steroidal axillary malodor; and

a cosmetic vehicle, comprising inorganic acids, organic acids or water soluble metal salts of fatty acids, in which said deodorant active material is dissolved or suspended therein;

wherein said Zn++ ions bind to the skin and/or hair and the bound residue remains inhibitory in the presence of soap or detergent solutions.

5,643,560
DRUG FORMULATION WITH ION-EXCHANGERS
Carl-Aage Bergwitz-Larsen, deceased, late of Stockholm; Bertil Hillgren Ulf, Storvreta, and Anders Ragnarsson Gert, Bro, all of Sweden, assignors to Pharmacia & Upjohn AB, Stockholm, Sweden
PCT No. PCT/SE92/00724, § 371 Date Jun. 21, 1994, § 102(e) Date Jun. 21, 1994, PCT Pub. No. WO93/07860, PCT Pub. Date Apr. 29, 1993
PCT Filed Oct. 16, 1992, Ser. No. 211,863
Claims priority, application Sweden, Oct. 24, 1991, 9103110
Int. Cl.[6] A61K *47/32;47/36*
U.S. Cl. 424—78.12 **8 Claims**



1. An oral pharmaceutical composition providing a preventing effect against toxic overdoses of a psychotropic drug comprising a mixture of:

a) a psychotropic drag having a ionizable amino group complexed to a carrageenan cation exchanger:

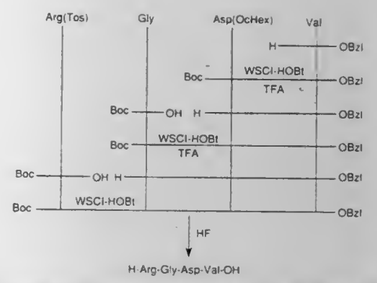
b) an additional substance capable of generating cations which affects the amount of available ions for ion exchange and thereby is capable of ceasing the psychotropic drug release rate when said psychotropic drug is administered in an amount exceeding normal doses, wherein said additional substance is selected from the group consisting of:

i) sodium chloride which generates a sodium ion with higher or similar affinity to the carrageenan cation exchanger compared to said psychotropic drug, and

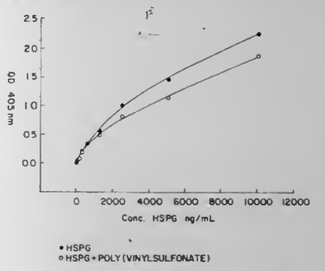
ii) an ionizable amine capable of acting as a counter ion in a competing complex with a carrageenan cation exchanger, wherein said amine has less or similar affinity to said carrageenan cation exchanger compared to said psychotropic drug.

5,643,561
COATING COMPOSITION FOR CULTURING ANIMAL CELLS AND METHOD FOR CULTURING OF THE CELLS IN SERUM-FREE CONDITION
Susumu Katsuen; Kunihiro Ohshima, both of Osaka; Seiko Kawamura, Shijonawate; Ryohei Yamamoto, Takatsuki, and Toyokazu Nishino, Ibaraki, all of Japan, assignors to Kurashiki Boseki Kabushiki Kaisha, Kurashiki, Japan
Continuation of Ser. No. 49,404, Apr. 20, 1993, abandoned. This application Nov. 2, 1994, Ser. No. 334,017
Claims priority, application Japan, Apr. 21, 1992, 4-100932; Sep. 3, 1992, 4-235806
Int. Cl.[6] A61K *31/74*
U.S. Cl. 424—78.17 **20 Claims**

1. A serum-free culturing method of animal adhesive cells comprising: 1) coating the surface of a culture vessel or a carrier with a water-insoluble polymer dissolved in a lower alcohol or an aqueous lower alcohol; wherein the said lower alcohol is selected from methanol; ethanol, propanol and butanol; wherein said polymer contains as monomer ingredients at least one monomer chemically bound to a peptide having a cell adhesive activity, said monomer being selected from the group consisting of (meth-a)acrylic acid, glycidyl (metha)acrylate and N-(metha)acryloyloxy succinimide, wherein the concentration of the water-insoluble polymer in the lower alcohol or aqueous lower alcohol is from about 0.001 to about 0.1% (w/v); wherein the amount of the peptide having cell adhesive activity is greater than about 2 μg/mg of the polymer; and wherein the polymer has a formulation ratio of hydrophilic monomers to all other monomers in the range from 90:10 to 10:90; and 2) culturing the animal adhesive cells in the vessel or carrier using a-medium which contains no serum while in contact with the polymer.



5,643,562
METHOD FOR TREATING AMYLOIDOSIS
Robert Kisilevsky; Walter Szarek, and Donald Weaver, all of Kingston, Canada, assignors to Queen's University of Kingston, Kingston, Canada
Continuation-in-part of Ser. No. 315,391, Sep. 29, 1994, abandoned, which is a continuation-in-part of Ser. No. 219,798, Mar. 29, 1994, abandoned, which is a continuation-in-part of Ser. No. 37,844, Mar. 29, 1993, abandoned. This application Mar. 15, 1995, Ser. No. 403,230
Int. Cl.[6] A61K *31/74;31/785;31/795;47/32*
U.S. Cl. 424—78.31 **55 Claims**



1. A method for inhibiting amyloid deposition in a subject comprising administering to the subject an effective amount of a therapeutic compound, or a pharmaceutically acceptable salt thereof, such that the therapeutic compound inhibits an interaction between an amyloidogenic protein and a glycoprotein or proteoglycan constituent of a basement membrane, such that amyloid deposition is inhibited, the therapeutic compound having the formula:

$$Q\text{—}[\text{—}Y^{-}X^{+}]_n$$

wherein Y^- is an anionic group at physiological pH; Q is a carrier molecule; X^+ is a cationic group; and n is an integer selected such that the biodistribution of the therapeutic compound for an

intended target site is not prevented while maintaining activity of the therapeutic compound.

5,643,563

N-∇3 DELETION MUTANTS OF THE SHORT FORM OF CSF-1

Martha B. Ladner, Oakland; Janelle A. Noble, Berkeley; George A. Martin, Berkeley, all of Calif.; Ernest S. Kawasaki, Waltham, Mass.; Mazie Y. Coyne, Danville, Calif.; Robert F. Halenbeck, San Rafael, Calif., and Kirston E. Koths, El Cerrito, Calif., assignors to Chiron Corporation, Emeryville, Calif.

Division of Ser. No. 999,280, Dec. 28, 1992, which is a continuation-in-part of Ser. No. 799,039, Nov. 27, 1991, abandoned, and Ser. No. 799,411, Nov. 27, 1991, abandoned, which is a continuation of Ser. No. 39,657, Apr. 16, 1987, abandoned, and Ser. No. 105,261, Oct. 13, 1987, abandoned, which is a continuation-in-part of Ser. No. 39,654, Apr. 16, 1987, which is a continuation-in-part of Ser. No. 39,657, which is a continuation-in-part of Ser. No. 923,067, Oct. 24, 1986, abandoned, which is a continuation-in-part of Ser. No. 876,819, Jun. 20, 1986, abandoned, which is a continuation-in-part of Ser. No. 821,068, Jan. 21, 1986, abandoned, which is a continuation-in-part of Ser. No. 756,814, Jul. 18, 1985, abandoned, which is a continuation-in-part of Ser. No. 744,924, Jun. 14, 1985, abandoned, which is a continuation-in-part of Ser. No. 728,834, Apr. 30, 1985, abandoned, which is a continuation-in-part of Ser. No. 698,359, Feb. 5, 1985, abandoned, said Ser. No. 799,039is a continuation-in-part of Ser. No. 39,657, and Ser. No. 105,261. This application Apr. 21, 1995, Ser. No. 426,036

Int. Cl.[6] A61K *38/19;* **C07K** *14/53;* **C12N** *15/27*

U.S. Cl. 424—85.1 **14 Claims**

1. A CSF-1 polypeptide consisting of amino acids 4 to 224 of the sequence shown in or a carboxy truncated polypeptide thereof, wherein the carboxy truncated polypeptide contains at least amino acids 4–150 of SEQ ID NO: 2.

5,643,564

GLYCOSYLATED CYTOKINES

Naoru Hamaguchi, Osaka; Jun Sato, Kawanishi, and Kazuhiro Doken, Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

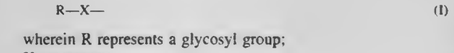
Continuation of Ser. No. 124,868, Sep. 22, 1993, abandoned. This application May 31, 1995, Ser. No. 455,661

Claims priority, application Japan, Sep. 24, 1992, 4-254962; Apr. 15, 1993, 5-088920

Int. Cl.[6] A61K *38/70;38/21;* **C07K** *14/54;14/555*

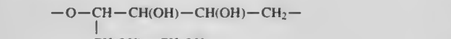
U.S. Cl. 424—85.1 **39 Claims**

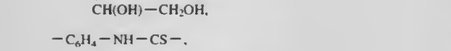
1. A sugar-modified interleukin-2 which comprises two to five modifying groups, which may be the same or different, bound to at least one primary amine group of interleukin-2, wherein said modifying group is represented by the formula (I):

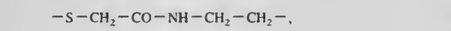


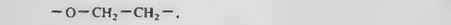
(I)

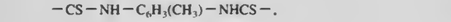
wherein R represents a glycosyl group;
X represents



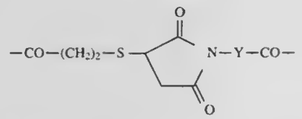




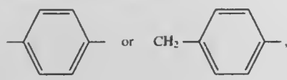


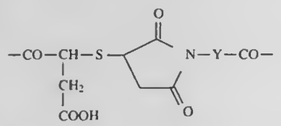


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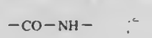


wherein Y is $-(CH_2)_3-$,

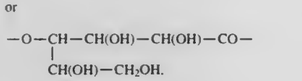




wherein Y is of the same meaning as mentioned above,



or



5,643,565

HUMAN IL-2 AS A VACCINE ADJUVANT

Michael V. Doyle, Oakland; Arthur D. Newell, Orinda; Jack H. Nunberg, and Thomas J. White, both of Oakland, all of Calif., assignors to Chiron Corporation, Emeryville, Calif.

Division of Ser. No. 314,975, Feb. 24, 1989, Pat. No. 5,503,841, which is a continuation-in-part of Ser. No. 856,035, Apr. 25, 1986, abandoned, which is a continuation-in-part of Ser. No. 778,372, Sep. 20, 1985, abandoned. This application May 24, 1995, Ser. No. 448,884

Int. Cl.[6] A61K *38/20*

U.S. Cl. 424—85.2 **29 Claims**

1. A composition for enhancing the immune response of an animal to a rabies vaccine, which composition comprises interleukin 2 and a rabies vaccine.

5,643,566

FORMULATION PROCESSES FOR LIPOPHILIC PROTEINS

Wolfgang H. Hanisch, Balmoral Heights, Australia; Pete M. Fernandes, Walnut Creek, Calif.; Terrance Taforo, Oakland, Calif., and James W. Thomson, Albany, Calif., assignors to Cetus Corporation, Emeryville, Calif.

Division of Ser. No. 266,832, Jun. 28, 1994, which is a continuation of Ser. No. 865,411, May 7, 1992, abandoned, which is a continuation of Ser. No. 923,425, Oct. 27, 1986, abandoned, which is a continuation-in-part of Ser. No. 775,751, Sep. 13, 1985, Pat. No. 4,992,271, which is a continuation-in-part of Ser. No. 752,403, Jul. 5, 1985, abandoned, which is a continuation-in-part of Ser. No. 592,077, Mar. 22, 1984, abandoned, which is a division of Ser. No. 495,896, May 18, 1983, Pat. No. 4,462,940, which is a continuation-in-part of Ser. No. 422,421, Sep. 23, 1982, abandoned. This application Jun. 7, 1995, Ser. No. 474,769

Int. Cl.[6] A61K *38/20;38/21*

U.S. Cl. 424—85.4 **21 Claims**

1. A process for formulating a lipophilic protein selected from an unglycosylated recombinant human interferon-β (IFN-β) and an unglycosylated recombinant human interleukin-2 (IL-2) that has been recovered from a bacterial host transformed to produce it wherein the cell wall and cell membrane of the host was disrupted and the protein in the disruptate was isolated and purified up to the point of final diafiltration or desalting, comprising the steps of

(a) diafiltering or desalting said lipophilic protein at a pH range of about 8.5 to 10.0 employing a low ionic strength elution buffer containing a transfer component;

(b) lowering the pH of the diafiltrate or desalted pool with an appropriate acid agent to a pH from about 2 to about 4; and

(c) removing the precipitated transfer component by centrifugation and/or filtration.

5,643,567

METHODS FOR THE SUPPRESSION OF NEU MEDIATED TUMORS BY ADENOVIRAL E1A AND SV40 LARGE T ANTIGEN

Mien-Chie Hung; Di-Hua Yu; Angahin Matin, and Yujiao Joe Zhang, all of Houston, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Continuation-in-part of Ser. No. 162,406, Dec. 3, 1993, which is a continuation-in-part of Ser. No. 70,410, Jun. 4, 1993, which is a continuation-in-part of Ser. No. 621,465, Dec. 4, 1990, abandoned. This application Jul. 15, 1994, Ser. No. 276,359

Int. Cl.[6] A61K *48/00;* **F01N** *63/00;* **C12N** *15/00*

U.S. Cl. 424—93.2 **22 Claims**

1. A method to suppress the growth of a neu oncogene-mediated tumor in a mammal, said method comprising introducing to a cell of a tumor an adenovirus containing an adenoviral E1A gene operatively linked to a promoter, wherein the production of the E1A gene product results in a decrease in the growth rate of said tumor.

5,643,568

SELECTION AND ISOLATION OF MICROFUNGI FOR USE IN BIOLOGICAL CONTROL OF PARASITIC NEMATODES IN ANIMALS

Jens Wolstrup, Amalievej 4A, Frederiksberg C, Denmark; Jørn Grønvold, Lundtoftegade 88, 2.tv., Copehagen N, Denmark; Peter Nansen, Elmekrogen 2, Værløse, Denmark; Svend Aage Henriksen, Borrisveg 22, DK-2650 Hvidovre, and Michael Larsen, Harsdorffsvej 1B, 2.tv., DK-1874 Frederiksberg C, both of Denmark

PCT No. PCT/DK92/00269, § 371 Date Jun. 20, 1994, § 102(e) Date Jun. 20, 1994, PCT Pub. No. WO93/05143, PCT Pub. Date Mar. 18, 1993

PCT Filed Sep. 8, 1992, Ser. No. 204,345

Claims priority, application Denmark, Sep. 9, 1991, 1582/91; Dec. 19, 1991, 2034/91

Int. Cl.[6] A01N *63/00;63/04;65/00;* **C12N** *1/14*

U.S. Cl. 424—93.5 **24 Claims**

1. A method for reducing the population of nematode parasites in the faeces of domestic animals susceptible to infection by said nematode parasites, and thereby reducing the population of said parasites in pastures, comprising orally administering to the animals predacious fungi, said fungi being the progeny of fungi having been preselected to survive in the fasces of the animal, by being subjected to a multi-step procedure comprising:

(i) In vitro exposure to diluted ruminal fluid at 39° C. for a period of 24 hours;

(ii) in vitro exposure to solutions simulating conditions in the alimentary tract of domestic animals, said solutions comprising or simulating saliva, ruminal fluid, abomasal fluid and a fluid containing an enzyme that acts in the gut and that subjects said fungi to enzymatic stress; and

(iii) in vivo passage through the alimentary tract of ruminant mammals, said fungi, after said procedure, possessing the ability to reduce the number of parasitic nematodes in a faecal bioassay by at least 50%.

5,643,569

PREPARATION OF AGAROSE COATED, SOLID AGAROSE-COLLAGEN BEADS CONTAINING SECRETORY CELLS

Kanti Jain, New York, N.Y.; Albert L. Rubin, Englewood, N.J., and Barry H. Smith, New York, N.Y., assignors to The Rogosin Institute, New York, N.Y.

Continuation of Ser. No. 181,269, Jan. 13, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 483,728

Int. Cl.[6] A61K *35/12;* **C12N** *11/02;11/10;5/00*

U.S. Cl. 424—93.7 **17 Claims**

1. A method for preparing an agarose coated, solid agarose-collagen bead which contains secretory cells, comprising:

(a) suspending secretory cells in a collagen containing solution,

(b) adding agarose to said solution,

(c) forming a semi-solid bead of said collagen, agarose, and secretory cells,

(d) polymerizing collagen in said semisolid bead to form a solid, agarose-collagen bead containing secretory cells, and

(e) coating said solid, agarose-collagen bead containing secretory cells with agarose.

5,643,570

BPI-IMMUNOGLOBULIN FUSION PROTEINS

Georgia Theofan, Torrance, Calif.; Lynn S. Grinna, Middleburg, Va., and Arnold Horwitz, Los Angeles, Calif., assignors to XOMA Corporation, Berkeley, Calif.

Continuation-in-part of Ser. No. 885,911, May 19, 1992, abandoned. This application May 19, 1993, Ser. No. 64,693

Int. Cl.[6] C12N *15/12;15/00;* **A61K** *39/395;* **C07K** *19/00*

U.S. Cl. 424—134.1 **28 Claims**

1. A hybrid fusion protein comprising, at its amino terminal, a bactericidal/permeability-increasing protein or a biologically active fragment thereof and, at its carboxy terminal, at least one constant domain of an immunoglobulin heavy chain or an allelic variant thereof.

5,643,571

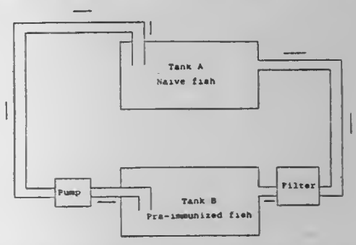
METHOD FOR CONTROLLING INFECTIOUS DISEASES IN FISH AND OTHER AQUATIC LIFEFORMS IN A CLOSED CULTURE SYSTEM

Y. M. Sin; K. H. Ling, and T. J. Lam, all of Singapore, Singapore, assignors to National University of Singapore, Singapore

Continuation of Ser. No. 103,054, Aug. 9, 1993, abandoned, which is a continuation-in-part of Ser. No. 929,865, Aug. 17, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 466,025

Int. Cl.[6] A61K *39/40;39/42;* **C07K** *16/08;16/12*

U.S. Cl. 424—159.1 **18 Claims**



1. A method of controlling one or more pathogenic organisms selected from the group consisting of protozoan parasites and bacteria wherein the pathogenic organisms are detrimental to aquatic lifeforms selected from the group consisting of fish, crustaceans, mollusks and echinoderms wherein the method comprises;

a) adding immunized fish immunized against one or more of said pathogenic organisms to a culture system comprising an aquatic medium;
b) permitting said immunized fish to release antibodies against the pathogenic organisms into the aquatic medium;
c) providing the aquatic lifeforms to the aquatic medium wherein the aquatic lifeforms are to be treated or protected; and
d) allowing the antibodies to immunoreact with the pathogenic organisms, thereby controlling the pathogenic organisms.

5,643,572

METHODS AND COMPOSITIONS FOR THE MODULATION OF HOST IMMUNE RESPONSE TO AN ALLERGEN

Vera K. Byers, San Francisco, Calif., and Robert W. Baldwin, Long Eaton, England, assignors to Allergene, Inc., San Mateo, Calif.

Continuation of Ser. No. 549,184, Jul. 6, 1990, abandoned. This application Nov. 24, 1993, Ser. No. 157,843
Int. Cl.[6] C07K *16/00;* **A61K** *39/395*
U.S. Cl. 424—171.1 **8 Claims**

1. A method for selective suppression of an immune response to urushiol, comprising vaccinating a human with an effective amount of a monoclonal antibody to urushiol to suppress a T cell mediated immune response to urushiol in said human.

5,643,573

ANTIBODY-DRUG CONJUGATES

Russell L. Barton, Indianapolis; Deborah L. Guttman-Carlisle, Sheridan, and Gary A. Koppel, Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 040,323, Mar. 30, 1993, Pat. No. 5,556,623. This application Oct. 10, 1995, Ser. No. 541,847
Int. Cl.[6] A61K *39/395;39/44*
U.S. Cl. 424—179.1 **9 Claims**

1. An immunoconjugate of the formula

$$[R^1\text{—}CO\text{—}\underset{\displaystyle HC\text{—}R^2}{\overset{\displaystyle \|}{C}}\text{—}CO\text{—}NH\text{—}CH_2\text{—}CH_2\text{—}CO]_m\text{—}Ab$$

wherein
R^1 is C_1–C_4 alkyl;
R^2 is a monovalent drug derivative having a reactively-available amino, hydroxy or thiol function;
m is an integer from 1 to 10; and
Ab is an antibody, or antigen-recognizing fragment thereof, which specifically binds an antigen associated with a cell, tissue, or pathogen to which delivery of the drug is desirable.

5,643,574

PROTEIN- OR PEPTIDE-COCHLEATE VACCINES AND METHODS OF IMMUNIZING USING THE SAME

Susan Gould-Fogerite, and Raphael James Mannino, both of Annandale, N.J., assignors to Albany Medical College, Albany, N.Y., and University of Medicine & Dentistry of New Jersey, Newark, N.J.

Filed Oct. 4, 1993, Ser. No. 130,986
Int. Cl.[6] A61K *39/00;51/00;38/16;* **B01J** *13/02*
U.S. Cl. 424—184.1 **26 Claims**

1. A method of immunizing a host, comprising administering a biologically effective amount of a protein- or peptide-cochleate which comprises the following components:
a) a protein or peptide component to which an immune response is elicited,
b) a negatively charged lipid component, and
c) a divalent cation component.

5,643,575

NON-ANTIGENIC BRANCHED POLYMER CONJUGATES

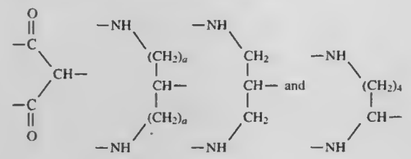
Anthony Martinez, Hamilton Square, and Richard B. Greenwald, Somerset, both of N.J., assignors to Enzon, Inc., Piscataway, N.J.

Filed Oct. 27, 1993, Ser. No. 143,403
Int. Cl.[6] A61K *39/385;38/54;* **C07K** *17/08;* **C08G** *83/00*
U.S. Cl. 424—194.1 **40 Claims**

18. A polymer conjugate comprising the formula:

$$[(R)_n\text{L-}A^1]_z\text{-(nucleophile)}$$

wherein:
(R) is a water-soluble substantially non-antigenic polymer containing a C_1–C_4 terminal group;
(n)= 2 or 3;
(L) is selected from the group consisting of:



wherein (α) is 1 to 5;
(nucleophile) is a biologically active nucleophile selected from the group consisting of proteins, peptides, polypeptides, enzymes and chemotherapeutic molecules;
(A^1) represents a covalent linkage between (L) and the biologically active nucleophile; and
(z) represents the number of polymers attached to the nucleophile.

5,643,576

METHOD OF INDUCING AN IMMUNE RESPONSE WITH A LIVE VENEZUELAN EQUINE ENCEPHALITIS VIRUS EXPRESSING A HETEROLOGOUS IMMUNOGEN

Robert E. Johnston; Nancy L. Davis, both of Chapel Hill, N.C.; Jonathan F. Smith, Sabillasville, and Franziska B. Grieder, Bethesda, both of Md., assignors to The University of North Carolina at Chapel Hill, Chapel Hill, N.C.

Division of Ser. No. 250,445, May 27, 1994, Pat. No. 5,505,947. This application May 19, 1995, Ser. No. 444,563
Int. Cl.[6] A61K *39/12;39/193;* **C12N** *7/04;* **C07H** *21/04*
U.S. Cl. 424—199.1 **12 Claims**

1. A method of protecting a subject against a disease, comprising:
administering a recombinant Venezuelan Equine Encephalitis (VEE) virus to said subject in an effective immunogenic amount, with said VEE virus containing at least one attenuating mutation selected from the group consisting of codons at E2 amino acid position 76 which specify an attenuating mutation, codons at E2 amino acid position 209 which specify an attenuating mutation, codons at E2 amino acid 120 which specify an attenuating mutation; a G to C mutation at vital RNA nucleotide 3; Codons at E1 amino acid 272 which specify an attenuating mutation; codons at E1 amino acid 81 which specify an attenuating mutation; and codons at E1 amino acid 253 which specify an attenuating mutation, and with said VEE virus containing a heterologous RNA segment, said heterologous RNA segment comprising a promoter operable in said subject operatively associated with a RNA encoding an immunogenic protein or peptide effective for protecting said subject from said disease.

5,643,577

ORAL VACCINE COMPRISING ANTIGEN SURFACE-ASSOCIATED WITH RED BLOOD CELLS

Gerald Toh Pang, and Robert Llewellyn Clancy, both of Newlambton, Australia, assignors to The University of Newcastle Research Associates Limited, Australia

PCT No. PCT/AU91/00159, § 371 Date Oct. 23, 1992, § 102(e) Date Oct. 23, 1992, PCT Pub. No. WO91/16073, PCT Pub. Date Oct. 31, 1991
PCT Filed Apr. 24, 1991, Ser. No. 940,899
Claims priority, application Australia, Apr. 24, 1990, PJ9783/90
Int. Cl.[6] A61K *39/145;39/12;39/385*
U.S. Cl. 424—206.1 **13 Claims**

1. An oral vaccine comprising an influenza antigen, wherein said influenza antigen is surface-associated with a red blood cell or a ghost preparation thereof, and wherein said vaccine elicits a mucosal immune response in mammals.

5,643,578

IMMUNIZATION BY INOCULATION OF DNA TRANSCRIPTION UNIT

Harriet L. Robinson, Southboro; Ellen F. Fynan, Sterling, both of Mass., and Robert G. Webster, Memphis, Tenn., assignors to University of Massachusetts Medical Center, Worcester, Mass., and St. Jude Children's Research Hospital, Memphis, Tenn.

Continuation-in-part of Ser. No. 855,562, Mar. 23, 1992, abandoned. This application Jan. 27, 1993, Ser. No. 9,833
Int. Cl.[6] A61K *39/145;39/00;* **C07H** *21/04;* **C12N** *15/11*
U.S. Cl. 424—210.1 **19 Claims**

1. A method of immunizing a vertebrate against an infectious agent, said method comprising administering to a vertebrate a DNA transcription unit comprising DNA encoding a hemagglutinin of the infectious agent operatively linked to a promoter region, whereby the vertebrate is protected from disease caused by the infectious agent.

5,643,579

ORAL VACCINES

Paul P. Hung, Bryn Mawr, and Alan R. Davis, Wayne, both of Pa., assignors to American Home Products Corporation, Madison, N.J.

Continuation-in-part of Ser. No. 805,121, Dec. 11, 1991, abandoned, which is a continuation-in-part of Ser. No. 426,336, Oct. 24, 1989, abandoned, which is a continuation-in-part of Ser. No. 58,002, Jun. 4, 1987, Pat. No. 4,920,209, which is a continuation-in-part of Ser. No. 782,638, Oct. 4, 1985, abandoned, which is a continuation-in-part of Ser. No. 667,233, Nov. 1, 1984, abandoned. This application Jul. 29, 1994, Ser. No. 283,231
Int. Cl.[6] A61K *39/29;39/12;39/23;* **C12P** *21/06*
U.S. Cl. 424—227.1 **54 Claims**

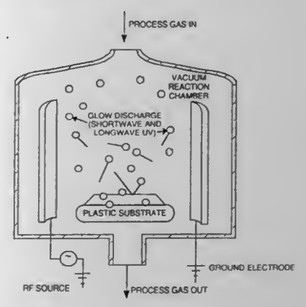
1. A method for producing antibodies or cell mediated immunity to Hepatitis-B virus in a warm-blooded animal which comprises orally administering to said warm-blooded animal, in an enteric coated dosage form, live recombinant adenoviruses in which the virion structural protein is unchanged from that in the native adenovirus from which the recombinant adenovirus is produced, and which contain the gene coding for the hepatitis-B surface antigen which corresponds to said antibodies or induces said cell mediated immunity.

5,643,580

BIOCOMPATIBLE COATING, MEDICAL DEVICE USING THE SAME AND METHODS

Raj Subramaniam, Fremont, Calif., assignor to Surface Genesis, Inc., Sunnyvale, Calif.

Filed Oct. 17, 1994, Ser. No. 324,413
Int. Cl.[6] A61K *41/00;* **B05D** *3/06*
U.S. Cl. 424—400 **22 Claims**



1. A method for treating a surface of a medical device to inhibit thrombosis comprising steps:
functionalizing a surface of a medical device by contacting said surface with a low temperature plasma which surface is exposed to blood flow continuous with bodily blood circulation with a first reactive group, contacting said surface with an antithrombogenic agent capable of reacting with said first reactive group, and causing said antithrombogenic agent to react with said first reactive group to covalently bind said antithrombogenic agent to said surface to form a coating on said surface which coating is effective to inhibit the formation of thrombus when said surface is exposed to blood flow continuous with bodily blood circulation.

5,643,581

COSMETIC COMPOSITIONS AND THEIR USES

Nathalie Mougin, Paris, and Jean Mondet, Drancy, both of France, assignors to L'Oreal, Paris, France

Filed Jul. 27, 1994, Ser. No. 280,875
Claims priority, application France, Jul. 28, 1993, 93 09286
Int. Cl.[6] A61K *7/06;7/04*
U.S. Cl. 424—401 **44 Claims**

1. A cosmetic composition comprising a cosmetically acceptable carrier and at least one pseudolatex based on a multiblock polycondensate which comprises, as a first component, a polysiloxane block corresponding to the following formula (I):

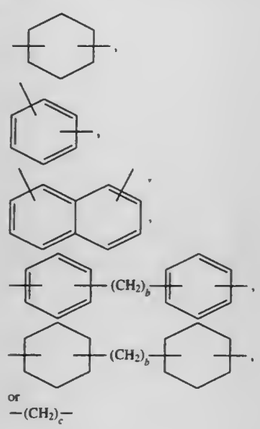
$$\left\{\left\{X^1\text{—}P\text{—}X^1\right\}\text{—}\underset{\displaystyle O}{\overset{\displaystyle \|}{C}}\text{—}NH\text{—}R\text{—}NH\text{—}\underset{\displaystyle O}{\overset{\displaystyle \|}{C}}\right\} \qquad (I)$$

in which:
P is a polysiloxane block corresponding to the following formula (I'):

$$\text{—}Y\text{—}\left[\begin{array}{c}R^1\\|\\Si\\|\\R^1\end{array}\text{—}O\right]_z\left[\begin{array}{c}R^1\\|\\Si\\|\\R^1\end{array}\text{—}Y\text{—}\right. \qquad (I')$$

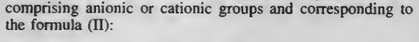
wherein:
the radicals R^1, which may be identical or different, are monovalent radicals selected from the group consisting of phenyl, naphthyl, benzyl, phenylethyl, tolyl, and xylyl radicals, or are nonaromatic C_1–C_{20} hydrocarbon radicals;
Y denotes a divalent hydrocarbon radical, or
z is an integer such that the mean molecular weight of the polysiloxane block ranges from 300 to 10,000.

X^1, each of which can be identical or different, denotes —O— or —NH—, and
R is



in which b is an integer from 0 to 3 and c is an integer from 1 to 20;

and, as a second component, a block of polyurethane, polyurea, or a combination thereof, said second component further comprising anionic or cationic groups and corresponding to the formula (II):



(II)

wherein:

X^2, each of which can be identical or different, denotes —O— or —NH—,

R is as defined above for formula (I),

x is an integer from 1 to 10, and

B is

a a divalent hydrocarbon radical which carries a group containing at least one carboxylic functional group, at least one sulphonic functional group, or a combination of at least one carboxylic functional group and at least one sulphonic functional group, said at least one carboxylic functional group, said at least one sulphonic functional group, or said combination having been neutralized with an inorganic or organic base, to provide a negative ionic charge or

a divalent hydrocarbon radical which carries at least one tertiary amine group, said at least one tertiary amine group having been neutralized with an inorganic or organic acid or quaternized with an alkyl halide, to provide a positive ionic charge.

humectant (1.0 to 20.0%), and a pharmaceutically acceptable oil (1.0 to 10.0%), and a second component consisting essentially of a 14 to 24 carbon atom mono-, di-, or tri-glyceride and bilayer particles comprising bioadhesive polymers wherein the core is a lower alkylvinyl ether/maleic anhydride coated with an alkylvinyl ether/maleic acid salt.

6. A moisturizer for the epithelia comprising a first component consisting essentially of a mixture of purified water (5 to 48%), a preservative (0.035 to 0.35%) carboxymethyl cellulose (0.05 to 7.5%), glycerin (1.0 to 20.0%) and mineral oil (1.0 to 10.0%), and a second component consisting essentially of a monoglyceride (3.0 to 80.0%) and bilayer particles comprising bioadhesive polymers wherein the core is a lower alkylvinyl ether/maleic anhydride coated with an alkylvinyl ether/maleic acid salt.

5,643,583

COSMETIC OR PHARMACEUTICAL COMPOSITION FOR TOPICAL USE

Robert Voultoury, Antony, and Anne-Marie Scott, Noyon, both of France, assignors to Laboratoires de Biologie Vegetale Yves Rocher, La Gacilly, France

Filed Apr. 24, 1995, Ser. No. 426,954

Claims priority, application France, May 2, 1994, 94 05320

Int. Cl.[6] A61K *7/48*

U.S. Cl. 424—401 **3 Claims**

1. A cosmetic or pharmaceutical composition for topical use, comprising, in an appropriate base for topical use, an effective amount of lipid vesicles obtained by:

a. crushing seeds of oleaginous plants to obtain ground seeds, said seeds being selected from the group consisting of soya bean, pistachio, macadamia, sunflower, rape, groundnut, almond, hazelnut, sesame, borage, wheat germ and jojoba seeds,

b. adding an aqueous phase to said ground seeds and stirring to obtain an emulsion

c. filtering said emulsion, and

d. centrifuging said emulsion to form a concentrate of said lipid vesicles, said composition comprising, in an aqueous phase, up to 30% by weight of said concentrate.

5,643,584

AQUEOUS GEL RETINOID DOSAGE FORM

Richard K. Farng, East Brunswick; Gerard J. Gendimenico, Neshanic Station; James A. Mezick, East Brunswick; Shirley M. Ng, Bridgewater, and Stanley B. Wrobel, Jr., Middlesex, all of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Continuation of Ser. No. 132,014, Oct. 5, 1993, abandoned, which is a continuation of Ser. No. 869,684, Apr. 16, 1992, abandoned. This application May 18, 1995, Ser. No. 444,145

Int. Cl.[6] A61K *7/00;7/48*

U.S. Cl. 424—401 **33 Claims**

1. A tretinoin aqueous gel dispersion composition for therapeutic topical administration of tretinoin to the skin comprising: a therapeutically effective amount of unsolubilized micronized tretinoin particles; a surfactant selected from the group consisting of octoxynol and nonoxynol in an amount effective to enhance penetration of tretinoin into the skin; a preservative; a gelling agent in an amount sufficient to provide body to the aqueous gel dosage form skin and which maintains the dispersion of tretinoin in the composition by maintenance of a semisolid dosage form; and water qs to 100%.

5,643,582

MOISTURIZER

Balgopal Gangadharan, Parsippany, N.J.; Marshall A. Hayward, Guildford, England, and Denise Lynne Ward, Fairfield, N.J., assignors to SmithKline Beecham Corporation, Philadelphia, Pa.

PCT No. PCT/US93/02975, § 371 Date Sep. 22, 1994, § 102(e) Date Sep. 22, 1994, PCT Pub. No. WO93/19733, PCT Pub. Date Oct. 14, 1993

PCT Filed Mar. 25, 1993, Ser. No. 307,679

Int. Cl.[6] A61K *7/48*

U.S. Cl. 424—401 **7 Claims**

1. A moisturizer for the epithelia comprising a first component consisting essentially of a mixture of purified water (5 to 48%), a water soluble water swellable polymer having bioadhesive properties (0.05 to 7.5%), one or more preservatives (0.035 to 0.35%), a

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5,643,585

COLORING MATERIALS

Shoshana Arad, Omer; Anina Yaron, Beer-Sheva, and Ephraim Cohen, Lehavim, all of Israel, assignors to Ben-Gurion University of the Negev - Research and Development Authority, Beer-Sheva, Israel

Filed Jul. 18, 1995, Ser. No. 503,555

Claims priority, application Israel, Jul. 21, 1994, 110396

Int. Cl.[6] A61K *7/00*

U.S. Cl. 424—401 **20 Claims**

1. A non-soluble particulate coloring material comprising dry ground red microalgae-derived material as the base coloring matter.

5,643,586

TOPICAL COMPOSITIONS AND METHODS FOR TREATMENT OF SKIN DAMAGE AND AGING USING CATECHOLAMINES AND RELATED COMPOUNDS

Nicholas V. Perricone, 27 Coginchaug Ct., Guilford, Conn. 06437

Continuation-in-part of Ser. No. 435,944, Apr. 27, 1995, Pat. No. 5,554,647. This application Sep. 7, 1995, Ser. No. 525,977

Int. Cl.[6] A61K *7/48*

U.S. Cl. 424—401 **17 Claims**

1. A method for the topical treatment of subcutaneous muscle and overlying cutaneous tissue comprising topically applying to affected skin areas a composition comprising, as active ingredients:

(a) from about 0.25% to about 5% by weight of a catecholamine precursor selected from the group consisting of tyrosine, phenylalanine, and mixtures thereof,

(b) an effective amount of ascorbyl palmitate, and

(c) about 0.25% to about 5% by weight of dimethylaminoethanol, in a dermatologically acceptable carrier that penetrates the skin so that muscle tone in subcutaneous muscle tissue is increased.

4. A method for the topical treatment of aging subcutaneous muscle and overlying cutaneous tissue comprising topically applying to affected skin areas, in a dermatologically acceptable carrier that penetrates the skin, a composition comprising a catecholamine selected from the group consisting of dopamine, norepinephrine, epinephrine, dopa, serotonin, and mixtures thereof, or a catecholamine precursor selected from the group consisting of tyrosine, phenylalanine, and mixtures thereof, in amounts sufficient to increase muscle tone in the subcutaneous muscle tissue, wherein the composition further comprises a fat-soluble, saturated fatty acid ester of ascorbic acid selected from the group consisting of ascorbyl palmirate, ascorbyl laurate, ascorbyl myristate, ascorbyl stearate, and mixtures thereof, and about 0.25 to about 5% dimethylaminoethanol.

7. A method for the topical treatment of aging subcutaneous muscle and overlying cutaneous tissue comprising topically applying to affected skin areas a composition comprising an effective amount of a catecholamine selected from the group consisting of dopamine, norepinepherine, epinepherine, dopa, seratonin, and mixtures thereof, or a catecholamine-related compound selected from the group consisting of phenylalanine, tyramine, ephedrine, amphetamine, tetrahydrobiopterin, pyridoxine, and mixtures thereof, in a dermatologically acceptable carrier that penetrates the skin.

5,643,587

COMPOSITION AND METHOD FOR UNDER-EYE SKIN LIGHTENING

Neil D. Scancarella, Wyckoff; John A. Duffy, West Milford, both of N.J.; Mark S. Garrison, White Plains, N.Y., and Gopinathan K. Menon, Wayne, N.J., assignors to Avon Products, Inc., Suffern, N.Y.

Filed Feb. 15, 1996, Ser. No. 602,004

Int. Cl.[6] A61K *7/00*

U.S. Cl. 424—401 **18 Claims**

1. A composition for topical treatment of skin discolorations found below the eyes, comprising:

(a) about 0.5 to about 10.0% live yeast cell extract,

(b) about 0.5 to about 10.0% magnesium ascorbyl phosphate,

(c) about 0.1 to about 5.0% tocopherol acetate,

(d) about 0.01 to about 1.0% retinol palmitate, and

(e) a vehicle which maintains active ingredient levels.

5,643,588

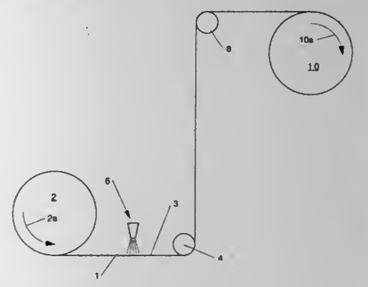
DIAPER HAVING A LOTIONED TOPSHEET

Donald Carroll Roe; Frank Heinrich Bakes, and Alrick Vincent Warner, all of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 28, 1994, Ser. No. 345,159

Int. Cl.[6] A01N *25/34;* **A61F** *13/20;* **A61K** *9/70*

U.S. Cl. 424—402 **24 Claims**



1. A disposable diaper comprising:

A) a liquid impervious backsheet;

B) a liquid pervious, hydrophilic topsheet joined to said backsheet, said topsheet having an inner surface oriented toward the interior of said diaper and an outer surface oriented toward the skin of the wearer when said diaper is being worn, wherein at least a portion of said topsheet outer surface comprises an effective amount of a lotion coating which is semisolid or solid at 20° C. and which is partially transferable to the wearer's skin, said lotion coating comprising:

(i) from about 10 to about 95% of a substantially water free emollient having a plastic or fluid consistency at 20° C., wherein said emollient contains about 5% or less water, said emollient comprising a member selected from the group consisting of petroleum-based emollients, fatty acid ester emollients, alkyl ethoxylate emollients, and mixtures thereof;

(ii) from about 5 to about 90% of an agent capable of immobilizing said emollient on said outer surface of the topsheet, said immobilizing agent being miscible with said emollient, said immobilizing agent having a melting point of at least about 35° C., wherein said immobilizing agent is selected from the group consisting of polyhydroxy fatty acid esters, polyhydroxy fatty acid amides, C_{14}–C_{22} fatty alcohols, C_{12}–C_{22} fatty acids, C_{12}–C_{22} fatty alcohol ethoxylates, and mixtures thereof; and

C) an absorbent core positioned between said topsheet and said backsheet.

5,643,589

DESICCANT FORMULATED FOR TREATING WOUNDS OR LESIONS

Susanna Elizabeth Chalmers, 28 Lobelia Street, Heldervue Somerset West Cape Province, South Africa

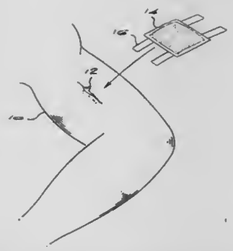
Filed Dec. 6, 1993, Ser. No. 163,454

Claims priority, application South Africa, Dec. 7, 1992, 92/9459

Int. Cl.[6] H01N *25/34;25/08*

U.S. Cl. 424—404 **15 Claims**

1. A dressing for use in treating an abnormal skin condition in an animal or human, comprising a liquid permeable sachet containing



a dry topical pharmaceutical composition, the topical pharmaceutical composition comprising:

(a) an antiseptic or antimicrobial agent; and

(b) a desiccant for adsorbing moisture or liquid in and around the area of the abnormal skin condition through the liquid permeable sachet so that the adsorbed moisture or liquid is not readily available to the skin.

5,643,590

SAFENED PESTICIDAL RESIN COMPOSITION FOR CONTROLLING SOIL BORNE PESTS AND PROCESS FOR THE PREPARATION THEREOF

Joseph Frederick Cannelongo, Piscataway, N.J., assignor to American Cyanamid Company, Madison, N.J.

Continuation of Ser. No. 239,850, May 9, 1994, which is a division of Ser. No. 925,326, Aug. 6, 1992, abandoned, which is a continuation of Ser. No. 447,960, Dec. 7, 1989, abandoned, which is a continuation of Ser. No. 114,821, Nov. 5, 1987, abandoned, which is a continuation-in-part of Ser. No. 933,842, Nov. 24, 1986, abandoned. This application Jun. 5, 1995, Ser. No. 464,906

Int. Cl.[6] A01N *25/32*

U.S. Cl. 424—406 **6 Claims**

1. A pelletized pesticidal composition comprising: about 1.0% to 35.0%, by weight, of a soil insecticide, the technical grade of said soil insecticide having an oral and/or a dermal LD50, as measured on rats or rabbits, of less than 50 mg/kg; about 1.0% to 30.0% by weight of a secondary pesticide or mixture of secondary pesticides; about 5.0% to 60.0%, by weight, of a polyvinylic suspension resin having a weight average molecular weight of about 41,000 to 130,000; about 0.2% to 2.0%, by weight, of a heat stabilizing agent or mixture of heat stabilizing agents for the resin; about 0.0% to 1.0%, by weight, of a lubricant; about 0.0% to 50.0%, by weight, of a secondary plasticizing agent; about 20.0% to 80.0%, by weight, of a mineral additive; and about 1.0% to 10.0% of silicon dioxide; wherein said composition is a solid resin pesticidal composition and has a reduced mammalian toxicity and improved pesticide stability.

5,643,591

SOLID DOSAGE FORMS

Dev K. Mehra, Furlong, Pa.; Nagui I. Ibrahim, East Windsor, N.J., and Edwin G. Fleck, Jr., Newark, Del., assignors to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 814,186, Dec. 19, 1991, abandoned, which is a continuation-in-part of Ser. No. 642,099, Jan. 16, 1991, abandoned. This application Apr. 20, 1994, Ser. No. 230,407

Int. Cl.[6] A01N *25/12*

U.S. Cl. 424—408 **12 Claims**

1. A solid dosage form comprising a compacted particulate blend consisting essentially of

(a) a compression moldable finely divided homogenous particulate mixture of from about 0.05 to about 25 percent of microcrystalline cellulose having a particle size of from about 20 microns to about 90 microns and a nitrogen compound selected from the group consisting of urea, ammonium sulfate and ammonium phosphate, in which the weight ratio of microcrystalline cellulose to nitrogen compound is from about 10:1 to about 1:10;

(b) from about 16 percent to about 65 percent of an active material compatible with the particulate mixture of (a) and selected from herbicides, plant growth regulators, pesticides and any mixtures thereof; and

(c) 0 to about 20 percent of an additive selected from glidants, lubricants, dispersants, surfactants, and auxiliary disintegrants and mixtures thereof.

5,643,592

SURFACE-COATED PARTICULATE ADDITIVES FOR POLYMERS

Howard Wayne Jacobson, Wilmington; Joseph V. Kurian, Seaford, both of Del.; Scott Thomas Sackinger, Columbia, S.C., and Chandrakant Shantilal Shah, Seaford, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 42,965, Apr. 5, 1993, abandoned, which is a continuation-in-part of Ser. No. 6,022, Jan. 15, 1993, abandoned, which is a continuation of Ser. No. 742,963, Aug. 9, 1991, Pat. No. 5,180,585. This application Aug. 22, 1994, Ser. No. 294,004

The portion of the term of this patent subsequent to Dec. 21, 2014, has been disclaimed.

Int. Cl.[6] A01N *25/26*

U.S. Cl. 424—409 **7 Claims**

1. A polymeric composition comprising

an organic polymer selected from the group consisting of polyamides, polyesters, polyolefins, vinyl polymers, fluorocarbon polymers, polyurethanes, segmented polyurethane elastomers, polyethers, polysulfides, polysulfones, polysiloxanes, and cellulosic polymers, said organic polymer incorporating a particulate additive consisting of

finely-divided particles having an average diameter of about 0.01 to about 100 microns and being selected from the group consisting of TiO_2 with at least an inorganic surface coating, colored pigments substantially free of metal chromate, anti-tackiness additives for elastic polymers, and inorganic particles which impart electrical conductivity to polymers,

said finely-divided particles having an organic surface coating comprised of a compound selected from the group consisting of C_8 diesters of azelaic acid and mixtures thereof, said compound of said organic surface coating comprising about 0.05 to about 3% by weight of said particulate additive.

5,643,593

METHOD OF REDUCING CONTAINER RESIDUE OF WATER-DISPERSIBLE AGRICULTURAL CHEMICAL GRANULES BY WATER-SOLUBLE FILM COATING

Kenneth E. Fersch, Apex, N.C., and Arthur J. Miner, Barboursville, W. Va., assignors to BASF Corporation, Mount Olive, N.J.

Division of Ser. No. 241,894, May 13, 1994, Pat. No. 5,476,833. This application Sep. 14, 1995, Ser. No. 527,918

Int. Cl.[6] A01N *25/12*

U.S. Cl. 424—419 **7 Claims**

1. A method of reducing container residue of a dry, flowable, granular, water-dispersible agricultural chemical comprising coating individual granules of the agricultural chemical with a layer of a water-soluble polyvinyl alcohol in an amount between about 0.01 to about 1.0 wt. %.

5,643,594

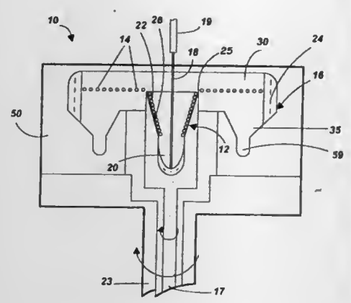
SPIN ENCAPSULATION APPARATUS AND METHOD OF USE

Randel E. Dorian, Orinda; Kent C. Cochrum, Davis, and Richard David Antanavich, Paso Robles, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Continuation-in-part of Ser. No. 891,564, May 29, 1992, Pat. No. 5,429,821, and Ser. No. 186,327, Jan. 24, 1994, Pat. No. 5,578,314. This application May 3, 1994, Ser. No. 237,290

Int. Cl.[6] A61F *2/02;* **A01N** *1/02;* **C12N** *11/02;* **B29C** *39/10*

U.S. Cl. 424—424 **37 Claims**



1. An encapsulation apparatus for forming capsules containing particles to be coated, the apparatus comprising in combination:

a) a rotary cup for forming beads and for projecting them centrifugally outward, said rotary cup being adjustably rotatable at a preselected first rotational speed,

said rotary cup being positioned within a rotary cup block connected to a first rotor or shaft for connection to a first motor providing said first rotational speed;

b) one or more collection basins adapted for substantially surrounding said rotary cup, and being adjustably rotatable at a preselected second rotational speed,

said collection basins comprising;

a collection basin block;

an annular gelation chamber;

an annular collection chamber; and

a trough;

wherein the collection basin block is connected to a second rotor or shaft for connection to a second motor providing said second rotational speed;

wherein the annular gelation chamber is defined within the collection basin block having a substantially flat upper rim extending generally horizontally and radially from a central axis into a vertical or lateral sidewall, said sidewall extending into a first conical or beveled edge of the annular collection chamber;

wherein the collection chamber is defined by the first beveled edge and a second beveled edge, generally symmetrical to the first beveled edge, with respect to a central geometric axis of the trough and wherein the second beveled edge extends radially into a substantially flat lower rim or edge parallel to said upper rim, said lower rim extending inwardly toward the block of the rotary cup;

wherein the trough is conically shaped;

said collection basins being rotatable independently from said rotary cup and positioned to collect said beads projected from said rotary cup into a gelling solution present in the gelation chamber; and

c) wherein said first and second rotational speeds are selected so as to minimize the impact of said beads against the gelling solution in said one or more collection basins.

5,643,595

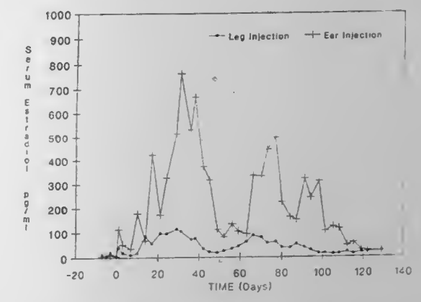
GROWTH PROMOTERS FOR ANIMALS

Danny H. Lewis, Hartselle, Ala., assignor to Alkermes Controlled Therapeutics Inc. II, Cambridge, Mass.

Continuation of Ser. No. 981,082, Nov. 24, 1992, Pat. No. 5,419,910. This application Jan. 27, 1995, Ser. No. 379,150

Int. Cl.[6] A61F *2/00*

U.S. Cl. 424—426 **4 Claims**



1. An injectable composition comprising microparticles, wherein said microparticles comprise a biodegradable polymeric matrix, wherein said composition comprises a steroid growth promoter microencapsulated within said polymeric matrix, and wherein said composition further comprises an unencapsulated antibiotic.

5,643,596

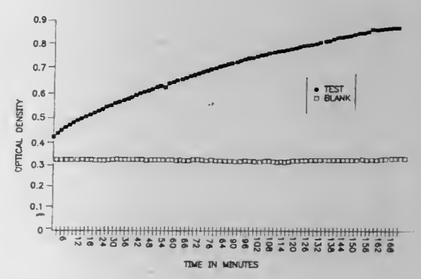
HEMOSTATIC PATCH

Thaddeus P. Pruss, Baltimore, Md., and James A. Will, Columbus, Wis., assignors to Clarion Pharmaceuticals, Inc., Madison, Wis.

Continuation of Ser. No. 146,360, Nov. 3, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 474,127

Int. Cl.[6] A61K *9/70*

U.S. Cl. 424—426 **17 Claims**



1. A hemostatic patch suitable for rapidly and without premoistening arresting bleeding from a lesion on a parenchymal organ, in the form of a dry sterile storage stable fibrogen-free flexible sheet of a biodegradable matrix selected from the group consisting of absorbable gelatin, calcium alginate, calcium/sodium alginate, collagen and oxidized regenerated cellulose and containing a hemostatic agent on one face only thereof, which hemostatic agent comprises an amount of thrombin effective to promote accelerated hemostasis and an amount of epsilon aminocaproic acid effective to inhibit fibrinolysis and to accelerate the activation of the thrombin when the patch is applied to the bleeding lesion.

5,643,597

USE OF A TOCOPHEROL PHOSPHATE OR ONE OF ITS DERIVATIVES FOR THE PREPARATION OF COSMETIC OR PHARMACEUTICAL COMPOSITIONS AND COMPOSITIONS SO OBTAINED

Alain Meybeck, Courbevoie; Marc Dumas, Colombes; Frédéric Bonte, Courbevoie, and Christian Marechal, Paris, all of France, assignors to LVMH Recherche, Nanterre, France

Division of Ser. No. 190,075, Feb. 1, 1994, abandoned. This application Jun. 5, 1995, Ser. No. 463,237

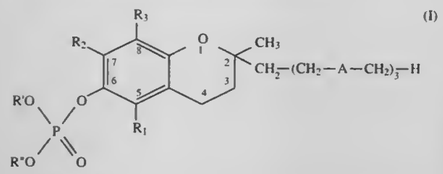
Claims priority, application France, Aug. 1, 1991, 91 09825

Int. Cl.[6] A61K *9/127;31/355*

U.S. Cl. 424—450 **25 Claims**

1. A method of combatting the toxic effects of the superoxide radicals which form during the application of resuscitation techniques requiring oxygenation comprising administering during said resuscitation techniques a composition consisting essentially of (I) 0.001 to 10% concentration by weight of a tocopherol phosphate selected from the group consisting of:

(a) a tocopherol phosphate of general formula:

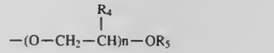


(I)

in which:

R' is selected from the group consisting of a hydrogen atom, an alkyl radical having 1 to 4 carbon atoms and a tocopherol radical when R' is in the form of R'O;

R" is selected from the group consisting of a hydrogen atom, an alkyl radical having 1 to 4 carbon atoms and, when R" is in the form of R"O, an oxyethylenated chain of the formula:

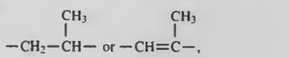


in which

R_4 and R_5 independently are selected from the group consisting of a hydrogen atom and a methyl radical, and n is an integer greater than or equal to 1;

R_1, R_2 and R_3 independently are selected from the group consisting of a hydrogen atom and a methyl radical, with the proviso that R_1, R_2 and R_3 cannot simultaneously be a methyl radical; and

A is the group:



(b) zeta-1-tocopherol phosphate;

(c) an ester of the tocopherol phosphate of part (a);

(d) an ester of the zeta-1-tocopherol phosphate of part (b);

(e) a cosmetically or pharmaceutically acceptable salt of the tocopherol phosphate of part (a); and

(f) a cosmetically or pharmaceutically acceptable salt of the zeta-1-tocopherol phosphate of part (b);

and (II) a cosmetically, dermatologically or pharmaceutically acceptable excipient, vehicle or carrier.

5,643,598

COMPOSITION BASED ON HYDRATED LIPID LAMELLAR PHASES OR LIPOSOMES CONTAINING AN EXTRACT OF SCUTELLARIA, OR AT LEAST ONE OF ITS CONSTITUENTS, AND COSMETIC OR PHARMACEUTICAL, PARTICULARLY DERMATOLOGICAL COMPOSITION, WITH ANTI-ALLERGIC, ANTI-INFLAMMATORY

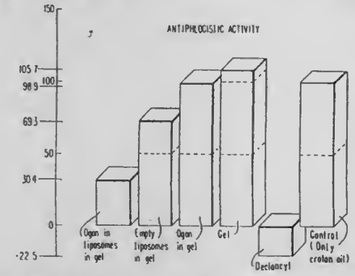
Alain Meybeck, Courbevoie, France, assignor to LVMH Recherche, Colombes Cedex, France

Division of Ser. No. 835,004, Feb. 12, 1992, Pat. No. 5,443,839, which is a continuation of Ser. No. 576,441, Sep. 7, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 473,336

Claims priority, application France, Mar. 9, 1988, 88 03066

Int. Cl.[6] A61K *9/127;7/00*

U.S. Cl. 424—450 **11 Claims**



1. A method for effecting a skin care treatment comprising topically applying to the skin a skin care efficient amount of hydrated lipidic lamellar phases or liposomes consisting essentially of an extract of Scutellaria as the active ingredient thereof, said extract being obtained by extraction with a solvent selected from the group consisting of a polar organic solvent, a polar water and organic solvent mixture, and an apolar organic solvent.

5,643,599

INTRACELLULAR DELIVERY OF MACROMOLECULES

Kyung-Dall Lee, Providence, R.I.; Daniel A. Portnoy, Philadelphia, Pa., and Joel A. Swanson, Brookline, Mass., assignors to President and Fellows of Harvard College, Cambridge, Mass., and University of Pennsylvania, Philadelphia, Pa.

Filed Jun. 7, 1995, Ser. No. 486,764

Int. Cl.[6] A61K *9/127*

U.S. Cl. 424—450 **38 Claims**

1. A composition comprising a liposome consisting essentially of a plurality of vesicle-forming lipids, a bacterial hemolysin, and a therapeutic agent or diagnostic agent, wherein said bacterial hemolysin and said therapeutic agent or diagnostic agent are encapsulated within the lumen of said liposome.

5,643,600

LIPID VESICLES CONTAINING AVOCADO OIL UNSAPONIFIABLES

Rajiv Mathur, Sewell, N.J., assignor to Micro-Pak, Inc., Wilmington, Del.

Continuation of Ser. No. 345,223, Nov. 28, 1994, abandoned, which is a continuation of Ser. No. 167,547, Dec. 15, 1993, abandoned, which is a continuation-in-part of Ser. No. 148,952, Nov. 8, 1993, Pat. No. 5,439,967, which is a continuation-in-part of Ser. No. 148,885, Nov. 8, 1993, Pat. No. 5,405,615, each Continuation-in-part of Ser. No. 761,253, Sep. 17, 1991, Pat. No. 5,260,065. This application Jan. 5, 1996, Ser. No. 583,667

Int. Cl.[6] A61K *9/127;7/00*

U.S. Cl. 424—450 **7 Claims**

1. A paucilamellar lipid vesicle having 2–10 bilayers surrounding an amorphous oil-filled central cavity, wherein each of said bilayers contains at least one non-phospholipid amphiphile selected from the group consisting of polyoxyethylene fatty esters, polyoxyethylene fatty acid ethers, diethanolamides, long chain acyl hexosamides, long chain acyl amino acid amides, long chain acyl amides, POE (20) sorbitan mono- or trioletate, and glycerol monostearate as the primary lipid in said bilayers and phytosterol supplied by avocado oil unsaponifiables, said avocado oil unsaponifiables partitioning in manufacture of said paucilamellar lipid vesicles, so that a sufficient amount of the phytosterol from said avocado oil unsaponifiables goes into said bilayers so as to stabilize said bilayers and the remainder of said avocado oil unsaponifiables goes into said amorphous central cavity.

5,643,601

PHOSPHOLIPID-AND FLUOROCARBON-CONTAINING COSMETIC

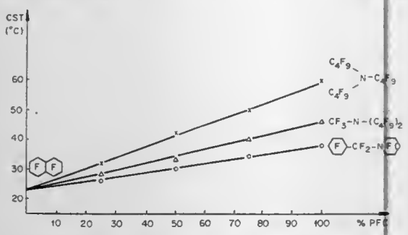
Udo Gross, Berlin; Joachim Roding, Wiesbaden, both of Germany; Klaus Stanzl, White Plains, N.Y., and Leonhard Zastrow, Monaco, Monaco, assignors to Lancaster Group AG, Ludwigshafen, Germany

Continuation of Ser. No. 362,505, Dec. 22, 1994, abandoned. This application Jul. 3, 1996, Ser. No. 674,849

Claims priority, application Germany, Jun. 26, 1992, 42 21 255.3

Int. Cl.[6] A61K *9/127;7/00*

U.S. Cl. 424—450 **21 Claims**



1. Phospholipid-containing and fluorocarbon-containing cosmetic, comprising

(a) a carrier suitable for cosmetic use; and

(b) asymmetric lamellar aggregates of phospholipids, which have a phosphatidylcholine content in the range from 30% to 99% by weight based upon the total weight, and fluorocarbons laden with oxygen in the range from 0.2% to 100% (weight/volume); and

said asymmetric lamellar phospholipid aggregates comprising a central core of fluorocarbons surrounded by at least three layers of phospholipid molecules wherein the layer adjacent to said central core has the lipophilic moiety of the phospholipid interact with the fluorocarbon; and

having a skin penetration depending on the critical solubility temperature of the fluorocarbons or fluorocarbon mixtures selected.

5,643,602

ORAL COMPOSITION FOR THE TREATMENT OF INFLAMMATORY BOWEL DISEASE

Jan Ulmius, Lund, Sweden, assignor to Astra Aktiebolag, Sodertalje, Sweden

Continuation of Ser. No. 855,623, Apr. 30, 1992, abandoned. This application May 9, 1994, Ser. No. 240,078

Claims priority, application Sweden, Nov. 22, 1989, 8903914

Int. Cl.[6] A61K *9/58;9/62;9/14;47/32*

U.S. Cl. 424—462 **26 Claims**

1. A controlled release pellet formulation for oral administration in the treatment of inflammatory bowel diseases wherein the pellet, having a size between 0.3 mm and 5 mm diameter, comprises

(i)

a) a core consisting of a non-pareil seed or

b) a seed in which a glucocorticosteroid as defined in this claim is homogeneously distributed; and

(ii)

a) in the case of the core consisting of a non-pareil seed, a layer surrounding said core of

i)' a glucocorticosteroid selected from the group consisting of (22R,S)-16α,17α-butylidenedioxy- 11β,21-dihydroxypregna-1,4-diene-3,20-dione (I); the 22R-epimer of (I); (22R,S)-16α,17α-butylidenedioxy-9α-fluoro-11β,21-dihydroxy-pregna-1,4-diene-3,20-dione (II); the 22R-epimer of (II); (22R,S)-16α,17α-butylidenedioxy-6α,9α-difluoro-11β,21-dihydroxy-pregna-1,4-diene-3,20-dione (III); the 22R-epimer of (III); (22R,S)-21-acetoxy-16α,17α-butylidenedioxy-11β-hydroxypregna-1,4-diene-3,20-dione (IA); the 22R-epimer of (IA); (22R, S)-21-acetoxy-16α-17α-butylidenedioxy- 9α-fluoro-11β-hydroxy-pregna- 1,4-diene-3,20-dione (IIA); the 22R-epimer of (IIA); (22R, S)-21-acetoxy-16α,17α-butylidenedioxy-6α,9α-difluoro-11β-hydroxypregna-1,4-diene-3,20-dione (IIIA); the 22R-epimer of (IIIA); (22R,S)-16α,17α-butylidenedioxy-11β,21-dihydroxypregna-4-ene-3,20-dione (IV); the 22R-epimer of (IV); (22R,S)-16α,17α-pentylidenedioxy-**11β,21**-dihydroxypregna- 4-ene-3,20-dione (V); the 22R-epimer of (V); (22R, S)-21-acetoxy-16α,17α-butylidenedioxy-11β hydroxypregna-4-ene-3,20-dione (IVA); the 22R-epimer of (IVA); (22R,S)-21-acetoxy- 16α,17α-pentylidenedioxy-11β hydroxypregna-4-ene-3,20-dione (VA); the 22R-epimer of (VA); methyl (20R,S)- 16α,17α-butylidenedioxy-11β-hydroxy-androsta- 1,4-diene-3-one-17β-carboxylate (VI); the 20R-epimer of (VI); methyl (20R, S)-16α,17α-butylidenedioxy- 9α-fluoro-11β-hydroxy-androsta- 1,4-diene-3-one-17β-carboxylate (VII); the 20R-epimer of (VII); methyl (20R,S)-16α,17α-butylidenedioxy- 6α,9α-difluoro-11β-hydroxy-androsta- 1,4-diene-3-one-17β-carboxylate (VIII); the 20R-epimer of (VIII); methyl (22R,S)-16α,17β-butylidenedioxy- 6α,9α-difluoro-11β-hydroxy- 3,20-dioxo-pregna-1,4-diene-21-oate (IX) and the 22R-epimer of (IX), and

ii)' a pharmaceutically acceptable film-forming, water-insoluble or water-soluble polymer, the layer comprising about 0.5–30% of the pellet by weight, or

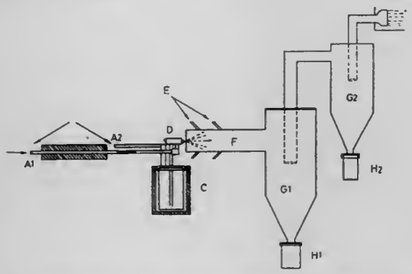
b) in the case of the core consisting of a seed in which a glucocorticosteroid as defined in this claim is homogeneously distributed, a layer surrounding said core of a pharmaceutically acceptable, film-forming, water-insoluble polymer or a pharmaceutically acceptable mixture of film-forming, water-insoluble polymers, or a pharmaceutically acceptable mixture of film-forming, water-soluble and film-forming, water-insoluble polymers; and

(iii) a membrane surrounding both said core and said surrounding layer and containing a pharmaceutically acceptable, film-forming, anionic carboxylic polymer being difficult to dissolve at a low pH but being soluble at a higher pH of about 4 to 7.5, the polymer being either alone or in combination with a pharmaceutically acceptable, film-forming, water-insoluble polymer, the membrane comprising about 1–50% of the pellet by weight, the thickness of said layer or said membrane, or the ratio of said anionic carboxylic polymer to said water-insoluble polymer being effective to prevent release of said glucocorticosteroid from said pellet in gastric fluids, but to permit release of said glucocorticosteroid from said pellet in intestinal fluids at a rate allowing treatment of the part of the intestinal tract where the disease resides, which rate corresponds to a release time in vivo of 1 to 50 hours.

5,643,603
COMPOSITION OF A BIOADHESIVE SUSTAINED DELIVERY CARRIER FOR DRUG ADMINISTRATION
Peter Bottenberg, Eupen; Jean Paul Louis August Remon, Gent; Christian Dominique Erwin De Muynck, Evergem, and Dick Slop, Brussels, all of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium
Continuation of Ser. No. 960,072, Oct. 13, 1992, abandoned. This application Jul. 13, 1994, Ser. No. 274,566
Int. Cl.[6] A61K *9/10;9/22;47/36*
U.S. Cl. 424—488 **10 Claims**

1. Composition of a bioadhesive carrier formulated to adhere to mucosa or teeth for administration of a drug ensuring a prolonged, sustained and controlled delivery of said drug, characterized in that said composition consists essentially of pregelatinized starch and from about 0.1% to about 5% of a drug.

5,643,604
PARENTERAL DOSAGE FORM
Juan Angeles Uribe, and Josué Garza Flores, both of Mexico, Mexico, assignors to Aplicaciones Farmaceuticas S.A. De C.V., Mexico
Continuation of Ser. No. 714,630, Jun. 13, 1991, abandoned. This application Jul. 14, 1993, Ser. No. 94,579
Claims priority, application France, Jun. 14, 1990, 90 07417
Int. Cl.[6] A61K *9/10;9/16;31/565*
U.S. Cl. 424—489 **21 Claims**

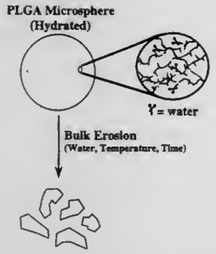


1. A pharmaceutical formulation suitable for compounding for parenteral administration to a mammal comprising solid, nonporous microspheres, said microspheres having a diameter of between 5 and 300 μm, wherein said microspheres consist of cholesterol as a carrier substance and particles of a pharmaceutically active substance homogeneously disbursed within said cholesterol carrier substance

wherein said microspheres are obtained by spraying said cholesterol in the melted state in which said pharmacologically active substance is either in the dissolved state or in the form of particles less than 5 μm, to form droplets and rapidly freezing said droplets.

5,643,605
METHODS AND COMPOSITIONS FOR MICROENCAPSULATION OF ADJUVANTS
Jeffrey L. Cleland, San Carlos; Amy Lim, San Bruno, and Michael Frank Powell, San Francisco, all of Calif., assignors to Genentech, Inc., South San Francisco, Calif.
Continuation of Ser. No. 143,332, Oct. 25, 1993, abandoned. This application Jun. 2, 1995, Ser. No. 460,363
Int. Cl.[6] A61K *9/50*
U.S. Cl. 424—489 **9 Claims**

1. A composition comprising polylactide or poly (D-L-lactide-co-glycolide) (PLGA) microspheres encapsulating an adjuvant capable of stimulating an immune response to an antigen of interest, wherein



the volume of aqueous adjuvant incorporated into the polymer is equal to or less than 1 milliliter per 3 grams polymer;

the ratio of lactide to glycolide is from about 100:0 to 0:100 weight percent;

the inherent viscosity of PLGA polymers used in the microspheres is about 0.1 to 1.2 dL/g;

the median diameter of the microspheres is from about 20 to 100 μm; and

the adjuvant is released from the microspheres in a triphasic pattern characterized by a first phase, wherein less than 30% of the adjuvant is released in an initial burst over a period of about one day, a second phase, following said first phase, wherein less than 10% of the adjuvant is released from the microspheres over a period of about 1 day and between about 30 and 200 days, and a third phase, following said second phase, wherein the remaining adjuvant is released in a second burst.

5,643,606

Patent Not Issued For This Number

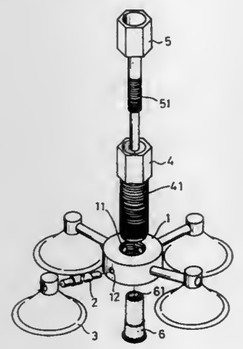
5,643,607
PROLONGED RELEASE MICROCAPSULES
Hiroaki Okada, Suita; Yayoi Inoue, Kyoto, and Yasuaki Ogawa, Otokuni-gun, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan
Division of Ser. No. 188,918, Jan. 31, 1994, Pat. No. 5,480,656, which is a continuation of Ser. No. 649,727, Feb. 1, 1991, abandoned. This application Jun. 2, 1995, Ser. No. 458,679
Claims priority, application Japan, Feb. 13, 1990, 2-033133
Int. Cl.[6] A61K *9/52;9/62*
U.S. Cl. 424—493 **9 Claims**

1. A microcapsule exhibiting zero order release of luteinizing hormone-releasing hormone (LH-RH) analog for a period of at least two months upon administration, which is produced by preparing a water-in-oil emulsion comprising an inner aqueous phase free from a drug retaining substance containing 35 to 60% (W/W) of the LH-RH analog, and an oil phase containing a homopolymer of lactic acid having a weight-average molecular weight of 14,100 to 18,200 and a dispersion degree (ratio of weight-average molecular weight to number-average molecular weight) of 1.5 to 2.5, as the material for forming an outer wall of the microcapsule and then subjecting said water-in-oil emulsion to microencapsulation.

5,643,608
LOW PH GERMICIDAL IODINE COMPOSITIONS HAVING ENHANCED STABILITY
Michael D. McKinzie, and Murray W. Winicov, both of Kansas City, Mo., assignors to West Agro, Inc., Kansas City, Mo.
Filed Mar. 1, 1996, Ser. No. 609,515
Int. Cl.[6] A61K *33/18*
U.S. Cl. 424—667 **35 Claims**

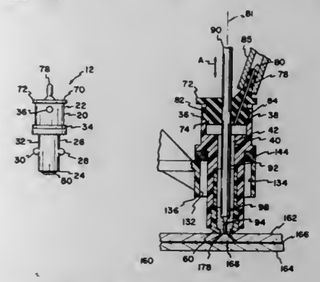
1. A stable aqueous germicidal composition comprising:
from about 0.01–1.4% by weight available iodine;
from about 10–125 ppm free iodine;
from about 0.005–0.5% by weight iodate ion;
a quantity of complexing agent sufficient for maintaining said available iodine in solution;
from about 0.004–0.50% by weight iodide ion; and
said composition having a pH of from about 2.0–4.5 and substantially maintaining the amounts of said available iodine and free iodine over a period of at least three months at room temperature storage.

5,643,609
WINDSHIELD REPAIR DEVICE
Yih-Jang Jan, 2F, No. 41-1, Jong-Huah Rd., Shin-Juang City, Taipei Hsien, Taiwan
Filed Aug. 22, 1995, Ser. No. 518,002
Int. Cl.[6] B32B *35/00*
U.S. Cl. 425—12 **1 Claim**



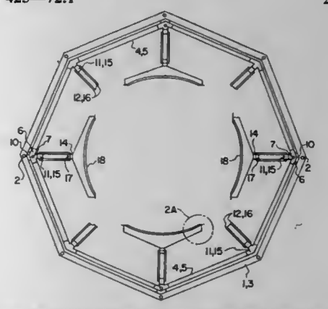
1. A windshield repair device comprising:
a base with a threaded central hole therein,
four suction disks,
means to fixedly connect said four suction disks to said base at ninety degree intervals,
a repair material delivery element,
a windshield contact member with a throughway therein, and
a pressurizing bar; wherein
said repair material delivery element includes a threaded portion at a lower end thereof that is received in said threaded central hole of said base, said repair material delivery element further includes a threaded interior cavity that mates with a threaded portion of said pressurizing bar, and
said windshield contact member is received in a lower end of said interior cavity of said repair material delivery element; such that
said device is securely mounted on a windshield by said suction disks, and
said windshield contact member is brought into firm contact with a windshield by pressure from said repair material delivery element being threaded into said base,
a repair material is inserted into said repair material delivery element and flows through said windshield contact member into a fissure in said windshield, and pressure is applied to said repair material by turning said pressurizing bar into said repair material delivery element so as to force said repair material into said fissure.

5,643,610
WINDSHIELD REPAIR INJECTOR
Adolf F. Beckert, Woodbury, and Jonathan P. Thomas, Maple Lake, both of Minn., assignors to TCG International Inc., Minneapolis, Minn.
Division of Ser. No. 405,141, Mar. 16, 1995, Pat. No. 5,565,217. This application Jul. 24, 1996, Ser. No. 685,707
Int. Cl.[6] B32B *35/00*
U.S. Cl. 425—12 **8 Claims**



1. A windshield repair injector comprising:
a body extending from a tip to an opposite end, the body having an outside surface, and an inner surface defining an inner passage;
a resilient fitting disposed at the tip partially within the inner passage; and
a resilient stopper with two passages closing off the opposite end in the inner passage.

5,643,611
APPARATUS FOR CALIBRATING AND SUPPORTING AN EXTRUDED TUBULAR FILM BLOWN UP INTO A FILM BUBBLE
Rudolf Peters, Lengerich, and Wilfried Howe, Tecklenburg, both of Germany, assignors to Windmoller & Holscher, Lengerich/Westf., Germany
Filed Dec. 20, 1994, Ser. No. 359,385
Claims priority, application Germany, Jan. 24, 1994, 44 01 933.5
Int. Cl.[6] B29C *49/42*
U.S. Cl. 425—72.1 **2 Claims**



1. An apparatus for calibrating and supporting an extruded film inflated into a film bubble made of a synthetic melt in an inflation extrusion installation, comprising supporting means that may be applied approximately tangentially to the film bubble and which

define a polygon approximating to a circle, said supporting means including supporting bars which are disposed parallel to the axis of the tubular film and are articulated by respective levers provided with adjustment drives to an outer basket-shaped frame, in such a way that said supporting bars are each displaceable in their planes in a radial direction to the same extent, the improvement wherein:

(a) the levers comprise link rods having inner ends that are articulated in the median zone of each supporting bar, and whose outer ends are articulated to brackets, which form parts of frames that carry spindle nuts at least two points;

(b) axially parallel screw spindles are mounted on the basket-shaped frame and are provided with drive means, and have thread sections provided with threads of opposite hand screwed into said spindle nuts; and

(c) at a distance from one of said link rods, an additional link rod is disposed parallel thereto and whose respective ends are articulated to a respective said supporting bar and to a said bracket;

wherein the upper link rod forms, together with the additional link rod, a link rod parallelogram;

the screw spindles are mounted on the basket-shaped frame at their upper and lower ends and in their median zones between their sections that are provided with threads running in opposite directions;

the screw spindles are mounted on axially parallel supports of the basket-shaped frame which supports the screw spindles from the part of the basket-shaped frame that is polygonal in a plan view;

said drive means of the screw spindles are chain wheels fitted on journals of the screw spindles which project from a frame profile of the basket-shaped frame and over which there runs a common drive-pulling means; and

neighbouring supporting link rods or supporting segments mounted on the supporting bars are respectively arranged offset to each other in vertical or axial planes.

5,643,612

PARTIAL PAD MOLD

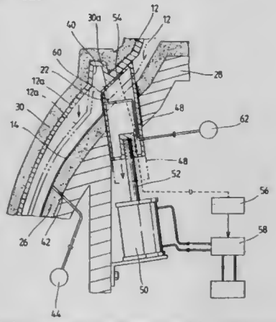
Hiroshi Suzuki, Anjyo, Japan, assignor to Kabushiki Kaisha Inoac Corporation, Aichi, Japan

Division of Ser. No. 302,540, Sep. 8, 1994, Pat. No. 5,500,168. This application Jun. 5, 1995, Ser. No. 461,206

Claims priority, application Japan, Jun. 7, 1994, 6-150405

Int. Cl.[6] B29C *44/12*

U.S. Cl. 425—125 **1 Claim**



1. A mold for partially molding a pad by setting a panel main body and a surfacing material on a core of an upper die and on a cavity wall of a lower die, respectively, and allowing a urethane stock solution to be foamed in the space defined between said panel main body and said surfacing material to mold an instrument panel provided with a pad having a urethane foam as a core material;

the improvement comprising: said core material of said upper die has a groove having a U-shaped cross section in which a recess provided on a front surface of said panel main body can intimately be received; said cavity wall of said lower die is provided with descendible supporting members arranged, when said upper die is closed, at positions slightly outer than said groove formed on said core; and said supporting members when ascended are designed to retain an edge portion standing from a periphery of said surfacing material toward a rear surface thereof, when said surfacing material is set on said cavity wall, and to descend as said upper die is closed; and

wherein said supporting members are attached to piston rods of fluid pressure cylinders and are ascended or descended by operating said cylinders under control and sensors are disposed on tops of said supporting members which detect contact of said panel main body with said supporting members as said upper die is being closed to actuate control valves of said fluid pressure cylinders via a controller and allow said supporting members to descend automatically.

5,643,613

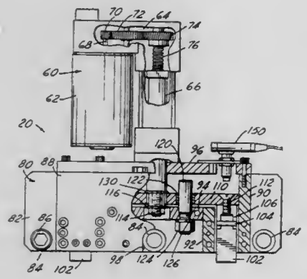
APPARATUS FOR CLAMPING MOLDS IN INJECTION MOLDING MACHINES

James A. Bott, Waterford, and John Tarr, Goodrich, both of Mich., assignors to Incoe Corporation, Troy, Mich.

Filed Jun. 6, 1994, Ser. No. 254,198

Int. Cl.[6] B29C *45/64*

U.S. Cl. 425—135 **19 Claims**



1. An electric clamping apparatus for clamping a mold to a platen in an injection molding machine, the apparatus comprising:

a housing,

at least one movable clamping member in said housing, said clamping member being movable from a first position within said housing to a second position wherein at least a portion thereof extends outside said housing and is used to clamp the mold to the platen,

an electric motor in operative association with said housing,

a drive mechanism in operable connection with said motor and used to move said clamping member between said first position and said second position,

said drive mechanism including an elongated shaft with threads thereon, and

an electric circuit in operative association with said motor for measuring the amperage drawn on said motor as said drive mechanism moves said clamping member from said first position to said second position,

wherein the limit of movement of said clamping members outside said housing for clamping the mold to the platen is determined by a control system according to a predetermined amperage drawn on said motor.

5,643,614

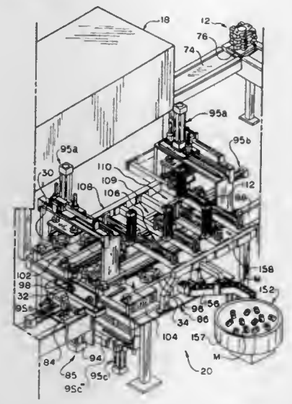
MOLD SEPARATOR APPARATUS

Robert L. Brown, 1357 Cosmos NW., Hartville, Ohio 44632; David E. Baxter, 2270 Tallmadge Rd., Ravenna, Ohio 44266, and Gregory L. Baxter, 1093 Dayton St., Akron, Ohio 44310

Division of Ser. No. 963,797, Oct. 20, 1992, Pat. No. 5,358,398, which is a continuation-in-part of Ser. No. 877,349, Apr. 30, 1992, which is a continuation of Ser. No. 621,675, Nov. 30, 1990, abandoned. This application Aug. 9, 1994, Ser. No. 288,096

Int. Cl.[6] B29C *45/00*

U.S. Cl. 425—169 **11 Claims**



4. Apparatus for removing molded articles from a continuous molding system, said molding system including at least one multi-section, self-clamping mold, the sections of said mold adapted to separate from one another by non-horizontal movement,

said apparatus comprising a disassembly station having means for unclamping said multi-section mold into sections and for moving said sections in a non-horizontal direction to separate said sections from one another,

at least one work station having means for

(a) moving said mold sections horizontally with respect to one another to locate said mold sections in horizontally-spaced relationship with respect to one another, and

(b) locating said sections to permit the removal of molded articles, and

a reassembly station having means for aligning said mold sections and clamping said multi-section mold in clamped condition.

5,643,615

APPARATUS AND METHODS FOR FORMING WORKPIECES

Michael D. Austin, Flushing, Mich., assignor to Atlas Technologies, Inc., Fenton, Mich.

Filed Mar. 10, 1995, Ser. No. 401,763

Int. Cl.[6] B29C *31/00;37/00*

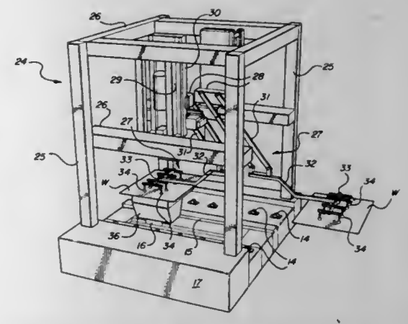
U.S. Cl. 425—186 **16 Claims**

1. Apparatus for supporting and moving a forming die into and out of a forming press in which a workpiece may be formed and for transferring a formed workpiece from said press, said apparatus comprising:

a cart movable from a first position in alignment with and adjacent one side of a forming press to a second position out of alignment with said one side of said press;

means on said cart for accommodating a forming die for movement with and relative to said cart;

means for moving said die selectively to and from said cart into said press when said cart is in said first position;



workpiece support means for removably supporting a workpiece;

workpiece transfer means for transferring a workpiece selectively from and to said support means; and

means mounting said transfer means on said cart for enabling said transfer means to transfer a workpiece selectively from and to said support means when said cart is in said first position and said die is in said press.

5,643,616

CONCRETE-MOLDING MACHINE

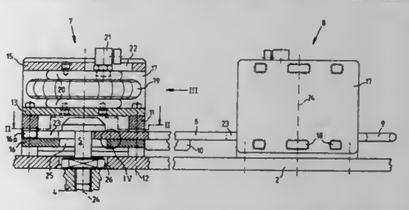
Herbert Hess, Maselheim, Germany, assignor to Rampf Formen GmbH, Allmendingen, Germany

Filed Aug. 25, 1995, Ser. No. 519,165

Claims priority, application Germany, Aug. 27, 1994, 44 30 536.2

Int. Cl.[6] B28B *3/02;* **B30B** *15/02*

U.S. Cl. 425—195 **13 Claims**



1. A concrete-molding machine having a movable ram, and an upper mold part positionable below the movable ram, and comprising:

means for clamping the upper mold part to the movable ram in a vibration-resistant manner, said means including:

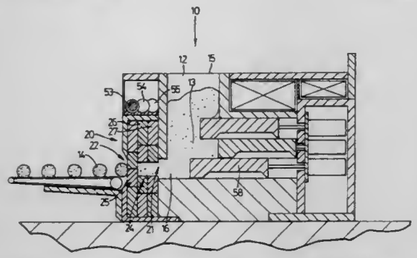
at least one connecting member fastened to one of the movable ram and the upper mold part, said connecting member comprising a shank, and a widened head at one end of said shank;

a horizontally arranged plate attached to the other one of the movable ram and the upper mold part, said plate having at least one opening formed therein for receiving the shank of a respective connecting member;

at least one horizontally arranged slide guided on the plate, said slide having a clearance region with a widened portion and a narrowed portion, and being displaceable from a release position in which the widened head can pass through the widened portion of the clearance region, to a connecting position in which the shank passes through the narrowed portion and the widened head rests against said slide; and

at least one pneumatic lifting element comprising an inflatable cushion positioned to exert a clamping force against said slide.

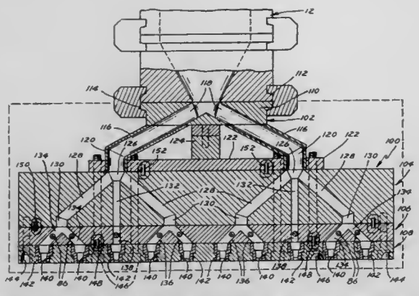
5,643,617
APPARATUS FOR SCALING AND MOLDING PIECES OF DOUGH
Gunther Burtscher, 52 Huntington Park Drive, Thornhill, Ontario, Canada
Filed Jan. 24, 1996, Ser. No. 590,664
Int. Cl.[6] A21C *5/08;11/10*
U.S. Cl. 425—298 **11 Claims**



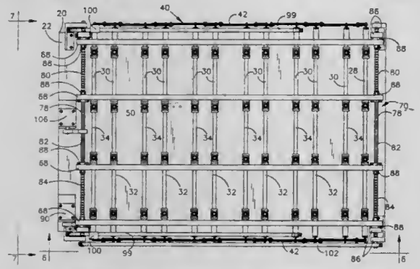
1. An apparatus for scaling and molding dough, comprising:
a hopper having an upper opening for receiving and walls for holding a batch of dough, the hopper having a opening at its lower end through which the dough may pass;
a scaling and molding station in flow communication with the hopper through its lower opening, the station having walls defining a dough receiving pocket with inflow and outflow ends and having an aperture forming assembly at the outflow end, the assembly comprising upper and lower opposing toothed members which are slidably disposed relative to one another and which when aligned define at least two spaces between at least three sets of opposing teeth of the members, in each of which spaces there are positioned two slidable members which coact with the toothed members to limit the movement of the toothed members relative to one another between an aperture opened configuration and an aperture closed configuration, the aperture opened configuration being obtained when the opposing toothed members are out of alignment with one another, and the aperture closed configuration being obtained when the toothed members are in alignment with one another, each aperture formed by said assembly is four sided with one side being provided by each of the opposing toothed members and one of the slidable members in each said space; and
means for moving a portion of dough in the hopper from the opening at its lower end and into the scaling and molding station, wherein a dough piece is scaled, molded and ejected from the apparatus by the action of the aperture forming assembly.

5,643,618
APPARATUS FOR MAKING MULTIPLE, COMPLEXLY PATTERNED EXTRUDATES
Peter A. Huberg, Shoreview, and James N. Weinstein, Minneapolis, both of Minn., assignors to General Mills, Inc., Minneapolis, Minn.
Continuation-in-part of Ser. No. 241,321, May 11, 1994. This application Dec. 9, 1994, Ser. No. 353,477
Int. Cl.[6] B29C *47/10*
U.S. Cl. 425—382.4 **19 Claims**

1. Manifold for making multiple extrudates formed from a food dough exiting from a source and having uniformity of flow, comprising, in combination: a plurality of exit orifices located at differing spacings from the source; and with each of the exit orifices including a flow path for the food dough from the source to the exit orifice, with the flow paths of at least two pair of the exit orifices being formed by at least first and second passageways and first, second, third, and fourth ports, with the first and second passageways extending downstream from an interconnection at a passageway angle relative to each other and having equal cross-sectional sizes and shapes, with the first and second passageways extending from the interconnection in a nonparallel manner, with the first and second ports extending downstream from the first passageway and having generally equal cross-sectional sizes and shapes and the third and fourth ports extending downstream from the second passageway and having generally equal cross-sectional sizes and shapes generally equal to the cross-sectional sizes and shapes of the first and second ports and less than the cross-sectional sizes of the first and second passageways, with the first and second passageways having generally equal lengths, with the first, second, third, and fourth ports having generally equal lengths, wherein the flow path of at least one of the exit orifices is formed by a duct having a constant size and extending downstream from the interconnection of the first and second passageways to the exit orifice, with the cross-sectional size of the duct being less than the cross-sectional size of the first and second passageways, with each of the flow paths including means for adjusting the rate and pressure of the flow of the dough.

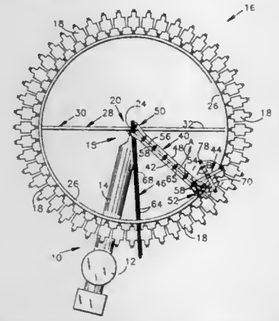


5,643,619
ARTICLE REPOSITIONING APPARATUS FOR AN INJECTION STRETCH BLOW MOLDING MACHINE
David C. Oas, Vandalia; Lynn R. Maggert, Sr., Tipp City, and James C. Turner, Cincinnati, all of Ohio, assignors to Electra Form, Inc., Vandalia, Ohio
Filed Dec. 18, 1995, Ser. No. 574,201
Int. Cl.[6] B29C *49/42*
U.S. Cl. 425—534 **34 Claims**



1. In a machine for simultaneously molding a plurality of containers from plastic parisons, the machine including a first work station wherein the parisons are disposed in a two-dimensional evenly spaced first position and a second work station wherein the parisons are disposed in a two-dimensional paired unevenly spaced second position, an apparatus for altering the spacings between the parisons between the first position and the second position comprising:
a base including at least a pair of ways;
a plurality of movable tracks, each said movable track coupled to said ways to permit movement with respect to said base;
linking elements, linking said movable tracks together to permit variation of spacings between said movable tracks;
a plurality of parison receivers, each parison receiver mounted to and slidably movable along one of said movable tracks;
positioning components, positioning said parison receivers along said movable tracks; and
associating apparatus, associating said positioning components and said linking elements so that said parison receivers are movable between the first position and the second position.

5,643,620
CONTINUOUS INJECTION MOLDING SYSTEM
Charles J. Brun, Jr., Xenia, Ohio, assignor to Electra Form, Inc., Vandalia, Ohio
Filed Aug. 9, 1995, Ser. No. 513,134
Int. Cl.[6] B29C *45/06*
U.S. Cl. 425—556 **18 Claims**



1. An apparatus for serially molding articles from a plastic resin material comprising: an extruder having an output for producing a stream of plasticized resin material, a circular array of molds arranged about a central area, a runner system coupled between the extruder output and the circular array of molds for maintaining the stream of plasticized resin material at a temperature suitable for molding, a valve connected between the runner system and an input of each mold of the circular array for sequentially directing the plasticized resin into each of the molds to form a molded article therein, a molded article extractor for sequentially removing each molded article from each of the molds, and a molded article handling apparatus coupled to the molded article extractor for arranging the molded articles in a series and carrying the molded articles to the central area for removal through the central area.

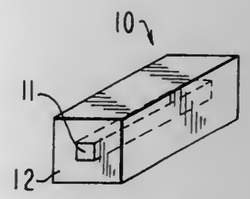
5,643,621
FLAVOR ENHANCEMENT IN CULTURED DAIRY PRODUCTS
David W. Mehnert, Antioch, Ill., assignor to Kraft Foods, Inc., Northfield, Ill.
Division of Ser. No. 218,505, Mar. 25, 1994, Pat. No. 5,462,755. This application May 22, 1995, Ser. No. 447,087
Int. Cl.[6] A23C *19/00;13/16*
U.S. Cl. 426—36 **26 Claims**

1. A method for preparing a cultured dairy product having a reduced fat content, said method comprising the steps of:
(a) preparing a fat-replaced milk by a process comprising the steps of:
(1) combining an aqueous protein composition comprising milk protein with a fat substitute to form a mixture; and
(2) homogenizing the mixture to form the fat-replaced milk; and
(b) processing the fat-replaced milk to form the cultured dairy product; wherein a small amount of a fat fraction relative to the finished product is incorporated into the cultured dairy product at or prior to flavor development by combining the fat fraction with the aqueous protein composition and the fat substitute to form the mixture of step (a)(1) or by adding the fat fraction to the fat-replaced milk during the processing step (b), wherein said fat fraction is derived from a fat source selected from the group consisting of milk fat, animal fat and vegetable fat and remains liquid at or below 74° F.

5,643,622
METHODS FOR PRODUCING A SOLID FEED SUPPLEMENT
Wallace Sawhill, Canoga Park, Calif., assignor to Pacific Kenyon Corporation, Long Beach, Calif.
Continuation-in-part of Ser. No. 58,130, May 10, 1993. This application Aug. 23, 1993, Ser. No. 110,513
Int. Cl.[6] A23C *21/02;* **A23J** *1/16;* **A23K** *1/06;* **A23L** *1/305*
U.S. Cl. 426—41 **17 Claims**

15. A method for the preparation of a solid animal feed supplement from a fermentation by-product comprising an aqueous solution containing protein in excess of 5 weight percent and in sufficient amount to form protein gels in said solution at ambient temperature, which method comprises:
a. heating said solution to a temperature from 100° to 150° F. and treating said solution with a proteinase at conditions sufficient to digest said protein and prevent the formation of a protein gel;
b. adding a gelling agent selected from the group consisting of expanding lattice clays, gums, orthophosphate salts and mixtures of calcium hydroxide and phosphoric acid to the aqueous solution in an amount sufficient to solidify said solution; and
c. pouring said mixture into containers for solidification and cooling said mixture to ambient temperature.

5,643,623
HEALTH FOOD PRODUCT AND ITS USES
Harold H. Schmitz, Hackettstown; Dana L. Michael, Andover, both of N.J.; James C. Neumann, Stroudsburg, Pa.; Michael Webster, Blairstown, N.J.; Elizabeth Zemenek, Easton, Pa., and Ralph Jerome, Blairstown, N.J., assignors to Mars Incorporated, McClean, Va.
Filed Jun. 7, 1995, Ser. No. 473,451
Int. Cl.[6] A23L *1/302*
U.S. Cl. 426—73 **25 Claims**



1. An edible food product, which comprises
(a) an edible first component containing an antioxidant having in vivo biological antioxidant activity and
(b) an edible second component containing an ingredient selected from the group consisting of a carbobydrate, a fat and a protein, and combinations thereof, said second component positioned for protecting the in vivo biological antioxidant activity of the antioxidant in the first component,
wherein the first component is in the form of a discrete portion from the second component, wherein the antioxidant is an antioxidant blend containing at least two nutritive antioxidants selected from the group consisting of all-trans beta-carotene, cis beta-carotenes, all-trans alpha-carotene, cis alpha-carotenes, all-trans gamma-carotene, cis gamma-

carotenes, vitamin C and vitamin E, and wherein the antioxidant blend further contains a non-nutritive antioxidant selected from the group consisting of zeta-carotene, all-trans lycopene, cis lycopenes, phytofluene, phytoene and an anti-inflammatory agent.

5,643,624

AMORPHOUS SILICAS

Derek Aldcroft, South Wirrol; John Robert Newton, and Peter William Stanier, both of Cheshire, all of England, assignors to Unilever Patent Holdings BV, Rotterdam, Netherlands

Continuation of Ser. No. 860,568, Mar. 30, 1992, abandoned, which is a continuation of Ser. No. 678,070, Apr. 1, 1991, abandoned, which is a continuation of Ser. No. 535,133, Jun. 8, 1990, abandoned, which is a continuation of Ser. No. 175,336, Mar. 30, 1988, abandoned. This application Nov. 29, 1995, Ser. No. 563,748

Claims priority, application United Kingdom, Mar. 30, 1987, 8707526

Int. Cl.[6] **A23L** *2/00*

U.S. Cl. 426—330.4 **1 Claim**

1. A process for treating beer or other alcoholic fermented beverage to stabilize the beverage and reduce haze on storage which comprises contacting said beer or other beverage with a precipitated amorphous silica having

i) a pore volume in the range from about 1.6 to about 2.5 cc g^{-1},

ii) a mean pore diameter in the range from about 8.0 nm to about 20.0 nm,

iii) a surface area from at least about 655–830 m^2g^{-1},

iv) an oil absorption in the range from about 250 to about 350 cc/100 g,

v) a structural bound water content of at least 5% w/w as determined by the difference between the ignition loss at 1000° C. and the moisture loss at 105° C.,

vi) a free moisture content of less than about 25% w/w as determined by drying at 105° C.,

vii) an average particle size of about 5 to 30 microns,

viii) less than about 20 ppm of beer solution iron which represents less than about 30% of the total iron present,

ix) a D SASPL value of about 1.2–1.5 mls.

5,643,625

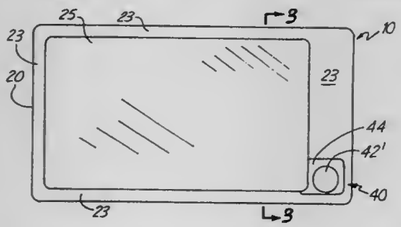
METHOD FOR PACKAGING REFRIGERATABLE YEAST LEAVENED DOUGHS

Michael R. Perry, Plymouth; Victor T. Huang, Moundsview; Diane R. Rosenwald, Shoreview; Andrew H. Johnson, Coon Rapids, and Katy Ghiasi, Minneapolis, all of Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Continuation of Ser. No. 483,401, Jun. 7, 1995, Pat. No. 5,547,694, which is a continuation of Ser. No. 035,469, Mar. 23, 1993, abandoned. This application Jul. 16, 1996, Ser. No. 683,071

Int. Cl.[6] **B65D** *81/20;* **A21D** *10/02*

U.S. Cl. 426—395 **6 Claims**



1. A method for packaging a refrigeratable dough product, said method comprising the steps of:

providing a package comprising a substantially gas-impermeable tray defining an interior cavity, the tray comprising a flange portion positioned on an upper edge of the tray and extending around its periphery, said flange including a recess that is positioned within the flange but which does not extend to an outer perimeter of the flange; a top wall; a port formed through the top wall above the recess; and a pressure control means sealingly attached to the port; said port being in gaseous communication with said interior cavity via said recess and through said pressure control means;

placing an expandable yeast leavened refrigerated dough within the interior cavity of said tray;

sealing the package containing the dough by sealingly attaching the top wall to the tray to cover the dough containing interior cavity and the recess, said recess being positioned in said flange together with said dough being positioned in said interior cavity such that enough head space is provided above the dough such that the dough will rise without the dough substantially interfering with said gaseous communication between the interior cavity and the port even as the dough expands to fill the inner cavity:

wherein the pressure control means is capable of venting dough generated carbon dioxide from the package and maintaining an internal equilibrium pressure of less than about 6 psig within the tray during refrigerated storage and as the dough expands within the package, such that pressure is prevented from building to a level which will cause the package to rupture, said pressure control means also substantially preventing the ingress of air into the package.

5,643,626

PROCESS FOR PRODUCING KETTLE-STYLE POTATO CHIPS

William Douglas Henson, Duncanville; William Roman Slovak, Arlington; Constantine Trifon Dalson, Irving, and Brenda Dee Slay, Dallas, all of Tex., assignors to Recot, Inc., Plano, Tex.

Continuation of Ser. No. 524,960, May 18, 1990, abandoned. This application Jan. 13, 1992, Ser. No. 821,311

Int. Cl.[6] **A23L** *1/217*

U.S. Cl. 426—438 **1 Claim**

1. A process for the batch-wise production of kettle-style potato chips, comprising placing a discrete batch of potato slices into a fry kettle containing cooking oil at a temperature of about 305° F., circulating the cooking oil through the kettle and through a remote heat transfer apparatus whereby the entire volume of oil within the kettle is maintained at a substantially uniform temperature, allowing the temperature of the cooking oil to drop during about the first two minutes of frying, then adding enough heat to maintain the temperature of the entire volume of cooking oil in the kettle at about 250° F. to 260° F. until a total of about 5 to 7 minutes of frying have elapsed, then adding heat to raise the temperature of the cooking oil to about 305° F. and ceasing frying after about 9 to 11 minutes of total fry time, at which point the total moisture content of the slices is less than about 2% by weight.

5,643,627

NON-GELLING WAXY STARCH HYDROLYZATES FOR USE IN FOODS

David P. Huang, Bound Brook; Roger Jeffcoat, Bridgewater, and William R. Mason, Somerville, all of N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Filed Dec. 29, 1995, Ser. No. 581,239

Int. Cl.[6] **A23L** *1/0522*

U.S. Cl. 426—578 **20 Claims**

1. A non-gelling starch hydrolyzate suitable for use as a food additive characterized in that the base starch is a waxy starch or flour which has natural freeze-thaw stability and has greater than

30% by weight of short chain with a degree of polymerization (DP) of less than 13, and is converted to a water fluidity (WF) of from about 10 to 80.

5,643,628

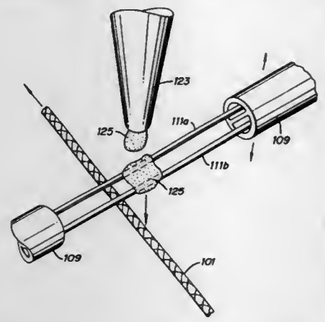
SUTURE TIPPING APPARATUS AND METHOD

Marcel Sonderegger, Schaffhausen, Switzerland, assignor to United States Surgical Corporation, Norwalk, Conn.

Filed Jun. 5, 1995, Ser. No. 460,962

Int. Cl.[6] **A61L** *17/00;* **B05D** *1/28;3/00*

U.S. Cl. 427—2.31 **27 Claims**



1. A method for tipping a surgical suture comprising:

a) drawing a multifilament surgical suture under tension from a suture supply;

b) dispensing a drop of liquid tipping agent;

c) contacting a portion of the suture with the drop; and

d) twisting the suture and absorbing the tipping agent into the suture to create a tipped portion of the suture.

5,643,629

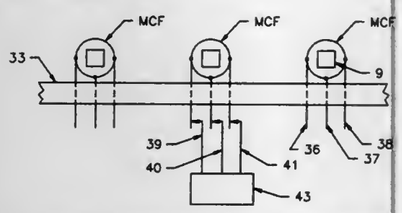
METHOD FOR ADJUSTING CENTER FREQUENCY AND BANDWIDTH OF MONOLITHIC FILTERS BY PLATING THROUGH A SINGLE-APERTURE MASK ON A SINGLE SIDE OF THE FILTERS ELECTRODE PATTERN TO PLATE SELECTED AREAS OF THE PATTERN

Franz L. Sauerland, 600 Falls Rd., Chagrin Falls, Ohio 44022

Continuation-in-part of Ser. No. 702,758, May 20, 1991, abandoned. This application Jun. 30, 1992, Ser. No. 906,429

Int. Cl.[6] **B05D** *5/12*

U.S. Cl. 427—8 **1 Claim**



1. A method for adjusting center frequency and bandwidth of a monolithic filter having an electrode pattern including at least two resonators separated by an inter-resonator gap, the method comprising

a) positioning one side of the filter's electrode pattern adjacent a mask with a first and second aperture, said first aperture having substantially the same dimensions as the resonator electrodes, and said second aperture having substantially the dimensions of said inter-resonator gap,

b) positioning said first aperture opposite each of said two resonator electrodes and depositing evaporated material through said first aperture to adjust the frequency of said resonators,

c) positioning said second aperture opposite said inter-electrode gap and depositing evaporated material through said second aperture to adjust the bandwidth of said filter.

5,643,630

METHOD AND DEVICE FOR DEPOSITING PULVERIZED LUBRICANTS OR PARTING COMPOUNDS ON THE PRESSING TOOLS OF TABLETTING MACHINES

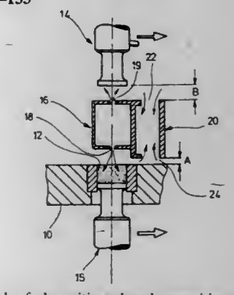
Jürgen Hinzpeter; Ulrich Zeuschner, both of Schwarzenbek; Hans-Joachim Pierags, Lübeck; Peter Lüneburg, Berkentin; Elke Wittenberg, Gülzow, and Ulrich Arndt, Lauenburg, all of Germany, assignors to Wilhelm Fette GmbH, Schwarzenbek, Germany

Filed Apr. 3, 1995, Ser. No. 415,723

Claims priority, application Germany, Apr. 8, 1994, 44 12 117.2

Int. Cl.[6] **B05D** *7/22*

U.S. Cl. 427—133 **5 Claims**



1. A method of depositing dosed quantities of a pulverized lubricant or parting compound on the materials contacting surfaces of pressing tools of a rotary tabletting machine having upper and lower pressing tools rotated about an axis along a circular orbit and axially displacable by a control means, said pressing tools being aligned with molding holes of a disc rotating about said axis synchronously with said pressing tools, the method including the steps of:

continuously blowing said lubricant or parting compound onto said materials contacting surfaces through upper and lower nozzle orifices adjacent, respectively to said upper and said lower pressing tools, said nozzle orifices being supplied from a source for said lubricant or release agent and

continuously removing excess of said lubricant or parting compound by a suction nozzle having upper and lower suction openings adjacent to and downstream of said upper and lower nozzle orifices when looking in direction of rotation of said pressing tools.

3. A rotary tabletting machine comprising:

upper and lower pressing tools (**14**, **15**) rotated about an axis along a circular orbit and axially displacable by a controller,

a matrix disc (**10**) having molding holes (**12**) therein rotating about said axis synchronously with said pressing tools, said pressing tools being aligned with the molding holes (**12**) of the matrix disc (**10**),

a discharge nozzle (**16**) for continuously depositing dosed quantities of a pulverized lubricant or parting compound to the materials contacting surfaces of the pressing tools, said discharge nozzle operatively connected to a source for said lubricant or parting compound and including upper and lower nozzle ports (**19**, **18**) adjacent, respectively to said upper and said lower pressing tools, and

a suction nozzle (**20**) for continuously removing excess of said lubricant or parting compound, said nozzle having upper and

lower suction ports (**22**, **24**) adjacent to and downstream of said upper and lower nozzle ports, respectively, when looking in direction of rotation of said pressing tools.

5,643,631

INK JET RECORDING PAPER INCORPORATING NOVEL PRECIPITATED CALCIUM CARBONATE PIGMENT

Douglas Ward Donigian, 1021 Main St. Rear, Bethlehem, Pa. 18018; Robert Kenneth Resnik, 1709 Wynwood La., Easton, Pa. 18040, and Michael Gregory McFadden, 870 Durham Rd., Riegelsville, Pa. 18077

Filed Mar. 17, 1995, Ser. No. 407,422

Int. Cl.[6] B05D *5/04*

U.S. Cl. 427—218 **13 Claims**

I. A process for making an ink jet recording paper comprising:

a) precipitating calcium carbonate particles from a slurry of calcium hydroxide by introducing carbon dioxide;

b) heat aging the precipitated calcium carbonate particles in the presence of an organophosphonate compound to produce particles having a BET specific surface area of at least about 60 m^2/g; and

c) coating at least one side of a paper base stock with a coating comprising heat aged calcium carbonate particles and binder to form the ink jet recording paper.

5,643,632

TUNGSTEN CHEMICAL VAPOR DEPOSITION PROCESS FOR SUPPRESSION OF VOLCANO FORMATION

Yung-Tsun Lo, Hsin-Chu, Taiwan, assignor to Mosel Vitelic, Inc., Taiwan

Filed Oct. 13, 1995, Ser. No. 543,226

Int. Cl.[6] C23C *16/08*

U.S. Cl. 427—250 **5 Claims**



1. A process for tungsten chemical vapor deposition on a wafer performed in a chamber having a shower head, a shadow ring and a heater, wherein said wafer is supported by said heater, said shadow ring is positioned over the edge of said wafer, said shower head is positioned over said shadow ring, said wafer and said heater, and wherein said shower head supplies a source of tungsten, said process comprising the following steps of:

depositing a first nucleation tungsten layer on said wafer at a first pressure under conditions whereby there is a first gap between the shower head and the heater;

depositing a second nucleation tungsten layer on said first nucleation tungsten layer at a second pressure higher than the first pressure under conditions whereby there is a second gap between the shower head and the heater larger than the first gap; and

depositing a blanket tungsten layer on said second nucleation tungsten layer.

5,643,633

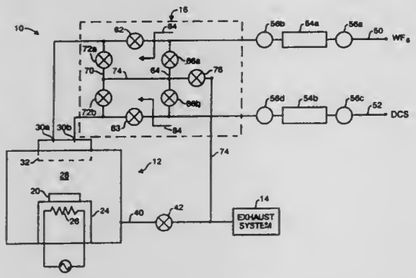
UNIFORM TUNGSTEN SILICIDE FILMS PRODUCED BY CHEMICAL VAPOR DEPOSTITON

Susan G. Telford, Untergruppenbach, Germany; Meng Chu Tseng, Saratoga, Calif.; Michio Aruga, Inba-gun, Japan, and Moshe Eizenberg, Haifa, Israel, assignors to Applied Materials, Inc., Santa Clara, Calif.

Continuation of Ser. No. 64,328, May 18, 1993, Pat. No. 5,500,249, which is a continuation-in-part of Ser. No. 995,211, Dec. 22, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 485,925

Int. Cl.[6] C23C *16/00*

U.S. Cl. 427—255 **15 Claims**



1. A chemical vapor deposition process for depositing a substantially uniform, substantially fluorine-free layer of WSi_x directly on a substrate, the process comprising the steps of:

(a) placing a substrate in a deposition zone;

(b) introducing a process gas comprising dichlorosilane and WF_6 into the zone;

(c) maintaining the pressure in the zone at at least 1 Torr; and

(d) heating the substrate to a temperature of at least 550° C., to deposit a WSi_x layer having a substantially uniform W to Si ratio directly on the substrate.

5,643,634

PROCESS FOR THE TREATMENT OF GLASS TO IMPROVE ITS ADHESION TO A POLYMER

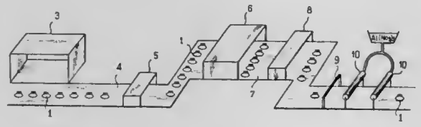
Frederic Mertz, Deparis, France, assignor to Saint-Gobain Emballage, Courbevoie, France

Filed Aug. 30, 1995, Ser. No. 520,983

Claims priority, application France, Aug. 30, 1994, 94 10398

Int. Cl.[6] C23C *16/18;16/40*

U.S. Cl. 427—255 **11 Claims**



1. A process for preparing a glass artical for adhesion to a polymer film comprising:

depositing a metal oxide layer on a surface of the glass article, and

depositing a water-soluble aluminum salt layer of aluminum nitrate, aluminum lactate or aluminum acetate from an aqueous solution of said salt on at least a portion of the metal oxide layer wherein said portion of the metal oxide layer is the portion to which the polymer is desired to adhere.

5,643,635

METHOD AND COMPOSITION FOR FORMING A DECORATIVE COATING ON A SUBSTRATE

Chung-Il Ahn, Inchon, and Chan-Hee Shin, 451-9, Hwagok-dong, Kangseo-ku, Seoul (157-010), both of Rep. of Korea, assignors to Chan-Hee Shin, Seoul, Rep. of Korea

Filed Feb. 16, 1995, Ser. No. 389,416

Claims priority, application Rep. of Korea, Feb. 16, 1994, 1995-283

Int. Cl.[6] B05D *5/06;3/02*

U.S. Cl. 427—257 **3 Claims**

I. A method of preparing a decorative surface coating on a substrate comprising:

mixing a principle component and a hardener component in a bulk ratio from 1:2 (v/v) to 2:1 (v/v) to form a liquid coating composition, said principle component consisting of 10–90% by volume of a polyol resin, 3–30% by volume of ethylene glycol acetate, 4–35% by volume of ethyl acetate, 2–20% by volume of toluene, 1–2% by volume of a filler, and 0.01–3% by volume of a pigment, said hardener component consisting of 70–80% by volume of a blocked isocyanate, 10–15% by volume of ethyl acetate, and 10–15% by volume of toluene;

applying said liquid coating composition to a surface of a substrate to form a coated product; and,

drying said coated product in a primary drying stage at ambient temperatures followed by a forced drying stage at elevated temperatures to obtain an end product having a decorative textured surface of a patterned appearance.

5,643,636

CERAMIC COLOR COMPOSITION AND METHOD FOR PRODUCING A GLASS SHEET

Hiroshi Usui; Hitoshi Onoda, and Tsuneo Manabe, all of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Jan. 24, 1996, Ser. No. 590,756

Claims priority, application Japan, Jan. 30, 1995, 7-013082

Int. Cl.[6] B05N *3/02*

U.S. Cl. 427—376.2 **9 Claims**

1. A ceramic color composition comprising from 5 to 34 wt % of a heat resistant color pigment powder, from 65 to 94 wt % of a bismuth oxide-based glass powder, from 0 to 10 wt % of a refractory filler powder, and from 0.1 to 20 wt % of at least one additive selected from the group consisting of borides and silicides, wherein the composition of the glass powder consists essentially of from 10 to 36 wt % of SiO_2, from 25 to 75 Wt% Of Bi_2O_3, from 3.3 to 25 wt % of B_2O_3, from 0 to 15 wt % of Li_2O, from 0 to 15 wt % of Na_2O, from 0 to 15 wt % of K_2O, from 0.1 to 19 wt % of BaO and from 0 to 10 wt % of TiO_2.

5,643,637

METHOD OF GRADING THE ELECTRIC FIELD OF AN ELECTRODE

Stefan Jacek Rzad, Rexford, and Michael Wayne DeVre, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 215,955, Mar. 18, 1994, Pat. No. 5,431,963. This application Mar. 20, 1995, Ser. No. 406,435

Int. Cl.[6] C23C *14/02*

U.S. Cl. 427—534 **9 Claims**

1. A method for grading the electrical field at the surface of an electrode which comprises the steps of:

providing a plasma reactor having a grounded electrode, and a further electrode to receive a semiconductive coating,

maintaining said further electrode at a coating-forming temperature on said grounded electrode,

powering said plasma reactor at a coating-forming power, and

passing a mixture of gases comprising (1) silane and helium or (2) at least one hydrocarbon and argon or hydrogen through an electrical discharge to ionize at least a portion thereof to form said semiconductive coating on the surface of said further electrode.

5,643,638

PLASMA CVD METHOD OF PRODUCING A GRADIENT LAYER

Jürgen Otto, Mannheim; Johannes Segner, Stromberg, and Volker Paquet, Mainz, all of Germany, assignors to Schott Glaswerke, Mainz, Germany

Filed Dec. 13, 1995, Ser. No. 571,476

Claims priority, application Germany, Dec. 20, 1994, 44 45 427.9

Int. Cl.[6] B05D *3/06*

U.S. Cl. 427—569 **14 Claims**

1. A plasma CVD method for producing a layer wherein a layer composition or structure gradient is generated in the direction of layer growth by changing at least one of plasma power parameters during the coating process, the method comprising the steps of:

supplying a plasma power as a power pulse train in a plasma pulse CVD method wherein the pulse train has the parameters of pulse amplitude, pulse width and pulse interval; and,

generating said layer gradient of said layer by changing at least one of said pulse amplitude, pulse width and pulse interval.

5,643,639

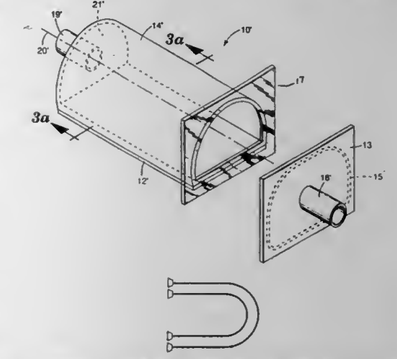
PLASMA TREATMENT METHOD FOR TREATMENT OF A LARGE-AREA WORK SURFACE APPARATUS AND METHODS

Ronald Alan Rudder, Wake Forest; Robert Carlisle Hendry, Hillsborough, and George Carlton Hudson, Clayton, all of N.C., assignors to Research Triangle Institute, Research Triangle Park, N.C.

Filed Dec. 22, 1994, Ser. No. 361,667

Int. Cl.[6] H05H *1/24;* **B01J** *3/06;* **H01L** *21/306*

U.S. Cl. 427—577 **35 Claims**



1. A method for treating at least one work surface of at least one substrate with a plasma, comprising:

a) providing a chamber having a longitudinal axis and sidewalls that surround the longitudinal axis;

b) providing an array of current-carrying conductors that are arranged along said longitudinal axis of said chamber, at least partially encircle the chamber, and are substantially transverse to the longitudinal axis of the chamber;

c) providing a gaseous material in the chamber;

d) providing high-frequency current in the conductors to magnetically induce ionization of the gaseous material in the chamber and form a plasma sheath that surrounds and extends along the longitudinal axis and conforms to the sidewalls of the chamber; and

e) positioning the at least one work surface adjacent at least one sidewall of said chamber at a boundary between the plasma sheath and the at least one sidewall, with the at least one work surface having a shape which is conformal to a shape of the at least one sidewall, so as to expose said at least one work surface to the plasma sheath at said boundary.

5,643,640

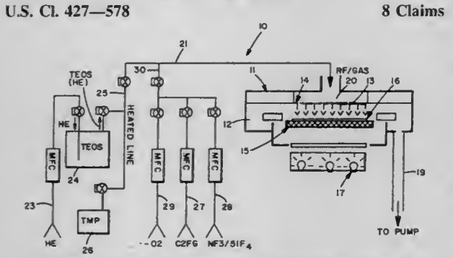
FLUORINE DOPED PLASMA ENHANCED PHOSPHOSILICATE GLASS, AND PROCESS

Ashima B. Chakravarti, Hopewell Junction, N.Y.; Terry M. Cheng, Allentown, Pa.; Son Van Nguyen, Hopewell Junction, and Michael Shapiro, Beacon, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 27, 1995, Ser. No. 563,165

Int. Cl.[6] B05D *3/06*

U.S. Cl. 427—578 **8 Claims**



1. Process for producing improved phosphosilicate glass dielectric compositions while reducing the dielectric constant thereof, which comprises introducing a supply of at least one fluorine-containing reactive gas to a chemical vapor deposition chamber containing reactive phosphosilicate glass-forming gases under a vacuum pressure and at a temperature between about 400° and 500° C., creating a plasma of said gases, and depositing said plasma as a fluorine-doped phosphosilicate glass dielectric containing between about 0.1 and 3 mole % of fluorine, said dielectric being capable of filling vias in a single continuous operation and having a lower dielectric constant than a corresponding dielectric composition produced in the absence of fluorine.

5,643,641

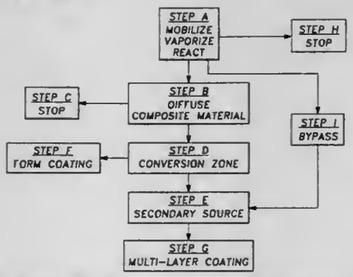
METHOD OF FORMING A DIAMOND COATING ON A POLYMERIC SUBSTRATE

Manuel C. Turchan, Northville, and Pravin Mistry, Shelby Township, both of Mich., assignors to QQC, Inc., Dearborn, Mich.

Division of Ser. No. 182,978, Jan. 18, 1994, Pat. No. 5,554,415. This application Jun. 5, 1995, Ser. No. 465,583

Int. Cl.[6] C23C *14/28;16/48*

U.S. Cl. 427—595 **18 Claims**



1. A method of forming a diamond or diamond-like carbon coating on a polymeric substrate, comprising:

directing energy at a surface of the polymeric substrate, and with the energy:

moving a carbon constituent element in a sub-surface zone of the substrate towards the surface of the substrate;

vaporizing selected amounts of the carbon constituent element to produce a vaporized carbon constituent element;

reacting said vaporized carbon constituent element to modify its physical structure and properties; and

fabricating the diamond or diamond-like carbon coating from said reacted vaporized carbon constituent element on the polymeric substrate.

5,643,642

POLYMERIC METAL OXIDE MATERIALS AND THEIR FORMATION AND USE

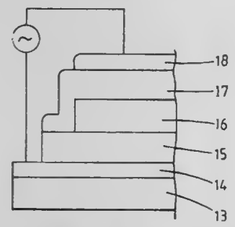
Tomoji Oishi, Hitachi; Ken Takahashi, Tohkai-mura; Teteuo Nakazawa, Tomobe-machi; Shigeru Tanaka, and Tadahiko Miyoshi, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 229,092, Apr. 18, 1994, Pat. No. 5,460,877, which is a continuation of Ser. No. 855,672, Mar. 23, 1992, abandoned, which is a division of Ser. No. 569,720, Aug. 20, 1990, Pat. No. 5,234,556. This application Jun. 7, 1995, Ser. No. 475,090

Claims priority, application Japan, Aug. 18, 1989, 1-211356; Jul. 11, 1990, 2-181454

Int. Cl.[6] C09K *19/00*

U.S. Cl. 428—1 **2 Claims**



1. A display unit comprising the display units substrate and a film thereon having a thickness of 1 to 1000 nm and consisting essentially of a polymeric metal oxide containing C—H bonds, said metal oxide having a total carbon content of 0.01 to 4 atomic %.

5,643,643

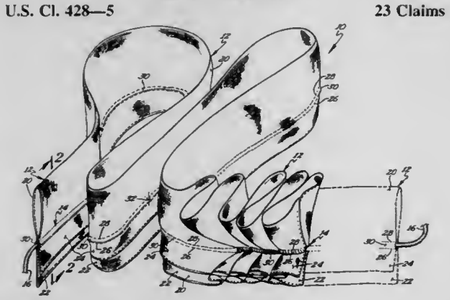
APPAREL ACCESSORY

Ruth B. Bernstein, 5330-33rd Ave. North, Golden Valley, Minn. 55422

Filed Sep. 26, 1991, Ser. No. 765,598

Int. Cl.[6] D04D *7/06*

U.S. Cl. 428—5 **23 Claims**



1. Apparel accessory comprising, in combination: a body having first and second free ends and formed of at least a first layer of flexible material including but not limited to fabric and having a width and an elongated length between the first and second free ends; and means for variably holding the body in a gathered, three dimensional condition with the first and second ends remaining free, with the body in the gathered condition having a fixed length between the first and second free ends less than the elongated length of the body, with the body in the gathered condition being drapable on the wearer.

5,643,644

INSULATING GLAZING

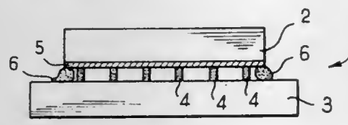
Yves Demars, Agnetz, France, assignor to Saint Gobain Vitrage, Courbevoie, France

Filed Sep. 27, 1994, Ser. No. 312,761

Claims priority, application France, Sep. 27, 1993, 93 11470; Sep. 27, 1993, 93 11471

Int. Cl.[6] E06B *3/66*

U.S. Cl. 428—34 **12 Claims**



1. An insulating glazing comprising:

two glass sheets, having a vacuum formed between the glass sheets;

pins which separate said two glass sheets from one another and which are distributed over an entire surface of said sheets, said pins being made of aluminum oxide coated with a suspension of sintered solder glass which is devitrified during the production of said pins; and

a sealing joint joining said two glass sheets together at their periphery.

5,643,645

CRAZE RESISTANT TRANSPARENT SHEET

Harold Reid Banyay; Michael S. Cholod, both of Bensalem, Pa.; Laurence Mitchell Kolanko, Mt. Holly, and Bonnie Vineis Smith, Magnolia, both of N.J., assignors to Ato Haas B.V., The Netherlands

Division of Ser. No. 283,888, Aug. 1, 1994, Pat. No. 5,549,941, which is a continuation-in-part of Ser. No. 145,266, Oct. 29, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 471,951

Int. Cl.[6] A21C *3/02*

U.S. Cl. 428—34.1 **4 Claims**

1. A method for producing a transparent melt calendered sheet having excellent solvent craze resistance, comprising the steps of:

a) extruding in an extruder at a temperature of from 200° C. to 245° C. an acrylic copolymer derived from monomer units consisting of I) from 94.0 to 99.9 weight percent methyl methacrylate and ii) from 0.1 to 6.0 weight percent of at least one monomer selected from the group consisting of alkyl acrylic esters having from 1 to 12 carbon atoms in the alkyl group, wherein the acrylic copolymer has a melt flow rate of from 0.3 to 1.3 grams/10 minutes, a molecular weight distribution of from 1.7 to about 1.8, a heat distortion temperature greater than 85 ° C., a haze value less than 2.0%, a flexural modulus greater than about 3,275 megapascals and a critical stress rating greater than 12,000 kilopascals;

b) conveying the extruded copolymer to a sheet slot die heated to a temperature of from 215° C. to 245° C.;

c) uniformly distributing the conveyed extruded copolymer across the sheet slot die; and

d) melt calendering the uniformly distributed copolymer from the sheet slot die on a heated calendering roll stand having at least two calendering rolls within a temperature range of from 85° C. to 100° C., yielding the transparent melt calendered sheet having a haze value less than 2.0% and a critical stress rating greater than 12,000 kilopascals.

5,643,646

TINTED BOTTLES FOR FOOD OR DRUGS

David R. Spence, 304 Weston Oaks Ct., Kirkwood, Mo. 63122

Division of Ser. No. 104,787, Aug. 11, 1993, abandoned. This application Dec. 12, 1994, Ser. No. 353,881

Int. Cl.[6] B29D *22/00*

U.S. Cl. 428—35.7 **11 Claims**

1. An injection blow-molded, tinted bottle for holding food or drugs comprising high density polyethylene, the bottle having a wall which has a thickness between about 0.07 and 0.4 inches, a glossy appearance and contact clarity.

5,643,647

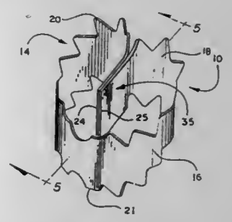
LOOSE FILL DUNNAGE ELEMENTS OF PAPERBOARD OR THE LIKE

Henry Wischusen, III, Lilburn, Ga., assignor to Rock-Tenn Company, Norcross, Ga.

Filed Jun. 12, 1996, Ser. No. 662,066

Int. Cl.[6] B32B *1/00;1/08*

U.S. Cl. 428—36.9 **18 Claims**



1. A dunnage element comprising:

an elongate strip of flexible material defining an outer planar surface, an inner planar surface, an upper elongate edge of said surfaces, a lower elongate edge of said surfaces, a first end, a second end, and a central portion where each of said edges extends to a position spaced below a line connecting points at which said edge meets said ends;

said ends being brought together and tucked, said outer surface adjacent to said first end being joined to said outer surface adjacent to said second end to form a closed figure having a tucked portion spaced axially from said central portion of said strip, said figure being resiliently compressible axially as well as radially.

5,643,648

PRESSURE SENSITIVE ADHESIVE PATCH

James J. Kobe, Newport, and Gene R. Ward, New Brighton, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

PCT No. PCT/US95/09467, § 371 Date Jul. 26, 1995, § 102(e) Date Jul. 26, 1995

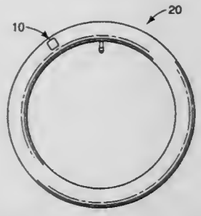
PCT Filed Jul. 26, 1995, Ser. No. 495,426

Int. Cl.[6] B32B *7/12;* **B29C** *73/10*

U.S. Cl. 428—63 **15 Claims**

1. A patch comprising:

(a) a backing; and



(b) a pressure sensitive adhesive layer having an average thickness of greater than about 0.076 mm disposed on said backing;

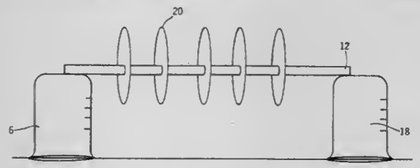
said patch having a maximum thickness of no greater than about 0.64 mm, a T-Peel strength from an organic polymeric substrate of greater than about 0.18 kN/m after 1 hour dwell time at 22° C., and a static shear strength of at least about 50 minutes from stainless steel at 70° C. with a 7.6 kPa load.

5,643,649

METHOD FOR IMPROVING THE FLATNESS OF GLASS DISK SUBSTRATES

James A. Hagan; Douglas H. Piltingsrud; Steven F. Starcke; Bradley J. Offuh, and Dennis L. Fox, all of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 31, 1995, Ser. No. 507,034
Int. Cl.[6] B32B *3/00*
U.S. Cl. 428—64.1 **21 Claims**



1. A glass disk resulting from a method comprising the steps of:
(a) placing the substrate on a support, said substrate comprising a first material, said support comprising a second material;
(b) heating said substrate to within the annealing range of the first material for a period of time effective to remove stresses within the first material; and
(c) controllably cooling said substrate and said support so that said first material and said second material cool at a substantially equivalent rate.

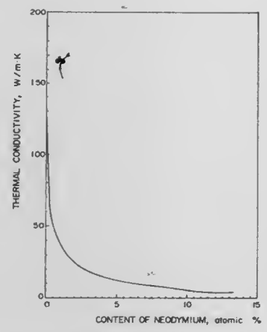
5,643,650

MAGNETO-OPTICAL RECORDING MEDIUM

Yoshio Tawara, Tokyo; Katsushi Tokunaga; Hideo Kaneko, both of Kanagawa-ken, and Yoshiaki Shimizu, Gunma-ken, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 188,651, Jan. 28, 1994, abandoned, which is a continuation of Ser. No. 935,822, Aug. 26, 1992, abandoned. This application Jun. 28, 1995, Ser. No. 496,256
Claims priority, application Japan, Sep. 9, 1991, 3-256964
Int. Cl.[6] G11B *5/66*
U.S. Cl. 428—64.3 **2 Claims**

1. In a magneto-optical recording medium having a laminar structure comprising a transparent substrate plate and a magnetic recording layer and a metallic reflecting layer formed on the substrate plate, the improvement which comprises having the reflecting layer formed from an alloy consisting of aluminum and a rare-earth element selected from the group consisting of yttrium, neodymium and gadolinium, the amount of rare-earth element being from 0.05 to 3 atomic %.

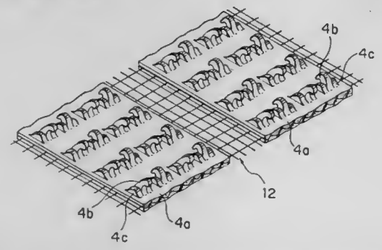


5,643,651

MOLDED SURFACE FASTENER AND METHOD FOR MANUFACTURING THE SAME

Ryuichi Murasaki, Toyama-ken, Japan, assignor to YKK Corporation, Tokyo, Japan

Filed Jun. 18, 1996, Ser. No. 666,602
Claims priority, application Japan, Jun. 20, 1995, 7-153560
Int. Cl.[6] B32B *3/06*
U.S. Cl. 428—100 **5 Claims**



1. A molded surface fastener of synthetic resin, comprising:
(a) a substrate sheet;
(b) a multiplicity of male engaging elements integrally molded with said substrate sheet and standing in rows on one surface of said substrate sheet; and
(c) said substrate sheet being divided into sections connected to one another via a connector, said connector being smaller in thickness than said substrate sheet and having open spaces through which molten resin is to be passed during the molding of said substrate sheet;
(d) said connector integrally joined with said substrate sheet simultaneously with the molding of said substrate sheet and said male engaging elements.

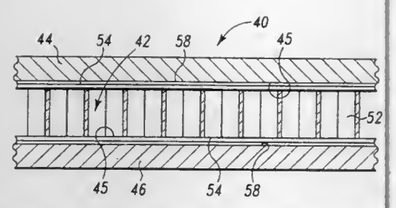
5,643,652

COMPOSITE PANEL FOR TOILET AND SHOWER PARTITIONS

Ronald L. Maurer, Indianapolis, and Daniel P. Carvin, Sheridan, both of Ind., assignors to Centura Solid Surfacing, Inc., Indianapolis, Ind.

Filed Sep. 28, 1994, Ser. No. 314,343
Int. Cl.[6] B32B *3/12*
U.S. Cl. 428—116 **10 Claims**

1. A composite panel for a wall partition system for a toilet or shower facility comprising:



a lightweight core sheet, said lightweight core sheet comprising a sheet having a ribbed structure and including a layer of scrim material covering a surface thereof;

at least one sheet of solid surfacing material, said at least one sheet of solid surfacing material comprising a material which is cast or extruded, colored throughout and about 98 percent de-aired, and which comprises a resin selected from the group consisting of polyester, acrylic and a combination thereof, and an inert filler which functions as an extender for the resin, and which renders the resin fire-retardant; and

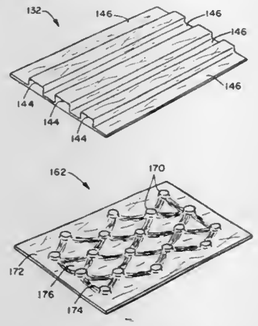
a bonding agent for bonding a surface of said at least one sheet of solid surfacing material to said lightweight core sheet, wherein said bonding agent bonds substantially the entire area of said surface of said at least one sheet of solid surfacing material to said layer of scrim material such that said lightweight core sheet supports said at least one sheet of solid surfacing material over substantially the entire surface of said at least one sheet of solid surfacing material.

5,643,653

SHAPED NONWOVEN FABRIC

Henry Louis Griesbach, III, Atlanta; Richard Daniel Pike, Norcross; Sharon Watkins Gwaltney, Woodstock; Ruth Lisa Levy, Sugar Hill; Lawrence Howell Sawyer, Roswell; Richard Macferran Shane, Duluth, and Philip Anthony Sasse, Alpharetta, all of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Division of Ser. No. 435,239, May 5, 1995, which is a continuation of Ser. No. 55,449, Apr. 29, 1993, abandoned. This application May 22, 1995, Ser. No. 447,340
Int. Cl.[6] B32B *1/10;3/30;* **D04H** *3/16*
U.S. Cl. 428—120 **24 Claims**



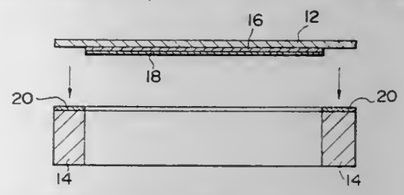
1. Nonwoven fabric having a length and a surface and comprising melt-spun and drawn continuous spunbond polymeric filaments extending substantially continuously along the length of the fabric, the filaments having an average diameter from about 6 to about 40 microns and forming an array of discrete surface features in the fabric, the spunbond filaments having a primary polymeric component extending continuously along the length of the filaments, the spunbond filaments being bonded together without the use of compression, and the fabric having an array of surface projections or apertures or a combination of surface projections and apertures determined by the array of discrete surface features on the foraminous surface upon which the drawn filaments were deposited prior to being bonded together under heating conditions and with an adhesive polymeric component which adheres the respective primary components of the spunbond filaments together, whereby the fabric is substantially uncompressed.

5,643,654

PELLICLE STRUCTURE AND PROCESS FOR PREPARATION THEREOF WITH DISSOLUTION OF COATING LAYER

Minoru Fujita; Hiroaki Nakagawa, both of Waki, and Tsutomu Saito, Fuchu, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Nov. 27, 1991, Ser. No. 801,500
Claims priority, application Japan, Nov. 29, 1990, 2-331499
Int. Cl.[6] G03B *27/28;* **B32B** *3/24*
U.S. Cl. 428—138 **8 Claims**



1. A pellicle structure comprising
(A) a frame having a vertical through opening,
(B) a pellicle film, which is capable of being used in a resist process of photolithography and has a high exposed light transmission, spread on an upper end of said opening of said frame, said pellicle film comprising a substrate film layer of a cellulose derivative and a coating layer of a fluorine resin formed at least on an inner surface of said substrate film layer, and
(C) a bonding portion for bonding an end edge of said frame to a peripheral edge of said pellicle film through an adhesive layer, wherein said coating layer of a fluorine resin in said bonding portion is dissolved or dispersed in said adhesive layer and said substrate film layer of a cellulose derivative, which is not dissolved in said adhesive layer, is directly contacted with and bonded to said adhesive layer, wherein an adhesive of said adhesive layer is a photocurable composition comprising
(i) a base resin selected from the group consisting of a urethane acrylate resin and isobornyl acrylate resin, and
(ii) an ethylenically unsaturated monomer or an oligomer thereof capable of dissolving or dispersing said fluorine resin therein but not capable of dissolving or dispersing said cellulose derivative therein.

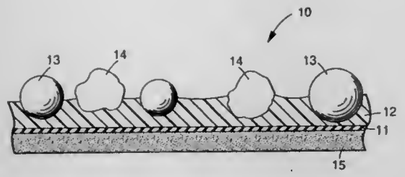
5,643,655

CONFORMABLE PAVEMENT MARKING TAPE

Sergio Passarino, Milan, Italy, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 56,420, May 3, 1993, abandoned. This application Dec. 7, 1994, Ser. No. 350,718
Claims priority, application Italy, May 4, 1992, M192A1056
Int. Cl.[6] B32B *5/16;* **E01F** *9/04*
U.S. Cl. 428—143 **23 Claims**

1. A marking tape comprising a support base and a top layer, wherein said support base comprises butadiene copolymer rubber, characterized in that said support base further comprises at least one modifying agent selected from the group consisting of hydrogenated polycyclodienic resins having a number average molecular weight of from 400 to 1000 and a softening temperature of from 60° to 160° C. and aliphatic hydrocarbon resins having a number



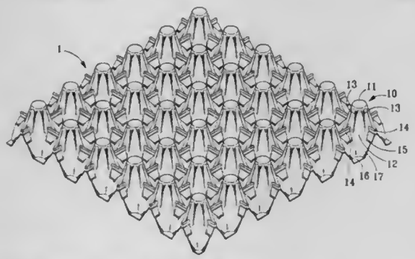
average molecular weight of from 800 to 1600 and a softening temperature of from 60° to 160° C.

5,643,656

PACKING CUSHION BOARD

Tso Nan Lin, 10F., No. 83, Shui-Yuan Rd.,, Taipei, Taiwan

Filed Aug. 14, 1995, Ser. No. 514,998
Int. Cl.[6] B32B *1/00*
U.S. Cl. 428—174 **3 Claims**



1. A packing cushion board comprising:

a sheet of thin material that is sufficiently flexible so that it can be bent to form a curve of at least ninety degrees;

said sheet includes a plurality of protuberances deployed in a plurality of rows and columns to form a square lattice design, said protuberances are generally conical in shape, with a flattened upper surface, a base of said protuberances conjoins with bases of adjacent protuberances to increase strength of said sheet,

each said protuberance includes four connecting members extending therefrom at ninety degree intervals, said connecting members link adjacent protuberances to further increase the strength of said sheet; wherein

said protuberances are readily deformed and collapse to absorb any shock force that is applied to said sheet so that an object protected by said sheet is not damaged by said shock force.

5,643,657

AQUEOUS PROCESSABLE, MULTILAYER, PHOTOIMAGEABLE PERMANENT COATINGS FOR PRINTED CIRCUITS

Thomas Eugene Dueber, and Frank Leonard Schadt, III, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 28, 1995, Ser. No. 431,376
Int. Cl.[6] B32B *9/00*
U.S. Cl. 428—209 **39 Claims**

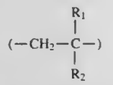
1. An aqueous processable, multilayer, photoimageable, permanent coating element having low tack when placed in contact with a printed circuit board and capable of withstanding molten solder after cure, which comprises:

(a) a temporary support film;

(b) a first layer of a photoimageable permanent coating composition comprising:

(i) an amphoteric binder;

(ii) a carboxyl group containing copolymer binder of the formula



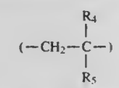
wherein R1 is H or alkyl; R_2 is phenyl or $—CO_2R_3$; and R_3 is H or alkyl which is unsubstituted or substituted with one or more hydroxy groups;

(iii) a monomer component containing at least two ethylenically unsaturated groups; and

(iv) a photoinitiator or photoinitiator system;

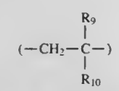
(c) a second layer of a photoimageable permanent coating composition comprising:

(i) a cobinder system comprising an admixture of at least one low molecular weight copolymer binder component having a molecular weight of from 3,000 to 15,000 and containing from 2 to 50% by weight of at least one carboxylic acid containing structural unit and from 50 to 98% by weight of at least one structural unit of the formula



A.

wherein R_4 is H, alkyl, phenyl or aryl; R_5 is H, CH_3, phenyl, aryl, $—COOR_6$, $—CONR_7R_8$ or —CN; and R_6, R_7 and R_8 independently are H, alkyl or aryl, which is unsubstituted or substituted with one or more hydroxy, ester, keto, ether or thioether groups; and at least one high molecular weight carboxylic acid containing copolymer binder component having a molecular weight of from 40,000 to 500,000 and containing structural units of the formula



B.

wherein R_9 is H, alkyl, —CN, phenyl, alkylphenyl or aryl; R_{10} is phenyl, alkylphenyl, aryl, $—COOR_{11}$ or $—CONR_7R_8$; R_{11} is H or alkyl; and wherein alkyl contains from 1 to 8 carbon atoms;

(ii) an acrylated urethane monomeric component;

(iii) a photoinitiator or a photoinitiator system; and

(iv) a blocked polyisocyanate crosslinking agent.

5,643,658

COATED CEMENTED CARBIDE MEMBER

Katsuya Uchino; Toshio Nomura; Mitsunori Kobayashi, and Masuo Chudo, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 39,976, Mar. 30, 1993, abandoned. This application Dec. 21, 1994, Ser. No. 361,030
Claims priority, application Japan, Apr. 17, 1992, 4-125541; May 6, 1992, 4-142220; Jul. 9, 1992, 4-182511
Int. Cl.[6] C23C *30/00*
U.S. Cl. 428—216 **12 Claims**

1. A coated cemented carbide member comprising:

a cemented carbide base material having an outer surface with an edge portion and a flat surface portion; and

a coating layer arranged on said outer surface;

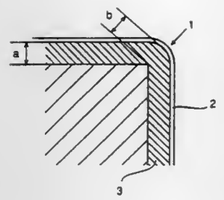
wherein said base material consists of a binder phase consisting of at least one iron family metal, and a hard phase,

wherein said hard phase consists of WC and a solid solution of at least one first metallic component selected from the group consisting of nitrides and carbo-nitrides of metals belonging to group VB of the periodic table and at least one second metallic component selected from the group consisting of nitrides and carbo-nitrides of at least one metal selected from Zr and Hf,

wherein said base material comprises a surface layer consisting only of WC and an iron family metal and forming said outer surface at said flat surface portion and at said edge portion, and wherein said surface layer has a flat portion thickness of from 5 μm to 50 μm at said flat surface portion and an edge portion thickness of 0.1 to 1.4 times said flat portion thickness at said edge portion,

wherein said base material further comprises an internal core and an inner layer of from 1 μm to 200 μm thickness arranged between said internal core and said surface layer, and wherein said inner layer contains the same weight proportion of said at least one second metallic component as does said internal core, and wherein said inner layer contains a greater weight proportion of said at least one first metallic component than does said internal core, and

wherein said coating layer comprises at least one layer consisting of at least one metallic component selected from the group consisting of carbides, nitrides, carbo-nitrides, oxides, and borides of metals belonging to groups IVB, VB and VIB of the periodic table and aluminum oxide.

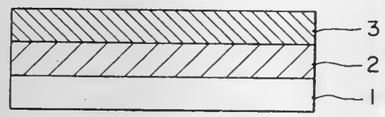


5,643,659

HEAT TRANSFER PRINTING SHEET FOR PRODUCING IMAGES HAVING METALLIC LUSTER

Shuji Kobayashi, and Keiichi Ogawa, both of Tokyo-To, Japan, assignors to Dai Nippon Printing Co., Ltd., Japan

Filed May 30, 1995, Ser. No. 452,790
Claims priority, application Japan, May 30, 1994, 6-139469
Int. Cl.[6] B41M *5/26;5/34*
U.S. Cl. 428—216 **4 Claims**



1. A heat transfer printing sheet for producing images having metallic luster, comprising:

a substrate sheet;

a transparent coloring layer comprising a coloring agent and a hot-melt binder, provided at least on one surface of the substrate sheet; and

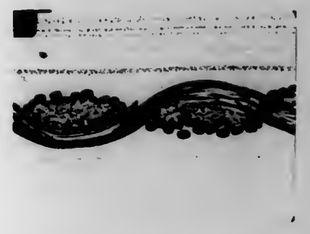
a metallic ink layer provided on the transparent coloring layer comprising aluminum particles each having a diameter ranging from 1 to 20 micrometers, and a hot-melt binder comprising a polyester resin.

5,643,660

HOLLOW NYLON FILAMENTS AND YARNS

David Arthur Price, Smyrna, Del.; James Preston Bennett, Hixson, Tenn.; Benjamin Hughes Knox, Wilmington, Del., and Dennis Raymond Schafluetzel, Hixson, Tenn., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 213,307, Mar. 14, 1994, Pat. No. 5,439,626. This application Jun. 7, 1995, Ser. No. 476,930
Int. Cl.[6] D03D *3/00*
U.S. Cl. 442—192 **5 Claims**



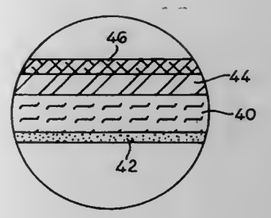
1. A woven fabric having front and back surfaces and comprising yarns of thermoplastic polymer filaments arranged in warp and fill directions, at least some of said filaments being hollow filaments having at least one longitudinal void, said void of at least a majority of said hollow filaments being collapsed to form collapsed hollow filaments having an oblong exterior cross-section with major and minor dimensions, the major dimension of said cross-section of at least a majority of said collapsed hollow filaments being generally aligned with said surfaces of said fabric.

5,643,661

PASSIVE FIRE PROTECTION

Vincent William Spano, Rugeley, Great Britain, assignor to AIC ISO Covers Limited, Staffordshire, United Kingdom

PCT No. PCT/GB94/00304, § 371 Date Aug. 21, 1995, § 102(e) Date Aug. 21, 1995, PCT Pub. No. WO94/19424, PCT Pub. Date Sep. 1, 1994
PCT Filed Feb. 15, 1994, Ser. No. 507,263
Claims priority, application United Kingdom, Feb. 25, 1993, 9303763
Int. Cl.[6] D04H *1/08*
U.S. Cl. 442—325 **10 Claims**



1. A fire protective composite sheet material comprising at least one layer of an insulant prone to damage by exposure to a high temperature erosive flame, and at least one non-erosive cover layer overlying said insulant having a base material of cross-linked rubber material burnable to a non-erosive protective char upon exposure to a flame, and heat-fusible ceramic frit material dispersed within said base material fusible to a hard, non-erosive shell upon exposure to such flame.

5,643,662

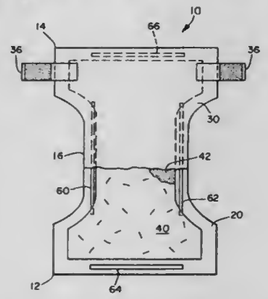
HYDROPHILIC, MULTICOMPONENT POLYMERIC STRANDS AND NONWOVEN FABRICS MADE THEREWITH

Richard Swee-chye Yeo, Dunwoody, and Christopher Cosgrove Creagan, Marietta, both of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Continuation of Ser. No. 974,554, Nov. 12, 1992, abandoned. This application Jan. 21, 1994, Ser. No. 186,394

Int. Cl.[6] **C08L** *33/02;* **B32B** *27/00;* **D02G** *3/00*

U.S. Cl. 442—361 **32 Claims**



1. A permanently hydrophilic nonwoven fabric comprising melt-extruded multicomponent polymeric strands including a first melt-extrudable polymeric component and a second component comprising a melt-extrudable, hydrophilic polymer having a critical surface tension at 20° C. greater than about 55 dynes/cm, the multicomponent strands having a cross-section, a length, and a peripheral surface, the first and second components being arranged in substantially distinct zones across the cross-section of the multicomponent strands and extending continuously along the length of the multicomponent strands, the second multicomponent constituting at least a portion of the peripheral surface of the multicomponent strands continuously along the length of the multicomponent strands.

5,643,663

CARBON-CARBON COMPOSITE FRICTION MATERIAL WITH DIVIDED POROSITY

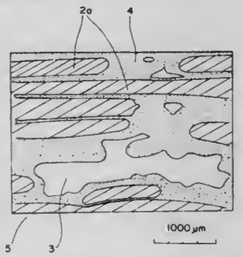
Christophe Bommier, Paris, and Jean-Louis Chareire, Levallois-Perret, both of France, assignors to Le Carbone Lorraine, Courbevoie, France

Continuation of Ser. No. 95,220, Jul. 23, 1993, abandoned. This application Jul. 17, 1995, Ser. No. 502,943

Claims priority, application France, Jul. 23, 1992, 92 09331

Int. Cl.[6] **B32B** *5/72*

U.S. Cl. 428—317.9 **10 Claims**



1. A carbon-carbon composite material comprising:
a) a fibrous substrate consisting essentially of a carbon fiber base which acts as a reinforcement, said fibrous substrate having a coarse texture and large sized cavities; and
b) a matrix comprising:
1) pyrocarbon layers coating the cavities of said fibrous substrate, and
2) a carbon based cellular structure dividing said large sized cavities into small cavities having open porosity, said cellular structure comprising a core portion of a non-oriented carbon based material, and a surface portion of an oriented material of the pyrocarbon type which is joined to said coating layers.

5,643,664

BIAXIALLY ORIENTED POLYSTYRENE FILM

Peter C. Kwong, Wheeling; Arun Menawat, Winfield; Park Ng, Naperville, and Kelvin T. Okamoto, Arlington Heights, all of Ill., assignors to Packaging Corporation of America, Evanston, Ill.

Filed Aug. 23, 1994, Ser. No. 294,655

Int. Cl.[6] **B32B** *5/16*

U.S. Cl. 428—327 **21 Claims**

1. A biaxially oriented film having less than about 10% haze when haze is measured with a sample of the film which is less than or equal to 15 mil thick and having an impact strength of about 10 lbs to about 200 lbs between −30° F. and ambient temperature, said biaxially oriented film consisting essentially of about 88 to about 98 weight percent polystyrene and about 2 to about 12 weight percent high impact polystyrene, said high impact polystyrene further comprising rubber particles with an average diameter of about 0.1 micron to about 10 microns, wherein said biaxially oriented film has a rubber content of about 0.1 to about 1.4 weight percent of the total weight of said biaxially oriented film.

5,643,665

LITHIUM CONTAINING SOLID ELECTROCHEMICAL CELLS

Eileen S. Saidi, San Jose, Calif., assignor to Valence Technology, Inc., Henderson, Nev.

Division of Ser. No. 77,489, Jun. 14, 1993, Pat. No. 5,366,829. This application Sep. 22, 1994, Ser. No. 310,099

Int. Cl.[6] **H01M** *4/60;* **H01B** *5/10;* **B32B** *5/16;15/08*

U.S. Cl. 428—330 **23 Claims**

1. A coated lithium anode in an electrochemical cell that comprises a sheet of lithium or lithium alloy; wherein a surface of said sheet is coated with a layer of an electrically conducting polymer composition comprising lithium or lithium alloy particles that are dispersed in a polymer, wherein the particles comprise more than 1 weight percent of the electrically conducting polymer composition and wherein the layer of electrically conducting polymer composition is not more than about 50 microns thick.

5,643,666

SOLID SURFACES WHICH ARE PREPARED FROM COPOLYESTERS LAMINATED ONTO A HIGH RESOLUTION IMAGE

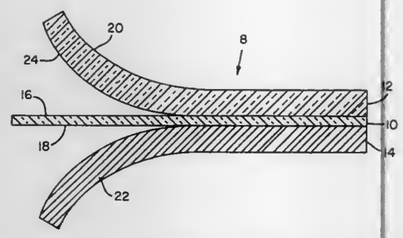
Michael Dennis Eckart, Blountville, Tenn., and Raymond Lynn Goodson, Sandy, Utah, assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Dec. 20, 1995, Ser. No. 575,454

Int. Cl.[6] **B32B** *27/08;* **C09D** *5/29*

U.S. Cl. 428—339 **19 Claims**

1. A solid surface prepared from copolyesters laminated onto an image layer comprising:
(A) an outer layer comprising a transparent PETG copolyester having an inherent viscosity of 0.5 to 1.2 dL/g, comprising
(1) a dicarboxylic acid component comprising repeat units from at least 80 mole percent of terephthalic acid or dimethylterephthalate; and



(2) a diol component comprising repeat units from ethylene glycol and 2 to 99 mole percent of cyclohexanedimethanol, based on 100 mole percent dicarboxylic acid and 100 mole percent diol;
(B) a polymeric film having a top side and a bottom side, wherein an image is printed on one of said sides and said film is joined to said outer layer such that said image can be seen through said outer layer; and
(C) a backing layer comprising a polymer selected from the group consisting of polyvinyl chloride and PETG copolyester, said backing layer having a side joined to said polymeric film opposite said outer layer; wherein said outer layer and said backing layer are thermally compatible.

5,643,667

HOT STAMP MATERIAL

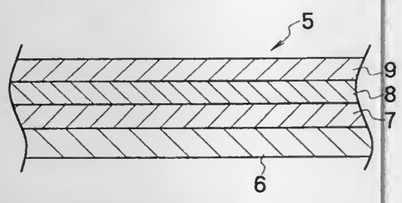
Tadao Tsukioka, Gifu, Japan, assignor to Kabushiki Kaisha Tsukioka, Gifu, Japan

Filed Dec. 29, 1994, Ser. No. 366,287

Claims priority, application Japan, Dec. 30, 1993, 5-354121; Nov. 16, 1994, 6-308095

Int. Cl.[6] **B32B** *15/04;* **B44C** *1/14*

U.S. Cl. 428—344 **13 Claims**



1. A hot stamp material comprising:
a base;
an inner release layer consisting essentially of at least one material selected from the group consisting of food additives, edible materials, and materials effective for coating food wrapping materials;
an intermediate layer including an edible gold coating;
an outer adhesive layer consisting of edible material; and
wherein each of said inner release layer, intermediate layer and outer adhesive layer are laminated on said base.

5,643,668

TAPE FOR ROUGH SURFACES

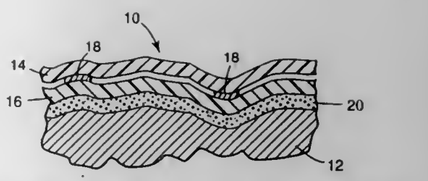
Clyde D. Calhoun, Stillwater, and James G. Berg, Lino Lakes, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 30, 1994, Ser. No. 366,815

Int. Cl.[6] **B32B** *7/12*

U.S. Cl. 428—354 **25 Claims**

1. An adhesive tape for adhering to rough surfaces comprising:
(a) a deformable backing;



(b) an adhesive layer attached to a first surface of the backing in a manner to allow discontinuities of attachment between the backing and the adhesive layer so that under application pressure, the adhesive layer and backing deform to conform to a rough surface and, on removal of the pressure, the backing recovers to define a substantially flat and smooth surface; and
(c) a release material on at least portions of the first surface of the backing.

5,643,669

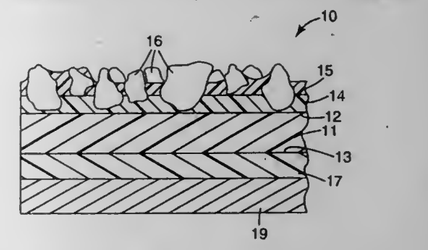
CURABLE WATER-BASED COATING COMPOSITIONS AND CURED PRODUCTS THEREOF

Alexander C. Tsuei, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 8, 1996, Ser. No. 598,491

Int. Cl.[6] **C09K** *3/14;* **B32B** *27/06;* **C08K** *5/06*

U.S. Cl. 428—354 **11 Claims**



1. An article comprising:
(a) a cured binder prepared from a curable water-based coating composition comprising:
(i) a urethane/acrylic copolymer having a Tg greater than about 50° C.;
(ii) a polyoxyethylene aryl ether plasticizer;
(iii) an alkaline-stable crosslinker; and
(iv) water;
wherein the curable water-based coating composition includes less than about 5 wt-% volatile organic compounds, based on the total weight of the composition; and
(b) a multitude of friction heating particles.

5,643,670

PARTICULATE CARBON COMPLEX

Deborah D. L. Chung, East Amherst, N.Y., assignor to The Research Foundation of State University of New York at Buffalo, Buffalo, N.Y.

Filed Jul. 29, 1993, Ser. No. 99,863

Int. Cl.[6] **B32B** *9/00*

U.S. Cl. 428—367 **12 Claims**

1. A particulate carbon complex comprising:
a carbon black substrate and
a plurality of carbon filaments each having a first end attached to said carbon black substrate and a second end distal from said carbon black substrate, wherein said particulate carbon complex transfers electrical current at a density of 7000 to 8000 mA/cm^2 for a Fe^{+2}/Fe^{+3} oxidation/reduction electrochemical



reaction couple carried out in an aqueous electrolyte solution containing 6 mM potassium ferrocyanide and 1M aqueous potassium nitrate.

5,643,671

Patent Not Issued For This Number

5,643,672

COSMETIC COMPOSITION CONTAINING SOLID PARTICLES COATED WITH AN AMPHOTERIC POLYMER

Patricia Marchi, Paris, and Myriam Mellul, L'Hay-les-Rose, both of France, assignors to L'Oreal, Paris, France

PCT No. PCT/FR93/00879, § 371 Date May 18, 1995, § 102(e) Date May 18, 1995, PCT Pub. No. WO94/06407, PCT Pub. Date Mar. 31, 1994

PCT Filed Sep. 13, 1993, Ser. No. 397,137

Claims priority, application France, Sep. 11, 1992, 92 10884

Int. Cl.[6] B32B *5/16*

U.S. Cl. 428—402 **31 Claims**

1. Cosmetic composition for the skin or the exoskeleton comprising a dispersion of solid particles in a binding agent, wherein at least a part of said particles is introduced into said composition in the form of particles whose surface is coated with at least one amphoteric polymer, said amphoteric polymer containing both cationic and anionic groups or containing groups which can ionize to cationic and anionic groups or combinations thereof.

5,643,673

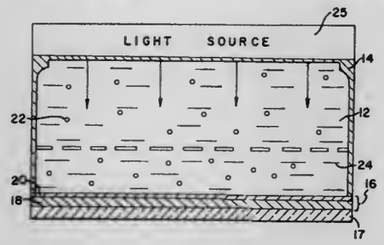
BLACK ELECTROPHORETIC PARTICLES AND METHOD OF MANUFACTURE

Wei-Hsin Hou, Bethlehem, Pa., assignor to Copytele, Inc., Huntington Station, N.Y.

Division of Ser. No. 901,755, Jun. 22, 1992, Pat. No. 5,298,833. This application Oct. 22, 1993, Ser. No. 141,867

Int. Cl.[6] B32B *33/00;27/08;* **G03G** *17/04*

U.S. Cl. 428—402.24 **14 Claims**



1. Multilayer dielectric particles comprising a composite latex polymer having at least one core structure and a shell structure, said core structure having residual double bonds which have reacted with a metal oxide that produces a black color.

5,643,674

LUMINESCENT MATERIALS PREPARED BY COATING LUMINESCENT COMPOSITIONS ONTO SUBSTRATE PARTICLES

Salvatore Anthony Bruno, and Donald Keith Swanson, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 995,647, Dec. 18, 1992, abandoned. This application Jun. 1, 1993, Ser. No. 67,402

The portion of the term of this patent subsequent to Nov. 5, 2013, has been disclaimed.

Int. Cl.[6] B32B *9/00;* **H01J** *29/00*

U.S. Cl. 428—403 **21 Claims**



1. A luminescent powder composition comprising particles with an inert core and at least one luminescent coating on said inert core, said at least one coating comprising about 2 through about 30 weight percent of the composition, wherein the inert core comprises at least one member selected from the group consisting of an alkaline earth sulfate, alkaline earth phosphate, alkaline earth fluoride, calcium oxide, calcium carbonate and magnesium oxide; and said luminescent powder composition has a relative intensity that is at least about 50% of a bulk material that consists of a material of the luminescent coating.

5,643,675

ADDITION FOR PROMOTION OF BENCH LIFE EXTENSION IN A HOT BOX BINDER SYSTEM

William John Ward, Lisle; Robert Anton Laitar, Woodbridge, and Bruce Eric Wise, Elmhurst, all of Ill., assignors to Borden, Inc., Columbus, Ohio

Continuation of Ser. No. 151,639, Nov. 13, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 427,626

Int. Cl.[6] B32B *27/02;* **C08G** *8/28*

U.S. Cl. 428—407 **30 Claims**

1. A binder composition consisting essentially of, in admixture:
(a) a thermosetting hot box binder resin;
(b) a latent acid catalyst; and
(c) an amount of bench life extender sufficient to retard ambient temperature hardening of a mixture of said binder composition and sand, wherein said bench life extender comprises an alkali metal salt of a polybasic acid.

5,643,676

COATING PROTECTIVE FILM

Akihiko Dobashi; Hirotugu Himori; Osamu Yamamoto, all of Shimodate; Kazuya Shiotsuki, Neyagawa, and Muneaki Tomiyama, Hiroshima, all of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, and Nippon Paint Company, Ltd., Osaka, both of Japan

Filed May 26, 1995, Ser. No. 450,152

Claims priority, application Japan, May 30, 1994, 6-116798; Nov. 17, 1994, 6-283289

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—411.1 **13 Claims**

1. A coating protective film comprising a substrate and a pressure sensitive adhesive layer on the substrate, the substrate being made of a colored polyolefin film which comprises a resin component comprising 5 to 40% by weight of ethylene units and 60 to 95% by weight of propylene units and whose maximum percent transmission of ultraviolet within a wavelength range of 190 to 370 nm is not more than 5%, the pressure sensitive adhesive layer comprising as a main component a polymer selected from the group consisting of polyisobutylene, butyl rubber and polybutene; the polyolefin film being colored to white of not lower than N7 of the Munsell color system, and said polyolefin film containing an agent for improving weatherability which is a hindered-amine light stabilizer.

5,643,677

AMINOPLAST/POLYURETHANE WEAR LAYER FOR PVC SUPPORT SURFACE

Joseph P. Feifer, Lancaster; Mary B. Grubb, Landisville; Claude R. Rupp, Jr., Lancaster, and William T. Sigman, Quarryville, all of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Continuation of Ser. No. 48,958, Apr. 12, 1993, abandoned, which is a continuation of Ser. No. 407,623, Sep. 15, 1989, abandoned. This application Sep. 15, 1994, Ser. No. 306,529

Int. Cl.[6] B32B *27/30;27/38;27/40;27/42*

U.S. Cl. 428—424.6 **8 Claims**



1. A resilient surface covering comprising a resilient vinyl support surface and a crosslinked aminoplast/polyurethane wear layer directly bonded to said support surface; said wear layer comprising substantially uniformly distributed polyurethane and aminoplast; said wear layer containing at least 20% and no greater than 48% polyurethane by weight based on polyurethane, aminoplast and any epoxy resin in said wear layer, said polyurethane being an aliphatic polyurethane having a plurality of carboxyl groups.

5,643,678

HOLOGRAPHIC FILM AND METHOD FOR FORMING

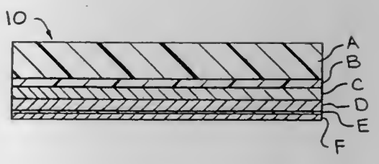
David R. Boswell, Reading, England, assignor to NovaVision, Inc., Bowling Green, Ohio

Continuation-in-part of Ser. No. 222,283, Apr. 4, 1994, Pat. No. 5,464,960. This application Oct. 10, 1995, Ser. No. 541,312

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—467 **14 Claims**

1. A composite sheet comprising:
(a) a thermoplastic substrate;
(b) a release coating having a thickness of 0.025 microns to 5 microns affixed to said substrate;
(c) a coating of hard lacquer having a thickness in the range of 0.5 microns to 5 microns affixed to said release coating, said hard lacquer having a glass transition temperature of at least 80° C.;
(d) a coating of soft lacquer having a thickness in the range of 0.5 microns to 5 microns affixed to said hard lacquer coating, said soft lacquer having a glass transition temperature no higher than 70° C.;
(e) a layer of metal having a thickness in the range of 20 millimicrons to 100 millimicrons affixed to said soft lacquer coating; and
(f) an embossment receiving coating having a thickness in the range of 0.025 micron to 1 micron affixed to said layer of metal, said embossment receiving coating being an esterified montan wax.



5,643,679

DECORATIVE ARTICLE

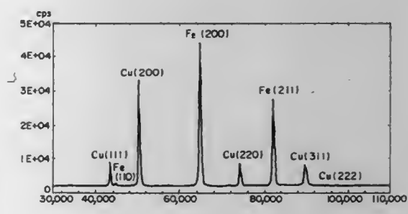
Yoko Isbimaru; Hirobumi Ohmori; Shin-ichi Nakamura, and Michihiko Inaba, all of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Filed Dec. 14, 1992, Ser. No. 990,618

Claims priority, application Japan, Dec. 16, 1991, 3-331069; Mar. 26, 1992, 4-068010

Int. Cl.[6] C22C *9/00*

U.S. Cl. 428—472 **22 Claims**



1. A decorative article having a two phase Cu-Fe structure, which essentially consists of a copper phase and an iron phase; said decorative article comprising:
a surface;
5 to 95% by weight of a copper based component selected from the group consisting of Cu and a copper alloy, wherein said copper alloy is a copper solid solution, said copper alloy comprising not more than 100 parts by weight of at least a metal selected from the group consisting of Au, Pb, Zn, Sn, Ni and Al based on 100 parts by weight of Cu;
0 to 20% by weight of Cr;
0 to 25% by weight of Ni; and
the balance of Fe and unavoidable impurities, wherein the {100} planes of the copper phase and iron phase contained at the surface of said decorative article are substantially parallel to the surface of said decorative article.

5,643,680

HEAT-SENSITIVE MIMEOGRAPH STENCIL

Katsumasa Osaki, Otsu; Masaru Suzuki, Ito; Kenji Tsunashima, Kyoto, and Mototada Fukuhara, Mishima, all of Japan, assignors to Toray Industries, Inc., Japan

PCT No. PCT/JP94/00677, § 371 Date Dec. 21, 1994, § 102(e) Date Dec. 21, 1994, PCT Pub. No. WO94/25285, PCT Pub. Date Nov. 10, 1994

PCT Filed Apr. 22, 1994, Ser. No. 356,359

Claims priority, application Japan, Apr. 23, 1993, 5-098085

Int. Cl.[6] B32B *27/06*

U.S. Cl. 428—480 **22 Claims**

1. A heat-sensitive mimeograph stencil which is prepared by thermally adhering together a polyester film and a porous support consisting essentially of polyester fibers into a laminate and then co-stretching said laminate, the peeling strength between said polyester film and said porous support being not less than 1 g/cm.

5,643,681

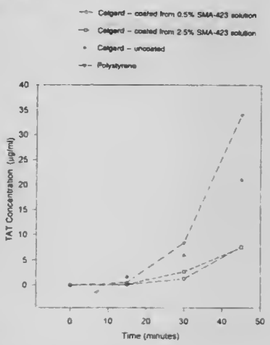
BIOCOMPATIBLE COATED ARTICLE

Marc Voorbees, Arvada; Lloyd Forrestal, Boulder, both of Colo., and Harold Fisher, Charlotte, N.C., assignors to Cobe Laboratories, Inc., Lakewood, Colo.

Continuation of Ser. No. 227,955, Apr. 15, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 473,723

Int. Cl.[6] B32B *27/32;27/36*

U.S. Cl. 428—483 **12 Claims**



1. A polymeric article having a base polymer and a biocompatible coating thereon comprising a polylactone-polysiloxane-polylactone triblock copolymer, said coating having a relative surface concentration sufficient to provide an X-ray fluorescence intensity ratio in the range 0.1 to 0.25.

5,643,682

SULFONIMIDE CATALYSTS FOR COATINGS

Jeno G. Szita, Norwalk; Subban Ramesh, Stamford; William Jacobs, III, Bethel, and John Colin Brogan, Stamford, all of Conn., assignors to Cytec Technology Corp., Wilmington, Del.

Division of Ser. No. 688,022, Apr. 19, 1991, abandoned, which is a continuation-in-part of Ser. No. 512,041, Apr. 26, 1990, abandoned. This application Nov. 16, 1992, Ser. No. 976,916

Int. Cl.[6] B32B *27/42;15/08;* **C08F** *283/00*

U.S. Cl. 428—524 **32 Claims**

1. A curable composition comprising:

(i) a sulfonimide cure catalyst,

(ii) an aminoplast crosslinking agent containing at least two crosslinkable groups, and

(iii) a polyfunctional material capable of reacting with the aminoplast crosslinking agents,

wherein the weight ratio of crosslinker to polyfunctional material (ii:iii) is from about 1:40 to about 3:1, and wherein the sulfonimide cure catalyst is selected from the group consisting of:

(a) a sulfonimide represented by the formula

$$RSO_2NZSO_2R$$

wherein each of the R groups is, independently, selected from the group consisting of

(a1) a linear, branched or cyclic alkyl, fluoroalkyl or N,N-dialkylamino group of 1 to 20 carbon atoms, or mixtures thereof,

(a2) an aryl group of 1 to 20 carbon atoms containing 5 or less aromatic or heterocyclic aromatic rings substituted by R^1, R^2, R^3, R^4 and R^5 groups, wherein R^1, R^2, R^3, R^4 and R^5 groups are the same or different groups selected from the group consisting of hydrogen, fluoro, alkyl, fluoroalkyl, aryl, haloaryl, carboxy, mercapto, vinyl, chloro, bromo, cyano, nitro, sulfonyl, acyl, alkoxycarbonyl, alkoxy, perfluoroalkoxy, hydroxy, amino, acylamino, alkoxycarbonylamino, carbamoyl, aminocarbonyl, N-alkyl aminocarbonyl and N,N-dialkyl aminocarbonyl groups, and

(a3) an aralkyl group wherein the alkyl and the aryl groups have the same meaning as the alkyl and aryl groups (a1) and (a2), and

wherein the Z group is

(a4) hydrogen,

(a5) acyl or

(a6) an alkyl or aralkyl group of 1 to 20 carbon atoms;

(b) a sulfonimide represented by the formula

$$—(R'—SO_2NH—SO_2)—_n$$

wherein n groups of the $—(R'—SO_2NH—SO_2)—$ units may be the same or different, and the R' group in each of the n units is independently selected from the group consisting of

(b1) a linear, branched or cyclic alkylene or fluoroalkylene group of 1 to 20 carbon atoms,

(b2) an arylene group of 1 to 20 carbon atoms containing 5 or less carbocyclic or heterocyclic aromatic rings substituted by R^1, R^2, R^3, R^4 and R^5 groups, wherein R^1, R^2, R^3, R^4 and R^5 groups are the same or different groups selected from the group consisting of hydrogen, fluoro, alkyl, fluoroalkyl, aryl, haloaryl, carboxy, mercapto, vinyl, chloro, bromo, cyano, nitro, sulfonyl, acyl, alkoxycarbonyl, alkoxy, perfluoroalkoxy, hydroxy, amino, acylamino, alkoxycarbonylamino, carbamoyl, aminocarbonyl, N-alkyl aminocarbonyl and N,N-dialkyl aminocarbonyl groups, and

(b3) an aralkylene group wherein the alkylene and the arylene groups have the same meaning as the alkylene and arylene groups (b1) and (b2);

(c) a sulfonimide represented by the formula

$$P—(SO_2NHSO_2R")_n$$

wherein P is a polyfunctional group or a polymer of a number average molecular weight greater than 500, R" is an alkyl or aryl group of 1 to 20 carbon atoms, and n is 2 or greater; and

(d) a latent reactive form thereof.

5,643,683

WET TYPE SLIDING APPARATUS

Tadashi Tanaka; Hidehiko Tamura; Takahiro Niwa; Izumi Maruyama, and Yoshihiro Fukutani, all of Nagoya, Japan, assignors to Daido Metal Company Ltd., Nagoya, Japan

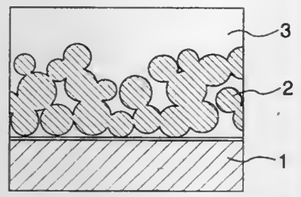
Filed Jan. 24, 1996, Ser. No. 590,764

Claims priority, application Japan, Feb. 1, 1995, 7-037607

Int. Cl.[6] B22F *7/04*

U.S. Cl. 428—551 **9 Claims**

1. A wet sliding apparatus in which a multilayer sliding member is used in the presence of a lubricating oil, characterized in that the multilayer sliding member is composed of (1) a backing metal



layer, (2) a porous, sintered layer provided thereon and (3) a surface layer consisting essentially of polyetheretherketone formed by impregnating and coating the porous, sintered layer (2) with a sliding resin consisting essentially of polyetheretherketone, and wherein the face roughness of the surface layer is 2 μm or less.

5,643,684

UNWOVEN METAL FABRIC

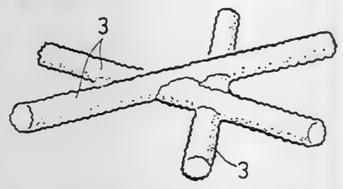
Toshiyasu Tsubouchi; Satoru Okamoto, and Tomohiko Ihara, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jun. 2, 1995, Ser. No. 459,771

Claims priority, application Japan, Jun. 9, 1994, 6-127508; May 11, 1995, 7-113259

Int. Cl.[6] B23P *17/06*

U.S. Cl. 428—605 **5 Claims**



1. An unwoven metal fabric comprising an aggregate of hollow metal fibers, said metal fibers being joined together, the hollow portions of said fibers communicating with each other at joint portions between said metal fibers, said metal fibers having a roughness of 0.5–1.5 μm on inner and outer surfaces thereof.

5,643,685

THIN FILM ELECTROLUMINESCENCE ELEMENT AND PROCESS FOR PRODUCING THE SAME

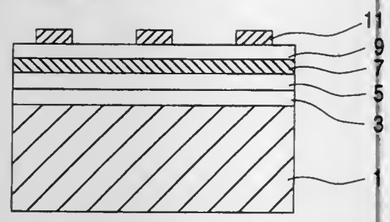
Kaoru Torikoshi, Minami Ashigara, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 19, 1994, Ser. No. 325,568

Claims priority, application Japan, Oct. 26, 1993, 5-266859

Int. Cl.[6] H05B *33/00;* **B32B** *9/00*

U.S. Cl. 428—690 **7 Claims**



1. An electroluminescence element composed of a substrate, a first electrode, a first insulating layer, a light-emitting layer, a second insulating layer, and a second electrode in this order, wherein said light-emitting layer comprises an oxide material containing a plurality of elements which is obtained by applying a coating of a solution of organic metal compounds, said organic metal compounds containing an element acting as a luminescence center, and heating the coating, the composition ratio of the elements constituting said oxide material being substantially equal to the ratio among the same elements present in the materials used to form the oxide material, wherein said oxide material forms a matrix for the element acting as a luminescence center.

5,643,686

MAGNETIC RECORDING MEDIUM AND METHOD FOR MANUFACTURING THE SAME

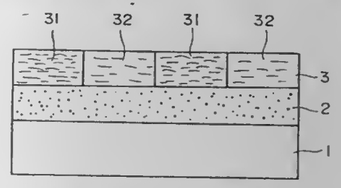
Teiichi Isshiki; Masayuki Hatano; Junichi Hashimoto; Tomoaki Karino, and Yoshifumi Kanda, all of Tokyo, Japan, assignors to Tokyo Magnetic Printing Co., Ltd., Tokyo, Japan

Filed Dec. 15, 1994, Ser. No. 356,431

Claims priority, application Japan, Jan. 6, 1994, 6-011319; Aug. 11, 1994, 6-209329; Oct. 13, 1994, 6-273144

Int. Cl.[6] G11B *5/716*

U.S. Cl. 428—694 BM **20 Claims**



1. A magnetic recording medium including a non-magnetic support and at least two magnetic layers formed on said support, characterized in that said at least two magnetic layers includes a first magnetic layer on said support and a second magnetic layer above said first magnetic layer containing magnetic particles having a coercive force of 4,000 Oe or less dispersed in a binder and has a non-rewritable fixed signal which has been recorded by a magnetic field generated by a signal recorded on said first magnetic layer under the influence of an orientation magnetic field having a magnetic field strength lower than the coercive force of said first magnetic layer but strong enough to cause the movement of said magnetic particles.

5,643,687

MAGNETO-OPTIC MEMORY MEDIUM AND A METHOD FOR PRODUCING THE SAME

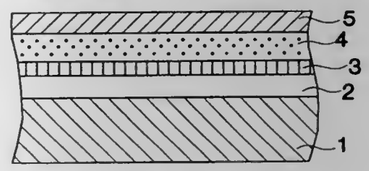
Naoyasu Iketani, Tenri; Hiroyuki Katayama, Nara; Junichiro Nakayama, and Kenji Ohta, both of Nara-ken, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 30,721, Mar. 12, 1993, abandoned. This application Dec. 19, 1994, Ser. No. 358,682

Claims priority, application Japan, Mar. 13, 1992, 4-054622

Int. Cl.[6] G11B *5/66*

U.S. Cl. 428—694 ML **17 Claims**



1. A magneto-optic memory medium, comprising:

a first dielectric layer having a first main surface and a second main surface, the first dielectric layer being formed of an oxide;

a second dielectric layer which directly covers the first main surface of the first dielectric layer, the second dielectric layer being formed of a material containing substantially no oxygen; and

a magneto-optic memory layer which directly covers the second dielectric layer,

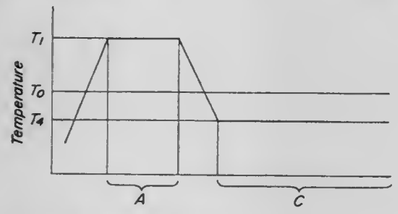
wherein the second dielectric layer is thinner than the first dielectric layer and wherein a refractive index of the oxide is larger than a refractive index of the material containing substantially no oxygen.

5,643,688

OPTOELECTRIC ARTICLES AND A PROCESS FOR PRODUCING THE SAME

Tsuguo Fukuda, Sendai; Tatsuo Kawaguchi, and Minoru Imaeda, both of Nagoya, all of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Mar. 13, 1995, Ser. No. 402,361
Claims priority, application Japan, Mar. 25, 1994, 6-055613
Int. Cl.[6] G02B *1/02*; C30B *29/30*
U.S. Cl. 428—699 **6 Claims**



1. An optoelectric article comprising:

a substrate comprised of an optoelectric single crystal; and

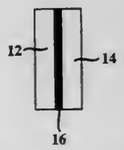
a single crystal lithium niobate film formed on the substrate by a liquid phase epitaxial process, wherein a ratio of lithium/niobium of the film falls in a range of 48.6/51.4 to 49.5/50.5, and a half-value width of an X-ray rocking curve of the film is smaller than that of the substrate.

5,643,689

NON-LIQUID PROTON CONDUCTORS FOR USE IN ELECTROCHEMICAL SYSTEMS UNDER AMBIENT CONDITIONS

Niles A. Fleischer; Joost Manassen, both of Rehovot, and Steve Daren, Nes Ziona, all of Israel, assignors to E.C.R.-Electro-Chemical Research Ltd., Yavne, Israel

Filed Aug. 28, 1996, Ser. No. 697,835
Int. Cl.[6] H01M *6/18*; *8/10*
U.S. Cl. 429—33 **18 Claims**



1. An electrochemical system operating at ambient temperatures, the system comprising:

(a) an anode plate;

(b) a cathode plate; and

(c) a non-liquid proton conductor membrane interposed between said anode plate and said cathode plate, such that an electrical contact is formed between said anode plate and said cathode plate via said non-liquid proton conductor membrane and ions flow therebetween, said non-liquid proton conductor membrane including:

(i) a matrix polymer dissolvable in a first solvent;

(ii) an acidic multimer dissolvable in said first solvent;

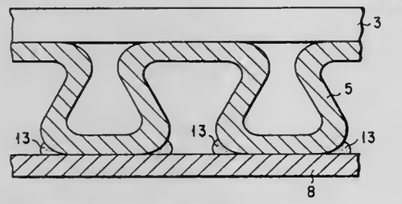
wherein, said matrix polymer is selected such that when said non-liquid proton conductor membrane is contacted with a second solvent, said non-liquid proton conductor membrane swells and as a result said electrical contact improves.

5,643,690

MOLTEN CARBONATE FUEL CELL

Hiroshi Tateishi, Yokohama; Norihiro Tomimatsu; Kazuaki Nakagawa, both of Kawasaki; Hideyuki Ozu, and Yoshihiro Akasaka, both of Yokahama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 8, 1995, Ser. No. 555,080
Claims priority, application Japan, Nov. 11, 1994, 6-277439; Jul. 20, 1995, 7-184287
Int. Cl.[6] H01M *8/14*
U.S. Cl. 429—34 **21 Claims**



11. A molten carbonate fuel cell which comprises;

a unit cell comprising an electrolyte body formed of a porous body impregnated with a carbonate, an air electrode disposed on one main surface of said electrolyte body, and a fuel electrode disposed on the other main surface of said electrolyte body;

corrugated collector plates, disposed respectively on a surface of said fuel electrode and a surface of said air electrode, wherein said corrugations have curved surfaces; and

interconnectors disposed on surfaces of said collector plates respectively;

wherein each corrugation of said collector plates contacts a flat surface of one of said interconnectors and barriers are provided in spaces formed between the flat surface of the interconnector and said curved surfaces of said collector plate.

5,643,691

GAS DISCHARGING DEVICE FOR BATTERIES FOR USE ON ELECTRIC VEHICLE

Syuichiro Iwatsuki; Kei Oshida, and Masayoshi Okamoto, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 28, 1995, Ser. No. 395,897
Claims priority, application Japan, Mar. 1, 1994, 6-031630
Int. Cl.[6] H01M *2/12*
U.S. Cl. 429—54 **54 Claims**

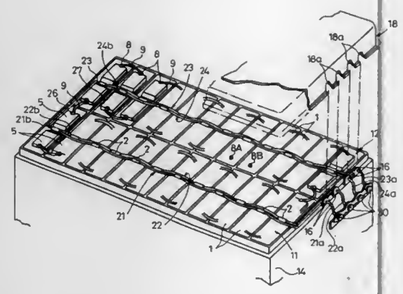
1. A gas discharging device for discharging a gas from batteries for use on an electric vehicle, comprising:

a battery box;

a plurality of batteries housed in said battery box, said batteries having respective outlet ports for emitting a gas therefrom;

first and second discharge pipes interconnecting said outlet ports in series with each other, said first discharge pipe interconnecting the outlet ports of a first portion of said plurality of batteries in series with each other, and said second discharge pipe interconnecting the outlet ports of a second portion of said plurality of batteries in series with each other; and

atmospheric discharge units connected respectively to opposite ends of said first and second discharge pipes for discharging a gas from said first and second discharge pipes into atmosphere.

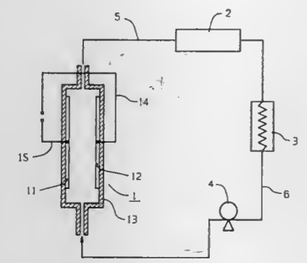


5,643,692

POWER GENERATOR

Tadahiro Ohmi, 1-17-301, Ko-megabukuro 2-chome, Aoba-ku, Sendai-shi, Miyagi-ken, Japan

PCT No. PCT/JP93/01131, § 371 Date Feb. 28, 1995, § 102(e) Date Feb. 28, 1995, PCT Pub. No. WO94/05055, PCT Pub. Date Mar. 3, 1994
PCT Filed Aug. 10, 1993, Ser. No. 382,055
Claims priority, application Japan, Aug. 12, 1992, 4-251308
Int. Cl.[6] H01M *12/08*
U.S. Cl. 429—72 **21 Claims**



1. A power generator, comprising:

a power cell comprising a fluid storage means having an inner surface possessing corrosion resistive and electrically insulating properties with respect to hydrogen fluoride containing moisture, a solution comprising an admixture comprised of hydrogen fluoride fluid and water, said solution disposed in said fluid storage means in isolation from the atmosphere, an anode electrode comprised of a material possessing corrosion resistance with respect to hydrogen fluoride containing moisture and having a work function in the range of from about 1.95 to about 4.58 eV, and a cathode electrode comprised of a material possessing corrosion resistance with respect to hydrogen fluoride containing moisture and having a work function in the range of from about 5.04 to about 5.93 eV, said anode and cathode electrodes immersed in a state of mutual opposition in said solution; and

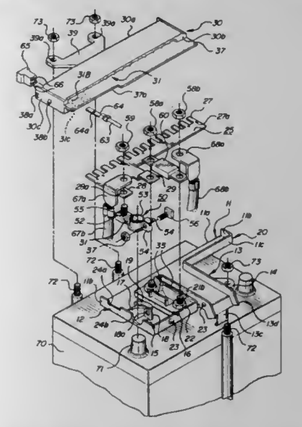
a heat application means for applying heat to said solution.

5,643,693

BATTERY-MOUNTED POWER DISTRIBUTION MODULE

Mark G. Hill, Novi, and Eric J. Stern, Farmington Hills, both of Mich., assignors to Yazaki Corporation, Tokyo, Japan

Filed Oct. 30, 1995, Ser. No. 550,367
Int. Cl.[6] H01M *2/20*
U.S. Cl. 429—121 **16 Claims**



1. An electrical power distribution module for mounting to a vehicle battery having a substantially horizontal top surface and a battery terminal projecting from the top surface, the power distribution unit comprising:

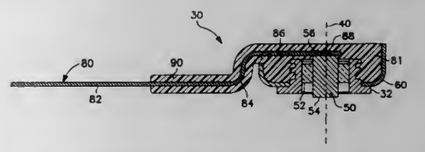
a battery terminal connector for making electrical contact with the battery terminal and a plurality of fuse receptacles electrically connected with the battery terminal connector by a bus bar, characterized in that the power distribution module is adapted to be mounted in overlying relation to the battery top surface.

5,643,694

ELECTRICAL FEEDTHROUGH FOR AN ELECTROCHEMICAL CELL

Bernard F. Heller, Jr., Fridley, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Apr. 26, 1996, Ser. No. 639,225
Int. Cl.[6] H01M *2/06*
U.S. Cl. 429—181 **16 Claims**



1. An electrical feedthrough apparatus comprising:

a ferrule having an exterior surface and an interior opening about a longitudinal axis therethrough, the interior opening extends along the longitudinal axis of the ferrule from a first end of the ferrule to a second end of the ferrule,

an electrical conductor glassed in the opening of the ferrule;

a locating member in contact with the exterior surface of the ferrule in proximity to the first end of the ferrule and having a length extending beyond the second end of the ferrule, a cavity being defined between the locating member and the ferrule; and

an insulating material in the cavity.

5,643,695

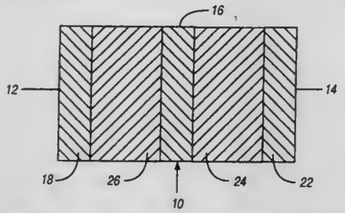
CARBONACEOUS ELECTRODE AND COMPATIBLE ELECTROLYTE

Jeremy Barker, and Feng Gao, both of Henderson, Nev., assignors to Valence Technology, Inc., Henderson, Nev.

Continuation-in-part of Ser. No. 533,882, Sep. 26, 1995. This application Apr. 10, 1996, Ser. No. 630,402

Int. Cl.[6] H01M *10/40*

U.S. Cl. 429—197 **30 Claims**



1. A battery which comprises a first electrode, a counter electrode which forms an electrochemical couple with said first electrode, and an electrolyte:

a) said first electrode consisting essentially of graphite particles and a binder, where on the basis of 100 parts by weight, said binder constitutes up to about 15 parts and said graphite particles constitute at least about 85 parts; said graphite particles having an interlayer distance spacing of 002 planes (d_{002}) as determined by x-ray diffraction of 0.3350 to 0.3360 nanometers (nm), a crystallite size in the direction of c-axis (L_c) being greater than about 100 nanometers (nm) and less than about 200 nanometers (nm), a BET surface area of greater than about 6 square meters per gram (m^2/g) and up to about 16 square meters per gram (m^2/g), and at least 90 percent by weight of said graphite particles having a size less than 16 microns (μm); and

b) said electrolyte comprising a solute and a solvent mixture; said solute consisting essentially of a salt of a metal; said solvent mixture consisting essentially of propylene carbonate (PC), ethylene carbonate (EC), and optionally one or more other organic solvents having a boiling point less than the boiling of point of said EC; with the ethylene carbonate being present in an amount by weight which is at least as great as the amount of propylene carbonate and at least as great as the amount of any said other solvent, respectively.

5,643,696

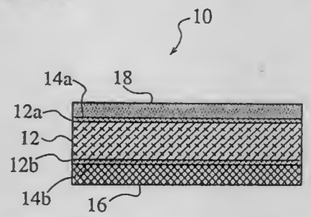
BATTERY PLATES WITH LIGHTWEIGHT CORES

John J. Rowlette, Monrovia, Calif., assignor to Bipolar Power Corporation, Whittier, Calif.

Continuation of Ser. No. 96,118, Jul. 22, 1993, abandoned, which is a continuation-in-part of Ser. No. 932,521, Aug. 20, 1992, Pat. No. 5,334,464, which is a continuation-in-part of Ser. No. 733,471, Jul. 22, 1991, abandoned. This application Sep. 5, 1995, Ser. No. 523,677

Int. Cl.[6] H01M *4/70*

U.S. Cl. 429—210 **10 Claims**



1. An apparatus for use in a bipolar lead-acid battery comprising:

a core layer having an upper and a lower side:

a negative side protective later, said negative side protective layer being located generally adjacent to said lower side of said core layer, and said negative side protective layer formed of a material which is capable of conducting electricity and which is capable of protecting said core layer from an acidic environment;

a positive side protective layer, said positive side protective layer being located generally adjacent to said upper side of said core layer, said positive protective layer formed of a material which is capable of conducting electricity, and said positive side protective layer being capable of protecting said core layer from a destructive electrochemical reaction in an oxidizing environment; and

an intermediate layer formed between said core layer and said positive side protection layer.

5,643,697

PROCESS FOR MANUFACTURING A SHADOW MASK MADE OF AN IRON/NICKEL ALLOY

Jacques Baudry, Imphy; Michel Faral, Nevers, and Jean-Francois Tiers, Sauvigny les Bois, all of France, assignors to Imphy S.A., Puteaux, France

Filed Dec. 22, 1995, Ser. No. 577,768

Claims priority, application France, Dec. 27, 1994, 94 15663

Int. Cl.[6] G03F *9/00*

U.S. Cl. 430—5 **8 Claims**

1. A process for manufacturing a shadow mask made of an iron/nickel alloy, wherein:

a foil perforated with holes is provided, this foil comprising an iron/nickel alloy whose chemical composition comprises, by weight:

35.5%	Ni ≦ 37%
	Co ≦ 0.5%
	Cr ≦ 0.1%
	Cu ≦ 0.1%
	Mo ≦ 0.1%
	V ≦ 0.1%
	Nb ≦ 0.1%
	Mn ≦ 0.1%
0.03% ≦	Si ≦ 0.15%
	S ≦ 0.001%
0.0001% ≦	Ca ≦ 0.002%
0.0001% ≦	Mg ≦ 0.002%
	Al ≦ 0.005%
	O ≦ 0.01%
	C ≦ 0.02%
	N ≦ 0.005%
	P ≦ 0.003%
	H ≦ 0.001%
	B ≦ 0.001%

the balance being iron and inevitable impurities resulting from production, the chemical composition satisfying the relationships:

$$S \leqq 0.02 \times Mn + 0.08 \times Ca + 0.6 \times Mg$$

and

$$Cr + Cu + Mo + V + Nb + Si \leqq 0.15\%$$

the foil is subjected to heat treatment in order to obtain grains whose size, as defined by the ASTM E112-88,12.4 standard, is greater than or equal to ASTM 7;

the foil is formed in order to give it the shape of a shadow mask.

5,643,698

MASK FOR MANUFACTURING SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURE THEREOF

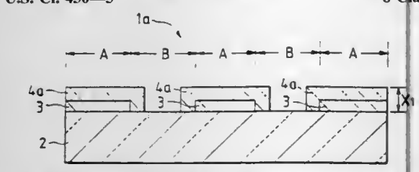
Yoshihiko Okamoto, Kodaira, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 449,926, May 25, 1995, abandoned, which is a division of Ser. No. 288,905, Aug. 11, 1994, Pat. No. 5,484,671, which is a division of Ser. No. 87,074, Jul. 7, 1993, Pat. No. 5,358,807, which is a continuation of Ser. No. 730,221, Jul. 15, 1991, abandoned, which is a continuation of Ser. No. 437,268, Nov. 16, 1989, Pat. No. 5,045,417. This application Apr. 12, 1996, Ser. No. 631,000

Claims priority, application Japan, Nov. 22, 1988, 63-295350; Oct. 2, 1989, 1-257226

Int. Cl.[6] G03F *5/00*

U.S. Cl. 430—5 **8 Claims**



1. An integrated circuit device reduction projection exposure method for transferring a circuit pattern of a mask onto an integrated circuit wafer, the reduction projection exposure method comprising the step of focusing a reduced real image of the circuit pattern of the mask onto a photoresist film overlying a major surface of the wafer through an optical projection system with exposure light in such manner that the real image is made clear due to interference between transmitted light beams transmitted through the mask, the circuit pattern including a transmission region pattern having a first opening pattern, a second opening pattern adjacent thereto, and a light shield pattern defining the first and second opening patterns, and a shifter pattern provided for at least one surface portion of the second opening pattern for reversing the phase of light passing through the at least one surface portion of the second opening pattern, the phase of the light passing through the at least one surface portion of the second opening pattern being substantially reversed in comparison with that of light passing through the first opening pattern, wherein the mask is formed by a mask making method comprising:

(a) preparing transmission region patterning data for patterning the transmission region pattern;

(b) automatically preparing shifter patterning data for patterning the shifter pattern in accordance with the transmission region patterning data;

(c) forming the transmission region pattern of the mask according to the transmission region patterning data; and

(d) forming the shifter pattern of the mask according to the shifter patterning data.

5,643,699

METHOD AND DEVICE FOR THE MUTUAL ALIGNMENT OF A FILM AND A PRINTED CIRCUIT BOARD

Paul R. Waldner, Pestalozzistrasse 12, 61350 Bad Homburg, Germany

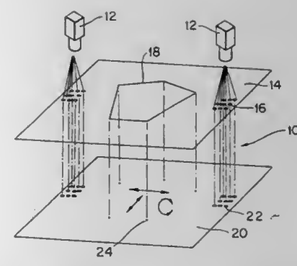
Filed May 10, 1995, Ser. No. 438,929

Claims priority, application Germany, May 13, 1994, 44 16 882.9

Int. Cl.[6] G03F *9/00*

U.S. Cl. 430—22 **9 Claims**

1. A method for the mutual alignment of a film and a printed circuit board prior to printing of the printed circuit board, said method comprising a registering step comprising using at least two cameras to optically register the respective positions of a plurality of markers on the film in relation to a plurality of respectively associated reference bores in the printed circuit board and a correcting step comprising, in the event of deviations of individual



bores of different amounts and in different directions from an ideal position, correcting the relative position of the printed circuit board with respect to the film within a tolerance range so as to provide optimized compensation for said deviations of different amounts and in different directions of the positions of said individual bores, said registering step comprising registering at least two markers and associated reference bores simultaneously with at least one camera so that by aligning as many as possible of said at least two markers as closely as possible with said associated reference bores, said optimized compensation for said deviations of different amounts and in different directions of the positions of said individual bores is provided.

5,643,700

PHOTORESIST COMPOSITION AND METHOD OF EXPOSING PHOTORESIST

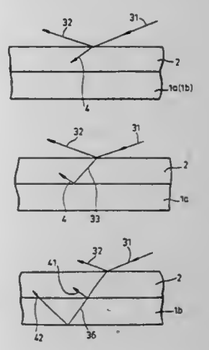
Yoichi Otsuka, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 26, 1992, Ser. No. 966,442

Claims priority, application Japan, Oct. 31, 1991, 3-313692

Int. Cl.[6] G03C *5/00*; **G03F** *7/26*

U.S. Cl. 430—30 **7 Claims**



1. A method of exposing a photoresist composition which is a lithographic step of forming a resist pattern comprising the steps of:

applying a photoresist composition to form a single photoresist layer on a substrate to be patterned, the photoresist composition having incorporated therein an infrared absorption dye;

projecting an incident infrared light onto the single photoresist layer; and

detecting a focusing position by measuring a reflection light of the incident infrared light, wherein

the infrared absorption dye has an adsorption at a wavelength of the infrared light used for detecting the focusing position.

5,643,701

ELECTROPHOTGRAPHIC PROCESS UTILIZING MUTABLE COLORED COMPOSITION

Ronald Sinclair Nobr, Roswell; John Gavin MacDonald, Decatur, both of Ga.; Vincent Daniel McGinniss, Sunbury, and Robert Samuel Whitmore, Jr., Columbus, both of Ohio, assignors to Kimberly-Clark Corporation, Neenah, Wis.

Continuation of Ser. No. 393,089, Feb. 22, 1995, which is a continuation of Ser. No. 103,503, Aug. 5, 1993, abandoned. This application Jun. 1, 1995, Ser. No. 457,025

Int. Cl.[6] G03G *13/01;9/00;13/14*

U.S. Cl. 430—47 **23 Claims**

22. An electrophotographic process comprising the step of applying a toner to a photoreceptor surface to form a toner image which replicates a first image, the toner comprising a mutable colorant, an ultraviolet radiation transorber, and a carrier comprising a polymer; wherein the ultraviolet radiation transorber is adapted, upon exposure to ultraviolet radiation, to interact with the mutable colorant to irreversibly mutate the mutable colorant from an initial absorption maximum to a new, absorption maximum different from the initial absorption maximum.

5,643,702

MULTILAYERED ELECTROPHOTOGRAPIC IMAGING MEMBER WITH VAPOR DEPOSITED GENERATOR LAYER AND IMPROVED ADHESIVE LAYER

Robert C. U. Yu, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 11, 1996, Ser. No. 587,118

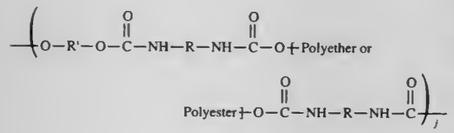
Int. Cl.[6] G03G *5/047;5/14*

U.S. Cl. 430—58 **21 Claims**

1. An electrophotographic imaging member comprising

a substrate layer having an electrically conductive outer surface,

an adhesive layer comprising a thermoplastic polyurethane film forming resin represented by the following formula:



wherein:

R is diphenyl substituted methylene group or dicyclohexyl substituted methylene group,

R' is a straight alkyl chain hydrocarbon containing between 2 and 6 carbon atoms, and

j is, the degree of polymerization, between 90 and 500,

a charge generation layer consisting essentially of a thin homogeneous vacuum sublimation deposited film of a photogenerating pigment and

a charge transport layer, said transport layer being substantially non-absorbing in said spectral region at which said charge generation layer generates and injects photogenerated holes but being capable of supporting said injection of photogenerated holes from said charge generation layer and transporting said holes through said charge transport layer.

5,643,703

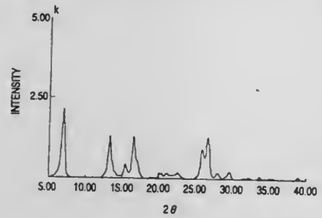
HYDROXYGALLIUM PHTHALOCYANINE CRYSTAL, PROCESS FOR PREPARING SAME, AND ELECTROPHOTOGRAPHIC PHOTORECEPTOR COMPRISING SAME

Katsumi Daimon; Katsumi Nukada; Yasuo Sakaguchi, and Ryosaku Igarashi, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Division of Ser. No. 217,887, Mar. 25, 1994, Pat. No. 5,508,395. This application Nov. 13, 1995, Ser. No. 555,017 Claims priority, application Japan, Mar. 25, 1993, 5-89503

Int. Cl.[6] G03G *5/06*

U.S. Cl. 430—78 **1 Claim**



1. An electrophotographic photoreceptor comprising an electrically conductive support having thereon a photosensitive layer, said photosensitive layer comprising a hydroxygallium phthalocyanine crystal having distinct diffraction peaks at Bragg angles (20+/−0.2°) of 7.0°, 13.4°, 16.6°, 26.0° and 26.7° to CuKα characteristic X-ray in X-ray diffraction spectrum.

5,643,704

TWO-COMPONENT TYPE DEVELOPER FOR DEVELOPING AN ELECTROSTATIC IMAGE

Kishio Tamura; Mayumi Tanaka, and Masafumi Uchida, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Aug. 14, 1995, Ser. No. 514,862

Claims priority, application Japan, Aug. 22, 1994, 6-196918

Int. Cl.[6] G03G *9/083*

U.S. Cl. 430—106.6 **18 Claims**

1. A two-component developer, for developing an electrostatic image, comprising (a) a toner particle and (b) a carrier particle comprising a substantially spherical magnetic particle coated with a resin, wherein said substantially spherical magnetic particle contains silicon in an amount of 100 ppm to 5000 ppm based on said substantially spherical magnetic particle.

5,643,705

TONER FOR DEVELOPING ELECTROSTATIC IMAGE AND IMAGE FORMATION PROCESS USING THE TONER

Satoshi Inoue; Chiaki Suzuki; Tetsu Torigoe; Shuji Sato, and Takahisa Fujii, all of Minami Ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Sep. 28, 1995, Ser. No. 540,025

Claims priority, application Japan, Sep. 30, 1994, 6-259808

Int. Cl.[6] G03G *9/087*

U.S. Cl. 430—110 **7 Claims**

1. A toner for developing an electrostatic image, which comprises a particulate toner containing a polyolefin wax and a modified polyolefin wax, wherein said polyolefin wax is low number average molecular weight polyethylene or low number average molecular weight polypropylene having a softening point of from 80° C. to 160° C. and said modified polyolefin wax is mainly composed of a low number average molecular weight polyethylene with M_n being 1,000 to 15,000, wherein the average diameter of wax particles dispersed in said particulate toner is not more than 0.5 μm and the amount of wax exposed on the surface of said particulate toner is from 40 to 65% by weight, and wherein a modifying component used in said modified polyolefin wax is an aromatic vinyl monomer, an acrylate monomer, an unsaturated dicarboxylic acid ester, or a mixture thereof.

5,643,706

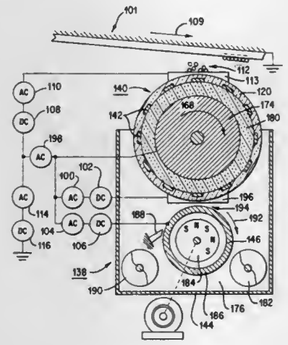
PROCESS FOR PREPARING ELECTROCONDUCTIVE MEMBERS

Leonard J. Brillson, Pittsford; Scott M. Silence, Penfield; Michael J. Duggan, and Ann M. Kazakos, both of Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 30, 1995, Ser. No. 565,544

Int. Cl.[6] G03G *5/00;* **B05D** *3/00*

U.S. Cl. 430—127 **20 Claims**



1. A method for forming an electroconductive member for electrostatographic development, comprising:

(a) forming a roll having a layer of an insulating material; and

(b) altering an electrical property of said insulating material by irradiating the insulating material with a laser beam, before or after said step (a).

5,643,707

LIQUID DEVELOPER COMPOSITIONS

James R. Larson; George A. Gibson, both of Fairport, and John W. Spiewak, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 31, 1995, Ser. No. 509,408

Int. Cl.[6] G03G *9/12*

U.S. Cl. 430—137 **6 Claims**

1. A process for reducing the volatiles present in a liquid developer comprised of a nonpolar liquid, thermoplastic resin particles, a charge adjuvant, pigment, and a charge director, which process comprises subjecting said developer to a temperature of 22° C. and to a pressure which is reduced from 760 millimeters of mercury to 0.30 millimeters of mercury during a period of 10 minutes, followed by subjecting said developer to a temperature of 22° C. and to a pressure which is reduced from 0.30 millimeters of mercury to 0.10 millimeters of mercury during a period of 2.25 hours, followed by subjecting said developer to a temperature of 22° C. and to a pressure which is reduced from 0.10 millimeters of mercury to 0.04 millimeters of mercury during a period of 16.5 hours, thereafter heating said developer at a temperature of from 22° C. to 45° C. for 40 minutes, and wherein the pressure is 0.015 millimeters of mercury, and thereafter heating said developer at a temperature of 44° C. to 45° C. for 4 hours at a pressure of 0.05 millimeters of mercury.

5,643,708

TONER AND DEVELOPER COMPOSITIONS

Pinyen Lin, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 18, 1995, Ser. No. 573,976

Int. Cl.[6] G03G *9/087*

U.S. Cl. 430—137 **20 Claims**

1. A process for the preparation of toner compositions consisting of the mixing or predispersion of a wax and colloidal silica particles, and subsequently adding the formed predispersion to thermoplastic resin and pigment, and whereby said wax is retained in said toner.

5,643,709

THERMAL TRANSFER RECORDING MATERIAL

Takayoshi Kamio; Yasuhiro Ishiwata, and Tomomi Tateishi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 4, 1996, Ser. No. 627,796

Claims priority, application Japan, Apr. 10, 1995, 7-083709

Int. Cl.[6] G03C *8/10*

U.S. Cl. 430—201 **16 Claims**

1. A thermal transfer recording material comprising a thermal transfer dye donating material containing a thermally migratable dye capable of donating hydrogen atom to be anion and an image receiving material for thermal transfer printing, containing at least one of basic materials and mordants as a dye receiving compound, in which at least one of the thermally migratable dyes is a beteryl azo dye of phenol type represented by General Formula (1) or its derivative:

General Formula (1)

wherein R^1, R^2, R^3 and R^4 independently and respectively represent a hydrogen atom or atomic group of nonmetals, R^3 and R^4 may be bonded to form a five to six membered group and R^5 represents a heterocyclic group.

5,643,710

IMAGING ELEMENT AND METHOD FOR MAKING LITHOGRAPHIC PRINTING PLATES ACCORDING TO THE SILVER SALT DIFFUSION TRANSFER PROCESS

Paul Coppens, Turnhout; Eric Hoes, Herentals; Johan Loccufier, Zwijnaarde, and Ronny De Clercq, Aalter, all of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Dec. 8, 1995, Ser. No. 569,426

Claims priority, application European Pat. Off., Dec. 28, 1994, 94203779

Int. Cl.[6] G03C *8/28;8/52;* **G03F** *7/07*

U.S. Cl. 430—204 **9 Claims**

1. An imaging element comprising in the order given on a hydrophilic surface of a support (i) an image receiving layer containing physical development nuclei, (ii) a photosensitive layer containing a silver halide emulsion being in water permeable relationship with said image receiving layer and.(iii) an intermediate layer between said image receiving layer and said photosensitive layer comprising particles of a water insoluble inorganic compound having a crosslinked structure and a number average size not lower than 0.02 μm and lower than 3 μm.

5,643,711

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Shunji Takada; Yoichi Suga, and Hiroyuki Kawamoto, all of Minami-Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

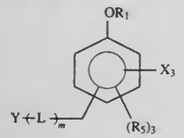
Continuation of Ser. No. 780,341, Oct. 22, 1991, abandoned. This application Jan. 10, 1994, Ser. No. 179,571

Claims priority, application Japan, Oct. 23, 1990, 2-284771; Nov. 5, 1990, 2-299659

Int. Cl.[6] C03C *1/035;1/34*

U.S. Cl. 430—546 **14 Claims**

1. A silver halide color photographic light-sensitive material having at least one light-sensitive silver halide emulsion layer on a support, wherein said material contains a coupler dispersed in an oil, and said light-sensitive silver halide emulsion layer contains a tabular silver halide emulsion comprised of tabular silver halide grains having an average aspect ratio of 2 or more in which said tabular silver halide emulsion has been subjected to spectral sensitization using 40% or more of the saturated adsorption quantity of a sensitizing dye and wherein said light-sensitive emulsion layer contains a compound represented by the following formula (II) and/or the oxidized product thereof which is added directly to said silver halide emulsion:

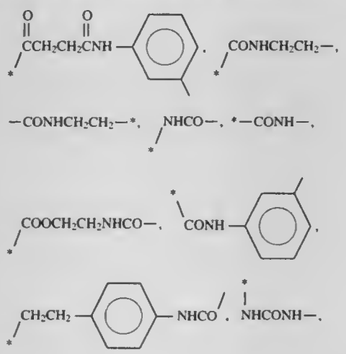


(II)

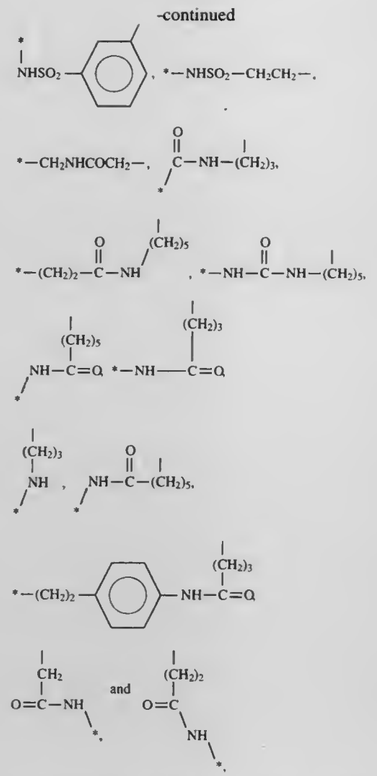
wherein X_3 represents OR_1 or



wherein R_1 represents a hydrogen atom or a group capable of being converted to a hydrogen atom upon hydrolysis. and R_2 and R_3 each represent hydrogen. alkyl, aryl, heterocyclic, heterocyclic sulfonyl, heterocyclic carbonyl, sulfamoyl, or carbamoyl. Y represents a group which accelerates adsorption to a silver halide grain and is a thioamido group, a mercapto group, a group having a disulfide bond, or a 5 or 6-membered nitrogen-containing heterocyclic group that may be part of a sensitizing dye, L represents a divalent coupling group selected from the group consisting of



-continued



where * represents the location where the L group is attached to the benzene ring, m represents 0 or 1, and R_5 represents a hydrogen atom, a halogen atom, an alkyl group, an aryl group, an alkoxy group, an aryloxy group, an alkylthio group, an arythio group, an acyl group, an acylamino group, a nitro group, a cyano group, an oxycarbonyl group, a carboxy group, a sulfo group, a hydroxy group, a ureido group, a sulfonamido group, a sulfamoyl group, a carbamoyl group, an acyloxy group, an amino group, a carbonate group, a sulfonyl group, a sulfinyl group or a heterocyclic group, and each R_5 may be the same or different.

5,643,712

METHOD FOR TREATING AND RENDERING GRAFTS NONTHROMBOGENIC AND SUBSTANTIALLY NONIMMUNOGENIC USING AN EXTRACELLULAR MATRIX COATING

Lauren Brasile, 61 Meadow La., Albany, N.Y. 12208

Continuation-in-part of Ser. No. 246,803, May 20, 1994, abandoned. This application May 17, 1995, Ser. No. 437,155

Int. Cl.[6] A01N *1/02;* **A61F** *2/04*

U.S. Cl. 435—1.2 **7 Claims**

1. A method of treating lumenal surfaces in the vasculature of a tissue or organ to be grafted, said method comprises the steps of:

(a) removing the organ or tissue to be grafted from the donor,

(b) perfusing or infusing the organ or tissue with a preservation solution,

(c) coating the vascular endothelial cells lining the lumen of the blood vessels within the vasculature of the organ or tissue to be grafted with a solution comprising a solubilized or partially polymerized extracellular matrix preparation derived from endothelial cells in a concentration sufficient to render the lumenal surfaces of the organ or tissue nonthrombogenic, and substantially nonimmunogenic as determined by at least a 99% inhibition in a cell-mediated reaction to the treated graft as compared to that of an untreated graft, to a recipient of said graft.

5,643,713

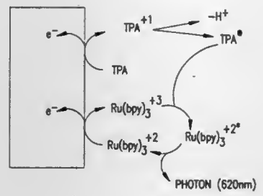
ELECTROCHEMILUMINESCENT MONITORING OF COMPOUNDS

Pam Liang, 1534 N. Colonial Ter., Arlington, Va. 22209; Mark T. Martin, 6516 Old Farm Ct.., N. Bethesda, Md. 20852, and Liwen Dong, 11411 Potoma Oak Dr., Rockville, Md. 20850

Filed Jun. 7, 1995, Ser. No. 485,419

Int. Cl.[6] C12Q *1/00;1/34;* **G01N** *33/53;33/554*

U.S. Cl. 435—4 **20 Claims**



1. A detectable electrochemiluminescent compound useful for monitoring changes in compounds, comprising:

(a) a chemically-transformable first compound covalently linked to an electrochemiluminescent compound; wherein

(I) the first compound is a substrate capable of (i) being chemically transformed upon an interaction with at least one second compound which is an enzyme specific to said substrate; (ii) intramolecularly donating an electron to the electrochemiluminescent compound to cause the electrochemiluminescent compound to subsequently luminesce; and (iii) varying in its ability to effect such intramolecular donation of an electron before and after any interaction; and

(II) upon the exposure of the detectable compound to electrochemical energy the first compound intramolecularly donates an electron to the electrochemiluminescent compound to cause the electrochemiluminescent compound to luminesce.

5,643,714

METHOD AND ASSAY FOR HTLV

Kenneth G. Hadlock, Hayward, Calif.; Chin-Joo Goh, Singapore, Singapore, and Steven K.H. Foung, Stanford, Calif., assignors to Genelabs Technologies, Inc., Redwood City, and The Board of Trustees of the Leland Stanford Junior University, Stanford, both of Calif.

Continuation-in-part of Ser. No. 653,091, Feb. 8, 1991, abandoned, which is a continuation-in-part of Ser. No. 366,313, Jun. 13, 1989, Pat. No. 5,066,579, which is a continuation of Ser. No. 948,270, Dec. 31, 1986, abandoned. This application Feb. 5, 1993, Ser. No. 14,153

Int. Cl.[6] C12Q *1/70;1/68;* **G01N** *33/53;* **C07K** *14/15*

U.S. Cl. 435—5 **17 Claims**

1. A peptide antigen, consisting of

an amino acid sequence identified by SEQ ID NO: 1.

5,643,715

HUMAN PAPILLOMAVIRUS TYPE 52 DNA SEQUENCES AND METHODS FOR EMPLOYING THE SAME

Wayne D. Lancaster, 3763 Steiner Rd., Trenton, Mich. 48183

Continuation of Ser. No. 972,355, Nov. 5, 1992, abandoned, which is a continuation of Ser. No. 262,597, Oct. 26, 1988, abandoned. This application Mar. 23, 1994, Ser. No. 217,015

Int. Cl.[6] C12Q *1/70;* **C12N** *15/37;* **C07H** *21/02;21/04*

U.S. Cl. 435—5 **27 Claims**

1. A recombinant DNA of HPV 52 comprising a cloning vector and HPV 52 DNA,

wherein the length of the HPV 52 DNA is between approximately 15 and 8000 nucleotide bases,

wherein the HPV 52 DNA consists of all or a fragment of an HPV DNA, wherein the HPV DNA cross-hybridizes to the HPV portion of clone pCD15 to greater than 50% under moderately stringent conditions, and

wherein the HPV 52 DNA does not hybridize to DNA from HPV types 1 through 51 under stringent conditions.

5,643,716

DIAGNOSTIC AGENT AND METHODS FOR IDENTIFYING HIV INFECTED INDIVIDUALS AND MONITORING THEIR THERAPY

Fred I. Chasalow, Glen Cove, N.Y., assignor to Amur Research Corp., Glen Cove, N.Y.

Continuation of Ser. No. 65,062, May 20, 1993, Pat. No. 5,464,740, which is a continuation-in-part of Ser. No. 940,927, Sep. 8, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 465,004

Int. Cl.[6] C12Q *1/70*

U.S. Cl. 435—5 **17 Claims**

1. A method for identifying a patient infected with HIV-1 comprising the steps of:

detecting the amount of an agent selected from the group consisting of sphingomyelin, sphingosyl-phospho-choline and ceramides in a serum sample from said patient;

wherein said patient is HIV-1 infected if the amount of said agent in said patient's serum sample is statistically different from the amount of said agent in serum samples obtained from a control, non-HIV-1 infected group.

5,643,717

SUBSTRATE USEFUL FOR SEPARATING MODIFIED OLIGONUCLEOTIDES

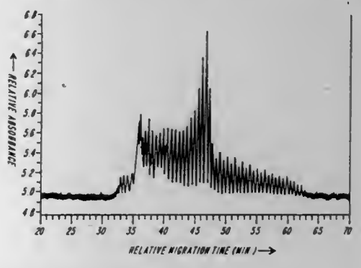
Aharon S. Cohen, Brookline, and Maria Vilenchik, Natick, both of Mass., assignors to Hybridon, Inc., Worcester, Mass.

Continuation-in-part of Ser. No. 991,466, Dec. 16, 1992, Pat. No. 5,420,265. This application Mar. 16, 1993, Ser. No. 32,856

The portion of the term of this patent subsequent to Dec. 16, 2012, has been disclaimed.

Int. Cl.[6] C12Q *1/68*

U.S. Cl. 435—6 **11 Claims**



1. A composition comprising:

a substrate in a capillary useful for separating modified mononucleotides and oligonucleotides, the substrate comprising at lest 12% linear polymer in at least 50% (volume:volume) organic solvent, the organic solvent being a denaturing agent; and a modified mononucleotide or oligonucleotide.

5,643,718

TRANSFECTION AND GENETIC MANIPULATIONS IN OBLIGATE INTRACELLULAR PARASITES

Kami Kim, San Francisco; Dominique Soldati, Mountain View, and John C. Boothroyd, Stanford, all of Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Palo Alto, Calif.

Filed Nov. 4, 1993, Ser. No. 147,783

Int. Cl.[6] C12Q *1/68;* **C12N** *1/11;15/64;* **C12P** *21/02*

U.S. Cl. 435—6 **25 Claims**

1. A transformed obligate intracellular parasite of the genus Toxoplasma, containing a DNA sequence heterologous to said intracellular parasite.

5,643,719

INTERSEXUAL HETEROZYGOUS PHYCOMYCES

Enrique Cerda-Olmedo; Bina Jamnadas Mehta, both of Sevilla, Spain; Petrus Wilhelmus Maria Van Dijck, Utrecht, and Bertus Pieter Koekman, Schiphuiden, both of Netherlands, assignors to Gist-brocades, N.V., Ma Delft, Netherlands

PCT No. PCT/EP93/00850, § 371 Date Feb. 2, 1994, § 102(e) Date Feb. 2, 1994, PCT Pub. No. WO93/20198, PCT Pub. Date Oct. 14, 1993

PCT Filed Apr. 5, 1993, Ser. No. 157,159

Claims priority, application European Pat. Off., Apr. 3, 1992, 92200958; May 8, 1992, 92201313

Int. Cl.[6] C12Q *1/68;* **C12P** *23/00;* **C12N** *15/64;1/15*

U.S. Cl. 435—6 **7 Claims**

1. A Phycomyces strain which is an intersexual heterozygote.

5,643,720

METHOD OF INHIBITING TRANSCRIPTION UTILIZING NUCLEAR RECEPTORS

Magnus Pfahl, Solana Beach, and Michael Karin, San Diego, both of Calif., assignors to The Burnham Institute, La Jolla, Calif.

Continuation of Ser. No. 32,726, Mar. 16, 1993, abandoned, which is a continuation of Ser. No. 595,582, Oct. 10, 1990, abandoned. This application Jan. 14, 1994, Ser. No. 182,735

Int. Cl.[6] C12Q *1/68;* **G01N** *33/50*

U.S. Cl. 435—6 **5 Claims**

1. A method of screening ligands for those which bind a retinoid receptor to form a complex which binds AP-1 or an AP-1 component and prevents DNA binding by the AP-1 or the AP-1 component, comprising the steps of:

a) contacting the ligand with a cell containing a retinoid receptor to form a ligand/receptor complex;

b) allowing the ligand/receptor complex and the AP-1 or the AP-1 component to contact; and

c) determining if the complex interferes with expression of a gene product from a gene regulated by the AP-1 or the AP-1 component DNA binding, the presence of interference indicating a ligand which forms a ligand/receptor complex which binds the AP-1 or the AP-1 component and prevents DNA binding by the AP-1 or the AP-1 component,

provided at least one of the proteins selected from the group consisting of the retinoid receptor, the AP-1, the AP-1 component and the gene product is expressed in said cell from a recombinant nucleic acid molecule.

5,643,721

BIOREAGENT IMMOBILIZATION MEDIUM

Thomas G. Spring, Highland Park, Ill.; John M. Brackett, Kenosha, Wis.; Sheila A. Vogdes, Grayslake, and Steven G. Schultz, Winthrop Harbor, both of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Feb. 9, 1994, Ser. No. 193,972

Int. Cl.[6] G01N *33/543;33/545;33/548;33/551*

U.S. Cl. 435—6 **15 Claims**

1. An immobilization medium comprising:

a. a bioreagent immobilized to a solid phase, wherein said solid phase is comprised of particles with a polymer absorbed thereon, wherein said adsorbed polymer is selected from the group consisting of quaternary ammonium polymers, tertiary amino polymers, secondary amino polymers, and primary amino polymers; and

b. a latex resin, wherein said immobilized bioreagent is evenly dispersed in said latex resin; wherein said immobilization medium is a substantially homogeneous dispensable mixture.

5,643,722

METHODS FOR THE DETECTION AND ISOLATION OF PROTEINS

Kenneth J. Rothschild, Newton; Sanjay M. Sonar, Boston, and Jerzy Olejnik, Allston, all of Mass., assignors to Trustees of Boston University

Filed May 11, 1994, Ser. No. 240,511

Int. Cl.[6] C12Q *1/68*

U.S. Cl. 435—6 **50 Claims**

1. A method for detecting nascent proteins synthesized in a translation system comprising the steps of:

a) aminoacylating a tRNA molecule with a photocleavable marker containing an α-amino acid to create a misaminoacylated tRNA;

b) introducing the misaminoacylated tRNA to the translation system;

c) incubating the system to incorporate marker into nascent proteins; and

d) detecting nascent proteins containing marker.

5,643,723

DETECTION OF A GENETIC LOCUS ENCODING RESISTANCE TO RIFAMPIN IN MYCOBACTERIAL CULTURES AND IN CLINICAL SPECIMENS

David H. Persing; John J. Hunt, both of Rochester, Minn.; Karen K. Y. Young, San Ramon, Calif.; Teresa A. Felmlee, Oronoco, Minn.; Glenn D. Roberts, and A. Christian Whelan, both of Rochester, Minn., assignors to Roche Molecular Systems, Inc., Branchburg, N.J., and Mayo Foundation For Medical Education and Research, Rochester, Minn.

Filed May 26, 1994, Ser. No. 250,030

Int. Cl.[6] C12Q *1/68;* **C12P** *19/34;* **C07H** *21/04;* **C12N** *15/00*

U.S. Cl. 435—6 **23 Claims**

1. A method for detecting Mycobacterium tuberculosis in a biological sample suspected of containing M. tuberculosis comprising:

(a) subjecting DNA from the biological sample to polymerase chain reaction using a plurality of primers under reaction conditions sufficient to simplify a portion of a M. tuberculosis rpoB gone to produce an amplification product, wherein the plurality of primers comprises at least one primer that hybridizes under hybridizing conditions to the amplified portion of the gone at a site comprising at least one position-specific M. tuberculosis signature nucleotide selected, with reference to FIG. 3 (SEQ D NO:1), from the group consisting

a G at nucleotide position 2312,

a T at nucleotide position 2313,

an A at nucleotide position 2373,

a G at nucleotide position 2374,

an A at nucleotide position 2378,

a G at nucleotide position 2408,

a T at nucleotide position 2409,

an A at nucleotide position 2426,

a G at nucleotide position 2441,

an A at nucleotide position 2456, and

a T at nucleotide position 2465; and

(b) detecting the presence or absence of an amplification product, wherein the presence of an amplification product is indicative of the presence of M. tuberculosis in the biological sample and wherein the absence of the amplification product is indicative of the absence of M. tuberculosis in the biological sample.

5,643,724

METHODS AND REAGENTS FOR GLYCOPHORIN A TYPING

Nicola Jane Fildes, Walnut Creek, and Rebecca Lynne Reynolds, Alameda, both of Calif., assignors to Roche Molecular Systems, Inc., Branchburg, N.J.

Filed Jun. 6, 1994, Ser. No. 255,264

Int. Cl.[6] C12Q *1/68;* **C12P** *19/34*

U.S. Cl. 435—6 **21 Claims**

1. A process for detecting the presence of an A', A", or B' allele of the Glycophorin A locus in a sample containing human nucleic acids comprising:

(a) mixing said nucleic acid with a sequence-specific oligonucleotide probe fully complementary to a variant sequence that distinguishes said allele from A and B alleles, under stringent hybridization conditions; and

(b) detecting hybrids formed between said nucleic acid and said probe.

5,643,725

SEQUENCE AND ANALYSIS OF LKP PILIN STRUCTURAL GENES AND THE LKP PILI OPERON OF NONTYPABLE HAEMOPHILUS INFLUENZAE

Bruce A. Green, Pittsford, N.Y., and Charles C. Brinton, Jr., Export, Pa., assignors to American Cyanamid Company, Wayne, N.J., and Bactex, Inc., Pittsburgh, Pa.

Filed Jul. 19, 1994, Ser. No. 277,231

Int. Cl.[6] C12Q *1/68;* **C07H** *21/02;21/04;* **A61K** *38/21*

U.S. Cl. 435—6 **4 Claims**

1. A method of vaccinating a mammal against *Haemophilus influenzae* comprising administering to the mammal an amount of *Haemophilus influenzae* serotype 1 LKP tip adhesin protein encoded by the hifE gene, effective to immunize a mammal against *Haemophilus influenzae* infection.

5,643,726

METHODS FOR MODULATING TRANSCRIPTION FROM THE AMYLOID β-PROTEIN PRECURSOR (APP) PROMOTER

Rudolph E. Tanzi, Canton, and Dora M. Kovacs, Cambridge, both of Mass., assignors to The General Hospital Corporation, Charlestown, Mass.

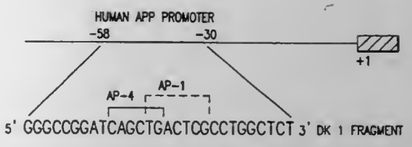
Filed Nov. 10, 1994, Ser. No. 339,152

Int. Cl.[6] C12Q *1/68;* **C12N** *15/63*

U.S. Cl. 435—6 **18 Claims**

15. A method for screening candidate upstream stimulatory factor (USF) binding compounds to identify compounds which down-regulate transcription from the amyloid β-protein precursor (APP) promoter, comprising the steps of:

(a) transfecting a host cell with a DNA or RNA construct containing the APP promoter operably linked to a gene encoding a reporter protein;



(b) transfecting said host cell with a DNA or RNA construct which expresses upstream stimulatory factor (USF) protein;

(c) measuring reporter protein expression activated by USF binding to the APP promoter;

(d) transfecting said host cell with a DNA or RNA construct either containing or which expresses a USF binding compound; and

(e) measuring if a decrease in reporter protein expression occurs due to said USF binding compound interfering with USF binding to the APP promoter.

5,643,727

BCL-2 GENE INHIBITORY ELEMENT BINDING FACTOR

John C. Reed, Carlsbad, and Masayoshi Harigai, San Diego, both of Calif., assignors to La Jolla Cancer Research Foundation, La Jolla, Calif.

Filed Feb. 16, 1995, Ser. No. 390,858

Int. Cl.[6] C12Q *1/68;* **C07H** *21/04;* **A61K** *38/16;* **C07K** *14/47*

U.S. Cl. 435—6 **15 Claims**

1. An in vitro method for identifying an effective agent that alters the association of a Bcl-2 inhibitory element (BIE) and a BIE binding factor (BBF), comprising the steps of:

a. incubating in solution or in cultured cells the BBF and the BIE, under conditions that allow said BBF and said BIE to associate, with an agent suspected of being able to alter the association of said BBF and said BIE; and

b. detecting the altered association of said BBF and said BIE, wherein said altered association identifies an effective agent.

5,643,728

METHOD OF MARKING A LIQUID

James Howard Slater, 38 Heol-Y-Delyn, Lisvane, Cardiff CF4 5SR, Great Britain, and John Edward Minton, 2 Mill Place, Lisvane, Cardiff CF4 5TF, Great Britain

PCT No. PCT/GB93/01822, § 371 Date Feb. 27, 1995, § 102(e) Date Feb. 27, 1995, PCT Pub. No. WO94/04918, PCT Pub. Date Mar. 3, 1994

PCT Filed Aug. 26, 1993, Ser. No. 392,821

Claims priority, application United Kingdom, Aug. 26, 1992, 9218131

Int. Cl.[6] C07H *21/00;* **C12Q** *1/68*

U.S. Cl. 435—6 **24 Claims**

1. A method of marking a liquid and subsequently detecting that the liquid has been marked and identifying the liquid, which method comprises:

adding to the liquid an additive comprising a plurality of particles in an amount no greater than 1 part weight of particles per 10^6 parts weight liquid, said plurality of particles comprising signal means to aid their detection, and coding means to aid identification of the liquid, said particles not being visible in the liquid to the naked eye; said additive comprising either (a) two or more particles, each particle having a different signal means, and at least one particle having a code means or (b) a particle having two or more different signal means and at least one code means; one of said signal means being a non-nucleic acid signal means, and another of said signal means being a nucleic acid signal means;

sampling a portion of the liquid containing said additive;

detecting the presence in the liquid sample of said particles having said non-nucleic acid signal means;

detecting the presence of said nucleic acid signal means on particles from the liquid sample; and

decoding said code means, thereby detecting that the liquid had been marked and identifying the liquid sample.

5,643,729

METHODS FOR DIAGNOSING CANCER, PRECANCEROUS STATE, OR SUSCEPTIBILITY TO OTHER FORMS OF DISEASES BY DETECTING AN ACCELERATION OF EXON SKIPPING IN IRF-1 MRNA

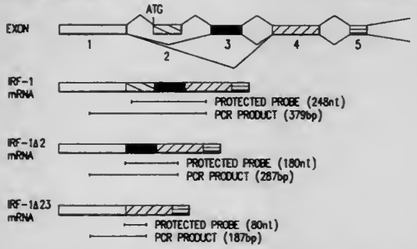
Tadatsugu Taniguchi, Ibaraki, and Hisashi Harada, Suita, both of Japan, assignors to Boehringer Ingelheim International GmbH, Germany

Filed Feb. 24, 1995, Ser. No. 393,997

Claims priority, application European Pat. Off., Feb. 24, 1994, 94102839

Int. Cl.[6] C12Q *1/68; 1/70;* **C12P** *19/34;* **C07H** *21/04*

U.S. Cl. 435—6 **16 Claims**



1. A method for detecting an acceleration of exon skipping in interferon-regulatory factor-1 (IRF-1) mRNA, the method comprising:

(a) assaying IRF-1 mRNA level in a first biological sample, wherein said IRF-1. mRNA is selected from one or more of intact IRF-I mRNA, Δ2 IRF-1 mRNA, or Δ23 IRF-1 mRNA;

(b) comparing said IRF-1 mRNA level to an IRF-1 mRNA standard level, said standard being taken from a second biological sample not exhibiting accelerated exon skipping in IRF-1 mRNA; and

(c) determining whether said sample exhibits an acceleration of exon skipping in IRF-1 mRNA.

5,643,730

PROCESS FOR DETECTING SPECIFIC MRNA AND DNA IN CELLS

Michael J. Banker, Groton; Ralph E. Davidson, North Stonington, and Dennis A. Pereira, Stonington, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Continuation of Ser. No. 52,805, Apr. 23, 1993, abandoned, which is a continuation of Ser. No. 764,462, Sep. 23, 1991, abandoned. This application Mar. 14, 1995, Ser. No. 403,555

Int. Cl.[6] C12Q *1/68;1/70;* **C12P** *19/34;* **C07H** *21/04*

U.S. Cl. 435—6 **22 Claims**

1. A method for detecting the presence of specific mRNA in cells which comprises the steps of:

(a) removing the culture medium or biological fluid in which the cells are cultured or exist;

(b) lysing the cells by adding deionized or distilled water to the cells in a vessel and maintaining the vessel in a liquid of a temperature from about 90° C. to about 115° C. for about two to about twelve minutes to produce a lysate;

(c) permitting the lysate to cool;

(d) producing one or more cDNA sequences from mRNA of a specific sequence or specific sequences present in and not separated from the lysate;

(e) amplifying the number of copies of the cDNA sequence or sequences; and

(f) detecting the presence of the cDNA sequence or sequences.

5,643,731

USE OF PAIRS OF LEUCINE ZIPPER PEPTIDES IN IMMUNOASSAY METHODS

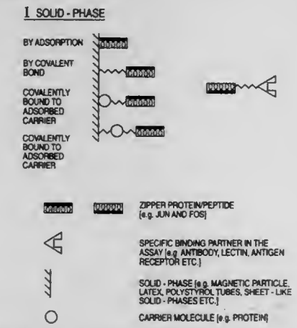
Klaus Bosslet; Peter Hermentin; Hans Harald Sedlacek; Bernhard Auerbach; Peter Pfleiderer, and Rolf Müller, all of Marburg, Germany, assignors to Behringwerke Aktiengesellschaft, Marburg, Germany

Continuation of Ser. No. 342,001, Nov. 16, 1994, abandoned, which is a continuation of Ser. No. 182,390, Jan. 18, 1994, abandoned, which is a continuation of Ser. No. 27,587, Mar. 5, 1993, abandoned, which is a continuation of Ser. No. 805,687, Dec. 12, 1991, abandoned. This application Jun. 6, 1995, Ser. No. 467,943

Claims priority, application Germany, Dec. 19, 1990, 40 40 669.5

Int. Cl.[6] G01N *33/53*

U.S. Cl. 435—7.1 **14 Claims**



1. A method for in vitro immunochemical detection and determination of an analyte in a biological liquid using a pair of complementary leucine zipper peptides, wherein the first leucine zipper peptide of the pair of leucine zipper peptides specifically binds to the second leucine zipper peptide of the pair of leucine zipper peptides, comprising the steps of:

(a) immobilizing said first leucine zipper peptide on a solid phase;

(b) coupling said second leucine zipper peptide to a specific binding partner for the analyte;

(c) contacting the immobilized first leucine zipper peptide with the second leucine zipper peptide coupled to the specific binding partner for the analyte, thereby immobilizing the specific binding partner on the solid phase;

(d) contacting a sample of the biological liquid containing the analyte with the immobilized specific binding partner; and

(e) determining the amount of the analyte bound by said specific binding partner.

5,643,732

IMMUNOLOGICAL ASSAY METHODS

Meir Strahilevitz, 10440 Willowdale, Creve Coeur, Mo. 63141

Division of Ser. No. 699,159, May 13, 1991, which is a division of Ser. No. 345,964, May 1, 1989, Pat. No. 5,037,645, which is a division of Ser. No. 925,821, Oct. 30, 1986, Pat. No. 4,834,973, which is a division of Ser. No. 319,238, Nov. 9, 1981, Pat. No. 4,620,977, which is a continuation of Ser. No. 761,290, Jan. 21, 1977, Pat. No. 4,375,414, which is a continuation of Ser. No. 255,154, May 19, 1972, abandoned. This application Jun. 5, 1995, Ser. No. 469,083

Claims priority, application United Kingdom, May 20, 1971, 16001/71

Int. Cl.[6] G01N *33/531;33/536;33/543;33/555*

U.S. Cl. 435—7.1 **16 Claims**

1. An immunoassay method of determining a hapten in a biological sample comprising mixing with said sample a first antibody to a first site on said hapten and a second antibody to a second site on said hapten, the quantities of said first and second antibodies



being chosen to produce a precipitate in the presence of at least a predetermined amount of said hapten.

5,643,733

BORRELIA BURGDOFERI ANTIGENS AND USES THEREOF

John M. Robinson, Gurnee; Tami J. Pilot-Matias, Libertyville, and Jeffrey C. Hunt, Lindenhurst, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 779,704, Oct. 21, 1991. This application Jul. 10, 1995, Ser. No. 500,222

Int. Cl.[6] G01N *33/53;33/543;33/554;33/569*

U.S. Cl. 435—7.1 **18 Claims**

1. A method for detecting a first antibody of class IgM or IgG, which binds a *B. burgdorferi* antigen, in a test sample suspected of containing said first antibody, comprising the steps of:

a) contacting said test sample with a solid support containing a bound second antibody, said second antibody being capable of binding to a mu-chain of an IgM antibody or gamma-chain of an IgG antibody, under conditions suitable for complexing said second antibody with said first antibody present in said test sample,

b) contacting an immunoreactive polypeptide to the solid support, wherein said immunoreactive polypeptide binds said first antibody, under conditions suitable for complexing said first antibody to said immunoreactive polypeptide,

c) contacting a third antibody to the solid support, wherein said third antibody binds the immunoreactive polypeptide, under conditions suitable for complexing said third antibody to said immunoreactive polypeptide,

d) detecting complex of (second antibody-IgM or IgG antibody-immunoreactive polypeptide-third antibody), presence of said complex indicating presence of said first antibody in said test sample,

wherein said immunoreactive polypeptide comprises a non-naturally occurring polypeptide which does not bind an antibody to *T. pallidum,* said non-naturally occurring polypeptide comprising an amino acid sequence selected from the group consisting of SEQ ID NO: 4 and SEQ ID NO: 8.

5,643,734

METHODS FOR PROTEIN BINDING ENZYME COMPLEMENTATION ASSAYS

Daniel Robert Henderson, Benicia, Calif., assignor to Microgenics Corporation, Concord, Calif.

Continuation of Ser. No. 268,711, Jun. 30, 1994, which is a continuation of Ser. No. 841,125, Feb. 25, 1992, abandoned, which is a continuation of Ser. No. 788,370, Oct. 22, 1985, Pat. No. 5,120,653, which is a continuation-in-part of Ser. No. 721,267, Apr. 8, 1985, Pat. No. 4,708,929, which is a continuation-in-part of Ser. No. 666,080, Oct. 29, 1984, abandoned, which is a continuation-in-part of Ser. No. 585,356, Mar. 1, 1984, abandoned. This application Jun. 1, 1995, Ser. No. 456,740

The portion of the term of this patent subsequent to Nov. 24, 2004, has been disclaimed.

Int. Cl.[6] G01N *33/535*

U.S. Cl. 435—7.6 **6 Claims**

1. A kit for constructing an enzyme complementation assay comprising:

(a) an enzyme-donor conjugate comprising (1) an enzyme donor polypeptide having an amino acid sequence:

					(−5)		(0)	(+1)			
Met	Asp	Pro	Ser	Gly	Asp	Pro	Arg	Ala	Ser
	(5)					(10)			
Ser	Asn	Ser	Leu	Ala	Val	Val	Leu	Gln	Arg
	(15)					(20)			
Arg	Asn	Trp	Glu	Asn	Pro	Gly	Val	Thr	Gln
	(25)					(30)			
Leu	Asn	Arg	Leu	Ala	Ala	His	Pro	Pro	Phe
	(35)					(40)			
Ala	Ser	Trp	Arg	Asn	Ser	Glu	Glu	Ala	Arg
	(45)					(50)			
Thr	Asp	Cys	Pro	Ser	Gln	Gln	Leu	Arg	Ser
	(55)					(60)			
Leu	Asn	Gly	Leu	Glu	Ser	Arg	Ser	Ala	Gly
	(65)								
Met	Pro	Leu	Glu						

wherein one amino acid, at position 3, 20 or 39 above, is replaced with either cysteine or lysine and (2) an analyte or analyte derivative conjugated to said replaced cysteine or lysine:

(b) an analyte-binding protein specific for an analyte;

(c) an enzyme-acceptor polypeptide capable of interaction with the enzyme-donor conjugate to form an active enzyme complex having catalytic activity characteristic of β-galactosidase; and

(d) a substrate capable of reacting with the active enzyme complex such that its conversion by active enzyme can be monitored;

wherein (a), (b), (c) and (d) are present in relative amounts sufficient for the determination of analyte.

5,643,735

ANTI-THYMOSIN α1 MONOCLONAL ANTIBODY-PRODUCING HYBRIDOMA

Hiroyuki Yokoi; Takao Saito, and Hideto Ohno, all of Ibaraki, Japan, assignors to Yuka Medias, Co., Ltd., Ibaraki, Japan

Filed Mar. 29, 1995, Ser. No. 412,564

Claims priority, application Japan, Sep. 9, 1994, 6-215747

Int. Cl.[6] G01N *33/53;33/542*

U.S. Cl. 435—7.9 **13 Claims**

1. A hybridoma, FERM BP-4971, obtained by fusing a myeloma cell with an anti-thymosin α1 antibody-producing cell; and selecting a hybridoma producing a monoclonal antibody which recognizes the N-terminus of thymosin α1 and does not recognize desacetyl-thymosin α1.

5,643,736

MONOCLONAL ANTIBODIES FOR HUMAN OSTEOGENIC CELL SURFACE ANTIGENS

Scott P. Bruder, Moreland Hills; Arnold I. Caplan, and Stephen E. Haynesworth, both of Cleveland Heights, all of Ohio, assignors to Osiris Therapeutics, Inc., Baltimore, Md., and Case Western Reserve University, Cleveland, Ohio

Filed Feb. 6, 1995, Ser. No. 384,039

Int. Cl.[6] G01N *33/567;* **C12N** *5/00;5/02;* **C07K** *16/00*

U.S. Cl. 435—4.21 **7 Claims**

1. A hybridoma which produces monoclonal antibodies which react with the surface of normal human osteogenic cells, which hybridoma is selected from the group consisting of those having ATCC accession numbers HB-11789, HB-11790 and HB-11791.

5,643,737

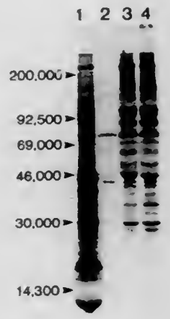
MEROZOITE PROTEINS FOR USE IN DETECTION OF *BABESIA EQUI* IN HORSES USING IMMUNOLOGICAL TECHNIQUES

Donald P. Knowles, Jr., and Lance E. Perryman, both of Pullman, Wash., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Continuation of Ser. No. 902,164, Jun. 22, 1992, abandoned. This application Mar. 2, 1995, Ser. No. 400,413

Int. Cl.[6] G01N *33/569;* **C07H** *21/04;* **C07K** *14/44;16/20*

U.S. Cl. 435—7.22 **15 Claims**



12. An immunoassay method for determining antibodies to *Babesia equi* in horses comprising, as indication of infection, the steps of:

A) collecting serum from a horse to be tested;

B) contacting the serum with antigen containing a conserved epitope of a merozoite protein of *Babesia equi* wherein said conserved epitope is specifically bound by Mab 36/133.97, ATCC HB 11788; and

C) detecting the presence of the antigen-antibody complex.

5,643,738

METHOD OF SYNTHESIS OF PLURALITY OF COMPOUNDS IN PARALLEL USING A PARTITIONED SOLID SUPPORT

Peter John Zanzucchi, West Windsor Township, Mercer County; Satyam Choudary Cherukuri, Cranbury; Sterling Edward McBride, Lawrence Township, Mercer County, all of N.J., and Amrit Kaur Judd, Belmont, Calif., assignors to David Sarnoff Research Center, Inc., Princeton, N.J.

Division of Ser. No. 338,703, Nov. 10, 1994, Pat. No. 5,585,069. This application May 31, 1995, Ser. No. 454,781

Int. Cl.[6] C12Q *1/68;* **C07H** *21/00;* **C08F** *283/00*

U.S. Cl. 435—6 **24 Claims**

1. A method of synthesizing a plurality of proteins or oligonucleotides in parallel which comprises,

providing a substrate having a plurality of wells, each well connected to a plurality of reservoirs for reagents or solvents, which reservoirs are formed in the substrate, the reservoirs connected to said wells by one or more channels, wherein the channel(s) connected to a particular reservoir do not intersect with channel(s) connected to other reservoirs so that reagents and solvents are controllably mixed in the wells;

moving reagents or solvents in sequence from said reservoirs along said channels and into and out of said wells by means of electrokinetic pumps each connected to a driver means; and

reacting said reagents to form a plurality of proteins or oligonucleotides.

5,643,739

ASSAY FOR DETERMINING SENSITIVITY TO ACTIVATED PROTEIN C

Katalin Varadi; Hans Peter Schwarz; Hartmut Lang, and Berta Moritz, all of Vienna, Austria, assignors to Immuno AG, Vienna, Austria

Continuation of Ser. No. 160,877, Dec. 3, 1993, abandoned. This application May 1, 1995, Ser. No. 432,018

Int. Cl.[6] C12Q *1/56;* **G01N** *33/86;* **C07K** *1/00*

U.S. Cl. 435—13 **18 Claims**

1. A method of determining the sensitivity of a test sample from a human subject to activated protein C, comprising the steps of:

(a) reacting factor X, activated factor IX, activated protein C and thrombin with said test sample in a test solution containing calcium ions and phospholipids, wherein the amount of endogenous factor VIII in said test sample is at least about 0.3 times the normal amount of factor VIII in plasma;

(b) determining the amount of activated factor X formed in the reaction of step (a) by measuring the activity of factor Xa using a spectrophotometric substrate specific for said factor Xa; and,

(c) evaluating the sensitivity of the test sample to activated protein C based on the determination of step (b) as compared to a control,

wherein said method requires a section of the entire blood coagulation cascade of reactions.

5,643,740

MONOCLONAL ANTIBODY SPECIFIC FOR ACTIVATED LYMPHOCYTES AND MONOCYTES

Ronald J. Billing, 682 Ora Avo Dr., Vista, Calif. 92084, and Paul I. Terasaki, Los Angeles, Calif., assignors to Ronald J. Billing, Vista, Calif.

Continuation of Ser. No. 115,739, Oct. 8, 1987, abandoned, which is a continuation-in-part of Ser. No. 846,828, Mar. 31, 1986, abandoned, which is a continuation of Ser. No. 469,608, Feb. 24, 1983, abandoned. This application Sep. 8, 1992, Ser. No. 941,973

Int. Cl.[6] C07K *16/22;16/30*

U.S. Cl. 435—7.23 **1 Claim**

1. An IgM antibody recognizing the epitope recognized by the CBL1 monoclonal antibody secreted by the hybridoma having accession no. ATCC #HB 8214.

5,643,741

IDENTIFICATION AND ISOLATION OF HUMAN HEMATOPOIETIC STEM CELLS

Ann Tsukamoto, Palo Alto; Charles M. Baum, Mountain View, both of Calif.; Yukoh Aihara, Yokohama, Japan, and Irving Weissman, Palo Alto, Calif., assignors to Systemix, Inc., Palo Alto, Calif.

Continuation of Ser. No. 720,883, Jun. 25, 1991, which is a continuation-in-part of Ser. No. 502,616, Mar. 30, 1990, Pat. No. 5,061,620. This application Jun. 6, 1995, Ser. No. 466,659

Int. Cl.[6] G01N *33/533;33/577;* **C07K** *14/705*

U.S. Cl. 435—7.24 **7 Claims**

1. A method for identifying the presence of human hematopoietic stem cells in a hematopoietic cell sample comprising a mixture of cells, the method comprising:

adding Thy-1 and CD34 specific antibodies to said sample under conditions and for a time suitable for antibody binding; and

detecting the presence of said antibodies bound to said human hematopoietic cell sample;

wherein the presence of hematopoietic stem cells in said sample is indicated by cells that simultaneously express CD34 and Thy-1.

5,643,742

SYSTEM FOR ELECTRONICALLY MONITORING AND RECORDING CELL CULTURES

Patricia J. Malin, Palo Alto; Kenneth Richard Wada, Cupertino, and Oskar Werner Huber, Belmont, all of Calif., assignors to CellStat Technologies, Inc., Belmont, Calif.

PCT No. PCT/US92/06269, § 371 Date Mar. 23, 1995, § 102(e) Date Mar. 23, 1995, PCT Pub. No. WO94/03583, PCT Pub. Date Feb. 17, 1994

Continuation-in-part of Ser. No. 125,507, Sep. 23, 1993, abandoned, which is a continuation of Ser. No. 883,063, May 8, 1992, abandoned, which is a continuation of Ser. No. 503,791, Apr. 3, 1990, abandoned. This PCT application Jul. 29, 1992, Ser. No. 374,542

Int. Cl.[6] C12Q *1/00;* **C12M** *1/34;1/42*

U.S. Cl. 435—29 **18 Claims**

1. A method for electronically monitoring and recording cells being cultured in a laboratory tray having a plurality of separate wells, each of the plurality of separate wells adapted for holding a quantity of cell growth media in which cells may be cultured, the method comprising the steps of:

a. providing a laboratory tray having a plurality of separate wells, each of the wells adapted for holding a quantity of cell growth media in which cells may be cultured;

b. disposing a pair of electrically conductive, elongated pins respectively through an open end of each of the wells in the laboratory tray to extend into cell growth media held therein;

c. supplying an alternating current voltage for selective application across a pair of the electrically conductive, elongated pins for electronically monitoring and recording cells being cultured in the laboratory tray;

d. prior to selecting a pair of the electrically conductive, elongated pins for application of the alternating current voltage, determining a delay period for the alternating current voltage equivalent to an interval of time between the alternating current voltage having an instantaneous potential of zero volts and having an instantaneous potential equal to the maximum voltage of the alternating current voltage; and

e. upon selecting a pair of electrically conductive, elongated pins for application of the alternating current voltage, measuring electrical conductivity between the pair of electrically conductive, elongated pins, at a point where the alternating current voltage reaches a maximum voltage, said point being set by said delay period.

5,643,743

METHOD FOR DETECTING COLIFORM AND *E. COLI* BACTERIA

George W. Chang, Berkeley, and Rosalind A. Lum, Saratoga, both of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Continuation of Ser. No. 91,528, Aug. 12, 1993, Pat. No. 5,411,867, which is a continuation-in-part of Ser. No. 523,320, May 14, 1990, abandoned. This application Dec. 29, 1994, Ser. No. 365,884

Int. Cl.[6] C12Q *1/04;1/10;* **C12N** *1/20*

U.S. Cl. 435—34 **19 Claims**

1. A method for detecting coliform and *E. coli* bacteria in a water or food sample comprising a plurality of different bacteria, which method comprises steps:

(a) contacting said bacteria of said sample with a medium comprising:

(i) a β-D-galactosidase substrate;

(ii) a tryptophanase substrate;

(iii) a protein or peptide hydrolysate in an amount sufficient to promote the growth of *E. coli;*

(b) incubating said bacteria at a temperature of 44.5° C. for 2 to 48 hours; then

(c) determining a presence or absence of a β-D-galactosidase reaction detectable product of said β-D-galactosidase substrate;

(d) determining the presence or absence of a tryptophanase reaction detectable product of said tryptophanase substrate;

wherein the presence of said β-D-galactosidase reaction product indicates the presence of a coliform bacterium in said sample and the presence of said tryptophanase reaction product indicates the presence of an *E. coli* in said sample.

5,643,744

METHOD FOR PRODUCING POLYPEPTIDE

Itaru Nitta, Tokyo; Takuya Ueda, Chiba, and Kimitsuna Watanabe, Tokyo, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Oct. 4, 1994, Ser. No. 317,356

Claims priority, application Japan, Oct. 4, 1993, 5-248168; Mar. 4, 1994, 6-034834; Mar. 4, 1994, 6-034835; May 17, 1994, 6-102861; May 17, 1994, 6-102862

Int. Cl.[6] C12N *15/00;1/00;* **C12P** *21/00;* **C12Q** *1/68*

U.S. Cl. 435—68.1 **14 Claims**

1. An in vitro method for producing a polypeptide, which comprises:

condensing, in an aqueous solution, precursors comprising an amino acid and a nucleic acid adaptor which comprises tRNA in the presence of an effective amount of ribosomes or a larger ribosomal subunit, and an effective amount of an aromatic tertiary amine under conditions which allow for the production of a polypeptide, wherein substantially all of soluble protein factors are removed from the aqueous solution and where the condensing is carried out in the absence of an energy source other than said precursors.

5,643,745

HETEROLOGOUS DIMERIC PROTEINS PRODUCED IN HETEROKARYONS

W. Dorsey Stuart, Kaneohe, Hi., assignor to University of Hawaii, Honolulu, Hi.

Filed Feb. 3, 1994, Ser. No. 191,337

Int. Cl.[6] C12P *21/04;* **C12N** *1/15*

U.S. Cl. 435—69.1 **15 Claims**

1. A heterokaryon filamentous fungus containing a first nucleus and a second nucleus, wherein said first nucleus has been modified to contain an expression system for a first nucleotide sequence encoding a first subunit of a heterologous heterodimer and said second nucleus has been modified to contain an expression system for a second nucleotide sequence encoding a second subunit of said heterologous heterodimer.

5,643,746

HUMAN EPIDERMAL GENE PROMOTER

Renata Regina Polakowska, and Lowell Alan Goldsmith, both of Pittsford, N.Y., assignors to Research Corporation Technologies, Inc., Tucson, Ariz.

Continuation of Ser. No. 73,190, Jun. 8, 1993, abandoned, which is a continuation of Ser. No. 826,931, Jan. 23, 1992, abandoned. This application Mar. 21, 1994, Ser. No. 216,219

Int. Cl.[6] C12N *15/63;15/79;15/09*

U.S. Cl. 435—69.1 **17 Claims**

1. An isolated DNA comprising a transcriptional regulatory region from a human type I transglutaminase gene wherein said DNA comprises a BamHI restriction fragment consisting of the nucleotide sequence of bases 485 to 1093 of SEQ ID NO:1.

5,643,747

GENES FOR THE EXPORT OF *PERTUSSIS* HOLOTOXIN

Steven M. Baker, and Robert A. Deich, both of Rochester, N.Y., assignors to American Cyanamid Company, Parsippany, N.J.

Continuation-in-part of Ser. No. 31,619, Mar. 15, 1993, abandoned. This application Mar. 31, 1994, Ser. No. 221,750

Int. Cl.[6] C12N *15/31;15/74;1/21;* **C07H** *21/04*

U.S. Cl. 435—69.1 **18 Claims**

13. A method for producing secreted pertussis holotoxin in a Borderella or *Escherichia coli* host, said method comprising the steps of:

a) constructing a plasmid comprising ptx and pts operatively linked to an active promoter;

b) introducing the plasmid into the host; and

c) maintaining the host under conditions appropriate for expression of ptx and pts and secretion of pertussis holotoxin.

5,643,748

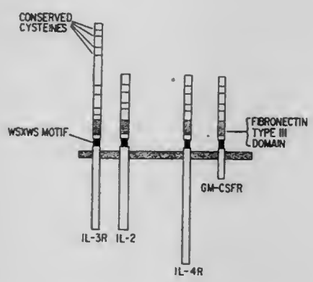
HU-B1.219, A NOVEL HUMAN HEMATOPOIETIN RECEPTOR

H. Ralph Snodgrass, Powell; Joseph Cioffi, Athens; Thomas Joel Zupancic, Worthington, and Alan Wayne Shafer, Albany, all of Ohio, assignors to Progenitor, Inc., Columbus, Ohio

Filed Sep. 14, 1994, Ser. No. 306,231

Int. Cl.[6] C07K *14/705;* **C12N** *5/10;15/17*

U.S. Cl. 435—69.1 **14 Claims**



2. An isolated nucleic acid molecule, comprising a nucleotide sequence that hybridizes under stringent conditions to a second nucleic acid molecule having the nucleotide sequence of SEQ ID NO: 2, or its complement.

5,643,749

SOLUBLE INTERFERON α-RECEPTOR, ITS PREPARATION AND USE

Michel Revel, Rehovot; Carolina Abramovich, Yavne, and Edward Ratovitski, Gan Yavne, all of Israel, assignors to Yeda Research and Development Co, Ltd., Rehovot, Israel

Filed Oct. 24, 1994, Ser. No. 328,256

Claims priority, application Israel, Oct. 24, 1993, 107378

Int. Cl.[6] C12N *15/63*

U.S. Cl. 435—69.1 **12 Claims**

1. An isolated DNA encoding a polypeptide having SEQ ID NO:11 or SEQ ID NO:12.

5,643,750

HUMAN NEURONAL BETA SUBUNITS OF VOLTAGE-OPERATED CALCIUM CHANNELS AND THE USE THEREOF

Peter Spreyer, Duesseldorf, and Axel Unterbeck, Bergisch Gladbach, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 15,495, Feb. 9, 1993, abandoned. This application Nov. 21, 1994, Ser. No. 343,733

Claims priority, application Germany, Feb. 17, 1992, 42 04 716.1; Jul. 6, 1992, 42 22 126.9

Int. Cl.[6] C07K *14/47;* **C12N** *15/12;* **C12P** *21/00;* **C12Q** *1/68*

U.S. Cl. 435—69.1 **9 Claims**

7. A process of producing a recombinant cell expression system, comprising coexpressing:

(a) isolated or synthetic DNA having a sequence consisting of SEQ ID NO: 1;

(b) isolated or synthetic DNA having a sequence consisting of SEQ ID NO: 2;

(c) isolated or synthetic DNA having a sequence consisting of SEQ ID NO: 3; and

(d) the alpha-1 and alpha-2 subunit of mammalian voltage-operated calcium channels;

in a eucaryotic cell selected from the group consisting of Xenopus oocytes, insect cells and mammalian cells.

5,643,751

***BORRELIA BURGDOFERI* ANTIGENS AND USES THEREOF**

John M. Robinson, Gurnee; Tami J. Pilot-Matias, Libertyville, and Jeffrey C. Hunt, Lindenhurst, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 779,704, Oct. 21, 1991. This application Jul. 10, 1995, Ser. No. 500,125

Int. Cl.[6] C12P *21/06;* **C12N** *15/00;15/09;15/63*

U.S. Cl. 435—69.1 **20 Claims**

1. A nucleotide sequence comprising SEQ ID NO: 7.

5,643,752

TISSUE INHIBITOR OF METALLOPROTEINASES

Phillip R. Hawkins, Mountain View, and Lynn E. Murry, Portola Valley, both of Calif., assignors to Incyte Pharmaceuticals, Inc., Palo Alto, Calif.

Filed Jan. 18, 1996, Ser. No. 588,163

Int. Cl.[6] C12N *15/00;15/85;15/63;15/11*

U.S. Cl. 435—69.2 **6 Claims**

1. A purified polynucleotide consisting of a nucleic acid sequence encoding the polypeptide having the sequence shown in SEQ ID NO:2, or its complement.

5,643,753

USE OF AUTOLOGOUS PROMOTERS TO EXPRESS GENE PRODUCTS IN BORDETELLA

Sheena Loosmore, Aurora; Gavin Zealey, Thornhill; Reza Khayyam Yacoob, Mississauga, and Michel Klein, Willowdale, all of Canada, assignors to Connaught Laboratories Limited, Ontario

Continuation-in-part of Ser. No. 687,231, Apr. 18, 1991, abandoned. This application Jan. 14, 1993, Ser. No. 4,301

Claims priority, application United Kingdom, Apr. 18, 1990, 9008746

The portion of the term of this patent subsequent to Jul. 9, 2012, has been disclaimed.

Int. Cl.[6] C12N *15/64;15/31;1/21;* **A61K** *39/10*

U.S. Cl. 435—69.3 **14 Claims**

12. A method of expression of a gene product from a Bordetella strain which comprises:

(a) forming a hybrid Bordetella gene comprising a Bordetella gene fused at the ATG start codon to an autologous Bordetella promoter, wherein:

(1) said promoter is the pertussis toxin operon (TOXp) promoter and the Bordetella gene is selected from the group consisting of the filamentous haemagglutinin operon (FHA) and pertactin (PRN) gene; or

(2) said promoter is the filamentous haemagglutinin operon (FHAp) promoter and the Bordetella gene is selected from the group consisting of pertussis toxin operon (TOX) and pertactin (PRN) gene;

(b) introducing said hybrid gene into a Bordetella strain to form a viable transformed Bordetella strain; and

(c) culturing said transformed Bordetella strain to effect expression of a gene product encoded by said hybrid gene at a production yield which is different from the production yield achieved when said Bordetella strain contains a Bordetella gene fused at an ATG start codon to its own native promoter.

5,643,754

NUCLEIC ACIDS ENCODING A LEPTOSPIRA OUTER MEMBRANE PROTEIN

David A. Haake, Culver City, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Filed May 25, 1994, Ser. No. 249,013

Int. Cl.[6] C12N *15/31;* **C07H** *21/04*

U.S. Cl. 435—69.3 **14 Claims**

1. An isolated polynucleotide sequence which encodes a polypeptide having the amino acid sequence of SEQ ID NO:2.

5,643,755

NUCLEIC ACID ENCODING TIE-2 LIGAND

Samuel Davis, New York; Thomas Aldrich, Ossining, and George D. Yancopoulos, Yorktown Heights, all of N.Y., assignors to Regeneron Pharmaceuticals Inc., Tarrytown, N.Y.

Filed Oct. 7, 1994, Ser. No. 319,932

Int. Cl.[6] C12N *15/12;* **C07K** *14/705*

U.S. Cl. 435—69.5 **11 Claims**

1. The plasmid designated pJFE14 encoding TIE-2 ligand (ATCC Accession No. 75910).

5,643,756

FUSION GLYCOPROTEINS

Samuel Kayman, New York, and Abraham Pinter, Brooklyn, both of N.Y., assignors to The Public Health Research Institute of the City of New York, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 938,100, Aug. 28, 1992, abandoned. This application Aug. 20, 1993, Ser. No. 110,300

Int. Cl.[6] C12N *5/10;15/85;* **C12P** *21/02*

U.S. Cl. 435—69.7 **74 Claims**

1. In an expression vector for infecting or transfecting a cell to express a glycosylated protein, the improvement wherein said protein is a fusion glycoprotein comprising (a) an amino acid sequence that has a biological activity and is from a protein that lacks a hydrophobic glycosylation signal located about seven residues N-terminal to a Cys-Trp-leu-cys sequence (Seq. ID. No. 18), said amino acid sequence being operably linked to the C-terminus of (b) a retrovirus env surface protein,

N-terminal carrier fragment that includes all of the Cys residues of the N-terminal globular domain of said surface protein, and further wherein said env surface protein contains an N-glycan attachment site within a hydrophobic glycosylation signal located about seven residues N-terminal to a Cys-trp-leu-cys sequence (Seq. ID. No. 18).

5,643,757

HIGH YIELD PRODUCTION OF HUMAN APOLIPOPROTEIN A1 IN *E. COLI*.

Sohail Malik, Englewood Cliffs, N.J.; Florence Mahlberg, Suresnes, France, and Sotirios Karathanasis, Grandview, N.Y., assignors to American Cyanamid Company, Wayne, N.J.

Filed Mar. 21, 1994, Ser. No. 215,749

Int. Cl.[6] C12N *15/70;* **C07K** *1/22*

U.S. Cl. 435—69.7 **15 Claims**

1. A method for the preparation of biologically active apolipoprotein A1, said method comprising:

(a) subcloning apolipoprotein A1 cDNA into an *Escherichia coli* plasmid to obtain a recombinant apoA1 fusion protein-encoding plasmid, wherein said cDNA is operatively linked to a bacteriophage T7 RNA polymerase promoter and encodes an apolipoprotein A1 fusion protein that comprises an apolipoprotein A1 polypeptide fused in frame to an amino acid sequence that facilitates purification;

(b) transferring said recombinant plasmid to an *Escherichia coli* strain containing inducible bacteriophage T7 RNA polymerase, to yield a transformed strain;

(c) inducing said T7 RNA polymerase in said transformed strain and growing said transformed strain in a culture for a sufficient time and under appropriate conditions to produce said apolipoprotein A1 fusion protein;

(d) lysing transformed cells harvested from said culture;

(e) obtaining a soluble fraction from said lysed cells; and

(f) isolating said apolipoprotein A1 fusion protein from said soluble fraction by one-step chromatography of said fraction.

5,643,758

PRODUCTION AND PURIFICATION OF A PROTEIN FUSED TO A BINDING PROTEIN

Chudi Guan, Wenham, Mass.; Hiroshi Inouye, deceased,, late of Philadelphia, and Frank N. Chang, administrator, Dresher, both of Pa., assignors to New England Biolabs, Inc., Beverly, Mass., and Temple University, Philadelphia, Pa.

Continuation of Ser. No. 19,981, Feb. 17, 1993, which is a continuation of Ser. No. 737,596, Jul. 25, 1991, abandoned, which is a continuation of Ser. No. 196,988, May 20, 1988, abandoned, which is a continuation-in-part of Ser. No. 24,053, Mar. 10, 1987, abandoned. This application Jan. 12, 1995, Ser. No. 374,145

Int. Cl.[6] C12P *21/00;* **C12N** *15/70*

U.S. Cl. 435—69.7 **24 Claims**

1. A method for producing and purifying a protein molecule comprising:

a) constructing a DNA expression vector which expresses a hybrid polypeptide in a transformed host cell, the hybrid polypeptide comprising the protein molecule, a sugar binding protein or portion thereof having a specific affinity for a substrate which binds to the sugar binding protein, and a linking sequence interposed between said protein molecule and said sugar binding protein, or portion thereof, said linking sequence having a Factor Xa protease cleavage site;

b) introducing the expression vector into an appropriate host cell and expressing the hybrid polypeptide;

c) contacting the hybrid polypeptide produced by the transformed cell with the substrate to which the sugar binding protein binds;

d) contacting the substrate bound hybrid polypeptide with a proteolyric agent that cleaves said linking sequence at the Factor Xa cleavage site, thus separating the protein molecule from the sugar binding protein; and

e) recovering the target protein molecule.

5,643,759

METHOD FOR PREPARING BISPECIFIC MONOCLONAL ANTIBODIES

Michael Pfreundschuh, Homburg/Saar, Germany, assignor to Biotest Pharma GmbH, Dreieich, Germany

Filed Oct. 21, 1994, Ser. No. 327,254

Claims priority, application Germany, Oct. 30, 1993, 43 37 197.3

Int. Cl.[6] **C12P** *21/08;* **C12N** *5/12;* **C07K** *16/00;16/18*

U.S. Cl. 435—70.21 **4 Claims**

I. A method for preparing bispecific MAB's, which comprises fusing a hybridoma cell, A9, which produces a murine MAB of class IgGl with a high capacity for inducing NK cell-related cytotoxicity, whereas said MAB is specific for human CD16 antigen, with hybridoma cells HRS-3 which binds human CD30 antigen to form a tetradoma HRS-3/A9 of deposit account number ACC 2142 thereby to obtain a bispecific MAB and isolating bispecific MAB, the hybridoma cell line A9 having been produced by

a. co-culturing hybridoma cell line A9 of deposit number ACC 2148 whicb produces CD 16 MAB with unstimulated human NK cells,

b. determining the die-off rate of the hybridoma cells and then

c. selecting the hybridoma cells with the highest die-off rate.

5,643,760

MICROBIAL PROCESS FOR PREPARATION OF INDOLOPYRROLOCARBAZOLE DERIVATIVES

Katsuhisa Kojiri; Hajime Suzuki; Hisao Kondo, and Hiroyuki Suda, all of Tsukuba, Japan, assignors to Banyu Pharmaceutical Co., Ltd., Tokyo, Japan

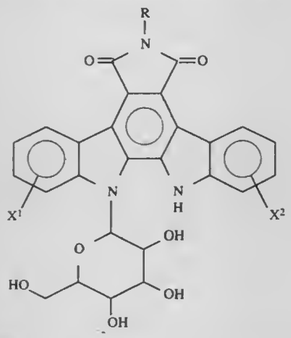
Division of Ser. No. 166,364, Dec. 14, 1993, Pat. No. 5,437,996, which is a continuation-in-part of Ser. No. 68,097, May 28, 1993, abandoned, which is a continuation-in-part of Ser. No. 981,070, Nov. 24, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 486,640

Claims priority, application Japan, Nov. 29, 1991, 3-341916; Feb. 18, 1992, 4-069269; Sep. 1, 1992, 4-257306; Dec. 14, 1992, 4-353623; Feb. 18, 1993, 5-053035

Int. Cl.[6] **C12P** *19/28;* **C12N** *1/20*

U.S. Cl. 435—85 **4 Claims**

I. A process for preparation of a compound of the formula R (I)



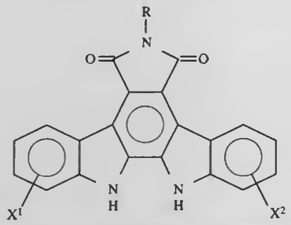
wherein

X^1 and X^2 each independently is hydrogen atom, halogen atom, amino group, mono- or di-lower alkylamino group, hydroxyl group, lower alkoxy group, aralkoxy group, carboxyl group, lower alkoxycarbonyl group, lower alkanoyloxy group or lower alkyl group, and

R is hydrogen atom, amino group, formylamino group, lower alkanoylamino group, mono- or di-lower alkylamino group, hydroxyl group, lower alkoxy group, aralkoxy group, aralkyl group or lower alkyl group,

which comprises cultivating a microorganism having an ability to glycosylate a compound of the formula

(II)



wherein X^1, X^2 and R have the same meanings as defined above, said microorganism being selected from the group consisting of Microtetraspora sp. A34549, *Saccharothrix aerocolonigenes* ATCC 39243 and a mutant of either of these microorganisms, in a nutrient medium containing the compound of the above formula (II), and recovering the formed compound of the formula (I) from the culturing medium.

5,643,761

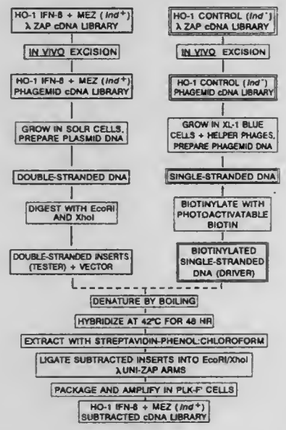
METHOD FOR GENERATING A SUBTRACTED CDNA LIBRARY AND USES OF THE GENERATED LIBRARY

Paul B. Fisher, Scarsdale, and Hongping Jiang, New York, both of N.Y., assignors to The Trustees of Columbia University in the City of New York, New York, N.Y.

Filed Oct. 27, 1993, Ser. No. 143,576

Int. Cl.[6] **C12P** *19/34*

U.S. Cl. 435—91.1 **22 Claims**



I. A method of generating a subtracted cDNA library of a population of cells comprising:

a) generating a λ ZAP cDNA library of the cells;

b) converting the λ ZAP cDNA library into a phagemid cDNA library;

c) preparing double-stranded phagemid DNAs;

d) isolating double-stranded DNAs from the prepared phagemid DNAs;

e) releasing the double-stranded cDNA inserts from the double-stranded DNAs by digestion of the nucleic acids with appropriate restriction enzyme;

f) denaturing the isolated double-stranded cDNA inserts;

g) hybridizing the denatured double-stranded cDNA inserts with labelled single stranded nucleic acid molecules, which are to be subtracted from the cDNA library; and

h) separating the hybridized labelled single-stranded nucleic acid molecules from the double stranded cDNA inserts, thereby generating a subtracted cDNA library of a population of cells.

5,643,762

METHOD FOR SYNTHESIZING SINGLE-STRANDED STEM-LOOP DNAS, THE PRODUCTS AND USES THEREFOR

Atsushi Ohshima, Highland Park; Sumiko Inouye, and Masayori Inouye, both of Bridgewater, all of N.J., assignors to University of Medicine And Denistry Of New Jersey, Newark, N.J.

Continuation of Ser. No. 753,111, Aug. 30, 1991, abandoned. This application Aug. 2, 1994, Ser. No. 284,860

Int. Cl.[6] **C12P** *19/34;* **C12N** *15/11*

U.S. Cl. 435—91.1 **26 Claims**

1. A method of synthesizing a stem-loop DNA (slDNA), which comprises a single strand of DNA having 5' and 3' termini and an inverted repeat that is folded into a structure having a duplex stem formed by pairing of the inverted repeat members joined at one end by a single-strand loop having unpaired bases and having at the other end the 5' and 3' termini of the single-strand DNA which method comprises the step of:

(a) providing the necessary components of DNA polymerase synthesis,

a double-stranded DNA, one strand of which is a DNA template containing a priming site and an inverted repeat downstream of said priming site,

a primer for the template to start DNA polymerization, and

a DNA polymerase to replicate the slDNA from the template;

(b) priming the template to start DNA polymerization; and

(c) synthesizing the slDNA by starting from the primer;

forming a single-stranded DNA using one of the double-strands of the DNA template as the parental strand, continuing the DNA synthesis into the inverted repeat sequence to form a first strand, then forming a sequence which is complementary to and anneals to itself, thereby forming another priming site, continuing DNA synthesis using as a template the newly synthesized strand or the other parental strand of the double-strand DNA or both to form a second strand, thereby forming the single-stranded slDNA which comprises a stem of duplexed single-stranded DNA of annealed complementary bases comprising said first strand and said second strand joined at one end by a loop of non-duplexed single-stranded DNA and having at the other end the single 5' and single 3' termini of the slDNA and isolating the slDNA.

5,643,763

METHOD FOR MAKING RECOMBINANT YEAST ARTIFICIAL CHROMOSOMES BY MINIMIZING DIPLOID DOUBLING DURING MATING

Barbara Dunn, Los Altos, and Theodore K. Choi, Berkeley, both of Calif., assignors to Genpharm International, Inc., Mountain View, Calif.

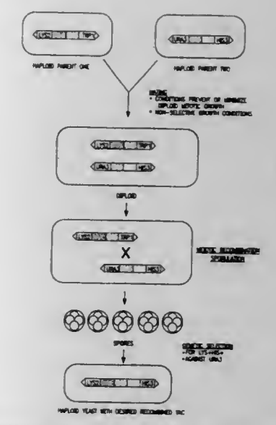
Filed Nov. 4, 1994, Ser. No. 335,116

Int. Cl.[6] **C12P** *19/34;* **C12Q** *1/68;* **C12N** *15/70;* **C07H** *21/04*

U.S. Cl. 435—91.1 **22 Claims**

I. A method of producing a recombinant YAC, comprising the steps of

(a) mating a first haploid yeast cell comprising a first YAC to a second haploid yeast cell comprising a second YAC having a homology region with the first YAC, to obtain a diploid yeast cell, said first and second YACs being maintained without rearrangements prior to meiotic recombination by limiting mitotic doubling of the diploid to less than or equal to 8 doublings,



(b) sporulating the diploid and/or its mitotic progeny, to obtain spores, and then

(c) identifying spores that comprise the recombinant YAC.

5,643,764

REACTIONS USING HEAT-RELEASABLE REAGENTS IN WAX BEADS

Kenneth M. Kosak, and Matthew K. Kosak, both of 3194 S. 4400 West, West Valley City, Utah 84120

Continuation-in-part of Ser. No. 936,357, Aug. 27, 1992, Pat. No. 5,413,924, which is a continuation-in-part of Ser. No. 835,758, Feb. 13, 1992, abandoned. This application Mar. 1, 1995, Ser. No. 396,257

Int. Cl.[6] **C12P** *19/34;* **C12N** *11/04;15/00;* **G01N** *33/544*

U.S. Cl. 435—91.1 **28 Claims**

1. An in vitro reaction method comprising the steps of:

(a) adding a dispensable body containing a reagent to an aqueous medium containing a substance capable of reacting with said reagent, said dispensable body containing the reagent being prepared by entrapping an aqueous suspension of a reagent in a water insoluble and water impermeable wax bead having a melting temperature greater than 40° C., wherein the aqueous suspension of the reagent is entrapped in the water insoluble and water impermeable wax bead by dropping droplets of the aqueous suspension through a molten layer of the wax whereby the droplets are coated with the wax as the droplets pass through the layer of molten wax and passing the wax-coated droplets to a cooling zone where the wax is solidified to form beads of wax with the reagent entrapped within the beads; and

(b) heating the dispensable body containing the reagent to a temperature at which the wax bead melts and releases the entrapped reagent into the aqueous medium, wherein the reagent reacts with the substance in the aqueous medium.

15. An in vitro reaction method comprising the steps of:

(a) adding a dispensable body containing a reagent to an aqueous medium containing a substance capable of reacting with said reagent, said dispensable body containing the reagent being prepared by entrapping an aqueous suspension of a reagent in a water insoluble and water impermeable wax bead having a melting temperature greater than 40° C., wherein the aqueous suspension of the reagent is entrappad in the water insoluble and water impermeable wax bead by injecting the aqueous suspension into essentially the center of a bead of molten wax and cooling the bead of molten wax with injected reagent therein to solidify the wax and form a bead of wax with the reagent entrapped within the bead; and

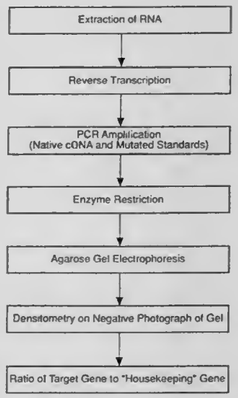
(b) heating the dispensable body containing the reagent to a temperature at which the wax bead melts and releases the entrapped reagent into the aqueous medium, wherein the reagent reacts with the substance in the aqueous medium.

5,643,765

METHOD FOR QUANTITATIVE MEASUREMENT OF GENE EXPRESSION USING MULTIPLEX COMPETITIVE REVERSE TRANSCRIPTASE-POLYMERASE CHAIN REACTION

James C. Willey, Rochester, N.Y., assignor to University of Rochester, Rochester, N.Y.

Filed Apr. 6, 1993, Ser. No. 43,390
Int. Cl.[6] C12P *19/34;* C12Q *1/68*
U.S. Cl. 435—91.2 22 Claims



1. Method for quantitative measurement of expression of a target gene comprising:

a) isolating at least a portion of a RNA sequence which encodes the RNA for the target gene and a portion of an RNA for a housekeeping gene, which RNA has been isolated from a sample cell;

b) subjecting the RNA sequence of step a) and two internal mutated standards comprising single base routants of the target gene and the housekeeping gene cDNA that cause either a loss or gain of an EcoRI restriction endonuclease recognition site to reverse transcription to obtain at least one native cDNA which encodes the DNA for both the target gene and at least one native cDNA which encodes the DNA for the housekeeping gene;

c) conducting polymerase chain reaction amplification of the native cDNA in the presence of target gene and housekeeping gene primers and a predetermined quantified amount of the routate internal standards;

d) conducting a quantification step of products of the polymerase chain reaction amplification of step c) by

i) maximizing heterodimer formation,

ii) calculating the quantities of the products, and

iii) comparing samples of the products simultaneously using a master mixture which is the same for each product and having the same dilution of internal standards;

e) subjecting the amplified cDNA of step c) to enzyme restriction by digesting with EcoRI;

f) subjecting the digested cDNA of step e) to electrophoresis to separate wild type from mutated products; and

f) measuring the expression of the target gene relative to the housekeeping gene to provide the quantitative measurement of expression of the target gene.

5,643,766

SYNTHESIS OF FULL-LENGTH, DOUBLE-STRANDED DNA FROM A SINGLE-STRANDED LINEAR DNA TEMPLATE

George Scheele, Brookline, and Shin-Ichi Fukuoka, Boston, both of Mass., assignors to Beth Israel Hospital Association, Boston, Mass.

Division of Ser. No. 944,043, Sep. 11, 1992, abandoned, which is a division of Ser. No. 643,438, Jan. 18, 1991, Pat. No. 5,162,209. This application Oct. 13, 1994, Ser. No. 322,599
Int. Cl.[6] C12P *19/34;* C12Q *1/68*
U.S. Cl. 435—912 33 Claims

23. A method of making a double-stranded DNA, said method comprising the following steps:

(a) providing a first DNA strand, the 3' sequence of which is unknown;

(b) adding an oligonucleotide tail to the 3' end of said first DNA strand, to yield a tailed first DNA strand;

(c) providing a single-stranded oligonucleotide primer complementary to a portion or all of said tail;

(d) contacting said primer with said tailed first DNA strand;

(e) synthesizing, in the presence of said primer and said tailed first DNA strand, a second DMA strand complementary to the entirety of said first DNA strand; and

(f) removing said tail and said primer from said first and second DNA strands, respectively; provided that one or both of said tail and said primer comprise RNA.

5,643,767

PROCESS FOR ISOLATING CELLULAR COMPONENTS

Vincent A. Fischetti, West Hempstead, and Ambrose Cheung, New York, both of N.Y., assignors to The Rockefeller University, New York, N.Y.

Continuation-in-part of Ser. No. 236,536, May 2, 1994, abandoned, and Ser. No. 236,537, May 2, 1994, abandoned. This application Mar. 28, 1995, Ser. No. 412,388
Int. Cl.[6] C07H *1/00;21/00*
U.S. Cl. 435—91.3 10 Claims

1. A method of isolating DNA from a cellular source containing it together with RNA and protein comprising the steps of:

a. mechanically releasing cellular components from a cellular source containing it by the application of reciprocal energy in the presence of an extraction solvent containing a plurality of micron size particles and comprising, by weight based on the total weight, from about 40 to 60% phenol in an aqueous buffer having a pH of from about 4 to 4.5 which is 2M in guanidinium thiocyanate or guanidinium chloride;

b. adding a water insoluble organic solvent to form a two phase mixture comprising an aqueous extraction solvent phase and an organic phase wherein the RNA is dissolved in the aqueous phase and the DNA and protein are concentrated in the organic phase or at the interface between the phases;

c. extracting the interphase with phenol and chloroform; and

d. precipitating the DNA with ethanol.

5,643,768

CELL-FREE SYNTHESIS AND ISOLATION OF NOVEL GENES AND POLYPEPTIDES

Glenn H. Kawasaki, Seattle, Wash., assignor to Optein, Inc., Seattle, Wash.

Division of Ser. No. 798,985, Nov. 29, 1991, which is a continuation of Ser. No. 417,357, Oct. 5, 1989, abandoned. This application Jun. 6, 1995, Ser. No. 469,026
Int. Cl.[6] C12P *19/34;* C12N *15/11*
U.S. Cl. 435—91.21 31 Claims

1. A method for isolating a nucleotide sequence which encodes a polypeptide of interest, comprising

transcribing an expression unit which comprises a 5' untranslated region containing an RNA polymerase binding sequence, a ribosome binding sequence, a translation initiation signal, and one or more semi-random nucleotide sequences to produce a mRNA library;

translating in vitro the mRNA library under conditions which maintain polysomes having polypeptide chains attached thereto;

contacting the polysomes to a substance of interest and isolating mRNA from the polysomes that specifically bind to the substance of interest.

5,643,769

PROCESS FOR PRODUCING AN OPTICALLY ACTIVE γ-HYDROXY-L-GLUTAMIC ACID

Ryoichi Katsumata, and Shinichi Hashimoto, both of Machida, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Filed Jul. 11, 1995, Ser. No. 501,177
Claims priority, application Japan, Jul. 11, 1994, 6-158656
Int. Cl.[6] C12P *13/04;13/14;41/00*
U.S. Cl. 435—106 16 Claims

1. A process for producing an optical active γ-hydroxy-L-glutamic acid, which comprises:

(a) adding an amino group donor, pyruvic acid and glyoxylic acid to an aqueous medium containing a biocatalyst (hereinafter referred to as "biocatalyst I") to form an optically active γ-hydroxy-L-glutamic acid in the aqueous medium, and

(b) recovering said optically active γ-hydroxy-L-glutamic acid therefrom;

wherein said biocatalyst I has an activity of forming an optically active γ-hydroxy-L-glutamic acid from pyruvic acid and glyoxylic acid in the presence of an amino group donor and is derived from a microorganism belonging to the genus *Pseudomonas, Paracoccus, Providencia, Rhizobium, Morganella, Enterobacter, Arthrobacter, Caulobacter, Microbacterium, Curtobacterium, Brevibacterium, Corynebacterium, Clavibacter* or *Bacillus.*

5,643,770

RETROVIRAL VECTOR PARTICLES EXPRESSING COMPLEMENT INHIBITOR ACTIVITY

James M. Mason, Wallingford, and Stephen P. Squinto, Bethany, both of Conn., assignors to Alexion Pharmaceuticals, Inc., New Haven, Conn.

Filed Jul. 21, 1994, Ser. No. 278,630
Int. Cl.[6] C12N *15/86;15/48;* C07K *14/15;* A61K *48/00*
U.S. Cl. 435—172.3 17 Claims

1. A retroviral vector particle expressing a complement inhibitor activity, wherein the retroviral vector 9article is substantially protected from inactivation upon exposure to body fluids containing complement.

5,643,771

NON-REVERTING LIVE BACTERIAL VACCINES

Bruce Arnold D. Stocker, Portola Valley, Calif., assignor to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Continuation of Ser. No. 16,579, Feb. 10, 1993, abandoned, which is a continuation of Ser. No. 745,876, Aug. 16, 1991, Pat. No. 5,210,035, which is a continuation-in-part of Ser. No. 798,052, Nov. 14, 1985, Pat. No. 4,837,151, which is a continuation-in-part of Ser. No. 675,381, Nov. 27, 1984, Pat. No. 4,735,801, which is a continuation-in-part of Ser. No. 415,291, Sep. 7, 1982, Pat. No. 4,550,081, which is a continuation-in-part of Ser. No. 151,002, May 19, 1980, abandoned. This application Aug. 19, 1994, Ser. No. 293,407
Int. Cl.[6] C12N *15/00;1/20;1/00;* C12P *21/04;* A01N *63/00;65/00;* A61K *39/00;39/108*
U.S. Cl. 435—172.3 21 Claims

1. A method for preparing a live non-virulent vaccine from a virulent pathogenic bacterial microorganism, which vaccine is substantially incapable of reverting to virulence in a vertebrate host susceptible to said microorganism, which comprises:

(a) subjecting a virulent strain of said microorganism to mutating conditions resulting in a mutated microorganism having at least two non-reverting mutations involving at least five nucleotides each and resulting in a block in at least one biosynthetic pathway which renders said organism auxotrophic with a requirement for a metabolite normally unavailable in a host susceptible to said microorganism, wherein said mutations comprise at least one of deletion, insertion or inversion;

(b) selecting for said non-reverting mutated microorganism;

(c) isolating said non-reverting mutated microorganism to provide a living vaccine;

(d) introducing an expression cassette containing a DNA sequence encoding an antigen foreign to said pathogenic microorganism, under regulatory control of regulatory regions recognized by said pathogenic microorganism, into said pathogenic microorganism or mutant microorganism to produce a transformed host cell;

(e) growing said transformed host cell; and

(f) identifying and isolating transformed host cells expressing said antigen;

wherein (d), (e) and (f) may be carried out before or after any one of (a) through (c), resulting in a culture of auxotrophic, non-reverting, non-virulent mutant microorganism capable of expressing an antigen foreign to said microorganism.

5,643,772

CRYPTOSPORIDIUM HYBRID VECTOR AND TRANSFORMED HOST CELLS

Carolyn Petersen, Berkeley; James Leech, Daly City; Richard C. Nelson, San Francisco, and Jiri Gut, Novato, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Continuation of Ser. No. 71,880, Jun. 1, 1993, abandoned, which is a continuation-in-part of Ser. No. 891,301, May 29, 1992, abandoned. This application Apr. 3, 1995, Ser. No. 415,751
Int. Cl.[6] C12N *15/00;1/20*
U.S. Cl. 435—172.3 4 Claims

1. A hybrid vector comprising a regulatory DNA segment operably coupled to a DNA fragment encoding a polypeptide to which anti-Cryptosporidium antibodies specifically bind, wherein said sequence comprises SEQ ID NO 27 or SEQ ID NO 28.

5,643,773

PREPARATION OF ELONGATED SEAMLESS CAPSULES CONTAINING A COAXIAL ROD AND BIOLOGICAL MATERIAL

Patrick Aebischer, Barrington; John F. Mills, Wakefield; Lars Wahlberg, Providence, all of R.I.; Edward J. Doherty, Mansfield, Mass., and Patrick A. Tresco, Salt Lake City, Utah, assignors to Brown University Research Foundation, Providence, R.I.

Continuation of Ser. No. 997,770, Dec. 24, 1992, Pat. No. 5,418,154, which is a continuation-in-part of Ser. No. 722,852, Jun. 28, 1991, abandoned, which is a continuation-in-part of Ser. No. 638,759, Jan. 8, 1991, Pat. No. 5,283,187, which is a continuation-in-part of Ser. No. 461,999, Jan. 8, 1990, Pat. No. 5,158,881, which is a continuation-in-part of Ser. No. 121,626, Nov. 17, 1987, Pat. No. 4,892,538. This application Apr. 27, 1995, Ser. No. 430,786
Int. Cl.[6] C12N *11/04;5/00;* B01J *13/02;* A61K *9/48*
U.S. Cl. 435—182 14 Claims

1. A method of integrally forming an elongated seamless capsule having a first end, a second end and a cell chamber with a coaxial and therein, the rod being connected to the first end of the capsule, but not the second end of the capsule, the method comprising the sequential steps of:

initiating extrusion of a casting solution through a first outer bore of a multiple annular extrusion port;

drawing casting solution into a second inner bore of the extrusion port, the second inner bore comprising a delivery channel and a plunger slidably extending therethrough, the second inner bore being configured such that the upstroke of the plunger creates a vacuum sufficient to draw casting solution into the delivery channel, the amount of casting solution being sufficient to form a coaxial rod when coagulated;

subsequently initiating delivery of a coagulant through the delivery channel of the second inner bore of the extrusion port to form a coextruded inner core and achieve a first end of a seamless capsule, the coagulant comprising an aqueous solution containing biological material, wherein delivery of the coagulant is at a pressure sufficient to eject the coaxial rod from the inner bore;

terminating delivery of the coagulant; and

subsequently terminating delivery of the casting solution such that essentially no extruded casting solution remains attached to the nozzle to achieve a smooth second end of the seamless capsule so that the coaxial rod extends through the capsule and is continuous with the first end but not the second end, the coagulant with the biological material being contained within the seamless capsule;

wherein the casting solution and the coagulant are selected so that coagulation of the casting solution occurs as the casting solution and the coagulant are extruded through the extrusion port.

5,643,774

GENES FOR THE SYNTHESIS OF ANTIPATHOGENIC SUBSTANCE

James M. Ligon, Basel; Thomas Schupp, Möhlin, both of Switzerland; James Joseph Beck; Dwight Steven Hill, both of Cary, N.C.; John Andrew Ryals, Durham, N.C.; Thomas Deane Gaffney, Chapel Hill, N.C.; Stephen Ting Lam, Raleigh, N.C.; Philip E. Hammer, Cary, N.C., and Scott Joseph Uknes, Apex, N.C., assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Division of Ser. No. 258,261, Jun. 8, 1994, which is a continuation-in-part of Ser. No. 87,636, Jul. 1, 1993, abandoned, which is a continuation-in-part of Ser. No. 908,284, Jul. 2, 1992, abandoned, which is a continuation-in-part of Ser. No. 570,184, Aug. 20, 1990, abandoned, which is a continuation-in-part of Ser. No. 937,648, Aug. 19, 1992, abandoned. This application Jun. 1, 1995, Ser. No. 456,837

Int. Cl.[6] C12N *9/00;* C12P *21/06*

U.S. Cl. 435—183 **6 Claims**

1. A method for producing pyrrolnitrin in a recombinant host, comprising the following steps:

(a) transforming a host with one or more DNA molecules that encode polypeptides in the biosynthetic pathway of pyrrolnitrin; and

(b) growing said host under conditions which allow biosynthesis of pyrrolnitrin in said host.

5,643,775

TREHALOSE PHOSPHORYLASE AND PREPARATION THEREOF

Eisaku Takahashi, Tokyo; Elichi Takahashi; Kohki Saitoh, both of Iwaki; Toshihiko Wada, Tokyo, and Yutaka Konai, Machida, all of Japan, assignors to Kureha Chemical Industry Co., Ltd., Japan

Filed Mar. 20, 1995, Ser. No. 406,554

Claims priority, application Japan, Mar. 23, 1994, 6-076461

Int. Cl.[6] C12N *9/10*

U.S. Cl. 435—193 **5 Claims**

1. An isolated trehalose phosphorylase enzyme produced by a microorganism selected from the group consisting of Grifola, Pleurotus, Lyophyllum, Lentinus, Agaricus, Trametes, Coriolus, Lenzites, Schizophyllum, Panus, Crepidotus, Laetiporus, Polyporellus, Favolus, Trichaptum, Oudemansiella, Naematoloma, Rhodophyllus, Gloeophyllum, Fomes, Ganoderma, Elfvingia, Fomitopsis, Armillariella, Lampteromyces, Pholiota and Tricholoma genera, which enzyme catalyzes the reaction of trehalose with inorganic phosphoric acid or salt thereof to produce α-D-glucose 1-phosphate and D-glucose, and the reaction of α-D-glucose 1-phosphate with D-glucose to produce trehalose and an inorganic phosphoric acid, and wherein the enzyme has a molecular weight of about 120,000 daltons as determined by gel filtration and about 60,000 daltons as determined by SDS-PAGE.

5,643,776

INSECT DIAGNOSTIC AND CONTROL COMPOSITIONS

Bruce D. Hammock, Davis, Calif.; Terry N. Hanzlik, Chapman, Australia; Lawrence G. Harshman, Dixon, Calif.; Bryony C. Bonning, and Vernon K. Ward, both of Davis, Calif., assignors to The Regents of the University of California, Oakland, Calif.

Continuation-in-part of Ser. No. 725,226, Jun. 26, 1991, abandoned, which is a continuation of Ser. No. 265,507, Nov. 1, 1988, abandoned. This application Aug. 10, 1992, Ser. No. 927,851

Int. Cl.[6] C12N *9/16;15/85;* A61K *48/00*

U.S. Cl. 435—196 **18 Claims**

1. An isolated nucleotide sequence having a sequence as in SEQ. ID. NOS. 1 or 2, the coding sequences thereof coding for juvenile hormone esterase.

10. A mutated nucleotide sequence having a sequence as in SEQ. ID. NOS. 1 or 2 but mutated therefrom, wherein said mutation codes for a substituted amino acid residue at one or more of lysine positions 29 and 522, or serine 201, the mutated coding sequence coding for a mutated juvenile hormone esterase.

5,643,777

THERMOSTABLE PROTEASE FROM THERMOCOCCUS

Garabed Antranikian, Seevetal 1-Hittfeld, and Michael Klingeberg, Gronau, both of Germany, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

Continuation of Ser. No. 949,490, Oct. 22, 1992, abandoned. This application Mar. 9, 1995, Ser. No. 401,666

Claims priority, application Denmark, Jun. 15, 1990, 1458/90

Int. Cl.[6] C12N *9/52;* C11D *3/386*

U.S. Cl. 435—220 **10 Claims**

1. An enzyme preparation comprising an enzyme having serine protease activity, wherein the enzyme is characterized as having:

(a) a pH optimum in the range of 8.0–10.0 at a temperature of 80° C.;

(b) a temperature optimum in the range of 75°–85° C. at a pH of 9.0; and

(c) is derived from a strain of *Thermococcus stetteri.*

5,643,778

RNA EDITING ENZYME AND METHODS OF USE THEREOF

Kazuko Nishikura, Haddonfield, N.J., assignor to The Wistar Institute of Anatomy & Biology, Philadelphia, Pa.

Continuation-in-part of Ser. No. 197,794, Feb. 17, 1994, abandoned. This application Jul. 25, 1994, Ser. No. 280,443

Int. Cl.[6] C12N *9/78;15/55;15/85*

U.S. Cl. 435—227 **8 Claims**

8. A method of recombinantly producing a human double stranded ribonucleic acid adenosine deaminase (DRADA) protein selected from SEQ ID NO:2 and fragments thereof having a DRADA-like biological activity, said method comprising:

providing a vector containing a polynucleotide sequence isolated from other cellular materials and encoding the DRADA protein, said polynucleotide sequence selected from the group consisting of SEQ ID NO:1 and fragments thereof encoding a protein having a DRADA-like biological activity and an expression control sequence permitting expression of the DRADA protein;

transforming a selected host cell with said vector; and

culturing said host cell under conditions which permit expression of the DRADA protein.

5,643,779

NUCLEIC ACID CODING FOR AN α-ACETOLACTATE SYNTHASE FROM LACTOCOCCUS AND ITS APPLICATIONS

Stanislav Ehrlich, Paris; Jean-Jacques Godon, Saint Pierre-de-Nemours, and Pierre Renault, Montigny-le-Bretonneux, all of France, assignors to Biotechnology and Biological Sciences Research Council, Great Britain

PCT No. PCT/GB93/02012, § 371 Date Jul. 21, 1995, § 102(e) Date Jul. 21, 1995, PCT Pub. No. WO94/08020, PCT Pub. Date Apr. 14, 1994

PCT Filed Sep. 27, 1993, Ser. No. 403,866

Claims priority, application France, Sep. 25, 1992, 92 11470

Int. Cl.[6] C12N *9/88*

U.S. Cl. 435—232 **17 Claims**

7. An isolated α-acetolactate synthase comprising a first subunit having an amino acid sequence as shown in SEQ ID NO: 7 and a second subunit having an amino acid sequence as shown in SEQ ID NO: 8.

5,643,780

COMPOSITIONS AND METHODS FOR MODULATING RNA ACTIVITY THROUGH MODIFICATION OF THE 5' CAP STRUCTURE OF RNA

Brenda F. Baker, Carlsbad, Calif., assignor to ISIS Pharmaceuticals, Inc., Carlsbad, Calif.

Continuation-in-part of Ser. No. 847,054, Apr. 3, 1992, abandoned. This application Oct. 21, 1994, Ser. No. 327,363

Int. Cl.[6] C12N *5/10;* C07H *21/00;* C08B *37/00;* A01N *59/16*

U.S. Cl. 435—375 **27 Claims**

1. A composition for inhibiting the activity of an mRNA comprising:

a targeting portion which is an oligonucleotide or oligonucleotide analog specifically hybridizable with the 5' end of the mRNA;

a reactive portion which chemically modifies or cleaves the 5' cap structure of said mRNA, wherein said reactive portion is selected from the group consisting of an amine and a coordination complex of a metal; and

a tether moiety connecting the targeting and reactive portions so that, upon hybridization of the targeting oligonucleotide or oligonucleotide analog to said mRNA, said reactive portion can contact the 5' cap of said mRNA.

5,643,781

DNA ENCODING PROTOCADHERIN-42

Shintaro Suzuki, Torrance, Calif., assignor to Doheny Eye Institute, Los Angeles, Calif.

Filed Dec. 29, 1992, Ser. No. 998,003

Int. Cl.[6] C12N *1/21;5/10;15/70;15/85*

U.S. Cl. 435—325 **9 Claims**

1. A purified and isolated polynucleotide encoding the amino acid sequence of protocadherin-42 set out in SEQ ID NO: 95.

5,643,782

IMMORTALIZED EPITHELIAL CELL LINES

Usha P. Andley, and Timothy P. Fleming, both of Ballwin, Mo., assignors to Washington University in St. Louis, St. Louis, Mo.

Filed Aug. 23, 1993, Ser. No. 110,726

Int. Cl.[6] C12N *5/00;5/02;1/00*

U.S. Cl. 435—371 **8 Claims**

1. An immortalized human lens epithelial cell line, which comprises: a human lens epithelial cell line ATCC CRL 11421 infected with hybrid adenovirus Ad12-SV40 which propagates the immortalized cell line in vitro, wherein the immortalized cell line produces a β-crystallin.

5,643,783

COLLAGEN AND USES THEREFOR

Bjorn R. Olsen, Milton, and Suk P. Oh, Chelsea, both of Mass., assignors to President and Fellows of Harvard College, Cambridge, Mass.

Filed Dec. 1, 1993, Ser. No. 159,784

Int. Cl.[6] C12N *5/00;* C12P *21/00;* A61K *38/17;* C07H *19/00*

U.S. Cl. 435—325 **8 Claims**

1. An isolated nucleic acid encoding a polypeptide having 95% identity to the human α1 (XVIII) collagen encoded by the nucleic acid sequence of SEQ ID NO:4, said polypeptide comprising the sequence Gly-X-Y-Gly-X'-Y', where X, Y, X', and Y' represent any amino acid.

5,643,784

INDAN DERIVATIVES

Klaus P. Bøgesø , Lyngby, and Peter Bregnedal, Allerød, both of Denmark, assignors to H, Lundbeck A/S, Copenhagen-Valby, Denmark

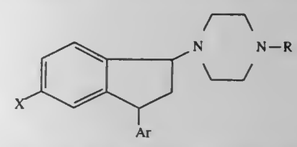
Continuation of Ser. No. 105,187, Jun. 3, 1993, abandoned. This application Feb. 1, 1995, Ser. No. 383,708

Claims priority, application Denmark, Dec. 4, 1990, 2869/90

Int. Cl.[6] A61K *31/495;31/505;* C07D *403/06;413/06*

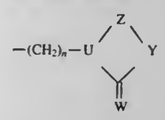
U.S. Cl. 514—228.8 **6 Claims**

1. A 5- substituted trans-1-piperazinolndan compound having the formula:



wherein X is chlorine, fluorine, methyl, or trifluoromethyl;

R is a substituent having the formula;



wherein n is 2;

Y is O, CH_2, or N-R^1, R^1 being hydrogen, isopropyl, or phenyl;

W is O or S;

Z is —GH_2CH_2—, —CH_2—CH_2—CH_2—, or 1,2-phenylene; and Ar is 4-fluorophenyl;

or a pharmaceutically acceptable acid addition salt thereof.

4. A 5-substituted trans-1-piperazinoindan, compound selected from the group consisting of:

(−)-Trans-1-[2-[4-[5-chloro-3-(4-fluorophenyl)-2,3-dihydro-1H-inden-1-yl]piperazin-1-yl]-ethyl]-3-isopropyl-2-imidazolidinone;

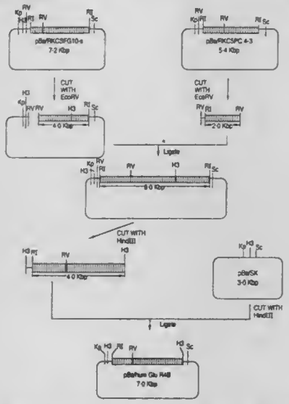
(+)-Trans-1-[2-[4-[5-fluoro-3-(4-fluorophenyl)-2,3-dihydro-1H-inden-1-yl]piperazin-1-yl]ethyl]-tetrahydro-2(1H)-pyrimidinethione;
(−)-Trans-1-[2-[4-[5-chloro-3-(4-fluorophenyl)-2,3-dihydro-1H-inden-1-yl] piperazin-1-yl]-ethyl]-tetrahydro-2(1H)-pyrimidinethione;
(+)-Trans-l_3[2-[4-[5-fluoro-3-(4-fluorophenyl)-2,3-dihydro-1H-inden-1-yl]piperazin-1-yl]ethyl]-tetrahydro-2(1H)-pyrimidinone; and
(−)-Trans-1-[2-[4-[5-chloro-3-(4-fluorophenyl)-2,3-dihydro-1H-inden-1-yl]piperazine-1-yl]ethyl]-tetrahydro-2(1H)-pyrimidinone;
and acid addition salts thereof.

5,643,785

POLYNUCLEOTIDES ENCODING AMPA-BINDING HUMAN GLUR4 RECEPTORS

Rajender Kamboj, Mississauga; Candace E. Elliott, and Stephen L. Nutt, both of Etobicoke, all of Canada, assignors to Allelix Biopharmaceuticals Inc., Mississauga, Canada

Continuation of Ser. No. 924,553, Aug. 5, 1992, abandoned. This application Jun. 13, 1994, Ser. No. 259,164
Int. Cl.[6] C07H *21/04;* **C12N** *15/12;15/63;15/85*
U.S. Cl. 435—325 **16 Claims**



1. An isolated polynucleotide that encodes an AMPA-binding human GluR4B receptor having the sequence of amino acid residues 1–881 of SEQ ID NO:2.

4. A recombinant DNA vector comprising a polynucleotide that encodes an AMPA-binding human GluR4B receptor having the sequence of amino acid residues 1–881 of SEQ ID NO:2.

8. A mammalian cell genetically engineered to produce GluR4B receptor, said cell containing a heterologous polynucleotide that encodes an AMPA-binding human GluR4B receptor having the sequence of amino acid residues 1–881 of SEQ ID NO:2.

5,643,786

METHOD FOR ISOLATING DENDRITIC CELLS

Peter A. Cohen, Betbesda; Brian J. Czerniecki; Charles Carter, both of Gaithersburg; Daniel H. Fowler, Bethesda, all of Md., and Hyun Kim, Rochester, Minn., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Jan. 27, 1995, Ser. No. 379,227
Int. Cl.[6] C12N *5/00;5/06;* **A61K** *33/06;35/14*
U.S. Cl. 435—325 **7 Claims**

1. A method for inducing monocytes to exhibit the phenotype of activated myeloid dendritic cells, comprising contacting said monocytes with an amount of a calcium ionophore effective to cause the contacted cells to downregulate CD14 and to upregulate HLA-DR, HLA-DQ, ICAM-1, and B7.2.

5,643,787

ADENOCARCINOMA CELL BASEMENT MEMBRANE COMPOSITION

Sanford H. Barsky, and Mark Sternlicht, both of Los Angeles, Calif., assignors to The Regents of the University of California, Oakland, Calif.

Continuation-in-part of Ser. No. 184,720, Jan. 21, 1994, Pat. No. 5,508,188. This application Jan. 31, 1995, Ser. No. 381,384
Int. Cl.[6] C12N *5/00;5/02*
U.S. Cl. 435—371 **10 Claims**

1. A cellular composition comprising cells isolated from a human parotid basal adenocarcinoma, wherein said composition is selected from the group consisting of HMS-1 and HMS-X.

5,643,788

METHOD OF INHIBITING THE PROLIFERATION AND CAUSING THE DIFFERENTIATION OF CELLS WITH IGF-1 RECEPTOR ANTISENSE OLIGONUCLEOTIDES

Renato Baserga, Ardmore; Christian Sell, Philadelphia, and Raphael Rubin, Penn Valley, all of Pa., assignors to Thomas Jefferson University, Philadelphia, Pa.

Continuation of Ser. No. 158,761, Nov. 30, 1993, which is a continuation-in-part of Ser. No. 37,257, Mar. 26, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 479,173
Int. Cl.[6] C12N *5/10;* **C07H** *21/00;* **A61K** *31/70;* **C12Q** *1/68*
U.S. Cl. 435—325 **4 Claims**

1. An antisense oligonucleotide consisting of the nucleotide sequence shown as SEQ ID NO:4.

5,643,789

BIOACTIVE MATERIAL TEMPLATE FOR IN VITRO SYNTHESIS OF BONE TISSUE

Paul Ducheyne, Rosemont; Ahmed El-Ghannam, and Irving Shapiro, both of Philadelphia, all of Pa., assignors to Trustees of the University of Pennslyvania, Philadelphia, Pa.

Continuation of Ser. No. 929,104, Aug. 13, 1992, abandoned. This application Jul. 21, 1994, Ser. No. 278,579
Int. Cl.[6] C12N *5/08;5/00;* **A61F** *2/28*
U.S. Cl. 435—402 **18 Claims**

1. A bioactive material for the in vitro inoculation of cells which express an osteoblastic phenotype comprising a substrate of bioactive glass or ceramic, said substrate having been treated prior to inoculation by immersion in a buffer solution containing a concentration of ions typical of interstitial fluid followed by immersion in a solution containing biological molecules normally occurring in bone tissue.

5,643,790

PLASMID VECTOR AND A METHOD FOR REGULATION OF GENE EXPRESSION USING THE SAME

Yasushi Morinaga, Yokohama, and Makoto Tsuchiya, Kawasaki, both of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Continuation of Ser. No. 167,112, Dec. 16, 1993, Pat. No. 5,426,050, which is a continuation of Ser. No. 35,502, Mar. 22, 1993, abandoned, which is a continuation of Ser. No. 774,374, Oct. 10, 1991, abandoned, which is a continuation of Ser. No. 339,876, Apr. 18, 1989, abandoned, which is a continuation of Ser. No. 901,642, Aug. 29, 1986, abandoned. This application Feb. 16, 1995, Ser. No. 389,772
Claims priority, application Japan, Sep. 6, 1985, 60-197277; Jun. 13, 1986, 61-137833
Int. Cl.[6] C12N *1/21;15/63;15/77*
U.S. Cl. 435—252.3 **9 Claims**

1. A recombinant plasmid vector which replicates and expresses in a coryneform bacterial cell, comprising:
a) a base sequence obtained from *E. coli* which functions as a promoter in a coryneform bacterium;
b) a base sequence obtained from *E. coli* which functions as an operator downstream from said base sequence a), said operator being selected from the group consisting of a base sequence of a lac operator, a trp operator, a λ operator and an operator of a phosphatase operon;
c) a base sequence obtained from *E. coli* which functions as a site for ribosome binding in a coryneform bacterium; and
d) a base sequence functioning as a translation initiation codon and a heterologous gene which is operably linked to said base sequence a), said vector further comprising a gene obtained from *E. coli* coding for a repressor protein which binds to said sequence b) functioning as an operator, and wherein the binding of said repressor protein is artificially regulated in a growth medium.

5,643,791

CHARACTERIZATION AND STRUCTURE OF AN ENDODGLUCANASE GENE OF *CELLULOMONAS FIMI*

R. Anthony J. Warren; Douglas G. Kilburn, both of Vancouver, and Robert C. Miller, Jr., North Vancouver, all of Canada, assignors to University of British Columbia, Vancouver, Canada

Continuation of Ser. No. 902,460, Jun. 19, 1992, abandoned, which is a continuation of Ser. No. 630,396, Dec. 18, 1990, abandoned, which is a continuation of Ser. No. 894,326, Aug. 7, 1986, abandoned. This application Jan. 19, 1994, Ser. No. 185,303
Int. Cl.[6] C12N *1/21;15/52;15/63*
U.S. Cl. 435—252.33 **28 Claims**

1. An isolated DNA comprising nucleotides 526 to 1673 numbered from the 5' terminus of the coding region as represented in FIG. 5.

5,643,792

MUTANT STRAIN OF *PICHIA PASTORIS* WHICH UTILIZES METHANOL IN THE PRESENCE OF GLUCOSE

Ken Okabayashi; Takao Ohmura; Kazumasa Yokoyama, all of Hirakata, and Haruhide Kawabe, Osaka, all of Japan, assignors to The Green Cross Corporation, Osaka, Japan

Filed Jan. 13, 1994, Ser. No. 181,242
Claims priority, application Japan, Jan. 13, 1993, 5-004289
Int. Cl.[6] C12N *1/15;15/11*
U.S. Cl. 435—254.23 **10 Claims**

1. A mutant *Pichia pastoris* strain having a gene encoding a heterologous protein, wherein said *Pichia pastoris* strain utilizes methanol in the presence of glucose to produce said heterologous protein.

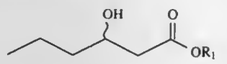
5,643,793

METHOD FOR PRODUCING OPTICALLY ACTIVE 3-HYDROXYHEXANOIC ACIDS USING PORCINE PANCREATIC LIPASE

Hitoshi Yano; Naoyuki Yoshida, and Teruyo Sugiura, all of Ichihara, Japan, assignors to Chisso Corporation, Osaka, Japan

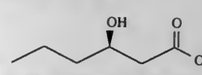
Filed Oct. 12, 1995, Ser. No. 542,067
Claims priority, application Japan, Oct. 17, 1994, 6-277130
Int. Cl.[6] C12P *41/00*
U.S. Cl. 435—280 **6 Claims**

1. A method for producing optically active 3-hydroxy-hexanoic acid comprising:
asymmetrically hydrolyzing a racemic ester of 3-hydroxy-hexanoic acid of formula (1)



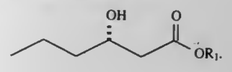
(1)

wherein R_1 is butyl or benzyl, with a conversion of less than 50%, with a porcine pancreatic lipase,
obtaining (R)-3-hydroxy-hexanoic acid of formula (2) with an optical purity of over 90%



(2)

and an ester of (S)-hydroxy-hexanoic acid of formula (3) wherein R_1 is the same as above



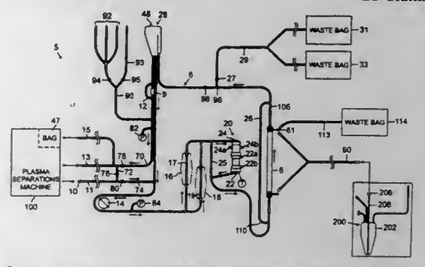
(3)

5,643,794

APPARATUS FOR BIOPROCESSING A CIRCULATING FLUID

Lee-Cheng Liu, Columbia, Md.; Timothy J. Perlman, Arlington, Mass., and Catherine A. Doyle, Massapequa, N.Y., assignors to W.R. Grace & Co.-Conn., Columbia, Md.

Filed Jun. 7, 1995, Ser. No. 475,629
Int. Cl.[6] C12M *3/00*
U.S. Cl. 435—289.1 **21 Claims**



1. An apparatus for circulating and bioprocessing a fluid, comprising:
a conduit for circulating the fluid;
an oxygenator, connected within said conduit, adapted to supply oxygen to the fluid;
a pump adapted to circulate the fluid through the conduit;
a bioreactor unit, connected within said conduit, adapted to process the fluid; and
a container, connected within said conduit, including:
a first compartment configured to receive the fluid into said container;
an inlet connected at a bottom end of said first compartment to provide the fluid into said first compartment, the cross-sectional area of the first compartment abruptly increasing from that of the cross-sectional area of the inlet; and
a second compartment configured to receive fluid overflowing from said first compartment; and
an outlet connected to said second compartment to allow flow of the fluid out of said second container.

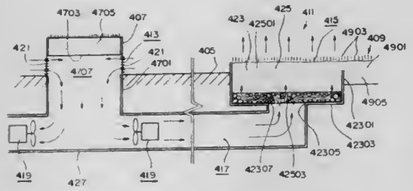
5,643,795

APPARATUS FOR PURIFYING CONTAMINATED AIR

Ken Hirate, Sagamihara; Kazumi Kaneko; Shinichiro Sato, both of Yokohama, and Kazunori Watagami, Nagoya, all of Japan, assignors to Fujita Corporation, Tokyo, Japan

Filed Mar. 28, 1995, Ser. No. 411,568
Int. Cl.[6] C12M *1/16;* **C12S** *5/00*
U.S. Cl. 435—299.1 **2 Claims**

1. An apparatus for purifying contaminated air, comprising:
a road having a road surface;
an air inlet exposed to said road surface;



an air outlet spaced from said road surface;

a soil bed containing microorganisms populated therein for chemically degrading contaminant gases in contaminated air, said soil bed allowing air to pass therethrough; and

air flowing means for introducing air into said soil bed through said air inlet, passing the air through said soil bed, and discharging the air from said soil bed through said air outlet;

a structure with a wall in which said air inlet is defined, said structure positioned at a center of an intersection connecting said road with another road, and a soil container disposed outside of said intersection, said soil bed being accommodated in said soil container and having plants cultivated thereon, said air outlet comprising a surface of said soil bed.

5,643,796

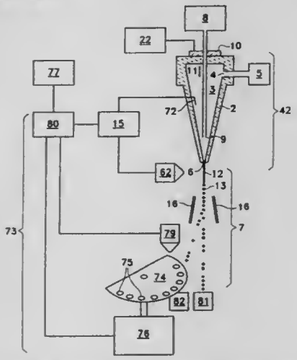
SYSTEM FOR SENSING DROPLET FORMATION TIME DELAY IN A FLOW CYTOMETER

Ger Van den Engh, and Richard J. Esposito, both of Seattle, Wash., assignors to University of Washington, Seattle, Wash.

Filed Oct. 14, 1994, Ser. No. 323,358

Int. Cl.[6] G01N *35/00*

U.S. Cl. 436—50 **17 Claims**



1. A method of droplet flow cytometry which senses droplet formation time delay comprising the steps of:

a. establishing a nozzle volume;

b. introducing a flow of sheath fluid into said nozzle volume;

c. introducing a flow of a substance within said sheath fluid in said nozzle volume;

d. establishing an oscillation to which said sheath fluid is responsive;

e. allowing said sheath fluid to exit from said nozzle volume;

f. analyzing a property of said substance entrained within said sheath fluid;

g. forming a plurality of droplets from said sheath fluid after allowing said sheath fluid to exit from said nozzle volume;

h. creating a droplet formation time delay estimate;

i. differentially charging some individual droplets based upon the step of analyzing a property of said substance and said droplet formation time delay estimate;

j. intermittently sampling said droplets while accomplishing the step of analyzing a property of said substance; and

k. analyzing said intermittent sampling;

l. adjusting said droplet formation time delay estimate based upon the step of analyzing said intermittent sampling.

5,643,797

PROCESS OF CONTINUOUSLY CONTROLLING THE PH OF AN ACID LIQUID INCLUDING MEASURING THE PH CONTINUOUSLY WITH A GLASS ELECTRODE

Hans J. Schmidt, Im Trutz 38, D-60322 Frankfurt am Main, and Bertold Stegemann, Am Tiergarten 22, D-60316 Frankfurt am Main, both of Germany

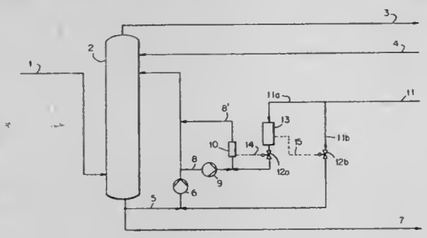
PCT No. PCT/EP93/03675, § 371 Date Jul. 5, 1995, § 102(e) Date Jul. 5, 1995, PCT Pub. No. WO94/16369, PCT Pub. Date Jul. 21, 1994

PCT Filed Dec. 23, 1993, Ser. No. 495,433

Claims priority, application Germany, Jan. 9, 1993, 43 00 388.5

Int. Cl.[6] G01N *35/08*

U.S. Cl. 436—55 **4 Claims**



1. A method of continuously controlling pH of an acid scrubbing liquid, wherein said acid scrubbing liquid is formed by wet separation of at least one member selected from the group consisting of SO_2, SO_3, HCl, HF and mixtures thereof from a flue gas, said method comprising the steps of:

a) continuously withdrawing a constant partial stream from said acid scrubbing liquid;

b) continuously measuring a pH in said constant partial stream with a glass electrode;

c) adding base at a first rate to said constant partial stream at a point in said constant partial stream upstream of said glass electrode and continuing the adding of the base until the pH measured in step b) is in a pH set-point range of from 2.5 to 11.5;

d) after the pH measured in step b) is in the pH set-point range of step c), controlling said pH measured in step b) to compensate any subsequently occurring deviations of the pH measured in step b) by changing said first rate of said adding of said base to said constant partial stream;

e) during the controlling of said pH in step d), measuring said first rate of said adding of said base to said constant partial stream to obtain a measured first rate; and

f) automatically controlling a pH of said acid scrubbing liquid using said measured first rate obtained in step e) as a controlling parameter by selecting a rate set-point range of said first rate of adding said base to said constant partial stream so that said pH of said glass electrode measured in step b) can be brought into said pH set-point range of from 2.5 to 11.5 by said controlling of step d) and adding base at a second rate to said acid scrubbing liquid from which said continuously withdrawing of step a) occurs to compensate for any subsequent fluctuations of said measured first rate from said rate set-point range of said first rate.

5,643,798

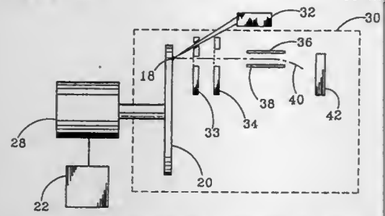
INSTRUMENT AND METHOD FOR THE SEQUENCING OF GENOME

Ronald C. Beavis, St. John's, Canada, and Brian T. Chait, New York, N.Y., assignors to The Rockefeller University, New York City, N.Y.

Continuation of Ser. No. 156,316, Nov. 23, 1993, Pat. No. 5,453,247. This application Jun. 7, 1995, Ser. No. 473,230

Int. Cl.[6] G01N *33/00;* **C12N** *15/00*

U.S. Cl. 436—94 **33 Claims**



1. A method of DNA sequencing, comprising the steps of:

(a) performing base-specific reactions on a piece of DNA to produce at least one set of sequence defining DNA fragments;

(b) mixing the at least one set with a light-absorbent matrix to form a sample;

(c) without separating the DNA fragments, striking the sample with laser pulses sufficient to desorb ions of the DNA fragments in the sample and produce ionized DNA fragments; and

(d) detecting the mass weights of the ionized DNA fragments by a mass spectrometer.

5,643,799

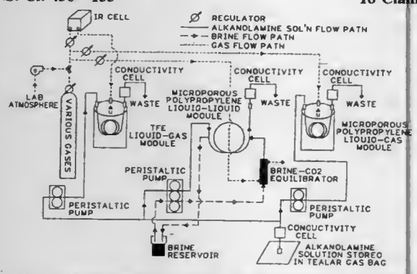
PROCESS FOR ANALYZING CO_2 IN SEAWATER

James E. Atwater, Eugene; James R. Akse, Roseburg, and Jeffrey DeHart, Yoncalla, all of Oreg., assignors to Umpqua Research Company, Myrtle Creek, Oreg.

Filed Oct. 31, 1994, Ser. No. 332,570

Int. Cl.[6] G07N *33/18*

U.S. Cl. 436—133 **18 Claims**



1. A process for determining the concentration of CO_2 or $p(CO_2)$ a seawater sample, which comprises:

providing a control solution including an alkanolamine chemical reagent, that absorbs large quantities of CO_2 by a reversible reaction with CO_2 producing conductive ionic CO_2 reaction products;

providing a membrane contactor having a membrane located therewithin for separating said seawater sample and said control solution, said membrane being permeable to CO_2 but impermeable to conductive ionic CO_2 reaction products;

measuring the specific conductance of the control solution before exposure to CO_2;

introducing said seawater sample and said control solution into said membrane contactor, the seawater sample flowing through the membrane contactor on the opposite side of the membrane from the control solution;

transporting CO_2 from said seawater sample through the membrane into said control solution;

chemically amplifying conductive species in the said control solution through reversible reactions between CO_2 and the chemical reagent which produces said conductive ionic CO_2 reaction products;

measuring the specific conductance of the control solution including said conductive ionic CO_2 reaction products: and determining $p(CO_2)$ or CO_2 concentration in the seawater sample by comparing the difference between the specific conductance of the control solution including said conductive ionic CO_2 reaction products and the specific conductance of the control solution before exposure to CO_2, and comparing this difference to known $p(CO_2)$ or CO_2 calibration values.

5,643,800

METHOD OF PREPARING A SAMPLE FOR ANALYSIS BY LASER DESORPTION IONIZATION MASS SPECTROMETRY

E. Rocco Tarantino, and Scot R. Weinberger, both of Reno, Nev., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 131,789, Oct. 4, 1993, abandoned. This application Sep. 21, 1995, Ser. No. 531,431

Int. Cl.[6] G01N *33/53*

U.S. Cl. 436—518 **23 Claims**

1. A method for preparing a homogeneous distribution of analyte crystals for analysis in a laser desorption ionization mass monitor, comprising the steps of:

depositing a homogeneous liquid mixture of an analyte and a solvent onto a substantially flat sample surface of a laser desorption ionization mass monitor probe; and

lyophilizing said mixture without physically disturbing said mixture in order to produce said homogeneous distribution of the analyte crystals on the probe sample surface.

18. A method for preparing homogeneous distributions of analyte crystals for analysis in a laser desorption ionization mass monitor, comprising the steps of:

depositing a layer of polyacrylamide gel onto a non-conductive planar support plate, said plate having a first axis and a second axis;

depositing a protein analyte dissolved in a solvent into said planar gel, said protein analyte including a plurality of protein components;

applying a voltage across a first axis of said planar gel, causing said protein components of said protein analyte to separate along said axis;

lyophilizing said planar gel in the laser desorption ionization mass monitor in order to produce said homogeneous distributions of analyte crystals of said protein analyte components on said planar support plate.

5,643,801

LASER PROCESSING METHOD AND ALIGNMENT

Hiroaki Ishihara; Kazuhisa Nakashita; Hideto Ohnuma; Nobuhiro Tanaka, and Hiroki Adachi, all of Kanagawa, Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Division of Ser. No. 145,587, Nov. 4, 1993, abandoned. This application Aug. 4, 1995, Ser. No. 511,466

Claims priority, application Japan, Nov. 6, 1992, 4-322737; Nov. 13, 1992, 4-328770

Int. Cl.[6] B23K *26/02;* **H01L** *21/268*

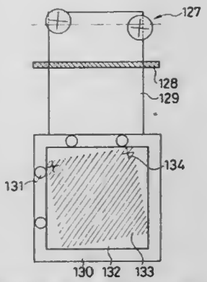
U.S. Cl. 437—7 **4 Claims**

1. A laser processing method comprising:

mounting a sample on a stage capable of making translational movement in at least one direction and rotational movement;

aligning at least two alignment markers provided on the sample through at least two monitoring cameras to bring the alignment markers of the sample in parallel with markers of said monitoring cameras by translating or rotating the stage;

irradiating a laser beam to said sample, said laser beam including a laser irradiation plane; and



rotating the stage after said aligning step and before said irradiating step to correct for rotational displacement between the monitoring cameras and the laser beam during the aligning step such that a pattern provided on said sample is parallel with the laser irradiation plane of said laser.

5,643,802

METHOD OF PRODUCING A SEMICONDUCTOR DEVICE BY GANG BONDING FOLLOWED BY POINT BONDING

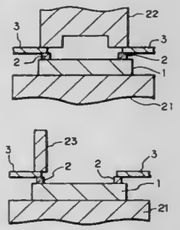
Chikara Yamashita, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Apr. 18, 1996, Ser. No. 634,443

Claims priority, application Japan, Apr. 21, 1995, 7-096465

Int. Cl.[6] H01L *21/607;21/68*

U.S. Cl. 437—9 **6 Claims**



1. A method of producing a semiconductor device, comprising the steps of:

(a) aligning inner leads formed on a film carrier tape with electrodes formed on an IC chip and laying said inner leads on said electrodes;

(b) temporarily connecting said inner leads and said electrodes by a low-temperature gang bonding jig; and

(c) sequentially bonding temporarily bonded portions of said inner leads and said electrodes by a point bonding jig.

5,643,803

PRODUCTION METHOD OF A SEMICONDUCTOR DYNAMIC SENSOR

Tsuyoshi Fukada, Aichi-gun; Yoshimi Yoshino, Inuyama; Hiroshige Sugito, Nagoya, and Minekazu Sakai, Nukata-gun, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

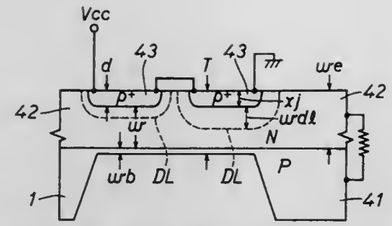
Filed Sep. 17, 1993, Ser. No. 122,164

Claims priority, application Japan, Sep. 18, 1992, 4-249352; Sep. 21, 1992, 4-251455; Mar. 10, 1993, 5-048853

Int. Cl.[6] C25F *3/12*

U.S. Cl. 437—15 **15 Claims**

1. A production method for a semiconductor dynamic sensor, comprising the steps of:



preparing a semiconductor member in which a first conductivity type semiconductor region and a second conductivity type semiconductor region form a PN junction; and

immersing said semiconductor member in an etching solution while said PN junction is reverse biased, whereby a portion of said second conductivity type semiconductor region is electrochemically etched to form at said portion a thin thickness shaped distortion-causing portion,

wherein said immersing step includes the steps of:

applying to said first conductivity type semiconductor region a voltage for reverse-biasing said PN junction; and

adjusting a magnitude of said voltage during said electrochemical etching to form a depletion layer which extends from said PN junction into said second conductivity type semiconductor region by a thickness thicker than a thickness of a depletion layer extending from said PN junction to said second conductivity type semiconductor region at a time when said semiconductor dynamic sensor is actually used, wherein

said adjusting step includes a step of adjusting said magnitude of said voltage to a certain value larger than a maximum rated voltage which is applied to said first conductivity type semiconductor region at a time when said semiconductor dynamic sensor is actually used.

5,643,804

METHOD OF MANUFACTURING A HYBRID INTEGRATED CIRCUIT COMPONENT HAVING A LAMINATED BODY

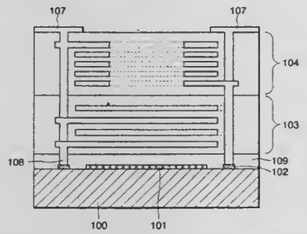
Michio Arai, Tokyo; Yukio Yamauchi, Kanagawa; Naoya Sakamoto, Kanagawa, and Katsuto Nagano, Kanagawa, all of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Filed May 16, 1994, Ser. No. 242,813

Claims priority, application Japan, May 21, 1993, 5-142882; Jul. 30, 1993, 5-190112; Aug. 2, 1993, 5-191297; Aug. 2, 1993, 5-191298; Aug. 2, 1993, 5-191299; Aug. 2, 1993, 5-191300

Int. Cl.[6] H01L *21/265;21/70;27/00*

U.S. Cl. 437—21 **9 Claims**



1. A method of manufacturing a composite integrated circuit member comprising the steps of:

forming thin film integrated circuits on a substrate;

forming a reflow film on said thin film integrated circuits;

forming a laminate type passive element on said reflow film, said laminate type passive element including a hydrogen introducing means;

cutting said substrate carrying said thin film integrated circuits and said lamination type passive element into separate chips; and

heat treating said thin film integrated circuits after said cutting step,

wherein said reflow film is formed for reducing a stress between said laminate type passive element and said thin film integrated circuits.

5,643,805

PROCESS FOR PRODUCING A BIPOLAR DEVICE

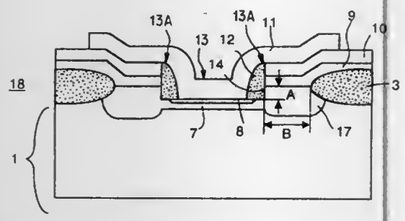
Hiroyuki Ohta, Ibaraki-ken; Hideo Miura, Koshigaya; Hiroo Masuda, Tokyo; Yoichi Tamaki, Kokubunji; Takahide Ikeda, Tokorozawa; Asao Nishimura, Ushiku, and Takashi Hashimoto, Ome, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Mar. 10, 1995, Ser. No. 401,678

Claims priority, application Japan, Mar. 18, 1994, 6-048271

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—31 **12 Claims**



1. A process for producing a bipolar device, which comprises the steps of:

forming a buried layer on a silicon substrate followed by formation of an impurity layer which comprises an impurity selected from the group consisting of a p-type impurity and an n-type impurity, and has a concentration of said impurity which is lower than a concentration of said impurity in said buried layer;

forming a device isolation film on the silicon substrate by thermal oxidation;

depositing a base electrode and an interlaminar insulating film on a base region of the silicon substrate;

forming an opening by removing a portion of the base electrode and a portion of the interlaminar insulating film;

forming a level difference A between a first level of contact of the base electrode with the base region of the silicon substrate and a second level of contact of an emitter electrode with an emitter to be formed in said substrate, by removing a portion of the silicon substrate in said opening, whereby side walls of said opening extend into the silicon substrate and a bottom portion of said opening defines said second level of contact of the emitter electrode and the emitter region, the portion of the silicon substrate being removed having a depth sufficient to form said level difference without generating a dislocation of elements of said device during production of said bipolar device;

forming a genuine base layer in a portion of said base region which is situated beneath an area of said substrate wherein said emitter is to be formed, by means of a process selected form the group consisting of ion implantation and thermal diffusion;

forming a side wall layer at side walls of the opening, separated by a distance B from the device isolation film;

forming an outer base layer in the silicon substrate by heat treatment using the base layer as an impurity source;

forming an emitter region on the base region by ion implantation and subsequent heat treatment after formation of a polycrystalline silicon film;

forming a emitter electrode on the emitter region;

forming a collector electrode in contact with the buried layer; and

wherein the level difference A is in the range of 0.03 μm to 0.1 μm.

5,643,806

MANUFACTURING METHOD FOR MAKING BIPOLAR DEVICE

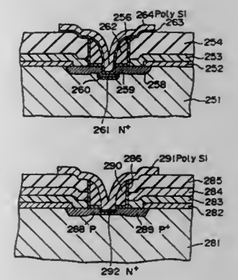
Hiroyuki Miwa; Shigeru Kanematsu, both of Kanagawa; Takayuki Gomi, Tokyo; Hiroaki Anmo, Kanagawa; Takashi Noguchi, Kanagawa; Katsuyuki Kato, Kanagawa; Hirokazu Ejiri, Kanagawa, and Norikazu Ouchi, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Division of Ser. No. 196,569, Feb. 15, 1994. This application Jun. 7, 1995, Ser. No. 472,869

Claims priority, application Japan, Feb. 28, 1993, 5-062982; Feb. 28, 1993, 5-062985; Mar. 31, 1993, 5-098789; Mar. 31, 1993, 5-098791; Mar. 31, 1993, 5-098792; Mar. 31, 1993, 5-098793; Mar. 31, 1993, 5-098795; Mar. 31, 1993, 5-098796

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—31 **9 Claims**



1. A manufacturing method for a semiconductor device, comprising the steps of:

forming a first impurity diffused layer of a first conduction type in a semiconductor substrate;

forming a first conducting film connected to said first impurity diffused layer, said first conducting film comprising a polycrystalline film;

heating said first conducting film to form a polycrystalline film;

forming a second conducting film on said first conducting film;

forming a first insulating film on said second conducting film;

forming a first hole through a laminated film comprised of said first insulating film, said first conducting film, and said second conducting film;

forming a second insulating film in said first hole;

forming a second impurity diffused layer of said first conduction type in said semiconductor substrate exposed to said first hole;

forming a side wall from a third insulating film in said first hole to form a second hole;

forming a third conducting film in said second hole; and

forming a third impurity diffused layer of a second conduction type in said second impurity diffused layer by impurity diffusion from said third conducting film.

5,643,807

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE COMPRISING A BURIED CHANNEL FIELD EFFECT TRANSISTOR

Peter M. Frijlink, Crosne, and Michel Iost, Boussy-Saint-Antoine, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 19, 1995, Ser. No. 491,753

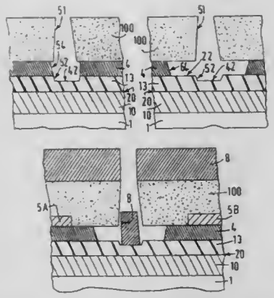
Claims priority, application France, Jun. 29, 1994, 94 08011

Int. Cl.[6] H01L *21/265;21/203;21/44;21/20*

U.S. Cl. 437—39 **21 Claims**

1. A method of manufacturing a semiconductor device comprising a buried channel field effect transistor, comprising at least:

realization of a stack of layers on a substrate, the stack including:



an active layer made of a semiconductor compound with a non-zero aluminium (Al) content in which a first, central gate recess is to be dug for receiving a Schottky gate contact,

a cap layer, disposed over said active layer, made of a semiconductor material without aluminium (Al) for receiving ohmic source and drain contacts of the transistor,

a masking layer, disposed over said cap layer, provided with a gate opening,

carrying out of etching steps for providing the first, central gate recess by self-alignment on the gate opening, comprising:

a first selective etching step with a first etching compound of fluorine (F) carried out in the cap layer through the gate opening and down to the upper surface of the active layer, on which an etching stopper layer of aluminium fluoride (AlF_3) will be formed automatically through a reaction between the fluorine (F) of the etching compound and the aluminium (Al) of the semiconductor compound of the active layer,

eliminating of the etching stopper layer of aluminium fluoride (AlF_3),

a second, non-selective etching step carried out in the active layer through the gate opening with a second etching agent until the first, central gate recess has been completed.

5,643,808

PROCESS OF MANUFACTURING A SEMICONDUCTOR DEVICE

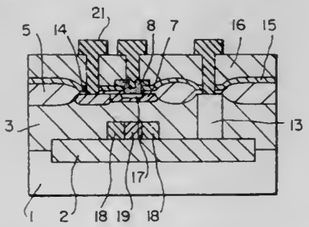
Hisamitsu Suzuki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Division of Ser. No. 355,327, Dec. 12, 1994, abandoned. This application Sep. 28, 1995, Ser. No. 535,892

Claims priority, application Japan, Dec. 15, 1993, 5-314641

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—31 **4 Claims**



1. A process of manufacturing a semiconductor device including a bipolar transistor, comprising the steps of:

forming a first buried layer region having an N-type impurity on a P-type semiconductor substrate;

forming an N-type epitaxial region on the semiconductor substrate;

doping a bipolar region in the epitaxial region into the N type;

forming a P-type intrinsic region on the N-type epitaxial region using a mask; and

forming an N-type impurity region between the P-type intrinsic region and the N-type buried layer using the mask, so that the N-type impurity region is separated from the P-type intrinsic region by the N-type epitaxial region, wherein the step of forming an N-type impurity region using a mask includes the steps of:

forming a first N-type impurity region using a first mask having an opening; and

forming a second N-type impurity region in the center of the first N-type impurity region using a second mask having an opening different from that of the first mask, so that the second N-type impurity region has an impurity concentration higher than the impurity concentration of the first N-type impurity region.

5,643,809

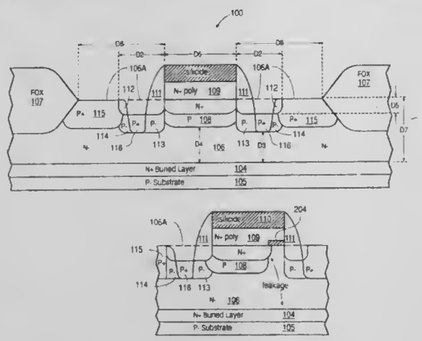
METHOD FOR MAKING HIGH SPEED POLY-EMITTER BIPOLAR TRANSISTOR

Chuen-Der Lien, Los Altos Hills, Calif., assignor to Integrated Device Technology, Inc., Santa Clara, Calif.

Division of Ser. No. 400,649, Mar. 8, 1995, Pat. No. 5,541,433. This application Dec. 14, 1995, Ser. No. 572,449

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—31 **4 Claims**



1. A method, comprising:

forming an oxide on an epitaxial semiconductor surface;

removing said oxide from only a part of said epitaxial semiconductor surface in an active area of a polycrystalline emitter type bipolar transistor structure;

forming a polycrystalline emitter feature on said epitaxial semiconductor surface;

forming a narrow trench in said active area along an edge of said polycrystalline emitter feature, said trench having a width of less than 200 Å; and

forming a spacer disposed at least in part in said narrow trench.

5,643,810

METHODS OF FORMING BICMOS SEMICONDUCTOR DEVICES

Young-Soo Jang, Kyungki-do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

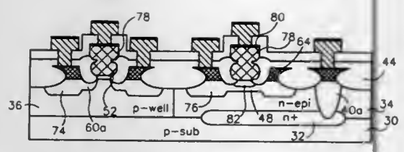
Filed Aug. 1, 1996, Ser. No. 688,998

Claims priority, application Rep. of Korea, Oct. 6, 1995, 95-34194

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—31 **20 Claims**

1. A method of forming a semiconductor device, comprising the steps of:



forming a gate electrode on a face of a semiconductor substrate containing a region of first conductivity type therein;

forming source and drain regions of second conductivity type in the region of first conductivity type by implanting ions of second conductivity type into the face using the gate electrode as an implant mask;

forming a first conductive layer containing second conductivity type dopants therein, on the source and drain regions; and

diffusing second conductivity type dopants from the first conductive layer into the source and drain regions to increase second conductivity type dopant concentrations therein, while simultaneously oxidizing the gate electrode at opposing ends thereof and the first conductive layer to form first bird's beak shaped oxide extensions between the gate electrode and the source and drain regions.

5,643,811

METHOD OF MAKING FIELD EFFECT TRANSISTOR FOR HIGH-FREQUENCY OPERATION

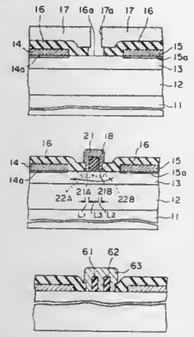
Yuuichi Hasegawa, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 173,050, Dec. 27, 1993, abandoned. This application Jun. 20, 1995, Ser. No. 492,544

Claims priority, application Japan, Jan. 7, 1993, 5-942

Int. Cl.[6] H01L *21/283;21/338*

U.S. Cl. 437—40 **9 Claims**



1. A method for fabricating a field effect transistor, comprising the steps of:

forming a source electrode and a drain electrode on a surface of a semiconductor layer;

forming an insulating film on the surface of said semiconductor layer in a region between said source and drain electrode, the surface under which a channel region is formed,

forming a mask layer on said insulating film, said mask layer having a window which is formed above said channel region;

forming an opening in said insulating film by removing a part of said insulating film exposed through said window;

enlarging said opening in said insulating film by conducting a side etching in said opening;

forming a dividing layer of an insulator in said enlarged opening and on said surface of the semiconductor layer, thus dividing said opening into at least two parts;

removing said mask layer;

depositing a gate electrode material on the insulating film so as to fill said at least two parts of the opening and to cover said dividing layer; and

patterning said gate electrode material on the insulating film to form a gate electrode in the enlarged opening to cover the dividing layer.

5,643,812

METHOD OF MAKING EEPROM FLASH MEMORY CELL WITH ERASE GATE

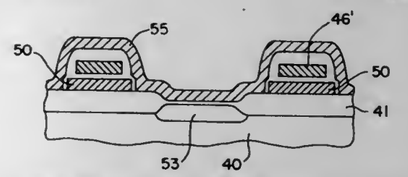
Keun Hyung Park, Seoul, Rep. of Korea, assignor to Goldstar Electron Co., Ltd., Cheongju, Rep. of Korea

Filed Oct. 28, 1994, Ser. No. 330,777

Claims priority, application Rep. of Korea, Oct. 28, 1993, 93-22629

Int. Cl.[6] H01L *21/265;21/8247*

U.S. Cl. 437—43 **12 Claims**



1. A process for forming an EEPROM flash memory device on a semiconductor substrate, comprising the steps of:

(1) forming a field region and an active region upon a semiconductor substrate, forming a gate insulating layer, and forming a plurality of patterns of a floating gate electrode conduction layer in a first direction;

(2) forming an intermediate insulating layer, and forming a control gate conduction layer and an upper insulating layer;

(3) defining a control gate electrode, and etching the upper insulating layer and the control gate conduction layer utilizing the intermediate insulating layer as an etch stop layer to form a control gate electrode in a second direction;

(4) forming an insulating layer, and etching back the insulating layer, wherein a side wall insulating layer is formed on the side walls of the control gate electrode;

(5) etching the floating gate conduction layer utilizing the upper insulating layer and the side wall insulating layer of tile control gate as a mask to form a floating gate electrode;

(6) ion-implanting ions, and forming a tunneling insulating layer on side portions of the floating gate electrode, and forming an N+ common source line and respective drain regions through diffusion of the implanted ions; and

(7) forming an erasing electrode conduction layer, and patterning the erasing electrode conduction layer to form an erasing electrode in a direction elongated perpendicular to the control gate electrode, wherein the tunneling insulating layer is interposed between the erasing electrode and the floating gate electrode.

5,643,813

PACKING DENSITY FOR FLASH MEMORIES BY USING A PAD OXIDE

Joyce Elizabeth Acocella, Hopewell Junction, N.Y.; Carol Galli, Odenton, Md.; Louis Lu-Chen Hsu, Fishkill, N.Y.; Seiki Ogura, Hopewell Junction, N.Y.; Nivo Rovedo, LaGrangeville, N.Y., and Joseph Francis Shepard, Hopewell Junction, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

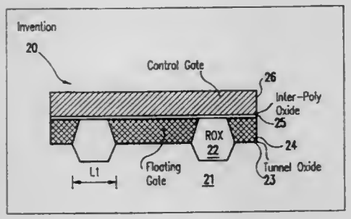
Division of Ser. No. 319,393, Oct. 6, 1994. This application May 4, 1995, Ser. No. 434,698

Int. Cl.[6] H01L *21/8247*

U.S. Cl. 437—43 **5 Claims**

1. A method of making a semiconductor device including the steps, in sequence, of

forming a pad oxide of a first thickness over an area of a semiconductor substrate,



forming a layer of material over said pad oxide, removing at least a first selected region of said pad oxide and said layer of material,

regrowing oxide in said first selected region to a second thickness,

removing at least a second selected region of said pad oxide,

regrowing oxide in said second selected region to a third thickness, and

forming an electronic device using a remaining portion of said pad oxide as an insulator.

5,643,814

METHOD OF MAKING AN EEPROM WITH AN ERASE GATE

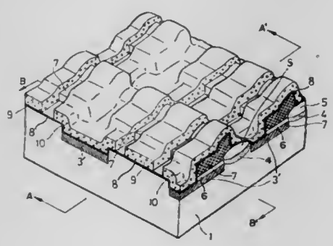
Seong-Woo Chung, Chungcheongbuk-Do, Rep. of Korea, assignor to LG Semicon Co., Ltd., Rep. of Korea

Filed Dec. 7, 1995, Ser. No. 568,621

Claims priority, application Rep. of Korea, Dec. 7, 1994, 94-33046

Int. Cl.[6] H01L *21/8247*

U.S. Cl. 437—43 **10 Claims**



1. A method for making an EEPROM cell comprising the steps of:

a) forming trenches in a substrate;

b) forming a first insulating layer in the trenches;

c) forming bit lines in the substrate between the trenches;

d) forming a second insulating layer on the bit lines;

e) forming a gate insulating layer on the substrate and extending partially into the trenches;

f) forming floating gates on the gate insulating layer, the floating gates being positioned between the trenches and having a side portion contiguous with the second insulating layer;

g) forming a third insulating layer on the floating gates; and

h) forming control gates and erase gates over the floating gates, the trenches and the substrate,

the control gates crossing over the bit lines and being positioned to overlie the floating gates and the substrate, and

the erase gates being positioned to overlie the floating gates, and being positioned in the trenches.

5,643,815

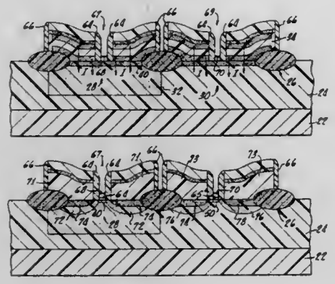
SUPER SELF-ALIGN PROCESS FOR FABRICATING SUBMICRON CMOS USING MICRON DESIGN RULE FABRICATION EQUIPMENT

Truc Quang Vu, Signal Hill, and Maw-Rong Chin, Huntington Beach, both of Calif., assignors to Hughes Aircraft Company

Filed Jun. 7, 1995, Ser. No. 484,739

Int. Cl.[6] H01L *21/8234*

U.S. Cl. 437—44 **8 Claims**



1. A method of making a semiconductor device structure, using fabrication equipment having a design rule value, comprising the steps of:

(A) providing an active area for a semiconductor device, said active area including an active device region of a first conductivity type, and having a surface thereon;

(B) forming a first polysilicon layer above said active device region surface;

(C) forming a mask layer above said first polysilicon layer, said mask including openings in positions above said active area, and implanting impurity ions into said polysilicon layer to form a plurality of doped implant region therein, comprising the substeps of:

(C) (1) forming a temporary blanket resist layer on the surface of said first polysilicon layer;

(C) (2) forming an implant mask opening in said resist mask layer disposed substantially above said active device region;

(C) (3) implanting a first concentration of impurity ions of a complementary conductivity type to said first conductivity type through said implant mask opening to form a threshold adjust region below the surface of said active device region;

(C) (4) implanting a second concentration of impurity ions of a complementary conductivity type to said first conductivity type through said implant mask opening such that the ions form a first doped implant region disposed substantially within the lower portion of said polysilicon layer;

(C) (5) implanting a third concentration of impurity ions of a second conductivity type through said implant mask opening such that said ions form a second doped implant region disposed substantially within the upper portion of said polysilicon layer;

(C) (6) removing the remaining resist layer after said step C (2) from the surface of the polysilicon layer;

(F) forming a first dielectric layer above said polysilicon layer;

(G) forming a gate opening through said polysilicon layer and said dielectric layer in a position above said active area using an etch process, said gate opening being defined between a pair of opposing sidewalls and having dimensions within said design rule value; and

(H) forming at least two dielectric spacers on said opposing sidewalls of said gate opening, said dielectric spacers being spaced from one another at a distance that defines a device gate length that is smaller than said design rule value.

5,643,816

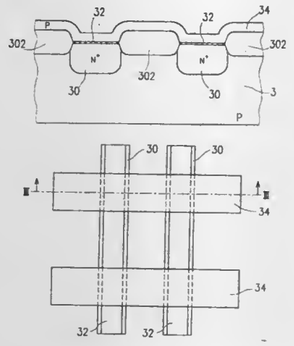
HIGH-DENSITY PROGRAMMABLE READ-ONLY MEMORY AND THE PROCESS FOR ITS FABRICATION

Chen-Chung Hsu, Taichung, and Gary Hong, Hsinchu, both of Taiwan, assignors to United Microelectronics Corp., Hsinchu, Taiwan

Filed May 31, 1995, Ser. No. 454,637

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—45 **5 Claims**



1. A process for fabricating semiconductor programmable read-only memory device for storing information of a first type and information of a second type, said programmable read-only memory device including a plurality of memory cells located on a substrate of a first conductivity type, said process comprising the steps of:

forming a plurality of insulators separated from each neighboring insulator along a first direction on a surface of said substrate of a first conductivity type;

implanting impurities of a second conductivity type into a depth of said substrate of a first conductivity type utilizing said plurality of insulators as shielding to form a corresponding plurality of separated implanted regions of the second conductivity type;

forming a corresponding plurality of dielectric switch control layers over each of said separated implanted regions of the second conductivity type;

forming a plurality of electrically conducting layers of the first conductivity type isolated from each neighboring other conductive layer of the first conductivity type along a second direction on said substrate of the first conductivity type, wherein said second direction is different from said first direction;

storing said information of a first type in any one of said plurality of memory cells by punching through one of said plurality of dielectric switch control layers that corresponds to said any memory cell by applying electrical potential through said one of said plurality of dielectric switch control layers, said electrical potential exceeding that of a punchthrough threshold of said one of said plurality of dielectric switch control layers; and

storing said information of a second type in another one of said plurality of memory cells by maintaining integrity of one of said plurality of dielectric switch control layers that corresponds to said another one of said plurality of memory cells by applying electrical potential through said one of said plurality of dielectric switch control layers, said electrical potential being less than that of the punchthrough threshold of said one of said plurality of dielectric switch control layers.

5,643,817

METHOD FOR MANUFACTURING A FLAT-PANEL DISPLAY

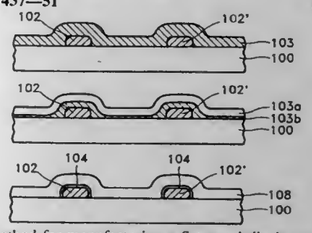
Kyung-seob Kim; Chi-woo Kim; Young-chan Kweon, and Won-kie Chang, all of Seoul, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed May 12, 1994, Ser. No. 241,856

Claims priority, application Rep. of Korea, May 12, 1993, 93-8171

Int. Cl.[6] H01L *21/786*

U.S. Cl. 437—51 **10 Claims**



1. A method for manufacturing a flat panel display comprising, the steps of:

forming a metal pattern on a substrate;

forming a metal layer on the substrate so as to cover the metal pattern formed thereon; and

anodically oxidizing the metal pattern and the metal layer, whereby the metal pattern is partially oxidized and the metal layer is oxidized;

said step of anodically oxidizing the metal pattern and the metal layer comprising:

a first anodic oxidation step, wherein the metal layer is partially anodically oxidized under a first voltage, and

a second anodic oxidation step, wherein the metal pattern is partially anodically oxidized and the partially anodically oxidized metal layer is anodically oxidized under a second voltage which is higher than the first voltage.

5,643,818

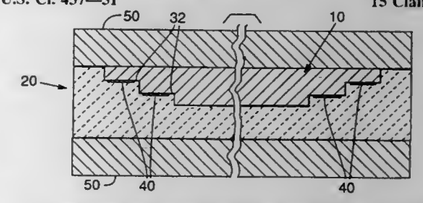
REMOVAL OF RESIDUES FROM METALLIC INSERT USED IN MANUFACTURE OF MULTI-LAYER CERAMIC SUBSTRATE WITH CAVITY FOR MICROELECTRONIC CHIP

Krishna G. Sachdev, Hopewell Junction; Thomas E. Lombardi, and Vincent P. Peterson, both of Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 2, 1996, Ser. No. 642,238

Int. Cl.[6] H01L *21/70*

U.S. Cl. 437—51 **15 Claims**



1. As an adjunct to manufacturing a predominantly ceramic substrate so as to have a cavity for a microelectronic chip and so as to have metallic features by laminating green sheets made from an inorganic filler-polymer composite slurry comprising inorganic particulates and a polymeric binder, wherein at least some of the green sheets are provided with metallic features made from a metal-polymer composite paste comprising a metallic powder and a polymeric binder, wherein at least some of the green sheets are formed with apertures, wherein the green sheets are stacked on one another so that the apertures define the cavity generally, wherein

the stacked sheets are laminated under pressure after a metallic insert is inserted into the apertures so as to compress the stacked sheets against the metallic insert, which defines the cavity precisely, when the stacked sheets are laminated, and wherein the metallic insert is removed from the cavity after the stacked sheets are laminated, a method for removing any green sheet and metal-polymer composite paste residues from the metallic insert while maintaining the surface finish of the metallic insert by

(a) cleaning the metallic insert by immersing the metallic insert in a bath containing a first solvent having a relatively high boiling point and agitating the bath containing the first solvent,

(b) removing the first solvent from the metallic insert and replacing the first solvent with a second solvent having a relatively low boiling point by rinsing the metallic insert in the second solvent, and

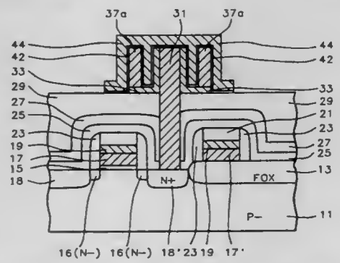
(c) drying the metallic insert to remove the second solvent.

5,643,819

METHOD OF FABRICATING FORK-SHAPED STACKED CAPACITORS FOR DRAM CELLS

Horng-Huei Tseng, Hsinchu, Taiwan, assignor to Vanguard International Semiconductor Corporation, Hsin-Chu, Taiwan

Filed Oct. 30, 1995, Ser. No. 549,864
Int. Cl.[6] H01L *21/8242*
U.S. Cl. 437—60 **35 Claims**



1. A method for fabricating stacked storage capacitors on a semiconductor substrate, comprising the steps of:

providing a semiconductor substrate having device areas surrounded and electrically isolated from each other by field oxide areas, said device areas having semiconductor devices formed, in part, from a patterned first polysilicon layer, and having contact areas in said devices areas, said substrate coated with a first insulating layer in which are etched contact openings to select contact areas for electrical interconnections, said interconnections composed, in part, from a patterned second polysilicon layer, and further forming said stacked storage capacitors by;

depositing a second insulating layer on said substrate and over said patterned second polysilicon layer,

depositing a third insulating layer on said second insulating layer, said third insulating layer being essentially planar,

anisotropically etching node contact openings in said third, second and first insulating layers to said device contact areas required for bottom electrodes of said stacked storage capacitors,

depositing a conformal third polysilicon layer, and thereby filling said node contact openings, and forming a uniformly thick and planar third polysilicon layer elsewhere on said planar third insulating layer,

removing a portion of said third polysilicon layer to said third insulating layer, and thereby forming polysilicon plugs in said node contact openings,

partially etching back said third insulating layer and thereby exposing upper portions of said polysilicon plugs, and said polysilicon plug having essentially vertical sidewalls,

depositing a conformal fourth polysilicon layer on said upper portions of said polysilicon plugs, and elsewhere on said third insulating layer,

depositing a conformal fourth insulating layer on said fourth polysilicon layer, and

anisotropically blanket etching back said fourth insulating to said fourth polysilicon layer, and thereby forming insulating sidewall spacers on said polysilicon plugs from said fourth insulating layer,

depositing a conformal fifth polysilicon layer on said polysilicon plugs, on said insulating sidewall spacers, and elsewhere on said fourth polysilicon layer, and

anisotropically blanket etching back said fifth polysilicon layer, and further by said same etch back, etching back said fourth polysilicon layer elsewhere on the substrate, and thereby forming an array of fork-shaped bottom capacitor electrodes electrically isolated from each other,

etching isotropically and selectively removing the insulating sidewall spacers between said polysilicon plug and said polysilicon sidewall spacer,

forming a capacitor interelectrode dielectric layer on said bottom electrodes, and

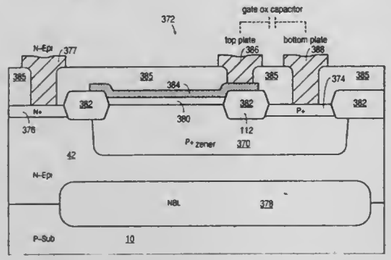
depositing and patterning a sixth polysilicon layer, and completing said stacked storage capacitors.

5,643,820

METHOD FOR FABRICATING AN MOS CAPACITOR USING ZENER DIODE REGION

Richard K. Williams, Cupertino; Hamza Yilmaz, Saratoga; Michael E. Cornell, Campbell, and Jun Wei Chen, Saratoga, all of Calif., assignors to Siliconix incorporated, Santa Clara, Calif.

Continuation of Ser. No. 463,403, Jun. 5, 1995, abandoned, which is a division of Ser. No. 323,950, Oct. 17, 1994, Pat. No. 5,559,044, which is a continuation-in-part of Ser. No. 226,419, Apr. 11, 1994, Pat. No. 5,426,328, which is a continuation of Ser. No. 948,276, Sep. 21, 1992, abandoned. This application Jun. 19, 1996, Ser. No. 667,219
Int. Cl.[6] H01L *21/70*
U.S. Cl. 437—60 **6 Claims**



1. A method for fabricating an MOS capacitor, said process comprising the steps of:

implanting ions of a first conductivity type into an upper surface of an epitaxial layer of a second conductivity type, prior to any gate dielectric layer being formed on said upper surface, to form a highly doped first region of said first conductivity type, said first region being implanted with ions of said first conductivity type with a dose of approximately 1E15 cm^2 or greater, said step of implanting also forming a separate zener diode region in said epitaxial layer;

forming a gate dielectric layer overlying said first region and overlying one or more channel regions for MOS transistors to be formed; and

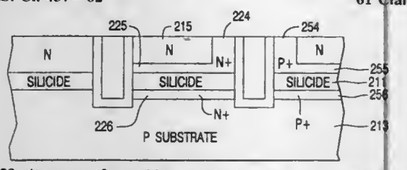
forming a conductive polysilicon layer overlying said gate dielectric layer and overlying said first region and said channel regions such that said conductive polysilicon layer is separated from said first region and said channel regions by said gate dielectric layer, wherein said first region and said conductive polysilicon layer form two plates of said MOS capacitor.

5,643,821

METHOD FOR MAKING OHMIC CONTACT TO LIGHTLY DOPED ISLANDS FROM A SILICIDE BURIED LAYER AND APPLICATIONS

James Douglas Beasom, Melbourne Village, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Nov. 9, 1994, Ser. No. 336,768
Int. Cl.[6] H01L *21/283;21/225*
U.S. Cl. 437—62 **61 Claims**



53. A process for making an ohmic contact to a buried layer comprising the steps of:

bonding a surface of a silicon device wafer to a surface of a handle wafer, at least one of said surfaces comprising a silicide layer;

forming at least one surface contact trench having sidewalls extending from the surface of the device wafer opposite the handle wafer and extending through said device wafer to a contact trench floor;

forming a plurality of isolation trenches, each trench having a floor and sidewalls that extend from the surface of the device wafer opposite the handle wafer through said silicide layer to said handle wafer, said floor and said sidewalls each having a coating of a dielectric material, said isolation trenches being filled with a semiconductor material and, together with said surface contact trench, defining a plurality of device islands;

while said contact trench is open, heavily doping with a first dopant of a first polarity the exposed contact trench sidewalls, the exposed contact trench floor, and an exposed portion of a silicide layer interposed between said device wafer and said handle wafer;

diffusing the first dopant through the silicide layer and outdiffusing said dopant from said silicide layer to form a heavily doped layer on the bottom of the islands in ohmic contact with the silicide layer.

5,643,822

METHOD FOR FORMING TRENCH-ISOLATED FET DEVICES

Toshiharu Furukawa, Essex Junction, Vt.; Jack Allen Mandelman, Stormville, N.Y., and William R. Tonti, Essex Junction, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

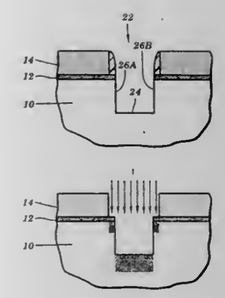
Filed Jan. 10, 1995, Ser. No. 370,703
Int. Cl.[6] H01L *21/76*
U.S. Cl. 437—67 **17 Claims**

1. A method for improving the subthreshold leakage characteristics of a trench-isolated FET device, comprising the steps of:

a) forming a vertical slot within a stack structure disposed on an oxide-covered silicon substrate, said slot terminating at the surface of the oxide;

b) forming spacers on the sidewalls of the slot, each of said spacers having a base portion;

c) etching a trench in the substrate, said trench being substantially self-aligned with the slot, and having a trench bottom and substantially vertical trench sidewalls, wherein the width of the trench is approximately equal to the distance between the base portions of the spacers;



d) removing the spacers to uncover a horizontal ledge on an exposed upper surface of the oxide-covered substrate, the exposed upper surface being free of the stack structure disposed thereon, and the ledge being adjacent the trench; and

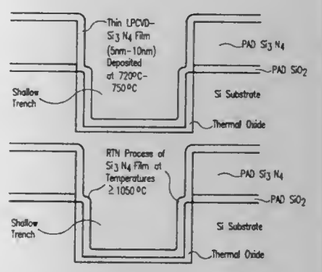
e) perpendicularly implanting a dopant into the ledge in an amount sufficient to suppress edge conduction of the device, wherein the concentration of dopant atoms implanted into the sidewalls of the trench is less than about 30% of the concentration of dopant atoms implanted into the ledge.

5,643,823

APPLICATION OF THIN CRYSTALLINE Si_3N_4 LINERS IN SHALLOW TRENCH ISOLATION (STI) STRUCTURES

Herbert Ho, Washingtonville; Erwin Hammerl, Stormville; David M. Dobuzinsky, Hopewell Junction; J. Herbert Palm, Wappingers Falls, all of N.Y.; Stephen Fugardi, New Milford, Conn.; Atul Ajmera, Wappinger, N.Y.; James F. Moseman, Dover Plains, N.Y., and Samuel C. Ramac, Wappinger Falls, N.Y., assignors to Siemens Aktiengesellschaft, Munich, Germany, and International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 21, 1995, Ser. No. 531,844
Int. Cl.[6] H01L *21/76*
U.S. Cl. 437—67 **5 Claims**



1. A process of forming a thin film of crystalline silicon nitride (Si_3N_4) film in a shallow trench isolation (STI) structure in an integrated circuit device comprising the steps of:

depositing by low-pressure chemical-vapor deposition (LPCVD) a Si_3N_4 film 5 to 10 nm thick within an STI structure at a temperature between 720° C. to 780° C.; and

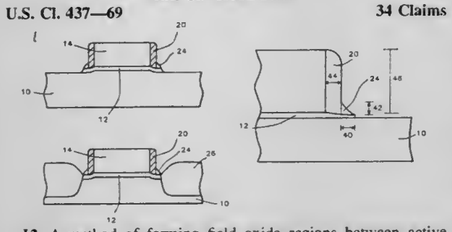
immediately after deposition of the Si_3N_4 film, conducting a rapid-terminal anneal between 1050° C. and 1150° C. for approximately 60 seconds to convert the Si_3N_4 film from an amorphous state to a crystalline state.

5,643,824

METHOD OF FORMING NITRIDE SIDEWALLS HAVING SPACER FEET IN A LOCOS PROCESS

Rong-Wu Chien, Chyai; Ming-Hong Kuo, Ping-Ting, and Hsu-Li Cheng, Tainan, all of Taiwan, assignors to Vanguard International Semiconductor Corporation, Hsin-Chu, Taiwan

Filed Jul. 29, 1996, Ser. No. 688,068
Int. Cl.[6] H01L 21/76
U.S. Cl. 437—69 34 Claims



12. A method of forming field oxide regions between active regions in a semiconductor substrate, comprising the steps of:

a) forming a first oxide layer over a substrate surface; said substrate having spaced active areas and field oxide areas;

b) depositing a first nitride layer over said first oxide layer;

c) patterning said first nitride layer forming a masking block over said active regions; said masking block having sidewalls;

d) depositing a second nitride layer over said masking block and said first oxide layer;

e) anisotropically etching said second nitride layer and said first oxide layer forming nitride spacers on said sidewalls of said masking block and forming nitride spacer feet on the surface of said first oxide layer out from said nitride spacers; said nitride spacer feet having a width in a range of between about 0.005 and 0.1 micrometers; the anisotropic etch using micro-loading effects to form said nitride spacer feet;

f) etching said substrate using said masking block nitride spacers and said nitride spacer feet as an etch mask forming trenches in said substrate;

g) oxidizing said substrate; using said masking block nitride spacers and said nitride spacer feet as an oxidation mask forming said field oxide regions; and

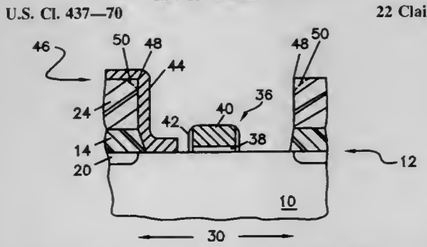
h) removing said masking block said nitride spacer, and nitride spacer feet.

5,643,825

INTEGRATED CIRCUIT ISOLATION PROCESS

Mark I. Gardner, Cedar Creek; Fred N. Hause, Austin, both of Tex., and Kuang-Yeh Chang, Los Gatos, Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Dec. 29, 1994, Ser. No. 366,053
Int. Cl.[6] H01L 21/76
U.S. Cl. 437—70 22 Claims



1. A method for isolating active regions within a semiconductor substrate, comprising:

forming a first dielectric film directly upon an entire surface of a semiconductor substrate;

forming a second dielectric film directly upon the entire said first dielectric film, wherein said first dielectric film is interposed between said semiconductor substrate and said second dielectric, and wherein the thickness of said first and second dielectric films is less than 4000 angstroms; and

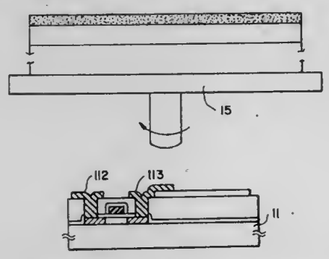
removing said first and second dielectric films over entire active regions within said semiconductor substrate.

5,643,826

METHOD FOR MANUFACTURING A SEMICONDUCTOR DEVICE

Hisashi Ohtani; Akiharu Miyanaga; Takeshi Fukunaga, and Hongyong Zhang, all of Kanagawa, Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, Japan

Filed Oct. 25, 1994, Ser. No. 329,644
Claims priority, application Japan, Oct. 29, 1993, 5-294633; Nov. 9, 1993, 5-303436; Nov. 12, 1993, 5-307206; Jun. 20, 1994, 6-162705
Int. Cl.[6] H01L 21/228
U.S. Cl. 437—88 12 Claims



1. A method for manufacturing a semiconductor device comprising the steps of:

disposing a crystallization promoting solution in contact with at least a portion of an amorphous silicon film on a substrate, said solution containing an element selected from the group consisting nickel (Ni), palladium (Pd), platinum (Pt), copper (Cu), silver (Ag), gold (Au), indium (In), tin (Sn), phosphorous (P), arsenic (As), and antinomy (Sb); and

crystallizing said silicon film by heating;

wherein a concentration of said element in said silicon film after said crystallizing is within a range from 1×10^{16} to 1×10^{19} atoms/cm^3 and said solution contains said element at a concentration less than 200 ppm.

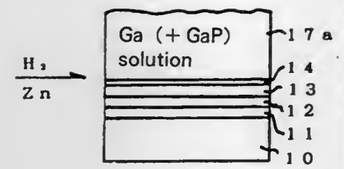
5,643,827

GAP LIGHT EMITTING SUBSTRATE AND A METHOD OF MANUFACTURING IT

Toshio Ootaki, Takasaki; Akio Nakamura; Yuuki Tamura, both of Annaka; Munehisa Yanagisawa, Takasaki, and Susumu Higuchi, Annaka, all of Japan, assignors to Shin-Etsu Handotai Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 128,131, Sep. 29, 1993, abandoned. This application Dec. 19, 1994, Ser. No. 358,977
Claims priority, application Japan, Sep. 30, 1992, 4-285265
Int. Cl.[6] H01L 21/20
U.S. Cl. 437—127 2 Claims

1. A method of manufacturing a GaP light emitting element substrate wherein an n-type GaP buffer layer is formed on an n-type GaP single crystal substrate to prepare a multi-layer GaP substrate, then an n-type GaP layer, a nitrogen doped n-type GaP layer and a p-type GaP layer are layered on said multi-layer GaP substrate by means of liquid phase epitaxial deposition using the melt-back method to dissolve the upper portion of the n-type GaP buffer layer(s), said method of manufacturing a GaP light emitting element substrate being characterized by the sulfur concentration in said n-type GaP buffer layer made to be 5×10^{16} atoms/cc or less,



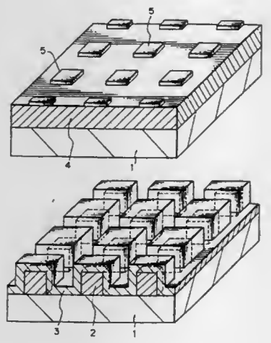
and some sulfur is transferred by the melt-back of the n-type GaP buffer layer(s) to the nitrogen doped n-type GaP layer in the concentration of 3×10^{16} atoms/cc or lower.

5,643,828

MANUFACTURING METHOD OF A QUANTUM DEVICE

Ryuichi Ugajin; Ichiro Hase, both of Kanagawa, and Kazumasa Nomoto, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Division of Ser. No. 105,121, Aug. 12, 1993, abandoned. This application Dec. 19, 1995, Ser. No. 574,785
Claims priority, application Japan, Aug. 13, 1992, 4-237723; Sep. 30, 1992, 4-285341
Int. Cl.[6] H01L 21/20
U.S. Cl. 437—133 7 Claims



1. A method of manufacturing a quantum box device having a plurality of spaced quantum dots comprising the steps of:

a) forming a first GaAs layer having a thickness of a height of a quantum dot on an AlGaAs substrate,

b) forming a resist layer on said first GaAs layer which has a pattern corresponding to that of the desired quantum dots,

c) using said resist layer as a mask to remove said first GaAs layer where not covered by said resist layer,

d) removing said resist layer,

e) forming a second GaAs layer over the entire structure including the tops of the quantum dots, the side walls of the quantum dots and the top surface of said AlGaAs substrate between said quantum dots,

f) removing said second GaAs layer on the tops of said quantum dots and on the top surface of said AlGaAs substrate, and

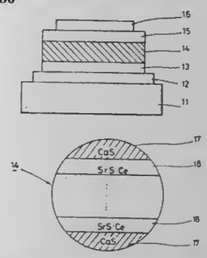
g) forming a third AlGaAs layer over the entire structure.

5,643,829

METHOD FOR THE FABRICATION OF MULTILAYER ELECTROLUMINESCENCE DEVICE

Hai Yong Kang, Seoul, Rep. of Korea, assignor to Goldstar Electron Co., Ltd., Cheongju, Rep. of Korea

Filed Dec. 14, 1994, Ser. No. 355,777
Claims priority, application Rep. of Korea, Dec. 15, 1993, 27845/1993
Int. Cl.[6] H05B 33/14
U.S. Cl. 437—180 4 Claims



1. A method for fabricating an electroluminescence device, comprising the steps of:

(a) forming a lower electrode with a first pattern on a substrate;

(b) forming a first insulation layer on the lower electrode atop the substrate;

(c) forming a first ply;

(d) forming a second ply which is different from the first ply;

(e) alternating steps (c) and (d) at substantially the same temperature to form a multi-layered luminescent layer on the first insulation layer;

(f) forming a second insulation film on the multi-layered luminescent layer; and

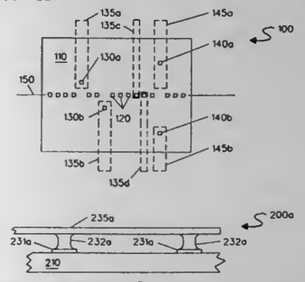
(g) forming an upper electrode with a second pattern on the second insulation layer, wherein an outmost lower ply and an outmost upper ply are made of CaS and are in contact with said first insulation layer and said second insulation layer, respectively.

5,643,830

PROCESS FOR MANUFACTURING OFF-AXIS POWER BRANCHES FOR INTERIOR BOND PAD ARRANGEMENTS

Michael D. Rostoker, Boulder Creek; Nicholas F. Pasch, Pacifica, and Joe Zelayeta, Saratoga, all of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Division of Ser. No. 58,120, May 5, 1993, Pat. No. 5,384,487. This application Jan. 23, 1995, Ser. No. 377,211
Int. Cl.[6] H01L 21/28;21/60
U.S. Cl. 437—180 11 Claims



1. A method of making a semiconductor device with off-axis interior bond pads for power distribution, comprising:

providing a semiconductor die having a planar surface, a centroid, a peripheral area, an interior area within the peripheral

area, an axis defined on the planar surface of the semiconductor die which passes substantially over the centroid, and a width perpendicular to the centroid axis;

forming circuitry within the die;

disposing a first plurality of bond pads on the planar surface of the die in a linear configuration along the centroid axis for signal connections thereto;

disposing a second plurality of bond pads smaller than the first plurality of bond pads on the planar surface of the die, within the interior area and spaced away from the centroid axis, the second plurality of bond pads being disposed on either side of the first plurality of bond pads and used for power connections;

defining a first limit line and a second limit line on the surface of the die on opposite sides of the axis, parallel to the axis and located a distance from the axis equal to approximately one-quarter of the width of the die;

defining a placement area on the surface of the die between the first limit line and the second limit line;

disposing the second plurality of bond pads entirely within the placement area;

providing connections in the die between the first plurality of bond pads and the circuitry within the die; and

providing connections in the die between the second plurality of bond pads and the circuitry within the die.

5,643,831

PROCESS FOR FORMING SOLDER BALLS ON A PLATE HAVING APERTURES USING SOLDER PASTE AND TRANSFERRING THE SOLDER BALLS TO SEMICONDUCTOR DEVICE

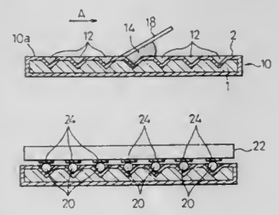
Masayuki Ochiai; Hidefumi Ueda; Michio Sono; Ichiro Yamaguchi; Kazuhiko Mitobe; Koki Otake; Junichi Kasai; Nobuo Kamehara; Yasuo Yamagishi; Masataka Mizukoshi; Yutaka Yamada, and Susumu Abe, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation-in-part of Ser. No. 374,429, Jan. 19, 1995, abandoned. This application Oct. 24, 1995, Ser. No. 547,532

Claims priority, application Japan, Jan. 20, 1994, 6-004751

Int. Cl.[6] H01L *21/283;21/48;21/60*

U.S. Cl. 437—183 **13 Claims**



12. A method for fabricating a semiconductor device, said method comprising the steps of:

preparing a plate having a flat surface;

forming a plurality of cavities on the flat surface of the plate;

filling the cavities with a solder paste;

heating the plate to form solder balls in the cavities while the plate is arranged in an inclined position relative to a horizontal; and

transferring the solder balls from the plate to a first member onto which solder bumps are to be formed.

5,643,832

SEMICONDUCTOR DEVICE AND METHOD FOR FABRICATION THEREOF

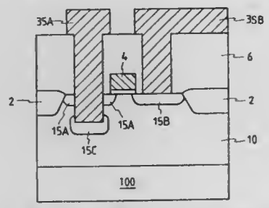
Jae Kap Kim, Kyoungki-do, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Rep. of Korea

Filed Jan. 19, 1995, Ser. No. 374,847

Claims priority, application Rep. of Korea, Jan. 19, 1994, 94-973

Int. Cl.[6] H01L *21/44*

U.S. Cl. 437—187 **5 Claims**



1. A process for the fabrication of semiconductor device, comprising the steps of:

forming a MOSFET structure comprising a gate oxide, a gate electrode, a source electrode and a drain electrode on an active region of a semiconductor device;

forming an interlayer insulation layer over the MOSFET structure;

selectively etching an area of said interlayer insulating layer, said source electrode and said substrate, to form a trench contact hole;

forming a substrate electrode underneath said trench contact hole, said substrate electrode being the same as said substrate in conductivity type; and

filling said trench contact hole with a conductive wire, to interconnect said substrate electrode with said source electrode.

5,643,833

METHOD OF MAKING A CONTACT HOLE IN A SEMICONDUCTOR DEVICE

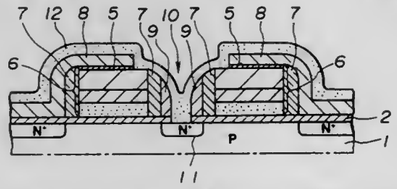
Masanori Tsukamoto, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 295,550, Aug. 25, 1994, abandoned. This application Jun. 27, 1995, Ser. No. 495,268

Claims priority, application Japan, Aug. 31, 1993, 5-216754

Int. Cl.[6] H01L *21/311*

U.S. Cl. 437—195 **6 Claims**



1. A method of making a self-aligning contact hole in a semiconductor device with multi-layer interconnections, comprising the steps of:

forming a first electrically conductive interconnection layer on a first insulating layer formed on a lower interconnection layer;

forming a second insulating layer on the first electrically conductive interconnection layer;

forming an antireflection layer on the second insulating layer;

patterning the first electrically conductive interconnection layer, the second insulating layer and the antireflection layer to form a stacked film composed of the first electrically conductive interconnection layer, the second insulating layer and the antireflection layer;

depositing a third insulating layer and etching back to form a sidewall on the stacked film;

forming an interlayer insulating layer on an entire surface of the stacked film having the sidewall formed thereon and the first insulating layer;

patterning the interlayer insulating layer to define a contact hole region and, using the antireflection layer as an etching stopper, etching by RIE to form a self-aligning contact hole to expose a selected portion of the lower interconnection layer using the sidewall as a mask; and

depositing a second electrically conductive interconnection layer in the contact hole at the exposed portion of the lower interconnection layer.

5,643,834

PROCESS FOR MANUFACTURING A SEMICONDUCTOR SUBSTRATE COMPRISING LAMINATED COPPER, SILICON OXIDE AND SILICON NITRIDE LAYERS

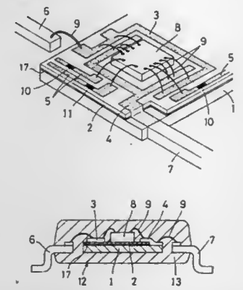
Keizo Harada; Takao Maeda; Takatoshi Takikawa; Shunsuke Ban, and Shosaku Yamanaka, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Division of Ser. No. 907,229, Jul. 1, 1992, Pat. No. 5,455,453. This application May 25, 1995, Ser. No. 450,406

Claims priority, application Japan, Jul. 1, 1991, 3-160678; Jan. 27, 1992, 4-12228; Mar. 5, 1992, 4-48602; Apr. 20, 1992, 4-99837

Int. Cl.[6] H01L *21/48;21/56;21/58;21/60*

U.S. Cl. 437—210 **6 Claims**



1. A method of manufacturing a semiconductor device comprising a rolled metal substrate made of metal selected from the group consisting of copper and a copper alloy composed of copper as a matrix and at least one other element in an amount of 50 wt % or less, wherein the surface of said metal substrate has a roughness of Rmax≧0.1 micron, an insulating film provided on a portion of the top surface of said metal substrate leaving a portion of the metal substrate exposed, which insulating film has a thickness of from 3 microns to 10 microns inclusive, wherein said insulating film is made by the plasma CVD method, a semiconductor element mounted on one of said insulating film and an exposed surface of said metal substrate, and at least one of signal film wirings and power film wirings, and passive elements selected from the group consisting of a film resistor and a film capacitor, mounted on said insulating film, said insulating film selected from the group consisting of (1) a single-layer film made of a mixture of silicon oxide and silicon nitride and (2) a multi-layered film having two or more layers laminated one on another and comprising (a) a silicon oxide layer and at least one of (b) a layer made of a mixture of silicon oxide and silicon nitride and (c) a silicon nitride layer, said insulating film having a nitrogen to silicon content of 0.3 to 0.8 and wherein the insulating film has an intrinsic stress measured as a compressive or tensile stress of not more than 8×10^9 (dyn/cm^2), said method comprising the step of removing oxides on the surface of said metal substrate by plasma cleaning in the atmosphere of argon gas, hydrogen gas or a mixture thereof, under the following conditions: board temperature: 350° or less, atmospheric gas pressure: 0.1–30 Torr, discharge output: 0.1–10 w/cm^2, discharge time: one minute or more, and forming an insulating film on the metal substrate by the plasma CVD method or the CVD method, using a silicon source gas, a nitrogen source gas and an oxygen source as materials, under the following conditions: board temperature: 350° C. or less, gas pressure when forming the film: 0.1 Torr or more and not more than the atmospheric pressure, flow ratio of nitrogen and oxygen source gases to silicon source gas: 0.5–30.

5,643,835

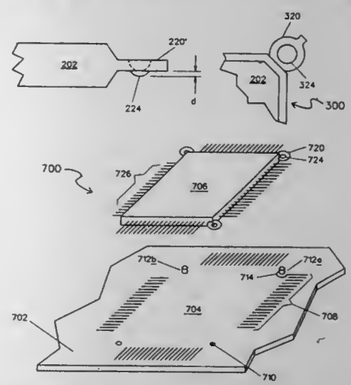
PROCESS FOR MANUFACTURING AND MOUNTING A SEMICONDUCTOR DEVICE LEADFRAME HAVING ALIGNMENT TABS

Chok J. Chia, Campbell, and Seng-Sool Lim, San Jose, both of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Continuation of Ser. No. 340,727, Nov. 16, 1994, abandoned, which is a division of Ser. No. 992,643, Dec. 18, 1992, abandoned. This application Feb. 16, 1996, Ser. No. 602,896

Int. Cl.[6] H01L *21/56;21/58;21/60*

U.S. Cl. 437—211 **6 Claims**



1. A method of packaging a semiconductor device to ensure alignment of the semiconductor device leads with traces of a printed wiring board, comprising the steps of:

patterning a leadframe from a conductive foil, wherein the leadframe has a plurality of leads and at least one tab element having a fixed coplanar relationship with the plurality of leads, the at least one tab element having a concave positioning means on one surface and a corresponding convex positioning means on another surface for aligning the at least one tab element with a planar substrate;

mounting a die to a central portion of the leadframe and connecting the die to inner portions of the leads;

forming a package body around the die and the central portion of the leadframe, wherein outer portions of the leads extend beyond a periphery of the package body, and

extending the at least one tab element beyond the periphery of the package body and proximate thereto, wherein the at least one tab remains in the fixed coplanar relationship with the outer portions of the plurality of leads.

5,643,836

METHOD FOR PRODUCING A SEMICONDUCTOR LAYER STRUCTURE HAVING A PLANARIZED SURFACE AND THE USE THEREOF IN THE MANUFACTURE OF BIPOLAR TRANSISTORS AND DRAMS

Thomas Meister, Taufkirchen, and Reinhard Stengl, Stadtbergen, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

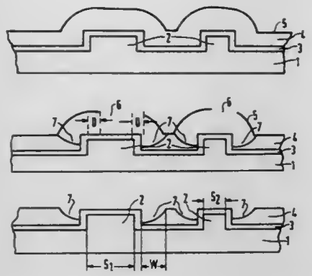
Filed Jul. 22, 1994, Ser. No. 279,106

Claims priority, application Germany, Jul. 27, 1993, 43 25 188.9

Int. Cl.[6] H01L *21/465*

U.S. Cl. 437—228 **10 Claims**

1. Method for producing a semiconductor layer structure having a planarized surface, said method comprising the steps of:



applying an insulating layer onto a surface of said semiconductor layer structure having elevations with edges having a maximum step height, said insulating layer having a thickness greater than said maximum step height;

etching said insulating layer to have irregularities with an essentially identical lateral expanse in a region of said edges of said elevations; and

planarizing said irregularities by conducting a technique selected from the group consisting of chemical mechanical polishing and deposition, flowing and etch-back of a planarization layer.

5,643,837

METHOD OF FLATTENING THE SURFACE OF A SEMICONDUCTOR DEVICE BY POLISHING

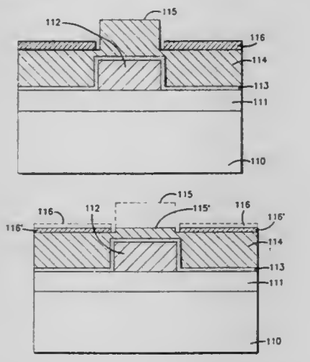
Yoshihiro Hayashi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Division of Ser. No. 34,167, Mar. 17, 1993, abandoned. This application May 18, 1995, Ser. No. 445,222

Claims priority, application Japan, Apr. 15, 1992, 4-094677

Int. Cl.[6] H01L *21/304*

U.S. Cl. 437—228 **12 Claims**



3. A method of manufacturing a semiconductor device comprising the steps of:

covering a semiconductor substrate having a convex pattern with an insulating layer, said insulating layer thereby having a surface including a convex portion formed to a greater height than said convex pattern and perimetric concave portions around said convex portion;

forming a protection insulating film on said convex and perimetric portions;

selectively removing said protection insulating film from said convex portion;

selectively removing, by polishing, said insulating layer from said convex portion; and

removing said protection insulating film from said perimetric portions.

5,643,838

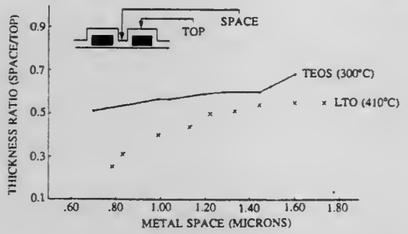
LOW TEMPERATURE DEPOSITION OF SILICON OXIDES FOR DEVICE FABRICATION

Robert Earl Dean, High Bridge; Pang-Dow Foo, Berkeley Heights; Earl Ryan Lory, Pennington, and Leonard Jay Olmer, Hopewell, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 798,355, Nov. 21, 1991, abandoned, which is a continuation of Ser. No. 632,636, Dec. 26, 1990, abandoned, which is a continuation of Ser. No. 175,567, Mar. 31, 1988, abandoned. This application Sep. 3, 1993, Ser. No. 116,309

Int. Cl.[6] H01L *21/02*

U.S. Cl. 437—238 **11 Claims**



1. A process for forming a device comprising the steps of 1) introducing a gaseous reaction composition to a substrate, 2) inducing a reaction in said composition to produce deposition of a silicon oxide region on said substrate, wherein said substrate at its upper surface before said deposition has a plurality of steps and 3) utilizing said oxide in completing said device, CHARACTERIZED IN THAT said silicon oxide is deposited by subjecting said substrate to a plasma in said composition wherein said composition comprises tetraethoxysilane and a source of oxygen wherein said deposited silicon oxide region is conformal to said plurality steps, wherein after said deposition a void in said silicon dioxide between said steps is substantially avoided and wherein the level of water and of silanol bonds present in said deposition is sufficiently low to substantially avoid device degradation associated with their presence.

5,643,839

METHOD FOR PRODUCING SEMICONDUCTOR DEVICE

Mikio Takagi, Kanagawa, Japan, assignor to F.T.L. Co., Ltd., Kanagawa, Japan

Division of Ser. No. 224,866, Apr. 8, 1994, Pat. No. 5,407,485. This application Jan. 25, 1995, Ser. No. 377,703

Claims priority, application Japan, Apr. 9, 1993, 5-83464

Int. Cl.[6] H01L *21/324*

U.S. Cl. 437—247 **1 Claim**

1. A method for producing a semiconductor device, comprising the steps of:

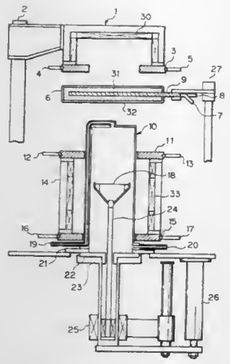
electric-resistance heating a first furnace to a first temperature, while essentially preventing leakage of radiant heat outside of said first furnace but allowing leakage of gas heated and expanded by an electric-heater outside said first furnace;

electric-resistance heating a second furnace to a second temperature lower than the first temperature;

subjecting at least one wafer to a first heat treatment in the second furnace which is heated to the second temperature;

after completion of the first heat treatment, directly transmitting the radiant heat of the first furnace in a downward direction into the second furnace which has been heated to the first temperature;

maintaining said at least one wafer in said second furnace until temperature of said second furnace arrives at a temperature almost half of said first temperature and second temperature; and



subjecting said at least one wafer to a second heat treatment in said first furnace or said second furnace, while radiant heat of said first furnace is directly transmitted from said first furnace into said second furnace.

5,643,840

LOW TEMPERATURE SEALING COMPOSITION WITH REDUCED SiO_2 CONTENT BUT

Hajime Hikata; Yoshitaka Jimura, and Kumi Tanaka, all of Shiga-ken, Japan, assignors to Nippon Electric Glass Co., Ltd., Otsu, Japan

Filed Dec. 28, 1995, Ser. No. 583,134

Claims priority, application Japan, Dec. 29, 1994, 6-338841

Int. Cl.[6] C03C *8/14;3/072*

U.S. Cl. 501—18 **15 Claims**

1. A low temperature sealing composition consisting of glass powder, said glass powder consisting essentially of 25–85 wt. % of PbO, 1–11.2 wt. % of B_2O_3, 5.1–70 wt. % of Bi_2O_3, 0.1–20 wt. % of GeO_2, 0–5 wt. % of SiO_2, 0–10 wt. % of Fe_2O_3, 0–10 wt. % of CuO, 0–15 wt. % of ZnO, 0–5 wt. % of TiO_2, and 0–9 wt. % of F_2.

5,643,841

RESISTIVE PASTE

Sachiko Yamaki; Keisuke Nagata, and Hiroji Tani, all of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Nov. 14, 1994, Ser. No. 339,397

Claims priority, application Japan, Nov. 16, 1993, 5-286892; Jun. 6, 1994, 6-123853

Int. Cl.[6] C03C *8/16*

U.S. Cl. 501—20 **8 Claims**

1. A resistive paste comprising:

(a) a solid content comprising (a1) a resistive material having a composition of $Nb_xLa_{1-x}B_{6-4x}$, wherein x is from 0.1 to 0.9 mol, and (a2) non-reducing glass frit,

(b) from 1 to 10% by weight, based on the solid content, of TiO_2 as a first additive,

(c) from 1 to 10% by weight, based on the solid content, of at least one second additive selected from the group consisting of Co_3O_4, CoO, and Fe_2O_3, and

(d) an organic vehicle.

5,643,842

LOW-FRICTION CERAMICS

Yasuaki Unno, Yamato; Hideo Yamamuro, Kawasaki, and Hideki Kita, Fujisawa, all of Japan, assignors to Isuzu Ceramics Research Institute Co., Ltd., Kanagawa-ken, Japan

Continuation of Ser. No. 135,350, Oct. 13, 1993, abandoned. This application Aug. 3, 1995, Ser. No. 510,873

Claims priority, application Japan, Oct. 14, 1992, 4-300642

Int. Cl.[6] C04B *35/565;35/584;35/597;35/599*

U.S. Cl. 501—88 **7 Claims**



1. A low-friction ceramic, consisting essentially of: at least one member selected from the group consisting of silicon nitride, silicon carbide, a composite material of silicon nitride and silicon carbide, a Si—Al—O—N, and Si—O—N as a matrix phase; and at least one compound containing iron and silicon dispersed in said matrix phase and having a particle size of 5 μm or smaller, said at least one compound being contained inside low-friction ceramic in an amount of 5 to 40% by weight of iron oxides initially added as a starting material and being formed through conversion by firing of said iron oxide, and wherein said low-friction ceramic is substantially pore-free.

5,643,843

SILICON NITRIDE/SILICON CARBIDE COMPOSITE DENSIFIED MATERIALS PREPARED USING COMPOSITE POWDERS

Stephen D. Dunmead; Alan W. Weimer; Daniel F. Carroll; Glenn A. Eisman; Gene A. Cochran; David W. Susnitzky; Donald R. Beaman, and Kevin J. Nilsen, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 481,017, Jun. 7, 1995, abandoned, which is a division of Ser. No. 227,751, Apr. 14, 1994, Pat. No. 5,538,675. This application Jul. 12, 1996, Ser. No. 678,199

Int. Cl.[6] C04B *35/577;35/596*

U.S. Cl. 501—92 **2 Claims**

1. A self-reinforced silicon nitride/silicon carbide ceramic body having:

(A) a density of at least 96 percent of theoretical density,

(B) a fracture toughness of at least 7 $MPa.m^{1/2}$ and

(C) the body consisting essentially of:

a crystalline phase of β-silicon nitride of which at least about 20 volume percent, as measured by viewing one plane of the body by scanning electron microscopy, is in the form of whiskers having an average aspect ratio of at least 2.5,

a glassy grain boundary phase in an amount not greater than 35 percent by weight of total body weight, and

the silicon carbide consisting of crystalline grains, the crystalline grains being distributed, with respect to the β-silicon nitride whiskers, as granular and intragranular submicrometer silicon carbide grains, wherein the intragranular silicon carbide grains have a mean number diameter within a range of from about 10 to about 400 nanometers and at least a portion of the intragranular silicon carbide grains contain nitrogen, as determined by parallel electron energy loss spectroscopy, in an amount that is within a range from about 2 to about 10 percent by weight of the silicon carbide.

5,643,844

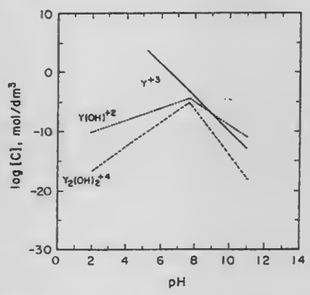
METHOD FOR STABILIZING CERAMIC SUSPENSIONS

Mehrdad Yasrebi, Clackamas; Mark Edwin Springgate, Portland, both of Oreg.; Douglas Gene Nikolas, Battleground, Wash.; William Warren Kemp, Milwaukie, Oreg.; David Howard Sturgis, Gladstone, Oreg., and Renee Van Ginhoven, Seattle, Wash., assignors to Precision Castparts Corporation, Portland, Oreg.

Filed Sep. 27, 1994, Ser. No. 312,694

Int. Cl.[6] C04B *35/505*

U.S. Cl. 501—152 **40 Claims**



1. A method for stabilizing an aqueous yttria-containing slurry by means of a yttria-stabilizing dopant, comprising the steps of:

forming an intimate yttria-dopant mixture comprising yttria and from about 0.1 weight percent to about 95 weight percent of a dopant material comprising an oxide or hydroxide, or combinations thereof, or compounds that form such oxides or hydroxides upon further processing, wherein the oxides or hydroxides are of metals selected from the group consisting of aluminum, titanium, tantalum, silicon, hafnium, tin, gallium, indium, beryllium, thorium, boron, scandium, ruthenium, rhodium, iridium, palladium, platinum, copper, germanium, bismuth, tellurium, erbium, thulium, ytterbium, lutetium, neptunium, plutonium, and combinations thereof; and

forming an aqueous slurry comprising from about 1 weight percent to about 95 weight percent of the yttria-dopant mixture.

5,643,845

CATALYST COMPONENTS FOR POLYMERIZATION OF OLEFINS

Yoshio Tajima; Naoki Kataoka; Yosuke Numao; Takashi Seki, and Kazuo Matsuura, all of Yokohama, Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 904,803, Jun. 26, 1992, Pat. No. 5,387,567. This application Nov. 4, 1994, Ser. No. 334,835

Claims priority, application Japan, Jun. 27, 1991, 3-183271; Sep. 27, 1991, 3-276672

Int. Cl.[6] B01J *31/00*

U.S. Cl. 502—103 **18 Claims**

1. A catalyst component for use in the polymerization of olefinic hydrocarbons, said catalyst component comprising:

a compound (A) of the formula

$$Me^1(OR^1)_pR^2_qX^1_{4-p-q}$$

wherein R^1 and R^2 each are hydrocarbon moieties independently selected from the group consisting of alkyl, alkenyl, aryl and aralkyl groups of 1–24 carbon atoms; X^1 is a halogen atom; Me^1 is Zr or Hf; $0 \leqq p \leqq 4$; $0 \leqq q \leqq 4$; and $0 < p+q \leqq 4$; and

an organocyclic hydrocarbon compound (B) having two or more conjugated double bonds and a total carbon number of 5–24, compound (B) being selected from the group consisting of (a) cyclopentadiene, (b) substituted cyclopentadienes, (c) indene, (d) substituted indenes and (e) cyclopolyenes having two or more cyclopentadienes or indenes according to (a), (b), (c) and (d), bonded together through an alkylene group of 2–8 carbon atoms.

14. A catalyst for use in the polymerization of olefinic hydrocarbons, said catalyst comprising:

a catalyst component comprised of a compound (A) of the formula

$$Me^1(OR^1)_pR^2_qX^1_{4-p-q}$$

wherein R^1 and R^2 each are hydrocarbon moieties independently selected from the group consisting of alkyl, alkenyl, aryl and aralkyl groups of 1–24 carbon atoms; X^1 is a halogen atom; Me^1 is Ti, Zr or Hf; $0 \leqq p \leqq 4$; $0 \leqq q \leqq 4$; and $0 \leqq p+q \leqq 4$;

an organocyclic hydrocarbon compound (B) selected from the group consisting of (a) cyclopentadiene, (b) substituted cyclopentadienes, (c) indene, (d) substituted indenes and (e) cyclopolyenes having two or more cyclopentadienes or indenes according to (a), (b), (c) and (d), bonded together through an alkenylene group of 2–8 carbon atoms; and

a modified organoaluminum compound having 1–100 Al—O—Al bonds in the molecule derived from the reaction of an organoaluminum compound with water.

5,643,846

PROCESS FOR A ISOTACTIC/SYNDIOTACTIC POLYMER BLEND IN A SINGLE REACTOR

Baireddy Raghava Reddy, Baytown, and Edwar Shoukri Shamshoum, Houston, both of Tex., assignors to Fina Technology, Inc., Dallas, Tex.

Division of Ser. No. 54,916, Apr. 28, 1993. This application Jun. 7, 1995, Ser. No. 473,680

Int. Cl.[6] C08F *4/64*

U.S. Cl. 502—104 **9 Claims**

1. A method of making a catalyst system comprising:

a) mixing the following components to form a syndiospecific metallocene catalyst consisting of:

1) a neutral metallocene compound of the general formula

$$R''(C_5H_4)(C_4H_{4-m}R'_mC_5C_4H_{4-n}R'_n)MeQ_p$$

wherein (C_5H_4) is a cyclopentadienyl ring and $(C_4H_{4-m}R'_mC_5C_4H_{4-n}R'_n)$ is a substituted cyclopentadienyl ring wherein (C_5H_4) and $(C_4H_{4-m}R'_mC_5C_4H_{4-n}R'_n)$ have bilateral or pseudo-bilateral symmetry; R' is a hydrocarbyl radical having from 1–20 carbon atoms, a halogen, an alkoxy, an alkoxy alkyl or an alkylamino radical, each R' may be the same or different; R" is a structural bridge between the (C_5H_4) and $(C_4H_{4-m}R'_mC_5C_4H_{4-n}R'_n)$ rings to impart stereorigidity; Q is a hydrocarbon radical or is a halogen; Me is a Group 1VB metal as positioned in the Periodic Table of Elements; $0 \leqq m \leqq 4$; $0 \leqq n \leqq 4$; and p is the valence of Me minus 2; and

2) an aluminoxane in solvent,

b) extracting solvent to form a solid complex consisting of the metallocene and the aluminoxane,

c) suspending the solid in mineral oil,

d) separately mixing:

1) a conventional supported Ziegler-Natta catalyst component comprising a transition metal compound of the general formula MR^*_x where M is titanium, R* is a halogen or a hydrocarboxyl and x is the valence of the metal and

2) an aluminum alkyl of the general formula $AlR^{\#}_3$ where $R^{\#}$ is an alkyl of from 1–8 carbon atoms and $R^{\#}$ may be the same or different, to form a conventional supported Ziegler-Natta catalyst,

3) an electron donor organosilicon compound,

e) mixing the metallocene catalyst in mineral oil and the conventional supported Ziegler-Natta catalyst.

5,643,847

SUPPORTED IONIC CATALYST COMPOSITION

John Flexer Walzer, Jr., Seabrook, Tex., assignor to Exxon Chemical Patents Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 285,380, Aug. 3, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 474,948

Int. Cl.[6] C08F *4/64*

U.S. Cl. 502—117 **21 Claims**

1. A metallocene catalyst composition characterized by comprising a metal oxide support having a counter anion that is derived from a Lewis acid not having readily hydrolyzable ligands and is covalently bound to the surface of the support directly through the oxygen atom of the metal oxide, wherein the anion is also ionically bound to a catalytically active transition metal compound.

5,643,848

SOLUBLE ANIONIC POLYMERIZATION INITIATORS AND PRODUCTS THEREFROM

David F. Lawson, Uniontown; James E. Hall, Mogadore, both of Ohio, and Yoichi Ozawa, Kodaira, Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 220,629, Mar. 30, 1994, Pat. No. 5,578,542, which is a continuation of Ser. No. 968,929, Oct. 30, 1992, abandoned. This application May 3, 1995, Ser. No. 433,110

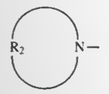
Int. Cl.[6] C08F *4/08;* **C07D** *295/00;487/08*

U.S. Cl. 502—167 **4 Claims**

1. An acyclic alkane soluble anionic polymerization initiator for the preparation of a polymer having reduced hysteresis characteristics, consisting essentially of a mixture comprising:

from about 90 to about 10 parts by weight of a lithio amine having the formula A_1Li and from about 10 to about 90 parts by weight of at least one other lithio amine having the formula A_2Li;

wherein A_1 and A_2 are different and are independently selected from the group consisting of cyclic amine radicals having the formula

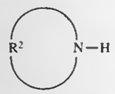


where R_2 is selected from the group consisting of a divalent alkylene, bicycloalkane, oxy- or N-alkylamino-allcylene group having from about 3 to about 16 methylene groups.

4. A method of preparing an acyclic alkane soluble, anionic polymerization initiator for the preparation of a polymer having reduced hysteresis characteristics, comprising the steps of:

forming a solution by mixing from about 90 to 10 parts by weight of a first amine with from about 10 to 90 parts by weight of at least one other amine in an anhydrous, aprotic, acyclic alkane solvent; adding an organolithium reagent to the solution and allowing said organolithium reagent to react with said amines;

wherein each of said amines are selected from the group consisting of cyclic amines having the formula



where R_2 is selected from the group consisting of a divalent alkylene, bicycloalkane, oxy- or N-alkylamino-alkylene group having from about 3 to about 16 methylene groups; and,

wherein said organolithium reagent has the formula RLi where R is selected from the group consisting of alkyls, cycloalkyis, alkenyls, aryls and aralkyls having from 1 to about 20 carbon atoms and short chain length low molecular weight polymers of diolefin and vinyl aryl monomers having up to about 25 units.

5,643,849

CATALYSTS AND IMPROVED PROCESS FOR PREPARING SALTS OF ALDONIC ACID

Van Au, Peekskill, N.Y., assignor to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Filed Jul. 25, 1994, Ser. No. 279,578

Int. Cl.[6] B01J *23/44;37/00;23/16*

U.S. Cl. 502—185 **7 Claims**

1. A process for preparing a catalyst consisting essentially of palladium and bismuth on a carbon support which process comprises:

(1) suspending about 1 to 10% by wt. palladium (on a carbon support) and 0.1 to 10% by wt. bismuth in water, the ratio of palladium to bismuth being 6:1 to 6:2; and

(2) adding 5 to 15% (by wt. of the catalyst support on carbon) of an aldehyde.

5,643,850

PROCESS FOR THE PRODUCTION OF A CATALYST LAYER ON A CARRIER MATERIAL AND CATALYST WITH A CATALYST LAYER FOR THE REMOVAL OF HYDROGEN FROM A HYDROGEN AND OXYGEN-CONTAINING GAS MIXTURE

Amiya Kumar Chakraborty, Erftstadt; Jurgen Rohde, Bergisch-Gladbach; Karl-Heinz Klatt, deceased, late of Julich; Helmut Wenzl, Julich; Ralf Konrad, deceased, late of Sinn, and Tatjana Konrad, Swisstal-Morenhofen, all of Germany, assignors to Forschungszentrum Julich GmbH, and Gesellschaft fur Reaktorsicherheit, both of Cologne, Germany

Continuation-in-part of Ser. No. 310,430, Sep. 22, 1994, Pat. No. 5,525,570, which is a continuation-in-part of Ser. No. 122,800, Sep. 15, 1993, abandoned, which is a continuation of Ser. No. 845,146, Mar. 3, 1992, abandoned. This application Mar. 17, 1995, Ser. No. 406,155

Claims priority, application Germany, Mar. 9, 1991, 41 07 595.1; Jun. 28, 1991, 41 21 418.8

Int. Cl.[6] B01J *20/28;23/40*

U.S. Cl. 502—326 **22 Claims**

1. In a process for the formation of a metallic catalyst layer which is utilized for the removal of hydrogen from a gas mixture containing hydrogen and oxygen, said catalyst layer being constituted from a metal or metal alloy catalytically influencing the oxidation of the hydrogen; and a carrier material having said catalyst layer applied thereon, wherein said carrier material is a metallic carrier plate; the improvement wherein said catalyst layer is a metallic material selected from the group consisting of palladium, platinum and palladium-nickel alloys and is a porous catalyst layer coated at least in a partial region onto the carrier material by plasma spraying or flame spraying together with a jet of an inert gas, wherein the catalyst layer formed thereby has tunnels within the catalyst layer, separated from the surrounding atmosphere by catalyst material, and has pores connecting said tunnels to the external surface of the catalyst layer.

5,643,851
REVERSIBLE THERMOSENSITIVE RECORDING LABEL AND REVERSIBLE THERMOSENSITIVE RECORDING CARD

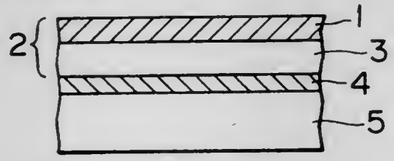
Yukio Konagaya, Shizuoka-ken; Takao Igawa, Numazu; Akihide Ito, Mishima; Tohru Nogiwa, Numazu; Tsutomu Kagawa, Shizuoka-ken, and Nobuo Yamada, Numazu, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 45,240, Apr. 13, 1993, abandoned. This application Dec. 5, 1994, Ser. No. 354,013

Claims priority, application Japan, Apr. 13, 1992, 4-119661; Jun. 5, 1992, 4-171847

Int. Cl.[6] B41M *5/36*

U.S. Cl. 503—201 **16 Claims**



1. A reversible thermosensitive recording label for reversibly forming images and erasing recorded images thereon comprising:

a reversible thermosensitive recording member having a temperature-dependent transparency which reversibly changes depending upon the temperature thereof,

an adhesive layer provided on the back side of said reversible thermosensitive recording member, and

a disposable release sheet applied to said adhesive layer, wherein said adhesive layer has such an adhesion that when said adhesive layer is applied to a label receiving material, the adhesion between said adhesive layer and said label receiving material is not less than 0.5 kgf/25 mm in terms of the average tensile load at an angle of 180° measured in accordance with JIS K-6854.

5,643,852
FUNGICIDAL COMPOSITIONS FOR THE ENHANCEMENT OF TURF QUALITY

Leon T. Lucas, Raleigh, N.C., and Laurence C. Mudge, Camden, S.C., assignors to North Carolina State University, Raleigh, N.C.

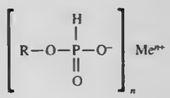
Continuation-in-part of Ser. No. 3,632, May 12, 1994, Pat. No. 5,336,661. This application Apr. 3, 1995, Ser. No. 415,635

Int. Cl.[6] A01N *47/14;57/12;59/06*

U.S. Cl. 504—126 **40 Claims**

1. A method of enhancing turf quality in turfgrass which comprises applying to said turfgrass in an amount effective to enhance turf quality:

(a) 1 part by weight of a monoester salt of a phosphorous acid of Formula (I):



(I)

wherein:

R is an alkyl radical having 2 to 4 carbon atoms,

Me is an alkali metal, alkaline earth metal, or aluminum atom, and

n is a whole number from 1 to 3 equal to the valence of Me;

(b) from 1.5 to 2.5 parts by weight of an ethylenebisdithiocarbamate contact fungicide selected from the group consisting of manganese ethylenebisdithiocarbamate and manganese-zinc ethylenebisdithiocarbamate; and

(c) from 0.01 to 0.1 parts by weight of a benzoporphyrin compound.

5,643,853
THIOL ACTIVATION OF CYTOTOXIC AND AUXIN-HERBICIDAL AGENTS AND ROOT FORMATION STIMULATION

D. James Morré, West Lafayette, Ind., assignor to Purdue Research Foundation, West Lafayette, Ind.

Filed Feb. 28, 1995, Ser. No. 397,659

Int. Cl.[6] A01N *43/40;39/02;39/04;37/10*

U.S. Cl. 504—130 **9 Claims**

1. In a method for inhibiting cellular growth of undesired cells using a cytotoxic agent, by contacting said cells with said cytotoxic agent under cytotoxic conditions, the improvement which comprises:

contacting said cells in conjunction with said cytotoxic agent, with a thiol compound in an amount sufficient to enhance the cytotoxic effect of said cytotoxic agent, where said cytotoxic agent is administered in an amount less than the amount required to obtain cytotoxicity in the absence of said thiol compound, wherein said cells are plant cells as part of a growing plant and said cytotoxic agent is an auxin herbicide.

5,643,854
SUBSTITUTED PYRIDINE COMPOUNDS

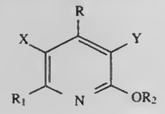
Donald Edwin Korte, St. Louis, and Len Fang Lee, St. Charles, both of Mo., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 339,994, Nov. 15, 1994, Pat. No. 5,512,536, which is a division of Ser. No. 45,154, Apr. 12, 1993, Pat. No. 5,391,540, which is a division of Ser. No. 871,525, Apr. 20, 1992, Pat. No. 5,228,897, which is a division of Ser. No. 660,480, Feb. 25, 1991, Pat. No. 5,125,956. This application Jun. 6, 1995, Ser. No. 467,510

Int. Cl.[6] A01N *43/50;* **C07D** *401/06*

U.S. Cl. 504—219 **18 Claims**

1. A compound represented by the formula



wherein:

R_1 is fluorinated methyl, chlorofluorinated methyl or fluorinated ethyl;

R_2 is hydrogen, C1–C7 alkyl, trichloromethyl, C2–C8 cyanoalkyl, C3–C7 alkenyl, or C3–C7 alkynyl;

R is C1–C6 straight or branched alkyl, C1–C7 haloalkyl, C2–C14 alkylthioalkyl, C2–C14 alkoxyalkyl, C2–C8 carboxyalkyl, C3–C4 cycloalkyl, or cyclopropylmethyl;

one of X and Y is selected from



where Z_1 is oxygen or NR_3 where R_3 is lower alkyl and where Z is hydrogen; halogen; hydroxy; C1–C7 alkoxy; C1–C7 haloalkoxy; C3–C7 alkynyloxy; C1–C7 alkylthio; NR_4R_5 where R_4 and R_5 are independently hydrogen or lower alkyl; acetylamino; C1–C7 hydroxyalkyl; C1–C7 haloalkyl; and C2–C8 alkoxymethyleneamino;

the other of X and Y is



where Z_1 is oxygen or NR_3 where R_3 is lower alkyl; and where Z' is 1-imidazolyl; 1,2,4-triazolyl; 1-pyrrolidinyl;

1-piperidinyl; 1-azetidinyl; 4-morpholinyl; 4-thiomorpholinyl; 3-thiazolidinyl; 1-aziridinyl; hexahydro-1-azepinyl; and 2-isoxazolidinyl.

5,643,855
HERBICIDAL IMIDAZOLONES

John Jolly Kilama, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

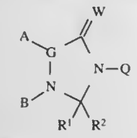
PCT No. PCT/US93/11636, § 371 Date Jun. 15, 1995, § 102(e) Date Jun. 15, 1995, PCT Pub. No. WO94/14817, PCT Pub. Date Jul. 7, 1994

Continuation-in-part of Ser. No. 109,875, Aug. 20, 1993, abandoned, which is a continuation-in-part of Ser. No. 96,526, Jul. 22, 1993, abandoned, which is a continuation-in-part of Ser. No. 73,010, Jun. 4, 1993, abandoned, which is a continuation-in-part of Ser. No. 992,880, Dec. 21, 1992, abandoned. This PCT application Dec. 7, 1993, Ser. No. 454,155

Int. Cl.[6] C07D *471/04;235/02;498/04;487/04;* **A01N** *43/90;43/50*

U.S. Cl. 504—224 **5 Claims**

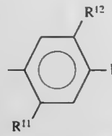
1. A compound of Formula I



I

wherein

Q is



Q-1

R^1 is H; C_1–C_4 alkyl, C_1–C_4 haloalkyl; or halogen;

R^2 is C_1–C_2 alkyl optionally substituted with one or more halogens, OR^8, CN, COR^9, CO_2R^{31} or $CONR^{32}R^{33}$, CN; CO_2R^{34}; $CONR^{35}R^{36}$; $S(O)_nR^8$; $S(O)_nNR^{19}R^8$ or COR^{37}; or

R^1 and R^2 can be taken together along with the carbon to which they are attached to form $C{=}CHCO_2R^{31}$; $C{=}C(CH_3)CO_2R^{31}$; $C{=}C(C_2H_5)CO_2R^{31}$; $C{=}CHCONR^{32}R^{33}$; $C{=}C(CH_3)CONR^{32}R^{33}$ or $C{=}C(C_2H_5)CONR^{32}R^{33}$;

G is CH or $C(C_1$–C_4 alkyl);

A is C_1–C_4 alkyl; C_1–C_4 haloalkyl; C_2–C_4 alkenyl; C_2–C_4 alkynyl; OR^{10}; SR^{10} or halogen;

B is C_1–C_4 alkyl; C_1–C_4 haloalkyl; C_3–C_4 alkenyl or C_3–C_4 alkynyl;

A and B can be taken together as Selected from the group consisting of $CHR^7CHR^6CHR^3$, $CHR^7CHR^6CHR^4CHR^5$, $CHR^7OCHR^4CHR^5$, $CHR^7SCHR^4CHR^5$, $CHR^7S(O)_2CHR^4CHR^5$, $CHR^7NR^{38}CHR^4CHR^5$, $CHR^4CHR^5NR^{38}CHR^3$, $CHR^7CR^6{=}CR^6CHR^3$, $CHR^4CHR^5S(O)_2CHR^4CHR^5$ and $CHR^7S(O)_2CHR^3$, and the directionality of the linkage is defined such that the moiety depicted on the left side of the linkage is bonded to G and the moiety depicted on the right side of the linkage is bonded to nitrogen;

n is independently 0; 1 or 2;

R^3, R^4, R^5, R^6 and R^7 are independently H; halogen; C_1–C_4 alkyl or C_1–C_4 haloalkyl;

R^3 and R^6, or R^6 and R^7, can be taken together to form —CH_2—;

R^8 and R^9 are independently H; C_1–C_6 alkyl; C_2–C_6 alkenyl; C_3–C_6 cycloalkyl or phenyl optionally substitituted with one or more CH_3, OCH_3, NO_2, CN or halogens;

W is independently O or S;

R^{10} is C_1–C_4 alkyl or C_1–C_4 haloalkyl;

R^{11} is halogen;

R^{12} is H; C_1–C_8 alkyl; C_1–C_8 haloalkyl; halogen; OH; OR^{17}; SH; $S(O)_nR^{17}$; COR^{17}; CO_2R^{17}; $C(O)SR^{17}$; $C(O)NR^{19}R^{20}$; CHO; $CR^{19}{=}NOR^{26}$; $CH{=}CR^{27}CO_2R^{17}$; $CH_2CHR^{27}CO_2R^{17}$; $CO_2N{=}CR^{21}R^{22}$; NO_2; CN; $NHSO_2R^{23}$; $NHSO_2NHR^{23}$; $NR^{17}R^{28}$; NH_2 or phenyl optionally substituted with R^{29};

R^{13} is C_1–C_2 alkyl; C_1–C_2 haloalkyl; OCH_3; SCH_3; $OCHF_2$; halogen; CN or NO_2;

R^{17} is C_1–C_8 alkyl; C_3–C_8 cycloalkyl; C_3–C_8 alkenyl; C_3–C_8 alkynyl; C_1–C_8 haloalkyl; C_2–C_8 alkoxyalkyl; C_2–C_8 alkylthioalkyl; C_2–C_8 alkylsulfinylalkyl; C_2–C_8 alkylsulfonylalkyl; C_4–C_8 alkoxyalkoxyalkyl; C_4–C_8 cycloalkyloxyalkyl; C_6–C_8 cycloalkoxyalkyl; C_4–C_8 alkenyloxyalkyl; C_4–C_8 alkynyloxyalkyl; C_3–C_8 haloalkoxyalkyl; C_4–C_8 haloalkenyloxyalkyl; C_4–C_8 haloalkynyloxyalkyl; C_6–C_8 cycloalkylthioalkyl; C_4–C_8 alkenylthioalkyl; C_4–C_8 alkynylthioalkyl; C_1–C_4 alkyl substituted with phenoxy or benzyloxy, each ring optionally substituted with halogen, C_1–C_3 alkyl or C_1–C_3 haloalkyl; C_4–C_8 trialkylsilylalkyl; C_3–C_8 cyanoalkyl; C_3–C_8 halocycloalkyl; C_3–C_8 haloalkenyl; C_5–C_8 alkoxyalkenyl; C_5–C_8 haloalkoxyalkenyl; C_5–C_8 alkylthioalkenyl; C_3–C_8 haloalkynyl; C_5–C_8 alkoxyalkynyl; C_5–C_8 haloalkoxyalkynyl; C_5–C_8 alkylthioalkynyl; C_2–C_8 alkyl carbonyl; benzyl optionally substituted with halogen, C_1–C_3 alkyl or C_1–C_3 haloalkyl; $CHR^{24}COR^{18}$; $CHR^{24}P(O)(OR^{18})_2$; $CHR^{24}P(S)(OR^{18})_2$; $CHR^{24}C(O)NR^{19}R^{20}$; $CHR^{24}C(O)NH_2$; $CHR^{24}CO_2R^{18}$; CO_2R^{18}; SO_2R^{18}; phenyl optionally substituted with R^{29};

R^{18} is C_1–C_6 alkyl; C_1–C_6 haloalkyl; C_3–C_6 alkenyl or C_3–C_6 alkynyl;

R^{19} and R^{21} are independently H or C_1–C_4 alkyl;

R^{20} and R^{22} are independently C_1–C_4 alkyl or phenyl optionally substituted with halogen, C_1–C_3 alkyl or C_1–C_3 haloalkyl;

R^{19} and R^{20} may be taken together along with the nitrogen to which they are attached to form a piperidinyl, pyrrolidinyl or morpholinyl ring, each ring optionally substituted with C_1–C_3 alkyl, phenyl or benzyl;

R^{21} and R^{22} may be taken together with the carbon to which they are attached to form C_3–C_8 cycloalkyl;

R^{23} is C_1–C_4 alkyl or C_1–C_4 haloalkyl;

R^{24} is H or C_1–C_4 alkyl;

R^{26} is H, C_1–C_6 alkyl, C_3–C_6 alkenyl or C_3–C_6 alkynyl;

R^{27} is H, C_1–C_4 alkyl or halogen;

R^{28} is H or C_1–C_4 alkyl; and

R^{29} is C_1–C_2 alkyl; C_1–C_2haloalkyl; OCH_3; SCH_3; $OCHF_2$; halogen; CN or NO_2;

R^{31}, R^{32}, R^{33}, R^{34}, R^{35}, R^{36} and R^{37} are independently H; C_1–C_6 alkyl; C_2–C_6 alkenyl; C_3–C_6 alkynyl; C_3–C_6 cycloalkyl; or benzyl or phenyl each optionally substituted on the phenyl ring with one or more CH_3, OCH_3, NO_2, CN or halogen;

R^{38} is H; C_1–C_4 alkyl or C_1–C_4 haloalkyl; and their corresponding N-oxides and agriculturally suitable salts provided that when R^2 is methyl or ethyl, then A and B are taken together as selected from $CHR^7CHR^6CHR^3$, $CHR^7CHR^6CHR^4CHR^5$, $CHR^7OCHR^4CHR^5$, $CHR^7SCHR^4CHR^5$, $CHR^7S(O)_2CHR^4CHR^5$, $CHR^7NR^{38}CHR^4CHR^5$, $CHR^4CHR^5NR^{38}CHR^3$, $CHR^7CR^6{=}CR^6CHR^3$, $CHR^4CHR^5S(O)_2CHR^4CHR^5$ and $CHR^7S(O)_2CHR^3$, and the directionality of the linkage is defined such that the moiety

depicted on the left side of the linkage is bonded to G and the moiety depicted on the right side of the linkage is bonded to nitrogen.

5,643,856

PREPARARTION OF SUPERCONDUCTING OXIDES AND OXIDE-METAL COMPOSITES

Gregory J. Yurek, Wellesley, and John B. Vander Sande, Newbury, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 56,605, May 3, 1993, Pat. No. 5,439,880, which is a continuation of Ser. No. 794,962, Nov. 20, 1991, abandoned, which is a continuation of Ser. No. 61,233, Jun. 10, 1987, Pat. No. 5,204,318, which is a continuation-in-part of Ser. No. 31,407, Mar. 27, 1987, Pat. No. 4,826,808. This application Mar. 31, 1995, Ser. No. 414,288

Int. Cl.[6] C04B *35/622;35/65*

U.S. Cl. 505—300 **17 Claims**

1. A method of preparing a copper oxide-based superconducting oxide, comprising the steps of:

combining the metallic elements of a copper oxide-based superconducting oxide in substantially stoichiometric proportions needed to form said superconducting oxide to form an alloy; and

oxidizing said alloy to form said copper oxide-based superconducting oxide.

5,643,857

METHOD OF MELTING CERAMIC SUPERCONDUCTIVE MATERIAL

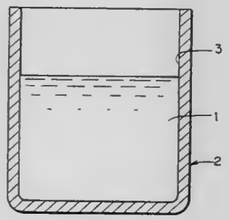
Kazuhiko Hayashi, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 354,595, May 22, 1989, abandoned. This application May 8, 1991, Ser. No. 700,059

Claims priority, application Japan, Jun. 2, 1988, 63-136489

Int. Cl.[6] C30B *11/02*

U.S. Cl. 505—451 **1 Claim**



1. A method of melting a Bi—Sr—Ca—Cu—O or Bi—Pb—Sr—Ca—Cu—O ceramic superconductive material, comprising

preparing a vessel at least internally formed of a solid solution alloy consisting of a base of silver, and 5 to 40 wt % Pd, so as not to be reactive with or contaminate said Bi—Sr—Ca—Cu—O or Bi—Pb—Sr—Ca—Cu—O ceramic superconductive material and so as to increase the strength thereof to withstand temperatures higher than 1050° C.;

Introducing a Bi—Sr—Ca—Cu—O or Bi—Pb—Sr—Ca—Cu—O ceramic superconductive material into the vessel; and

melting the superconductive material in the vessel at a temperature greater than 1050° C.

5,643,858

HIGH DENSITY AQUEOUS COMPOSITIONS

Graham Edward Woolley, Northwich, United Kingdom, assignor to Brunner Mond & Company Limited, Cheshire, United Kingdom

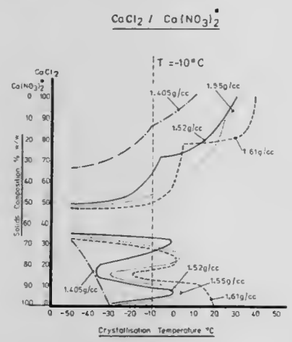
PCT No. PCT/GB93/00323, § 371 Date Sep. 14, 1994, § 102(e) Date Sep. 14, 1994, PCT Pub. No. WO93/16144, PCT Pub. Date Aug. 19, 1993

PCT Filed Feb. 15, 1993, Ser. No. 284,638

Claims priority, application United Kingdom, Feb. 15, 1992, 9203271

Int. Cl.[6] C09K *7/00*

U.S. Cl. 507—140 **22 Claims**



1. An aqueous composition comprising dissolved calcium chloride and calcium nitrate wherein the composition has a density of at least 1.40 g cm^{-3}, the weight ratio of calcium chloride to calcium nitrate is 5:95 to 95:5, the composition contains at least 12% by weight of the calcium nitrate, and the composition is so formulated that there is no substantial crystallization of the composition above 20° C.

5,643,859

DERIVATIVES OF POLYAMINES WITH ONE PRIMARY AMINE AND SECONDARY OF TERTIARY AMINES

Antonio Gutierrez, Mercerville, N.J.; Jacob I. Emert, Brooklyn, N.Y.; James P. Stokes; Warren A. Thaler, both of Flemington, N.J.; William D. Diana, Belle Mead, N.J.; Keith R. Gorda, Little York, N.J.; William B. Eckstrom, Fanwood, N.J.; David C. Dankworth, Whitehouse Station, N.J., and Joseph V. Cusumano, Watchung, N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Continuation-in-part of Ser. No. 992,403, Dec. 17, 1992, abandoned. This application Jun. 17, 1994, Ser. No. 261,534

Int. Cl.[6] C10M *145/22*

U.S. Cl. 508—454 **21 Claims**

1. A dispersant comprising a functionalized hydrocarbon polymer derivatized by reaction with a polyamine having one primary amino group and 1 to 10 secondary or tertiary amino groups, wherein the hydrocarbon polymer is other than gem-structured polyolefin and has a number average molecular weight of at least 500 and the functionalized hydrocarbon polymer is functionalized by direct attachment of groups of the formula —CO—Y—R^3, wherein Y is O or S and R^3 is either (i) H or hydrocarbyl and at least about 50 mole percent of the functional groups —CO—Y—R^3 are attached to a tertiary carbon atom of the polymer backbone or (ii) aryl, substituted aryl, or substituted hydrocarbyl.

5,643,860

CLEANING COMPOSITION FOR PIPES AND COILS OF A REFRIGERATION SYSTEM

Steven P. Mella, Stamford, Conn., assignor to Comstar International, Inc., College Point, N.Y.

Continuation of Ser. No. 238,919, May 6, 1994, abandoned. This application Feb. 8, 1996, Ser. No. 599,281

Int. Cl.[6] C11D *7/26*

U.S. Cl. 510—245 **3 Claims**

1. A stable cleaning composition for cleaning the interior surfaces of refrigeration systems, the composition being free of ozone depleting substances, biodegradable, non-flammable, and free of contaminates of the lubricating oil of a refrigeration system, and having a timed evaporation rate, the composition consisting of

85 to 99% by volume of compounds from at least one of the glycol-ether group wherein said compounds are selected from the group consisting of

ethylene glycol-based glycol ethers of diethylene glycol monobutyl ether, ethylene glycol n-butyl ether, diethylene glycol monomethyl ether, diethylene glycol monoethyl ether, ethylene glycol monopropyl ether, diethylene glycol monopropyl ether, ethylene glycol monobutyl ether, and mixtures thereof, and of

propylene glycol-based glycol ethers of tripropylene glycol methyl ether, propylene glycol methyl ether acetate, dipropylene glycol monomethyl ether, dipropylene glycol methyl ether acetate, propylene glycol monopropyl ether, propylene glycol monomethyl ether, propylene glycol monobutyl ether, dipropylene glycol monopropyl ether, trimethylene glycol monomethyl ether, trimethylene glycol monoethyl ether, and mixtures thereof; and

1 to 15% by volume of the stable cleaning composition of at least one compound selected from the group consisting of alcohols and ketones wherein the alcohol is selected from the group consisting of butanol, propanol, ethanol, methanol, isopropanol, and mixtures thereof, and

the ketone is selected from the group consisting of methyl ethyl ketone, methyl propyl ketone, methyl butyl ketone, ethyl propyl ketone, ethyl butyl ketone, propyl butyl ketone, and mixtures thereof.

5,643,861

NEAR TRICRITICAL POINT COMPOSITIONS CONTAINING A BLEACH AND/OR A DISINFECTING AGENT

Louis Oldenhove de Guertechin, Heks, and Michel Julemont, Heusy, both of Belgium, assignors to Colgate-Palmolive Co., Piscataway, N.J.

Continuation-in-part of Ser. No. 300,105, Sep. 2, 1994, Pat. No. 5,527,485, which is a continuation-in-part of Ser. No. 191,893, Feb. 4, 1994, abandoned. This application Nov. 17, 1995, Ser. No. 558,212

Int. Cl.[6] C11D *7/150*

U.S. Cl. 510—365 **14 Claims**

1. A liquid cleaning composition having a surface tension of about 10 to 35 mN/m and incorporating 0 to 30 wt. % of a peroxygen bleach and about 0 to about 5 wt. % of a disinfecting agent, and at least a polar solvent, a water soluble or water dispersible low molecular weight amphiphile and a non-polar or weakly polar solvent and deriving from three co-existing liquid phases which are capable of being converted into one single phase according to a reversible equilibrium, wherein the first phase is the most abounding with the polar solvent, the second phase is the most abounding with the water soluble or water dispersible low molecular weight amphiphile and the third phase is the most abounding with the non-polar solvent or weakly polar solvent, and the interfacial tension between said first phase and said second phase is 0 to about 1×10^{-3} mN/m, and the interfacial tension between second phase and third phase is 0 to about 1×10^{-3} mN/m, and the interfacial tension between first phase and third phase is 0 to about 1×10^{-3} mN/m, wherein said polar solvent is at a concentration of about 55 to about 95 wt. %.

5,643,862

STABLE FOAM-CONTROLLED LIQUID DETERGENT COMPOSITIONS

Roger Jeffery Jones, Jauche; Athanasios Surutzidis, Wemmel; Walter Broeckx, Zele, and Andrew Albon Fisk, Strombeek-Bever, all of Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio

PCT No. PCT/US93/05221, § 371 Date Dec. 5, 1994, § 102(e) Date Dec. 5, 1994, PCT Pub. No. WO93/25652, PCT Pub. Date Dec. 23, 1993

PCT Filed Jun. 4, 1993, Ser. No. 351,270

Claims priority, application European Pat. Off., Jun. 6, 1992, 92201649

Int. Cl.[6] C11D *1/08;3/12*

U.S. Cl. 510—466 **7 Claims**

1. An antifoam agent suitable for incorporation as a composition into liquid detergent products, which antifoam agent comprises:

A) from 0.1% to 80% by weight of the antifoam agent composition of a silicone antifoam admixture which comprises a polydimethylsiloxane antifoam compound mixed with from 1 to 30% by weight of a completely said admixture of hydrophobic silanated silica particles and which has a viscosity of from 2×10^{-4} m^2/s to 1 m^2/s;

B) a surfactant-containing solution which comprises from 80% to 100% by weight of said solution of a nonionic surfactant and which is present in a weight ratio to the silicone antifoam admixture of from 1:4 to 1000:1; and

C) a particulate stabilizing aid which comprises fumed or precipitated silica having a BET surface area of from 50 to 500 m^2/g, which has been hydrophobically modified so as to have a Methanol Wettability of from 30% to 70% and said silica contains about 30% hydrophilic groups, and which is present in a weight ratio to the silicone antifoam admixture of from 1:200 to 1:1.

5,643,863

DETERGENT COMPOSITIONS COMPRISING POLYIMIDE/SILICATE COBUILDER PREFORMULATIONS

Gilles Guerin, Eaubonne, and Arnaud Ponce, Aubervilliers, both of France, assignors to Rhone-Poulenc Chimie, Courbevoie Cedex, France

Continuation of Ser. No. 271,957, Jul. 8, 1994, abandoned. This application Feb. 20, 1996, Ser. No. 603,178

Claims priority, application France, Jul. 8, 1993, 93 08385

Int. Cl.[6] C11D *3/08;3/37;17/06*

U.S. Cl. 510—466 **18 Claims**

1. A detergency builder/cobuilder preformulation, comprising an intimate structured admixture of at least one polyimide polymer and at least one alkali metal silicate, wherein the polyimide/silicate ratio by weight ranges from about 40/60 to 55/45, said preformulation obtained by forming a mixture by mixing the polyimide polymer with a concentrated aqueous solution of the silicate containing 30–60% by weight of solids of an alkali metal silicate with a SiO_2/M_2O ratio of about 1.6 to 3.5 wherein M is an alkali metal and drying the mixture at a temperature of about 40°–100° C., said at least one polyimide polymer generating at least one biodegradable water-soluble polypeptide species when contacted with an aqueous medium having a non-alkaline pH.

5,643,864

ANIONIC SURFACTANTS HAVING MULTIPLE HYDROPHOBIC AND HYDROPHILIC GROUPS

Ji Li, East Windsor; Manilal Dahanayake, Princeton Junction; Robert Lee Reierson, Cranbury, and David James Tracy, Plainsboro, all of N.J., assignors to Rhone-Poulenc, Inc., Cranbury, N.J.

Filed Aug. 19, 1994, Ser. No. 292,907
Int. Cl.[6] C11D *1/02;1/10*
U.S. Cl. 510—499 **14 Claims**

1. Anionic surfactants comprising compounds of the formula:



wherein R_1 represents R_4—B—R_5 wherein R_4 can be alkyl or hydroxy substituted or perfluorinated alkyl of from 1 to about 22 carbon atoms and the hydroxy-substituted derivative thereof; B represents an amide group, wherein R_6 independently represents lower alkyl or hydroxy-substituted alkyl from 1 to about 6 carbons or hydrogen; R_2 can independently represent C_1 to about C_{10} alkylene and the hydroxy-substituted derivatives thereof, an amide group, a polyether group or R_8—D_1—R_8 wherein R_6 has been hereinbefore defined and R_7 independently represents about C_2 to about C_4 alkyl with x being a number between 1 and 20 and R_8 can independently be C_1 to about C_6 alkylene and the hydroxy-substituted derivatives thereof and D_1 represents —O—, —S—, an amide group or —N(R_9)— wherein R_9 independently represents C_1 to about C_{12} alkyl and the hydroxy-substituted derivatives thereof or hydrogen; R_3 can independently be alkylene or alkylaryl of 1 to about 10 carbon atoms and the hydroxy-substituted derivatives thereof or R_{10}—D_2—R_{10} wherein R_{10} can independently be alkylene of from 1 to about 6 carbon atoms and the hydroxy-substituted derivatives thereof as well as aryl, and D_2 represents —O—, —S—, —SO_2—, a carbonyl group, a polyether group, or aryl wherein R_{11} represents a carbon chain of from 1 to about 12 carbon atoms and the hydroxy-substituted derivatives thereof or hydrogen, R_7 being as defined hereinabove with x being a number between 1 and 20 and z is a number from 1 to about 4; "A" independently represents —N= and Y independently represents hydrogen, —SO_3H, —OSO_3H, —$OP(O)(OH)_2$, —$P(O)(OH)_2$, —COOH, —CO_2—C_6H_4—SO_3H and the salts thereof.

5,643,865

CONCENTRATED BIODEGRADABLE QUATERNARY AMMONIUM FABRIC SOFTENER COMPOSITIONS CONTAINING QUATERNARY AMMONIUM COMPOUNDS WITH SHORT FATTY ACID ALKYL CHAINS

Robert Mermelstein; Ellen Schmidt Baker; John Henry Shaw, Jr., and Errol Hoffman Wahl, all of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 245,732, May 18, 1994, abandoned. This application Jun. 6, 1995, Ser. No. 467,329
Int. Cl.[6] D06M *13/46*
U.S. Cl. 510—521 **23 Claims**

1. A stable, homogenous liquid composition having fabric softening and static controlling benefits comprising

(A) from about 5% to about 40% by weight of a biodegradable quaternary ammonium fabric softening compound;

(B) from about 0% to about 2.5% by weight of an electrolyte;

(C) an aqueous liquid carrier; and

(D) from about 0% to about 0.5% of a silicone antifoam agent, wherein the quaternary ammonium fabric softening compound has the formula:



wherein

each Y is —O—(O)C—, or —C(O)—O—;

m is 2 or 3;

n is 1 to 4;

each R is a C_1–C_6 alkyl group, benzyl group, or mixtures thereof;

each R^2 is a saturated C_8–C_{14} hydrocarbyl or substituted hydrocarbyl substituent; and

X^- is any softener compatible anion;

wherein the composition contains less than about 1.5% by weight of fatty acid; and wherein the liquid composition has a pH from about 2 to about 5.

5,643,866

AIR TREATING GEL

H. Rahman Ansari, Old Tappan, N.J., and Barbara Potts, Milford, Pa., assignors to Quest International B.V., Bussum, Netherlands

Filed Jun. 7, 1995, Ser. No. 480,741
Int. Cl.[6] A61K *7/46*
U.S. Cl. 512—4 **12 Claims**

1. An air treating gel composition comprising, on a weight basis:

fragrance oil	1.0–88.5%
glycol component	10.0–97.5%
dibenzylidene sorbitol acetal	1.5–10.0%

the composition being free from alkaline salts and volatile organic solvents having a vapor pressure of $0.1\times^{mm}$ or greater at 20° C.

5,643,867

METHOD FOR TREATING CATABOLIC CONDITIONS

Christopher A. Maack, El Cerrito, and Andreas Sommer, Concord, both of Calif., assignors to Celtrix Pharmaceuticals, Inc., Santa Clara, Calif.

Continuation of Ser. No. 190,685, Feb. 1, 1994, abandoned, which is a continuation of Ser. No. 935,890, Aug. 26, 1992, abandoned. This application Mar. 29, 1995, Ser. No. 413,920
Int. Cl.[6] C07K *14/62;* **A61K** *38/28*
U.S. Cl. 514—3 **22 Claims**

1. A method for treating a protein wasting disease, said method comprising administering parenterally to an individual in need of such treatment a complex comprising insulin-like growth factor (IGF) and insulin-like growth factor binding protein (IGFBP-3), said complex administered in an amount sufficient to alleviate said disease as indicated by an increase in lean body mass of said individual, and wherein said parenteral administration is selected from the group consisting of intramuscular, intranasal, intraperitoneal, and intravenous administration.

5,643,868

METHOD OF TREATING OR PREVENTING TYPE 1 DIABETES BY ORAL ADMINISTRATION OF INSULIN

Howard L. Weiner, Brookline; George Eisenbarth, Wellesley; David Allen Hafler, West Newton, and Zhengyi Zhang, Walden, all of Mass., assignors to Autoimmune, Inc., Lexington, Mass.

Continuation of Ser. No. 235,121, Apr. 28, 1994, abandoned, which is a continuation of Ser. No. 70,020, May 28, 1993, abandoned, which is a continuation of Ser. No. 896,484, Jun. 2, 1992, abandoned, which is a continuation of Ser. No. 595,468, Oct. 10, 1990, abandoned. This application Jun. 6, 1995, Ser. No. 472,016
Int. Cl.[6] A61K *38/20;39/00;* **C07K** *14/62*
U.S. Cl. 514—3 **19 Claims**

1. A method for suppressing autoimmune response against pancreatic beta cells in a mammal comprising orally or enterally administering to said mammal an mount of a composition comprising insulin effective to suppress said autoimmune response without causing a decrease in the blood sugar level of said mammal within 4 hours after said administration.

5,643,869

PIPECOLIC ACID-CONTAINING PEPTOLIDES, THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

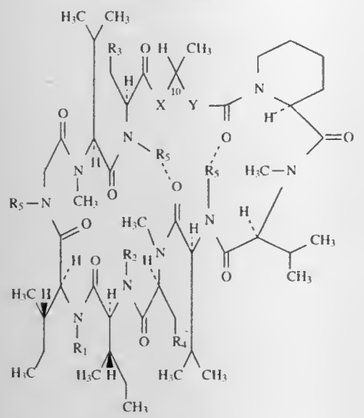
Michael Morris Dreyfuss, Basel, Switzerland; Gerhard Emmer; Maximilian Grassberger, both of Vienna, Austria; Klaus Rüedi, Therwil, and Hans Tscherter, Allschwil, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 187,929, Jan. 27, 1994, abandoned, which is a continuation of Ser. No. 874,277, Apr. 24, 1992, abandoned, which is a continuation of Ser. No. 411,336, Sep. 22, 1989, abandoned. This application May 22, 1995, Ser. No. 446,983

Claims priority, application Germany, Sep. 23, 1988, 38 32 362.1

Int. Cl.[6] A61K *38/00;* **C07K** *5/12;7/06*
U.S. Cl. 514—9 **6 Claims**

1. The compound of formula I



wherein R_1 and R_2 are methyl,

R_3 is para-methoxyphenyl

R_4 is carboxy,

each R_5 is hydrogen,

X is oxygen,

Y is a direct bond, and the carbon atom in the 10 position has the D-configuration.

5,643,870

O-ACYLATED CYCLOSPORINS

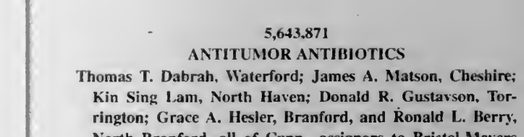
Johann Jakob Boelsterli, Buus; Marcel Karl Eberle, Riehen; Reto Naef, Rheinfelden, and Trevor Glyn Payne, Berne, all of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Filed Feb. 26, 1993, Ser. No. 23,525

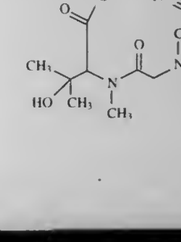
Claims priority, application United Kingdom, Mar. 2, 1992, 9204466

Int. Cl.[6] C07K *7/06;5/12;* **A61K** *38/00*
U.S. Cl. 514—11 **11 Claims**

1. A cyclosporin of the formula



wherein A is



wherein

R is hydrogen, C_{1-3}alkyl, C_{1-3}alkoxy or C_{1-3}alkylthio; halo-substituted-C_{1-3}alkyl, -C_{1-3}alkoxy or -C_{1-3}alkylthio; hydroxy-substituted-C_{1-3}alkyl, -C_{2-3}alkoxy or -C_{2-3}alkylthio; amino or mono- or di-(C_{1-2}alkyl)amino.

X is oxygen or sulphur,

—x—y— is —CH=CH— (trans) or —CH_2—CH_2—,

B is -αAbu-, -Val-, -Thr- or -Nva- and

Q is -(D)Ala-, -(D)Ser-[O-(2-hydroxyethyl) (D) Ser]-, or -[O-acyl(D)Ser]- or -[O-(2-acyloxethyl) (D) Ser]-

in which the acyl group is physiologically hydrolyzable and acceptable.

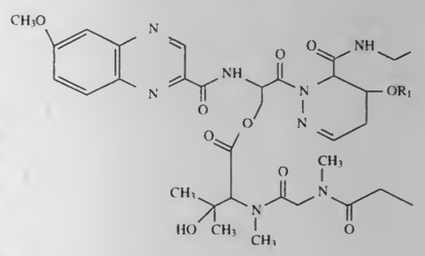
5,643,871

ANTITUMOR ANTIBIOTICS

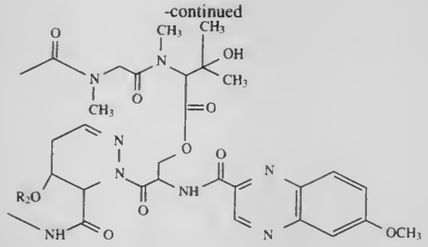
Thomas T. Dabrah, Waterford; James A. Matson, Cheshire; Kin Sing Lam, North Haven; Donald R. Gustavson, Torrington; Grace A. Hesler, Branford, and Ronald L. Berry, North Branford, all of Conn., assignors to Bristol-Meyers Squibb Company, Princeton, N.J.

Filed Nov. 23, 1993, Ser. No. 156,479
Int. Cl.[6] A61K *38/15;* **C07K** *11/02*
U.S. Cl. 514—11 **22 Claims**

1. A compound having the formula



-continued



wherein R_1 is 2-methylpropanoyl, and R_2 is 2-methylpropanoyl, propanoyl or acetyl; or R_1 is 3-methylbutanoyl, and R_2 is 2-methylpropanoyl or 3-methylbutanoyl; or R_1 is propanoyl, and R_2 is acetyl or propanoyl.

9. A method for treating leukemia or lung carcinoma in a mammalian host which comprises administering to said host an antitumor effective amount of the compound of claim **1**.

5,643,872

CYCLIC ANTI-AGGREGATORY PEPTIDES

Fadia El-Fehail Ali, Cherry Hill, N.J., and James Martin Samanen, Phoenixville, Pa., assignors to SmithKline Beecham Corporation, Philadelphia, Pa.

Continuation of Ser. No. 630,124, Dec. 19, 1990, abandoned, which is a continuation-in-part of Ser. No. 590,635, Sep. 28, 1990, abandoned, which is a continuation-in-part of Ser. No. 425,906, Oct. 23, 1989, abandoned. This application Aug. 26, 1994, Ser. No. 296,621

Int. Cl.[6] **A61K** *38/00; C07K 7/06;5/12;5/10*

U.S. Cl. 514—11 **22 Claims**

1. A compound of the formula:



(I)

wherein:

A' is absent, Asn, Gln, Ala or Abu;

A is absent or a D- or L-amino acid chosen from Arg, HArg, NArg, (Me_2)Arg, (Et_2)Arg, Abu, Ala, Gly, His, Lys, or an α-R' substituted derivative thereof, Dtc, Tpr and Pro;

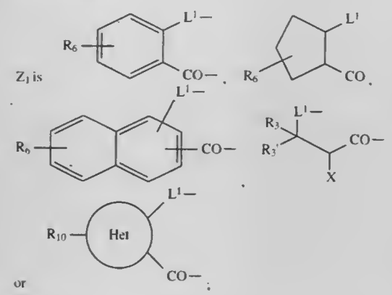
B is a D- or L-amino acid chosen from Arg, HArg, (Me_2)Arg, (Et_2)Arg and Lys or an α-R' substituted derivative thereof;

Q is absent or a D- or L-amino acid chosen from Tyr, (Alk)Tyr, Phe, (4'W)Phe, HPhe, Phg, Pro, Trp, His, Ser, (Alk)Ser, Thr, (Alk)Thr, (Alk)Cys, (Alk)Pen, Ala, Val, Nva, Met, Leu, Ile, Nle and Nal or an α-R' substituted derivative thereof;

M is absent or Gly or a D- or L-amino acid chosen from Glu, Phe, Pro, Lys and Ser or, provided n is 1, B-Gly-Glu-Q;

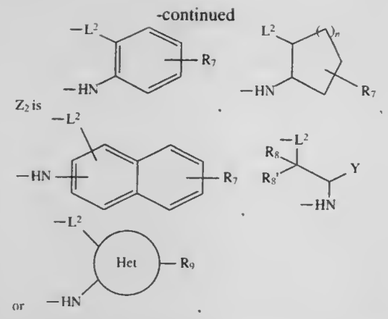
W is halogen or Alk;

R' is Alk or $PhCH_2$;



or

-continued



wherein Z_1 and Z_2 are linked via a covalent bond between L^1 and L^2;

L^1 and L^2 are —S— or $—(CH_2)_p—$;

X is R_4R_5N;

Y is H, $CONR_1R_2$ or CO_2R_2;

R_1 and R_2 are H, Alk or $(CH_2)_pAr$;

R_3 and $R_{3'}$ are H, Alk, $(CH_2)_pAr$ or taken together are $—(CH_2)_4—$ or $—(CH_2)_5—$;

R_4 is H or Alk;

R_5 is R_{11}, $R_{11}CO$, $R_{11}OCO$, $R_{11}OCH(R_{11'})CO$, $R_{11}NHCH(R_{11'})CO$, $R_{11}SCH(R_{11'})CO$, $R_{11}SO_2$ or $R_{11}SO$;

R_6 is Alk, OAlk, halogen or X;

R_7 is H, Alk, OAlk, halogen or Y;

R_8 and $R_{8'}$ are H, Alk, $(CH_2)_pPh$, $(CH_2)_pNph$ or taken together are $—(CH_2)_4—$ or $—(CH_2)_5—$;

R_9 is H, Alk or Y;

R_{10} is H or Alk;

R_{11} and $R_{11'}$ are H, $C_{1\text{-}5}$alkyl, $C_{3\text{-}7}$cycloalkyl, Ar, Ar—$C_{1\text{-}5}$alkyl, Ar—$C_{3\text{-}7}$cycloalkyl;

Ar is phenyl or phenyl substituted by one or two $C_{1\text{-}5}$alkyl, trifluoromethyl, hydroxy, $C_{1\text{-}5}$alkoxy or halogen groups;

n is 1 or 2;

q is 0 or 1; and

p is 0, 1, 2 or 3

and pharmaceutically active salts thereof;

provided that when n is 1 and Z_1 is X-Cys, X-Pen or X-APmp, Z_2 is not Cys-Y, Pen-Y or APmp-Y.

5,643,873

PEPTIDES AND COMPOUNDS THAT BIND SELECTINS INCLUDING ENDOTHELIAL LEUKOCYTE ADHESION MOLECULE 1

Ronald W. Barrett, Sunnyvale; Steven E. Cwirla, Palo Alto; William J. Dower, Menlo Park; Kerry J. Koller, San Francisco; Jung Lee, Mountain View; Christine L. Martens, Portola Valley, and Beatrice Ruhland-Fritsch, Los Altos, all of Calif., assignors to Affymax Technologies N.V., Netherlands, Netherlands Antilles

Continuation-in-part of Ser. No. 57,295, May 5, 1993, abandoned, which is a continuation-in-part of Ser. No. 881,395, May 6, 1992, abandoned. This application May 11, 1994, Ser. No. 241,054

Int. Cl.[6] **A61K** *38/00;* **C07K** *14/00;7/08;7/06*

U.S. Cl. 514—12 **3 Claims**

1. A method for treating disease and disease symptoms which are mediated by the presence of ELAM-1 which method comprises the administration to a patient of an amount sufficient to reduce inflammation of a pharmaceutical composition comprising a peptide and/or peptide mimetic and a pharmaceutically acceptable carrier, wherein said peptide or peptide mimetic has a core sequence comprising WXXLWXXM (SEQ ID NO:1) where each amino acid is indicated by standard one letter abbreviations, and X is any amino acid.

5,643,874

PHARMACEUTICAL COMPOSITION COMPRISING A GLUCOSIDASE AND/OR AMYLASE INHIBITOR, AND A LIPASE INHIBITOR

Klaus-Dieter Bremer, Allschwil, and Pavel Sawlewicz, Basel, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Jul. 22, 1994, Ser. No. 279,127

Claims priority, application Switzerland, Aug. 5, 1993, 2339/93

Int. Cl.[6] **A61K** *38/00*

U.S. Cl. 514—12 **21 Claims**

1. A pharmaceutical composition which comprises an effective amount of a lipase inhibitor and (a) a glucosidase inhibitor, (b) an amylase inhibitor or, (c) a glucosidase and amylase inhibitor, together with an inert carrier.

5,643,875

HUMAN THERAPEUTIC USES OF BACTERICIDAL/PERMEABILITY INCREASING (BPI) PROTEIN PRODUCTS

Nadav Friedmann, 91 Bacon Ct., Lafayette, Calif. 94549; Patrick J. Scannon, 176 Edgewood Ave., San Francisco, Calif. 94117; Sander J. H. van Deventer; Marijke A. M. von der Mohlen, both of Meibergdreff 9, 1105 AZ, Amsterdam, Netherlands, and Nancy Wedel, 5800 Ayala Ave., Oakland, Calif. 94609

Continuation-in-part of Ser. No. 188,221, Jan. 24, 1994, abandoned. This application Aug. 16, 1994, Ser. No. 291,112

Int. Cl.[6] **A61K** *38/00;45/05*

U.S. Cl. 514—12 **12 Claims**

1. A method for treatment of sepsis or septic shock in humans exposed m bacterial endotoxin in circulation comprising administering a Bactericidal/Permeability-Increasing (BPI) protein product in an amount effective to alleviate endotoxin mediated increase in circulating tumor necrosis factor and interleukin 6.

5,643,876

BIOLOGICALLY ACTIVE SYNTHETIC MAGAININ PEPTIDES

Michael A. Zasloff, Rockville, Md., assignor to The United States of America as represented by the Department of Health and Human Services, Rockville, Md.

Continuation of Ser. No. 507,263, Apr. 12, 1990, abandoned, which is a continuation of Ser. No. 76,734, Jul. 23, 1987, abandoned, which is a continuation-in-part of Ser. No. 21,493, Mar. 4, 1987, Pat. No. 4,810,777. This application Oct. 19, 1992, Ser. No. 963,007

Int. Cl.[6] **A61K** *38/10;38/16;* **C07K** *7/08;14/00*

U.S. Cl. 514—13 **18 Claims**

1. A peptide selected from the group consisting of amide-and carboxy-terminated peptides having the following amino acid sequences:

(a) GIGKFLHSAGKFGKAFVGEIMKS;

(b) GIGKFLHSAKKFGKAFVGEIMNS;

(c) GIGKFLHSAKKFGKAFVGEIMN;

(d) IGKFLHSAKKFGKAFVGEIMNS;

(e) GKFLHSAKKFGKAFVGEIMNS;

(f) KFLHSAKKFGKAFVGEIMNS;

(g) FLHSAKKFGKAFVGEIMNS; and

(h) LHSAKKFGKAFVGEIMNS.

10. A composition, comprising:

(a) a peptide selected from the group consisting of:

(NH_2) GIGKFLHSAGKFGKAFVGEIMKS (OH),

(NH_2) GIGKFLHSAKKFGKAFVGEIMNS (OH),

(NH_2) GIGKFLHSAKKFGKAFVGEIMN (OH),

(NH_2) IGKFLHSAKKFGKAFVGEIMNS (OH),

(NH_2) GKFLHSAKKFGKAFVGEIMNS (OH),

(NH_2) KFLHSAKKFGKAFVGEIMNS (OH),

(NH_2) FLHSAKKFGKAFVGEIMNS (OH), and

(NH_2) LHSAKKFGKAFVGEIMNS (OH),

or their carboxy-terminal amides; and (b) a pharmaceutically acceptable carrier.

5,643,877

COMPOUNDS COMPRISING GONADOTROPIN RELEASING HORMONE (GNRH) AND METHODS FOR CONTROLLING REPRODUCTION IN FISH

Yonathan Zohar, Baltimore, Md.; Nancy M. Sherwood, Victoria, Canada; Jean Rivier, LaJolla, Calif.; Jim Powell, Victoria, Canada, and Yoav Gothilf, Baltimore, Md., assignors to University of Maryland Biotechnology Institute, College Park, Md., and University of Victoria Innovation and Development Corporation, British Columbia, Canada

Filed Dec. 5, 1994, Ser. No. 341,219

Int. Cl.[6] **A61K** *38/09;* **C07K** *7/23*

U.S. Cl. 514—15 **19 Claims**

1. A peptide having the formula

pGlu-His-Trp-Ser-Tyr-R_6-Leu-X-pro-R_{10}-NHR

(SEQ ID NO: 10) or a nontoxic salt thereof wherein X is selected from the group consisting of Ser, Ala, Thr, Pro, and Gly, R_6 is a D-isomer of an α-amino acid selected from the group consisting of Trp, Ala, Phe, Lys, Pro, Met, Leu, Glu, Ash, Arg, Tyr, Cys, His, Chg, Nva, Orn, Thr, Abu, Phg, Ile, Glu, Asp, Nle and Val and wherein R_{10} is Gly or des-R_{10} and R is H or $C_nY_{2n}CY_3$, with Y being H or F and n being 0, 1, 2 or 3, provided that when R_{10} is des-R_{10}, n is not 0.

5,643,878

5-AMINO-4-HYDROXYHEXANOIC ACID DERIVATIVES

Guido Bold, Gipf-Oberfrick, Switzerland; Marc Lang, Mulhouse, France; Alexander Fässler, Oberwils; Hans-Georg Capraro, Rheinfelden, both of Switzerland; Shripad Bhagwat, Scotch Plains, N.J.; Peter Schneider, Bottmingen, and Peter van Hoogevest, Richen, both of Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

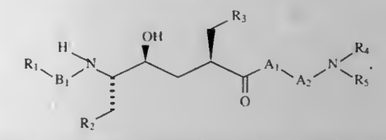
Continuation-in-part of Ser. No. 941,595, Sep. 8, 1992, abandoned. This application Mar. 8, 1994, Ser. No. 207,646

Claims priority, application Switzerland, Sep. 12, 1991, 2689/91; Mar. 27, 1992, 890/92; Jun. 25, 1992, 2007/92; Mar. 11, 1993, 772/92

Int. Cl.[6] **A61K** *31/535;* **C07P** *265/06*

U.S. Cl. 514—19 **25 Claims**

1. A compound of the formula



(I)

wherein R_1 is hydrogen; lower alkoxycarbonyl benzyloxycarbonyl that is unsubstituted or substituted by up to three radicals which may be the same or different and are selected from fluorine, halo-lower alkyl, lower alkanoyl, sulfo, lower alkylsulfonyl and cyano; or lower alkylsulfonyl; B_1 is a bond or a bivalent radical of an a-amino acid selected from glycine, valine, norvaline, alanine, leucine, norleucine and isoleucine, which radical is bonded

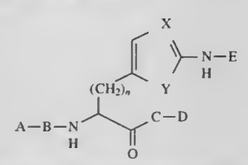
N-terminally to R_1 and C-terminally to the amino group at the R_2—CH_2-carrying carbon atom, each of R_2 and R_3, independently of the other, is phenyl or cyclohexyl, those radicals being unsubstituted or substituted by from one to three radicals which may be the same or different and are selected from hydroxy, lower alkoxy, halogen, halo-lower alkyl, sulfo, lower alkylsulfonyl, cyano and nitro, A_1 is a bond between —C=O and A_2 or is a bivalent radical of an a-amino acid selected from glycine, valine, norvaline, alanine, leucine, norleucine and isoleucine, which radical is bonded N-terminally to the group —C=O and C-terminally to A_2, A_2 is a bivalent radical of an a-amino acid selected from phenylalanine, p-fluorophenylalanine, p-methoxyphenylalanine, tyrosine, phenylglycine, a-naphthylalanine, cyclohexylalanine, cyclohexylglycine, glycine, valine, norvaline, alanine, leucine, norleucine and isoleucine, which radical is bonded N-terminally to A_1 and C-terminally to the group NR_4R_5, and R_5, together with the bonding nitrogen atom, are morpholino which is unsubstituted or substituted at one or more of the carbon atoms by lower alkyl, or a pharmaceutically acceptable salt of that compound if salt-forming groups are present.

5,643,879
AMINO-SUBSTITUTED HETEROCYCLES AS RENIN INHIBITORS

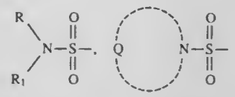
Cleo Connolly, Livonia; Annette Marion Doherty, Ann Arbor; Harriet Wall Hamilton; William Chester Patt, both of Chelsea, and Ila Sircar, Ann Arbor, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 38,728, Mar. 26, 1993, Pat. No. 5,453,488, which is a division of Ser. No. 511,271, Apr. 25, 1990, Pat. No. 5,238,923, which is a continuation-in-part of Ser. No. 357,561, May 26, 1989, abandoned. This application May 15, 1995, Ser. No. 440,585
Int. Cl.[6] A61K *38/05*
U.S. Cl. 514—19 **24 Claims**

1. A compound of the formula



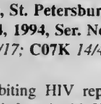
or a pharmaceutically acceptable acid addition salt thereof wherein A is BOC, BBSP, Z,



wherein R and R_1 are each independently hydrogen or straight or branched chain lower alkyl which is unsubstituted or substituted by one or two hydroxy, one or two amino groups, or



wherein this is a saturated ring containing two to five carbon atoms wherein Q is CH_2, O, S, or NR wherein R is as above;
B is absent, PHE, TYR, or TYR(OME) with the proviso that when A is BBSP, B is absent;
C is CST, FCS, FCO, CD is DH, or STA;
D is absent, OH, or NR_2R_3 wherein R_2 and R_3 are each independently hydrogen or straight or branched lower alkyl or when R_2 is hydrogen, R_3 can also be $—(CH_2)_mX$ wherein m is an integer of from zero to eight and X is —OH,



as defined above, OR_4, NR_5R_6 wherein R_4, R_5, and R_6 are each independently hydrogen, straight or branched chain lower alkyl substituted or unsubstituted by one or two hydroxy or amino groups with the proviso that when C is CAD, D is absent;
E is hydrogen, Z, BOC, TROC, or lower alkanoyl,
n is an integer of from 0 to 2;
X and Y are each independently O, S, N or NH and at least one of X and Y must be N; X and
Y cannot both be N.

5,643,880
PRODUCT FOR INHIBITION OF ATTACHMENT OF H. INFLUENZAE TO HUMAN CELLS

Pradip Mukerji; Amanda Eun-Yeong Seo, both of Gahanna; Steven Neal Anderson, Pickerington, and Linda Ann Harvey, Orient, all of Ohio, assignors to Abbott Laboratories, Abbott Park, Ill.

Filed May 26, 1994, Ser. No. 249,584
The portion of the term of this patent subsequent to May 26, 2014, has been disclaimed.
Int. Cl.[6] A61K *38/00;* **C07K** *1/00*
U.S. Cl. 514—21 **6 Claims**

1. A liquid enteral nutritional product which inhibits the attachment of *H. influenzae* to human cells comprising at least one protein selected from the group consisting of bovine milk protein and vegetable protein in combination with at least one material selected from the group consisting of β-casein isolated from human milk, a recombinant form of β-casein contained in human milk, and hydrolysates of both.

5,643,881
PROTEIN HAVING ANTI-HIV ACTIVITY AND METHOD FOR OBTAINING IT

Meihan Nonoyama, St. Petersburg; Akiko Tanaka, and Patrick K. Lai, both of Clearwater, all of Fla., assignors to Tampa Bay Research Institute, St. Petersburg, Fla.

Filed Aug. 4, 1994, Ser. No. 285,436
Int. Cl.[6] A61K *38/17;* **C07K** *14/435;* **C12P** *21/00*
U.S. Cl. 514—21 **14 Claims**

10. A method for inhibiting HIV replication in vitro which comprises contacting cells infected with HIV with a protein which inhibits HIV replication in cells infected with HIV in an amount sufficient to, inhibit HIV replication, wherein the protein can be produced by
(a)culturing CD4 positive T cells deposited with the ATCC as accession number 11697 in a tissue culture medium comprising an agent to activate the cells;
(b) incubating said tissue culture medium for a period of time sufficient to induce said cells to produce a protein having anti-HIV activity;
(c) separating the cells from the culture medium containing the protein having anti-HIV activity; and
(d) recovering the protein from the medium by passing the medium containing the anti-HIV protein through a 30 kDa molecular sieve and retaining that portion which does not pass through the sieve, wherein the protein is characterized by a molecular weight of at least 30,000 daltons.

5,643,882
FROZEN REHYDRATION FORMULATION AND DELIVERY SYSTEM THEREFOR

Christopher S. Waite, Cary, Ill., assignor to PTS Labs LLC, Chicago, Ill.

Filed Oct. 14, 1994, Ser. No. 323,229
Int. Cl.[6] A61K *31/70*
U.S. Cl. 514—23 **3 Claims**

I. A method for providing electrolytes of a child in need of electrolyte therapy comprising:
(a) providing a rehydrating composition comprising: an aqueous solution of about 45 m Eq. of sodium ion, about 20 m Eq. of potassium ion, and about 35 m Eq. of chloride ion per liter of water and a water soluble natural carbohydrate sweetener or a water soluble sweetener derived therefrom, end with or without a flavoring agent; wherein the rehydrating composition is sealed in freezable packaging material;
(b) freezing the rehydrating composition; and
(c) opening the freezable packaging material and orally administering the frozen rehydrating composition to the child.

5,643,883
GLUCOSE-6-PHOSPHATE UPTAKE INHIBITORS AND NOVEL USES THEREOF

Richard B. Marchase, and Sudha Darbha, both of Birmingham, Ala., assignors to UAB Research Foundation, Birmingham, Ala.

Filed Jan. 19, 1995, Ser. No. 376,048
Int. Cl.[6] A01N *43/04;* **A61K** *31/70*
U.S. Cl. 514—23 **7 Claims**

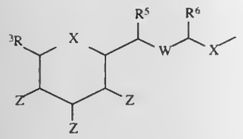
1. A method of inhibiting the import of glucose-6-phosphate into the endoplasmic reticulum of a cell, comprising the step of administering a pharmacologically effective dose of a glucose analogue to said cell, said analogue being phosphorylated at its 6-carbon after uptake by said cell, wherein Said inhibitor is given by is given by a route of administration selected from the group consisting of oral administration, nasal administration and inhalation administration.

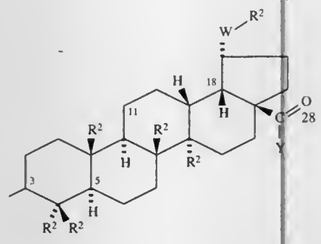
5,643,884
LUPANE TRITERPENOID DERIVATIVES

Mark Brian Anderson, Orinda, and John Henry Musser, San Carlos, both of Calif., assignors to Glycomed Incorporated, Alameda, Calif.

Filed Aug. 9, 1993, Ser. No. 105,095
Int. Cl.[6] A61K *31/705;* **C07J** *17/00*
U.S. Cl. 514—26 **19 Claims**

1. A compound comprising the following structural formula (I):





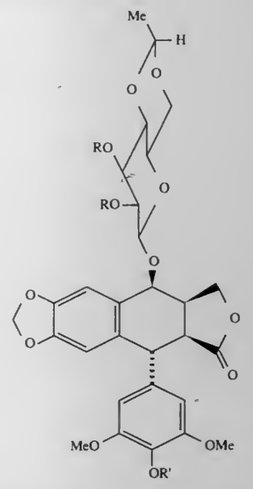
wherein:
Y is OR^1, NR^1_2 or O-M^1;
R^1 is H or lower alkyl:
M^1 is Na^+, K^+, Mg^{++}, or Ca++ ions;
each R^2 is independently CH_2OR^1 or CH_3;
each R^3 is independently H, CH_3, lower alkyl, COY, CH_2OH, $CH_2OCH_2CH{=}CH_2$, or CH_2OSO_3-M^1;
each Z is independently NHR^1_2, NR^1Ac, NR^1Bz, H, OCH_3, lower alkyl, OH, OSO_3-M^1, $OCH_2CH{=}CH_2$, OCH_2CO_2H or O-glycoside;
each X is independently O, S, NR^1 or NR^1_2:
each W is independently C=O, $C{=}CR^1_2$, $CR^1CR^1_3$, $CR^1CR^1_2OR^1$, COR^1-CR^1OR^1, $COR^1CR^1_2OR^1$, $CR^1CR^1_2NR^1_2$, $CR^1CR^1_2OCR^1COY$ or CHR^4;
R^4 is H, OH, OSO_3-M^1, $NH(CH_2)_nNH_2$, where n=1–8, or NH-Ph-NH_2 where Ph is a phenyl or naphthyl ring substituted with up to 3 amine functionalities and the remaining substitutions can be H, R^1, R^2, or COY; and
R^5 and R^6 are independently H, CH_3 or taken together form a 5 or 6 membered carbocyclic ring.

5,643,885
ETOPOSIDE DERIVATIVES, PROCESS FOR PREPARING THEM, THEIR USE AS A MEDICINAL PRODUCT AND THEIR USE FOR THE PREPARATION OF A MEDICINAL PRODUCT INTENDED FOR ANTI-CANCER TREATMENT

Jean-Pierre Robin, Le Mans, France; Robert Kiss, Brussels, Belgium, and Thierry Imbert, Viviers-les-Montagnes, France, assignors to Pierre Fabre Medicament, Boulogne, France

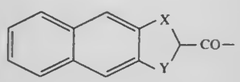
PCT No. PCT/FR93/01270, § 371 Date Jun. 21, 1995, § 102(e) Date Jun. 21, 1995, PCT Pub. No. WO94/14829, PCT Pub. Date Jul. 7, 1994
PCT Filed Dec. 20, 1993, Ser. No. 464,646
Claims priority, application France, Dec. 22, 1992, 92 15460
Int. Cl.[6] A61K *31/70;* **C07H** *15/26*
U.S. Cl. 514—27 **14 Claims**

11. Method of treating a mammalian cancer comprising the step of administering to the mammal an effective anticancer amount of a compound of formula I:

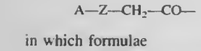


in which
R' represents a hydrogen atom or a radical R, and

R represents a group of formula



or an acyl residue of formula



in which formulae

X, Y and Z independently represent an oxygen atom or a sulfur atom, and

A represents

a linear or branched C_1–C_4 alkyl radical,

a C_3–C_6 cycloalkyl radical,

an aryl radical selected from the group consisting of phenyl, phenyl(linear or branched C_1–C_4 alkyl) and naphthyl radicals and these same radicals substituted with one to three substituents selected from the group consisting of hydroxyl radicals, linear or branched C_1–C_4 alkoxy radicals optionally perhalongenated with chlorine or fluorine atoms, benzyloxy, phenyl and linear or branched C_1–C_4 alkyl radicals and halogen atoms,

or a physiologically-acceptable salt thereof.

5,643,886

AVERMECTINS AND MILBEMYCINS TO TREAT PARASITIC INFESTATIONS IN DOGS

John Dick Hood, Betchworth, England, assignor to Pfizer Inc., New York, N.Y.

PCT No. PCT/GB91/01981, § 371 Date Jan. 7, 1994, § 102(e) Date Jan. 7, 1994, PCT Pub. No. WO92/08455, PCT Pub. Date May 29, 1992

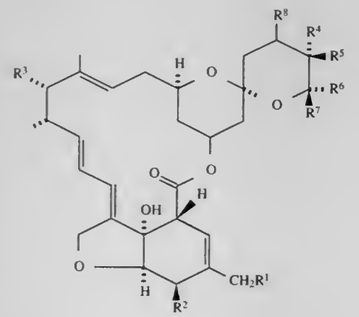
PCT Filed Nov. 11, 1991, Ser. No. 64,080

Claims priority, application United Kingdom, Nov. 16, 1990, 9024927

Int. Cl.[6] A61K *31/70*

U.S. Cl. 514—30 **8 Claims**

1. A pharmaceutical composition for use in treatment or prophylaxis of endo- and ectoparasitic infestations in dogs, which comprises a compound of formula (I):



(I)

wherein

R^1 is selected from the group consisting of hydrogen, hydroxy, and protected hydroxy;

R^2 is selected from the group consisting of alkoxy, hydroxy, protected hydroxy, oxo, oximino, and O-substituted oximino;

R^3 is selected from the group consisting of hydrogen, hydroxy, protected hydroxy, 4'-(α-L-oleandrosyl)-α-L-oleandrosyloxy, 4'-(α-L-oleandrosyl)-α-L-oleandrosyloxy, wherein the terminal hydroxy group is protected, α-L-oleandrosyloxy, and α-L-oleandrosyloxy wherein the terminal hydroxy group is protected;

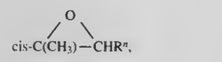
R^4, R^5, R^6, and R^7 are independently selected from the group consisting of hydrogen and an organic radical;

R^8 is selected from the group consisting of amino, substituted amino, imino, and substituted imino;

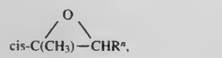
provided that

A) if R^2 is hydroxy or protected hydroxy; R^3 is hydrogen; R^4 is hydrogen or methyl; R^5 is hydrogen or methyl; and R^8 is imino, oxyimino, O-substituted oxyimino, hydrazone, N-substituted hydrazone, semicarbazone, or N-substituted semicarbazone;

then i) R^1 is hydroxy or protected hydroxy; and further provided that (a) when R^6 is hydrogen, R^7 is not cis-$C(CH_3)$=CHR^n, where R^n is selected from the group consisting of methyl, ethyl, and isopropyl; (b) when R^7 is hydrogen, R^6 is not cis-$C(CH_3)$=CHR^n, where R^n is selected from the group consisting of methyl, ethyl, and isopropyl; (c) when R^6 is hydrogen, R^7 is not



where R^n is selected from the group consisting of methyl, ethyl, and isopropyl; (d) when R^7 is hydrogen, R^6 is not



where R^n is selected from the group consisting of methyl, ethyl, and isopropyl;

B) if R^2 is hydroxy or protected hydroxy; R^3 is hydrogen; R^4 is hydrogen or methyl; R^5 is hydrogen or methyl; R^6 is hydrogen, isopropyl, or sec-butyl; R^7 is hydrogen, isopropyl, or sec-butyl; and R^8 is imino, oxyimino, O-substituted oxyimino, hydrazone, or N-substituted hydrazone;

then i) R^1 is hydroxy or protected hydroxy;

C) if R^2 is oxo, hydroxy, substituted hydroxy having up to 25 carbon atoms; R^3 is hydroxy; R^4 is methyl; R^5 is hydrogen; R^6 is hydrogen; R^7 is cis-$C(CH_3)$=CHR^o, where R^o is selected from the group consisting of methyl, ethyl, and isopropyl; and R^8 is —C=NOR^p, where R^p is selected from the group consisting of hydrogen and a C_{1-8} alkyl group:

then i) R^1 is hydroxy or protected hydroxy;

said compound of formula (I) being the E or Z isomer, or a mixture thereof.

5,643,887

DAUNOMYCIN DERIVATIVE WITH REDUCED CYTOTOXICITY TOWARD NORMAL CELLS

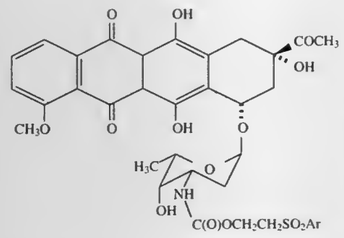
Kyriacos C. Nicolaou; Wolfgang A. Wrasidlo, and Peter E. Maligres, all of La Jolla, Calif., assignors to The Scripps Research Institute, LaJolla, Calif.

Continuation of Ser. No. 922,834, Jul. 31, 1992, Pat. No. 5,413,992. This application Apr. 17, 1995, Ser. No. 423,266

Int. Cl.[6] A61K *31/70*

U.S. Cl. 514—34 **4 Claims**

1. A chemotherapeutic process for killing or inhibiting the growth of cancerous cells that comprises contacting cancerous cells to be killed or whose growth is to be inhibited in vitro in an aqueous medium suitable for growth of those cells with a chemotherapeutic amount of an active agent, said active agent having a structure that corresponds to structural Formula I wherein Ar is phenyl, 1-naphthyl or 2-naphthyl,



I

and maintaining said contact in said aqueous medium for a time period sufficient for the contacted cells to be killed or their growth inhibited.

5,643,888

REGULATING RETROVIRAL REPLICATION, INFECTION, AND PATHOGENESIS

Larry R. Rohrschneider, Mercer Island, Wash., assignor to Fred Hutchinson Cancer Research Center, Seattle, Wash.

Continuation of Ser. No. 122,022, Sep. 14, 1993, abandoned, which is a continuation of Ser. No. 784,145, Oct. 30, 1991, Pat. No. 5,264,356, which is a continuation of Ser. No. 53,306, May 22, 1987, abandoned, which is a continuation-in-part of Ser. No. 812,937, Dec. 23, 1985, abandoned. This application Nov. 3, 1994, Ser. No. 334,188

Int. Cl.[6] A41K *31/70*; **G01N** *33/48*

U.S. Cl. 514—43 **12 Claims**

1. A method of regulating the replication of a nondefective retrovirus in a mammalian host in vivo comprising the step of administering to said host a therapeutically effective amount of a glucosidase I inhibitor.

5,643,889

CHOLESTEROL CONJUGATES OF 2'5'-OLIGOADENYLATE DERIVATIVES AND ANTIVIRAL USES THEREOF

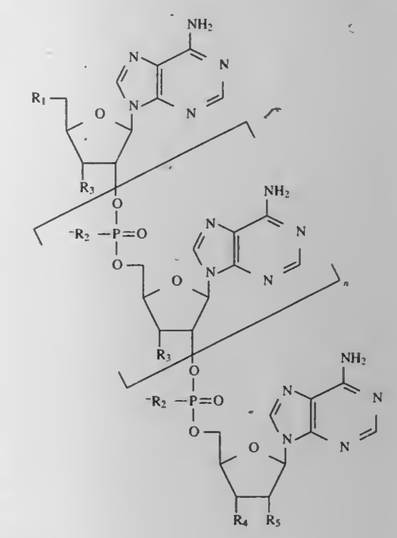
Robert J. Suhadolnik, Roslyn, Pa., and Wolfgang Pfleiderer, Constance, Germany, assignors to Temple University-of the Commonwealth System of Pennsylvania, Philadelphia, Pa.

Continuation-in-part of Ser. No. 849,865, Mar. 12, 1992, abandoned, which is a continuation-in-part of Ser. No. 613,848, Dec. 6, 1990, abandoned, which is a continuation-in-part of Ser. No. 204,659, Jun. 9, 1988, abandoned, which is a continuation-in-part of Ser. No. 144,602, Jan. 11, 1988, Pat. No. 4,859,768, which is a continuation of Ser. No. 629,660, Jul. 11, 1984, abandoned. This application Sep. 14, 1994, Ser. No. 306,274

Int. Cl.[6] A01G *7/06*; **A61K** *31/70*

U.S. Cl. 514—44 **16 Claims**

1. A compound of the formula:



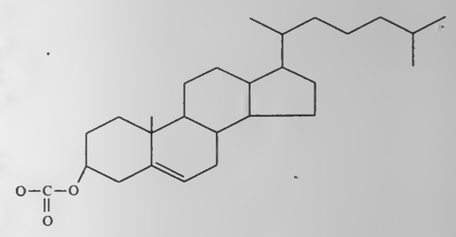
I

wherein:

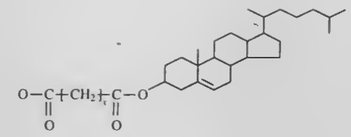
n is an integer from 1 to 8;

R_1 is selected from the group of consisting of T, T' and Y, wherein

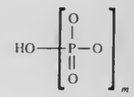
T is



T is



where x is an integer from 1 to 18;
Y is



where m is zero, 1, 2, or 3;
each R_2 is independently selected from the group consisting of oxygen and sulfur;
each R_3 is independently selected from the group consisting of hydrogen and hydroxyl;
R_4 is selected from the group consisting of hydrogen, hydroxyl, T and T';
R_5 is selected from the group consisting of hydrogen, hydroxyl, T and T';
provided that
all R_1, R_4 and R_5 may not be T or T';
at least one R_3 is hydrogen or R_4 is hydrogen; and
at least one of R_1, R_4 and R_5 must be T or T';
or a water soluble salt thereof.

15. A method of treating viral infection in a plant comprising administering thereto an antiviral effective amount of a compound according to claim 1.

5,643,890

SYNTHETIC OLIGONUCLEOTIDES WHICH MIMIC TELOMERIC SEQUENCES FOR USE IN TREATMENT OF CANCER AND OTHER DISEASES

Patrick L. Iversen, Ralston, and John E. Mata, Omaha, both of Nebr., assignors to The Board of Regents of the University of Nebraska, Lincoln, Nebr.

Filed Jan. 31, 1995, Ser. No. 381,097
Int. Cl.[6] A61K *48/00;* **C12N** *5/10;* **C07H** *21/04*
U.S. Cl. 514—44 **25 Claims**

1. A method of inhibiting proliferation of and/or killing cells characterized by uncontrolled proliferation comprising:
contacting said cells with an oligonucleotide, said oligonucleotide having a nucleotide sequence consisting of a single human telomeric repeat motif.

5,643,891

TREATMENT OF VIRAL INFECTIONS

Janet Litster Rideout, Raleigh; David Walter Barry, Chapel Hill; Sandra Nusinoff Lehrman, Durham; Martha Heider St. Clair, Durham, and Phillip Allen Furman, Durham, all of N.C., assignors to Glaxo Wellcome Inc., Research Triangle Park, N.C.

Continuation of Ser. No. 792,812, Nov. 15, 1991, abandoned, which is a continuation of Ser. No. 670,499, Mar. 15, 1991, abandoned, which is a continuation of Ser. No. 288,735, Apr. 29, 1988, abandoned, which is a continuation of Ser. No. 839,795, Mar. 14, 1986, abandoned. This application Feb. 26, 1993, Ser. No. 540,593
Claims priority, application United Kingdom, Mar. 16, 1985, 8506869; May 9, 1985, 8511774
Int. Cl.[6] A61A *31/70*
U.S. Cl. 514—50 **4 Claims**

1. A method of treating an HTLV-I infection in a host in need thereof comprising administering to said host an effective treatment amount of 3'-azido-3'-deoxythymidine or a pharmaceutically acceptable salt thereof.

5,643,892

METHOD OF TREATING CHRONIC PROGRESSIVE VASCULAR DISEASES

Gary E. Striker; Liliane J. Striker, both of Bethesda, Md., and Fred P. Sherman, Hollywood, Fla., assignors to Baker Norton Pharmaceuticals, Inc., Miami, Fla., and The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Jun. 7, 1995, Ser. No. 478,347
Int. Cl.[6] A61K *31/70*
U.S. Cl. 514—54 **14 Claims**

1. A method of treating a mammalian patient suffering from a chronic progressive vascular disease (CPVD) characterized by scarring or fibrosis in an affected organ or vasculature, to halt the progress of the disease and cause the resolution of already-formed scarring or fibrotic lesions, said method consisting of the administration to the patient of a pharmaceutical composition containing an effective vascular disease treatment amount of pentosan polysulfate (PPS) or a pharmaceutically acceptable salt thereof.

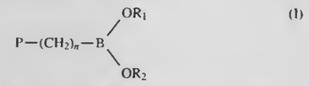
5,643,893

N-SUBSTITUTED-(DIHYDROXYBORYL)ALKYL PURINE, INDOLE AND PYRIMIDINE DERIVATIVES, USEFUL AS INHIBITORS OF INFLAMMATORY CYTOKINES

Bradley J. Benson, Chapel Hill, N.C.; Xiannong Chen, Athens, Ga.; George J. Cianciolo, Chapel Hill, N.C.; Jose-Luis Diaz, Durham, N.C.; Khalid S. Ishaq, Chapel Hill, N.C.; Susan L. Morris-Natschke, Apex, N.C.; Ronald J. Uhing, Durham, N.C., and Henry Wong, Morrisville, N.C., assignors to Macronex, Inc., Wayne, Pa., and University of North Carolina, Chapel Hill, N.C.

Filed Jun. 22, 1994, Ser. No. 264,039
Int. Cl.[6] A61K *31/69;* **C07F** *5/02;5/04*
U.S. Cl. 514—64 **16 Claims**

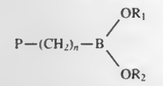
1. A compound of the formula



(I)

wherein R_1 and R_2 are both hydrogen atoms, or together are a propylene chain bridging the two oxygen atoms;
n is 2–6; and
P is a purine or pyrimidine base residue selected from the group consisting of thymine, guanine, and hypoxanthine and 6-substituted- or 2,6-disubstitued-purines wherein the substituents are selected from the group consisting of halogen and amino, bonded via the N^9 in the case of a purine base or via the N^1 in the case of a pyrimidine base; and the pharmaceutically acceptable salts thereof.

9. A pharmaceutical composition which comprises a therapeutically effective amount of a compound of the formula



(I)

wherein both R_1 and R_2 are both hydrogen atoms, or together are a propylene chain bridging the two oxygen atoms; n is 2–6; and P is a purine or pyrimidine hase residue selected from the group consisting of thymine, guanine, hypoxanthine and 6-substituted- or 2,6-disubstitued-purines wherein the substituents are selected from the group consisting of halogen and amino, bonded via the N^9 in the case of a purine base or via the N^1 in the case of a pyrimidine base; and a carrier therefor.

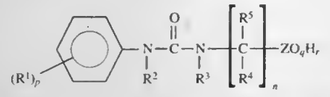
5,643,894

EATABLE TASTE MODIFIERS

Robert J. Kurtz, New York, N.Y., and William D. Fuller, San Diego, Calif., assignors to Bioresearch, Inc., Arlington, Va.

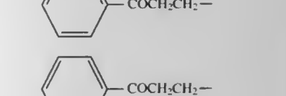
Division of Ser. No. 451,063, May 25, 1995, which is a continuation of Ser. No. 67,537, May 26, 1993, abandoned, which is a continuation-in-part of Ser. No. 799,207, Nov. 27, 1991, abandoned, which is a continuation-in-part of Ser. No. 531,388, Jun. 1, 1990, Pat. No. 5,232,735. This application Jun. 2, 1995, Ser. No. 459,703
Int. Cl.[6] A61K *31/36*
U.S. Cl. 514—113 **13 Claims**

1. A composition comprising an eatable having at least one taste selected from bitter and metallic, and at least one tastand in a substantially tasteless amount of about 0.0000001 to about 300% by weight, based on the weight of the eatable, which amount is sufficient to reduce said at least one bitter and metallic taste, said tastand being selected from the group consisting of compounds which are substantially tasteless in the amount used and have the structure:



T-1

wherein p is 1, 2, 3, 4, or 5; each R^1 is independently selected from the group consisting of H, hydroxy, nitro, cyano, halogen, COOH, SO_3H, $CH_2SO_2NH_2$, trifluoroacetyl an acid group of the structure ZO_qH_r wherein Z is an element selected from the group consisting of carbon, sulfur, boron or phosphorus, q is an integer from 2 to 3 and r is an integer from 1 to 3; and an O, S N or phosphorylated glycoside, where the glycoside is selected from the group consisting of monosaccharides, disaccharides, trisaccharides, and oligosaccharides all of which saccharides may be substituted; and the following groups which may be substituted or unsubstituted: amino, alkyl, alkoxy, aryl, alkylene, aminoacyl, aryloxy, aralkoxy, acyl, arylacyl, benzoyl, alkylamino, dialkylamino, trialkylamino, carbonates, alkylcarbonates, arylcarbonates, acylamino, guanidino, alkylguanidino, acylguanidino, arylguanidino, alkylurethanes, arylurethanes, ureas, alkylureas, CHO, $COCH_3$, $COCH_3$, CH_2CHO, CH_2COOH, $COOCH_3$, $OCOCH_3$, $CONH_2$, NHCHO, SCH_3, SCH_2CH_3, CH_2SCH_3, SO_2NH_2, SO_2CH_3, CH_2SO_3H, cycloalkyl, heterocyclic, polycyclic, arylureas, carboxylic acid ester, carboxamide, N-alkyl carboxamide, di-alkyl carboxamides, and wherein any two substituents taken together can be an aliphatic chain linked to a phenyl ring at one or more positions either directly via a carbon atom or indirectly via an oxygen, nitrogen or sulfur atom to form a ring structure; each R^2 and R^3 are independently selected from the group consisting of H, trifluoroacetyl; and substituted or unsubstituted alkyl, dialkyl, aralkyl, aryl, diaryl, acyl cycloalkyl, benzoyl, alkyloxycarbonyl, aryloxycarbonyl, alkylaminocarbonyl, arylaminocarbonyl, amidines, alkylamidines, arylamidines, a monosaccharide, a disaccharide, a trisaccharide, an oligosaccharide, phosphorylated saccharides, arylacyl, alkylene, heterocyclic and polycyclic; each R^4 and R^5 are independently selected from the group consisting of H, trifluoromethyl, halogen, cyano; and substituted or unsubstituted alkyl, alkylene, branched alkyl, branched alkylene, aryl, aralkyl, cycloalkyl, acyl, benzoyl, alkoxy, aryloxy, heterocyclic, polycyclic; n is an integer of 0 to 20; Z is selected from the group consisting of carbon, sulfur, boron, and phosphorus; q is an integer from 2 to 3 and r is an integer from 1 to 3; when Z is C, q is 2; when Z is S, P or B, q is 2 or 3; when Z is C or S, r is 1; when Z is P or B, r is 2; where CH—CH or CH_2—CH_2 bonds exist the level of unsaturation may be increased by removing one or more hydrogen atoms from the carbon atoms participating in the CH—CH or CH_2—CH_2 bond, and physiologically acceptable salts of all of the foregoing with the proviso that when the taste is bitter the tastand may not be



Wherein X represents H, CHO, CN, CO_2C_1–C_3alkyl, COC_1–C_3alkyl, $CONH_2$, Br, Cl, F, I, or NO_2 or physiologically acceptable salts thereof.

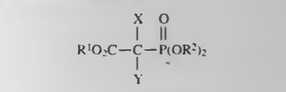
5,643,895

PHOSPHONOACETIC ESTERS AND ACIDS AS ANTI-INFLAMMATORIES

Richard A. Nugent, Galesburg; David J. Anderson, and Stephen T. Schlachter, both of Kalamazoo, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

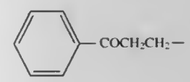
Division of Ser. No. 382,240, Feb. 1, 1995, Pat. No. 5,565,641, which is a continuation of Ser. No. 926,879, Aug. 7, 1992, abandoned. This application May 29, 1996, Ser. No. 654,801
Int. Cl.[6] C07F *9/40;17/02;9/6561;* **A61K** *31/66*
U.S. Cl. 514—125 **4 Claims**

1. A compound of Formula I or pharmaceutically acceptable salts thereof wherein Formula I is

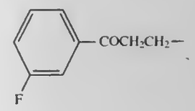


wherein R^1 is H, C_1–C_6 alkyl, benzyl, phenyl, phenyl substituted with 1 to 5 F, Cl, Br, I, NO_2, OCH_3 or C_1–C_4 alkyl;
R^2 is H, C_1–C_6 alkyl, benzyl, phenyl or phenyl substituted with 1 to 5 F, Cl, Br, I, NO_2, OCH_3 or C_1–C_4 alkyl;
Y is hydrogen and
X is

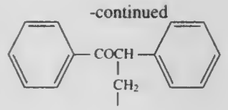
a.



b.



-continued



c.

ferrocenyl $COCH_2CH_2-$ d.

5,643,896

2-BENZYL-3-ARYLBENZOTHIOPHENES

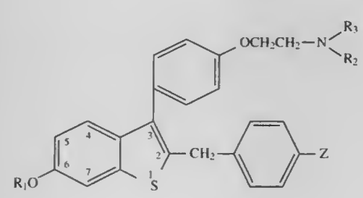
George J. Cullinan, Trafalgar, and James J. Sales, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 396,021, Feb. 28, 1995, Pat. No. 5,552,401. This application Sep. 22, 1995, Ser. No. 532,135

Int. Cl.[6] A61K *31/38;31/445;* **C07D** *333/64;409/10*

U.S. Cl. 514—146 **8 Claims**

1. A method for alleviating the symptoms of post-menopausal syndrome comprising administering to a woman in need of such treatment an effective amount of a compound of formula I



(I)

wherein

R_1 is hydrogen, a hydroxy protecting group, or methyl;

R_2 and R_3 are independently C_1–C_6 alkyl, or R_2 and R_3, together with the nitrogen to which they are attached, form a heterocycle selected from the group consisting of pyrrolidino, hexamethyleneimino, morpholino, and piperidino;

Z is bromo, chloro, fluoro, hydroxy, protected hydroxy, or hydrogen; and pharmaceutically acceptable salts and solvates thereof.

5,643,897

TREATMENT FOR INSOMNIA

Neil B. Kavey, 26 West Orchard Rd., Chappaqua, N.Y. 10514

Division of Ser. No. 34,252, Mar. 22, 1993, Pat. No. 5,502,047. This application Mar. 25, 1996, Ser. No. 623,892

Int. Cl.[6] A61K *31/33;31/555;31/335;31/40*

U.S. Cl. 514—183 **14 Claims**

1. A method for the treatment of a patient suffering from chronic insomnia comprising administering to said patient a compound selected from the group consisting of the pharmaceutically acceptable forms of amitriptyline, trimipramine, trazodone and mixtures thereof in a daily dosage ranging from about 0.5 to about 20 milligrams.

5,643,898

COMBINATION OF DERIVATIVES OF PYRIMIDINE AND OF HYDROCORTISONE FOR INDUCING AND STIMULATING THE GROWTH OF HAIR AND REDUCING ITS LOSS

Jean Francois Grollier, Paris, and Georges Rosenbaum, Asnières, both of France, assignors to L'Oreal, Paris, France

Continuation of Ser. No. 197,445, Feb. 16, 1994, abandoned, which is a continuation of Ser. No. 288,607, Dec. 22, 1988, abandoned. This application Apr. 18, 1995, Ser. No. 425,236

Claims priority, application Luxembourg, Dec. 22, 1987, 87.091

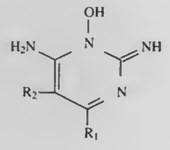
Int. Cl.[6] A61K *31/56;31/505*

U.S. Cl. 514—169 **10 Claims**

1. A combination of components that is effective for use in inducing and stimulating hair growth and for decreasing hair loss, said combination comprising:

(a) a first component (A), comprising in an anhydrous, physiologically acceptable medium an effective amount of at least hydrocortisone, its salts or esters; and

(b) a second component (B), comprising a physiologically acceptable medium and an effective amount of at least one pyrimidine derivative having the formula:



(I)

as well as acid addition salts thereof, wherein R_1 represents a group having the formula:



(II)

wherein R_3 and R_4 are selected from the group consisting of hydrogen, lower alkyl, alkenyl, alkylaryl and cycloalkyl, the alkyl part of which is a lower alkyl radical, or R_3 and R_4, with the nitrogen to which they are each bound, form a heterocyclic group, which is unsubstituted or is substituted on the carbon atoms with one to three lower alkyl, hydroxy, or alkoxy, and which is selected from the group consisting of aziridinyl, azetidinyl, pyrrolidinyl, piperidino, hexahydrolazepinyl, heptamethylenimino, octamethyleneimino, morpholino and 4-(lower alkyl)piperazinyl, and wherein R_2 is selected from the group consisting of hydrogen, lower alkyl, alkenyl, alkoxyalkyl, cycloalkyl, aryl, alkylaryl, arylalkyl, alkylarylalkyl, alkoxyarylalkyl and haloarylalkyl, the alkyl part of which is a lower alkyl radical, wherein said components are used as separate components that are used either successively or intermittently or are mixed immediately prior to use for use as a composition containing said components and wherein said effective amount of each component is effective, when used as a combination, to induce and stimulate hair growth and reduce its loss.

5,643,899

LIPIDS FOR EPIDERMAL MOISTURIZATION AND REPAIR OF BARRIER FUNCTION

Peter M. Elias, Muir Beach; Kenneth R. Feingold, San Rafael, both of Calif., and Carl R. Thornfeldt, Ontario, Oreg., assignors to Cellegy Pharmaceuticals, Inc., Foster City, and The Regents of the University of California, Oakland, both of Calif.

PCT No. PCT/US93/05798, § 371 Date Feb. 27, 1995, § 102(e) Date Feb. 27, 1995, PCT Pub. No. WO94/00127, PCT Pub. Date Jan. 6, 1994

Continuation-in-part of Ser. No. 952,934, Sep. 29, 1992, abandoned, and Ser. No. 953,603, Sep. 29, 1992, abandoned, which is a continuation-in-part of Ser. No. 901,052, Jun. 19, 1992, abandoned. This PCT application Jun. 18, 1993, Ser. No. 347,363

Int. Cl.[6] A61K *31/59;31/23;31/20;31/16*

U.S. Cl. 514—171 **20 Claims**

1. A method for treating the epidermis of a terrestrial mammal suffering from a condition characterized by a perturbed epidermal barrier function, said method comprising topically applying to said epidermis a therapeutically effective amount of a pharmaceutical composition comprising the lipids:

(a) cholesterol, and

(b) an acylceramide,

the mole ratio of lipid (a) to lipid (b) being from about 0.25:1 to about 5:1.

5,643,900

METHOD FOR TREATMENT OF PATHOLOGICAL CONDITIONS ASSOCIATED WITH ANGIOGENESIS AND PREPARATION THEREFOR

Theodore Fotsis, Heidelbergerstrasse 54 B, D-69151 Neckargemund, Germany; Herman Adlercreutz, Riskutie 13, FIN-00950, Helsinki, Finland, and Lothar Schweigerer, Lutherstrasse 6, 35033, Marburg, Germany

Continuation-in-part of Ser. No. 84,969, Jul. 2, 1993, abandoned. This application Mar. 17, 1995, Ser. No. 405,776

Int. Cl.[6] A61K *31/56*

U.S. Cl. 514—182 **3 Claims**

1. Method of suppressing the growth of solid tumors sustained by angiogenesis in a mammal comprising administering to said mammal 2-methoxyestradiol in an amount of 0.0015 to 100 mg/kg body weight/day.

5,643,901

MEDICAMENT FOR TREATING IDIOPATHIC THROMBOCYTOPENIC PURPURA

Toshiyasu Honbo, Kobe; Hachiro Seno, Kadoma, and Michihisa Nishiyama, Ikeda, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

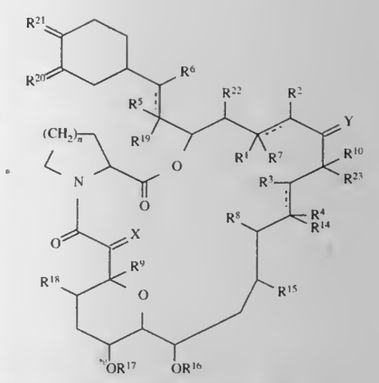
Continuation of Ser. No. 235,239, Apr. 29, 1994, abandoned, which is a continuation of Ser. No. 956,028, Dec. 10, 1992, abandoned. This application Feb. 16, 1995, Ser. No. 390,815

Claims priority, application United Kingdom, Jun. 11, 1990, 9012942; Jun. 11, 1990, 9012951; Jun. 11, 1990, 9012952; Jun. 11, 1990, 9012953; Jun. 11, 1990, 9012954; Jun. 11, 1990, 9012955; Jun. 11, 1990, 9012956; Jun. 11, 1990, 9012957; Jun. 11, 1990, 9012958; Jun. 11, 1990, 9012959; Jun. 11, 1990, 9012960; Jun. 11, 1990, 9012961; Aug. 13, 1990, 9017701

Int. Cl.[6] A61K *31/33*

U.S. Cl. 514—183 **6 Claims**

1. A method for treating idiopathic thrombocytopenic purpura, comprising administering to a mammal in need of such treatment an effective amount of a macrolide compound of formula (I)



(I)

wherein each vicinal pair of substituents R^1 and R^2, R^3 and R^4, R^5 and R^6 independently

a) represent two vicinal hydrogen atoms, or

b) form a second bond between the vicinal carbon atoms to which they are attached;

in addition to its significance above, R^2 may represent an alkyl group;

R^7 represents H, OH, protected hydroxyl or O-alkyl, or in conjunction with R^1 it may represent =O;

R^8 and R^9 independently represent H or OH;

R^{10} represents H, alkyl, alkyl substituted by one or more hydroxyl groups, alkenyl, alkenyl substituted by one or more hydroxyl groups, or alkyl substituted by =O;

X represents O, (H,OH), (H,H) or $—CH_2O—$;

Y represents O, (H,OH), (H,H), $N—NR^{11}R^{12}$ or $N—OR^{13}$;

R^{11} and R^{12} independently represent H, alkyl, aryl or tosyl;

R^{13}, R^{14}, R^{15}, R^{16}, R^{17}, R^{18}, R^{19}, R^{22} and R^{23} independently represent H or alkyl;

R^{20} and R^{21} independently represent O, or they may independently represent (R^{20}a,H) and (R^{21}a,H) respectively; R^{20}a and R^{21}a independently represent OH, O-alkyl or $OCH_2OCH_2CH_2OCH_3$ or R^{21}a is protected hydroxy;

in addition, R^{20}a and R^{21}a may together represent an oxygen atom in an epoxide ring;

n is 1 or 2;

in addition to their significances above, Y, R^{10} and R^{23}, together with the carbon atoms to which they are attached, may represent a 5- or 6-membered N-, S- or O-containing heterocyclic ring, which may be saturated or unsaturated, and which may be substituted by one or more groups selected from alkyl, hydroxy, alkyl substituted or by one or more hydroxyl groups, O-alkyl, benzyl and $—CH_2Se(C_6H_5)$;

or a pharmaceutically acceptable salt thereof.

5,643,902

VETERINARY TREATMENT

Victor Charles Cracknell, Tadworth, England, assignor to Pfizer Inc., New York, N.Y.

Continuation of Ser. No. 934,754, Oct. 6, 1992, abandoned. This application Mar. 16, 1994, Ser. No. 214,653

Claims priority, application United Kingdom, Apr. 26, 1990, 9009446

Int. Cl.[6] A61K *31/43;31/545;31/395*

U.S. Cl. 514—192 **5 Claims**

1. A method for the treatment of farrowing fever and/or bacterial pneumonia in pigs, which comprises administering to the animal an effective amount of amoxycillin or a veterinary acceptable derivative thereof, clavulanic acid or a veterinary acceptable derivative thereof, and a veterinary acceptable carrier.

5,643,903

2-(4-PIPERIDINYL)-1H-PYRIDO[4,3-B]INDOL-1-ONES AND RELATED COMPOUNDS

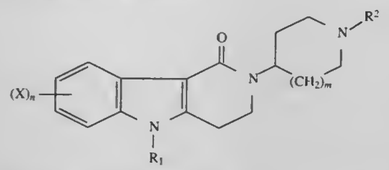
Lawrence L. Martin, Lebanon; Denise M. Flanagan, Livingston, and Joseph F. Payack, Somerset, all of N.J., assignors to Hoechst Marion Roussel, Inc., Cincinnati, Ohio

Division of Ser. No. 148,305, Nov. 8, 1993, Pat. No. 5,430,038, which is a division of Ser. No. 67.891, May 27, 1993, Pat. No. 5,292,883, which is a division of Ser. No. 821,364, Jan. 15, 1992, Pat. No. 5,229,517, which is a division of Ser. No. 588,870, Sep. 27, 1990, Pat. No. 5,102,889. This application Jun. 1, 1995, Ser. No. 458,146

Int. Cl.[6] A61K *31/55;* **C07D** *401/04*

U.S. Cl. 514—212 **3 Claims**

1. A compound of the formula



wherein R^1 is hydrogen, loweralkyl, phenyl, phenyl substituted by one or more loweralkyl, loweralkoxy, halogen, or trifluoromethyl groups, phenylloweralkyl or phenylloweralkyl in which the phenyl group is substituted by one or more loweralkyl, loweralkoxy, halogen, or trifluoromethyl groups; R^2 is hydrogen, loweralkyl, furanylloweralkyl, thienylloweralkyl, pyrrolylloweralkyl, pyridinylloweralkyl, phenylloweralkyl, phenylloweralkyl in which the phenyl group is substituted by one or more loweralkyl, loweralkoxy, halogen, or trifluoromethyl groups, or a group of the formula

wherein R^3 is loweralkyl, halololoweralkyl, phenyl, phenyl substituted by one or more loweralkyl, loweralkoxy, halogen, or trifluoromethyl groups, phenylloweralkyl, or phenylloweralkyl in which the phenyl group is substituted by one or more loweralkyl, loweralkoxy, halogen, or trifluoromethyl groups; X is hydrogen, loweralkyl, loweralkoxy, halogen, or trifluoromethyl; m is 2; n is 1 or 2; an optical isomer thereof; or a pharmaceutically acceptable salt thereof.

5,643,904

SUBSTITUTED HEXAHDRYOAZEPINONES AND TETRAHYDROBENZAZEPINONES

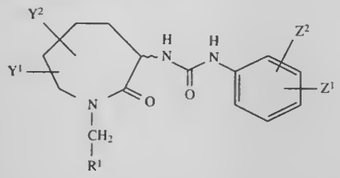
John A. Lowe, III, Stonington, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 78,125, Jun. 16, 1993, Pat. No. 5,484,917, which is a continuation-in-part of Ser. No. 825,677, Jan. 27, 1992, abandoned. This application Jun. 27, 1995, Ser. No. 495,283

Int. Cl.[6] A61K *31/53;* **C07D** *223/16*

U.S. Cl. 514—212 **7 Claims**

1. A compound of the formula



wherein Y^1 and Y^2 are independently selected from the group consisting of phenyl, thienyl, pyridyl, furyl, pyrimidyl, $(C_3–C_8)$ straight or branched alkyl and $(C_5–C_8)$ cycloalkyl, wherein said phenyl, thienyl, pyridyl, furyl and pyrimidyl may optionally substituted with one or two substituents independently selected from the group consisting of halo $(C_1–C_6)$ alkyl, $(C_1–C_6)$ alkoxy, nitro, amino and trifluoromethyl, and wherein said cycloalkyl may optionally be substituted with one or two substituents independently selected from $(C_1–C_6)$ alkyl;

Z^1 and Z^2 are independently selected from the group consisting of halo, $(C_1–C_6)$ alkyl, $(C_1–C_6)$ thioalkyl, $(C_1–C_6)$ alkoxy, trifluoromethyl, $(C_1–C_6)$ carboalkoxy, amino and nitro;

R^1 is phenyl, CO_2R^2, $SO_2NR^3R^6$ or $CONR^4R^5$, wherein said phenyl may optionally be substituted with one or two substituents independently selected from the group consisting of halo, $(C_1–C_6)$ alkyl, $(C_1–C_6)$ alkoxy, nitro, amino and trifluoromethyl, and wherein R^2, R^3, R^4 and R^5 are independently selected from hydrogen, $(C_3–C_{12})$ alkyl and fused, saturated, carbocyclic systems containing two or three rings;

or a pharmaceutically acceptable salt thereof

R^1 is phenyl, CO_2R^2, $SO_2NR^3R^6$ or $CONR^4R^5$, wherein said phenyl may optionally be substituted with one or two substituents independently selected from the group consisting of halo, $(C_1–C_6)$ alkyl, $(C_1–C_6)$ alkoxy, nitro, amino and trifluoromethyl, and wherein R^2, R^3, R^4 and R^5 are independently selected from hydrogen, $(C_3–C_{12})$ alkyl and fused, saturated, carbocyclic systems containing two or three rings;

or a pharmaceutically acceptable salt thereof.

4. A pharmaceutical composition for treating or preventing a condition selected from the group consisting of pain, gastrointestinal disorders such as ulcer and colitis, and central nervous system disorders such as anxiety and panic disorder in a mammal, comprising an amount of a compound according to claim **1** effective in preventing or treating such condition and a pharmaceutically acceptable carrier.

5,643,905

PHARMACEUTICAL FORMULATION FOR THE TREATMENT OF NICOTINE DEPENDENCE

Joachim Moormann, Werne, Germany, assignor to Therapie-System GmbH & Co., KG, Neuwied, and Arzneimittelforschung GmbH & Co. KG, Werne, both of Germany

PCT No. PCT/EP94/00055, § 371 Date Oct. 30, 1995, § 102(e) Date Oct. 30, 1995, PCT Pub. No. WO94/16708, PCT Pub. Date Aug. 4, 1994

PCT Filed Jan. 10, 1994, Ser. No. 495,608

Claims priority, application Germany, Jan. 23, 1993, 43 01 782.7

Int. Cl.[6] A61K *31/55*

U.S. Cl. 514—215 **7 Claims**

1. A method for the treatment of nicotine dependence which comprises administering to a patient suffering from such dependence an effective amount of galanthamine or a pharmaceutically acceptable acid addition salt thereof.

5,643,906

METHOD OF USING N-ARYLHETEROARYLALKYL IMIDAZOL-2-ONE COMPOUNDS FOR TREATMENT OF A GLAUCOMA DISORDER

David B. Reitz, Chesterfield, and Robert E. Manning, St. Louis, both of Mo., assignors to G.D. Searle & Co., Chicago, Ill.

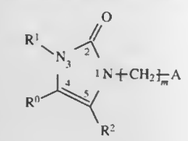
Continuation of Ser. No. 894,032, Jun. 4, 1992, abandoned, which is a continuation of Ser. No. 681,011, Apr. 5, 1991, Pat. No. 5,164,403. This application Jul. 1, 1993, Ser. No. 86,959

Int. Cl.[6] A61K *31/535;31/505;31/445;31/411*

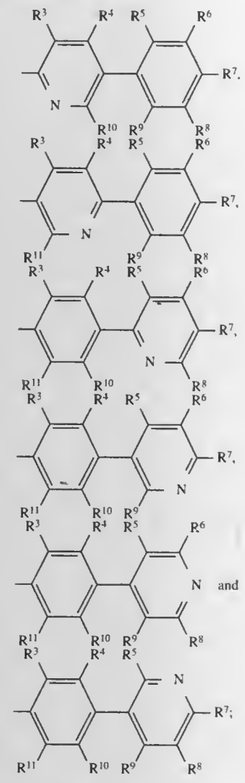
U.S. Cl. 514—235.8 **18 Claims**

1. A method for treating a glaucoma disorder related to elevated intraocular pressure, which elevated intraocular pressure is mediated by action of an angiotensin II receptor antagonist, said method

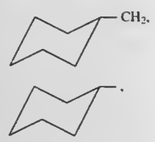
comprising administering to a subject susceptible to or afflicted with such glaucoma disorder a therapeutically-effective amount of an angiotensin II receptor antagonist compound of Formula I



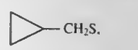
wherein A is selected from



wherein m is one; wherein R^1 is selected from methyl, ethyl, n-propyl, isopropyl, n-butyl, sec-butyl, isobutyl, tert-butyl, n-pentyl, isopentyl, neopentyl, phenyl, benzyl, phenethyl, cyclohexyl, cyclohexylmethyl, cyclohexylethyl, cyclohexanoyl, 1-oxo-2-cyclohexylethyl, benzoyl, 1-oxo-2-phenethyl, 1-oxoethyl, 1-oxopropyl, 1-oxobutyl, 1-oxopentyl, 2-butenyl, 3-butenyl, 2-butynyl, 3-butynyl and 2-hydroxybutyl; wherein R^0 is selected from hydrido, C_4H_9(n), $CH_3CH_2CH{=}CH$, C_3H_7(n), SC_3H_7,

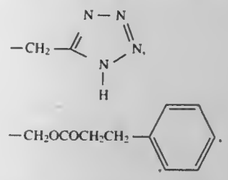


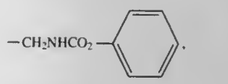
C_2H_5, C_5H_{11}(n), C_6H_{13}(n), SC_4H_9,



(I)

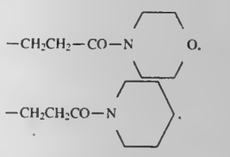
$CH_3CH{=}CH$, $CH_3CH_2CH_2CH{=}CH$—, amino, aminomethyl, aminoethyl, aminopropyl, CH_2OH, CH_2OCOCH_3, CH_2Cl, CH_2OCH_3, $CH_2OCH(CH_3)_2$, CHO, CH_2CO_2H, $CH(CH_3)CO_2H$,



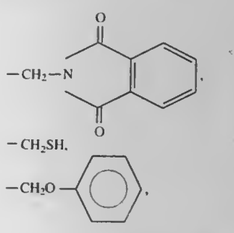


$—CO_2CH_3$, $—CONH_2$, $—CONHCH_3$, $CON(CH_3)_2$, $—CH_2—NHCO_2C_2H_5$,

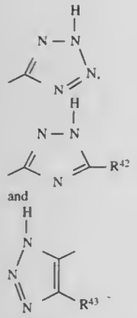
$—CH_2NHCO_2CH_3$, $—CH_2NHCO_2C_3H_7$, $—CH_2NHCO_2CH_2(CH_3)_2$, $—CH_2NHCO_2C_4H_9$, CH_2NHCO_2-adamantyl, $—CH_2NHCO_2$-(1-napthyl), $—CH_2NHCONHCH_3$, $—CH_2NHCONHC_2H_5$, $—CH_2NHCONHC_3H_7$, $—CH_2NHCONHC_4H_9$, $—CH_2NHCONHCH(CH_3)_2$, $—CH_2NHCONH$(1-napthyl), $—CH_2NHCONH$(1-adamantyl), CO_2H,



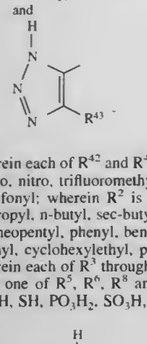
$—CH_2CH_2CH_2CO_2H$, $—CH_2CH_2F$, $—CH_2OCONHCH_3$, $—CH_2OCSNHCH_3$, $—CH_2NHCSOC_3H_7$, $—CH_2CH_2CH_2F$, $—CH_2ONO_2$,



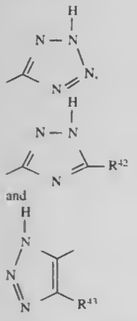
H, NO_2, CF_3, Br, Cl, F, I, methyl, ethyl, n-propyl, isopropyl, -butyl, sec-butyl, isobutyl, tert-butyl, n-pentyl, isopentyl, neopentyl, phenyl, cyclohexyl, cyclohexylmethyl, carboxyl, formyl, 1-oxoethyl, 1-oxopropyl, 1-oxobutyl, 1-oxopentyl, dimethoxymethyl, 1,1-dimethoxypropyl, 1,1-dimethoxypentyl, hydroxyalkyl, halo, 1-oxo-2-phenylethyl, 1-oxo-2-cyclohexylethyl, 1,1-difluoro-2-phenylethyl, monofluoromethyl, 1,1-difluoro-2-cyclohexylethyl, 2-cyclohexylethyl, 1,1-difluoro-3 -cyclohexylpropyl, 1,1-dimethoxybutyl, 1,1-difluoroethyl, 1,1-difluoropropyl, 1,1-difluorobutyl, 1,1-difluoropentyl, benzyl, 2-phenylethyl, 1,1-difluoro-3-phenylpropyl, cyclohexylmethyl, cyclohexylethyl, cyclohexanoyl, 1-butenyl, 2-butenyl, 3-butenyl, 1-butynyl, 2-butynyl, 3-butynyl, difluoromethyl, CO_2H, SH, PO_3H_2, SO_3H, $CONHNH_2$, $CONHNHSO_2CF_3$, OH.



and



wherein each of R^{42} and R^{43} is independently selected from chloro, cyano, nitro, trifluoromethyl, methoxycarbonyl and trifluoromethylsulfonyl; wherein R^2 is selected from methyl, ethyl, n-propyl, isopropyl, n-butyl, sec-butyl, isobutyl, tert-butyl, n-pentyl, isopentyl, neopentyl, phenyl, benzyl, phenethyl, cyclohexyl, cyclohexylmethyl, cyclohexylethyl, propylthio, butylthio, and hydroxyalkyl; wherein each of R^3 through R^{11} is hydrido with the proviso that at least one of R^5, R^6, R^8 and R^9 is an acidic group selected from CO_2H, SH, PO_3H_2, SO_3H, $CONHNH_2$, $CONHNHSO_2CF_3$, OH.



and

wherein each of R^{42} and R^{43} is independently selected from chloro, cyano, nitro, trifluoromethyl, methoxycarbonyl and trifluoromethylsulfonyl;
or a tautomer thereof or a pharmaceutically-acceptable salt thereof.

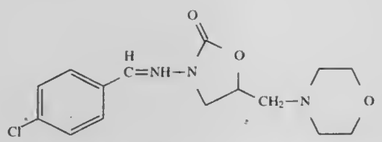
5,643,907

PHARMACEUTICAL COMPOSITION CONTAINING 5-MORPHOLINOMETHYL-3-(4-CHLOROBENZYLIDENEAMINE)-2-OXAZOLIDINONE AND ITS USE FOR THE TREATMENT OF CNS DISORDERS

Alicja Swirska, Jablonna; Leszek Krzywosinski, Warsaw; Maria Bogdal, Warsaw; Marta Serwin-Krajewska, Warsaw; Maria Kobylinska, Warsaw, and Andrzej Grzeszkiewicz, Warsaw, all of Poland, assignors to Instytut Farmaceutiyczny, Warsaw, Poland

PCT No. PCT/PL94/00004, § 371 Date Jul. 26, 1995, § 102(e) Date Jul. 26, 1995, PCT Pub. No. WO94/16705, PCT Pub. Date Aug. 4, 1994
PCT Filed Jan. 24, 1994, Ser. No. 495,428
Claims priority, application Poland, Jan. 27, 1993, 297-548
Int. Cl.[6] A61K *31/535*
U.S. Cl. 514—236.8 **24 Claims**

1. A pharmaceutical composition comprising a pharmaceutically acceptable carrier, 5-morpholinomethyl-3-(4-chlorobenzylideneamine)- 2-oxazolidinone of formula 1



and/or a pharmaceutical acceptable salt of 5-morpholinomethyl-3-(4-chlorobenzylideneamine)-2-oxazolidinone and an auxiliary agent.

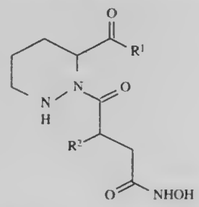
5,643,908

COLLAGENASE INHIBITOR

Yukio Sugimura; Kazuhiko Tamaki; Tomowo Kobayashi, and Kazuhiko Tanzawa, all of Tokyo, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

PCT No. PCT/JP92/01420, § 371 Date Jun. 27, 1994, § 102(e) Date Jun. 27, 1994, PCT Pub. No. WO93/09097, PCT Pub. Date May 13, 1993
PCT Filed Nov. 2, 1992, Ser. No. 232,119
Claims priority, application Japan, Nov. 8, 1991, 3-292884
Int. Cl.[6] A61K *31/50;* **C07D** *237/04;403/12;413/12*
U.S. Cl. 514—247 **16 Claims**

1. A compound having the formula:



in which:
R^1 represents a group of formula:
—NR^4R^5 wherein R^4 and R^5 are the same or different and each represents a hydrogen atom or an alkyl group having 1 to 4 carbon atoms; and
R^2 represents an alkyl group having 6 to 10 carbon atoms.

16. An inhibitor of angiogenesis, cancer invasion or cancer metastasis comprising an effective dose of a compound selected from the following compounds in admixture with a pharmaceutically acceptable carrier or vehicle:
N^2-[2-(R)-(hydroxyaminocarbonyl)methyl-1-oxoheptyl]-(S)-piperazic acid N-methylamide,
N^2-[2-(R)-(hydroxyaminocarbonyl)methyl-1-oxooctyl]-(S)-piperazic acid N-methylamide,
N^2-[2-(R)-(hydroxyaminocarbonyl)methyl-1-oxononyl]-(S)-piperazic acid N-methylamide,
N^2-[2-(R)-(hydroxyaminocarbonyl)methyl-1-oxodecyl]-(S)-piperazic acid N-methylamide,
N^2-[2-(R)-(hydroxyaminocarbonyl)methyl-1-oxododecyl]-(S)-piperazic acid N-methylamide,
N^2-[2-(R)-(hydroxyaminocarbonyl)methyl-1-oxo-4-phenylbutyl)-(S)-piperazic acid N-methylamide,
N^2-[2-(R)-(hydroxyaminocarbonyl)methyl-1-oxoheptyl]-(S)-piperazic acid N,N-dimethylamide,
N^2-[2-(R)-(hydroxyaminocarbonyl)methyl-1-oxooctyl]-(S)-piperazic acid N,N-dimethylamide,
N^2-[2-(R)-(hydroxyaminocarbonyl)methyl-1-oxononyl]-(S)-piperazic acid N,N-dimethylamide,
N^2-[2-(R)-(hydroxyaminocarbonyl)methyl-1-oxodecyl]-(S)-piperazic acid N,N-dimethylamide,
N^2-[2-(R)-(hydroxyaminocarbonyl)methyl-1-oxododecyl]-(S)-piperazic acid N,N-dimethylamide, and
N^2-[2-(R)-(hydroxyaminocarbonyl)methyl-1-oxo-4-phenylbutyl]-(S)-piperazic acid N,N-dimethylamide.

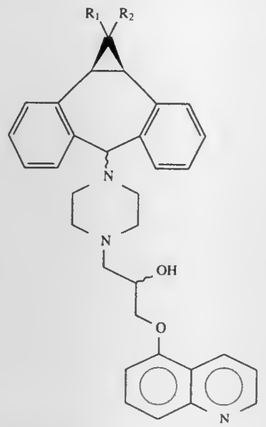
5,643,909

10,11-METHANODIBENZOSUBERANE DERIVATIVES

Jurg R. Pfister, Los Altos, and Doris L. Slate, Mountain View, both of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Apr. 19, 1993, Ser. No. 49,065
Int. Cl.[6] A61K *31/50*
U.S. Cl. 514—253 **6 Claims**

1. A chemosensitizing method for enhancing bioavailability of a pharmaceutically active agent comprising administering to a mammal in need thereof an amount of a compound represented by the formula



or a pharmaceutically acceptable salt thereof, wherein R^1 and R^2 are F, Cl or BR, sufficient to increase permeation of said active agent through the blood-brain barrier.

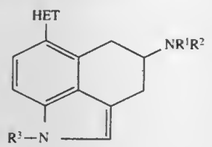
5,643,910

6-HETEROCYCLIC-4-AMINO-1,2,2A,3,4,5-HEXAHYDROBENZ[CD]INDOLES

Richard N. Booher, Indianapolis; David E. Lawhorn, Greenfield; Michael J. Martinelli; Charles J. Paget, Jr., both of Indianapolis, and John M. Schaus, Zionsville, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 263,910, Jun. 20, 1994, abandoned, which is a division of Ser. No. 954,171, Sep. 30, 1992, Pat. No. 5,347,013, which is a continuation-in-part of Ser. No. 676,679, Mar. 28, 1991, Pat. No. 5,244,911. This application Jun. 2, 1995, Ser. No. 458,534
Int. Cl.[6] A61K *31/50*
U.S. Cl. 514—253 **10 Claims**

1. A compound of the formula



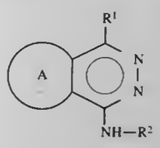
5,643,911

MEDICAMENT FOR THERAPEUTIC AND PROPHYLACTIC TREATMENT OF DISEASES CAUSED BY SMOOTH MUSCLE CELL HYPERPLASIA

Kumi Yamada; Yoshikuni Tamao; Masahiro Ohshima, and Norimichi Iwase, all of Yokohama, Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

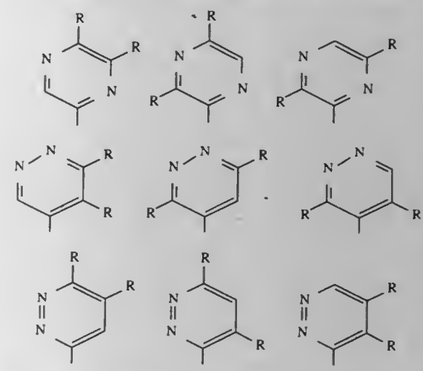
Filed May 16, 1995, Ser. No. 441,743
Claims priority, application Japan, May 19, 1994, 6-105367
Int. Cl.[6] A61K *31/495*
U.S. Cl. 514—254 **10 Claims**

1. A method for treating smooth muscle cell hyperplasia which comprises a step of administering to a patient in need of such treatment an therapeutically or prophylactically effective amount of an aminopyridazine derivative or a salt thereof represented by the following Formula (I):



(I)

wherein:
R^1 is hydrogen, C_1–C_4 alkyl, C_3–C_4 alkenyl, cyclopropylmethyl, phenyl (C_1–C_4 alkyl), naphthyl (C_1–C_4 alkyl), phenyl (C_1–C_4 alkyl) substituted with one or two substituents selected from the group consisting of C_1–C_3 alkoxy, halo, hydroxy, C_1–C_3 thioalkyl, nitro, C_1–C_3 alkyl or trifluoromethyl, naphthyl (C_1–C_4 alkyl) substituted with one or two substituents selected from the group consisting of C_1–C_3 alkoxy, halo, hydroxy, C_1–C_3 thioalkyl, nitro, C_1–C_3 alkyl or trifluoromethyl, —$(CH_2)_nS(C_1$–C_4 alkyl), —$C(O)R^4$, or —$(CH_2)_nC(O)NR^5R^6$;
R^2 is hydrogen, C_1–C_4 alkyl, cyclopropylmethyl or C_3–C_4 alkenyl;
R^3 is hydrogen, C_1–C_4 alkyl or an amino blocking group;
n is 1–4;
R^4 is hydrogen, C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_1–C_4 alkoxy or phenyl;
R^5 and R^6 are independently hydrogen, C_1–C_4 alkyl, or C_5–C_8 cycloalkyl with the proviso that when one of R^5 or R^6 is a cycloalkyl the other is hydrogen;
HET is a heterocyclic ring selected from the group consisting of



where each R is independently hydrogen, C_1–C_3 alkyl, halogen, hydroxy, C_1–C_3 alkoxy, C_1–C_3 thioalkyl, NH_2, CN or phenyl; or pharmaceutically acceptable salts thereof.

wherein R^1 represents cyclohexyl group; phenyl group which may be substituted with one or more substituents selected from the group consisting of C_1–C_4 alkyl groups, C_1–C_4 alkoxy groups and halogen atoms; thienyl group which may be substituted with one or more substituents selected from the group consisting of C_1–C_4 alkyl groups, C_1–C_4 alkoxy groups and halogen atoms; or furyl group which may be substituted with one or more substituents selected from the group consisting of C_1–C_4 alkyl groups, C_1–C_4 alkoxy groups and halogen atoms; R^2 represents —CHR^3R^4 wherein R^3 represents a hydrogen atom or a C_1–C_4 alkyl group and R^4 represents a C_1–C_4 alkyl group, cyclohexyl group, thienyl group, or phenyl group which may be substituted with one or more substituents selected from the group consisting of C_1–C_4 alkyl groups, C_1–C_4 alkoxy groups and halogen atoms; or R^2 represents a cyclohexyl group which may be substituted with one or more substituents selected form the group consisting of C_1–C_4 alkyl groups, C_1–C_4 alkoxy groups and C_1–C_6 alkylene groups; and ring A represents a benzene ring, a thiophene ring or a furan ring.

5,643,912

PYRAZINOIC ACID ESTERS AS ANTI-MYCOBACTERIUM AVIUM AGENTS

Michael Henry Cynamon, Dewitt, and John T. Welch, Albany, both of N.Y., assignors to The Research Foundation of State University of NY, Albany, N.Y.

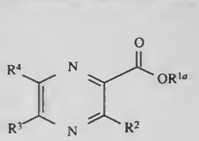
Continuation of Ser. No. 169,308, Dec. 17, 1993, abandoned. This application Jan. 11, 1996, Ser. No. 584,707

Int. Cl.[6] A61K *31/495;* **C07D** *241/18*

U.S. Cl. 514—255 **18 Claims**

1. A compound of formula IIa or a pharmaceutically acceptable salt thereof:

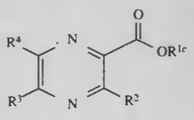
IIa



wherein R^{1a} is:
(a) loweralkoxyloweralkyl;
(b) —$(CH_2CH_2O)_n$loweralkyl, wherein n is 2 or 3
(c) —NHR^{1b} where R^{1b} is C_1 to C_{20} alkyl;
R^2 is:
(a) H;
(b) lower alkyl;
(c) lower haloalkyl;
(d) halogen;
R^3 and R^4 independently are:
(a) H;
(b) lower alkyl;
(c) lower haloalkyl;
(d) halogen;
(e) OQ, where Q is H, lower alkyl, or phenyl;
(f) SQ.

16. An antibacterial composition comprising a pharmaceutically acceptable carrier and a compound of formula:

IIa



wherein R^{1c} is:
(a) loweralkoxyloweralkyl or —$(CH_2CH_2O)_n$loweralkyl, wherein n is 2 or 3;
(b) C_{10} to C_{15} alkyl;
(c) —NHR^{1b} where R^{1b} is C_1 to C_{20} alkyl;
R^2 is:
(a) H;
(b) lower alkyl;
(c) lower haloalkyl;
(d) halogen;
R^3 and R^4 independently are:
(a) H;
(b) lower alkyl;
(c) lower haloalkyl;
(d) halogen;
(e) OQ, where Q is H, lower alkyl, or phenyl;
(f) SQ,
said compound possessing activity against bacteria having mycolic acid in their cell walls.

5,643,913

PHARMACEUTICAL COMPOSITIONS OF 5-SUBSTITUTED URACIL COMPOUNDS

Thomas Spector, Durham; David J. T. Porter, Raleigh, both of N.C., and Saad George Rahim, Beckenham, England, assignors to Glaxo Wellcome Inc., Research Triangle Park, N.C.

Division of Ser. No. 965,261, Jan. 19, 1993, abandoned. This application Nov. 9, 1994, Ser. No. 336,717

Claims priority, application United Kingdom, Jul. 19, 1990, 9015896; Nov. 17, 1990, 9025039

Int. Cl.[6] A61K *31/505*

U.S. Cl. 514—274 **4 Claims**

1. A pharmaceutical composition comprising a 5-substituted uracil compound substituted in the 5-position by;
halogen;
C_{2-4} alkenyl optionally substituted by halogen;
C_{2-6} alkynyl;
cyano; or
C_{1-4} alkyl substituted by one or more halogens.

5,643,914

PHARMACEUTICAL PYRIDINE COMPOUNDS

Robert A. Daines, Lansdale, Pa., assignor to SmithKline Beecham Corporation, Philadelphia, Pa.

PCT No. PCT/US93/06234, § 371 Date Dec. 19, 1994, § 102(e) Date Dec. 19, 1994, PCT Pub. No. WO94/00437, PCT Pub. Date Jan. 6, 1994

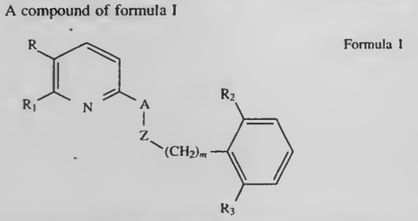
PCT Filed Jun. 30, 1993, Ser. No. 356,358

Int. Cl.[6] A61K *31/435;31/44;* **C07D** *401/00;211/72*

U.S. Cl. 514—277 **14 Claims**

1. A compound of formula I

Formula I



or an N-oxide, or a pharmaceutically acceptable salt, where
A is CH_2 and Z is $S(O)_q$ where q is 0, 1 or 2, CH_2, CHOH, CO, NR_x, or O, or
A is C=O and Z is NR_x;
m is 0–5;
R_x is hydrogen or lower alkyl;
R is C_1 to C_{20}-aliphatic, unsubstituted or substituted five-membered heteroaryl-C_1 to C_{10}-aliphatic-O—, unsubstituted or substituted phenyl-C_1 to C_{10}-aliphatic where substituted phenyl has one or more radicals selected from the group consisting of lower alkoxy, lower alkyl, trihalomethyl, and halo, or R is C_1 to C_{20}-aliphatic-O—, or R is unsubstituted or substituted phenyl-C_1 to C_{10}-aliphatic-O—where substituted phenyl has one or more radicals selected from the group consisting of lower alkoxy, lower alkyl, trihalomethyl, and halo;

R_1 is R_4, —(C_1 to C_5 aliphatic)R_4, —(C_1 to C_5 aliphatic)CHO, —(C_1 to C_5 aliphatic)CH_2OR_5;
R_2 and R_3 are independently, halo, lower alkoxy, CF_3, CN, or lower alkyl;
R_4 is tetrazol-5-yl or COOH or an ester or amide thereof; and
R_5 is H, lower alkyl, $CH_3(CH_2)_{0-6}CO$ or phenyl$(CH_2)_{0-6}$CO.

5,643,915

TREATMENT OF ISCHEMIA/REPERFUSION INJURY WITH THALIDOMIDE ALONE OR IN COMBINATION WITH OTHER THERAPIES

Peter J. Andrulis, Jr., Bethesda, and Murray W. Drulak, Gaithersburg, both of Md., assignors to Andrulis Pharmaceuticals Corp., Beltsville, Md.

Filed Jun. 6, 1995, Ser. No. 471,352

Int. Cl.[6] A01N *43/42;* **A61K** *31/44;31/445*

U.S. Cl. 514—279 **20 Claims**

1. A method for the prevention and treatment of ischemia/reperfusion injury in a mammal which comprises administering to said afflicted mammal a therapeutically-effective amount of thalidomide.

5,643,916

TETRAHYDRO-BETA-CARBOLINES

James E. Audia, Indianapolis, Ind.; Stephen Richard Baker, Camberley, England; Jesus Ezquerra Carrera, Madrid, Spain; Carlos Lamas Peteira, Madrid, Spain, and Concepcion Pedregal Tercero, Madrid, Spain, assignors to Eli Lilly and Company, Indianapolis, Ind.

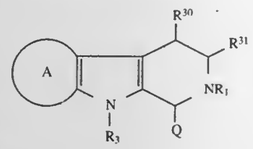
Division of Ser. No. 380,565, Feb. 6, 1995, abandoned. This application May 19, 1995, Ser. No. 444,449

Int. Cl.[6] A61K *31/44;* **C07D** *471/04;487/04*

U.S. Cl. 514—285 **11 Claims**

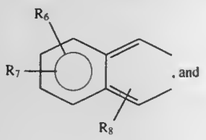
1. A compound of the Formula I

I

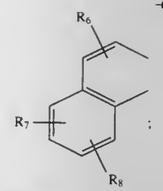


wherein
Q is selected from the group consisting of hydrogen, and $(CHR_2)R_4$;
R_1 is hydrogen or C_1–C_3 alkyl;
R_2 is hydrogen or C_1–C_6 alkyl;
R_3 is hydrogen or C_1–C_3 alkyl;
R_4 is C_5–C_8 cycloalkyl, substituted C_5–C_8 cycloalkyl, C_5–C_8 cycloalkenyl or substituted C_5–C_8 cycloalkenyl;
A is selected from the group consisting of

(IIa)



and



(IIIa)

wherein
R_6 and R_7 are, independently, hydrogen, C_1–C_6 alkyl, C_2–C_6 alkenyl, halo, halo(C_1–C_6)alkyl, halo(C_2–C_6)alkenyl, COR_5, C_1– C_{10} alkanoyl, CO_2R_5, (C_1–C_6 alkyl)$_m$amino, NO_2, —SR_5, or OR_5;
m is an integer of 1 to 2;
R_5 is independently hydrogen or C_1–C_4 alkyl;
R_5 is C_1–C_4 alkyl;
R_8 is independently selected from the group consisting of an R_6 group, substituted C_3–C_8 cycloalkyl, C_3–C_8 cycloalkyl, C_3–C_8 cycloalkyl-(C_1–C_3)alkyl, C_5–C_8 cycloalkenyl, substituted C_5–C_8 cycloalkenyl or C_5–C_8 cycloalkenyl-(C_1–C_3)alkyl, C_7–C_{16} arylalkyl;
R^{30} and R^{31} are independently selected from the group consisting of C_1–C_6 alkyl and C_2–C_6 alkenyl; or
a pharmaceutically acceptable salt or solvate thereof.

5,643,917

4-AMINOMETHYL-1-AZAADAMANTANE DERIVED BENZAMIDES

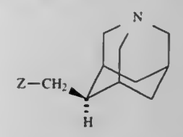
Daniel Lee Flynn, Mundelein, and Robert L. Shone, Palatine, both of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Division of Ser. No. 919,679, Jul. 27, 1992. This application May 18, 1995, Ser. No. 443,545

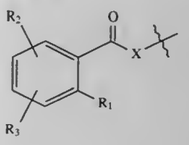
Int. Cl.[6] A61K *31/435;* **C07D** *471/18*

U.S. Cl. 514—290 **32 Claims**

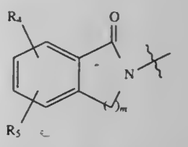
I. A compound of the formula:



or a pharmaceutically acceptable salt thereof wherein Z is selected from the group consisting of



and



R_1 is alkoxy of one to six carbon atoms;
R_2, R_3, R_4 and R_5 are the same or different and are selected from the group consisting of hydrogen, halogen, CF_3, hydroxy, alkoxy of one to six carbon atoms, acyl of two to seven

carbon atoms, amino, amino substituted by one or two alkyl groups of one to six carbon atoms, C_2–C_7 acylamino, aminocarbonyl, aminosulfone optionally substituted by one or two alkyl groups of one to six carbon atoms, C_1–C_6 alkylsulfone and nitro;

m is 1 or 2;

X is 0 or NR_7; and

R_7 is hydrogen or alkyl of 1 to 6 carbon atoms.

5,643,918

MARCROCYCLIC AMIDE AND UREA IMMUNOMODULATORS

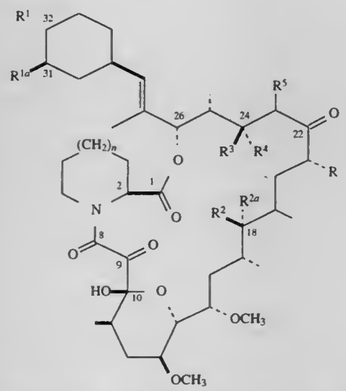
Rolf Wagner; Jay R. Luly, and Yat Sun Or, all of Libertyville, Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 213,394, Mar. 14, 1994, Pat. No. 5,538,994, which is a continuation-in-part of Ser. No. 149,419, Nov. 9, 1993, abandoned, which is a continuation-in-part of Ser. No. 32,958, Mar. 17, 1993, abandoned, which is a continuation-in-part of Ser. No. 755,208, Sep. 5, 1991, abandoned. This application Apr. 19, 1996, Ser. No. 636,746

Int. Cl.[6] **A61K** *31/435;* **C07D** *498/22*

U.S. Cl. 514—291 **2 Claims**

1. A pharmaceutical composition useful for immunomodulation comprising a therapeutically-effective amount of a compound having the formula:



(I)

or a pharmaceutically acceptable salt, ester or amide thereof, wherein the ester is selected from C_1— to —C_6 -alkyl esters, C_5— to —C_7 cycloalkyl esters, aryl —C, —C_6-alkyl esters and esters resulting from reaction of an alcohol moiety in the compound of formula I with a C_1— to —C_6-alkyl carboxylic acid, a C_1— to —C_6-alkyl dicarboxylic acid or an arylcarboxylic acid and wherein the amide results from reaction of a carboxylic acid moiety in the compound of formula I with NH_3, $NH_2(C_1$— to —C_3-alkyl), $NH(C_1$— to —C_2 alkyl)$_2$ or a 5- or 6-membered ring heterocycle containing one nitrogen atom, wherein

n is zero or one;

R is selected from the group consisting of hydrogen, methyl, ethyl, allyl, propyl, 2-hydroxyethyl, cyclopropylmethyl, 2-oxopropyl and 2-ethanal;

R^1 and R^{1a} are selected such that one of R^1 and R^{1a} is hydrogen, —(C_1– C_6-alkyl)oxy or hydroxy, and the other is chosen from the group consisting of:

(I) —$O(CH_2)_jC(O)R^{12}$, where j is one-to-five, and R^{12} is selected from the group consisting of:

(A) hydroxy;

(B) —OR^{13}, wherein R^{13} is:

(i) —(C_1–C_{10}-alkyl);

(ii) -(cyclo-C_3–C_8-alkyl);

(iii) -(cyclo-C_3–C_8-alkyl-C_1—C_3-alkyl);

(iv) aryl-(C_1–C_6-alkyl)-, where the zero, one, two or three substituents on the aryl group, each designated R^{301}, are independently selected from the group consisting of:

(a) —(C_1— to —C_7-alkyl);

(b) —(C_2— to —C_6-alkenyl);

(c) halogen;

(d) —$(CH_2)_mNR^8R^9$, where m is zero-to-six, and NR^8R^9 is either a nitrogen atom attached to R^8 and R^9, wherein R^8 and R^9 are independently selected from the group consisting of:

(1) hydrogen;

(2) —R^{400}, wherein R^{400} is selected from the group consisting of:

a. mod-aryl, wherein the one, two, or three substituents of mod-aryl, each designated R^{302}, are independently selected from the group consisting of:

1. —(C_1— to —C_7-alkyl);
2. —(C_2— to —C_6-alkenyl);
3. halogen;
4. —$(CH_2)_mNR^{18}R^{19}$, where m is as defined above and $NR^{18}R^{19}$ is either a nitrogen atom attached to R^{18} and R^{19}, wherein R^{18} and R^{19} are independently selected from the group consisting of hydrogen, —(C_1–C_6-alkyl), unsubstituted aryl-, and unsubstituted aryl-(C_1–C_6-alkyl); or $NR^{18}R^{19}$ may be a 3-to-7-membered heterocyclic ring where the ring consists of carbon atoms, the nitrogen atom shown, and zero, one or two additional heteroatoms independently selected from the group consisting of —O—, —NH—, —N(C_1— to —C_6-alkyl) and —$S(O)_s$—, wherein s is zero, one or two;
5. —CN;
6. —CHO;
7. mono-, di-, tri-, or perhalogenated —C_1–C_6-alkyl;
8. —$S(O)_sR^{18}$, where s and R^{18} are as defined above;
9. —$C(O)NR^{18}R^{19}$, where $NR^{18}R^{19}$ is as defined above;
10. —$(CH_2)_mOR^{18}$, where m and R^{18} are as defined above;
11. —$OH(OR^{16})(OR^{17})$, where R^{16} and R^{17} are independently chosen from —(C_1— to —C_3 alkyl) groups or, taken together, R^{16} and R^{17} form an ethylene or propylene bridge;
12. —$(CH_2)_mOC(O)R^{18}$, where m and R^{18} are as defined above;
13. —$(CH_2)_mC(O)OR^{18}$, where m and R^{18} are as defined above;
14. —OR^{10}, where R^{10} is:
(i) —PO(OH)OH,
(ii) —SO_3H,
(iii) —$C(O)(CH_2)_mC(O)OH$, wherein m is as defined above;
15. —NO_2;
16. —N_3;
17. —(C_2— to —C_6-alkynyl);
18. —C≡C—$Si(CH_3)_3$; and
19. guanidino substituted by:
a) hydrogen;
b) —(C_1–C_6-alkyl);
c) unsubstituted aryl;
d) (C_1–C_8-alkyl)—C(O)—;
e) unsubstituted aryl-$S(O)_2$;
f) (C_1–C_6-alkyl)—OC(O)—;
g) unsubstituted aryl-(C_1–C_6-alkyl)—OC(O);
h) unsubstituted aryl-OC(O); or
i) (C_1–C_6-alkyl)SO_2—; or taken together, any two adjacent R^{302} substituents in a di- or trisubstituted mod-aryl group form a 5-, 6- or 7-membered carbocyclic ring, or a 5-, 6-, or 7-membered heterocyclic ring, wherein the ring atoms consist of carbon atoms and one or two heteroatoms independently selected from the group consisting of —O—, —$S(O)_s$—, where s is as defined above, and —NR^{18}—, where R^{18} is as defined above;

b. -Q-mod-aryl, where the divalent radical —Q— is selected from the group consisting of:

1. —(C_1 — to —C_6-alkyl)-;
2. —(C_2— to —C_6-alkenyl)-;

3. —(C_2— to —C_6-alkynyl)-;
4. —$(CH_2)_mO$—, wherein m is as defined above;
5. —$O(CH_2)_m$—, wherein m is as defined above;
6. —$N(R^{18})C(O)$—, wherein R^{18} is as defined above;
7. —$C(O)N(R^{18})$—, wherein R^{18} is as defined above;
8. —$S(O)_s$—, wherein s is as defined above;
9. —$N(R^{18})$—, wherein R^{18} is as defined above;
10. —$N(R^{18})S(O)_t$—, wherein t is one or two, and R^{18} is as defined above;
11. —$S(O)_tN(R^{18})$—, wherein t and R^{18} are as defined above;
12. —C(O)—;
13. —NN—;
14. —CHN—;
15. —NCH—;
16. —ONCH—: and
17. —CHNO—;

c. -mod-Het, where the one, two, or three substituents of rood-Het, each designated R^{302}, are independently selected, and are as defined above;

d. -Q-mod-Het, where Q is as defined above;

e. -biaryl;

f. -Q-biaryl, where Q is as defined above;

g. -mod-aryl-Q-mod-aryl, where Q is as defined above;

h. -mod-aryl-Q-mod-Het, where Q is as defined above;

i. -mod-Het-Q-mod-aryl, where Q is as defined above;

j. -mod-Het-Q-mod-Het, where Q is as defined above;

k. -mod-Het-mod-aryl;

l. -mod-aryl-mod-Het; and

m. -mod-Het-mod-Het;

(3) —(C_1— to —C_6-alkyl);

(4) substituted-C_1— to —C_6-alkyl;

(5) —(C_3— to —C_6-alkenyl);

(6) substituted-C_3— to —C_6-alkenyl;

(7) —(C_3— to —C_6-alkynyl);

(8) substituted-C_3— to —C_6-alkynyl;

(9) -(cyclo-C_3— to —C_{10}-alkyl);

(10) substituted-cyclo-C_3— to —C_{10}-alkyl;

(11) -(cyclo-C_4— to —C_{10}-alkenyl);

(12) substituted-cyclo-C_4— to —C_{10}-alkenyl;

(13) -(bicyclo-C_6— to —C_{10}-alkyl);

(14) substituted-bicyclo-C_6— to —C_{10}-alkyl;

(15) -(bicyclo-C_6— to —C_{10}-alkenyl);

(16) substituted-bicyclo-C_6— to —C_{10}-alkenyl;

(17) -(bicyclo-C_6— to —C_{10}-alkenyl)-C_1— to —C_6-alkyl; and

(18) substituted-bicyclo-C_6— to —C_{10}-alkenyl-C_1— to —C_6-alkyl; or —NR^8R^9 may be a 3- to 7-membered heterocyclic ring, where the ring consists of carbon atoms, the nitrogen atom shown, and zero, one or two additional heteroatoms independently selected from the group consisting of —O—, —$S(O)_s$—, wherein s is as defined above, and —NR^8—, wherein R^8 is as defined above;

(e) —CN;

(f) —CHO;

(g) mono-, di-, tri-, or perhalogenated —C_1–C_6-alkyl;

(h) —$S(O)_sR^8$, where s and R^8 are as defined above;

(i) —$C(O)NR^8R^9$, where NR^8R^9 is as defined above;

(j) —$(CH_2)_mOR^8$, where m and R^8 are as defined above;

(k) —$CH(OR^{16})(OR^{17})$, where R^{16} and R^{17} are as defined above;

(l) —$(CH_2)_mOC(O)R^8$, where m and R^8 are as defined above;

(m) —$(CH_2)_mC(O)OR^8$, where m and R^8 are as defined above;

(n) —OR^{10}, where R^{10} is as defined above;

(o) —NO_2;

(p) —N_3;

(q) —R^{400}, as defined above;

(r) —$S(O)_tNR^8R^9$, where t and NR^8R^9 are as defined above;

(s) —$NR^8S(O)_tR^9$, where t, R^8 and R^9 are as defined above;

(t) —(C_2— to —C_6-alkynyl);

(u) —C≡C—$Si(CH_3)_3$; and

(v) guanidino substituted by:

(1) hydrogen;

(2) —(C_1–C_6-alkyl);

(3) -mod-aryl;

(4) (C_1–C_8-alkyl)—C(O)—;

(5) mod-aryl-$S(O)_2$—;

(6) (C_1–C_6-alkyl)—OC(O)—;

(7) mod-aryl-(C_1–C_6-alkyl)—OC(O);

(8) mod-aryl-OC(O)—; or

(9) (C_1–C_6-alkyl)SO_2—; or taken together, any two adjacent R^{301} substituents in a di- or trisubstituted aryl group form a 5-, 6- or 7-membered carbocyclic ring, or a 5-, 6- or 7-membered heterocyclic ring wherein the ring atoms consist of carbon atoms and zero, one or two heteroatoms independently selected from the group consisting of —O—, —$S(O)_s$—, where s is as defined above, and —NR^8—, where R^8 is as defined above;

with the proviso that each R^{301} substituent or each ring formed by two adjacent R^{301} groups may comprise no more than twenty non-hydrogen atoms;

(v) aryl-;

(vi) Het-;

(vii) heterocyclic-;

(viii) mono-, di-, tri-, or per-halogenated-C_1–C_6-alkyl-;

(ix) -(cyclo-C_5–C_{10}-alkenyl);

(x) -(cyclo-C_5–C_{10}-alkenyl-C_1–C_3-alkyl);

(xi) -(bicyclo-C_6—C_{12}-alkenyl); or

(xii) -(bicyclo-C_6–C_{12}-alkenyl-C_1–C_3-alkyl);

(C) —$NR^{14}R^{15}$, wherein $NR^{14}R^{15}$ is either a nitrogen atom attached to R^{14} and R^{15}, wherein R^{14} and R^{15} are independently selected from the group consisting of:

(i) hydrogen;

(ii) —R^{400}, as defined above;

(iii) —(C_1— to —C_{10}-alkyl);

(iv) sub-C_1 — to —C_{10}-alkyl;

(v) -(cyclo-C_3— to —C_{10}-alkyl);

(vi) sub-cyclo-C_3— to —C_{10}-alkyl;

(vii) -(cyclo-C_3— to —C_{10}-alkyl-C_1 — to —C_3-alkyl);

(viii) sub-cyclo-C_3— to —C_{10}-alkyl-C_1 — to —O3-alkyl;

(ix) —(C_3— to —C_{10}-alkenyl);

(x) sub-C_3— to —C_{10}-alkenyl;

(xi) -(cyclo-C_4— to —C_{10}-alkenyl);

(xii) sub-cyclo-C_4— to —C_{10}-alkenyl;

(xiii) -(cyclo-C_6— to —C_{10}-alkyl-C_3–C_5-alkenyl);

(xiv) sub-cyclo-C_6— to —C_{10}-alkyl-C_3–C_5-alkenyl;

(xv) —(C_3— to —C_{10}-alkynyl);

(xvi) sub-C_3— to —C_{10}-alkynyl;

(xvii) -(cyclo-C_6— to —C_{10}-alkyl-C_3–C_5-alkynyl);

(xviii) sub-cyclo-C_6— to —C_{10}-alkyl-C_3—C_5-alkynyl;

(xix) -(bicyclo-C_6— to —C_{10}-alkyl);

(xx) sub-bicyclo-C_6— to —C_{10}-alkyl;

(xxi) -(bicyclo-C_6— to —C_{10}-alkenyl);

(xxii) sub-bicyclo-C_6— to —C_{10}-alkenyl;

(xxiii) -aryl;

(xxiv) -Het; and

(xxv) R^6, where R^6 is selected from the group consisting of:

(a) hydrogen;

(b) —(C_1— to —C_{10}-alkyl);

(c) mod-C_1— to —C_{10}-alkyl;

(d) —(C_3— to —C_{10}-alkenyl);

(e) mod-C_3— to —C_{10}-alkenyl;

(f) —(C_3— to —C_{10} alkynyl);

(g) mod-C_3— to —C_{10}-alkynyl;

(h) -(cyclo-C_3— to —C_{10}-alkyl);

(i) mod-cyclo-C_3— to —C_{10}-alkyl;

(j) -(cyclo-C_4— to —C_{10}-alkenyl);

(k) mod-cyclo-C_4— to —C_{10}-alkenyl;

(l) -(bicyclo-C_6— to —C_{10}-alkyl);

(m) mod-bicyclo-C_6— to —C_{10}-alkyl;

(n) -(bicyclo-C_6— to —C_{10}-alkenyl);

(o) mod-bicyclo-C_6— to —C_{10}-alkenyl;

(p) —R^8, as defined above;

(q) -aryl; and

(r) -Het; or —$NR^{14}R^{15}$ may be a 3- to 7-membered heterocyclic ring, where the ring consists of carbon atoms, the nitrogen atom shown, and zero, one or two additional heteroatoms independently selected from —O—,

—S(O)$_s$—, wherein s is as defined above, and —NR^8—, wherein R^8 is as defined above, which ring is unsubstituted or substituted with from one-to-five compatible radicals independently selected from the group consisting of:

(i) R^6, as defined above;
(ii) —(CH$_2$)$_m$OR^6, where m and R^6 are as defined above;
(iii) —(CH$_2$)$_m$NR^{6}R^7, where m is as defined above and NR^{6}R^7 is either a nitrogen atom attached to R^6 and R^7, wherein R^6 is as defined above and R^7 is independently selected from the group defining R^6, or —NR^{6}R^7 may be a 3- to 7-membered heterocyclic ring, where the ring consists of carbon atoms, the nitrogen atom shown, and zero, one, or two additional heteroatoms independently selected from the group consisting of —O—, —S(O)$_s$—, wherein s is as defined above, and —NR^8—, wherein R^8 is as defined above, which ring is unsubstituted or substituted with from one-to-six compatible radicals independently selected from the group consisting of:
(a) —R^8, as defined above;
(b) —(CH$_2$)$_m$OR^8, wherein m and R^8 are as defined above;
(c) —S(O)$_s$R^8, wherein s and R^8 are as defined above;
(d) —S(O)$_t$NR^{8}R^9, wherein t and NR^{8}R^9 are as defined above;
(e) —(CH$_2$)$_m$NR^{8}R^9, wherein m and NR^{8}R^9 are as defined above;
(f) —SO$_3$H;
(g) =NOR^8, wherein R^8 is as defined above;
(h) —R^{400}, as defined above;
(i) -aryl;
(j) -Het; and
(k) —R^{399}, wherein R^{399} is selected from the group consisting of:
(1) hydroxyl;
(2) —C(O)OH;
(3) —C(O)OR^8, where R^8 is as defined above;
(4) -(cyclo-C$_3$— to —C$_7$-alkyl);
(5) oxo;
(6) thiooxo;
(7) epoxy;
(8) halogen;
(9) —CN;
(10) —N$_3$;
(11) —NO$_2$;
(12) —OR^{10}, where R^{10} is as defined above;
(13) —S(O)$_t$NR^{8}R^9, wherein t and NR^{8}R^9 are as defined above;
(14) —NR^{8}S(O)$_t$R^9, where t, R^8 and R^9 are as defined above;
(15) —CH(OR^{16})(OR^{17}), where R^{16} and R^{17} are as defined above; and
(16) guanidino substituted by hydrogen; —(C$_1$–C$_6$-alkyl); aryl; (C$_1$—C$_6$-alkyl)CO—; aryl-SO$_2$—; (C$_1$–C$_6$-alkyl)OC(O)—; aryl-(C$_1$–C$_6$-alkyl)OC(O)—; aryl-OC(O)—; or (C$_1$–C$_6$-alkyl)-SO$_2$—;
(iv) —C(O)OR^6, where R^6 is as defined above;
(v) —SO$_3$H;
(vi) —S(O)$_s$R^6, where s and R^6 are as defined above;
(vii) —S(O)$_t$NR^{6}R^7, where t and NR^{6}R^7 are as defined above;
(viii) =NOR^6, where R^6 is as defined above;
(ix) -aryl;
(x) -Het;
(xi) —R^{399}, as defined above; and
(xii) —R^{400}, as defined above;
(D) -aryl;
(E) Het-;
(F) mono-, di-, tri-, or per-halogenated-C$_1$–C$_6$alkyl;
(G) —N(R^8)NR^{14}R^{15}, where R^8 and NR^{14}R^{15} are as defined above;
(H) —Si(R^{11})$_3$, where each R^{11} is independently —(C$_1$–C$_6$-alkyl), aryl-(C$_1$–C$_6$-alkyl)-, or aryl;
(J) —OSi(R^{11})$_3$, where each R^{11} is independently as defined above;
(J) —Sn(R^{11})$_3$, where each R^{11} is independently as defined above;
(K) —P(R^{11})$_2$, where each R^{11} is independently as defined above;
(L) —R^{14}, as defined above; and
(M) halogen;
(II) —O(CH$_2$)$_m$S(O)$_s$R^{12}, where m, s and R^{12} are as defined above;
(III) —O(CH$_2$)$_j$CN, where j is as defined above;
(IV) —O(CH$_2$)$_j$C(=NOR^{14})R^{12}, where j, R^{12} and R^{14} are as defined above;
(V) —O(CH$_2$)$_j$C(=N$^+$(O$^-$)R^{14})R^{12}, where j, R^{12} and R^{14} are as defined above, with the proviso that R^{14} may not be hydrogen;
(VI) —O(CH$_2$)$_j$C(=NOR^{14})R^{15}, where j, R^{14} and R^{15} are as defined above;
(VII) —O(CH$_2$)$_j$C(=N$^+$(O$^-$)R^{14})R^{15}, where j, R^{14} and R^{15} are as defined above, with the proviso that R^{14} may not be hydrogen;
(VIII) —OC(O)O(CH$_2$)$_j$C(O)NR^{14}R^{15}, where j and NR^{14}R^{15} are as defined above;
(IX) —O(CH$_2$)$_j$NR^{6}C(O)OR^{14}, where j, R^6 and R^{14} are as defined above;
(X) —O(CH$_2$)$_j$NR^{6}C(O)NR^{14}R^{15}, where j, R^6 and NR^{14}R^{15} are as defined above;
(XI) —O(CH$_2$)$_j$NR^{6}O(O)NR^{7}NR^{14}R^{15}, where j, R^6, R^7 and NR^{14}R^{15} are as defined above;
(XII) —O(CH$_2$)$_j$NR^{6}C(O)R^{14} where j, R^6 and R^{14} are as defined above; and
(XIII) —O(CH$_2$)$_j$N R^{6}C(O)OC(O)R^{14}, where j, R^6 and R^{14} are as defined above;

R^2 and R^{2a} are independently hydrogen, halogen, or —OR^{14}, wherein R^{14} is as defined above, or one of R^2 and R^{2a} may be hydroxy, when the other of R^2 or R^{2a} is hydrogen, or R^2 and R^{2a} taken together is oxo or thiooxo;

R^3 and R^4 are chosen, when R^5 is hydrogen, such that one of R^3 and R^4 is hydrogen and the other is selected from hydrogen, hydroxy, —OCOR^8, where R^8 is as defined above, or —OSi(R^{11})$_3$, where each R^{11} is independently as defined above, or one of R^3 and R^4 is joined with non-hydrogen R^5 to form a C-23/C-24 bond, with the other of R^3 and R^4 being hydrogen, hydroxy, —OCOR^8, where R^8 is as defined above, or —OSi(R^{11})$_3$, where each R^{11} is independently as defined above; and

R^5 is hydrogen, or taken together with either R^3 or R^4, forms a C-23/C-24 bond;

with the proviso that when R^{1a} is methoxy, R^2 is hydrogen and R^{2a} is hydroxy or fluoro or R^{2a} is hydrogen and R^2 is hydroxy or fluoro, R^3 is hydroxy, R^4 is hydrogen, R^5 is hydrogen and n is 2, then R^1 is other than —OCH$_2$C(O)OCH$_2$CH$_3$ and

wherein at each occurrence the aryl group is independently selected from the group consisting of phenyl, 1-naphthyl, 2-naphthyl, azulenyl, fluorenyl, (1,2)-dihydronaphthyl, (1,2,3,4)-tetrahydronaphthyl, indenyl and indanyl and wherein each aryl group is unsubstituted or substituted with from one, two or three independently selected substituents, R^{301}, as defined above; and

wherein at each occurrence the term bicyclo refers to a two ring system; and,

wherein at each occurrence the term cycloalkenyl refers to cyclic groups of 5 to 10 carbons possessing one or more carbon-carbon double bonds in which the point of attachment can occur at any available valency on the carbocylic ring; and,

wherein at each occurrences the term cycloalkyl refers to a cyclic groups of 3 to 8 carbons; and,

wherein at each occurrence the term cycloalkylalkenyl refers to cycloalkyl, as defined above, appended to an alkenyl group, as defined above; and,

wherein at each occurrence the term cycloalkylalkyl refers to a cycloalkyl group appended to a lower alkyl group; and,

wherein at each occurrence the term cycloalkylalkynyl refers to cycloalkyl, as defined above, appended to an alkynyl group, as defined above; and,

wherein at each occurrence the term mod-aryl refers to an aryl group as defined above, with the exception that the aryl group is unsubstituted or substituted with from one to three independently selected substituents, R^{302}, rather than R^{301}, where R^{302} is as defined above; and

wherein at each occurrence, the heterocyclic group is independently selected from the group consisting of aziridinyl, thiomorpholine, thiomorpholine-oxide, thiomorpholine dioxide, pyrrolidinyl, pyrazolinyl, pyrazolidinyl, imidazolinyl, imidazolidinyl, piperidinyl, piperazinyl, oxazolidinyl, isoxazolidinyl, morpholinyl, thiazolidinyl, and isothiazolidinyl wherein any carbon or heteroatom with suitable valence may bear a substituent, R^{301}, as defined above; and wherein at each occurrence, the term mod-heterocyclic refers to a heterocyclic group as defined above, with the exception that any carbon or heteroatom with suitable valence may bear a substituent, R^{302}, rather than R^{301}, where R^{302} is as defined above; and

wherein at each occurrence, the het group is independently selected from pyrrolyl, pyrazolyl, cytosinyl, thiocytosinyl, imidazolyl, pyridyl, pyrazinyl, pyrimidinyl, pyridazinyl, xanthenyl, xanthonyl, xanthopterinyl, oxazolyl, thiouracilyl, isoxazolyl, indolyl, quinolinyl, uracilyl, urazolyl, uricyl, thiazolyl, isothiazolyl, isoquinolinyl, thyminyl, benzimidazolyl, benzothiazolyl, benzoxazolyl, furyl, thienyl, and benzothienyl wherein any carbon or heteroatom with suitable valence may bear a substituent, R^{301}, as defined above; and

wherein at each occurrence, the term mod-het refers to a her group as defined above, with the exception that any carbon or heteroatom with suitable valence may bear a substituent, R^{302}, rather than R^{301}, where R^{302} is as defined above; and

wherein at each occurrence, the term mod when used as a prefix for the group selected from —C$_1$ — to —C$_{10}$-alkyl, —C$_3$— to —C$_{10}$-alkenyl, —C$_3$— to —C$_{10}$-alkynyl, -cyclo-C$_3$— to —C$_{10}$-alkyl, -cyclo-C$_4$— to —C$_{10}$-alkenyl, -bicyclo-C$_6$— to —C$_{10}$-alkyl, and -bicyclo-C$_6$— to —C$_{10}$-alkenyl refers to from one to six radicals substituted on said group, wherein said radicals are independently selected from the group consisting of —R^8, —(CH$_2$)$_m$OR^8, —S(O)$_t$NR^{8}R^9, —S(CH$_2$)$_m$NR^{8}R^9, —S(O)$_3$H, =NOR^8, —R^{399}, —R^{400}, and -Het where R^8, R^9, m, s, t, —R^{399}, —R^{400}, -aryl and -Het are as defined above; and

wherein at each occurrence, the term sub when used as a prefix for the group selected from —C$_1$ — to —C$_{10}$-alkyl, -cyclo-C$_3$— to —C$_{10}$-alkyl, -cyclo-C$_3$— to —C$_{10}$-alkyl-C$_3$— to —C$_3$-alkyl, —C$_3$— to —C$_{10}$-alkenyl, -cyclo-C$_4$— to —C$_{10}$-alkenyl, -cyclo-C$_6$— to —C$_{10}$-alkyl-C$_3$— to —C$_5$-alkenyl, —C$_3$— to —C$_{10}$-alkynyl, -cyclo-C$_6$— to —C$_{10}$-alkyl-C$_3$— to —C$_5$-alkynyl, -bicyclo-C$_6$— to —C$_{10}$-alkyl, and -bicyclo-C$_6$— to —C$_{10}$-alkenyl refers to from one to six radicals substituted on said group, wherein said radicals are independently selected from the group consisting of —R^6, —(CH$_2$)$_m$OR^6, —NR^{6}R^7, —C(O)OR^6, —S(O)$_3$H, —S(O)$_t$R^6, —S(O)$_t$NR^{6}R^7, =NOR^6, —R^{399}, —R^{400}, -aryl and -Het where R^6, R^7, m, s, t, —R^{399}, —R^{400}, -aryl and -Het are as defined above; and

wherein at each occurrence, the term substituted when used as a prefix for the group selected from -bicyclo-C$_6$— to —C$_{10}$-alkenyl, -bicyclo-C$_6$— to —C$_{10}$-alkyl, —C$_3$— to-C$_6$-alkenyl, —C$_1$ — to —C$_6$-alkyl, —C$_3$— to —C$_6$-alkynyl, -cyclo-C$_4$— to —C$_{10}$-alkenyl, -cyclo-C$_3$— to —C$_{10}$-alkyl, and -bicyclo-C$_6$— to —C$_{10}$-alkenyl-C$_1$ — to —C$_6$-alkyl, refers to from one to three radicals substituted on said group wherein said radicals are independently selected from the group consisting of halogen; —OH; (C$_1$–C$_6$-alkyl)NH—; di(C$_1$–C$_6$-alkyl)N—; —CO$_2$H; —CONH$_2$; —SH; (C$_1$–C$_6$-alkyl)S—; (C$_1$–C$_6$-alkyl)O—; (C$_1$–C$_6$-alkyl)OC(O)—;mod-aryl-(C$_1$–C$_6$-alkyl)OC(O)—; (C$_1$–C$_6$-alkyl)OC(O)NH—; (C$_1$–C$_6$-alkyl)C(O)NH—; mod-aryl-(C$_1$–C$_6$-alkyl)OC(O)NH—; mod-aryl-OC(O)NH—; (C$_1$–C$_6$-alkyl)CO-guanidino; mod-aryl-(SO$_2$)-guanidino; (C$_1$–C$_6$-alkyl)OC(O)-guanidino; H$_2$N—; mod-aryl-(C$_1$–C$_6$-alkyl)OC(O)-guanidino; mod-aryl-OC(O)-guanidino; (C$_1$–C$_6$-alkyl)NHC(O)—; di(C$_1$–C$_6$-alkyl)NC(O)—; mod-aryl-NHCO—; di(mod-aryl)NCO—; —OSO$_2$R^{11}; oxo; epoxy; mod-aryl-O—; mod-aryl-S—; mod-aryl-(C$_1$–C$_6$-alkyl)O—; mod-aryl-(C$_1$–C$_6$-alkyl)-S—; mod-Het-O—; mod-Het-S—; mod-Het-(C$_1$–C$_6$-alkyl)O—; mod-Het-(C$_1$–C$_6$-alkyl)S—; mod-aryl-; mod-Het-; —SO$_3$H; —S(O)$_t$NH$_2$; —S(O)$_t$NHR^{11}; —S(O)$_t$NR^{11}R^{11}, where both R^{11}'s are independently selected; and —S(O)$_t$R^{11}; wherein guanidino, mod-aryl, oxo, epoxy, mod-Het-, s, t and R^{11} are as defined above

and a pharmaceutically acceptable carrier.

5,643,919

ANELLATED DIHYDROPYRIDINES AND THE USE THEREOF FOR THE PRODUCTION OF PHARMACEUTICAL PREPARATION

Dietrich Arndts, Appenheim; Walter Lösel, Gau-Algesheim, and Otto Roos, Schwabenheim, all of Germany, assignors to Boehringer Ingelheim KG, Ingelheim am Rhein, Germany

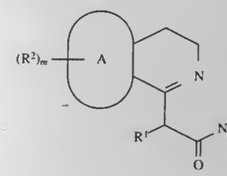
Continuation of Ser. No. 249,822, May 26, 1994, abandooed. This application Jun. 7, 1995, Ser. No. 475,154

Claims priority, application Germany, Jun. 22, 1992, 42 20 369.4; Jun. 22, 1992, 42 20 373.2; Jun. 22, 1992, 42 20 312.0; Jun. 22, 1993, 42 20 368.6; Jun. 22, 1993, 42 20 345.7; Jun. 22, 1993, 42 20 355.4; Jun. 22, 1993, 42 20 319.8; Jun. 22, 1993, 42 20 353.8

Int. Cl.^{6} A61K *31/47;* **C07D** *217/24;217/22;217/12*

U.S. Cl. 514—292 **7 Claims**

1. A compound of formula



I

wherein

A is a benzo;

m is 2;

R^2 are in positions 6 and 7 and independently of each other may be hydroxy, (C$_{1-4}$)alkoxy, benzyloxy, halogen, (C$_{1-4}$)alkyl, methanesulphonyloxy or methanesulphonamido or two adjacent substituents R^2 together may be —O—CH$_2$—O or —O—CH$_2$—CH$_2$—O—;

R^1 is (C$_{4-6}$)cyloalkyl or (C$_{4-6}$)cycloalkyl(C$_{1-5}$)-alkyl;

R^3 and R^4 independently or each other are

(a) hydrogen,

(b) branched or unbranched C$_{3-6}$-alkenyl,

(c) branched or unbranched C$_{3-6}$-alkynyl,

(d) branched or unbranched C$_{1-12}$-alkyl, whilst the alkyl may be substituted by

hydroxy,

(C$_{1-4}$)alkoxy,

di(C$_{1-4}$)akylamino,

furyl,

pyridyl,

pyrrolidinyl, N-methylpyrrolidinyl,

morpholino,

indolyl,

nitrilo,

thienyl,

adamantyl,

cyclohexyl,

phenoxy,

napthyloxy or phenyl, whilst this phenyl or the phenyl contained in the phenoxy group may be mono-, di- or trisubstituted by hydroxy, (C$_{1-4}$)alkoxy, benzyloxy, halogen, CF$_3$, N$_3$, (C$_{1-4}$)alkyl, adamantyl, —SO$_2$NH$_2$ or by the bridge —O—CH$_2$—O—;

or R^3 is hydrogen and R^4 is cyclohexyl, phenyl, fluorophenyl, pyridyl or N-benzylpiperidyl;

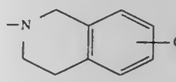
or R^3 and R^4 together with the nitrogen atom to which they are

bound represent

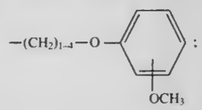
pyrrolidinyl,

piperidinyl,

morpholino, thiomorpholino, the group



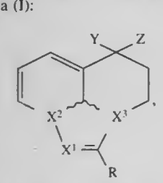
or
piperazinyl, whilst the piperazinyl ring may optionally be N-substituted by methyl, unsubstituted phenyl, mono- or di(C_{1-4})alkoxyphenyl, pyrimidinyl, phenyl(C_{1-4})alkyl or



or the salts thereof with physiologically acceptable acids, bases or complexing agents.

5,643,920
TRICYCLIC COMPOUND HAVING ANTI-ALLERGIC ACTIVITIES
Hidenori Mochizuki; Kazuo Kato; Ichiro Yamamoto, and Kiyoshi Mizuguchi, all of Tokyo, Japan, assignors to Mochida Pharmaceutical Co., Ltd., Tokyo, Japan
PCT No. PCT/JP93/00549, § 371 Date Oct. 27, 1994, § 102(e) Date Oct. 27, 1994, PCT Pub. No. WO93/22313, PCT Pub. Date Nov. 11, 1993
PCT Filed Apr. 27, 1993, Ser. No. 325,339
Claims priority, application Japan, Apr. 27, 1992, 4-134189
Int. Cl.[6] A61K *31/44;* **C07D** *455/03;221/06*
U.S. Cl. 514—294 **11 Claims**

1. A nitrogen-containing tricyclic compound represented by formula (I):



(I)

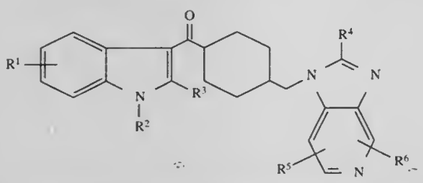
a salt thereof, or a solvate of said compound or said salt, wherein
R represents phenyl or naphthyl group which is unsubstituted or substituted at one to five sites with a group optionally selected from a halogen atom; a straight chain or branched alkyl group containing 1 to 10 carbon atoms which is unsubstituted or substituted with one or more halogen atoms; cyano group; carboxyl group; an alkoxycarbonyl group containing 1 to 4 carbon atoms; hydroxyl group; a straight chain or branched alkoxyl group containing 1 to 4 carbon atoms which is unsubstituted or substituted with one or more halogen atoms; phenoxy group; tetrazolyl group; amino group which is unsubstituted or substituted at least at one site with a straight chain or branched atkyl group containing 1 to 4 carbon atoms; and nitro group;
Y represents hydrogen atom; and
Z represents hydrogen atom; hydroxyl group; acetoxy group; an amino group which is unsubstituted or substituted with methylthiopropanoyl group, an alkyl group containing 1 to 4 carbon atoms, an aminoalkyl group containing 1 to 4 carbon atoms, a hydroxyethylaminoethyl group, an alkoxyoxalyl group containing 1 to 4 carbon atoms, or an alkylidene group containing 2 to 6 carbon atoms; nitro group; or an alkyl group containing 1 to 4 carbon atoms substituted with amino group; or
Y and Z together represent hydrazono group which is unsubstituted or substituted at least at one site with an alkyl group containing 1 to 4 carbon atoms, an alkylidene group containing 2 to 6 carbon atoms, an alkoxycarbonyl group containing 1 to 4 carbon atoms, phenyl group, tosyl group, formyl group, carbamoyl group, amidino group, imidazolidinyl group, pyridyl group, or methoxyphenylethylpiperidinylcarbonyl group; hydroxyimino group which is unsubstituted or substituted with an alkyl group containing 1 to 4 carbon atoms which is unsubstituted or substituted with an alkoxycarbonyl group containing 1 to 4 carbon atoms or carboxyl group, tosyl group, or tetrazolylmethyl group; imino group substituted with an unsubstituted or substituted heteromonocyclic group; methylene group which is unsubstituted or substituted with cyano group or an aminoalkyl group containing 1 to 4 carbon atoms; or oxygen atom; and
X^1–X^2–C–X^3 represents CH—N—C=C;
excluding the following both compounds wherein
Y and Z together represent oxygen and R represents unsubstituted phenyl group; and
Y and Z represent hydrogen, R represents unsubstituted phenyl group, 4-methoxy phenyl group, 4-bromo phenyl group, and 2-naphthyl group.

5,643,921
CARDIOPULMONARY BYPASS AND ORGAN TRANSPLANT USING A POTASSIUM CHANNEL ACTIVATOR
Gary J. Grover, Stockton, N.J., assignor to E.R. Squibb & Sons, Inc., Princeton, N.J.
Filed Sep. 26, 1990, Ser. No. 589,224
Int. Cl.[6] A61K *31/44;31/35;31/495;31/535*
U.S. Cl. 514—302 **12 Claims**

1. A method for protecting an organ and surrounding cells from ischemic damage in a mammalian species subject to organ surgery which method comprises employing an organ-protecting amount of an ischemia selective potassium channel activator.

5,643,922
INDOLE CYCLOHEXYL PLATELET ACTIVATING FACTOR ANTAGONISTS
George S. Sheppard, Wilmette; Steven K. Davidsen, and James B. Summers, both of Libertyville, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.
Continuation-in-part of Ser. No. 424,911, Apr. 19, 1995, Pat. No. 5,567,711. This application Jul. 2, 1996, Ser. No. 677,462
Int. Cl.[6] C07D *471/02;* **A61K** *31/44*
U.S. Cl. 514—303 **7 Claims**

1. A compound of formula

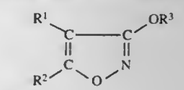


or a pharmaceutically acceptable salt thereof wherein
R^1 is one or more groups independently selected from the group consisting of
(a) hydrogen,
(b) halogen,
(c) hydroxy,
(d) cyano,
(e) alkyl of one to six carbon atoms,
(f) alkenyl of two to six carbon atoms,
(g) alkynyl of two to six carbon atoms,
(h) alkoxy of one to six carbon atoms,
(i) alkanoyl of one to seven carbon atoms,
(j) —$COOR^7$, wherein R^7 is
hydrogen,
alkyl of one to ten carbon atoms, or
phenylalkyl wherein the alkyl portion is of one to four carbon atoms,
(k) unsubstituted phenyl,

(l) phenyl, substituted with
alkyl of one to six carbon atoms,
alkoxy of one to six carbon atoms,
halogen,
—NR^8R^9, where R^8 and R^9 are independently selected from hydrogen and
alkyl of one to six carbon atoms,
or R^8 and R^9 together with the nitrogen atom to which they are attached form a pyrrolidinyl, piperidinyl, piperazinyl, or morpholinyl ring,
—$COOR^7$,
—$C(O)NR^8R^9$, or
—$SO_2NR^8R^9$,
(m) —$C(O)NR^8R^9$,
(n) —$OC(O)NR^8R^9$,
(o) —$NHC(O)NR^8R^9$,
(p) 2- or 3-furyl,
(q) 2- or 3-thienyl,
(r) 2-, 4-, or 5-thiazolyl,
(s) 2-, 3-, or 4-pyridyl,
(t) 2-, or 4-pyrimidyl,
(u) phenylalkyl in which the alkyl portion is of one to six carbon atoms,
(v) phenylalkyl, in which the alkyl portion is of one to six carbon atoms and the phenyl moiety is substituted with
halogen,
alkyl of from one to six carbon atoms, or
alkoxy of from one to six carbon atoms,
(w) unsubstituted benzoyl,
(x) benzoyl substituted with
halogen,
alkyl of from one to six carbon atoms, or
alkoxy of from one to six carbon atoms,
(y) unsubstituted phenoxy,
(z) phenoxy substituted with
halogen,
alkyl of from one to six carbon atoms, or
alkoxy of from one to six carbon atoms,
(aa) unsubstituted phenylalkyloxy, in which the alkyl portion is of one to six carbon atoms,
(bb) phenylalkyloxy in which the alkyl portion is of one to six carbon atoms and the phenyl moiety is substituted with
halogen,
alkyl of from one to six carbon atoms, or
alkoxy of from one to six carbon atoms,
(cc) unsubstituted phenylalkanoyl, in which the alkanoyl portion is of one to seven carbon atoms, and
(dd) phenylalkanoyl, in which the alkanoyl portion is of one to seven carbon atoms and the phenyl moiety is substituted with;
halogen,
alkyl of from one to six carbon atoms, or
alkoxy of from one to six carbon atoms;
R^2 is selected from the group consisting of
(a) hydrogen,
(b) alkyl of one to six carbon atoms;
(c) —$(CH_2)_pCOOR^7$, where p is 0, 1, 2, 3, or 4,
(d) —$(CH_2)_qNR^8R^9$, where q is 2, 3, or 4,
(e) —$(CH_2)_pCOR^7$
(f) —$(CH_2)_pOR^7$,
(g) —$(CH_2)_pSO_2R^7$,
(h) —$(CH_2)_pSO_2NR^8R^9$,
(i) —$(CH_2)_pCONR^{10}R^{11}$, where R^{10} and R^{11} are independently selected from the group consisting of
hydrogen,
alkyl of one to six carbon atoms,
—$(CH_2)_rCOOR^7$, where r is 1, 2, 3, or 4,
—$(CH_2)_rNR^8R^9$,
$(CH_2)_rOR^7$,
—$(CH_2)_rSO_2R^7$, and
—$(CH_2)_rSO_2NR^8R^9$,
or R^{10} and R^{11} taken together define a pyrrolidine, morpholine, or thiomorpholine ring,
(j) —$(CH_2)_pCN$,
(k) —$(CH_2)_p$-1H-tetrazol-5-yl,
(l) —$CONHNH_2$,
(m) unsubstituted phenylalkyl wherein the alkyl portion is of one to four carbon atoms, and
(n) phenylakyl wherein the alkyl portion is of one to four carbon atoms and the phenyl moiety is substituted with
halogen,
alkyl of from one to six carbon atoms, or
alkoxy of from one to six carbon atoms;
R^3 is selected from the group consisting of hydrogen and alkyl of one to six carbon atoms;
R^4 is selected from the group consisting of
(a) alkyl of one to six carbon atoms,
(b) alkenyl of two to six carbon atoms,
(c) alkynyl of two to six carbon atoms,
(d) alkoxy of one to six carbon atoms,
(e) alkylthio of one to six carbon atoms,
(f) alkoxyalkyl in which the alkoxy and alkyl portions are independently of one to six carbon atoms,
(g) alkylthioalkyl in which the alkyl portions each independently of one to six carbon atoms,
(h) haloalkyl of one to six carbon atoms,
(i) unsubstituted phenylalkyl wherein the alkyl portion is of one to six carbon atoms,
(j) phenylalkyl wherein the alkyl portion is of one to six carbon atoms and the phenyl is substituted with
alkyl of one to six carbon atoms,
haloalkyl of one to six carbon atoms,
alkoxy of one to six carbon atoms,
hydroxy, or
halogen,
(k) cycloalkyl of three to eight carbon atoms,
(l) unsubstituted thiophenyl, and
(m) thiophenyl substituted with
alkyl of one to six carbon atoms,
haloalkyl of one to six carbon atoms,
alkoxy of one to six carbon atoms,
hydroxy, or
halogen; and
R^5 and R^6 are independently selected from the group consisting of
hydrogen,
alkyl of one to six carbon atoms,
halogen,
haloalkyl, and
alkoxy of one to six carbon atoms.

5,643,923
QUINUCLIDINYLOXY-ISOXAZOLE COMPOUNDS AND THEIR THERAPEUTIC USES
Mitsuo Nagano; Takeo Kobayashi; Junichi Sakai; Masao Kozuka; Nobuyoshi Iwata, and Yoshiko Kubo, all of Tokyo, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan
Continuation of Ser. No. 694,447, May 1, 1991, abandoned. This application Aug. 27, 1992, Ser. No. 937,445
Claims priority, application Japan, May 11, 1990, 2-119754; Aug. 17, 1990, 2-216519; Oct. 17, 1990, 2-278489
Int. Cl.[6] A61K *31/42;31/44;* **C07D** *453/02;261/04*
U.S. Cl. 514—305 **48 Claims**

1. A method for the treatment or prophylaxis of anxiety, depression or psychosis in a mammal, comprising administering to said mammal a pharmaceutically effective amount of at least one active compound, wherein the active compound is selected from the group consisting of a compound of the following formula (I) and pharmaceutically acceptable salts thereof:



(I)

in which:
R^1 represents
a hydrogen atom,

a halogen atom or
an alkyl group having from 1 to 6 carbon atoms;
R^2 represents
a hydrogen atom,
an alkyl group having from 1 to 6 carbon atoms,
a phenyl group which is unsubstituted or which is substituted by at least one of substituent selected from the group consisting of
halogen atoms,
alkyl groups having from 1 to 6 carbon atoms,
alkoxy groups having from 1 to 6 carbon atoms,
alkylamino groups having from 1 to 4 carbon atoms,
dialkylamino groups in which each alkyl group has from 1 to 4 carbon atoms,
hydroxy groups,
nitro groups and
amino groups, or
a heterocyclic group selected from the group consisting of furyl, thienyl, pyrrolyl, pyridyl, thiazolyl, isothiazolyl, oxazolyl, isoxazolyl, imidazolyl, pyrazolyl, pyranyl, tetrahydrofuranyl, tetrahydrothienyl, pyrrolidinyl, thiazolidinyl, imidazolidinyl, imidazolinyl, oxazolinyl, oxazolidinyl, pyrazolidinyl, pyrrolidonyl, piperidonyl, oxazolidinyl, pyrazolidinyl, pyrrolidonyl, piperidonyl, pyridonyl, 2H-pyrrolyl, furazanyl and pyrazolinyl, said heterocyclic group being unsubstituted or being substituted by at least one substituent selected from the group consisting of
halogen atoms,
alkyl groups having from 1 to 6 carbon atoms,
alkoxy groups having from 1 to 6 carbon atoms,
alkylamino groups having from 1 to 4 carbon atoms,
dialkylamino groups in which each alkyl group has from 1 to 4 carbon atoms,
hydroxy groups,
nitro groups and
amino groups; or
R^1 and R^2 together form a group of formula $—CR^4{=}CR^5—CR^6{=}CR^7—$, in which R^4, R^5, R^6 and R^7 are independently selected from the group consisting of
a hydrogen atom,
halogen atoms,
alkyl groups having from 1 to 6 carbon atoms,
alkoxy groups having from 1 to 4 carbon atoms,
halomethyl groups,
alkylamino groups having from 1 to 4 carbon atoms,
dialkylamino groups in which each alkyl group has from 1 to 4 carbon atoms,
hydroxy groups,
nitro groups,
aliphatic carboxylic acylamino groups having from 2 to 4 carbon atoms and
amino groups; and
R^3 represents a quinuclidinyl group.

5,643,924

RETROVIRAL PROTEASE INHIBITORS

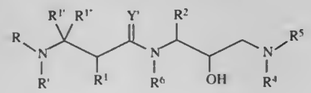
John J. Talley; Daniel P. Getman, both of Chesterfield; Gary A. DeCrescenzo, St. Peters, all of Mo.; Kathryn L. Reed, Raleigh, N.C.; Ko-Chung Lin, St. Louis; John Nicholas Freskos, Clayton, both of Mo.; Michael Clare, Skokie, Ill.; Donald Joseph Rogier, Jr., St. Louis; Robert M. Heintz, Ballwin, both of Mo.; Michael L. Vazquez, Gurnee, and Richard A. Mueller, Glencoe, both of Ill., assignors to Monsanto Company of St. Louis, St. Louis, Mo.

Division of Ser. No. 886,700, May 12, 1992, abandoned. This application May 31, 1995, Ser. No. 455,237

Int. Cl.[6] A61K *31/44*

U.S. Cl. 514—307 **66 Claims**

1. A compound represented by the formula



including a pharmaceutically acceptable salt, prodrug or ester thereof, wherein:

R represents hydrogen, alkoxycarbonyl, aryloxycarbonylalkyl, aralkoxycarbonyl, alkylcarbonyl, cycloalkylcarbonyl, cycloalkylalkoxycarbonyl, cycloalkylalkanoyl, alkanoyl, aralkanoyl, aroyl, aryloxycarbonyl, aryloxyalkanoyl, heterocyclylcarbonyl, heterocyclyloxycarbonyl, heteroaralkoxycarbonyl, heterocyclylalkanoyl, heterocyclylalkoxycarbonyl, heteroarylcarbonyl, heteroaryloxycarbonyl, heteroaroyl, alkyl, aryl, aralkyl, aryloxyalkyl, heteroaryloxyalkyl, hydroxyalkyl, alkylaminocarbonyl, arylaminocarbonyl, aralkylaminocarbonyl, aminoalkanoyl, aminocarbonyl, aminocarbonylalkyl, alkylaminoalkylcarbonyl, and mono- and disubstituted aminoalkanoyl radicals wherein the substituents are selected from the group consisting of alkyl, aryl, aralkyl, cycloalkyl, cycloalkylalkyl, heteroaryl, heteroaralkyl, heterocycloalkyl, and heterocycloalkylalkyl radicals, or in the case of disubstituted aminoalkanoyl, said substituents along with the nitrogen atom to which they are attached form a heterocyclyl or heteroaryl radical;

R' represents alkyl, alkenyl, hydroxyalkyl, alkoxyalkyl, cycloalkyl, cycloalkylalkyl, heterocycloalkyl, heteroaryl, heterocycloalkylalkyl, aryl, aralkyl, and heteroaralkyl radicals, or R and R' together with the nitrogen to which they are attached form a heterocycloalkyl or heteroaryl radical;

R^1 represents hydrogen, $—CH_2SO_2NH_2$, $—CO_2CH_3$, $—CH_2CO_2CH_3$, — $CONH_2$, $—CONHCH_3$, $—CON(CH_3)_2$, $—CH_2CONHCH_3$, $—CH_2CON(CH_3)_2$, alkyl, alkenyl, alkynyl, fluorinated alkyl and cycloalkyl radicals and amino acid side chains selected from the group consisting of asparagine, S-methyl cysteine and the corresponding sulfoxide and sulfone derivatives thereof, glycine, leucine, isoleucine, alloisoleucine, tert-leucine, alanine, phenylalanine, ornithine, histidine, norleucine, glutamine, valine, threonine, allothreonine, serine, aspartic acid and beta-cyano alanine side chains;

$R^{1'}$ and $R^{1''}$ independently represent hydrogen and radicals as defined for R^1, or one of $R^{1'}$ and $R^{1''}$ together with R^1 and the carbon atoms to which they are attached represent a cycloalkyl radical;

R^2 represents alkyl, aryl, cycloalkyl, cycloalkylalkyl and aralkyl radicals, which radicals are optionally substituted with a substituent selected from the group consisting of $—NO_2$, $—OR^{15}$, $—SR^{15}$, and halogen radicals, wherein R^{15} represents hydrogen and alkyl radicals;

R^3 represents hydrogen, alkyl, alkenyl, hydroxyalkyl, alkoxyalkyl, cycloalkyl, cycloalkylalkyl, heterocycloalkyl, heteroaryl, heterocycloalkylalkyl, aryl, aralkyl, and heteroaralkyl radicals;

Y' represents O, S and NR^3;

R^4 and R^5 together with the nitrogen atom to which they are bonded represent a N-heterocyclic moiety; and

R^6 represents hydrogen and alkyl radicals.

5,643,925

BENZENE DERIVATIVES HAVING NGF PRODUCTION-PROMOTING ACTIVITY

Shunji Naruto; Yuichi Sugano; Keiichi Matsuda; Masahiko Sugimoto, and Tomiichiro Oda, all of Tokyo, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

Filed Feb. 18, 1992, Ser. No. 837,491

Claims priority, application Japan, Feb. 21, 1991, 3-027060

Int. Cl.[6] A01N *43/42*; **C07D** *215/38;215/14*

U.S. Cl. 514—311 **13 Claims**

1. A compound which is selected from the group consisting of:
N-(3-quinolyl)-3-(3,4-diaminophenyl)propionamide,
N-(5-quinolyl)-3-(3,4-diaminophenyl)propionamide,
N-(8-quinolyl)-3-(3,4-diaminophenyl)propionamide,
N-(3-quinolyl)-3-(3,4-diaminophenyl)propionamide hydrochloride,
N-(5-quinolyl)-3-(3,4-diaminophenyl)propionamide hydrochloride,
N-(8-quinolyl)-3-(3,4-diaminophenyl)propionamide hydrochloride salts thereof.

5,643,926

PYRAZOLIDINONE CCK AND GASTRIN ANTAGONISTS AND PHARMACEUTICAL FORMULATIONS THEREOF

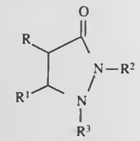
Raymond F. Brown; J. Jeffry Howbert; Karen L. Lobb, all of Indianapolis; David A. Neel, Zionsville; Jon K. Reel, Carmel, and Beverley Greenwood, Fishers, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 33,737, Mar. 18, 1993, Pat. No. 5,300,514, which is a continuation of Ser. No. 982,257, Nov. 25, 1992, abandoned, which is a continuation of Ser. No. 737,624, Jul. 30, 1991, abandoned, which is a continuation-in-part of Ser. No. 553,489, Jul. 17, 1990, abandoned. This application Jan. 19, 1994, Ser. No. 183,465

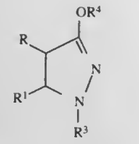
Int. Cl.[6] A61K *31/47;31/415;* **C07D** *231/18;233/54*

U.S. Cl. 514—314 **48 Claims**

1. A compound of the formula



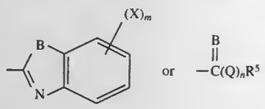
or



wherein
R and R^1 are independently hydrogen, C_1-C_6 alkyl, phenyl, benzyl, naphthyl, pyridyl or $(X)_p$-substituted phenyl; X is a substituent selected from the group consisting of C_1-C_6 alkyl, C_1-C_6 alkoxy, C_1-C_6 alkylthio, halo, trifluoromethyl, phenyl, phenoxy, phenyl(C_1-C_4 alkyl), phenyl(C_1-C_4 alkoxy), phenylacetyl, C_1-C_6 alkanoyl, cyano, carbamyl, nitro, C_1-C_6 alkoxycarbonyl, methylenedioxy, C_3-C_6 alkylene, amino, —NH(C_1-C_4 alkyl or benzyl), and N(C_1-C_4 alkyl)$_2$; and p is 1, 2 or 3;
R^2 is hydrogen, C_1-C_6 alkyl, carboxymethyl, C_1-C_4 alkoxycarbonylmethyl or a group of the formula



wherein
A is $—CH_2—$, —O—, —NH— or —N(C_1-C_6 alkyl)—; t is 0 or 1; and
Y is phenyl or $(X)_p$-substituted phenyl;
R^3 is hydrogen or a group of the formula



wherein
B is O or S; m is 0, 1 or 2; Q is —NH—, —N(C_1-C_6 alkyl)—, —S—, or —O—; and n is 0 or 1;
R^4 is C_1-C_6 alkyl, carboxymethyl, or C_1-C_4 alkoxycarbonylmethyl;
R^5 is a group of the formula $—\{CH(R^6)\}_q$-$(CH_2)_r$-R^7 wherein R^6 is hydrogen or C_1-C_6 alkyl; q is 0 or 1; r is 0, 1 or 2; and R^7 is hydrogen, C_1-C_8 alkyl, C_3-C_8 cycloalkyl, pentafluorophenyl, pyridyl, tetrahydro-naphthyl, indolyl, quinolinyl, phenyl, naphthyl, or $(X)_p$-substituted-(phenyl or naphthyl); or the group $—(Q)_n$-R^5 is 2-tetrahydroisoquinolinyl;
provided that:
(1) at least one of R or R^1 is other than hydrogen or C_1-C_6 alkyl;
(2) R or R^1 is hydrogen only when the other R or R^1 is substituted phenyl in which the substituent is phenyl;
(3) at least one of R^2 and R^3 is other than hydrogen; and
(4) when R^3 is

R^2 cannot be



or a pharmaceutically acceptable salt thereof.

5,643,927

4-P-FLUOROBENZOYL-1-PIPERIDINYL-PROPOXY-CHROMEN-4-ONE DERIVATIVES, THEIR PREPARATION AND THEIR USE IN THE TREATMENT OF PSYCHOSIS AND SCHIZOPHRENIA

Rafael Foguet; Jordi Bolós; Aurelio Sacristán, and José A. Ortiz, all of Barcelona, Spain, assignors to Ferrer Internacional, S.A., Barcelona, Spain

PCT No. PCT/EP95/01008, § 371 Date Dec. 12, 1995, § 102(e) Date Dec. 12, 1995, PCT Pub. No. WO95/25733, PCT Pub. Date Sep. 28, 1995

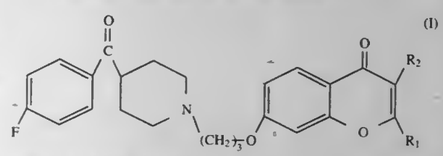
PCT Filed Mar. 17, 1995, Ser. No. 532,791

Claims priority, application Spain, Mar. 18, 1994, 9400581; Jul. 1, 1994, 9401437; Jan. 30, 1995, 9500163

Int. Cl.[6] A61K *31/445;* **C07D** *405/12*

U.S. Cl. 514—320 **7 Claims**

1. A chromene compound having the formula (I):



(I)

wherein R_1 and R_2 are hydrogen, alkyl having from 1 to 4 carbon atoms, halogen, trifluoromethyl, optionally substituted phenyl or hydroxymethyl, or a pharmaceutically acceptable addition salt thereof.

5,643,928

HUMAN BODY WEIGHT MANAGEMENT

Robert M. Keenan, Baltimore, Md., assignor to Pharmaco Behavioral Associates, Inc., Minneapolis, Minn.

Filed Oct. 21, 1992, Ser. No. 964,277

Int. Cl.[6] A61K *31/44*

U.S. Cl. 514—343 **11 Claims**

1. A therapeutic method to control long-term human body weight in a nicotine-naive human comprising: administering an amount of cotinine or a pharmaceutically acceptable salt thereof to a human in need of such treatment.

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5,643,929

1,2,4-OXIDIAZOLYL-PHENOXYALKYLISOXAZOLES AND THEIR USE AS ANTIVIRAL AGENTS

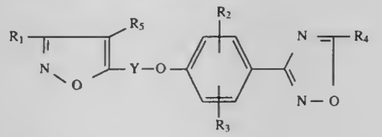
Guy Dominic Diana, North Coventry Township, Chester County, and Theodore John Nitz, East Coventry Township, Chester County, both of Pa., assignors to Sanofi Winthrop, Inc., New York, N.Y.

Division of Ser. No. 131,050, Oct. 1, 1993, Pat. No. 5,464,848, which is a continuation-in-part of Ser. No. 869,287, Apr. 15, 1992, Pat. No. 5,349,068. This application May 19, 1995, Ser. No. 444,795

Int. Cl.[6] C07D *413/12;* **A01K** *31/41*

U.S. Cl. 514—364 **35 Claims**

1. A compound of the formula



wherein:

R_1 is alkyl, alkoxy, hydroxy, cycloalkyl, hydroxyalkyl, alkoxyalkyl, hydroxyalkoxy, alkylthioalkyl, alkylsulfinylalkyl, alkylsulfonylalkyl, aminoalkyl, alkylaminoalkyl, dialkylaminoalkyl, alkoxycarbonyl, carboxy or cyanomethyl;

Y is alkylene of 3 to 9 carbon atoms,

R_2 and R_3 independently are hydrogen, alkyl, alkoxy, halo, cyano, trifluoromethyl or nitro;

R_4 is alkoxy, hydroxy, halomethyl, dihalomethyl, trihalomethyl, dihaloethyl, cycloalkyl, heterocyclyl, alkoxycarbonyl, hydroxyalkyl, alkoxyalkyl, alkanecarbonyloxyalkyl, cyano, halo, thioalkyl, alkylthioalkyl, alkylthio, thio, 2,2,2-trifluoroethyl, (4-methylphenyl)sulfonyloxymethyl, N=Q or CON=Q, where N=Q is amino, alkylamino or dialkylamino;

R_5 is halo or hydrogen, or alkyl.

5,643,930

6-HETEROCYCLIC-4-AMINO-1,3,4,5,-TETRAHYDROBENZ [CD]INDOLES

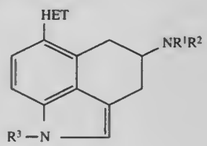
Richard N. Booher, Indianapolis; David E. Lawhorn, Greenfield; Charles J. Paget, Jr., Indianapolis, and John M. Schaus, Zionsville, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 299,175, Aug. 31, 1994, which is a division of Ser. No. 954,105, Sep. 30, 1992, Pat. No. 5,364,856, which is a continuation-in-part of Ser. No. 677,016, Mar. 28, 1991, Pat. No. 5,244,912. This application May 31, 1995, Ser. No. 456,225

Int. Cl.[6] A61K *31/40*

U.S. Cl. 514—364 **10 Claims**

1. A compound of the formula



wherein:

R^1 is hydrogen, C_1–C_4 alkyl, C_3–C_4 alkenyl, cyclopropylmethyl, phenyl (C_1–C_4 alkyl), naphthyl (C_1–C_4 alkyl), phenyl (C_1–C_4 alkyl) substituted with one or two substituents selected from the group consisting of C_1–C_3 alkoxy, halo, hydroxy, C_1–C_3 thioalkyl, nitro, C_1–C_3 alkyl or trifluoromethyl, naphthyl (C_1–C_4 alkyl) substituted with one or two substituents selected from the group consisting of C_1–C_3 alkoxy, halo, hydroxy, C_1–C_3 thioalkyl, nitro, C_1–C_3 alkyl or trifluoromethyl, $-(CH_2)_nS(C_1$–C_4 alkyl), $-C(O)R^4$, or $-(CH_2)_nC(O)NR^5R^6$;

R^2 is hydrogen, C_1–C_4 alkyl, cyclopropylmethyl or C_3–C_4 alkenyl;

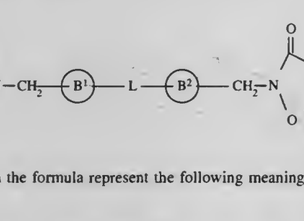
R^3 is hydrogen, C_1–C_4 alkyl or an amino blocking group;

n is 1–4;

R^4 is hydrogen, C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_1–C_4 alkoxy or phenyl;

R^5 and R^6 are independently hydrogen, C_1–C_4 alkyl, or C_5–C_8 cycloalkyl with the proviso that when one of R^5 or R^6 is a cycloalkyl the other is hydrogen;

HET is a heterocyclic ring selected from the group consisting of



where R is hydrogen, C_1–C_3 alkyl, halogen, hydroxy, C_1–C_3 alkoxy, C_1–C_3 thioalkyl, NH_2, CN or phenyl; or pharmaceutically acceptable salts thereof.

5,643,931

BISOXADIAZOLIDINE DERIVATIVE

Kunihiro Niigata, Saitama; Takumi Takahashi, Ibaraki; Tatsuya Maruyama, Ibaraki; Takayuki Suzuki, Ibaraki; Kyoichi Maeno, Ibaraki; Kenichi Onda, Ibaraki; Toru Kontani, Ibaraki; Osamu Noshiro, Ibaraki; Reiko Koike, Ibaraki; Akiyoshi Shimaya, Ibaraki, and Jun Irie, Ibaraki, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

PCT No. PCT/JP94/00696, § 371 Date Oct. 26, 1995, § 102(e) Date Oct. 26, 1995, PCT Pub. No. WO94/25448, PCT Pub. Date Nov. 10, 1994

PCT Filed Apr. 26, 1994, Ser. No. 537,907

Claims priority, application Japan, Apr. 30, 1993, 5-127898; Dec. 29, 1993, 5-350209

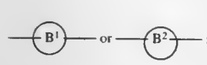
Int. Cl.[6] C07D *413/14;* **A61K** *31/41*

U.S. Cl. 514—364 **10 Claims**

1. A bisoxadiazolidine dione derivative represented by the following general formula (I)

(I)

symbols in the formula represent the following meanings;



the same or different from each other and each represents a phenylene group which may be substituted,

L:

(1) an oxygen atom,

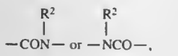
(2) a group represented by the formula



(3) a group represented by the formula $-S(O)_n-$,

(4) a group represented by the formula —CO—,

(5) a group represented by the formula



(6) an alkylene group or an alkenylene group which may respectively be interrupted with an oxygen atom and/or a sulfur atom and which may each be substituted, or

(7) a group represented by a formula



R^1: a hydrogen atom or a lower alkyl group,

n: 0, 1 or 2,

R^2: a hydrogen atom or a lower alkyl group,

L^1 and L^2: the same or different from each other and each represents

(1) an oxygen atom,

(2) a group represented by the formula

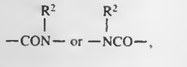


R^1 is as defined in the foregoing,

(3) a group represented by the formula $-S(O)_n-$, n is as defined in the foregoing,

(4) a group represented by the formula —CO—,

(5) a group represented by the formula



R^2 is as defined in the foregoing, or

(6) an alkylene group or an alkenylene group which may respectively be interrupted with an oxygen atom and/or a sulfur atom and which may each be substituted, and



a cycloalkanediyl group, an arylene group or a pyridinediyl group, which may respectively be substituted,

or a pharmaceutically acceptable salt thereof.

5,643,932

SUPEROXIDE RADICAL INHIBITOR

Masatoshi Chihiro, Naruto; Hajime Komatsu; Michiaki Tominaga, both of Itano-gun, and Yoichi Yabuuchi, Tokushima, all of Japan, assignors to Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 916,082, Jul. 29, 1992, abandoned. This application May 19, 1995, Ser. No. 444,728

Claims priority, application Japan, Nov. 30, 1990, 2-337727

Int. Cl.[6] C07D *413/04;* **A61K** *31/425*

U.S. Cl. 514—365 **11 Claims**

9. 2-(3,4-Diethoxyphenyl)-4-(2-carboxy-6-pyridyl)-thiazole.

5,643,933

SUBSTITUTED SULFONYLPHENYLHETEROCYCLES AS CYCLOOXYGENASE-2 AND 5-LIPOXYGENASE INHIBITORS

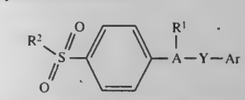
John J. Talley, Brentwood; James A. Sikorski, Des Peres, both of Mo.; Bryan H. Norman, Indianapolis, Ind.; Roland S. Rogers, deceased, late of Richmond Heights, Mo.; Balekudru Devadas, Chesterfield, Mo.; Matthew J. Graneto, St. Louis, Mo., and Jeffery S. Carter, Chesterfield, Mo., assignors to G. D. Searle & Co., Skokie, Ill.

Filed Jun. 2, 1995, Ser. No. 460,324

Int. Cl.[6] A61K *31/44;31/425;31/42;* **C09D** *263/32;* **C07D** *413/12;413/06;413/10;417/02*

U.S. Cl. 514—372 **29 Claims**

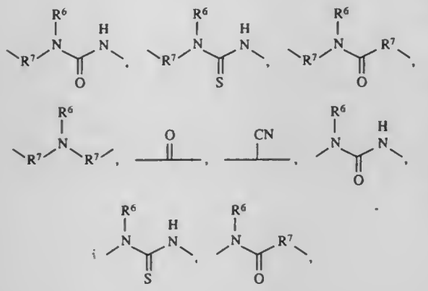
1. A compound of Formula I



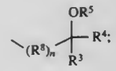
wherein A is oxazolyl or isoxazolyl, wherein A is optionally substituted with a radical selected from acyl, halo, alkyl, haloalkyl, cyano, nitro, carboxyl, alkoxy, oxo, aminocarbonyl, alkoxycarbonyl, carboxyalkyl, cyanoalkyl, and hydroxyalkyl;

wherein Y is a radical selected from oxy, thio, sulfinyl, sulfonyl, alkyl, alkenyl, alkynyl, alkyloxy, alkylthio, alkylcarbonyl, cycloalkyl, aryl, haloalkyl, hydroxyalkyl, hydroxyalkyloxy, hydroxyalkyloxyalkyl, hydroxyalkylthio, hydroxyalkylthioalkyl, oximinoalkoxy, oximinoalkoxyalkyl, (alkyl) oximinoalkoxy, (alkyl)oximinoalkoxyalkyl, oximinoalkylthio, oximinoalkylthioalkyl, (alkyl)oximinoalkylthio, (alkyl)oximinoalkylthioalkyl, carbonylalkyloxy, carbonylalkyloxyalkyl, carbonylalkylthio, carbonylalkylthioalkyl, heterocyclo, cycloalkenyl, aralkyl, heterocycloalkyl, acyl, alkylthioalkyl, alkyloxyalkyl, alkenylthio, alkynylthio, alkenyloxy, alkynyloxy, alkenylthioalkyl, alkynylthioalkyl, alkenyloxyalkyl, alkynyloxyalkyl, arylcarbonyl, aralkylcarbonyl, aralkenyl, haloalkylcarbonyl, alkoxyalkyl, alkylaminocarbonylalkyl, heteroaralkoxyalkyl, heteroaryloxyalkyl, heteroarylthioalkyl, heteroaralkylthioalkyl, heteroaralkoxy, heteroaralkylthio, heteroaryloxy, heteroarylthio, arylthioalkyl, aryloxyaryloxy, haloaryloxyalkyl, aralkylthioalkyl, aralkoxyalkyl, alkoxyaralkoxyalkyl, alkoxycarbonylalkyl, alkoxycarbonylcycloalkenyl, aminocarbonylalkyl, N-alkylaminocarbonyl, N-arylaminocarbonyl, N, N-dialkylaminocarbonyl, N-alkyl-N-arylaminocarbonyl, cycloalkylaminocarbonyl, heterocycloaminocarbonyl, carboxyalkylaminocarbonyl, alkylcarbonylalkyl, aralkoxycarbonylalkylaminocarbonyl, haloaralkyl, carboxyhaloalkyl, alkoxycarbonylhaloalkyl, aminocarbonylhaloalkyl, alkylaminocarbonylhaloalkyl, N-alkylamino, N,N-dialkylamino, N-arylamino, N-aralkylamino, N-alkyl-N-aralkylamino, N-alkyl-N-arylamino, aminoalkyl, N-alkylaminoalkyl, N,N-dialkylaminoalkyl, N-arylaminoalkyl, N-aralkylaminoalkyl, N-alkyl-N-aralkylaminoalkyl, N-alkyl-N-arylaminoalkyl, aminoalkoxy, aminoalkoxyalkyl, aminoalkylthio, aminoalkylthioalkyl, cycloalkyloxy, cycloalkylatkyloxy, aryloxy, aralkoxy, arylthio, aralkylthio, alkylsulfinyl, alkylsulfonyl, aminosulfonyl, N-alkylaminosulfonyl, N-arylaminosulfonyl, arylsulfonyl, N,

N-dialkylaminosulfonyl, N-alklyl-N-arylaminosulfonyl,



wherein Ar is selected from aryl and heteroaryl, wherein Ar is optionally substituted with one or two substituents selected from halo, hydroxyl, amino, nitro, cyano, carbamoyl, alkyl, alkenyloxlz, alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, alkylamino, dialkylamino, haloalkyl, alkoxycarbonyl, N-alkylcarbamoyl, N,N-dialkylcarbamoyl, alkanoylamino, cyanoalkoxy, carbamoylalkoxy, alkoxycarbonylalkoxy and



wherein R^1 is one or more substituent selected from heterocyclo, cycloalkyl, cycloalkenyl and aryl, wherein R^1 is optionally substituted at a substitutable position with one or more radicals selected from alkyl, haloalkyl, cyano, carboxyl, alkoxycarbonyl, hydroxyl, hydroxyalkyl, haloalkoxy, amino, alkylamino, arylamino, nitro, alkoxyalkyl, alkylsulfinyl, halo, alkoxy and alkylthio;

wherein R^2 is selected from alkyl and amino; wherein R^3 and R^4 together form a group of the formula —B—X—B^1 which together with the carbon atom to which B and B^1 are attached, defines a ring having 6 ring atoms, wherein B and B^1, which may be the same or different, each is alkylene and X is oxy, and which ring may bear one, two or three substituents, which may be the same or different, selected from hydroxyl, alkyl, alkoxy, alkenyloxy and alkynyloxy;

wherein R^5 is selected from hydrido, alkyl, alkanoyl, and aroyl, optionally substituted with a substituent selected from halo, alkyl and alkoxy;

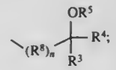
wherein R^6 is selected from hydrido, alkyl, aryl and aralkyl;

wherein R^7 is selected from alkyl, alkenyl and alkynyl;

wherein R^8 is oximino optionally substituted with alkyl; and

wherein n is 0 or 1;

provided Ar is substituted with



or a pharmaceutically-acceptable salt thereof.

5,643,934

6-HETEROCYCLIC-4-AMINO-1,2,2A,3,4,5-HEXAHYDROBENZ [CD]INDOLES

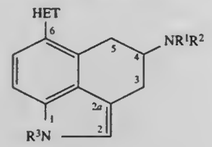
Richard N. Booher, Indianapolis; David E. Lawhorn, Greenfield; Michael J. Martinelli; Charles J. Paget, Jr., both of Indianapolis, and John M. Schaus, Zionsville, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 263,910, Jun. 20, 1994, which is a division of Ser. No. 954,171, Sep. 30, 1992, Pat. No. 5,347,013, which is a continuation-in-part of Ser. No. 676,679, Mar. 28, 1991, Pat. No. 5,244,911. This application Jun. 2, 1995, Ser. No. 459,563

Int. Cl.[6] A61K *31/40*

U.S. Cl. 514—383 **9 Claims**

1. A compound of the formula



wherein:

R^1 is hydrogen, C_1–C_4 alkyl, C_3–C_4 alkenyl, cyclopropylmethyl, phenyl (C_1–C_4 alkyl), naphthyl (C_1–C_4 alkyl), phenyl (C_1–C_4 alkyl) substituted with one or two substituents selected from the group consisting of C_1–C_3 alkoxy, halo, hydroxy, C_1–C_3 thioalkyl, nitro, C_1–C_3 alkyl or trifluoromethyl, naphthyl (C_1–C_4 alkyl) substituted with one or two substituents selected from the group consisting of C_1–C_3 alkoxy, halo, hydroxy, C_1–C_3 thioalkyl, nitro, C_1–C_3 alkyl or trifluoromethyl, —$(CH_2)_nS(C_1$–C_4 alkyl), —$C(O)R^4$, —$(CH_2)_nC(O)NR^5R^6$;

R^2 is hydrogen, C_1–C_4 alkyl, cyclopropylmethyl or C_3–C_4 alkenyl;

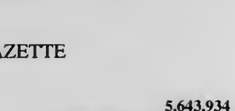
R^3 is hydrogen, C_1–C_4 alkyl or an amino blocking group;

n is 1–4;

R^4 is hydrogen, C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_1–C_4 alkoxy or phenyl;

R^5 and R^6 are independently hydrogen, C_1–C_4 alkyl, or C_5–C_8 cycloalkyl with the proviso that when one of R^5 or R^6 is a cycloalkyl the other is hydrogen;

HET is a heterocyclic ring selected from the group consisting of;



where R is hydrogen, C_1–C_3 alkyl, halogen, hydroxy, C_1–C_3 alkoxy, C_1–C_3 thioalkyl, NH_2, CN or phenyl; or pharmaceutically acceptable salts thereof.

5,643,935

METHOD OF COMBATTING INFECTIOUS DISEASES USING DICATIONIC BIS-BENZIMIDAZOLES

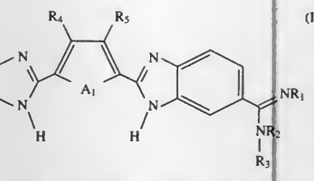
Christine C. Dykstra, Chapel Hill; John Perfect, Durham, both of N.C.; David W. Boykin; W. David Wilson, both of Atlanta, Ga., and Richard R. Tidwell, Pittsboro, N.C., assignors to The University of North Carolina at Chapel Hill, Chapel Hill; Duke University, Durham, both of N.C., and Georgia State University Research Foundation, Inc., Atlanta, Ga.

Filed Jun. 7, 1995, Ser. No. 472,996

Int. Cl.[6] A61K *31/505*

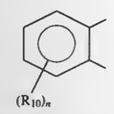
U.S. Cl. 514—394 **9 Claims**

1. A method of treating *Cryptococcus neoformans* in a subject in need of such treatment, comprising administering to said subject a compound of Formula I-A:



wherein:

R_1 and R_2 are each independently selected from the group consisting of H, lower alkyl, alkoxyalkyl, cycloalkyl, aryl, alkylaryl, hydroxyalkyl, aminoalkyl, or alkylaminoalkyl, or R_1 and R_2 together represent alkylene or R_1 and R_2 together are:



wherein

n is a number from 1 to 3, and R_{10} is H or —$CONHR_{11}NR_{15}R_{16}$ wherein R_{11} is lower alkyl and R_{15} and R_{16} are each independently selected from the group consisting of H and lower alkyl; and

R_3 is H, hydroxy, lower alkyl, cycloalkyl, aryl, alkylaryl, alkoxyalkyl, hydroxycycloalkyl, alkoxycycloalkoxy, hydroxyalkyl, aminoalkyl or alkylaminoalkyl;

A_1 is —$N(R_{12})$—;

wherein R_{12} is hydrogen, lower alkyl, hydroxy, aminoalkyl or alkylaminoalkyl; and

R_4 and R_5 are each independently selected from the group consisting of H, lower alkyl, halogen, aryl, arylalkyl, aminoalkyl, aminoaryl, oxyalkyl, oxyaryl, or oxyarylalkyl, or a physiologically acceptable salt thereof, in an amount effective to treat *Cryptococcus neoformans*.

5,643,936

TREATMENTS FOR DISEASES CHARACTERIZED BY NEOVASCULARIZATION

Jose Halperin, Brookline, and Carlo Brugnara, Newton Highlands, both of Mass., assignors to President and Fellows of Harvard College, Cambridge, Mass.

Division of Ser. No. 18,840, Feb. 18, 1993, Pat. No. 5,512,591. This application Jun. 7, 1995, Ser. No. 474,946

Int. Cl.[6] A61K *31/415*

U.S. Cl. 514—399 **8 Claims**

1. A method for treating an angiogenic condition characterized by vascular smooth muscle cell proliferation, comprising:

administering to a subject who has Kaposi's Sarcoma an imidazole selected from the group consisting of clotrimazole, miconazole, and econazole in an amount effective to inhibit said vascular smooth muscle cell proliferation.

5,643,937

ANTI-SEBORRHOEIC FORMULATION

Kenneth Vincent Mason, 22 Kana Crescent, Slack's Creek, Australia

Continuation of Ser. No. 211,706, Apr. 14, 1994, Pat. No. 5,536,742. This application Jan. 19, 1996, Ser. No. 588,792

Claims priority, application Australia, Oct. 15, 1991, PK8926

Int. Cl.[6] A61K *31/415;31/155*

U.S. Cl. 514—399 **3 Claims**

1. A method of treating a sebhorreic skin condition in a dog, said method comprising topically applying to said dog of an anti-fungal drug and a topical antiseptic.

5,643,938

(I-A)

PYRAZOLOPYRIDINE COMPOUNDS FOR THE TREATMENT OF ANEMIA

Yutaka Kohno; Itsuo Nagatomi, both of Osaka, and Kaori Hanaoka, Kyoto, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

PCT No. PCT/JP93/00762, § 371 Date Dec. 8, 1994, § 102(e) Date Dec. 8, 1994, PCT Pub. No. WO93/25205, PCT Pub. Date Dec. 23, 1993

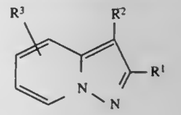
PCT Filed Jun. 7, 1993, Ser. No. 338,539

Claims priority, application United Kingdom, Jun. 10, 1992, 9212264; Jul. 24, 1992, 9215794

Int. Cl.[6] A01N *43/56*

U.S. Cl. 514—403 **6 Claims**

1. A method for the prevention and/or the treatment of anemia by raising the erythropoietin level in a patient in need thereof, which comprises administering a pyrazolopyridine compound of the following formula, or a pharmaceutically acceptable salt thereof, to a human being or an animal:

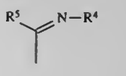


(I)

wherein

R^1 is lower alkyl, aryl which may have one or more suitable substituent(s) selected from the group consisting of halogen, lower alkoxy, nitro, amino and protected amino or a heterocyclic group,

R^2 is a group of the formula:



wherein

R^4 is protected amino or hydroxy and R^5 is hydrogen or lower alkyl;

cyano;

a group of the formula:

—A—R^6

wherein R^6 is an acyl group, or a group of the formula:

—COR_N

wherein R_N is N-containing heterocyclic group which may have one or more suitable substituent(s) selected from the group consisting of lower alkyl, lower alkoxy(lower) alkyl, acyloxy(lower) alkyl, carboxy, protected carboxy and acyl-(lower) alkyl, and A is lower aliphatic hydrocarbon group which may have one or more halogens;

amidated carboxy; unsaturated heterocyclic group which may have one or more suitable substituent(s) selected from the group consisting of lower alkyl; lower alkyl having hydroxy and halogen; hydroxy(lower) alkyl; lower alkoxy-(lower)alkyl; carboxy(lower) alkyl; protected carboxy(lower)alkyl; protected carboxy(lower)alkyl; amino(lower-)alkyl; lower alkylamino(lower)alkyl; carboxy(lower)alkylamino(lower)alkyl; protected carboxy-(lower)alkylamino(lower)alkyl; lower alkylamino(lower-)alkyl having hydroxy and aryloxy; protected amino(lower-)alkyl; cyano(lower)alkyl; cyano(higher)alkyl; lower alkyl having heterocyclic group, in which heterocyclic group may have one or more suitable substituent(s) selected from the group consisting of hydroxy(lower)alkyl, aryl which may have lower alkoxy and oxo; higher alkyl having heterocyclic group, in which heterocyclic group may have one or more suitable substituent(s) selected from the group consisting of hydroxy(lower)alkyl, aryl which may have lower alkoxy and oxo; ar(lower)alkyl; lower alkyl; heterocyclic group which may have one or more suitable substitu-

ent(s) selected from the group consisting of lower alkyl, hydroxy and cyano; carboxy(lower)alkenyl; amino; di(lower)alkylamino; halogen; lower alkoxy; oxo; hydroxy; cyano; carboxy; protected carboxy and lower alkanoyl; amino or protected amino; and

R^3 is hydrogen, lower alkyl, lower alkoxy or halogen.

5,643,939

USE OF, AND METHOD OF TREATMENT USING, CARBAZOLYL-(4)-OXYPROPANOLAMINE COMPOUNDS FOR INHIBITION OF SMOOTH MUSCLE CELL PROLIFERATION

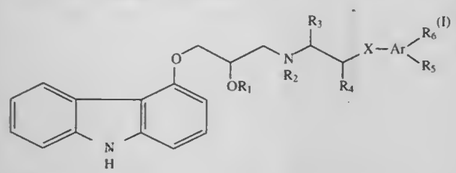
Eliot H. Ohlstein, Glenmoore, Pa., assignor to Boehringer Mannheim Pharmaceutical Corporation-SmithKline Beecham Corporation, Gaithersburg, Md.

Division of Ser. No. 26,892, Mar. 5, 1993, Pat. No. 5,308,862. This application Feb. 16, 1994, Ser. No. 197,625

Int. Cl.[6] A61K *31/40*

U.S. Cl. 514—411 **3 Claims**

1. A method of treatment for inhibition of proliferation and migration of smooth muscle cells in mammals comprising internally administering to a mammal in need thereof an effective amount of a compound selected from the group consisting essentially of the compounds of Formula I:



(I)

wherein:

R_1 is hydrogen, lower alkanoyl of up to 6 carbon atoms or aroyl selected from benzoyl and naphthoyl;

R_2 is hydrogen, lower alkyl of up to 6 carbon atoms or arylalkyl selected from benzyl, phenylethyl and phenylpropyl;

R_3 is hydrogen or lower alkyl of up to 6 carbon atoms;

R_4 is hydrogen or lower alkyl of up to 6 carbon atoms, or when X is oxygen, R_4 together with R_5 can represent $—CH_2—O—$;

X is a valency bond, $—CH_2$, oxygen or sulfur;

Ar is selected from phenyl, naphthyl, indanyl and tetrahydronaphthyl;

R_5 and R_6 are individually selected from hydrogen, fluorine, chlorine, bromine, hydroxyl, lower alkyl of up to 6 carbon atoms, a— $CONH_2$— group, lower alkoxy of up to 6 carbon atoms, benzyloxy, lower alkylthio of up to 6 carbon atoms, lower alkysulphinyl of up to 6 carbon atoms and lower alkylsulphonyl of up to 6 carbon atoms; or or a pharmaceutically acceptable salt thereof.

5,643,940

DIOXAPYRROLOMYCIN AS AN ANTIPARASITIC AGENT AND COMPOSITIONS USEFUL THEREFOR

George Anthony Conder, Richland; Ming-Shang Thomas Kuo, Portage; Vincent P. Marshall, Kalamazoo, and Raymond John Zielinski, Portage, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 189,694, Feb. 1, 1994, abandoned, which is a continuation-in-part of Ser. No. 739,765, Aug. 1, 1991, abandoned. This application May 1, 1995, Ser. No. 432,374

Int. Cl.[6] A61K *31/40*

U.S. Cl. 514—422 **3 Claims**

1. A method of killing parasitic worms in an animal hosting said worms comprising the administration to said animal of a therapeutic dosage of dioxapyrrolomycin, wherein the parasitic worms are Dictyocaulus, Haemonchus, Trichostrongylus, Ostertagia, Nematodirus, Cooperia, Bunostomum, Oesophagostomum, Chabertia, Strongyloides, Trichuris, Fasciola, Dicrocoelium, Enterobius, Ascaris, Toxascaris, Toxocara, Ascaridia, Capillaria, Heterakis, Ancylostoma, Uncinaria, Onchocerca, Taenia, Moniezia, Dipylidium, Metastrongylus, Hyostrongylus, or Strongylus.

5,643,941

SPECIFIC EATABLE TASTE MODIFIERS

Robert J. Kurtz, New York, N.Y., and William D. Fuller, San Diego, Calif., assignors to Bioresearch, Inc., Arlington, Va.

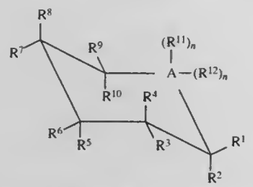
Division of Ser. No. 451,063, May 25, 1995, which is a continuation of Ser. No. 67,537, May 26, 1993, abandoned, which is a continuation-in-part of Ser. No. 799,207, Nov. 27, 1991, abandoned, which is a continuation-in-part of Ser. No. 531,388, Jun. 1, 1990, Pat. No. 5,232,735. This application Jun. 2, 1995, Ser. No. 460,260

Int. Cl.[6] A61K *31/38*

U.S. Cl. 514—432 **13 Claims**

1. A composition comprising an eatable having at least one taste selected from bitter and metallic, and at least one tastand in a substantially tasteless amount of about 0.0000001 to about 300% by weight, based on the weight of the eatable, which amount is sufficient to reduce said at least one bitter and metallic taste, said tastand being selected from the group consisting of compounds which are substantially tasteless in the amount used and have the structure:

U-1



wherein A is selected from the group consisting of O, S, and C; when A is C, n is 1; and when A is O or S, n is zero; R^1, R^2, R^3, R^4, R^5, R^6, R^7,R^8, R^9, R^{10}, R^{11}, and R^{12} are independently selected from the, group consisting of H, hydroxy, nitro, cyano, halogen, COOH, SO_3H, $CH_2SO_2NH_2$, trifluoroacetyl, an acid group of the structure ZO_qH_r wherein Z is an element selected from the group consisting of carbon, sulfur, boron or phosphorus, q is an integer from 2 to 3 and r is an integer from 1 to 3; and an O, S, N or phosphorylated glycoside, where the glycoside is selected from the group consisting of monosaccharides, disaccharides, trisaccharides, and oligosaccharides all of which saccharides may be substituted; and the following groups which may be substituted or unsubstituted: amino, alkyl, alkoxy, aryl, alkylene, aminoacyl, aryloxy, aralkoxy, acyl, arylacyl, benzoyl, alkylamino, dialkylamino, trialkylamino, carbonates, alkylcarbonates, arylcarbonates, acylamino, quanidino, alkylguanidino, acylguanidino, arylguanidino, alkylurethanes, arylurethanes, ureas, alkylureas, CHO, $COCH_3$, $COCH_3$, CH_2CHO, CH_2COOH, $COOCH_3$, $OCOCH_3$, $CONH_2$, NHCHO, SCH_3, SCH_2CH_3, CH_2SCH_3, SO_2NH_2, SO_2CH_3, CH_2SO_3H, cycloalkyl, heterocyclic, polycyclic, arylureas, carboxylic acid ester, carboxamide, N-alkyl carboxamide, di-alkyl carboxamides, and wherein any two substituents taken together can be an aliphatic chain linked to a phenyl ring at one or more positions either directly via a carbon atom or indirectly via an oxygen, nitrogen or sulfur atom to form a ring structure; OR^{13}, $NH—R^{13}$, $N—(R^{13})_2$, and $S—R^{13}$, where R^{13} is selected from the group consisting of H, trifluoroacetyl; and substituted or unsubstituted alkyl, dialkyl, aralkyl, aryl, diaryl, acyl, cycloalkyl, benzoyl, alkyloxycarbonyl, aryloxycarbonyl, alkylaminocarbonyl, arylaminocarbonyl, amidines, alkylamidines, arylamidines, a monosaccharide, a disaccharide, a trisaccharide, an oligosaccharide, phosphorylated saccharides, arylacyl, alkylene, heterocyclic and polycyclic;; any two R substitutents may be dehydrated to form an anhydride linkage; or any two R substituents may together form a

cyclic structure; where CH—CH or $CH_2—CH_2$ bonds exist the level of unsaturation may be increased by removing one or more hydrogen atoms from the carbon atoms participating in the CH—CH or $C_2—CH_2$. bond; and physiologically acceptable salts of all of the foregoing.

5,643,942

METHODS, COMPOSITION AND SOLUTIONS FOR TREATING ALOPECIA

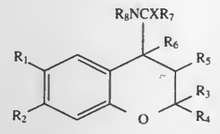
Jackson B. Hester, Jr., Galesburg, and Kaushik D. Meisheri, Kalamazoo, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 857,715, Mar. 25, 1992, abandoned, which is a continuation of Ser. No. 675,032, Mar. 25, 1991, abandoned, which is a continuation of Ser. No. 499,574, Mar. 26, 1990, abandoned, which is a continuation of Ser. No. 312,773, Feb. 7, 1989, abandoned, which is a continuation of Ser. No. 894,969, Aug. 8, 1986, abandoned. This application Jan. 11, 1994, Ser. No. 180,001

Int. Cl.[6] A61K *31/35*

U.S. Cl. 514—456 **13 Claims**

1. A method of treating humans for androgenic alopecia which comprises topically applying to the human scalp an effective amount of a pharmaceutical composition containing a compound of Formula I



(I)

wherein;

either one of R_1 and R_2 is hydrogen and the other is selected from the class of C_{1-6} alkylcarbonyl, C_{1-6} alkoxycarbonyl, C_{1-6} alkylcarbonyloxy, C_{1-6} alkylhydroxymethyl, nitro, cyano, chloro, trifluoromethyl, C_{1-6} alkylsulphinyl, C_{1-6} alkylsulphonyl, C_{1-6} alkoxysulphinyl, C_{1-6} alkoxysulphonyl, C_{1-6} alkylcarbonylamino, C_{1-6} alkoxycarbonylamino, C_{1-6} alkylthiocarbonyl, C_{1-6} alkoxythiocarbonyl, C_{1-6} alkylthiocarbonyloxy, C_{1-6} alkoxythiolmethyl, formyl or aminosulphinyl, aminosulphonyl or aminocarbonyl, the amino moiety being unsubstituted or substituted by one or two C_{1-6} alkyl groups, or C_{1-6} alkylsulphinylamino, C_{1-6} alkylsulphonylamino C_{1-6} alkoxysulphinylamino or C_{1-6} alkoxysulphonylamino or ethylenyl terminally substituted by C_{1-6} alkylcarbonyl, nitro or cyano, or

$—C(C_{1-6}$ alkyl)NOH or $—C(C_{1-6}$ alkyl)NNH_2, or one of R_1 and R_2 is nitro, cyano or C_{1-3} alkylcarbonyl and the other is methoxy or amino unsubstituted or substituted by one or two C_{1-6} alkyl or by C_{2-7} alkanoyl;

one of R_3 and R_4 is hydrogen or C_{1-4} alkyl and the other is C_{1-4} alkyl or R_3 and R_4 together are C_{2-5} polymethylene;

either R_5 is hydrogen hydroxy, C_{1-6} alkoxy or C_{1-7} acyloxy and R_6 is hydrogen or R_5 and R_6 together are a bond;

R_7 is

hydrogen,

C_{1-6} alkyl,

C_{1-6} alkyl being substituted by hydroxy,

C_{1-6} alkoxy,

C_{1-6} alkoxycarbonyl or carboxy,

C_{1-6} alkyl substituted by halogen,

C_{2-6} alkenyl,

phenyl,

phenyl being substituted by one or more groups or atoms selected from the class of C_{1-6} alkoxy, hydroxy, halogen, trifluoromethyl, nitro, cyano, C_{1-12} carboxylic acyl, or amino or aminocarbonyl being unsubstituted or substituted by one or two C_{1-6} alkyl groups,

naphthyl,

naphthyl being substituted by one or more groups or atoms selected from the class of C_{1-6} alkoxy, hydroxy, halogen, trifluoromethyl, nitro, cyano, C_{1-12} carboxylic acyl, or amino or aminocarbonyl being unsubstituted or substituted by one or two C_{1-6}alkyl groups, or

a heteroaryl moiety selected from the group consisting of furanyl, thienyl, pyrryl, oxazolyl, thiazolyl, imidazolyl, thiadiazolyl, pyridinyl, pyridazinyl, pyrimidinyl, pyrazinyl, thiazinyl, benzofuranyl, benzothiophenyl, indolyl, indazolyl, quinolinyl, isoquinolinyl and quinazoninly;

R_8 is hydrogen or C_{1-6} alkyl; or

R_7 and R_8 are joined together to form C_{3-5} polymethylene or $—CH_2—(CH_2)_n—Z—(CH_2)m—$ where m and n are intergers 0 to 2 such that m+n is 1 or 2 and Z is oxygen, sulphur or NR_9 wherein R_9 is hydrogen, C_{1-9} alkyl, C_{2-7} alkanoyl, phenyl C_{1-4} alkyl, naphthylcarbonyl, phenylcarbonyl or benzylcarbonyl unsubstituted or substituted in the phenyl or naphthyl ring by one or two C_{1-6} alkyl, C_{1-6} alkoxy or halogen; mono- or bi-cyclic heteroarylcarbonyl selected from the group consisting of furanyl, thienyl, pyrryl, oxazolyl, thiazolyl, imidazolyl, thiadiazolyl, pyridinyl, pyridazinyl, pyrimidinyl, pyrazinyl, thiazinyl, benzofuranyl, benzothiophenyl, indolyl, indazolyl, quinolinyl, isoquinolinyl and quinazoninly;

X is oxygen or sulphur; and the R_8NCXR_7 moiety is trans to the R_5 group when R_5 is hydroxy, C_{1-6} alkoxy or C_{1-7} acyloxy; or a pharmaceutically acceptable salt or solvate thereof.

5,643,943

SYSTEMIC ADMINISTRATION OF ESTERS AND AMIDES OF ANTIOXIDANTS WHICH MAY BE USED AS ANTIOXIDANT PRODRUG THERAPY FOR OXIDATIVE AND INFLAMMATORY PATHOGENESIS

Daniel A. Gamache; Mark R. Hellberg, both of Arlington; Jon C. Nixon, Mansfield, and Gustav Graff, Cleburne, all of Tex., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.

Continuation-in-part of Ser. No. 362,718, Dec. 23, 1994, Pat. No. 5,607,966. This application Jun. 7, 1995, Ser. No. 472,445

Int. Cl.[6] A61K *31/335;31/34*

U.S. Cl. 514—456 **16 Claims**

1. A method of preventing or treating vascular inflammatory pathologies in a human patient which comprises administering a composition comprising a therapeutically effective amount of a compound of the following formula to the patient:

$$A—X—(CH_2)_n—Y—(CH_2)_m—Z$$

wherein:

A is a non-steroidal anti-inflammatory agent originally having a carboxylic acid moiety;

X is O or NR;

A—X is an ester or amide linkage derived from the carboxylic acid moiety of the non-steroidal anti-inflammatory agent and the X;

R is H, C_1–C_6 alkyl or C_3–C_6 cycloalkyl;

Y, if present, is O, NR, $C(R)_2$, CH(OH) or $S(O)_n$;

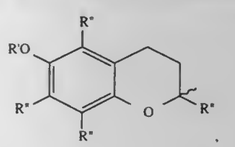
n is 2 to 4 and m is 1 to 4 when Y is O, NR, or $S(O)_n$;

n is 0 to 4 and m is 0 to 4 when Y is $C(R)_2$ or is not present;

n is 1 to 4 and m is 0 to 4 when Y is CH(OH);

n' is 0 to 2; and

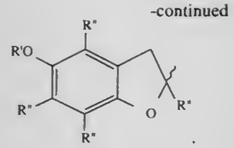
Z is selected from the group consisting of:



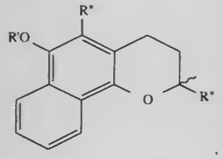
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and



wherein:

R' is H, C(O)R, C(O)N(R)$_2$, PO_3^- or SO_3^-;

R" is H or C_1–C_6 alkyl;

or a pharmaceutically acceptable salt thereof; and a pharmaceutically acceptable vehicle thereof.

5,643,944

OVULATION CONTROL BY REGULATING NITRIC OXIDE LEVELS

Robert E. Garfield, Friendswood, and Chandrasekhar Yallampalli, Houston, both of Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Division of Ser. No. 165,309, Dec. 10, 1993, Pat. No. 5,470,847. This application Jun. 7, 1995, Ser. No. 477,189

Int. Cl.[6] A61K *31/34;31/195;31/045*

U.S. Cl. 514—470 **3 Claims**

1. A method for inducing ovulation comprising administering L-arginine, sodium nitroprusside, nitroglycerin, isosorbide mononitrate or isosorbide dinitrate to a female in an amount stimulating ovulation.

5,643,945

EATABLE TASTE MODIFIERS

Robert J. Kurtz, New York, N.Y., and William D. Fuller, San Diego, Calif., assignors to Bioresearch, Inc., Arlington, Va.

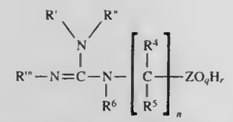
Division of Ser. No. 451,063, May 25, 1995, which is a continuation of Ser. No. 67,537, May 26, 1993, abandoned, and Ser. No. 799,207, Nov. 27, 1991, abandoned, which is a continuation-in-part of Ser. No. 531,388, Jun. 1, 1990, Pat. No. 5,232,735. This application Jun. 5, 1995, Ser. No. 462,021

Int. Cl.[6] A61K *31/275*

U.S. Cl. 514—476 **13 Claims**

1. A composition comprising an eatable having at least one taste selected from bitter and metallic, and at least one tastand in a substantially tasteless amount of about 0.0000001 to about 300% by weight, based on the weight of the eatable, which amount is sufficient to reduce said at least one bitter and metallic taste, said tastand being selected from the group consisting of compounds which are substantially tasteless in the amount used and have the structure:

b



E-t

wherein R', R", R"', and R^6 are independently selected from the group consisting of H, trifluoroacetyl; and substituted or unsubstituted alkyl, dialkyl, aralkyl, aryl, diaryl, acyl, cycloalkyl, benzoyl, alkyloxycarbonyl, aryloxycarbonyl, alkylaminocarbonyl, arylaminocarbonyl, amidines, alkylamidines, arylamidines, a monosaccharide, a disaccharide, a trisaccharide, an oligosaccharide, phosphorylated saccharides, arylacyl, alkylene, heterocyclic and polycyclic;; each R^4 and R^5 are independently selected from the group consisting of H, trifluoromethyl, halogen, cyano; and substituted or unsubstituted alkyl, alkylene, branched alkyl, branched alkylene, aryl, aralkyl, cycloalkyl, acyl, benzoyl, alkoxy, aryloxy, heterocyclic, polycyclic; n is integer of 0 to 10; Z is selected from C, S, P and B; q is an integer from 2 to 3 and r is an integer from 1 to 3; when Z is C, q is 2; when Z is S, P or B, q is 2 or 3; when Z is C or S, r is 1; when Z is P or B, r is 2; where CH—CH or CH_2—CH_2 bonds exist the level of unsaturation may be increased by removing one or more hydrogen atoms from the carbon atoms participating in the CH—CH or CH_2—CH_2 bond, and physiologically acceptable salts of all of the foregoing.

c

d

5,643,946

COMPOUNDS USEFUL FOR TREATING ALLERGIC AND INFLAMMATORY DISEASES

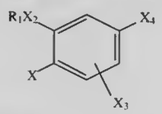
Siegfried Benjamin Christensen, IV, Philadelphia, Pa., assignor to SmithKline Beecham Corporation, Philadelphia, Pa.

Continuation of Ser. No. 313,094, Sep. 29, 1994, Pat. No. 5,552,438, which is a continuation-in-part of Ser. No. 968,762, Oct. 30, 1992, abandoned, which is a continuation-in-part of Ser. No. 862,030, Apr. 2, 1992, abandoned. This application May 18, 1995, Ser. No. 443,636

Int. Cl.[6] A61K *31/115;31/085;* **C07C** *69/96;49/355*

U.S. Cl. 514—512 **3 Claims**

1. A compound of Formula (I):



(I)

wherein:

R_1 is $—(CR_4R_5)_nC(O)O(CR_4R_5)_mR_6$, $—(CR_4R_5)_nC(O)NR_4(CR_4R_5)_mR_6$, $—(CR_4R_5)_nO(CR_4R_5)_mR_6$, or $—(CR_4R_5)_rR_6$ wherein the alkyl moieties may be optionally substituted with one or more halogens;

m is 0 to 2;

n is 1 to 4;

r is 0 to 6;

R_4 and R_5 are independently selected from hydrogen or a C_{1-2} alkyl;

R_6 is hydrogen, methyl, hydroxyl, aryl, halo substituted aryl, aryloxy C_{1-3} alkyl, halo substituted aryloxy C_{1-3} alkyl, indanyl, indenyl, C_{7-11} polycycloalkyl, tetrahydrofuranyl, furanyl, tetrahydropyranyl, pyranyl, tetrahydrothienyl, thienyl, tetrahydrothiopyranyl, thiopyranyl, C_{3-6} cycloalkyl, or a C_{4-6} cycloalkyl containing one or two unsaturated bonds, wherein the cycloalkyl and heterocyclic moieties may be optionally substituted by 1 to 3 methyl groups or one ethyl group;

provided that:

a) when R_6 is hydroxyl, then m is 2; or

b) when R_6 is hydroxyl, then r is 2 to 6; or

c) when R_6 is 2-tetrahydropyranyl, 2-tetrahydrothiopyranyl, 2-tetrahydrofuranyl, or 2-tetrahydrothienyl, then m is 1 or 2; or

d) when R_6 is 2-tetrahydropyranyl, 2-tetrahydrothiopyranyl, 2-tetrahydrofuranyl, or 2-tetrahydrothienyl, then r is 1 to 6;

e) when n is 1 and m is 0, then R_6 is other than H in $—(CR_4R_5)^NO(CR_4R_5)_mR_6$;

X is YR_2, halogen, nitro, NR_4R_5, or formyl amine;

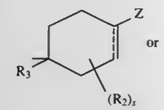
Y is O or $S(O)_{m'}$;

m' is 0, 1, or 2;

X_2 is O or NR_8;

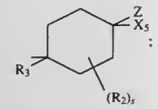
X_3 is hydrogen or X;

X_4 is



(a)

or



(b)

;

X_5 is H, R_9, OR_8, CN, $C(O)R_8$, $C(O)OR_8$, $C(O)NR_8R_8$, or NR_8R_8;

R_2 is independently selected from the group consisting of $—CH_3$ and $—CH_2CH_3$ optionally substituted by 1 or more halogens;

s is 0 to 4;

R_3 is cyclopropyl optionally substituted by R_8',

Z is $C(Y')R_{14}$, $C(O)OR_{14}$, $C(Y')NR_{10}R_{14}$, $C(NR_{10})NR_{10}R_{14}$, CN, $C(NOR_8)R_{14}$, $C(O)NR_8NR_8C(O)R_8$, $C(O)NR_8NR_{10}R_{14}$, $C(NOR_{14})R_8$, $C(NR_8)NR_{10}R_{14}$, $C(NR_{14})NR_8R_8$ $C(NCN)NR_{10}R_{14}$, $C(NCN)SR_9$, (2-, 4- or 5-imidazolyl), (3-, 4- or 5-pyrazolyl), (4- or 5-triazolyl[1,2,3]), (3- or 5-triazolyl[1,2,4]), (5-tetrazolyl), (2-, 4- or 5-oxazolyl), (3-, 4- or 5- isoxazolyl), (3- or 5-oxadiazolyl[1,2,4]), (2oxadiazolyl[1,3,4]), (2-thiadiazolyl[1,3,4]), (2-, 4-, or 5-thiazolyl), (2-, 4-, or 5-oxazolidinyl), (2-, 4-, or 5-thiazolidinyl), or (2-, 4-, or 5-imidazolidinyl); wherein all of the heterocyclic ring systems may be optionally substituted one or more times by R_{14};

the dotted line in formula (a) represents a single or double bond;

Y' is O or S;

R_7 is $—(CR_4R_5)_qR_{12}$ or C_{1-6} alkyl wherein the R_{12} or C_{1-6} alkyl group is optionally substituted one or more times by C_{1-2} alkyl optionally substituted by one to three fluorines, —F, —Br, —Cl, $—NO_2$, $—NR_{10}R_{11}$, $—C(O)R_8$, $—C(O)OR_8$, $—OR_8$, —CN, $—C(O)NR_{10}R_{11}$, $—OC(O)NR_{10}R_{11}$, $—OC(O)R_8$, $—NR_{10}C(O)NR_{10}R_{11}$, $—NR_{10}C(O)R_{11}$, $—NR_{10}C(O)OR_9$, $—NR_{10}C(O)R_{13}$, $—C(NR_{10})NR_{10}R_{11}$, $—C(NCN)NR_{10}R_{11}$, $—C(NCN)SR_9$, $—NR_{10}C(NCN)SR_9$, $—NR_{10}C(NCN)NR_{10}R_{11}$, $—NR_{10}S(O)_2R_9$, $—S(O)_{m'}R_9$, $—NR_{10}C(O)C(O)NR_{10}R_{11}$, $—NR_{10}C(O)C(O)R_{10}$, thiazolyl, imidazolyl, oxazolyl, pyrazolyl, triazolyl, or tetrazolyl;

q is 0, 1, or 2;

R_{12} is C_3–C_7-cycloalkyl, (2-, 3- or 4-pyridyl), pyrimidyl, pyrazolyl, (1- or 2-imidazolyl), thiazolyl, triazolyl, pyrrolyl, piperazinyl, piperidinyl, morpholinyl, furanyl, (2- or 3-thienyl), (4- or 5-thiazolyl), quinolinyl, naphthyl, or phenyl;

R_8 is independently selected from hydrogen or R_9;

R_8' is R_8 or fluorine;

R_9 is C_{1-4} alkyl optionally substituted by one to three fluorines;

R_{10} is OR_8 or R_{11};

R_{11} is hydrogen, or C_{1-4} alkyl optionally substituted by one to three fluorines; or when R_{10} and R_{11} are as $NR_{10}R_{11}$ they may together with the nitrogen form a 5 to 7 membered ring optionally containing at least one additional heteroatom selected from O/N/or S;

R_{13} is oxazolidinyl, oxazolyl, thiazolyl, pyrazolyl, triazolyl, tetrazolyl, imidazolyl, imidazolidinyl, thiazolidinyl, isoxazolyl, oxadiazolyl, or thiadiazolyl, and each of these heterocyclic rings is connected through a carbon atom and each may be unsubstituted or substituted by one or two C_{1-2} alkyl groups;

R_{14} is hydrogen or R_7; or when R_{10} and R_{14} are as $NR_{10}R_{14}$ they may together with the nitrogen form a 5 to 7 membered ring optionally containing one or more additional heteroatoms selected from O, N, or S;

provided that:

f) when R_{12} is N-pyrazolyl, N-imidazolyl, N-triazolyl, N-pyrrolyl, N-piperazinyl, N-piperidinyl, or N-morpholinyl, then q is not 1; or

or the pharmaceutically acceptable salts thereof.

5,643,947

ω-AMINO-α-PHENYLALKANONITRILE DERIVATIVES

Claude L. Gillet, Blanmont, Belgium; Philippe R. Bovy, St. Louis, Mo.; Hugo Gorissen, Grez Doiceau, and Michel P. Sayers, Limal, both of Belgium, assignors to G. D. Searle & Co., Skokie, Ill.

Continuation of Ser. No. 40,824, Mar. 31, 1993, abandoned, which is a continuation of Ser. No. 811,450, Dec. 19, 1992, abandoned, which is a continuation of Ser. No. 638,006, Jan. 5, 1991, abandoned, which is a continuation of Ser. No. 454,341, Dec. 21, 1989, abandoned. This application May 24, 1995, Ser. No. 448,911

Int. Cl.[6] C07K *255/24;* **A61K** *31/275*

U.S. Cl. 514—523 **9 Claims**

1. Compound selected from compounds, and their pharmaceutically acceptable salts, of the group consisting of 5-[(4-phenylbutyl)methylamino]-2-(3,4-dimethoxyphenyl)-2-isopropylvaleronitrile and 5-[(5-phenylpentyl)methylamino]-2-(3,4-dimethoxyphenyl)-2-isopropylvaleronitrile.

5,643,948

PROTEIN KINASE C MODULATORS. K.

Paul E. Driedger, Boston, and James Quick, Lexington, both of Mass., assignors to Procyon Pharmaceuticals, Inc., Woburn, Mass.

Continuation-in-part of Ser. No. 980,907, Nov. 24, 1992, and Ser. No. 664,397, Mar. 4, 1991, which is a continuatioo-in-part of Ser. No. 537,885, Jun. 14, 1990, abandoned, Ser. No. 559,296, Jul. 30, 1990, abandoned, and Ser. No. 559,701, Jul. 30, 1990, Pat. No. 5,145,842, said Ser. No. 537,885is a continuation-in-part of Ser. No. 61,299, Jun. 10, 1987, abandoned, which is a continuation-in-part of Ser. No. 872,812, Jun. 11, 1986, abandoned, said Ser. No. 559,296and Ser. No. 559,701, is a continuation-in-part of Ser. No. 322,881, Mar. 13, 1989, abandoned, which is a division of Ser. No. 61,299, which is a continuation-in-part of Ser. No. 872,812. This application Sep. 13, 1993, Ser. No. 120,643

Int. Cl.[6] A61K *31/235*

U.S. Cl. 514—533 **56 Claims**

1. A compound, in the form of an individual isomer, an isomer mixture, a racemate or optical antipode, or a pharmaceutically acceptable salt thereof, of the formula:

P—G

wherein P represents a radical, formally derived from a parent compound of the diterpene-type phorboid class, which compound:

a. binds reversibly or irreversibly to a diacylglycerol-type receptor; and/or

b. activates any form of the enzyme protein kinase C; and

c. contains an hydroxymethyl or 1-hydroxyethyl group bonded to a carbon atom; and

wherein G is any group of 55 or fewer atoms selected from carbon, hydrogen, oxygen, nitrogen, halogen, sulfur, phosphorus, silicon, arsenic, boron and selenium either i) singly or doubly bonded to the carbon atom of the parent compound in place of the hydroxymethyl or 1-hydroxyethyl group; or ii) singly or doubly bonded to a carbon atom immediately adjacent to the carbon atom to which the hydroxymethyl or

1-hydroxyethyl group is bound in the parent compound; and wherein the hydroxymethyl or 1-hydroxyethyl group of the parent compound is absent or has been replaced by G;

provided that: for all P, when G is bonded to the equivalent of phorbol's carbon 6, G may not be $—CH_3$, —CH═O, $—CH_2O—R_e$, wherein R_e, is an acyl group, or $—CH_2O—R_f$, wherein R_f, is a (i) C_1–C_6 hydrocarbon radical, (ii) a substituted or unsubstituted triphenylmethyl group, (iii) a (C_1–C_6 linear or branched alkyl)$_n$(phenyl)$_{3-n}$silyl group, wherein n is 0–3, or is (iv) $—C(CH_3)_2O—$, —C(═O)O— or $—B(C_6H_5)O—$ linked via the oxygen atom to carbon 5 of P, and G may not be $—CH═NNHR_h$ wherein R_h is a phenyl ring with or without substituents; P—G may not include 12-beta-13-alpha-diacetoxy derivatives of compounds having the exact 20-carbon tigliane or the exact 19-carbon 20-nor-tigliane skeleton; P—G may not comprise 20-deoxy-20-chlorocrotophorbolone nor 20-deoxy-20-chlorophorbol 12,13-diesters wherein the ester groups are both selected from saturated or unsaturated alkanoyl or are both benzoyl; if G is $=CH_2$ bonded to carbon 6 of P,P may not carry a ring formed by $—OC(CH_3)_2O—$bonded in the beta configuration to carbons 3 and 4 or a trimethylsilyloxy at carbon 4; if P has an ingenol skeleton with a rearranged A-ring, G may not consist or $—CH_2—OC(═O)NHC_6H_5$; and, P—G may not comprise 6-deshydroxymethyl-6-carboxyphorbol 12,13-didecanoate, 6-deshydroxymethyl-6-carboxyphorbol 12,13-diacetate, 20-chloro-12,13,20-trideoxy-3-deoxo-3α-trimethylsilyloxy-4-O-trimethylsilyl-1,2-dihydro-2(19)-didehydrophorbol, 20-iodo-9,12,13,20-tetradeoxy-3-deoxo-3α-benzoyloxy-4-O-trimethylsilyl-1,2,6,7-tetrahydro-2(19)-didehydro-6α,9α-oxidophorbol, 20-O-benzyl-9,12,13-trideoxy-3-deoxo-3α-benzoyloxy-4-O-trimethylsilyl-1,2,6,7-tetrahydro-2(19)-didehydro-6α,9α-oxidophorbol or 1,2-didehydro-6-deshydroxymethyl-2-desmethyl-4,9,12,13-tetradeoxy-4,7-dimethylphorbol.

5,643,949

PHENYL ALPHA ACYLOXYALKANOIC ACIDS, DERIVATIVES AND THEIR THERAPEUTIC USE

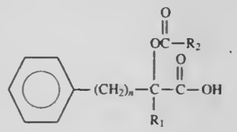
Eugene J. Van Scott, Abington, and Ruey J. Yu, Ambler, both of Pa., assignors to Tristrata, Inc., Princeton, N.J.

Division of Ser. No. 132,837, Oct. 7, 1993, abandoned, which is a division of Ser. No. 630,743, Dec. 20, 1990, Pat. No. 5,258,391, which is a continuation of Ser. No. 266,702, Nov. 3, 1988, abandoned, which is a continuation of Ser. No. 50,143, May 15, 1987, abandoned. This application Jul. 18, 1994, Ser. No. 276,275

Int. Cl.[6] A61K *31/235;31/225*

U.S. Cl. 514—533 **36 Claims**

1. A composition for topical administration to nails, skin, lips, and other mucous membranes, said composition comprising (a) a cosmetic or dermatologic drug in an amount effective to produce a cosmetic or therapeutic effect to an area of topical application, and (b) at least one compound selected from the group consisting of 2-phenyl beta acetoxypropanoic acid, and phenyl alpha acyloxyalkanoic acids having the formula:



wherein said compound is present as free acid, lactone or salt form, and as an optically active or inactive isomer selected from the group consisting of D, L, and DL form, and wherein

R_1 represents H, alkyl, aralkyl or aryl group of saturated or unsaturated, straight or branched chain, having 1 to 25 carbon atoms, or a cyclic form;

R_2 represents alkyl, aralkyl, or aryl group of saturated or unsaturated, straight or branched chain, having 1 to 25 carbon atoms, or a cyclic form; and

the hydrogen atoms of the phenyl, R_1, R_2, $(CH_2)_n$ may be substituted by a halogen, hydroxy, acetoxy, sulfur, or a lower alkyl or alkoxy, saturated or unsaturated having 1 to 9 carbon atoms;

said at least one compound being present in an amount effective to enhance the cosmetic or therapeutic effect of said cosmetic or dermatologic drug.

5,643,950

TRIPHENYLALKYL ANTIMICROBIAL AGENTS

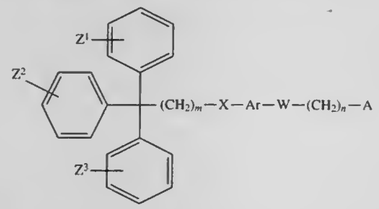
James P. Demers, New York, N.Y.; Sigmood Johnson, Three Bridges, N.J.; Michele Ann Weidner-Wells, Somerville, N.J.; Ramesh M. Kanojia, Somerville, N.J.; Stephanie A. Fraga, Somerville, N.J., and Dieter Klaubert, Eugene, Oreg., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Jun. 2, 1995, Ser. No. 459,446

Int. Cl.[6] A61K *31/14;* **C07C** *279/06;279/08;211/03*

U.S. Cl. 514—539 **16 Claims**

5. A compound selected from those of the formula 1:



wherein

Z^1, Z^2, and Z^3 are independently H, halogen, C_1–C_6 alkyl, C_1–C_6 alkoxy, hydroxy, amino, or nitro;

m is an integer from 1–5;

X is CH_2O, CH_2S, CH_2NR, C(O)NR, $CH_2OC(O)CH_2$, or $CH_2OC(O)CH_2CH_2$;

Ar is aryl optionally substituted with one to three substituents selected from halogen, hydroxy, C_1–C_6 alkyl and C_1–C_6 alkoxy;

W is oxygen, sulfur, or a bond;

n is an integer from 0–5;

A is selected from:

(a) NR^1R^2;

(b) $N^+R^1R^2R^3$ B^-; and

(c) guanidino;

wherein:

R, R^1, R^2, and R^3 are independently H, C_1–C_6 lower alkyl, or arylC_1–C_6 alkyl;

B^- is a pharmaceutically acceptable counterion; and

aryl is phenyl, biphenyl or naphthyl;

with the provisos that:

where n is 0, A is not NH_2; and

where n is 0 or 1, W is a bond;

and the pharmaceutically acceptable salts and prodrug forms thereof.

5,643,951

COMPOSITIONS COMPRISING CARBONATE/BICARBONATE BUFFERED DICHLOROACETIC ACID AND METHODS FOR TREATMENT OF METABOLIC AND CARDIOVASCULAR DISORDERS

Peter W. Stacpoole, 6205 NW. 143rd St., Gainesville, Fla. 32606, and Robert M. Bersin, 2005 Cortelyou Rd., Charlotte, N.C. 28211

Continuation of Ser. No. 945,374, Sep. 16, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 465,608

Int. Cl.[6] A61K *31/19;31/075*

U.S. Cl. 514—557 **10 Claims**

1. A method for the treatment of a metabolic disorder comprising administering to a human in need thereof a therapeutically effective amount of an aqueous composition comprising dichloroacetic acid or a pharmaceutically acceptable salt or derivative thereof and a pharmaceutically acceptable mixture of carbonate and bicarbonate ions, the weight ratio of dichloroacetic acid or salt thereof to said mixture of carbonate and bicarbonate ions being in the range of from about 100:1 to about 0.01:1.

5,643,952

METHOD OF USING 2-PHENYLLACTIC ACID FOR TREATING WRINKLES

Ruey J. Yu, Ambler, and Eugene J. Van Scott, Abington, both of Pa., assignors to Tristrata Technology, Inc., Wilmington, Del.

Continuation of Ser. No. 135,841, Oct. 7, 1993, which is a continuation of Ser. No. 840,149, Feb. 24, 1992, abandoned, which is a division of Ser. No. 393,749, Aug. 15, 1989, Pat. No. 5,091,171, which is a continuation-in-part of Ser. No. 945,680, Dec. 23, 1986, abandoned. This application Jun. 6, 1995, Ser. No. 466,770

Int. Cl.[6] A61K *31/19;7/48*

U.S. Cl. 514—557 **20 Claims**

1. Method of visibly reducing a human skin wrinkle comprising topically applying to said wrinkle a composition comprising 2-phenyllactic acid or a topically effective salt thereof, in an amount and for a period of time sufficient to visibly reduce said wrinkle.

5,643,953

METHOD OF USING 3-PHENYLLACTIC ACID FOR TREATING WRINKLES

Ruey J. Yu, Ambler, and Eugene J. Van Scott, Abington, both of Pa., assignors to Tristrata Technology, Wilmington, Del.

Continuation of Ser. No. 135,841, Oct. 17, 1993, which is a continuation of Ser. No. 840,149, Feb. 24, 1992, abandoned, which is a division of Ser. No. 393,749, Aug. 15, 1989, Pat. No. 5,091,171, which is a continuation-in-part of Ser. No. 945,680, Dec. 23, 1986, abandoned. This application Jun. 6, 1995, Ser. No. 467,156

Int. Cl.[6] A61K *31/19;7/48*

U.S. Cl. 514—557 **20 Claims**

1. Method of visibly reducing a human skin wrinkle comprising topically applying to said wrinkle a composition comprising 3-phenyllactic acid or a topically effective salt thereof, in an amount and for a period of time sufficient to visibly reduce said wrinkle.

5,643,954

METHOD OF PREVENTING AND ALLEVIATING STRESS IN A HEALTHY MAMMAL IN NEED THEREOF

Irina Alexeevna Komissarova, ulitsa Medikov, 24, kv.47; Julia Vasileivna Gudkova, ulitsa Barzarina, 9, kv.94; Tatyana Dmitrievna Soldatenkova, Pokrovsky bulvar, 14/5, kv.73; Tatyana Tikhonovna Kondrashova, ulitsa Severodvinskaya, 9, kv.305, all of Moscow, and Natalya Mikhailovna Burbenskaya, Ozersky raion, selo Sennitsy, Moskovskaya oblast, all of Russian Federation

PCT No. PCT/RU92/00005, § 371 Date Sep. 10, 1993, § 102(e) Date Sep. 10, 1993, PCT Pub. No. WO93/13764, PCT Pub. Date Jul. 22, 1993

PCT Filed Jan. 10, 1992, Ser. No. 119,050

Int. Cl.[6] A61K *31/195*

U.S. Cl. 514—561 **4 Claims**

1. A method of preventing stress in a healthy mammal in need thereof or alleviating acute or chronic stress in a healthy mammal in need thereof comprising administering sublingually a composition in tablet form comprising from 0.1 to 0.2 g of glycine or a pharmaceutically acceptable salt thereof and methyl cellulose.

5,643,955

SPECIFIC EATABLE TASTE MODIFIERS

Robert J. Kurtz, New York, N.Y., and William D. Fuller, San Diego, Calif., assignors to Bioresearch, Inc., Arlington, Va.

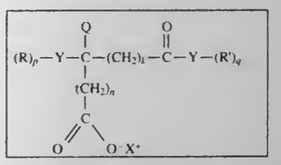
Division of Ser. No. 451,063, May 25, 1995, which is a continuation of Ser. No. 67,537, May 26, 1993, abandoned, which is a continuation-in-part of Ser. No. 799,207, Nov. 27, 1991, abandoned, which is a continuation-in-part of Ser. No. 531,388, Jun. 1, 1990, Pat. No. 5,232,735. This application May 31, 1995, Ser. No. 454,713

Int. Cl.[6] A61K *31/195*

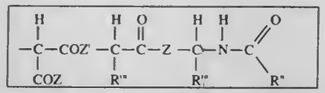
U.S. Cl. 514—561 **13 Claims**

1. A composition comprising an eatable having at least one taste selected from bitter and metallic, and at least one tastand in a substantially tasteless amount of about 0.0000001 to about 300% by weight, based on the weight of the eatable, which amount is sufficient to reduce said at least one bitter and metallic taste, said tastand being selected from the group consisting of compounds which are substantially tasteless in the amount used and have the structure:

D-1



wherein n and k are independently selected from 0, 1 or 2; each Y is independently selected from N, O, and S; Q is selected from the group consisting of H, trifluoromethyl, halogen, cyano; and substituted or unsubstituted alkyl, alkylene, branched alkyl, branched alkylene, aryl, aralkyl, cycloalkyl, acyl, benzoyl, alkoxy, aryloxy, heterocyclic, polycyclic; p and q are 1 when Y is O, p and q are independently selected from 1 and 2 when Y is S, and p and q are independently selected from 2 and 3 when Y is N; R which may be the same or different when p>1 and R' which may be the same or different when q<1 are independently selected from the group consisting of H, trifluoroacetyl; and substituted or unsubstituted alkyl, dialkyl, aralkyl, aryl, diaryl, acyl, cycloalkyl, benzoyl, alkyloxycarbonyl, aryloxycarbonyl, alkylaminocarbonyl, arylaminocarbonyl, amidines, alkylamidines, arylamidines, a monosaccharide, a disaccharide, a trisaccharide, an oligosaccharide, phosphorylated saccharides, arylacyl, alkylene, heterocyclic and polycyclic; and following three structures D-2:



D-2

wherein Z and Z' are independently selected from the group consisting of OH, $—O^-X^+$, OR", NH_2, NHR", $N(R")_2$; R" is selected from the group consisting of alkyl, branched alkyl, aryl, aralkyl, alkaryl, cycloalkyl, substituted alkyl, substituted cycloalkyl, substituted aryl, substituted aralkyl and substituted alkaryl, and R'" is selected from alkyl, branched alkyl, aryl, aralkyl, alkaryl, cycloalkyl, substituted alkyl, substituted cycloalkyl, substituted aralkyl, substituted alkaryl, and an amino acid side chain; where CH—CH or CH_2—CH_2 bonds exist the level of unsaturation may be increased by removing one or more hydrogen atoms from the carbon atoms participating in the CH—CH or CH_2—CH_2 bond, and X^+ is selected from H^+ or a physiologically acceptable cation; and physiologically acceptable salts of all of the foregoing.

5,643,956

SPECIFIC EATABLE TASTE MODIFIERS

Robert J. Kurtz, New York, N.Y., and William D. Fuller, San Diego, Calif., assignors to Bioresearch, Inc., Arlington, Va.

Division of Ser. No. 451,063, May 25, 1995, which is a continuation of Ser. No. 67,537, May 26, 1993, abandoned, which is a continuation-in-part of Ser. No. 799,207, Nov. 27, 1991, abandoned, which is a continuation-in-part of Ser. No. 531,388, Jun. 1, 1990, Pat. No. 5,232,735. This application Jun. 2, 1995, Ser. No. 459,706

Int. Cl.[6] A61K *31/195*

U.S. Cl. 514—561 **12 Claims**

1. A composition comprising an eatable having at least one taste selected from bitter and metallic, and at least one tastand in a substantially tasteless amount of about 0.0000001 to about 300% by weight, based on the weight of the eatable, which amount is sufficient to reduce said at least one bitter and metallic taste, wherein said tastand is selected from the group consisting of amino acids and polyamino acids which are substantially tasteless in the amount used and wherein the nitrogen atoms are optionally substituted with one, two or three substituents selected from the group consisting of H, trifluoroacetyl; and substituted or unsubstituted alkyl, dialkyl, aralkyl, aryl, diaryl, acyl, cycloalkyl, benzoyl, alkyloxycarbonyl, aryloxycarbonyl, alkylaminocarbonyl, arylaminocarbonyl, amidines, alkylamidines, arylamidines, a monosaccharide, a disaccharide, a trisaccharide, an oligosaccharide, phosphorylated saccharides, arylacyl, alkylene, heterocyclic, polycyclic; if the tastand comprises oxygen or sulfur atoms, these heteroatoms are optionally substituted with one or more substituents selected from the group consisting of H, trifluoroacetyl; and substituted or unsubstituted alkyl, dialkyl, aralkyl, aryl, diaryl, acyl, cycloalkyl, benzoyl, alkyloxycarbonyl, aryloxycarbonyl, alkylaminocarbonyl, arylaminocarbonyl, amidines, alkylamidines, arylamidines, a monosaccharide, a disaccharide, a trisaccharide, an oligosaccharide, phosphorylated saccharides, arylacyl, alkylene, heterocyclic, polycyclic; and if the tastand comprises one or more aromatic group, such aromatic groups are optionally substituted with one or more substituents selected from the group consisting of H, hydroxy, nitro, cyano, halogen, COOH, SO_3H, $CH_2SO_2NH_2$, trifluoroacetyl, an acid group of the structure ZO_gH_r wherein Z is an element selected from the group consisting of carbon, sulfur, boron or phosphorus, g is an integer from 2 to 3 and r is an integer from 1 to 3; and an O, S, N or phosphorylated glycoside, where the glycoside is selected from the group consisting of monosaccharides, disaccharides, trisaccharides, and oligosaccharides all of which saccharides may be substituted; and the following groups which may be substituted or unsubstituted: amino, alkyl, alkoxy, aryl, alkylene, aminoacyl, aryloxy, aralkoxy, acyl, arylacyl, benzoyl, alkylamino, dialkylamino, trialkylamino, carbonates, alkylcarbonates, arylcarbonates, acylamino, guanidino, alkylguanidino, acylguanidino, arylguanidino, alkylurethanes, arylurethanes, ureas, alkylureas, CHO, $COCH_3$, $COCH_3$, CH_2CHO_3, CH_2COOH, $COOCH_3$, $OCOCH_3$, $CONH_2$, NHCHO, SCH_3, SCH_2CH_3, CH_2SCH_3, SO_2NH_2, SO_2CH_3, CH_2SO_3H, cycloalkyl, heterocyclic, polycyclic, arylureas, carboxylic acid ester, carboxamide, N-alkyl carboxamide, di-alkyl carboxamides, and wherein any two substituents taken together can be an aliphatic chain linked to a phenyl ring at one or more positions either directly via a carbon atom or indirectly via an oxygen, nitrogen or sulfur atom to form a ring structure.

5,643,957

COMPOUNDS AND COMPOSITIONS FOR DELIVERING ACTIVE AGENTS

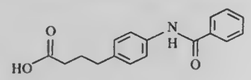
Andrea Leone-Bay, Ridgefield, Conn.; Duncan R. Paton, Purdys, N.Y.; Koc-Kan Ho, Mt. Kisco, N.Y., and Frenel DeMorin, Spring Valley, N.Y., assignors to Emisphere Technologies, Inc., Hawthorne, N.Y.

Continuation-in-part of Ser. No. 231,622, Apr. 22, 1994, Ser. No. 205,511, Mar. 2, 1994, and Ser. No. 51,019, Apr. 22, 1993, Pat. No. 5,451,410. This application Oct. 25, 1994, Ser. No. 335,148

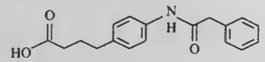
Int. Cl.[6] A01N *37/12;* **A61K** *31/195*

U.S. Cl. 514—563 **18 Claims**

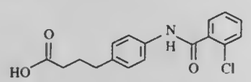
1. A compound selected from the group consisting of



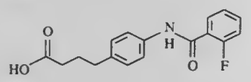
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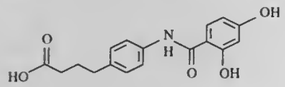
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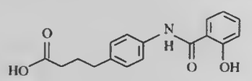
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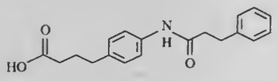
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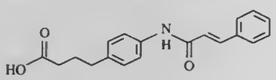
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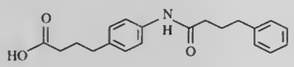
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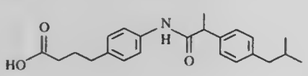
VII



VIII

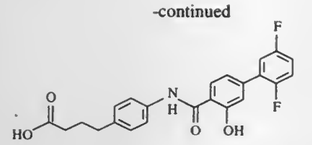


IX

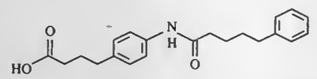


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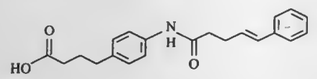
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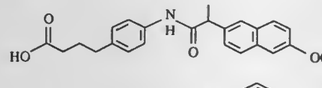
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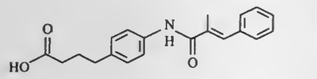
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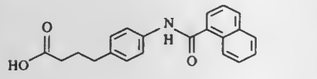
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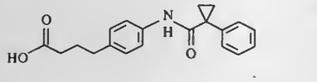
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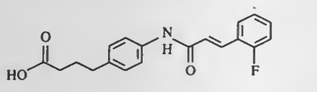
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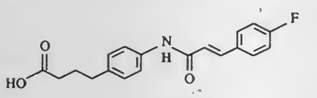
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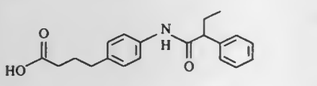
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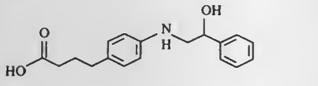
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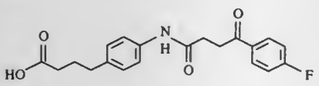
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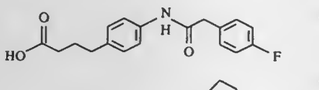
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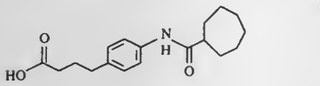
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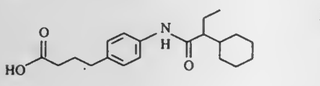
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XXV

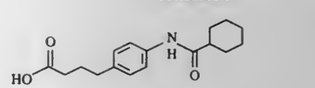


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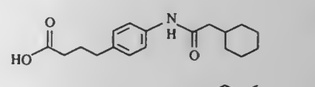


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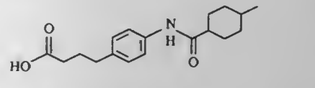
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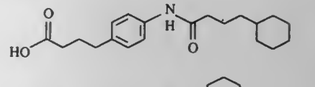
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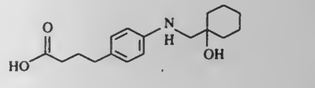
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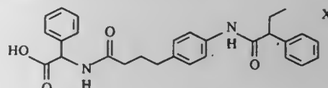
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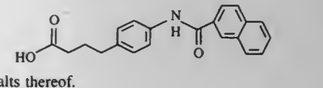
XXXI



XXXII



XXXIX



XLV

or salts thereof.

5,643,958

SUBSTITUTED AMIDE DERIVATIVES

Yoshikazu Iwasawa; Tetsuya Aoyama; Kumiko Kawakami; Sachie Arai; Toshihiko Satoh, and Yoshiaki Monden, all of Tsukuba, Japan, assignors to Banyu Pharmaceutical Co., Ltd., Tokyo, Japan

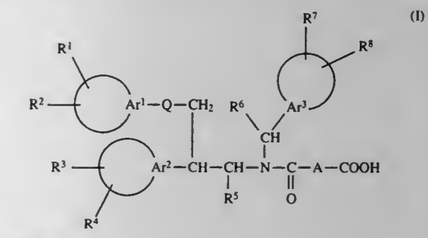
Filed Mar. 15, 1996, Ser. No. 616,308

Claims priority, application Japan, Aug. 11, 1994, 6-210646; Apr. 10, 1995, 7-109067

Int. Cl.[6] A61K *31/19;* **C07C** *229/24;229/22*

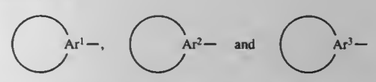
U.S. Cl. 514—568 **7 Claims**

1. A compound of the formula (I) or its pharmaceutically acceptable salt or ester:



(I)

wherein each of



which are the same or different, is an aryl group or a heteroaromatic ring group; A is a C_{2-8} saturated or unsaturated aliphatic hydrocarbon group which may have substituent(s) selected from

the group consisting of a lower alkyl group, a hydroxyl group, a lower hydroxyalkyl group, a lower alkoxy group, a carboxyl group, a lower carboxyalkyl group, an aryl group and an aralkyl group; Q is a group of the formula $—(CH_2)_m—$ (wherein m is an integer of from 1 to 6) or $—(CH_2)_n—W—(CH_2)_p—$ (wherein W is an oxygen atom, a sulfur atom, a vinylene group or an ethynylene group; and each of n and p which are the same or different, is an integer of from 0 to 3); R^1 is a hydrogen atom, a halogen atom, a hydroxyl group, a lower alkyl group, a lower alkoxy group, or an aryl or heteroaromatic ring group which may have substituent(s) selected from the group consisting of a halogen atom, a lower alkyl group and a lower alkoxy group; each of R^2, R^7 and R^8 which are the same or different, is a hydrogen atom, a halogen atom, a hydroxyl group, a lower alkyl group or a lower alkoxy group; each of R^3 and R^4 which are the same or different, is a hydrogen atom, a halogen atom, a hydroxyl group, an amino group, a nitro group, a cyano group, a carboxyl group, a lower alkoxycarbonyl group, a carbamoyl group, a lower alkylcarbamoyl group, a lower alkyl group, a lower hydroxyalkyl group, a lower fluoroalkyl group or a lower alkoxy group; R^5 is a lower alkyl group; and R^6 is a hydrogen atom or a lower alkyl group.

5,643,959

METHOD FOR TREATING PATIENTS WITH PRECANCEROUS LESIONS BY ADMINISTERING SUBSTITUTED SULFONYL INDENYL ACETIC AND PROPIONIC ACIDS AND ESTERS THEREOF

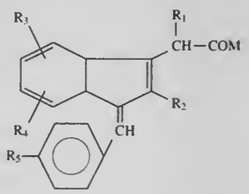
Rifat Pamukcu, Cincinnati, Ohio, and Klaus Brendel, Tucson, Ariz., assignors to Cell Pathways, Inc., Aurora, Colo., and University of Arizona, Tucson, Ariz.

Continuation of Ser. No. 839,203, Feb. 20, 1992, Pat. No. 5,401,774, which is a continuation-in-part of Ser. No. 666,796, Mar. 8, 1991, abandoned. This application Dec. 22, 1994, Ser. No. 361,291

Int. Cl.[6] A61K *31/19*

U.S. Cl. 514—569 **11 Claims**

1. A method for inhibiting growth of precancerous lesion cells, comprising exposing said cells, in the absence of sulindac, to a growth inhibiting effective amount of a compound of the formula B:



wherein R_1 is selected from the group consisting of hydrogen, lower alkyl, or haloalkyl;

R_2 is selected from the group consisting of hydrogen or alkyl;

R_3 and R_4 are one or more members each independently chosen from the group consisting of hydrogen, alkyl, acyloxy, alkoxy, nitro, amino, acylamino, alkylamino, diakylamino, dialkylaminoalkyl, sulfamyl, alkythio, mercapto, hydroxy, hydroxyalkyl, alkylsulfonyl, halogen, cyano, carboxyl, carbalkoxy, carbamido, haloalkyl or cycloalkoxy;

R_5 is an alkylsulfonyl; and

M is selected from the group consisting of hydroxy, substituted lower alkoxy, amino, alkylamino, dialkylamino, N-morpholino, hydroxyalkylamino, polyhydroxyamino, dialkylaminoalkylamino, aminoalklyamino, and the group OMe, wherein Me is a cation.

5,643,960

METHOD OF DELAYING ONSET OF ALZHEIMER'S DISEASE SYMPTOMS

John C. S. Breitner, Chapel Hill, and Kathleen A. Welsh, Durham, both of N.C., assignors to Duke University, Durham, N.C.

Filed Apr. 15, 1994, Ser. No. 228,019

Int. Cl.[6] A61K *31/60;31/615;31/54;31/44;31/425;31/42;31/415;31/40, 31/38;31/34;31/195;31/19*

U.S. Cl. 514—570 **17 Claims**

1. A method of delaying the onset of Alzheimer's disease symptoms comprising:

i) identifying an individual at risk of developing said disease;

ii) administering to said individual an amount of a nonsteroidal anti-inflammatory agent sufficient to effect said delay; and

iii) monitoring said individual for the development of clinical symptoms of said disease.

5,643,961

METHOD OF USING MALIC ACID FOR TREATING WRINKLES

Ruey J. Yu, Ambler, and Eugene J. Van Scott, Abington, both of Pa., assignors to Tristrata Technology, Inc., Wilmington, Del.

Continuation of Ser. No. 135,841, Oct. 7, 1993, which is a continuation of Ser. No. 840,149, Feb. 24, 1992, abandoned, which is a division of Ser. No. 393,749, Aug. 15, 1989, Pat. No. 5,091,171, which is a continuation-in-part of Ser. No. 945,680, Dec. 23, 1986, abandoned. This application Jun. 6, 1995, Ser. No. 466,737

Int. Cl.[6] A61K *31/19;7/48*

U.S. Cl. 514—574 **20 Claims**

1. Method of visibly reducing a human skin wrinkle comprising topically applying to said wrinkle a composition comprising malic acid or a topically effective salt thereof, in an amount and for a period of time sufficient to visibly reduce said wrinkle.

5,643,962

METHOD OF USING GLUCOLEPTONIC ACID FOR TREATING WRINKLES

Ruey J. Yu, Ambler, and Eugene J. Van Scott, Abington, both of Pa., assignors to Tristrata Technology, Inc., Wilmington, Del.

Continuation of Ser. No. 135,841, Oct. 7, 1993, which is a continuation of Ser. No. 840,149, Feb. 24, 1992, abandoned, which is a division of Ser. No. 393,749, Aug. 15, 1989, Pat. No. 5,091,171, which is a continuation-in-part of Ser. No. 945,680, Dec. 23, 1986, abandoned. This application Jun. 6, 1995, Ser. No. 466,740

Int. Cl.[6] A61K *31/19;7/48*

U.S. Cl. 514—574 **20 Claims**

1. Method of visibly reducing a human skin wrinkle comprising topically applying to said wrinkle a composition comprising glucoheptonic acid or a topically effective salt thereof, in an amount and for a period of time sufficient to visibly reduce said wrinkle.

5,643,963

METHOD OF USING ISOCITRIC ACID FOR TREATING WRINKLES

Ruey J. Yu, Ambler, and Eugene J. Van Scott, Abington, both of Pa., assignors to Tristrata Technology, Inc., Wilmington, Del.

Continuation of Ser. No. 135,841, Oct. 7, 1993, which is a continuation of Ser. No. 840,149, Feb. 24, 1992, abandoned, which is a division of Ser. No. 393,749, Aug. 15, 1989, Pat. No. 5,091,171, which is a continuation-in-part of Ser. No. 945,680, Dec. 23, 1986, abandoned. This application Jun. 6, 1995, Ser. No. 471,523

Int. Cl.[6] A61K *31/19;7/48*

U.S. Cl. 514—574 **20 Claims**

1. Method of visibly reducing a human skin wrinkle comprising topically applying to said wrinkle a composition comprising isocitric acid or a topically effective salt thereof, in an amount and for a period of time sufficient to visibly reduce said wrinkle.

5,643,964

NATURAL AMINO ACID DERIVATIVES AS METALLOPROTEINASE INHIBITORS

Jonathan Philip Dickens, Cambridge; Michael John Crimmin, and Raymond Paul Beckett, both of Cowley, all of England, assignors to British Biotech Pharmaceuticals Limited, Cowley, United Kingdom

PCT No. PCT/GB93/01556, § 371 Date Jan. 23, 1995, § 102(e) Date Jan. 23, 1995, PCT Pub. No. WO94/02446, PCT Pub. Date Feb. 3, 1994

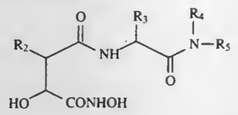
PCT Filed Jul. 23, 1993, Ser. No. 374,601

Claims priority, application United Kingdom, Jul. 23, 1992, 9215665

Int. Cl.[6] A01N *37/28*

U.S. Cl. 514—575 **11 Claims**

1. A compound of formula (I):



(I)

wherein

R2 is C_3–C_6 alkyl;

R3 is the characterizing side chain of phenylalanine, valine, leucine, isoleucine, methionine, glycine, asparagine, glutamine, or alanine; or the characterizing side chain of cysteine, tyrosine, tryptophan, histidine, serine, threonine, arginine, glutamic acid, lysine, or aspartic acid in which the polar groups therein are optionally protected.

R4 is hydrogen; and

R5 is methyl or ethyl.

5,643,965

AMINOBENZAMIDE COMPOUNDS FOR THE TREATMENT OF NEURODEGENERATIVE DISORDERS

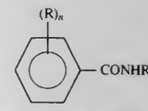
William Flitter, Mountain View; William Garland, Cupertino; Richard Paylor, Sunnyvale, and Allan Wilcox, Fremont, all of Calif., assignors to Centaur Pharmaceuticals, Inc., Sunnyvale, Calif.

Filed Apr. 3, 1995, Ser. No. 415,847

Int. Cl.[6] A61K *31/165*

U.S. Cl. 514—619 **8 Claims**

1. A method for treating a dopamine-associated neurodegenerative condition in a patient in need thereof comprising administering to said patient an effective neurodegenerative condition-treating amount of a pharmaceutical composition comprising a benzamide compound of the formula II:



II

where R' is a saturated alkyl of from 3 to 5 carbon atoms, each R is $—NH_2$, and n is 1 or 2, in a pharmaceutically acceptable carrier.

5,643,966

β-ALETHINE AS ANTI-TUMOR AGENT

Galen D. Knight; Paul L. Mann, and Terrance J. Scallen, all of Albuquerque, N. Mex., assignors to University Of New Mexico, Albuquerque, N. Mex.

Division of Ser. No. 924,977, Aug. 5, 1992, abandoned, which is a continuation-in-part of Ser. No. 549,103, Jul. 6, 1990, abandoned. This application Oct. 3, 1994, Ser. No. 316,836

Int. Cl.[6] A61K *31/16*

U.S. Cl. 514—626 **20 Claims**

1. A method for differentiating hematolymphoid neoplastic cells comprising exposing the cells to an amount of β-alethine, or physiologically compatible salts thereof, sufficient to induce differentiation.

5,643,967

GROWTH PROMOTION

David B. Anderson, Greenfield; Klaus K. Schmiegel, Indianapolis; Edward L. Veenhuizen, Greenfield, all of Ind., and Ronald R. Tuttle, Escondido, Calif., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 606,670, Oct. 31, 1990, abandoned, which is a division of Ser. No. 328,996, Mar. 27, 1989, Pat. No. 4,992,473, which is a division of Ser. No. 153,640, Feb. 8, 1988, Pat. No. 4,849,453, which is a division of Ser. No. 860,719, May 7, 1986, Pat. No. 4,734,437, which is a continuation of Ser. No. 628,002, Jul. 5, 1984, abandoned, which is a continuation of Ser. No. 462,587, Jan. 31, 1983, abandoned. This application Mar. 18, 1993, Ser. No. 37,789

Int. Cl.[6] A61K *31/135*

U.S. Cl. 514—653 **38 Claims**

1. A method for promoting the growth of a domesticated warm blooded animal other than a ruminant, swine, or poultry, which comprises administering to the animal an effective amount of 1-(4-hydroxyphenyl)-2-(1-methyl-3-(4 -hydroxyphenyl)propylamino)ethanol or an acid addition salt thereof.

5,643,968

PROCESS FOR PRODUCING ION EXCHANGE MEMBRANES, AND THE ION EXCHANGE MEMBRANES PRODUCED THEREBY

Christopher Andreola, Morristown; Frederick P. Chlanda, Rockaway, and Jian-Ping Huang, Morris Plains, all of N.J., assignors to The Graver Company, Union, N.J.

Continuation of Ser. No. 6,010, Jan. 15, 1993, abandoned. This application Nov. 23, 1994, Ser. No. 345,017

Int. Cl.[6] C08J *5/20;* **C08G** *65/48*

U.S. Cl. 521—27 **15 Claims**

1. An ion membrane comprising a solution cast graft copolymer, said graft copolymer comprising a first polymer having a main chain containing aromatic rings and at least one initiation site on at least one of said aromatic rings or on at least one benzylic carbon atom of said aromatic rings; and at least one polymerized vinyl or ring containing compound having ion exchange functionality selected from the group consisting of sulfonic acid groups, phosphonic acid groups, ammonium groups and amine groups grafted

thereto, wherein grafting takes place in solution, said polymerized vinyl or ring containing compound being anionically grafted onto said first polymer at the at least one said initiation site before casting the ion exchange membrane from said solution,

wherein initial fouling rates for said ion exchange membrane are less than or equal to 0.04 volts/sec.

5,643,969

EXPANDABLE RESIN COMPOSITION

Toshio Sakamoto; Tatsuhiko Inoue, and Mamoru Yoshida, all of Kanagawa-ken, Japan, assignors to Nippon Unicar Company Limited, Tokyo, Japan

Filed Jul. 11, 1996, Ser. No. 678,777

Claims priority, application Japan, Aug. 11, 1995, 7-226118

Int. Cl.[6] C08J *9/10;9/12*

U.S. Cl. 521—81 **7 Claims**

1. A process for preparing an expandable resin composition comprising the following steps:

(a) admixing, at a temperature in the range of about 120 to about 130 degrees C., the following components:

(i) 100 parts by weight of a high pressure, low density homopolymer of ethylene;

(ii) about 30 to about 200 parts by weight of a high density polyethylene having a melting point higher than the above mixing temperature;

(iii) about 2 to about 50 parts by weight of polypropylene having a DSC melting point of not less than about 140 degrees C. and a melt flow in the range of about 0.5 to about 20 decigrams per 1 minute; and

(iv) about 0.1 to about 2 parts by weight of a silane coupling agent; and

(b) admixing, at a temperature in the range of about 120 to about 130 degrees C., 100 parts by weight of the mixture produced in step (a) with 0.5 to 3 parts by weight of one or more chemical blowing agents having a decomposition temperature higher than the above mixing temperature.

5,643,970

METHOD AND APPARATUS FOR FOAM MANUFACTURE USING CARBON DIOXIDE DISSOLVED UNDER PRESSURE

Hans-Michael Sulzbach, Königswinter; Ferdinand Althausen, Neunkirchen; Herbert Steilen, Königswinter; Reiner Raffel, Siegburg; Robert Eiben, and Wilfried Ebeling, both of Köln, all of Germany, assignors to Maschinenfabrik Hennecke GmbH, and Bayer Aktiengesellschaft, both of Leverkusen, Germany

Filed Dec. 14, 1995, Ser. No. 572,394

Claims priority, application Germany, Dec. 27, 1994, 44 46 876.8

Int. Cl.[6] C08G *18/00;* **C08J** *9/00*

U.S. Cl. 521—155 **4 Claims**

1. In a method for manufacturing polyurethane foam from reactive components using carbon dioxide as blowing agent by the mixing of at least one of the reactive components with carbon dioxide under pressure, mixing of the components one at least of which contains carbon dioxide under pressure, expanding the reactive mixture containing carbon dioxide and curing, the improvement wherein the reactive mixture is passed through an extended flow channel, wherein the pressure is reduced as the flow resistance is increased with generation of high rates of shear, and then prior to the foaming up of the liquid the flow rate of the reactive mixture is reduced.

5,643,971

DURABLE ANTI-MICROBIAL AGENTS

Karl F. Roenigk, Hudson, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 301,043, Sep. 6, 1994, Pat. No. 5,541,233, which is a continuation of Ser. No. 983,685, Dec. 1, 1992, abandoned. This application May 16, 1995, Ser. No. 441,781

Int. Cl.[6] C08L *1/00*

U.S. Cl. 523—122 **8 Claims**

1. A substantially water insoluble metal complex comprising:

a. at least one chelating polymer selected from the group consisting of polyglucosamine, polycarboxylic acid, polyamine and ethylene acrylic acid copolymer;

b. one or more metal ions chelated to said chelating polymer said metal ions selected from the group consisting of a transition metal ions, non-transition metal ions capable of existing in more than one valence state, zinc and aluminum; and

c. at least one potentiator chelated to said transition metal ion.

5,643,972

IMAGING ELEMENT

Yongcai Wang, and Charles Chester Anderson, both of Penfield, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 221,432, Mar. 31, 1994, Pat. No. 5,447,832. This application May 16, 1995, Ser. No. 442,437

Int. Cl.[6] C08K *9/00;* **C08F** *2/16*

U.S. Cl. 523—206 **12 Claims**

1. A coating composition for applying a transparent layer to a photographic element which comprises a continuous aqueous phase having dispersed therein film-forming colloidal polymeric particles and non-film-forming colloidal polymeric particles, the film-forming and non-film-forming colloidal polymeric particles having an average particle size of from 10 to 500 nm; whether the colloidal polymeric particles are film-forming or non-film-forming being determined by applying an aqueous coating formulation of 3% by weight of said colloidal polymeric particles free of organic solvent or coalescing aid to a sheet of polyethylene terephthalate in a wet coverage of 10 ml/m^2 and drying for 2 minutes at 75° C., polymers that form clear, transparent continuous films under these conditions are film-forming, while those that do not form clear, transparent continuous films are non-film-forming.

5,643,973

SILICONE COMPOSITION, ELASTIC REVOLUTION BODY AND FIXING DEVICE USING THE SAME

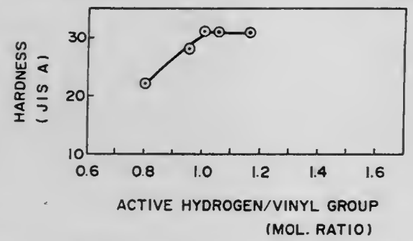
Toshiyuki Miyabayashi, Ohmachi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 386,639, Jul. 17, 1989, Pat. No. 5,354,612. This application Jul. 29, 1994, Ser. No. 282,175

Claims priority, application Japan, Jul. 19, 1988, 63-181158; Jul. 19, 1988, 63-181160

Int. Cl.[6] C08K *9/06*

U.S. Cl. 523—212 **30 Claims**



1. A liquid addition reaction dimethylsilicone composition comprising:

(a) a dimethylpolysiloxane containing a reactive vinyl group at a terminal thereof or in a side chain thereof;

(b) a dimethylpolysiloxane containing an active hydrogen atom; and

(c) silicic acid fine powder having a BET specific surface area of 40–500 m^2/g has been treated first with silane compound (ii) and then surface-treated with "silane compound (i) wherein both silane compounds (i) and (ii) are present in an amount of 1 to 30 wt. parts per 100 wt. parts of said silicic acid fine powder,

said compound (i) being selected from the group consisting of a fluoroalkylsilane, an alkylsilane compound, a fluorosilicone oil, a dimethylsilicone oil, hexamethyldisilazane, and a mixture thereof, and

said compound (ii) being a silane compound containing an unsaturated group having a reactivity to said dimethylpolysiloxane containing an active hydrogen atom.

5,643,974

COMPOSITE PIGMENTARY MATERIAL

Leslie Ainsley Simpson, Normanby; Keith Robson, Whitesmocks; David Trevor Knight, Northallerton, and Martin Alec Williamson, Wingate, all of England, assignors to Tioxide Group Services Limited, United Kingdom

Filed Feb. 6, 1996, Ser. No. 596,050

Claims priority, application United Kingdom, Feb. 16, 1995, 9502982.3

Int. Cl.[6] C09C *1/36;* **C08K** *3/20*

U.S. Cl. 523—334 **24 Claims**

1. A process for the production of a structured composite pigmentary material comprising forming a first aqueous dispersion containing a particulate inorganic pigment in which the pigment particles carry a positive surface charge forming a second aqueous dispersion of particulate polyvinyl chloride in which the polyvinyl chloride particles carry a negative surface charge and mixing said first aqueous dispersion and said second aqueous dispersion under conditions such that the mixing does not produce a reversal of the sign of the surface charge on one of the particulate materials wherein said mixing takes place in the presence of at least one anionic surfactant and at least one nonionic surfactant, the anionic surfactant being present in an amount greater than 2 per cent by weight with respect to weight of polyvinyl chloride particles and the nonionic surfactant having a hydrophile-lipophile balance greater than 12.

5,643,975

EPOXY RESIN COMPOSITIONS AND CURED PRODUCTS

Toshio Shiobara, and Hisashi Shimizu, both of Annaka, Japan, assignors to Shin-Etsu Chemical Company, Limited, Tokyo, Japan

Continuation of Ser. No. 181,953, Jan. 18, 1994, abandoned, which is a continuation of Ser. No. 695,012, May 3, 1991, abandoned. This application Mar. 30, 1995, Ser. No. 413,929

Claims priority, application Japan, May 11, 1990, 2-122251; Nov. 20, 1990, 2-315014

Int. Cl.[6] C08L *9/02;63/00;51/00*

U.S. Cl. 523—400 **10 Claims**

1. An epoxy resin composition comprising

(A) an epoxy resin,

(B) a phenol resin,

(C) a component obtained by copolymerizing a reactive monomer selected from the group consisting of N-4-(2,3-epoxypropoxy)-3,5-dimethylbenzylacrylamide and 2-propenylphenol, with a styrene-butadiene-methyl methacrylate copolymer or styrene-butadiene copolymer, said component (C) being a graft copolymer of said reactive monomer with said styrene-butadiene-methyl methacrylate copolymer or styrene-butadiene copolymer, and

(D) an inorganic filler.

5,643,976

SELF-DISPERSING CURABLE EPOXY RESIN DISPERSIONS AND COATING COMPOSITIONS MADE THEREFROM

Kartar S. Arora, Chalfont, and Michael S. Wiggins, Lansdale, both of Pa., assignors to Henkel Corporation, Plymouth Meeting, Pa.

Filed Dec. 29, 1994, Ser. No. 366,189

The portion of the term of this patent subsequent to Jun. 1, 2015, has been disclaimed.

Int. Cl.[6] C08K *3/20*

U.S. Cl. 523—404 **19 Claims**

1. A self-dispersing curable epoxy resin composition comprising the addition product of reactants comprising (a) 1.0 reactive equivalent of an epoxy resin, (b) from about 0.40 to 0.95 reactive equivalents of a polyhydric phenol, and (c) from about 0.005 to 0.5 reactive equivalents of an amine-epoxy adduct comprising the addition product of reactants comprising 1.0 reactive equivalent of a polyepoxide and from about 0.3 to 0.9 reactive equivalents of a polyoxyalkyleneaminocarbamate having the structural formula:

$$R_1—O—R_2—CH_2CH(R_3)—X—R_4—NH2$$

wherein:

R_1 designates a monovalent organic radical selected from the group consisting of C_1 to C_2 aliphatic, alicyclic or aromatic hydrocarbons, and

R_2 represents a polyoxyalkylene chain having the structural formula:

$$(CH_2—CH_2—O)_a—(CH_2—CH(R_5)—O)_b$$

wherein:

R_5 is a monovalent organic radical selected from the group consisting of C_1 to C_4 aliphatic hydrocarbons,

'a' designates a number of ethoxy groups ($CH_2—CH_2—O$),

'b' designates a number of monosubstituted ethoxy groups ($CH_2—CH(R_5)O$) where the substitution of one monosubstituted ethoxy group is independent from the substitution of any other monosubstituted ethoxy group in the polyoxyalkylene chain, the sum of 'a' and 'b' is equal to or greater than 10 but less than or equal to 200, and where the sequence of ethoxy and monosubstituted ethoxy groups within a polyoxyalkylene chain may be completely random and/or there may be blocks of ethoxy and/or monosubstituted ethoxy groups, and

R_3 designates H or a monovalent organic radical selected from the group consisting of C_1 to C_4 aliphatic hydrocarbons.

R_4 designates aliphatic, cycloaliphatic or aromatic radical containing 6 to 18 carbon atoms and X is OC(O)NH.

5,643,977

ROOM-TEMPERATURE CURABLE WATERBASED COATING COMPOSITIONS

Katsuhiko Sho, Mino; Masahiro Nishio, Kadoma; Koichi Saitoh, Kyoto; Kei Aoki, Ikoma, and Tohru Yagi, Kyoto, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Aug. 8, 1995, Ser. No. 512,488

Claims priority, application Japan, Aug. 9, 1994, 6-209208

Int. Cl.[6] C08K *3/20*

U.S. Cl. 523—411 **12 Claims**

1. A water-based, room-temperature curable coating composition comprising

(a) an aqueous emulsion of an acrylic copolymer having a plurality of activated methylene groups in the molecule produced by emulsion polymerizing a mixture of an acrylic monomer having an activated methyleoe group and an ethylenically unsaturated monomer copolymerizable therewith free from said activated methylene group,

(b) an aqueous solution or dispersion of a compound having a plurality of ethylenic unsaturations in the molecule which is an acrylic or methacrylic acid ester of an aliphatic polyol, an acrylic or methacrylic acid ester of an ethylene oxide-adduct of an aliphatic polyol or a mixture thereof, and

(c) a catalyst capable of catalyzing the Michael reaction between said component (a) and said component (b).

5,643,978

CEMENT ADMIXTURE PRODUCT HAVING IMPROVED RHEOLOGICAL PROPERTIES AND PROCESS OF FORMING SAME

David Charles Darwin, Columbia; Ellis Martin Gartner, Silver Spring; Byong-Wa Chun, Columbia, all of Md.; Hideo Koyata, Waltham, Mass., and Lawrence Lu Kuo, Columbia, Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Division of Ser. No. 299,028, Sep. 6, 1994, abandoned, which is a continuation-in-part of Ser. No. 128,939, Sep. 29, 1993, Pat. No. 5,393,343. This application Jun. 6, 1995, Ser. No. 468,293

Int. Cl.[6] C08K *3/00;* **C08F** *8/34*

U.S. Cl. 524—5 **7 Claims**

1. A process of forming an imidized polymer comprising contacting (i) a polymer having functional groups selected from carboxylic acid groups, their C_1–C_{10} alkyl esters, or mixtures thereof, wherein said functional groups are positioned pendant alpha-beta, alpha-gamma or both from the polymer backbone chain with (ii) an amine selected from ammonia, or a primary amine of the formula

$$H_2N(BO)_nR''$$

wherein O represents oxygen atom, B represents a C_2–C_{10} alkylene group, R" represents a C_1–C_{10} alkyl group, and n represents an integer of 1 to 200; maintaining said reaction mixture at a temperature of from 60° to 250° C. at atmospheric or reduced atmospheric pressure for a time of from 1 to 8 hours while removing water from the reaction mixture; and cooling and recovering the formed imidized polymer product.

5,643,979

BELLOWS-TYPE RUBBER HOSES FOR USE IN AUTOMOBILES

Hidenori Hayashi, Aichi-ken; Takao Mizuta, Kawasaki; Ichiro Sagae, Kawasaki, and Naotoshi Watanabe, Tokyo, all of Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai-gun, and Showa Denko K.K., Tokyo, both of Japan

Filed Dec. 20, 1994, Ser. No. 361,309

Claims priority, application Japan, Dec. 21, 1993, 5-321444

Int. Cl.[6] C08K *5/34*

U.S. Cl. 524—100 **8 Claims**

1. A rubber composition comprising:
a chlorinated ethylene-propylene copolymer;
a triazine-based vulcanizing agent in combination with a salt of a mercaptothiazole and a secondary amine;
an acid-acceptor comprising magnesium oxide and hydrotalcite;
a releasing enhancer comprising a sulfur-containing organic carboxylic acid compound; and
a heat resistance enhancer comprising a thioether-based antioxidant.

5,643,980

FLAME RETARDANT THERMOPLASTIC RESIN COMPOSITION

Masuo Shiodoh, Funabashi; Masayoshi Shirakawa, Fuchu-machi; Noriaki Kohtoh, Tokyo, and Atsumi Aoki, Onoda, all of Japan, assignors to Nissan Chemical Industries Ltd., Tokyo, Japan

Continuation of Ser. No. 283,259, Aug. 1, 1994, abandoned. This application Dec. 18, 1995, Ser. No. 573,862

Claims priority, application Japan, Aug. 3, 1993, 5-192295

Int. Cl.[6] C08K *5/3435;5/3492*

U.S. Cl. 524—100 **9 Claims**

1. A flame retardant thermoplastic resin composition consisting essentially of:
100 parts by weight of a thermoplastic resin;
(A) from 1 to 30 parts by weight of at least one of polyhydric alcohol-boric acid metal complexes;
(B) from 15 to 30 parts by weight of at least one of ammonium polyphosphate and melamine-modified ammonium polyphosphate; and
(C) from 3 to 30 parts by weight of at least one of melamine and melamine derivatives.

5,643,981

FLAMEPROOF THERMOPLASTIC RESIN COMPOSITIONS

Sam-Joo Yang, and Bok-Nam Jang, both of Seoul, Rep. of Korea, assignors to Cheil Industries, Inc., Taegu, Rep. of Korea

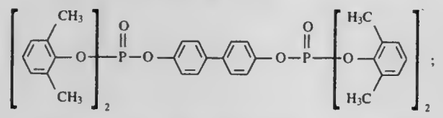
Filed Nov. 1, 1994, Ser. No. 333,073

Claims priority, application Rep. of Korea, Sep. 5, 1994, 1994-22218

Int. Cl.[6] C08K *5/523;* **C08L** *51/00;69/00;27/12*

U.S. Cl. 524—141 **7 Claims**

1. A flameproof thermoplastic resin composition comprising:
(A) 100 parts by weight of a base resin comprising:
(i) from 60 to 98% by weight of a polycarbonate resin;
(ii) from 2 to 40% by weight of a styrene-containing graft copolymer resin; and
(iii) from 0 to 20% by weight of a styrene-containing copolymer resin;
(B) from 2 to 20 parts by weight of an aromatic diphosphate compound of the following formula



(C) from 2 to 7 parts by weight of an organic monophosphorous compound; and
(D) from 0.1 to 2.0 parts by weight of a polyfluoroalkyl resin.

5,643,982

NON-OZONE DEPLETING CO-SOLVENT COMPOSITIONS

Ju-Chao Liu, West Hartford, Conn., assignor to Loctite Corporation, Hartford, Conn.

Filed Oct. 13, 1994, Ser. No. 322,937

Int. Cl.[6] C08K *5/54*

U.S. Cl. 524—267 **21 Claims**

1. A non-ozone depleting and non-flammable azeotropic co-solvent carrier composition comprising a perfluorocarbon and an alkylsiloxane present in an amount of up to about 26% by weight.

5,643,983

MOISTURE CURABLE 100 SOLIDS ONE COMPONENT PLYWOOD ADHESIVE

Shang Lee, Dublin, Ohio, assignor to Ashland Inc., Russell, Ky.

Filed Aug. 30, 1995, Ser. No. 520,804

Int. Cl.[6] C08K *5/54*

U.S. Cl. 524—267 **6 Claims**

1. A 100% solids one-part moisture curable adhesive composition prepared under argon or nitrogen in the absence of water, filler and solvent, for use in making laminates of wood veneer by hot pressing for 4 minutes or less, comprising the storage stable mixture of
a) 100 parts of an isocyanate terminated polyurethane prepolymer, and
b) 1 to 4 parts of a water-free polydimethyl siloxane foam control agent.

5,643,984

WAX COMPOSITION FOR THE PRINTING INK INDUSTRY AND INK COMPOSITIONS AND OVERPRINT VARNISHES CONTAINING SAME

Raymond J. Mueller, Plymouth, and George S. Hassaballa, Ypsilanti, both of Mich., assignors to Flint Ink Corporation, Ann Arbor, Mich.

Filed Jan. 3, 1996, Ser. No. 582,305

Int. Cl.[6] C08L *93/04;91/06;* **C09D** *191/06;193/04*

U.S. Cl. 524—272 **20 Claims**

1. A composition for use in the ink industry to improve and enhance the slip and scuff resistant properties of ink films, said composition comprising, in weight percent:
(a) about 40% to about 90% of solvent having a boiling point within the range of 100° C. to about 550° C., said solvent being selected from the group consisting of aromatic and aliphatic solvents,
(b) about 10% to about 40% of wax having an average particle size within the range of about 1 to about 300 microns, and said wax is selected from the group consisting of polyethylene waxes, microcrystalline waxes, Fischer-Tropsch waxes, oxidized polyethylene waxes, and carnauba wax,
(c) about 5% to about 40% of polymeric pour point depressant and said polymeric pour point depressant is selected from at least one member of the group consisting of a polymethacrylate polymer; a polyacrylate polymer; a polyacrylamide polymer; a vinyl carboxylate polymer; and terpolymers of dialkylfumarates, vinyl esters of fatty acids, and alkyl vinyl ethers,
(d) about 4% to about 40% of a resin material which is soluble in aromatic and aliphatic solvents,
and said resin material is a separate and distinct material relative to said pour point depressant and is selected from at least one member of the group consisting of a metal resinate, phenolic modified rosin, phenolic resin, hydrocarbon resin, hydrocarbon modified rosins, an acrylic resin, a polyamide resin, a maleic modified rosin, a fumaric modified rosin, and a cellulosic resin.

5,643,985

PROCESS FOR THE STABILIZATION OF AND STABILIZER MIXTURES FOR RECYCLED PLASTICS

Kurt Hoffmann, Lautertal; Heinz Herbst, Lautertal-Reichenbach; Rudolf Pfaendner, Rimbach/Odenwald; Hans-Jürgen Sander, Lorsch, all of Germany, and Franciszek Sitek, Therwill, Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

PCT No. PCT/EP93/02486, § 371 Date Mar. 21, 1995, § 102(e) Date Mar. 21, 1995, PCT Pub. No. WO94/07946, PCT Pub. Date Apr. 14, 1994

PCT Filed Sep. 14, 1993, Ser. No. 403,914

Claims priority, application Switzerland, Sep. 25, 1992, 3012/92

Int. Cl.[6] C08K *5/09;5/526*

U.S. Cl. 524—291 **18 Claims**

1. A process for the stabilization of recycled plastics, consisting essentially of thermoplastics with up to 5% of non-thermoplastics, which process comprises adding from 0.01 to 10% by weight of a mixture of
(A) as component a) 5–50 parts of pentaerythritol ester of β-(3,5-di-tert.butyl-4-hydroxy-phenyl)-propionic acid, as component b) 5–50 parts of tris-(2,4-di-tert.butylphenyl)-phosphite and as component c) 5–50 parts calcium stearate;
(B) as component a) 5–50 parts of pentaerythritol ester of β-(3,5-di-tert.butyl-4-hydroxy-phenyl)-propionic acid, as component b) 5–50 parts of tris-(2,4-di-tert.butylphenyl)-phosphite and as component c) 5–50 parts of a mixture of calcium and zinc stearates;
(C) as component a) 5–50 parts of octadecyl ester of β-(3,5-di-tert.butyl-4-hydroxyphenyl)-propionic acid, as component b) 5–50 parts of tris-(2,4-di-tert.butylphenyl)-phosphite and as component c) 5–50 parts of calcium stearate; or
(D) as component a) 10–40 parts of pentaerythritol ester of β-(3,5-di-tert.butyl-4-hydroxy-phenyl)-propionic acid, as component b) 10–40 parts of tris-(2,4-di-tert.butylphenyl)-phosphite and as component c) 20–50 parts of calcium stearate.

5,643,986

POLYIMIDOSILOXANE COMPOSITIONS

Seiji Ishikawa; Hiroshi Yasuno; Masayuki Nakatani; Hiroyuki Fukuda, and Shigeru Yamamoto, all of Ichihara, Japan, assignors to Ube Industries, Ltd., Yamaguchi, Japan

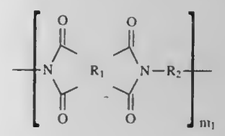
Filed Mar. 14, 1996, Ser. No. 615,828.

Claims priority, application Japan, Mar. 17, 1995, 7-059044; Aug. 22, 1995, 7-213417; Aug. 22, 1995, 7-213418

Int. Cl.[6] C08K *5/06*

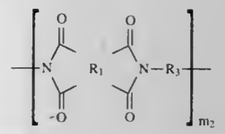
U.S. Cl. 524—366 **15 Claims**

1. A polyimidosiloxane composition comprising
(a) 100 parts by weight of an organic solvent-soluble polyimidosiloxane comprising structural units represented by the formula (1),



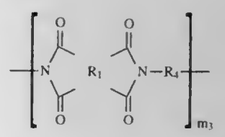
(1)

formula (2).



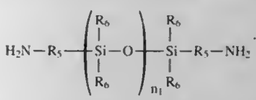
(2)

and formula (3),



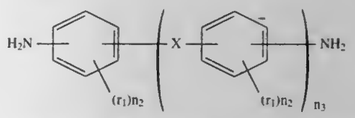
(3)

wherein:
R_1 represents a tetravalent residue of an aromatic tetracarboxylic acid without the tetracarboxylic acid;
R_2 represents a divalent residue of a diaminopolysiloxane having the formula (4) without the amino groups



(4)

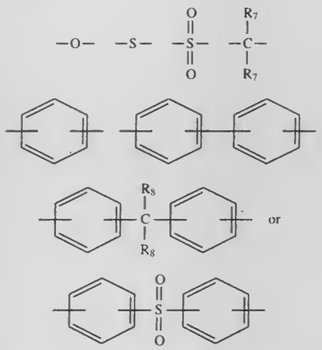
wherein n_1 ranges from 3 to 30, each R_5 independently represents a divalent hydrocarbon group, and each R_6 independently represents an alkyl group with 1–3 carbon atoms or a phenyl group;
R_3 represents a divalent residue of an aromatic diamine compound represented by formula (5) without the amino groups,



(5)

wherein r_1 represents a hydroxy group, n_2 represents 1 or 2, n_3 represents zero or an integer from 1 to 3, and X represents a direct bond or a divalent group selected

from



wherein R_7 and R_8 each independently represent hydrogen, methyl or halogenated methyl;

R_4 represents a divalent residue of a diamine compound other than the diamine compounds represented by formulae (4) and (5) without the amino groups; and

m_1 is 45 to 80 mole percent, m_2 is 0.5 to 40 mole percent, and m_3 is $(100-m_1-m_2)$ mole percent;

(b) 1 to 50 parts by weight of an epoxy resin, and

(c) an organic solvent.

5,643,987

SYNTHESIS OF MICROPOROUS CERAMICS

John Pickett Dismukes, Annandale; Jack Wayne Johnson, Clinton, both of N.J.; Edward William Corcoran, Jr., Easton, Pa.; Joseph Vallone, Roselle, N.J.; James J. Pizzulli, Jr., Whitehouse Station, N.J., and Michael P. Anderson, Clinton, N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed May 24, 1994, Ser. No. 248,290

The portion of the term of this patent subsequent to May 24, 2014, has been disclaimed.

Int. Cl.[6] C04B *38/00;35/52;35/56;* **C08L** *85/04*

U.S. Cl. 524—442 **18 Claims**

1. A process for preparing a microporous ceramic product having a surface area in excess of 70 m^2/gm and a volume of open-pore micropores having a mean diameter of less than 20 Angstroms, and a volume of greater than about 0.03 cm^3/gm, comprising:

a. forming an intimate mixture comprising from greater than 30 up to about 99 parts by weight of a ceramic precursor oligomer or polymer having a number average molecular weight in the range of from about 200 to about 100,000 g/mole and from about 1 to less than 70 parts by weight of ceramic particles selected from the group consisting of silicon carbide, silicon nitride, silicon-carbide-nitride and mixtures thereof, said particles having a mean particle size or mean diameter of less than about 10 microns;

b. gradually heating said mixture in the presence of an inert gas or ammonia gas and in sequential stages with hold times at intermediate temperatures to a maximum temperature in the range of from about 400° C. up to less than 1100° C. and over a period of total combined heating and hold time of from about 5 to about 50 hours to form a microporous ceramic product; and

c. cooling said microporous ceramic product.

5,643,988

SHAPED ARTICLE OF LIQUID CRYSTALLINE POLYMER

Kiyokazu Nakamura; Norio Kitajima, both of Nagoya, and Toshihide Inoue, Ichinomiya, all of Japan, assignors to Toray Industries, Inc., Japan

Continuation of Ser. No. 365,026, Dec. 28, 1994, abandoned. This application Apr. 5, 1996, Ser. No. 628,396

Claims priority, application Japan, Dec. 28, 1993, 5-338096

Int. Cl.[6] C08L *67/03;67/04*

U.S. Cl. 524—449 **14 Claims**

1. A shaped article of a liquid crystalline polymer having a weld, which is provided by plural melted resin flows encountering in a mold, obtained by melt molding a composition comprising (A) 100 parts by weight of at least one liquid crystalline polymer capable of forming an anisotropic melt selected from the group consisting of liquid crystalline polyesters and liquid crystalline polyester amides and (B) 0.01 to 2 parts by weight of at least one olefinic polymer, having a weight-average molecular weight of 10,000 to 600,000, selected from the group consisting of (a) polyethylene, (b) polypropylene, (c) copolymers of ethylene and α-olefin having 3 or more carbon atoms, (d) copolymers of propylene and α-olefin having 4 or more carbon atoms, (e) copolymers of ethylene, α-olefin having 3 or more carbon atoms and a non-conjugated diene and (f) copolymers of propylene, α-olefin having 4 or more carbon atoms and a non-conjugated diene, said composition having a retention rate of a weld strength of 15% to 100% obtained by the following formula (1), based upon flexural strengths determined from a weld shaped article (X) having a weld, which is provided by plural melted resin flows encountering in a mold, at substantially the center portion thereof and a non-weld shaped article (Y) having no weld therein, both obtained by injection molding the composition under the following conditions:

Retention rate of weld strength (%)=(Flexural strength of shaped article (X) having weld/Flexural strength of shaped article (Y) having no weld)×100 (1)

Injection molding condition:

Cylinder temperature: Melting point (°C.) of liquid crystalline polymer +10° C.

Mold temperature: 90° C.

Size of shaped article: 6.0 mm (width)×127 mm (length)×1 mm (thickness).

5,643,989

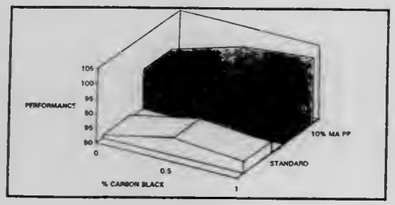
FIBER REINFORCED FUNCTIONALIZED POLYOLEFIN COMPOSITES

Hendrik T. Van De Grampel, Bergen Op Zoom, Netherlands; Yongsheng Hou, Pittsburgh, Pa.; Dennis O. Spencer, Shelby, N.C.; Robert G. Swisher, Pittsburgh, and Thomas V. Thimons, Allison Park, both of Pa., assignors to Azdel, Inc., Shelby, N.C.

Continuation-in-part of Ser. No. 144,847, Oct. 29, 1993, abandoned. This application Feb. 28, 1995, Ser. No. 396,122

Int. Cl.[6] C08J *5/10;* **C08K** *3/40;* **C08L** *23/12*

U.S. Cl. 524—494 **66 Claims**



1. A composite material comprising:

a glass mat comprising a plurality of glass fibers treated with a reaction product of a polymeric amine and an organosilane, a film-forming polymer and an emulsified polyolefin; and

a functionalized polypropylene.

5,643,990

RESIN COMPOUND

Shotaro Uehara, Tojyo; Munehiro Mitsui, Tokyo; Seiichi Atomori, Tokyo; Tateki Furuyama, Tokyo; Atushi Shiota, Tokyo; Mineo Fujimura, Tokyo, and Masaki Nagata, Tokyo, all of Japan, assignors to Hyperion Catalysts International, Inc., Cambridge, Mass.

Continuation of Ser. No. 23,471, Feb. 25, 1993, abandoned, which is a continuation of Ser. No. 654,507, Feb. 23, 1991, abandoned, which is a continuation of Ser. No. 567,017, Aug. 14, 1990, abandoned. This application Oct. 28, 1994, Ser. No. 331,330

Claims priority, application Japan, Aug. 14, 1989, 1-209890

Int. Cl.[6] C08K *3/04*

U.S. Cl. 524—496 **26 Claims**

1. A resin composition comprising:

a. a carbon fibril material, at least 50 weight percent of which is in the form of agglomerates of intertwined carbon fibrils and

b. a synthetic resin, the at least 50 weight percent agglomerates having diameters of about 0.10 to about 0.25 millimeter,

the carbon fibrils having diameters of about 3.5 to about 70 nanometers, lengths at least about 5 times greater than their diameter and

said carbon fibril material being present in an amount of about 0.1 to about 50 parts by weight per 100 parts by weight of the composition and said synthetic resin being present in an amount of about 99.9 to about 50 parts by weight per 100 parts by weight of the composition.

5,643,991

COPOLYESTER COMPOSITIONS CONTAINING CARBON BLACK

Candace Michele Stipe; Scott Arnold Hanson, and Richard Leon McConnell, all of Kingsport, Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed May 12, 1995, Ser. No. 439,597

Int. Cl.[6] C08K *3/04*

U.S. Cl. 524—496 **19 Claims**

1. A blend comprising:

(a) one or more substantially amorphous copolyester resins having a degree of crystallinity of less than 20 percent;

(b) from about 5 to about 25 weight percent carbon black; and

(c) from about 7 to about 30 weight percent of an impact modifier,

wherein said impact modifier is selected from the group consisting of maleic anhydride modified styrene-ethylene/butylene-styrene block copolymers, styrene-ethylene/propylene-styrene block copolymers, and butadiene/acrylic monomer shell core polymers which are based on butyl acrylate and methyl acrylate,

wherein the total of the weight percentages of (a), (b), and (c) equal 100 percent.

5,643,992

COATING ADDITIVES FOR WATER-BASED FORMULATIONS

Paul J. Northey, Somerset, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 2, 1995, Ser. No. 458,430

Int. Cl.[6] C08L *7/02*

U.S. Cl. 524—501 **17 Claims**

1. A coating composition comprising a water-based pressure-sensitive adhesive formulation, and a polymer additive comprising poly(ethylene oxide) polymers having a molecular weight of at least about 1,000,000 g/mole, wherein the polymer additive is present at a concentration between about 1 ppm and about 50 ppm, based on the weight of the composition, the concentration being suitable to allow the composition to be delivered from the coating die of a premetered coater in the form of a stable sheet at a flow rate substantially less than the minimum delivery flow rate achievable using the formulation itself.

5,643,993

AQUEOUS POLYMER DISPERSION, METHOD FOR MAKING SAME, AND USE THEREOF FOR PREPARING PAINTS

Patrick Guerin, Meerbusch Strümp, Germany, assignor to Cray Valley, S.A., France

PCT No. PCT/FR94/01294, § 371 Date Jul. 2, 1996, § 102(e) Date Jul. 2, 1996, PCT Pub. No. WO95/13309, PCT Pub. Date May 18, 1995

PCT Filed Nov. 7, 1994, Ser. No. 640,729

Claims priority, application Germany, Nov. 10, 1993, 93 13552

Int. Cl.[6] C08L *31/04*

U.S. Cl. 524—524 **20 Claims**

1. An aqueous dispersion of polymer particles comprising at least one first polymer and at least one second polymer which are mutually incompatible, wherein the first at least one second polymer which are mutually incompatible, wherein the first polymer is non-crosslinked, has a glass transition temperature of from −25° to 0° C. and represents from 40 to 65% by weight of the particles, the second polymer is not alkali-soluble and is non-crosslinked, has a glass transition temperature of from 5° to 40° C. and represents from 60% to 35% by weight of the particles, the glass transition temperature of the second polymer exceeds that of the first polymer by less than 40° C., and the average particle size is between 100 and 300 nm.

5,643,994

ANCHORING SYSTEMS AND METHODS UTILIZING ACRYLATE COMPOSITIONS

Fred A. Kish, Wheeling; Michael J. Rancich, Mundelein, and Cyndie S. Hackl, Wauconda, all of Ill., assignors to Illinois Tool Works Inc., Glenview, Ill.

Continuation of Ser. No. 310,709, Sep. 21, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 487,870

Int. Cl.[6] E21D *20/00;* **C08K** *5/08;* **C08L** *33/10*

U.S. Cl. 524—533 **28 Claims**

1. A system for anchoring bolts in structural bodies comprising:

(a) a structural body selected from the group consisting of concrete bodies, masonry bodies and rock;

(b) an anchor bolt; and

(c) a cured polymer composition adhesively contacting said structural body and said bolt, said cured polymer composition providing a pull-out force of at least about 2200 lbs. in medium weight concrete block and having been cured from a curable composition comprising:

i. from about 20% to about 90% by weight of a solution of methacrylate ester polymer in methacrylate ester monomer;

ii. inorganic filler;

iii. free-radical catalyst; and

iv. trimethyl hydroquinone as a free-radical inhibitor.

5,643,995

METHOD FOR IMPROVING THE PROCESSABILTY OF POLYPHTHALAMIDES

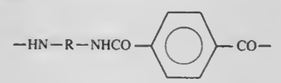
M. Jamal El-Hibri, Atlanta, Ga.; Yu-Tsai Chen, Glen Ellyn, and David P. Sinclair, Winfield, both of Ill., assignors to Amoco Corporation, Chicago, Ohio

Continuation-in-part of Ser. No. 784,763, Oct. 30, 1991, abandoned, which is a continuation of Ser. No. 252,400, Sep. 30, 1988, abandoned, which is a continuation-in-part of Ser. No. 60,456, Jun. 11, 1987, abandoned. This application Jun. 7, 1995, Ser. No. 478,717

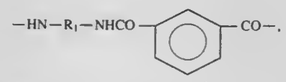
Int. Cl.[6] C08L *77/00*

U.S. Cl. 524—538 9 Claims

1. A method for improving the melt processability of a glass fiber-filled polyphthalamide, said polyphthalamide having a heat deflection temperature at 264 psi according to ASTM D-648 of at least about 240° C. when filled with 33 weight percent glass fibers and molded, said polyphthalamide comprising the following recurring units:

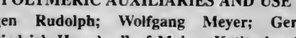


A



B

and



C

wherein the mole ratio of units A, B and C is about 40–100:0–35:0–60 and wherein R, R_1 and R_2 are independently divalent hydrocarbyl radicals;

said method comprising the step of compounding said filled polyphthalamide with from about 10 to about 50 wt % polyarylene sulfide based on the total weight of said polyphthalamide and said polyarylene sulfide.

5,643,996

INORGANIC POWDER COMPOSITION CONTAINING POLYMERIC AUXILIARIES AND USE THEREOF

Jürgen Rudolph; Wolfgang Meyer; Gerhard Wegner; Friedrich Hessel, all of Mainz; Katharina Seitz, Frankfurt am Main, and Andreas Roosen, Hofheim/Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Continuation of Ser. No. 160,735, Dec. 3, 1993, abandoned. This application Mar. 18, 1996, Ser. No. 617,429

Claims priority, application Germany, Dec. 5, 1992, 42 40 979.9

Int. Cl.[6] C08L *53/00;* C08K *3/22*

U.S. Cl. 524—561 11 Claims

1. An inorganic powder composition comprising inorganic powder, dispersant and binder, wherein the dispersant and/or binder comprises a saponified block copolymer containing (A) units of methacrylic acid and (B) units of alkyl methacrylate in which the alkyl radical comprises from 1 to 8 carbon atoms, and the total block copolymer before saponification having an average molecular weight of 4,405 to 20,000, in each case expressed as number average (M_n), and wherein said block copolymer is present in an amount of about 0.5 to 10% by weight, calculated on the total weight of solids in the total composition, and wherein chain length ratio of the methacrylic acid block to the alkyl methacrylate block within the block copolymer ranges from about 0.95 to about 2.0.

5,643,997

POLYETHYLENIC RESIN COMPOSITION

Masami Matsuoka, and Hikaru Aoyagi, both of Kawasaki, Japan, assignors to Showa Denko K.K., Tokyo, Japan

Continuation of Ser. No. 842,374, Mar. 27, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 474,958

Claims priority, application Japan, Aug. 10, 1990, 2-262416

Int. Cl.[6] C08L *23/04;23/26;51/06*

U.S. Cl. 525—71 2 Claims

1. A polyethylenic resin composition consisting of:

(1) at least one high density polyethylenic resin selected from the group consisting of:

(a) a high density polyethylenic resin having a density (g/cm^3) of at least 0.935 and a melt flow rate (g/10 min.) of at least 0.01 (Resin A), and

(b) a modified high density polyethylenic resin derived by grafting on the Resin A at least one monomer selected from the group consisting of an unsaturated carboxylic acid and its derivative (Resin B);

(2) a linear low density polyethylenic resin consisting of a mixture of Resin C and D or Resin D alone, wherein Resin C is:

(c) a linear low density polyethylenic resin having a number of short chain branches of 5 to 30/1,000 carbon atoms of the main chain, a density (g/cm^3) of at least 0.910, but less than 0.935, a melt flow rate (g/10 min.) of 0.1 to 50, and a melting point as determined by the differential scanning calorimetric method of 115 to 130° C., and

Resin D is:

(d) a modified linear low density polyethylenic resin derived by grafting on the Resin C, the monomer as defined in (b) above; and

(3)(e) a linear very low density polyethylenic resin having a number of short chain branches of 18 to 60/1,000 carbon atoms of the main chain, a density (g/cm^3) of at least 0.890 but less than 0.910, a melt flow rate (g/10 min.) of 0.1 to 30, and a melting point as determined by the differential scanning calorimetric method of 110 to 125 (Resin E), wherein the weight ratio of (Resin D)/(Resin C+Resin D) is at least 1/1,000. the weight ratio of (Resin A+Resin B)/(Resin A+Resin B+Resin C+Resin D) is 1/10 to 975/1,000, the proportion of the Resin E in the total composition is 5 to 40% by weight, and the proportion of the total amount of grafted monomers in the total composition is 0.001 to 5.0% by weight.

5,643,998

RECYCLABLE POLYMER, PROCESS FOR PRODUCING THE SAME, METHOD FOR RECOVERING THE SAME, AND METHOD FOR REGENERATING THE SAME

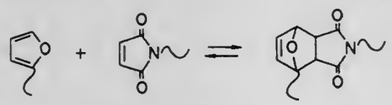
Mitsuru Nakano; Arimitsu Usuki; Akane Okada, and Osami Kamigaito, all of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi-ken, Japan

Filed Mar. 8, 1995, Ser. No. 400,869

Claims priority, application Japan, Mar. 10, 1994, 6-067854

Int. Cl.[6] C08G *77/00*

U.S. Cl. 525—103 37 Claims



1. A recyclable polymer comprising:

a plurality of oligomer units, formed of a fixed number of monomers, and

linkage units which link at least two of said oligomer units through a chemical bond which is different from a bond between the monomers constituting the oligomer units, thereby allowing repetitive scission and re-bonding of the linkage units by a predetermined treatment capable of scissoring only the chemical bond in the linkage units,

wherein at least one of said oligomer units is bonded to at least two of said linkage units.

5,643,999

CO-EXTRUDABLE ADHESIVES WITH GOOD AGE-DOWN RESISTANCE

I-Hwa Lee, and Timothy Alan Libert, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 28, 1995, Ser. No. 413,033

Int. Cl.[6] C08F *8/00*

U.S. Cl. 525—193 5 Claims

1. A co-extrudable adhesive composition suitable for providing durable bonds to ionomers, comprising:

(A) 70–95 weight %, based on (A) plus (B), of a blend of polyethylene polymers, the blend consisting essentially of:

(a) 5–40 weight percent, based on (A), of a first polyethylene polymer having a density of 0.86 to below 0.91 g/cc, with the proviso that the heat of fusion, based on differential scanning calorimetry, DSC, is greater than 30 joules/gram, the polymer produced by other than free-radical polymerization;

(b) 60–95 weight percent, based on (A), of a second polyethylene polymer having a density of 0.910 to 0.935 g/cc; and

(B) 5–30 percent based on (A) plus (B), of a hydrocarbon elastomer having a heat of fusion based on DSC of less than 25 joules/gram;

wherein any portion of (a), any portion of (b) and any portion of (B) may be modified by grafting with a carboxylic acid a carboxylic acid ester, half ester, amide, imide or metal salt, with the proviso that the total weight percent of acid or acid derivative in the final adhesive composition does not exceed 3 weight percent based on the total weight of adhesive composition.

5,644,000

CRYSTALLIZATION RESISTANT, LOW MODULUS ELASTOMER FOR FLEXIBLE BEARINGS

David G. Guillot, Tremonton, Utah, assignor to Thiokol Corporation, Ogden, Utah

Filed Mar. 10, 1989, Ser. No. 322,273

Int. Cl.[6] C08L *9/00;7/00*

U.S. Cl. 525—236 5 Claims

1. A rubber composition which does not substantially thermally crystallize when maintained at 0° C. for 28 days, has a shear modulus of from about 13.8 to about 18.6N/cm^2 at 21° C. and at a crosshead rate of 1.27 cm per minute, and has a shear strength of from about 483 to about 690N/cm^2 at 20° C. and a crosshead speed of 1.27 cm per minute, consisting essentially of the vulcanizate of:

A. from about 60 to about 80 phr of a first random copolymer of about 92% by weight cis-1,4-polyisoprene and about 8% by weight trans-1,4-polyisoprene moleties; and

B. from about 20 to about 40 phr of a second random copolymer consisting essentially of at least about 98% by weight 1,4-cis-polyisoprene and at most about 2% trans-1,4-polyisoprene moieties.

5,644,001

RESIN-FREE SUCCINIMIDES PROCESS OF MAKING, AND COMPOSITIONS CONTAINING SAME

John Richard Blackborow, Edinburgh, Scotland, and Michael John Clarke, Hull, England, assignors to BP Chemicals Limited, London, England

Division of Ser. No. 161,897, Dec. 3, 1993, Pat. No. 5,523,417. This application Mar. 11, 1996, Ser. No. 613,499

Claims priority, application United Kingdom, Dec. 15, 1992, 92/26108

Int. Cl.[6] C08F *8/00;* C07D *403/02*

U.S. Cl. 525—285 11 Claims

1. A process for producing a hydrocarbyl substituted succinylating agent (HSSA) in which the real and apparent mole ratios of the succinyl groups to hydrocarbyl groups are substantially equivalent and which contains less than 250 ppm of chlorine, said process comprising:

a. reacting a poly(iso)butene with maleic anhydride to form an HSSA, and

b. cleaning the HSSA so formed by solvent extraction to obtain the desired product.

5,644,002

ABSORBABLE POLYALKYLENE DIGLYCOLATES

Kevin Cooper, Warren, and Angelo Scopelianos, Whitehouse Station, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Continuation of Ser. No. 505,408, Jul. 21, 1995, abandoned, Division of Ser. No. 375,020, Jan. 19, 1995, abandoned. This application Jul. 22, 1996, Ser. No. 681,134

Int. Cl.[6] C08L *67/02;67/04;* C08G *81/00;63/08*

U.S. Cl. 525—411 23 Claims

1. An absorbable, block, segmented, statistically random, or graft copolymer comprising the reaction product of:

a) an absorbable, biocompatible poly(alkylene diglycolate), comprising the reaction product of::

an acid or ester of diglycolic acid; and,

an alcohol selected from the group consisting of glycerol, pentaerythitol, trimethylolpropane, hydroxyl terminated poly(ethylene glycol)s, ethylene glycol, 1,2-propanediol, 1,3-propanediol, 1,4-butylene glycol, dipropylene glycol, 1,5-pentanediol, 1,6-hexanediol, 1,7-heptanediol, and 1,8-octanediol,

wherein the poly(alkylene diglycolate) comprises about 10 mole percent to about 90 mole percent of repeating units with tri-, tetra-alcohols, and hydroxyl terminated poly(ethylene glycol)s, and wherein the balance of the poly(alkylene diglycolate) comprises repeating units with diol alcohols, and,

b) a polyester formed from lactone monomers selected from the group consisting of p-dioxanone, e-caprolactone, delta-valerolactone, beta-butyrolactone, epsilon-decalactone, 2,5-diketomorpholine, pivalolactone, alpha, alpha-diethylpropiolactone, ethylene oxalate, 3-methyl-1,4-dioxane-2,5-dione, 3,3-diethyl-1,4-dioxan-2,5-dione, gamma-butyrolactone, 1,4-dioxepan-2-one, 1,5-dioxepan-2-one, 1,4-dioxan-2-one, 6,8-dioxabicycloctane-7-one, and combinations of two and more thereof,

wherein the copolymer is comprised of about 10 weight percent to about 90 weight percent of poly(alkylene diglycolate).

5,644,003

EPOXY RESIN COMPOSITION, PROCESS FOR PRODUCING THE SAME AND RESIN-SEALED SEMICONDUCTOR DEVICE

Noriyuki Arai, Tsukuba; Yutaka Shiomi, Toyonaka; Hiroshi Nakamura, Tsuchiura, and Noriaki Saito, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Filed Jul. 18, 1995, Ser. No. 503,668

Claims priority, application Japan, Jul. 19, 1994, 6-166945; Oct. 20, 1994, 6-255102; Nov. 10, 1994, 6-276568

Int. Cl.[6] C08F *283/04;* C08L *63/00*

U.S. Cl. 525—423 16 Claims

1. An epoxy resin composition which comprises:

(a) an epoxy resin having at least two epoxy groups in the molecule,

(b) an epoxy resin curing agent,

(c) a cure accelerator,

(d) an aromatic polyamide pulp, and

(e) an inorganic filler as the essential components, wherein the aromatic polyamide pulp (d) is in an amount of 0.5 to 10% by weight based on the total weight of the component (a), the component (b) and the component (d), and the specific surface area of the aromatic polyamide pulp (d) measured according to the BET method falls within the range of from 3 to 20 m^2/g and the freeness of the pulp as measured by

the Canadian standard method in JIS P-8121 falls within the range of from 100 to 700 ml; and

the inorganic filler (e) is in an amount of 75 to 94% by weight based on the total weight of the component (a), the component (b), the component (c) and the component (e).

5,644,004

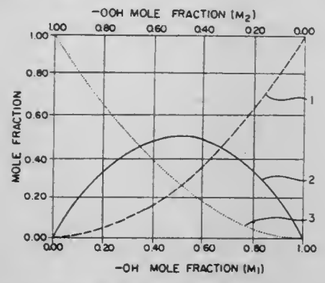
MULTI-COMPONENT ETHYLENICALLY UNSATURATED PEROXYESTERS

Jose Sanchez, Grand Island, N.Y., assignor to Elf Atochem North America, Inc., Phila., Pa.

Division of Ser. No. 220,148, Mar. 30, 1994. This application Jan. 25, 1995, Ser. No. 378,148

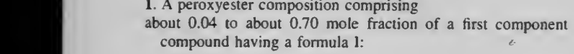
Int. Cl.[6] C08F *20/00*

U.S. Cl. 525—444 **12 Claims**

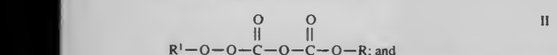


1. A peroxyester composition comprising

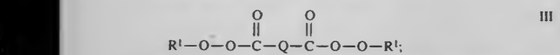
about 0.04 to about 0.70 mole fraction of a first component compound having a formula I:



about 0.32 to about 0.50 mole fraction of a second component compound having a formula II:



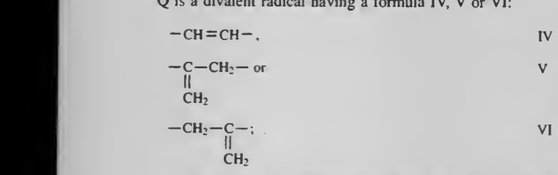
about 0.04 to about 0.70 mole fraction of a third component compound having a formula III:



the mole fractions being determined by the respective molar quantities of the three components present in the peroxyester composition;

wherein

Q is a divalent radical having a formula IV, V or VI:



R is substituted or unsubstituted alkyl of 1 to 18 carbons optionally containing one or more —O— or —NH— hetero groups, with the proviso that multiple hetero groups must be separated from each other and the radical ends by at least one carbon atom, substituted or unsubstituted cycloalkyl of 5 to 12 carbons, substituted or unsubstituted alkenyl of 3 to 11 carbons, substituted or unsubstituted aryl of 6 to 14 carbons or substituted or unsubstituted aralkyl of 7 to 11 carbons, where the R substituents are one or more of lower alkyl of 1 to 4 carbons, chloro, bromo, cyano, carboxy, alkoxy of 1 to 10 carbons or aryloxy of 6 to 10 carbons;

R^1 is substituted or unsubstituted t-alkyl of 4 to 12 carbons, substituted or unsubstituted t-alkynyl of 5 to 9 carbons, substituted or unsubstituted t-cycloalkyl of 6 to 13 carbons or substituted or unsubstituted t-aralkyl of 9 to 13 carbons, where the R^1 substituents are independently one or more of lower alkyl of 1 to 4 carbons, chloro, hydroxy or t-alkylperoxy of 4 to 8 carbons; and

from zero to about 250% by weight of a solvent, based upon the total weight of the three components of the peroxyester composition having formulas I, II and III.

5,644,005

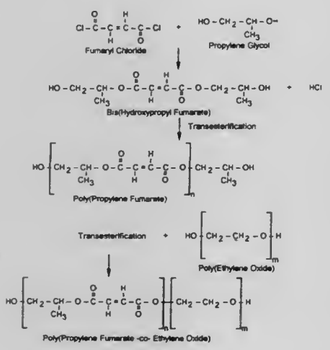
METHOD OF MAKING POLY(PROPYLENE FUMARATE-COETHYLENE OXIDE)

Laura J. Suggs; Richard G. Payne, both of Houston; Michael J. Yaszemski, San Antonio, and Antonios G. Mikos, Houston, all of Tex., assignors to Rice University, Houston, Tex.

Division of Ser. No. 512,308, Aug. 8, 1995, Pat. No. 5,527,864. This application Apr. 24, 1996, Ser. No. 637,355

Int. Cl.[6] C08F *20/00*

U.S. Cl. 525—444 **5 Claims**



1. A method for the synthesis of a block copolymer poly(propylene fumarate -co- ethylene oxide) comprising the steps of:

reacting a prepolymer poly(propylene fumarate) with a prepolymer poly(ethylene oxide); and

recovering poly(propylene fumarate -co- ethylene oxide).

5,644,006

HIGH STRENGTH THERMOSET COPOLYMERS INCORPORATING MODIFIED BISOXAZOLINE MONOMERS.

Marvin L. Deviney, and Joel J. Kampa, both of San Antonio, Tex., assignors to Southwest Research Institute, San Antonio, Tex.

Continuation of Ser. No. 324,115, Oct. 14, 1994, abandoned. This application Jul. 13, 1995, Ser. No. 502,302

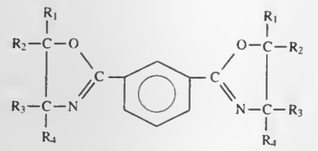
Int. Cl.[6] C08F *283/00*; **C08G** *8/28*

U.S. Cl. 525—489 **18 Claims**

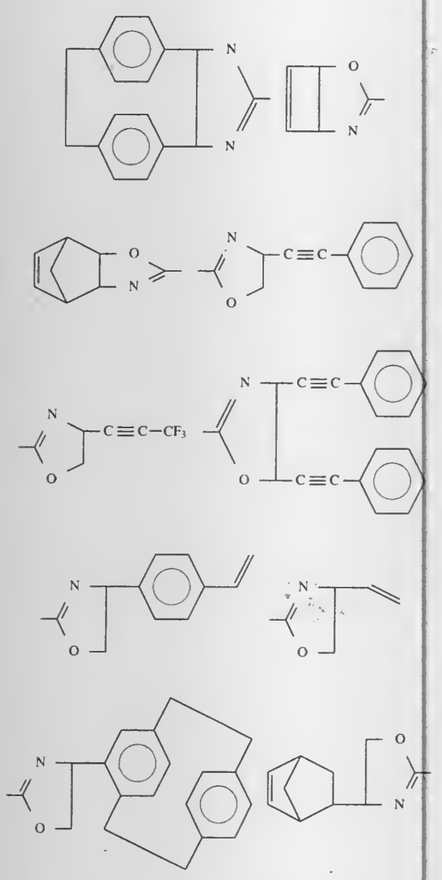
1. A thermoset copolymer composition, comprising:

between about 10–90 percent by weight of a thermoplastic resin having unreacted phenolic OH groups; and

between about 10–90 percent by weight of a modified bisoxazoline monomer having the following general formula:



wherein R^1, R^2, R^3, and R^4 independently are selected from the group consisting of hydrogen, methyl groups, substituted vinyl groups, substituted ethynyl groups, norbornyl groups, nadic imide groups, cyclobutenyl groups, cyclophane groups, groups bound into the oxazoline at the 4- and 5-positions to form bicyclic compounds, and substituents having the following structure:



provided that at least one of R^1, R^2, R^3, and R^4 must not be hydrogen, and further provided that, if one of R^1, R^2, R^3, and R^4 is a methyl group, the remaining R groups are hydrogen.

5,644,007

CONTINUOUS PROCESS FOR THE PRODUCTION OF POLY(1-ALKENES)

Robert S. Davidson, Edina; Robert W. Ferguson, Maplewood; Barry E. Heldman, Cottage Grove; Timothy J. Diekmann, Wyoming; Anthony R. Maistrovich, Woodbury, all of Minn.; James A. Higgins, River Falls, Wis., and Mark D. Gehlsen, Eagan, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 26, 1996, Ser. No. 644,611

Int. Cl.[6] C08F *10/14*

U.S. Cl. 526—64 **20 Claims**

1. A process for the continuous production of a poly(α-olefin) having a targeted inherent viscosity, comprising the steps:

a) in a reactor comprising one or more sections, the temperature of each of said sections being independently controllable so as to provide a temperature profile, mixing at least one α-olefin monomer that is or that can be made a liquid at a temperature of 20° to 100° C. and about 1000 kPa and a catalyst system useful in the polymerization of olefinic monomers, so as to form a reaction mixture that comprises

1) said at least one monomer,

2) said catalyst system, and

3) the polymerization product of said at least one monomer; and

b) allowing said at least one monomer to continue to polymerize while said reaction mixture travels in an essentially plug flow manner through said reactor,

said reactor being free of a hydrogen control feed, the inherent viscosity of said poly(α-olefin) remaining within 0.2 dL/g of said targeted inherent viscosity within five residence times of said reactor.

5,644,008

PROCESS FOR PREPARING POLYOLEFINS

Akira Sano, Tokyo; Takeichi Shiraishi, Kawasaki; Hiroyuki Shimizu, Tokyo; Kunihiro Suzuki, and Kazuo Matsuura, both of Yokohama, all of Japan, assignors to Nippon Oil Company, Limited, Tokyo, Japan

Continuation of Ser. No. 810,394, Dec. 19, 1991, abandoned. This application Oct. 23, 1995, Ser. No. 546,824

Claims priority, application Japan, Dec. 27, 1990, 2-415265

Int. Cl.[6] C08F *4/654*

U.S. Cl. 526—116 **18 Claims**

1. A process for preparing a polyolefin by polymerizing or copolymerizing an olefin or olefins in the presence of a catalyst comprising a solid catalyst component and an organometallic compound, the solid catalyst component being prepared by reacting a product resulting from the reaction of the following components (I) and (II) further with the following component (III):

(I) a reaction product obtained by reacting:

(1) a silicon oxide, and

(2) a titanium compound, or a titanium compound and a vanadium compound, and further reacting the resulting reaction product with:

(3) an organoaluminum compound;

(II) a reaction product obtained by the reaction of:

(1) a magnesium halide, and

(2) a compound represented by the general formula

$$[Me(OR)_nX_{z-n}]$$

where Me represents an element of Groups I to IV in the Periodic Table, z represents the valence of the element Me, n is $o<n\leqq z$, X is a halogen atom, and R is a hydrocarbon group having 1 to 20 carbon atoms;

(III) a compound represented by the general formula

$$[R^1_aR^2_bR^3_cSi(OR^4)_dX_{4-(a+b+c+d)}]$$

where R^1, R^2, R^3 and R^4, which may be the same or different, are each a hydrocarbon group having 1 to 20 carbon atoms, X is a halogen atom, and a, b, c and d are $0\leqq a<4$, $0\leqq b<4$, $0\leqq c<4$ and $O<d<4$, provided $O<a+b+c<4$ and $1<a+b+c+d\leqq 4$.

5,644,009

CATALYST COMPOSITION FOR PREPARING HIGH SYNDIOTACTICITY POLYSTYRENE FROM STYRENE OF OTHER ARYLETHYLENE MONOMERS AND PROCESSES USING THE SAME

Jing-Cherng Tsai; Shian-Jy Wang; Shu-Ling Peng, all of Hsinchu, and Mickey Sue, Taipei, all of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Nov. 27, 1995, Ser. No. 563,272

Int. Cl.[6] C08F *4/642;12/08*

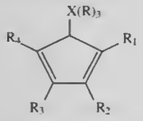
U.S. Cl. 526—128 **20 Claims**

1. A catalytic process for preparing high-syndiotacticity polystyrene or other aryl ethylene polymers from styrene or substituted styrene monomers, wherein said substituted styrene is a C_{1-12}-substituted styrene or a mono- or poly-halogenated styrene, said process comprising the steps of:

(a) preparing a catalyst composition comprising:

(i) 0.1 to 10 parts by mole of a titanium (IV) or titanium (III) complex which does not contain cyclopentadienyl ligand, said titanium is represented by the following formula of $TiR'_1R'_2R'_3R'_4$ or $TiR'_1R'_2R'_3$, wherein each of said R'_1, R'_2, R'_3, and R'_4 is, independently, an alkyl group, an aryl group, an alkoxy group, an aryloxy group, an amino group, or a halogen atom,

(ii) 0.1 to 10 parts by mole of a cyclopentadienyl complex of silicon (Si), germanium (Ge), or tin (Sn) represented by the following formula:



wherein each of said R_1, R_2, R_3, and R_4 is, independently, an alkyl group, an aryl group, a silyl group, a germanyl group, a stannyl group, or a halogen atom; R is an alkyl group, an aryl group, a hydrogen atom or a halogen atom; and X is selected from the group consisting of the Group IVA elements of silicon (Si), germanium (Ge) and tin (Sn),

(iii) an activated transitional metal co-catalyst which is either 20 to 10,000 parts by mole of methyl aluminoxane, or a mixture containing 0.1 to 20 parts by mole of a non-coordinated Lewis acid and 100 to 10,000 parts by mole of a trialkyl aluminum;

(b) charging said catalyst composition and said styrene or substituted styrene monomers into a reactor to begin a polymerization reaction; and

(c) stopping said polymerization reaction to obtain a polymerization product.

5,644,010

CURABLE LIQUID RESIN, PROCESS FOR THE PRODUCTION THEREOF AND USE THEREOF

Toru Kurihashi; Miki Kawashima, and Takeo Yamaguchi, all of Tokyo, Japan, assignors to Toyo Ink Manufacturing Co., Ltd., Tokyo, Japan

Filed Jul. 18, 1995, Ser. No. 503,723

Claims priority, application Japan, Jul. 22, 1994, 6-170510; Aug. 4, 1994, 6-183197; Aug. 19, 1994, 6-195175

Int. Cl.[6] C08F *224/00;220/58;220/04;220/10;230/00;* **C07C** *69/54;233/16;11/12*

U.S. Cl. 526—273 **16 Claims**

1. A liquid resin having a number average molecular weight of 10,000 to 200,000 and a viscosity, measured at 50° C., in the range of from 500 cps to 30,000 cps, the liquid resin being a copolymer obtained from

(A) a monomer of the formula (1) or (2),

$$CH_2{=}C(R^1)COO{-}R^2 \quad (1)$$

wherein R^1 is hydrogen or methyl, and R^2 is an alkyl group having 8 to 22 carbon atoms,

$$CH_2{=}C(R^3)COO(C_nH_{2n}O)_m{-}R^4 \quad (2)$$

wherein R^3 is hydrogen or methyl, R^4 is an alkyl group having 1 to 5 carbon atoms, n is an integer of 1 to 3 and m is an integer of 4 to 25, and

(B) at least one monomer selected from the group consisting of

(B1) a monomer prepared by reacting an ethylenically unsaturated epoxide (a) with a fatty acid (b) of the formula (3)

$$R^5COOH \quad (3)$$

wherein R^5 is an unsaturated aliphatic hydrocarbon group having 3 to 30 carbon atoms and having at least one double bond,

(B2) a monomer of the formula (4),

$$CH_2{=}C(R^6)CONR^7R^8 \quad (4)$$

wherein R^6 is hydrogen or methyl and each of R^7 and R^8 is hydrogen or a functional group of CH_2OR^9 provided that at least one of R^7 and R^8 is a functional group of CH_2OR^9 in which R^9 is hydrogen or an alkyl group having 1 to 5 carbon atoms,

and

(B3) a monomer whose molecule has at least two ethylenically unsaturated double bonds.

5,644,011

COATING AND BINDER FOR PHARMACEUTICAL AGENTS

Klaus Lehmann, and Thomas Süfke, both of Rossdorf, Germany, assignors to Roehm GmbH Chemical Factory, Darmstadt, Germany

Filed Aug. 25, 1995, Ser. No. 519,357

Claims priority, application Germany, Aug. 31, 1994, 9414066 U

Int. Cl.[6] C08L *33/02;33/04;33/08;33/12*

U.S. Cl. 526—319 **20 Claims**

1. A composition, comprising:

(a) a pharmaceutical compound; and

(b) a copolymer comprising:

A) about 10–25 wt. % methacrylic acid,

B) about 40–70 wt. % methyl acrylate, and

C) about 20–40 wt. % methyl methacrylate, based on a total copolymer weight of 100 wt. %.

5,644,012

ADJUVANT FOR PHARMACEUTICAL PREPARATIONS

Koji Iritani; Tetsuya Kawasaki, both of Hyogo; Nobutaka Tani, Osaka; Shigeki Masuda, and Yoshiaki Yano, both of Hyogo, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

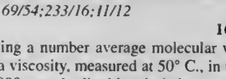
Filed Nov. 16, 1992, Ser. No. 977,100

Claims priority, application Japan, Nov. 15, 1991, 3-300395; Nov. 26, 1991, 3-310873

Int. Cl.[6] C08G *63/668*

U.S. Cl. 527—311 **8 Claims**

1. A copolymer which comprises at least two structural units of the following formula (I'):

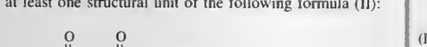


(I')

wherein R is a divalent organic group and R^1 is an oligosaccharide, wherein said oligosaccharide is unsubstituted or substituted with a moiety consisting of an acyl group, and has at least 2 saccharide residues, and is hydrolyzed and/or assimilated in the large intestine,

wherein R^1 is selected from the group consisting of a galactooligosaccharide, fructooligosaccharide, a soybean oligosaccharide and cellobiose; and

at least one structural unit of the following formula (II):



(II)

wherein R is a divalent organic group, each of X^1 and X^2 is independently an oxygen atom, an imino group or a sulfur atom and R^2 is selected from the group consisting of a saturated hydrocarbon having 2 to 20 carbon atoms, an unsaturated hydrocarbon having 4 to 20 carbon atoms, a polyalkylene, a polyalkylene glycol, a polyarylene oxide, a polyester and a polyamide.

5,644,013

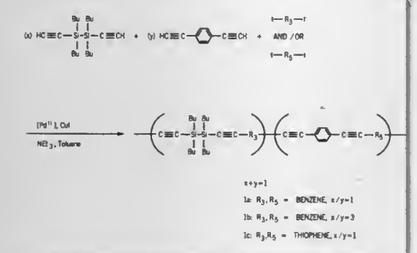
FLUORESCENT ORGANOSILICON POLYMERS

Chien-Hua Yuan, and Robert C. West, both of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

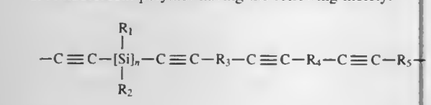
Filed Aug. 18, 1994, Ser. No. 292,593

Int. Cl.[6] C08G *77/06*

U.S. Cl. 528—15 **2 Claims**



1. A fluorescent polymer having the following moiety:



wherein:

(a) n=1–10;

(b) R_1 and R_2 are independently selected from a first group consisting of H, alkyl moieties having less than 16 carbons, and aromatic moieties having 1–3 rings, wherein if n>1 R_1 is independently selected from said first group for each n, and wherein if n>1 R_2 is independently selected from said first group for each n; and

(c) R_3, R_4, and R_5 are independently selected from a second group consisting of aromatic moieties having 1–3 rings.

5,644,014

COATING COMPOSITIONS BASED ON FLUORINE-CONTAINING INORGANIC POLYCONDENSATES, THEIR PRODUCTION AND THEIR USE

Helmut Schmidt, Saarbrücken-Güdingen; Reiner Kasemann, Mandelbachtal-Ormesheim, and Stefan Brück, Merchweiler, all of Germany, assignors to Institut Für Neue Materialien gemeinnützige GmbH, Saarbrücken, Germany

PCT No. PCT/EP92/01233, § 371 Date Apr. 29, 1994, § 102(e) Date Apr. 29, 1994, PCT Pub. No. WO92/21729, PCT Pub. Date Dec. 10, 1993

PCT Filed Jun. 3, 1992, Ser. No. 150,003

Claims priority, application Germany, Jun. 3, 1991, 41 18 184.0

Int. Cl.[6] C08G *77/24*

U.S. Cl. 528—43 **30 Claims**

1. A coating composition comprising a polycondensate of one or more hydrolyzable compounds of at least one element M selected from the group consisting of elements of groups IIIA to VA and groups IIB to IVB of the Periodic Table of Elements having hydrolyzable groups A, at least a portion of said hydrolyzable compounds also having non-hydrolyzable carbon-containing groups B, wherein the total molar ratio of groups A to groups B in said hydrolyzable compounds is from 10:1 to 1:2, and wherein 0.1 to 500 mol. % of said groups B are groups B' which on the average contain 5 to 30 fluorine atoms bonded to one or more aliphatic carbon atoms, where said carbon atoms are separated from said element M by at least two atoms.

5,644,015

PROCESS OF MANUFACTURING IMPROVED POLYURETHANE FIBER POLYMER

Seung-Won Seo, Kunpo-si, and Mun-Seon Kim, Seoul, both of Rep. of Korea, assignors to Hyosung T & C Co., Ltd., Seoul, Rep. of Korea

Filed Jul. 24, 1996, Ser. No. 686,056

Int. Cl.[6] C08G *18/18;18/32*

U.S. Cl. 528—60 **7 Claims**

1. A process for producing a polymer suitable for manufacturing polyurethane-based filament comprising:

stirring a mixture of a glycol and a diisocyanate, where the molar ratio of diisocyanate to glycol is about 1.5 to about 1.64, in a homogenizer and reacting said mixture to give a first polymer containing less than 4 mole % of unreacted diisocyanate;

then reacting said polymer with a chain-extender mixture containing ethylenediamine, 1,2-diaminopropane and diethylenetriamine.

5,644,016

MALEIMIDE COPOLYMER AS ALIGNMENT LAYER FOR LIQUID-CRYSTAL DISPLAYS

Horst Röschert; Norbert Rösch, and Peter Wegener, all of Hoechst Aktiengelsellschaft, D-65926 Frankfurt am Main, Germany

PCT No. PCT/EP93/00740, § 371 Date Nov. 17, 1994, § 102(e) Date Nov. 17, 1994, PCT Pub. No. WO93/21556, PCT Pub. Date Oct. 28, 1993

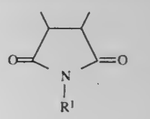
PCT Filed Mar. 26, 1993, Ser. No. 295,729

Claims priority, application Germany, Apr. 17, 1992, 42 12 893.5; Sep. 2, 1992, 42 29 194.1

Int. Cl.[6] C08G *73/12;* **G02F** *1/1337*

U.S. Cl. 528—170 **10 Claims**

1. An alignment layer for liquid crystal displays, which comprises a polymer containing maleimide units of the formula I



in which

R^1 is hydrogen, an acyclic or cyclic, aliphatic, aromatic or araliphatic radical which is chiral or achiral, can be monosubstituted or polysubstituted by functional groups and in which one or more CH_2 groups can be replaced by functional groups.

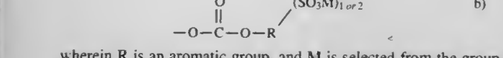
5,644,017

POLYCARBONATE TERMINATED BY AN IONIC SULFONATED AROMATIC MOIETY AND PREPARATION THEREOF

Ray E. Drumright; Michael J. Mullins, and Stephen E. Bales, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

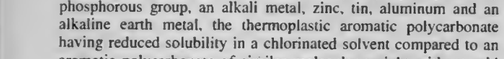
Filed Aug. 25, 1995, Ser. No. 519,853
Int. Cl.[6] C08G *63/02*
U.S. Cl. 528—196 **21 Claims**

1. A polycarbonate comprising a thermoplastic aromatic polycarbonate which has a plurality of terminating groups wherein at least about 10 mole percent of said terminating groups are an aromatic sulfonated terminating (ASTer) group having the structure:



a)

or



b)

wherein R is an aromatic group, and M is selected from the group consisting of hydrogen, a quaternary nitrogen group, a quaternary phosphorous group, an alkali metal, zinc, tin, aluminum and an alkaline earth metal, the thermoplastic aromatic polycarbonate having reduced solubility in a chlorinated solvent compared to an aromatic polycarbonate of similar molecular weight without said aromatic sulfonated terminating groups.

5,644,018

PITCH WITH REDUCED TENDENCY TO SMOKE DURING SPINNING AND A PROCESS FOR THE PRODUCTION OF SAID PITCH

Takashi Kojima; Yasuhiro Hirai, and Takafumi Yoshimura, all of Ibaraki-ken, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Jun. 30, 1995, Ser. No. 491,354
Claims priority, application Japan, Jul. 11, 1994, 6-158780
Int. Cl.[6] C10C *3/02*
U.S. Cl. 528—247 **13 Claims**

1. Pitch with reduced tendency to smoke during spinning and having good spinnability produced by (a) polymerizing a compound selected from the group consisting of a condensed polycyclic aromatic hydrocarbon and a substance containing a condensed polycyclic aromatic hydrocarbon in the presence of HF/BF_3, and then (b) refining the polymerization product of (a) by freeing said product of light components wherein said pitch contains an optically anisotropic phase in an amount of substantially 100%, wherein said pitch has a softening point of no more than 250° C., a pyridine-insolubles content of no more than 50%, and a n-heptane solubles content of 3–10%, and wherein the n-heptane solubles experience a weight loss of no more than 15% at 450° C. as measured by thermogravimetry.

5,644,019

HIGH ACTIVITY CATALYTIC SYSTEM FOR THE SYNTHESIS OF POLY(ETHYLENE TEREPHTHALATE)

Riccardo Po', Livorno; Luigi Pelosini, Fontaneto D'Agogna; Ernesto Occhiello, Novara, and Luisa Fiocca, Florence, all of Italy, assignors to Enichem S.p.A., Milan, Italy

Filed May 20, 1996, Ser. No. 650,833
Claims priority, application Italy, Jun. 1, 1995, MI95A1141; Aug. 4, 1995, MI95A1728; Aug. 9, 1995, MI95A1765; Sep. 29, 1995, MI95A1992
Int. Cl.[6] C08G *63/02*
U.S. Cl. 528—272 **17 Claims**

1. Catalytic system to catalyze the polymerization of bis-(2-hydroxyethyl) terephthalate or its homologous oligomers which are formed upon the reaction of dimethyl terephthalate or terephthalic acid and ethylene glycol, comprising:

a compound of formula

$$Z_x—A(O)_m—R_y \qquad (I)$$

or its anhydride,

where Z is OH, OM, OR', $NR"_2$;

M is a simple or complex metallic ion mono- or bi- or tri- or tetra-valent or an organic ion;

A is P, S, B, Si, As, or C, and when A is C, R is an alkyl perfluorate group;

R, R', $R"_2$, the same or different one from the other, are radicals, containing up to 20 atoms of carbon, selected from the group consisting of linear, branched and cyclic alkyl and aryl;

m is 0, 1 or 2;

y is equal or above 1;

x is equal or above 0;

an antimony or germanium derivative in quantities so that antimony or germanium in the final polymer is between 5 and 130 ppm;

a titanium derivative in quantities so that titanium in the final polymer is between 0 and 20 ppm;

wherein the metal content from said catalytic system in the final polymer is below 130 ppm.

5,644,020

THERMOPLASTICALLY PROCESSIBLE AND BIODEGRADABLE ALIPHATIC POLYESTERAMIDES

Ralf Timmermann, Krefeld; Ralf Dujardin, Willich, and Rainhard Koch, Köln, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 283,528, Aug. 1, 1994, abandoned. This application May 10, 1996, Ser. No. 644,584
Claims priority, application Germany, Aug. 12, 1993, 43 27 024.7
Int. Cl.[6] C08G *63/44;69/44*
U.S. Cl. 528—288 **7 Claims**

1. A biodegradable, thermoplastically processible copolymer containing aliphatic ester structures and aliphatic amide structures and having a melting point of at least 75° C., the proportion by weight of amide structures being between 70 and 30% and the proportion by weight of ester structures being between 30 and 70%, the copolymer being the reaction product of monomers selected from the group consisting of dialcohols with a chain length of C_2–C_6, dicarboxylic acids with a chain length of C_2–C_6 or their salts, hydroxycarboxylic acids and lactones, aminoalcohols, and ε-caprolactam, ω-aminocarboxylic acids with a chain length of C_4–C_6, and 1:1 salts of dicarboxylic acids with a chain length of C_4–C_6 and diamines with a chain length of C_4–C_6.

5,644,021

SYNTHESIS OF HIGH SOLIDS-CONTENT WET-STRENGTH RESIN

William Ivalter Maslanka, Landenberg, Pa., assignor to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 344,779, Nov. 23, 1994, abandoned, which is a continuation of Ser. No. 659,552, Feb. 22, 1991, abandoned, which is a continuation-in-part of Ser. No. 634,355, Dec. 31, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 487,782
Int. Cl.[6] C08G *69/26*
U.S. Cl. 528—336 **8 Claims**

1. An aqueous composition comprising a solution of a water-soluble, stable, cationic polyaminoamide-epichlorohydrin wet strength resin which does not gel when held at 90° F. for 90 days and has a total solids content of at least about 25 weight % and wherein the molar ratio of epichlorohydrin to polyaminoamide is from about 1.7/1 to about 1.9/1.

5,644,022

COPOLYIMIDES PREPARED FROM 3,4'-OXYDIANILINE AND 1,3-BIS(3-AMINOPHENOXY) BENZENE WITH 3,3'-4,4'-BIPHENYLCARBOXYLIC DIANHYDRIDE HAVING REACTIVE ENDGROUPS

Brian J. Jensen, Williamsburg, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Feb. 14, 1995, Ser. No. 388,090
The portion of the term of this patent subsequent to Feb. 14, 2015, has been disclaimed.
Int. Cl.[6] C08G *69/26;73/10*
U.S. Cl. 528—353 **14 Claims**

1. A polyimide copolymer prepared by reacting a mixture of 3,4'-oxydianiline (ODA) and 1,3-bis(3-aminophenoxy)benzene (APB) with 3,3',4,4'-biphenylcarboxylic dianhydride (BPDA), and terminating the reaction with an effective amount of a reactive endcapper.

5,644,023

PROCESS FOR THE MANUFACTURE OF COPOLYMERS OF ETHYLENE AND CARBON MONOXIDE

Nicholas Joseph Conti, Flemington; Frederick John Karol, Belle Mead, and George Norris Foster, Bloomsbury, all of N.J., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Filed Apr. 21, 1992, Ser. No. 871,652
Int. Cl.[6] C08G *67/02;* **B01J** *31/18*
U.S. Cl. 528—392 **14 Claims**

1. A process for the preparation of copolymers of one or more alpha-olefins and carbon monoxide comprising:

(a) introducing a mixture comprising one or more alpha-olefins, carbon monoxide, and, optionally, one or more dienes into a reaction zone under polymerization conditions;

(b) contacting the mixture with a catalyst prepared by a process comprising:

(i) reacting a transition metal in the zero valence state adsorbed on a support with an oxidant to form a supported compound wherein the metal has a positive valence;

(ii) ligating the supported compound with a ligand; and, optionally,

(c) introducing a reoxidant into the reaction zone to maintain the positive valence of the metal.

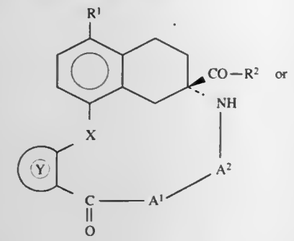
5,644,024

TETRAHYDRONAPHTHALENE DERIVATIVES

Christine Abrecht, Lengnau; Klaus Müller, Münchenstein; Daniel Obrecht, Basle, all of Switzerland, and Arnold Trzeciak, Schopfheim, Germany, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

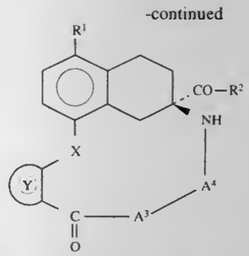
Filed Aug. 17, 1994, Ser. No. 292,128
Claims priority, application Switzerland, Aug. 27, 1993, 2552/93
Int. Cl.[6] C07K *7/54;4/00;* **C07D** *285/00*
U.S. Cl. 530—317 **24 Claims**

1. A compound of the formula:



la

-continued



Ib

wherein

R^1 is hydrogen, bromine, cyano, formyl, hydroxy, lower alkyl, lower alkenyl, lower alkynyl, lower alkoxy, aryloxy, lower aralkoxy or aryl;

R^2 is an amino acid residue or a chain of 2 to 20 amino acid residues derived from a biologically active peptide or protein, wherein the side-chain(s) of said amino acid residue(s) is/are protected or unprotected and wherein the acid group of the C-terminal amino acid is the free acid, is protected, or is in the form of an amide

A^1, A^2, A^3 and A^4 each are residues of α-amino acids, wherein A^1 or A^2 are in the L configuration and A^3 or A^4 are in the D configuration when the α-C atom of said α-amino acid residue is asymmetric;

X is oxygen or sulphur; and

Y and the two C atoms together are an aromatic ring selected from the group consisting of benzene, furan, thiophene, pyridine or pyrimidine, wherein said aromatic ring is substituted or unsubstituted;

and the salts thereof.

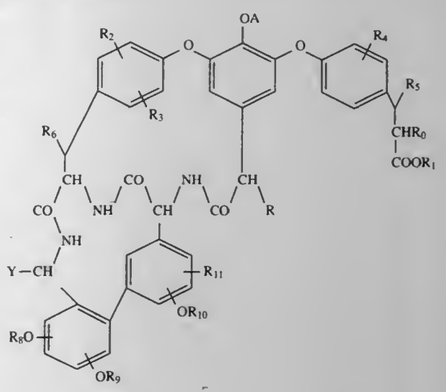
5,644,025

TETRAPEPTIDES DERIVING FROM DALBAHEPTIDE ANTIBIOTICS

Adriano Malabarba, Binasco, and Romeo Ciabatti, Novate Milanese, both of Italy, assignors to Gruppo Lepetit SPA, Gerenzano, Italy

Continuation of Ser. No. 70,472, Jun. 3, 1993, abandoned. This application Feb. 17, 1995, Ser. No. 391,378
Claims priority, application European Pat. Off., Dec. 10, 1990, 90123672
Int. Cl.[6] C07K *5/12;7/64*
U.S. Cl. 530—317 **7 Claims**

1. A tetrapeptide which is represented by the following general formula, in which



R and R_0 each independently represent amino or a protected amino group;

R_1 is hydrogen or a protecting group of the carboxylic function;

A represents hydrogen or a protecting group of the phenolic hydroxy function;

R_2, R_3 and R_4 each independently represent hydrogen or halogen and optionally are in the ortho position with respect to the ether bond;

R_5 and R_6, each independently, represent hydrogen, or a group OR_7 wherein R_7 is hydrogen or a protecting group of the benzylic hydroxy function;

the groups OR_8 and OR_9, are optionally respectively in the para and ortho position with respect to the bond connecting the two phenyl rings and the radicals R_8 and R_9 each independently represents hydrogen or a protecting group of the phenolic hydroxy function;

the group OR_{10} is, optionally, in the position ortho with respect to the bond connecting the two phenyl rings and the radical R_{10} represents hydrogen or a protecting group of the phenolic hydroxy function;

the group R_{11} is, optionally, in the position meta with respect to the bond connecting the two phenyl rings and represents hydrogen or halogen;

Y represents a carboxylic group or a functional derivative thereof;

or its salts with acids and bases as well as its inner salts.

5,644,026

EPITAXIN, A CELL MOTILITY FACTOR

Yu Yamaguchi, and Motoyuki Shimonaka, both of San Diego, Calif., assignors to La Jolla Cancer Research Foundation, Ja Jolla, Calif.

Filed May 3, 1994, Ser. No. 237,280

Int. Cl.[6] C07K *14/00*

U.S. Cl. 530—326 **1 Claim**

1. A substantially purified polypeptide having epitaxin activity, said polypeptide having an apparent molecular mass of about 36 kiloDalton and comprising an N-terminal amino acid sequence as shown in FIG. 7 (SEQ ID NO:1).

5,644,027

Patent Not Issued For This Number

5,644,028

PROCESS FOR PRODUCING PEPTIDE DERIVATIVES AND SALTS THEREFOR

Tsutomu Mimoto; Sumitsugu Kisanuki; Osamu Takahashi, all of Tokyo, and Yoshiaki Kiso, Ibaraki, all of Japan, assignors to Japan Energy Corporation, Japan

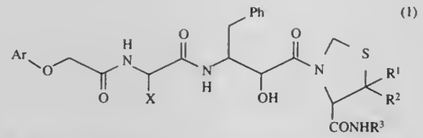
Continuation-in-part of Ser. No. 60,535, May 13, 1993, abandoned. This application Dec. 28, 1994, Ser. No. 364,707

Claims priority, application Japan, May 13, 1992, 4-192653; May 13, 1992, 4-192654; May 25, 1992, 4-157459; Oct. 30, 1992, 4-315640; Nov. 9, 1992, 4-323599

Int. Cl.[6] C07K *1/02;1/08;1/10;5/083*

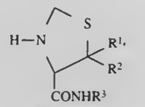
U.S. Cl. 530—331 **7 Claims**

1. A process for producing peptide derivatives represented by formula (1) and salts thereof:



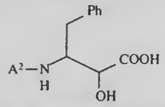
(1)

said process comprising Step E: a condensation reaction of an amino amide represented by formula (9):



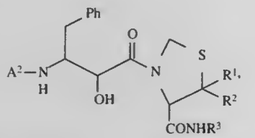
(9)

with a protected amino acid represented by formula (10):



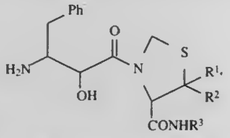
(10)

using a carbodiimide-additive method as a condensation method of said Step E which gives a protected peptide represented by formula (11):



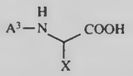
(11)

Step F: deprotection of said protected peptide of formula (11) which gives a peptide represented by formula (4):



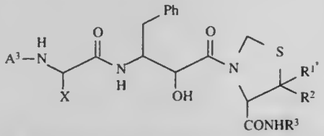
(4)

Step B: a condensation reaction of said peptide of formula (4) with a protected amino acid represented by formula (5):



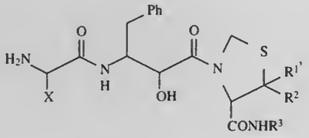
(5)

which gives a protected peptide of formula (12):



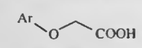
(12)

Step G: deprotection of said protected peptide of formula (12) which gives a peptide represented by formula (2):



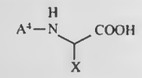
(2)

and Step A: a condensation reaction of said peptide of formula (2) with a carboxylic acid represented by formula (3):



(3)

which gives said peptide derivative of formula (1); or a process comprising said Step E using a carbodiimide-additive method, said Step F, and Step B': a condensation reaction of said peptide of formula (4) with a N-acylated amino acid of formula (5'):



(5')

which also gives said peptide of formula (1) wherein R^1 and R^2 each represents a lower alkyl group or a hydrogen atom, R^3 represents a lower alkyl group, X represents methylthiomethyl, methanesulfonylmethyl, or carbamoylmethyl, Ar represents a 1-naphthyl group or 5-isoquinolyl group, A^2 and A^3 each represents an amino protective group, and A^4 represents an acyl group derived from the carboxylic acid represented by formula (3).

5,644,029

REAGENTS FOR PEPTIDE COUPLINGS

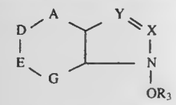
Louis A. Carpino, Amherst, Mass., assignor to Research Corporation Technologies, Inc., Tucson, Ariz.

Division of Ser. No. 127,675, Sep. 28, 1993, Pat. No. 5,580,981, which is a continuation-in-part of Ser. No. 952,025, Sep. 28, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 468,300

Int. Cl.[6] C07K *5/00*

U.S. Cl. 530—333 **124 Claims**

1. A process for preparing a peptide bond comprising reacting an amino compound with a carboxylic acid in the presence of an effective amount of a compound having the formula:



or N-oxides thereof or salts thereof;

wherein said amino compound is an amino acid or peptide and said carboxylic acid is a N-terminal amino protected amino acid or a N-terminal amino protected peptide;

D is CR_{16} or N;

E is CR_{17} or N;

A is CR_{15} or N;

G is CR_{18} or N;

whereby one and only one of A, E, D, or G is N;

R_{15}, R_{16}, R_{17}, and R_{18} are independently hydrogen, lower alkyl or an electron-donating group;

X is CR_7 or N;

Y is N or CR_5;

R_7 and R_5 are independently hydrogen or lower alkyl;

R_3 is SO_2R_{14} or a positively charged electron-withdrawing group, and

R_{14} is lower alkyl, aryl or aryl loweralkyl.

5,644,030

GENE AND METHOD FOR PRODUCTION OF AN IGA BINDING PROTEIN

Ervin Faulmann, Holland, Ohio, assignor to Medical College of Ohio, Toledo, Ohio

Division of Ser. No. 108,828, Aug. 18, 1993, Pat. No. 5,413,918, which is a continuation of Ser. No. 677,209, Mar. 29, 1991, abandoned. This application Apr. 27, 1995, Ser. No. 430,024

Int. Cl.[6] C07K *14/315*

U.S. Cl. 530—350 **10 Claims**

1. A recombinant polypeptide produced by the process comprising the steps of transforming an appropriate host with a polynucleotide sequence encoding a polypeptide which binds with IgA, wherein said polypeptide is an approximately 40 to 45 kDa protein expressed by a Group B streptococcus, said process further comprising isolating and purifying said recombinant polypeptide expressed by said transformed host.

5,644,031

DELTA-LIKE GENE EXPRESSED IN NEUROENDOCRINE TUMORS

Jorge Laborda, Silver Spring, Md., assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Division of Ser. No. 989,537, Dec. 11, 1992, abandoned. This application Jun. 1, 1995, Ser. No. 457,135

Int. Cl.[6] C07K *1/00;14/00;17/00;* **G01N** *33/48*

U.S. Cl. 530—350 **1 Claim**

1. An isolated Dlk polypeptide consisting essentially of the amino acid sequence shown in FIG. 1B (SEQ ID NO:2).

5,644,032

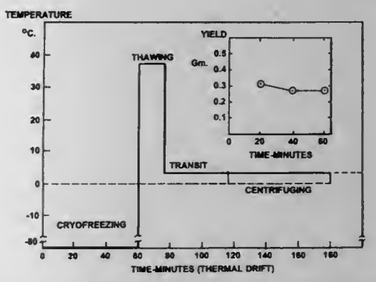
PROCESS FOR PRODUCING FIBRINOGEN CONCENTRATES

John F. Lontz, Wilmington, Del., assignor to Fibrin Corporation, Wilmington, Del.

Continuation of Ser. No. 221,183, Mar. 31, 1994, abandoned, which is a continuation-in-part of Ser. No. 44,585, Apr. 8, 1993, Pat. No. 5,420,250, which is a continuation-in-part of Ser. No. 855,752, Mar. 23, 1992, abandoned, which is a continuation-in-part of Ser. No. 759,698, Sep. 9, 1991, abandoned, which is a continuation-in-part of Ser. No. 562,839, Aug. 6, 1990, abandoned. This application Feb. 21, 1995, Ser. No. 391,277

Int. Cl.[6] C07K *1/14;1/30;14/75*

U.S. Cl. 530—382 **18 Claims**



1. A process for producing a fibrinogen concentrate from mammalian plasma comprising:

a. freezing said plasma to a temperature of at most about −20° C. for less than four hours in a container having a surface to volume ratio of about 4.38:1 to about 1.65:1 reciprocal centimeters, thereby producing frozen plasma;

b. thawing said frozen plasma at a temperature of at least about 4° C. for a time sufficient to attain from about 5% to about 95% residual icing, thereby producing thawed plasma; and

c. centrifuging said thawed plasma to produce a supernatant and a fibrinogen concentrate having about 6% to about 44% solids content by weight.

5,644,033

MONOCLONAL ANTIBODIES THAT DEFINE A UNIQUE ANTIGEN OF HUMAN B CELL ANTIGEN RECEPTOR COMPLEX AND METHODS OF USING SAME FOR DIAGNOSIS AND TREATMENT

Ben K. Seon, Williamsville, N.Y., assignor to Health Research, Inc., Buffalo, N.Y.

Filed Dec. 22, 1992, Ser. No. 994,946

Int. Cl.[6] C07K *16/28*

U.S. Cl. 530—388.22 **12 Claims**

1. A Monoclonal antibody, from a series designated SN8, which binds to extracellular epitopes of a unique heterodimeric glycoprotein consisting of the human mb-1 protein and the human B29 protien and, which specifically binds to representatives from each of the leukemia lymphoma cell specimens selected from the group consisting of B prolymphocytic leukemia cells, B non-Hodgkin's lymphoma cells, B chronic lymphocytic leukemia cells, B hairy cell leukemia cells, B acute lymphoblastic leukemia cells, and which binds to human normal B cells.

12. A method for producing the monoclonal antibodies of claim I comprising the steps of:

(a) preparing cell membranes from B prolymphocytic leukemia cells and cell membrane antigens by solubilizing by deoxycholate treatment to obtain solubilized antigens;

(b) fractionating the solubilized antigens by affinity chromatography on serially connected columns of *Lens culinaris* lectin (LcH) and *Ricinis communis* lectin (RCA);

(c) individually eluting the LcH-bound and RCA-bound glycoconjugates which result from step (b);

(d) combining the individually eluted glycoconjugates of step (c);

(e) submitting the combined glycoconjugates of step (d) to passive immunoaffinity chromatography;

(f) pooling and concentrating materials in passthrough fractions obtained from step (e) to obtain an isolated antigen preparation;

(g) immunizing mice or rats with the isolated antigen preparation obtained from step (f);

(h) obtaining immune spleen cells from said mice or rats after step (g) and fusing the immune spleen cells with an appropriate myeloma cell line to obtain hybridomas; and

(i) screening antibodies from the hybridomas to obtain desired hybridomas which produce an SN8 series antibody and cloning the desired hybridomas.

5,644,034

TUMOUR NECROSIS FACTOR BINDING LIGANDS

Deborah Ann Rathjen, New South Wales, Australia, and Roger Aston, Gloucester, Great Britain, assignors to Peptide Technology Ltd., Australia

Continuation-in-part of Ser. No. 828,956, Feb. 18, 1992, abandoned. This application Nov. 23, 1994, Ser. No. 344,133

Claims priority, application Australia, Aug. 7, 1989, PJ5662; Nov. 24, 1989, PJ7576; WIPO, Aug. 7, 1990, PCT/AU90/00337

Int. Cl.[6] C07K *16/24;* **C12N** *5/12*

U.S. Cl. 530—388.23 **7 Claims**

1. An antibody which specifically binds to human TNF-α, the antibody being characterized in that when it binds to TNF-α, the induction of endothelial procoagulant activity of the TNF-α is inhibited; the induction of tumour fibrin deposition and tumour regression activities of the TNF-α are enhanced; and the cytotoxicity and receptor binding activities of the TNF-α are unaffected.

5,644,035

METHOD FOR PURIFYING SECRETED MAC-2-BINDING GLYCOPROTEIN

Kirston E. Koths, El Cerrito; Robert F. Halenbeck, San Rafael; Eric W. Taylor, Berkeley; Alice M. Wang, Lafayette, and Clayton L. Casipit, Hayward, all of Calif., assignors to Chiron Corporation, Emeryville, Calif.

Division of Ser. No. 316,714, Sep. 29, 1994, which is a continuation of Ser. No. 961,404, Oct. 15, 1992, abandoned, which is a continuation-in-part of Ser. No. 777,121, Oct. 16, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 477,674

Int. Cl.[6] C07K *1/00;* **B01D** *15/08*

U.S. Cl. 530—395 **2 Claims**

1. A method of purifying a glycoprotein complex from solution having an apparent native molecular weight of over 1200 kilodaltons (kD) as determined by SDS-PAGE and a sedimentation value of approximately 25S and that interferes with *Phaseolus vulgaris* hemagglutinin (PHA)-dependent activation of lymphocytes, said method comprising the steps of:

a) contacting said solution with anion exchange chromatographic material for a time sufficient for said glycoprotein complex to bind to said anion exchange chromatographic material;

b) forming a first eluate containing said glycoprotein complex by eluting said complex from said anion exchange chromatographic material; and

c) forming a second eluate by contacting said first eluate with hydrophobic chromatographic material that binds said glycoprotein complex and eluting said glycoprotein complex from said hydrophobic chromatographic material.

5,644,036

PURIFIED IMMUNOGLOBULIN

Paul Ian Nicholas Ramage, Reinach, Switzerland, and Geoffrey Allen, Beckenham, England, assignors to Burroughs Wellcome Company, Research Triangle Park, N.C.

Continuation of Ser. No. 304,440, Sep. 12, 1994, which is a continuation of Ser. No. 985,272, Dec. 3, 1992, abandoned, which is a continuation of Ser. No. 975,967, Nov. 13, 1992, abandoned, which is a continuation of Ser. No. 777,731, Oct. 16, 1991. This application Oct. 7, 1994, Ser. No. 319,598

Claims priority, application United Kingdom, Oct. 17, 1990, 9022547-5

Int. Cl.[6] C07K *1/18;1/22;1/36*

U.S. Cl. 530—412 **6 Claims**

1. A process for obtaining a purified IgG antibody preparation which comprises:

(a) culturing a recombinant mammalian cell line capable of producing the antibody in an aqueous culture medium under antibody producing conditions;

(b) applying the antibody-containing aqueous medium to a Protein A column or Protein G column so as to absorb the antibody onto the column and then eluting the antibody with an acidic solution to produce an acidic eluate;

(c) applying the acidic eluate to an ion exchange column of charged particles previously equilibrated with a neutral buffer so as to absorb the antibody and then eluting the antibody with a neutral aqueous solution of counter-charged ions; and

(d) applying the aqueous eluate to a size exclusion column of porous particles so as to separate aggregates and other non-antibody molecules from the desired antibody and to obtain the desired antibody in selected fractions eluted from the column.

5,644,037

METHOD FOR THE PREPARATION OF POLYHEDRAL PARTICLES OF A RARE EARTH AMMONIUM DOUBLE OXALATE

Masami Kaneyoshi; Isamu Fujioka, and Shigeru Sakai, all of Fukui-ken, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed May 2, 1995, Ser. No. 433,925

Claims priority, application Japan, May 18, 1994, 6-103747

Int. Cl.[6] C07F *5/00;* **C04B** *35/58;* **C01F** *17/00;* **C09K** *11/08*

U.S. Cl. 534—16 **7 Claims**

1. A method for the preparation of polyhedral particles of a rare earth ammonium double oxalate represented by the general formula $NH_4R(C_2O_4)_2 \cdot nH_2O$, in which R is an atom of a rare earth element selected from the group consisting of yttrium and the elements having atomic numbers in the range from 57 to 71 or a combination thereof and n is a positive number, which consists essentially of the steps of:

(a) dissolving, in water, (1) ammonium oxalate or (2) two or three compounds selected from the group consisting of ammonium oxalate, oxalic acid and ammonia to prepare a first aqueous solution;

(b) dissolving a water-soluble salt of a rare earth element in water to prepare a second aqueous solution;

(c) mixing the first and second aqueous solutions so as to form an aqueous slurry of precipitates;

(d) keeping the aqueous slurry containing the precipitates at a temperature in the range from 30° C. to 80° C. to effect aging of the precipitates; and

(e) separating the precipitates from the aqueous medium, wherein inequalities:

$a+b \geqq 2d$;

$2a-c \geqq 0.01f$;

$2b+c \geqq 2d$; and

$2b+c \geqq 2a-c$,

are satisfied, in which a is the amount of the oxalic acid in moles used in the preparation of the first aqueous solution, b is the amount of the ammonium oxalate in moles used in the preparation of the first aqueous solution, c is the amount of the ammonia in moles used in the preparation of the first aqueous solution, d is the amount of the salt of the rare earth element in moles used in the preparation of the first aqueous solution and f is the total volume of the first and second aqueous solutions in liters.

5,644,038

QUINONE DIAZO COMPOUND CONTAINING NON-METALLIC ATOM

Ari Aviram, Croton-on-Hudson; William Ross Brunsvold, Poughkeepsie, both of N.Y.; Daniel Bucca, Alexandria, Va.; Willard Earl Conley, Jr., Cornwall, and David Earle Seeger, Congers, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 314,975, Sep. 29, 1994, Pat. No. 5,552,256. This application Mar. 15, 1996, Ser. No. 616,599

Int. Cl.[6] G03F *7/022*

U.S. Cl. 534—557 **11 Claims**

1. A naphthoquinone diazo compound which contains directly bonded to the naphthalene of said compound at least one non-metallic atom selected from the group consisting of iodine, germanium, arsenic, antimony and mixtures thereof, wherein when iodine is said non-metallic atom it is bonded in at least the 4-position.

5,644,039

MIXTURES OF BLUE DISPERSE AZO DYESTUFFS

Rainer Hamprecht, Odenthal, and Heinz-Dietrich Jordan, Leverkusen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 13, 1995, Ser. No. 542,761

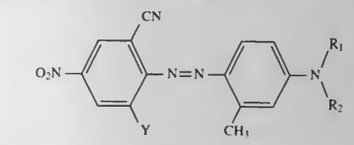
Claims priority, application Germany, Oct. 20, 1994, 44 37 551.4

Int. Cl.[6] C09B *67/22;67/38;29/08;* **D06P** *1/18*

U.S. Cl. 534—573 **10 Claims**

1. Mixture of disperse azo dyestuffs, which comprises

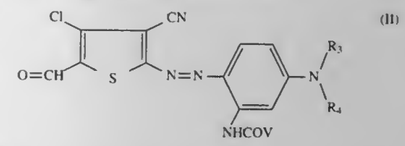
a) or more one dyestuffs of the formula (I)



(I)

and

b) or more one dyestuffs of the formula (II)



(II)

wherein

Y denotes NO_2 or CN,

V denotes H, alkyl, alkoxyalkyl, aryloxyalkyl, aryl or alkoxy,

R_1 denotes alkyl, aralkyl, alkoxyalkyl or alkenyl,

R_2 denotes alkyl, aralkyl, alkoxyalkyl, alkenyl, chloroalkyl, aryloxyalkyl or alkoxycarbonylalkyl,

R_3 denotes alkyl, aralkyl, alkoxyalkyl, hydroxyalkyl, aryloxyalkyl, alkenyl, acyloxyalkyl or alkoxycarbonylalkyl and

R_4 denotes alkyl, aralkyl, alkoxyalkyl, hydroxyalkyl, aryloxyalkyl, alkenyl, acyloxyalkyl, alkoxycarbonylalkyl or C_2–C_4-chloroalkyl.

5,644,040

AZO DYES HAVING TWO MONOAZO-CHROMOPHORES BOUND TO A HALOTRIAZINYL RADICAL PROCESSES FOR THEIR PREPARATION AND THEIR USE

Rudolf Hurter, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Tarrytown, N.Y.

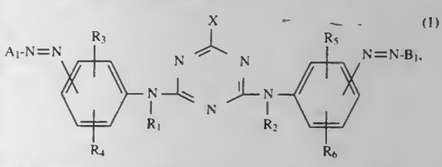
Filed Nov. 21, 1995, Ser. No. 560,265

Claims priority, application Switzerland, Dec. 2, 1994, 3651/94

Int. Cl.[6] C09B *62/09;* **D06P** *1/382*

U.S. Cl. 534—635 **16 Claims**

1. An azo dye of the formula



(I)

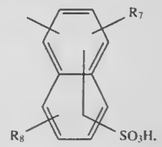
in which

R_1 and R_2 independently of one another are hydrogen or C_1–C_4alkyl,

R_3, R_4, R_5 and R_6 independently of one another are hydrogen, C_1–C_4alkyl, C_1–C_4alkoxy, C_1–C_4alkanoylamino, ureido or halogen,

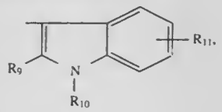
X is chlorine or fluorine,

B_1 is a phenyl naphthyl or heterocyclic radical, and
A_1 is a radical of the formula



(2)

in which
R_7 is hydrogen, amino, N-mono- or N,N-di-C_1–C_4alkylamino or phenylamino which is unsubstituted or substituted in the phenyl ring by C_1–C_4alkyl, C_1–C_4alkoxy, C_2–C_4alkanoylamino, ureido, halogen or sulfo and
R_8 is hydrogen or hydroxyl,
or A_1 is a radical of the formula



(3)

in which
R_9 is hydrogen, C_1–C_8alkyl or phenyl which is unsubstituted or substituted by C_1–C_4alkyl, C_1–C_4alkoxy, C_1–C_4alkanoylamino, ureido, halogen or sulfo,
R_{10} is hydrogen or C_1–C_8alkyl and
R_{11} is hydrogen, C_1–C_4alkyl, C_1–C_4alkoxy, C_2–C_4alkanoylamino, ureido, halogen or sulfo, and
the azo dye of the formula (1) contains at least one and not more than two sulfo groups, with the proviso that the radical of the formula (2) is not 6-sulfonaphth-2-yl.

5,644,041

ALKYL GLYCOSIDE ITS USE FOR CLEANING PURPOSES, AND CLEANING COMPOSITION

Ingegärd Johansson, Göteborg, Sweden, assignor to Akzo Nobel nv, Arhem, Netherlands

PCT No. PCT/SE94/00198, § 371 Date Oct. 18, 1995, § 102(e) Date Oct. 18, 1995, PCT Pub. No. WO94/21769, PCT Pub. Date Sep. 29, 1994
PCT Filed Mar. 10, 1994, Ser. No. 507,439
Claims priority, application Sweden, Mar. 23, 1993, 9300954
Int. Cl.[6] C07G *3/00;* C07H *15/04;* C11D *1/00*
U.S. Cl. 536—4.1 **12 Claims**

11. A process for preparing an alkyl glycoside of formula
$RCH_2O(G)_xH$ (I)
wherein R is an alkyl group having a total of 8–12 carbon atoms containing 2–4 groups of formula —CH(CH_3)— in its carbon chain, G is a monosaccharide residue and x is 1–4, which comprises reacting
(i) an alcohol of the formula
RCH_2OH (II)
wherein R is as indicated above, with
(ii) a monosaccharide wherein said reaction is conducted in the presence of an acid catalyst and the ratio of alcohol to monosaccharide is in the range of from 2:1 to 80:1.

5,644,042

PROCESS FOR PRODUCTION OF ALDOBIONIC ACID AMIDE

Klaus Guenther Gerling, Laatzen; Claudia Schreer, Schellerten; Petra Schwarz, Hanover, and Kornelia Wendler, Sehnde, all of Germany, assignors to Solvay Pharma Deutschland GmbH, Hanover, Germany

Filed Dec. 21, 1995, Ser. No. 576,700
Claims priority, application Germany, Dec. 24, 1994, 44 46 632.3
Int. Cl.[6] C07H *15/04;15/18;1/00*
U.S. Cl. 536—17.5 **14 Claims**

1. A process for the preparation of aldobionamide, wherein organic solvents are circulated in a closed solvent cycle, said process comprising the steps of
a) mixing an aldobionic acid or an aldobionic acid solution with an organic solvent capable of forming an azeotrope with water,
b) removing water from the aldobionic acid by azeotropic distillation to obtain a soulution of aldobionolactone in said organic solvent and a water-containing azeotropic distillate;
c) reacting the aldobionolactone solution from step b) with an amine to obtain a solution or suspension of the aldobionamide in said organic solvent;
d) precipitating the aldobionamide by adding a further orqanic solvent to the solution or suspension from step c) and separating the precipitate to leave an orqanic solvent mixture;
e) combining the water-containing azeotropic distillate from step b) and the solvent mixture from step d),
f) separating the combined mixture from step e) into water and orqanic solvent components, and
g) feeding separated organic solvent components from step f) back into step a) or d).

5,644,043

2',3'-DIDEOXY-2',2'-DIFLUORONUCLEOSIDES AND INTERMEDIATES

Larry W. Hertel, and Julian S. Kroin, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 964,121, Oct. 21, 1992, abandoned, which is a continuation of Ser. No. 394,382, Aug. 15, 1989, abandoned, which is a continuation-in-part of Ser. No. 295,321, Jan. 11, 1989, abandoned, which is a continuation-in-part of Ser. No. 156,116, Feb. 16, 1988, abandoned. This application Dec. 27, 1993, Ser. No. 173,256
Int. Cl.[6] C07H *15/00;19/00*
U.S. Cl. 536—18.4 **5 Claims**

1. A compound selected from the group consisting of
a) β-1'-(4-amino-2-oxo1H-pyrimidin-1-yl)-2',3'-dideoxy-2',2'-difluororibose, or a pharmaceutically acceptable salt thereof,
b) β-1'-(2,6-diamino-9H-purin-9-yl)-2',3'-dideoxy- 2',2'-difluororibose, or a pharmaceutically acceptable salt thereof,
c) β-1'-(2-amino-6-oxo-9H-purin-9-yl)-2',3'-dideoxy-2',2'-fluororibose, or a pharmaceutically acceptable salt thereof,
d) β-1'-(5-methyl-2,4-dioxo-1H,3H-pyrimidin-1-yl)-3'-azido-2',3'-dideoxy-2',2'-difluororibose, or a pharmaceutically acceptable salt thereof,
e) β-1'-(5-methyl-2,4-dioxo-1H,3H-pyrimidin-1-yl)- 2',3'-dideoxy-2',2'-difluororibose, or a pharmaceutically acceptable salt thereof,
f) α and β-1'-(6-amino-9H-purin-9-yl)-2',3'-dideoxy-2',2'-difluororibose, or a pharmaceutically acceptable salt thereof,
g) α-1'-(6-amino-9H-purin-9-yl)-3'-azido-2',3'-dideoxy- 2',2'-difluororibose, or a pharmaceutically acceptable salt thereof,
h) β-1'-(6-amino-9H-purin-9-yl)-3'-azido-2',3'-dideoxy-2',2'-difluororibose, or a pharmaceutically acceptable salt thereof,
i) α and β-1'-(4-amino-2-oxo-1H-pyrimidin-1-yl)-3'-azido-2',3'-dideoxy-2',2'-difluororibose, or a pharmaceutically acceptable salt thereof.

5,644,044

PROCESS FOR THE PREPARATION OF α-D-GLUCOPYRANOSIDO-1,6-MANNITOL AND -SORBITOL FROM α-D-GLUCOPYRANOSIDO-1, 6-FRUCTOSE

Gerhard Darsow, Krefeld, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Apr. 28, 1995, Ser. No. 430,996
Claims priority, application Germany, May 6, 1994, 44 16 115.8
The portion of the term of this patent subsequent to May 1, 2015, has been disclaimed.
Int. Cl.[6] C07C *29/132;31/18*
U.S. Cl. 536—18.5 **12 Claims**

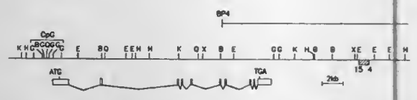
1. A process for the preparation of mixtures of α-D-glucopyranosido-1,6-mannitol and α-D-glucopyranosido-1,6-sorbitol by catalytic hydrogenation of α-D-glucopyranosido-1,6-fructose in aqueous solution with hydrogen at elevated pressure and elevated temperature, characterized in that the hydrogenation is carried out continuously at a hydrogen pressure of 100 to 400 bar, and temperatures of 40° to 80° C., in the fixed-bed process in a reaction zone over support-free shaped bodies serving as hydrogenation catalysts having a compressive strength of 20 to 250N, and an internal surface area of 10 to 80 m^2/g and comprising an alloy of at least three-metals, at least one of which is selected from the group consisting of iron, cobalt and nickel and at least one of which is selected from the group consisting of chromium, molybdenum and tungsten.

5,644,045

X-LINKED ADRENOLEUKODYSTROPHY GENE AND CORRESPONDING PROTEIN

Jean-Louis Mandel, Schiltigheim; Patrick Aubourg, Sceaux; Jean Mosser, and Claude Sarde, both of Strasbourg, all of France, assignors to Institut National de la Sante et de la Recherche Medicale, Paris Cedex, France

Filed Oct. 15, 1993, Ser. No. 136,277
Int. Cl.[6] C07H *21/04*
U.S. Cl. 536—23.5 **5 Claims**



1. An isolated nucleotide sequence selected from the group consisting of a cDNA having the sequence represented in FIG. 2 (SEQ ID NO:1), an isolated genomic DNA sequence comprising said cDNA, and RNA encoding the protein of SEQ ID NO:2, said sequence being in unmutated form and which, in mutated forms, is responsible for adrenoleukodystrophy or adrenomyelopathy.

5,644,046

CLONING OF A GENE ENCODING FOR THE GROWTH HORMONE RELEASING HORMONE RECEPTOR

Michael Oliver Thorner, North Garden; Bruce David Gaylinn, Trevilians, both of Va.; Jeffrey K. Harrison, Gainesville, Fla.; Kevin R. Lynch, Charlottesville, Va., and John Ronald Zysk, Frenchtown, N.J., assignors to The University of Virginia Patent Foundation, Charlottesville, Va.

Continuation-in-part of Ser. No. 947,672, Sep. 18, 1992, which is a continuation-in-part of Ser. No. 902,826, Jun. 23, 1992. This application May 1, 1995, Ser. No. 432,043
Int. Cl.[6] C12N *15/12*
U.S. Cl. 536—23.5 **8 Claims**

1. A nucleic acid molecule encoding isolated, purified human growth hormone releasing hormone receptor having a molecular weight determined by SDS-PAGE under reducing conditions of about 55 kDa and capable of specifically binding GHRH, prepared by a homology cloning process comprising the steps of:
(a) screening an acromegalic pituitary cDNA library with a probe comprising rat secretin receptor DNA under low stringency conditions of about 42° C. to obtain clones that hybridize to said probe;
(b) sequencing said clones to obtain clones encoding partial cDNA sequences for the growth hormone releasing hormone receptor;
(c) preparing a 50 bp HAP oligonucleotide probe from said partial cDNA sequences for the growth hormone releasing hormone receptor; and
(d) screening an acromegalic pituitary cDNA library with said 50 bp HAP oligonucleotide probe under high stringency conditions of about 65° C. to obtain a nucleic acid molecule encoding the growth hormone releasing hormone receptor.

5,644,047

COMPOSITIONS FOR DIAGNOSING ROCHALIMAEA HENSELAE AND ROCHALIMAEA QUINTANA INFECTION

Burt E. Anderson, and Russell L. Regnery, both of Tucker, Ga., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 822,539, Jan. 17, 1992, Pat. No. 5,399,485. This application May 18, 1994, Ser. No. 245,294
The portion of the term of this patent subsequent to Sep. 16, 2014, has been disclaimed.
Int. Cl.[6] C07H *21/02;21/04*
U.S. Cl. 536—23.7 **10 Claims**

1. An isolated nucleic acid specific for *Rochalimaea henselae*, consisting of the nucleotides in the nucleotide sequence defined in the Sequence Listing as SEQ ID NO:5.

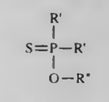
5,644,048

PROCESS FOR PREPARING PHOSPHOROTHIOATE OLIGONUCLEOTIDES

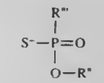
Eric K. Yau, Kirkland, Wash., assignor to ISIS Pharmaceuticals, Inc., Carlsbad, Calif.

Division of Ser. No. 818,928, Jan. 10, 1992, Pat. No. 5,210,264. This application Dec. 18, 1992, Ser. No. 993,115
Int. Cl.[6] C07H *21/00*
U.S. Cl. 536—25.3 **31 Claims**

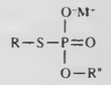
1. A process for preparing phosphorothioate oligonucleotides, comprising the steps of:
(a) reacting $PSCl_3$ with an alkyl alcohol in the presence of base to form a phosphorus-containing alkoxy intermediate, said alkoxy intermediate having an acidic proton located on a carbon atom in a β-position relative to said phosphorus atom, said alkoxy intermediate having the structure:



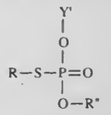
where R' is Cl or alkoxy, and R" is alkyl;
(b) hydrolyzing said alkoxy intermediate to form a hydrolyzed alkoxy intermediate of the structure:



where R" is as above, and R"' is OH or alkoxy;
(c) reacting said hydrolyzed alkoxy intermediate with an alkaryl halide or an aryl halide to form a first reaction intermediate of the structure:



where:
R is an aryl or alkaryl group;
R" is as above; and
M is a cation;
(d) reacting said first reaction intermediate with a nucleoside having a 3'-hydroxyl moiety, a nucleotide having a 3'-hydroxyl moiety, or an oligonucleotide having a 3'-hydroxyl moiety in the presence of an activating agent to form a second reaction intermediate of the structure:



where R and R" are as above, and Y' is said nucleoside, nucleotide or oligonucleotide; and
(e) reacting said second reaction intermediate with a nucleoside having a 5'-hydroxyl moiety, a nucleotide having a 5'-hydroxyl moiety or an oligonucleotide having a 5'-hydroxyl moiety in the presence of an activating agent to form an ester linkage between an S-(alkaryl or aryl) alkyl phosphorothioate moiety of said second reaction intermediate and said 5'-hydroxyl moiety.

5,644,049
BIOMATERIAL COMPRISING HYALURONIC ACID AND DERIVATIVES THEREOF IN INTERPENETRATING POLYMER NETWORKS (IPN)

Paolo Giusti, Pisa, and Lanfranco Callegaro, Padua, both of Italy, assignors to M.U.R.S.T. Italian Ministry for Universities and Scientific and Technology Research, Rome, Italy

PCT No. PCT/EP93/01727, § 371 Date Feb. 23, 1995, § 102(e) Date Feb. 23, 1995, PCT Pub. No. WO94/01468, PCT Pub. Date Jan. 20, 1994
PCT Filed Jul. 5, 1993, Ser. No. 367,137
Claims priority, application Italy, Jul. 3, 1992, PD92A0121
Int. Cl.[6] C08B *37/08;* A61K *31/715*
U.S. Cl. 536—53 **19 Claims**

1. A biomaterial, comprising a non-chemically crosslinked interpenetrating polymer network, IPN, having a first component and a second component wherein said first component is a member selected from the group consisting of a hyaluronic acid ester and a salt of hyaluronic acid with an organic base, and said second component is a synthetic chemical polymer.

5,644,050
METHOD FOR MANUFACTURING LACTULOSE ANHYDRIDE

Seiichi Shimamura; Yoshitaka Tamura; Teruhiko Mizota; Itsuko Suzawa, and Nobuo Seki, all of Kanagawa, Japan, assignors to Morinaga Milk Industry Co., Ltd., Tokyo, Japan

PCT No. PCT/JP93/00841, § 371 Date Sep. 1, 1995, § 102(e) Date Sep. 1, 1995, PCT Pub. No. WO94/18213, PCT Pub. Date Aug. 18, 1994
PCT Filed Jun. 22, 1993, Ser. No. 500,858
Claims priority, application Japan, Feb. 2, 1993, 5-015736
Int. Cl.[6] C13K *13/00;* C07H *1/00*
U.S. Cl. 536—123.13 **2 Claims**

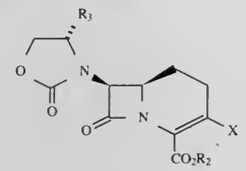
1. A method for manufacturing lactulose anhydride, which comprises drying lactulose trihydrate at a temperature within a range of from 45° to 75° C. and a degree of vacuum within a range of from 25 to 100 Torr to remove water of crystallization.

5,644,051
INTERMEDIATES FOR THE PREPARATION OF CARBACEPHEMS

Jack W. Fisher; Lowell D. Hatfield; Richard C. Hoying, and James E. Ray, all of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 837,173, Feb. 18, 1992, Pat. No. 5,521,307. This application May 18, 1995, Ser. No. 444,118
Int. Cl.[6] C07D *471/04;413/04;* C07B *43/04*
U.S. Cl. 540—205 **10 Claims**

1. A compound of the formula:



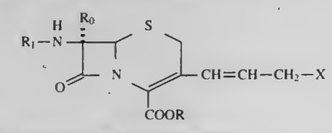
in which:
R_2 is a carboxy protecting group or hydrogen;
R_3 is selected from the group consisting of phenyl, C_1–C_4 alkylphenyl, halophenyl, C_1–C_4 alkoxyphenyl, naphthyl, thienyl, furyl, benzothienyl and benzofuryl; and
X is selected from the group consisting of hydroxyl, halo, C_1–C_6 alkyl, C_1–C_6 alkyl substituted with cyano, carboxy, halogen, amino, C_1–C_4 alkoxy, C_1–C_4-alkylthio, trifluoromethyl or trifluoromethylthio, C_1–C_4 alkoxy, C_1–C_4 alkylthio, trifluoromethyl, C_2–C_6 alkenyl, C_2–C_6 alkenyl substituted by one or more halogen, hydroxy, protected hydroxy, nitro or trihalomethyl groups, C_2–C_6 alkynyl, C_2–C_6 alkynyl substituted by one or more of halogen, hydroxy, protected hydroxy, nitro or trihalomethyl, phenyl, phenyl substituted with a and/or a', wherein a and a' independently are hydrogen, halogen, hydroxy, C_1–C_4 alkoxy, C_1–C_4 alkanoyloxy, C_1–C_4 alkyl, C_1–C_4 alkylthio, amino, mono- or di(C_1–C_4 alkyl)amino, C_1–C_4 alkanoylamino, C_1–C_4 alkylsulfonylamino, carboxy, carbamoyl, hydroxymethyl, aminomethyl, or carboxymethyl, C_1–C_6 alkyloxymethyl, phenyl-C_1–C_6 alkyloxymethyl, tri(C_1– C_6)alkylsilyloxymethyl, trifluoromethylsulfonyloxy, cyano and phenoxy.

5,644,052
PROCESS FOR THE PRODUCTION OF CEPHALOSPORINES AND NOVEL INTERMEDIATES IN THIS PROCESS

Johannes Ludescher, Breitenbach; Hubert Sturm, Innsbruck, and Josef Wieser, Kufstein, all of Austria, assignors to BIOCHEMIC Gesellschaft m.b.H., Austria

Continuation of Ser. No. 932,145, Aug. 19, 1992, abandoned. This application May 5, 1995, Ser. No. 437,084
Claims priority, application Austria, Aug. 21, 1991, A1636/91
Int. Cl.[6] C07D *501/20;498/08;* A61K *31/545*
U.S. Cl. 540—221 **15 Claims**

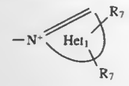
1. A process for preparing a 3'-substituted 7-amino-3-propenyl-4-cephem-carboxylic acid derivative of formula I



I

or an acid addition salt thereof, wherein

R_1 is hydrogen or a silyl protecting group;
R_0 is hydrogen or methoxy;
X is a group selected from
a) an unsaturated heterocyclic ammonium group of formula II



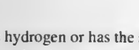
II

wherein Het_1 is a 5- or 6-membered heterocycle which may contains one or two additional heteroatoms selected from oxygen, nitrogen and sulphur atoms, R_7 is hydrogen, carboxy, carboxamido, a sulphonic acid radical, alkoxy, hydroxy, amino, alkylthio or mercapto, or both the R_7's are a saturated or unsaturated alkyl group, or form part of a saturated or unsaturated carbocyclic ring;
b) aliphatic ammonium group of formula III



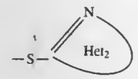
III

wherein R_2, R_3 and R_4 may be the same or different and are respectively alkyl, alkenyl, hydroxy lower alkyl, carbamoyl lower alkyl, amino lower alkyl, acylamino lower alkyl, cyano-lower alkyl, carboxy lower alkyl, or oxopropyl, or R_2 with R_3 and the nitrogen atom form a carbocyclic unsaturated ring which is alkyl-substituted by R_4 in which R_4 may additionally represent a 1,3- or 1,4-alkylene or vinylene bridge, or R_2 and R_3 and the nitrogen atom form a carbocyclic saturated ring, wherein R_4 is a vinylene bridge;
c) a saturated heterocyclic ammonium group which is 1-methylpyrrolidinium, pyrrolidinium, piperidinium, 1-methylpiperidinium, 1-methylpiperazinium, 1-methylpyrazolidinium, 1,5-diazabicyclo[3.3.0]octan-1-ium, 1,4-diazabicyclo[2.2.2]octan-1-ium, quinuclidinium, or 1-aza-5-methyl- 4,6-dioxabicyclo[3.3.1]nonan-1-ium;
d) a nitrogen base of formula IV



IV

wherein R_5 is hydrogen or has the significance of R_2 above;
e) a tetrazole, triazole, imidazole, pyrrolidine or pyrazole group; f) a heterocyclic thio radical of formula V

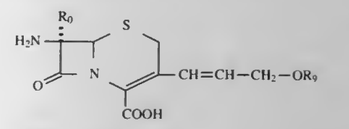


V

wherein Het_2 is
a) 1,5-dihydroxy-4-pyridon-2-yl;
b) 5-hydroxy-1-methyl-4-pyridon-2-yl;
c) 5-hydroxy-4-pyridon-2-yl;
d) 1-methyl-1H-tetrazol-5-yl,
e) 2-methyl-1,3-4-thiadiazol-5-yl;
f) 1-carboxymethyl-1H-tetrazol-5-yl;
g) 6-hydroxy-2-methyl-5-oxo-2H-1,2,4-triazin-3-yl;
h) 1,2,3-triazol-5-yl, or
i) 4-methyl-thiazol-5-yl;
g) a thiole radical of formula VI

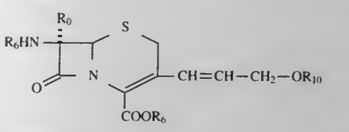
VI

in which R_8 is alkyl, alkenyl, carbamoyl, thiocarbamoyl or carbalkoxy radical or a thia-analog thereof; and
h) N_3; and
R is hydrogen, a silyl protecting group, or a negative charge, which comprises
i) silylating a compound of formula VII



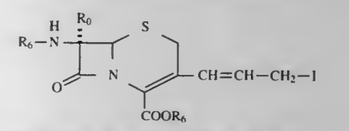
VII

where
R_0 is as defined above; and
R_9 is hydrogen, an alkyl radical, phenyl or naphthyl, or phenyl or naphthyl substituted with 1 to 3 groups selected from halogen, (C_{1-4})alkyl, and (C_{1-4})alkoxy, (C_{1-4})alkylcarbonyl, or benzoyl;
with a silylation agent to obtain a compound of formula VIII



VIII

where
R_0 is as defined above
R_6 is a silyl protecting group, and
R_{10} is a silyl protecting group or a group other than hydrogen as defined above for R_9.
ii) reacting a compound of formula VIII with an iodinating agent to obtain a compound of formula IX



IX

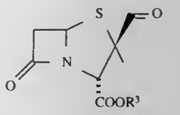
where R_0 and R_6 are as defined above, and
iii) reacting a compound of formula IX with a reactant form of the nucleophile radical X to obtain a compound of formula I in which R and R_1 are both silyl protecting groups and when required, splitting off the silyl protecting groups to obtain a compound of formula I in which R_1 is hydrogen and R is hydrogen or a negative charge.

5,644,053
PENAM DERIVATIVES

Christian Hubschwerlen, Durmenach, France; Hans Richter, Grenzach-Wyhlen, Germany, and Jean-Luc Specklin, Kembs, France, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 293,865, Aug. 22, 1994. This application Nov. 16, 1995, Ser. No. 559,104
Claims priority, application Switzerland, May 31, 1994, 1687/94; Aug. 24, 1996, 2511/93
Int. Cl.[6] C07D *499/00*
U.S. Cl. 540—310 **2 Claims**

1. A compound having the formula



II

wherein R^3 is hydrogen, lower alkyl, aryl alkyl, allyl, or a residue which is clearable in vivo.
2. The compound according to claim 1, Benzhydryl (2S,3R,5R)-3-formyl-3-methyl-7-oxo-4-thia-1-azabicyclo[3,2,0]heptane-2-carboxylate.

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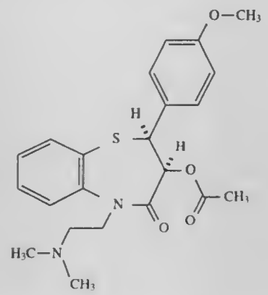
5,644,054

PROCESS FOR PREPARING DILTIAZEM

Martti Hytönen, Espoo, Finland, assignor to Orion-Yhtyma Oy Fermion, Espoo, Finland

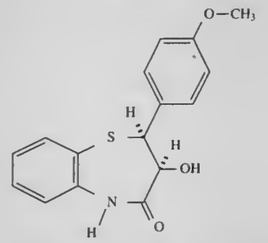
Filed Feb. 14, 1996, Ser. No. 601,182
Claims priority, application Finland, Feb. 17, 1995, 950719
Int. Cl.[6] C07D *281/00;283/00;285/00*
U.S. Cl. 540—491 **8 Claims**

1. A process for preparing diltiazem according to Formula (II),



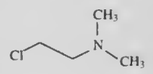
(II)

characterized in that a compound according to Formula (III)



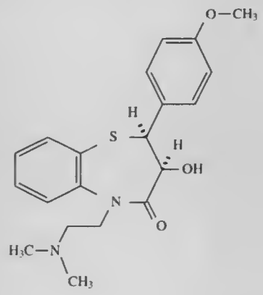
(III)

is allowed to react with a compound according to Formula (IV)



(IV)

in a mixture of toluene and N-methylpyrrolidin-2-one in the presence of finely-divided sodium carbonate in anhydrous conditions to cis-(+)-hydroxy-5-[2(dimethylamino)ethyl]-2,3-dihydro-2-(4-methoxyphenyl)-benzothiazepin-4(5H)-one according to Formula (I),



(I)

the solvents are removed by distallation after a water wash of the reaction mixture and the separation of the water layer, and the distallation residue is allowed to react with acetic acid anhydride to form diltiazem (II).

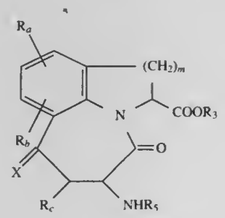
5,644,055

ANTIHYPERTENSIVE TRICYCLIC AZEPINE DERIVATIVES USEFUL AS INHIBITORS OF ENKEPHALINASE AND ACE

Stéphane De Lombaert, Bernardsville, N.J., assignor to Ciba-Geigy Corporation, Tarrytown, N.Y.

PCT No. PCT/EP94/01978, § 371 Date Dec. 20, 1995, § 102(e) Date Dec. 20, 1995, PCT Pub. No. WO95/01353, PCT Pub. Date Jan. 12, 1995
Continuation-in-part of Ser. No. 85,223, Jun. 30, 1993, abandoned. This PCT application Jun. 17, 1994, Ser. No. 569,117
Int. Cl.[6] C07D *471/04;487/04;* **A61K** *31/47*
U.S. Cl. 540—522 **12 Claims**

1. A compound of the formula



wherein

X represents oxo;

R_a and R_b independently represent hydrogen, hydroxy, lower alkoxy, nitro, amino, or halogen; or R_a and R_b on adjacent carbon atoms taken together represent lower alkylenedioxy;

R_c represents hydrogen, lower alkyl or aryl-lower alkyl;

m represents one or two;

R_5 is an amino protecting group or hydrogen;

$COOR_3$ represents carboxyl or carboxyl derivatized in form of a pharmaceutically acceptable ester, or a salt thereof.

5,644,056

METHOD OF PREPARING 7,8-DIFLUORO-2,3-DIHYDRO-3-METHYL-4H-1, 4-BENZOXAZINE

John C. Saukaitis, Corpus Christi, Tex., assignor to Hoechst Celanese Corporation, Somerville, N.J.

Filed Jun. 7, 1995, Ser. No. 473,619
Int. Cl.[6] C07D *265/36*
U.S. Cl. 544—105 **8 Claims**

1. A method of preparing 7.8-difluoro-2,3-dihydro-3-methyl-4H-1,4-benzoxazine comprising contacting 2,3,4-trifluoroaniline with a hydroxyacetone reactant, reducing the resulting reaction product to form N-(3-hydroxy-2-propyl)-2,3,4-trifluoroaniline or derivative thereof and contacting said N-(3-hydroxy-2-propyl)-2,3,4 trifluoroaniline or derivative thereof with a base in a solvent.

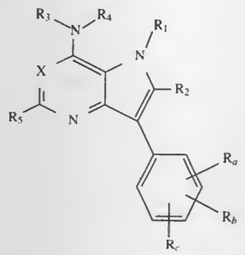
5,644,057

DEAZAPURINE DERIVATIVES; A NEW CLASS OF CRFI SPECIFIC LIGANDS

Jun Yuan, Clinton, and Alan Hutchison, Madison, both of Conn., assignors to Neurogen Corporation, Branford, Conn.

Filed May 12, 1995, Ser. No. 439,874
Int. Cl.[6] C07D *487/02*
U.S. Cl. 544—280 **28 Claims**

1. A compound of the formula:



or the pharmaceutically acceptable salts thereof wherein:

R_a, R_b, and R_c independently represent hydrogen, halogen, hydroxy, lower alkyl, or lower alkoxy, with the proviso that at least one of R_a, R_b, or R_c is in an ortho position of the phenyl group to which they are attached;

R_1 is lower alkyl;

R_2 is hydrogen, halogen, lower alkyl, lower alkoxy, or thioalkyl;

R_3 and R_4 are the same or different and represent hydrogen, lower alkyl, cycloalkyl having 3–8 carbon atoms, or cycloalkyl lower alkyl where the cycloalkyl portion has 3–8 carbon atoms, or hydroxy lower alkyl with the proviso that not both R_3 and R_4 are hydrogen; or R_3 and R_4 taken together represent $—(CH_2)_n—CH_2—(CH_2)_m—$
where n is 2 or 3, and m is 1, 2 or 3; and

R_5 is hydrogen, halogen, lower alkyl, lower alkoxy, or thioalkyl.

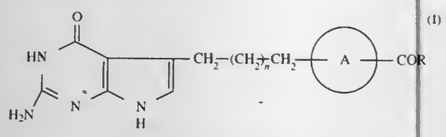
5,644,058

PROCESS FOR PREPARING 5-SUBSTITUTED PYRROLO-[2,3-D]PYRIMIDINES

Charles J. Barnett, Indianapolis, and Thomas M. Wilson, Speedway, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 362,392, Dec. 22, 1994, which is a division of Ser. No. 66,831, May 24, 1993, Pat. No. 5,416,211, which is a continuation-in-part of Ser. No. 951,515, Sep. 25, 1992, abandoned. This application Jan. 31, 1996, Ser. No. 594,961
Int. Cl.[6] C07D *487/04*
U.S. Cl. 544—280 **13 Claims**

1. A process for preparing 5-substituted pyrrolo[2,3-d]pyrimidines of formula I



(I)

wherein

R is NHC*H(COOR[1])CH_2CH_2COOR[1] or OR[1];

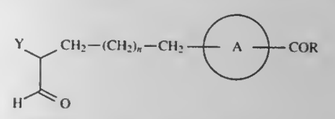
each R[1] is H or the same or different carboxy protecting group;

the configuration about the carbon atom designated * is L;

n is 0 or 1; and Ⓐ is an aryl group selected from the group consisting of 1,4-phenylene, substituted 1,4-phenylene, thienyl, substituted thienyl, pyridyl, substituted pyridyl, furyl and substituted furyl wherein said substituted 1,4-phenylene, substituted thienyl, substituted pyridyl and substituted furyl are substituted with one or two substituent groups selected from halo, hydroxy, C_1–C_4 alkyl and C_1–C_4 alkoxy;

or a salt thereof, which comprises

a) reacting 2,4-diamino-6-hydroxypyrimidine with a haloaldehyde of formula II



(II)

wherein

Y is bromo, chloro or iodo; and

Ⓐ, R, R[1], n and * are as defined above; and

b) optionally salifying the reaction product from step a).

5,644,059

1,4-DIHYDROPYRIDINE DERIVATIVES AND METHODS OF PRODUCING THE SAME

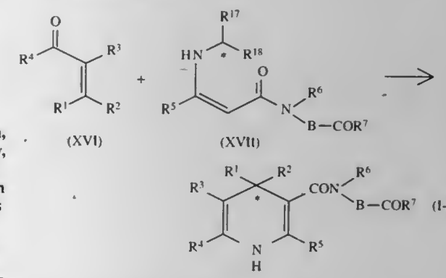
Hiroshi Ikawa; Akiyoshi Kadniri; Yasuko Konagai; Tetsuaki Yamaura, and Noriko Kase, all of Tokyo, Japan, assignors to Fujirebio Inc., Tokyo, Japan

Division of Ser. No. 258,487, Jun. 10, 1994, which is a division of Ser. No. 800,249, Nov. 29, 1991, Pat. No. 5,367,081. This application Jun. 2, 1995, Ser. No. 460,764
Claims priority, application Japan, Nov. 30, 1990, 2-330005; Jul. 25, 1991, 3-207283; Jul. 25, 1991, 3-207284
Int. Cl.[6] C07D *401/06;403/06;213/57;213/56*
U.S. Cl. 544—336 **10 Claims**

1. A method of producing optically 1,4-dihydropyridine derivatives of formula (I-a) comprising the steps of:

(a) allowing a ketone derivative of formula (XVI) to react with an optically active acrylamide derivative of formula (XVII), and

(b) allowing a product of this reaction to react with ammonia or an ammonium salt:



(XVI) (XVII) (I-a)

wherein R^1 represents hydrogen, a straight chain, branched chain or cyclic alkyl group, an unsubstituted or substituted aromatic hydrocarbon group, or an unsubstituted or substituted aromatic heterocyclic group; R^2 represents hydrogen, a straight chain, branched chain or cyclic alkyl group, and R^1 and R^2 in combination may form a saturated or unsaturated hydrocarbon ring; R^4 and-R^5 each represent hydrogen, an unsubstituted or substituted straight chain, branched chain or cyclic alkyl group, an unsubstituted or substituted amino group, an unsubstituted or substituted aromatic hydrocarbon group, or an unsubstituted or substituted aromatic heterocyclic group; represents R^6 hydrogen, a straight chain, branched chain or cyclic alkyl group or a trialkylsilyl group; B represents an unsubstituted or substituted alkylene group, an unsubstituted or substituted aromatic hydrocarbon group, an unsubstituted or substituted aromatic heterocyclic group, an unsubstituted or substituted cycloalkylydene group; R^7 represents an unsubstituted or substituted straight chain, branched chain or cyclic alkoxyl group, an unsubstituted or substituted amino group, or an unsubstituted or substituted cyclic amino group; R^3 represents

hydrogen, cyano group, nitro group, —COR^8 an unsubstituted or substituted aromatic hydrocarbon group, or an unsubstituted or substituted aromatic heterocyclic group, in which R^8 represents an unsubstituted or substituted straight chain, branched chain or cyclic alkoxyl group, an alkenyloxy group, an alkynyloxy group, or —$N(R^{61})$-B^1-COR^{71} in which R^{61}, R^{71} and B^1 are respectively the same as R^6, R^7, and B; R^{17} and R^{18} are different and independently represent an unsubstituted or substituted straight chain, branched chain or cyclic alkyl group, an unsubstituted or substituted aromatic hydrocarbon group, an unsubstituted or substituted aralkyl group, an unsubstituted or substituted straight chain, branched chain or cyclic alkoxycarbonyl group, or an unsubstituted or substituted straight chain, branched chain or cyclic aminocarbonyl group, and * indicates a chiral center.

5,644,060

PROCESS FOR THE PREPARATION OF 1-OXA-3,8-DIAZA-4-OXOSPIRO[4.5]DECANE COMPOUNDS

Georg Schmailzl, Gersthofen, Germany, assignor to Hoechst Atkiengesellschaft, Frankfurt, Germany

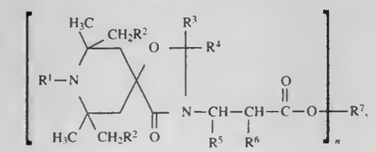
Continuation of Ser. No. 81,867, Jun. 23, 1993, abandoned, which is a continuation of Ser. No. 738,101, Jul. 30, 1991, abandoned. This application Nov. 2, 1994, Ser. No. 333,239

Claims priority, application Germany, Aug. 1, 1990, 40 24 415.6

Int. Cl.[6] **C07D** *498/10*

U.S. Cl. 546—19 **15 Claims**

1. A process for the preparation of 1-oxa-3,8-diaza-4-oxospiro[4.5]decane compounds of the formula I



(I)

in which

n is an integer from 1 to 4,

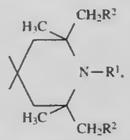
R^1 is hydrogen, C_1–C_4-alkyl, benzyl, allyl, C_2–C_{30}-alkanoyl, C_3–C_{20}-alkenoyl, C_7–C_{11}-aroyl, C_8–C_{14}-arylalkanoyl or C_8–C_{20}-alkylaryl,

R^2 is hydrogen or C_1–C_4-alkyl,

R^3 is hydrogen, C_1–C_{18}-alkyl, C_5–C_{12}-cycloalkyl, a phenyl or naphthyl group which can be substituted by chlorine or C_1–C_4-alkyl, or a C_7–C_{12}-phenylalkyl group which is unsubstituted or substituted by C_2–C_4-alkyl,

R^4 is hydrogen, C_1–C_4-alkyl, C_5–C_{12}-cycloalkyl, C_1–C_3-alkenyl which is substituted by —COOH, carb-C_1–C_4-alkoxy or carbamoyl, a phenyl, naphthyl or pyridyl group which can be substituted by C_1–C_4-alkoxy or C_1–C_4-alkyl, or a C_7–C_{12}-phenylalkyl group which can be substituted by C_1–C_4-alkyl, or

R^3 and R^4, together with the carbon atom linking them, are a cycloalkyl group which can be substituted by one to four C_1–C_4-alkyl groups, or a radical of the formula II



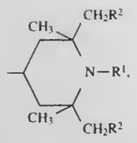
(II)

where R^1 and R^2 have the abovementioned meaning,

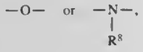
R^5 is hydrogen, methyl, phenyl or carb-C_1–C_{21}-alkoxy,

R^6 is hydrogen or methyl,

R^7 is, if n is 1, hydrogen, C_1–C_{21}-alkyl, C_2–C_{22}-alkenyl, C_7–C_{18}-phenylalkyl, C_5–C_{12}-cycloalkyl, phenyl, naphthyl, C_7–C_{12}-alkylphenyl, a radical of the formula

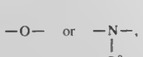


where R^1 and R^2 have the above meaning, or C_2–C_{20}-alkyl which is interrupted by



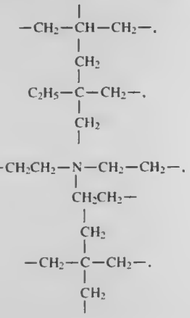
being hydrogen or C_1–C_{10}-alkyl,

R^7 is, if n is 2, straight-chain or branch C_1–C_{30}-alkylene, C_2–C_{30}-alkenylene, phenyldialkylene, these radicals being optionally interrupted by



where R^8 has the above meaning,

R^7 is, if n is 3 or 4, a radial of the formula IV, V, VI or VII



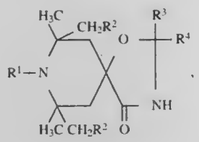
(IV)

(V)

(VI)

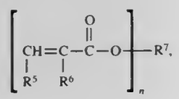
(VII)

which comprises reacting a compound of the formula VIII



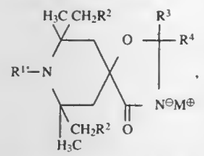
(VIII)

with a compound of the formula IX



(IX)

where n, R^1, R^2, R^3, R^4, R^5, R^6 and R^7 have the above-mentioned meaning, in an inert solvent at a temperature of 30° to 150° C. in the absence of a phase-transfer catalyst but in the presence of 1 to 10 mol %, relative to the compound VIII, of a catalyst of the formula (X)



(X)

where R^1, R^2, R^3 and R^4 have the abovementioned meaning and M^+ is an alkali metal cation which has been preformed by reacting a compound of the formula VIII with an alkali metal in an inert solvent over a period from 1 to 24 hours, said inert solvent comprising an aromatic hydrocarbon which is liquid at room temperature.

5,644,061

PROCESS FOR PIPERIDINE DERIVATIVES

Chi-Hsin Richard King, Cincinnati, and Michele A. Kaminski, Reading, both of Ohio, assignors to Merrell Pharmaceuticals Inc., Cincinnati, Ohio

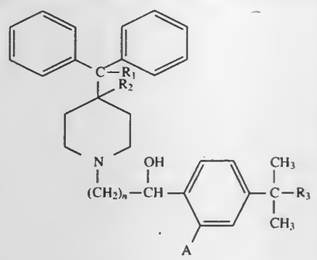
Division of Ser. No. 369,234, Jan. 6, 1995, which is a continuation-in-part of Ser. No. 152,606, Nov. 15, 1993, abandoned, which is a continuation-in-part of Ser. No. 99,773, Jul. 3, 1993, abandoned, which is a continuation of Ser. No. 17,251, Feb. 25, 1993, abandoned, which is a continuation-in-part of Ser. No. 9,370, Jan. 26, 1993, abandoned, which is a continuation of Ser. No. 867,261, Apr. 10, 1993, abandoned.

This application May 1, 1995, Ser. No. 432,487

Int. Cl.[6] **C07D** *211/22;211/32*

U.S. Cl. 546—240 **5 Claims**

1. A process for preparing a compound of the formula



wherein

R_1 represents hydroxy;

R_2 represents hydrogen; or

R_1 and R_2 taken together form a second bond between the carbon atoms bearing R_1 and R_2;

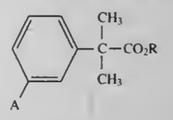
n is an integer of from 1 to 5;

R_3 is —COOH or —COOalkyl wherein the alkyl moiety has from 1 to 6 carbon atoms and is straight or branched;

A is hydrogen or hydroxy; and

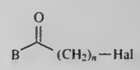
pharmaceutically acceptable salts, hydrates and individual optical isomers thereof comprising the steps of:

(a) reacting a benzeneacetic acid compound of the formula



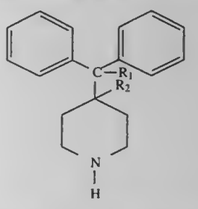
wherein A is as defined above and R is hydrogen or C_1–C_6 alkyl with a suitable reducing agent to give a phenethyl alcohol;

(b) reacting the phenethyl alcohol with a ω-halo compound of the formula



wherein B is halo or hydroxy, Hal represents Cl, Br or I and n is as defined above, in the presence of a suitable Lewis acid to produce a ω-halo hydroxyethylphenylketone; and

(c) reacting the ω-halo hydroxyethylphenylketone with a piperidine compound of the formula



wherein R_1 and R_2 are as defined above in the presence of a suitable non-nucleophilic base to produce a piperidine hydroxyethylphenylketone;

(d) reacting the piperidine hydroxyethylphenylketone with a suitable oxidizing agent to produce a piperidine formylphenylketone;

(e) reacting the piperidine formylphenylketone with a suitable oxidizing agent to produce a piperidine carboxyphenylketone;

(f) reacting the piperidine carboxyphenylketone with a suitable reducing agent to produce a piperidine carboxyphenylalcohol;

(g) optionally reacting the piperidine carboxyphenylalcohol to form a piperidine carboxyphenylalcohol ester; and

(h) optionally reacting the piperidine carboxyphenylalcohol or the piperidine carboxyphenylalcohol ester with an appropriate deprotecting reagent,

with the proviso that each of the hydroxy groups present in the compounds described in steps a–g are optionally protected or unprotected.

5,644,062

PREPARATION OF N-ALKYL-N-PYRIDINYL-1H-INDOL-1-AMINES

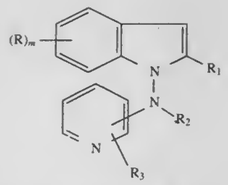
Thomas B. Lee, Whitehouse Station, N.J., and Keith E. Goehring, Nazareth, Pa., assignors to Hoechest Marion Roussel, Inc., Cincinnati, Ohio

Division of Ser. No. 242,395, May 13, 1994, Pat. No. 5,459,274. This application May 31, 1995, Ser. No. 455,468

Int. Cl.[6] **C07D** *401/04*

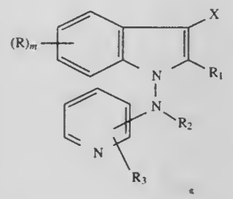
U.S. Cl. 546—277.1 **12 Claims**

1. A process for the preparation of a compound of the formula with high purity



wherein R is hydrogen, loweralkyl, loweralkoxy or trifluoromethyl; R_1 is hydrogen or loweralkyl; R_2 is loweralkyl; R_3 is hydrogen, loweralkyl, loweralkoxy or trifluoromethyl; and m is 1 or 2 which comprises the steps of:

(a) contacting a compound of the formula



wherein R, R_1, R_2, R_3, and m are as above and X is bromo or chloro with formic acid in the presence of a metal catalyst in reflex temperature with 2-propanol; and (b) isolating the product.

5,644,063

IMIDAZO[4,5-C]PYRIDIN-4-AMINE INTERMEDIATES

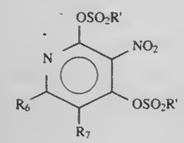
Kyle J. Lindstrom, Houlton, Wis., and Nick Nikolaides, Woodbury, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 303,216, Sep. 8, 1994, Pat. No. 5,446,153. This application May 31, 1995, Ser. No. 455,285

Int. Cl.[6] C07D *213/62;213/70;213/72*

U.S. Cl. 546—294 **3 Claims**

1. A compound of the formula



wherein R_6 and R_7 are independently selected from the group consisting of hydrogen and alkyl of one to about five carbon atoms, with the proviso that R_6 and R_7 taken together contain no more than six carbon atoms, and with the further proviso that when R_7 is hydrogen then R_6 is other than hydrogen; and R' is alkyl, perfluoroalkyl, alkylaryl, or haloaryl.

5,644,064

DERIVATIVES OF POLYETHERS AND OF PENTACYCLIC HETEROCYCLES, THEIR POLYMERS AND THEIR APPLICATIONS, PARTICULARLY TO THE COMPLEXING OF METAL IONS

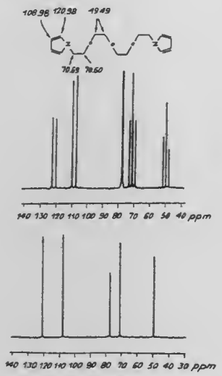
Olivier Leclerc, Moret sur Loing, France, assignor to Eletricite de France - Service National, Paris, France

Filed Jul. 14, 1994, Ser. No. 274,784

Claims priority, application France, Jul. 16, 1993, 93 08789

Int. Cl.[6] C07D *207/04;207/08*

U.S. Cl. 548—523 **10 Claims**



1. A monomer consisting of an aliphatic polyether chain containing at least three ether units and pyrrole heterocyclic units bonded to ends of the chain via, for each of said heterocyclic units either carbon atoms in the 3,3' -positions of the heterocyclic units or the respective nitrogen atoms, the 2-and 2'-positions of said heterocyclic units being free of all substituents or substituted by easily removable protective groups.

5,644,065

GENETICALLY ENGINEERED MICE CONTAINING ALTERATIONS IN THE MHC CLASS II GENES

Christophe Benoist; Diane Mathis, both of Erstein, France, and Dominic Cosgrove, Omaha, Nebr., assignors to Bristol-Myers Squibb Company, Princeton, N.J.; Institut National de la Santé et de la Recherche Médicale, Paris Cedex, France; Centre National de la Recherche Scientifique, Paris Cedex, France, and Université Louis Pasteur, Strasbourg Cedex, France

Continuation of Ser. No. 819,497, Jan. 10, 1992, abandoned. This application Oct. 3, 1994, Ser. No. 312,984

Claims priority, application United Kingdom, Jan. 10, 1991, 9100481

Int. Cl.[6] C12N *15/00*

U.S. Cl. 800—2 **4 Claims**

1. A mouse whose somatic and germ line cells contain an inserted exogenous DNA sequence in an exon of the major histocompatibility class IIAβ gene locus such that the insertion prevents functional Aβ chain protein from being expressed and wherein lack of functional Aβ chain protein prevents expression of functional major histocompatibility II AαAβ complex by cells of said mouse.

5,644,066

METHODS FOR INTRODUCING A FERTILITY RESTORER GENE AND FOR PRODUCING F_1 HYBRID OF BRASSICA PLANTS THEREBY

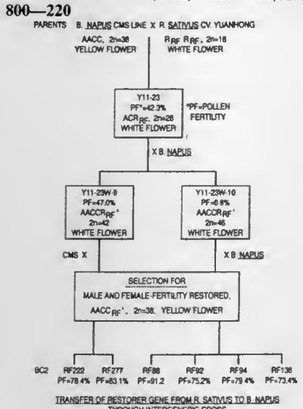
Takako Sakai, Machida; Hongjun Liu, Yokohama; Hiroyuki Kurihara, and Jun Imamura, both of Machida, all of Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

Filed Oct. 14, 1993, Ser. No. 136,023

Claims priority, application Japan, Oct. 14, 1992, 4-276069; Oct. 14, 1992, 4-276070; Oct. 15, 1992, 4-303127

Int. Cl.[6] A01H *5/00;1/02;* **C12N** *5/14;15/02*

U.S. Cl. 800—220 **20 Claims**



1. A method for introducing a fertility restorer gene of a Raphanus plant into a Brassica plant, which comprises:

providing a Brassica plant having cytoplasm containing a cytoplasmic male sterility gene of a Raphanus plant which causes sterility of the Brassica plant,

providing a Raphanus plant having a fertility restorer gene which can restore fertility to a plant containing the cytoplasmic male sterility gene, and

conducting cell fusion or intergeneric cross directly between the Raphanus plant and the Brassica plant to introduce the fertility restorer gene of the Raphanus plant into the Brassica plant, to thereby produce a hybrid plant which has fertility restored by the fertility restorer gene.

12. A hybrid plant produced by the method of any one of claims 1–7 and 10–11.

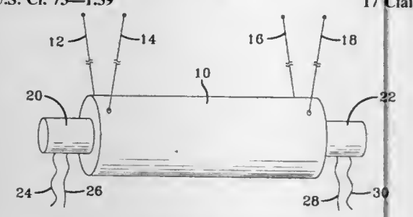
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5,644,067

APPARATUS AND METHOD FOR CALIBRATION OF SENSING TRANSDUCERS

Thomas B. Gabrielson, Warminster, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 16, 1996, Ser. No. 682,033
Int. Cl.[6] G01L *25/00*
U.S. Cl. 73—1.39 **17 Claims**



1. The process of calibrating an electromechanical transducer comprising:

mechanically coupling first, second and third transducers to a mass supported so that the mass, and the transducers coupled to it at any given time, constitute the weight of a pendulum capable of free oscillation, at least the third transducer being a linear, reciprocal device;

while at least the first and second transducers are coupled to the supported mass, driving the first transducer with a known electrical input while measuring the electrical output of the second transducer;

while at least the second and third transducers are coupled to the supported mass, driving the third transducer with a known electrical input while measuring the electrical output of the second transducer;

while at least the first and third transducers are coupled to the supported mass, driving the first transducer with a known electrical input while measuring the electrical output of the third transducer; and

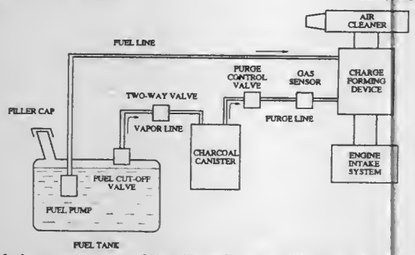
determining the sensitivity of at least one of said transducers from the known electrical inputs and the measured electrical outputs.

5,644,068

GAS SENSOR

Eiji Okamoto, and Kuniaki Miyake, both of Fujisawa, Japan, assignors to NOK Corporation, Tokyo, Japan

Division of Ser. No. 336,223, Nov. 7, 1994, Pat. No. 5,535,614.
This application Apr. 15, 1996, Ser. No. 632,529
Claims priority, application Japan, Nov. 11, 1993, 5-282725; Nov. 11, 1993, 5-282729
Int. Cl.[6] G01N *27/18*
U.S. Cl. 73—23.32 **12 Claims**



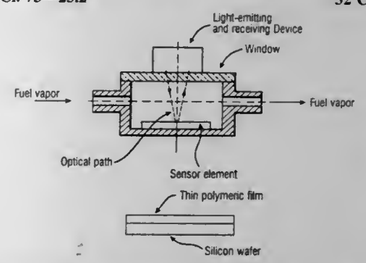
1. In a gas sensor of the thermal conductivity type for use in measuring a fuel vapor content of a mixture of air and fuel vapor, said sensor having a Wheatstone network with two input terminals and two output terminals having a voltage potential corresponding to the fuel vapor content of the mixture, a sensing element having an electrically-heated first member which in use is brought in contact with the mixture to be tested, a compensating element having an electrically-heated second member in contact with a reference gas, said electrically-heated members being made of a material having an electrical resistance that varies with temperature, said first member forming an arm of said network, said second member forming another arm of said network, and a constant current supply circuit for supplying a constant electric current across said input terminals of said network, the improvement wherein said constant current supply circuit is adjusted such that said first member is heated with a constant electric current of such an intensity that, at the interface of said first member and said mixture, heat to transfer from said first member to said mixture primarily by thermal conduction such that the electric current is of such an intensity that substantially corresponds to a point of transition at which the predominant mode of heat transfer from said first member to said mixture changes from thermal conduction to natural convection, wherein the point of transition is determined based upon an insensitive point at which the voltage potential of the output terminals is zero.

5,644,069

SENSOR FOR DISTINGUISHING FUEL VAPORS

Yuan Liu; Kenji Motosugi, both of Kawagoe, Japan; Christoph Roth, München, Germany; Tetsu Yamamoto, Kawagoe, and Masayuki Arai, Gyoda, both of Japan, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Filed Mar. 22, 1995, Ser. No. 408,437
Claims priority, application Japan, Mar. 24, 1994, 6-054068
Int. Cl.[6] G01N *27/12;31/00*
U.S. Cl. 73—23.2 **32 Claims**



1. A method for distinguishing a single fuel vapor in an atmosphere of interest that is selected from the group consisting of at least two fuels and that is the sole fuel component of the atmosphere, comprising the steps of:

providing a plurality of measuring means that are at least equal in number to the types of fuels that compose the fuel group and which have different sensitivities to the respective fuel vapors;

presetting the relationship between the magnitudes of the outputs from the respective measuring means at various fuel vapor concentrations in such a manner that it differs from one fuel vapor to another;

placing said measuring means in the atmosphere of interest containing said single fuel vapor as the sole fuel component;

measuring the concentration of that fuel vapor;

determining the relationship between the magnitudes of outputs as obtained from the respective measuring means;

comparing the thus determined relationship with the preset relationships, thereby distinguishing the fuel vapor in the atmosphere of interest; and

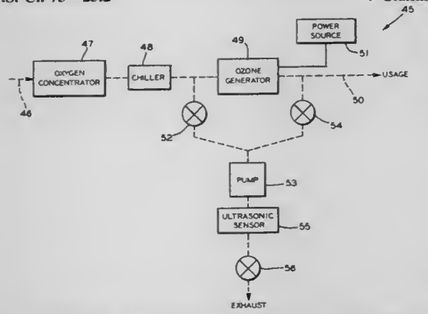
wherein each measuring means comprises a sensor element having a thin polymeric film on a substrate, and optical measuring means capable of optical measurement of physical changes comprising physical changes in thickness and refractive index that occur in the polymeric film.

5,644,070

OZONE CONCENTRATION SENSOR

Dennis A. Gibboney, Mt. Pleasant, and Paul A. Bauer, Jr., Pittsburgh, both of Pa., assignors to Dynamic Manufacturing Inc., Pittsburgh, Pa.

Filed Apr. 22, 1996, Ser. No. 636,159
Int. Cl.[6] G01N *29/18;* C01B *13/10;* A61L *9/00*
U.S. Cl. 73—23.2 9 Claims



2. Apparatus for measuring the concentration of ozone produced by an ozone generator from an oxygen containing flow of substantially ozone free feed gas, said ozone generator having an output gas flow, said apparatus comprising sensor means for measuring the time required for a high frequency sound pulse to travel a predetermined distance through a volume of gas and for measuring the temperature of such volume of gas, programmed means for storing and processing pulse travel times and gas temperature measurements from said sensor means, means adapted for delivering the substantially ozone free feed gas to said sensor means whereby said sensor means measures a pulse travel time and a temperature for such feed gas, means adapted for delivering ozone containing output gas from the ozone generator to said sensor means whereby said sensor means measures a pulse travel time and a temperature for such output gas, and wherein said programmed means for storing and processing pulse travel times and gas temperature measurements from said sensor means includes means for determining the ozone concentration in such output gas from a calculated comparison made between the measured travel times and temperatures for such feed gas and such output gas, wherein said sensor means is connected to receive output gas from the ozone generator, and wherein said means adapted to deliver feed gas to said sensor means further includes means for interrupting the generation of ozone by the ozone generator whereby the feed gas flows through the ozone generator and flows from the ozone generator output to said sensor means unchanged in composition.

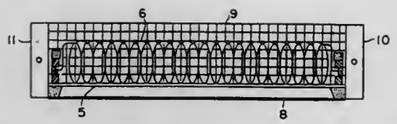
5,644,071

METHOD FOR GENERATING SMOKE AEROSOLS AND PYROLYSIS APPARATUS FOR CARRYING OUT THE METHOD

Ernst-Werner Wagner, Winsen/Aller, Germany, assignor to Wagner Alarm-und Sicherungs -systeme GmbH & Co., Germany

PCT No. PCT/EP94/02917, § 371 Date Feb. 28, 1996, § 102(e) Date Feb. 28, 1996, PCT Pub. No. WO95/06929, PCT Pub. Date Mar. 9, 1995
PCT Filed Sep. 2, 1994, Ser. No. 617,817
Claims priority, application Germany, Sep. 3, 1993, 43 29 847.8
Int. Cl.[6] G01M *19/00*
U.S. Cl. 73—23.33 10 Claims

1. A method of generating smoke aerosols, especially for planning, testing or demonstration of a fire alarm system by simulating a pyrolysis phase or a smoldering fire phase or an open fire phase of hypothetical fire conditions, in which a test material, having a unit temperature, a smoldering fire temperature and a pyrolysis



temperature is pyrolysed by heating and thus the smoke aerosols are released in a controllable and reproducible concentration into a space containing said system so as to allow simulation of the progress of a fire characterized in that

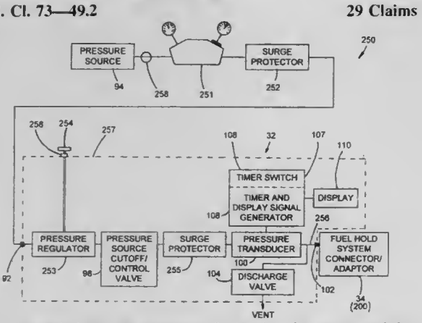
the test material is heated over a specific period of time until its temperature, in dependence on the heating time, follows a specific, predeterminable unit temperature curve.

5,644,072

EVAPORATIVE EMISSIONS TEST APPARATUS AND METHOD

Peter R. Chirco, Sterling Heights, and R. Clayton McKeon, Holland, both of Mich., assignors to K-Line Industries, Inc., Holland, Mich.

Continuation-in-part of Ser. No. 218,350, Mar. 28, 1994, Pat. No. 5,507,176. This application Nov. 13, 1995, Ser. No. 559,760
Int. Cl.[6] G01M *3/32*
U.S. Cl. 73—49.2 29 Claims



1. An emissions test apparatus for testing for vapor emitting leaks in a fuel holding system in a vehicle, the fuel holding system including a vehicle fuel tank and a fuel vapor control system operably connected to the fuel tank, the fuel tank and the fuel vapor control system defining an atmosphere, comprising in combination:

a pressurizing system including:

a first pressure regulator configured for connection to a source of pressurized gas for regulating a maximum first pressure in the apparatus downstream of the first pressure regulator;

a first surge protector connected to said first pressure regulator for controlling first surges from the first pressure regulator;

an adjustable second pressure regulator operably connected to the first surge protector for adjustably regulating a test-initiating second pressure of pressurized gas for operating the apparatus, the second pressure regulator including an adjustment knob positioned in a readily accessible position so that the pressure downstream of the second pressure regulator can be adjusted for changes in ambient atmospheric pressure;

a line extending from the second pressure regulator for operably connecting the second pressure regulator to the fuel holding system; and

a pressure-monitoring system including:

a pressure sensor for measuring the pressure of said atmosphere in the fuel holding system;

a timer for indicating passage of a predetermined amount of time;

a switch for actuating said timer when the test-initiating second pressure is reached in the atmosphere in the fuel holding system; and

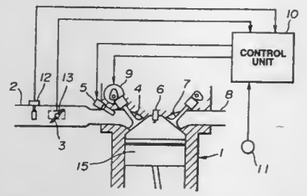
an indicator operably connected to said pressure sensor, said timer and said switch, said indicator being configured to indicate that a change in the pressure of said atmosphere over said predetermined time is acceptable or unacceptable.

5,644,073

DIAGNOSTIC SYSTEM FOR VARIABLE VALVE TIMING CONTROL SYSTEM

Osamu Matsuno, Ebina, and Katsuhiko Kawamura, Yokohama, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed May 31, 1996, Ser. No. 656,685
Claims priority, application Japan, Jun. 1, 1995, 7-135343
Int. Cl.[6] F01L *13/00*
U.S. Cl. 73—118.1 15 Claims



1. A diagnostic system for making a diagnosis on a variable valve timing control system through which an intake- and/or exhaust-valve timing is variably adjusted, said diagnostic system comprising:

means for forcibly switching a variable valve timing control system between operative and inoperative states for a diagnosis of the variable valve timing control system;

sensor means for detecting a variation of an operating state of an internal combustion engine, based on a forcible switching operation executed by said means for forcibly switching, and for detecting a throttle valve opening of the engine;

diagnostic means for making a diagnosis on the variable valve timing control system by said variation of the operating state of the engine to determine whether the variable valve timing control system operates normally or abnormally;

means for calculating a variation of said throttle valve opening, varied from said throttle valve opening detected by said sensor means a predetermined period of time before said forcible switching operation; and

means for inhibiting the diagnosis of the variable valve timing control system when said variation of said throttle valve opening exceeds a predetermined threshold.

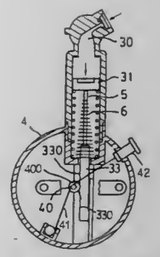
5,644,074

PRESSURE GAUGE RESET MECHANISM

Tien-Tsai Huang, No. 4, Lane 30, WU-Chang Street, Pan-Chiao City, Taipei Hsien, Taiwan

Filed Mar. 14, 1996, Ser. No. 615,841
Int. Cl.[6] B60C *23/04*
U.S. Cl. 73—146.8 4 Claims

1. A pressure gauge reset mechanism of the type comprising a cylinder having a pressure measuring head at one end, and a pressure gauge coupled to said cylinder, said pressure gauge comprising an index shaft, a gear fixedly mounted around said index shaft and driven to turn said index shaft, a torsional spring mounted on the inside to hold down said index shaft, said torsional spring having one end stopped at the inside of said pressure gauge and an opposite end extending out of said pressure gauge and fixedly connected with a button, said cylinder comprising a piston,



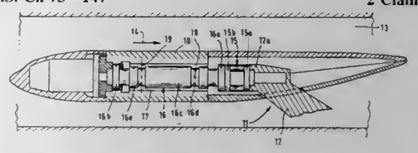
a first spring member mounted on the inside to force said piston toward said pressure measuring head, and a pressure rod reciprocated by said piston, said pressure rod having a toothed portion meshed with the gear of said index shaft, wherein an actuating rod member is mounted inside said cylinder having one end stopped at said piston and an opposite end fixedly connected to one end of said pressure rod; a second spring member is sleeved onto said actuating rod member, having one end fixedly secured to said actuating rod member and an opposite end stopped against said cylinder at a bottom end thereof; said second spring member is compressed and said index shaft is turned by movement of said pressure rod through said gear when said piston is forced by the pressure being applied to said pressure measuring head to move said actuating rod member; when said button is depressed, said torsional spring is released from said index shaft, thereby enabling said second spring member to push said actuating rod member and said pressure rod back to their former positions, and therefore the gauge is returned to a zero reading position.

5,644,075

WIND TUNNEL MODEL SUPPORT WITH VIBRATION DETECTION BALANCE AND COUNTERVIBRATION MEANS

Gerhard Hefer, Goettingen, Germany, assignor to European Transonic Windtunnel GmbH, Cologne, Germany

Filed Mar. 27, 1996, Ser. No. 622,379
Claims priority, application Germany, Apr. 7, 1995, 195 13 083.9
Int. Cl.[6] G01M *9/02;9/04*
U.S. Cl. 73—147 2 Claims



2. A support for wind tunnel models, comprising

a rigid sting having a first end and a second end, the first end of the sting being rigidly fastened to a stationary support, the sting carrying an elastic balance for detecting, in several degrees of freedom, forces acting on the model, and

a counter vibration generator provided in serial arrangement with the balance and being controlled on the basis of signals supplied by sensors detecting the movements of the model wherein

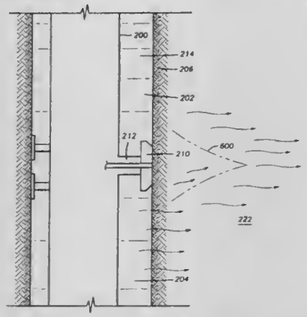
the counter vibration generator is arranged between the sting and the balance or between the first end of the sting and the second end of the sting.

5,644,076

WIRELINE FORMATION TESTER SUPERCHARGE CORRECTION METHOD

Mark A. Proett; Margaret C. Waid, and Wilson C. Chin, all of Houston, Tex., assignors to Halliburton Energy Services, Inc., Houston, Tex.

Filed Mar. 14, 1996, Ser. No. 614,617
Int. Cl.[6] E21B *49/00;47/00*
U.S. Cl. 73—152.41 **24 Claims**



17. A method for determining characteristics of a subterranean earth formation penetrated by a wellbore, the wellbore having a mudcake on an inner wall, the steps comprising:

(a) disposing a formation tester in said wellbore, said formation tester having a probe and an isolation pad attached thereto;

(b) sealingly disposing said probe and said isolation pad against said mudcake, while maintaining said mudcake substantially intact in the wellbore area beneath said isolation pad;

(c) measuring fluid pressure at said probe;

(d) injecting a fluid from said tester into said mudcake through said probe where said fluid pressure measurement does not meet a first predetermined criteria and repeating step (c);

(e) inducing a pressure differential between said tester and said formation, drawing fluid from said formation into said tester through said probe, while avoiding substantial damage to said mudcake, and measuring the pressure of said fluid at said probe;

(f) terminating said induced pressure differential, continuing to draw fluid from said formation into said tester, and continuing to measure fluid pressure at said probe until a second predetermined criteria is met; and

(g) determining said formation pressure and permeability.

5,644,077

WAVE-POWERED OCEAN PROFILER

George A. Fowler, Dartmouth, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of Fisheries of Oceans, Ottawa, Canada

Filed Oct. 17, 1995, Ser. No. 544,171
Int. Cl.[6] G01W *1/00*
U.S. Cl. 73—170.29 **9 Claims**

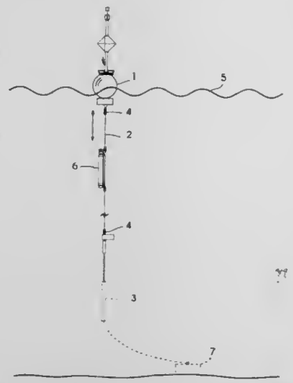
1. A wave-powered ocean profiler, comprising:

a) an instrument for collecting oceanographic profile data;

b) a buoyant member for riding the waves on a body of water;

c) a line suspended from a lower end of the buoyant member:

d) a line traversing assembly operatively disposed on the line for supporting the instrument and conveying the instrument along the line; said traversing assembly including a disengagable one-way clutch, operative, while engaged, to allow travel incrementally along the line in one direction as the line rises and falls under the action of waves, and to prevent travel along the line in the opposite direction; and



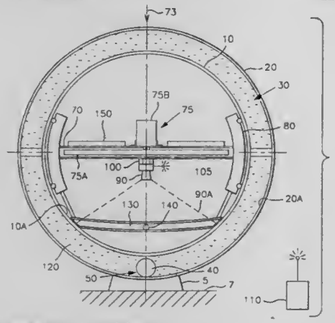
e) actuating means for the one-way clutch, responsive to a condition representative of a desired travel limit of the traversing assembly along the line, and operative for selectively engaging or disengaging the one way clutch.

5,644,078

OPTICAL GYROSCOPE

Ned Ahdoot, 6916 Kings Harbor Dr., Rancho Pales Verdes, Calif. 90275

Filed Oct. 2, 1995, Ser. No. 537,464
Int. Cl.[6] G01C *21/00*
U.S. Cl. 73—178 R **11 Claims**



1. An apparatus comprising;

a pair of spherical shells including an outer shell and a transparent inner shell fixed concentrically within the outer shell, the shells providing a fixed space therebetween;

a first spherical ball positioned between the inner and the outer shell and free to roll on an inner surface of the outer shell, the first ball, under the influence of gravity, positioning itself at a selected initial position on the outer shell;

a polar coordinate grid fixed to an inner surface of the inner shell, the grid providing an origin point of the polar coordinate grid, the origin point being centered on the first ball when the first ball is at the initial position;

a support frame extending between diametrically opposing portions of the inner shell and rotatably supported thereon by a bearing means for providing low friction movement of the support frame relative to the inner shell, the support frame having a rotating mass mounted therein, the rotating mass establishing a fixed inertial position of the frame so as to urge the support frame to maintain a fixed spacial orientation,

an imaging means engaged with the support frame and directed for observing a field of view nominally centered on the coordinate grid origin point, the imaging means providing a signal containing field of view image information;

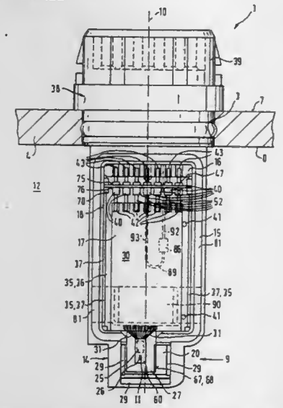
a data processor including a means for image element recognition interconnected with the imaging means so as to receive the information signal and to identify the location of the spherical ball with respect to the polar coordinate grid origin point when the apparatus is rotated, the processor further providing an output signal identifying the ball location on the grid.

5,644,079

DEVICE FOR MEASURING THE MASS OF A FLOWING MEDIUM

Heinz Rilling, Eberdingen, and Stefan Lehenberger, Maierhoefen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE95/00886, § 371 Date Jul. 12, 1996, § 102(e) Date Jul. 12, 1996, PCT Pub. No. WO96/03623, PCT Pub. Date Feb. 8, 1996
PCT Filed Jul. 6, 1995, Ser. No. 617,866
Claims priority, application Germany, Jul. 22, 1994, 44 26 100.4
Int. Cl.[6] G01F *1/68*
U.S. Cl. 73—204.22 **5 Claims**



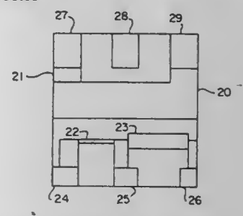
1. A device for measuring the mass or flow rate of a flowing medium of air aspirated by internal combustion engines, comprising a temperature-dependent sensor element introduced into a flowing medium, a control circuity, said element is connected to said control circuit and said control circuit is surrounded for electromagnetic compatability protection (EMC protection) by a metal protective housing, said metal protective housing comprises a metal bottom housing and a metal closure housing which are joined to one another, and the control circuit is mounted on the bottom housing, which has a sensor carrier for receiving the sensor element, the protective housing (**34**) is disposed in an elongated basic housing (**15**) made of plastic and has a plug part (**47**) with leadthrough capacitors (**40**), through which electrical connection lines (**52**) are extended, and the sensor carrier (**27**) for receiving the sensor element (**25**) is embodied on a base wall (**36**) of the bottom housing (**35**), in alignment with the base wall (**36**).

5,644,080

METHOD OF MEASURING DEWPOINT OR GAS CONCENTRATION AND APPARATUS FOR PREDICTION OF ICING

Lars Stormbom, and Matti Lyyra, both of Vantaa, Finland, assignors to Vaisala Oy, Helsinki, Finland

Filed Apr. 13, 1995, Ser. No. 421,605
Claims priority, application Finland, Apr. 15, 1994, 941746; Nov. 16, 1994, 945385
Int. Cl.[6] G01N *25/06;* **G01W** *1/02*
U.S. Cl. 73—335.05 **3 Claims**



1. An apparatus for predicting the occurrence of icing, comprising:

(1) a humidity measurement means, further comprising:

(A) a humidity measuring means for generating a humidity signal;

(B) a first temperature measuring means located in the vicinity of said humidity measuring means for generating a first temperature signal;

(C) heating means for heating said humidity measurement means to a temperature above ambient temperature; and

(D) cooling means for cooling said humidity measurement means to dewpoint;

(2) two resistor means having different thermal responses, located in the vicinity of said humidity measurement means, for detecting the dewpoint when a pulsed signal is applied over said resistor means;

(3) a second temperature measurement means for measuring a temperature of an object or environment for which the occurrence of icing is to be predicted, separate from said humidity measurement means; and

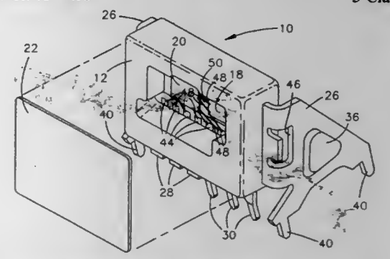
(4) computing means for generating an icing warning signal from said humidity signal and said first temperature signal.

5,644,081

MICROACCELEROMETER PACKAGE WITH INTEGRAL SUPPORT BRACES

Dwight Lance Schwarz, Kokomo; William Martin Maki, Ft. Wayne, and Richard Allen Wilson, Kokomo, all of Ind., assignors to Delco Electronics Corp., Kokomo, Ind.

Continuation of Ser. No. 220,864, Sep. 28, 1995, abandoned. This application Sep. 28, 1995, Ser. No. 535,679
Int. Cl.[6] G01P *1/02*
U.S. Cl. 73—493 **3 Claims**



1. An accelerometer assembly comprising:

a unitary metal leadframe including a flat backplate defining a mounting plane for an acceleration sensor and circuit, a pair of brace elements extending from opposing sides of said backplate, and an electrical terminal having a first end disposed in proximity to said backplate, said acceleration sensor and circuit being mounted on said backplate and electrically coupled to said first end of said electrical terminal;

a plastic housing overmolded on said backplate such that said acceleration sensor and circuit and the first end of said terminal are disposed within a central cavity of said housing, and such that said brace elements and a second end of said electrical terminal protrude through said plastic housing; and

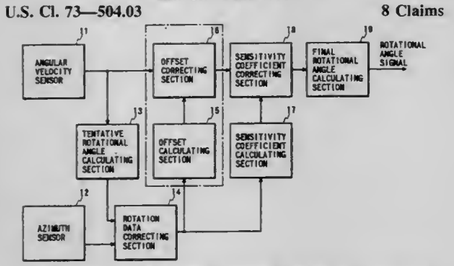
said brace elements being bent substantially perpendicular to said mounting plane defined by said backplate so as to form a circuit board mount for said accelerometer assembly.

5,644,082

VEHICLE ROTATIONAL-ANGLE CALCULATING APPARATUS

Eiji Iwata, and Hiroyuki Maeda, both of Yokohama, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 29, 1995, Ser. No. 496,618
Claims priority, application Japan, Jun. 30, 1994, 6-150267
Int. Cl.[6] G01P *7/00*
U.S. Cl. 73—504.03 **8 Claims**



1. A vehicle rotational-angle calculating apparatus comprising:

a first sensor outputting a signal representing an angular rate of a vehicle body;

a second sensor outputting a signal representing a direction of the vehicle body;

first means connected to the first sensor for integrating the output signal of the first sensor to generate a signal representing a tentative rotational angle of the vehicle body;

second means connected to the second sensor for generating first data pieces representing temporally spaced samples of the output signal of the second sensor respectively;

third means connected to the first means for generating second data pieces representing temporally spaced samples of the signal generated by the first means respectively;

fourth means connected to the second means for selecting two first data pieces from among the first data pieces generated by the second means, the selected two first data pieces relating to occurrence moments spaced by at least a given time;

fifth means connected to the fourth means for calculating a time interval between the occurrence moments of the selected two first data pieces;

sixth means connected to the third means for selecting two second data pieces from among the second data pieces generated by the third means, the selected two second data pieces relating to occurrence moments corresponding to the occurrence moments of the selected first data pieces respectively;

seventh means connected to the fourth means for calculating a direction difference between directions represented by the selected two first data pieces:

eighth means connected to the seventh means for deciding whether or not the direction difference calculated by the seventh means is greater than a predetermined direction difference;

ninth means connected to the sixth means for calculating a rotational-angle difference between tentative rotational angles represented by the selected two second data pieces:

tenth means connected to the fifth means, the eighth means, and the ninth means for calculating an amount of offset in the output signal of the first sensor in response to the time interval calculated by the fifth means and the rotational-angle difference calculated by the ninth means in cases where the eighth means decides that the direction difference calculated by the seventh means is equal to or smaller than the predetermined direction difference;

eleventh means connected to the first sensor and the tenth means for correcting the output signal of the first sensor into an offset-free signal in response to the offset amount calculated by the tenth means: and

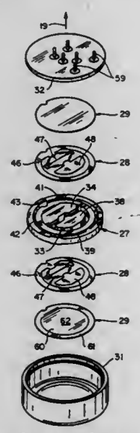
twelfth means connected to the eleventh means for integrating the offset-free signal to generate a signal representing a final rotational angle of the vehicle body.

5,644,083

ACCELEROMETER AND METHOD OF MANUFACTU

G. Richard Newell, Alamo; Kenneth S. Lewallen, Concord; Scott D. Orlosky, San Anselmo, and Bert D. Egley, Walnut Creek, all of Calif., assignors to New SD, Inc., Concord, Calif.

Continuation of Ser. No. 267,670, Jun. 29, 1994, abandoned.
This application Jan. 19, 1996, Ser. No. 588,899
Int. Cl.[6] G01P *15/09*
U.S. Cl. 73—514.34 **21 Claims**



1. In an accelerometer for measuring acceleration along a sensitive axis:

(a) a support fabricated of a piezoelectric material;

(b) a generally planar seismic mass fabricated of the same piezoelectric material as the support disposed in a plane substantially perpendicular to the sensitive axis and having axially facing major surfaces on opposite sides thereof;

(c) mounting means fabricated of the same piezoelectric material as the support and the seismic mass connecting the seismic mass to the support for movement about a hinge axis which is perpendicular to the sensitive axis and approximately midway between the major surfaces of the seismic mass; and

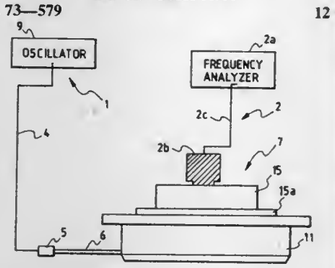
(d) a pair of generally planar force transducers fabricated of the same piezoelectric material as the support and the seismic mass spaced equally from the hinge axis on opposite sides of the seismic mass in planes perpendicular to the sensitive axis and connected to the seismic mass in such manner that movement of the seismic mass about the hinge axis causes substantially equal and opposite forces to be applied to the two force transducers.

5,644,084

METHOD OF MEASURING NATURAL FREQUENCY OF MOTOR

Shinji Kinoshita; Mitsuru Ide, and Koichi Katakura, all of Nagano, Japan, assignors to Kabushiki Kaisha Sankyo Seiki Seisakusho, Nagano, Japan

Filed Apr. 27, 1995, Ser. No. 429,547
Claims priority, application Japan, Apr. 27, 1994, 6-111962
Int. Cl.[6] G01H *13/00*
U.S. Cl. 73—579 **12 Claims**



1. A method of measuring a natural frequency of a motor, comprising the steps of:

connecting current applying means to an armature coil of the motor;

applying a current from the current applying means to the armature coil while the frequency of the current is gradually varied from a preset frequency to another preset frequency, to vibrate the motor; and

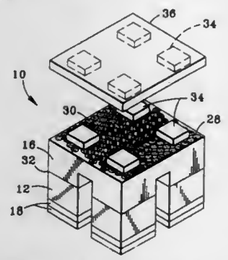
measuring the amplitudes corresponding to the frequencies of the current by a frequency analyzer means, which is brought into contact with the motor.

5,644,085

HIGH DENSITY INTEGRATED ULTRACONIC PHASED ARRAY TRANSDUCER AND A METHOD FOR MAKING

Peter William Lorraine, Niskayuna, and Venkat Subramaniam Venkataramani, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 3, 1995, Ser. No. 415,895
Int. Cl.[6] H04R *17/00;* **H01L** *41/08*
U.S. Cl. 73—641 **20 Claims**



1. A method for forming a high density ultrasonic phased array transducer, the method comprising the steps of:

forming a backfill material;

forming an array of unidirectional holes in the backfill material, each of the holes separated a predetermined distance apart from each other and having a predetermined depth within the backfill material;

depositing a conducting material in the array of holes forming a high density interconnect with uniaxial conductivity;

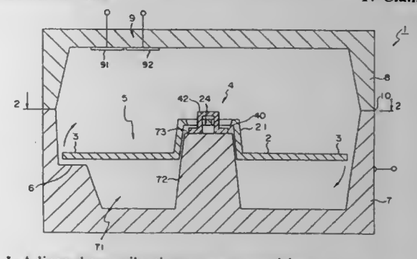
bonding a piezoelectric ceramic material and matching layers to the backfill material, the piezoelectric ceramic material and the matching layers bonding to the backfill material on a surface opposite the array of conducting holes; and cutting at the surface opposite the array of conducting holes through a portion of the matching layers, the piezoelectric ceramic material, and the backfill material, forming an array of isolated individual elements each having multiple electrical connections therein.

5,644,086

PRELOADED LINEAR BEAM VIBRATION SENSOR

Sean Samuel Cahill, Palo Alto, Calif.; Walter Snoeys, Perly, Switzerland, and Kenichi Nakamura, Tokyo, Japan, assignors to Tokyo Gas Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 346,261, Nov. 23, 1996, abandoned.
This application Oct. 8, 1996, Ser. No. 727,135
Int. Cl.[6] G01P *15/125;* **G01H** *11/06*
U.S. Cl. 73—654 **17 Claims**



1. A linear beam vibration sensor, comprising:

a substrate defining a main body containing a pivot support;

a see-saw beam having a mass at at least one end thereof pivotally mounted within said main body;

hinge posts integrally formed on said see-saw beam intermediate the ends thereof, said hinge posts being received in hinge post receivers forming said pivot support to retain said see-saw beam for pivotal rotation;

said mass on said beam and the location of said hinge posts thereon cooperating to pivotally unbalance said beam within said main body;

a stopper disposed beneath a mass at one end of said beam and operative to supportively engage said beam at said one end to control the direction of pivotal rotation thereof;

a cap attached to said main body and covering said see-saw beam, said pivot support and. said beam rotation control means;

means forming electrodes carried by said cap and disposed thereon to overlie said mass engaged by said stopper; and

means for measuring changes in capacitance between said electrodes and said stopper-engaged mass occurring in response to pivotal movement of said beam.

5,644,087

ROTATIONAL SHOCK VIBRATION FIXTURE

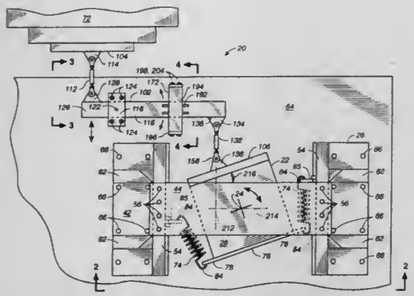
Hong S. Liu, 284 Moraga Wayu, San Jose, Calif. 95119

Filed Jun. 20, 1996, Ser. No. 667,094
Int. Cl.[6] B06B *3/00*
U.S. Cl. 73—663 **14 Claims**

1. A rotational shock/vibration fixture that adapts a rectilinear shock or vibration apparatus for applying a rotary shock or vibration to a device undergoing test, the rotational shock/vibration fixture comprising:

a rotatable device-mounting-plate for receiving the device to be tested, said rotatable device-mounting-plate being supported for movement about an axis of rotation that is fixed with respect to the rectilinear shock or vibration apparatus, and is oriented perpendicular to the device; and

a linkage for coupling said rotatable device-mounting-plate to the rectilinear shock or vibration apparatus so that rectilinear movement of the rectilinear shock or vibration apparatus



induces rotary motion of said rotatable device-mounting-plate about the axis of rotation, said linkage having a linear-motion end that is coupled to the rectilinear shock or vibration apparatus, and a rotary-motion end that is coupled to the rotatable device-mounting-plate.

5,644,088

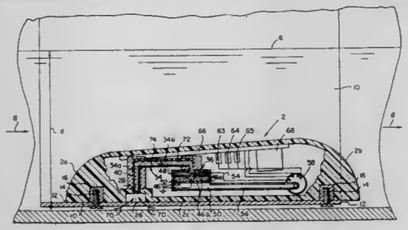
PORT FORWARD SENSOR FOR LIQUID LEVEL GAUGE OR FLOWMETER

Donald B. Heckman, Purcellville, Va., assignor to Marsh-McBirney, Inc., Frederick, Md.

Filed Jul. 27, 1995, Ser. No. 508,102

Int. Cl.[6] G01F *23/18*

U.S. Cl. 73—756 **17 Claims**



1. Apparatus for measuring the level of liquid flowing in a generally horizontal conduit, comprising:

(a) a sensor body having a longitudinal axis, said sensor body being adapted for arrangement in the conduit below the level of the liquid and generally parallel with the direction of flow thereof, a lower surface portion of said sensor body containing a pressure inlet port;

(b) pressure transducer means contained within said sensor body; and

(c) means defining first passage means affording communication between said pressure inlet port and said pressure transducer means, said first passage means including a first vertical portion extending upwardly relative to said pressure inlet port, said first vertical portion having an upper end, and a horizontal portion connected with said first vertical portion upper end, said first passage means being such that when a quantity of air is trapped within at least said vertical passage portion, liquid entering said vertical passage portion via said pressure port produces a degree of compression of the air that is a function of the instantaneous depth of the pressure port within the liquid.

5,644,089

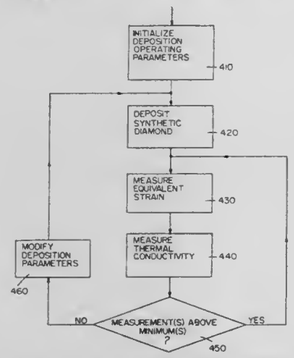
SYNTHETIC DIAMOND WEAR COMPONENT AND METHOD

Matthew Simpson, Arlington, Mass., assignor to Norton Company, Worcester, Mass.

Division of Ser. No. 308,374, Sep. 19, 1994, Pat. No. 5,589,232, which is a continuation of Ser. No. 773,465, Oct. 9, 1991, Pat. No. 5,411,758. This application May 12, 1995, Ser. No. 439,524

Int. Cl.[6] G01B *5/30;7/16;* G01L *1/00;* G01N *3/00*

U.S. Cl. 73—760 **5 Claims**



1. A method of investigating synthetic diamond to be utilized as wear surface to select synthetic diamond having superior wear properties, comprising the steps of:

measuring the equivalent strain of the synthetic diamond; and

selecting diamond having an equivalent strain greater than a predetermined percentage.

5,644,090

GAS METERS

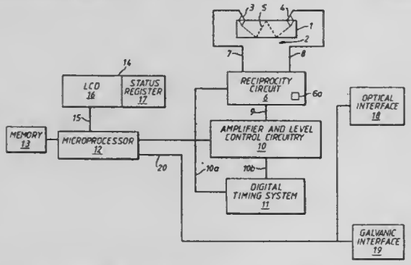
Karl Damian Spendel, Nuremburg, Germany, assignor to Siemens Measurements Limited, Lancs, England

Filed Sep. 14, 1994, Ser. No. 305,868

Claims priority, application United Kingdom, Sep. 29, 1993, 9320042

Int. Cl.[6] G01F *1/66*

U.S. Cl. 73—861.27 **7 Claims**



1. A gas meter comprising:

a measuring tube through which gas to be supplied is fed, said measuring tube including two ultrasonic transducers, one of which is arranged to transmit while the other is arranged to receive, and vice versa, and between which ultrasonic signals are transmitted whereby gas flow is determined in dependence upon a difference between times of flight of ultrasonic signals transmitted between the transducers in opposite directions,

means for measuring the gas flow in dependence upon said difference between said times of flight,

a digital display operative to indicate a volume of gas used,

an electrical power supply,

an electronic clock in dependence upon which said times of flight are measured, and

data interface means for facilitating feeding of data to or from the meter,

wherein a measurement to determine differences between the times of flight is carried out over a time period which is small with respect to a time period of successive time slots, whereby a power economy is thereby effected, and wherein the measurement is determined in dependence upon operation of a counter which forms a part of a digital timing system including a quartz reference, which counter is arranged to produce a random count output in dependence upon which a start of each measurement is determined.

5,644,091

MATERIAL SAMPLING METHOD AND DEVICE

Patrick H. Jacq, Montigny Le Bretonneux; Daniel M. Kerlau, Chatenay-Malabry; Patrice B. Roux, Paris, and Claude A. Gineste, Villefranche de Panat, all of France, assignors to Compagnie Generale des Matieres Nucleaires, Velizy-Villacoublay, France

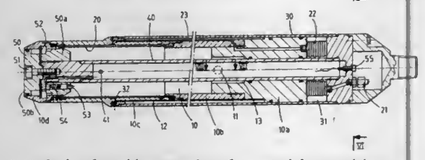
PCT No. PCT/FR94/00092, § 371 Date Jul. 18, 1995, § 102(e) Date Jul. 18, 1995, PCT Pub. No. WO94/17386, PCT Pub. Date Aug. 4, 1994

PCT Filed Jan. 26, 1994, Ser. No. 491,950

Claims priority, application France, Jan. 26, 1993, 93 00717

Int. Cl.[6] G01N *1/08*

U.S. Cl. 73—864.44 **18 Claims**



1. A device for taking samples of a material comprising:

a hollow sampling cylinder having an outer wall defining a cavity therein and an open bottom communicating with said cavity;

an outer cylinder having a top portion and an open bottom, said sampling cylinder being mounted within said outer cylinder for movement relative thereto between a first position in which said sampling cylinder is received within said outer cylinder and a second position in which said sampling cylinder is displaced downwardly relative to said outer cylinder, said outer cylinder guiding said sampling cylinder during relative movement therebetween;

a rod having a top end and a bottom end and being connected at its top end to said outer cylinder, said rod cooperating with said outer cylinder to guide said sampling cylinder;

a stationary piston secured to said bottom end of said rod, said piston stopping and positioning said sampling cylinder in said second position;

said outer cylinder and said sampling cylinder defining therebetween a pressure chamber within which said sampling cylinder is displaced;

inflatable shutter means positioned near said open bottom of said sampling cylinder and moveable between an inflated position wherein said inflatable shutter means shuts said open bottom of said sampling cylinder after said cylinder has filled with said material thereby holding said material in said sampling cylinder, and a collapsed position wherein said inflatable shutter means does not close said open bottom of said sampling cylinder;

injecting means for injecting pressurized fluid into said pressure chamber for moving said sampling cylinder to said second position and for exhausting said pressurized fluid from said pressure chamber as said outer cylinder is moved downwardly over said sampling cylinder for returning said sampling cylinder to said first position;

venting means for exhausting a gas contained within said sampling cavity as said sampling cylinder moves from said first position to said second position;

said outer wall of said sampling cylinder having a conduit therein communicating at one end with said inflatable shutter means for transmitting pressurized fluid to said inflatable shutter means for movement thereof to said inflated position and for suctioning said pressurized fluid from said inflatable shutter means for movement thereof to said collapsed position; and

a flexible hose in said pressure chamber connected at one end to a source of pressurized fluid and at the other end to said conduit for feeding pressurized fluid from said source to said inflatable shutter means.

5,644,092

APPARATUS FOR INSPECTING TIIE ATTACHED STATE OF SLIDE FASTENER STOP BOXES AND STOP BOXES ATTACHING MACHINE EQUIPMENT WITH THE SAME

Shigenori Oomori, and Michio Ito, both of Toyama-ken, Japan, assignors to YKK Corporation, Tokyo, Japan

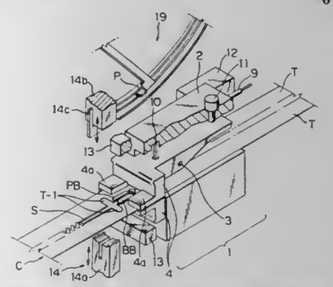
Filed Sep. 30, 1994, Ser. No. 315,358

Claims priority, application Japan, Oct. 13, 1993, 5-255629

Int. Cl.[6] G01M *19/00*

U.S. Cl. 73—86 **6 Claims**

.8



1. An apparatus for inspecting attachments of bottom stop boxes attached to separable slide fasteners, comprising:

(a) a parallel pair of fastener tapes, a bottom stop box, and a pair of tape grip members movable forwardly and backwardly along a travelling path of a said pair of parallel fastener tapes, said bottom stop box attached to one tape of said pair of fastener tapes, said tape grip members being situated above and below the travelling path in confronting relationship, each of said tape grip members being pivotally movable about a horizontal axis extending through a central portion thereof, said tape grip members having urging means for urging first confronting ends of the grip members toward each other to resiliently contact with said tapes, and forced turning means for forcedly turning second confronting ends of the grip members selectively toward and away from each other to cause said first confronting ends to release said tapes, and also to grip said tapes, said first confronting ends upstream of said second confronting ends along said path of the pair of fastener tapes through the apparatus for continuously inspecting;

said first confronting ends allow said pair of tapes to pass but abut said bottom stop box, forward movement of said pair of tapes causing said bottom stop box, when attached to said one of said pair of tapes, to drive forwardly said grip members a predetermined length;

(b) a moving body situated on one side of said grip members for moving forwardly and backwardly together with said grip members;

(c) a contact member and a spring, said contact member situated in a path of movement of said moving body and normally urged by said spring from a fixed position toward said moving body by a predetermined resilience; and

(d) detecting means for detecting when said moving body is moved said predetermined length against said predetermined resilience of said spring while in contact with said contact member.

5,644,093

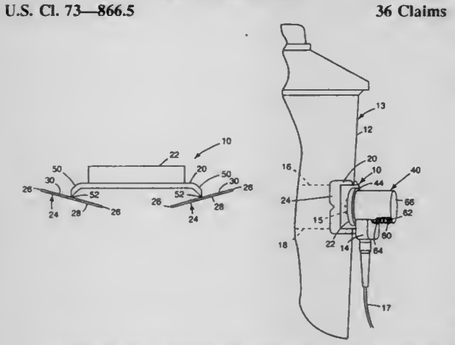
SENSOR MOUNTING PAD AND METHOD

David W. Wright, Novi; John M. Adams, Manchester, and Martha J. Rumford, Ann Arbor, all of Mich., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 420,011, Apr. 11, 1995, abandoned. This application Sep. 12, 1996, Ser. No. 707,656

Int. Cl.[6] A47F *7/02*

U.S. Cl. 73—866.5 **36 Claims**



1. A mounting pad for mounting a sensor on a wall, the mounting pad comprising:

a body;

means on the body for mounting a sensor on the body of the mount; and

at least two foot pads, each foot pad having an edges, a mounting surface having an adhesive coating, and an outer surface opposite the mounting surface, the outer surface being pivotably connected to the body intermediate the edges of the foot pad such that the foot pads can pivot relative to the body to conform to the configuration of the wall and such that any forces applied to the foot pads via the body of the mounting pad are applied intermediate the edges of the foot pads.

5,644,094

BRIDGE FOR STRINGED MUSICAL INSTRUMENTS

George E. Dickson, II, 1224 Escalon Ave., Escalon, Calif. 95320

Filed Feb. 21, 1995, Ser. No. 391,927

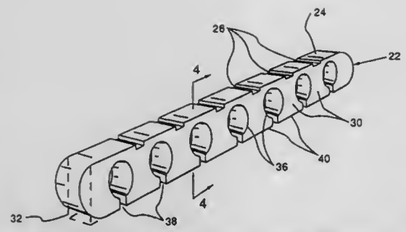
Int. Cl.[6] G10D *3/04*

U.S. Cl. 84—307 **17 Claims**

1. A bridge for a stringed musical instrument, comprising:

an elongated comb-shaped member including

an elongated backbone portion forming an upper surface of the bridge and having particular positions for engagement by each string of the instrument; and



a plurality of tooth-like portions extending transverse to the length of said backbone portion, the distal ends of each tooth-like portion being flared to form an enlarged foot for engaging the soundboard of the instrument, said tooth-like portions forming pedestals for directly supporting at least one string and for transmitting vibratory energy from the supported string to said soundboard, said bridge being adapted for use with a six-string guitar and including six pedestals each adapted to support one of the six guitar strings.

5,644,095

BRASS INSTRUMENT IMPROVEMENT

John R. Davidson, 6565 Deering, Garden City, Mich. 48135

Continuation-in-part of Ser. No. 185,590, Jan. 21, 1994, abandoned. This application Apr. 3, 1995, Ser. No. 417,513

Int. Cl.[6] G10D *7/10*

U.S. Cl. 84—453 **9 Claims**

1. A method of treating a cup mouthpiece wind instrument having an integral series of metal tubing sections with external convexly curved surfaces, said sections having internal spaces defining an air column, said method comprising a treatment for improving the tone and responsiveness of the instrument by the steps of:

preshaping a damping piece of readily moldable waxy material with a concavely shaped surface portion;

holding said piece of readily moldable waxy material with the concavely shaped surface portion pressed against one of said external convexly curved surfaces of said integral series of metal tubing sections at an effective location to attenuate sympathetic vibrations.

5,644,096

MUSICAL COMPUTATIONAL DEVICES

Gerard Neil Bull, 3/33 Kea Street, Katikati, 3063, New Zealand

PCT No. PCT/NZ93/00109, § 371 Date Jun. 26, 1995, § 102(e) Date Jun. 26, 1995, PCT Pub. No. WO94/11857, PCT Pub. Date May 26, 1994

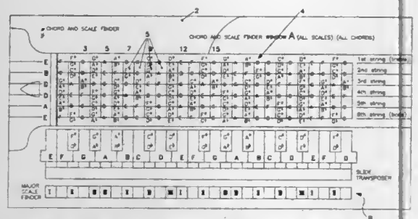
PCT Filed Nov. 11, 1993, Ser. No. 436,296

Claims priority, application New Zealand, Nov. 11, 1992, 245096

Int. Cl.[6] G09B *15/00*

U.S. Cl. 84—485 SR **14 Claims**

1. Apparatus comprising a first element and a second element whose position relative to each other can be altered, and in which



a portion of both said elements is visible during use of the apparatus, said first clement comprising

a visual representation of a keyboard and an associated window portion allowing keyboard associated information on said second clement to be visible, and

a visual representation of a stringed instrument's fret, as said associated window portion allowing frets of a fingerboard of a stringed instrument fret associated information on said second element to be visible, and

information identifying the relative position of different musical notes on said representation of said stringed instrument's fingerboard fret;

said second element comprising:

said fret associated information comprising at least one indicated sequence corresponding to either or both a musical scale or chord, this fret associated information in conjunction with said visual representation of said stringed instrument's fingerboard fret on said first element indicating relative finger positioning for said stringed instrument's fingerboard fret, and

said keyboard associated information in turn comprising an accepted notation for said musical notes,

the keyboard associated information being alignable with the visual representation of said keyboard on said first element thereby allowing said represented notes to be correlated with said notes of the visual representation of said keyboard for key transposition;

and wherein either or both:

i) the positioning of the visual keyboard representation on the first element is such that the position of the musical notes represented by the keyboard correlate to the positioning of the indicated musical notes on at least one of the strings of the visual representation of the frets, and

ii) on said second element, the position of a sequence of said fret associated information representing said scale, correlates in position to a sequence of musical notes on said keyboard associated information belonging to said scale.

5,644,097

PERFORMANCE INFORMATION OUTPUT DEVICE AND AN AUTOMATIC PERFORMING SYSTEM PROVIDED WITH THE PERFORMANCE INFORMATION OUTPUT DEVICE

Yoshihisa Shimada, Hamamatsu, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Shizuoka-Ken, Japan

Filed Sep. 28, 1995, Ser. No. 534,382

Claims priority, application Japan, Oct. 3, 1994, 6-239014; Oct. 3, 1994, 6-239015

Int. Cl.[6] G10H *1/00;7/00*

U.S. Cl. 84—609 **18 Claims**

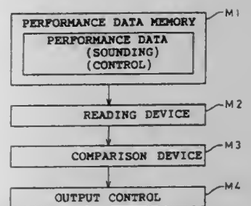
16. A method of converting musical performance data, composed of at least sounding information and control information, into a MIDI signal and serially transferring the MIDI signal to at least one device comprising at least one of a sound source and a sequencer, comprising the steps of:

(a) storing said performance data;

(b) serially reading said stored performance data;

(c) determining whether presently read performance data is control information;

(d) upon a determination that the presently read performance data is control information, comparing the presently read



control information with a most recent previously read control information and determining whether the presently read control information coincides with the previously read control information; and

(e) (i) upon a determination that the presently read control information coincides with the previously read control information, preventing the presently read control information from being transmitted to said at least one external device, and (ii) upon a determination that the presently read control information does not coincide with the previously read control information, converting the presently read control information to a corresponding MIDI signal and serially transmitting the corresponding MIDI signal to said at least one external device.

5,644,098

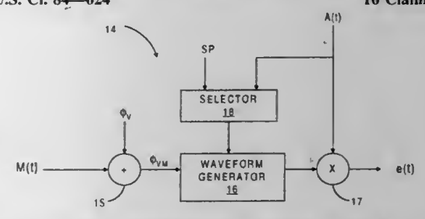
TONE SIGNAL GENERATOR FOR PRODUCING MULTIOPERATOR TONE SIGNALS

Michael V. Jenkins; Salvador R. Bernadas, and Qiujie Dong, all of Austin, Tex., assignors to Crystal Semiconductor Corporation, Austin, Tex.

Filed Jun. 30, 1995, Ser. No. 497,044

Int. Cl.[6] G10H *1/057;1/06*

U.S. Cl. 84—624 **16 Claims**



1. A frequency modulation (FM) tone signal generator for generating an FM tone signal comprising:

a waveform generator that furnishes a waveform signal in response to a phase angle address signal, the waveform generator comprising a plurality of wave tables, each storing a different waveform;

a selector that selects one of the wave tables in response to a plurality of selection signals such that the selected wave table largely provides the waveform signal upon being addressed largely by the phase angle address signal, whereby selection of the selected wave table varies with each selection signal; and

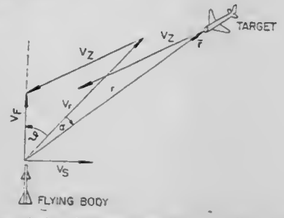
an enveloper that impresses an envelope signal on the waveform signal, the envelope signal being used as a carrier or modulator for generating the FM tone signal.

5,644,099

PROXIMITY DETONATOR

Jürgen Rabbow, and Georg Schmucker, both of Ulm, Germany, assignors to Telefunken Systemtechnik GmbH, Ulm, Germany

Filed Jan. 18, 1977, Ser. No. 760,506
Int. Cl.[6] F42C *13/04*
U.S. Cl. 102—214 **13 Claims**



1. In a proximity detonator for flying bodies for combating flying targets, including a system for providing speed information regarding the relative speed between detonator and target, the improvement comprising means for providing signals corresponding to the speed of approach v_a and the relative speed v_r between the detonator and the target; and means for comparing said signals and for initiating the firing of the detonator when the speed of approach v_a and the relative speed v_r differ by a firing value K_r which is selected in dependence on the optimum point of firing, where

$$v_a = -\frac{\partial}{\partial t}\,|\bar{r}|$$

$$v_r = \left|\frac{\partial}{\partial t}\,\bar{r}\right|$$

and

$\bar{r}$=the location vector from detonator to target;

$\frac{\partial}{\partial t}$

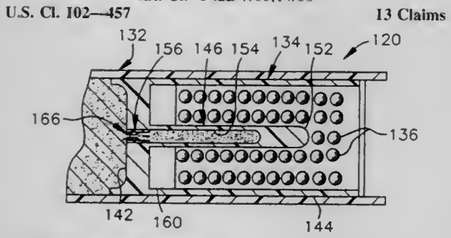
=the differential quotient after time t.

5,644,100

SABOT FOR HIGH-DISPERSION SHOT SHELL

Lawrence J. Puckett, Baltimore, and Robert P. Kaste, North East, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 19, 1996, Ser. No. 699,365
Int. Cl.[6] F42B *7/00;14/06*
U.S. Cl. 102—457 **13 Claims**



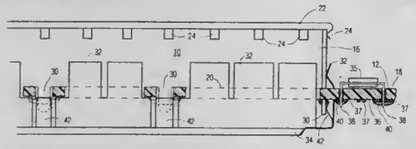
1. A shotgun shell comprising
a shell casing;
a sabot disposed within said shell casing and including a base with an opening formed therethrough and a tubular portion extending from a periphery of said base;
a chamber disposed within said tubular portion in communication with said opening in said base;
a load of shot disposed within said tubular portion around said chamber;
a gas producing propellant disposed within said shell casing between said sabot base and a rear portion of said shell casing, said gas producing propellant being in fluid communication with said opening in said base of said sabot; and
a valve located in said sabot and disposed between said chamber and said opening to control the flow of propellant gases into and out of said chamber, wherein said valve defines a passage communicating said chamber with said propellant gases, and wherein said valve includes a valve member movable within said passage between a closed position sealing said passage and retaining propellant gases in said chamber, and an open position allowing propellant gases to flow through said passage.

5,644,101

PRINTED CIRCUIT BOARD SHIELD ASSEMBLY

Charles Anthony Elliott, Greenwood, Ind., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

PCT No. PCT/US93/07207, § 371 Date Feb. 24, 1994, § 102(e) Date Feb. 24, 1994, PCT Pub. No. WO94/06268, PCT Pub. Date Mar. 17, 1994
Continuation of Ser. No. 936,770, Aug. 28, 1992, abandoned. This PCT application Jul. 30, 1993, Ser. No. 196,248
Int. Cl.[6] H05K *9/00*
U.S. Cl. 174—35 R **7 Claims**



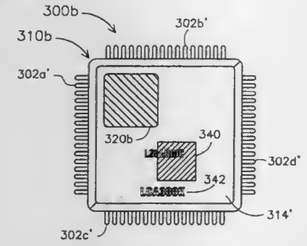
1. In an electronic device having circuitry components mounted on a printed circuit board and an electromagnetic shield assembly shielding at least a portion of the printed circuit board, apparatus comprising:
a planar printed circuit board having thickness, a component mounting side wherein leads of mounted components are inserted through apertures extending through the thickness of the board, and a conductor side having electrically conductive pathways disposed thereon for providing predetermined solderable electrical interconnections between the leads of the mounted components,
an electromagnetic shielding means mounted on the component mounting side of the printed circuit board and having elongated support members extending through the thickness of the printed circuit board to the conductor side and electrically connected to a reference potential through an electrically conductive pathway, the electromagnetic shielding means having a body portion, and edge proximal the component side of the printed circuit board and an edge distal of the component side of the printed circuit board, said shield enclosing a predetermined area of the printed circuit board,
a first electromagnetic shielding cover means extending over the predetermined area of the printed circuit board and removably engaging the edge of the electromagnetic shielding means distal of the component side of the printed circuit board for electromagnetically shielding the predetermined area in cooperation with the electromagnetic shielding means, and
a second electromagnetic shielding cover means disposed proximal to the electrically conductive pathway side of the printed circuit board and extending over the predetermined area, the second electromagnetic shielding cover means having a first and a second separate pluralities of members, the first plurality of members extending through apertures in the printed circuit board for engaging the body of the electromagnetic shielding means, the second plurality of members engaging the support members of the electromagnetic shielding means, the second electromagnetic shield cover means electromagnetically shielding the predetermined area in cooperation with the electromagnetic shield means.

5,644,102

INTEGRATED CIRCUIT PACKAGES WITH DISTINCTIVE COLORATION

Michael D. Rostoker, Boulder Creek, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Filed Mar. 1, 1994, Ser. No. 203,919
Int. Cl.[6] H05K *5/00*
U.S. Cl. 174—52.1 **4 Claims**



1. Integrated circuit package having at least two different colored areas selected to equalize thermal stresses within the package caused by heat generated from an integrated circuit device contained therein, said integrated circuit package comprising:
an integrated circuit device; and
a package body having at least two different colored areas selected to equalize the thermal stress within the package caused by heat generated from the integrated circuit device contained therein, wherein the at least two different colored areas have different heat dissipation characteristics than the remaining areas of the package, the at least two different colored areas being located on the package to normalize thermal stresses across the surface area of the integrated circuit device
a one of the at least two different colored areas has good thermal dissipation characteristics and is located over a relatively hot spot on the integrated circuit device contained within the package body, and
another of the at least two different colored areas has poor thermal dissipation characteristic and is located over a relatively cool spot on the integrated circuit device contained within the package body.

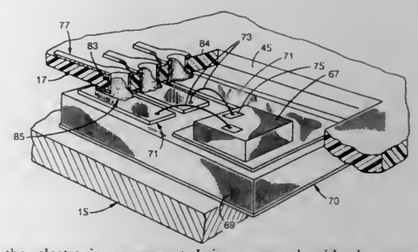
5,644,103

PACKAGING ELECTRICAL COMPONENTS HAVING A SCALLOP FORMED IN AN EDGE OF A CIRCUIT BOARD

Stephen R. Pullen, Derry, N.H., and Walter R. Hedlund, III, Lowell, Mass., assignors to VLT Corporation, San Antonio, Tex.

Filed Nov. 10, 1994, Ser. No. 337,245
Int. Cl.[6] H05K *5/00;1/14*
U.S. Cl. 174—52.1 **15 Claims**

1. A structure comprising:
a baseplate,
a circuit board parallel and adjacent to the baseplate, the circuit board having an edge with a scallop formed in the edge, the scallop being plated with a conductive material,
an electronic component including a power-dissipating surface and a pad for making electrical connection,
the electronic component being mounted with the power-dissipating surface in contact with the baseplate, and the pad electrically connected to the conductive material.

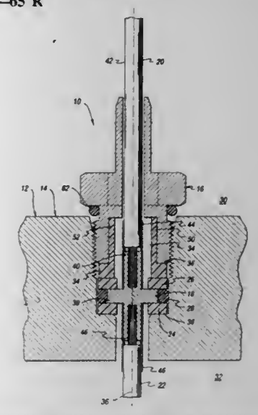


5,644,104

ASSEMBLY FOR PERMITTING THE TRANSMISSION OF AN ELECTRICAL SIGNAL BETWEEN AREAS OF DIFFERENT PRESSURE

Fred C. Porter, 31065 Stafford Dr., Birmingham, Mich. 48010, and Garth J. Schultz, 2111 Lovington Ave. #106, Troy, Mich. 48083

Filed Dec. 19, 1994, Ser. No. 358,254
Int. Cl.[6] H02G *3/22*
U.S. Cl. 174—65 R **23 Claims**



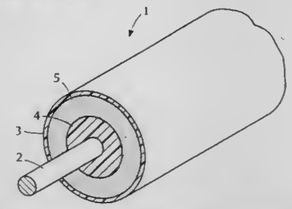
1. An assembly for passing an electrical signal between areas, comprising:
a housing defining a first area and a second area;
a sleeve cooperating with the housing to define a port;
a button disposed at least partially in the port;
a first electrically conductive member disposed in the first area and being in electrical communication with the button;
a second electrically conductive member disposed in the second area and being in electrical communication with the button;
a first insulator disposed between the button and the housing;
a second insulator disposed between the button and the sleeve;
a third insulator disposed between the first insulator and the second insulator; and
a fourth insulator disposed between the sleeve and the second insulator.

5,644,105

SELF-EXTINGUISHING CABLE RELEASING LOW QUANTITIES OF TOXIC AND CORROSIVE SMOKES AND GASES, AND PROCESS FOR PRODUCING THE SAME

Luca Castellani, Corsico, Italy, assignor to Pirelli Cavi S.p.A., Milan, Italy

Filed Dec. 6, 1995, Ser. No. 568,352
Int. Cl.[6] H01B *7/00*
U.S. Cl. 174—110 SR **39 Claims**



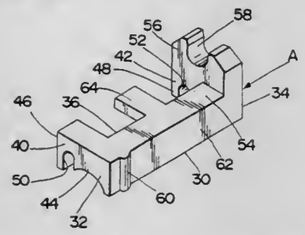
1. Cable comprising at least an energy conductor (**2**) and an outer coating (**3**), self-extinguishing, releasing low quantities of toxic and corrosive smokes and gases, and having a per cent elongation at break equal to at least 100, which coating includes a couple of coaxial layers, respectively inner (**4**) and outer (**5**), said outer layer (**5**) comprising a polymeric mixture including 50 to 80 parts (w/w) of an aromatic polyester of the isophthalic and terephthalic acids, with bisphenol A and 20 to 50 parts (w/w) of a polyether-polyester block elastomer copolymer having a Shore hardness D greater than 50 and a Vicat softening point higher than 170° C., characterized in that said inner layer (**4**) comprises a polyester thermoplastic elastomer including a quantity of aromatic groups such that its Shore hardness D is equal to at least 45 and such that the delamination shear force necessary to separate said layers (**4**, **5**) from one another is equal to at least 2,000 g after ageing in oil ASTM Nr. 3 for 2 hours at 100° C.

5,644,106

THERMISTOR HOLDER

Paul J. Gajeski, and G. Lynnette Marks, both of Muskegon, Mich., assignors to Therm-O-Disc, Incorporated, Mansfield, Ohio

Filed Oct. 11, 1994, Ser. No. 321,105
Int. Cl.[6] H05K *7/02*
U.S. Cl. 174—138 G **13 Claims**



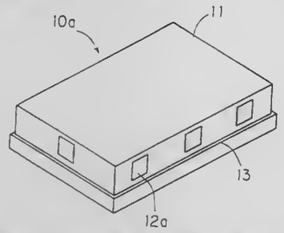
9. A one-piece holder for an electrical circuit component comprising a body having an elongated base portion with opposite ends and a component support surface, endwalls extending outwardly from said base portion adjacent said opposite ends, said endwalls having concave front faces, and a retainer projection extending outwardly from said base portion substantially perpendicular to said support surface intermediate said endwalls.

5,644,107

METHOD OF MANUFACTURING A MULTILAYER ELECTRONIC COMPONENT

Kenji Kubota; Norio Sakai, and Shoichi Kawabata, all of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Division of Ser. No. 227,022, Apr. 13, 1994, which is a division of Ser. No. 96,719, Jul. 23, 1993, abandoned. This application May 10, 1995, Ser. No. 438,339
Claims priority, application Japan, Jul. 27, 1992, 4-199795
Int. Cl.[6] H05K *1/02*
U.S. Cl. 174—262 **6 Claims**



1. An assembly of electrically independent multilayer electronic components, said assembly being adapted to be cut along prescribed cutting lines for obtaining a plurality of multilayer electronic components, said assembly comprising:

a mother laminate comprising a plurality of stacked mother insulating sheets with conductors thereon which are connectable to internal circuit elements corresponding to each of said respective multilayer electronic components,

said laminate having via holes, said via holes being coated with conductive materials and being electrically connected with said conductors, and being provided in positions along said cutting lines,

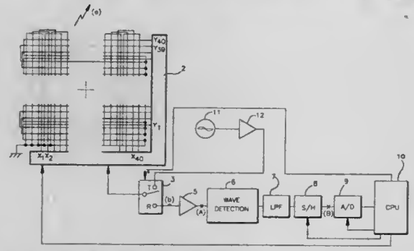
grooves being formed partially but not completely through said mother laminate along said cutting lines, thereby exposing at least said conductive materials in said via holes at surfaces of said grooves and thereby forming said plurality of multilayer electronic components which are electrically independent of each other while still remaining assembled with each other.

5,644,108

POSITION DETECTION DEVICE UTILIZING ELECTROMAGNETIC INDUCTION

Yuji Katsurahira, and Yasuhiro Fukuzaki, both of Saitama-ken, Japan, assignors to WACOM Co., Ltd., Saitama-ken, Japan

Filed Jul. 13, 1995, Ser. No. 503,815
Claims priority, application Japan, Jul. 18, 1994, 6-165495
Int. Cl.[6] G08C *21/00;* **G09G** *3/02*
U.S. Cl. 178—18 **89 Claims**



1. A position detector comprising:

a position indicator having an oscillation circuit consisting of at least a first coil and condenser, and

a tablet which transmits to the position indicator a transmission signal having a predetermined frequency corresponding to a resonance frequency of the oscillation circuit, receives from the oscillation circuit a signal corresponding to the position indicated by the position indicator and finds the position of coordinates of the position indicator on the basis of the received signal, characterized in that the position indicator comprises:

a control coil put side by side with the first coil so that a part of a magnetic flux generated at the first coil by an induced current running through the first coil passes;

a first control means which opens/closes the control coil in response to an operation mode indication signal transmitted from the tablet;

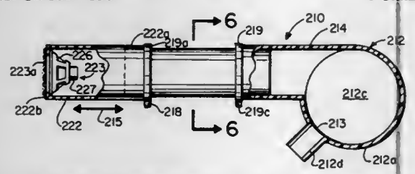
a second control means which corrects a resonant frequency of the oscillation circuit so that it coincides with the predetermined frequency of the transmitted signal when the control coil is controlled to be opened/closed by the first control means.

5,644,109

SPEAKER ENCLOSURE

Ottis G. Newman, 9344 Bramble Dr., Baton Rouge, La. 70818

Filed May 30, 1995, Ser. No. 453,181
Int. Cl.[6] H05K *5/00*
U.S. Cl. 181—156 **4 Claims**



1. An extensible speaker assembly for use in a motor vehicle comprising:

a. an enclosed hollow chamber means for receiving sound waves from a speaker, said hollow chamber means having

i. a first hollow tubular cylinder rigidly connected thereto for receiving sound waves generated from a speaker and conveying the sound waves to said chamber, and

ii. a second hollow tubular cylinder rigidly connected to said hollow chamber means for transmitting sound waves received inside said hollow chamber means to the outside of said hollow chamber means, said first tubular cylinder and said second tubular cylinder being open at both ends,

b. a third hollow tubular cylinder open at both ends, said third tubular cylinder being slidably connected to said first tubular cylinder,

c. a fourth hollow tubular cylinder open at both ends, said fourth tubular cylinder being slidably connected to said third tubular cylinder, and

d. a speaker connected to the inside of said fourth hollow tubular cylinder for generating sound waves.

5,644,110

ELEVATOR SERVICE FOR DUAL LOBBY DURING UP-PEAK

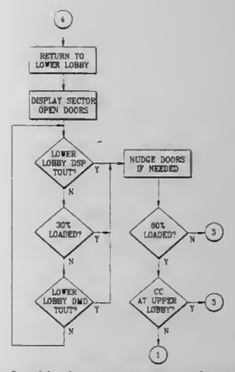
Zuhair S. Bahjat; James M. Collins, both of Farmington, and David M. Hughes, New Britain, all of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Dec. 16, 1994, Ser. No. 357,630
Int. Cl.[6] B66B *1/28*
U.S. Cl. 187—385 **1 Claim**

1. An elevator system, comprising:

a controller having an electronic processor coupled to a memory;

a plurality of elevator cars controllably connected to said controller, a dual lobby routine stored within said memory, said dual lobby routine including instructions for dispatching at least one of said elevator cars to a lower lobby during up-peak, indicating a sector assigned to said car, dispatching said car to the upper lobby if a first load weight threshold is exceeded and a second load weight threshold is not exceeded or if a car call to the upper lobby is registered, and then indicating the sector assigned to said car while said car is located at the upper lobby, said second load weight threshold being equal to at least two times said first load weight threshold, and wherein said instructions further include instructions for nudging doors of said at least one elevator car closed prior to dispatching said car to the upper lobby.

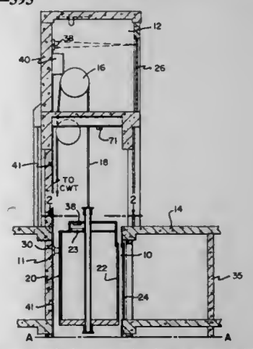


5,644,111

ELEVATOR HATCH DOOR MONITORING SYSTEM

Bobuslav Cerny; Anthony Geniale; John Ashton, and Domenico Vitulli, all of New York, N.Y., assignors to New York City Housing Authority, New York, N.Y.

Filed May 8, 1995, Ser. No. 436,933
Int. Cl.[6] B66B *1/28;1/34*
U.S. Cl. 187—393 **27 Claims**



26. An elevator shaft door monitoring system which determines if any door to an elevator shaft at any floor along the elevator shaft is opened while an elevator cab is away from the door, comprising:

at least two non-contact door monitors being provided at a floor, each door monitor being mounted in the shaft at a respective location generally opposite each door being monitored along the shaft, each such door monitor being directed at the respective door and detecting the opening of the respective door without direct contact therewith, whereby one door monitor monitors a hatch door at the floor and the other door monitor monitors the presence of the elevator cab, each door monitor produces an alarm signal whenever a respective door is being opened and the elevator cab is not at the floor where the door is being opened on the basis of a distance signal produced by

each door monitor whereby the distance is determined from the respective door monitor to an object;

a preprogrammed microprocessor for receiving the alarm signals and distance signals from each door monitor and indicating an alarm condition whenever an alarm signal is received; and

a local area network connecting each monitor to the microprocessor whereby each door monitor has an interface circuit connected between it and the network.

5,644,112

BRAKING CIRCUIT SWITCH FOR AN ELECTRIC MOTOR

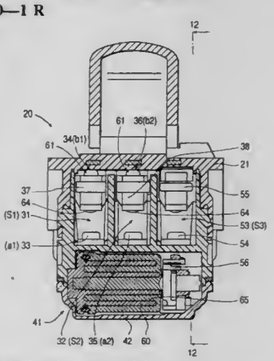
August Geiger, Talheim; Alexander Knappe, and Michael Bufe, both of Rietheim, all of Germany, assignors to Marquardt GmbH, Rietheim, Germany

Division of Ser. No. 125,864, Sep. 24, 1993, Pat. No. 5,449,992. This application May 31, 1995, Ser. No. 455,106

Claims priority, application Germany, Sep. 26, 1992, 42 32 402.5

Int. Cl.[6] H01H *9/00*

U.S. Cl. 200—1 R **17 Claims**



1. An electrical switch, comprising:

first and second changeover switches, said first changeover switch comprising first and second stationary contacts and a first movable contact for switching over between the first and second stationary contacts of the first changeover switch, said second changeover switch comprising first and second stationary contacts and a second movable contact for switching over between the first and second stationary contacts of the second changeover switch;

a rocker comprising two lever arms and being mounted for pivoting between first and second positions;

a plunger operatively connected to one lever arm of the rocker for causing the rocker to pivot between its first position corresponding to a non-actuated position of the electrical switch and its second position corresponding to an actuated position of the electrical switch, the first stationary contacts being associated with the actuated position of the electrical switch and the second stationary contacts being associated with the non-actuated position;

spring means connected between the other lever arm of the rocker and the first and second movable contacts, the spring means being arranged on the rocker and on the first and second movable contacts so that when switching over between the first and second stationary contacts the first and second movable contacts are lifted off the first stationary contacts essentially synchronously in a direction toward the second stationary contacts and are lifted off the second stationary contacts essentially synchronously in a direction toward the first stationary contacts; and

delay means coupled to the first movable contact of the first changeover switch for only delaying movement of the first movable contact of the first changeover switch when switching over from the first stationary contact to the second stationary contact of the first changeover switch, after the first movable contact has lifted off the first stationary contact of the first changeover switch, so that the first movable contact comes to rest against the second stationary contact of the first changeover switch later than the second movable contact comes to rest against the second stationary contact of the second changeover switch.

5,644,113

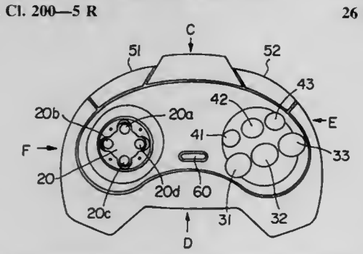
HAND HELD CONTROL KEY DEVICE INCLUDING MULTIPLE SWITCH ARRANGEMENTS

Toshinori Date, Tokyo, Japan; Johnny D. Couch, San Jose, and Sarah Mason Richmond, Foster City, both of Calif., assignors to Sega Eenterprises, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 367,577, Jan. 3, 1995, abandoned. This application Mar. 31, 1995, Ser. No. 414,316

Int. Cl.[6] H01H *25/04*

U.S. Cl. 200—5 R **26 Claims**



20. A controller for a video game machine to be operatively held by both hands of a operator, comprising:

a housing having an upper spherical surface with an approximately circular outer perimeter, extending traversely to the upper spherical surface, along a sufficient portion of the perimeter to permit contact with the respective fingers and palms of each of the operator's hands and a lower surface having separate right and left convex surfaces extending respectively inwardly from the circular outer perimeter and terminating on the lower surface to provide a pair of curved hand grips to permit the respective middle and second to last fingers of the respective operator's hands to hold the lower surface of the housing;

a first control means for generating electrical signals formed on one side of the upper surface of the housing and positioned for operation by the left thumb of the operator;

a second control means for generating electrical signals formed on the other side of the upper surface of the housing and positioned for operation by the right thumb of the operator;

a third control means for generating electrical signals formed on the outer circular perimeter of the housing and extending across a portion of the upper surface, the third control means is positioned for operation by the left forefinger of the operator and also by the left thumb of the operator; and

a fourth control means for generating electrical signals formed on the outer circular perimeter of the housing and extending across a portion of the upper spherical surface, the third control means is positioned for operation by the right forefinger of the operator and also by the right thumb of the operator, whereby the operator can comfortably grasp the controller with the lower convex surfaces conforming to the natural curved position of the operator's fingers while positioning the thumbs and forefingers for control of the respective control means.

5,644,114

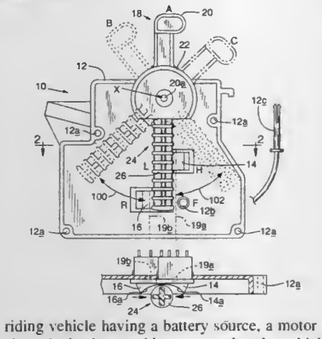
PLURAL SWITCH ARRANGEMENT INCLUDING SHIFTER CAM FOR CHILDREN'S RIDE-ON VEHICLES

Patrice M. Neaves, Ft. Wayne, Ind., assignor to Mattel, Inc., El Segundo, Calif.

Filed Jul. 3, 1995, Ser. No. 497,821

Int. Cl.[6] H01H *3/00;21/80*

U.S. Cl. 200—6 R **11 Claims**



1. In a riding vehicle having a battery source, a motor source, a vehicle body and wheels rotatably connected to the vehicle's body, a shifter assembly mounted to the vehicle's body and connected between the battery source and the motor source for selecting speed and direction comprising:

a speed switch movable about a pivot axis between a high and a low setting;

a direction switch adjacent the speed switch, movable about a pivot axis between a forward and a reverse setting; and

an actuator positioned adjacent the speed and direction switches, movable in a plane generally parallel to the pivot axes of the speed and direction switches, for selectively contacting the switches to cause the speed switch to pivot between its low and high settings when the direction switch is in its forward setting and to cause the direction switch to pivot between its forward and reverse settings when the speed switch is in its low setting, each switch remaining in either of its settings until acted upon by the actuator to cause the switch to pivot to its other setting, where it remains until the actuator again acts upon it to cause the switch to pivot back to its first setting.

5,644,115

RELAY MATRIX SWITCHING ASSEMBLY

William Knauer, Portage, Ohio, assignor to Keithley Instruments, Inc., Cleveland, Ohio

Filed May 5, 1995, Ser. No. 436,018

Int. Cl.[6] H01H *51/00;67/02;1/66*

U.S. Cl. 200—175 **30 Claims**

1. A relay matrix, comprising:

a plurality of controlled switches arranged in a plurality of rows and columns, each switch having first and second leads extending therefrom;

a plurality of input conductors, each corresponding to one of the columns and removably connected to the first leads of the switches in the corresponding column;

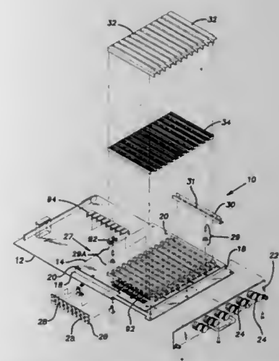
a plurality of pathway conductors, each corresponding to one of the rows and removably connected to the second leads of the switches in the corresponding row; and

said switches being controlled to selectively interconnect corresponding input and pathway conductors, and said switches being disposed between the corresponding input and pathway conductors.

8. A relay matrix, comprising:

a plurality of relays, each relay including a switching element having first and second leads;

a plurality of first conductors, each connectable with the first leads of corresponding switching elements;



a plurality of first interconnect bars each supporting one of the first conductors;

a plurality of second conductors, each connectable with the second leads of corresponding switching elements; and

a plurality of second interconnect bars each supporting one of the second conductors, so as to permit connection of a selected one of said first conductors with a selected one of said second conductors by operation of the relays.

15. A relay matrix according to claim **8**, further comprising a plurality of input connectors each connected to a corresponding one of the first conductors and adapted to be connected to a device under test, a plurality of pathway connectors each connected to a corresponding one of the second conductors and adapted to be connected to a test apparatus.

5,644,116

CARBON MONOXIDE SENSOR AND METHOD OF DETECTING CARBON MONOXIDE

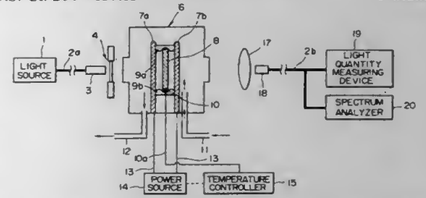
Kazutoshi Noda, Tsukuba; Tetsuhiko Kobayashi, and Masanori Ando, both of Ikeda, all of Japan, assignors to Director-General of Agency of Industrial Science and Technology, Japan

Filed Jul. 23, 1996, Ser. No. 681,501

Claims priority, application Japan, Jul. 26, 1995, 7-190222

Int. Cl.[6] G01N *21/00;21/01*

U.S. Cl. 204—157.15 **1 Claim**



1. A method of detecting carbon monoxide in an oxygen-containing gas, comprising the steps of:

fixedly securing a sensor within a light permeable cell, said sensor comprising a transparent substrate, and a metal oxide layer provided over a surface of said substrate and containing nickel oxide and cobalt oxide in an amount providing an atomic ratio Ni/Co of 99:1 to 1:2;

feeding said gas through said sensor-containing cell;

irradiating said cell with light having a wave length of 350–1,500 nm while maintaining said sensor at a temperature of 200°–350° C., such that said light passes through said sensor contained in said cell; and

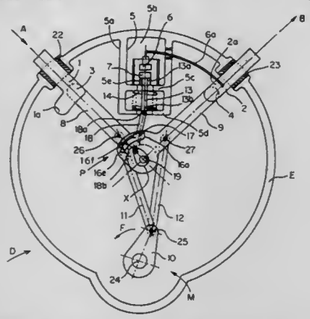
measuring the transmittance of said light through said sensor by means of a photoelectric device, said measured transmittance being indicative of carbon monoxide in the oxygen-containing gas.

5,644,117

MEDIUM VOLTAGE ELECTRICAL CIRCUIT BREAKER AND SWITCH

Roger Bolongeat-Mobleu; Frédéric Burnaz, both of Echirolles, and Hans Schellekens, Meylan, all of France, assignors to Schnelder Electric SA, France

Filed Apr. 4, 1995, Ser. No. 416,362
Claims priority, application France, Apr. 25, 1994, 9405071
Int. Cl.[6] H01H *33/42*
U.S. Cl. 218—154 12 Claims



1. A medium voltage electric switch, comprising:

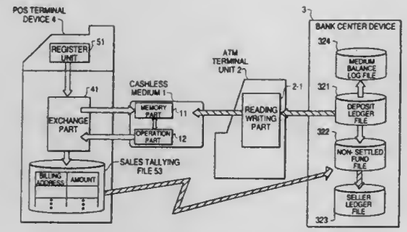
a sealed enclosure filled with a dielectric gas in which there are housed a first stationary contact electrically connected to a first connection terminal, a second stationary contact electrically connected to a second connection terminal, a mobile conducting bridge equipped with first and second movable contacts designed to cooperate respectively with the first and second stationary contacts and an operating mechanism coupled to said bridge to establish or interrupt the electrical circuit between the first and second connection terminals, said switch further comprising a vacuum cartridge containing a third stationary contact electrically connected to one of the first and second connection terminals, and a third movable contact electrically connected to said bridge at an intermediate point situated between the first and second movable contacts and mechanically coupled to said operating mechanism, and sequencing means designed to establish the opening and closing sequences of the first, second and third movable contacts associated with the first, second and third stationary contacts, cooperating with said operating means, in such a way that in the stable open or closed positions of the switch, the third stationary and movable contacts are separated, and that in the course of opening or closing operations of the switch, the third stationary and movable contacts close momentarily to switch the arc associated with the first stationary and movable contacts or with the second stationary and movable contacts.

5,644,118

ELECTRONIC CASHLESS SYSTEM

Shoji Hayashida, Higashi-kurume, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 279,856, Jul. 26, 1994, which is a continuation of Ser. No. 959,458, Oct. 9, 1992, abandoned, which is a continuation of Ser. No. 578,234, Sep. 6, 1990, abandoned.
This application Apr. 19, 1996, Ser. No. 634,850
Claims priority, application Japan, Sep. 6, 1989, 1-230893
Int. Cl.[6] G06F *17/60*
U.S. Cl. 235—379 13 Claims



1. An electronic cashless system comprising:

a terminal device; and

a center device connected to said terminal device;

said terminal device including

first communicating means for communicating with said center device a first amount information to be subtracted from an account in said center device, said first communicating means annexing an account information with said first amount information; and

means for storing said first amount information into a memory; and

said center device including:

deposit ledger file means for identifying and storing account balances of multiple accounts, account by account;

non-settled fund file means for storing a non-settled fund which is an accumulated value of said first amount information, without specifying an account of said first amount information, at each time which said first amount information is subtracted from said account in said center device; and

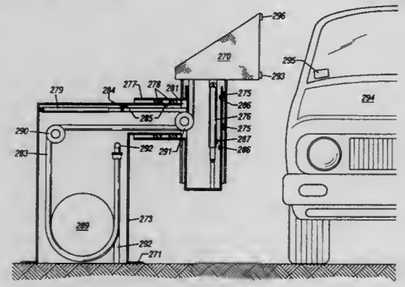
processor means in response to said first amount information communicated with said terminal device, for subtracting said first amount information from said account specified by said annexed account information, and for renewing said non-settled fund in said non-settled fund file means by adding, without annexing said account information, said first amount information which is subtracted from said account by said processor means.

5,644,119

CUSTOMER INTERFACE FOR DRIVER

Joseph Anthony Padula, Vancouver; Owen Ricardo Williams, New Westminster; Mark Frederick Abraham, Vancouver, all of Canada, and William Dale Ramsey, Jr., Kingwood, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jun. 5, 1995, Ser. No. 461,275
Int. Cl.[6] G06K *15/00*
U.S. Cl. 235—384 11 Claims



1. A customer interface comprising:

a customer interface panel;

a means to determine a desirable height for the customer to access the interface panel from that particular vehicle;

a means to position the customer interface panel at the desirable height for the customer in the particular vehicle; and

a means to position the customer interface panel within a predetermined lateral distance from the vehicle;

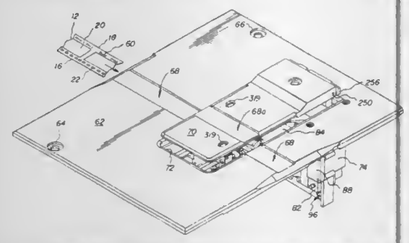
wherein the means to determine a desirable height for the customer to access the interface panel from the particular vehicle comprises a radio frequency transponder located within the vehicle capable of transmitting data indicative of vehicle make, model and year.

5,644,120

APPARATUS FOR READING OPTICAL CODE ON MOVING PHOTOGRAPHIC FILM

Carl Wilson Roy, Spencerport, and John A. Schempp, Jr., Fairport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 4, 1996, Ser. No. 610,642
Int. Cl.[6] G06K *7/10;13/00;* G03D *13/08;13/14*
U.S. Cl. 235—462 14 Claims



1. Apparatus for reading optical code on moving web of photographic film, comprising:

a first frame;

a substantially straight track supported by said first frame;

first and second carriage members mounted for movement along said track;

first and second oppositely facing edge guides each supported by a respective one of said carriage members, each edge guide being positioned transversely to said track and each edge guide comprising a contact surface for engaging an edge of the web moving between said edge guides, each contact surface comprising a central portion and, on opposite sides of said central potion, further, curved potions to provide lateral strength in the film moving across said contact surfaces between said edge guides;

means for moving said first and second carriage members back and forth along said track to vary a distance between said edge guides to accommodate webs of different widths;

a first flexure resiliently engaging said means for moving with said first carriage member when said guides are moved toward each other;

a second flexure resiliently engaging said means for moving with said second carriage member when said guides are moved toward each other;

a second frame;

first and second film deflectors supported by said second frame;

means for relatively positioning said first and second frames with said film deflectors engaging the film on opposite sides of said central portion, thereby to deflect the film into a serpentine path extended along one of said further curved portions, across said central portion and along the other of said further curved portions, said means for relatively positioning being selectively adjustable to vary deflection of the film into said serpentine path, whereby films having different properties can be constrained;

a housing having a slot through which an edge of the web may be transported, said housing being supported respectively by one of said first and second carriage members;

a light source mounted in said housing on one side of said slot;

a code reader mounted in said housing on an opposite side of said slot;

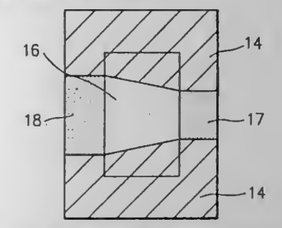
means for moving said housing relative to its said one carriage member to adjust location of said reader relative to an edge of the web.

5,644,121

SOLID STATE IMAGE SENSOR

Takashi Nakano; Akiyoshi Kohno, and Kozo Orihara, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Dec. 7, 1995, Ser. No. 568,930
Claims priority, application Japan, Dec. 7, 1994, 6-303572
Int. Cl.[6] H01J *40/14*
U.S. Cl. 250—208.1 2 Claims



1. A solid state image sensor in which signal charges are photoelectrically generated by a plurality of photodiodes, transferred through a transfer register to a charge detection capacitance and sensed through a floating junction, as a potential change of the charge detection capacitance to be amplified and output at an output amplifier composed of a plurality of stages of driver transistors, wherein:

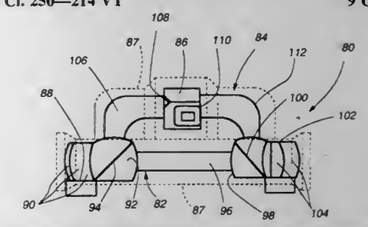
a driver transistor of a first stage of the plurality of stages of driver transistors has a channel thereof formed to be narrower at a drain end thereof than at a source end thereof, with an effective width thereof unchanged.

5,644,122

GRIN OPTICAL SYSTEM

Kenneth E. Siegenthaler, Colorado Springs, Colo., and James R. Rotge, Albuquerque, N. Mex., assignors to Aptek, Inc. (Siegenthaler), Colorado Springs, Colo.

Filed Jul. 11, 1995, Ser. No. 500,615
Int. Cl.[6] G02B *23/04*
U.S. Cl. 250—214 VT 9 Claims



1. An aiming sight including graded index optical elements, each of which is referred to as a GRIN element, comprising:

an objective optical element including at least one GRIN element, said objective optical element having a front surface upon which light from an object impinges and a rear surface from which the light from the object passes from the objective element;

an ocular optical element including at least one GRIN element, said ocular optical element being aligned in an optical path with said objective optical element and having a front surface upon which the light from the objective optical element enters and a rear surface from which the light from said aiming sight exits;

a beam splitter positioned in the optical path to receive the light from the objective optical element, the beam splitter operatively splitting the light from the objective optical element

into a first range of wavelengths of visible light and a second range of wavelengths or invisible light;

a first light channel positioned to receive light within the first range of wavelengths from the beam splitter;

a second light channel seperate from the first channel and positioned to receive light within the second range of wavelengths from the beam splitter;

a beam combiner positioned to receive and combine the light from the first and second light channels and to apply the combined light to the ocular optical element;

an image intensifier in the second light channel between the beam splitter and the beam combiner;

a first optical element located within the first light channel between the beam splitter and the beam combiner;

a second optical element located within the second light channel between the beam splitter and one end of the image intensifier; and

a third optical element located within the second light channel between an opposite end of the image intensifier and the beam combiner; and wherein:

said first, second and third optical elements provide for a substantially voidless aining sight.

5,644,123

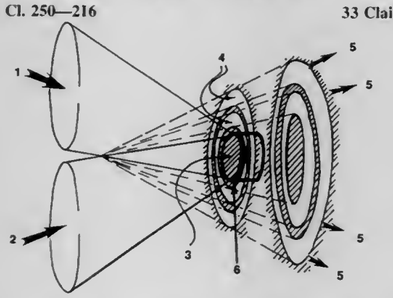
PHOTONIC SIGNAL PROCESSING, AMPLIFICATION, AND COMPUTING USING SPECIAL INTERFERENCE

John Norman Hait, Missoula, Mont., assignor to Rocky Mountain Research Center, Missoula, Mont.

Continuation of Ser. No. 357,460, Dec. 16, 1994. This application Apr. 19, 1995, Ser. No. 424,177

Int. Cl.[6] G06G *7/00;* **G06E** *1/04*

U.S. Cl. 250—216 **33 Claims**



1. An energy beam controller for controlling a plurality of energy beam sets with at least one of said plurality of energy beam sets comprising:

an image component separator having a first location and a second location and an output for outputting energy from said second location, and

a plurality of input beam sets including a first beam set and a second beam set positioned and oriented so as to produce interference at said first location such that said interference diverts energy proportional to said second beam set to said second location when said first and second beam sets are on, thereby providing a controlled said output.

5,644,124

PHOTODETECTOR WITH A MULTILAYER FILTER AND METHOD OF PRODUCING THE SAME

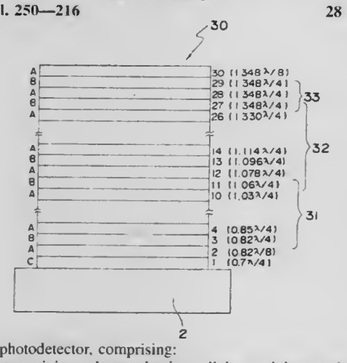
Toshimasa Hamada, Yamatokooriyama; Masaru Iwasaki, Izumisano; Tetsuya Hanamoto, Nishinomiya; Shohichi Katoh, Yamatotakada; Takahiro Funakoshi, Tenri; Koji Miyake, Higashi-Hiroshima, and Masumi Nakamichi, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 270,165, Jul. 1, 1994, abandoned. This application May 1, 1996, Ser. No. 646,729

Claims priority, application Japan, Jul. 1, 1993, 5-163522

Int. Cl.[6] H01J *3/14*

U.S. Cl. 250—216 **28 Claims**



1. A photodetector, comprising:

a light-receiving substrate having a light receiving portion on a top surface of the substrate and performing photoelectric conversion on light received by the light-receiving portion; and

a multilayer filter formed on the light-receiving substrate for selectively passing light components in a predetermined wavelength band, wherein the multilayer filter comprises high refractive index films and low refractive index films, wherein the high and low refractive index films have optical film thicknesses that vary according to a plurality of different types of arithmetic series each type of arithmetic series having a common difference, the arithmetic series of one type being different in common difference from the common difference of another type.

5,644,125

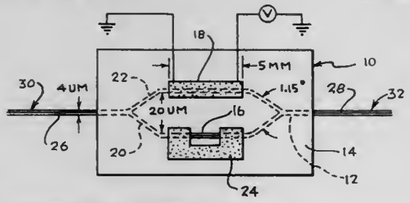
SPECTROMETER EMPLOYING A MACH ZEHNDER INTERFEROMETER CREATED BY ETCHING A WAVEGUIDE ON A SUBSTRATE

Darold Wobschall, Williamsville, N.Y., assignor to Research Foundation of State University NY, Albany, N.Y.

Filed Nov. 23, 1994, Ser. No. 344,184

Int. Cl.[6] G01B *9/02*

U.S. Cl. 250—227.27 **10 Claims**



1. An interfering spectrometer comprising:

a substrate having an input end for receiving white light and an output end;

a waveguide for conducting the white light said waveguide being etched upon said substrate, said waveguide having a

plurality of optical paths of nearly equal physical length for passing the white light from the input end of said substrate to the output end of said substrate, at least one of the optical paths being a reference path, and at least one other of the optical paths being a sensing path having a sample area adapted to be exposed to a sample under test, each of the optical paths having an input end and an output end, the input ends of the optical paths being joined together upon the input end of said substrate to form an input path for the white light, the output ends of the optical paths being joined together upon the output end of said substrate to form an output path for recombining the white light from the optical paths;

input coupling means connected to said input path for receiving the white light;

means for linearly varying over time the optical length of at least one of said reference paths, the intensity of the white light at the output path being modulated depending on a phase difference between the light in the reference paths and the light in the sensing paths;

photo detecting means for converting electromagnetic intensity to an electrical signal, said photo detecting means having an input and an output;

an output coupling means for passing recombined white light from said output path to the input of said photo detecting means;

current to voltage conversion means having an input coupled to the output of said photo detecting means, said current to voltage conversion means further having an output;

analog to digital conversion means having an input coupled to the output of said current to voltage conversion means whereby the output of said analog to digital conversion means represents the intensity of the light in said output path;

digital signal processing means having an input coupled to the output of said analog to digital conversion means, said digital signal processing means comprising:

means for calculating the optical intensity of the light in said output path as a function of wavelength;

means for comparing the optical intensity of the light in the output path when a sample is present in the at least one sensing path to the optical intensity of the light in the output path when no sample is present in the at least one sensing path;

means for displaying the results of said comparison.

5,644,126

MANUAL IMPLEMENT FOR INPUTTING INCREMENTAL INFORMATION BY ATTITUDE CONTROL

Yasuji Ogawa, Otone-machi, Japan, assignor to Kabushikikaisha Wacom, Japan

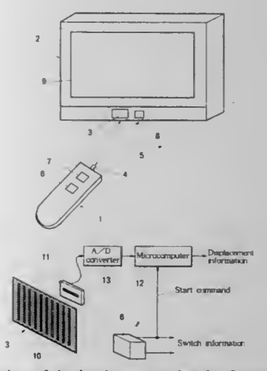
Filed May 19, 1995, Ser. No. 445,169

Claims priority, application Japan, May 20, 1994, 6-131363

Int. Cl.[6] G01D *5/34*

U.S. Cl. 250—231.1 **24 Claims**

1. An information input apparatus for inputting information into a machine, comprising: an implement manually operable to vary at least one of a position and a direction thereof relative to a reference point; at least one light source disposed at one of the implement and the reference point for transmitting an optical ray to the other one of the implement and the reference point; and a detector disposed at the other one of the implement and the reference point for receiving the optical ray to detect a physical variation in the position or the direction of the implement so as to input displacement information representative of an incremental/decremental amount into the machine according to the detected physical variation; wherein the detector comprises light modulation means having a periodic pattern for spatially modulating the optical ray to form a periodic image which shifts in response to the physical variation of the implement, receiving means comprising an image sensor having an array of pixels for capturing the shifting periodical image to output a corresponding periodic signal, and processor means for processing the periodic signal to extract therefrom the



physical variation of the implement to thereby form the displacement information which is input to the machine.

5,644,127

ROTARY ENCODER AND INPUT DEVICE USING THE SAME

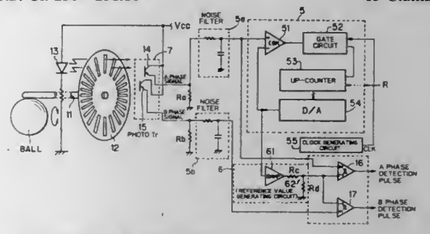
Hideo Ohmae, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Dec. 22, 1994, Ser. No. 361,379

Claims priority, application Japan, Dec. 27, 1993, 5-348546

Int. Cl.[6] G01D *5/34*

U.S. Cl. 250—231.16 **15 Claims**



1. A rotary encoder comprising:

a light receiving unit including a first light receiving element and a second light receiving element which receive light emitted from a light emitting element via slits formed at a rotary disk and respectively generate detection signals whose phases differ from each other substantially by 90°;

a first waveform shaping circuit which compares the detection signal from said first light receiving element with a reference value and generates a first detection output of a rectangular waveform;

a second waveform shaping circuit which compares the detection signal from said second light receiving element with the reference value and generates a second detection output of a rectangular waveform;

a peak hold circuit which receives the detection signal from said first light receiving element and holds the peak value thereof; and

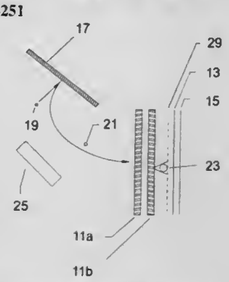
a reference value generating circuit which generates the reference value depending on the peak value held at said peak hold circuit.

5,644,128

FAST TIMING POSITION SENSITIVE DETECTOR

Hermann Wollnik, Fernwald, and Christoph Klein, Bad Endbach, both of Germany, assignors to Ionwerks, Houston, Tex.

Filed Aug. 25, 1994, Ser. No. 296,312
Int. Cl.[6] H05H *3/00;* H01J *47/00*
U.S. Cl. 250—251 45 Claims



1. A position sensitive fast timing detector for atomic particles comprising:

a channel plate exhibiting a front surface for detecting a substantially simultaneous impact of one or more atomic particles in close proximity, said channel plate amplifying said one or more atomic particles into an electron cloud released from a rear surface of said channel plate; and

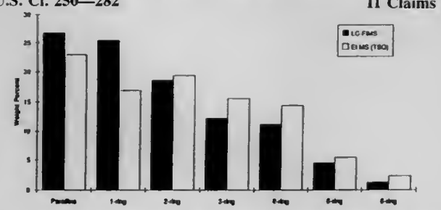
a triplate waveguide electron detector for independently registering a time of occurrence and a position of the electron cloud formed behind the channel plate.

5,644,129

DIRECT ANALYSIS OF PARAFFIN AND NAPHTHENE TYPES IN HYDROCARBON

Chang S. Hsu, Bridgewater; Saul C. Blum, Edison; Zhenmin Liang, Branchburg; Peter B. Grosshans, Whitehouse Station, and Winston K. Robbins, New Providence, all of N.J., assignors to Exxon Research & Engineering Company, Florham Park, N.J.

Filed Feb. 2, 1996, Ser. No. 595,681
Int. Cl.[6] B01D *59/44;* H01J *49/00*
U.S. Cl. 250—282 11 Claims



1. A method to distinguish and measure normal paraffins, isoparaffins, and naphthenes in a saturated hydrocarbon mixture comprising:

(a) field-ionizing said hydrocarbon mixture,

(b) separating said normal paraffins, isoparaffins, and naphthenes, and

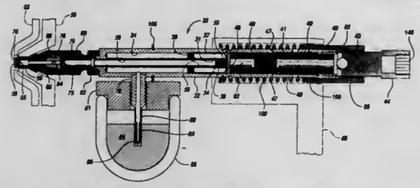
(c) detecting said normal paraffins as molecular ions, naphthenes as molecular ions, and isoparaffins as fragment ions.

5,644,130

MULTI-GAS CATHODE ION SURGE

James E. Raatz, Middleton, Wis., assignor to National Electrostatics Corp., Middleton, Wis.

Filed Mar. 20, 1996, Ser. No. 619,850
Int. Cl.[6] H01J *49/04*
U.S. Cl. 250—288 24 Claims



1. An apparatus having a gas sample container and valve for providing gas to an ion source, comprising:

a valve body having portions defining a gas storage volume;

a valve stem mounted to the valve body, the valve stem having portions defining a passageway for releasing gas from the storage volume;

a valve seat moved with respect to the valve body, wherein the valve seat is moved away from the valve stem to permit a flow of said gas from the storage volume to the passageway in the valve stem, and wherein the valve seat is moved towards the valve stem to block the flow of said gas from the storage volume to the valve stem passageway;

a first spring having a first spring constant and located within the valve body and biasing the valve seat away from the valve stem;

a second spring having a second spring constant and providing a spring force for biasing the valve seat towards the valve stem, wherein the second spring constant is less than one half the first spring constant; and

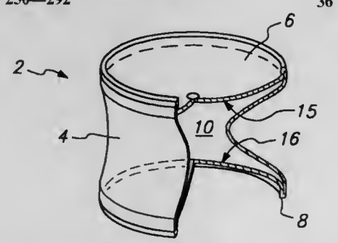
a screw mounted to the valve body, the second spring positioned between the screw and the valve seat, the screw positioned to move towards and away from the second spring, to adjust the spring force to open and close the valve seat.

5,644,131

HYPERBOLIC ION TRAP AND ASSOCIATED METHODS OF MANUFACTURE

Stuart C. Hansen, Palo Alto, Calif., assignor to Hewlett-Packard Co., Palo Alto, Calif.

Filed May 22, 1996, Ser. No. 651,367
Int. Cl.[6] H01J *49/42*
U.S. Cl. 250—292 36 Claims



1. A hyperbolic ion trap comprising:

a glass ring electrode having an interior surface with a convex portion having a generally hyperbolic cross section, a first open terminus and a second open terminus, wherein the convex portion has a conductive coating thereon;

a first glass end-cap electrode comprising a convex interior surface having a generally hyperbolic cross section with a conductive coating thereon, wherein said first end-cap electrode is fixably aligned within the first open terminus of the ring electrode such that the interior surface of the first end-cap electrode is adjacent to the interior surface of the ring electrode; and

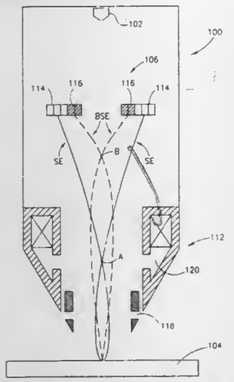
a second glass end-cap electrode comprising a convex interior surface having a generally hyperbolic cross section with a conductive coating thereon, wherein said second end-cap electrode is fixably aligned within the second open terminus of the ring electrode such that the interior surface of the second end-cap electrode is adjacent to the interior surface of the ring electrode and in facing relation with the interior surface of the first end-cap electrode, thereby defining a hyperbolic chamber.

5,644,132

SYSTEM FOR HIGH RESOLUTION IMAGING AND MEASUREMENT OF TOPOGRAPHIC AND MATERIAL FEATURES ON A SPECIMEN

Alon Litman, Nes Ziona; Alexander Goldenstein, Holon, and Steven R. Rogers, Moshav Beit, all of Israel, assignors to Opan Technologies Ltd., Nes Ziona, Israel

Continuation of Ser. No. 359,297, Dec. 19, 1994, abandoned, which is a continuation-in-part of Ser. No. 262,285, Jun. 20, 1994, Pat. No. 5,466,940. This application Dec. 27, 1995, Ser. No. 579,125
Int. Cl.[6] H01J *37/248;37/26*
U.S. Cl. 250—310 9 Claims



1. A particle beam apparatus for charge-free high-resolution imaging and measurement of topographic and material features on a specimen, the particle beam apparatus comprising:

(a) a particle source for providing a primary beam along a primary beam axis, said primary beam impinging on the specimen so as to release electrons therefrom, said electrons including secondary electrons and backscattered electrons;

(b) an objective lens for focussing said electrons so as to provide a radial dispersion of said electrons relative to said primary beam axis, said radial dispersion of electrons including an inner annulus of backscattered electrons and an outer annulus of secondary electrons;

(c) a backscattered electron detector for detecting said inner annulus of backscattered electrons, said backscattered electron detector being located between said particle source and said objective lens;

(d) a secondary electron detector for detecting said outer annulus of secondary electrons, said secondary electron detector being located between said particle source and said objective lens; and

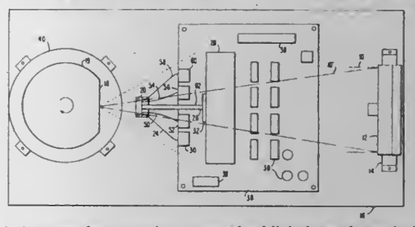
(e) an evacuated chamber for housing the specimen.

5,644,133

REMOTE VEHICLE EMISSION ANALYZER WITH LIGHT CONVEYANCE TO DETECTORS THROUGH FIBER OPTIC LIGHT TUBES

John Didomenico; Dennis L. Smith, and James H. Johnson, all of Tucson, Ariz., assignors to Envirotest Systems, Corp., Tuscon, Ariz.

Filed Jul. 25, 1995, Ser. No. 506,476
Int. Cl.[6] G01N *21/00*
U.S. Cl. 250—338.5 16 Claims



1. A system for conveying a transmitted light beam for analysis, comprising:

a primary mirror for reflecting the transmitted light beam in a first direction;

rotating mirror means arranged in said first direction relative to said primary mirror for scanning in a second direction the reflected light beam from the primary mirror;

a plurality of fiber optic tubes, first ends of said fiber optic tubes being closely arranged in a linear array and arranged in said second direction relative to said rotating mirror means, said array being separated from said rotating mirror means by a distance of two to three inches; and

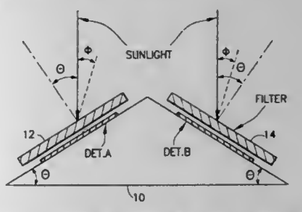
a plurality of light detector means having second ends of said fiber optic tubes arranged respectively thereon so that light scanned on said array is conducted to said plurality of light detector means, whereby the transmitted light beam is analyzed by said plurality of light detector means.

5,644,134

SUN SENSORS

Robert W. Astheimer, Fairfield, Conn., assignor to EDO Corporation, Barnes Engineering Division, Shelton, Conn.

Filed Jul. 21, 1995, Ser. No. 505,791
Int. Cl.[6] B64G *1/36*
U.S. Cl. 250—372 5 Claims



1. A method of greatly increasing the ratio of direct sunlight to earthshine in a sun sensor used on a spacecraft orbiting the earth and used for attitude determination of the spacecraft with respect to the sun illuminated earth comprising the steps of:

mounting detector means responsive to radiation from the sun on a spacecraft whose attitude is desired to be determined,

limiting radiation applied to the detection means to a spectral region in which the sun emits appreciable energy but where such energy striking the earth is absorbed in the earth's atmosphere before reaching the detector means, thereby limiting the effect of backscattered sun radiation from the earth and greatly increasing the ratio of direct sunlight to earthshine on the detector means.

5,644,135

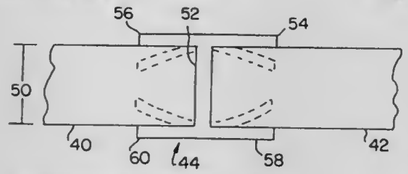
ULTRAVIOLET CURING CHAMBER WITH IMPROVED SEALING DEVICE AND TOOL

Derek S. Matheson, 3505 Porter St., N.W., Washington, D.C. 20016; Kevin W. Silbert, 3449 Lindenwood Dr., Laurel, Md. 20724, and Christian C. Curtin, 20118 Torrey Pond Pl., Gaithersburg, Md. 20879

Filed Feb. 20, 1996, Ser. No. 603,293

Int. Cl.[6] G01N *21/00*

U.S. Cl. 250—454.11 **5 Claims**

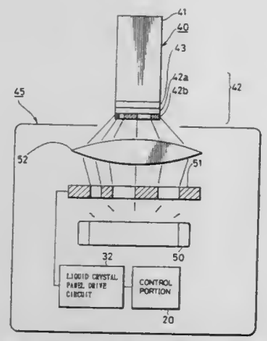


1. An ultraviolet curing apparatus, comprising,

a curing chamber for accommodating a controlled atmosphere, said curing chamber having a window for admitting ultraviolet light,

an irradiator for providing ultraviolet radiation which is directed at said window of said curing chamber,

said window being comprised of co-planar plates of ultraviolet-transmissive material which are joined together by a sealing device which is made of a material having a memory which is bendable without breaking, said sealing device having a substantially I shaped cross-section when sealing said plates and being comprised of a center member and cross members, said sealing device being positioned so that the center member is between the edges of the co-planar plates and the cross members abut the flat surfaces of the plates, the cross members having been spread apart prior to application of the device to the plates, and after application because of said memory having attempted to return to their original position with the result that they are biased against the flat surfaces of said plates so as to form a seal between said plates.



control means for controlling the liquid crystal panel portion so as to transfer imprint figure information onto the ultraviolet setting resin layer by selectively transmitting the light rays from the light source on the basis of the imprint figure information generated from the imprint figure information generating means;

the light source comprising an ultraviolet irradiating light source equipped with a first parabolic mirror, a visible light irradiating light source spaced apart from and disposed oppositely to the ultraviolet irradiating light source and equipped with a second parabolic mirror, and a swinging mirror disposed between the ultraviolet irradiating light source and the visible light irradiating light source so as to permit the liquid crystal panel portion to be back-lighted by a visible light and an ultraviolet light;

the liquid crystal panel portion being composed of a liquid crystal panel capable of transmitting the ultraviolet light and the visible light, respectively.

5,644,136

SEAL MAKING DEVICE

Takanobu Kameda; Machiko Kano; Rui Kondoh; Kenji Watanabe; Tomoyuki Ichikawa; Yuichiro Taniguchi, and Chieko Aida, all of Tokyo, Japan, assignors to King Jim Co., Ltd., Tokyo, Japan

PCT No. PCT/JP94/00409, § 371 Date Oct. 31, 1994, § 102(e) Date Oct. 31, 1994, PCT Pub. No. WO94/21469, PCT Pub. Date Sep. 29, 1994

PCT Filed Mar. 15, 1994, Ser. No. 325,446

Claims priority, application Japan, Mar. 15, 1993, 5-054090; Mar. 15, 1993, 5-054091; Mar. 29, 1993, 5-069499; Mar. 29, 1993, 5-069500; Apr. 2, 1993, 5-076565; Apr. 12, 1993, 5-084305; Apr. 19, 1993, 5-091018

Int. Cl.[6] B41K *1/00;* **G03F** *7/00*

U.S. Cl. 250—492.1 **23 Claims**

1. A seal making device, comprising:

imprint figure information generating means for generating imprint figure information;

a seal face member structured to have an imprint figure formed thereon, and comprising an ultraviolet setting resin layer;

a light source disposed oppositely to the ultraviolet setting resin layer;

a liquid crystal panel portion for transferring an imprint, disposed between the light source and the seal face member;

lens means disposed between the liquid crystal panel portion and the ultraviolet setting resin layer, for converging light rays onto the ultraviolet setting resin layer, the light rays being emitted from the light source and being transmitted through the liquid crystal panel portion; and

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5,644,137

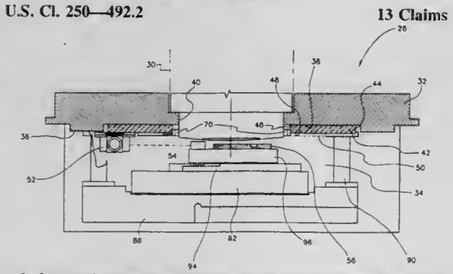
STABILIZING SUPPORT MECHANISM FOR ELECTRON BEAM APPARATUS

Herbert A. Waggener, 7282 Wissota Dr., Chippewa Falls, Wis. 54729, and Kurt Werder, 333 Monroe St. #6, Hoboken, N.J. 07030

Filed Mar. 4, 1996, Ser. No. 610,749

Int. Cl.[6] G01B *9/02*

U.S. Cl. 250—492.2 **13 Claims**



1. In an electron beam apparatus having a vacuum chamber bounded at its top by an upper wall provided with a centrally disposed electron beam column and including a plurality of interferometers, the improvement comprising;

a ring of low coefficient of thermal expansion glass ceramic composition,

a mounting adapter attaching said ring to said upper wall, and

said interferometers affixed to said ring within said vacuum chamber.

5,644,138

ELECTRON BEAM EXPOSURE APPARATUS AND A METHOD FOR ELECTRON BEAM EXPOSURE

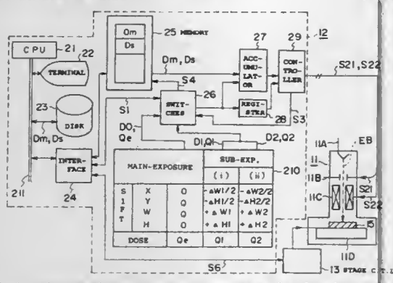
Shin-ichi Hamaguchi, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 6, 1994, Ser. No. 300,862

Claims priority, application Japan, Sep. 9, 1993, 5-224465

Int. Cl.[6] H01J *37/302*

U.S. Cl. 250—492.22 **5 Claims**



1. An electron beam exposure apparatus for forming a desired pattern on an object to be exposed by irradiating electron beams to said object, comprising:

storing means for storing various data including:

first location data indicating a location of said desired pattern on said object,

parameters used to generate second location data from the first location data, said second location data indicating a location of a two-dimensionally enlarged pattern of said desired pattern on said object,

first dose amount data used to set an irradiation amount of said electron beams for exposing said desired pattern on said object, and

second dose amount data used to set an irradiation amount of said electron beams for exposing said enlarged pattern on said object;

controlling means for generating a first irradiating signal based on the first location data stored in the storing means and the first dose amount data, said controlling means further generating a second irradiating signal based on the second dose amount data and the second location data which have been obtained by applying said parameters to said first location data; and

electron beam irradiating means for exposing said exposed object in compliance with said first and second irradiating signals supplied from said controlling means.

5,644,139

NAVIGATION TECHNIQUE FOR DETECTING MOVEMENT OF NAVIGATION SENSORS RELATIVE TO AN OBJECT

Ross R. Allen, 408 Hainline Dr., Belmont, Calif. 94002; David Beard, 842 Los Robles, Palo Alto, Calif. 94306; Mark T. Smith, 726 Pico Ave., San Mateo, Calif. 94403, and Barclay J. Tullis, 1795 Guinda St., Palo Alto, Calif. 94303

Division of Ser. No. 396,826, Mar. 2, 1995, Pat. No. 5,578,813. This application Aug. 14, 1996, Ser. No. 696,713

Int. Cl.[6] G06K *7/015*

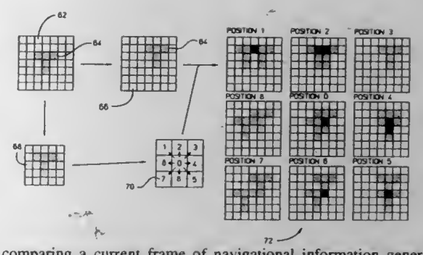
U.S. Cl. 250—557 **25 Claims**

1. A method of operating a detecting device comprising the steps of:

generating electrical signals, representative of a position, by a navigation sensor, said electrical signals providing sequential frames of navigational information at time intervals;

storing a first frame of navigational information generated at time N in a first memory buffer;

storing successive frames of navigational information, subsequent to said first frame, in a second memory buffer;



comparing a current frame of navigational information generated at time M to a previous frame, immediately preceding said current frame, stored in said second memory buffer and generating a first displacement value representative of a difference between said current frame and said frame of navigational information immediately preceding said current frame;

processing data based on said first displacement value to take into account movement of said navigation sensor relative to a reference when processing said data;

comparing a current frame of navigational information generated at time T, subsequent to time M, to said first frame of navigational information stored in said first memory buffer and generating a second displacement value representative of a difference between said current frame generated at time T and said first frame;

processing data based on said second displacement value so that said data is not affected by accumulated errors from other displacement values; and

storing a current frame of navigational information generated at time V, subsequent to time T, in said first memory buffer for comparison to a later frame of navigational information.

5,644,140

APPARATUS FOR CHECKING SEMICONDUCTOR WAFERS WITH COMPLEMENTARY LIGHT SOURCES AND TWO CAMERAS

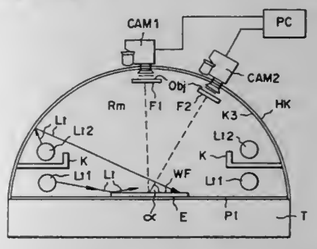
Ernst Biedermann, Regensburg; Manfred Ben El Mekki, Fürstenfeldbruck; Kenneth Weisheit, Augsburg; Thomas Griebsch, and Gerhard Ross, both of München, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Apr. 20, 1995, Ser. No. 425,824

Claims priority, application Germany, Apr. 20, 1994, 44 13 832.6

Int. Cl.[6] G01N *21/86*

U.S. Cl. 250—559.08 **11 Claims**



1. An apparatus for checking semiconductor wafers, comprising:

a receiver for a semiconductor wafer to be checked, said receiver having a center point;

a first light for directly illuminating the semiconductor wafer with light of a first color;

a second light for indirectly illuminating the semiconductor wafer with light of a second color being complementary to the first color;

a hemispherical hood having a surface of the second color and having a hemispherical region defining an interior inside said hemispherical region;

a further hood being disposed above said first light, being opaque to incident light, permitting the semiconductor wafer to be illuminated directly by said first light, and permitting the semiconductor wafer to only be illuminated indirectly by said second light;

a first camera disposed at said hemispherical hood vertically above said center point of said receiver for the semiconductor wafer to be checked, said first camera having a lens looking into said interior and a filter admitting only light of the first color;

a second camera being disposed at said hemispherical hood and having a lens looking into said interior and a filter admitting only light of the second color, said second camera being disposed at an angle greater than 0° relative to said center point of said receiver for the semiconductor wafer to be checked; and

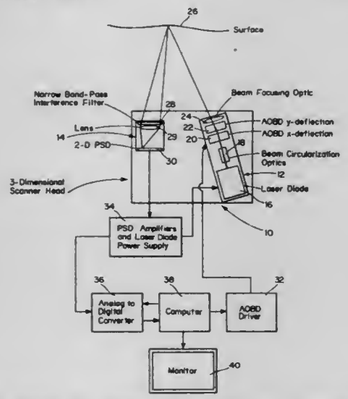
an evaluator being connected to both of said cameras for controlling said cameras and for receiving, buffer-storing, further processing and outputing data transmitted from said cameras.

5,644,141

APPARATUS AND METHOD FOR HIGH-SPEED CHARACTERIZATION OF SURFACES

Jeffery A. Hooker, Melbourne Beach, and Stephen M. Simmons, Titusville, both of Fla., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Oct. 12, 1995, Ser. No. 542,141
Int. Cl.[6] G01N *21/86*
U.S. Cl. 250—559.22 **22 Claims**



1. A method of determining a contour of a test object, the method comprising the steps of:

a) directing a beam of radiation towards a point on the object, and scattering the radiation from said point onto a location on a detector,

b) determining said location on the detector onto which the radiation is scattered,

c) computing a displacement of said point from a reference point based on said location, and

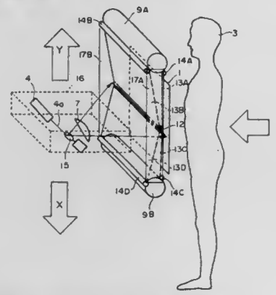
d) repeating steps (a) through (c) for other points on the object, wherein each repetition of steps (a) through (c) is preceded by the step of deflecting the beam by non-mechanical means.

5,644,142

RADIATION IMAGE READING AND ERASING APPARATUS

Fumihiro Namiki, and Shinichi Yoshimoto, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawaski, Japan

Filed Jun. 15, 1995, Ser. No. 490,578
Claims priority, application Japan, Nov. 29, 1994, 6-295014
Int. Cl.[6] G01N *23/04*
U.S. Cl. 250—586 **5 Claims**



1. A radiation imaging apparatus comprising:

scan means for scanning a slab-like shaped accelerated phosphorescence fluorescent material object, onto which object image information is accumulated and stored, in a two-dimensional configuration so that the accelerated phosphorescence fluorescent material object is repeatedly scanned with excitation light in a predetermined main scan direction, while the excitation light is moved relative to the accelerated phosphorescence fluorescent material object in a sub-scan direction perpendicular to the main scan direction; and

light receiving means for receiving an accelerated phosphorescence fluorescent light emanated from the accelerated phosphorescence fluorescent material object, wherein said light receiving means comprises:

a slit member having a slit extending in the main scan direction for directing the excitation light to transmit toward the accelerated phosphorescence fluorescent material object, said slit member being movable along the accelerated phosphorescence fluorescent material object in the sub-scan direction;

photoelectric converter means for receiving the accelerated phosphorescence fluorescent light, said photoelectric converter means being fixed; and

light guide member means for guiding to said photoelectric converter means the accelerated phosphorescence fluorescent light emanated from the accelerated phosphorescence fluorescent material object through irradiation of the accelerated phosphorescence fluorescent material object with the excitation light entered from said slit member, said light guide member means has a variable length being extendable between said slit member and said photoelectric converter means, the length varying in accordance with a movement of said slit member in the sub-scan direction.

5. A radiation image reading and erasing apparatus comprising:

scan means for scanning a slab-like shaped accelerated phosphorescence fluorescent material object, onto which object image information is accumulated and stored, on a two-dimensional configuration so that the accelerated phosphorescence fluorescent material object is repeatedly scanned with excitation light in a predetermined main scan direction, while the excitation light is moved relative to the accelerated phosphorescence fluorescent material object in a sub-scan direction perpendicular to the main scan direction;

light receiving means for receiving an accelerated phosphorescence fluorescent light emanated from the accelerated phosphorescence fluorescent material object; and

erasing means for irradiating the accelerated phosphorescence fluorescent material object with erasing light to erase image information remaining in the accelerated phosphorescence fluorescent material object, wherein said erasing means comprises:

an erasing light source means for emitting the erasing light, said erasing light source means being fixed;

a reflection sheet forming part of said light receiving means, said reflection sheet being movable between an erasing position at which said reflection sheet reflects the erasing light emanated from said erasing light source toward the accelerated phosphorescence fluorescent material object and a light receiving position at which said light receiving means receives the accelerated phosphorescent light; and

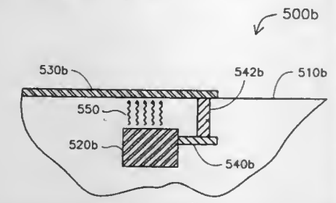
a take-up roller for taking-up said reflection sheet at the light receiving position.

5,644,143

METHOD FOR PROTECTING A SEMICONDUCTOR DEVICE WITH A SUPERCONDUCTIVE LINE

Michael D. Rostoker, Boulder Creek; Mark Schneider, San Jose; Nicholas F. Pasch, Pacifica; Abraham Yee, Santa Clara, and William C. Schneider, Mountain View, all of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Division of Ser. No. 233,607, Apr. 22, 1994, Pat. No. 5,593,918.
This application May 30, 1995, Ser. No. 454,542
Int. Cl.[6] H01L *29/06;39/00*
U.S. Cl. 257—30 **7 Claims**



1. A method, of protecting a semiconductor device from current and/or heat overload, comprising:

providing a semiconductor device having a circuit element formed therewithin;

supplying current to the circuit element via a superconductive trace; and

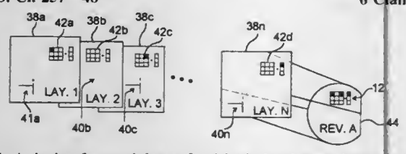
causing the superconductive trace to become non-superconductive and have a resistance in response to heat from the circuit element, thereby limiting the current to the circuit element.

5,644,144

DEVICE AND METHOD FOR PROGRAMMING A LOGIC LEVEL WITHIN AN INTEGRATED CIRCUIT USING MULTIPLE MASK LAYERS

S. Doug Ray, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Sep. 23, 1994, Ser. No. 311,216
Int. Cl.[6] H01L *23/58*
U.S. Cl. 257—48 **6 Claims**



1. A device for receiving a fixed logic level at an input to the device and for producing a programmed logic level at an output of the device in accordance with a change of at least one mask layer used to lithography form the device, comprising:

a first mask layer having opaque elements arranged in a pattern across the first mask layer, wherein a portion of said opaque elements are confined within a first layer programmable cell;

a second mask layer having opaque elements arranged in a pattern across the second mask layer, wherein a portion of said opaque elements are confined within a second layer programmable cell;

means for reconfiguring the opaque elements within the first and second layers along with respective said opaque elements within the first and second layer programmable cells; and

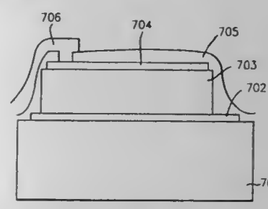
a device formed in a portion of a semiconductor substrate arranged for optically receiving said opaque elements within the first and second layer programmable cells, wherein said device is electrically connected to receive a fixed logic level and, based upon reconfigured said opaque elements, to produce a programmed logic level.

5,644,145

PROCESS FOR THE FORMATION OF AN AMORPHOUS SILICON DEPOSITED FILM WITH INTERMITTENT IRRADIATION OF INERT GAS PLASMA

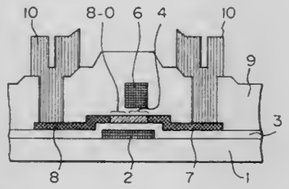
Shunichi Ishihara, Ebina, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 888,159, May 26, 1992, Pat. No. 5,288,658. This application Oct. 14, 1993, Ser. No. 136,013
Claims priority, application Japan, May 24, 1991, 3-148130
Int. Cl.[6] H01L *21/20*
U.S. Cl. 257—52 **20 Claims**



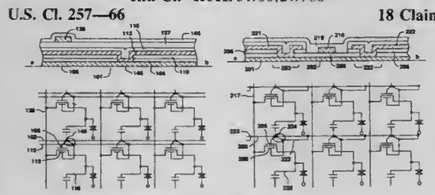
1. A semiconductor device having a semiconductor layer having a length of at least 100 mm and having a stacked structure comprising a plurality of silicon-containing amorphous films containing 5 atomic % or less of hydrogen stacked by alternately repeating (a) a step of depositing a silicon-containing film at a thickness from 10 Å to 100 Å on a substrate employing a concentration of at least 30% of a silicon-containing film-forming raw material gas and (b) a step of irradiating plasma of inert gas to said silicon-containing amorphous film at a substrate temperature of at least 300° C. which is a transition temperature at which a marked reduction is caused in the content of said hydrogen atoms contained in the silicon-containing amorphous film formed on the substrate, wherein the same inert gas used in each repetition of the step (b) is also used in each repetition of the step (a) together with the silicon-containing film-forming raw material gas thereby providing said semiconductor device with a more uniform large area semiconductor layer having a length of at least 100 mm, enhanced photoelectric conversion efficiency and reduced light deterioration characteristics.

5,644,146
THIN FILM TRANSISTOR
Michio Arai, Tokyo; Mitsufumi Codama, and Ichiro Takayama, both of Kanagawa, all of Japan, assignors to TDK Corporation, Tokyo, and Semiconductor Energy Laboratory Co., Ltd., Kanagawa, both of Japan
Filed Mar. 21, 1995, Ser. No. 407,856
Claims priority, application Japan, Mar. 23, 1994, 6-051681
Int. Cl.[6] H01L *27/01;29/78*
U.S. Cl. 257—66 **6 Claims**



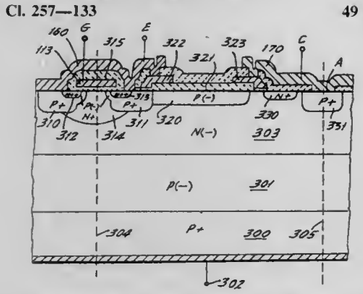
1. A thin film transistor comprising;
a dielectric substrate,
a semiconductor layer, comprising polycrystalline silicon, having a drain region, an active gate region, and a source region, disposed on said substrate,
a drain terminal connected to said drain region, and a source terminal connected to said source region, both for external connection,
a first gate electrode asymmetrically positioned with respect to and coupled with a part of said active gate region through a dielectric layer,
wherein the length of said gate electrode proximate to said active gate region is shorter than the length of said active gate region juxtaposed thereto whereby forming an offset region of said active gate region which is not juxtaposed to said gate electrode; and
wherein said offset region is provided in the portion of said active gate region directed toward said drain region, and no offset region is provided in the portion of said active gate region directed toward said source region; and
a second gate electrode disposed on the side of said active gate region opposite to said first gate electrode,
wherein the length of said second gate electrode is substantially the same as the length of said active gate region.

5,644,147
ELECTRO-OPTICAL DEVICE INCORPORATING PIXEL TRANSISTORS WITH PLURAL GATE ELECTRODES
Shunpei Yamazaki, Tokyo, and Yasuhiko Takemura, Shiga, both of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, Japan
Filed Jul. 5, 1995, Ser. No. 498,532
Claims priority, application Japan, Jul. 7, 1994, 6-180950
Int. Cl.[6] H01L *31/00;29/786*
U.S. Cl. 257—66 **18 Claims**



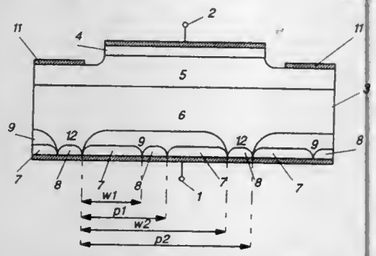
1. An electro-optical device comprising:
a substrate having an insulating surface;
a first gate line and a second gate line extending in parallel on said substrate;
an interlayer insulator interposed between said first and second gate lines;
a plurality of pixel regions arranged in parallel with said first and second gate lines;
a thin film transistor disposed in each of said pixel regions on said substrate, said transistor having a first gate electrode, a first gate insulating layer on said first gate electrode, a semiconductor layer including a channel region on said first gate insulating layer, a second gate insulating layer on said semiconductor layer and a second gate electrode on said second gate insulating layer, where said first gate electrode is electrically connected to said first gate line and said second gate electrode is electrically connected to said second gate line,
wherein said first gate line is connected with said second gate line through a contact hole of said interlayer insulator at each of said pixel regions.

5,644,148
POWER TRANSISTOR DEVICE HAVING ULTRA DEEP INCREASED CONCENTRATION REGION
Daniel M. Kinzer, El Segundo, Calif., assignor to International Rectifier Corporation, El Segundo, Calif.
Continuation of Ser. No. 461,509, Jun. 5, 1995, abandoned, which is a continuation of Ser. No. 364,514, Dec. 27, 1994, abandoned, which is a continuation of Ser. No. 945,106, Sep. 15, 1992, abandoned. This application Jul. 3, 1996, Ser. No. 674,982
Int. Cl.[6] H01L *29/74;31/111*
U.S. Cl. 257—133 **49 Claims**



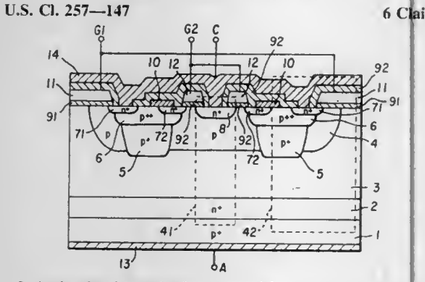
33. A power transistor device having bipolar device forward current carrying characteristics and MOS gate control characteristics; said device comprising a lightly doped layer of semiconductor material of a first conductivity type having an upper surface and disposed on a substrate, at least two spaced base regions of a conductivity type opposite said first conductivity type extending into the upper surface of said layer of semiconductor material to a given depth, at least two source regions of said first conductivity type formed in respective ones of said two spaced base regions and defining a surface channel region therebetween, a gate insulation layer disposed over said channel regions, a conductive gate layer disposed over said gate insulation layer, a first main electrode connected to said source regions, a further region of said opposite conductivity type which is laterally spaced from said spaced base regions and which extends into said upper surface of said layer of semiconductor material; and a second main electrode connected to said further region, the region between said spaced base regions comprising a region of increased conductivity and having an increased concentration of carriers of said first conductivity type which extends from said upper surface to a depth greater than the depth of said base regions; said increased concentration being greater than that of the remaining portion of said layer over the full depth of the increased concentration region and being greater than twice that of said remaining portion of said layer of semiconductor material in a portion of said region of increased conductivity that is adjacent to said upper surface.

5,644,149
ANODE-SIDE SHORT STRUCTURE FOR ASYMMETRIC THYRISTORS
Peter Streit, Widen, Switzerland, assignor to Asea Brown Boveri AG, Baden, Switzerland
Filed Mar. 17, 1995, Ser. No. 406,060
Claims priority, application Germany, Jun. 10, 1994, 44 20 252.0
Int. Cl.[6] H01L *29/74;31/111*
U.S. Cl. 257—147 **12 Claims**



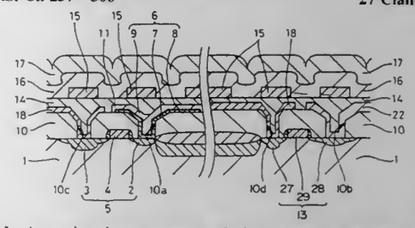
1. A gate-turn-off, asymmetrically blocking thyristor having an anode and a cathode, comprising
a) a layer sequence of an n-type emitter layer, a p-type base layer, an n-type base layer and a p-type emitter layer in a semiconductor substrate between the anode and the cathode,
b) the p-type emitter layer being perforated by anode short circuits and
c) a p-type barrier layer being disposed between the anode short circuits or the p-type emitter layer,
wherein
d) the p-type barrier layer has gaps in which the n-type base is contacted by the anode directly or via an anode short circuit.

5,644,150
INSULATED GATE THYRISTOR
Noriyuki Iwamuro, Nagano, Japan, assignor to Fuji Electric Co., Ltd., Japan
Filed Mar. 16, 1995, Ser. No. 406,184
Claims priority, application Japan, Mar. 28, 1994, 6-056407
Int. Cl.[6] H01L *29/74;31/111*
U.S. Cl. 257—147 **6 Claims**



1. An insulated gate thyristor comprising:
a base layer of a first conductivity type and of high resistivity;
a first base region of a second conductivity type selectively formed in a surface layer on a first side of said base layer;
a first source region of the first conductivity type;
a second source region of the first conductivity type;
an emitter region of the first conductivity type, said first source region, said second source region and said emitter region being selectively formed in a surface layer of said first base region and aligned from an edge side thereof;
an emitter layer of the second conductivity type formed on a second side of said base layer with a buffer layer of the first conductivity type and of low resistivity interposed therebetween;
a first gate electrode disposed on an insulation film over a surface of said first base region sandwiched between said first source region and an exposed area of said base layer;
a second gate electrode disposed on an insulation film over an exposed area of said first base region sandwiched between said second source region and said emitter region;
a first main electrode contacting said emitter layer; and
a second main electrode contacting in common said emitter region, said first source region, and said first base region in a void of said first source region; and an auxiliary electrode contacting in common said second source region and said first base region.

5,644,151
SEMICONDUCTOR MEMORY DEVICE AND METHOD FOR FABRICATING THE SAME
Hirohiko Izumi, and Shoichi Iwasa, both of Tokyo, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan
Filed May 30, 1995, Ser. No. 453,975
Claims priority, application Japan, May 27, 1994, 6-138158; Apr. 25, 1995, 7-124233
Int. Cl.[6] H01L *27/108*
U.S. Cl. 257—306 **27 Claims**



1. A semiconductor memory device having a plurality of memory cells one of which is selected by a plurality of column selection lines and a plurality of row selection lines, said memory device comprising:
a semiconductor substrate;
transistors included in said plurality of memory cells respectively and each having first and second impurity diffused regions formed within said semiconductor substrate and a gate electrode formed on said semiconductor substrate with an insulating film disposed therebetween;
an insulating layer covering said transistors and having at least contact holes made therein located on said first and second impurity diffused regions of said transistors;
capacitor lower electrodes included in said plurality of memory cells respectively and each formed on said insulating layer to be electrically connected to the first impurity diffused region of associated one of said transistors through associated one of said contact holes made in said insulating layer;
capacitor dielectric films included in said plurality of memory cells and formed on said capacitor lower electrodes respectively; and
first electrically conductive films and second electrically conductive films adjacent to each other and extended in a column direction and electrically separated from each other, each of said first conductive films being connected to one of said plurality of column selection lines and also connected to said second impurity diffused region of associated one of the transistors in the plurality of memory cells, which are adjacent to each other in the column direction, through associated one of the contact holes made in said insulating layer, each of said second conductive films being connected to a power supply line and including parts formed on the capacitor dielectric films in said plurality of memory cells adjacent to each other

in the column direction, said parts being opposite to said capacitor lower electrodes with said capacitor dielectric films disposed therebetween, thereby acting as capacitor upper electrodes.

5,644,152

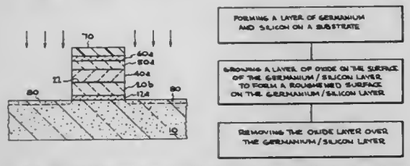
CONDUCTIVE GERMANIUM/SILICON MEMBER WITH A ROUGHENED SURFACE THEREON SUITABLE FOR USE IN AN INTEGRATED CIRCUIT STRUCTURE

Michael D. Rostoker, San Jose, and Ashok Kapoor, Palo Alto, both of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Division of Ser. No. 121,679, Sep. 15, 1993, Pat. No. 5,521,108. This application Jun. 5, 1995, Ser. No. 462,653

Int. Cl.[6] H01L *29/788;29/161;29/34*

U.S. Cl. 257—317 **14 Claims**



1. An EPROM integrated circuit structure including a floating gate electrode comprising a mixture of germanium and silicon and provided with a roughened surface thereon which comprises:

a) a silicon semiconductor substrate;

b) a silicon oxide gate layer formed over said substrate;

c) a first conductive layer of silicon and germanium formed over said silicon oxide gate layer and patterned to form said floating gate electrode, said first conductive layer of silicon and germanium having a roughened, surface thereon formed by oxidizing the surface of said layer of silicon and germanium layer and then removing said oxidized silicon and germanium;

d) a deposited layer of oxide formed over said roughened surface of said first conductive layer of silicon and germanium; and

e) a second conductive layer formed over said deposited layer of oxide and patterned to form a control gate electrode, said control gate electrode having a surface facing said roughened surface of said floating gate electrode.

5,644,153

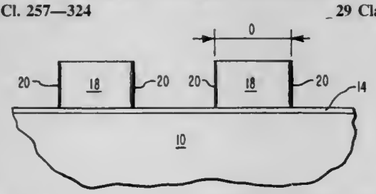
METHOD FOR ETCHING NITRIDE FEATURES IN INTEGRATED CIRCUIT CONSTRUCTION

David J. Keller, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Oct. 31, 1995, Ser. No. 551,169

Int. Cl.[6] B44C *1/22;* **H01L** *29/792;21/302*

U.S. Cl. 257—324 **29 Claims**



1. An etch process for improving etch uniformity, comprising the steps of:

(a) bombarding a layered substrate with an ionized carbon containing fluorine compound, said substrate having at least one nitride layer disposed thereon, said ionized carbon containing fluorine compound depositing a layer of a polymer on said nitride layer during said bombardment, said nitride layer being patterned; and

(b) bombarding said layered substrate with an ionized hydrogen halide and ionized NF_3, said ionized hydrogen halide and ionized NF_3 removing portions of said nitride layer, thereby creating substantially straight sidewalls in said nitride layer.

5,644,154

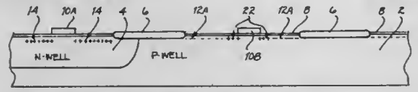
MOS READ-ONLY SEMICONDUCTOR MEMORY WITH SELECTED SOURCE/DRAIN REGIONS SPACED AWAY FROM EDGES OF OVERLYING GATE ELECTRODE REGIONS AND METHOD THEREFOR

Salvatore Spinella, and Gianpaolo Spadini, both of Mesa, Ariz., assignors to Microchip Technology Incorporated, Chandler, Ariz.

Filed Mar. 27, 1995, Ser. No. 410,966

Int. Cl.[6] H01L *29/76;29/94;31/062;31/113*

U.S. Cl. 257—390 **14 Claims**



1. A MOS read-only semiconductor memory including a plurality of semiconductor memory cells arranged in an array comprising, in combination:

a semiconductor substrate region of a first conductivity type;

a plurality of gate electrode regions overlying and insulated from a surface of said substrate;

at least one non-conducting memory cell representative of only one of a "1" and a "0" bit and comprising first source/drain means of a second conductivity type opposite said first conductivity type located in said substrate region and spaced apart from at least one edge of at least one gate electrode region of said plurality of gate electrode regions for suppressing electrical conduction in said non-conducting memory cell which includes said first source/drain means;

at least one conducting memory cell representative of only the other of said "1" and "0" bit and comprising second source/drain means of said second conductivity type located in said substrate region and spaced beneath both edges of another one of said plurality of gate electrode regions for enabling electrical conduction in said conducting memory cell which includes said second source/drain means; and

at least one heavily doped region of said first conductivity type lying in a surface portion of said semiconductor substrate region between said at least one edge of said at least one gate electrode region and said first source/drain means.

5,644,155

STRUCTURE AND FABRICATION OF HIGH CAPACITANCE INSULATED-GATE FIELD EFFECT TRANSISTOR

Chuen-Der Lien, Mountain View, Calif., assignor to Integrated Device Technology, Inc., Santa Clara, Calif.

Filed Sep. 6, 1994, Ser. No. 301,365

Int. Cl.[6] H01L *29/76*

U.S. Cl. 257—401 **29 Claims**

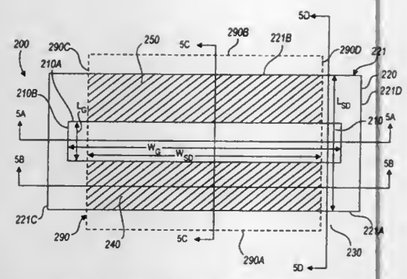
1. A field effect transistor comprising:

a semiconductor substrate having an upper surface;

a field insulating layer situated along the upper surface of said semiconductor substrate and having a boundary which defines an active region of said substrate;

a gate dielectric layer located over said active region;

a gate electrode located over said gate dielectric layer and laterally separated from said boundary of said field insulating layer;



a source region situated in said active region adjacent to said dielectric layer, said source region having an edge which extends to said boundary of said field insulating layer; and

a drain region situated in said active region, adjacent to said dielectric layer, said drain region having an edge which extends to said boundary of said field insulating layer, said drain and source regions being laterally separated within said active region, wherein said gate electrode is wider than said source and drain regions.

5,644,156

POROUS SILICON PHOTO-DEVICE CAPABLE OF PHOTOELECTRIC CONVERSION

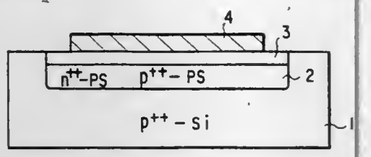
Taketoshi Suzuki, Tokyo; Tadashi Sakai, Yokohama; Li Zhang, Tokyo, and Taijun Murakami, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 12, 1995, Ser. No. 420,515

Claims priority, application Japan, Apr. 14, 1994, 6-075665; Sep. 19, 1994, 6-223656; Mar. 23, 1995, 7-063745

Int. Cl.[6] H01L *27/095;29/47;29/812;31/07*

U.S. Cl. 257—485 **9 Claims**



1. A semiconductor device comprising:

a porous silicon layer made from single crystalline silicon as a base with an impurity concentration of 1×10^{19} to 1×10^{21} cm^{-3}, in which a plurality of pores are formed; and

a thermal oxide film of 0.01 to 10 μm thickness, formed on expanded surfaces of said porous silicon layer, said expanded surfaces including internal surfaces of said pores.

5,644,157

HIGH WITHSTAND VOLTAGE TYPE SEMICONDUCTOR DEVICE HAVING AN ISOLATION REGION

Makio Iida, Ichinomiya; Shoji Miura, Nukata-gun; Takayuki Sugisaka, Okazaki; Toshio Sakakibara, Nishio, and Osamu Ishihara, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

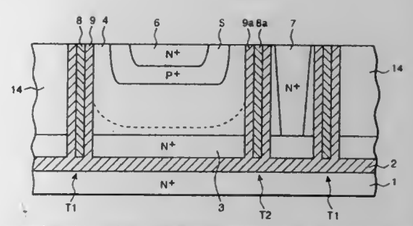
Continuation of Ser. No. 256,868, Aug. 25, 1994, abandoned. This application May 22, 1996, Ser. No. 653,924

Claims priority, application Japan, Dec. 25, 1992, 4-346414; Feb. 2, 1993, 5-015338

Int. Cl.[6] H01L *29/73;29/80;27/06*

U.S. Cl. 257—521 **30 Claims**

1. A semiconductor device comprising:



a semiconductor layer of a first conductivity type formed over a substrate, said semiconductor layer being isolated from said substrate;

an island-shaped semiconductor region of a second conductivity type formed through a surface of said semiconductor layer, said island-shaped semiconductor region having a first impurity concentration which is higher than a second impurity concentration of said semiconductor layer, a reverse-biased pn junction being defined between said semiconductor layer and said island-shaped semiconductor region;

a side dielectric isolation region formed through said surface of said semiconductor layer, said side dielectric isolation region being formed deeper into said semiconductor layer than said island-shaped semiconductor region to thereby define an element region including said island-shaped semiconductor region; and

an adjacent semiconductor region disposed adjacent to said element region with said side dielectric isolation region disposed therebetween;

a minimum first distance from said pn junction to said side dielectric isolation region causing a depletion layer to extend through said semiconductor layer from said pn junction to said side dielectric isolation region; and

said adjacent semiconductor region having an adjacent electric potential that is more approximate to a first electric potential at said island-shaped semiconductor region than to a second electric potential at said semiconductor layer, whereby said depletion layer is deformed to prevent said pn junction from causing a breakdown.

5,644,158

SEMICONDUCTOR MEMORY DEVICE REDUCING HYDROGEN CONTENT

Eiji Fujii, Osaka; Atsuo Inoue, Kyoto; Koji Arita, Osaka; Toru Nasu, Kyoto, and Akihiro Matsuda, Osaka, all of Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Filed Jun. 20, 1995, Ser. No. 492,690

Claims priority, application Japan, Jun. 21, 1994, 6-138689

Int. Cl.[6] H01L *21/3205*

U.S. Cl. 257—532 **2 Claims**

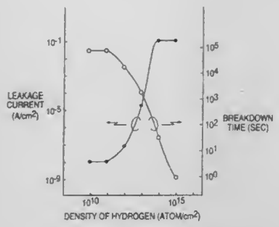
1. A semiconductor device comprising:

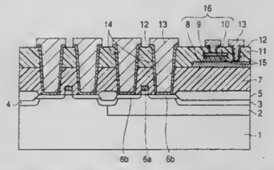
(a) a semiconductor substrate on whose surface an integrated circuit is formed;

(b) a first insulating layer formed on said semiconductor substrate, and having first contact holes leading to said integrated circuit;

(c) a capacitance element comprising a lower electrode formed on said first insulating layer, dielectric layer formed on said lower electrode and having a high dielectric constant, and an upper electrode formed on said dielectric layer, wherein said dielectric layer has a hydrogen density of greater than zero atoms/cm^2 and no more than 10^{11} atoms/cm^2, said hydrogen density of said dielectric layer being reduced by a dehydrogenation treatment;

(d) a second insulating layer formed on said first insulating layer to cover said capacitance element, and having second contact holes which lead to said upper electrode and said lower electrode respectively;





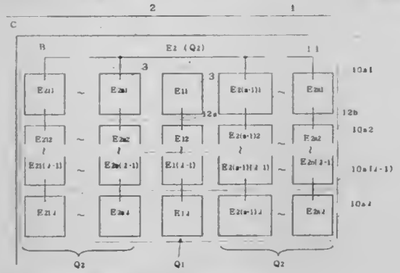
(e) interconnections which are connected to said integrated circuit and said capacitance element respectively passing through said first and second contact holes.

5,644,159

SEMICONDUCTOR DEVICE INCLUDING A BAND GAP REFERENCE POWER SUPPLY DEVICE

Masao Arimoto, Sagamihara, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 383,840, Feb. 6, 1995, Pat. No. 5,523,613. This application Mar. 13, 1996, Ser. No. 613,939
Claims priority, application Japan, Mar. 22, 1994, 6-050534
Int. Cl.[6] H01L *27/10*
U.S. Cl. 257—560 **11 Claims**



I. A semiconductor device, comprising:

a first semiconductor layer of a first conductivity type having a major surface;

a first semiconductor element provided on said major surface of said first semiconductor layer; and

a second semiconductor element provided adjacent to said first semiconductor element on said major surface of said first semiconductor layer,

wherein said first semiconductor element comprises:

at least one second semiconductor layer of a second conductivity type having a major surface formed on said major surface of said first semiconductor layer; and

at least one third semiconductor layer of the first conductivity type formed by diffusion at a predetermined region on said major surface of said second semiconductor layer, and

wherein said second semiconductor element comprises:

a plurality of fourth semiconductor layers of the first conductivity type formed by diffusion at a predetermined region on said major surface of said second semiconductor layer so that each of said plurality of fourth semiconductor layers has the same shape and area as said at least one third semiconductor layer, wherein said at least one third semiconductor layer and said plurality of fourth semiconductor layers are spaced with one another in at least one row region, and a total area of said plurality of fourth semiconductor layers is larger than a total area of said at least one third semiconductor layer; and

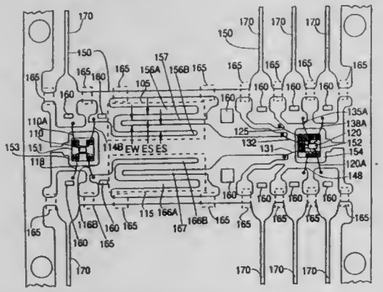
wherein said at least one third semiconductor layer is disposed between said plurality of fourth semiconductor layers.

5,644,160

LEAD-FRAME CAPACITOR AND CAPACITIVELY-COUPLED ISOLATOR CIRCUIT USING SAME

Robert C. Dobkin, Monte Sereno, and Robert L. Reay, Mountain View, both of Calif., assignors to Linear Technology Corporation, Milpitas, Calif.

Division of Ser. No. 985,881, Dec. 3, 1992, Pat. No. 5,444,600. This application Mar. 8, 1995, Ser. No. 401,026
Int. Cl.[6] H01L *23/495;23/28;23/06*
U.S. Cl. 257—666 **19 Claims**



1. A packaged integrated circuit device comprising:

a plurality of conductive fingers disposed in a single plane, wherein a first one of said plurality of fingers comprises a first conducting base, and wherein second and third ones of said plurality of fingers comprise first and second electrodes of a capacitor;

a first circuit mounted on said first conducting base, said first circuit being electrically coupled to said first electrode; and

a dielectric molding material encapsulating said first circuit, said first conducting base and said first and second electrodes, so that said first and second electrodes are capacitively coupled through said dielectric molding material without providing a separate capacitive element therebetween, and so that said first and second electrodes are in contact with said dielectric molding material on both sides of said plane.

5,644,161

ULTRA-HIGH DENSITY WARP-RESISTANT MEMORY MODULE

Carmen D. Burns, Austin, Tex., assignor to Staktek Corporation, Austin, Tex.

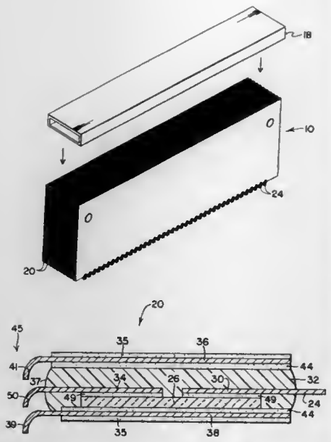
Continuation-in-part of Ser. No. 280,968, Jul. 27, 1994, Pat. No. 5,581,121, which is a division of Ser. No. 37.830, Mar. 29, 1993, Pat. No. 5,369,056. This application Jun. 7, 1995, Ser. No. 473,593
Int. Cl.[6] H01L *23/34;23/48;25/00*
U.S. Cl. 257—668 **17 Claims**

1. An ultra-high density memory module, comprising:

a plurality of high density memory integrated circuit packages, wherein each package comprises:

an integrated circuit die;

a substantially planar internal lead frame mounted to at least a portion of said die, said internal lead frame having a plurality of electrical conductors electrically connected to said die;



a protective casing covering said die and said internal lead frame, wherein a plurality of said conductors extend from said internal lead frame, as leads, through a first edge of said casing;

a substantially planar thermally conductive internal element within said casing which is in thermal contact with at least a portion of said die; and

a substantially planar external thermally conductive element mounted to an exterior major surface of said casing,

wherein an edge portion of said thermally conductive internal element extends through a second edge of said casing opposite said first casing edge;

wherein a thin, warp-resistant metal layer is mounted to an exterior major surface of said casing of at least one of said packages, said metal layer being mounted to a major surface of said casing opposite said external thermally conductive element; and

wherein said packages are vertically oriented and mounted to one another to form said module.

5,644,162

SEMICONDUCTOR CHIP HAVING CHIP METAL LAYER AND TRANSFER METAL LAYER COMPOSED OF SAME METAL, AND CORRESPONDING ELECTRONIC MODULE

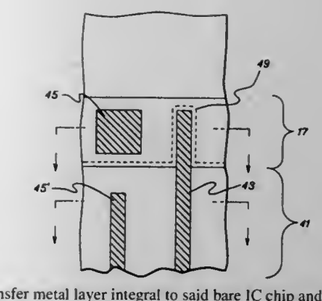
Kenneth Edward Beilstein, Jr., Essex Junction; Claude Louis Bertin, Burlington; Timothy Harrison Daubenspeck, Colchester, and Wayne John Howell, Williston, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 301,290, Sep. 6, 1994, Pat. No. 5,596,226. This application Jun. 10, 1996, Ser. No. 660,556
Int. Cl.[6] H01L *23/48*
U.S. Cl. 257—690 **9 Claims**

1. A bare integrated circuit (IC) chip comprising:

a support layer;

a chip metal layer composed of a first type of metal, said chip metal layer being mechanically coupled to said support layer; and



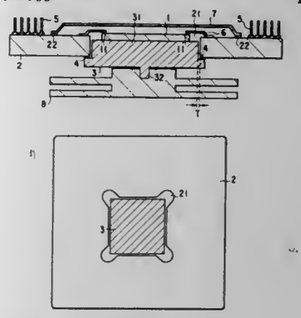
a transfer metal layer integral to said bare IC chip and composed of said first type of metal, said transfer metal layer being mechanically coupled to said support layer, said transfer metal layer extending from above active circuitry of said bare IC chip to said edge surface of said IC chip for facilitating electrical contact to said active circuitry from said edge.

5,644,163

SEMICONDUCTOR DEVICE

Ken-ichiro Tsuji, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 382,787, Feb. 2, 1995, abandoned. This application Mar. 11, 1996, Ser. No. 617,956
Claims priority, application Japan, Feb. 3, 1994, 6-030814
Int. Cl.[6] H01L *23/10;23/34;* **H05K** *7/20*
U.S. Cl. 257—706 **19 Claims**



1. A semiconductor device comprising:

a ceramic plate having first and second major surfaces and an opening having corners;

a heat sink having first and second major surfaces and joined by a bonding agent layer to the ceramic plate to cover the opening of the ceramic plate, the bonding agent layer being formed between the first major surface of the heat sink and an inner edge portion of the opening on the second major surface side of the ceramic plate;

a semiconductor element mounted on the first major surface of the heat sink and located in the opening of the ceramic plate; and

a cap mounted on the first major surface of the ceramic plate to cover the semiconductor element;

wherein each of the corners of the opening in the ceramic plate has a curvature radius R of 2.3 mm.

5,644,164

SEMICONDUCTOR DEVICE WHICH DISSIPATES HEAT

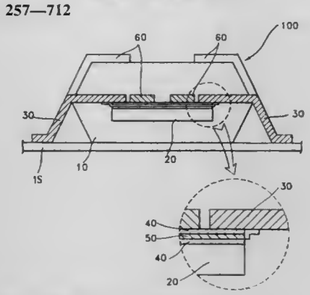
Hyoung-ho Roh, Kyungki-do, Rep. of Korea, assignor to Samsung Aerospace Industries, Ltd., Kyongsangnam-do, Rep. of Korea

Filed May 16, 1996, Ser. No. 648,832

Claims priority, application Rep. of Korea, Jul. 7, 1995, 95-19924

Int. Cl.[6] H01L *23/34*

U.S. Cl. 257—712 **7 Claims**



1. A semiconductor device, comprising:

a package;

a semiconductor chip contained within the package;

an adhesive member attached to the semiconductor chip;

a plurality of connecting leads, one end portion of each connecting lead being attached to said semiconductor chip by said adhesive member which is located between said connecting lead end portions and said semiconducting chip, and the end portion thereof being external to said package and adapted for connection to a circuit substrate;

at least one heat-conducting lead having one end portion being attached to said semiconductor chip by said adhesive member which is located between said at least one heat-conducting lead end portion and said semiconductor chip, and another end portion being external to said package and separated from said circuit substrate; and

a heat-conducting body at least partially embedded in said adhesive member.

5,644,165

SEMICONDUCTOR DEVICE HAVING A P-TYPE OHMIC ELECTRODE STRUCTURE

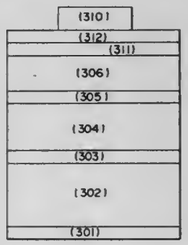
Hideki Goto, Tsuchiura, Japan, assignor to Mitsubishi Kasei Corporation, Tokyo, Japan

Continuation of Ser. No. 2,779, Jan. 14, 1993, abandoned. This application Feb. 27, 1996, Ser. No. 606,867

Claims priority, application Japan, Jan. 14, 1992, 4-005168

Int. Cl.[6] H01L *31/0328;29/22;23/48;23/52*

U.S. Cl. 257—744 **4 Claims**



1. A group II–IV semiconductor device comprising:

a first layer of a p-type group II–IV semiconductor containing zinc and selenium;

a second layer of an ohmic electrode disposed on said first layer containing: (a) zinc and selenium, and (b) a group II element other than zinc; and

a third layer of a metal electrode.

5,644,166

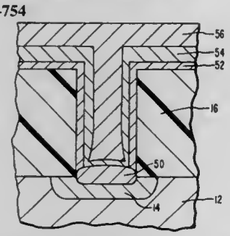
SACRIFICIAL CVD GERMANIUM LAYER FOR FORMATION OF HIGH ASPECT RATIO SUBMICRON VLSI CONTACTS

Jeffrey Honeycutt, and Sujit Sharan, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Jul. 17, 1995, Ser. No. 503,385

Int. Cl.[6] H01L *23/48*

U.S. Cl. 257—754 **23 Claims**



1. A high aspect ratio submicron VLSI contact on a substrate of a silicon wafer, the contact having an opening, a bottom, and a plurality of sides and comprising:

a doped active region in said silicon substrate;

an insulating layer on said silicon substrate adjacent to and above said active region;

a region of titanium germanosilicide located above the active region at the bottom of the contact opening; and

a metallization material substantially filling the contact opening:

a layer of titanium germanide on the sides of the contact, and an layer of titanium nitride on the layer of titanium germanosilicide and on the layer of titanium germanide.

5,644,167

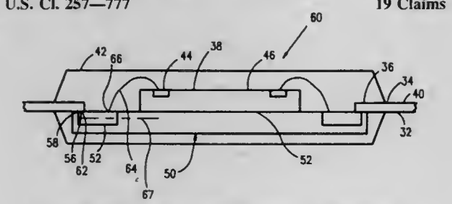
INTEGRATED CIRCUIT PACKAGE ASSEMBLIES INCLUDING AN ELECTROSTATIC DISCHARGE INTERPOSER

Peter M. Weiler, Alpine, Utah, and Jagdish G. Belani, Cupertino, Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Mar. 1, 1996, Ser. No. 609,644

Int. Cl.[6] H01L *23/62;23/52;25/065*

U.S. Cl. 257—777 **19 Claims**



1. An integrated circuit package assembly comprising:

a) a semiconductor chip including a plurality of chip input/output terminals;

b) a substrate supporting said chip; and

c) an arrangement including a plurality of ESD protection means on said substrate for providing ESD protection to predetermined ones of said chip input/output terminals.

5,644,168

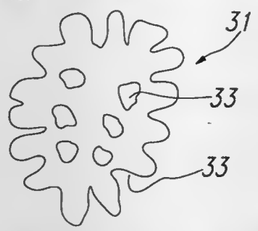
MECHANICAL INTERLOCKING OF FILLERS AND EPOXY/RESIN

Jeremias P. Libres, Dallas, Tex.; Abbas I. Attarwala, Sandyhook, Conn.; Mario A. Bolanos, Plano, Tex.; Jimmy Liang, and Indran B. Nair, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 3, 1995, Ser. No. 433,101

Int. Cl.[6] H01L *23/28*

U.S. Cl. 257—787 **16 Claims**



1. A mold composition for use in semiconductor packaging comprising:

(a) a filler of ceramic particles, each of said ceramic particles having macroscopic pores of sufficient size to receive a resin binder therein, said pores extending from the surface of said particle to the particle interior; and

(b) a flowable and permanently hardenable resin binder composition adherable to said ceramic particles extending around said ceramic particles and extending into said pores.

5,644,169

MOLD AND METHOD FOR MANUFACTURING A PACKAGE FOR A SEMICONDUCTOR CHIP AND THE PACKAGE MANUFACTURED THEREBY

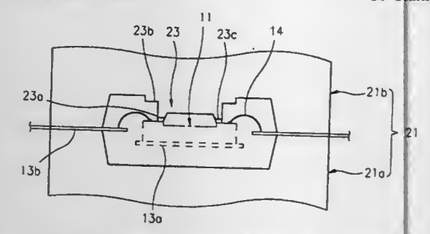
Heung Sup Chun, Seoul, Rep. of Korea, assignor to Goldstar Electron Co., Ltd., Cheongju, Rep. of Korea

Continuation of Ser. No. 203,243, Mar. 1, 1994, abandoned. This application Apr. 3, 1996, Ser. No. 624,204

Claims priority, application Rep. of Korea, Mar. 4, 1993, 3229/1993

Int. Cl.[6] H01L *23/28*

U.S. Cl. 257—787 **10 Claims**



1. A mold for manufacturing a package for a semiconductor chip, comprising:

a lower mold die;

an upper mold die having a recess; and

a protrusion provided on a predetermined portion of the recess to cover a light receiving area of the semiconductor chip for providing an opening of a molded body of the package, wherein the protrusion includes an extension provided on a portion of a first surface thereof and extending beyond said first surface of the protrusion for preventing a formation of a molding resin on a predetermined portion of the package, wherein the molded body of the package is formed in an area defined by said lower and upper mold dies, said protrusion and said extension, and said protrusion and extension are not part of the package manufactured using the mold.

5,644,170

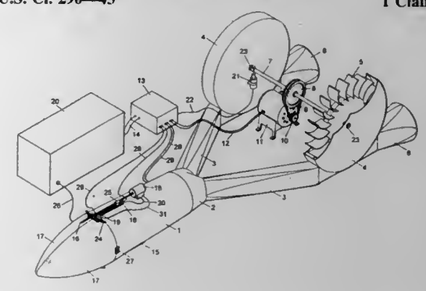
VECHICLE MOUNTED ATMOSPHERIC/AQUA TURBINE HAVING SPEED RESPONSIVE INTAKE MEANS

David A. Bynum, 247 Vine St., Keller, Tex. 76244, and Johnnie J. Bynum, 7314 Bridges Ave., Ft. Worth, Tex. 76118

Filed Feb. 17, 1995, Ser. No. 390,072

Int. Cl.[6] F03B *13/10;* **F03D** *9/00*

U.S. Cl. 290—43 **1 Claim**



1. An air or water twin turbine system, mounted on a vehicle, for the purpose of producing electricity, comprising:

1) a pre-fan chamber adapter, two pre-fan tubes, two turbine chambers and twin turbines wherein the pre-fan chamber adapter directs the air or water into each of the two pre-fan chamber tubes where the water or air after passing through the two pre-fan chamber tubes then passes through the two turbine chambers where it, the water or air, turns the twin turbines before returning to the atmosphere or body of water;

2) a common shaft coupling the twin turbines, a V type pulley mounted on the common shaft and a generator having a rotary shaft with a pulley mounted thereon wherein the V type pulley mounted on the common shaft is connected to the pulley on the generator by means of a V type belt or a gear box to turn the generator at a speed ratio, with respect to the common shaft speed, of greater than 1 to 1;

3) the rotation of the twin turbines causes the generator to rotate and produce electricity;

4) an air or water scoop having two half cone covers, two worm screws, worm screw mounting brackets, two small DC motors with motor mounts, a control box and a shaft speed monitor wherein the electricity produced as stated in 3) above is regulated by the control box that receives input from the shaft speed monitor which monitors the speed of the common shaft and adjusts the intake of air or water into the air or water scoop by means of the half cone covers wherein the intake of air or water into the air or water scoop is controlled by utilizing the two half cone covers along with the two worm screws reciprocal with the worm screw mounting brackets, and the two small DC motors with motor mounts that operate in conjunction with the control box to regulate the air or water entering the air or water scoop thereby keeping the generator turning at a constant speed independent in relation to the speed of the vehicle on which the twin turbine system is installed;

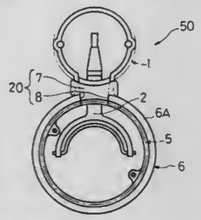
5) battery charging means wherein the electricity produced by the generator can be used to extended to charge on a battery or batteries.

5,644,171

STARTER HAVING AN ELASTIC SEAL MEMBER SHAPED TO TAPER IN A DIRECTION PERPENDICULAR TO THE LONGITUDINAL AXIS OF THE MOTOR

Shigeru Yumiyama; Shigehiko Omata, both of Hitachinaka; Takashi Suzuki, and Yoshinobu Nakamura, both of Ibaraki-ken, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 5, 1995, Ser. No. 498,421
Claims priority, application Japan, Jul. 28, 1994, 6-176962
Int. Cl.[6] F02N *15/06;* **H02K** *5/10*
U.S. Cl. 290—48 **6 Claims**



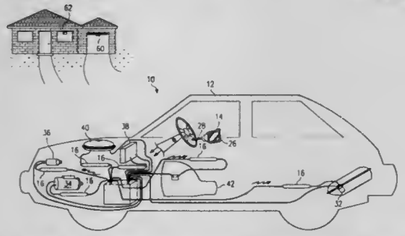
1. A starter comprising:
a shift lever for performing engagement and disengagement between a pinion and a ring gear of an engine;
a magnetic switch for actuating said shift lever;
a motor for driving said pinion;
a front case having an open end to which said magnetic switch and said motor are mounted substantially from the same direction, said pinion being enclosed in said front case;
a seal portion provided in the vicinity of said open end of said front case so as to seal a gap between the inside and the outside of said front case;
said seal portion including a taper face and an elastic material, said taper face having an axis the direction of which is substantially perpendicular to the longitudinal axis of said motor, said elastic material being fitted onto said taper face so as to be disposed between said magnetic switch and said motor, wherein said elastic material receives a force in the direction of narrowing width of the taper face.

5,644,172

VEHICLE ANTI-THEFT DEVICE

Gerald Marvin Hodges, P.O. Box 54153, Hurst, Tex. 76054

Filed Dec. 15, 1994, Ser. No. 356,647
Int. Cl.[6] B60R *25/04*
U.S. Cl. 307—10.5 **10 Claims**



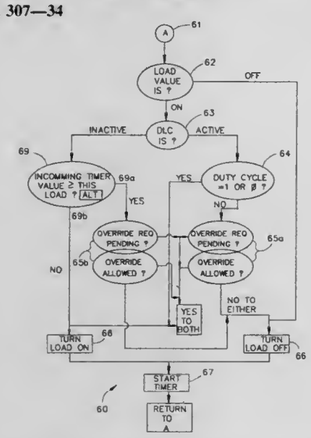
1. An anti-theft apparatus for selectively enabling vital electrical components powered by a vehicle's electrical system, comprising:
transmitter and at leas one control unit, said transmitter transmitting directly to said at least one control unit a single coded activation signal comprising a low-power audio frequency signal propagated over the vehicle's electrical system;
wherein said transmitter is neither powered by said vehicle electrical system nor fixedly attached to the vehicle;
wherein each said at least one control unit is powered by the vehicle electrical system and is coupled directly between the vehicle electrical system and a vehicle electrical component and selectively controls the delivery of electrical power to said vehicle electrical component in response to said single coded activation signal received from said transmitter; and
wherein each said at least one control unit comprises:
a receiver for receiving said single coded activation signal transmitted by said transmitter,
a comparator operatively coupled with said receiver for comparing said received single coded activation signal transmitted by said transmitter with a known stored signal, and
a switch coupled between the vehicle electrical system and said vehicle electrical component for selectively enabling and disabling the delivery of power to said vehicle electrical component, wherein said switch is operably coupled and responsive to said comparator for switching power to said vehicle electrical component only when said received single coded activation signal transmitted by said transmitter matches said known stored signal.

5,644,173

REAL TIME AND/SHED LOAD BASED ON RECEIVED TIER PRICING AND DIRECT LOAD CONTROL WITH PROCESSORS FOR EACH LOAD

Kurt L. Elliason, 12725 54th Ave. North, Plymouth, Minn. 55422; Robert J. Schnell, 15415 47th Ave. No., Plymouth, Minn. 55446; Philip J. Bohrer, 5900 Amy Dr., Edina, Minn. 55436, and Gregory J. Merten, 3753 Windtree Dr., Eagan, Minn. 55123-1335

Filed Oct. 25, 1994, Ser. No. 329,731
Int. Cl.[6] H02J *3/14*
U.S. Cl. 307—34 **11 Claims**



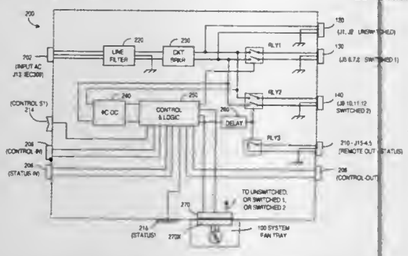
1. A method for controlling the energy usage in a facility having individual controllers, each responsible for its own subsystems which have energy loads that can be in various states, comprising:
(a) receiving a price tier signal from a utility providing energy to said facility;
(b) communicating that signal to each processor responsible for the adding/shedding of each subsystem load;
(c) determining by each processor whether it is appropriate to shed its load based on information in the utility-provided signal, and;
(d) shedding by said processor of those loads for which it is responsible if appropriate.

5,644,174

UNIVERSAL AC SEQUENCER FOR A SERVER

Chin Y. Cheng, and Stimson Ho, both of Cupertino, Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Mar. 22, 1996, Ser. No. 621,827
Int. Cl.[6] H02J *3/14*
U.S. Cl. 307—41 **15 Claims**



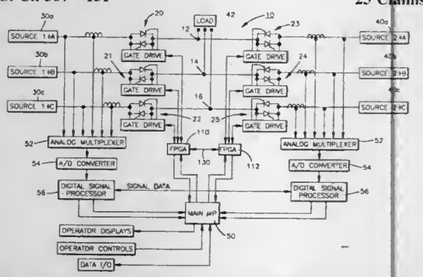
1. An alternating current (AC) sequencer coupleable to a source of AC input operating voltage from which at least two output modes of AC operating voltage are sequentially provided by said AC sequencer, comprising:
a source AC input connector, mounted to said AC sequencer, that receives said AC input operating voltage and provides said AC input operating voltage to said AC sequencer;
wherein a source of said AC input operating voltage is coupled to said AC sequencer by a second connector that attaches to said source AC input connector;
a first AC outlet port that is coupled to said connector to provide a first unswitched output AC operating voltage whenever said AC input operating voltage is present at said connector;
an input control port coupled to an input control port connector; and
a circuit, coupled to said connector and to said input control port, that outputs at least one of (i) a switched 1 version of said AC input operating voltage but only when a power-on control signal is coupled to said input control port connector, and (ii) a switched 2 version of said switched 1 version of said AC input operating voltage but only after a delay time of at least one second from occurrence of said switched 1 version.

5,644,175

STATIC SWITCH METHOD AND APPARATUS

James M. Galm, Shaker Heights, Ohio, assignor to Cyberex, Inc., Mentor, Ohio

Filed Mar. 28, 1995, Ser. No. 412,067
Int. Cl.[6] H02B *1/00*
U.S. Cl. 307—131 **25 Claims**



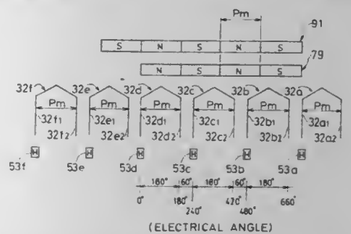
14. Apparatus for coupling a source to a load through a junction comprising:
a) a first set of gate controlled switches coupled to a junction wherein one switch of the first set conducts current in one sense and another switch of the first set conducts current in an opposite sense;
b) a second set of gate controlled switches coupled to said junction wherein one switch of the second set conducts current in one sense and another switch of the second set conducts current in an opposite sense;
c) monitoring circuits for monitoring a current state through the switches of the first and second sets of switches;
d) a first and a second gate control circuit for gating the switches of the first and second sets of switches into conduction; and
e) a controller coupled to the first and second gate control circuits for activating switches in the first and second sets by actuating the first and second gate control circuits as said controller determines which set of said first and second set of switches to render active and also coupled to said monitoring circuits to monitor the current carrying state of the first and seconds sets of switches; said controller comprising a stored program for instructing the gate control circuits to remove a gating signal from the gate electrodes of a first active switch set and subsequent to the removal of the gating signal for repeatedly monitoring an output from the monitoring circuits to confirm a status of the current in the switches of a first switch set and subsequent to such confirmation for then applying a gate signal to the gate electrodes of switches in a second inactive switch set and thereby allow current to flow through the second switch set.

5,644,176

LINEAR DIRECT CURRENT MOTOR

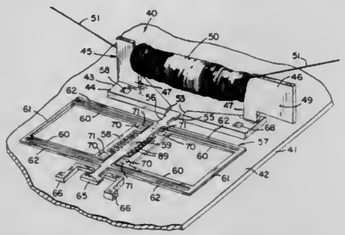
Satoru Katagiri, Saitama; Hidehito Oohira, Tokyo, and Shouji Fujisawa, Kanagawa, all of Japan, assignors to Nippon Thnmpson Co., Ltd., Tokyo, Japan

Filed Nov. 3, 1994, Ser. No. 334,366
Claims priority, application Japan, Nov. 19, 1993, 5-314374
Int. Cl.[6] H02K *41/02*
U.S. Cl. 310—12 **11 Claims**



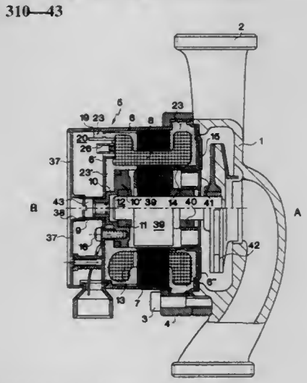
11. A linear direct current motor comprising:
a field magnet in which P number of poles (P being an integer of at least 2) are arranged and magnetized so that said poles are sequentially different;
a group of armature coils wound so that an open angle width of each one of said armature coils is approximately 2n−1 times (where n is an integer of at least 1) the magnetic pole width of said field magnet, said armature coils being arranged so as to oppose said field magnet and receiving an excitation current for driving said field magnet relative to said armature coils;
a magnetic pole detection magnet, having a magnetic pole width equal to the magnetic pole width of said field magnet, and having a magnetized state which is the same as a magnetized state of said field magnet, said magnetic pole detection magnet being arranged substantially parallel to said field magnet; and magnetic pole discrimation elements provided so as to correspond to each one of said armature coils for discriminating magnetic poles of said magnetic pole detection magnet; wherein,
the number of magnetic poles of said magnetic pole detection magnet is set to be P+(2n−1), and each one of the magnetic poles of said magnetic pole detection magnet and each one of said magnetic pole discrimination elements is arranged so as to be mutually corresponding in the same phase.

5,644,177
MICROMECHANICAL MAGNETICALLY ACTUATED DEVICES
Henry Guckel; Jonathan L. Klein, and Thomas L. Earles, all of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.
Filed Feb. 23, 1995, Ser. No. 393,432
Int. Cl.[6] H02K *15/00;57/00*
U.S. Cl. 310—40 MM **30 Claims**



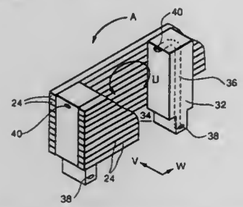
24. A micromagnetic circuit structure comprising:
(a) a nonferromagnetic substrate having a top surface;
(b) a fixed magnetic core formed by electrodeposition on the top surface of the substrate, the core formed of a ferromagnetic material, the core having a top surface and receptacle openings formed therein extending downwardly from the top surface of the fixed core; and
(c) a coil section comprising a mandrel of ferromagnetic material and a coil of electrical conductor wound around the mandrel, the mandrel having end sections with pegs extending therefrom formed to fit in the receptacle openings in the fixed core sections, the pegs on the mandrel inserted into the receptacle openings in the fixed core section to complete a magnetic circuit.

5,644,178
WET ROTOR GAP TUBE MOTOR FOR PUMPS
Richard Halm, Silcherstrasse 54, D-73666 Baltmannsweiler, Germany
Filed May 1, 1995, Ser. No. 431,843
Claims priority, application Germany, May 4, 1994, 44 15 757.6; May 25, 1994, 44 18 166.3
Int. Cl.[6] H02K *1/22;11/00;5/10*
U.S. Cl. 310—43 **13 Claims**



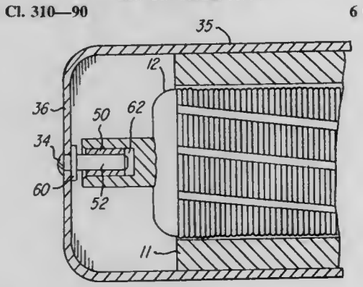
1. An apparatus for pumps, comprising:
a housing;
a stator having a winding cast in said housing by a hardenable sealing compound to form a composite body, said composite body having coupling means on a first side thereof for attaching said composite body to a pump on said first side of said composite body and having a second side opposite said first side;
unblocking means on said second side of said composite body;
a connection chamber connected to a housing second end panel on said second side of said composite body and receiving electrical connection elements connecting electrical lines to said winding, said electrical lines extending in an axial direction of said composite body into said connection chamber; and
a cover attached to said composite body and closing said connection chamber on said second side.

5,644,179
GAS COOLED END TURNS FOR DYNAMOELECTRIC MACHINE ROTOR
Fred Wolf Staub, Niskayuna, and Emil Donald Jarczynski, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Dec. 19, 1994, Ser. No. 358,276
Int. Cl.[6] H02K *9/00*
U.S. Cl. 310—65 **10 Claims**



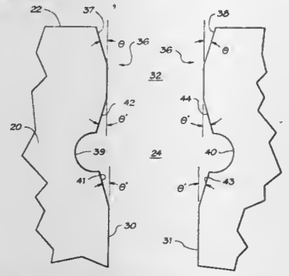
1. A gas cooled dynamoelectric machine, comprising:
a rotor having a body portion, said rotor having axially extending coils and end turns extending axially beyond at least one end of said body portion;
at least one spacer located between a first and a second end turn, said spacer having a radially-extending duct said duct extending between an inlet opening and an outlet opening, disposed therein; and
said duct outlet opening being disposed in said spacer so as to emit said cooling gas flow in the direction of gas flow circulation.

5,644,180
REAR MOTOR BEARING FOR WORM GEAR DRIVE MOTORS
Harry C. Buchanan, Jr., Spring Valley, Ohio, assignor to ITT Automotive Electrical Systems, Inc., Auburn Hills, Mich.
Filed Jun. 6, 1995, Ser. No. 469,520
Int. Cl.[6] H02K *15/14*
U.S. Cl. 310—90 **6 Claims**



1. In an electric motor having an outer case forming a rear wall of the motor, and a rotating armature shaft therein with an end facing said rear wall, the improvement comprising an axial opening formed in said armature shaft end, a sleeve bearing in said opening having an outer surface in engagement with said armature shaft, and a shaft supporting pin having one end rotatably received in said sleeve bearing and having a remote end supported on said motor rear wall.

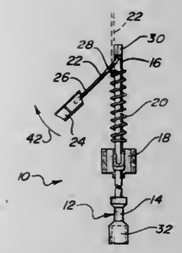
5,644,181
STATOR LAMINATION DESIGN HAVING A TAPERED OPENING
Gale A. Kooken, Englewood; John W. Murphy, Kettering, and Roger D. Fleming, Centerville, all of Ohio, assignors to Dayton-Phoenix Group, Inc., Dayton, Ohio
Filed Jan. 5, 1995, Ser. No. 369,097
Int. Cl.[6] H02K *1/00*
U.S. Cl. 310—216 **7 Claims**



1. A stator lamination comprising:
substantially flat plate means made of a conductive material, said plate having a plurality of notches formed therein; and
each of said notches including an inner wall and two opposing side walls, such that an outer portion of said side walls intersect a periphery of said plate means to form an outwardly tapering opening,
further comprising a cutout in said side walls, said cutout being shaped and positioned in oppposing relation to receive a retaining slat therebetween, and
said side walls adjacent to said cutouts having tapered edges leading to and away from said cutouts, whereby insertion of windings into said notches and removal of windings from said notches is facilitated and damage to insulation on said windings is minimized.

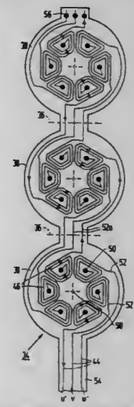
5,644,182
END CAP AND BRUSH HOLDER ASSEMBLY FOR DYNAMOELECTRIC MACHINE
Earl W. Rawls, Columbus, Miss., assignor to United Technologies Automotive, Inc., Dearborn, Mich.
Contiouation of Ser. No. 176,020, Dec. 30, 1993, Pat. No. 5,471,107. This application Nov. 1, 1995, Ser. No. 551,569
Int. Cl.[6] H02K *13/00*
U.S. Cl. 310—249 **19 Claims**

1. An apparatus comprising:
an electric motor end cap having a brush box;
a brush box cover having a pair of arms extending generally perpendicular to a top, said pair of arms only being attached to each other at a planar surface of said top;
said brush box cover being fastened to said brush box;
a brush;
a flexible shunt connected to an end of said brush;
a flexible and conductive wire directly connected to said shunt by a crimp, crimped ends of said shunt and said wire pointing in the same direction in a parallel and overlapping relationship; and
a spring contacting against said brush and surrounding at least a portion of said shunt;



said shunt and said crimp being entirely disposed within said brush box when said brush and said brush box cover are fastened to said brush box, said conductive wire exiting said motor end cap generally parallel to an armature shaft rotational axis.

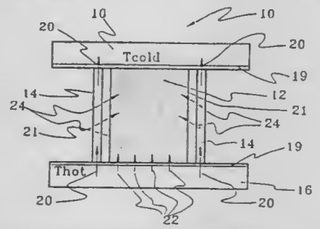
5,644,183
FLAT ELECTRIC MOTOR HAVING A STATOR FORMED FROM A FOLDED STACK OF FLAT ELECTRICALLY INSULATING SUPPORT ELEMENTS WITH PRINTED CONDUCTOR WINDINGS
Evert J. Van Loenen, and Franciscus M.A.M. Van Gaal, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Jun. 14, 1995, Ser. No. 490,477
Claims priority, application European Pat. Off., Jun. 15, 1994, 94201716
Int. Cl.[6] H02K *4/06;3/32*
U.S. Cl. 310—268 **8 Claims**



1. A flat electric motor having a rotor (**14**) with at least one flat, permanent magnetic disc (**15**) which is rotatable about an axis of rotation (**10**) extending perpendicularly to the plane of the disc, and an electromagnetic stator (**16**) which comprises:
at least one stack of flat, electrically insulating supporting elements (**38**) each having a first and a second principal surface;
patterns of conductor tracks (**44**) on each of said surfaces which form a plurality of windings consisting of first coils (**46**) and second coils (**48**) arranged in a ring about said axis of rotation, each coil consisting of a pattern of spirally extending conductor tracks on each of the first and second principal surfaces of each supporting element;
the coils which form part of each winding being electrically connected in series via a connection system comprising connection tracks (**52**) which form part of the conductor tracks, interconnections (**50, 56**) which extend between the first and second principal surfaces, and connection elements (**52***a*)

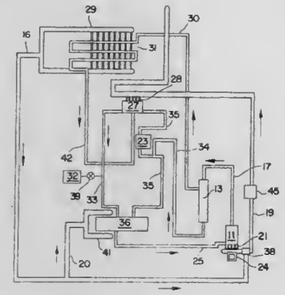
which connect connection tracks of different supporting elements of the stack to one another;
the windings of the stack being distributed between a number of phases each of which comprises one winding, the coils which are situated directly over one another in the stack belonging to the same phase;
the supporting elements (**38**) of each stack being constituted by successive parts of a stator support (**34**) in the form of a strip of electrically insulating foil, there being a folding line (**36**) extending transversely of a local longitudinal direction of the strip between each pair of successive supporting elements, the strip being folded along the folding lines so as to form said stack of supporting elements;
said connection elements (**52***a*) between the connection tracks (**52**) of different supporting elements of said stack being constituted by portions of said connection tracks which cross the folding lines of said strip.

5,644,184
PIEZO-PYROELECTRIC ENERGY CONVERTER AND METHOD
Yan R. Kucherov, Salt Lake City, Utah, assignor to Thermodyne, Inc., Salt Lake City, Utah
Filed Feb. 15, 1996, Ser. No. 602,159
Int. Cl.[6] H02N *3/00*
U.S. Cl. 310—306 **86 Claims**



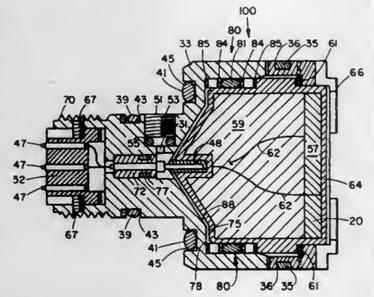
1. An energy conversion device, comprising:
one or more plates formed of piezo-pyroelectric material;
thermally conductive electrodes interleaved with said one or more plates forming a capacitor;
hot and cold heat sinks in thermal communication with said electrodes;
means for holding said one or more plates together;
means coupled to said capacitor for applying voltage and resonant frequency thereto; and
means coupled to said capacitor for removing electrical charge therefrom created from piezo-pyroelectric effects.

5,644,185
MULTI STAGE THERMOELECTRIC POWER GENERATION USING AN AMMONIA ABSORPTION REFRIGERATION CYCLE AND THERMOELECTRIC ELEMENTS AT NUMEROUS LOCATIONS IN THE CYCLE
Joel V. Miller, 14340 Trinidad Rd., San Leandro, Calif. 94577
Continuation-in-part of Ser. No. 491,787, Jun. 19, 1995, abandoned. This application Feb. 27, 1996, Ser. No. 607,382
Int. Cl.[6] H02N *10/00*; **H01L** *35/30;35/28*; **F25D** *17/08*
U.S. Cl. 310—306 **13 Claims**



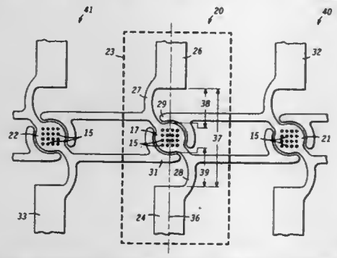
1. A thermoelectric generator system for converting a portion of heat flowing from a heat source to electricity which comprises
a boiler means (**11**) adapted to have thermal contact with said heat source for heating a liquid solution of a first component and a second component;
a separator means (**13**) communicating with said boiler means (**11**) such that when said solution is heated by said heat from said source (**24**), said liquid solution passing into said separator means (**13**) is separated into liquid first component and gaseous second component;
an absorption means (**36**) for mixing said first and second components and exhausting heat of solution generated by mixing said first and second components;
first conduit means (**35**) for conducting said first component from said separator means (**13**) to said absorption means (**36**);
a condensing means (**31**) for condensing said second component from a gaseous second component to a liquid second component;
a second conduit means (**30**) for conducting said gaseous second component from said separator means (**13**) to said condenser means (**31**) whereby said gaseous second component is condensed to a liquid second component;
an evaporator means (**27**) communicating with said condenser means (**31**) for converting said liquidus second component to gaseous second component;
a third conduit means (**33**) for enabling said evaporator means (**27**) to communicate with said absorption means (**36**) such that said gaseous second component passes from said evaporator means (**27**) to said absorption means (**36**) and mix with said liquid first component means returning from said separator means;
at least one thermopile means for generating thermoelectricity, each of said at least one thermopile having a first surface and a second surface where a portion of heat flowing into said first surface and out of said second surface is converted to the thermoelectricity;
any one of said at least one thermopile being located in any one of:
(i) a first position where said first surface is in thermal contact with said source of heat and said second surface is in contact with said boiler whereby heat flows from said source of heat through said thermoelectric pile to said boiler whereby thermoelectricity is generated in said thermoelectric pile;
(ii) a second position where said first surface is in thermal contact with said condenser means and said second surface is in contact with said evaporator means whereby heat flows from said condenser means through said thermoelectric pile to said evaporator means such as to generate thermoelectricity in said thermoelectric pile;
(iii) a third position where said first surface is in thermal contact with said absorption means and said second surface is in contact with said evaporator means whereby heat flows from said absorption means through said thermoelectric pile to said evaporator means such as to generate thermoelectricity in said thermoelectric pile;
(iv) a fourth position where said first surface is in thermal contact with said condenser means and said second surface is in contact with means for removing heat from said system whereby heat flows from said condenser means through said thermoelectric pile and out of said system such as to generate thermoelectricity in said thermoelectric pile.

5,644,186
ACOUSTIC TRANSDUCER FOR LWD TOOL
James Robert Birchak, Spring; Eugene Linyaev, Houston; Carl Arthur Robbins, Tomball, and Dennis E. Roessler, Houston, all of Tex., assignors to Halliburton Company, Houston, Tex.
Filed Jun. 7, 1995, Ser. No. 483,112
Int. Cl.[6] H01L *41/08*
U.S. Cl. 310—337 **1 Claim**



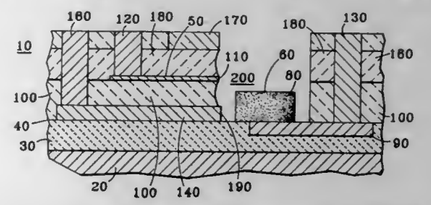
1. A transducer comprising:
(a) a casing having a recess, and having electrical contacts on an outer part of the casing extending through to the recess;
(b) a piezo electric housing comprising a piezoeletric member therein, and comprising electrical contacts on an outer part of the housing extending through to the piezoelectric member, wherein the housing resides within the recess forming an annular space between the housing and the casing, and wherein the housing and casing electrical contacts are connectably engaged;
(c) a compressible liquid residing within the annular space;
(d) an annularly shaped seal assembly within the annular space, positioned to retain the compressible liquid within the annular space, wherein the seal assembly is additionally slidably positioned within the annular space between first and second positions.

5,644,187
COLLIMATING EXTRACTION GRID CONDUCTOR AND METHOD
James E. Jaskie, and Lawrence N. Dworsky, both of Scottsdale, Ariz., assignors to Motorola, Schaumburg, Ill.
Filed Nov. 25, 1994, Ser. No. 345,040
Int. Cl.[6] H01J *1/46*
U.S. Cl. 313—293 **12 Claims**



1. An electron source extraction grid conductor comprising:
a first conductor strip;
a second conductor strip;
an extraction grid section that is spaced apart from the first and second conductor strips and electrically connected to the first and second conductor strips; and
a collimating conductor for creating an electric field between the extraction grid section and the first and second conductor strips, the electric field repels electrons that pass through the extraction grid section from the first and second conductor strips.

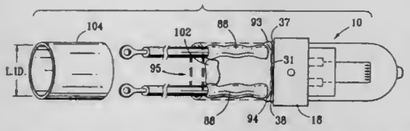
5,644,188
FIELD EMISSION DISPLAY CELL STRUCTURE
Michael D. Potter, Grand Isle, Vt., assignor to Advanced Vision Technologies, Inc., Rochester, N.Y.
Filed May 8, 1995, Ser. No. 438,023
Int. Cl.[6] H01J *1/16;19/24*
U.S. Cl. 313—309 **15 Claims**



1. A rectifying device having a cold-cathode field-emission electron source, comprising:
a) a substrate having a substrate upper surface defining a first plane;
b) a buried anode contact layer having upper and lower major surfaces, disposed with one of said upper and lower major surfaces contiguous with said first plane;
c) a field-emission electron emitter disposed on a second plane spaced from said first plane to form said electron source;
d) a first insulating layer disposed between said first and second planes to insulate said buried anode contact layer from said electron emitter;
e) an anode spaced apart from said electron emitter by a first predetermined lateral distance and extending upward from said buried anode contact layer to a height less than the distance between said first and second planes;
f) a first conductive contact connected to said electron emitter to provide a cathode contact;
g) a second conductive contact spaced apart from said first conductive contact and connected to said buried anode contact layer to provide an anode contact for applying an electrical bias voltage;
h) means for applying said electrical bias voltage;
I) a conductive control electrode spaced apart from said anode by a second predetermined lateral distance and disposed in a third plane spaced from said first and second planes;
j) a second insulating layer disposed between said second and third planes to insulate said control electrode from said electron emitter;
k) a third conductive contact spaced apart from said first and second conductive contacts and connected to said control electrode; and
l) means for applying a control signal to said third conductive contact, for controlling said device.

5,644,189
STRAIN AND VIBRATION RESISTANT HALOGEN LIGHT BULB FOR AIRCRAFT AND METHOD
Jeffrey D. Busby, Ft. Worth, Tex., assignor to Bunker Sales & Marketing, Inc., Carrollton, Tex.
Filed Feb. 8, 1995, Ser. No. 385,952
Int. Cl.[6] H01J *5/48*
U.S. Cl. 313—318.01 **14 Claims**

1. A rigidified quartz-halogen light bulb for use in aircraft light bulb mounting devices, comprising:
(a) a quartz-halogen light bulb of the type which operates at temperature of about 300° F., having a sealed glass bulb with



an enclosed filament, a mounting base and at least two parallel connector terminals extending insulatedly through said mounting base and lead wires attached to said connector terminals at attachment sites;

(b) a high temperature thermal-setting epoxy coating surrounding each attachment site between said terminals and said lead wires, said thermal-setting epoxy adhered to said base at one end and extending a predetermined short distance from said base and adhered along said terminals and lead wires;

(c) individual shrink-fit sleeves securely encasing said epoxy on each of said terminals and lead wire attachment sites;

(d) interposed high temperature thermal-setting epoxy fillingly adhered between said shrink-fit sleeves and partially adhered to said base of said light bulb; and

(e) an exterior shrink-fit tubing securely encasing all of said terminals, lead wires, attachment site epoxy coating, individual shrink-fit sleeves and interposed epoxy into a tightly adhered composite.

5,644,190

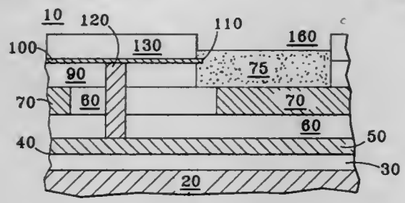
DIRECT ELECTRON INJECTION FIELD-EMISSION DISPLAY DEVICE

Michael D. Potter, Grand Isle, Vt., assignor to Advanced Vision Technologies, Inc., Rochester, N.Y.

Filed Jul. 5, 1995, Ser. No. 498,505

Int. Cl.[6] H01J *19/24*

U.S. Cl. 313—336 **16 Claims**



1. A microelectronic device display cell structure, comprising:

(a) a substrate;

(b) an anode;

(c) a phosphor disposed on said anode, said phosphor having first and second phosphor surfaces, and said first phosphor surface being substantially orthogonal to said substrate;

(d) a conductive thin-film electron emitter substantially parallel to said substrate, said emitter having an emitting edge spaced apart from said anode, said emitting edge being disposed in contact with said first phosphor surface, and said emitter edge extending into said phosphor; and

(e) means for applying an electrical bias voltage to said anode and to said electron emitter sufficient to excite cathodoluminescence in said phosphor, in order to cause light emission from said phosphor.

5,644,191

COLOR DISPLAY TUBE HAVING AN EXTERNAL MAGNETIC SHIELD

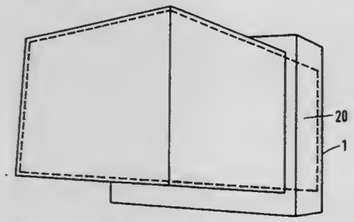
Hendrik J. De Wit, and Willem Schouten, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 28, 1994, Ser. No. 330,647

Claims priority, application Belgium, Oct. 29, 1993, 09301184

Int. Cl.[6] H01J *29/86*

U.S. Cl. 313—402 **10 Claims**



1. A color display tube having an envelope and comprising means for generating electrons, a transparent window, a display screen having a pattern of phosphor elements on the inner surface of the window and means for directing electrons to the display screen, characterized in that the tube is present in an open arrangement of bars of soft magnetic material that shields the tube from the influence of the earth magnetic field and the arrangement being free from said bars in front of the display screen.

5,644,192

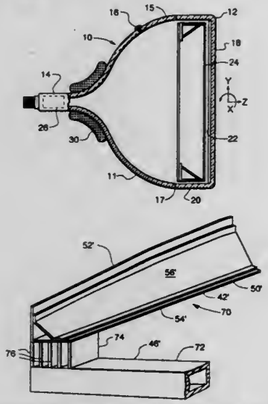
COLOR PICTURE HAVING A TENSIONED MASK AND COMPLIANT SUPPORT FRAME ASSEMBLY

Frank Rowland Ragland, Jr., Lancaster, Pa., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Nov. 15, 1995, Ser. No. 559,697

Int. Cl.[6] H01J *29/80*

U.S. Cl. 313—402 **6 Claims**



1. In a color picture tube having a tensioned mask and support frame assembly, each of said mask and said support frame being rectangular and having two long sides paralleling a central major axis thereof and two short sides paralleling a central minor axis thereof, and said mask having a cylindrical contour, being curved along said major axis and straight along said minor axis, the improvement comprising

said frame including two first members paralleling said major axis and two second members attached to the ends of said first members and paralleling said minor axis, each of said first members comprising a first part having two flanges, a first flange extending toward said screen and a second flange being flat and perpendicular to said first flange, in an L-shaped cross-section, said first flange varying in height from said second flange along said first part from a minimum height at the ends thereof to a maximum height at the center thereof, and each of said first members comprising a second part extending between said first and second flanges of said first part and forming a triangle therewith in cross-section, said second part intersecting the first flange of said first part a predetermined distance from a distal end of said first flange.

5,644,193

PHOSPHOR, CATHODE-RAY TUBE, FLUORESCENT LAMP AND RADIATION INTENSIFYING SCREEN

Naotoshi Matsuda, Tokyo; Masaaki Tamatani, Fujisawa; Keiko Albessard, Yokohama; Miwa Okumura, Kawasaki; Takeshi Takahara, Yokohama, and Takeo Itou, Kumagaya, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 16, 1994, Ser. No. 356,959

Claims priority, application Japan, Dec. 17, 1993, 5-343241; Sep. 19, 1994, 6-223582; Sep. 19, 1994, 6-223583; Oct. 7, 1994, 6-270221

Int. Cl.[6] H01J *63/04*

U.S. Cl. 313—486 **11 Claims**



1. A phosphor, comprising:

transparent spherical particles having an average particle size of 0.5 to 20 μm and a ratio of the major diameter to the minor diameter of individual particles in the range of 1.0 to 1.5; and

ultrafine particles having a diameter of 0.2 μm or less in an amount of 0.001–5 wt % or less.

5,644,194

CIRCUIT FOR CONTROLLING AN INDICATOR LIGHT TO TURN OFF SLOWLY

Kok Chin Chang, Singapore, Singapore, assignor to TriTech Microelectronics International, Pte, Ltd., Singapore, Singapore

Filed Jul. 17, 1995, Ser. No. 503,174

Int. Cl.[6] H05B *37/02*

U.S. Cl. 315—123 **7 Claims**

1. A circuit for discharging a charge storage device, such as a glow-effect capacitor (**11**) in discrete steps, the circuit comprising,

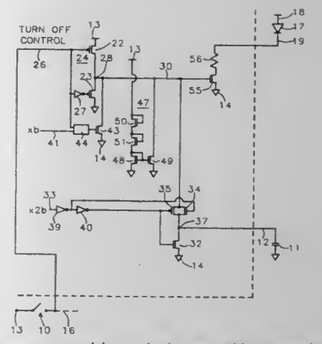
means (**10**), such as a switch, providing a binary signal (**26**) that the charge storage device is to be turned on or to be turned off,

a first FET (**22**) and a line (**30**) connecting the first FET between the charge storage device and a power supply point (**13**) for supplying charge to operate the charge storage device,

rapid discharge means comprising a second FET (**43**) connected between the line (**30**) and circuit ground (**14**) for discharging the charge storage device,

means (**17, 55**) for producing a first signal (**41**) for turning off the rapid discharge means at a predetermined point,

means (**33, 44**) responsive to one value of the binary signal to turn off the first FET (**22**) and to turn on the second FET (**43**) to discharge the charge storage device at a selected rapid rate,



the means comprising a logic gate (**44**) responsive to the binary signal and to the signal (**41**) for turning off the rapid discharge means at the predetermined point,

the means for producing the signal (**41**) for turning off the rapid discharge means including

an FET (**55**) for producing a signal (**19**) representing the voltage on the charge storage device, and

means for producing the first signal in a binary state that turns on the rapid discharge means in coincidence with the value of the binary signal,

and means responsive to a predetermined voltage level of the charge storage device for switching the first signal to its other binary state for turning off the rapid discharge means,

the means (**17, 55**) for producing the signal (**41**) for turning off the rapid discharge means at a predetermined point producing the signal at a predetermined point in the fall of the charge voltage on the line,

and means (**47**) for thereafter discharging the charge storage device at a lower rate comprising a current mirror (**47**) connected between the line (**30**) and circuit ground (**14**), the current mirror being a weak current mirror for discharging the charge storage device with a preceptable exponential characteristic.

5,644,195

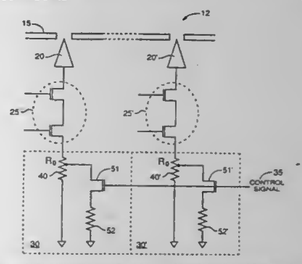
FLAT PANEL DISPLAY DRIVE CIRCUIT WITH SWITCHED DRIVE CURRENT

Jim J. Browning, Boise, Id., assignor to Micron Display Technology, Inc., Boise, Id.

Continuation of Ser. No. 371,949, Jan. 12, 1995, Pat. No. 5,525,868, which is a continuation of Ser. No. 77,791, Jun. 15, 1993, Pat. No. 5,387,844. This application Mar. 4, 1996, Ser. No. 613,442

Int. Cl.[6] G09G *3/10*

U.S. Cl. 315—169.3 **25 Claims**



1. An electron supply path for a display having an emitter, the emitter emitting electrons in response to an emitter current, the electron supply path providing the emitter current in response to a control signal comprising:

a first resistance coupled between the emitter and an electron source, the first resistance providing a first path for a first current to flow to the emitter; and

a shunt circuit coupled to bypass a portion of the first resistance, the shunt circuit providing a second path for a second current to flow to the emitter, in response to the control signal.

5,644,196

BEAM LANDING LOCATION ERROR CORRECTION ARRANGEMENT

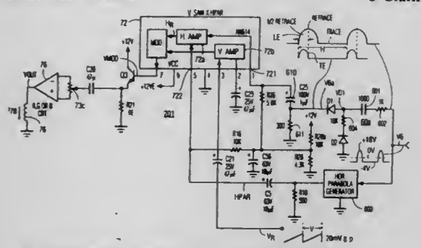
John Barrett George, Carmel, Ind., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

PCT No. PCT/US93/11995, § 371 Date Jul. 7, 1995, § 102(e) Date Jul. 7, 1995, PCT Pub. No. WO95/16273, PCT Pub. Date Jun. 15, 1995

PCT Filed Dec. 8, 1993, Ser. No. 481,539

Int. Cl.[6] G09G *1/28;* **H01J** *29/51*

U.S. Cl. 315—368.18 **8 Claims**



1. A video display deflection apparatus, comprising:

a cathode ray tube including an evacuated glass envelope, a display screen disposed at one end of said envelope and an electron gun assembly disposed at a second end of said envelope, said electron gun assembly producing an electron beam that forms a raster at electron beam landing locations on said screen;

a main horizontal deflection winding and a main vertical deflection winding disposed on a neck of said cathode ray tube for producing a main deflection field in a beam path of said electron beam that varies in a manner to vary the electron beam landing location;

means for generating a horizontal deflection current in said horizontal deflection winding and a first retrace pulse signal, during horizontal retrace;

a differentiator for differentiating said first retrace pulse signal to generate a second retrace pulse signal;

means for generating a correction signal, said correction signal generating means being responsive to said second retrace pulse signal for introducing a pulse portion in said correction signal, such that said second retrace pulse signal is utilized for controlling said pulse portion during an interval that is determined by said second retrace pulse signal; and

an amplifier responsive to said correction signal for generating a current in an auxiliary deflection coil disposed on said neck to correct for a beam landing error in accordance therewith.

5,644,197

CATHODE RAY TUBE DISPLAY APPARATUS WITH ROTATABLE RASTER

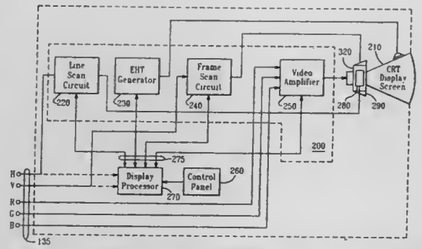
David Leaver, Sussex, United Kingdom, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 22, 1995, Ser. No. 408,512

Int. Cl.[6] H01J *29/78*

U.S. Cl. 315—378 **27 Claims**

1. A cathode ray rube display apparatus including: a cathode ray tube having a screen (**210**) and a neck (**350**); means for directing



an electron beam from the neck (**350**) towards the screen (**210**) along an axis (S) of the cathode ray tube containing the centre of the screen (**210**);

deflection means (**320**) mounted on the neck (**350**) for deflecting the beam from the axis (S) at a deflection centre (X) of the cathode ray tube to scan the beam across the screen (**210**) in a raster pattern; and raster rotation means (**300, 310**) for rotating the raster pattern about the centre of the screen (**210**); wherein the raster rotation means (**300, 310**) includes a first coil (**300**) located around the neck (**350**) at or near the deflection centre (X) to generate, in use, a first magnetic field in the path of the electron beam; and a second coil (**310**) parallel to the first coil (**300**) and located around the neck (**350**) on the side of the deflection centre (X) remote from the screen (**210**) to generate, in use, a second magnetic field, of opposite polarity to the first field, in the path of the electron beam, and wherein the first and second coils are connected in series.

5,644,198

FLYBACK TRANSFORMER DRIVING APPARATUS FOR VIDEO DISPLAY APPLIANCES

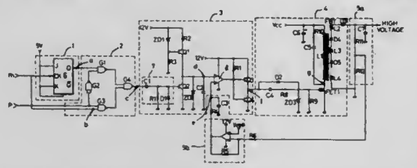
Kwang Ho Park, Kyoungsangbuk-do, Rep. of Korea, assignor to LG Electronics Inc., Seoul, Rep. of Korea

Filed Aug. 14, 1996, Ser. No. 700,591

Claims priority, application Rep. of Korea, Aug. 28, 1995, 95-26886

Int. Cl.[6] H01J *29/70*

U.S. Cl. 315—411 **6 Claims**



1. A flyback transformer driving apparatus for a video display appliance comprising:

horizontal frequency dividing means for dividing a horizontal frequency in a predetermined ratio in response to an input horizontal sync signal;

horizontal frequency selecting means for selecting and supplying either the horizontal frequency or the divided horizontal frequency provided from the horizontal frequency dividing means in response to the horizontal sync signal;

PWM modulating means for PWM-modulating the horizontal frequency selected by and supplied from the horizontal frequency selecting means, and comparing the modulated horizontal frequency with an error detection voltage value to provide a resultant circular wave pulse signal;

high voltage generating means for being driven by the circular wave pulse signal supplied from the PWM-modulating means to generate a high voltage; and

error detecting means for detecting the high voltage supplied from the high voltage generating means, and comparing the

detected voltage with a reference voltage to output the resultant voltage as an error detection voltage.

5,644,199

METHOD FOR DRIVING AN ULTRASONIC MOTOR

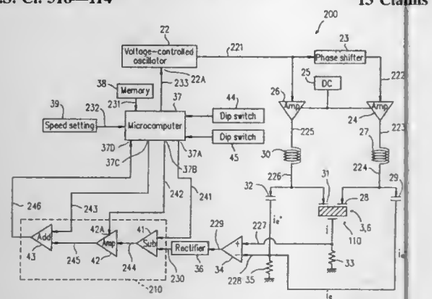
Takashi Nojima, Katano; Masanori Sumihara, Higashi-osaka; Tetsuro Otsuchi, Osaka; Takahiro Nishikura, Ikoma; Osamu Kawasaki, Kyoto; Katsu Takeda, Osaka, and Katsumi Imada, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jul. 18, 1995, Ser. No. 503,512

Claims priority, application Japan, Jul. 20, 1994, 6-168117; Jul. 20, 1994, 6-168120; Jul. 28, 1994, 6-176849

Int. Cl.[6] H02K *33/00*

U.S. Cl. 318—114 **13 Claims**



1. A method for driving an ultrasonic motor comprising a vibrator for causing a flexural vibration wave in response to a pair of AC driving voltage signals, and a rotor in contact with the vibrator and moved by the flexural vibration wave, a rotational speed of the ultra sonic motor being controlled by using a feedback signal and a data table, the feedback signal indicating the current rotational speed of the ultrasonic motor, the data table storing values of the feedback signal as a standard function of the rotational speed, the method including the steps of:

sampling the feedback signal and detecting the rotational speed in a plurality of rotation states of the ultrasonic motor;

obtaining an approximate function representing the relationship between the sampled feedback signal and the detected rotational speed;

calculating correction coefficients for adjusting the approximate function to the standard function; and

controlling the rotational speed of the ultrasonic motor by using the feedback signal,

wherein the controlling step includes a step of correcting the feedback signal obtained from the ultrasonic motor by using the correction coefficient to transform a value of the approximate function into a corresponding value of the standard function.

5,644,200

DRIVING ELECTRICAL MACHINE SPEED CONTROLLED POWER COMBINED SYSTEM AND DEVICE

Tai-Her Yang, No. 32 Lane 29, Taipin St., Si-Hu Town, Dzan-Hwa, Taiwan

Continuation of Ser. No. 317,634, Oct. 3, 1994, abandoned. This application Jan. 25, 1996, Ser. No. 591,103

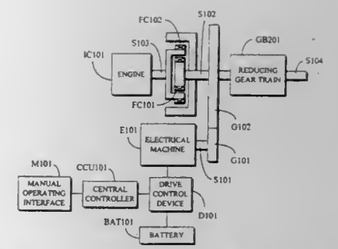
Int. Cl.[6] H02P *1/00*

U.S. Cl. 318—139 **7 Claims**

1. A combined engine and electrical device, comprising:

an engine;

an electrical machine;



means including a clutch for connecting the engine and electrical machine;

means including an output shaft for connecting the engine and electrical machine to a load;

a battery connected to the electrical machine; and

means for controlling operation of the electrical machine in the following manner:

a. operating the electrical machine as a motor powered by electricity from said battery, at a speed sufficient to cause said clutch to close, thereby connecting the electrical machine to the engine and causing said electrical machine to function as a starter for said engine;

b. when the engine is running at a speed sufficient to cause said clutch to close and said engine is driving the load, operating the electrical machine to drive the load together with the engine; and

c. operating the electrical machine as a motor powered by electricity from said battery, at a speed insufficient to cause said clutch to close in order to drive said load while the engine is stopped.

5,644,201

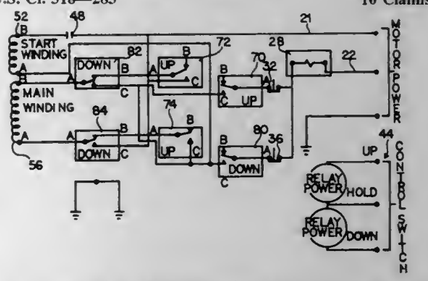
ADJUSTABLE HEIGHT PODIUM

Thomas Laurann Jepsen, Brentwood, Calif.; Rural W. Gifford, Nampa, Id., and Neil A. Arnold, 4502 S. Chicago, Nampa, Id. 83686, assignors to Neil A. Arnold, Nampa, Id.

Filed Apr. 25, 1995, Ser. No. 428,056

Int. Cl.[6] H02P *1/00*

U.S. Cl. 318—283 **10 Claims**



1. A motor-driven, adjustable-height podium being powered from an external motor power source having hot and neutral leads, and an external relay power source comprising:

a base section;

a lectern section slidably attached to the base section for generally vertical extension up from, and retraction down toward the base section;

and a reversible electric motor fixedly attached to the base section having start and main windings, each winding having first and second terminals, wherein the second terminal of the start winding is connected to the power source neutral lead, and having means drivingly connecting the motor to the lectern section for moving the lectern section relative to the base section;

a first, a second and a third up relay and a first, a second and a third down relay, each having a de-energized and an energized position and each having a first, a second and a third terminal for directing power to the motor windings for vertical extension and retraction of the lectern section, wherein the first and second terminals of each relay are electrically interconnected when the relay is de-energized, and the first and third terminals are electrically interconnected when the relay is energized, wherein the third terminal of the first up relay is connected both to the third terminal of the second down relay and to the first terminal of the motor start winding, the third terminal of the first down relay is connected to the third terminal of the first and third up relays, and to the third terminal of the second down relay and to the first terminal of the motor start winding, the first terminal of the second up relay is connected to the second terminal of the second down relay, the third terminal for the second up relay is connected to both the third terminal of the third down relay and the second terminal of the motor start winding, the first terminal of the second down relay is connected to the second terminal of the motor main winding, the first terminal of the third up relay is connected to the second terminal of the third down relay, and the first terminal of the third down relay is connected to the first terminal of the motor main winding;

an up and a down limit switch for cutting off power to the motor when the lectern section reaches predetermined limits of up or down, respectively, travel fixedly attached to the base section, each having an input and an output terminal, wherein the up limit switch output terminal is connected to the first terminal of the first up relay and the down limit switch output terminal is connected to the first terminal of the first down relay; and

a manual control switch electrically connected to the relay power source for energizing the first, second and third up and down relays.

5,644,202

BRAKING CONTROL SYSTEM FOR AN ELECTRIC VEHICLE

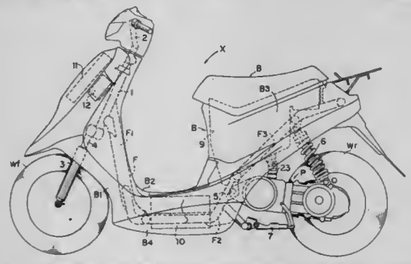
Masayuki Toriyama; Kenji Tamaki; Satoshi Honda; Shoji Motodate; Yoshihiro Nakazawa; Takaaki Fujii, and Shigemi Sasaki, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 292,193, Aug. 18, 1994, abandoned, which is a division of Ser. No. 866,339, Apr. 9, 1992, Pat. No. 5,384,522. This application Jan. 26, 1996, Ser. No. 592,601

Claims priority, application Japan, Apr. 9, 1991, 3-103324; Apr. 11, 1991, 3-105098; Oct. 21, 1991, 3-299562

Int. Cl.[6] H02K *7/10*

U.S. Cl. 318—369 **13 Claims**



1. A controller for an electric vehicle driven by an electric motor, a speed of which is controlled according to a voltage, said controller comprising:

an accelerator position sensor for sensing an angular position of an accelerator, said angular position being used for determining a voltage to be supplied to the electric motor;

monitor means for monitoring functions of the electric vehicle to detect a malfunction therein, said functions including battery voltage, electric motor temperature, electric motor angular position, and accelerator angular position;

braking duty factor determining means for receiving an accelerator angular position input signal from said monitor means when the malfunction is detected by said monitor means, said braking duty factor determining means calculating a braking duty factor according to said accelerator angular position input signal; and

correcting means for receiving said braking duty factor and generating a corrected voltage according to said braking duty factor by gradually decreasing the voltage supplied to the electric motor when the malfunction is detected by said monitor means;

said correcting means supplying said corrected voltage to the electric motor when the malfunction is detected.

5,644,203

BRUSHLESS MOTOR SPEED DETECTOR

Hayato Naito, and Isao Uchikoshi, both of Komagane, Japan, assignors to Sanyo Seiki Mfg. Co., Ltd., Nagano-ken, Japan

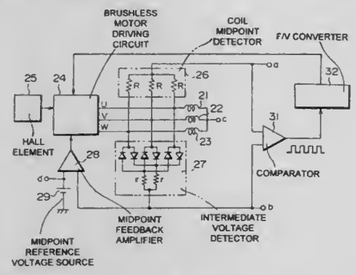
PCT No. PCT/JP93/01618, § 371 Date Jun. 26, 1995, § 102(e) Date Jun. 26, 1995

PCT Filed Nov. 9, 1993, Ser. No. 432,144

Claims priority, application Japan, Nov. 10, 1992, 4-324766; Jul. 26, 1993, 5-203665

Int. Cl.[6] A01R *39/46*

U.S. Cl. 318—439 **7 Claims**



1. A brushless motor speed detector comprising:

variable signal output means for generating and providing as an output a signal alternately varied due to rotation of a motor in accordance with a driving-coil output voltage waveform of each phase of the motor;

constant signal output means for generating and providing as an output a signal not varied due to the rotation of said motor in accordance with a driving-coil output voltage waveform of each phase of the motor;

control means for controlling said output signal of said constant signal output means so as to coincide with a coil midpoint reference voltage of the driving coil; and

a comparator for comparing said output signal of the variable signal output means with said output signal of the constant signal output means to provide a quantity of speed detection signals for one turn of the motor which is greater than the number of driving magnetized poles.

5,644,204

ANTI-SLIP CONTROL FOR A LEGGED ROBOT AND REALISITC SIMULATION OF A LEGGED CREATURE

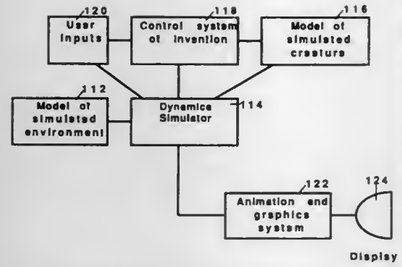
John Nagle, 999 Woodland Ave., Menlo Park, Calif. 94025

Filed Nov. 3, 1994, Ser. No. 333,654

Int. Cl.[6] B25J *5/00*

U.S. Cl. 318—568.12 **22 Claims**

1. A system for the dynamic simulation of a running creature, said system comprising



data structures defining physical properties of rigid members of said creature, said rigid members including a body and an articulated leg of said creature, and defining an environment for said creature, said environment including a surface to receive said articulated leg of said creature;

a dynamics simulator defining actuation of said articulated leg with respect to said body and equations of motion of said rigid members of said articulated leg including simulated contact of said articulated leg with said surface, said simulator, responsive to said data structures defining said physical properties of said creature and defining said environment, incrementally determining positions and velocities of said rigid members of said articulated leg and simulated interaction between said surface and said articulated leg upon simulated running by said creature;

a control system interacting with said dynamics simulator for determining a simulated transverse force of said articulated leg with respect to and in contact with said surface for simulated running by said creature, said control system having means for limiting said transverse force when said leg contacts said surface so that said leg avoids slipping on said surface;

a graphics system for incrementally generating a image of said creature including said articulated leg; and

means responsive to said graphics system for displaying said image;

whereby a realistic dynamic simulation of said running creature is created.

5,644,205

ASYNCHRONOUS MOTOR POWER SUPPLY CONTROL SYSTEM

Vinh T. Nguyen Phuoc, Boulogne; Hubert Cornilleau, Verneuil sur Seine; Antonio Almeida, Tournan en Brie, and Lucien Perrin, Paris, all of France, assignors to Schneider Electric S.A., Boulogne-Billancourt, France

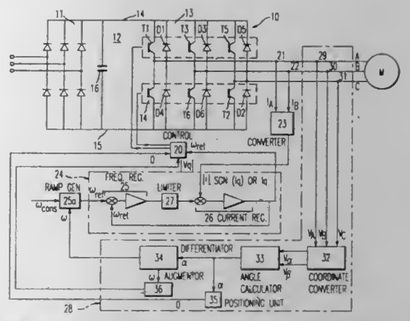
Filed Dec. 16, 1994, Ser. No. 357,755

Claims priority, application France, Dec. 16, 1993, 93 15274

Int. Cl.[6] H02P *5/34*

U.S. Cl. 318—801 **6 Claims**

1. System for controlling the supply of power to an asynchronous motor from an AC line voltage via a variable speed drive including a rectifier bridge connected to the AC line voltage, a DC voltage intermediate circuit including a capacitor, an inverter comprising switches and connected to the phase windings of the motor and an inverter control for controlling said switches, the system including means for controlled resumption of motor speed control after interruption of the AC line voltage connected to said inverter control comprising an identification structure for estimating an electric speed ω of the motor and for setting an angular position of the voltage vector in a rotating orthogonal system of axes (d, q) in which the axis (d) corresponds to a motor flux and the axis (q) leads (d) by π/2.



5,644,206

CONTROL UNIT FOR INDUCTION MOTOR

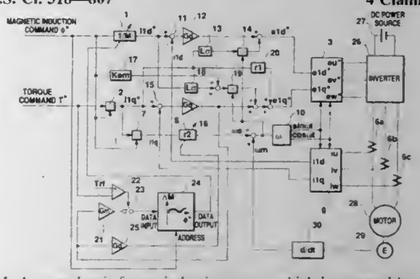
Motozumi Yura, Niwa-gun, Japan, assignor to Okuma Corporation, Nagoya, Japan

Filed Apr. 15, 1996, Ser. No. 632,067

Claims priority, application Japan, Apr. 18, 1995, 7-092165

Int. Cl.[6] H02P *7/63*

U.S. Cl. 318—807 **4 Claims**



1. A control unit for an induction motor which is actuated by a 3-phase current converted from a DC current, the control unit converting a two-phase command, including a torque command and a magnetic induction command, into a three-phase command for controlling a primary current of the induction motor, and converting a primary current of an actual three-phase current of the induction motor to a two-phase current including a torque current value and an excitation current value, and performing feedback control of the induction motor, the control unit comprising:

(a) an excitation current command issuing circuit for calculating an excitation current command on the basis of the magnetic induction command and an excitation inductance;

(b) an excitation current error calculating circuit for calculating an error of the excitation current on the basis of the excitation current command and the excitation current value;

(c) an excitation voltage command calculating circuit for calculating, on the basis of the excitation current error, an excitation voltage command having the same phase as the phase of the excitation current;

(d) a torque current command issuing circuit for calculating a torque current command on the basis of the torque command and the magnetic induction command;

(e) a torque current error calculating circuit for calculating a torque current error on the basis of the torque current command and the torque current value;

(f) a torque voltage command calculating circuit for calculating a torque voltage command, on the basis of the torque current error, having the same phase as the phase of the torque current;

(g) a secondary resistance correcting value calculating circuit for calculating a value for correcting a secondary resistance on the basis of the torque voltage command;

(h) a slip angular frequency calculating circuit for calculating a slip angle on the basis of the torque current command, the magnetic induction command and the secondary resistance corrected by the secondary resistance correcting value;

(i) an angular frequency command calculating circuit for calculating an angular frequency command on the basis of the slip angular frequency and an actual slip angle of the induction motor;

(j) a corrected excitation voltage command calculating circuit for correcting the excitation voltage command on the basis of the torque current command, a primary leakage inductance and the angular frequency command, and calculating a corrected excitation voltage command;

(k) a corrected torque voltage command calculating circuit for correcting the torque voltage command on the basis of the excitation current command, the primary leakage inductance and the angular frequency command, further correcting the torque voltage command on the basis of the torque current command and a primary resistance of the induction motor, and calculating a corrected torque voltage command;

(l) an excitation inductance value correcting circuit for calculating a value for correcting the excitation inductance on the basis of the torque voltage command, and calculating an excitation inductance correcting value for use with the excitation current command issuing circuit on the basis of the correct excitation inductance; and

(m) a three-phase voltage command calculating circuit for calculating a three-phase voltage command applicable to the motor on the basis of the corrected excitation voltage command, the corrected torque voltage command and the angular frequency command.

5,644,207

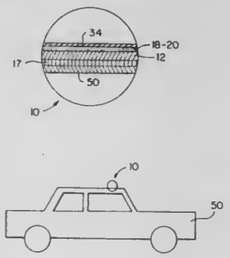
INTEGRATED POWER SOURCE

Ark L. Lew, Ellicott City; Joseph J. Suter, Clarksville, both of Md., and Binh Q. Le, Vienna, Va., assignors to The Johns Hopkins University, Baltimore, Md.

Filed Apr. 16, 1996, Ser. No. 632,969

Int. Cl.[6] H02J *7/00*

U.S. Cl. 320—5 **20 Claims**



1. An integrated power source comprising:

an all polymer battery, and

energy conversion means connected to said battery for delivering electrical energy to said battery.

5,644,208

BATTERY COMPRISING A PLURALITY OF CELLS, IN PARTICULAR LITHIUM-ION CELLS, CONNECTED IN SERIES

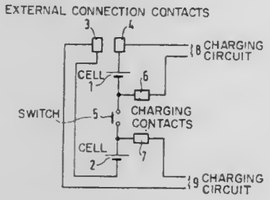
Benoit Abiven, Asnieres, France, assignor to Alcatel Mobile Phones, Paris, France

Filed Aug. 9, 1996, Ser. No. 695,025

Claims priority, application France, Aug. 11, 1995, 95 09764

Int. Cl.[6] H02J *7/00;* **H01M** *10/44*

U.S. Cl. 320—6 **1 Claim**



1. Battery comprising a plurality of cells, in particular lithium-ion cells, connected in series and having two external connection contacts constituting charging/discharging contacts and, between said cells, in the electrical circuit connecting them, a switch adapted to be open when the battery is being charged and closed when the battery is being discharged, and, on either side of each of said switches, an external charging contact for connection to a separate charging circuit for each of said cells, each of said charging/discharging contacts also constituting a charging contact for the cell that is directly connected to it.

5,644,209

METHOD AND DEVICE FOR MONITORING AND FOR DYNAMICALLY BALANCING A STORAGE BATTERY PACK

Philippe Chabbert, Rueil Malmaison; Alain Chatenay, Marly le Roi, and Michel Petit, Levallois-Perret, all of France, assignors to Thomson-CSF, Paris, France

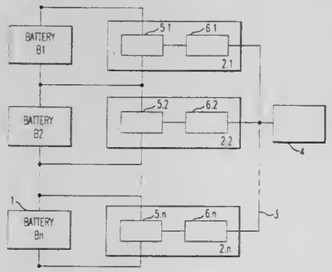
PCT No. PCT/FR94/01351, § 371 Date Jul. 24, 1995, § 102(e) Date Jul. 24, 1995, PCT Pub. No. WO95/15023, PCT Pub. Date Jun. 1, 1995

PCT Filed Nov. 18, 1994, Ser. No. 481,511

Claims priority, application France, Nov. 23, 1993, 93 13987

Int. Cl.[6] H02J *7/10;* **G01R** *31/36*

U.S. Cl. 320—15 **17 Claims**



1. A method of monitoring the state of all individual batteries in a battery pack made up of a plurality of said individual batteries connected in series, said method comprising the steps of:

monitoring voltage at terminals of each of said batteries and monitoring the temperature of each of said batteries;

tapping off at least a portion of charging current of individual ones of said batteries and dissipating said at least part of the charging current outside said ones of said batteries when at least one of a voltage at terminals of said ones of said batteries and the temperature of said ones of said batteries indicate a state of overcharge;

monitoring, during a charging and discharging mode, the rate of change of voltage at terminals of each of said batteries and monitoring the temperature of each of said batteries in order to detect imbalance between said plurality of batteries in said pack; and

when an imbalance is detected, providing at least one of a recording of said imbalance and a triggering of an alarm.

9. A device for monitoring the state of individual batteries in a battery pack containing a plurality of said individual batteries connected in series, said device comprising:

a current sensor connected to the terminals of each one of said plurality of batteries, said current sensor being in series with an energy-dissipating ballast;

a comparator having an input receiving a set voltage, said comparator being connected to said sensor and the output of said comparator controlling said ballast;

a voltage measurement device for measuring the rate of change of voltage of each of said batteries; and

a control device responding to an output of said voltage measurement device to determine a rate of change of voltage of each of said batteries and to output said set of voltage to said comparator wherein said set voltage is a function of said rate of change of voltage of said individual batteries.

5,644,210

CHARGING CONTROL METHOD AND CIRCUIT OF RECHARGING BATTERY

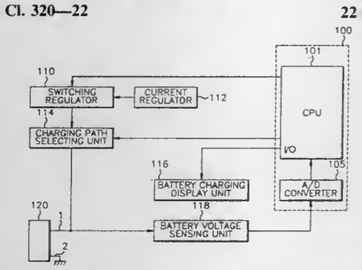
Yong-Duk Hwang, Gumi, Rep. of Korea, assignor to SamSung Electronics co., Ltd., Suwon, Rep. of Korea

Filed Dec. 28, 1995, Ser. No. 579,822

Claims priority, application Rep. of Korea, Dec. 28, 1994, 1994-38101

Int. Cl.[6] H01M *10/44*

U.S. Cl. 320—22 **22 Claims**



2. A charging control method of a recharging battery, comprising the steps of:

(a) checking an insertion status of said battery, providing a visual display of said insertion status of said battery, and reading a battery voltage of said battery prior to a charging;

(b) performing an on-charging of said battery and checking whether said battery voltage prior to said charging has been cleared, when said battery voltage of said battery prior to said charging read in step (a) is maintained at a first voltage state during a first time period;

(c) maintaining said battery voltage of said battery prior to said charging to a second voltage state during a second time period, when said battery voltage prior to said charging read in step (b) has not been cleared;

(d) checking whether said battery voltage prior to said charging corresponds to a third voltage state during a third time period, when said battery voltage prior to said charging read in step (c) is maintained at said second voltage state during said second time period;

(e) checking whether a counter set for said first time period exceeds a predetermined count value, when said battery voltage prior to said charging read in step (d) corresponds to said third voltage state during said third time period;

(f) checking whether a charging mode for charging said battery is set for one of a fourth time period, a fifth time period and a sixth time period;

(g) checking a charging state of said battery during said fourth time period when said charging mode is set in step (f) for said fourth time period, and converting a charging mode to said fifth time period;

(h) checking a charging state of said battery during said fifth time period, when said charging mode is set in step (f) for said fifth time period, increasing said counter by a constant value corresponding to said first time period, converting a charging mode to said sixth time period, turning off said charging of said battery, and clearing said battery voltage prior to charging; and

(i) checking a charging state of said battery during said sixth time period, when said charging mode is set in step (f) step for said sixth time period, increasing said counter by said constant value corresponding to said first time period, turning off said charging of said battery, and clearing said battery voltage prior to said charging.

5,644,211

MALFUNCTION PREVENTION CIRCUIT FOR A BATTERY CHARGER

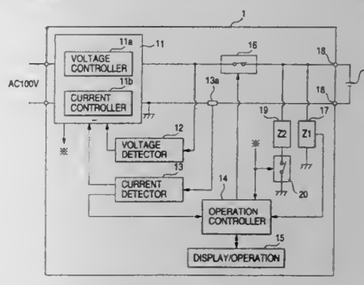
Yoshitaka Tokuyama, Tokyo, Japan, assignor to Kyocera Corporation, Kyoto, Japan

Filed Jan. 22, 1996, Ser. No. 589,755

Claims priority, application Japan, Jan. 30, 1995, 7-033062

Int. Cl.[6] H02J *7/00*

U.S. Cl. 320—29 **5 Claims**



1. A malfunction prevention circuit for a battery charger, comprising:

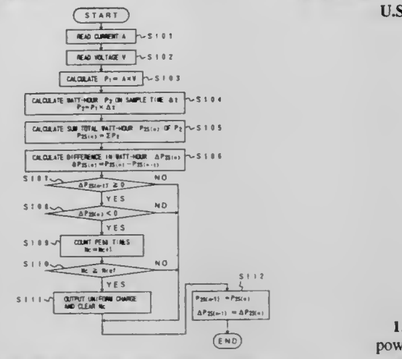
two charging terminals to which a battery is to be attached,

a high impedance attachment detection unit for detecting attachment of the battery to the charging terminals by detecting a voltage across the charging terminals,

a low impedance unit disposed between one of the charging terminals and ground, the high impedance unit and the low impedance unit being connected in parallel, and

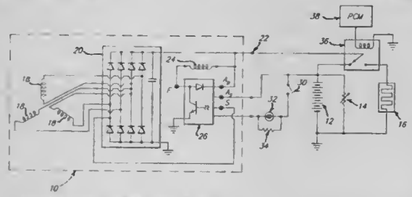
connection means for connecting the low impedance unit between one of the charging terminals and ground when input power for the battery charger is supplied and for disconnecting the low impedance unit between one of the charging terminals and ground when input power for the battery charger is interrupted.

5,644,212
TRACTION BATTERY MANAGEMENT SYSTEM
Tsutomu Takahashi, Oota, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 2, 1995, Ser. No. 552,080
Claims priority, application Japan, Nov. 11, 1994, 6-278080
Int. Cl.[6] H02J *7/00*
U.S. Cl. 320—48 15 Claims



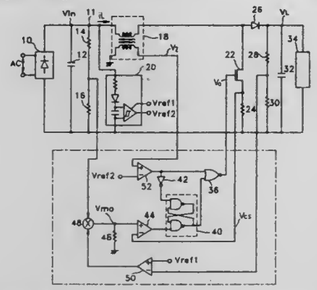
1. A traction battery management system, comprising:
detecting means for detecting battery conditions of a traction battery composed of a plurality of batteries and mounted on an electric vehicle;
calculating means for calculating battery charge and discharge conditions of the traction battery on the basis of the detected battery conditions; and
means for equalizing charging the traction battery on the basis of the calculated battery charge and discharge conditions, in such charging characteristics that charge current is relatively smaller and charge time is relatively longer, as compared with those in an ordinary battery charge, continuously after the ordinary battery charge.

5,644,213
ELECTRICAL GENERATING SYSTEM FOR A MOTOR VEHICLE
John Francis Renehan, South Lyon, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Apr. 26, 1996, Ser. No. 639,138
Int. Cl.[6] H02P *9/00*
U.S. Cl. 322—28 19 Claims



1. A voltage regulator comprising:
(a) a first voltage divider having a first voltage divider input, a first voltage divider output and a first output/input voltage ratio;
(b) a second voltage divider having a second voltage divider input, a second voltage divider output and a second output/input voltage ratio;
(c) a first comparator for comparing a voltage at said first voltage divider output to a first predetermined voltage; and
(d) a first transistor responsively coupled to said first comparator and coupled to an impedance to switchably insert said impedance into said second voltage divider.

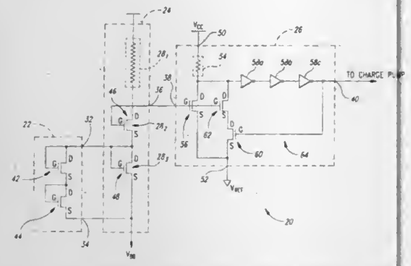
5,644,214
POWER FACTOR CORRECTION CIRCUIT
Hoon-chul Lee, Kyungki-do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed Nov. 10, 1994, Ser. No. 338,758
Claims priority, application Rep. of Korea, Nov. 16, 1993, 93-24280
Int. Cl.[6] G05F *1/70*
U.S. Cl. 323—211 4 Claims



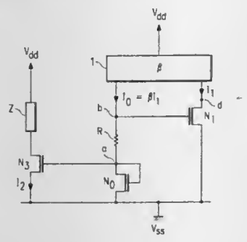
1. A continuous current type power factor correction circuit in a power device having
a booster converter circuit having an inductor receiving a rectified AC input voltage, a diode connected in series with the inductor, and a control switch connected across the rectified AC input voltage, and
a power factor correction circuit controlling the switching operation of the control switch, the power factor correction circuit, comprising:
an off-time controller having a first comparator comparing a feedback voltage signal from the booster converter circuit with a reference voltage signal, and generating an off signal in response to the comparison;
an on-time controller having a capacitor, and generating an on signal in accordance with a charge time period of the capacitor, wherein the on-time controller comprises;
a constant current source;
a capacitor charged by current supplied from the constant current source; and,
a switch connected in parallel across the capacitor and being switched in response to an output of the off-time controller; and,
a drive signal generator comprising a latch circuit receiving the off and on signals, latching the off and on signals, and generating a drive signal controlling operation of the control switch.

5,644,215
CIRCUIT AND METHOD FOR REGULATING A VOLTAGE
Stephen L. Casper, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.
Filed Jun. 7, 1995, Ser. No. 485,093
Int. Cl.[6] G05F *1/40;1/44;1/56;1/618*
U.S. Cl. 323—274 34 Claims

1. A circuit for regulating a voltage by controlling a voltage generator, comprising:
a voltage divider coupled between said regulated voltage and a supply voltage and operable to generate a sense voltage;
a clamp circuit coupled across a portion of said divider and operable to reduce the sensitivity between said supply voltage and said regulated voltage by substantially prohibiting the voltage across said portion from exceeding a predetermined value; and
a detector circuit coupled to said divider and to said voltage generator and operable to generate a control signal that deactivates said generator when said sense voltage equals a first threshold voltage and that activates said generator when said sense voltage equals a second threshold voltage.

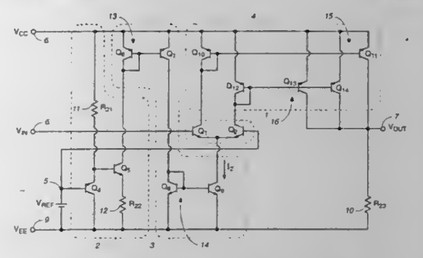


5,644,216
TEMPERATURE-STABLE CURRENT SOURCE
Joaquin Lopez, Aix en Provence, and Jean-Michel Coquin, Marseille, both of France, assignors to SGS-Thomson Microelectronics, S.A., Gentilly, France
Filed May 31, 1995, Ser. No. 454,926
Claims priority, application France, Jun. 13, 1994, 94 07407
Int. Cl.[6] G05F *3/16*
U.S. Cl. 323—315 16 Claims



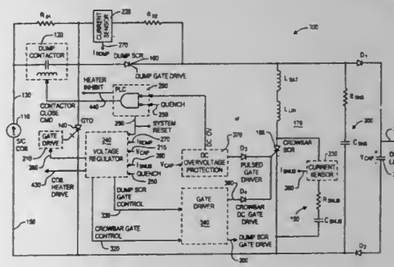
1. A current source comprising:
a current mirror designed to give a first current proportional to a second current in a given ratio; and
a first insulated-gate field-effect transistor and a second insulated-gate field-effect transistor whose sources are connected to a first common potential, the drain and the gate of the first transistor being connected to the gate of the second transistor by means of a resistor;
wherein said second current directly supplies the channel of said second transistor, said first current supplies the channel of said first transistor by means of said resistor, said first and second transistors are doped so that the conduction threshold of the second transistor is higher than that of the first transistor, and the dimensional ratio of each of said first and second transistors being defined as the ratio of the width of its gate to the length of its gate, said first and second transistors being sized so that the dimensional ratio of said first transistor is proportional to that of said second transistor in said given ratio;
wherein said current mirror has a component connected to display a substantial dynamic resistance as compared with the resistance value of said resistor, said component being a third transistor which is a native transistor.

5,644,217
EMITTER COUPLED LOGIC OUTPUT CIRCUIT
Katsumi Kusaba, Kyoto, Japan, assignor to Rohm Co., Ltd., Japan
Filed Mar. 12, 1996, Ser. No. 614,315
Claims priority, application Japan, Apr. 20, 1995, 7-095097
Int. Cl.[6] G05F *3/20*
U.S. Cl. 323—315 7 Claims



1. An emitter coupled logic output circuit comprising:
an input terminal for having an input voltage applied thereon:
an emitter differential pair of transistors (Q1) and (Q2) each having a base, a collector and an emitter, the emitters of said transistors (Q1) and (Q2) being connected together, and the base of said transistor (Q1) being connected to said input terminal;
a positive voltage source connected to the collectors of said transistors (Q1) and (Q2);
a reference voltage source adapted to apply a reference voltage to the base of said transistor (Q2);
a constant current supplying circuit adapted to convert said reference voltage to a constant current corresponding to said reference voltage and to supply said constant current to the emitters of said transistors (Q1) and (Q2);
an output terminal for providing an output voltage; and
an output circuit comprising non-inversion transistors and inversion transistors arranged so as to provide a pair of output-circuit current mirrors, the collector of each of said transistors (Q1) and (Q2) being connected to different one of said non-inversion transistors of said output circuit, each of said inversion transistors being connected to said output terminal.

5,644,218
PROTECTION DEVICE FOR A SUPERCONDUCTING COIL OF A SUPERCONDUCTING VOLTAGE STABILIZER
Jeffery C. Emmerich; Eric L. Kostecki, and Warren Buckles, all of Madison, Wis., assignors to Superconductivity, Inc., Middleton, Wis.
Filed Feb. 1, 1995, Ser. No. 382,241
Int. Cl.[6] H01F *36/00;* H02H *9/00*
U.S. Cl. 323—360 19 Claims



1. A superconducting voltage stabilizer comprising:
a superconducting coil for storing and releasing energy;

a first semiconductor switch disposed to conduct current from the superconducting coil therethrough to complete an energy storage loop when the superconducting coil is to store energy and to inhibit current flow therethrough to disrupt the current flow through the energy storage loop when the superconducting coil is to release energy;

a crowbar circuit including a second semiconductor switch;

a dump load disposed in a current path exterior to the energy storage loop;

a third semiconductor switch in parallel with the dump load and disposed in a current path exterior to the energy storage loop in series between the superconducting coil and the crowbar circuit;

quench detection and control means for detecting a quench condition of the superconducting coil and in response to the quench condition controlling the first and third semiconductor switches to go to an open condition, and the second semiconductor switch to go to a closed condition thereby to dissipate energy from the superconducting coil in the dump load.

5,644,219

SOLAR ENERGY SYSTEM

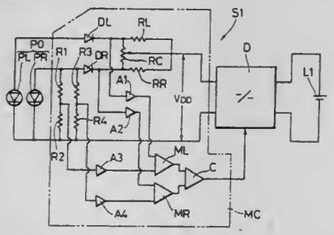
Hiroyuki Kurokawa, Sakura, Japan, assignor to Kyocera Corporation, Kyoto, Japan

Filed Apr. 28, 1995, Ser. No. 431,229

Claims priority, application Japan, Apr. 28, 1994, 6-092397

Int. Cl.[6] G05F *5/00*

U.S. Cl. 323—303 **7 Claims**



1. A solar energy system, comprising:

a photovoltaic array comprising at least a first photovoltaic array element and a second photovoltaic array element, the first and second photovoltaic array elements being connected in parallel and having substantially identical voltage-current characteristics,

detecting means for detecting the operating point of the photovoltaic array and a load, and

power converting means connected to the detecting means for controlling the power to be supplied to the load based on a detection signal from the detecting means,

the detecting means comprising:

at least a first current limiting element connected in series with the first photovoltaic array element and a second current limiting element connected in series with the second photovoltaic array element, the first current limiting element having a first voltage drop in the forward direction, the second current limiting element having a second voltage drop in the forward direction, the first and second voltage drops being unequal,

wherein the detecting means detects the operating point of the photovoltaic array in response to an output signal from the first current limiting element and an output signal from the second current limiting element.

5,644,220

PROCESS AND APPARATUS FOR MEASURING CHARGE QUANTITY FLOWING IN A VACUUM

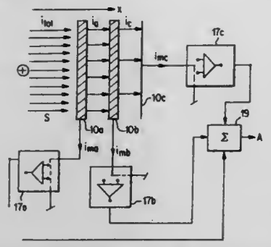
Waelchli Urs, Heiligkreuz; Stoeckli Armin Leo, Sargans, and Boesch Martin, Azmoos, all of Switzerland, assignors to Balzers Aktiengesellschaft, Liechtenstein

Filed Feb. 13, 1995, Ser. No. 388,232

Claims priority, application Switzerland, Feb. 11, 1994, 417/94

Int. Cl.[6] G01R *27/26*

U.S. Cl. 324—71.3 **19 Claims**



1. A process for measuring electric charge quantity which flows per unit time through a vacuum volume range in a given direction, comprising the steps of

arranging at least two collectors one behind another in the given direction so as to form a collector arrangement of independent measuring collectors each of which is configured to provide a galvanic current to a measuring circuit and at least one of which is provided with a collector surface which permits transmission of charge-transporting particles to a collector arranged downstream thereof in the given direction, and

simultaneously collecting the charge-transporting particles in the given direction.

5,644,221

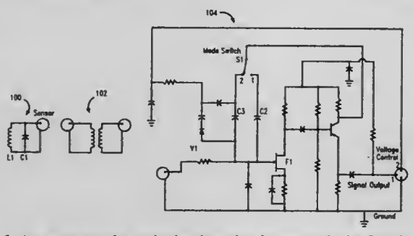
ENDPOINT DETECTION FOR CHEMICAL MECHANICAL POLISHING USING FREQUENCY OR AMPLITUDE MODE

Leping Li, Poughkeepsie; Steven George Barbee, Dover Plains, and Arnold Halperin, Cortlandt Manor, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 19, 1996, Ser. No. 620,722

Int. Cl.[6] G01B *27/00*

U.S. Cl. 324—71.5 **18 Claims**



1. An apparatus for endpoint detection in removal of a film from a semiconductor wafer, comprising:

a sensor for creating a signal responsive to the film removal process;

a positive feedback amplifier coupled to the sensor, the positive feedback amplifier having a mode selector; and

an analyzer coupled to the positive feedback amplifier.

5,644,222

PROCESS FOR TESTING AN ELECTRONIC ELECTRICITY METER

Wolfgang Dohmstreich, Lauf, and Klaus Windsheimer, Scheinfeld, both of Germany, assignors to Siemens Aktiengesellschaft, Germany

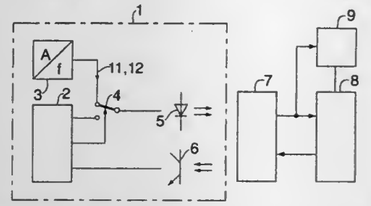
PCT No. PCT/EP93/02453, § 371 Date Mar. 24, 1995, § 102(e) Date Mar. 24, 1995, PCT Pub. No. WO94/07135, PCT Pub. Date Mar. 31, 1994

PCT Filed Sep. 10, 1993, Ser. No. 403,871

Claims priority, application European Pat. Off., Sep. 24, 1992, 92116359

Int. Cl.[6] G07F *17/24;* **H04Q** *9/00*

U.S. Cl. 324—74 **10 Claims**



8. An electricity meter comprising:

a microcomputer;

an optical interface coupled to said microcomputer and including an infrared transmitting diode;

a power/frequency converter coupled to said microcomputer;

a divider coupled to the power/frequency converter;

a light emitting diode coupled to the divider; and

a means for applying a test load having a predetermined energy level to said power/frequency converter, wherein after a test load has been applied to the electricity meter, said power/frequency converter converts the test load to a first plurality of meter pulses having a frequency corresponding to the predetermined energy level, and feeds said plurality of meter pulses to said divider, said divider divides said first plurality of meter pulses to form a second plurality of meter pulses which are fed to said emitting diode,

wherein a receipt by said optical interface of an external request for a meter measurement causes switching means to switch one of the first and second plurality of pulses to said infrared transmitting diode, and

wherein the light emitting diode provides a visual indication of the predetermined energy level.

5,644,223

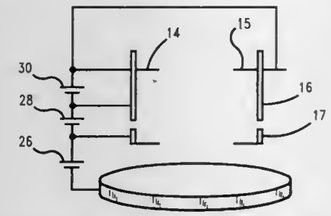
UNIFORM DENSITY CHARGE DEPOSIT SOURCE

Roger Leonard Verkuil, Wappingers Falls, N.Y., assignor to International Business Machines Corporation

Filed May 12, 1995, Ser. No. 440,502

Int. Cl.[6] G01R *31/02;* **G01N** *27/60*

U.S. Cl. 324—158.1 **8 Claims**



1. A device including a corona discharge gun having a longitudinal, vertical axis and a transverse axis intersecting said longitudinal axis, said gun comprising at least one transversely oriented, biased needle-shaped electrode providing a source of ions of a given polarity at the tip of each said at least one needle-shaped electrode,

a biased focusing ring electrode, and

a biased masking electrode, said masking electrode comprising a centrally apertured disk,

said electrodes being insulated from each other and supported so that said ring electrode and said apertured disk are mutually coaxial with said vertical axis,

said ring electrode being positioned intermediate to each said tip and said masking electrode.

5,644,224

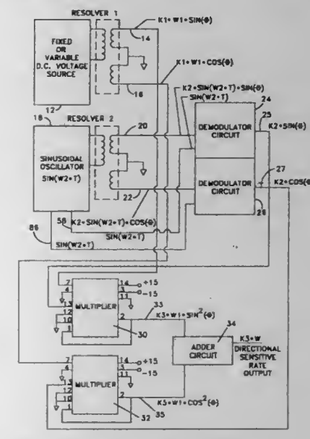
DUAL BRUSHLESS RESOLVER RATE SENSOR

David E. Howard, Hazel Green, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 8, 1996, Ser. No. 613,803

Int. Cl.[6] G01P *3/52;13/00;* **G08B** *21/00;* **G05B** *1/06*

U.S. Cl. 324—165 **15 Claims**



1. A dual brushless rate sensor comprising:

first and second resolvers mechanically coupled to a common output shaft;

a DC voltage source for exciting said first resolver for providing first and second output signals therefrom which are defined by sin and cosine trigonometric functions;

an AC voltage source for exciting said second resolver for providing first and second output signals therefrom which are defined by sin and cosine trigonometric functions;

circuit means for receiving and processing said output signals from said first and second resolvers to provide a directional sensitive rate output.

5,644,225

METHOD FOR CALIBRATING AN ANGULAR POSITION SENSOR

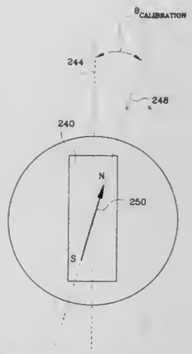
Eugene D. Alfors, Rockford, and Joseph K. Murdock, Freeport, both of Ill., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 16, 1996, Ser. No. 632,874

Int. Cl.[6] G01R *35/00;* **G01B** *7/30*

U.S. Cl. 324—202 **7 Claims**

1. A method for calibrating an angular position sensor which is intended to have a rotatable permanent magnet and a magnetically sensitive component having an output signal which is representa-



tive of the angular position of said rotatable permanent magnet, said method comprising:

(a) providing an electrical coil, said electrical coil being rotatable about a first axis;

(b) with said permanent magnet absent from said angular position sensor, disposing said electrical coil at a location in relation to said magnetically sensitive component to simulate the presence of said rotatable permanent magnet;

(c) selecting a desired relationship between said output signal and the angular position of said permanent magnet, said desired relationship having a desired gain characteristic;

(d) providing an initial magnitude of electrical current through said electrical coil to create an initial magnitude of magnetic field emanating from said electrical coil;

(e) moving said electrical coil through at least two angular positions about said first axis;

(f) determining an initial relationship between said output signal and the angular position of said electrical coil for said initial magnitude of magnetic field;

(g) calculating an initial gain characteristic of said initial relationship;

(h) comparing said initial gain characteristic to said desired gain characteristic;

(i) providing a second magnitude of said electrical current to create a second magnitude of said magnetic field as a function of the difference between said initial gain characteristic and said desired gain characteristic, said second magnitude of electrical current being selected to achieve said desired gain characteristic;

(j) rotating said electrical coil to cause said output signal to achieve a preselected calibration magnitude, said preselected calibration magnitude being selected as a function of said desired gain characteristic and a preselected angular position of said electrical coil;

(k) measuring a calibration angle of said electrical coil, relative to a first reference position of said angular position sensor, which achieves said preselected calibration magnitude of said output signal;

(l) magnetizing a ferromagnetic object to create said permanent magnet with said second magnitude of magnetic field at an angle equal to said calibration angle relative to a second reference position of said ferromagnetic object; and

(m) disposing said permanent magnet in said angular position sensor with said second reference position aligned relative to said first reference position.

5,644,226

MAGNETIC DETECTOR HAVING A BIAS MAGNET AND MAGNETORESISTIVE ELEMENTS SHIFTED AWAY FROM THE CENTER OF THE MAGNET

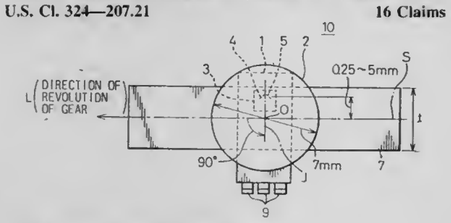
Seiki Aoyama, Toyohashi; Susumu Kuroyanagi; Ichirou Izawa, both of Anjo, and Yasuaki Makino, Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 1, 1995, Ser. No. 396,241

Claims priority, application Japan, Mar. 2, 1994, 6-032693

Int. Cl.[6] G01P *3/488;* **G01B** *7/14;* **G01D** *5/245;* **H01L** *43/08*

U.S. Cl. 324—207.21 **16 Claims**



1. A magnetic detector which comprises:

a bias magnet which has a magnetic material in the magnetized surface thereof, and is opposed to an object to be detected, and further generates a bias magnetic field toward said object to be detected;

and magneto resistance elements disposed in said bias magnetic field;

wherein the magneto-resistance elements are disposed in a pattern having a center and the bias magnet has a center, the center of the pattern being shifted away from the center of the bias magnet,

wherein a change in the resistance takes place in said magneto resistance elements accompanying a change in said bias magnetic field generated from said bias magnet toward said object to be detected as said object to be detected undergoes movement,

wherein said magneto resistance elements are disposed in parallel with the magnetized surface of said bias magnet,

wherein said magneto resistance elements are so disposed as to define a predetermined angle with respect to a component vector which is in parallel with the magnetized surface of said bias magnet,

wherein said magneto resistance elements are so disposed that the longitudinal axes thereof define an angle of about 45 degrees with respect to the component vector which is in parallel with said magnetized surface, and

wherein the distance between the center of the pattern of the magneto resistance elements and the center of the bias magnet is such that a magnetic filed intensity is greater than a saturation magnetic field intensity of the magneto resistance elements.

5,644,227

DISPLACEMENT TRANSDUCER TO IDENTIFY THE POSITION OF A PRESSING PLUNGER

Gerhard Geisel, Bückeburg, Germany, assignor to The Firm Hermann Heye, Obernkirchen, Germany

PCT No. PCT/EP94/00866, § 371 Date Jul. 31, 1995, § 102(e) Date Jul. 31, 1995, PCT Pub. No. WO94/27922, PCT Pub. Date Dec. 8, 1994

PCT Filed Mar. 19, 1994, Ser. No. 379,607

Claims priority, application Germany, May 27, 1993, 43 17 730.1

Int. Cl.[6] G01B *7/04;7/02;* **C03B** *23/13*

U.S. Cl. 324—207.24 **23 Claims**

1. An apparatus for identifying the axial position of a pressing plunger of a glass forming machine, comprising:

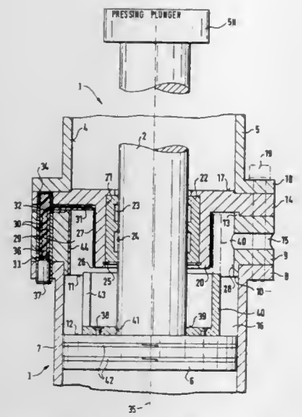
a piston-cylinder unit having a piston rod upon which the pressing plunger is mounted, a cylinder, a piston fixed to said piston rod and which is displaceable in said cylinder, and a guide sleeve for guiding said piston rod;

a transducer having an annular coil fixed relative to said cylinder and an annular metallic actuating member mounted on a side of said piston which faces the pressing plunger, said actuating member cooperating with said annular coil wherein the inductance of said coil changes in dependence upon the axial relative position of said piston and said cylinder;

a means for connecting said coil to an electrical evaluation circuit;

wherein said coil is arranged in the region of one end of said cylinder, encircling said piston rod, with said cylinder end having said piston rod extending therethrough, and

wherein said annular coil encircles at least a part of the axial length of said guide sleeve, and said actuating member at least partially encompasses said coil at the end of a pressing stroke of said piston.



5,644,228

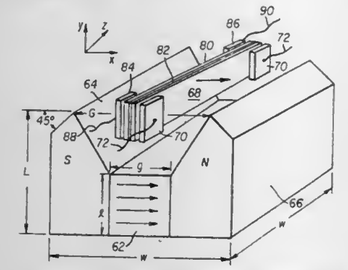
PERMANENT MAGNET ASSEMBLY WITH MR AND DC COMPENSATING BIAS

Frederick John Jeffers, Escondido; Neil Smith, San Diego; Jay Davis Freeman, Leucadia; Kent Raphael Gandola, Poway, and Peter VanderSalm Koeppe, San Diego, all of Calif., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 114,720, Aug. 31, 1993, Pat. No. 5,418,458. This application Oct. 28, 1994, Ser. No. 330,506

Int. Cl.[6] G01N *27/90;* **G06K** *7/08*

U.S. Cl. 324—235 **6 Claims**



1. A magnetic assembly for both magnetizing and detecting magnetic documents comprising:

a permanent magnet;

first and second magnetically soft, high permeability pole pieces shaped to form a tapered variable gap-size magnetic circuit with said permanent magnet, wherein said permanent magnet is located at a first gap between said first and second pole pieces;

a magnetoresistive (MR) sensing element which is located at or near the center of a second gap between said first and second pole pieces, wherein said second gap and said MR sensing element are proximate to a magnetic document to be sensed by said MR sensing element; and wherein said magnetic field at said MR sensing element maintains said MR element in a proper magnetic bias state for achieving adequate sensitivity for detecting magnetic fields emanating from a magnetic document to be sensed, said magnetic field also magnetizes said object to be detected;

an electrical conductor which is adjacent to but electrically insulated from said MR element; and

a variable source of direct current for passing direct current through said electrical conductor for generating a bias field in said MR element which is combined with said bias field generated by said permanent magnet, wherein said bias field generated by said permanent magnet is substantially larger than the bias field generated by said direct current.

5,644,229

METHOD OF DETERMINING THE SPATIAL FIELD DISTRIBUTION

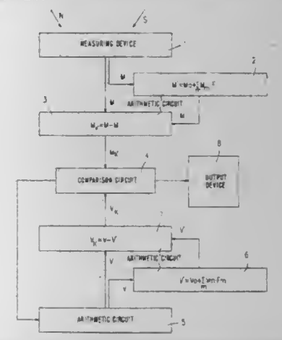
Olaf Dössel, Tangstedt; Hans-Aloys Wischmann, Hamburg; Manfred Fuchs, Uetersen, all of Germany; Rob Steenbrink, Roermond, and Robert Oostenveld, Groningen, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 7, 1995, Ser. No. 553,230

Claims priority, application Germany, Nov. 7, 1994, 44 39 691.0

Int. Cl.[6] G01R *33/022;* **A61B** *5/04*

U.S. Cl. 324—247 **20 Claims**



1. A method of determining the spatial field distribution and/or the spatial position of a useful field source producing the field distribution by means of a multi-channel field measuring device which comprises a plurality of spatially distributed sensors which generate measured values which contain on the one hand useful measured values stemming from the useful field source and on the other hand noise measured values stemming from at least one noise field source, correction values being formed and superposed on the measured values so that compensated measured values are obtained which are compared with similarly compensated, mathematically derived reference values which are produced by a fictitious reference field source by means of the field sensors, the method thus determining the reference field source for which the pattern of compensated reference values corresponds best to the pattern of compensated measured values, characterized in that the pattern of measured values is approximated by a correction function which contains a number of terms of a function series which are essential to the spatial variation of the noise measured values, in the correction function there being absent at least one term of

the function series which is essential to the spatial variation of the useful measured values but not essential to the spatial variation of the noise measured values, that compensated measured values are formed as the difference between the measured values and the values occurring at the areas of the associated field sensors on the basis of the correction function, and that the reference values are transformed into compensated reference values in the same way.

5,644,230

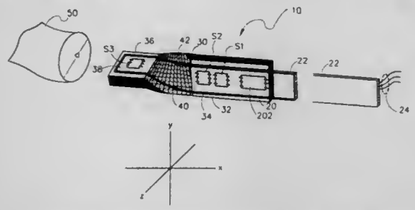
MINIATURE MAGNETOMETER AND FLEXIBLE CIRCUIT

Bharat B. Pant, Minneapolis; Richard K. Spielberger, Maple Grove, and Bruce W. Ohme, Minneapolis, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 277,846, Jul. 20, 1994, abandoned. This application Jan. 18, 1996, Ser. No. 588,162

Int. Cl.[6] G01R *33/09;* **G01B** *7/00;* **A61B** *5/05;* **H05K** *1/00*

U.S. Cl. 324—247 **8 Claims**



1. A miniature magnetometer apparatus for use with external monitoring equipment to determine a position of a portion of a medical device located within a first magnetic field, said medical device having an elongated passageway for holding said magnetometer apparatus, comprising:

an elongated flexible tape having conductors and further having a first end portion, a second end portion, an intermediate portion and a first length, said first end portion having electrical connection means for connection to said external monitoring equipment, said length related to a length of said passageway;

said intermediate portion conforming to a changing form of said passageway;

a substrate having a first surface and a second surface orthogonal to said first surface, said second end portion secured to said first surface and to said second surface;

a first sensor means mounted on said flexible tape at said first surface, said first sensor means having a direction of sensitivity in a first direction lying in a plane of said first sensor means;

second sensor means mounted on said flexible tape at said first surface, said second sensor means having a direction of sensitivity in a second direction lying in a plane of said second sensor means;

a third sensor means mounted on said flexible tape at said second surface, said third sensor means having a direction of sensitivity in a third direction lying in a plane of said third sensor means, with said first, second and third directions being mutually perpendicular; and

means for electrically connecting said first, second and third sensor means to said conductors to provide first, second and third output signals representative of said magnetic field components in said first, second and third directions respectively to permit determination of a location of said substrate and thereby said location of a said portion of said medical device.

5,644,231

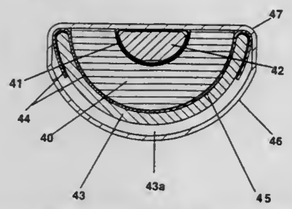
HIGH PRESSURE MAGNETIC ANTENNA ASSEMBLY

Al H. Wignall, Friendswood, Tex., assignor to Schlumberger Technology Corporation, Houston, Tex.

Filed Mar. 4, 1996, Ser. No. 610,010

Int. Cl.[6] G01R *33/30*

U.S. Cl. 324—303 **22 Claims**



1. An antenna assembly for use in a well logging apparatus, said assembly being packaged such that said antenna maintains its construction when exposed to high temperatures and pressures comprising:

a) a shell shaped such that said shell has an inner surface and an outer surface;

b) a electrically conductive material conforming generally in shape to and encasing said shell;

c) a load material having inner and outer surfaces, said outer surface being adjacent to said electrical conductor;

d) an electrically conductive probe disposed adjacent said inner surface of said load material; and

e) a material for holding assembly together, said material surrounding said outer surface of shell and enclosing said shell, conductive material, load material and probe.

5,644,232

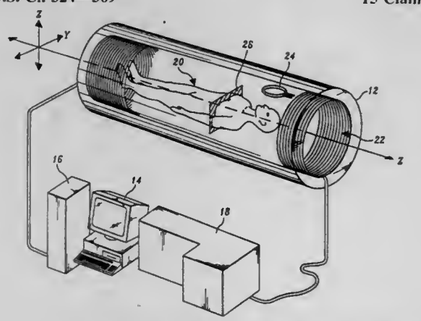
QUANTITATION AND STANDARDIZATION OF MAGNETIC RESONANCE MEASUREMENTS

Justin P. Smith, Kirkland, Wash., assignor to University of Washington, Seattle, Wash.

Continuation-in-part of Ser. No. 883,565, May 15, 1992, Pat. No. 5,311,131. This application Nov. 15, 1993, Ser. No. 153,118

Int. Cl.[6] G01R *33/48*

U.S. Cl. 324—309 **15 Claims**



1. A computer-implemented method for estimating the magnitude of at least a first property of a first sample of a first substance based on nuclear magnetic resonance (MR) measurements comprising:

obtaining a first plurality of MR measurements comprising a set of measurements of a plurality of calibration samples of a material which includes said first substance, said plurality of calibration samples being different from said first sample and including a first plurality of values of said first property, each of said first plurality of nuclear MR measurements formed using at least first and second different pulse sequences, and encoded with spatial position information for each of said plurality of calibration samples;

defining a first mapping from a first set of values, based on said first plurality of nuclear MR measurements, to a set of values of said first property, said mapping being continuous over at least a first domain of values of said first property;

obtaining a second plurality of nuclear MR measurements of said first sample using at least said first and second pulse sequences, each of said second plurality of nuclear MR measurements encoded with spatial position information; and

calculating an estimated value of said first property by applying said first mapping to a second set of values based on said second plurality of nuclear MR measurements wherein said estimated value is different from any of said first plurality of values of said first property.

5,644,233

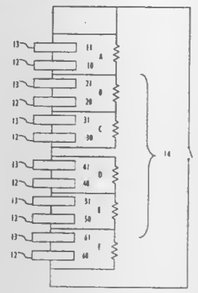
QUENCH PROTECTION FOR ACTIVELY SHIELDED MAGNETS

John Maurice Bird, Oxfordshire Ox, and Alan George Andrew Marcel Armstrong, Oxon Ox, both of England, assignors to Elscint Ltd., Haifa, Israel

Filed Feb. 22, 1996, Ser. No. 605,666

Int. Cl.[6] G01V *3/00*

U.S. Cl. 324—318 **13 Claims**



1. An improved actively shielded magnetic resonance imaging system, which in the event of a quench protects its superconducting coils from burnout as well as keeps the stray field of the system principally unchanged; said system comprising:

an actively shielded magnet and a plurality of protective units;

said actively shield magnet including:

a set of inner magnet coils with forward going current and a set of outer magnet coils with backward going current;

said sets of inner and our magnet coils arranged so that a strong and homogenous magnetic field is generated inside the magnet and a stray field close to zero is generated on the outside of the magnet;

said sets of inner and outer magnet coils electrically arranged in a plurality of coil groups so that the magnitude of the current running through all coils in a group is substantially identical;

said coil groups each comprising at least one coil pair including at least one coil from said set of inner magnet coils and at least one coil from said set of outer magnet coils, both said coils in said pair having the same dipole moment so that the net dipole moment and contribution to the stray field of the magnet from each of said groups is close to zero; and

said plurality of protective units each electrically connected in parallel to one of said groups to carry the excess current from said coils in the event of a quench.

5,644,234

MR METHOD AND MR DEVICE FOR IMPLEMENTING THE METHOD

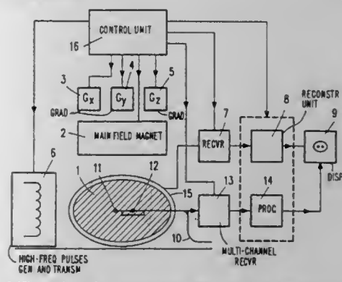
Volker Rasche, and Peter Röschmann, both of Hamburg, Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 4, 1996, Ser. No. 610,024

Claims priority, application Germany, Mar. 4, 1995, 19507617

Int. Cl.[6] G01R *33/20*

U.S. Cl. 324—318 **5 Claims**



1. A MR method for determining the nuclear magnetic distribution in an examination area and for determining the position of at least one microcoil which is located in the examination area in or on an examination object, in which

a) a homogeneous stationary magnetic field acts on the examination area,

b) at least one high-frequency pulse acting on the examination area is generated,

c) after the high-frequency pulse an MR signal induced in the microcoil is detected under the influence of a gradient magnetic field that acts on the examination area,

d) the position of the microcoil in the gradient direction defined by the gradient field is derived from the detected MR signal,

e) the steps and b) to d) are repeated for another gradient direction, and

f) MR signals are detected by a further receiving coil arrangement to determine the nuclear magnetic distribution,

and relates to an arrangement for implementing this method, wherein the sequences comprising steps b) and c) are continuously repeated while the gradient direction is varied and the position of the microcoil and the nuclear magnetic distribution are derived from MR signals simultaneously detected by the microcoil and the receiver coil arrangement.

5,644,235

USE OF AUDIO SIGNALS FOR MONITORING SAMPLE SPINNING SPEEDS IN NUCLEAR MAGNETIC SPECTROMETERS

Laima Baltusis, Cupertino, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Jun. 7, 1995, Ser. No. 475,112

Int. Cl.[6] G01V *3/00*

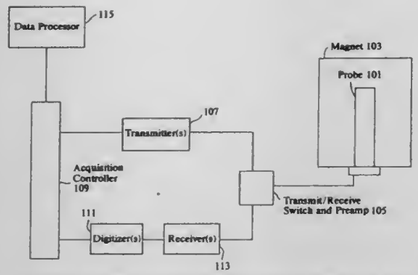
U.S. Cl. 324—321 **3 Claims**

1. An apparatus for recording and analysis of a complete audio spectrum of a rotating sample in a nuclear magnetic resonance spectrometer comprising:

a. a polarizing magnet for imposing a DC magnetic field on said sample;

b. a nuclear magnetic resonance probe, comprising a rotor for containing a same and rotation thereof responsive to pressurized gas directed along the outer surface thereof, and a stator surrounding said rotor, comprising bearing and drive gas jets to cause rotation of said rotor;

c. said nuclear magnetic resonance probe comprising an audio transducer proximate to said bearing and drive gas jets for acquiring the substantially entire frequency range of audio



signals including the fundamental sample spinning frequency and higher and lower harmonics emitted by said sample during rotation;

d. an audio analyzer responsive to said substantially entire range of audio signals including the fundamental spinning frequency and higher and lower harmonics emitted by said sample during rotation;

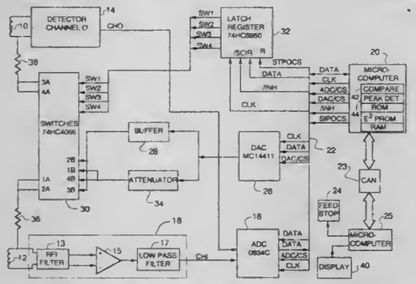
e. a processor connected to said audio analyzer for accumulating, storing, and analyzing the entire audio spectrum emitted by said sample during rotation.

5,644,236

METHOD AND APPARATUS FOR SIMULTANEOUSLY TESTING THE INDUCTANCE OF DETECTION COILS IN A MULTIPLE CHANNEL METAL DETECTOR

Richard P. Strosser, Akron, and Mark K. Chow, Paoli, both of Pa., assignors to New Holland North America, Inc., New Holland, Pa.

Filed Mar. 31, 1995, Ser. No. 414,330
Int. Cl.[6] G01V *3/10;* **G01R** *31/02*
U.S. Cl. 324—326 **8 Claims**



1. A method for simultaneously testing the inductance of a first detection coil and a second detection coil in a metal detector having a first detection circuit and a second detection circuit, the first detection coil and the second detection coil being mutually inductively coupled and said first detection coil and said second detection coil being connected to the first detection circuit and said second detection circuit, respectively, said method comprising:

establishing a first threshold magnitude representing the minimum acceptable magnitude of an output signal from said metal detector in response to a test signal;

injecting said test signal into said first detection coil; and,

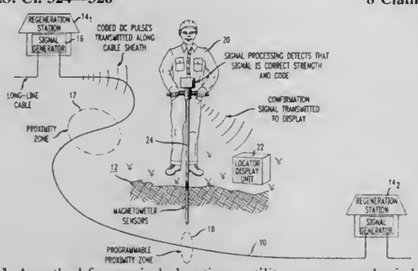
while said test signal is being injected into said first detection coil, determining if said second detection circuit produces an output signal having a magnitude at least as great as said first threshold magnitude.

5,644,237

METHOD AND APPARATUS FOR PRECISELY LOCATING A BURIED UTILITY CONVEYANCE

Hossein Eslambolchi, Basking Ridge, N.J., and John Sinclair Huffman, McDonough, Ga., assignors to AT&T, Middletown, N.J.

Filed Sep. 27, 1995, Ser. No. 534,750
Int. Cl.[6] G01R *19/00;* **G01V** *3/08;3/10*
U.S. Cl. 324—326 **8 Claims**



1. A method for precisely locating a utility conveyance buried a prescribed depth below the earth, comprising the steps of:

impressing a conveyance-locating tone on the conveyance so that the conveyance radiates a first electromagnetic field within a first proximity zone that has a radius about the conveyance at least as great the depth of burial of the conveyance:

impressing on the conveyance a low frequency conveyance-confirmation tone that is pulsed in a particular pattern unique to the conveyance to be located so that the conveyance radiates a second electromagnetic field unique to the conveyance within a second proximity zone that has a radius about the conveyance less than the depth below which the conveyance is buried;

sensing, via a first signal detector located above the earth, where the first electromagnetic field has its greatest strength to establish a region where the conveyance is generally located;

inserting into the earth, within the region where the conveyance is generally located, a second signal detector to detect whether the second field is present, and if the second field is not present then:

inserting the second signal detector in the earth at successive positions within the region where the conveyance is generally located until the second field has been detected.

5,644,238

METHOD AND APPARATUS FOR COMPARING LOAD CURRENT IN AN ELECTRICAL CIRCUIT WITH THE CAPACITY OF ITS SUPPLY SOURCE

Gregory J. Seifert, 1433 Raymond Ave., St. Paul, Minn. 55108, and Peter G. Seifert, 1685 Wellesley Ave., St. Paul, Minn. 55105

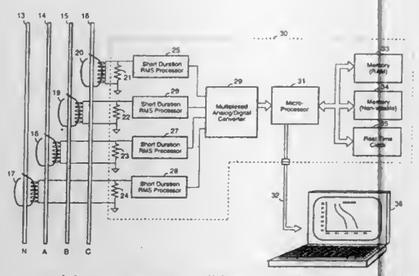
Filed Jun. 7, 1995. Ser. No. 472,437
Int. Cl.[6] G01R *31/02;31/327*
U.S. Cl. 324—424 **19 Claims**

1. A method of analyzing load currents in an electrical distribution system to anticipate potential overcurrent conditions for a current-limiting device in the system, the method comprising the steps of:

(a) simultaneously monitoring an RMS current value of a load current in the system over a plurality of time intervals, at least two of the time intervals being of different lengths;

(b) determining a peak-magnitude RMS current value for each time interval; and

(c) developing a system current profile using the peak-magnitude RMS current value for each time interval, the system current profile showing multiple, actual values of RMS current over the plurality of time intervals, the system current profile being comparative to a curve reflective of the



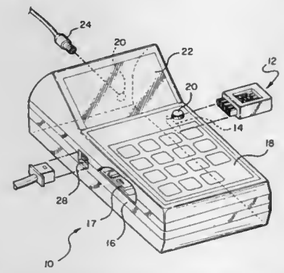
potential overcurrent conditions for the current-limiting device in the system in all time domains relevant to operation of the current-limiting device.

5,644,239

METHOD AND APPARATUS FOR SENSING THE CONDITION OF A FLUID

Joseph Y. Huang, and Cheng-Foo Chen, both of Troy, Mich., assignors to American Systems Technology, Inc., Troy, Mich.

Filed Apr. 15, 1994, Ser. No. 228,561
Int. Cl.[6] G01N *27/02*
U.S. Cl. 324—439 **10 Claims**



1. A method of evaluating the condition of a fluid comprising:

heating a sample of the fluid;

measuring an electric characteristic of the fluid sample at a first temperature;

measuring the aforesaid electric characteristic of the fluid sample at a second fluid temperature which is higher than the first temperature;

calculating a quality parameter as a function of the measured electric characteristics at the first and second fluid temperatures;

the quality parameter Q being calculated as:

$$Q = \frac{V_2}{4} + \frac{V_2}{V_1}$$

where

V_1=the conductivity of the fluid sample measured at the first temperature, and

V_2=the conductivity of the fluid sample measured at the second temperature; and

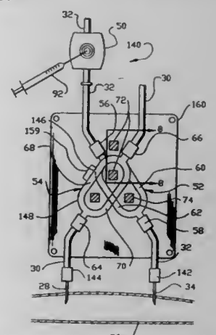
comparing the calculated quality parameter with known quality parameter values corresponding to fluid samples of varying condition.

5,644,240

DIFFERENTIAL CONDUCTIVITY HEMODYNAMIC MONITOR

James M. Brugger, Boulder, Colo., assignnr to Cobe Laboratories, Inc., Lakewood, Colo.

Continuation-in-part of Ser. No. 332,647, Nov. 1, 1994, Pat. No. 5,510,716, which is a continuation of Ser. No. 954,584, Sep. 30, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 486,982
Int. Cl.[6] G01N *27/08;* **G01F** *1/708;* **G01P** *5/08*
U.S. Cl. 324—439 **23 Claims**



1. A method for quantitatively determining a flow rate in a tube of a first fluid having a first electrical conductivity and a corresponding first concentration of conductivity producing ions, comprising:

altering the electrical conductivity of the first fluid;

measuring the electrical conductivity at a measuring location of the first fluid after the conductivity is altered;

determining the period of time over which the altered conductivity fluid passes the measuring location;

integrating the measured conductivity over the period of time; and

interpreting the time integrated value of conductivity to determine flow rate;

wherein the step of measuring the conductivity of the first fluid further comprises:

flowing the first fluid through a first conduit, said first conduit comprising a first conductivity cell through which the first fluid flows with a continuous path configuration;

inducing by electromagnetic induction a first electrical current in the first fluid in the first conductivity cell; and

sensing by electromagnetic induction the first electrical current in the first fluid in the first conductivity cell.

5,644,241

MEASUREMENT OF SOLID PARTICLE CONCENTRATION IN A FLUID STREAM RESPONSIVE TO MAGNITUDE AND RATE OF CHANGE OF A TRIBOELECTRIC PROBE OUTPUT SIGNAL

Scott M. Hewelt, China, Mich., assignor to Bindicator Company, Port Huron, Mich.

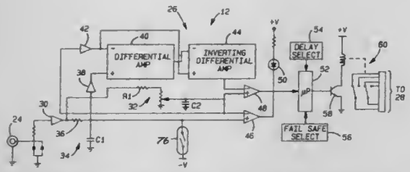
Filed Sep. 25, 1995, Ser. No. 533,438
Int. Cl.[6] G01N *27/60*
U.S. Cl. 324—454 **12 Claims**

1. Apparatus for measuring concentration of solid particles in a fluid stream that comprises:

triboelectric probe means for disposition in the fluid stream to provide an electrical probe signal as a function of concentration of solid particles in the fluid stream,

first circuit means coupled to said probe means for providing a first electrical signal as a proportionate function of magnitude of said probe signal,

second circuit means for providing a second electrical signal as a function of rate of change of said probe signal,



third circuit means for receiving said first and second signals, and providing a third signal as a function of a difference therebetween, and

means for providing an output signal when said difference exceeds a preselected threshold.

5,644,242

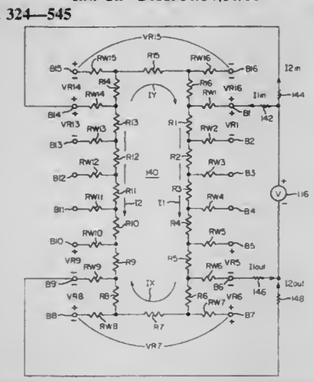
ARMATURE WINDING AND WINDING CONNECTION TEST METHODS

James Allan Fisher, 1312 Devereux Dr., Dayton, Ohio 45419

Filed Jun. 21, 1995, Ser. No. 493,165

Int. Cl.[6] G01R *31/34;31/06*

U.S. Cl. 324—545 **14 Claims**



1. A method of testing an armature including a plurality of series connected windings, each of said plurality of windings being connected to a pair of commutator bars through resistive connections, said method comprising the steps of:

connecting a single source of electrical energy across first and second commutator bars to form a first driven current path through a first set of at least one winding connected between said first and second commutator bars, said first driven current path receiving current at said first commutator bar and emitting current from said second commutator bar;

connecting said single source of electrical energy across third and fourth commutator bars to form a second driven current path through a second set of at least one winding connected between said third and fourth commutator bars, said second driven current path receiving current at said third commutator bar and emitting current from said fourth commutator bar, said first and second driven current paths being connected to conduct current in opposite directions around said plurality of series connected windings and being separated from one another by at least three windings;

determining current flowing in said first driven current path;

determining current flowing in said second driven current path;

measuring voltage across at least one pair of commutator bars connected to at least one winding of said first set within said first driven current path and including said first and second commutator bars;

measuring voltage across at least one pair of commutator bars connected to at least one winding of said second set within said second driven current path and including said third and fourth commutator bars;

determining resistance of said at least one winding of said first set connected between said at least one pair of commutator bars within said first driven current path by combining in a processor the voltage measured thereacross with the current determined to be flowing in said first driven current path; and

determining resistance of said at least one winding of said second set connected between said at least one pair of commutator bars within said second driven current path by combining in a processor the voltage measured thereacross with the current determined to be flowing in said second driven current path.

5,644,243

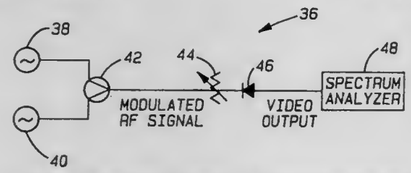
DETECTOR POWER LINEARITY REQUIREMENTS AND VERIFICATION TECHNIQUES FOR TMI DIRECT DETECTION RECEIVERS

Victor S. Reinhardt, Rancho Palos Verdes; Yi-Chi Shih, Palos Verdes Estate; Paul A. Toth, Cypress, and Samuel C. Reynolds, Los Angeles, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 5, 1994, Ser. No. 349,348

Int. Cl.[6] G01R *23/20*

U.S. Cl. 324—626 **20 Claims**



1. A system for testing the linearity of a detector that produces a DC output voltage proportional to an RF power input signal, said system comprising:

a fast oscillator that generates a first frequency;

a second oscillator that generates a second frequency;

combining means for combining the first frequency with the second frequency so as to generate a modulated RF signal;

means for applying the modulated RF signal to the detector being tested for linearity; and

a spectrum analyzer being responsive to the frequency spectrum of an output of the detector, wherein the spectrum analyzer generates harmonics of the modulated RF signal being applied to the detector, and wherein a relationship corresponding to a ratio of power levels of the first and second harmonics of the modulated RF signal is indicative of the linearity of the detector.

5,644,244

METHOD FOR ANALYZING A PETROLEUM STREAM

John David Marrelli, Houston; Dale Francis Brost, Sugar Land; Farhan Siddioui, Katy; Lisa Langford Pepin, Sugar Land, and Joseph David Stafford, Bellaire, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 718,665, Jun. 21, 1991, Pat. No. 5,383,353. This application Jan. 18, 1995, Ser. No. 374,002

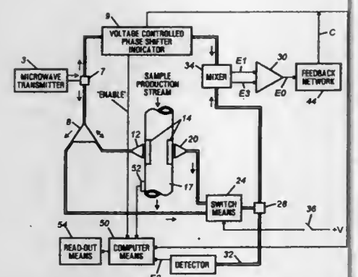
Int. Cl.[6] G01N *22/04*

U.S. Cl. 324—637 **5 Claims**

1. A method for measuring a petroleum stream having an immiscible flow of solids, water and oil comprising the steps of:

directing a beam of incident microwave energy of from 10 to 12 gigahertz frequency through the petroleum stream to be measured;

detecting attenuated microwave energy passing through the petroleum stream to be measured and using said detected reflected energy to measure the relative phase of said incident microwave energy and said attenuated microwave energy;



comparing the relative phase and amplitude attenuation of said attenuated microwave energy to an empirically derived reference map of amplitude attenuation as a function of relative phase shift for a set of reference petroleum streams having known, but varied, percentages of solids, oil and water to derive the ratio of solids to liquids in the petroleum stream to be measured.

5,644,245

PROBE APPARATUS FOR INSPECTING ELECTRICAL CHARACTERISTICS OF A MICROELECTRONIC ELEMENT

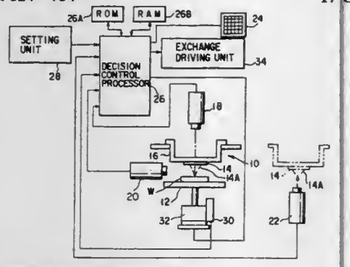
Satoshi Saitoh, and Akihiro Terada, both of Tokyo, Japan, assignors to Tokyo Electron Limited, and Tokyo Electron FE Limited, both of Tokyo, Japan

Filed Nov. 23, 1994, Ser. No. 347,138

Claims priority, application Japan, Nov. 24, 1993, 5-292960; Apr. 18, 1994, 6-103331; May 17, 1994, 6-126898

Int. Cl.[6] G01R *31/02*

U.S. Cl. 324—754 **17 Claims**



1. A probe apparatus comprising:

means for holding a microelectronic element formed on a substrate and having a plurality of pads;

a probe card having a plurality of probe needles;

means for holding said probe card;

image pick-up means for picking up images of the pads and the probe needles;

registration means for previously storing pad position information indicating pad positions of at least specified pads of said pads and needle position information indicating needle positions of at least specified probe needles of said plurality of probe needles, the needle positions being obtained by an actual measurement based on the images picked up by said image pick-up means;

a control processor for executing a task for forming imaginarily needle marks on said pads by overlapping said needle position information and the pad position information of the microelectronic element to obtain imaginary needle mark information, and a task for detecting a positional deviation between said needle marks and said pads on the basis of the imaginary needle mark information and the pad positions.

5,644,246

PROBE CARD LOCKING DEVICE OF A SEMICONDUCTOR WAFER PROBE STATION

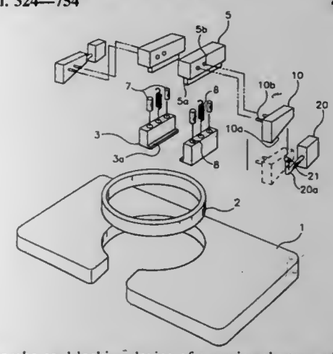
Dong-Seck Lee, Kyoungki-do; Ung-Gi Park, Seoul, and Wha-Young Kim, Pusan, all of Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Ich'on, Rep. of Korea

Filed Mar. 29, 1996, Ser. No. 624,140

Claims priority, application Rep. of Korea, Apr. 6, 1995, 95-7935

Int. Cl.[6] G01R *31/02*

U.S. Cl. 324—754 **4 Claims**



1. A probe card locking device of a semiconductor wafer probe station comprising:

a pair of frames respectively formed with support steps for supporting opposite sides of a probe card and installed in a tester head in parallel with each other for spacing apart by a prescribed distance;

a pair of locking members each having a pressing step provided for pressing said opposite sides of said probe card supported by said support steps of said frames;

a plurality of springs installed for elastic support between said locking members and said frames to allow said locking members to press said frames with a prescribed force for locking said probe card;

driving cams respectively attached to outer planes of said locking members and provided with slanted driving planes; and

a pair of air cylinders having pistons for slidably reciprocating while being in contact with said slanted driving planes of said driving cams.

5,644,247

TEST SOCKET AND METHOD FOR PRODUCING KNOWN GOOD DIES USING THE TEST SOCKET

In Ho Hyun, Kiheung; Sang Hyeong Lee, Suwon, and Il Ung Kim, Seoul, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Continuation of Ser. No. 279,636, Jul. 25, 1994, abandoned. This application May 9, 1996, Ser. No. 644,396

Claims priority, application Rep. of Korea, Jul. 23, 1993, 93-13979

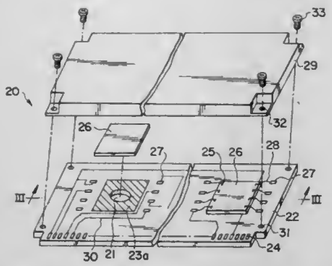
Int. Cl.[6] G01R *31/02*

U.S. Cl. 324—755 **16 Claims**

1. A test device for testing a plurality of unpackaged semiconductor chips, comprising:

a substrate having a plurality of semiconductor chip-mounting locations thereon, said substrate including a plurality of openings extending through said substrate, each said opening positionally corresponding to a respective semiconductor chip mounting location;

at least one piece of double-sided adhesive tape having one side adhered on said substrate at each said semiconductor chip-mounting location; said adhesive tape being configured to leave each of said openings effectively unobstructed thereby, and having another side disposed for removably adhesively



mounting a respective unpackaged semiconductor chip to said substrate at a respective semiconductor chip-mounting location, while permitting demounting of the respective unpackaged semiconductor chip by effective engagement of the chip through the respective opening from an opposite side of the substrate from the respective semiconductor chip-mounting location using an effective pushing element;

a plurality of conductive land patterns disposed about a periphery of each opening, wherein each said semiconductor chip mounting location does not overlap a corresponding said conductive land pattern; and

a plurality of external contact sites formed along an edge of said substrate, said external contact sites being electrically connected to said plurality of conductive land patterns, said external contact sites being constructed and arranged to be connected with circuitry which is external to the test device.

5,644,248

TEST HEAD COOLING SYSTEM

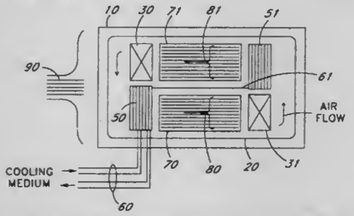
Akihiro Fujimoto, Meiwa-mura, Japan, assignor to Advantest Corporation, Tokyo, Japan

Filed Dec. 22, 1995, Ser. No. 577,754

Claims priority, application Japan, Dec. 22, 1994, 6-336078

Int. Cl.[6] G01R *1/02*

U.S. Cl. 324—760 **2 Claims**



1. A test head cooling system, wherein a cable (**90**) extended from a semiconductor IC test apparatus is connected to a socket of board racks (**70**, **71**), and a plurality of boards (**80**, **81**) is inserted to said socket, comprising:

a sealed housing (**10**);

an air duct (**20**) provided in a wall inside said sealed housing (**10**);

heat exchangers (**50**, **51**) provided for cooling said plurality of boards (**80**, **81**) inserted in said board racks (**70**, **71**);

a cooling pipe (**61**) connected to said heat exchangers (**50**, **51**);

a flexible hose (**60**) connected to an outside cooling apparatus for circulating cooling medium, said flexible hose (**60**) being connected to said heat exchanger (**50**);

a fan (**30**) for generating cooling air in said sealed housing (**10**) provided in front of said heat exchanger (**50**);

a fan (**31**) for generating cooling air in said sealed housing (**10**) provided in front of said heat exchanger (**51**).

5,644,249

METHOD AND CIRCUIT TESTING APPARATUS FOR EQUALIZING A CONTACT FORCE BETWEEN PROBES AND PADS

January Kister, Menlo Park, Calif., assignor to Probe Technology, Santa Clara, Calif.

Filed Jun. 7, 1996, Ser. No. 659,861

Int. Cl.[6] G01R *1/06;31/02*

U.S. Cl. 324—762 **18 Claims**



1. A method of contacting a set of vertical probes belonging to a circuit testing mechanism with a set of pads of a circuit under test, each vertical probe of said set of vertical probes being arranged to contact a corresponding pad of said set of pads, said vertical probe having a circular cross section, a tip portion of tip length L1 and a beam portion of beam length L2, said beam portion extending at a right angle to said tip portion, said beam portion having an end, said vertical probe further having a Young's modulus E and a predetermined Area moment of inertia I about said end, said method comprising the following steps:

a) securing said end to a block of said circuit testing mechanism;

b) passing said tip portion through a guide hole to align said tip portion with said corresponding pad, such that said tip portion is free to slide vertically in said guide hole and said vertical probe is free to undergo a vertical deflection D_v;

c) determining a contact force F to be applied between said tip portion of said vertical probe and said corresponding pad, said contact force F being governed by a relation:

$$F = -E \cdot I \cdot \frac{D_V}{\left[\frac{-1}{3} \cdot \frac{L2^3}{(L1+3\cdot L2)} \cdot L1 - \frac{1}{4} \cdot \frac{L2^4}{(L1+3\cdot L2)}\right]}.$$

d) selecting a tip length L1 and a beam length L2 for each of said vertical probes to keep said contact force F in said relation constant;

e) driving said set of vertical probes against said set of pads, whereby said contact force F between said set of vertical probes and said set of pads remains substantially equal.

5,644,250

STRUCTURE FOR EXTERNALLY IDENTIFYING AN INTERNAL STATE OF A SEMICONDUCTOR DEVICE

Tsukasa Ooishi, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 5, 1995, Ser. No. 463,255

Claims priority, application Japan, Jun. 30, 1994, 6-149324

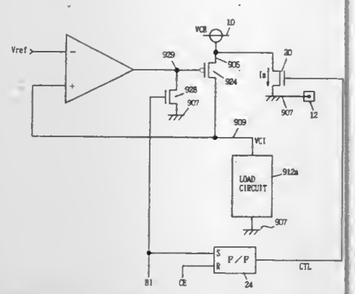
Int. Cl.[6] H03K *19/00*

U.S. Cl. 326—16 **23 Claims**

21. A semiconductor device comprising:

a plurality of pads for establishing electrical connections between internal circuitry and outside said semiconductor device;

a logic circuit connected for receiving (1) an internal state setting signal for setting said internal circuitry to a predetermined state and (2) a period designation signal, and configured for responsively generating a control signal; and



a switch coupled between two pads of said plurality of pads and configured to establish a current flow path between said two pads in response to said control signal.

5,644,251

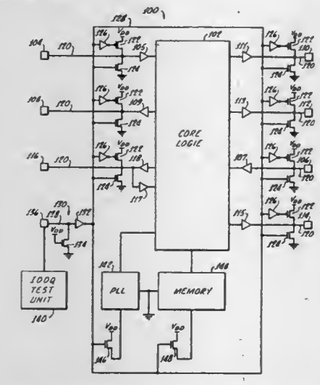
SWITCHABLE PULL-UPS AND PULL-DOWNS FOR IDDQ TESTING OF INTEGRATED CIRCUITS

Michael Colwell, Livermore; Rochit Rajsuman, San Jose; Ray Abrishami, Los Altos, and Zarir B. Sarkari, Santa Clara, all of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Continuation-in-part of Ser. No. 359,950, Dec. 20, 1994, abandoned, which is a continuation of Ser. No. 52,418, Apr. 22, 1993, abandoned. This application Sep. 26, 1995, Ser. No. 533,688

Int. Cl.[6] H03K *19/00*

U.S. Cl. 326—16 **33 Claims**



1. A switchable pull-up circuit for a signal line of an integrated circuit, comprising:

switching means connected between said signal line and a source of potential of said integrated circuit; and

IDDQ testing means for applying a control signal to said switching means having a first selectable value that enables said switching means to pull said signal line to said source of potential, and a second selectable value that causes said switching means to disconnect said signal line from said source of potential for IDDQ testing of said integrated circuit.

5,644,252

DRIVER FOR INTERFACING INTEGRATED CIRCUITS TO TRANSMISSION LINES

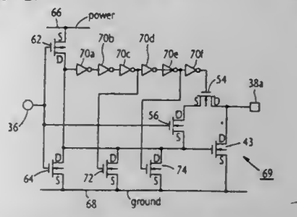
Seiichi Watarai, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 11, 1996, Ser. No. 613,409

Claims priority, application Japan, Mar. 9, 1995, 7-049643

Int. Cl.[6] H03K *17/16*

U.S. Cl. 326—27 **9 Claims**



1. A driver for interfacing a plurality of integrated circuits to a bus, said driver comprising:

an inverter (**62**, **64**) provided between first and second power sources (**66**, **68**);

an output transistor (**43**) whose gate is coupled to an output of said inverter and whose source-drain path is coupled between an output (**38***a*) of said driver and said second power source;

a feedback path coupled between the output of said driver and the output of said inverter, said feedback path including first and second transistors (**56**, **54**) coupled in series, said first transistor (**56**) having a gate thereof coupled to an input of said inverter, said second transistor (**54**) having a gate thereof coupled to the output of said inverter via delay means;

characterized in that

an impedance controller (**72**, **74**) is provided between the output of said inverter and said second power source, said impedance controller stepwisely adjusting impedance of said output transistor when an input signal to said inverter changes from a low logic level to a high logic level.

5,644,253

MULTIPLE-VALUED LOGIC CIRCUIT

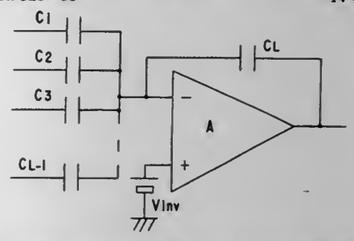
Motomu Takatsu, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Mar. 8, 1996, Ser. No. 618,420

Claims priority, application Japan, Mar. 30, 1995, 7-073925

Int. Cl.[6] H03K *17/735*

U.S. Cl. 326—35 **14 Claims**



1. A multiple-valued logic circuit which receives plural multiple-valued input logic signals corresponding to respective numeral values and outputs a multiple-valued output logic signal corresponding to a sum of the respective numeral values, said multiple-valued logic circuit comprising

n operation circuits where n is an integer,

the kth operation circuit comprising:

multiple-input comparators generating carry signals; and

multiple-input amplifiers performing weighted linear voltage adding operations on input signals at the kth digit, carry

signals of the input signals at the kth digit and carry signals from the (k−1)th digit where k is 0, 1, 2, . . . , n−1, the multiple-input amplifier having a feedback circuit having a capacitance,

the multiple-input comparator and the multiple-input amplifier being connected to corresponding input signals through capacitances,

a voltage gain of the multiple-input amplifier being based on a ratio of the capacitance through which the input signals applied and the capacitance of the feedback circuit.

5,644,254

RAPID SWITCHING INPUT-OUTPUT COUPLERS FOR HIGH RATE DATA TRANSFER BUSES

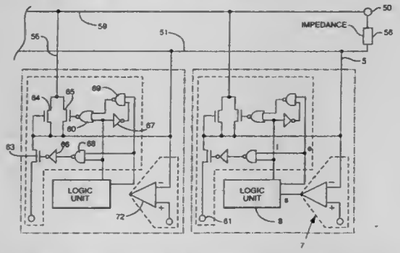
Jeao-Marie Boudry, Montigny le Bretonneux, France, assignor to Bull, S.A., France

Filed Jan. 31, 1996, Ser. No. 595,003

Claims priority, application France, Feb. 8, 1995, 95 01457

Int. Cl.[6] H03K *19/0185*

U.S. Cl. 326—62 **17 Claims**



1. An input-output coupler for an integrated circuit, for exchanging signals with at least two identical couplers of other integrated circuits through a bus line (**51**) having a characteristic impedance, comprising a transmitter (**6**) and a receiver (**7**) connected to the bus line (**51**) through a first conductor (**5**), the transmitter (**6**) comprising a first switch (**63**) having an on and an off condition, said first switch (**63**) in said on condition adapted to take the first conductor (**5**) to a potential Vb and in said off condition adapted to take said first conductor (**5**) to a potential different than Vb propagated along said bus line (**51**), at least one second switch (**64**), (**65**) having an on and an off condition, said second switch in the on condition adapted to take the first conductor (**5**) to a potential Vtt, and said second switch being so constructed and arranged such that switching on of the second switch (**64**), (**65**) is only possible after the first switch (**63**) has been switched to the off condition.

5,644,255

CIRCUITS SYSTEMS AND METHODS FOR REDUCING POWER LOSS DURING TRANSFER OF DATA ACROSS A CONDUCTIVE LINE

Ronald T. Taylor, Grapevine, Tex., assignor to Cirrus Logic, Inc., Fremont, Calif.

Continuation-in-part of Ser. No. 543,210, Oct. 13, 1995, Pat. No. 5,585,744. This application Mar. 21, 1996, Ser. No. 620,115

Int. Cl.[6] H03K *19/017*

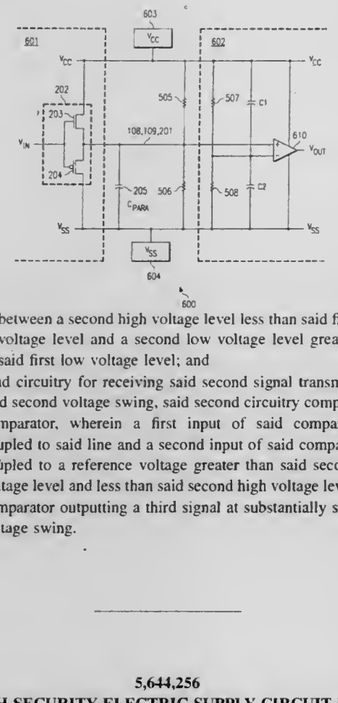
U.S. Cl. 326—81 **21 Claims**

1. A system for transferring a signal across a line comprising:

first circuitry for transmitting a signal across said line, said first circuitry comprising:

circuitry for generating a first signal having a first voltage swing between a first high voltage level and a first low voltage level; and

a line driver for receiving said first signal and outputting a second signal on said line having a second voltage swing



between a second high voltage level less than said first high voltage level and a second low voltage level greater than said first low voltage level; and

second circuitry for receiving said second signal transmitted at said second voltage swing, said second circuitry comprising a comparator, wherein a first input of said comparator is coupled to said line and a second input of said comparator is coupled to a reference voltage greater than said second low voltage level and less than said second high voltage level, said comparator outputting a third signal at substantially said first voltage swing.

5,644,256

HIGH-SECURITY ELECTRIC SUPPLY CIRCUIT FOR MACHINE CONTROL SYSTEMS

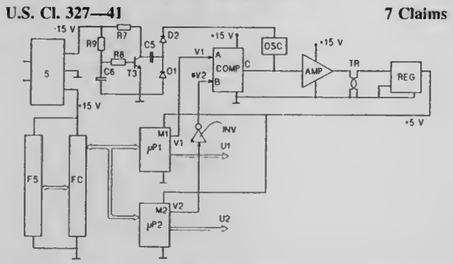
Silvano Ferro, Turin, Italy, assignor to REER S.p.A., Turin, Italy

Filed Dec. 4, 1995, Ser. No. 566,798

Claims priority, application Italy, Dec. 29, 1994, T094A1086

Int. Cl.[6] H03D *13/00*

U.S. Cl. 327—41 **7 Claims**



1. An inherent-security electric supply circuit having for a machine control system, characterized in that it comprises:

an inherent-security signal comparator, driven by two or more input signals delivered by different parts of the control system, and capable of generating an alternate output signal of a predetermined frequency whenever both its input signals are identical, and of terminating said output signal whenever either said input signals wander off from identity, or anyone of its circuit components breaks down, or its d.c. supply is interrupted;

an amplifier driven by said alternate output signal, and in its turn driving an isolating transformer coupled to a voltage rectifier/regulator device for the supply to said control system.

5,644,257

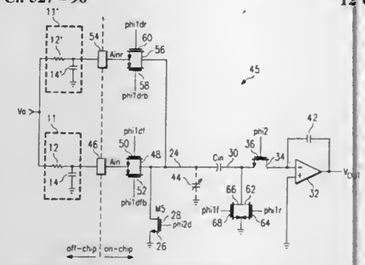
SAMPLING CIRCUIT CHARGE MANAGEMENT

Donald A. Kerth, Austin, Tex.; Dan B. Kasha, Seattle, Wash.; Eric J. Swanson, Buda, and Anthony G. Mellissinos, Austin, both of Tex., assignors to Crystal Semiconductor Corporation, Austin, Tex.

Continuation of Ser. No. 350,498, Dec. 6, 1994, abandoned, which is a continuation of Ser. No. 36,471, Mar. 24, 1993, abandoned. This application Apr. 22, 1996, Ser. No. 635,570

Int. Cl.[6] H03K *5/159;* **G06G** *7/10*

U.S. Cl. 327—96 **12 Claims**



1. In an integrated circuit having first and second inputs for receiving first and second analog signals, respectively, from first and second passive circuits, respectively, said second passive circuit comprising a filter, a sampling circuit coupled to said first and second inputs, said sampling circuit comprising:

a) a charging circuit for charging a capacitor coupled to said first and second inputs during first and second time periods, respectively, during a charging phase of the sampling circuit, said charging circuit being coupled to said first and second inputs and said capacitor; and

b) a transfer circuit for transferring the charge on said capacitor to an output terminal of said sampling circuit during a transfer phase of the sampling circuit, said transfer circuit being coupled to said capacitor and said output terminal.

5,644,258

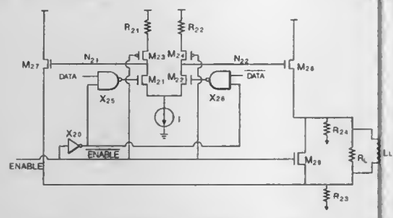
DRIVER CIRCUIT, WITH LOW IDLE POWER CONSUMPTION, FOR AN ATTACHMENT UNIT INTERFACE

Chung-Hsia Wu, Hsinchu, Taiwan, assignor to Winbond Electronics Corp., Hsinchu, Taiwan

Filed Jan. 4, 1996, Ser. No. 582,951

Int. Cl.[6] H03K *19/0175*

U.S. Cl. 327—110 **4 Claims**



1. A driver circuit for an attachment unit interface used in a network system, the network system providing complementary data signals and an enable signal to the driver circuit, the driver circuit comprising:

a constant current source;

a gate for outputing an inverted signal of the enable signal;

a pair of gates for outputing a pair of signals by NANDing its input signals, one of the gates of the pair of gates receiving one of the complementary data signals and the inverted signal, and another one of the gates of the pair of gates receiving another one of the complementary data signals and the inverted signal;

a differential transistor pair having a pair of differential transistors, each of the differential transistors having a drain terminal, a gate terminal which receives a respective one of said output signals of the pair of gates, and a source terminal which is connected to said constant current source;

a pair of load resistors;

a pair of switch transistors, each of the switch transistors of the pair having a gate terminal which receives the enable signal, and a drain and source terminals which are connected respectively to a terminal of a respective one of the load resistors and to the drain terminal of a respective one of the differential transistors;

a pair of source followers, each having a gate terminal connected to the drain terminal of the respective one of the differential transistors, and a source terminal, said source followers receiving said differential voltage outputs from the drain terminals of the differential transistors; and

another switch transistor having a gate terminal which receives said enable signal, and source and drain terminals which are respectively connected to said source terminals of said source followers and which are further connected to a respective external pull-down load resistor, said source and drain terminals of said another switch transistor are connected to the attachment unit interface;

wherein bias current which operates the differential transistor pair is saved during Idle of the circuit by a de-assertion state of the enable signal.

5,644,259

RESET CIRCUIT AND INTEGRATED CIRCUIT INCLUDING THE SAME

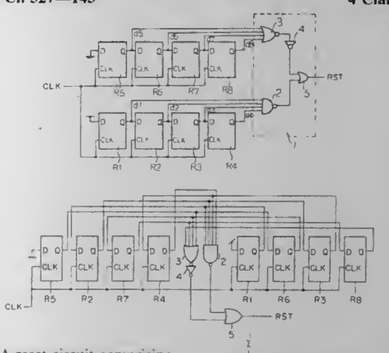
Nobuo Shishikura, Yokohama, and Makiko Ogiu, Shinjuku-Ku, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 118,202, Sep. 9, 1993, abandoned. This application Mar. 18, 1996, Ser. No. 620,751

Claims priority, application Japan, Sep. 11, 1992, 4-243750

Int. Cl.[6] H03L *7/00;* **H03K** *3/02*

U.S. Cl. 327—143 **4 Claims**



1. A reset circuit comprising:

a first shift register including a first register group having a first number of registers connected in series, each of said first number of registers being readily set to logical "0" at power on, and a second shift register including a second register group having a second number of registers, each of said second number of registers being readily set to logical "1" at power on; and

a logic circuit for outputting a coincidence signal when each of said registers of said first and second register groups is respectively set to a corresponding predetermined logical value and for outputting a non-coincidence signal when at least one

register of said first and second register groups is set to a logical value different from a corresponding predetermined logical value,

wherein said non-coincidence signal is used as a reset signal and the first number of registers readily set to logical "0" and the second number of registers readily set to logical "1" are alternately disposed on a semiconductor substrate.

5,644,260

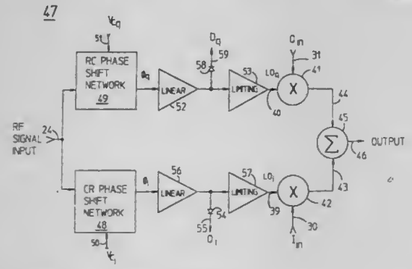
RC/CR AUTOMATIC QUADRATURE NETWORK

Marcus K. DaSilva, Newman Lake, Wash., and Andrew M. Teetzel, Healdsburg, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 425,325, Apr. 17, 1995, abandoned, which is a continuation of Ser. No. 125,380, Sep. 22, 1993, abandoned. This application Oct. 13, 1995, Ser. No. 542,745

Int. Cl.[6] H03H *7/20;7/21*

U.S. Cl. 327—238 **7 Claims**



1. A phase shift circuit comprising:

a first phase shifter having a first input that receives an input signal to be phase shifted, a first output at which appears a phase shifted first output signal having an amplitude that is related to the phase difference between the input signal and the first output signal, and a first control input that receives a first control signal to which the first phase shifter is responsive by varying the phase shift between the input signal and the first output signal;

a second phase shifter having a second input that receives the input signal, a second output at which appears a phase shifted second output signal having an amplitude that is related to the phase difference between the input signal and the second output signal, and a second control input that receives a second control signal to which the second phase shifter is responsive by varying the phase shift between the input signal and the second output signal;

a first amplitude detector, coupled to the first output signal, that produces a first level signal corresponding to the amplitude of the first output signal;

a second amplitude detector, coupled to the second output signal, that produces a second level signal corresponding to the amplitude of the second output signal;

a differential amplifier having inputs coupled to the first and second level signals and having an output; and

a circuit coupled to the output of the differential amplifier and having outputs coupled to the first and second control inputs, the circuit introducing a differential offset between the first and second control signals.

5,644,261

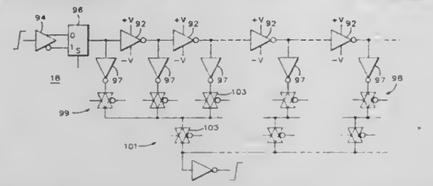
ADJUSTABLE PRECISE DELAY CIRCUIT

Arnold M. Frisch, Portland, and Thomas A. Almy, Tualatin, both of Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

Division of Ser. No. 138,856, Oct. 18, 1993, Pat. No. 5,428,626. This application Jun. 26, 1995, Ser. No. 494,757

Int. Cl.[6] H03H *11/26;* **G01R** *19/00*

U.S. Cl. 327—277 **8 Claims**



1. An apparatus for delaying an input signal by a precise amount comprising:

a plurality of delay elements coupled in series, each delay element being an inverter gate;

a multiplexer for selecting an output from among the input to the first delay element in the series and the outputs from each of the delay elements; and

means for selecting a polarity of the input signal for input to the plurality of delay elements so that the output always has a same predetermined polarity, the selecting means producing a first polarity of the input signal when the multiplexer is selecting an output that has been inverted an even number of times and producing a second polarity of the input signal when the multiplexer is selecting an output that has been inverted an odd number of times.

5,644,262

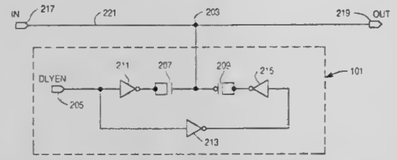
DIGITALLY CONTROLLED CAPACITIVE LOAD

Mel Bazes, Haifa, Israel, assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 394,677, Feb. 24, 1995, abandoned. This application Mar. 21, 1996, Ser. No. 621,732

Int. Cl.[6] H03K *5/13;17/28*

U.S. Cl. 327—277 **16 Claims**



1. An integrated circuit for providing a variable delay for a waveform carried by a signal line, the integrated circuit coupled to the signal line, the integrated circuit comprising:

a delay enable line having an active state and an inactive state; and

a capacitive load directly coupled to the signal line, the capacitive load comprising first and second transistors having commonly connected gates directly coupled to the signal line, the delay enable line coupled to the first and second transistors, the capacitive load having minimum capacitance when the delay enable line is in the inactive state, the capacitive load having maximum capacitance when the delay enable line is in the active state, the first and second transistors configured to switch in opposite directions in response to a transition on the delay enable line.

5,644,263

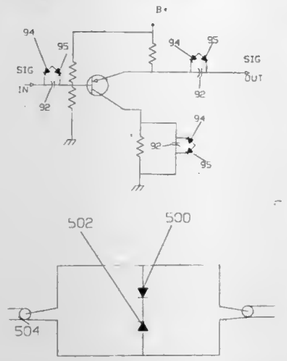
GROUND LOOP ELIMINATION

George E. Clark, 1900 Alta West Rd., Mansfield, Ohio 44903

Division of Ser. No. 945,092, Sep. 15, 1992, Pat. No. 5,422,804, and a continuation-in-part of Ser. No. 945,092. This application Jun. 2, 1995, Ser. No. 459,256

Int. Cl.[6] H03K *5/08;17/16*

U.S. Cl. 327—310 **4 Claims**



1. A method of reducing the ground loop and other distortion in an audio, video, or a digital cable with ground wires comprising:

a. placing an electronic device taken from the group consistence essentially of piezoelectric crystals, neon bulbs, or a set of two diode placed either anode to anode or a cathode to cathode between the cable and the ground wire.

5,644,264

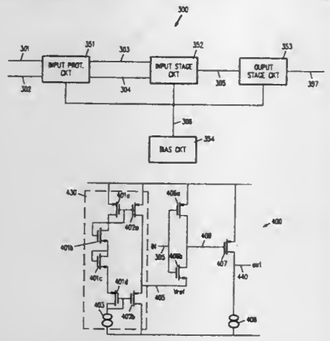
OUTPUT CIRCUIT WITH SHORT CIRCUIT PROTECTION FOR A CMOS COMPARATOR

Kwok-Fu Chiu, and Don Roy Sauer, both of San Jose, Calif., assignors to National Semiconductor Corporation

Division of Ser. No. 295,135, Aug. 24, 1994, Pat. No. 5,525,934. This application Mar. 15, 1996, Ser. No. 616,397

Int. Cl.[6] H03K *5/08;5/22*

U.S. Cl. 327—318 **6 Claims**



1. A comparator circuit, comprising:

an input protection circuit for minimizing an offset voltage performance ("V_{os}"), said input protection circuit receiving a differential input signal and providing a differential output signal corresponding to said differential input signal;

an input stage circuit receiving said differential output signal, for providing a comparator output signal indicating whether said differential input signal is positive or negative;

an output stage circuit for amplification of said comparator output signal, said output stage coupled between a first supply voltage and a second supply voltage, and including an output transistor having a gate terminal limited to a reference voltage between said first supply voltage and said second supply voltage; and

a bias circuit for providing a bias voltage used in said input protection circuit and said input stage circuit.

5,644,265

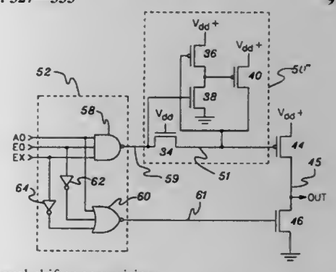
OFF-CHIP DRIVER FOR MIXED VOLTAGE APPLICATIONS

John Stephen Austin, Burlington, and Douglas Willard Stout, Milton, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 1, 1995, Ser. No. 431,882

Int. Cl.[6] H03L *5/00*

U.S. Cl. 327—333 **9 Claims**



1. A level shifter comprising:

a first terminal for receiving an input signal of a first voltage magnitude;

a second terminal for sending out an output signal representative of said input signal, but of a second voltage magnitude;

a first supply node for providing a first supply voltage corresponding to said first voltage magnitude;

a second supply node for providing a second supply voltage corresponding to said second voltage magnitude;

a pass gate disposed between said first terminal and said second terminal;

a first P-MOSFET having its source coupled to said second supply node for receiving said second supply voltage, its gate coupled to said second terminal, and its drain coupled to an intermediate node;

a first N-MOSFET having its source coupled to ground, its gate directly coupled to said first terminal for receiving said input signal directly, and its drain coupled to said intermediate node; and

a second P-MOSFET having its source coupled to said second supply node for receiving said second supply voltage, its gate coupled to said intermediate node, and its drain coupled to said second terminal.

5,644,266

DYNAMIC THRESHOLD VOLTAGE SCHEME FOR LOW VOLTAGE CMOS INVERTER

Ming-Jer Chen, No. 2, Lane 86, Chen-Kung 1st Rd., Chun-Kung Li, Hsinchu, and Chuang-Hen Yang, No. 4, Alley 17, Lane 320, Sec. 2, Ching-Kuo Rd., Hsinchu, both of Taiwan

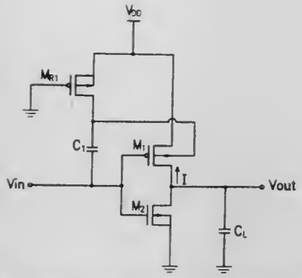
Filed Nov. 13, 1995, Ser. No. 559,201

Int. Cl.[6] H03K *19/003;19/0185*

U.S. Cl. 327—534 **10 Claims**

1. A low voltage inverter, comprising:

a CMOS inverter consisting of a PMOS transistor and an NMOS transistor; and



a back-gate biasing circuit consisting of a capacitor and a load, wherein said capacitor is connected between an input terminal of said CMOS inverter and one of bulks of said transistors for biasing via said load.

5,644,267

HIGH-PASS FILTER STRUCTURE WITH PROGRAMMABLE ZEROS

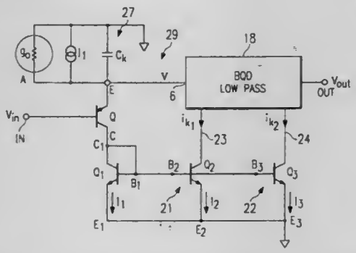
Francesco Brianti, Piacenza; Roberto Alini, Stradella; Valerio Pisati, Bosnasco, and Paolo Gadducci, Tirrenia, all of Italy, assignors to SGS-Thomson Microelectronics, S.r.l., Agrate Brianza, Italy

Filed May 31, 1995, Ser. No. 455,850

Claims priority, application European Pat. Off., Aug. 12, 1994, 94830401

Int. Cl.[6] H03F *3/68*

U.S. Cl. 327—553 **7 Claims**



1. A programmable zeros filter for high-frequency applications comprising:

an input terminal and an output terminal, the relationship between the Laplace transform of said input terminal and said output terminal defining a transfer function;

a biquadratic cell having an input and a series of transconductance stages;

a generator circuit for receiving signals from said input terminal to generate variable currents which are dynamically varied in accordance with said signals received at said input terminal, said generator circuit being connected respectively to said input of said biquadratic cells, and to first and second nodes which are between respective pairs of stages of said biquadratic cell; and

wherein said generator circuit further comprises means for adjusting respective bias current components of said variable currents.

5,644,268

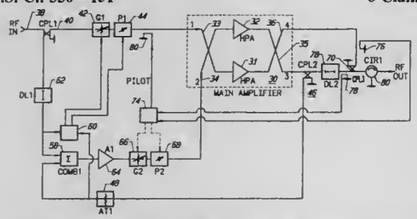
FEED FORWARD RF AMPLIFIER FOR COMBINED SIGNAL AND ERROR AMPLIFICATION

Huong M. Hang, San Jose, Calif., assignor to Spectrian, Inc., Mountain View, Calif.

Continuation-in-part of Ser. No. 369,546, Jan. 6, 1995, Pat. No. 5,528,196. This application Mar. 28, 1995, Ser. No. 412,479

Int. Cl.[6] H03F *1/32*

U.S. Cl. 330—151 **6 Claims**



1. A radio frequency (RF) amplifier having improved linearity and reduced intermodulation distortion comprising

an input terminal for receiving RF signals to be amplified,

a main amplifier including two high power amplifiers having first and second input ports and first and second output ports in a quadrature combined configuration,

a first amplitude and phase trimmer,

means for connecting said input terminal through said first amplitude and phase trimmer to said first input port,

a combiner and a first controller for receiving and comparing a delayed portion of an input signal at said input terminal and a portion of an amplified input signal at said first output port, said first controller controlling said first amplitude and phase trimmer so that said input signal and said amplified output signal have the same amplitude and are 180 degrees out of phase relative to each other, said combiner generating an error signal by combining said input signal and said amplified input signal,

means including a second amplitude and phase trimmer for applying said error signal to said second input port,

means for coupling an amplified error signal at said second output port to a delayed amplified input signal from said first output port, and

a second controller for generating a pilot signal for introduction at said first input port and for receiving and comparing a delayed portion of said pilot signal at said first output port and a portion of an amplified error signal at said second output port and controlling said second amplitude and phase trimmer.

5,644,269

CASCODE MOS CURRENT MIRROR WITH LATERAL BIPOLAR JUNCTION TRANSISTOR TO ENHANCE OUPUT SIGNAL SWING

Shyh-Chyi Wong, Taichung, and Mong-Song Liang, Hsin-chu, both of Taiwan, assignors to Taiwan Semiconductor Manufacturing Company, Hsin-chu, Taiwan

Filed Dec. 11, 1995, Ser. No. 570,297

Int. Cl.[6] H03F *3/45;3/16*

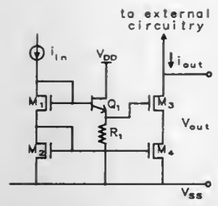
U.S. Cl. 330—261 **19 Claims**

1. A cascode MOS transistor current mirror circuit connected between a first power supply line and a second power supply line to supply a constant current of a first magnitude to external circuitry, comprising:

a) a controlling current source having a first terminal connected to the first power supply line and a second terminal;

b) a first MOS transistor comprising a drain, gate, and a source, wherein said drain and gate are connected to the second terminal of the controlling current source;

c) a second MOS transistor comprising a drain, a gate, and a source, wherein said drain and gate are connected to the



source of the first MOS transistor and said source is connected to said second power supply line;

d) a bipolar junction transistor comprising a base connected to the gate of the first MOS transistor, a collector connected to the first power supply line, and an emitter;

e) a resistor connected between the second power supply line and the emitter of the bipolar junction transistor; and

f) a plurality of cascode current sources operably coupled to said external circuitry.

5,644,270

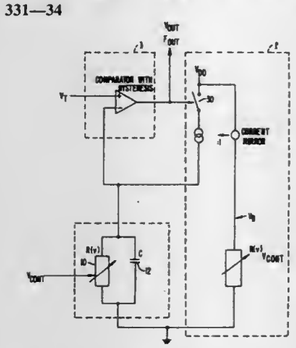
ENCHANCED STABILITY VOLTAGE CONTROLLED RC OSCILLATOR

Todd K. Moyer, Wilsonville, Oreg., and Daniel M. Clementi, Doylestown, Pa., assignors to ICS Technologies, Inc., Valley Forge, Pa.

Filed Mar. 15, 1996, Ser. No. 618,413

Int. Cl.[6] H03K *3/0231*

U.S. Cl. 331—34 **36 Claims**



1. A voltage controlled oscillator having a tuning voltage input, the oscillator comprising a RC timing element comprising a voltage-variable resistance element and a capacitor, and a current source having an output providing an output current, wherein said tuning voltage input is coupled to said voltage-variable resistance element to vary the resistance thereof, and to said current source to vary the output current thereof, said capacitor being coupled to said output of said current source to receive said output current.

5,644,271

TEMPERATURE COMPENSATED CLOCK

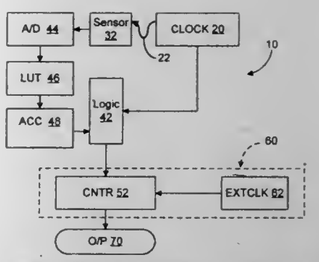
Ivan Petrov Mollov, Parkview, and Robert Eugene Havens, Eldridge, both of Iowa, assignors to Mehta Tech, Inc., Eldridge, Iowa

Filed Mar. 5, 1996, Ser. No. 611,125

Int. Cl.[6] H03L *1/02;7/00;* **G04B** *17/20*

U.S. Cl. 331—176 **27 Claims**

1. A temperature compensation system, comprising:



a first oscillator configured to generate a number of pulses, said first number of pulses varying from a desired frequency as a function of temperature of said first oscillator;

a second oscillator configured to generate digital pulses at a corrective frequency, said corrective frequency being at least 100,000 times greater than said desired frequency;

a temperature sensor configured to provide an analog temperature signal corresponding to temperature of said first oscillator;

an analog to digital converter coupled to said sensor to correspondingly convert said temperature signal to a digital temperature error address signal for each of said number of pulses;

a digital memory coupled to said converter, said memory including a digital error table addressable by said temperature error address signal to provide a number of digital pulse error signals corresponding to temperature error for each of said number of pulses, each of said number of pulse error signals being a function of said corrective frequency and a temperature versus frequency characteristic of said first oscillator;

a digital accumulator coupled to said memory, said accumulator being configured to receive each of said pulse error signals to provide a digital cumulative error signal corresponding to one of said number of pulses; and

a variable digital delay device coupled to said accumulator, said first oscillator, and said second oscillator, said delay device being configured to count a quantity of corrective pulses from said second oscillator in response to said one of said number of pulses to provide a delayed output pulse in accordance with said desired frequency, said quantity of corrective pulses being a function of said cumulative error signal provided by said accumulator.

5,644,272

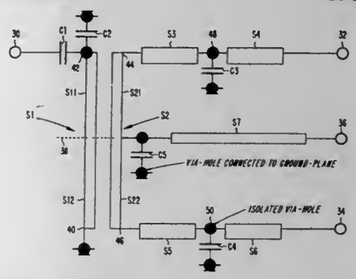
HIGH FREQUENCY BALUN PROVIDED IN A MULTILAYER SUBSTRATE

Jerzy Dabrowski, Täby, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Mar. 5, 1996, Ser. No. 610,934

Int. Cl.[6] H01P *5/10*

U.S. Cl. 333—26 **12 Claims**



1. A balun comprising:

a nonsymmetrical signal port coupled to a first capacitor, said first capacitor being provided on a top layer of a multilayer structure;

a first ground plane layer provided beneath said top layer;

a coupled pair of stripline elements provided on a third layer beneath said ground plane layer, said coupled pair of stripline transmission elements having a first connection node associated with one of said pair of stripline elements and second and third connection nodes associated with another of said pair of stripline elements, wherein said first capacitor is connected to said first node;

a first symmetrical signal port connected to said second node of said coupled pair of stripline transmission elements, wherein a combination of a first transmission line element, a second capacitor and a second transmission line element are provided between said second node and said first symmetrical signal port; and

a second symmetrical signal port connected to said third node of said coupled pair of stripline transmission elements, wherein a combination of a third transmission line element, a third capacitor and a fourth transmission line element are provided between said third node and said second symmetrical signal port;

wherein said second and third capacitors are also provided on said top layer of said multilayer structure.

5,644,273

PIEZOELECTRIC RESONATOR DEVICE OF TUNING FORK TYPE

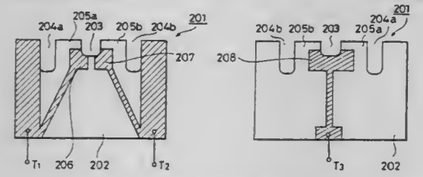
Hiroaki Kaida; Jiro Inoue; Masatoshi Kajiwara; Hiroshi Nakatani; Katsumi Fujimoto, and Katsumi Sakai, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Continuation of Ser. No. 279,704, Jul. 25, 1994, abandoned, which is a continuation of Ser. No. 60,615, May 12, 1993, abandoned, which is a division of Ser. No. 919,100, Jul. 23, 1992, Pat. No. 5,373,267, which is a division of Ser. No. 431,539, Nov. 3, 1989, Pat. No. 5,159,301. This application Jun. 7, 1995, Ser. No. 476,051

Claims priority, application Japan, Jun. 14, 1989, 1-69438; Jun. 14, 1989, 1-69439; Aug. 7, 1989, 1-92702; Aug. 7, 1989, 1-92703

Int. Cl.[6] H03H *9/21*

U.S. Cl. 333—187 **3 Claims**



3. A piezoelectric filter with a tuning-fork-type vibrating portion, comprising:

a piezoelectric substrate having a nearly rectangular plane shape having edges and opposed major surfaces, said piezoelectric substrate comprising a first slit defining inner edges of a pair of arm portions of a tuning fork portion, extending inward from one edge of said piezoelectric substrate, and a pair of second slits defining outer edges of said arm portions of said tuning fork portion extending inwardly from said one edge and provided approximately parallel with the first slit, said second slits being respectively on two opposite sides of the first slit, and

wherein:

a first vibrating electrode and a second vibrating electrode are disposed on respective sides of the first slit with the first slit being interposed therebetween, localized at an innermost portion of the first slit on one of said opposed major surfaces of the piezoelectric substrate and spaced away from both said one edge of said substrate and said outer edges of said arm portions, and

at least one back electrode opposed to said first and second electrodes through the piezoelectric substrate disposed on the other of said opposed major surfaces of said piezoelectric substrate.

5,644,274

STACKED PIEZOELECTRIC RESONATOR LADDER-TYPE FILTER WITH AT LEAST ONE BENDING MODE RESONATOR

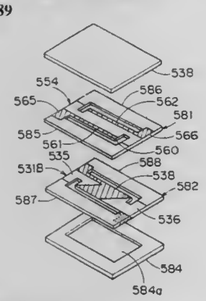
Hiroaki Kaida, Nagaokakyo, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Division of Ser. No. 287,530, Aug. 8, 1994. This application May 18, 1995, Ser. No. 444,831

Claims priority, application Japan, Aug. 17, 1993, 5-203426; Sep. 2, 1993, 5-218585; Sep. 30, 1993, 5-244569; Sep. 30, 1993, 5-244570; Oct. 1, 1993, 5-247182; Dec. 16, 1993, 5-316282

Int. Cl.[6] H03H *9/54*

U.S. Cl. 333—189 **12 Claims**



1. A ladder-type filter comprising:

at least one series resonator forming a series arm; and

at least one parallel resonator forming a parallel arm, said series and parallel resonators being stacked on each other in a vertical direction and connected to each other along said vertical direction;

at least one of said series and parallel resonators including:

a plate type piezoelectric vibrator having a pair of opposite rectangular surfaces, each of said rectangular surfaces having a pair of opposed shorter edges and a pair of opposed longer edges, said shorter edges having a length a, said longer edges each having a length b, said plate type piezoelectric vibrator further having a pair of shorter side surfaces coupling said shorter edges of said pair of rectangular surfaces with each other, and a pair of longer side surfaces coupling said longer edges of said pair of rectangular surfaces with each other to form a rectangular parallelpiped;

first and second resonance electrodes located on said pair of rectangular surfaces of said piezoelectric vibrator, and

first and second support parts coupled to respective ends of each of said shorter side surfaces of said piezoelectric vibrator, and first and second holding parts coupled to said first and second support parts, respectively;

the lengths of said shorter and longer side edges of said rectangular surfaces being in a range of ±10% from a value satisfying the following equation:

$$b/a=n(0.3\sigma+1.48)$$

wherein σ represents the Poisson's ratio of the material forming said piezoelectric vibrator and n represents an integer, said piezoelectric vibrator being arranged and adapted to excite bending mode vibration having a degree of 2m through a piezoelectric transverse effect, wherein m is an integer.

5,644,275

LAMINATED DIELECTRIC RESONATOR AND DIELECTRIC FILTER

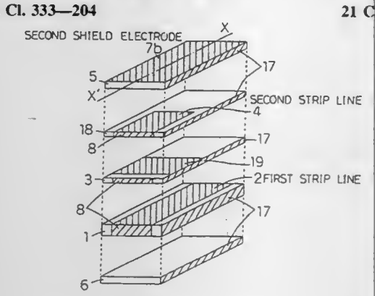
Toshio Ishizaki, Hyogo, and Hideaki Nakakubo, Kyoto, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 217,118, Mar. 24, 1994, Pat. No. 5,479,141. This application Sep. 22, 1995, Ser. No. 532,304

Claims priority, application Japan, Mar. 25, 1993, 5-066315

Int. Cl.[6] H01P *1/20*

U.S. Cl. 333—204 **21 Claims**



1. A laminated dielectric resonator, comprising:

a first dielectric sheet;

a second dielectric sheet;

a third dielectric sheet interposed between and laminated with first and second dielectric sheets;

a first strip line formed on an upper surface of the first dielectric sheet;

a second strip line formed on an upper surface of the second dielectric sheet;

a capacitor electrode formed on an upper surface of the third dielectric sheet;

an uppermost dielectric sheet laminated on an upper surface of the second dielectric sheet;

a lowermost dielectric sheet laminated on a lower surface of the first dielectric sheet;

a first shield electrode provided on a lower surface of the lowermost dielectric sheet;

a second shield electrode provided on an upper surface of the uppermost dielectric sheet;

a connection electrode which connects one end of the first strip line to one end of the second strip line;

a ground electrode which grounds the other end of the first strip line; and

side shield electrodes respectively provided as external electrodes on both side surfaces of the laminated dielectric resonator, connecting the first shield electrode and the second shield electrode,

wherein the capacitor electrode is grounded through the side shield electrodes,

lengths of the second strip line, and the capacitor electrode are shorter than that of the first strip line,

the other end of the second strip line is opened, and

the second strip line and the capacitor electrode are overlapped on a portion of the first strip line which is in the vicinity of the connection electrode,

while except for this portion, the first strip line is confronting the first shield electrode and the second shield electrode without any other electrode therebetween.

5,644,276

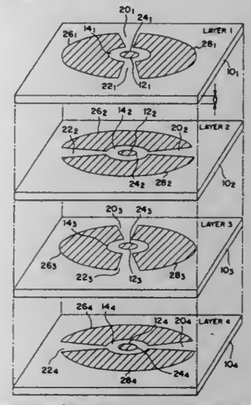
MULTI-LAYER CONTROLLABLE IMPEDANCE TRANSITION DEVICE FOR MICROWAVES/ MILLIMETER WAVES

Dana J. Sturzebecher, Tinton Falls; Michael T. Cummings, Howell; Thomas P. Higgins, Tinton Falls, and James R. DeMarco, Howell, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 29, 1996, Ser. No. 654,949

Int. Cl.[6] H01P *3/06*

U.S. Cl. 333—236 **10 Claims**



1. A multi-layer transition device for microwave and millimeter wave signals while maintaining a uniform characteristic impedance, comprising:

a plurality of layers of constant thickness dielectric material contiguously stacked and bonded together to form an integral unit having a continuous center conductor and a ground plane surrounding the center conductor along its length,

wherein each layer of dielectric material includes an inner region of metallization forming one segment of said center conductor, an intermediate region of dielectric material surrounding said inner region of metallization, and at least two outer regions of metallization mutually separated by at least two portions of said intermediate region of dielectric material, and

wherein said two portions of said intermediate region of dielectric material of mutually contiguous layers are offset relative to one another in respective planes by a predetermined angle so as to provide a continuous ground plane structure through the device.

5,644,277

THREE-WIRE-LINE VERTICAL INTERCONNECT STRUCTURE FOR MULTILEVEL SUBSTRATES

Jon J. Gulick, Hawthorne, and John J. Wooldridge, Manhattan Beach, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 395,220, Feb. 27, 1995, abandoned. This application Nov. 6, 1995, Ser. No. 553,946

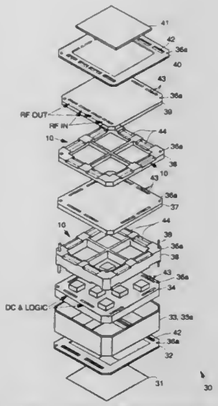
Int. Cl.[6] H01P *5/00*

U.S. Cl. 333—246 **16 Claims**

1. A stacked multilevel substrate module comprising:

an enclosure having a plurality of openings that permit electrical connection to external circuits;

lower, center, and upper substrates stacked within the enclosure each comprising an electronic circuit having plurality of coplanar conductors disposed on upper and lower surfaces thereof that are used to transmit and receive electrical signals, and wherein the center substrate comprises a plurality of three



wire vertical interconnect structures that extend through peripheral edges thereof

lower and upper ring frames interposed between the respective substrates each comprising a plurality of solderless interconnects disposed therethrough, and wherein predetermined ones of the solderless interconnects contact predetermined ones of the three wire vertical interconnect structures of the center substrate; and

a plurality of alignment pins disposed through alignment holes disposed through the substrates and ring frames.

5,644,278

LIQUID COOLING TYPE CATHODE-RAY TUBE

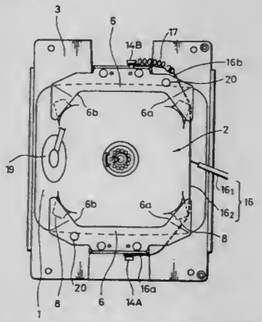
Hiroyuki Takezawa, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 12, 1996, Ser. No. 631,783

Claims priority, application Japan, Apr. 13, 1995, 7-088290

Int. Cl.[6] H01F *7/00;* **H01J** *7/26;29/80*

U.S. Cl. 335—210 **10 Claims**



1. In a liquid cooling type cathode-ray tube including a cathode-ray tube assembly, a coupler provided on a front surface of said cathode-ray tube assembly to seal a coolant and fixing members for fixing said coupler to said cathode-ray tube assembly, said liquid cooling type cathode-ray tube comprising:

a pair of holes defined on said coupler or said fixing members;

a pair of engagement pins fixed into said pair of holes with a pressure; and

an earth wire which directly closely contacts with an outer conductive film to apply an earth potential to said outer conductive film, said earth wire being extended between said pair of engagement pins through a spring.

5,644,279

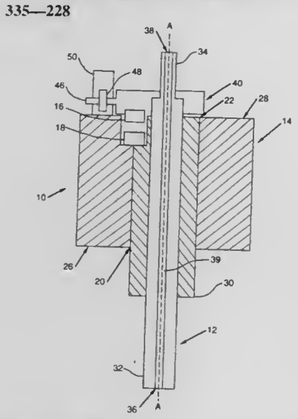
ACTUATOR ASSEMBLY

John G. Piper, Midvale, and Michael J. Bettinger, Boise, both of Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Apr. 3, 1996, Ser. No. 626,982

Int. Cl.[6] H01F *7/08;* **G05B** *19/04*

U.S. Cl. 335—228 **23 Claims**



1. An actuator comprising:

a. a housing;

b. a stem slidably supported by said housing and having a rest position relative to said housing;

c. a first magnetic portion attached to said stem; and,

d. a second magnetic portion attached to said housing, said second magnetic portion being of sufficient strength and oriented to exert a generally predetermined force on said first magnetic portion sufficient to resist displacement of said stem from said rest position.

5,644,280

METHOD OF OPERATING A TWO-COIL SOLENOID VALVE

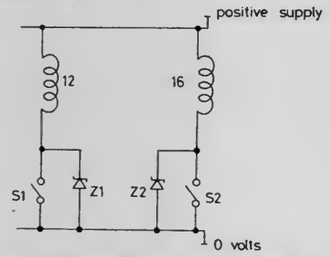
Colin John Wilson, Hertfordshire; David Roy Withers, Cambridgeshire, and Ewan Stuart Bewley, London, all of Great Britain, assignors to Perkins Limited, Cambridgeshire, United Kingdom

Filed Dec. 22, 1994, Ser. No. 362,265

Claims priority, application United Kingdom, Dec. 23, 1993, 9326245

Int. Cl.[6] H01F *3/00*

U.S. Cl. 335—256 **17 Claims**



1. A method of operating a two-coil solenoid valve having an armature member located in a housing for movement between a first electromagnet and a second electromagnet, each electromagnet being located adjacent to a respective end of said armature member and being switchable between an on state and an off state, said method comprising

moving the armature member from a first position closely adjacent to the first electromagnet to a second position closely adjacent to the second electromagnet,

wherein the electromagnets are controlled to be at the same initial switched state and subsequently one of said electromagnets is switched to said other switched state for a first predetermined period sufficient to allow the resultant pull exerted on the armature member to be such that the armature member is caused to move towards the second electromagnet, the duration of the first predetermined period being such that said one electromagnet is switched back to its initial switched state before the armature member reaches said second position.

5,644,281

ELECTRONIC COMPONENT INCORPORATING SOLDER FUSE WIRE

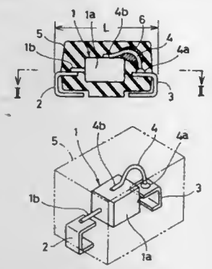
Chojiro Kuriyama, Kyoto, Japao, assignor to Rohm Co., Ltd., Kyoto, Japan

Continuation-in-part of Ser. No. 209,314, Mar. 14, 1994, Pat. No. 5,402,307, which is a continuation of Ser. No. 41,971, Apr. 2, 1993, Pat. No. 5,315,474. This application Sep. 19, 1994, Ser. No. 310,063

Claims priority, application Japan, Apr. 7, 1992, 4-85353; Scp. 21, 1993, 5-234629; Mar. 16, 1994, 6-045899

Int. Cl.[6] H01H *85/04;* **H01G** *9/05*

U.S. Cl. 337—295 **8 Claims**



1. An electronic component comprising:

at least one chip element having at least two poles; and

at least two leads respectively connected electrically to said two poles;

wherein at least one of said two leads is electrically connected to a corresponding one of said two poles through a solder fuse wire which has a nail head end and a flattened discal end.

5,644,282

FUSE AND BATTERY APPARATUS UTILIZING SAME

Alay M. Mehta, Lawrenceville; Stephanie D. Brown, Atlanta, and Michael B. Kirschner, Alpharetta, all of Ga., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 6, 1995, Ser. No. 383,633

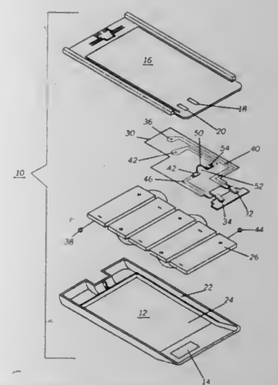
Int. Cl.[6] H01H *85/04;* **H01M** *14/00*

U.S. Cl. 337—295 **4 Claims**

1. A battery pack comprising:

at least one battery cell; and

a thermal fuse member disposed on said at least one battery cell, said thermal fuse member comprising a conductive layer having two end portions and a strip portion formed therebetween, said strip portion defining two major surfaces, each major surface having a layer of a polymeric insulating material disposed thereon, said layer of polymer material being selected from the group consisting of mylar, polyester, polyimide, kapton, and combinations thereof.



5,644,283

VARIABLE HIGH-CURRENT RESISTOR, ESPECIALLY FOR USE AS PROTECTIVE ELEMENT IN POWER SWITCHING APPLICATIONS & CIRCUIT MAKING USE OF HIGH-CURRENT RESISTOR

Hubert Grosse-Wilde, Neunkirchen; Jörg Kieser, Forchheim; Wilfried Jaehner, Nürnberg; Fritz Pohl, Hembofen; Reinhard Steger, Sulzbach-Rosenberg, and Gert Vogel, Amberg, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germaay

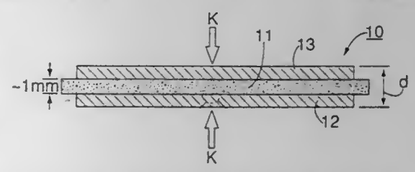
PCT No. PCT/DE93/00721, § 371 Date Feb. 14, 1995, § 102(e) Date Feb. 14, 1995, PCT Pub. No. WO94/06130, PCT Pub. Date Mar. 17, 1994

PCT Filed Aug. 11, 1993, Ser. No. 381,927

Claims priority, application Germany, Aug. 26, 1992, 42 28 297.7

Int. Cl.[6] H01C *7/10*

U.S. Cl. 338—20 **30 Claims**



1. A variable high-current resistor, especially for use as a protective element in power switching applications, comprising:

a) a first electrode of a highly conductive material;

b) a second electrode of a highly conductive material;

c) at least one resistive layer arranged between the first and second electrodes and including a resistive material comprised of at least one of a carbon and a carbon-black, the resistive layer having a transition zone to the second electrode, which receives a contact pressure;

d) means for selectively influencing the contact pressure, wherein the resistive layer is pressed by a contact pressure with a preset first value against the first and second electrical electrodes to adjust a low-resistance state of the resistor, and in the event of a short-circuit, the contact pressure is opposed by an opposing pressure so as to produce a resultant pressure which is reducible in a short enough time to a second value at which the resistance in the transition zone is increased by at least two orders of magnitude, the opposing pressure developing between the resistive layer and the second electrode

primarily as the result of thermal decomposition of the binding agent into gaseous decomposition products, in that a temperature of the binding agent in the transition zone of the resistive layer to the second electrode is increased by the electric power loss up to the decomposition temperature.

5,644,284
TEMPERATURE SENSOR
Hiroki Moriwake, Sanda; Tsuyoshi Tanaka, Neyagawa, and Masayuki Takahashi, Sapporo, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Apr. 25, 1995, Ser. No. 428,577
Claims priority, application Japan, Apr. 27, 1994, 6-089580; Jun. 3, 1994, 6-122458
Int. Cl.[6] H01C *7/10*
U.S. Cl. 338—22 R **10 Claims**



6. A temperature sensor comprising a heat-resistant cap, a thermistor element accommodated in the heat-resistant cap, and a pair of lead wires electrically connected to each other via the thermistor element and extending outside the heat-resistant cap, wherein the thermistor element comprises an oxide composition comprising elements in amounts represented by the following formula:

$(Al_{1-x-y}Cr_xFe_y)_2O_3$+$a$ atm. % Mn

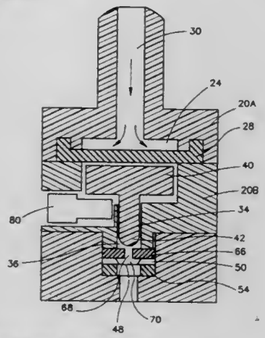
$0.05 \leqq x+y \leqq 0.95$

$0.05 \leqq y/(x+y) \leqq 0.8$

$0.1 \leqq a \leqq 10$

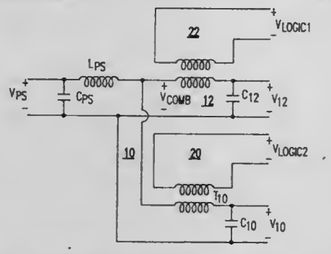
where a represents a value based on one molecule of $(Al_{1-x-y}Cr_xFe_y)_2O_3$.

5,644,285
PRESSURE TRANSDUCER WITH MEDIA ISOLATION
D. Joseph Maurer, Pearl City, Ill., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Feb. 1, 1995, Ser. No. 382,272
Int. Cl.[6] G01L *1/22*
U.S. Cl. 338—39 **14 Claims**



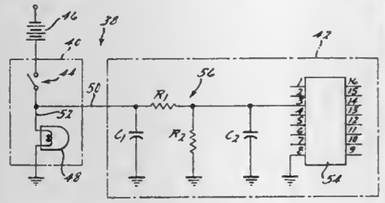
1. A pressure sensor, comprising:
a housing member having a first chamber and a second chamber;
a flexible membrane disposed between said first and second chambers;
a first conduit being connected in fluid communication with said first chamber;
a tubular opening in said housing member;
a plunger slideably disposed within said tubular opening, said plunger having a first end and a second end, said first end of said plunger being disposed within said second chamber and being disposed proximate said flexible membrane, said flexible membrane being movable into contact with said plunger, said plunger being movable within said tubular opening in response to movement of said flexible membrane, at least a portion of said flexible membrane being separable from said first end of said plunger and movable away from said first end of said plunger in response to a first pressure within said first chamber which is less than a second pressure within said second chamber, said housing member permitting said flexible membrane to be removed from said housing member without removing said plunger from said housing member;
a pressure sensor die disposed within said housing member proximate said second end of said plunger, said pressure sensor die having a deformable portion which is deformable in response to movement of said plunger;
a diaphragm disposed between said second end of said plunger and said deformable portion of said pressure sensor die, said diaphragm has an opening formed through its thickness, said diaphragm opening being disposed proximate said second end of said plunger, said plunger being movable into contact with said diaphragm in response to movement of said flexible membrane; and
a third chamber disposed between said pressure sensor die and said diaphragm, said third chamber being sealed from fluid communication with said tubular opening when said second end of said plunger is moved into contact with said diaphragm in response to movement of said flexible membrane, said pressure sensor die being responsive to pressure changes of the fluid within said third chamber.

5,644,286
POWER BUS DIGITAL COMMUNICATION SYSTEM
Richard M. Brosh, Woodbridge; Charles A. Dennis, Warrenton, and Scott C. Willis, Manassas, all of Va., assignors to Lockheed Martin Corporation, Bethesda, Md.
Filed Oct. 4, 1993, Ser. No. 131,346
Int. Cl.[6] H04M *11/04*
U.S. Cl. 340—310.01 **4 Claims**



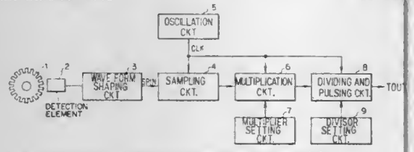
1. A power bus digital communication system for a space satellite system comprising:
a) a plurality of power conducting circuits **10**, **12**, each circuit connected in parallel between a DC power supply Vps and a load Vl1, Vl2;
b) a plurality of digital transceiver sources Vlogic**1**, Vlogic**2** for transmitting and receiving digital signals;
c) a plurality of digital signaling coupling devices **T10**, **T12**, each digital signaling coupling device including a broad band transformer and an impedance element **C10**, **C12** for coupling a digital transceiver source to an associated load Vl1, Vl2, each said broad band transformer connected in series between one terminal of said power supply Vps and its associated load Vl1, Vl2 with said impedance element **C10**, **C12** providing a low impedance path across each said associated load Vl1, Vl2, each said digital coupling device **T10**, **T12** including additional inductance to isolate digital signals on the power conducting circuits **10**, **22** from the associated load Vl1, Vl2 while supplying digital signals to the digital transceiver sources and DC power to each associated load Vl1, Vl2;
d) the digital signaling coupling devices in the respective power conducting circuits being in electrically parallel relation to said DC power supply; and
e) a power supply impedance element LPS for isolating the DC power supply from the coupled digital transceiver signal sources;
whereby digital communications are completed among the digital transceivers sources by using the power conducting circuits as a carrier for the digital signals while supplying DC power to each load thereby saving weight and size in the space satellite system.

5,644,287
COMBINATION UNDERHOOD SECURITY SWITCH AND LAMP ASSEMBLY
Benjamin P. Nouri, West Bloomfield, Mich., assignor to Chrysler Corporation, Auburn Hills, Mich.
Filed Jun. 6, 1995, Ser. No. 471,109
Int. Cl.[6] B60R *25/10*
U.S. Cl. 340—426 **15 Claims**



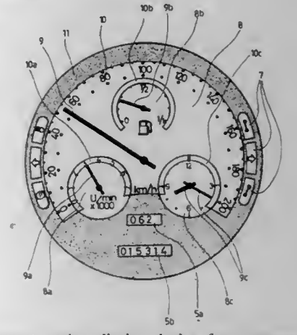
1. A security system for a vehicle, said system comprising:
a lamp assembly, said lamp assembly including a lamp and a lamp switch positioned within a single housing, said lamp switch being electrically connected to the lamp and to a power source, said lamp receiving power from the power source when the switch is in a closed position, said lamp assembly further including an underhood security system signal line, said underhood security system signal line being electrically connected to the lamp switch within the housing; and
a controller electrically connected to the security system signal line, said controller being responsive to a security signal on the security line when the switch is closed.

5,644,288
VEHICLE SPEED DETECTING APPARATUS
Susumu Kuroyanagi, Anjou, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan
Filed Jun. 19, 1995, Ser. No. 491,733
Claims priority, application Japan, Jun. 20, 1994, 6-136930
Int. Cl.[6] B60Q *1/00*
U.S. Cl. 340—441 **11 Claims**



1. A vehicle speed detecting apparatus comprising:
a gear rotating in accordance with traveling of a vehicle;
vehicle speed pulse signal output means for outputting a vehicle-speed pulse signal with a period proportional to a rotational speed of said gear; and
altering means for altering the period of the vehicle-speed pulse signal and outputting an output vehicle-speed pulse signal with the altered period,
said altering means comprising:
period detection means for detecting the period of the vehicle-speed pulse signal,
multiplication means for multiplying the period by a predetermined multiplier,
division means for dividing the multiplied period by a predetermined divisor, and
pulse signal outputting means for outputting the output vehicle-speed pulse signal with the period obtained from said division means performed by said division means.

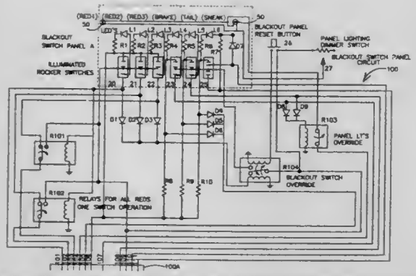
5,644,289
COMPACT INSTRUMENT PANEL
Marc Frehner, Riehen; Clément Meyrat, Le Landeron, and Daniel Donzé , Bienne, all of Switzerland, assignors to SMH Management Services AG, Biel, Switzerland
Filed Apr. 18, 1995, Ser. No. 423,296
Claims priority, application Switzerland, Apr. 19, 1994, 181/94
Int. Cl.[6] B60Q *1/100*
U.S. Cl. 340—461 **7 Claims**



1. A compact analog display device for a measurement or control instrument having a plurality of individual dials, each provided with scales permitting the reading of different or complementary types of measurements by means of needles individually driven by separate motors, the operation of which is controlled by integrated circuits supported by a first plate, characterized in that a second plate supports both a main dial, providing a main reading in relation to a first scale by means of a first needle, and also a plurality of secondary dials, said first needle moving above said secondary dials, which are located inside the perimeter of the main dial, and which give readings, of a different or complementary type in relation to secondary scales, by means of different needles, the needles of said main and secondary dials being driven by said separate motors which are positioned and retained between said first and said second plates.

5,644,290
BLACKOUT CONTROL SYSTEM
Michael E. Rhodes, Rte. 3, Box 930, Big Fork, Minn. 56628
Continuation-in-part of Ser. No. 77,094, Jun. 16, 1993, Pat. No. 5,434,553. This application Jul. 5, 1995, Ser. No. 498,433
Int. Cl.[6] B60Q *1/00*
U.S. Cl. 340—468 **19 Claims**

1. An improved blackout control system for use in an emergency vehicle having emergency lights including, high and low beam headlights, running lights, front lights selected from red grill lights and turn signal lights, a rear window brake light, brake lights, and



backup lights controlled by a backup switch for supplying power to backup lights of the vehicle when the vehicle is placed in reverse, a manually activated running light switch to provide power to running lights of the vehicle, an interior dome light activated by opening doors, and a brake switch for supplying power to brake lights of the vehicle when a brake pedal within the vehicle is engaged, said improved blackout control system containing a blackout panel unit, a harness unit and a control unit comprising:

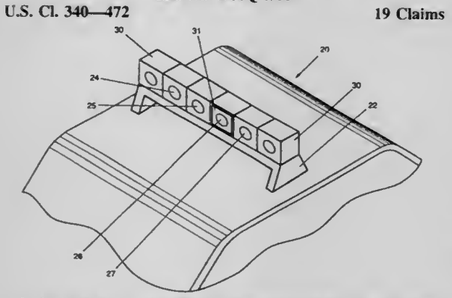
(a) a blackout panel unit comprising:
- a first manually activated emergency light switch supplying power to the high beam headlights of the vehicle;
- a second manually activated emergency light switch supplying power to red grill lights;
- a third manually activated emergency light switch supplying power to brake and backup lights;
- a first manually activated blackout switch to deactivate the brake lights;
- a second manually activated tail lights' blackout switch to deactivate the running lights;
- a third manually operated sneak light switch to activate the sneak lights and to deactivate the right low beam headlight;

(b) a harness unit connected to all the switches in said blackout panel of the emergency vehicle; and

(c) a control unit connected to said harness unit and to the lighting system of a vehicle;

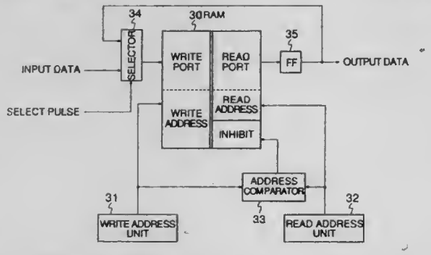
wherein when any of the first, second and third emergency light switches is selected, power to the blackout switches for the brake and backup lights, running lights, interior dome light, digital radio display light, digital heater display light, low beam headlights, and the sneak lights is simultaneously interrupted and stay off until the power is restored by a reset means with the exception of the first emergency light switch deactivating the interior dome light.

5,644,291
OVERLAPPING STROBE FLASH PATTERN
Jacek J. Jozwik, Richton Park, Ill., assignor to Federal Signal Corporation, University Park, Ill.
Continuation-in-part of Ser. No. 434,237, May 4, 1995, abandoned. This application Jun. 22, 1995, Ser. No. 493,684
Int. Cl.[6] B60Q *1/00*
U.S. Cl. 340—472 **19 Claims**



1. An emergency signalling system comprising: two or more light sources emitting light; a modulator coupled to the light sources for modulating the light from each of the sources between relatively low and high states of brightness to create a visual pattern from each of the light sources of cyclically flashing light, a controller connected to the modulator for controlling transitions of the light from one of the states to the other, and the controller including means for synchronizing the flashing lights from the two or more light sources such that the transition of brightness from the high to the low state in one of the light sources appears to visually overlap the transition of brightness from the low to the high state in another of the two or more light sources.

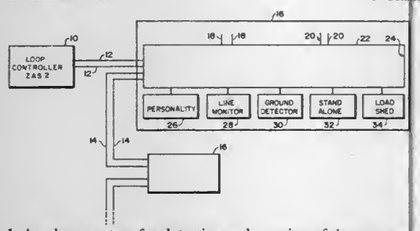
5,644,292
ALARM TERMINATION APPARATUS
Aya Suzuki; Toshiyuki Sakai, and Yasutaka Yamagata, all of Kawasaki, Japan, assignors to Fujitsu Limited, Japan
Filed Sep. 27, 1994, Ser. No. 313,456
Claims priority, application Japan, Mar. 15, 1994, 6-043490
Int. Cl.[6] G08B *29/00*
U.S. Cl. 340—506 **7 Claims**



1. An alarm termination apparatus of a data communication system in which a plurality of parallel inputs from a plurality of channels are received, alarm bits from the parallel inputs are processed, and the processed alarm bits are inserted into a plurality of parallel outputs, said apparatus comprising;
- a bi-directionally accessible random access memory for storing the alarm bits at memory locations, wherein said memory includes a plurality of write ports to which the alarm bits are written, a plurality of read ports from which the alarm bits are read, and a read inhibit port;
- a flip-flop circuit, having an input connected to one of said read ports of said memory and an output connected to an output transmission line, for temporarily storing a first alarm bit read from said one of said read ports and for outputting said first alarm bit to said output transmission line; and
- a selector, having an input connected to an input transmission line, an input connected to said output of said flip-flop circuit, and an output connected to one of said write ports of said memory at one of said memory locations corresponding to said one of said read ports, for receiving a second alarm bit from said input transmission line and for receiving said temporarily stored first alarm bit from said output of said flip-flop circuit, said selector selectively outputting one of said second alarm bit and said first alarm bit to one of said write ports of said memory in accordance with a value of a select pulse, said select pulse being supplied from the data communication system to another input of said selector;

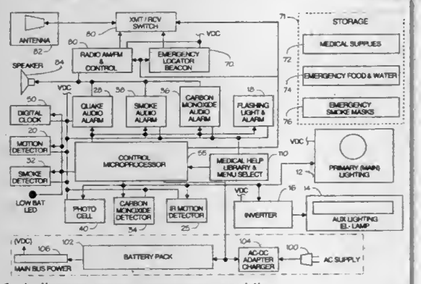
wherein said temporary storing of said first alarm bit from said memory by said flip-flop circuit and said selective outputting of one of said first alarm bit and said second alarm bit to the memory by said selector are controlled to sequentially take place.

5,644,293
GROUND FAULT DETECTION WITH LOCATION IDENTIFICATION
Robert W. Right, Huntington, Conn.; Jan A. Braam; John P. Hewlin, both of Bradenton, Fla., and Rick A. Wolf, Sarasota, Fla., assignors to General Signal Corporation, Stamford, Conn.
Filed May 16, 1995, Ser. No. 441,811
Int. Cl.[6] G08B *29/00*
U.S. Cl. 340—507 **6 Claims**



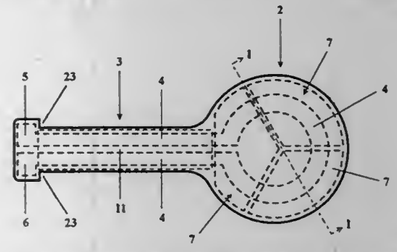
1. An alarm system for detecting and warning of the presence of various alarm conditions at transponder units located in a plurality of respective zones, comprising:
- a loop controller having a control panel and plurality of supply lines extending to said transponder units;
- a module, within each of said transponders, connected to said plurality of supply lines, said module being capable of initiating communication of the conditions in its respective zone to said loop controller;
- a plurality of circuits coupled to said module, said circuits including devices connected by field wiring; and,
- first means for detecting a ground fault, including means for identifying at the control panel a particular location of a field wiring ground fault within a given transponder so as to expedite the repair of a ground fault condition.

5,644,294
RESCUE SUPPORT APPARATUS
Ronald J. Ness, 30041 Del Mar Ct., Temecula, Calif. 92592
Filed Aug. 13, 1996, Ser. No. 696,302
Int. Cl.[6] G08B *21/00*
U.S. Cl. 340—540 **12 Claims**



1. A disaster support apparatus providing:
- an enclosure, and in the enclosure;
- a circuit providing, in operational interconnection, a primary means for illumination;
- an auxiliary means for illumination;
- a means for sensing an ambient lighting level;
- a means for detecting motion of the enclosure;
- a means for air monitoring;
- a means for sensing motion of objects near the apparatus;
- an audible alarm means;
- a means for wave energy wireless signal propagation;
- a means for wave energy wireless signal reception;
- a means for audible presentation of recorded medical advice;
- a portable means for providing electrical power to the circuit for operation thereof, and;
- a microprocessor adapted to control the circuit such that with the ambient lighting level below a designated level as determined by the ambient lighting level sensing means, and with a sensing of an object near the apparatus, the auxiliary illumination means is energized, and further, with a gas level of a selected gas detected above a designated level by the air monitoring means, or with a motion of the apparatus, having a magnitude above a designated level, being sensed by the enclosure motion sensing means, or with smoke being detected by the air monitoring means, an audible alarm is produced by the audible alarm means, and a wave energy alarm signal is transmitted;
- and the apparatus further including a means for storing medical and sustenance supplies;
- and a garb means for excluding poisonous gases during breathing.

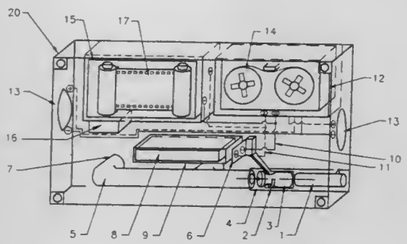
5,644,295
SECURITY DEVICE
Raymond Edwin Connolly, Cedar Hall, and Jonathan James Whittington Griffiths, Bristol, both of United Kingdom, assignors to Permasign Limited, Bristol, United Kingdom
Filed Sep. 5, 1995, Ser. No. 523,473
Claims priority, application United Kingdom, Sep. 5, 1994, 9417822; Dec. 20, 1994, 9425648
Int. Cl.[6] G08B *13/14*
U.S. Cl. 340—568 **21 Claims**



1. A security device for fixing to a surface to allow relative movement of the device and the surface to be detected, the device comprising:
- a substrate having a fixing portion by which the device may be fixed to the surface;
- an adhesive layer for fixing the fixing portion to the surface; and
- circuit means defining a circuit between two locations on the device and having predetermined electrical characteristics, at least part of the circuit means being located between the substrate and the adhesive layer and having in a first region a greater adhesion with the substrate than with the adhesive layer and in a second region a greater adhesion with the adhesive layer than with the substrate so that when the device is fixed to the surface by said adhesive layer, relative movement of the substrate and the surface disrupts the circuit means by measurably changing said predetermined electrical characteristics.

5,644,296
A-1-2-3, BODY GUARD ALARM
Marvin Leon Miller, 3309 Barton Ave., Richmond, Va. 23222
Filed Jan. 25, 1994, Ser. No. 186,375
Int. Cl.[6] G08B *23/00*
U.S. Cl. 340—573 **3 Claims**

1. A self-contained A-1-2-3 Body Guard Alarm that simultaneously activates 3 functions by the push of a single button, causing: a color dye to spray out on an attacker, a built-in camera



to cause pictures to be taken of the attacker, and delivery of a pre-recorded voice through activation of a built-in cassette player.

5,644,297

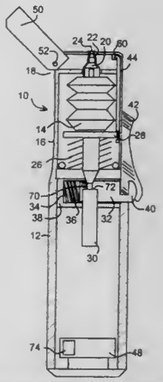
PERSONAL PROTECTION DEVICE

J. Roger Masi, 55 State St., Hackensack, N.J. 07601, and William F. Hall, 158 Harvest La., Lincoln Park, N.J. 07035

Continuation-in-part of Ser. No. 280,392, Jul. 26, 1994, Pat. No. 5,517,180. This application May 14, 1996, Ser. No. 645,810

Int. Cl.[6] G08B *23/00*

U.S. Cl. 340—573 **19 Claims**



1. A personal protection device, said personal protection device comprising:

a body section, said body section having a first end and a second end, said body section having an container section proximate said first end,

a mixing area, said mixing being proximate said first end and having a mixing nozzle extending trough said first end,

a fluid container, said fluid container resting on a movable container base and having a nozzle extending into said mixing area,

compression means, said compression means being positioned proximate said container base,

locking means, said locking means maintaining said compression means in a non-compressed position,

trigger means, said trigger means being proximate said locking means,

a light, said light being proximate said first end,

a battery receiving area, said battery receiving area being proximate said locking means,

alarm means,

electronic means, said electronic means being connected to said battery receiving area, said trigger means, said alarm means and said light,

movable safety means, said movable safety means being proximate said trigger means, preventing access to said trigger means when in the unarmed position and allowing access to said trigger means when in the armed position,

safety cap, said safety cap being held in the unarmed position by a reset bar, said reset bar being in contact with said compression means,

wherein placing said safety means in the armed position and depressing said trigger means releases said locking means and enables said compression means to compress said container and release said safety cap, thereby expelling under force the contents of said container into said mixing area and out of said protection device.

5,644,298

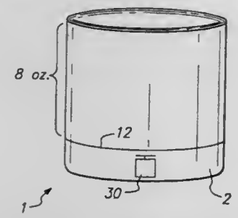
DRINKING CONTAINER WITH SERVING COUNTER, AND METHODS OF CONSTRUCTING AND UTILIZING SAME

Ruth M. Brooks, and Chrystal L. Brooks, both of 9439 Oak St., Taylor, Mich. 48180

Filed Sep. 28, 1995, Ser. No. 534,932

Int. Cl.[6] G08B *21/00*

U.S. Cl. 340—612 **17 Claims**



1. A fluid consumption monitoring device, comprising:

means for indicating a volume of fluid which has been consumed in a predetermined period of time;

said indicating means being operably associated with a drinking container;

said indicating means detects an amount of fluid in said drinking container; and

said indicating means comprises sensing means for substantially automatically determining when said drinking container contains a serving of fluid, memory means, electrically connected to said sensing means, for storing a number of times when said drinking container contains a serving of fluid during the predetermined period of time, and a means, electrically connected to said memory means, for displaying the number of times that said drinking container contained a serving of fluid during the predetermined period of time.

5,644,299

ULTRASONIC MATERIAL LEVEL MEASUREMENT

William T. Cruickshank, Port Huron, Mich., assignor to Bindicator Company, Port Huron, Mich.

Continuation-in-part of Ser. No. 99,135, Jul. 29, 1993, abandoned. This application Jun. 8, 1994, Ser. No. 255,390

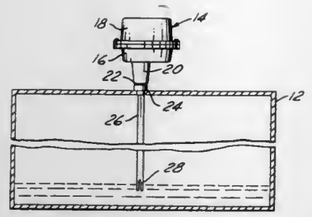
Int. Cl.[6] G08B *21/00*

U.S. Cl. 340—617 **14 Claims**

1. Apparatus for indicating level of material comprising:

means for operatively coupling a pair of ultrasonic transducers to a space for receiving the material such that energy transmitted between said transducers traverses said space,

means for applying electrical signals to one of said transducers so that said one of said transducers radiates into said space toward the other of said transducers ultrasonic energy that continuously sweeps back and forth between a high frequency range at which energy is transmitted through said space and



any material in said space between said sensors and a low frequency range at which energy is transmitted between said sensors through said operatively coupling means independent of said space and any material in said space between said sensors,

means responsive to energy received at said other transducer at said high frequency range for indicating presence of material in said space between said transducers, and

means responsive to energy received at said other transducer at said low frequency range for indicating operative condition of said apparatus including said transducers independent of presence of material in said space between said transducers.

5,644,300

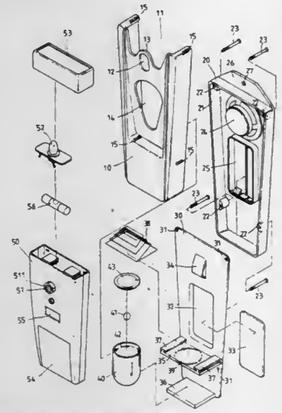
SEISMOSCOPIC DETECTOR

Yea-Ling Lin, 58, Ma Yuan West St., Taichung, Taiwan

Continuation-in-part of Ser. No. 535,329, Sep. 27, 1995, abandoned. This application May 24, 1996, Ser. No. 653,424

Int. Cl.[6] G08B *21/00*

U.S. Cl. 340—690 **1 Claim**



1. A seismoscopic detector comprising:

a front casing;

a rear casing having a shape corresponding to a shape of said front casing;

an upper opening formed on said front casing;

an undulate upper edge formed on said front casing;

a positioning hole formed on an upper portion of said front casing adjacent to said undulate upper edge;

a window formed on a center of a front surface of said front casing;

a plurality of threaded holes formed on said front casing;

said rear casing having four side plates to support a positioning plate;

an inner surface of each of said side plates having at least one lobe;

each of said lobes having a threaded hole matching a corresponding threaded hole of said front casing;

a cell chamber and a buzzer disposed in said rear casing;

an upper plate extending from said rear casing;

said positioning plate having a plurality of through holes matching said corresponding threaded holes of said front casing;

a plurality of fasteners passing through said corresponding threaded holes of said rear casing, said corresponding through holes of said positioning plate and said corresponding threaded holes of said front casing;

a slot matching said cell chamber and an elastic plate formed on said positioning plate;

said slot covered by a cell cover;

an upper clamp plate disposed at a lower portion of said positioning plate perpendicularly;

a lower clamp plate disposed at a bottom of said positioning plate perpendicularly;

a recess formed under said upper clamp plate;

two opposite clipping blocks disposed at two opposite side edges of said upper clamp plate;

a spring disposed between said two clipping blocks;

a cup disposed between said upper clamp plate and said lower clamp plate;

an inner flange disposed on an upper rim of said cup to receive a sound sensor;

a steel ball placed in said cup;

a flashlight disposed on said spring;

wherein said steel ball is shaked to bump said cup to produce a sound wave while an earthquake occurs, and said sound sensor senses said sound wave to initiate said buzzer.

5,644,301

Patent Not Issued For This Number

5,644,302

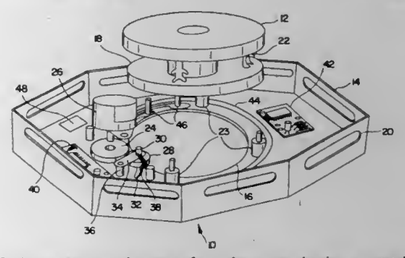
DEVICE FOR REMOTELY CHANGING THE SET TEMPERATURE OF A THERMOSTAT

Najib Hana, 3 Buckboard Dr., Cumberland, R.I. 02864, and Musa Jouaneh, Kingston, R.I., assignors to Najib Hana, Cumberland, R.I.

Filed Dec. 27, 1994, Ser. No. 364,614

Int. Cl.[6] H04Q *1/00*

U.S. Cl. 340—825.06 **9 Claims**



1. A remote control system for a thermostat having a rotatable dial which dial controls the temperature settings which comprises:

a housing joined to the thermostat;

a control circuit within the housing to receive an input signal from a remote control device and to output a signal;

drive means secured within the housing and in electrical communication with the control circuit, the drive means comprising a stepping motor and a first friction drive wheel which

engages and rotates the thermostat dial a predetermined amount when a signal is received by the control circuit, the first friction drive wheel being biased into contacting engagement with the thermostat dial; and

means engaged to the first friction drive wheel within the housing and extending exteriorly of the housing to disengage the drive wheel from the thermostat dial whereby the thermostat dial may be manually rotated.

5,644,303

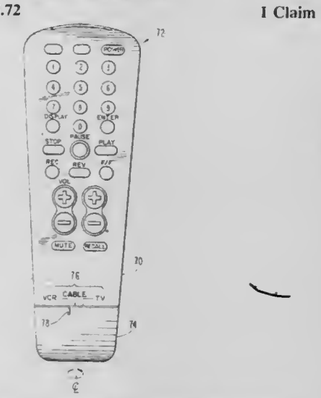
SPECIALIZED SHAPED UNIVERSAL REMOTE COMMANDER

Richard Gioscia, Mahwah, N.J., assignor to Sony Corporation, Tokyo, Japan, and Sony Electronics, Inc., Park Ridge, N.J.

Continuation of Ser. No. 69,879, Jun. 1, 1993, abandoned. This application Jan. 26, 1995, Ser. No. 379,090

Int. Cl.[6] H04Q *1/00*

U.S. Cl. 340—825.72 **1 Claim**



1. A universal remote control unit for controlling operations of a plurality of electronic apparatus, comprising:

an elongate main body element having a shape and size for being gripped in a hand of a user, the shape being wider at an upper end than at a lower end in a first cross section and in a second cross section orthogonal to the first cross section the shape being narrower at the upper end than at the lower end;

a flat bottom portion rotatably attached to the main body element at the lower end, so that the main body element stands upright on a flat surface;

a keypad arranged on the main body element and having a plurality of switches for actuation by the user of the remote control unit;

programmable memory for storing command protocols for the plurality of electronic apparatus;

a selector switch for selecting functions of the plurality of electronic apparatus being controlled, the selector switch being mounted inside the main body element and being mechanically connected for actuation by movement of the flat bottom portion; and

control signal transmitter means for transmitting control signals to the plurality of electronic apparatus being controlled in response to actuation of one of the plurality of switches of the keypad, wherein the control signals are based on the command protocols stored in the programmable memory and the selector switch is actuated by the user of the remote control unit rotating the flat bottom portion relative to the main body element.

5,644,304

AUTOMATIC CONTROL SYSTEM OF LIGHTS IN A SERIES CIRCUIT ILLUMINATION PLANT, IN PARTICULAR LIGHTS FOR AIRPORT SIGNALLING

Remo Pavarotti, Via Bernini 36, I-27045, Casteggio, Province of Pavia, and Umberto Cazzani, Via Verdi 2, I-28049 Stresa, Province of Novara, both of Italy

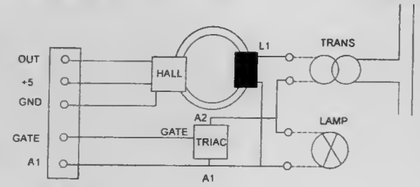
PCT No. PCT/EP93/01920, § 371 Date Jan. 19, 1995, § 102(e) Date Jan. 19, 1995, PCT Pub. No. WO94/02919, PCT Pub. Date Feb. 3, 1994

PCT Filed Jul. 20, 1993, Ser. No. 373,305

Claims priority, application Italy, Jul. 22, 1992, MI92A1773

Int. Cl.[6] B64F *1/18*

U.S. Cl. 340—953 **23 Claims**



1. In an automatic control system for the lights of an illumination plant in a series circuit, in particular for airport signalling lights, physically separated from the work circuit feeding said lights and galvanically separated from the latter, comprising:

a computer;

several Main Stations each containing several Main Modules, each controlling several Remote Modules which check and act on a single airport light, each of said Main and Remote Modules comprising firmware boards;

a full duplex data transmission network linking said computer with said Main Stations;

the improvement including: each Remote Module has externally two pairs of electric terminals of which one said pair is connected to the secondary of an insulating transformer making part of said work circuit and the other pair is connected to a light or a group of lights being controlled, said two pairs of electric terminals being connected to each other by electrical leads, wherein connected in series to one of the electrical leads is a coil which is magnetically coupled to a Hall sensor of the Remote Module; and further including an electronic device with controlled conduction having two conducting terminals and a control terminal, each conducting terminal connected with one of said electric leads while the control terminal is connected to circuitry which connects said electronic device magnetically to internal circuitry of the Remote Module itself.

5,644,305

HIGH-EFFICIENCY ENCODING APPARATUS AND HIGH-EFFICIENCY DECODING APPARATUS

Sadayuki Inoue, and Junko Ishimoto, both of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 29, 1994, Ser. No. 282,570

Claims priority, application Japan, Jul. 30, 1993, 5-208348; Oct. 18, 1993, 5-284519; Nov. 16, 1993, 5-311141; Jan. 17, 1994, 6-17787; Apr. 28, 1994, 6-92705; Apr. 28, 1994, 6-92706; Jun. 21, 1994, 6-139030

Int. Cl.[6] H03M *7/40*

U.S. Cl. 341—67 **4 Claims**

EOB'	NUMBER OF 2 AFTER EOB	SIGN BIT OF 2

1. A high-efficiency encoding apparatus which reduces the amount of data by applying high-efficiency encoding to digital data organized into blocks, comprising:

data dividing means for dividing the digital data into run length data and coefficient data through 1-dimensional scanning and run-length encoding employing a value other than 0 as the run;

first encoding means for further applying run-length encoding to the divided run-length data by employing 0 as the run;

second encoding means for further applying run-length encoding to the divided coefficient data by employing 0 as the run;

first variable-length encoding means for applying variable-length encoding to said output of the first encoding means; and

second variable-length encoding means for applying variable-length encoding to the output of said second encoding means.

5,644,306

SYNTAX INDEPENDENT VARIABLE LENGTH CODER FOR DIGITAL VIDEO CODER

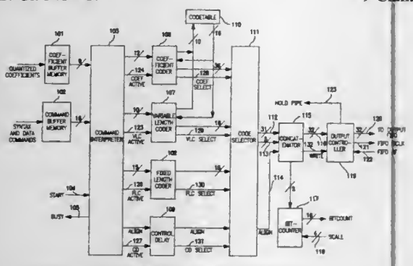
Wilson William Brent, Singapore, Singapore, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 2, 1995, Ser. No. 382,673

Claims priority, application Japan, Feb. 2, 1994, 6-011197

Int. Cl.[6] H03M *7/40*

U.S. Cl. 341—67 **9 Claims**



1. A digital video bitstream coder comprising:

a coefficient buffer memory for storing transform coefficients;

a command buffer memory for storing bitstream format and data commands;

a coefficient coder for encoding said coefficients as variable length bitsequences;

a variable length coder for encoding data in said data commands as variable length bitsequences;

a fixed length coder for encoding data in said data commands as fixed length bitsequences;

a command interpreter for reading said commands from said command buffer memory and for reading said coefficients from said coefficient buffer memory and for distributing data and control signals to said coefficient coder, said variable length coder, and said fixed length coder;

a codetable for storing codewords, said codewords means for defining said variable length bitsequences and length of said bitsequences;

a code selector for selecting either said variable length bitsequence from said coefficient coder, said variable length bitsequence from said variable length coder, said fixed length bitsequence from said fixed length coder, or a null bitsequence;

a concatenator for concatenating selected bitsequences to form a bitstream, said bitstream being a sequence of words of 1 or more bits in width;

a bitcounter for counting the number of bits concatenated to form said bitstream;

an output controller for outputting said bitstream to an output buffer memory; and

syntax ordering means for ordering said bitsequences such that said bitstream conforms to a desired bitstream syntax.

5,644,307

MODULATION METHOD, RECORDING METHOD, REPRODUCING METHOD, RECORDING AND REPRODUCING APPARATUS, RECORDING AND REPRODUCING METHOD, AND REPRODUCING APPARATUS

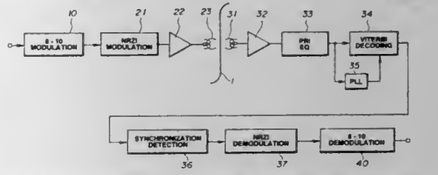
Shinichi Fukuda, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 10, 1995, Ser. No. 401,909

Claims priority, application Japan, Mar. 14, 1994, 6-042208

Int. Cl.[6] H03M *7/30*

U.S. Cl. 341—68 **15 Claims**



6. A recording method for a recording medium comprising steps of:

generating a waveform string corresponding to two successive, identical codes from a code series of continuous codes, each code having a codeword digital sum after NRZI modulating equal to 0, ±2 of (0,3;8,10;1) code, by selecting a code other than a code such that lengths between transition 1T, 4T, 1T, 3T, 1T, or 1T, 3T, 1T, 4T, 1T, T denoting a minimum length between transition, are generated, with the number of continuous 1's being not greater than N, N being 12 to 18, in the code series;

transforming 8-bit data to a 10-bit code using only the selected code;

NRZI modulating the transformed code series to generate a waveform string; and

recording the resulting waveform string into the recording medium.

5,644,308

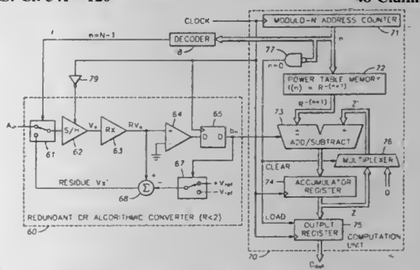
ALGORITHMIC ANALOG-TO-DIGITAL CONVERTER HAVING REDUNDANCY AND DIGITAL CALIBRATION

Donald A. Kerth, and Brian D. Green, both of Austin, Tex., assignors to Crystal Semiconductor Corporation, Austin, Tex.

Filed Jan. 17, 1995, Ser. No. 372,954

Int. Cl.[6] H03M *1/10*

U.S. Cl. 341—120 **48 Claims**



1. A method of converting an analog input signal to a digital output signal comprising the steps of:

a) operating an algorithmic converter having a loop gain substantially less than two to convert said analog input signal to a redundant digital code; and

b) operating a digital computation unit to convert said redundant digital code to a digital output signal by computing a polynomial of a radix, said radix being substantially equal to said

loop gain, wherein said redundant digital code specifies coefficients of said polynomial; and

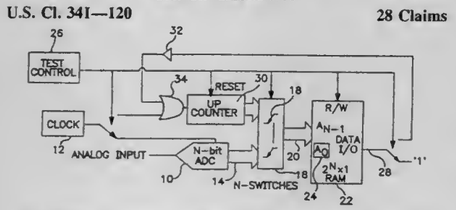
wherein said polynomial is computed by operating an adder/subtractor to accumulate powers of said radix in an accumulator register, and said redundant code specifies an accumulation operation performed for each power of said radix.

5,644,309

DIGITAL COMONENT TESTING APPARATUS AND METHOD

William David Bartlett, Melbourne Beach, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Apr. 10, 1995, Ser. No. 419,610
Int. Cl.[6] H03M *1/10*
U.S. Cl. 341—120 **28 Claims**



1. A method of testing an analog to digital converter comprising the steps of:

a) providing an analog-to-digital converter ("ADC") having a predetermined input signal range and an N bit digital output;

b) providing a memory of a length of 2^N cells;

c) applying to an input of the ADC an analog signal having a signal range at least as large as the predetermined input signal range;

d) clocking the ADC to generate a digital output signal;

e) storing at the address of the memory cell indicated by the digital output signal, a signal indicating "code present";

f) repeating steps (c)–(e) at least 2^N times; and

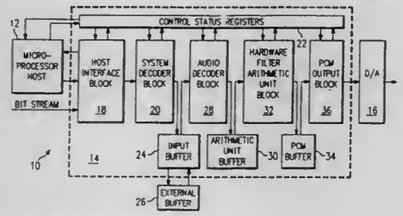
g) scanning the memory to determine the cells which do not have a "code present" signal.

5,644,310

INTEGRATED AUDIO DECODER SYSTEM AND METHOD OF OPERATION

Frank L. Laczko, Sr., Allen, Tex.; Gerard Benbassat, St. Paul de Vence, France; Kenneth R. Cyr, Carrollton, Tex.; Stephen H. Li, Garland, Tex.; Shiu Wai Kam; Karen L. Walker, both of Richardson, Tex., and Jonathan L. Rowlands, Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 21,007, Feb. 22, 1993. This application Jun. 7, 1995, Ser. No. 475,251
Int. Cl.[6] H04J *3/06*; H03M *1/00*
U.S. Cl. 341—143 **20 Claims**



12. An audio decoding system, comprising:

a host interface circuit operable to receive external signals including blocks of encoded data;

a system reference clock register for maintaining a copy of a reference time, wherein each of said blocks of encoded data is related to a presentation time stamp;

a plurality of functional processing blocks, each of said functional processing blocks operable to manipulate a block of said encoded data asynchronously to said system reference clock;

wherein one of said functional blocks is a system decoder circuit coupled to said host interface and operable to receive said encoded data, extract encoded audio data from said encoded data stream, and output said encoded audio data;

an input buffer circuit coupled to said system decoder and operable to receive, store, and output said encoded audio data;

wherein one of said functional blocks is an audio decoder circuit coupled to said input buffer circuit and operable to retrieve said encoded audio data from said input buffer circuit, decode said encoded audio data, and to output decoded audio data;

an arithmetic unit buffer circuit coupled to said audio decoder and operable to receive, store, and output said decoded audio data;

wherein one of said functional blocks is an arithmetic unit circuit coupled to said arithmetic unit buffer and operable to retrieve said decoded audio data from said arithmetic unit buffer circuit; dequantize, transform, and filter said decoded audio data, and to output filtered audio data;

an output buffer circuit coupled to said arithmetic unit circuit and operable to receive, store, and output said filtered audio data; and

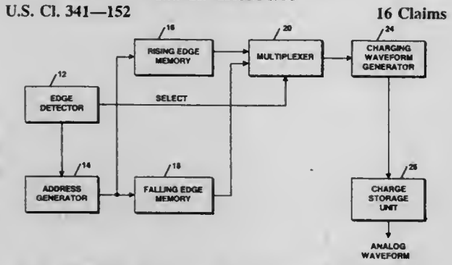
wherein one of said functional blocks is an output circuit coupled to said output buffer circuit and operable to retrieve said filtered data from said output buffer circuit synchronously with said system reference clock according to said presentation time stamp and to output said filtered data.

5,644,311

PULSE WIDTH MODULATION PULSE SHAPER

Ashfaq Choudhury, and Humphrey Gordon, both of Calgary, Canada, assignors to NovAtel Communications, Ltd., Calgary, Canada

Filed Jul. 7, 1995, Ser. No. 499,292
Int. Cl.[6] H03M *5/08*
U.S. Cl. 341—152 **16 Claims**



1. A system for converting an incoming multiple-level digital signal to analog waveform that includes shaped pulses, the system including:

A. a pattern detector for detecting a pattern in the digital signal;

B. an address generator for generating a sequence of N addresses in response to the detection of a pattern by the pattern detector;

C. a memory means containing code words, the memory means being addressed by the addresses generated by the address generator;

D. a charging waveform generator for generating a charging waveform that is associated with the code words that are retrieved from the addressed locations of the memory; and

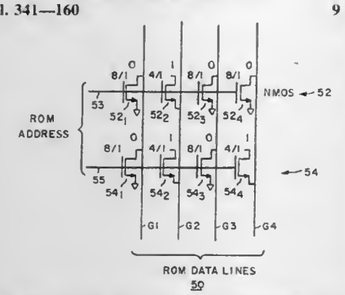
E. a charge storage unit for producing the analog waveform, the charge storage unit varying the amplitude of the analog waveform in accordance with the charging waveform produced by the charging waveform generator.

5,644,312

ROM ENCODER CIRCUIT FOR FLASH ADC'S WITH TRANSISTOR SIZING TO PREVENT SPARKLE ERRORS

Kenneth T. Deevy, and Philip Quinlan, both of Limerick, Ireland, assignors to Analog Devices, Inc., Norwood, Mass.

Filed Nov. 30, 1994, Ser. No. 346,753
Int. Cl.[6] H03M *7/02*; *1/00*
U.S. Cl. 341—160 **9 Claims**



1. A ROM encoder stage for use in a flash analog-to-digital converter, the ROM encoder stage receiving as inputs a plurality of outputs from a "one-of" circuit, comprising:

a ROM having a plurality of n-bit locations, each location containing n bit cells storing one bit each and addressable by one of the inputs and, when addressed, driving a corresponding bit line in accordance with the bit value stored in said bit cell;

each ROM bit cell having a MOS transistor with a source-drain path connected between the corresponding bit line and a voltage representing a logic value, and a gate electrode connected to receive the input addressing the ROM location of the bit cell;

an output inverter connected to each bit line, said inverter having a trigger point such that if an input to the inverter is below the trigger point, the inverter supplies a logical high output, but if the input to the inverter is above the trigger point, the inverter supplies a logical low output; and

the MOS transistors being sized such that when first and second locations are enabled concurrently and the drain-source path of a MOS transistor in the first location and the drain-source path of a MOS transistor in the second location are connected to the same bit line, with the drain-source path of the first transistor also connected to a logic low level and the drain-source path of the second transistor also connected to a logic high level, the first transistor will pull the bit line to a voltage below the trigger point of the inverter.

5,644,313

REDUNDANT SIGNED DIGIT A-TO-D CONVERSION CIRCUIT AND METHOD THEREOF

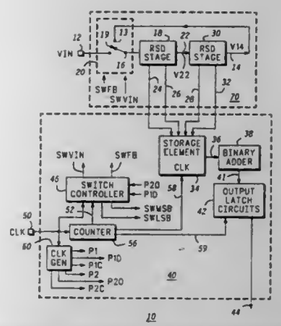
Patrick L. Rakers, Schaumburg, Ill., and Douglas A. Garrity, Gilbert, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 5, 1995, Ser. No. 463,818
Int. Cl.[6] H03M *1/40*
U.S. Cl. 341—163 **22 Claims**

16. A redundant signed digit (RSD) analog-digital converter, comprising:

a first switching circuit having a first terminal coupled for receiving an input voltage, said first switching circuit operating in response to a control signal for connecting said first terminal to a second terminal and for connecting said second terminal to a third terminal;

a first RSD stage having an input coupled to said second terminal of said first switching circuit, a first output for providing a first residue voltage, and second and third outputs for providing first and second data signals, respectively, as a digital representation of a signal applied to said input of said first RSD stage; and



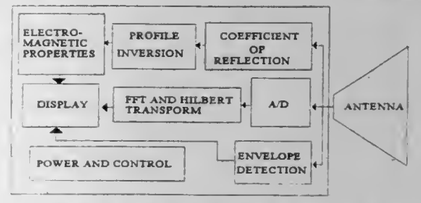
a second RSD stage having an input coupled to said first output of said first RSD stage, a first output for providing a second residue voltage to said third terminal of said first switching circuit, and second and third outputs for providing third and fourth data signals, respectively, as a digital representation of said first residue voltage.

5,644,314

PORTABLE GEOPHYSICAL SYSTEM USING AN INVERSE COLLOCATION-TYPE METEHODOLOGY

Falih H. Ahmad, Clinton, Miss., and James A. Evans, Tallulah, La., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 29, 1996, Ser. No. 625,080
Int. Cl.[6] G01S *13/04*
U.S. Cl. 342—22 **6 Claims**



1. A portable processor based system for detecting an object with a transmitting/receiving signal means for transmitting an electromagnetic wave and receiving as an observation signal a reflected wave which is an electromagnetic wave returned from the object with input means and output display means comprising: the transmitting signal means including:

a means for producing a pulse repetition frequency carrier signal that includes an oscillator thereby producing a stable output signal that is a square wave;

a means for producing a carrier generating signal that includes a circuit with under-damped oscillator with narrow band filtering capability thereby producing an exponentially decaying dc signal along with a superimposed exponentially decaying sinusoidal carrier signal, the carrier generating signal is gated ON only during transmission of a desired code thereby minimizing system power usage;

a means for producing a phase shifting of the a modulated carrier signal with the desired code that is a digitally controlled phase shift keying modulator unit;

a means for amplifying the transmitted modulated carrier signal towards the observed objects through a narrow beam-width antenna;

the receiving signal means including:

a narrow beam-width antenna;

a means for observation signal envelope detection which includes a positive-intrinsic-negative diode for detecting this envelope along with a means for cross-correlating the

envelope of the observation signal with the desired code used thereby producing a high-resolution time compressed version of the observation signal envelope that generates a base band signal characteristic of the object observed for output display by the by the output means;

a means for generating an input signal to a means for performing a collocation-type inversion method from the observation signal which is first digitized at multiples of the carrier signal's rate using an analog to digital (A/D) convertor;

a means for performing real-time inversion and generation of desired electromagnetic profiles that includes the processor for implementing the collocation-type inversion method wherein the input signal is inputted into the means for performing the inversion method that: i) generates polynomials and its' derivatives from the input signal; if) generates a set of algebraic equations with unknowns being the desired profiles; and iii) solves the set of algebraic equations for the unknowns which produces the desired electromagnetic profiles of the object being observed;

a means for frequency domain analysis of the A/D signals generated using a Fourier and Hilbert transform unit for material classification of the object; and

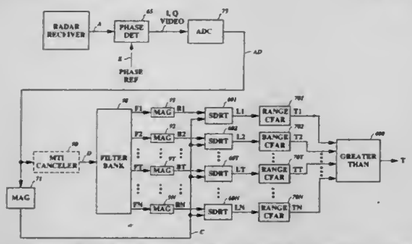
the display means outputs electromagnetic profiles of the object observed of the objects permittivity, conductivity, permeability and susceptibility.

5,644,315

DOPPLER RATIO DETECTION RADAR WITH RANGE CFAR

Maurice W. Long, 1036 Somerset Dr. NW., Atlanta, Ga. 30327

Filed Oct. 27, 1995, Ser. No. 549,183
Int. Cl.[6] G01S *7/292;7/34*
U.S. Cl. 342—93 **20 Claims**



1. A radar detection system for processing at a plurality of range cells a received signal having magnitude from a radar receiver, said detection system having a range CFAR and means for selectively rejecting fixed and propeller clutter signals input to said CFAR, wherein said clutter signals are selected for rejection using both ratio and amplitude sensing means, comprising:

doppler processor means for frequency filtering the received signal and providing at least one filtered signal in response to the magnitude of said received signal;

means of providing a first signal having doppler frequencies at and near zero frequency with magnitude in response to the magnitude of said received signal;

means of providing a second signal with magnitude in response to the magnitude of a filtered signal of said at least one filtered signal in response to the magnitude of said received signal, wherein the second signal providing means passes doppler frequencies appreciably above zero and suppresses doppler frequencies at and near zero;

means of providing a level sensor input signal having magnitude in response to said received signal; and

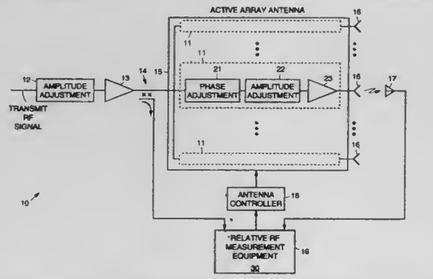
selective doppler ratio threshold means for passing a selective doppler ratio thresholder output signal except at range cells where both the ratio of the second signal magnitude to the first signal magnitude is less than a predetermined value and the magnitude of the level sensor input signal is of at least an intermediate level relative to its magnitudes in neighboring range cells, wherein said selective output signal is a fixed and propeller clutter rejected CFAR input signal.

5,644,316

ACTIVE PHASED ARRAY ADJUSTMENT USING TRANSMIT AMPLITUDE ADJUSTMENT RANGE MEASUREMENTS

Gib F. Lewis, Manhattan Beach, and Eric N. Boe, Long Beach, both of Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Filed May 2, 1996, Ser. No. 642,093
Int. Cl.[6] G01S *7/40*
U.S. Cl. 342—174 **4 Claims**



1. An RF drive leveling adjustment method of use with an active phased array antenna system having a transmit module comprising a transit RF drive amplifier, said method comprising the steps of:

calibrating the transmit RF drive amplifier for a predetermined transmit duty factor and pulse repetition frequency;

making relative RF measurements of transmit amplitude adjustment range of the transmit module for a number of duty factors and pulse repetition frequencies spanning operating conditions to be encountered by the system;

determining correction factors for RF drive levels of the transmit RF drive amplifier such that a constant amplitude adjustment range of the transmit module is maintained; and

adjusting the RF drive level of the transmit RF drive amplifier using the correction factors,

wherein the active phased array antenna system comprises transmit/receive modules that share an attenuator for both transmission and reception and wherein the step of determining the correction factors for the transmit/receive modules comprises computing the correction factors using the equation:

$$G_{max,R}/G_{min,R}=A_R, \text{ and } G_{max,T}/G_{min,T}=A_T=A_R/A_{comp}, (G_{max,R}/G_{min,R})/(G_{max,T}/G_{min,T})=A_R/A_R/A_{comp}=A_{comp}$$

=transmit gain compression, A_{comp}=a constant for fixed operating conditions,

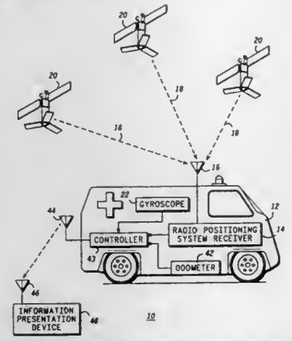
where: $G_{max,T}$ is the maximum elemental gain when transmitting, $G_{min,T}$ is the minimum elemental gain when transmitting, A_T is the transmit amplitude adjustment range. $G_{max,R}$ is the maximum elemental gain when receiving, $G_{min,R}$ is the minimum elemental gain when receiving, A_R is the receive amplitude adjustment range.

5,644,317

DUAL POSITIONING LOCATION SYSTEM

Richard James Weston, Mesa, and Bruce Edward Geren, Chandler, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 27, 1995, Ser. No. 411,354
Int. Cl.[6] G01S *5/02;3/02;* **G01C** *21/00*
U.S. Cl. 342—357 **19 Claims**



1. A method for operating a location system having a gyroscope with inner and outer gimbals and having a radio positioning system receiver, said method comprising the steps of:

obtaining receiver signals from said radio positioning system receiver and gyroscope signals from said gyroscope;

identifying a speed for said location system;

computing a compensation factor in response to said receiver signals, said computing step being performed when said receiver signals define a current heading for said radio positioning system receiver wherein said computing step is performed when said identifying step identifies said speed as being greater than a predetermined minimum speed; and

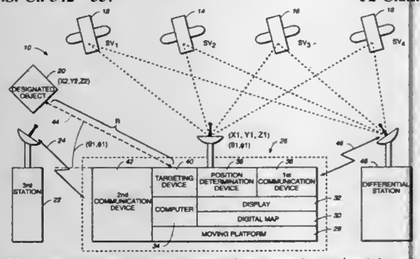
determining, when receiver signals do not define a current heading, a position in response to said gyroscope signals and in response to said compensation factor.

5,644,318

SATPS DYNAMIC SURVEYING FROM A MOVING PLATFORM

James M. Janky, Los Altos; Valentine L. Denninger, Sunnyvale; James Edwin Jones, Jr., San Jose; Michael D. Murphy, Sunnyvale, and Boris G. Tankhilevich, Walnut Creek, all of Calif., assignors to Trimble Navigation Limited, Sunnyvale, Calif.

Filed Feb. 2, 1996, Ser. No. 595,818
Int. Cl.[6] G01S *5/02;* **H04B** *7/185*
U.S. Cl. 342—357 **52 Claims**



52. A method for dynamic targeting a predetermined location with coordinates (X2, Y2, Z2) from a moving platform, said method comprising the steps of:

determining the location coordinates (X1, Y1, Z1) of said moving platform using a position determination means;

receiving the differential corrections from a SATPS differential station employing a first communication means;

continuously processing data including coordinates (X2, Y2, Z2) of said predetermined location and coordinates of said moving platform (X1, Y1, Z1) using a computer means in order to determine in real time the value R of the distance and the angular orientation coordinates (θ1, ϕ1) of the sighting line between said moving platform and said predetermined location; and

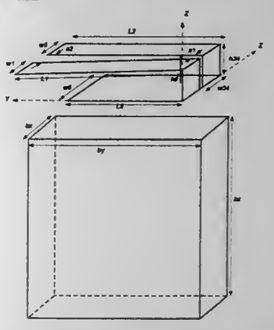
targeting said predetermined location with coordinates (X2, Y2, Z2) employing a targeting means that uses the value of the distance R and the angular coordinates (θ1, ϕ1) of the sighting line between said moving platform and said predetermined location.

5,644,319

MULTI-RESONANCE HORIZONTAL-U SHAPED ANTENNA

Yung Jinn Chen, Chi Shan; Hsueh-Jyh Li, Taipei; Ruey-Beei Wu, Taipei, and Dou-Ken Lee, Taipei, all of Taiwan, assignors to Industrial Technology Research Institute, Chutung, Taiwan

Filed May 31, 1995, Ser. No. 455,916
Int. Cl.[6] H01Q *1/24*
U.S. Cl. 343—702 **8 Claims**



1. A horizontal-U shaped antenna provided for application with a signal transmitting and receiving device, said antenna comprising:

a conductive base plate including two vertically side plates extending upwardly from one edge of said base plate;

two horizontal conductive antenna arms of unequal lengths each connected to a corresponding side plate extending horizontally over said base plate; and

said conductive base plate is further provided to be electrically insulated from said signal transmitting and receiving device whereby a plurality of resonance currents are induced in said conductive base plate, said vertical side plates and said horizontal conductive antenna arms to generate a plurality of antenna resonant frequencies.

5,644,320

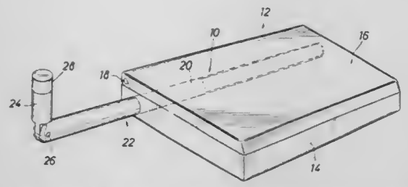
ANTENNA SYSTEM FOR A NOTEBOOK COMPUTER

Markku J. Rossi, Houston, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Continuation of Ser. No. 268,953, Jun. 30, 1994, abandoned. This application Dec. 13, 1995, Ser. No. 571,636
Int. Cl.[6] H01Q *1/24*
U.S. Cl. 343—702 **20 Claims**

1. A cellular notebook computer emitting electromagnetic interference power when in use, comprising

a display section,



a base section having a width and being pivotably connected with said display section, said display section and said base section when in the closed position providing a substantially parallelepiped exterior surface, and

an antenna assembly having an antenna end and a blocking end and having an antenna enclosure containing an antenna positioned adjacent said antenna end of said assembly, said antenna remaining in said enclosure when moved between a retracted storage position and an extended position, said antenna is positioned a length away from said exterior surface of said sections when said antenna is in the extended position for providing distance between said antenna and said electromagnetic interference power, said length said antenna is positioned away from said exterior surface is greater than half the width of said base section, said antenna being rotatable relative to said blocking end of said assembly when said antenna assembly is in the extended position.

5,644,321

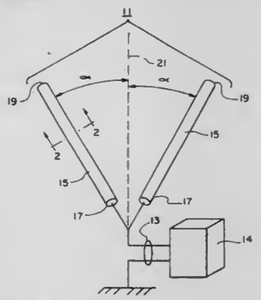
MULTI-ELEMENT ANTENNA WITH TAPERED RESISTIVE LOADING IN EACH ELEMENT

Glynda O. Benham, P.O. Box 633, Sterling, Mass. 01564

Continuation of Ser. No. 3,408, Jan. 12, 1993, abandoned. This application May 22, 1995, Ser. No. 445,910

Int. Cl.[6] H01Q *9/44*

U.S. Cl. 343—826 **13 Claims**



1. An antenna comprising

linear elements each having a base end and a distal end, the base ends of said linear elements being connected directly together and directly to a conductor of a transmission line, said linear elements being disposed about a median axis of said antenna and diverging outward from their base ends relative to said median axis, each of said linear elements having a resistance that varies non-linearly and essentially continuously along its length, said linear elements having essentially the same non-linearly and essentially continuously varying tapered resistive loading along their lengths and essentially the same impedances, and

a ground plane lying in a plane essentially normal to the median axis of said antenna, the ground plane being connected to another conductor of said transmission line so that said linear elements are fed in a common mode relative to the ground plane,

the linear elements together effecting a low standing wave ratio, a wide bandwidth achieved other than by differences in the impedances of the linear elements, and an omnidirectional radiation pattern.

5,644,322

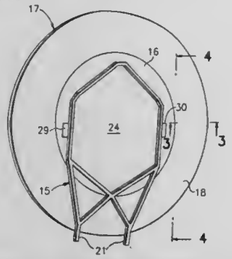
SPACECRAFT ANTENNA REFLECTORS AND STOWAGE AND RESTRAINT SYSTEM THEREFOR

George T. Hayes, Pleasanton, and Louis B. Brydon, San Carlos, both of Calif., assignors to Space Systems/Loral, Inc., Palo Alto, Calif.

Filed Jun. 16, 1995, Ser. No. 491,502

Int. Cl.[6] H01Q *15/20*

U.S. Cl. 343—915 **15 Claims**



1. A lightweight antenna reflector adapted to be attached to a spacecraft body, comprising a molded reflector panel having a parabolic surface for reflecting electromagnetic signals, said molded reflector panel comprising a normally flexible composite fiber-reinforced thin outer resin layer having a central area, and having a rigid lightweight central reinforcing core bonded to the rear surface of said central area, said rigid core having a high accuracy, fixed-curvature surface and having a dimension smaller than the outer dimension of the reflector panel whereby an outer annulus of the reflector panel, comprising the normally-flexible composite fiber-reinforced thin outer layer thereof, extends beyond the rigid core as a flexible annulus of the reflector panel which can be folded around a spacecraft body to which the reflector is attached while the central area of said normally-flexible thin outer layer reinforced and rendered rigid by said rigid reinforcing core to provide a high accuracy fixed curvature central reflective surface.

5,644,323

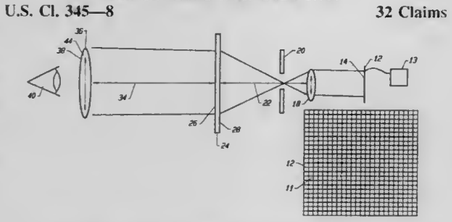
MINIATURE SYNTHESIZED VIRTUAL IMAGE ELECTRONIC DISPLAY

Alfred P. Hildebrand, Palo Alto, and Gregory J. Kintz, Mountain View, both of Calif., assignors to Siliscape, Inc., Palo Alto, Calif.

Filed Dec. 21, 1994, Ser. No. 361,035

Int. Cl.[6] G09G *5/00*; G02B *27/01*

U.S. Cl. 345—8 **32 Claims**



1. A synthesized virtual image electronic display comprising:

a microdisplay for forming a source object having an area less than about 100 mm^2;

a first stage magnification optic for magnifying the source object to produce a magnified real image;

an image synthesizing optic upon which the real image is projected, and

a second stage magnification optic for providing a magnified virtual image of the magnified real image projected on the image synthesizing optic;

wherein the first and second stage magnification optics provide a combined magnification of at least about 20.

5,644,324

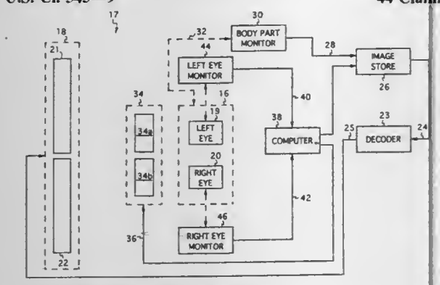
APPARATUS AND METHOD FOR PRESENTING SUCCESSIVE IMAGES

Francis J. Maguire, Jr., 33 Colby Dr., East Hartford, Conn. 06108

Filed Mar. 3, 1993, Ser. No. 25,975

Int. Cl.[6] G09G *5/00*

U.S. Cl. 345—9 **44 Claims**



1. A method, comprising the steps of:

providing, in response to a combined image and control signal (**11**), an image distance control signal (**3**) indicative of varying image distances, an image signal (**8**), and an image control signal (**9**);

providing, in response to the image signal (**8**) and the image control signal (**9**), successive input images (**4**);

providing, in response to the image distance control signal (**3**) and the successive input images (**4**), corresponding successive output images (**2**) at varying apparent distances for viewing along a visual axis (**6**) of an eye (**5**) of a viewer with correspondingly varying accommodation; and

monitoring (**44**, **46**) at least one eye of a pair of eyes (**19**,**20**) of the viewer (**16**) in an image space (**17**) for providing the image distance control signal (**36**) indicative of varying image distances.

5,644,325

DIGITAL TO ANALOG CONVERTER WITH IMPROVED OUTPUT LEVEL CONTROL

Sherman T. King, San Francisco; Niantsu Wang, and Guorjuh T. Hwang, both of Milpitas, all of Calif., assignors to AuraVision Corporation, Fremont, Calif.

Filed Dec. 12, 1994, Ser. No. 354,296

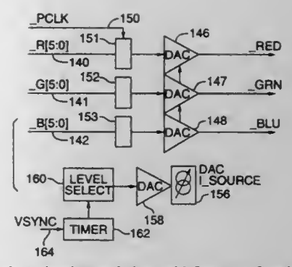
Int. Cl.[6] G09G *5/02*

U.S. Cl. 345—20 **10 Claims**

1. An image processing circuit for converting digital signals to analog signals for controlling a display device, said circuit comprising:

a first set of variable current generators connected to a common node via controllable switches, each of said controllable switches being controlled by a digital bit applied to a control terminal of a respective one of said controllable switches,

said first set of variable current generators, in conjunction with said controllable switches, comprising a D/A converter whose analog output corresponds to a digital input, wherein a magnitude of said analog output is dependent upon current levels generated by said first set of variable current generators; and



a level select circuit coupled to said first set of variable current generators for controlling output current levels of said variable current generators such that a magnitude of said analog output of said D/A converter is independently controllable by an output of said level select circuit irrespective of the values of digital bits applied to said controllable switches, so that said analog output of said D/A converter is not solely determined by said values of digital bits.

5,644,326

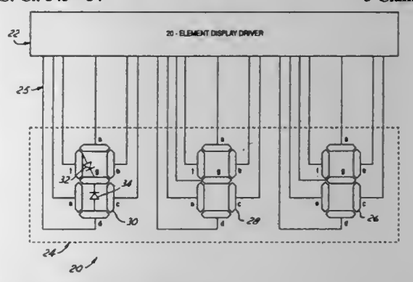
DISPLAY DEVICE WITH ELECTRICALLY INTERCONNECTED DISPLAY ELEMENTS

Mark William Lauzon, Southgate, and Charles Gerard Hellebuyck, Dearborn, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed May 4, 1995, Ser. No. 435,099

Int. Cl.[6] G09G *3/04*

U.S. Cl. 345—34 **3 Claims**



1. A display device comprising:

a display character comprising a plurality of display elements;

a first diode having a first anode and a first cathode, said diode electrically connected between two said display elements with said first anode coupled to one said display element and said first cathode coupled to another said display element; and

a second diode electrically coupling two elements; wherein

said display character is a seven-segment display character;

said second diode has a second anode and a second cathode;

said first diode is connected between elements "f" and "g" of said display character with said first anode coupled to element "f" and said first cathode coupled to element "g"; and

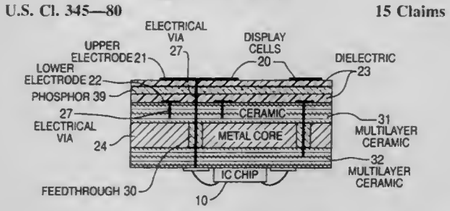
said second diode is connected between elements "d" and "g" of said display character with said second anode coupled to element "d" and said second cathode coupled to element "g".

5,644,327

TESSELLATED ELECTROLUMINESCENT DISPLAY HAVING A MULTILAYER CERAMIC SUBSTRATE

Lubomyr Stephen Onyskevych, Lawrenceville; Satyam C. Cherukuri, Middlesex; Ashok Narayan Prabhu, Mercer; P. Niel Yocom, Princeton, all of N.J., and Kenneth E. Salsman, Brush Prairie, Wash., assignors to David Sarnoff Research Center, Inc., Princeton, N.J.

Filed Jun. 7, 1995, Ser. No. 472,540
Int. Cl.[6] G09G *3/30*
U.S. Cl. 345—80 **15 Claims**



1. An electroluminescent display comprising:

a ceramic substrate having a first planar surface;

a plurality of electroluminescent cells mounted on said first planar surface;

a plurality of driver circuits for driving the plurality of electroluminescent cells; and

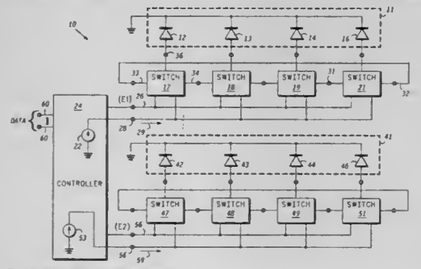
a plurality of connectors extending through said ceramic substrate which couple the plurality of electroluminescent cells to the plurality of driver circuits, each of the plurality of connectors comprising an insulating wall defining an insulated via through said ceramic substrate, said via being filled with a conductive material.

5,644,328

APPARATUS AND METHOD FOR OPERATING GROUPS OF LED DISPLAY PIXELS IN PARALLEL TO MAXIMIZE ACTIVE TIME

George W. Rhyne, Scottsdale, and Paige M. Holm, Phoenix, both of Ariz., assignors to Motorola, Schaumburg, Ill.

Filed Mar. 3, 1995, Ser. No. 398,270
Int. Cl.[6] G09G *3/32*
U.S. Cl. 345—82 **12 Claims**



7. A display comprising:

a first plurality of pixels organized as a first group of the display;

a first variable current source coupled to provide a first drive current to each pixel of the first plurality of pixels;

a second plurality of pixels organized as a second group of the display;

a second variable current source coupled to provide a second drive current to each pixel of the second plurality of pixels;

a controller for operating the first and the second plurality of pixels in parallel in response to data to be displayed by the first and second plurality of pixels, the controller having a first output that is a first enable signal coupled to each pixel of the first plurality of pixels to establish a first active time for each pixel of the first plurality of pixels, the first active time being approximately a frame time of the display minus a first quantity equal to a number of non-illuminated pixels of the first plurality of pixels multiplied by a second quantity equal to a minimum display time plus a minimum clock time all divided by a number of illuminated pixels of the first plurality of pixels; and

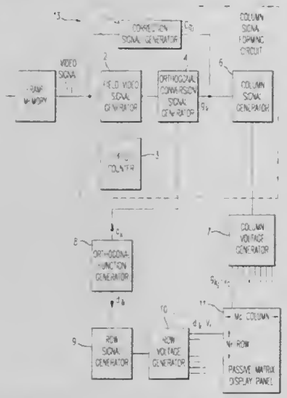
a second enable signal that is a second output of the controller coupled to each pixel of the second plurality of pixels to establish a second active time for each pixel of the second plurality of pixels, the second active time being approximately the frame time of the display minus a third quantity equal to a number of non-illuminated pixels of the second plurality of pixels multiplied by a fourth quantity equal to the minimum display time plus the minimum clock time all divided by a number of illuminated pixels of the second plurality of pixels.

5,644,329

DISPLAY APPARATUS AND A DATA SIGNAL FORMING METHOD FOR THE DISPLAY APPARATUS

Goro Asari, Yokohama, Japan; Temkar N. Ruckmongathan, Bangalore, India; Takeshi Kuwata, Yokohama, and Yutaka Nakagawa, Isehara, both of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Continuation of Ser. No. 197,883, Feb. 17, 1994, abandoned. This application Nov. 13, 1995, Ser. No. 556,633
Claims priority, application Japan, Feb. 19, 1993, 5-055146
Int. Cl.[6] G09G *3/36*
U.S. Cl. 345—89 **8 Claims**



1. A display apparatus in which light transmittance of a pixel selected by a scanning electrode and a data electrode is changed in response to a difference of voltages applied to the scanning electrode and the data electrode, said display apparatus comprising:

an input for receiving an input data signal, said input data signal taking on one of a first predetermined number of first gray shade levels;

an orthogonal function generator for generating an orthogonal function signal having substantial orthogonality;

a data signal forming circuit for operating the input data signal based on the orthogonal function signal generated from the orthogonal function generator, wherein the data signal forming circuit includes:

a field video signal converter for distributing signals for a single picture to a plurality of time-sequential sub-pictures, each sub-picture being displayed in one field on a time axis, and the field video signal converter further converting the input data signal corresponding to one of the first predetermined number of first gray shade levels into an output data signal corresponding to one of a second predetermined number of second gray shade levels for each field, wherein each second gray shade level is displayed by pulses whose heights change in response to the second gray shade level and the second predetermined number of second gray shade levels is less than the first predetermined number of first gray shade levels, and

an orthogonal conversion signal generator for effecting orthogonal conversion of the output data signal by the orthogonal function signal generated from the orthogonal function generator, the field video signal converter and the orthogonal conversion signal generator being connected in series; and

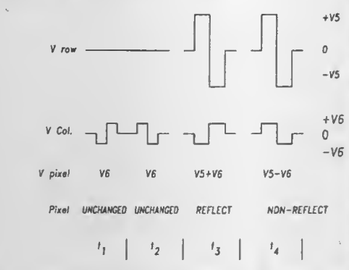
a correction signal generator for generating a correction signal to be included in the output data signal so that an effective voltage applied to a pixel in a non-selection time is substantially constant to any pixel, an effective voltage to a pixel in a selection time in each of the fields corresponding to one of said second gray shade levels.

5,644,330

DRIVING METHOD FOR POLYMER STABILIZED AND POLYMER FREE LIQUID CRYSTAL DISPLAYS

Clive Catchpole, Beverly Hills, Mich.; Haiji Yuan, Stow, and Minhua Lu, Kent, both of Ohio, assignors to Kent Displays, Inc., Kent, Ohio

Continuation of Ser. No. 288,831, Aug. 11, 1994, abandoned. This application Aug. 22, 1995, Ser. No. 517,991
Int. Cl.[6] G09G *3/36*
U.S. Cl. 345—95 **19 Claims**



17. A method of operating a cholesteric liquid crystal display device having a first substrate having a plurality of substantially parallel address lines disposed thereon, and a second substrate having a plurality of substantially parallel address lines disposed thereon, said first and second substrates operatively disposed in facing, parallel relationship so that said address lines on said first substrate are disposed at an angle with respect to the address lines of said second substrate to form a plurality of crossover points therewith, each crossover point defining a picture element, said method comprising the steps of:

providing a layer of a cholesteric liquid crystal material having periodic modulated optical structure that reflects light, disposed between said first and second substrates, said material being switchable between a transparent state in which said material is substantially transparent, and a reflecting state which reflects light, wherein said liquid crystal material reflects light due to the application of a first AC voltage level, and is transparent due the application of a second AC voltage level; said material having a first AC threshold voltage, V_1, for beginning transition from said reflecting state to said transparent state; a first saturation voltage, V_2, for driving of said display from said reflecting state to said transparent state; a second AC threshold voltage, V_3, for beginning transition from said transparent state to said reflecting state and a second AC saturation voltage, V_4, for driving said display to said reflecting state and wherein $V_1<V_2<V_3<V_4$;

applying a first AC voltage to at least one address line on said first substrate; said first AC voltage being between said second AC voltage level and said first AC voltage level; and

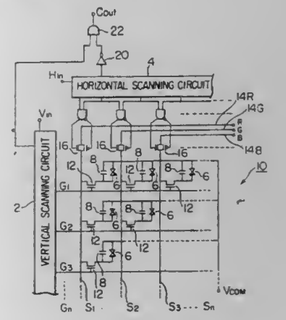
applying a second AC voltage to at least one address line on said second substrate, said second AC voltage being sufficient in amplitude when applied out of phase with said first AC voltage to switch said liquid crystal material into said reflecting state, and when applied in phase with said first AC voltage to switch said liquid crystal material to said transparent state, said second AC voltage being less than the second AC threshold voltage so as to prevent the liquid crystal material from changing from either the transparent state or the reflecting state and said second AC voltage being greater than $V_4-V_3/2$ and wherein $V_1>V_4-V_3/2$ whereby the effective range of useable address line voltage is expanded.

5,644,331

FLAT PANEL DISPLAY DEVICE AND METHOD OF INSPECTION OF SAME

Yoshikazu Hazama, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 20, 1994, Ser. No. 262,691
Claims priority, application Japan, Jun. 21, 1993, 5-149560
Int. Cl.[6] G09G *3/36*
U.S. Cl. 345—99 **13 Claims**



1. A flat panel display device comprising:

a substrate;

a pixel region comprised of a plural of picture elements formed on said substrate in a manner of a matrix array;

a vertical scanning circuit for outputting a selecting pulse and selecting a column of said picture elements of said pixel region in series, said scanning circuit formed on said substrate;

a horizontal scanning circuit for outputting a selecting pulse and selecting a row of said picture elements of said pixel region in series so as to provide picture signals to the selected column of said picture elements of said pixel region, said scanning circuit formed on said substrate;

a logic circuit for combining selecting pulses output from said vertical scanning circuit and horizontal scanning circuit, said logic circuit formed on said substrate; and

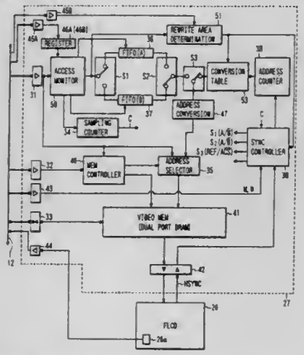
an inspection-use output terminal for outputting an inspection-use output signal obtained through said logic circuit, said inspection-use output terminal formed on said substrate.

5,644,332

APPARATUS AND METHOD FOR CONTROLLING DRIVE OF A DISPLAY DEVICE IN ACCORDANCE WITH THE NUMBER OF SCANNING LINES TO BE UPDATED

Eiichi Matsuzaki, Kawasaki; Kenzo Ina, Yokohama; Hiroshi Nonoshita, Fujisawa, and Yoshitsugu Yamanashi, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 921,830, Jul. 30, 1992, abandoned.
This application Mar. 13, 1995, Ser. No. 402,986
Claims priority, application Japan, Aug. 2, 1991, 3-194178; Aug. 2, 1991, 3-194260; Aug. 2, 1991, 3-194261; Aug. 2, 1991, 3-194262; Sep. 9, 1991, 3-228919; Sep. 9, 1991, 3-228921
Int. Cl.[6] G09G *3/36*
U.S. Cl. 345—100 14 Claims



1. A display control apparatus comprising:
display means including display elements formed by continuous lines on which display data is displayed;
detecting means for detecting an area of said display means defined by lines of said display means in which the display data to be displayed on said display means is changed; and
display driving means for displaying the display data in accordance with a size of the area which is detected by said detecting means, wherein said display driving means changes a duration of partial rewriting and a duration of total rewriting of said display means based on a number of lines in which a change in the display data is detected.

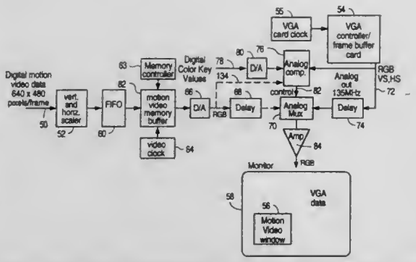
5,644,333

COLOR KEY DETECTION SCHEME FOR MULTIMEDIA SYSTEMS

Sherman T. King, San Francisco; Tommy C. Lee, Danville; Niantsu Wang, Milpitas; Scott A. Kimura, San Jose, and Guorjuh T. Hwang, Milpitas, all of Calif., assignors to AuraVision Corporation, Fremont, Calif.

Filed Dec. 12, 1994, Ser. No. 354,190
Int. Cl.[6] G09G *5/00*
U.S. Cl. 345—115 6 Claims

1. A method for automatically identifying a key signal value in a multimedia application, said method comprising the steps of:
selecting a digital key value;
controlling a first memory buffer to output a digital key signal determined by the digital key value at a designated time and for a designated period;
converting digital outputs of said first memory buffer to a first analog signal;
detecting said first analog signal during said designated period to obtain a detected analog color key value, said detected analog color key value for use in controlling a multiplexer for passing either graphics signals or motion video signals to a display device;
converting said detected analog color key value into a digital representation of said detected analog color key value;



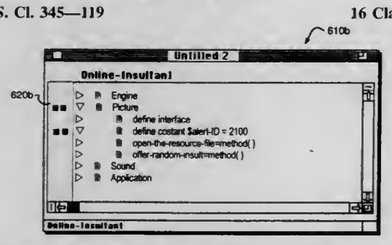
storing said digital representation of said detected analog color key value to obtain a stored key value;
controlling said first memory buffer to output second digital signals after said designated period, said second digital signals for controlling pixels in said display device;
comparing a signal corresponding to said stored key value with analog signals corresponding to said second digital signals outputted after said designated period; and
controlling a multiplexer to pass either graphics signals or motion video signals to said display device, depending upon an outcome of said comparing.

5,644,334

STATUS INDICATORS OF AN IMPROVED GRAPHICAL USER INTERFACE

Jeremy A. Jones, Arlington; Neil L. Mayle; Paige K. Parsons, both of Cambridge; Andrew L. M. Shalit, Somerville, and Steven H. Strassmann, Cambridge, all of Mass., assignors to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 245,877, May 19, 1994, abandoned.
This application Mar. 11, 1996, Ser. No. 613,530
Int. Cl.[6] G09B *1/06*
U.S. Cl. 345—119 16 Claims



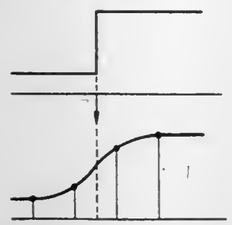
1. An improved graphical user interface of a computer system having a display monitor for displaying a cursor on a display screen, said screen having associated therewith a device for controlling said cursor, said interface comprising:
a window of said screen, said window configured for apportionment into at least one pane for displaying objects of said system; and
status indicator means for positionally displaying state attributes associated with said objects, said status indicator means being displayed on a side bar panel of said pane, said side bar panel having a dynamically-adjustable width configured to one of expand and contract in response to the quantity of said state attributes selected for display.

5,644,335

METHOD FOR THE GRAPHIC REPRODUCTION OF A SYMBOL WITH AN ADJUSTABLE SCALE AND POSITION

Pieter M. Mielekamp, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 808,337, Dec. 16, 1991, abandoned.
This application Dec. 21, 1993, Ser. No. 470,581
Claims priority, application Netherlands, Dec. 21, 1990, 9002843
Int. Cl.[6] G09G *5/00*
U.S. Cl. 345—127 27 Claims



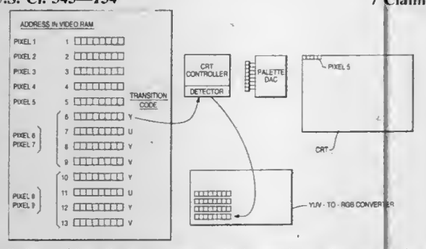
1. A method for reproducing, by means of raster image lines of a display apparatus, a multiplicity of symbols each represented by brightness amplitudes forming an ideal brightness profile which is more perfect than the raster image lines are capable of reproducing, said method comprising the steps of:
a. low-pass spatially filtering the ideal brightness profiles;
b. sampling the filtered profiles by means of a sampling grid having a succession of sampling lines which are movable relative to the profiles;
c. controlling the positions of the filtered profiles and the sampling lines in the grid relative to each other to locate for each one of said multiplicity of symbols being reproduced by said image lines of said display apparatus at least one maximum variation in the brightness amplitudes, which defines a respective edge for said each one of said multiplicity of symbols that is substantially parallel to the sampling lines, substantially midway between successively refreshed ones of said image lines; and
d. varying the brightness of the image lines in response to samples produced by said sampling.

5,644,336

MIXED FORMAT VIDEO RAM

Brian K. Herbert, Colorado Springs, Colo., assignor to AT&T Global Information Solutions Company, Dayton, Ohio; Hyundai Electronics America, San Jose, Calif., and Symbios Logic Inc., Collins, Colo.

Continuation of Ser. No. 64,518, May 19, 1993, abandoned.
This application Dec. 12, 1994, Ser. No. 355,413
Int. Cl.[6] G09G *5/04;5/36*
U.S. Cl. 345—154 7 Claims



2. In a video display system, which translates data stored in a display memory into a video image, said data comprising a plural-

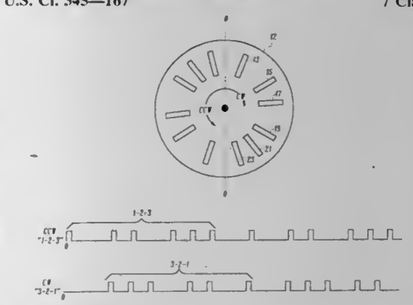
ity of data types which represent dissimilar display image formats, the improvement comprising the step of:
changing to a different method of stored data translation when a predetermined code word is detected between data of a first type corresponding with at least one video display pixel and successive data of a second type corresponding with a plurality of video display pixels in the display memory, wherein said successive data is for translation to generate said plurality of video display pixels according to a display image format corresponding with said second data type.

5,644,337

TRACKBALL HAVING SINGLE EMITTER-DETECTOR DETECTING CHOPPER WHEEL DIRECTION

Carl W. Stacy, Elmwood Park, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Jun. 6, 1995, Ser. No. 467,424
Int. Cl.[6] G06F *3/033*
U.S. Cl. 345—167 7 Claims



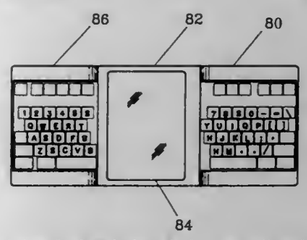
1. In combination:
a trackball;
a chopper wheel arranged in a driving relationship with said trackball;
a directional slot pattern on said chopper wheel;
an IR emitter-detector sensing movement of said chopper wheel; and
pattern detection means responsive to said directional slot pattern for determining the direction of movement of said chopper wheel.

5,644,338

ERGONOMIC LAPTOP COMPUTER AND ERGONOMIC KEYBOARD

James H. Bowen, 13442 Crimson La., Linden, Va. 22642

Continuation-in-part of Ser. No. 284,108, Aug. 2, 1994, Pat. No. 5,502,460, which is a continuation-in-part of Ser. No. 67,015, May 26, 1993, abandoned. This application Mar. 25, 1996, Ser. No. 621,439
Int. Cl.[6] G09G *5/00*
U.S. Cl. 345—168 18 Claims



1. A stand alone keyboard where the keys are split and separable so a first plurality of alpha characters can be entered with a left

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hand separated from a second plurality of alpha characters entered with a right hand, said keyboard comprising in combination:

a left hand set of alpha keys for entering said first plurality of alpha characters, said left hand set being housed in a left housing;

a right hand set of alpha keys for entering said second plurality of alpha characters, said right hand set being housed in a right housing;

a flat planar surface forming a top surface of a structure separating said left hand set of alpha keys and said right hand set of alpha keys, said structure spanning substantially from front to rear of said keyboard;

said left and right housings forming left and right keyboards, respectively;

a pivot disposed on left and right sides of said structure separating said left hand and said right hand set of alpha keys, said pivot connecting said left and right housings to maintain alignment between said left and right housings and allowing said left and right housing to be positioned at angles below or above an horizontal plane formed by said planar surface; and

a detent mechanism which interacts with said structure and at least one of said left and right housings for restraining movement of said at least one of said left and right housings, said detent mechanism at least restraining movement when said left and right sets of alpha keys are in said angles below or above said horizontal plane.

5,644,339

ELECTRONIC INFORMATION APPARATUS

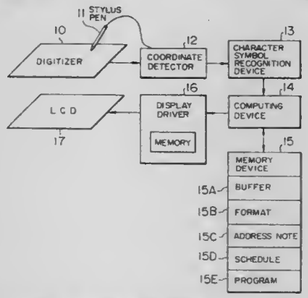
Shigeki Mori, Koshigaya; Eisaku Tatsumi, Yokohama; Atsushi Tanaka, Kawasaki, and Kazuhiro Matsubayashi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 909,717, Jul. 7, 1992, abandoned. This application Jan. 9, 1995, Ser. No. 370,351

Claims priority, application Japan, Jul. 10, 1991, 3-169629

Int. Cl.[6] G09G *5/00*

U.S. Cl. 345—173 **34 Claims**



1. An electronic information apparatus comprising:

storing means for storing a plurality of formats for outputted information;

input means for inputting information to be registered, containing a discriminator identifying the format of the inputted information;

detection means for detecting the discriminator on the basis of the information input by said input means;

extraction means for extracting particular information associated with the discriminator detected by said detection means;

selecting means for automatically selecting a format identified by the discriminator contained in the inputted information to be registered, stored by said storing means, and detected by said detection means without a user inputting additional information via a keyboard; and

registration means for registering the extracted particular information associated with the discriminator detected by said detection means as particular information in the format selected by said selecting means.

5,644,340

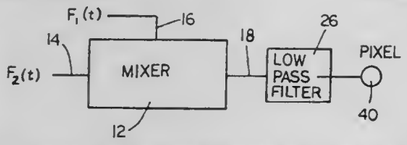
FREQUENCY MIXING FOR CONTROLLING INDIVIDUAL PIXELS IN A DISPLAY

Michael Harney, 5263 S. Cobble Creek Rd. #24I, Salt Lake City, Utah 84117

Filed Mar. 16, 1995, Ser. No. 405,361

Int. Cl.[6] G09G *5/00*

U.S. Cl. 345—212 **8 Claims**



5. Apparatus for controlling individual pixels in a display formed of a plurality of pixels, said apparatus comprising

a plurality of mixers, with each mixer having first and second inputs and an output;

means for connecting the mixers to correspond to a matrix of rows and columns, wherein the first inputs of all mixers corresponding to a particular individual row in the matrix are connected to a common row lead, there being an equal number of row leads to the number of rows in the matrix, and further wherein the second inputs of all mixers, corresponding to a particular individual column in the matrix, are connected to a common column lead, there being an equal number of column leads to the number of columns in said matrix;

means for feeding a distinctive alternating signal to each of the row leads, wherein the signal fed to one row lead differs from any signal fed to any other row lead by a predetermined, set frequency;

means for selectively feeding an alternating signal to one or more of the column leads, wherein the signal fed to any particular column at any one time has the same frequency of one of the signals fed to the row leads, whereby the mixer corresponding to the row which has the same frequency as the frequency being selectively fed to the column lead produces a DC voltage as an output signal from the output of the mixer;

a plurality of low pass filters, with a respective low pass filter being connected to the output of each of the mixers;

means for feeding the output signals from each of the mixers to a respective low pass filter; and

means for using the output of each low pass filter to control an individual pixel on said display.

5,644,341

INK JET HEAD DRIVE APPARATUS AND DRIVE METHOD, AND A PRINTER USING THESE

Masahiro Fujii; Ikuhiro Miyashita; Hiroshi Koeda; Keiichi Mukaiyama; Hiroyuki Maruyama; Noriyoshi Otsuki; Toshiaki Watanabe, and Naoki Kobayashi, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 274,184, Jul. 12, 1994, Pat. No. 5,563,634. This application Dec. 7, 1994, Ser. No. 350,912

Claims priority, application Japan, Jul. 14, 1993, 5-174508; Jul. 19, 1993, 5-178140; Dec. 7, 1993, 5-306832; Dec. 7, 1993, 5-306833; Nov. 22, 1994, 6-287681; Dec. 1, 1994, 6-298433

Int. Cl.[6] B41J *29/38*

U.S. Cl. 347—11 **24 Claims**

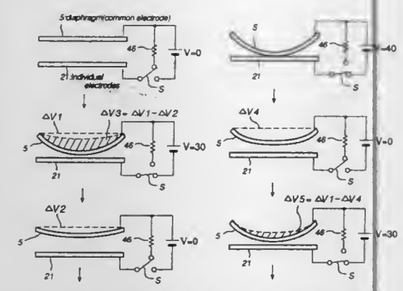
11. A recording apparatus comprising:

a marking fluid head comprising:

a nozzle,

a pathway in communication with said nozzle, and

an actuator comprising:



a diaphragm provided at one part of said pathway,

a first electrode provided in opposition to said diaphragm, and

a second electrode provided on a portion of said diaphraghm; and

a driving circuit for selectively:

applying a first driving voltage signal having a first polarity to said first and second electrodes to electrostatically attract said diaphragm towards said first electrode in a first direction to fill said pathway with marking fluid, and

discharging the static electricity between the diaphragm and the first electrode, and causing said diaphragm to move in the opposite direction away from said first electrode to thereby eject said marking fluid from said nozzle,

applying a second driving voltage signal having a second polarity opposite to the first polarity to said first electrode and said second electrode having a magnitude at least a voltage that causes the diaphragm to come into contact with the electrode to stabilize displacement of said diaphragm at a predetermined time.

5,644,342

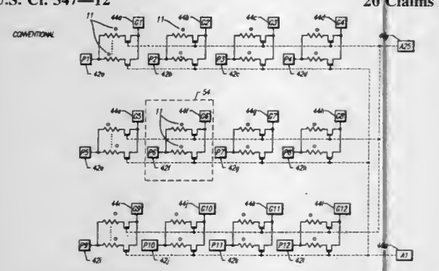
ADDRESSING SYSTEM FOR AN INTEGRATED PRINTHEAD

Dimitri Argyres, Corvallis, Oreg., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 40,781, Mar. 31, 1993. This application Jan. 30, 1995, Ser. No. 381,008

Int. Cl.[6] B41J *29/38;2/05*

U.S. Cl. 347—12 **20 Claims**



16. An integrated printhead having multiple inkjet nozzles, and having three-dimensional addressing comprising:

a row-and-column array of groups of separate and distinct nozzle drivers, wherein;

each of the separate nozzle drivers is respectively associated with one of the multiple inkjet nozzles, and

each of said groups of separate nozzle drivers has a unique row-and-column address;

first addressing means, coupled to said array of groups, for selecting one row of said array and for connecting voltage or current to individual nozzle drivers in that selected row to partially enable printing by the nozzles associated therewith;

second addressing means, coupled to said array of groups, for selecting one column of said array and for connecting voltage or current to individual nozzle drivers in that selected column to partially enable printing by the nozzles associated therewith;

means for establishing a resistance between said first addressing means and said second addressing means, for each of said groups of individual nozzle drivers;

third addressing means, coupled to said array of groups, for connecting voltage or current to one respective individual nozzle driver in each of said groups of separate nozzle drivers to partially enable printing by the nozzles associated therewith; and

means, coupled to said first addressing means, for adjusting the resistance-establishing means between said first addressing means and said second addressing means for at least one of said groups of individual nozzle drivers.

5,644,343

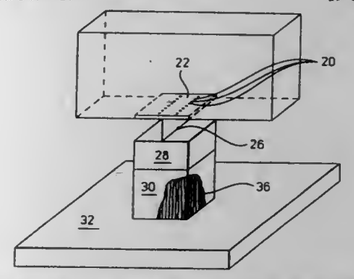
METHOD AND APPARATUS FOR MEASURING THE TEMPERATURE OF DROPS EJECTED BY AN INK JET PRINTHEAD

Ross R. Allen, Belmont, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 20, 1994, Ser. No. 359,775

Int. Cl.[6] B41J *29/38*

U.S. Cl. 347—17 **19 Claims**



1. An apparatus for monitoring thermal-inkjet elector temperature, for control of thermal-inkjet print quality, by measuring the temperature of drops ejected by thermal-inkjet printhead; said apparatus comprising:

a drop ejector on the thermal-inkjet printhead for ejecting drops to form printed images, said ejector having temperature-dependent print-quality characteristics; and

means for monitoring the ejector temperature for control of said print-quality characteristics, said monitoring means comprising:

temperature sensor means for measuring the temperature of the drops;

means for aligning the drop ejector and the temperature sensor; and

means for causing the drop ejector to eject multiple drops onto the temperature sensor means.

5,644,344

OPTICAL PRINT CARTRIDGE ALIGNMENT SYSTEM

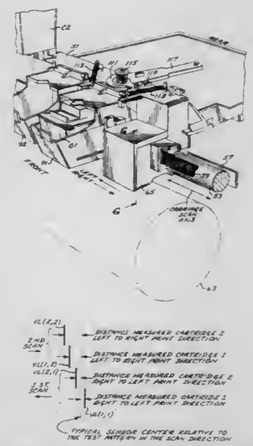
Robert D. Haselby, San Diego, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 786,145, Oct. 31, 1991, Pat. No. 5,289,208. This application Feb. 22, 1994, Ser. No. 200,101

Int. Cl.[6] B41J *29/393;2/125*

U.S. Cl. 347—19 **4 Claims**

4. A method for aligning an operation of printheads along a media scan axis in a swath printer having (a) a carriage that is



movable along a horizontal carriage scan axis in first and second carriage scan directions, (b) a first ink jet printhead and second ink jet printhead supported by the movable carriage for printing onto a print media that is selectively movable along a vertical media scan axis, the first ink jet printhead and the second ink jet printhead being independently controlled and each ink jet printhead having a plurality of ink jet nozzles arranged in alignment with the vertical axis such that the nozzles of each ink jet printhead are spaced apart along the vertical axis, and (c) an optical sensor supported by the movable carriage for sensing markings printed by the first ink jet printhead and the second ink jet printhead, the method comprising the steps of:

causing the first ink jet printhead to print a first test pattern;

causing the second ink jet printhead to print a second test pattern;

optically sensing the first test pattern and the second test pattern to produce sensed signals; and

adjusting an operation of the first ink jet printhead and the second ink jet printhead by enabling selected nozzles of the first ink jet printhead and the second ink jet printhead on a basis of the sensed signals.

5,644,345

SERVICE STATION FOR INK JET PRINTER

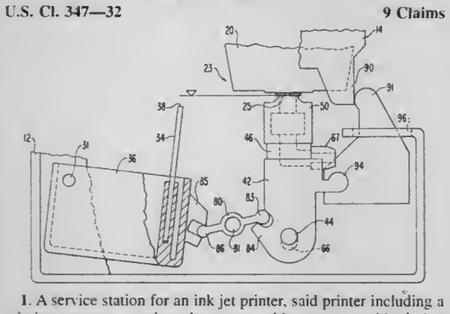
Antonio Toniolo, Aglie', Italy, assignor to Olivetti-Canon Industriale S.p.A., Ivrea, Italy

Filed Oct. 26, 1994, Ser. No. 329,164

Claims priority, application Italy, Nov. 11, 1993, TO93A0854

Int. Cl.[6] B41J *2/165*

U.S. Cl. 347—32 9 Claims



1. A service station for an ink jet printer, said printer including a printing support; a carriage that moves with respect to said printing support; and a print head of a first kind carried by said carriage, said print head having a plurality of nozzles for expelling drops of ink, said service station comprising:

cleaning means for cleaning said print head on said carriage when said carriage is moved to said service station, said cleaning means including a flexible blade that slides over said print head to remove residues of ink thereon, said blade being movable from a position of interference with said print head to an inactive position spaced away from said print head;

nozzle restoring and protecting means for restoring and protecting said nozzles of said print head when said carriage is located at said service station, said restoring and protecting means including a support, said support including ink collecting means for collecting the ink purged from said nozzles and supporting a cover for protecting said nozzles, said support being independently pivotable around and linearly movable along a shaft perpendicular to the motion of said print head from a rest position, in which said cover is away from said print head, to an operating position, in which said cover is in contact with said print head;

means engageable by a trigger member on said carriage during its movement towards said service station for pivoting said support from said rest position to said operating position, said support being connected to said blade by means of a rocker so as to move said blade to said inactive position spaced away from said print head simultaneously to the movement of said support to said operating position to bring said cover against said print head.

5,644,346

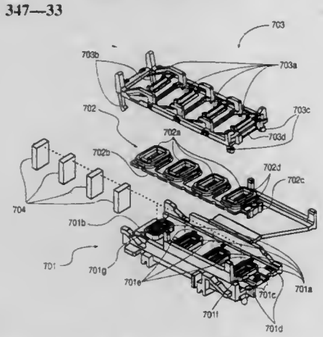
MODULAR WIPING UNIT FOR INKJET PRINTER

William H. Schwiebert, Cardiff, and Gerold G. Firl, Poway, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 8, 1994, Ser. No. 225,040

Int. Cl.[6] B41J *2/165*

U.S. Cl. 347—33 4 Claims



1. Wiping structure for use with a printer, comprising:

a wiper;

a wiper mount on which the wiper is mounted;

a wiper frame on which the wiper mount is mounted;

wherein the wiper frame comprises means for detachably attaching the wiper frame to the printer; and

wherein the means for detachably attaching further comprises:

first and second snap arms extending from a surface of the wipe frame and proximal to a first end of the wiper frame; and

first and second retention legs extending from the surface of the wiper frame and proximal to a second end of the wiper frame opposite the first end, a foot being formed at the end of each of the first and second retention legs.

5,644,347

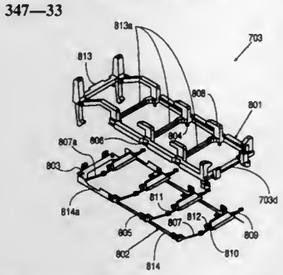
INKJET PRINTER WITH VARIABLE WIPING CAPABILITIES FOR MULTIPLE PRINTHEADS

William H. Schwiebert, Cardiff; Gerold G. Firl, Poway; Heinz H. Waschhauser, Escondido, all of Calif., and William S. Osborne, Vancouver, Wash., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 56,327, Apr. 30, 1993, and Ser. No. 55,616, Apr. 30, 1993, abandoned, which is a continuation-in-part of Ser. No. 949,197, Sep. 21, 1992, Pat. No. 5,563,638, said Ser. No. 56,327is a continuation-in-part of Ser. No. 949,197. This application Apr. 8, 1994, Ser. No. 225,163

Int. Cl.[6] B41J *2/165*

U.S. Cl. 347—33 7 Claims



1. Wiping structure for use with an inkjet printer including a first movable print cartridge and a second movable print cartridge, the first print cartridge and the second print cartridge each having a printhead from which ink is dispensed, the structure comprising:

a wiper mount including a plurality of wiper blades, one of the wiper blades wiping a printhead of the first print cartridge and another of the wiping blades wiping a printhead of the second print cartridge;

means for biasing the wiper blades against the printhead of the first print cartridge and the printhead of the second print cartridge such that the wiper blade that wipes the printhead of the first print cartridge is biased against the printhead of the first print cartridge with a different wiping force than a wiping force of the other of the wiper blades that wipes the printhead of the second print cartridge; and

wherein the wiper blade that wipes the printhead of the first print cartridge is biased against the printhead of the first print cartridge with greater force than the wiper blade that wipes the printhead of the second print cartridge during a simultaneous pass of said printheads over said wiper blades.

5,644,348

CONTROL OF PRINT CARTRIDGE MOVEMENT IN AN INK JET RECORDING APPARATUS

Noboru Shimoyama, Yokohama, and Masanori Kaneko, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 332,492, Oct. 31, 1994, abandoned, which is a continuation of Ser. No. 140,988, Oct. 25, 1993, abandoned, which is a continuation of Ser. No. 709,228, Jun. 3, 1991, abandoned. This application Jan. 30, 1996, Ser. No. 594,332

Claims priority, application Japan, Jun. 1, 1990, 2-144610; May 17, 1991, 3-113231

Int. Cl.[6] B41J *2/165;19/18*

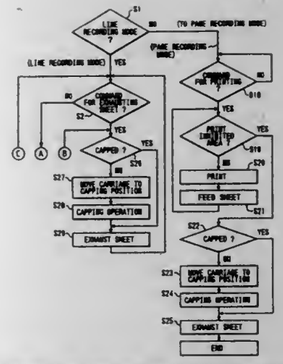
U.S. Cl. 347—37 25 Claims

1. An electronic typewriter recording image information on a recording medium having a trailing end portion, comprising:

a movable carriage for supporting a recording head for discharging ink onto the recording medium;

conveying means for conveying the recording medium;

driving means for driving said carriage mounting the recording head and said conveying means;



detection means for detecting the trailing end portion of the recording medium;

input means for inputting the image information to be recorded;

means for setting a line recording mode in which the image is recorded for every line, and a shift recording mode in which the image information inputted by said input means is recorded at one time;

trailing end detection cancel mode means for cancelling operation of said detection means for detecting the trailing end portion of the recording medium when the line recording mode is set; and

trailing end detection mode means for setting a mode of operation in which said detection means detects the trailing end portion of the recording medium when the shift recording mode is set.

5,644,349

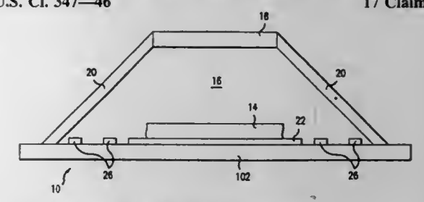
MECHANICAL CAPACITOR

Russel A. Martin, Menlo Park, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 7, 1994, Ser. No. 301,952

Int. Cl.[6] B41J *2/085;* **H01G** *5/00*

U.S. Cl. 347—46 17 Claims



1. A mechanical capacitor device, comprising:

a substrate;

a fixed electrode disposed on the substrate;

a movable electrode, wherein the movable electrode and the fixed electrode form a capacitor;

at least one support disposed on the substrate;

a voltage applying device for applying a voltage between the fixed electrode and the movable electrode;

the movable electrode being supported by the at least one support so that the movable electrode opposes the fixed electrode, the movable electrode being separated from the fixed electrode by a distance based on the voltage applied by the voltage applying device between the movable electrode and the fixed electrode; and

an insulator disposed over one of the fixed electrode and the movable electrode between the fixed and the movable electrodes, wherein a capacitance of the capacitor changes based on the voltage applied between the fixed electrode and the movable electrode.

5,644,350

INK JET RECORDING APPARATUS

Makoto Ando; Toshiki Kagami, both of Tokyo; Takaaki Murakami, Kanagawa; Masayuki Sato; Noriko Kasahara, both of Tokyo; Kengo Ito, Miyagi; Masanobu Hida, Miyagi, and Motohiro Mizumachi, Miyagi, all of Japan, assignors to Sony Corporation, Japan

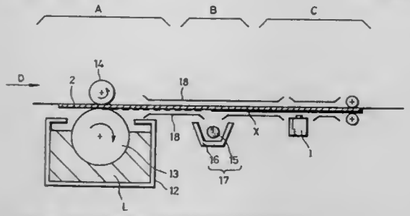
PCT No. PCT/JP94/01263, § 371 Date Mar. 30, 1995, § 102(e) Date Mar. 30, 1995, PCT Pub. No. WO95/03940, PCT Pub. Date Feb. 9, 1995

PCT Filed Aug. 1, 1994, Ser. No. 411,755

Claims priority, application Japan, Jul. 31, 1993, 5-209008; Dec. 1, 1993, 5-301359

Int. Cl.[6] B41J *2/01*

U.S. Cl. 347—101 **6 Claims**



1. An ink jet recording apparatus comprising:

an ink nozzle for expelling an ink toward a recording medium to form an image thereon; and

dye acceptor layer forming means for forming on said recording medium a dye acceptor layer composed of an intercalation compound which fixes and holds a dye of said ink by way of an intercalation,

wherein said dye acceptor layer forming means forms the dye acceptor layer by coating a fixing solution containing said intercalation compound on said recording medium with a coating roller.

5,644,351

THERMAL GRADATION PRINTING APPARATUS

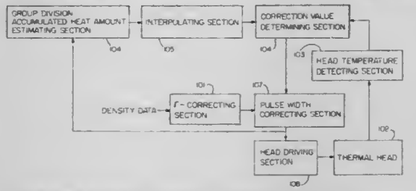
Yasuki Matsumoto, Takarazuka; Haruo Yamashita, Ibaraki, and Hideshi Ishihara, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Nov. 30, 1993, Ser. No. 160,032

Claims priority, application Japan, Dec. 4, 1992, 4-324524; May 18, 1993, 5-115484

Int. Cl.[6] B41J *2/36*

U.S. Cl. 347—194 **14 Claims**



1. A thermal gradation printing apparatus comprising:

a thermal head including a body portion, a substrate formed on said body portion, and a plurality of heat elements arranged in a line on said substrate, said plurality of heat elements being divided into a plurality of groups;

head temperature detecting means for detecting the temperature of said body portion;

data generating means for generating a plurality of data units each having a pulse width depending on density data, the pulse width indicating a time period for which a predetermined voltage is applied to one of said plurality of heat elements;

group division accumulated heat amount estimating means for estimating accumulated heat amounts of regions of said substrate for every one line, the regions corresponding to said plurality of groups, respectively;

correction value calculating means for calculating correction values assigned to said plurality of groups, respectively, based on the estimated accumulated heat amounts for said respective groups, and the temperature of said body portion;

pulse width correcting means for correcting the pulse width of each of the plurality of data units based on the correction values, and for generating a plurality of corrected data units each having the corrected pulse width; and

head driving means for applying the predetermined voltage to said plurality of heat elements for a time period in accordance with the plurality of corrected data units,

wherein said group division accumulated heat amount estimating means estimates the accumulated heat amounts of regions corresponding to said plurality of groups, respectively, based on an average of the plurality of corrected data units generated for an immediately preceding line in each of said plurality of groups, and the accumulated heat amount of each of said plurality of groups in the immediately preceding line.

5,644,352

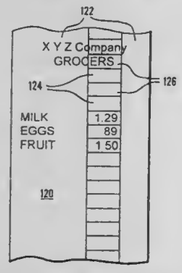
MULTICOLOR HEAT-SENSITIVE VERIFICATION AND HIGHLIGHTING SYSTEM

John C. H. Chang, Naperville; Eric B. Wendler, Aurora, and Vance P. Gregory, Jr., Wheaton, all of Ill., assignors to Wallace Computer Services, Inc., Hillside, Ill.

Division of Ser. No. 416,283, Apr. 4, 1995, which is a continuation-in-part of Ser. No. 987,710, Dec. 9, 1992, Pat. No. 5,427,415. This application Mar. 6, 1996, Ser. No. 611,855

Int, Cl.[6] B41M *5/28;5/30;* **B41J** *2/32*

U.S. Cl. 347—221 **18 Claims**



1. A printing system for producing printed multicolor receipts capable of authentication comprising

a heated printing stylus for producing a visible image upon application of heat from said heated printing stylus to a heat activatable chromogenic composition,

a receipt form comprising a support having at least one surface bearing a first coating comprising a substantially colorless, heat activatable, non-pressure sensitive chromogenic composition capable of producing a first color under the application of heat, and a second coating comprising a localized coating of a substantially colorless, heat activatable, non-pressure sensitive chromogenic composition capable of producing a second color under the application of heat, said first and second coatings being non-coextensive, each of said first and second coatings being at least partially exposed, said first color being different from said second color,

each said chromogenic composition comprising a chromogenic compound and a color developer,

said chromogenic compound and said color developer being substantially colorless solids in physical contact prior to reaction, but which can chemically react to produce a visible colored image by application of heat at temperatures above room temperature,

said heated printing stylus forming a visible, colored image by means of the heat applied by said heated printing stylus upon contact with said first and second coatings.

5,644,353

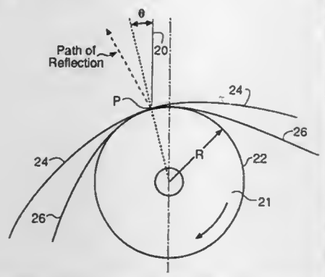
APPARATUS AND METHOD FOR ELIMINATING FEEDBACK NOISE IN LASER THERMAL PRINTING

Sanwal Prasad Sarraf, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 905,948, Jun. 29, 1992, Pat. No. 5,420,611. This applicatinn Jan. 4, 1995, Ser. No. 368,561

Int. Cl.[6] B41J *2/435;2/48*

U.S. Cl. 347—224 **13 Claims**



1. An apparatus for forming a laser-induced thermal dye transfer image, said apparatus comprising:

a laser for projecting a light beam along an optical path; and

a media-carrying member having a surface for providing a location at which a dye donor element is brought into dye transferring proximity with a dye receiver element and for receiving said light beam at a point of incidence, wherein a direction normal to the surface of the media-carrying member at the point of incidence differs from the optical path, to eliminate intensity noise caused by light reflecting from the dye donor element along the optical path.

5,644,354

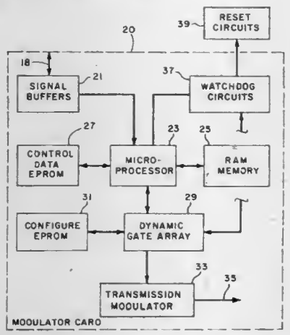
INTERACTIVE VIDEO SYSTEM

John R. Thompson, LaQuinta; Craig E. Trivelpiece, and Steve E. Trivelpiece, both of Newport Beach, all of Calif., assignors to Prevue Interactive, Inc., Tulsa, Okla.

Filed Oct. 9, 1992, Ser. No. 959,042

Int. Cl.[6] H04N *7/10;7/08*

U.S. Ci. 348—13 **37 Claims**



1. A video display, data transmission system comprising:

means having resident programing therein for manipulating a composite digital information signal to produce an output signal, wherein said output signal includes data code and object code;

means for formatting said output signal to produce a formatted signal and for transmitting said formatted signal, wherein said means for formatting and transmitting includes:

an output data storage means for storing said output signal,

a dynamic gate array,

means for determining and maintaining a predetermined configuration sequence in said dynamic gate array, and

means for processing and feeding data stored in said output data storage means to said dynamic gate array; and

means for decoding said transmitted formatted signal to produce a decoded signal, and for enabling said decoded signal to be passed to a video display means in response to satisfaction of one or more predetermined conditions.

5,644,355

ADAPTIVE VIDEO SUBSCRIBER SYSTEM AND METHODS FOR ITS USE

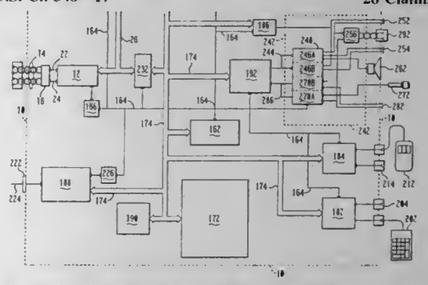
Mark Christopher Koz, Santa Clara, and Masato Hata, Sunnyvale, both of Calif., assignors to Intelligent Instruments Corporation, Santa Clara, Calif.

PCT No. PCT/US92/01446, § 371 Date Jul. 19, 1994, § 102(e) Date Jul. 19, 1994, PCT Pub. No. WO93/17526, PCT Pub. Date Sep. 2, 1993

PCT Filed Feb. 24, 1992, Ser. No. 140,172

Int. Cl.[6] H04N *7/14*

U.S. Cl. 348—17 **28 Claims**



1. A subscriber system adapted for receiving compressed data and for generating from the received data video and audio signals respectively adapted for producing a visible image and an audible sound, said subscriber system comprising:

a control microprocessor for controlling the operation of the subscriber system;

a communication subsystem, responsive to commands from said control microprocessor, for receiving compressed data transmitted to said subscriber system, and for separating the compressed data into compressed video data and compressed audio data;

a programmable video data format conversion subsystem, responsive to commands from said control microprocessor, for receiving compressed video data directly from said communication subsystem and for converting received compressed video data into video data, said programmable video data format conversion subsystem operating under control of a video data conversion computer program selected from a plurality of video data conversion computer programs by said control microprocessor, each video data conversion computer program being capable of converting video data compressed in accordance with a particular pre-specified conversion standard into video data;

a video signal generation subsystem, responsive to commands from said control microprocessor, for receiving video data from said programmable video data format conversion sub-

system, and for generating from the received video data a video signal adapted for producing a visible image;

a programmable audio data format conversion subsystem, responsive to commands from said control microprocessor, for receiving compressed audio data, and for converting received compressed audio data into audio data, said programmable audio data format conversion subsystem operating under control of an audio data conversion computer program selected from a plurality of audio data conversion computer programs by said control microprocessor, each audio data conversion computer program being capable of converting audio data compressed in accordance with a particular prespecified conversion standard into audio data; and

an audio signal generation subsystem, responsive to commands from said control microprocessor, for receiving audio data from said audio data format conversion subsystem, and for generating from the received audio data an audio signal adapted for producing an audible sound.

5,644,356

HIGH RESOLUTION FILM SCANNER

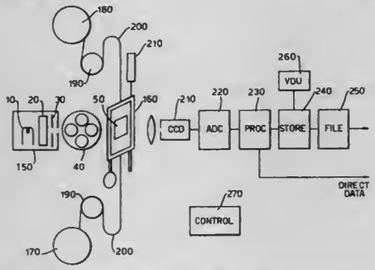
Peter Richard Swinson, St Albans, and Graham Malcolm Alexander Barber, Hitchin, both of United Kingdom, assignors to Rank Cintel Limited, United Kingdom

Filed Feb. 1, 1995, Ser. No. 382,361

Claims priority, application United Kingdom, Feb. 1, 1994, 94 01 907

Int. Cl.[6] H04N *3/38;3/40*

U.S. Cl. 348—96 **16 Claims**



1. A film scanner comprising a scanning means comprising:

a light source;

a light sensitive line sensor;

a film gate assembly for advancing film past said light sensitive line sensor and arranged between said light source and said light sensitive line sensor and having means for holding film fast with respect thereto;

means for moving said film gate assembly past said light sensitive line sensor to scan film held in said film gate assembly;

a position sensor for sensing the precise location of said film gate assembly with respect to said light sensitive line sensor; and

control means for controlling data when data from the light sensitive line sensor is read in accordance with data from said position sensor.

5,644,357

BURST DRIVING OF SINGLE-PANEL DISPLAY

David A. Cohen, Ossining, and Peter J. Janssen, Scarborough, both of N.Y., assignors to Philips Electronics North America Corporation, New York, N.Y.

Filed Dec. 15, 1994, Ser. No. 356,939

Int. Cl.[6] H04N *9/31*

U.S. Cl. 348—196 **7 Claims**

1. A method of producing a color image by means of a light valve comprising a row and column array of variable-transmissivity pixels, a plurality of row electrodes for selectively addressing the rows of pixels, and a plurality of column electrodes for transferring data representative of predetermined transmissivities to respective pixels on a selected one of the rows, said method comprising the steps of:

a. scanning a plurality of spatially-separated light bands of different colors across the rows of pixels;

b. for each of the colored light bands in turn, sequentially driving a group of closely-spaced rows of the pixels substantially in synchronism with the scanning of said rows by said colored light band.

5,644,358

AUTOMATIC WHITE BALANCE ADJUSTING DEVICE

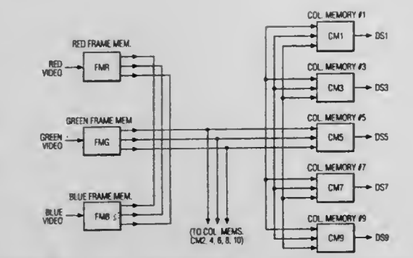
Toshiki Miyano, and Eiichi Shimizu, both of Yokohama, Japan, assignors to Eastman Kodak Comany, Rochester, N.Y.

Filed Nov. 21, 1995, Ser. No. 561,589

Claims priority, application Japan, Mar. 7, 1995, 7-046812

Int. Cl.[6] H04N *9/73*

U.S. Cl. 348—223 **2 Claims**



1. An automatic white balance adjusting device comprising:

(a) a block representative value calculating circuit for dividing a video signal into a plurality of blocks and for calculating representative values of the divided blocks;

(b) a fluorescent lamp block average calculating circuit for calculating a fluorescent lamp block average of the representative values of the blocks where the video signal represents a substantially white object under a fluorescent lamp;

(c) a sunlight-and-tungsten-lamp block average calculating circuit for calculating a sunlight-and-tungsten-lamp block average of the representative values of the blocks where the video signal represents the substantially white object under bright sunlight and a tungsten lamp;

(d) a fluorescent lamp block weighting circuit for receiving the fluorescent lamp block average and object brightness, and multiplying one of a number of fluorescent weighting coefficients, predetermined on the basis of the object brightness, by the fluorescent lamp block average to generate a weighted fluorescent lamp block average;

(e) a sunlight-and-tungsten-lamp block weighting circuit for receiving the sunlight-and-tungsten-lamp block average, and multiplying one of a number of daylight weighting coefficients, predetermined on the basis of the sunlight-and-tungsten-lamp block average, by the sunlight-and-tungsten-lamp block average to generate a weighted sunlight-and-tungsten-lamp block average;

(f) a white balance adjusting signal calculating circuit for mixing the weighted fluorescent lamp block average and the weighted sunlight-and-tungsten-lamp block average in accordance with a ratio of fluorescent lamp blocks and sunlight-and-tungsten-lamp blocks which are weighted by the fluorescent and daylight weighting coefficients, so as to generate a white balance adjusting signal; and

(g) a white balance adjusting circuit for performing white balance adjustment in response to the white balance adjusting signal.

5,644,359

IMAGE INPUT APPARATUS HAVING A WHITE BALANCE CORRECTION MEANS AND A METHOD OF INPUTTING AN IMAGE USING THE IMAGE INPUT APPARATUS

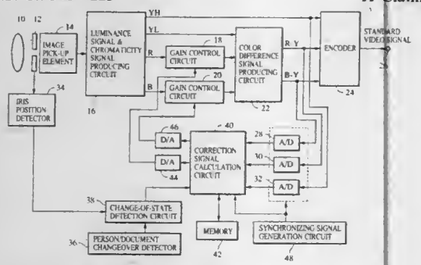
Kan Ito, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 28, 1996, Ser. No. 621,721

Claims priority, application Japan, Apr. 3, 1995, 7-077700

Int. Cl.[6] H04N *9/73*

U.S. Cl. 348—223 **11 Claims**



1. An image input apparatus, comprising:

image pick-up means for converting an optical image into an electric signal and outputting a color image signal;

calculation means for calculating color information from the color image signal output from said image pick-up means;

storage means for storing one or more first reference values for a white balance correction in a first pick-up mode, and one or more second, different, reference values for a white balance correction in a second pick-up mode;

determining means for determining whether said apparatus is in the first pick-up mode or the second pick-up mode;

selection means for selecting one of said first reference values and said second reference values in accordance with the determined pick-up mode; and

correction means for correcting the white balance of the color image signal with the selected reference value and the color information calculated by said calculation means.

5,644,360

CIRCUIT FOR COMPENSATING THE BLUE PHOSPHOR ROLL OFF AT HIGH DRIVE LEVELS IN A PROJECTION TELEVISION SYSTEM

Thomas David Gurley, Indianapolis, and Charles Michael White, Noblesville, both of Ind., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Feb. 26, 1993, Ser. No. 622,323

Int. Cl.[6] H04N *9/16*

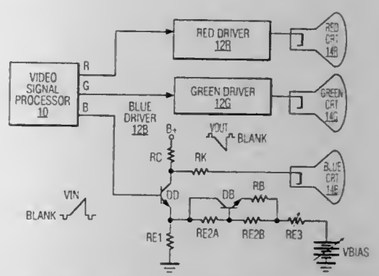
U.S. Cl. 348—381 **20 Claims**

1. In a television system, apparatus comprising:

a cathode ray tube (CRT);

an amplifier having an input at which a video input signal is received and an output at which a video output signal is developed and which is coupled to said CRT; said amplifier having a main current path coupled to said output of said amplifier; and

a three terminal switching device having a conduction path between first and second terminals and a control terminal for controlling the conduction of said conduction path; said conduction path of said switching device being connected in series with a first impedance element between said main current path of said amplifier and a point of reference potential; said control terminal of said switching device being coupled to said main current path of said amplifier to control the conduction of said conduction path of said switching device in response to the current flowing in said main current path of said amplifier.



5,644,361

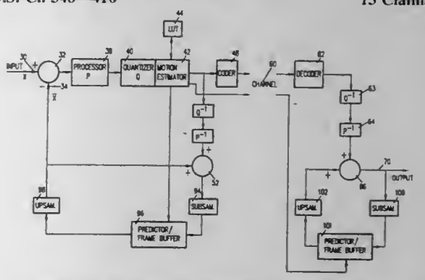
SUBSAMPLED FRAME STORAGE TECHNIQUE FOR REDUCED MEMORY SIZE

Xiaonong Ran, Cupertino, and Michael Van Scherrenburg, San Jose, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Nov. 30, 1994, Ser. No. 348,272

Int. Cl.[6] H04N *7/36*

U.S. Cl. 348—416 **13 Claims**



1. A method for generating compressed video data, said method comprising the steps of:

receiving first video data at one or more input terminals representing a first block of M×N picture elements (pels) from a first frame of Q×R pels;

subsampling second video data representing a second block of M×N pels, by outputting only selected subsampled video data from said second block, so as to reduce said second block to a subsampled block of S×T pels;

storing in a memory said subsampled block representing S×T pels;

addressing said memory to output said subsampled block representing S×T pels;

upsampling said subsampled block output from said memory, by interpolating pel values, to output an upsampled block of M×N pels;

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generating a difference signal representing differences between said first block of pels from said first frame and said upsampled block;

transmitting a signal corresponding to said difference signal to a receiver;

adding said difference signal to said upsampled block to form an input block of video data for subsampling;

repeating said steps of receiving, subsampling, storing, addressing, upsampling, generating, transmitting, and adding for a plurality of blocks of M×N pels applied to said one or more input terminals until all video data in said first frame has been received and difference signals for said first frame have been generated;

motion compensating said subsampled block output from said memory if it is determined in said step of generating a difference signal that movement has occurred between a previous frame and said first frame;

detecting a number of bits required to be transmitted in order to convey said difference signal;

selecting for motion compensation of said subsampled block from said memory a motion vector which produces a fewest number of bits required to be transmitted to convey said difference signal; and

transmitting said motion vector and said difference signal which resulted in said fewest number of bits required to convey said difference signal.

5,644,362

TELEVISION RECEIVER INCLUDING A TELETEXT DECODER FOR SELECTIVELY CHOOSING A PARTICULAR TELETEXT BROADCAST

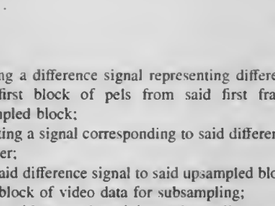
Ronny M. P. Cornelis, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 415,780, Apr. 3, 1995, abandoned, which is a continuation of Ser. No. 303,543, Sep. 9, 1994, abandoned, which is a continuation of Ser. No. 79,295, Jun. 17, 1993, abandoned. This application Jun. 26, 1996, Ser. No. 668,307

Claims priority, application European Pat. Off., Jun. 29, 1992, 92201924

Int. Cl.[6] H04N *7/08;7/087*

U.S. Cl. 348—468 **12 Claims**



1. A television receiver for receiving a composite video signal, said composite video signal including a plurality of video information signals and a plurality of teletext information signals, each of said teletext information signals stored as a teletext page, said receiver comprising:

recognition means for identifying all teletext pages within said composite video signal which correspond to a predetermined one of said video information signals;

selection means for selecting one of said identified teletext pages in response to a single control signal; and

decoding means for decoding said selected teletext page.

5,644,363

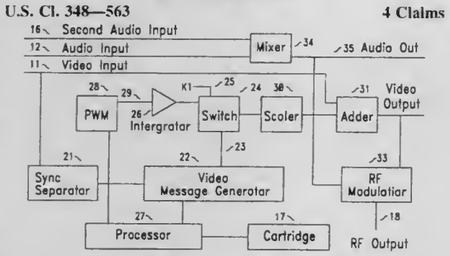
APPARATUS FOR SUPERIMPOSING VISUAL SUBLIMINAL INSTRUCTIONAL MATERIALS ON A VIDEO SIGNAL

Talbert Mead, Colorado Springs, Colo., assignor to The Advanced Learning Corp., Colorado Springs, Colo.

Filed Mar. 24, 1995, Ser. No. 410,275

Int. Cl.[6] H04N *5/445*

U.S. Cl. 348—563 **4 Claims**



1. An apparatus for superimposing subliminal and non-subliminal video messages on a video signal to generate a combined video signal comprising:

a. circuitry for receiving a source video signal having horizontal and vertical synchronization information;

b. circuitry for generating sync signals by detecting said horizontal and vertical synchronization information from said video signal;

c. circuitry for generating said subliminal and non-subliminal video messages synchronized to said sync signals;

d. an analog adder for superimposing said subliminal video messages on said source video signal as received by the circuitry for receiving a source video signal, said adder further comprising a clamp circuit for superimposing said non-subliminal video messages on said source signal.

5,644,364

MEDIA PIPELINE WITH MULTICHANNEL VIDEO PROCESSING AND PLAYBACK

Jeffrey Kurtze, Nashua, N.H.; Ray Cacciatore, Westford, Mass.; Peter Zawojski, Merrimack, N.H.; Eric C. Peters, Carlisle, Mass., and John Walsh, Jr., North Chelmsford, Mass., assignors to Avid Technology, Inc., Tewksbury, Mass.

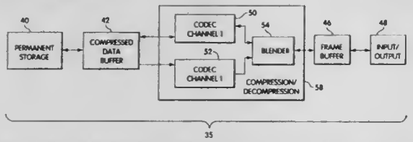
PCT No. PCT/US94/04253, § 371 Date Mar. 6, 1995, § 102(e) Date Mar. 6, 1995, PCT Pub. No. WO94/24815, PCT Pub. Date Oct. 27, 1994

PCT Filed Apr. 18, 1994, Ser. No. 347,394

Claims priority, application United Kingdom, Apr. 16, 1993, 9307894

Int. Cl.[6] H04N *5/262*

U.S. Cl. 348—584 **16 Claims**



8. A method for blending first and second sequences of digital still images without timing signals and defining motion video to create a third sequence of digital still images without timing signals and defining motion video, comprising the steps of:

periodically transferring pixel data of images from the first and second sequences into first and second buffer circuits to maintain valid data in the first and second buffer circuits according to demand for the pixel data;

receiving an indication of a blend operation to be performed on the images;

sequentially reading corresponding pairs of pixels of each of the images from the first and second sequences from the first and second buffer circuits according to availability of valid data in the first and second buffer circuits and demand for the pixel data in the third sequence of digital still images;

selecting a blending factor according to the indicated blend operation and a relative position of a combination of the selected pixels in the desired output image; and

blending the selected pixels according to the selected factor to generate pixels in the image of the third sequence desired output.

5,644,365

METHOD AND CIRCUIT FOR GENERATING A COMPOSITE VIDEO SIGNAL

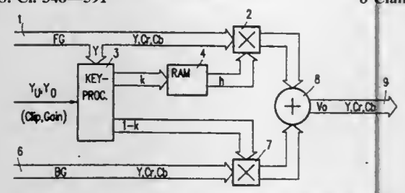
Rainer Gehrmann, Alsbach-Hähnlein, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 13, 1995, Ser. No. 527,739

Claims priority, application Germany, Sep. 15, 1994, 44 32 788.9

Int. Cl.[6] H04N *9/74*

U.S. Cl. 348—591 **8 Claims**



1. A method of generating a composite video signal, formed from a foreground signal and a background signal, in accordance with a luminance self-key mode, in which a key signal is derived from a luminance foreground signal in dependence upon a clipping level, characterized in that the method comprises the steps:

generating an video output signal (Vo) by fading in accordance with $Vo=h*FG+(1-k)*BG$, in which h is a hyperbolically formed control key signal pre-corrected in accordance with $h=1-(1-k)*Yu/Y_{FG}$, FG is the foreground signal and Y_{FG} is the luminance foreground signal, BG is the background signal and k is a linear key signal, and in which Yu corresponds to a lower clipping level of the luminance foreground signal; and

performing the fading for the foreground luminance signal as well as for foreground chrominance signals.

5,644,366

IMAGE REPRODUCTION INVOLVING ENLARGEMENT OR REDUCTION OF EXTRACTED CONTOUR VECTOR DATA FOR BINARY REGIONS IN IMAGES HAVING BOTH BINARY AND HALFTONE REGIONS

Katsutoshi Ushida, and Teruya Hara, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 19, 1993, Ser. No. 5,991

Claims priority, application Japan, Jan. 29, 1992, 4-013632; Jan. 31, 1992, 4-016339; Jan. 31, 1992, 4-016341; Jan. 31, 1992, 4-016343; Jan. 31, 1992, 4-016344; Jan. 31, 1992, 4-016345; Jan. 31, 1992, 4-016346; Jan. 31, 1992, 4-016347

Int. Cl.[6] H04N *5/21;1/40;1/46;* **G06K** *9/40*

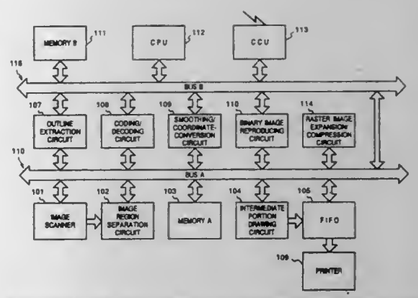
U.S. Cl. 343—625 **98 Claims**

1. An image processing apparatus comprising:

input means for inputting an image;

discrimination means for discriminating whether a region in the image input be said input means is a character/line region or a pseudo-halftone image region;

contour extraction means for extracting contour vector data along an image edge in the character/line image region discriminated by said discriminating means;



first image generating means for enlarging/reducing the vector data extracted by said contour vector extraction means and for generating image data on the basis of the enlarged/reduced vector data if said discrimination means discriminates that the region in the image input by said input means is a character/line region; and

second generating means for deactivating said contour vector extraction means and for generating image data by enlarging/reducing the input image in the pseudo-halftone image region if said discrimination means discriminates that the region in the image input by said input means is a pseudo-halftone image region.

5,644,367

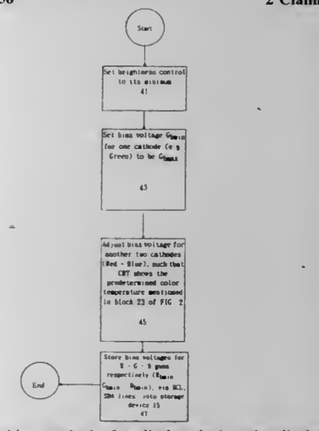
COLOR TRACKING METHOD OF A DISPLAY DEVICE WHEN BRIGHTNESS LEVEL THEREOF IS VARIED

Kuo-Chin Yu, Taoyuan, Taiwan, assignor to Acer Peripherals Inc., Taoyuan, Taiwan

Filed Mar. 20, 1995, Ser. No. 407,578

Int. Cl.[6] H04N *9/73;5/57*

U.S. Cl. 348—656 **2 Claims**



1. A color tracking method of a display device, the display device including a brightness control, a Red, green, Blue cathode, a control grid terminal for receiving a brightness voltage and a video circuit, the video circuit having a bias voltage input terminal for each Red, Green and Blue cathode respectively for receiving a bias voltage, comprising the steps of:

(1) Calculating the bias voltage, Rb, Gb, Bb, for the Red, Green and Blue cathode respectively, responsive to the brightness voltage applied to the control grid terminal, such that a condition of (Rb−G):(Gb−G):(Bb−G)=(Rbmin−Gmin):(Gbmin−Gmin):(Bbmin−Gmin) holds, wherein G is the brightness voltage, Gmin is the brightness voltage on the

control grid terminal when the brightness control is set to a minimum, Rbmin, Gbmin and Bbmin respectively is the bias voltage applied to each bias voltage input terminal when the brightness control is set to the minimum and the display device shows a predetermined color temperature:

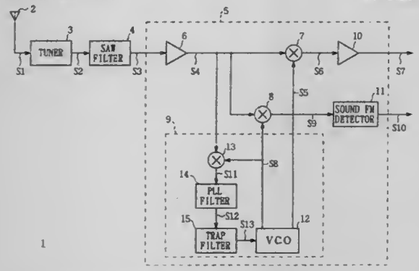
(2) Outputing the Rb, Gb, Bb to each bias voltage input terminal respectively, such that the color of the display device is independent from the change of the brightness voltage G.

5,644,368

COMPOSITE SIGNAL DETECTING APPARATUS HAVING ASSOCIATED FILTER

Yoshitaka Natsume, Kanagawa, Japan, assignor to Sony Corporation

Filed Nov. 9, 1995, Ser. No. 556,149
Claims priority, application Japan, Nov. 30, 1994, 6-321238
Int. Cl.[6] H04N *5/445*
U.S. Cl. 348—737 **40 Claims**



1. A signal detecting apparatus comprising:

a PLL circuit for receiving as input an input signal containing a first signal component and a second signal component;

a filter in said PLL circuit for attenuating said second signal component;

an oscillator in said PLL circuit for receiving a control signal from said filter and generating first and second switching carriers in response thereto; and

a detecting circuit for detecting said first signal component based on a multiplication of said input signal with said first switching carrier.

5,644,369

SWITCHABLE LENS/DIFFUSER

Karen E. Jachimowicz, Laveen, and Michael S. Lebby, Apache Junction, both of Ariz., assignors to Motorola, Schaumburg, Ill.

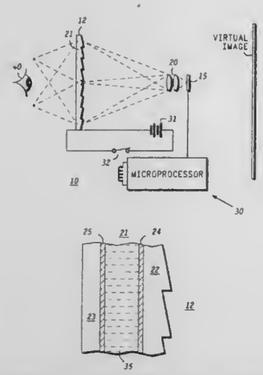
Filed Feb. 24, 1995, Ser. No. 393,639
Int. Cl.[6] G02F *1/1335;* **G02B** *5/32*
U.S. Cl. 349—10 **7 Claims**

1. A switchable lens/diffuser comprising:

a refractive lens constructed to form an optical image in cooperation with light directed thereon; and

a layer of polymer dispersed liquid crystal material having a clear state and a diffusing state, the layer of material being positioned in a cavity in the refractive lens so that the refractive lens forms an optical image when the layer of polymer dispersed liquid crystal material is in the clear state and the layer of polymer dispersed liquid crystal material serves as a diffusing screen to form an image in cooperation with the light directed thereon in the diffusing state; and

means including a pair of optically clear electrically conductive layers one on each opposite side of the layer of polymer dispersed liquid crystal material for providing an electrical potential thereacross, the means being associated with the layer of polymer dispersed liquid crystal material for switching the layer of polymer dispersed liquid crystal material between the clear state and the diffusing state.

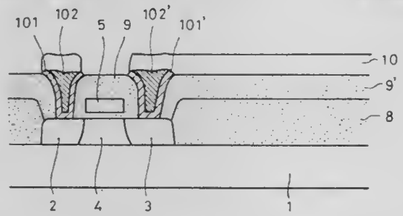


5,644,370

LIQUID CRYSTAL DISPLAY APPARATUS WITH A PLURAL LAYER CONNECTION BETWEEN THE TFT DRAINS AND THE PIXEL ELECTRODES

Mamoru Miyawaki, Tokyo, and Shigetoshi Sugawa, Atsugi, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 330,611, Oct. 28, 1994, abandoned, which is a continuation of Ser. No. 10,628, Jan. 28, 1993, abandoned. This application Jul. 5, 1996, Ser. No. 675,807
Claims priority, application Japan, Jan. 31, 1992, 4-040491; Jan. 31, 1992, 4-040495
Int. Cl.[6] G02F *1/136*
U.S. Cl. 349—43 **10 Claims**



1. A liquid crystal display apparatus of an active matrix type, comprising:

a thin film transistor acting as a switching device;

a pixel having an electrode which is connected to said thin film transistor;

metal layers provided at least in a connecting portion which connects said thin film transistor and the electrode of said pixel; and

insulating layers around said metal layers,

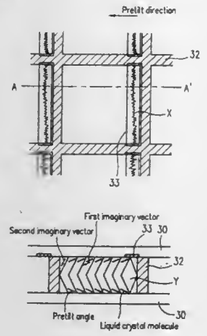
wherein a top surface of said metal layers is at substantially a same level as a top surface of said insulating layers around said metal layers.

5,644,371

LIQUID CRYSTAL DISPLAY DEVICE AND METHOD FOR PRODUCING THE SAME

Mitsuhiro Koden, Nara; Aya Miyazaki, Tenri, and Tokihiko Shinomiya, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 4, 1995, Ser. No. 434,487
Claims priority, application Japan, Jul. 25, 1994, 6-172738
Int. Cl.[6] G02F *1/1339;1/141*
U.S. Cl. 349—110 **3 Claims**



1. A liquid crystal display device comprising: a pair of substrates disposed so as to face each other; a pair of electrodes formed respectively on each surface of the pair of substrates; a pair of alignment films formed respectively on each surface of the pair of electrodes; and a ferroelectric liquid crystal layer interposed between the pair of alignment films,

wherein pretilt directions defined by first direction vectors obtained by orthogonally projecting first imaginary vectors to each surface of the pair of substrates are the same with respect to both of the pair of substrates, the first imaginary vectors are parallel to liquid crystal molecules in the ferroelectric liquid crystal layer in the vicinity of the pair of substrates and directed away from each surface of the pair of substrates toward a center portion of the ferroelectric liquid crystal layer in its thickness direction,

wherein the ferroelectric liquid crystal layer has a plurality of smectic layers in a chevron layered structure and where a bending direction of the smectic layers is the same direction as the first direction vector and is defined by a second direction vector obtained by orthogonally projecting a second imaginary vector to each surface of the pair of substrates, the second imaginary vector is parallel to the smectic layers and included in the same plane with the first imaginary vector and directed away from each of the surfaces of the pair of the substrates toward the center portion of the ferroelectric liquid crystal layer,

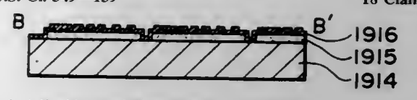
and wherein walls made of an insulating non-liquid crystal material are formed between the pair of substrates in a direction vertical to the surfaces of the pair of substrates, and a light-shielding film is formed on either one of the pair of substrates so that light beam does not pass through portions of the ferroelectric liquid crystal in a vicinity of a downstream side of the walls along the pretilt direction.

5,644,372

LIQUID CRYSTAL DISPLAY DEVICE HAVING PROTRUSIONS ON THE ELECTRODES

Katsuhiko Shinjo, Isehara; Tetsuya Kaneko; Shuzo Kaneko, both of Yokohama, and Takeo Tsukamoto, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 99,054, Jul. 29, 1993, Pat. No. 5,495,352.
This application May 22, 1995, Ser. No. 445,991
Claims priority, application Japan, Jul. 30, 1992, 4-222287; Jul. 30, 1992, 4-222288; Jul. 30, 1992, 4-222289; Dec. 28, 1992, 4-348689
Int. Cl.[6] G02F *1/1343;1/13*
U.S. Cl. 349—139 **18 Claims**



1. A liquid crystal display device, comprising:

a pair of oppositely disposed substrates each having a plurality of opposing electrodes, and a ferroelectric liquid crystal disposed between the substrates so as to form a plurality of pixels each composed by a combination of a pair of the opposing electrodes and the ferroelectric liquid crystal disposed therebetween;

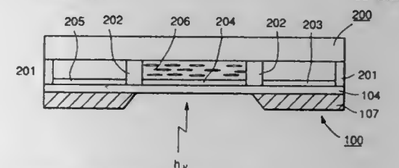
wherein each pixel is provided with regions of different polarity inversion threshold voltages, and at least one of said pair of opposing electrodes is provided with a plurality of regions having island-shaped unevennesses at different densities including a region with a higher density of unevennesses corresponding to a region of a lower polarity inversion threshold voltage and a region with a lower density of unevennesses corresponding to a region of a higher polarity inversion threshold voltage.

5,644,373

LIQUID CRYSTAL DEVICE WITH SUBSTRATES OF DIFFERENT MATERIALS AND SIMILAR THERMAL EXPANSION COEFFICIENTS

Teruhiko Furushima; Shigetoshi Sugawa, both of Atsugi; Moriyuki Okamura, Sagamihara; Masaru Kamio, Kawasaki, and Mamoru Miyawaki, Isehara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 10,295, Jan. 28, 1993, abandoned.
This application Sep. 26, 1994, Ser. No. 312,172
Claims priority, application Japan, Jan. 31, 1992, 4-040493; Dec. 28, 1992, 4-358844
Int. Cl.[6] G02F *1/1333;1/13*
U.S. Cl. 349—158 **11 Claims**



1. A liquid crystal device comprising:

first and second substrates opposed to each other at a predetermined distance, said substrates being formed of different materials, said first substrate including light-transmissive and non-light-transmissive layers; and

a liquid crystal enclosed between said first and second substrates,

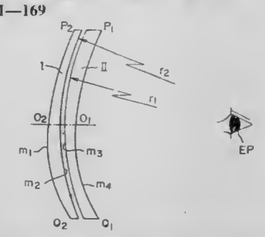
wherein a difference between a thermal expansion coefficient of said non-light-transmissive layer and a thermal expansion coefficient of said second substrate is within a range of ±50% of a thermal expansion coefficient of said first substrate over a temperature range for sealing said first and second substrates together without intentional deformation of either said first substrate or said second substrate.

5,644,374

VARIABLE FOCUS TYPE EYESIGHT CORRECTING APPARATUS

Hiroyuki Mukaiyama; Kazutoshi Kato, and Akira Komatsu, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo-to, Japan

Continuation of Ser. No. 129,101, Sep. 30, 1994, abandoned. This application Mar. 27, 1995, Ser. No. 410,902
Claims priority, application Japan, Feb. 3, 1992, 4-17715
Int. Cl.[6] G02C *7/06;7/08*
U.S. Cl. 351—169 5 Claims



1. An optical lens system for a variable focus eyesight correcting apparatus, the optical lens system comprising:

first and second optical lenses (I,II) superimposed on each other such that principal meridians thereof are coincident, the optical lenses being relatively slidable along the principal meridian for changing a refractive power, at least one of the opposite refractive surfaces (m_1–m_2) of each of the optical lenses having a region in which a radius of curvature and, thereby, optical power progressively changes along the principal meridians, wherein:

when astigmatisms in the optical lenses are expressed by contours space at interval of arbitrary diopter, the contours are substantially parallel to the principal meridians and substantially linear, the astigmatisms of the optical lenses compensating for each other so as to provide a low constant total astigmatism over an effective surface of the optical lenses; and

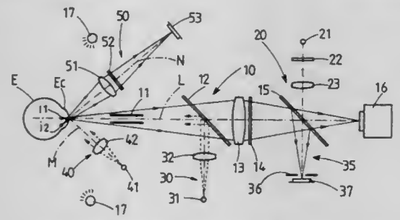
when refracting powers in the optical lenses are expressed by contours spaced at intervals of arbitrary diopter, the contours are substantially perpendicular to the principal meridians and substantially linear, the refracting powers of the optical lenses compensating for each other so as to provide a variable but locally constant power over the entire effective surface.

5,644,375

OPHTHALMIC APPARATUS PROVIDED WITH ALIGNMENT MECHANISM PRELIMINARY CLASS

Nobuo Suzuki, Nukata-gun, Japan, assignor to Nidek Co., Ltd., Japan

Filed Sep. 18, 1995, Ser. No. 529,402
Claims priority, application Japan, Sep. 30, 1994, 6-260980; Sep. 30, 1994, 6-260981
Int. Cl.[6] A61B *3/14;3/10*
U.S. Cl. 351—208 14 Claims



1. An ophthalmic apparatus comprising an examining means for examining an eye, wherein said examining means is operated after aligned at a predetermined position with respect to the eye to be examined, the apparatus comprising:

first means for moving said examining means in accordance with operation by an examiner with respect to the eye to be examined;

means for irradiating alignment lights onto a cornea of the eye to be examined to form alignment indexes formed by the reflection of the alignment lights from the surface of the cornea;

means for detecting a position of the alignment indexes formed on the eye;

second means for further moving said examining means;

means for judging whether or not said examining means is within a predetermined rough alignment area in X, Y and Z directions, where said second moving means starts to move, with respect to the eye based on results from said index detecting means; and

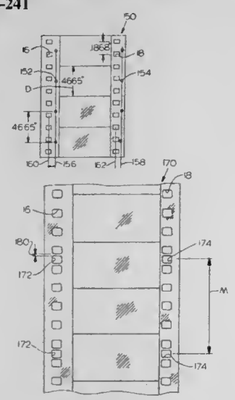
means for controlling said second moving means to perform alignment, when said judging means judges that said examining means is within the predetermined rough alignment area in X, Y and Z directions.

5,644,376

ADDED FILM PERFORATIONS FOR FRAME REGISTRATION

Richard Vetter, 17627 Camino de Yatasto, Pacific Palisades, Calif. 90272

Continuation-in-part of Ser. No. 529,673, Sep. 18, 1995, Pat. No. 5,543,869, which is a continuation-in-part of Ser. No. 221,036, Mar. 31, 1994, Pat. No. 5,534,954, which is a continuation-in-part of Ser. No. 807,056, Dec. 12, 1991, abandoned. This application Jun. 4, 1996, Ser. No. 658,054
Int. Cl.[6] G03C *1/76*
U.S. Cl. 352—241 6 Claims



4. An elongated film strip of 35 mm motion picture film which has opposite side portions and a row of regular perforations in each side portion, said perforations of each row being spaced along the length of the film by a perf spacing distance of substantially 0.187 inch and said film strip having film frames spaced apart by 2.5 perf spacings, or substantially 0.467 inch, wherein:

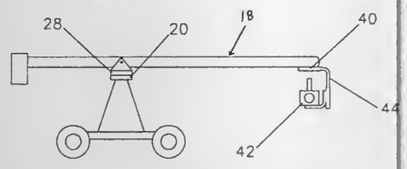
said strip has a plurality of new pin-receiving holes that are spaced apart along the length of the film strip by said perf spacing distance times a positive integer times 2.5.

5,644,377

COMPENSATION MECHANISM FOR THE ELIMINATION OF MANUAL BACKPAN ON CAMERA CRANES AND JIB ARMS

Andrew B. Romanoff, 374 N. Ridgewood Pl., Los Angeles, Calif. 90004

Filed Jun. 7, 1995, Ser. No. 476,459
Int. Cl.[6] G03B *17/00*
U.S. Cl. 352—243 20 Claims



1. A system for automatically compensating for unwanted arc of a camera when panned on a crane arm or jib comprising:

a motor for panning the camera;

a motion sensor located on said arm or jib, said motion sensor being connected to a servo amplifier in such as a manner as to compensate for angular pan movement of said arm or jib by panning said camera in a reverse direction; and

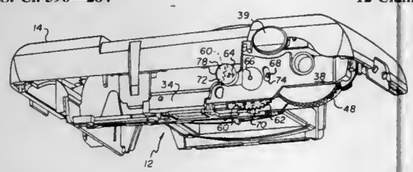
a means to turn the compensation on and off.

5,644,378

PROCESS FOR INITIALIZINS FRAME COUNT

James David Boyd, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 327,536, Oct. 21, 1994, abandoned. This application Jul. 25, 1996, Ser. No. 686,294
Int. Cl.[6] G03B *17/36;1/00*
U.S. Cl. 396—284 12 Claims



1. A method for initializing a rotatable frame counter in a camera to a preliminary setting from a random setting, comprising the steps of:

placing an engagement element directly on a surface of the frame counter in a ready position to engage and thereby arrest the frame counter when the frame counter is rotated from the random setting to the preliminary setting; and

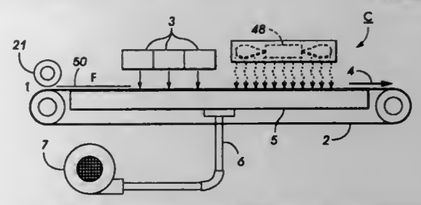
rotating the frame counter relative to the engagement element to bring engageable means located on the frame counter into contact with the engagement element only when the frame counter is at the preliminary setting, whereby the engagement element will arrest the frame counter at the preliminary setting.

5,644,379

PASSIVE BELT GUIDANCE BY FABRIC WEAVE ORIENTATION

Leo Chin, Bronx; Abu S. Islam, Mt. Vernon, both of N.Y.; Sandra Graveson, Waterbury, Conn., and Robert J. Kleckner, Yorktown Heights, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 26, 1995, Ser. No. 548,566
Int. Cl.[6] G03B *27/32*
U.S. Cl. 355—27 4 Claims



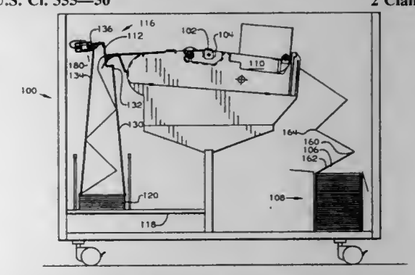
1. An apparatus for for guiding a web along a predetermined path in a process direction, comprising a web support and constraining device, said support and constraining device comprising a fabric portion in contact with the web, wherein said fabric portion and the web have alignment channels formed therein in the process direction to maintain the web along the predetermined path.

5,644,380

PRODUCING A CONTINUOUS-FORMS PRINTER WITH A PAPER MISFOLD DETECTOR

Robert Frederic Jessen, Endwell; Christopher Alan Mertens; Nathan J. Olsen, both of Endicott, and Robert Joseph Telfer, Vestal, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 165,230, Dec. 10, 1993, Pat. No. 5,450,158, which is a division of Ser. No. 938,182, Aug. 31, 1992, Pat. No. 5,321,464. This application May 3, 1995, Ser. No. 433,628
Int. Cl.[6] G03B *27/48;27/50*
U.S. Cl. 355—50 2 Claims



1. A process for producing a printer, comprising the steps of:

providing printing means for producing images on the surface of a length of paper;

positioning tractor drive means in line with the printing means for moving the length of paper longitudinally through the printing means by engaging in holes along the longitudinal edges of the paper;

positioning surface means in line with and below the tractor drive means for stacking the continuous paper in a fanfold arrangement after printing;

positioning guide means in line between the tractor drive means and surface means for directing the paper from the tractor drive means downward toward the surface means for stacking in the fanfold arrangement;

positioning a misfold detector at the guide means for detecting misfolds either between the tractor drive means and guide means or between the guide means and the fanfold stack of paper by

positioning a lever so that misfolds between the tractor drive and guide means tend to move the lever in a first direction and misfolds between the guide means and the stack on the surface means tend to move the lever in an opposite direction; and

providing indicator means for generating a misfold signal if the lever is moved in either the first or the opposite the directions.

5,644,381

METHOD OF EXPOSURE EMPLOYING PHASE SHIFT MASK OF ATTENUATION TYPE

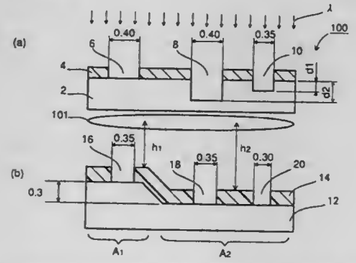
Junji Miyazaki, and Nobuyuki Yoshioka, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 15, 1995, Ser. No. 440,611

Claims priority, application Japan, Jul. 11, 1994, 6-158419

Int. Cl.[6] G03B *27/42;27/32;27/72*

U.S. Cl. 355—53 **3 Claims**



1. A method of exposure using a phase shift mask of attenuation type, for exposing, using an exposure apparatus including an attenuation type phase shift mask having first and second light transmitting portions through which a transparent substrate is exposed, and a phase shift mask formed on said transparent substrate to surround said first and second light transmitting portions, a material having a first region to be exposed positioned at a first distance from a projection lens of said exposure apparatus corresponding to a region of said first light transmitting portion, and a second region to be exposed positioned at a second distance from the projection lens of said exposure apparatus corresponding to a region of said second light transmitting portion, comprising the steps of:

providing a prescribed phase angle to exposure light passing through said second light transmitting portion; and

calculating optimal value of difference between said first and second distances, based on said phase angle and hole diameter of said second light transmitting portion.

5,644,382

PHOTOGRAPHIC PRINTING APPARATUS

Yuji Yamamoto, Wakayama, Japan, assignor to Noritsu Koki Co., Ltd., Wakayama, Japan

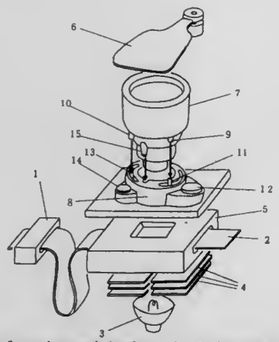
Filed Apr. 21, 1995, Ser. No. 426,404

Claims priority, application Japan, Apr. 25, 1994, 6-108988

Int. Cl.[6] G03B *27/34*

U.S. Cl. 355—55 **3 Claims**

1. A photographic printing apparatus in which a plurality of lens units are selectively used for printing, comprising:



a variable focus lens unit having a focal distance adjusting jack for operating a focal distance adjusting mechanism and an aperture adjusting jack for operating an aperture adjusting mechanism; and

a lens mount equipped with a focal distance adjusting pin which is driven by a focal distance driving motor unit and an aperture adjusting pin which is driven by an aperture driving motor,

wherein when said lens mount is engaged with said variable focus distance lens unit, said focal distance adjusting jack is engaged with said focal distance adjusting pin, and said aperture adjusting jack is engaged with said aperture adjusting pin.

5,644,383

SCANNING EXPOSURE APPARATUS AND DEVICE MANUFACTURING METHOD USING THE SAME

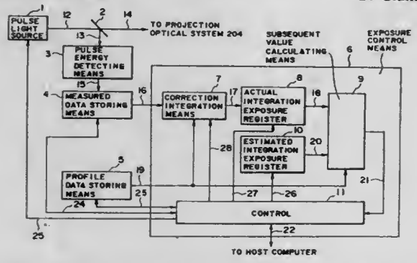
Tetsuzo Mori, Atsugi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 10, 1994, Ser. No. 338,777

Claims priority, application Japan, Nov. 11, 1993, 5-282573

Int. Cl.[6] G03B *27/42;27/74*

U.S. Cl. 355—68 **20 Claims**



1. A scanning exposure apparatus for scan exposure of an original and a substrate, for transferring a pattern of the original onto the substrate, said apparatus comprising:

supplying means for supplying exposure light to the substrate through the original during the scan exposure of the original and the substrate, wherein the exposure light illuminates a slit-like region on the substrate which extends in a direction intersecting a scan direction of the substrate, wherein the exposure light has a predetermined intensity distribution within the slit-like region and with respect to the scan direction, and wherein the slit-like region has a width with respect to the scan direction which is smaller than a width of a pattern transfer region on the substrate with respect to the scan direction;

detecting means for detecting light quantity of the exposure light; and

control means for controlling said supplying means on the basis of the detected light quantity and the predetermined intensity distribution of the exposure light.

5,644,384

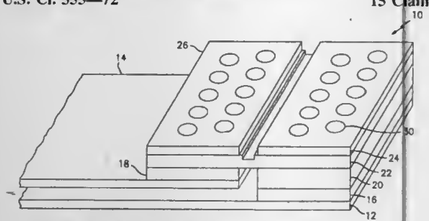
REINFORCING, ADJUSTABLE, SERVICEABLE HINGE ASSEMBLY FOR PHOTOIMAGING APPARATUS AND A METHOD FOR MAKING SAME

Lawrence O'Neil, 741 S. Main St., Bellingham, Mass. 02019

Filed Apr. 19, 1995, Ser. No. 423,830

Int. Cl.[6] G03B *27/58;27/04*

U.S. Cl. 355—72 **15 Claims**



6. A hinged photoimaging apparatus comprising:

an upper rigid plate;

a lower rigid plate;

an upper hinge plate having a plurality of staggered threaded studs fixedly attached to said upper rigid plate, each stud having one end connected to the upper hinge plate and each stud extending a distance from said upper hinge plate and terminating with an opposite open end;

a lower hinge plate having a plurality of staggered threaded studs fixedly attached to lower rigid plate, each stud having one end connected to said lower hinge plate and each stud extending a distance from said lower hinge plate and terminating with an opposite open end, said hinge plate is "T" shaped, a portion of which is adhesively attached to said lower rigid plate so as to reduce flexing is said lower rigid plate;

a spacer plate having a plurality of staggered openings extending through with, each opening having a diameter about the same as the diameter of said threaded studs and the openings being sized to receive a portion of said threaded studs extending therethrough, said spacer plate attached to said lower hinge plate through the interference fit being established between each opening on said spacer plate and said threaded studs of said lower hinge;

a flexible polymeric hinge having a plurality of staggered openings, each opening having a diameter about the same as the diameter of said threaded studs and the openings being sized to receive a portion of said threaded studs extending therethrough, and an interference fit being established between each opening of said hinge and said threaded studs of said upper and lower hinge plates, said polymeric hinge having a top and bottom side, said top side having a groove extending down the entire length of the center of said hinge, said top further having a left and right side separated by said groove, said hinge joining said upper and lower hinge plates;

an upper retaining plate having a plurality of staggered openings to accommodate said threaded studs to said upper hinge plate, each opening having a diameter about the same as the diameter of said threaded studs and the openings being sized to receive a portion of said threaded studs extending therethrough, and an interference fit being established between each opening of said upper retaining plate and said threaded studs of said upper hinge plate, said retaining plate positioned on said top left side of said polymeric hinge;

a lower retaining plate having a plurality of staggered openings to accommodate said threaded studs to said lower hinge plate, each opening having a diameter about the same as the diameter of said threaded studs and the openings being sized to receive a portion of said threaded studs extending therethrough, and an interference fit being established between each opening of said lower retaining plate and said threaded studs of said lower hinge plate, said retaining plate positioned on said top right side of said polymeric hinge; and

a plurality of threaded screws, adjustably threaded into said open ended studs for securing together said hinge assembly.

5,644,385

DISTANCE MEASURING DEVICE USING POSITION SENSITIVE LIGHT DETECTOR

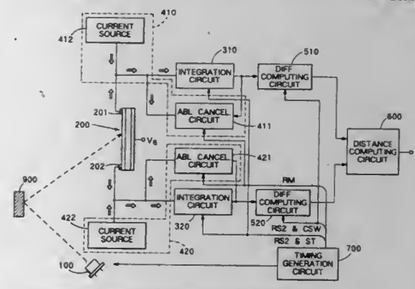
Seiichiro Mizuno, Hamamatsu, Japan, assignor to Hamamatsu Photonics K.K., Shizuoka-ken, Japan

Filed Apr. 28, 1995, Ser. No. 429,618

Claims priority, application Japan, Apr. 28, 1994, 6-091558

Int. Cl.[6] G01C *3/00;* **G03B** *3/00;* **G02B** *7/04*

U.S. Cl. 356—3.04 **10 Claims**



1. A distance measuring device comprising:

a light emitting element for emitting light when said light emitting element is turned ON in response to a light emission instruction;

a light receiving element having a light receiving surface, a first output terminal, and a second output terminal, said light receiving surface receiving reflection light, that is emitted from said light emitting element and reflected from an object to be distance measured, and background light, that comes from a background of the object, and photoelectrically converting the reflection light to a reflection current and the background light to a background current, the reflection current being divided into a first reflection current and a second reflection current, the background current being divided into a first background current and a second background current, the first reflection current and the first background current being outputted from the first output terminal, the second reflection current and the second background current being outputted from the second output terminal;

a first cancellation circuit operatively connected to the first output terminal of said light receiving element, for canceling a first reference background current from a current outputted from the first output terminal of said light receiving element and outputting a first modified current in response to a first cancellation instruction;

a first integration circuit having an input terminal supplied with the first modified current and an output terminal, said first integration circuit integrating the first modified current for a first predetermined period of time during which time said light emitting element is turned OFF and outputting a first pre-integrated value, said first integration circuit thereafter integrating the first modified current for the first predetermined period of time during which time said light emitting element is turned ON and outputting a first post-integrated value, in response to a first integration instruction;

a first difference computing circuit operatively connected to the output terminal of said first integration circuit, for computing a difference between the first pre-integrated value and the first post-integrated value and outputting a first distance information signal in response to a first computing instruction;

a second cancellation circuit operatively connected to the second output terminal of said light receiving element, for canceling a second reference background current from a current outputted from the second output terminal of said light receiving element and outputting a second modified current in response to a second cancellation instruction;

a second integration circuit having an input terminal supplied with the second modified current and an output terminal, said second integration circuit integrating the second modified current for a second predetermined period of time during which time said light emitting element is turned OFF and outputting a second pre-integrated value, said second integration circuit thereafter integrating the second modified current for the second predetermined period of time during which time said light emitting element is turned ON and outputting a second post-integrated value, in response to a second integration instruction;

a second difference computing circuit operatively connected to the output terminal of said second integration circuit, for computing a difference between the second pre-integrated value and the second post-integrated value and outputting a second distance information signal in response to a second computing instruction;

a distance computing circuit operatively connected to both said first difference computing circuit and said second difference computing circuit, for computing a distance to the object based on the first distance information signal and the second distance information signal; and

a timing generation circuit for generating the light emission instruction, the first integration instruction, the second integration instruction, the first computing instruction and the second computing instruction.

5,644,386

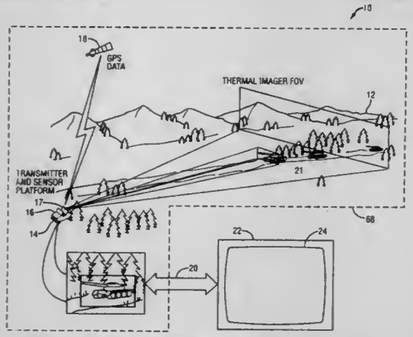
VISUAL RECOGNITION SYSTEM FOR LADAR SENSORS

Gary Kim Jenkins, Arlington; Bruno Jack Evans, Euless; David Collis Williams, Jr., Burleson, and Arthur Steven Bornowski, Garland, all of Tex., assignors to Loral Vought Systems Corp., Grand Prairie, Tex.

Filed Jan. 11, 1995, Ser. No. 371,284

Int. Cl.[6] G01C *3/08;* **H04N** *7/18;7/12;* **G01N** *5/02*

U.S. Cl. 356—4.01 **20 Claims**



1. A method of detecting an object in a scene at a point remote from the scene, comprising the steps of:

laser scanning the scene to provide scan data representing a three-dimensional record of the scene including the object;

processing the scan data at a local site to segment the object in the scene; and

transmitting substantially only said segmented data to a remote site for viewing the object at the remote site.

5,644,387

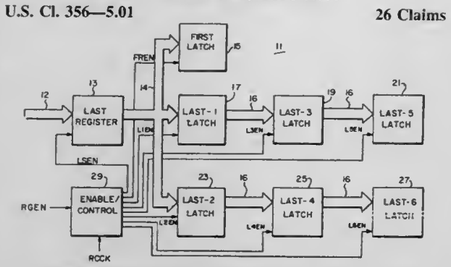
HIGH-SPEED DATA REGISTER FOR LASER RANGE FINDERS

Dwight N. Oda, Rancho Santa Margarita, Calif.; Gregson D. Chinn, Oro Valley, Ariz., and Charles E. Nourrcier, Jr., Lakewood, Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Filed Jun. 7, 1995, Ser. No. 484,736

Int. Cl.[6] G01C *3/08;* **G11C** *19/00*

U.S. Cl. 356—5.01 **26 Claims**



1. A data register driven by a system clock for storing a series of data values supplied at a rate of said system clock comprising:

a last register means for receiving said data values at the rate of said system clock and for holding a last data value inputted to said last register means;

a first set of pipelined latches;

a second set of pipelined latches; and

control means for loading the received data values alternately from said last register means into said first set of latches and from said last register means into said second set of latches such that each of said first and second set of latches is loaded at one-half the rate of said system clock.

5,644,388

IMAGING FLOW CYTOMETER NEARLY SIMULTANEOUSLY CAPTURING A PLURALITY OF IMAGES

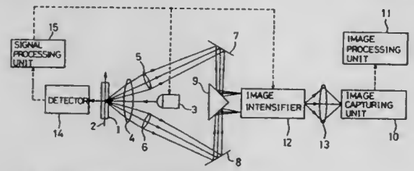
Yasunori Maekawa, Miki, and Tokibiro Kosaka, Kakogawa, both of Japan, assignors to Toa Medical Electronics Co., Ltd., Hyogo, Japan

Filed Apr. 19, 1995, Ser. No. 424,076

Claims priority, application Japan, Apr. 19, 1994, 6-080509

Int. Cl.[6] G01N *21/00;33/48;* **G01J** *3/30*

U.S. Cl. 356—73 **21 Claims**



1. An imaging flow cytometer comprising:

a transparent flow cell, through which a sample liquid containing at least one particle flows;

light emitting means for emitting a light beam to illuminate the at least one particle in the transparent flow cell; and

image capturing means for nearly simultaneously capturing a plurality of different images, the plurality of images being captured based on a plurality of light beams nearly simultaneously leaving the particle in a plurality of different directions after the illuminating light beam has interacted upon the at least one particle being located in an image capturing area of the transparent flow cell.

5,644,389

METHOD FOR MEASURING DISTANCE BETWEEN REFLECTION POINTS ALONG LIGHT TRANSMISSION LINE AND REFLECTANCE THEREOF

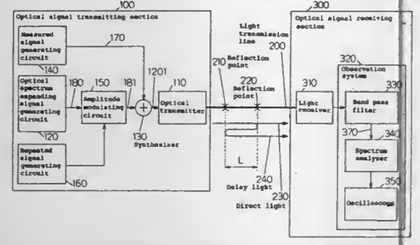
Hiroaki Yamamoto, Higashiosaka; Kuniaki Utsumi, Sanda, and Katsuyuki Fujito, Higashiosaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 14, 1995, Ser. No. 557,478

Claims priority, application Japan, Nov. 15, 1994, 6-280209

Int. Cl.[6] G01N *21/88*

U.S. Cl. 356—73.1 **21 Claims**



1. A method of measuring reflection points on a light transmission line, which comprises the steps of:

modulating amplitude of a light spectrum expanding signal having at least one frequency outside the intrinsic frequency band of a measured signal by means of a repeated signal having a period T so that an amplitude value of an output signal becomes sufficiently smaller than an amplitude value of said measured signal only for a certain period of time during the time of said period T;

synthesizing said amplitude-modulated signal and said measured signal;

light-intensity-modulating a signal light emitted from a light source with said synthesized signal;

transmitting said light-intensity-modulated signal light via a light transmission line to a light receiving circuit;

converting a received signal light received by said light receiving circuit into an electric signal;

extracting said transmitted measured signal from said electric signal; and

calculating (1) a distance between reflection points present on the end faces of optical elements and/or at connecting points of optical fibers on said light transmission line and/or (2) reflectance at said reflection points by detecting first periodical characteristics of a variation amount of an amplitude fluctuation of said measured signal, relative to a change in central light frequency of said signal light, said variation amount being affected while the measured signal is transmitted, and on the basis of the result of such detection, or by detecting second periodical characteristics of a variation amount of an amplitude fluctuation of said transmitted measured signal during said transmission relative to a change in the frequency of said measured signal, and on the basis of the result of such detection.

5,644,390

INTENSITY DISTRIBUTION SIMULATING METHOD

Tadao Yasuzato, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

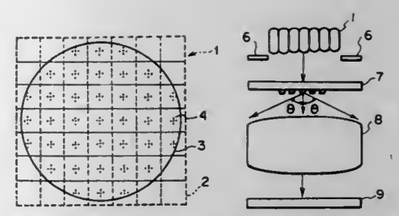
Filed Jan. 31, 1995, Ser. No. 381,326

Claims priority, application Japan, Jan. 31, 1994, 6-009011

Int. Cl.[6] G01J *1/00;* **G02B** *27/10*

U.S. Cl. 356—121 **18 Claims**

1. An intensity distribution simulation method for a lithographic process for semiconductor devices, said lithographic process including an integrator having plural unit lenses which define an effective light source, said method comprising the steps of:



modeling a light intensity distribution of each of the plural unit lenses of the integrator which define said effective light source with at least two sub-point sources; and

determining an intensity distribution of a reticle pattern illuminated by each of said at least two sub-point sources to synthesize the intensity distribution of the reticle pattern due to all of the at least two sub-point sources modeled for each of the plural unit lenses.

5,644,391

METHOD OF AND DEVICE FOR DETERMINING THE POLYMERIZATION PROFILE OF A POLYMERIC LAYER

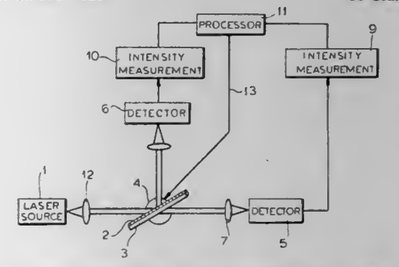
Giorgio Grego, S. Francesco Al Campo, and Luigi Tallone, Paesana, both of Italy, assignors to Sip societa Italiana per l'Esercizio Delle Telecomunicazioni P.A., Turin, Israel

Filed Mar. 21, 1996, Ser. No. 619,425

Claims priority, application Italy, Mar. 22, 1995, TO95A0217

Int. Cl.[6] G01N *21/41*

U.S. Cl. 356—128 **10 Claims**



1. A method of determining a polymerization profile of a layer of polymeric material comprising the steps of:

(a) sending a light radiation towards a layer of polymeric material under test at different angles of incidence;

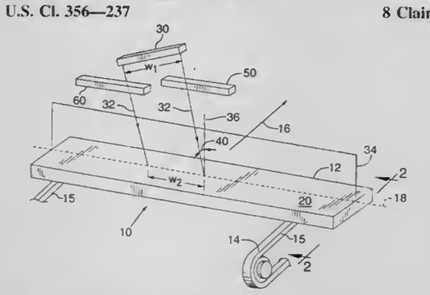
(b) transforming both a portion of radiation reflected by the layer and a portion of radiation transmitted by the layer into respective electrical signals;

(c) measuring the intensity of each of said electrical signals as the angle of incidence varies and obtaining values of reflectance and transmittance of the layer relevant to different angles of incidence are obtained from said measurements of intensity;

(c) obtaining a value of refractive index at a different depth inside the layer from said values of reflectance and transmittance relevant to each angle of incidence; and

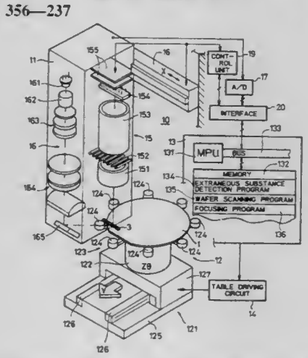
(e) obtaining a degree of polymerization at each depth by comparison of said refractive index with refractive indexes determined in a calibration phase of a precursor of the polymer and of the fully polymerized material.

5,644,392
SCANNING SYSTEM FOR LUMBER
Jon F. Soest; James N. Horn, both of Seattle; Thomas E. Lock, and Gordon L. Mitchell, both of Woodinville, all of Wash., assignors to U.S. Natural Resources, Inc., Vancouver, Wash.
Filed Sep. 12, 1995, Ser. No. 527,169
Int. Cl.[6] G01N *21/00*
U.S. Cl. 356—237 **8 Claims**



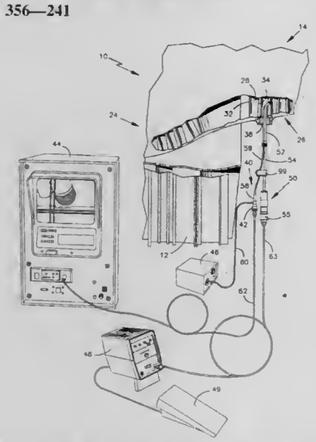
1. A system for scanning lumber pieces which are conveyed transversely on a conveyor comprising:
a telecentric scanning device converting a sweeping light beam into a linear light beam pattern projected onto a lumber piece whereby the projection of the beam throughout the pattern is at a substantially constant angle of incidence, said linear light beam pattern projected lengthwise onto the lumber piece which is being transversely conveyed along a path of conveyance, a first array of detectors positioned relative to the surface of a lumber piece to receive the specular reflection of the linear light pattern and a second array including at least one detector positioned relative to the surface of the lumber pieces to receive the diffuse reflection of the linear light pattern;
a computer, said first and second array of detectors establishing the intensity levels of the specular and diffuse reflection, respectively, said intensity levels conveyed to the computer for comparison and determination of a defect.

5,644,393
EXTRANEOUS SUBSTANCE INSPECTION METHOD AND APPARATUS
Hisato Nakamura, Saitama-ken; Tetsuya Watanabe, and Yoshio Morishige, both of Honjo, all of Japan, assignors to Hitachi Electronics Engineering Co., Ltd., Tokyo, Japan
Filed Jul. 10, 1996, Ser. No. 678,069
Claims priority, application Japan, Oct. 19, 1995, 7-296065
Int. Cl.[6] G01N *21/89*
U.S. Cl. 356—237 **10 Claims**



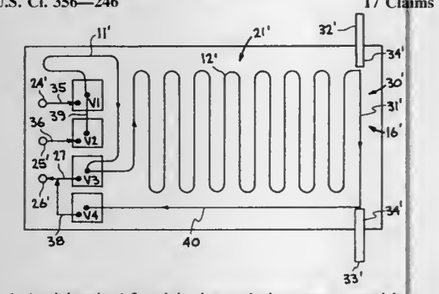
1. An extraneous substance inspection method comprising the steps of:
positioning an extraneous substance inspection optical system having an extraneous inspection area of a predetermined scanning width in subscanning direction of a matter to be inspected in such a manner that the extraneous substance inspection area at a moment when the matter to be inspected is started to move in main scanning direction is arranged at a position in the main scanning direction corresponding to a head portion of the matter to be inspected;
moving the matter to be inspected in the main scanning direction to perform a forward scanning for the matter to be inspected to thereby detect possible extraneous substances in the extraneous substance inspection area; and,
rotating the matter to be inspected by 180° after completing the forward scanning, then moving the matter to be inspected in the direction opposite to the forward scanning to perform a backward scanning, to thereby detect possible extraneous substances in the extraneous substance inspection area.

5,644,394
SYSTEM FOR REPAIRING DAMAGED GAS TURBINE ENGINE AIRFOILS
James L. Owens, Colchester, Conn., assignor to United Technologies Corporation, Hartford, Conn.
Filed Oct. 19, 1994, Ser. No. 325,736
Int. Cl.[6] G01N *21/00*
U.S. Cl. 356—241 **9 Claims**



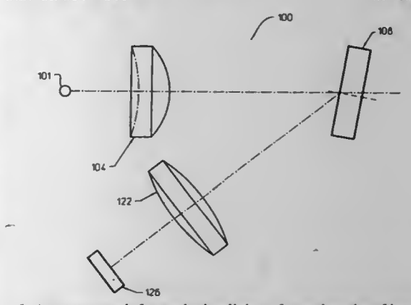
9. A method for observing and repairing damaged airfoils in successive stages of a gas turbine engine, said gas turbine engine having a front and a rear, said method comprising the steps of:
positioning a rigid blending tool having an elongated body with an attachment end and a working end in front of a borescope opening formed in an engine case at a corresponding stage of said gas turbine engine with said attachment end of said blending tool pointing toward 11:00 o'clock position, said rigid blending tool conforming in shape to a path from said borescope opening to a leading edge of said damaged airfoil of said corresponding stage of said gas turbine engine;
inserting said working end of said blending tool radially inward through said borescope opening;
rotating said blending tool so that a grinding top disposed on said working end of said blending tool being oriented to face the front of said gas turbine engine;
pivoting said attachment end of said blending tool toward the rear of said gas turbine engine;
securing said attachment end of said rigid blending tool onto a motorized power handle;
inserting a fiber optic bundle of a borescope through said rigid elongated body of said blending tool with said fiber optic bundle protruding through said working end of said rigid blending tool;
connecting said borescope to said high intensity light source to provide high intensity lighting through said fiber optic bundle onto said damaged airfoil;
connecting said borescope to a video monitor to observe repair process of said airfoil transmitted through said fiber optic bundle of said borescope and a camera of said borescope onto said video monitor;
positioning said grinding tip of said blending tool at a substantially right angle to said leading edge of said damaged airfoil while observing said grinding tip and damaged airfoil on said video monitor;
turning on said motorized power handle after the damage is blended;
withdrawing said rigid blending tool from said gas turbine engine by maneuvering said rigid tool;
withdrawing said rigid blending tool from said borescope opening;
removing said rigid blending tool from said motorized power handle;
repeating above steps with a rigid polishing tool to polish said damaged blade, said polishing tool conforming in shape to said path from said borescope opening to said leading edge of said damaged airfoil of said corresponding stage of said gas turbine engine; and
selecting a different blending tool of a different shape conforming in shape from a borescope opening to a successive stage of said gas turbine engine and repeating the above steps and applied to said successive stage of said gas turbine engine.

5,644,395
MINIATURIZED FLOW INJECTION ANALYSIS SYSTEM
James A. Folta, Livermore, Calif., assignor to Regents of the University of California, Oakland, Calif.
Filed Jul. 14, 1995, Ser. No. 502,795
Int. Cl.[6] G01N *1/10;21/01*
U.S. Cl. 356—246 **17 Claims**



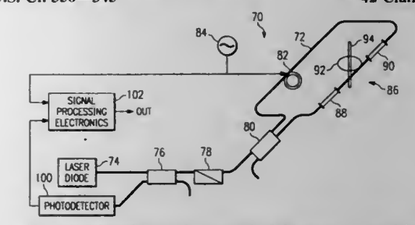
1. A miniaturized flow injection analysis system, comprising:
a substrate having flow channels formed therein;
a cover member secured to said substrate to cover said flow channels;
said flow channels including a sample loop section, a mixing and reaction capillary section, and an absorption section;
a plurality of microvalves operatively connected to sections of said flow channels;
at least sample, reagent, and waste ports operatively connected to said microvalves; and
a detector assembly operatively connected to said absorption section, said detector assembly including an optical absorption flow cell, a fiber optic source, and a fiber optic detector, said fiber optic source and detector being operatively connected to said optical absorption flow cell.

5,644,396
SPECTROGRAPH WITH LOW FOCAL RATIO
George W. Hopkins, II, Sunnyvale, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Jun. 20, 1995, Ser. No. 492,661
Int. Cl.[6] G01J *3/18;3/44*
U.S. Cl. 356—301 **19 Claims**



1. A spectrograph for analyzing lights of wavelengths of interest, comprising:
(a) a first lens unit having at least one lens with at least one aspheric surface for collimating light from a light source, the first lens unit having a positive optical power and having a focal ratio of at most 1.7;
(b) a reflective diffraction grating for diffracting the collimated light from the first lens unit;
(c) a light detector; and
(d) a second lens unit having at least one lens with at least one aspheric surface for focusing the diffracted light on the light detector, the second lens unit having a focal length sufficient to provide an overall magnification of 0.8 to 2.0 on the light detector for said light source.

5,644,397
FIBER OPTIC INTERFEROMETRIC CIRCUIT AND MAGNETIC FIELD SENSOR
James N. Blake, College Station, Tex., assignor to The Texas A&M University System, College Station, Tex.
Continuation of Ser. No. 320,734, Oct. 7, 1994, abandoned.
This application Mar. 26, 1996, Ser. No. 620,121
Int. Cl.[6] G01B *9/02*
U.S. Cl. 356—345 **42 Claims**



1. An optical interferometric magnetic field sensor, comprising:
a polarization maintaining optic fiber forming an optical path;
two linearly polarized light waves traveling in said polarization maintaining optic fiber on said optical path;
at least one fiber quarter wave plate coupled to said optic fiber at substantially a mid-point in said optical path for converting said two linearly polarized light waves into two opposingly circularly polarized light waves traveling on said optical path toward a sensing region, said fiber quarter wave plate being constructed from at least one short section of long beat length polarization maintaining fiber;
said sensing region including a sensing medium sensitive to a magnetic field coupled to said optic fiber at generally said

mid-point in said optical path, said opposingly circularly polarized light waves passing through said sensing medium, and said magnetic field causing a differential phase shift in said opposingly circularly polarized light waves; and

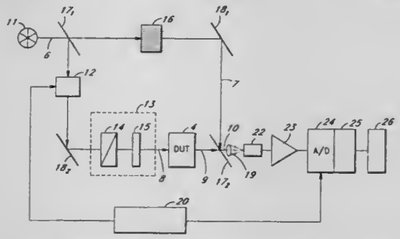
a detector coupled to said optic fiber detecting said differential phase shift and producing an output in response thereto.

5,644,398

HOLE BURNING EFFECT MEASUREMENT SYSTEM

Haruo Yoshida, Gyoda, Japan, assignor to Advantest Corporation, Tokyo, Japan

Filed May 17, 1996, Ser. No. 649,816
Claims priority, application Japan, May 17, 1995, 7-142512
Int. Cl.[6] G01B *9/02*
U.S. Cl. 356—349 **15 Claims**



1. A hole burning measurement system for analyzing a photochemical hole burning effect in an optical device under, comprising:

a light source for generating a coherent light beam;

a first beam splitter for splitting said coherent light beam into two light beams;

an optical frequency shifter for shifting a frequency of one of said two light beams splitted by said first beam splitter to form a reference light beam;

an optical switch for switching the other light beam splitted by said first beam splitter to form a pulse train in a form predetermined for inducing photon echoes in said optical device under test;

a circular polarization converter for circularly polarizing said pulse train from said optical switch to form a circularly polarized light pulse train to be applied to said optical device under test;

a second beam splitter for mixing said reference light beam and a free induction decay (FID) signal of said photon echo induced by said pulse train in said optical device under test;

a photo detector for receiving a mixed signal from said second beam splitter and converting the same to a corresponding electric signal;

an analog-to-digital converter for converting said electric signal to corresponding digital data; and

a Fourier transformer for converting said digital data from said analog-to-digital converter to frequency domain data showing said hole burning effect in a form of frequency spectrum.

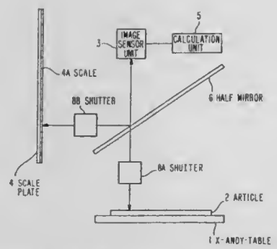
5,644,399

APPARATUS FOR MEASURING DIMENSION OF ARTICLE AND SCALE TO BE USED IN THE SAME

Hiroki Hoshiyama, Shizuoka, Japan, assignor to Japan EM Co., Ltd., Japan

Filed Nov. 27, 1995, Ser. No. 562,733
Claims priority, application Japan, Nov. 15, 1995, 7-297163
Int. Cl.[6] G01B *11/00*
U.S. Cl. 356—372 **7 Claims**

1. An apparatus for measuring the dimension of an article, comprising:



a table having a first flat surface on which said article to be measured is placed;

a marker plate disposed on a second flat surface parallel to the first flat surface, said marker plate having a marker representing a unit of measurement including a coordinate, a dimension or an angle;

half mirror means disposed on a third flat surface located at a position where the optical distance between the article and the half mirror means is equal to the optical distance between the marker and the half mirror means; and

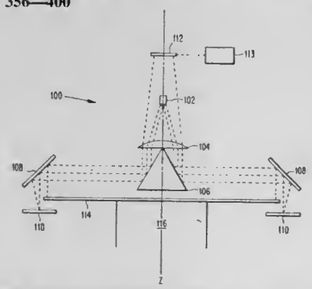
reading means for reading a value corresponding to an arbitrary point on the article and a value, of the marker on the marker plate, corresponding to said arbitrary point by taking advantage of light transmitted through and light reflected from the half mirror means.

5,644,400

METHOD AND APPARATUS FOR DETERMINING THE CENTER AND ORIENTATION OF A WAFER-LIKE OBJECT

Randall S. Mundt, Pleasanton, Calif., assignor to Lam Research Corporation, Fremont, Calif.

Filed Mar. 29, 1996, Ser. No. 623,866
Int. Cl.[6] H01L *21/68*
U.S. Cl. 356—400 **19 Claims**



1. A light detection system for verifying a position of a center and/or discontinuity on an edge of a circular workpiece, comprising:

a support supporting a circular workpiece such that an outer periphery of the workpiece is located radially outwardly of the support;

a light source facing a first side of the workpiece, the light source projecting light toward the workpiece;

a collimating lens between the light source and the workpiece, the collimating lens having an optical axis and the light from the light source passing through the collimating lens in a direction nonparallel to the optical axis;

a first reflector between the collimating lens and the workpiece, the light passing through the collimating lens being reflected radially outwardly by the first reflector;

a second reflector facing the outer periphery of the workpiece, the light reflected by the first reflector being reflected by the second reflector past the outer periphery of the workpiece;

a third reflector facing a second side of the workpiece and reflecting light back towards the second reflector such that the reflected light is reflected by the first reflector through the collimating lens and focused by the collimating lens at a focal position spaced from the light source;

a light detector spaced from the focal position, the light detector receiving the reflected light such that the reflected light illuminates a two-dimensional area on the light detector; and

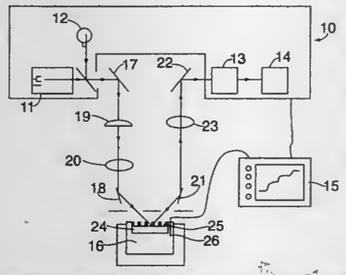
a controller electrically connected to the light detector, the controller receiving signals outputted from the light detector and being operable to verify whether a center of the workpiece is aligned with the optical axis.

5,644,401

METHOD FOR DIRECT CHEMICAL ANALYSIS OF MOLTEN METAL USING SPECTROMETER

Torkild Eivindson, Vennesla, Norway, assignor to Elkem A/S, Norway

PCT No. PCT/NO94/00114, § 371 Date Dec. 29, 1995, § 102(e) Date Dec. 29, 1995, PCT Pub. No. WO95/03546, PCT Pub. Date Feb. 2, 1995
PCT Filed Jun. 21, 1994, Ser. No. 569,190
Claims priority, application Norway, Jul. 26, 1993, 932682
Int. Cl.[6] G01N *21/31*
U.S. Cl. 356—437 **4 Claims**



1. A method for quantitative analysis of one or more elements in a molten metal bath, characterized in that light beams from one or more light sources are focused against the surface of the metal bath, whereafter the light is reflected from the surface of the molten metal bath to a monochromator or a polychromator connected to suitable detectors for detecting absorbed light in a gas layer associated with and in equilibrium with the melt of a wavelength or wavelengths corresponding to the element or elements to be analyzed, which absorption signal or signals are proportional to the atom- or molecular density for the gas component or components to be analysed and a function of the thickness of the gas layer, whereafter the concentration of the element or the elements in the molten metal bath is calculated based on known relations between the absorption signals, the thickness of the gas layer and the temperature of the metal bath.

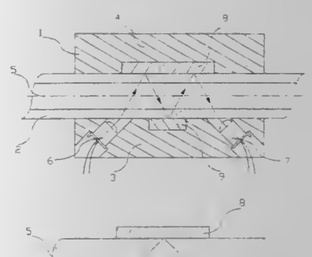
5,644,402

DEVICE FOR DETECTING A CONDUIT AND FOR DETERMINING AT LEAST ONE CHARACTERISTIC OF ITS CONTENT

Jacques Chevallet, Serezin Du Rhone, France, assignor to Hospal Industrie, France

Filed Jun. 1, 1995, Ser. No. 457,219
Claims priority, application France, Oct. 7, 1994, 94 12252
Int. Cl.[6] G01N *21/85*
U.S. Cl. 356—440 **12 Claims**

1. A device for detecting a removable conduit and for determining at least one characteristic of the conduit's contents, the device comprising:



a seat for housing at least one portion of the conduit, the seat including a first and a second zone which are opposite each other with respect to a recess for receiving the conduit;

a light emitter arranged in the first zone and having a preferential light emission direction oriented towards the recess;

a light receptor sensitive to light emitted by the emitter, and having a preferential reception direction oriented towards the recess;

a first light deflector for deflecting, in a direction of the first zone, at least part of the light emitted by the emitter at least when a conduit containing a substantially transparent liquid is engaged in the seat;

a second light deflector for deflecting, in a direction of the second zone, at least part of the light deflected by the first deflector so that, when a conduit containing a substantially transparent liquid is engaged in the seat, at least part of the light emitter by the emitter reaches the receptor after having passed through the conduit at least twice obliquely with respect to a longitudinal axis of the recess; and

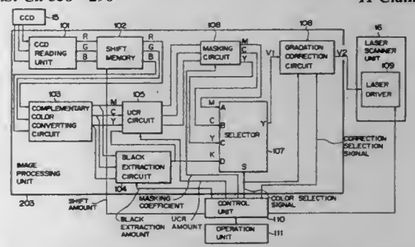
wherein the emitter, the receptor, the first deflector, and the second deflector are arranged with respect to each other, so that, in the absence of a conduit in the seat, at least part of the light emitted by the emitter reaches the receptor after a single deflection.

5,644,403

COLOR IMAGE PROCESSING METHOD AND APPARATUS HAVING SINGLE SIDE AND TWO SIDE MODES FOR PROCESSING COLOR IMAGE DATA

Nobuyuki Watanabe, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 68,098, May 28, 1993, Pat. No. 5,557,428.
This application Jun. 14, 1996, Ser. No. 663,817
Claims priority, application Japan, May 29, 1992, 4-138443
Int. Cl.[6] H04N *1/23;1/46;1/60;* G03G *21/00*
U.S. Cl. 358—296 **11 Claims**



1. A color image processing apparatus comprising:

setting means for setting one of a single side mode and a two side mode as an image forming mode;

color processing means for color processing color image data on the basis of the image forming mode set by said setting means to produce color processed color image data; and

output means for outputting the color processed color image data to a color image forming unit.

5,644,404

FACSIMILE SERVER SYSTEM CAPABLE OF RECOGNIZING AT TRANSMITTING END AN ACCESS TO RECEIVED FACSIMILE DATA AT RECEIVING END

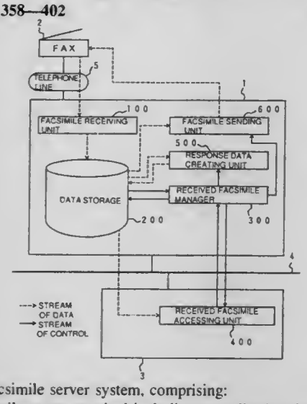
Shin'ichi Hashimoto; Tomihisa Hatano; Kazuhiro Umemura, and Hiroshi Kawamura, all of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 6, 1994, Ser. No. 300,964

Claims priority, application Japan, Sep. 8, 1993, 5-223549

Int. Cl.[6] H04N *1/32*

U.S. Cl. 358—402 **10 Claims**



1. A facsimile server system, comprising:

a facsimile server terminal including a sending/receiving means for sending/receiving facsimile data via a communication line and a storage means for storing facsimile data received by the sending/receiving means;

a client terminal coupled via a network to said facsimile server terminal and including an access means responsive to a user's command for accessing received facsimile data stored in said storage means in said facsimile server terminal;

said facsimile server terminal further including:

a management means for managing a sending-end facsimile number in correspondence with the received facsimile data in a case where the facsimile data is received together with the sending-end facsimile number at a receiving end, and also for managing access information in correspondence with the received facsimile data, said access information indicating whether or not the facsimile data stored in said storage means has already been accessed by said access means in said client terminal; and

a response data sending means, activated when the facsimile data stored in said storage means is accessed by said access means in said client terminal and when said access information indicates that the facsimile data has not yet been accessed by said access means, for calling said sending-end facsimile number corresponding to the accessed facsimile data to send back response data which indicates that the facsimile data has been accessed by a user at the receiving end, said response data including a receiving-end user identifier indicative of a user of the client terminal who has accessed the receiver terminal, a type of access made by said access means, and a time when the access was made by said access means by the receiving-end user identifier indicative of a user of the client terminal who has accessed the received facsimile data stored in said storage means in said facsimile;

said storage means comprising a reception history data file for storing reception history data including data specifying received facsimile data, and reception process result data indicating at least whether or not the reception was normal;

wherein said sending/receiving means creates reception history data upon every receipt of facsimile data, and stores the data in said reception history data file.

5,644,405

COMPOSITE FACSIMILE APPARATUS HAVING FUNCTION FOR ACHEIVING EFFICIENT USE OF LIMITED RESOURCES

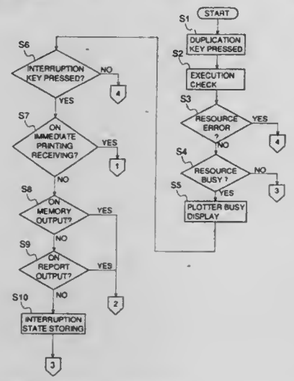
Kazuhiro Sato, Hiratsuka, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Mar. 10, 1994, Ser. No. 208,294

Claims priority, application Japan, Mar. 11, 1993, 5-049790; Oct. 21, 1993, 5-263207

Int. Cl.[6] H04N *1/32*

U.S. Cl. 358—404 **18 Claims**



1. A facsimile apparatus comprising:

signal receiving means for receiving an image signal through facsimile transmission;

image reading means for reading an image and outputting a corresponding image signal;

outputting means for outputting onto a recording medium either the image specified by the image signal received by said signal receiving means or the image specified by the image signal output by said image reading means;

storing means for storing the image signal received by said signal receiving means, if appropriate; and

switching means for automatically switching, in response to a switching signal, an outputting operation of said outputting means so that said outputting means starts outputting of the image specified by the image signal output by said image reading means when said image reading means starts reading of the image while the outputting means is outputting the image specified by said signal receiving means, said storing means then automatically storing the image signal received by said signal receiving means when said image signal received by said signal receiving means is not processed by said outputting means which instead processes said image output by said image reading means.

5,644,406

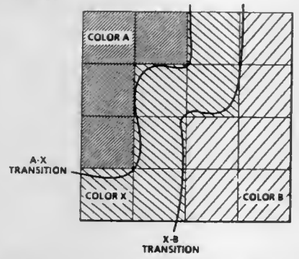
METHOD FOR SELECTING AN OPTIMUM ENCODING PROCESS FOR A BLOCK OF PIXELS FROM A PLURALITY OF PREDEFINED ENCODING PROCESSES

Steven J. Harrington, Holley; Stephen C. Morgana, Sweden, and R. Victor Klassen, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 11, 1995, Ser. No. 439,216

Int. Cl.[6] H04N *1/415*

U.S. Cl. 358—433 **30 Claims**



1. A method for selecting an optimum encoding process for a block of pixels from a plurality of predefined encoding processes, comprising:

identifying a number of color regions present in the block;

said identifying step comprises

selecting two colors within the block, the selecting step comprises choosing two most distinct colors within the block;

finding relationships between the selected two colors within the block; and

classifying the block based on the relationships found determining geometric relationships between the color regions in the block; and

selecting an encoding process from a plurality of encoding processes in response to said identifying step and said determining step.

5,644,407

IMAGE PROCESSING APPARATUS HAVING A REMOTE COMMUNICATION FUNCTION

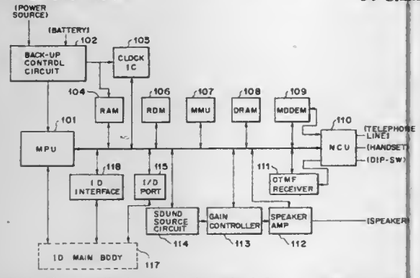
Asao Watanabe, Higashi Kurume; Yukihiko Ogata, Kawasaki; Hiroyuki Nakanishi, Yokohama; Seijiro Yanase, Machida, and Koji Harada, Fuchu, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 20, 1991, Ser. No. 811,054

Claims priority, application Japan, Dec. 20, 1990, 2-404036; Dec. 20, 1990, 2-404287; Dec. 20, 1990, 2-404288; Dec. 20, 1990, 2-404289

Int. Cl.[6] G02B *27/02;23/08;* **G03B** *21/60*

U.S. Cl. 358—434 **30 Claims**



1. An image display control method for controlling an image display unit from a remote location through a predetermined line, with the image display unit having a first memory in which a plurality of images are stored, comprising the steps of:

receiving first data for designating an image to be displayed from among the plurality of images stored in the first memory in advance and second data designating a time to display the image designated by the first data through the predetermined line;

storing the received first data and second data in a second memory; and

reading the image designated by the first data from the first memory when the time designated by the stored second data is reached and displaying the image on the image display unit.

5,644,408

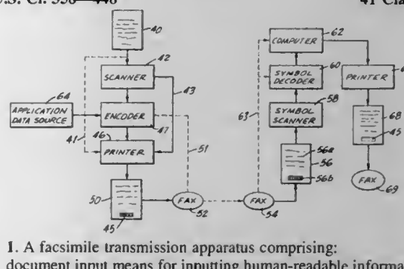
APPARATUS FOR PROCESSING HUMAN-READABLE AND MACHINE-READABLE DOCUMENTS

Chung-Chi Li, and Ynjiun P. Wang, both of Stonyhrook, N.Y., assignors to Symbol Technologies, Inc., Holtsville, N.Y.

Continuation of Ser. No. 123,955, Sep. 20, 1993, Pat. No. 5,506,697, which is a continuation-in-part of Ser. No. 461,881, Jan. 5, 1990, Pat. No. 5,304,786. This application Mar. 31, 1995, Ser. No. 414,849

Int. Cl.[6] H04N *1/40*

U.S. Cl. 358—448 **41 Claims**



1. A facsimile transmission apparatus comprising:

document input means for inputting human-readable information of an original document to produce document data;

means for encoding said document data into a two-dimensional bar code symbol, wherein said two-dimensional bar code symbol has a format which is error-correctable; and

facsimile transmission means for transmitting a facsimile image of the two-dimensional bar code symbol to a remote location.

5,644,409

SHADING CORRECTING METHOD AND SHADING CORRECTING APPARATUS FOR USE IN IMAGE FORMING APPARATUSES

Atsuhiko Irie; Ariyoshi Hikosaka, and Tetsuji Kajitani, all of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Jan. 3, 1995, Ser. No. 367,887

Claims priority, application Japan, Jan. 13, 1994, 6-002200; Jan. 14, 1994, 6-002831

Int. Cl.[6] H04N *1/40*

U.S. Cl. 358—461 **11 Claims**

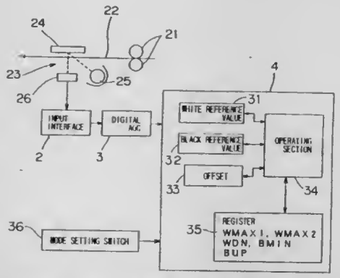
7. A shading correcting apparatus for subjecting inputted image data to a predetermined correction, comprising:

reading means for reading image data from an image data reading section;

illuminating means for illuminating the image data reading section;

a density reference plate provided in the image data reading section;

offset holding means for causing the reading means to read reflected light from the density reference plate in a case where the density reference plate is illuminated by the illuminating means to hold a value obtained by the reading as an OFFSET;



black reference value holding means for causing the reading means to read reflected light from the density reference plate in a case where the density reference plate is not illuminated by the illuminating means to hold a value obtained by the reading as a black reference value;

white reference value holding means for causing the reading means to read reflected light from the density reference plate in a case where the density reference plate is illuminated by the illuminating means to hold a value obtained by the reading as a white reference value; and

correcting means for causing the illuminating means to illuminate a document positioned in the image data reading section and causing the reading means to read image data of the document, to correct the image data of the document read by the reading means in accordance with a set mode signal and its selection of one of the following four computing equations (A) to (D) using the OFFSET held in said offset holding means, the black reference value held in the black reference value holding means and the white reference value held in the white reference value holding means:

$$SOUT = \frac{I.D. - (\text{white reference value} + \text{OFFSET})}{\text{black reference value} - (\text{white reference value} + \text{OFFSET})} \times \text{number of gray levels} \quad (A)$$

$$SOUT = \frac{I.D. - (\text{white reference value} + \text{OFFSET})}{\text{black reference value} - (\text{white reference value} - \text{OFFSET})} \times \text{number of gray levels} \quad (B)$$

$$SOUT = \frac{I.D. - \text{white reference value}}{\text{black reference value} - (\text{white reference value} + \text{OFFSET})} \times \text{number of gray levels} \quad (C)$$

$$SOUT = \frac{I.D. - \text{white reference value}}{\text{black reference value} - (\text{white reference value} - \text{OFFSET})} \times \text{number of gray levels.} \quad (D)$$

5,644,410

IMAGE SENSING APPARATUS

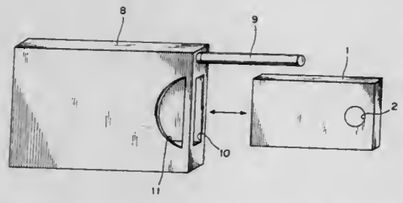
Masao Suzuki, Tokyo; Kazuyuki Matoba, Fukuoka, and Norihiro Nanba, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo

Continuation of Ser. No. 213,975, Mar. 16, 1994, abandoned. This application May 12, 1995, Ser. No. 440,116
Claims priority, application Japan, Mar. 19, 1993, 5-085575
Int. Cl.[6] H04N *1/40;* **G06K** *9/38*
U.S. Cl. 358—471 **54 Claims**

1. An image sensing apparatus comprising:

an information device having an insertion port at its upper surface; and

an image sensing cartridge, which has at least an image sensing system, capable of being loaded in and unloaded from the information device by being inserted in the insertion port, wherein an image sensing operation becomes possible by docking said information device and said image sensing cartridge;



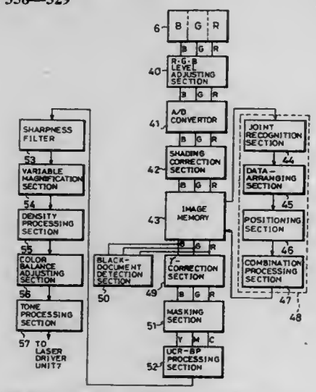
said image sensing cartridge having an opening at its side surface, which is for introducing light to the image sensing system, the diameter of which is designed to be larger than the shortest side of said upper surface.

5,644,411

JOINT-PORTION PROCESSING DEVICE FOR IMAGE DATA FOR USE IN AN IMAGE PROCESSING APPARATUS

Akira Tamagaki, Kyoto; Tsutomu Taniguchi; Nobuyuki Ueda, both of Yamatokoriyama; Masami Oka, Osaka; Kenji Matsumoto, Yamatokoriyama, and Fuminori Miyoshi, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 153,897, Nov. 17, 1993, Pat. No. 5,452,105. This application May 26, 1995, Ser. No. 453,056
Claims priority, application Japan, Nov. 19, 1992, 4-310328; May 7, 1993, 5-106834; Jun. 16, 1993, 5-145230
Int. Cl.[6] H04N *1/54*
U.S. Cl. 358—529 **13 Claims**



1. An image processing apparatus, comprising:

input means for scanning a plurality of partial images, to thereby read an image of an original document that is a composite image of the plurality of partial images and that is separately unscannable as a whole;

storage means for storing the plurality of scanned partial images as respective partial document data, the partial images having been separately scanned by the input means;

black-document discrimination means for determining whether the partial document data, stored in the storage means, are mono-color document data or color document data;

joint-portion processing means for positioning the partial document data by recognizing joint portions between the partial document data in accordance with a result of the determination made by the black-document discrimination means; and

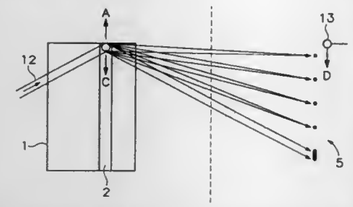
document-color recognition means for forming color data corresponding to the respective partial document data by recognizing the colors of the plurality of partial images scanned by the input means, wherein, when the black-document discrimination means determines that the partial document data are color document data, the joint-portion processing means recognizes joint portions between the partial document data by retrieving the pattern of colors in the partial document data while comparing the color data formed in the document-color recognition means with the partial document data stored in the storage means, and positions the respective partial document data in accordance with the recognized joint portions.

5,644,412

HOLOGRAM AND METHOD OF READING THE SAME

Satoshi Yamazaki, and Ryuji Horiguchi, both of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 996,800, Dec. 24, 1992, abandoned. This application Feb. 4, 1994, Ser. No. 191,619
Claims priority, application Japan, Dec. 25, 1991, 3-342566
Int. Cl.[6] G03H *1/00*
U.S. Cl. 359—2 **9 Claims**



1. A hologram having a record for reconstructing a like image of a plurality of parallel bars of a given sequence from each area of said hologram by illumination with a beam of light of a diameter less than a length of a region of said hologram record, said region extending parallel to an axis that intersects the bars of the reconstructed pattern, and the length of the region being at least as long as the reconstructed pattern in a direction parallel to said axis so that as said hologram receives reconstructing light of a stationary light source and said hologram is moved the length of said region in said direction, the complete sequence of said pattern passes over a selected fixed point in a stationary receiving position.

5,644,413

OPTICAL HEAD FOR ADJUSTING A POSITIONAL RELATION BETWEEN THE INFORMATION MEDIUM AND THE OPTICAL HEAD

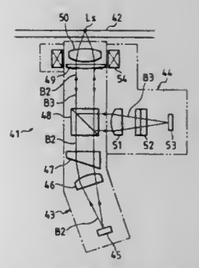
Yoshiaki Komma, Kyoto; Sadao Mizuno, Osaka; Makoto Kato, Nishinomiya; Hidenori Wada, and Seiji Nishino, both of Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 100,936, Aug. 3, 1993, abandoned. This application Jul. 12, 1995, Ser. No. 501,351
Claims priority, application Japan, Aug. 7, 1992, 4-211108
Int. Cl.[6] G02B *5/32*
U.S. Cl. 359—19 **38 Claims**

1. An image-formation optical system for converging a light beam at an information medium to read or write information from/in the information medium, comprising:

a semiconductor laser for radiating a light beam, a wavelength of the light beam being lengthened as intensity of the light beam is increased;

a first convex lens for refracting the light beam radiated from the semiconductor laser, a focal length of the first convex lens being lengthened as a wavelength of the light beam becomes longer, the first convex lens being formed of a collimator lens in which the beam light radiated from the semiconductor laser is collimated;



a refraction type of objective lens for converging the light beam refracted by the first convex lens at the information medium to read or write information from/in the information medium, a focal length of the objective lens being lengthened as the wavelength of the light beam becomes longer; and

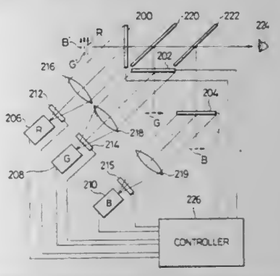
a chromatic aberration correcting element for excessively correcting chromatic aberration of the objective lens to cancel out chromatic aberration of the first convex lens, the chromatic aberration correcting element being a hologram lens functioning both as a diffraction optical element for diffracting the light beam and as a second convex lens to make a curvature of the objective lens small, a first combined focal length of both the objective lens and the hologram lens being shortened as the wavelength of the light beam becomes longer to make a second combined focal length of the objective lens, the hologram lens and the first convex lens constant and to fix a distance between a light spot of the light beam formed on the information medium and the refraction type of objective lens regardless of a change of the wavelength of the light beam, a plurality of blazed reliefs being concentrically arranged on a surface of the hologram lens to form a hologram pattern, and a center of the hologram pattern and a center of the objective lens being respectively positioned on a central line of a light path through which the light beam transmits.

5,644,414

STEREOSCOPIC DISPLAY METHOD OF HOLOGRAM AND ITS FORMING METHOD AND ITS STEREOSCOPIC DISPLAY APPARATUS

Masayuki Kato; Hirokazu Aritake; Manabu Ishimoto; Noriko Sato, and Masato Nakashima, all of Kawasaki, Japan, assignors to Fujitsu, Ltd., Kawasaki, Japan

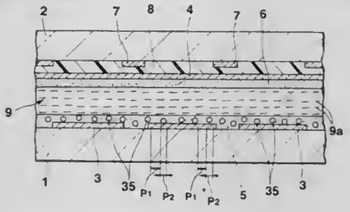
Division of Ser. No. 104,622, Aug. 11, 1993, abandoned. This application Mar. 27, 1995, Ser. No. 411,220
Claims priority, application Japan, Aug. 21, 1992, 4-222588
Int. Cl.[6] G03H *1/26;1/28*
U.S. Cl. 359—22 **14 Claims**



1. A stereoscopic display method of a hologram using a plurality of color components, comprising the steps of:

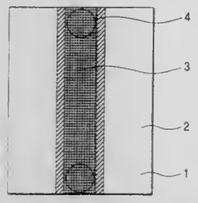
(a) for each of said plurality of color components, forming 3-dimensional information of an object or objects to be displayed;
(b) for each of said plurality of color components, dividing the 3-dimensional information of an object to be expressed in a depth direction into 3-dimensional regions, thereby setting a plurality of 3-dimensional regions;
(c) for each of said plurality of color components, forming 3-dimensional region data indicative of the 3-dimensional information of an object to be displayed for every 3-dimensional region of the plurality of 3-dimensional regions set by dividing the 3-dimensional information in step (b);
(d) for each of said plurality of color components, setting a 2-dimensional plane to form depth data for said every 3-dimensional region set in step (b);
(e) for each of said plurality of color components, forming projection image data, when the objects are seen from segment hologram regions, as minimum units for a hologram expression finely divided on the hologram forming surface from the 3-dimensional information onto the 2-dimensional plane set for every segment hologram area in each of the plurality of regions in the depth direction thereby forming a 2-dimensional image;
(f) for each of said plurality of color components, calculating a phase distribution at a hologram forming surface from said information regarding said 2-dimensional image formed;
(g) for each of said plurality of color components, expressing the phase distribution, obtained in said calculating of the phase distribution in step (f), onto the hologram forming surface; and
(h) for each of said plurality of color components, displaying a solid image by irradiating a reference light to the phase distribution expressed in step (g) and by converting said reference light into an optical wave front.

5,644,415
LIQUID CRYSTAL DISPLAY DEVICE HAVING WIDE FIELD ANGLE
Hisashi Aoki, Hamura, and Tetsushi Yoshida, Sagamiko-machi, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan
Filed Dec. 13, 1994, Ser. No. 354,595
Claims priority, application Japan, Dec. 20, 1993, 5-320092; Dec. 22, 1993, 5-323606
Int. Cl.[6] G02F *1/1333;1/1337*
U.S. Cl. 349—122 **22 Claims**



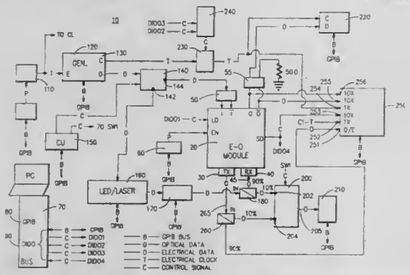
1. A liquid crystal display device comprising:
first and second substrates arranged to oppose each other, said first and second substrates having respective opposing surfaces;
first and second electrodes respectively arranged on the opposing surfaces of said first and second substrates, said first and second electrodes forming a plurality of pixels, and opposing portions between said first and second electrodes defining a plurality of corresponding pixel regions;
a liquid crystal arranged between said first and second electrodes; and
a layer formed between said liquid crystal and at least one of said first and second electrodes, said layer having a substantially planar surface in each pixel region and said layer including regions which differ from one another in at least one of a resistivity and a dielectric constant in each pixel region.

5,644,416
LIGHT MODULATION DEVICE AND METHOD OF LIGHT MODULATION USING THE SAME
Takashi Morikawa, and Ryojiro Akashi, both of Minami Ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan
Filed Nov. 25, 1992, Ser. No. 981,866
Claims priority, application Japan, Nov. 26, 1991, 3-335448; Jun. 12, 1992, 4-177775; Aug. 6, 1992, 4-229387
Int. Cl.[6] G02F *1/13*
U.S. Cl. 349—86 **11 Claims**



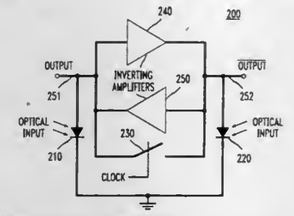
1. A light modulation device composed of a high polymeric liquid crystal film comprising a uniaxially oriented side chain type high polymeric liquid crystal containing a photochromic compound and a supporting member for supporting said high polymeric liquid crystal film, wherein said photochromic compound comprises a spiropyran derivative, a spiro-oxazine derivative or a diarylethene derivative, and wherein said high polymeric liquid crystal film exhibits a nematic phase in a temperature of use that is room temperature.

5,644,417
AUTOMATED SYSTEM, AND CORRESPONDING METHOD, FOR MEASURING TRANSMITTER DATA-DEPENDENT JITTER OF ELECTRO-OPTIC MODULES
Nancy Ruth Aulet, Austin, Tex.; David Charles Bogdan, Vestal, N.Y.; Muhammed Ishtiaq Hussain, Hopewell Junctinn, N.Y.; George William Hutt, Hyde Park, N.Y.; Donald Lynn Pearl, Endwell, N.Y., and David Todd Pribula, Port Crane, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Division of Ser. No. 13,460, Feb. 4, 1993, Pat. No. 5,546,325.
This application May 23, 1995, Ser. No. 447,582
Int. Cl.[6] H04B *10/08;10/04*
U.S. Cl. 359—110 **3 Claims**



1. A method for testing an electro-optic module that includes an electro-optic transmitter, comprising the steps of:
providing an automated test system for testing electro-optic modules that include electro-optic transmitters;
connecting an electro-optic module that includes an electro-optic transmitter to the automated test system; and
automatically measuring a transmitter data-dependent jitter associated with said electro-optic transmitter, wherein the electro-optic transmitter receives signals from the automated test system and in response produces a series of signals that define an oscilloscope eye pattern containing a number of voltage crossings, and transmitter data-dependent jitter is defined as the standard deviation of the number of voltage crossings within a predefined area around the center of the eye pattern;
wherein the step of automatically measuring further includes the step of automatically setting an oscilloscope to display the eye pattern voltage crossings and the predefined area around the center of the eye pattern.

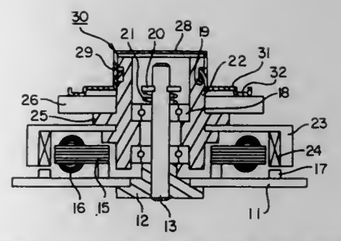
5,644,418
SMART PIXEL OPTICAL RECEIVER EMPLOYING SENSE AMPLIFIER AND METHOD OF OPERATION THEREOF
Ted K. Woodward, Holmdel, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.
Filed Dec. 7, 1995, Ser. No. 570,171
Int. Cl.[6] H04B *10/06*
U.S. Cl. 359—189 **20 Claims**



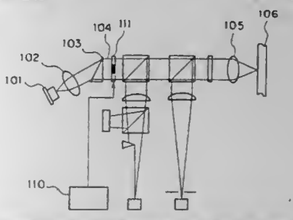
1. An optical receiver, comprising:
an optical sensor for receiving an optical signal, generating in response thereto an analog electrical signal and transmitting said analog electrical signal therefrom along an electrical path; and
a sense amplifier having cross-coupled inverting amplifiers and a clock input, at least one of first and second inputs of said cross-coupled inverting amplifiers coupled to said electrical path to allow said sense amplifier to detect said analog electrical signal when a clock signal at said clock input is high, regenerative feedback within said sense amplifier driving first and second outputs of said cross-coupled inverting amplifiers to complementary logic levels when said clock signal is low, said clock signal controlling said regenerative feedback of said sense amplifier to amplify said analog electrical signal into said output electrical signal provided at said first and second outputs and suitable for use by digital circuitry.

5,644,419
MIRROR FIXING DEVICE FOR A MOTOR EMPLOYING A BEAM REFLECTOR
Cheon Choi, Kyunggi-Do, Rep. of Korea, assignor to Samsung Electro-Mechanics Co., Ltd., Kyunggi-do, Rep. of Korea
Filed Jul. 31, 1995, Ser. No. 509,360
Claims priority, application Rep. of Korea, Jul. 30, 1994, U94-19497
Int. Cl.[6] G02B *26/08*
U.S. Cl. 359—198 **2 Claims**

1. A mirror fixing device for a motor employing a beam reflector in the form of a polygon mirror installed on a circumferential surface of a housing to reflect a beam, a motor shaft rotatably installed inside said housing, and a bearing, installed between said motor shaft and said housing, for rotatably supporting said motor shaft, said mirror fixing device comprising:
a cap having a body and mirror fixing members connected to said body, said body being capped on a top portion of said housing to prevent a gas from leaking from said housing, said mirror fixing members extending radially at regular intervals from said body to evenly press and fix said polygon mirror to said housing, wherein end portions of said respective mirror fixing members are curved and firmly press said polygon mirror; wherein
said housing comprises a plurality of recess grooves on a circumferential surface thereof and said body of said cap includes a circumferentially extending portion having a plurality of elastic members which are bent inwardly at a predetermined angle and severed from a part of said circumferentially extending portion to respectively interlock with said recess grooves to retain said cap on said housing.

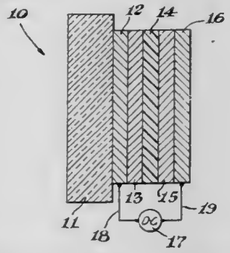


5,644,420
LIGHT BEAM CONDENSING APPARATUS AND METHOD OF DRIVING OPTICAL RECORDING MEDIUM BY APPLYING THE APPARATUS
Kazuhiko Nakane, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 185,457, Jan. 24, 1994, abandoned.
This application Jul. 16, 1996, Ser. No. 683,112
Claims priority, application Japan, Mar. 31, 1993, 5-096846
Int. Cl.[6] G02F *1/07*
U.S. Cl. 359—245 **57 Claims**



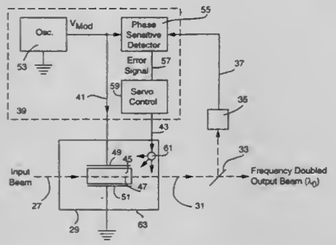
1. A light beam condensing apparatus for introducing a condensing spot onto optical recording media, said optical recording media including a first optical recording medium having first recording characteristics and a second optical recording medium having second recording characteristics which are different from said first recording characteristics, said apparatus comprising:
a laser oscillator emitting a laser beam;
a collimate lens transforming said laser beam into a collimate beam;
an objective lens condensing said collimate beam into said condensing spot at a predetermined distance from said objective lens, said predetermined distance corresponding to a location at which said optical recording media is to be positioned; and
modulation means for varying a shape of said condensing spot by modulating said collimate beam, said shape of said condensing spot including a first shape to correspond to said first recording characteristics and a second shape to correspond to said second recording characteristics when said optical recording media is said first optical recording medium and said second optical recording medium respectively, said modulation means being controllable using an external signal.

5,644,421
IRIDIUM OXIDE COUNTERELECTRODE FOR ELECTROCHROMIC DEVICES
Mani Shabrang; Susan J. Babinec, and Richard D. Varjian, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
Continuation-in-part of Ser. No. 146,768, Nov. 2, 1993, abandoned. This application Jan. 24, 1995, Ser. No. 377,558
Int. Cl.[6] G02F *1/153*
U.S. Cl. 359—269 **7 Claims**



1. An improved electrochromic device of the type incorporating a cathodic electrochromic electrode in ionic contact with an ion conductor, the ion conductor being in ionic contact with a counterelectrode, the counterelectrode comprising a layer of gold, wherein the improvement comprises: a layer of iridium oxide, the layer of iridium oxide being positioned between the layer of gold and the ion conductor, the layer of iridium oxide being in ionic contact with the ion conductor, the layer of iridium oxide being in electronic contact with the layer of gold, the layer of iridium oxide and the layer of gold not being an electrochromic electrode.

5,644,422
TECHNIQUES OF RADIATION PHASE MATCHING WITHIN OPTICAL CRYSTALS
Michael Louis Bortz, Palo Alto; Martin Michael Fejer, Menlo Park, both of Calif., and Marc David Levenson, Boulder, Colo., assignors to New Focus, Inc., Santa Clara, Calif.
Filed Jan. 16, 1996, Ser. No. 587,331
Int. Cl.[6] G02F *1/35*
U.S. Cl. 359—326 **24 Claims**



15. A method of controlling operation of a non-linear crystal that responds to incident electromagnetic radiation of a first frequency traveling in a direction of an axis thereof to generate electromagnetic radiation of a second frequency that is a multiple of the first frequency, said crystal having a non-linear coefficient that cyclically varies along the direction of said axis in a manner which tends to match the relative phases of the incident and generated radiation within the crystal, comprising:

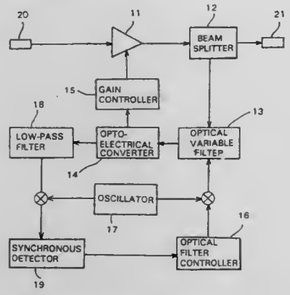
directing an incident beam of coherent electromagnetic radiation of said first frequency into said crystal in a direction of said axis, thereby to generate a beam of coherent electromagnetic radiation at said second frequency that exits the crystal,

cyclically altering an electric field through said crystal for a distance along said axis that includes at least several cycles of said cyclically varying non-linear coefficient, said alteration being accomplished in a manner to generate a corresponding cyclic intensity variation in the output radiation when a conversion efficiency within the crystal between the incident radiation and the generated radiation is not maximized, while generating substantially no cyclic intensity variation in the output radiation when said conversion efficiency is substantially maximized,

monitoring the output radiation intensity in order to measure any of said cyclic intensity variation therein, and

in response to monitoring some substantial magnitude in said output radiation cyclic intensity variation, adjusting a condition of operation of the crystal in a manner to cause the cyclic intensity variation to approach substantially zero, whereby the conversion efficiency is substantially maximized.

5,644,423
METHOD AND DEVICE FOR OPTICAL AMPLIFICATION
Tadayuki Iwano, Tokyo, Japan, assignor to NEC Corporation, Japan
Filed Mar. 13, 1996, Ser. No. 615,633
Claims priority, application Japan, Mar. 14, 1995, 7-54005
Int. Cl.[6] H01S *3/00*
U.S. Cl. 359—337 **4 Claims**



1. An optical amplifying device comprising: an optical direct amplifier for amplifying optical signals subjected to wavelength division multiplexing;

beam splitting means for splitting the optical signals amplified by said optical direct amplifier into two;

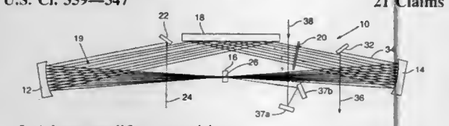
an optical variable filter for separating a single optical signal from one of two outputs of said beam splitting means, and varying a center value of a transmission wavelength range of said optical variable filter in response to a control signal;

optoelectrical converting means for outputting an electric signal corresponding to a level of said single optical signal transmitted through said optical variable filter;

gain control means for controlling a gain of said optical direct amplifier such that said electric signal output from said optoelectrical converting means has a preselected level; and

transmission wavelength range varying means for varying a center value of said transmission wavelength range of said optical variable filter periodically, and matching, based on said electric signal output from said optoelectrical converting means, said center value to a wavelength of said single optical signal transmitted through said optical variable filter.

5,644,424
LASER AMPLIFIER AND METHOD
Sterling Backus; Henry C. Kapteyn, and Margaret M. Murnane, all of Ann Arbor, Mich., assignors to Washington State University Research Foundation, Pullman, Wash.
Filed Mar. 18, 1996, Ser. No. 619,275
Int. Cl.[6] H01S *3/00*
U.S. Cl. 359—347 **21 Claims**



1. A laser amplifier, comprising:

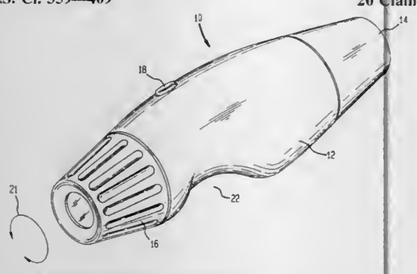
(a) first and second curved mirrors each having a focal point;

(b) a gain medium situated between the first and second curved mirrors at the focal point of each first and second curved mirror, the first curved mirror being operable to direct and focus a laser beam to pass through the gain medium to the second curved mirror, the second curved mirror being operable to reflect and recollimate the laser beam, the gain medium being operable to amplify and shape the laser beam as the laser beam passes through the gain medium;

(c) a third mirror disposed relative to the first and second curved mirrors, the third mirror being operable to reflect the laser beam, reflected from the second curved mirror, to cause the laser beam to bypass the gain medium and return to the first curved mirror to complete a cycle of a ring traversed by the laser beam; and

(d) a mask disposed relative to the unit of gain medium, the mask defining, for each of at least some of the cycles constituting the ring, a separate beam-clipping aperture through which the laser beam passes.

5,644,425
NIGHT VISION MONOCULAR WITH UNISTRUCTURAL OPTICAL BED
Gary L. Palmer, Vinton, Va., assignor to Itt Corporation, New York, N.Y.
Filed Nov. 14, 1995, Ser. No. 557,600
Int. Cl.[6] G02B *23/00*
U.S. Cl. 359—409 **20 Claims**



1. A night vision device, comprising:

an objective lens assembly for receiving low intensity light;

an image intensifier tube for converting the low intensity light into a visible output image;

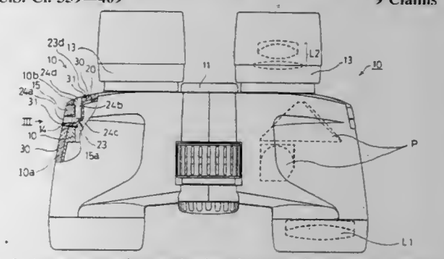
a collimator lens arrangement for reimaging the output image of said image intensifier tube at a substantially infinite conjugate;

an ocular lens assembly for viewing said output image through said collimator assembly;

an optical bed containing a tubular structure and a receptacle disposed at one end of said tubular structure, wherein said collimator lens arrangement is disposed within said tubular structure and said image intensifier tube is retained within said receptacle so as to be joined to said optical bed and optically aligned with said collimator lens arrangement;

a housing for receiving said optical bed, said objective lens assembly and said ocular lens assembly, wherein said housing optically aligns said ocular lens assembly with said collimator lens arrangement within said optical bed and aligns said objective lens assembly with said image intensifier tube.

5,644,426
STRAP MOUNTING MECHANISM FOR AN OPTICAL VIEWING DEVICE
Keiichi Hotta, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 16, 1996, Ser. No. 585,620
Claims priority, application Japan, Jan. 18, 1995, 7-006050
Int. Cl.[6] G02B *23/00*; G02C *3/00*; A45F *3/14*
U.S. Cl. 359—409 **9 Claims**



1. A strap mounting mechanism for an optical viewing device comprising:

a lens barrel body having an opening at an eyepiece lens side thereof;

a cover member which closes said opening of the lens barrel body;

a through hole which is formed on said lens barrel body, said through hole being located at a circumferential surface of said lens barrel body;

a strap insertion opening and a strap guide wall both provided on said cover member, one end of said strap guide wall being connected to said strap insertion opening; and,

the other end of said strap guide wall being connected to said through hole of said lens barrel body.

5,644,427
IMAGE DISPLAY APPARATUS
Shigeru Omori; Tomohiko Hattori; Kunimasa Katayama, and Sadayuki Sakuma, all of Nakai-machi, Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 7, 1995, Ser. No. 385,056
Claims priority, application Japan, Feb. 7, 1994, 6-013843
Int. Cl.[6] G02B *27/22*
U.S. Cl. 359—464 **36 Claims**

1. An image display apparatus comprising:

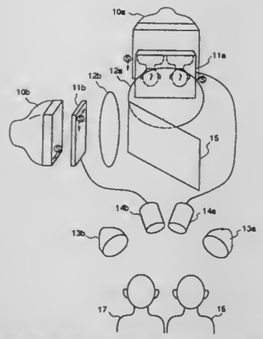
an infrared light irradiation device for selectively illuminating right and left half faces of the viewers;

at least one image sensing device for picking up an image of the viewers' faces, said at least one image sensing device being capable of selectively picking up images depending upon the wavelengths of infrared light;

first image display means for displaying a first image;

second image display means for displaying a second image;

first spatial modulation element provided between said first image display means and said viewers, said first spatial modulation element transmitting light at a position corresponding to one of said right and left half faces of the viewers picked up by said at least one image sensing device, and blocking light at a position corresponding to one of said left and right half faces;



second spatial modulation element provided between said second image display means and the viewers, said second spatial modulation element transmitting light at a position corresponding to one of said left said right half faces of the viewers and blocking light at a position corresponding to one of said right and left half faces;

at least one optical element, provided between the first and second spatial modulation elements and said viewers, for giving directivity to light of the first and the second images which are transmitted through said first and second spatial modulation elements, respectively; and

combining means, provided between the first and second spatial modulation elements and viewers, for combining light of the first and second images which are transmitted through said first and second spatial modulation elements,

wherein light transmission areas and light blocking areas on said first and second spatial modulation elements are controlled depending upon the image of the viewers' faces picked up by said at least one image sensing device.

5,644,428

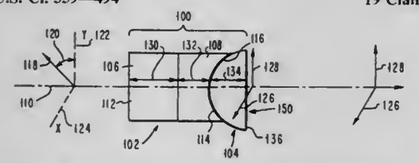
CONTINUOUSLY VARIABLE BEAM SPLITTER

Harley Kent Heinrich, Brewster, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 3, 1993, Ser. No. 25,501

Int. Cl.[6] G02B *5/30;26/08;27/28*

U.S. Cl. 359—494 **19 Claims**



1. An apparatus for splitting an incident electromagnetic beam into two beams diverging at a continuously variable angle comprising:

an input subsystem;

an output subsystem;

said incident beam has a first polarization;

said input subsystem splits said incident beam into a first component and a second component;

said output subsystem is rotatable with respect to said input subsystem to cause said first and second components to diverge as said two beams at said continuously variable angle;

said input subsystem comprises a first layer of birefringent material and a second layer of birefringent material, the principal axis of said first layer being nonparallel to the principal axis of said second layer.

5,644,429

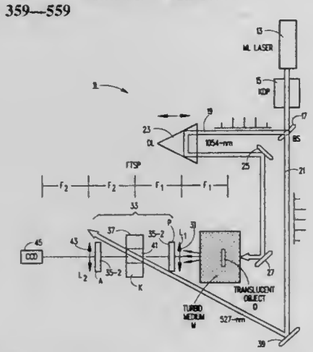
2-DIMENSIONAL IMAGING OF TRANSLUCENT OBJECTS IN TURBID MEDIA

Robert R. Alfano, Bronx; Ping-Pei Ho, Great Neck, and Xiangchun Liang, Bronx, all of N.Y., assignors to Research Foundation of City College of New York, New York, N.Y.

Continuation of Ser. No. 215,383, Mar. 21, 1994, abandoned, which is a continuation-in-part of Ser. No. 920,193, Jul. 23, 1992, Pat. No. 5,371,368. This application May 29, 1996, Ser. No. 654,800

Int. Cl.[6] G02B *27/46*

U.S. Cl. 359—559 **3 Claims**



1. A method for obtaining a 2-dimensional image of a translucent object in or behind a turbid medium comprising the steps of:

(a) illuminating the translucent object through the turbid medium with a pulse of light, the light emergent from the turbid medium consisting of a ballistic component, a snake-like component and a diffuse component;

(b) simultaneously temporally and spatially gating the emergent light to preferentially pass said ballistic component and said snake-like component; and

(c) forming a 2-dimensional image of the translucent object in or behind the turbid medium with the temporally and spatially gated light.

5,644,430

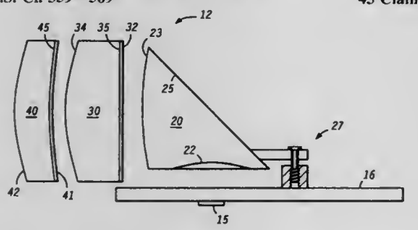
SINGLE FOLD OPTICAL MAGNIFIER FOR USE IN IMAGE MANIFESTATION APPARATUS

Fred V. Richard, Scottsdale, and Marc H. Wildy, Phoenix, both of Ariz., assignors to Motorola, Schaumburg, Ill.

Filed Mar. 16, 1995, Ser. No. 405,057

Int. Cl.[6] G02B *5/18*

U.S. Cl. 359—569 **43 Claims**



10

15. A single fold optical magnifier comprising:

a first optical element having an aspheric field flattening light inlet, a light outlet directed at an angle to the inlet and a reflecting surface optically positioned between the inlet and the outlet so as to direct light from the inlet to the outlet;

an optical lens having a light inlet, positioned adjacent the light outlet of the first optical element, and a light outlet;

the first optical element and the optical lens defining a light path from the light inlet of the first optical element to the light outlet of the optical lens with a total average optical length in the range of approximately 15 to 30 millimeters and angularly magnifying an image source at the light inlet of the first optical element by greater than ten; and

at least one aspherical surface on one of the first optical element and the optical lens and in the light path so as to provide aberration correction.

5,644,431

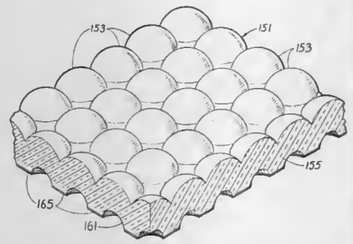
DIRECTIONAL IMAGE TRANSMISSION SHEET AND METHOD OF MAKING SAME

John Allan Magee, Fayetteville, Ark., assignor to University of Arkansas, N.A., Little Rock, Ark.

Continuation-in-part of Ser. No. 948,109, Sep. 21, 1992, Pat. No. 5,303,525, and Ser. No. 779,646, Oct. 21, 1991, which is a continuation-in-part of Ser. No. 524,975, May 18, 1990, abandoned, said Ser. No. 948,109is a continuation of Ser. No. 524,975. This application Apr. 13, 1994, Ser. No. 227,055

Int. Cl.[6] G02B *27/10*

U.S. Cl. 359—619 **19 Claims**



1. A partially transparent sheet for directional light transmission and image viewing comprising:

a body of at least partially transparent solid material with a predetermined thickness substantially less than its other dimensions, and having a front surface and a back surface,

a multiplicity of convex lenses with a predetermined index of refraction covering a substantial area on said body front surface with each of said lenses having a least transverse dimension of less than two millimeters,

the effective radius of curvature of said convex lenses being from 0.01 millimeter to 2.0 millimeters, and

a multiplicity of concave lenses with a predetermined index of refraction on said body back surface, each being generally in register with a respective one of said convex lenses, the least transverse dimension of said concave lenses being less than the center to center pitch thereof, the radii of curvature of said concave lenses being selected with regard to the radii of curvature of said convex lenses, said index of refraction, and said body thickness to cause parallel rays converged by said convex lenses to be returned approximately to parallelism upon passing through said concave lenses,

whereby said sheet when viewed in a direction nearly parallel with the paths from lenses on the front surface to corresponding lenses on the back surface appears transparent and transmits a substantially undistorted image, while said sheet appears non-transparent to images when viewed in a substantially different direction.

5,644,432

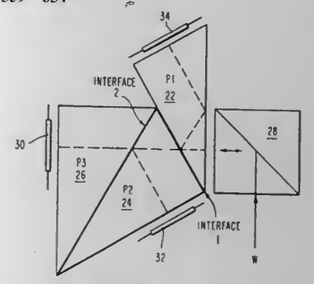
THREE PRISM COLOR SEPARATOR

Fuad Elias Doany, Katonah, N.Y., assignor to IBM Corporation, Armonk, N.Y.

Filed Jan. 17, 1995, Ser. No. 373,704

Int. Cl.[6] G02R *27/14*

U.S. Cl. 359—634 **7 Claims**



1. A projection display for projecting a color image in which first, second and third different color component images forming from first, second and third different reflective light valves are projected onto a display, in which light from a light source containing first, second and third color components passes through an optical beam splitter for directing the beam of light in first, second and third different directions onto first, second and third reflective light valves which reflect the color components back into said optical beam splitter, which combines the reflected color components into one beam for projection of a color image onto the display, wherein said optical beam splitter comprises first, second and third prisms forming a color splitting prism assembly in which the first, second and third prisms are assembled with no air gaps in each of the light paths corresponding to each of the color components between where each of the color components enters said color splitting prism assembly and where each of the color components exits said color splitting prism assembly, and further wherein the first, second and third prisms are dissimilar prisms, with first, second and third optical paths, a first optical path without reflections, a second optical path with one reflection, and a third optical path with two reflections.

5,644,433

ZOOM LENS SYSTEM

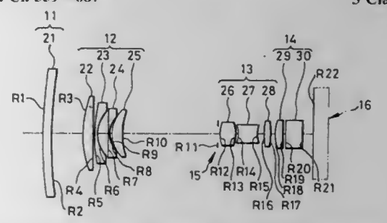
Kazuo Ikari, Saitama, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 5, 1996, Ser. No. 628,160

Claims priority, application Japan, Apr. 5, 1995, 7-080541

Int. Cl.[6] G02B *15/14*

U.S. Cl. 359—687 **3 Claims**



1. A zoom lens system composed of a first lens group of a positive power, a second lens group of a negative power, a third lens group of a positive power, and a fourth lens groups of a positive power arranged in this order from the object side, the magnification of said zoom lens system being changed by moving the second and third lens groups relative to each other and to the first and fourth lens groups while the positions of the first and

fourth lens groups are fixed, wherein focal lengths of the first to fourth lens groups are defined to satisfy the following conditions:

$$100<f1/fw<500 \quad (1)$$

$$2.3<|f2|/fw<3.5 \quad (2)$$

$$1<f4/f3<2 \quad (3)$$

wherein

f1, f2, f3 and f4 are the focal lengths of the first to fourth lens groups, respectively; and

fw is the focal length of the zoom lens system in a wide-angle terminal.

5,644,434

ZOOM LENS SYSTEM

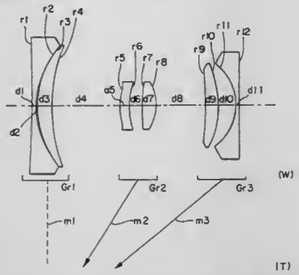
Hitoshi Hagimori, Nara-ken, Japan, assignor to Minolata Co. Ltd., Osaka, Japan

Filed May 2, 1995, Ser. No. 432,629

Claims priority, application Japan, May 16, 1994, 6-101101

Int. Cl.[6] G02B *15/14*

U.S. Cl. 359—689 **21 Claims**



1. A zoom lens system comprising sequentially from the object side a first lens unit having a negative refractive power, a second lens unit having a positive refractive power and a third lens unit having a negative refractive power, wherein zooming is performed by changing the distances between the lens units, wherein the second lens unit includes one positive lens and one negative lens, and wherein the following conditions are fulfilled:

$$0.08<t1/y'<0.25$$

$$0.08<t2/y'<0.28$$

where t1 represents the length of the first lens unit along the optical axis, t2 represents the length of the second lens unit along the optical axis, and y' represents the diagonal length of the film surface.

5,644,435

ZOOM LENS SYSTEM AND PROJECTION-TYPE DISPLAY APPARATUS

Shinsuke Shikama, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 5, 1995, Ser. No. 567,495

Claims priority, application Japan, Jan. 19, 1995, 6427/95

Int. Cl.[6] G02B *15/14;9/00;13/16;* **H04N** *9/07*

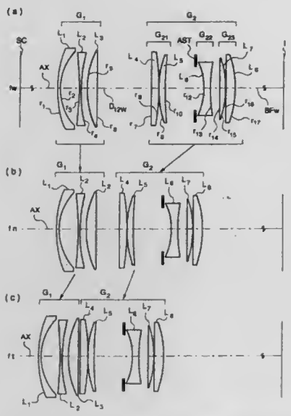
U.S. Cl. 359—691 **19 Claims**

1. A zoom lens system comprising, in order from a large conjugate side:

a first lens group having a negative refracting power; and

a second lens group having a positive refracting power;

a focal length of said zoom lens system being longer, as a gap between said first lens group and said second lens group is reduced;



wherein said zoom lens system satisfies following relational expressions (1) to (4),

$$0.9<|f_1|/f_w<1.2 \quad (1)$$

$$0.8<f_2/f_w<1.2 \quad (2)$$

$$0.3<D_{12w}/f_w<0.5 \quad (3)$$

$$BF_w/f_w>1.5 \quad (4)$$

where a symbol f_1 designates a focal length of said first lens group, a symbol f_2 designates a focal length of said second lens group, a symbol f_w designates a focal length of said zoom lens system at a minimum focal length state, a symbol D_{12w} designates said gap between said first lens group and said second lens group at the minimum focal length state, and a symbol BF_w designates a back focal length at the minimum focal length state.

5,644,436

CONCENTRIC OPTICAL SYSTEM

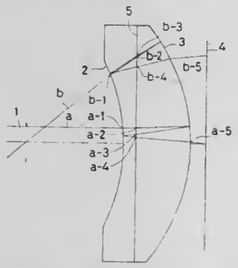
Takayoshi Togino, Koganei, and Kunie Nakagiri, Hachioji, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 17, 1995, Ser. No. 405,711

Claims priority, application Japan, Mar. 18, 1994, 6-048558

Int. Cl.[6] G02B *17/00*

U.S. Cl. 359—731 **18 Claims**



1. A concentric optical system comprising:

at least two semitransparent reflecting surfaces each being convex toward an image side of said concentric optical system; and

a turn-back optical path defined such that light passing through one of said at least two semitransparent reflecting surfaces is reflected at the other of said at least two semitransparent reflecting surfaces, then is reflected at said one of said at least two semitransparent reflecting surfaces, and finally is transmitted by said other of said at least two semitransparent reflecting surfaces;

said turn-back optical path including:

a first medium having a first dispersion, and

a second medium having a second dispersion different from said first dispersion; and

each of said at least two semitransparent reflecting surfaces having a transmittance in a range of from 20% to 80%.

5,644,437

OPTICAL SYSTEM OF OPTICAL INFORMATION RECORDING/REPRODUCING APPARATUS

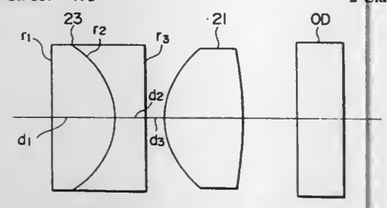
Koichi Maruyama, and Makoto Iwaki, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 208,847, Mar. 11, 1994, Pat. No. 5,479,296, which is a division of Ser. No. 5,187, Jan. 14, 1993, Pat. No. 5,321,550, which is a continuation of Ser. No. 477,464, Feb. 9, 1990, abandoned. This application Sep. 14, 1995, Ser. No. 527,977

Claims priority, application Japan, Feb. 9, 1989, 1-30775; Feb. 28, 1989, 1-47590; Aug. 3, 1989, 1-202558

Int. Cl.[6] G02B *9/04*

U.S. Cl. 359—793 **2 Claims**



1. An optical system of an optical information recording/reproducing apparatus comprising:

an objective lens for converging a generally parallel luminous flux;

a chromatic aberration correcting element for correcting chromatic aberration of said objective lens, said chromatic aberration correcting element having substantially no power;

said chromatic aberration correcting element, comprising a positive lens and a negative lens positioned in the generally parallel luminous flux, and

said positive lens and said negative lens having substantially the same refractive index and different Abbe's numbers.

5,644,438

OPTICAL DEVICE FOR VIOVING INTO RESTRICTED AREAS

Paul C. Pottash, 1414 Dorset La., Wynnewwod, Pa. 19096

Filed Oct. 30, 1995, Ser. No. 550,013

Int. Cl.[6] G02B *27/02;* **F21V** *33/00;* **A61B** *1/06*

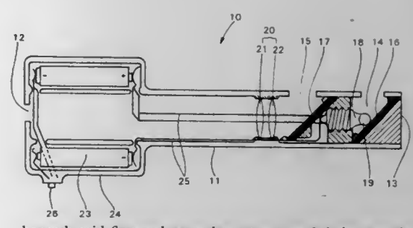
U.S. Cl. 359—798 **18 Claims**

1. An optical device for illuminating and optically inspecting the interior of a restricted space, comprising:

a. an elongated tubular housing comprising a proximal sight end having an opening to which viewing means is to be applied, and a distal end;

b. first and second apertures disposed in end to end relationship in an outer surface of said housing, said first aperture being an illumination aperture adjacent to said distal end, and said second aperture being a viewing aperture anterior to said first aperture;

c. first and second reflecting means disposed within said housing, said reflecting means corresponding with and located beneath said first and second apertures, each being angularly disposed and positioned in substantially parallel planes, and each having a reflective surface facing said proximal end; and



d. a light source capable of providing a beam of light and located between said first and second reflecting means, said first reflecting means being positioned to project said light beam in a light path from said light source through said illumination aperture into said restricted space, and said second reflecting means being positioned to project the illuminated image in an image path from said restricted space through said viewing aperture and through said sight end.

5,644,439

MOUNTING EQUIPMENT USED FOR AN OBJECT HAVING A HOLLOW PORTION OF CIRCULAR CROSS SECTION

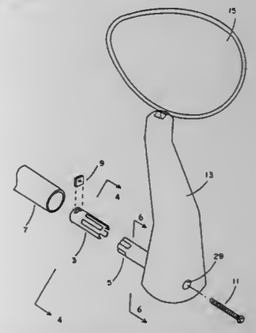
Kenzo Shiba, Osaka, Japan, assignor to Cateye Co., Ltd., Osaka, Japan

Filed Feb. 8, 1996, Ser. No. 598,663

Claims priority, application Japan, Feb. 14, 1995, 7-024988

Int. Cl.[6] G02B *7/02*

U.S. Cl. 359—819 **7 Claims**



1. A mounting equipment for mounting an object to a component having a hollow portion of approximately circular cross section on which an object is to be mounted, comprising:

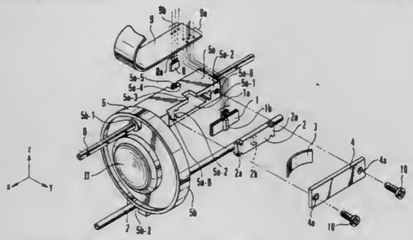
first mounting part having a bar-shape to be connected to said object;

a second mounting part having a tip end portion of such a shape that covers at least an end portion of said first mounting part, engaged to said first mounting part such that said tip end portion expands conforming to an outer shape of said first mounting part as it is drawn closer to said first mounting part; and

a drawing part capable of drawing said first and second mounting parts close to each other; wherein

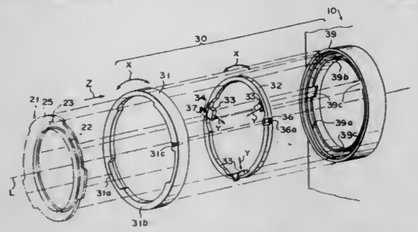
said first and second mounting parts being engaged with each other are inserted to said hollow portion of said component on which the object is to be mounted, and said drawing part is activated, whereby said tip end portion of said second mounting part is pressed against an inner wall of said hollow portion of said component on which the object is to be mounted.

5,644,440
OPTICAL APPARATUS
Hiroshi Akada, Kanagawa-ken, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 22, 1995, Ser. No. 577,235
Claims priority, application Japan, Dec. 27, 1994, 6-325250
Int. Cl.[6] G02B *7/02*
U.S. Cl. 359—823 **17 Claims**



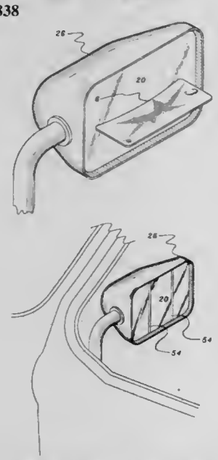
1. An optical apparatus comprising:
a guide member;
an optical member capable of moving while being guided by said guide member;
a vibration member held by said optical member and having a contact portion placed in contact with said guide member, said optical member being capable of being moved by a vibration produced by said vibration member; and
a spring for pressing said vibration member against said guide member, said spring being held by said optical member, wherein said optical member is pressed against said guide member by a reaction force of said spring.

5,644,441
LENS MOUNT FOR TV CAMERA
Norio Hirasaki, and Tomomi Iguchi, both of Saitama-ken, Japan, assignors to Fuji Photo Optical Co., Ltd., Saitama-ken, Japan
Filed Oct. 19, 1995, Ser. No. 545,315
Claims priority, application Japan, Oct. 20, 1994, 6-254904
Int. Cl.[6] G02B *7/02*
U.S. Cl. 359—828 **5 Claims**



1. A lens mount for a TV camera for mounting a lens having a lens-side bayonet ring on its rear face and a cylindrical projection connected to said lens-side bayonet ring which is smaller in diameter than the lens-side bayonet ring and extends rearward coaxially with the optical axis of the lens, comprising:
a camera-side bayonet ring which is movable relative to the lens-side bayonet ring between an engagement position where the bayonet rings are engaged with each other to hold the lens on the camera and a disengagement position where the bayonet rings are disengaged from each other to permit removal of the lens from the camera, and
a chucking means which is movable back and forth in a radial direction of the camera-side bayonet ring between a retracted position where it is away from the outer surface of the cylindrical projection on the lens and a chucking position where it abuts against the outer surface of the cylindrical projection.

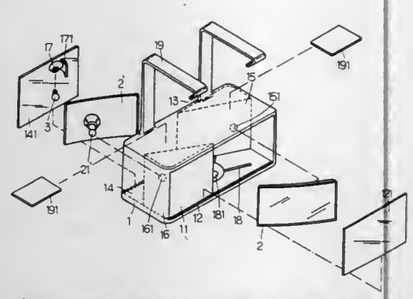
5,644,442
SPHERICAL REAR VIEW MIRROR TARGET MARKING SYSTEM AND METHOD
Peter N. Lemere, 48 Center Road Cir., Orange, Conn. 06477
Filed Jun. 28, 1994, Ser. No. 267,866
Int. Cl.[6] G02B *5/08*
U.S. Cl. 359—838 **5 Claims**



1. A method of marking a spherical automotive rear view mirror with a safe to return target area comprising the steps of determining the curvature of said mirror by conforming a coded mirror comparitor to the curvature of said mirror, selecting a coded spacer template whose code corresponds to said coded mirror curvature comparitor, temporarily fastening said spacer template to said mirror with masking tape, adhering frosted crystal film on said mirror in vertical relationship at the left and right edges of said template and then removing said template, said adhered films on said mirror forming a safe to return target to overcome the visual aberrations common to said spherical automotive rear view mirror.

5,644,443
REFLECTIVE DEAD ANGLE VISION DEVICE FOR VEHICLE SIDE MIRRORS
Hsiang-Hsin Hung, 1-1, Fang Kuang Lane, Jen Ai Village, Fang Yuan Country, Changhua, Taiwan
Filed May 23, 1995, Ser. No. 445,559
Int. Cl.[6] G02B *5/08;5/10;7/182*
U.S. Cl. 359—856 **4 Claims**

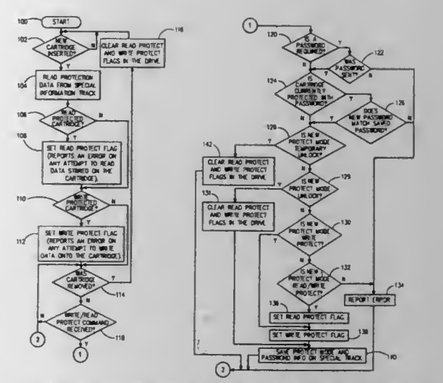
1. A reflective dead angle vision device for a vehicle side mirror comprising:
a housing,
said housing having a rectangular box for an internal structure, and
said housing having open front and rear sides;
a water drainage hole in communication with a bottom surface of said housing and extending through said surface;
a plurality of drainage troughs extending from said water drainage hole along said bottom surface of said housing;
a front sliding track along a bottom longitudinal edge of said housing;
a rear sliding track along a bottom longitudinal edge of said housing opposite said front sliding track;



a front cover plate attached to a side, bottom, and top of said housing, and extending along a parallel path to said front sliding track to a predetermined point;
a rear cover plate attached to a side, bottom, and top of said housing, and extending along a parallel path to said rear sliding track in a length equivalent to a length of said front cover plate;
a first block abutting said front cover plate, and extending from an open edge of said front cover plate to a second predetermined point along the side of said housing attached to said front cover plate;
a second block abutting said rear cover plate, and extending from an open edge of said rear cover plate to the second predetermined point along the side of said housing attached to said rear cover plate;
said first and second inclined blocks having a ball socket extending into a side facing said water drainage hole;
said first and second inclined blocks having surfaces extending along parallel lines;
a pair of ultra wide-angle mirrors each having a ball mount;
said ball mounts are in communication with said corresponding ball sockets, respectively;
a transparent plate in communication with said rear sliding track, covering an opening formed between the edge of said rear cover plate and the side of said housing;
said transparent plate having a plate light bulb socket mounted on a surface facing said front sliding track;
a curved plate affixed to said movable transparent cover plate on a side of said light bulb socket closest to said rear cover plate;
a transparent plate in communication with said front sliding track and having sufficient size to cover an opening formed between said front cover plate and the side of said housing;
a corner light bulb socket mounted in a lower rear corner of said housing below said second block;
a pair of flat rubber cushions affixed to top of said housing; and
a pair of hook-type mounting arms extending from the top rear edge of said housing for securing said housing to a vehicle said mirror.

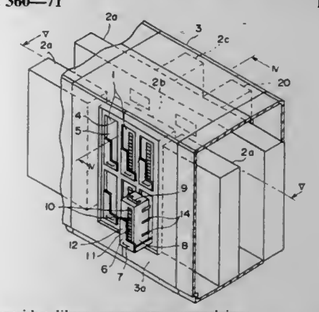
5,644,444
READ/WRITE PROTECT SCHEME FOR A DISK CARTRIDGE AND DRIVE
David G. Braithwaite, Layton; Clark C. Bruderer, Farmington; Gregory M. Allen, Layton, and David A. Thompson, Ogden, all of Utah, assignors to Iomega Corporation, Roy, Utah
Filed Mar. 10, 1995, Ser. No. 402,540
Int. Cl.[6] G11B *19/04*
U.S. Cl. 360—60 **19 Claims**

1. A method of inhibiting inadvertent and unauthorized writing and reading of information to and from a storage medium comprising the steps of:
writing a first code in a predetermined location on the storage medium, said first code being indicative of a first protection mode of said storage medium;



receiving a command to change the protection mode of said storage medium from said first protection mode to a second protection mode and, in response to the command, writing in said predetermined location on the storage medium, in place of the first code, a second code indicative of the second protection mode; and
receiving a second command to change the protection mode of said storage medium from said second protection mode back to said first protection mode, and, in response to the second command, rewriting in said predetermined location on the storage medium, in place of said second code, said first code indicative of said first protection mode.

5,644,445
CARTRIDGE LIBRARY APPARATUS
Masatoshi Ishikawa, Odawara, Japan, assignor to Hitachi Ltd., Tokyo, Japan
Continuation of Ser. No. 998,472, Dec. 30, 1992, abandoned.
This application Sep. 9, 1994, Ser. No. 307,346
Claims priority, application Japan, Jan. 9, 1992, 4-002040
Int. Cl.[6] G11B *15/18*
U.S. Cl. 360—71 **11 Claims**



1. A cartridge library apparatus comprising:
(a) a plurality of racks in a housing configured to accommodate a plurality of cartridges of magnetic tapes;
(b) magazines for receiving said plurality of cartridges of magnetic tapes;
(c) a transport mechanism designed to slide along said racks and to transport said cartridges between a magnetic tape drive unit and said racks, said transport mechanism having direct access to said cartridges of magnetic tape in said magazines;
(d) a magazine rack composed of a portion of said plurality of racks having a first side accessible by said transport mechanism and a second side accessible from outside said housing which is operable to be loaded from the outside and unloaded from said racks by said transport mechanism;

(e) first openings in said plurality of racks facing said transport mechanism through which said cartridges of magnetic tape can be unloaded by said transport mechanism;

(f) second openings in said magazine rack provided on an outer wall of said housing through which said magazines can be loaded from outside the housing;

(g) a safety cover on each of said second openings configured to be urged from an open position to a closed position;

(h) a latch which locks the safety cover in the closed position and unlocks the safety cover by an operation of inserting one of said magazines from the second opening into the magazine rack; and

(i) a sliding drawer onto which at least one of the magazines may be loaded and unloaded, the sliding drawer having a bottom portion configured to slide horizontally from an open position substantially outside one of the second openings to a closed position substantially inside one of the second openings, the sliding drawer including a securely fixed bracket positioned to contact a magazine loaded on the sliding drawer, from a bottom portion to a position on a lateral side which is located on the same level as a center of gravity of the magazine.

5,644,446

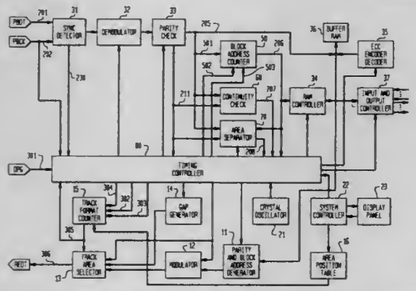
ROTARY-HEAD DIGITAL REPRODUCING/RECORDING METHOD AND APPARATUS WITH BLOCK ADDRESS-BASED AREA SIGNAL GENERATION

Jang-Zern Tsai, Ma Dow Town, and Jyh Yuan, Taipei, both of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Continuation of Ser. No. 298,841, Aug. 31, 1994, abandoned, which is a continuation of Ser. No. 908,411, Jul. 6, 1992, abandoned. This application Nov. 22, 1995, Ser. No. 561,787

Int. Cl.[6] G11B *15/18*

U.S. Cl. 360—72.2 **13 Claims**



1. In a system in which data is recorded on a tape by a rotary head in the form of a plurality of recording tracks arranged at oblique angles relative to the tape running direction, a method comprising the steps of:

reproducing a previously-recorded data area of one of the recording tracks, the data area including a plurality of data blocks each having a block address;

determining the block addresses for at least a subset of the plurality of data blocks within the reproduced data area;

generating from the determined block addresses an area signal indicative of the end of the reproduced data area; and

using the area signal to determine when the rotary head is properly positioned to record data in a subsequent data area of the same recording track.

5,644,447

RECORDING OR REPRODUCING APPARATUS HAVING FUNCTION OF SEARCHING FOR UNRECORDED PART

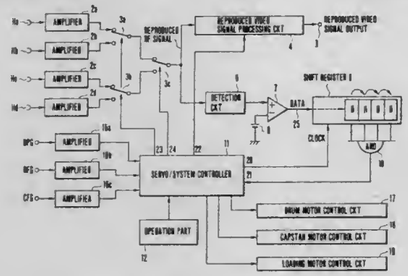
Nobutoshi Takayama, Kanagawa-ken, and Hiroaki Furuyama, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 279,698, Jul. 25, 1994, abandoned, which is a continuation of Ser. No. 841,849, Feb. 26, 1992, abandoned. This application Dec. 8, 1995, Ser. No. 569,553

Claims priority, application Japan, Mar. 1, 1991, 3-036163; Mar. 19, 1991, 3-052925

Int. Cl.[6] G11B *27/22*

U.S. Cl. 360—72.2 **14 Claims**



1. An information signal recording and/or reproducing apparatus comprising:

a) a plurality of rotary heads arranged to sequentially trace a tape-shaped recording medium;

b) detection means for detecting signals sequentially reproduced by said plurality of rotary heads;

c) extracting means for sequentially extracting outputs of said detection means for every one of said plurality of rotary heads;

d) memory means for sampling and holding the outputs of the extracting means for each of the plurality of rotary heads in association with the rotation of the plurality of rotary heads;

e) means for logic integration of the outputs of the extracting means for said each head held by the memory means; and

f) discriminating means for determining a non-recorded area relative to an information signal on said recording medium on the basis of a logical product obtained from the integration of the outputs of said extracting means relative to all of the plurality of rotary heads.

5,644,448

HEAD SIGNAL SUPPLY/RETRIEVAL STRUCTURE FOR MAGNETIC DISK DRIVE

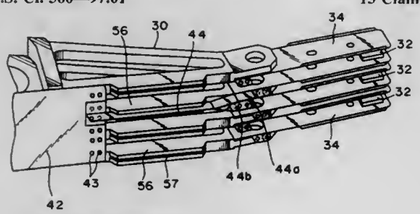
Kazuhiro Suzuki, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 5, 1995, Ser. No. 539,340

Claims priority, application Japan, Mar. 17, 1995, 7-059538

Int. Cl.[6] G11B *5/012*

U.S. Cl. 360—97.01 **13 Claims**



1. A disk drive comprising:

a housing;

a disk rotatably mounted in said housing;

a head for reading/writing data on said disk;

an actuator arm rotatably mounted in said housing;

a suspension having a base end portion fixed to a front end portion of said actuator arm and a front end portion for supporting said head, said suspension having a first conductor pattern connected at one end thereof to said head and a first terminal connected to another end of said first conductor pattern;

a main flexible printed circuit sheet fixed at one end portion thereof to said actuator arm, said main flexible printed circuit sheet having a second terminal; and

an interconnection flexible printed circuit sheet mounted along a side surface of said actuator arm so as to extend substantially parallel to an upper surface of said actuator arm, said interconnection flexible printed circuit sheet having a second conductor pattern, a third terminal connected to one end of said second conductor pattern and said first terminal, and a fourth terminal connected to another end of said second conductor pattern and said second terminal.

5,644,449

MAGNETIC HEAD SLIDER ASSEMBLY

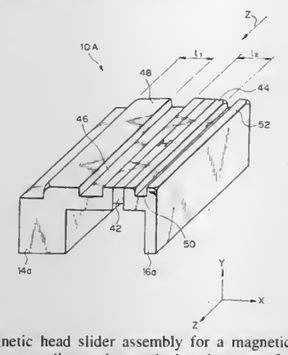
Yuichi Hayakawa, Tokyo; Atsushi Hirano, Gunma; Yasuhiro Miyata, Gunma, and Koki Takahashi, Gunma, all of Japan, assignors to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 111,951, Aug. 26, 1993, abandoned. This application Apr. 12, 1996, Ser. No. 631,120

Claims priority, application Japan, Aug. 28, 1992, 4-229511

Int. Cl.[6] G11B *5/60*

U.S. Cl. 360—103 **6 Claims**



1. A magnetic head slider assembly for a magnetic recording apparatus for recording and reproducing data out of a magnetic recording medium, said assembly comprising:

a magnetic core extending in an intended direction of movement of the recording medium;

a slider holding said magnetic core, said slider comprising:

a first slide surface having the same level throughout its length and facing the recording medium and sliding at a first distance from a plane of rotation of said recording medium, said first slide surface having a first edge, and said magnetic core situated in said first slide surface;

a second slide surface having the same level throughout its length and equal to the length of said first slide surface, said second slide surface facing the recording medium and spaced from said first slide surface by a recess, said second slide surface throughout its length sliding at a second distance from the plane of rotation of said recording medium, wherein said second distance is larger than said first distance to thereby create a positive pressure between said second slide surface and said magnetic recording medium so as to prevent said magnetic recording medium from colliding with said first edge of said first slide surface when said magnetic head slider assembly moves in a direction perpendicular to direction of rotation of said recording medium;

wherein said first edge of said first slide surface faces said second slide surface, said second slide surface includes a second edge facing away from said first slide surface, and wherein said first edge being sharper than said second edge.

5,644,450

MAGNETIC HEAD ASSEMBLY WITH THIN-FILM MAGNETIC HEAD AND FLEXIBLE SUPPORT MEMBER

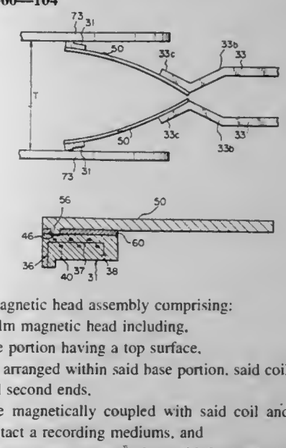
Yoichi Handa, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 145,063, Oct. 28, 1993, abandoned. This application Feb. 16, 1996, Ser. No. 602,685

Claims priority, application Japan, Oct. 30, 1992, 4-292984; Oct. 30, 1992, 4-292985

Int. Cl.[6] G11B *5/48;21/16*

U.S. Cl. 360—104 **23 Claims**



19. A magnetic head assembly comprising:

a thin film magnetic head including,

a base portion having a top surface,

a coil arranged within said base portion, said coil having first and second ends,

a pole magnetically coupled with said coil and adapted to contact a recording mediums, and

conductor means connected to said first and second ends of said coil, said conductor means having a pair of head conductor members arranged on said top surface of said base portion; and

an elongated support member adhesively bonded, at a bottom surface thereof, to said top surface of said base portion, said elongated support member having conductor means extending substantially along the length of said support member, said conductor means having a pair of support conductor members arranged on said bottom surface of said support member;

wherein one pair of said head or support conductor members are bumps and the other pair are bonding pads, said magnetic head being adhesively bonded to said support member with said top surface of said base portion facing said bottom surface of said support member and said bumps in abutment with said bonding pads, an adhesive being filled in a gap between the facing top and bottom surfaces, and

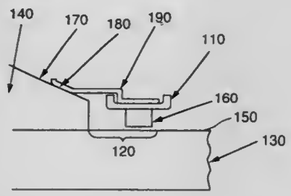
wherein said base portion of said magnetic head includes a bottom surface, a side surface and a contact pad arranged on said bottom surface, said contact pad having a bottom surface adapted to contact a recording medium and a side surface extending flush with said side surface of said base portion, said pole extending from said side surface of said base portion to said side surface of said contact pad.

5,644,451

MECHANISM FOR LOADING AND UNLOADING OF READ/WRITE HEADS AT AN INNER DIAMETER OF A DISK

John R. Chan, Fremont, and Jeffrey R. Burt, Mountain View, both of Calif., assignors to Samsung Information Systems America, Inc., Santa Clara County, Calif.

Filed May 26, 1995, Ser. No. 451,632
Int. Cl.[6] G11B *5/54*
U.S. Cl. 360—105 **17 Claims**



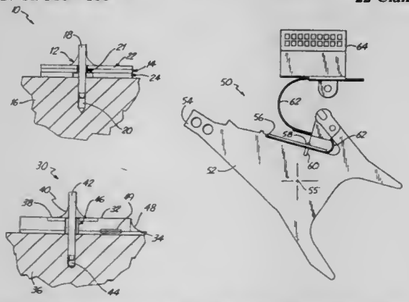
1. A disk drive comprising:
a disk having a surface adapted for storage of data;
a ramp attached to a central portion of the disk, the ramp having a surface inclined relative to the surface of the disk, wherein the inclined surface of the ramp is a portion of a surface which has a symmetry axis coincident with an axis about which the disk and the ramp rotate;
a head assembly adapted to move a head radially along the surface of the disk; and
a suspension arm attached to the head assembly so that when the head is within a landing zone around the central portion of the disk, the suspension arm engages the surface of the ramp and moves the head away from the surface of the disk.

5,644,452

APPARATUS CONNECTING A FLEXIBLE CIRCUIT TO AN ACTUATOR ARM OF A DISC DRIVE

Alvin E. Cox, Yukon; Steven S. Eckerd; David S. Allsup, both of Oklahoma City, and Mark S. Maggio, Bethany, all of Okla., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Continuation of Ser. No. 228,665, Apr. 18, 1994, abandoned. This application Jun. 23, 1995, Ser. No. 494,009
Int. Cl.[6] G11B *21/08;25/04;* H05K *1/00*
U.S. Cl. 360—106 **22 Claims**



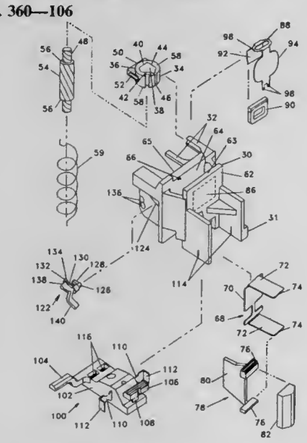
1. Apparatus connecting a flexible circuit to an actuator arm of a disc drive, the actuator arm supporting a transducer assembly, the flexible circuit including an electrical circuit supporting structure supporting a first electrical circuit coupled to the transducer assembly, the apparatus comprising:
a first pin receiving hole in the electrical circuit supporting structure;
a stiffening member composed of electrically insulating material, the stiffening member having a second pin receiving hole aligned with the first pin receiving hole and having a rigid surface abutting the electrical circuit supporting structure to stiffen the electrical circuit supporting structure;
a pin supported by the actuator arm and extending through the first and second pin receiving holes; and
a solder connection between the pin and one of the electrical circuit supporting structure and the stiffening member, the solder connection mechanically securing and electrically connecting the pin to the one of the electrical circuit supporting structure and the stiffening member.

5,644,453

TAPE DRIVE ACTUATOR INCLUDING A ONE PIECE INTERNALLY PRE-LOADED LINEAR BEARING

Eric Alan Eckberg; Gerald Daniel Malagrino, Jr., both of Rochester, and Brian Lee Rappel, Grand Meadow, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 489,462, Jun. 7, 1995, and a continuation-in-part of Ser. No. 474,227, Jun. 7, 1995, and a continuation-in-part of Ser. No. 472,829, Jun. 7, 1995. This application Jan. 16, 1996, Ser. No. 586,519
Int. Cl.[6] G11B *5/55*
U.S. Cl. 360—106 **17 Claims**



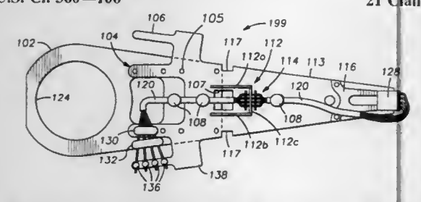
1. An actuator for positioning a transducer head in a tape drive, comprising:
a carriage to which said transducer head is secured;
a lead screw non-rotatably mounted in said tape drive;
a pair of molded split bearings secured to said carriage and having openings for receiving said lead screw with substantially zero clearance; and
a threaded nut positioned to engage said lead screw between said pair of molded split bearings to move said carriage along said lead screw as said threaded nut is rotated relative to said lead screw.

5,644,454

ELECTROSTATIC DISCHARGE PROTECTION SYSTEM FOR MR HEADS

Satya P. Arya, San Jose; Timothy Scott Hughbanks, Morgan Hill, both of Calif.; Steven Howard Voldman, South Burlington, Vt., and Albert John Wallash, Morgan Hill, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 11, 1996, Ser. No. 613,928
Int. Cl.[6] G11B *5/48;5/33*
U.S. Cl. 360—106 **21 Claims**



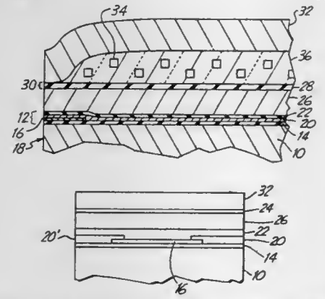
1. An apparatus for protecting an MR head from electrostatic discharge, comprising:
an actuator arm for mounting to a head disk assembly;
a load beam having a distal end and a proximal end, said proximal end being flexibly joined at a joint to the actuator arm to permit the load beam to bend with respect to the actuator arm about the joint;
multiple MR lead wires running along the load beam from the distal end to the proximal end, said wires being uninsulated in at least one contact point; and
a shorting bar attached to the actuator arm in a position such that the shorting bar electrically shorts the wires at the contact point when the load beam bends a predetermined amount toward the shorting bar about the joint with respect to the actuator arm.

5,644,455

AMORPHOUS DIAMOND-LIKE CARBON GAPS IN MAGNETORESISTIVE HEADS

Allan E. Schultz, St. Paul, Minn., assignor to Seagate Technology, Inc., Scotts Valley, Calif.

PCT No. PCT/US93/12685, § 371 Date Apr. 15, 1994, § 102(e) Date Apr. 15, 1994
PCT Filed Dec. 30, 1993, Ser. No. 211,759
Int. Cl.[6] G11B *5/127*
U.S. Cl. 360—113 **13 Claims**



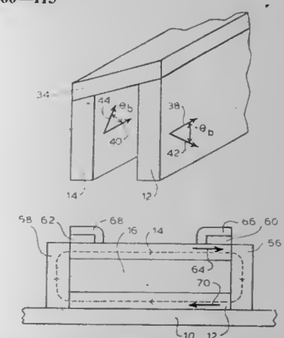
1. A sensor for a disc drive for reading data from a magnetic disc and for writing data to the magnetic disc comprising:
a first thermally conductive magnetic film of soft magnetic material;
a magnetoresistive element;
at least two conductors attached to different regions of he magnetoresistive element;
a first thermally conductive resistive film containing thermally conductive, high electrical resistivity amorphous diamond-like carbon sandwiched between the first thermally conductive magnetic film on one side of the first thermally conductive resistive film and the magnetoresistive element and the conductors on the opposite side of the first thermally conductive resistive film;
a second thermally conductive magnetic film of soft magnetic material; and
a second thermally conductive resistive film of thermally conductive, high electrical resistivity amorphous diamond-like carbon sandwiched between the second thermally conductive magnetic film on one side of the second thermally conductive film and the magnetoresistive element and the conductors on the other side of the second thermally conductive resistive film,
wherein both the magnetoresistive element and the conductors directly contact the first and second thermally conductive resistive films.

5,644,456

MAGNETICALLY CAPPED DUAL MAGNETORESISTIVE REPRODUCE HEAD

Neil Smith, San Diego, and Jay D. Freeman, Leucadia, both of Calif., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 180,255, Jan. 12, 1994, abandoned. This application Jan. 5, 1996, Ser. No. 583,578
Int. Cl.[6] G11B *5/39;5/147*
U.S. Cl. 360—113 **7 Claims**



1. A magnetic head assembly for detecting magnetically recorded signals from a magnetic medium comprising:
first and second rectangular thin film magnetoresistive elements, each of which has a long dimension with first and second long sides and a short dimension with first and second short ends connecting said long sides;
a spacer between said first and second magnetoresistive elements;
shorting means for electrically shorting said first ends and said second ends, respectively, of said first and second magnetoresistive elements;
current means connected to said shorting means for flowing a sense current through said first and second magnetoresistive elements between said first and second shorted ends, said sense current flow mutually magnetically self-biasing said first and second magnetoresistive elements anti-symmetric to one another along said long dimension;
a cap of magnetic permeable material extending along said long dimension of said elements, covering said elements and said spacer, along said first long sides of said elements; and
means for orienting said magnetic head assembly relative to said magnetic medium so that said second long sides of said elements face said medium and so that magnetic fields from magnetically recorded signals on said medium are directed

along the short dimension of said elements such that magnetic flux follows a path in one direction along the short dimension of said first element, is shorted through said cap, and follows a path along the short dimension of said second element in a direction opposite to said one direction.

5,644,457

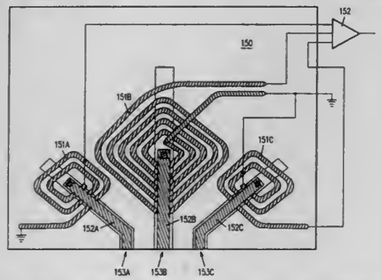
MULTIPLE GAP READ/WRITE HEAD FOR DATA STORAGE DEVICES

William D. Llewellyn, and Robert J. Strain, both of San Jose, Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Division of Ser. No. 984,660, Dec. 1, 1992, Pat. No. 5,426,539. This application Mar. 28, 1995, Ser. No. 412,496

Int. Cl.[6] G11B *5/265;5/17*

U.S. Cl. 360—121 **11 Claims**



1. A head for transferring data from a data storage medium, said head comprising:

a center magnetic pole piece having a pair of pole tips, said pole tips defining a center gap;

a center coil associated with said center magnetic pole piece;

a side magnetic pole piece having a pair of pole tips, said pair of pole tips of said side magnetic pole piece defining a side gap, said side gap being positioned on a side of said center gap;

a side coil associated with said side magnetic pole piece;

a data path extending from said center coil; and

a side conduction path extending from said side coil, said side conduction path including a signal attenuator and a signal inverter, said signal inverter being connected so as to invert a signal originating in said side coil, said signal attenuator being selected such that said signal originating in said side coil, after being inverted in said signal inverter and attenuated in said signal attenuator, substantially cancels a cross-talk signal in said data path, said cross-talk signal being created as said center gap responds to data in a data track located under said side gap.

5,644,458

INDUCTION MACHINE PROTECTION DEVICE

Randy Schoen, Decatur, and Thomas G. Habetler, Snellville, both of Ga., assignors to Siemens Energy & Automation, Inc., Alpharetta, Ga.

Continuation of Ser. No. 213,285, Mar. 15, 1994, Pat. No. 5,570,256. This application Jun. 12, 1996, Ser. No. 662,388

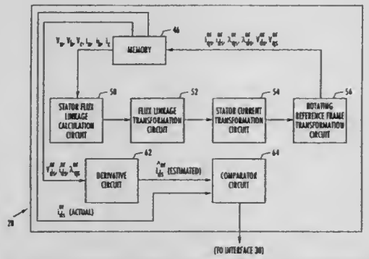
Int. Cl.[6] H02H *5/04*

U.S. Cl. 361—31 **22 Claims**

15. A monitoring device coupled to three phase conductors which supply power to an induction machine including a stator winding and a rotor winding, and determining the presence of unacceptable magnetic fields in the machine, the device comprising:

means for producing three phase current signals representative of the currents in the phase conductors;

means for determining the direct-axis current in said machine by analysis of said phase current signals, and for monitoring said



direct-axis current signal to determine a component of the phase currents substantially related only to unacceptable magnetic fields in the machine;

means for determining if the value of the component is unacceptable; and

means for interrupting the application of power to the machine from the three phase conductors when the value of the component is unacceptable.

5,644,459

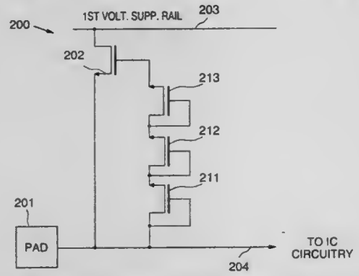
BIPOLARITY ELECTROSTATIC DISCHARGE PROTECTION DEVICE AND METHOD FOR MAKING SAME

Chuen-Der Lien, Los Altos Hills, Calif., assignor to Integrated Devices Technology, Santa Clara, Calif.

Filed Nov. 2, 1995, Ser. No. 551,995

Int. Cl.[6] H02H *9/00*

U.S. Cl. 361—56 **19 Claims**



1. An electrostatic discharge (ESD) protection circuit for protecting an integrated circuit fabricated on a chip, the ESD protection circuit comprising:

a pad connected to the integrated circuit to be protected;

a first voltage supply rail;

a first field effect transistor connected across the pad and the first voltage supply rail, wherein the first field effect transistor provides a conductive path between the pad and the first voltage supply rail by a parasitic bipolar effect when a voltage having a first polarity exists across the pad and the first voltage supply rail; and

a first enabling circuit coupled between a gate of the first field effect transistor and the pad, wherein the first enabling circuit turns on the first field effect transistor when a voltage having a second polarity opposite the first polarity and exceeding a preselected voltage exists across the pad and the first voltage supply rail, thereby providing a conductive path between the pad and the first voltage supply rail.

5,644,460

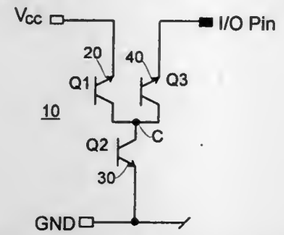
MULTI-RAIL ELECTROSTATIC DISCHARGE PROTECTION DEVICE

Stephen W. Clukey, South Portland, Me., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 184,261, Jan. 21, 1994, abandoned. This application May 13, 1996, Ser. No. 647,274

Int. Cl.[6] H02H *9/00*

U.S. Cl. 361—56 **24 Claims**



1. Apparatus for protecting an electrical circuit against circuit-damaging voltage spikes, wherein said electrical circuit is coupled to a high-potential power rail and to a low-potential power rail, said apparatus comprising a plurality of semiconductor elements wherein a first bipolar transistor is coupled to said high-potential power rail, a second bipolar transistor is coupled to said low-potential power rail and to said first bipolar transistor, and a third bipolar transistor having an output coupled to an input node or an output node of said electrical circuit and not directly coupled to said high-potential power rail, said third bipolar transistor also being coupled to said first bipolar transistor and to said second bipolar transistor, wherein said first bipolar transistor, said second bipolar transistor, and said third bipolar transistor have a common collector.

5,644,461

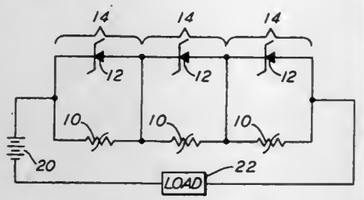
HIGH VOLTAGE D-C CURRENT LIMITER

Craig A. Miller, Pittsburgh, and Joseph C. Fray, Turtle Creek, both of Pa., assignors to Westinghouse Air Brake Company, Wilmerding, Pa.

Continuation of Ser. No. 366,486, Dec. 30, 1994, abandoned. This application Jul. 30, 1996, Ser. No. 688,556

Int. Cl.[6] H02H *9/00;* **H01H** *7/00*

U.S. Cl. 361—56 **13 Claims**



1. A current limiter for protecting a circuit within a railroad locomotive subject to a predetermined driving voltage ranging from 50 to approximately 135 volts d-c, said current limiter comprising; a plurality of PTC resistors connected in series, a zener diode connected in parallel with each of said PTC resistors, each of said PTC resistors having a predetermined voltage capacity limit such that the total of said predetermined capacity limits of said PTC resistors exceeds said predetermined driving voltage, each of said zener diodes having a zener voltage rating less than said predetermined voltage capacity limit of said PTC resistor connected in parallel therewith, and such that the total of said zener voltage ratings of said zener diodes also exceeds said predetermined driving voltage.

5,644,462

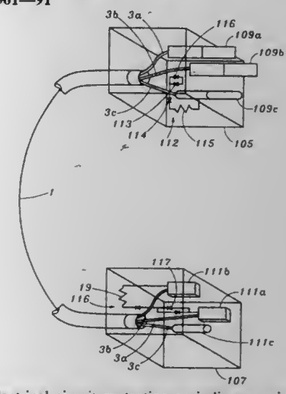
ELECTRICAL POWER/GROUND CONTINUITY INDICATOR PROTECTION CIRCUIT

Andrew A. Boschetto, Sewell, N.J., and Michael Jacobs, Westfield, Pa., assignors to International Marketing Corporation, Sewell, N.J.

Continuation of Ser. No. 145,853, Nov. 5, 1993, abandoned. This application Feb. 20, 1996, Ser. No. 603,196

Int. Cl.[6] H02H *3/20*

U.S. Cl. 361—91 **8 Claims**



1. An electrical circuit protecting an indicator, said indicator is electrically interposed between a first potential level and a second potential level, said electrical circuit comprising:

a first semi-conductor means for controlling electron flow, said first semi-conductor means generally blocking current flow from said first potential to said second potential;

a second semi-conductor means for controlling electron flow, said second semi-conductor means limiting voltage across said indicator; and

said indicator is electrically connected in series with said first semi-conductor means and electrically connected in parallel with said second semi-conductor means;

wherein said electrical circuit and said indicator are embedded within a plug of an electrical power cord, and said indicator indicates positively when said plug is mated to an active power source having a functional ground conductor,

and wherein said first and second semi-conductor means permit a surge voltage of about 1500 VAC and 2150 VDC to be passed through said electrical circuit for at least one second without damaging said indicator.

5,644,463

ADAPTIVE SEQUENTIAL CONTROLLER WITH MINIMUM SWITCHING ENERGY

Mohamed A. El-Sharkawi, Renton; Jian Xing, Seattle, both of Wash.; Nicholas G. Butler, Newberg, Oreg., and Alonso Rodriguez, Pasadena, Calif., assignors to University of Washington, Seattle, Wash.

Continuation-in-part of Ser. No. 963,692, Oct. 20, 1992, Pat. No. 5,361,184. This application Sep. 26, 1994, Ser. No. 312,389

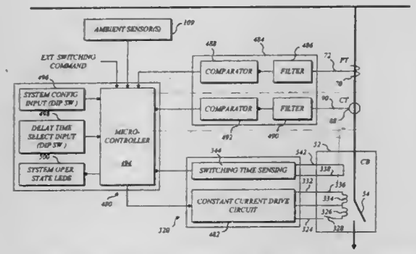
Int. Cl.[6] H02H *3/00*

U.S. Cl. 361—94 **50 Claims**

12. An adaptive sequential controller for controlling a switching device that is disposed on an AC power line so as to ensure that the switching device responds to a switching signal so as to achieve a substantially minimum switching energy, comprising:

(a) a potential transformer couplable to the power line, said potential transformer producing a potential signal indicative of zero crossings of a periodic electrical voltage on the power line;

(b) switching-time sensing means, couplable to an auxiliary switch within the switching device, for determining a



response time of the switching device after it is activated to enable or interrupt current flow in the AC power line, said auxiliary switch being linked to primary contacts of the switching device that carry line current on the AC power line when closed and having a response time that is indicative of the response time of the primary contacts of the switching device; and

(c) control means, coupled to the potential transformer to receive the potential signal and to the switching-time sensing means to determine the response time of the switching device, for activating the switching device in response to an externally produced switching command after a compensatory delay and for determining said compensatory delay so that said minimum switching energy is achieved when the switching device operates, said switching-time sensing means enabling the control means to produce a control signal that activates the switching device at a time appropriate to compensate for any changes in the response time of the primary contacts of the switching device.

5,644,464

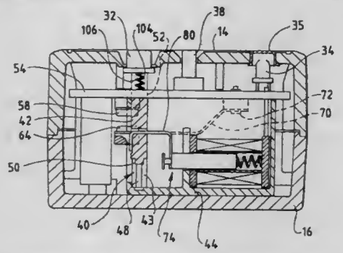
RESETTABLE LATCH MECHANISM

Liang Zhou, Guangdong, China, assignor to Pacific Sources, Inc., Greendale, Wis.

Filed Jan. 12, 1995, Ser. No. 371,699

Int. Cl.[6] H02H *3/00*

U.S. Cl. 361—115 **2 Claims**



1. A portable ground fault circuit interrupter comprising:

a housing;

a frame within said housing;

a plate slidably mounted in said frame and having a passageway extending through said plate;

a bracket slidably mounted in said passageway;

a pair of strips straddling said plate;

a carrier bar attached to and suspended by said strips adjacent said plate;

a first pair of electrical contacts mounted to said frame;

a second pair of electrical contacts electrically connected to said strips; and

solenoid means for selectively moving said bracket into engagement with said carrier bar to move said carrier bar toward said first pair of electrical contacts.

5,644,465

SURGE ARRESTER WITH EXTERNAL SHORT-CIRCUIT DEVICE

Gerhard Lange; Thomas Westebbe, and Michael Bluhm, all of Berlin, Germany, assignors to Siemens Aktiengesellschaft, München, Germany

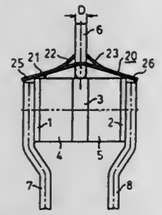
PCT No. PCT/DE94/00217, § 371 Date Oct. 30, 1995, § 102(e) Date Oct. 30, 1995, PCT Pub. No. WO94/22191, PCT Pub. Date Sep. 29, 1994

PCT Filed Feb. 25, 1994, Ser. No. 522,352

Claims priority, application Germany, Mar. 17, 1993, 43 09 331.0

Int. Cl.[6] H02H *9/06*

U.S. Cl. 361—120 **9 Claims**



1. A gas-filled surge arrester comprising:

two axially opposed cylindrical end electrodes;

a ring-shaped center electrode;

a connecting wire coupled to said center electrode, said connecting wire extending radially outward from said center electrode;

two hollow cylindrical insulators, wherein one of the two hollow cylindrical insulators is arranged between one of the two end electrodes and the center electrode, and wherein another of the two hollow cylindrical insulators is arranged between another of the two end electrodes and the center electrode;

and an external short-circuit device, said external short-circuit device including a two-arm spring clip that extends in the axial direction and has a roof-shaped arch, where the arms of the clip form an obtuse angle and free ends of the arms are in contact with said end electrodes with a layer of insulation in between, said spring clip having a passage in the center through which said connecting wire of the center electrode is guided in such a way that said spring clip is secured on said connecting wire in a pre-stressed state, wherein said free ends of the arms of said spring clip project axially beyond and are in contact with an outside peripheral edge of the respective end electrodes.

5,644,466

POWER FEED CIRCUIT FOR USE IN A SUBMARINE CABLE BRANCHING UNIT

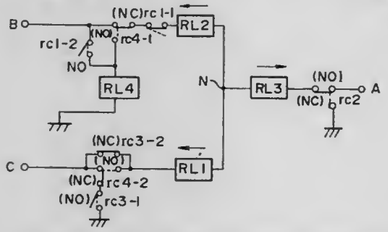
Kenji Obta, and Yoshiyuki Inoue, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Jan. 17, 1995, Ser. No. 373,606

Claims priority, application Japan, Mar. 17, 1994, 6-072632

Int. Cl.[6] H01H *47/22*

U.S. Cl. 361—191 **12 Claims**



1. A submarine cable system for connecting a plurality of land stations by submarine cables, comprising:

a submarine cable branching unit adapted for use in a submerged environment;

a first cable having a first end connected to said submarine cable branching unit and a second, opposite end adapted for connection to a first land station, said first cable including a first feed branch for feeding electric power from said first land station to said submarine cable branching unit;

a second cable having a first end connected to said submarine cable branching unit and a second, opposite end adapted for connection to a second land station, said second cable including a second feed branch for feeding electric power from said second land station to said submarine cable branching unit;

a third cable having a first end connected to said submarine cable branching unit and a second, opposite end adapted for connection to a third land station, said third cable including a third feed branch for feeding electric power from said third land station to said submarine cable branching unit;

said first through third feed branches being connected with each other at a common node in said submarine cable branching unit;

a first relay provided in said first feed branch, said first relay being activated in response to a first current flowing through said first feed branch only in one of a first direction toward said submarine cable branching unit and a second direction away from said submarine cable branching unit;

a second relay provided in said second feed branch, said second relay being set to be activated in response to a second current flowing through said second feed branch only in a direction toward said submarine cable branching unit when said first relay is set to be activated by said first current that flows in said first direction of said first current, said second relay being set to be activated in response to a second current flowing through said second feed branch only in a direction away from said submarine cable branching unit when said first relay is set to be activated by said first current flowing in said second direction of said first current;

a third relay provided in said third feed branch, said third relay being set to be activated in response to a third current flowing through said third feed branch only in a direction toward said submarine cable branching unit when said first relay is set to be activated by said first current that flows in said first direction of said first current, said third relay being set to be activated in response to a third current flowing through said third feed branch only in a direction away from said submarine cable branching unit when said first relay is set to be activated by said first current flowing in said second direction of said first current;

said second feed branch including a first normally closed switch that is opened by said first relay, said first normally closed switch opening a ground path of said second feed branch in a normally closed state thereof;

said third feed branch including a second normally closed switch that is opened by said second relay, said second normally closed switch opening a ground path of said third feed branch in a normally closed state thereof;

said first feed branch including a third normally closed switch that is opened by said third relay, said third normally closed switch opening a ground path of said first feed branch in a normally closed state thereof;

said ground path of said second feed branch including a fourth relay and a self-sustaining switch connected in series to said fourth relay, such that said fourth relay urges, when energized, said self-sustaining switch to close;

said first feed branch further including a bypassing switch so as to bypass said third normally closed switch therein, said bypassing switch being closed in response to energization of said fourth relay.

5,644,467

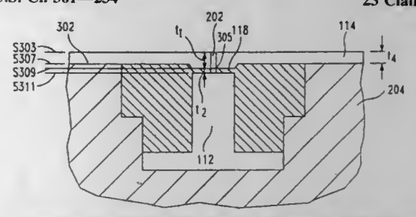
METHOD AND STRUCTURE FOR IMPROVING GAS BREAKDOWN RESISTANCE AND REDUCING THE POTENTIAL OF ARCING IN A ELECTROSTATIC CHUCK

Robert J. Steger, Cupertino, and Brian Lue, Mountain View, both of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Filed Sep. 28, 1995, Ser. No. 535,422

Int. Cl.[6] H02N *13/00*

U.S. Cl. 361—234 **23 Claims**



1. A structure useful in facilitating heat transfer fluid flow to the upper surface of an electrostatic chuck, the structure comprising:

(a) a conductive layer which contains at least one fluid flow passageway having at least one first opening to the upper surface of said conductive layer, wherein the distance between the upper surface of said conductive layer and the upper surface of said electrostatic chuck is greater in the area adjacent said at least one first opening than said distance in surrounding areas which are not adjacent said first opening; and

(b) a dielectric layer overlying said conductive layer and having at least one second opening from the surface of said dielectric layer which connects with said first opening through said conductive layer, whereby a fluid flow path is provided from said passageway to the surface of said dielectric layer.

20. A structure useful in facilitating heat transfer fluid flow to the upper surface of an electrostatic chuck, said structure comprising: a conductive layer which contains at least one fluid flow passageway having at least one opening to the upper surface of said conductive layer, wherein the distance between the upper surface of said conductive layer and the upper surface of said electrostatic chuck is greater in the area adjacent said at least one opening than said distance in surrounding areas which are not adjacent said opening.

5,644,468

METALLIZED WOUND-DIELECTRICALIZATION CONDENSER X-Y MULTIPLE CAPACITANCES

Reinhold Wink, and Mathias Gruner, both of Schlitz, Germany, assignors to Eichhoff GmbH, Schlitz, Germany

Filed Mar. 20, 1996, Ser. No. 618,916

Claims priority, application Germany, Mar. 23, 1995, 195 10 624.5

Int. Cl.[6] H01G *4/38;2/20*

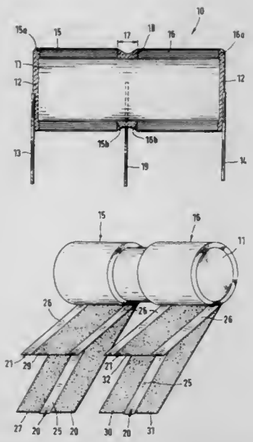
U.S. Cl. 361—330 **9 Claims**

1. A wound-dielectric multiple-capacity condenser, comprising:

a first winding of a dielectric foil having at least one metallized strip thereon, said first winding having opposite axial ends;

respective connection contacts on said opposite axial ends of said first winding conductively connected to the metallized strip thereof;

a pair of axially spaced second windings of dielectric foils coaxially surrounding said first winding, each of said dielectric foils of said second windings having at least one metallized strip thereon electrically insulated from the metallized strip of said first winding; and



means forming a common central contact conductively connected to said metallized strips of said second windings, said metallized strips of said second windings being conductively connected to said connection contacts.

5,644,469

INFORMATION PROCESSING APPARATUS SUPPORT SYSTEM WITH SUPPORT ARMS WHICH ARE CAPABLE OF CLOSING TOWARD A KEYBOARD UNIT OR AWAY FROM A KEYBOARD UNIT

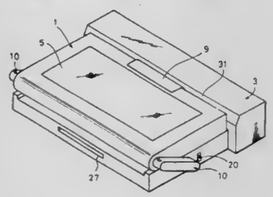
Yasushi Shioya, Kawasaki; Yasutoshi Sugita, Tokyo; Kiyoharu Yoshioka, Yokohama, and Yoshiaki Nakashima, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

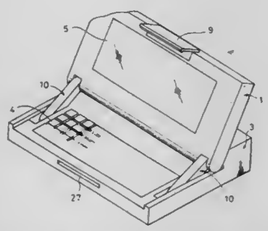
Continuation of Ser. No. 847,671, Mar. 4, 1992, abandoned. This application Jul. 7, 1994, Ser. No. 271,589

Claims priority, application Japan, Mar. 6, 1991, 3-065651; May 9, 1991, 3-133433; May 9, 1991, 3-133434; May 9, 1991, 3-133435

Int. Cl.[6] G06F *1/16;* H05K *7/16*

U.S. Cl. 361—681 **13 Claims**





1. An information processing apparatus support system, comprising:

display unit supporting means for an information display unit for displaying information, and a touch panel for entering information, said display unit supporting means having a frame permanently fixed to said display unit supporting means;

a keyboard unit for entering information; and

a connecting arm for connecting said display unit supporting means and said keyboard unit, said connecting arm being pivotally connected at one end thereof to the lower end of said display unit supporting means and pivotally connected at the other end to a fixed location on said keyboard unit;

the length of said connecting arm and the location of its pivot connection to said keyboard unit being such that said arm may swing about said pivot connection from a first position, where said frame is superimposed on said keyboard unit with said touch panel facing toward said keyboard unit, to a second position, where said frame is superimposed on said keyboard unit, with said touch panel facing away from said keyboard unit, and such that when said connecting arm is in the first position, the frame may pivot about said one end of said connecting arm to expose said touch panel and said keyboard unit.

5,644,470

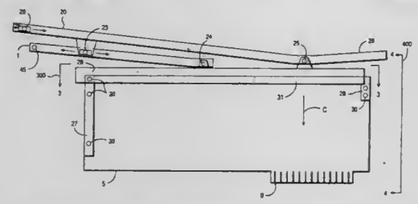
AUTODOCKING HARDWARE FOR INSTALLING AND/OR REMOVING ADAPTER CARDS WITHOUT OPENING THE COMPUTER SYSTEM COVER

Melvin Kent Benedict, Cary, N.C.; Patrick Allen Buckland, Austin, Tex.; Richard Allen Kelley, Apex, N.C.; Danny Marvin Neal, Round Rock, Tex.; Price Ward Oman, Raleigh, and Carl Raymond Waters, Cary, both of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 2, 1995, Ser. No. 552,186

Int. Cl.[6] G06F *1/16;* H01R *13/629;* H05K *7/10*

U.S. Cl. 361—686 **7 Claims**



1. A computer having a system board with at least one connector having electrical connection lands, comprising:

a cover that encloses said system board, including at least one slot aligned with said connector;

a feature card having insertion tabs, disposed on one side thereof, for contacting said lands;

a support member affixed to a side of said feature card opposite said insertion tabs; and

means for inserting said feature card to said connector, or removing a feature card from said connector, without removing said cover, said means for inserting including a frame member aligned with said slot and connector, affixed to said computer and disposed inside said cover, and means for receiving said support member which are rotatingly attached to said computer system.

5,644,471

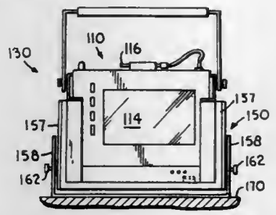
PORTABLE DOCK FOR A PORTABLE ELECTRONIC DEVICE

Darald R. Schultz, Cedar Rapids; Arvin D. Danielson, Solon; Alan G. Bunte, Cedar Rapids; Richard A. Sherman, Toddville, and Robert B. Jaeger, Swisher, all of Iowa, assignors to Norand Corporation, Cedar Rapids, Iowa

Continuation of Ser. No. 423,239, Apr. 17, 1995, Pat. No. 5,544,010, which is a division of Ser. No. 275,884, Jul. 15, 1994, Pat. No. 5,408,382, which is a continuation of Ser. No. 958,873, Oct. 8, 1992, abandoned, which is a continuation-in-part of Ser. No. 880,452, May 8, 1992, abandoned, which is a continuation-in-part of Ser. No. 818,761, Jan. 10, 1992, abandoned, which is a continuation-in-part of Ser. No. 558,895, Jul. 25, 1990, abandoned. This application May 14, 1996, Ser. No. 645,980

Int. Cl.[6] G06F *1/16;* H05K *7/10*

U.S. Cl. 361—686 **2 Claims**



1. An apparatus for connecting a plurality of different hand-held electrical devices, each having a device connector, said apparatus comprising:

a vehicle dock having a dock connector and first side panels; and

a portable adapter having second side panels, a first connector, and a second connector electrically interconnected to said first connector; said portable adapter configured to be physically received alongside said first side panels by said vehicle dock such that said first connector electrically communicates with said dock connector; said portable adapter further configured to physically receive each of the plurality of different hand-held electrical devices alongside said second side panels such that said second connector electrically communicates with the device connector of the respective electrical device received therein.

5,644,472

COMPUTER COMPONENT CARRIER THAT DIRECTS AIRFLOW TO CRITICAL COMPONENTS

Dean A. Klein, Lake City, Minn., assignor to Micron Electronics, Inc., Nampa, Id.

Filed Sep. 6, 1995, Ser. No. 524,336

Int. Cl.[6] H05K *7/20*

U.S. Cl. 361—695 **1 Claim**

1. An electronic-component carrier assembly for a computer having a fan assembly and a plurality of electronic components, said carrier assembly comprising:

(a) a top carrier and a bottom carrier each having:

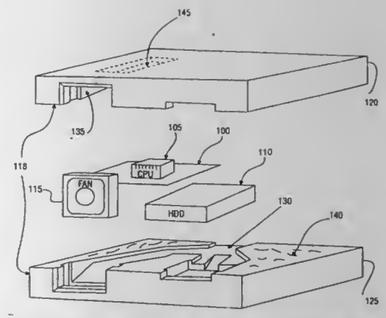
(1) a cavity arranged to accommodate said fan assembly, referred to as a fan cavity,

(2) a cavity arranged to accommodate a motherboard subassembly, referred to as a motherboard cavity, wherein at least of one of said plurality of electronic components is mounted on said motherboard subassembly, and

(3) a cavity arranged to accommodate a hard disk drive, referred to as a HDD cavity; and

(b) plurality of interconnecting airways connecting said fan cavity, said motherboard cavity, and said HDD cavity;

(c) wherein at least one of said top carrier and said bottom carrier:



(1) includes one or more removable sections that can be removed to form a cavity to accommodate an additional component, and

(2) is formed of an EMI-shielding material.

5,644,473

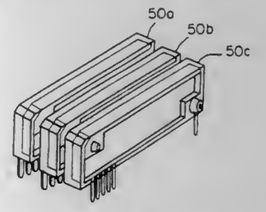
CARRIERS FOR IC PACKAGES

Nour Eddine Derouiche, Raleigh, N.C., assignor to Mitsubishi Semiconductor America, Inc., Durham, N.C.

Filed Aug. 21, 1995, Ser. No. 517,122

Int. Cl.[6] B65D *21/024;21/028;85/90;* H01L *23/055*

U.S. Cl. 361—732 **10 Claims**



1. An electronic package carrier comprising a frame made of elastic material, and having side walls spaced with respect to each other so as to accommodate an electronic package therebetween, at least one of said side walls being provided with locking elements for attaching said frame to at least one other frame for receiving electronic packages, the frames being rigidly oriented by said locking elements so as to establish a prescribed alignment of said packages with respect to each other or a set of external conductors.

5,644,474

VIDEO CASSETTE RECORDER INCORPORATING THEREIN A GROUNDING SYSTEM

Gi-Il Jang, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Mar. 19, 1996, Ser. No. 617,590

Claims priority, application Rep. of Korea, Apr. 28, 1995, 95-8944

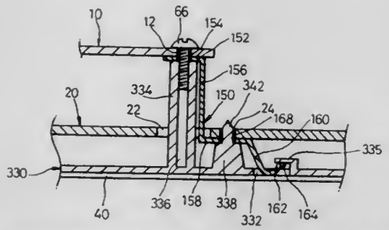
Int. Cl.[6] H05K *5/00*

U.S. Cl. 361—753 **2 Claims**

1. A video cassette recorder incorporating therein a grounding system for forming an electrical signal loop from a deck assembly to a lower cover of the video cassette recorder, the grounding system comprising:

a main chassis having a boss upwardly projected to be engaged with a hole formed at a side of the deck assembly, a supporting protrusion formed adjacent to the boss and a recess portion formed adjacent to the supporting protrusion, the

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supporting protrusion having a guide pin projected therefrom and the recess portion being provided with a deformation preventing jaw;

a printed circuit board having a first through-hole inserted into the boss of the main chassis and a second through-hole formed adjacent to the first through-hole; and

a ground plate having a first horizontal portion with a hole, a second horizontal portion with an inserting hole, a vertical portion connecting between the first horizontal portion and the second horizontal portion and passing through the first through-hole of the printed circuit board, a bending portion inserted into the recess portion of the main chassis to ground with the lower cover, a tip end horizontally extended from the bending portion to allow the bending portion to resiliently contact with the deformation preventing jaw, and a slant portion connecting between the second horizontal portion and the bending portion, the inserting hole of the second horizontal portion and the second through-hole of the printed circuit board being inserted into the guide pin of the supporting protrusion, thereby allowing the second horizontal portion of the ground plate to be sandwiched between the printed circuit board and the supporting protrusion.

5,644,475

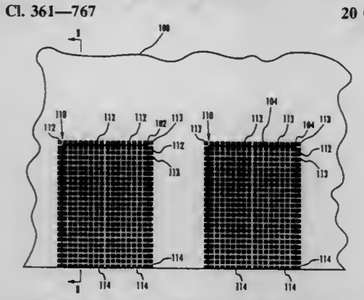
SOLDER MASK FOR A FINGER CONNECTOR ON A SINGLE IN-LINE PACKAGE MODULE

Gerard A. Woychik, Waukesha, Wis., and John C. Mather, Cedar Rapids, Iowa, assignors to Allen-Bradley Company, Inc., Milwaukee, Wis.

Continuation-in-part of Ser. No. 316,667, Sep. 30, 1994, Pat. No. 5,484,965. This application Apr. 11, 1995, Ser. No. 419,792

Int. Cl.[6] H05K *1/02*

U.S. Cl. 361—767 **20 Claims**



1. A contact area for a circuit board, the contact area being manufactured according to the following steps:

providing the contact area on a surface of the circuit board;

providing a solder mask over a location including the contact area in a pattern, the pattern covering the location and being configured to prevent solder from adhering to the contact area at the location and yet be removed by a low-impact operation;

soldering electrical devices to the circuit board; and

stripping the pattern of solder mask by the low-impact operation.

5,644,476

FLEXIBLE FASTENING MEMBER AND OBJECT PROVIDED WITH SUCH A FASTENING MEMBER, AND SUPPORT PROVIDED WITH BOTH

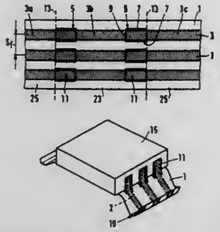
Johannus W. Weekamp, Eindhoven, and Johannes Brandsma, Roermond, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 13, 1994, Ser. No. 323,525

Claims priority, application Belgium, Oct. 13, 1993, 9301079

Int. Cl.[6] H05K *1/14*

U.S. Cl. 361—773 **22 Claims**



5. A flexible fastening member comprising a foil for fastening an object thereto, characterized in that the member is generally U-shaped with a central portion as the base of the U, the legs being bent along parallel bending lines, said member having tags forming extensions of the legs of said U-shaped member and being an integral part of the legs, the tags being situated at one side of the plane defined by the central portion and the legs at the other side of said plane, and in that the member is made of electrically insulating material and at least the tags and the legs are provided with electrically conducting tracks.

5,644,477

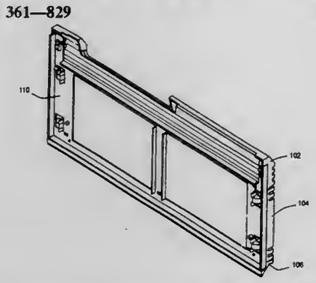
FRAME CARRIER AND MODULAR COVER PANEL SYSTEM

Peter P. Klein, Phoenixville, Pa., assignor to Unisys Corporation, Blue Bell, Pa.

Filed Oct. 20, 1994, Ser. No. 326,266

Int. Cl.[6] H02B *1/01*

U.S. Cl. 361—829 **19 Claims**



1. A fascia assembly comprising one or more modular panels selected from a limited set of panel heights and affixed to a frame carrier, wherein the fascia assembly completely covers an opening in a rack by attaching the frame carrier to the rack, wherein each of the limited set of panel heights is a whole number multiple of a standardized unit of height.

5,644,478

ELECTRONIC COMPONENT AND ITS MANUFACTURING METHOD

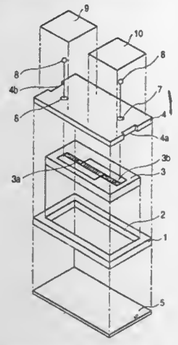
Daizo Ando, Katano; Tadashi Nakamura, Hirakata; Shinji Umeda, Neyagawa, and Kunihiko Oishi, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 31, 1995, Ser. No. 381,655

Claims priority, application Japan, Jan. 31, 1994, 6-009202

Int. Cl.[6] H02B *1/01*

U.S. Cl. 361—829 **10 Claims**



1. An electronic component comprising:

a framework having an opening plane on each of a first side and a second side thereof:

an electronic element mounted inside of said framework and provided with electrodes;

a first plate directly joined on said opening plane at the first side of the framework and provided with feedthrough holes thereon;

a second plate directly joined on said opening plane at the second side of the framework;

conductors disposed inside of said feedthrough holes with hermetic sealing and connected to said electrodes; and

external electrodes disposed on the outside surface of said first plate and connected to said conductors.

5,644,479

SWITCHING POWER SUPPLY DEVICE

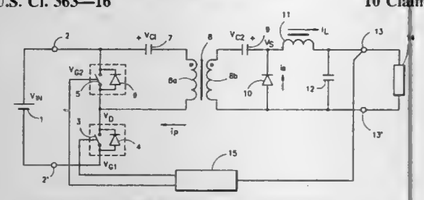
Koji Yoshida, Hirakata, and Takuya Ishii, Suita, both of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Japan

Filed Oct. 18, 1994, Ser. No. 325,928

Claims priority, application Japan, Oct. 27, 1993, 5-268706

Int. Cl.[6] H02M *3/335*

U.S. Cl. 363—16 **10 Claims**



1. A switching power supply device comprising:

a series circuit constituted by a first switch means which is connected to an input voltage and which is repeatedly turned on and off, and a second switch means which is repeatedly turned on and off to alternate with said first switch means;

a first capacitor connected to one end of said second switch means;

a transformer having a primary winding connected to said second switch means and said first capacitor and having at least one secondary winding;

a series circuit constituted by a second capacitor, and a rectifier diode connected across said at least one secondary winding of said transformer;

a series circuit constituted by an inductance element and a smoothing capacitor connected across said rectifier diode; and

a control circuit for controlling turning on and turning off of said first and second switch means in order to control an output voltage, said output voltage being a voltage across said smoothing capacitor.

5,644,480

POWER SOURCE DEVICE

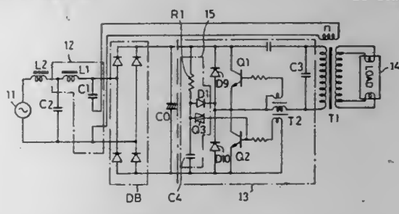
Hiroyuki Sako, and Tokushi Yamauchi, both of Kadoma, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Apr. 29, 1994, Ser. No. 235,346

Claims priority, application Japan, Nov. 15, 1993, 5-285309; Nov. 25, 1993, 5-295030

Int. Cl.[6] H02M *3/338*

U.S. Cl. 363—17 **21 Claims**



1. A power source device comprising:

an AC source for supplying an AC voltage;

rectifying means including at least one diode element for rectifying the AC voltage;

a first smoothing capacitor for smoothing an output voltage from said rectifying means to produce an output DC voltage;

inverter means for converting the output DC voltage into a high frequency AC voltage and for supplying the high frequency AC voltage to a load;

voltage feedback means for feeding the high frequency AC voltage back to an input side of said rectifying means;

resonating means including a resonating capacitor and a resonating inductance element for resonating at the high frequency AC voltage; and

a diode element connected in a forward direction between said voltage feedback means and said first smoothing capacitor.

5,644,481

CONTROLLED DC VOLTAGE STABILIZER

Hirofumi Konishi, Takatshuki, and Masanori Yamanaka, Takatsuki, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 23, 1995, Ser. No. 547,053

Claims priority, application Japan, Nov. 15, 1994, 6-280561

Int. Cl.[6] H02M *3/335*

U.S. Cl. 363—21 **3 Claims**

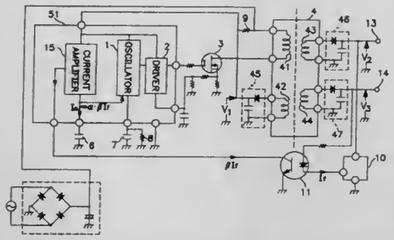
1. A controlled dc voltage stabilizer comprising:

oscillation means for oscillating by charging and discharging of a capacitor;

switching means responsive to an output of said oscillation means;

transformer means including a primary winding connected in series with said switching means across a dc source;

secondary rectifier means connected to a secondary winding of said transformer means for generating a dc output voltage;



error amplifier means for amplifying a difference between the dc output voltage of said secondary rectifier means and a reference voltage and transforming a difference voltage to an error current;

photocoupler means for amplifying the error current produced at said error amplifier means; and

current amplifier means composed of a current mirror circuit for amplifying an output current of said photocoupler means; and wherein

the dc output voltage of said secondary rectifier means is stabilized by controlling a conductive period of said switching means by means of an output current of said current amplifier means.

5,644,482

HVDC TRANSMISSION SYSTEM WITH MULTIPLE CONVERTER STATIONS

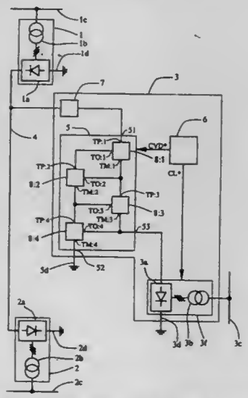
Gunnar Asplund, Ludvika, Sweden, assignor to Asea Brown Boveri AB, Västerås, Sweden

Filed Jun. 28, 1996, Ser. No. 673,358

Claims priority, application Sweden, Jul. 6, 1995, 9502450

Int. Cl.[6] H02J *3/36*

U.S. Cl. 363—35 **9 Claims**



1. A power transmission system for high-voltage direct current, comprising at least one rectifier station (1) and one inverter station (2), which are interconnected by a dc connection (4), as well as a third converter station (3) connected between the dc connection and an ac network (3c), which converter station comprises a converter (3a) connected to the dc connection via a direct-voltage converter (5), characterized in that the direct-voltage converter comprises at least a first and a second converter stage (8:1, 8:2), each with a positive terminal (TP:1, TP:2), a negative terminal (TM:1, TM:2) and an output terminal (TO:1, TO:2) and comprising a voltage-source converter circuit (V, C1, SL) with at least one extinguishable semiconductor valve (T1, T2), the positive terminal of the second converter stage being connected to the output terminal of the first converter stage and the output terminal of the second converter stage being connected to the negative terminal of the first converter stage.

5,644,483

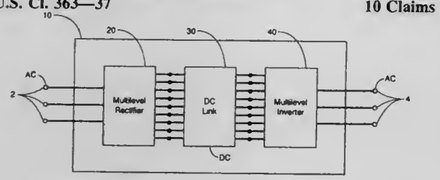
VOLTAGE BALANCED MULTILEVEL VOLTAGE SOURCE CONVERTER SYSTEM

Fang Zheng Peng, Oak Ridge, and Jih-Sheng Lai, Knoxville, both of Tenn., assignors to Lockheed Martin Energy Systems, Inc., Oak Ridge, Tenn.

Filed May 22, 1995, Ser. No. 446,366

Int. Cl.[6] H02M *5/45*

U.S. Cl. 363—37 **10 Claims**



1. A multilevel converter system, comprising:

a rectifier having at least one phase leg and a source input node for each of said phases, said rectifier further having a plurality of rectifier DC output nodes;

an inverter having at least one phase leg and a load output node for each of said phases, said inverter further having a plurality of inverter DC input nodes; and

a DC link having a plurality of rectifier charging means and a plurality of inverter discharging means, said plurality of rectifier charging means connected in series, one of said rectifier charging means disposed between and connected in an operable relationship with each adjacent pair of said rectifier DC output nodes, said plurality of inverter discharging means connected in series, one of said inverter discharging means disposed between and connected in an operable relationship with each adjacent pair of said inverter DC input nodes, each of said rectifier DC output nodes individually electrically connected to said respective inverter DC input nodes;

whereby each of said rectifier DC output nodes and each of said inverter input nodes are voltage balanced by to the respective charging and discharging of said rectifier charging means and said inverter discharging means.

5,644,484

BIDIRECTIONAL LOAD CURRENT SENSE CIRCUIT FOR A H-BRIDGE

PakriSwami Elango, Singapore, Singapore, assignor to SGS-Thomson Microelectronics Pte Ltd., Singapore and Seoul, Rep. of Korea

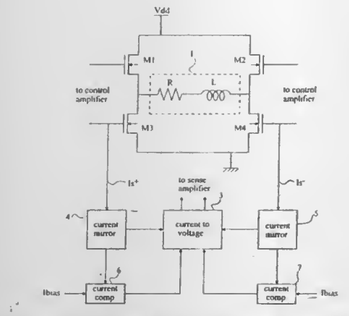
Filed Jul. 13, 1995, Ser. No. 501,881

Claims priority, application European Pat. Off., Jul. 19, 1994, 94410051

Int. Cl.[6] H02M *3/335*

U.S. Cl. 363—98 **24 Claims**

1. A current sense device for a load arranged in a diagonal of a H-bridge having two high-side MOS transistors and two low-side MOS transistors and operating in class AB, the current sense device comprising first mean for determining the current flowing in the load without influencing the current flowing in the load.



5,644,485

CONVERTER CONNECTION WITH A BALANCING CIRCUIT

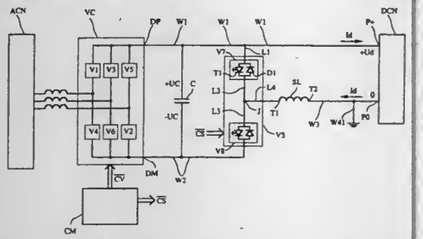
Gunnar Asplund, Ludvika, Sweden, assignor to Asea Brown Boveri AB, Västerås, Sweden

Filed Jul. 18, 1995, Ser. No. 503,860

Claims priority, application Sweden, Aug. 24, 1994, 9402827

Int. Cl.[6] H02M *7/155*

U.S. Cl. 363—129 **7 Claims**



1. A converter connection for conversion between alternating voltage and direct voltage, especially at high-voltage direct current, for connection to at least one power network having a neutral pole and at least one pole energized by direct voltage in relation to the neutral pole, said converter connection comprising a voltage-source converter with two direct-voltage terminals, connected to an alternating-voltage network without an intermediate separate winding transformer, a control device for control of said converter and a capacitor connected between said direct-voltage terminals, and at least one of the direct-voltage terminals of the converter is connected by means of an electric pole conductor to at least one of the poles of the power network energized by direct voltage, two valves mutually series-connected at a common point of connection, each of said valves comprising a gate turn-off semiconductor valve and a diode valve connected thereto in anti-parallel connection, said series connection being connected to said direct-voltage terminals, and a reactor with an essentially inductive impedance, with a first terminal connected to said connection point and a second terminal which communicates with said neutral pole in an electrically conducting connection, the control device generating control signals to said gate turn-off semiconductor valves in such a way that the time-average value of the voltage at said connection point becomes substantially equal to the average value of the voltage which occurs across the two terminals of the capacitor.

5,644,486

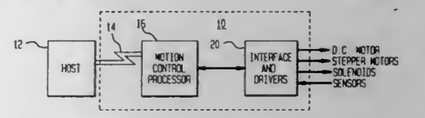
PROGRAMMABLE CONTROLLER FOR MECHANICAL SYSTEMS

Sung S. Chang, Stamford; James L. Harman, Southport; Gary Steven Jacobson, East Norwalk; Wesley A. Kirschner; Micheal J. Ramadei, both of Trumbull, and Eric L. Zuidema, Norwalk, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Oct. 24, 1994, Ser. No. 327,246

Int. Cl.[6] G06F *19/00*

U.S. Cl. 364—132 **19 Claims**



1. An apparatus for controlling a mechanical system in response to classes of messages from a host computer system, said apparatus comprising:

a) communications means for receiving a first class of messages from said host computer system to selectively activate profiles and a second class of messages from said host computer system that cancels said previously activated profiles;

b) interface means for transmitting control signals to, and receiving status signals from, said mechanical system;

c) a motion control processor responsive to said messages and said status signals to generate said control signals in accordance with a selected set of profiles.

5,644,487

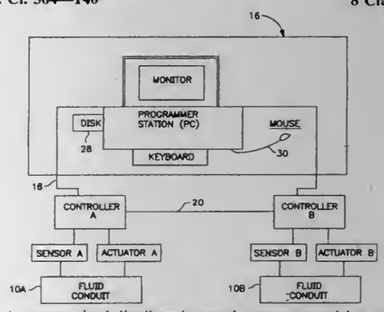
MONITORING AND CONTROL SYSTEM AND METHOD

Stephen B. Duff, Palmyra, N.J., and Jack S. Paltenstein, Ft. Washington, Pa., assignors to Moore Products Co., Spring House, Pa.

Filed Oct. 19, 1993, Ser. No. 138,848

Int. Cl.[6] G05B *11/01*

U.S. Cl. 364—140 **8 Claims**



1. A computerized distributed-control system comprising a plurality of distributed controllers and a programmer station including a programmable computer provided with a Sequential Function Chart program and interconnected with each of said controllers to interchange information and control data with said controllers, wherein said system comprises:

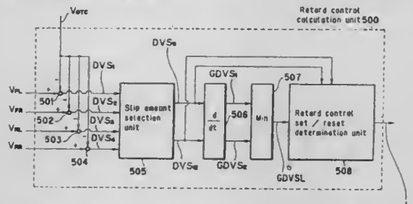
operator-controllable means for placing said Sequential Function Chart program at said programmable computer in any operator-selected one of a plurality of modes of operation, at least one of said modes being effective to interrupt evolving of said Sequential Function Chart program at a selected step to permit monitoring, editing and/or changing of said Sequential Function Chart program while it is in said at least one mode and while permitting said controllers to continue their operation.

5,644,488

DRIVING FORCE CONTROL APPARATUS AND METHOD FOR 4-WHEEL DRIVING VEHICLE

Yoshihito Ito, Okazaki, Japan, and Hiroki Tuge, Frankfurt am Main, Germany, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 5, 1995, Ser. No. 417,040
Claims priority, application Japan, Apr. 8, 1994, 6-070359
Int. Cl.[6] B60K *28/16*
U.S. Cl. 364—423.098 **27 Claims**



1. A driving force control apparatus for a 4-wheel drive vehicle including a differential system with a differential limit mechanism disposed between front or rear right and left wheels of the vehicle for restricting a slip of the wheels by controlling a driving force transmitted from the wheels to a road surface, comprising:

wheel speed detection means for detecting individual rotational speeds of each of the four wheels;

slip detection means for detecting two relatively largest slip condition amounts, each slip condition amount indicating a magnitude of slip of an individual wheel according to a corresponding wheel rotational speed of one of the four wheels detected by said wheel speed detection means;

slip change rate calculation means for determining change rates of the two relatively largest slip condition amounts detected by said slip detection means;

slip change rate selection means for selecting the relatively smaller slip change rate of two slip change rates determined by said slip change rate calculation means; and

driving force control means for controlling the driving force according to the slip change rate selected by said slip change rate select means.

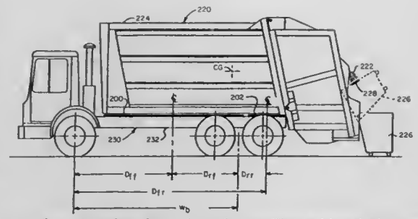
5,644,489

APPARATUS AND METHOD FOR IDENTIFYING CONTAINERS FROM WHICH MATERIAL IS COLLECTED AND LOADED ONTO A HAULAGE VEHICLE

LeRoy G. Hagenbuch, 4602 N. Rosemead Dr., Peoria, Ill. 61614

Continuation of Ser. No. 403,069, Mar. 13, 1995, which is a continuation of Ser. No. 206,531, Mar. 4, 1994, Pat. No. 5,416,706, which is a continuation of Ser. No. 102,531, Aug. 4, 1993, Pat. No. 5,327,347, which is a continuation of Ser. No. 964,126, Oct. 20, 1992, abandoned, which is a continuation of Ser. No. 351,179, May 12, 1989, abandoned, which is a continuation-in-part of Ser. No. 874,273, Jun. 13, 1986, Pat. No. 4,831,539, and a continuation-in-part of Ser. No. 717,042, Apr. 1, 1985, Pat. No. 4,839,835, each which is a continuation-in-part of Ser. No. 604,739, Apr. 27, 1984, Pat. No. 4,630,227. This application Jun. 7, 1995, Ser. No. 475,806
Int. Cl.[6] G01G *19/08;19/415*
U.S. Cl. 364—424.07 **28 Claims**

1. A haulage vehicle comprising in combination: a mechanism for moving a container of material and loading the material onto the haulage vehicle while the vehicle remains stationary; a sensor mounted to the vehicle proximate a region through which the container is moved for retrieving from the container a machine-readable code when the container is moved through the region; and, an electronic processor for collecting the code retrieved by the



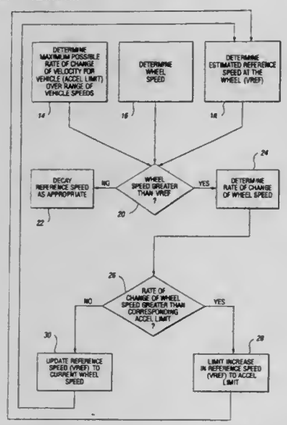
sensor, time stamping the code and compiling a historical record identifying the container and a time when the material from it was collected.

5,644,490

METHOD AND SYSTEM FOR ESTIMATING VEHICLE SPEED REFERENCE VALUE

Darryl C. Weber, Ann Arbor, Mich., assignor to Kelsey-Hayes Company, Livonia, Mich.

Filed Feb. 3, 1995, Ser. No. 383,267
Int. Cl.[6] B60K *31/00*
U.S. Cl. 364—426.018 **10 Claims**



1. For use with a motor vehicle equipped with an Anti-Locking Braking System (ABS), an improved method of estimating a vehicle speed reference value (VREF) at a wheel so as to prevent false slip detection and false ABS activation, the method comprising:

(a) determining a corresponding ACCEL limit having a value which is a function of a corresponding vehicle speed;

(b) determining wheel speed;

(c) determining an estimated reference speed (VREF) for the vehicle at the wheel in accordance with said determined wheel speed;

(d) comparing said wheel speed to the estimated reference speed;

(e) decaying said estimated reference speed at a predetermined rate in response to said wheel speed<VREF;

(f) determining a rate of change of the wheel speed;

(g) comparing the determined said rate of change of the wheel speed to the corresponding ACCEL limit at said estimated reference speed;

(h) setting VREF=wheel speed if said wheel speed>VREF and said rate of change of the wheel speed<ACCEL limit;

(i) limiting VREF to the corresponding ACCEL limit if said wheel speed>VREF and said rate of change of the wheel speed>ACCEL limit; and

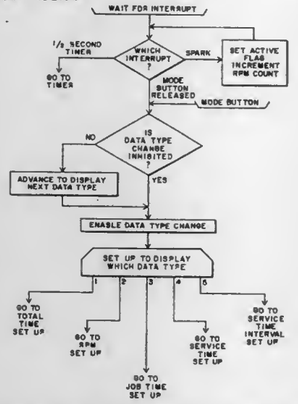
(j) repeating steps (b)–(i) on a real-time basis over a predetermined time interval.

5,644,491

SELF CONTAINED MULTI-FUNCTION ENGINE MONITOR AND TIMER FOR PROVIDING ENGINE RUNNING TIME, JOB TIME, SERVICE TIME AND TACHOMETER FUNCTIONS

Kenton W. Fiske, Macedon; Edward G. Reehil, Shortsville; Herbert F. Ley, Farmington, and David L. Sestito, Fairport, all of N.Y., assignors to SenDEC Corporation, Fairport, N.Y.

Filed Jan. 31, 1994, Ser. No. 189,321
Int. Cl.[6] G06G *7/70*
U.S. Cl. 364—431.04 **28 Claims**



1. An engine monitor for an internal combustion engine having at least one spark plug comprising:

a substantially weather resistant case;

a spark detector within the case capacitively coupled to the engine through the case and having an input terminal, located adjacent to an outside wall of the case, and responsive to electro-magnetic radiation produced when the spark plug is fired;

a clamp on an outside wall of the case including a channel for forming a loop at the end of an antenna wire close to the input terminal for capacitively coupling a spark signal from the antenna wire through the case to the input terminal; and

a clock within the case, responsive to the spark detector for accumulating running time while the engine is running.

5,644,492

METHOD FOR COMPENSATION OF WEIGHING ERRORS IN AN ELECTRONIC SCALE

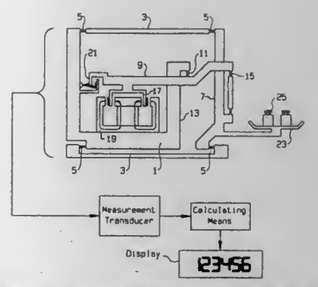
Arthur Reichmuth, Wetzikon, and Martin Heusser, Meilen, both of Switzerland, assignors to Mettler-Toledo GmbH, Greifensee, Switzerland

Continuation of Ser. No. 130,865, Dec. 10, 1987, abandoned. This application Aug. 17, 1992, Ser. No. 931,118
Claims priority, application Switzerland, Dec. 16, 1986, 4999/86
Int. Cl.[6] G01G *23/01*
U.S. Cl. 364—464.25 **38 Claims**

1. A process for compensating for nonlinear weighing errors in an electronic scale, the electronic scale having a load receiver for bearing loads to be weighed, comprising the steps of:

(a) operating the scale to obtain a series of indications representative of at least four different loads, at least two loads being offset the same amount from two other loads;

(b) determining correction parameters from the indications; and



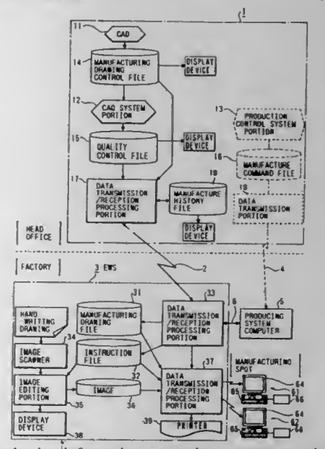
(c) using the correction parameters to linearize the electronic scale.

5,644,493

PRODUCTION INFORMATION PROCESSING SYSTEM

Kazunori Motai, and Kimio Inoue, both of Kanagawa, Japan, assignors to NSK Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 936,217, Aug. 27, 1992, abandoned. This application Feb. 28, 1995, Ser. No. 395,812
Claims priority, application Japan, Aug. 30, 1991, 3-220664
Int. Cl.[6] G06F *19/00*
U.S. Cl. 364—468.02 **5 Claims**



1. A production information processing system comprising:

a main information processing apparatus comprising:

a manufacturing drawing information generation means for generating a manufacturing drawing information of products;

a quality control information instruction means for generating a quality control instruction information in accordance with the manufacturing drawing information;

a production system portion for generating a manufacturing instruction in accordance with a customer information including an ordered quantity and a date of delivery;

a production control information generation means including a producing system computer for generating a manufacturing schedule in a working spot in response to the manufacturing instruction, and for generating at least one slid which contains a manufacturing instruction information and is attached to each of the products in accordance with the manufacturing schedule, the at least one slip comprising one of:

a completion card with a printed a bar code for identifying the products;

a movement slip for indicating movement and delivery of materials worked in the working spot;

a delivery slip for indicating preparation of the materials and jigs in the working spot; and

an inspection slip for indicating inspection on intermediate or finished products and for recording a result of the inspection, wherein the main information processing apparatus has a manufacture history file which stores a manufacture history of the working spot; and

a factory information processing apparatus comprising:

means for generating an integrative transmission/reception information which is integrated with the manufacturing drawing information, the quality control instruction information, and the manufacturing instruction information;

means for bidirectionally communicating the manufacture history to the main information processing apparatus;

an interactive type terminal installed at the working spot; and

means for generating an integrative work instruction information by adding an image information which comprises a character and a graphic provided in the working spot by the interactive type terminal, to the integrative transmission/reception information, wherein the integrative work instruction information is transmitted to the interactive type terminal and shared with the manufacture history.

5,644,494

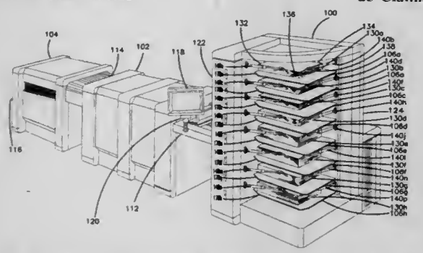
PRINTING SYSTEM

Michael M. Richardson; Jay R. Peterson, both of Eden Prairie; Eugene G. Weiss, Minneapolis, and Thomas J. McDonough, Inver Grove Heights, all of Minn., assignors to Check Technology Corporation, Minnetonka, Minn.

Filed Dec. 13, 1994, Ser. No. 354,654

Int. Cl.[6] G06F *17/00*

U.S. Cl. 364—478.11 **23 Claims**



15. A system for collating and printing on print media, including a sheet of print medium the system comprising:

a medium transporter, the medium transporter defining a planer path which does not turn the sheet of print medium, wherein the sheet of print medium has a planer state when transported along the planer path;

an input collator configured and arranged to present the sheet of input medium to the planer path;

a print engine configured and arranged to print on the sheet of print medium while the sheet of print medium is on the planer path; and

a receiving accumulator arranged and configured to receive the sheet of print medium from the planer path and to position the sheet in a group of print media while the sheet of print medium remains in the planer state.

5,644,495

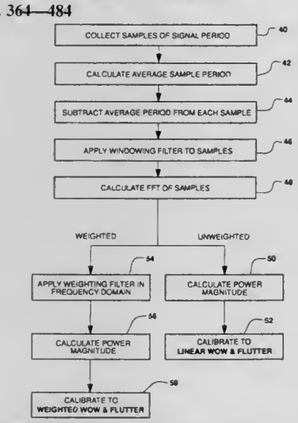
METHOD AND APPARATUS FOR WOW AND FLUTTER ANALYSIS

Larry W. Soutar, and Ronald W. Dale, both of Kokomo, Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed Apr. 7, 1995, Ser. No. 418,356

Int. Cl.[6] G11B *20/22*

U.S. Cl. 364—484 **7 Claims**



1. The method of analyzing speed deviation of a device for playing recorded sound comprising the steps of:

playing media having a tone recorded at a fixed frequency;

digitally sampling the period of each cycle of the tone over a test interval;

calculating the average sample period;

subtracting the average period from each sampled period in the test interval to obtain an amplitude modulated waveform of period deviation representing speed deviation;

deriving frequency domain data by calculating the FFT of the waveform; and

calculating true RMS measurements of speed deviation from the frequency domain data.

5,644,496

PROGRAMMABLE LOGIC DEVICE WITH INTERNAL TIME-CONSTANT MULTIPLEXING OF SIGNALS FROM EXTERNAL INTERCONNECT BUSES

Om P. Agrawal, Los Altos, Calif., and Michael J. Wright, Boulder, Colo., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 429,125, Oct. 30, 1989, Pat. No. 5,233,539, Ser. No. 442,528, Nov. 27, 1989, Pat. No. 5,260,881, Ser. No. 538,211, Jun. 14, 1990, Pat. No. 5,255,203, Ser. No. 514,297, Apr. 25, 1990, Pat. No. 5,231,588, Ser. No. 924,267, Aug. 3, 1992, abandoned, Ser. No. 924,685, Aug. 3, 1992, Pat. No. 5,457,409, Ser. No. 924,201, Aug. 3, 1992, Pat. No. 5,489,857, Ser. No. 12,573, Feb. 1, 1993, Pat. No. 5,359,536, said Ser. No. 429,125is a division of Ser. No. 394,221, Aug. 15, 1989, Pat. No. 5,212,652. This application Jun. 18, 1993, Ser. No. 80,658

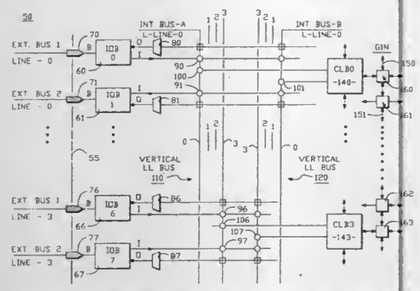
Int. Cl.[6] H03K *17/693;19/177*

U.S. Cl. 364—489 **49 Claims**

1. A user-programmable device comprising:

(a) a monolithic substrate having logic and interconnect circuitry provided thereon;

(b) a first plurality of first through Nth Input/Output Blocks (IOB's) provided on the substrate for receiving output signals of the substrate interconnect circuitry and coupling the output signals to points outside the substrate, and for receiving input signals from points outside the substrate and supplying the received input signals to the substrate interconnect circuitry;



(c) where the substrate interconnect circuitry includes at least one longline bus extending over or next to the first plurality of IOB's, the at least one longline bus having first through Mth longlines, each extending over or next to the first plurality of IOB's;

(d) where the Substrate interconnect circuitry further includes bus multiplexing means for selectively coupling respective ones of the first plurality of N IOB's bidirectionally to preselected ones of the first through Mth longlines of the at least one longline bus, the bus multiplexing means providing selective bidirectional coupling between at least one of the longlines in the at least one longline bus and a programmably selected one or the other of two IOB's among said first plurality of IOB's such that signal propagation delay between the at least one longline and the programmably selected one or another of said two IOB's is substantially the same irrespective of which of the two IOB's is selected; and

(e) where said logic includes a first plurality of first through Kth logic blocks (CLB's) operatively coupled to respective ones of the first through Mth longlines of the at least one longline bus.

5,644,497

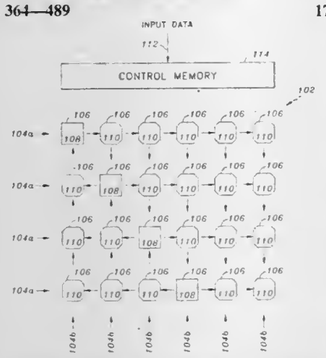
METHOD AND APPARATUS FOR COMPILING AND IMPLEMENTING STATE-MACHINE STATES AND OUTPUTS FOR A UNIVERSAL CELLULAR SEQUENTIAL LOGIC ARRAY

Edward Hyman, 1202 S. Irene Ave., Redondo Beach, Calif. 90277

Continuation-in-part of Ser. No. 895,607, Jun. 8, 1992, Pat. No. 5,377,123, and Ser. No. 614,686, Nov. 15, 1990, Pat. No. 5,253,363, which is a continuation of Ser. No. 168,376, Mar. 15, 1988, abandoned. This application Oct. 6, 1993, Ser. No. 132,992

Int. Cl.[6] H03K *17/693*

U.S. Cl. 364—489 **17 Claims**



1. A rectilinear cellular array formed on a single microchip wherein digital signals pass between elements of the array without passing through input/output buffers, the cellular array comprising (i) cells in a plurality of columns and rows wherein multiple cells along a main diagonal of the cellular array are memory cells for storing information and cells removed from the main diagonal are function cells for transferring information between the memory cells, and (ii) at least one output column of cells for providing an output value of the cellular array.

5,644,498

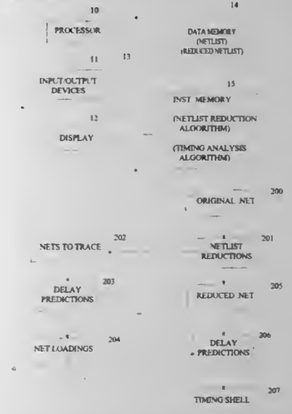
TIMING SHELL GENERATION THROUGH NETLIST REDUCTION

Christian Joly, Palo Alto; Francois Ducaroir, San Francisco; Zarir Sarkari, and Allen Wu, both of San Jose, all of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed Jan. 25, 1995, Ser. No. 377,844

Int. Cl.[6] G06F *15/00*

U.S. Cl. 364—489 **12 Claims**



1. An apparatus for reducing a netlist which defines circuit paths and cells in a first circuit to provide a timing shell having the same timing constraints as said netlist, the timing shell netlist representing a second circuit, said apparatus comprising:

a memory for storing the netlist; and

a processor connected to the memory for executing a program, to reduce the netlist to the timing shell netlist by removing entries in the netlist that correspond to cells that are internal to the first circuit, the removed entries being chosen such that the second circuit has the same inputs and outputs as the first circuit and the same timing constraints with respect to signals entering and leaving the inputs and outputs, respectively, and the second circuit having a different circuit functionality than said first circuit.

5,644,499

RETIMING GATED-CLOCKS AND PRECHARGED CIRCUIT STRUCTURES

Alexander T. Ishii, Princeton, N.J., assignor to NEC USA, Inc., Princeton, N.J.

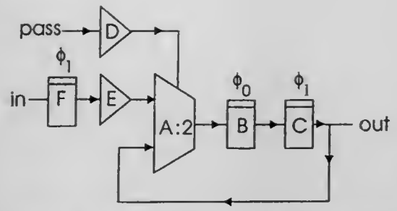
Continuation of Ser. No. 148,696, Nov. 5, 1993, abandoned. This application Sep. 7, 1995, Ser. No. 525,815

Int. Cl.[6] G06F *17/10*

U.S. Cl. 364—489 **16 Claims**

1. A method of designing a VLSI system including precharged circuit structures by virtue of gated clock signals and having a set of timing constraints, comprising the steps of:

determining critical elements of the set of timing constraints;



formulating sets of inequalities between the delay of a path and the temporal length of a critical path bounded by a pair of clock edges based upon said critical elements;

selecting clock signals for use in the delay path for a set of inequalities, which clock signals retime the VLSI system without changing the input/output behavior of the system; and

designing said system based on said selected clock signals.

5,644,500

ROUTING PROGRAM GENERATING METHOD AND APPARATUS THEREFOR, PLACEMENT PROGRAM GENERATING METHOD AND APPARATUS THEREFOR, AND AUTOMATIC ROUTING METHOD AND APPARATUS THEREFOR

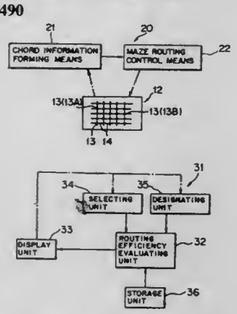
Hiroshi Miura; Masato Ariyama; Kazuyuki Iida; Kazufumi Iwahara; Mitsunobu Okano; Hiroyuki Orihara; Akira Katsumata; Toshiyasu Sakata; Masaharu Nishimura; Hirofumi Hamamura; Naoki Murakami; Mitsuru Yasuda; Yasubiro Yamashita; Ryouji Yamada, and Atsushi Yamane, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 380,795, Jan. 30, 1995, abandoned. This application Jul. 1, 1996, Ser. No. 673,472

Claims priority, application Japan, Mar. 18, 1994, 6-049109; Nov. 30, 1994, 6-296469

Int. Cl.[6] G06F *15/00*

U.S. Cl. 364—490 **50 Claims**



40. An automatic routing apparatus deciding a routing path of a routing pattern in order to automatically route said routing pattern on a circuit board having a number of component pins comprising:

a chord information forming means for forming positional information about a chord that is a straight line connecting said component pins adjacent to each other on the basis of positional information about said component pins; and

a maze routing control means for generating a wave for maze method routing from a start point toward an end point of said routing path, propagating wave between said adjacent chords on the basis of information about said chords formed by said chord information forming means, successively storing positions of said chords through which said wave has passed until reaching said end point from said start point, and tracing said positions of said chords through which said wave has passed back to said start point from said end point when said wave reaches said end point to decide a routing path of said routing pattern.

5,644,501

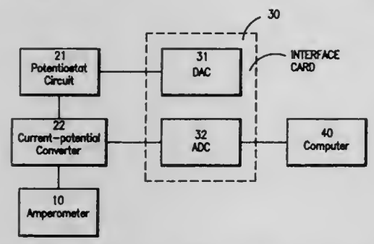
METHOD OF USING A COMPUTER TO COLLECT CHEMICAL SIGNALS DIRECTLY

Shengfu Lin, 3F, 7, Lane 110, Chien-Kang Street, Tapei, Taiwan, and Chih-I Lin, 14292 Spring Vista La., Chino Hills, Calif. 91709

Filed Dec. 6, 1994, Ser. No. 354,031

Int. Cl.[6] G01N *27/26*

U.S. Cl. 364—496 **4 Claims**



1. A method of using a computer to collect chemical signals directly from a chemical sensor used in amperometry or conductometry, comprising the steps of:

supplying an analog output of the chemical amperometry or conductometry sensor to a current-potential converter and potentiostat circuit in order to transform the analog output of the chemical sensor into a processed analog signal in preparation for analog-to-digital conversion in cooperation with a control program executed by the computer;

supplying an output of the current-potential converter and potentiostat circuit to an analog-to-digital converter in order to transform the processed analog signal into a digital signal; and

transferring the digital signal output by the analog-to-digital converter to a computer,

wherein the analog-to-digital converter further includes a digital-to-analog converter, and further comprising the steps of transferring digital signals from said computer to the digital-to-analog converter in order to convert the digital signals to analog signals, said supplying the converted digital signals to the potentiostat circuit for use in amperometry, the converted digital signals providing a specific electric potential to the potentiostat circuit to cause the chemical sensor to execute a potentiostat, cyclic voltammetry or square wave voltammetry operation.

5,644,502

METHOD FOR EFFICIENT COUNTER-CURRENT HEAT EXCHANGE USING OPTIMIZED MIXTURES

William A. Little, Palo Alto, Calif., assignor to MMR Technologies, Inc., Mountain View, Calif.

Filed May 4, 1995, Ser. No. 434,596

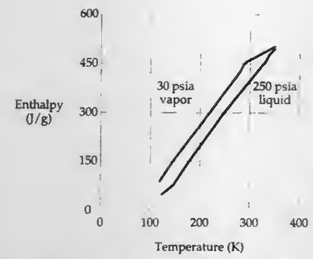
Int. Cl.[6] C09K *5/00*

U.S. Cl. 364—496 **10 Claims**

4. A thermodynamic system characterized by a predetermined operational temperature range, a predetermined high pressure, and a predetermined low pressure, the system comprising:

a working fluid comprising n components, where the molar fractions $x_1, \ldots, x_n$ of the n components are selected such that the variance across the operational temperature range of the absolute difference between the enthalpy per unit mass of the fluid at the high pressure and the enthalpy per unit mass of the fluid at the low pressure is minimized and such that the smallest absolute difference across the operational temperature range between the enthalpy per unit mass of the fluid at the high pressure and the enthalpy per unit mass of the fluid at the low pressure is maximized; and

a heat exchanger into which a stream of the working fluid enters at the high pressure, and into which a stream of the working fluid enters at low pressure in counter-current relationship with the high-pressure stream.



5,644,503

METHODS AND APPARATUSES FOR ANALYZING MULTICHANNEL CHROMATOGRAM

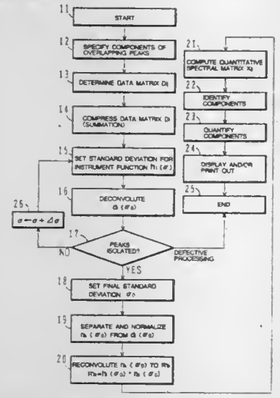
Masahito Ito, and Kisaburo Deguchi, both of Hitachinaka, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 24, 1995, Ser. No. 409,986

Claims priority, application Japan, Mar. 28, 1994, 6-057313; Apr. 28, 1994, 6-091064

Int. Cl.[6] G01N *30/00;* **G06F** *17/16*

U.S. Cl. 364—497 **46 Claims**



1. A method for analyzing a multichannel chromatogram for analyzing chromatogram data having three-dimensional intensity components composed of a quantitative intensity, a qualitative intensity having at least two channel data, and a retention intensity of a sample under measurement detected by a detector, comprising the steps of:

calculating said at least two channel data with each other for compressing said chromatogram data having the three-dimensional intensity components in terms of said qualitative intensity component to transform the three-dimensional chromatogram data to two-dimensional chromatogram data;

performing deconvolution for removing a dispersion data portion due to an inherent device function representing the detection characteristic of said detector from said compressed two-dimensional chromatogram data; and

identifying the characteristic component of the sample under measurement from said two-dimensional chromatogram data from which said dispersion data portion has been removed.

5,644,504

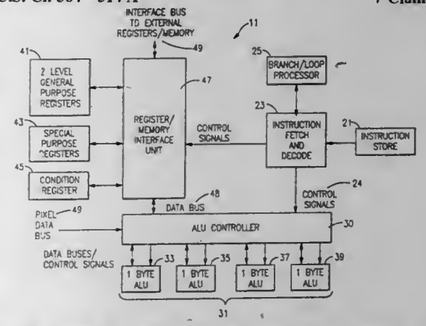
DYNAMICALLY PARTITIONABLE DIGITAL VIDEO ENCODER PROCESSOR

Charles Edward Boice; John Mark Kaczmarczyk, both of Endicott; Agnes Yee Ngai, Endwell, and Robert Leslie Woodard, Newark Valley, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 27, 1995, Ser. No. 411,239

Int. Cl.[6] G06K *15/00*

U.S. Cl. 364—514 A **7 Claims**



4. A dynamically partitionable processor having a plurality of datapaths, said datapaths being partitionable by the action of running opcode thereon into (1) a single wide datapath, and (2) a plurality of narrow datapaths.

5,644,505

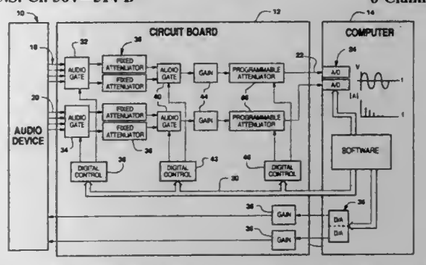
UNIVERSAL AUDIO ANALYZER

Larry W. Soutar, and Ronald W. Dale, both of Kokomo, Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed Apr. 7, 1995, Ser. No. 418,349

Int. Cl.[6] G06F *17/00*

U.S. Cl. 364—514 B **6 Claims**



1. An audio analyzer for receiving signals from an audio device under test, the analyzer comprising:

a computer for analyzing at least one audio channel and having an audio input; and

an interface having a plurality of input channels for coupling signals from the audio device to the audio input of the computer;

the computer having an audio output for coupling test tones to the device, a control output for controlling the interface, and means for digitally analyzing input signals, and

the interface being coupled to the control output and including switch means under computer control for selecting inputs, and attenuation means under computer control for adjusting the amplitude of input signals.

5,644,506

PICTURE SIGNAL REPRODUCING METHOD AND PICTURE SIGNAL REPRODUCING APPARATUS

Toru Okazaki, Tokyo; Jun Yonemitsu, Kanagawa; Katsumi Tahara, Kanagawa, and Yasushi Fujinami, Kanagawa, all of Japan, assignors to Sony Corporation, Japan

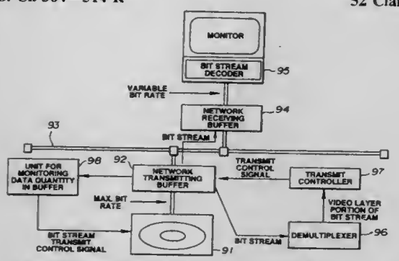
PCT No. PCT/JP94/01140, § 371 Date Apr. 17, 1995, § 102(e) Date Apr. 17, 1995, PCT Pub. No. WO95/02947, PCT Pub. Date Jan. 26, 1995

PCT Filed Jul. 12, 1994, Ser. No. 397,210

Claims priority, application Japan, Jul. 12, 1993, 5-171919

Int. Cl.[6] H04J *3/00*

U.S. Cl. 364—514 R **52 Claims**



1. A transmission method for bit streams including picture data generated by carrying out encoding,

the method comprising the steps of:

reproducing the bit stream from recording media on which the bit streams are recorded or radio wave, using reproducing equipment having only the bit stream reproducing function without having a decoding function;

transmitting the reproduced bit stream to a high speed digital network;

receiving the bit stream transmitted through the high speed digital network; and

decoding or recording the received bit stream using a decoder having only the function of decoding the bit stream connected via the high speed digital network.

5,644,507

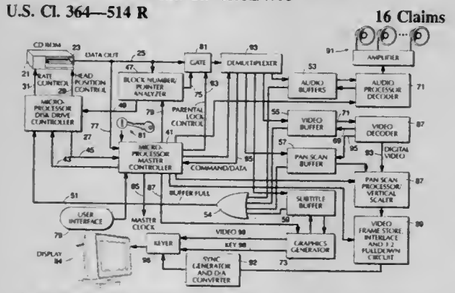
METHOD FOR INTERLEAVING DATA FOR SEAMLESS PLAYBACK OF MULTIPLE PROGRAM VERSIONS HAVING COMMON MATERIAL

Lewis S. Ostrover, Los Angeles; Gregory B. Thagard, Redondo Beach, both of Calif.; Joseph E. Wall, III, London, England, and Christopher J. Cookson, Los Angeles, Calif., assignors to Time-Warner Entertainment Co., L.P., Burbank, Calif.

Filed Feb. 21, 1996, Ser. No. 604,303

Int. Cl.[6] H03L *7/10*

U.S. Cl. 364—514 R **16 Claims**



1. A method for interleaving data on a recording medium for seamless play of at least two program versions A and B of source material, the medium being playable on a player having a predefined data buffer management system; the data representing A-type segments of A-version source material, B-type segments of B-version source material, and C-type segments of source material common to both of said at least two versions; and wherein data is to be interleaved on said medium to represent A-type and B-type paired segments disposed between successive C-type segments, with data representing C-type segments being read no matter which version of the source material is being played and data representing only A-type or only B-type segments being read depending on which version of the source material is being played; comprising the steps of:

(a) dividing data representing each A-type segment and each B-type segment in a pair into two series of data blocks;

(b) interleaving in a single series the data blocks in the two series of step (a);

(c) following the interleaved A-type and B-type data blocks of step (b) for a pair of A-type and B-type segments by data blocks representing just the following C-type segment;

(d) limiting the lengths of the individual A-type and B-type data blocks to allow the player on which the medium is played to skip over A-type data blocks without interruptions when version B of the source material is played, and to skip over B-type data blocks without interruptions when version A of the source material is played; and

(e) to avoid interruptions during play when one of the segments of an A-type and B-type pair is much longer than the other, deleting material from the C-type segment following the pair and representing it redundantly in each of the two preceding A-type and B-type interleaved series of data blocks.

5,644,508

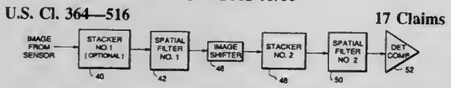
DETECTION OF MOVING OBJECTS

Charles A. McNary, Calabasas, Calif.; Thomas K. Lo, Tucson, Ariz.; Jack M. Sacks, deceased, late of Thousand Oaks, and Nam D. Banh, Canoga Park, both of Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Filed Jun. 5, 1995, Ser. No. 465,668

Int. Cl.[6] G01S *13/66*

U.S. Cl. 364—516 **17 Claims**



1. A method for detecting moving objects, comprising the steps of:

furnishing an imaging sensor;

forming a plurality of filtered, shifted images of a scene containing a moving object beginning at an initial time t=0, by

providing a sensed image of the scene at a time t using the sensor,

spatially filtering the sensed image to remove objects of a size larger than a first preselected size, to produce a filtered image,

shifting the position of the filtered image by an amount $-vt$, where v is a velocity hypothesis, to produce a filtered, shifted image, and

repeating the steps of providing and spatially filtering to produce a plurality of filtered, shifted images;

adding the plurality of filtered, shifted images together to produce a stacked image;

spatially filtering the stacked image to remove objects of a size larger than a second preselected size, to produce a filtered, stacked image; and

selecting those features, if any, of the filtered, stacked image having an intensity greater than a preselected intensity as the moving objects.

5,644,509

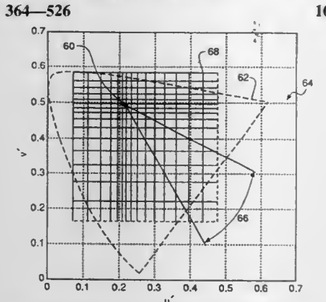
METHOD AND APPARATUS FOR COMPUTING COLOR TRANSFORMATION TABLES

Michael Schwartz, Belmont, Mass., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 7, 1994, Ser. No. 320,023

Int. Cl.[6] G03F *3/00*

U.S. Cl. 364—526 **10 Claims**



1. A method of creating a color transformation table, comprising:

designating nonuniform index point spacing for the table around a neutral point so that a portion of a color space where the human eye is sensitive is emphasized; and

determining entries in the table using a transformation function responsive to the index points.

5,644,510

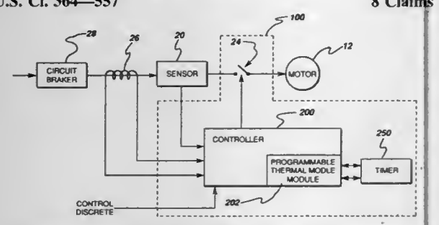
APPARATUS AND METHOD FOR MOTOR OVERLOAD PROTECTION USING AN ELAPSED-TIME SIGNAL FOR ENABLING COMPUTATION OF MOTOR TEMPERATURE DATA INDEPENDENTLY OF TEMPORARY POWER INTERRUPTION

Michael Paul Weir, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 25, 1994, Ser. No. 344,912

Int. Cl.[6] H02H *7/00*

U.S. Cl. 364—557 **8 Claims**



1. Apparatus for electrically coupling a motor to a power source and providing overload protection to said motor, said apparatus comprising:

a controller having a programmable module for periodically computing digital data indicative of motor temperature based upon current supplied by said power source to said motor, said controller being adapted to supply a controller output signal based at least upon the computed motor temperature data;

switching means responsive to the controller output signal for deenergizing said motor whenever any last-computed motor temperature data at least reaches a predetermined threshold temperature;

a nonvolatile memory for storing the last-computed motor temperature data prior to said motor being deenergized; and

a timer circuit coupled to said controller to supply as an analog quantity a timer output signal indicative of elapsed time upon said motor being deenergized, the supplied timer output signal and the stored motor temperature data enabling said programmable module to compute, independently of any temporary electrical power interruption therein, fresh data indicative of motor temperature subsequent to said motor being deenergized; and

means for initializing said programmable module with the fresh motor temperature data, thereby allowing said programmable module to resume periodic computation of digital data indicative of motor temperature based upon current supplied by said power source to said motor subsequent to said motor being deenergized.

5,644,511

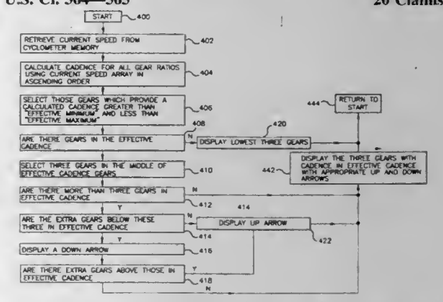
CYCLOMETER COMPUTER

Gary T. McWhorter, State Rte. 1, No. 194, Jacksons Mill, W. Va. 26452

Filed Apr. 26, 1995, Ser. No. 429,156

Int. Cl.[6] G01C *22/00*

U.S. Cl. 364—565 **20 Claims**



1. A cyclometer computer display system for a multi-geared bicycle having multiple gear ratios for monitoring and displaying the performance of a rider, comprising:

first sensing means for detecting a revolution of a wheel of the bicycle and for transmitting a pulse signal at the completion of said wheel revolution;

first detecting means in communication with said first sensing means for receiving said pulse signal;

first data calculating means coupled to said detecting means for determining a wheel rotational velocity for the wheel;

first data storage means in communication with said first data calculating means for storing said wheel rotational velocity;

input means for entering multiple gear ratios calculated by dividing front gear sizes by rear gear sizes;

second data storage means for storing the multiple gear ratios of the multi-gear bicycle;

second data calculating means coupled to said first data storage means and said second storage means for calculating a table of theoretical cadence values by dividing said wheel rotational velocity by each of the multiple gear ratios;

third storage means in communication with said second data calculating means for storing said table of theoretical cadence values; and

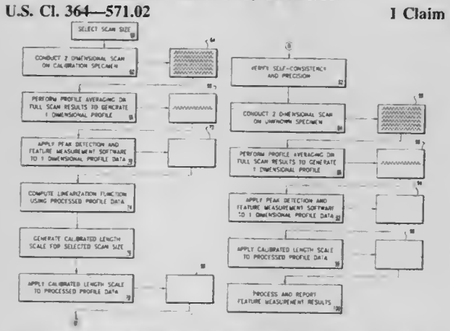
a first display in communication with said third storage means, said first display displaying at least two of said theoretical cadence values of potential gears; whereby

a rider may manually select a gear having a desired theoretical cadence from those displayed on said first display.

5,644,512
HIGH PRECISION CALIBRATION AND FEATURE MEASUREMENT SYSTEM FOR A SCANNING PROBE MICROSCOPE

Donald A. Chernoff, and Jason D. Lohr, both of Indianapolis, Ind., assignors to Advanced Surface Microscopy, Inc., Indianapolis, Ind.

Filed Mar. 4, 1996, Ser. No. 610,726
Int. Cl.[6] H02N *2/02;* **G01B** *5/28*
U.S. Cl. 364—571.02 **1 Claim**



1. A method for high precision calibration and feature measurement for use with a scanning probe microscope, comprising the steps of:

a) scanning a calibration specimen in order to create a two-dimensional calibration data array;

b) generating a one-dimensional calibration profile by calculating an average cross-section of the calibration data array;

c) measuring first feature locations in the calibration profile;

d) creating a calibrated length scale by comparing the first feature locations to a known topography of the calibration specimen;

e) scanning a measurement specimen in order to create a two-dimensional measurement data array;

f) applying the calibrated length scale to the two-dimensional measurement data array in order to correct nonlinearities in the measurement data array in at least one direction; and

g) displaying the corrected measurement data array to a user.

5,644,513
SYSTEM INCORPORATING FEATURE-ORIENTED SIGNAL ENHANCEMENT USING SHOCK FILTERS

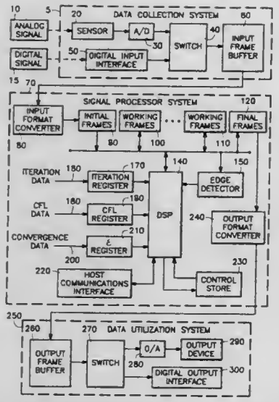
Leonid I. Rudin, 1734 Grevelia Ave., Apt. A, South Pasadena, Calif. 91030-2736, and Stanley Osher, 426 Lincoln Blvd., Santa Monica, Calif. 90402

Continuation of Ser. No. 815,548, Dec. 27, 1991, abandoned, which is a continuation of Ser. No. 456,120, Dec. 22, 1989, abandoned. This application Apr. 16, 1993, Ser. No. 49,637
Int. Cl.[6] G06K *9/40;9/44*
U.S. Cl. 364—572 **18 Claims**

10. A system for performing edge-enhancement of an N-dimensional original image containing transitions corresponding to edges in said image, said transitions corresponding to different respective edge pixel values on respective sides of a given edge, so as to produce an edge-enhanced image, wherein said original image is represented by an array of pixels having respective pixel values, said system comprising:

(1.) means for propagating combined pixel value changes toward respective edges from all sides thereof in successive iterations while prohibiting propagation of the combined pixel value changes across any of said edges, said means for propagating comprising:

(a) means operative in each one of said successive iterations for computing for each one of said dimensions a respective change in the value of each respective one of said pixels toward the corresponding edge pixel value in accordance



with a difference between values of said one pixel and a neighboring pixel further away from an edge nearest said one pixel along said one dimension,

(b) means operative in each one of said successive iterations for combining the changes computed for said one pixel for each of said dimensions to produce a combined pixel value change for said one pixel, and for changing said original image in accordance with the combined pixel value changes of said pixels to produce an enhanced image, and for substituting said enhanced image for said original image; and

(2.) means for transmitting an enhanced image of a latest iteration to an image output device for one of displaying and recording of said enhanced image.

5,644,514
INTERPOLATION CIRCUIT FOR MEASURING DEVICE

Mitsuyoshi Abo, and Toshihiko Kuga, both of Mobara, Japan, assignors to Futaba Denshi Kogyo K.K., Mobara, Japan

Filed Feb. 14, 1996, Ser. No. 601,510
Int. Cl.[6] G01D *21/02;* **H04L** *25/17*
U.S. Cl. 364—577 **2 Claims**



1. An interpolation circuit for a measuring device, comprising:

a balanced modulation circuit to which a sin θ signal varied in a manner like a sine wave and a cos θ signal varied in a manner like a cosine wave depending on the magnitude of deviation are fed in the form of a modulation signal;

a waveform shaping circuit for shaping a waveform of a modulated wave having a phase of an angle θ which is generated by said balanced modulation circuit;

an extraction means for extracting an n-th higher harmonic signal component of said modulated wave from an output of said waveform shaping circuit;

a first mixer for mixing the n-th higher harmonic signal extracted by said extraction means with a frequency signal having a frequency n times as high as that of said modulated wave and a phase of 0°;

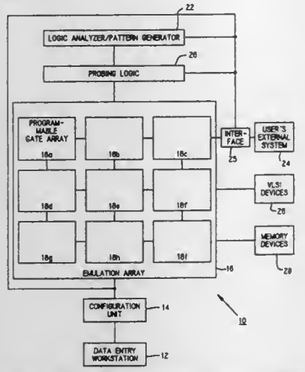
a second mixer for mixing the n-th higher harmonic signal extracted by said extraction means with a frequency signal having a frequency n times as high as that of said modulated wave and a phase of 90°; and

a voltage comparison interpolation circuit for carrying out voltage comparison interpolation of a cos nθ signal taken out of said first mixer and a sin nθ signal taken out of said second mixer to provide an m-divided interpolation output, to thereby output A-phase B-phase signals interpolated while keeping the whole number of dividing at m·n.

5,644,515
HARDWARE LOGIC EMULATION SYSTEM CAPABLE OF PROBING INTERNAL NODES IN A CIRCUIT DESIGN UNDERGOING EMULATION

Stephen P. Sample, Mountain View; Michael R. D'Amour, Los Altos Hills, and Thomas S. Payne, Union City, all of Calif., assignors to Quickturn Design Systems, Inc., Mountain View, Calif.

Continuation of Ser. No. 273,513, Jul. 11, 1994, which is a continuation of Ser. No. 171,348, Dec. 21, 1993, Pat. No. 5,329,470, which is a continuation of Ser. No. 71,033, May 28, 1993, abandoned, which is a continuation of Ser. No. 824,341, Jan. 23, 1992, abandoned, which is a continuation of Ser. No. 279,477, Dec. 2, 1988, Pat. No. 5,109,353. This application Jun. 7, 1995, Ser. No. 483,337
Int. Cl.[6] G06F *17/00*
U.S. Cl. 364—578 **11 Claims**



1. A apparatus which can be configured with a circuit design in response to the input of circuit information and which transmits signal information between the configured circuit design and an external system adapted for use with a component incorporating the circuit design, said apparatus comprising:

a plurality of fixed electrical conductors;

a plurality of reprogrammable logic chips, each of said plurality of reprogrammable logic chips comprising input/output terminals, at least some of said input/output terminals of said plurality of reprogrammable logic chips connected to said fixed electrical conductors, said plurality of reprogrammable logic chips further comprising reprogrammable functional logic elements capable of being connected to at least some of said input/output terminals;

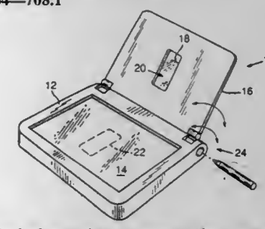
an input/output bus; and

a plurality of reconfigurable probe chips, each of said reconfigurable probe chips comprising input/output terminals, a first group of said input/output terminals of said plurality of reconfigurable probe chips connected to said input/output bus, a second group of said input/output terminals of said plurality of reconfigurable probe chips connected to said fixed electrical conductors, said fixed electrical conductors placing said second group of said input/output terminals of said plurality of reconfigurable probe chips in electrical communication with at least some of said input/output terminals of said plurality of reprogrammable logic chips, said reconfigurable probe chips transferring state information from a node within said reprogrammable functional logic elements onto said input/output bus.

5,644,516
PORTABLE COMPUTER

Sergey Gary Podwalny; Michael D. Derocher; Scott N. Hickman, all of Corvallis, and Jan Hippen, Portland, all of Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 994,035, Dec. 21, 1992. This application Jun. 7, 1995, Ser. No. 485,939
Int. Cl.[6] G06F *1/16*
U.S. Cl. 364—708.1 **4 Claims**



1. A method of operating a computer, the computer including a microprocessor, a display screen, and a cover for the display screen, the method comprising:

(a) when the computer is not being used, closing the cover to overlie and protect the display screen; and

(b) when, thereafter, a program performed by the microprocessor solicits user attention:

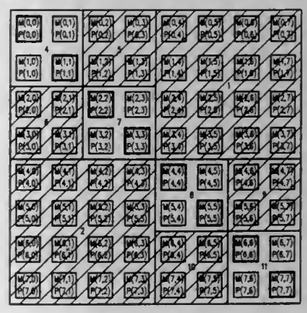
providing an audible alert signal; and

displaying indicia to the user indicating the reason the program solicits attention, said indicia being displayed in a portion of the display screen viewable even when the cover is positioned to overlie and protect the display screen.

5,644,517
METHOD FOR PERFORMING MATRIX TRANSPOSITION ON A MESH MULTIPROCESSOR ARCHITECTURE HAVING MULTIPLE PROCESSOR WITH CONCURRENT EXECUTION OF THE MULTIPLE PROCESSORS

Ching-Tien Ho, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 965,498, Oct. 22, 1992, abandoned. This application Jun. 28, 1995, Ser. No. 496,036
Int. Cl.[6] G06F *15/173;17/16*
U.S. Cl. 364—725.02 **8 Claims**



1. A method for transposing a matrix comprising the steps of:

a) performing a block allocation of elements of the matrix to respective nodes of a multi-node computer system having a

2-dimensional N×N mesh of interconnected nodes, N being an integer greater than 1, each datablock representing a respective submatrix of the matrix, said matrix having a diagonal axis such that a subset of the nodes is on the diagonal axis;

b) partitioning the mesh into four submeshes, each of size less than or equal to $(\lceil N/2 \rceil \times \lceil N/2 \rceil)$, such that a first group of the four submeshes is on the diagonal axis of the matrix, and a second group of the four submeshes is off the diagonal axis;

c) further partitioning each submesh of the first group, each submesh being of size N'×N', where N' is an integer greater than 1, into four submeshes of size less than or equal to $(\lceil N'/2 \rceil \times \lceil N'/2 \rceil)$, such that a third group of the submeshes of size $\lceil N'/2 \rceil \times \lceil N'/2 \rceil$ is on the diagonal axis of the matrix, and a fourth group of the submeshes of size $\lceil N'/2 \rceil \times \lceil N'/2 \rceil$ is off the diagonal axis of the matrix;

d) concurrently performing a transposition of all datablocks on all of the nodes included on all submeshes of the second and fourth groups; and

e) repeating steps b–e for each of the submeshes in the third group if there exists a submesh of size greater than (1×1) on the diagonal axis and the submesh has no partitioned submeshes.

5,644,518

COMPUTING DEVICE FOR NTH DEGREE FUNCTIONS

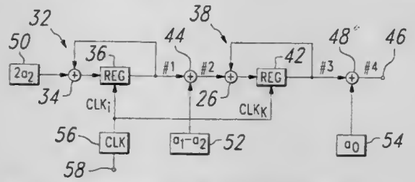
Hiroyuki Nishimura, Kamakura, Japan, and Toshiaki Yoshino, Fremont, Calif., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 258,313, Jun. 10, 1994, abandoned. This application Mar. 26, 1996, Ser. No. 622,051

Claims priority, application Japan, Jun. 10, 1993, 5-165191

Int. Cl.[6] G06F *17/11*

U.S. Cl. 364—735 **4 Claims**



1. An nth degree function computing device comprising:

n series operators connected in series and defining respective consecutive series operator stages;

a plurality of operator stage summing adders respectively alternating with said n series operators such that an operator stage summing adder is connected between successive series operators;

each of said series operators including

a shift register having an input and an output,

an adder having first and second inputs and an output,

the output of said adder being connected to the input of said shift register, and

a feedback line connected between the output of said shift register and the second input of said adder;

each of said operator stage summing adders having first and second inputs and an output, the second input of each operator stage summing adder being connected to the output of the shift register included in a downstream series operator and the output of each operator stage summing adder being connected to the second input of an adder included in a succeeding upstream series operator in relation to the downstream series operator;

a plurality of constant generators respectively corresponding to a specific one of said n series operators;

the initial one of said constant generators being connected to the first input of the adder included in the said n series operator defining the initial series operator stage;

each of the remaining constant generators being connected to the first input of respective operator stage summing adders in advance of the one of said n series operators corresponding thereto, said plurality of constant generators respectively providing a predetermined constant value to the first input of the adder connected thereto corresponding to one or a plurality of coefficients of the nth degree function; and

a timing circuit connected to the shift register included in each of said n series operators and providing respective timing signals regulating the performance of an integration operation by each of said n series operators for a predetermined number of cycles dependent upon the value of a variable integer operated upon by each respective series operator;

such that the output of an initial stage series operator is received by the second input of an operator stage summing adder as a predetermined constant value is input to the first input of the operator stage summing adder by the constant generator corresponding thereto, thereby summing the output of an initial stage series operator by the succeeding second stage series operator, the output of said second stage series operator being summed by the third stage series operator and the output of the (n−1) series operator being summed by the nth series operator.

5,644,519

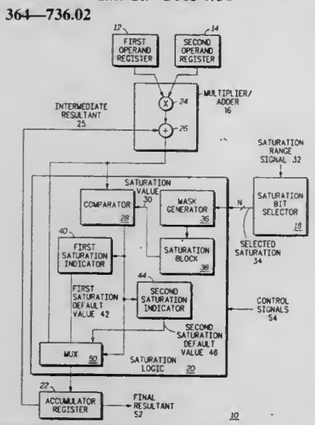
METHOD AND APPARATUS FOR A MULTIPLY AND ACCUMULATE CIRCUIT HAVING A DYNAMIC SATURATION RANGE

David Yatim, and James W. Girardeau, Jr., both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 7, 1995, Ser. No. 418,355

Int. Cl.[6] G06F *7/38*

U.S. Cl. 364—736.02 **16 Claims**



1. A multiply and accumulate circuit for use in a digital signal processor, wherein the multiply and accumulate circuit comprises:

first operand register;

second operand register;

multiplier/adder operably coupled to the first operand register and the second operand register;

accumulator register;

saturation bit selector that receives a signal representative of a saturation range to produce a selected saturation; and

saturation logic operably coupled to the saturation bit selector, the multiplier/adder, and the accumulator register, wherein the saturation logic determines when a resultant of the multiplier/adder compares unfavorably to a representation of the selected saturation.

5,644,520

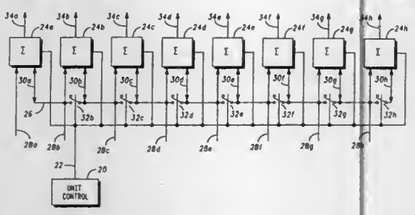
ACCUMULATOR CIRCUIT AND METHOD OF USE THEREOF

Shao Wei Pan, 1931 Prairie Sq., Suite 202, Schaumburg, Ill. 60173, and Shay-Ping T. Wang, 1701 Edgewood La., Long Grove, Ill. 60047

Filed May 31, 1995, Ser. No. 455,927

Int. Cl.[6] G06F *7/38;7/52*

U.S. Cl. 364—736.01 **31 Claims**



10. An accumulator, which comprises:

a bus;

a plurality of summing circuits, adjacently coupled to the bus, for generating a plurality of intermediate signals, each of the plurality of summing circuits having a bi-directional port and an input port connected to the bus;

a plurality of switches for regulating the transmission of data on the bus, each of the plurality of switches having an open, setting and a closed setting and being located on the bus between the input port and the bi-directional port of a corresponding one of the plurality of summing circuits; and

a control unit for configuring each of the plurality of switches in the open setting or the closed setting and for configuring the bi-directional port of each of the plurality of summing circuits to receive or transmit data;

wherein a plurality of input signals is summable by the plurality of summing circuits to generate the plurality of intermediate signals, and the control unit routes ones of the plurality of intermediate signals to be either transmitted as output signals or across the bus to at least one of the plurality of summing circuits by configuring the plurality of switches and the bi-directional port of each of the plurality of summing circuits.

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COMPARATOR SCHEME

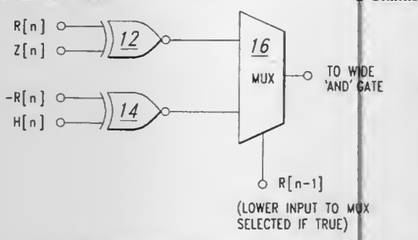
Richard Simpson, Bedford, England, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 6, 1995, Ser. No. 399,261

Claims priority, application United Kingdom, Mar. 7, 1994, 9404377

Int. Cl.[6] G06F *7/50*

U.S. Cl. 364—736.5 **2 Claims**



2. A circuit for determining if a sum of two multibit variables equals a predetermined value comprising:

for each bit

a first exclusive OR gate having a first input receiving a propagate carry signal from said corresponding bit, a second input receiving a kill carry signal from a next least significant bit and an output,

a second exclusive OR gate having a first input receiving a propagate carry signal from said corresponding bit, a second input receiving a generate carry signal from a next least significant bit and an output,

a first exclusive NOR gate having a first input receiving said corresponding bit of said predetermined value, a second input receiving said output of said first exclusive OR gate, and an output,

a second exclusive NOR gate having a first input receiving an inverse of said corresponding bit of said predetermined value, a second input receiving said output of said second exclusive OR gate, and an output;

a multiplexer having a first input receiving said output of said first exclusive NOR gate, a second input receiving said output of said second exclusive NOR gate, a control input receiving said predetermined value for a next least significant bit, said multiplexer selecting for output said second input if said predetermined value of said next least significant bit is 1 and selecting for output said first input if said predetermined value of said next least significant bit is 0; and

a multi-input AND gate having an input for each multiplexer output, and an output, said circuit determining the sum equals the predetermined value if said output of said multi-input AND gate is 1 and determining the sum does not equal the predetermined value if said output of said multi-input AND gate is 0.

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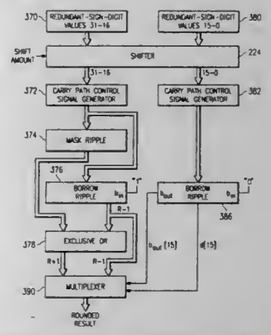
METHOD, APPARATUS AND SYSTEM FOR MULTIPLY ROUNDING USING REDUNDANT CODED MULTIPLY RESULT

Philip Moyse, and Richard Simpson, both of Bedford, England, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 30, 1993, Ser. No. 159,650

Int. Cl.[6] G06F *7/00;7/38*

U.S. Cl. 364—745.02 **39 Claims**



1. A method for rounding an input member coded in a redundant bit form including a magnitude signal and a sign signal for each bit of the input member, said method comprising the steps of:

forming carry/borrow control signals for each bit of the input number from the corresponding magnitude signal and sign signal;

generating a standard digital notation signal and a borrow out signal of a most significant bit of a first set of a predetermined number of least significant bits of the input number by carry/borrow ripple of said carry/borrow control signals for said first set of bits and a "0" borrow in signal for a least significant bit of said first set of bits;

generating a first rounded number in standard digital notation of each bit of a second set of all bits more significant bits than said first set of bits by carry/borrow ripple of said carry/

borrow control signals for each bit of said second set of bits and a "1" borrow in signal for a least significant bit of said second set of bits;

generating a second rounded number in standard digital notation of said second set of bits, said second rounder number having a value equal to two more than said first rounder number;

generating a third rounded number in standard digital notation having a value equal to one more than said first rounded number;

selecting via a multiplexer as a rounded output number one of said first rounded number, said second rounded number or said third rounded number based upon said standard digital notation of said most significant bit of said first set of bits and said borrow out signal of said most significant bit of said first set of bits.

5,644,523

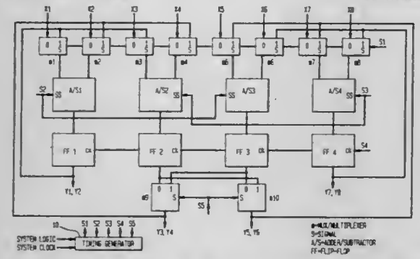
STATE-CONTROLLED HALF-PARALLEL ARRAY WALSH TRANSFORM

Wen-Chang Lin, Hsinchu, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan

Division of Ser. No. 215,857, Mar. 22, 1994, Pat. No. 5,574,675. This application Jun. 7, 1995, Ser. No. 477,864

Int. Cl.[6] G06F *7/52;7/36*

U.S. Cl. 364—754.02 **11 Claims**



1. A matrix multiplier circuit for performing a Fast Walsh Transform, comprising:

a plurality of N inputs for receiving N input signals;

a first plurality of multiplexers including a first group of n multiplexers, where n=pth root of N, and a second group of each other multiplexer of said first plurality, each multiplexer of said first and second groups having a first input connected to a corresponding one of said plurality of N inputs for receiving one of said N input signals, and a second input,

a plurality of (N/2) adder/subtractor units connected to said multiplexers of said first plurality;

a plurality of flip-flop circuits, each flip-flop circuit being connected to a corresponding one of said adder/subtractor units;

a second plurality of multiplexers, each multiplexer of said second plurality being connected to a first group of at least two of said flip-flop circuits;

wherein each multiplexer of said first group receives an output of a corresponding one of said second plurality of multiplexers as said second input of said multiplexer of said first group, and wherein each multiplexer of said second group of multiplexers receives an output of a corresponding one of a second group of said flip-flops as said second input of said multiplexers of said second group, and

a signal generating circuit for outputting a first signal to a select input of each of said first plurality of multiplexers, a second signal to a switch input of each adder/subtractor circuit of a first group of N/4 of said plurality of adder/subtractor circuits, a third signal to a switch input of each adder/subtractor circuit of a second group of N/4 of said plurality of adder/subtractor circuits, a fourth signal to a clock input of each of said flip-flops, and a fifth signal to a select input of each of said second plurality of multiplexers.

5,644,524

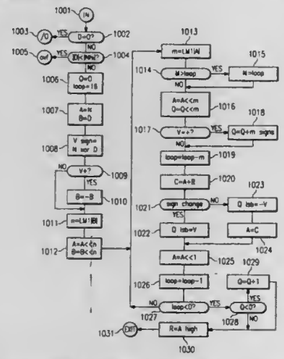
ITERATIVE DIVISION APPARATUS, SYSTEM AND METHOD EMPLOYING LEFT MOST ONE'S DETECTION AND LEFT MOST ONE'S DETECTION WITH EXCLUSIVE OR

Jerry R. Van Aken, Sugar Land; Karl M. Guttag, Missouri City, and Sydney W. Poland, Katy, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 30, 1993, Ser. No. 160,120

Int. Cl.[6] G06F *7/52*

U.S. Cl. 364—766 **46 Claims**



1. A data processing apparatus for iterative division comprising:

a first data register storing a numerator, said first data register initially storing a most significant "1" bit of said numerator in a most significant bit position;

a second data register storing a divisor, said second data register initially storing a most significant "1" bit of said divisor in a most significant bit position;

a third data register for storing a quotient;

an arithmetic logic unit having a first input connected to said first data register, a second input connected to said second data register and an output, said arithmetic logic unit forming a trial subtraction of said second input from said first input and generating a partial remainder and a status signal indicating whether said partial remainder is less than zero;

a left most one's circuit having an input connected to said first data register and an output, said left most one's circuit generating a number at said output equal to a number of bit locations from a most significant bit of said input to the location of a greatest significant "1" bit of data received at said input;

a loop counter register for storing therein a number indicative of iterations required for said division;

a control circuit connected to said third data register, said arithmetic logic unit, said left most one's circuit and said loop counter register, said control circuit including

a) means for supplying data stored in said first data register to said input of said left most one's circuit,

b) means for reducing said number indicative of iterations stored in said loop counter register by said output of said left most one's circuit, if said output of said left most one's circuit is nonzero,

c) means for shifting data stored in said first and third data registers by said output of said left most one's circuit, if said output of said left most one's circuit is nonzero,

d) means for filling corresponding quotient bits in said third data register vacated by said shifting with a number of zeros corresponding to said output of said left most one's circuit, if said output of said left most one's circuit is nonzero,

e) means for controlling said arithmetic logic unit to form a trial subtraction of data in said second data register from data in said first data register thereby generating a partial remainder and a status signal, if said output of said left most one's circuit is zero,

f) means for shifting data stored in said first and third data registers by one bit, if said output of said left most one's circuit is zero,

g) means for filling a least significant bit of said quotient stored in said third data register with a number corresponding to said status signal, if said output of said left most one's circuit is zero,

h) means for reducing said number indicative of iterations stored in said loop counter register by one, if said output of said left most one's circuit is zero, and

i) means for repeating use of means a) to h) until said loop counter register indicates no iterations remaining.

5,644,525

DYNAMIC SEMICONDUCTOR MEMORY DEVICE HAVING AN IMPROVED SENSE AMPLIFIER LAYOUT ARRANGEMENT

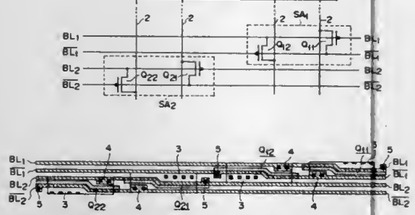
Daisaburo Takashima, Yokohama; Kenji Tsuchida, Kawasaki, and Yukihito Oowaki, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 47,383, Apr. 19, 1993, abandoned, which is a continuation of Ser. No. 864,184, Apr. 3, 1992, abandoned, which is a continuation of Ser. No. 433,013, Nov. 7, 1989, abandoned. This application Jul. 8, 1994, Ser. No. 272,284

Claims priority, application Japan, Nov. 7, 1988, 63-280636; Jan. 9, 1989, 1-2456

Int. Cl.[6] G11C *5/02;11/407;11/413*

U.S. Cl. 365—51 **10 Claims**



1. A dynamic semiconductor memory device comprising:

a semiconductor substrate;

a plurality of sense amplifiers, each including first and second MOS transistors each having a gate electrode, and a source region and a drain region which are formed in said semiconductor substrate by a diffusion method;

a plurality of pairs of bit lines positioned above said sense amplifiers and extending in a first direction so that the first and second MOS transistors of one of said sense amplifiers and those of another sense amplifier adjacent thereto are positioned within a region defined by two adjacent pairs of said pairs of bit lines, each of said pairs of bit lines having first and second bit lines extending in the first direction perpendicular to a second direction in which said source and drain regions are formed in said semiconductor substrate so that the transistors of the sense amplifiers are arranged one for every four bit lines in the second direction, one of the first and second bit lines being connected to the gate electrode of one of said first and second MOS transistors of one of said sense amplifiers and the other of the first and second bit lines being connected to the drain region of the same one of said first and second MOS transistors of one of said sense amplifiers; and

a plurality pairs of dynamic memory cells arrayed along said pairs of bit lines; and

said first and second MOS transistors of each of said plurality of sense amplifiers being separated in the first direction.

5,644,526

INTEGRATED CIRCUIT WITH IMPROVED IMMUNITY TO LARGE METALLIZATION DEFECTS

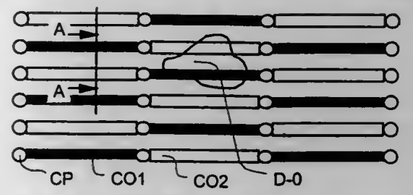
Stefano Mazzali, Milan, Italy, assignor to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

Filed Oct. 2, 1995, Ser. No. 538,302

Claims priority, application European Pat. Off., Sep. 30, 1994, 94830468

Int. Cl.[6] G11C *5/02;5/06;11/50;11/34*

U.S. Cl. 365—51 **35 Claims**



1. An integrated circuit memory comprising:

an array of memory cells arranged in rows and columns;

a plurality of word lines each connected to plural cells in at least one respective row of said array;

a plurality of bitlines each connected to plural cells in at least one respective column of said array; and

strapping connections, formed in a thin film layer, each connecting two separate locations of a respective one of said word lines to shunt the resistivity of a respective portion of said respective word line;

wherein said strapping connections do not cover the entire length of at least one of said word lines;

wherein said strapping connections are arranged, in groups, in a checkerboard pattern over said array.

5,644,527

SEMICONDUCTOR MEMORY DEVICE

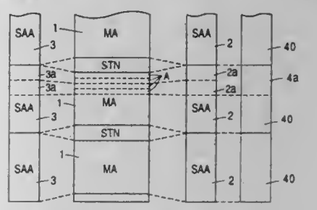
Yasushi Kubota, Sakurai, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 965,089, Oct. 22, 1992, abandoned. This application May 24, 1995, Ser. No. 448,756

Claims priority, application Japan, Oct. 22, 1991, 3-274332; Feb. 3, 1992, 4-017939

Int. Cl.[6] G11C *13/00*

U.S. Cl. 365—63 **2 Claims**



1. A semiconductor memory device comprising:

a plurality of word lines;

a plurality of bit lines;

a plurality of first regions in which respective memory cell arrays including a plurality of memory cells are formed;

at least one second region provided between said first regions for reducing the resistance of said plurality of word lines, said first regions and said second region being arranged along a first direction; and

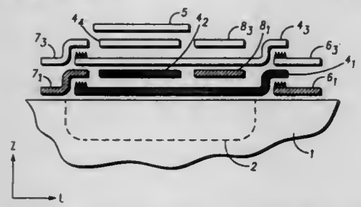
wherein a third region is located adjacent to and continuously along a length of said plurality of first regions and at least one of said second regions, said third region having a circuit formed therein for selecting at least one of said plurality of bit lines, and wherein said circuit includes a column decoder.

5,644,528

NON-VOLATILE MEMORY HAVING A CELL APPLYING TO MULTI-BIT DATA BY MULTI-LAYERED FLOATING GATE ARCHITECTURE AND PROGRAMMING METHOD FOR THE SAME

Toshiaki Kojima, Sendai, Japan, assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 21, 1995, Ser. No. 563,885
Claims priority, application Japan, Nov. 29, 1994, 6-295162
Int. Cl.[6] G11C *11/34*
U.S. Cl. 365—185.03 6 Claims



2. A non-volatile memory having a cell applying to multi-bit data by multi-layered floating gate architecture, which is characterized by a storage cell transistor comprising:

source and drain being formed in a semiconductor substrate distantly from each other so as to form a channel therebetween; and

a control gate facing said channel, said storage cell transistor further comprising:

at least one first floating gate having a width extending from said source to said drain, said at least one first floating gate extending in a direction crossing to the separating direction of said source and drain, and arranged in order between said channel and said control gate; a first program gate facing one of the extending ends of said first floating gate from said channel; a first erasure gate facing the other extending end of said first floating gate from said control gate;

at least one second floating gate facing said first floating gate, said at least one second floating gate extending in a direction crossing to the extending direction of said first floating gate, arranged in order between said channel and said control gate and overlapping a portion of the first floating gate, said first and second floating gates arranged in alternating order in their respective extending directions between said channel and said control gate; a second program gate facing one of the extending ends of said second floating gate from said channel; a second erasure gate facing the other extending end of said second floating gate from said control gate;

a first bias gate facing said first floating gate from said control gate in locations excluding said overlapping locations where said first and second floating gates overlap with each other; and

a second bias gate facing said second floating gate from said control gate in locations excluding said overlapping locations.

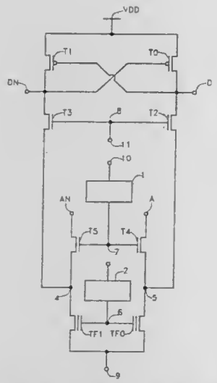
5,644,529

INTEGRATED CIRCUIT FOR THE PROGRAMMING OF A MEMORY CELL IN A NON-VOLATILE MEMORY REGISTER

Luigi Pascucci, Sesto San Giovanni, and Silvia Padoan, Rimini, both of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

Continuation of Ser. No. 347,267, Nov. 30, 1994, abandoned.
This application Apr. 18, 1996, Ser. No. 635,455
Claims priority, application European Pat. Off., Nov. 30, 1993, 93830474
Int. Cl.[6] G11C *11/40*
U.S. Cl. 365—185.05 31 Claims

1. An integrated circuit for programming a memory cell in a non-volatile memory register which is associated with a memory



matrix wherein the non-volatile memory register is used to store a redundancy address, the memory cell having at least one programmable non-volatile memory element having a control electrode and a data electrode and being suitable to store one bit of information and a load circuit associated with the memory element to read the information stored therein, the integrated circuit comprising;

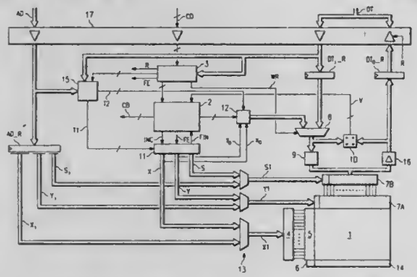
switching means connected in series between the data electrode and a respective address signal line of an address signal bus which also supplies a decoding circuitry of the memory matrix, said switching means being controlled by a signal which controls said switching means to electrically connect the data electrode of the memory element to the address signal line when the memory cell of the non-volatile memory register is to be programmed and to electrically disconnect the data electrode of the memory element from the address signal line when the information stored in the memory element is to be read by the load circuit.

5,644,530

ELECTRICALLY MODIFIABLE NON-VOLATILE MEMORY INCORPORATING TEST FUNCTIONS

Jean-Marie Bernard Gaultier, Rousset, France, assignor to SGS-Thomson Microelectronics, S.A., Gentilly, France

Filed Apr. 7, 1995, Ser. No. 418,636
Claims priority, application France, Apr. 8, 1994, 94 04565
Int. Cl.[6] G11C *16/06;* G01R *31/28*
U.S. Cl. 365—185.09 10 Claims



1. A non-volatile memory that is electrically modifiable by erasing and programming operations, said memory comprising:

at least one matrix of memory cells organized in rows and columns,

supply means to apply erasure and programming voltages to said rows and columns, said programming voltages being applied selectively to the rows and columns identified respectively by row addresses and column addresses,

an address generator comprising counting means activated by an incrementation signal,

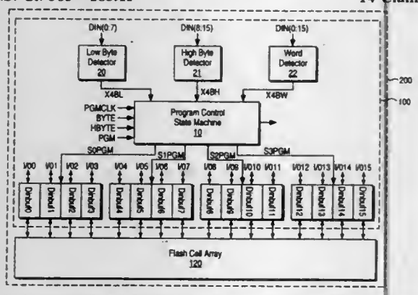
means to control said supply means and said address generator, said erasure operation consisting of the performance, by said control means, of a first pre-erasure programming algorithm followed by a second erasure algorithm, said first algorithm consisting in activating the incrementation of said counting means to successively give all the possible values of said row addresses and column addresses and, for each address value given, in activating said supply means to give said programming voltages, said second erasure algorithm consisting in activating the incrementation of said counting means to successively give all the possible values of said row addresses and column addresses and, for each address value given, verifying that the cell at such address corresponds to an erased reference cell, and applying an erasure voltage if the cell at such address does not correspond to said erased reference cell, said memory being one wherein said counting means comprise a row counter and a column counter respectively giving said row address and column address values, and wherein said address generator is designed to work according to a normal mode and at least one test mode, the operation in test mode(s) being conditioned by a first test word, said normal mode consisting in incrementing said row counter exclusively by said incrementation signal and said column counter exclusively by an overflow signal of said row counter, said test mode or modes consisting in permitting the incrementation, by said incrementation signal, of said row counter and/or the incrementation of said column counter as a function of said first test word.

5,644,531

PROGRAM ALGORITHM FOR LOW VOLTAGE SINGLE POWER SUPPLY FLASH MEMORIES

Tiao Hua Kuo, San Jose; Chung K. Chang, Santa Clara; Johnny Chen, Cupertino, and James C. Y. Yu, San Jose, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Nov. 1, 1995, Ser. No. 551,705
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—185.11 14 Claims



1. A programming method for a memory, comprising the steps of:

subdividing programming circuitry in the memory into a set of groups;

detecting a number of logic zeros to be programmed into a cell array by each group;

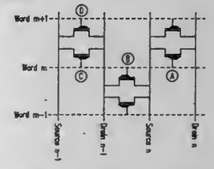
switching among the groups such that a number of simultaneously programmed cells in the cell array does not exceed a predetermined number while using maximum available programming current provided by a low voltage, single power supply.

5,644,532

METHOD FOR PROGRAMMING A CELL IN A SOURCE-COUPLING, SPLIT-GATE, VIRTUAL GROUND FLASH EEPROM ARRAY

Ming-Bing Chang, Santa Clara, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Division of Ser. No. 941,745, Sep. 8, 1992, Pat. No. 5,412,238.
This application May 2, 1995, Ser. No. 432,822
Int. Cl.[6] H01L *29/68*
U.S. Cl. 365—185.16 5 Claims



Operation \ Bias	Bit Lines					Word Lines	
	B(n)	S(n)	B(n−1)	S(n−1)	Others	W(m)	Others
Write (cell A)	6V	0V	0V	6V	6V	9V	0V
Bit line Erase	0V	12V	0V	0V	0V	0V	0V
Sector Erase	Float*	5V	Float*	5V	5V*	−9V	5V
Read (cell B)	1.5V	1.5V	0V	1.5V	1.5V	5V	0V

*Floating or 5V

1. A method of programming a selected EEPROM cell in a source-coupling, split-gate, virtual ground (SSVG) flash EEPROM array that is formed in a silicon substrate of P-type conductivity and includes a plurality of spaced-apart, parallel buried n+ bit lines formed in the silicon substrate to define alternating source and drain lines, a plurality of spaced-apart field oxide islands formed between adjacent source and drain lines to define substrate channel regions therebetween, and, for each channel region, a poly1 floating gate formed over a first portion of each channel region and separated therefrom by a layer of floating gate oxide having a first thickness, said floating gate including a tunnelling portion that extends over the source line associated with said channel region and is separated therefrom by tunnel oxide having a second thickness, and, for each floating gate, a poly2 word line formed over said floating gate and separated therefrom by a layer of oxide/nitride/oxide (ONO), said word line running perpendicular to the buried n+ bit lines and extending over a second portion of said channel region and separated from said second portion of said channel region by said layer of ONO, the programming method comprising:

maintaining the source and drain bit lines of an immediate neighboring EEPROM cell which shares the source line and the word line with the selected cell, at ground while biasing the remaining bit lines of the array at a write bias voltage; and

biasing the word line associated with the floating gate of the selected EEPROM cell at a programming voltage while maintaining the remaining word lines of the array at ground.

5,644,533

FLASH MEMORY SYSTEM, AND METHODS OF CONSTRUCTING AND UTILIZING SAME

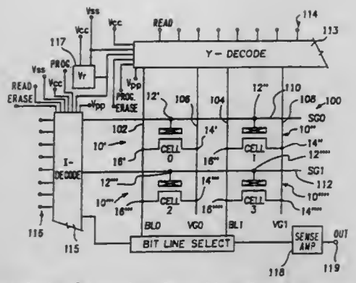
Loren T. Lancaster, and Ryan T. Hirose, both of Colorado Springs, Colo., assignors to NVX Corporation, Colorado Springs, Colo.

PCT No. PCT/US93/10485, § 371 Date Apr. 26, 1995, § 102(e) Date Apr. 26, 1995, PCT Pub. No. WO04/10686, PCT Pub. Date May 11, 1994
Continuation-in-part of Ser. No. 970,921, Nov. 2, 1992, abandoned. This PCT application Nov. 2, 1993, Ser. No. 427,826
Int. Cl.[6] G11C *16/00*
U.S. Cl. 365—185.18 45 Claims

1. A non-volatile integrated memory circuit, comprising:

a semiconductor substrate;

a memory transistor formed in said substrate, said memory transistor having a source, a drain, a gate, and a dielectric memory material that has programmable memory states that produce a first transistor threshold of magnitude less thin a



magnitude of a supply voltage, V_{cc}, when the memory transistor is erased and a different threshold when the memory transistor is programmed;

biasing circuitry for applying selected read biasing voltages to the gate, drain, and source of said transistor, said read biasing voltages including a read voltage, V_r, of magnitude less than the magnitude of the supply voltage applied to the source and gate, with the supply voltage applied between the drain the substrate;

and sensing circuitry for sensing a current generated at the drain of said memory transistor in accordance with the programmable state of said dielectric memory material.

5,644,534

VOLTAGE BOOSTER CIRCUIT WITH PLURAL BOOSTER UNITS HAVING OUTPUTS CONNECTED IN COMMON

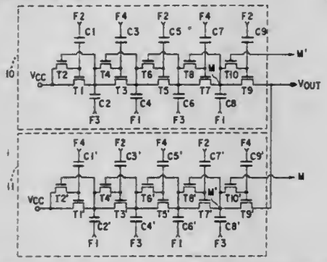
Kouta Soejima, Tokyo, Japan, assignor to Macronix International Co., Ltd., Hsin-chu, Taiwan

Filed Dec. 11, 1995, Ser. No. 570,682

Claims priority, application Japan, Dec. 27, 1994, 6-336937; Nov. 30, 1995, 7-312566

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—185.23 **8 Claims**



1. A booster circuit having a first booster circuit section and a second booster circuit section which have the same structure, each of the first and second booster circuit sections comprising:

a plurality of first MOS transistors, said first MOS transistors each having a gate terminal and two current terminals and connected to one another in series;

a plurality of second MOS transistors, said second MOS transistors each having a gate terminal and two current terminals, first one of said current terminals of each second MOS transistor connected to one of the current terminals of the first MOS transistor, second one of said current terminals of each second MOS transistor connected to the gate of the first MOS transistor, said gate terminal, excluding a case of a gate terminal of a second MOS transistor in a final stage, connected to the second one of the current terminals of the first MOS transistor, said gate terminal of the second MOS transistor in a final stage connected to a final node between first MOS transistors of another booster circuit section;

a plurality of first capacitors each having one terminal connected to the gate of each first MOS transistor; and

a plurality of second capacitors each having one terminal connected to a node between said first MOS transistors, wherein clock pulses are inputted to second terminals of said first and second capacitors, the second terminals of the first and second capacitors of the first booster circuit section and the second terminals of the first and second capacitors of the second booster circuit section being terminals which correspond to each other and which are supplied with clock pulses opposite each other in phase.

5,644,535

SEMICONDUCTOR DEVICE HAVING PLURAL MEMORIES WHICH SYNCHRONOUSLY GENERATE ACESS ALLOW SIGNALS

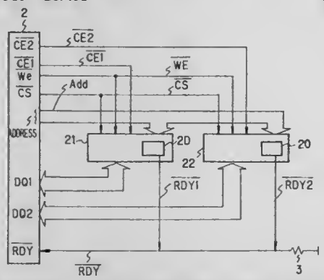
Tamio Shimizu, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Mar. 29, 1996, Ser. No. 626,240

Claims priority, application Japan, Mar. 30, 1995, 7-072921

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—189.01 **6 Claims**



1. A semiconductor device comprising a plurality of memories, a plurality of bit lines connected to said memories, and a plurality of word lines also connected to said memories, said memories being arranged to permit memory operation of writing or reading of data into or from said memories, each respective memory being arranged to execute a respective memory operation in response to activation of predetermined ones of said bit line pairs and word lines, a memory select signal, an operating mode signal, and at least one respective operating input signal, each respective memory also being arranged to generate a respective access allow signal when data in the respective memory is ready to be accessed, the respective memory operation not being executed by the respective memory if a condition exists in which the memory select signal and operating mode signal are activated and the respective operating input signal is de-activated, said respective memory being arranged to execute upon occurrence of said condition an allowing signal set operation wherein only a predetermined operation mode of the memory operation is determined, each said respective access allow signal being generated with a timing substantially corresponding to the allow signal set operation so as to permit substantially synchronous generation of the access allowing signals by the memories.

5,644,536

HIGH GAIN FEEDBACK LATCH

Christopher P. Miller, Underhill, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

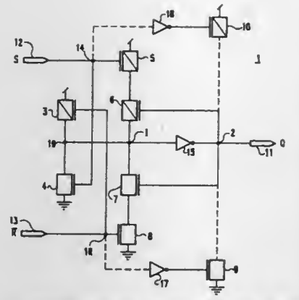
Continuation of Ser. No. 487,205, Jun. 7, 1995, Pat. No. 5,541,881. This application May 14, 1996, Ser. No. 645,768

Int. Cl.[6] G11C *13/00*

U.S. Cl. 365—189.05 **20 Claims**

1. An integrated circuit comprising:

first input means for receiving a first signal;



means for evaluating coupled to said first input means;

second input means for receiving a second signal, coupled to said means for evaluating; and

means for outputting one of a third signal and a fourth signal coupled to said means for evaluating,

wherein said means for evaluating controls said means for outputting, based on said first signal and said second signal, so that one of said third signal and said fourth signal is output,

wherein said means for outputting maintains outputting of one of said third signal and said fourth signal,

wherein said third signal is output by said means for outputting until said second signal is received by said second input means and said fourth signal is output by said means for outputting until said first signal is received by said first input means, and

wherein said means for evaluating includes a first transistor for processing said first signal and a second transistor for processing said second signal.

5,644,537

MEMORY DEVICE AND SERIAL-PARALLEL DATA TRANSFORM CIRCUIT

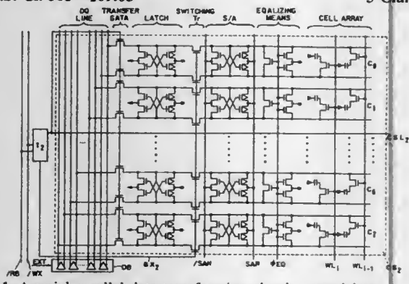
Haruki Toda, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Tokyo, Japan

Division of Ser. No. 346,080, Nov. 29, 1994, Pat. No. 5,568,428. This application Jul. 22, 1996, Ser. No. 681,169

Claims priority, application Japan, Nov. 29, 1993, 5-298074

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—189.05 **3 Claims**



1. A serial-parallel data transforming circuit comprising:

serial data inputting means for receiving external serial data;

latching means having a plurality of latches for latching each of the serial data, said latches being divided into a plurality of latch groups, each latch group being formed by a predetermined number of said latches;

a plurality of data transfer gates, each data transfer gate being provided at an output terminal of a corresponding one of said latches; and

transfer masking means for controlling said data transfer gates,

wherein each of the serial data is written in the latches of a selected latch group, and

said transfer masking means operates to turn on said data transfer gates corresponding to latch groups in which data have been written in order to output parallel data therefrom while keeping turned off said data transfer gates corresponding to latch groups in which data have not been written.

5,644,538

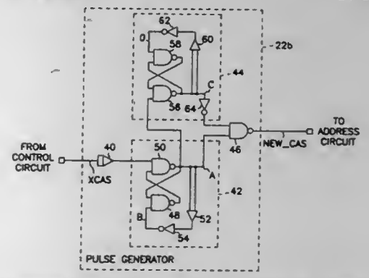
CIRCUIT AND METHOD FOR CONTROLLNG THE DURATION OF PULSES IN A CONTROL SIGNAL FROM AN ELECTRONIC SYSTEM

Todd A. Merritt, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Mar. 1, 1996, Ser. No. 609,738

Int. Cl.[6] G11C *8/00*

U.S. Cl. 365—194 **14 Claims**



1. A memory device for use with an electronic system, the memory device comprising:

pulse generator including:

a first lockout circuit that extends a low logic pulse of the control signal to produce an acceptable control signal;

a second lockout circuit that extends a high logic pulse of the control signal to produce an acceptable control signal; and

a logic gate coupled to receive the output of each of the first and second lockout circuits for outputting the generated control signal for the memory device; and

a memory array with an address circuit coupled to receive the control signal from pulse generator.

5,644,539

STORAGE DEVICE EMPLOYING A FLASH MEMORY

Hajime Yamagami; Koulchi Terada, both of Yokohama; Yoshihiro Hayashi, Narashino; Takashi Tsunehiro, Ebina; Kunihiro Katayama; Kenichi Kaki, both of Yokohama, and Takeshi Furuno, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 25, 1992, Ser. No. 981,438

Claims priority, application Japan, Nov. 26, 1991, 3-310848; Nov. 28, 1991, 3-314297; Feb. 19, 1992, 4-031756; Apr. 20, 1992, 4-099891

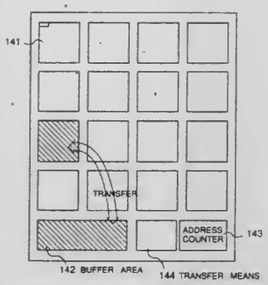
Int. Cl.[6] G11C *13/00*

U.S. Cl. 365—200 **21 Claims**

1. A storage device employing a flash memory, comprising:

a storage area comprised of (1) a plurality of data memory areas for storing data, each of said plurality of data memory areas being identified by a unique physical address, (2) a plurality of substitutive memory areas for use as substitute memory areas for said data memory areas, each of said plurality of substitutive memory areas being identified by a unique physical address, and (3) a plurality of error memory areas each of which is provided in correspondence with a respective one of said plurality of data memory areas and each of which stores error information of corresponding ones of said data memory areas, said storage device further comprising:

address conversion means; and



a memory controller which accesses a respective data memory area identified by a received physical address,

wherein at least one of said error memory areas corresponds to a data memory area in which no error occurred and stores, as said error information, information showing that no error occurred in the corresponding data memory area,

wherein each of remaining ones of said error memory areas corresponds to a respective data memory area in which error occurred and stores, as said error information, said physical address of a respective substitutive memory area to be used in place of the corresponding data memory area in which error occurred, and

wherein when the physical address of said substitutive memory area is stored as the error information in the error memory area corresponding to the data memory area identified by the physical address, said address conversion means converts said physical address, to be provided to the memory controller, into the physical address of said substitutive memory area stored in the error memory area corresponding to the respective data memory area identified by the physical address to be accessed.

5,644,540

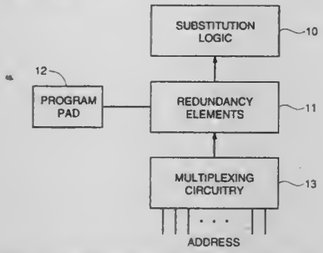
REDUNDANCY ELEMENTS USING THIN FILM TRANSISTORS (TFTS)

Monte Manning, Kuna, Id., assignor to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 106,497, Aug. 13, 1993, Pat. No. 5,392,245. This application Feb. 17, 1995, Ser. No. 390,348

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—200 **26 Claims**



1. A method for using field effect transistors (FETs) as programmable redundancy elements in a redundancy repair circuit having a plurality of FETs, said method comprising:

applying a first potential to an output terminal of each FET selected for programming; and

applying a programming signal to the gate of each said selected FET that is sufficient to cause the threshold voltage of each selected FET to shift by injecting charge into the FET's gate insulation region such that the shift in threshold voltage is detectable from the threshold voltage of a non-selected FET.

5,644,541

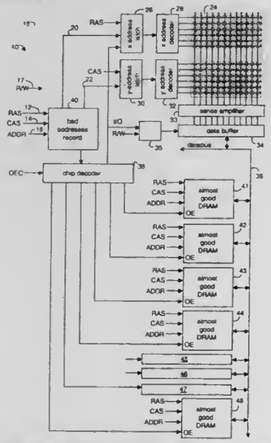
MEMORY SUBSTITUTION SYSTEM AND METHOD FOR CORRECTING PARTIALLY DEFECTIVE MEMORIES

Philip K. Siu, 11629 Dawson Dr.; Lawrence K. Lo, 14303 Saddle Mountain Dr., both of Los Altos Hills, Calif. 94024, and Hing S. Tong, 19335 Dehavilland Dr., Saratoga, Calif. 95070, assignors to Philip K. Siu; Lawrence K. Lo, buth of Los Altos Hills, and Hing S. Tong, Saratoga, all of Calif.

Filed Nov. 3, 1995, Ser. No. 552,803

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—200 **13 Claims**



1. A memory repair integrated circuit (IC), comprising on a single semiconductor device:

a bad address record (BAR) with an input connected to receive data access requests by system addresses and a plurality of outputs for selecting one of several off-chip dynamic random access memories (DRAM's) or an on-chip memory array to respond to for each particular data access request according to a prerecorded list of defective bits in said off-chip DRAM's;

an X-address latch and decoder connected to receive said system addresses from the BAR and connected to a first plurality of rows of memory elements in said memory array;

a Y-address latch and decoder connected to receive said system addresses from the BAR and connected to a second plurality of rows of memory elements in said memory array;

a sense amplifier connected to receive data from said first and second plurality of rows of memory in said memory array; and

a data buffer connected to receive data from the sense amplifier and to provide said received data to a databus connected to said DRAM's, and connected to write data to said memory array from said databus.

5,644,542

STRESS TEST FOR MEMORY ARRAYS IN INTEGRATED CIRCUITS

David Charles McClure, Carrollton, and James Brady, Dallas, both of Tex., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Continuation of Ser. No. 954,276, Sep. 30, 1992, Pat. No. 5,424,988. This application Jun. 2, 1995, Ser. No. 460,409

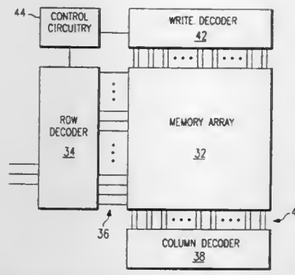
Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—201 **9 Claims**

2. A circuit of an integrated circuit memory device for stress testing an integrated circuit memory device, comprising:

a memory array of the integrated circuit memory device;

a plurality of word lines of the memory array;



a plurality of bit lines of the memory array comprised of a plurality of bit lines true and a plurality of bit lines complement;

a row decoder coupled to the plurality of word lines of the memory array;

a column and write decoder coupled to the memory array which controls the plurality of bit lines of the memory array and allows data to be written into the memory array; and

a control circuit which generates a control signal that controls the row decoder and the column and write decoder;

wherein the control signal generated by the control circuit causes the row decoder to simultaneously select at least a portion of the plurality of word lines which remain activated for the duration of a stress test of the memory array; and

wherein during a first predetermined period of time of the stress test the control signal generated by the control circuit causes the write decoder to set at least a portion of the plurality of bit lines true to a first voltage level and to set at least a portion of the plurality of bit lines bar to a second voltage level, and wherein during a second predetermined period of time of the stress test the control signal generated by the control circuit causes the write decoder to set the at least a portion of the plurality of bit lines true to the second voltage level and to set the at least a portion of the plurality of bit lines bar to the first voltage level.

5,644,543

SEMICONDUCTOR MEMORY APPARATUS HAVING SENSE AMPLIFIERS CONNECTED TO BOTH ENDS OF A PAIR OF BIT LINES

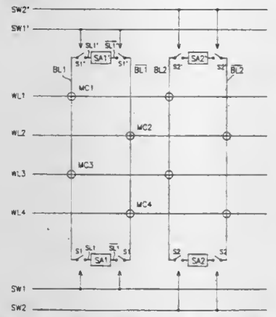
Tae Hyoung Kim, and Jin Hong Ahn, both of Kyungki-Do, Rep. of Korea, assignors to LG Semicon Co., Ltd., Cheongju, Rep. of Korea

Filed Jan. 16, 1996, Ser. No. 586,392

Claims priority, application Rep. of Korea, Nov. 20, 1995, 42224/1995

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—207 **3 Claims**



1. A memory driving method for a semiconductor memory apparatus wherein first and second sense amplifying units are connected to a pair of bit lines of a memory array, respectively, through first and second switches, and a latch type word line driver capable of concurrently selecting at least two memory cells connected to one bit line is provided in said semiconductor memory apparatus, comprising the steps of:

a first step which senses a data of a first memory cell selected by said word line driver and stores the thusly sensed data into said first sense amplifying unit in accordance with a switching operation of a first switch;

a second step which selects a second memory cell during the sensing operation of said first sense amplifying unit and stores a data of said second memory cell into said second sense amplifying unit in accordance with a switching operation of a second switch; and

a third step which restores data stored in the first sense amplifying unit and second sense amplifying unit into said first and second selected memory cells, respectively, in accordance with said switching operation of said first and second switches.

5,644,544

SEMICONDUCTOR DYNAMIC RANDOM ACCESS MEMORY DEVICE VARIABLE IN REFRESH CYCLE

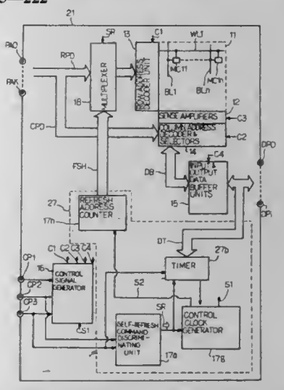
Takeshi Mizukami, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 27, 1995, Ser. No. 549,310

Claims priority, application Japan, Oct. 28, 1994, 6-265569

Int. Cl.[6] G11C *13/00*

U.S. Cl. 365—222 **5 Claims**



1. A semiconductor memory device fabricated on a semiconductor chip comprising:

a memory cell array;

a plurality of first terminal means for communicating an address signal and a data signal through an external device;

an access means connected to said plurality of first terminal means, and responsive to said address signal for selecting at least one memory cell from said memory cell array in a memory access mode, thereby carrying out a read-out of a data represented by said data signal and a write-in of a data represented by said data signal on the selected memory cell;

a second terminal means selected from said plurality of first terminal means, and receiving information for determining a refresh cycle from the outside of said semiconductor chip in said refresh mode; and

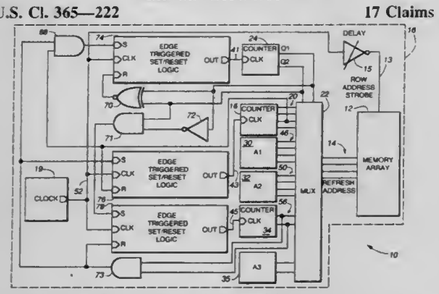
a refresh means including a refresh timer for periodically generating a timer signal, and carrying out a refreshing operation on said memory cell array on the basis of said timer signal supplied from said refresh timer in a refresh mode, said refresh means further including a means responsive to said information so as to cause said refresh timer to change an interval of said timer signal.

5,644,545

BIMODAL REFRESH CIRCUIT AND METHOD FOR USING SAME TO REDUCE STANDBY CURRENT AND ENHANCE YIELDS OF DYNAMIC MEMORY PRODUCTS

David E. Fisch, Colorado Springs, Colo., assignor to United Memories, Inc., Colorado Springs, Colo., and Nippon Steel Semiconductor Corporation, Chiba, Japan

Filed Feb. 14, 1996, Ser. No. 601,179
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—222 17 Claims



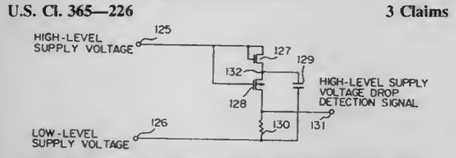
1. A integrated memory circuit, comprising:
an array of memory elements that require periodic refreshing;
an address providing circuit for providing information identifying weak memory elements in said array; and
circuitry connected to refresh said memory elements at a rate which is varied in dependence upon said information identifying weak memory elements in said address providing circuit, said circuitry having a main refresh counter and a supplemental refresh counter, said main refresh counter being connected to said supplemental refresh counter to initiate a count of said supplemental refresh counter at predetermined counts of said main refresh counter.

5,644,546

MOS STATIC RAM WITH IMPROVED SOFT ERROR RESISTANCE; HIGH-LEVEL SUPPLY VOLTAGE DROP DETECTION CIRCUIT AND COMPLEMENTARY SIGNAL TRANSITION DETECTION CIRCUIT FOR THE SAME; AND SEMICONDUCTOR DEVICE WITH IMPROVED INTERSIGNAL TIME MARGIN

Kazuto Furumochi, and Junji Seino, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 353,312, Dec. 5, 1994, abandoned, which is a continuation of Ser. No. 113,894, Aug. 31, 1993, abandoned. This application Aug. 10, 1995, Ser. No. 513,641
Claims priority, application Japan, Sep. 11, 1992, 4-243136; Sep. 16, 1992, 4-246598; Sep. 17, 1992, 4-248309; Sep. 17, 1992, 4-248310
Int. Cl.[6] G11C *8/00*
U.S. Cl. 365—226 3 Claims



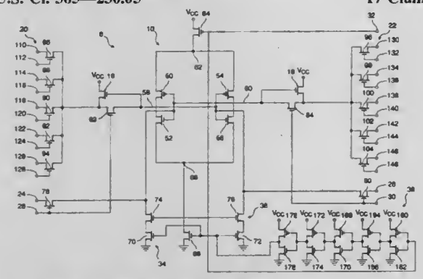
1. A high-level supply voltage drop detection circuit comprising:
an nMOS transistor whose drain and gate are connected to a high-level supply voltage input terminal at which a high-level supply voltage is applied; a capacitor connected at a first end thereof to the source of the nMOS transistor and connected at a second end thereof to a low-level supply voltage input terminal at which a low-level supply voltage is applied; a pMOS transistor whose source is connected to said first end of said capacitor and whose gate is connected to the high-level supply voltage input terminal; and a resistor connected at one end thereof to the drain of the pMOS transistor and connected at the other end to the low-level supply voltage input terminal, wherein a high-level supply voltage drop detection signal is obtained from the drain of the pMOS transistor.

5,644,547

MULTIPORT MEMORY CELL

Gennady Ivanovich Grishakov, and Igor Vladimirovich Tarasov, both of Moscow, Russian Federation, assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Apr. 26, 1996, Ser. No. 641,998
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—230.05 17 Claims



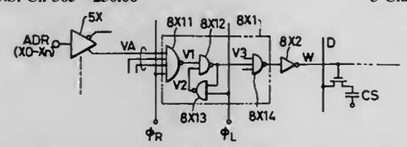
1. A multiport memory cell comprising:
a first and second switched reference port;
a first and second bank of a plurality of switched read/write ports;
a storage element for storing a small differential voltage between about 0.3 and about 0.5 volts between one of said switched reference ports and a corresponding one of said switched read/write ports during a write operation, wherein during a read operation said storage element swings high or low depending on the value of said small differential voltage stored during a previous write operation.

5,644,548

DYNAMIC RANDOM ACCESS MEMORY HAVING BIPOLAR AND C-MOS TRANSISTOR

Goro Kitsukawa, Tokyo; Takao Watanabe, Kokubunji; Ryoichi Hori, Tokyo; Noriyuki Honma, Kokubunji; Kunihiko Yamaguchi, Sayama; Kiyoo Ito, Higashikurume; Masahiro Iwamura, and Ikuro Masuda, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 391,537, Feb. 21, 1995, Pat. No. 5,587,952, which is a continuation of Ser. No. 35,272, Mar. 22, 1993, abandoned, which is a division of Ser. No. 921,385, Jul. 30, 1992, abandoned, which is a continuation of Ser. No. 308,680, Feb. 3, 1989, abandoned, which is a continuation-in-part of Ser. No. 803,673, Dec. 2, 1985, abandoned, which is a continuation of Ser. No. 825,939, Feb. 4, 1986, abandoned.
This application Aug. 27, 1996, Ser. No. 703,521
Claims priority, application Japan, Dec. 3, 1984, 59-254014; Dec. 17, 1984, 59-264466; Jan. 23, 1985, 60-8976
Int. Cl.[6] G11C *8/00*
U.S. Cl. 365—230.06 3 Claims



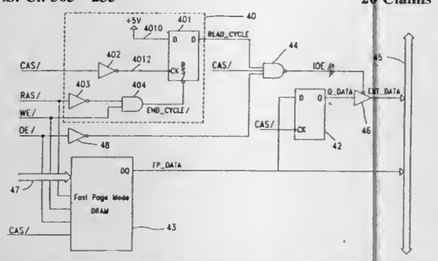
1. A semiconductor circuit having a dynamic memory cell, a word line coupled to said dynamic memory cell, a data line coupled to said dynamic memory cell, a precharge circuit coupled to said data line, a word driver coupled to said word line and a decoder coupled to said word driver, comprising:
a plurality of address lines coupled to said decoder;
wherein said decoder has a first logic circuit whose inputs are connected to said plurality of address lines, respectively, for decoding an address signal on said plurality of address lines;
wherein said decoder has a latch circuit whose input is connected to an output of said first logic circuit and whose output is coupled to said word line,
wherein said decoder receives a first signal as an input for placing said word line in a selected state, and
wherein said word line remains in said selected state while a second signal is input to said decoder even if the first signal is input to said decoder.

5,644,549

APPARATUS FOR ACCESSING AN EXTENDED DATA OUTPUT DYNAMIC RANDOM ACCESS MEMORY

Jiang-Tsuen Ju, Hsinchu, Taiwan, assignor to Act Corporation, Hsinchu, Taiwan

Filed Mar. 21, 1996, Scr. No. 619,436
Int. Cl.[6] G11C *8/00*
U.S. Cl. 365—235 20 Claims



1. An apparatus for accessing an extended data output dynamic random access memory (EDO DRAM), said apparatus comprising:
a fast page mode (FPM) DRAM for inputting a column address strobe signal, a row address strobe signal, a read/write signal, an output enable signal and a plurality of memory address signals, and for generating a plurality of fast page mode (FPM) data signals coupled to a system data bus;
read-cycle generating means for inputting said column address strobe signal, said row address strobe signal and said read/write signal, and for generating a read-cycle signal;
data latching means for inputting said column address strobe signal, said plurality of fast page mode (FPM) data signals, and for generating a plurality of latched data signals;
output control means for inputting said read-cycle signal, said column address strobe signal and said output enable signal, and for generating an output control signal, and
a data switch for inputting said output control signal and said plurality of latched data signals, and for generating a plurality of extended data signals coupled to the system data bus.

5,644,550

METHOD FOR LOGGING BEHIND CASING

John F. Priest, Tomball, Tex., assignor to Western Atlas International, Inc., Houston, Tex.

Filed Jul. 2, 1996, Ser. No. 674,485
Int. Cl.[6] G01V *1/40*
U.S. Cl. 367—35 6 Claims

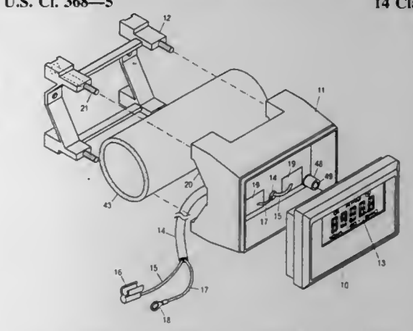
1. A method for logging a subterranean formation from a wellbore with casing and fill material penetrating said formation, comprising:
transmitting an acoustic pulse signal from a pulse-echo transducer into the wellbore at an angle approximately perpendicular to the wellbore;
receiving at the transducer a first casing echo at an angle approximately perpendicular to the wellbore;
receiving at the transducer a first formation echo at an angle approximately perpendicular to the wellbore;
detecting the amplitudes and times of arrival of the casing and formation echoes;
calculating the casing inner radius;
calculating the casing thickness;
calculating the fill material thickness;
calculating the formation reflectance amplitude; and
using the formation reflectance amplitude to image the subterranean formation.

5,644,551

ADAPTABLE ENGINE USAGE METER

Edward Carmichael, 4373 Sequoyah Rd., Oakland, Calif. 94605, and Robert Legge, 1465 Kring Way, Los Altos Hills, Calif. 94024

Filed May 9, 1995, Ser. No. 438,160
Int. Cl.[6] G04F *8/00*; F02P *17/00*
U.S. Cl. 368—5 14 Claims



1. An engine usage meter for monitoring an engine having an electrical system, comprising:
a front housing,
a sensor clip adapted to be clipped onto an ignition wire in said electrical system, circuit means disposed within said front

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housing and connected to said sensor clip via a signal wire for monitoring a total operating time of said engine,

a rear housing attached to said front housing, said rear housing having a concave back portion adapted to be mounted around a front portion of a handlebar,

a concave mounting bracket adapted to be positioned around a back portion of said handlebar, said concave mounting bracket having opposite ends, and

a pair of screws positioned through said concave mounting bracket at said opposite ends, said screws being adapted to be positioned on opposite sides of said handlebar, said screws connecting said concave mounting bracket to said rear housing for securing said engine usage meter on said handlebar.

5,644,552

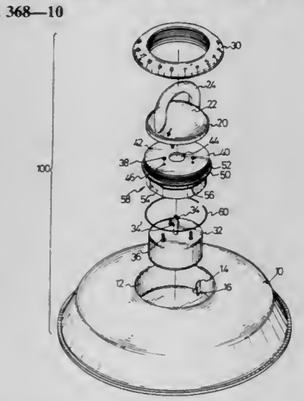
LID WITH A TIMER

Chang-hsing Lien, Taipei, Taiwan, assignor to Action Overseas Co., Ltd., Taipei, Taiwan

Filed Jul. 24, 1996, Ser. No. 686,150

Int. Cl.[6] G04B *47/00*; A47J *37/12*; B65D *25/28*

U.S. Cl. 368—10 **3 Claims**



1. An arrangement for mounting a timer having an adjusting pole and a plurality of screws onto a lid, comprising:

a circular recess defined in a substantial center of the lid;

a plurality of equidistant ear portions protruding from an inner wall of the circular recess and each defining a notch;

a tubular cap having a circular plate with a central hole and a plurality of apertures and a downward extending edge defining a threaded periphery, a plurality of flats facing the ear portions so as to be marginally received within the circular recess, a groove facing the notches of the ear portions, and a cylindrical chamber for receiving the timer by having the adjusting pole extending through the central hole and the screws of the timer extending through the apertures, and a corresponding number of nuts threadably engaging with the screws;

a 'C'-clip received within the groove and biased within the notches as to secure the tubular cap onto the lid;

a knob defining a bottom flange and coupled with the adjusting pole of the timer; and

a collar defining a circular bore with a threaded surface for engaging with the threaded periphery of the tubular cap and for the knob to extend therethrough with the bottom flange rotatably secured between the collar and the tubular cap.

5,644,553

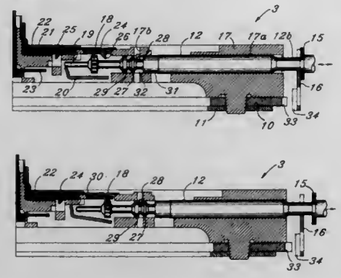
COMBINED CROWN/PUSHBUTTON FOR ILLUMINATED ANALOG WATCH

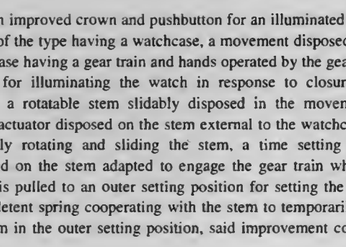
Jean Louis Cuinet, Recologne, France, assignor to Timex Corporation, Middlebury, Conn.

Filed Feb. 13, 1995, Ser. No. 387,692

Int. Cl.[6] G04C *3/00*

U.S. Cl. 368—320 **8 Claims**





1. An improved crown and pushbutton for an illuminated analog watch of the type having a watchcase, a movement disposed in the watchcase having a gear train and hands operated by the gear train, means for illuminating the watch in response to closure of a switch, a rotatable stem slidably disposed in the movement, a crown actuator disposed on the stem external to the watchcase for manually rotating and sliding the stem, a time setting pinion disposed on the stem adapted to engage the gear train when the crown is pulled to an outer setting position for setting the hands, and a detent spring cooperating with the stem to temporarily hold the stem in the outer setting position, said improvement comprising:

an axially elongated detent recess defined by said stem arranged to cooperate with said detent spring to allow a preselected range of axial movement of said stem without engaging said gear train during which said hands are operated by said gear train, between a normal run position and an axially inner switching position,

a first contact terminal adjacent said stem connected as one side of said switch,

a spring switching arm adapted to cooperate with said stem and bias it axially outward toward said run position,

a second contact terminal spaced from said first contact terminal connected as the other side of said switch,

said switching arm being arranged to cause the second contact terminal to make contact with the first contact terminal when said stem is moved within said preselected range of axial movement by pushing said crown against the biasing force of said spring switching arm.

5,644,554

MAGNETIC HEAD LOAD/UNLOAD DEVICE, METHOD AND A MAGNETO-OPTICAL DISK APPARATUS USING THE SAME

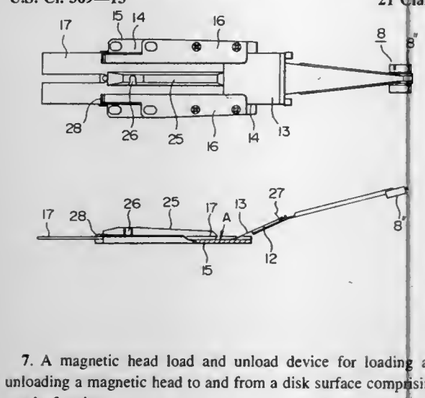
Kunio Harada, Hachioji; Toshimitsu Kaku, Sagamihara; Masuo Kasai, Hachioji, and Masabiro Ojima, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

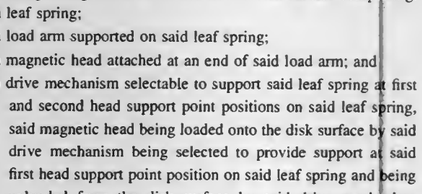
Continuation of Ser. No. 581,783, Sep. 13, 1990, abandoned, which is a continuation-in-part of Ser. No. 145,313, Jan. 19, 1988, Pat. No. 4,892,389, Ser. No. 153,094, Feb. 8, 1988, Pat. No. 5,020,041, Ser. No. 248,376, Sep. 23, 1988, Pat. No. 5,043,960, Ser. No. 501,545, Mar. 30, 1990, and Ser. No. 509,743, Apr. 17, 1990, which is a continuation-in-part of Ser. No. 153,094, said Ser. No. 501,545is a continuation-in-part of Ser. No. 153,094. This application Mar. 29, 1993, Ser. No. 38,080

Claims priority, application Japan, Sep. 18, 1989, 1-239992

Int. Cl.[6] G11B *11/12*

U.S. Cl. 369—13 **21 Claims**





7. A magnetic head load and unload device for loading and unloading a magnetic head to and from a disk surface comprising:

a leaf spring;

a load arm supported on said leaf spring;

a magnetic head attached at an end of said load arm; and

a drive mechanism selectable to support said leaf spring at first and second head support point positions on said leaf spring, said magnetic head being loaded onto the disk surface by said drive mechanism being selected to provide support at said first head support point position on said leaf spring and being unloaded from the disk surface by said drive mechanism being selected to provide support at said second support point position which is farther away from said magnetic head than said first support point position.

21. A magnetic head load and unload method comprising the steps of:

providing a leaf spring having one end supporting a load arm fitted with a magnetic head and another end interposed between two flat plates;

sliding one of said two flat plates in a direction toward said magnetic head to deform said leaf spring from a normal curved posture to a straightened posture to load said head onto a disk surface with a stiffness at a fitting section of said magnetic head of at least 5 kg/mm; and

sliding said one flat plate in a direction away from said magnetic head to allow said leaf spring to return from a straightened posture to a curved posture to unload the magnetic head off of the disk surface with a stiffness no greater than 1 g/mm.

5,644,555

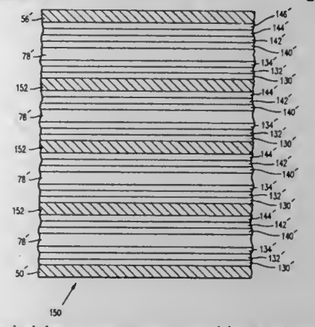
MULTIPLE DATA SURFACE MAGNETO-OPTICAL DATA STORAGE SYSTEM

Terry Wayne McDaniel, Morgan Hill; Harris Anthony Notarys, San Jose; Hal Jervis Rosen, Los Gatos, and Kurt Allan Rubin, Santa Clara, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 19, 1995, Ser. No. 376,943

Int. Cl.[6] G11C *13/06*

U.S. Cl. 369—13 **23 Claims**



1. An optical data storage system comprising: a substrate; a first dielectric layer overlying the substrate;

a first magneto-optical layer overlying the first dielectric layer, the first magneto-optical layer being of a thickness which allows the transmission of a radiation beam;

a second dielectric layer overlying the first magneto-optical layer;

a radiation transmissive layer overlying the second dielectric layer;

a third dielectric layer overlying the radiation transmissive layer;

a second magneto-optical layer overlying the third dielectric layer;

a fourth dielectric layer overlying the second magneto-optical layer; and wherein the first dielectric layer has a thickness range of 0<166 (±½ n) nanometers, the second dielectric layer has a thickness range of 80–160 (±½ n) nanometers, the third dielectric layer has a thickness range of 80–250 (±½ n) nanometers, and the fourth dielectric layer has a thickness range of 90–240 (±½ n) nanometers, wherein l equals the wavelength of light used with the system and n equals the real part of the index of refraction of the dielectric layer material.

5,644,556

MAGNETO-OPTICAL DISK HAVING CELLULARLY DIVIDED REGIONS WITH ALTERNATING DIRECTIONS OF MAGNETIZATION AND METHOD OF INITIALIZING DIRECTION OF MAGNETIZATION OF MAGNETO-OPTICAL DISK PRIOR TO RECORDING OF INFORMATION

Katsuya Oikawa, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

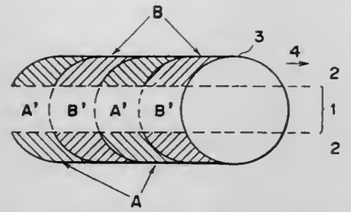
Continuation of Ser. No. 175,580, Dec. 30, 1993, abandoned. This application Nov. 2, 1995, Ser. No. 556,830

Claims priority, application Japan, Jan. 11, 1993, 5-002701

Int. Cl.[6] G11B *11/00*

U.S. Cl. 369—13 **4 Claims**

1. A magneto-optical disk in which information is recorded by forming a magnetic pit recording string by thermomagnetic recording on a recording region of a magnetic member and the information is read-out by detecting the recorded pits utilizing the photomagnetic effect, comprising:



cellularly divided regions provided at two sides outside and adjacent to user's the recording region on which a pit string is to be formed, wherein the respective directions of magnetization of said divided regions alternate in different directions.

5,644,557

AUDIO DATA RECORDING SYSTEM FOR RECORDING VOICE DATA AS AN OPTICALLY READABLE CODE ON A RECORDING MEDIUM FOR RECORDING STILL IMAGE DATA PHOTOGRAPHED BY A CAMERA

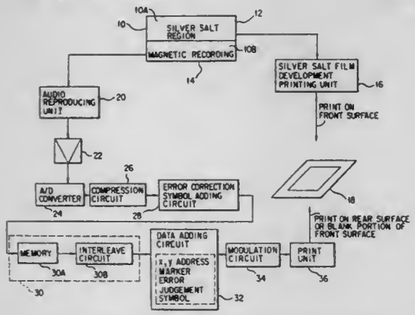
Yoshikazu Akamine, and Seiichi Wakamatsu, both of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 16, 1994, Ser. No. 357,938

Claims priority, application Japan, Dec. 22, 1993, 5-325366

Int. Cl.[6] G11B *13/00*

U.S. Cl. 369—14 **18 Claims**



1. An audio data recording/reproduction system comprising:

an independent, portable camera for respectively recording still image data on a silver salt region of a film and audio data on a magnetic recording region of said film;

a silver salt film developing/printing device for developing said still image data recorded in said silver salt region of said film, and for printing said developed still image data on a front surface of a photographic paper as visible data;

conversion means for reproducing said audio data recorded in said magnetic recording region of said film, and for converting said reproduced audio data into an optically readable code; and

a recording device for printing said optically readable code produced by said conversion means on a rear surface or a blank section of said front surface of said photographic paper.

5,644,558

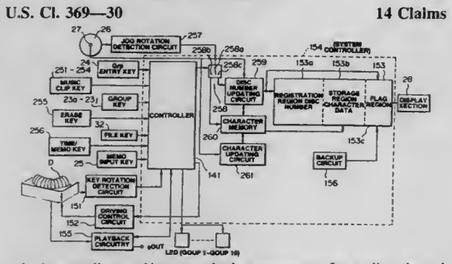
RECORDING AND/OR REPRODUCING APPARATUS FOR DISC-SHAPED RECORDING MEDIUM

Akihisa Inatani; Shuichi Nagano, both of Kanagawa; Kanji Mita, Tokyo; Shuji Minami, Kanagawa; Haruyuki Tamura, Tokyo; Tsutomu Watanabe, Ibaragi; Akira Katsuyama; Masami Ishikawa, both of Kanagawa, and Taiji Noshitani, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Division of Ser. No. 307,671, Feb. 19, 1995. This application May 10, 1996, Ser. No. 608,659

Int. Cl.[6] G11B *17/22*

U.S. Cl. 369—30 **14 Claims**



1. A recording and/or reproducing apparatus for a disc-shaped recording medium, comprising:

means for reproducing information data from a disc-shaped recording medium having a plurality of information data recorded thereon;

information designating means for designating desired information data from the plurality of information data recorded on the disc-shaped recording medium;

group designating means for designating a group corresponding to the information data designated by said designating means and for designating reproduction of the information data;

display means for displaying attributes of the group designated by said group designating means and displaying the information data constituting the group;

storage means for storing the attributes of the group designated by said group designating means and attributes of the information data constituting the group; and

control means for controlling said display means for displaying the attributes of the group designated by said group designating means and displaying the desired information data constituting the group and for controlling said storage means for storing the attributes of the group and the attributes of the information data, in a manner that, when the reproduction of the grouped information data is designated by said group designating means, said control means controls said reproducing means so that the information of the designated group is reproduced based upon the attributes stored in said storage means, said control means also controlling said display means for displaying the attributes of the reproduced information.

5,644,559

FLIP LATCH ASSEMBLY FOR MEDIA AUTOCHANGER

Leslie Christie, Jr., Greeley, and Gregg S. Schmidtke, Fort Collins, both of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

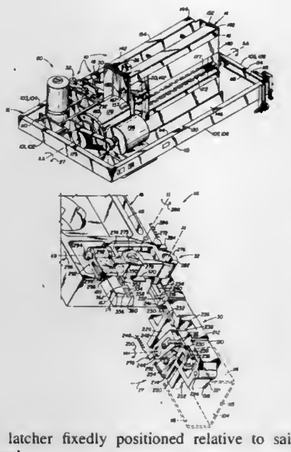
Filed Jan. 4, 1995, Ser. No. 368,465

Int. Cl.[6] G11B *17/04;15/68*

U.S. Cl. 369—36 **8 Claims**

8. A flip-latch assembly for a media autochanger having a media holder assembly which is rotatable relative to a media holder support frame, about a longitudinally extending, media holder flip axis, the media holder assembly including a chassis and a media engager longitudinally displaceable relative to said chassis and having an extended position and a retracted position, comprising:

a) a stud extending laterally outwardly from said chassis;



b) a stud latcher fixedly positioned relative to said support frame; and

c) a stud latcher tripper assembly actuatable by said media engager;

and further comprising a second stud positioned in laterally extending relationship with said chassis in diametrically opposed relationship with said first stud and wherein said stud latcher comprises:

a) a displaceable stud stop member having a first operating position in a rotational displacement path of said studs and a second operating position out of said rotational displacement path of said studs; and

b) a one-way gate member located proximate said stop member and having a first operating position in said rotational displacement path of said studs and a second operating position out of said rotational displacement path of said studs;

wherein said stud latcher tripper comprises:

a) a first pivot member pivotable about a first pivot axis extending transversely of said longitudinally extending, media holder flip axis, said first pivot member having a first, biased position and a second position pivotally displaced from said first position, said first pivot member being displaceable from said first position to said second position through longitudinal displacement of said media engager, said first pivot member being pivotally connected to a portion of said stud latcher;

b) a second pivot member pivotally mounted on said first pivot member and pivotable about a second pivot axis extending transversely of said first pivot axis, said second pivot member having a first, biased position and a second position pivotally displaced from said first position, said second pivot member being displaceable from said first position to said second position through rotational displacement of said media holder assembly.

5,644,560

THREE-BEAM DETECTING SYSTEM PHASE DIFFERENCE DETECTOR WHICH ELIMINATES PHASE DIFFERENCE ERROR

Koji Hori, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Division of Ser. No. 995,593, Dec. 22, 1992. This application Jun. 2, 1995, Ser. No. 459,353

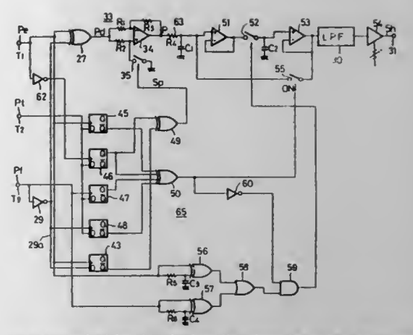
Claims priority, application Japan, Dec. 26, 1991, 3-344498; Jan. 8, 1992, 4-001699

Int. Cl.[6] G11B *7/095*

U.S. Cl. 369—44.34 **11 Claims**

1. A phase difference detecting apparatus, comprising:

(a) swinging direction discriminating means for discriminating on the basis of three beams obtained from a three-beam system optical head swinging directions in which tracks and said three beams are made perpendicular to one another;



(b) advance phase and delay phase detecting means for detecting an advanced or delayed phase by a side beam detecting signal obtained from side beam photo-detecting means on the basis of two side beams of said three beams;

(c) phase difference absolute value detecting means for detecting an absolute value of a phase difference on the basis of the detecting signal from said photo-detecting means;

(d) a polarity adding circuit connected to an output side of said phase difference absolute value detecting means and being controlled on the basis of a judged signal of said advance phase and delay phase detecting means to determine a polarity of an absolute value detecting output signal; and

sample and hold control signal generating means for generating a sample and hold control signal which discriminates a phase difference polarity between said two side beams on the basis of an output of said swinging direction discriminating means and an output of said advance phase and delay phase detecting means, and hold means responsive to the sample and hold control signal for holding a measurement error of a previous value of an error signal.

5,644,561

METHOD OF DISCERNING DISC IN COMPACT DISC DRIVE

Woog-Ig Son, Suwon, and Ki-Bong Yun, Anyang, both of Rep. of Korea, assignors to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Apr. 8, 1996, Ser. No. 628,938

Claims priority, application Rep. of Korea, Apr. 7, 1995, 8117/1995; Nov. 23, 1995, 43204/1995

Int. Cl.[6] G11B *27/36*

U.S. Cl. 369—58 **12 Claims**

9. An optical disk size detecting apparatus for determining the size of an optical disk loaded in a disk player, comprising:

a spindle motor for rotating an optical disk;

an optical pick-up device arranged to move along a radial line of said optical disk, when said optical disk is loaded in the disk player, to a predetermined position of said an optical disk to read information data stored on said optical disk loaded in the disk player; and

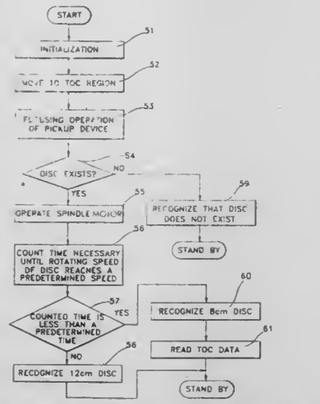
control means for controlling movement of the optical pick-up device, the rotation of the spindle motor, and for determining the size of said optical disk loaded in the disk player by:

determining first whether said optical disk is loaded in the disk player;

rotating said optical disk when said optical disk is determined as loaded in the disk player;

measuring the time for a rotating speed of said optical disk to reach a reference speed;

comparing the measured time with a reference time, when the rotating speed of said optical disk reaches the reference speed;



recognizing said optical disk loaded in the compact disk drive as a relatively small optical disk, when the measured time is less than the reference time; and

alternatively, recognizing said optical disk loaded in the compact disk drive as a relatively large optical disk, when the measured time is not less than the reference time.

5,644,562

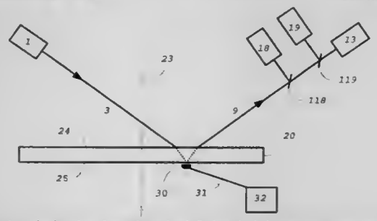
METHOD AND APPARATUS FOR MEASURING AND COMPENSATING BIREFRINGENCE IN ROTATING DISKS

Peter de Groot, Middletown, Conn., assignor to Zygo Corporation, Middlefield, Conn.

Filed Feb. 28, 1996, Ser. No. 608,258

Int. Cl.[6] G11B *7/00;* **G01B** *9/02*

U.S. Cl. 369—110 **39 Claims**



1. A polarization based optical flying height tester apparatus for measuring and compensating for birefringence in a rotating glass disk having a first surface upon which polarized light impinges and a reference surface opposed thereto, said apparatus comprising said disk and further comprising a polarized light source for providing an incident beam impinging on said first disk surface at a predetermined angle, said disk having a birefringence characteristic associated therewith, said incident beam comprising a plane of incidence defining a polarization basis vector to which is associated an orthogonal basis vector, said polarized light comprising both said polarizations, said disk refracting a first portion of said beam passing therethrough to a measurement point on said reference surface, said first portion of said refracted beam being reflected back from said reference surface through said glass disk and being refracted back through said glass disk first surface into space for providing a second refracted beam; phase detector means disposed above said first surface and optically aligned with said second refracted beam for measuring any difference in phase between said polarizations in said second refracted beam, said phase detector means comprising means for performing a polarization analysis on said disk at at least one position on said disk and for calculating at least one characteristic of said disk related to said associated birefringence characteristic thereof based on said polarization analysis; slider means disposed in close proximity to said reference surface; and means for positioning said slider means with respect to said measurement point for bringing said slider means adjacent to said reference surface at said measurement point, said positioning means comprising means for at least loading or unloading said slider means, said disposed slider means comprising a slider-disk interface with respect to said disk, said phase detector means further comprising means for applying said polarization analysis to said slider-disk interface and for determining the flying height based on said polarization analysis and said associated birefringence characteristic of said disk.

5,644,563

OPTICAL PICKUP SYSTEM

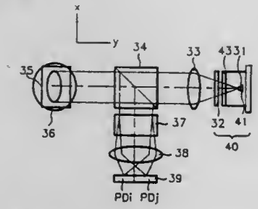
Keun Young Yang, Kyungki-do, Rep. of Korea, assignor to LG Electronics Inc., Seoul, Rep. of Korea

Filed Jun. 7, 1995, Ser. No. 478,751

Claims priority, application Rep. of Korea, Jun. 10, 1994, 13117/1994

Int. Cl.[6] G11B *7/135*

U.S. Cl. 369—112 **12 Claims**



1. An optical pickup system capable of reading out/recording information from/on a disc comprising:

a laser diode used as a light source;

a polarized beam splitter for totally reflecting beams of an S-wave component of the light emitted from said laser diode or reflected from said disc, and partially reflecting beams of a P-wave component while partially transmitting said beams of the P-wave component;

a grating placed between said laser diode and said polarized beam splitter for classifying said beams from said laser diode into one main beam and two sub-beams to allow the three beams to be incident to said polarized beam splitter;

a reflection mirror placed between said polarized beam splitter and said disc for reflecting the beams transmitted through said polarized beam splitter toward said disc, and reflecting the beams reflected from said disc toward said polarized beam splitter;

an objective lens placed between said reflection mirror and said disc of focusing the beams reflected by said reflection mirror onto said discs and for causing the beams reflected from said disc to form parallel beams;

a first photodetector having a plurality of split areas for detecting a focus error and a tracking error in accordance with the beams focusing on respective split areas;

a hologram element divided-by-two placed between said grating and said polarized beam splitter, said hologram element being formed of two semicircular holograms for allowing said three beams from said grating to be incident to said polarized beam splitter or diffracting said beams of said P-wave component transmitted through said polarized beam splitter to focus the diffracted beams on said first photodetector, one of said holograms having a reference light position at light-emitting point of said laser diode and an object light position set before passing said first photodetector, the other of said holograms having a reference light position at said light-emitting point of said laser diode and an object light position set after passing said first photodetector;

a second photodetector being partitioned into six split areas for detecting said information recorded on said disc in accordance with the beams focusing on respective split areas thereof; and

a Wollaston prism placed between said polarized beam splitter and said second photodetector for separating mixed beams of P-wave and S-wave components from said polarized beam splitter to allow the separated beams to be incident to said second photodetector.

5,644,564

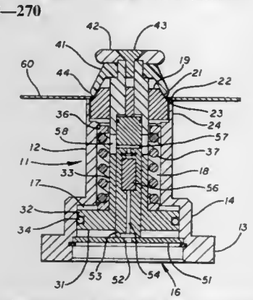
VACUUM CHUCK FOR ROTATING DATA DISCS

Roger Peters, Hayward, Calif., assignor to Phase Metrics, San Diego, Calif.

Filed Mar. 17, 1995, Ser. No. 406,163

Int. Cl.[6] G11B *17/028;25/04*

U.S. Cl. 369—270 **6 Claims**



1. A chuck that secures a disk that has a center opening and an inner diameter, comprising:

an arbor that supports the disk;

a vacuum system that pulls the disk onto said arbor;

a knob which has a tapered surface;

a piston assembly that moves relative to said knob and is pneumatically driven between a first position and a second position;

a bushing that is attached to said piston assembly and slides along said tapered surface of said knob such that when said piston assembly is in the first position said bushing is expanded to a position that is separated from the disk by a space but has a first diameter that is greater than the inner diameter of the disk to prevent removal of the disk, and when said piston assembly is in the second position said bushing is retracted to a second diameter to allow removal of the disk; and,

a positive pressure system that pushes said piston assembly to the second position.

5,644,565

OPTICAL RECORDING MEDIUM INCLUDING A PLURALITY OF DIFFRACTED GRATING CELLS

Toshiki Toda, Satte; Susumu Takahashi, Matsudo, and Fujio Iwata, Chiba, all of Japan, assignors to Toppan Printing Co., Ltd., Tokyo, Japan

Division of Ser. No. 232,072, Apr. 28, 1994, Pat. No. 5,570,338.

This application Jun. 7, 1995, Ser. No. 475,816

Claims priority, application Japan, Aug. 28, 1992, 4-230535

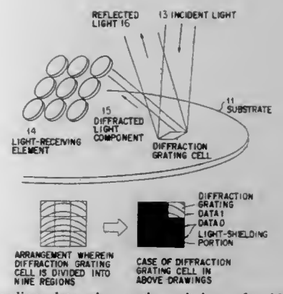
Int. Cl.[6] G11B *7/24*

U.S. Cl. 369—275.1 **12 Claims**

1. An optical information recording medium comprising:

a planar substrate; and

at least one cell comprising diffraction gratings formed in a surface region of said planar substrate, said surface region of said at least one cell being divided into a plurality of regions, the diffraction gratings of each of the plurality of regions having different grating pitches which are determined based on recording data, the grating pitches of said diffraction gratings being set such that a ratio of a wavelength to an intensity of a diffracted light component emerging from each region corresponds to a color of one point on a chromaticity diagram.



5,644,566

MAGNETO-OPTICAL RECORDING MEDIUM

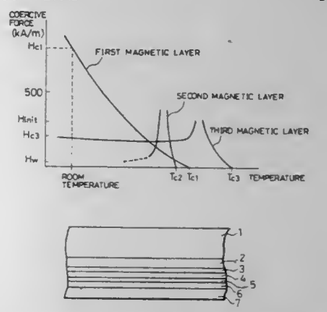
Junichiro Nakayama; Michinobu Mieda, both of Shiki-gun; Hiroyuki Katayama, Sakura; Junji Hirokane; Akira Takahashi, both of Nara, and Kenji Ohta, Kitakatsuragi-gun, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 2, 1995, Ser. No. 432,683

Claims priority, application Japan, May 24, 1994, 6-109943; May 24, 1994, 6-109948

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—275.2 **5 Claims**



1. A magneto-optical recording medium comprising:

a memory layer showing perpendicular magnetization within a first temperature range between room temperature and a Curie point thereof;

a writing layer showing perpendicular magnetization within a second temperature range between room temperature and a Curie point thereof which is higher than the Curie point of said memory layer, said writing layer having a coercive force smaller than a coercive force of said memory layer at room temperature; and

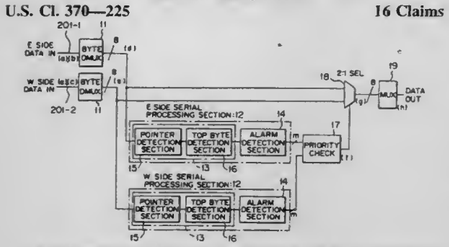
an intermediate layer between said memory layer and said writing layer, said intermediate layer showing in-plane magnetization at room temperature and perpendicular magnetization within a third temperature range within which the coercive force of said memory layer is smaller than the coercive force of said writing layer, said intermediate layer having a Curie point lower than the Curie point of said memory layer.

5,644,567

LINE SWITCHING METHOD AND LINE SWITCHING APPARATUS

Yoshihisa Ikeda, Osaka, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed May 1, 1995, Ser. No. 432,514
Claims priority, application Japan, Aug. 3, 1994, 6-182642
Int. Cl.[6] H04J *1/16*
U.S. Cl. 370—225 **16 Claims**



1. A line switching method for switching a plurality of multiplex transmission lines in response to line alarm information in transmission data of individual channels transmitted in said multiplex transmission lines for selecting, for each of the channels, one of said multiplex transmission lines, the method comprising the steps of:

comparing, for each of said multiplex transmission lines, pointer information with pointer offset information in time series to detect frame top positions of the individual channels in the multiplexed transmission data by serial processing;

detecting, in accordance with results of detection of the frame top positions, line alarm information of the individual channels in time series by serial processing; and

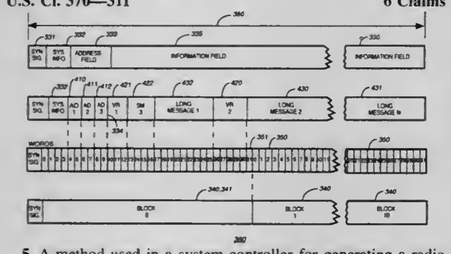
switching said multiplex transmission lines in a time series relationship for the individual channels in accordance with results of detection of the line alarm information for the individual multiplex transmission lines.

5,644,568

METHOD AND APPARATUS FOR ORGANIZING AND RECOVERING INFORMATION COMMUNICATED IN A RADIO COMMUNICATION SYSTEM

Douglas Irvin Ayerst, Delray Beach; Malik J. Khan, Boynton Beach, and Michael James Rudowicz, Delray Beach, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 15, 1995, Ser. No. 404,698
Int. Cl.[6] H04J *3/26*
U.S. Cl. 370—311 **6 Claims**



5. A method used in a system controller for generating a radio signal transmitted on a first radio channel, wherein the radio signal has short and long messages included in a plurality of control frames and data frames, each of the short and long messages having an address signal and related message information, and wherein a set of radio channels are used to transmit the radio signal, the method comprising the steps of:

generating an address field of a control frame having a set of address signals, wherein each of the set of address signals includes an address and a subvector values of which indicate, respectively, a selective call radio for which one of the short and long messages is intended, and a starting position of a data packet within the control frame;

generating an information field following the address field and having a set of data packets, wherein each data packet in the set of data packets has the starting position of the data packet indicated at least one subvector within the control frame, and wherein each data packet in the set of data packets is one of a vector packet and a short message packet, and wherein vector packets indicate starting positions of long messages within the plurality of control frames and data frames;

assembling each control frame comprising an address field and an information field;

assembling each data frame comprising a set of long messages, wherein each long message in the set of long messages has a starting position indicated by at least one vector packet in a control frame; and

transferring the control frames and data frames to a transmitter for radio transmission;

identifying from the set of radio channels a radio channel used for transmitting each control frame and each data frame; and

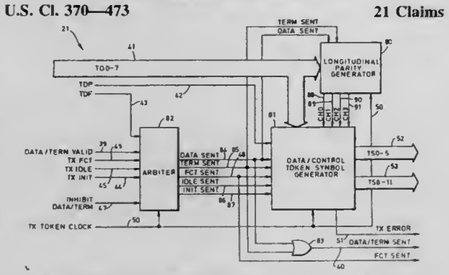
wherein in said step of generating an information field, an identification of the radio channel used for transmitting a data frame which includes a long message is included in the starting position of the long message.

5,644,569

TRANSMISSION OF MESSAGES

Christopher Paul Hulme Walker, Portishead, United Kingdom, assignor to SGS-Thomson Microelectronics Limited, Bristol, United Kingdom

Continuation of Ser. No. 259,521, Jun. 10, 1994, abandoned. This application Feb. 8, 1996, Ser. No. 598,402
Claims priority, application United Kingdom, Jun. 11, 1993, 9312136
Int. Cl.[6] H03M *13/00;* **H04L** *25/49*
U.S. Cl. 370—473 **21 Claims**



1. A method of encoding a message comprising at least one message packet, each message packet including at least a data portion and a terminator portion, the data portion comprising a plurality of four bit values defining data to be transmitted, the method comprising:

selecting, out of twenty available six-bit symbols having three ones and three zeros, sixteen data symbols and at least one control symbol;

converting each of the four bit values into a respective one of said six-bit data symbols;

generating from the four bit values a set of four checking bits for that message packet;

converting the four checking bits into a six-bit data symbol selected from said sixteen data symbols;

generating a terminator token comprising said six-bit symbol representing said four checking bits and said control symbol; and

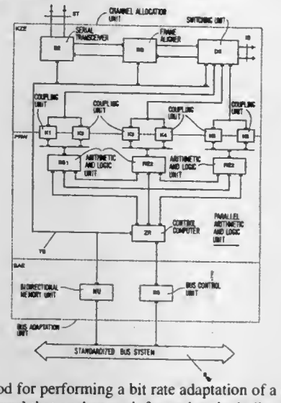
forming an encoded message packet comprising said six bit data symbols representing said four bit values and said terminator token.

5,644,570

ARRANGEMENT FOR CONNECTING A COMPUTER TO A TELECOMMUNICATIONS NETWORK, AND A METHOD FOR BIT RATE ADAPTATION IN THIS ARRANGEMENT

Peter Skalsky, Zurich, Switzerland, assignor to Siemens Aktiengesellschaft, Munich, Germany

Division of Ser. No. 955,712, Dec. 17, 1992, Pat. No. 5,432,792. This application Apr. 11, 1995, Ser. No. 420,216
Claims priority, application Switzerland, May 13, 1991, 01 418/91; Jul. 10, 1991, 02 047/91; Aug. 21, 1991, 02 453/91
Int. Cl.[6] H04J *3/22*
U.S. Cl. 370—468 **13 Claims**



1. A method for performing a bit rate adaptation of a data stream in a data channel that exchanges information, including at least one of user and control information, between at least two units operating at different transmission rates, each of the at least two units including a receiver unit, said method comprising the steps of:

dividing the data stream into at least one data set that is specified by a word length of an arithmetic and logic unit for processing the data stream of the data channel;

extracting the user information from the at least one data set; and

transferring the extracted user information between the receiver units.

5,644,571

APPARATUS FOR MESSAGE FILTERING IN A NETWORK USING DOMAIN CLASS

Michael J. Seaman, San Jose, Calif., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 4, 1993, Ser. No. 73,217
Claims priority, application United Kingdom, Jun. 15, 1992, 9212655.6
Int. Cl.[6] H04J *3/02*
U.S. Cl. 370—401 **12 Claims**

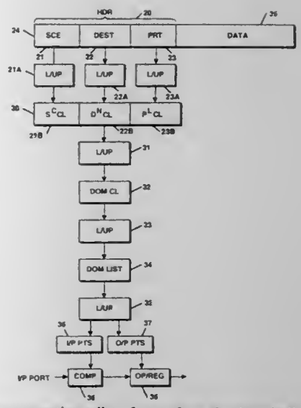
1. In an apparatus in an area network, message filtering means to direct a received message to at least one port for transmission there-through comprising:

means for generating respective class specifiers for said received message from a contents of a message source field, a message destination field, and a type of message field;

means for generating a class specification from the class specifiers;

means for generating a domain class from the class specification, said domain class having fewer entries than said class specifiers;

means for generating a domain list from the domain class, said domain list having more entries than said domain class, said domain list representing a subarea in the area network to which a message is to be sent; and



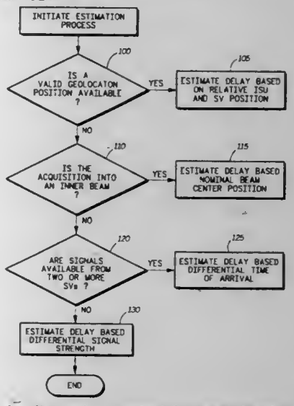
means for generating a list of ports from the domain list, said list of ports selected to have said message transmitted therethrough.

5,644,572

METHOD AND APPARATUS FOR APPROXIMATING PROPAGATION DELAY FOR USE IN TRANSMISSION COMPENSATION TO ORBITING SATELLITES

Keith Andrew Olds; Victor Hawes Cutler, both of Mesa, and Daniel Richard Tayloe, Phoenix, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 3, 1995, Ser. No. 538,762
Int. Cl.[6] H04J *3/06*
U.S. Cl. 370—324 **17 Claims**



7. In a subscriber unit, a method for approximating a transmit time advance offset for use by said subscriber unit in transmitting information to a first satellite, said first satellite having a receive time window wherein said first satellite recognizing said information transmitted by said subscriber unit and said first satellite projecting a plurality of beams upon the earth, said method comprising the steps of:

when said subscriber unit does not possess a current geolocation position of said subscriber unit, receiving in a current beam projected about said subscriber unit a first transmission comprising a first beam identifier and a first beam center, said current beam being one of said plurality of beams projected

by said first satellite and said first beam center defining a first geographical coordinate of an approximated center of said current beam;

when said first beam identifier denotes said current beam as being centrally located among said plurality of beams of said first satellite, defining said first beam center as an approximation of a subscriber unit location;

calculating a distance between said first satellite and said subscriber unit, said distance being derived from said subscriber unit location; and

estimating said transmit time advance offset from said distance between said first satellite and said subscriber unit.

5,644,573

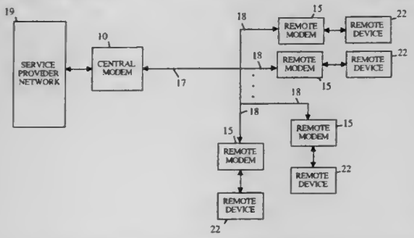
METHODS FOR COORDINATING UPSTREAM DISCRETE MULTI-TONE DATA TRANSMISSIONS

John A.C. Bingham, Palo Alto, and Krista S. Jacobsen, Mountain View, both of Calif., assignors to Amati Communications Corporation, San Jose, Calif.

Filed Jan. 20, 1995, Ser. No. 377,023

Int. Cl.[6] H04J *3/06*

U.S. Cl. 370—503 **24 Claims**



1. In a bi-directional data transmission system that facilitates communications between a plurality of remote units and a central unit on a common bi-directional transmission medium and using a frame based discrete multi-tone transmission scheme that has a multiplicity of discrete sub-channels for facilitating upstream communications between the plurality of remote units and the central unit, a method of synchronizing frames transmitted from a selected first remote unit to the central unit with frames transmitted from other remote units to the central unit, such that frame boundaries of the flames transmitted from the first remote unit arrive at the central unit substantially in synchrony with frame boundaries of frames transmitted from the other remote units, the method comprising the steps of:

periodically providing synchronized quiet times on the multiplicity of discrete sub-channels provided for facilitating upstream communications in accordance with the discrete multi-tone transmission scheme on the common bi-directional transmission medium; and

transmitting an unprompted broad band initialization signal on the common bi-directional transmission medium from the first remote unit to the central unit during a first selected synchronized quiet time, the broad band initialization signal including a plurality of initialization signals transmitted over distinct sub-channels, each of the sub-channels carrying data independently of other sub-channels on the common hi-directional transmission medium and independently of the other remote units, the broad band initialization signal having a frame boundary.

5,644,574

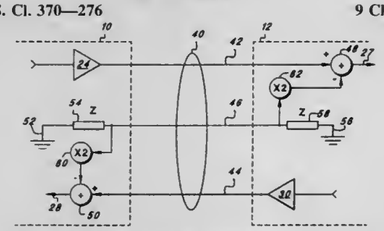
NOISE CANCELING SINGLE RETURN CONDUCTOR FOR MULTIPLE SIGNAL CARRYING CONDUCTORS

George A. Wiley, San Diego, Calif., assignor to Hughes Electronics, Los Angeles, Calif.

Filed Oct. 20, 1995, Ser. No. 546,363

Int. Cl.[6] H04B *1/56*

U.S. Cl. 370—276 **9 Claims**



1. A system for noise canceling using a single return conductor, the system comprising:

a first unit;

a full duplex communications path coupled to the first unit, the full duplex communications path comprising:

a forward signal carrying conductor;

a reverse signal carrying conductor; and

a single return conductor;

a first canceling impedance coupled between the single return conductor and a first unit ground;

a second unit coupled to the first unit via the full duplex communications path; and

a second canceling impedance coupled between the single return conductor and a second unit ground.

5,644,575

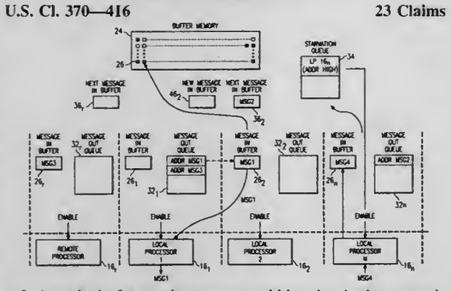
MANAGING MEMORY WITHIN A LOCAL TELECOMMUNICATIONS NETWORK

David W. McDaniel, Dallas, Tex., assignor to DSC Communications Corporation, Plano, Tex.

Filed Dec. 6, 1995, Ser. No. 567,967

Int. Cl.[6] H04L *12/56*

U.S. Cl. 370—416 **23 Claims**



1. A method of managing memory within a local telecommunications network, comprising the steps of:

associating a pool of buffers with a first local communication processor and a second local communication processor;

associating a message-in buffer from the pool of buffers with the second local communication processor;

associating a message-out queue with the first local communication processor;

placing a buffer location into the message-out queue associated with the first local communication processor, the buffer location corresponding to the message-in buffer associated with the second local communication processor, the message-in buffer associated with the second local communication processor containing a message destined for the first local communication processor;

assigning an empty buffer within the pool of buffers as a next message-in buffer associated with the second local communication processor.

5,644,576

MEDIUM ACCESS CONTROL SCHEME FOR WIRELESS LAN USING A VARIABLE LENGTH INTERLEAVED TIME DIVISION FRAME

Frederic Jacques Bauchot, St. Jeannet; Frederic Bernard Lefevre, Cagnes sur Mer, and Luc Louis Revardel, La Gaude, all of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 16, 1995, Ser. No. 442,424

Claims priority, application European Pat. Off., Oct. 26, 1994, 94480111

Int. Cl.[6] H04J *3/16*

U.S. Cl. 370—437 **35 Claims**



1. A digital communication system comprising:

a plurality of remote stations, each including a transceiver for communication over a shared medium;

a base station having a transceiver for communication over said shared medium with the transceivers of each of said plurality of remote stations, said base station including:

a means for defining a sequence of time frames during which messages and data are transmitted over said shared medium, each said time frame being divided into at least three types of time slots, a first type A time slot for outbound transmission from said base station to said plurality of remote stations, a second type B time slot for contention free inbound transmission from said plurality of remote stations to said base station and a third type C time slot for contention access by said plurality of remote stations for transmission over said shared medium said defining means further including

a means responsive to traffic load on said shared medium for allocating in a given time frame a variable number of said type A, type B and type C slots; and

a means for interleaving within said given time frame groups of consecutive slots of the same type.

5,644,577

PRESERVING DATA FRAME CONTINUITY ACROSS FULL-DUPLEX LAN INTERFACE WITH DISPARATE DATA CAPACITIES

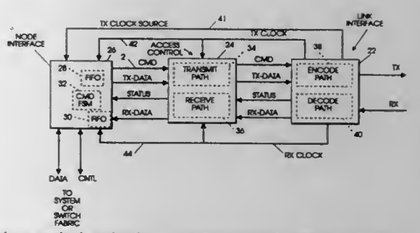
Kenneth Jussi Christensen, Apex; Lee Clyde Haas, Raleigh, and Francis Edward Noel, Jr., Durham, all of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 257,265, Jun. 9, 1994, abandoned. This application Nov. 6, 1995, Ser. No. 553,945

Int. Cl.[6] H04J *3/07;3/12*

U.S. Cl. 370—506 **20 Claims**

1. In a communication network having nodes and communication links that do not have matched data capacity and duplex transmission between a first node at one end of a communication link and a second node at the opposite end of the communication



link, a method at the first node for preserving the continuity of a first node data frame transmitted from the first node to the second node and for passing status information back from the first node to the second node, the status information indicating the status of buffering data strings at the first node, the data strings being a part of a second node data frame being transmitted to the first node from the second node, said method at the first node comprising the steps of:

(a) if data capacity of the link is greater than data buffering capacity of the first node, detecting where gaps will occur between data strings in the first node data frame to be transmitted from the first node to the second node;

(b) stretching the first node data frame by inserting first node status information in the gaps before the first node data frame is transmitted so that the first node data frame is continuous and becomes a stretched data frame;

(c) transmitting the stretched data frame;

(d) receiving at the first node the second node data frame transmitted from the second node;

(e) buffering at the first node the second node data frame received by step (d);

(f) detecting from step (e) the data filled state of a buffer buffering the second node data frame at the first node and providing status information indicating the data filled state of the buffer buffering the second node data frame at the first node; and

step (b) responsive to step (f) for inserting the first node status information into the gaps whereby data frame continuity is maintained and first node status information is passed back to the second node.

5,644,578

FAILURE MEMORY DEVICE

Toshimi Ohsawa, Gyoda, Japan, assignor to Advantest Corporation, Japan

Filed May 15, 1996, Ser. No. 648,244

Claims priority, application Japan, May 17, 1995, 7-118249

Int. Cl.[6] G06F *11/00*

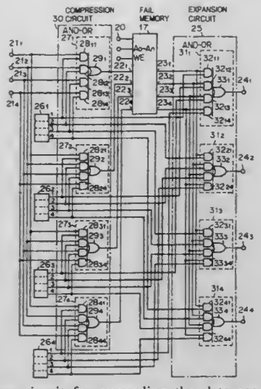
U.S. Cl. 371—21.2 **2 Claims**

1. A failure memory device wherein a failure data obtained from the result of logical comparison between a data read out from a memory under test and an expected value data is written in a failure memory which is a variable bit width memory, the content of said failure memory is read out to generate a mask pattern, and the writing of the failure data more than once in said failure memory is inhibited by said mask pattern, said failure memory device comprising:

n (n is an integer equal to or greater than 2) input terminals each supplied with a failure data;

registers each having a compression data inputted;

a compression circuit for compressing a plurality of data among failure data inputted to said n input terminals in accordance with the compression data inputted to said registers to supply the compressed data to said failure memory; and



an expansion circuit for expanding the data read out of said failure memory to n output terminals in accordance with the compression data in said registers to output the expanded data as said mask pattern.

5,644,579

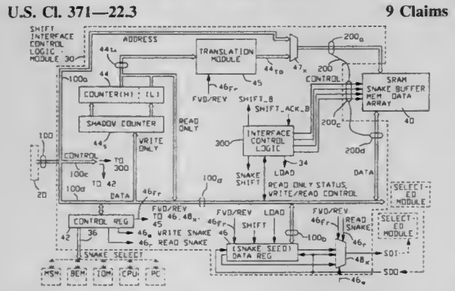
BI-DIRECTIONAL DATA TRANSFER SYSTEM ENABLING FORWARD/REVERSE BIT SEQUENCES

David William Sheppard, Mission Viejo, Calif., assignor to Unisys Corporation, Blue Bell, Pa.

Filed Dec. 22, 1994, Ser. No. 363,424

Int. Cl.[6] G01R *31/28*

U.S. Cl. 371—22.3 **9 Claims**



1. In a network connecting multiple digital modules each having a snake path therethrough wherein a maintenance interface module holds initialization data and serial diagnostic snake data in a memory data array (**40**), a system for initializing and testing the logic states of logic circuitry in a Selected digital module, comprising:

(a) means to shift data from said memory data array (**40**) via a data register means (**46**) into a snake path through said selected digital module;

(b) means to shift said data out of said snake path and into said data register means (**46**) for transfer to said maintenance interface module for diagnosis;

(c) said data register means including:

(c1) means to select whether data received will be written to said selected digital module in a forward order sequence of most significant bit (MSB) onto least significant bit (LSB) or in a reverse order sequence of LSB onto MSB.

5,644,580

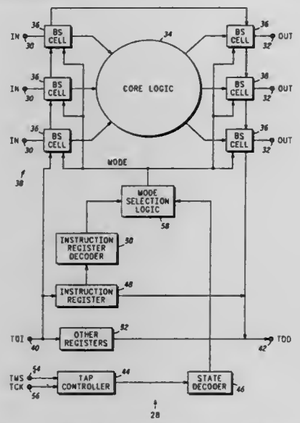
BOUNDARY-SCAN TESTABLE SYSTEM AND METHOD

Cary Richard Champlin, Chandler, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 158,345, Nov. 29, 1993. This application Jun. 17, 1996, Ser. No. 663,466

Int. Cl.[6] G01R *31/28*

U.S. Cl. 371—22.5 **21 Claims**



1. A method of testing an integrated circuit that includes at least one output pin, core logic, an instruction register, a test access port (TAP) controller operable in a plurality of states, including an UPDATE-DR state and a SHIFT-DR state, and a Boundary-Scan cell coupled between said core logic and said output pin, said method comprising steps of:

isolating said output pin from said core logic during said UPDATE-DR state when said instruction register contains an external test (EXTEST) instruction; and

coupling said output pin to said core logic during said SHIFT-DR state when said instruction register contains said EXTEST instruction.

5,644,581

METHOD AND APPARATUS FOR CONVERTING LOGIC TEST VECTORS TO MEMORY TEST PATTERNS

Robert Han Wu, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 26, 1995, Ser. No. 494,464

Int. Cl.[6] G06F *11/00*

U.S. Cl. 371—27 **21 Claims**

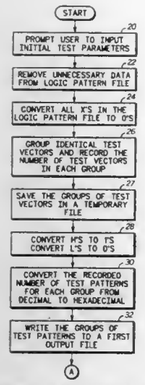
1. A method for testing an integrated circuit including both logic circuitry and a memory array on a memory tester, the method comprising the steps of:

providing logic test vectors for testing the logic circuitry;

determining whether to write or to read the logic test vectors to the integrated circuit being tested using a computer;

modifying the logic test vectors to a form that is readable by the memory tester using the computer;

storing the modified logic test vectors in a computer memory file; and



testing the logic circuitry on the memory, tester using the modified logic test vectors.

5,644,582

CONVERSION ARRANGEMENT FOR A MAGNETIC RECORDING/REPRODUCING APPARATUS OF THE D-TYPE

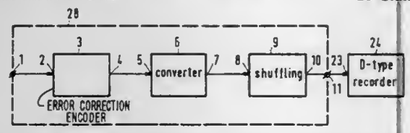
Adrianus J. M. Denissen; Wilhelmus H. A. Bruls, and Ludovicus M. G. M. Tolhuizen, all of Eidenhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 24, 1995, Ser. No. 393,750

Claims priority, application European Pat. Off., Mar. 9, 1994, 94200594

Int. Cl.[6] G11B *20/18;* **H03M** *13/00;13/22*

U.S. Cl. 371—37.4 **28 Claims**



1. An encoder arrangement for converting a digital data signal into a digital input signal which is suitable for being received by a digital video (D-type) magnetic recording apparatus for recording the digital input signal in tracks on a magnetic record carrier, the magnetic recording apparatus of the D-type comprising:

first error correction encoding means for carrying out an error correction encoding on the digital input signal;

first shuffling means for carrying out a data shuffling step on the digital input signal; and

channel encoding means for converting the digital input signal, after being processed in the error correction encoding means and the shuffling means, into a recording signal suitable for recording on the magnetic record carrier,

characterized in that the encodes arrangement comprises:

second error correction encoding means, having an input coupled to an input terminal of the encoder arrangement, and an output, for carrying out an error correction encoding step on packets of p m-bit digital words in the digital data signal applied to said input terminal, and for supplying error correction encoded packets of n m-bit digital words to said output, where n, m and p are integers larger than 1, and n>p;

conversion means, having an input and an output, for converting digital words contained in the digital signal applied to said input into converted digital words so as to obtain a converted digital output signal, and for supplying the converted digital output signal to said output; and

second shuffling means having an input coupled to the output of the conversion means and an output coupled to the output terminal of the encoder arrangement for carrying out a shuffling step on digital words contained in the converted digital output signal of the conversion means so as to obtain the digital input signal for the D-type recording apparatus.

5,644,583

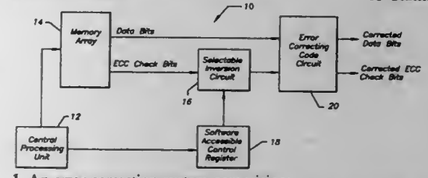
SOFT ERROR CORRECTION TECHNIQUE AND SYSTEM FOR ODD WEIGHT ROW ERROR CORRECTION CODES

Enrique Quique Garcia, and Sushama Mahesh Paranjape, both of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 950,620, Sep. 22, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 479,257

Int. Cl.[6] G11C *29/00*

U.S. Cl. 371—40.2 **11 Claims**



1. An error correction system comprising:

memory means for storing a word of digital data and at least one check bit;

control means for reading and inverting said data word and said check bit in said memory means;

inversion means responsive to said control means for selectively reinverting said check bit; and

means responsive to said reinverted check bit for correcting a bit error in said data word.

10. A method of correcting data errors including the steps of:

providing a word of digital data and at least one check bit;

reading and inverting said data word and said check bit;

selectively reinverting said inverted check bit; and

correcting errors in said data word in accordance with said selectively reinverted check bit.

5,644,584

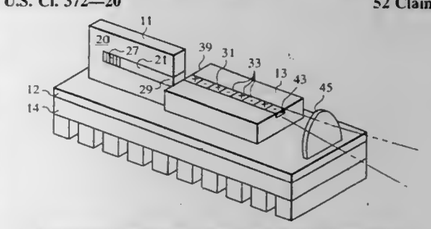
TUNABLE BLUE LASER DIODE

Derek W. Nam, Sunnyvale; David F. Welch, Menlo Park; Robert G. Waarts, Palo Alto, and Jo S. Major, San Jose, all of Calif., assignors to SDL, Inc., San Jose, Calif.

Continuation of Ser. No. 317,032, Oct. 3, 1994, abandoned. This application Mar. 29, 1996, Ser. No. 625,781

Int. Cl.[6] H01S *3/10*

U.S. Cl. 372—20 **52 Claims**



1. A frequency-converting, diode laser device comprising,

a semiconductor laser emitting a light beam of a first wavelength,

a nonlinear frequency converting material optically coupled to said lazer to receive said light beam and oriented for carrying out frequency conversion of said light beam received from said laser, said nonlinear frequency converting material having a temperature-dependent resonance wavelength band for

which light of a wavelength that coincides with said resonance wavelength band is efficiently converted by said material to light of a corresponding second wavelength,

temperature control means in thermal communication with said nonlinear frequency converting material for setting a temperature of said nonlinear frequency converting material to correspond to a selected resonance wavelength band with a desired corresponding second wavelength, and

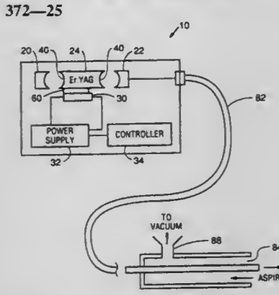
means for tuning said laser such that said first wavelength of said light beam emitted by said laser coincides with said selected resonance wavelength band of said nonlinear frequency converting material, whereby said light beam of said first wavelength from said laser is converted to an output beam of said desired corresponding second wavelength.

5,644,585

HIGH REPETITION RATE ERIBUM-YAG LASER FOR TISSUE ABLATION

Gerald M. Mitchell, Los Altos; Edward D. Reed, Sunnyvale; Greg J. Spooner, and Michael Hmelar, both of Palo Alto, all of Calif., assignors to Coherent, Inc., Santa Clara, Calif.

Continuation of Ser. No. 422,827, Apr. 17, 1995, abandoned.
This application Jul. 22, 1996, Ser. No. 685,972
Int. Cl.[6] A61N *5/06*
U.S. Cl. 372—25 **2 Claims**



1. A laser system comprising:

a first erbium doped solid state gain medium located with a first resonant cavity, wherein said first cavity has a first output coupler;

a second erbium doped solid state gain medium located within a second resonant cavity, wherein said second cavity has a second output coupler;

an optical pump means for periodically exciting said gain media to generate laser output pulses;

a power supply for energizing said pump means at a predetermined repetition rate and duration and wherein the transmission of each of the output couplers are selected to control the energy threshold input for lasing and wherein the design parameters of the cavities are selected to compensate for thermal lens effects such that stable laser output pulses are generated at a repetition rate of at least 50 hertz from each cavity;

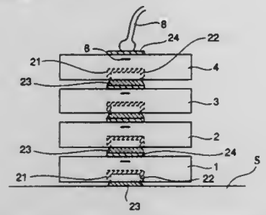
means for combining the laser output pulses from the two gain medium to achieve an interleaved output having a repetition rate of at least 100 hertz.

5,644,586

SEMICONDUCTOR LASER DEVICE AND METHOD OF FABRICATING SEMICONDUCTOR LASER DEVICE

Minoru Kawano, and Go Sakaino, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 12, 1995, Ser. No. 526,561
Claims priority, application Japan, Sep. 16, 1994, 6-221679
Int. Cl.[6] H01S *3/18*
U.S. Cl. 372—44 **3 Claims**



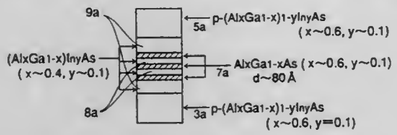
1. A semiconductor laser device comprising a stack of semiconductor laser chips, each semiconductor laser chip including opposite upper and lower surfaces, an upper electrode disposed on a portion of the upper surface, and a lower electrode disposed on a portion of the lower surface, wherein each of the semiconductor laser chips has a recess in its lower surface, each lower electrode is disposed in the recess of the corresponding semiconductor laser chip, and two adjacent semiconductor laser chips in the stack are connected such that the lower electrode of an upper laser chip is bonded to the upper electrode of a lower laser chip with solder.

5,644,587

SEMICONDUCTOR LASER DEVICE

Nobuaki Kaneno, and Syoichi Karakida, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 26, 1995, Ser. No. 430,800
Claims priority, application Japan, Apr. 28, 1994, 6-091257
Int. Cl.[6] H01S *3/19*
U.S. Cl. 372—45 **10 Claims**



1. A semiconductor laser device comprising:

a semiconductor substrate;

upper and lower cladding layers, each of the upper and lower cladding layers comprising a composition lattice-matching with the semiconductor substrate, said lower cladding layer being disposed on the semiconductor substrate; and

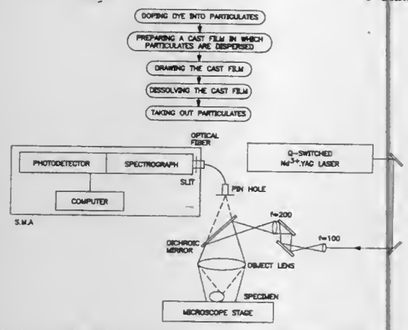
an active layer having a quantum well structure interposed between the upper and lower cladding layers and comprising alternating well layers and barrier layers and outermost guide layers, the layers of the active layer being arranged so that each well layer is sandwiched by two of the barrier layers and the guide layers sandwich the alternating well layers and barrier layers, wherein the guide layers lattice-match with the upper and lower cladding layers, the well layers have a lattice constant different from the lattice constant of the barrier layers, thereby applying a tensile strain to each of the well layers, and each of the upper and lower cladding layers, the guide layers, and the barrier layers include In, and the well layers are free of In.

5,644,588

MICROFINE LIGHT SOURCE

Hiroaki Misawa, Tokushima, Japan, assignor to Research Development Corporation of Japan, Saitama, Japan

Filed Mar. 27, 1995, Ser. No. 411,145
Claims priority, application Japan, Mar. 26, 1994, 6-079600
Int. Cl.[6] H01S *3/06*
U.S. Cl. 372—66 **6 Claims**



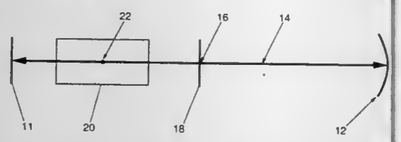
1. A microfine light source comprising a means for producing a non-spherical particulate doped with a laser dye and having a shape such that an axial ratio of a larger axis of the non-spherical particulate to an axial ratio of a smaller axis of the non-spherical particulate is greater than 1 and wherein the doped non-spherical particle emits light at an increased frequency and relative intensity upon irradiation with a laser beam due to the non-spherical shape of the particulate, such that there is a substantial increase in the number of laser emission peaks and wherein oscillation peaks occur at shorter wavelengths in the emission spectrum of said non-spherical particulate.

5,644,589

SOLID STATE LASER OPTIMIZED FOR MULTIMODE OPERATION

Douglas W. Anthon, Wheaton, Ill., assignor to ATx Telecom Systems, Inc., Naperville, Ill.

Filed Dec. 22, 1995, Ser. No. 577,421
Int. Cl.[6] H01S *3/08*
U.S. Cl. 372—92 **25 Claims**



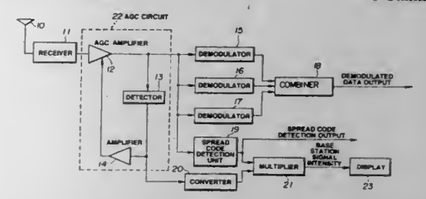
1. A solid state laser for generating a laser wave having multiple of modes about a desired laser wavelength, the laser system comprising: a pump source for generating a pump wave, an input mirror and an output coupler defining a laser cavity, the input mirror transmitting a pump wave into the laser cavity, the laser cavity having an optical path and an optical center therein, the laser cavity having at least one optically transmissive surface disposed at the optical center of the laser cavity such that the number of selected modes in the laser cavity is maximized, said at least one optically transmissive surface having a highest reflectivity of optical elements disposed within the laser cavity and normal to the optical path; and a solid state gain medium absorbing the pump wave and generating the laser wave which travels along the optical path in the laser cavity, the output coupler transmitting a portion of the laser wave out of the laser system, the gain medium having an active region whose center is disposed on the optical path midway between the input mirror and the said at least one optically transmissive surface, thereby optimizing multimode operation of the laser cavity.

5,644,590

SPREAD SPECTRUM COMMUNICATION APPARATUS AND SIGNAL INTENSITY DETECTION APPARATUS

Takchiro Sugita, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 21, 1995, Ser. No. 391,064
Claims priority, application Japan, Feb. 23, 1994, 6-025264
Int. Cl.[6] H04B *1/707*
U.S. Cl. 375—200 **6 Claims**



1. A spread spectrum communication apparatus for communication by a spread spectrum communication system with a plurality of communication units comprising:

reception means for receiving signals of a frequency channel including a target communication unit;

automatic gain control means for controlling a signal intensity of the frequency channel received by said reception means;

spread code detection means for detecting a signal intensity of the spread spectrum code of the target communication unit from an output signal of said automatic gain control means; and

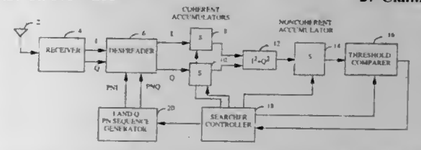
synthesis means for combining a gain control signal from said automatic gain control means with the signal intensity as detected by said spread code detection means to find a reception intensity.

5,644,591

METHOD AND APPARATUS FOR PERFORMING SEARCH ACQUISITION IN A CDMA COMMUNICATIONS SYSTEM

Todd R. Sutton, San Diego, Calif., assignor to Qualcomm Incorporated, San Diego, Calif.

Continuation of Ser. No. 283,304, Jul. 29, 1994, abandoned.
This application May 2, 1996, Ser. No. 643,226
Int. Cl.[6] H04B *15/00;* **H04K** *1/00;* **H04L** *27/30*
U.S. Cl. 375—200 **27 Claims**



1. In a direct sequence spread spectrum receiver, a method for for processing a received signal, comprising the steps of:

calculating a first set of signal correlation energy values for said received signal despread according to a first set of PN sequences;

comparing said first set of signal correlation energy values against a first threshold value;

selecting a second set of PN sequences in accordance with said first set of signal correlation energy values;

calculating a second set of signal correlation energy values for said received signal despread according to said second set of

PN sequences, wherein said second set of PN sequences is a subset of said first set of PN sequences; and

selecting a synchronized PN sequence from said second set of PN sequences in accordance with said second set of signal correlation energy values; and

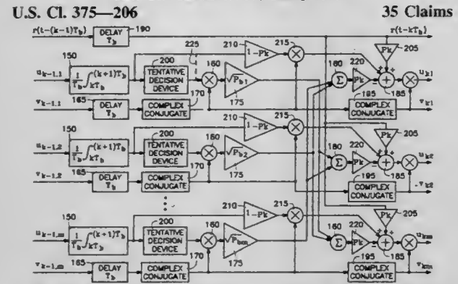
demodulating said received signal in accordance with said selected synchronized PN sequence.

5,644,592

PARALLEL INTERFERENCE CANCELLATION FOR CDMA APPLICATIONS

Dariush Divsalar, Pacific Pallisades; Marvin K. Simon, La Canada, both of Calif., and Dan Raphaeli, Tel Aviv, Israel, assignors to California Institute of Technology, Pasadena, Calif.

Filed Apr. 24, 1995, Ser. No. 428,306
Int. Cl.[6] H04B *1/707;* **H04J** *13/04*
U.S. Cl. 375—206 **35 Claims**



35. An apparatus for decoding a spread spectrum composite signal, said composite signal comprising plural user signals that have been spread with plural respective codes, wherein each user signal is despread, filtered to produce a signal value, analyzed to produce a tentative decision value, respread, summed with all other respread signals to produce combined interference signals, comprising:

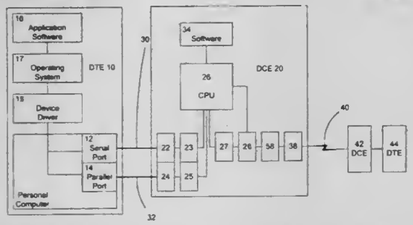
a combiner for combining a portion of each signal value with said combined interference signals and said composite signal to produce an estimate of a respective user signal whereby a portion of information contained in said user signal is preserved.

5,644,593

HIGH PERFORMANCE COMMUNICATIONS INTERFACE

Jay Patrick Bailey, North Easton; Brian J. Copley, Mansfield, and Mark J. Freitas, East Walpole, all of Mass., assignors to Microcom Systems, Inc., Burbank, Calif.

Filed Sep. 2, 1994, Ser. No. 300,490
Int. Cl.[6] H04B *1/38*
U.S. Cl. 345—222 **36 Claims**



1. A data communications system having at least one mode of operation for bidirectionally transmitting data including control-status information at a high performance rate between said system and data terminal equipment including at least one equipment parallel port, said system comprising:

control processing means for controlling the operation of said data communications system;

at least one system parallel port for coupling said communications system to said equipment parallel port of said data terminal equipment so as to create a parallel interface through which data can be transmitted in parallel data units between said system and equipment in accordance with a predefined data communication protocol;

means, controlled by said control processing means, for transmitting data in said parallel data units through said system parallel port to said equipment parallel port, and for receiving data in said parallel data units through said system parallel port from said equipment parallel port;

means for bidirectionally transmitting said data between said data communications system and said data terminal equipment according to said predefined data communication protocol; and

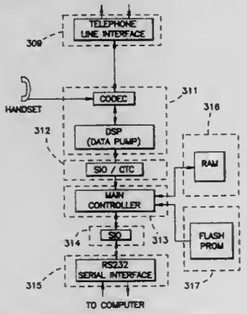
means for emulating a serial interface between said data communications system and said data terminal equipment through said parallel interface.

5,644,594

POWER-CONSERVING MODEM

Greg Johnson, Fridley; Richard David Johnson, Maplewood, and David A. Weinzierl, Mounds View, all of Minn., assignors to Multi-Tech Systems, Inc., Mounds View, Minn.

Division of Ser. No. 87,164, Jul. 2, 1993. This application Oct. 25, 1995, Ser. No. 548,005
Int. Cl.[6] H04B *1/38;* **H04L** *5/16*
U.S. Cl. 375—222 **3 Claims**



1. A power-conserving modem, comprising:

communications interface means connected for communicating with a local computer and operable for transferring data and commands between the local computer and the modem;

telephone line interface means including a data pump circuit for connection to a telephone line;

control means connected to the telephone line interface means and the communications interface means for executing operating code to control the modem;

memory means connected to the control means for storing the operating code;

power saving means connected to the control means for conserving power when the modem is not in use, the power saving means comprising:

first oscillator means for providing a first clock signal to the control means during use of the modem;

second oscillator means for providing a second clock signal having a frequency which is switchable between a first frequency and a second frequency to the data pump circuit;

the modem further for operating in a first power consumption mode when the first clock signal is provided to the control means and the second clock is connected to the data pump circuit and switched to the first frequency;

the modem further for operating in a second power consumption mode when the first clock signal is not provided to the control means and the second clock is connected to the data pump circuit and switched to the second frequency; and

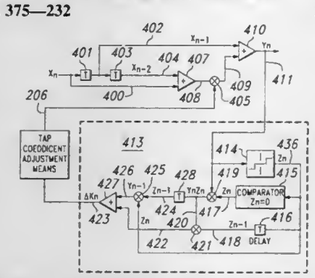
wake up means connected to the control means and the telephone line interface means and operable for causing the control means to switch from a second power consumption mode to a first power consumption mode when a ring signal is detected on the telephone line.

5,644,595

METHOD AND APPARATUS FOR AN ADAPTIVE THREE TAP TRANSVERSAL EQUALIZER FOR PARTIAL-RESPONSE SIGNALING

Richard G. Yamasaki, Torrance, and Tzu-Wang Pan, Irvine, both of Calif., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 217,493, Mar. 24, 1994, Pat. No. 5,467,370. This application Jun. 2, 1995, Ser. No. 456,654
Int. Cl.[6] H03H *7/30;* **G11B** *5/035*
U.S. Cl. 375—232 **23 Claims**



1. An apparatus for equalizing a channel comprising:

equalizing means coupled to said channel, said equalizing means receiving at least one coefficient signal and providing an equalized output signal; and

equalizer update means coupled to said equalizing means, said equalizer update means receiving said equalized output signal and providing said at least one coefficient signal based upon at least one past value of said equalized output signal and at least one present value of said equalized output signal, said equalizer update means comprising masking means coupled to said equalized output signal, said masking means suppressing an error signal when said equalized output signal lies beyond a specified range, said error signal based on said equalized output signal.

5,644,596

METHOD AND APPARATUS FOR FREQUENCY SELECTIVE ADAPTIVE FILTERING

Gilbert C. Sih, San Diego, Calif., assignor to Qualcomm Incorporated, San Diego, Calif.

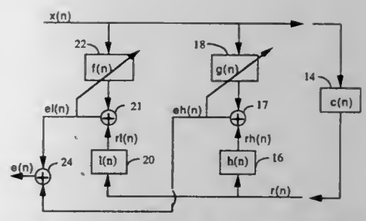
Continuation of Ser. No. 189,819, Feb. 1, 1994, abandoned. This application Sep. 13, 1995, Ser. No. 528,391
Int. Cl.[6] H03H *7/30*
U.S. Cl. 375—232 **6 Claims**

1. An echo canceller for cancelling echo in a far-end signal characterized by a frequency spectrum, comprising:

a plurality of bandpass filter means, each bandpass filter means of said plurality of bandpass filter means for receiving an echo signal and for subband filtering said echo signal to provide a corresponding subband echo signal for a corresponding subband of the frequency spectrum;

a plurality of adaptive filter means, each adaptive filter means of said plurality of adaptive filter means for receiving the frequency spectrum of the far-end signal and generating a subband echo signal estimate for a corresponding subband of the frequency spectrum in accordance with filter taps values wherein said filter tap values of each of said plurality of adaptive filter means is determined in accordance with said far-end signal; and

a plurality of subtracting means, each of said subtracting means for receiving a corresponding one of said subband echo signals and a corresponding one of said subband echo signal estimates and for subtracting said subband echo signal estimate from said subband echo signal to provide a corresponding subband echo canceled signal.

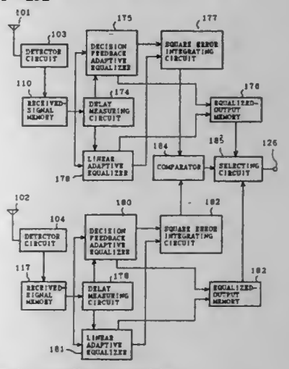


5,644,597

ADAPTIVE EQUALIZER AND ADAPTIVE DIVERSITY EQUALIZER

Koji Ueda, Kanagawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 292,612, Aug. 18, 1994, Pat. No. 5,541,956. This application Apr. 22, 1996, Ser. No. 636,061
Claims priority, application Japan, Sep. 10, 1993, 5-226004
Int. Cl.[6] H03H *7/30;7/40*
U.S. Cl. 375—232 **1 Claim**



1. An adaptive equalizer comprising:

a decision feedback adaptive equalizer including an equalization filter part, a decision part having an input connected to the output of said equalization filter part and a tap-coefficient-update part which updates the tap coefficients of said equalization filter part in accordance with a tap-coefficient update algorithm, said equalization filter part having two linear transversal filters, that is, a feedforward filter and a feedback filter;

a linear adaptive equalizer including an equalization filter part having a linear transversal filter, a decision part and a tap-coefficient-update part which updates the tap coefficients of said equalization filter part in accordance with a tap-coefficient update algorithm;

a delay measuring circuit for measuring a multipath propagation characteristic of a channel; and

means for activating either said decision feedback adaptive equalizer or said linear adaptive equalizer based on the result of measurement by said delay measuring circuit.

5,644,598

SWITCHING ARRANGEMENT FOR COUPLING A TRANSMITTING UNIT TO A TRANSMISSION LINE

Werner Bidese, Zurich, Switzerland, assignor to Siemens Schweiz AG, Zurich, Switzerland

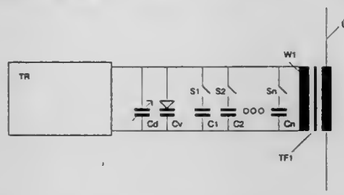
PCT No. PCT/CH93/00125, § 371 Date Jan. 11, 1994, § 102(e) Date Jan. 11, 1994, PCT Pub. No. WO93/25011, PCT Pub. Date Dec. 9, 1993

PCT Filed May 18, 1993, Ser. No. 175,373

Claims priority, application Switzerland, May 26, 1992, 01695/92

Int. Cl.[6] H04B *3/00;* H04L *25/00*

U.S. Cl. 375—258 11 Claims



1. A switching arrangement for coupling a transmitting unit, that generates a signal to be transmitted, to a transmission line, comprising a transformer having a primary winding that is connected with the transmitting unit and a secondary winding that is part of the transmission line, and a parallel resonance circuit which is tuneable to a carrier frequency of the signal to be transmitted, the primary winding of the transformer being part of the parallel resonance circuit.

5,644,599

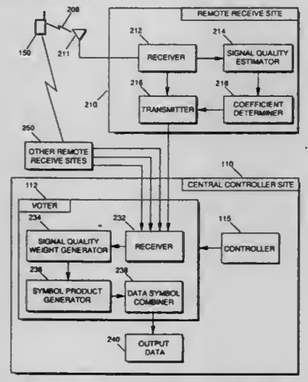
MULTISITE DIGITAL RADIO COMMUNICATION SYSTEM WITH SIGNAL DIVERSITY

Garry Carson Hess, Elgin, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 25, 1994, Ser. No. 345,059

Int. Cl.[6] H04B *7/02*

U.S. Cl. 375—267 22 Claims



1. In a digital radio communications system having a receive site for providing signal diversity, a method comprising the steps of:

receiving data representing data symbols on a wireless communication channel;

determining a signal quality for the data received;

determining coefficients of a time domain function defining the signal quality of the data received, the time domain function and corresponding coefficients describing variations in the signal quality over time; and

transferring, to a central site, the data and coefficients of the time domain function.

5,644,600

MULTI-VALUED SIGNAL DECODING CIRCUIT HAVING BIT SYNCHRONIZATION SIGNAL TIMING TRANSITION WHICH IS SAMPLED AND HELD

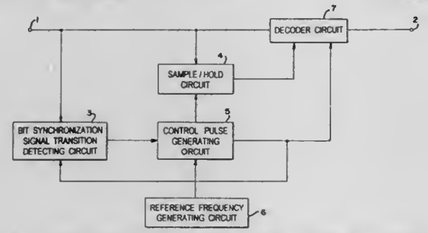
Kazuo Kawal, Yokohama, Japan, assignor to General Research of Electronics, Inc., Tokyo, Japan

Filed Nov. 8, 1994, Ser. No. 336,394

Claims priority, application Japan, Nov. 8, 1993, 5-302320

Int. Cl.[6] H04L *25/34*

U.S. Cl. 375—286 5 Claims



1. A multi-valued signal decoding circuit for decoding a multi-valued data signal transmitted in the form of a packet signal comprising:

a bit synchronization signal transition detecting circuit for detecting the timing of a transition of the bit synchronization signal included in said multi-valued data signal by using a detection output signal obtained from the detection of a repetition of "1, 0" of said bit synchronization signal;

a control pulse generating circuit for generating a sampling pulse signal on the basis of said detected timing;

a sample/hold circuit for sampling said bit synchronization signal by using said sampling pulse signal and holding the sampled levels; and

a decoder circuit for decoding said multi-valued data signal by using the sampled and held levels as decoding reference voltages.

5,644,601

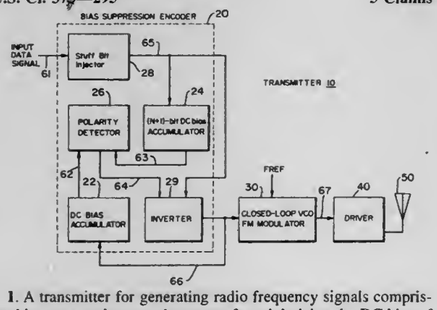
METHOD AND APPARATUS FOR BIAS SUPPRESSION IN A VCO BASED FM TRANSMISSION SYSTEM

Dean M. Kawaguchi, San Jose, Calif., assignor to Symbol Technologies, Inc., Holtsville, N.J.

Filed Oct. 31, 1994, Ser. No. 332,221

Int. Cl.[6] H04L *27/04;25/49*

U.S. Cl. 375—295 5 Claims



1. A transmitter for generating radio frequency signals comprising bias suppression encoder means for minimizing the DC bias of a digital signal and generating an encoded digital signal having a minimized DC bias thereby and a closed loop VCO for generating

a time variant frequency signal from said encoded digital signal, wherein said bias suppression encoder means comprises:

stuff bit injecting means for adding a stuff bit to an N-bit block of said digital signal to produce an (N+1) bit block of an injected digital signal;

DC bias accumulation means for generating a running sum of the logic states of said encoded digital signal;

(N+1)-bit DC bias accumulation means for generating an (N+1)-bit sum of the logic states of said (N+1)-bit block of said injected digital signal;

polarity detector means for detecting whether the polarities of said running sum and said (N+1)-bit are the same; and

inverter means for inverting said (N+1)-bit block of said injected digital signal when said polarity detector means detects that said running sum and said (N+1)-bit sum are the same polarity, thereby generating said encoded digital signal.

5,644,602

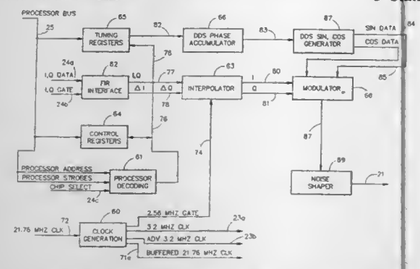
DIRECT DIGITAL FREQUENCY SYNTHESIZER FOR USE IN A SUBSCRIBER UNIT OF A WIRELESS DIGITAL COMMUNICATION SYSTEM

David Norton Critchlow, San Diego, and Karle Joseph Johnson, Carlsbad, both of Calif., assignors to InterDigital Technology Corporation, Wilmington, Del.

Division of Ser. No. 222,670, Apr. 4, 1994, which is a continuation of Ser. No. 940,662, Sep. 4, 1992, Pat. No. 5,325,396, which is a continuation of Ser. No. 658,065, Feb. 20, 1991, Pat. No. 5,146,473, which is a continuation of Ser. No. 394,497, Aug. 14, 1989, Pat. No. 5,008,900. This application May 22, 1995, Ser. No. 445,082

Int. Cl.[6] G06F *1/035;* H04L *27/20*

U.S. Cl. 375—308 3 Claims



1. A digital frequency synthesizer for use in a subscriber unit of a wireless digital communication system comprising:

a processor, for providing an output phase signal corresponding to a selected output digital frequency;

means for buffering said phase signal;

lookup table means comprising a memory device having two sets of predefined stored values pertaining to the amplitude of a signal for a single quadrant, wherein said predefined stored values comprise coarse angle approximations and fine angle approximations;

signal generator means for receiving said phase signal and generating sine and cosine waveforms utilizing amplitude values obtained from said lookup table means, wherein said phase signal includes phase data and specifies the quadrant and the algebraic sign of the phase data;

said signal generator means accessing said lookup table means differently depending upon the quadrant and sign of the phase data such that the lookup table means provides an amplitude value from said sets of predefined stored values based upon the phase data;

means for combining the sine and cosine waveforms to produce said selected output digital frequency; and

means for modulating said digital frequency.

5,644,603

MAXIMUM-LIKELIHOOD SEQUENCE ESTIMATOR WITH VARIABLE NUMBER OF STATES

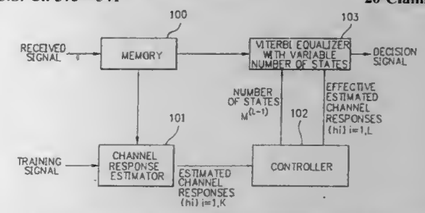
Akihisa Ushirokawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 7, 1995, Ser. No. 499,402

Claims priority, application Japan, Jul. 7, 1994, 6-155921

Int. Cl.[6] G06F *11/10*

U.S. Cl. 375—341 20 Claims



1. A maximum-likelihood sequence estimator with a variable number of states for use in a burst transmission, comprising:

first means for estimating channel responses every burst;

second means for estimating a number of components having an effective power among the estimated channel responses; and

third means for carrying out a maximum-likelihood sequence estimation on the basis of a trellis diagram with a number of states designated and the estimated channel responses,

the number of states being determined every burst on the basis of the number of the components having the effective power.

5,644,604

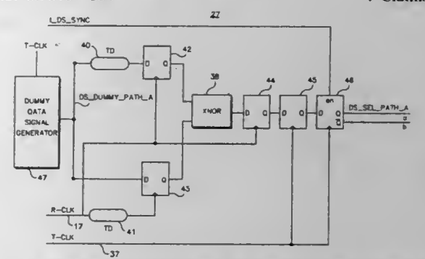
DIGITAL PHASE SELECTOR SYSTEM AND METHOD

Jeffrey Dale Larson, San Jose, Calif., assignor to Hal Computer Systems, Inc., Campbell, Calif.

Filed Nov. 14, 1994, Ser. No. 338,397

Int. Cl.[6] H04L *7/00*

U.S. Cl. 375—354 7 Claims



1. An apparatus for synchronizing the transfer of data between a transmitting unit having a first clock signal and a receiving unit having a second clock signal, said first and second clock signals having substantially the same frequency and are out of phase, the apparatus comprising:

a plurality of data paths coupled between the transmitting unit and the receiving unit, for selectively transferring data signals between the transmitting unit and the receiving unit;

a data path selector, disposed to receive the first and second clock signals, for generating first and second control signals, said data path selector, including:

a dummy data signal generator, disposed to receive said first clock signal, for generating a dummy data signal representing data transitions on one of said data paths in response to said first clock signal;

a first delay unit, having an output and disposed to receive said dummy data signal, for transmitting said dummy data signal after a first delay on said first delay unit output;

a first latch, having an output and an input that is coupled to said first delay unit output, for transmitting a first signal,

having a first value, that is equal to said dummy data signal on said first latch output at a transition of said second clock signal;

a second delay unit, having an output and disposed to receive said second clock signal, for transmitting said second clock signal after a second delay on said second delay unit output;

a second latch, having an output and an input that is coupled to said dummy data signal generator, for transmitting a second signal, having a second value, that is equal to said dummy data signal on said second latch output, at a transition of said second clock signal received from said second delay unit; and

a control signal generator for generating said first control signal if said first value and said second value are equal and for generating said second control signal if said first value and said second value are not equal.

5,644,605

JITTER ATTENUATOR

Frank A. Whiteside, Coppell, Tex., assignor to Dallas Semiconductor Corp., Dallas, Tex.

Continuation of Ser. No. 209,138, Mar. 9, 1994, abandoned, which is a continuation of Ser. No. 612,648, Nov. 13, 1990, abandoned. This application Jun. 27, 1995, Ser. No. 495,710

Int. Cl.[6] H03D *3/18*

U.S. Cl. 375—375 **7 Claims**



2. A jitter attenuator, comprising:

a first phase-frequency comparator having at least two inputs, one input connected to a first node and one input connected to a second node and having at least two outputs;

a second phase-frequency comparator having at least two inputs, one input connected to an output of a first inverter and one input connected to an output of a second inverter, wherein an input of said first inverter is connected to said first node and wherein an input of said second inverter is connected to said second node, said second phase-frequency comparator also having at least two outputs;

a first logic device having a first input and a second input, said first input being connected to a first output of said first phase-frequency comparator and said second input being connected to a corresponding first output of said second phase-frequency comparator;

a second logic device having a first input and a second input, said first input being connected to a second output of said first phase-frequency comparator and said second input being connected to a corresponding second output of said second phase-frequency comparator; and

wherein said inputs of said second phase-frequency comparator are logical opposites of said inputs of said first phase-frequency comparator.

5,644,606

RECEIVER WITH TWO SYNCHRONIZATION LOOPS

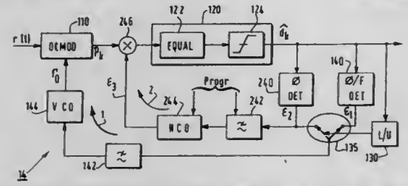
Georges Martinez, Caen, and Jean-Michel Guillaud, Montgeron, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 24, 1995, Ser. No. 518,872

Claims priority, application France, Aug. 25, 1994, 94 10278

Int. Cl.[6] H03D *3/24*

U.S. Cl. 375—376 **16 Claims**



1. A signal transmission system comprising a receiving device which includes carrier synchronizing means for estimating and compensating for synchronization errors between a local carrier and a modulated input signal, while the device further includes input signal demodulation means which produce a demodulated signal, and processing means for recovering estimated symbols from the demodulated signal, the synchronizing means comprising a first correction loop which includes, on the one hand, phase/frequency detection means for producing a first error signal, first low-pass filter means which have a first passband for filtering the first error signal, which filtered first error signal corrects the synchronization errors in an unlocked mode, and, on the other hand, means for generating the local carrier, and a second correction loop which includes phase detection means which produce a second error signal which corrects the synchronization errors in a locked mode, and means for controlling the loops and for putting the synchronizing means either in the unlocked mode or in the locked mode, wherein the second loop includes

second low-pass filter means for filtering the second error signal, which second low-pass filter means have a passband which is wider than the first passband to provide that the synchronization is robust to phase noise,

transforming means for transforming the second error signal, after it has been filtered by the second filter means, into a phase correction signal, while the the phase detection means is connected to the output of the processing means,

and mixing means connected between the demodulation means and the processing means, for mixing the demodulated signal with the phase correction signal.

5,644,607

AUTOMATIC REFUELING APPARATUS

Kunihiko Iwama, Hitachinaka, and Yutaka Kometani, Hitachi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

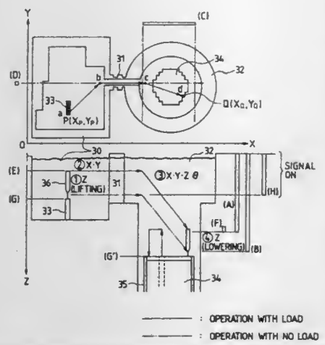
Filed Mar. 21, 1996, Ser. No. 590,557

Claims priority, application Japan, Mar. 27, 1995, 7-067822

Int. Cl.[6] G21C *19/18*

U.S. Cl. 376—268 **10 Claims**

7. An automatic refueling method for automatically transferring fuel assemblies between a fuel pool and a reactor core in a nuclear power plant, using a traveling carriage moving on an X-Y axis in a horizontal plane between the reactor core and the fuel pool in said nuclear power plant, a fuel assembly grappling apparatus provided at said traveling carriage and moved in a Z axis direction perpendicular to said X-Y axis horizontal plane, a rotation machine provided at said traveling carriage to rotate said fuel assembly grappling apparatus around said Z axis in a θ direction, and driving means for moving said traveling carriage, said fuel assembly grappling apparatus and said rotation machine in each of said X, Y, Z and θ directions, said automatic refueling method comprising the steps of:



inputting information representing positions of a start point and a target terminal point in a fuel assembly transferring operation;

detecting a position of said fuel assembly grappling apparatus along said X-Y-Z-θ coordinates;

reading out said input positions of said start point and said target terminal point;

determining the shortest route between said start point and said target terminal point through a preset fuel transferring permitted region;

generating control command signals to move said fuel assembly grappling apparatus along said obtained shortest route based on said detected position of said fuel assembly grappling apparatus; and

sending said control command signals to said driving means.

5,644,608

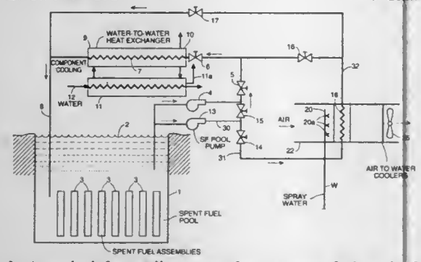
COOLING SYSTEM FOR SPENT FUEL POOL

Paul Malik, Northport; Robert Kosson, Massapequa, both of N.Y.; Michael Vasely, 21 Newhard Pl., Hopewell Junction, N.Y. 12533, and George Stegmann, Thornwood, N.Y., assignors to Consolidated Edison Company of New York, New York, N.Y., and Michael Vasely, Hopewell Junction, N.Y.

Division of Ser. No. 294,072, Aug. 22, 1994, Pat. No. 5,488,642. This application May 26, 1995, Ser. No. 452,276

Int. Cl.[6] G21C *19/07*

U.S. Cl. 376—272 **9 Claims**



1. A method for cooling water from a spent fuel pool of a nuclear power generating plant comprising withdrawing water to be cooled from the spent fuel pool and passing the water to be cooled to and through a heat exchanger for transferring heat from the water to be cooled flowing on one side of a heat exchanger surface of the heat exchanger to a coolant medium flowing on the other side of the heat exchanger surface, comprising causing a flow of air as coolant medium to pass through said heat exchanger while spraying a fine mist of droplets of water into the flow of air to enhance the cooling capacity of the air.

5,644,609

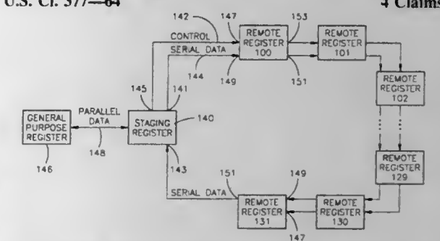
APPARATUS AND METHOD FOR READING AND WRITING REMOTE REGISTERS ON AN INTEGRATED CIRCUIT CHIP USING A MINIMUM OF INTERCONNECTS

John W. Bockhaus; Gregg B. Lesartre, and Gregory L. Ranson, all of Fort Collins, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 31, 1996, Ser. No. 690,466

Int. Cl.[6] G11C *19/00*

U.S. Cl. 377—64 **4 Claims**



1. A system of registers implemented on an integrated circuit chip, comprising:

a staging register circuitry having a staging register circuitry control signal output, a staging register circuitry serial data output, and a staging register circuitry serial data input;

a series of remote register circuitries, each remote register circuitry in said series having at least one data latch for propagating data from a remote register circuitry serial data input to a remote register circuitry serial data output, and each remote register circuitry in said series having at least one control signal latch for propagating a control signal from a remote register circuitry control signal input to a remote register circuitry control signal output;

a serial data line exiting said staging register circuitry at said staging register circuitry serial data output, propagating through each of said remote register circuitries in said series and reentering said staging register circuitry at said staging register circuitry serial data input; and

a control signal line exiting said staging register circuitry at said staging register circuitry control signal output and propagating through each of said remote register circuitries in said series.

5,644,610

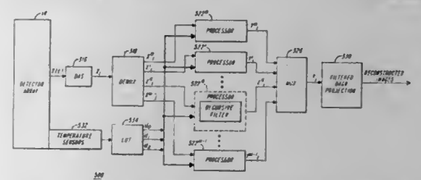
MULTI-PROCESSOR AFTERGLOW ARTIFACT CORRECTION FILTER FOR USE WITH COMPUTED TOMOGRAPHY SCANNERS

Carl R. Crawford, Brookline; Christopher C. Ruth, Danvers; Iouri Bachilov, Peabody, and Ruvin Deych, Burlington, all of Mass., assignors to Analogic Corporation, Peabody, Mass.

Division of Ser. No. 671,219, Jun. 27, 1996. This application Aug. 1, 1996, Ser. No. 690,810

Int. Cl.[6] A61B *6/03*

U.S. Cl. 378—19 **32 Claims**



1. A system for processing an output signal generated by a detector as a function of an intensity of radiation incident on said detector, the signal response of the detector being characterized by afterglow represented as a function of at least one afterglow amplitude and at least one afterglow time constant, the system

including means for measuring the temperature of the detector and for generating a parameter signal according to a function of said temperature, said parameter signal being representative of said afterglow amplitude and said afterglow time constant.

21. A computed tomography scanning system, comprising:

(A) tomography means for generating data for a tomographic scan, including (i) means for generating radiation; (ii) detector means for generating at least one output signal in response to at least a portion of the radiation generated by the means for generating radiation and incident on the detector means, the signal response of said detector means being characterized by afterglow represented as a function of at least one afterglow amplitude and at least one afterglow time constant; (iii) means for rotating at least the means for generating radiation about a rotation axis during the tomographic scan; and (iv) means for sampling the output signal during the tomographic scan and thereby generating a plurality of samples x_i for all integers i from zero to MAX;

(B) processing means including a set of N sub-processors for processing said samples x_i, a q'th one of said sub-processors receiving only the samples x_{iN+q} for all integers i and for all integers q from zero to N minus one, said q'th sub-processor further including means for generating a compensated signal according to a function of at least a portion of the samples x_{iN+q} and parameters representative of said afterglow amplitude and said afterglow time constant.

5,644,611

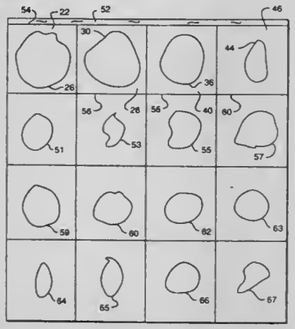
METHOD AND APPARATUS FOR MAXIMIZING THE NUMBER OF RADIOLOGICAL IMAGES DISPLAYED ON A DISPLAY SCREEN

James F. McShane, Kennett Square, and Bruce T. Robinson, Telford, both of Pa., assignors to Axsys Corporation, Greenville, Del.

Continuation-in-part of Ser. No. 602,352, Feb. 16, 1996. This application Apr. 10, 1996, Ser. No. 630,456

Int. Cl.[6] H05G *1/64*

U.S. Cl. 378—98 **9 Claims**



1. A method of maximizing the number of radiological images displayed on a display screen, which comprises the steps of:

serially storing a plurality of digital radiological frames made up of digital information, with each said plurality of stored digital radiological frames having an image portion and a non-image portion;

identifying the radiological image portion of each said plurality of stored digital radiological frames;

reducing the non-image portion of each stored digital radiological frame so as to create a plurality of modified radiological frames each having a modified length and a modified width;

arranging the plurality of modified radiological frames relative to one another into a plurality of rows and columns of modified radiological frames occupying a predetermined area corresponding to the area of the display screen; and

displaying the arranged plurality of modified radiological frames on the display screen.

5,644,612

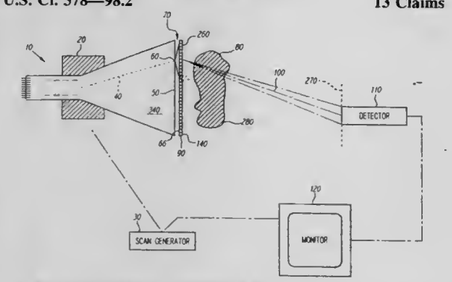
IMAGE RECONSTRUCTION METHODS

Jack W. Moorman, Los Gatos; Edward G. Solomon, Menlo Park; Peter J. Fiekowsky, Los Altos; John W. Wilent, deceased, late of Aptos; Abigail A. Moorhouse, San Jose, and Robert E. Melen, Saratoga, all of Calif., assignors to Cardiac Mariners, Inc., Los Gatos, Calif.

Continuation of Ser. No. 386,861, Feb. 10, 1995, which is a continuation-in-part of Ser. No. 375,501, Jan. 17, 1995, abandoned, and Ser. No. 342,641, Nov. 21, 1994, abandoned, which is a continuation of Ser. No. 8,455, Jan. 25, 1993, abandoned, said Ser. No. 375,501is a continuation of Ser. No. 42,742, Apr. 5, 1993, abandoned. This application Apr. 10, 1995, Ser. No. 419,730

Int. Cl.[6] H05G *1/64*

U.S. Cl. 378—98.2 **13 Claims**



1. An imaging method comprising the steps of:

stepping an electron beam across an x-ray source in a pattern of steps AP_x by AP_y, to generate x-ray beams which pass through the object to be imaged before intersecting an array of DET_x by DET_y detectors;

measuring the x-ray intensity detected by each of the detectors comprising the detector array;

storing, in a memory, the equivalent of a data array (IMAGE) of size DET_x by DET_y containing the information indicative of the intensity measured by each detector for each step of the electron beam;

storing, in memory, the equivalent of a four dimensional array (PIXEL) of size DET_x by DET_y by AP_x by AP_y containing the IMAGE data for each step of the electron beam;

generating output values for forming the equivalent of a two dimensional array (OUTIMAGE) of size IP_x by IP_y, where OUTIMAGE(x,y) has the value:

$$\sum_{j=1}^{j=DET_y} \sum_{i=1}^{i=DET_x} \text{PIXEL}(j,i,y+j*\text{FOCUS},x+i*\text{FOCUS})$$

where focus is a number between 0.1 and 10.0;

outputting the output values for analysis.

5,644,613

ROAD-MAPPING

Arnon Mick, Haifa, Israel, assignor to CMT-Medical Technologies Ltd., Haifa, Israel

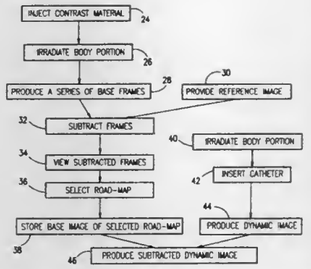
Filed Aug. 9, 1996, Ser. No. 695,053

Claims priority, application Israel, Aug. 11, 1995, 114916; Dec. 18, 1995, 116434

Int. Cl.[6] H05G *1/64*

U.S. Cl. 378—98.12 **16 Claims**

1. A method of producing a road-mapped image of a body portion for monitored guidance of a catheter therethrough, the method comprising the steps of:



providing a first X-ray transmission frame of said body portion;

injecting contrast-enhancing material into a blood vessel in said body portion;

irradiating said body portion with X-ray radiation for a first irradiation session;

producing a series of second X-ray transmission frames of the body portion during said first irradiation session;

forming a series of third, subtracted, frames each third frame corresponding to the difference between a respective second frame and said first frame;

selecting one of said third frames;

irradiating said body portion with X-ray radiation for a second irradiation session;

guiding said catheter through a blood vessel in said body portion during said second irradiation session;

producing a first, dynamic, X-ray transmission image including a plurality of fourth frames of said body portion during said second irradiation session; and

forming a second, dynamic, image of said body portion including a series of fifth, subtracted, frames, each fifth frame corresponding to the difference between a respective fourth frame and the second frame corresponding to the selected one of said third frames.

5,644,614

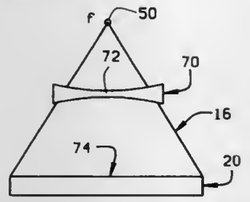
COLLIMATOR FOR REDUCING PATIENT X-RAY DOSE

Thomas Louis Toth, Brookfield, and Willi Walter Hampel, St. Francis, both of Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Dec. 21, 1995, Ser. No. 576,152

Int. Cl.[6] G21K *1/02*

U.S. Cl. 378—147 **17 Claims**



1. A pre-patient collimator for controlling the shape of a collimated fan beam for use in a computed tomography system, the computed tomography system including a detector array having a plurality of rectangular shaped detector cells and an x-ray source, said collimator comprising x-ray absorbing material having an aperture therein for restricting the collimated fan beam, said aperture contour providing that a fan beam umbra of a beam passing therethrough has a substantially rectangular cross sectional shape.

5,644,615

X-RAY COLLINATOR HAVING PLATES WITH PERIODIC RECTANGULAR OPENINGS

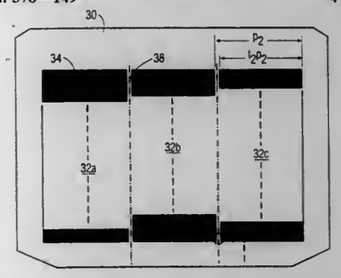
Johannes Van Der Borst; Johannes F. M. D'Achard Van Enschut; Theodorus J. J. M. Jenneskens, all of Eindhoven; Jacob Dobben, Almelo; Christiaan J. Ter Borch, Almelo, and Hendricus G. M. Van Der Wal, Almelo, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 21, 1995, Ser. No. 576,623

Claims priority, application European Pat. Off., Dec. 22, 1994, 94203722

Int. Cl.[6] G21K *1/02*

U.S. Cl. 378—149 **4 Claims**



1. An X-ray analysis apparatus comprising an X-ray collimator, which collimator comprises a plurality of plates (**30***a*, **30***b* etc.) of a radiation absorbing material which are provided with openings,

which plates are arranged so as to extend parallel and offset relative to one another in the propagation direction of the radiation,

each plate comprising a pattern of holes (**40**, **42**) with a given period p_1 in a direction perpendicular to one of the sides of the holes, said period having a given opening fraction t_1,

characterized in that

the holes (**40**, **42**) have a rectangular shape, and

the collimator is provided with a first series of plates in which the ratio of two successive distances (d_i, d_{i+1}) between the plates of the series is equal to the given opening fraction t_1 of the period p_1.

5,644,616

DUAL RADIATION TARGETING SYSTEM

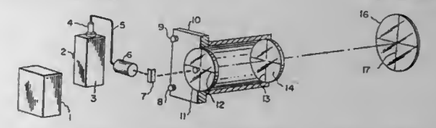
Michael K. Landi, Snyder, and Robert M. Lifeso, East Amherst, both of N.Y., assignors to The Research Foundation of State University of New York, Amherst, N.Y.

PCT No. PCT/US93/03440, § 371 Date Jan. 11, 1996, § 102(e) Date Jan. 11, 1996, PCT Pub. No. WO94/23651, PCT Pub. Date Oct. 27, 1994

Continuation-in-part of Ser. No. 827,672, Jan. 29, 1992, Pat. No. 5,212,720. This PCT application Apr. 12, 1993, Ser. No. 535,023

Int. Cl.[6] A61B *6/08*

U.S. Cl. 378—206 **9 Claims**



1. A dual radiation imaging and targeting system comprising fluoroscopic imaging means having a first source of radiation and means including a detector for providing an image of an object positioned between said first source and said detector by radiation which illuminates and is transmitted through said object, said radiation extending along a path between said source and said detector, a fixture attachable to the first source and intersecting of

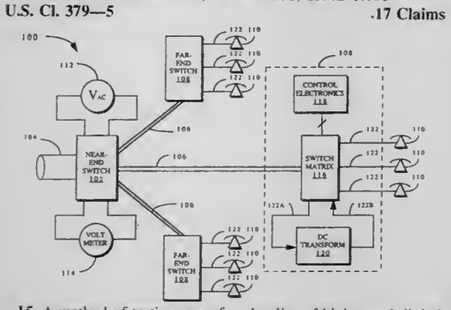
said path, said fixture including means incrementally movable and positionable along two axes orthogonal to each other and generally orthogonal to said path, at least a portion of said fixture intersected by said path being radiolucent to the radiation from said first source, a radiolucent mirror mounted in the radiolucent portion of said fixture and being intersected by said path, a second source providing a visible beam of radiation incident on said mirror and carried by said fixture and offset from said path, said visible beam being reflected from said mirror along said path, collinearizing means removably attachable to said fixture and extending along said path, said collinearizing means including means for providing with said image providing means a visual indication of the relative alignment of the visible beam and an identifiable ray of the radiation from said first source, and a radio-opaque target symbol mounted in said fixture between said first source of radiation and said radiolucent mirror, said symbol mounted in said path to provide said image providing means a second visual indication of the relative alignment of the visible beam and an identifiable ray of the radiation from said first source.

5,644,617

METHOD AND APPARATUS FOR TESTING CABLES

Kurt E. Schmidt, Lindenhurst, Ill., assignor to Teradyne, Inc., Boston, Mass.

Filed Jan. 12, 1995, Ser. No. 371,734
Int. Cl.[6] H04M *1/24;* **G01R** *27/02;* **H04B** *17/00*
U.S. Cl. 379—5 **17 Claims**



15. A method of testing one of a plurality of high speed digital lines, comprising the steps of:

a) injecting an AC test signal into a line under test, the line under test being one of the plurality of high speed digital lines;

b) receiving the AC test signal at a point where it has propagated down the line under test;

c) producing a DC signal having a magnitude deterministically related to the magnitude of the received AC test signal;

d) placing the DC signal onto a return line, the return line being another one of the plurality of high speed digital lines;

e) receiving the DC signal at a point where it has propagated down the return line; and

f) comparing the DC signal to the magnitude of the injected AC signal and determining whether a fault condition exists.

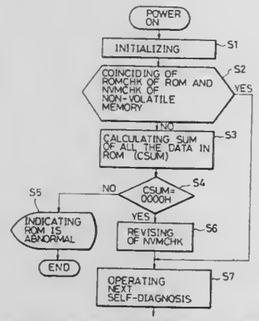
5,644,618

METHOD OF SELF-DIAGNOSING A MOBILE TELEPHONE SET FOR USE IN A MOBILE TELEPHONE SWITCHING SYSTEM AND A MOBILE TELEPHONE SET TO WHICH THE METHOD IS APPLIED

Motoyoshi Komoda, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed May 28, 1992, Ser. No. 889,856
Claims priority, application Japan, May 31, 1991, 3-155346
Int. Cl.[6] H04M *1/24;3/22;* **H04B** *17/00;* **G01R** *31/28*
U.S. Cl. 379—27 **11 Claims**

1. A method of self-diagnosing a mobile telephone set for use in mobile telephone switching system by checking data stored in the



mobile telephone set, the mobile telephone set comprising a read only memory (ROM) having said data to be checked stored therein, a non-volatile memory having reference binary data stored therein, and a microprocessor, said reference binary data, representing an initially calculated result of all binary data stored in the ROM calculated according to a predetermined calculus, the method comprising the steps of:

(a) comparing the data to be checked stored within a specific address of said ROM with the reference binary data stored within a specific address of said non-volatile memory when the power supply is turned ON;

(b) calculating a result of all binary data stored in said ROM according to said predetermined calculus when said data stored in the specific addresses of the ROM and non-volatile memory, respectively, do not coincide in step (a); and

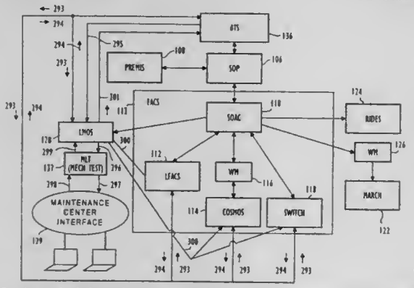
(c) indicating an abnormality of said ROM when said result calculated in step (b) differs from the data stored in the specific address of the non-volatile memory.

5,644,619

ANALYSIS AND VALIDATION SYSTEM FOR PROVISIONING A PUBLIC SWITCHED TELEPHONE NETWORK

Robert D. Farris, Sterling, Va., and Myron E. Harper, Burtonsville, Md., assignors to Bell Atlantic Network Services, Inc., Arlington, Va.

Continuation-in-part of Ser. No. 376,201, Jan. 20, 1995, Pat. No. 5,491,742, which is a continuation-in-part of Ser. No. 152,360, Nov. 16, 1993, Pat. No. 5,416,833. This application Jun. 6, 1995, Ser. No. 467,646
Int. Cl.[6] H04M *3/22*
U.S. Cl. 379—27 **52 Claims**



1. An administration system for a public switched telephone network (PSTN), comprising:

a service order processing system receiving a service request from a customer requesting service for a customer location, and determining whether the service request is provisionable, wherein

when said service order processing system determines that the service request is provisionable, automatically provisioning customer facilities to execute the service request based upon information stored by said service order processing system, the information including customer identification data and customer facility data, and the information maintained by said service order processing system without substantially altering the customer facility data, and

when the service request is determined by said service order processing system not to be provisionable, said service order processing system generating a manual provisioning request;

an auxiliary database storing auxiliary data associated with the information stored by said service order processing system; and

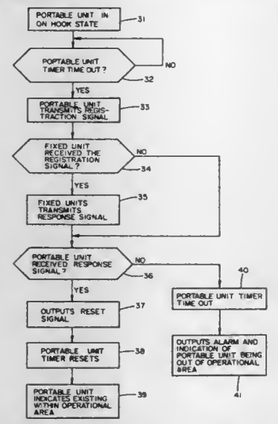
a work center interface system operatively connected to said service order processing system and said auxiliary database, said work center interface system receiving the manual provisioning request from said service order processing system and retrieving the auxiliary data from said auxiliary database, said work center interface system provisioning other facilities to execute the service request responsive to the auxiliary data and user interaction with said work center interface system.

5,644,620

METHOD OF INDICATING A PORTABLE UNIT OF A CORDLESS TELEPHONE INSTRUMENT OUT OF OPERATIONAL AREA AND ITS DEVICE

Yukihiro Shimura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 26, 1995, Ser. No. 451,677
Claims priority, application Japan, Jun. 30, 1994, 6-171720
Int. Cl.[6] H04M *1/24;3/22;11/00;* **H04Q** *7/00*
U.S. Cl. 455—421 **10 Claims**



1. A method of indicating that a portable unit of a cordless telephone instrument which comprises a fixed unit and a portable unit is out of operational area, comprising the steps of:

starting counting of a predetermined first reference time at said portable unit,

transmitting a registration signal of a first frequency peculiar to said cordless telephone instrument from said portable unit after lapse of the predetermined first reference time and starting next counting of the predetermined first reference time by said portable unit;

transmitting, upon reception of the registration signal by a fixed unit, a response signal of a second frequency peculiar to said fixed unit;

resetting, when said portable unit having transmitted the registration signal receives the response signal, the counted value of the first predetermined reference time and starting next counting of the first reference time by said portable unit; and

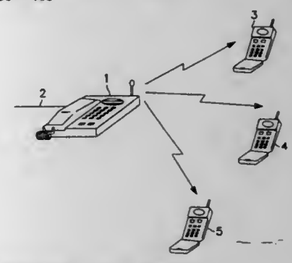
outputting, when said portable unit receives no response signal after having transmitted the registration signal for more than a predetermined second reference time longer than the predetermined first reference time, an indication of an unavailable situation on said portable unit.

5,644,621

POINT TO MULTIPOINT RADIOTELEPHONE SYSTEM

Hidehiro Yamashita, Ohnojou, and Masakazu Tachiyama, Ogoori, both of Japan, assignors to Matsushita Electric Industrial co., Ltd., Osaka, Japan

Filed Jan. 10, 1995, Ser. No. 370,882
Claims priority, application Japan, Jan. 11, 1994, 6-001148
Int. Cl.[6] H04Q *7/30*
U.S. Cl. 455—463 **28 Claims**



15. A radiotelephone system comprising:

one main unit, and

plural sub units,

wherein communications between the main unit and the sub units are digital radio communications having a control channel and plural service channels;

the main unit including:

batch call means for transmitting a batch call signal to each sub unit in the control channel when an incoming signal is provided by a telephone circuit,

chief sub unit selecting means for selecting a chief sub unit out of the sub units transmitting a request signal for a first link channel establishment to the main unit in the control channel in response to the batch call signal,

transmitting means of a first link channel establishment signal for transmitting chief sub unit information indicating which sub unit has been selected as the chief sub unit, and a first link channel assignment signal indicating the service channel for batch multiple access, to the sub units in the control channel,

first communication establishing means for establishing communications with the chief sub unit by using the service channel for batch multiple access,

transmitting means of a second link channel assignment signal for transmitting, when a request signal for a second link channel establishment is received in the control channel, the second link channel assignment signal containing the frequency of a new service channel and slot number information to the sub unit transmitting the request signal for a second link channel establishment in the control channel, and

transmitting a radio channel cut-off signal in the service channel to the other sub units for batch multiple access, and

first call transition means for establishing communications between the main unit and the sub unit transmitting the request signal for a second link channel establishment in the new service channel; and

each sub unit including:

transmitting means of a request signal for a first link channel establishment for transmitting a request signal

for a first link channel establishment to the main unit in the control channel, when a batch call signal is received,

receiving means of the first link channel assignment signal for receiving the first link channel assignment signal in the control channel, and transferring the channel for transmission and reception of the sub unit to the service channel for batch multiple access specified by the first link channel assignment signal,

second communication establishing means for establishing radio communications with the main unit in the service channel for batch multiple address when selected as chief sub unit,

batch incoming means for establishing the batch incoming state by intercepting the batch multiple address from the main unit in the service channel for batch multiple address when not selected as chief sub unit,

receiving means of the second link channel assignment signal for transmitting the request signal for a second link channel establishment signal in the control channel when the user responds to the batch multiple address from the main unit, and receiving the second link channel assignment signal from the main unit in the control channel,

second call transition means for establishing service between the sub unit and the main unit in a new service channel specified by the second link channel assignment signal, and

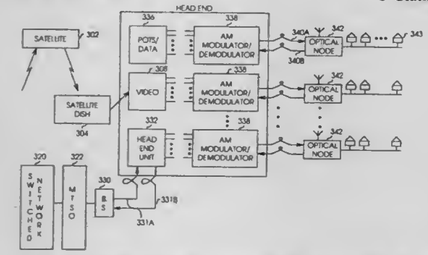
means for transferring the channel for transmission and reception of the sub unit from the service channel to the control channel when a radio channel cut-off signal is received from the main unit in the service channel for batch multiple address.

5,644,622

CELLULAR COMMUNICATIONS SYSTEM WITH CENTRALIZED BASE STATIONS AND DISTRIBUTED ANTENNA UNITS

David S. Russell, Minneapols, and Larry G. Fischer, Waseca, both of Minn., assignors to ADC Telecommunications, Inc., Bloomington, Minn.

Division of Ser. No. 204,660, Mar. 2, 1994, which is a continuation-in-part of Ser. No. 183,221, Jan. 14, 1994, abandoned, which is a continuation-in-part of Ser. No. 68,389, May 28, 1993, abandoned, which is a continuation-in-part of Ser. No. 946,402, Sep. 17, 1992, abandoned, Ser. No. 946,964, Sep. 17, 1992, abandoned, Ser. No. 946,931, Sep. 17, 1992, abandoned, and Ser. No. 946,548, Sep. 17, 1992, abandoned.
This application Mar. 23, 1995, Ser. No. 409,738
Int. Cl.[6] H04Q *7/22*
U.S. Cl. 455—422 **3 Claims**



1. A microcellular communications system for providing mobile telephone service to a microcell area over a cable system, comprising:

a microcell base station unit connected by a fiber path to a head end unit located in a head end station of a cable television distribution system having a plurality of optical nodes connected to the head end unit over respective fiber paths, the base station unit including:

a plurality of RF transmitters and receivers, one for each channel assigned to the microcell, the plurality of channels making up a cellular band;

combiner means for combining the RF signal output from the transmitters;

analog-to-digital converter means for converting the cellular band content of the combined signal to a digitized stream of samples;

first framing means for framing the digitized stream; and

digitally modulated laser means for receiving the framed stream and applying a corresponding laser signal to the fiber path for transmission to the head end unit;

the head end unit including:

demultiplexer means for receiving the framed stream and extracting the digitized RF signal;

digital-to-analog converter means for receiving the digitized RF signal and reconstructing an analog RF signal containing the cellular band;

one or more filter means for separating the cellular band into a plurality of sub-bands, each sub-band containing a sub-set of said plurality of channels;

modulator means for modulating one of said sub-bands and applying the modulated output to an optical transmitter producing a corresponding optical signal for application to one of said fiber paths connected to a optical node;

optical receiver means for receiving a modulated optical signal carrying a sub-band and producing a corresponding electrical signal for application to a demodulator for demodulating the sub-band to produce a corresponding analog RF signal including the sub-band;

analog-to-digital converter means for receiving the RF signal from the demodulator and converting the RF signal to a digitized data stream;

second framing means for framing the digitized stream; and

digitally modulated laser means for receiving the framed stream and applying a corresponding laser signal to the fiber path for transmission to the corresponding base station unit;

wherein each base station unit further includes:

demultiplexer means for receiving the framed microcell traffic stream from the antenna unit and extracting the digitized RF signal;

digital-to-analog converter means for receiving the digitized RF signal and reconstructing the analog RF signal, the RF signal being applied to the receivers; and

an optical node unit located at the optical node of the cable television system, the optical node unit including:

optical receiver means for receiving the modulated sub-band on said one fiber path;

demodulator means for demodulating the modulated sub-band to produce an RF signal containing the sub-band;

amplifier means for amplifying the RF signal for transmission from a main antenna;

filter means for filtering out the sub-band from the RF signal received at the main antenna;

modulating means for modulating the received sub-band; and

optical transminter means for applying a corresponding optical signal to the one fiber path.

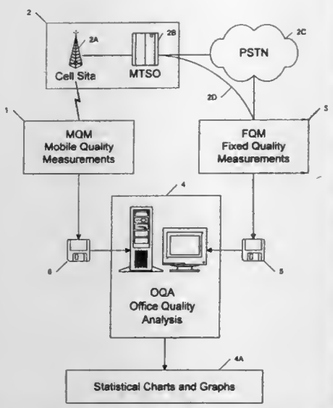
5,644,623

AUTOMATED QUALITY ASSESSMENT SYSTEM FOR CELLULAR NETWORKS BY USING DTMF SIGNALS

Kenneth G. Gulledge, Arlington Heights, Ill., assignor to SAFCO Technologies, Inc., Chicago, Ill.

Division of Ser. No. 204,619, Mar. 1, 1994, Pat. No. 5,490,204.
This application Jan. 31, 1996, Ser. No. 594,583
Int. Cl.[6] H04Q *7/20*
U.S. Cl. 455—423 **9 Claims**

1. A method for the establishment of reliable remote operational control over one or more communication channels of a first measurement station by a second control station by transmitting control



messages each of which includes a sequence of start, control command, checksum and stop digits utilizing Dual Tone Multiple Frequency (DTMF) tones for each digit comprising the steps of,

converting at the second control station the control command which comprises one or more sequentially transmitted DTMF digits into a control message by appending a checksum DTMF digit which is determined by an analysis of all of the digits of the control command to the end of the control command and then inserting a unique start DTMF digit before the first digit of the control command and appending the control command with a unique stop DTMF digit after the previously added checksum DTMF digit,

transmitting the command message as a sequence of DTMF digits beginning with the start DTMF digit and ending with the stop DTMF digit from the second control station to the first measurement station,

receiving at the first measurement station the command message sent by the second control station by waiting for the unique start DTMF digit and collecting DTMF digits until after the unique stop DTMF digit is received,

verifying at the first measurement station the command message sent from the second control station by removing the start DTMF digit, the end DTMF digit and the checksum DTMF digit and comparing the received checksum digit against an analysis of all of the remaining DTMF digits which form the received control command,

sending a positive acknowledgment from the first measurement station to the second control station if the received checksum DTMF digit is equal to the calculated checksum, or sending a negative acknowledgment from the first measurement station to the second control station if the checksum is not equal to the calculated checksum, and

resending the command message if the second control station receives a negative acknowledgment from the first measurement station or accepting as reliable by the second control station the transmission of the command message if the second control station receives a positive acknowledgment from the first measurement station.

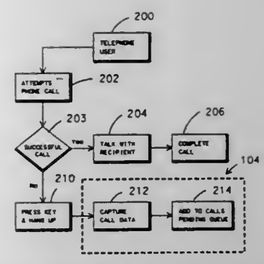
5,644,624

AUTOMATIC TELEPHONE CALL ORIGINATION AND RETRY SYSTEM AND METHOD OF OPERATION

Holley G. Caldwell, Phenix City, Ala., assignor to Caldwell Communications Development, Inc., Phenix City, Ala.

Continuation of Ser. No. 247,553, May 23, 1994, abandoned.
This application May 9, 1995, Ser. No. 437,601
Int. Cl.[6] H04M *1/27*
U.S. Cl. 379—69 **4 Claims**

1. A telephone system including an automatic telephone recall apparatus attached to and controlled by a Touch Tone telephone having operating keys capable of providing DTMF tones, said telephone system comprising:



numbers recording means for recording a plurality of telephone numbers as each of said telephone numbers is dialed during the placing of respective telephone calls through a PSTN by a user of the telephone system;

storage means for sequentially storing selected of said telephone numbers by actuation of said operating keys;

voice recording means for recording a respective custom message dictated by the user of the telephone system after dialing of each of said telephone calls;

automatic recall means for placing a recall to each of said selected telephone numbers;

recognition means for automatic recognition of the results of each said recall so as to recognize whether each respective recall was unanswered or answered and if answered to further recognize whether each respective answered recall was answered by a person or by an answering machine;

return means for return to said storage means the telephone number of each unanswered recall for later recall;

processor means for providing the respective custom message to the associated telephone number of the person or answering machine reached during each answered recall;

deletion means for deleting the stored number of each answered recall from said storage means; and

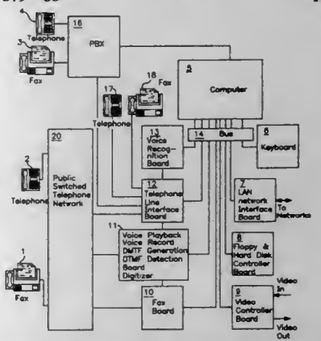
indication means for indicating completion of each answered recall, and of the placement of each unanswered recall.

5,644,625

AUTOMATIC ROUTING AND REROUTING OF MESSAGES TO TELEPHONES AND FAX MACHINES INCLUDING RECEIPT OF INTERCEPT VOICE MESSAGES

Edwin L. Solot, Los Angeles, Calif., assignor to Faxts-Now, Inc., Los Angeles, Calif.

Filed Sep. 1, 1995, Ser. No. 523,081
Int. Cl.[6] H04M *3/42*
U.S. Cl. 379—88 **10 Claims**



1. Apparatus for routing and rerouting of messages between machines via a telephone, including responding where an intercept voice message is received, comprising:

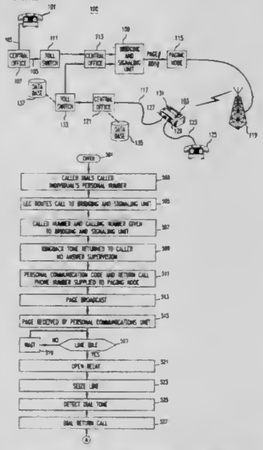
means for storing telephone numbers,
means for placing calls to said stored telephone numbers,
means for automatically recognizing that a voice intercept message is being returned as a result of placing one of the calls,
means for automatically determining the content of the voice intercept message, and
means for handling said call responsive to said content.

5,644,626

APPARATUS AND METHOD FOR CONNECTING TELEPHONE CALLS USING AUTOMATED PAGING AND CALL BRIDGING

Ralph Carlsen, Port Monmouth; Marc P. Kaplan, Aberdeen, and John S. Robertson, Freehold, all of N.J., assignors to AT&T, Middletown, N.J.

Division of Ser. No. 843,685, Feb. 28, 1992. This application May 23, 1995, Ser. No. 447,670
Int. Cl.[6] H04Q *7/38*
U.S. Cl. 455—31.2 **10 Claims**



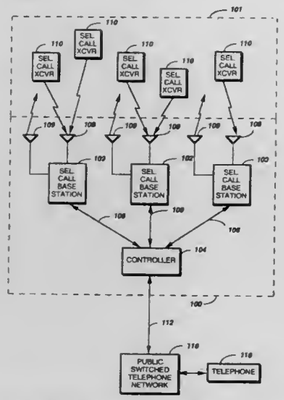
1. A method for use in completing a telephone call that is initiated from a calling telephone to a called individual comprising:
receiving a paging signal in response to a call placed to said called individual without alerting the called individual;
automatically placing a second telephone call over a telephone channel through a switched telephone network to a predetermined location in response to reception of said paging signal;
receiving, from said location over said channel, an indication that said telephone call from said calling telephone continues to be in progress;
supplying an alerting signal for alerting the called individual for a first time that the called individual is being called, said alerting signal being supplied in response to continued reception of said indication; and
connecting a telephone associated with said telephone channel to said telephone channel and connecting said telephone channel to said calling telephone in response to a going off-hook by said telephone associated with said telephone channel.

5,644,627

METHOD AND APPARATUS FOR PROCESSING A VOICE MESSAGE INTENDED FOR A SELECTIVE CALL TRANSCEIVER

Nirarjan Nath Segal, Arlington, and Steven Harold Petit, North Richland Hills, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 29, 1995, Ser. No. 413,020
Int. Cl.[6] H04M *1/64;* **H04Q** *7/00*
U.S. Cl. 379—67 **18 Claims**



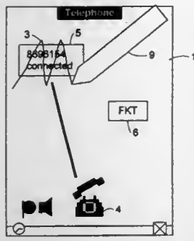
1. A method of processing a voice message intended for a selective call transceiver in a selective call communication system, the method comprising in a fixed portion of the selective call communication system the steps of:
accepting and storing the voice message;
transmitting a message notification indicative of message size to the selective call transceiver; and
transmitting the voice message to the selective call transceiver in response to receiving therefrom a first acknowledgment comprising a request to transmit the voice message, and
the method further comprising in the selective call transceiver the steps of:
receiving the message notification;
determining in response whether sufficient memory space is available in the selective call transceiver for storing the voice message therein; and
processing the voice message in a first manner in response to determining that sufficient memory space is available, comprising the steps of:
transmitting the first acknowledgment; and
thereafter receiving and storing the voice message,
wherein the method further comprises in the selective call transceiver the step of processing the voice message in a second manner in response to determining that sufficient memory space is not available, comprising the steps of:
providing an indication to a user of the selective call transceiver that there is insufficient memory available for storing the voice message;
withholding the first acknowledgment in an absence of an execution of a first predetermined control sequence by the user within a predetermined period after providing the indication;
transmitting the first acknowledgment in response to the execution of the first predetermined control sequence by the user within the predetermined period; and
thereafter receiving and audibly reproducing the voice message without storing the voice message within the selective call transceiver.

5,644,628

TELECOMMUNICATIONS TERMINAL INTERFACE FOR CONTROL BY PREDETERMINED GESTURES

Jürgen Schwarzer, Stuttgart, and Hans-Joachim Nielen, Korntal-Münchingen, both of Germany, assignors to Alcatel N.V., Rijswijk, Netherlands

Filed Mar. 15, 1995, Ser. No. 407,752
Claims priority, application Germany, Mar. 15, 1994, 44 08 737.3
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—93.19 **15 Claims**



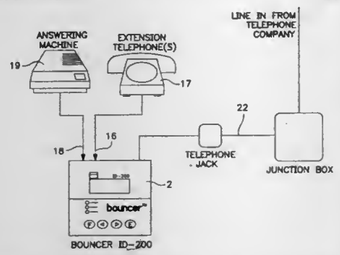
1. A telecommunications terminal comprising a large-area touch-sensitive optical input/output unit (**1**), in combination with a control unit under control of software, for displaying available telecommunications functions and for recognizing predetermined gestures (**3**), that are input by drawing on the input/output unit (**1**), said gestures for activating or deactivating the available telecommunications functions (**2**); and further wherein at least some of the predetermined gestures are created by a user and are trained in the software so as to be associated with the activating or deactivating of the available telecommunication functions.

5,644,629

AUTOMATIC ROUTING OF INCOMING TELEPHONE CALLS TO A PLURALITY OF RECEIVING DEVICES BASED ON CALLER IDENTIFICATION

Chan You Chow, Stow, Mass., assignor to SNI Innovation, Inc., Stow, Mass.

Continuation-in-part of Ser. No. 37,896, Mar. 26, 1993, abandoned. This application Apr. 27, 1995, Ser. No. 429,479
Int. Cl.[6] H04M *3/42;1/57*
U.S. Cl. 379—142 **20 Claims**



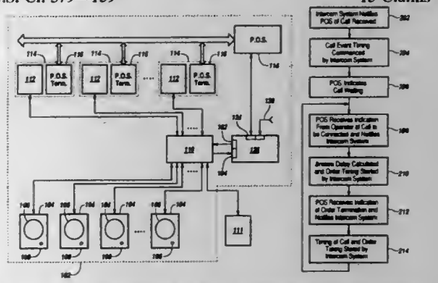
1. Apparatus for determining the routing of externally generated incoming ring signals of an incoming telephone call, wherein a caller identification number follows the first ring signal, to a plurality of outputs comprising:
(a) means for storing a list of caller identification numbers,
(b) means for detecting and suppressing said first incoming ring signal such that no audible ring occurs,
(c) means for detecting and receiving said incoming caller identification numbers,
(d) means for comparing said incoming caller identification numbers to said stored caller identification numbers,
(e) responsive to said comparing, means for routing said second and subsequent incoming ring signals to at least one of said outputs,
(f) means for maintaining an on-hook condition while performing said routing,
(g) means for programming a sequence of outputs to which incoming ring signals are to be directed,
(h) means for programming a selected number of incoming ring signals to be directed to each output,
(i) means for connecting said second and subsequent ring signals to each of said outputs in said sequence of outputs,
(j) means for counting the number of ring signals occurring at each of said outputs, and
(k) responsive to the count equaling the programmed number of ring signals at an output, means for connecting subsequent of said ring signals to the next sequential output.

5,644,630

INTERCOM SYSTEM FOR A SERVICE ESTABLISHMENT

Andrew Durco, Jr., Five North McCormick St., Oklahoma City, Okla. 73127-6620

Continuation of Ser. No. 489,826, Jun. 13, 1995, abandoned, which is a continuation of Ser. No. 212,906, Mar. 15, 1994, abandoned. This application Feb. 7, 1996, Ser. No. 598,091
Int. Cl.[6] H04M *1/00;1/60*
U.S. Cl. 379—159 **15 Claims**



1. An intercom system for a service establishment comprising:
an intercom communications system having a plurality of intercom extensions for placement within a service establishment, the intercom system including,
an intercom switch for selectively coupling intercom extensions for communication,
a plurality of customer intercom extensions connected to the intercom switch for placement in proximity to a plurality of customer ordering stations within the service establishment, each customer extension including means for signalling a request for service, and
a service intercom extension connected to the intercom switch for placement in proximity to an order taking station enabled for signalling the intercom switch to connect a specific customer extension;
means for tracking requests for service from the plurality of customer extensions, the means for tracking requests coupled to the intercom switch for receiving signalling information on calls from the plurality of second extensions the means for tracking including means for queuing calls placed by the plurality of second extensions; and
means for providing information on next queued request for service to the order taking station.

5,644,631

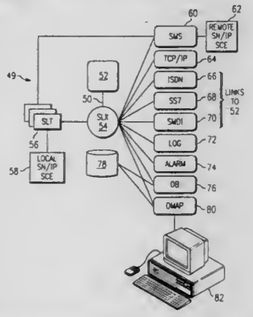
METHOD AND APPARATUS FOR DELIVERING CALLING SERVICES

Sohail Sattar, and Steven E. Polsky, both of Irving, Tex., assignors to InterVoice, Inc., Dallas, Tex.

Continuation of Ser. No. 508,392, Jul. 31, 1995, Pat. No. 5,572,581, which is a continuation of Ser. No. 151,543, Nov. 12, 1993, Pat. No. 5,469,500. This application Aug. 6, 1996, Ser. No. 689,281

Int. Cl.[6] H04M *3/42*

U.S. Cl. 379—201 **27 Claims**



1. A call processor operable to deliver calling services to callers, comprising:

a service creation environment for generating call processing instructions;

a memory accessible by the service creation environment, the memory storing the call processing instructions;

a central processor including a service logic executive with access to the call processing instructions stored in the memory;

a communications link allowing transmission of a data package from a service control point to the call processor, the data package indicating a call type and wherein the service logic executive executes the call processing instructions in response to receipt of the data package by the call processor : and

wherein the call processor provides call processing resources to the service, control point or delivers a calling service independent of the service control point based upon the call type indicated by the data package.

5,644,632

DISTRIBUTED KEY TELEPHONE STATION NETWORK

Menachem Tsur Ardon, Naperville, Ill., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jun. 7, 1995, Ser. No. 485,421

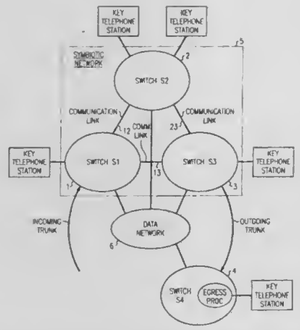
Int. Cl.[6] H04M *7/00;1/00;3/00*

U.S. Cl. 379—220 **4 Claims**

1. In a telecommunications network comprising a plurality of stand-alone switches, said plurality of stand-alone switches being interconnected by a data network for transmitting data messages among said plurality of stand-alone switches, a method of controlling a plurality of associated key telephone stations within a set of said plurality of stand-alone switches, said plurality of associated stations connected to a plurality of said switches, comprising the steps of:

grouping the set of said plurality of stand-alone switches into a symbiotic network;

responsive to receipt in a first of the set of said switches of a call on a line or an incoming trunk for ones of said plurality of associated stations, transmitting first display control data messages, over said data network, to second ones of the set of said switches connected to said ones of said stations, to control displays of said ones of said stations;



responsive to receipt of said first messages in said second one of said switching systems, transmitting display control messages from said second ones of said switching systems to said ones of said stations;

responsive to receipt from one of said stations in any of the set of said switches of a message indicating a request to answer said call, transmitting over said data network, a request to said first of said switches to establish a connection from said line or incoming trunk to said one of said stations; and

establishing a connection from said incoming trunk to said one of said stations.

5,644,633

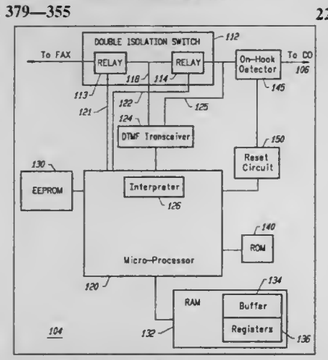
AUTOMATIC TELEPHONE DIALER SYSTEM

James C. Kaufeld, Freehold; Jacek Zagorski, Edison, both of N.J.; Teresa Linne Bialik, and Russell Dennis Rufer, both of San Jose, Calif., assignors to Digitran Corporation, Edison, N.J.

Filed Mar. 20, 1995, Ser. No. 407,504

Int. Cl.[6] H04M *1/27*

U.S. Cl. 379—355 **22 Claims**



18. A memory for storing data for access by an automatic dialing system, said system coupled to a telephonic device and a telephone line, said memory comprising:

a plurality of intercept digit sequences for use in interpreting a dialed number, said dialed number having one of a plurality of patterns, each pattern including one or more DTMF digits, at least one intercept digit sequence including instructions to match said pattern to an associated outgoing dial sequence;

a plurality of outgoing dial sequences, each of said outgoing dial sequences including program instructions including a set of DTMF digits and at least one control sequence for communicating with said telephone line, said control sequence including instructions for monitoring said telephone line for one or more specified DTMF tones, to perform one or more specified delays, and to transmit said set of DTMF digits in a specified sequence; and

wherein said system uses said intercept digit sequences to determine one of said outgoing dial sequences applicable for said dialed number and wherein said system uses one of said outgoing dial sequences to establish communication between said telephonic device and said telephone line.

5,644,634

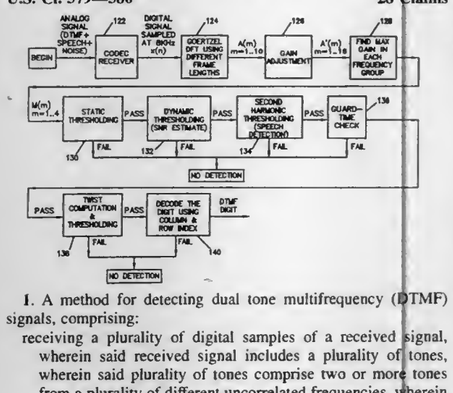
SYSTEM AND METHOD FOR DUAL TONE MULTIFREQUENCY DETECTION USING VARIABLE FRAME WIDTHS

Zheng-yi Xie, and John G. Bartkowiak, both of Austin, Tex., assignors to Advanced Micro Devices, Sunnyvale, Calif.

Filed Nov. 29, 1995, Ser. No. 563,973

Int. Cl.[6] H04M *3/00*

U.S. Cl. 379—386 **28 Claims**



1. A method for detecting dual tone multifrequency (DTMF) signals, comprising:

receiving a plurality of digital samples of a received signal, wherein said received signal includes a plurality of tones, wherein said plurality of tones comprise two or more tones from a plurality of different uncorrelated frequencies, wherein said plurality of different uncorrelated frequencies comprise two or more frequency groups;

calculating a frequency spectrum on said plurality of digital samples for each of said plurality of different uncorrelated frequencies, wherein said calculating uses a frame length N comprising at least a subset N of said digital samples for each of said different uncorrelated frequencies, wherein said calculating uses a different frame length N of said digital samples for at least a plurality of said different uncorrelated frequencies, wherein said calculating produces an energy value for each of said different uncorrelated frequencies;

determining maximum values of said energy values for each of said two or more frequency groups to detect said plurality of tones in said received signal.

5,644,635

METHOD OF AND DEVICE FOR ECHO CANCELLATION

Werner Armbrüster, Eckental-Forth, Germany, assignor to U S Philips Corporation, New York, N.Y.

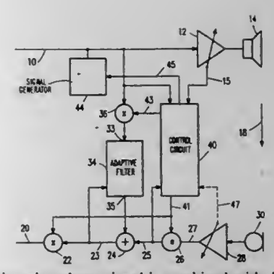
Filed Dec. 1, 1995, Ser. No. 565,776

Claims priority, application Germany, Dec. 22, 1994, 44 45 877.0

Int. Cl.[6] H04M *9/08*

U.S. Cl. 379—390 **6 Claims**

1. A method of echo cancellation for a full duplex loudspeaking telephone, in which method an input signal is reproduced acoustically by a loudspeaker and is simultaneously filtered adaptively; an acoustic signal is converted into a microphone signal by a microphone; and the microphone signal is combined with the adaptively filtered signal so as to form an output signal; characterized in that prior to combining with the filtered signal the microphone signal is attenuated to an extent such that a fixed ratio is maintained between the level of the input signal and the level of the attenuated microphone signal produced by the input signal via a feedback path from the loudspeaker to the microphone; and in that the attenuation of the microphone signal is cancelled by amplification after being combined with the filtered signal.



5,644,636

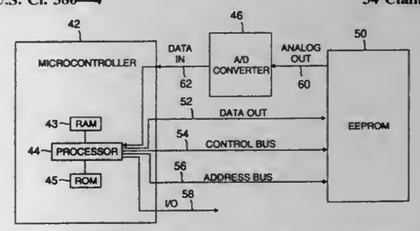
METHOD AND APPARATUS FOR SECURING DATA STORED IN SEMICONDUCTOR MEMORY CELLS

Alberto J. Fernandez, Miami, Fla., assignor to XTec, Incorporated, Miami, Fla.

Filed Dec. 30, 1994, Ser. No. 367,084

Int. Cl.[6] H04L *9/00*

U.S. Cl. 380—4 **34 Claims**



13. A secure semiconductor memory cell apparatus comprising:

first and second semiconductor cells;

a data out line selectively connected to the first and second semiconductor memory cells upon which voltages are applied for programming data to the first and second semiconductor memory cells, causing charges to be trapped in the first and second memory cells; and

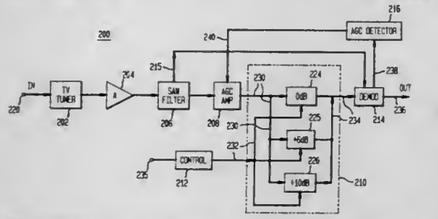
an analog out line selectively connected to the first and second semiconductor memory cells for selective connection to a measurement apparatus for making an analog measurement of the levels of trapped charges in the first and second memory cells, wherein said second memory cells are utilized for storing a reference fingerprint generated from numerical representations of the levels of trapped charges measured in the first memory cells, such that a comparison of the stored reference fingerprint to numerical representations of a subsequent measurement of the levels of trapped charges in the first memory cells provides for authenticating the data stored in the first memory cells.

5,644,637

METHOD AND APPARATUS FOR RECOVERING SYNCHRONIZING SIGNALS IN SCRAMBLED TELEVISION PICTURES

Henry Sebastian Landgraf, Cherry Hill, N.J., assignor to General Instrument Corporation of Delaware, Hatboro, Pa.

Filed Sep. 27, 1995, Ser. No. 534,723
Int. Cl.[6] H04N *7/167*
U.S. Cl. 380—15 **12 Claims**



10. Apparatus for recovering suppressed sync signals in scrambled TV pictures in order to descramble them, the apparatus comprising:

tuner means for selecting a desired TV channel and for outputting TV pictures of the channel at an intermediate frequency (IF) level;

filter means coupled to the tuner means for separating a video portion having suppressed sync signals from an audio portion of the TV picture at the IF level;

gain controlled amplifier means coupled to the filter means to receive the video portion of the TV pictures for outputting the video portion at optimum levels of gain;

sync recovery means coupled to the amplifier means for selectively amplifying the sync signals to the degree they have been suppressed to obtain operable levels of the sync signals;

control means coupled to receive coded signals identifying suppressed sync signals and coupled to the sync recovery means for controlling the selective amplification of the sync signals;

demodulator means coupled to the sync recovery means for demodulating the video portion with recovered sync signals of the TV picture; and

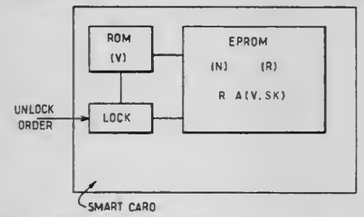
feedback means for providing a feedback signal from the demodulator means to the amplifier means to automatically control gain and thereby minimize artifacts in the TV pictures after sync recovery.

5,644,638

PROCESS FOR PROTECTING COMPONENTS OF SMART OR CHIP CARDS FROM FRAUDULENT USE

Fabien P. Thiriet, Orleans, France, assignor to Solaic (société anonyme), France

Filed Feb. 2, 1995, Ser. No. 382,604
Claims priority, application France, Feb. 11, 1994, 94 01584
Int. Cl.[6] H04L *9/32;9/00*
U.S. Cl. 380—25 **17 Claims**



15. A smart card having a locked memory component being unlockable by the application of an unlock order involving a secret key (SK) having a characteristic value, said component comprising:

a read-only memory (ROM) having a value (V) entered therein; and

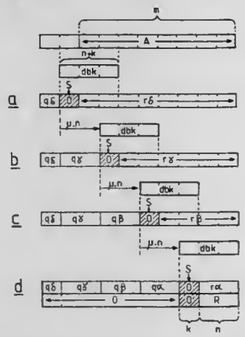
a programmable memory having a number (N) peculiar to said component and a result (R) written therein, said result (R) being related to said value (V) by means of an algorithm (A) and said secret key (SK) according to the relationship R=A(V,SK), whereby said component is unlockable by applying an unlock order using the characteristic value of said secret key (SK) and fulfilling said relationship.

5,644,639

DEVICE FOR CARRYING OUT A DIVISION

Robert Naciri, Chatenay Malabry, and Jean P. Bournas, Chaville, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 502,547, Jul. 14, 1995, abandoned, which is a continuation of Ser. No. 194,299, Feb. 8, 1994, abandoned. This application Mar. 11, 1996, Ser. No. 614,921
Claims priority, application France, Feb. 8, 1993, 93 01357
Int. Cl.[6] H04L *9/30;* **G06F** *7/49;* **G06K** *19/073*
U.S. Cl. 380—30 **8 Claims**



3. A device for carrying out a division of a dividend A formed by m words by a divisor D formed by n words, said words having a base b, to obtain a quotient Q and a remainder R, said device comprising:

a memory for at least storing said m words of the dividend; and means for generating Q by the function:

$$A+Q'db_k=Q''\cdot b^{n+k}+S\cdot b^k+R',$$

in which $db_k=b^{n+k}-D$ with $k\geqq 1$ k being an integer, so that the value S, which acts as a separator, becomes zero for a value of Q' for which Q" takes the value of Q and R' the value of R, where Q' is an approximate quotient value and Q" represents high weights of the quotient Q.

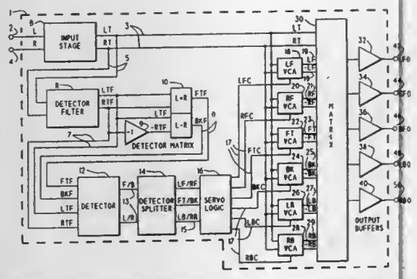
5,644,640

SURROUND SOUND PROCESSOR WITH IMPROVED CONTROL VOLTAGE GENERATOR

James W. Fosgate, Heber City, Utah, assignor to Harman International Industries, Inc., Northridge, Calif.

Continuation of Ser. No. 276,901, Jul. 18, 1994, Pat. No. 5,504,819, which is a continuation-in-part of Ser. No. 990,660, Dec. 14, 1992, Pat. No. 5,428,687, which is a continuation-in-part of Ser. No. 533,091, Jun. 8, 1990, Pat. No. 5,172,415. This application Mar. 27, 1996, Ser. No. 624,907
Int. Cl.[6] H04R *5/00*
U.S. Cl. 381—18 **3 Claims**

1. A surround sound processor for receiving left and right audio signals of a stereophonic source and for processing said left and right signals for presentation on a plurality of loudspeakers surrounding a listening area so as to produce an impression of discrete sound sources surrounding a listener therein, said processor comprising:



an input matrix circuit which receives said left and right audio signals from a pair of input terminals and comprises at least an inverting amplifier and a non-inverting amplifier of equal gain for each channel to provide said left and a detector filter which filters said left and right audio signals from said input matrix and provides left and right filtered signals;

a detector matrix circuit which receives and combines said left and right filtered signals to provide their sum and difference as additional front and back signals respectively;

a direction detector circuit which receives said left and right filtered signals and processes them to provide a left-right direction signal proportional to the logarithm of the ratio of the amplitude of said right filtered signal to that of said left filtered signal, up to a limiting voltage, and which also receives said front and back signals and processes them to provide a front-back direction signal proportional to the logarithm of the ratio of the amplitude of said back signal to said front signal, up to the same limiting voltage;

a detector splitter circuit which receives said left-right and front-back direction signals and processes them to provide one or more additional direction signals while modifying said left-right and front-back direction signals to maintain constancy of the sum of said left-right direction signal, said front-back direction signal, and said one or more additional direction signals said detector splitter circuit including a switching circuit for changing said left-right and front-back direction signals between a forward oriented configuration and a backward-oriented configuration;

a servologic circuit which receives said modified left-right and front-back direction signals and said one or more additional direction signals from said detector splitter circuit and filters each of them to provide a plurality of smoothly varying control voltage signals of the same polarity;

a plurality of voltage-controlled amplifiers equal in number to said plurality of said control voltage signals, each one of said control voltage signals being connected to control the gain of each said voltage-controlled amplifier, each of said plurality of voltage-controlled amplifiers receiving different proportions of said left or right audio signals or their inversions from said input matrix circuit, and summing the received signals with a variable gain dependent upon the corresponding one of said plurality of said control voltage signals applied thereto; and

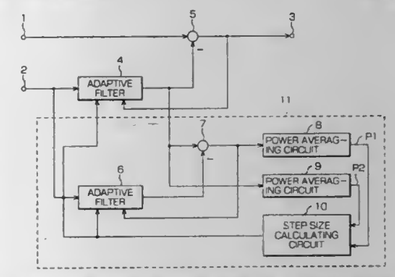
an output said matrix circuit comprising a plurality of matrix circuits equal in number to said plurality of loudspeakers, each said plurality of mature circuits receiving one or more of said left and right signals and their inversions from said input matrix circuit and one or more output signals from said plurality of voltage-controlled amplifiers, and combining them in suitable proportions to obtain a loudspeaker feed signal wherein unwanted directional components are canceled, each said loudspeaker feed signal for driving the corresponding one of said plurality of loudspeakers surrounding said listening area.

5,644,641

NOISE CANCELLING DEVICE CAPABLE OF ACHIEVING A REDUCED CONVERGENCE TIME AND A REDUCED RESIDUAL ERROR AFTER CONVERGENCE

Shigeji Ikeda, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 4, 1996, Ser. No. 610,255
Claims priority, application Japan, Mar. 3, 1995, 7-044222
Int. Cl.[6] H04B *15/00*
U.S. Cl. 381—94.1 **4 Claims**



1. A noise cancelling device including: a first input terminal for receiving an input signal comprising a main signal and a first noise signal superposed on said main signal; a second input terminal for receiving a second noise signal which is not correlated with said main signal but is correlated with said first noise signal; an output terminal; a first subtractor for subtracting a first pseudo signal from said input signal to produce a first subtraction result signal which is delivered to said output terminal; and a first adaptive filter having a plurality of filter coefficients for filtering, in accordance with the filter coefficients of said first adaptive filter, said second noise signal into a first filtered signal which is for use as said first pseudo signals wherein said noise cancelling device comprises:

a second subtractor for subtracting a second pseudo signal from said first pseudo signal to produce a second subtraction result signal;

a second adaptive filter having a plurality of filter coefficients for filtering, in accordance with the filter coefficients of said second adaptive filter, said second noise signal into a second filtered signal which is for use as said second pseudo signal;

a first power averaging circuit for producing a first power average signal representative of a first average (**P1**) of power of said second subtraction result signal;

a second power averaging circuit for producing a second power average signal representative of a second average (**P2**) of power of said first pseudo signals; and

a step size calculating circuit for calculating, from said first and said second power average signals, a step size which is for use in renewal of the filter coefficients of each of said first and said second adaptive filters in deciding a rate of convergence of each of said first and said second adaptive filters at a time, said step size calculating circuit producing a step size signal representative of said step sizes;

said first adaptive filter renewing the filter coefficients of said first adaptive filter into renewed filter coefficients of said first adaptive filter in accordance with said second noise signal and said first subtraction result signal supplied as a first error signal and in accordance with said step size signal;

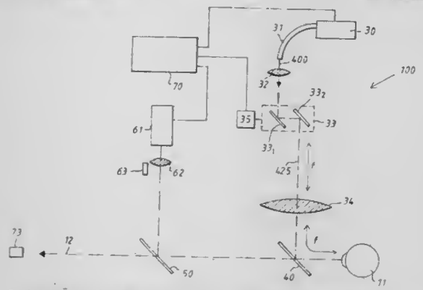
said second adaptive filter renewing the filter coefficients of said second adaptive filter into renewed filter coefficients of said second adaptive filter in accordance with said second noise signal and said second subtraction result signal supplied as a second error signal and in accordance with said step size signal.

5,644,642

GAZE TRACKING USING OPTICAL COHERENCE TOMOGRAPHY

Alan R. Kirschbaum, Oakland, Calif., assignor to Carl Zeiss, Inc., Thornwood, N.Y.

Filed Apr. 3, 1995, Ser. No. 415,678
Int. Cl.[6] G06K 9/00
U.S. Cl. 382—103 20 Claims



1. Apparatus for gaze tracking an eye which comprises:

an optical coherence tomography (OCT) apparatus that generates optical output and generates detection signals in response to backscattered optical output;

a scanner that scans the optical output along one or more trajectories across a predetermined portion of the eye and transfers to the OCT apparatus portions of optical output backscattered from materials in the eye;

a depth analyzer that analyzes the detection signals at various positions along the one or more trajectories to determine depths in the eye of the materials that backscattered the optical output;

a location analyzer, responsive to the depths, that determines a location of a feature of the eye;

an illuminator which produces a reflection of radiation from a cornea of the eye (corneal reflex);

a detector which determines a location of the corneal reflex; and

a gaze tracker, responsive to the location of the feature and to the location of the corneal reflex, which tracks the gaze.

5,644,643

CHUTE FOR USE WITH AN ANIMAL EVALUATION SYSTEM

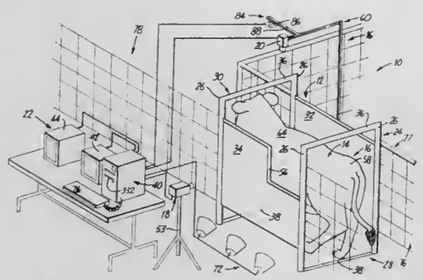
Wayne W. Scofield, Piedmont, and Mark A. Engelstad, Rapid City, both of S. Dak., assignors to C-Scan, LLC, Minneapolis, Minn.

Division of Ser. No. 262,234, Jun. 20, 1994, Pat. No. 5,576,949, which is a continuation-in-part of Ser. No. 238,979, May 6, 1994, Pat. No. 5,483,441, which is a continuation of Ser. No. 753,428, Aug. 30, 1991, abandoned. This application May 9, 1996, Ser. No. 647,221
Int. Cl.[6] G06K 9/00
U.S. Cl. 382—110 6 Claims

1. A chute for an animal evaluation system for evaluating animals with each such animal during its evaluation moving through first and second scenes in said chute corresponding to differing first and second fields of view in a manner so as to partially cover first and second background surfaces provided in each of said first and second scenes, respectively, as viewed in said first and second fields of view, respectively, at a selected time, said chute comprising:

a first side wall supported in a substantially vertical position and supporting said first background surface;

a second side wall supported in a substantially vertical position spaced apart from said first side wall and further positioned so that said first field of view from outside that space between said first and second side walls, in extending past said second side wall, has said first background surface therein, said first field of view being of at least a portion of said first background surface when a said animal is undergoing evaluation at said selected time; and



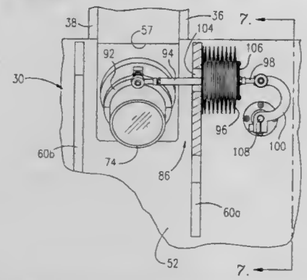
a first guide structure provided in that space between said first and second side walls and positioned in said space to provide a passageway for a said animal moving through said space in undergoing evaluation, said first guide structure supporting said second background surface in a position elevated above a bottom of at least one of said first and second side walls so that said second field of view, in extending between said first and second side walls into said space, has said second background surface therein, said second field of view being of at least a portion of said second background surface when a said animal is undergoing evaluation at said selected time.

5,644,644

FLOW CAMERA FOR LARGE DOCUMENT REPRODUCTIONS HAVING LENS ADJUSTMENT AND DOCUMENT FEED CONTROL MECHANISM

Joseph H. Wally, Jr., Overland Park, Kans.; David A. Huff, Raytown, and Michael R. Huff, Excelsior Springs, both of Mo., assignors to Black & Veatch Architects, Inc., Kansas City, Mo.

Filed Aug. 2, 1995, Ser. No. 510,589
Int. Cl.[6] G06K 9/00; G03B 27/48;27/54
U.S. Cl. 382—112 16 Claims



1. A flow image apparatus for capturing an image of a document, said apparatus comprising:

a housing;

an image capturing device located within said housing, presenting a field of view, and having a lens with an adjustable iris to vary the lens aperture, said housing including a wall positioned adjacent said device and an opposed outboard side;

means for moving a document through said housing for presenting the document in said field of view,

said device including means for capturing an image of the document during movement of the document through said housing,

said device including an adjustable aperture mechanism for changing the lens iris of said device,

said mechanism including a rotatable aperture ring for changing the iris of said device during rotation of said ring,

an elongated adjustment rod having one end coupled with said ring and an opposed second end extending through a hole in said wall, said hole being of sufficiently larger diameter relative to the cross-sectional diameter of the rod to compensate for side-to-side movement of the rod during rotation of the ring by the rod,

a coupling assembly coupling said second end with said manually manipulable adjustment structure,

said manually manipulable adjustment structure including a rotatable knob,

said coupling assembly including means for translating rotation of said knob into generally linear movement of said rod, said housing being subject to entry of ambient light through said hole,

said mechanism further including a flexible, tubular body coupled light-tight with said outboard side of the housing in surrounding relationship with said hole and rod and coupled light-tight with said rod adjacent said second end,

said coupling assembly further including a shaft supporting said knob and extending into the housing, and

a C-shaped rotational pivotally connected to the knob shaft and to the adjustment rod,

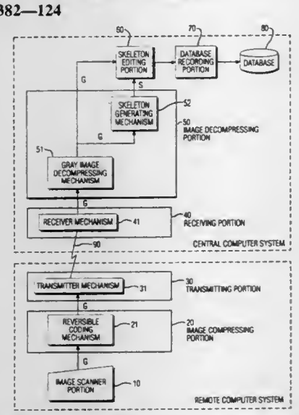
the portion of the C-shaped rotation link presenting an entrance opening thereto facing the tubular body to receive the latter as said one end of the rod and thereby the part of the tubular member connected thereto are moved toward the rotation link whereby the iris may be adjusted from outside of said housing even though the lens iris is not directly accessible.

5,644,645

FINGERPRINT IMAGE TRANSMISSION SYSTEM UTILIZING REVERSIBLE AND NON-REVERSIBLE DATA COMPRESSION CODING TECHNIQUES

Yoshikazu Osuga, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 22, 1994, Ser. No. 294,726
Claims priority, application Japan, Aug. 20, 1993, 5-226719
Int. Cl.[6] G06K 9/00
U.S. Cl. 382—124 3 Claims



1. A fingerprint image transmission system for transmitting a fingerprint image from a remote computer system which samples the fingerprint image to a central computer system which performs analysis of a fingerprint, wherein:

said remote computer system comprises an image scanner portion, an image compressing portion and a transmitting portion;

said image scanner portion being input with a fingerprint image and comprising means for generating a gray image as data indicative of tone of respective pixels of said fingerprint image;

said image compressing portion comprising a non-reversible coding mechanism, a skeleton generating mechanism and a reversible coding mechanism;

said non-reversible coding mechanism being input with said gray image and comprising means for compressing the gray image and eliminating a high frequency band;

said skeleton generating mechanism being input with the gray image generated by said image scanner portion and comprising means for generating a skeleton pattern as data indicative of ridge portions of the minutiae of the fingerprint from the reproduced gray image, said skeleton pattern being generated from an entire non-blank area of said gray image;

said reversible coding mechanism comprising means for compressing said skeleton pattern generated by said skeleton generating mechanism in such a manner that no information will be lost upon decompression of said skeleton pattern;

said transmitting portion of said remote computer system comprising a transmitter mechanism;

said transmitter mechanism comprising means for feeding the gray image compressed by said non-reversible coding mechanism together with said skeleton pattern compressed by said reversible coding mechanism to a transmission path; and wherein

said central computer system comprises a receiving portion, an image decompressing portion, a skeleton editing portion and a database recording portion;

said receiving portion of said central computer system comprising a receiver mechanism;

said receiver mechanism comprising means for receiving said gray image and said skeleton pattern transmitted from said remote side computer system via said transmission path and means for separating said gray image and said skeleton pattern;

said image decompressing portion comprising a gray image decompression mechanism and a skeleton decompression mechanism;

said gray image decompression mechanism being input with the gray image received and separated by said receiver mechanism for reproducing a decompressed gray image;

said skeleton decompression mechanism being input with the skeleton pattern received and separated by said receiver mechanism and comprising means for reproducing the original skeleton pattern existing before compression;

said skeleton editing portion being input with a skeleton pattern decompressed by said skeleton decompression mechanism and the gray image decompressed by said gray image decompressing mechanism, and comprising means for providing an editing screen for a user for correction of said skeleton pattern with reference to said decompressed gray image for enabling correction, and means for extracting feature points from the corrected skeleton pattern; and

said database recording portion comprising means for recording the feature points of said skeleton pattern extracted by said skeleton editing portion and said gray image in a database.

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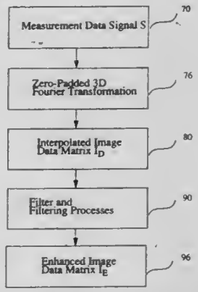
VESSEL ENHANCEMENT FILTERING IN MAGNETIC RESONANCE ANGIOGRAPHY

Yiping Du, Salt Lake City, and Dennis L. Parker, Centerville, both of Utah, assignors to University of Utah Research Foundation, Salt Lake City, Utah

Filed Aug. 5, 1994, Ser. No. 286,523

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—128 **24 Claims**



1. A system for enhancing lines in images produced from data that represent a structure of anatomy of a subject and that are produced in a magnetic resonance imaging (MRI) device, the system comprising:

a detector that detects signals composed of energy passing through and modified by the structure of anatomy and that produces detection signals reflective of the detected modified energy signals;

preprocessing circuitry that receives the detection signals and provides preprocessed signals in response thereto; and

processing circuitry that receives the preprocessed signals and performs a transformation thereon to provide an interpolated image data matrix I_D and that performs a max-min second difference (SD) line enhancing filtering process on the interpolated image data matrix I_D to provide an enhanced image data matrix I_E in which lines are enhanced.

5,644,647

USER-INTERACTIVE REDUCTION OF SCENE BALANCE FAILURES

Patrick Andre Cosgrove; Robert Melvin Goodwin, both of Rochester; Heemin Kwon, Pittsford, and Anthony Scalise, Fairport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 17, 1990, Ser. No. 583,740

Int. Cl.[6] G06K *9/40*

U.S. Cl. 382—162 **26 Claims**



1. For use with an image processing system, in which a color photographic image that has been captured on a color photographic image recording medium is digitally encoded by an opto-electronic device and stored in a digital data base as a digitized image, said digitized image being processed by means of an image adjustment mechanism to derive a modified output image to be coupled to an image reproduction device, a method of controlling the operation of said system to reduce the effects of failures in the processing of a digitized image by said image adjustment mechanism comprising the steps of:

(a) processing said digitized image in accordance with an image adjustment failure discriminator to define the likelihood of whether or not said image adjustment mechanism will cause said output image to be reproduced as a prescribed quality image; and

(b) in response to a prescribed likelihood that said image adjustment mechanism will fail to cause said output image to be reproduced as said prescribed quality image, generating a request for user-sourced control information for modifying the manner in which said image adjustment mechanism processes said image.

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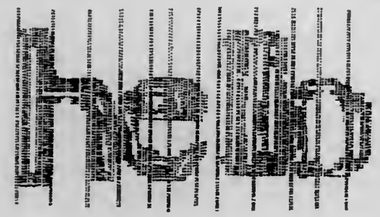
METHOD AND APPARATUS FOR CONNECTED AND DEGRADED TEXT RECOGNITION

Chinmoy Bhusan Bose, Green Brook, and Shyh-Shiaw Kuo, East Brunswick, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Division of Ser. No. 251,676, May 31, 1994, Pat. No. 5,559,902, which is a continuation of Ser. No. 813,225, Dec. 23, 1991, abandoned. This application May 9, 1995, Ser. No. 437,332

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—177 **50 Claims**



1. A method for recognizing characters in a scanned text image, the method comprising the steps of:

segmenting the scanned image into one or more sub-character segments, each sub-character segment comprising a substantially vertical portion of said scanned text image;

identifying one or more features characterizing a sub-character segment; and

recognizing characters based on identified sub-character features.

wherein said step of segmenting the scanned image comprises the steps of:

determining one or more groups of nodes, wherein a node comprises a set of consecutive scanned pixels of a first binary value;

determining one or more strokes in the scanned text image based on characteristics of said determined groups of nodes, wherein each stroke comprises a line segment characterizing a group of nodes; and

segmenting the scanned text image into one or more of said substantially vertical sub-character segments based on one or more of said determined strokes.

5,644,649

PROCESSING METHOD IN RADIOGRAPHIC IMAGE RECORDING SYSTEMS

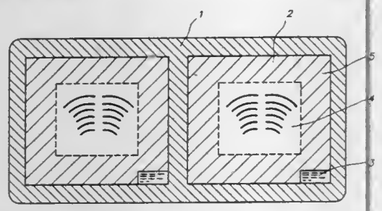
Emile Paul Schoeters, Lier, and Lucien Alfred Hayen, Antwerp, both of Belgium, assignors to AGFA-Gevaert N. V., Mortsel, Belgium

Filed Jul. 1, 1992, Ser. No. 907,125

Claims priority, application European Pat. Off., Jul. 15, 1991, 91201865

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—132 **14 Claims**



1. In a method of processing a radiographic image having diagnostically relevant and diagnostically non-relevant zones therein in a radiographic image recording system wherein image pixels constituting said radiographic image are converted into electrical signals corresponding substantially to the density values of the individual pixels and said electrical signals are employed for visualization of the radiographic image on a rendering medium, the improvement comprising the steps of establishing said diagnostically non-relevant zone of said image and adjusting the electrical signals of the image pixels comprised within said diagnostically non-relevant image zone of the radiographic image thus established to a generally uniform density value throughout said non-relevant image zone of at least about 0.5 such that when said radiographic image is visualized in said rendering medium from said electrical signals including the adjusted signals, the light transmitted by said diagnostically non-relevant image zone of the thus-visualized image is effectively masked off to reduce visual influence of the diagnostically non-relevant zone on the relevant zone during such visualization.

5,644,650

METHOD AND APPARATUS FOR DIGITALLY DISPLAYING AN ENHANCED X-RAY IMAGE

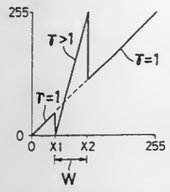
Masakazu Suzuki; Keisuke Mori, and Akifumi Tachibana, all of Kyoto, Japan, assignors to J. Morita Manufacturing Corporation, Kyoto, Japan

Filed Mar. 2, 1995, Ser. No. 397,581

Claims priority, application Japan, Apr. 6, 1994, 6-068791

Int. Cl.[6] G06K *9/36*

U.S. Cl. 382—132 **8 Claims**



1. A method for displaying an X-ray image wherein an X-ray is irradiated toward a subject, an image of the X-ray having passed through the subject is converted into an image signal, the image signal is digitized and stored in an image memory means, and thereafter X-ray image data consisting of digital values are subjected to gradient conversion and then displayed on a screen or a recording medium, said method comprising;

converting the X-ray image data with the gradient characteristics of $\gamma>1$ in the case where the values of the input data are in an interested region of a predetermined range, converting the X-ray image data with the gradient characteristic of $\gamma=1$ in the case where the values of the input data are uninterested region outside the predetermined range, and converting the input data inside the boundary of the interested region into output data consistently greater than 0 and wherein a ratio of an increment of output data of gradient characteristics to an increment data input data thereof is indicated by γ.

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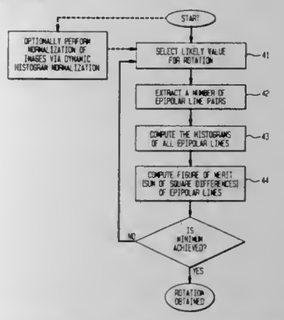
METHOD FOR THE ESTIMATION OF ROTATION BETWEEN TWO FRAMES VIA EPIPOLAR SEARCH FOR USE IN A THREE-DIMENSIONAL REPRESENTATION

Ingemar J. Cox, Lawrenceville, and Sebastien Roy, Princeton, both of N.J., assignors to NEC Research Institute, Inc., Princeton, N.J.

Filed Mar. 31, 1995, Ser. No. 414,397

Int. Cl.[6] G06K *9/00;9/36;* **G06F** *15/00*

U.S. Cl. 382—154 **9 Claims**



1. In a process for the three dimensional representation of a scene from a plurality of two-dimensional images of the scene that depends on knowing the amount of rotation involved in the viewpoints represented by a pair of different images of the scene, the method for approximating the amount of rotation involved comprising the steps of:

(a) determining a plurality of corresponding pairs of epipolar lines in a pair of images of the scene assuming a specific amount of rotation between the two viewpoints of the pair of images;

(b) preparing a histogram of the pixel intensities along each of the epipolar lines;

(c) determining the sum of the squared differences of the pixel intensity levels of the histograms of each pair of corresponding epipolar lines of the two images;

(d) determining the total of such sums;

(e) repeating steps a, b, c and d for different amounts of assumed rotation; and

(f) using the amount of assumed rotation that is associated with the smallest total determined in step d.

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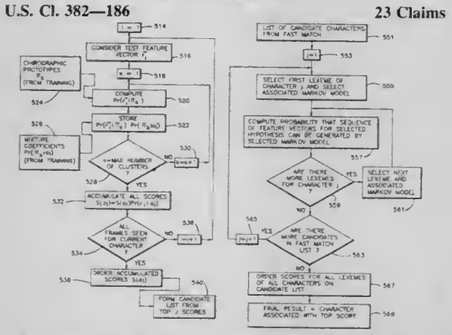
SYSTEM AND METHOD FOR AUTOMATIC HANDWRITING RECOGNITION WITH A WRITER-INDEPENDENT CHIROGRAPHIC LABEL ALPHABET

Eveline Jeannine Bellegarda; Jerome Rene Bellegarda, both of Goldens Bridge; David Nahamoo, White Plains, and Krishna Sundaram Nathan, New York, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 156,335, Nov. 23, 1993, abandoned. This application Apr. 19, 1995, Ser. No. 424,236

Int. Cl.[6] G06K *9/18*

U.S. Cl. 382—186 **23 Claims**



1. A method for operating a handwriting recognition system having a programmed digital data processor, comprising the data processor executed steps of:

generating a sequence of feature vectors in response to a two-dimensional trace associated with the input handwriting;

projecting the sequence of feature vectors onto a higher dimensional feature space that represents sub-character sections of the input handwriting;

performing a fast match of the sequence of feature vectors by generating a list of probable candidate characters using single-state, hidden Markov models (HMMs) having output probability distributions obtained from writer-independent higher dimensional feature space prototype distributions; and

performing a detailed match on the list of probable candidate characters using multi-state, writer independent HMMs to identify a most probable character sequence that the input handwriting represents; wherein

at least one of the steps of performing a fast match and performing a detailed match operate in accordance with a supervision process.

5,644,653

INFORMATION PROCESSING APPARATUS AND CONTROL METHOD THEREOF HAVING USER CHARACTER RECOGNITION

Shinichi Sunakawa, Kawasaki; Kazutoshi Shimada, Yokosuka; Eisaku Tatsumi, Yokohama; Noriyuki Suzuki, Tokyo, and Katsuhiko Nagasaki, Ichikawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 26, 1994, Ser. No. 233,888

Claims priority, application Japan, May 7, 1993, 5-106638; Jul. 2, 1993, 5-164487

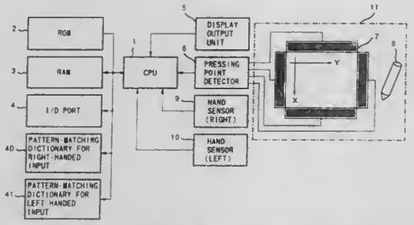
Int. Cl.[6] G06K *9/00;* **G06F** *3/00*

U.S. Cl. 382—187 **10 Claims**

1. An electronic apparatus which performs handwriting recognition comprising:

detection means for detecting a position at which a palm of a user is rested;

discrimination means for discriminating whether a user who performs handwriting input is right-handed or left-handed on the basis of the position of the palm detected by said detection means;



selection means for selecting one of a plurality of dictionaries for character recognition, based on a discrimination result from said discrimination means; and

character recognition control means for controlling predetermined character recognition which refers to the dictionary selected by said selection means.

5,644,654

IMAGE PROCESSING APPARATUS CAPABLE OF EFFICIENT CODING OF COMPLEX SHAPE INFORMATION

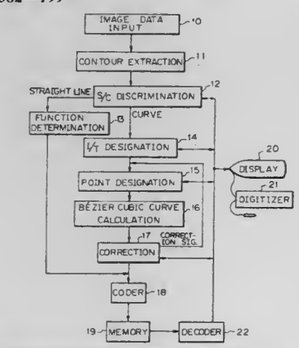
Ken Onokera, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 90,629, Jul. 12, 1993, abandoned, which is a continuation of Ser. No. 811,913, Dec. 23, 1991, abandoned, which is a continuation of Ser. No. 449,149, Dec. 15, 1989, abandoned, which is a continuation of Ser. No. 176,272, Mar. 31, 1988, abandoned. This application Feb. 13, 1995, Ser. No. 387,627

Claims priority, application Japan, Apr. 6, 1987, 62-083007; Apr. 6, 1987, 62-083008

Int. Cl.[6] G06K *9/48*

U.S. Cl. 382—199 **24 Claims**



1. An image processing apparatus comprising:

first deriving means for deriving coordinates of two end points of a segment of a curve obtained from data of a contour of an image and slopes of the curve segment at the two end points;

second deriving means for deriving coordinates for specifying an approximate curve based on the coordinates of the two end points and the curve slopes derived by said first deriving means and coordinates of an intermediate point on the curve segment, and deriving the approximate curve based on the derived specifying coordinates and the coordinates of the two end points;

error deriving means for deriving an error between the curve segment and the approximate curve derived by said second deriving means;

deciding means for changing a position of the intermediate point between the two end points and causing said second deriving means and said error deriving means to repeat the approximate curve deriving and the error deriving in response to the

changed position of the intermediate point and for deciding (a) the specifying coordinates derived by said second deriving means with the error derived by said error deriving means being the smallest and (b) the coordinates of the two end points as sample point data for representing the approximate curve; and

memory means for storing the sample point data for representing the approximate curve decided by said deciding means.

5,644,655

IDENTIFICATION METHOD AND APPARATUS

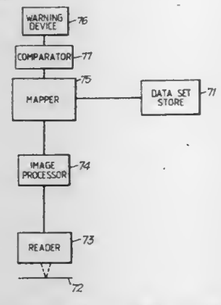
Colin George Windsor, Goring, United Kingdom, assignor to United Kingdom Atomic Energy Authority, Didcot, United Kingdom

Filed May 3, 1995, Ser. No. 433,046

Claims priority, application United Kingdom, May 13, 1994, 9409773

Int. Cl.[6] G06K *9/62*

U.S. Cl. 382—209 **6 Claims**



1. A method of comparing two nominally identical entities a first one of which is designated as a reference entity, comprising the operations of producing an image of the reference entity, extracting therefrom an assembly of arcs related to linear features of the image of the reference entity, producing a first data set representative of the assembly of arcs extracted from the image of the reference entity, storing the first data set, reproducing from the stored data set a plurality of the assemblies of arcs extracted from the image of the reference entity, mapping the reproduced assemblies of arcs upon one another to establish a standard level of differences between the assemblies of arcs extracted from the same image so as to establish a criterion of an acceptable level of probability of identity between two entities being compared, producing an image of the second entity, extracting therefrom an assembly of arcs related to linear features of the image of the second entity, producing a second data set representative of the assembly of arcs extracted from the image of the second entity, using the first and second data sets to reproduce assemblies of arcs extracted from the images of the reference and second entities, mapping said last mentioned reproduced assemblies one upon the other and determining the level of difference therebetween, comparing the determined level of difference between the assemblies of arcs extracted from the images of the reference and second entities with the standard level of difference between the repeated mappings of the assemblies of arcs extracted from the reference entity image to establish the level of probability of identity between the entities, and providing an indication of the acceptance or rejection of the proposition that the two entities are identical.

5,644,656

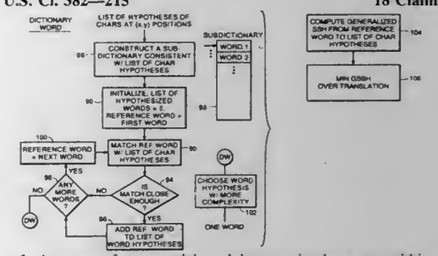
METHOD AND APPARATUS FOR AUTOMATED TEXT RECOGNITION

Mohamad A. Akra, Beirut, Lebanon, and Sanjoy K. Mitter, Cambridge, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jun. 7, 1994, Ser. No. 254,938

Int. Cl.[6] G06K *9/62*

U.S. Cl. 382—215 **18 Claims**



1. Apparatus for recognizing alphanumeric characters within a sample, comprising:

(A) a data storage device for storing a plurality of first sets of data, each of the first sets of data is representative of a different alphanumeric character template and includes a plurality of data points which together define the shape of the template;

(B) a template applicator for:

receiving a second set of data which is representative of a sample to be recognized and which includes a plurality of data points which together define the shape of the sample,

accessing the first sets of data and applying each of the first sets of data to the second set of data according to a single-sided Hausdorff function to identify each template shape which is included substantially within the sample shape regardless of whether the sample shape has other portions thereof within which the template shape is not substantially included and thus regardless of whether the sample shape and the template shape have a substantially one-to-one symmetrical correspondence, and

outputting a plurality of third sets of data, each of the third sets of data is representative of at least one of the template shapes identified as included substantially within the sample shape; and

(C) a template selector for:

receiving the third sets of data,

manipulating the third sets of data to determine which third set of data represents the template shape or shapes having the largest number of data points and designating that third set of data as representative of a recognized version of the sample, and

outputting a fourth set of data which is representative of the recognized version of the sample.

5,644,657

METHOD FOR LOCATING AND DISPLAYING INFORMATION IN A POINTER-BASED COMPUTER SYSTEM

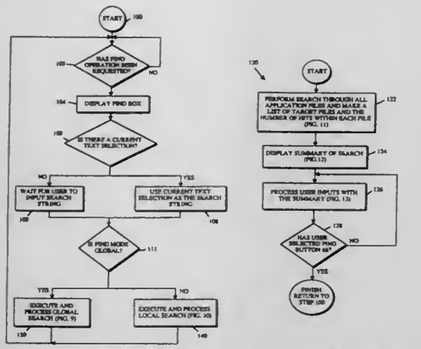
Stephen P. Capps, San Carlos, and John R. Meier, Cupertino, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 1,121, Jan. 5, 1993, which is a continuation-in-part of Ser. No. 889,660, May 27, 1992. This application Jun. 1, 1995, Ser. No. 456,747

Int. Cl.[6] G06K *9/72*

U.S. Cl. 382—229 **39 Claims**

1. A method of controlling a display screen for searching the contents of a memory device associated with a pointer-based computer system and displaying the search results on the display screen associated with the computer system, the computer system



having a processor and a plurality of applications, at least one of which is running on the processor, wherein the contents of the memory device include a plurality of application text files that are each associated with at least one of the plurality of applications and each capable of containing a plurality of records capable of storing textual information, the method comprising the steps of:

a) receiving a find command;

b) displaying a find dialog box on the display screen in response to the find command;

c) receiving a search string comprising a plurality of characters, said characters being input into said dialog box by interaction of a pointer with the display screen, and displaying the search string in the find dialog box;

d) determining whether a global search mode or a local search mode has been selected by interaction of the pointer with the display screen;

e) when the local search mode is selected, executing the selected search by searching through the entire textual contents of each record in an application text file stored in the memory device, the selected search being application dependent whereby the application text file is associated with an application program that is currently running on the processor, and

f) when the global search mode is selected, executing the selected search by searching through the entire textual contents of the entire records in the entire application text files stored in the memory device, the selected search being application independent, and making a list of the application text files searched and the number of records within each application text file that contain the search string; and

g) displaying at least a portion of the search results on the display screen.

5,644,658

METHOD OF AND APPARATUS FOR COMPRESSING IMAGE REPRESENTING SIGNALS

Takayuki Sugahara, Kanagawa-ken, and Ichiro Ando, Yokohama, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Division of Ser. No. 187,459, Jan. 28, 1994, Pat. No. 5,542,008, which is a continuation-in-part of Ser. No. 69,469, Jun. 1, 1993, abandoned, which is a continuation of Ser. No. 650,252, Feb. 4, 1991, abandoned. This application Jun. 6, 1995, Ser. No. 468,400

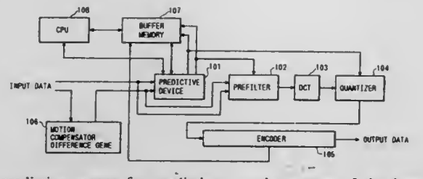
Claims priority, application Japan, Feb. 28, 1990, 2-50269; Mar. 19, 1990, 2-71096; Mar. 19, 1990, 2-71097

Int. Cl.[6] G06K *9/36;9/46*

U.S. Cl. 382—248 **1 Claim**

1. A data compression apparatus comprising:

block separating means for separating input image data included in a signal inputted to the apparatus into blocks each having a predetermined number of successive pixels and outputting a signal including separated data therein;



predicting means for predicting a code amount of the input image data and outputting a prediction signal including code prediction data therein;

limiting means for limiting a band of the input image data in correspondence with the code prediction data in the prediction signal outputted from said predicting means and outputting a limited signal including band limited input image data therein;

transform means for subjecting the band limited input image data in the limited signal outputted from said limiting means to a predetermined orthogonal transform and outputting a transformed signal including transformed data therein;

quantizing means for quantizing the transformed data in the transformed signal outputted from said transform means and outputting a quantized signal including quantized data therein;

encoding means for encoding the quantized data in the quantized signal outputted from the quantizing means and outputting encoded quantized data in a plurality of segments; and

means for controlling said predicting means so that a code amount of each segment of the encoded quantized data outputted from said encoding means is approximately constant, each said segment including a predetermined number of blocks of encoded quantized data.

5,644,659

PATTERN OUTPUT APPARATUS

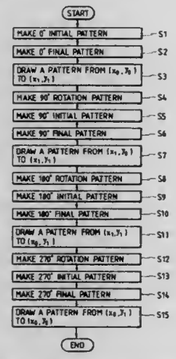
Kazuyuki Honda, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 158,372, Nov. 29, 1993, abandoned, which is a continuation of Ser. No. 68,315, May 28, 1993, abandoned, which is a continuation of Ser. No. 888,303, May 27, 1992, abandoned, which is a continuation of Ser. No. 645,703, Jan. 25, 1991, abandoned. This application Apr. 28, 1995, Ser. No. 430,621

Claims priority, application Japan, Jan. 30, 1990, 2-019727

Int. Cl.[6] G06K *9/36*

U.S. Cl. 382—276 **19 Claims**



1. A rule pattern generating apparatus comprising:

memory means for storing a base dot pattern prepared in advance for use in generating a rule line;

means for forming, from the base dot patten stored in said memory means, modified dot patterns, by cutting off, at a 45° angle, an end of the base dot pattern; and

means for generating a corner of a frame comprising rule lines, by combining the modified dot patterns formed by said forming means with each other.

5,644,660

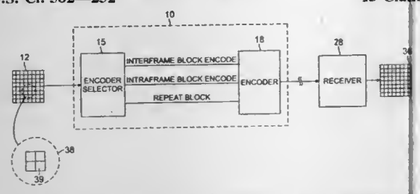
METHOD AND APPARATUS FOR EFFICIENTLY TRANSMITTING FORCED UPDATES IN A MOVING PICTURE CODEC

John E. Bruder, Arlington, Mass., assignor to PictureTel Corporation, Andover, Mass.

Filed Apr. 9, 1992, Ser. No. 865,319

Int. Cl.[6] G06K *9/36*

U.S. Cl. 382—232 **15 Claims**



1. A method for encoding and transmitting a block of data in each of a sequence of frames, the method comprising the steps of:

calculating a first energy value representative of the approximate number of bits required to encode said block of data using an interframe encoding technique,

calculating a second energy value representative of the approximate number of bits required to encode the block of data using intraframe encoding, and

transmitting said block using intraframe encoding if said second energy value is approximately less than said first energy value.

5,644,661

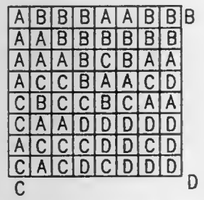
IMAGE INTERPOLATOR FOR AN IMAGE DISPLAY SYSTEM

Robert William MacLaughlin Smith, Gloucester, England; Alastair Miles Sinton, Taupo, New Zealand, and Francis Joseph McArdle, Sheffield, England, assignors to British Technology Group Limited, London, England

Continuation of Ser. No. 142,987, Oct. 29, 1993, abandoned. This application May 16, 1995, Ser. No. 442,299

Int. Cl.[6] G06K *9/42*

U.S. Cl. 382—300 **11 Claims**



1. A method of enhancing a displayed image for an image display apparatus, comprising the steps of:

using signal processing means to generate input image signals representative of image data, and designating an array of pixels based on said signals,

designating as primary image pixels a limited plurality of display pixels within said array of pixels,

determining an allocation pattern such that each remaining display pixel within said array is associated with a particular one of the primary image pixels,

determining an image value for each of the primary image pixels,

applying each determined image value to the respective primary image pixel and to each of the remaining pixels which is associated therewith,

wherein the allocation pattern is such that a distribution of the display pixels associated with each primary image pixel is, at a distance from the respective primary image pixel, increasingly sporadic with increasing distance from said respective primary image pixel, and

utilizing said distribution of display pixels to output on the display apparatus an interpolated image based on said image data.

5,644,662

MULTIPLE PROCESSING OF RADIOGRAPHIC IMAGES BASED ON A PYRAMIDAL IMAGE DECOMPOSITION

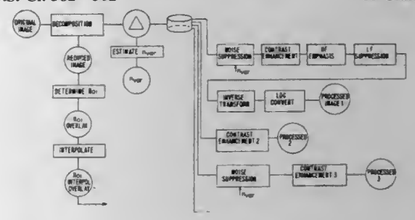
Pieter Paul Vuylsteke, Mortsel, Belgium, assignor to AGFA-Gevaert, Mortsel, Belgium

Continuation of Ser. No. 84,530, Jun. 28, 1993, abandoned. This application Mar. 28, 1995, Ser. No. 412,355

Claims priority, application European Pat. Off., Feb. 11, 1993, 93200375

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—302 **16 Claims**



1. A method of generating more than one differently processed image version originating from a single radiation image, comprising the steps of:

1. applying a decomposition transform to said radiation image to decompose it into a multiresolution representation which represents localized image detail at multiple resolution levels,

2. storing said multiresolution representation into a memory,

3. producing at least two differently processed image versions by applying at least two individual processing cycles to said multi-resolution representation, each processing cycle comprising the steps of:

(i) retrieving said multiresolution representation from said memory,

(ii) modifying the multiresolution representation at at least one resolution level by applying a non-linear monotonically increasing odd modifying function with a slope that gradually decreases with increasing argument values to elements of the multiresolution representation that belong to a same resolution level,

(iii) obtaining a processed image representation by applying the inverse of said decomposition transform to the modified multiresolution representation,

(iv) applying said processed image presentation to a hard copy recorder or to a display device to control generation of density values of a processed image version of said original image.

5,644,663

PORTABLE IMAGE SCANNER HAVING MANUAL OR AUTOMATIC FEED

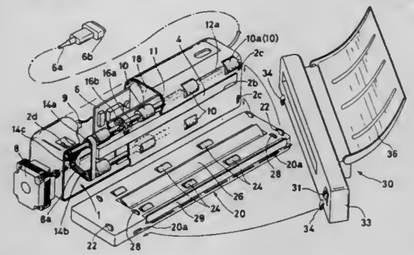
Hidemi Saito, Yamanashi-ken; Takashi Kanda; Yoshihito Iida, both of Kofu, and Naoto Mochizuki, Yamanashi-ken, all of Japan, assignors to NISCA Corporation, Yamanishi-ken, Japan

Continuation of Ser. No. 104,545, Aug. 11, 1993, abandoned. This application Apr. 10, 1995, Ser. No. 419,521

Claims priority, application Japan, Aug. 11, 1992, 4-235432; Aug. 11, 1992, 4-235433; Aug. 11, 1992, 4-235434; Nov. 14, 1992, 4-328525

Int. Cl.[6] G06K *9/22*

U.S. Cl. 382—313 **8 Claims**



1. A portable image scanner for scanning a document to optically read an image on the document, comprising:

a scanner body including a bottom, a motor having sufficient motive force to move said scanner body, driving rollers disposed on said bottom and driven by said motor for imparting a relative motion to the document to be scanned, image reading means for optically reading out the image data on the document while relatively moving the document, and a document sensor for detecting the document placed opposite to said bottom;

a cover member detachably attached to said scanner body to define a document passage between itself and said scanner body and to cover said bottom of said scanner body;

said cover member being provided with press rollers which come into contact with said driving rollers of said scanner body so as to forward the document through said document passage by said driving rollers of said scanner body and said press rollers of said cover member when being united with said scanner body; and

a document feeder having a document tray for stacking one or more documents thereon, said document feeder being positionable in a first position fully detached from said scanner body and cover member and in a second position attached to at least one of said scanner body and cover member which are united with each other, for sending out said documents one by one into said document passage formed between said united scanner body and cover member.

5,644,664

FIBER OPTIC DIGITAL TRANSMISSION SYSTEM

William K. Burns, and Ganesh K. Gopalakrishnan, both of Alexandria, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

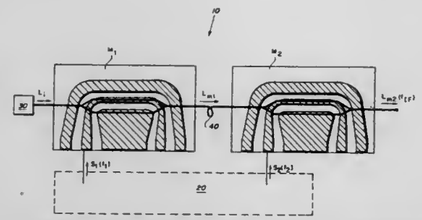
Continuation-in-part of Ser. No. 258,028, Jun. 10, 1994, Pat. No. 5,422,966. This application Jun. 6, 1995, Ser. No. 471,461

Int. Cl.[6] G02B *6/10*

U.S. Cl. 385—2 **19 Claims**

1. A transmission system responsive to an electrical input information signal comprising:

(a) means for modulating the input signal with a microwave subcarrier signal to produce a subcarrier modulated signal;



(b) a first interferometric modulator responsive to a source light and to the subcarrier modulated signal for producing a first modulated optical signal;

(c) a second interferometric modulator cascade coupled to said first modulator and being responsive to the first modulated optical signal and to a microwave local oscillator signal for producing a second modulated optical signal;

(d) means coupled between said first and second modulators for transmitting the first modulated optical signal from said first modulator to said second modulator; and

(e) means responsive to the second modulated optical signal for producing an output signal.

5,644,665

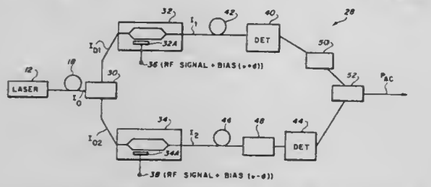
MULTI-OCTAVE, HIGH DYNAMIC RANGE OPERATION OF LOW-BIASED MODULATORS BY BALANCED DETECTION

William K. Burns, Alexandria, Va.; Robert P. Moeller, Ft. Washington, Md., and Ganesh K. Gopalakrishnan, Hatbro, Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 27, 1995, Ser. No. 508,119

Int. Cl.[6] G02F *1/035*

U.S. Cl. 385—3 **8 Claims**



1. An optical link for modulating an optical carrier with an information signal comprising:

(a) an optical power spitter for receiving an optical carrier and providing about one-half of the power of said optical carrier to a first path having a predetermined path and the remaining power of said optical carrier being provided to a second path having a predetermined path;

(b) a first modulator means receiving said optical carrier at said first path and having means for receiving both said information signal and a phase bias signal with a positive offset quantity to preset the operating point of said first modulator means, said first modulator means providing a first optical output signal modulated by said information signal and representative of said optical carrier present at said first path;

(c) a second modulator means receiving said optical carrier at said second path and having means for receiving said information signal and a phase bias signal with a negative offset quantity to preset the operating point of said second modulator means, said second modulator means providing a second optical output signal modulated by said information signal and representative of said optical carrier present at said second path;

(d) a first detector receiving said first optical output signal and providing a representative first AC output signal thereof;

(e) a second detector receiving said second optical output signal and providing a representative second AC output signal thereof; and

(f) a 180° phase shift device connected to receive one of said first A.C. output signal and one of said second A.C. output signal and having means for connecting its output to the other of said first A.C. output signal and the other of said second A.C. output signal so as to be combined therewith and providing an output signal for said optical link.

5,644,666

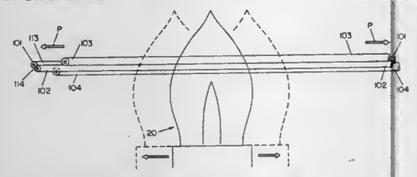
BROADBAND OPTICAL FIBER COUPLER AND METHOD OF MAKING

Daniel R. Campbell, Franklin, Mass., and Pamela A. Weber, Baltimore, Md., assignors to Gould Electronics Inc., Eastlake, Ohio

Filed Dec. 22, 1995, Ser. No. 577,344

Int. Cl.[6] G02B *6/26*

U.S. Cl. 385—43 **22 Claims**



1. A fused fiber optic coupler, comprised of:

a first pair of axially elongated cylindrical fibers, the fibers of said first pair each having a circular transverse cross-section of a first diameter, said first pair of fibers being in fused contact with each other along a line of contact and forming grooves on opposite sides of said line of contact; and

a second pair of axially elongated cylindrical fibers, the fibers of said second pair each having a circular transverse cross-section of a second diameter greater than said first diameter, one fiber from said second pair of fibers being disposed in each of said grooves and fused to each of said first pair of fibers.

5,644,667

INTEGRATED SEMICONDUCTOR OPTICAL DEVICES AND METHOD OF MANUFACTURE EMPLOYING SUBSTRATE HAVING ALIGNMENT GROOVE

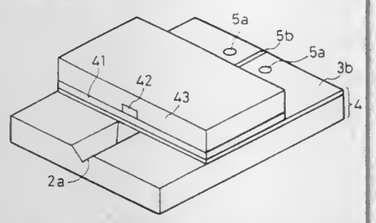
Haruhiko Tabuchi, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 25, 1994, Ser. No. 186,027

Claims priority, application Japan, Mar. 24, 1993, 5-065559

Int. Cl.[6] G02B *6/36*

U.S. Cl. 385—49 **22 Claims**



1. A method of manufacturing an integrated semiconductor optical device comprising the steps of:

providing a support substrate having a main surface;

forming a groove, which receives an optical fiber, on and extending from the main surface into the support substrate;

forming a flat surface layer on said main surface of said support substrate by applying a flat plate member thereon, the flat plate member extending across and being disposed over and covering said groove;

while retaining a first portion of the flat plate member, applied on said main surface of said support substrate, removing a second portion of the flat plate member thereby to expose said groove theretofore covered by the second portion of the flat plate member so removed;

positioning an optical component on said flat surface layer, said optical component having an optical axis and said optical component being assembled on said flat surface layer with said optical axis thereof above said flat surface layer relatively to and remote from said main surface of said support substrate; and

assembling and positioning the optical fiber in said groove, the optical fiber having an axis and the axis being positioned in alignment with the optical axis of the optical component.

5,644,668

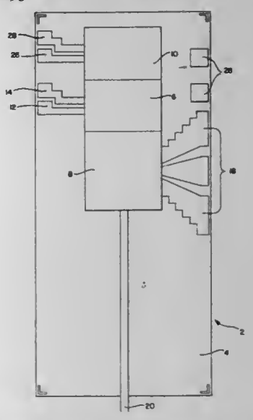
HIGH SPEED ELECTRO-OPTICAL SIGNAL TRANSLATOR

Frank A. Chambers, Warrenville; R. Gilbert Kaufman, Chicago; Melvin C. Schmidt, Lisle; Michael G. Ressl, Western Springs, and John G. Kwasegrock, Algonquin, all of Ill., assignors to E-Systems, Inc., Dallas, Tex.

Division of Ser. No. 802,897, Dec. 6, 1991, Pat. No. 5,276,756. This application Nov. 8, 1993, Ser. No. 149,060

Int. Cl.[6] G02B *6/00;6/36*

U.S. Cl. 385—90 **9 Claims**



1. For an electro-optical signal translator that serves as an interface between electrical and optical signals, a method of attaching at least one translator component on a translator component mounting substrate, comprising the steps of:

positioning a lower surface of said at least one component on an upper surface of said substrate to mount said at least one component to said substrate;

directing radiation through the thickness of a selected one of a group that comprises said substrate and said at least one component that has a spectrum in the transparent region of the absorption spectrum for said penetrated thickness to at least a portion of an upper surface of said substrate and at least a portion of an adjacent lower surface of said at least one component that absorbs a significant amount of said directed radiation; and

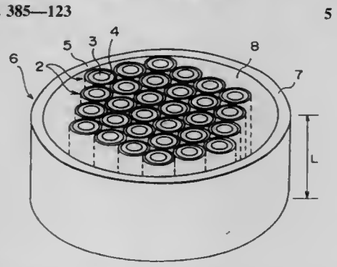
controlling the power of said directed radiation to bond said at least portion of an upper surface of said substrate to said at least a portion of an adjacent lower surface of said at least one component.

5,644,669

PHYSICAL PROPERTY EVALUATION METHOD FOR OPTICAL FIBER COATING, AND COATED OPTICAL FIBER

Kazumasa Oishi; Atsushi Suzuki; Nobuhiro Akasaka, and Yasuo Matsuda, all of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jan. 22, 1996, Ser. No. 589,326
Claims priority, application Japan, Jan. 23, 1995, 7-008202
Int. Cl.[6] G02B *6/02*
U.S. Cl. 385—123 **5 Claims**



1. A method for evaluating a physical property of a first coating layer in a coated optical fiber having an optically transparent member, the first coating layer surrounding the periphery of the optically transparent member and being an elastic body, and a second coating layer surrounding the periphery of the first coating layer and having a higher tensile modulus of elasticity than said first coating layer has, which is a physical property evaluation method for optical fiber coating, comprising:

a step of producing a sample with the both end faces being parallel by cutting said coated optical fiber by a plane normal to a direction of the center axis of said optically transparent member;

a step of holding said sample by fixing said second coating layer;

a step of pushing only said optically transparent member to impose a load thereon, thereby giving displacement to said optically transparent member and causing shear elastic deformation to said first coating layer; and

a step of calculating a shear modulus of elasticity or a tensile modulus of elasticity of said first coating layer, based on an amount of the displacement of said optically transparent member and a value of the load imposed thereon.

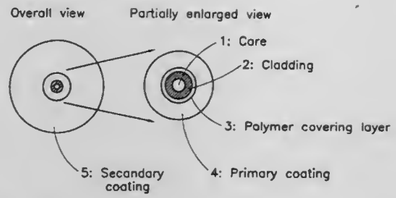
5,644,670

BROAD BANDWIDTH OPTICAL FIBERS, JACKETED OPTICAL FIBERS AND OPTICAL FIBER CORDS

Seiji Fukuda, Tokyo; Hisaaki Kobayashi, Nishikasugai-gun; Shoshiro Taneichi, Tajimi, and Tetsuya Yamamoto, Nagoya, all of Japan, assignors to Toray Industries, Inc., Japan

PCT No. PCT/JP95/01826, § 371 Date May 8, 1996, § 102(e) Date May 8, 1996, PCT Pub. No. WO96/08741, PCT Pub. Date Mar. 21, 1996
PCT Filed Sep. 13, 1995, Ser. No. 637,806
Claims priority, application Japan, Sep. 16, 1994, 6-221244
Int. Cl.[6] G02B *6/132;6/16*
U.S. Cl. 385—124 **17 Claims**

1. A broad bandwidth optical fiber comprising a quartz glass core with a graded index profile, a quartz glass cladding provided over said core and a polymer covering layer provided over said cladding, with said polymer covering layer made of a UV-cured hard polymer with a Shore hardness of D 55 or greater and at least 5 μm thick.

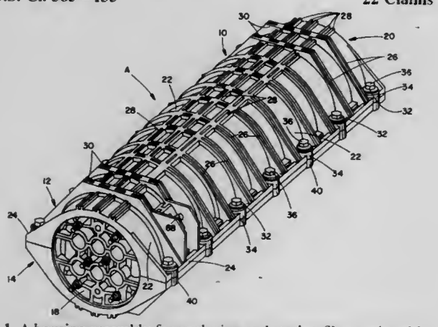


5,644,671

OPTICAL FIBER SPICE CASE WITH CROSS CONNECT FEATURE

Erwin H. Goetter, Chesterland; Daniel J. Levac, Bellville, both of Ohio, and Gary R. Krout, Tampa, Fla., assignors to Preformed Line Products Company, Mayfield Village, Ohio

Filed Jun. 23, 1995, Ser. No. 493,925
Int. Cl.[6] G02B *6/26*
U.S. Cl. 385—135 **22 Claims**



1. A housing assembly for enclosing and storing fiber optic cable splices comprising:

first and second end plates axially spaced from one another and defining a storage space therebetween;

a pair of opposed housing members contoured to enclose the end plates and the storage space, said housing members being releasably and sealably clamped to each other and to said end plates;

a fiber optic storage receptacle in the storage space; and,

a fiber optic connect panel in the storage space.

5,644,672

OPTICAL FIBER HOLDER USED IN OPTICAL CONNECTORS

Toshiyasu Tanaka, Yokohama, Japan, assignor to Asahi Kohoen, Co., Ltd., Yokohama, Japan

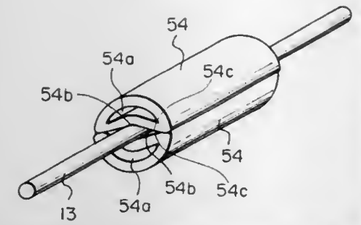
Filed Nov. 28, 1995, Ser. No. 566,573
Claims priority, application Japan, Dec. 5, 1994, 6-329979
Int. Cl.[6] G02B *6/36*
U.S. Cl. 385—137 **7 Claims**

1. An optical fiber holder comprising:

a pair of hollow metal members opposingly provided so as to interpose an optical fiber between them, and

a holding case that holds the hollow metal members in such a state that their peripheries are pressed against an inner chamber wall of said bolder;

each of said hollow metal members being in the shape of a half-round cylinder for its periphery, each of said hollow



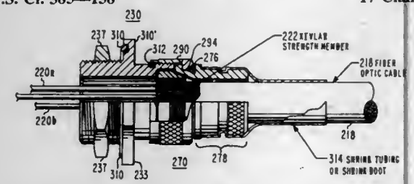
metal members having a hollow longitudinal chamber internal to said hollow metal member, and being provided in such a manner that the planar portions thereof face each other so that the optical fiber is held between said hollow metal members at the center of each planar portion thereof.

5,644,673

OPTICAL-FIBER-CABLE TO BULKHEAD CONNECTOR

Richard Joseph Patterson, Medford, N.J., assignor to Lockheed Martin Corp., Moorestown, N.J.

Filed Jan. 16, 1996, Ser. No. 586,097
Int. Cl.[6] G02B *6/00*
U.S. Cl. 385—138 **17 Claims**



1. A connector assemblage, comprising:

a bulkhead defining an aperture through which an optical signal path extends;

an optical cable including at least one optical fiber and an longitudinal strength member surrounding said optical fiber; and

a bulkhead connector including:

(a) a bulkhead member defining a cylindrical bore therethrough, and also defining an exterior thread at a first end thereof, said exterior thread having root and crest diameters, said bulkhead member being mechanically fastened to said bulkhead at a second end remote from said first end, with said bore contiguous with said aperture in said bulkhead, and with said bore surrounding a portion of said optical signal path, whereby tensile forces applied to said optical cable may tend to pull said optical fiber from said bore;

(b) an annular male cone member defining a cylindrical bore surrounding a portion of said optical fiber and of said longitudinal strength member, said male cone member including an outer surface which tapers from a larger diameter to a smaller diameter, said larger diameter being located at a first end of said male cone member, which first end lies adjacent to said first end of said bulkhead member, and said smaller diameter of said male cone member being located at a second end of said male cone member, which is remote from said first end of said male cone member, said larger diameter of said male cone member being no greater than said root diameter of said exterior thread of said bulkhead member, but great enough to bear against said first end of said bulkhead member;

(c) an annular female cone member defining a conical bore surrounding a portion of said optical fiber and of said longitudinal strength member, said conical bore of said female cone member having an inner surface which tapers from a larger diameter at a first end of said conical bore to a smaller diameter at a second end of said conical bore, said first end of said conical bore of said female cone member lying, when said connector assemblage is assembled, nearer to said bulkhead member, and said second end of said female cone member being more remote from said bulkhead member, said larger diameter of said conical bore of said female cone member being about equal to said larger diameter of said male cone member, and said smaller diameter of said conical bore of said female cone member being about equal to said smaller diameter of said male cone member, and the lengths of said male and female cone members being selected so that, when juxtaposed, said male and female cones at least approximately mate, said male and female cone members, when so juxtaposed, having a terminal portion of said strength member extending therebetween, said terminal portion of said strength member being remote from that portion of said strength member which extends through said conical bore of said female cone member, said female cone member also including a bearing surface adjacent said second end, by which said female cone member may be urged toward said bulkhead member;

a compression member associated with said female cone member, said compression member defining first and second ends, and having an interior thread adjacent said first end which mates with said exterior thread of said bulkhead member, said compression member also including a rotatable bearing portion coupled to said bearing portion of said female cone member, so that tightening of said interior thread of said compression member onto said exterior thread of said bulkhead member tends to compress said female cone member toward said male cone member, and to capture said terminal portion of said strength member of said optical cable between said mating male and female cone members, but said tensile forces nevertheless tend to pull said strength member from between said cones, with the result that said tensile forces undesirably tend to be transferred to said optical fiber; said connector assemblage further comprising

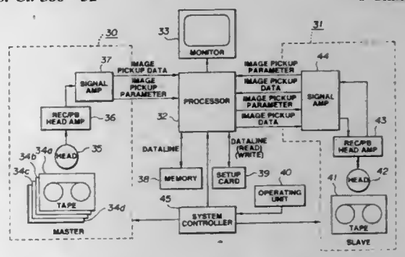
a plurality of concentric grooves formed in one of (a) said outer surface of said male cone member and (b) said inner surface of said female cone member, to provide a greater grip on said strength member, to thereby tend to prevent said strength member of said optical cable from pulling free of said mating surfaces of said male cone member and said female cone member.

5,644,674

IMAGING PARAMETER RECORDING APPARATUS IMAGING METHOD AND EDITING SYSTEM

Kenichi Aihara, Tokyo; Yoshio Chiba, and Taku Kihara, both of Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Division of Ser. No. 397,227, Apr. 20, 1995. This application Jun. 19, 1996, Ser. No. 666,786
Claims priority, application Japan, Jul. 16, 1993, 6-076761
Int. Cl.[6] H04N *5/76*
U.S. Cl. 386—52 **6 Claims**



1. An editing system for editing imaging signals from a plurality of master side recording media and for recording the imaging signals on slave side recording medium, each of the master side recording media having recorded thereon imaging signals and imaging parameter indicating imaging conditions of the imaging

means at a time point when said imaging signals have been obtained, said editing system comprising

master side reproducing means for reproducing said imaging signals and the imaging parameters from a desired one of the master side recording media,

signal processing means connected to said master side reproducing means for processing the imaging signals supplied from said reproducing means in a predetermined manner and outputting processed imaging signals,

slave side recording/reproducing means connected to said signal processing means for recording said imaging signals and said imaging parameters from said signal processing means on said slave side recording medium and for reproducing at least the imaging parameters among the imaging signals and the imaging parameters recorded on said recording medium, and

system control means for controlling said master side reproducing means, said signal processing means and said slave side recording/reproducing means,

said system controlling means controlling said signal processing means on the basis of imaging parameters reproduced by said slave side recording/reproducing means and imaging parameters reproduced by said master side reproducing means from another of said master side recording media, for changing signal processing parameters for imaging signals reproduced from said another master side recording medium at said signal processing means, said system control means controlling said slave side recording/reproducing means for recording imaging signals processed under the changed parameters on said slave side recording medium.

5,644,675

METHOD OF HELICAL SCAN MAGNETIC TAPE RECORDING

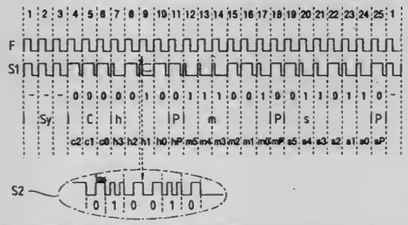
Jürgen Kaaden, Villingen-Schwenningen; Gerhard Reiner, Schonbach, and Peter Mahr, Königsfeld, all of Germany, assignors to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Germany

Continuation of Ser. No. 164,248, Dec. 9, 1993, abandoned. This application Mar. 27, 1995, Ser. No. 410,417

Claims priority, application Germany, Dec. 12, 1992, 42 41 986.7

Int. Cl.[6] G11B *27/32*

U.S. Cl. 386—60 **15 Claims**



1. A time and control code generator for video recording and replay use, said generator comprising:

a pulse generator generating a waveform of pulses having a television frame frequency repetition rate;

a source of a time code signal related to said television frame frequency repetition rate and comprising data bits representative of hours, minutes and seconds of time and data bits representative of frames;

pulse width modulating means responsive to said time representative data bits for moving trailing edges of said pulses to a first position when said time representative data bits have a first logical value and to a second position when said time representative data bits a have a second logical value; and,

signal generating means responsive to said frame representative data bits and generating a signal having a first frequency when said frame representative data bits have said first logical value and having a second frequency when said frame representative data bits have said second logical value, said signals of said first and second frequencies being added to said width modulated signal to occur with symmetrical positions about said trailing edges of said width modulated pulses, said modulated positions of said trailing edges being undisturbed by said symmetrical positions.

5,644,676

THERMAL RADIANT SOURCE WITH FILAMENT ENCAPSULATED IN PROTECTIVE FILM

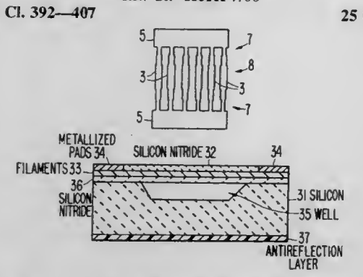
Martti Blomberg, Vantaa; Markku Orpana, Espoo; Ari Lehto, Helsinki, and Hannu Kattelus, Vantaa, all of Finland, assignors to Instrumentarium Oy, and Vaisala Oy, both of Helsinki, Finland

Filed Jun. 23, 1995, Ser. No. 494,636

Claims priority, application Finland, Jun. 23, 1994, 943037

Int. Cl.[6] H01K *7/00*

U.S. Cl. 392—407 **25 Claims**



1. An electrically modulatable radiant source, comprising:

an essentially planar substrate;

a well or hole formed into the substrate;

at least one incandescent filament attached to the substrate, said incandescent filament being aligned at said well or hole, said incandescent filament being formed from a metallic compound which readily oxidizes at an operating temperature of said incandescent filament;

an oxidation resistant film encapsulating said incandescent filament to prevent said filament from oxidizing; and

contact pads formed onto the substrate at both ends of the incandescent filament for feeding electric current to the incandescent filament.

5,644,677

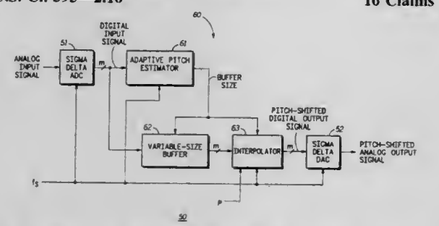
SIGNAL PROCESSING SYSTEM FOR PERFORMING REAL-TIME PITCH SHIFTING AND METHOD THEREFOR

Sangil Park, and Dion M. Funderburk, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 13, 1993, Ser. No. 120,266

Int. Cl.[6] G10L *5/00*

U.S. Cl. 395—2.16 **16 Claims**



14. A method for performing real-time pitch shifting comprising the steps of:

receiving a digital input signal at a sample dock rate;

storing said digital input signal at successive locations of a variable-size buffer having a variable size associated therewith;

adaptively estimating a fundamental frequency of said digital input signal to provide an estimated fundamental frequency;

changing said variable size of said variable-size buffer in response to said estimated fundamental frequency; and

interpolating said digital input signal stored in said variable-size buffer to provide a digital pitch-shifted output signal.

5,644,678

METHOD OF ESTIMATING VOICE PITCH BY ROTATING TWO DIMENSIONAL TIME-ENERGY REGION ON SPEECH ACOUSTIC SIGNAL PLOT

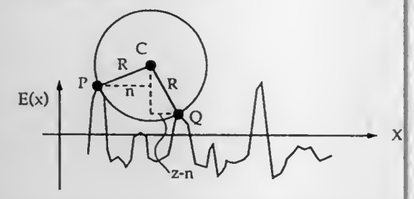
Benedetto Giuseppe Di Ronza, Bari, Italy, assignor to Alcatel N. V., Amsterdam, Netherlands

Filed Jan. 20, 1994, Ser. No. 184,277

Claims priority, application Italy, Feb. 3, 1993, MI93A0169

Int. Cl.[6] G10L *9/00*

U.S. Cl. 395—2.16 **18 Claims**



1. A method of estimating a pitch of a speech acoustic signal in a time interval in which said speech acoustic signal is a voiced one, characterized in that

the pitch corresponds to a distance between contact points of a circle and a plot of energy of said speech acoustic signal as a function of time, the plot being normalized to a limit value, said contact points being obtained by rotating said circle on said plot.

5,644,679

METHOD AND DEVICE FOR PREPROCESSING AN ACOUSTIC SIGNAL UPSTREAM OF A SPEECH CODER

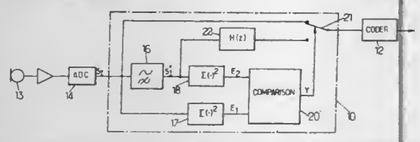
Sophie Scott, Paris, and William Navarro, Velizy Villacoublay, both of France, assignors to Matra Communication, Quimper, France

Filed Jun. 5, 1995, Ser. No. 462,209

Claims priority, application France, Jun. 3, 1994, 94 06824

Int. Cl.[6] G10L *9/00*

U.S. Cl. 395—2.33 **8 Claims**



1. Method of preprocessing an acoustic signal upstream of a speech coder, comprising the steps of:

high-pass filtering said acoustic signal;

comparing the energy of the high-pass filtered signal with the energy of the unfiltered acoustic signal in order to determine a signal state from among a first state for which the energy of the high-pass filtered signal is above a predetermined fraction of the energy of the unfiltered acoustic signal and a second state for which the energy of the high-pass filtered signal is below the predetermined fraction of the energy of the unfiltered signal; and

when said second state is determined, addressing the high-pass filtered signal with pre-emphasized high frequencies to the input of the coder.

5,644,680

UPDATING MARKOV MODELS BASED ON SPEECH INPUT AND ADDITIONAL INFORMATION FOR AUTOMATED TELEPHONE DIRECTORY ASSISTANCE

Gregory J. Bielby, Pointe Claire; Vishwa N. Gupta, Brossard; Lauren C. Hodgson, Beaconsfield; Matthew Lennig; R. Douglas Sharp, both of Westmount, and Hans A. Wasmeier, Ottawa, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Division of Ser. No. 227,830, Apr. 14, 1994, Pat. No. 5,488,652. This application May 25, 1995, Ser. No. 452,191

Int. Cl.[6] G10L *5/06*

U.S. Cl. 395—2.49 **11 Claims**

1. A method for performing desired actions in response to speech signals, comprising:

storing representations of speech signals;

calculating, according to a speech recognition algorithm responsive to the representations of speech signals, measures of probability that the speech signals correspond to each of a plurality of actions in an action vocabulary;

selecting actions in response to the calculated measures of probability and automatically performing said actions from the action vocabulary;

acquiring further data indicative of desired actions;

calculating, according to a speech recognition algorithm responsive to both the representations of the speech signals and the further data, further measures of probability that the speech signals correspond to each of a plurality of actions;

labelling the stored representations of speech signals in response to the further calculated measures of probability; and

calculating speech recognition algorithm model parameters in response to the labelled stored representations of speech signals.

5,644,681

LEARNING METHOD FOR NEURAL NETWORK HAVING DISCRETE INTERCONNECTION STRENGTHS

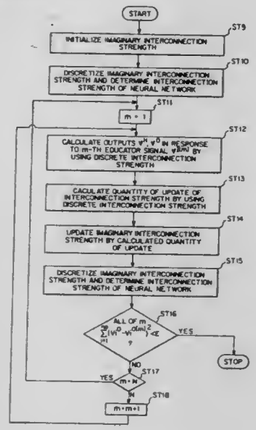
Masanobu Takahashi; Shuichi Tai, both of Hyogo-ken, Japan; Keisuke Kojima, Breinigsville, Pa.; Toshio Shinnishi, and Kazuo Kyuma, both of Hyogo-ken, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 963,083, Oct. 19, 1992, abandoned, which is a continuation-in-part of Ser. No. 622,516, Dec. 5, 1990, abandoned. This application Dec. 23, 1994, Ser. No. 363,597

Claims priority, application Japan, Dec. 18, 1989, 1-327704

Int. Cl.[6] G06F *15/18*

U.S. Cl. 395—23 **25 Claims**



1. A learning method for a neuron computer having a plurality of neurons and interconnections among the neurons, wherein each interconnection has a weight, wherein at least one weight is taken from a discrete set of possible weights, the learning method comprising the steps of:

(a) applying an input to the neuron computer;

(b) obtaining an actual output from the neuron computer;

(c) for each interconnection of the neuron computer having a weight taken from the discrete set,

(i) calculating an update quantity by comparing the actual output to a desired output associated with the applied input to obtain an error and by calculating the update quantity as a function of the error and outputs of neurons of the neuron computer,

(ii) updating an imaginary interconnection strength taken from a range of values, wherein each possible weight in the discrete set corresponds to more than one value in the range of values and each value in the range of values corresponds to only one possible weight in the discrete set, using the calculated update quantity,

(iii) discretizing the updated imaginary interconnection strength by converting the updated imaginary interconnection strength to the corresponding weight in the discrete set; and

(iv) setting the weights of the neuron computer to the corresponding discretized updated imaginary interconnection strengths; and

(d) repeating all steps for a plurality of inputs, until errors in the actual output with respect to the desired output of the neuron computer are below a predetermined value.

5,644,682

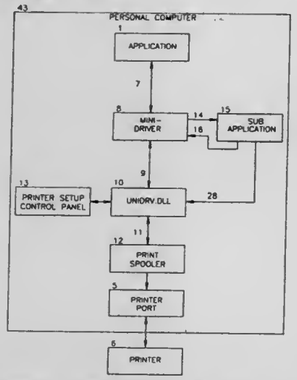
METHOD AND SYSTEM FOR INCORPORATING INDICIA INTO A DOCUMENT GENERATED BY A COMPUTER APPLICATION

Joseph Weinberger, 13 Guernsey La., East Brunswick, N.J. 08816, and Gary Bricault, Rochester, N.Y., assignors to Joseph Weinberger, East Brunswick, N.J.

Filed Dec. 21, 1994, Ser. No. 360,938

Int. Cl.[6] G06F *3/00*

U.S. Cl. 395—101 **14 Claims**



1. In a computer system having an application for creating a source document and a printer driver for creating a document image from said source document and delivering said document image to a printing means, a method for incorporating user unaided readable indicia into said document image prior to delivery to said printing means without modifying said source document, said method comprising the steps of:

(a) interrupting execution of said printer driver in response to an added command in said printer driver which redirects program execution into a sub-application;

(b) adding said user unaided readable indicia to said document image prior to delivery of said document image to said printing means, wherein in response to a set of escape function commands which are redirected by said added command, said sub-application inserts data representing at least part of said user unaided readable indicia, from a device independent file into a device context block of computer memory having at least one page of said document image from said application therein; and

(c) redirecting program flow back to said printer driver.

5,644,683

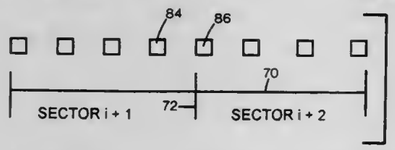
PRINT MODE AND SYSTEM TO ALLEVIATE WAIT-BANDING

Eric P. Ross, Camas, and Thieu X. Dang, Vancouver, both of Wash., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 3, 1995, Ser. No. 398,223

Int. Cl.[6] G06K *15/00*

U.S. Cl. 395—108 **14 Claims**



1. A method of printing with a scanning ink-jet printhead, the method comprising:

providing image data;

composing page sectors of said image data, said page sectors being composed at a variable times;

printing a series of passes according to said image data, the timing of said passes being dependent on said variable times;

storing information regarding actual delays between when previous passes were printed;

determining an average time delay between said passes based on past experience with actual delays between when previous passes were printed; and

printing subsequent passes according to said image data, the timing of said subsequent passes being based on said average time delay.

5,644,684

HIGH-EFFICIENCY COMPRESSION SUITABLE FOR USE IN CHARACTER GENERATION

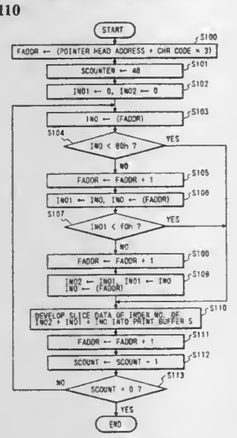
Masaki Nishiyama, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 14, 1994, Ser. No. 209,888

Claims priority, application Japan, Mar. 15, 1993, 5-053895; Mar. 15, 1993, 5-053896; Jul. 27, 1993, 5-185111

Int. Cl.[6] G06K *9/36*

U.S. Cl. 395—110 **21 Claims**



1. A character generating apparatus which combines unit patterns divided into predetermined units to generate character pattern data, said apparatus comprising:

first memory means for storing, for each character and for each character unit pattern, first data indicating that the unit pattern comprises a blank pattern, second data indicating that the unit pattern comprises a specific pattern which appears a plurality of times, or third data indicating that the unit pattern comprises a pattern other than the specific pattern, together with index data corresponding to the second data and pattern data corresponding to the third data;

second memory means for storing pattern data corresponding to the index data;

writing means for performing data writing upon reading data for a unit pattern to be generated from said first memory means, wherein (1) if the first data is read, said writing means writes blank pattern data, (2) if the second data is read, said writing means writes the pattern data stored in said second memory means corresponding to the second data, or (3) if the third data is read, said writing means writes the pattern data corresponding to the third data; and

generating means for generating character pattern data by obtaining exclusive OR of the data written by said writing means for two adjacent unit patterns.

5,644,685

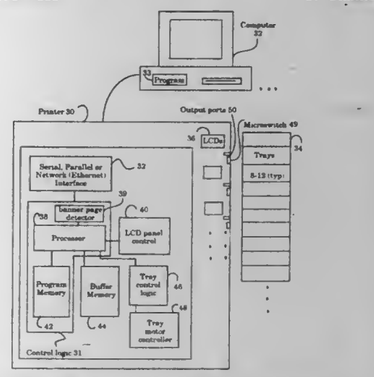
LASER PRINTER OUTPUT DIRECTOR

Geoffrey G. Baehr, Menlo Park, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Dec. 6, 1994, Ser. No. 349,924

Int. Cl.[6] G06K *15/02*

U.S. Cl. 395—111 **17 Claims**



1. An apparatus for directing printed outputs comprising:

a plurality of output trays;

control logic for coupling to a computer, said control logic monitoring data transmission from a computer and extracting a user identifier which uniquely identifies a predetermined user, said computer comprising, an executing program which inserts control characters preceding said user identifier to indicate to said control logic that said user identifier follows said control characters; and

tray control logic for controlling and directing printed outputs for said predetermined user to a corresponding one of said plurality of output trays assigned to said predetermined user using said user identifier, wherein said control characters do not appear on said printed outputs.

5,644,686

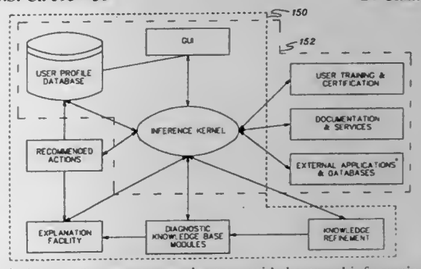
EXPERT SYSTEM AND METHOD EMPLOYING HIERARCHICAL KNOWLEDGE BASE, AND INTERACTIVE MULTIMEDIA/HYPERMEDIA APPLICATIONS

Amir Hekmatpour, Burlington, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 29, 1994, Ser. No. 235,301

Int. Cl.[6] G06F *17/00*

U.S. Cl. 395—50 **24 Claims**



1. An expert system responsive to provided external information, said expert system comprising:

first memory means for storing a hierarchically-structured knowledge base containing inferentially processable information, wherein said hierarchically-structured knowledge base

comprises a hierarchical decomposition comprising a plurality of knowledge trees coupled together in multiple levels, said multiple levels being arranged according to attributes associated with said plurality of knowledge trees, and wherein said multiple levels comprise three distinct levels, said three distinct levels comprising an uppermost level having a domain behavioral knowledge tree, a middle level having a domain structural knowledge tree and a lowermost level having a domain action tree;

second memory means for storing at least one multimedia or hypermedia utility containing non-inferentially accessible information; and

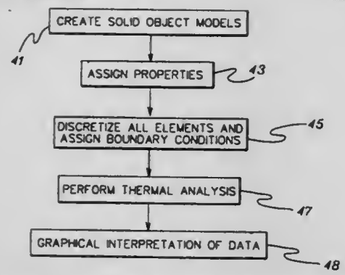
processing means coupled to said first memory means and to said second memory means for processing said hierarchically-structured knowledge base and for accessing said at least one utility, respectively, said processing means comprising means for inferential processing of information in said hierarchically-structured knowledge base and means for non-inferential accessing of information in said at least one utility, said means for inferential processing of information and said means for non-inferential accessing of information being responsive to the provided external information, and wherein said three distinct levels of said hierarchically-structured knowledge base are interconnected such that said means for inferential processing of information inference processes through said hierarchically-structured knowledge base from said domain behavioral knowledge level through said domain structural knowledge level to said domain action level.

5,644,687

METHODS AND SYSTEM FOR THERMAL ANALYSIS OF ELECTRONIC PACKAGES

Dereje Agonafer, and Arnold Ojars Vimba, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1994, Ser. No. 366,171
Int. Cl.[6] G06T *15/00*
U.S. Cl. 395—119 **26 Claims**



9. A method for thermally analyzing an electronic package, said electronic package including multiple parts, said method comprising the steps of:

(a) creating a solid model of each of said multiple parts of said electronic package to create a plurality of solid models;

(b) assigning at least one non-geometrical property of each of said multiple parts to a corresponding solid model of said plurality of solid models;

(c) after said step (b), subdividing each of said plurality of solid models into a plurality of finite control volumes;

(d) automatically establishing a plurality of boundary conditions for each of said plurality of finite control volumes for each of said plurality of solid models using the at least one non-geometrical property of the solid model; and

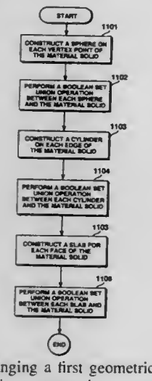
(e) thermally analyzing said electronic package using said plurality of boundary conditions for each finite control volume of each solid model of each part of the electronic package.

5,644,688

BOOLEAN TRAJECTORY SOLID SURFACE MOVEMENT METHOD

Francisco A. Leon, 948 San Marcos Cir., Mountain View, Calif. 94043; Satoshi Tazawa, 2385 17, Okata, Atsugi shi, Kanagawa 243, Japan, and Gregory Anderson, 96-G Escondido Village, Stanford, Calif. 94305

Continuation of Ser. No. 904,003, Jun. 24, 1992, abandoned. This application Mar. 2, 1995, Ser. No. 398,410
Int. Cl.[6] G06T *17/40*
U.S. Cl. 395—120 **16 Claims**



1. A method for changing a first geometric representation of a solid, said first geometric representation comprised of a plurality of vertex points, one or more edges and one or more faces, said method comprising the steps of:

a) constructing a first geometric object at each vertex point of said first geometric representation, one of said first geometric objects defining a larger space than one other first geometric object;

b) creating a first changed geometric representation from said first geometric objects and said first geometric representation;

c) constructing a second geometric object for each edge of said first geometric representation, each of said second geometric objects having a center axis along an edge corresponding to each of said second geometric objects;

d) creating a second changed geometric representation from said second geometric objects and said first changed geometric representation;

e) constructing a third geometric object for each of said one or more faces of said first geometric representation, each of said third geometric objects having a face parallel to a corresponding face of said first geometric representation; and

f) creating a third changed geometric representation from said third geometric objects and said second changed geometric representation.

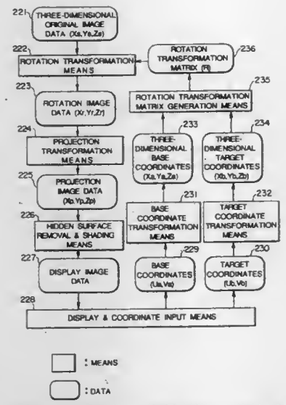
5,644,689

ARBITRARY VIEWPOINT THREE-DIMENSIONAL IMAGING METHOD USING COMPRESSED VOXEL DATA CONSTRUCTED BY A DIRECTED SEARCH OF VOXEL DATA REPRESENTING AN IMAGE OF AN OBJECT AND AN ARBITRARY VIEWPOINT

Hideyuki Ban, Kodaira, and Ryuichi Suzuki, Kokubunji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 6, 1993, Ser. No. 1,389
Claims priority, application Japan, Jan. 13, 1992, 4-003673; May 6, 1992, 4-113344
Int. Cl.[6] G06T *17/20*
U.S. Cl. 395—124 **1 Claim**

1. An arbitrary viewpoint three-dimensional imaging method using compressed voxel data constructed by a directed search of voxel data representing an image of an object, said method comprising the steps of:



(a) searching at least six neighboring voxel data positions around each of all voxel data inside of said object represented by the voxel data along each of six axes directions in a space defined by three coordinate axes intersecting at right angles with each other to detect boundary voxel positions representing surface positions of said object in each of the six axes directions, the image of said object being represented in the three coordinate axes;

(b) producing eight kinds of compressed boundary coordinate data representing boundary voxel positions from eight viewpoint positions in the three coordinate axes having different voxel connectivity from the neighboring voxels;

(c) storing, in a memory, the compressed boundary coordinate data from the eight viewpoint positions for each difference of voxel connectivity in the three coordinate axes;

(d) selecting one kind of the compressed boundary coordinate data from the memory based on positive or negative signs of three coordinate axes components of a vector which is normal to a display plane and points from the display plane to the object;

(e) transforming the boundary voxel positions expressed by the selected compressed boundary coordinate data into coordinate values on the display plane and distances therefrom to the display plane;

(f) producing, from the transformed boundary voxel positions, range data representing the distances from the display plane to the boundary voxel positions based on the viewpoint position using a Z-buffer;

(g) shading a surface of said object based on said range data; and

(h) displaying a three-dimensional image of said object based on the shaded surface.

5,644,690

ELECTRONIC MONTAGE CREATION DEVICE

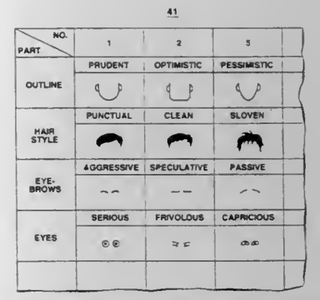
Hiroyuki Yoshino, Higashiyamato, and Takashi Kojo, Ome, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Division of Ser. No. 587,829, Jan. 11, 1996, Pat. No. 5,568,599, which is a continuation of Ser. No. 212,114, Mar. 11, 1994, abandoned. This application Jun. 10, 1996, Ser. No. 660,819
Claims priority, application Japan, Mar. 18, 1993, 5-85519
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—135 **43 Claims**

1. An electronic montage image creation device for creating a montage image of a face, the device comprising:

part image storage means for storing a plurality of part images of each of a plurality of parts which constitute the face;

character designating means for designating a character such as any of prudent, optimistic, pessimistic, punctual, clean, sloven, aggressive, speculative, passive, serious, frivolous, capricious, and the like, of the face whose montage image is to be created;



part image designating means for selectively designating a part image of each of the plurality of parts from among the part images stored in said part image storage means, on the basis of the character designated by said character designating means; and

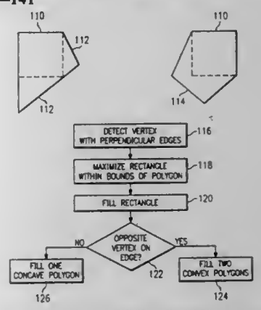
combining means for combining the respective part images of the parts designated by the part image designating means to create a montage image of the face having the designated character, and for displaying the created montage image of the face.

5,644,691

METHOD AND APPARATUS FOR ACCELERATED FILLING OF POLYGONS ON A COMPUTER DISPLAY BY RECTANGULAR DECOMPOSITION

David A. Dyches, Spring; Brian H. Danielson, Tomball; Craig A. Estepp, Houston, and Danley M. Carlson, Spring, all of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Filed Oct. 14, 1994, Ser. No. 322,993
Int. Cl.[6] G06T *11/00*
U.S. Cl. 395—141 **19 Claims**



1. A method of displaying a filled polygon in a computer system, comprising the steps of:

determining whether the perimeter of the polygon to be filled includes at least one right angle; and

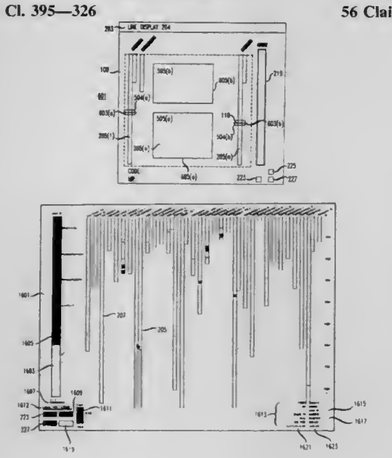
determining whether the polygon to be filled can be decomposed into a rectangle and one or more smaller polygons, wherein said rectangle includes said at least one right angle;

if the polygon to be filled can be decomposed into said rectangle and said one or more smaller polygons:

filling said rectangle using hardware acceleration; and

filling said one or more smaller polygons.

5,644,692
INFORMATION DISPLAY APPARATUS AND METHODS
Stephen Gregory Eick, Naperville, Ill., assignor to Lucent Technologies Inc., Murray Hill, N.J.
Continuation of Ser. No. 32,342, Mar. 16, 1993, abandoned, which is a continuation-in-part of Ser. No. 802,912, Dec. 6, 1991. This application Dec. 20, 1994, Ser. No. 360,181
Int. Cl.[6] G06F *17/27*
U.S. Cl. 395—326 56 Claims



1. Apparatus implemented in a system having processing means and a display controlled by the processing means for displaying information about a plurality of entities comprising lines of one or more texts, the entities having associated attribute values and the apparatus comprising:

items in the display including

context representation means (**205**) for visually representing a context of the entities;

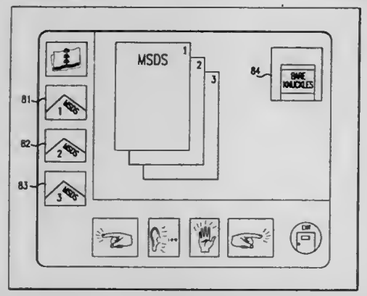
for each entity, individual entity representation means (**207**) contained in the context representation means for visually representing the entity, a plurality of the entity representation means being simultaneously present in the display and each entity representation means having a size such that at least five thousand of the entity representation means may be simultaneously displayed in a display with a 19 inch diagonal measurement;

a plurality of individual value representation means distinct from the context representation means, (**303**) the individual value representation means being simultaneously present in the display and each one of the value representation means visually representing an attribute value; and

pointing means (**103**) for selecting a displayed item in response to a user input to the system; and

responding means in the processing means responsive to a first kind of selection of a value representation means by the pointing means by altering the appearance in the display of any entity representation means itself whose corresponding entity is associated with the value represented by the selected value representation means to a first appearance, the first appearance indicating selection of the entity representation means.

5,644,693
INSTRUCTIONAL METHOD INVOLVING TALKING MATERIAL SAFETY DATA SHEET
Andrianne H. Fitzgerald, Shrewsbury, and Edward Boyajian, Acton, both of Mass., assignors to The Butcher Polish Company, Marlborough, Mass.
Filed Nov. 29, 1994, Ser. No. 346,469
Int. Cl.[6] G06F *3/00*
U.S. Cl. 395—326 11 Claims



1. An instructional method for instructing a user of chemical products as to information contained in a material safety data sheet, MSDS, for each product, the method comprising the steps of:

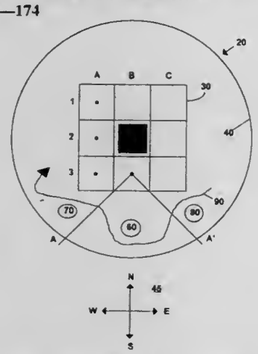
(a) displaying a product list of various chemical products on a display screen of a computer system;

(b) allowing the user to select, using a mouse, in a random access fashion, one of the products on the displayed product list; and

(c) displaying an MSDS and a plurality of graphical icons, each icon representing a different page thereof for the selected product, by clicking the mouse to cause a selection of the MSDS for a product; and

(d) displaying a particular page of the MSDS by the user clicking on to one of the graphical icons representing the pages of the MSDS by using a mouse.

5,644,694
APPARATUS AND METHOD FOR DIGITAL MOVIE PRODUCTION
William C. Appleton, Knoxville, Tenn., assignor to Cyberflix Inc., Knoxville, Tenn.
Filed Dec. 14, 1994, Ser. No. 355,661
Int. Cl.[6] G06T *13/00*
U.S. Cl. 395—174 26 Claims

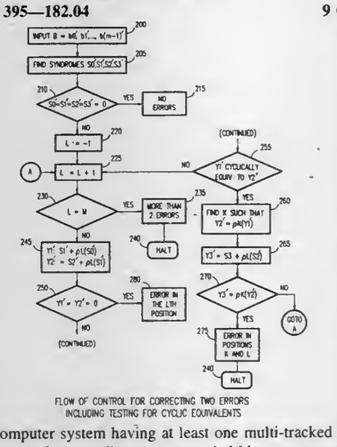


1. An apparatus implemented in a computer system having memory for the production of digital movies of modeled elements within a virtual environment using a virtual camera which renders image frames, comprising:

a mapper responsive to user input commands, for selecting and indicating positions within the environment onto which the camera can and cannot go; and

a script writer for determining camera positions to be used for rendering the image frames needed for individual movies of the environment, and for writing a script into the memory containing at least some of the positions.

5,644,695
ARRAY COMBINATORIAL DECODING WITH MULTIPLE ERROR AND ERASURE DETECTION AND LOCATION USING CYCLIC EQUIVALENCE TESTING
Mario Blaum, San Jose, Calif., and Alexander Vardy, Champaign, Ill., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation-in-part of Ser. No. 177,633, Jan. 3, 1994, Pat. No. 5,351,246. This application Jul. 15, 1994, Ser. No. 276,074
Int. Cl.[6] G06F *11/34*
U.S. Cl. 395—182.04 9 Claims



FLOW OF CONTROL FOR CORRECTING TWO ERRORS INCLUDING TESTING FOR CYCLIC EQUIVALENTS

5. A computer system having at least one multi-tracked storage device, means for recording an n×m coded bit array across counterpart tracks of said storage device, buffer means, and insane for copying selected ones of said recorded n×m coded bit arrays from said device into said buffer means where m≦n, n being prime, said computer system further comprises:

means for determining each of j≦m syndromes s_j from the n×m coded bit array in said buffer means in which

$$s_j' = \sum_{i=0}^{m-1} \rho_{j*i}(a_i')$$

where ρ_{j*i} is a column vector rotational operator, a_i' are columns of said n×m coded bit array; and

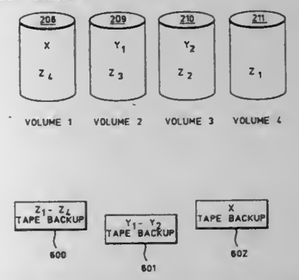
means responsive to at least one non-zero syndrome s_j for initializing at least one tracking variable L and iteratively:

(1) incrementing said tracking variable L by a predetermined amount,

(2) forming first y_1', second y_2', and third y_3' test vectors from the syndromes s_j such that:
$y_1'=s_1'+\rho_L(s_0')$, $y_2'=s_2'+\rho_L(s_1')$,
$y_3'=s_3'+\rho_L(s_2')$, and

(3) either providing signal indication of exactly one error at column location L≦(m−1) when the $y_1'=y_2'=0$, providing signal indication of exactly two errors at column locations L and L≦K≦(m−1) when $y_2'=\rho_L(y_1')$ and $y_3'=\rho_L(y_2')$. repeating iteratively (1) through (3) when $y_2'\neq\rho_L(y_1')$, or providing signal indication of more than two errors if the incremented value L=m.

5,644,696
RECOVERING MULTI-VOLUME DATA SETS DURING VOLUME RECOVERY
Anthony Steve Pearson, and Jerry Wayne Pence, both of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.J.
Filed Jun. 6, 1995, Ser. No. 470,732
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—182.04 27 Claims



1. A method of recovering data formerly stored on multiple volumes from backup storage to the volumes; comprising the steps of:

For a selected one of the volumes, performing steps comprising:

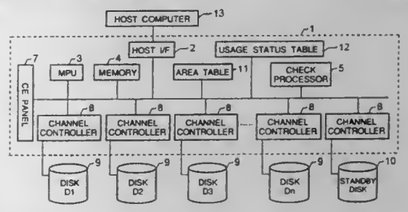
Identifying all data sets partially or completely stored on the selected volume prior to a failure of that volume, wherein each data set includes at least a first data segment stored on the selected volume prior to the failure;

Restoring only identified multi-volume data sets whose first segment was stored on the selected volume prior to the failure, said restoration being conducted to at least one of the volumes; and

Deferring restoration of each identified multi-volume data set whose first segment was not stored on the selected volume prior to the failure until restoration of the volume containing the deferred data set's first segment; and

Repeating the previous step for each remaining one of the volumes.

5,644,697
REDUNDANT ARRAY OF DISKS WITH IMPROVED STORAGE AND RECOVERY SPEED
Toshio Matsumoto; Hiroshi Baba; Kazuhiko Itoh, and Shiro Ogura, all of Kamakura, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 110,423, Aug. 23, 1993, Pat. No. 5,517,632. This application Jan. 4, 1996, Ser. No. 582,875
Claims priority, application Japan, Aug. 26, 1992, 4-226976
Int. Cl.[6] G06F *12/02;11/80*
U.S. Cl. 395—182.04 14 Claims



1. A method of storing data in a redundant group of disks, comprising the steps of:

partitioning each disk in said group into areas;

designating certain areas as data areas for storing data;

designating certain other areas as check areas for storing check information of corresponding data areas disposed on different disks in said group;

maintaining, in a semiconductor memory, a usage status table (12) indicating which areas are in use and which are not in use;

receiving, from a host computer (13), new data to be stored in said group of disks;

choosing selected data areas in which to store said new data;

writing said new data in said selected data areas; and

writing, in corresponding check areas, new check information pertaining to the new data written in said selected areas and to data in any corresponding areas indicated by said usage status table to be in use, but not pertaining to data areas not indicated to be in use.

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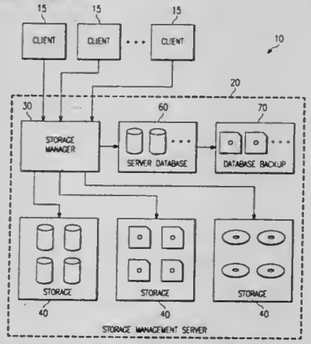
CONFIGURABLE REUSE DELAY CRITERION FOR STORAGE VOLUMES

David Maxwell Cannon, Tucson, Ariz., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 30, 1996, Ser. No. 655,526

Int. Cl.[6] G01R *31/28;* **G06F** *11/00*

U.S. Cl. 395—182.04 **22 Claims**



1. In a data processing system having a plurality of client systems generating client data files, and a storage management server coupled to said plurality of client systems, said server having a plurality of storage volumes for storing a primary copy and a back-up copy of said client data files, a server database for maintaining directory and reference location information linking said primary copy and said back-up copy of said client data files, and a database back-up for storing an incremental back-up of said server database, a method in said server for preserving consistency between said database back-up and said plurality of storage volumes comprising steps of:

(a) maintaining storage volume information in said server database, an entry in said storage volume information corresponding to each of said plurality of storage volumes;

(b) specifying a reuse delay criterion for a selected storage volume;

(c) marking said selected storage volume as a pending storage volume when a last remaining file is removed from said selected storage volume to prevent said server from invalidating references within said database back-up by overwriting said selected storage volume;

(d) periodically checking whether said reuse delay criterion has elapsed for said pending storage volume; and

(e) classifying said pending storage volume as eligible for reuse by said server when said reuse delay criterion has elapsed.

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MEMORY APPARATUS AND DATA PROCESSOR USING THE SAME

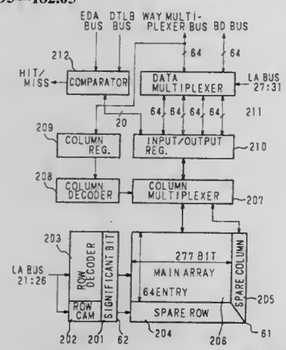
Toyohiko Yoshida, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 883,582, May 14, 1992, abandoned. This application Mar. 13, 1995, Ser. No. 403,558

Claims priority, application Japan, Aug. 7, 1991, 3-197688

Int. Cl.[6] G11C *29/00;* **G06F** *11/00*

U.S. Cl. 395—182.05 **18 Claims**



1. A data processor regulated by a clock signal that automatically detects and replaces defective memory cells upon start-up, said data processor having a data bus and an address bus and comprising:

(a) a reset signal input terminal into which a reset signal is input;

(b) a memory unit, coupled to said data bus, including a plurality of memory cells arranged in a plurality of rows and a plurality of columns, said memory unit including a spare column of memory cells;

(c) a memory failure diagnosis circuit, coupled to said reset input terminal, to said memory unit, and to said data and address buses, for testing said memory unit for defective memory cells and replacing said defective memory cells in response to said reset signal, said memory failure diagnosis circuit including:

(1) a control program memory for storing a microprogram that controls operation of said memory failure diagnosis circuit, said microprogram beginning execution in response to said reset signal;

(2) a memory failure diagnosis sub-processor, coupled to said control program memory and to said data and address buses, for executing a plurality of operations to detect and replace defective memory cells according to said microprogram, and for ensuring that said plurality of operations are always executed in a predetermined number of cycles of said clock signal regardless of whether a defective memory cell is detected and replaced, said failure diagnosis subprocessor including:

a. a counter for counting said predetermined number of cycles of said clock signal and for generating a count termination signal when a last one of said predetermined number of cycles of said clock signal is counted;

b. a first register for storing a column address of said defective memory cells in said memory unit; and

c. an execution unit, coupled to said counter, for executing each of said plurality of operations until said count termination signal is received from said counter;

(3) a column replacing circuit, coupled to said memory failure diagnosis sub-processor, for replacing a defective column of said memory unit, as identified by said column address stored in said first register, with said spare column of memory cells.

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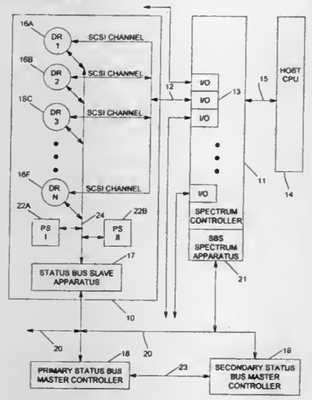
METHOD FOR OPERATING REDUNDANT MASTER I/O CONTROLLERS

Kevin Arthur Dickson, and Wayne Kenneth Stonehouse, both of Winnipeg, Canada, assignors to Unisys Corporation, Blue Bell, Pa.

Filed Oct. 5, 1994, Ser. No. 319,502

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—182.07 **9 Claims**



1. A method in a computer peripheral control system for initializing and monitoring operations of a plurality of peripheral device controllers, said peripheral control system including a primary master controller and a secondary master controller with a status bus coupled therebetween, each of said master controllers including a micro-controller executing said method comprising the steps of:

a. storing in registers of each of said master controllers an initial set of parameters for directing operation of said peripheral control system;

b. executing a self test of each of said master controllers to determine if any errors have occurred;

c. and if an error has been determined in the preceding step, checking to verify presence of said secondary master controller;

d. detecting whether or not said secondary master controller is in control;

e. if said secondary master controller is in control as detected in the preceding step, checking for presence of an active clock signal therefrom, thereby indicating that said secondary master controller is in control of said status bus;

f. if said active clock signal of said secondary master controller is present, setting a master time-out counter for an outside time period limit for which an interrupt could have been received from said secondary master controller;

g. configuring bus transceivers for said primary master controller for slave emulation;

h. verifying presence of a bus active control signal from said secondary master controller;

i. if said bus active control signal verified in the preceding step is present, checking for a remote active clock signal from said secondary master controller;

j. if said remote active clock signal is active as checked in the preceding step, determining if said master time-out counter has timed out;

k. if said master time-out counter has not timed out, checking power control circuitry of said peripheral control system for a possible failure; and,

l. repeating the steps h through k hereof.

5,644,701

DATA PROCESSING SYSTEM AND METHOD FOR EXECUTING SNAPSHOT DUMPS

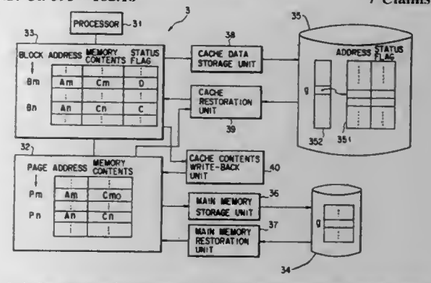
Toshiaki Takewaki, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 28, 1994, Ser. No. 365,545

Claims priority, application Japan, Dec. 29, 1993, 5-349616

Int. Cl.[6] G06F *1/00*

U.S. Cl. 395—182.18 **7 Claims**



4. A data processing system with a main memory that stores data in pages, comprising:

a copy-back-type cache memory storing a copy of part of the main memory data in blocks and containing address data of the blocks in said main memory and status flags indicating whether its own block is clean, dirty, or invalid;

first storage means for storing memory dumps of said main memory;

second storage means for storing memory dumps of said cache memory;

means for executing snapshot dumps in a constant period including:

means for writing back into said main memory memory contents of the blocks containing status flags indicating a dirty state in said cache memory, without changing the dirty state indications of the status flags,

means for storing into said second storage means the address data and the status flags contained in the blocks having status flags indicating a dirty or clean state in said cache memory, and

means for storing into said first storage means memory contents of said main memory changed during the time between a preceding snapshot dump execution and a current snapshot dump execution;

first restoring means for writing back into said main memory the memory contents stored in said first storage means; and

second restoring means for writing back into said cache memory the memory contents corresponding to the address data stored in said second storage means among the memory contents written back into said main memory, and the status flags stored in said second storage means.

5,644,702

MICROCOMPUTER, MICROCOMPUTER CONTAINING APPARATUS, AND IC CARD

Kouichi Nishioka, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 22, 1994, Ser. No. 361,600

Claims priority, application Japan, Dec. 28, 1993, 5-335620

Int. Cl.[6] G06F *11/00*

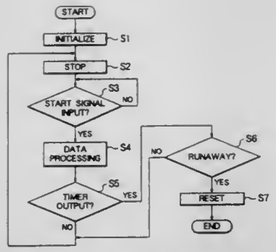
U.S. Cl. 395—182.2 **4 Claims**

1. A microcomputer comprising:

a CPU having a first threshold power supply voltage that must be exceeded to ensure normal operation of said CPU;

a memory for storing data;

an oscillation circuit for supplying an oscillation signal to said CPU and having a second threshold power supply voltage that must be exceeded to ensure normal operation of said oscilla-



tion circuit, the second threshold being higher than the first threshold, said oscillation circuit comprising an oscillator and an inverter connected in parallel, said inverter comprising first and second MOS transistors including, respectively, first and second gate electrodes, said first and second MOS transistors being connected in series to each other between a V_{DD} supply line and a V_{SS} supply line and the first and second gate electrodes being connected together whereby the second threshold is established by controlling dimensions of the first and second gate electrodes; and

a battery for supplying a power supply voltage to each of said CPU, said memory, and said oscillation circuit.

5,644,703

DATA PROCESSOR PROVIDING FAST BREAK IN PROGRAM EXECUTION

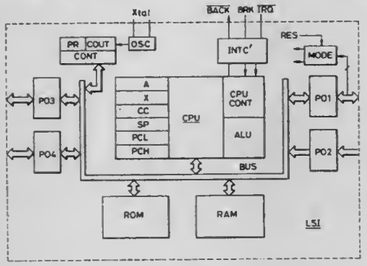
Keiichi Kurakazu, Tachikawa; Yoshikazu Aoto, Fuchu; Shiro Baba, Tokorozawa; Satoshi Masuda, Sayama; Hiroyuki Kida, Hitachi; Shinji Kawashima, and Yoshiaki Naruse, both of Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 626,740, Dec. 13, 1990, Pat. No. 5,493,659, which is a continuation of Ser. No. 215,506, Jul. 6, 1988, Pat. No. 4,998,197. This application Nov. 7, 1995, Ser. No. 554,805

Claims priority, application Japan, Jul. 6, 1987, 62-168086; Aug. 28, 1987, 62-214200

Int. Cl.[6] G06F *9/44;9/46*

U.S. Cl. 395—183.11 **3 Claims**



1. An emulation system comprising:

a first memory which stores a program to be developed;

a second memory which stores an emulation program;

a microprocessor having a first mode to execute the program to be developed stored in the first memory and a second mode to execute the emulation program stored in the second memory, the microprocessor further including an external input terminal for receiving a break signal having a first state or a second state and an external output terminal for providing a break acknowledge signal which has a first level when being in the first mode and a second level when being in the second mode, wherein the microprocessor is responsive to the break signal changing from the first state to the second state and changes the operation mode thereof from the first mode to the second mode, wherein the microprocessor outputs address signals to fetch the program to be developed from the first memory when being in the first mode;

a circuit in which a break address is set, which compares the break address with an address signal outputted from the microprocessor operating in the first mode and which is coupled to the external input terminal of the microprocessor, the circuit changing the break signal from the first state to the second state when the break address is coincident with the address signal;

a selector coupled to the external output terminal of the microprocessor, the selector coupling the microprocessor to the first memory so as to transfer the address signals from the microprocessor to the first memory when the break acknowledge signal has the first level and coupling the microprocessor to the second memory so as to be capable of executing the emulation program when the break acknowledge signal has the second level.

5,644,704

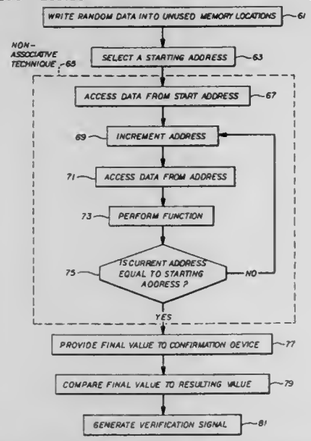
METHOD AND APPARATUS FOR VERIFYING THE CONTENTS OF A STORAGE DEVICE

Logan L. Pease, Reno; Delbert Richard, Sparks, and Peter D. Dickinson, deceased, late of Reno, all of Nev., assignors to International Game Technology, Reno, Nev.

Filed Nov. 30, 1994, Ser. No. 348,268

Int. Cl.[6] G06F *11/34*

U.S. Cl. 395—183.18 **21 Claims**



1. A method of verifying the contents of a computer storage device, comprising:

writing non-sequential data into each unused memory location of the storage device;

performing a non-associative technique on contents of each memory location in the storage device starting at a randomly determined address in the storage device;

providing a final value from the non-associative technique to a confirmation device for comparison with a set of predetermined resulting values;

comparing the final value to a resulting value, the resulting value being predetermined by applying the non-associative technique to pre-programmed contents of the storage device; and

generating a first signal indicating the contents of the storage device are corrupted if the final value does not correspond to the resulting value or a second signal indicating the contents of the storage device are uncorrupted if the final value corresponds to the resulting value.

5,644,705

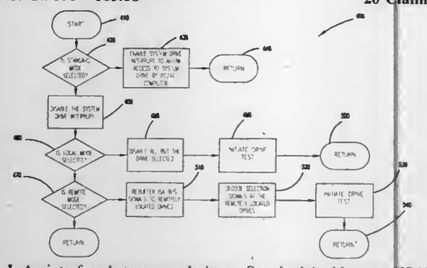
METHOD AND APPARATUS FOR ADDRESSING AND TESTING MORE THAN TWO ATA/IDE DISK DRIVE ASSEMBLIES USING AN ISA BUS

Thomas E. Stanley, Gilroy, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 371,133, Jan. 11, 1995, abandoned. This application May 2, 1996, Ser. No. 643,078

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—183.18 **20 Claims**



1. An interface between an Industry Standard Architecture (ISA) bus and more than two AT Attachment, Integrated Device Electronics (ATA/IDE) disk drives for allowing the execution of manufacturing tests by a host CPU on the more than two IDE drives using the ISA bus, the interface comprising:

an IDE disk drive controller for receiving control signals from the host CPU and providing test instructions for the more than two IDE disk drives;

a multi-master encoder, coupled to the IDE disk drive controller, the encoder receiving the test instructions from the IDE disk drive controller and receiving selection signals from the CPU, the encoder further including a common output port for providing data and test instructions to the more than two IDE disk drives and independent control port for providing individual drive selection signals to each of the more than two IDE disk drives from disabling all but one of the disk drives:

a common input/output (I/O) path, coupled to the common output port and the more than two IDE disk drives, for routing the data and test instructions from the encoder to the more than two IDE drives; and

independent signal paths, coupled to the independent control port and the more than two IDE disk drives, for individually routing the drive selection signals from the encoder to the multiple IDE drives for disabling all but one of the disk drives such that one of the more than two IDE disk drives is selected for testing, wherein each of the more than two IDE disk drives operates as a master.

5,644,706

FAILURE DETECTION AND REPORTING FOR A COMPUTER MAIL GATEWAY

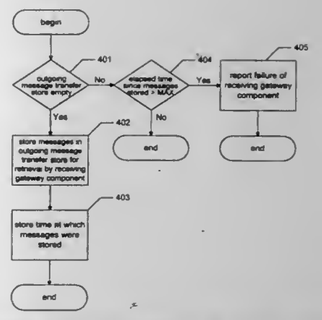
Adrian Ruigrok, Vancouver; Geoffrey G. Kratz, Calgary, both of Canada; Andrew John Wallace, Bellevue; Neil Karl Koorland, Redmond, both of Wash.; James Ross, Vancouver, Canada; Safa Alikashani, North Vancouver, Canada, and Marcel Laforce, Surrey, Canada, assignors to Microsoft Corporation, Redmond, Wash.

Continuation of Ser. No. 263,653, Jun. 20, 1994, abandoned. This application Apr. 30, 1996, Ser. No. 641,412

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—185.01 **25 Claims**

1. A method in a computer mail gateway for diagnosing the failure of the gateway, the gateway being for forwarding messages from a first mail system to a second mail system via a message transfer store, the gateway comprising the message transfer store, a first gateway component for transferring messages from the first mail system to the message transfer store, and a second gateway component for retrieving messages from the message transfer store for forwarding to the second mail system, the method comprising the steps of:



transmitting a dummy message from the first gateway component to the message transfer store, said dummy message being transmitted to decide whether the second gateway component has failed;

under the control of the first gateway component, detecting that the dummy message from the first gateway component has remained in the message transfer store for at least a predetermined time; and

in response to the detecting step, determining that the gateway has failed.

5,644,707

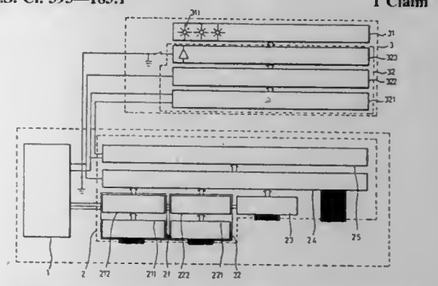
COMPUTER MAINFRAME SIGNAL MONITORING SYSTEM

Tian-Luh Chen, 2nd Floor, No. 8, Lane 264, Sher-Chung Street, Taipei, Taiwan

Filed Feb. 16, 1996, Ser. No. 601,352

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—185.1 **1 Claim**



1. A computer mainframe signal monitoring system connected to the mainframe of computer to monitor its signals, comprising a main control circuit, a data catching and processing integrated circuit and a monitor respectively connected to said main control circuit and controlled by it, wherein said monitor is comprised of a LED array and a driver IC, the LEDs of said LED array of said monitor respectively corresponding to the major function signals of a motherboard of the mainframe such as A0–A3, D0–D31, IRQ0–IRQ15, DRQ0–DRQ7, and regular I/O signals such as COM1–COM4, LPT1–LPT3, said driver IC comprising a serial in parallel out register array, a latching logic, and a driver circuit; said catching and processing integrated circuit is comprised of an I/O signal decoding and processing circuit, a control signal catching and delay circuit, a preliminary latching logic, a latching logic, and a parallel in serial out register array, said I/O signal decoding and processing circuit comprised of a decoder circuit and a signal catching and delay circuit, said decoder circuit being connected to

an I/O address line of the mainframe to decode its signal and then to send the decoded I/O signal to said signal catching and delay circuit, said signal catching and delay circuit catching the decoded I/O signal from said decoder circuit and then sending it to the latching logic of said data catching and processing integrated circuit after a predetermined time delay, said control signal catching and delay circuit comprised of a control signal catching circuit and a delay circuit, said control signal catching circuit being connected to a control bus of the mainframe to catch the control signal and then to send the caught control signal to said delay circuit, which sends the control signal to the latching logic of said data catching and processing integrated circuit after a predetermined time delay, said preliminary latching logic being connected to the data bus of the mainframe to latch the data so that the latching circuit of said data catching and processing integrated circuit can catch the data, the latching logic of said data catching and processing integrated circuit being connected to said I/O signal decoding and processing circuit, said control signal catching and delay circuit, said preliminary latching logic, and the address bus of the mainframe, and sending the caught data to said parallel in serial out register array, said parallel in serial out register array sending the parallel input data to the serial in parallel out register array of said driver IC by means of serial output; the serial in parallel out register array of said driver IC sending the received data to the latching logic of said driver IC by means of parallel output, and the latching logic of said driver IC sending the caught data to said driver circuit, causing it to drive the respective LEDs of said LED array; said data catching and processing integrated circuit being to catch the major function signals of the mother board of the mainframe such as address bus signal, data bus signal, control bus signal, and regular I/O signals, then to send the signals to said driver IC for driving said LED array.

5,644,708

METHOD AND DEVICE TO CONTROL A MEMORY

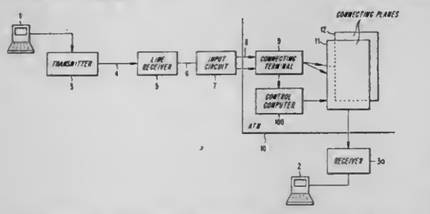
Leif Mikael Larsson, Stockholm, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Feb. 7, 1995, Ser. No. 385,176

Claims priority, application Sweden, Feb. 10, 1994, 9400435

Int. Cl.[6] G01R *31/28;* **G06F** *11/00*

U.S. Cl. 395—185.02 **7 Claims**



1. A method of determining that digital information stored in a memory is correctly readable before the digital information is read for controlling a function activated by a computer unit, wherein the digital information comprises a number of coordinated bit positions; and a selected address position in the memory corresponding to the stored digital information points out a first set of bits required for controlling and/or activating the function and a second set of bits serving as a control sum, comprising the steps of:

determining the second set of bits based on a current set of bits corresponding to the first set of bits and on a third set of bits corresponding to the selected address position;

determining a new control sum following readout of the digital information from the memory, wherein the new control sum is calculated in the same way as the second set of bits but based on the current set of bits and a fourth set of bits corresponding to the selected address position, and the new control sum forms a fifth set of bits;

comparing the second set of bits and the fifth set of bits, whereby the digital information is determined to be correct when the comparison finds agreement;

controlling a function with the digital information in a switching unit belonging to a telecommunication system in which incoming information-carrying digital signals arrive at the switching unit from a caller when the digital information is determined to be correct;

structuring the incoming information-carrying digital signals as data packets of a first category, each data packet of the first category having one address-related set of bits and one information related set of bits;

exchanging signals in the switching unit using information-carrying digital signals structured as data packets of a second category, each data packet of the second category having one address-related set of bits and one information-related set of bits, using a traffic computer that establishes a connection through the switching unit based on a destination requested by the caller in data packets of the first category;

storing at a selected address position in a control memory an address-related set of bits corresponding to the connection;

exchanging address-related bit positions for a data packet of a third category arriving at the switching unit from the caller with a data packet of the second category that is used internally in the switching unit and that corresponds to the connection before the data packet of the third category is transmitted through the switching unit;

establishing with the computer the connection by pointing out an available connection through the switching unit based on information in a data packet of the first category; writing, into the control memory at a selected address, new address information corresponding to the available connection and a control sum determined based on bit positions corresponding to the new address information and bit positions corresponding to the selected address; and informing the caller of the new address information, whereafter the caller transmits data packets of the third category;

reading the new address information and depending thereon, interpreting the address in the control memory;

reading the information stored in the control memory and pointed out by the address information that is to be added to the data packet; and

determining a new control sum for complete address-related information and the address in the control memory; wherein

agreement between the new control sum and the stored control sum indicates that no bit errors in the information read from the control memory have occurred and that the data packet of the second category used internally in the switching unit can be passed through the switching unit.

5,644,709

METHOD FOR DETECTING COMPUTER MEMORY ACCESS ERRORS

Todd Michael Austin, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Apr. 21, 1994, Ser. No. 237,041

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—185.06 **20 Claims**

1. A method for detecting memory access errors which occur while executing a computer program, wherein the computer program includes a pointer to a data object, said method comprising the steps of:

providing a spatial attribute for said data object, said spatial attribute defining an address space within which valid accesses may be made to said data object;

associating said spatial attribute with said pointer;

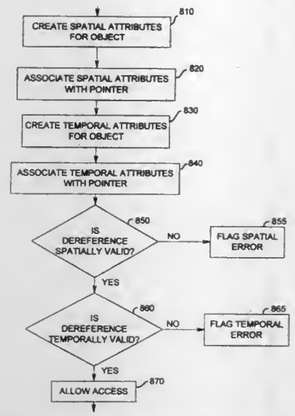
providing a temporal attribute for said data object, said temporal attribute defining a period of time within which valid accesses may be made to said data object, wherein the step of providing said temporal attribute comprises the steps of:

providing a temporal validity number having a temporal validity number location; and

providing a temporal capability number;

associating said temporal capability number with said pointer;

providing a dereference to said pointer;



determining if said dereference falls outside said address space;

if said dereference falls outside said address space, flagging a spatial error;

determining from said temporal capability number and said temporal validity number whether a temporal error has occurred; and

if a temporal error has occurred, flagging said temporal error.

5,644,710

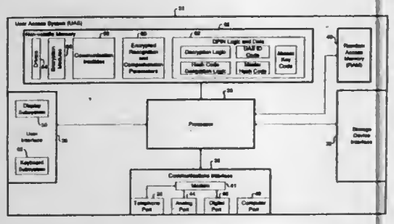
PERSONAL ACCESS MANAGEMENT SYSTEM

William Cedric Johnson, Los Angeles, and Donald L. Marx, Redondo Beach, both of Calif., assignors to ETA Technologies Corporation, Los Angeles, Calif.

Filed Feb. 13, 1995, Ser. No. 388,278

Int. Cl.[6] G01R *31/28;* **G06F** *11/00*

U.S. Cl. 395—186 **73 Claims**



1. In a communications system wherein a unique relationship is established between a provider device and a recognized device, a method performed by the provider device for processing information from a sending device, comprising the steps of:

receiving a sending device file name, a set of processed identification information, a processed encrypted application address (EAA), and at least one message from the sending device;

accessing a device file using said sending device file name as a reference, said device file containing a set of recognition parameters including a reference EAA and a set of reference information which is possessed by no sending device except for the recognized device;

deriving a current key code from said recognition parameters;

processing said processed identification information using said current key code to derive a set of de-processed identification information;

comparing said de-processed identification information with said reference information to determine whether the sending device is the recognized device;

terminating communication with the sending device in response to a determination that said de-processed identification information is inconsistent with said reference information;

processing said processed EAA using said current key code to derive a de-processed comparing said de-processed EAA with said reference EAA; and

terminating communication with the sending device in response to a determination that said de-processed EAA is inconsistent with said reference EAA.

5,644,711

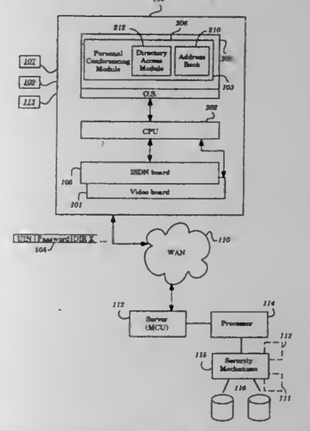
MULTI-PRIVILEGED LEVEL DIRECTORY ACCESS ON THE AT&T WORLDWORXSM PERSONAL CONFERENCING SERVICE

Sean T. Murphy, Portland, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed May 26, 1995, Ser. No. 451,754

Int. Cl.[6] G06F *15/16*

U.S. Cl. 395—188.01 **10 Claims**



7. A network system restricting directory access to electronic directories located in a wide area network to users using a computer and having secured access rights, said system comprising:

a plurality of databases having electronic directories;

a storage device comprising, a network directory security mechanism for restricting access to said electronic directories, said network directory security mechanism comprising a table indicating the electronic directories to which access is restricted and the criteria for access to these said electronic directories;

a processor for running said network directory security mechanism, said processor coupled to said storage device; and

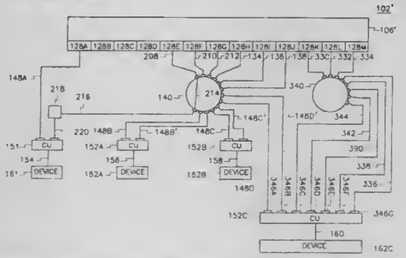
a multi-point conferencing unit for interfacing said wide area network with said computer, said multi-point conferencing unit coupled to said processor.

5,644,712

INDIRECT ADDRESSING OF CHANNELS VIA LOGICAL CHANNEL GROUPS

Anthony Coscarella, Woodstock, N.Y.; Martin William Sachs, Westport, Conn., and Joseph Temple, Hurley, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 5, 1991, Ser. No. 711,474
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—200.01 **22 Claims**



1. In a computer system in which a plurality of channels electrically couple an active data unit to one or more devices, an IO subsystem for establishing physical paths between the active data unit and the devices, the subsystem comprising:

(1) multiple channel path identifiers for identifying the channels;

(2) one or more logical channel groups comprising lists, stored in a memory unit, comprising varying numbers of said channel path identifiers, the respective lengths of said lists being limited only by the storage capacity of said memory unit; and

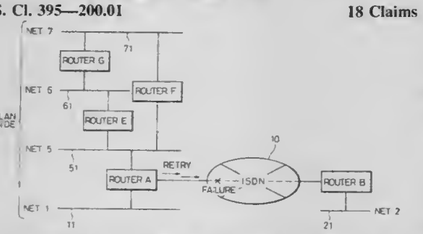
(3) one or more subchannels each exclusively assigned to one of said devices, each of said subchannels maintaining one or more pointers, each of said pointers addressing one of said logical channel groups.

5,644,713

METHOD OF EFFECTING DYNAMIC MANAGEMENT OF PATH OR ROUTING INFORMATION WITHOUT REQUIRING AN INTERNETWORKING OPERATION FOR ROUTING

Tomonori Makishima, Hiratsuka, Japan, assignor to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed May 2, 1995, Ser. No. 432,654
Claims priority, application Japan, May 12, 1994, 6-098491
Int. Cl.[6] G06F *15/16*
U.S. Cl. 395—200.01 **18 Claims**



1. A method for transferring path or routing information of a first internetworking equipment, which is connected to at least one alternative internetworking equipment by means of a circuit, and for communicating said path or routing information between computer networks respectively coupled to said first internetworking equipment and said alternative internetworking equipment, said method comprising:

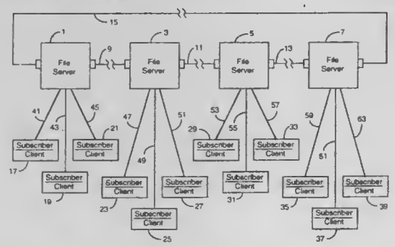
an exchange process for exchanging said path or routing information with said alternative internetworking equipment in response to a request for transmission of said path or routing information, said path or routing information being transmitted also when data other than said path or routing information is transmitted.

5,644,714

VIDEO COLLECTION AND DISTRIBUTION SYSTEM WITH INTERESTED ITEM NOTIFICATION AND DOWNLOAD ON DEMAND

Dan Kikinis, Saratoga, Calif., assignor to Elonex plc, Ltd., London, United Kingdom

Continuation-in-part of Ser. No. 182,282, Jan. 14, 1994, Pat. No. 5,515,510. This application Apr. 10, 1995, Ser. No. 419,021
Int. Cl.[6] G06F *15/16*
U.S. Cl. 395—200.03 **19 Claims**



1. A video jukebox system, comprising:

a plurality of computerized file server stations interconnected in a network by first data links, with individual ones of the file server stations also connected to video input apparatus; and

a plurality of client computer stations connected by second data links to individual ones of the file server stations;

wherein each file server station with a video input apparatus accepts video clippings from the video input apparatus, stores the clippings in a database in digital form, and shares the video clippings with other file servers in the network over the first data links, and wherein individual ones of the file servers store details of client interests provided by the clients, notify connected clients of new video clippings available conforming to the stored details of client interests, and downloads the video clippings directly to the client computer stations on demand.

5,644,715

SYSTEM FOR SCHEDULING MULTIMEDIA SESSIONS AMONG A PLURALITY OF ENDPOINT SYSTEMS WHEREIN ENDPOINT SYSTEMS NEGOTIATE CONNECTION REQUESTS WITH MODIFICATION PARAMETERS

Mark John Baugher, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 796,175, Nov. 22, 1991, abandoned. This application Dec. 9, 1994, Ser. No. 353,168
Int. Cl.[6] H01J *13/00*
U.S. Cl. 395—200.04 **15 Claims**

1. An apparatus for scheduling a multimedia session between at least two of a plurality of end-point computer systems, comprising:

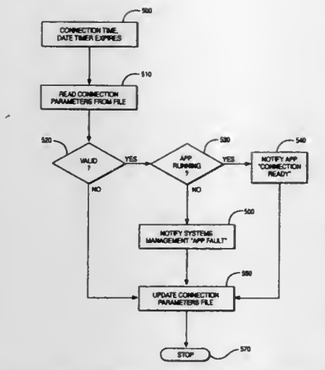
(a) first means for receiving a user generated session connection request in each of said plurality of computers, said request including a specification of others of said plurality of end-point computer systems to connect, a plurality of quality of Service parameters and a session time;

(b) requesting network connection means in said receiving one of said plurality of computers, said requesting network connection means transmitting a network connection reservation request across said network in response to said session connection request, receiving a connection response from said other end-point computer systems and accepting or rejecting a response containing a connection parameter modification;

(c) receiving network connection means in each of said other end-point computer systems, said receiving network connection means receiving said network connection request, testing whether or not said end-point computer system is available and whether or not it can to satisfy said quality of service parameters, and generating a connection response with a connection rejection, connection acceptance, or a provisional connection acceptance with modified connection parameters;

(d) storage means for storing in each of said plurality of computers participating in said session network connection the reservation information for each accepted connection including the quality of service parameters and the session time; and

(e) means in each of said plurality of computers for reading the stored network connection reservation information for the multimedia session and commencing the multimedia session at the session time.



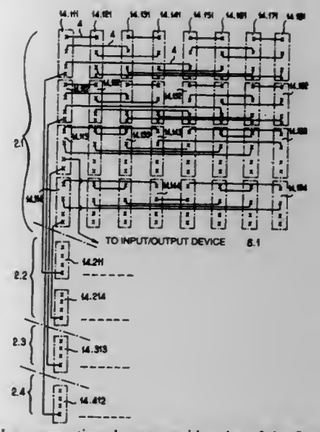
5,644,716

SHARED MEMORY INFORMATION PROCESSING SYSTEM WITH INTERNODE CONNECTIONS ENABLING IMPROVED PERFORMANCE WITH ADDED PROCESSOR NODES

Jean-François Autechaud, Paris, and Ghassan Chehaibar, Les Clayes Sous Bois, both of France, assignors to Bull S.A., Puteaux, France

Filed Jul. 15, 1994, Ser. No. 275,377
Claims priority, application France, Jul. 15, 1993, 93 08710
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—200.08 **22 Claims**

15. An information processing system with shared memory means, the system having an open-ended configuration from a first configuration to a maximum configuration and comprising in the maximum configuration a predetermined number of processors grouped in sets of nodes that have a critical size relative a rate of messages between said processors and said shared memory means and in the first configuration a portion of said maximum number of processors grouped in at least two sets of nodes, a pair of sets forming a supernode, and means for interconnecting said nodes of said first configuration with one another, said interconnecting means including serial link controller means having a predetermined number of terminal means in each node, double serial links for connecting the nodes to one another in each set to transmit said messages at respective ones of said terminal means of the nodes and single serial links in each supernode for connecting each node of one set to the nodes of the other set to transmit said messages at respective ones of said terminal means, and said predetermined number of terminal means in each node being determined to further allow connections between said nodes of the first configuration and each of other ones of said nodes of said maximum configuration.

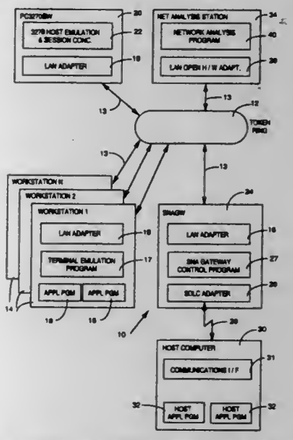


5,644,717

SYSTEM FOR GENERATING LOCAL AREA NETWORK OPERATING STATISTICS BASED ON MONITORED NETWORK TRAFFIC AND METHOD THEREFOR

Robert Clark, Oakland, Calif., assignor to Legent Corporation, Islandia, N.Y.

Continuation of Ser. No. 992,439, Dec. 17, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 466,230
Int. Cl.[6] G06F *11/30*
U.S. Cl. 395—200.11 **16 Claims**



1. A system, residing on a network analysis station connected to a local area network over which stations may send and receive messages during a session, for generating operating statistics for the local area network, said system comprising:

means for monitoring said messages on the network on one of the network level, transport level, and session level;

means, responsive to said means for monitoring, for assigning direction data to each of said messages based on an analysis of the direction which the message is traveling with respect to an ongoing session, and wherein said assigned direction data is one of inbound, outbound and unknown;

means, responsive to said means for assigning, for determining the role assumed by each of said stations with respect to said ongoing session; and

means, responsive to said means for determining, for calculating statistics for one of said stations.

5,644,718

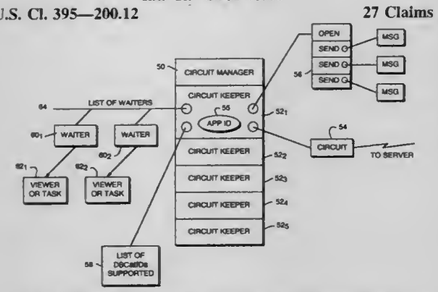
APPARATUS USING CIRCUIT MANAGER TO ASSOCIATE A SINGLE CIRCUIT WITH EACH HOST APPLICATION WHERE THE CIRCUIT IS SHARED BY A PLURALITY OF CLIENT APPLICATIONS

Edward Belove, Cambridge; R. Patrick Johnson, Manchester; O. Stevens Leland, III, Hudson; Deborah Méndez, Malden, and Stephen Zagieboylo, Norfolk, all of Mass., assignors to AT&T Corporation, Basking Ridge, N.J.

Filed Nov. 10, 1994, Ser. No. 337,950

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200.12 **27 Claims**



1. Apparatus for establishing and managing communication circuits between one of a plurality of client computers and a central host computer, the client being capable of (i) interacting with a plurality of host applications resident and active on the host and (ii) running a plurality of client applications resident and active on the client, the apparatus comprising:

a. a communication platform for establishing and maintaining communication circuits between the client and the host, the platform itself comprising means for sending digitally encoded outgoing messages to the host and for receiving digitally encoded incoming messages from the host;

b. a circuit manager for associating a single circuit with each host application active with respect to the client, the circuit capable of being shared by a plurality of client applications; and

c. routing means for decoding digital signatures associated with outgoing messages by client applications and, based thereon, routing the messages to host applications over the circuits associated therewith.

5,644,719

INTERPROCESS COMMUNICATION APPARATUS INTERPOSED BETWEEN APPLICATION PROCESSES AND THE OPERATING SYSTEMS OF HOSTING COMPUTERS IN A SYSTEM OF NETWORKED COMPUTERS

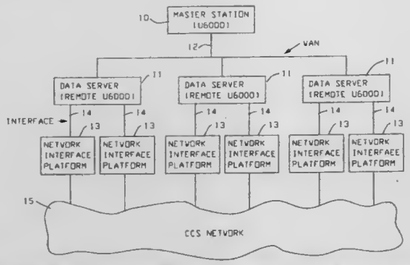
James Aridas; Judith L. Culpepper; Tijen Ireland; Pope P. Trinidad, all of Virginia Beach, and Sherman R. White, Jr., Newport News, all of Va., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Dec. 16, 1994, Ser. No. 358,221

Int. Cl.[6] G06F *13/14;13/42*

U.S. Cl. 395—200.12 **12 Claims**

1. In a system of computers interconnected by a network, each computer hosting application processes, said application processes requiring message transport therebetween, each said computer having an operating system with an intracomputer communication



mechanism for transporting said messages between application processes on said computer, said network including intercomputer communication mechanisms for transporting said messages between said computers, said system including means for assigning system addresses unique to each said computer, each said application process having a system name, each said application process having a process identification (PID) assigned by the operating system of the computer hosting said process, interprocess communication (IPC) apparatus on each said computer, said IPC being interposed between said application processes hosted on said each said computer and said operating system of said each said computer, said IPC apparatus on at least one of said computers comprising:

an application process interface including a REGISTER function with which an application process registers for sending and receiving messages, said REGISTER function having registration tables, said application process providing its system name, said REGISTER function storing said system name and PID of the registering application process in said registration tables,

said application process interface further including a SEND function responsive to a sending process desiring to send a message to a recipient process, said sending process providing the system name and system address of said recipient process to said SEND function, and

first local/remote means coupled to said SEND function and responsive to said system address of said recipient process for determining if said recipient process is hosted locally on said at least one of said computers or remotely on another of said computers,

if hosted locally, said first local/remote means being operative for accessing said registration tables for determining the PID of said recipient process and attaching said PID to said message and further operative for directing said message and PID to said intracomputer communication mechanism of said at least one of said computers for delivery to said recipient process,

if hosted remotely, said first local/remote means being operative for directing said message to an intercomputer communication mechanism in accordance with said system address of said recipient process.

5,644,720

INTERPROCESS COMMUNICATIONS INTERFACE FOR MANAGING TRANSACTION REQUESTS

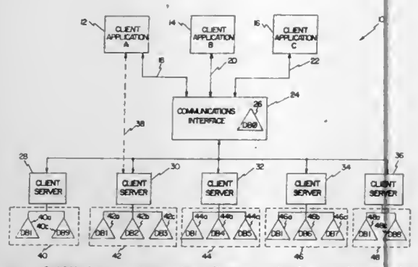
Alfred R. Boll, St. Croix; David G. Finke, and Charles S. Koehn, both of St. Paul, all of Minn., assignors to West Publishing Company, Eagan, Minn.

Filed Jul. 31, 1995, Ser. No. 509,124

Int. Cl.[6] H01J *13/00*

U.S. Cl. 395—200.12 **17 Claims**

1. A method of processing a transaction request from a client application within a computer network having a plurality of client servers, each client server having a set of attributes including identification data and capabilities available for fulfilling transaction requests, the transaction request identifying attributes necessary to fulfill the request and attributes ranked according to desirability for fulfilling the request, the method comprising:



identifying a set of client servers having the attributes necessary to fulfill the transaction request;

providing a work distribution function for distributing transaction requests among the client servers of the set of client servers; and

selecting a client server from the set of client servers according to the work distribution function;

sorting the client servers, according to the attributes ranked according to desirability for fulfilling the transaction request; and

identifying a subset of client servers most desirable for fulfilling the transaction request.

5,644,721

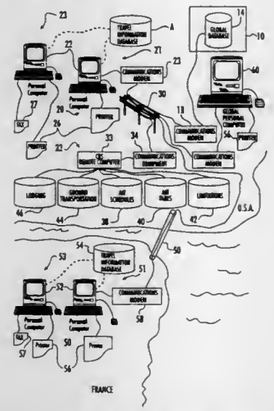
MULTIPLE CURRENCY TRAVEL RESERVATION INFORMATION MANAGEMENT SYSTEM AND METHOD

Kieran Sebastian Chung, Plantation; Phillip Mark Perez Megofna, Sunrise; Bhagirath Nirmalsinh Gohil, Miami, and Jose Bernos, Miami Beach, all of Fla., assignors to System One Information Management, L.L.C., Houston, Tex.

Filed Aug. 30, 1995, Ser. No. 521,354

Int. Cl.[6] G06F *17/60*

U.S. Cl. 395—206 **25 Claims**



1. A method of consolidating at least two travel reservation information records with at least two different currencies generated from a locally operated computer system, comprising the steps of

selecting a global currency in which to represent prices associated with each travel segment,

entering a first locally operated computer system,

acquiring, in the first locally operated computer system, a first computer travel reservation information record with price of at least one travel segment represented in a first currency from a computer reservation system (CRS),

representing the price of each segment in the global currency,

storing information from the computer travel reservation information record and the price of each segment in the global currency in a global data storage medium,

entering a second locally operated computer system,

acquiring, in the second locally operated computer system, a second computer travel reservation information record with price of at least one travel segment represented in a second currency from the computer reservation system (CRS),

representing the price of each segment in the second computer travel reservation information record in the global currency, and

storing information from the second computer travel reservation information record and the price of each segment from the second record in the global currency in the global data storage medium.

5,644,722

SCHEDULE-MANAGING APPARATUS BEING CAPABLE OF MOVING OR COPYING A SCHEDULE OF A DATE TO ANOTHER DATE

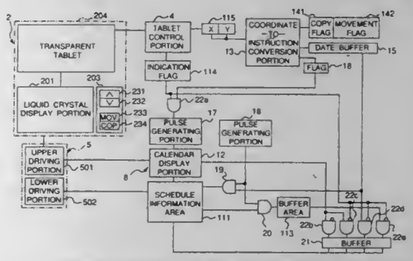
Satoru Miyamoto, Tenri; Naoki Shiraishi, Nara-ken; Toshio Isoe, Tenri, and Isamu Haneda, Souraku-gun, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 5, 1995, Ser. No. 463,685

Claims priority, application Japan, Nov. 17, 1994, 6-283281

Int. Cl.[6] G06F *19/00*

U.S. Cl. 395—209 **12 Claims**



1. A schedule-managing apparatus comprising: information input means for inputting date information indicating a date and schedule information indicating a schedule content;

a first storing portion for storing the date information inputted by the information input means and the schedule information corresponding to the date information, in correspondence to each other;

a display portion allowing a calendar of a certain period of time to be displayed on a calendar display region of a display screen;

coordinate input means for inputting a coordinate on the display screen of the display portion;

a second storing portion capable of storing the date information of a date corresponding to the coordinate inputted by the coordinate input means and the schedule information of the date;

first control means for extracting date and corresponding schedule information corresponding to the coordinate inputted by the coordinate input means from the first storing portion and for controlling the second storing portion to store the extracted date and schedule information when a coordinate input is started in the calendar display region by the coordinate input means, and for controlling the second storing portion to maintain the schedule information as it is and to renew the date information according to inputted coordinates, when the inputted coordinates are changed successively in the calendar display region;

second control means for moving or copying the schedule information stored in the second storing portion in correspondence to renewed date indicated by the date information stored in the second storing portion, when the coordinate input means has completed the successive coordinate-input,

wherein a scroll indication window is provided adjacent to the display screen of the display portion such that the scroll indication window allows a coordinate thereof to be inputted continuously to the display screen by use of the coordinate input means; and

third control means for scrolling a content displayed on the display screen when the coordinate of the scroll indication window is inputted by use of the coordinate input means.

5,644,723

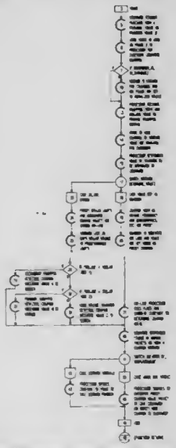
METHOD AND SYSTEM FOR SELECTIVE INCENTIVE POINT-OF-SALE MARKETING IN RESPONSE TO CUSTOMER SHOPPING HISTORIES

David W. Deaton, and Rodney G. Gabriel, both of Abilene, Tex., assignors to Credit Verification Corporation, Abilene, Tex.

Continuation of Ser. No. 96,921, Jul. 23, 1993, which is a continuation-in-part of Ser. No. 63,413, May 17, 1993, Pat. No. 5,621,812, which is a continuation of Ser. No. 886,383, May 19, 1992, abandoned, which is a continuation-in-part of Ser. No. 826,255, Jan. 24, 1992, abandoned, which is a continuation of Ser. No. 345,475, May 1, 1989, abandoned. This application Jan. 4, 1994, Ser. No. 178,052

Int. Cl.[6] G06F *17/60*

U.S. Cl. 395—214 **27 Claims**



1. A method of performing customer promotion at a store with a computer having a processor and a memory, the method comprising the steps of:

storing in the memory data representative of a plurality of customer's prior purchases of a plurality of different products at a store in association with a customer's unique identification;

determining with the processor from said stored data information regarding a product frequently previously purchased by an individual customer relative to said plurality of different products previously purchased in previous visits to the store by said individual customer; and

in response to said information, issuing a promotion to said customer at the point-of sale in an effort to incent said customer to return to the store, said promotion providing incentives including a promotion on said product frequently previously purchased by said customer relative to said plurality of different products purchased by said individual customer, such that promotions on specific products consistently preferred by said individual customer are issued to said individual customer.

5,644,724

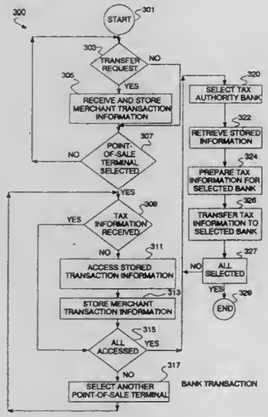
POINT-OF-SALE TAX COLLECTION SYSTEM AND METHOD OF USING SAME

Donald J. Cretzler, 3712 Del Mar Ave., San Diego, Calif. 92106

Filed Sep. 28, 1994, Ser. No. 314,249

Int. Cl.[6] G06F *17/60*

U.S. Cl. 395—219 **13 Claims**



1. A method of facilitating the collection of sales or use taxes by a bank computer means, comprises:

using a plurality of merchant point-of-sale terminal means by a group of different merchants at different point-of-sale locations, each terminal means including cash and credit/debit card payment means for facilitating the receipt of payment of merchandise;

collecting cash and credit/debit card payments from the sale of merchandise transactions with the merchant terminal means by the group of merchants;

determining sales or use tax information for each individual payment collected by said terminal means at the time of the collection thereof;

accumulating the total of all sales or use tax information for each terminal means during a given short periodic time interval substantially less than quarterly;

storing the accumulated totals of tax information for each terminal means;

sending to merchant computer means from each one of said terminal means a message including the accumulated totals of tax information for a given terminal means, the identification of the merchant terminal means sending the message, and an authorization code to instruct the merchant bank to pay the taxes based on the collected payments from the bank account of the merchant;

receiving the messages and storing them in said merchant computer means from said terminal means for each merchant;

accumulating the stored merchant tax information for the group of merchants; and

sending a single tax payment corresponding to the accumulated tax information for the group of merchants to a taxing authority bank and sending a report message including the identification of the merchants making the tax payments corresponding to the single tax payment.

5,644,725

COMPUTERIZED INVENTORY MONITORING AND VERIFICATION SYSTEM AND METHOD

Hal P. Schmerer, St. Louis, Mo., assignor to Deutsche Financial Services, St. Louis, Mo.

Continuation of Ser. No. 187,088, Jan. 26, 1994, abandoned, which is a continuation of Ser. No. 439,250, Nov. 20, 1989, Pat. No. 5,319,544. This application Dec. 20, 1995, Ser. No. 576,843

Int. Cl.[6] G06F *17/60*

U.S. Cl. 395—228 **19 Claims**



1. In a multiple computer system for modifying, monitoring and verifying inventory comprising a central computer system and at least one remote computer system, the central computer system and the at least one remote computer system being operative to exchange inventory data via a communications link, wherein the central computer system operates in response to a first instruction means and a selected one of the at least one remote computer system operates in response to a second instruction means, the improvement therewith comprising:

a first instruction-change means located in the central computer system operative when selected to cause predetermined changes to the second instruction means in the selected one of the at least one remote computer system and a second instruction-change means located in the central computer system responsive to a request via the communications link from the selected one of the at least one remote computer system to cause said predetermined changes to the second instruction means to be transmitted to and implemented by the selected one of the at least one remote computer system, said communications link coupling said at least one remote computer system to said central computer system for coordinating the processing of said predetermined changes while enabling said central computer system to operate independently from said at least one remote computer system; and

wherein a user can use said at least one remote computer system to access said central computer system to modify, monitor and verify inventory.

5,644,726

METHOD AND SYSTEM IMPLEMENTING A MORTGAGE PARTNERSHIP

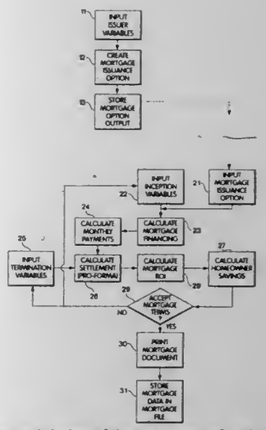
Robert H. Oppenheimer, 67 Thornberry Rd., Winchester, Mass. 01890

Continuation-in-part of Ser. No. 356,853, May 25, 1989, abandoned. This application Mar. 19, 1990, Ser. No. 495,393

Int. Cl.[6] G06F *19/00*

U.S. Cl. 395—238 **26 Claims**

1. A method, with the aid of a digital computer system including a printer, of preparing single-issue, multi-part mortgage documents wherein the multiple payment obligations of mortgagor to multiple mortgagees under said parts varies as to term of each obligation



and the amount and timing of the repayment of such obligations to each mortgagee, said method comprising the steps of:

(a) applying data from issuer regarding the terms of multi-part mortgage obligations into the digital computer,

(b) acquiring customer identifications from potential mortgagors as to financing requirements and options;

(c) applying the acquired identifications into the digital computer,

(d) storing the acquired data and identifications in the digital computer,

(e) actuating the digital computer to calculate mortgage obligations and terms from the acquired data and identifications;

(f) actuating the digital computer to print the mortgage document using the acquired data and identifications.

5,644,727

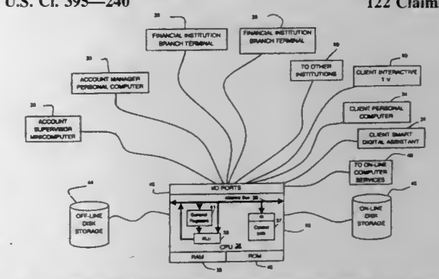
SYSTEM FOR THE OPERATION AND MANAGEMENT OF ONE OR MORE FINANCIAL ACCOUNTS THROUGH THE USE OF A DIGITAL COMMUNICATION AND COMPUTATION SYSTEM FOR EXCHANGE, INVESTMENT AND BORROWING

Charles Agee Atkins, Charleston, S.C., assignor to Proprietary Financial Prodncts, Inc., Charleston, S.C.

Continuation-in-part of Ser. No. 780,590, Oct. 23, 1991, which is a continuation-in-part of Ser. No. 686,319, Apr. 16, 1991, which is a continuation of Ser. No. 408,173, Sep. 15, 1989, abandoned, which is a continuation of Ser. No. 38,817, Apr. 15, 1987, Pat. No. 4,953,085. This application Dec. 6, 1994, Ser. No. 350,442

Int. Cl.[6] G06F *19/00*

U.S. Cl. 395—240 **122 Claims**



1. A computer-based system for operating a plurality of client financial accounts comprising:

processing means;

memory means connected to said processing means for storing information pertaining to the client financial accounts;

means for maintaining in said memory means a database comprising for each client account at least one asset account which receives funds for investment purposes, said asset account having an account balance which is updated by the computer system upon receipt of said funds, and at least one liability account;

means for allocating said received funds among said accounts; and

a plurality of client computers, each client computer comprising:

means for communicating with said computer system;

means for limiting use of said client computer to one or more clients by one or more identification means; and

means for interacting with said client account maintained in said memory means.

5,644,728

CONTROL SYSTEMS

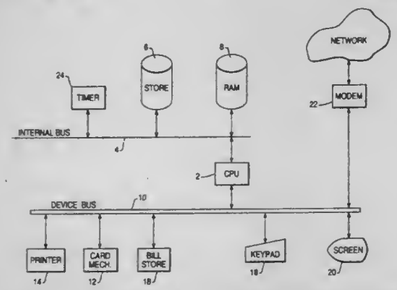
Andrew R. Pillans, Dundee, Scotland, assignor to NCR Corporation, Dayton, Ohio

Filed Jun. 22, 1995, Ser. No. 493,658

Claims priority, application United Kingdom, Feb. 14, 1995, 9502819

Int. Cl.[6] G06F *19/00*

U.S. Cl. 395—243 **37 Claims**



1. A system for generating a control program for use in a target apparatus, said system comprising:

a processing unit for providing a visual interface representing (i) subimages which represent control processes which are grouped to represent a plurality of processes to be concurrently executed and (ii) links between said subimages to represent control flow from one group of concurrent processes to a successively performed group of concurrent processes; and

an input device for enabling a system user to edit said subimages to generate the control program for use in the target apparatus.

5,644,729

BIDIRECTIONAL DATA BUFFER FOR A BUS-TO-BUS INTERFACE UNIT IN A COMPUTER SYSTEM

Nader Amini; Bechara Fouad Boury; Sherwood Brannon, all of Boca Raton; Richard Louis Horne, Boynton Beach, and Terence Joseph Lohman, Boca Raton, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 816,691, Jan. 2, 1992, abandoned. This application Jul. 28, 1994, Ser. No. 282,159

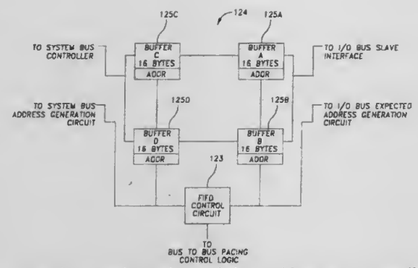
Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—250 **11 Claims**

1. A computer system, comprising:

system memory;

a memory controller for controlling access to system memory, said system memory and said memory controller connected by a memory bus;



a central processing unit coupled to said memory controller through a local bus, said central processing unit being connected to read data from and write data to said system memory over said local bus and said memory bus by performing read and write operations;

a bus interface unit connected with said memory controller by a system bus;

at least one input/output (I/O) device connected to said bus interface unit by an I/O bus for reading data from and writing data to said system memory over said bus interface unit;

said bus interface unit including a bidirectional data storage unit to provide temporary storage of data being transferred between said system bus and said I/O bus during read and write operations performed by said at least one I/O device, said bidirectional storage unit comprising (i) a first pair of buffers connected in series between said I/O bus and said system bus, and (ii) a second pair of buffers connected in series between said I/O bus and said system bus and in parallel with said first pair of buffers, each of said buffers in each of said pairs being used for bidirectional data transfer between said system bus and said I/O bus wherein first and second sets of data originating on either one of said system bus or said I/O bus and destined for transfer in one direction to the other one of said system bus or said I/O bus are transferred to the bidirectional storage unit so that (a) said first set of data is stored in one buffer of one of the pairs of series-connected buffers, and (b) (1) said stored first set of data contained in said one buffer of one of the pairs of series-connected buffers is transferred to the other buffer in said one of the pairs while, simultaneously, (b) (2) said second set of data is transferred into one buffer of the other series-connected pair of buffers; wherein one of said first pair of buffers and one of said second pair of buffers is connected to said system bus, each of said system-bus connected buffers capable of simultaneously transferring data over said system bus.

5,644,730

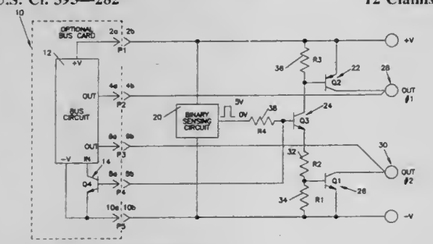
DUAL MODE BINARY SENSOR FOR BUS OPERATION

Robert W. Fayfield, Shorewood, Minn., assignor to Banner Engineering Corp., Minneapolis, Minn.

Filed Mar. 22, 1995, Ser. No. 409,262

Int. Cl.[6] G06F *13/40;13/10*

U.S. Cl. 395—282 **12 Claims**



1. A binary sensor comprising:

a binary sensing circuit having a means for receiving a signal indicative of a condition; and a means for producing a binary signal indicative of whether the intensity of said signal is above or below a threshold;

a logic circuit, operatively coupled to said binary sensing circuit, for providing a means for communicating with a first external circuit;

an adaptive interface card, including bus network interface circuitry, operatively coupled to said binary sensing circuit and said logic circuit;

wherein said adaptive interface card disables said logic circuit and enables said bus network interface circuitry upon insertion into said binary sensor,

said adaptive interface card providing a means for said binary sensor to communicate with a first network bus and network buses of a type other than said first network bus without the use of said first external circuit.

5,644,731

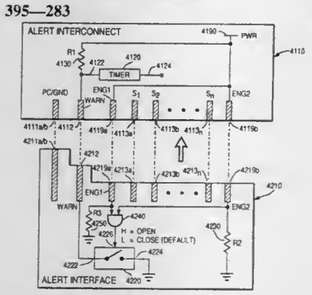
METHOD AND APPARATUS FOR HOT PLUGGING/UNPLUGGING A SUB-SYSTEM TO AN ELECTRICALLY POWERED SYSTEM

Bjorn Liencres, Palo Alto; Ashok Singhal, Redwood City; Jeff Price, San Jose, and Kang S. Lim, Danville, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Jul. 7, 1995, Ser. No. 499,150

Int. Cl.[6] G06F *13/20*

U.S. Cl. 395—283 **29 Claims**



1. A method for hot-plugging an interface of a component to an interconnect of an electrically powered system, the method comprising the steps of:

A) generating an engage warning signal for said powered system, said engage warning signal indicative of an imminent mating of a daughter signal connector of said interface to a mother signal connector of said interconnect;

B) initiating a quiet period for said mother signal connector;

C) begin mating said daughter and said mother signal connectors after step B;

D) generating a first engaged signal for said powered system;

E) generating a second engaged signal for said powered system after step D, said generation of said second engaged signal indicating that said daughter and said mother signal connectors have mated; and

F) terminating said quiet period after step E.

5,644,732

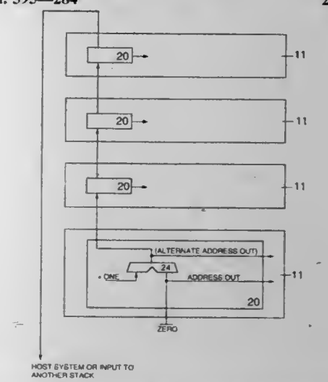
METHOD AND APPARATUS FOR ASSIGNING ADDRESSES TO A COMPUTER SYSTEM'S THREE DIMENSIONAL PACKING ARRANGEMENT

Howard L. Davidson, San Carols, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Continuation of Ser. No. 954,269, Sep. 30, 1992, abandoned, which is a continuation-in-part of Ser. No. 553,439, Jul. 13, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 480,025

Int. Cl.[6] G06F *12/02*

U.S. Cl. 395—284 **20 Claims**



1. An apparatus for configuring a system including a plurality of layers to operate in a three dimensional structure, the apparatus comprising:

a register file coupled to each of the plurality of layers, said register file being configured to store file information including information identifying each of the plurality of layers as a processor module, a memory module, or an input/output (I/O) interface module;

a layer identification circuit coupled to a corresponding layer of the plurality of layers, said layer identification circuit being configured to generate a unique layer identification value and to output said unique layer identification value to a succeeding layer of the plurality of layers to configure said system;

a first bus configured to couple each of said layer identification circuits to a corresponding layer;

a state machine coupled to said first bus, said state machine being configured to access said file information from one of said plurality of layers to determine which of said plurality of layers includes a control processor; and

said control processor configured to select a layer via said unique layer identification, to access said file information on said selected layer, to assign an address to said selected layer, and to write to said register file said address assigned to said layer.

5,644,733

DUAL COUPLED PARTITIONABLE NETWORKS PROVIDING ARBITRATION LOGIC FOR MANAGED ACCESS TO COMMONLY SHARED BUSSES

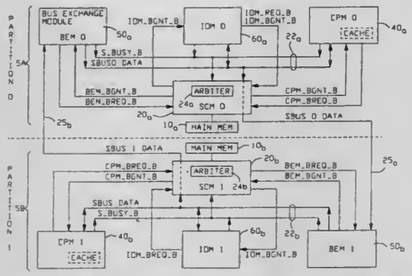
David Mark Kalish, Laguna Niguel; Russell Lee Marrash, Irvine; Gary Carl Whitlock, Mission Viejo, and Kha Nguyen, Anaheim, all of Calif., assignors to Unisys Corporation, Blue Bell, Pa.

Filed May 18, 1995, Ser. No. 443,974

Int. Cl.[6] G06F *13/362*

U.S. Cl. 395—293 **3 Claims**

1. In a network using two partitioned systems wherein a first partitioned system includes a first system control module holding a first arbiter unit for controlling access of a first central processing module (CPM), a first input/output module (IOM) and a first bus



exchange module (BEM) to a first system common bus, said first arbiter unit having a first arbiter state machine controlling a first bus interface unit and first retry counter state machine, and wherein a second partitioned system includes a second system control module holding a second arbiter unit for controlling access of a second CPM, a second IOM and a second BEM to a second system common bus, said second arbiter unit having a second arbiter state machine controlling a second bus interface unit and second retry counter state machine, a method for coupling said first and second partitioned systems for data transfers while enhancing throughput and preventing lockup or module starvation of bus access, said method comprising the steps of:

(a) regulating the priority of bus access to said first system common bus by setting priority of access between said first CPM, said first IOM and said first BEM;

(b) regulating the priority of bus access to said second system common bus by setting priority of said second common system bus access between said second CPM, said second IOM and said second BEM;

(c) transmitting data from said first system common bus via said first system control module to said second BEM;

(d) transmitting data from said second system common bus via said second system control module to said first BEM module;

(e) allocating the highest priority of access on said first and second system buses respectively to said first and second BEMs on a general basis except when said first/second IOM and said first/second CPM are locked up trying to access each other concurrently;

(f) allocating a temporary second-level priority to said first/second IOM and third priority to said first/second CPM for system common bus access respectively in said first and second partitioned systems, said temporary second level priority being transferred to said first/second CPM immediately after said IOM has completed its operation cycle;

(g) enabling a multiple number N of retry cycles for any IOM or CPM whose bus access request is incomplete said enabling effected on an alternate priority sequence as long as said BEM is inactive and not requesting bus access;

(h) allocating a temporary higher priority to a requesting first/second IOM or CPM after N retry cycles by a CPM or IOM so as to enable toggling of priority between said IOM and CPM;

(i) eliminating said temporary higher priority for said first/second IOM or CPM after completion of its bus access request;

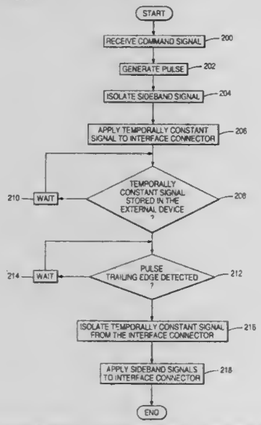
(j) subordinating said temporary higher priority of said first/second IOM and CPM to said first/second BEM during any bus request by said first/second BEM after said first/second IOM or CPM has completed N retries or has completed its bus access request.

5,644,734

METHOD AND APPARATUS FOR MULTIPLEXING BUS CONNECTOR SIGNALS WITH SIDEBAND SIGNALS

Soon Chul Hong, San Diego, Calif., assignor to NCR Corporation, Dayton, Ohio

Filed Aug. 24, 1995, Ser. No. 518,739
Int. Cl.[6] G06F *13/38;13/40*
U.S. Cl. 395—309 **32 Claims**



1. A method of multiplexing temporally constant signals from a Peripheral Component Interconnect (PCI) compliant device with sideband signals, the PCI compliant device being coupled to an external device by an interface connector, the method comprising the steps of:

receiving a command signal in the PCI compliant device from the interface connector;

generating a pulse in the PCI compliant device in response to the command signal via the interface connector;

isolating the sideband signals from the interface connector in response to a leading edge of the pulse;

applying the temporally constant signals to the interface connector until the temporally constant signals are stored in the external device;

isolating the temporally constant signals from the interface connector in response to a trailing edge of the pulse; and

applying the sideband signals to the interface connector in response to the trailing edge of the pulse.

5,644,735

METHOD AND APPARATUS FOR PROVIDING IMPLICIT COMPUTER-IMPLEMENTED ASSISTANCE

William W. Luciw, Morgan Hill; Stephen P. Capps, San Carlos, and Lawrence G. Tesler, Portola Valley, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Division of Ser. No. 99,861, Jul. 30, 1993, Pat. No. 5,477,447, which is a continuation-in-part of Ser. No. 889,225, May 27, 1992, Pat. No. 5,390,281. This application Apr. 19, 1995, Ser. No. 424,959
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—338 **20 Claims**

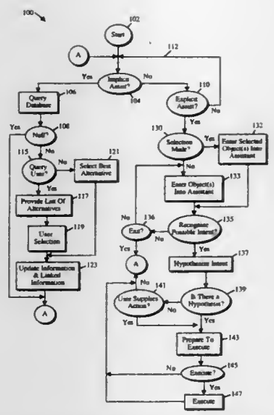
1. A computer system having assistance capabilities, comprising:

(a) computation means for performing assistance functions,

(b) memory means for maintaining a data base of assistance-pertinent events, said memory means being coupled to said computation means,

(c) means for providing a smart field responsive to information of a predefined type,

(d) means for noticing assistance-pertinent event occurrences subject to potential assist action performance, the means for noticing assistance-pertinent event occurrences including:



means for determining whether the information of a predefined type has been entered into the smart field; and

search means responsive to the entry of the information of a predefined type into the smart field, the search means operable for searching a portion of the data base of assistance-pertinent events associated with the type of information of the smart field to identify and compile a list of any alternatives matching or partially matching the specific information entered in the smart field,

(d) means for determining whether implicit assistance responsive to the event is indicated, and

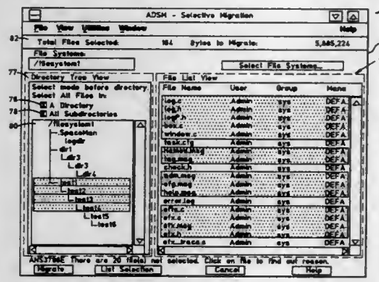
(e) means for providing the implicit assistance indicated.

5,644,736

SYSTEM AND METHOD FOR SELECTING COMPONENTS OF A HIERARCHICAL FILE STRUCTURE

Vivian Louise Healy, San Jose; Hanhsi Huang, Cupertino, and Tin Luong Nguyen, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 25, 1995, Ser. No. 449,979
Int. Cl.[6] G06F *3/00*
U.S. Cl. 395—341 **38 Claims**



1. In a computer system having a display with a screen and a graphical user interface, and further having memory coupled to the display, a method for allowing a user to select for an operation any component within a hierarchical file tree structure, the method comprising the unordered machine-executed steps of:

responsive to a user specifying a directory, displaying data objects representing a tree structure of subdirectories located below the user specified directory;

displaying a user option object on the screen that represents a user option to select for an operation specified components of the file tree structure, the user option object being different from filenames, directory names, and subdirectory names; and

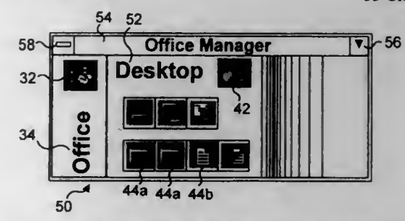
responsive to a user selecting the user option object on the screen and marking a starting directory within the displayed tree structure as being the starting point for selection, selecting for an operation the components of the file tree structure specified by the selection of the user option object.

5,644,737

METHOD AND SYSTEM FOR STACKING TOOLBARS IN A COMPUTER DISPLAY

David Charles Tuniman; Vinod Anantharaman, both of Redmond, and Michael Halvar Jansson, Bellevue, all of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed Jun. 6, 1995, Ser. No. 466,611
Int. Cl.[6] G06F *5/01;1/00*
U.S. Cl. 395—352 **33 Claims**



1. A method for providing access to a plurality of graphic objects on a computer display, comprising the steps of:

(a) organizing the plurality of graphic objects into a plurality of generally quadrilaterally shaped toolbars, each toolbar comprising a group of associated graphic objects organized in an array;

(b) creating a stack with the plurality of toolbars on the computer display, so that any selected toolbar is fully visible and hides a substantial portion of any non-selected toolbar from among the plurality of toolbars; a graphic object in any selected toolbar that is fully visible to a user on the computer display being directly selectable by the user to activate said graphic object; and

(c) enabling the user to choose any non-selected toolbar from among the plurality of toolbars of graphic objects, to make the non-selected toolbar that is thus chosen by the user become a selected toolbar that is fully visible to the user on the computer display, causing a previously selected toolbar to become a non-selected toolbar that is no longer fully visible, a substantial portion of the previously selected toolbar being substantially hidden by the toolbar just chosen by the user.

5,644,738

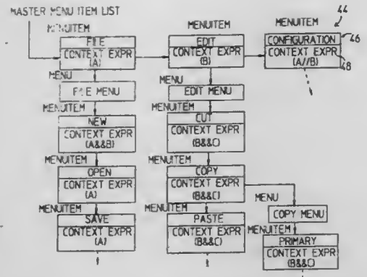
SYSTEM AND METHOD USING CONTEXT IDENTIFIERS FOR MENU CUSTOMIZATION IN A WINDOW

Jason D. Goldman; William G. McCollom, and Evelyn Williams, all of Fort Collins, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 13, 1995, Ser. No. 527,478
Int. Cl.[6] G06F *3/00*
U.S. Cl. 395—352 **20 Claims**

1. A context identification system for a window manager for improving association of menu items with windows, comprising:

an application registration mechanism configured to create a menu item to be placed in a window for display, said menu item comprising a context expression, a predefined function specification defining an action to be taken by said window manager when said menu item is prompted, and a menu string defining a display image corresponding to said menu item;



a window creation mechanism configured to define said window for display, said window having a context identifier; and

a menu item placement mechanism configured to associate said menu item with said window based upon an evaluation of said context expression associated with said menu item and said context identifier associated with said window.

5,644,739

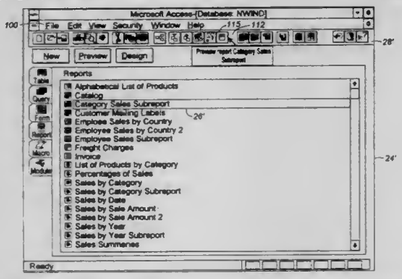
METHOD AND SYSTEM FOR ADDING BUTTONS TO A TOOLBAR

Elizabeth Ann Moursund, Bellevue, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Filed Jan. 27, 1995, Ser. No. 379,705

Int. Cl.[6] G06F *3/00*

U.S. Cl. 395—354 **14 Claims**



1. A method for adding a control to a region for holding controls, comprising the steps of:

displaying a region for holding controls;

displaying a container including a plurality of objects of a predetermined type;

identifying a default operation associated with the plurality of objects in the container;

detecting the selection and movement of one of the plurality of objects;

detecting the placement of the selected object;

in response to the placement of the selected object in the region for holding controls, creating a control in the region for holding controls; and

associating the control with the default operation and the selected object,

whereby subsequent actuation of the control results in the default operation being performed on the selected object.

5,644,740

METHOD AND APPARATUS FOR DISPLAYING ITEMS OF INFORMATION ORGANIZED IN A HIERARCHICAL STRUCTURE

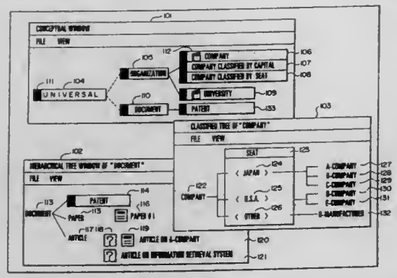
Itsuko Kiuchi, Tokyo, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 30, 1993, Ser. No. 160,231

Claims priority, application Japan, Dec. 2, 1992, 4-349855

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—357 **7 Claims**



1. A method of displaying a hierarchical tree of nodes, each node of which comprises an item of information representing a concept defining a noun, a name of numerical value or a unit, wherein at least two of said concepts have an is-a relation as a hierarchical relationship therebetween, a generic relation comprising a general relation as a non-hierarchical relationship therebetween or an instance relation that comprises an exemplified relation of a corresponding generic relation, said method comprising the steps of:

displaying a hierarchical tree of nodes indicative of is-a relations among the concepts;

selecting a first node from the hierarchical tree of nodes;

displaying, in response to the first node, the selected first node and a partial hierarchical tree of nodes lower than the selected first node;

displaying an attribute representing the generic relation corresponding to the instance relation which exists among the nodes of the partial hierarchical tree;

selecting an attribute from among the displayed attributes;

classifying the partial hierarchical tree of nodes according to the selected attribute so as to extract nodes associated with the selected attribute; and

displaying the classified partial hierarchical tree.

5,644,741

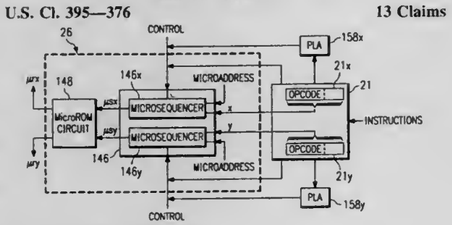
PROCESSOR WITH SINGLE CLOCK DECODE ARCHITECTURE EMPLOYING SINGLE MICROROM

Mark W. Blubm, Plano; Mark W. Hervio, Dallas; Steven C. McMahan, and Raul A. Garibay, Jr., both of Richardson, all of Tex., assignors to Cyrix Corporation, Richardson, Tex.

Filed Oct. 18, 1993, Ser. No. 138,855

Int. Cl.[6] G06F *9/22*

U.S. Cl. 395—376 **13 Claims**



1. A processor, comprising:

storage circuitry for storing an instruction;

a single microROM addressable by a microaddress for outputting a microinstruction in response to said microaddress;

sequencing circuitry coupled to provide said microaddress to said single microROM; and

decode circuitry coupled to said storage circuitry for detecting whether said instruction stored in said storage circuitry comprises a single clock instruction before said single microROM outputs said microinstruction, and for indicating to said sequencing circuitry in response to detecting whether said instruction stored in said storage circuitry comprises a single clock instruction.

5,644,742

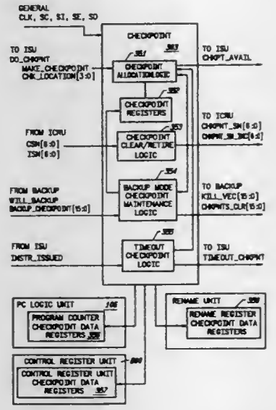
PROCESSOR STRUCTURE AND METHOD FOR A TIME-OUT CHECKPOINT

Gene W. Shen, Mountain View; John Szeto, Oakland; Niteen A. Patkar, Sunnyvale, all of Calif., and Michael C. Shebanow, Plano, Tex., assignors to Hal Computer Systems, Inc., Campbell, Calif.

Continuation of Ser. No. 398,299, Mar. 3, 1995, abandoned, which is a continuation of Ser. No. 390,885, Feb. 14, 1995, abandoned. This application Jun. 7, 1995, Ser. No. 473,223

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—591 **16 Claims**



1. In a central processing unit (CPU) having an instruction issue means, instruction execution means, and a data store for storing data, a method for bounding exception handling for exceptions occurring in said execution means; said method comprising the steps of:

establishing a predetermined threshold for the number of occurrences of a specified event that defines a time-out condition and storing said threshold in a first data store within said CPU;

counting occurrences of a said specified event in a counter within said CPU and storing said number of occurrences as a count in a second data store within said CPU;

comparing said count with said threshold;

forming a time-out checkpoint when said count is equal to or greater than said time-out condition.

5,644,743

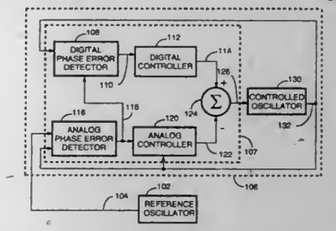
HYBRID ANALOG-DIGITAL PHASE ERROR DETECTOR

Raymond Louis Barrett, Jr., Ft. Lauderdale; Barry W. Herold, Boca Raton; Grazyna Anna Pajunen, Delray Beach, and Walter L. Davis, Parkland, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 4, 1995, Ser. No. 567,387

Int. Cl.[6] H03D *3/24*

U.S. Cl. 375—375 **18 Claims**



1. A hybrid analog-digital phase error detector for detecting a phase error between first and second clock signals, the hybrid analog-digital phase error detector comprising:

an analog phase error detector coupled to the first and second clock signals for generating an analog phase error signal starting at a first selected transition of the second clock signal and ending at a first selected transition of the first clock signal;

a digital phase error detector coupled to the first clock signal and the analog phase error signal for generating a digital phase error value starting at a second selected transition of the second clock signal and ending at a second selected transition of the first clock signal;

a digital controller coupled to the digital phase error detector for executing a digital control algorithm based on the digital phase error value to produce a digitally derived control signal;

an analog controller coupled to the analog phase error detector for executing an analog control algorithm based on the analog phase error signal to produce an analog control signal; and

a summer coupled to the digital controller and coupled to the analog controller for combining the analog control signal and the digitally derived control signal to produce a composite control signal representing the phase error.

5,644,744

SUPERSCALER INSTRUCTION PIPELINE HAVING BOUNDARY IDENTIFICATION LOGIC FOR VARIABLE LENGTH INSTRUCTIONS

Stephen William Mahin, Underhill; Stephen Michael Conor, Essex Junction; Stephen J. Ciavaglia, Williston, all of Vt.; Lyman Henry Moulton, III, Phoenix, Ariz.; Stephen Emery Rich, Essex Junction, and Paul David Kartschoke, Williston, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 360,520, Dec. 21, 1994. This application May 12, 1995, Ser. No. 440,035

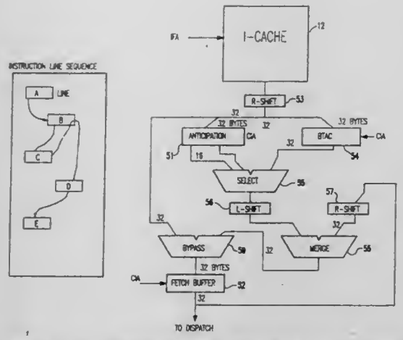
Int. Cl.[6] G06F *9/312*

U.S. Cl. 395—383 **18 Claims**

1. A method of fetching multiple instructions in a pipelined microprocessor for out-of-order instruction execution in microprocessor architectures that permit store to the instruction stream, said method comprising the steps of:

storing most recent addresses of cache lines which have been accessed for instruction fetching for execution in a content addressable memory, said instructions being of variable length;

logically identifying instruction boundaries for each of said plurality of instructions held in cache;



holding a next instruction in an anticipation buffer, said next instruction being located and identified by said identifying step using said content addressable memory;

aligning and appending said next instruction to said instructions held in cache, based on said step of logically identifying instruction boundaries, without first sequentially decoding said instructions;

detecting an occurrence of a store to memory request to one of said instruction addresses in the content addressable memory;

delaying the store to memory request until previous instructions are executed; and

then refetching instructions that follow the store to memory request in program order.

5,644,745

APPARATUS FOR REPLACING DATA AVAILABILITY INFORMATION FOR AN INSTRUCTION SUBSEQUENT TO A BRANCH WITH PREVIOUS AVAILABILITY INFORMATION UPON BRANCH PREDICTION FAILURE

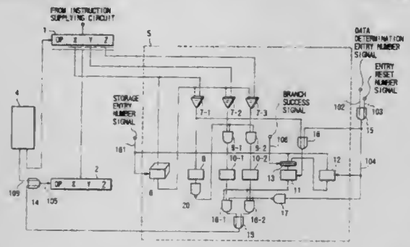
Takahiko Uesugi, Yamanashi, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 239,933, May 9, 1994, abandoned, which is a continuation of Ser. No. 715,685, Jun. 14, 1991, abandoned. This application Apr. 24, 1995, Ser. No. 427,700

Claims priority, application Japan, Jun. 19, 1990, 2-160208

Int. Cl.[6] G06F *9/38*

U.S. Cl. 395—392 **11 Claims**



1. A pipeline repair control apparatus for a pipelined computer system comprising:

data control means for processing instructions in a pipeline and generating data determination information corresponding to said instructions, said data determination information indicating whether or not data required for execution of said instructions are available;

an information holding register for holding data determination information for an instruction preceding a branch instruction; and

replacing means for replacing data determination information for an instruction subsequent to the branch instruction, with data determination information held in said information holding register upon branch prediction failure.

5,644,746

DATA PROCESSING APPARATUS WITH IMPROVED MECHANISM FOR EXECUTING REGISTER-TO-REGISTER TRANSFER INSTRUCTIONS

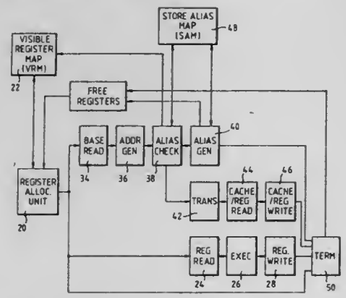
Nicholas Peter Holt, Padfield, and John Richard Eaton, Salford, both of United Kingdom, assignors to International Computers Limited, London, England

Filed Apr. 30, 1992, Ser. No. 876,965

Claims priority, application United Kingdom, Jun. 13, 1991, 9112754

Int. Cl.[6] G06F *9/30*

U.S. Cl. 395—393 **3 Claims**



1. A data processing apparatus comprising:

(a) a plurality of physical registers,

(b) a mapping table for mapping a plurality of logical registers on to said physical registers,

(c) means for fetching a sequence of instructions, said instructions including a MOVE instruction for moving an operand from a logical source register to a logical destination register, said logical source register being mapped on to one of said physical registers, and

(d) execution means for executing said instructions, the execution means including means for executing said MOVE instruction by modifying said mapping table to map said logical destination register on to said one of said physical registers.

5,644,747

PAGE MODE ACCESS MEMORY CONTROLLER INCLUDING PLURAL ADDRESS LATCHES AND A COMPARATOR

Masahiro Kusuda, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 3, 1995, Ser. No. 398,442

Claims priority, application Japan, Mar. 8, 1994, 6-062139

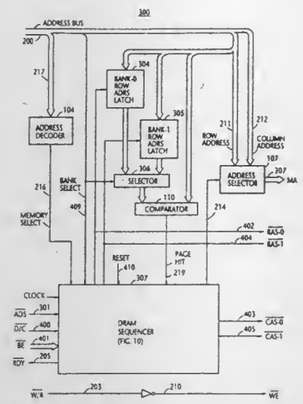
Int. Cl.[6] G06F *12/00;* **G11C** *8/00*

U.S. Cl. 395—405 **8 Claims**

1. A memory controller for a computer system having a processor and a plurality of groups of memories each being capable of buffering a row address, wherein one group of memories of said groups of memories is selected by said processor, said memory controller comprising:

a plurality of latch means corresponding respectively to said groups of memories, each of the latch means storing a row address from said processor when the corresponding group of memories is selected by said processor;

selector means for selecting one of said latch means corresponding to the group of memories which is currently selected by said processor;



a comparator for comparing the row address stored in the selected latch means with a row address from said processor to detect a coincidence or a noncoincidence therebetween; and

control means responsive to an initial coincidence detected by said comparator for directing access to the group of memories currently selected using the first row address,

said control means being responsive to a subsequent coincidence detected by said comparator when the first row address is stored in the selected latch means for directing access to the memories of the currently selected group using the same first row address and one of a plurality of column addresses from said processor, and

said control means being responsive to a noncoincidence detected by said comparator when the first row address is stored in the selected latch means for directing access to the memories of the currently selected group using a second row address and one of said column addresses from said processor.

5,644,748

PROCESSOR SYSTEM INCLUDING AN INDEX BUFFER CIRCUIT AND A TRANSLATION LOOK-ASIDE BUFFER CONTROL CIRCUIT FOR PROCESSOR-TO-PROCESSOR INTERFACING

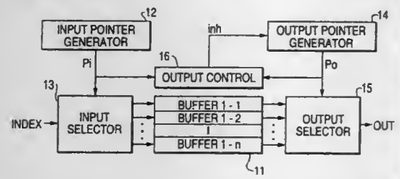
Shinichi Utsunomiya; Hideyuki Iino; Noriko Kadomaru, and Makoto Miyagawa, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 1, 1993, Ser. No. 11,761

Claims priority, application Japan, Jan. 30, 1992, 4-015567; Jan. 31, 1992, 4-016929

Int. Cl.[6] G06F *12/10*

U.S. Cl. 395—417 **11 Claims**



1. A processor having an address unit with an index buffer circuit comprising:

a plurality of buffers;

input pointer generating means for generating an input control signal for determining a first selected buffer of said plurality of buffers in a buffer portion, into which index data is to be stored;

input selecting means for selecting index data based on the input control signal and supplying said index data to said first selected buffer, said first selected buffer storing said index data;

output pointer generating means for outputting a control signal for determining a second selected buffer from which output data is to be read;

output selecting means for selecting output data based on the control signal, thereby outputting it;

translation look-aside buffer (TLB) means for storing a translation pair comprising a logical address and physical address for use in an address translation, said TBL means comprising an input for entering information from an output of said index buffer-circuit;

first information storing means for storing information corresponding to respective entries of a plurality of entries, each information indicating whether a corresponding respective entry of said TLB means is valid or invalid;

second information storing means for storing a plurality of information designating priorities of said respective entries in said TLB means, each respective entry having a respective priority;

priority designating means for designating preselected priorities for respective entries when each information of said plurality of information to be stored in the second information storing means indicates an invalid value;

comparison judging means for comparing logical addresses previously determined for respective entries in the TLB means with comparison data received from an outside unit and producing comparison results, each respective entry having a corresponding logical address and each corresponding logical address being compared with corresponding comparison data to produce a respective comparison result, and judging, based on the comparison results, whether the comparison data are hits in the TLB means, said judging of the comparison data being performed based on each comparison result; and

logical address storing means for storing the logical addresses to be supplied to said comparison judging means and for performing updating operations of said logical addresses based on updated data sent from the outside unit based on the judgment result obtained from said comparison judging means.

5,644,749

PARALLEL COMPUTER AND PROCESSOR ELEMENT UTILIZING LESS MEMORY

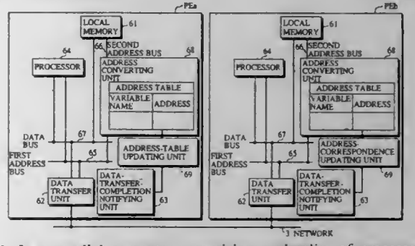
Yoshimasa Obayashi, Kyoto, Japan, assignor to Matsushita electric industrial co. ltd., Osaka-fu, Japan

Filed May 9, 1994, Ser. No. 239,763

Claims priority, application Japan, May 10, 1993, 5-108029

Int. Cl.[6] G06F *9/26;9/34;12/00;12/02*

U.S. Cl. 395—421.1 **11 Claims**



1. In a parallel computer comprising a plurality of processor elements interconnected via a network, the processor element including:

memory means for storing a program and, per array-variable name, a partitioned array variable, the program being run

simultaneously by the processor elements, each partitioned array variable being allocated to respective processor elements;

a processor for carrying out a calculation using the partitioned array variable in the memory means, the partitioned array variable being accessed by being addressed with a variable-name address that includes a code representing an array-variable name;

address converting means for holding a variable-name address in relation with a physical address on the memory means for each partitioned array variable to output a corresponding physical address in response to an input of the variable-name address from the processor, wherein the variable-name address includes a first address unit and a second address unit, the first address unit representing a variable name of a partitioned array variable while the second address unit representing an element number contained in the array variable, the address converting means comprising:

an address latch circuit for latching an address including the variable name, the address being outputted from the processor and from the transferring means;

an associative memory for holding the first address unit in relation with a high order of the physical address on the memory means for each partitioned array variable in the memory means to convert the first address unit of the latched address into a high order of a corresponding physical address; and

an output circuit for outputting the physical address to the memory means by combining the high order of the physical address from the associative memory and the second address unit from the address latch circuit,

wherein the associative memory holds the first address unit in relation with a high order of a physical address of the free area, the first address unit representing the free area instead of the variable name of the partitioned array variable;

transferring means for transferring a partitioned array variable per array-variable name with other processor elements via the network, the partitioned array variable being transferred to be stored into a free area acquired in the memory means when a partition direction changes, the free area being as large as a storage area for one partitioned array variable, wherein the transferring means comprises:

first address-generating means for generating a readout address to read out a partitioned array variable to be sent to the other processor elements from the memory means, the partitioned array variable being sent via the network;

second address-generating means for generating a write-in address to write a partitioned array variable received from the other processor elements into the free area, the partitioned array variable being received via the network;

I/O means for outputting the readout partitioned array variable from the memory means to the network, and inputting the partitioned array variable received from the network into the free area;

controlling means for controlling the readout of the partitioned array variable from the memory means in accordance with the readout address generated by the first address-generating means to be outputted to the other processor elements via the I/O means, and the writing of the partitioned array variable received from the other processor elements via the I/O means into the free area in accordance with the write-in address generated by the second address-generating means,

wherein the first address-generating means generates the variable-name address as the readout address, and wherein the second address-generating means generates the variable-name address as the write-in address;

flag holding means for holding a sending-completion flag indicating that all partitioned array variables to be sent have been sent to the other processor elements, and a receiving-completion flag indicating that all partitioned array variables to be received from the other processor elements have been received; and

notifying means for notifying a completion of the transfer per array variable name to the address-correspondence updating means when both the flags have been set, both the flags being set by the controlling means; and

address-correspondence updating means for updating an address correspondence in the address converting means with a pretransfer variable-name address in relation with a post-transfer physical address each time the transferring means completes the transfer per array-variable name, wherein the address-correspondence updating means includes:

an address updating table for holding a pretransfer variable-name address and a high order of a post-transfer physical address for a partitioned array variable being transferred; and

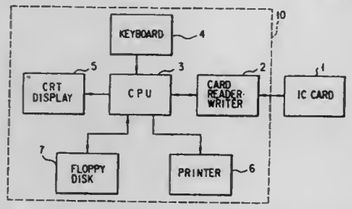
update controlling means for updating the associative memory in accordance with a content in the address updating table when the notifying means notifies a completion of the transfer, the address updating table being set by one of the processor and the transferring means.

5,644,750

DATA STORAGE APPARATUS HAVING MEMORY AREA WITH A PREDETERMINED LOGIC TYPE

Yasuo Iijima, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 22, 1994, Ser. No. 215,728
Claims priority, application Japan, Mar. 29, 1993, 5-069783
Int. Cl.[6] G06K *5/00*
U.S. Cl. 395—427 **19 Claims**



5. A data storage apparatus for writing/reading data in/from the divided areas, comprising:

a memory having a predetermined logic type that is divided into a plurality of areas;

write logic type setting means for setting a write logic type for each of the divided areas;

first writing means for directly writing received write data in the memory;

second writing means for inverting the received data and for writing the inverted data in the memory;

first reading means for reading data from the memory and for outputting the data read;

second reading means for reading data from the memory, inverting the data read, and outputting the inverted data; and

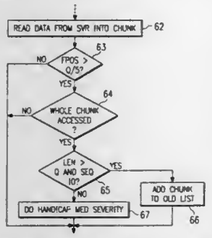
selecting means for selecting the first writing means and the first reading means when the write logic type of an area set by the write logic type setting means coincides with a logic type of memory, and for selecting second writing means and the second reading means when the logic type of the area set by the write logic type setting means does not coincide with the logic type of the memory.

5,644,751

DISTRIBUTED FILE SYSTEM (DFS) CACHE MANAGEMENT BASED ON FILE ACCESS CHARACTERISTICS

Rodney Carlton Burnett, Austin, Tex., assignor to International Business Machines Corporation, Austin, Tex.

Filed Oct. 3, 1994, Ser. No. 317,981
Int. Cl.[6] G06F *12/08*
U.S. Cl. 395—440 **12 Claims**



1. A method of managing a cache of a processing system connected to a computer network during a file I/O operation in which data from a file is being accessed, the cache being divided into chunks, the method comprising the steps of:

(a) determining whether the file I/O operation is of a predetermined type;

(b) if the file I/O operation is of the predetermined type, determining whether data being accessed from the file is at a predetermined offset in the file;

(c) if the data being accessed is not at the predetermined offset in the file, storing the data being accessed in one or more chunks of the cache not currently in use by the file during the file I/O operation; and

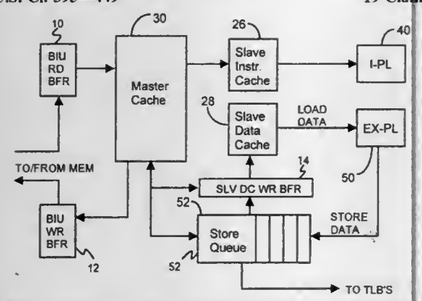
(d) if the data being accessed is at the predetermined offset in the file, storing the data being accessed in one or more chunks of the cache already in use by the file during the file I/O operation.

5,644,752

COMBINED STORE QUEUE FOR A MASTER-SLAVE CACHE SYSTEM

Earl T. Cohen, Fremont; Russell W. Tilleman, Palo Alto, and Jay C. Pattin, Redwood City, all of Calif., assignors to Exponential Technology, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 267,658, Jun. 29, 1994, Pat. No. 5,551,001. This application Dec. 7, 1994, Ser. No. 350,815
Int. Cl.[6] G06F *12/08*
U.S. Cl. 395—449 **19 Claims**



9. A master-slave cache system for transferring data between a main memory and a central processing unit (CPU), the CPU having an execution pipeline executing at a first rate, the main memory storing a plurality of operands, the system comprising:

a master cache for storing operands, the master cache coupled to the main memory, the master cache storing a first subset of the plurality of operands stored in the main memory, the master cache storing a second subset of operands, the second subset being a subset of the first subset;

a slave data cache, coupled to the execution pipeline, for storing the second subset of operands, the slave data cache capable of transferring operands to the execution pipeline at the first rate; and

a store queue, coupled to receive stores from the execution pipeline, for temporarily storing operands for writing to the master cache and the slave data cache, the store queue comprising:

means for receiving line fills from the master cache;

means for storing the line fills in the store queue;

means for writing the line fills to the slave data cache; and

a plurality of entries, each entry in the plurality of the entries comprising:

a data field for storing store data from the execute pipeline or line fill data from the master cache;

a physical address field for indicating a portion of a physical address of data in the data field;

cache operation indicating means for indicating that the entry is a cache operation rather than a store or line fill;

destination valid means for indicating a destination of the data in the data field, the destination valid means including:

master valid indicating means for indicating when the entry contains valid data for writing to the master cache;

slave valid indicating means for indicating when the entry contains valid data for writing to the slave data cache; and

slave tag valid indicating means for indicating when the entry contains a valid physical address for writing to a tag in the slave data cache;

wherein the master valid indicating means indicates that the entry contains valid data for writing to the master cache and the slave valid indicating means indicates that the entry is not for writing to the slave data cache when the cache operation indicating means indicates that the entry is a cache operation, whereby cache operations are only sent to the master cache but not to the slave data cache,

whereby the store queue stores operands from the execute pipeline for writing to the master cache and the slave data cache and the store queue stores line fills from the master cache to the slave data cache.

5,644,753

FAST, DUAL PORTED CACHE CONTROLLER FOR DATA PROCESSORS IN A PACKET SWITCHED CACHE COHERENT MULTIPROCESSOR SYSTEM

Zahir Ebrahim, Mountain View; Kevin Normoyle, San Jose; Satyanarayana Nishtala, Cupertino, and William C. Van Loo, Palo Alto, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

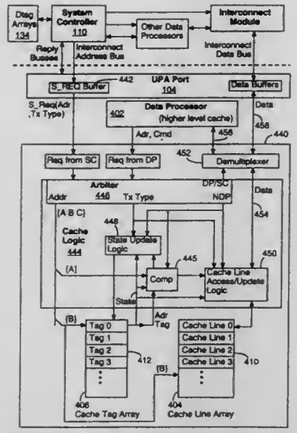
Continuation of Ser. No. 415,515, Mar. 31, 1995, abandoned. This application Sep. 17, 1996, Ser. No. 714,965
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—458 **7 Claims**

2. A cache memory device, comprising:

a cache line array having 2^N cache lines for storing 2^N data blocks;

a cache tag array having 2^N cache tags, each cache tag denoting a cache line state value and an address tag for a corresponding one of said 2^N cache lines;

a cache controller for controlling access to said cache memory device, said cache controller having two ports for receiving access requests, including a first port for receiving access requests from a first device and a second port for receiving access requests from a second device distinct from said first device; all said access requests from said first device and from said second device including an address value, said access requests from said second device further including a mode



flag; each address value including a first set of most significant address bits, and a second set of cache index address bits;

said cache controller further including:

a comparator for comparing said first set of address bits in each access request's address value with the address tag stored in the one of said cache tags corresponding to said cache index address bits in said each access request's address value and generating a hit/miss signal indicating whether said first set of address bits match said address tag; and

access circuitry having two modes of operation, including a first standard mode of operation in which read/write access to said cache line array and write access to said cache tag array is preceded by generation of said hit/miss signal by said comparator in response to said access request's address value, and a second accelerated mode of operation in which read/write access to said cache line array and write access to said cache tag array are initiated without waiting for said comparator to process said access request's address value; wherein said access circuitry uses said first mode of operation for all access requests by said first device and for access requests by said second device when said mode flag has a first value, and uses said second mode of operation for access requests by said second device when said mode flag has a second value distinct from said first value.

5,644,754

BUS CONTROLLER AND ELECTRONIC DEVICE IN A SYSTEM IN WHICH SEVERAL ELECTRONIC DEVICES ARE NETWORKED

Karl Weber, Altdorf; Klaus Spichtinger, Stulln, and Karl-Theo Kremer, Adelsdorf, all of Germany, assignors to Siemens Aktiengesellschaft, München, Germany

Filed Nov. 16, 1994, Ser. No. 340,693

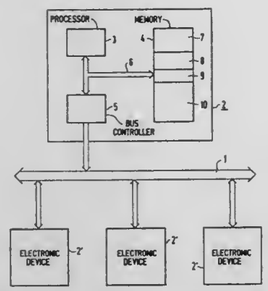
Claims priority, application European Pat. Off., Nov. 22, 1993, 93118775

Int. Cl.[6] G06F *13/14*

U.S. Cl. 395—500 **39 Claims**

1. A bus controller for an electronic device of a plurality of electronic devices, wherein said electronic device includes a processor and a memory having a plurality of individually addressable memory locations, which processor and memory are connected to each other by a system bus, wherein the bus controller is connectable with the memory and with a network bus, wherein the network bus networks said plurality of electric devices with each other,

wherein the bus controller:



manages at least one request-receipt queue having queue elements for requests to be received via the network bus, and wherein the queue is organized as a double-linked list;

manages an execution queue for received requests, the execution queue being organized as a double-linked list and wherein after the reception of a request, a first element of the request-receipt queue is unlinked from the request-receipt queue and is linked as a last element into the execution queue;

manages at least one request-send queue with queue elements for a request to be sent, the request-send queue being organized as a double-linked list; and

manages at least one execution queue for sent requests, the execution queue being organized as a double-linked list, and wherein upon the sending of a request, a first element of the request-send queue is sent, and wherein the element is unlinked from the request queue after the sending and is linked as a final element in the execution queue.

5,644,755

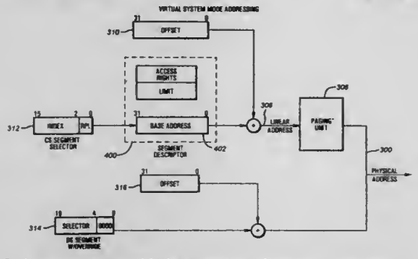
PROCESSOR WITH VIRTUAL SYSTEM MODE

David R. Wooten, Spring, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Filed Feb. 24, 1995, Ser. No. 394,680

Int. Cl.[6] G06F *12/10*

U.S. Cl. 395—500 **86 Claims**



1. A processor operable in a number of modes, comprising:

a plurality of segment registers for specifying portions of an address;

a first interpreter for interpreting values in said segment registers in a first mode to provide a linear address;

a second interpreter for interpreting values in said segment registers in a second mode to provide a linear address; and

a mode control circuit for allowing said first and second mode interpreters to operate concurrently on different of said segment registers.

5,644,756

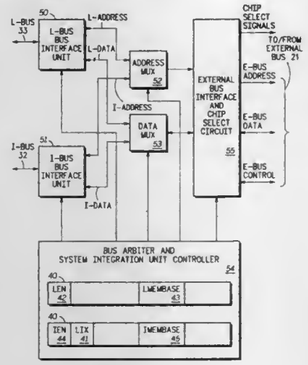
INTEGRATED CIRCUIT DATA PROCESSOR WITH SELECTABLE ROUTING OF DATA ACCESSES

Wallace B. Harwood, III, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 7, 1995, Ser. No. 418,348

Int. Cl.[6] G06F *13/14*

U.S. Cl. 395—500 **17 Claims**



1. An integrated circuit data processor with selectable routing of data accesses, comprising:

an internal instruction bus;

an internal load/store bus;

a nonvolatile memory coupled to said internal instruction bus, having a first portion for storing a plurality of program instructions, and a second portion for storing a plurality of parameters;

a central processing unit coupled to said internal instruction bus and to said internal load/store bus, for performing instruction accesses via said internal instruction bus and for performing load/store accesses via said internal load/store bus; and

a system integration unit coupled to said internal instruction bus, to said internal load/store bus, and to an external bus;

said system integration unit having a register for placing said system integration unit into a selected one of first and second modes;

while in said first mode, said system integration unit routing load/store accesses to said second portion of said nonvolatile memory, to said internal instruction bus;

while in said second mode, said system integration unit routing load/store accesses to said second portion of said nonvolatile memory, to said external bus, and enabling accesses to said nonvolatile memory from said internal instruction bus;

whereby accesses to said plurality of parameters may be selectively routed to said external bus during calibration.

5,644,757

APPARATUS FOR STORING DATA INTO A DIGITAL-TO-ANALOG CONVERTER BUILT-IN TO A MICROCONTROLLER

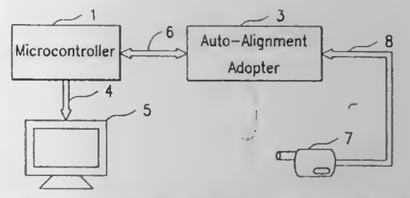
Martin Lee, Pingtung Hsien, Taiwan, assignor to United Microelectronics Corporation, Hsinchu, Taiwan

Filed Jun. 12, 1995, Ser. No. 489,385

Int. Cl.[6] G06F *15/00*; **H04N** *17/00*

U.S. Cl. 395—501 **5 Claims**

1. An apparatus for inputting data into a digital-to-analog converter of a microcontroller used in an automatic alignment monitor test system, said apparatus inputting test data into said digital-to-analog converter provided by an auto-alignment means of said



automatic alignment monitor test system without said test data passing through a CPU of said microcontroller, said apparatus comprising:

a serial-to-parallel interface, for receiving a data access request issued by said auto-alignment means, said serial-to-parallel interface including:

means for converting a plurality of data bits sequentially into a parallel form of data for conversion by said digital-to-analog converter into a converted analog signal, and

logic decoder means for selecting one of a plurality of digital-to-analog converter output channels for outputting said converted analog signal to said monitor.

5,644,758

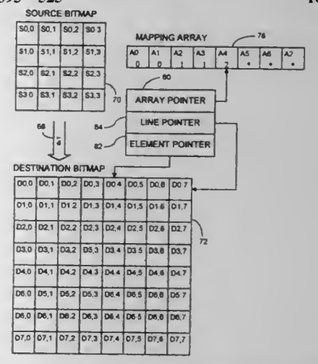
BITMAP BLOCK TRANSFER IMAGE CONVERSION

Stuart Raymond Patrick, Issaquah, and Amit Chatterjee, Redmond, both of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed Dec. 13, 1994, Ser. No. 354,926

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—525 **16 Claims**



1. A method of block transfer image conversion, comprising:

storing a bitmap of a source image in an addressable memory, the bitmap having a plurality of scan lines, each scan line having a plurality of elements;

forming an array of indices to elements of the source image bitmap which correspond to a plurality of elements in a first scan line of a destination image bitmap; and

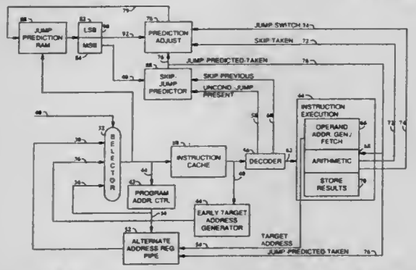
for each of a plurality of scan lines of the destination image bitmap, copying a plurality of elements of that scan line of the destination image bitmap from elements in a corresponding scan line of the source image bitmap at the indices of the array.

5,644,759

APPARATUS AND METHOD FOR PROCESSING A JUMP INSTRUCTION PRECEDED BY A SKIP INSTRUCTION

Gary J. Lucas, Pine Springs, and Ronald G. Arnold, Apple Valley, both of Minn., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Jan. 19, 1995, Ser. No. 375,219
Int. Cl.[6] G06F *9/42*
U.S. Cl. 395—587 **10 Claims**



1. In a data processing system, an apparatus for predicting the address of an instruction to fetch from memory after a jump instruction has been fetched from address n, wherein the jump instruction specifies a target address at which a target instruction is stored, comprising:

a pipeline instruction execution unit;

an instruction fetch unit coupled to the memory and coupled to the pipeline instruction execution unit;

a skip detector coupled to said instruction fetch unit that detects that a skip instruction was fetched from address n−1 prior to fetching the jump instruction, wherein said skip instruction includes a condition to be evaluated by said pipeline instruction execution unit; and

a jump predictor coupled to said instruction fetch unit and coupled to said skip detector, wherein said jump predictor generates a predicted address of an instruction to fetch after the jump instruction, said predicted address being the target address if a recent execution of the jump instruction resulted in the target instruction being fetched and executed, and said predicted instruction address being n+1 if said skip detector detected a skip instruction,

wherein said jump predictor is coupled to said pipeline instruction execution unit and includes a jump prediction designator for the jump instruction that is used to predict the instruction to fetch after the jump instruction, and

wherein said jump prediction designator is adjusted such that said predicted instruction address will be n+1 if said skip detector detects a skip instruction and said condition is satisfied.

5,644,760

PRINTED CIRCUIT BOARD PROCESSOR CARD FOR UPGRADING A PROCESSOR-BASED SYSTEM

R. Stephen Polzin, Morgan Hill; Noah M. Price, Campbell, and Duane M. P. Takahashi, San Jose, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

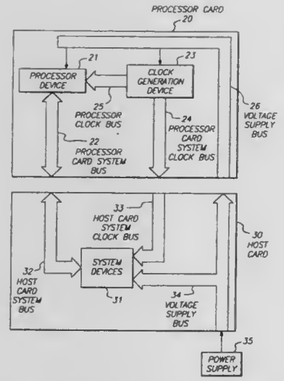
Filed May 1, 1995, Ser. No. 432,906
Int. Cl.[6] G06F *1/04;13/00*
U.S. Cl. 395—555 **8 Claims**

1. A printed circuit board (PCB) processor card including:

a processor device, said processor device having an associated clock rate;

a system clock generator device, said system clock generator device coupling a processor clock signal to said processor device;

a processor card system bus for transmitting signals to and from said processor, said processor card system bus being connectable to a processor-based system which includes all system



devices other than another processor device and another system clock generator device;

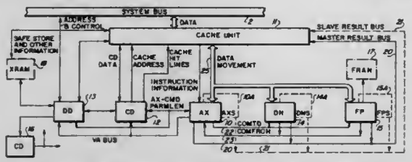
a processor card system clock bus, said system clock generator device coupling a system clock signal on said processor card system clock bus, said processor card system clock bus being connectable to said processor-based system.

5,644,761

BASIC OPERATIONS SYNCHRONIZATION AND LOCAL MODE CONTROLLER IN A VLSI CENTRAL PROCESSOR

Ronald W. Yoder, Mesa; Ronald E. Lange, Glendale; William A. Shelly, Phoenix; Russell W. Guenthner, Glendale, and Richard L. Demers, Peoria, all of Ariz., assignors to Bull HN Information Systems Inc., Billerica, Mass.

Filed Jun. 5, 1992, Ser. No. 893,871
Int. Cl.[6] G06F *9/22*
U.S. Cl. 395—595 **9 Claims**



1. In a central processing unit including memory means in which are stored words including instructions and operands; an address and execution (AX) unit comprising:

A) a main controller and a basic operation (BOP) controller;

B) the main controller including a main sequencer and an MROM, said MROM storing main control words, said main sequencer in response to the AX unit receiving an instruction word from said memory means for producing an MROM address at which address is located a main control word, a main control word including control signals for causing the AX unit to perform selected ones of the following actions such as to generate a memory address, to produce control signals to read a word from the memory means, to write a word to the memory means, to transmit BROM control signals to the BOP controller;

C) said BOP controller including a basic operation (BOP) sequencer and a BROM, said BROM storing basic operation control words, the BOP sequencer in response to the receipt of BROM control signals from the main controller for producing a BROM address at which address in the BROM is located a BOP control word, each BOP control word including control signals for causing the AX unit to execute a basic operation during one clock period, said basic operations including shift

and character manipulation operations; the BOP controller also including BROM address register means for storing a BROM address; BROM pointer register means for storing a plurality of BROM addresses; and selection circuit means for selecting one of the BROM addresses stored in the BROM pointer register means and for writing the selected BROM address into the BROM address register means;

D) the main controller in response to receiving an instruction to move a plurality of characters from a sending string of characters of a plurality of sending operand words specified in a sending descriptor word to a receiving string of characters written into a plurality of receiving operand words specified in a receiving string descriptor word with one character being moved at a time, hereafter referred to as an EIS instruction; the movement of a Character from its sending string to its receiving string requiring a sequence of basic operations to be executed by the AX unit; the main controller in response to the receipt by the AX unit of an EIS instruction producing a main control word, said main control word causing BROM addresses to be written into the BROM pointer register means, and the BROM control signals of the main control word causing the BOP sequencer to apply a BROM address to the BROM causing the BROM to produce a BOP control word including a BOP sequence control field, the BOP sequence control field of the BOP control word in execution being applied to the selection circuit means of the BOP controller, the BOP sequence control field determining the BROM address written into the BROM address register means, the address of the next BOP control word to be executed in a sequence of BOP control words to be executed by the AX unit in executing an EIS instruction; the main controller asynchronously producing main control words while an EIS instruction is in execution by the AX unit for generating a memory address of a sending operand and read control signals for the memory means for causing the memory means to read the sending operand from the memory means and to transmit the sending operand to the AX unit as required during the execution of an EIS instruction, and for generating a memory address for a receiving operand and write control signals for the memory means for causing the memory means to write a receiving operand into the memory means as each receiving operand is produced and transmitted by the AX unit to the memory means during the executing an EIS instruction;

E) said BOP controller further including communication circuit means by which the BOP controller communicates to the main controller the current status of the BOP controller while executing an EIS instruction.

5,644,762

METHOD AND APPARATUS FOR RECORDING AND READING DATE DATA HAVING COEXISTING FORMATS

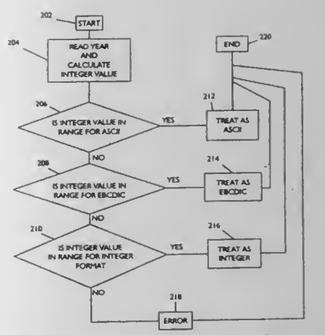
Thomas B. Soeder, West Friendship, Md., assignor to Resolve 2000, Inc., Columbia, Md.

Filed May 14, 1996, Ser. No. 645,822
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—606 **3 Claims**

1. A series of operational steps to be performed on or with the aid of a computer, said steps comprising:

(a) providing a computer-readable storage medium storing a plurality of year data, the plurality of year data comprising (i) a first year datum comprising two bytes which together have a composite binary integer value which represents at least four decimal digits of a first year and (ii) a second year datum comprising two bytes, each of the two bytes of the second year datum separately representing a single decimal digit of a second year;

(b) examining at least one of the plurality of year data to determine whether said at least one of the plurality of year data has a composite binary integer value which is inside or outside a range from 12,336 to 14,649, inclusive;



(c) if step (b) determines that said composite binary integer value of at least one of the plurality of year data is outside said range, defining the composite binary integer value as a number representing the first year; and

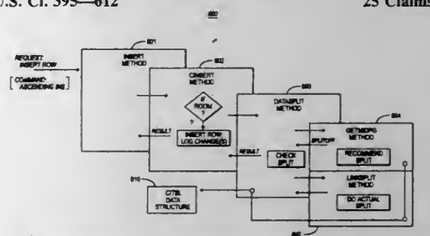
(d) if step (b) determines that said composite binary integer value of said at least one of the plurality of year data is inside said range, determining the single decimal digit represented by said each of the two bytes of the second year datum and determining the second year represented by the second year datum in accordance with the single decimal digit represented by said each of the two bytes of the second year datum.

5,644,763

DATABASE SYSTEM WITH IMPROVED METHODS FOR B-TREE MAINTENANCE

Shaibal Roy, Oakland, Calif., assignor to Sybase, Inc., Emeryville, Calif.

Filed Jun. 28, 1995, Ser. No. 497,663
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—612 **25 Claims**



1. In a database system, said database system storing a plurality of data records as a data table having an index, said index comprising a B-Tree having a plurality of nodes, each node storing a key value for a particular one of said data records, a method for maintaining the B-Tree during updates to the table, the method comprising:

(a) receiving a request for inserting a plurality of new data records into the table;

(b) for each new data record to insert:

(1) determining a key value for the data record;

(2) determining a node in the B-Tree for storing the determined key value; and

(3) if said determined node does not contain sufficient room for storing the determined key value, splitting the node into two nodes by:

(i) if said plurality of new data records comprises an ascending sequence of records to be inserted into the table, splitting the node at a point where the determined key value for said each data record would have been stored had the node contained sufficient room for storing

the determined key value, said point being determined by key values stored in the node; and otherwise

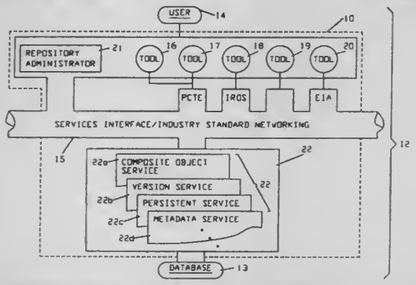
(ii) splitting the node at a point which is a midpoint for the node.

5,644,764

METHOD FOR SUPPORTING OBJECT MODELING IN A REPOSITORY

Peter Johnson, Foothill Ranch, and Sridhar Srinivasa Iyengar, Irvine, both of Calif., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Jan. 31, 1995, Ser. No. 382,303
Int. Cl.[6] G06F *17/30;12/00*
U.S. Cl. 395—614 **7 Claims**



1. In a computer system having a user interface, a memory, a repository and a database, a repository program operating in said computer system for accessing said database, said repository program executing a method for supporting object modeling, said method comprising the steps of:

a. examining a collection of types forming a model stored in said repository;

b. sorting object types into data and persistent type objects;

c. creating all data type objects and adding to a collection of all objects owned by said model;

d. creating all persistent type objects and adding to a collection of all objects owned by said model;

e. initializing all persistent type objects in said collection of objects by;

1) examining each persistent type object in said collection for features thereof;

2) sorting said features into operations, attributes and references;

3) creating an operation type object for all operations sortedby said step of sorting;

4) creating an attribute type object for all attributes sorted by said step of sorting;

5) creating a reference type object for all references sortedby said step of sorting; and,

6) adding all features created into a collection of features owned by said persistent types.

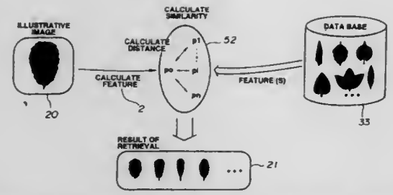
5,644,765

IMAGE RETRIEVING METHOD AND APPARATUS THAT CALCULATES CHARACTERISTIC AMOUNTS OF DATA CORRELATED WITH AND IDENTIFYING AN IMAGE

Norio Shimura, Yokohama, and Yuichi Bannai, Koganei, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 30, 1994, Ser. No. 351,229
Claims priority, application Japan, Dec. 9, 1993, 5-309135
Int. Cl.[6] G06F *17/30;15/00*
U.S. Cl. 395—615 **12 Claims**

1. An image retrieval method, comprising the steps of:



storing in a data base a plurality of images, additional-information for identifying each of the plurality of images and calculated characteristic-amounts of data correlated with, and identifying each of the images;

inputting additional-information data and illustrative image data for identifying a desired image stored in said data base;

selecting additional information of an image by comparing the input additional information with the additional information of each image stored in the data base;

generating a plurality of characteristic-amounts of data from, and correlated with the input illustrative image data;

calculating the difference between each of the generated plurality of characteristic-amounts of data and characteristic-amounts of data of image data having the additional information selected in the selecting step; and

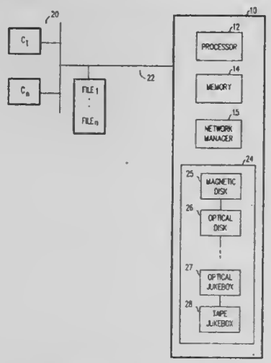
selecting image data having a calculated difference in the order of smallest difference as the desired image.

5,644,766

SYSTEM AND METHOD FOR MANAGING A HIERARCHICAL STORAGE SYSTEM THROUGH IMPROVED DATA MIGRATION

Henry Robert Coy, Boca Raton, Fla.; Robert M. Rees, and Luis Felipe Cabrera, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 198,972, Mar. 22, 1994, abandoned.
This application Aug. 23, 1996, Ser. No. 697,317
Int. Cl.[6] G06F *13/00;12/00*
U.S. Cl. 395—620 **20 Claims**



8. A computerized distributed hierarchical data storage management system comprising:

a server computer system having a central processing unit and memory;

a plurality of client computer systems each having a central processing unit and a non-volatile storage device, in communication with the server;

a hierarchical data storage system in communication with the server and having a plurality of levels of media instances wherein data is stored more economically on a lower level;

means for identifying a logical cluster of data objects in a first level;

means for identifying at least one media instance in a lower level for storing said logical cluster by first attempting to identify at least one media instance already containing other data objects from said logical cluster, second, attempting to identify at least one empty media instance and third, identifying a media instance with the largest available space; and

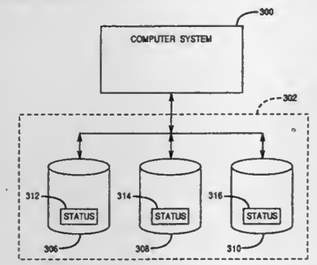
storage means for storing said logical cluster in a minimum number of identified media instances.

5,644,767

METHOD AND APPARATUS FOR DETERMINING AND MAINTAINING DRIVE STATUS FROM CODES WRITTEN TO DISK DRIVES OF AN ARRAYED STORAGE SUBSYSTEM

Dale F. Rathunde, Wheaton, Ill., assignor to AT&T Global Information Solutions Company, Dayton, Ohio; Hyundai Electronics America, San Jose, Calif., and Symbios Logic Inc., Fort Collins, Colo.

Continuation of Ser. No. 69,475, Jun. 1, 1993, abandoned.
This application Feb. 7, 1995, Ser. No. 385,387
Int. Cl.[6] G06F *11/22*
U.S. Cl. 395—651 **12 Claims**



1. In a computer system including an array of disk drives connected to said computer system, a method operable within said computer system for determining the status of the array drives; said method comprising the steps of:

writing a status code onto a plurality of disk drives in the array upon initialization of said array, wherein said plurality of disk drives numbers greater than two disk drives, and wherein said status code having an initial value, and wherein said status code is indicative of a number of said plurality of disk drives in an non-active state;

detecting occurrence of an event, wherein said event is one of a plurality of events including a failure of an operating disk drive, a disk array configuration operation, and a disk array restoration operation;

updating the value of said status code saved to each drive of said plurality of disk drives in the array which is in an active state upon the occurrence of said event which changes the operating state of the disk array;

reading the status codes stored on each drive of said plurality of disk drives within the array upon configuration of the array;

identifying drives within the array having status codes which have not been updated; and

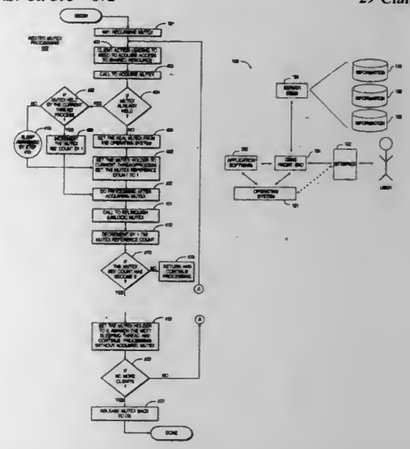
determining the operability of the array in accordance with the number of non-active disk drives identified in response to reading of said status codes stored on each drive.

5,644,768

SYSTEMS AND METHODS FOR SHARING RESOURCES IN A MULTI-USER ENVIRONMENT

Damodar Das Periwal, and Manish Maheshwari, both of Campbell, Calif., assignors to Borland International, Inc., Scotts Valley, Calif.

Filed Dec. 9, 1994, Ser. No. 353,490
Int. Cl.[6] G06F *9/00*
U.S. Cl. 395—672 **29 Claims**



9. In a client-server database system including a server maintaining a database and a plurality of clients, a method for providing nested mutual exclusive access to a data object specified by a shared stored procedure, said shared stored procedure comprising user-specified data manipulation statements for instructing said server to perform a predefined sequence of operations on said database, the method comprising the steps of:

allocating within storage a surrogate mutex including a record describing access to a data object specified by said shared stored procedure and shared concurrently by said plurality of clients, said record having an identifier field for storing an identity of a client, having a mutex field for accessing a system mutex from an operating system that does not allow nested mutual exclusive access, and having a count field for storing how many times said client has requested access to said data object;

receiving at least one request from a particular client to access said data object; and

for each said at least one request from said particular client to access said data object, performing one of the following:

storing an identity of said particular client in said identifier field, storing a pointer to a system mutex that does not allow nested mutual exclusive access in said mutex field, storing a value of 1 in said count field, and granting said particular client access to said data object if said identifier field indicates no client has access to said data object,

placing said particular client in a sleep state until said identifier field indicates no other client has access to said data object if said identifier field does not specify said particular client, and

incrementing said count field if said identifier field specifies said particular client.

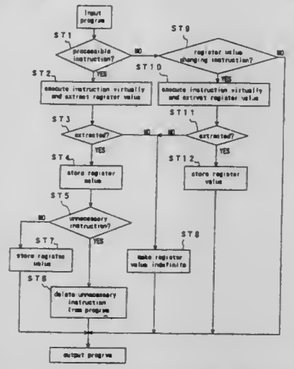
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5,644,769

SYSTEM FOR OPTIMIZING PROGRAM BY VIRTUALLY EXECUTING THE INSTRUCTION PRIOR TO ACTUAL EXECUTION OF THE PROGRAM TO INVALIDATE UNNECESSARY INSTRUCTIONS

Wataru Hasiguti, Kyoto, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 258,990, Jun. 13, 1994, abandoned. This application Aug. 19, 1996, Ser. No. 699,220
Claims priority, application Japan, Jun. 14, 1993, 5-141728
Int. Cl.[6] G06F *9/44*
U.S. Cl. 395—709 **10 Claims**



1. A device for optimizing a program composed of a plurality of assembler instructions to be executed in a computer, comprising:

means for extracting a value of an internal state of a computer by virtually executing an instruction of the program prior to an actual execution of the program;

register, wherein the value of the internal state of the computer is a value of said register extracted by the virtual execution of an instruction to be executed;

means for storing the value extracted by said extracting means;

means for judging when an instruction is unnecessary, by comparing the extracted value stored in said storing means with at least a part of a value extracted and stored for a prior instruction, wherein when said value extracted from the virtual execution of the instruction is identical to said value extracted from the prior instruction, the instruction is judged unnecessary; and means for deleting an unnecessary instruction so as not to have the computer execute the unnecessary instruction.

5,644,770

COUPLING RULES TO AN OBJECT-ORIENTED PROGRAM

Fred H. Burke, Round Rock; Keith O. Carlson, Austin, and Richard C. Roth, Georgetown, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

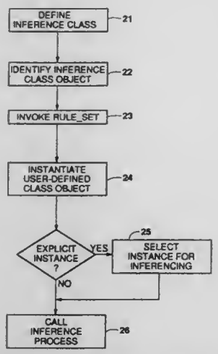
Division of Ser. No. 590,108, Sep. 28, 1990, Pat. No. 5,423,041. This application Mar. 8, 1995, Ser. No. 400,943
Int. Cl.[6] G06F *9/44*
U.S. Cl. 395—710 **10 Claims**

1. A method of using a computer for rule inferencing from an object-oriented data domain of user-defined objects, comprising the steps of:

instantiating a rule, from a program having an object-oriented data domain, as an inference class object;

inheriting at least one user-defined object, to be used by said rule for inferencing, from a working memory element class;

instantiating said user-defined class object from which said rule will inference; and



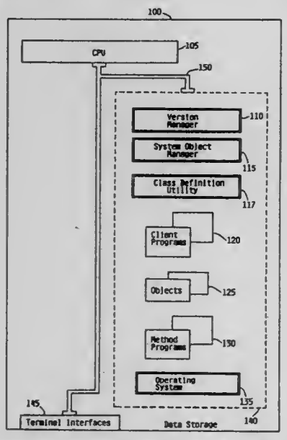
inferencing with said rule, wherein a matching phase of said inferencing directly accesses said user-defined class object.

5,644,771

EFFICIENT METHOD ROUTER THAT SUPPORTS MULTIPLE SIMULTANEOUS OBJECT VERSIONS

John Clarence Endicott; Steven Jay Munroe, both of Rochester, and Robert Peter Resch, Byron, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 954,138, Sep. 30, 1992, Pat. No. 5,404,525. This application Apr. 3, 1995, Ser. No. 415,907
Int. Cl.[6] G06F *9/44*
U.S. Cl. 395—712 **4 Claims**



1. A computer-implemented method for creating an object oriented programming environment, said method comprising the steps of:

creating a Root class, said Root class comprising a Root class object, a Root class interface table, and a Root class method table;

connecting said Root class object to said Root class interface table and said Root class interface table to said Root class method table;

creating X levels of subclasses to said Root class, wherein X is a positive integer greater than one, each of said X levels of subclasses comprising a first class and a second class, said first class and said second class respectively comprising a class object, a class interface table, a class method table, and X super class class method tables; and

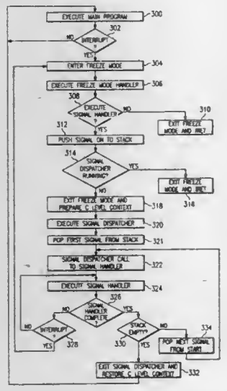
respectively connecting each said class interface table to its said class object and each said class method table and each set of said X super class class method tables to its said class interface table, whereby said object oriented programming environment is used to create object instances and wherein each said class interface table is used by said object instances to call method programs.

5,644,772

SIGNAL DISPATCHING FOR C LANGUAGE INTERRUPT HANDLING

Daniel Mann, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 289,512, Aug. 12, 1994, abandoned. This application May 3, 1996, Ser. No. 643,264
Int. Cl.[6] G06F *9/46*
U.S. Cl. 395—733 **22 Claims**



1. A method of servicing a plurality of interrupts received by a microprocessor using C language interrupt handlers, the method comprising:

responsive to receipt of a first one of said interrupts, preparing a C level context of said microprocessor and initiating execution of a signal dispatcher;

responsive to receipt of each one of said interrupts:

placing said microprocessor in a freeze mode;

adding a signal number for identifying a C language signal handler associated with said received interrupt onto a signal queue stored in a memory electrically connected to said microprocessor while said microprocessor is in said freeze mode; and

subsequent to said adding, removing said microprocessor from said freeze mode;

determining whether said signal queue is empty;

if said signal queue is not empty, said signal dispatcher retrieving one of said signal numbers from said signal queue and calling said C language signal handler identified by said one of said signal numbers, said signal numbers being retrieved from said signal queue in the same order in which they were added to said signal queue; and

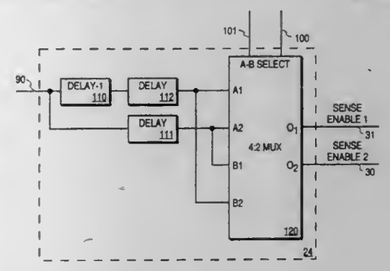
if said signal queue is empty, exiting said signal dispatcher and restoring said microprocessor C level context.

5,644,773

SENSE AMPLIFIER TIMING METHOD AND APPARATUS FOR PEAK POWER REDUCTION

David DiMarco, Hillsborough, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Division of Ser. No. 175,929, Dec. 30, 1993, Pat. No. 5,422,781. This application Sep. 15, 1994, Ser. No. 308,114
Int. Cl.[6] G11C *13/00*; **G06F** *1/26*
U.S. Cl. 395—750 **10 Claims**



6. A computer system comprising:

a bus that transmits data;

a memory, coupled to said bus, that stores said data;

a microprocessor, coupled to said bus, that processes said data; and

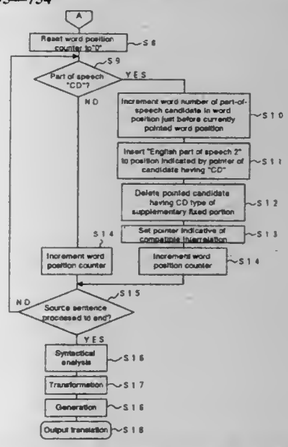
a cache memory, coupled to said microprocessor, that stores said data, said cache memory having an integrated circuit configured selectively to enable a first set of sense amps before or after a second set of sense amps is enabled.

5,644,774

MACHINE TRANSLATION SYSTEM HAVING IDIOM PROCESSING FUNCTION

Yoji Fukumochi, Ikoma-gun; Toshiyuki Okunishi, Higashiosaka; Ichiko Sata, Nara, and Takeshi Kutsumi, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 25, 1995, Ser. No. 428,547
Claims priority, application Japan, Apr. 27, 1994, 6-090053
Int. Cl.[6] G06F *17/28*
U.S. Cl. 395—754 **8 Claims**



1. A machine translation system having an idiom processing function, comprising:

an input means for inputting a word sequence of a first language;

a dictionary means for storing therein idioms of the first language including at least two fixed portions and a variable portion interposed therebetween as headers and translated expressions in a second language corresponding to the respective headers;

a registration means for newly or additionally registering a header of the first language and translated expressions in the second language corresponding to the header into said dictionary means;

a dictionary lookup means for retrieving a header corresponding to an idiom included in the word sequence of the first language input by said input means from the headers stored in said dictionary means by comparing the word sequence of the first language with each of the headers; and

an idiom processing means for normalizing an arrangement of fixed portions in a word sequence of the first language which is identified with one of the headers by said dictionary lookup means.

5,644,775

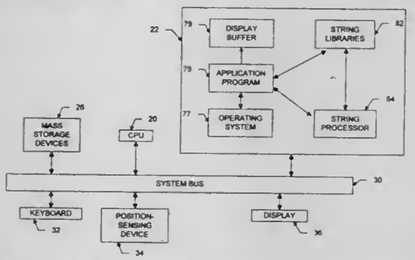
METHOD AND SYSTEM FOR FACILITATING LANGUAGE TRANSLATION USING STRING-FORMATTING LIBRARIES

Suzanne Marie Thompson, and Randal Lee Bertram, both of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 11, 1994, Ser. No. 289,153

Int. Cl.[6] G06F *17/20*

U.S. Cl. 395—757 **11 Claims**



8. A method of facilitating translation of text associated with application programs executed on a computer system, the method comprising:

a. establishing a global string file comprising character strings representing text associated with a plurality of application programs;

b. establishing at least one private string file comprising character strings representing text associated with at least one specific application program;

c. providing a stored set of global string files and at least one set of private string files, each member of each set containing character strings representing a different text translation;

d. providing a string processor, responsive to commands embedded in the application programs, said string processor for retrieving and causing display of designated ones of the character strings from private and global string files loaded into computer memory;

e. embedding string retrieval and display commands in the application program; and

f. loading from a mass storage device a selected stored global string file and at least one selected stored private string file into first and second regions of a computer memory.

5,644,776

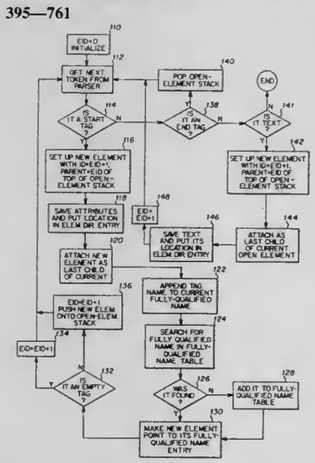
DATA PROCESSING SYSTEM AND METHOD FOR RANDOM ACCESS FORMATTING OF A PORTION OF A LARGE HIERARCHICAL ELECTRONICALLY PUBLISHED DOCUMENT WITH DESCRIPTIVE MARKUP

Steven DeRose, East Providence, and Jeffrey Vogel, Providence, both of R.I., assignors to INSO Providence Corporation, Providence, R.I.

Division of Ser. No. 419,051, Apr. 7, 1995, Pat. No. 5,557,722, which is a continuation of Ser. No. 733,204, Jul. 19, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 480,611

Int. Cl.[6] G06F *17/21*

U.S. Cl. 395—761 **8 Claims**



1. A data processing system for random access formatting of a portion of a large hierarchical electronically published document, the electronically published document having descriptive markup defining a plurality of hierarchical elements, wherein each element has a type name, and has at least one of an ancestor element, a child element, a left sibling element, a right sibling element and unformatted text content, the data processing system using a representation of the electronically published document, including, for each element, an indication of any ancestor element, child element, and left and right sibling element and comprising:

means for receiving an indication of a starting point within the electronically published document; and

means for identifying one of the plurality of hierarchical elements within the electronically published document as an initial element containing the indicated starting point using the representation of the electronically published document;

means for traversing the representation of the electronically published document to select elements of the electronically published document beginning with the initial element; and

means for formatting only the text content contained in the selected elements.

5,644,777

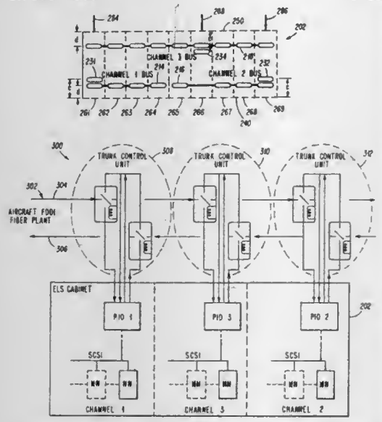
FIELD RECONFIGURATION DATA BUS CABINET COMPUTER SYSTEM

Mark R. Meyer, Marion, and Lee A. Johnson, Cedar Rapids, both of Iowa, assignors to Rockwell International Corporation, Seal Beach, Calif.

Filed Mar. 4, 1992, Ser. No. 846,209

Int. Cl.[6] G06F *13/20*

U.S. Cl. 395—800 **3 Claims**



1. An improved avionics electronic library system for use in an aircraft computer and communication system of the type having an aircraft data distribution network therein, the electronic library system comprising:

an electronic library system cabinet having a top side and a bottom side and having plurality of slots therein and said cabinet coupled with said aircraft data distribution network;

said cabinet having a first bus extending across and connecting each of said plurality of slots;

said cabinet having a second bus extending across a first subset of said plurality of slots;

said cabinet having a third bus extending across a second subset of said plurality of slot;

said first subset and said second subset having none of said plurality of slots in common and none of said plurality of slots are absent from the combination of both said first subset and said second subset; and,

said first bus located a predetermined distance from said top side, said second and third buses are located said predetermined distance from said bottom side.

5,644,778

MEDICAL TRANSACTION SYSTEM

James L. Burks, Pendleton; Robert R. Schick, and Sheila H. Schweitzer, both of Louisville, all of Ky., assignors to Athena of North America, Inc., Indianapolis, Ind.

Filed Nov. 2, 1993, Ser. No. 147,156

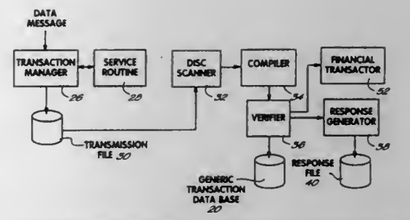
Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—800 **42 Claims**

1. A medical transaction system for communicating data messages between a plurality of computer stations located at healthcare providers and payors, comprising:

a communication receiver for receiving data messages related to patient care activities performed by said healthcare providers, said messages received from said computer stations at said healthcare providers in a plurality of formats and protocols recognized by said communications receiver;

a compiler for compiling patient care information from said date messages received from said computer stations to form a plurality of patient care records having a single common format that is independent of at least one of said plurality of formats and protocols recognized by said communication receiver;



an extractor for extracting ones of said patient care records in accordance with a computer station identification code;

a formatter for formatting said extracted patient care records in a format corresponding to said computer station identification code;

a communications transmitter for transmitting said formatted patient care records to said computer station identified by said identification code in a format and protocol recognized by said identified computer station;

a verifier for verifying data fields within said data messages received from said computer stations and generating an error record indicating when at least one data field within one of said received data messages failed verification; and

a response generator for converting said error record into an error message with a format corresponding to said computer station that sent said failed data message;

wherein said communication transmitter transmits said formatted error message to said computer station.

5,644,779

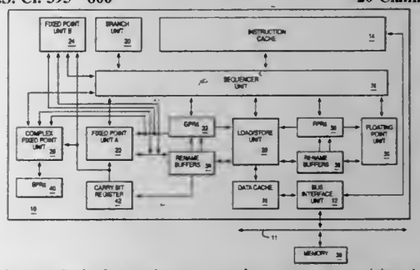
PROCESSING SYSTEM AND METHOD OF OPERATION FOR CONCURRENT PROCESSING OF BRANCH INSTRUCTIONS WITH CANCELLING OF PROCESSING OF A BRANCH INSTRUCTION

Seungyoon Peter Song, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 15, 1994, Ser. No. 228,249

Int. Cl.[6] G06F *9/38*

U.S. Cl. 395—800 **20 Claims**



1. A method of operating a processing system, comprising the steps of:

in response to a dispatch processing stage of a first branch instruction, processing a first instruction prior to an execution processing stage of said first branch instruction;

in response to said dispatch processing stage of said first branch instruction and to a dispatch processing stage of a second branch instruction, processing a second instruction so that a dispatch processing stage of said second instruction occurs prior to said execution processing stage of said first branch instruction and to an execution processing stage of said second branch instruction; and

in response to said execution processing stage of at least one of said first and second branch instructions, cancelling said pro-

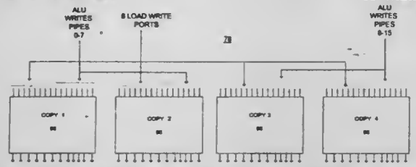
cessing of said second instruction prior to a completion processing stage of said executed branch instruction.

5,644,780

MULTIPLE PORT HIGH SPEED REGISTER FILE WITH INTERLEAVED WRITE PORTS FOR USE WITH VERY LONG INSTRUCTION WORD (VLIN) AND N-WAY SUPERSCALER PROCESSORS

David Arnold Luick, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 2, 1995, Ser. No. 459,490
Int. Cl.[6] G06F *9/30;12/04;12/06*
U.S. Cl. 395—800 **13 Claims**



1. A high speed register file for use with Very Long Instruction Word (VLIW) and N-way superscaler processors comprising:

a general purpose register (GPR) building block, said GPR building block including at least two interleaved sub-banks of registers, each of said sub-banks including a number N of physical write ports and a number M of physical read ports; said sub-banks being interleaved by write ports to provide two times said number N of write ports for said GPR building block and said sub-banks having non-interleaved read ports; and

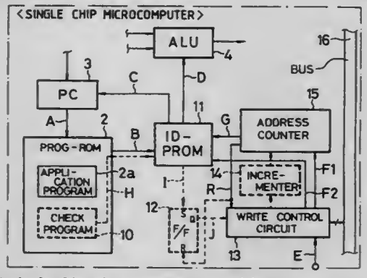
a selected number of copies of said GPR building block.

5,644,781

MICROCOMPUTER HAVING A SECURITY FUNCTION FOR STORED DATA

Haruo Hagimori, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Jan. 14, 1993, Ser. No. 4,295
Claims priority, application Japan, Jan. 14, 1992, 4-024613
Int. Cl.[6] G06F *9/26;12/14;15/04*
U.S. Cl. 395—800 **3 Claims**



1. A single chip microcomputer, comprising:

a ROM for storing various instruction codes and program data including an invalidation instruction code for invalidating a content of an instruction decoder;

said instruction decoder being in the form of a read-only memory, in which writing of binary digits is performed by one operation, for decoding instruction codes written out from said ROM to produce a plurality of control signals, wherein an invalidation control signal is one of said control signals when said invalidation instruction code is written out;

an address counter for assigning an address of said instruction decoder; and

a write control circuit responsive to said invalidation control signal for overwriting a predetermined value in the assigned address of said instruction decoder;

wherein said invalidation instruction code in said ROM is accessed and sent out to the instruction decoder when the microcomputer detects one of an abnormality by a plurality of input errors and an abnormality by a checking means;

wherein said ROM contains a decision program for deciding whether said security execution condition is established, and wherein, when said security execution condition is established, said invalidation instruction code is written out;

wherein said ROM further contains an application program, and wherein said decision program is executed prior to execution of said application program;

wherein said instruction decoder comprises an EEPROM, and, when said invalidation instruction code is decoded by said instruction decoder, said write control circuit is activated to sequentially write specific data in said EEPROM; and

further comprising a flip-flop and an incrementer circuit for incrementing said address counter;

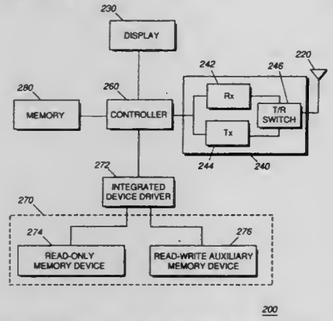
wherein said flip-flop is set when said invalidation instruction code is decoded by said instruction decoder, said write control circuit being responsive to an output of said flip-flop when set to write said data in an address of said instruction decoder, and wherein said write control circuit writes said data while incrementing said address counter by said incrementer circuit.

5,644,782

SYSTEM WITH VIRTUAL UPDATE CAPABLE READ-ONLY MEMORY

Anthony J. Yeates; Michael R. Landis, both of Cary, and Jeffrey K. Berger, Palatine, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 17, 1994, Ser. No. 323,564
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—830 **11 Claims**



5. A system having a virtual update capable read-only memory, comprising:

a data storage system, including:

a read-only memory device having primary data;

an auxiliary memory device having supplementary data reflecting updates to the primary data; and

a device driver interfacing with the data storage system, including a read handler, being responsive to a read request, to provide a read response comprising a combination of primary data from the read-only memory device and supplementary data from the auxiliary memory device;

wherein:

the read-only memory device comprises a plurality of write-protected media; and

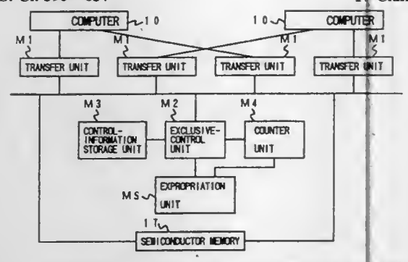
the auxiliary memory device comprises a plurality of storage areas each having supplementary data corresponding to one of the plurality of write-protected media.

5,644,783

DEVICE FOR SETTING ASIDE MEMORY FOR USE BY ONE TRANSFER UNIT WHEN NUMBER OF BUSY RESPONSES FOR THE UNIT REGARDING THE MEMORY BECOMES PREDETERMINED NUMBER

Toshiaki Kochiya, and Soichiro Nagasawa, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 12, 1995, Ser. No. 420,696
Claims priority, application Japan, Jun. 20, 1994, 6-137606
Int. Cl.[6] G06F *15/02*
U.S. Cl. 395—837 **17 Claims**



1. An input/output control device controlling data exchange between computers and memory units, said input/output control device comprising:

transfer units connected to said computers and accessing said memory units so as to effect said data exchange;

exclusive-control means for preventing more than one of said transfer units from having access to the same one of said memory units by sending device-busy responses to all but one of said transfer units;

busy-count means for counting a number of said device-busy responses for each of said transfer units regarding each of said memory units;

control-information-storage means for storing information which includes said number of said device-busy responses; and

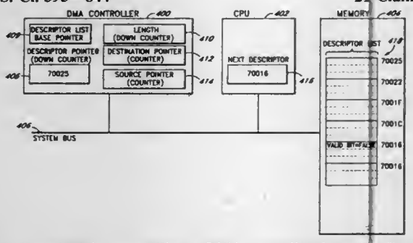
expropriation means for taking control of one of said memory units when a number of said device-busy responses for one of said transfer units regarding said one of said memory units becomes a predetermined number, so that said one of said memory units can be set aside for use by said one of said transfer units.

5,644,784

LINEAR LIST BASED DMA CONTROL STRUCTURE

Gregory A. Peek, Hillsboro, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Mar. 3, 1995, Ser. No. 398,439
Int. Cl.[6] G06F *13/28*
U.S. Cl. 395—844 **21 Claims**



1. A method for controlling a DMA controller through a linear list of DMA descriptors in memory, said method comprising the steps of:

writing descriptor entries in said linear list of DMA descriptors, each said descriptor entry being added at the end of said linear list in said memory; and

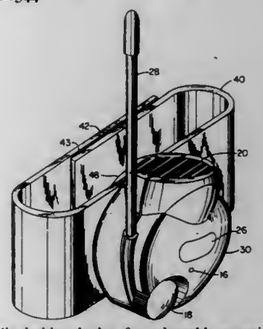
reading said descriptor entry from said linear list of DMA descriptors starting at an address pointed to by a descriptor list pointer, said reading being performed by the DMA controller, each descriptor entry being accessed by the DMA controller in the order said descriptor entries were written to said linear list.

5,644,785

GOLF STRAP RADIO CARRIER

Brent A. Garrett, 4141 W. Lake Cir., Littleton, Colo. 80123

Filed Jun. 26, 1992, Ser. No. 904,979
Int. Cl.[6] H04B *1/08*
U.S. Cl. 455—344 **9 Claims**



1. In a radio holder device for releasable securing a portable radio to a shoulder strap to be placed over a shoulder of a person wherein said radio has an outer casing and radio controls including volume and tuner controls in said casing, the improvement comprising:

a flexible strap member having means for adjustably securing said device to a front portion of said shoulder strap whereby to permit adjustable positioning of said device in a direction lengthwise of said shoulder strap;

mounting means on a back surface of said outer casing for mounting said back surface directly to said strap member whereby said radio controls are exposed and accessible to the person when said shoulder strap is placed over the shoulder, said mounting means defined by a flange member and at least one fastener member extending through said flange member into a back surface of said outer casing with said strap member interposed between said flange member and said outer casing; and

motion detector means in said radio for automatically turning off said radio when said radio is not in motion.

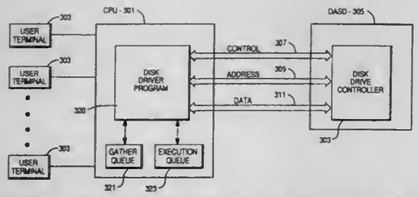
5,644,786

METHOD FOR SCHEDULING THE EXECUTION OF DISK I/O OPERATIONS

Michael J. Gallagher, and Ray M. Jantz, both of Wichita, Kans., assignors to AT&T Global Information Solutions Company, Dayton, Ohio; Hyundai Electronics America, San Jose, Calif., and Symbios Logic Inc., Fort Collins, Colo.

Filed Nov. 8, 1990, Ser. No. 610,633
Int. Cl.[6] G06F *9/312*
U.S. Cl. 395—850 **7 Claims**

1. In a computer system including a multiple-platter disk memory device, said disk memory device being divided into a plurality of disk cylinders comprising concentric rings occupying the same position in each platter wherein each ring is further divided into a plurality of sectors which define angularly spaced



recording areas and having a disk access time, rotational latency, rotational distance, and function return time associated therewith, a method for scheduling process requests for access to said disk memory device, the steps comprising:

sorting said process requests in ascending/descending order by the disk cylinder numbers to which the requests desire access;

sorting said process requests within each cylinder in next-closest-in-time sequence;

wherein said step of sorting said process requests within a cylinder further comprises the steps of:

determining the rotational latencies between each pairing of process requests desiring access to said cylinder;

comparing said rotational latencies to the function return time of said disk device; and

sorting said process requests desiring access to said cylinder such that successive process requests are separated by the minimum rotational latency which exceeds said function return time.

5,644,787

APPARATUS FOR CONTROLLING DATA TRANSFER BETWEEN EXTERNAL INTERFACES THROUGH BUFFER MEMORY USING TABLE DATA HAVING TRANSFER START ADDRESS TRANSFER COUNT AND UNIT SELECTION PARAMETER

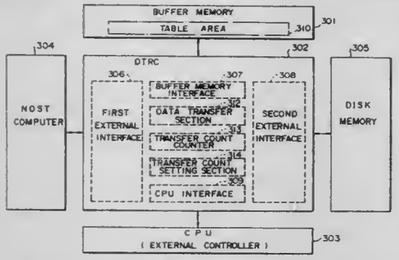
Yoshihiro Nakamura, and Takao Ogawa, both of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Aug. 2, 1994, Ser. No. 285,051

Claims priority, application Japan, Aug. 3, 1993, 5-192545

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—853 **17 Claims**



1. A data transfer control device for controlling data transfer via a buffer memory between first and second external interfaces of a plurality of external interfaces based on at least one group of table data set by external control means, comprising;

transfer count counting means for counting data to be transferred between said buffer memory and at least one of said first and second external interfaces;

transfer count setting means coupled to said transfer count counting means for selecting a unit corresponding to a transfer count based on a transfer count unit selection parameter, for converting said transfer count into a converted transfer count based on said unit, and setting said transfer count counting means to said converted transfer count; and

data transferring means coupled to said transfer count counting means for starting said data transfer in response to a transfer start command received from said external control means and for transferring said data between said buffer memory and said at least one of said first and second external interfaces within an address range that is determined based on a transfer start address and a count value of said transfer count counting means, wherein said at least one group of table data comprises said transfer start address, said transfer count, and said transfer count unit selection parameter.

5,644,788

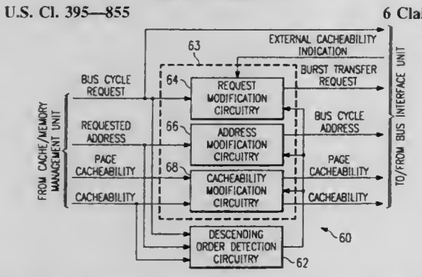
BURST TRANSFERS USING AN ASCENDING OR DESCENDING ONLY BURST ORDERING

David A. Courtright, Richardson, and Douglas Ewing Duschatko, Plano, both of Tex., assignors to Cyrix Corporation, Richardson, Tex.

Filed Oct. 28, 1994, Ser. No. 330,402

Int. Cl.[6] G06F *13/28*

U.S. Cl. 395—855 **6 Claims**



1. In a computer system including a processor in which the processor generates address requests to retrieve associated double-words (Dwords) from an internal cache, or if a requested address misses in the cache, from a memory subsystem, where the computer system transfers the Dword associated with the requested address from a memory subsystem by performing a burst transfer of a corresponding cache line of at least four Dwords stored in successive Dword positions in the cache line including the requested Dword which can be in any Dword position, and where the computer system is configured to perform burst transfers using an ascending burst order if the requested address is of a first type of address, and a descending burst order if the requested address is of a second type of address, depending on the Dword position of the requested Dword, a burst ordering system that implements burst transfers using a selected burst order only, either ascending only or descending only, comprising:

(a) burst ordering circuitry including burst order detection circuitry, cacheability circuitry, and address generation circuitry;

(b) for each cacheable requested address, the burst order detection circuitry detects whether the requested address is of a selected type, where the selected type is either the first type or the second type, such that the corresponding burst transfer would be in the selected burst order;

(c) in response to the detection of a requested address of other than the selected type, the cacheability circuitry causes a non-cacheability signal to be asserted to the memory subsystem along with the requested address, such that the memory subsystem does not effect a burst transfer in response to the requested address, but rather, performs a non-burst transfer of a requested Dword which is associated with the requested address;

(d) in response to the detection of a requested address of other than the selected type, and the resulting non-burst transfer of the requested Dword, the address generation circuitry causes to be generated a cache-line-transfer address of the selected type which is in a cache line that also includes the requested address, such that the memory subsystem effects a burst transfer of that cache line including the requested Dword previously transferred.

5,644,789

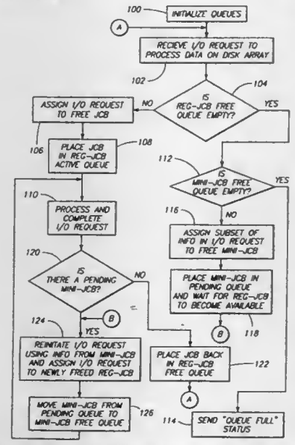
SYSTEM AND METHOD FOR HANDLING I/O REQUESTS OVER AN INTERFACE BUS TO A STORAGE DISK ARRAY

Randy J. Matthews, and Wade A. Dolphin, both of Boise, Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 19, 1995, Ser. No. 376,944

Int. Cl.[6] G06F *13/00;12/00*

U.S. Cl. 395—856 **8 Claims**



1. A multi-tasking, multi-initiator computing system comprising:

an interfacing bus;

at least one storage disk array for storing data, the storage disk array being connected to the interfacing bus;

multiple initiators connected to the interfacing bus to request I/O processes to be performed by the storage disk array, each I/O request containing information to process the I/O request; and

a disk array controller provided in the storage disk array, the disk array controller being configured to assign the I/O requests received from the initiators to one of two types of job control data structures: (1) regular job control data structures that hold the information to process and complete the I/O request, and (2) minimized job control data structures that are temporarily used when no regular job control data structures are available, each minimized job control data structure holding a subset of the information from the I/O request that is sufficient to reinitiate the I/O request for completion when a regular job control data structure once again becomes available.

5,644,790

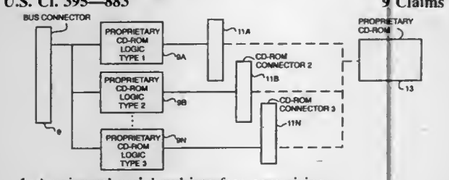
UNIVERSAL CD ROM INTERFACE USING SINGLE INTERFACE CONNECTION

Raymond M.L. Li, Scarborough, and Henry Quan, Woodbridge, both of Canada, assignors to ATI Technologies, Inc., Thornhill, Canada

Filed Feb. 16, 1994, Ser. No. 197,335

Int. Cl.[6] G06F *13/14*

U.S. Cl. 395—883 **9 Claims**



1. A universal peripheral interface comprising:

a) a plurality of control logic circuits for controlling a plurality of compact disk read only memory (CD ROM) peripherals various ones of which have different pin assignments and thereby carrying different signals on different pins of respective peripheral connectors,

b) a single interface connector having a pin arrangement capable of mating with any of the peripheral connectors,

c) at least one of said peripheral connectors having one of various pin assignments, mating with said interface connector,

d) a first multiplexer for interfacing any of said control logic circuits with the single interface connector and for switching particular lines of each of said control logic circuits carrying particular signals to particular pins of said single interface connector, and

e) means for controlling the multiplexer to map said particular lines to said particular pins of said single connector.

5,644,791

SYSTEM FOR STORING POINTERS TO INITIAL SECTORS OF VARIABLE LENGTH N UNITS AND STORING SECOND POINTERS WITHIN THE INITIAL SECTOR OF THE N UNIT

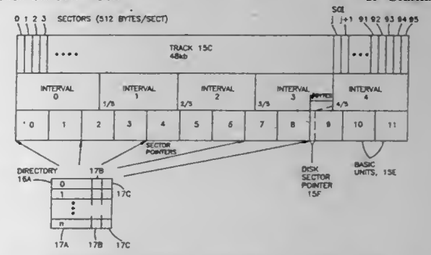
James T. Brady; Joe-Ming Cheng, both of San Jose, Calif.; Oded Cohn, Haifa, Israel; James W. Eldridge, San Jose, Calif.; Yoram Novick, Haifa, Israel; Norman K. Ouchi, San Jose, Calif., and Danit Segev, Haifa, Israel, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 11, 1994, Ser. No. 241,982

Claims priority, application Japan, Nov. 30, 1993, 5-299290

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—888 **19 Claims**



1. A method for operating a data storage system that is comprised of at least one disk, comprising the steps of:

partitioning a data compression unit into n basic compression units, where n is greater than one, each data compression unit being comprised of a plurality of disk sectors and each of n basic compression units beginning with a different initial sector;

partitioning the data compression unit into X intervals, where X is less than n, each of the X intervals beginning with a different initial sector and within one of the n basic compression units;

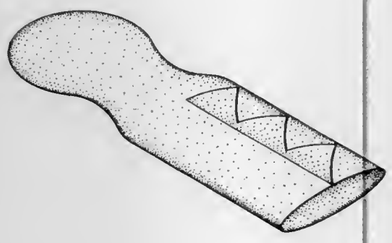
storing, external to the at least one disk, a plurality of storing, external to the at least one disk, a plurality of first pointers each of which points to the initial sector of one of the n variable length basic compression units wherein the 1/X, 2/X, . . . , (X−1)/X intervals begin;

storing, within each of the initial sectors of the individual ones of the n variable length basic compression units wherein the 1/X, 2/X, . . . , (X−1)/X intervals begin, a second pointer to the initial sector of the interval that begins within the basic compression unit; and

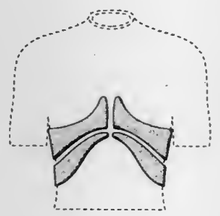
in response to a disk read operation that reads a compressed data unit that begins with one of the sectors that is located within one interval, accessing the beginning sector of the compressed data unit within the one interval in accordance with one of the first pointers and one of the second pointers, said one of the second pointers decompressed after being accessed in accord with a first pointer, to enable identification of said beginning sector of said compressed data unit.

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380,285
FINGERLESS MITTEN
Kim J. Babcock, HC01 Box 6219C, Palmer, Ak. 99645
Filed Apr. 10, 1996, Ser. No. 52,927
Term of patent 14 years
LOC (6) Cl. 02 - *06*
U.S. Cl. D2—622



380,286
WET SUIT RIB CAGE PADDING SEGMENTS
Patrick F. O'Neill, Watsonville, Calif., assignor to O'Neill, Inc., Santa Cruz, Calif.
Filed Feb. 24, 1995, Ser. No. 35,368
Term of patent 14 years
LOC (6) Cl. 02 - *02*
U.S. Cl. D2—853



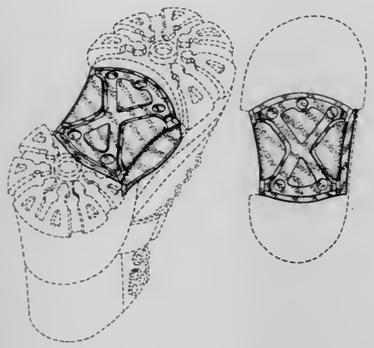
380,287
GAITER FOR A SKATE BOOT
Ting-Hsing Chen, Tainan, Taiwan, assignor to Far Great Plastics Industrial Co., Ltd., Tainan, Talwan
Filed Mar. 14, 1996, Ser. No. 51,622
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—901



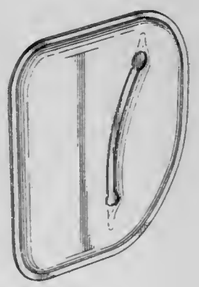
380,288
SKI BOOT
Ting-Hsing Chen, Taiwan, Taiwan, assignor to Far Great Plastics Industrial Co., Ltd., Tainan, Taiwan
Filed May 14, 1996, Ser. No. 54,416
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—904



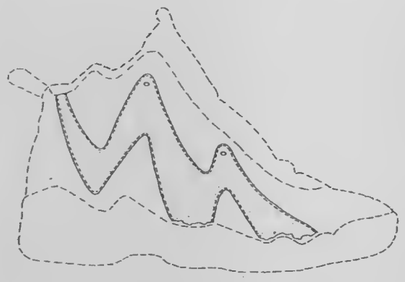
380,289
OUTSOLE FOR SNOWBOARD BOOT
Jeff Waldo Sand, San Francisco, Calif., assignor to Switch Manufacturing, San Francisco, Calif.
Filed Dec. 22, 1995, Ser. No. 48,280
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—959



380,290
INSOLE FOR FOOTWEAR
Masahiko Nakagawa, Tokyo, Japan, assignor to Japan Health Supply, Inc., Japan
Filed Nov. 16, 1995, Ser. No. 46,825
Claims priority, application Japan, May 22, 1995, 7-14246; May 22, 1995, 7-14247; Jun. 23, 1995, 7-17845
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—961



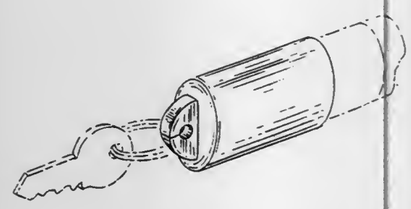
380,291
ELEMENT OF A SHOE
Jonathan R. Morris, Franklin, Mass., assignor to Reebok International Ltd., Stoughton, Mass.
Filed Oct. 13, 1995, Ser. No. 46,619
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—972



380,292
WIND INSTRUMENT TRANSPORTING PACK
JoAnn Funk, Woodbury, Minn. 55125
Filed Apr. 22, 1996, Ser. No. 53,531
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—204



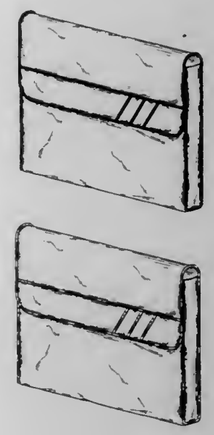
380,293
COMBINED ACCESSORY JACKET AND RING LOCK TAB
Colin P. Cudmore, Duxbury, Mass., assignor to Design Development Group, Incorporated, Pembroke, Mass.
Filed Feb. 23, 1996, Ser. No. 51,034
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—208



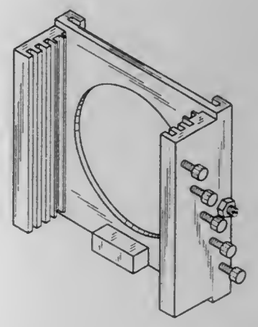
380,294
BACKPACK
Eugene M. Kliot, New York, N.Y., assignor to Visual Impact Films Corporation, New York, N.Y.
Filed May 29, 1996, Ser. No. 55,085
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—217



380,295
SATCHEL
Pamela J. Morris, 816 E. Ridgecrest, Fort Collins, Colo. 80524
Filed Apr. 24, 1996, Ser. No. 53,542
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—243



380,296
CAMERA FILTER HOLDER
Richard W. Smith, 4829 Harvey Rd., Jamestown, N.C. 27282
Filed Jan. 29, 1996, Ser. No. 49,673
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—263



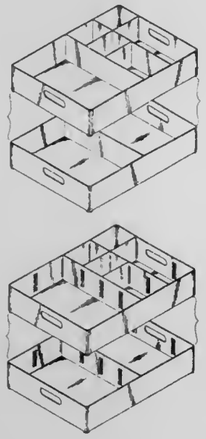
380,297
MULTIPLE COMPARTMENT FOOD CONTAINER APPARATUS FOR TRAVELING
Stephen A. Magnant, and Monica L. Magnant, both of RR1 Box 703, North Ferrisburg, Vt. 05473
Filed Apr. 3, 1995, Ser. No. 37,010
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—276



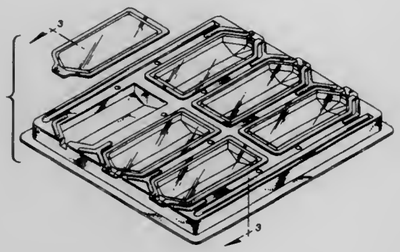
380,298
SUITCASE
Ian Ferris, Wokingham, England, assignor to Samsonite Corporation, Denver, Colo.
Division of Ser. No. 33,396, Jan. 12, 1995, Pat. No. Des. 372,796. This application Feb. 20, 1996, Ser. No. 50,422
Claims priority, application United Kingdom, Jul. 12, 1994, 204282; Jul. 12, 1994, 204283
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—279



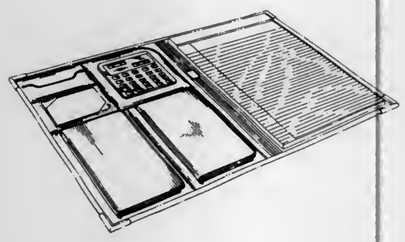
380,299
STACKING CONTAINER
James Schlaeger, 2725 Lexington Ave., Roseville, Minn. 55113, and George Holgate, 3228 Leyland Trail, St. Paul, Minn. 55125
Filed Sep. 26, 1994, Ser. No. 28,898
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—310



380,300
TRAY FOR BEADWORK
Emil J. Dalbo, P.O. Box 61, Tucker, Ga. 30084
Filed Sep. 21, 1995, Ser. No. 44,255
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—313



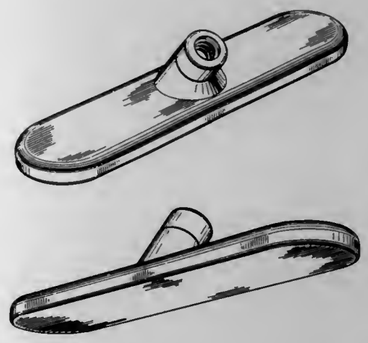
380,301
ACCESSORY POCKET FOR PORTFOLIO
Randy A. Kogutt, Dallas, Tex., assignor to Dart Manufacturing Company, Dallas, Tex.
Filed Jun. 14, 1995, Ser. No. 40,264
Term of patent 14 years
LOC (6) Cl. 03 - *99*
U.S. Cl. D3—319



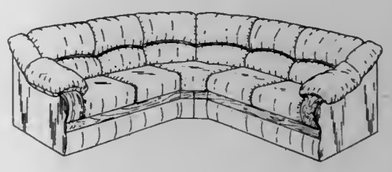
380,302
SET OF BRISTLES
Daniel William Volpenhein, Maineville, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed May 19, 1995, Ser. No. 39,051
Term of patent 14 years
LOC (6) Cl. 04 - *02*
U.S. Cl. D4—104



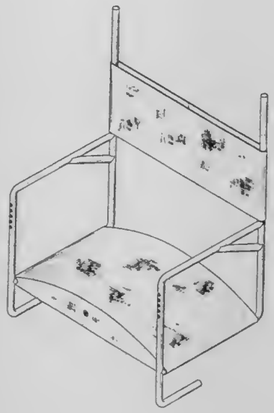
380,303
BROOM HEAD WITH CONNECTOR
Anthony Henry Wolfenden, Elwood, Australia, assignor to The Decor Corporation Pty Ltd., Victoria, Australia
Filed Sep. 18, 1995, Ser. No. 44,085
Term of patent 14 years
LOC (6) Cl. 04 - *99*
U.S. Cl. D4—199



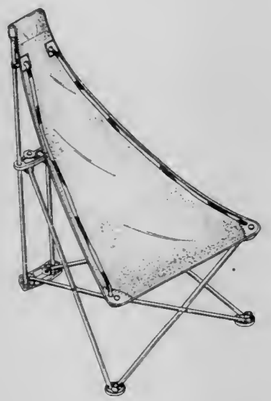
380,304
SOFA
Robert A. Gera, Glencoe, Ill., assignor to Meadowbrook Furniture, Inc., Sherman, Miss.
Filed Sep. 1, 1995, Ser. No. 43,334
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—335



380,305
ULTIMATE BLEACHER SEAT
Clarene R. Asche, 18005 20th Ave. N., Plymouth, Minn. 55447
Filed May 6, 1996, Ser. No. 54,074
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—368



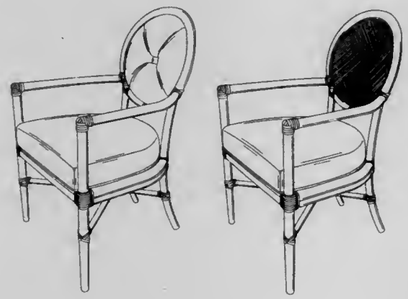
380,306
FOLDABLE CHAIR
Chi-fu Lin, No. 67, Yenhsing Rd., Yenchou Li, Yungkang City, Tainan Hsien, Taiwan
Filed Jun. 26, 1996, Ser. No. 56,318
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—368



380,307
CHAIR
Orlando Diaz-Azcuy, San Francisco, Calif., assignor to McGuire Furniture Company Inc., San Francisco, Calif.
Filed Mar. 11, 1996, Ser. No. 51,420
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—369



380,308
CHAIR
Orlando Diaz-Azcuy, San Francisco, Calif., assignor to McGuire Furniture Company Inc., San Francisco, Calif.
Filed Mar. 11, 1996, Ser. No. 51,422
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—369



380,309
CHAIR
Orlando Diaz-Azcuy, San Francisco, Calif., assignor to McGuire Furniture Company Inc., San Francisco, Calif.
Filed Mar. 11, 1996, Ser. No. 51,425
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—369



380,310
CHAIR
Orlando Diaz-Azcuy, San Francisco, Calif., assignor to McGuire Furniture Company Inc., San Francisco, Calif.
Filed Mar. 11, 1996, Ser. No. 51,437
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—369



380,311
CHAIR
Orlando Diaz-Azcuy, San Francisco, Calif., assignor to McGuire Furniture Company Inc., San Fraocisco, Calif.
Filed Mar. 11, 1996, Ser. No. 51,438
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—369

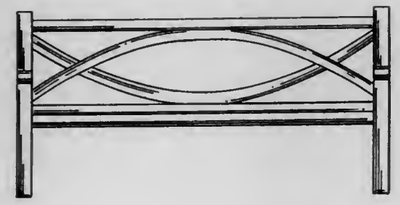


380,312
CHAIR
Orlando Diaz-Azcuy, San Francisco, Calif., assignor to McGuire Furniture Company Inc., San Francisco, Calif.
Filed Mar. 11, 1996, Ser. No. 51,439
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—369



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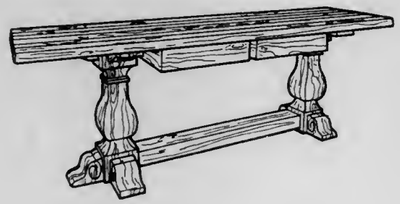
380,313
BENCH
Carl A. Slear, 788 Mercer Rd., Butler, Pa. 16001
Filed Mar. 19, 1996, Ser. No. 51,894
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—370



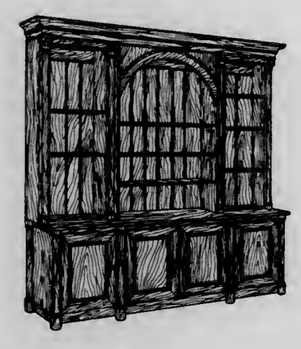
380,314
CHAIR
David Paul Chandler, Jamestown, N.C., assignor to Henredon Furniture Industries, Inc., Morganton, N.C.
Filed Feb. 27, 1996, Ser. No. 50,822
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—380



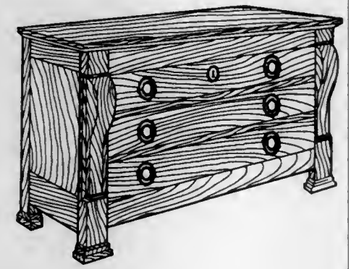
380,315
TABLE
Christopher S. Bergelin, Morganton, N.C., assignor to Henredon Furniture Industries, Inc., Morganton, N.C.
Filed Jan. 24, 1996, Ser. No. 49,403
Term of patent 14 years
LOC (6) Cl. 06 - *03*
U.S. Cl. D6—428



380,316
BOOKCASE
Christopher S. Bergelin, Morganton, N.C., assignor to Henredon Furniture Industries, Inc., Morganton, N.C.
Filed Jan. 24, 1996, Ser. No. 49,396
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—438



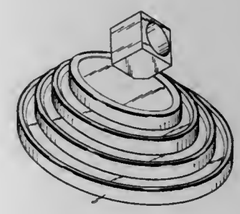
380,317
CHEST
Christopher S. Bergelin, Morganton, N.C., assignor to Henredon Furniture Industries, Inc., Morganton, N.C.
Filed Feb. 1, 1996, Ser. No. 49,854
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—446



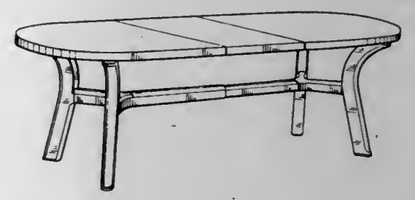
380,318
TABLE
Wayne Horvath, #9-7165 Pandora Street, Burnaby, British Columbia, Canada
Filed May 6, 1996, Ser. No. 54,048
Term of patent 14 years
LOC (6) Cl. 06 - *03*
U.S. Cl. D6—451



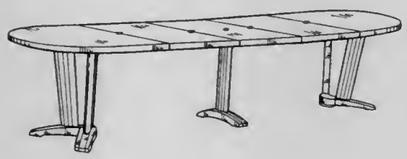
380,319
DISPLAY PEDESTAL
Aurelio Sica, and Nancy Sica, both of Miami, Fla., assignors to Aurafin Corporation, Sunrise, Fla.
Filed Feb. 26, 1996, Ser. No. 50,753
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—474



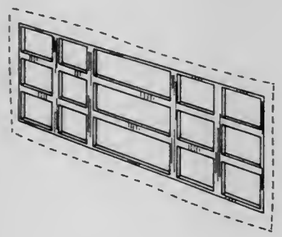
380,320
TABLE
Vittorio Grazioli, Asola, Italy, assignor to Grazioli S.p.A., Mosio di Acquanegra, Italy
Filed Jan. 29, 1996, Ser. No. 49,670
Claims priority, application Italy, Jul. 28, 1995, MI9500430
Term of patent 14 years
LOC (6) Cl. 06 - *03*
U.S. Cl. D6—480



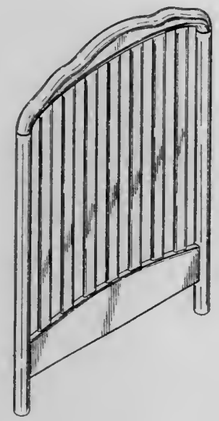
380,321
TABLE
Vittorio Grazioli, Asola, Italy, assignor to Grazioli S.p.A., Mosio Di Acquanegra, Italy
Filed Jan. 29, 1996, Ser. No. 49,671
Claims priority, application Italy, Jul. 28, 1995, M195O0430
Term of patent 14 years
LOC (6) Cl. 06 - *03*
U.S. Cl. D6—480



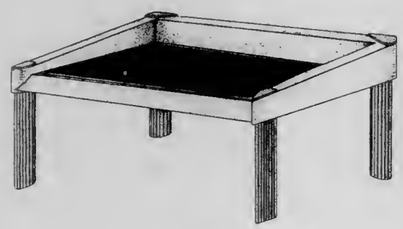
380,322
OPEN LATTICE PANEL
Guy A. Walters, III, High Point, and Avis Edward Tobin, Jr., Thomasville, both of N.C., assignors to Thomasville Furniture Industries, Inc., Thomasville, N.C.
Division of Ser. No. 29,997, Oct. 20, 1994. This application May 20, 1996, Ser. No. 54,714
Term of patent 14 years
LOC (6) Cl. 06 - *06*
U.S. Cl. D6—492



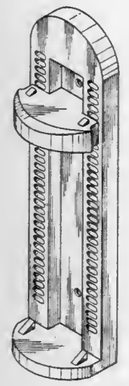
380,323
CRIB ENDBOARD
Merlin A. Brunner, Appleton, and Harvey J. Draheim, Weyauwega, both of Wis., assignors to Simmons Juvenile Products Company, Inc., New London, Wis.
Filed May 17, 1996, Ser. No. 54,617
Term of patent 14 years
LOC (6) Cl. 06 - *06*
U.S. Cl. D6—508



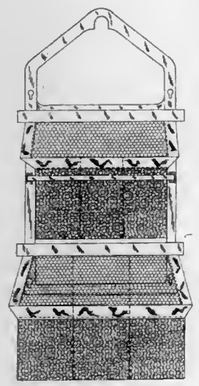
380,324
MODULAR DISPLAY SHELF
Barry Kramer, Stamford, Conn., and Charles E. Levin, Riverdale, N.Y., assignors to NYSCO Products, Inc., Bronx, N.Y.
Filed Jun. 30, 1995, Ser. No. 40,953
Term of patent 14 years
LOC (6) Cl. 06 - *06*
U.S. Cl. D6—511



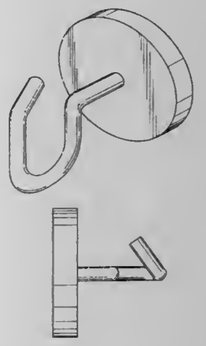
380,325
ADJUSTABLE HOLDER FOR A TISSUE BOX
G. Chris Kempf, 1358 Vail Valley Dr., Vail, Colo. 81657
Filed Mar. 28, 1996, Ser. No. 52,352
Term of patent 14 years
LOC (6) Cl. 07 - *07*
U.S. Cl. D6—518



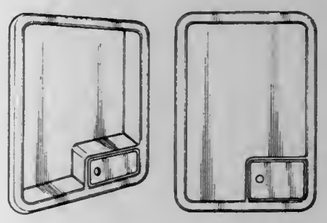
380,326
SHOWER ORGANIZER
Michael S. Kellogg, Oconomowoc; Dean Krotts, Brookfield, and William Prah, Eagle, all of Wis., assignors to Bajer Design & Marketing, Inc., Brookfield, Wis.
Filed May 19, 1995, Ser. No. 39,048
Term of patent 14 years
LOC (6) Cl. 06 - *02*
U.S. Cl. D6—525



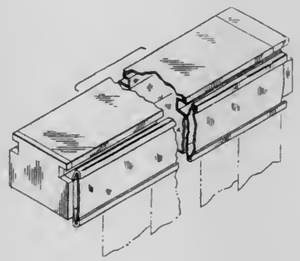
380,327
FISHING ROD HOLDER
Milford A. Marshall, and Guy M. Marshall, both of 3300 Main St., Apt. 1, Forest Grove, Oreg. 97116
Filed Nov. 27, 1995, Ser. No. 47,032
Term of patent 14 years
LOC (6) Cl. 07 - *07*
U.S. Cl. D6—552



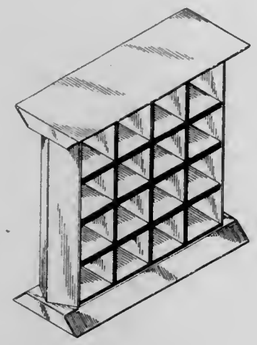
380,328
MEDICINE CABINET
Jeff G. Greger, Mechanicsburg, Pa., assignor to Zenith Products Corporation, Aston, Pa.
Division of Ser. No. 39,843, Jun. 6, 1995. This application May 2, 1996, Ser. No. 53,928
Term of patent 14 years
LOC (6) Cl. 08 - *08*
U.S. Cl. D6—559



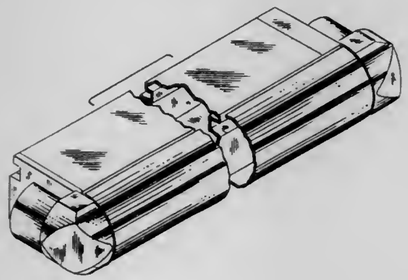
380,329
VERTICAL BLIND VALANCE
Gene Chou, Villa Park, Calif., assignor to Rainbow Industrial, Inc., Anaheim, Calif.
Filed Aug. 10, 1995, Ser. No. 43,832
Term of patent 14 years
LOC (6) Cl. 06 - *10*
U.S. Cl. D6—579



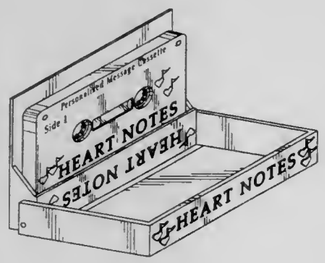
380,331
COMPACT DISC HOLDER
George Goguen, Cambridge, Mass., assignor to The American Corplexx Company, Inc., Boston, Mass.
Filed Jan. 22, 1996, Ser. No. 49,299
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—629



380,330
VERTICAL BLIND VALANCE
Gene Chou, Villa Park, Calif., assignor to Rainbow Industrial, Inc., Anaheim, Calif.
Filed Feb. 22, 1996, Ser. No. 50,672
Term of patent 14 years
LOC (6) Cl. 06 - *10*
U.S. Cl. D6—579



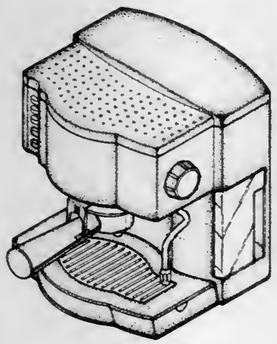
380,332
COMBINED PERSONALIZED MESSAGE CASSETTE TAPE AND CASE
Gordon Laymance, 1108 Scott St., Grangeville, Id. 83530
Filed Feb. 12, 1996, Ser. No. 50,251
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—634



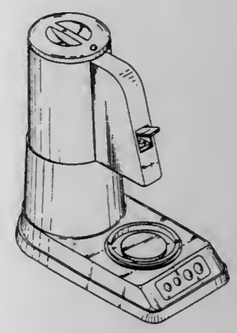
380,333
ELECTRIC COFFEE MAKER
Eric Carrere, Lyon, France, assignor to SEB, France
Filed Jan. 29, 1996, Ser. No. 49,691
Claims priority, application France, Aug. 2, 1995, 95 4344
Term of patent 14 years
LOC (6) Cl. 07 - *02*
U.S. Cl. D7—309



380,334
COFFEE MAKER
Yu-Yuan Lin, P.O. Box 1032, Tainan, Taiwan
Filed Apr. 15, 1996, Ser. No. 53,148
Term of patent 14 years
LOC (6) Cl. 07 - *02*
U.S. Cl. D7—309



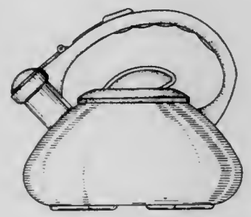
380,335
MULTI-PURPOSE COFFEE MAKER
Chao Ming Hui, P.O. Box 82-144, Taipei, Taiwan
Filed Apr. 15, 1996, Ser. No. 53,336
Term of patent 14 years
LOC (6) Cl. 07 - *02*
U.S. Cl. D7—309



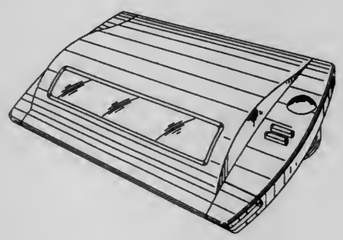
380,336
TEAPOT AND INSERT
Stewart D. Zive, Ft. Lee, N.J., assignor to Stanley Roberts, Inc., Lodi, N.J.
Filed Apr. 25, 1996, Ser. No. 53,604
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—321



380,337
KETTLE
Chang-hsing Lien, Taipei, Taiwan, assignor to Action Overseas Co., Ltd., Taipei, Taiwan
Filed Mar. 19, 1996, Ser. No. 51,889
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—322



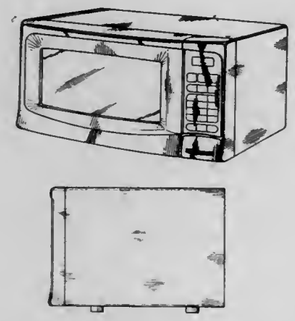
380,338
TOASTER
Richard J. Carbone, Southbury, and Anthony Brooks Rorke, Guilford, both of Conn., assignors to Black & Decker Inc., Newark, Del.
Filed Jan. 11, 1996, Ser. No. 48,722
Term of patent 14 years
LOC (6) Cl. 07 - *02*
U.S. Cl. D7—328



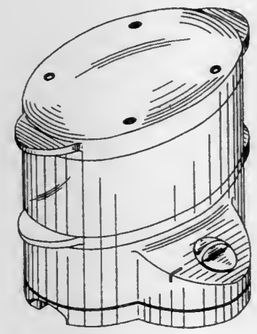
380,339
ELECTRIC ROASTER
Tony Hsu, Yung Kang, Taiwan, assignor to Lundar Electric Industrial Co., Ltd., Tainan Hsien, Taiwan
Filed Apr. 23, 1996, Ser. No. 53,481
Term of patent 14 years
LOC (6) Cl. 07 - *02*
U.S. Cl. D7—350



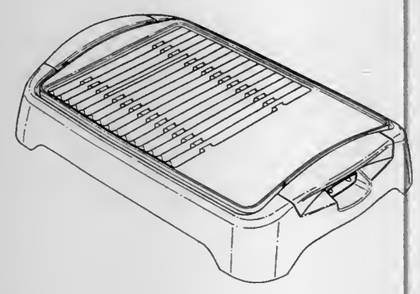
380,340
MICROWAVE OVEN
Kensaku Noda; Yasuhiro Matsusaki; Masatoshi Okuda, and Atsuko Wakagi, all of Shiga-Ken, Japan, assignors to Sanyo Electric Co., Ltd., Osaka-fu, Japan
Filed Feb. 22, 1996, Ser. No. 50,518
Claims priority, application Japan, Sep. 13, 1995, 7-27164
Term of patent 14 years
LOC (6) Cl. 07 - *02*
U.S. Cl. D7—351



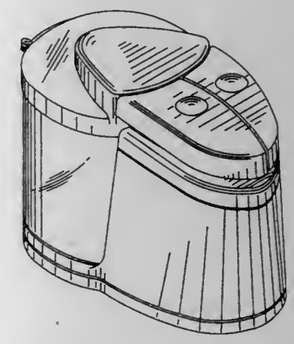
380,341
FOOD STEAMER
Stuart Naft, Fairfield, and Michael E. Laude, Southbury, both of Conn., assignors to Black & Decker Inc., Newark, Del.
Filed Dec. 18, 1995, Ser. No. 47,979
Term of patent 14 years
LOC (6) Cl. 07 - *02*
U.S. Cl. D7—354



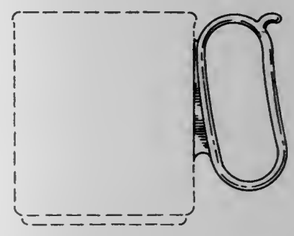
380,342
GRILL
Nicholas Graham Edmonds, Campsie, Australia, assignor to Sunbeam Corporation Limited, New South Wales, Australia
Filed Nov. 7, 1995, Ser. No. 46,106
Claims priority, application Australia, May 9, 1995, 1435/95
Term of patent 14 years
LOC (6) Cl. 07 - *02*
U.S. Cl. D7—363



380,343
FOOD PROCESSOR
Anthony Brooks Rorke, Guilford, Conn., assignor to Black & Decker Inc., Newark, Del.
Filed Jan. 11, 1996, Ser. No. 48,984
Term of patent 14 years
LOC (6) Cl. 31 - *00*
U.S. Cl. D7—384



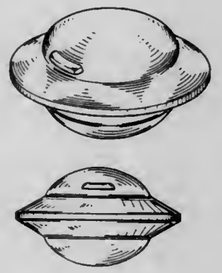
380,344
HANDLE FOR A MUG
Douglas M. Laib, Orlando, Fla., assignor to Dart Industries Inc., Orlando, Fla.
Filed Jul. 24, 1995, Ser. No. 41,747
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—394



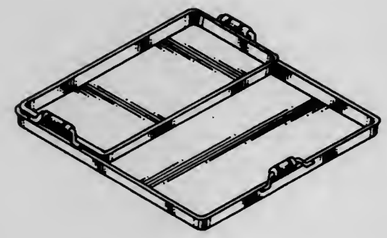
380,345
UNIVERSAL HANDLE
Nai-Pin Lu, 6F, No.705, Da Dun Road, Taichung, Taiwan
Filed Apr. 10, 1996, Ser. No. 53,025
Term of patent 14 years
LOC (6) Cl. 07 - *03*
U.S. Cl. D7—395



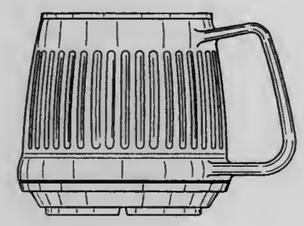
380,346
BARBEQUE GRILL PAN
Chih-ming Chiang, 7th Fl., No. 25, Lane 33, Sec. 2, Hsingan Rd., Taichung, Taiwan
Filed Mar. 6, 1996, Ser. No. 51,353
Term of patent 14 years
LOC (6) Cl. 07 - *02*
U.S. Cl. D7—402



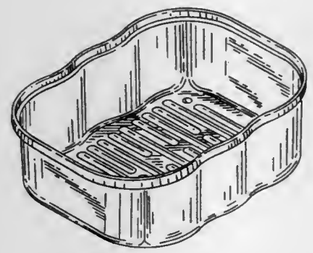
380,347
STOVE TOP NESTING GRILL
Herman L. Norton, P.O. Box 74094, Houston, Tex. 77274
Filed Sep. 26, 1995, Ser. No. 44,548
Term of patent 14 years
LOC (6) Cl. 07 - *02*
U.S. Cl. D7—409



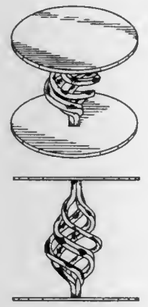
380,348
MUG
Richard H. Burns, Troy, Ohio, and Allen J. Hutton, Greenfield, Ind., assignors to Seco Products Corporation, Washington, Mo.
Filed Feb. 26, 1996, Ser. No. 50,799
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—536



380,349
BREAD CONTAINER
Erik D. W. Indekeu, Borgerhout, Belgium, assignor to Dart Industries Inc., Orlando, Fla.
Filed Jan. 11, 1996, Ser. No. 53,893
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—543



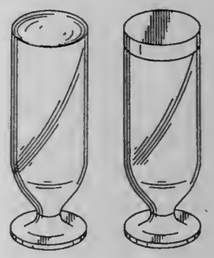
380,350
CAKE STAND
Daniel J. Tortorella, and David J. Tortorella, both of 29 Cutting Ave., Cranston, R.I. 02920
Filed Jul. 10, 1996, Ser. No. 56,851
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—558



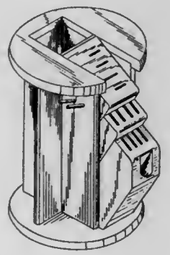
380,351
CONDIMENT SHAKER
Hanne Dalsgaard Jeppesen, Holte; Jakob Heiberg, Charlottenlund, and Stig Lillelund, Gentofte, all of Denmark, assignors to Dart Industries Inc., Orlando, Fla.
Filed Feb. 15, 1996, Ser. No. 49,656
Term of patent 14 years
LOC (6) Cl. 07 - *06*
U.S. Cl. D7—597



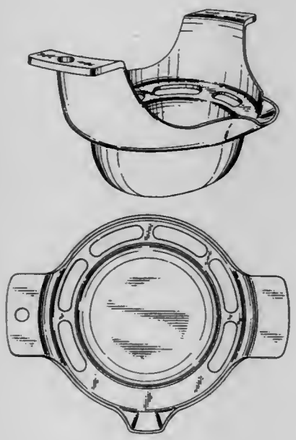
380,352
CONTAINER FOR A FOOD PRODUCT
Takeshi Meiji, 4-23, Nishi 12-chome, Minami 18-Jou, Chuo-ku, Sapporo-shi, Hokkaido, Japan
Filed Mar. 25, 1996, Ser. No. 52,119
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—602



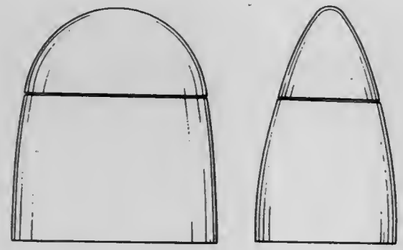
380,353
STORAGE CAROUSEL FOR KNIVES AND KITCHEN TOOLS, UTENSILS AND GADGETS
Milton L. Cohen, Hewlett Bay Park, and Jeff Siegel, Great Neck, both of N.Y., assignors to Lifetime Hoan Corporation, Westbury, N.Y.
Filed Apr. 10, 1996, Ser. No. 52,875
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D7—641



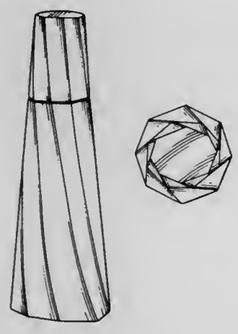
380,354
FAT SEPARATOR
Kenneth M. Ferrin, P.O. Box 5069, East Hampton, N.Y. 11937
Filed Mar. 26, 1996, Ser. No. 52,248
Term of patent 14 years
LOC (6) Cl. 07 - *04*
U.S. Cl. D7—667



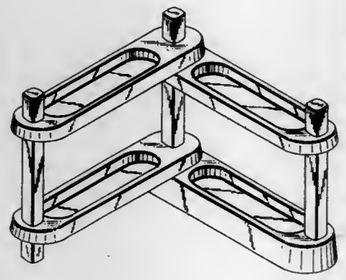
380,355
PEPPERMILL
Wayne Husted, 73 California Ave., Mill Valley, Calif. 94941
Filed May 2, 1996, Ser. No. 53,930
Term of patent 14 years
LOC (6) Cl. 07 - *04*
U.S. Cl. D7—679



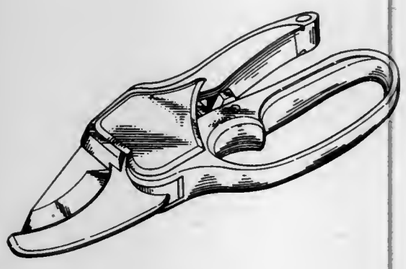
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PEPPERMILL
Wayne Husted, 73 California Ave., Mill Valley, Calif. 94941
Filed May 2, 1996, Ser. No. 53,931
Term of patent 14 years
LOC (6) Cl. 07 - *04*
U.S. Cl. D7—679



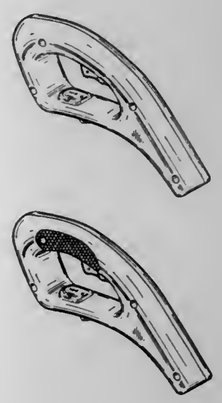
380,357
ADJUSTABLE SPICE RACK
Marcus W. Kibbe, San Marcos, Calif., assignor to Dudley Kebow, Inc., Oceanside, Calif.
Filed Jul. 2, 1996, Ser. No. 56,572
Term of patent 14 years
LOC (6) Cl. 07 - *06*
U.S. Cl. D7—701



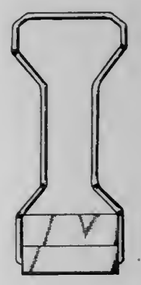
380,358
GARDEN TOOL
Chin-Sung Wu, 30, Min Yu Street, Lu Kang Town, Changhua, Taiwan
Filed Apr. 25, 1996, Ser. No. 53,572
Term of patent 14 years
LOC (6) Cl. 08 - *01*
U.S. Cl. D8—5



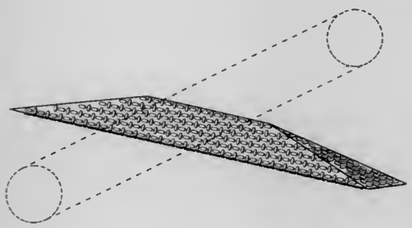
380,359
HANDLE FOR VEGETATION CUTTER
Edward Meisner, Short Hills; Thomas Van Dyk, Prospect Park, and Michael Ballone, New Providence, all of N.J., assignors to Black & Decker Inc., Newark, Del.
Continuation of Ser. No. 40,286, Jun. 14, 1995, abandoned.
This application Apr. 23, 1996, Ser. No. 53,523
Term of patent 14 years
LOC (6) Cl. 08 - *01*
U.S. Cl. D8—8



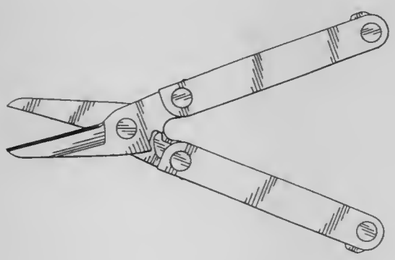
380,360
SHOVEL
Lincoln Scruggs, 7369 Farrand, Clio, Mich. 48420
Filed Mar. 19, 1996, Ser. No. 51,772
Term of patent 14 years
LOC (6) Cl. 08 - *01*
U.S. Cl. D8—10



380,361
LOG PIVOT
Anthony S. Holway, 20 Fullam Hill Rd., N. Brookfield, Mass. 01535
Filed Sep. 30, 1994, Ser. No. 29,230
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—14



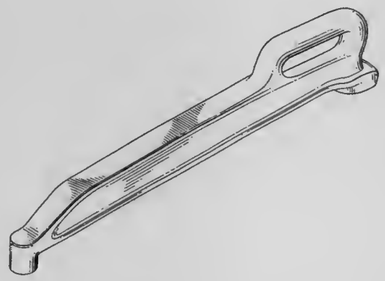
380,362
SCISSORS
Benjamin C. Rivera, West Linn, Oreg., assignor to Leatherman Tool Group, Inc., Portland, Oreg.
Filed Nov. 29, 1995, Ser. No. 47,220
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—52



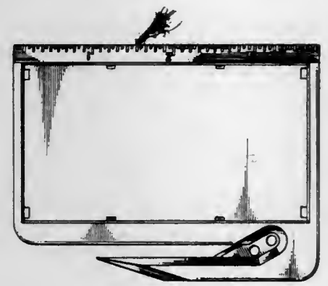
380,363
SCREWDRIVER HANDLE
Richard J. Macor, Warren County, N.J., assignor to Proprietary Technologies, Inc., Stewartsville, N.J.
Continuation-in-part of Ser. No. 523,355, Sep. 5, 1995, which is a continuation-in-part of Ser. No. 39,726, Jun. 5, 1995, Pat. No. Des. 373,061. This application Feb. 8, 1996, Ser. No. 50,089
Term of patent 14 years
LOC (6) Cl. 08 - *04*
U.S. Cl. D8—83



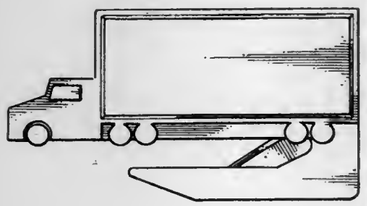
380,364
DRIVE BAR
John Martin, 7308 Corbin Ave. Apt. E, Reseda, Calif. 91335
Filed Oct. 3, 1994, Ser. No. 32,014
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—89



380,365
LETTER OPENER
G. Gerry Schmidt, Newport Beach, Calif., assignor to Pacific Handy Cutter, Inc., Costa Mesa, Calif.
Filed Mar. 20, 1996, Ser. No. 51,952
Term of patent 14 years
LOC (6) Cl. 08 - *03*
U.S. Cl. D8—102



380,366
LETTER OPENER
Gerry Schmidt, Newport Beach, Calif., assignor to Pacific Handy Cutter, Inc., Costa Mesa, Calif.
Filed Jan. 11, 1996, Ser. No. 48,654
Term of patent 14 years
LOC (6) Cl. 08 - *03*
U.S. Cl. D8—103



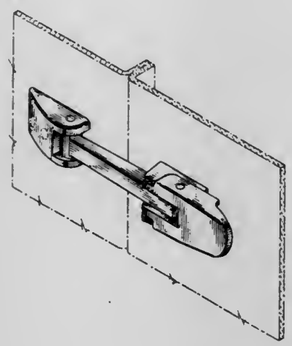
380,367
LETTER OPENER
Gerry Schmidt, Newport Beach, Calif., assignor to Pacific Handy Cutter, Inc., Costa Mesa, Calif.
Filed Jan. 11, 1996, Ser. No. 48,677
Term of patent 14 years
LOC (6) Cl. 08 - *03*
U.S. Cl. D8—103



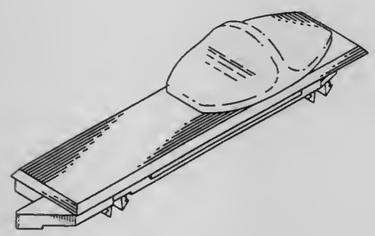
380,368
AUXILIARY TOOL HANDLE
Dale Kort, 915 Wolverine Dr., Walled Lake, Mich. 48390
Filed Feb. 14, 1996, Ser. No. 50,292
Term of patent 14 years
LOC (6) Cl. 08 - *01*
U.S. Cl. D8—107



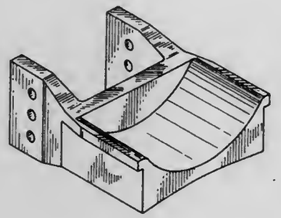
380,369
FLEXIBLE DRAW LATCH
Jeffrey L. Antonucci, King of Prussia, Pa., assignor to Southco, Inc., Concordville, Pa.
Continuation of Ser. No. 517,576, Aug. 21, 1995. This application Jan. 18, 1996, Ser. No. 49,128
Term of patent 14 years
LOC (6) Cl. 08 - *07*
U.S. Cl. D8—342



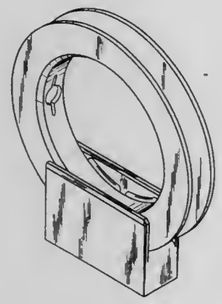
380,370
LATCH FOR SECURING TILTABLE WINDOW PANELS AND SASHES TO A WINDOW FRAME
Dennis Carlson, McPherson, Kans.; Jeffrey B. Hersh, Wayne, Pa., and Dennis Westphal, Parma, Mich., assignors to CertainTeed Corporation, Valley Forge, Pa.
Filed Jun. 23, 1995, Ser. No. 40,679
Term of patent 14 years
LOC (6) Cl. 08 - *09*
U.S. Cl. D8—343



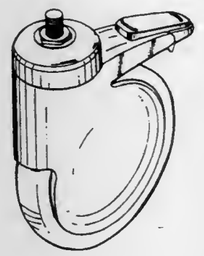
380,371
JUMP CUP
Roy St. John Maher, and Michelle Christine Bartlett, both of R.R. #3, Mount Albert, Ontario, Canada
Filed Mar. 1, 1996, Ser. No. 50,999
Term of patent 14 years
LOC (6) Cl. 08 - *08*
U.S. Cl. D8—354



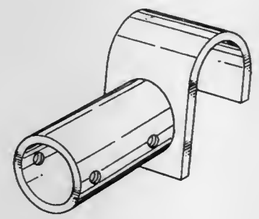
380,372
MONOFILAMENT LINE HOLDER
Allen C. McManaway, 330 173rd Ave., N. Redington Beach, Fla. 33708
Filed Nov. 2, 1995, Ser. No. 45,906
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—358



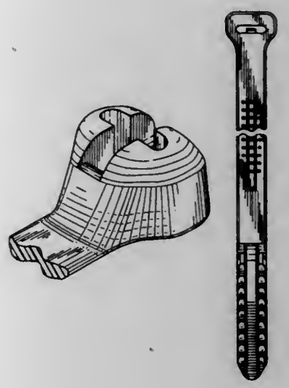
380,373
CASTOR
Stafford Thomas Screen, West Midlands, United Kingdom, assignor to Colson Castors Limited, West Midlands, United Kingdom
Filed Feb. 22, 1996, Ser. No. 50,686
Claims priority, application United Kingdom, Aug. 22, 1995, 2 049 795
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—375



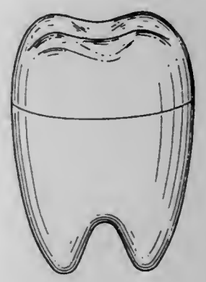
380,374
JOINT FOR A RACK
Takeyasu Murakami, Shizuoka, Japan, assignor to Yazaki Industrial Chemical Co., Ltd., Shizuoka, Japan
Filed Apr. 12, 1994, Ser. No. 21,307
Term of patent 14 years
LOC (6) Cl. 08 - *08*
U.S. Cl. D8—382



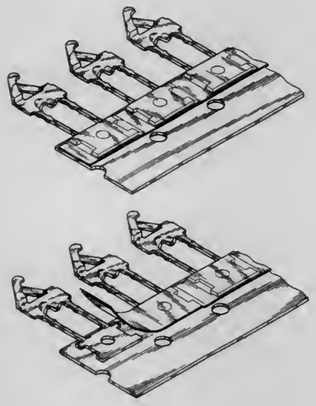
380,375
CABLE TIE
Joseph S. Rohaly, Frankfort, and Paul M. Herbst, Oak Forest, both of Ill., assignors to Panduit Corp., Tinley Park, Ill.
Filed Jan. 13, 1995, Ser. No. 33,450
The portion of the term of this patent subsequent to May 28, 2010, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 08 - *08*
U.S. Cl. D8—396



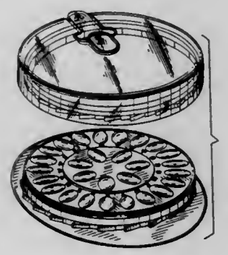
380,376
COMBINED CONTAINER AND CAP
Jürgen Reinhardt, Bühl/Baden, Germany, assignor to Lingner & Fischer GmbH, Germany
Filed Jun. 15, 1994, Ser. No. 24,489
Claims priority, application United Kingdom, Dec. 17, 1993, 2035912
Term of patent 14 years
LOC (6) Cl. 09 - *03*
U.S. Cl. D9—314



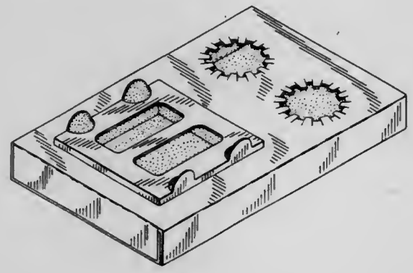
380,377
TAPE MOUNTED WIRE HOLDER PACKAGE
Kyotaro Sato, Tokyo, Japan, assignor to Kyoshin Kogyo Co., Ltd., Tokyo, Japan
Filed Jan. 24, 1995, Ser. No. 33,920
Claims priority, application Japan, Aug. 23, 1994, 6-25314
Term of patent 14 years
LOC (6) Cl. 09 - *03*
U.S. Cl. D9—341



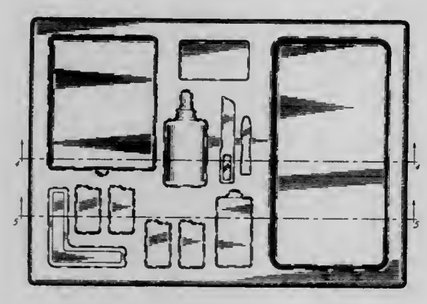
380,378
PILL HOLDER AND DISPENSER
Cliff Wood, 16 Bob Hill Rd., Pound Ridge, N.Y. 10576
Filed Jan. 11, 1996, Ser. No. 51,763
Term of patent 14 years
LOC (6) Cl. 09 - *03*
U.S. Cl. D9—341



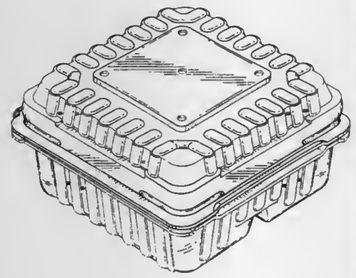
380,379
TRAY
Olle Lindblom, and Robert Pettersson, both of Gävle, Sweden, assignors to Ko-Lars AB, Gavle, Sweden
Filed Sep. 15, 1995, Ser. No. 44,063
Claims priority, application Sweden, Mar. 16, 1995, 95-0548
Term of patent 14 years
LOC (6) Cl. 09 - *03*
U.S. Cl. D9—347



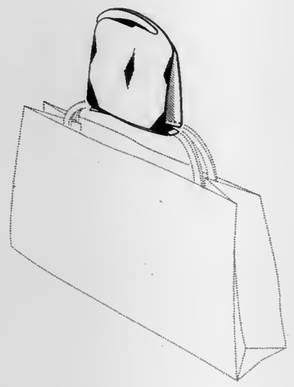
380,380
TRAY
Roland Quinton, St-Ferdinand, Canada, assignor to Gestion Quinton, St-Ferdinand, Canada
Filed Mar. 19, 1996, Ser. No. 51,928
Term of patent 14 years
LOC (6) Cl. 9 - *03*
U.S. Cl. D9—347



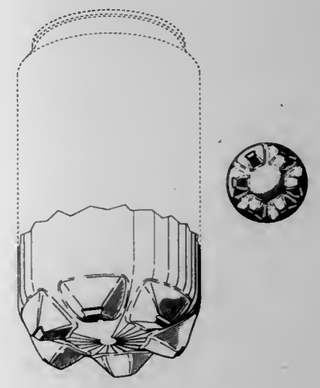
380,381
FRUIT CONTAINER
Calvin S. Krupa, Medina, and Robert Knoss, Anoka, both of Minn., assignors to Ultra Pac, Inc., Rogers, Minn.
Filed Feb. 13, 1996, Ser. No. 50,266
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—425



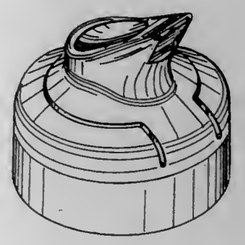
380,382
PLASTIC BAG HOLDER
Claudia H. Rhone, 4066 Tivoli Ave., Los Angeles, Calif. 90066, and Zohar Ben Yosef, Seadia Gaon, #4, Tel Aviv, Israel
Filed Jan. 22, 1996, Ser. No. 49,256
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—434



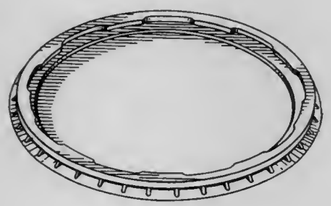
380,383
CONTAINER BOTTOM
David J. Wiemann, O'Fallon, and David H. Henkelmann, Imperial, both of Mo., assignors to Anheuser-Busch Incorporated, St. Louis, Mo.
Filed May 1, 1996, Ser. No. 53,906
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—434



380,384
DISPENSING ACTUATOR CAP
Daniel A. Ferrara, Jr., Bantam, Conn., assignor to Precision Valve Corporation, Yonkers, N.Y.
Continuation of Ser. No. 4,858, Feb. 16, 1993, abandoned.
This application May 15, 1995, Ser. No. 38,816
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—448



380,385
LID
Terry Litke, Regina, Canada, assignor to TwinPak Inc., Quebec, Canada
Filed Oct. 18, 1995, Ser. No. 45,370
Claims priority, application Canada, Jul. 14, 1995, 1995-1563
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—452



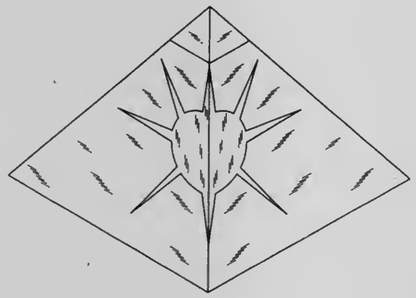
380,386
COMBINED BOTTLE AND CAP
Pierre Francois Dinand, Levallois-Perret, France, assignor to Guaber S.r.L., Funo, Italy
Filed Nov. 20, 1995, Ser. No. 46,546
Claims priority, application WIPO, May 18, 1995, DMA/002945
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—503



380,387
COMBINED BOTTLE AND CLOSURE
Gerhard H. Weiler, South Barrington, Ill., assignor to Automatic Liquid Packaging, Inc., Woodstock, Ill.
Division of Ser. No. 23,846, Jun. 2, 1994, Pat. No. Des. 367,613. This application Jan. 11, 1996, Ser. No. 48,698
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—520



380,388
BOTTLE
Steven M. Rowe, 9030 W. Sahara Ave., Suite 888, Las Vegas, Nev. 89117
Filed Jan. 16, 1996, Ser. No. 48,927
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—529



380,389
COMBINED CONTAINER AND CAP
John Clifford Crawford, Mahopac, N.Y., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed May 2, 1996, Ser. No. 53,945
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—542



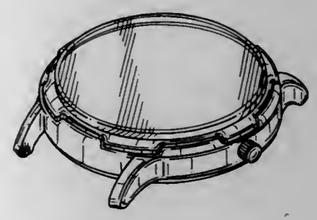
380,390
COMBINED PERFUME BOTTLE AND CAP
Hubert Varlet, Paris, France, assignor to Verreries Pochet et du Courval, Paris, France
Filed Aug. 5, 1994, Ser. No. 26,831
Claims priority, application France, Jun. 24, 1994, 943738
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—558



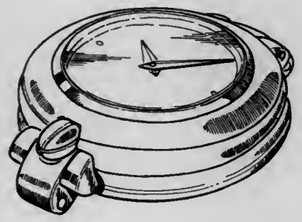
380,391
WATCH BEZEL AND CASING
Robert Osit, Rocky Hill, Conn., assignor to Timex Corporation, Middlebury, Conn.
Filed Apr. 15, 1996, Ser. No. 53,144
Term of patent 14 years
LOC (6) Cl. 10 - *02*
U.S. Cl. D10—30



380,392
CASING FOR A WATCH
M. Amelia Kennedy, Woodbury, Conn., assignor to Timex Corporation, Middlebury, Conn.
Filed Jul. 1, 1996, Ser. No. 56,464
Term of patent 14 years
LOC (6) Cl. 10 - *02*
U.S. Cl. D10—30



380,393
COMBINED WATCH AND RECEPTACLE
Jacques Molas, Cheval-Blanc, France, assignor to Cosmos Promotions AG, Basel, Switzerland
Filed May 3, 1996, Ser. No. 55,815
Term of patent 14 years
LOC (6) Cl. 10 - *02*
U.S. Cl. D10—31



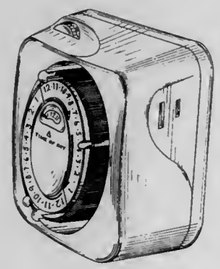
380,394
WATCH
Pierre Ludvig, St Nom-la-Breteche, France, assignor to Titan International Marketing Ltd., London, United Kingdom
Filed Oct. 25, 1995, Ser. No. 45,618
Claims priority, application United Kingdom, Apr. 26, 1995, 2047012
Term of patent 14 years
LOC (6) Cl. 10 - *02*
U.S. Cl. D10—32



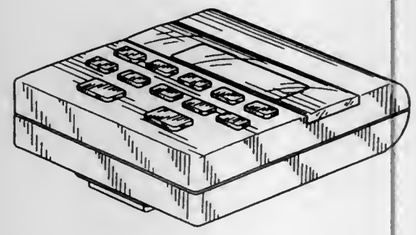
380,395
COMBINED WATCH CASE AND BRACELET
Patrick Joseph Lassigne, Cressier, Switzerland, assignor to Taramax S.A., Marin-Epagnier, Switzerland
Filed Feb. 14, 1996, Ser. No. 50,306
Claims priority, application Hague Agreement, Aug. 15, 1995, DMA/003030
Term of patent 14 years
LOC (6) Cl. 10 - *02*
U.S. Cl. D10—32



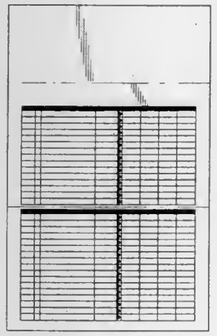
380,396
ELECTRICAL TIMER
Ted N. Svarnias, Arlington Heights; Randall P. Bell, River Forest; Mark D. Dziersk, Chicago, and James C. Hand, Glen Ellyn, all of Ill., assignors to Intermatic, Inc., Spring Grove, Ill.
Filed Nov. 17, 1995, Ser. No. 46,525
Term of patent 14 years
LOC (6) Cl. 10 - *03*
U.S. Cl. D10—40



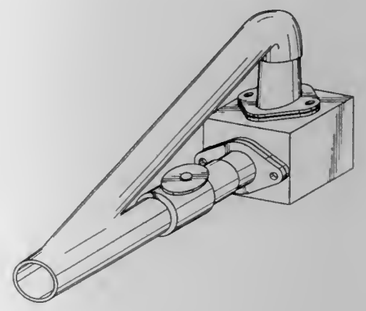
380,397
TIMER
Raymond Chan, Kowloon, Hong Kong, assignor to IDT International Limited, Hamilton, Bermuda
Filed May 9, 1996, Ser. No. 54,327
Claims priority, application United Kingdom, Nov. 17, 1995, 2052047
Term of patent 14 years
LOC (6) Cl. 10 - *03*
U.S. Cl. D10—40



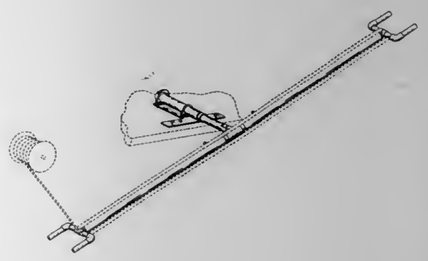
380,398
GAME CARD
Keith Randolph, Edmonton, Canada, assignor to Karand Sales & Marketing a div. of Professional Accounting Services Ltd., Edmonton, Canada
Filed Nov. 7, 1995, Ser. No. 46,137
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D10—46.1



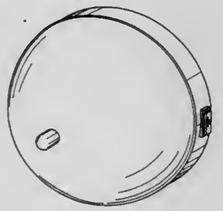
380,399
DUAL THERMOSTAT SYSTEM
Mario Grillo, 72 Blackthorn Avenue, Toronto, ON, Canada
Filed Aug. 25, 1995, Ser. No. 43,089
Term of patent 14 years
LOC (6) Cl. 10 - *04*
U.S. Cl. D10—50



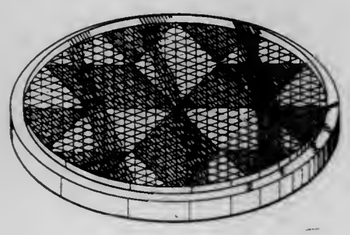
380,400
DEVICE FOR MEASURING LENGTHS OF TAPE
Dustin Peard, 7449 Anderson La., Citrus Heights, Calif. 95610
Filed Jul. 14, 1995, Ser. No. 41,434
Term of patent 14 years
LOC (6) Cl. 10 - *04*
U.S. Cl. D10—70



380,401
AUTOMOBILE ALARM INDICATOR
Warant Sarkis, 44 Gerrard St., Ste 1007, Toronto, ON, Canada
Filed Mar. 5, 1996, Ser. No. 51,189
Term of patent 14 years
LOC (6) Cl. 10 - *05*
U.S. Cl. D10—106



380,402
STAR REFLECTOR
Fred Binder, Sr., LaSalle, Canada, assignor to Acutek Incorporated, Odessa, Mo.
Filed May 13, 1996, Ser. No. 56,164
Term of patent 14 years
LOC (6) Cl. 10 - *05*
U.S. Cl. D10—111



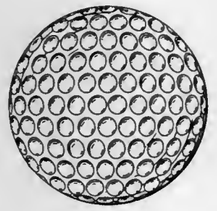
380,403
ELECTRICAL TIMER DIAL
Ted N. Svarnias, Arlington Heights, Ill.; Gregory S. Breiding, and Ronald M. Gage, both of Columbus, Ohio, assignors to Intermatic, Inc., Spring Grove, Ill.
Filed Nov. 17, 1995, Ser. No. 46,521
Term of patent 14 years
LOC (6) Cl. 10 - *03*
U.S. Cl. D10—126



380,404
JEWELRY CHAIN
David Rozenwasser, 26 Har Dafna Street, Savion, Israel
Filed Dec. 19, 1995, Ser. No. 48,787
Claims priority, application Israel, Jun. 21, 1995, 24595
Term of patent 14 years
LOC (6) Cl. 11 - *01*
U.S. Cl. D11—17



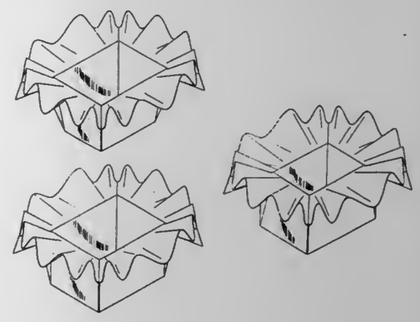
380,405
CUT FOR A CROWN OF A GEMSTONE
Derrick S. Obatake, 1123 Upland Ave., San Pedro, Calif. 90732
Filed Mar. 29, 1996, Ser. No. 52,423
Term of patent 14 years
LOC (6) Cl. 11 - *01*
U.S. Cl. D11—89



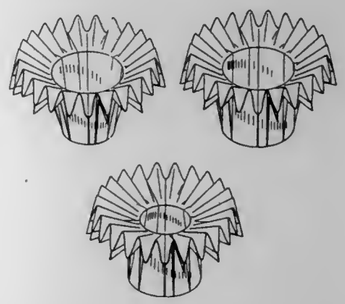
380,406
CHRISTMAS TREE ORNAMENT
Leonhardt J. Andersen, 2005 James St., Jefferson, La. 70121
Filed Aug. 30, 1995, Ser. No. 43,275
Term of patent 14 years
LOC (6) Cl. 11 - *05*
U.S. Cl. D11—121



380,407
FLOWER POT COVER
Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Southpac Trust International, Inc., Oklahoma City, Okla.
Division of Ser. No. 673, Oct. 20, 1992, Pat. No. Des. 364,116, which is a continuation-in-part of Ser. No. 781,453, Oct. 21, 1991, Pat. No. Des. 348,634, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, Ser. No. 411,249, Sep. 22, 1989, Pat. No. Des. 358,113, Ser. No. 411,247, Sep. 22, 1989, abandoned, and Ser. No. 411,245, Sep. 22, 1989, abandoned. This application Oct. 18, 1995, Ser. No. 45,384
Term of patent 14 years
LOC (6) Cl. 11 - *02*
U.S. Cl. D11—164



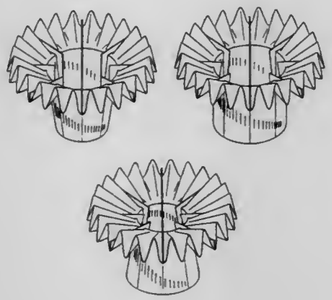
380,408
FLOWER POT COVER
Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Southpac Trust International, Inc., Oklahoma City, Okla.
Division of Ser. No. 1,353, Nov. 9, 1992, Pat. No. Des. 364,118, which is a continuation-in-part of Ser. No. 781,453, Oct. 21, 1991, Pat. No. Des. 348,634, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, which is a continuation-in-part of Ser. No. 411,249, Sep. 22, 1989, Pat. No. Des. 358,113, Ser. No. 411,247, Sep. 22, 1989, abandoned, and Ser. No. 411,245, Sep. 22, 1989, abandoned. This application Nov. 2, 1995, Ser. No. 45,900
Term of patent 14 years
LOC (6) Cl. 11 - *02*
U.S. Cl. D11—164



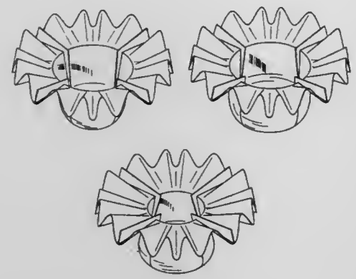
380,409
FLOWER POT COVER
Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Southpac Trust International, Inc., Oklahoma City, Okla.
Division of Ser. No. 26,208, Jul. 21, 1994, Pat. No. Des. 366,631, which is a continuation of Ser. No. 543,628, Jun. 26, 1990, abandoned, which is a continuation-in-part of Ser. No. 411,247, Sep. 22, 1989, abandoned, which is a continuation of Ser. No. 283,014, Dec. 8, 1988, abandoned, which is a continuation of Ser. No. 652,903, Sep. 21, 1984, abandoned, which is a continuation-in-part of Ser. No. 613,053, May 22, 1984, Pat. No. Des. 293,224. This application Nov. 2, 1995, Ser. No. 45,910
Term of patent 14 years
LOC (6) Cl. 11 - *02*
U.S. Cl. D11—164



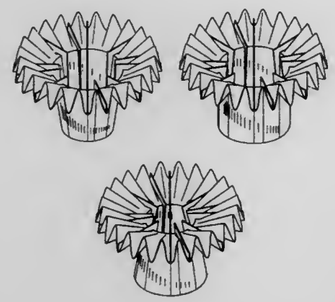
380,410
FLOWER POT COVER
Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Southpac Trust International, Inc., Oklahoma City, Okla.
Division of Ser. No. 4,297, Feb. 1, 1993, Pat. No. Des. 364,120, which is a continuation-in-part of Ser. No. 782,237, Oct. 18, 1991, Pat. No. Des. 349,076, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, Ser. No. 411,249, Sep. 22, 1989, Pat. No. Des. 358,113, Ser. No. 411,247, Sep. 22, 1989, abandoned, and Ser. No. 411,245, Sep. 22, 1989, abandoned. This application Nov. 3, 1995, Ser. No. 45,974
Term of patent 14 years
LOC (6) Cl. 11 - *02*
U.S. Cl. D11—164



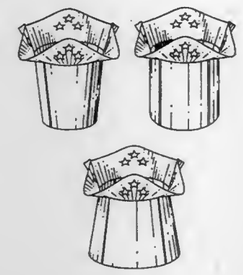
380,411
FLOWER POT COVER
Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Southpac Trust International, Inc., Oklahoma City, Okla.
Division of Ser. No. 4,296, Feb. 1, 1993, Pat. No. Des. 363,898, which is a continuation-in-part of Ser. No. 782,237, Oct. 18, 1991, Pat. No. Des. 349,076, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, Ser. No. 411,249, Sep. 22, 1989, Pat. No. Des. 358,113, Ser. No. 411,247, Sep. 22, 1989, abandoned, and Ser. No. 411,245, Sep. 22, 1989, abandoned. This application Oct. 18, 1995, Ser. No. 46,628
Term of patent 14 years
LOC (6) Cl. 11 - *02*
U.S. Cl. D11—164



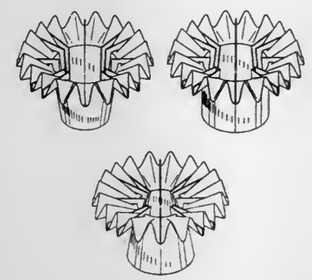
380,412
FLOWER POT COVER
Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Southpac Trust International, Inc., Oklahoma City, Okla.
Division of Ser. No. 7,869, Apr. 30, 1993, Pat. No. Des. 364,123, which is a continuation-in-part of Ser. No. 782,237, Oct. 18, 1991, Pat. No. Des. 349,076, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, Ser. No. 411,249, Sep. 22, 1989, Pat. No. Des. 358,113, Ser. No. 411,247, Sep. 22, 1989, abandoned, and Ser. No. 411,245, Sep. 22, 1989, abandoned. This application Oct. 18, 1995, Ser. No. 46,629
Term of patent 14 years
LOC (6) Cl. 11 - *02*
U.S. Cl. D11—164



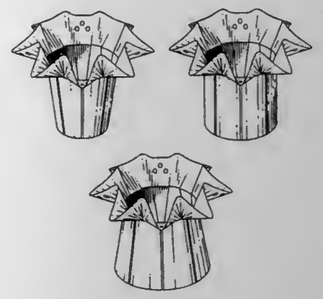
380,413
FLOWER POT COVER
Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Southpac Trust International, Inc., Oklahoma City, Okla.
Division of Ser. No. 3,897, Jan. 21, 1993, Pat. No. Des. 368,440, which is a continuation-in-part of Ser. No. 808,554, Dec. 16, 1991, Pat. No. Des. 362,825, which is a continuation-in-part of Ser. No. 710,272, Jun. 4, 1991, Pat. No. Des. 365,302, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, Ser. No. 411,249, Sep. 22, 1989, Pat. No. Des. 358,113, Ser. No. 411,247, Sep. 22, 1989, abandoned, and Ser. No. 411,245, Sep. 22, 1989, abandoned. This application Jan. 16, 1996, Ser. No. 49,034
Term of patent 14 years
LOC (6) Cl. 11 - *02*
U.S. Cl. D11—164



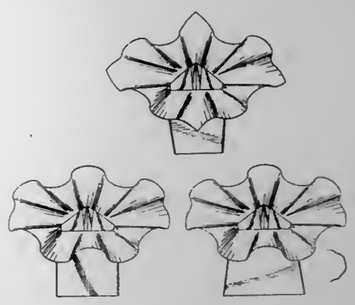
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Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Southpac Trust International, Inc., Oklahoma City, Okla.
Division of Ser. No. 7,760, Apr. 30, 1993, Pat. No. Des. 363,899, which is a continuation-in-part of Ser. No. 782,237, Oct. 18, 1991, Pat. No. Des. 349,076, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, Ser. No. 411,249, Sep. 22, 1989, Pat. No. Des. 358,113, Ser. No. 411,247, Sep. 22, 1989, abandoned, and Ser. No. 411,245, Sep. 22, 1989, abandoned. This application Oct. 18, 1995, Ser. No. 46,635
Term of patent 14 years
LOC (6) Cl. 11 - *02*
U.S. Cl. D11—164



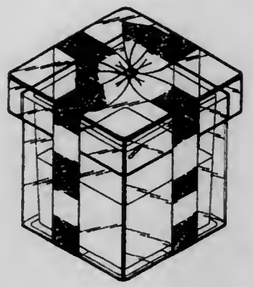
380,415
FLOWER POT COVER
Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Southpac Trust International, Inc., Oklahoma City, Okla.
Division of Ser. No. 3,286, Jan. 5, 1993, Pat. No. Des. 369,324, which is a continuation-in-part of Ser. No. 808,561, Dec. 16, 1991, Pat. No. Des. 363,449, which is a continuation-in-part of Ser. No. 710,272, Jun. 4, 1991, Pat. No. Des. 365,302, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, Ser. No. 411,249, Sep. 22, 1989, Pat. No. Des. 358,113, Ser. No. 411,247, Sep. 22, 1989, abandoned, and Ser. No. 411,245, Sep. 22, 1989, abandoned. This application Jan. 22, 1996, Ser. No. 49,317
Term of patent 14 years
LOC (6) Cl. 11 - *02*
U.S. Cl. D11—164



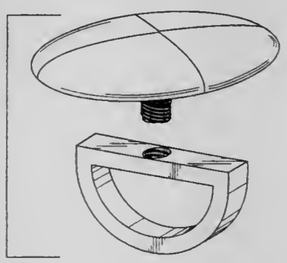
380,416
FLOWER POT COVER
Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Southpac Trust International, Inc., Oklahoma City, Okla.
Division of Ser. No. 3,317, Jan. 5, 1993, Pat. No. Des. 371,090, which is a continuation-in-part of Ser. No. 808,555, Dec. 16, 1991, Pat. No. Des. 361,959, which is a continuation-in-part of Ser. No. 710,272, Jun. 4, 1991, Pat. No. Des. 365,302, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, Ser. No. 411,249, Sep. 22, 1989, Pat. No. Des. 358,113, Ser. No. 411,247, Sep. 22, 1989, abandoned, and Ser. No. 411,245, Sep. 22, 1989, abandoned. This application May 6, 1996, Ser. No. 53,624
Term of patent 14 years
LOC (6) Cl. 11 - *02*
U.S. Cl. D11—164



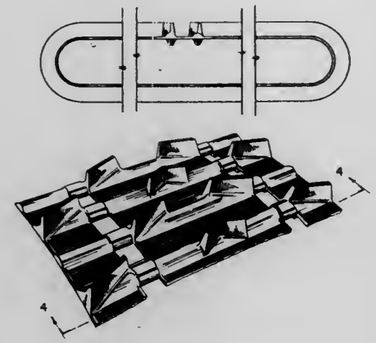
380,417
CANDLE HOLDER
Christopher Hardy, 2500 Stockyard Rd., Springfield, Ill. 62072
Filed May 2, 1997, Ser. No. 65,718
Term of patent 14 years
LOC (6) Cl. 26 - *01*
U.S. Cl. D26—16



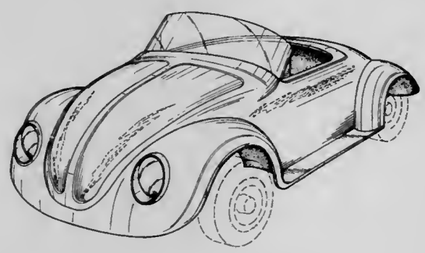
380,418
CHANGEABLE FACE BUTTON
Allan G. Michael, 5811 58 Ave., Ste. 205,, Red Deer, AB T4N 4T9, Canada
Filed Dec. 8, 1995, Ser. No. 47,624
Term of patent 14 years
LOC (6) Cl. 02 - *07*
U.S. Cl. D11—222



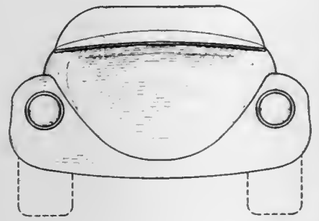
380,419
SNOWMOBLE TRACK
Mark B. Thompson, Providence, Utah, and Serge A. Bedard, Valcourt, Canada, assignors to Bombardier Inc., Montreal, Canada
Filed Dec. 29, 1994, Ser. No. 32,817
Term of patent 14 years
LOC (6) Cl. 12 - *14*
U.S. Cl. D12—7



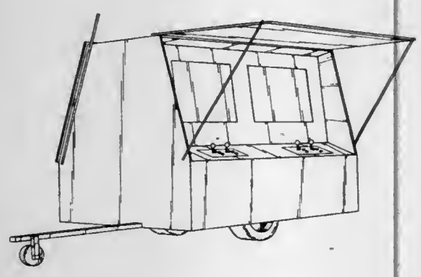
380,420
AUTOMOBILE BODY
Ron F. Croteau, 1013 SE. 9th Ter., Cape Coral, Fla. 33990
Filed Apr. 5, 1996, Ser. No. 52,701
Term of patent 14 years
LOC (6) Cl. 12 - *08*
U.S. Cl. D12—91



380,421
ROADSTER KIT CAR BODY
Paul S. Hoard, 1124 SE. 4th St., Cape Coral, Fla. 33990
Filed Apr. 12, 1996, Ser. No. 52,987
Term of patent 14 years
LOC (6) Cl. 12 - *08*
U.S. Cl. D12—91



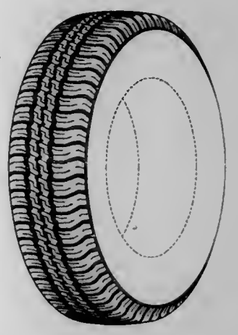
380,422
TRAILER
Mark Murray Cairney, 259 Muritai Road, Eastbourne, Wellington, New Zealand
Filed Feb. 17, 1995, Ser. No. 35,053
Claims priority, application New Zealand, Aug. 19, 1994, 26120
Term of patent 14 years
LOC (6) Cl. 12 - *10*
U.S. Cl. D12—102



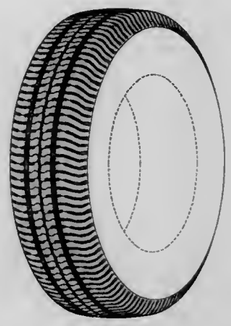
380,423
HANDLE
Heather Jean Martellacci, 10 Downsview Cres, Nepean, Ontario, Canada, and Tom Fredrick Griffin, 111 Crosby Dr., Bobcaygeon, On, Canada
Filed Jun. 22, 1995, Ser. No. 40,586
Term of patent 14 years
LOC (6) Cl. 12 - *11*
U.S. Cl. D12—114



380,424
TIRE TREAD
Stephanie Carol Brown; Keith Carl Trares, both of Akron, Ohio; Andy Ngoc Hoang, Schaumburg, Ill.; Anthony John Scarpitti, Uniontown, Ohio; Michael Alois Kolowski, Mogadore, Ohio; Sean David Montag, Westerville, Ohio, and Frederick William Miller, Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Aug. 30, 1995, Ser. No. 43,254
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—146



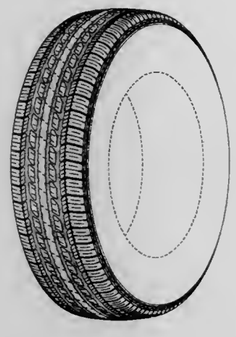
380,425
TIRE TREAD
Stephanie Carol Brown; Keith Carl Trares, both of Akron, Ohio; Andy Ngoc Hoang, Schaumburg, Ill.; Anthony John Scarpitti, Uniontown, Ohio; Michael Alois Kolowski, Mogadorf, Ohio; Sean David Montag, Westerville, Ohio, and Frederick William Miller, Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Aug. 30, 1995, Ser. No. 43,255
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—146



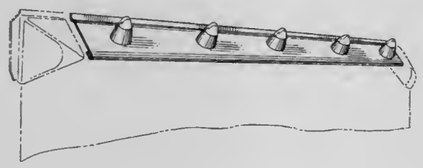
380,426
TIRE TREAD
Christopher Paul Johenning; David Dean Hutson, both of Akron; Randall Raymond Brayer, North Canton, and Terry John Waibel, Wadsworth, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Nov. 27, 1995, Ser. No. 47,021
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147



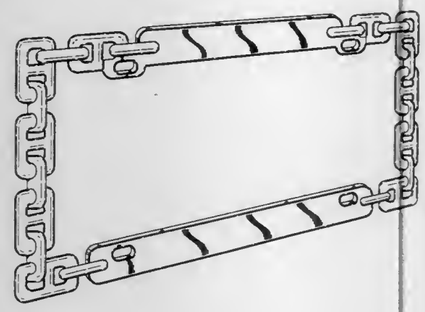
380,427
TIRE TREAD
David Ray Hubbell, Jr., Hartville, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Jan. 17, 1996, Ser. No. 49,102
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147



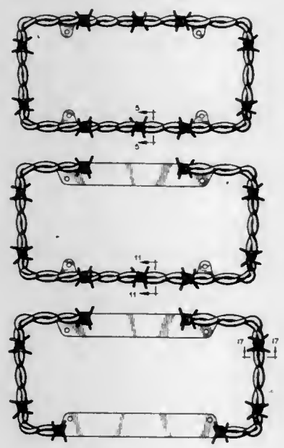
380,428
LIGHTED WINDOW SHIELD
James L. Mayers, Jr., 2235 Honore, North Chicago, Ill. 60064
Filed Jul. 7, 1995, Ser. No. 41,331
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—191



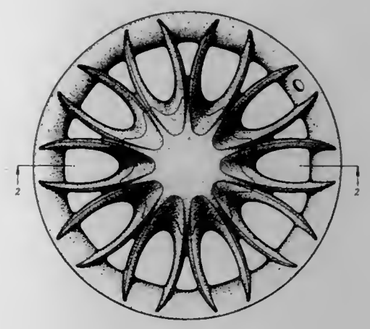
380,429
LICENSE PLATE HOLDER HAVING CHAIN-LINK ORNAMENTATION
Lawrence E. Clark, and Peter S. Reynolds, both of Miami, Fla., assignors to Quest Industries, Inc., Miami, Fla.
Filed Nov. 28, 1995, Ser. No. 47,166
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—193



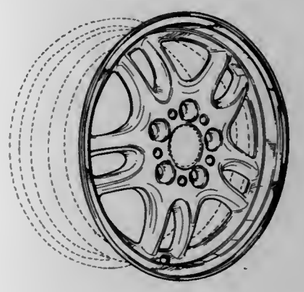
380,430
BARBED WIRE LICENSE PLATE FRAME
Paul E. Spencer, 23302 S. Normandie Ave., Torrance, Calif. 90502
Filed Apr. 8, 1996, Ser. No. 52,569
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—193



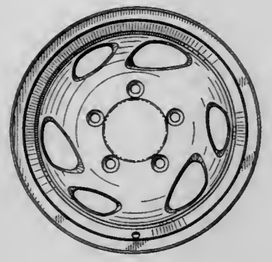
380,431
CUSTOM WHEEL
Larry P. Brown, 274 W. Los Flores Dr., Altadena, Calif. 91001, and Frederick D. Brown, 3732 S. Dalton Ave., Los Angeles, Calif. 90018
Filed Mar. 4, 1996, Ser. No. 51,137
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—209



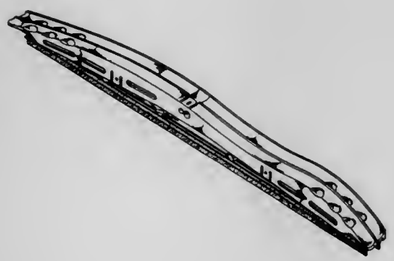
380,432
FRONT FACE OF A VEHICLE WHEEL
Jan Hettler, Munich, Germany, assignor to Bayerische Motoren Werke AG, Munich, Germany
Filed Sep. 16, 1994, Ser. No. 28,477
Claims priority, application Germany, Mar. 16, 1994, 94 02 369.7
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—209



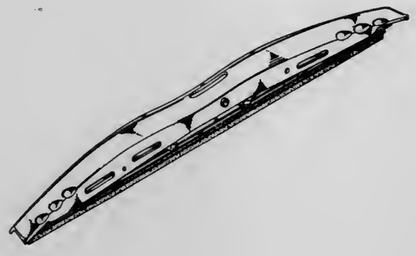
380,433
VEHICLE WHEEL FRONT FACE
Suny Chung, Placentia, Calif., assignor to American Racing Equipment, Inc., Rancho Dominguez, Calif.
Filed Mar. 29, 1996, Ser. No. 52,625
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—209



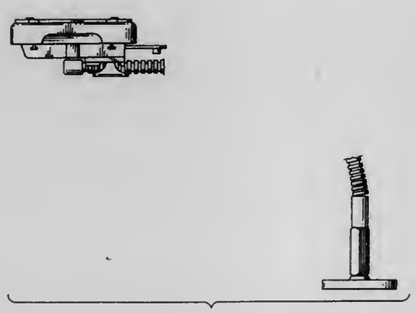
380,434
WIPER
Liang-Yuan Chen, P. O. Box 82-144, Taipei, Taiwan
Filed May 2, 1996, Ser. No. 53,912
Term of patent 14 years
LOC (6) Cl. 12 - *06*
U.S. Cl. D12—219



380,435
WIPER
Liang-Yuan Chen, P.O. Box 82-144, Taipei, Taiwan
Filed May 2, 1996, Ser. No. 53,913
Term of patent 14 years
LOC (6) Cl. 12 - *06*
U.S. Cl. D12—219



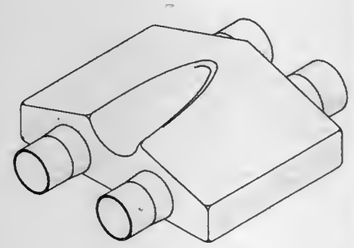
380,436
VEHICLE MOUNT FOR PORTABLE COMPACT DISC PLAYER
Roy Nimpoeno, Monterey Park, and Roger J. Alves, Simi Valley, both of Calif., assignors to Scosche Industries, Inc., Moorpark, Calif.
Filed Jul. 11, 1994, Ser. No. 25,739
Term of patent 14 years
LOC (6) Cl. 12 - *06*
U.S. Cl. D12—223



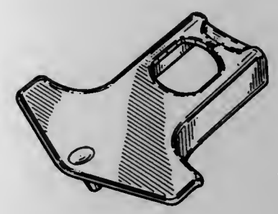
380,437
PERSONAL WATER CRAFT
Donald A. Saulters, 5913 Carlo Dr., Memphis, Tenn. 38119
Filed May 6, 1996, Ser. No. 54,051
Term of patent 14 years
LOC (6) Cl. 12 - *06*
U.S. Cl. D12—307



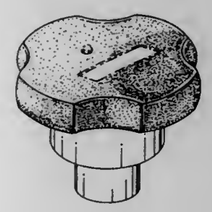
380,438
MARINE MUFFLER
Wayne A. LeQuire, 701 Southwind Rd., Maryville, Tenn. 37801
Continuation-in-part of Ser. No. 512,935, Aug. 9, 1995, Pat. No. 5,594,217. This application Sep. 18, 1995, Ser. No. 44,728
Term of patent 14 years
LOC (6) Cl. 12 - *06*
U.S. Cl. D12—317



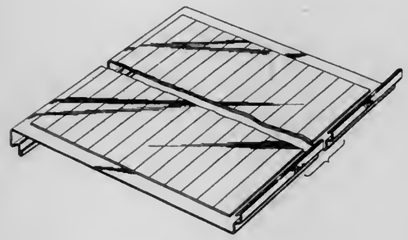
380,439
CLAMPING PLATE FOR LOAD CARRIER FOOT
Anders Lundgren, Grimsås, Sweden, assignor to Industri AB Thule, Hillerstorp, Sweden
Filed Aug. 21, 1995, Ser. No. 42,878
Claims priority, application Sweden, Jun. 15, 1995, 95-1221
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—414



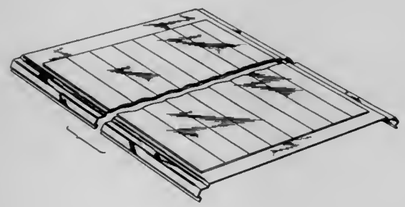
380,440
ULTRASONIC TRANSDUCER HOUSING
Roger J. Talish, Fairfield; Kenneth J. Urgovitch, Clifton; Kenneth J. Scowen, Springfield, and John P. Ryaby, Essex Fells, all of N.J., assignors to Exogen, Inc., Piscataway, N.J.
Filed Feb. 13, 1995, Ser. No. 34,813
Term of patent 14 years
LOC (6) Cl. 13 - *02*
U.S. Cl. D13—101



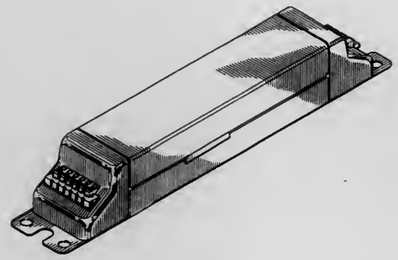
380,441
ROOF PLATE WITH SOLAR BATTERY
Tadashi Fukuhara; Jun Miyata, both of Fukaya; Kimitoshi Fukae, Nara; Yuji Inoue, Nara, and Masahiro Mori, Nara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 28, 1995, Ser. No. 44,645
Claims priority, application Japan, Mar. 31, 1995, 7-8898
Term of patent 14 years
LOC (6) Cl. 13 - *02*
U.S. Cl. D13—102



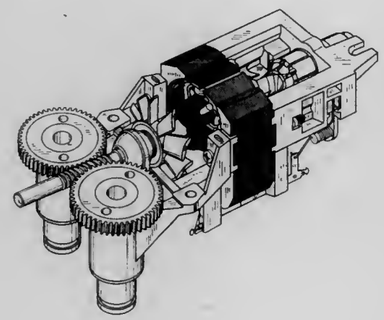
380,442
ROOF PLATE WITH SOLAR BATTERY
Tadashi Fukuhara, Fukaya; Hideki Shibata, Kumagaya; Takayuki Saito, Kumagaya; Katsuji Mukai, Kumagaya; Kimitoshi Fukae, Nara; Yuji Inoue, Nara, and Masahiro Mori, Nara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 28, 1995, Ser. No. 44,654
Claims priority, application Japan, Mar. 31, 1995, 7-8896
Term of patent 14 years
LOC (6) Cl. 13 - *02*
U.S. Cl. D13—102



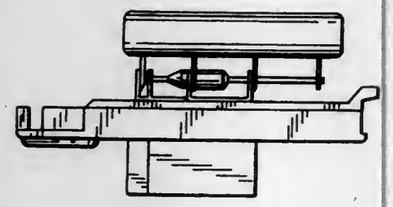
380,443
FLUORESCENT LAMP BALLAST
Youngkee Ahn, Buffalo Grove, and Petr Kacena, Chicago, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Sep. 29, 1995, Ser. No. 44,691
Term of patent 14 years
LOC (6) Cl. 13 - *02*
U.S. Cl. D13—110



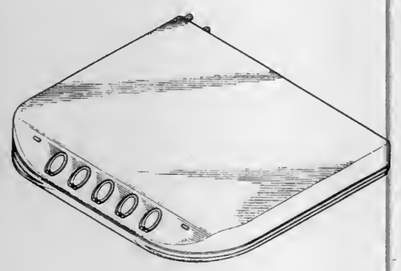
380,444
ELECTRIC MOTOR
Kam-Shing Mok, Yuen Long, Hong Kong, assignor to Johnson Electric S.A., Switzerland
Filed May 4, 1995, Ser. No. 38,358
Term of patent 14 years
LOC (6) Cl. 13 - *02*
U.S. Cl. D13—112



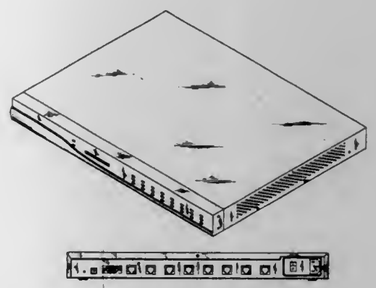
380,445
RESISTOR ARRANGEMENT FOR A FAN FOR MOTOR VEHICLES
Karl-Heinz Doerr, Wuelfrath; Hans-Joachim Heinze, Witten; Karlheinz Neumann, Remscheid, and Peter Stricker, Sprockhoevel, all of Germany, assignors to Stannol Loetmittelfabrik Wilhelm Paff GmbH & Co. KG, Wuppertal, Germany
Filed Mar. 11, 1996, Ser. No. 51,463
Claims priority, application Germany, Dec. 27, 1995, M-95-10-128.4
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—125



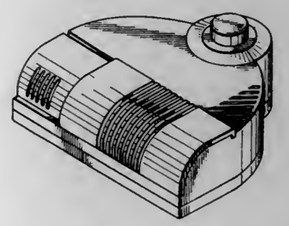
380,446
COMPUTER SOCKET CONNECTOR
Jonie Chou, 6F, No. 2, Lane 348, Chung Shan Rd., Sec. 2, Chung Ho City, Taipei Hsien, Taiwan
Filed Jan. 11, 1996, Ser. No. 48,665
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—142



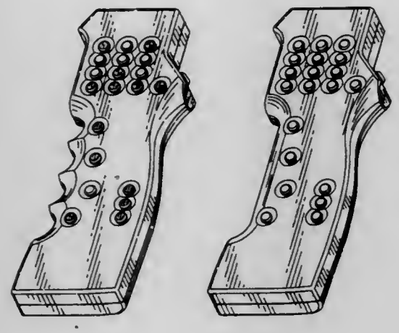
380,447
ETHERNET SWITCHING HUB
Chi-Chuan Chen, Hsinchu, and Shu-Chen Huang, Taoyuan, both of Taiwan, assignors to Industrial Techology Research Institute, Hsinchu, Taiwan
Filed Aug. 8, 1995, Ser. No. 42,356
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—164



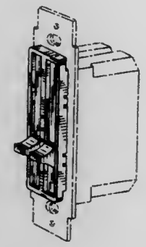
380,448
FOOT DIMMER SWITCH
Pao-Chih Tung, No. 155, Chien-I Rd., Chung Ho City, Taipei Hsien, Taiwan
Filed Nov. 28, 1995, Ser. No. 47,201
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—167



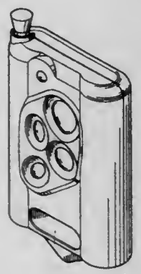
380,449
REMOTE CONTROL UNIT WITH THUMB-OPERATED POINTER
Dennis Palatov, 36 Nightingale Dr., Aliso Viejo, Calif. 92656
Filed Apr. 18, 1996, Ser. No. 53,240
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—168



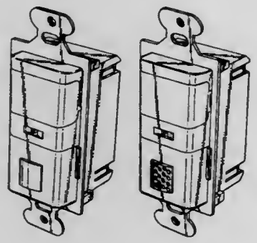
380,451
FACEPLATE FOR A DUAL FAN/LIGHT CONTROLLER HOUSING
Edward Krajci, Franklin Square, and Richard C. Doyle, Little Neck, both of N.Y., assignors to Leviton Manufacturing Co., Inc., Little Neck, N.Y.
Filed Jan. 23, 1996, Ser. No. 49,332
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—170



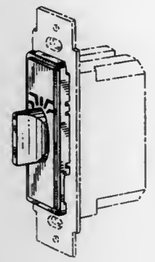
380,450
REMOTE CONTROL
Spencer Tsai, Fl. 11, No. 31, Sec. 5, Nanking E. Road, Taipei, Taiwan
Filed Feb. 13, 1996, Ser. No. 50,318
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—168



380,452
WALL-MOUNTED SWITCH
Jerome M. Mix, Redwood City, and Charles C Hu, Saratoga, both of Calif., assignors to The Watt Stopper, Santa Clara, Calif.
Filed Jul. 13, 1995, Ser. No. 41,397
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—171



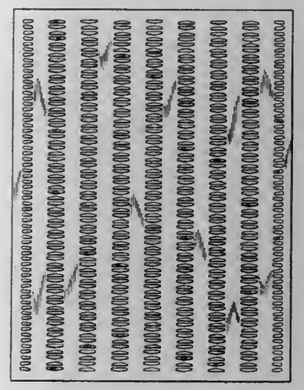
380,453
FACEPLATE FOR A ROTARY SWITCH HOUSING
Edward Krajci, Franklin Square, and Saul Rosenbaum, East Meadow, both of N.Y., assignors to Leviton Manufacturing Co., Inc., Little Neck, N.Y.
Filed Jan. 23, 1996, Ser. No. 49,324
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—177



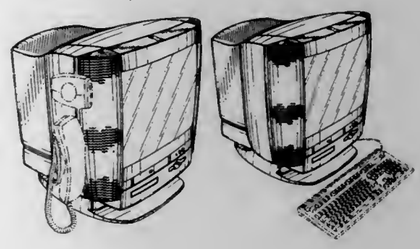
380,454
WAFER BOAT
Hiroyuki Iwai; Katsutoshi Ishii, and Hitoshi Kato, all of Kanagawa-ken, Japan, assignors to Tokyo Electron Limited, Tokyo-to, Japan
Filed Nov. 30, 1995, Ser. No. 47,278
Claims priority, application Japan, May 30, 1995, 7-15171; May 30, 1995, 7-15173
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—182



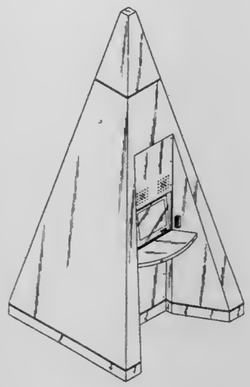
380,455
PRINTED CIRCUIT BOARD HOLDER
Willard J. Sickles, Dalton; Jeffrey C. Olson, Wilkes-Barre, and André F. Kabacinski, Moosic, all of Pa., assignors to Metro Industries, Inc., Reno, Nev.
Filed Jul. 21, 1995, Ser. No. 41,673
Term of patent 14 years
LOC (6) Cl. 13 - *99*
U.S. Cl. D13—184



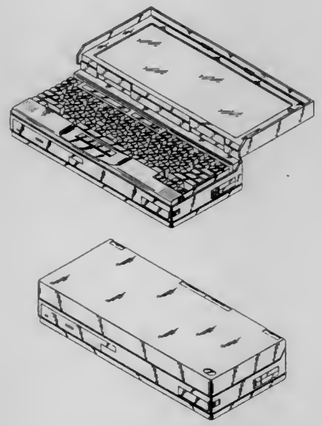
380,456
COMPUTER ENCLOSURE
Daniel J. Coster, San Francisco, and Timothy J. Parsey, Palo Alto, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.
Filed Nov. 8, 1995, Ser. No. 46,185
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—113



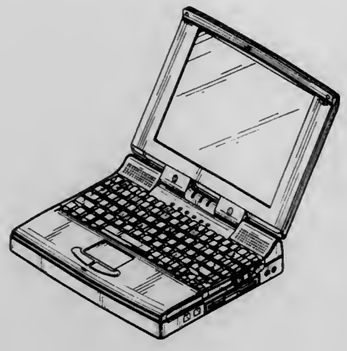
380,457
FREE STANDING BI-LEVEL PERSONAL COMPUTER STATION
Neil R. Senturia, La Jolla; James P. Nicholas, and Dennis T. Rogers, both of San Diego, all of Calif., assignors to Senturia Investments, Inc., San Diego, Calif.
Filed Feb. 16, 1996, Ser. No. 50,401
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—103



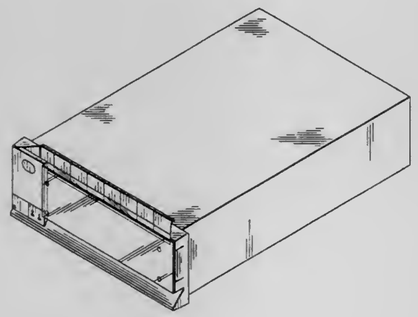
380,458
PORTABLE PERSONAL COMPUTER
Tomoyuki Takahashi, Fujisawa; Kazuhiko Yamazaki, Hiratsuka, both of Japan, and Samuel Lucente, Stamford, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 11, 1996, Ser. No. 51,409
Claims priority, application Japan, Sep. 11, 1995, 7-26734
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—106



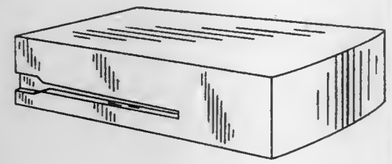
380,459
PERSONAL COMPUTER
Yoichi Tanimura; Toru Makidera, both of Nara-ken, and Yasuhiko Mano, Hiroshima-ken, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Mar. 12, 1996, Ser. No. 51,530
Claims priority, application Japan, Sep. 14, 1995, 7-27274
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—106



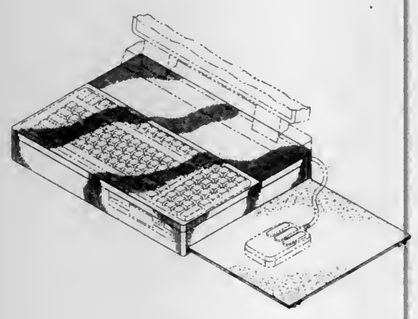
380,460
HARD DISK DRAWER OF A RACK SYSTEM FOR ELECTRONIC DEVICES
Pedro Marcos Alfonso, Austin, Tex., and Michael Horton Sharp, Renfrewshire, United Kingdom, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 9, 1995, Ser. No. 40,068
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—109



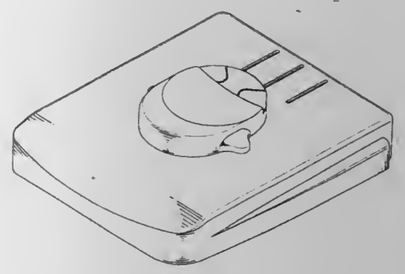
380,461
INSERTABLE MASS STORAGE MODULE
Michael A. Mihalik, Beaverton, and Kim S. Porter, Portland, both of Oreg., assignors to La Cie, Ltd., Beaverton, Oreg.
Division of Ser. No. 27,326, Aug. 18, 1994, Pat. No. Des. 366,255, which is a continuation of Ser. No. 198,630, Feb. 18, 1994, Pat. No. 5,515,239. This application Aug. 25, 1995, Ser. No. 43,368
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—114



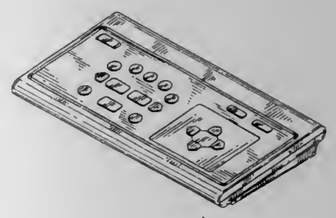
380,462
NOTEBOOK COMPUTER RETRACTABLE MOUSE PAD CASE
Ronal E. Wilson, 403 Tiffany Trail, Richardson, Tex. 75081-5544
Filed Jan. 16, 1996, Ser. No. 48,968
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—114



380,463
MOUSE
Chun Kuo Wu, 18F1-6, No. 1, Bao Sheng Rd., Yuan Ho City, Taipei Hsien, Taiwan
Filed Mar. 14, 1996, Ser. No. 51,602
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—114

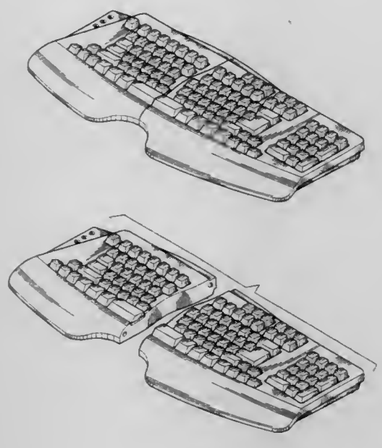


380,464
KEYBOARD FOR A DATA RECORDER
Takashi Ikenaga, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Dec. 5, 1995, Ser. No. 47,482
Claims priority, application Japan, Jun. 20, 1995, 7-17400
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—115

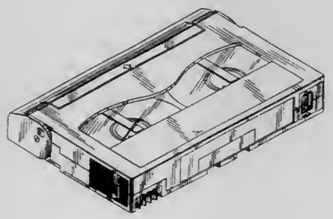


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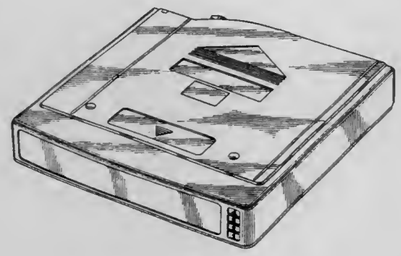
380,465
ERGONOMIC KEYBOARD
Joe Chang, and Robert Fan, both of Taipei, Taiwan, assignors to Behavior Tech Computer Corporation, Taipei, Taiwan
Filed Mar. 26, 1996, Ser. No. 52,253
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—115



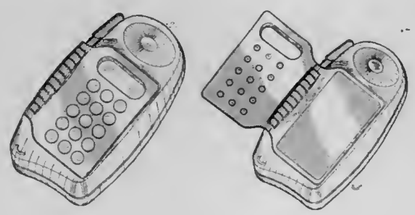
380,466
TAPE CARTRIDGE
Toshio Iribe, 7-35 Kitashinagawa 6 chome, Shinagawa-ku, Tokyo, Japan
Filed Feb. 7, 1996, Ser. No. 50,006
Term of patent 14 years
LOC (6) Cl. 14 - *99*
U.S. Cl. D14—121



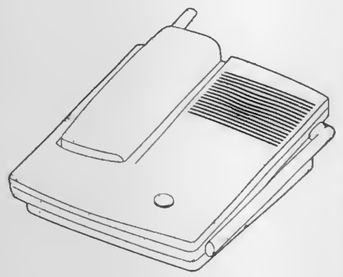
380,467
MAGAZINE FOR COMPACT DISKS
Hiroshi Harada, and Hiroyuki Kagaya, both of Fukushima-ken, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan
Filed Apr. 26, 1996, Ser. No. 55,736
Claims priority, application Japan, Oct. 26, 1995, 7-32222
Term of patent 14 years
LOC (6) Cl. 14 - *99*
U.S. Cl. D14—121



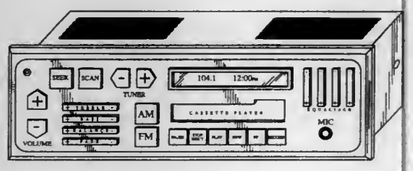
380,468
PORTABLE RADIO
Frank M. Tyneski, Ft. Lauderdale; Craig F Siddoway, Davie, and Bruce A. Claxton, Coral Springs, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Sep. 19, 1994, Ser. No. 28,535
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—137



380,469
TELEPHONE SET
Daniel R. Biskup, Somerset; Pratod V. Kasbekar, Manalapan, both of N.J.; Michael John Nuttall, Portola Valley, Calif.; Heidi Anne Rajan, Morganville, N.J.; Christopher A. Robinette, Woodside, Calif.; John Henry Schaffeld, New Vernon, and Chaonong Yoh, Matawan, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.
Filed Jan. 4, 1995, Ser. No. 33,033
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—149



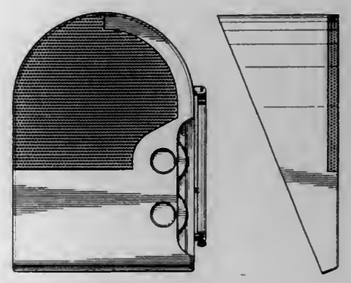
380,470
AUTOMOBILE CASSETTE RECORDER/PLAYER/RADIO
Charles Burns, 2715 Milam St., Orange, Tex. 77630
Filed Sep. 29, 1995, Ser. No. 44,782
Term of patent 14 years
LOC (6) Cl. 14 - *01*
U.S. Cl. D14—157



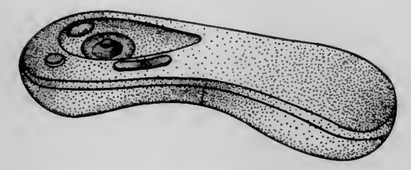
380,471
PAGER
Mark Biasotti, San Jose; Michael John Nuttall, Portola Valley, both of Calif.; John Henry Schaffeld, New Vernon, and Jose Antonio Sosa, Hackettstown, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.
Filed Jan. 4, 1995, Ser. No. 33,022
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—191



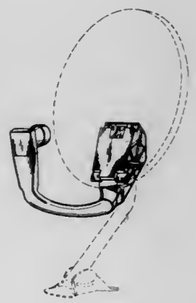
380,472
RADIO
Ronnie Chi Wah Mak, Kowloon, Hong Kong, assignor to Sanny Electronics Limited, Kowloon, Hong Kong
Filed Apr. 10, 1996, Ser. No. 52,945
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—195



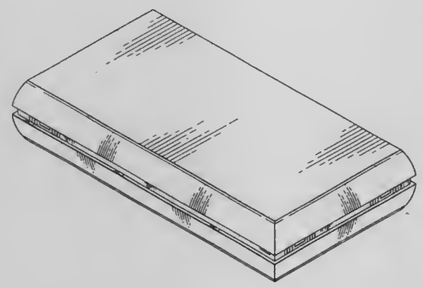
380,473
REMOTE CONTROLLER
Toru Otani, Chiba-ken, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Aug. 14, 1995, Ser. No. 42,667
Claims priority, application Japan, Mar. 8, 1995, 7-6457
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—218



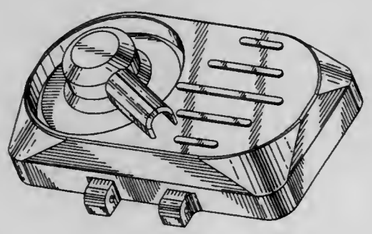
380,474
ANTENNA SUPPORT ARM ASSEMBLY
Gregory J. Pietrangelo, Monrovia; Michael B. Middeke, Jefferson, both of Md.; Steven B. Cook, Oceanside, Calif., and Derek Charles Cunningham, Lichfield, England, assignors to Hughes Electronics and Moulded Plastics (Birmingham) Ltd., Los Angeles, Calif.
Filed Feb. 29, 1996, Ser. No. 50,884
Term of patent 14 years
LOC (6) Cl. 14 - *01*
U.S. Cl. D14—231



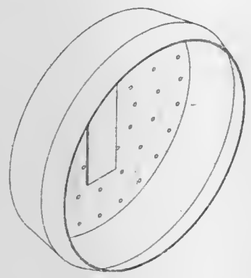
380,475
TELECOMMUNICATION APPARATUS HOUSING
Søren Rasmussen, Frederiksberg, Denmark, assignor to Ericsson Business Mobile Networks B.V., Amsterdam, Netherlands
Filed Mar. 27, 1996, Ser. No. 52,261
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—240



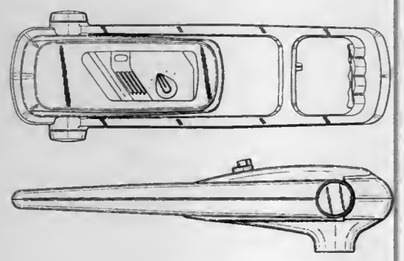
380,476
RETRACTABLE EARPIECE FOR A COMPACT WIRELESS TELEPHONE
Carrie L. Zochert; Barry Voroba, both of Minnetonka, and Daniel E. Kobylarz, Bloomington, all of Minn., assignors to MicroTalk Technologies, Inc., Minnetonka, Minn.
Filed Jun. 20, 1994, Ser. No. 24,753
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—249



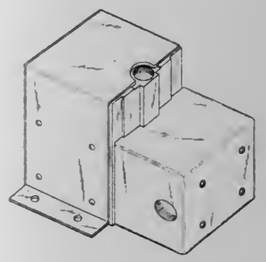
380,477
SANITARY BIODEGRADABLE TELEPHONE MOUTH/EAR PIECE COVER
James A. Williams, and Colton Jones, both of 1980 Blue Fox Dr., Lansdale, Pa. 19446
Filed Feb. 9, 1996, Ser. No. 50,723
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—250



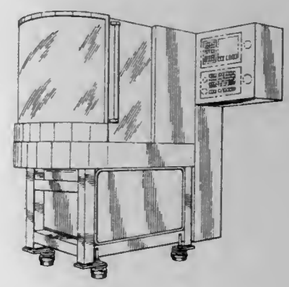
380,478
MULTI-POSITION TROLLING MOTOR HEAD AND HANDLE
Jack Robbins, Derby, Kans., and William A. Henderson, Starkville, Miss., assignors to Brunswick Corporation, Lake Forest, Ill.
Filed Apr. 20, 1995, Ser. No. 37,832
Term of patent 14 years
LOC (6) Cl. 15 - *01*
U.S. Cl. D15—4



380,479
MODULAR PUMP
George A. Cantley, Akron, and David L. Prince, Medina, both of Ohio, assignors to Teledyne Industries, Inc., Los Angeles, Calif.
Filed Mar. 6, 1996, Ser. No. 51,240
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D15—7



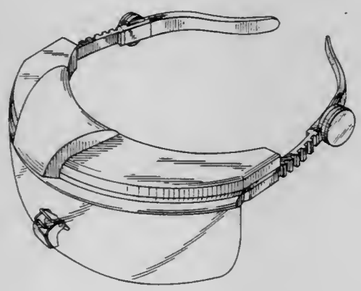
380,480
COMPUTER NUMERICAL CONTROL OPERATED TOOL GRINDER ENCLOSURE
Sinisa V. Marinkovic, Skokie, Ill., assignor to Active Automation, Inc., Elk Grove Village, Ill.
Filed May 9, 1996, Ser. No. 54,301
Term of patent 14 years
LOC (6) Cl. 15 - *09*
U.S. Cl. D15—124



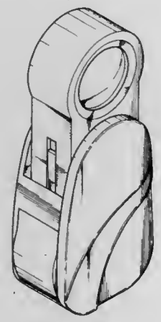
380,481
OIL FILTER DRIP COLLECTOR WITH FLEXIBLE INTERMEDIATE EXTENT
Kioumars Pournaghdi, 11839 Tolentino Dr., Alta Loma, Calif. 91701
Filed May 28, 1996, Ser. No. 55,023
Term of patent 14 years
LOC (6) Cl. 15 - *09*
U.S. Cl. D15—150



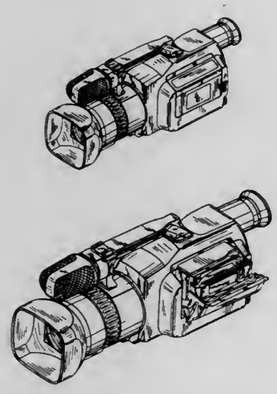
380,482
HEAD MOUNTED DISPLAY SYSTEM
Kevin W. Shimasaki; Joel W. Robinson, both of Bothell; Wendie L. Siverts, Everett, and Theodore F. Pierson, Auburn, all of Wash., assignors to Virtual Vision, Redmond, Wash.
Filed Dec. 4, 1992, Ser. No. 2,216
Term of patent 14 years
LOC (6) Cl. 16 - *06*
U.S. Cl. D16—100



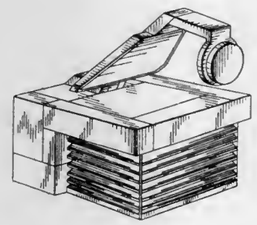
380,483
JEWELRY MAGNIFYING GLASS
Ming-Jin Lee, 7F, No. 21, Lane 67, Lin-Sen N. Rd., Taipei, Taiwan
Filed Jul. 24, 1995, Ser. No. 41,786
Term of patent 14 years
LOC (6) Cl. 16 - *06*
U.S. Cl. D16—135



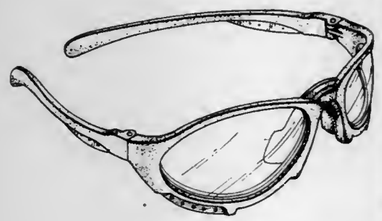
380,484
VIDEO CAMERA COMBINED WITH VIDEO TAPE RECORDER
Kaoru Sumita, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Aug. 2, 1995, Ser. No. 42,133
Claims priority, application Japan, Feb. 2, 1995, 7-2199
Term of patent 14 years
LOC (6) Cl. 16 - *01*
U.S. Cl. D16—202



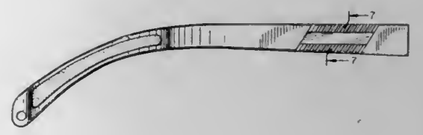
380,485
LCD DAYLIGHT PROJECTOR FOR DATA AND VIDEO WITH INTEGRATED PC
Peter Hein Grunwald, Schlattstrasse 215, 9491 Ruggell, Liechtenstein
Filed Mar. 15, 1996, Ser. No. 51,715
Claims priority, application Germany, Sep. 28, 1995, M 95 07 755.3
Term of patent 14 years
LOC (6) Cl. 16 - *02*
U.S. Cl. D16—232



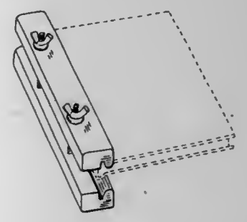
380,486
SUNGLASSES
Jey-Ching Lin, Taipei, Taiwan, assignor to Mao Lin Enterprises Co., Ltd., Taipei, Taiwan
Filed May 15, 1996, Ser. No. 54,517
Term of patent 14 years
LOC (6) Cl. 16 - *06*
U.S. Cl. D16—327



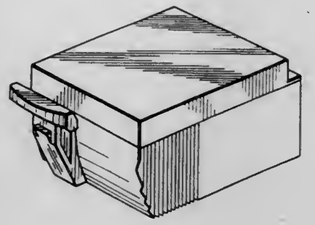
380,487
EYEGLASS TEMPLE PIECE
Stephen Nevitt, Sarasota, Fla., assignor to Solar-Mates, Inc., Sarasota, Fla.
Filed May 22, 1996, Ser. No. 54,794
Term of patent 14 years
LOC (6) Cl. 16 - *06*
U.S. Cl. D16—335



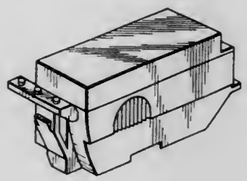
380,488
APPARATUS FOR BINDING BOOKS
Karen L. Elstad, 12836 Verdin St. Northwest, Coon Rapids, Minn. 55448, and Richard E. Rayment, 1315 15th Ave. South, Moorhead, Minn. 56560
Filed Mar. 9, 1995, Ser. No. 35,899
Term of patent 14 years
LOC (6) Cl. 18 - *04*
U.S. Cl. D18—34



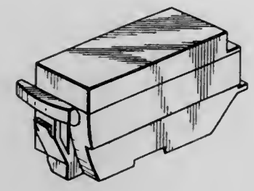
380,489
INK CARTRIDGE FOR PRINTER
Naoki Tashiro, Kawasaki; Toshihiko Ujita, Yamato; Teruo Arashima, Kawasaki; Yuji Hamasaki, Sagamihara; Hisashi Yamamoto, Hiratsuka, and Wataru Takahashi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 4, 1995, Ser. No. 42,241
Claims priority, application Japan, Feb. 6, 1995, 7-2775
The portion of the term of this patent subsequent to Dec. 3, 2010, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 18 - *02*
U.S. Cl. D18—56



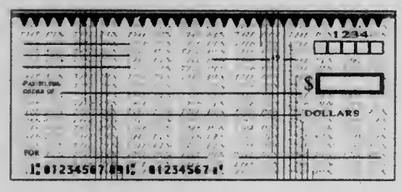
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Filed Aug. 4, 1995, Ser. No. 42,242
Claims priority, application Japan, Feb. 6, 1995, 7-2794
The portion of the term of this patent subsequent to Dec. 31, 2010, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 18 - *02*
U.S. Cl. D18—56



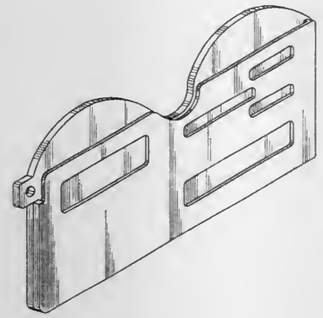
380,491
INK CARTRIDGE FOR PRINTER
Naoki Tashiro, Kawasaki; Toshihiko Ujita, Yamato; Teruo Arashima, Kawasaki; Yuji Hamasaki, Sagamihara; Hisashi Yamamoto, Hiratsuka, and Wataru Takahashi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 4, 1995, Ser. No. 42,263
Claims priority, application Japan, Feb. 6, 1995, 7-2795
The portion of the term of this patent subsequent to Dec. 31, 2010, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 18 - *02*
U.S. Cl. D18—56



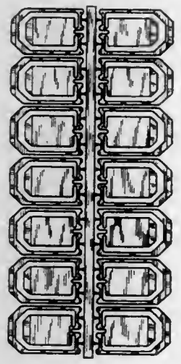
380,492
CHECK
Farid Karzai, 216 S. 152 St., Apt. 81, Seattle, Wash. 98148
Filed Mar. 19, 1996, Ser. No. 51,913
Term of patent 14 years
LOC (6) Cl. 19 - *08*
U.S. Cl. D19—11



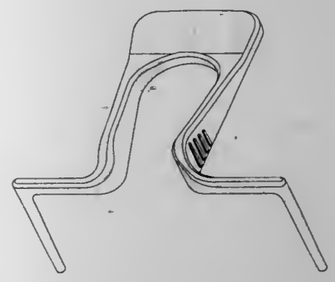
380,493
CHECK READER
Phillip L. Sanders, Floyds Knobs, Ind., assignor to Food Equipment Engineering and Design, Inc., Jeffersonville, Ind.
Filed Mar. 6, 1996, Ser. No. 51,235
Term of patent 14 years
LOC (6) Cl. 19 - *06*
U.S. Cl. D19—37



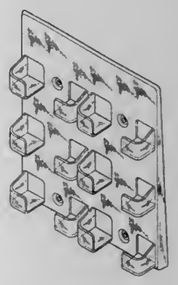
380,494
SHEET OF PAPER CLIPS
Steven L. Molenaar, Willmar, Minn., assignor to Molenaar, Inc., Wilmar, Minn.
Filed May 13, 1996, Ser. No. 54,358
Term of patent 14 years
LOC (6) Cl. 19 - *02*
U.S. Cl. D19—65



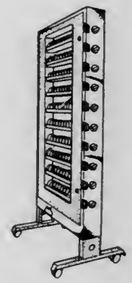
380,495
PAPER HANDLING DEVICE DESIGN
Steven Charles Black, and Duane Christensen, both of Hastings, Minn., assignors to The Smead Manufacturing Company, Hastings, Minn.
Filed May 17, 1996, Ser. No. 54,635
Term of patent 14 years
LOC (6) Cl. 19 - *02*
U.S. Cl. D19—86



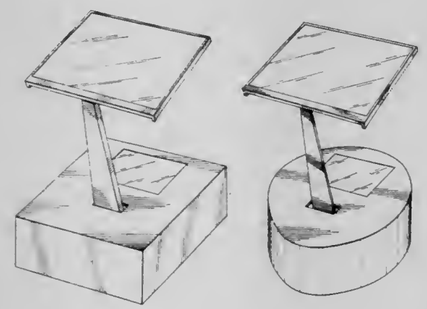
380,496
BUSINESS CARD HOLDER WITH MULTIPLE CARD-SUPPORT PORTIONS
Stephen T. Meyer, Indianapolis, Ind., assignor to Deflecto Corporation, Indianapolis, Ind.
Filed Dec. 11, 1995, Ser. No. 47,659
Term of patent 14 years
LOC (6) Cl. 19 - *02*
U.S. Cl. D19—90



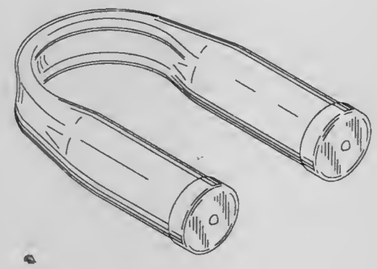
380,497
VENDING MACHINE
Yao Shen Lee, 873 E. Cameron Ct., Brea, Calif. 92621
Filed May 10, 1996, Ser. No. 54,211
Term of patent 14 years
LOC (6) Cl. 20 - *01*
U.S. Cl. D20—4



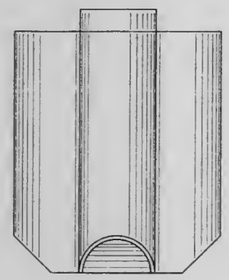
380,498
INTERACTIVE DISPLAY
Donald M. Lunetta, Chappaqua, N.Y., assignor to Interactive Sales Systems, Chappaqua, N.Y.
Filed Feb. 2, 1996, Ser. No. 49,896
Term of patent 14 years
LOC (6) Cl. 20 - *03*
U.S. Cl. D20—10



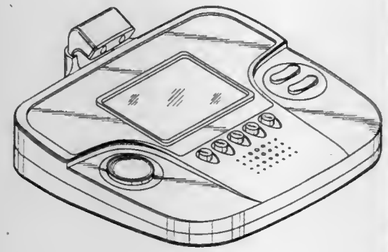
380,499
HORSESTICKS GAME TARGET ASSEMBLY
Sandy F. Kraemer, 2402 Ceresa La., Colorado Springs, Colo. 80909
Filed Apr. 29, 1996, Ser. No. 53,750
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—4



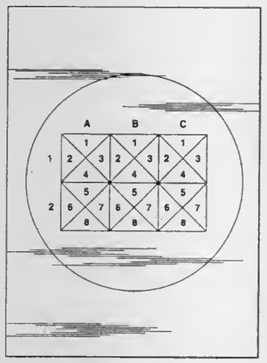
380,500
TOSSED COIN RECEPTACLE FOR RECREATIONAL PURPOSES
Angelo Cusumano, 27 S. Main St., Chatham, Va. 24531
Filed Jun. 23, 1995, Ser. No. 40,691
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—5



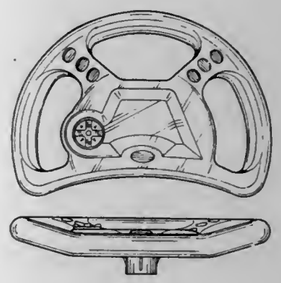
380,501
HAND-HELD ELECTRONIC GAME HOUSING
Ralph F. Osterhout; Hamid Arjomand, both of San Francisco, Calif., and Hon Kin Ngan, New Territories, Hong Kong, assignors to Tiger Electronics, Inc., Vernon Hills, Ill.
Filed Jan. 11, 1996, Ser. No. 48,986
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—13



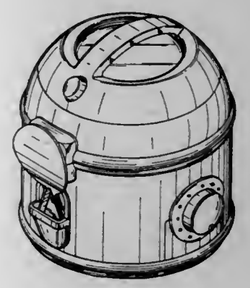
380,502
GAME BOARD
Thomas N. Horton, P.O. Box 241015, Memphis, Tenn. 38124-1015
Filed Feb. 1, 1996, Ser. No. 49,849
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—34



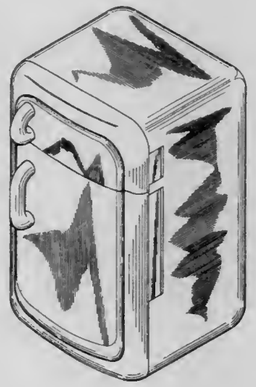
380,503
ANALOG STEERING WHEEL FOR VIDEO GAME
Kelly D. Tyler, Box 841, Jamul, Calif. 91935
Filed Feb. 1, 1996, Ser. No. 49,826
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—48



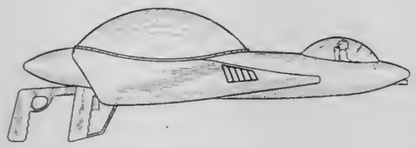
380,504
TOY RICE COOKER
Chin-Long Yang, No. 48, Lane 502, Wen Shyan Rd., Tainan City, Taiwan
Filed Aug. 29, 1995, Ser. No. 43,203
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—122



380,505
TOY REFRIGERATOR
Chin-Long Yang, No. 48, Lane 502, Wen Shyan Rd., Tainan, Taiwan
Filed Aug. 29, 1995, Ser. No. 43,473
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—122



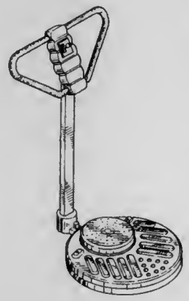
380,506
AIRPLANE SQUIRT GUN WITH PISTOL GRIP
Gabriel Matthews, 5331 Painters St., New Orleans, La. 70122
Filed Feb. 5, 1996, Ser. No. 49,952
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—147



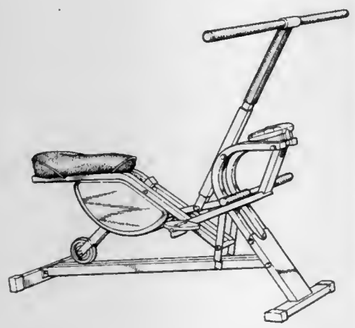
380,507
ICE SKATING DOLL
Bonita P. Giordano; John D. Giordano, and Rebecca S. Palmer, all of 10880 Rutherford Ct., Jacksonville, Fla. 32257
Filed Sep. 27, 1994, Ser. No. 28,973
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—177



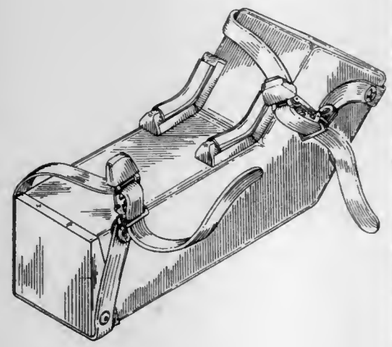
380,508
TWISTING EXERCISE APPARATUS
Hsun-Fang Chang, 16, Lane 277, Chung Shan Rd, Sec 2, Yuan Lin Town, Changhua, Taiwan
Filed Feb. 7, 1996, Ser. No. 50,044
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—193



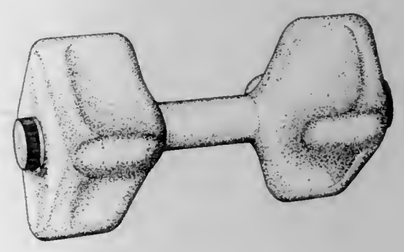
380,509
EXERCISE MACHINE
Kerry Wilkinson, Phoenix, and Gary H. Smith, Salt Lake City, both of Ariz., assignors to HealthRider, Inc., Salt Lake City, Utah
Filed Sep. 15, 1995, Ser. No. 44,030
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—195



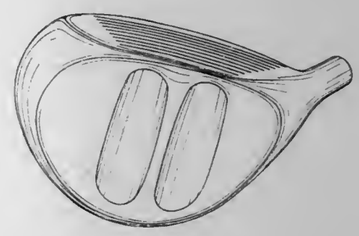
380,510
BICYCLE TRAINING WEIGHT
Jonathan M. Porkka, 288 Pond St., Osterville, Mass. 02655
Filed Nov. 7, 1995, Ser. No. 46,136
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—196



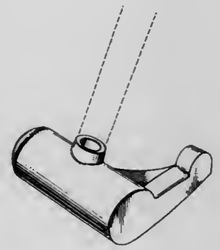
380,511
WATER WEIGHT DUMBBELL
Guy M. Anthony, Jr., Huntington Beach, Calif., assignor to Hydro-Tone Fitness Supply Inc., Huntington Beach, Calif.
Continuation of Ser. No. 28,145, Sep. 8, 1994, abandoned. This application Feb. 27, 1996, Ser. No. 50,967
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—197



380,512
GOLF CLUB HEAD
Yutaka Oku, Higashikurume, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan
Filed Dec. 29, 1995, Ser. No. 48,475
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—214



380,513
GOLF CLUB HEAD
Hiroshi Noda, 15 Skycrest, Irvine, Calif. 92715
Filed Mar. 5, 1996, Ser. No. 51,202
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—217



380,514
GOLF PUTTER
William N. Markley, 84 Juniper Rd., Hollywood, Fla. 33021
Continuation-in-part of Ser. No. 23,506, May 25, 1994, abandoned. This application Sep. 11, 1995, Ser. No. 43,676
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—219



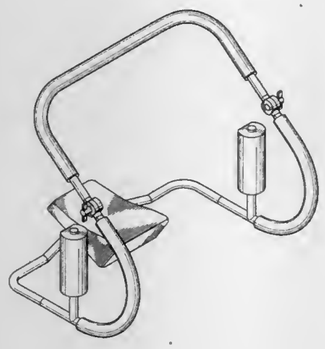
380,515
GOLF PUTTER HEAD
Remo Fabbri, Jr., 32 Trumbull St., New Haven, Conn. 06511, and Mark R. Schmitt, Tipp City, Ohio, assignors to Remo Fabbri, Jr., Cape May, N.J.
Filed Feb. 15, 1996, Ser. No. 50,355
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—219



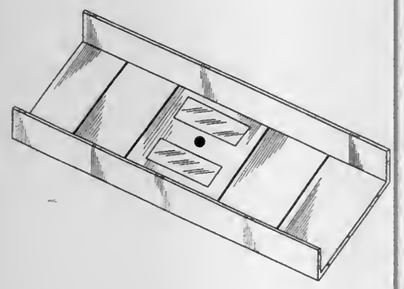
380,516
ICE SKATE
Massimo Cavasin, Montebelluna, Italy, assignor to Roces S.R.L., Montebelluna, Italy
Filed May 20, 1996, Ser. No. 54,718
Claims priority, application WIPO, Jan. 25, 1996, DM035308
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—225



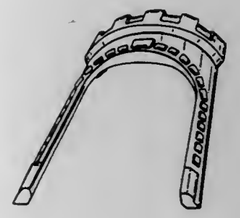
380,517
ABDOMINAL EXERCISE APPARATUS
Charles Ho, Taipei, Taiwan, assignor to Keys Fitness Products, Inc., Dallas, Tex.
Filed Nov. 27, 1995, Ser. No. 47,035
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—191



380,518
GOLF TRAINING DEVICE
Douglas Barton, 625 N. Nanticoke Ave., Endicott, N.Y. 13760, and Scott Katusha, 20 Karic Rd., Conklin, N.Y. 13748
Filed Mar. 31, 1995, Ser. No. 38,753
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—234



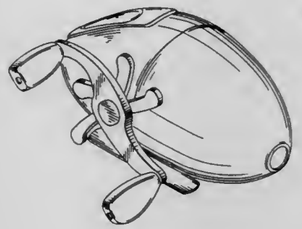
380,519
PANEL FOR AN ACTIVITY SAND CASTLE GYM
Maarten van Huystee, East Aurora, N.Y., assignor to Fisher-Price, Inc., East Aurora, N.Y.
Division of Ser. No. 27,334, Aug. 19, 1994, Pat. No. Des. 367,694. This application Dec. 13, 1995, Ser. No. 47,848
Term of patent 14 years
LOC (6) Cl. 21 - *03*
U.S. Cl. D21—240



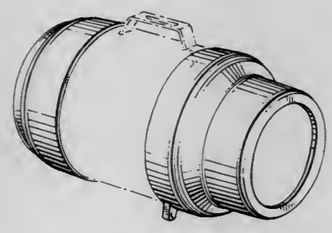
380,520
KNIFE
Gil Hibben, LaGrange, Ky., assignor to United Cutlery Corporation, Sevierville, Tenn.
Filed May 10, 1996, Ser. No. 54,245
Term of patent 14 years
LOC (6) Cl. 22 - *02*
U.S. Cl. D22—118



380,521
FISHING REEL
Richard J. Robbins, Derby, Kans., assignor to Zebco Div. of Brunswick Corporation, Tulsa, Okla.
Filed Jan. 9, 1995, Ser. No. 33,282
Term of patent 14 years
LOC (6) Cl. 22 - *05*
U.S. Cl. D22—141



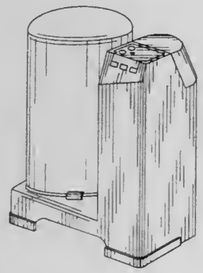
380,522
SET OF AIR TANK END PROTECTORS
Harry B. Moore, Marshfield, and Dean W. Felin, Lebanon, both of Mo., assignors to Champion Products, Inc., Strafford, Mo.
Filed Dec. 18, 1995, Ser. No. 48,034
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—206



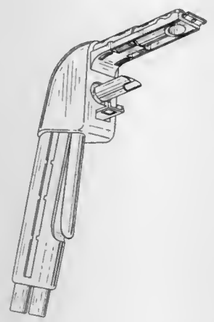
380,523
WELL CASING SECURITY UNIT
David R. Moench, P.O. Box 1029, Oroville, Calif. 95965
Filed Feb. 2, 1996, Ser. No. 50,586
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—206



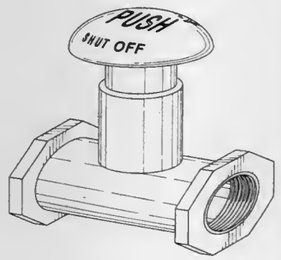
380,524
WATER PURIFIER
Dennis J. Kool, 4385 Burton SE., Kentwood, Mich. 49546
Division of Ser. No. 931,288, Aug. 17, 1992, Pat. No. Des. 355,700. This application Nov. 21, 1994, Ser. No. 31,272
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—209



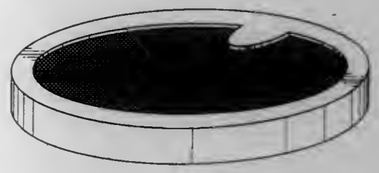
380,525
CONNECTION PIECE FOR MILK PIPELINE VALVE
Kenneth Gustafsson, Sodertalje, and Lars Lallerstedt, Stockholm, both of Sweden, assignors to Tetra Laval Holdings & Finance S.A., Pully, Switzerland
Filed Nov. 29, 1994, Ser. No. 31,501
Claims priority, application Sweden, May 31, 1994, 94-1252; May 31, 1994, 94-1253
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—233



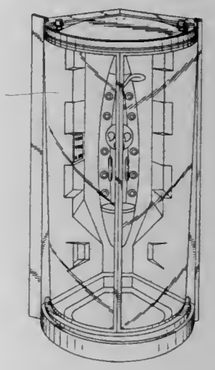
380,526
EMERGENCY SHUT-OFF VALVE
Ronald Pullen, 36380 N. Wilson Rd., Ingleside, Ill. 60041
Filed Mar. 19, 1996, Ser. No. 51,915
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—245



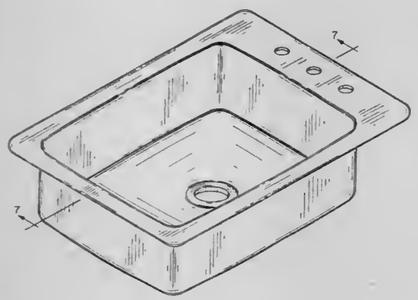
380,527
SINK DRAIN SHIELD
Cherie Velez, 9609 Arbor Meadow Dr., Boynton Beach, Fla. 33437
Filed Mar. 19, 1996, Ser. No. 51,914
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—261



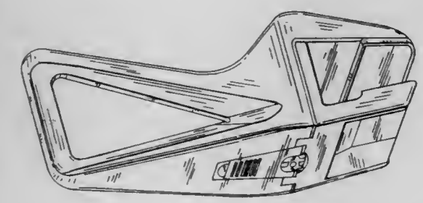
380,528
SHOWER STALL
Mario D'Andrea, Pordenone, Italy, assignor to Domino S.p.A., Pordenone, Italy
Filed Feb. 3, 1995, Ser. No. 34,416
Claims priority, application Italy, Aug. 3, 1994, PN9400014
Term of patent 14 years
LOC (6) Cl. 23 - *02*
U.S. Cl. D23—283



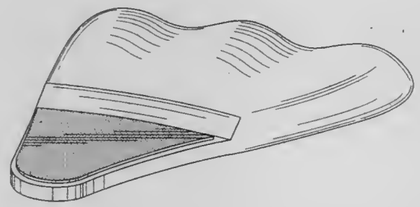
380,529
SINK
John Laughton, East Sussex, England, assignor to American Standard Inc., Piscataway, N.J.
Division of Ser. No. 13,057, Sep. 16, 1993, Pat. No. Des. 355,949. This application Dec. 5, 1994, Ser. No. 31,722
Term of patent 14 years
LOC (6) Cl. 23 - *02*
U.S. Cl. D23—287



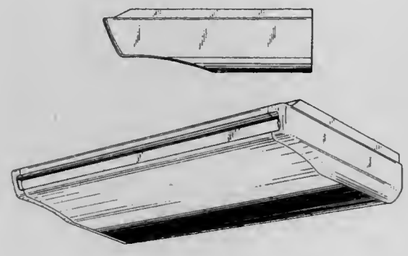
380,530
BATHTUB GRAB BAR
William H. Stanton, Winnipeg, Canada, assignor to Winnipeg Pattern & Model Works Ltd., Winnipeg, Canada
Filed Dec. 18, 1995, Ser. No. 48,008
Term of patent 14 years
LOC (6) Cl. 23 - *02*
U.S. Cl. D23—304



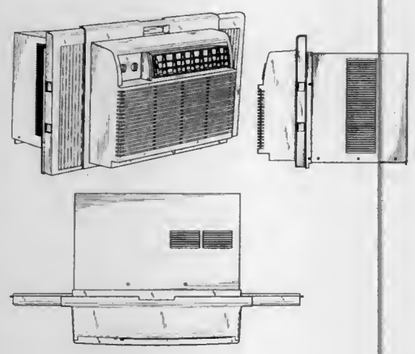
380,531
TOILET SEAT LIFTING HANDLE
Michelle Rostan-Frenzel, 708 Green Ridge Dr., Raleigh, N.C. 27609
Filed Mar. 15, 1996, Ser. No. 51,718
Term of patent 14 years
LOC (6) Cl. 23 - *02*
U.S. Cl. D23—309



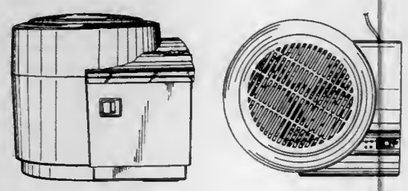
380,532
AIR CONDITIONER
Sanae Aihara, and Takaharu Kabashima, both of Yokohama, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 2, 1996, Ser. No. 52,668
Claims priority, application Japan, Oct. 11, 1995, 7-30332
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—351



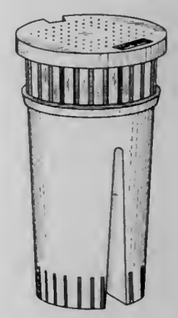
380,533
INTEGRATED COMPACT AIR CONDITIONER
John A. Molnar, Columbus, Ohio, assignor to White Consolidated Industries, Inc., Cleveland, Ohio
Filed Jan. 11, 1996, Ser. No. 48,701
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—353



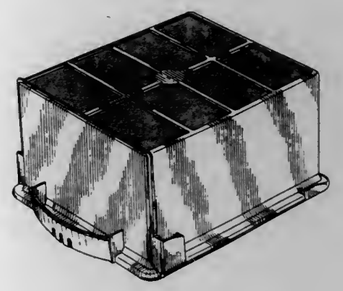
380,534
HUMIDIFIER
Bernard Chiu, Wellesley, Mass.; Jui-Shang Wang, Taipei, Taiwan; John Longan, Natick, Mass., and Robert L. Marvin, Farmington, Conn., assignors to Duracraft Corp., Southborough, Mass.
Filed Sep. 2, 1994, Ser. No. 27,956
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—356



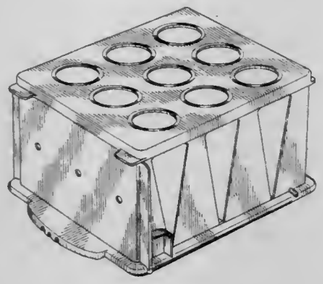
380,535
COMBINED FILTER CARTRIDGE AND LID THEREFOR
Carsten Joergensen, Dattenbergrain 31, CH-6010 Kriens, Switzerland
Filed Sep. 10, 1993, Ser. No. 12,801
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—365



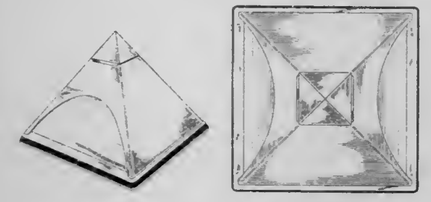
380,536
FILTER FOR AN AIR CLEANER
Iain Paul Ellwood, Groningen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Feb. 20, 1996, Ser. No. 50,483
Claims priority, application Hague Agreement, Sep. 11, 1995, DMA/003-057
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—365



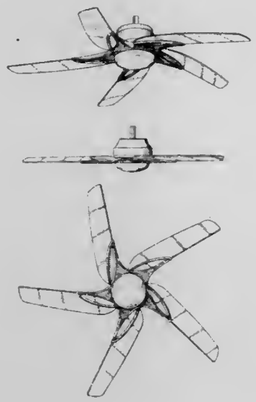
380,537
FILTER FOR AN AIR CLEANER
Iain Paul Ellwood, Groningen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Feb. 20, 1996, Ser. No. 50,484
Claims priority, application Hague Agreement, Sep. 11, 1995, DMA/003 057
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—365



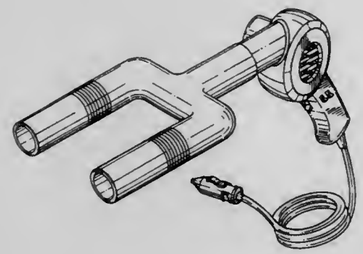
380,538
DECORATIVE ENVIRONMENTAL AROMA MACHINE
Ronald L. Muller, Norwalk, and Duane D. Adams, Deep River, both of Conn., assignors to Philips Electronics North America Corporation, New York, N.Y.
Filed May 2, 1996, Ser. No. 53,957
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—367



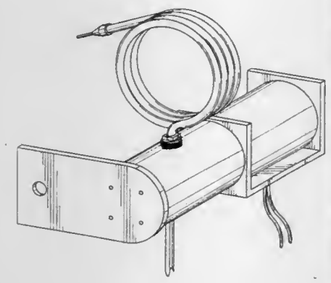
380,539
COMBINED CEILING FAN AND LIGHT
Chentze Liu, Taichung Hsien, Taiwan, assignor to Sheng Yuan Electric Co., Ltd., Taichung Hsien, Taiwan
Filed May 14, 1996, Ser. No. 54,391
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—377



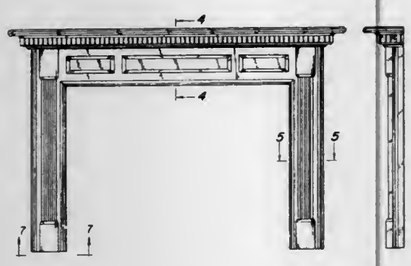
380,540
PORTABLE HEATER-BLOWER
Scott D. Seatvet, and Melanie A. Seatvet, both of 504 E. Third, Eagle, Colo. 81631
Filed May 24, 1995, Ser. No. 39,214
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—383



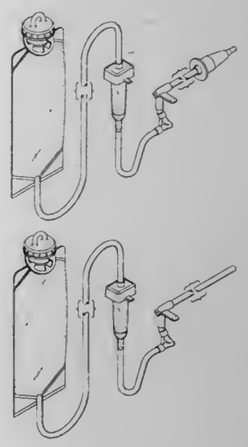
380,541
AIR BLOWER FOR MIG WELDER
James E. Furman, P.O. Box 1756, Sumass, Wash. 98295
Filed Mar. 22, 1996, Ser. No. 52,068
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—383



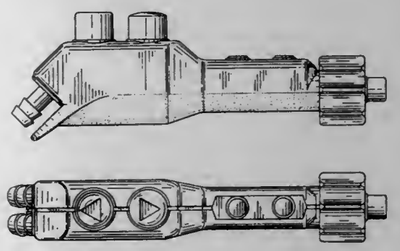
380,542
FIREPLACE MANTEL
Anthony Mattarelli, 7207 E. McNichols Rd., Detroit, Mich. 48212
Filed Sep. 27, 1994, Ser. No. 28,985
Term of patent 14 years
LOC (6) Cl. 23 - *03*
U.S. Cl. D23—404



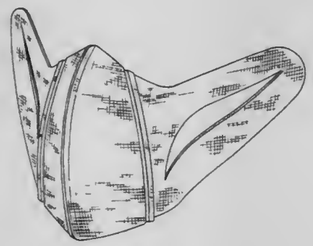
380,543
FLUID DELIVERY SET
Carl Joseph Piontek, Powell; Robert Donald Clegg, Pickerington; Bradford Lynn Buck, Gahanna; Matthew Scott Fleming; Grant Richard Wilson, both of Columbus; William Edward Patton, Dublin, and William Fred Lyon, Marengo, all of Ohio, assignors to Abbott Laboratories, Abbott Park, Ill.
Filed Sep. 21, 1995, Ser. No. 44,254
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—108



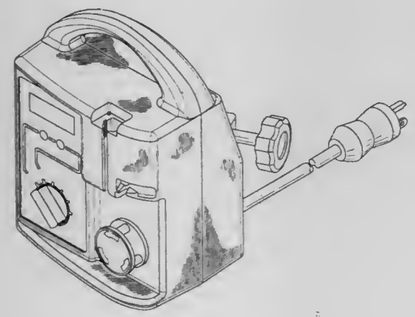
380,544
MANUAL CONTROL FOR A LAPAROSCOPIC INSTRUMENT
Paul Sandock, New Hartford, N.Y., assignor to Conmed Corporation, Utica, N.Y.
Filed Mar. 8, 1996, Ser. No. 51,283
Term of patent 14 years
LOC (6) Cl. 24 - *04*
U.S. Cl. D24—108



380,545
DISPOSABLE SANITARY MASK
Satoshi Nozaki; Miki Takahashi, both of Ehime-ken, and Yukitoshi Kubota, Kouchi-ken, all of Japan, assignors to Uni-Charm Corporation, Ehime-ken, Japan
Filed Feb. 22, 1996, Ser. No. 50,683
Term of patent 14 years
LOC (6) Cl. 29 - *02*
U.S. Cl. D24—110.1



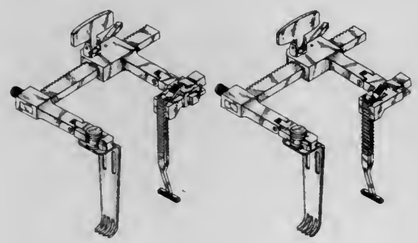
380,546
ROTARY PERISTALTIC PUMP
Robert Donald Clegg, Pickerington; Matthew Scott Fleming, Columbus; Joseph Anthony Juratovac, Columbus; Dennis John Hoffman, Columbus; Grant Richard Wilson, Columbus, and William Edward Patton, Columbus, all of Ohio, assignors to Abbott Laboratories, Abbott Park, Ill.
Filed Sep. 21, 1995, Ser. No. 44,270
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—111



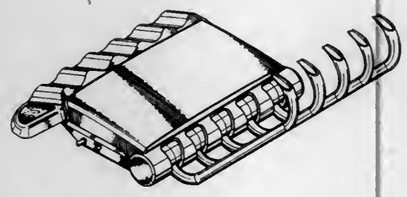
380,547
MALE INCONTINENCE HARNESS
Vernon K. Carlsen, 4367 S. Mission Rd., Fallbrook, Calif. 92028
Filed Oct. 18, 1995, Ser. No. 46,626
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—122



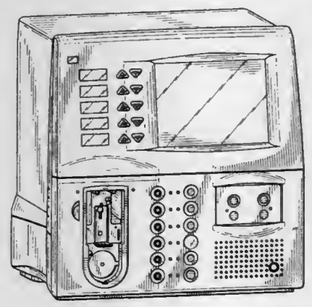
380,548
MICRODISCECTOMY RETRACTOR
Tibor Koros, and Gabriel Koros, both of 610 Flinn Ave., Moorpark, Calif. 93021
Filed May 4, 1995, Ser. No. 38,493
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—135



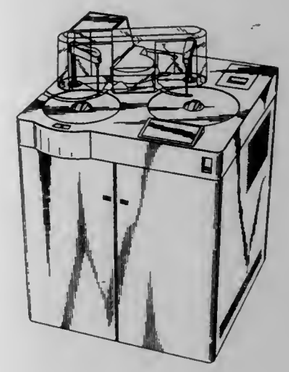
380,549
CONTROL HEAD
Edwin Leonard Pate, c/o Marus Dental 20554 Builders St., Bend, Oreg. 97701
Filed Mar. 15, 1996, Ser. No. 51,728
Term of patent 14 years
LOC (6) Cl. 24 - *99*
U.S. Cl. D24—177



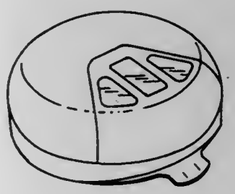
380,550
SURGICAL CONSOLE
James R. Dennewill, Lakewood; Russell L. Finlay, Dana Point, both of Calif.; Paul R. Hallen, Arlington, Tex.; John C. Huculak, Laguna Niguel, Calif.; John A. Ripley, Newport Beach, Calif.; Richard L. Zaleski, II, San Juan Capistrano, Calif., and David Weston, Newport Beach, Calif., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.
Filed Nov. 14, 1995, Ser. No. 46,443
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—185



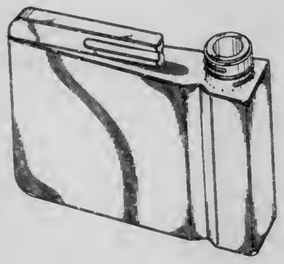
380,551
BIOCHEMICAL ANALAYZER
Mitsuru Ohnuma, Mitaka; Atsushi Katayama, Kokubunji; Isamu Takekoshi, Kodaira; Isao Shindo; Kahei Shiraishi, both of Hitachiota, and Hiromichi Sato, Hitachinaka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jul. 27, 1995, Ser. No. 41,933
Claims priority, application Japan, Jun. 12, 1995, 7-16437
Term of patent 14 years
LOC (6) Cl. 24 - *01*
U.S. Cl. D24—186



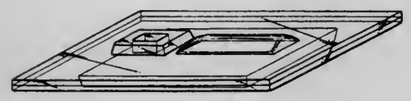
380,552
ACTIVE PATCH FOR DERMAL DIFFUSIONS
Erik Jan Frenkel, Neuchatel; Jean-Jacques Born, Morges, and Konrad Schafroth, Berne, all of Switzerland, assignors to Asulab AG (Asulab S.A.) (Asulab Ltd.), Bienne, Switzerland
Filed Sep. 13, 1994, Ser. No. 28,383
Claims priority, application WIPO, Mar. 14, 1994, DM/029015
Term of patent 14 years
LOC (6) Cl. 24 - *04*
U.S. Cl. D24—189



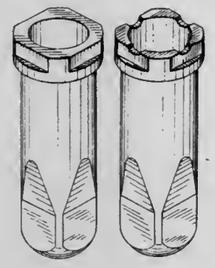
380,553
REAGENT CONTAINER
Jari-Pekka Riekkinen, Espoo, Finland, assignor to Kone Instruments Oy, Espoo, Finland
Filed Oct. 21, 1994, Ser. No. 30,165
Claims priority, application Finland, Apr. 21, 1994, FI319/94
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—224



380,554
TRANSPARENT ASSAY TESTER FOR BIOLOGICAL FLUIDS WITH A MAGNIFICATION LENS
William A. Leiva, Half Moon Bay, and Ian D. Wells, Escondido, both of Calif., assignors to Medix Biotech, Inc., San Carlos, Calif.
Continuation-in-part of Ser. No. 15,399, Nov. 15, 1993, abandoned, which is a continuation of Ser. No. 918,340, Jul. 21, 1992, abandoned. This application Dec. 12, 1994, Ser. No. 32,035
The portion of the term of this patent subsequent to Nov. 19, 2010, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 24 - *01*
U.S. Cl. D24—224



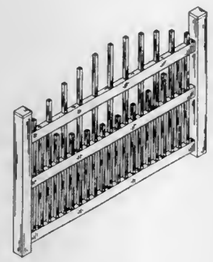
380,555
SAMPLE ANALYSIS CUVETTE
Tsuyoshi Kurosaki, Kakogawa, and Masayuki Nakagawa, Hyogo-ken, both of Japan, assignors to TOA Medical Electronics Co., Ltd., Kobe, Japan
Filed Feb. 23, 1995, Ser. No. 35,242
Claims priority, application Japan, Aug. 31, 1994, 6-26390; Aug. 31, 1994, 6-26391
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—224



380,556
COMBINATION MAGNETIC HEALTH AND BEAUTY MASK
Ray S. Ruscitti, 465 W. Dominion Dr. Apt. 1504, Wood Dale, Ill. 60191, and Wilma M. Rohan, 496 Old Surrey La., Hinsdale, Ill. 60521
Filed Mar. 4, 1996, Ser. No. 51,106
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D24—231



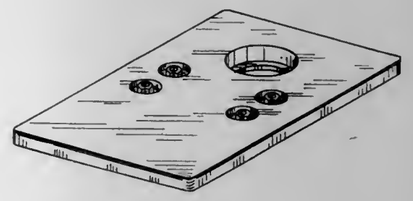
380,557
FENCE PANEL
Rex L. German, P.O. Box 45, Cozad, Nebr. 69130
Filed Aug. 24, 1995, Ser. No. 43,058
Term of patent 14 years
LOC (6) Cl. 25 - *02*
U.S. Cl. D25—42



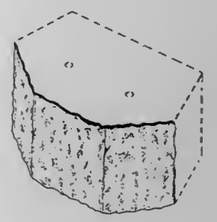
380,558
SAWHORSE
Michael Ray Clavin, 3326 Arsenal St., St. Louis, Mo. 63118
Filed Feb. 10, 1994, Ser. No. 18,599
Term of patent 14 years
LOC (6) Cl. 25 - *04*
U.S. Cl. D25—64



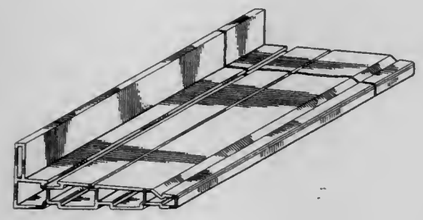
380,559
SHELF PLATFORM
Larry L. Sweency, 422 W. Haskell St. #15, Winnemucca, Nev. 89445
Division of Ser. No. 39,365, May 26, 1995, Pat. No. Des. 372,990. This application May 20, 1996, Ser. No. 54,727
Term of patent 14 years
LOC (6) Cl. 25 - *04*
U.S. Cl. D25—68



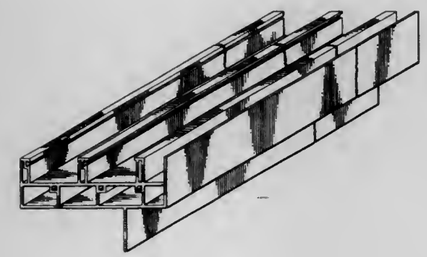
380,560
THREE FACETED BROKEN FRONT FACE OF A RETAINING WALL BLOCK
Paul J. Forsberg, Edina, Minn., assignor to Keystone Retaining Wall Systems, Inc., Edina, Minn.
Division of Ser. No. 485,736, Feb. 27, 1990, abandoned, Ser. No. 184,165, Apr. 21, 1988, abandoned, and Ser. No. 59,481, Jun. 8, 1987, Pat. No. Des. 298,463. This application May 21, 1992, Ser. No. 886,983
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—113



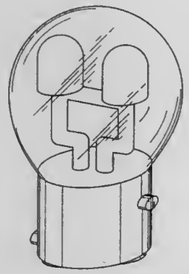
380,561
SILL
Domenic Colitto, Bolton, Canada, assignor to Royal Extrusions Limited, Woodbridge, Canada
Filed Jun. 3, 1996, Ser. No. 55,312
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—124



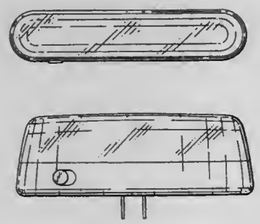
380,562
SIDE JAMB
Domenic Colitto, Bolton, Canada, assignor to Royal Extrusions Limited, Woodbridge, Canada
Filed Jun. 3, 1996, Ser. No. 55,317
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—124



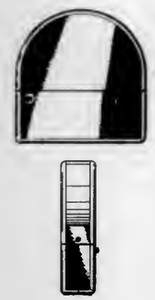
380,563
AUTOMOTIVE STOP LIGHT BULB
Dan Williamson, 176 Bennett Ave., Council Bluffs, Iowa 51503
Filed Feb. 20, 1996, Ser. No. 50,433
Term of patent 14 years
LOC (6) Cl. 26 - *04*
U.S. Cl. D26—1



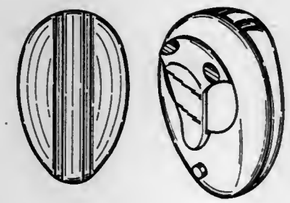
380,564
NIGHT LIGHT
John Se-Kit Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed Nov. 15, 1995, Ser. No. 46,478
Claims priority, application United Kingdom, May 31, 1995, 2 047 841
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—26



380,565
NIGHTLIGHT
Ng Man Ho, Kowloon, Hong Kong, assignor to Top Ocean Enterprises Limited, Kowloon, Hong Kong
Filed Nov. 28, 1995, Ser. No. 47,150
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—26



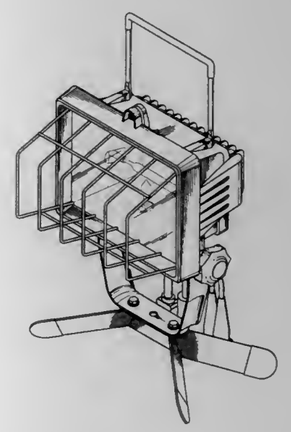
380,566
FLASH LIGHT
Ming-Chang Chen, No. 48, Huan Kung Road, Yung Kang Shih, Tainan Hsien, Taiwan
Filed Nov. 9, 1994, Ser. No. 30,839
Term of patent 14 years
LOC (6) Cl. 26 - *02*
U.S. Cl. D26—37



380,567
COMBINED FLEXIBLE LIGHT AND CLOCK
Chan Chung Hon, New Territories, Hong Kong, assignor to Sunrich Manufactory Ltd., New Territories, Hong Kong
Filed Mar. 18, 1996, Ser. No. 51,751
Term of patent 14 years
LOC (6) Cl. 26 - *02*
U.S. Cl. D26—38



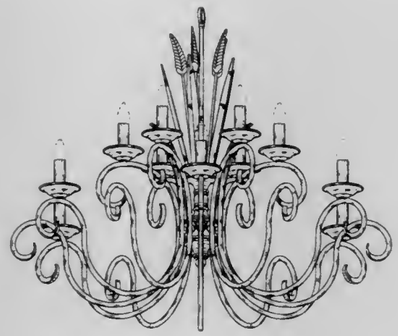
380,568
PORTABLE AC/DC FLOODLIGHT
Richard Joseph Landy, Casiaic, Calif., assignor to Allied Wholesale Inc., Sylmar, Calif.
Filed Dec. 5, 1994, Ser. No. 32,381
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—63



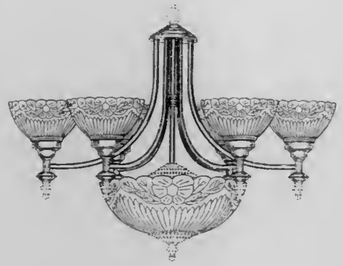
380,569
GROUND STAKE
Thomas A. Garber, Hudson, Ohio, assignor to The L.D. Kichler Co., Cleveland, Ohio
Filed Mar. 16, 1995, Ser. No. 36,009
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—67



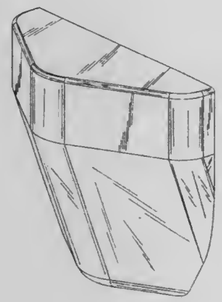
380,570
CHANDELIER
David H. Porter, Chagrin Falls, Ohio, assignor to The L.D. Kichler Co., Cleveland, Ohio
Filed Jan. 5, 1995, Ser. No. 33,116
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—84



380,571
CHANDELIER
Patrick S. Dolan, 1901 NW. Upshur, Portland, Oreg. 97209
Filed May 1, 1996, Ser. No. 53,885
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—84



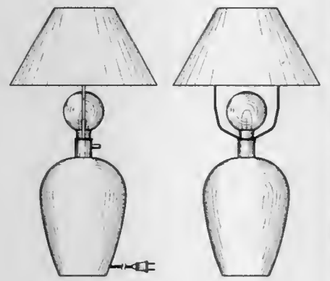
380,572
LIGHTING FIXTURE
Steven W. Bodell, Troutville, and David A. Vosika, Cloverdale, both of Va., assignors to Hubbell Incorporated, Orange, Conn.
Filed May 16, 1996, Ser. No. 54,532
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—85



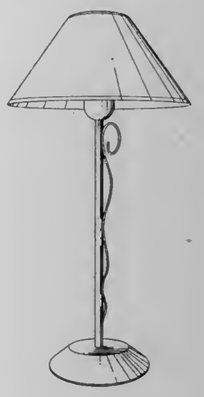
380,573
TORCHIERE LAMP BASE
David H. Porter, Chagrin Falls, and Libbe A. Milicia, North Royalton, both of Ohio, assignors to The L.D. Kichler Co., Cleveland, Ohio
Filed Apr. 10, 1996, Ser. No. 52,874
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—101



380,574
ELECTRIC LAMP WITH OPTIONAL RECHARGEABLE BATTERY OPERATION
Kimberly Nettles, 4291 Tuxedo, Detroit, Mich. 48204
Filed Sep. 5, 1995, Ser. No. 43,495
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—106



380,575
LAMP
Simon V. Benghozi, 406 Champagneur, Outremont, Quebec, Canada
Filed Apr. 1, 1996, Ser. No. 52,614
Claims priority, application Canada, Mar. 4, 1996, 1996-0497
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—106



380,576
TABLE LAMP BASE
David H. Porter, Chargin Falls, Ohio, assignor to The L.D. Kichler Co., Cleveland, Ohio
Filed Apr. 10, 1996, Ser. No. 52,880
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—106



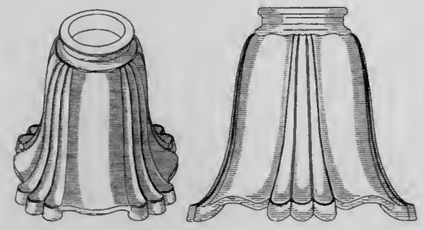
380,577
LAMP
Simon V. Benghozi, 406 Champagneur, Outremont Quebec, Canada
Filed Apr. 1, 1996, Ser. No. 52,613
Claims priority, application Canada, Mar. 5, 1996, 1996-0508
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—110



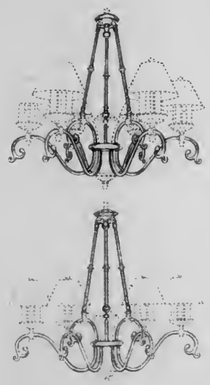
380,578
LAMP BASE
Colleen M. Visage, Willoughby, and Gary M. Kattler, Chagrin Falls, both of Ohio, assignors to The L.D. Kichler Co., Cleveland, Ohio
Filed Apr. 15, 1996, Ser. No. 53,179
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—111



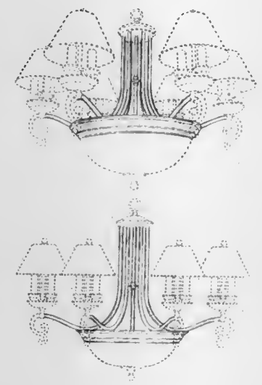
380,579
LAMP GLASS SHADE
Patrick S. Dolan, 1901 NW. Upshur, Portland, Oreg. 97209
Filed Mar. 13, 1996, Ser. No. 51,991
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—133



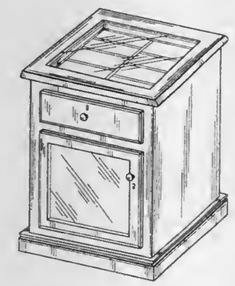
380,580
CHANDELIER BODY
Patrick S. Dolan, 1901 NW. Upshur, Portland, Oreg. 97209
Filed Jan. 11, 1996, Ser. No. 48,875
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—144



380,581
CHANDELIER BODY
Patrick S. Dolan, 1901 NW. Upshur, Portland, Oreg. 97209
Filed Jan. 11, 1996, Ser. No. 48,878
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—144



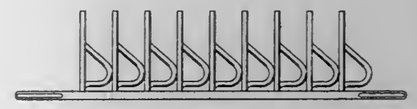
380,582
CIGAR HUMIDOR
Gregory M. Filias, Portsmouth, N.H., assignor to Vigilant Incorporated, Portsmouth, N.H.
Filed Jun. 2, 1995, Ser. No. 39,706
Term of patent 14 years
LOC (6) Cl. 27 - *06*
U.S. Cl. D27—183



380,583
DISPENSER FOR MATCHES
Charles A. Wharmby, Jr., 33433 Mountain View Rd., Newberry Springs, Calif. 92365
Filed Nov. 20, 1995, Ser. No. 46,541
Term of patent 14 years
LOC (6) Cl. 27 - *06*
U.S. Cl. D27—173



380,584
HAIR BRAIDING TOOL HAVING SELECTIVELY REMOVABLE HAIR RETAINING ELEMENTS
Cezahir Celik, 8 Winchester Dr., Howell, N.J. 07731
Filed May 10, 1996, Ser. No. 54,222
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—10



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LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 1st DAY OF JULY, 1997

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

AB Astra: *See—*
Andersson, Jan; Jägfeldt, Hans; Trofast, Eva; and Wetterlin, Kjell, 5,642,728, Cl. 128-203.150.

ABB Power T&D Company Inc.: *See—*
Younger, Harold R., 5,643,007, Cl. 439-421.000.

Abbott Laboratories: *See—*
Mukerji, Pradip; Seo, Amanda Eun-Yeong; Anderson, Steven Neal; and Harvey, Linda Ann, 5,643,880, Cl. 514-21.000.
Robinson, John M.; Pilot-Matias, Tami J.; and Hunt, Jeffrey C., 5,643,733, Cl. 435-7.100.
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Sheppard, George S.; Davidsen, Steven K.; and Summers, James B., 5,643,922, Cl. 514-303.000.
Spring, Thomas G.; Brackett, John M.; Vogdes, Sheila A.; and Schultz, Steven G., 5,643,721, Cl. 435-6.000.
Wagner, Rolf; Luly, Jay R.; and Or, Yat Sun, 5,643,918, Cl. 514-291.000.

Abdelmalek, Fawzy T.; and Rutsch, Michael J. Process for solids waste landfill gas treatment and separation of methane and carbon dioxide. 5,642,630, Cl. 62-632.000.

Abdi, Abraham. Garment hanger with irremovable information tabs. 5,642,840, Cl. 223-85.000.

Abe, Shinji, to Koyo Seiko Co., Ltd. Bearing assembly. 5,642,945, Cl. 384-470.000.

Abe, Susumu: *See—*
Ochiai, Masayuki; Ueda, Hidefumi; Sono, Michio; Yamaguchi, Ichiro; Mitobe, Kazuhiko; Otake, Koki; Kasai, Junichi; Kamehara, Nobuo; Yamagishi, Yasuo; Mizukoshi, Masataka; Yamada, Yutaka; and Abe, Susumu, 5,643,831, Cl. 437-183.000.

Abiomed R & D, Inc.: *See—*
Kung, Robert T. V.; and Champsaur, Gerard, 5,643,172, Cl. 600-16.000.

Abiven, Benoit, to Alcatel Mobile Phones. Battery comprising a plurality of cells, in particular lithium-ion cells, connected in series. 5,644,208, Cl. 320-6.000.

Abo, Mitsuyoshi; and Kuga, Toshihiko, to Futaba Denshi Kogyo K.K. Interpolation circuit for measuring device. 5,644,514, Cl. 364-577.000.

Abraham, Mark Frederick: *See—*
Padula, Joseph Anthony; Williams, Owen Ricardo; Abraham, Mark Frederick; and Ramsey, William Dale, Jr., 5,644,119, Cl. 235-384.000.

Abramov, Grigory Khananovich; Amiragov, Mikhail Sergeevich; Astafiev, Valery Borisovich; Berezkin, Sergei Valentinovich; Bobe, Leonid Sergeevich; Bykov, Viktor Pavlovich; Vasiliev, Jury Borisovich; Gordeev, Vladimir Mikhailovich; Djukova, Eleonora Sergeevna; Novikov, Vladimir Mikhailovich; Podrugin, Alexandr Yakovlevich; Protasov, Nikolai Nikolaevich; Razgulina, Margarita Dmitrievna; Samsonov, Nikolai Mikhailovich; Sinyak, Galina Sergeevna; Sinyak, Jury Emelyanovich; and Farafonov, Nikolai Sergeevich, to Aktsionernoe Obschestvo Otkrytogo Tipa. Method for water recovery from atmosphere of habitable pressurized module. 5,643,457, Cl. 210-668.000.

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Revel, Michel; Abramovich, Carolina; and Ratovitski, Edward, 5,643,749, Cl. 435-69.100.

Abrecht, Christine; Müller, Klaus; Obrecht, Daniel; and Trzeciak, Arnold, to Hoffmann-La Roche Inc. Tetrahydronaphthalene derivatives. 5,644,024, Cl. 530-317.000.

Abrishami, Ray: *See—*
Colwell, Michael; Rajsuman, Rochit; Abrishami, Ray; and Sarkari, Zarir B., 5,644,251, Cl. 326-16.000.

Acer Peripherals Inc.: *See—*
Yu, Kuo-Chin, 5,644,367, Cl. 348-656.000.

Ackerman, Richard: *See—*
Zerlin, Elizabeth; and Ackerman, Richard, 5,642,791, Cl. 186-66.000.

Ackermann, Werner; and Römer, Hans-Herward, to Gebr. Happich GmbH. Roof hatch for large-capacity vehicles such as motor buses. 5,642,915, Cl. 296-214.000.

Ackroyd, Rand H., to Watts Investment Company. Temperature-sensitive safety valve assembly. 5,642,859, Cl. 236-93.00B.

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Acosta, George M.: *See—*
Cohen, Donald; Daw, Derek J.; Kick, George F.; and Acosta, George M., 5,643,257, Cl. 606-48.000.

Act Corporation: *See—*
Ju, Jiang-Tsuen, 5,644,549, Cl. 365-235.000.

Action Overseas Co., Ltd.: *See—*
Lien, Chang-hsing, 5,644,552, Cl. 368-10.000.

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Akachi, Hisateru, 5,642,775, Cl. 165-104.140.

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Wang, John S., 5,642,732, Cl. 128-661.070.

Adachi, Hiroki: *See—*
Ishihara, Hiroaki; Nakashita, Kazuhisa; Ohnuma, Hideto; Tanaka, Nobuhiro; and Adachi, Hiroki, 5,643,801, Cl. 437-7.000.

Adair, Edwin L. Sterilizable endoscope with separable disposable tube assembly. 5,643,175, Cl. 600-133.000.

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Couillard, Cal L.; and Adams, Bruce, 5,643,391, Cl. 156-324.000.

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Wright, David W.; Adams, John M.; and Rumford, Martha J., 5,644,093, Cl. 73-866.500.

Adamski, Maximilian, Jr.; and Pagett, Steve J., to Union Special Corp. Sewing sleeves on shirt bodies. 5,642,681, Cl. 112-475.090.

ADC Telecommunications, Inc.: *See—*
Russell, David S.; and Fischer, Larry G., 5,644,622, Cl. 455-422.000.

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Fotsis, Theodore; Adlercreutz, Herman; and Schweigerer, Lothar, 5,643,900, Cl. 514-182.000.

Advanced Learning Corp., The: *See—*
Mead, Talbert, 5,644,363, Cl. 348-563.000.

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Xie, Zheng-yi; and Bartkowiak, John G., 5,644,634, Cl. 379-386.000.

Advanced Micro Devices, Inc.: *See—*
Agrawal, Om P.; and Wright, Michael J., 5,644,496, Cl. 364-489.000.
Gardner, Mark I.; Hause, Fred N.; and Chang, Kuang-Yeh, 5,643,825, Cl. 437-70.000.
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Mann, Daniel, 5,644,772, Cl. 395-733.000.
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Chernoff, Donald A.; and Lohr, Jason D., 5,644,512, Cl. 364-571.020.

Advanced Vision Technologies, Inc.: *See—*
Potter, Michael D., 5,644,188, Cl. 313-309.000.
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Advantest Corporation: *See—*
Fujimoto, Akihiro, 5,644,248, Cl. 324-760.000.
Ohsawa, Toshimi, 5,644,578, Cl. 371-21.200.
Yoshida, Haruo, 5,644,398, Cl. 356-349.000.

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Zutz, Hans-Henning, 5,642,890, Cl. 277-92.000.

Aebischer, Patrick; Mills, John F.; Wahlberg, Lars; Doherty, Edward J.; and Tresco, Patrick A., to Brown University Research Foundation. Preparation of elongated seamless capsules containing a coaxial rod and biological material. 5,643,773, Cl. 435-182.000.

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Porte, Alain; and Ciprian, Danilo, 5,642,615, Cl. 60-226.100.

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Barrett, Ronald W.; Cwirla, Steven E.; Dower, William J.; Koller, Kerry J.; Lee, Jung; Martens, Christine L.; and Ruhland-Fritsch, Beatrice, 5,643,873, Cl. 514-12.000.

AGFA-Gevaert: *See—*
Vuylsteke, Pieter Paul, 5,644,662, Cl. 382-302.000.

Agfa-Gevaert, N.V.: *See—*
Coppens, Paul; Hoes, Eric; Loccufier, Johan; and De Clercq, Ronny, 5,643,710, Cl. 430-204.000.
Schoeters, Emile Paul; and Hayen, Lucien Alfred, 5,644,649, Cl. 382-132.000.

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Ahmed, Iqbal: *See—*
Moradi-Araghi, Ahmad; and Ahmed, Iqbal, 5,642,783, Cl. 166-295.000.
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Kim, Tae Hyoung; and Ahn, Jin Hong, 5,644,543, Cl. 365-207.000.
Ahr, Nicholas Albert; and Roe, Donald Carroll, to Procter & Gamble Company, The. Disposable absorbent article having a pump and an inflatable component. 5,643,241, Cl. 604-385.100.
AIC ISO Covers Limited: *See—*
Spano, Vincent William, 5,643,661, Cl. 442-325.000.
Aichi Steel Works, Ltd.: *See—*
Honkura, Yoshinobu; Mitarai, Hironari; Mishima, Chisato; Amahiro, Yoshikazu; Matsuoka, Hiroshi; and Sugiura, Yoshinobu, 5,643,491, Cl. 252-62.540.
Aida, Chieko: *See—*
Kameda, Takanobu; Kano, Machiko; Kondoh, Rui; Watanabe, Kenji; Ichikawa, Tomoyuki; Taniguchi, Yuichiro; and Aida, Chieko, 5,644,136, Cl. 250-492.100.
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Tsukamoto, Ann; Baum, Charles M.; Aihara, Yukoh; and Weissman, Irving, 5,643,741, Cl. 435-7.240.
Aikyo, Hiroyuki: *See—*
Yamamoto, Iwao; Aikyo, Hiroyuki; Yoshiya, Akihiko; and Shirosaki, Kazuo, 5,643,546, Cl. 423-447.200.
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Agrawal, Rakesh; Chen, Michael Shi-Kuan; Smith, Arthur Ramsden; Thorogood, Robert Michael; and Ward, Thomas Joseph, 5,643,354, Cl. 75-490.000.
Aisan Kogyo Kabushiki Kaisha: *See—*
Kato, Eisuke; and Nagai, Takashi, 5,642,981, Cl. 415-55.100.
Aisin AW Co., Ltd.: *See—*
Yoshii, Kinya; Ichioka, Eiji; Koide, Takeharu; and Sasaki, Yoshihiko, 5,643,127, Cl. 475-160.000.
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Morinaga, Yasushi; and Tsuchiya, Makoto, 5,643,790, Cl. 435-252.300.
Ajmera, Atul: *See—*
Ho, Herbert; Hammerl, Erwin; Dobuzinsky, David M.; Palm, J. Herbert; Fugardi, Stephen; Ajmera, Atul; Moseman, James F.; and Ramac, Samuel C., 5,643,823, Cl. 437-67.000.
Akachi, Hisateru, to Actronics Kabushiki Kaisha; and Akachi, Hisetaru. Ribbon-like plate heat pipes. 5,642,775, Cl. 165-104.140.
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Akada, Hiroshi, to Canon Kabushiki Kaisha. Optical apparatus. 5,644,440, Cl. 359-823.000.
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Akamine, Yoshikazu; and Wakamatsu, Seiichi, to Olympus Optical Co., Ltd. Audio data recording system for recording voice data as an optically readable code on a recording medium for recording still image data photographed by a camera. 5,644,557, Cl. 369-14.000.
Akasaka, Nobuhiro: *See—*
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Tateishi, Hiroshi; Tomimatsu, Norihiro; Nakagawa, Kazuaki; Ozu, Hideyuki; and Akasaka, Yoshihiro, 5,643,690, Cl. 429-34.000.
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Akashi, Ryojiro: *See—*
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Aker, Charles M., to Omnithruster Inc. Thrust director unit for a marine vessel. 5,642,684, Cl. 114-151.000.
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Morikawa, Koji; and Akimoto, Akira, 5,642,705, Cl. 123-300.000.
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Abramov, Grigory Khananovich; Amiragov, Mikhail Sergeevich; Astafiev, Valery Borisovich; Berezkin, Sergei Valentinovich; Bobe, Leonid Sergeevich; Bykov, Viktor Pavlovich; Vasiliev, Jury Borisovich; Gordeev, Vladimir Mikhailovich; Djukova, Eleonora Sergeevna; Novikov, Vladimir Mikhailovich; Podrugin, Alexandr Yakovlevich; Protasov, Nikolai Nikolaevich; Razgulina, Margarita Dmitrievna; Samsonov, Nikolai Mikhailovich; Sinyak, Galina Sergeevna: Sinyak, Jury Emelyanovich; and Farafonov, Nikolai Sergeevich, 5,643,457, Cl. 210-668.000.
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Selifanov, Oleg Vladimirovich; Tochitsky, Eduard Ivanovich; and Akulich, Valerii Vladimirovich, 5,643,343, Cl. 51-306.000.
Akzo Nobel nv: *See—*
Johansson, Ingegärd, 5,644,041, Cl. 536-4.100.
Alary, Jean-Paul Daniel; Ansart, Denis Roger Henri; Salan, Yves Francois André; and Sandelis, Denis Jean Maurice, to Socoiete Nationale D'Etude et de Construction de Moteurs D'Aviation S.N.E.C.M.A. Dual head combustion chamber. 5,642,621, Cl. 60-747.000.
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Gould-Fogerite, Susan; and Mannino, Raphael James, 5,643,574, Cl. 424-184.100.
Albers, Albert; and Felger, Robert, to LuK Lamellen und Kupplungsbau GmbH. Coil spring with flattened convolutions. 5,642,875, Cl. 267-167.000.
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Wolf, Klaus-Uwe; and Schauer, Friedrich, 5,643,002, Cl. 439-164.000.
Alcatel Mobile Phones: *See—*
Abiven, Benoit, 5,644,208, Cl. 320-6.000.
Alcatel N. V.: *See—*
Di Ronza, Benedetto Giuseppe, 5,644,678, Cl. 395-2.160.
Schwarzer, Jürgen; and Nielen, Hans-Joachim, 5,644,628, Cl. 379-93.190.
Alcon Laboratories, Inc.: *See—*
Gamache, Daniel A.; Hellberg, Mark R.; Nixon, Jon C.; and Graff, Gustav, 5,643,943, Cl. 514-456.000.
Alcorn, Allan E.; Barnett, Michael; Giacalone, Louis D., Jr.; and Levinthal, Adam E., to Silicon Gaming, Inc. Electronic casino gaming apparatus with improved play capacity, authentication and security. 5,643,086, Cl. 463-29.000.
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Owens, Warren D.; Jenkins, Cary P.; and Hargett, Ken, 5,642,726, Cl. 128-200.260.
Aldcroft, Derek; Newton, John Robert; and Stanier, Peter William, to Unilever Patent Holdings BV. Amorphous silicas. 5,643,624, Cl. 426-330.400.
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Davis, Samuel; Aldrich, Thomas; and Yancopoulos, George D., 5,643,755, Cl. 435-69.500.
Alexander, Steve. Detachable beltloop conchos. 5,642,556, Cl. 24-163.00K.
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Mason, James M.; and Squinto, Stephen P., 5,643,770, Cl. 435-172.300.
Alfano, Robert R.; Ho, Ping-Pei; and Liang, Xiangchun, to Research Foundation of City College of New York. 2-dimensional imaging of translucent objects in turbid media. 5,644,429, Cl. 359-559.000.
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Alini, Roberto: *See—*
Brianti, Francesco; Alini, Roberto; Pisati, Valerio; and Gadducci, Paolo, 5,644,267, Cl. 327-553.000.
Alkermes Controlled Therapeutics Inc. II: *See—*
Lewis, Danny H., 5,643,595, Cl. 424-426.000.
Allegre, Jean-Luc, to Decomatic S.A. Information-medium sleeve and process for manufacturing it. 5,643,383, Cl. 156-203.000.
Allelix Biopharmaceuticals Inc.: *See—*
Kamboj, Rajender; Elliott, Candace E.; and Nutt, Stephen L., 5,643,785, Cl. 435-325.000.
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Woychik, Gerard A.; and Mather, John C., 5,644,475, Cl. 361-767.000.
Allen, Geoffrey: *See—*
Ramage, Paul Ian Nicholas; and Allen, Geoffrey, 5,644,036, Cl. 530-412.000.
Allen, Gregory M.: *See—*
Braithwaite, David G.; Bruderer, Clark C.; Allen, Gregory M.; and Thompson, David A., 5,644,444, Cl. 360-60.000.
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Allen, Ross R., to Hewlett-Packard Company. Method and apparatus for measuring the temperature of drops ejected by an ink jet printhead. 5,644,343, Cl. 347-17.000.
Allergan: *See—*
Zaleski, Edward R., 5,643,276, Cl. 606-107.000.
Allergene, Inc.: *See—*
Byers, Vera K.; and Baldwin, Robert W., 5,643,572, Cl. 424-171.100.
AlliedSignal Inc.: *See—*
Dybro, Niels; and Woydick, Mark C., 5,642,916, Cl. 297-216.180.
Allsup, David S.: *See—*
Cox, Alvin E.; Eckerd, Steven S.; Allsup, David S.; and Maggio, Mark S., 5,644,452, Cl. 360-106.000.
Almeida, Antonio: *See—*
Nguyen Phuoc, Vinh T.; Cornilleau, Hubert; Almeida, Antonio; and Perrin, Lucien, 5,644,205, Cl. 318-801.000.
Almy, Thomas A.: *See—*
Frisch, Arnold M.; and Almy, Thomas A., 5,644,261, Cl. 327-277.000.
Alpha Enterprises, Inc.: *See—*
Mundorf, Larry K.; Gallagher, Christopher G.; Hoerger, John P.; and Weisburn, James T., 5,642,815, Cl. 211-40.000.
Alps Electric Co., Ltd.: *See—*
Ushimaru, Hiroshi, 5,642,929, Cl. 362-85.000.
Al-Tameem, Moshin. Device for excision of a fistula. 5,643,305, Cl. 606-180.000.
Althausen, Ferdinand: *See—*
Sulzbach, Hans-Michael; Althausen, Ferdinand; Steilen, Herbert; Raffel, Reiner; Eiben, Robert; and Ebeling, Wilfried, 5,643,970, Cl. 521-155.000.
Althin, Anders; Fernandez, Ben; Elsen, Raymond; Ruzius, Kees; Silva, Lalith; and Washington, George, to Althin Medical, Inc. High-flux hollow-fiber membrane with enhanced transport capability and process for making same. 5,643,452, Cl. 210-500.230.
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Altschul, Randice Lisa, to Altschul, Randice Lisa. Puppet-like toy. 5,643,037, Cl. 446-28.000.
Aluminum Pechiney: *See—*
Benmalek, Mohamed; and Santarini, Marc, 5,643,434, Cl. 205-109.000.
Amada Metrecs Company, Limited: *See—*
Kawano, Susumu, 5,642,642, Cl. 72-482.910.
Amahiro, Yoshikazu: *See—*
Honkura, Yoshinobu; Mitarai, Hironari; Mishima, Chisato; Amahiro, Yoshikazu; Matsuoka, Hiroshi; and Sugiura, Yoshinobu, 5,643,491, Cl. 252-62.540.
Amano, Masanori, to Nidek Co., Ltd. Optical ophthalmic treatment apparatus. 5,643,249, Cl. 606-4.000.
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Ozaki, Naoyuki; Amano, Matsuo; Ohnishi, Hiroshi; and Minowa, Toshimichi, 5,642,709, Cl. 123-361.000.
Amano, Naomoto; and Saito, Yosuke, to Hoshizaki Denki Kabushiki Kaisha. Saturated brine tank in apparatus for production of electrolyzed water. 5,643,425, Cl. 204-279.000.
Amati Communications Corporation: *See—*
Bingham, John A.C.; and Jacobsen, Krista S., 5,644,573, Cl. 370-503.000.
Amendolea, Richard M.: *See—*
Roote, Michael S.; Amendolea, Richard M.; and McLaughlin, Frederick A., 5,642,650, Cl. 82-126.000.
American Cyanamid Company: *See—*
Baker, Steven M.; and Deich, Robert A., 5,643,747, Cl. 435-69.100.
Cannelongo, Joseph Frederick, 5,643,590, Cl. 424-406.000.
Green, Bruce A.; and Brinton, Charles C., Jr., 5,643,725, Cl. 435-6.000.
Malik, Sohail; Mahlberg, Florence; and Karathanasis, Sotrios, 5,643,757, Cl. 435-69.700.
American Home Products Corporation: *See—*
Hung, Paul P.; and Davis, Alan R., 5,643,579, Cl. 424-227.100.
American Machine & Tool Company, Inc. of Pennsylvania: *See—*
Chen, Chao-Hsin, 5,643,059, Cl. 451-164.000.
American Systems Technology, Inc.: *See—*
Huang, Joseph Y.; and Chen, Cheng-Foo, 5,644,239, Cl. 324-439.000.
AMI Industries: *See—*
Kennedy, Othar P., 5,643,128, Cl. 475-168.000.
Amini, Bijan K. Centrifugal flow separator method. 5,643,470, Cl. 210-787.000.
Amini, Nader; Boury, Bechara Fouad; Brannon, Sherwood; Horne, Richard Louis; and Lohman, Terence Joseph, to International Business Machines Corporation. Bidirectional data buffer for a bus-to-bus interface unit in a computer system. 5,644,729, Cl. 395-250.000.
Amiragov, Mikhail Sergeevich: *See—*
Abramov, Grigory Khananovich; Amiragov, Mikhail Sergeevich; Astafiev, Valery Borisovich; Berezkin, Sergei Valentinovich; Bobe, Leonid Sergeevich; Bykov, Viktor Pavlovich; Vasiliev, Jury Borisovich; Gordeev, Vladimir Mikhailovich; Djukova, Eleonora Sergeevna; Novikov, Vladimir Mikhailovich; Podrugin, Alexandr Yakovlevich; Protasov, Nikolai Nikolaevich; Razgulina, Margarita Dmitrievna; Samsonov, Nikolai Mikhailovich; Sinyak, Galina Sergeevna; Sinyak, Jury Emelyanovich; and Farafonov, Nikolai Sergeevich, 5,643,457, Cl. 210-668.000.
Amoco Corporation: *See—*
El-Hibri, M. Jamal; Chen, Yu-Tsai; and Sinclair, David P., 5,643,995, Cl. 524-538.000.
Amur Research Corp.: *See—*
Chasalow, Fred I., 5,643,716, Cl. 435-5.000.
An, Bin: *See—*
Marcus, Beth A.; Chen, Elaine; An, Bin; and Osborne, Timothy, 5,643,087, Cl. 463-38.000.
Analog Devices, Inc.: *See—*
Deevy, Kenneth T.; and Quinlan, Philip, 5,644,312, Cl. 341-160.000.
Analogic Corporation: *See—*
Crawford, Carl R.; Ruth, Christopher C.; Bachilov, Iouri; and Deych, Ruvin, 5,644,610, Cl. 378-19.000.
Anantharaman, Vinod: *See—*
Tuniman, David Charles; Anantharaman, Vinod; and Jansson, Michael Halvar, 5,644,737, Cl. 395-352.000.
Anderson, Burt E.; and Regnery, Russell L., to United States of America, Health and Human Services. Compositions for diagnosing rochalimaea henselae and rochalimaea quintana infection. 5,644,047, Cl. 536-23.700.
Anderson, Charles Chester: *See—*
Wang, Yongcai; and Anderson, Charles Chester, 5,643,972, Cl. 523-206.000.
Anderson, Craig Jamieson: *See—*
Greenberg, Joe David; and Anderson, Craig Jamieson, 5,642,762, Cl. 141-358.000.
Anderson, David B.; Schmiegel, Klaus K.; Veenhuizen, Edward L.; and Tuttle, Ronald R., to Eli Lilly and Company. Growth promotion. 5,643,967, Cl. 514-653.000.
Anderson, David J.: *See—*
Nugent, Richard A.; Anderson, David J.; and Schlachter, Stephen T., 5,643,895, Cl. 514-125.000.
Anderson, Gregory: *See—*
Leon, Francisco A.; Tazawa, Satoshi; and Anderson, Gregory, 5,644,688, Cl. 395-120.000.
Anderson, Mark Brian; and Musser, John Henry, to Glycomed Incorporated. Lupane triterpenoid derivatives. 5,643,884, Cl. 514-26.000.
Anderson, Michael P.: *See—*
Dismukes, John Pickett; Johnson, Jack Wayne; Corcoran, Edward William, Jr.; Vallone, Joseph; Pizzulli, James J., Jr.; and Anderson, Michael P., 5,643,987, Cl. 524-442.000.
Anderson, Peter L.; Cowell, Michael J.; and Hotek, Dan J., to Societe Civile des Brevets Henri C. Vidal. Modular block retaining wall construction and components. 5,642,968, Cl. 405-286.000.
Anderson, Steven Neal: *See—*
Mukerji, Pradip; Seo, Amanda Eun-Yeong; Anderson, Steven Neal; and Harvey, Linda Ann, 5,643,880, Cl. 514-21.000.
Andersson, Jan; Jägfeldt, Hans; Trofast, Eva; and Wetterlin, Kjell, to AB Astra. System for dispensing pharmaceutically active compounds. 5,642,728, Cl. 128-203.150.
Andley, Usha P.; and Fleming, Timothy P., to Washington University in St. Louis. Immortalized epithelial cell lines. 5,643,782, Cl. 435-371.000.
Ando, Daizo; Nakamura, Tadashi; Umeda, Shinji; and Oishi, Kunihiko, to Matsushita Electric Industrial Co., Ltd. Electronic component and its manufacturing method. 5,644,478, Cl. 361-829.000.
Ando, Ichiro: *See—*
Sugahara, Takayuki; and Ando, Ichiro, 5,644,658, Cl. 382-248.000.
Ando, Makoto; Kagami, Toshiki; Murakami, Takaaki; Sato, Masayuki; Kasahara, Noriko; Ito, Kengo; Hida, Masanobu; and Mizumachi, Motohiro, to Sony Corporation. Ink jet recording apparatus. 5,644,350, Cl. 347-101.000.
Ando, Masanori: *See—*
Noda, Kazutoshi; Kobayashi, Tetsuhiko; and Ando, Masanori, 5,644,116, Cl. 204-157.150.
Andreas, Bernard H.: *See—*
Hundertmark, Ron Ray; Farley, Brian; Dell, Kent D.; and Andreas, Bernard H., 5,643,296, Cl. 606-159.000.
Andreola, Christopher; Chlanda, Frederick P.; and Huang, Jian-Ping, to Graver Company, The. Process for producing ion exchange membranes, and the ion exchange membranes produced thereby. 5,643,968, Cl. 521-27.000.
Andres, Thomas, to Thermal Industries, Inc. Plastic extrusions for use in floor assemblies. 5,642,592, Cl. 52-177.000.
Andrews, Guy T.: *See—*
Rose, Arthur S.; and Andrews, Guy T., 5,643,109, Cl. 473-329.000.
Andrews, Michael R., to PelleTech Fuels, Inc. Fuel pellet and method of making the fuel pellet. 5,643,342, Cl. 44-530.000.
Andrulis, Peter J., Jr.; and Drulak, Murray W., to Andrulis Pharmaceuticals Corp. Treatment of ischemia/reperfusion injury with thalidomide alone or in combination with other therapies. 5,643,915, Cl. 514-279.000.
Andrulis Pharmaceuticals Corp.: *See—*
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Anelva Corporation: *See—*
Kobayashi, Masahiko; and Takahashi, Nobuyoki, 5,643,427, Cl. 204-298.200.
Angeion Corporation: *See—*
Brucker, Gregory G.; Saul, Jerome Philip; and Savage, Steven D., 5,643,197, Cl. 604-20.000.
Kroll, Mark W.; and Brewer, James E., 5,643,323, Cl. 607-2.000.
Angeles, James P., to LifeGear, Inc. Portable storage support structure. 5,642,820, Cl. 211-103.000.
Angeles Uribe, Juan; and Garza Flores, Josué, to Aplicaciones Farmaceuticas S.A. De C.V. Parenteral dosage form. 5,643,604, Cl. 424-489.000.

Anguillese, Mauro: *See—*
Scatizzi, Mario; Anguillese, Mauro; and Bartalucci, Moreno, 5,642,940, Cl. 366-150.100.

Anmo, Hiroaki: *See—*
Miwa, Hiroyuki; Kanematsu, Shigeru; Gomi, Takayuki; Anmo, Hiroaki; Noguchi, Takashi; Kato, Katsuyuki; Ejiri, Hirokazu; and Ouchi, Norikazu, 5,643,806, Cl. 437-31.000.

Ansari, H. Rahman; and Potts, Barbara, to Quest International B.V. Air treating gel. 5,643,866, Cl. 512-4.000.

Ansart, Denis Roger Henri: *See—*
Alary, Jean-Paul Daniel; Ansart, Denis Roger Henri; Salan, Yves Francois André; and Sandelis, Denis Jean Maurice, 5,642,621, Cl. 60-747.000.

Anspach Effort, Inc., The: *See—*
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Anspach, William E., III: *See—*
Del Rio, Eddy H.; and Anspach, William E., III, 5,643,280, Cl. 606-109.000.

Antanavich, Richard David: *See—*
Dorian, Randel E.; Cochrum, Kent C.; and Antanavich, Richard David, 5,643,594, Cl. 424-424.000.

Anthon, Douglas W., to ATx Telecom Systems, Inc. Solid state laser optimized for multimode operation. 5,644,589, Cl. 372-92.000.

Antonious, Anthony J. Metal wood type golf club head with improved hosel construction. 5,643,104, Cl. 473-305.000.

Antranikian, Garabed; and Klingeberg, Michael, to Novo Nordisk A/S. Thermostable protease from thermococcus. 5,643,777, Cl. 435-220.000.

Aoi, Takahiro: *See—*
Hamada, Masaaki; Aoi, Takahiro; Kohgo, Tetsuya; and Mishima, Masaaki, 5,642,874, Cl. 267-141.000.

Aoki, Atsumi: *See—*
Shindoh, Masuo; Shirakawa, Masayoshi; Kohtoh, Noriaki; and Aoki, Atsumi, 5,643,980, Cl. 524-100.000.

Aoki, Hisashi; and Yoshida, Tetsushi, to Casio Computer Co., Ltd. Liquid crystal display device having wide field angle. 5,644,415, Cl. 349-122.000.

Aoki, Kei: *See—*
Sho, Katsuhiko; Nishio, Masahiro; Saitoh, Koichi; Aoki, Kei; and Yagi, Tohru, 5,643,977, Cl. 523-411.000.

Aoto, Yoshikazu: *See—*
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Aoyagi, Hikaru: *See—*
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Aoyama, Fujio: *See—*
Hirose, Masayoshi; Ishikawa, Seiji; Kimura, Norio; Sasaki, Yoshimi; Yamada, Kouki; Aoyama, Fujio; Shimizu, Noburu; and Okumura, Katsuya, 5,643,056, Cl. 451-41.000.

Aoyama, Seiki; Kuroyanagi, Susumu; Izawa, Ichirou; and Makino, Yasuaki, to Nippondenso Co., Ltd. Magnetic detector having a bias magnet and magnetoresistive elements shifted away from the center of the magnet. 5,644,226, Cl. 324-207.210.

Aoyama, Tetsuya: *See—*
Iwasawa, Yoshikazu; Aoyama, Tetsuya; Kawakami, Kumiko; Arai, Sachie; Satoh, Toshihiko; and Monden, Yoshiaki, 5,643,958, Cl. 514-568.000.

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Apple Computer, Inc.: *See—*
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Jones, Jeremy A.; Mayle, Neil L.; Parsons, Paige K.; Shalit, Andrew L. M.; and Strassmann, Steven H., 5,644,334, Cl. 345-119.000.
Luciw, William W.; Capps, Stephen P.; and Tesler, Lawrence G., 5,644,735, Cl. 395-338.000.
Polzin, R. Stephen; Price, Noah M.; and Takahashi, Duane M. P., 5,644,760, Cl. 395-555.000.

Appleton, William C., to Cyberflix Inc. Apparatus and method for digital movie production. 5,644,694, Cl. 395-174.000.

Applied Materials, Inc.: *See—*
Maydan, Dan; Mak, Steve S. Y.; Olgado, Donald; Yin, Gerald Zheyao; Driscoll, Timothy D.; Shieh, Brian; and Papanu, James S., 5,643,394, Cl. 156-345.000.
Shendon, Norm, 5,643,053, Cl. 451-28.000.
Somekh, Sasson R.; Salzman, Philip M.; and Vierny, Oskar U., 5,643,366, Cl. 118-721.000.
Steger, Robert J.; and Lue, Brian, 5,644,467, Cl. 361-234.000.
Telford, Susan G.; Tseng, Meng Chu; Aruga, Michio; and Eizenberg, Moshe, 5,643,633, Cl. 427-255.000.
Zhao, Jun; Wolff, Stefan; Smyth, Kenneth; Taylor, William Nixon, Jr.; and McNutt, Gerald, 5,643,364, Cl. 118-723.00E.

Applied Medical Resources Corporation: *See—*
Hart, Charles C., 5,643,292, Cl. 606-144.000.

Applied Web Systems, Inc.: *See—*
Henkelmann, Gary L., 5,643,544, Cl. 423-245.300.

AptarGroup, Inc.: *See—*
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Aptek, Inc. (Siegenthaler): *See—*
Siegenthaler, Kenneth E.; and Rotge, James R., 5,644,122, Cl. 250-214.0VT.

Arad, Shoshana; Yaron, Anina; and Cohen, Ephraim, to Negev - Research and Development Authority, Ben-Gurion University of the. Coloring materials. 5,643,585, Cl. 424-401.000.

Arai, Masayuki: *See—*
Liu, Yuan; Motosugi, Kenji; Roth, Christoph; Yamamoto, Tetsu; and Arai, Masayuki, 5,644,069, Cl. 73-23.200.

Arai, Michio; Yamauchi, Yukio; Sakamoto, Naoya; and Nagano, Katsuto, to Semiconductor Energy Laboratory Co., Ltd. Method of manufacturing a hybrid integrated circuit component having a laminated body. 5,643,804, Cl. 437-21.000.

Arai, Michio; Codama, Mitsufumi; and Takayama, Ichiro, to TDK Corporation; and Semiconductor Energy Laboratory Co., Ltd. Thin film transistor. 5,644,146, Cl. 257-66.000.

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Landry, Kenneth Charles; and Arnold, Kermit Ray, 5,642,745, Cl. 134-167.00R.

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Salice, Luciano, 5,642,960, Cl. 403-407.100.

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Telford, Susan G.; Tseng, Meng Chu; Aruga, Michio; and Eizenberg, Moshe, 5,643,633, Cl. 427-255.000.

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Usui, Hiroshi; Onoda, Hitoshi; and Manabe, Tsuneo, 5,643,636, Cl. 427-376.200.

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Streit, Peter, 5,644,149, Cl. 257-147.000.

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Lee, Shang, 5,643,983, Cl. 524-267.000.

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Ulmius, Jan, 5,643,602, Cl. 424-462.000.

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Eslambolchi, Hossein; and Huffman, John Sinclair, 5,644,237, Cl. 324-326.000.

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Gallagher, Michael J.; and Jantz, Ray M., 5,644,786, Cl. 395-850.000.
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Austin, Michael D., 5,643,615, Cl. 425-186.000.

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Uehara, Shotaro; Mitsui, Munehiro; Atomori, Seiichi; Furuyama, Tateki; Shiota, Atushi; Fujimura, Mineo; and Nagata, Masaki, 5,643,990, Cl. 524-496.000.

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Weiner, Howard L.; Eisenbarth, George; Hafler, David Allen; and Zhang, Zhengyi, 5,643,868, Cl. 514-3.000.

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Boner, William; and Kimble, Warren, 5,642,711, Cl. 123-379.000.

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Hudspith, Sydney, 5,642,954, Cl. 402-36.000.

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AVX Corporation: *See—*
Qiu, Yong-Jian, 5,643,432, Cl. 205-50.000.

Awbrey, Brian J.; and Dye, Kipp K. Water and land therapy and fitness device. 5,643,154, Cl. 482-111.000.

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Ayer, Jacqueline. Continually optimized, variable flow rate ventilation system. 5,643,077, Cl. 454-54.000.

Ayerst, Douglas Irvin; Khan, Malik J.; and Rudowicz, Michael James, to Motorola, Inc. Method and apparatus for organizing and recovering information communicated in a radio communication system. 5,644,568, Cl. 370-311.000.

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Van De Grampel, Hendrik T.; Hou, Yongsheng; Spencer, Dennis O.; Swisher, Robert G.; and Thimons, Thomas V., 5,643,989, Cl. 524-494.000.

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Strock, Thomas W.; and Dykshoorn, Paul, 5,643,344, Cl. 55-226.000.

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Bacher, Helmut; Schulz, Helmuth; and Wendelin, Georg. Filter apparatus for fluids, in particular for thermoplastic synthetic plastics material fluid. 5,643,450, Cl. 210-350.000.

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Crawford, Carl R.; Ruth, Christopher C.; Bachilov, Iouri; and Deych, Ruvin, 5,644,610, Cl. 378-19.000.

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Watson, Randy C.; and Bajocchi, Richard L., 5,643,185, Cl. 602-26.000.

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Leung, Woon-Fong; Shapiro, Ascher H.; and Yarnell, Robert S., 5,643,169, Cl. 494-53.000.
Richard, Bennett M., 5,642,781, Cl. 166-231.000.
Wood, Leonard J. A.; Turner, Simon D.; Laros, Timothy J.; and Emmett, Robert C., Jr., 5,643,463, Cl. 210-739.000.

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Striker, Gary E.; Striker, Liliane J.; and Sherman, Fred P., 5,643,892, Cl. 514-54.000.

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Bakes, Frank Heinrich: *See—*
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Banner Engineering Corp.: *See—*
Fayfield, Robert W., 5,644,730, Cl. 395-282.000.

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Kojiri, Katsuhisa; Suzuki, Hajime; Kondo, Hisao; and Suda, Hiroyuki, 5,643,760, Cl. 435-85.000.

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Barbee, Steven George: *See—*
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Darsow, Gerhard, 5,644,044, Cl. 536-18.500.
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Spreyer, Peter; and Unterbeck, Axel, 5,643,750, Cl. 435-69.100.
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Lange, David V.; McCarville, David J.; and Garde, Jeffrey R., 5,643,416, Cl. 162-199.000.

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Young, Mark Douglas; Erspamer, John Paul; Forry, Mark Edwin; and Berg, Charles John, Jr., 5,642,602, Cl. 53-438.000.

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Berg, Richard A.: *See*—
Rhee, Woonza M.; Berg, Richard A.; Rosenblatt, Joel S.; Schroeder, Jacqueline A.; Braga, Larry J.; Smestad, Thomas L.; and Freeman, Abigail, 5,643,464, Cl. 210-748.000.

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Berghauser, Donald C.; and Berghauser, Sally H., 5,643,387, Cl. 156-230.000.

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Wakeman, Russell J.; and Bergstrom, John, 5,642,862, Cl. 239-585.400.

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Jenkins, Michael V.; Bernadas, Salvador R.; and Dong, Qiujie, 5,644,098, Cl. 84-624.000.

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Dabrah, Thomas T.; Matson, James A.; Lam, Kin Sing; Gustavson, Donald R.; Hesler, Grace A.; and Berry, Ronald L., 5,643,871, Cl. 514-11.000.

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Stacpoole, Peter W.; and Bersin, Robert M., 5,643,951, Cl. 514-557.000.

Berthelemy, Jean-Claude; Bessenay, Gilles Jean-Michel; Gauthier, Gérard Philippe; Girault, Daniel Georges; and Molliex, Ludovic Edmond Camille, to Societe Nationale D'Etude et de Construction de Moteurs D'Aviation "Snecma" . Method of producing a circular fibre-reinforced metal article, and apparatus for use in said method. 5,642,851, Cl. 228-44.300.

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Vilsmeier, Stefan; Lippstreu, Stefan; and Bertram, Michael, 5,643,268, Cl. 606-73.000.

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Thompson, Suzanne Marie; and Bertram, Randal Lee, 5,644,775, Cl. 395-757.000.

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Betherum, Gary J. Multi-position door hinge lock. 5,642,910, Cl. 292-288.000.

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Piper, John G.; and Bettinger, Michael J., 5,644,279, Cl. 335-228.000.

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Minevski, Ljiliana V., 5,643,534, Cl. 422-12.000.
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Kaufeld, James C.; Zagorski, Jacek; Bialik, Teresa Linne; and Rufer, Russell Dennis, 5,644,633, Cl. 379-355.000.

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Biederman, Bruce P.: *See*—
Spear, David A.; Biederman, Bruce P.; and Orosa, John A., 5,642,985, Cl. 416-238.000.

Biedermann, Ernst; El Mekki, Manfred Ben; Weisheit, Kenneth; Griebsch, Thomas; and Ross, Gerhard, to Siemens Aktiengesellschaft. Apparatus for checking semiconductor wafers with complementary light sources and two cameras. 5,644,140, Cl. 250-559.080.

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Shaw, Mark D.; Heyman, J. Tad; Bierce, Laurence M.; and Ehredt, Jesse, 5,642,834, Cl. 220-720.000.

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Lawrence, John; and Sandor, Istvan, 5,642,756, Cl. 137-884.000.

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Ludescher, Johannes; Sturm, Hubert; and Wieser, Josef, 5,644,052, Cl. 540-221.000.

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Biondo, Sam, 5,642,712, Cl. 123-398.000.

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Ehrlich, Stanislav; Godon, Jean-Jacques; and Renault, Pierre, 5,643,779, Cl. 435-232.000.

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Rowlette, John J., 5,643,696, Cl. 429-210.000.

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Wally, Joseph H., Jr.; Huff, David A.; and Huff, Michael R., 5,644,644, Cl. 382-112.000.

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Rowden, Jimmy M.; Heaton, John E.; and Koh, Charles H., 5,643,285, Cl. 606-119.000.

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Sesona, Albert J.; and Blanco, Ernesto E., 5,642,659, Cl. 99-376.000.

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Blaum, Mario; and Vardy, Alexander, to International Business Machines Corporation. Array combinatorial decoding with multiple error and erasure detection and location using cyclic equivalence testing. 5,644,695, Cl. 395-182.040.

Blinov, L. M.; Neuberger, W.; and Pavlov, V. V., to Ceram Optec Industries Inc. Method and device for plasma vapor chemical deposition of homogeneous films on large flat surfaces. 5,643,365, Cl. 118-723.0MW.

Blocher, Bernhard: *See*—
Bammer, Josef; Blocher, Bernhard; Glaser, Wolfgang; Loquenz, Heinz; Staufer, Walter; and Yaldez, Peter, 5,643,548, Cl. 423-540.000.

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Pietsch, Günter; Hillig, Holger; Voss, Bodo; and Von Bergen, Ernst-Peter, 5,643,026, Cl. 440-112.000.

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Bluhm, Michael: *See*—
Lange, Gerhard; Westebbe, Thomas; and Bluhm, Michael, 5,644,465, Cl. 361-120.000.

Blum, Saul C.: *See*—
Hsu, Chang S.; Blum, Saul C.; Liang, Zhenmin; Grosshans, Peter B.; and Robbins, Winston K., 5,644,129, Cl. 250-282.000.

Boag, James T.: *See*—
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Board of Regents, The University of Texas System: *See*—
Garfield, Robert E.; and Yallampalli, Chandrasekhar, 5,643,944, Cl. 514-470.000.
Hung, Mien-Chie; Yu, Di-Hua; Matin, Angahin; and Zhang, Yujiao Joe, 5,643,567, Cl. 424-93.200.

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Abramov, Grigory Khananovich; Amiragov, Mikhail Sergeevich; Astafiev, Valery Borisovich; Berezkin, Sergei Valentinovich; Bobe, Leonid Sergeevich; Bykov, Viktor Pavlovich; Vasiliev, Jury Borisovich; Gordeev, Vladimir Mikhailovich; Djukova, Eleonora Sergeevna; Novikov, Vladimir Mikhailovich; Podrugin, Alexandr Yakovlevich; Protasov, Nikolai Nikolaevich; Razgulina, Margarita Dmitrievna; Samsonov, Nikolai Mikhailovich; Sinyak, Galina Sergeevna; Sinyak, Jury Emelyanovich; and Farafonov, Nikolai Sergeevich, 5,643,457, Cl. 210-668.000.

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Garrett, Michael E.; and Boon, Arthur G., 5,643,454, Cl. 210-620.000.

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Zabytko, Luanne Byers; Whelchel, Nyra W.; Dougherty, George W., Jr.; and Bockover, Sharon K., 5,643,100, Cl. 473-250.000.

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Lewis, Gib F.; and Boe, Eric N., 5,644,316, Cl. 342-174.000.

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Taniguchi, Tadatsugu; and Harada, Hisashi, 5,643,729, Cl. 435-6.000.

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Arndts, Dietrich; Lösel, Walter; and Roos, Otto, 5,643,919, Cl. 514-292.000.

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Ohlstein, Eliot H., 5,643,939, Cl. 514-411.000.

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Bogdan, David Charles: *See*—
Aulet, Nancy Ruth; Bogdan, David Charles; Hussain, Muhammed Ishtiaq; Hutt, George William; Pearl, Donald Lynn; and Pribula, David Todd, 5,644,417, Cl. 359-110.000.

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Elliason, Kurt L.; Schnell, Robert J.; Bohrer, Philip J.; and Merten, Gregory J., 5,644,173, Cl. 307-34.000.

Boice, Charles Edward; Kaczmarczyk, John Mark; Ngai, Agnes Yee; and Woodard, Robert Leslie, to International Business Machines Corporation. Dynamically partitionable digital video encoder processor. 5,644,504, Cl. 364-514.00A.

Bolanos, Mario A.: *See*—
Libres, Jeremias P.; Attarwala, Abbas I.; Bolanos, Mario A.; Liang, Jimmy; and Nair, Indran B., 5,644,168, Cl. 257-787.000.

Bold, Guido; Lang, Marc; Fässler, Alexander; Capraro, Hans-Georg; Bhagwat, Shripad; Schneider, Peter; and Hoogevest, Peter van, to Ciba-Geigy Corporation. 5-amino-4-hydroxyhexanoic acid derivatives. 5,643,878, Cl. 514-19.000.

Boler Company, The: *See*—
Pierce, Phillippi Randsome; Dilling, Scott Allen; and Ramsey, John Edward, 5,642,896, Cl. 280-149.200.

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Boll, Alfred R.; Finke, David G.; and Koehn, Charles S., to West Publishing Company. Interprocess communications interface for managing transaction requests. 5,644,720, Cl. 395-200.120.

Bolongeat-Mobleu, Roger; Burnaz, Frédéric; and Schellekens, Hans, to Schneider Electric SA. Medium voltage electrical circuit breaker and switch. 5,644,117, Cl. 218-154.000.

Bolós, Jordi: *See*—
Foguet, Rafael; Bolós, Jordi; Sacristán, Aurelio; and Ortiz, José A., 5,643,927, Cl. 514-320.000.

Bomgardner, Charles T.: *See*—
Kalina, Harry B.; Bomgardner, Charles T.; and Hodges, Richard N., 5,642,823, Cl. 213-43.000.

Bommier, Christophe; and Chareire, Jean-Louis, to Le Carbone Lorraine. Carbon-carbon composite friction material with divided porosity. 5,643,663, Cl. 428-317.900.

Boner, William; and Kimble, Warren, to Automated Waste Equipment Co., Inc. Apparatus for automatically controlling operation of the throttle assembly of a motor vehicle engine system during operation of power take-off equipment. 5,642,711, Cl. 123-379.000.

Bonnett, Roy E., to Ford Motor Company. Single station assembly apparatus for automotive multi-panel compartment. 5,642,563, Cl. 29-771.000.

Bonning, Bryony C.: *See*—
Hammock, Bruce D.; Hanzlik, Terry N.; Harshman, Lawrence G.; Bonning, Bryony C.; and Ward, Vernon K., 5,643,776, Cl. 435-196.000.

Bonte, Frédéric: *See*—
Meybeck, Alain; Dumas, Marc; Bonte, Frédéric; and Marechal, Christian, 5,643,597, Cl. 424-450.000.

Booher, Richard N.; Lawhorn, David E.; Martinelli, Michael J.; Paget, Charles J., Jr.; and Schaus, John M., to Eli Lilly and Company. 6-heterocyclic-4-amino-1,2,2A,3,4,5-hexahydrobenz[CD]indoles. 5,643,910, Cl. 514-253.000.

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Boon, Arthur G.: *See*—
Garrett, Michael E.; and Boon, Arthur G., 5,643,454, Cl. 210-620.000.

Booth, David K.; and Conner, Arlie R., to Lightware, Inc. LCD projector with retractable projection lens assembly. 5,642,927, Cl. 353-119.000.

Boothroyd, John C.: *See*—
Kim, Kami; Soldati, Dominique; and Boothroyd, John C., 5,643,718, Cl. 435-6.000.

Borden, Inc.: *See*—
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Borg-Warner Automotive, Inc.: *See*—
Dembosky, Stanley K., 5,643,117, Cl. 474-110.000.

Borghard, William S.; Degnan, Thomas F.; and Mazzone, Dominick N., to Mobil Oil Corporation. Production of high viscosity index lubricants. 5,643,440, Cl. 208-58.000.

Borgstedt, Eric von Rehren; and Denkewicz, Raymond P., Jr., to PQ Corporation. Crystalline hydrated layered sodium and potassium silicates and method of producing same. 5,643,358, Cl. 106-600.000.

Borland International, Inc.: *See*—
Periwal, Damodar Das; and Maheshwari, Manish, 5,644,768, Cl. 395-672.000.

Bornowski, Arthur Steven: *See*—
Jenkins, Gary Kim; Evans, Bruno Jack; Williams, David Collis, Jr.; and Bornowski, Arthur Steven, 5,644,386, Cl. 356-4.010.

Bornzin, Gene A.; and Mann, Brian M., to Pacesetter, Inc. Single-pass A-V lead for pacing with stimulation of right ventricular outflow tract. 5,643,338, Cl. 607-123.000.

Bortz, Michael Louis; Fejer, Martin Michael; and Levenson, Marc David, to New Focus, Inc. Techniques of radiation phase matching within optical crystals. 5,644,422, Cl. 359-326.000.

Boschetto, Andrew A.; and Jacobs, Michael, to International Marketing Corporation. Electrical power/ground continuity indicator protection circuit. 5,644,462, Cl. 361-91.000.

Bose, Chinmoy Bhusan; and Kuo, Shyh-Shiaw, to Lucent Technologies Inc. Method and apparatus for connected and degraded text recognition. 5,644,648, Cl. 382-177.000.

Bosslet, Klaus; Hermentin, Peter; Sedlacek, Hans Harald; Auerbach, Bernhard; Pfleiderer, Peter; and Müller, Rolf, to Behringwerke Aktiengesellschaft. Use of pairs of leucine zipper peptides in immunoassay methods. 5,643,731, Cl. 435-7.100.

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Rowland, Christopher A.; Vergano, Michael G.; Eddy, Bryan P.; and Cotton, Peter B., 5,643,199, Cl. 604-22.000.
Tsukernik, Vladimir B.; and Shaw, William J., 5,643,318, Cl. 606-214.000.

Boswell, David R., to NovaVision, Inc. Holographic film and method for forming. 5,643,678, Cl. 428-467.000.

Bott, James A.; and Tarr, John, to Incoe Corporation. Apparatus for clamping molds in injection molding machines. 5,643,613, Cl. 425-135.000.

Bottenberg, Peter; Remon, Jean Paul Louis August; De Muynck, Christian Dominique Erwin; and Slop, Dick, to Janssen Pharmaceutica N.V. Composition of a bioadhesive sustained delivery carrier for drug administration. 5,643,603, Cl. 424-488.000.

Boudry, Jean-Marie, to Bull, S.A. Rapid switching input-output couplers for high rate data transfer buses. 5,644,254, Cl. 326-62.000.

Boulanger, Roger: *See*—
Fechillas, Michael R.; Boulanger, Roger; and Tan, Erol, 5,643,237, Cl. 604-366.000.

Bourcier, Jacques: *See*—
Morlec, Jean; and Bourcier, Jacques, 5,643,538, Cl. 422-173.000.

Bournas, Jean P.: *See*—
Naciri, Robert; and Bournas, Jean P., 5,644,639, Cl. 380-30.000.

Boury, Bechara Fouad: *See*—
Amini, Nader; Boury, Bechara Fouad; Brannon, Sherwood; Horne, Richard Louis; and Lohman, Terence Joseph, 5,644,729, Cl. 395-250.000.

Bovy, Philippe R.: *See*—
Gillet, Claude L.; Bovy, Philippe R.; Gorissen, Hugo; and Snyers, Michel P., 5,643,947, Cl. 514-523.000.

Bowen, James H. Ergonomic laptop computer and ergonomic keyboard. 5,644,338, Cl. 345-168.000.

Bowman, David A.; and Davis, David J., to Winget, Larry J. Thermoplastic air bag cover having a membrane switch with enhanced activation. 5,642,901, Cl. 280-728.300.

Boyajian, Edward: *See*—
Fitzgerald, Andrianne H.; and Boyajian, Edward, 5,644,693, Cl. 395-326.000.

Boyd, Jack D.; and Hopper, Lawrence C., to Cytec Technology Corp. Reducing galvanic degradation of hybrid metal/composite structures. 5,643,499, Cl. 252-387.000.

Boyd, James David, to Eastman Kodak Company. Process for initializins frame count. 5,644,378, Cl. 396-284.000.

Boykin, Christopher M.: *See*—
Cosgrove, Delos M.; Cornhill, J. Frederick; Boykin, Christopher M.; Huldin, Nelson L.; and O'Neill, William G., 5,643,226, Cl. 604-264.000.

Boykin, David W.: *See*—
Dykstra, Christine C.; Perfect, John; Boykin, David W.; Wilson, W. David; and Tidwell, Richard R., 5,643,935, Cl. 514-394.000.

Bozzuto, Carl Richard; Bianca, Joseph David; and Siddall, Walter Franklin, to Combustion Engineering, Inc. Gas turbine combined cycle system. 5,642,614, Cl. 60-39.182.

BP Chemicals Limited: *See*—
Blackborow, John Richard; and Clarke, Michael John, 5,644,001, Cl. 525-285.000.

Braam, Jan A.: *See*—
Right, Robert W.; Braam, Jan A.; Hewlin, John P.; and Wolf, Rick A., 5,644,293, Cl. 340-507.000.

Bracco International B.V.: *See*—
Schneider, Michel; Bichon, Daniel; Bussat, Philippe; Puginier, Jerome; and Hybl-Sutherland, Eva, 5,643,553, Cl. 424-9.520.

Brackett, John M.: *See*—
Spring, Thomas G.; Brackett, John M.; Vogdes, Sheila A.; and Schultz, Steven G., 5,643,721, Cl. 435-6.000.

Brader, Larry G.: *See*—
Barnett, Michael L.; and Brader, Larry G., 5,643,019, Cl. 440-2.000.

Bradshaw, Anthony J.; and Raizner, Albert E., to NeoCardia, LLC. Method and apparatus for uniform radiation treatment of vascular lumens. 5,643,171, Cl. 600-1.000.

Brady, James: *See*—
McClure, David Charles; and Brady, James, 5,644,542, Cl. 365-201.000.

Brady, James T.; Cheng, Joe-Ming; Cohn, Oded; Eldridge, James W.; Novick, Yoram; Ouchi, Norman K.; and Segev, Danit, to International Business Machines Corporation. System for storing pointers to initial sectors of variable length n units and storing second pointers within the initial sector of the n unit. 5,644,791, Cl. 395-888.000.

Braendle, Walter, to Eugster/Frismag AG. Espresso machine having a safety device. 5,642,656, Cl. 99-295.000.

Braga, Larry J.: *See*—
Rhee, Woonza M.; Berg, Richard A.; Rosenblatt, Joel S.; Schroeder, Jacqueline A.; Braga, Larry J.; Smestad, Thomas L.; and Freeman, Abigail, 5,643,464, Cl. 210-748.000.

BrainLAB Med. Computersysteme GmbH: *See*—
Vilsmeier, Stefan; Lippstreu, Stefan; and Bertram, Michael, 5,643,268, Cl. 606-73.000.

Braithwaite, David G.; Bruderer, Clark C.; Allen, Gregory M.; and Thompson, David A., to Iomega Corporation. Read/write protect scheme for a disk cartridge and drive. 5,644,444, Cl. 360-60.000.

Brandsma, Johannes: *See*—
Weekamp, Johannus W.; and Brandsma, Johannes, 5,644,476, Cl. 361-773.000.

Branly, Keith: *See*—
Lew, Chel W.; Branly, Keith; and Gaytan, Jesse, 5,643,351, Cl. 71-64.130.

Brannon, Sherwood: *See*—
Amini, Nader; Boury, Bechara Fouad; Brannon, Sherwood; Horne, Richard Louis; and Lohman, Terence Joseph, 5,644,729, Cl. 395-250.000.

Brasile, Lauren. Method for treating and rendering grafts nonthrombogenic and substantially nonimmunogenic using an extracellular matrix coating. 5,643,712, Cl. 435-1.200.

Breed, Allen: *See*—
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Breed Automotive Corporation: *See*—
Thuen, Torbjorn; and Breed, Allen, 5,642,904, Cl. 280-741.000.

Breese, Douglas E., to Dana Corporation. Aluminum driveshaft having reduced diameter end portion. 5,643,093, Cl. 464-183.000.

Bregnedal, Peter: *See*—
Brgesø , Klaus P.; and Bregnedal, Peter, 5,643,784, Cl. 514-228.800.

Breitner, John C. S.; and Welsh, Kathleen A., to Duke University. Method of delaying onset of alzheimer's disease symptoms. 5,643,960, Cl. 514-570.000.

Bremer, Klaus-Dieter; and Sawlewicz, Pavel, to Hoffmann-La Roche Inc. Pharmaceutical composition comprising a glucosidase and/or amylase inhibitor, and a lipase inhibitor. 5,643,874, Cl. 514-12.000.

Brendel, Klaus: *See*—
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Brent, Adam; and Shimabukuro, Jill R., to Brent, Adam. Structure for supporting articles against vehicles. 5,642,818, Cl. 211-70.500.

Brent, Wilson William, to Matsushita Electric Industrial Co., Ltd. Syntax independent variable length coder for digital video coder. 5,644,306, Cl. 341-67.000.

Brese, Nathaniel E.; and Reilly, Kenneth T., to OSRAM Sylvania Inc. Small size electroluminescent phosphor. 5,643,496, Cl. 252-301.650.

Breton, Marcel P.; Wong, Raymond W.; Schwarz, William M.; Gagnon, Yvan; and Friberg, Stig E., to Xerox Corporation. Liquid crystalline ink compositions. 5,643,357, Cl. 106-31.250.

Brewer, James E.: *See*—
Kroll, Mark W.; and Brewer, James E., 5,643,323, Cl. 607-2.000.

Brianti, Francesco; Alini, Roberto; Pisati, Valerio; and Gadducci, Paolo, to SGS-Thomson Microelectronics, S.r.l. High-pass filter structure with programmable zeros. 5,644,267, Cl. 327-553.000.

Bricault, Gary: *See*—
Weinberger, Joseph; and Bricault, Gary, 5,644,682, Cl. 395-101.000.

Bridgestone Corporation: *See*—
Lawson, David F.; Hall, James E.; and Ozawa, Yoichi, 5,643,848, Cl. 502-167.000.
Matsumoto, Hiroyuki, 5,643,374, Cl. 152-209.00R.

Briggs & Stratton Corporation: *See*—
Oswald, Denis A.; Emmer, Mark W.; Edmonds, Daniel W.; and Johnson, Robert S., 5,642,701, Cl. 123-193.500.

Brillson, Leonard J.; Silence, Scott M.; Duggan, Michael J.; and Kazakos, Ann M., to Xerox Corporation. Process for preparing electroconductive members. 5,643,706, Cl. 430-127.000.

Brinkley, Herman E. Apparatus for lifting oil-based liquid. 5,643,449, Cl. 210-242.400.

Brinton, Charles C., Jr.: *See*—
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Bristol-Meyers Squibb Company: *See*—
Dabrah, Thomas T.; Matson, James A.; Lam, Kin Sing; Gustavson, Donald R.; Hesler, Grace A.; and Berry, Ronald L., 5,643,871, Cl. 514-11.000.

Bristol-Myers Squibb Company: *See*—
Benoist, Christophe; Mathis, Diane; and Cosgrove, Dominic, 5,644,065, Cl. 800-2.000.

British Biotech Pharmaceuticals Limited: *See*—
Dickens, Jonathan Philip; Crimmin, Michael John; and Beckett, Raymond Paul, 5,643,964, Cl. 514-575.000.

British Technology Group Limited: *See*—
Smith, Robert William MacLaughlin; Sinton, Alastair Miles; and McArdle, Francis Joseph, 5,644,661, Cl. 382-300.000.

Broeckx, Walter: *See*—
Jones, Roger Jeffery; Surutzidis, Athanasios; Broeckx, Walter; and Fisk, Andrew Albon, 5,643,862, Cl. 510-466.000.

Brogan, John Colin: *See*—
Szita, Jeno G.; Ramesh, Subban; Jacobs, William, III; and Brogan, John Colin, 5,643,682, Cl. 428-524.000.

Bromsø, Per: *See*—

Olsen, Flemming Højberg; and Brømsø, Per, 5,643,038, Cl. 446-75.000.

Brooks, Chrystal L.: *See*—
Brooks, Ruth M.; and Brooks, Chrystal L., 5,644,298, Cl. 340-612.000.

Brooks, Paula A.: *See*—
Monahan, Deanna J.; and Brooks, Paula A., 5,643,098, Cl. 473-230.000.

Brooks, Ruth M.; and Brooks, Chrystal L. Drinking container with serving counter, and methods of constructing and utilizing same. 5,644,298, Cl. 340-612.000.

Brophy, Jere H.: *See*—
Grensing, Fritz C.; Marder, James M.; and Brophy, Jere H., 5,642,773, Cl. 164-516.000.

Brosh, Richard M.; Dennis, Charles A.; and Willis, Scott C., to Lockheed Martin Corporation. Power bus digital communication system. 5,644,286, Cl. 340-310.010.

Brost, Dale Francis: *See*—
Marrelli, John David; Brost, Dale Francis; Siddioui, Farhan; Pepin, Lisa Langford; and Stafford, Joseph David, 5,644,244, Cl. 324-637.000.

Brother Kogyo Kabushiki Kaisha: *See*—
Tomatsu, Yoshiya; and Hattori, Yoshiteru, 5,642,952, Cl. 400-624.000.

Brotzki, Bernard J.; and Corson, David N., to Whirlpool Corporation. Double bowl electric cooktop cooling. 5,643,481, Cl. 219-461.000.

Brown Bear Corporation: *See*—
Brown, Stanley L., 5,642,765, Cl. 144-34.100.

Brown, Bradley A., to Ford Motor Company. Automotive fuel delivery module with fuel level actuated reservoir. 5,642,719, Cl. 123-509.000.

Brown, Dennis. Gas cartridge safety inflator apparatus. 5,643,030, Cl. 441-94.000.

Brown, Gary I. Rotary valve system. 5,642,699, Cl. 123-190.200.

Brown, Jackie C., Sr. Three-dimensional scenery theme lamp. 5,642,930, Cl. 362-124.000.

Brown, Jeffrey P. Shoe with integral storable gaiter. 5,642,573, Cl. 36-2.00R.

Brown, Judith A.; and Hagerty, Jon C. Tent having a continuous seamless peripheral surface and containing an integral self-inflating floor. 5,642,750, Cl. 135-137.000.

Brown, Kelly M. Method and apparatus for removing polish from a nail. 5,642,913, Cl. 294-100.000.

Brown, Raymond F.; Howbert, J. Jeffry; Lobb, Karen L.; Neel, David A.; Reel, Jon K.; and Greenwood, Beverley, to Eli Lilly and Company. Pyrazolidinone CCK and gastrin antagonists and pharmaceutical formulations thereof. 5,643,926, Cl. 514-314.000.

Brown, Robert L.; Baxter, David E.; and Baxter, Gregory L. Mold separator apparatus. 5,643,614, Cl. 425-169.000.

Brown, Stanley L., to Brown Bear Corporation. Rotor for land clearing device. 5,642,765, Cl. 144-34.100.

Brown, Stephanie D.: *See*—
Mehta, Alay M.; Brown, Stephanie D.; and Kirschner, Michael B., 5,644,282, Cl. 337-295.000.

Brown University Research Foundation: *See*—
Aebischer, Patrick; Mills, John F.; Wahlberg, Lars; Doherty, Edward J.; and Tresco, Patrick A., 5,643,773, Cl. 435-182.000.

Brownell, Thomas Arthur: *See*—
Whipple, Walter, III; Brownell, Thomas Arthur; and Herzog, Rollie Richard, 5,642,628, Cl. 62-186.000.

Browning, Jim J., to Micron Display Technology, Inc. Flat panel display drive circuit with switched drive current. 5,644,195, Cl. 315-169.300.

Brück, Rolf: *See*—
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Brück, Stefan: *See*—
Schmidt, Helmut; Kasemann, Reiner; and Brück, Stefan, 5,644,014, Cl. 528-43.000.

Brucker, Gregory G.; Saul, Jerome Philip; and Savage, Steven D., to Angeion Corporation. Fluid cooled and perfused tip for a catheter. 5,643,197, Cl. 604-20.000.

Bruder, John E., to PictureTel Corporation. Method and apparatus for efficiently transmitting forced updates in a moving picture codec. 5,644,660, Cl. 382-232.000.

Bruder, Scott P.; Caplan, Arnold I.; and Haynesworth, Stephen E., to Osiris Therapeutics, Inc.; and Case Western Reserve University. Monoclonal antibodies for human osteogenic cell surface antigens. 5,643,736, Cl. 435-4.210.

Bruderer, Clark C.: *See*—
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Brugger, James M., to Cobe Laboratories, Inc. Differential conductivity hemodynamic monitor. 5,644,240, Cl. 324-439.000.

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Bruls, Wilhelmus H. A.: *See*—
Denissen, Adrianus J. M.; Bruls, Wilhelmus H. A.; and Tolhuizen, Ludovicus M. G. M., 5,644,582, Cl. 371-37.400.

Brun, Charles J., Jr., to Electra Form, Inc. Continuous injection molding system. 5,643,620, Cl. 425-556.000.

Brunner Mond & Company Limited: *See*—
Woolley, Graham Edward, 5,643,858, Cl. 507-140.000.

Bruno, Salvatore Anthony; and Swanson, Donald Keith, to Du Pont de Nemours, E. I., and Company. Luminescent materials prepared by coating luminescent compositions onto substrate particles. 5,643,674, Cl. 428-403.000.

Brunsvold, William Ross: *See*—
Aviram, Ari; Brunsvold, William Ross; Bucca, Daniel; Conley, Willard Earl, Jr.; and Seeger, David Earle, 5,644,038, Cl. 534-557.000.

Brunswick Corporation: *See*—
Schroeder, Bruce A., 5,642,691, Cl. 123-41.090.

Brush Wellman Inc.: *See*—
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Brydon, Louis B.: *See*—
Hayes, George T.; and Brydon, Louis B., 5,644,322, Cl. 343-915.000.

BTM Corporation: *See*—
Sawdon, Edwin G., 5,642,559, Cl. 29-33.00K.

Buan, Angeles Lillian; and Laurin, Dean, to Baxter International Inc. Additives for polymer compositions. 5,643,501, Cl. 252-407.000.

Bucca, Daniel: *See*—
Aviram, Ari; Brunsvold, William Ross; Bucca, Daniel; Conley, Willard Earl, Jr.; and Seeger, David Earle, 5,644,038, Cl. 534-557.000.

Buchanan, Harry C., Jr., to ITT Automotive Electrical Systems, Inc. Rear motor bearing for worm gear drive motors. 5,644,180, Cl. 310-90.000.

Buckberg, Gerald D.; Heimstaedt, Russell A.; and Taylor, John M., to Sorin Biomedical Inc. Cardioplegia delivery system and method for converting from warm cardioplegia to cold cardioplegia. 5,643,191, Cl. 604-4.000.

Buckland, Patrick Allen: *See*—
Benedict, Melvin Kent; Buckland, Patrick Allen; Kelley, Richard Allen; Neal, Danny Marvin; Oman, Price Ward; and Waters, Carl Raymond, 5,644,470, Cl. 361-686.000.

Buckles, Warren: *See*—
Emmerich, Jeffery C.; Kostecki, Eric L.; and Buckles, Warren, 5,644,218, Cl. 323-360.000.

Buckley, Paul, to Lucas Industries. Fuel system. 5,642,714, Cl. 123-447.000.

Buell, Kenneth Barclay: *See*—
Lavon, Gary Dean; Carlin, Edward Paul; Buell, Kenneth Barclay; Desmarais, Thomas Allen; Chang, John Allen; Mueller, Christina-Susanne; and Haga, Takako, 5,643,242, Cl. 604-385.100.

Bufe, Michael: *See*—
Geiger, August; Knappe, Alexander; and Bufe, Michael, 5,644,112, Cl. 200-1.00R.

Bull, Gerard Neil. Musical computational devices. 5,644,096, Cl. 84-485.0SR.

Bull HN Information Systems Inc.: *See*—
Yoder, Ronald W.; Lange, Ronald E.; Shelly, William A.; Guenthner, Russell W.; and Demers, Richard L., 5,644,761, Cl. 395-595.000.

Bull S.A.: *See*—
Autechaud, Jean-François; and Chehaibar, Ghassan, 5,644,716, Cl. 395-200.080.
Boudry, Jean-Marie, 5,644,254, Cl. 326-62.000.

Bullard, James Roger. Controlled targeting laryngoscope. 5,643,221, Cl. 604-194.000.

Bunker Sales & Marketing, Inc.: *See*—
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Bunte, Alan G.: *See*—
Schultz, Darald R.; Danielson, Arvin D.; Bunte, Alan G.; Sherman, Richard A.; and Jaeger, Robert B., 5,644,471, Cl. 361-686.000.

Burak, Jerome M.; and Mayes, Douglas, to D&J Development Workshop, Inc. Wheelchair trainer. 5,643,143, Cl. 482-54.000.

Burbenskaya, Natalya Mikhailovna: *See*—
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Burch, Steven D.: *See*—
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Clews, Christopher Mark, 5,642,557, Cl. 24-339.000.

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Yamamoto, Yasuhiro; and Iwaya, Toshio, 5,642,925, Cl. 353-25.000.

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Moorman, Jack W.; Solomon, Edward G.; Fiekowsky, Peter J.; Wilent, John W., deceased; Moorhouse, Abigail A.; and Melen, Robert F., 5,644,612, Cl. 378-98.200.

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Lopez, Joaquin; and Coquin, Jean-Michel, 5,644,216, Cl. 323-315.000.
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Cosme, Edgar Z. Needle assembly. 5,643,220, Cl. 604-192.000.
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Date, Toshinori; Couch, Johnny D.; and Richmond, Sarah Mason, 5,644,113, Cl. 200-5.00R.
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Coughlin, Daniel L., Jr.: *See*—
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Ganguly, Parthasarthy; Pavaskar, Neela Raghunath; Vijayamohanan, Kunjukrishna Pillai; George, Santhi; and Singh, Prabhat, 5,643,508, Cl. 264-29.600.
Courtright, David A.; and Duschatko, Douglas Ewing, to Cyrix Corporation. Burst transfers using an ascending or descending only burst ordering. 5,644,788, Cl. 395-855.000.
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Cover, Charles L. Pill swallowing device and method. 5,643,204, Cl. 604-77.000.
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Cox, Ian M.: *See*—
Martin, Henry Woods; Cox, Ian M.; and Rodibaugh, Scott A., 5,643,448, Cl. 210-232.000.
Cox, Ingemar J.; and Roy, Sebastien, to NEC Research Institute, Inc. Method for the estimation of rotation between two frames via epipolar search for use in a three-dimensional representation. 5,644,651, Cl. 382-154.000.
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Coy, Henry Robert; Rees, Robert M.; and Cabrera, Luis Felipe, to International Business Machines Corporation. System and method for managing a hierarchical storage system through improved data migration. 5,644,766, Cl. 395-620.000.
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Craig, James J. Quick release surf leash assembly. 5,643,028, Cl. 441-75.000.
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Hayes, Kim G.; and Crapo, Mark J., 5,642,837, Cl. 221-197.000.
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Cretzler, Donald J. Point-of-sale tax collection system and method of using same. 5,644,724, Cl. 395-219.000.
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Cruickshank, William T., to Bindicator Company. Ultrasonic material level measurement. 5,644,299, Cl. 340-617.000.
Crum, James R., to Walker Forge Inc. Lubricator assembly for presses usable in die forging. 5,642,637, Cl. 72-43.000.
Crystal Semiconductor Corporation: *See*—
Jenkins, Michael V.; Bernadas, Salvador R.; and Dong, Qiujie, 5,644,098, Cl. 84-624.000.
Kerth, Donald A.; Kasha, Dan B.; Swanson, Eric J.; and Mellissinos, Anthony G., 5,644,257, Cl. 327-96.000.
Kerth, Donald A.; and Green, Brian D., 5,644,308, Cl. 341-120.000.
Cucin, Robert L., to Rocin Laboratories, Inc. Power-assisted liposuction instrument and cannula assembly therefor. 5,643,198, Cl. 604-22.000.
Cuinet, Jean Louis, to Timex Corporation. Combined crown/pushbutton for illuminated analog watch. 5,644,553, Cl. 368-320.000.
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Aridas, James; Culpepper, Judith L.; Ireland, Tijen; Trinidad, Pope P.; and White, Sherman R., Jr., 5,644,719, Cl. 395-200.120.
Culver, Gregory B.: *See*—
Culver, Lorraine S.; and Culver, Gregory B., 5,642,540, Cl. 5-499.000.
Culver, Lorraine S.; and Culver, Gregory B. Pad cover with flap lacking fasteners. 5,642,540, Cl. 5-499.000.
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Sturzebecher, Dana J.; Cummings, Michael T.; Higgins, Thomas P.; and DeMarco, James R., 5,644,276, Cl. 333-236.000.
Curtin, Christian C.: *See*—
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Cusumano, Joseph V.: *See*—
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Cyberex, Inc.: *See*—
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Cybex International, Inc.: *See*—
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Bluhm, Mark W.; Hervin, Mark W.; McMahan, Steven C.; and Garibay, Raul A., Jr., 5,644,741, Cl. 395-376.000.
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Cytec Technology Corp.: *See*—
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Neff, Roger Edgar; Pellon, Joseph Jacinto; and Ryles, Roderick Glyn, 5,643,461, Cl. 210-728.000.
Szita, Jeno G.; Ramesh, Subban; Jacobs, William, III; and Brogan, John Colin, 5,643,682, Cl. 428-524.000.
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Warner, Nicholas; Goddard, Moses; and Mills, John, 5,643,286, Cl. 606-130.000.

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Van Der Borst, Johannes; D'Achard Van Enschut, Johannes F. M.; Jenneskens, Theodorus J. J. M.; Dobben, Jacob; Ter Borch, Christiaan J.; and Van Der Wal, Hendricus G. M., 5,644,615, Cl. 378-149.000.

Da Cunha, Carlos Henrique Guimaraes: *See—*
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Daewoo Electronics Co., Ltd.: *See—*
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Daewoo Hawaii Corporation: *See—*
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Daewoo Heavy Industries Ltd.: *See—*
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Dahlhaus, Ulrich: *See—*
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Dai Nippon Printing Co., Ltd.: *See—*
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Yamazaki, Satoshi; and Horiguchi, Ryuji, 5,644,412, Cl. 359-2.000.

Daido Metal Company Ltd.: *See—*
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Daido Tokushuko Kabushiki Kaisha: *See—*
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Daines, Robert A., to SmithKline Beecham Corporation. Pharmaceutical pyridine compounds. 5,643,914, Cl. 514-277.000.

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Soutar, Larry W.; and Dale, Ronald W., 5,644,505, Cl. 364-514.00B.

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Dalson, Constantine Trifon: *See—*
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Sherman, Michael C.; Ray, Eddie, III; Farcy, Jean Pierre; and Tai, Joseph, 5,643,264, Cl. 606-61.000.

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Archibald, G. Kent; Danielson, Orland H.; and Woessner, Roger J., 5,642,733, Cl. 128-672.000.

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Darsow, Gerhard, to Bayer Aktiengesellschaft. Process for the preparation of α-D-glucopyranosido-1,6-mannitol and -sorbitol from α-D-glucopyranosido-1, 6-fructose. 5,644,044, Cl. 536-18.500.

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Zanzucchi, Peter John; Cherukuri, Satyam Choudary; McBride, Sterling Edward; and Judd, Amrit Kaur, 5,643,738, Cl. 435-6.000.

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Davis, Alan R.: *See—*
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Eteve, Martine; and Hansenne, Isabelle, to L'Oreal. Screening cosmetic composition containing a mixture of 1,4-benzenedi(3-methylidene-10-camphosulfonic) acid, partially or completely neutralized, and metal oxide nanopigments. 5,643,557, Cl. 424-60.000.
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Cooper, Kevin; and Scopelianos, Angelo, 5,644,002, Cl. 525-411.000.
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Gnade, Bruce E.; Evans, Daron G.; Summerfelt, Scott R.; and Levine, Jules D., 5,643,033, Cl. 445-24.000.
Evans, James A.: *See*—
Ahmad, Falih H.; and Evans, James A., 5,644,314, Cl. 342-22.000.
Evans, Marc P.; and Cazalet, Peter M., to Endurance Sport Technology Group, Inc. Freestyle stroke swim training paddle. 5,643,027, Cl. 441-58.000.
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Bush, Stephan G.; Collias, Dimitris I.; and Evans, Stephen E., 5,642,860, Cl. 239-333.000.
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Gutierrez, Antonio; Emert, Jacob I.; Stokes, James P.; Thaler, Warren A.; Diana, William D.; Gorda, Keith R.; Eckstrom, William B.; Dankworth, David C.; and Cusumano, Joseph V., 5,643,859, Cl. 508-454.000.
Walzer, John Flexer, Jr., 5,643,847, Cl. 502-117.000.
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Dismukes, John Pickett; Johnson, Jack Wayne; Corcoran, Edward William, Jr.; Vallone, Joseph; Pizzulli, James J., Jr.; and Anderson, Michael P., 5,643,987, Cl. 524-442.000.
Hsu, Chang S.; Blum, Saul C.; Liang, Zhenmin; Grosshans, Peter B.; and Robbins, Winston K., 5,644,129, Cl. 250-282.000.
Sartori, Guido; Savage, David W.; Gorbaty, Martin L.; and Ballinger, Bruce Henry, 5,643,439, Cl. 208-47.000.

Sweet, James Sweet; Chen, Tan Jen; and Darnell, Charles P., 5,643,442, Cl. 208-302.000.

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Smithe, Eliot S.; and Wagner, Stephen M., 5,642,878, Cl. 271-109.000.

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Takagi, Mikio, 5,643,839, Cl. 437-247.000.

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Abramov, Grigory Khananovich; Amiragov, Mikhail Sergeevich; Astafiev, Valery Borisovich; Berezkin, Sergei Valentinovich; Bobe, Leonid Sergeevich; Bykov, Viktor Pavlovich; Vasiliev, Jury Borisovich; Gordeev, Vladimir Mikhailovich; Djukova, Eleonora Sergeevna; Novikov, Vladimir Mikhailovich; Podrugin, Alexandr Yakovlevich; Protasov, Nikolai Nikolaevich; Razgulina, Margarita Dmitrievna; Samsonov, Nikolai Mikhailovich; Sinyak, Galina Sergeevna; Sinyak, Jury Emelyanovich; and Farafonov, Nikolai Sergeevich, 5,643,457, Cl. 210-668.000.

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Baudry, Jacques; Faral, Michel; and Tiers, Jean-Francois, 5,643,697, Cl. 430-5.000.

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Holiday, Allan D., 5,643,420, Cl. 203-11.000.

Farng, Richard K.; Gendimenico, Gerard J.; Mezick, James A.; Ng, Shirley M.; and Wrobel, Stanley B., Jr., to Ortho Pharmaceutical Corporation. Aqueous gel retinoid dosage form. 5,643,584, Cl. 424-401.000.

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Errico, Joseph P.; Errico, Thomas J.; and Ralph, James, 5,643,265, Cl. 606-70.000.

Faulmann, Ervin, to Medical College of Ohio. Gene and method for production of an IgA binding protein. 5,644,030, Cl. 530-350.000.

Favre, Bernard, to LIR France. Case with hinged closure that assists opening. 5,642,832, Cl. 220-260.000.

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Solot, Edwin L., 5,644,625, Cl. 379-88.000.

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Swan, David A.; and Lau, Robert Gerald, 5,642,909, Cl. 292-39.000.

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Bortz, Michael Louis; Fejer, Martin Michael; and Levenson, Marc David, 5,644,422, Cl. 359-326.000.

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Fellows, Thomas George: *See*—
Greenwood, Christopher John; and Fellows, Thomas George, 5,643,121, Cl. 475-72.000.

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Persing, David H.; Hunt, John J.; Young, Karen K. Y.; Felmlee, Teresa A.; Roberts, Glenn D.; and Whelan, A. Christian, 5,643,723, Cl. 435-6.000.

Fenton, Vernon K.; and Larson, Sheldon D., to X-Stream Unlimited, Inc. Aquatic vehicle. 5,643,031, Cl. 441-130.000.

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Davidson, Robert S.; Ferguson, Robert W.; Heldman, Barry E.; Diekmann, Timothy J.; Maistrovich, Anthony R.; Higgins, James A.; and Gehlsen, Mark D., 5,644,007, Cl. 526-64.000.

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Hanisch, Wolfgang H.; Fernandes, Pete M.; Taforo, Terrance; and Thomson, James W., 5,643,566, Cl. 424-85.400.

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Althin, Anders; Fernandez, Ben; Elsen, Raymond; Ruzius, Kees; Silva, Lalith; and Washington, George, 5,643,452, Cl. 210-500.230.

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Ferrara, Joseph J.; Cipolla, Stephen D.; Kramer, William E.; Naramore, Raymond A.; and Rolph, L. James, to Xerox Corporation. Variable sheet sets stapling and registration positions system. 5,642,876, Cl. 270-58.010.

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Ferro, Silvano, to REER S.p.A. High-security electric supply circuit for machine control systems. 5,644,256, Cl. 327-41.000.

Fersch, Kenneth E.; and Miner, Arthur J., to BASF Corporation. Method of reducing container residue of water-dispersible agricultural chemical granules by water-soluble film coating. 5,643,593, Cl. 424-419.000.

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Wohlrab, Chad A.; Powers, John A.; and Fessenden, Michael C., 5,642,924, Cl. 312-408.000.

FEV Motorentechnik GmbH & Co. Kommanditgesellschaft: *See*—
Schmitz, Guenter; and Mayer, Heinrich, 5,642,713, Cl. 123-435.000.

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Lontz, John F., 5,644,032, Cl. 530-382.000.

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Figueiredo, Antonio Albino: *See*—
Filus, Wayne Scott; Figueiredo, Antonio Albino; Kane, Adam Stuart; Kluska, Theodore Edward; Larsen, Wayne David; and Starace, Jeremia Patrick, 5,643,014, Cl. 439-680.000.

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Fugoso, Mauricio Lintag; and Figueroa, Candida Naguit, 5,643,209, Cl. 604-96.000.

Fildes, Nicola Jane; and Reynolds, Rebecca Lynne, to Roche Molecular Systems, Inc. Methods and reagents for Glycophorin A typing. 5,643,724, Cl. 435-6.000.

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Davies, John, 5,643,515, Cl. 264-103.000.

Filter Specialists, Inc.: *See*—
Harris, James L.; and Jacobs, James D., 5,643,451, Cl. 210-448.000.

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Reddy, Baireddy Raghava; and Shanishourn, Edwar Shoukri, 5,643,846, Cl. 502-104.000.

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Pauler, Franz; Dahlhaus, Ulrich; and Vogt, Rolf, 5,642,889, Cl. 277-37.000.
Spies, Karl-Heinz; Heinemann, Joachim; and Meinig, Uwe, 5,642,695, Cl. 123-142.50E.

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Fischer, Dan E., to Ultradent Products, Inc. Methods and apparatus for mixing and dispensing multi-part compositions. 5,643,206, Cl. 604-82.000.

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Fisher, Jack W.; Hatfield, Lowell D.; Hoying, Richard C.; and Ray, James E., to Eli Lilly and Company. Intermediates for the preparation of carbacephems. 5,644,051, Cl. 540-205.000.

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Tuttle, Mark E.; Lake, Rickie C.; and Fisher, John D., 5,642,561, Cl. 29-623.200.

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Jones, Roger Jeffery; Surutzidis, Athanasios; Broeckx, Walter; and Fisk, Andrew Albon, 5,643,862, Cl. 510-466.000.

Fiske, Kenton W.; Reehil, Edward G.; Ley, Herbert F.; and Sestito, David L., to SenDEC Corporation. Self contained multi-function engine monitor and timer for providing engine running time, job time, service time and tachometer functions. 5,644,491, Cl. 364-431.040.

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Lurie, Keith G.; Benditt, David G.; Shultz, Jeffrey J.; Ockuly, John David; and Fleischhacker, John J., 5,643,231, Cl. 604-282.000.

Fleming, Roger D.: *See*—
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Flock, Stephen T.: *See*—
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Flow International Corporation: *See*—
Erichsen, Glenn A.; Massenburg, John C.; Burnham, Chip; O'Connor, Thomas Harry; Smith, Rhonda R.; Zaring, Katherine; and Many, Robert P., 5,643,058, Cl. 451-99.000.

Fluhler, Thomas J.: *See*—
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Flynn, Daniel Lee; and Shone, Robert L., to G. D. Searle & Co. 4-aminomethyl-1-azaadamantane derived benzamides. 5,643,917, Cl. 514-290.000.

Flynn, Stephen J.: *See*—
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FMC Corporation: *See*—
East, Charles F., 5,642,800, Cl. 193-37.000.
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Foley, Newman C. Golf putter. 5,643,101, Cl. 473-251.000.

Foley, Steven J.; and Michaud, Joseph A., to Teijin Seiki Boston, Inc.; and Harmonic Drive Technologies. Hermetically sealed harmonic drive transmission manufacture. 5,642,645, Cl. 74-640.000.

Folske, Donald W.: *See*—
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Folta, James A., to University of California, Regents of the. Miniaturized flow injection analysis system. 5,644,395, Cl. 356-246.000.

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Dean, Robert Earl; Foo, Pang-Dow; Lory, Earl Ryan; and Olmer, Leonard Jay, 5,643,838, Cl. 437-238.000.

Foote, Richard W.; and Young, Richard, to Automatic Business Products Company, Inc. Method of labelling prescription containers. 5,642,906, Cl. 283-67.000.

Ford, Jerry C., to Rayonier Inc. Process for operating a wood pulp digester sampling device. 5,643,411, Cl. 162-49.000.

Ford Motor Company: *See*—
Bonnett, Roy E., 5,642,563, Cl. 29-771.000.
Brown, Bradley A., 5,642,719, Cl. 123-509.000.
Diehl, Roy Edward; and Vance, Matt Adrian, 5,642,698, Cl. 123-184.420.
Gilman, Dale M.; and Ngo, Lang So, 5,642,717, Cl. 123-481.000.
Lauzon, Mark William; and Hellebuyck, Charles Gerard, 5,644,326, Cl. 345-34.000.
Renehan, John Francis, 5,644,213, Cl. 322-28.000.
Richardson, John A., 5,643,129, Cl. 475-204.000.
Stockhausen, William F.; and LoRusso, Julian A., 5,642,703, Cl. 123-198.00F.

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Young, Mark Douglas; Erspamer, John Paul; Forry, Mark Edwin; and Berg, Charles John, Jr., 5,642,602, Cl. 53-438.000.

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Foster, George Norris: *See*—
Conti, Nicholas Joseph; Karol, Frederick John; and Foster, George Norris, 5,644,023, Cl. 528-392.000.

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Hadlock, Kenneth G.; Goh, Chin-Joo; and Foung, Steven K.H., 5,643,714, Cl. 435-5.000.

Fountain Fresh, Inc.: *See*—
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Fournier, Michel Mark: *See*—
Piramoon, Alireza; Wedemeyer, Robert; and Fournier, Michel Mark, 5,643,168, Cl. 494-16.000.

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Parekh, Mahendra B.; Kitzmiller, Leon; Costello, Richard C.; Grow, C. Allen; Pinchott, Gordon; O'Leary, Dennis; MacDougall, Louis M.; Okey, David W.; and Fowler, Edward J., 5,642,654, Cl. 92-260.000.

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Fraga, Stephanie A.: *See*—
Demers, James P.; Johnson, Sigmond; Weidner-Wells, Michele Ann; Kanojia, Ramesh M.; Fraga, Stephanie A.; and Klaubert, Dieter, 5,643,950, Cl. 514-539.000.

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Joye, Freddie W., Sr.; and Spector, Lane I., 5,642,674, Cl. 108-43.000.
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Freeman, Jay D.: *See*—
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Frehner, Marc; Meyrat, Clément; and Donzé , Daniel, to SMH Management Services AG. Compact instrument panel. 5,644,289, Cl. 340-461.000.
Freitas, Mark J.: *See*—
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Reitz, David B.; and Manning, Robert E., 5,643,906, Cl. 514-235.800.
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Gabriel, Rodney G.: *See*—
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Galm, James M., to Cyberex, Inc. Static switch method and apparatus. 5,644,175, Cl. 307-131.000.
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Glycomed Incorporated: *See*—
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Goldstar Electron Co., Ltd.: *See*—
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Connolly, Raymond Edwin; and Griffiths, Jonathan James Whittington, 5,644,295, Cl. 340-568.000.
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Grow, C. Allen: *See*—
Parekh, Mahendra B.; Kitzmiller, Leon; Costello, Richard C.; Grow, C. Allen; Pinchott, Gordon; O'Leary, Dennis; MacDougall, Louis M.; Okey, David W.; and Fowler, Edward J., 5,642,654, Cl. 92-260.000.
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Janes, Harry W.; Gore, Gerald E.; Wittman, Wayne K.; and Roman, Harry T., 5,642,587, Cl. 47-58.000.
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Guay, Christian; and Leblond, Guy, to Sani Metal Ltd. Exhaust hood apparatus. 5,642,784, Cl. 169-61.000.
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Guerin, Patrick, to Cray Valley, S.A. Aqueous polymer dispersion, method for making same, and use thereof for preparing paints. 5,643,993, Cl. 524-524.000.
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Gullo, Christopher Thomas; Bolin, Stephen James; and Kaczmarek, James Stanley, to Motoman Inc. Laser enclosure. 5,643,477, Cl. 219-121.860.
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Petersen, Carolyn; Leech, James; Nelson, Richard C.; and Gut, Jiri, 5,643,772, Cl. 435-172.300.
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Werth, John, 5,643,352, Cl. 75-255.000.
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Haddad, Eric, to Genlyte Group Incorporated, Hadco Division of The. Adjustable outdoor light. 5,642,934, Cl. 362-287.000.
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Hadlock, Kenneth G.; Goh, Chin-Joo; and Foung, Steven K.H., to Genelabs Technologies, Inc.; and Leland Stanford Junior University, The Board of Trustees of the. Method and assay for HTLV. 5,643,714, Cl. 435-5.000.
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Hafler, David Allen: *See*—
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Hagan, James A.; Piltingsrud, Douglas H.; Starcke, Steven F.; Offuh, Bradley J.; and Fox, Dennis L., to International Business Machines Corporation. Method for improving the flatness of glass disk substrates. 5,643,649, Cl. 428-64.100.
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Hagerty, Jon C.: *See*—
Brown, Judith A.; and Hagerty, Jon C., 5,642,750, Cl. 135-137.000.
Hagimori, Haruo, to Rohm Co., Ltd. Microcomputer having a security function for stored data. 5,644,781, Cl. 395-800.000.
Hagimori, Hitoshi, to Minolata Co. Ltd. Zoom lens system. 5,644,434, Cl. 359-689.000.
Hagman, Ronny Kent: *See*—
Gustavsson, Magnus Peter Mikael; and Hagman, Ronny Kent, 5,643,480, Cl. 219-211.000.
Haines, Timothy G.; and Goldstein, David B., to Hudson Surgical Design, Inc. Method and apparatus for tibial resection. 5,643,272, Cl. 606-80.000.
Hait, John Norman, to Rocky Mountain Research Center. Photonic signal processing, amplification, and computing using special interference. 5,644,123, Cl. 250-216.000.
Hal Computer Systems, Inc.: *See*—
Larson, Jeffrey Dale, 5,644,604, Cl. 375-354.000.
Shen, Gene W.; Szeto, John; Patkar, Niteen A.; and Shebanow, Michael C., 5,644,742, Cl. 395-591.000.
Halbig, David Michael: *See*—
Insalaco, Jeffrey Lee; Johnson, William Marv; and Halbig, David Michael, 5,642,640, Cl. 72-334.000.
Hale, Layton C., to University of California, Regents of the. Adjustable link for kinematic mounting systems. 5,642,956, Cl. 403-122.000.
Hale, Leon A. Cable and parts container. 5,642,812, Cl. 206-396.000.
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Koths, Kirston E.; Halenbeck, Robert F.; Taylor, Eric W.; Wang, Alice M.; and Casipit, Clayton L., 5,644,035, Cl. 530-395.000.
Ladner, Martha B.; Noble, Janelle A.; Martin, George A.; Kawasaki, Ernest S.; Coyne, Mazie Y.; Halenbeck, Robert F.; and Koths, Kirston E., 5,643,563, Cl. 424-85.100.

Hall, James B.: *See*—
Bello, Fernando A.; Hall, James B.; Luedke, Otto; and O'Neal, Earl W., 5,643,405, Cl. 156-636.100.

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Lawson, David F.; Hall, James E.; and Ozawa, Yoichi, 5,643,848, Cl. 502-167.000.

Hall, Mark Alan: *See*—
Mason, J. Bradley; and Hall, Mark Alan, 5,643,350, Cl. 65-158.000.

Hall, Stephen: *See*—
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Hall, William F.: *See*—
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Proett, Mark A.; Waid, Margaret C.; and Chin, Wilson C., 5,644,076, Cl. 73-152.410.

Halm, Richard. Wet rotor gap tube motor for pumps. 5,644,178, Cl. 310-43.000.

Halperin, Arnold: *See*—
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Hamada, Masaaki; Aoi, Takahiro; Kohgo, Tetsuya; and Mishima, Masaaki, to Tokai Rubber Industries, Ltd.; and Nissan Motor Company, Limited. Double-mass type dynamic damper having two damper systems connected to each other, and drive shaft equipped with the dynamic damper. 5,642,874, Cl. 267-141.000.

Hamada, Toshimasa; Iwasaki, Masaru; Hanamoto, Tetsuya; Katoh, Shohichi; Funakoshi, Takahiro; Miyake, Koji; and Nakamichi, Masumi, to Sharp Kabushiki Kaisha. Photodetector with a multilayer filter and method of producing the same. 5,644,124, Cl. 250-216.000.

Hamaguchi, Koji; Ishibashi, Yoichi; and Urushibata, Hideaki, to Kao Corporation. Method for deinking wastepaper. 5,643,409, Cl. 162-5.000.

Hamaguchi, Naoru; Sato, Jun; and Doken, Kazuhiro, to Takeda Chemical Industries, Ltd. Glycosylated cytokines. 5,643,564, Cl. 424-85.100.

Hamaguchi, Shin-ichi, to Fujitsu Limited. Electron beam exposure apparatus and a method for electron beam exposure. 5,644,138, Cl. 250-492.220.

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Mizuno, Seiichiro, 5,644,385, Cl. 356-3.040.

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Hamilton, Harriet Wall: *See*—
Connolly, Cleo; Doherty, Annette Marion; Hamilton, Harriet Wall; Patt, William Chester; and Sircar, Ila, 5,643,879, Cl. 514-19.000.

Hammer, Philip E.: *See*—
Ligon, James M.; Schupp, Thomas; Beck, James Joseph; Hill, Dwight Steven; Ryals, John Andrew; Gaffney, Thomas Deane; Lam, Stephen Ting; Hammer, Philip E.; and Uknes, Scott Joseph, 5,643,774, Cl. 435-183.000.

Hammerl, Erwin: *See*—
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Hammerslag, Julius G.: *See*—
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Hammock, Bruce D.; Hanzlik, Terry N.; Harshman, Lawrence G.; Bonning, Bryony C.; and Ward, Vernon K., to University of California, The Regents of the. Insect diagnostic and control compositions. 5,643,776, Cl. 435-196.000.

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Hamprecht, Rainer; and Jordan, Heinz-Dietrich, to Bayer Aktiengesellschaft. Mixtures of blue disperse azo dyestuffs. 5,644,039, Cl. 534-573.000.

Hana, Najib; and Jouaneh, Musa, to Hana, Najib. Device for remotely changing the set temperature of a thermostat. 5,644,302, Cl. 340-825.060.

Hanamoto, Tetsuya: *See*—
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Hanaya, Morimasa, to Tokushu Paper Mfg. Co., Ltd. Method and apparatus for sheet formation. 5,643,417, Cl. 162-300.000.

Handa, Yoichi, to Fujitsu Limited. Magnetic head assembly with thin-film magnetic head and flexible support member. 5,644,450, Cl. 360-104.000.

Haneda, Isamu: *See*—
Miyamoto, Satoru; Shiraishi, Naoki; Isoe, Toshio; and Haneda, Isamu, 5,644,722, Cl. 395-209.000.

Hang, Huong M., to Spectrian, Inc. Feed forward RF amplifier for combined signal and error amplification. 5,644,268, Cl. 330-151.000.

Hanisch, Wolfgang H.; Fernandes, Pete M.; Taforo, Terrance; and Thomson, James W., to Cetus Corporation. Formulation processes for lipophilic proteins. 5,643,566, Cl. 424-85.400.

Hanneman, Rodney E.; and Girard, Arthur L., to Reynolds Metals Company. Method and apparatus for continuously cladding and hot working cast material. 5,643,371, Cl. 148-522.000.

Hanrahan, Michael J.: *See*—
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Hansen, Stuart C., to Hewlett-Packard Co. Hyperbolic ion trap and associated methods of manufacture. 5,644,131, Cl. 250-292.000.

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Hanzlik, Terry N.: *See*—
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Hara, Yoshikazu, to Riso Kagaku Corporation. Apparatus for controlling a linkage drive section in a stencil printing machine. 5,642,663, Cl. 101-116.000.

Harada, Hisashi: *See*—
Taniguchi, Tadatsugu; and Harada, Hisashi, 5,643,729, Cl. 435-6.000.

Harada, Keizo; Maeda, Takao; Takikawa, Takatoshi; Ban, Shunsuke; and Yamanaka, Shosaku, to Sumitomo Electric Industries, Ltd. Process for manufacturing a semiconductor substrate comprising laminated copper, silicon oxide and silicon nitride layers. 5,643,834, Cl. 437-210.000.

Harada, Koji: *See*—
Watanabe, Asao; Ogata, Yukihiko; Nakanishi, Hiroyuki; Yanase, Seijiro; and Harada, Koji, 5,644,407, Cl. 358-434.000.

Harada, Kunio; Kaku, Toshimitsu; Kasai, Masuo; and Ojima, Masahiro, to Hitachi, Ltd. Magnetic head load/unload device, method and a magneto-optical disk apparatus using the same. 5,644,554, Cl. 369-13.000.

Hardison, Stewart, to Perky-P Co., A Colorado Partnership. Containers. 5,642,829, Cl. 220-4.220.

Hargett, Ken: *See*—
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Harigai, Masayoshi: *See*—
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Härle, Anton. Externally threaded bodies for use as taps or screws. 5,643,269, Cl. 606-79.000.

Harman International Industries, Inc.: *See*—
Fosgate, James W., 5,644,640, Cl. 381-18.000.

Harman, James L.: *See*—
Chang, Sung S.; Harman, James L.; Jacobson, Gary Steven; Kirschner, Wesley A.; Ramadei, Micheal J.; and Zuidema, Eric L., 5,644,486, Cl. 364-132.000.

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Harney, Michael. Frequency mixing for controlling individual pixels in a display. 5,644,340, Cl. 345-212.000.

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Harper, Myron E.: *See*—
Farris, Robert D.; and Harper, Myron E., 5,644,619, Cl. 379-27.000.

Harrington, Steven J.; Morgana, Stephen C.; and Klassen, R. Victor, to Xerox Corporation. Method for selecting an optimum encoding process for a block of pixels from a plurality of predefined encoding processes. 5,644,406, Cl. 358-433.000.

Harris Corporation: *See*—
Bartlett, William David, 5,644,309, Cl. 341-120.000.
Beasom, James Douglas, 5,643,821, Cl. 437-62.000.

Harris, Herman R. Personal watercraft. 5,643,020, Cl. 440-31.000.

Harris, James L.; and Jacobs, James D., to Filter Specialists, Inc. Filter bag having a rim intermittently bonded to a porous portion. 5,643,451, Cl. 210-448.000.

Harris, Norman H.; and Dougherty, Thomas K., to Hughes Aircraft Company. Method for making low cost infrared windows. 5,643,505, Cl. 264-1.210.

Harris, Richard Hunter; Kinney, Michael John; and Vorhees, Kevin Hunter, to International Business Machines Corporation. Biaxial printer for portrait and landscape printing. 5,642,948, Cl. 400-124.280.

Harrison, Jeffrey K.: *See*—
Thorner, Michael Oliver; Gaylinn, Bruce David; Harrison, Jeffrey K.; Lynch, Kevin R.; and Zysk, John Ronald, 5,644,046, Cl. 536-23.500.

Harshman, Lawrence G.: *See*—
Hammock, Bruce D.; Hanzlik, Terry N.; Harshman, Lawrence G.; Bonning, Bryony C.; and Ward, Vernon K., 5,643,776, Cl. 435-196.000.

Hart, Charles C., to Applied Medical Resources Corporation. Percutaneous suturing device. 5,643,292, Cl. 606-144.000.

Harvey, Linda Ann: *See*—
Mukerji, Pradip; Seo, Amanda Eun-Yeong; Anderson, Steven Neal; and Harvey, Linda Ann, 5,643,880, Cl. 514-21.000.

Harvey, William H. Tubular bird feeder with a self-contained seed scoop. 5,642,689, Cl. 119-57.800.

Harwood, Wallace B., III, to Motorola, Inc. Integrated circuit data processor with selectable routing of data accesses. 5,644,756, Cl. 395-500.000.

Hase, Ichiro: *See*—
Ugajin, Ryuichi; Hase, Ichiro; and Nomoto, Kazumasa, 5,643,828, Cl. 437-133.000.

Hasegawa, Tamotsu: *See*—
Ogawa, Takatoshi; Yoshioka, Yasuhiko; Tsubouchi, Nobuo; Saito, Toshio; Hasegawa, Tamotsu; Fujishima, Akira; and Hashimoto, Kazuhito, 5,643,436, Cl. 205-324.000.

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Maslanka, William Ivalter, 5,644,021, Cl. 528-336.000.
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Christie, Leslie, Jr.; and Schmidtke, Gregg S., 5,644,559, Cl. 369-36.000.
DaSilva, Marcus K.; and Teetzel, Andrew M., 5,644,260, Cl. 327-238.000.
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Ross, Eric P.; and Dang, Thieu X., 5,644,683, Cl. 395-108.000.
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Hirate, Ken; Kaneko, Kazumi; Sato, Shinichiro; and Watagami, Kazunori, to Fujita Corporation. Apparatus for purifying contaminated air. 5,643,795, Cl. 435-299.100.
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Hong, Soon Chul, to NCR Corporation. Method and apparatus for multiplexing bus connector signals with sideband signals. 5,644,734, Cl. 395-309.000.

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Horwitz, Arnold: *See*—
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Hoshiyama, Hiroki, to Japan EM Co., Ltd. Apparatus for measuring dimension of article and scale to be used in the same. 5,644,399, Cl. 356-372.000.

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Hsieh, Chih-Ching. Screwdriver with wrench engaging collar. 5,642,649, Cl. 81-58.100.

Hsien, James C. Golf club set having progressively offset faces. 5,643,102, Cl. 473-290.000.

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Huang, Ma-Li Hsu. Chest developer. 5,643,160, Cl. 482-126.000.

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Harris, Norman H.; and Dougherty, Thomas K., 5,643,505, Cl. 264-1.210.
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Yuan, Jun; and Hutchison, Alan, 5,644,057, Cl. 544-280.000.

Hutchison, Eric A., to Caterpillar Inc. Method and apparatus for providing detents on an electronic control handle. 5,642,653, Cl. 91-459.000.

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Cohen, Aharon S.; and Vilenchik, Maria, 5,643,717, Cl. 435-6.000.
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Morrill, Charles D., 5,642,872, Cl. 251-1.300.
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Seo, Seung-Won; and Kim, Mun-Seon, 5,644,015, Cl. 528-60.000.
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Nahass, Paul R.; Friend, Stephen O.; and Hausslein, Robert W., 5,643,502, Cl. 252-511.000.
Hyperion Catalysts International, Inc.: *See*—
Uehara, Shotaro; Mitsui, Munehiro; Atomori, Seiichi; Furuyama, Tateki; Shiota, Atushi; Fujimura, Mineo; and Nagata, Masaki, 5,643,990, Cl. 524-496.000.
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Gallagher, Michael J.; and Jantz, Ray M., 5,644,786, Cl. 395-850.000.
Herbert, Brian K., 5,644,336, Cl. 345-154.000.
Rathunde, Dale F., 5,644,767, Cl. 395-651.000.
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Kim, Jae Kap, 5,643,832, Cl. 437-187.000.
Lee, Dong-Seck; Park, Ung-Gi; and Kim, Wha-Young, 5,644,246, Cl. 324-754.000.
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Jang, Jaeduk; and Kim, Taekyun, 5,643,123, Cl. 475-119.000.
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Park, Donghoon, 5,643,130, Cl. 475-204.000.
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McPhee, Charles J., 5,643,213, Cl. 604-131.000.
Iacob, Mihai. Angioplasty perfusion catheter. 5,643,210, Cl. 604-102.000.
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Doany, Fuad Elias, 5,644,432, Cl. 359-634.000.
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ICP Systems, Inc.: *See*—
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Igarashi, Lawrence Y. Golf wood club with smooth groove-free face. 5,643,110, Cl. 473-330.000.
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Iida, Kazuyuki: *See*—
Miura, Hiroshi; Ariyama, Masato; Iida, Kazuyuki; Iwahara, Kazufumi; Okano, Mitsunobu; Orihara, Hiroyuki; Katsumata, Akira; Sakata, Toshiyasu; Nishimura, Masaharu; Hamamura, Hirofumi; Murakami, Naoki; Yasuda, Mitsuru; Yamashita, Yasuhiro; Yamada, Ryouji; and Yamane, Atsushi, 5,644,500, Cl. 364-490.000.
Iida, Makio; Miura, Shoji; Sugisaka, Takayuki; Sakakibara, Toshio; and Ishihara, Osamu, to Nippondenso Co., Ltd. High withstand voltage type semiconductor device having an isolation region. 5,644,157, Cl. 257-521.000.
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Saito, Hidemi; Kanda, Takashi; Iida, Yoshihito; and Mochizuki, Naoto, 5,644,663, Cl. 382-313.000.
Iijima, Takahiro: *See*—
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Iijima, Yasuo, to Kabushiki Kaisha Toshiba. Data storage apparatus having memory area with a predetermined logic type. 5,644,750, Cl. 395-427.000.
Iino, Hideyuki: *See*—
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Ikari, Kazuo, to Fuji Photo Film Co., Ltd. Zoom lens system. 5,644,433, Cl. 359-687.000.
Ikawa, Hiroshi; Kadoiri, Akiyoshi; Konagai, Yasuko; Yamaura, Tetsuaki; and Kase, Noriko, to Fujirebio Inc. 1,4-dihydropyridine derivatives and methods of producing the same. 5,644,059, Cl. 544-336.000.
Ikeda Bussan Co., Ltd.: *See*—
Sakamoto, Manabu; and Iwasaki, Koichi, 5,642,918, Cl. 297-408.000.
Ikeda Bussan Co.,Ltd.: *See*—
Kikuchi, Masanobu; Yanagishita, Norio; and Yamada, Koji, 5,643,385, Cl. 156-212.000.
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Ikeda, Yoshihisa, to Fujitsu Limited. Line switching method and line switching apparatus. 5,644,567, Cl. 370-225.000.
Ikegaya, Hirohiko; and Murase, Yasuyuki, to Yamaha Hatsudoki Kabushiki Kaisha. Sliding contact-making structures in internal combustion engine and method for producing same. 5,642,700, Cl. 123-193.200.
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Ikeya, Kaname. Double ignition system for internal combustion engines, ignition plug for double ignition systems, and electric spark generator. 5,642,721, Cl. 123-627.000.
Illig, Carl R., to NanoSystems L.L.C. Nanoparticulate diagnostic mixed carbonic anhydrides as x-ray contrast agents for blood pool and lymphatic system imaging. 5,643,552, Cl. 424-9.450.
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Kish, Fred A.; Rancich, Michael J.; and Hackl, Cyndie S., 5,643,994, Cl. 524-533.000.
Marco, Leslie S.; and Olsen, Robert C., 5,642,808, Cl. 206-150.000.
Iltis, Patrick: *See*—
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Imada, Katsumi: *See*—
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Imai, Takahiro: *See*—
Yamamoto, Yoshiyuki; Tsuno, Takashi; Imai, Takahiro; and Fujimori, Naoji, 5,642,779, Cl. 165-185.000.
Imamura, Jun: *See*—
Sakai, Takako; Liu, Hongjun; Kurihara, Hiroyuki; and Imamura, Jun, 5,644,066, Cl. 800-220.000.
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Immuno AG: *See*—
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IMO Industries, Inc.: *See*—
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Imoto, Hiroshi; Omaru, Atsuo; Azuma, Hideto; Nishi, Yoshio; Gonno, Yoshihisa; and Nagamine, Masayuki, to Sony Corporation. Anode material and method of manufacturing the same. 5,643,426, Cl. 204-294.000.
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Baudry, Jacques; Faral, Michel; and Tiers, Jean-Francois, 5,643,697, Cl. 430-5.000.
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Imthurn, James A.; Wiater, Len J.; and Beaven, Graham T., to Wagstaff, Inc. Non-ferrous metal casting rotational control apparatus. 5,642,770, Cl. 164-420.000.
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Incoe Corporation: *See*—
Bott, James A.; and Tarr, John, 5,643,613, Cl. 425-135.000.
Incont, Inc.: *See*—
Thompson, Ronald J., 5,643,288, Cl. 606-139.000.
Incyte Pharmaceuticals, Inc.: *See*—
Hawkins, Phillip R.; and Murry, Lynn E., 5,643,752, Cl. 435-69.200.
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Calabrese, Frank A.; Shockey, Kenneth B.; Wisman, Franklin O.; and McCarney, David A., 5,642,690, Cl. 119-721.000.
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Chen, Lai-Juh, 5,643,050, Cl. 451-10.000.
Chen, Yung Jinn; Li, Hsueh-Jyh; Wu, Ruey-Beei; and Lee, Dow-Ken, 5,644,319, Cl. 343-702.000.
Lin, Wen-Chang, 5,644,523, Cl. 364-754.020.
Tsai, Jang-Zern; and Yuan, Jyh, 5,644,446, Cl. 360-72.200.
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Yang, Jen-Chang; Chang, Hsiao-Chuan; Lin, Jin-Chyueh; and Chen, Lien-Tai, 5,643,518, Cl. 264-184.000.
InforMedix, Inc.: *See*—
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Sams, Gary W.; Prestridge, Floyd L.; and Inman, Merle B., 5,643,431, Cl. 204-564.000.
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Inoue, Hideo; Kamimae, Hajime; Morita, Mitsuhiko; and Kojima, Hiroyoshi, to Toyota Jidosha Kabushiki Kaisha. Damping force control system for automotive vehicle. 5,642,899, Cl. 280-707.000.
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Inoue, Kimio: *See*—
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Inoue, Sadayuki; and Ishimoto, Junko, to Mitsubishi Denki Kabushiki Kaisha. High-efficiency encoding apparatus and high-efficiency decoding apparatus. 5,644,305, Cl. 341-67.000.
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Morlec, Jean; and Bourcier, Jacques, 5,643,538, Cl. 422-173.000.
Prevost, Isabelle; and Rojey, Alexandre, 5,643,469, Cl. 210-787.000.
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Schmidt, Helmut; Kasemann, Reiner; and Brück, Stefan, 5,644,014, Cl. 528-43.000.
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Mandel, Jean-Louis; Aubourg, Patrick; Mosser, Jean; and Sarde, Claude, 5,644,045, Cl. 536-23.500.
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Integrated Device Technology, Inc.: *See*—
Lien, Chuen-Der, 5,643,809, Cl. 437-31.000.
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Jackson, Paul David; and Schultz, Stephen Charles, 5,643,061, Cl. 451-289.000.
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DiMarco, David, 5,644,773, Cl. 395-750.000.
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Interlego AG: *See*—
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Acocella, Joyce Elizabeth; Galli, Carol; Hsu, Louis Lu-Chen; Ogura, Seiki; Rovedo, Nivo; and Shepard, Joseph Francis, 5,643,813, Cl. 437-43.000.
Agonafer, Dereje; and Vimba, Arnold Ojars, 5,644,687, Cl. 395-119.000.
Amini, Nader; Boury, Bechara Fouad; Brannon, Sherwood; Horne, Richard Louis; and Lohman, Terence Joseph, 5,643,729, Cl. 395-250.000.
Arya, Satya P.; Hughbanks, Timothy Scott; Voldman, Steven Howard; and Wallash, Albert John, 5,644,454, Cl. 360-106.000.
Aulet, Nancy Ruth; Bogdan, David Charles; Hussain, Muhammed Ishtiaq; Hutt, George William; Pearl, Donald Lynn; and Pribula, David Todd, 5,644,417, Cl. 359-110.000.
Austin, John Stephen; and Stout, Douglas Willard, 5,644,265, Cl. 327-333.000.
Aviram, Ari; Brunsvold, William Ross; Bucca, Daniel; Conley, Willard Earl, Jr.; and Seeger, David Earle, 5,644,038, Cl. 534-557.000.
Bauchot, Frederic Jacques; Lefevre, Frederic Bernard; and Revardel, Luc Louis, 5,644,576, Cl. 370-437.000.
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Beilstein, Kenneth Edward, Jr.; Bertin, Claude Louis; Daubenspeck, Timothy Harrison; and Howell, Wayne John, 5,644,162, Cl. 257-690.000.
Bellegarda, Eveline Jeannine; Bellegarda, Jerome Rene; Nahamoo, David; and Nathan, Krishna Sundaram, 5,644,652, Cl. 382-186.000.
Benedict, Melvin Kent; Buckland, Patrick Allen; Kelley, Richard Allen; Neal, Danny Marvin; Oman, Price Ward; and Waters, Carl Raymond, 5,644,470, Cl. 361-686.000.
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Boice, Charles Edward; Kaczmarczyk, John Mark; Ngai, Agnes Yee; and Woodard, Robert Leslie, 5,644,504, Cl. 364-514.00A.
Brady, James T.; Cheng, Joe-Ming; Cohn, Oded; Eldridge, James W.; Novick, Yoram; Ouchi, Norman K.; and Segev, Danit, 5,644,791, Cl. 395-888.000.
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Cannon, David Maxwell, 5,644,698, Cl. 395-182.040.
Chakravarti, Ashima B.; Cheng, Terry M.; Van Nguyen, Son; and Shapiro, Michael, 5,643,640, Cl. 427-578.000.
Christensen, Kenneth Jussi; Haas, Lee Clyde; and Noel, Francis Edward, Jr., 5,644,577, Cl. 370-506.000.
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Eckberg, Eric Alan; Malagrino, Gerald Daniel, Jr.; and Rappel, Brian Lee, 5,644,453, Cl. 360-106.000.
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Furukawa, Toshiharu; Mandelman, Jack Allen; and Tonti, William R., 5,643,822, Cl. 437-67.000.
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Healy, Vivian Louise; Huang, Hanhsi; and Nguyen, Tin Luong, 5,644,736, Cl. 395-341.000.
Heinrich, Harley Kent, 5,644,428, Cl. 359-494.000.
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Leaver, David, 5,644,197, Cl. 315-378.000.
Li, Leping; Barbee, Steven George; and Halperin, Arnold, 5,644,221, Cl. 324-71.500.
Luick, David Arnold, 5,644,780, Cl. 395-800.000.
Mahin, Stephen William; Conor, Stephen Michael; Ciavaglia, Stephen J.; Moulton, Lyman Henry, III; Rich, Stephen Emery; and Kartschoke, Paul David, 5,644,744, Cl. 395-383.000.
McDaniel, Terry Wayne; Notarys, Harris Anthony; Rosen, Hal Jervis; and Rubin, Kurt Allan, 5,644,555, Cl. 369-13.000.
Miller, Christopher P., 5,644,536, Cl. 365-189.050.
Pearson, Anthony Steve; and Pence, Jerry Wayne, 5,644,696, Cl. 395-182.040.
Sachdev, Krishna G.; Lombardi, Thomas E.; and Peterson, Vincent P., 5,643,818, Cl. 437-51.000.
Song, Seungyoon Peter, 5,644,779, Cl. 395-800.000.
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Holt, Nicholas Peter; and Eaton, John Richard, 5,644,746, Cl. 395-393.000.

International Game Technology: *See—*
Pease, Logan L.; Richard, Delbert; Dickinson, Peter D., deceased, 5,644,704, Cl. 395-183.180.

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Boschetto, Andrew A.; and Jacobs, Michael, 5,644,462, Cl. 361-91.000.

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Kinzer, Daniel M., 5,644,148, Cl. 257-133.000.

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Sattar, Sohail; and Polsky, Steven E., 5,644,631, Cl. 379-201.000.

Invacare Corporation: *See—*
Obitts, Shane, 5,642,748, Cl. 135-66.000.

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Braithwaite, David G.; Bruderer, Clark C.; Allen, Gregory M.; and Thompson, David A., 5,644,444, Cl. 360-60.000.

Ionwerks: *See—*
Wollnik, Hermann; and Klein, Christoph, 5,644,128, Cl. 250-251.000.

Iost, Michel: *See—*
Frijlink, Peter M.; and Iost, Michel, 5,643,807, Cl. 437-39.000.

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Iritani, Kunio; Numazawa, Shigeo; Fujiwara, Kenichi; Yamanaka, Yasushi; Isaji, Akira; and Suzuki, Nobunao, 5,642,627, Cl. 62-156.000.

Ishaq, Khalid S.: *See—*
Benson, Bradley J.; Chen, Xiannong; Cianciolo, George J.; Diaz, Jose-Luis; Ishaq, Khalid S.; Morris-Natschke, Susan L.; Uhing, Ronald J.; and Wong, Henry, 5,643,893, Cl. 514-64.000.

Ishibashi, Yoichi: *See—*
Hamaguchi, Koji; Ishibashi, Yoichi; and Urushibata, Hideaki, 5,643,409, Cl. 162-5.000.

Ishihara, Hideshi: *See—*
Matsumoto, Yasuki; Yamashita, Haruo; and Ishihara, Hideshi, 5,644,351, Cl. 347-194.000.

Ishihara, Hiroaki; Nakashita, Kazuhisa; Ohnuma, Hideto; Tanaka, Nobuhiro; and Adachi, Hiroki, to Semiconductor Energy Laboratory Co., Ltd. Laser processing method and alignment. 5,643,801, Cl. 437-7.000.

Ishihara, Osamu: *See—*
Iida, Makio; Miura, Shoji; Sugisaka, Takayuki; Sakakibara, Toshio; and Ishihara, Osamu, 5,644,157, Cl. 257-521.000.

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Ishii, Alexander T., to NEC USA, Inc. Retiming gated-clocks and precharged circuit structures. 5,644,499, Cl. 364-489.000.

Ishii, Takuya: *See—*
Yoshida, Koji; and Ishii, Takuya, 5,644,479, Cl. 363-16.000.

Ishikawa Gasket Co., Ltd.: *See—*
Udagawa, Tsunekazu, 5,642,893, Cl. 277-235.00B.

Ishikawa, Masami: *See—*
Inatani, Akihisa; Nagano, Shuichi; Mita, Kanji; Minami, Shuji; Tamura, Haruyuki; Watanabe, Tsutomu; Katsuyama, Akira; Ishikawa, Masami; and Noshitani, Taiji, 5,644,558, Cl. 369-30.000.

Ishikawa, Masatoshi, to Hitachi Ltd. Cartridge library apparatus. 5,644,445, Cl. 360-71.000.

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Ishikawa, Seiji: *See—*
Hirose, Masayoshi; Ishikawa, Seiji; Kimura, Norio; Sasaki, Yoshimi; Yamada, Kouki; Aoyama, Fujio; Shimizu, Noburu; and Okumura, Katsuya, 5,643,056, Cl. 451-41.000.

Ishikura, Yukio, to Taiki Corporation, U.S.A. Water purification system. 5,643,443, Cl. 210-113.000.

Ishimaru, Yoko; Ohmori, Hirobumi; Nakamura, Shin-ichi; and Inaba, Michihiko, to Kabushiki Kaisha Toshiba. Decorative article. 5,643,679, Cl. 428-472.000.

Ishimoto, Junko: *See—*
Inoue, Sadayuki; and Ishimoto, Junko, 5,644,305, Cl. 341-67.000.

Ishimoto, Manabu: *See—*
Kato, Masayuki; Aritake, Hirokazu; Ishimoto, Manabu; Sato, Noriko; and Nakashima, Masato, 5,644,414, Cl. 359-22.000.

Ishiwata, Hiroshi: *See—*
Yamakawa, Toru; Kubo, Ken'ichi; Ishiwata, Hiroshi; and Matsubara, Jun, 5,642,715, Cl. 123-450.000.

Ishiwata, Yasuhiro: *See—*
Kamio, Takayoshi; Ishiwata, Yasuhiro; and Tateishi, Tomomi, 5,643,709, Cl. 430-201.000.

Ishizaki, Toshio; and Nakakubo, Hideaki, to Matsushita Electric Industrial Co., Ltd. Laminated dielectric resonator and dielectric filter. 5,644,275, Cl. 333-204.000.

ISIS Pharmaceuticals, Inc.: *See—*
Baker, Brenda F., 5,643,780, Cl. 435-375.000.
Yau, Eric K., 5,644,048, Cl. 536-25.300.

Islam, Abu S.: *See—*
Chin, Leo; Islam, Abu S.; Graveson, Sandra; and Kleckner, Robert J., 5,644,379, Cl. 355-27.000.

Isoe, Toshio: *See—*
Miyamoto, Satoru; Shiraishi, Naoki; Isoe, Toshio; and Haneda, Isamu, 5,644,722, Cl. 395-209.000.

Isozaki, Takashi; Tojima, Takahito; Higa, Ryuji; and Okuda, Sadanao, to Riso Kagaku Corporation. Print image treatment device. 5,642,672, Cl. 101-424.200.

Isshiki, Teiichi; Hatano, Masayuki; Hashimoto, Junichi; Karino, Tomoaki; and Kanda, Yoshifumi, to Tokyo Magnetic Printing Co., Ltd. Magnetic recording medium and method for manufacturing the same. 5,643,686, Cl. 428-694.0BM.

Isuzu Ceramics Research Institute Co., Ltd.: *See—*
Unno, Yasuaki; Yamamuro, Hideo; and Kita, Hideki, 5,643,842, Cl. 501-88.000.

Isuzu Motors Limited: *See—*
Inoue, Eiji, 5,643,132, Cl. 476-10.000.

Ito, Akihide: *See—*
Konagaya, Yukio; Igawa, Takao; Ito, Akihide; Nogiwa, Tohru; Kagawa, Tsutomu; and Yamada, Nobuo, 5,643,851, Cl. 503-201.000.

Ito, Kan, to Canon Kabushiki Kaisha. Image input apparatus having a white balance correction means and a method of inputting an image using the image input apparatus. 5,644,359, Cl. 348-223.000.

Ito, Kengo: *See—*
Ando, Makoto; Kagami, Toshiki; Murakami, Takaaki; Sato, Masayuki; Kasahara, Noriko; Ito, Kengo; Hida, Masanobu; and Mizumachi, Motohiro, 5,644,350, Cl. 347-101.000.

Ito, Kiyoo: *See—*
Kitsukawa, Goro; Watanabe, Takao; Hori, Ryoichi; Honma, Noriyuki; Yamaguchi, Kunihiko; Ito, Kiyoo; Iwamura, Masahiro; and Masuda, Ikuro, 5,644,548, Cl. 365-230.060.

Ito, Koji: *See—*
Miyata, Manabu; Ito, Koji; Kameoka, Teruhiko; Shikata, Kazushi; Matsunaga, Koji; and Sugi, Hikaru, 5,643,079, Cl. 454-139.000.

Ito, Masahito; and Deguchi, Kisaburo, to Hitachi, Ltd. Methods and apparatuses for analyzing multichannel chromatogram. 5,644,503, Cl. 364-497.000.

Ito, Michio: *See—*
Oomori, Shigenori; and Ito, Michio, 5,644,092, Cl. 73-865.800.

Ito, Yoshihiro; and Miyake, Kazushi, to Institute of General Beauty & Medical Science. Method and apparatus to reduce skin tissue by using high-voltage pulses. 5,643,322, Cl. 607-2.000.

Ito, Yoshihito; and Tuge, Hiroki, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Driving force control apparatus and method for 4-wheel driving vehicle. 5,644,488, Cl. 364-423.098.

Ito, Yoshizo: *See—*
Uno, Hideki; Ito, Yoshizo; and Muramatsu, Yoshiyuki, 5,642,628, Cl. 62-127.000.

Ito, Yukio, to Daido Tokushuko Kabushiki Kaisha. Corrosion-resistant spring steel. 5,643,532, Cl. 420-84.000.

Itoh, Kazuhiko: *See—*
Matsumoto, Toshio; Baba, Hiroshi; Itoh, Kazuhiko; and Ogura, Shiro, 5,644,697, Cl. 395-182.040.

Itou, Takeo: *See—*
Matsuda, Naotoshi; Tamatani, Masaaki; Albessard, Keiko; Okumura, Miwa; Takahara, Takeshi; and Itou, Takeo, 5,644,193, Cl. 313-486.000.

ITT Automotive Electrical Systems, Inc.: *See—*
Buchanan, Harry C., Jr., 5,644,180, Cl. 310-90.000.

Itt Corporation: *See—*
Palmer, Gary L., 5,644,425, Cl. 359-409.000.

Iversen, Patrick L.; and Mata, John E., to University of Nebraska, The Board of Regents of the. Synthetic oligonucleotides which mimic telomeric sequences for use in treatment of cancer and other diseases. 5,643,890, Cl. 514-44.000.

Iwafune, Tomoaki; and Kamoi, Koichi, to Nagano Japan Radio Co., Ltd.; and Gradco (Japan) Ltd. Method of producing blanket belt for use in printing machine. 5,643,381, Cl. 156-141.000.

Iwahara, Kazufumi: *See—*
Miura, Hiroshi; Ariyama, Masato; Iida, Kazuyuki; Iwahara, Kazufumi; Okano, Mitsunobu; Orihara, Hiroyuki; Katsumata, Akira; Sakata, Toshiyasu; Nishimura, Masaharu; Hamamura, Hirofumi; Murakami, Naoki; Yasuda, Mitsuru; Yamashita, Yasuhiro; Yamada, Ryouji; and Yamane, Atsushi, 5,644,500, Cl. 364-490.000.

Iwaki, Makoto: *See—*
Maruyama, Koichi; and Iwaki, Makoto, 5,644,437, Cl. 359-793.000.

Iwama, Kunihiko; and Kometani, Yutaka, to Hitachi, Ltd. Automatic refueling apparatus. 5,644,607, Cl. 376-268.000.

Iwamura, Masahiro: *See—*
Kitsukawa, Goro; Watanabe, Takao; Hori, Ryoichi; Honma, Noriyuki; Yamaguchi, Kunihiko; Ito, Kiyoo; Iwamura, Masahiro; and Masuda, Ikuro, 5,644,548, Cl. 365-230.060.

Iwamuro, Noriyuki, to Fuji Electric Co., Ltd. Insulated gate thyristor. 5,644,150, Cl. 257-147.000.

Iwano, Tadayuki, to NEC Corporation. Method and device for optical amplification. 5,644,423, Cl. 359-337.000.

Iwasa, Shoichi: *See—*
Izumi, Hirohiko; and Iwasa, Shoichi, 5,644,151, Cl. 257-306.000.

Iwasaki, Koichi: *See—*
Sakamoto, Manabu; and Iwasaki, Koichi, 5,642,918, Cl. 297-408.000.

Iwasaki, Masaru: *See—*
Hamada, Toshimasa; Iwasaki, Masaru; Hanamoto, Tetsuya; Katoh, Shohichi; Funakoshi, Takahiro; Miyake, Koji; and Nakamichi, Masumi, 5,644,124, Cl. 250-216.000.

Iwasaki, Naoaki, to Sumitomo Rubber Industries, Ltd. Pneumatic tire with pair of grooves. 5,643,373, Cl. 152-209.00R.

Iwasawa, Yoshikazu; Aoyama, Tetsuya; Kawakami, Kumiko; Arai, Sachie; Satoh, Toshihiko; and Monden, Yoshiaki, to Banyu Pharmaceutical Co., Ltd. Substituted amide derivatives. 5,643,958, Cl. 514-568.000.

Iwase, Norimichi: *See—*
Yamada, Kumi; Tamao, Yoshikuni; Ohshima, Masahiro; and Iwase, Norimichi, 5,643,911, Cl. 514-254.000.

Iwase, Yoshimi: *See—*
Kondoh, Yoshiyuki; Sakyo, Tsuyoshi; Iwase, Yoshimi; Tomita, Sadahisa; Komatsu, Kazunori; and Tamura, Kazuhisa, 5,643,080, Cl. 454-155.000.

Iwata, Eiji; and Maeda, Hiroyuki, to Matsushita Electric Industrial Co., Ltd. Vehicle rotational-angle calculating apparatus. 5,644,082, Cl. 73-504.030.

Iwata, Fujio: *See—*
Toda, Toshiki; Takahashi, Susumu; and Iwata, Fujio, 5,644,565, Cl. 369-275.100.

Iwata, Nobuyoshi: *See—*
Nagano, Mitsuo; Kobayashi, Takeo; Sakai, Junichi; Kozuka, Masao; Iwata, Nobuyoshi; and Kubo, Yoshiko, 5,643,923, Cl. 514-305.000.

Iwata, Yukihiko: *See—*
Totsuka, Hidekazu; Kawagishi, Kenshi; Shida, Yasunori; Mitsushima, Kazuyuki; and Iwata, Yukihiko, 5,642,857, Cl. 236-51.000.

Iwatsuki, Syuichiro; Oshida, Kei; and Okamoto, Masayoshi, to Honda Giken Kogyo Kabushiki Kaisha. Gas discharging device for batteries for use on electric vehicle. 5,643,691, Cl. 429-54.000.

Iwaya, Toshio: *See—*
Yamamoto, Yasuhiro; and Iwaya, Toshio, 5,642,925, Cl. 353-25.000.

Iyengar, Sridhar Srinivasa: *See—*
Johnson, Peter; and Iyengar, Sridhar Srinivasa, 5,644,764, Cl. 395-614.000.

Iyer, Ravi, to Micron Technology, Inc. Endpoint regulator and method for regulating a change in wafer thickness in chemical-mechanical planarization of semiconductor wafers. 5,643,048, Cl. 451-6.000.

Izawa, Ichirou: *See—*
Aoyama, Seiki; Kuroyanagi, Susumu; Izawa, Ichirou; and Makino, Yasuaki, 5,644,226, Cl. 324-207.210.

Izumi, Hirohiko; and Iwasa, Shoichi, to Nippon Steel Corporation. Semiconductor memory device and method for fabricating the same. 5,644,151, Cl. 257-306.000.

Izumi Products Company: *See—*
Hirabayashi, Shigeru, 5,642,566, Cl. 30-228.000.

Izumi, Yasunobu: *See—*
Yamamoto, Manabu; Suzuki, Zenetu; and Izumi, Yasunobu, 5,643,174, Cl. 600-114.000.

J. Morita Manufacturing Corporation: *See—*
Suzuki, Masakazu; Mori, Keisuke; and Tachibana, Akifumi, 5,644,650, Cl. 382-132.000.

Jachimowicz, Karen E.; and Lebby, Michael S., to Motorola. Switchable lens/diffuser. 5,644,369, Cl. 349-10.000.

Jackson, John R.: *See—*
Dong, Dennis F.; Mumby, Timothy Alan; Jackson, John R.; and Rogers, Derek John, 5,643,437, Cl. 205-348.000.

Jackson, Paul David; and Schultz, Stephen Charles, to Integrated Process Equipment Corporation. Pneumatic polishing head for CMP apparatus. 5,643,061, Cl. 451-289.000.

Jackson, Wanda Walton; Diaz, Monica Signoret; Perkins, Cheryl Anne; Huffman, Dawn Marie; Bush, Wendy Louise; Mocadlo, Cheryl Ann; and Birtwell, Richard John, to Kimberly-Clark Corporation. Apertured film/nonwoven composite for personal care absorbent articles and the like. 5,643,240, Cl. 604-378.000.

Jacobs, James D.: *See—*
Harris, James L.; and Jacobs, James D., 5,643,451, Cl. 210-448.000.

Jacobs, Michael: *See—*
Boschetto, Andrew A.; and Jacobs, Michael, 5,644,462, Cl. 361-91.000.

Jacobs, William, III: *See—*
Szita, Jeno G.; Ramesh, Subban; Jacobs, William, III; and Brogan, John Colin, 5,643,682, Cl. 428-524.000.

Jacobsen, Krista S.: *See—*
Bingham, John A.C.; and Jacobsen, Krista S., 5,644,573, Cl. 370-503.000.

Jacobson, Gary Steven: *See—*
Chang, Sung S.; Harman, James L.; Jacobson, Gary Steven; Kirschner, Wesley A.; Ramadei, Micheal J.; and Zuidema, Eric L., 5,644,486, Cl. 364-132.000.

Jacobson, Howard D.: *See—*
Hanson, Gregg W.; and Jacobson, Howard D., 5,642,977, Cl. 414-320.000.

Jacobson, Howard Wayne; Kurian, Joseph V.; Sackinger, Scott Thomas; and Shah, Chandrakant Shantilal, to Du Pont de Nemours, E. I., and Company. Surface-coated particulate additives for polymers. 5,643,592, Cl. 424-409.000.

Jacq, Patrick H.; Kerlau, Daniel M.; Roux, Patrice B.; and Gineste, Claude A., to Compagnie Generale des Matieres Nucleaires. Material sampling method and device. 5,644,091, Cl. 73-864.440.

Jaeger, Robert B.: *See—*
Schultz, Darald R.; Danielson, Arvin D.; Bunte, Alan G.; Sherman, Richard A.; and Jaeger, Robert B., 5,644,471, Cl. 361-686.000.

Jaehner, Wilfried: *See—*
Grosse-Wilde, Hubert; Kieser, Jörg; Jaehner, Wilfried; Pohl, Fritz; Steger, Reinhard; and Vogel, Gert, 5,644,283, Cl. 338-20.000.

Jägfeldt, Hans: *See—*
Andersson, Jan; Jägfeldt, Hans; Trofast, Eva; and Werterlin, Kjell, 5,642,728, Cl. 128-203.150.

Jahrens, Hans-Ulrich; and Söhlke, Günter, to Volkswagen AG. Intake manifold for an internal combustion engine. 5,642,697, Cl. 123-184.210.

Jain, Kanti; Rubin, Albert L.; and Smith, Barry H., to Rogosin Institute, The. Preparation of agarose coated, solid agarose-collagen beads containing secretory cells. 5,643,569, Cl. 424-93.700.

Jan, Yih-Jang, Windshield repair device. 5,643,609, Cl. 425-12.000.

Janes, Harry W.; Gore, Gerald E.; Wittman, Wayne K.; and Roman, Harry T., to GRoW International Corp. Compressed dormancy process for increased plant growth. 5,642,587, Cl. 47-58.000.

Jang, Bok-Nam: *See—*
Yang, Sam-Joo; and Jang, Bok-Nam, 5,643,981, Cl. 524-141.000.

Jang, Gi-Il, to Daewoo Electronics Co., Ltd. Video cassette recorder incorporating therein a grounding system. 5,644,474, Cl. 361-753.000.

Jang, Jaeduk; and Kim, Taekyun, to Hyundai Motor Company. Electronic and hydraulic control system of a 4-speed automatic transmission for automotive vehicle and method for controlling hydraulic pressure. 5,643,123, Cl. 475-119.000.

Jang, Jaeduk, to Hyundai Motor Company. Hydraulic control system of an automatic transmission for automative vehicles. 5,643,134, Cl. 477-130.000.

Jang, Young-Soo, to Samsung Electronics Co., Ltd. Methods of forming BiCMOS semiconductor devices. 5,643,810, Cl. 437-31.000.

Janky, James M.; Denninger, Valentine L.; Jones, James Edwin, Jr.; Murphy, Michael D.; and Tankhilevich, Boris G., to Trimble Navigation Limited. SATPS dynamic surveying from a moving platform. 5,644,318, Cl. 342-357.000.

Janssen, Peter J.: *See—*
Cohen, David A.; and Janssen, Peter J., 5,644,357, Cl. 348-196.000.

Janssen Pharmaceutica N.V.: *See—*
Bottenberg, Peter; Remon, Jean Paul Louis August; De Muynck, Christian Dominique Erwin; and Slop, Dick, 5,643,603, Cl. 424-488.000.

Jansson, Michael Halvar: *See*—
Tuniman, David Charles; Anantharaman, Vinod; and Jansson, Michael Halvar, 5,644,737, Cl. 395-352.000.
Jantz, Ray M.: *See*—
Gallagher, Michael J.; and Jantz, Ray M., 5,644,786, Cl. 395-850.000.
Japan EM Co., Ltd.: *See*—
Hoshiyama, Hiroki, 5,644,399, Cl. 356-372.000.
Japan Energy Corporation: *See*—
Mimoto, Tsutomu; Kisanuki, Sumitsugu; Takahashi, Osamu; and Kiso, Yoshiaki, 5,644,028, Cl. 530-331.000.
Jarczynski, Emil Donald: *See*—
Staub, Fred Wolf; and Jarczynski, Emil Donald, 5,644,179, Cl. 310-65.000.
Jarrett, Mark G., to Hollowood, Inc. Apparatus for making wood tubing. 5,643,166, Cl. 493-304.000.
JAS Manufacturing Co., Inc.: *See*—
Salerno, Mark; and Dick, Eric R., 5,643,142, Cl. 482-54.000.
Jaskie, James E.; and Dworsky, Lawrence N., to Motorola. Collimating extraction grid conductor and method. 5,644,187, Cl. 313-293.000.
Jatco Corporation: *See*—
Sugiyama, Hideharu; Hirose, Ikuo; and Fujita, Yoshifumi, 5,643,124, Cl. 475-123.000.
Sugiyama, Shinichi, 5,642,958, Cl. 403-359.000.
Jeffcoat, Roger: *See*—
Huang, David P.; Jeffcoat, Roger; and Mason, William R., 5,643,627, Cl. 426-578.000.
Jeffers, Frederick John; Smith, Neil; Freeman, Jay Davis; Gandola, Kent Raphael; and Koeppe, Peter VanderSalm, to Eastman Kodak Company. Permanent magnet assembly with MR and DC compensating bias. 5,644,228, Cl. 324-235.000.
Jelich, Nicholas J.: *See*—
Hess, John M., III; Jelich, Nicholas J.; and Mueller, Bruce M., 5,642,824, Cl. 215-235.000.
Jenkins, Cary P.: *See*—
Owens, Warren D.; Jenkins, Cary P.; and Hargett, Ken, 5,642,726, Cl. 128-200.260.
Jenkins, Gary Kim; Evans, Bruno Jack; Williams, David Collis, Jr.; and Bornowski, Arthur Steven, to Loral Vought Systems Corp. Visual recognition system for LADAR sensors. 5,644,386, Cl. 356-4.010.
Jenkins, Michael V.; Bernadas, Salvador R.; and Dong, Qiujie, to Crystal Semiconductor Corporation. Tone signal generator for producing multioperator tone signals. 5,644,098, Cl. 84-624.000.
Jenneskens, Theodorus J. J. M.: *See*—
Van Der Borst, Johannes; D'Achard Van Enschut, Johannes F. M.; Jenneskens, Theodorus J. J. M.; Dobben, Jacob; Ter Borch, Christiaan J.; and Van Der Wal, Hendricus G. M., 5,644,615, Cl. 378-149.000.
Jenny Wyatt Enterprises, Inc.: *See*—
Marcus, Ira, 5,643,114, Cl. 473-408.000.
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Nakamura, Kiyokazu; Kitajima, Norio; and Inoue, Toshihide, 5,643,988, Cl. 524-449.000.

Kitsukawa, Goro; Watanabe, Takao; Hori, Ryoichi; Honma, Noriyuki; Yamaguchi, Kunihiko; Ito, Kiyoo; Iwamura, Masahiro; and Masuda, Ikuro, to Hitachi, Ltd. Dynamic random access memory having bipolar and C-MOS transistor. 5,644,548, Cl. 365-230.060.

Kitzmiller, Leon: *See*—
Parekh, Mahendra B.; Kitzmiller, Leon; Costello, Richard C.; Grow, C. Allen; Pinchott, Gordon; O'Leary, Dennis; MacDougall, Louis M.; Okey, David W.; and Fowler, Edward J., 5,642,654, Cl. 92-260.000.

Kiuchi, Itsuko, to Hitachi, Ltd. Method and apparatus for displaying items of information organized in a hierarchical structure. 5,644,740, Cl. 395-357.000.

Klassen, R. Victor: *See*—
Harrington, Steven J.; Morgana, Stephen C.; and Klassen, R. Victor, 5,644,406, Cl. 358-433.000.

Klatt, Barbara, legal representative: *See*—
Chakraborty, Amiya Kumar; Rohde, Jurgen; Klatt, Karl-Heinz, deceased; Wenzl, Helmut; Konrad, Ralf, deceased; Konrad, Tatjana, 5,643,850, Cl. 502-326.000.

Klatt, Karl-Heinz, deceased (by Barbara Klatt, legal representative): *See*—
Chakraborty, Amiya Kumar; Rohde, Jurgen; Klatt, Karl-Heinz, deceased; Wenzl, Helmut; Konrad, Ralf, deceased; Konrad, Tatjana, 5,643,850, Cl. 502-326.000.

Klaubert, Dieter: *See*—
Demers, James P.; Johnson, Sigmond; Weidner-Wells, Michele Ann; Kanojia, Ramesh M.; Fraga, Stephanie A.; and Klaubert, Dieter, 5,643,950, Cl. 514-539.000.

Kleckner, Robert J.: *See*—
Chin, Leo; Islam, Abu S.; Graveson, Sandra; and Kleckner, Robert J., 5,644,379, Cl. 355-27.000.

Klein, Christoph: *See*—
Wollnik, Hermann; and Klein, Christoph, 5,644,128, Cl. 250-251.000.

Klein, Dean A., to Micron Electronics, Inc. Computer component carrier that directs airflow to critical components. 5,644,472, Cl. 361-695.000.

Klein, James A. Vent screen and vent apparatus. 5,643,081, Cl. 454-284.000.

Klein, Jonathan L.: *See*—
Guckel, Henry; Klein, Jonathan L.; and Earles, Thomas L., 5,644,177, Cl. 310-40.0MM.

Klein, Michel: *See*—
Loosmore, Sheena; Zealey, Gavin; Yacoob, Reza Khayyam; and Klein, Michel, 5,643,753, Cl. 435-69.300.

Klein, Peter P., to Unisys Corporation. Frame carrier and modular cover panel system. 5,644,477, Cl. 361-829.000.

Klekamp, Thomas A. Frustroconical exercising device. 5,643,165, Cl. 482-146.000.

Klemp, Walter V., to Drypers Corporation. Disposable diaper with cuff. 5,643,243, Cl. 604-385.200.

Klestadt, Ralph H., to Hughes Missile Systems Company. Aerodynamic lifting and control surface and control system using same. 5,642,867, Cl. 244-49.000.

Klingeberg, Michael: *See*—
Antranikian, Garabed; and Klingeberg, Michael, 5,643,777, Cl. 435-220.000.

Kluska, Theodore Edward: *See*—
Filus, Wayne Scott; Figueiredo, Antonio Albino; Kane, Adam Stuart; Kluska, Theodore Edward; Larsen, Wayne David; and Starace, Jeremia Patrick, 5,643,014, Cl. 439-680.000.

Knapp, Bradley J.: *See*—
Kimock, Fred M.; Knapp, Bradley J.; and Finke, Steven James, 5,643,423, Cl. 204-192.350.

Knappe, Alexander: *See*—
Geiger, August; Knappe, Alexander; and Bufe, Michael, 5,644,112, Cl. 200-1.00R.

Knauer, William, to Keithley Instruments, Inc. Relay matrix switching assembly. 5,644,115, Cl. 200-175.000.

Knecht, Johann: *See*—
Patzelt, Norbert; and Knecht, Johann, 5,642,863, Cl. 241-24.130.

Knieling, Dagobert: *See*—
Christiansen, Uwe; Knieling, Dagobert; and Schultheis, Andreas, 5,643,069, Cl. 451-540.000.

Knight, David Trevor: *See*—
Simpson, Leslie Ainsley; Robson, Keith; Knight, David Trevor; and Williamson, Martin Alec, 5,643,974, Cl. 523-334.000.

Knight, Galen D.; Mann, Paul L.; and Scallen, Terrance J., to University Of New Mexico. β-alethine as anti-tumor agent. 5,643,966, Cl. 514-626.000.

Knisley, Edward Eugene, Jr.: *See*—
Weidler, Charles Harry; and Knisley, Edward Eugene, Jr., 5,643,013, Cl. 439-660.000.

Knowles, Donald P., Jr.; and Perryman, Lance E., to United States of America, Agriculture. Merozoite proteins for use in detection of *Babesia equi* in horses using immunological techniques. 5,643,737, Cl. 435-7.220.

Knox, Benjamin Hughes: *See*—
Price, David Arthur; Bennett, James Preston; Knox, Benjamin Hughes; and Schafluetzel, Dennis Raymond, 5,643,660, Cl. 442-192.000.

Kobayashi, Hisaaki: *See*—
Fukuda, Seiji; Kobayashi, Hisaaki; Taneichi, Shoshiro; and Yamamoto, Tetsuya, 5,644,670, Cl. 385-124.000.

Kobayashi, Masahiko; and Takahashi, Nobuyoki, to Anelva Corporation. Magnetron cathode. 5,643,427, Cl. 204-298.200.

Kobayashi, Mitsunori: *See*—
Uchino, Katsuya; Nomura, Toshio; Kobayashi, Mitsunori; and Chudo, Masuo, 5,643,658, Cl. 428-216.000.

Kobayashi, Naoki: *See*—
Fujii, Masahiro; Miyashita, Ikuhiro; Koeda, Hiroshi; Mukaiyama, Keiichi; Maruyama, Hiroyuki; Otsuki, Noriyoshi; Watanabe, Toshiaki; and Kobayashi, Naoki, 5,644,341, Cl. 347-11.000.

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Kobayashi, Shuji; and Ogawa, Keiichi, to Dai Nippon Printing Co., Ltd. Heat transfer printing sheet for producing images having metallic luster. 5,643,659, Cl. 428-216.000.

Kobayashi, Takeo: *See*—
Nagano, Mitsuo; Kobayashi, Takeo; Sakai, Junichi; Kozuka, Masao; Iwata, Nobuyoshi; and Kubo, Yoshiko, 5,643,923, Cl. 514-305.000.

Kobayashi, Tetsuhiko: *See*—
Noda, Kazutoshi; Kobayashi, Tetsuhiko; and Ando, Masanori, 5,644,116, Cl. 204-157.150.

Kobayashi, Tomowo: *See*—
Sugimura, Yukio; Tamaki, Kazuhiko; Kobayashi, Tomowo; and Tanzawa, Kazuhiko, 5,643,908, Cl. 514-247.000.

Kobe, James J.; and Ward, Gene R., to Minnesota Mining and Manufacturing Company. Pressure sensitive adhesive patch. 5,643,648, Cl. 428-63.000.

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Swirska, Alicja; Krzywosinski, Leszek; Bogdal, Maria; Serwin-Krajewska, Marta; Kobylinska, Maria; and Grzeszkiewicz, Andrzej, 5,643,907, Cl. 514-236.800.

Koch, Rainhard: *See*—
Timmermann, Ralf; Dujardin, Ralf; and Koch, Rainhard, 5,644,020, Cl. 528-288.000.

Kochiya, Toshiaki; and Nagasawa, Soichiro, to Fujitsu Limited. Device for setting aside memory for use by one transfer unit when number of busy responses for the unit regarding the memory becomes predetermined number. 5,644,783, Cl. 395-837.000.

Koden, Mitsuhiro; Miyazaki, Aya; and Shinomiya, Tokihiko, to Sharp Kabushiki Kaisha. Liquid crystal display device and method for producing the same. 5,644,371, Cl. 349-110.000.

Koeda, Hiroshi: *See*—
Fujii, Masahiro; Miyashita, Ikuhiro; Koeda, Hiroshi; Mukaiyama, Keiichi; Maruyama, Hiroyuki; Otsuki, Noriyoshi; Watanabe, Toshiaki; and Kobayashi, Naoki, 5,644,341, Cl. 347-11.000.

Koeho, Charles S.: *See*—
Boll, Alfred R.; Finke, David G.; and Koehn, Charles S., 5,644,720, Cl. 395-200.120.

Koekman, Bertus Pieter: *See*—
Cerda-Olmedo, Enrique; Mehta, Bina Jamnadas; Van Dijck, Petrus Wilhelmus Maria; and Koekman, Bertus Pieter, 5,643,719, Cl. 435-6.000.

Koenig & Bauer-Albert Aktiengesellschaft: *See*—
Schaede, Johannes Georg; and Wagner, Peter Eugen, 5,642,668, Cl. 101-415.100.
Schneider, Georg, 5,642,664, Cl. 101-123.000.

Koeppe, Peter VanderSalm: *See*—
Jeffers, Frederick John; Smith, Neil; Freeman, Jay Davis; Gandola, Kent Raphael; and Koeppe, Peter VanderSalm, 5,644,228, Cl. 324-235.000.

Koesveld, Gerrit-Jan Hofte: *See*—
Heurman, Erwin Herman Gerardus; Koesveld, Gerrit-Jan Hofte; and Roerink, Johan Gerrit, 5,643,076, Cl. 452-176.000.

Kogasaka, Takahiro; Suzuta, Toshihiko; Bito, Shiro; Tsuruta, Minoru; Uchiyama, Naoki; and Kaji, Kunihide, to Olympus Optical Co., Ltd. Suturing instrument. 5,643,293, Cl. 606-148.000.

Koh, Charles H.: *See*—
Rowden, Jimmy M.; Heaton, John E.; and Koh, Charles H., 5,643,285, Cl. 606-119.000.

Kohgo, Tetsuya: *See*—
Hamada, Masaaki; Aoi, Takahiro; Kohgo, Tetsuya; and Mishima, Masaaki, 5,642,874, Cl. 267-141.000.

Kohno, Akiyoshi: *See*—
Nakano, Takashi; Kohno, Akiyoshi; and Orihara, Kozo, 5,644,121, Cl. 250-208.100.

Kohno, Yutaka; Nagatomi, Itsuo; and Hanaoka, Kaori, to Fujisawa Pharmaceutical Co., Ltd. Pyrazolopyridine compounds for the treatment of anemia. 5,643,938, Cl. 514-403.000.

Kohtoh, Noriaki: *See*—
Shindoh, Masuo; Shirakawa, Masayoshi; Kohtoh, Noriaki; and Aoki, Atsumi, 5,643,980, Cl. 524-100.000.

Koide, Takeharu: *See*—
Yoshii, Kinya; Ichioka, Eiji; Koide, Takeharu; and Sasaki, Yoshihiko, 5,643,127, Cl. 475-160.000.

Koike, Koji: *See*—
Suzuki, Masataka; Ashiya, Hiroyuki; Tanaka, Yoshiyuki; Mochizuki, Shinobu; and Koike, Koji, 5,642,852, Cl. 228-110.100.

Koike, Reiko: *See*—
Niigata, Kunihiro; Takahashi, Takumi; Maruyama, Tatsuya; Suzuki, Takayuki; Maeno, Kyoichi; Onda, Kenichi; Kontani, Toru; Noshiro, Osamu; Koike, Reiko; Shimaya, Akiyoshi; and Irie, Jun, 5,643,931, Cl. 514-364.000.

Kojima, Hiroyoshi: *See*—
Inoue, Hideo; Kamimae, Hajime; Morita, Mitsuhiko; and Kojima, Hiroyoshi, 5,642,899, Cl. 280-707.000.

Kojima, Keisuke: *See*—
Takahashi, Masanobu; Tai, Shuichi; Kojima, Keisuke; Shinnishi, Toshio; and Kyuma, Kazuo, 5,644,681, Cl. 395-23.000.

Kojima, Michio: *See*—
Hotta, Takashi; Marumo, Kinji; and Kojima, Michio, 5,643,126, Cl. 475-159.000.

Kojima Press Industry Co., Ltd.: *See*—
Uno, Hideki; Ito, Yoshizo; and Muramatsu, Yoshiyuki, 5,642,626, Cl. 62-127.000.

Kojima, Shinji: *See*—
Mizumura, Masanori; and Kojima, Shinji, 5,642,678, Cl. 112-302.000.

Kojima, Takashi; Hirai, Yasuhiro; and Yoshimura, Takafumi, to Mitsubishi Gas Chemical Company, Inc. Pitch with reduced tendency to smoke during spinning and a process for the production of said pitch. 5,644,018, Cl. 528-247.000.

Kojima, Toshiaki, to Motorola, Inc. Non-volatile memory having a cell applying to multi-bit data by multi-layered floating gate architecture and programming method for the same. 5,644,528, Cl. 365-185.030.

Kojiri, Katsuhisa; Suzuki, Hajime; Kondo, Hisao; and Suda, Hiroyuki, to Banyu Pharmaceutical Co., Ltd. Microbial process for preparation of indolopyrrolocarbazole derivatives. 5,643,760, Cl. 435-85.000.

Kojo, Takashi: *See*—
Yoshino, Hiroyuki; and Kojo, Takashi, 5,644,690, Cl. 395-135.000.

Kolanko, Laurence Mitchell: *See*—
Banyay, Harold Reid; Cholod, Michael S.; Kolanko, Laurence Mitchell; and Smith, Bonnie Vineis, 5,643,645, Cl. 428-34.100.

Kolbly, Kenneth D. Temperature sensing device for medical patients with releasable housing. 5,642,735, Cl. 128-736.000.

Koller, Kerry J.: *See*—

Barrett, Ronald W.; Cwirla, Steven E.; Dower, William J.; Koller, Kerry J.; Lee, Jung; Martens, Christine L.; and Ruhland-Fritsch, Beatrice. 5,643,873, Cl. 514-12.000.

Komatsu, Akira: *See*—
Mukaiyama, Hiroyuki; Kato, Kazutoshi; and Komatsu, Akira. 5,644,374, Cl. 351-169.000.

Komatsu, Hajime: *See*—
Chihiro, Masatoshi; Komatsu, Hajime; Tominaga, Michiaki; and Yabuuchi, Yoichi. 5,643,932, Cl. 514-365.000.

Komatsu, Kazunori: *See*—
Kondoh, Yoshiyuki; Sakyo, Tsuyoshi; Iwase, Yoshimi; Tomita, Sadahisa; Komatsu, Kazunori; and Tamura, Kazuhisa. 5,643,080, Cl. 454-155.000.

Kometani, George. Portable apparatus for supporting a patient for massage treatment. 5,642,542, Cl. 5-620.000.

Kometani, Yutaka: *See*—
Iwama, Kunihiko; and Kometani, Yutaka. 5,644,607, Cl. 376-268.000.

Komissarova, Irina Alexeevna; Gudkova, Julia Vasileivna; Soldatenkova, Tatyana Dmitrievna; Kondrashova, Tatyana Tikhonovna; and Burbenskaya, Natalya Mikhailovna. Method of preventing and alleviating stress in a healthy mammal in need thereof. 5,643,954, Cl. 514-561.000.

Komma, Yoshiaki; Mizuno, Sadao; Kato, Makoto; Wada, Hidenori; and Nishino, Seiji, to Matsushita Electric Industrial Co., Ltd. Optical head for adjusting a positional relation between the information medium and the optical head. 5,644,413, Cl. 359-19.000.

Komoda, Motoyoshi, to NEC Corporation. Method of self-diagnosing a mobile telephone set for use in a mobile telephone switching system and a mobile telephone set to which the method is applied. 5,644,618, Cl. 379-27.000.

Konagai, Yasuko: *See*—
Ikawa, Hiroshi; Kadoiri, Akiyoshi; Konagai, Yasuko; Yamaura, Tetsuaki; and Kase, Noriko. 5,644,059, Cl. 544-336.000.

Konagaya, Yukio; Igawa, Takao; Ito, Akihide; Nogiwa, Tohru; Kagawa, Tsutomu; and Yamada, Nobuo, to Ricoh Company, Ltd. Reversible thermosensitive recording label and reversible thermosensitive recording card. 5,643,851, Cl. 503-201.000.

Konai, Yutaka: *See*—
Takahashi, Eisaku; Takahashi, Eiichi; Saitoh, Kohki; Wada, Toshihiko; and Konai, Yutaka. 5,643,775, Cl. 435-193.000.

Kondo, Hisao: *See*—
Kojiri, Katsuhisa; Suzuki, Hajime; Kondo, Hisao; and Suda, Hiroyuki. 5,643,760, Cl. 435-85.000.

Kondo, Masahiko: *See*—
Onishi, Noriaki; Okamoto, Masayuki; Hirai, Toshiyuki; Yamada, Nobuaki; Nagae, Nobukazu; Kondo, Masahiko; and Terashita, Shinichi. 5,643,471, Cl. 216-23.000.

Kondoh, Rui: *See*—
Kameda, Takanobu; Kano, Machiko; Kondoh, Rui; Watanabe, Kenji; Ichikawa, Tomoyuki; Taniguchi, Yuichiro; and Aida, Chieko. 5,644,136, Cl. 250-492.100.

Kondoh, Yoshiyuki; Sakyo, Tsuyoshi; Iwase, Yoshimi; Tomita, Sadahisa; Komatsu, Kazunori; and Tamura, Kazuhisa, to Hitachi Construction Machinery Co., Ltd. Air outlet member. 5,643,080, Cl. 454-155.000.

Kondrashova, Tatyana Tikhonovna: *See*—
Komissarova, Irina Alexeevna; Gudkova, Julia Vasileivna; Soldatenkova, Tatyana Dmitrievna; Kondrashova, Tatyana Tikhonovna; and Burbenskaya, Natalya Mikhailovna. 5,643,954, Cl. 514-561.000.

Kongsberg Automotive AS: *See*—
Ljøsne, Knut Tore. 5,642,793, Cl. 192-30.00W.

Konica Corporation: *See*—
Hosogaya, Ryuji; Tsunoda, Eizo; Hatakeyama, Akira; Osawa, Yoshihisa; Tanaka, Hideki; and Tobisawa, Seiichi. 5,643,363, Cl. 118-410.000.
Tamura, Kishio; Tanaka, Mayumi; and Uchida, Masafumi. 5,643,704, Cl. 430-106.600.

Konishi, Hirofumi; and Yamanaka, Masanori, to Matsushita Electric Industrial Co., Ltd. Controlled DC voltage stabilizer. 5,644,481, Cl. 363-21.000.

Konishi, Yoshito: *See*—
Murashima, Nobuharu; Tanii, Junichi; Konishi, Yoshito; and Tanino, Ken. 5,643,120, Cl. 475-5.000.

Kono, Katsumi; and Nakamura, Shinya, to Toyota Jidosha Kabushiki Kaisha. Slip control apparatus for motor vehicle lock-up clutch. 5,643,136, Cl. 477-169.000.

Kono, Susumu: *See*—
Monzen, Tadaaki; Kono, Susumu; Ohkubo, Yoshiaki; Fujii, Toshiyuki; and Uchida, Kouji. 5,642,822, Cl. 212-275.000.

Konrad, Irene, legal representative: *See*—
Chakraborty, Amiya Kumar; Rohde, Jurgen; Klatt, Karl-Heinz, deceased; Wenzl, Helmut; Konrad, Ralf, deceased; Konrad, Tatjana. 5,643,850, Cl. 502-326.000.

Konrad, Ralf, deceased (by Irene Konrad, legal representative): *See*—
Chakraborty, Amiya Kumar; Rohde, Jurgen; Klatt, Karl-Heinz, deceased; Wenzl, Helmut; Konrad, Ralf, deceased; Konrad, Tatjana. 5,643,850, Cl. 502-326.000.

Konrad, Tatjana (legal representative): *See*—
Chakraborty, Amiya Kumar; Rohde, Jurgen; Klatt, Karl-Heinz, deceased; Wenzl, Helmut; Konrad, Ralf, deceased; Konrad, Tatjana. 5,643,850, Cl. 502-326.000.

Konstant, Anthony N., to Konstant Products, Inc. Unloading device. 5,642,976, Cl. 414-276.000.

Konstant Products, Inc.: *See*—
Konstant, Anthony N., 5,642,976, Cl. 414-276.000.

Kontani, Toru: *See*—
Niigata, Kunihiro; Takahashi, Takumi; Maruyama, Tatsuya; Suzuki, Takayuki; Maeno, Kyoichi; Onda, Kenichi; Kontani, Toru; Noshiro, Osamu; Koike, Reiko; Shimaya, Akiyoshi; and Irie, Jun. 5,643,931, Cl. 514-364.000.

Kooken, Gale A.; Murphy, John W.; and Fleming, Roger D., to Dayton-Phoenix Group, Inc. Stator lamination design having a tapered opening. 5,644,181, Cl. 310-216.000.

Koorland, Neil Karl: *See*—
Ruigrok, Adrian; Kratz, Geoffrey G.; Wallace, Andrew John; Koorland, Neil Karl; Ross, James; Alikashani, Safa; and Laforce, Marcel. 5,644,706, Cl. 395-185.010.

Kopp, Clinton Virgil; Doig, Ian Dracup; Streeton, Robert John William; and Darzi, Jalel Michel, to Memtel Limited. Concentration of solids in a suspension using hollow fibre membranes. 5,643,455, Cl. 210-636.000.

Koppel, Gary A.: *See*—
Barton, Russell L.; Guttman-Carlisle, Deborah L.; and Koppel, Gary A., 5,643,573, Cl. 424-179.100.

Korshok, Aleksandr P.: *See*—
Kavteladze, Zaza A.; Korshok, Aleksandr P.; and Kadnikov, Andrej A., 5,643,339, Cl. 623-1.000.

Korte, Donald Edwin; and Lee, Len Fang, to Rohm and Haas Company. Substituted pyridine compounds. 5,643,854, Cl. 504-219.000.

Korte, Ralf: *See*—
Otto, Hans-Dieter; Wabnitz, Thomas; and Korte, Ralf, 5,643,004, Cl. 439-397.000.

Kortenbach, Juergen Andrew: *See*—
Turkel, David; and Kortenbach, Juergen Andrew, 5,643,307, Cl. 606-184.000.

Kosak, Kenneth M.; and Kosak, Matthew K. Reactions using heat-releasable reagents in wax beads. 5,643,764, Cl. 435-91.100.

Kosak, Matthew K.: *See*—
Kosak, Kenneth M.; and Kosak, Matthew K., 5,643,764, Cl. 435-91.100.

Kosaka, Tokihiro: *See*—
Maekawa, Yasunori; and Kosaka, Tokihiro, 5,644,388, Cl. 356-73.000.

Kosson, Robert: *See*—
Malik, Paul; Kosson, Robert; Vasely, Michael; and Stegmann, George, 5,644,608, Cl. 376-272.000.

Kostecki, Eric L.: *See*—
Emmerich, Jeffery C.; Kostecki, Eric L.; and Buckles, Warren, 5,644,218, Cl. 323-360.000.

Kotani, Kazuyuki, to Koyo Seiko Co., Ltd. Rocker arm and method of manufacturing same. 5,642,693, Cl. 123-90.410.

Koths, Kirston E.; Halenbeck, Robert F.; Taylor, Eric W.; Wang, Alice M.; and Casipit, Clayton L., to Chiron Corporation. Method for purifying secreted Mac-2-binding glycoprotein. 5,644,035, Cl. 530-395.000.

Koths, Kirston E.: *See*—
Ladner, Martha B.; Noble, Janelle A.; Martin, George A.; Kawasaki, Ernest S.; Coyne, Mazie Y.; Halenbeck, Robert F.; and Koths, Kirston E., 5,643,563, Cl. 424-85.100.

Kouchi, Toshifumi; Hirose, Tadafumi; and Tanaka, Yoshio, to Honda Giken Kogyo Kabushiki Kaisha. Generator set. 5,642,702, Cl. 123-198.00E.

Kovacs, Dora M.: *See*—
Tanzi, Rudolph E.; and Kovacs, Dora M., 5,643,726, Cl. 435-6.000.

Koyata, Hideo: *See*—
Darwin, David Charles; Gartner, Ellis Martin; Chun, Byong-Wa; Koyata, Hideo; and Kuo, Lawrence Lu, 5,643,978, Cl. 524-5.000.

Koyo Seiko Co., Ltd.: *See*—
Abe, Shinji, 5,642,945, Cl. 384-470.000.
Kotani, Kazuyuki, 5,642,693, Cl. 123-90.410.
Miura, Yoshihisa; and Numata, Tetsuaki, 5,642,795, Cl. 192-45.100.

Koz, Mark Christopher; and Hata, Masato, to Intelligent Instruments Corporation. Adaptive video subscriber system and methods for its use. 5,644,355, Cl. 348-17.000.

Kozlowski, Keith Allen, to General Motors Corporation. Stroking constant velocity universal joint having low stroke load. 5,643,091, Cl. 464-144.000.

Kozuka, Masao: *See*—
Nagano, Mitsuo; Kobayashi, Takeo; Sakai, Junichi; Kozuka, Masao; Iwata, Nobuyoshi; and Kubo, Yoshiko, 5,643,923, Cl. 514-305.000.

Kraft Foods, Inc.: *See*—
Mehnert, David W., 5,643,621, Cl. 426-36.000.

Kramer, William E.: *See*—
Ferrara, Joseph J.; Cipolla, Stephen D.; Kramer, William E.; Naramore, Raymond A.; and Rolph, L. James, 5,642,876, Cl. 270-58.010.

Kratz, Geoffrey G.: *See*—
Ruigrok, Adrian; Kratz, Geoffrey G.; Wallace, Andrew John; Koorland, Neil Karl; Ross, James; Alikashani, Safa; and Laforce, Marcel, 5,644,706, Cl. 395-185.010.

Krause, Kenneth W.: *See*—
Beiser, David G.; Woolfson, Steven B.; and Krause, Kenneth W., 5,643,203, Cl. 604-66.000.
Beiser, David G.; Woolfson, Steven B.; and Krause, Kenneth W., 5,643,302, Cl. 606-167.000.

Kreindel, Michael: *See*—
Eckhouse, Shimon; and Kreindel, Michael, 5,643,334, Cl. 607-88.000.

Kremer, Karl-Theo: *See*—
Weber, Karl; Spichtinger, Klaus; and Kremer, Karl-Theo, 5,644,754, Cl. 395-500.000.

Krevolin, Janet L.: *See*—

Sederholm, Gary W.; Gustke, Kenneth A.; and Krevolin, Janet L., 5,643,271, Cl. 606-80.000.

Krivokapic, Zoran; and Bang, David S., to Advanced Micro Devices, Inc. Multiple tier collimator system for enhanced step coverage and uniformity. 5,643,428, Cl. 204-298.110.

Kroin, Julian S.: *See*—
Hertel, Larry W.; and Kroin, Julian S., 5,644,043, Cl. 536-18.400.

Kroll, Mark W.; and Brewer, James E., to Angeion Corporation. System and method inducing fibrillation using an implantable defibrillator. 5,643,323, Cl. 607-2.000.

Krout, Gary R.: *See*—
Goetter, Erwin H.; Levac, Daniel J.; and Krout, Gary R., 5,644,671, Cl. 385-135.000.

Krupp Polysius AG: *See*—
Patzelt, Norbert; and Knecht, Johann, 5,642,863, Cl. 241-24.130.

Krzywosinski, Leszek; *See*—
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Meybeck, Alain; Dumas, Marc; Bonte, Frédéric; and Marechal, Christian, 5,643,597, Cl. 424-450.000.
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Lygum, Poul, to Tetra Laval Food Koppens B.V. Shaping machine. 5,643,075, Cl. 452-174.000.
Lynch, Kevin R.: *See*—
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Lynd, L. Grant, to National Packaging Corporation. Beverage container with vertically adjustable base. 5,642,831, Cl. 220-8.000.
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Lysyansky, Alexander V.: *See*—
Aityan, Sergey K.; and Lysyansky, Alexander V., 5,643,085, Cl. 463-9.000.
Lyyra, Matti: *See*—
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Giusti, Paolo; and Callegaro, Lanfranco, 5,644,049, Cl. 536-53.000.
Ma, Frank C.: *See*—
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Maack, Christophel A.; and Sommer, Andreas, to Celtrix Pharmaceuticals, Inc. Method for treating catabolic conditions. 5,643,867, Cl. 514-3.000.
Maack, Werner: *See*—
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Mabbott, David E. Dismount braking device for a snowmobile. 5,642,788, Cl. 180-272.000.
Mabilon, Gil: *See*—
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MacCauley, William J., III, to John Rock & Company, Inc. Method and apparatus for removing sawdust. 5,642,766, Cl. 144-329.000.
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MacDonald, John Gavin: *See—*
Nohr, Ronald Sinclair; and MacDonald, John Gavin, 5,643,356, Cl. 106-31.490.
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MacDougall, Louis M.: *See—*
Parekh, Mahendra B.; Kitzmiller, Leon; Costello, Richard C.; Grow, C. Allen; Pinchott, Gordon; O'Leary, Dennis; MacDougall, Louis M.; Okey, David W.; and Fowler, Edward J., 5,642,654, Cl. 92-260.000.
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Macri, Vincent J.; Magaw, Robert O.; and Zilber, Paul. Interactive ice and roller hockey training, coaching, and playing rinks. 5,643,094, Cl. 472-92.000.
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Benson, Bradley J.; Chen, Xiannong; Cianciolo, George J.; Diaz, Jose-Luis; Ishaq, Khalid S.; Morris-Natschke, Susan L.; Uhing, Ronald J.; and Wong, Henry, 5,643,893, Cl. 514-64.000.
Macronix International Co., Ltd.: *See—*
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Madisco Inc.: *See—*
Rioux, Marcel, 5,642,883, Cl. 273-157.00R.
Madsen, Kurt Bo, to Maersk Container Industri AS. Refrigerated container and a gable frame. 5,642,827, Cl. 220-1.500.
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Maekawa, Yasunori; and Kosaka, Tokihiro, to Toa Medical Electronics Co., Ltd. Imaging flow cytometer nearly simultaneously capturing a plurality of images. 5,644,388, Cl. 356-73.000.
Maeno, Kyoichi: *See—*
Niigata, Kunihiro; Takahashi, Takumi; Maruyama, Tatsuya; Suzuki, Takayuki; Maeno, Kyoichi; Onda, Kenichi; Kontani, Toru; Noshiro, Osamu; Koike, Reiko; Shimaya, Akiyoshi; and Irie, Jun, 5,643,931, Cl. 514-364.000.
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Maffett, Michael Kinard: *See—*
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Magee, John Allan, to University of Arkansas, N.A. Directional image transmission sheet and method of making same. 5,644,431, Cl. 359-619.000.
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Maggio, Mark S.: *See—*
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Maguire, Francis J., Jr. Apparatus and method for presenting successive images. 5,644,324, Cl. 345-9.000.
Maheshwari, Manish: *See—*
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Mahin, Stephen William; Conor, Stephen Michael; Ciavaglia, Stephen J.; Moulton, Lyman Henry, III; Rich, Stephen Emery; and Kartschoke, Paul David, to International Business Machines Corporation. Superscaler instruction pipeline having boundary identification logic for variable length instructions. 5,644,744, Cl. 395-383.000.
Mahlberg, Florence: *See—*
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Kaaden, Jürgen; Reiner, Gerhard; and Mahr, Peter, 5,644,675, Cl. 386-60.000.
Mahurkar, Sakharam D. Hypodermic needle assembly. 5,643,222, Cl. 604-195.000.
Mai, Chao-Lin; and Chiu, Pen-Li. Safety plug with switch means. 5,643,012, Cl. 439-622.000.
Maier, Willi; and Schuhmacher, Hans, to Grapha-Holding AG. Conveyor apparatus having pivotable load-bearing elements. 5,642,802, Cl. 198-370.040.
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Mak, Steve S. Y.: *See—*
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Makino, Katsunori: *See—*
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Makishima, Tomonori, to Furukawa Electric Co., Ltd., The. Method of effecting dynamic management of path or routing information without requiring an internetworking operation for routing. 5,644,713, Cl. 395-200.010.
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Malagrino, Gerald Daniel, Jr.: *See—*
Eckberg, Eric Alan; Malagrino, Gerald Daniel, Jr.; and Rappel, Brian Lee, 5,644,453, Cl. 360-106.000.
Maligres, Peter E.: *See—*
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Malik, Paul; Kosson, Robert; Vasely, Michael; and Stegmann, George, to Consolidated Edison Company of New York; and Vasely, Michael. Cooling system for spent fuel pool. 5,644,608, Cl. 376-272.000.
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Malin, Patricia J.; Wada, Kenneth Richard; and Huber, Oskar Werner, to CellStat Technologies, Inc. System for electronically monitoring and recording cell cultures. 5,643,742, Cl. 435-29.000.
Mallinckrodt Medical, Inc.: *See—*
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Malone, Matthew H.: *See—*
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Malone, William J. Beam and prop system for supporting concrete formwork. 5,643,487, Cl. 249-18.000.
Manabe, Tsuneo: *See—*
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Mandel, Jean-Louis; Aubourg, Patrick; Mosser, Jean; and Sarde, Claude, to Institut National de la Sante et de la Recherche Medicale. X-linked adrenoleukodystrophy gene and corresponding protein. 5,644,045, Cl. 536-23.500.
Mandelman, Jack Allen: *See—*
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Mangone Enterprises: *See—*
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Mangone, Ronald W., to Mangone Enterprises. Weldless gratings or grids for bridge decks. 5,642,549, Cl. 14-73.000.
Mann, Brian M.: *See—*
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Mansell, Marc Lynn: *See—*
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Many, Robert P.: *See—*
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Marble, Robert A.; Ramesh, Manian; and Byrne, Norman Edward, to Nalco/Exxon Energy Chemicals, L. P. Method for separating oil from water in petroleum production. 5,643,460, Cl. 210-705.000.
Marcato, Forrest C., to Rainline Corporation, The. Apparatus for applying a night-visible traffic stripe to a road. 5,642,962, Cl. 404-94.000.
Marchase, Richard B.; and Darbha, Sudha, to UAB Research Foundation. Glucose-6-phosphate uptake inhibitors and novel uses thereof. 5,643,883, Cl. 514-23.000.
Marchi, Patricia; and Mellul, Myriam, to L'Oreal. Cosmetic composition containing solid particles coated with an amphoteric polymer. 5,643,672, Cl. 428-402.000.
Marco, Leslie S.; and Olsen, Robert C., to Illinois Tool Works Inc. Individual aperture—continuous zip strip. 5,642,808, Cl. 206-150.000.
Marcus, Beth A.; Chen, Elaine; An, Bin; and Osborne, Timothy, to Microsoft Corporation. Input device including digital force feedback apparatus. 5,643,087, Cl. 463-38.000.
Marcus, Ira, to Jenny Wyatt Enterprises, Inc. Golf accessory. 5,643,114, Cl. 473-408.000.
Marder, James M.: *See—*
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Marechal, Christian: *See—*
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Marion, Millard C.: *See—*
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Mark, Darren M.; Segien, Donald J., Jr.; and Woolley, Curtis S., to Emhart Inc. Faucet. 5,642,755, Cl. 137-801.000.
Mark, Joseph P.: *See—*
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Marker, Richard Lee: *See—*
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Markman, Barry Stephen. Method and apparatus for forming multiple cavities for placement of hair grafts. 5,643,308, Cl. 606-187.000.
Markowitz, H. Toby: *See—*
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Marquardt GmbH: *See—*
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Marrash, Russell Lee: *See—*
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Marrelli, John David; Brost, Dale Francis; Siddioui, Farhan; Pepin, Lisa Langford; and Stafford, Joseph David, to Texaco Inc. Method for analyzing a petroleum stream. 5,644,244, Cl. 324-637.000.
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Schmitz, Harold H.; Michael, Dana L.; Neumann, James C.; Webster, Michael; Zemenek, Elizabeth; and Jerome, Ralph, 5,643,623, Cl. 426-73.000.
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Marshall, Jeremy; and Turner, Derek, to Owen Mumford Limited. Injection devices. 5,643,214, Cl. 604-134.000.
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Martin, George A.: *See—*
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Martin, Henry Woods; Cox, Ian M.; and Rodibaugh, Scott A., to Glacier Metal Company Limited. Spin-on filter assembly incorporating a re-usable tubular filter screen. 5,643,448, Cl. 210-232.000.
Martin, Jean-Paul Marcel Lucieu: *See—*
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Martin, Lawrence L.; Flanagan, Denise M.; and Payack, Joseph F., to Hoechst Marion Roussel, Inc. 2-(4-piperidinyl)-1H-pyrido[4,3-b]indol-1-ones and related compounds. 5,643,903, Cl. 514-212.000.
Martin Marietta Corporation: *See—*
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Martin, Mark T.: *See—*
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Martin, Russel A., to Xerox Corporation. Mechanical capacitor. 5,644,349, Cl. 347-46.000.
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Martinez, Anthony; and Greenwald, Richard B., to Enzon, Inc. Non-antigenic branched polymer conjugates. 5,643,575, Cl. 424-194.100.
Martinez, Georges; and Guillaud, Jean-Michel, to U.S. Philips Corporation. Receiver with two synchronization loops. 5,644,606, Cl. 375-376.000.
Martiny, Wolfgang: *See—*
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Maruyama, Koichi; and Iwaki, Makoto, to Asahi Kogaku Kogyo Kabushiki Kaisha. Optical system of optical information recording/reproducing apparatus. 5,644,437, Cl. 359-793.000.
Maruyama, Tatsuya: *See—*
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Maruyama, Tohru; Saito, Masatoshi; Terashi, Taro; Watanabe, Hisao; Fujita, Shigeru; Shinkai, Masaru; and Sugawara, Tomoaki, to Ricoh Company, Ltd. Apparatus for removing image forming substance from image holding member. 5,642,550, Cl. 15-102.000.
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Mascitelli, Francesco, to SAR S.p.A. Sleeve for the fixing of a manual pump group to a glass bottle. 5,642,908, Cl. 285-148.190.
Masi, J. Roger; and Hall, William F. Personal protection device. 5,644,297, Cl. 340-573.000.
Masini, Michael A. Composite wound dressing including inversion means. 5,643,189, Cl. 602-58.000.
Maslanka, William Ivalter, to Hercules Incorporated. Synthesis of high solids-content wet-strength resin. 5,644,021, Cl. 528-336.000.
Mason, James M.; and Squinto, Stephen P., to Alexion Pharmaceuticals, Inc. Retroviral vector particles expressing complement inhibitor activity. 5,643,770, Cl. 435-172.300.
Mason, J. Bradley; and Hall, Mark Alan, to VECTRA Technologies, Inc. Waste vitrification melter. 5,643,350, Cl. 65-158.000.
Mason, Kenneth Vincent. Anti-seborrhoeic formulation. 5,643,937, Cl. 514-399.000.
Mason, William R.: *See—*
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Matheson, Derek S.; Silbert, Kevin W.; and Curtin, Christian C. Ultraviolet curing chamber with improved sealing device and tool. 5,644,135, Cl. 250-454.110.
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Mathur, Rajiv, to Micro-Pak, Inc. Lipid vesicles containing avocado oil unsaponifiables. 5,643,600, Cl. 424-450.000.
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Brent, Wilson William, 5,644,306, Cl. 341-67.000.
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Middlesworth, Tommy A.; Penkoske, Donald G.; and Burmesch, Gerald C., to Simplicity Manufacturing, Inc. Chipper vacuum shredder system and apparatus. 5,642,864, Cl. 241-58.000.

Middleton, Hunter: *See*—
Cates, Gordon D., Jr.; Driehuys, Bastiaan; Happer, William; Middleton, Hunter; Miron, Eli; Saam, Brian; and Walter, Daniel, 5,642,625, Cl. 62-55.500.

Midwest Research Institute: *See*—
Potter, Thomas F.; Benson, David K.; and Burch, Steven D., 5,643,485, Cl. 219-621.000.

Mieda, Michinobu: *See*—
Nakayama, Junichiro; Mieda, Michinobu; Katayama, Hiroyuki; Hirokane, Junji; Takahashi, Akira; and Ohta, Kenji, 5,644,566, Cl. 369-275.200.

Mielekamp, Pieter M., to U.S. Philips Corporation. Method for the graphic reproduction of a symbol with an adjustable scale and position. 5,644,335, Cl. 345-127.000.

Mietlicki, Eugene E.: *See*—
Kalisiak, Michael S.; and Mietlicki, Eugene E., 5,643,389, Cl. 156-290.000.

Mikos, Antonios G.: *See*—
Suggs, Laura J.; Payne, Richard G.; Yaszemski, Michael J.; and Mikos, Antonios G., 5,644,005, Cl. 525-444.000.

Miller, Barbara Ann: *See*—
Gravenstein, Stefan; Shult, Peter Alan; Miller, Barbara Ann; and Lowder, James Norman, 5,643,202, Cl. 604-54.000.

Miller, Charles E.: *See*—
Williams, Jeffrey A.; and Miller, Charles E., 5,643,071, Cl. 452-50.000.

Miller, Christopher P., to International Business Machines Corporation. High gain feedback latch. 5,644,536, Cl. 365-189.050.

Miller, Craig A.; and Fray, Joseph C., to Westinghouse Air Brake Company. High voltage d-c current limiter. 5,644,461, Cl. 361-56.000.

Miller, Darwin L.: *See*—
Webb, Edward H.; Remmel, Allan H.; and Miller, Darwin L., 5,642,921, Cl. 305-179.000.

Miller, Joel V. Multi stage thermoelectric power generation using an ammonia absorption refrigeration cycle and thermoelectric elements at numerous locations in the cycle. 5,644,185, Cl. 310-306.000.

Miller, John, to TeleEngineering, Inc. Apparatus for detecting the distance between two objects. 5,642,869, Cl. 246-182.00B.

Miller, John E., to Parma Corporation. Foldable bed with collapsible sinuous springs and pivotable leg. 5,642,536, Cl. 5-13.000.

Miller, Marvin Leon. A-1-2-3, body guard alarm. 5,644,296, Cl. 340-573.000.

Miller, Nancy Lebeis: *See*—
Grindersley, Soren; Miller, Nancy Lebeis; and Paul, Randall B., 5,643,064, Cl. 451-378.000.

Miller, Robert C., Jr.: *See*—
Warren, R. Anthony J.; Kilburn, Douglas G.; and Miller, Robert C., Jr., 5,643,791, Cl. 435-252.330.

Mills, Gregory A.: *See*—
Genovese, Michael D.; Lochkovic, Gregory A.; and Mills, Gregory A., 5,643,393, Cl. 156-344.000.

Mills, John: *See*—
Warner, Nicholas; Goddard, Moses; and Mills, John, 5,643,286, Cl. 606-130.000.

Mills, John F.: *See*—
Aebischer, Patrick; Mills, John F.; Wahlberg, Lars; Doherty, Edward J.; and Tresco, Patrick A., 5,643,773, Cl. 435-182.000.

Mimoto, Tsutomu; Kisanuki, Sumitsugu; Takahashi, Osamu; and Kiso, Yoshiaki, to Japan Energy Corporation. Process for producing peptide derivatives and salts therefor. 5,644,028, Cl. 530-331.000.

Minami, Shuji: *See*—
Inatani, Akihisa; Nagano, Shuichi; Mita, Kanji; Minami, Shuji; Tamura, Haruyuki; Watanabe, Tsutomu; Katsuyama, Akira; Ishikawa, Masami; and Noshitani, Taiji, 5,644,558, Cl. 369-30.000.

Miner, Arthur J.: *See*—
Fersch, Kenneth E.; and Miner, Arthur J., 5,643,593, Cl. 424-419.000.

Minevski, Ljiliana V., to BetzDearborn Inc. Corrosion inhibitor for alkanolamine units. 5,643,534, Cl. 422-12.000.

Minnesota Mining and Manufacturing: *See*—
Cosgrove, Delos M.; Cornhill, J. Frederick; Boykin, Christopher M.; Huldin, Nelson L.; and O'Neill, William G., 5,643,226, Cl. 604-264.000.

Minnesota Mining and Manufacturing Company: *See*—
Berrigan, Michael R.; and Olson, David A., 5,643,507, Cl. 264-6.000.
Calhoun, Clyde D.; and Berg, James G., 5,643,668, Cl. 428-354.000.

Davidson, Robert S.; Ferguson, Robert W.; Heldman, Barry E.; Diekmann, Timothy J.; Maistrovich, Anthony R.; Higgins, James A.; and Gehlsen, Mark D., 5,644,007, Cl. 526-64.000.
Gorman, Michael R.; Becker, Dennis L.; Folske, Donald W.; Melbye, William L.; Nestegard, Susan K.; and Ott, Ronald L., 5,643,397, Cl. 156-435.000.
Kobe, James J.; and Ward, Gene R., 5,643,648, Cl. 428-63.000.
Lindstrom, Kyle J.; and Nikolaides, Nick, 5,644,063, Cl. 546-294.000.
Northey, Paul J., 5,643,992, Cl 524-501.000.
Passarino, Sergio, 5,643,655, Cl. 428-143.000.
Roenigk, Karl F., 5,643,971, Cl. 523-122.000.
Tsuei, Alexander C., 5,643,669, Cl. 428-354.000.
Ward, Robert E., Sr., 5,643,068, Cl. 451-526.000.
Wilfong, Debra L.; and Rolando, Richard J., 5,643,375, Cl. 156-244.240.
Wright, David W.; Adams, John M.; and Rumford, Martha J., 5,644,093, Cl. 73-866.500.

Minolata Co. Ltd.: *See*—
Hagimori, Hitoshi, 5,644,434, Cl. 359-689.000.

Minolta Co., Ltd.: *See*—
Murashima, Nobuharu; Tanii, Junichi; Konishi, Yoshito; and Tanino, Ken, 5,643,120, Cl. 475-5.000.

Minowa, Toshimichi; Kimura, Hiroshi; Yoshida, Yoshiyuki; Ohyama, Yoshishige; and Nishimura, Yutaka, to Hitachi, Ltd. Change gear control device using acceleration and gear ratio as parameters for automatic transmission in a motor vehicle and the method therefor. 5,643,133, Cl. 477-107.000.

Minowa, Toshimichi: *See*—
Ozaki, Naoyuki; Amano, Matsuo; Ohnishi, Hiroshi; and Minowa, Toshimichi, 5,642,709, Cl. 123-361.000.

Minton, John Edward: *See*—
Slater, James Howard; and Minton, John Edward, 5,643,728, Cl. 435-6.000.

Miron, Eli: *See*—
Cates, Gordon D., Jr.; Driehuys, Bastiaan; Happer, William; Middleton, Hunter; Miron, Eli; Saam, Brian; and Walter, Daniel, 5,642,625, Cl. 62-55.500.

Miron, Yvan; Toutant, Daniel; and Chouinard, Marius, to Canada Inc. Column structure for bearing a portable stage roof. 5,642,589, Cl. 52-7.000.

Mirsky, Richard M., to Basic Software Limited Partnership 95, a Limited Partnership. Moving video jigsaw puzzle. 5,643,084, Cl. 463-9.000.

Misawa, Hiroaki, to Research Development Corporation of Japan. Microfine light source. 5,644,588, Cl. 372-66.000.

Mishima, Chisato: *See*—
Honkura, Yoshinobu; Mitarai, Hironari; Mishima, Chisato; Amahiro, Yoshikazu; Matsuoka, Hiroshi; and Sugiura, Yoshinobu, 5,643,491, Cl. 252-62.540.

Mishima, Masaaki: *See*—
Hamada, Masaaki; Aoi, Takahiro; Kohgo, Tetsuya; and Mishima, Masaaki, 5,642,874, Cl. 267-141.000.

Mistry, Pravin: *See*—
Turchan, Manuel C.; and Mistry, Pravin, 5,643,641, Cl. 427-595.000.

Mita Industrial Co., Ltd.: *See*—
Irie, Atsuhiko; Hikosaka, Ariyoshi; and Kajitani, Tetsuji, 5,644,409, Cl. 358-461.000.

Mita, Kanji: *See*—
Inatani, Akihisa; Nagano, Shuichi; Mita, Kanji; Minami, Shuji; Tamura, Haruyuki; Watanabe, Tsutomu; Katsuyama, Akira; Ishikawa, Masami; and Noshitani, Taiji, 5,644,558, Cl. 369-30.000.

Mitarai, Hironari: *See*—
Honkura, Yoshinobu; Mitarai, Hironari; Mishima, Chisato; Amahiro, Yoshikazu; Matsuoka, Hiroshi; and Sugiura, Yoshinobu, 5,643,491, Cl. 252-62.540.

Mitchell, Daniel B.: *See*—
Lloyd, Robert D.; and Mitchell, Daniel B., 5,643,479, Cl. 219-137.0PS.

Mitchell, Gerald M.; Reed, Edward D.; Spooner, Greg J.; and Himelar, Michael, to Coherent, Inc. High repetition rate Eribum-YAG laser for tissue ablation. 5,644,585, Cl. 372-25.000.

Mitchell, Gordon L.: *See*—
Soest, Jon F.; Horn, James N.; Lock, Thomas E.; and Mitchell, Gordon L., 5,644,392, Cl. 356-237.000.

Mitobe, Kazuhiko: *See*—
Ochiai, Masayuki; Ueda, Hidefumi; Sono, Michio; Yamaguchi, Ichiro; Mitobe, Kazuhiko; Otake, Koki; Kasai, Junichi; Kamehara, Nobuo; Yamagishi, Yasuo; Mizukoshi, Masataka; Yamada, Yutaka; and Abe, Susumu, 5,643,831, Cl. 437-183.000.

Mitsubishi Chemical Corporation: *See*—
Sakai, Takako; Liu, Hongjun; Kurihara, Hiroyuki; and Imamura, Jun, 5,644,066, Cl. 800-220.000.
Yamada, Kumi; Tamao, Yoshikuni; Ohshima, Masahiro; and Iwase, Norimichi, 5,643,911, Cl. 514-254.000.
Yamamoto, Iwao; Aikyo, Hiroyuki; Yoshiya, Akihiko; and Shirosaki, Kazuo, 5,643,546, Cl. 423-447.200.

Mitsubishi Denki Kabushiki Kaisha: *See*—
Arimoto, Masao, 5,644,159, Cl. 257-560.000.
Inoue, Sadayuki; and Ishimoto, Junko, 5,644,305, Cl. 341-67.000.
Kaneno, Nobuaki; and Karakida, Syoichi, 5,644,587, Cl. 372-45.000.
Kawano, Minoru; and Sakaino, Go, 5,644,586, Cl. 372-44.000.
Matsumoto, Toshio; Baba, Hiroshi; Itoh, Kazuhiko; and Ogura, Shiro, 5,644,697, Cl. 395-182.040.
Miyazaki, Junji; and Yoshioka, Nobuyuki, 5,644,381, Cl. 355-53.000.
Nakane, Kazuhiko, 5,644,420, Cl. 359-245.000.
Nishioka, Kouichi, 5,644,702, Cl. 395-182.200.
Ooishi, Tsukasa, 5,644,250, Cl. 326-16.000.
Shikama, Shinsuke, 5,644,435, Cl. 359-691.000.
Takahashi, Masanobu; Tai, Shuichi; Kojima, Keisuke; Shinnishi, Toshio; and Kyuma, Kazuo, 5,644,681, Cl. 395-23.000.
Totsuka, Hidekazu; Kawagishi, Kenshi; Shida, Yasunori; Mitsushima, Kazuyuki; and Iwata, Yukihiko, 5,642,857, Cl. 236-51.000.
Ueda, Koji, 5,644,597, Cl. 375-232.000.
Yoshida, Toyohiko, 5,644,699, Cl. 395-182.050.

Mitsubishi Gas Chemical Company, Inc.: *See*—
Kojima, Takashi; Hirai, Yasuhiro; and Yoshimura, Takafumi, 5,644,018, Cl. 528-247.000.

Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See*—
Ito, Yoshihito; and Tuge, Hiroki, 5,644,488, Cl. 364-423.098.

Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Monzen, Tadaaki; Kono, Susumu; Ohkubo, Yoshiaki; Fujii, Toshiyuki; and Uchida, Kouji, 5,642,822, Cl. 212-275.000.

Mitsubishi Kasei Corporation: *See*—
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Mitsubishi Pencil Kabushiki Kaisha: *See*—
Kobayashi, Seiichi; and Sekiguchi, Naoki, 5,642,953, Cl. 401-30.000.

Mitsubishi Semiconductor America, Inc.: *See*—
Derouiche, Nour Eddine, 5,644,473, Cl. 361-732.000.

Mitsui, Jiro, to Mitsui Kinzoku Kogyo Kabushiki Kaisha. Locking device for trunk lids. 5,642,636, Cl. 70-237.000.

Mitsui Kinzoku Kogyo Kabushiki Kaisha: *See*—
Mitsui, Jiro, 5,642,636, Cl. 70-237.000.

Mitsui, Munehiro: *See*—
Uehara, Shotaro; Mitsui, Munehiro; Atomori, Seiichi; Furuyama, Tateki; Shiota, Atushi; Fujimura, Mineo; and Nagata, Masaki, 5,643,990, Cl. 524-496.000.

Mitsui Petrochemical Industries, Ltd.: *See*—
Fujita, Minoru; Nakagawa, Hiroaki; and Saito, Tsutomu, 5,643,654, Cl. 428-138.000.

Mitsushima, Kazuyuki: *See*—
Totsuka, Hidekazu; Kawagishi, Kenshi; Shida, Yasunori; Mitsushima, Kazuyuki; and Iwata, Yukihiko, 5,642,857, Cl. 236-51.000.

Mitter, Sanjoy K.: *See*—
Akra, Mohamad A.; and Mitter, Sanjoy K., 5,644,656, Cl. 382-215.000.

Miura, Hideo: *See*—
Ohta, Hiroyuki; Miura, Hideo; Masuda, Hiroo; Tamaki, Yoichi; Ikeda, Takahide; Nishimura, Asao; and Hashimoto, Takashi, 5,643,805, Cl. 437-31.000.

Miura, Hiroshi; Ariyama, Masato; Iida, Kazuyuki; Iwahara, Kazufumi; Okano, Mitsunobu; Orihara, Hiroyuki; Katsumata, Akira; Sakata, Toshiyasu; Nishimura, Masaharu; Hamamura, Hirofumi; Murakami, Naoki; Yasuda, Mitsuru; Yamashita, Yasuhiro; Yamada, Ryouji; and Yamane, Atsushi, to Fujitsu Limited. Routing program generating method and apparatus therefor, placement program generating method and apparatus therefor, and automatic routing method and apparatus therefor. 5,644,500, Cl. 364-490.000.

Miura, Shoji: *See*—
Iida, Makio; Miura, Shoji; Sugisaka, Takayuki; Sakakibara, Toshio; and Ishihara, Osamu, 5,644,157, Cl. 257-521.000.

Miura, Tatsuo: *See*—
Yamaguchi, Yukio; Enya, Masaaki; Yamazaki, Takahiro; and Miura, Tatsuo, 5,642,970, Cl. 409-132.000.

Miura, Yoshihisa; and Numata, Tetsuaki, to Koyo Seiko Co., Ltd. One-way clutch. 5,642,795, Cl. 192-45.100.

Miwa, Hiroyuki; Kanematsu, Shigeru; Gomi, Takayuki; Anmo, Hiroaki; Noguchi, Takashi; Kato, Katsuyuki; Ejiri, Hirokazu; and Ouchi, Norikazu, to Sony Corporation. Manufacturing method for making bipolar device. 5,643,806, Cl. 437-31.000.

Miyabayashi, Toshiyuki, to Canon Kabushiki Kaisha. Silicone composition, elastic revolution body and fixing device using the same. 5,643,973, Cl. 523-212.000.

Miyagawa, Makoto: *See*—
Utsunomiya, Shinichi; Iino, Hideyuki; Kadomaru, Noriko; and Miyagawa, Makoto, 5,644,748, Cl. 395-417.000.

Miyaishi, Yoshinori: *See*—
Yamaguchi, Kozo; and Miyaishi, Yoshinori, 5,643,119, Cl. 475-5.000.

Miyake, Kazushi: *See*—
Ito, Yoshihiro; and Miyake, Kazushi, 5,643,322, Cl. 607-2.000.

Miyake, Koji: *See*—
Hamada, Toshimasa; Iwasaki, Masaru; Hanamoto, Tetsuya; Katoh, Shohichi; Funakoshi, Takahiro; Miyake, Koji; and Nakamichi, Masumi, 5,644,124, Cl. 250-216.000.

Miyake, Kuniaki: *See*—
Okamoto, Eiji; and Miyake, Kuniaki, 5,644,068, Cl. 73-23.320.

Miyamoto, Satoru; Shiraishi, Naoki; Isoe, Toshio; and Haneda, Isamu, to Sharp Kabushiki Kaisha. Schedule-managing apparatus being capable of moving or copying a schedule of a date to another date. 5,644,722, Cl. 395-209.000.

Miyanaga, Akiharu: *See*—
Ohtani, Hisashi; Miyanaga, Akiharu; Fukunaga, Takeshi; and Zhang, Hongyong, 5,643,826, Cl. 437-88.000.

Miyano, Toshiki; and Shimizu, Eiichi, to Eastman Kodak Comany. Automatic white balance adjusting device. 5,644,358, Cl. 348-223.000.

Miyashita, Ikuhiro: *See*—
Fujii, Masahiro; Miyashita, Ikuhiro; Koeda, Hiroshi; Mukaiyama, Keiichi; Maruyama, Hiroyuki; Otsuki, Noriyoshi; Watanabe, Toshiaki; and Kobayashi, Naoki, 5,644,341, Cl. 347-11.000.

Miyashita, Naoto: *See*—
Katakabe, Ichiro; Miyashita, Naoto; and Akiyama, Tatsuo, 5,643,046, Cl. 451-6.000.
Shimomura, Mariko; Miyashita, Naoto; and Ohashi, Hiroyuki, 5,643,406, Cl. 156-636.100.
Miyata, Manabu; Ito, Koji; Kameoka, Teruhiko; Shikata, Kazushi; Matsunaga, Koji; and Sugi, Hikaru, to Nippondenso Co., Ltd. Inside and outside air switching apparatus for automotive air conditioner. 5,643,079, Cl. 454-139.000.
Miyata, Yasuhiro: *See*—
Hayakawa, Yuichi; Hirano, Atsushi; Miyata, Yasuhiro; and Takahashi, Koki, 5,644,449, Cl. 360-103.000.
Miyawaki, Mamoru; and Sugawa, Shigetoshi, to Canon Kabushiki Kaisha. Liquid crystal display apparatus with a plural layer connection between the TFT drains and the pixel electrodes. 5,644,370, Cl. 349-43.000.
Miyawaki, Mamoru: *See*—
Furushima, Teruhiko; Sugawa, Shigetoshi; Okamura, Moriyuki; Kamio, Masaru; and Miyawaki, Mamoru, 5,644,373, Cl. 349-158.000.
Miyazaki, Aya: *See*—
Koden, Mitsuhiro; Miyazaki, Aya; and Shinomiya, Tokihiko, 5,644,371, Cl. 349-110.000.
Miyazaki, Junji; and Yoshioka, Nobuyuki, to Mitsubishi Denki Kabushiki Kaisha. Method of exposure employing phase shift mask of attenuation type. 5,644,381, Cl. 355-53.000.
Miyoshi, Fuminori: *See*—
Tamagaki, Akira; Taniguchi, Tsutomu; Ueda, Nobuyuki; Oka, Masami; Matsumoto, Kenji; and Miyoshi, Fuminori, 5,644,411, Cl. 358-529.000.
Miyoshi, Tadahiko: *See*—
Oishi, Tomoji; Takahashi, Ken; Nakazawa, Teteuo; Tanaka, Shigeru; and Miyoshi, Tadahiko, 5,643,642, Cl. 428-1.000.
Mizota, Teruhiko: *See*—
Shimamura, Seiichi; Tamura, Yoshitaka; Mizota, Teruhiko; Suzawa, Itsuko; and Seki, Nobuo, 5,644,050, Cl. 536-123.130.
Mizuguchi, Kiyoshi: *See*—
Mochizuki, Hidenori; Kato, Kazuo; Yamamoto, Ichiro; and Mizuguchi, Kiyoshi, 5,643,920, Cl. 514-294.000.
Mizukami, Takeshi, to NEC Corporation. Semiconductor dynamic random access memory device variable in refresh cycle. 5,644,544, Cl. 365-222.000.
Mizukoshi, Masataka: *See*—
Ochiai, Masayuki; Ueda, Hidefumi; Sono, Michio; Yamaguchi, Ichiro; Mitobe, Kazuhiko; Otake, Koki; Kasai, Junichi; Kamehara, Nobuo; Yamagishi, Yasuo; Mizukoshi, Masataka; Yamada, Yutaka; and Abe, Susumu, 5,643,831, Cl. 437-183.000.
Mizumachi, Motohiro: *See*—
Ando, Makoto; Kagami, Toshiki; Murakami, Takaaki; Sato, Masayuki; Kasahara, Noriko; Ito, Kengo; Hida, Masanobu; and Mizumachi, Motohiro, 5,644,350, Cl. 347-101.000.
Mizuno, Hiroshi: *See*—
Hitomi, Shigeki; Mizuno, Hiroshi; and Ojima, Satoshi, 5,643,267, Cl. 606-73.000.
Mizuno, Sadao: *See*—
Komma, Yoshiaki; Mizuno, Sadao; Kato, Makoto; Wada, Hidenori; and Nishino, Seiji, 5,644,413, Cl. 359-19.000.
Mizuno, Seiichiro, to Hamamatsu Photonics K.K. Distance measuring device using position sensitive light detector. 5,644,385, Cl. 356-3.040.
Mizunuma, Masanori; and Kojima, Shinji, to Singer Company N.V., The. Thread guide devices of a sewing machine. 5,642,678, Cl. 112-302.000.
Mizuta, Takao: *See*—
Hayashi, Hidenori; Mizuta, Takao; Sagae, Ichiro; and Watanabe, Naotoshi, 5,643,979, Cl. 524-100.000.
MMR Technologies, Inc.: *See*—
Little, William A., 5,644,502, Cl. 364-496.000.
Mobil Oil Corporation: *See*—
Borghard, William S.; Degnan, Thomas F.; and Mazzone, Dominick N., 5,643,440, Cl. 208-58.000.
Raterman, Michael F.; and Smalley, Christopher G., 5,643,537, Cl. 422-147.000.
Timken, Hye Kyung C.; and Riedinger, Sherri L., 5,643,441, Cl. 208-89.000.
Mocadlo, Cheryl Ann: *See*—
Jackson, Wanda Walton; Diaz, Monica Signoret; Perkins, Cheryl Anne; Huffman, Dawn Marie; Bush, Wendy Louise; Mocadlo, Cheryl Ann; and Birtwell, Richard John, 5,643,240, Cl. 604-378.000.
Mochida, Masaaki; Kaneko, Norio; and Tanaka, Nobuhiro, to Nikon Corporation. Endosseous implant. 5,642,996, Cl. 433-174.000.
Mochida Pharmaceutical Co., Ltd.: *See*—
Mochizuki, Hidenori; Kato, Kazuo; Yamamoto, Ichiro; and Mizuguchi, Kiyoshi, 5,643,920, Cl. 514-294.000.
Mochizuki, Hidenori; Kato, Kazuo; Yamamoto, Ichiro; and Mizuguchi, Kiyoshi, to-Mochida Pharmaceutical Co., Ltd. Tricyclic compound having anti-allergic activities. 5,643,920, Cl. 514-294.000.
Mochizuki, Naoto: *See*—
Saito, Hidemi; Kanda, Takashi; Iida, Yoshihito; and Mochizuki, Naoto, 5,644,663, Cl. 382-313.000.
Mochizuki, Shinobu: *See*—
Suzuki, Masataka; Ashiya, Hiroyuki; Tanaka, Yoshiyuki; Mochizuki, Shinobu; and Koike, Koji, 5,642,852, Cl. 228-110.100.
Modern Muzzleloading, Inc.: *See*—
Watley, Lindell Dale, 5,642,585, Cl. 42-96.000.
Moeller, Robert P.: *See*—
Burns, William K.; Moeller, Robert P.; and Gopalakrishnan, Ganesh K., 5,644,665, Cl. 385-3.000.
Mogi, Hiroshi: *See*—
Kubota, Yoshihiro; and Mogi, Hiroshi, 5,643,483, Cl. 219-543.000.
Mohri, Jun; and Endoh, Noboru, to Noritake Co., Limited; and Kyushu Noritake Co., Ltd. Fluorescent display tube wherein grid electrodes are formed on ribs contacting fluorescent segments, and process of manufacturing the display tube. 5,643,034, Cl. 445-24.000.
Moll, Frederic H.; and Chin, Albert K., to Origin Medsystems, Inc. Method for peritoneal retration. 5,643,178, Cl. 600-204.000.
Moll, Frederic H.: *See*—
Chin, Albert K.; Smith, Jeffrey A.; Lunsford, John P.; and Moll, Frederic H., 5,643,310, Cl. 606-192.000.
Moll, Hurley Chester, Jr.: *See*—
Weidler, Charles Harry; Moll, Hurley Chester, Jr.; Griesemer, David Alan; Whiteman, Robert Neil, Jr.; and Long, Michael David, 5,643,005, Cl. 439-405.000.
Mollenauer, Kenneth H., to General Surgical Innovations, Inc. Cannula assembly with squeeze operated valve. 5,643,301, Cl. 606-167.000.
Molliex, Ludovic Edmond Camille: *See*—
Berthelemy, Jean-Claude; Bessenay, Gilles Jean-Michel; Gauthier, Gérard Philippe; Girault, Daniel Georges; and Molliex, Ludovic Edmond Camille, 5,642,851, Cl. 228-44.300.
Mollov, Ivan Petrov; and Havens, Robert Eugene, to Mehta Tech, Inc. Temperature compensated clock. 5,644,271, Cl. 331-176.000.
Monahan, Deanna J.; and Brooks, Paula A. Golf putter training tools. 5,643,098, Cl. 473-230.000.
Monden, Yoshiaki: *See*—
Iwasawa, Yoshikazu; Aoyama, Tetsuya; Kawakami, Kumiko; Arai, Sachie; Satoh, Toshihiko; and Monden, Yoshiaki, 5,643,958, Cl. 514-568.000.
Mondet, Jean: *See*—
Mougin, Nathalie; and Mondet, Jean, 5,643,581, Cl. 424-401.000.
Monget, François; and Cahuzac, Georges, to Societe Nationale Industrielle et Aerospatiale. Machine for producing a reinforcement for a composite component. 5,642,679, Cl. 112-470.130.
Monsanto Company: *See*—
Kimock, Fred M.; Knapp, Bradley J.; and Finke, Steven James, 5,643,423, Cl. 204-192.350.
Monsanto Company of St. Louis: *See*—
Talley, John J.; Getman, Daniel P.; DeCrescenzo, Gary A.; Reed, Kathryn L.; Lin, Ko-Chung; Freskos, John Nicholas; Clare, Michael; Rogier, Donald Joseph, Jr.; Heintz, Robert M.; Vazquez, Michael L.; and Mueller, Richard A., 5,643,924, Cl. 514-307.000.
Monzen, Tadaaki; Kono, Susumu; Ohkubo, Yoshiaki; Fujii, Toshiyuki; and Uchida, Kouji, to Mitsubishi Jukogyo Kabushiki Kaisha. Suspended load vibration preventing apparatus. 5,642,822, Cl. 212-275.000.
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Duff, Stephen B.; and Paltenstein, Jack S., 5,644,487, Cl. 364-140.000.
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Lo, Yung-Tsun, 5,643,632, Cl. 427-250.000.
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Gullo, Christopher Thomas; Bolin, Stephen James; and Kaczmarek, James Stanley, 5,643,477, Cl. 219-121.860.
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Jachimowicz, Karen E.; and Lebby, Michael S., 5,644,369, Cl. 349-10.000.
Jaskie, James E.; and Dworsky, Lawrence N., 5,644,187, Cl. 313-293.000.
Rhyne, George W.; and Holm, Paige M., 5,644,328, Cl. 345-82.000.
Richard, Fred V.; and Wildy, Marc H., 5,644,430, Cl. 359-569.000.
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Barrett, Raymond Louis, Jr.; Herold, Barry W.; Pajunen, Grazyna Anna; and Davis, Walter L., 5,644,743, Cl. 375-375.000.
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Schumacher, Darren A.; and Bush, Kevin J., 5,642,722, Cl. 123-673.000.
Segal, Nirarjan Nath; and Petit, Steven Harold, 5,644,627, Cl. 379-67.000.
Weston, Richard James; and Geren, Bruce Edward, 5,644,317, Cl. 342-357.000.
Wu, Robert Han, 5,644,581, Cl. 371-27.000.
Yatim, David; and Girardeau, James W., Jr., 5,644,519, Cl. 364-736.020.
Yeates, Anthony J.; Landis, Michael R.; and Berger, Jeffrey K., 5,644,782, Cl. 395-830.000.
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Moyer, Todd K.; and Clementi, Daniel M., to ICS Technologies, Inc. Enchanced stability voltage controlled RC oscillator. 5,644,270, Cl. 331-34.000.
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Mueller, Christina-Susanne: *See*—
Lavon, Gary Dean; Carlin, Edward Paul; Buell, Kenneth Barclay; Desmarais, Thomas Allen; Chang, John Allen; Mueller, Christina-Susanne; and Haga, Takako, 5,643,242, Cl. 604-385.100.
Mueller, Raymond J.; and Hassaballa, George S., to Flint Ink Corporation. New Wax composition for the printing ink industry and ink compositions and overprint varnishes containing same. 5,643,984, Cl. 524-272.000.
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Muirhead, Hugh James; and Marker, Richard Lee, to General Motors Corporation. Electromagentic compressor clutch with combined torque cushion and armature cooling. 5,642,798, Cl. 192-84.961.
Mukai, Kiichiro: *See*—
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Mukaida, Kenzi, to Nikki Co., Ltd. Toy vehicle having adjustable load clearance. 5,643,041, Cl. 446-455.000.
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Mulhauser, Paul: *See*—
Sadowski, Peter; Mulhauser, Paul; and Schiff, David, 5,643,211, Cl. 604-110.000.
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Müller, Klaus: *See*—
Abrecht, Christine; Müller, Klaus; Obrecht, Daniel; and Trzeciak, Arnold, 5,644,024, Cl. 530-317.000.
Müller, Rolf, to Riverwood International Corporation. Spacing conveyor mechanism. 5,642,604, Cl. 53-448.000.
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Bosslet, Klaus; Hermentin, Peter; Sedlacek, Hans Harald; Auerbach, Bernhard; Pfleiderer, Peter; and Müller, Rolf, 5,643,731, Cl. 435-7.100.
Mullins, Michael J.: *See*—
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Johnson, Greg; Johnson, Richard David; and Weinzierl, David A., 5,644,594, Cl. 375-222.000.
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Dong, Dennis F.; Mumby, Timothy Alan; Jackson, John R.; and Rogers, Derek John, 5,643,437, Cl. 205-348.000.
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Pedall, Günter, 5,642,633, Cl. 66-193.000.
Mundorf, Larry K.; Gallagher, Christopher G.; Hoerger, John P.; and Weisburn, James T., to Alpha Enterprises, Inc. Storage and display device. 5,642,815, Cl. 211-40.000.
Mundt, Randall S., to Lam Research Corporation. Method and apparatus for determining the center and orientation of a wafer-like object. 5,644,400, Cl. 356-400.000.
Muñoz, Rosario Castro. Hydraulic pillow. 5,642,544, Cl. 5-644.000.
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Murakami, Kakuji: *See*—
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Miura, Hiroshi; Ariyama, Masato; Iida, Kazuyuki; Iwahara, Kazufumi; Okano, Mitsunobu; Orihara, Hiroyuki; Katsumata, Akira; Sakata, Toshiyasu; Nishimura, Masaharu; Hamamura, Hirofumi; Murakami, Naoki; Yasuda, Mitsuru; Yamashita, Yasuhiro; Yamada, Ryouji; and Yamane, Atsushi, 5,644,500, Cl. 364-490.000.
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Muraoka, Hisashi; and Fukazawa, Yuji, to Purex Co., Ltd.; and Kabushiki Kaisha Toshiba. Method for examination of silicon wafer surface defects. 5,643,404, Cl. 156-626.100.
Murasaki, Ryuichi, to YKK Corporation. Molded surface fastener and method for manufacturing the same. 5,643,651, Cl. 428-100.000.
Murase, Yasuyuki: *See*—
Ikegaya, Hirohiko; and Murase, Yasuyuki, 5,642,700, Cl. 123-193.200.
Murashima, Nobuharu; Tanii, Junichi; Konishi, Yoshito; and Tanino, Ken, to Minolta Co., Ltd. Motor drive system. 5,643,120, Cl. 475-5.000.
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Kaida, Hiroaki; Inoue, Jiro; Kajiwara, Masatoshi; Nakatani, Hiroshi; Fujimoto, Katsumi; and Sakai, Katsumi, 5,644,273, Cl. 333-187.000.
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Kubota, Kenji; Sakai, Norio; and Kawabata, Shoichi, 5,644,107, Cl. 174-262.000.
Yamaki, Sachiko; Nagata, Keisuke; and Tani, Hiroji, 5,643,841, Cl. 501-20.000.
Murdock, Joseph K.: *See*—
Alfors, Eugene D.; and Murdock, Joseph K., 5,644,225, Cl. 324-202.000.
Murnane, Margaret M.: *See*—
Backus, Sterling; Kapteyn, Henry C.; and Murnane, Margaret M., 5,644,424, Cl. 359-347.000.
Murphy, John W.: *See*—
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Murphy, Michael D.: *See*—
Janky, James M.; Denninger, Valentine L.; Jones, James Edwin, Jr.; Murphy, Michael D.; and Tankhilevich, Boris G., 5,644,318, Cl. 342-357.000.
Murphy, Sean T., to Intel Corporation. Multi-privileged level directory access on the AT&T worldworxsm personal conferencing service. 5,644,711, Cl. 395-188.010.
Murry, Lynn E.: *See*—
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Musket System Design and Control Inc.: *See*—
Le Gras, Brian W., 5,643,528, Cl. 266-88.000.
Musser, John Henry: *See*—
Anderson, Mark Brian; and Musser, John Henry, 5,643,884, Cl. 514-26.000.
Myer, John Mark; and Shuey, John Raymond, to Whitaker Corporation, The. Housing latch with connector position assurance device. 5,643,003, Cl. 439-352.000.
Myler, Richard; and Hammerslag, Julius G. Cardiovascular stent and retrieval apparatus. 5,643,309, Cl. 606-191.000.
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Cullen, Ralph E.; and Sjolund, John Robert, 5,642,979, Cl. 414-607.000.
Naciri, Robert; and Bournas, Jean P., to U.S. Philips Corporation. Device for carrying out a division. 5,644,639, Cl. 380-30.000.
Naef, Reto: *See*—
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Nagae, Nobukazu: *See*—
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Nagai, Takashi: *See*—
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Nagamine, Masayuki: *See*—
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Nagano Japan Radio Co., Ltd.: *See*—
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Nagano, Katsuto: *See*—
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Nagano, Mitsuo; Kobayashi, Takeo; Sakai, Junichi; Kozuka, Masao; Iwata, Nobuyoshi; and Kubo, Yoshiko, to Sankyo Company, Limited. Quinuclidinyloxy-isoxazole compounds and their therapeutic uses. 5,643,923, Cl. 514-305.000.
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Nagaoka, Tadayoshi, 5,643,458, Cl. 210-702.000.
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Nagata, Keisuke: *See*—
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Nagatomi, Itsuo: *See*—
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Nagle, John. Anti-slip control for a legged robot and realisitc simulation of a legged creature. 5,644,204, Cl. 318-568.120.
Nahamoo, David: *See*—
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Nahass, Paul R.; Friend, Stephen O.; and Hausslein, Robert W., to Hyperion Catalysis International. High strength conductive polymers containing carbon fibrils. 5,643,502, Cl. 252-511.000.
Naimo, Salvatore G. Weight release mechanism for weight-lifting equipment. 5,643,151, Cl. 482-98.000.
Nair, Gopi, to TransLogic Corporation. Up closing fire door. 5,642,767, Cl. 160-8.000.
Nair, Indran B.: *See*—
Libres, Jeremias P.; Attarwala, Abbas I.; Bolanos, Mario A.; Liang, Jimmy; and Nair, Indran B., 5,644,168, Cl. 257-787.000.
Naito, Hayato; and Uchikoshi, Isao, to Sanyo Seiki Mfg. Co., Ltd. Brushless motor speed detector. 5,644,203, Cl. 318-439.000.
Nakagawa, Hiroaki: *See*—
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Nakagawa, Kazuaki: *See*—
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Nakagiri, Kunie: *See*—
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Nakai, Hideyuki; Okabe, Kenji; Yamada, Katsuhisa; and Okane, Yukihiro, to Nippondenso Co., Ltd.; and Toyota Kidosha Kabushiki Kaisha. In-tank fuel pump apparatus having improved structure for dissipating electrostatic charges. 5,642,718, Cl. 123-497.000.
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Nakamura, Hiroshi: *See*—
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Nakamura, Hisato; Watanabe, Tetsuya; and Morishige, Yoshio, to Hitachi Electronics Engineering Co., Ltd. Extraneous substance inspection method and apparatus. 5,644,393, Cl. 356-237.000.
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Cahill, Sean Samuel; Snoeys, Walter; and Nakamura, Kenichi, 5,644,086, Cl. 73-654.000.

Nakamura, Kiyokazu; Kitajima, Norio; and Inoue, Toshihide, to Toray Industries, Inc. Shaped article of liquid crystalline polymer. 5,643,988, Cl. 524-449.000.
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Kono, Katsumi; and Nakamura, Shinya, 5,643,136, Cl. 477-169.000.
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Ando, Daizo; Nakamura, Tadashi; Umeda, Shinji; and Oishi, Kunihiko, 5,644,478, Cl. 361-829.000.
Nakamura, Yoshihiro; and Ogawa, Takao, to Seiko Epson Corporation. Apparatus for controlling data transfer between external interfaces through buffer memory using table data having transfer start address transfer count and unit selection parameter. 5,644,787, Cl. 395-853.000.
Nakamura, Yoshinobu: *See*—
Yumiyama, Shigeru; Omata, Shigehiko; Suzuki, Takashi; and Nakamura, Yoshinobu, 5,644,171, Cl. 290-48.000.
Nakane, Kazuhiko, to Mitsubishi Denki Kabushiki Kaisha. Light beam condensing apparatus and method of driving optical recording medium by applying the apparatus. 5,644,420, Cl. 359-245.000.
Nakanishi, Hiroyuki: *See*—
Watanabe, Asao; Ogata, Yukihiko; Nakanishi, Hiroyuki; Yanase, Seijiro; and Harada, Koji, 5,644,407, Cl. 358-434.000.
Nakano, Mitsuru; Usuki, Arimitsu; Okada, Akane; and Kamigaito, Osami, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Recyclable polymer, process for producing the same, method for recovering the same, and method for regenerating the same. 5,643,998, Cl. 525-103.000.
Nakano, Takashi; Kohno, Akiyoshi; and Orihara, Kozo, to NEC Corporation. Solid state image sensor. 5,644,121, Cl. 250-208.100.
Nakashima, Kazushi, to Fujitsu Limited; and Fujitsu VLSI Limited. Process of cleaning a substrate and apparatus for cleaning a substrate. 5,643,368, Cl. 134-1.300.
Nakashima, Masato: *See*—
Kato, Masayuki; Aritake, Hirokazu; Ishimoto, Manabu; Sato, Noriko; and Nakashima, Masato, 5,644,414, Cl. 359-22.000.
Nakashima, Yoshiaki: *See*—
Shioya, Yasushi; Sugita, Yasutoshi; Yoshioka, Kiyoharu; and Nakashima, Yoshiaki, 5,644,469, Cl. 361-681.000.
Nakashita, Kazuhisa: *See*—
Ishihara, Hiroaki; Nakashita, Kazuhisa; Ohnuma, Hideto; Tanaka, Nobuhiro; and Adachi, Hiroki, 5,643,801, Cl. 437-7.000.
Nakatani, Hiroshi: *See*—
Kaida, Hiroaki; Inoue, Jiro; Kajiwara, Masatoshi; Nakatani, Hiroshi; Fujimoto, Katsumi; and Sakai, Katsumi, 5,644,273, Cl. 333-187.000.
Nakatani, Masayuki: *See*—
Ishikawa, Seiji; Yasuno, Hiroshi; Nakatani, Masayuki; Fukuda, Hiroyuki; and Yamamoto, Shigeru, 5,643,986, Cl. 524-366.000.
Nakayama, Junichiro; Mieda, Michinobu; Katayama, Hiroyuki; Hirokane, Junji; Takahashi, Akira; and Ohta, Kenji, to Sharp Kabushiki Kaisha. Magneto-optical recording medium. 5,644,566, Cl. 369-275.200.
Nakayama, Junichiro: *See*—
Iketani, Naoyasu; Katayama, Hiroyuki; Nakayama, Junichiro; and Ohta, Kenji, 5,643,687, Cl. 428-694.0ML.
Nakazawa, Masao: *See*—
Fukase, Katsuya; Iijima, Takahiro; Nakazawa, Masao; and Wakabayashi, Shinichi, 5,643,433, Cl. 205-78.000.
Nakazawa, Teteuo: *See*—
Oishi, Tomoji; Takahashi, Ken; Nakazawa, Teteuo; Tanaka, Shigeru; and Miyoshi, Tadahiko, 5,643,642, Cl. 428-1.000.
Nakazawa, Yoshihiro: *See*—
Toriyama, Masayuki; Tamaki, Kenji; Honda, Satoshi; Motodate, Shoji; Nakazawa, Yoshihiro; Fujii, Takaaki; and Sasaki, Shigemi, 5,644,202, Cl. 318-369.000.
Nalco/Exxon Energy Chemicals, L. P.: *See*—
Marble, Robert A.; Ramesh, Manian; and Byrne, Norman Edward, 5,643,460, Cl. 210-705.000.
Nam, Derek W.; Welch, David F.; Waarts, Robert G.; and Major, Jo S., to SDL, Inc. Tunable blue laser diode. 5,644,584, Cl. 372-20.000.
Namikawa, Reiko; Kyoizumi, Seishi; Shtivelman, Emilya; and McCune, Joseph M., to Systemix, Inc. Small animal metastasis model. 5,643,551, Cl. 424-9.100.
Namiki, Fumihiro; and Yoshimoto, Shinichi, to Fujitsu Limited. Radiation image reading and erasing apparatus. 5,644,142, Cl. 250-586.000.
Nanavati, Chaya: *See*—
Fernandez, Julio M.; and Nanavati, Chaya, 5,643,247, Cl. 604-891.100.
Nanba, Norihiro: *See*—
Suzuki, Masao; Matoba, Kazuyuki; and Nanba, Norihiro, 5,644,410, Cl. 358-471.000.
NanoSystems L.L.C.: *See*—
Illig, Carl R., 5,643,552, Cl. 424-9.450.
Nansen, Peter: *See*—
Wolstrup, Jens; Grønvold, Jørn; Nansen, Peter; Henriksen, Svend Aage; and Larsen, Michael, 5,643,568, Cl. 424-93.500.
Nanya, Takanori; and Yoshino, Nobuyuki, to Citizen Watch Co., Ltd. Coated knitting parts of knitting machine. 5,642,632, Cl. 66-104.000.
Nappholz, Tibor: *See*—
Dawson, Albert K.; and Nappholz, Tibor, 5,643,327, Cl. 607-24.000.
Naramore, Raymond A.: *See*—
Ferrara, Joseph J.; Cipolla, Stephen D.; Kramer, William E.; Naramore, Raymond A.; and Rolph, L. James, 5,642,876, Cl. 270-58.010.
Naruse, Yoshiaki: *See*—
Kurakazu, Keiichi; Aoto, Yoshikazu; Baba, Shiro; Masuda, Satoshi; Kida, Hiroyuki; Kawashima, Shinji; and Naruse, Yoshiaki, 5,644,703, Cl. 395-183.110.
Naruto, Shunji; Sugano, Yuichi; Matsuda, Keiichi; Sugimoto, Masahiko; and Oda, Tomiichiro, to Sankyo Company, Limited. Benzene derivatives having NGF production-promoting activity. 5,643,925, Cl. 514-311.000.
Næstoft, Roland; and Jensen, Hanne, to Coloplast A/S. Dressing. 5,643,187, Cl. 602-43.000.
Nasu, Toru: *See*—
Fujii, Eiji; Inoue, Atsuo; Arita, Koji; Nasu, Toru; and Matsuda, Akihiro, 5,644,158, Cl. 257-532.000.
Nathan, Krishna Sundaram: *See*—
Bellegarda, Eveline Jeannine; Bellegarda, Jerome Rene; Nahamoo, David; and Nathan, Krishna Sundaram, 5,644,652, Cl. 382-186.000.
National Compressed Air Canada Limited: *See*—
Keddie, David, 5,642,989, Cl. 417-298.000.
National Electrostatics Corp.: *See*—
Raatz, James E., 5,644,130, Cl. 250-288.000.
National Packaging Corporation: *See*—
Lynd, L. Grant, 5,642,831, Cl. 220-8.000.
National Science Council: *See*—
Cheng, Huang-Chung; and Ku, Tzu-Kun, 5,643,032, Cl. 445-24.000.
Cheng, Jung-Ho, 5,643,108, Cl. 473-329.000.
National Semiconductor Corporation: *See*—
Chang, Ming-Bing, 5,644,532, Cl. 365-185.160.
Chiu, Kwok-Fu; and Sauer, Don Roy, 5,644,264, Cl. 327-318.000.
Clukey, Stephen W., 5,644,460, Cl. 361-56.000.
Llewellyn, William D.; and Strain, Robert J., 5,644,457, Cl. 360-121.000.
Ran, Xiaonong; and Scherrenburg, Michael Van, 5,644,361, Cl. 348-416.000.
Weiler, Peter M.; and Belani, Jagdish G., 5,644,167, Cl. 257-777.000.
National Starch and Chemical Investment Holding Corporation: *See*—
Huang, David P.; Jeffcoat, Roger; and Mason, William R., 5,643,627, Cl. 426-578.000.
National Tank Company: *See*—
Sams, Gary W.; Prestridge, Floyd L.; and Inman, Merle B., 5,643,431, Cl. 204-564.000.
National University of Singapore: *See*—
Sin, Y. M.; Ling, K. H.; and Lam, T. J., 5,643,571, Cl. 424-159.100.
Natsume, Yoshitaka, to Sony Corporation. Composite signal detecting apparatus having associated filter. 5,644,368, Cl. 348-737.000.
Navarro, William: *See*—
Scott, Sophie; and Navarro, William, 5,644,679, Cl. 395-2.330.
Naville, Denis, to Denis Naville S.A. Sporting and exercising device having a foot receiving portion and an anticollapse spring portion. 5,643,148, Cl. 482-77.000.
Navistar International Transportation Corp.: *See*—
Gogots, Kenneth J.; Rowells, Robert L.; and Franchi, Franco, 5,642,704, Cl. 123-198.00R.
Navius Corporation: *See*—
Carpenter, Kenneth W.; Roucher, Leo R., Jr.; and Jung, Eugene J., Jr., 5,643,314, Cl. 606-198.000.
Nawrot, Serge: *See*—
Hert, Marius; Dousson, Christian; and Nawrot, Serge, 5,643,526, Cl. 264-476.000.
Nayak, Rahul Krishnakant: *See*—
Bodford, Carl Allen; and Nayak, Rahul Krishnakant, 5,643,239, Cl. 604-370.000.
NCR Corporation: *See*—
Hong, Soon Chul, 5,644,734, Cl. 395-309.000.
Pillans, Andrew R., 5,644,728, Cl. 395-243.000.
Neal, Danny Marvin: *See*—
Benedict, Melvin Kent; Buckland, Patrick Allen; Kelley, Richard Allen; Neal, Danny Marvin; Oman, Price Ward; and Waters, Carl Raymond, 5,644,470, Cl. 361-686.000.
Neaves, Patrice M., to Mattel, Inc. Plural switch arrangement including shifter cam for children's ride-on vehicles. 5,644,114, Cl. 200-6.00R.
NEC Corporation: *See*—
Hayakawa, Yuichi; Hirano, Atsushi; Miyata, Yasuhiro; and Takahashi, Koki, 5,644,449, Cl. 360-103.000.
Hayashi, Yoshihiro, 5,643,837, Cl. 437-228.000.
Ikeda, Shigeji, 5,644,641, Cl. 381-94.100.
Iwano, Tadayuki, 5,644,423, Cl. 359-337.000.
Komoda, Motoyoshi, 5,644,618, Cl. 379-27.000.
Kusuda, Masahiro, 5,644,747, Cl. 395-405.000.
Mizukami, Takeshi, 5,644,544, Cl. 365-222.000.
Nakano, Takashi; Kohno, Akiyoshi; and Orihara, Kozo, 5,644,121, Cl. 250-208.100.
Osuga, Yoshikazu, 5,644,645, Cl. 382-124.000.
Shimizu, Tamio, 5,644,535, Cl. 365-189.010.
Shimura, Yukihiro, 5,644,620, Cl. 455-421.000.
Suzuki, Hisamitsu, 5,643,808, Cl. 437-31.000.
Uesugi, Takahiko, 5,644,745, Cl. 395-392.000.
Ushirokawa, Akihisa, 5,644,603, Cl. 375-341.000.
Watarai, Seiichi, 5,644,252, Cl. 326-27.000.
Yamada, Yoshiaki, 5,643,422, Cl. 204-192.150.
Yamashita, Chikara, 5,643,802, Cl. 437-9.000.
Yasuzato, Tadao, 5,644,390, Cl. 356-121.000.
NEC Research Institute, Inc.: *See*—

Cox, Ingemar J.; and Roy, Sebastien. 5,644,651, Cl. 382-154.000.
NEC USA, Inc.: *See*—
Ishii, Alexander T., 5,644,499, Cl. 364-489.000.
Neel, David A.: *See*—
Brown, Raymond F.; Howbert, J. Jeffry; Lobb, Karen L.; Neel, David A.; Reel, Jon K.; and Greenwood, Beverley, 5,643,926, Cl. 514-314.000.
Neff, Roger Edgar; Pellon, Joseph Jacinto; and Ryles, Roderick Glyn, to Cytec Technology Corp. High performance dewatering aids. 5,643,461, Cl. 210-728.000.
Negev - Research and Development Authority, Ben-Gurion University of the: *See*—
Arad, Shoshana; Yaron, Anina; and Cohen, Ephraim, 5,643,585, Cl. 424-401.000.
Negre, Philippe, to Sophysa. Subcutaneous valve and device for externally setting it. 5,643,194, Cl. 604-8.000.
Negrin, Dan: *See*—
Luckevich, Mark; Johnson, Bernard W.; and Negrin, Dan, 5,642,920, Cl. 303-156.000.
Nehm, Holger, to Dieter Wildfang GmbH. Process for producing sanitary fittings. 5,643,521, Cl. 264-255.000.
Neilson, Bruce H.: *See*—
Reid, John M.; Kauphusman, James V.; Porter, Christopher H.; and Neilson, Bruce H., 5,643,335, Cl. 607-101.000.
Nelson, Lawrence Farrell. Litter separator for household pets. 5,642,814, Cl. 209-235.000.
Nelson, Richard C.: *See*—
Petersen, Carolyn; Leech, James; Nelson, Richard C.; and Gut, Jiri, 5,643,772, Cl. 435-172.300.
Neo-Ex Lab. Inc.: *See*—
Takabatake, Yoshihiro, 5,642,914, Cl. 296-187.000.
NeoCardia, LLC: *See*—
Bradshaw, Anthony J.; and Raizner, Albert E., 5,643,171, Cl. 600-1.000.
Ness, Ronald J. Rescue support apparatus. 5,644,294, Cl. 340-540.000.
Nestec S.A.: *See*—
Wadell, Lars Gustaf Albert, 5,643,361, Cl. 118-16.000.
Nestegard, Susan K.: *See*—
Gorman, Michael R.; Becker, Dennis L.; Folske, Donald W.; Melbye, William L.; Nestegard, Susan K.; and Ott, Ronald L., 5,643,397, Cl. 156-435.000.
Netten, Adriaan; and Tse, Hong W. C., to U.S. Philips Corporation. Steam iron having a fabric temperature sensor for controlling steam production. 5,642,579, Cl. 38-77.700.
Netten, Adriaan: *See*—
Hazan, Jean-Pierre; Netten, Adriaan; and Nagel, Jean-Louis, 5,642,578, Cl. 38-77.700.
Neuberger, W.: *See*—
Blinov, L. M.; Neuberger, W.; and Pavlov, V. V., 5,643,365, Cl. 118-723.0MW.
Neumann, James C.: *See*—
Schmitz, Harold H.; Michael, Dana L.; Neumann, James C.; Webster, Michael; Zemenek, Elizabeth; and Jerome, Ralph, 5,643,623, Cl. 426-73.000.
Neurogen Corporation: *See*—
Yuan, Jun; and Hutchison, Alan, 5,644,057, Cl. 544-280.000.
Neuromotion Inc.: *See*—
Stein, Richard B., 5,643,332, Cl. 607-49.000.
New England Biolabs, Inc.: *See*—
Guan, Chudi; Inouye, Hiroshi, deceased,; and Chang, Frank N., administrator, 5,643,758, Cl. 435-69.700.
New Focus, Inc.: *See*—
Bortz, Michael Louis; Fejer, Martin Michael; and Levenson, Marc David, 5,644,422, Cl. 359-326.000.
New Holland North America, Inc.: *See*—
Dupon, Luc Camiel; Martin, Jean-Paul Marcel Lucieu; and Le Nevé, Daniel Henri André Marie, 5,642,610, Cl. 56-340.100.
Strosser, Richard P.; and Chow, Mark K., 5,644,236, Cl. 324-326.000.
New SD, Inc.: *See*—
Newell, G. Richard; Lewallen, Kenneth S.; Orlosky, Scott D.; and Egley, Bert D., 5,644,083, Cl. 73-514.340.
New York City Housing Authority: *See*—
Cerny, Bohuslav; Geniale, Anthony; Ashton, John; and Vitulli, Domenico, 5,644,111, Cl. 187-393.000.
Newell, Arthur D.: *See*—
Doyle, Michael V.; Newell, Arthur D.; Nunberg, Jack H.; and White, Thomas J., 5,643,565, Cl. 424-85.200.
Newell, G. Richard; Lewallen, Kenneth S.; Orlosky, Scott D.; and Egley, Bert D., to New SD, Inc. Accelerometer and method of manufacture. 5,644,083, Cl. 73-514.340.
Newell Operating Company: *See*—
Daniels, James L.; and Chiles, Christopher T., 5,642,595, Cl. 52-301.000.
Newman, Ottis G. Speaker enclosure. 5,644,109, Cl. 181-156.000.
Newton, John Robert: *See*—
Aldcroft, Derek; Newton, John Robert; and Stanier, Peter William, 5,643,624, Cl. 426-330.400.
Ng, Park: *See*—
Kwong, Peter C.; Menawat, Arun; Ng, Park; and Okamoto, Kelvin T., 5,643,664, Cl. 428-327.000.
Ng, Shirley M.: *See*—
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Ngai, Agnes Yee: *See*—
Boice, Charles Edward; Kaczmarczyk, John Mark; Ngai, Agnes Yee; and Woodard, Robert Leslie, 5,644,504, Cl. 364-514.00A.
NGK Insulators, Ltd.: *See*—
Fukuda, Tsuguo; Kawaguchi, Tatsuo; and Imaeda, Minoru, 5,643,688, Cl. 428-699.000.
Takeuchi, Yukihisa; Masumori, Hideo; and Takahashi, Nobuo, 5,643,379, Cl. 156-89.000.
Ngo, Lang So: *See*—
Gilman, Dale M.; and Ngo, Lang So, 5,642,717, Cl. 123-481.000.
Nguyen, Kha: *See*—
Kalish, David Mark; Marrash, Russell Lee; Whitlock, Gary Carl; and Nguyen, Kha, 5,644,733, Cl. 395-293.000.
Nguyen, Pascaline: *See*—
Chen, James M.; and Nguyen, Pascaline, 5,643,545, Cl. 423-245.300.
Nguyen, Tin Luong: *See*—
Healy, Vivian Louise; Huang, Hanhsi; and Nguyen, Tin Luong, 5,644,736, Cl. 395-341.000.
Nguyen Phuoc, Vinh T.; Cornilleau, Hubert; Almeida, Antonio; and Perrin, Lucien, to Schneider Electric S.A. Asynchronous motor power supply control system. 5,644,205, Cl. 318-801.000.
Nickel, Michael J.: *See*—
Freese, Theodore B.; Nickel, Michael J.; and Panzarella, James S., 5,643,035, Cl. 446-15.000.
Nicolaou, Kyriacos C.; Wrasidlo, Wolfgang A.; and Maligres, Peter E., to Scripps Research Institute, The. Daunomycin derivative with reduced cytotoxicity toward normal cells. 5,643,887, Cl. 514-34.000.
Nidek Co., Ltd.: *See*—
Amano, Masanori, 5,643,249, Cl. 606-4.000.
Suzuki, Nobuo, 5,644,375, Cl. 351-208.000.
Niederpruem, Ottmar: *See*—
Gilbert De Cauwer, Jacques; Niederpruem, Ottmar; Stachnik, Michel; Woll, Jean Francois; and Bednarz, Thomas, 5,643,524, Cl. 264-441.000.
Nieding, Detlef, to Beiersdorf Aktiengesellschaft. Roll of tape plus holder. 5,642,866, Cl. 242-588.400.
Nielen, Hans-Joachim: *See*—
Schwarzer, Jürgen; and Nielen, Hans-Joachim, 5,644,628, Cl. 379-93.190.
Nieto, Jose: *See*—
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Niigata, Kunihiro; Takahashi, Takumi; Maruyama, Tatsuya; Suzuki, Takayuki; Maeno, Kyoichi; Onda, Kenichi; Kontani, Toru; Noshiro, Osamu; Koike, Reiko; Shimaya, Akiyoshi; and Irie, Jun, to Yamanouchi Pharmaceutical Co., Ltd. Bisoxadiazolidine derivative. 5,643,931, Cl. 514-364.000.
Nikki Co., Ltd.: *See*—
Mukaida, Kenzi, 5,643,041, Cl. 446-455.000.
Nikolaides, Nick: *See*—
Lindstrom, Kyle J.; and Nikolaides, Nick, 5,644,063, Cl. 546-294.000.
Nikolas, Douglas Gene: *See*—
Yasrebi, Mehrdad; Springgate, Mark Edwin; Nikolas, Douglas Gene; Kemp, William Warren; Sturgis, David Howard; and Van Ginhoven, Renee, 5,643,844, Cl. 501-152.000.
Nikon Corporation: *See*—
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Nilsen, Kevin J.: *See*—
Dunmead, Stephen D.; Weimer, Alan W.; Carroll, Daniel F.; Eisman, Glenn A.; Cochran, Gene A.; Susnitzky, David W.; Beaman, Donald R.; and Nilsen, Kevin J., 5,643,843, Cl. 501-92.000.
Nilsen, Robert B.: *See*—
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Nippon Electric Glass Co., Ltd.: *See*—
Hikata, Hajime; Jimura, Yoshitaka; and Tanaka, Kumi, 5,643,840, Cl. 501-18.000.
Nippon Oil Company, Limited: *See*—
Sano, Akira; Shiraishi, Takeichi; Shimizu, Hiroyuki; Suzuki, Kunihiro; and Matsuura, Kazuo, 5,644,008, Cl. 526-116.000.
Tajima, Yoshio; Kataoka, Naoki; Numao, Yosuke; Seki, Takashi; and Matsuura, Kazuo, 5,643,845, Cl. 502-103.000.
Nippon Paint Company, Ltd.: *See*—
Dobashi, Akihiko; Himori, Hirotugu; Yamamoto, Osamu; Shiotsuki, Kazuya; and Tomiyama, Muneaki, 5,643,676, Cl. 428-411.100.
Sho, Katsuhiko; Nishio, Masahiro; Saitoh, Koichi; Aoki, Kei; and Yagi, Tohru, 5,643,977, Cl. 523-411.000.
Nippon Petrochemicals Company, Limited: *See*—
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Nippon Steel Corporation: *See*—
Izumi, Hirohiko; and Iwasa, Shoichi, 5,644,151, Cl. 257-306.000.
Nippon Steel Semiconductor Corporation: *See*—
Fisch, David E., 5,644,545, Cl. 365-222.000.
Nippon Thompson Co., Ltd.: *See*—
Katagiri, Satoru; Oohira, Hidehito; and Fujisawa, Shouji, 5,644,176, Cl. 310-12.000.
Nippon Unicar Company Limited: *See*—
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Nippondenso Co., Ltd.: *See*—

Aoyama, Seiki; Kuroyanagi, Susumu; Izawa, Ichirou; and Makino, Yasuaki, 5,644,226, Cl. 324-207.210.
Fukada, Tsuyoshi; Yoshino, Yoshimi; Sugito, Hiroshige; and Sakai, Minekazu, 5,643,803, Cl. 437-15.000.
Iida, Makio; Miura, Shoji; Sugisaka, Takayuki; Sakakibara, Toshio; and Ishihara, Osamu, 5,644,157, Cl. 257-521.000.
Iritani, Kunio; Numazawa, Shigeo; Fujiwara, Kenichi; Yamanaka, Yasushi; Isaji, Akira; and Suzuki, Nobunao, 5,642,627, Cl. 62-156.000.
Kakehashi, Nobuharu; Tomatsu, Yoshitaka; Kishita, Hiroshi; Yamanaka, Yasushi; and Fujiwara, Kenichi, 5,642,858, Cl. 236-92.00B.
Kuroyanagi, Susumu, 5,644,288, Cl. 340-441.000.
Miyata, Manabu; Ito, Koji; Kameoka, Teruhiko; Shikata, Kazushi; Matsunaga, Koji; and Sugi, Hikaru, 5,643,079, Cl. 454-139.000.
Nakai, Hideyuki; Okabe, Kenji; Yamada, Katsuhisa; and Okane, Yukihiro, 5,642,718, Cl. 123-497.000.
Samukawa, Katsuhiko; and Honda, Yuji, 5,642,856, Cl. 236-49.300.
Tabuchi, Yasuo; Ohguchi, Junichi; and Tobayama, Masashi, 5,642,560, Cl. 29-607.000.
Yamaguchi, Yukio; Enya, Masaaki; Yamazaki, Takahiro; and Miura, Tatsuo, 5,642,970, Cl. 409-132.000.
NISCA Corporation: *See*—
Saito, Hidemi; Kanda, Takashi; Iida, Yoshihito; and Mochizuki, Naoto, 5,644,663, Cl. 382-313.000.
Nish, Terry E., to Servi-Tech, Inc. Stabilizing of cam in automated beverage filling machinery. 5,642,764, Cl. 141-392.000.
Nishi, Yoshio: *See*—
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Nishikura, Kazuko, to Wistar Institute of Anatomy & Biology, The. RNA editing enzyme and methods of use thereof. 5,643,778, Cl. 435-227.000.
Nishikura, Takahiro: *See*—
Nojima, Takashi; Sumihara, Masanori; Otsuchi, Tetsuro; Nishikura, Takahiro; Kawasaki, Osamu; Takeda, Katsu; and Imada, Katsumi, 5,644,199, Cl. 318-114.000.
Nishimura, Asao: *See*—
Ohta, Hiroyuki; Miura, Hideo; Masuda, Hiroo; Tamaki, Yoichi; Ikeda, Takahide; Nishimura, Asao; and Hashimoto, Takashi, 5,643,805, Cl. 437-31.000.
Nishimura, Hiroyuki; and Yoshino, Toshiaki, to Texas Instruments Incorporated. Computing device for nth degree functions. 5,644,518, Cl. 364-735.000.
Nishimura, Masaharu: *See*—
Miura, Hiroshi; Ariyama, Masato; Iida, Kazuyuki; Iwahara, Kazufumi; Okano, Mitsunobu; Orihara, Hiroyuki; Katsumata, Akira; Sakata, Toshiyasu; Nishimura, Masaharu; Hamamura, Hirofumi; Murakami, Naoki; Yasuda, Mitsuru; Yamashita, Yasuhiro; Yamada, Ryouji; and Yamane, Atsushi, 5,644,500, Cl. 364-490.000.
Nishimura, Yutaka: *See*—
Minowa, Toshimichi; Kimura, Hiroshi; Yoshida, Yoshiyuki; Ohyama, Yoshishige; and Nishimura, Yutaka, 5,643,133, Cl. 477-107.000.
Nishino, Seiji: *See*—
Komma, Yoshiaki; Mizuno, Sadao; Kato, Makoto; Wada, Hidenori; and Nishino, Seiji, 5,644,413, Cl. 359-19.000.
Nishino, Toyokazu: *See*—
Katsuen, Susumu; Ohshima, Kunihiro; Kawamura, Seiko; Yamamoto, Ryohei; and Nishino, Toyokazu, 5,643,561, Cl. 424-78.170.
Nishio, Masahiro: *See*—
Sho, Katsuhiko; Nishio, Masahiro; Saitoh, Koichi; Aoki, Kei; and Yagi, Tohru, 5,643,977, Cl. 523-411.000.
Nishioka, Kouichi, to Mitsubishi Denki Kabushiki Kaisha. Microcomputer, microcomputer containing apparatus, and IC card. 5,644,702, Cl. 395-182.200.
Nishiyama, Masaki, to Canon Kabushiki Kaisha. High-efficiency compression suitable for use in character generation. 5,644,684, Cl. 395-110.000.
Nishiyama, Michihisa: *See*—
Honbo, Toshiyasu; Seno, Hachiro; and Nishiyama, Michihisa, 5,643,901, Cl. 514-183.000.
Nishtala, Satyanarayana: *See*—
Ebrahim, Zahir; Normoyle, Kevin; Nishtala, Satyanarayana; and Van Loo, William C., 5,644,753, Cl. 395-458.000.
Nissan Chemical Industries, Ltd.: *See*—
Kaga, Takao; Kimura, Yutaka; Saito, Fumio; and Tanaka, Hiroaki, 5,643,497, Cl. 252-313.100.
Shindoh, Masuo; Shirakawa, Masayoshi; Kohtoh, Noriaki; and Aoki, Atsumi, 5,643,980, Cl. 524-100.000.
Nissan Motor Company, Limited: *See*—
Hamada, Masaaki; Aoi, Takahiro; Kohgo, Tetsuya; and Mishima, Masaaki, 5,642,874, Cl. 267-141.000.
Matsuno, Osamu; and Kawamura, Katsuhiko, 5,644,073, Cl. 73-118.100.
Niswander, Dwight J., to Wilson Sporting Goods Co. Golf club with male hosel and reinforcing sleeve. 5,643,105, Cl. 473-308.000.
Nitta, Itaru; Ueda, Takuya; and Watanabe, Kimitsuna, to Sumitomo Chemical Company, Limited. Method for producing polypeptide. 5,643,744, Cl. 435-68.100.
Nitz, Theodore John: *See*—
Diana, Guy Dominic; and Nitz, Theodore John, 5,643,929, Cl. 514-364.000.
Niwa, Takahiro: *See*—
Tanaka, Tadashi; Tamura, Hidehiko; Niwa, Takahiro; Maruyama, Izumi; and Fukutani, Yoshihiro, 5,643,683, Cl. 428-551.000.
Nixon, Jon C.: *See*—
Gamache, Daniel A.; Hellberg, Mark R.; Nixon, Jon C.; and Graff, Gustav, 5,643,943, Cl. 514-456.000.
Noble, Janelle A.: *See*—
Ladner, Martha B.; Noble, Janelle A.; Martin, George A.; Kawasaki, Ernest S.; Coyne, Mazie Y.; Halenbeck, Robert F.; and Koths, Kirston E., 5,643,563, Cl. 424-85.100.
Noda, Kazuhiro: *See*—
Takahashi, Kenichi; Akashi, Hiroyuki; Noda, Kazuhiro; and Tanaka, Koichi, 5,643,490, Cl. 252-62.200.
Noda, Kazutoshi; Kobayashi, Tetsuhiko; and Ando, Masanori, to Director-General of Agency of Industrial Science and Technology. Carbon monoxide sensor and method of detecting carbon monoxide. 5,644,116, Cl. 204-157.150.
Noel, Francis Edward, Jr.: *See*—
Christensen, Kenneth Jussi; Haas, Lee Clyde; and Noel, Francis Edward, Jr., 5,644,577, Cl. 370-506.000.
Nogiwa, Tohru: *See*—
Konagaya, Yukio; Igawa, Takao; Ito, Akihide; Nogiwa, Tohru; Kagawa, Tsutomu; and Yamada, Nobuo, 5,643,851, Cl. 503-201.000.
Noguchi, Takashi: *See*—
Miwa, Hiroyuki; Kanematsu, Shigeru; Gomi, Takayuki; Anmo, Hiroaki; Noguchi, Takashi; Kato, Katsuyuki; Ejiri, Hirokazu; and Ouchi, Norikazu, 5,643,806, Cl. 437-31.000.
Nohr, Ronald Sinclair; and MacDonald, John Gavin, to Kimberly-Clark Corporation. Ink for ink jet printers. 5,643,356, Cl. 106-31.490.
Nohr, Ronald Sinclair; MacDonald, John Gavin; McGinniss, Vincent Daniel; and Whitmore, Robert Samuel, Jr., to Kimberly-Clark Corporation. Electrophotgraphic process utilizing mutable colored composition. 5,643,701, Cl. 430-47.000.
Nojima, Takashi; Sumihara, Masanori; Otsuchi, Tetsuro; Nishikura, Takahiro; Kawasaki, Osamu; Takeda, Katsu; and Imada, Katsumi, to Matsushita Electric Industrial Co., Ltd. Method for driving an ultrasonic motor. 5,644,199, Cl. 318-114.000.
NOK Corporation: *See*—
Okamoto, Eiji; and Miyake, Kuniaki, 5,644,068, Cl. 73-23.320.
Nomoto, Kazumasa: *See*—
Ugajin, Ryuichi; Hase, Ichiro; and Nomoto, Kazumasa, 5,643,828, Cl. 437-133.000.
Nomura, Masaaki; and Kimura, Soichiro, to Fuji Photo Film Co., Ltd. Projector of reflection type. 5,642,926, Cl. 353-103.000.
Nomura, Toshio: *See*—
Uchino, Katsuya; Nomura, Toshio; Kobayashi, Mitsunori; and Chudo, Masuo, 5,643,658, Cl. 428-216.000.
Nonoshita, Hiroshi: *See*—
Matsuzaki, Eiichi; Ina, Kenzo; Nonoshita, Hiroshi; and Yamanashi, Yoshitsugu, 5,644,332, Cl. 345-100.000.
Nonoyama, Meihan; Tanaka, Akiko; and Lai, Patrick K., to Tampa Bay Research Institute. Protein having anti-HIV activity and method for obtaining it. 5,643,881, Cl. 514-21.000.
Norand Corporation: *See*—
Schultz, Darald R.; Danielson, Arvin D.; Bunte, Alan G.; Sherman, Richard A.; and Jaeger, Robert B., 5,644,471, Cl. 361-686.000.
Norddeutsche Seekabelwerke GmbH: *See*—
Basse, Hartwig, 5,643,118, Cl. 474-237.000.
Nordgren, Gregory N.; and Kelly, Thomas L., to Endovascular Instruments, Inc. Intra-artery obstruction clearing apparatus and methods. 5,643,297, Cl. 606-159.000.
Nordgren, Gregory N.; and Kelly, Thomas L. Intra-artery obstruction clearing apparatus and methods. 5,643,298, Cl. 606-159.000.
Nordic Track, Inc.: *See*—
Nylen, James E.; Rose, Steven A.; and Wood, Terrence D., 5,643,153, Cl. 482-110.000.
Nordica S.p.A.: *See*—
Gustavsson, Magnus Peter Mikael; and Hagman, Ronny Kent, 5,643,480, Cl. 219-211.000.
Noren, Doug: *See*—
Noren, Lars; and Noren, Doug, 5,642,742, Cl. 134-57.00D.
Noren, Lars; and Noren, Doug, to Stero Company, The. Warewasher tank heating system and controls therefor. 5,642,742, Cl. 134-57.00D.
Noritake Co., Limited: *See*—
Mohri, Jun; and Endoh, Noboru, 5,643,034, Cl. 445-24.000.
Nortsu Koki Co., Ltd.: *See*—
Yamamoto, Yuji, 5,644,382, Cl. 355-55.000.
Normaliar-Garrett (Holdings) Limited: *See*—
Phillips, Robert John; and Simons, Adrian, 5,643,355, Cl. 96-4.000.
Norman, Bryan H.: *See*—
Talley, John J.; Sikorski, James A.; Norman, Bryan H.; Rogers, Roland S., deceased; Devadas, Balekudru; Graneto, Matthew J.; and Carter, Jeffery S., 5,643,933, Cl. 514-372.000.
Norman, Dwayne S.: *See*—
Grimshaw, Allan D.; and Norman, Dwayne S., 5,642,782, Cl. 166-237.000.
Normoyle, Kevin: *See*—
Ebrahim, Zahir; Normoyle, Kevin; Nishtala, Satyanarayana; and Van Loo, William C., 5,644,753, Cl. 395-458.000.
Norsk Hydro A. S.: *See*—
Insalaco, Jeffrey Lee; Johnson, William Marv; and Halbig, David Michael, 5,642,640, Cl. 72-334.000.

North Carolina State University: *See*—
Lucas, Leon T.; and Mudge, Laurence C., 5,643,852, Cl. 504-126.000.
Northeastern University: *See*—
Gorlov, Alexander M., 5,642,984, Cl. 416-176.000.
Northern Telecom Limited: *See*—
Bielby, Gregory J.; Gupta, Vishwa N.; Hodgson, Lauren C.; Lennig, Matthew; Sharp, R. Douglas; and Wasmeier, Hans A., 5,644,680, Cl. 395-2.490.
Northey, Paul J., to Minnesota Mining and Manufacturing Company. Coating additives for water-based formulations. 5,643,992, Cl. 524-501.000.
Northrop Grumman Corporation: *See*—
Daws, David Eric; Castellucci, Nicholas T.; Carpenter, Harry Wellington; and Colby, Mary Wagner, 5,643,512, Cl. 264-43.000.
Norton Company: *See*—
Simpson, Matthew, 5,644,089, Cl. 73-760.000.
Norton, Edward J.; and Smotrycz, Zenon O. Midsole construction. 5,642,575, Cl. 36-27.000.
Noshiro, Osamu: *See*—
Niigata, Kunihiro; Takahashi, Takumi; Maruyama, Tatsuya; Suzuki, Takayuki; Maeno, Kyoichi; Onda, Kenichi; Kontani, Toru; Noshiro, Osamu; Koike, Reiko; Shimaya, Akiyoshi; and Irie, Jun, 5,643,931, Cl. 514-364.000.
Noshitani, Taiji: *See*—
Inatani, Akihisa; Nagano, Shuichi; Mita, Kanji; Minami, Shuji; Tamura, Haruyuki; Watanabe, Tsutomu; Katsuyama, Akira; Ishikawa, Masami; and Noshitani, Taiji, 5,644,558, Cl. 369-30.000.
Notarys, Harris Anthony: *See*—
McDaniel, Terry Wayne; Notarys, Harris Anthony; Rosen, Hal Jervis; and Rubin, Kurt Allan, 5,644,555, Cl. 369-13.000.
Nouri, Benjamin P., to Chrysler Corporation. Combination underhood security switch and lamp assembly. 5,644,287, Cl. 340-426.000.
Nourrcier, Charles E., Jr.: *See*—
Oda, Dwight N.; Chinn, Gregson D.; and Nourrcier, Charles E., Jr., 5,644,387, Cl. 356-5.010.
NovAtel Communications, Ltd.: *See*—
Choudhury, Ashfaq; and Gordon, Humphrey, 5,644,311, Cl. 341-152.000.
NovaVision, Inc.: *See*—
Boswell, David R., 5,643,678, Cl. 428-467.000.
Novick, Yoram: *See*—
Brady, James T.; Cheng, Joe-Ming; Cohn, Oded; Eldridge, James W.; Novick, Yoram; Ouchi, Norman K.; and Segev, Danit, 5,644,791, Cl. 395-888.000.
Novikov, Vladimir Mikhailovich: *See*—
Abramov, Grigory Khananovich; Amiragov, Mikhail Sergeevich; Astafiev, Valery Borisovich; Berezkin, Sergei Valentinovich; Bobe, Leonid Sergeevich; Bykov, Viktor Pavlovich; Vasiliev, Jury Borisovich; Gordeev, Vladimir Mikhailovich; Djukova, Eleonora Sergeevna; Novikov, Vladimir Mikhailovich; Podrugin, Alexandr Yakovlevich; Protasov, Nikolai Nikolaevich; Razgulina, Margarita Dmitrievna; Samsonov, Nikolai Mikhailovich; Sinyak, Galina Sergeevna; Sinyak, Jury Emelyanovich; and Farafonov, Nikolai Sergeevich, 5,643,457, Cl. 210-668.000.
Novo Nordisk A/S: *See*—
Antranikian, Garabed; and Klingeberg, Michael, 5,643,777, Cl. 435-220.000.
NSK Ltd.: *See*—
Matsuki, Masuo; and Ikesue, Haruyuki, 5,642,619, Cl. 60-632.000.
Motai, Kazunori; and Inoue, Kimio, 5,644,493, Cl. 364-468.020.
NTN Corporation: *See*—
Akamatsu, Yoshinobu; Maeda, Kikuo; Yoshimura, Katsuyoshi; and Makino, Katsunori, 5,642,947, Cl. 384-491.000.
Nugent, Richard A.; Anderson, David J.; and Schlachter, Stephen T., to Upjohn Company, The. Phosphonoacetic esters and acids as anti-inflammatories. 5,643,895, Cl. 514-125.000.
Nukada, Katsumi: *See*—
Daimon, Katsumi; Nukada, Katsumi; Sakaguchi, Yasuo; and Igarashi, Ryosaku, 5,643,703, Cl. 430-78.000.
Numao, Yosuke: *See*—
Tajima, Yoshio; Kataoka, Naoki; Numao, Yosuke; Seki, Takashi; and Matsuura, Kazuo, 5,643,845, Cl. 502-103.000.
Numata, Tetsuaki: *See*—
Miura, Yoshihisa; and Numata, Tetsuaki, 5,642,795, Cl. 192-45.100.
Numazawa, Shigeo: *See*—
Iritani, Kunio; Numazawa, Shigeo; Fujiwara, Kenichi; Yamanaka, Yasushi; Isaji, Akira; and Suzuki, Nobunao, 5,642,627, Cl. 62-156.000.
Nunberg, Jack H.: *See*—
Doyle, Michael V.; Newell, Arthur D.; Nunberg, Jack H.; and White, Thomas J., 5,643,565, Cl. 424-85.200.
Nunokawa, Mioko. Synthetic vascular prosthesis. 5,643,340, Cl. 623-1.000.
Nutt, Stephen L.: *See*—
Kamboj, Rajender; Elliott, Candace E.; and Nutt, Stephen L., 5,643,785, Cl. 435-325.000.
NVX Corporation: *See*—
Lancaster, Loren T.; and Hirose, Ryan T., 5,644,533, Cl. 365-185.180.
Nyberg, Carl R.: *See*—
Meacham, Patrick E.; Wallace, Mark W.; Nyberg, Carl R.; Thompson, William W.; and Bland, James P., 5,642,923, Cl. 312-258.000.
Nylen, James E.; Rose, Steven A.; and Wood, Terrence D., to Nordic Track, Inc. Flywheel resistance mechanism for exercise equipment. 5,643,153, Cl. 482-110.000.
Nylen, Link; and Rainey, Ron, to Woodlink, Ltd. Squirrel baffler. 5,642,687, Cl. 119-52.300.
Nyseth, David L., to Fluoroware, Inc. Wafer shipper and package. 5,642,813, Cl. 206-597.000.
Oas, David C.; Maggert, Lynn R., Sr.; and Turner, James C., to Electra Form, Inc. Article repositioning apparatus for an injection stretch blow molding machine. 5,643,619, Cl. 425-534.000.
Obayashi, Yoshimasa, to Matsushita electric industrial co. ltd. Parallel computer and processor element utilizing less memory. 5,644,749, Cl. 395-421.100.
Obermeyer, Henry K. Spillway gate system. 5,642,963, Cl. 405-100.000.
Obitts, Shane, to Invacare Corporation. Walker tray. 5,642,748, Cl. 135-66.000.
Obrecht, Daniel: *See*—
Abrecht, Christine; Müller, Klaus; Obrecht, Daniel; and Trzeciak, Arnold, 5,644,024, Cl. 530-317.000.
O'Brien, Sonja F. Hanging device for belts. 5,642,817, Cl. 211-60.100.
Occhiello, Ernesto: *See*—
Po', Riccardo; Pelosini, Luigi; Occhiello, Ernesto; and Fiocca, Luisa, 5,644,019, Cl. 528-272.000.
Ochiai, Masayuki; Ueda, Hidefumi; Sono, Michio; Yamaguchi, Ichiro; Mitobe, Kazuhiko; Otake, Koki; Kasai, Junichi; Kamehara, Nobuo; Yamagishi, Yasuo; Mizukoshi, Masataka; Yamada, Yutaka; and Abe, Susumu, to Fujitsu Limited. Process for forming solder balls on a plate having apertures using solder paste and transferring the solder balls to semiconductor device. 5,643,831, Cl. 437-183.000.
Ockuly, John David: *See*—
Lurie, Keith G.; Benditt, David G.; Shultz, Jeffrey J.; Ockuly, John David; and Fleischhacker, John J., 5,643,231, Cl. 604-282.000.
O'Connor, Thomas Harry: *See*—
Erichsen, Glenn A.; Massenburg, John C.; Burnham, Chip; O'Connor, Thomas Harry; Smith, Rhonda R.; Zaring, Katherine; and Many, Robert P., 5,643,058, Cl. 451-99.000.
Oda, Dwight N.; Chinn, Gregson D.; and Nourrcier, Charles E., Jr., to Hughes Electronics. High-speed data register for laser range finders. 5,644,387, Cl. 356-5.010.
Oda, Tomiichiro: *See*—
Naruto, Shunji; Sugano, Yuichi; Matsuda, Keiichi; Sugimoto, Masahiko; and Oda, Tomiichiro, 5,643,925, Cl. 514-311.000.
O'Donnell, Francis E., Jr. Laser probe hand piece. 5,643,250, Cl. 606-4.000.
Oettgen, Herbert F.: *See*—
Welt, Sydney; Divgi, Chaitanya R.; Yeh, Samual; Old, Lloyd J.; Oettgen, Herbert F.; Real, Francisco X.; and Sakamoto, Junichi, 5,643,550, Cl. 424-1.850.
Offuh, Bradley J.: *See*—
Hagan, James A.; Piltingsrud, Douglas H.; Starcke, Steven F.; Offuh, Bradley J.; and Fox, Dennis L., 5,643,649, Cl. 428-64.100.
Ogata, Yukihiko: *See*—
Watanabe, Asao; Ogata, Yukihiko; Nakanishi, Hiroyuki; Yanase, Seijiro; and Harada, Koji, 5,644,407, Cl. 358-434.000.
Ogawa, Keiichi: *See*—
Kobayashi, Shuji; and Ogawa, Keiichi, 5,643,659, Cl. 428-216.000.
Ogawa, Takao: *See*—
Nakamura, Yoshihiro; and Ogawa, Takao, 5,644,787, Cl. 395-853.000.
Ogawa, Takatoshi; Yoshioka, Yasuhiko; Tsubouchi, Nobuo; Saito, Toshio; Hasegawa, Tamotsu; Fujishima, Akira; and Hashimoto, Kazuhito, to Takenaka Corporation. Architectural material using metal oxide exhibiting photocatalytic activity. 5,643,436, Cl. 205-324.000.
Ogawa, Yasuaki: *See*—
Okada, Hiroaki; Inoue, Yayoi; and Ogawa, Yasuaki, 5,643,607, Cl. 424-493.000.
Ogawa, Yasuji, to Kabushikikaisha Wacom. Manual implement for inputting incremental information by attitude control. 5,644,126, Cl. 250-231.100.
Ogi, Jeffrey M.; and Worcester, David S., to Camsco Manufacturing Corp. Plastic spray nozzle with improved distribution. 5,642,861, Cl. 239-568.000.
Ogiu, Makiko: *See*—
Shishikura, Nobuo; and Ogiu, Makiko, 5,644,259, Cl. 327-143.000.
Ogura, Kunio: *See*—
Yokota, Hiroshi; Yokota, Shingo; and Ogura, Kunio, 5,642,752, Cl. 137-413.000.
Ogura, Seiki: *See*—
Acocella, Joyce Elizabeth; Galli, Carol; Hsu, Louis Lu-Chen; Ogura, Seiki; Rovedo, Nivo; and Shepard, Joseph Francis, 5,643,813, Cl. 437-43.000.
Ogura, Shiro: *See*—
Matsumoto, Toshio; Baba, Hiroshi; Itoh, Kazuhiko; and Ogura, Shiro, 5,644,697, Cl. 395-182.040.
Oh, Suk P.: *See*—
Olsen, Bjorn R.; and Oh, Suk P., 5,643,783, Cl. 435-325.000.
Ohashi, Hiroyuki: *See*—
Shimomura, Mariko; Miyashita, Naoto; and Ohashi, Hiroyuki, 5,643,406, Cl. 156-636.100.
Ohguchi, Junichi: *See*—
Tabuchi, Yasuo; Ohguchi, Junichi; and Tobayama, Masashi, 5,642,560, Cl. 29-607.000.
Ohkubo, Yoshiaki: *See*—
Monzen, Tadaaki; Kono, Susumu; Ohkubo, Yoshiaki; Fujii, Toshiyuki; and Uchida, Kouji, 5,642,822, Cl. 212-275.000.
Ohlsson, Per, to Tetra Laval Holdings & Finance S.A. Sealing apparatus for packaging containers. 5,642,606, Cl. 53-565.000.
Ohlstein, Eliot H., to Boehringer Mannheim Pharmaceutical Corporation-SmithKline Beecham Corporation. Use of, and method of treatment using, carbazolyl-(4)-oxypropanolamine compounds for inhibition of smooth muscle cell proliferation. 5,643,939, Cl. 514-411.000.
Ohmae, Hideo, to Rohm Co., Ltd. Rotary encoder and input device using the same. 5,644,127, Cl. 250-231.160.
Ohman, Henrik, to Svenska Rotor Maskiner AB. Cooled air cycle system and method for operating such a system. 5,642,629, Cl. 62-401.000.
Ohme, Bruce W.: *See*—
Pant, Bharat B.; Spielberger, Richard K.; and Ohme, Bruce W., 5,644,230, Cl. 324-247.000.
Ohmi, Tadahiro. Power generator. 5,643,692, Cl. 429-72.000.
Ohmori, Hirobumi: *See*—
Ishimaru, Yoko; Ohmori, Hirobumi; Nakamura, Shin-ichi; and Inaba, Michihiko, 5,643,679, Cl. 428-472.000.
Ohmura, Takao: *See*—
Okabayashi, Ken; Obmura, Takao; Yokoyama, Kazumasa; and Kawabe, Haruhide, 5,643,792, Cl. 435-254.230.
Ohnishi, Hiroshi: *See*—
Ozaki, Naoyuki; Amano, Matsuo; Ohnishi, Hiroshi; and Minowa, Toshimichi, 5,642,709, Cl. 123-361.000.
Ohno, Hideto: *See*—
Yokoi, Hiroyuki; Saito, Takao; and Ohno, Hideto, 5,643,735, Cl. 435-7.900.
Ohnuma, Hideto: *See*—
Ishihara, Hiroaki; Nakashita, Kazuhisa; Ohnuma, Hideto; Tanaka, Nobuhiro; and Adachi, Hiroki, 5,643,801, Cl. 437-7.000.
Ohsawa, Toshimi, to Advantest Corporation. Failure memory device. 5,644,578, Cl. 371-21.200.
Ohshima, Atsushi; Inouye, Sumiko; and Inouye, Masayori, to University of Medicine And Denistry Of New Jersey. Method for synthesizing single-stranded stem-loop DNAs, the products and uses therefor. 5,643,762, Cl. 435-91.100.
Ohshima, Kunihiro: *See*—
Katsuen, Susumu; Ohshima, Kunihiro; Kawamura, Seiko; Yamamoto, Ryohei; and Nishino, Toyokazu, 5,643,561, Cl. 424-78.170.
Ohshima, Masahiro: *See*—
Yamada, Kumi; Tamao, Yoshikuni; Ohshima, Masahiro; and Iwase, Norimichi, 5,643,911, Cl. 514-254.000.
Ohta, Hiroyuki; Miura, Hideo; Masuda, Hiroo; Tamaki, Yoichi; Ikeda, Takahide; Nishimura, Asao; and Hashimoto, Takashi, to Hitachi, Ltd. Process for producing a bipolar device. 5,643,805, Cl. 437-31.000.
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Ohta, Kenji: *See*—
Iketani, Naoyasu; Katayama, Hiroyuki; Nakayama, Junichiro; and Ohta, Kenji, 5,643,687, Cl. 428-694.0ML.
Nakayama, Junichiro; Mieda, Michinobu; Katayama, Hiroyuki; Hirokane, Junji; Takahashi, Akira; and Ohta, Kenji, 5,644,566, Cl. 369-275.200.
Ohtani, Hisashi; Miyanaga, Akiharu; Fukunaga, Takeshi; and Zhang, Hongyong, to Semiconductor Energy Laboratory Co., Ltd. Method for manufacturing a semiconductor device. 5,643,826, Cl. 437-88.000.
Ohyama, Yoshishige: *See*—
Minowa, Toshimichi; Kimura, Hiroshi; Yoshida, Yoshiyuki; Ohyama, Yoshishige; and Nishimura, Yutaka, 5,643,133, Cl. 477-107.000.
Oikawa, Katsuya, to Canon Kabushiki Kaisha. Magneto-optical disk having cellularly divided regions with alternating directions of magnetization and method of initializing direction of magnetization of magneto-optical disk prior to recording of information. 5,644,556, Cl. 369-13.000.
Oishi, Kazumasa; Suzuki, Atsushi; Akasaka, Nobuhiro; and Matsuda, Yasuo, to Sumitomo Electric Industries, Ltd. Physical property evaluation method for optical fiber coating, and coated optical fiber. 5,644,669, Cl. 385-123.000.
Oishi, Kunihiko: *See*—
Ando, Daizo; Nakamura, Tadashi; Umeda, Shinji; and Oishi, Kunihiko, 5,644,478, Cl. 361-829.000.
Oishi, Tomoji; Takahashi, Ken; Nakazawa, Teteuo; Tanaka, Shigeru; and Miyoshi, Tadahiko, to Hitachi, Ltd. Polymeric metal oxide materials and their formation and use. 5,643,642, Cl. 428-1.000.
Ojima, Masahiro: *See*—
Harada, Kunio; Kaku, Toshimitsu; Kasai, Masuo; and Ojima, Masahiro, 5,644,554, Cl. 369-13.000.
Ojima, Satoshi: *See*—
Hitomi, Shigeki; Mizuno, Hiroshi; and Ojima, Satoshi, 5,643,267, Cl. 606-73.000.
Oka, Masami: *See*—
Tamagaki, Akira; Taniguchi, Tsutomu; Ueda, Nobuyuki; Oka, Masami; Matsumoto, Kenji; and Miyoshi, Fuminori, 5,644,411, Cl. 358-529.000.
Okabayashi, Ken; Ohmura, Takao; Yokoyama, Kazumasa; and Kawabe, Haruhide, to Green Cross Corporation, The. Mutant strain of *Pichia pastoris* which utilizes methanol in the presence of glucose. 5,643,792, Cl. 435-254.230.
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Okabe, Masaaki, 5,643,384, Cl. 156-206.000.
Okabe, Kenji: *See*—
Nakai, Hideyuki; Okabe, Kenji; Yamada, Katsuhisa; and Okane, Yukihiro, 5,642,718, Cl. 123-497.000.
Okabe, Masaaki, to Okabe Engineering Kabushiki Kaisha. Method of manufacturing molded goods using paper or pulp sheets as material. 5,643,384, Cl. 156-206.000.
Okada, Akane: *See*—
Nakano, Mitsuru; Usuki, Arimitsu; Okada, Akane; and Kamigaito, Osami, 5,643,998, Cl. 525-103.000.
Okada, Hiroaki; Inoue, Yayoi; and Ogawa, Yasuaki, to Takeda Chemical Industries, Ltd. Prolonged release microcapsules. 5,643,607, Cl. 424-493.000.
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Iwatsuki, Syuichiro; Oshida, Kei; and Okamoto, Masayoshi, 5,643,691, Cl. 429-54.000.
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Tsubouchi, Toshiyasu; Okamoto, Satoru; and Ihara, Tomohiko, 5,643,684, Cl. 428-605.000.
Okamoto, Yoshihiko, to Hitachi, Ltd. Mask for manufacturing semiconductor device and method of manufacture thereof. 5,643,698, Cl. 430-5.000.
Okamura, Moriyuki: *See*—
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Okane, Yukihiro: *See*—
Nakai, Hideyuki; Okabe, Kenji; Yamada, Katsuhisa; and Okane, Yukihiro, 5,642,718, Cl. 123-497.000.
Okano, Mitsunobu: *See*—
Miura, Hiroshi; Ariyama, Masato; Iida, Kazuyuki; Iwahara, Kazufumi; Okano, Mitsunobu; Orihara, Hiroyuki; Katsumata, Akira; Sakata, Toshiyasu; Nishimura, Masaharu; Hamamura, Hirofumi; Murakami, Naoki; Yasuda, Mitsuru; Yamashita, Yasuhiro; Yamada, Ryouji; and Yamane, Atsushi, 5,644,500, Cl. 364-490.000.
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Okuda, Sadanao: *See*—
Isozaki, Takashi; Tojima, Takahito; Higa, Ryuji; and Okuda, Sadanao, 5,642,672, Cl. 101-424.200.
Okudaira, Sadayuki: *See*—
Tachi, Shinichi; Tsujimoto, Kazunori; Okudaira, Sadayuki; and Mukai, Kiichiro, 5,643,473, Cl. 216-67.000.
Okuma Corporation: *See*—
Yura, Motozumi, 5,644,206, Cl. 318-807.000.
Okumura, Katsuya: *See*—
Hirose, Masayoshi; Ishikawa, Seiji; Kimura, Norio; Sasaki, Yoshimi; Yamada, Kouki; Aoyama, Fujio; Shimizu, Noburu; and Okumura, Katsuya, 5,643,056, Cl. 451-41.000.
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Fukumochi, Yoji; Okunishi, Toshiyuki; Sata, Ichiko; and Kutsumi, Takeshi, 5,644,774, Cl. 395-754.000.
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O'Laughlin, Patrick K.: *See*—
O'Laughlin, Gavin S.; and O'Laughlin, Patrick K., 5,642,744, Cl. 134-166.00R.
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Welt, Sydney; Divgi, Chaitanya R.; Yeh, Samual; Old, Lloyd J.; Oettgen, Herbert F.; Real, Francisco X.; and Sakamoto, Junichi, 5,643,550, Cl. 424-1.850.
Olds, Keith Andrew; Cutler, Victor Hawes; and Tayloe, Daniel Richard, to Motorola, Inc. Method and apparatus for approximating propagation delay for use in transmission compensation to orbiting satellites. 5,644,572, Cl. 370-324.000.
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Rothschild, Kenneth J.; Sonar, Sanjay M.; and Olejnik, Jerzy, 5,643,722, Cl. 435-6.000.
Olgado, Donald: *See*—
Maydan, Dan; Mak, Steve S. Y.; Olgado, Donald; Yin, Gerald Zheyao; Driscoll, Timothy D.; Shieh, Brian; and Papanu, James S., 5,643,394, Cl. 156-345.000.

Oliveira, Robert J. Liner-protected adhesive strip. 5,643,188, Cl. 602-54.000.
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Toniolo, Antonio, 5,644,345, Cl. 347-32.000.
Olmer, Leonard Jay: *See*—
Dean, Robert Earl; Foo, Pang-Dow; Lory, Earl Ryan; and Olmer, Leonard Jay, 5,643,838, Cl. 437-238.000.
Olsen, Bjorn R.; and Oh, Suk P., to President and Fellows of Harvard College. Collagen and uses therefor. 5,643,783, Cl. 435-325.000.
Olsen, Flemming Højberg; and Brømsø, Per, to Interlego AG. Receptacle for a constructional building set. 5,643,038, Cl. 446-75.000.
Olsen, Nathan J.: *See*—
Jessen, Robert Frederic; Mertens, Christopher Alan; Olsen, Nathan J.; and Telfer, Robert Joseph, 5,644,380, Cl. 355-50.000.
Olsen, Robert C.: *See*—
Marco, Leslie S.; and Olsen, Robert C., 5,642,808, Cl. 206-150.000.
Olson, David A.: *See*—
Berrigan, Michael R.; and Olson, David A., 5,643,507, Cl. 264-6.000.
Olympus Optical Co., Ltd.: *See*—
Akamine, Yoshikazu; and Wakamatsu, Seiichi, 5,644,557, Cl. 369-14.000.
Kogasaka, Takahiro; Suzuta, Toshihiko; Bito, Shiro; Tsuruta, Minoru; Uchiyama, Naoki; and Kaji, Kunihide, 5,643,293, Cl. 606-148.000.
Togino, Takayoshi; and Nakagiri, Kunie, 5,644,436, Cl. 359-731.000.
Oman, Price Ward: *See*—
Benedict, Melvin Kent; Buckland, Patrick Allen; Kelley, Richard Allen; Neal, Danny Marvin; Oman, Price Ward; and Waters, Carl Raymond, 5,644,470, Cl. 361-686.000.
Omaru, Atsuo: *See*—
Imoto, Hiroshi; Omaru, Atsuo; Azuma, Hideto; Nishi, Yoshio; Gonno, Yoshihisa; and Nagamine, Masayuki, 5,643,426, Cl. 204-294.000.
Omata, Shigehiko: *See*—
Yumiyama, Shigeru; Omata, Shigehiko; Suzuki, Takashi; and Nakamura, Yoshinobu, 5,644,171, Cl. 290-48.000.
Omnithruster Inc.: *See*—
Aker, Charles M., 5,642,684, Cl. 114-151.000.
Omori, Shigeru; Hattori, Tomohiko; Katayama, Kunimasa; and Sakuma, Sadayuki, to Terumo Kabushiki Kaisha. Image display apparatus. 5,644,427, Cl. 359-464.000.
OncorMed: *See*—
Evans, Steven, 5,642,936, Cl. 128-630.000.
Onda, Kenichi: *See*—
Niigata, Kunihiro; Takahashi, Takumi; Maruyama, Tatsuya; Suzuki, Takayuki; Maeno, Kyoichi; Onda, Kenichi; Kontani, Toru; Noshiro, Osamu; Koike, Reiko; Shimaya, Akiyoshi; and Irie, Jun, 5,643,931, Cl. 514-364.000.
O'Neal, Earl W.: *See*—
Bello, Fernando A.; Hall, James B.; Luedke, Otto; and O'Neal, Earl W., 5,643,405, Cl. 156-636.100.
O'Neil, Lawrence. Reinforcing, adjustable, serviceable hinge assembly for photoimaging apparatus and a method for making same. 5,644,384, Cl. 355-72.000.
O'Neill, William G.: *See*—
Cosgrove, Delos M.; Cornhill, J. Frederick; Boykin, Christopher M.; Huldin, Nelson L.; and O'Neill, William G., 5,643,226, Cl. 604-264.000.
Onishi, Noriaki; Okamoto, Masayuki; Hirai, Toshiyuki; Yamada, Nobuaki; Nagae, Nobukazu; Kondo, Masahiko; and Terashita, Shin-ichi, to Sharp Kabushiki Kaisha. Liquid crystal device and method for producing the same. 5,643,471, Cl. 216-23.000.
Onoda, Hitoshi: *See*—
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Onokera, Ken, to Canon Kabushiki Kaisha. Image processing apparatus capable of efficient coding of complex shape information. 5,644,654, Cl. 382-199.000.
Onyskevych, Lubomyr Stephen; Cherukuri, Satyam C.; Prabhu, Ashok Narayan; Yocom, P. Niel; and Salsman, Kenneth E., to David Sarnoff Research Center, Inc. Tessellated electroluminescent display having a multilayer ceramic substrate. 5,644,327, Cl. 345-80.000.
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Katagiri, Satoru; Oohira, Hidehito; and Fujisawa, Shouji, 5,644,176, Cl. 310-12.000.
Ooishi, Tsukasa, to Mitsubishi Denki Kabushiki Kaisha. Structure for externally identifying an internal state of a semiconductor device. 5,644,250, Cl. 326-16.000.
Oomori, Shigenori; and Ito, Michio, to YKK Corporation. Apparatus for inspecting the attached state of slide fastener stop boxes and stop boxes attaching machine equipment with the same. 5,644,092, Cl. 73-865.800.
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Dössel, Olaf; Wischmann, Hans-Aloys; Fuchs, Manfred; Steenbrink, Rob; and Oostenveld, Robert, 5,644,229, Cl. 324-247.000.
Ootaki, Toshio; Nakamura, Akio; Tamura, Yuuki; Yanagisawa, Munehisa; and Higuchi, Susumu, to Shin-Etsu Handotai Kabushiki Kaisha. GaP light emitting substrate and a method of manufacturing it. 5,643,827, Cl. 437-127.000.
Oowaki, Yukihito: *See*—
Takashima, Daisaburo; Tsuchida, Kenji; and Oowaki, Yukihito, 5,644,525, Cl. 365-51.000.
Opan Technologies Ltd.: *See*—
Litman, Alon; Goldenstein, Alexander; and Rogers, Steven R., 5,644,132, Cl. 250-310.000.
OPC Engineering, Inc.: *See*—
Smith, Robert Sherwood, 5,643,421, Cl. 203-12.000.
Oppenheimer, Robert H. Method and system implementing a mortgage partnership. 5,644,726, Cl. 395-238.000.
Optein, Inc.: *See*—
Kawasaki, Glenn H., 5,643,768, Cl. 435-91.210.
Or, Yat Sun: *See*—
Wagner, Rolf; Luly, Jay R.; and Or, Yat Sun, 5,643,918, Cl. 514-291.000.
Orav, Mihkel. Game dart with retractable flight section. 5,642,887, Cl. 473-586.000.
Organ, Leslie W., to Hicor, Inc. Steerable catheter with rotatable tip electrode and method of use. 5,643,255, Cl. 606-41.000.
Origin Medsystems, Inc.: *See*—
Chin, Albert K.; Smith, Jeffrey A.; Lunsford, John P.; and Moll, Frederic H., 5,643,310, Cl. 606-192.000.
Moll, Frederic H.; and Chin, Albert K., 5,643,178, Cl. 600-204.000.
Orihara, Hiroyuki: *See*—
Miura, Hiroshi; Ariyama, Masato; Iida, Kazuyuki; Iwahara, Kazufumi; Okano, Mitsunobu; Orihara, Hiroyuki; Katsumata, Akira; Sakata, Toshiyasu; Nishimura, Masaharu; Hamamura, Hirofumi; Murakami, Naoki; Yasuda, Mitsuru; Yamashita, Yasuhiro; Yamada, Ryouji; and Yamane, Atsushi, 5,644,500, Cl. 364-490.000.
Orihara, Kozo: *See*—
Nakano, Takashi; Kohno, Akiyoshi; and Orihara, Kozo, 5,644,121, Cl. 250-208.100.
Orion-Yhtyma Oy Fermion: *See*—
Hytönen, Martti, 5,644,054, Cl. 540-491.000.
Orlosky, Scott D.: *See*—
Newell, G. Richard; Lewallen, Kenneth S.; Orlosky, Scott D.; and Egley, Bert D., 5,644,083, Cl. 73-514.340.
Orosa, John A.: *See*—
Spear, David A.; Biederman, Bruce P.; and Orosa, John A., 5,642,985, Cl. 416-238.000.
Orpana, Markku: *See*—
Blomberg, Martti; Orpana, Markku; Lehto, Ari; and Kattelus, Hannu, 5,644,676, Cl. 392-407.000.
Orstad, Richard E.: *See*—
Dinkel, Jeffrey Allen; Orstad, Richard E.; and Trull, Michael Paul, 5,643,009, Cl. 439-595.000.
Ortho Pharmaceutical Corporation: *See*—
Demers, James P.; Johnson, Sigmond; Weidner-Wells, Michele Ann; Kanojia, Ramesh M.; Fraga, Stephanie A.; and Klaubert, Dieter, 5,643,950, Cl. 514-539.000.
Farng, Richard K.; Gendimenico, Gerard J.; Mezick, James A.; Ng, Shirley M.; and Wrobel, Stanley B., Jr., 5,643,584, Cl. 424-401.000.
Ortiz, José A.: *See*—
Foguet, Rafael; Bolós, Jordi; Sacristán, Aurelio; and Ortiz, José A., 5,643,927, Cl. 514-320.000.
Ortiz, Mark S.; and Steckel, Mark G., to Ethicon, Inc. Method for using an abdominal lift device. 5,643,177, Cl. 600-204.000.
Oryszczak, Richard: *See*—
Provancal, Stephen J.; Carrillo, Angel L.; Fluhler, Thomas J.; Oryszczak, Richard; and Sane, Jayant N., 5,643,558, Cl. 424-66.000.
Osakabe, Takayuki, to Sanshin Kogyo Kabushiki Kaisha. Trim system for outboard motor. 5,643,021, Cl. 440-61.000.
Osaki, Katsumasa; Suzuki, Masaru; Tsunashima, Kenji; and Fukuhara, Mototada, to Toray Industries, Inc. Heat-sensitive mimeograph stencil. 5,643,680, Cl. 428-480.000.
Osawa, Yoshihisa: *See*—
Hosogaya, Ryuji; Tsunoda, Eizo; Hatakeyama, Akira; Osawa, Yoshihisa; Tanaka, Hideki; and Tobisawa, Seiichi, 5,643,363, Cl. 118-410.000.
Osbon Medical Systems, Ltd.: *See*—
Clark, Jeffrey W.; Flynn, Stephen J.; Gamper, Steven C.; Moore, Devin L.; and Rowley, David S., 5,643,290, Cl. 606-141.000.
Osborn, Thomas Ward, III; and Lavash, Bruce William, to Procter & Gamble Company, The. Absorbent article having tucked flaps. 5,643,245, Cl. 604-387.000.
Osborne, Timothy: *See*—
Marcus, Beth A.; Chen, Elaine; An, Bin; and Osborne, Timothy, 5,643,087, Cl. 463-38.000.
Osborne, William S.: *See*—
Schwiebert, William H.; Firl, Gerold G.; Waschhauser, Heinz H.; and Osborne, William S., 5,644,347, Cl. 347-33.000.
Osbourn, Charles Anthony, to Gaston County Dyeing Machine Company. Apparatus and method for wet processing traveling textile material. 5,642,548, Cl. 8-152.000.
O'Shaughnessy, Roger: *See*—
Piper, Mark; Slavich, Al; Granley, Chris; and O'Shaughnessy, Roger, 5,643,349, Cl. 65-157.000.
Osher, Stanley: *See*—
Rudin, Leonid I.; and Osher, Stanley, 5,644,513, Cl. 364-572.000.
Oshida, Kei: *See*—
Iwatsuki, Syuichiro; Oshida, Kei; and Okamoto, Masayoshi, 5,643,691, Cl. 429-54.000.
Osiris Therapeutics, Inc.: *See*—
Bruder, Scott P.; Caplan, Arnold I.; and Haynesworth, Stephen E., 5,643,736, Cl. 435-4.210
OSRAM Sylvania Inc.: *See*—
Brese, Nathaniel E.; and Reilly, Kenneth T., 5,643,496, Cl. 252-301.650
Ostgathe, Klaus: *See*—

Leyrer, Juergen; Domesle, Rainer; Lox, Egbert; and Ostgathe, Klaus, 5,643,542, Cl. 423-212.000.
Ostrover, Lewis S.; Thagard, Gregory B.; Wall, Joseph E., III; and Cookson, Christopher J., to Time-Warner Entertainment Co., L.P. Method for interleaving data for seamless playback of multiple program versions having common material. 5,644,507, Cl. 364-514.00R.
Osuga, Yoshikazu, to NEC Corporation. Fingerprint image transmission system utilizing reversible and non-reversible data compression coding techniques. 5,644,645, Cl. 382-124.000.
Oswald, Denis A.; Emmer, Mark W.; Edmonds, Daniel W.; and Johnson, Robert S., to Briggs & Stratton Corporation. Engine cylinder head assembly having planar and cast components. 5,642,701, Cl. 123-193.500.
Otake, Koki: *See*—
Ochiai, Masayuki; Ueda, Hidefumi; Sono, Michio; Yamaguchi, Ichiro; Mitobe, Kazuhiko; Otake, Koki; Kasai, Junichi; Kamehara, Nobuo; Yamagishi, Yasuo; Mizukoshi, Masataka; Yamada, Yutaka; and Abe, Susumu, 5,643,831, Cl. 437-183.000.
Otis Elevator Company: *See*—
Bahjat, Zuhair S.; Collins, James M.; and Hughes, David M., 5,644,110, Cl. 187-385.000.
Otsuchi, Tetsuro: *See*—
Nojima, Takashi; Sumihara, Masanori; Otsuchi, Tetsuro; Nishikura, Takahiro; Kawasaki, Osamu; Takeda, Katsu; and Imada, Katsumi, 5,644,199, Cl. 318-114.000.
Otsuka Pharmaceutical Co., Ltd.: *See*—
Chihiro, Masatoshi; Komatsu, Hajime; Tominaga, Michiaki; and Yabuuchi, Yoichi, 5,643,932, Cl. 514-365.000.
Otsuka, Yoichi, to Sony Corporation. Photoresist composition and method of exposing photoresist. 5,643,700, Cl. 430-30.000.
Otsuki, Noriyoshi: *See*—
Fujii, Masahiro; Miyashita, Ikuhiro; Koeda, Hiroshi; Mukaiyama, Keiichi; Maruyama, Hiroyuki; Otsuki, Noriyoshi; Watanabe, Toshiaki; and Kobayashi, Naoki, 5,644,341, Cl. 347-11.000.
Ott, Ronald L.: *See*—
Gorman, Michael R.; Becker, Dennis L.; Folske, Donald W.; Melbye, William L.; Nestegard, Susan K.; and Ott, Ronald L., 5,643,397, Cl. 156-435.000.
Otto, Hans-Dieter; Wabnitz, Thomas; and Korte, Ralf, to Quante Aktiengesellschaft. Electric connection contact in a single piece. 5,643,004, Cl. 439-397.000.
Otto, Jürgen; Segner, Johannes; and Paquet, Volker, to Schott Glaswerke. Plasma CVD method of producing a gradient layer. 5,643,638, Cl. 427-569.000.
Ouchi, Norikazu: *See*—
Miwa, Hiroyuki; Kanematsu, Shigeru; Gomi, Takayuki; Anmo, Hiroaki; Noguchi, Takashi; Kato, Katsuyuki; Ejiri, Hirokazu; and Ouchi, Norikazu, 5,643,806, Cl. 437-31.000.
Ouchi, Norman K.: *See*—
Brady, James T.; Cheng, Joe-Ming; Cohn, Oded; Eldridge, James W.; Novick, Yoram; Ouchi, Norman K.; and Segev, Danit, 5,644,791, Cl. 395-888.000.
Owen Mumford Limited: *See*—
Marshall, Jeremy; and Turner, Derek, 5,643,214, Cl. 604-134.000.
Owens, James L., to United Technologies Corporation. System for repairing damaged gas turbine engine airfoils. 5,644,394, Cl. 356-241.000.
Owens, Warren D.; Jenkins, Cary P.; and Hargett, Ken, to Alcove Medical, Inc. Reduced internal volume neonatal suction adaptor. 5,642,726, Cl. 128-200.260.
Oxford Magnet Technology Limited: *See*—
Gore, Russell Peter, 5,642,624, Cl. 62-51.100.
Ozaki, Naoyuki; Amano, Matsuo; Ohnishi, Hiroshi; and Minowa, Toshimichi, to Hitachi, Ltd. Engine power train control method and control apparatus for a vehicle. 5,642,709, Cl. 123-361.000.
Ozawa, Yoichi: *See*—
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Ozu, Hideyuki: *See*—
Tateishi, Hiroshi; Tomimatsu, Norihiro; Nakagawa, Kazuaki; Ozu, Hideyuki; and Akasaka, Yoshihiro, 5,643,690, Cl. 429-34.000.
Pacesetter, Inc.: *See*—
Bomzin, Gene A.; and Mann, Brian M., 5,643,338, Cl. 607-123.000.
Dawson, Albert K.; and Nappholz, Tibor, 5,643,327, Cl. 607-24.000.
Pacific Kenyon Corporation: *See*—
Sawhill, Wallace, 5,643,622, Cl. 426-41.000.
Pacific Sources, Inc.: *See*—
Zhou, Liang, 5,644,464, Cl. 361-115.000.
Packaging Corporation of America: *See*—
Kwong, Peter C.; Menawat, Arun; Ng, Park; and Okamoto, Kelvin T., 5,643,664, Cl. 428-327.000.
Padoan, Silvia: *See*—
Pascucci, Luigi; and Padoan, Silvia, 5,644,529, Cl. 365-185.050.
Padula, Joseph Anthony; Williams, Owen Ricardo; Abraham, Mark Frederick; and Ramsey, William Dale, Jr., to Shell Oil Company. Customer interface for driver. 5,644,119, Cl. 235-384.000.
Pages, Etienne: *See*—
Papillon, Jean; and Pages, Etienne, 5,643,193, Cl. 604-6.000.
Paget, Charles J., Jr.: *See*—
Booher, Richard N.; Lawhorn, David E.; Martinelli, Michael J.; Paget, Charles J., Jr.; and Schaus, John M., 5,643,910, Cl. 514-253.000.
Booher, Richard N.; Lawhorn, David E.; Paget, Charles J., Jr.; and Schaus, John M., 5,643,930, Cl. 514-364.000.
Booher, Richard N.; Lawhorn, David E.; Martinelli, Michael J.; Paget, Charles J., Jr.; and Schaus, John M., 5,643,934, Cl. 514-383.000.
Pagett, Steve J.: *See*—
Adamski, Maximilian, Jr.; and Pagett, Steve J., 5,642,681, Cl. 112-475.090.
Pajunen, Grazyna Anna: *See*—
Barrett, Raymond Louis, Jr.; Herold, Barry W.; Pajunen, Grazyna Anna; and Davis, Walter L., 5,644,743, Cl. 375-375.000.
Palau, Joseph; and Froment, Jean-Paul, to Staubli Faverges. Frame for supporting the return levers connected to heddle frames. 5,642,758, Cl. 139-57.000.
Pall Corporation: *See*—
Cassidy, Ronald F., 5,642,729, Cl. 128-204.290.
Palm, J. Herbert: *See*—
Ho, Herbert; Hammerl, Erwin; Dobuzinsky, David M.; Palm, J. Herbert; Fugardi, Stephen; Ajmera, Atul; Moseman, James F.; and Ramac, Samuel C., 5,643,823, Cl. 437-67.000.
Palmer, Gary L., to Itt Corporation. Night Vision Monocular with unistructural optical bed. 5,644,425, Cl. 359-409.000.
Palmer, Gordon M. Telescoping measuring device. 5,642,569, Cl. 33-809.000.
Paltenstein, Jack S.: *See*—
Duff, Stephen B.; and Paltenstein, Jack S., 5,644,487, Cl. 364-140.000.
Pamukcu, Rifat; and Brendel, Klaus, to Cell Pathways, Inc.; and University of Arizona. Method for treating patients with precancerous lesions by administering substituted sulfonyl indenyl acetic and propionic acids and esters thereof. 5,643,959, Cl. 514-569.000.
Pan, Shao Wei; and Wang, Shay-Ping T. Accumulator circuit and method of use thereof. 5,644,520, Cl. 364-736.010.
Pan, Tzu-Wang: *See*—
Yamasaki, Richard G.; and Pan, Tzu-Wang, 5,644,595, Cl. 375-232.000.
Pang, Gerald Toh; and Clancy, Robert Llewellyn, to University of Newcastle Research Associates Limited, The. Oral vaccine comprising antigen surface-associated with red blood cells. 5,643,577, Cl. 424-206.100.
Pannier, Michele; and Chudoba, Pavel, to Degremont. Process for the treatment of liquid effluents by activated sludge. 5,643,453, Cl. 210-605.000.
Pant, Bharat B.; Spielberger, Richard K.; and Ohme, Bruce W., to Honeywell Inc. Miniature magnetometer and flexible circuit. 5,644,230, Cl. 324-247.000.
Panzarella, James S.: *See*—
Freese, Theodore B.; Nickel, Michael J.; and Panzarella, James S., 5,643,035, Cl. 446-15.000.
Papanu, James S.: *See*—
Maydan, Dan; Mak, Steve S.-Y.; Olgado, Donald; Yin, Gerald Zheyao; Driscoll, Timothy D.; Shieh, Brian; and Papanu, James S., 5,643,394, Cl. 156-345.000.
Papillon, Jean; and Pages, Etienne, to Haemonetics Corporation. Apparatus for collection washing and reinfusion of shed blood. 5,643,193, Cl. 604-6.000.
Paquet, Volker: *See*—
Otto, Jürgen; Segner, Johannes; and Paquet, Volker, 5,643,638, Cl. 427-569.000.
Paragon Trade Brands, Inc.: *See*—
Baker, Andrew T., 5,643,238, Cl. 604-368.000.
Paranjape, Sushama Mahesh: *See*—
Garcia, Enrique Quique; and Paranjape, Sushama Mahesh, 5,644,583, Cl. 371-40.200.
Parekh, Mahendra B.; Kitzmiller, Leon; Costello, Richard C.; Grow, C. Allen; Pinchott, Gordon; O'Leary, Dennis; MacDougall, Louis M.; Okey, David W.; and Fowler, Edward J., to Sundstrand Corporation. Piston and method of manufacturing the same. 5,642,654, Cl. 92-260.000.
Parish, Robert O., II, to TTI Trenchless Technologies, Inc. Pulling attachment for plastic pipe and slip lining head. 5,642,912, Cl. 294-86.120.
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Carpino, Louis A., 5,644,029, Cl. 530-333.000.
Polakowska, Renata Regina; and Goldsmith, Lowell Alan, 5,643,746, Cl. 435-69.100.

Research Development Corporation of Japan: *See*—
Misawa, Hiroaki, 5,644,588, Cl. 372-66.000.

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Alfano, Robert R.; Ho, Ping-Pei; and Liang, Xiangchun, 5,644,429, Cl. 359-559.000.

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Wobschall, Darold, 5,644,125, Cl. 250-227.270.

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Landi, Michael K.; and Lifeso, Robert M., 5,644,616, Cl. 378-206.000.

Research Foundation of State University of New York at Buffalo, The: *See*—
Chung, Deborah D. L., 5,643,670, Cl. 428-367.000.

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Cynamon, Michael Henry; and Welch, John T., 5,643,912, Cl. 514-255.000.

Research Triangle Institute: *See*—
Rudder, Ronald Alan; Hendry, Robert Carlisle; and Hudson, George Carlton, 5,643,639, Cl. 427-577.000.

Resnik, Robert Kenneth: *See*—
Donigian, Douglas Ward; Resnik, Robert Kenneth; and McFadden, Michael Gregory, 5,643,631, Cl. 427-218.000.

Resolve 2000, Inc.: *See*—
Soeder, Thomas B., 5,644,762, Cl. 395-606.000.

Ressl, Michael G.: *See*—
Chambers, Frank A.; Kaufman, R. Gilbert; Schmidt, Melvin C.; Ressl, Michael G.; and Kwasegrock, John G., 5,644,668, Cl. 385-90.000.

Revardel, Luc Louis: *See*—
Bauchot, Frederic Jacques; Lefevre, Frederic Bernard; and Revardel, Luc Louis, 5,644,576, Cl. 370-437.000.

Revel, Michel; Abramovich, Carolina; and Ratovitski, Edward, to Yeda Research and Development Co, Ltd. Soluble interferon α-receptor, its preparation and use. 5,643,749, Cl. 435-69.100.

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Hanneman, Rodney E.; and Girard, Arthur L., 5,643,371, Cl. 148-522.000.

Reynolds, Rebecca Lynne: *See*—
Fildes, Nicola Jane; and Reynolds, Rebecca Lynne, 5,643,724, Cl. 435-6.000.

Reynolds, Samuel C.: *See*—
Reinhardt, Victor S.; Shih, Yi-Chi; Toth, Paul A.; and Reynolds, Samuel C., 5,644,243, Cl. 324-626.000.

Rhee, Woonza M.; Berg, Richard A.; Rosenblatt, Joel S.; Schroeder, Jacqueline A.; Braga, Larry J.; Smestad, Thomas L.; and Freeman, Abigail, to Collagen Corporation. Process for preparing a sterile, dry crosslinking agent. 5,643,464, Cl. 210-748.000.

Rhodes, Buck A., to Rhomed Incorporated. Leukostimulatory agent for in vivo leukocyte tagging. 5,643,549, Cl. 424-1.690.

Rhodes, Michael E. Blackout control system. 5,644,290, Cl. 340-468.000.

Rhomed Incorporated: *See*—
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Guerin, Gilles; and Ponce, Arnaud, 5,643,863, Cl. 510-466.000.

Rhone-Poulenc Inc.: *See*—
Li, Ji; Dahanayake, Manilal; Reierson, Robert Lee; and Tracy, David James, 5,643,498, Cl. 252-357.000.
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Rhyne, George W.; and Holm, Paige M., to Motorola. Apparatus and method for operating groups of led display pixels in parallel to maximize active time. 5,644,328, Cl. 345-82.000.

Ricco, Mario, to Elasis Sistema Ricerca Fiat Nel Mezzogiorno Societe Consortile Per Azioni. Device for regulating the supply of pressurized fluid to a pressurized fluid accumulator, for example for motor vehicles. 5,642,716, Cl. 123-456.000.

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Suggs, Laura J.; Payne, Richard G.; Yaszemski, Michael J.; and Mikos, Antonios G., 5,644,005, Cl. 525-444.000.

Rich, Stephen Emery: *See*—
Mahin, Stephen William; Conor, Stephen Michael; Ciavaglia, Stephen J.; Moulton, Lyman Henry, III; Rich, Stephen Emery; and Kartschoke, Paul David, 5,644,744, Cl. 395-383.000.

Richard, Bennett M., to Baker Hughes Incorporated. Multi-passage sand control screen. 5,642,781, Cl. 166-231.000.

Richard, Delbert: *See*—
Pease, Logan L.; Richard, Delbert; Dickinson, Peter D., deceased, 5,644,704, Cl. 395-183.180.

Richard, Fred V.; and Wildy, Marc H., to Motorola. Single fold optical magnifier for use in image manifestation apparatus. 5,644,430, Cl. 359-569.000.

Richardson, John A., to Ford Motor Company. Speed reduction gearset and torque split differential mechanism. 5,643,129, Cl. 475-204.000.

Richardson, Michael M.; Peterson, Jay R.; Weiss, Eugene G.; and McDonough, Thomas J., to Check Technology Corporation. Printing system. 5,644,494, Cl. 364-478.110.

Richmond, Sarah Mason: *See*—
Date, Toshinori; Couch, Johnny D.; and Richmond, Sarah Mason, 5,644,113, Cl. 200-5.00R.

Richter, Hans: *See*—
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Ricoh Company, Ltd.: *See*—
Konagaya, Yukio; Igawa, Takao; Ito, Akihide; Nogiwa, Tohru; Kagawa, Tsutomu; and Yamada, Nobuo, 5,643,851, Cl. 503-201.000.
Maruyama, Tohru; Saito, Masatoshi; Terashi, Taro; Watanabe, Hisao; Fujita, Shigeru; Shinkai, Masaru; and Sugawara, Tomoaki, 5,642,550, Cl. 15-102.000.
Saitoh, Tadashi; Tanikawa, Kiyoshi; Murakami, Kakuji; Tokita, Toshiaki; and Fujita, Shigeru, 5,643,380, Cl. 156-94.000.
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Rideout, Janet Litster; Barry, David Walter; Lehrman, Sandra Nusinoff; St. Clair, Martha Heider; and Furman, Phillip Allen, to Glaxo Wellcome Inc. Treatment of viral infections. 5,643,891, Cl. 514-50.000.

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Suhocki, Paul V.; and Ridinger, Mark T., 5,643,281, Cl. 606-113.000.

Riedinger, Sherri L.: *See*—
Timken, Hye Kyung C.; and Riedinger, Sherri L., 5,643,441, Cl. 208-89.000.

Riffe, William J.; and Carter, Jack D., to Marine Environmental Research, Inc. Apparatus for the prevention of fouling and/or corrosion of structures in seawater, brackish water and/or fresh water. 5,643,424, Cl. 204-196.000.

Riggenbach, Richard C. Gun sling. 5,642,584, Cl. 42-85.000.

Right, Robert W.; Braam, Jan A.; Hewlin, John P.; and Wolf, Rick A., to General Signal Corporation. Ground fault detection with location identification. 5,644,293, Cl. 340-507.000.

Riitano, Francesco. Endodontic instrument for rapid mechanical widening of the canal mouth and specific rectification of the first two thirds. 5,642,998, Cl. 433-224.000.

Rilling, Heinz; and Lehenberger, Stefan, to Robert Bosch GmbH. Device for measuring the mass of a flowing medium. 5,644,079, Cl. 73-204.220.

Ring Can Corporation: *See*—
Ring, Carl D., 5,642,833, Cl. 220-441.000.

Ring, Carl D., to Ring Can Corporation. Composite package for scoopable products. 5,642,833, Cl. 220-441.000.

Rioux, Marcel, to Madisco Inc. Puzzle holder. 5,642,883, Cl. 273-157.00R.

Rise, Mark T., to Medtronic, Inc. Implantable techniques for infusing a therapeutic agent with endogenous bodily fluid. 5,643,207, Cl. 604-93.000.

Riso Kagaku Corporation: *See*—
Hara, Yoshikazu, 5,642,663, Cl. 101-116.000.
Horie, Mariko, 5,642,665, Cl. 101-125.000.
Isozaki, Takashi; Tojima, Takahito; Higa, Ryuji; and Okuda, Sadanao, 5,642,672, Cl. 101-424.200.

Rittner, Siegbert; Rüffer, Hans-Martin; Schmid, Jörg; and Wisser, Thomas, to Hoechst Aktiengesellschaft. Process for the preparation of aromatic hydroxy carboxylic acids. 5,643,494, Cl. 252-182.310.

Riverwood International Corporation: *See*—
Müller, Rolf, 5,642,604, Cl. 53-448.000.

Rivier, Jean: *See*—
Zohar, Yonathan; Sherwood, Nancy M.; Rivier, Jean; Powell, Jim; and Gothilf, Yoav, 5,643,877, Cl. 514-15.000.

Rizzotti, Salvatore A. Hand-held aerodynamic umbrella. 5,642,747, Cl. 135-16.000.

Robbins, Carl Arthur: *See*—
Birchak, James Robert; Linyaev, Eugene; Robbins, Carl Arthur; and Roessler, Dennis E., 5,644,186, Cl. 310-337.000.

Robbins, Winston K.: *See*—
Hsu, Chang S.; Blum, Saul C.; Liang, Zhenmin; Grosshans, Peter B.; and Robbins, Winston K., 5,644,129, Cl. 250-282.000.

Roberson, Harold Theodore, Jr. Adapter plate. 5,643,024, Cl. 440-76.000.

Robert Bosch GmbH: *See*—
Rilling, Heinz; and Lehenberger, Stefan, 5,644,079, Cl. 73-204.220.

Roberts, Glenn D.: *See*—
Persing, David H.; Hunt, John J.; Young, Karen K. Y.; Felmlee, Teresa A.; Roberts, Glenn D.; and Whelan, A. Christian, 5,643,723, Cl. 435-6.000.

Robertson, John S.: *See*—
Carlsen, Ralph; Kaplan, Marc P.; and Robertson, John S., 5,644,626, Cl. 455-31.200.

Robin, Jean-Pierre; Kiss, Robert; and Imbert, Thierry, to Pierre Fabre Medicament. Etoposide derivatives, process for preparing them, their use as a medicinal product and their use for the preparation of a medicinal product intended for anti-cancer treatment. 5,643,885, Cl. 514-27.000.

Robinson, Bruce T.: *See*—
McShane, James F.; and Robinson, Bruce T., 5,644,611, Cl. 378-98.000.

Robinson, Harriet L.; Fynan, Ellen F.; and Webster, Robert G., to University of Massachusetts Medical Center; and St. Jude Children's Research Hospital. Immunization by inoculation of DNA transcription unit. 5,643,578, Cl. 424-210.100.

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Robinson, Thomas W.: *See*—
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Robinson, Troy: *See*—
Stout, Roger Neal; and Robinson, Troy, 5,643,139, Cl. 482-14.000.

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Metz-Stavenhagen, Peter; and Robioneck, Bernd, 5,643,262, Cl. 606-61.000.

Robson, Keith: *See*—
Simpson, Leslie Ainsley; Robson, Keith; Knight, David Trevor; and Williamson, Martin Alec, 5,643,974, Cl. 523-334.000.

Roche Molecular Systems, Inc.: *See*—
Fildes, Nicola Jane; and Reynolds, Rebecca Lynne, 5,643,724, Cl. 435-6.000.
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Cucin, Robert L., 5,643,198, Cl. 604-22.000.

Rock-Tenn Company: *See*—
Wischusen, Henry, III, 5,643,647, Cl. 428-36.900.

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Beavis, Ronald C.; and Chait, Brian T., 5,643,798, Cl. 436-94.000.
Fischetti, Vincent A.; and Cheung, Ambrose, 5,643,767, Cl. 435-91.300.

Rockwell International Corporation: *See*—
Meyer, Mark R.; and Johnson, Lee A., 5,644,777, Cl. 395-800.000.

Rockwood, Robert E., to Environamics Corporation. Temperature and pressure resistant rotating seal construction for a pump. 5,642,888, Cl. 277-15.000.

Rocky Mountain Research Center: *See*—
Hait, John Norman, 5,644,123, Cl. 250-216.000.

Rodder, Jerome A. Method of improving growth characteristics of plants of the family Orchidaceae. 5,642,586, Cl. 47-58.000.

Rodgers, John. Adjustable tee setting device. 5,643,113, Cl. 473-386.000.

Rodibaugh, Scott A.: *See*—
Martin, Henry Woods; Cox, Ian M.; and Rodibaugh, Scott A., 5,643,448, Cl. 210-232.000.

Roding, Joachim: *See*—
Gross, Udo; Roding, Joachim; Stanzl, Klaus; and Zastrow, Leonhard, 5,643,601, Cl. 424-450.000.

Rodriguez, Alonso: *See*—

El-Sharkawi, Mohamed A.; Xing, Jian; Butler, Nicholas G.; and Rodriguez, Alonso, 5,644,463, Cl. 361-94.000.
Rodriguez, Diego. Sports practice apparatus. 5,642,879, Cl. 473-448.000.
Roe, Donald Carroll; Bakes, Frank Heinrich; and Warner, Alrick Vincent, to Procter & Gamble Company, The. Diaper having a lotioned topsheet. 5,643,588, Cl. 424-402.000.
Roe, Donald Carroll: *See*—
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Roehm GmbH Chemical Factory: *See*—
Lehmann, Klaus; and Süfke, Thomas, 5,644,011, Cl. 526-319.000.
Roenigk, Karl F., to Minnesota Mining and Manufacturing Company. Durable anti-microbial agents. 5,643,971, Cl. 523-122.000.
Roerink, Johan Gerrit: *See*—
Heurman, Erwin Herman Gerardus; Koesveld, Gerrit-Jan Hofte; and Roerink, Johan Gerrit, 5,643,076, Cl. 452-176.000.
Roessler, Dennis E.: *See*—
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Rogers, Derek John: *See*—
Dong, Dennis F.; Mumby, Timothy Alan; Jackson, John R.; and Rogers, Derek John, 5,643,437, Cl. 205-348.000.
Rogers, Kathy L., legal representative: *See*—
Talley, John J.; Sikorski, James A.; Norman, Bryan H.; Rogers, Roland S., deceased; Devadas, Balekudru; Graneto, Matthew J.; and Carter, Jeffery S., 5,643,933, Cl. 514-372.000.
Rogers, Roland S., deceased (by Kathy L. Rogers, legal representative): *See*—
Talley, John J.; Sikorski, James A.; Norman, Bryan H.; Rogers, Roland S., deceased; Devadas, Balekudru; Graneto, Matthew J.; and Carter, Jeffery S., 5,643,933, Cl. 514-372.000.
Rogers, Steven R.: *See*—
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Rogosin Institute, The: *See*—
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Roh, Hyoung-ho, to Samsung Aerospace Industries, Ltd. Semiconductor device which dissipates heat. 5,644,164, Cl. 257-712.000.
Rohde, Jurgen: *See*—
Chakraborty, Amiya Kumar; Rohde, Jurgen; Klatt, Karl-Heinz, deceased; Wenzl, Helmut; Konrad, Ralf, deceased; Konrad, Tatjana, 5,643,850, Cl. 502-326.000.
Rohm and Haas Company: *See*—
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Rohm Co., Ltd.: *See*—
Hagimori, Haruo, 5,644,781, Cl. 395-800.000.
Kuriyama, Chojiro, 5,644,281, Cl. 337-295.000.
Kusaba, Katsumi, 5,644,217, Cl. 323-315.000.
Ohmae, Hideo, 5,644,127, Cl. 250-231.160.
Rohrschneider, Larry R., to Fred Hutchinson Cancer Research Center. Regulating retroviral replication, infection, and pathogenesis. 5,643,888, Cl. 514-43.000.
Rojey, Alexandre: *See*—
Prevost, Isabelle; and Rojey, Alexandre, 5,643,469, Cl. 210-787.000.
Roland, Jean-Louis. Device for introducing a gas into a liquid. 5,643,503, Cl. 261-30.000.
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Rolph, L. James: *See*—
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Roman, Harry T.: *See*—
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Romanco, Vincent P., to R.R. Street & Co. Inc. Filter cartridge having gasket seal employing pressure ridges to prevent leakage. 5,643,467, Cl. 210-767.000.
Romanoff, Andrew B. Compensation mechanism for the elimination of manual backpan on camera cranes and jib arms. 5,644,377, Cl. 352-243.000.
Römer, Hans-Herward: *See*—
Ackermann, Werner; and Römer, Hans-Herward, 5,642,915, Cl. 296-214.000.
Ronia, Ernesto. Christmas stocking holder. 5,642,819, Cl. 211-86.010.
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Rose, Arthur S.; and Andrews, Guy T. Tensioned band golf putter head. 5,643,109, Cl. 473-329.000.
Rose, Mitchell, to Scott Fetzer Company, The. Flexible impeller with one-piece hub. 5,642,986, Cl. 416-240.000.
Rose, Steven A.: *See*—
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Ross, Eric P.; and Dang, Thieu X., to Hewlett-Packard Company. Print mode and system to alleviate wait-banding. 5,644,683, Cl. 395-108.000.
Ross, Gerhard: *See*—
Biedermann, Ernst; El Mekki, Manfred Ben; Weisheit, Kenneth; Griebsch, Thomas; and Ross, Gerhard, 5,644,140, Cl. 250-559.080.
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Rossi, Markku J., to Compaq Computer Corporation. Antenna system for a notebook computer. 5,644,320, Cl. 343-702.000.
Rostoker, Michael D.; Pasch, Nicholas F.; and Zelayeta, Joe, to LSI Logic Corporation. Process for manufacturing off-axis power branches for interior bond pad arrangements. 5,643,830, Cl. 437-180.000.
Rostoker, Michael D., to LSI Logic Corporation. Integrated circuit packages with distinctive coloration. 5,644,102, Cl. 174-52.100.
Rostoker, Michael D.; Schneider, Mark; Pasch, Nicholas F.; Yee, Abraham; and Schneider, William C., to LSI Logic Corporation. Method for protecting a semiconductor device with a superconductive line. 5,644,143, Cl. 257-30.000.
Rostoker, Michael D.; and Kapoor, Ashok, to LSI Logic Corporation. Conductive germanium/silicon member with a roughened surface thereon suitable for use in an integrated circuit structure. 5,644,152, Cl. 257-317.000.
Rotge, James R.: *See*—
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Roth, Richard C.: *See*—
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Rothschild, Kenneth J.; Sonar, Sanjay M.; and Olejnik, Jerzy, to Trustees of Boston University. Methods for the detection and isolation of proteins. 5,643,722, Cl. 435-6.000.
Roucher, Leo R., Jr.: *See*—
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Rourke, John K., to Mead Corporation, The. Continuous production of Emulsions and microcapsules of uniform particle size. 5,643,506, Cl. 264-4.100.
Roux, Patrice R.: *See*—
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Rowden, Jimmy M.; Heaton, John E.; and Koh, Charles H., to Blairden Precision Instruments, Inc. Vaginal extender for colpotomy surgery. 5,643,285, Cl. 606-119.000.
Rowells, Robert L.: *See*—
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Rowland, Christopher A.; Vergano, Michael G.; Eddy, Bryan P.; and Cotton, Peter B., to Boston Scientific Corporation. Apparatus for performing diagnostic and therapeutic modalities in the biliary tree. 5,643,199, Cl. 604-22.000.
Rowlands, Jonathan L.: *See*—
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Rowlette, John J., to Bipolar Power Corporation. Battery plates with lightweight cores. 5,643,696, Cl. 429-210.000.
Rowley, David S.: *See*—
Clark, Jeffrey W.; Flynn, Stephen J.; Gamper, Steven C.; Moore, Devin L.; and Rowley, David S., 5,643,290, Cl. 606-141.000.
Roy, Carl Wilson; and Schempp, John A., Jr., to Eastman Kodak Company. Apparatus for reading optical code on moving photographic film. 5,644,120, Cl. 235-462.000.
Roy, Sebastien: *See*—
Cox, Ingemar J.; and Roy, Sebastien, 5,644,651, Cl. 382-154.000.
Roy, Shaibal, to Sybase, Inc. Database system with improved methods for B-tree maintenance. 5,644,763, Cl. 395-612.000.
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Rubin, Raphael: *See*—
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Rudin, Leonid I.; and Osher, Stanley. System incorporating feature-oriented signal enhancement using shock filters. 5,644,513, Cl. 364-572.000.
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Ayerst, Douglas Irvin; Khan, Malik J.; and Rudowicz, Michael James, 5,644,568, Cl. 370-311.000.
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Ruhland-Fritsch, Beatrice: *See*—
Barrett, Ronald W.; Cwirla, Steven E.; Dower, William J.; Koller, Kerry J.; Lee, Jung; Martens, Christine L.; and Ruhland-Fritsch, Beatrice, 5,643,873, Cl. 514-12.000.
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Althin, Anders; Fernandez, Ben; Elsen, Raymond; Ruzius, Kees; Silva, Lalith; and Washington, George, 5,643,452, Cl. 210-500.230.
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Ligon, James M.; Schupp, Thomas; Beck, James Joseph; Hill, Dwight Steven; Ryals, John Andrew; Gaffney, Thomas Deane; Lam, Stephen Ting; Hammer, Philip E.; and Uknes, Scott Joseph, 5,643,774, Cl. 435-183.000.
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Neff, Roger Edgar; Pellon, Joseph Jacinto; and Ryles, Roderick Glyn, 5,643,461, Cl. 210-728.000.
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Cates, Gordon D., Jr.; Driehuys, Bastiaan; Happer, William; Middleton, Hunter; Miron, Eli; Saam, Brian; and Walter, Daniel, 5,642,625, Cl. 62-55.500.
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Coscarella, Anthony; Sachs, Martin William; and Temple, Joseph, 5,644,712, Cl. 395-200.010.
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Sacks, Jack M., deceased (by P. A. Sachr, heiress): *See*—
McNary, Charles A.; Lo, Thomas K.; Sacks, Jack M., deceased; and Banh, Nam D., 5,644,508, Cl. 364-516.000.
Sacristán, Aurelio: *See*—
Foguet, Rafael; Bolós, Jordi; Sacristán, Aurelio; and Ortiz, José A., 5,643,927, Cl. 514-320.000.
Sadler, Steven P.; and Vinciarelli, Patrizio, to VLT Corporation. Modular soldering nozzle. 5,642,850, Cl. 228-37.000.
Sadowski, Peter; Mulhauser, Paul; and Schiff, David, to Medi-Ject Corporation. Nozzle assembly having a frangible plunger. 5,643,211, Cl. 604-110.000.
SAFCO Technologies, Inc.: *See*—
Gulledge, Kenneth G., 5,644,623, Cl. 455-423.000.
Sagae, Ichiro: *See*—
Hayashi, Hidenori; Mizuta, Takao; Sagae, Ichiro; and Watanabe, Naotoshi, 5,643,979, Cl. 524-100.000.
Saidi, Eileen S., to Valence Technology, Inc. Lithium containing solid electrochemical cells. 5,643,665, Cl. 428-330.000.
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Rensing, Cornélis Willem; and Sainsard, Hubert, 5,643,360, Cl. 118-13.000.
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Mertz, Frederic, 5,643,634, Cl. 427-255.000.
Viel, Charles-Henri, 5,643,367, Cl. 134-1.000.
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Demars, Yves, 5,643,644, Cl. 428-34.000.
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Simpson, Matthew A., 5,643,523, Cl. 264-400.000.
Sairanen, Paavo; Lindström, Jan; and Lamminpää, Osmo, to Valmet Corporation. Method and system for air-conditioning a coating station for a paper web or equivalent. 5,643,078, Cl. 454-66.000.
Saito, Fumio: *See*—
Kaga, Takao; Kimura, Yutaka; Saito, Fumio; and Tanaka, Hiroaki, 5,643,497, Cl. 252-313.100.
Saito, Hidemi; Kanda, Takashi; Iida, Yoshihito; and Mochizuki, Naoto, to NISCA Corporation. Portable image scanner having manual or automatic feed. 5,644,663, Cl. 382-313.000.
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Maruyama, Tohru; Saito, Masatoshi; Terashi, Taro; Watanabe, Hisao; Fujita, Shigeru; Shinkai, Masaru; and Sugawara, Tomoaki, 5,642,550, Cl. 15-102.000.
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Arai, Noriyuki; Shiomi, Yutaka; Nakamura, Hiroshi; and Saito, Noriaki, 5,644,003, Cl. 525-423.000.
Saito, Takao: *See*—
Yokoi, Hiroyuki; Saito, Takao; and Ohno, Hideto, 5,643,735, Cl. 435-7.900.
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Ogawa, Takatoshi; Yoshioka, Yasuhiko; Tsubouchi, Nobuo; Saito, Toshio; Hasegawa, Tamotsu; Fujishima, Akira; and Hashimoto, Kazuhito, 5,643,436, Cl. 205-324.000.
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Fujita, Minoru; Nakagawa, Hiroaki; and Saito, Tsutomu, 5,643,654, Cl. 428-138.000.
Saito, Yosuke: *See*—
Amano, Naomoto; and Saito, Yosuke, 5,643,425, Cl. 204-279.000.
Saitoh, Kohki: *See*—
Takahashi, Eisaku; Takahashi, Eiichi; Saitoh, Kohki; Wada, Toshihiko; and Konai, Yutaka, 5,643,775, Cl. 435-193.000.
Saitoh, Koichi: *See*—
Sho, Katsuhiko; Nishio, Masahiro; Saitoh, Koichi; Aoki, Kei; and Yagi, Tohru, 5,643,977, Cl. 523-411.000.

Saitoh, Satoshi; and Terada, Akihiro, to Tokyo Electron Limited; and Tokyo Electron FE Limited. Probe apparatus for inspecting electrical characteristics of a microelectronic element. 5,644,245, Cl. 324-754.000.

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Sakaguchi, Yasuo: *See*—
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Sakai, Hitoshi; and Sugie, Naoto, to Yazaki Corporation. Terminal for waterproof connectors. 5,643,018, Cl. 439-852.000.

Sakai, Junichi: *See*—
Nagano, Mitsuo; Kobayashi, Takeo; Sakai, Junichi; Kozuka, Masao; Iwata, Nobuyoshi; and Kubo, Yoshiko, 5,643,923, Cl. 514-305.000.

Sakai, Katsumi: *See*—
Kaida, Hiroaki; Inoue, Jiro; Kajiwara, Masatoshi; Nakatani, Hiroshi; Fujimoto, Katsumi; and Sakai, Katsumi, 5,644,273, Cl. 333-187.000.

Sakai, Minekazu: *See*—
Fukada, Tsuyoshi; Yoshino, Yoshimi; Sugito, Hiroshige; and Sakai, Minekazu, 5,643,803, Cl. 437-15.000.

Sakai, Norio: *See*—
Kubota, Kenji; Sakai, Norio; and Kawabata, Shoichi, 5,644,107, Cl. 174-262.000.

Sakai, Shigeru: *See*—
Kaneyoshi, Masami; Fujioka, Isamu; and Sakai, Shigeru, 5,644,037, Cl. 534-16.000.

Sakai, Tadashi: *See*—
Suzuki, Taketoshi; Sakai, Tadashi; Zhang, Li; and Murakami, Taijun, 5,644,156, Cl. 257-485.000.

Sakai, Takako; Liu, Hongjun; Kurihara, Hiroyuki; and Imamura, Jun, to Mitsubishi Chemical Corporation. Methods for introducing a fertility restorer gene and for producing F_1 hybrid of Brassica plants thereby. 5,644,066, Cl. 800-220.000.

Sakai, Toshiyuki: *See*—
Suzuki, Aya; Sakai, Toshiyuki; and Yamagata, Yasutaka, 5,644,292, Cl. 340-506.000.

Sakaino, Go: *See*—
Kawano, Minoru; and Sakaino, Go, 5,644,586, Cl. 372-44.000.

Sakakibara, Toshio: *See*—
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Sakamoto, Junichi: *See*—
Welt, Sydney; Divgi, Chaitanya R.; Yeh, Samual; Old, Lloyd J.; Oettgen, Herbert F.; Real, Francisco X.; and Sakamoto, Junichi, 5,643,550, Cl. 424-1.850.

Sakamoto, Manabu; and Iwasaki, Koichi, to Ikeda Bussan Co., Ltd. Moveable headrest. 5,642,918, Cl. 297-408.000.

Sakamoto, Naoya: *See*—
Arai, Michio; Yamauchi, Yukio; Sakamoto, Naoya; and Nagano, Katsuto, 5,643,804, Cl. 437-21.000.

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Sakata, Toshiyasu: *See*—
Miura, Hiroshi; Ariyama, Masato; Iida, Kazuyuki; Iwahara, Kazufumi; Okano, Mitsunobu; Orihara, Hiroyuki; Katsumata, Akira; Sakata, Toshiyasu; Nishimura, Masaharu; Hamamura, Hirofumi; Murakami, Naoki; Yasuda, Mitsuru; Yamashita, Yasuhiro; Yamada, Ryouji; and Yamane, Atsushi, 5,644,500, Cl. 364-490.000.

Sako, Hiroyuki; and Yamauchi, Tokushi, to Matsushita Electric Works, Ltd. Power source device. 5,644,480, Cl. 363-17.000.

Sakuma, Sadayuki: *See*—
Omori, Shigeru; Hattori, Tomohiko; Katayama, Kunimasa; and Sakuma, Sadayuki, 5,644,427, Cl. 359-464.000.

Sakurai, Kunihiko: *See*—
Katsuoka, Seiji; Sakurai, Kunihiko; and Togawa, Tetsuji, 5,643,067, Cl. 451-444.000.

Sakyo, Tsuyoshi: *See*—
Kondoh, Yoshiyuki; Sakyo, Tsuyoshi; Iwase, Yoshimi; Tomita, Sadahisa; Komatsu, Kazunori; and Tamura, Kazuhisa, 5,643,080, Cl. 454-155.000.

Salan, Yves Francois André: *See*—
Alary, Jean-Paul Daniel; Ansart, Denis Roger Henri; Salan, Yves Francois André; and Sandelis, Denis Jean Maurice, 5,642,621, Cl. 60-747.000.

Salem Engelhard: *See*—
Collard, Wayne G.; Gribbon, Sean T.; and Woodside, Kenneth R., 5,643,539, Cl. 422-178.000.

Salerno, Mark; and Dick, Eric R., to JAS Manufacturing Co., Inc. AC motor driven treadmill. 5,643,142, Cl. 482-54.000.

Sales, James J.: *See*—
Cullinan, George J.; and Sales, James J., 5,643,896, Cl. 514-146.000.

Salice, Luciano, to Arturo Salice S.p.A. Fastening element. 5,642,960, Cl. 403-407.100.

Salomon S.A.: *See*—
Couderc, Bernard; and Szafranski, Pierre, 5,642,897, Cl. 280-605.000.

Salsman, Kenneth E.: *See*—
Onyskevych, Lubomyr Stephen; Cherukuri, Satyam C.; Prabhu, Ashok Narayan; Yocom, P. Niel; and Salsman, Kenneth E., 5,644,327, Cl. 345-80.000.

Salzman, Philip M.: *See*—
Somekh, Sasson R.; Salzman, Philip M.; and Vierny, Oskar U., 5,643,366, Cl. 118-721.000.

Samanen, James Martin: *See*—
Ali, Fadia El-Fehail; and Samanen, James Martin, 5,643,872, Cl. 514-11.000.

Sample, Stephen P.; D'Amour, Michael R.; and Payne, Thomas S., to Quicktum Design Systems, Inc. Hardware logic emulation system capable of probing internal nodes in a circuit design undergoing emulation. 5,644,515, Cl. 364-578.000.

Sams, Gary W.; Prestridge, Floyd L.; and Inman, Merle B., to National Tank Company. Method for augmenting the coalescence of water in a water-in-oil emulsion. 5,643,431, Cl. 204-564.000.

Samsonov, Nikolai Mikhailovich: *See*—
Abramov, Grigory Khananovich; Amiragov, Mikhail Sergeevich; Astafiev, Valery Borisovich; Berezkin, Sergei Valentinovich; Bobe, Leonid Sergeevich; Bykov, Viktor Pavlovich; Vasiliev, Jury Borisovich; Gordeev, Vladimir Mikhailovich; Djukova, Eleonora Sergeevna; Novikov, Vladimir Mikhailovich; Podrugin, Alexandr Yakovlevich; Protasov, Nikolai Nikolaevich; Razguiina, Margarita Dmitrievna; Samsonov, Nikolai Mikhailovich; Sinyak, Galina Sergeevna; Sinyak, Jury Emelyanovich; and Farafonov, Nikolai Sergeevich, 5,643,457, Cl. 210-668.000.

Samsung Aerospace Industries, Ltd.: *See*—
Roh, Hyoung-ho, 5,644,164, Cl. 257-712.000.

Samsung Display Devices Co., Ltd.: *See*—
Park, Dae-in, 5,642,571, Cl. 34-202.000.

Samsung Electro-Mechanics Co., Ltd.: *See*—
Choi, Cheon, 5,644,419, Cl. 359-198.000.

SamSung Electronics co., Ltd.: *See*—
Hwang, Yong-Duk, 5,644,210, Cl. 320-22.000.
Hyun, In Ho; Lee, Sang Hyeong; and Kim, Il Ung, 5,644,247, Cl. 324-755.000.
Jang, Young-Soo, 5,643,810, Cl. 437-31.000.
Kim, Kyung-seob; Kim, Chi-woo; Kweon, Young-chan; and Chang, Won-kie, 5,643,817, Cl. 437-51.000.
Lee, Hoon-chul, 5,644,214, Cl. 323-211.000.
Son, Woog-Ig; and Yun, Ki-Bong, 5,644,561, Cl. 369-58.000.

Samsung Heavy Industry Co., Ltd.: *See*—
Kim, Kang-Hyung; Park, Maeng-Roh; Yang, Seung-Ho; and Chi, Yong-Kwon, 5,643,531, Cl. 420-64.000.

Samsung Information Systems America, Inc.: *See*—
Chan, John R.; and Burt, Jeffrey R., 5,644,451, Cl. 360-105.000.

Samukawa, Katsuhiko; and Honda, Yuji, to Nippondenso Co., Ltd. Air conditioner. 5,642,856, Cl. 236-49.300.

Sanabria, Gaspar. Kit for adding wheels to an in-line roller skate. 5,642,894, Cl. 280-11.270.

Sanchez, Jose, to Elf Atochem North America, Inc. Multi-component ethylenically unsaturated peroxyesters. 5,644,004, Cl. 525-444.000.

Sanchez, Manuel; Deans, Michael S.; Holmes, Wilbur R.; and Holmes, Susan L. Spa weir gate. 5,642,534, Cl. 4-507.000.

Sandelis, Denis Jean Maurice: *See*—
Alary, Jean-Paul Daniel; Ansart, Denis Roger Henri; Salan, Yves Francois André; and Sandelis, Denis Jean Maurice, 5,642,621, Cl. 60-747.000.

Sandelman, David; and Shprecher, Daniel E., to Heat timer Corporation. Snow melt control system. 5,643,482, Cl. 219-497.000.

Sander, Hans-Jürgen: *See*—
Hoffmann, Kurt; Herbst, Heinz; Pfaendner, Rudolf; Sander, Hans-Jürgen; and Sitek, Franciszek, 5,643,985, Cl. 524-291.000.

Sander, Thomas W.; Gangnath, Robert; and Lee, Daniel R., to United States Surgical Corporation. Orthopedic fastener applicator kit. 5,643,274, Cl. 606-104.000.

Sanderson, Leon Franklin, to Deere & Company. Shaft structure for a cotton harvester doffer column. 5,642,608, Cl. 56-28.000.

Sandhu, Gurtej S.; and Doan, Trung Tri, to Micron Technology, Inc. System for real-time control of semiconductor wafer polishing including heater. 5,643,060, Cl. 451-285.000.

Sandor, Istvan: *See*—
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Sandoz Ltd.: *See*—
Boelsterli, Johann Jakob; Eberle, Marcel Karl; Naef, Reto; and Payne, Trevor Glyn, 5,643,870, Cl. 514-11.000.
Dreyfuss, Michael Morris; Emmer, Gerhard; Grassberger, Maximilian; Rüedi, Klaus; and Tscherter, Hans, 5,643,869, Cl. 514-9.000.

Sane, Jayant N.: *See*—
Provancal, Stephen J.; Carrillo, Angel L.; Fluhler, Thomas J.; Oryszczak, Richard; and Sane, Jayant N., 5,643,558, Cl. 424-66.000.

Sangeeta, D., to General Electric Company. Thermal barrier coating removal on flat and contoured surfaces. 5,643,474, Cl. 216-96.000.

Sani Metal Ltd.: *See*—
Guay, Christian; and Leblond, Guy, 5,642,784, Cl. 169-61.000.

Sankyo Company, Limited: *See*—
Nagano, Mitsuo; Kobayashi, Takeo; Sakai, Junichi; Kozuka, Masao; Iwata, Nobuyoshi; and Kubo, Yoshiko, 5,643,923, Cl. 514-305.000.
Naruto, Shunji; Sugano, Yuichi; Matsuda, Keiichi; Sugimoto, Masahiko; and Oda, Tomiichiro, 5,643,925, Cl. 514-311.000.
Sugimura, Yukio; Tamaki, Kazuhiko; Kobayashi, Tomowo; and Tanzawa, Kazuhiko, 5,643,908, Cl. 514-247.000.

Sano, Akira; Shiraishi, Takeichi; Shimizu, Hiroyuki; Suzuki, Kunihiro; and Matsuura, Kazuo, to Nippon Oil Company, Limited. Process for preparing polyolefins. 5,644,008, Cl. 526-116.000.

Sanofi Winthrop, Inc.: *See*—
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Sansha Electric Manufacturing Company, Limited: *See*—
Karino, Kunio; Moriguchi, Haruo; Fujiyoshi, Toshikazu; Kinoshita, Atsushi; and Hashimoto, Takashi, 5,643,475, Cl. 219-121.570.

Sanshin Kogyo Kabushiki Kaisha: *See*—
Osakabe, Takayuki, 5,643,021, Cl. 440-61.000.
Suzuki, Takayoshi, 5,643,025, Cl. 440-88.000.

Santarini, Marc: *See*—
Benmalek, Mohamed; and Santarini, Marc, 5,643,434, Cl. 205-109.000.

Sanyo Seiki Mfg. Co., Ltd.: *See*—
Naito, Hayato; and Uchikoshi, Isao, 5,644,203, Cl. 318-439.000.

Sapim Amada S.p.A.: *See*—
Codatto, Antonio, 5,642,639, Cl. 72-319.000.

SAR S.p.A.: *See*—
Mascitelli, Francesco, 5,642,908, Cl. 285-148.190.

Sara Lee Corporation: *See*—
Thompson, Ken J.; Everhart, John R.; Foster, Wayne G.; and Trotter, David S., 5,642,680, Cl. 112-470.140.
Williams, Jeffrey A.; and Miller, Charles E., 5,643,071, Cl. 452-50.000.

Sarde, Claude: *See*—
Mandel, Jean-Louis; Aubourg, Patrick; Mosser, Jean; and Sarde, Claude, 5,644,045, Cl. 536-23.500.

Sargis, Ike. Switch stand. 5,642,870, Cl. 246-406.000.

Sarkari, Zarir: *See*—
Joly, Christian; Ducaroir, Francois; Sarkari, Zarir; and Wu, Allen, 5,644,498, Cl. 364-489.000.

Sarkari, Zarir B.: *See*—
Colwell, Michael; Rajsuman, Rochit; Abrishami, Ray; and Sarkari, Zarir B., 5,644,251, Cl. 326-16.000.

Sarraf, Sanwal Prasad, to Eastman Kodak Company. Apparatus and method for eliminating feedback noise in laser thermal printing. 5,644,353, Cl. 347-224.000.

Sartori, Guido; Savage, David W.; Gorbaty, Martin L.; and Ballinger, Bruce Henry, to Exxon Research and Engineering Company. Process for neutralization of petroleum acids using alkali metal trialkylsilanolates. 5,643,439, Cl. 208-47.000.

Sasaki, Shigemi: *See*—
Toriyama, Masayuki; Tamaki, Kenji; Honda, Satoshi; Motodate, Shoji; Nakazawa, Yoshihiro; Fujii, Takaaki; and Sasaki, Shigemi, 5,644,202, Cl. 318-369.000.

Sasaki, Yoshihiko: *See*—
Yoshii, Kinya; Ichioka, Eiji; Koide, Takeharu; and Sasaki, Yoshihiko, 5,643,127, Cl. 475-160.000.

Sasaki, Yoshimi: *See*—
Hirose, Masayoshi; Ishikawa, Seiji; Kimura, Norio; Sasaki, Yoshimi; Yamada, Kouki; Aoyama, Fujio; Shimizu, Noburu; and Okumura, Katsuya, 5,643,056, Cl. 451-41.000.

Sasse, Philip Anthony: *See*—
Griesbach, Henry Louis, III; Pike, Richard Daniel; Gwaltney, Sharon Watkins; Levy, Ruth Lisa; Sawyer, Lawrence Howell; Shane, Richard Macferran; and Sasse, Philip Anthony, 5,643,653, Cl. 428-120.000.

Sasso, Ricardo C.; and Justin, Daniel F., to Sasso, Ricardo C. Spine fixation instrumentation. 5,643,259, Cl. 606-61.000.

Sastre, Michael. Stamping structure. 5,642,667, Cl. 101-405.000.

Sata, Ichiko: *See*—
Fukumochi, Yoji; Okunishi, Toshiyuki; Sata, Ichiko; and Kutsumi, Takeshi, 5,644,774, Cl. 395-754.000.

Sato, Jun: *See*—
Hamaguchi, Naoru; Sato, Jun; and Doken, Kazuhiro, 5,643,564, Cl. 424-85.100.

Sato, Kazuhiro, to Ricoh Company, Ltd. Composite facsimile apparatus having function for acheiving efficient use of limited resources. 5,644,405, Cl. 358-404.000.

Sato, Masayuki: *See*—
Ando, Makoto; Kagami, Toshiki; Murakami, Takaaki; Sato, Masayuki; Kasahara, Noriko; Ito, Kengo; Hida, Masanobu; and Mizumachi, Motohiro, 5,644,350, Cl. 347-101.000.

Sato, Noriko: *See*—
Kato, Masayuki; Aritake, Hirokazu; Ishimoto, Manabu; Sato, Noriko; and Nakashima, Masato, 5,644,414, Cl. 359-22.000.

Sato, Shinichiro: *See*—
Hirate, Ken; Kaneko, Kazumi; Sato, Shinichiro; and Watagami, Kazunori, 5,643,795, Cl. 435-299.100.

Sato, Shuji: *See*—
Inoue, Satoshi; Suzuki, Chiaki; Torigoe, Tetsu; Sato, Shuji; and Fujii, Takahisa, 5,643,705, Cl. 430-110.000.

Satoh, Toshihiko: *See*—
Iwasawa, Yoshikazu; Aoyama, Tetsuya; Kawakami, Kumiko; Arai, Sachie; Satoh, Toshihiko; and Monden, Yoshiaki, 5,643,958, Cl. 514-568.000.

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Brianti, Francesco; Alini, Roberto; Pisati, Valerio; and Gadducci, Paolo, 5,644,267, Cl. 327-553.000.
Mazzali, Stefano, 5,644,526, Cl. 365-51.000.
Pascucci, Luigi; and Padoan, Silvia, 5,644,529, Cl. 365-185.050.
Shabrang, Mani; Babinec, Susan J.; and Varjian, Richard D., to Dow Chemical Company, The. Iridium oxide counterelectrode for electrochromic devices. 5,644,421, Cl. 359-269.000.
Shafer, Alan Wayne: *See*—
Snodgrass, H. Ralph; Cioffi, Joseph; Zupancic, Thomas Joel; and Shafer, Alan Wayne, 5,643,748, Cl. 435-69.100.
Shafer, Dennis: *See*—
Warner, Rex; Meadows, Cyndi M.; and Shafer, Dennis, 5,642,810, Cl. 206-389.000.
Shah, Chandrakant Shantilal: *See*—
Jacobson, Howard Wayne; Kurian, Joseph V.; Sackinger, Scott Thomas; and Shah, Chandrakant Shantilal, 5,643,592, Cl. 424-409.000.
Shalit, Andrew L. M.: *See*—
Jones, Jeremy A.; Mayle, Neil L.; Parsons, Paige K.; Shalit, Andrew L. M.; and Strassmann, Steven H., 5,644,334, Cl. 345-119.000.
Shamp, Donald Ellsworth; Stark, Thomas Fowler; and Swisher, Harry Earl, Jr., to Schuller International, Inc. Oxygen/fuel fired furnaces having massive, low velocity, turbulent flame clouds. 5,643,348, Cl. 65-134.400.
Shamshoum, Edwar Shoukri: *See*—
Reddy, Baireddy Raghava; and Shamshoum, Edwar Shoukri, 5,643,846, Cl. 502-104.000.
Shane, Richard Macferran: *See*—

Griesbach, Henry Louis, III; Pike, Richard Daniel; Gwaltney, Sharon Watkins; Levy, Ruth Lisa; Sawyer, Lawrence Howell; Shane, Richard Macferran; and Sasse, Philip Anthony, 5,643,653, Cl. 428-120.000.
Shapiro, Ascher H.: *See—*
Leung, Woon-Fong; Shapiro, Ascher H.; and Yarnell, Robert S., 5,643,169, Cl. 494-53.000.
Shapiro, Irving: *See—*
Ducheyne, Paul; El-Ghannam, Ahmed; and Shapiro, Irving, 5,643,789, Cl. 435-402.000.
Shapiro, Michael: *See—*
Chakravarti, Ashima B.; Cheng, Terry M.; Van Nguyen, Son; and Shapiro, Michael, 5,643,640, Cl. 427-578.000.
Sharan, Sujit: *See—*
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Sharp Kabushiki Kaisha: *See—*
Fukumochi, Yoji; Okunisbi, Toshiyuki; Sata, Ichiko; and Kutsumi, Takeshi, 5,644,774, Cl. 395-754.000.
Hamada, Toshimasa; Iwasaki, Masaru; Hanamoto, Tetsuya; Katoh, Shohichi; Funakoshi, Takahiro; Miyake, Koji; and Nakamichi, Masumi, 5,644,124, Cl. 250-216.000.
Iketani, Naoyasu; Katayama, Hiroyuki; Nakayama, Junichiro; and Ohta, Kenji, 5,643,687, Cl. 428-694.0ML.
Koden, Mitsuhiro; Miyazaki, Aya; and Shinomiya, Tokihiko, 5,644,371, Cl. 349-110.000.
Kubota, Yasushi, 5,644,527, Cl. 365-63.000.
Miyamoto, Satoru; Shiraishi, Naoki; Isoe, Toshio; and Haneda, Isamu, 5,644,722, Cl. 395-209.000.
Nakayama, Junichiro; Mieda, Michinobu; Katayama, Hiroyuki; Hirokane, Junji; Takahashi, Akira; and Ohta, Kenji, 5,644,566, Cl. 369-275.200.
Onishi, Noriaki; Okamoto, Masayuki; Hirai, Toshiyuki; Yamada, Nobuaki; Nagae, Nobukazu; Kondo, Masahiko; and Terashita, Shinichi, 5,643,471, Cl. 216-23.000.
Tamagaki, Akira; Taniguchi, Tsutomu; Ueda, Nobuyuki; Oka, Masami; Matsumoto, Kenji; and Miyoshi, Fuminori, 5,644,411, Cl. 358-529.000.
Sharp, R. Douglas: *See—*
Bielby, Gregory J.; Gupta, Vishwa N.; Hodgson, Lauren C.; Lennig, Matthew; Sharp, R. Douglas; and Wasmeier, Hans A., 5,644,680, Cl. 395-2.490.
Sharples, James Henry, to Pifco Limited. Liquid heating apparatus. 5,642,725, Cl. 126-369.000.
Shaw, David N. Multi-rotor helical screw compressor. 5,642,992, Cl. 418-152.000.
Shaw, John Henry, Jr.: *See—*
Mermelstein, Robert; Baker, Ellen Schmidt; Shaw, John Henry, Jr.; and Wahl, Errol Hoffman, 5,643,865, Cl. 510-521.000.
Shaw, Mark D.; Heyman, J. Tad; Bierce, Laurence M.; and Ehredt, Jesse. Secondary containment reservoir device. 5,642,834, Cl. 220-720.000.
Shaw, William J.: *See—*
Tsukernik, Vladimir B.; and Shaw, William J., 5,643,318, Cl. 606-214.000.
Shebanow, Michael C.: *See—*
Shen, Gene W.; Szeto, John; Patkar, Niteen A.; and Shebanow, Michael C., 5,644,742, Cl. 395-591.000.
Shell Oil Company: *See—*
Morrison, Denby Grey; Smolinski, Susan Lyon; Marshall, Peter William; Huete, David Amstrong; and Gonzalez, Romulo, 5,642,966, Cl. 405-195.100.
Padula, Joseph Anthony; Williams, Owen Ricardo; Abraham, Mark Frederick; and Ramsey, William Dale, Jr., 5,644,119, Cl. 235-384.000.
Shelly, William A.: *See—*
Yoder, Ronald W.; Lange, Ronald E.; Shelly, William A.; Guenthner, Russell W.; and Demers, Richard L., 5,644,761, Cl. 395-595.000.
Shelton, Lawrence S.: *See—*
Gabriel, William L.; Shelton, Lawrence S.; Sygnator, Henry A.; and Eckmann, Elizabeth J., 5,642,974, Cl. 411-453.000.
Shen, Gene W.; Szeto, John; Patkar, Niteen A.; and Shebanow, Michael C., to Hal Computer Systems, Inc. Processor structure and method for a time-out checkpoint. 5,644,742, Cl. 395-591.000.
Shendon, Norm, to Applied Materials, Inc. Chemical mechanical polishing apparatus with improved polishing control. 5,643,053, Cl. 451-28.000.
Shepard, Joseph Francis: *See—*
Accocella, Joyce Elizabeth; Galli, Carol; Hsu, Louis Lu-Chen; Ogura, Seiki; Rovedo, Nivo; and Shepard, Joseph Francis, 5,643,813, Cl. 437-43.000.
Sheppard, David William, to Unisys Corporation. Bi-directional data transfer system enabling forward/reverse bit sequences. 5,644,579, Cl. 371-22.300.
Sheppard, George S.; Davidsen, Steven K.; and Summers, James B., to Abbott Laboratories. Indole cyclohexyl platelet activating factor antagonists. 5,643,922, Cl. 514-303.000.
Sherman, Fred P.: *See—*
Striker, Gary E.; Striker, Liliane J.; and Sherman, Fred P., 5,643,892, Cl. 514-54.000.
Sherman, Michael C.; Ray, Eddie, III; Farcy, Jean Pierre; and Tai, Joseph, to Danek Medical, Inc. Iliac screw. 5,643,264, Cl. 606-61.000.
Sherman, Richard A.: *See—*
Schultz, Darald R.; Danielson, Arvin D.; Bunte, Alan G.; Sherman, Richard A.; and Jaeger, Robert B., 5,644,471, Cl. 361-686.000.
Sherwood, Nancy M.: *See—*
Zohar, Yonathan; Sherwood, Nancy M.; Rivier, Jean; Powell, Jim; and Gothilf, Yoav, 5,643,877, Cl. 514-15.000.
Shiba, Kenzo, to Cateye Co., Ltd. Mounting equipment used for an object having a hollow portion of circular cross section. 5,644,439, Cl. 359-819.000.
Shida, Yasunori: *See—*
Totsuka, Hidekazu; Kawagishi, Kenshi; Shida, Yasunori; Mitsushima, Kazuyuki; and Iwata, Yukihiko, 5,642,857, Cl. 236-51.000.
Shieh, Brian: *See—*
Maydan, Dan; Mak, Steve S. Y.; Olgado, Donald; Yin, Gerald Zheyao; Driscoll, Timothy D.; Shieh, Brian; and Papanu, James S., 5,643,394, Cl. 156-345.000.
Shieh, Steven J. Knockdown and reassemble office partition. 5,642,593, Cl. 52-239.000.
Shiels, Paul; Bell, Louis E.; and Gaigl, Martin. Apparatus for melting and pouring metal and metal alloys. 5,642,768, Cl. 164-335.000.
Shiflett, Mark Brandon, to Du Pont de Nemours, E. I., and Company. Constant boiling compositions of HFC-32, HFC-125 and HFC-134 A. 5,643,492, Cl. 252-67.000.
Shih, Yi-Chi: *See—*
Reinhardt, Victor S.; Shih, Yi-Chi; Toth, Paul A.; and Reynolds, Samuel C., 5,644,243, Cl. 324-626.000.
Shikama, Shinsuke, to Mitsubishi Denki Kabushiki Kaisha. Zoom lens system and projection-type display apparatus. 5,644,435, Cl. 359-691.000.
Shikata, Kazushi: *See—*
Miyata, Manabu; Ito, Koji; Kameoka, Teruhiko; Shikata, Kazushi; Matsunaga, Koji; and Sugi, Hikaru, 5,643,079, Cl. 454-139.000.
Shimabukuro, Jill R.: *See—*
Brent, Adam; and Shimabukuro, Jill R., 5,642,818, Cl. 211-70.500.
Shimada, Kazutoshi: *See—*
Sunakawa, Shinichi; Shimada, Kazutoshi; Tatsumi, Eisaku; Suzuki, Noriyuki; and Nagasaki, Katsuhiko, 5,644,653, Cl. 382-187.000.
Shimada, Takaaki: *See—*
Yamaki, Rumi; and Shimada, Takaaki, 5,643,244, Cl. 604-385.200.
Shimada, Yoshihisa, to Kabushiki Kaisha Kawai Gakki Seisakusho. Performance information output device and an automatic performing system provided with the performance information output device. 5,644,097, Cl. 84-609.000.
Shimamura, Seiichi; Tamura, Yoshitaka; Mizota, Teruhiko; Suzawa, Itsuko; and Seki, Nobuo, to Morinaga Milk Industry Co., Ltd. Method for manufacturing lactulose anhydride. 5,644,050, Cl. 536-123.130.
Shimano, Inc.: *See—*
Tabe, Koshi, 5,642,796, Cl. 192-64.000.
Shimaya, Akiyoshi: *See—*
Niigata, Kunihiro; Takahashi, Takumi; Maruyama, Tatsuya; Suzuki, Takayuki; Maeno, Kyoichi; Onda, Kenichi; Kontani, Toru; Noshiro, Osamu; Koike, Reiko; Shimaya, Akiyoshi; and Irie, Jun, 5,643,931, Cl. 514-364.000.
Shimizu, Eiichi: *See—*
Miyano, Toshiki; and Shimizu, Eiichi, 5,644,358, Cl. 348-223.000.
Shimizu, Hiroyuki: *See—*
Sano, Akira; Shiraishi, Takeichi; Shimizu, Hiroyuki; Suzuki, Kunihiro; and Matsuura, Kazuo, 5,644,008, Cl. 526-116.000.
Shimizu, Hisashi: *See—*
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Shimizu, Noburu: *See—*
Hirose, Masayoshi; Ishikawa, Seiji; Kimura, Norio; Sasaki, Yoshimi; Yamada, Kouki; Aoyama, Fujio; Shimizu, Noburu; and Okumura, Katsuya, 5,643,056, Cl. 451-41.000.
Shimizu, Tamio, to NEC Corporation. Semiconductor device having plural memories which synchronously generate acess allow signals. 5,644,535, Cl. 365-189.010.
Shimizu, Yoshiaki: *See—*
Tawara, Yoshio; Tokunaga, Katsushi; Kaneko, Hideo; and Shimizu, Yoshiaki, 5,643,650, Cl. 428-64.300.
Shimomura, Mariko; Miyashita, Naoto; and Ohashi, Hiroyuki, to Kabushiki Kaisha Toshiba. Chemical-mechanical polishing (CMP) method for controlling polishing rate using ionized water, and CMP apparatus. 5,643,406, Cl. 156-636.100.
Shimonaka, Motoyuki: *See—*
Yamaguchi, Yu; and Shimonaka, Motoyuki, 5,644,026, Cl. 530-326.000.
Shimoyama, Noboru; and Kaneko, Masanori, to Canon Kabushiki Kaisha. Control of print cartridge movement in an ink jet recording apparatus. 5,644,348, Cl. 347-37.000.
Shimura, Norio; and Bannai, Yuichi, to Canon Kabushiki Kaisha. Image retrieving method and apparatus that calculates characteristic amounts of data correlated with and identifying an image. 5,644,765, Cl. 395-615.000.
Shimura, Yukihiro, to NEC Corporation. Method of indicating a portable unit of a cordless telephone instrument out of operational area and its device. 5,644,620, Cl. 455-421.000.
Shin, Chan-Hee: *See—*
Ahn, Chung-Il; and Shin, Chan-Hee, 5,643,635, Cl. 427-257.000.
Shin-Etsu Chemical Co., Ltd.: *See—*
Kaneyoshi, Masami; Fujioka, Isamu; and Sakai, Shigeru, 5,644,037, Cl. 534-16.000.
Kubota, Yoshihiro; and Mogi, Hiroshi, 5,643,483, Cl. 219-543.000.
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Tawara, Yoshio; Tokunaga, Katsushi; Kaneko, Hideo; and Shimizu, Yoshiaki, 5,643,650, Cl. 428-64.300.
Shin-Etsu Handotai Kabushiki Kaisha: *See—*

Ootaki, Toshio; Nakamura, Akio; Tamura, Yuuki; Yanagisawa, Munehisa; and Higuchi, Susumu, 5,643,827, Cl. 437-127.000.
Shin, Hyunkook: *See—*
McGinty, David Jackson; Powers, Ervin Townsend, Jr.; Shin, Hyunkook; Siemionko, Roger Keith; and Taylor, David Martin, 5,643,525, Cl. 264-469.000.
Shindoh, Masuo; Shirakawa, Masayoshi; Kohtoh, Noriaki; and Aoki, Atsumi, to Nissan Chemical Industries Ltd. Flame retardant thermoplastic resin composition. 5,643,980, Cl. 524-100.000.
Shingu, Yoshiaki; and Ueda, Yasushi, to Kurimoto, Ltd. Non-magnetic high manganese cast product. 5,643,530, Cl. 420-56.000.
Shinjo, Katsuhiko; Kaneko, Tetsuya; Kaneko, Shuzo; and Tsukamoto, Takeo, to Canon Kabushiki Kaisha. Liquid crystal display device having protrusions on the electrodes. 5,644,372, Cl. 349-139.000.
Shinkai, Masaru: *See—*
Maruyama, Tohru; Saito, Masatoshi; Terashi, Taro; Watanabe, Hisao; Fujita, Shigeru; Shinkai, Masaru; and Sugawara, Tomoaki, 5,642,550, Cl. 15-102.000.
Shinko Electric Industries Co., Ltd.: *See—*
Fukase, Katsuya; Iijima, Takahiro; Nakazawa, Masao; and Wakabayashi, Shinichi, 5,643,433, Cl. 205-78.000.
Shinnishi, Toshio: *See—*
Takahashi, Masanobu; Tai, Shuichi; Kojima, Keisuke; Shinnishi, Toshio; and Kyuma, Kazuo, 5,644,681, Cl. 395-23.000.
Shinomiya, Tokihiko: *See—*
Koden, Mitsuhiro; Miyazaki, Aya; and Shinomiya, Tokihiko, 5,644,371, Cl. 349-110.000.
Shiobara, Toshio; and Shimizu, Hisashi, to Shin-Etsu Chemical Company, Limited. Epoxy resin compositions and cured products. 5,643,975, Cl. 523-400.000.
Shiomi, Yutaka: *See—*
Arai, Noriyuki; Shiomi, Yutaka; Nakamura, Hiroshi; and Saito, Noriaki, 5,644,003, Cl. 525-423.000.
Shiota, Atushi: *See—*
Uehara, Shotaro; Mitsui, Munehiro; Atomori, Seiichi; Furuyama, Tateki; Shiota, Atushi; Fujimura, Mineo; and Nagata, Masaki, 5,643,990, Cl. 524-496.000.
Shiotsuki, Kazuya: *See—*
Dobashi, Akihiko; Himori, Hirotugu; Yamamoto, Osamu; Shiotsuki, Kazuya; and Tomiyama, Muneaki, 5,643,676, Cl. 428-411.100.
Shioya, Yasushi; Sugita, Yasutoshi; Yoshioka, Kiyoharu; and Nakashima, Yoshiaki, to Canon Kabushiki Kaisha. Information processing apparatus support system with support arms which are capable of closing toward a keyboard unit or away from a keyboard unit. 5,644,469, Cl. 361-681.000.
Shiraishi, Naoki: *See—*
Miyamoto, Satoru; Shiraishi, Naoki; Isoe, Toshio; and Haneda, Isamu, 5,644,722, Cl. 395-209.000.
Shiraishi, Takeichi: *See—*
Sano, Akira; Shiraishi, Takeichi; Shimizu, Hiroyuki; Suzuki, Kunihiro; and Matsuura, Kazuo, 5,644,008, Cl. 526-116.000.
Shirakawa, Masayoshi: *See—*
Shindoh, Masuo; Shirakawa, Masayoshi; Kohtoh, Noriaki; and Aoki, Atsumi, 5,643,980, Cl. 524-100.000.
Shirosaki, Kazuo: *See—*
Yamamoto, Iwao; Aikyo, Hiroyuki; Yoshiya, Akihiko; and Shirosaki, Kazuo, 5,643,546, Cl. 423-447.200.
Shishikura, Nobuo; and Ogiu, Makiko, to Kabushiki Kaisha Toshiba. Reset circuit and integrated circuit including the same. 5,644,259, Cl. 327-143.000.
Sho, Katsuhiko; Nishio, Masahiro; Saitoh, Koichi; Aoki, Kei; and Yagi, Tohru, to Nippon Paint Co., Ltd. Room-temperature curable waterbased coating compositions. 5,643,977, Cl. 523-411.000.
Shockey, Kenneth B.: *See—*
Calabrese, Frank A.; Shockey, Kenneth B.; Wisman, Franklin O.; and McCarney, David A., 5,642,690, Cl. 119-721.000.
Shoenhair, John J., to Select Comfort Corporation. Inflatable mattress with improved border support wall. 5,642,546, Cl. 5-680.000.
Shone, Robert L.: *See—*
Flynn, Daniel Lee; and Shone, Robert L., 5,643,917, Cl. 514-290.000.
Short, Charles G. Traveling valve ball displacing tool. 5,642,990, Cl. 417-444.000.
Shouman, Ahmad R. Combustion method for power generation. 5,642,613, Cl. 60-39.050.
Showa Denko K.K.: *See—*
Hayashi, Hidenori; Mizuta, Takao; Sagae, Ichiro; and Watanabe, Naotoshi, 5,643,979, Cl. 524-100.000.
Matsuoka, Masami; and Aoyagi, Hikaru, 5,643,997, Cl. 525-71.000.
Shprecher, Daniel E.: *See—*
Sandelman, David; and Shprecher, Daniel E., 5,643,482, Cl. 219-497.000.
Shtivelman, Emilya: *See—*
Namikawa, Reiko; Kyoizumi, Seishi; Shtivelman, Emilya; and McCune, Joseph M., 5,643,551, Cl. 424-9.100.
Shuey, John Raymond: *See—*
Myer, John Mark; and Shuey, John Raymond, 5,643,003, Cl. 439-352.000.
Shult, Peter Alan: *See—*
Gravenstein, Stefan; Shult, Peter Alan; Miller, Barbara Ann; and Lowder, James Norman, 5,643,202, Cl. 604-54.000.
Shultz, Jeffrey J.: *See—*
Lurie, Keith G.; Benditt, David G.; Shultz, Jeffrey J.; Ockuly, John David; and Fleischhacker, John J., 5,643,231, Cl. 604-282.000.
Siddall, Walter Franklin: *See—*
Bozzuto, Carl Richard; Bianca, Joseph David; and Siddall, Walter Franklin, 5,642,614, Cl. 60-39.182.
Siddioui, Farhan: *See—*
Marrelli, John David; Brost, Dale Francis; Siddioui, Farhan; Pepin, Lisa Langford; and Stafford, Joseph David, 5,644,244, Cl. 324-637.000.
Sides, Douglas W.: *See—*
White, Jack D., Jr.; and Sides, Douglas W., 5,643,378, Cl. 156-87.000.
Siecor Corporation: *See—*
Genovese, Michael D.; Lochkovic, Gregory A.; and Mills, Gregory A., 5,643,393, Cl. 156-344.000.
Siegenthaler, Kenneth E.; and Rotge, James R., to Aptek, Inc. (Siegenthaler). Grin optical system. 5,644,122, Cl. 250-214.0VT.
Sieleman, Jim: *See—*
Besnard, Philippe; Tang, Larry; Rugge, Richard L.; Sieleman, Jim; and Dumontier, Franck, 5,643,112, Cl. 473-350.000.
Siemens Aktiengesellschaft: *See—*
Biedermann, Ernst; El Mekki, Manfred Ben; Weisheit, Kenneth; Griebsch, Thomas; and Ross, Gerhard, 5,644,140, Cl. 250-559.080.
Dohmstreich, Wolfgang; and Windsheimer, Klaus, 5,644,222, Cl. 324-74.000.
Grosse-Wilde, Hubert; Kieser, Jörg; Jaehner, Wilfried; Pohl, Fritz; Steger, Reinhard; and Vogel, Gert, 5,644,283, Cl. 338-20.000.
Ho, Herbert; Hammerl, Erwin; Dobuzinsky, David M.; Palm, J. Herbert; Fugardi, Stephen; Ajmera, Atul; Moseman, James F.; and Ramac, Samuel C., 5,643,823, Cl. 437-67.000.
Lange, Gerhard; Westebbe, Thomas; and Bluhm, Michael, 5,644,465, Cl. 361-120.000.
Meister, Thomas; and Stengl, Reinhard, 5,643,836, Cl. 437-228.000.
Schmelz, Helmut, 5,643,536, Cl. 422-105.000.
Schulze-Kahlayss, Rainer; and Hierl, Robert, 5,643,401, Cl. 156-505.000.
Skalsky, Peter, 5,644,570, Cl. 370-468.000.
Weber, Karl; Spichtinger, Klaus; and Kremer, Karl-Theo, 5,644,754, Cl. 395-500.000.
Siemens Automotive Corporation: *See—*
Wakeman, Russell J.; and Bergstrom, John, 5,642,862, Cl. 239-585.400.
Siemens Automotive S.A.: *See—*
Cerf, Patrice; Le Quellec, Jean-Michel; and Demaya, Bernard, 5,642,707, Cl. 123-339.230.
Siemens Energy & Automation, Inc.: *See—*
Schoen, Randy; and Habetler, Thomas G., 5,644,458, Cl. 361-31.000.
Siemens Measurements Limited: *See—*
Spendel, Karl Damian, 5,644,090, Cl. 73-861.270.
Siemens Schweiz AG: *See—*
Bidese, Werner, 5,644,598, Cl. 375-258.000.
Siemionko, Roger Keith: *See—*
McGinty, David Jackson; Powers, Ervin Townsend, Jr.; Shin, Hyunkook; Siemionko, Roger Keith; and Taylor, David Martin, 5,643,525, Cl. 264-469.000.
Sigman, William T.: *See—*
Feifer, Joseph P.; Grubb, Mary B.; Rupp, Claude R., Jr.; and Sigman, William T., 5,643,677, Cl. 428-424.600.
Sih, Gilbert C., to Qualcomm Incorporated. Method and apparatus for frequency selective adaptive filtering. 5,644,596, Cl. 375-232.000.
Sikorski, James A.: *See—*
Talley, John J.; Sikorski, James A.; Norman, Bryan H.; Rogers, Roland S., deceased; Devadas, Balekudru; Graneto, Matthew J.; and Carter, Jeffery S., 5,643,933, Cl. 514-372.000.
Sikorsky Aircraft Corporation: *See—*
Matuska, David G.; and Gronenthal, Edward W., 5,642,982, Cl. 416-87.000.
Silbert, Kevin W.: *See—*
Matheson, Derek S.; Silbert, Kevin W.; and Curtin, Christian C., 5,644,135, Cl. 250-454.110.
Silence, Scott M.: *See—*
Brillson, Leonard J.; Silence, Scott M.; Duggan, Michael J.; and Kazakos, Ann M., 5,643,706, Cl. 430-127.000.
Silicon Gaming, Inc.: *See—*
Alcorn, Allan E.; Barnett, Michael; Giacalone, Louis D., Jr.; and Levinthal, Adam E., 5,643,086, Cl. 463-29.000.
Siliconix incorporated: *See—*
Williams, Richard K.; Yilmaz, Hamza; Cornell, Michael E.; and Chen, Jun Wei, 5,643,820, Cl. 437-60.000.
Siliscape, Inc.: *See—*
Hildebrand, Alfred P.; and Kintz, Gregory J., 5,644,323, Cl. 345-8.000.
Silva, Lalith: *See—*
Althin, Anders; Fernandez, Ben; Elsen, Raymond; Ruzius, Kees; Silva, Lalith; and Washington, George, 5,643,452, Cl. 210-500.230.
Simmons, James A., to Ranpak Corp. Cushioning conversion machine for converting sheet-like material into a cushioning product. 5,643,167, Cl. 493-464.000.
Simmons, Stephen M.: *See—*
Hooker, Jeffery A.; and Simmons, Stephen M., 5,644,141, Cl. 250-559.220.
Simon, Eric: *See—*
Chipian, E. Terry; Simon, Eric; and Theodore, Alexander, 5,642,994, Cl. 433-82.000.
Simon, Marvin K.: *See—*

Divsalar, Dariush; Simon, Marvin K.; and Raphaeli, Dan, 5,644,592, Cl. 375-206.000.
Simons, Adrian: *See*—
Phillips, Robert John; and Simons, Adrian, 5,643,355, Cl. 96-4.000.
Simonson, Peter Melott. Spinal implant connection assembly. 5,643,263, Cl. 606-61.000.
Simonson, Roy, to Cybex International, Inc. Chest press exercise machine and method of exercising. 5,643,152, Cl. 482-100.000.
Simplicity Manufacturing, Inc.: *See*—
Middlesworth, Tommy A.; Penkoske, Donald G.; and Burmesch, Gerald C., 5,642,864, Cl. 241-58.000.
Simpson, Leslie Ainsley; Robson, Keith; Knight, David Trevor; and Williamson, Martin Alec, to Tioxide Group Services Limited. Composite pigmentary material. 5,643,974, Cl. 523-334.000.
Simpson, Matthew, to Norton Company. Synthetic diamond wear component and method. 5,644,089, Cl. 73-760.000.
Simpson, Matthew A., to Saint-Gobain/Norton Industrial Ceramics Corp. Method of manufacturing diamond-coated cutting tool inserts. 5,643,523, Cl. 264-400.000.
Simpson, Richard, to Texas Instruments Incorporated. Comparator scheme. 5,644,521, Cl. 364-736.500.
Simpson, Richard: *See*—
Moyse, Philip; and Simpson, Richard, 5,644,522, Cl. 364-745.020.
Sin, Y. M.; Ling, K. H.; and Lam, T. J., to National University of Singapore. Method for controlling infectious diseases in fish and other aquatic lifeforms in a closed culture system. 5,643,571, Cl. 424-159.100.
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Doherty, Brian J., 5,643,260, Cl. 606-61.000.
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Smith, Johnny N., to Dana Corporation. Strap for retaining a bearing cup in a universal joint assembly. 5,643,090, Cl. 464-130.000.
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Smith, Justin P., to University of Washington. Quantitation and standardization of magnetic resonance measurements. 5,644,232, Cl. 324-309.000.
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SNI Innovation, Inc.: *See*—
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Snodgrass, H. Ralph; Cioffi, Joseph; Zupancic, Thomas Joel; and Shafer, Alan Wayne, to Progenitor, Inc. HU-B1.219, a novel human hematopoietin receptor. 5,643,748, Cl. 435-69.100.
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Soest, Jon F.; Horn, James N.; Lock, Thomas E.; and Mitchell, Gordon L., to U.S. Natural Resources, Inc. Scanning system for lumber. 5,644,392, Cl. 356-237.000.
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Soldatenkova, Tatyana Dmitrievna: *See*—
Komissarova, Irina Alexeevna; Gudkova, Julia Vasileivna; Soldatenkova, Tatyana Dmitrievna; Kondrashova, Tatyana Tikhonovna; and Burbenskaya, Natalya Mikhailovna, 5,643,954, Cl. 514-561.000.
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Solheim, John A., to Karsten Manufacturing Corporation. Golf club head with visual Indicators. 5,643,099, Cl. 473-238.000.
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Solonionov, Moshe; and D'Ambrosia, Robert. System for maintaining a desired spinal curvature of a user suffering from improper alignment of the vertebrae of the spine. 5,643,329, Cl. 607-43.000.
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Gerling, Klaus Guenther; Schreer, Claudia; Schwarz, Petra; and Wendler, Kornelia, 5,644,042, Cl. 536-17.500.
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Son, Woog-Ig; and Yun, Ki-Bong, to SamSung Electronics Co., Ltd. Method of discerning disc in compact disc drive. 5,644,561, Cl. 369-58.000.
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Sonderegger, Marcel, to United States Surgical Corporation. Suture tipping apparatus and method. 5,643,628, Cl. 427-2.310.
Song, Seungyoon Peter, to International Business Machines Corporation. Processing system and method of operation for concurrent processing of branch instructions with cancelling of processing of a branch instruction. 5,644,779, Cl. 395-800.000.
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Aihara, Kenichi; Chiba, Yoshio; and Kihara, Taku, 5,644,674, Cl. 386-52.000.
Ando, Makoto; Kagami, Toshiki; Murakami, Takaaki; Sato, Masayuki; Kasahara, Noriko; Ito, Kengo; Hida, Masanobu; and Mizumachi, Motohiro, 5,644,350, Cl. 347-101.000.
Fukuda, Shinichi, 5,644,307, Cl. 341-68.000.
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Hori, Koji, 5,644,560, Cl. 369-44.340.
Imoto, Hiroshi; Omaru, Atsuo; Azuma, Hideto; Nishi, Yoshio; Gonno, Yoshihisa; and Nagamine, Masayuki, 5,643,426, Cl. 204-294.000.
Inatani, Akihisa; Nagano, Shuichi; Mita, Kanji; Minami, Shuji; Tamura, Haruyuki; Watanabe, Tsutomu; Katsuyama, Akira; Ishikawa, Masami; and Noshitani, Taiji, 5,644,558, Cl. 369-30.000.
Miwa, Hiroyuki; Kanematsu, Shigeru; Gomi, Takayuki; Anmo, Hiroaki; Noguchi, Takashi; Kato, Katsuyuki; Ejiri, Hirokazu; and Ouchi, Norikazu, 5,643,806, Cl. 437-31.000.
Natsume, Yoshitaka, 5,644,368, Cl. 348-737.000.
Okazaki, Toru; Yonemitsu, Jun; Tahara, Katsumi; and Fujinami, Yasushi, 5,644,506, Cl. 364-514.00R.
Otsuka, Yoichi, 5,643,700, Cl. 430-30.000.
Sugita, Takehiro, 5,644,590, Cl. 375-200.000.
Takahashi, Kenichi; Akashi, Hiroyuki; Noda, Kazuhiro; and Tanaka, Koichi, 5,643,490, Cl. 252-62.200.
Takezawa, Hiroyuki, 5,644,278, Cl. 335-210.000.
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Sorens, Andris P. Refuse container attachment apparatus. 5,642,828, Cl. 220-4.030.
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Sorensen, Soren Christian; and Sorensen, Jens Ole, 5,642,554, Cl. 24-16.0PB.
Sorensen, Soren Christian; and Sorensen, Jens Ole, to GB Electrical, Inc. Cable tie having enhanced locking engagement between pawl and ratchet teeth on tongue. 5,642,554, Cl. 24-16.0PB.
Sorin Biomedical Inc.: *See*—
Buckberg, Gerald D.; Heimstaedt, Russell A.; and Taylor, John M., 5,643,191, Cl. 604-4.000.
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Hayes, George T.; and Brydon, Louis B., 5,644,322, Cl. 343-915.000.
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Specollector, Inc.: *See—*
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Spector, Lane I.: *See—*
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Spence, David R. Tinted bottles for food or drugs. 5,643,646, Cl. 428-35.700.
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Spielberger, Richard K.: *See—*
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Spies, Karl-Heinz; Heinemann, Joachim; and Meinig, Uwe, to Firma Carl Freudenberg. Heating module for a combustion engine. 5,642,695, Cl. 123-142.50E.
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Squinto, Stephen P.: *See—*
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Stacpoole, Peter W.; and Bersin, Robert M. Compositions comprising carbonate/bicarbonate buffered dichloroacetic acid and methods for treatment of metabolic and cardiovascular disorders. 5,643,951, Cl. 514-557.000.
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Stark, Duane P.; Sweeney, Michael T.; and Sweeney, James S., Jr., to Tectrix Fitness Equipment. Stationary exercise device having load-controlling braking system. 5,643,146, Cl. 482-63.000.
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Stat Medical Devices Inc.: *See—*
Schraga, Steven, 5,643,306, Cl. 606-182.000.
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Palau, Joseph; and Froment, Jean-Paul, 5,642,758, Cl. 139-57.000.
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Steenbrink, Rob: *See—*
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Steilen, Herbert: *See—*
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Stern, Eric J.: *See—*
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Stipe, Candace Michele; Hanson, Scott Arnold; and McConnell, Richard Leon, to Eastman Chemical Company. Copolyester compositions containing carbon black. 5,643,991, Cl. 524-496.000.
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Stokes, James P.: *See—*
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Strahilevitz, Meir. Immunological assay methods. 5,643,732, Cl. 435-7.100.
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Strait, David S., to Climax Portable Machine Tools, Inc. Portable machine tool. 5,642,969, Cl. 408-124.000.
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Striker, Gary E.; Striker, Liliane J.; and Sherman, Fred P., to Baker Norton Pharmaceuticals, Inc.; and United States of America, Health and Human Services. Method of treating chronic progressive vascular diseases. 5,643,892, Cl. 514-54.000.
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Strock, Thomas W.; and Dykshoorn, Paul, to Babcock & Wilcox Company, The. Dry scrubber with forced recirculation. 5,643,344, Cl. 55-226.000.
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Stuart, W. Dorsey, to University of Hawaii. Heterologous dimeric proteins produced in heterokaryons. 5,643,745, Cl. 435-69.100.
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Sturzebecher, Dana J.; Cummings, Michael T.; Higgins, Thomas P.; and DeMarco, James R., to United States of America, Army. Multi-layer controllable impedance transition device for microwaves/millimeter waves. 5,644,276, Cl. 333-236.000.
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Sucre F, Alfredo. Prefabricated building system. 5,642,594, Cl. 52-270.000.
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Sugimura, Yukio; Tamaki, Kazuhiko; Kobayashi, Tomowo; and Tanzawa, Kazuhiko, to Sankyo Company, Limited. Collagenase inhibitor. 5,643,908, Cl. 514-247.000.
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Sugita, Takehiro, to Sony Corporation. Spread spectrum communication apparatus and signal intensity detection apparatus. 5,644,590, Cl. 375-200.000.
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Sulzbach, Hans-Michael; Althausen, Ferdinand; Steilen, Herbert; Raffel, Reiner; Eiben, Robert; and Ebeling, Wilfried, to Maschinenfabrik Hennecke GmbH; and Bayer Aktiengesellschaft. Method and apparatus for foam manufacture using carbon dioxide dissolved under pressure. 5,643,970, Cl. 521-155.000.
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Tsubouchi, Toshiyasu; Okamoto, Satoru; and Ihara, Tomohiko, 5,643,684, Cl. 428-605.000.
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Baehr, Geoffrey G., 5,644,685, Cl. 395-111.000.
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Davidson, Howard L., 5,644,732, Cl. 395-284.000.
Ebrahim, Zahir; Normoyle, Kevin; Nishtala, Satyanarayana; and Van Loo, William C., 5,644,753, Cl. 395-458.000.
Grishakov, Gennady Ivanovich; and Tarasov, Igor Vladimirovich, 5,644,547, Cl. 365-230.050.
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Superconductivity, Inc.: *See*—
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Superseal Corporation: *See*—
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Sutton, Todd R., to Qualcomm Incorporated. Method and apparatus for performing search acquisition in a CDMA communications system. 5,644,591, Cl. 375-200.000.

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Suzuki, Masataka; Ashiya, Hiroyuki; Tanaka, Yoshiyuki; Mochizuki, Shinobu; and Koike, Koji, to Yazaki Corporation. Method of ultrasonic welding. 5,642,852, Cl. 228-110.100.

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Iritani, Kunio; Numazawa, Shigeo; Fujiwara, Kenichi; Yamanaka, Yasushi; Isaji, Akira; and Suzuki, Nobunao, 5,642,627, Cl. 62-156.000.

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Suzuki, Ryuichi: *See*—
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Suzuki, Shintaro, to Doheny Eye Institute. DNA encoding protocadherin-42. 5,643,781, Cl. 435-325.000.

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Suzuki, Takashi: *See*—
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Suzuki, Takayoshi, to Sanshin Kogyo Kabushiki Kaisha. Transmission lubrication system. 5,643,025, Cl. 440-88.000.

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Swanson, Eric J.: *See*—
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Swars, Helmut; and Brück, Rolf, to Emitec, Gesellschaft fuer Emissionstechnologie mbH. Electrically heatable honeycomb body with resistance increased by slits. 5,643,484, Cl. 219-552.000.

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Stark, Duane P.; Sweeney, Michael T.; and Sweeney, James S., Jr., 5,643,146, Cl. 482-63.000.

Sweet, James Sweet; Chen, Tan Jen; and Darnell, Charles P., to Exxon Research and Engineering Company. Membrane process for enhanced distillate or hydrotreated distillate aromatics reduction. 5,643,442, Cl. 208-302.000.

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Shamp, Donald Ellsworth; Stark, Thomas Fowler; and Swisher, Harry Earl, Jr., 5,643,348, Cl. 65-134.400.

Swisher, Robert G.: *See*—
Van De Grampel, Hendrik T.; Hou, Yongsheng; Spencer, Dennis O.; Swisher, Robert G.; and Thimons, Thomas V., 5,643,989, Cl. 524-494.000.

Sybase, Inc.: *See*—
Roy, Shaibal, 5,644,763, Cl. 395-612.000.

Sygnator, Henry A.: *See*—
Gabriel, William L.; Shelton, Lawrence S.; Sygnator, Henry A.; and Eckmann, Elizabeth J., 5,642,974, Cl. 411-453.000.

Symbios Logic Inc.: *See*—
Gallagher, Michael J.; and Jantz, Ray M., 5,644,786, Cl. 395-850.000.
Herbert, Brian K., 5,641,336, Cl. 345-154.000.
Rathunde, Dale F., 5,644,767, Cl. 395-651.000.

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Turkel, David; and Kortenbach, Juergen Andrew, 5,643,307, Cl. 606-184.000.

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Kawaguchi, Dean M., 5,644,601, Cl. 375-295.000.
Li, Chung-Chi; and Wang, Yujiun P., 5,644,408, Cl. 358-448.000.

Synergist LLC: *See*—
Manning, Roberta J., 5,642,572, Cl. 34-621.000.

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Pfister, Jurg R.; and Slate, Doris L., 5,643,909, Cl. 514-253.000.

System One Information Management, L.L.C.: *See*—
Chung, Kieran Sebastian; Megofna, Phillip Mark Perez; Gohil, Bhagirath Nirmalsinh; and Bemos, Jose, 5,644,721, Cl. 395-206.000.

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Namikawa, Reiko; Kyoizumi, Seishi; Shtivelman, Emilya; and McCune, Joseph M., 5,643,551, Cl. 424-9.100.
Tsukamoto, Ann; Baum, Charles M.; Aihara, Yukoh; and Weissman, Irving, 5,643,741, Cl. 435-7.240.

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Couderc, Bernard; and Szafranski, Pierre, 5,642,897, Cl. 280-605.000.

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Szapiro, Jaime Luis; Szames, Leonardo; and Moreno, Saúl, 5,643,224, Cl. 604-238.000.

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Szarek, Walter: *See*—
Kisilevsky, Robert; Szarek, Walter; and Weaver, Donald, 5,643,562, Cl. 424-78.310.

Szeremeta, Wally, to Western Digital Corporation. Self-aligning air bearing for use with servo-track writer. 5,642,943, Cl. 384-100.000.

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Shen, Gene W.; Szeto, John; Patkar, Niteen A.; and Shebanow, Michael C., 5,644,742, Cl. 395-591.000.

Szita, Jeno G.; Ramesh, Subban; Jacobs, William, III; and Brogan, John Colin, to Cytec Technology Corp. Sulfonimide catalysts for coatings. 5,643,682, Cl. 428-524.000.

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Fujima, Taro, 5,642,529, Cl. 2-428.000.

Tabe, Koshi, to Shimano, Inc. Bicycle hub. 5,642,796, Cl. 192-64.000.

Tabuchi, Haruhiko, to Fujitsu Limited. Integrated semiconductor optical devices and method of manufacture employing substrate having alignment groove. 5,644,667, Cl. 385-49.000.

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Suzuki, Masakazu; Mori, Keisuke; and Tachibana, Akifumi, 5,644,650, Cl. 382-132.000.

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Yamashita, Hidehiro; and Tachiyama, Masakazu, 5,644,621, Cl. 455-463.000.

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Hanisch, Wolfgang H.; Fernandes, Pete M.; Taforo, Terrance; and Thomson, James W., 5,643,566, Cl. 424-85.400.

Tahara, Katsumi: *See*—
Okazaki, Toru; Yonemitsu, Jun; Tahara, Katsumi; and Fujinami, Yasushi, 5,644,506, Cl. 364-514.00R.

Tai, Joseph: *See*—
Sherman, Michael C.; Ray, Eddie, III; Farcy, Jean Pierre; and Tai, Joseph, 5,643,264, Cl. 606-61.000.

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Ishikura, Yukio, 5,643,443, Cl. 210-113.000.

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Wong, Shyh-Chyi; and Liang, Mong-Song, 5,644,269, Cl. 330-261.000.

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Chang, Hsien-Wen, 5,643,407, Cl. 156-644.100.

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Takada, Shunji; Suga, Yoichi; and Kawamoto, Hiroyuki, to Fuji Photo Film Co., Ltd. Silver halide photographic light-sensitive material. 5,643,711, Cl. 430-546.000.

Takagi, Mikio, to F.T.L. Co., Ltd. Method for producing semiconductor device. 5,643,839, Cl. 437-247.000.

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Matsuda, Naotoshi; Tamatani, Masaaki; Albessard, Keiko; Okumura, Miwa; Takahara, Takeshi; and Itou, Takeo, 5,644,193, Cl. 313-486.000.

Takahashi, Akira: *See*—
Nakayama, Junichiro; Mieda, Michinobu; Katayama, Hiroyuki; Hirokane, Junji; Takahashi, Akira; and Ohta, Kenji, 5,644,566, Cl. 369-275.200.

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Polzin, R. Stephen; Price, Noah M.; and Takahashi, Duane M. P., 5,644,760, Cl. 395-555.000.

Takahashi, Eiichi: *See*—
Takahashi, Eisaku; Takahashi, Eiichi; Saitoh, Kohki; Wada, Toshihiko; and Konai, Yutaka, 5,643,775, Cl. 435-193.000.

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Oishi, Tomoji; Takahashi, Ken; Nakazawa, Teteuo; Tanaka, Shigeru; and Miyoshi, Tadahiko, 5,643,642, Cl. 428-1.000.

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Hayakawa, Yuichi; Hirano, Atsushi; Miyata, Yasuhiro; and Takahashi, Koki, 5,644,449, Cl. 360-103.000.

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Takeuchi, Yukihisa; Masumori, Hideo; and Takahashi, Nobuo, 5,643,379, Cl. 156-89.000.

Takahashi, Nobuyoki: *See*—
Kobayashi, Masahiko; and Takahashi, Nobuyoki, 5,643,427, Cl. 204-298.200.

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Mimoto, Tsutomu; Kisanuki, Sumitsugu; Takahashi, Osamu; and Kiso, Yoshiaki, 5,644,028, Cl. 530-331.000.

Takahashi, Susumu: *See*—
Toda, Toshiki; Takahashi, Susumu; and Iwata, Fujio, 5,644,565, Cl. 369-275.100.

Takahashi, Takumi: *See*—
Niigata, Kunihiro; Takahashi, Takumi; Maruyama, Tatsuya; Suzuki, Takayuki; Maeno, Kyoichi; Onda, Kenichi; Kontani, Toru; Noshiro, Osamu; Koike, Reiko; Shimaya, Akiyoshi; and Irie, Jun, 5,643,931, Cl. 514-364.000.

Takahashi, Tsutomu, to Fuji Jukogyo Kabushiki Kaisha. Traction battery management system. 5,644,212, Cl. 320-48.000.

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Takatsu, Motomu, to Fujitsu Limited. Multiple-valued logic circuit. 5,644,253, Cl. 326-35.000.

Takayama, Ichiro: *See*—
Arai, Michio; Codama, Mitsufumi; and Takayama, Ichiro, 5,644,146, Cl. 257-66.000.

Takayama, Nobutoshi; and Furuyama, Hiroaki, to Canon Kabushiki Kaisha. Recording or reproducing apparatus having function of searching for unrecorded part. 5,644,447, Cl. 360-72.200.

Takeda Chemical Industries, Ltd.: *See*—
Hamaguchi, Naoru; Sato, Jun; and Doken, Kazuhiro, 5,643,564, Cl. 424-85.100.
Okada, Hiroaki; Inoue, Yayoi; and Ogawa, Yasuaki, 5,643,607, Cl. 424-493.000.

Takeda, Katsu: *See*—
Nojima, Takashi; Sumihara, Masanori; Otsuchi, Tetsuro; Nishikura, Takahiro; Kawasaki, Osamu; Takeda, Katsu; and Imada, Katsumi, 5,644,199, Cl. 318-114.000.

Takemura, Yasuhiko: *See*—
Yamazaki, Shunpei; and Takemura, Yasuhiko, 5,644,147, Cl. 257-66.000.

Takenaka Corporation: *See*—
Ogawa, Takatoshi; Yoshioka, Yasuhiko; Tsubouchi, Nobuo; Saito, Toshio; Hasegawa, Tamotsu; Fujishima, Akira; and Hashimoto, Kazuhito, 5,643,436, Cl. 205-324.000.

Takeuchi, Hideo, to Comtec Co., Ltd. Paper surface-cleaning device. 5,642,670, Cl. 101-423.000.

Takeuchi, Yukihisa; Masumori, Hideo; and Takahashi, Nobuo, to NGK Insulators, Ltd.; and Seiko Epson Corporation. Method of producing a piezoelectric/electrostrictive actuator. 5,643,379, Cl. 156-89.000.

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Takezawa, Hiroyuki, to Sony Corporation. Liquid cooling type cathode-ray tube. 5,644,278, Cl. 335-210.000.

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Tal, Sher Yea: *See—*
Wang, Shou Jing; and Tal, Sher Yea. 5,643,006, Cl. 439-419.000.

Talley, John J.; Getman, Daniel P.; DeCrescenzo, Gary A.; Reed, Kathryn L.; Lin, Ko-Chung; Freskos, John Nicholas; Clare, Michael; Rogier, Donald Joseph, Jr.; Heintz, Robert M.; Vazquez, Michael L.; and Mueller, Richard A., to Monsanto Company of St. Louis. Retroviral protease inhibitors. 5,643,924, Cl. 514-307.000.

Talley, John J.; Sikorski, James A.; Norman, Bryan H.; Rogers, Roland S., deceased (by Kathy L. Rogers, legal representative); Devadas, Balekudru; Graneto, Matthew J.; and Carter, Jeffery S., to G. D. Searle & Co. Substituted sulfonylphenylheterocycles as cyclooxygenase-2 and 5-lipoxygenase inhibitors. 5,643,933, Cl. 514-372.000.

Tallone, Luigi: *See—*
Grego, Giorgio; and Tallone, Luigi, 5,644,391, Cl. 356-128.000.

Talmy, Inna G.; and Haught, Deborah A., to United States of America, Navy. Ceramic material. 5,642,868, Cl. 244-121.000.

Tamagaki, Akira; Taniguchi, Tsutomu; Ueda, Nobuyuki; Oka, Masami; Matsumoto, Kenji; and Miyoshi, Fuminori, to Sharp Kabushiki Kaisha. Joint-portion processing device for image data for use in an image processing apparatus. 5,644,411, Cl. 358-529.000.

Tamaki, Kazuhiko: *See—*
Sugimura, Yukio; Tamaki, Kazuhiko; Kobayashi, Tomowo; and Tanzawa, Kazuhiko. 5,643,908, Cl. 514-247.000.

Tamaki, Kenji: *See—*
Toriyama, Masayuki; Tamaki, Kenji; Honda, Satoshi; Motodate, Shoji; Nakazawa, Yoshihiro; Fujii, Takaaki; and Sasaki, Shigemi, 5,644,202, Cl. 318-369.000.

Tamaki, Yoichi: *See—*
Ohta, Hiroyuki; Miura, Hideo; Masuda, Hiroo; Tamaki, Yoichi; Ikeda, Takahide; Nishimura, Asao; and Hashimoto, Takashi, 5,643,805, Cl. 437-31.000.

Tamao, Yoshikuni: *See—*
Yamada, Kumi; Tamao, Yoshikuni; Ohshima, Masahiro; and Iwase, Norimichi, 5,643,911, Cl. 514-254.000.

Tamatani, Masaaki: *See—*
Matsuda, Naotoshi; Tamatani, Masaaki; Albessard, Keiko; Okumura, Miwa; Takahara, Takeshi; and Itou, Takeo, 5,644,193, Cl. 313-486.000.

Tambrands Inc.: *See—*
Child, William M.; and Tarr, Warren, 5,643,196, Cl. 604-14.000.

Tampa Bay Research Institute: *See—*
Nonoyama, Meihan; Tanaka, Akiko; and Lai, Patrick K., 5,643,881, Cl. 514-21.000.

Tamura, Haruyuki: *See—*
Inatani, Akihisa; Nagano, Shuichi; Mita, Kanji; Minami, Shuji; Tamura, Haruyuki; Watanabe, Tsutomu; Katsuyama, Akira; Ishikawa, Masami; and Noshitani, Taiji, 5,644,558, Cl. 369-30.000.

Tamura, Hidehiko: *See—*
Tanaka, Tadashi; Tamura, Hidehiko; Niwa, Takahiro; Maruyama, Izumi; and Fukutani, Yoshihiro, 5,643,683, Cl. 428-551.000.

Tamura, Kazuhisa: *See—*
Kondoh, Yoshiyuki; Sakyo, Tsuyoshi; Iwase, Yoshimi; Tomita, Sadahisa; Komatsu, Kazunori; and Tamura, Kazuhisa, 5,643,080, Cl. 454-155.000.

Tamura, Kishio; Tanaka, Mayumi; and Uchida, Masafumi, to Konica Corporation. Two-component type developer for developing an electrostatic image. 5,643,704, Cl. 430-106.600.

Tamura, Yoshitaka: *See—*
Shimamura, Seiichi; Tamura, Yoshitaka; Mizota, Teruhiko; Suzawa, Itsuko; and Seki, Nobuo, 5,644,050, Cl. 536-123.130.

Tamura, Yuuki: *See—*
Ootaki, Toshio; Nakamura, Akio; Tamura, Yuuki; Yanagisawa, Munehisa; and Higuchi, Susumu, 5,643,827, Cl. 437-127.000.

Tan, Erol: *See—*
Fechillas, Michael R.; Boulanger, Roger; and Tan, Erol, 5,643,237, Cl. 604-366.000.

Tan, Haw-Chan; and Ma, Frank C., to Hon Hai Precision Ind. Co., Ltd. System for arrangement of different input/output connectors. 5,643,008, Cl. 439-541.500.

Tanaka, Akiko: *See—*
Nonoyama, Meihan; Tanaka, Akiko; and Lai, Patrick K., 5,643,881, Cl. 514-21.000.

Tanaka, Atsushi: *See—*
Mori, Shigeki; Tatsumi, Eisaku; Tanaka, Atsushi; and Matsubayashi, Kazuhiro, 5,644,339, Cl. 345-173.000.

Tanaka, Hideki: *See—*
Hosogaya, Ryuji; Tsunoda, Eizo; Hatakeyama, Akira; Osawa, Yoshihisa; Tanaka, Hideki; and Tobisawa, Seiichi, 5,643,363, Cl. 118-410.000.

Tanaka, Hiroaki: *See—*
Kaga, Takao; Kimura, Yutaka; Saito, Fumio; and Tanaka, Hiroaki, 5,643,497, Cl. 252-313.100.

Tanaka, Hiroyuki; and Torikoshi, Kaoru, to Fuji Xerox Co., Ltd. Photoelectric conversion element having an infrared transmissive indium-tin oxide film. 5,643,369, Cl. 136-256.000.

Tanaka, Koichi: *See—*
Takahashi, Kenichi; Akashi, Hiroyuki; Noda, Kazuhiro; and Tanaka, Koichi, 5,643,490, Cl. 252-62.200.

Tanaka, Kumi: *See—*
Hikata, Hajime; Jimura, Yoshitaka; and Tanaka, Kumi, 5,643,840, Cl. 501-18.000.

Tanaka, Mayumi: *See—*
Tamura, Kishio; Tanaka, Mayumi; and Uchida, Masafumi, 5,643,704, Cl. 430-106.600.

Tanaka, Nobuhiro, to Kao Corporation. Method and apparatus for accommodating goods in container. 5,642,603, Cl. 53-445.000.

Tanaka, Nobuhiro, to Kao Corporation. Article loading apparatus and method therefor. 5,642,803, Cl. 198-535.000.

Tanaka, Nobuhiro: *See—*
Ishihara, Hiroaki; Nakashita, Kazuhisa; Ohnuma, Hideto; Tanaka, Nobuhiro; and Adachi, Hiroki, 5,643,801, Cl. 437-7.000.
Mochida, Masaaki; Kaneko, Norio; and Tanaka, Nobuhiro, 5,642,996, Cl. 433-174.000.

Tanaka, Shigeru: *See—*
Oishi, Tomoji; Takahashi, Ken; Nakazawa, Teteuo; Tanaka, Shigeru; and Miyoshi, Tadahiko, 5,643,642, Cl. 428-1.000.

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Tanaka, Toshiyasu, to Asahi Kohoen, Co., Ltd. Optical fiber holder used in optical connectors. 5,644,672, Cl. 385-137.000.

Tanaka, Tsuyoshi: *See—*
Moriwake, Hiroki; Tanaka, Tsuyoshi; and Takahashi, Masayuki, 5,644,284, Cl. 338-22.00R.

Tanaka, Yoshio: *See—*
Kouchi, Toshifumi; Hirose, Tadafumi; and Tanaka, Yoshio, 5,642,702, Cl. 123-198.00E.

Tanaka, Yoshiyuki: *See—*
Suzuki, Masataka; Ashiya, Hiroyuki; Tanaka, Yoshiyuki; Mochizuki, Shinobu; and Koike, Koji, 5,642,852, Cl. 228-110.100.

Taneichi, Shoshiro: *See—*
Fukuda, Seiji; Kobayashi, Hisaaki; Taneichi, Shoshiro; and Yamamoto, Tetsuya, 5,644,670, Cl. 385-124.000.

Tang, Larry: *See—*
Besnard, Philippe; Tang, Larry; Rugge, Richard L.; Sieleman, Jim; and Dumontier, Franck, 5,643,112, Cl. 473-350.000.

Tani, Hiroji: *See—*
Yamaki, Sachiko; Nagata, Keisuke; and Tani, Hiroji, 5,643,841, Cl. 501-20.000.

Tani, Nobutaka: *See—*
Iritani, Koji; Kawasaki, Tetsuya; Tani, Nobutaka; Masuda, Shigeki; and Yano, Yoshiaki, 5,644,012, Cl. 527-311.000.

Taniguchi, Tadatsugu; and Harada, Hisashi, to Boehringer Ingelheim International GmbH. Methods for diagnosing cancer, precancerous state, or susceptibility to other forms of diseases by detecting an acceleration of exon skipping in IRF-1 mRNA. 5,643,729, Cl. 435-6.000.

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Tamagaki, Akira; Taniguchi, Tsutomu; Ueda, Nobuyuki; Oka, Masami; Matsumoto, Kenji; and Miyoshi, Fuminori, 5,644,411, Cl. 358-529.000.

Taniguchi, Yuichiro: *See—*
Kameda, Takanobu; Kano, Machiko; Kondoh, Rui; Watanabe, Kenji; Ichikawa, Tomoyuki; Taniguchi, Yuichiro; and Aida, Chieko, 5,644,136, Cl. 250-492.100.

Tanii, Junichi: *See—*
Murashima, Nobuharu; Tanii, Junichi; Konishi, Yoshito; and Tanino, Ken, 5,643,120, Cl. 475-5.000.

Tanikawa, Kiyoshi: *See—*
Saitoh, Tadashi; Tanikawa, Kiyoshi; Murakami, Kakuji; Tokita, Toshiaki; and Fujita, Shigeru, 5,643,380, Cl. 156-94.000.

Tanino, Ken: *See—*
Murashima, Nobuharu; Tanii, Junichi; Konishi, Yoshito; and Tanino, Ken, 5,643,120, Cl. 475-5.000.

Tankhilevich, Boris G.: *See—*
Janky, James M.; Denninger, Valentine L.; Jones, James Edwin, Jr.; Murphy, Michael D.; and Tankhilevich, Boris G., 5,644,318, Cl. 342-357.000.

Tanzawa, Kazuhiko: *See—*
Sugimura, Yukio; Tamaki, Kazuhiko; Kobayashi, Tomowo; and Tanzawa, Kazuhiko, 5,643,908, Cl. 514-247.000.

Tanzi, Rudolph E.; and Kovacs, Dora M., to General Hospital Corporation, The. Methods for modulating transcription from the amyloid β-protein precursor (APP) promoter. 5,643,726, Cl. 435-6.000.

Tarantino, E. Rocco; and Weinberger, Scot R., to Hewlett-Packard Company. Method of preparing a sample for analysis by laser desorption ionization mass spectrometry. 5,643,800, Cl. 436-518.000.

Taras, Curt Michael, to Spaztech Designs. Convertible sling/waistbelt for carrying in-line skates, boots, and shoes. 5,642,842, Cl. 224-250.000.

Tarasov, Igor Vladimirovich: *See—*
Grishakov, Gennady Ivanovich; and Tarasov, Igor Vladimirovich, 5,644,547, Cl. 365-230.050.

Target Therapeutics, Inc.: *See—*
Scheldrup, Ronald W.; and Schaller, Laurent B., 5,643,254, Cl. 606-32.000.

Taricco, Todd. Pump motor assemhly for a two-phase fluid. 5,642,987, Cl. 417-53.000.

Tarr, John: *See—*
Bott, James A.; and Tarr, John, 5,643,613, Cl. 425-135.000.

Tarr, Warren: *See—*
Child, William M.; and Tarr, Warren, 5,643,196, Cl. 604-14.000.

Tateishi, Hiroshi; Tomimatsu, Norihiro; Nakagawa, Kazuaki; Ozu, Hideyuki; and Akasaka, Yoshihiro, to Kabushiki Kaisha Toshiba. Molten carbonate fuel cell. 5,643,690, Cl. 429-34.000.

Tateishi, Tomomi: *See—*
Kamio, Takayoshi; Ishiwata, Yasuhiro; and Tateishi, Tomomi, 5,643,709, Cl. 430-201.000.

Tatsumi, Eisaku: *See—*
Mori, Shigeki; Tatsumi, Eisaku; Tanaka, Atsushi; and Matsubayashi, Kazuhiro, 5,644,339, Cl. 345-173.000.
Sunakawa, Shinichi; Shimada, Kazutoshi; Tatsumi, Eisaku; Suzuki, Noriyuki; and Nagasaki, Katsuhiko, 5,644,653, Cl. 382-187.000.

Tawara, Yoshio; Tokunaga, Katsushi; Kaneko, Hideo; and Shimizu, Yoshiaki, to Shin-Etsu Chemical Co., Ltd. Magneto-optical recording medium. 5,643,650, Cl. 428-64.300.

TaxiWand Inc.: *See—*
Gappelberg, Evan E., 5,642,931, Cl. 362-186.000.

Tayloe, Daniel Richard: *See—*
Olds, Keith Andrew; Cutler, Victor Hawes; and Tayloe, Daniel Richard, 5,644,572, Cl. 370-324.000.

Taylor, David Martin: *See—*
McGinty, David Jackson; Powers, Ervin Townsend, Jr.; Shin, Hyunkook; Siemionko, Roger Keith; and Taylor, David Martin, 5,643,525, Cl. 264-469.000.

Taylor, Eric W.: *See—*
Koths, Kirston E.; Halenbeck, Robert F.; Taylor, Eric W.; Wang, Alice M.; and Casipit, Clayton L., 5,644,035, Cl. 530-395.000.

Taylor, John M.: *See—*
Buckberg, Gerald D.; Heimstaedt, Russell A.; and Taylor, John M., 5,643,191, Cl. 604-4.000.

Taylor, Kevin D.: *See—*
Hillsman, Cecily M.; Taylor, Kevin D.; Kasprzyk, Daniel J.; and Solar, Matthew S., 5,643,251, Cl. 606-7.000.

Taylor Made Golf Co., Inc.: *See—*
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Zhao, Jun; Wolff, Stefan; Smyth, Kenneth; Taylor, William Nixon, Jr.; and McNutt, Gerald, 5,643,364, Cl. 118-723.00E.

Tazawa, Satoshi: *See—*
Leon, Francisco A.; Tazawa, Satoshi; and Anderson, Gregory, 5,644,688, Cl. 395-120.000.

TCG International Inc.: *See—*
Beckert, Adolf F.; and Thomas, Jonathan P., 5,643,610, Cl. 425-12.000.

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Arai, Michio; Codama, Mitsufumi; and Takayama, Ichiro, 5,644,146, Cl. 257-66.000.
Hosogaya, Ryuji; Tsunoda, Eizo; Hatakeyama, Akira; Osawa, Yoshihisa; Tanaka, Hideki; and Tobisawa, Seiichi, 5,643,363, Cl. 118-410.000.

Tecnorama S.r.L: *See—*
Scatizzi, Mario; Anguillese, Mauro; and Bartalucci, Moreno, 5,642,940, Cl. 366-150.100.

Tectrix Fitness Equipment: *See—*
Stark, Duane P.; Sweeney, Michael T.; and Sweeney, James S., Jr., 5,643,146, Cl. 482-63.000.

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DaSilva, Marcus K.; and Teetzel, Andrew M., 5,644,260, Cl. 327-238.000.

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Foley, Steven J.; and Michaud, Joseph A., 5,642,645, Cl. 74-640.000.

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Raleigh, William F., 5,642,724, Cl. 126-350.00R.

TeleEngineering, Inc.: *See—*
Miller, John, 5,642,869, Cl. 246-182.00B.

Telefonaktiebolaget LM Ericsson: *See—*
Dabrowski, Jerzy, 5,644,272, Cl. 333-26.000.
Larsson, Leif Mikael, 5,644,708, Cl. 395-185.020.

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Rabbow, Jürgen; and Schmucker, Georg, 5,644,099, Cl. 102-214.000.

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Jessen, Robert Frederic; Mertens, Christopher Alan; Olsen, Nathan J.; and Telfer, Robert Joseph, 5,644,380, Cl. 355-50.000.

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Temic Telefunken microelectronic GmbH: *See—*
Genzel, Michael; Hettich, Gerhard; and Ramm, Norbert, 5,643,116, Cl. 474-11.000.

Temotrans, B.V.: *See—*
Greferath, Hans-Gerd, 5,642,959, Cl. 403-388.000.

Temp Top Container Systems, Inc.: *See—*
Meacham, Patrick E.; Wallace, Mark W.; Nyberg, Carl R.; Thompson, William W.; and Bland, James P., 5,642,923, Cl. 312-258.000.

Temple, Joseph: *See—*
Coscarella, Anthony; Sachs, Martin William; and Temple, Joseph, 5,644,712, Cl. 395-200.010.

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Guan, Chudi; Inouye, Hiroshi, deceased.; and Chang, Frank N., administrator, 5,643,758, Cl. 435-69.700.

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Tenner, Mark; and Kerrins, D'Shawn. Food portion inventory device with imprinted predetermined data indicia. 5,642,605, Cl. 53-469.000.

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Hirsh, Jack; Johnston, Marilyn; and Teoh, Kevin, 5,643,192, Cl. 604-4.000.

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Saitoh, Satoshi; and Terada, Akihiro, 5,644,245, Cl. 324-754.000.

Terada, Kouichi: *See—*
Yamagami, Hajime; Terada, Kouichi; Hayashi, Yoshihiro; Tsunehiro, Takashi; Katayama, Kunihiro; Kaki, Kenichi; and Furuno, Takeshi, 5,644,539, Cl. 365-200.000.

Teradyne, Inc.: *See—*
Schmidt, Kurt E., 5,644,617, Cl. 379-5.000.

Terasaki, Paul I.: *See—*
Billing, Ronald J.; and Terasaki, Paul I., 5,643,740, Cl. 435-7.230.

Terashi, Taro: *See—*
Maruyama, Tohru; Saito, Masatoshi; Terashi, Taro; Watanabe, Hisao; Fujita, Shigeru; Shinkai, Masaru; and Sugawara, Tomoaki, 5,642,550, Cl. 15-102.000.

Terashita, Shin-ichi: *See—*
Onishi, Noriaki; Okamoto, Masayuki; Hirai, Toshiyuki; Yamada, Nobuaki; Nagae, Nobukazu; Kondo, Masahiko; and Terashita, Shin-ichi, 5,643,471, Cl. 216-23.000.

Ter Borch, Christiaan J.: *See—*
Van Der Borst, Johannes; D'Achard Van Enschut, Johannes F. M.; Jenneskens, Theodorus J. J. M.; Dobben, Jacob; Ter Borch, Christiaan J.; and Van Der Wal, Hendricus G. M., 5,644,615, Cl. 378-149.000.

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Audia, James E.; Baker, Stephen Richard; Carrera, Jesus Ezquerra; Peteira, Carlos Lamas; and Tercero, Concepcion Pedregal, 5,643,916, Cl. 514-285.000.

Terumo Kabushiki Kaisha: *See—*
Omori, Shigeru; Hattori, Tomohiko; Katayama, Kunimasa; and Sakuma, Sadayuki, 5,644,427, Cl. 359-464.000.

Tesler, Lawrence G.: *See—*
Luciw, William W.; Capps, Stephen P.; and Tesler, Lawrence G., 5,644,735, Cl. 395-338.000.

Tetra Laval Food Koppens B.V.: *See—*
Lygum, Poul, 5,643,075, Cl. 452-174.000.

Tetra Laval Holdings & Finance S.A.: *See—*
Ohlsson, Per, 5,642,606, Cl. 53-565.000.

Texaco Inc.: *See—*
Marrelli, John David; Brost, Dale Francis; Siddioui, Farhan; Pepin, Lisa Langford; and Stafford, Joseph David, 5,644,244, Cl. 324-637.000.

Texas A&M University System, The: *See—*
Blake, James N., 5,644,397, Cl. 356-345.000.

Texas Instruments Incorporated: *See—*
Burke, Fred H.; Carlson, Keith O.; and Roth, Richard C., 5,644,770, Cl. 395-710.000.
Gnade, Bruce E.; Evans, Daron G.; Summerfelt, Scott R.; and Levine, Jules D., 5,643,033, Cl. 445-24.000.
Laczko, Frank L., Sr.; Benbassat, Gerard; Cyr, Kenneth R.; Li, Stephen H.; Kam, Shiu Wai; Walker, Karen L.; and Rowlands, Jonathan L., 5,644,310, Cl. 341-143.000.
Libres, Jeremias P.; Attarwala, Abbas I.; Bolanos, Mario A.; Liang, Jimmy; and Nair, Indran B., 5,644,168, Cl. 257-787.000.
Moyse, Philip; and Simpson, Richard, 5,644,522, Cl. 364-745.020.
Nishimura, Hiroyuki; and Yoshino, Toshiaki, 5,644,518, Cl. 364-735.000.
Simpson, Richard, 5,644,521, Cl. 364-736.500.
Van Aken, Jerry R.; Guttag, Karl M.; and Poland, Sydney W., 5,644,524, Cl. 364-766.000.
Yamasaki, Richard G.; and Pan, Tzu-Wang, 5,644,595, Cl. 375-232.000.

Textron Inc.: *See—*
Schmitt, Karl R., 5,642,935, Cl. 362-294.000.

Thagard, Gregory B.: *See—*
Ostrover, Lewis S.; Thagard, Gregory B.; Wall, Joseph E., III; and Cookson, Christopher J., 5,644,507, Cl. 364-514.00R.

Thaler, Warren A.: *See—*
Gutierrez, Antonio; Emert, Jacob I.; Stokes, James P.; Thaler, Warren A.; Diana, William D.; Gorda, Keith R.; Eckstrom, William B.; Dankworth, David C.; and Cusumano, Joseph V., 5,643,859, Cl. 508-454.000.

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Chipian, E. Terry; Simon, Eric; and Theodore, Alexander, 5,642,994, Cl. 433-82.000.

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Moormann, Joachim, 5,643,905, Cl. 514-215.000.

Therm-O-Disc, Incorporated: *See—*
Gajeski, Paul J.; and Marks, G. Lynnette, 5,644,106, Cl. 174-138.00G.

Thermacore, Inc.: *See—*

Meyer, George A., IV; and Garner, Scott D., 5,642,776, Cl. 165-104.260.
Thermal Industries, Inc.: *See*—
Andres, Thomas, 5,642,592, Cl. 52-177.000.
Thermodyne, Inc.: *See*—
Kucherov, Yan R., 5,644,184, Cl.-310-306.000.
Thiele, Hartmut: *See*—
Hübner, Dietmar; Müll, Rainer; Zwintzscher, Kurt; Martiny, Wolfgang; Thiele, Hartmut; and Hirschberg, Ekkehard, 5,642,811, Cl. 206-391.000.
Thimons, Thomas V.: *See*—
Van De Grampel, Hendrik T.; Hou, Yongsheng; Spencer, Dennis O.; Swisher, Robert G.; and Thimons, Thomas V., 5,643,989, Cl. 524-494.000.
Thiokol Corporation: *See*—
Guillot, David G., 5,644,000, Cl. 525-236.000.
Thiriet, Fabien P., to Solaic (société anonyme). Process for protecting components of smart or chip cards from fraudulent use. 5,644,638, Cl. 380-25.000.
Thistle, Ethan P.; DeCerbo, Michael A.; and Metcalf, John R., to Dresser-Rand Company. Valve unloader assembly. 5,642,753, Cl. 137-512.100.
Thomas Jefferson University: *See*—
Baserga, Renato; Sell, Christian; and Rubin, Raphael, 5,643,788, Cl. 435-325.000.
Thomas, Jonathan P.: *See*—
Beckert, Adolf F.; and Thomas, Jonathan P., 5,643,610, Cl. 425-12.000.
Thompson, David A.: *See*—
Braithwaite, David G.; Bruderer, Clark C.; Allen, Gregory M.; and Thompson, David A., 5,644,444, Cl. 360-60.000.
Thompson, James Henry, Jr.; and Maffett, Michael Kinard, to Greenwood Mills, Inc. Method of forming thermal insulation. 5,642,601, Cl. 53-431.000.
Thompson, John R.; Trivelpiece, Craig E.; and Trivelpiece, Steve E., to Prevue Interactive, Inc. Interactive video system. 5,644,354, Cl. 348-13.000.
Thompson, Ken J.; Everhart, John R.; Foster, Wayne G.; and Trotter, David S., to Sara Lee Corporation. Automatic cuff setter. 5,642,680, Cl. 112-470.140.
Thompson, Robert E. Convertible garment having a ventilation opening and a storage pouch. 5,642,526, Cl. 2-79.000.
Thompson, Ronald J., to Incont, Inc. Apparatus and method for laparoscopic urethropexy. 5,643,288, Cl. 606-139.000.
Thompson, Suzanne Marie; and Bertram, Randal Lee, to International Business Machines Corporation. Method and system for facilitating language translation using string-formatting libraries. 5,644,775, Cl. 395-757.000.
Thompson, William W.: *See*—
Meacham, Patrick E.; Wallace, Mark W.; Nyberg, Carl R.; Thompson, William W.; and Bland, James P., 5,642,923, Cl. 312-258.000.
Thomson Consumer Electronics, Inc.: *See*—
Elliott, Charles Anthony, 5,644,101, Cl. 174-35.00R.
George, John Barrett, 5,644,196, Cl. 315-368.180.
Gurley, Thomas David; and White, Charles Michael, 5,644,360, Cl. 348-381.000.
Ragland, Frank Rowland, Jr., 5,644,192, Cl. 313-402.000.
Thomson-CSF: *See*—
Chabbert, Philippe; Chatenay, Alain; and Petit, Michel, 5,644,209, Cl. 320-15.000.
Thomson, James W.: *See*—
Hanisch, Wolfgang H.; Fernandes, Pete M.; Taforo, Terrance; and Thomson, James W., 5,643,566, Cl. 424-85.400.
Thomson, John, Jr.: *See*—
Chandross, Edwin Arthur; Johnson, David Wilfred, Jr.; MacChesney, John Burnette; Rabinovich, Eliezer M.; and Thomson, John, Jr., 5,643,346, Cl. 65-17.200.
Thöne, Heinrich; and Wimmer, Franz, to Voest-Alpine Industrieanlagenbau GmbH. Continuous casting mold. 5,642,769, Cl. 164-416.000.
Thorner, Michael Oliver; Gaylinn, Bruce David; Harrison, Jeffrey K.; Lynch, Kevin R.; and Zysk, John Ronald, to University of Virginia Patent Foundation, The. Cloning of a gene encoding for the growth hormone releasing hormone receptor. 5,644,046, Cl. 536-23.500.
Thornfeldt, Carl R.: *See*—
Elias, Peter M.; Feingold, Kenneth R.; and Thornfeldt, Carl R., 5,643,899, Cl. 514-171.000.
Thorogood, Robert Michael: *See*—
Agrawal, Rakesh; Chen, Michael Shi-Kuan; Smith, Arthur Ramsden; Thorogood, Robert Michael; and Ward, Thomas Joseph, 5,643,354, Cl. 75-490.000.
Thuen, Torbjorn; and Breed, Allen, to Breed Automotive Corporation. Two piece inflator housing. 5,642,904, Cl. 280-741.000.
Tiberio, Thomas A.: *See*—
Sauer, Jude S.; Rapp, Louis N.; and Tiberio, Thomas A., 5,643,289, Cl. 606-139.000.
Tice, Hugh J. Skinning apparatus. 5,643,073, Cl. 452-125.000.
Tidwell, Richard R.: *See*—
Dykstra, Christine C.; Perfect, John; Boykin, David W.; Wilson, W. David; and Tidwell, Richard R., 5,643,935, Cl. 514-394.000.
Tiers, Jean-Francois: *See*—
Baudry, Jacques; Faral, Michel; and Tiers, Jean-Francois, 5,643,697, Cl. 430-5.000.
Tikka, Panu O.: *See*—
Hiljanen, Seppo T.; and Tikka, Panu O., 5,643,410, Cl. 162-37.000.
Tilleman, Russell W.: *See*—
Cohen, Earl T.; Tilleman, Russell W.; and Pattin, Jay C., 5,644,752, Cl. 395-449.000.
Time-Warner Entertainment Co., L.P.: *See*—
Ostrover, Lewis S.; Thagard, Gregory B.; Wall, Joseph E., III; and Cookson, Christopher J., 5,644,507, Cl. 364-514.00R.
Timex Corporation: *See*—
Cuinet, Jean Louis, 5,644,553, Cl. 368-320.000.
Timken, Hye Kyung C.; and Riedinger, Sherri L., to Mobil Oil Corporation. Naphtha upgrading process. 5,643,441, Cl. 208-89.000.
Timmermann, Ralf; Dujardin, Ralf; and Koch, Rainhard, to Bayer Aktiengesellschaft. Thermoplastically processible and biodegradable aliphatic polyesteramides. 5,644,020, Cl. 528-288.000.
Tioxide Group Services Limited: *See*—
Simpson, Leslie Ainsley; Robson, Keith; Knight, David Trevor; and Williamson, Martin Alec, 5,643,974, Cl. 523-334.000.
Tisma Machinery Corporation: *See*—
Tisma, Stevan, 5,642,599, Cl. 53-373.600.
Tisma, Stevan, to Tisma Machinery Corporation. Automatic packaging machine for boxes with paper end liners. 5,642,599, Cl. 53-373.600.
Toa Medical Electronics Co., Ltd.: *See*—
Maekawa, Yasunori; and Kosaka, Tokihiro, 5,644,388, Cl. 356-73.000.
Nakagawa, Masayuki; and Inoue, Hisaaki, 5,642,938, Cl. 366-110.000.
Tobayama, Masashi: *See*—
Tabuchi, Yasuo; Ohguchi, Junichi; and Tobayama, Masashi, 5,642,560, Cl. 29-607.000.
Tobisawa, Seiichi: *See*—
Hosogaya, Ryuji; Tsunoda, Eizo; Hatakeyama, Akira; Osawa, Yoshihisa; Tanaka, Hideki; and Tobisawa, Seiichi, 5,643,363, Cl. 118-410.000.
Tochitsky, Eduard Ivanovich: *See*—
Selifanov, Oleg Vladimirovich; Tochitsky, Eduard Ivanovich; and Akulich, Valerii Vladimirovich, 5,643,343, Cl. 51-306.000.
Toda, Haruki, to Kabushiki Kaisha Toshiba. Memory device and serial-parallel data transform circuit. 5,644,537, Cl. 365-189.050.
Toda, Toshiki; Takahashi, Susumu; and Iwata, Fujio, to Toppan Printing Co., Ltd. Optical recording medium including a plurality of diffracted grating cells. 5,644,565, Cl. 369-275.100.
Togawa, Tetsuji: *See*—
Katsuoka, Seiji; Sakurai, Kunihiko; and Togawa, Tetsuji, 5,643,067, Cl. 451-444.000.
Togino, Takayoshi; and Nakagiri, Kunie, to Olympus Optical Co., Ltd. Concentric optical system. 5,644,436, Cl. 359-731.000.
Tojima, Takahito: *See*—
Isozaki, Takashi; Tojima, Takahito; Higa, Ryuji; and Okuda, Sadanao, 5,642,672, Cl. 101-424.200.
Tokai Rubber Industries, Ltd.: *See*—
Hamada, Masaaki; Aoi, Takahiro; Kohgo, Tetsuya; and Mishima, Masaaki, 5,642,874, Cl. 267-141.000.
Kato, Rentaro, 5,642,873, Cl. 267-140.140.
Tokita, Toshiaki: *See*—
Saitoh, Tadashi; Tanikawa, Kiyoshi; Murakami, Kakuji; Tokita, Toshiaki; and Fujita, Shigeru, 5,643,380, Cl. 156-94.000.
Tokunaga, Katsushi: *See*—
Tawara, Yoshio; Tokunaga, Katsushi; Kaneko, Hideo; and Shimizu, Yoshiaki, 5,643,650, Cl. 428-64.300.
Tokushu Paper Mfg. Co., Ltd.: *See*—
Hanaya, Morimasa, 5,643,417, Cl. 162-300.000.
Tokuyama, Yoshitaka, to Kyocera Corporation. Malfunction prevention circuit for a battery charger. 5,644,211, Cl. 320-29.000.
Tokyo Electron FE Limited: *See*—
Saitoh, Satoshi; and Terada, Akihiro, 5,644,245, Cl. 324-754.000.
Tokyo Electron Limited: *See*—
Saitoh, Satoshi; and Terada, Akihiro, 5,644,245, Cl. 324-754.000.
Tokyo Gas Co., Ltd.: *See*—
Cahill, Sean Samuel; Snoeys, Walter; and Nakamura, Kenichi, 5,644,086, Cl. 73-654.000.
Tokyo Magnetic Printing Co., Ltd.: *See*—
Isshiki, Teiichi; Hatano, Masayuki; Hashimoto, Junichi; Karino, Tomoaki; and Kanda, Yoshifumi, 5,643,686, Cl. 428-694.0BM.
Tolhuizen, Ludovicus M. G. M.: *See*—
Denissen, Adrianus J. M.; Bruls, Wilhelmus H. A.; and Tolhuizen, Ludovicus M. G. M., 5,644,582, Cl. 371-37.400.
Tomatsu, Yoshitaka: *See*—
Kakehashi, Nobuharu; Tomatsu, Yoshitaka; Kishita, Hiroshi; Yamanaka, Yasushi; and Fujiwara, Kenichi, 5,642,858, Cl. 236-92.00B.
Tomatsu, Yoshiya; and Hattori, Yoshiteru, to Brother Kogyo Kabushiki Kaisha. Sheet-supply unit capable of controlling sheet-feed operations and sheet alignment operations using a single solenoid. 5,642,952, Cl. 400-624.000.
Tomimatsu, Norihiro: *See*—
Tateishi, Hiroshi; Tomimatsu, Norihiro; Nakagawa, Kazuaki; Ozu, Hideyuki; and Akasaka, Yoshihiro, 5,643,690, Cl. 429-34.000.
Tominaga, Michiaki: *See*—
Chihiro, Masatoshi; Komatsu, Hajime; Tominaga, Michiaki; and Yabuuchi, Yoichi, 5,643,932, Cl. 514-365.000.
Tomita, Sadahisa: *See*—
Kondoh, Yoshiyuki; Sakyo, Tsuyoshi; Iwase, Yoshimi; Tomita, Sadahisa; Komatsu, Kaznnori; and Tamura, Kazuhisa, 5,643,080, Cl. 454-155.000.
Tomiyama, Muneaki: *See*—
Dobashi, Akihiko; Himori, Hirotugu; Yamamoto, Osamu; Shiotsuki, Kazuya; and Tomiyama, Muneaki, 5,643,676, Cl. 428-411.100.

Tong, Hing S.: *See*—
Siu, Philip K.; Lo, Lawrence K.; and Tong, Hing S., 5,644,541, Cl. 365-200.000.
Toniolo, Antonio, to Olivetti-Canon Industriale S.p.A. Service station for ink jet printer. 5,644,345, Cl. 347-32.000.
Tonti, William R.: *See*—
Furukawa, Toshiharu; Mandelman, Jack Allen; and Tonti, William R., 5,643,822, Cl. 437-67.000.
Toppan Printing Co., Ltd.: *See*—
Toda, Toshiki; Takahashi, Susumu; and Iwata, Fujio, 5,644,565, Cl. 369-275.100.
Toray Industries, Inc.: *See*—
Fukuda, Seiji; Kobayashi, Hisaaki; Taneichi, Shoshiro; and Yamamoto, Tetsuya, 5,644,670, Cl. 385-124.000.
Nakamura, Kiyokazu; Kitajima, Norio; and Inoue, Toshihide, 5,643,988, Cl. 524-449.000.
Osaki, Katsumasa; Suzuki, Masaru; Tsunashima, Kenji; and Fukuhara, Mototada, 5,643,680, Cl. 428-480.000.
Torigoe, Tetsu: *See*—
Inoue, Satoshi; Suzuki, Chiaki; Torigoe, Tetsu; Sato, Shuji; and Fujii, Takahisa, 5,643,705, Cl. 430-110.000.
Torikoshi, Kaoru, to Fuji Xerox Co., Ltd. Thin film electroluminescence element and process for producing the same. 5,643,685, Cl. 428-690.000.
Torikoshi, Kaoru: *See*—
Tanaka, Hiroyuki; and Torikoshi, Kaoru, 5,643,369, Cl. 136-256.000.
Toriyama, Masayuki; Tamaki, Kenji; Honda, Satoshi; Motodate, Shoji; Nakazawa, Yoshihiro; Fujii, Takaaki; and Sasaki, Shigemi, to Honda Giken Kogyo Kabushiki Kaisha. Braking control system for an electric vehicle. 5,644,202, Cl. 318-369.000.
Torotrak (Development) Limited: *See*—
Greenwood, Christopher John; and Fellows, Thomas George, 5,643,121, Cl. 475-72.000.
Toso, Victor. Back support with knee and foot engaging straps. 5,643,184, Cl. 602-19.000.
Toth, Paul A.: *See*—
Reinhardt, Victor S.; Shih, Yi-Chi; Toth, Paul A.; and Reynolds, Samuel C., 5,644,243, Cl. 324-626.000.
Toth, Thomas Louis; and Hampel, Willi Walter, to General Electric Company. Collimator for reducing patient x-ray dose. 5,644,614, Cl. 378-147.000.
Totsuka, Hidekazu; Kawagishi, Kenshi; Shida, Yasunori; Mitsushima, Kazuyuki; and Iwata, Yukihiko, to Mitsubishi Denki Kabushiki Kaisha. Control apparatus for multi-air-conditioner. 5,642,857, Cl. 236-51.000.
Touchstone, Inc.: *See*—
Christenson, Jeffrey J., 5,642,774, Cl. 165-82.000.
Toutant, Daniel: *See*—
Miron, Yvan; Toutant, Daniel; and Chouinard, Marius, 5,642,589, Cl. 52-7.000.
Tovar Riestra, Francisco. Hand propelled longitudinal axial gyroscopic projectile. 5,642,565, Cl. 30-123.000.
Tovey, H. Jonathan; Zvenyatsky, Boris; and Aranyi, Ernie, to United States Surgical Corporation. Surgical apparatus having an increased range of operability. 5,643,294, Cl. 606-148.000.
Toyo Ink Manufacturing Co., Ltd.: *See*—
Kurihashi, Toru; Kawashima, Miki; and Yamaguchi, Takeo, 5,644,010, Cl. 526-273.000.
Toyoda Gosei Co., Ltd.: *See*—
Hayashi, Hidenori; Mizuta, Takao; Sagae, Ichiro; and Watanabe, Naotoshi, 5,643,979, Cl. 524-100.000.
Toyota Jidosha Kabushiki Kaisha: *See*—
Inoue, Hideo; Kamimae, Hajime; Morita, Mitsuhiko; and Kojima, Hiroyoshi, 5,642,899, Cl. 280-707.000.
Kono, Katsumi; and Nakamura, Shinya, 5,643,136, Cl. 477-169.000.
Tabata, Atsushi; and Takahashi, Nobuaki, 5,643,135, Cl. 477-154.000.
Yoshii, Kinya; Ichioka, Eiji; Koide, Takeharu; and Sasaki, Yoshihiko, 5,643,127, Cl. 475-160.000.
Toyota Kidosha Kabushiki Kaisha: *See*—
Nakai, Hideyuki; Okabe, Kenji; Yamada, Katsuhisa; and Okane, Yukihiro, 5,642,718, Cl. 123-497.000.
Tracto-Technik Paul Schmidt Spezialmaschinen KG: *See*—
Puttmann, Franz-Josef; and Hesse, Alfons, 5,642,786, Cl. 175-171.000.
Tracy, David James: *See*—
Li, Ji; Dahanayake, Manilal; Reierson, Robert Lee; and Tracy, David James, 5,643,498, Cl. 252-357.000.
Li, Ji; Dahanayake, Manilal; Reierson, Robert Lee; and Tracy, David James, 5,643,864, Cl. 510-499.000.
TransLogic Corporation: *See*—
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Yamashita, Hidehiro; and Tachiyama, Masakazu, to Matsushita Electric Industrial co., Ltd. Point to Multipoint radiotelephone system. 5,644,621, Cl. 455-463.000.

Yamashita, Yasuhiro: *See—*
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Yamazaki, Satoshi; and Horiguchi, Ryuji, to Dai Nippon Printing Co., Ltd. Hologram and method of reading the same. 5,644,412, Cl. 359-2.000.

Yamazaki, Shunpei; and Takemura, Yasuhiko, to Semiconductor Energy Laboratory Co., Ltd. Electro-optical device incorporating pixel transistors with plural gate electrodes. 5,644,147, Cl. 257-66.000.

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Yang, Keun Young, to LG Electronics Inc. Optical pickup system. 5,644,563, Cl. 369-112.000.

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TO WHOM

PATENTS WERE ISSUED ON THE 1st DAY OF JULY, 1997

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Sluyterman, Albertus A. S.; Stil, Lambert J.; and Vrinten, Marinus L. A., to U.S. Philips Corporation. Color display tube system with reduced spot growth. Re. 35,548, Cl. 315-368.280.
Smith, Terrance P.: *See*—
Jongewaard, Susan K.; Smith, Terrance P.; and Zaklika, Krzysztof A., Re. 35,550, Cl. 503-227.000.
Snow, James T., to Millipore Corporation. Apparatus for monitoring moisture in a gas stream. Re. 35,544, Cl. 73-24.010.
Stil, Lambert J.: *See*—
Sluyterman, Albertus A. S.; Stil, Lambert J.; and Vrinten, Marinus L. A., Re. 35,548, Cl. 315-368.280.
Takayama, Toshio: *See*—
Sakuma, Masaru; and Takayama, Toshio, Re. 35,547, Cl. 303-156.000.
Tokico Ltd.: *See*—
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Zaklika, Krzysztof A.: *See*—
Jongewaard, Susan K.; Smith, Terrance P.; and Zaklika, Krzysztof A., Re. 35,550, Cl. 503-227.000.

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CERTIFICATES WERE ISSUED

Chen, Jimmy. Spectacles with high efficient angle adjustment. B1 5,457,503, Cl. 351-105.000.
Cody, Charles A.: *See*—
Doolan, Joseph G.; and Cody, Charles A., B1 5,425,806, Cl. 106-203.100.
Doolan, Joseph G.; and Cody, Charles A., to Rheox, Inc. Pourable water dispersible thickening composition for aqueous systems and a method of thickening said aqueous systems. B1 5,425,806, Cl. 106-203.100.
General Electric Company: *See*—
Haskell, Roger W., B1 5,098,797, Cl. 428-621.000.
Haskell, Roger W., to General Electric Company. Steel articles having protective duplex coatings and method of production. B1 5,098,797, Cl. 428-621.000.
Herman, Stewart T.; Pfeiffer, James B.; Sewald, Richard T., Sr.; and Sterner, Charles J., to Tetra Technologies, Inc. Treatment of industrial wastewaters. B1 4,465,597, Cl. 210-713.000.
Hornbeck, Larry J., to Texas Instruments Incorporated. Infrared detector. B1 5,021,663, Cl. 250-349.000.
Hoshino, Ryoichi; Sasaki, Hironaka; and Yasutake, Takayuki, to Showa Aluminum Corporation. Condenser for use in a car cooling system. B1 4,825,941, Cl. 165-110.000.
Kuratate, Tomoaki: *See*—
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Mao, Mark H. K.; Miller, Larry E.; and Weeman, John M., to Procter & Gamble Company, The. Process of preparing alkylpolysaccharides. B1 4,393,203, Cl. 536-124.000.
Miller, Larry E.: *See*—
Mao, Mark H. K.; Miller, Larry E.; and Weeman, John M., B1 4,393,203, Cl. 536-124.000.
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Nakagawa, Kenichi: *See*—
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Nakano, Satoshi: *See*—
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Pfeiffer, James B.: *See*—
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Rheox, Inc.: *See*—
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Sasaki, Hironaka: *See*—
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Piontek, Carl Joseph; Clegg, Robert Donald; Buck, Bradford Lynn; Fleming, Matthew Scott; Wilson, Grant Richard; Patton, William Edward; and Lyon, William Fred, 380,543, Cl. D24-108.000.
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Chen, Liang-Yuan. Wiper. 380,435, Cl. D12-219.000.
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Paciorek, Kazimiera J. L.; Masuda, Steven R.; Lin, Wen-Huey; and Warner, William M., H1,668, Cl. 528-125.000.
Love, Steve; Zimmerman, Eric; Rosa, Jim; and DiMuzio, Catherine. Technique for automatically preparing a dialysis machine at a predetermined date and time. H1,658, Cl. 134-18.000.
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ISSUED JULY 1, 1997

NOTE—First number, class; second number, subclass; third number, patent number

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CLASS 307
10.5 5,644,172
34 5,644,173
41 5,644,174
131 5,644,175

CLASS 310
12 5,644,176
40 MM 5,644,177
43 5,644,178
65 5,644,179
90 5,644,180
216 5,644,181
249 5,644,182
268 5,644,183
306 5,644,184
5,644,185
337 5,644,186

CLASS 312
7.2 5,642,922
258 5,642,923
408 5,642,924

CLASS 313
293 5,644,187
309 5,644,188
318.01 5,644,189
336 5,644,190
402 5,644,191
5,644,192
486 5,644,193

CLASS 315
123 5,644,194
169.3 5,644,195
368.18 5,644,196
368.28 Re.35,548
378 5,644,197
411 5,644,198

CLASS 318
114 5,644,199
139 5,644,200
283 5,644,201
369 5,644,202
439 5,644,203
568.12 5,644,204
801 5,644,205
807 5,644,206

CLASS 320
5 5,644,207
6 5,644,208
15 5,644,209
22 5,644,210
29 5,644,211
48 5,644,212

CLASS 322
28 5,644,213

CLASS 323
211 5,644,214
274 5,644,215
303 5,644,219
315 5,644,216
5,644,217
360 5,644,218

CLASS 324
71.3 5,644,220
71.5 5,644,221
74 5,644,222
158.1 5,644,223
165 5,644,224
202 5,644,225
207.21 5,644,226
207.24 5,644,227
235 5,644,228
247 5,644,229
5,644,230
303 5,644,231
309 5,644,232
318 5,644,233
5,644,234
321 5,644,235
326 5,644,236
5,644,237
424 5,644,238
439 5,644,239
5,644,240
454 5,644,241
545 5,644,242
626 5,644,243
637 5,644,244
754 5,644,245
5,644,246
755 5,644,247
760 5,644,248
762 5,644,249

CLASS 326
16 5,644,250
5,644,251
27 5,644,252
35 5,644,253
62 5,644,254
81 5,644,255

CLASS 327
41 5,644,256
96 5,644,257
110 5,644,258
143 5,644,259
238 5,644,260
277 5,644,261
5,644,262
310 5,644,263
318 5,644,264
333 5,644,265
534 5,644,266
553 5,644,267

CLASS 330
151 5,644,268
261 5,644,269

CLASS 331
34 5,644,270
176 5,644,271

CLASS 333
26 5,644,272
187 5,644,273
189 5,644,274
204 5,644,275
236 5,644,276
246 5,644,277

CLASS 335
210 5,644,278
228 5,644,279
256 5,644,280

CLASS 337
295 5,644,281
5,644,282

CLASS 338
20 5,644,283
22 R 5,644,284
39 5,644,285

CLASS 340
310.01 5,644,286
426 5,644,287
441 5,644,288
461 5,644,289
468 5,644,290
472 5,644,291
506 5,644,292
507 5,644,293
540 5,644,294
568 5,644,295
573 5,644,296
5,644,297
612 5,644,298
617 5,644,299
690 5,644,300
825.06 5,644,302
825.72 5,644,303
953 5,644,304

CLASS 341
67 5,644,305
5,644,306
68 5,644,307
120 5,644,308
5,644,309

143 5,644,310
152 5,644,311
160 5,644,312
163 5,644,313

CLASS 342
22 5,644,314
93 5,644,315
174 5,644,316
357 5,644,317
5,644,318

CLASS 343
625 5,644,366
702 5,644,319
5,644,320
826 5,644,321
915 5,644,322

CLASS 345
8 5,644,323
9 5,644,324
20 5,644,325
34 5,644,326
80 5,644,327
82 5,644,328
89 5,644,329
95 5,644,330
99 5,644,331
100 5,644,332
115 5,644,333
119 5,644,334
127 5,644,335
154 5,644,336
167 5,644,337
168 5,644,338
173 5,644,339
212 5,644,340
222 5,644,593

CLASS 347
11 5,644,341
12 5,644,342
17 5,644,343
19 5,644,344
32 5,644,345
33 5,644,346
5,644,347
37 5,644,348
46 5,644,349
101 5,644,350
194 5,644,351
221 5,644,352
224 5,644,353

CLASS 348
13 5,644,354
17 5,644,355
96 5,644,356
196 5,644,357
223 5,644,358
5,644,359
381 5,644,360
416 5,644,361
468 5,644,362
563 5,644,363
584 5,644,364
591 5,644,365
656 5,644,367
737 5,644,368

CLASS 349
10 5,644,369
43 5,644,370
86 5,644,416
110 5,644,371
122 5,644,415
134 B1 5,
139 5,644,372
158 5,644,373

CLASS 351
105 B1 5,
169 5,644,374
208 5,644,375

CLASS 352
241 5,644,376
243 5,644,377

CLASS 353
25 5,642,925
103 5,642,926
119 5,642,927

CLASS 355
27 5,644,379
50 5,644,380
53 5,644,381
55 5,644,382
68 5,644,383
72 5,644,384

CLASS 356
3.04 5,644,385
4.01 5,644,386
5.01 5,644,387
73 5,644,388
73.1 5,644,389
121 5,644,390
128 5,644,391
237 5,644,392
5,644,393
241 5,644,394
246 5,644,395
301 5,644,396
345 5,644,397
349 5,644,398
372 5,644,399
400 5,644,400
437 5,644,401
440 5,644,402

CLASS 358
296 5,644,403
402 5,644,404
404 5,644,405
433 5,644,406
434 5,644,407
448 5,644,408
461 5,644,409
471 5,644,410
529 5,644,411

CLASS 359
2 5,644,412
19 5,644,413
22 5,644,414
110 5,644,417
189 5,644,418
198 5,644,419
245 5,644,420
269 5,644,421
326 5,644,422
337 5,644,423
347 5,644,424
409 5,644,425
5,644,426
464 5,644,427
494 5,644,428
559 5,644,429
569 5,644,430
619 5,644,431
634 5,644,432
687 5,644,433
689 5,644,434
731 5,644,436
793 5,644,437
798 5,644,438
819 5,644,439
823 5,644,440
828 5,644,441
838 5,644,442
856 5,644,443

CLASS 360
60 5,644,444
71 5,644,445
72.2 5,644,446
5,644,447
97.01 5,644,448
103 5,644,449
104 5,644,450
105 5,644,451
106 5,644,452
5,644,453
5,644,454
113 5,644,455
5,644,456
121 5,644,457

CLASS 361
31 5,644,458
56 5,644,459
5,644,460
5,644,461
91 5,644,462
94 5,644,463
115 5,644,464
120 5,644,465
191 5,644,466
234 5,644,467
330 5,644,468
681 5,644,469
686 5,644,470
5,644,471
695 5,644,472
732 5,644,473
753 5,644,474
767 5,644,475
773 5,644,476
829 5,644,477
5,644,478

CLASS 362
61 5,642,928
85 5,642,929
124 5,642,930
186 5,642,931
206 5,642,932
243 5,642,933
287 5,642,934
294 5,642,935

CLASS 363
16 5,644,479
17 5,644,480
21 5,644,481
35 5,644,482
37 5,644,483
98 5,644,484
129 5,644,485

CLASS 364
132 5,644,486
140 5,644,487
423.098 5,644,488
424.07 5,644,489
426.018 5,644,490
431.04 5,644,491
464.25 5,644,492
468.02 5,644,493
478.11 5,644,494
484 5,644,495
489 5,644,496
5,644,497
5,644,498
5,644,499
490 5,644,500
496 5,644,501
5,644,502
497 5,644,503
514 A 5,644,504
514 B 5,644,505
514 R 5,644,506
5,644,507
516 5,644,508
526 5,644,509
557 5,644,510
565 5,644,511
571.02 5,644,512
572 5,644,513
577 5,644,514
578 5,644,515
708.1 5,644,516
725.02 5,644,517
735 5,644,518
736.01 5,644,520
736.02 5,644,519
736.5 5,644,521
745.02 5,644,522
754.02 5,644,523
766 5,644,524

CLASS 365
51 5,644,525
5,644,526
63 5,644,527
185.03 5,644,528
185.05 5,644,529
185.09 5,644,530
185.11 5,644,531
185.16 5,644,532
185.18 5,644,533
185.23 5,644,534
189.01 5,644,535
189.05 5,644,536
5,644,537
5,644,538
5,644,539
5,644,540
5,644,541
201 5,644,542
207 5,644,543
222 5,644,544
5,644,545
226 5,644,546
230.05 5,644,547
230.06 5,644,548
235 5,644,549

CLASS 366
106 5,642,937
110 5,642,938
132 5,642,939
150.1 5,642,940

CLASS 367
35 5,644,550

CLASS 368
5 5,644,551
10 5,644,552
320 5,644,553

CLASS 369
13 5,644,554
5,644,555
5,644,556
14 5,644,557
30 5,644,558
36 5,644,559
44.34 5,644,560
58 5,644,561
110 5,644,562
112 5,644,563
270 5,644,564
275.1 5,644,565
275.2 5,644,566

CLASS 370
225 5,644,567
276 5,644,574
311 5,644,568
324 5,644,572
401 5,644,571
416 5,644,575
437 5,644,576
468 5,644,570
473 5,644,569
503 5,644,573
506 5,644,577

CLASS 371
21.2 5,644,578
22.3 5,644,579
22.5 5,644,580
27 5,644,581
37.4 5,644,582
40.2 5,644,583

CLASS 372
20 5,644,584
25 5,644,585
44 5,644,586
45 5,644,587
66 5,644,588
92 5,644,589

CLASS 375
200 5,644,590
5,644,591
206 5,644,592
222 5,644,594
232 5,644,595
5,644,596
5,644,597
258 5,644,598
267 5,644,599
286 5,644,600
295 5,644,601
308 5,644,602
341 5,644,603
354 5,644,604
375 5,644,605
5,644,743
376 5,644,606

CLASS 376
268 5,644,607
272 5,644,608

CLASS 377
64 5,644,609

CLASS 378
19 5,644,610
98 5,644,611
98.12 5,644,613
98.2 5,644,612
147 5,644,614
149 5,644,615
206 5,644,616

CLASS 379
5 5,644,617
27 5,644,618
5,644,619
67 5,644,627
69 5,644,624
88 5,644,625
93.19 5,644,628
142 5,644,629
159 5,644,630
201 5,644,631
220 5,644,632
355 5,644,633
386 5,644,634
390 5,644,635

CLASS 380
4 5,644,636
15 5,644,637
25 5,644,638
30 5,644,639

CLASS 381
18 5,644,640
94.1 5,644,641

CLASS 382
103 5,644,642
110 5,644,643
112 5,644,644
124 5,644,645
128 5,644,646
132 5,644,649
5,644,650
154 5,644,651
162 5,644,647
177 5,644,648
186 5,644,652
187 5,644,653
199 5,644,654
209 5,644,655
215 5,644,656
229 5,644,657
232 5,644,660
5,644,658
276 5,644,659
300 5,644,661
302 5,644,662
313 5,644,663

CLASS 384
57 5,642,941
95 5,642,942
100 5,642,943
102 5,642,944
470 5,642,945
486 5,642,946
491 5,642,947

CLASS 385
2 5,644,664
3 5,644,665
43 5,644,666
49 5,644,667
90 5,644,668
123 5,644,669
124 5,644,670
135 5,644,671
137 5,644,672
138 5,644,673

CLASS 386
52 5,644,674
60 5,644,675

CLASS 392
407 5,644,676

CLASS 395
2.16 5,644,677
5,644,678
2.33 5,644,679
2.49 5,644,680
23 5,644,681
50 5,644,686
101 5,644,682
108 5,644,683
110 5,644,684
111 5,644,685
119 5,644,687
120 5,644,688
124 5,644,689
135 5,644,690
141 5,644,691
174 5,644,694
182.04 5,644,695
5,644,696
5,644,697
5,644,698
182.05 5,644,699
182.07 5,644,700
182.18 5,644,701
182.2 5,644,702
183.11 5,644,703
183.18 5,644,704
5,644,705
185.01 5,644,706
185.02 5,644,708
185.06 5,644,709
185.1 5,644,707
186 5,644,710
188.01 5,644,711
200.01 5,644,712
5,644,713
200.03 5,644,714
200.04 5,644,715
200.08 5,644,716
200.11 5,644,717
200.12 5,644,718
5,644,719
5,644,720
206 5,644,721
209 5,644,722
214 5,644,723
219 5,644,724
228 5,644,725
238 5,644,726
240 5,644,727
243 5,644,728
250 5,644,729
282 5,644,730
283 5,644,731
284 5,644,732
293 5,644,733
309 5,644,734
326 5,644,692
5,644,693
338 5,644,735
341 5,644,736
352 5,644,737
5,644,738
354 5,644,739
357 5,644,740
376 5,644,741
383 5,644,744
392 5,644,745
393 5,644,746
405 5,644,747
417 5,644,748
421.1 5,644,749
427 5,644,750
440 5,644,751
449 5,644,752
458 5,644,753
500 5,644,754
5,644,755
5,644,756
501 5,644,757
525 5,644,758
555 5,644,760
587 5,644,759
591 5,644,742
595 5,644,761
606 5,644,762
612 5,644,763
614 5,644,764
615 5,644,765
620 5,644,766
651 5,644,767
672 5,644,768
709 5,644,769
710 5,644,770
712 5,644,771
733 5,644,772
750 5,644,773
754 5,644,774
757 5,644,775
761 5,644,776
800 5,644,777
5,644,778
5,644,779
5,644,780
5,644,781
830 5,644,782
837 5,644,783
844 5,644,784
850 5,644,786
853 5,644,787
855 5,644,788
856 5,644,789
883 5,644,790
888 5,644,791

CLASS 396
284 5,644,378

CLASS 400
124.28 5,642,948
322 5,642,949
490 5,642,950
613.2 5,642,951
624 5,642,952

CLASS 401
30 5,642,953

CLASS 402
36 5,642,954

CLASS 403
24 5,642,955
122 5,642,956
297 5,642,957
359 5,642,958
388 5,642,959
407.1 5,642,960

CLASS 404
81 5,642,961
94 5,642,962

CLASS 405
100 5,642,963
154 5,642,964
191 5,642,965
195.1 5,642,966
229 5,642,967
286 5,642,968

CLASS 408
124 5,642,969

CLASS 409

132 5,642,970

CLASS 410

106 5,642,971

CLASS 411

353 5,642,972
431 5,642,973
453 5,642,974

CLASS 414

11 5,642,975
276 5,642,976
320 5,642,977
331 5,642,978
607 5,642,979
796.9 5,642,980

CLASS 415

55.1 5,642,981

CLASS 416

87 5,642,982
119 5,642,983
176 5,642,984
238 5,642,985
240 5,642,986

CLASS 417

53 5,642,987
273 5,642,988
298 5,642,989
444 5,642,990

CLASS 418

104 5,642,991
152 5,642,992

CLASS 420

56 5,643,530
64 5,643,531
84 5,643,532

CLASS 422

1 5,643,533
12 5,643,534
82.05 5,643,535
105 5,643,536
147 5,643,537
173 5,643,538
178 5,643,539
245.1 5,643,540
275 5,643,541

CLASS 423

212 5,643,542
213.5 5,643,543
245.3 5,643,544
5,643,545
447.2 5,643,546
447.4 5,643,547
540 5,643,548

CLASS 424

1.69 5,643,549
1.85 5,643,550
9.1 5,643,551
9.45 5,643,552
9.52 5,643,553
59 5,643,554
5,643,555
5,643,556
60 5,643,557
66 5,643,558
67 5,643,559
78.12 5,643,560
78.17 5,643,561
78.31 5,643,562
85.1 5,643,563
5,643,564
85.2 5,643,565
85.4 5,643,566
93.2 5,643,567
93.5 5,643,568
93.7 5,643,569
134.1 5,643,570
159.1 5,643,571
171.1 5,643,572
179.1 5,643,573
184.1 5,643,574
194.1 5,643,575
199.1 5,643,576
206.1 5,643,577
210.1 5,643,578
227.1 5,643,579
400 5,643,580
401 5,643,581
5,643,582
5,643,583
5,643,584
5,643,585
5,643,586
5,643,587
402 5,643,588
404 5,643,589
406 5,643,590
408 5,643,591
409 5,643,592
419 5,643,593
424 5,643,594
426 5,643,595
5,643,596
450 5,643,597
5,643,598
5,643,599
5,643,600
5,643,601
462 5,643,602
488 5,643,603
489 5,643,604
5,643,605
493 5,643,607
667 5,643,608

CLASS 425

12 5,643,609
5,643,610
72.1 5,643,611
125 5,643,612
135 5,643,613
169 5,643,614
186 5,643,615
195 5,643,616
298 5,643,617
382.4 5,643,618
534 5,643,619
556 5,643,620

CLASS 426

36 5,643,621
41 5,643,622
73 5,643,623
330.4 5,643,624
395 5,643,625
438 5,643,626
578 5,643,627

CLASS 427

2.31 5,643,628
8 5,643,629
133 5,643,630
218 5,643,631
250 5,643,632
255 5,643,633
5,643,634
257 5,643,635
376.2 5,643,636
534 5,643,637
569 5,643,638
577 5,643,639
578 5,643,640
595 5,643,641

CLASS 428

1 5,643,642
5 5,643,643
34 5,643,644
34.1 5,643,645
35.7 5,643,646
36.9 5,643,647
63 5,643,648
64.1 5,643,649
64.3 5,643,650
100 5,643,651
116 5,643,652
120 5,643,653
138 5,643,654
143 5,643,655
174 5,643,656
209 5,643,657
216 5,643,658
5,643,659
317.9 5,643,663
327 5,643,664
330 5,643,665
339 5,643,666
344 5,643,667
354 5,643,668
5,643,669
367 5,643,670
402 5,643,672
402.24 5,643,673
403 5,643,674
407 5,643,675
411.1 5,643,676
424.6 5,643,677
467 5,643,678
472 5,643,679
480 5,643,680
483 5,643,681
524 5,643,682
551 5,643,683
605 5,643,684
621 B1 5,
690 5,643,685
694 BM 5,643,686
694 ML 5,643,687
699 5,643,688

CLASS 429

33 5,643,689
34 5,643,690
54 5,643,691
72 5,643,692
121 5,643,693
181 5,643,694
197 5,643,695
210 5,643,696

CLASS 430

5 5,643,697
5,643,698
22 5,643,699
30 5,643,700
47 5,643,701
58 5,643,702
78 5,643,703
106.6 5,643,704
110 5,643,705
127 5,643,706
137 5,643,707
5,643,708
201 5,643,709
204 5,643,710
546 5,643,711

CLASS 431

153 5,642,993

CLASS 433

82 5,642,994
115 5,642,995
174 5,642,996
215 5,642,997
224 5,642,998

CLASS 435

1.2 5,643,712
4 5,643,713
4.21 5,643,736
5 5,643,714
5,643,715
5,643,716
6 5,643,717
5,643,718
5,643,719
5,643,720
5,643,721
5,643,722
5,643,723
5,643,724
5,643,725
5,643,726
5,643,727
5,643,728
5,643,729
5,643,730
7.1 5,643,738
5,643,731
5,643,732
5,643,733
7.22 5,643,737
7.23 5,643,740
7.24 5,643,741
7.6 5,643,734
7.9 5,643,735
13 5,643,739
29 5,643,742
34 5,643,743
68.1 5,643,744
69.1 5,643,745
5,643,746
5,643,747
5,643,748
5,643,749
5,643,750
5,643,751
5,643,752
69.2 5,643,753
69.3 5,643,754
5,643,755
69.5 5,643,756
69.7 5,643,757
5,643,758
5,643,759
70.21 5,643,760
85 5,643,761
91.1 5,643,762
5,643,763
5,643,764
91.2 5,643,765
91.21 5,643,768
91.3 5,643,767
106 5,643,769
172.3 5,643,770
5,643,771
5,643,772
182 5,643,773
183 5,643,774
193 5,643,775
196 5,643,776
220 5,643,777
227 5,643,778
232 5,643,779
252.3 5,643,790
252.33 5,643,791
254.23 5,643,792
280 5,643,793
289.1 5,643,794
299.1 5,643,795
325 5,643,781
5,643,783
5,643,785
5,643,786
5,643,788
371 5,643,782
5,643,787
375 5,643,780
402 5,643,789
912 5,643,766

CLASS 436

50 5,643,796
55 5,643,797
94 5,643,798
133 5,643,799
518 5,643,800

CLASS 437

7 5,643,801
9 5,643,802
15 5,643,803
21 5,643,804
31 5,643,805
5,643,806
5,643,808
5,643,809
5,643,810
39 5,643,807
40 5,643,811
43 5,643,812
5,643,813
5,643,814
44 5,643,815
45 5,643,816
51 5,643,817
5,643,818
60 5,643,819
5,643,820
62 5,643,821
67 5,643,822
5,643,823
69 5,643,824
70 5,643,825
88 5,643,826
127 5,643,827
133 5,643,828
180 5,643,829
5,643,830
183 5,643,831
187 5,643,832
195 5,643,833
210 5,643,834
211 5,643,835
228 5,643,836
5,643,837
5,643,838
247 5,643,839

CLASS 439

34 5,642,999
69 5,643,000
159 5,643,001
164 5,643,002
352 5,643,003
397 5,643,004
405 5,643,005
419 5,643,006
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595 5,643,009
598 5,643,010
619 5,643,011
622 5,643,012
660 5,643,013
680 5,643,014
701 5,643,015
744 5,643,016
843 5,643,017
852 5,643,018
876 Re.35,549

CLASS 440

2 5,643,019
31 5,643,020
61 5,643,021
5,643,022
76 5,643,023
5,643,024
88 5,643,025
112 5,643,026

CLASS 441

58 5,643,027
75 5,643,028
76 5,643,029
94 5,643,030
130 5,643,031

CLASS 442

192 5,643,660
325 5,643,661
361 5,643,662

CLASS 445

24 5,643,032
5,643,033
5,643,034

CLASS 446

15 5,643,035
23 5,643,036
28 5,643,037
75 5,643,038
208 5,643,039
429 5,643,040
455 5,643,041
475 5,643,042

CLASS 450

86 5,643,043

CLASS 451

5 5,643,044
5,643,045
6 5,643,046
5,643,047
5,643,048
10 5,643,049
5,643,050
11 5,643,051
21 5,643,052
28 5,643,053
34 5,643,054
36 5,643,055
41 5,643,056
81 5,643,057
99 5,643,058
164 5,643,059
285 5,643,060
289 5,643,061
355 5,643,062
356 5,643,063
378 5,643,064
403 5,643,065
442 5,643,066
444 5,643,067
526 5,643,068
540 5,643,069

CLASS 452

50 5,643,071
66 5,643,072
125 5,643,073
165 5,643,074
174 5,643,075
176 5,643,076

CLASS 454

54 5,643,077
66 5,643,078
139 5,643,079
155 5,643,080
284 5,643,081
337 5,643,082

CLASS 455

31.2 5,644,626
344 5,644,785
421 5,644,620
422 5,644,622
423 5,644,623
463 5,644,621

CLASS 463

1 5,643,083
9 5,643,084
5,643,085
29 5,643,086
38 5,643,087
40. 5,643,088

CLASS 464

37 5,643,089
130 5,643,090
144 5,643,091
145 5,643,092
183 5,643,093

CLASS 472

92 5,643,094

CLASS 473

44 5,643,095
135 5,643,096
215 5,643,097
230 5,643,098
238 5,643,099
250 5,643,100
251 5,643,101
290 5,643,102
5,643,103
305 5,643,104
308 5,643,105
328 5,643,106
5,643,107
329 5,643,108
5,643,109
330 5,643,110
332 5,643,111
350 5,643,112
386 5,643,113
408 5,643,114
417 5,642,880
448 5,642,879
537 5,642,881
549 5,642,882
578 5,643,115
586 5,642,887

CLASS 474

11 5,643,116
110 5,643,117
237 5,643,118

CLASS 475

5 5,643,119
5,643,120
72 5,643,121
80 5,643,122
119 5,643,123
123 5,643,124
127 5,643,125
159 5,643,126
160 5,643,127
168 5,643,128
204 5,643,129
5,643,130
210 5,643,131

CLASS 476

10 5,643,132

CLASS 477

107 5,643,133
130 5,643,134
154 5,643,135
169 5,643,136
5,643,137

CLASS 482

4 5,643,138
14 5,643,139
51 5,643,140
52 5,643,141
54 5,643,142
5,643,143
5,643,144
57 5,643,145
63 5,643,146
72 5,643,147
77 5,643,148
82 5,643,149
96 5,643,150
98 5,643,151
100 5,643,152
110 5,643,153
111 5,643,154
5,643,155
5,643,156
112 5,643,157
121 5,643,158
125 5,643,159
126 5,643,160
127 5,643,161
131 5,643,162
142 5,643,163
146 5,643,164
5,643,165

CLASS 493

304 5,643,166
464 5,643,167

CLASS 494

16 5,643,168
53 5,643,169

CLASS 501

18 5,643,840
20 5,643,841
88 5,643,842
92 5,643,843
152 5,643,844

CLASS 502

103 5,643,845
104 5,643,846

117 5,643,847
167 5,643,848
185 5,643,849
326 5,643,850

CLASS 503

201 5,643,851
227 Re.35,550

CLASS 504

126 5,643,852
130 5,643,853
219 5,643,854
224 5,643,855

CLASS 505

300 5,643,856
451 5,643,857

CLASS 507

140 5,643,858

CLASS 508

454 5,643,859

CLASS 510

245 5,643,860
365 5,643,861
466 5,643,862
5,643,863
499 5,643,864
521 5,643,865

CLASS 512

4 5,643,866

CLASS 514

3 5,643,867
5,643,868
9 5,643,869
11 5,643,870
5,643,871
5,643,872
12 5,643,873
5,643,874
5,643,875
13 5,643,876
15 5,643,877
19 5,643,878
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21 5,643,880
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27 5,643,885
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43 5,643,888
44 5,643,889
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54 5,643,892
64 5,643,893
113 5,643,894
125 5,643,895
146 5,643,896
169 5,643,898
171 5,643,899
182 5,643,900
183 5,643,897
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192 5,643,902
212 5,643,903
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215 5,643,905
228.8 5,643,784
235.8 5,643,906
236.8 5,643,907
247 5,643,908
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274 5,643,913
277 5,643,914
279 5,643,915
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311 5,643,925
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343 5,643,928
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372 5,643,933
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399 5,643,936
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403 5,643,938
411 5,643,939
422 5,643,940
432 5,643,941
456 5,643,942
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470 5,643,944
476 5,643,945
512 5,643,946
523 5,643,947
533 5,643,948
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539 5,643,950
557 5,643,951
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561 5,643,954
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563 5,643,957
568 5,643,958
569 5,643,959
570 5,643,960
574 5,643,961
5,643,962
5,643,963
575 5,643,964
619 5,643,965
626 5,643,966
653 5,643,967

CLASS 521

27 5,643,968
81 5,643,969
155 5,643,970

CLASS 523

122 5,643,971
206 5,643,972
212 5,643,973
334 5,643,974
400 5,643,975
404 5,643,976
411 5,643,977

CLASS 524

5 5,643,978
100 5,643,979
5,643,980
141 5,643,981
267 5,643,982
5,643,983
272 5,643,984
291 5,643,985
366 5,643,986
442 5,643,987
449 5,643,988
494 5,643,989
496 5,643,990
5,643,991
501 5,643,992
524 5,643,993
533 5,643,994
538 5,643,995
561 5,643,996

CLASS 525

71 5,643,997
103 5,643,998
193 5,643,999
236 5,644,000
285 5,644,001
411 5,644,002
423 5,644,003
444 5,644,004
5,644,005
489 5,644,006

CLASS 526

64 5,644,007
116 5,644,008
128 5,644,009
273 5,644,010
319 5,644,011

CLASS 527

311 5,644,012

CLASS 528

15 5,644,013
43 5,644,014
60 5,644,015
170 5,644,016
196 5,644,017
247 5,644,018
272 5,644,019
288 5,644,020
336 5,644,021
353 5,644,022
392 5,644,023

CLASS 530

317 5,644,024
5,644,025
326 5,644,026
331 5,644,028
333 5,644,029
350 5,644,030
5,644,031

CLASS 534

382 5,644,032
388.22 5,644,033
388.23 5,644,034
395 5,644,035
412 5,644,036
16 5,644,037
557 5,644,038
573 5,644,039
635 5,644,040

CLASS 536

4.1 5,644,041
17.5 5,644,042
18.4 5,644,043
18.5 5,644,044
23.5 5,644,045
5,644,046
23.7 5,644,047
25.3 5,644,048
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123.13 5,644,050
124 B2 4,

CLASS 540

205 5,644,051
221 5,644,052
310 5,644,053
491 5,644,054
522 5,644,055

CLASS 544

105 5,644,056
280 5,644,057
5,644,058
336 5,644,059

CLASS 546

19 5,644,060
240 5,644,061
277.1 5,644,062
294 5,644,063

CLASS 548

523 5,644,064

CLASS 588

252 5,643,170

CLASS 600

1 5,643,171
16 5,643,172
26 5,643,173
114 5,643,174
133 5,643,175
173 5,643,176
204 5,643,177
5,643,178

CLASS 601

2 5,643,179
24 5,643,180
112 5,643,181
119 5,643,182

CLASS 602

3 5,643,183
19 5,643,184
26 5,643,185
32 5,643,186
43 5,643,187
54 5,643,188
58 5,643,189

CLASS 604

4 5,643,190
5,643,191
5,643,192
6 5,643,193
8 5,643,194
9 5,643,195
14 5,643,196
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174 5,643,216
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267 5,643,229
280 5,643,230
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352 5,643,235
353 5,643,236
366 5,643,237
368 5,643,238
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385.1 5,643,241
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385.2 5,643,243
5,643,244
387 5,643,245
890.1 5,643,246
891.1 5,643,247

CLASS 606

1 5,643,248
4 5,643,249
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7 5,643,251
9 5,643,252
17 5,643,253
32 5,643,254
41 5,643,255
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73 5,643,267
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107 5,643,275
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166 5,643,299
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171 5,643,304
180 5,643,305
182 5,643,306
184 5,643,307
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193 5,643,311
198 5,643,312
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5,643,314
201 5,643,315
205 5,643,316
213 5,643,317
214 5,643,318
218 5,643,319
232 5,643,320
5,643,321

CLASS 607

2 5,643,322
5,643,323
5 5,643,324
8 5,643,325
14 5,643,326
24 5,643,327
36 5,643,328
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49 5,643,332
88 5,643,333
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101 5,643,335
104 5,643,336
107 5,643,337
123 5,643,338

CLASS 623

1 5,643,339
5,643,340

CLASS 800

2 5,644,065
220 5,644,066

CLASSIFICATION OF DESIGNS

D2— 622 380,285
853 380,286
901 380,287
904 380,288
959 380,289
961 380,290
972 380,291
D3— 204 380,292
208 380,293
217 380,294
243 380,295
263 380,296
276 380,297
279 380,298
310 380,299
313 380,300
319 380,301
D4— 104 380,302
199 380,303
D6— 335 380,304
368 380,305
380,306
369 380,307
380,308
380,309
380,310
380,311
380,312
370 380,313
380 380,314
428 380,315
438 380,316
446 380,317
451 380,318
474 380,319
480 380,320
380,321
492 380,322
508 380,323
511 380,324
518 380,325
525 380,326
552 380,327
559 380,328
579 380,329
380,330
629 380,331
634 380,332
D7— 309 380,333
380,334
380,335
321 380,336
322 380,337
328 380,338
350 380,339
351 380,340
354 380,341
363 380,342
384 380,343
394 380,344
395 380,345
402 380,346
409 380,347
536 380,348
543 380,349
558 380,350
597 380,351
602 380,352
641 380,353
667 380,354
679 380,355
380,356
701 380,357
D8— 5 380,358
8 380,359
10 380,360
14 380,361
52 380,362
83 380,363
89 380,364
102 380,365
103 380,366
380,367
107 380,368
342 380,369
343 380,370
354 380,371
358 380,372
375 380,373
382 380,374
396 380,375
D9— 314 380,376
341 380,377
380,378
347 380,379
380,380
425 380,381
434 380,382
380,383
448 380,384
452 380,385
503 380,386

	520	380,387		114	380,423			380,459		37	380,493		283	380,528	D26—	1	380,563
	529	380,388		146	380,424		109	380,460		65	380,494		287	380,529		16	380,417
	542	380,389			380,425		113	380,456		86	380,495		304	380,530		26	380,564
	558	380,390		147	380,426		114	380,461		90	380,496		309	380,531			380,565
D10—	30	380,391			380,427			380,462	D20—	4	380,497		351	380,532		37	380,566
		380,392		191	380,428			380,463		10	380,498		353	380,533		38	380,567
	31	380,393		193	380,429		115	380,464	D21—	4	380,499		356	380,534		63	380,568
	32	380,394			380,430			380,465		5	380,500		365	380,535		67	380,569
		380,395		209	380,431		121	380,466		13	380,501			380,536		84	380,570
	40	380,396			380,432			380,467		34	380,502			380,537			380,571
		380,397			380,433		137	380,468		48	380,503		367	380,538		85	380,572
	46.1	380,398		219	380,434		149	380,469		122	380,504		377	380,539		101	380,573
	50	380,399			380,435		157	380,470			380,505		383	380,540		106	380,574
	70	380,400		223	380,436		191	380,471		147	380,506			380,541			380,575
	106	380,401		307	380,437		195	380,472		177	380,507		404	380,542			380,576
	111	380,402		317	380,438		218	380,473		191	380,517	D24—	108	380,543		110	380,577
	126	380,403		414	380,439		231	380,474		193	380,508			380,544		111	380,578
D11—	17	380,404	D13—	101	380,440		240	380,475		195	380,509		110.1	380,545		133	380,579
	89	380,405		102	380,441		249	380,476		196	380,510		111	380,546		144	380,580
	121	380,406			380,442		250	380,477		197	380,511		122	380,547			380,581
	164	380,407		110	380,443	D15—	4	380,478		214	380,512		135	380,548	D27—	173	380,583
		380,408		112	380,444		7	380,479		217	380,513		177	380,549		183	380,582
		380,409		125	380,445		124	380,480		219	380,514		185	380,550	D28—	10	380,584
		380,410		142	380,446		150	380,481			380,515		186	380,551			
		380,411		164	380,447	D16—	100	380,482		225	380,516		189	380,552			
		380,412		167	380,448		135	380,483		234	380,518		224	380,553			
		380,413		168	380,449		202	380,484		240	380,519			380,554			
		380,414			380,450		232	380,485	D22—	118	380,520			380,555			
		380,415		170	380,451		327	380,486		141	380,521		231	380,556			
		380,416		171	380,452		335	380,487	D23—	206	380,522	D25—	42	380,557			
	222	380,418		177	380,453	D18—	34	380,488			380,523		64	380,558			
D12—	7	380,419		182	380,454		56	380,489		209	380,524		68	380,559			
	91	380,420		184	380,455			380,490		233	380,525		113	380,560			
		380,421	D14—	103	380,457			380,491		245	380,526		124	380,561			
	102	380,422		106	380,458	D19—	11	380,492		261	380,527			380,562			

CLASSIFICATION OF PLANTS

P.—	39	9,937	43.2	9,939	70.3	9,941		9,943	88.8	9,945	
	42.1	9,938		9,940	88.1	9,942		9,944			

STATUTORY INVENTION REGISTRATIONS

134—	18	H1658	210—	670	H1661	436—	518	H1664	525—	438	H1667	604—	367	H1670			
148—	669	H1659	252—	182.12	H1662	510—	218	H1665	528—	125	H1668						
180—	6.2	H1660	367—	146	H1663	522—	3	H1666		300	H1669						

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 :	5,642,673	5,642,683	5,643,185	5,643,622	5,644,152	5,644,508
	5,642,804	5,642,684	5,643,191	5,643,633	5,644,155	5,644,513
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02 :	5,643,170	5,642,792	5,643,260	5,643,734	5,644,243	5,644,555
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	5,642,841	5,642,816	5,643,276	5,643,741	5,644,251	5,644,571
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18 :	380,493		380,542		380,359		380,316	41 :	380,327		380,460
	380,496		380,574		380,363		380,317		380,362		380,462
19 :	380,563	27 :	380,292		380,440		380,322		380,461		380,470
20 :	380,370		380,299		380,469		380,531		380,549	49 :	380,419
	380,478		380,305		380,584	39 :	380,302		380,571	50 :	380,297
	380,521		380,381	36 :	380,294		380,348		380,579	51 :	380,500
21 :	380,520		380,476		380,353		380,424		380,580		380,572
22 :	380,406		380,488		380,354		380,425		380,581	53 :	380,482
	380,506		380,494		380,378		380,426	42 :	380,313		380,492
24 :	380,474		380,495		380,389		380,427		380,328		380,541
25 :	380,291		380,560		380,451		380,479		380,369	55 :	380,323
	380,293	29 :	380,383		380,453		380,533		380,455		380,326
	380,331		380,522		380,498		380,543		380,477		
	380,361		380,558		380,518		380,546	44 :	380,350		
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26 :	380,360		380,559	37 :	380,296		380,573		380,502		

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06 :	9,937		9,938		9,941	12 :	9,945	26 :	9,939		9,940

STATUTORY INVENTION REGISTRATIONS

06 :	H1661		H1668	26 :	H1665	39 :	H1659	47 :	H1669	51 :	H1663
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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1194 O.G. 618, on January 21, 1997.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on September 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective May 1, 1997, due to a change in the exchange rate of the U.S. dollar with regard to the German mark, and was announced in the *Official Gazette* at 1197 O.G. 69, on April 22, 1997.

International fees were changed, effective on May 1, 1997, due to a change in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1197 O.G. 69, on April 22, 1997.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective October 1, 1996, and were announced in the *Official Gazette* at 1189 O.G. 62, on August 20, 1996.

The schedule of PCT fees (in U.S. dollars), effective May 1, 1997, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	230.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
— No corresponding prior U.S. national application filed	680.00
— Corresponding prior U.S. national application filed	440.00
— Supplemental search fee, per additional invention (payable only upon invitation)	200.00
European Patent Office as ISA	1425.00
International fees	
Basic fee :	530.00
Basic supplemental fee (for each page over 30)	10.00
Designation fee per country or region	
— For the first 11 national or regional offices designated	128.00
— For each designation in excess of 11 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
— Designation fee	128.00
— Confirmation fee	64.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
— USPTO was ISA in PCT Chapter I	480.00
— Additional examination fee, per additional invention (payable only upon invitation)	140.00
— USPTO was not ISA in PCT Chapter I	730.00
— Additional examination fee, per additional invention (payable only upon invitation)	260.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
— All claims presented satisfied provisions of PCT Article 33(2) to (4)	48.00	96.00
— All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	350.00	700.00
USPTO was ISA but not IPEA	385.00	770.00
USPTO was neither ISA nor IPEA		
— Search report has not been prepared by the European Patent Office or the Japanese Patent Office	520.00	1040.00
— Search report has been prepared by the European Patent Office or the Japanese Patent Office	455.00	910.00
Other National fees		
— For each independent claim in excess of 3	40.00	80.00
— For each claim in excess of 20	11.00	22.00
— For each application containing a multiple dependent claim	130.00	260.00
— Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
— Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

March 31, 1997

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on July 05, 1994 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,325,537 through 5,327,584
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on July 03, 1990 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,937,879 through 4,939,793
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on July 01, 1986 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,597,108 through 4,598,426
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1996, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $510.00
By other than a small entity $1,020.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,025.00
By other than a small entity $2,050.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on applications filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,540.00
By other than a small entity $3,080.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:
(1) unavoidable $680.00
(2) unintentional $1,600.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED April 30, 1997
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 33,295	07/045,052	08/14/90
(4,513,986)	(06/508,880)	(04/30/85)
Re. 33,654	07/501,004	08/06/91
(4,823,475)	(07/170,832)	(04/25/89)
Re. 33,753	07/459,304	11/26/91
(4,824,636)	(07/022,204)	(04/25/89)
Re. 33,970	07/419,232	06/23/92
(4,824,049)	(07/124,721)	(04/25/89)
4,513,468	06/520,881	04/30/85
4,513,482	06/603,988	04/30/85
4,513,489	06/482,282	04/30/85
4,513,495	06/534,688	04/30/85
4,513,497	06/655,985	04/30/85
4,513,503	06/468,709	04/30/85
4,513,506	06/522,290	04/30/85
4,513,511	06/407,581	04/30/85
4,513,515	06/468,716	04/30/85
4,513,520	06/469,896	04/30/85
4,513,533	06/445,590	04/30/85
4,513,547	06/416,681	04/30/85
4,513,571	06/418,601	04/30/85
4,513,573	06/530,650	04/30/85
4,513,575	06/554,408	04/30/85
4,513,576	06/560,305	04/30/85
4,513,585	06/224,009	04/30/85
4,513,606	06/407,201	04/30/85
4,513,613	06/502,057	04/30/85
4,513,614	06/498,064	04/30/85
4,513,625	06/509,478	04/30/85
4,513,627	06/501,761	04/30/85
4,513,630	06/395,378	04/30/85
4,513,634	06/409,768	04/30/85
4,513,637	06/382,772	04/30/85
4,513,648	06/502,977	04/30/85
4,513,649	06/498,777	04/30/85
4,513,662	06/542,945	04/30/85
4,513,663	06/554,585	04/30/85
4,513,665	06/501,384	04/30/85
4,513,672	06/517,839	04/30/85
4,513,678	06/514,818	04/30/85
4,513,680	06/440,332	04/30/85
4,513,686	06/530,392	04/30/85
4,513,691	06/555,132	04/30/85
4,513,692	06/605,197	04/30/85
4,513,699	06/468,384	04/30/85
4,513,704	06/557,313	04/30/85
4,513,705	06/557,321	04/30/85
4,513,707	06/487,052	04/30/85
4,513,709	06/442,195	04/30/85
4,513,724	06/358,440	04/30/85
4,513,725	06/297,320	04/30/85
4,513,729	06/444,036	04/30/85
4,513,742	06/418,070	04/30/85
4,513,744	06/441,633	04/30/85
4,513,750	06/582,492	04/30/85
4,513,751	06/474,273	04/30/85
4,513,762	06/534,087	04/30/85
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4,513,767	06/469,588	04/30/85
4,513,774	06/480,306	04/30/85
4,513,778	06/518,193	04/30/85
4,513,780	06/578,124	04/30/85
4,513,788	06/555,371	04/30/85
4,513,794	06/423,079	04/30/85
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4,513,815	06/542,870	04/30/85
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4,513,869	06/611,116	04/30/85
4,513,871	06/615,214	04/30/85
4,513,882	06/396,760	04/30/85
4,513,885	06/427,504	04/30/85
4,513,888	06/428,742	04/30/85
4,513,892	06/485,394	04/30/85
4,513,903	06/444,402	04/30/85
4,513,904	06/518,595	04/30/85
4,513,909	06/651,489	04/30/85
4,513,910	06/651,490	04/30/85
4,513,915	06/447,103	04/30/85
4,513,922	06/534,057	04/30/85
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4,513,944	06/632,321	04/30/85
4,513,950	06/494,165	04/30/85
4,513,960	06/542,671	04/30/85
4,514,003	06/301,778	04/30/85
4,514,010	06/487,054	04/30/85
4,514,012	06/516,730	04/30/85
4,514,019	06/285,155	04/30/85
4,514,023	06/552,605	04/30/85
4,514,031	06/387,371	04/30/85
4,514,033	06/544,470	04/30/85
4,514,038	06/345,018	04/30/85
4,514,040	06/468,994	04/30/85
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4,514,045	06/436,030	04/30/85
4,514,046	06/562,327	04/30/85
4,514,050	06/400,810	04/30/85
4,514,053	06/520,178	04/30/85
4,514,077	06/467,781	04/30/85
4,514,078	06/482,084	04/30/85
4,514,095	06/549,179	04/30/85
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5,205,651	07/846,819	04/27/93
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5,205,656	07/702,051	04/27/93
5,205,661	07/848,317	04/27/93
5,205,669	07/673,944	04/27/93
5,205,677	07/685,592	04/27/93
5,205,679	07/825,123	04/27/93
5,205,685	07/956,385	04/27/93
5,205,687	07/793,497	04/27/93
5,205,689	07/880,569	04/27/93
5,205,693	07/881,238	04/27/93
5,205,696	07/522,903	04/27/93
5,205,697	07/687,804	04/27/93
5,205,698	07/722,156	04/27/93
5,205,700	07/785,554	04/27/93
5,205,705	07/817,858	04/27/93
5,205,706	07/831,060	04/27/93
5,205,718	07/942,714	04/27/93
5,205,724	07/815,953	04/27/93
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5,205,743	07/822,912	04/27/93
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5,205,747	07/882,577	04/27/93
5,205,758	07/892,296	04/27/93
5,205,762	07/803,424	04/27/93
5,205,771	07/833,555	04/27/93
5,205,773	07/792,964	04/27/93
5,205,781	07/921,998	04/27/93
5,205,786	07/687,169	04/27/93
5,205,796	07/946,401	04/27/93
5,205,799	07/817,607	04/27/93
5,205,800	07/792,367	04/27/93
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5,205,813	07/753,925	04/27/93
5,205,814	07/890,856	04/27/93
5,205,832	07/881,305	04/27/93
5,205,839	07/968,428	04/27/93
5,205,850	07/888,906	04/27/93
5,205,852	07/792,532	04/27/93
5,205,863	07/791,721	04/27/93
5,205,898	07/613,046	04/27/93
5,205,907	07/796,952	04/27/93
5,205,911	07/611,581	04/27/93
5,205,913	07/732,866	04/27/93
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5,205,938	07/850,657	04/27/93
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5,205,941	07/739,472	04/27/93
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5,205,948	07/521,866	04/27/93
5,205,952	07/760,876	04/27/93
5,205,954	07/730,315	04/27/93
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5,206,088	07/792,031	04/27/93
5,206,094	07/621,098	04/27/93
5,206,110	07/650,341	04/27/93
5,206,111	07/639,354	04/27/93
5,206,113	07/575,642	04/27/93
5,206,135	07/635,013	04/27/93
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5,206,144	07/607,766	04/27/93
5,206,145	07/751,670	04/27/93
5,206,158	07/569,729	04/27/93
5,206,164	07/835,278	04/27/93
5,206,169	07/769,935	04/27/93
5,206,175	07/810,361	04/27/93
5,206,179	07/674,803	04/27/93
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5,206,192	07/794,920	04/27/93
5,206,201	07/704,069	04/27/93
5,206,220	07/742,782	04/27/93
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5,206,243	07/666,833	04/27/93
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5,206,247	07/755,155	04/27/93
5,206,256	07/687,802	04/27/93
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5,206,297	07/665,494	04/27/93
5,206,304	07/751,586	04/27/93
5,206,310	07/645,877	04/27/93
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5,206,320	07/898,605	04/27/93
5,206,322	07/888,998	04/27/93
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5,206,430	07/782,299	04/27/93
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5,206,505	07/824,928	04/27/93
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5,206,582	07/570,998	04/27/93
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5,206,652	07/788,951	04/27/93
5,206,654	07/886,112	04/27/93
5,206,670	07/793,617	04/27/93
5,206,671	07/546,544	04/27/93
5,206,681	07/760,274	04/27/93
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5,206,726	07/694,412	04/27/93
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5,206,764	07/604,911	04/27/93
5,206,765	07/859,102	04/27/93
5,206,767	07/459,014	04/27/93
5,206,771	07/571,641	04/27/93
5,206,777	07/764,255	04/27/93
5,206,797	07/602,104	04/27/93
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5,206,842	07/410,341	04/27/93
5,206,875	07/751,812	04/27/93
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5,206,879	07/734,459	04/27/93
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5,206,897	07/739,423	04/27/93
5,206,900	07/708,722	04/27/93
5,206,909	07/643,250	04/27/93
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5,206,920	07/824,354	04/27/93
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Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

5,244,534, Re. S.N. 08/527,954, Sept. 14, 1995, Cl. 156/636, TWO-STEP CHEMICAL MECHANICAL POLISHING PROCESS FOR PRODUCING FLUSH AND PROTRUDING TUNGSTEN PLUGS, Chris C. Yu, et. al., Owner of Record: *Micron Technology, Inc., Boise, Idaho,* Attorney or Agent: Michael L. Lynch, Ex. Gp.: 1104

5,276,679, Re. S.N. 08/582,680, Jan. 4, 1996, Cl. 370/84, METHOD FOR MAINTAINING CHANNELS AND A SUBSCRIBER STATION FOR USE IN AN ISDN SYSTEM, Thomas D. McKay, et. al., Owner of Record: *US West Advanced Technologies, Inc., Boulder, Colo.,* Attorney or Agent: Judson D. Cary, Ex. Gp.: 2603

5,280,780, Re. S.N. 08/841,470, April 22, 1997, Cl. 60, EXHAUST GAS PURIFYING DEVICE FOR AN OUTBOARD MOTOR, Masafumi Sougawa, et. al., Owner of

Record: *Inventors,* Attorney or Agent: Ernest A. Beutler, Ex. Gp.: 3406

5,285,313, Re. S.N. 08/598,374, Feb. 8, 1995, Cl. 369/554, IMAGE STABILIZING APPARATUS, Takashi Kobayashi, et. al., Owner of Record: *Cannon Kabushiki Kaisha, Tokyo, Japan,* Attorney or Agent: James D. Daley, Ex. Gp.: 2507

5,339,805, Re. S.N. 08/701,244, Aug. 23, 1996, Cl. 128/200, BLIND OROLARYNGEAL AND OROESOPHAGEAL GUIDING AND AIMING DEVICE, Jeffrey D. Parker, Owner of Record: *Parker Medical Limited Partnership, Cincinnati, Ohio,* Attorney or Agent: Kurt L. Grossman, Ex. Gp.: 3307

5,352,797, Re. S.N. 08/726,167, Oct. 4, 1996, Cl. 548/406, SILANE-TYPE COUPLING AGENT, PROCESS FOR ITS PREPARATION, AND ITS USE FOR THE PRODUCTION OF A CONDUCTING COATING ON GLASS, Bertrand Bloch, et. al., Owner of Record: *Office National D'Etudes ET DE Recherches Aerospatia, Chatillon Sous Bagneux, France,* Attorney or Agent: Le-Hhung McLeland, Ex. Gp.: 1201

5,356,076, Re. S.N. 08/733,397, Oct. 18, 1996, Cl. 239, SHOWER SOAP DISPENSER FOR LIQUID SOAPS, Robert A. Bishop, Owner of Record: *Inventor,* Attorney or Agent: Michael L. Harrison, Ex. Gp.: 3104

5,358,075, Re. S.N. 08/736,462, Oct. 24, 1996, Cl. 188/001.110, BRAKE MOVEMENT AND ADJUSTABLE MONITORING DEVICE, Richard J. Jarzombek, Owner of Record: *Richard J. Jarzombek, Baiting Hollow, N.Y.,* Attorney or Agent: John E. Carlson, Ex. Gp.: 3103

5,362,039, Re. S.N. 08/747,147, Nov. 8, 1996, Cl. 271/225, DEVICE FOR TURNING A SHEET WITH A SIMULTANEOUS CHANGE IN CONVEYING DIRECTION, Johannes J. M. Kusters, Owner of Record: *Bell and Howell Gmbh, Friedberg/Hessen, Germany,* Attorney or Agent: David D. Beatty, Ex. Gp.: 3101

5,363,936, Re. S.N. 08/674,423, July 2, 1996, Cl. 180/009, FRICTIONALLY DRIVEN BELTED WORK VEHICLE, Charles E. Grawey, et. al., Owner of Record: *Caterpillar, Inc., Peoria, Ill.,* Attorney or Agent: Larry G. Cain, Ex. Gp.: 3106

5,373,652, Re. S.N. 08/772,070, Dec. 19, 1996, Cl. 37/403, SWEEPING APPLIANCE FOR EXCAVATORS, Gunnar Olsson, Owner of Record: *Inventor,* Attorney or Agent: Peter N. Lalos, Ex. Gp.: 3501

5,377,613, Re. S.N. 08/777,725, Dec. 20, 1996, Cl. 114/332, SUBMERSIBLE BOAT, David B. Wyman, et. al., Owner of Record: *The United States of America as Represented By The Secretary of The Navy, Washington, D.C.,* Attorney or Agent: Harvey A. Gilbert, Ex. Gp.: 3102

5,379,249, Re. S.N. 08/775,742, Dec. 31, 1996, Cl. 365/104, SEMICONDUCTOR MEMORY DEVICE INCLUDING MEMORY CELLS CONNECTED TO A GROUND LINE, Hirotada Kuriyama, et. al., Owner of Record: *Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan,* Attorney or Agent: Stephen A. Becker, Ex. Gp.: 2511

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,609,548, Reexam. No. 90/004,647, May 22, 1997, Cl. 424/205.1, VACCINES FOR PSEUDORABIES DISEASE AND METHODS FOR USE OF SAME, Malon Kit, et. al., Owner of Record: *Novagene Inc., Houston, Tex.,* Attorney or Agent: Gordon Kit, Shugrue, Mion, Zinn, MacPeak & Seas, Washington, D.C., Ex. Gp.: 1806, Requester: Syntro Corp. & Syntrovet Inc., c/o John P. White, Cooper & Dunham, New York, N.Y.

5,043,438, Reexam. No. 90/004,646, May 22, 1997, Cl. 536/119, PROCESS FOR THE SYNTHESIS OF POLYLOL FATTY ACID ESTERS, Markus G. Buter, Owner of Record: *Lever Brothers Co., New York, N.Y.,* Attorney or Agent: Pennie & Edmonds, New York, N.Y., Ex. Gp.: 1211, Requester: Owner

5,410,843, Reexam. No. 90/004,645, April 18, 1997, Cl. 451/043, PROCESS FOR FINISHING THE EDGE OF CORRECTIVE LENSES MADE OF PLASTIC, Lutz Gottschald, Owner of Record: *Wernicke & Co., Dusseldorf, Germany,* Attorney or Agent: Klein & Vibber, Westport, Conn., Ex. Gp.: 3203, Requester: Owner

5,559,190, Reexam. No. 90/004,648, May 22, 1997, Cl. 525/270, DIFUNCTIONAL TELECHELIC LINEAR NON-CROSSLINKED POLYOLEFINS, Philip O. Nubel, et. al., Owner of Record: *Amoco Corp., Chicago, Ill.,* Attorney or Agent: G. Byron Stover, Amoco Corp., Chicago, Ill., Ex. Gp.: 1501, Requester: Owner

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Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED
April 07, 1997
DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date
111,192	71/079,446	07/04/1916
111,291	71/090,739	07/04/1916
111,299	71/092,927	07/04/1916
336,144	71/374,230	06/30/1936
336,181	71/373,291	06/30/1936
336,242	71/373,898	06/30/1936
336,291	71/375,361	06/30/1936
336,305	71/367,335	06/30/1936
336,325	71/375,564	06/30/1936
336,326	71/375,558	06/30/1936
336,335	71/369,905	06/30/1936
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617,055	71/683,595	12/06/1955
629,778	71/699,408	07/03/1956
629,779	71/692,587	07/03/1956
629,780	71/694,730	07/03/1956
629,782	71/674,383	07/03/1956
629,789	71/693,828	07/03/1956
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629,846	71/692,691	07/03/1956
629,850	71/696,250	07/03/1956
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629,864	71/699,097	07/03/1956
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630,092	71/694,877	07/03/1956
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1,042,036	73/058,280	06/29/1976
1,042,038	73/018,372	06/29/1976
1,042,039	73/022,822	06/29/1976
1,042,040	73/030,379	06/29/1976
1,042,043	73/037,693	06/29/1976
1,042,044	73/037,694	06/29/1976
1,042,047	73/049,735	06/29/1976
1,042,049	73/053,174	06/29/1976
1,042,050	73/054,139	06/29/1976
1,042,051	73/054,414	06/29/1976
1,042,058	73/062,187	06/29/1976
1,042,060	73/063,080	06/29/1976
1,042,065	73/065,994	06/29/1976
1,042,066	73/066,393	06/29/1976
1,042,070	73/066,880	06/29/1976
1,042,071	73/066,906	06/29/1976
1,042,072	73/066,908	06/29/1976
1,042,073	73/066,975	06/29/1976
1,042,075	73/067,643	06/29/1976
1,042,078	73/021,551	06/29/1976
1,042,079	73/028,260	06/29/1976
1,042,080	73/028,445	06/29/1976
1,042,081	73/032,306	06/29/1976
1,042,082	73/054,461	06/29/1976
1,042,083	73/055,686	06/29/1976
1,042,085	73/068,408	06/29/1976
1,042,086	73/009,832	06/29/1976
1,042,089	73/046,818	06/29/1976
1,042,091	73/053,024	06/29/1976
1,042,093	73/053,663	06/29/1976
1,042,100	73/014,883	06/29/1976
1,042,102	73/019,114	06/29/1976
1,042,103	73/021,558	06/29/1976
1,042,104	73/021,771	06/29/1976
1,042,105	73/022,122	06/29/1976
1,042,109	73/034,426	06/29/1976
1,042,112	73/039,722	06/29/1976
1,042,114	73/044,622	06/29/1976
1,042,116	73/048,787	06/29/1976
1,042,117	73/048,907	06/29/1976
1,042,120	73/055,089	06/29/1976
1,042,123	73/058,983	06/29/1976
1,042,124	73/059,008	06/29/1976
1,042,129	73/062,698	06/29/1976
1,042,133	73/065,636	06/29/1976
1,042,135	73/066,333	06/29/1976
1,042,136	73/066,675	06/29/1976
1,042,137	73/066,947	06/29/1976
1,042,139	73/030,219	06/29/1976
1,042,140	73/039,968	06/29/1976
1,042,141	73/045,500	06/29/1976
1,042,142	73/054,502	06/29/1976
1,042,145	73/061,703	06/29/1976
1,042,151	73/029,884	06/29/1976
1,042,158	73/043,309	06/29/1976
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1,042,171	73/053,724	06/29/1976
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1,042,174	73/054,860	06/29/1976
1,042,184	73/060,638	06/29/1976
1,042,187	73/063,777	06/29/1976
1,042,188	73/063,903	06/29/1976
1,042,189	73/065,407	06/29/1976
1,042,190	73/065,504	06/29/1976
1,042,191	73/066,599	06/29/1976
1,042,199	73/043,166	06/29/1976
1,042,200	73/053,153	06/29/1976
1,042,203	73/061,224	06/29/1976
1,042,206	73/064,890	06/29/1976
1,042,208	73/066,020	06/29/1976
1,042,209	73/071,674	06/29/1976
1,042,211	73/001,767	06/29/1976
1,042,212	73/009,764	06/29/1976
1,042,213	73/043,133	06/29/1976
1,042,215	73/054,323	06/29/1976
1,042,221	73/049,774	06/29/1976
1,042,231	73/025,156	06/29/1976
1,042,236	73/048,577	06/29/1976
1,042,242	73/005,803	06/29/1976
1,042,248	73/036,273	06/29/1976
1,042,255	73/044,819	06/29/1976
1,042,266	73/055,784	06/29/1976
1,042,268	73/058,013	06/29/1976
1,042,269	73/059,409	06/29/1976
1,042,270	73/059,411	06/29/1976
1,042,272	73/059,413	06/29/1976
1,042,273	73/061,456	06/29/1976
1,042,275	73/039,458	06/29/1976
1,042,276	73/058,656	06/29/1976
1,042,279	73/037,623	06/29/1976
1,042,282	73/048,487	06/29/1976
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1,042,285	73/061,237	06/29/1976
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1,042,292	73/050,192	06/29/1976
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1,042,301	73/065,955	06/29/1976
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1,042,321	73/063,222	06/29/1976
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1,042,337	73/048,965	06/29/1976
1,042,339	73/049,716	06/29/1976
1,042,341	73/053,330	06/29/1976
1,042,349	73/049,891	06/29/1976
1,042,351	73/051,639	06/29/1976
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1,042,438	73/066,313	06/29/1976
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1,042,441	73/067,016	06/29/1976
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1,042,478	73/043,560	06/29/1976
1,042,481	73/047,907	06/29/1976
1,042,485	73/053,066	06/29/1976
1,042,490	73/064,234	06/29/1976
1,042,498	73/060,994	06/29/1976
1,042,499	73/001,312	06/29/1976
1,042,503	73/049,477	06/29/1976
1,042,505	73/061,052	06/29/1976
1,042,519	73/055,256	06/29/1976
1,042,520	73/006,945	06/29/1976
1,042,521	73/013,226	06/29/1976
1,042,522	73/016,310	06/29/1976
1,042,527	73/040,688	06/29/1976
1,042,528	73/043,363	06/29/1976
1,042,529	73/044,035	06/29/1976
1,042,530	73/046,646	06/29/1976
1,042,532	73/047,713	06/29/1976
1,042,533	73/047,715	06/29/1976
1,042,534	73/048,045	06/29/1976
1,042,535	73/049,481	06/29/1976
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1,042,542	73/057,951	06/29/1976
1,042,545	72/428,452	06/29/1976
1,042,548	72/443,584	06/29/1976
1,042,549	72/443,965	06/29/1976
1,042,552	72/439,156	06/29/1976
1,042,558	72/451,908	06/29/1976
1,042,561	72/462,347	06/29/1976
1,042,562	72/463,800	06/29/1976
1,042,564	72/449,647	06/29/1976
1,042,565	72/431,042	06/29/1976
1,042,569	72/431,051	06/29/1976
1,042,570	72/448,824	06/29/1976
1,042,576	73/063,571	06/29/1976
1,042,577	73/041,232	06/29/1976
1,042,578	73/026,924	06/29/1976
1,042,579	73/052,772	06/29/1976

Service by Publication

A petition to cancel the registrations identified below having been filed, and the notice of such proceeding sent by certified mail to registrants at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days of this publication, the cancellation will proceed as in the case of default.

L & S Investors Corp., New York, N.Y., Reg. Nos. 1,136,461 and 1,136,462, for the marks "THE STORK CLUB RESTAURANT" and Design and "STORK CLUB", respectively, Canc. No. 25,809.

A. B. L. Jewelers, Inc., New York, N.Y., Reg. No. 1,134,564, for the mark "ABL", Canc. No. 26,185.

JEAN BROWN
Technical Program Manager
Trademark Trial
and Appeal Board, for
ROBERT M. ANDERSON
Deputy Assistant Commissioner
for Trademarks

Service by Publication

A petition to cancel the registration identified below has been filed, and a copy of the petition together with the notice of institution of such proceeding is being sent to registrant at its last known address. Simultaneously therewith, notice is hereby given that unless the registrant listed herein, its assigns or legal representatives, shall enter an appearance within thirty days of this publication, or unless an answer or other response to the petition is filed within forty days after the mailing of the institution notice, or within an extension of time therefor, the cancellation will proceed as in the case of default.

VSC, Inc., Clara City, Minn., Reg. No. 771,916 for the mark "PAUL BUNYAN", Canc. No. 25,903.

JEAN BROWN
Technical Program Manager
Trademark Trial
and Appeal Board, for
ROBERT M. ANDERSON
Deputy Assistant Commissioner
for Trademarks

Errata

"All reference to Patent No. 5,614,569 to Venkat S. Venkataramani, et al of New York, for FLAME RETARDANT POLYMER COMPOSITIONS WITH COATED BORON PHOSPHATE appearing in the Official Gazette of March 25, 1997, should be deleted since no patent was granted."

"All reference to Patent No. 5,636,148 to Edward G. Newman, et al. of Virginia, for HANDS-FREE, PORTABLE COMPUTER AND SYSTEM appearing in the Official Gazette of June 3, 1997, should be deleted since no patent was granted."

"All reference to Patent No. 5,639,646 to Tomoko Kojima, et al. of Japan, for STEREOSPECIFIC ALCOHOL DEHYDROGENASE ISOLATED FROM CANDIDA PARAPSILOSIS, AMINO ACID AND DNA SEQUENCES THEREFOR, AND METHOD OF PREPARATION THEREOF appearing in the Official Gazette of June 17, 1997, should be deleted since no patent was granted."

Erratum

Under the section "Patents Reinstated Due to the Acceptance of a Late Maintenance Fee" appearing at 1198 OG 46 (May 13, 1997) patent number 4,371,306 should be deleted. This patent was not reinstated and has expired due to failure to pay the maintenance fee.

Patents Available For License or Sale

4,795,171 SELF PRESSURIZED SHAFT OR CLOSURE SEAL

Contact: L. James Ristas
Chilton, Alix & Van Kirk
750 Main Street
Hartford, Conn. 06103
(voice) : (860) 527-9211
(fax) : (860) 527-5029

5,402,999 BASKETBALL SAFETY RETURN

Contact: Michael F. Petock
46 The Commons At Valley Forge
1220 Valley Forge Rd.
P.O. Box 856
Valley Forge, Pa. 19482-0856
(voice) : (610) 935-8600
(fax) : (610) 933-9300

5,441,183 VEHICULAR COMPARTMENTALIZER UNIT

Contact: Michael J. Frenzel
7134 Richards Drive
Baton Rouge, La. 70809
(voice) : (504) 926-0560
(fax) : (504) 926-1509

5,489,165 EARTH RETAINER BEAM AND METHOD (FOR BUILDING LINER PONDS)

Contact: David J. Smith
Serenity Ponds & Streams
4488 Candleberry Ave.
Seal Beach, Calif. 90740
(voice) : (310) 430-5284

5,634,441 POWER TRANSFER MECHANISM

Contact: W. Parker Ragain
3100 River Exchange Dr.
#616
Norcross, Ga. 30092
(voice) : (770) 242-7516

5,644,917 KINEMATIC STIRLING ENGINE

Contact: Thomas McWaters
113 Miami Gardens Drive
Miami, Ariz. 85539

Registration to Practice

The following person successfully passed the registration examination that was held October 14, 1992, and has been given provisional recognition pursuant to 37 CFR 10.9(a) to prepare and prosecute patent applications before the Office until applicant's registration certificate is mailed to applicant. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before August 22, 1997.

Elpel, Jeanne M., 7870 Southdown Rd., Alexandria, Va. 22308

June 12, 1997 KAREN L. BOVARD, *Director*
Office of Enrollment and Discipline

Registration to Practice

The following list contains the names of persons who successfully passed the registration examination that was held May 3, 1995 and have been given provisional recognition pursuant to 37 CFR 10.9(a) to prepare and prosecute patent applications before the Office until their registration certificates are mailed to them. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before August 22, 1997.

Levine, Howard W., 7500 Woodmont Ave., #701, Bethesda, Md. 20814

McGee, David R., 1990 Marshall Rd., Vacaville, Calif. 95687

Soldner, Michael C., 4801 Kim Lane, #C, Madison, Wis. 53704

June 12, 1997 KAREN L. BOVARD, *Director*
Office of Enrollment and Discipline

Registration to Practice

The following list contains the names of persons applying before the United States Patent and Trademark Office who have been given provisional recognition pursuant to 37 CFR 10.9(a) to prepare and prosecute patent applications before the Office until their registration certificates are mailed to them. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before August 22, 1997.

Haley, Jacqueline, 6317 Chastain Dr., Atlanta, Ga. 30342

Lowe, Scott L., 1716 Milton St., Alexandria, Va. 22303

Woods, Raymond D., 7106 Whetstone Rd., Alexandria, Va. 22306

June 12, 1997 KAREN L. BOVARD, *Director*
Office of Enrollment and Discipline

Certificates of Correction
For the Week of July 8, 1997

D. 283,703	5,441,870	5,542,781	5,570,453
D. 324,438	5,443,921	5,544,356	5,570,461
D. 371,571	5,447,196	5,544,469	5,570,559
D. 374,162	5,449,673	5,545,508	5,570,761
D. 376,378	5,459,823	5,545,818	5,571,251
D. 377,768	5,460,748	5,545,906	5,572,091
D. 378,279	5,463,561	5,546,082	5,572,606
D. 378,867	5,464,630	5,546,194	5,572,633
P. 09,171	5,466,131	5,546,533	5,574,071
Re. 35,321	5,466,244	5,546,577	5,574,545
4,656,134	5,480,249	5,546,878	5,574,892
4,831,555	5,481,470	5,547,560	5,574,924
5,053,941	5,483,387	5,548,235	5,575,757
5,130,310	5,485,304	5,549,106	5,575,912
5,150,319	5,486,831	5,549,451	5,576,179
5,186,938	5,494,731	5,553,889	5,576,285
5,196,844	5,495,530	5,555,101	5,576,457
5,198,460	5,496,816	5,556,452	5,576,559
5,260,207	5,499,036	5,558,726	5,576,731
5,260,436	5,499,758	5,558,728	5,577,136
5,268,118	5,500,195	5,558,860	5,577,162
5,270,452	5,501,644	5,559,259	5,578,463
5,277,416	5,503,778	5,559,730	5,578,474
5,277,739	5,509,551	5,560,861	5,578,823
5,280,516	5,511,645	5,561,496	5,578,886
5,314,662	5,512,090	5,562,114	5,579,051
5,318,710	5,517,263	5,562,728	5,579,221
5,332,531	5,517,499	5,562,970	5,579,438
5,352,788	5,518,940	5,563,230	5,579,450
5,373,960	5,522,659	5,563,517	5,579,460
5,376,961	5,522,820	5,563,989	5,579,530
5,386,235	5,523,540	5,564,676	5,580,045
5,393,747	5,526,006	5,565,145	5,580,183
5,399,177	5,526,711	5,565,830	5,580,230
5,411,362	5,531,947	5,565,889	5,580,711
5,420,090	5,532,332	5,566,373	5,580,998
5,435,556	5,532,929	5,566,387	5,581,282
5,435,884	5,534,010	5,567,862	5,581,774
5,436,980	5,534,614	5,568,109	5,583,057
5,440,398	5,540,855	5,568,196	5,583,226
5,441,527	5,541,785	5,569,040	5,583,302
5,583,519	5,594,538	5,607,414	5,618,328
5,583,553	5,594,549	5,607,505	5,618,425
5,583,616	5,594,551	5,607,668	5,619,183
5,583,620	5,594,708	5,607,692	5,619,240
5,583,667	5,594,783	5,607,723	5,619,437
5,583,682	5,595,778	5,607,858	5,619,559
5,583,753	5,596,022	5,607,962	5,619,887
5,583,919	5,596,428	5,608,058	5,620,326
5,584,486	5,596,720	5,608,072	5,620,389
5,584,716	5,596,899	5,608,089	5,620,436
5,585,667	5,597,440	5,608,493	5,620,602
5,585,719	5,597,734	5,608,540	5,620,618
5,585,795	5,597,807	5,608,679	5,620,743
5,585,902	5,597,970	5,608,927	5,620,834
5,585,914	5,598,256	5,609,373	5,620,985
5,585,969	5,598,805	5,609,395	5,620,986
5,586,635	5,599,303	5,609,560	5,621,023
5,586,713	5,599,464	5,609,798	5,621,111
5,586,928	5,600,196	5,609,815	5,621,245
5,586,933	5,600,240	5,610,162	5,621,316
5,587,780	5,600,399	5,610,593	5,621,622
5,587,817	5,600,887	5,610,709	5,621,878
5,587,834	5,601,581	5,610,783	5,622,094
5,588,092	5,601,695	5,611,700	5,622,141
5,588,742	5,601,771	5,612,220	5,622,194
5,589,262	5,601,899	5,612,491	5,622,315
5,589,706	5,602,039	5,612,497	5,622,579
5,589,882	5,602,209	5,612,568	5,622,642
5,589,924	5,602,244	5,612,878	5,622,671
5,590,095	5,603,259	5,613,589	5,622,953
5,590,324	5,603,883	5,613,735	5,622,990
5,590,560	5,604,287	5,613,844	5,623,545
5,590,676	5,604,332	5,613,902	5,623,573
5,591,152	5,604,472	5,614,157	5,623,648
5,591,623	5,604,861	5,614,607	5,623,741
5,591,900	5,604,959	5,615,341	5,623,770
5,592,194	5,605,026	5,615,471	5,623,822
5,592,532	5,605,099	5,615,680	5,624,111
5,592,575	5,605,428	5,615,740	5,624,575
5,592,592	5,605,659	5,616,023	5,624,868
5,592,766	5,605,728	5,616,247	5,624,987
5,593,148	5,605,997	5,616,376	5,625,013
5,593,266	5,606,035	5,616,378	5,625,099
5,593,426	5,606,115	5,616,440	5,625,890
5,593,483	5,606,295	5,616,502	5,626,524
5,593,580	5,606,652	5,616,536	5,626,724
5,593,757	5,606,880	5,616,861	5,627,115
5,593,805	5,607,122	5,616,901	5,628,168
5,593,825	5,607,140	5,617,578	
5,594,537	5,607,302	5,617,779	

Summary of Final Decisions
Issued by the
Trademark Trial and Appeal Board
May 19 - May 23, 1997

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	TTAB Decision	Mark and Goods Cited by Examining Attorney	Recommended for Publication
5-19	EX	74/558,109	Momentum! Sport und Mode Vertriebs GmbH	2(d)		"SUBWEAR" [shirts, t-shirts, sweaters, jackets, shorts, pants, bathing suits and bikinis]	Refusal Affirmed	"TAG INT. SUBWEAR" [t-shirts, shorts, denim jeans, pants, woven and knitted tops, shirts, sweaters, and headwear]	No
5-20	EX	74/502,191	PNC Bank Corp.	2(d)		"CAPITAL DIRECTIONS" [investment advice, investment of funds for others, and investment management]	Refusal Reversed	"DIRECTIONS" [an investment strategy service which furnishes financial and investment advice on the basis of analyzing industrial performance]	No
5-20	EX	74/578,307	Omnicor, Inc.	whether applicant has used the mark that it seeks to register [mutilation]		"WIKKI" (in stylized lettering) [wax-impregnated yarn strands for drawing, tracing, spelling, and teaching; creative art toys made of wax-impregnated yarn strands]	Refusal Affirmed		No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION

SPECIAL BOXES FOR PATENT MAIL

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Washington, D.C. 20231

Box Designations	Explanation
Box 7	Reissue applications for patents involved in litigation and subsequently filed related papers.
Box 12	Contributions to the Examiner Education Program.
Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box Comments Patents	Public comments regarding patent related regulations and procedures.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or materials related to the Disclosure Document Program.
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Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62).
Box Issue Fee	All communications following the receipt of a PTOL–85, "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box Missing Parts	Response to the Notice to File Missing Parts of Application and associated papers and fees.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box PATENT APPLICATION	New patent applications and associated papers and fees.
Box Patent Ext.	Applications for patent term extension and any communications relating thereto.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Provisional Patent Application	The filing of all provisional patent applications and any communications relating thereto.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return post card or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

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Box TTAB FEE	Oppositions, cancellation petitions, and ex parte appeals.
Box TTAB NO FEE	Interferences, motions, and extension requests.
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Box POST REG FEE	Affidavits, renewals, corrections and amendments.
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Box 8	All papers for the Office of the Solicitor *except* communications relating to *pending litigation and disciplinary proceedings*; papers relating to pending litigation in court cases shall be mailed only to Office of the Solicitor, P.O. Box 15667, Arlington, Virginia 22215 and papers relating to pending disciplinary proceedings before the Administrative Law Judge or the Commissioner shall be mailed only to the Office of the Solicitor, P.O. Box 16116, Arlington, Virginia 22215.
Box 9	Coupon orders for U.S. patent and trademark copies.
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Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 16	Deposit Account Replenishment Checks.
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box Assignment	All assignment documents except those filed with new applications.
Box EEO	Mail for the Office of Civil Rights.
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box M Fee	Correspondence regarding patent maintenance fees and related matter.
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Reference Collections of U.S. Patents and Trademarks Available for Public Use in Patent and Trademark Depository Libraries

The following libraries, designated as Patent and Trademark Depository Libraries (PTDLs), receive patent and trademark information in various formats from the U.S. Patent and Trademark Office. Many PTDLs have on file all full-text patents issued since 1790, trademarks published since 1872, and select collections of foreign patents. All PTDLs have both the patent and trademark sections of the *Official Gazette of the U.S. Patent and Trademark Office*. The full-text utility and design patents are distributed numerically on 16 mm microfilm, and plant patents on color microfiche. Patent and trademark search systems on CD-ROM (Compact Disc-Read Only) format are available at all PTDLs to increase utilization of and enhance access to the information found in patents and trademarks. It is through the CD-ROM systems that preliminary patent and trademark searches can be conducted through the numerically arranged collections.

All information is available for use by the public free of charge.

In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

Since there are variations in the scope of patent and trademark collections among the PTDLs, and their hours of service to the public vary, anyone contemplating use of these collections at a particular library is urged to contact that library in advance about its collections, services, and hours in order to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(334) 844-1747
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Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7010
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	(415) 557-4500
	Sunnyvale Center for Innovation, Invention and Ideas	(408) 730-7290
Colorado	Denver Public Library	(303) 640-6220
Delaware	Newark: University of Delaware Library	(302) 831-2965
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Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Hawaii	Honolulu: Hawaii State Public Library System	(808) 586-3477
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 747-4450
	Springfield: Illinois State Library	(217) 782-5659
Indiana	Indianapolis-Marion County Public Library	(317) 269-1741
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Iowa	Des Moines: State Library of Iowa	(515) 281-4118
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Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 405-9157
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Media Union Library, University of Michigan	(313) 647-5735
	Big Rapids: Abigail S. Timme Library, Ferris State University	(616) 592-3602
	Detroit: Great Lakes Patent and Trademark Center	(313) 833-3379
Minnesota	Minneapolis Public Library and Information Center	(612) 372-6570
Mississippi	Jackson: Mississippi Library Commission	(601) 359-1036
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
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	Piscataway: Library of Science and Medicine, Rutgers University	(908) 445-2895
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	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
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Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
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	Lubbock: Texas Tech University	(806) 742-2282
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West Virginia	Morgantown: Evansdale Library, West Virginia University	(304) 293-2510 Ext. 113
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PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, ENGINEERING AND DESIGNS, GROUP 1100—THEODORE MORRIS, Director	308-0661	12/17/95
ORGANIC CHEMISTRY, DRUG, BIO-AFFECTING AND BODY TREATING COMPOSITION, GROUP 1200/2900—JOHN E. KITTLE, Director	308-1235	09/21/95
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—RICHARD V. FISHER, Director	308-0651	10/11/95
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—MARY LEE, Acting Director	308-2351	11/08/95
BIOTECHNOLOGY, GROUP 1800—JOHN J. DOLL, Director	308-0196	03/24/95
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—STEWART LEVY, Director	308-1782	05/05/95
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	04/30/95
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—JOSEPH J. ROLLA, Director	305-3900	07/10/95
SPECIAL COMPUTER APPLICATIONS: COMPUTER GRAPHICS, BUSINESS PRACTICES, & DIAGNOSTIC TESTING, GROUP 2400—GERALD GOLDBERG, Director	305-3900	07/20/95
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	07/08/95
TELECOMMUNICATIONS, GROUP 2600—NICHOLAS P. GODICI, Director	305-3900	05/14/95
DESIGN, GROUP 2900—JOHN E. KITTLE, Director	308-0661	05/03/95
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—JOHN F. TERAPANE, JR., Director	308-1113	09/13/95
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—ETHEL CROSS, Director	308-1148	08/20/95
MEDICAL INSTRUMENTS, DIAGNOSTIC EQUIPMENT AND TREATMENT DEVICES; SURGERY AND SURGICAL SUPPLIES; AMUSEMENT AND EXERCISING DEVICES; ANIMAL HUSBANDRY; SPORTING GOODS; TOBACCO PRODUCTS AND MANUFACTURING EQUIPMENT; AND PRINTING, GROUP 3300—J.J. LOVE, Director	308-0858	10/13/95
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	08/15/95
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-2168	11/20/95

*A communication from the examiner should have been received in most applications filed prior to this date.

Patents will Expire as Follows:
(1) The term of any utility or plant patent that is in force on or results from an application filed before June 8, 1995 is the greater of the 20 year term provided in 35 U.S.C. 154(a)(2) or 17 years from grant subject to any terminal disclaimers. 35 U.S.C. 154(c)(1).
(2) All utility and plant patents granted on applications having an actual United States filing date on or after June 8, 1995 are granted for a term which begins on the date on which the patent is granted and ends 20 years from the date on which the application was filed in the United States. If the application contains a specific reference to an earlier application under 35 U.S.C. 120, 121 or 365(c), the patent term ends twenty years from that date on which the earliest application was filed. 35 U.S.C. 154(a)(2).
(3) All design patents are granted for a term of 14 years from the date of the grant.
However, the term of any patent may have been curtailed by disclaimer under the provisions of 35 U.S.C. 153, have lapsed due to failure to pay maintenance fees, or have been extended under the provisions of 35 U.S.C. 154, 155, or 156. Thus, if more reliable information is needed with respect to a particular patent, then the specific patent file should be reviewed to determine the actual date of patent expiration.

TRADEMARK OPERATION

Bruce A. Lehman, Commissioner
Philip G. Hampton, II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Office
Condition of Trademark Applications as of June 1, 1997

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 101—Ron Williams, Managing Attorney, (703) 308–9101—4th Floor Foods, Beverages, Wines & Spirits—Int. Classes 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/09/96	03/06/97
Law Office 102—Myra Kurzbard, Managing Attorney, (703) 308–9102—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/25/96	03/03/97
Law Office 103—Michael A. Szoke, Acting Managing Attorney, (703) 308–9103—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/31/96	05/15/97
Law Office 104—Sidney Moskowitz, Managing Attorney, (703) 308–9104—6th Floor Unwrought metals, Industrial Equipment, Tools, Installation, Vehicles, Firearms, Musical Instruments, Building Materials & Floor Coverings—Int. Classes 6, 7, 8, 11, 12, 13, 15, 19, 27 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/15/96	03/05/97
Law Office 105—Thomas Howell, Managing Attorney, (703) 308–9105—6th Floor Chemicals, Paints, Lubricants, Pharmaceuticals, Medical Apparatus & Tobacco—Int. Classes 1, 2, 4, 5, 10, 34 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/14/96	04/07/97
Law Office 106—Mary Sparrow, Managing Attorney, (703) 308–9106—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/01/96	01/30/97
Law Office 107—Thomas Lamone, Managing Attorney, (703) 308–9107—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/06/97	03/27/97
Law Office 108—David Shallant, Managing Attorney, (703) 308–9108—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/08/96	02/20/97
Law Office 109—Deborah Cohn, Managing Attorney, (703) 308–9109—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/13/97	04/17/97
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Terron Simms, Director, (703) 308-9100 Trademark Assistance Center—(703) 308-9000 Pre-Examination—Alan Lambert, Supervisor, (703) 308-9401 ext. 188 Intent-To-Use—(ITU)—(703) 308-9500 Post Registration Section—Mary Bowman, Supervisor, (703) 308-9500 ext. 126		
Affidavits Under Sections 8 & 15 (All Classes)	05/06/97	—0—
Renewals (All Classes)	05/05/97	—0—
Section 12(c) Publications (All Classes)	03/13/97	—0—

1. ** Assigned to all Law Office

2. Applicants with inquiries concerning the status of their applications and a touch telephone should call (703) 305–8747 from 6:30 a.m. to Midnight EST, Monday through Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquiries concerning the status of their applications. See SECTION 411 of the TRADEMARK MANUAL OF EXAMINING PROCEDURE.

3. * These dates identify the oldest unassigned new case in each Law Office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examining attorney.

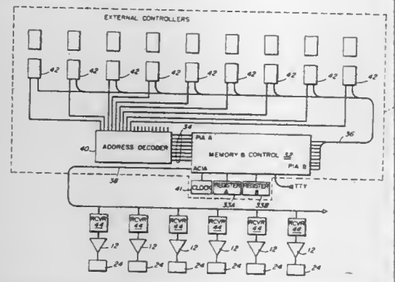
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REEXAMINATIONS

JULY 8, 1997

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,095,139 (3252nd)
LIGHT CONTROL SYSTEM
Alan P. Symonds, Needham Heights, and William K. Durfee, Cambridge, both of Mass., assignors to Vari-Lite, Inc.
Reexamination Request No. 90/003,188, Sep. 7, 1993.
Reexamination Certificate for Patent 4,095,139, issued Jun. 13, 1978, Ser. No. 798,259, May 18, 1977.
Int. Cl.[6] H05B *37/02*
U.S. Cl. 315—153



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **12–14** is confirmed.

Claims **1–3, 5, 6** and **15** are cancelled.

Claim **4** is determined to be patentable as amended.

Claims **7–11**, dependent on an amended claim, are determined to be patentable.

New claims **16** and **17** are added and determined to be patentable.

4. A system **[**in accordance with claim **2]** *for controlling the light intensity level of a light group including one or more lights, said system comprising, in combination:*

control means for generating a parallel binary-coded signal representative of a predetermined signal level to be applied to said light group;

signal generating means for generating a unique and predetermined serially-coded address signal corresponding to said light group and for generating a serially-coded data signal representatives of said signal level in response to said parallel binary-coded signal;

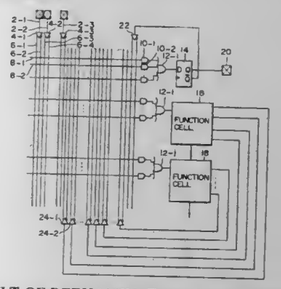
receiver means for applying said signal level to said light group only in response to said address signal and said data signal;

a common bus for transmitting said address and data signals from said signal generating means to said receiver means;

wherein said control means includes switching means movable between a first position wherein said parallel binary-coded signal is representative of a preselected minimum signal level and a second position wherein said parallel binary-coded signal is representative of a preselected maximum signal level; and

wherein said switching means includes a photomask having a plurality of tracks, and means including an array of photosensitive elements disposed on one said of said photomask and movable between said first and second positions so that said photosensitive elements can be selectively energized depending upon the position of said elements relative to said tracks of said photomask.

B1 4,763,020 (3253rd)
PROGRAMMABLE LOGIC DEVICE HAVING PLURAL PROGRAMMABLE FUNCTION CELLS
Akira Takata, and Koichi Fujii, both of Toyonaka, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Reexamination Request No. 90/004,331, Aug. 9, 1996.
Reexamination Certificate for Patent 4,763,020, issued Aug. 9, 1988, Ser. No. 903,781, Sep. 4, 1986.
Claims priority, application Japan, Sep. 6, 1985, 60-198102; Sep. 10, 1985, 60-201358; Sep. 13, 1985, 60-204157; Oct. 17, 1985, 60-232992
Int. Cl.[6] H03K *19/177*
U.S. Cl. 365—185.17



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **1** is determined to be patentable as amended.

Claims **2–5**, dependent on an amended claim, are determined to be patentable.

New claims **6–9** are added and determined to be patentable.

1. A programmable logic device, comprising:

a plurality of input terminals;

an AND plane connected to said plurality of input terminals;

an OR plane connected to said AND plane;

at least one output terminal connected to said OR plane;

at least one of said AND and OR planes including an array of programmable elements which can be selectively programmed to define a desired logic circuit therein *said AND and OR planes being part of a programmable logic unit*; and

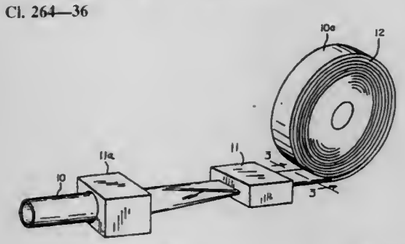
at least two function cells, each connected to at least said OR plane, each of said function cells having a particular structure for selectively providing one of a plurality of predetermined functions, said at least two function cells being operatively connected to each other to define an integrated function when a control signal supplied *from said programmable logic unit* has a first state and disconnected from each other when said control signal has a second state which is different from said first state.

B1 4,867,921 (3254th)

PROCESS FOR INSTALLING A NEW PIPE INSIDE AN EXISTING PIPELINE

Campbell H. Steketee, Jr., Salem, Oreg., assignor to Nu-Pipe, Inc., Salem, Oreg.

Reexamination Request No. 90/004,414, Oct. 18, 1996.
Reexamination Certificate for Patent 4,867,921, issued Sep. 19, 1989, Ser. No. 76,973, Jul. 28, 1987.
Continuation-in-part of Ser. No. 864,322, Mar. 31, 1986, abandoned.
Int. Cl.[6] B29C *31/00;53/08;63/34*
U.S. Cl. 264—36



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–14** is confirmed.

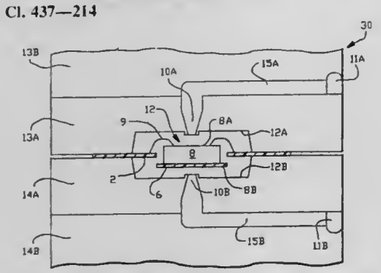
1. A method of lining an existing pipeline with a substantially rigid thermoplastic pipe comprising the steps of:
manufacturing a substantially rigid, thermoplastic pipe in a flattened and folded shape in at least a length comparable to the length of an existing pipeline to be lined;
said flattened and folded thermoplastic pipe having cross-sectional dimensions less than the cross-sectional dimensions of the lumen of the existing pipeline to be lined to facilitate insertion of the flattened and folded pipe into the existing pipeline;
storing the flattened and folded pipe on storage means in a layered condition to facilitate transport of the flattened and folded pipe to an installation site;
heating the flattened and folded pipe at the installation site while the pipe remains in the flattened and folded shape;
removing the heated, flattened and folded pipe from the storage means;
said heating of said pipe being sufficient to render said pipe softened and deformable to facilitate extending of the pipe from the storage means to a substantially elongated condition for insertion into the existing pipeline and to enable subsequent expanding of the pipe from the flattened and folded shape;
feeding the heated, elongated pipe through the lumen of the existing pipeline while it remains flattened and folded;
positioning the heated, elongated, flattened and folded pipe within the lumen of the existing pipeline;
heating the pipe, now positioned inside of the existing pipeline, the pipe remaining in its flattened and folded shape;
applying internal pressure to the pipe positioned inside the existing pipeline thereby expanding the heated pipe from the flattened and folded shape to cross-sectional dimensions comparable to the cross-sectional dimensions of the existing pipeline;
ceasing to apply heat to the pipe to allow the pipe to cool and again become substantially rigid thereby allowing the pipe to maintain its expanded shape; and
ceasing to apply internal pressure to the expanded substantially rigid thermoplastic pipe in place within the existing pipeline;
said expanded, substantially rigid pipe being capable of withstanding hydrostatic and earth pressures.

B1 5,077,237 (3255th)

METHOD OF ENCAPSULATING A SEMICONDUCTOR ELEMENT USING A RESIN MOLD HAVING UPPER AND LOWER MOLD HALF RESIN INFLOW OPENINGS

Akitoshi Hara, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo-to, Japan

Reexamination Request No. 90/003,099, Jun. 16, 1993.
Reexamination Certificate for Patent 5,077,237, issued Dec. 31, 1991, Ser. No. 583,813, Sep. 17, 1990.
Claims priority, application Japan, Sep. 18, 1989, 1-241164
Int. Cl.[6] H01L *21/56;21/58*
U.S. Cl. 437—214



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–10** are cancelled.

[1. A method of encapsulating a semiconductor element in resin or sealing it with resin comprising the steps of:
providing a mold cavity comprising opposed parts,
mounting the semiconductor element in said mold cavity so that an active surface and an opposite back surface of the semiconductor element respectively face said opposed mold parts,
providing said opposed mold parts with respective resin inflow openings for receiving resin from at least one source,
introducing separate flows of resin from the source into the mold parts via said inflow openings so that both the active surface and the opposite back surface of the semiconductor element are subjected to the pressure of the respective inflow of resin into the mold cavity, and
effecting setting of the resin to encapsulate the semiconductor element within the resin or seal the semiconductor element with the resin.]

B1 5,172,338 (3256th)

MULTI-STATE EEPROM READ AND WRITE CIRCUITS AND TECHNIQUES

Sanjay Mehrotra, Milpitas; Eliyahou Harari, Los Gatos, and Winston Lee, San Francisco, all of Calif., assignors to Sandisk Corporation, Santa Clara, Calif.

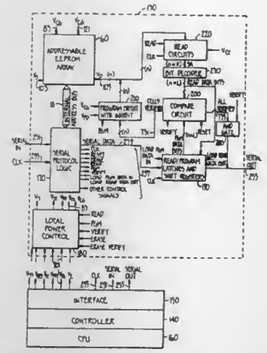
Reexamination Request Nos. 90/004,352, Sep. 6, 1996 and 90/004,387, Sep. 27, 1996.
Reexamination Certificate for Patent 5,172,338, issued Dec. 15, 1992, Ser. No. 508,273, Apr. 11, 1990.
Continuation-in-part of Ser. No. 337,579, Apr. 13, 1989.
Iot. Cl.[6] G11C *7/00;29/00;16/04*
U.S. Cl. 365—185.03

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–31**, **35–43** and **45–47** is confirmed.

Claims **32** and **44** are determined to be patentable as amended.

Claims **33** and **34**, dependent on an amended claim, are determined to be patentable.



New claims **48–65** are added and determined to be patentable.

27. In an array of addressable semiconductor electrically erasable and programmable memory (EEprom) cells on an integrated circuit chip, the memory cell being of the type having a source, a drain, a control gate and an erase electrode receptive to specific voltage conditions for reading, programming and erasing of data in the cell, and having a floating gate capable of retaining a specific charge level corresponding to a specific memory state of the cell, such that a specific memory state is achieved by increment or decrement of the charge level with successive applications of programming or erasing voltage conditions, a system for programming data to EEprom cells including means for temporarily storing a chunk of data for programming a plurality of addressed cells, means for programming in parallel the stored chunk of data into the plurality of addressed cells, and means for verifying the programmed data in each of the plurality of addressed cells with the chunk of stored data, wherein the improvement comprises:
means for inhibiting further programming of correctly verified cells among the plurality of addressed cells; and
means for further programming and verifying in parallel the plurality of addressed cells and inhibiting programming of correctly verified cells until all the plurality of addressed cells are verified correctly.

B1 5,211,938 (3257th)

METHOD OF DETECTION OF MALIGNANT AND NON-MALIGNANT LESIONS BY PHOTOCHEMOTHERAPY OF PHOTOPORPHYRIN IX PRECURSORS

James C. Kennedy; Roy H. Pottier, and Robert L. Reid, all of Kingston, Canada, assignors to Queen's University at Kingston, Kingston, Canada

Reexamination Request No. 90/004,476, Dec. 4, 1996.
Reexamination Certificate for Patent 5,211,938, issued May 18, 1993, Ser. No. 783,750, Oct. 28, 1991.
Continuation of Ser. No. 386,414, Jul. 28, 1989, Pat. No. 5,079,262.
Int. Cl.[6] A61B *5/06;* A61K *49/00;31/40*
U.S. Cl. 424—9.61

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1** and **2** is confirmed.

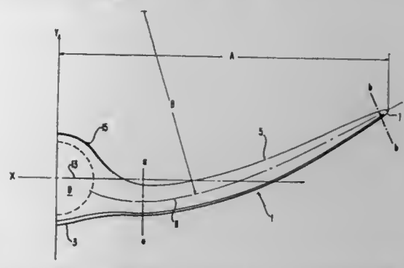
1. A method for detecting malignant and non-malignant tissue abnormalities and lesions of the skin, mucosa, endometrium and urothelium in a patient, comprising administering to said patient an effective amount of a precursor of protoporphyrin IX in the biosynthetic pathway for heme so as to induce synthesis of protoporphyrin IX preferentially in said abnormalities and lesions, exposing said patient to light having a wavelength within the absorbance spectrum of said protoporphyrin IX to thereby induce fluorescence in said abnormalities or lesions, and detecting said fluorescence.

B1 5,219,396 (3258th)

ARTIFICIAL SPUR FOR COCKFIGHTING

John J. Roman, Hato Rey, and Nicolas M. Cartogena, Guaynabo, both of Puerto Rico, assignors to Posti-Fort, Inc., Caguas, Puerto Rico

Reexamination Request No. 90/003,870, Jun. 29, 1995.
Reexamination Certificate for Patent 5,219,396, issued Jun. 15, 1993, Ser. No. 962,339, Oct. 16, 1992.
Int. Cl.[6] A01K *45/00*
U.S. Cl. 119—174



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–26** is confirmed.

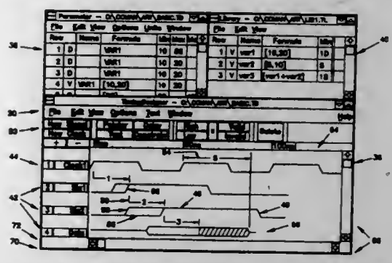
1. An artificial spur for cockfighting, comprising a hub portion for attachment to a spur stub of a fighting cock and an elongated arcuate shank portion attached at one end to said hub portion and having at its opposite end a pointed tip, said spur being formed of molded substantially transparent thermoplastic material.

B2 5,381,524 (3259th)

AUTOMATED DEVELOPMENT OF TIMING DIAGRAMS FOR ELECTRICAL CIRCUITS

Lawrence E. Lewis, Kirkland, and Michael S. Meredith, Redmond, both of Wash., assignors to Chronology Corp., Redmond, Wash.

Reexamination Request No. 90/004,407, Oct. 7, 1996.
Reexamination Certificate for Patent 5,381,524, issued Jan. 10, 1995, Ser. No. 791,794, Nov. 12, 1991.
Reexamination Certificate B1 5,381,524, issued Oct. 29, 1996.
Int. Cl.[6] G06F *3/00*
U.S. Cl. 395—346



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–42** is confirmed.

1. An apparatus for constructing timing diagrams on a computer having a monitor to model electrical circuits, comprising:
parameter spreadsheet means, performed by the computer, for accepting one or more parameters defining a timing diagram

into a spreadsheet displayed on the monitor, wherein the spreadsheet comprises one or more intersecting rows and columns, each of the rows comprises one of the parameters, and the columns identify a minimum value for the parameter and a maximum value for the parameter; and

timing diagram window means, performed by the computer, for displaying the timing diagram on the monitor of the computer in response to the parameters accepted into the spreadsheet displayed on the monitor, wherein the spreadsheet and the timing diagram are linked so that changes in the spreadsheet are reflected in the timing diagram.

B1 5,411,926 (3260th)

OLEFIN POLYMERIZATION CATALYST

Stanley E. Wilson, Houston, and Richard A. Kemp, Stafford, both of Tex., assignors to Shell Polypropylene Company, Houston, Tex.

Reexamination Request No. 90/004,340, Aug. 21, 1996.
Reexamination Certificate for Patent 5,411,926, issued May 2, 1995, Ser. No. 193,302, Feb. 8, 1994.
Continuation of Ser. No. 969,652, Oct. 30, 1992, abandoned.
Int. Cl.[6] B01J *31/00*
U.S. Cl. 502—117

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1** and **4** are determined to be patentable as amended.

Claims **2–3** and **5–14**, dependent on an amended claim, are determined to be patentable.

New claims **15–18** are added and determined to be patentable.

1. An olefin polymerization procatalyst precursor used in producing a high activity catalyst obtained by contacting at an elevated temperature in the presence of an inert diluent:

(a) a carbonated magnesium alkoxide of the general formula

$$Mg(OC(=O)-OR)_x(OR)_{2-x}$$

wherein R is a hydrocarbyl group having up to 12 carbon atoms and x is a number from about 0.1 to about 2; and

(b) at least one halogenating compound selected from the group consisting of non-transition metal halogenated compounds which are aluminum trichloride and tin tetrachloride, and non-metallic halogenated compounds which are thionyl chloride, hydrogen chloride, oxalyl chloride, carbonyl chloride, boron trichloride, *and* phosphorous oxychloride**[**, and carbon tetrachloride**]**.

B1 5,507,288 (3261st)

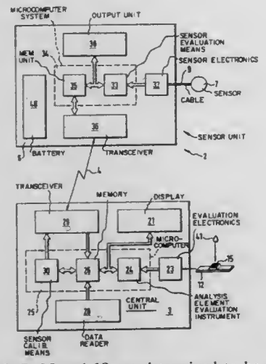
ANALYTICAL SYSTEM FOR MONITORING A SUBSTANCE TO BE ANALYZED IN PATIENT-BLOOD

Dirk Böcker, Heidelberg; Hans-Peter Haar, Wiesloch; Peter Blasberg, Weinheim, and Reinhard Kotulla, Lambsheim, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

Reexamination Request No. 90/004,271, Jun. 7, 1996.
Reexamination Certificate for Patent 5,507,288, issued Apr. 16, 1996, Ser. No. 434,296, May 3, 1995.
Claims priority, application Germany, May 5, 1994, 44 15 896.3
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—633

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **5** is cancelled.



Claims **1–4**, **6**, **7**, **15** and **18** are determined to be patentable as amended.

Claims **8–14**, **16**, **17**, **19** and **20**, dependent on an amended claim, are determined to be patentable.

New claims **21–26** are added and determined to be patentable.

1. An analytical system for monitoring and analyzing a concentration of a substance in **[**a**]** blood **[**sample**]** of a patient, said system comprising:

an element-analysis system, said element-analysis system comprising at least one analysis element containing a reagent thereupon, said reagent for reacting with the substance in *a sample of* the blood when said at least one analysis element has been brought in contact with the sample, thereby causing a measurable change *R* in the analysis element which correlates with the concentration of the substance**[**:**]**, *and* an evaluation instrument having a measuring device therein, said measuring device for measuring the measurable change *R* in the analysis element, the evaluation instrument also including an evaluation means for determining **[**sample-analysis**]** *element-analysis* data C_A from the measured change *R*; said analytical system further comprising

a sensor-analysis, said sensor-analysis system comprising

i) a **[**portable**]** sensor unit configured to be *affixed to and thus continuously* carried on the *body of the* patient, said **[**portable**]** sensor unit including a first sensor means for non-invasive determination of a measured value of a parameter *S* correlating with the concentration of the substance in the blood of the patient *and for generating sensor data signals representing the non-invasively measured parameter S*, said **[**portable**]** sensor unit also including a transmitter means for wireless transmission of data signals representing the non-invasively measured parameter *S*; and

ii) *an evaluation unit remotely disposed from said sensor unit for wirelessly receiving data signals transmitted from said sensor unit, said evaluation unit comprising receiver means for wirelessly receiving the data signals representing the non-invasively measured parameter S from the sensor unit, and* sensor analysis means for ascertaining sensor-analysis data **[**from the measured values of the parameter by the first sensor means**]** C_S *from the transmitted data signals*;

[said evaluation instrument further comprising a receiver means for wirelessly receiving the data signals from the sensor unit, calibration means for calibrating the sensor-analysis data based upon the sample analysis data, and**]** *wherein said evaluation unit of the sensor-analysis system and said evaluation instrument of the element-analysis system are coupled together in a central unit which is remote from said sensor unit, said central unit including a calibration means for performing a calibration of the data representing the non-invasively measured parameter S and for determining sensor-analysis data* C_S *based upon the element-analysis data* C_A, *said central unit also comprising* a data memory means coupled to said calibration means for storing data therein.

B1 5,514,200 (3262nd)

FORMULATION OF PHOSPHORUS FERTILIZER FOR PLANTS

Carol J. Lovatt, Riverside, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Reexamination Request No. 90/004,497, Dec. 20, 1996.
Reexamination Certificate for Patent 5,514,200, issued May 7, 1996, Ser. No. 192,508, Feb. 7, 1994.
Int. Cl.[6] C05B *15/00*
U.S. Cl. 71—11

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–22** is confirmed.

1. A concentrated phosphorus fertilizer comprising a buffered composition comprising an organic acid and salts thereof and a phosphorous-containing acid selected from the group consisting of phosphorous acid, hypophosphorous acid, polyphosphorous acid, polyhypophosphorous acid and salts thereof, such that when said composition is diluted with water, there is formed a substantially fully solubilized use-dilution fertilizer having a foliage-acceptable pH for phosphorus uptake.

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Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 35,551

PISTON FOR ALTERNATIVE ENDOTHERMIC ENGINES CREATING OIL CUSHION LUBRICATION

Ludovico Bruni, Turin, Italy, assignor to AE Borgo SPA, Italy

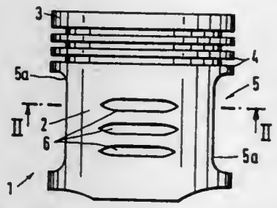
Original No. 4,903,580, dated Feb. 27, 1990, Ser. No. 218,616, Jul. 13, 1988. Continuation of Ser. No. 107,139, Aug. 17, 1993, abandoned, which is a continuation of Ser. No. 841,635, Feb. 27, 1992, abandoned, which is a continuation of Ser. No. 848,963, Apr. 7, 1986, abandoned. Application for reissue Aug. 15, 1994, Ser. No. 290,095

Claims priority, application Italy, Apr. 12, 1985, 67346/85

Int. Cl.[6] F02F *3/00*

U.S. Cl. 92—158

15 Claims



11. An improved piston for alternative, endothermic four-cycle engines, comprising a piston head portion and a piston skirt portion located below said head portion, said piston skirt portion having a first pair of opposing faces through which a piston pin axis passes, and a second pair of opposing faces, said piston skirt adapted to hold oil under pressure in a plurality of elongated closed-end grooves formed in each one of said second pair of opposing faces, substantially parallel to the piston pin axis and confined within said second pair of opposing faces, and at approximately the height of the piston pin axis, there being no grooves on said piston skirt between said second pair of opposing faces.

Re. 35,552

DEVICE INTENDED FOR MEASURING A DOSE OF POWERED MEDICAMENT FOR INHALATION

Tapio Lankinen, Turku, Finland, assignor to Leiras Oy, Turku, Finland

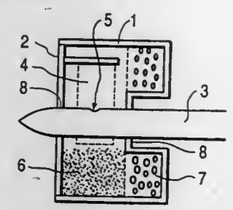
PCT No. PCT/FI91/00113, § 371 Date Feb. 16, 1993, § 102(e) Date Feb. 16, 1993, PCT Pub. No. WO92/18188, PCT Pub. Date Oct. 29, 1992

Original No. 5,295,479, dated Mar. 22, 1994, Ser. No. 955,743, Apr. 15, 1991. This PCT application Apr. 15, 1991, Ser. No. 343,930

Int. Cl.[6] A61M *15/00*

U.S. Cl. 128—203.12

12 Claims



10. A device for measuring a dose of powdered medicament and mixing the dose of powdered medicament with a stream of air for inhalation, the device comprising:

a first portion having a shaft secured thereto, the shaft having a dosage recess;

a second portion relatively rotatable with respect to the first portion, the second portion including an inhalation chamber having an inlet through which air is drawn connected to an outlet through which a mixture of air and a powdered medicament is inhaled, the second portion also including a powdered medicament container disposed adjacent the inhalation chamber;

one of said first and second portions including a projecting stud and the other of said portions including a slot which receives the stud, the slot engaging the stud to move said first and second portions away from each other upon relative rotation of said portions;

wherein the shaft is relatively longitudinally displaceable with respect to the medicament container and the inhalation chamber of the second portion along a longitudinal axis of the shaft by relative rotation of said first portion and said second portion, the rotation permitting placement of the shaft dosage recess within the inhalation chamber of said second portion;

whereby positioning the dosage recess of the shaft within said medicament container fills the dosage recess with a dose of powdered medicament, and subsequent longitudinal displacement of said shaft with respect to the second portion by relative rotation af said first and second portions positions the filled dosage recess of said shaft within said inhalation chamber to permit inhalation of a mixture of air and powdered medicament by a user.

Re. 35,553

OPTICAL RF STEREO

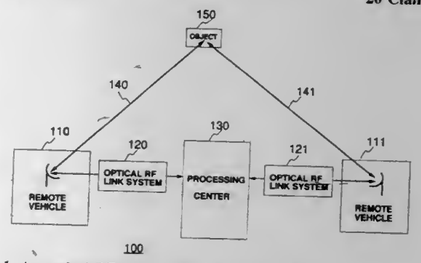
Ming-Chiang Li, 11415 Bayard Dr., Mitchellville, Md. 20721

Original No. 5,294,930, dated Mar. 15, 1994, Ser. No. 877,419, May 1, 1992. Application for reissue Jan. 20, 1995, Ser. No. 375,654

Int. Cl.[6] H04K *3/00*; **G01S** *7/38*

U.S. Cl. 342—13

20 Claims



1. An optical RF stereo systems comprising:

two [widely separated] antenna subsystems;

a processing center; and

[two] *at least one* optical RF link [systems] *system* linking *one of* the antenna subsystems to the processing center; wherein the optical RF stereo systems comprises means for forming a triangle among an object and two antenna subsystems; wherein the antenna subsystems comprise means for transmitting [concurrent] RF signals to or receiving from the object, *and comprise further means for performing same antenna functions at the same time*; wherein the optical RF link [systems comprise] *system comprises*: (a) means for receiving RF signals from one end; (b) means for up-converting the RF signals to an optical signal; (c) means for transiting the optical signal from one end to [a second] *other* end; (d) means for down-converting the optical signal [at the second end to] *back to* an RF signal; and (e) means for transiting the RF signals between the antenna subsystems and the processing center.

Re. 35,554

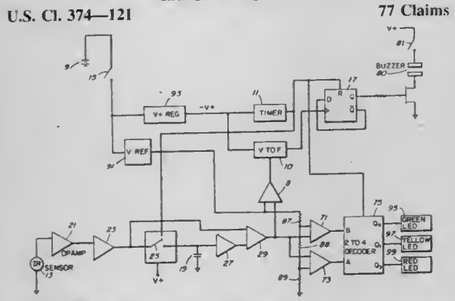
RADIATION DETECTOR WITH TEMPERATURE DISPLAY

Francesco Pompei, Boston, and Michael W. Burke, Natick, both of Mass., assignors to Exergen Corporation, Watertown

Original No. 4,874,253, dated Oct. 17, 1989, Ser. No. 32,067, Mar. 27, 1987. Continuation of Ser. No. 778,046, Oct. 16, 1991, abandoned. Application for reissue Apr. 4, 1994, Ser. No. 222,324

Int. Cl.[6] G01J *5/26*

U.S. Cl. 374—121 **77 Claims**



11. A radiation detector comprising:

a radiation sensor;

a display assembly means for providing on a segmented illuminatable display [in] *an* indication of the amount of radiation sensed by the radiation sensor above a reference amount of radiation;

an autozero circuit comprising time controlled means for *placing a voltage on a capacitor for* establishing a reference signal indicative of a reference amount of radiation detected by the radiation sensor[, and] *from a reference target;*

means for summing the reference signal [being summed] with a radiation signal indicative of the amount of sensed radiation subsequently detected by the radiation sensor to provide a display signal, the display assembly *means* being responsive to the display signal and thereby providing on the display an indication of the amount of [a] radiation sensed above the reference amount of radiation; *and* timing means for controlling the time controlled means.

Re. 35,555

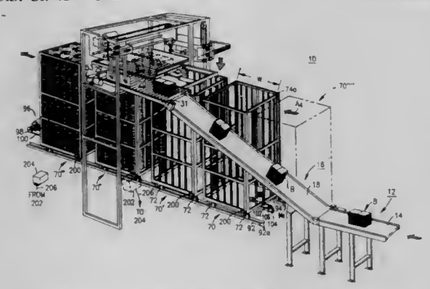
AUTOMATIC BUNDLE LOADING APPARATUS AND METHOD

Christer A. Sjogren, Miami, Fla., and Kevin Cote, Durham, N.H., assignors to Quipp Systems, Inc., Miami, Fla.

Original No. 5,181.820, dated Jan. 26, 1993, Ser. No. 676,192, Mar. 27, 1991. Application for reissue Jan. 9, 1995, Ser. No. 369,879

Int. Cl.[6] B65G *1/10*

U.S. Cl. 414—331 **46 Claims**



1. Apparatus for automatically loading a cart comprised of a platform surrounded by sidewalls and having an open top, at least one of said sidewalls having a plurality of vertically aligned elongated clearance slots;

said apparatus comprising:

a loading station for receiving and positioning said cart;

means for receiving bundles to be loaded into said cart;

conveyor means adjacent said receiving means for conveying the bundles received from said receiving means to a location a [predetermiend] *predetermined* height above an open end of said cart at said loading station;

a platform assembly for receiving bundles from said conveyor means;

said platform assembly being comprised of a plurality of sections;

means for selectively advancing bundles along said sections including means to halt the advancing of bundles on each section responsive to detection of a bundle on said section;

pusher means responsive to the presence of bundles upon [predetermiend] *predetermined* ones of said sections for pushing said bundles in a transverse direction onto a split platform means;

said split platform means comprising first and second platform sections movable between a closed position wherein adjacent edges of said platform sections are in close proximity and an open position wherein said sections are moved apart to define a gap region between said split platform sections;

said gap region being positioned immediately above the open end of said cart; and

means responsive to delivery of bundles by said pusher means upon said split platform assembly for moving said split platform sections apart whereupon the bundles resting thereon are dropped through said gap region toward said cart.

Re. 35,556

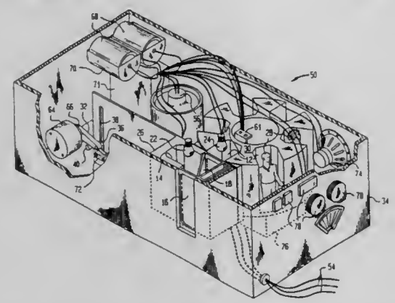
TELEPORTER

Stephen Weinreich, Monmouth Junction, N.J., assignor to Inventures, Inc., Parsippany, N.J.

Original No. 5,041,044, dated Aug. 20, 1991, Ser. No. 372,643, Jun. 28, 1989. Application for reissue Aug. 20, 1993, Ser. No. 109,714

Int. Cl.[6] A63H *33/26;33/22;* **A63J** *3/00;5/00*

U.S. Cl. 446—130 **20 Claims**



2. [The] *A teleporter toy apparatus* [of claim 1 further] *for making a figure seem to disappear* comprising: *a first multi-chamber means having at least a first and a second figure-receiving chamber mounted on a first turntable;*

a first door means located adjacent to said first multi-chamber means for viewing one of said chambers of said first multi-chamber means at a time;

a first dissolve means located in said first door means for making a figure in said first chamber seem to disappear;

a first turntable driving means for positioning said second chamber behind said first door means after said first dissolve means has made the figure in said first chamber seem to disappear;

a second multi-chamber means having at least a first and a second figure-receiving chamber therein mounted on a second turntable;

a second door means located adjacent said second multi-chamber means for viewing one of said chambers of said second multi-chamber means at a time;

a second dissolve means located in said second door means for making a figure in one of said chambers of said second multi-chamber means seem to appear;

a second turntable driving means for driving the chambers of said second multi-chamber means past said second door means; and,

communication means for coordinating the rotation of said first and second turntable driving means.

Re. 35,557

MINERAL FIBERS DECOMPOSABLE IN A PHYSIOLOGICAL MEDIUM

Sylvie Thelohan; Alain DeMeringo, both of Paris, France; Hans Furtak, Speyer am Rhein, and Wolfgang Holstein, Homberg, both of Germany, assignors to Isover-Saint Gobain, Courbevoie, France

Original No. 5,250,488, dated Oct. 5, 1993, Ser. No. 982,136, Nov. 25, 1992. Continuation of Ser. No. 708,661, May 31, 1991, abandoned. Application for reissue May 1, 1995, Ser. No. 432,000

Claims priority, application France, Jun. 1, 1990, 90 06840; Jun. 1, 1990, 90 06841

Int. Cl.[6] C03C *13/06*

U.S. Cl. 501—11 **9 Claims**

1. A mineral fiber composition decomposable in a physiological medium, said composition consisting essentially of:

SiO_2	37 to 58 wt. %;
Al_2O_3	4 to *11.5* [14] wt. %;
CaO	7 to 40 wt. %;
MgO	4 to 16 wt. %;
P_2O_5	1 to 7 [10] wt. %;
Fe_2O_3	0.1 to 15 wt. %;

-continued

$Na_2O + K_2O$	up to about 7 wt. %; and
Impurities	up to about 3 wt. %,

wherein the amount of $CaO+MgO+Fe_2O_3$ is greater than 25 wt. % of the composition.

Re. 35,558

(2R)-2-[DI(2-PROPYL)PHOSPHONYYLMETHOXY]-3-P-TOLUENESULFONYLOXY-1-TRIMETHYLACETOXYPROPANE, ITS PREPARATION AND USE

Petr Alexander, Foster City, Calif.; Antonin Holy, and Hana Dvorakova, both of Prague, Czechoslovakia, assignors to Institute of Organic Chemistry and Biochemistry of the Academy of Sciences of the Czech Republic, Prague, Czechoslovakia

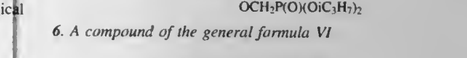
Original No. 5,130,427, dated Jul. 14, 1992, Ser. No. 729,422, Jul. 12, 1991. Application for reissue Jul. 14, 1994, Ser. No. 275,186

Claims priority, application Czechoslovakia, Aug. 6, 1990, 3871-90

Int. Cl.[6] C07F *9/6524;9/6512;9/40*

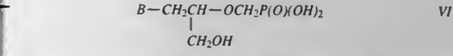
U.S. Cl. 544—244 **11 Claims**

1. (2R)-2-[Di(2-propyl)phosphonylmethoxy]-3-p-toluenesulfonyloxy- 1-trimethylacetoxypropane of the formula *I*



(1)

6. *A compound of the general formula VI*



VI

wherein B is purin-9-yl, purin-7-yl, pyrimidin-1-yl selected from the group consisting of 6-methylthiopurine, 2-amino-6-chloropurine, 2-amino-6- chloropurine, 2-amino-6-azidopurine, 4-alkoxy-2-pyrimidinone, and 2-chloroadenine.

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PLANT PATENTS

GRANTED JULY 8, 1997

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

9,946

CHAMELAUCIUM (WAXFLOWER) PLANT NAMED PAINTED LADY

Brian Jack, and Victoria Syme, both of Coorow, Australia, assignors to New World Plants USA, Escondido, Calif.

Filed Feb. 20, 1996, Ser. No. 604,069
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—54.1 1 Claim

1. A new and distinct Chamelaucium interspecific hybrid plant named Painted Lady, as illustrated and described.

9,947

CARNATION PLANT VARIETY NAMED 'CFPC GOLDSTRIKE'

Walter H. Jessel, Jr., Gonzales, Calif., assignor to California Florida Plant Co., L.P., Salinas, Calif.

Filed Apr. 2, 1996, Ser. No. 626,533
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—70.4 1 Claim

1. A new and distinct variety of carnation plant substantially as shown and described.

9,948

CARNATION PLANT VARIETY NAMED 'CFPC MALEA'

Walter H. Jessel, Jr., Gonzales, Calif., assignor to California Florida Plant Co., L.P., Salinas, Calif.

Filed Apr. 2, 1996, Ser. No. 626,532
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—70.5 1 Claim

1. A new and distinct variety of carnation plant substantially as shown and described.

9,949

CHRYSANTHEMUM PLANT NAMED 'REGAL VOLARE'

Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Mar. 18, 1996, Ser. No. 617,184
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—74.1 1 Claim

1. A new and distinct cultivar of Chrysanthemum plant named Regal Volare, as illustrated and described.

9,950

CHRYSANTHEMUM NAMED 'DARK SPLENDID REAGAN'

Robert Noodelijk, Woubrugge, Netherlands, assignor to Chrysanthemum Breeders Association, N.V., Netherlands

Filed May 6, 1996, Ser. No. 646,224
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—74.1 1 Claim

1. A new and distinct variety of chrysanthemum plant as described and illustrated.

9,951

POINSETTIA PLANT NAMED '725'

Franz Fruehwirth, Encinitas, Calif., assignor to Paul Ecke Ranch, Inc., Encinitas, Calif.

Filed Mar. 22, 1996, Ser. No. 621,001
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—86.4 1 Claim

1. A new and distinct cultivar of Poinsettia plant, substantially as herein shown and described, distinguished by its dark red flower bracts, dark green foliage, self-branching characteristics and uniform growth habit.

9,952

POINSETTIA PLANT NAMED '603'

Franz Fruehwirth, Encinitas, Calif., assignor to Paul Ecke Ranch, Inc., Encinitas, Calif.

Filed Mar. 22, 1996, Ser. No. 621,003
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—86.4 1 Claim

1. A new and distinct cultivar of Poinsettia plant, substantially as herein shown and described, distinguished by its dark red flower bracts, dark green foliage, self-branching characteristics and compact upright growth habit.

9,953

LILIUM PLANT NAMED 'RUBY FLASH'

Johan A. Mak, 5595 Halls Ferry Rd., Independence, Oreg. 97351

Filed Mar. 18, 1996, Ser. No. 618,476
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—87.4 1 Claim

1. A new and distinctive variety of Oriental pot hybrid lily plant substantially as herein shown and described, characterized by its high resistance to disease; its tolerance of virus; its vigorous growth and rapid natural propagation; the excellence of its flower form, size, and substance; its versatility both as a garden plant and as a pot-flower producer from pre-cooled bulbs forced under glass out of season; and in particular by its unique out-facing flowers with strong pedicels, its lightly ruffled tepal margins, and its soft pink coloration shading into a reddish midrib, accented with noticeable magenta rose papillae on the basal half of each tepal and its pink coloration of the upper buds at the time the lowermost buds first open, a combination unique among Oriental hybrid lilies suited to pot forcing and to mass commercial cultivation.

9,954

LILY PLANT 'VILLANOVA'

Johan A. Mak, 5595 Halls Ferry Rd., Independence, Oreg. 97351

Filed Apr. 24, 1996, Ser. No. 638,465
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—87.4 1 Claim

1. A new and distinctive variety of Oriental hybrid lily plant substantially as herein shown and described, characterized by its resistance to disease; its tolerance of virus; its vigorous growth and rapid natural propagation; the excellence of its flower form, size, and substance; its versatility both as a garden plant and as a cut-flower producer from pre-cooled bulbs forced under glass out of season; and in prticular by its unique upright to semi-upright flowers with sharply ascending pedicels, its long and pointed buds, the large flat-faced form of its flowers, which recurve only at the

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tips, its soft pink coloration shading into a wide solid red band at the midrib, accented with noticeable magenta rose papillae on the basal half of each tepal, a combination unique among Oriental hybrid lilies suited to forcing and to mass commercial cultivation.

9,955

SCHEFFLERA ARBORICOLA 'PVN-1'

Ellsworth D. Bottoms, and Luseane M. Bottoms, both of Apopka, Fla., assignors to Pine Valley Nursery, Inc., Apopka, Fla.

Filed Apr. 24, 1995, Ser. No. 426,880

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—88.1 **1 Claim**

1. A dwarf *Schefflera arboricola* plant, substantially as herein shown and described, characterized particularly as to novelty by its almost perfectly dwarfed dimensions as compared with the usual *Schefflera arboricola*.

9,956

CALATHEA PLANT NAMED 'GA-1'

John P. Klinger, Longwood, Fla., assignor to Garden Arts Nursery, Inc., Longwood, Fla.

Filed Sep. 11, 1995, Ser. No. 526,402

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—88.1 **1 Claim**

1. A new and distinctive cultivar of Calathea plant named 'GA-1', as illustrated and described, characterized particularly as to novelty by the orbicular shape of the leaves each with a distinctive broad silver band entire to its edge, a tinge of pink being present, fading as the plant ages.

9,957

SPATHIPHYLLUM PLANT NAMED JETTY

Wim A. J. Brouwer, Nootdorp, Netherlands, assignor to Milestone Agriculture Inc., Apopka, Fla.

Filed Apr. 4, 1996, Ser. No. 627,607

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—88.1 **1 Claim**

1. A new and distinct cultivar of Spathiphyllum plant named Jetty, as illustrated and described.

9,958

SPATHIPHYLLUM PLANT NAMED MAX

Daniel Cornelis, Merelbeke, Belgium, assignor to Milestone Agriculture, Inc., Apopka, Fla.

Filed Apr. 8, 1996, Ser. No. 628,951

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—88.1 **1 Claim**

1. A new and distinct cultivar of Spathiphyllum plant named Max, as illustrated and described.

PATENTS

GRANTED July 8, 1997

ERRATA

For CLASS	See PATENT NO.
211–134	5,645,182
463–047	5,645,276
074–336	5,645,508
442–184	5,645,924
442–128	5,645,925
442–234	5,645,926
442–388	5,645,927
442–290	5,645,933
507–107	5,646,092
507–209	5,646,093
525–288	5,646,210
340–825	5,646,701
396–413	5,646,711
396–535	5,646,712
399–154	5,646,717
399–350	5,646,718
399–287	5,646,719
399–361	5,646,720
386–057	5,646,743
349–172	5,646,754
345–097	5,646,755
349–042	5,646,756
349–122	5,646,757
379–093	5,646,839
395–752	5,646,840
455–411	5,646,977
455–436	5,646,978
455–563	5,646,979
382–100	5,647,009
382–100	5,647,010

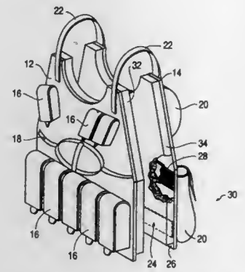
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PATENTS

GRANTED JULY 8, 1997

GENERAL AND MECHANICAL

5,644,792
LOAD-BEARING, PERSONALLY WORN SYSTEM FOR SECURITY AND COMBAT UNITS
Dror Tishler, and Nitzan Kimchi, both of Jerusalem, Israel, assignors to Kata Professional L.T.D., Jerusalem, Israel
Filed Feb. 23, 1995, Ser. No. 393,535
Int. Cl.[6] F41H *1/02*
U.S. Cl. 2—2.5 **9 Claims**



1. A personally-worn system for security and combat units, comprising:

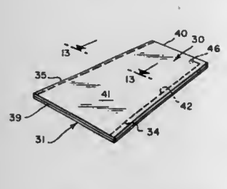
a plurality of modular, interchangeable, load-bearing front and back panels each having one of a plurality of differing predesignated pouch arrangements integrally formed therewith, said load-bearing panels being interchangeably secured to each other via interconnecting shoulder straps to form at least one garment having a load-bearing front panel and a load-bearing back panel; and

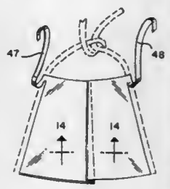
a plurality of interchangeable front and back armor panels,

wherein each of said load-bearing panels has an inner-facing surface provided with interconnection means for optional releasable attachment of one of said plurality of front and back armor panels thereto, and

wherein each of said armor panels, when attached to one of said load-bearing panels, is secured to the body of the wearer by means of said one of said load-bearing panels.

5,644,793
DISPENSIBLE, DISPOSABLE REVERSIBLE FOREARM PROTECTOR
Pierre Lahaussois, Darien, and Margaret T. Strohl, Ridgefield, both of Conn., assignors to Dale Strohl, Ridgefield, Conn.
Continuation-in-part of Ser. No. 269,149, Jun. 30, 1994, Pat. No. 5,542,121. This application Feb. 20, 1996, Ser. No. 603,283
Int. Cl.[6] A41D *13/08*; A41B *13/10*
U.S. Cl. 2—59 **6 Claims**





1. A convertible sleeve protector device comprising

(a) first and second sections of sheet-like material of similar size and shape and having first and second end edges and opposite side edges,

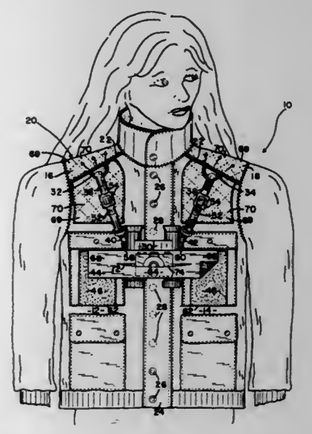
(b) said first and second sections being joined along said opposite side edges only, to form a normally flat structure openable to tubular configuration to accommodate insertion of a user's hand and forearm,

(c) said sections being joined along one of said opposite side edges, along side edge margins of the respective sections, with a bond that is separable without tearing of the sheet-like material forming said sections,

(d) said sections being joined along the other of said opposite side edges with a permanent bond,

(e) said sections of sheet-like material, upon separation of said separable bond, being openable to a generally flat, single layer form, with said sections remaining joined along the other of said side edges and adapted for an alternative use.

5,644,794
GARMENT FOR SECURING BINOCULARS/CAMERA THERETO
Harold L. Hull, 401 Canyon Way #43, Sparks, Nev. 89434, and Martin Harris, 3045 Attridge Pl., Reno, Nev. 89503
Filed Apr. 12, 1996, Ser. No. 631,157
Int. Cl.[6] A41D *1/04*
U.S. Cl. 2—102 **18 Claims**



1. A garment for supporting and removably securing a pair of binoculars thereto, said garment comprising: a first and a second frontal section; a first and a second shoulder section; and a back section, each of said frontal sections and said back section being of a length to extend from substantially the shoulder area of the wearer to substantially the waist area of the wearer and each of said sections being interconnected so as to form the body of said garment with the body being of a shape and size to substantially cover the upper body portion of the wearer, and a portion of said second frontal section overlapping a portion of said first frontal section forming a flap for retaining releasable fastener means therein, a binocular support system comprising: a first and a second loop; a first and a second strap; each having a first and second end a first and a second coupling means; an elongated hook and loop strap; having substantially a mid-portion and a first and a second hook and loop panel, said first loop being fixedly attached to said first shoulder section and said second loop being fixidly attached to said second shoulder section, said first end of said first strap being inserted through said first loop and said second end of said first strap being inserted through said first coupling member and said

first and said second end of said first strap being adjustably attached together by suitable adjustable fastener means, said first end of said second strap being inserted through said second loop and said second end of said strap being inserted through said second coupling member and said first and said second end of said second strap being adjustably attached together by suitable adjustable fastener means, said first coupling member being removably attached to a first ring located on a pair of binoculars, said second coupling member being removably attached to a second ring on said binoculars, said first hook and loop panel being affixed at a location of choice to said first frontal section, said second hook and loop panel being affixed at a location of choice to said second frontal section, said elongated hook and loop strap having said mid-portion positionable over a portion of said binoculars and having a first end removably attached to said first hook and loop panel and a second end removably attached to said second hook and loop panel, whereby;

said binoculars are removably and adjustably secured to said body of said garment.

5,644,795

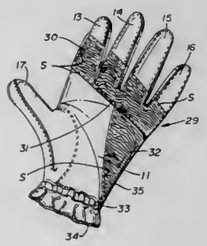
GOLF GLOVE

George Landis, 6261 Whispering Meadows, Canfield, Ohio 44406, and Phil Courtney, 7404 Eisenhower Dr., Apt. 7, Boardman, Ohio 44512

Continuation-in-part of Ser. No. 495,074, Jun. 27, 1995, abandoned. This application Apr. 8, 1996, Ser. No. 629,449

Int. Cl.[6] A41D *19/00*

U.S. Cl. 2—161.3 **9 Claims**



1. Gripping and alignment means for a golf club comprising, a golf glove having a palm portion, a plurality of finger portions and a thumb portion, gripping and alignment surfaces located on the palm side surface of said finger and palm portions, a first gripping and alignment surface extending transversely and angularly across said palm side surface of said finger portions, said gripping and alignment surfaces having a frictional co-efficient greater than that of the surrounding surfaces, a portion of said first gripping and alignment surface extending beyond said finger portions to said palm portion, a second gripping and alignment surface comprising a palm insert extending from said portion of said first gripping and alignment surface, which extends beyond said finger portions, said palm insert extending from said first surface to a point beyond said thumb portion and abutting a seam line extending from one of said finger portions of said portion of said first surface that extends beyond said finger portions, means for securing said surfaces to said glove.

5,644,796

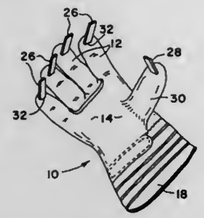
WORKGLOVE RAKE

George Eric Laughlin, 500 Victory Rd., Springfield, Ohio 45504

Filed Jun. 20, 1996, Ser. No. 665,718

Int. Cl.[6] A41D *19/00*

U.S. Cl. 2—161.6 **4 Claims**



1. A work glove for hand-gathering of leaves and loose debris from relatively inaccessible places within an arm's length of the person wearing the glove, said gathering taking place by means of a raking-like action in which the debris can be drawn toward the wearer; said glove comprising:

a unitary back side, palm side and finger and thumb extensions; and

a relatively short, blunt-ended rake tine extending generally perpendicularly outwardly from the distal ends of a plurality of the finger extensions in the direction away from the palm side of the glove, said tines being of a length approximating the length of a user's fingers from the fingertip to the first joint, and being of a width approximating one third the width of a finger extension of said glove.

5,644,797

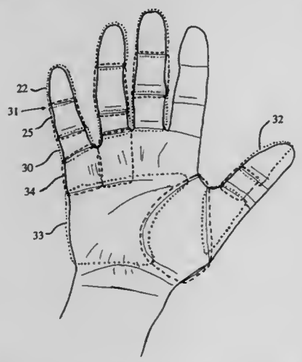
PUNCTURE RESISTANT GLOVES

Yousef Daneshvar, 21459 Woodfarm, Northville, Mich. 48167

Filed Dec. 20, 1993, Ser. No. 169,497

Int. Cl.[6] A41D *13/10;19/00*

U.S. Cl. 2—161.7 **8 Claims**



1. A glove comprising digit portions into which digits of a person's hand fit and which allow a person's digits to flex, said digit portions being of non-puncture puncture resistant material, and further including a puncture resistant layer disposed on at least one of said non-puncture resistant portions for protecting a person's digit against puncture, said layer comprising plural segments arranged end-to-end in a proximal-distal sense along said digit portion, each segment being transversely concave for substantially conforming to the contour of a respective portion of a person's digit proximal and distal to a joint of a person's digit, wherein at

such joint the respective end-to-end arranged puncture resistant segments comprise respective formations that are in mutually overlapping relation laterally across the full extent of the joint and that are shaped such that one formation nests within the other formation to allow flexing of the joint while at the same time presenting across joint an interference to penetration by a puncturing device, in which said other formation comprises a shallow, laterally-extending trough and said one formation comprises a shape for fitting to said trough to allow flexing of said puncture resistant segments.

5,644,798

POLYURETHANE GLOVE OF WELDED POLYURETHANE FILM

Tilak M. Shah, Cary, N.C., assignor to Polygenex International, Inc., Cary, N.C.

Division of Ser. No. 104,666, Aug. 11, 1993, Pat. No. 5,469,863. This application Jun. 7, 1995, Ser. No. 476,250

Int. Cl.[6] A41D *19/00*

U.S. Cl. 2—167 **5 Claims**



1. A thermoplastic polyurethane elastomer glove having a peripheral seam and a wrist opening comprising:

two layers of thermoplastic polyurethane elastomer barrier film; said film having a thickness of from about 0.5 mils to about 5 mils (about 0.0127 μm to about 0.127 μm);

a weld joining said layers together along said peripheral seam thereof to form a configuration corresponding to the contour of a hand, leaving said wrist opening unsealed.

5,644,799

HEADGEAR ACCESSORY

Vincent Armenta, 1824 Lynne Dr.; Louis J. Cruz, 909 Gunnar, and Henry S. Alvarez, 515 N. Scott, all of Santa Maria, Calif. 93454

Filed Mar. 31, 1995, Ser. No. 414,310

Int. Cl.[6] A42B *1/04*

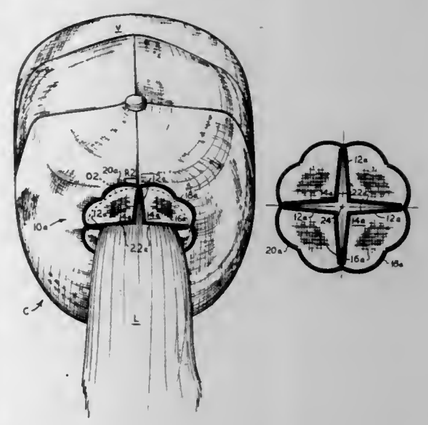
U.S. Cl. 2—209.13 **18 Claims**

1. A headgear accessory adapted for installation to a headgear article having a hole in the upper rear portion thereof for the passage therethrough of the hair of a wearer of the headgear, said headgear accessory comprising:

a generally flat, planar, flexible, and resilient sheet of material having a periphery, a center, and a plurality of slots radiating from said center outwardly across said sheet toward said periphery;

said slots defining a plurality of radially disposed segments in said sheet, with said segments being resiliently distensible to resiliently grip and conform to the hair of a wearer of said headgear accessory as the hair is passed therethrough; and

each of said segments having edges adjacent to corresponding said slots, and said edges of said segments include stitching therealong providing additional strength and finish;



whereby said headgear accessory may be passed over the hair of a wearer thereof by means of resiliently distending said segments to open said slots, and said segments may flexibly and resiliently close about the hair passing therebetween to secure said headgear accessory to the hair of a wearer of said headgear accessory.

5,644,800

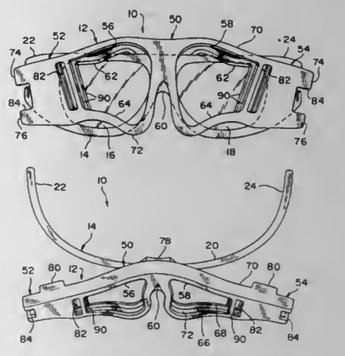
SPORTS PAD FOR EYEWEAR FRAMES

Peter F. Leonardi, Gloversville, N.Y., assignor to Halo Sports and Safety, Inc., Gloversville, N.Y.

Continuation-in-part of Ser. No. 195,468, Feb. 14, 1994, Pat. No. 5,495,623. This application May 19, 1994, Ser. No. 246,247

Int. Cl.[6] A61F *9/02*

U.S. Cl. 2—431 **12 Claims**



9. Sports eyewear for eye protection, comprising:

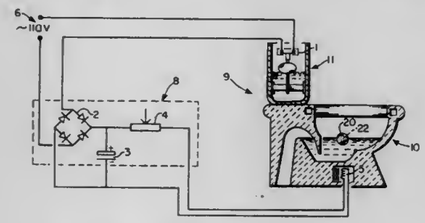
a substantially rigid eyewear frame having a front portion with at least one lens, a first temple portion being coupled to a first end of said front portion of said frame, and a second temple portion being coupled to a second end of said front portion of said frame; and

a soft, elastomeric pad removably coupled to said frame for covering at least certain exposed areas of said frame, said pad including

a front wall for removably overlying certain forwardly facing areas of said eyewear;

a rear wall spaced from said front wall for removably overlying certain rearwardly facing areas of said eyewear and for removably receiving said eyewear therebetween;
a peripheral wall coupled between said front and rear walls for removably overlying certain peripheral edges of said eyewear; and
first and second lens apertures being formed in said pad and extending through said pad,
said rear wall further comprising a nose portion positioned between said first and second lens apertures,
each of said front, rear and peripheral walls of said pad being constructed of a soft, stretchable, resilient material for removably retaining said pad on said eyewear and being shaped to overlie at least portions of the peripheral edges of the eyewear along said at least one lens.

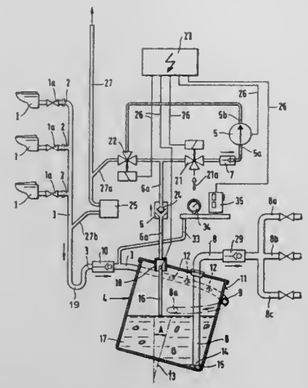
5,644,801
SPLASH-REDUCED TOILET SYSTEM
Shurun Zhao, New Orleans, La. 70094, and Gang Zhao, Law Office Huangdao District, Qingdao, China
Filed Oct. 10, 1995, Ser. No. 541,339
Int. Cl.[6] E03D *9/00*
U.S. Cl. 4—300.3 **21 Claims**



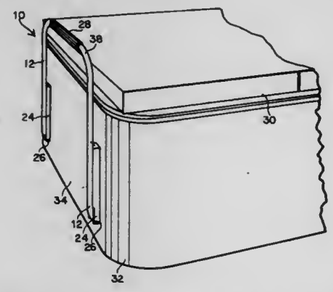
1. A toilet system, comprising:
a toilet bowl partially filled with water;
a reservoir tank filled with water associated with said toilet bowl;
a floating object floating in said toilet bowl for deflecting matter that falls into the toilet bowl, said floating object being positioned at the surface of the water inside the bowl; and
magnetic means associated with said toilet bowl for generating an magnetic field to interact with and influence the position of said floating object as it floats in said toilet bowl.

5,644,802
VACUUM SEWER ARRANGEMENT
Henry Olin, Espoo, Finland, assignor to Evac AB, Bromolla, Sweden
Continuation of Ser. No. 309,581, Sep. 20, 1994, abandoned. This application Aug. 20, 1996, Ser. No. 700,125
Claims priority, application Finland, Sep. 21, 1993, 934126
Int. Cl.[6] E03D *11/00*
U.S. Cl. 4—431 **19 Claims**

1. A vacuum sewer arrangement comprising:
a plurality of toilet bowls,
a common sewage collecting container,
sewer piping connecting the toilet bowls to the common sewage collecting container,
a dry rotary vane pump having a pressure side and a suction side,
a tube and valve system having a first condition in which the suction side of the pump is connected to the collecting container for generating and maintaining a considerable partial vacuum in the sewer piping and in the collecting container, and a second condition in which the pressure side of the pump is connected to the collecting container for expelling the contents of the collecting container, and an air separation device for receiving sewage and air from the sewer piping and removing at least some of the air accompanying the sewage before delivering sewage into the collecting container.

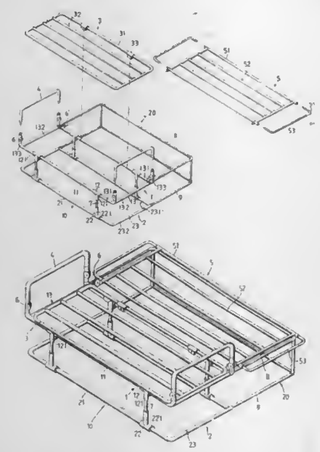


5,644,803
SPA COVER SUPPORT ASSEMBLY
Richard M. Wilson, 14777 Hillside Dr., Caldwell, Id. 83605
Filed Feb. 26, 1996, Ser. No. 605,490
Int. Cl.[6] E04H *4/06*
U.S. Cl. 4—500 **7 Claims**



1. A spa cover support assembly for use with a spa having side walls with top surfaces defining a generally horizontal plane for slidably supporting a removable spa cover, said spa cover support assembly comprising:
a support arm having an upper end and a bottom end, pivotally attached at its bottom end to a spa side wall for pivotal rotation of the said upper end through an arc from a point above and adjacent to said side wall to a point away from said side wall at a point where said upper end of said support arm is within the generally horizontal plane defined by the top surfaces of the side walls, and at a distance away from the side wall wherein the center of gravity of a spa cover supported between the side wall to which the lower end is pivotally attached and the upper end of the support arm will fall between the side wall and the upper end of said support arm;
means for supporting a spa cover attached to the upper end of said support arm; and
pivot bias means for holding the support arm in a generally vertically position when not supporting said spa cover, and for permitting arcuate rotation of the upper end of said support arm when said spa cover is slid from the top surfaces of the side walls said means for supporting.

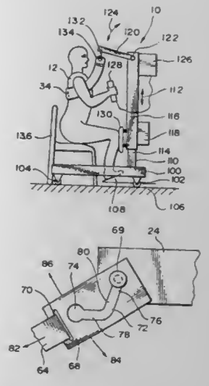
5,644,804
SOFABED
Chi-Jung Wang, Chia-Yi Hsien, Taiwan, assignor to Chung-Chin Chen, Alexandria, Va.
Filed Jan. 23, 1996, Ser. No. 590,429
Int. Cl.[6] A47C *17/16;17/18*
U.S. Cl. 5—12.1 **4 Claims**



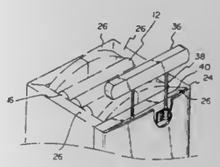
1. A sofabed comprising:
a first base frame, said first base frame comprising an upper sub-frame and a bottom sub-frame connected in parallel at different elevations, said upper sub-frame comprising two longitudinal frame tubes disposed at two opposite sides in a parallel relation, two substantially U-shaped frame tubes respectively connected between said longitudinal frame tubes, and two pairs of tees respectively connected between said longitudinal frame robes and said U-shaped frame tubes to support said upper sub-frame above said bottom sub-frame;
at least one armrest frame, a plurality of first pivotal connectors for connecting the armrest frame to a U-Shaped frame robe of the upper sub-frame and permitting pivotal adjustment of a relative angle between the armrest frame and the upper sub-frame;
a first seat frame pivoted to one longitudinal frame tube of the upper sub-frame of said first base frame and fitting over the upper sub-frame of said first base frame; and
a second seat frame, a plurality of second pivotal adjustable connectors for connecting the second seat frame to a longitudinal frame tube of the upper sub-frame of the first base frame and permitting pivotal adjustment of the second seat frame relative to the first base frame through an angle within approximately 180 degrees.

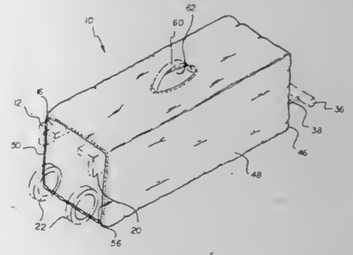
5,644,805
LIFTING DEVICE FOR HANDICAPPED PERSONS, WITH HEIGHT ADJUSTABLE KNEE REST
Stefan Horcher, Nidderau, Germany, assignor to Horcher GmbH, Nidderan, Germany
Division of Ser. No. 238,943, May 6, 1994, Pat. No. 5,530,976. This application Mar. 11, 1996, Ser. No. 613,514
Int. Cl.[6] A61G *7/14;7/12*
U.S. Cl. 5—86.1 **8 Claims**

1. A lifting device for handicapped persons, in particular those in wheelchairs, comprising a traction element for placement under the armpits of a person to be lifted and transported, a stand which can be displaced on a surface, support means originating at the stand and directed upward, at least one lifting arm laterally originating at an end of the support means and rotatable around an horizontal axis; at least one attachment point disposed on the lifting arm for ends of the traction element, wherein the support means consists of an elongated fixed inner section around which a second outer section is disposed, each section profiled as a square tube, the outer section is displaceable in respect to the inner section, said horizontal axis is extending from said outer section and a knee rest for supporting the knees of the person to be lifted from the seating position disposed on said outer section the outer section and thus the knee-rest being height-adjustable.



5,644,806
PLAYYARD SYSTEM WITH A HANDLE AND WHEELS
John V. Mariol, Cincinnati, and Christopher Arens, Troy, both of Ohio, assignors to James F. Mariol, Wyoming, Ohio
Filed Nov. 9, 1995, Ser. No. 556,190
Int. Cl.[6] A47D *7/00*
U.S. Cl. 5—99.1 **4 Claims**





1. A new and improved playyard system with a handle and wheels for facilitating transportation of the playyard comprising, in combination:
a playyard having a fabric support for receiving a child, the playyard having a frame to maintain the support in a generally rectilinear configuration for operation and use, the frame also adapted to collapse to a reduced size in a generally rectilinear configuration for transportation and storage, the frame having

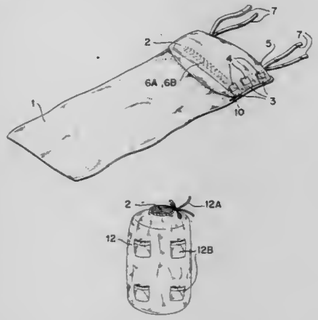
four corners with fixed legs at two corners and two rotatable wheels at the other corners;

a separable floor formed of four similarly shaped rigid rectangular segments positionable on the lower surface of the container during operation and use, the floor adapted to be removed from the container and placed around the playyard when in a collapsed orientation to form a generally rectilinear configuration with an upper end and a lower end and with the legs and wheels of the frame extending from the lower end;

a handle secured to one of the segments of the floor adjacent to the upper end, the handle including a generally horizontal gripping portion at the upper extent and a generally rigid intermediate wire formed with parallel vertical extents and an enlarged lower extent, the handle also having associated therewith two pair of apertured brackets secured to the floor for allowing for the sliding of the wire within the brackets to lower the handle toward the floor when in the stowed orientation and to raise the handle from the floor when in the elevated orientation for transportation whereby a user may grasp the elevated handle, pivot the playyard, floor and wheels to raise the legs and then pull the playyard and floor while the wheels rotate; and

a fabric container having a generally rectilinear configuration for receiving the playyard when collapsed and the floor and the handle with an opened lower end for the passage of the legs and wheels therefrom and with a closed upper end with a slit adjacent one edge overlying the handle for the passage of the handle therethrough.

5,644,807
BEACH TOWEL WITH DETACHABLE PILLOW AND CARRYING CASE HAVING POCKETS
Dawn A. Battistella, 3723 Delaware Ave., Kenner, La. 70065
Filed Aug. 29, 1996, Ser. No. 705,283
Int. Cl.[6] A47G *9/06;9/00*
U.S. Cl. 5—419 **4 Claims**



1. A beach towel with pillow and carrying case comprising:

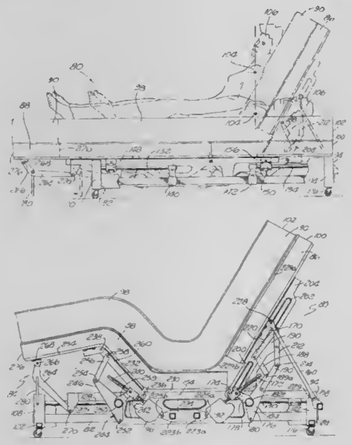
an elongated piece of fabric having two laterally extending edges and two longitudinally extending edges;

an elongated, inflatable pillow, said inflatable pillow being provided with a plurality of pouches, said pouches being attached to at least one side of said inflatable pillow, and said pouches having flaps which close said pouches;

means for detachably connecting said inflatable pillow to said fabric, said inflatable pillow being attachably disposed along one of said lateral edges said inflatable pillow having an inflation nozzle thereon;

one lateral edge of said beach towel being provided with means for securing said fabric in a rolled up condition and a carrying case for holding said towel and pillow, said carrying case having an open top, said open top having a draw string attached thereto for closing said open top, and an outside surface of said carrying case having a plurality of pockets disposed thereon.

5,644,808
ADJUSTABLE BED AND METHOD OF ADJUSTING SAME
Franklin E. Elliott, Culver City, Calif., assignor to Maxwell Products, Inc., Cerritos, Calif.
Division of Ser. No. 213,675, Mar. 15, 1994, Pat. No. 5,537,701. This application Apr. 30, 1996, Ser. No. 641,240
Int. Cl.[6] A61G *7/00*
U.S. Cl. 5—618 **39 Claims**



28. An adjustable bed comprising:

a bed frame;

a mattress foundation supported by said frame, said foundation having a foundation foot end, an opposite foundation head end and a foundation head portion;

a mechanical assembly operatively connected to said foundation;

a mattress supported on said foundation, said mattress having a mattress foot end, an opposite mattress head end and a mattress head portion;

wherein said foundation head portion is movable by said mechanical assembly between a generally horizontal position and a generally pivoted raised portion;

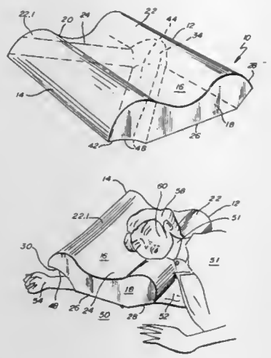
wherein when said foundation head portion is in the horizontal position, said foundation and mattress head ends are vertically aligned and said foundation and mattress foot ends are aligned;

wherein said mattress head portion is movable with said foundation head portion between a generally horizontal position and a generally pivoted raised position; and

wherein when said foundation head portion is in the raised position, said foundation and mattress foot ends are aligned and said foundation and mattress head ends are aligned.

5,644,809
CERVICAL PILLOW
Michael J. Olson, 710 Maple Leaf Ct., Osceola, Wis. 54020
Filed May 15, 1996, Ser. No. 648,426
Int. Cl.[6] A47G *9/02*
U.S. Cl. 5—636 **20 Claims**

1. A one-piece pillow comprising a top portion having a head support thereon, a front portion on the pillow, a bottom portion on the pillow, and a back portion on the pillow, a first arm channel formed in the bottom portion of the pillow, the first arm channel having a shoulder opening at the from portion of the pillow, a second arm channel formed in the bottom portion of the pillow, the second arm channel having a shoulder opening adjacent to the shoulder opening on the first arm channel, the shoulder opening on the second arm channel extending to the front portion of the pillow, the first arm channel and the second arm channel formed in a V-orientation to each other, and the pillow formed from a resiliently flexible material.

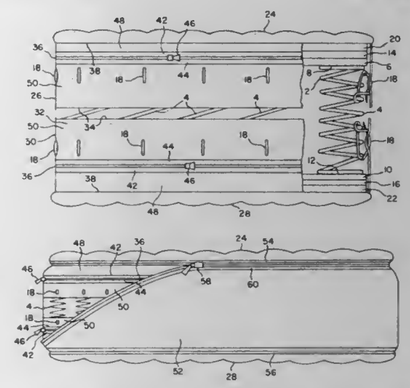


5,644,810
PILLOW FOR SUPINE AND SIDE-ORIENTATED SLEEPING POSITIONS
Katsuya Kato, #408 1000-4-2 Shinei-cho, Kusaka-shi, Saitama, Japan
Filed Oct. 18, 1996, Ser. No. 731,776
Claims priority, application Japan, Dec. 5, 1995, 7-0144441
Int. Cl.[6] A47C *9/02*
U.S. Cl. 5—645 **6 Claims**



3. A pillow for supine and side-orientated sleeping positions comprising opposed horizontal side head end support units and a central head back support unit there between, said head back support unit further comprising vertically opposed neck-bones' support sections separated by an overall central head back rest section whereby every unit and section is divided into integrated, compartmentalized areas by divider walls.

5,644,811
MATTRESS HAVING ACCESS TO MATERIALS SANDWICHED BETWEEN MATTRESS COVER AND INNER CUSHIONING ASSEMBLY
Frank G. Cavazos, 14040 Shoshoni Dr., Lockport, Ill. 60441
Filed Sep. 25, 1995, Ser. No. 533,032
Int. Cl.[6] A47C *27/045;27/04*
U.S. Cl. 5—738 **28 Claims**

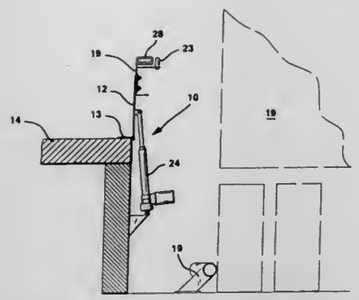


1. A mattress comprising an inner cushioning assembly having an upwardly facing bearing surface, at least one layer of material over said upwardly facing bearing surface, a first mattress cover over said layer of material, said first mattress cover having a first flange of flexible sheet material extending from the peripheral edge of said first mattress cover, said first flange having a first connecting edge connected to said first mattress cover and a first opposite free edge, said first flange comprising a connecting edge adjacent flange portion extending from said connecting edge of said first flange toward said free edge of said first flange terminating in a first zipper connecting edge of said first flange and a free edge adjacent flange portion of said first flange extending from said free edge of said first flange toward said connecting edge of said first flange terminating in a second zipper connecting edge of said first flange, a first zipper assembly connected along one side thereof to said first zipper connecting edge of said first flange and along the other side to said second zipper connecting edge of said first flange, and flange securing means connecting said free edge adjacent flange portion of said first flange to said inner cushioning assembly, said first zipper assembly being operable between an inter-engaged and a separated position, said first mattress cover and said connected edge adjacent flange portion of said first flange being separable from said free edge adjacent flange portion of said first flange secured to said inner cushioning assembly when said first zipper assembly is in its said separated position for access to said layer of material over said upwardly facing bearing surface and under said first mattress cover.

5,644,812
ADJUSTABLE DOCK APPARATUS
Roy E. Neufeldt, and Clint J. Retterath, both of Red Wing, Minn., assignors to Neufeldt Industrial Services, Inc., Red Wing, Minn.
Filed Oct. 26, 1995, Ser. No. 548,731
Int. Cl.[6] E01D *1/00*
U.S. Cl. 14—71.3 **6 Claims**

1. Adjustable dock apparatus comprising:

a) a generally rectangular shaped and essentially planar body having opposed inner and outer edges along the longest dimension thereof, said body having attachment means for pivotally attaching said inner edge of said body to the outer edge of a dock such that said body can rotate between a



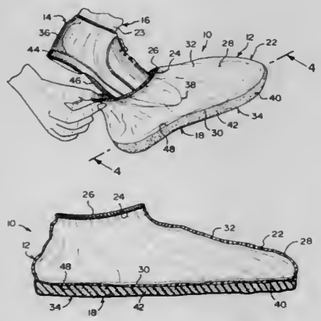
horizontal orientation extending outward from the dock and a vertical orientation extending upward from the dock; said body also having a plurality of first actuator means for rotating the body between the horizontal orientation and the vertical orientation;

b) a generally rectangular shaped and essentially planar extension having opposed inner and outer edges along the longest dimension thereof which are essentially the same length as the opposed inner and outer edges of said body, said extension having attachment means for slidable attaching said extension adjacent to said body and coplanar therewith with the outer edge of said extension farthest from the dock and such that said extension can move from a first position, where the outer edge of said extension is essentially aligned with the outer edge of said body, to a second position, where the outer edge of said extension projects outward a predetermined distance beyond the outer edge of said body, said extension also having a plurality of second actuator means for moving said extension between said first position and said second position;

c. a plurality of inductive sensor means spaced along the outer edge of said extension for sending the presence of a truck trailer at a predetermined distance and generating an output signal; and

d. said second actuator means having groups of adjacent actuators bracketing each said inductive sensor, with each inductive sensor signal having means for stopping the group of second actuators bracketing said sensor when said extension is moving outwardly with respect to said dock.

5,644,813
DISPOSABLE OVERSHOE MOP
Paula Puskas, 645 Larkfield Rd., East Northport, N.Y. 11731
Filed Jan. 16, 1996, Ser. No. 585,375
Int. Cl.[6] A47L *13/20;13/282*
U.S. Cl. 15—227 **1 Claim**

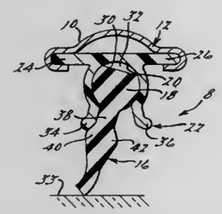


1. A disposable overshoe mop comprising:

a) means in combination with and for covering a shoe being worn by a person to protect said shoe from water and dirt comprising a stretchable sheath of thin flexible waterproof plastic material snugly fitting and completely covering said shoe to the ankle of said person, said sheath having an entrance aperture for said shoe to be inserted therethrough, an elastic band secured about said entrance aperture to seal off said aperture when said shoe is within said sheath, and a bottom wall continuous and integral With side walls covering the length and width of the bottom of said sheath; and

b) means affixed to the bottom wall of said covering means for cleaning a floor comprising a soft sole extending along a complete length of said bottom wall, said soft sole being made out of a compressible water absorbent material covering the entire bottom of said overshoe mop for sucking up any water on said floor and permanently bonded by adhesive to said bottom wall.

5,644,814
ARTICULATED WINDSHIELD WIPER BLADE ASSEMBLY
Peter H. Jeffer, New York, N.Y., assignor to New-View Windshield Wiper L.P., New York, N.Y.
Continuation-in-part of Ser. No. 634,346, Apr. 18, 1996, Pat. No. 5,572,764. This application Sep. 5, 1996, Ser. No. 708,669
Int. Cl.[6] B60S *1/38;1/04*
U.S. Cl. 15—250.361 **1 Claim**

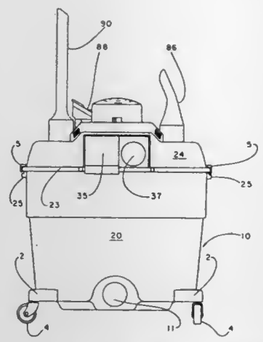


1. In an articulated twin spline windshield wiper blade assembly for acceptance in claws of a conventional windshield wiper arm assembly, said assembly comprising an elongated relatively high durometer polymeric female spline having a cylindrical channel therein, the improvement comprising:

an elongated relatively low durometer elastomeric male spline having a cylindrical portion complimentary to the channel in said female spline so as to be journaled for rotation therein and a wiping portion with a pair of spaced wiping edges engageable, alternately, with a surface to be wiped upon rotation of said male spline relative to said female spline, the cylindrical portion of said male spline being truncated so as to define a channel between said male and female splines for the egress of water and debris and to minimize friction between said male and female splines.

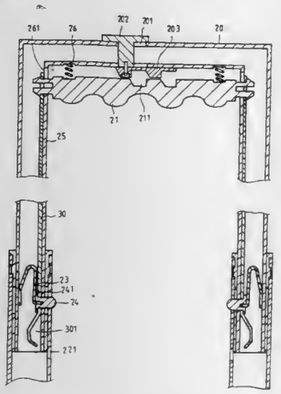
5,644,815
SLIDING DOOR VALVE FOR UTILITY VACUUM CLEANER
Nick M. Bosyj, North Canton; Donald R. Bowers; Nicholas Koukourakis, both of Akron; Conway Vincent, and Richard A. Wareham, both of North Canton, all of Ohio, assignors to The Hoover Company, North Canton, Ohio
Continuation of Ser. No. 5,023, Jan. 15, 1993, abandoned. This application Jan. 18, 1994, Ser. No. 182,655
Int. Cl.[6] A47L *5/32*
U.S. Cl. 15—328 **18 Claims**

1. In a vacuum cleaner having multiple inlet ports wherein each port is configured to removably receive therein a flexible vacuum



hose end and wherein each port fluidly communicates with a separate debris collecting chamber the improvement comprising a selectively positionable valve means having a single valve door for preventing fluid flow into all but one of said inlet ports.

5,644,816
EXTENSIBLE DRAWBAR DEVICE OF A TRUNK
Cheng-Tsan Chou, 27, Lane 280, Chung Zhen Road, Chin Quan Li, Sa Lu, Taichung, Taiwan
Filed Mar. 4, 1996, Ser. No. 610,471
Int. Cl.[6] B25G *1/04*
U.S. Cl. 16—115 **2 Claims**



1. An extensible drawbar device comprising:

a grip;

two parallel drawbars having upper ends connected to said grip;

two link plates adjacent to said corresponding drawbars, respectively;

two fixed plates receiving said corresponding drawbars and link plates;

a groove formed on an upper portion of each said drawbar;

a draw plate disposed under said grip transversely to said drawbars and having two ends inserted in said corresponding grooves, respectively;

said two ends of said draw plate connected to two upper ends of said corresponding link plates, respectively;

a lower end of each said link plate having a generally ladder-shaped plate;

said ladder-shaped plate having a first step, a second step, a bevel between said first step and said second step, and a slot on said ladder-shaped plate;

said second step having a curved distal end;

a caging hole formed at a lower portion of each said drawbar;

a plurality of positioning holes formed on an upper portion of each said fixed plate;

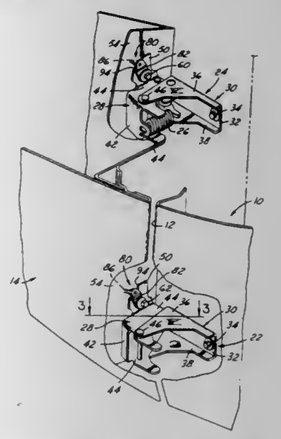
a positioning stopper which is restrained by a restrained spring and inserted in each said caging hole and said corresponding positioning hole;

said positioning stopper each having a rear flange abutting said slot; and

one end of each said restrained spring inserted in a bottom of said positioning stopper;

wherein when said draw plate is lifted upward, said bevel pushes said rear flange so that each of said positioning stopper moves from said first step to said second step, disengages with said caging hole and said corresponding positioning hole, and is positioned in the drawbar, and said drawbars may be extended.

5,644,817
LOCATOR PIN ASSEMBLY FOR A VEHICLE DOOR
Frederick F. Bender, South Lyon, and Robert F. Giorio, Livonia, both of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.
Filed Oct. 17, 1996, Ser. No. 731,548
Int. Cl.[6] E05D *5/00*
U.S. Cl. 16—382 **12 Claims**



1. Hinge apparatus for a door of a motor vehicle providing precise door-on-door-off capability enabling the door to be hinged to a vehicle body post in adjusted position, unhinged, and then re-hinged in the same adjusted position, comprising:

a door panel,

a body post panel,

a pair of hinges connecting said door panel to said body post panel,

each hinge comprising a first hinge plate connected to a first one of said panels,

a second hinge plate disposed against a second one of said panels,

a pivot pin pivotally connecting said first and second hinge plates,

a tapping plate secured to said second panel,

said tapping plate having a threaded hole therein,

a locator comprising a tab secured to said second hinge plate,

said tab having a clearance hole therein aligned with said threaded hole,

said tab having a locator pin spaced from said clearance hole,

said tapping plate having a locator hole closely receiving said locator pin,

clearance openings in said second hinge plate and in said second panel aligned with said threaded hole, and

a mounting screw extending through the clearance hole in said tab and through the clearance openings in said second hinge plate and second panel and threadedly engaged in said threaded hole to clamp together said tab, said second hinge plate, said second panel and said tapping plate,

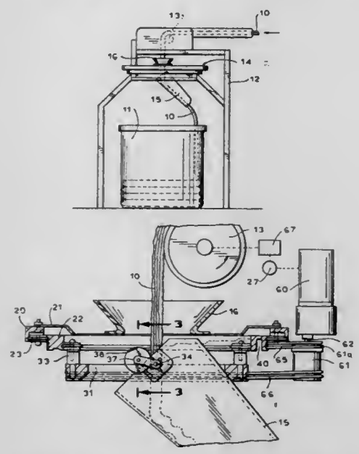
said clearance openings in said second hinge plate and in said second panel being large enough relative to said screw to permit adjustment of the said second hinge plate relative to the second panel before said screw is tightened.

5,644,818

FABRIC DISTRIBUTOR

Ellie E. Price, Charlotte, and William C. Hardin, Jr., Lexington, both of N.C., assignors to Tubular Textile LLC, Lexington, N.C.

Filed Sep. 17, 1996, Ser. No. 713,690
Int. Cl.[6] D04H *11/00;* **B21C** *47/10*
U.S. Cl. 19—159 R **11 Claims**



1. A system for feeding and distributing rope-form fabric into an open-top container with a layered distribution, and comprising an elongated distributing guide for receiving fabric from a source and having a discharge end for controllably discharging said fabric into said container, first means for supporting said distributing guide for rotation above said container, second means for controllably manipulating the discharge end of said distributing guide between a first position, near center portions of said container and a second position near outer portions of said container, characterized by

(a) a distributing member mounted for rotation about a vertical axis,

(b) pivot means on said distributing member for pivotally supporting upper end portions of said distributing guide for swinging movement in a direction radially of said vertical axis between first and second limit positions in which the discharge end of said distributing guide is positioned, respectively, near center portions of said container and near outer portions of said container,

(c) a ring-like member coaxial with said distributing member,

(d) said ring-like member having a circular cam track thereon formed with progressively rising portions over a first portion of its length and progressively declining portions over a second portion of its length,

(e) cam follower means associated with said distributing guide and engaging said circular cam track, whereby relative rotational movement of said ring-like member and said distributing member results in swinging movement of said distributing guide between said first and second limit positions, and

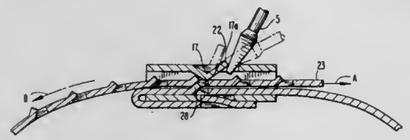
(f) drive means for rotating said ring-like member and said distributing member simultaneously but at slightly different speeds, whereby to cause relative movement between said cam follower and said cam track.

5,644,819

REUSABLE METALLIC BANDING ASSEMBLY

John Lyons, Levitown, N.Y., assignor to Duro Dyne Corporation, Farmingdale, N.Y.

Filed Aug. 30, 1996, Ser. No. 715,351
Int. Cl.[6] B65D *63/00*
U.S. Cl. 24—20 R **4 Claims**



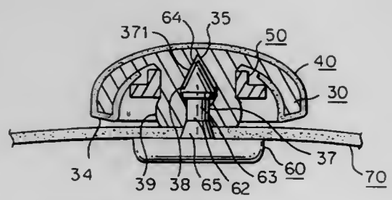
1. A reusable metallic banding assembly comprising a band member and a clamp member, said band member comprising an elongate strap having parallel longitudinally extending side walls, a free end and a clamp end, a plurality of regularly longitudinally spaced locking components formed in said strap, said components including a tooth offset from the plane of said strap and a stop shoulder in the plane of said strap in longitudinally spaced relation to said tooth, said shoulders facing said free end of said strap, said clamp member being fixed to said clamp end of said strap and including upper and lower walls defining a passage parallel to the plane of said strap, a barb formed on said strap and extending into said passage, a pawl integrally formed on said clamp member, said pawl including a cam surface extending into said passage in proximate spaced relation to said barb, said pawl being positioned to be resiliently deflected away from said barb responsive to engagement of said teeth and cam surface when said strap is advanced through said passage in a first direction, said stop shoulders being biased by said pawl into the path of said barb to block relative movement of said strap in said passage in a direction opposite said first direction.

5,644,820

CROWN BUTTON OF A CAP

Wen-Lung Ho, No. 30-1, Ta-chung Street, Taichung, Taiwan

Continuation-in-part of Ser. No. 288,692, Aug. 12, 1994, Pat. No. 5,517,730. This application Sep. 8, 1995, Ser. No. 525,165
Int. Cl.[6] A44B *1/12;1/38*
U.S. Cl. 24—92 **6 Claims**



1. A cap crown button comprising:

a female retaining body made integrally of a plastic material by injection molding and provided at a top thereof with an arcuate surface having a periphery extending downwards and

a receiving space which is provided centrally with a projection having an axial hole;

a decorating cloth of a soft fabric and covering said arcuate surface and said periphery of said female retaining body such that a tail end of said decorating cloth is received in said receiving space;

a fastening element made integrally of a plastic material by injection molding and being smaller in size than said receiving space of said female retaining body, said fastening element provided axially with a through hole dimensioned to receive therein said projection of said female retaining body; and

a male retaining body made integrally of a plastic material by injection molding and composed of a bottom and a nail fastened centrally to said bottom;

wherein said axial hole of said projection has an upper segment greater in diameter than a lower segment thereof, and a shoulder; wherein said nail of said male retaining body is provided with a head and a tapered bottom, said head being greater in diameter than said nail and having thereon a tapered portion capable of piercing a cap crown to engage said axial hole of said projection of said female retaining body; wherein said projection of said female retaining body is provided with a belly portion capable of urging said fastening element so as to fix firmly said decorating cloth; and

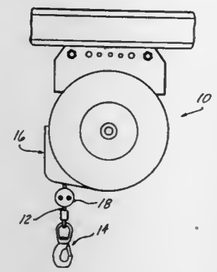
wherein, said axial hole includes a blind top end, and said blind top end includes a tapered sustaining portion; and wherein said tapered portion of said head of said male retaining body is tapered at a head inclination substantially equal to a top end inclination of said sustaining portion.

5,644,821

ARRANGEMENT FOR ATTACHMENT OF A STOP ELEMENT TO A HOIST CABLE OR CHAIN

James Zaguroli, Jr., Drayton Plains, Mich., assignor to Knight Industries, Inc., Auburn Hills, Mich.

Filed Jun. 7, 1995, Ser. No. 478,787
Int. Cl.[6] F16G *11/00*
U.S. Cl. 24—114.5 **9 Claims**



1. A stop element adapted to be secured to a cable, comprising:

a pair of stop element component pieces configured to be assembled together, each of said pieces having a face abutting a corresponding face on the other component piece, with a clearance recess extending completely across the abutting face of each of said component pieces, each said clearance recess aligned with each other with said component piece faces in abutment to allow a cable to extend through said stop element;

at least one elongated transverse recess formed into each said abutting face extending transversely to said clearance recess and a cable disposed therein;

a pair of respective elongate inserts of harder material than said component pieces, each of said inserts tightly fits into a respective said transverse recess to place a surface thereof against a surface of the other respective insert;

each of said inserts having a groove formed across said surface thereof, said groove of each of said inserts aligned with each other when said component pieces are assembled together to encircle a cable, said grooves extending to be aligned with said clearance recess and shaped to grip a cable when assembled to secure a cable to said element; and

means for drawing said stop element pieces together to hold said faces of said component pieces abutting together and said surfaces of said inserts against each other.

5,644,822

STRAP BUCKLE

Gordon Frew, Indian Rocks Beach, Fla., assignor to Net/Werk/USA, Inc., New York, N.Y.

Filed Apr. 1, 1996, Ser. No. 625,231
Int. Cl.[6] A44B *11/00*
U.S. Cl. 24—196 **13 Claims**



1. A buckle for fastening ends of a flat strap, said buckle consisting of a unitary structure consisting of:

a pair of parallel end portions;

a pair of parallel side legs each having two ends disposed between and directly connected permanently and perpendicularly at said two ends to said pair of end portions; and

a pair of parallel intermediate legs each having two ends and of generally rectangular cross-section immovably disposed between and directly connected permanently and perpendicularly at said two ends to said pair of end portions and parallel to said side legs with a predetermined space between each intermediate leg and each side leg, so that an end of said flat strap is threaded under a bottom surface of one intermediate leg, between said pair of intermediate legs, over a top surface of said one intermediate leg, between said one intermediate leg and one side leg, and below a bottom surface of said one side leg and above a part of said flat strap, whereby said threaded strap is bent at least three times at substantially right angles so that upon pulling of said flat strap to tighten, said flat strap is held in substantially the tightened position.

5,644,823

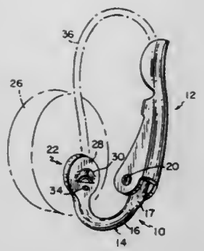
EARRING CLIP

Robert A. Montaquila, 39 Hamden Rd., Cranston, R.I. 02920

Filed Feb. 20, 1996, Ser. No. 602,505
Int. Cl.[6] A44C *7/00;* **A44B** *21/00*
U.S. Cl. 24—499 **2 Claims**

1. A clip for earrings comprising:

a movable spring action clip arm and a stationery body, said body having a attachment member at one end thereof and connection means at the other end thereof, one end of said clip arm having means for receiving said body connection means so as to pivotally attach said clip arm to said body for relative spring urged movement towards and away from said clip, said attachment member having a first and second side and an opening extending through said sides, said first side



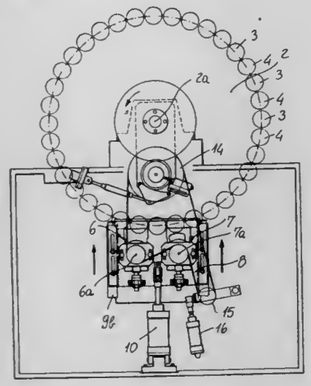
having a level surface to receive a decorative element, said second side having a metallic band extending from the surface in an arc shape to receive an earwire.

5,644,824

MAINTENANCE RAISING MACHINE INCLUDING A SAFETY DEVICE FOR PREVENTING DAMAGES AS THE FABRIC BEING RAISED IS BROKEN

Emanuele Crosta, Corso Sempione, 67, 21052 - Busto Arsizio (Varese), Italy

Filed Apr. 10, 1996, Ser. No. 629,480
Claims priority, application Italy, Sep. 26, 1995, MI95A1980
Int. Cl.[6] D06C *11/00*
U.S. Cl. 26—33 **3 Claims**



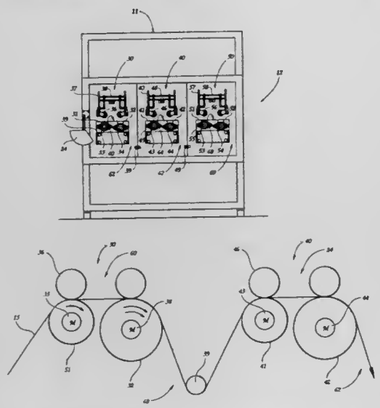
1. An improved maintenance raising machine, including a safety device for preventing damages as a fabric being raised is broken, said raising machine comprising a drum, having a horizontal axis, which can be rotatably driven about said axis and supporting, on a peripheral portion thereof, a plurality of raising cylinders, each having an axis parallel to said axis of said drum and which can be rotatively driven about the axes thereof, two cleaning brushes being moreover provided, said brushes adjoining a portion of said periphery of said drum and operating on said raising cylinders for cleaning said raising cylinders, wherein said two cleaning brushes are provided with offset cleaning portions so that a cleaning brush will operate exclusively on said raising cylinders provided for the raising operation proper, whereas the other cleaning brush will operate exclusively on the raising cylinders provided for a counter-raising operation, said two cleaning brushes being mounted on a controllably driven plate-like support element which can be controlled vertically displaced toward said drum or away from said drum, said plate-like support element adjoining a bottom portion of said drum and being vertically slidably mounted on two vertical guides arranged at vertical opposite sides of said plate-like support element.

5,644,825

METHOD AND APPARATUS FOR INCREASING THE YIELD OF RUBBER YARN

James O. Threlkeld, and Thor Robert Thisse, both of 4100 Barringer Dr., Charlotte, N.C. 28217

Filed Mar. 13, 1996, Ser. No. 614,747
Int. Cl.[6] D02J *1/22*
U.S. Cl. 28—240 **27 Claims**



1. A method for stabilizing and increasing the yield of natural rubber yarn prior to winding the yarn on a bobbin, the method comprising the steps of:

providing a traveling strand of natural rubber yarn for winding on a bobbin;

providing means for winding the strand on a bobbin;

providing first means for stretching the yarn, said first stretching means being associated with said winding means;

providing second means for stretching the yarn, said second stretching means spaced a predetermined distance from said first stretching means, with the space therebetween defining a first yarn relaxation region, with a space downstream of said second stretching means defining a second relaxation region;

stretching the traveling yarn using said first stretching means;

relaxing the yarn in said first relaxation region;

stretching the yarn a second time using said second stretching means;

relaxing the yarn in said second relaxation region, and winding the yarn on a bobbin using said yarn winding means.

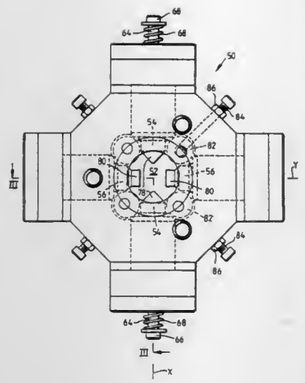
5,644,826

SPIN CLOSING APPARATUS AND METHOD

Antonio Manuel Rodriguez Reyes, Jerez Fra, Spain, assignor to Delphi Automotives Systems Espana S.A., Cadiz, Spain

Filed Oct. 17, 1994, Ser. No. 324,146
Claims priority, application United Kingdom, Jun. 25, 1994, 9412806
Int. Cl.[6] B23P *11/00*
U.S. Cl. 29—243.5 **7 Claims**

1. Apparatus for spin closing an open end of a tube of a suspension strut comprising: a throughbore having a longitudinal axis; a first pair of rollers, each roller of the first pair being rotatably mounted within in a bore of a housing communicating with the throughbore, each roller having a contact surface at a first predetermined angle to the longitudinal axis and extending into the throughbore, each roller being biased toward said longitudinal axis by a spring such that the contact surface can retract from the throughbore against the biasing action of the spring as the tube is inserted within the throughbore and contacts said contact surface;



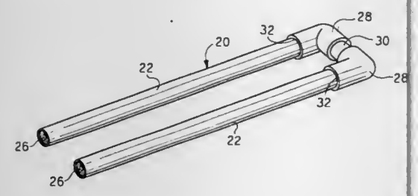
and a second pair of rollers, each roller of the second pair being rotatably mounted within a bore opening into the throughbore, and having a contact surface at a second predetermined angle to the longitudinal axis and extending into the throughbore; wherein the second predetermined angle is greater than the first predetermined angle; and wherein the first pair of rollers is offset from the second pair of rollers along the longitudinal axis such that, on insertion, the open end of the tube of the suspension strut will make contact with the contact surfaces of the first pair of rollers before contacting the contact surfaces of the second pair of rollers.

5,644,827

APPARATUS FOR INSTALLING AND REMOVING PISTON RODS

Ed Alcobia, 2244 Weatherby Ave., Escondido, Calif. 92027

Filed Nov. 19, 1993, Ser. No. 154,900
Int. Cl.[6] B25B *27/00*
U.S. Cl. 29—270 **5 Claims**



1. An apparatus for installing or removing a piston rod comprising:

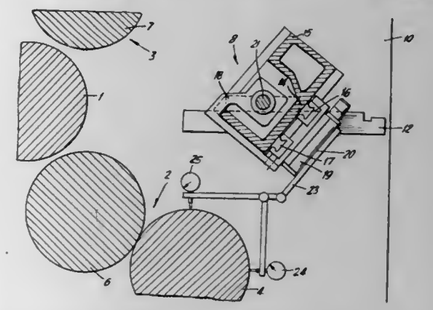
two legs of sufficient length to extend from below the engine's cranking means into a cylinder bore for attachment to rod bolts; one end of each said leg having a hollow portion; two angular sections one connected to each said leg; a central base section connected between said angular sections and a means of retaining rod bolts within said legs comprising an inward curved section in each of said legs, whereby said curved section exerts and retains a force on the piston rod bolts.

5,644,828

DEVICE FOR IN SITU REPAIRING OF A CYLINDER IN A PRINTING MACHINE

Colin Saller, Augsburg; Paul Harmathy, Munich; Eckhard Tusché , Bobingen; Thomas Weissbacher, Neusäss; Heinrich Schoder, Inchenhofen; Xaver Bachmeir, Augsburg, and Johannes Ruschkowski, Augsburg, all of Germany, assignors to MAN Roland Druckmaschinen AG, Offenbach am Main, Germany

Filed Jun. 17, 1994, Ser. No. 261,994
Claims priority, application Germany, Jun. 17, 1993, 43 20 069.9
Int. Cl.[6] B23P *6/00*
U.S. Cl. 29—402.06 **9 Claims**



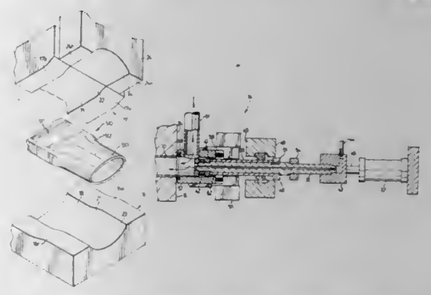
1. A device for repairing a cylinder of in a printing machine while the cylinder is installed in the printing machine, comprising: a cross slide rail having a base body having longitudinal guides, a longitudinal support slidably mounted on the longitudinal guides, and a transverse support connected to the longitudinal support; means for removably mounting the cross slide rail to side walls of the printing machine so as to be parallel to a longitudinal axis of the cylinder to be repaired; a pull spindle rotatably mounted to the base body and operatively connected to the longitudinal support so that rotation of the pull spindle moves the longitudinal support along the longitudinal guides of the base body; tool holder means connected to the transverse support for carrying a tool for working the cylinder; and means for driving the cylinder.

5,644,829

METHOD FOR EXPANSION FORMING OF TUBING

Murray R. Mason, and Gerrald A. Klages, both of Woodstock, Canada, assignors to T 1 Corporate Services Limited, London, England

Continuation of Ser. No. 106,752, Aug. 16, 1993, abandoned. This application Dec. 5, 1995, Ser. No. 567,721
Int. Cl.[6] B23P *17/02;* **B21D** *22/10*
U.S. Cl. 29—421.1 **15 Claims**



1. A method of forming a tubular member comprising:

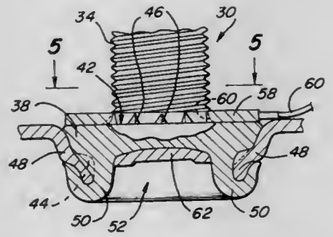
(a) providing a die having therein a cavity having a cross section corresponding to a configuration of a desired final tubular member;
(b) providing a tubular blank having thereon an end portion;
(c) deforming the end portion of said tubular blank to provide a deformed end portion having a cross section transverse to the longitudinal axis of the tubular blank, the transverse cross section being a continuously smoothly curved elongated profile, the transverse cross section including a first length measured along a first axis, a second length measured along a second axis, said second axis extending transversely to said first axis, and said second length being greater than said first length;
(d) confining said tubular blank in said cavity;
(e) sealing said blank by applying to said deformed end portion a sealing member having a resilient sealing portion of continuously smoothly curved elongated cross sectional profile corresponding to said deformed end portion;
(f) pressurizing the blank internally to expand it to define the shape of the cavity; and
(g) releasing the pressure, removing the sealing member and withdrawing the expanded blank from the die;
and wherein in said step of providing a die, said die comprises die sections moving between open, intermediate and closed positions, each die section having a die cavity portion and a mating surface portion, which die sections in the closed position having the mating surface portion of each section in mating engagement with the mating surface portion of each adjacent section on the die cavity portions defining said cavity, and said step of deforming said end portion of said tubular blank comprises placing the blank between the die sections in the open position, and partially closing the die sections to said intermediate position for deforming said end portion, and wherein said sealing member is inserted into the deformed end before the blank is confined in the die by moving said die sections to the closed position.

5,644,830

METHOD OF FORMING ELECTRICAL CONNECTION

Harold A. Ladouceur, Livonia, Mich., and Rudolf R. M. Muller, Frankfurt, Germany, assignors to Multifastener Corporation, Detroit, Mich.

Division of Ser. No. 988,066, Dec. 9, 1992, Pat. No. 5,441,417, which is a continuation-in-part of Ser. No. 786,243, Oct. 31, 1991, Pat. No. 5,207,588, which is a continuation-in-part of Ser. No. 491,925, Mar. 12, 1990, Pat. No. 5,092,724, which is a division of Ser. No. 196,209, May 19, 1988, Pat. No. 4,915,558, which is a division of Ser. No. 892,017, Aug. 1, 1986, Pat. No. 4,765,057, which is a division of Ser. No. 773,387, Sep. 6, 1985, Pat. No. 4,633,560, which is a division of Ser. No. 563,833, Dec. 21, 1983, Pat. No. 4,555,838, which is a continuation-in-part of Ser. No. 485,099, Mar. 28, 1983, Pat. No. 4,459,073, and Ser. No. 504,074, Jun. 14, 1983, Pat. No. 4,543,701, which is a continuation of Ser. No. 229,274, Jan. 28, 1981, said Ser. No. 485,099is a division of Ser. No. 229,274. This application May 17, 1995, Ser. No. 443,325
Int. Cl.[6] B23P *11/00*
U.S. Cl. 29—432.2 **13 Claims**



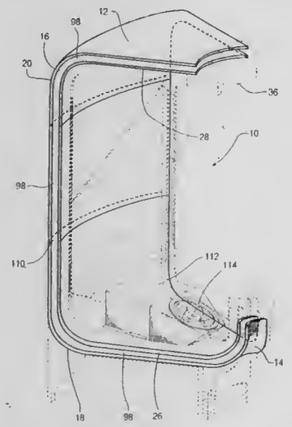
1. A method of attaching an electrical grounding connector assembly to an electrically conductive panel, said electrical grounding connector assembly of the type having a grounding stud connector and a displaceable cap, said grounding stud connector having a body portion disposed between, and integrally joining, a stud portion and a riveting portion, said body portion including a flange portion extending generally radially from said body portion, said flange having a panel engaging surface and a lug engaging surface, said electrical grounding connector assembly including barbed elements disposed on at least one of said riveting portion and said panel engaging surface of said flange portion for conducting electrical current between said electrical grounding connector assembly and said conductive panel when said electrical grounding connector is joined to said electrically conductive panel, said displaceable cap being adapted to cooperatively engage and substantially cover said stud portion and also adapted to cover said lug engaging surface of said flange thereby protecting said stud portion and said lug engaging surface of said flange from contaminants, said method comprising the steps of:
(a) placing said riveting portion of said electrical grounding connector assembly adjacent said electrically conductive panel;
(b) passing said riveting portion through said panel thereby causing said barbed elements to contact said panel providing a path for electrical current between said electrical grounding connector assembly and said panel;
(c) radially deforming said riveting portion of said grounding stud connector thereby mechanically bonding said electrical grounding connector assembly to said panel;
(d) displacing said cap from said lug engaging surface; and
(e) securing an electrically conducting lug against said lug engaging surface of said flange.

5,644,831

METHOD FOR CONSTRUCTION OF A UNIVERSAL MODULAR APPARATUS FOR SELECTIVELY FORMING CURVED CONCAVE AND CONVEX SECTIONS OF A REFRIGERATED DISPLAY CASE

Joseph A. Federico, Titusville, N.J., assignor to Delaware Capitol Formation Inc., Wilmington, Del.

Division of Ser. No. 340,933, Nov. 17, 1994, Pat. No. 5,501,516. This application Nov. 2, 1995, Ser. No. 552,324
Int. Cl.[6] B21D *39/00*
U.S. Cl. 29—455.1 **11 Claims**



1. A method for constructing a thermally insulated housing for a curved section of a refrigerated display case from a plurality of similarly shaped outer liner members and a plurality of similarly

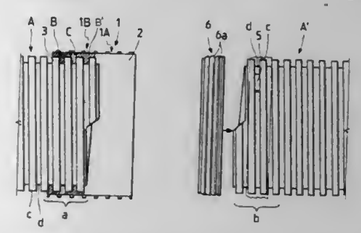
shaped inner liner members usable for forming both concave and convex curved case sections, the method comprising:
A. forming a plurality of outer modular members each including a generally planar arc shaped outer horizontal panel having a first outer longitudinal end and a second outer longitudinal end positioned spaced apart from and oriented perpendicularly with respect to each other, each outer modular member being formed with an outer narrow arcuate end and an outer wide arcuate end extending between the first outer longitudinal end and the second outer longitudinal end, each outer modular member further provided with an outer narrow vertical panel extending upwardly from the outer narrow arcuate end generally perpendicularly with respect to the outer horizontal panel and an outer narrow corner member extending between the outer narrow arcuate end and the outer narrow vertical panel and extending through an angle of approximately ninety degrees, each outer modular member further provided with an outer wide vertical panel extending upwardly from the outer wide arcuate end generally perpendicularly with respect to the outer horizontal panel and an outer wide corner member extending between the outer wide arcuate end and the outer wide vertical panel and extending through an angle of approximately ninety degrees; and
B. forming a plurality of inner modular members each including a generally planar arc-shaped inner horizontal panel having a first inner longitudinal end and a second inner longitudinal end positioned spaced apart from and oriented perpendicularly with respect to each other, each inner modular member being formed with an inner narrow arcuate end and an inner wide arcuate end extending between the first inner longitudinal end and the second inner longitudinal end, each inner modular member further provided with an inner narrow vertical panel extending upwardly from the inner narrow arcuate end generally perpendicularly with respect to the inner horizontal panel and an inner narrow corner member extending between the inner narrow arcuate end and the inner narrow vertical panel and extending through an angle of approximately ninety degrees with a radius of curvature less than that of the outer narrow corner member, each inner modular member further provided with an inner wide vertical panel extending upwardly from the inner wide arcuate end generally perpendicularly with respect to the inner horizontal panel and an inner wide corner member extending between the inner wide arcuate end and the inner wide vertical panel and extending through an angle of approximately ninety degrees with a radius of curvature less than that of the outer wide corner member;
C. first outer marking of each outer modular member with a first outer lining extending approximately horizontally at an intermediate location on the outer narrow vertical panel for indicating the position for cutting of the outer modular member therealong for facilitating use thereof as the outer liner of a concave tank section of a refrigerated display case;
D. second outer marking of each outer modular member with a second outer lining including a major second outer lining extending through an arc passing across the outer horizontal panel from the first outer longitudinal end to the second outer longitudinal end thereof and a minor second outer lining extending approximately horizontally at an intermediate location on the outer wide vertical panel for indicating the position for cutting of the outer modular member therealong for facilitating use thereof as the outer canopy liner of a concave refrigerated display case;
E. third outer marking of each outer modular member with a third outer lining extending approximately horizontally at an intermediate location on the outer wide vertical panel for indicating the position for cutting of the outer modular member therealong for facilitating use thereof as the outer tank liner of a convex refrigerated display case; and
F. fourth outer marking of each outer modular member with a fourth outer lining including a major fourth outer lining extending through an arc passing across the outer horizontal panel from the first outer longitudinal end to the second outer longitudinal end thereof and a minor fourth outer lining extending approximately horizontally at an intermediate location on the outer narrow vertical panel for indicating the position for cutting of the outer modular member therealong for facilitating use thereof as the outer canopy liner of a convex refrigerated display case;
G. first inner marking of each inner modular member with a first inner lining extending approximately horizontally at an intermediate location on the inner narrow vertical panel for indicating the position for cutting of the inner modular member therealong for facilitating use thereof as the inner tank liner of a concave refrigerated display case;
H. second inner marking of each inner modular member with a second inner lining including a major second inner lining extending through an arc passing across the inner horizontal panel from the first inner longitudinal end to the second inner longitudinal end thereof and a minor second inner lining extending approximately horizontally at an intermediate location on the inner wide vertical panel for indicating the position for cutting of the inner modular member therealong for facilitating use thereof as the inner canopy liner of a concave refrigerated display case;
I. third inner marking of each inner modular member with a third inner lining extending approximately horizontally at an intermediate location on the inner wide vertical panel for indicating the position for cutting of the inner modular member therealong for facilitating use thereof as the inner tank liner of a convex refrigerated display case; and
J. fourth inner marking of each inner modular member with a fourth inner lining including a major fourth inner lining extending through an arc passing across the inner horizontal panel from the first inner longitudinal end to the second inner longitudinal end thereof and a minor fourth inner lining extending approximately horizontally at an intermediate location on the inner narrow vertical panel for indicating the position for cutting of the inner modular member therealong for facilitating use thereof as the inner canopy liner of a convex refrigerated display case.

5,644,832

METHOD OF PROVIDING SEALING CONNECTION BETWEEN CORRUGATED SPIRAL PIPES

Shiro Kanao, 9-18, Nanpeidai 4-chome, Takatsuki-shi, Osaka, Japan

Division of Ser. No. 121,889, Sep. 17, 1993, Pat. No. 5,415,440. This application Feb. 17, 1995, Ser. No. 390,798
Claims priority, application Japan, Sep. 18, 1992, 4-275038
Int. Cl.[6] B23P *25/00*
U.S. Cl. 29—458 **2 Claims**



2. A method of providing sealing connection between a first corrugated pipe with a joint and a second corrugated pipe, the first and second pipes each having a spirally corrugated outer surface and being made of synthetic resin, the joint comprising a cylindrical joint body having an inside diameter greater than an outside diameter of the corrugations of said first pipe and being attached to said first pipe so that a protruded portion of said joint body protrudes outward from said first pipe while a remaining fitted portion of said joint body is fitted onto said first pipe with two strips of seal material wound between and in intimate contact with an inner peripheral face of said fitted portion of said joint body and an outer peripheral face of said corrugations of said first pipe, each

of said two strips of seal material being wound with one or more turns around said first pipe, forming space which is defined by said two strips of seal material, said inner peripheral face of said fitted portion, and said corrugated outer surface of said first pipe, said space being filled with a foamed resin material so as to couple said joint body and said first pipe together with watertightness, said method comprising the steps of:

forcing a block of waterstop having a cross section slightly greater than that of a trough portion of the corrugations of said second pipe into said trough portion of said second pipe;

fitting an elastic sealing ring with annular ridges formed on an outer peripheral face thereof onto an outer peripheral face of said second pipe in such a way as to cover an outer surface of said block of waterstop; and

forcing said second pipe into said protruded portion of said joint body such that an inner peripheral face of said sealing ring frictionally engages said outer surface of said block of waterstop and said outer peripheral face of said second pipe, and the annular ridges of said sealing ring frictionally engage an inner peripheral face of said protruded portion of said joint body.

5,644,833

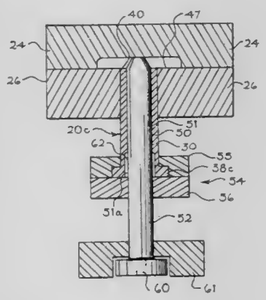
METHOD OF MAKING DRY, LUBRICATED EJECTOR PINS

Glenn Starkey, Lindenhurst, Ill., assignor to D & L Incorporated, Wauconda, Ill.

Division of Ser. No. 265,042, Jun. 23, 1994. This application Jun. 5, 1995, Ser. No. 461,938

Int. Cl.[6] B23P *9/00*

U.S. Cl. 29—527.2 **6 Claims**



1. A method of manufacturing a mold with a dry ejector, comprising the steps of:

providing a nominal length ejector made of metal;

coating the nominal length ejector with a low friction coating of aluminum or an alloy thereof, and with less than a 0.0002 inch thick coating thereon;

cutting the nominal length ejector through the metal and the coating to form an ejector of a selective size and forming a cut end with the coating at the corner at the cut end;

deburring the cut end of the ejector while leaving the low friction metal coating substantially intact at the corner of the cut end without flaking or peeling the coating at the cut end corner; and

placing the metal coated, cut-to-size in the mold.

5,644,834

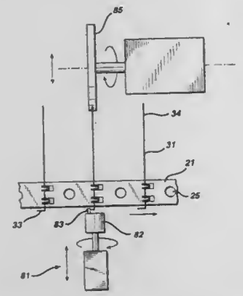
PROCESS FOR MANUFACTURING TAPER POINT SURGICAL NEEDLES

Daniel Smith, Manalapan Township; Bernard M. Willis, East Brunswick; Kenneth P. Marschke, Jr., Medford; Barry Littlewood, Harmony; Vulgens Schoen, Stockton; Carl Gucker, Branchburg; Michael Nordmeyer, Neshanic Station, all of N.J., and Thaddeus Miklewicz, Nazareth, Pa., assignors to Ethicon, Inc., Somerville, N.J.

Continuation of Ser. No. 429,446, Apr. 27, 1995, abandoned, which is a continuation of Ser. No. 146,681, Nov. 1, 1993, Pat. No. 5,477,604. This application Mar. 25, 1996, Ser. No. 621,375

Int. Cl.[6] B23P *13/04*

U.S. Cl. 29—557 **1 Claim**



1. A method for manufacturing a taper point surgical needle comprising:

mounting a plurality of surgical needle blanks to a flat carrier strip, each surgical needle blank having a proximal angulated end; and,

moving each surgical needle blank to a rotary grinding wheel and simultaneously grinding the distal end of the surgical needle blank while rotating the surgical needle blank in the carrier strip by engaging the proximal end of the surgical needle blank with a rotating means to form a taper point.

5,644,835

HEATING ELEMENT METHOD

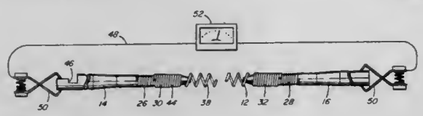
Egan Villringer, Brampton, Canada, assignor to Mold-Masters Limited, Georgetown, Canada

Filed Sep. 9, 1996, Ser. No. 708,814

Claims priority, application Canada, Aug. 20, 1996, 2183722

Int. Cl.[6] H05B *3/00;* **H01C** *17/28*

U.S. Cl. 29—611 **3 Claims**



1. In a method of making an elongated electrical heating element having a resistance wire extending between first and second lead pins and surrounded by an insulating powder in an outer casing, the resistance wire having a first coiled portion extending from a first end, a second coiled portion extending from a second end, and a helical portion extending between the first and second coiled portions, each of the lead pins having an outer end and an inner end, the method including connecting the first lead pin to the first end of the helical resistance wire connecting the second lead pin to the second end of the helical resistance wire, stretching the resistance wire between the first and second lead pins to form the helical portion of the resistance wire, mounting the helical resistance wire with the first and second lead pins attached thereto in an outer cylindrical casing, filling the outer casing with a powdered insulative material to surround the resistance wire and the threaded portions of the first and second lead pins, and compressing the casing to compact the powdered insulative material around the resistance wire, the improvement comprising the further steps of:

(a) threading each of the lead pins to provide each of the lead pins with a threaded portion adjacent the inner end of each lead pin,

(b) screwing the threaded portion of the first lead pin into the first coiled portion adjacent the first end of the helical resistance wire to connect the resistance wire to the first lead pin,

(c) screwing the threaded portion of the second lead pin into the second coiled portion adjacent the second end of the helical resistance wire to connect the resistance wire to the second lead pin, and after stretching the resistance wire between the first and second lead pins to form the helical portion of the resistance wire;

(d) connecting the outer ends of the first and second lead pins to a resistance indicator to indicate the effective electrical resistance of the helical portion of the resistance wire between the first and second lead pins, and

(e) rotating one of the first and second lead pins relative to the other of the first and second lead pins to adjust the effective electrical resistance of the helical portion of the resistance wire between the first and second lead pins to a predetermined value.

5,644,836

DEVICE FOR BELT CONNECTORS

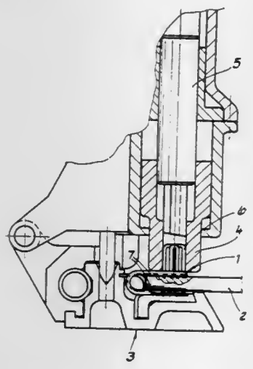
Jean-François Schick, Monteferrier/Lez, France, assignor to Goro S.A., Saint Privat des Vieux, France

Filed Jul. 5, 1995, Ser. No. 498,463

Claims priority, application Germany, Jul. 11, 1994, 44 24 041.4

Int. Cl.[6] B23P *11/00*

U.S. Cl. 29—798 **11 Claims**



1. In combination with a U-shaped clip and a staple, a stapling apparatus comprising:

a die having a seat shaped to fit a belt end over which is fitted the clip;

a presser head displaceable transversely toward and away from the die and having a passage holding the staple;

a first piston-cylinder unit operatively connected to the presser head and pressurizable to displace the presser head toward the die;

a plunger displaceable toward and away from the die in the passage of the presser head;

a second piston-cylinder unit operatively connected to the plunger and pressurizable to displace the plunger toward the die;

means including a hydraulic pump for supplying fluid under pressure; and

control means including a multiport valve between the pump and the piston-cylinder units for first pressurizing the first piston-cylinder unit to cause the presser head to compress the clip on the belt end and then for pressurizing the second piston-cylinder unit to cause the plunger to force the staple through the belt end and clip.

5,644,837

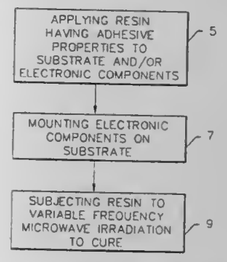
PROCESS FOR ASSEMBLING ELECTRONICS USING MICROWAVE IRRADIATION

Zakaryae Fathi, Cary; Richard S. Garard, Chapel Hill, and Jianghua Wei, Raleigh, all of N.C., assignors to Lambda Technologies, Inc., Raleigh, N.C.

Filed Jun. 30, 1995, Ser. No. 497,019

Int. Cl.[6] H05K *3/30*

U.S. Cl. 29—832 **28 Claims**



1. A method for assembling electronic components, said method comprising the steps of:

(a) applying a first curable resin having adhesive properties to at least one of a substrate and a first electronic component;

(b) mounting the first electronic component on the substrate in contacting relation with the first curable resin; and

(c) subjecting the first curable resin to a first window of microwave frequencies to cure the first curable resin.

5,644,838

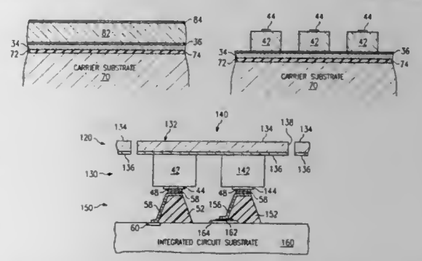
METHOD OF FABRICATING A FOCAL PLANE ARRAY FOR HYBRID THERMAL IMAGING SYSTEM

Howard R. Beratan, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 3, 1995, Ser. No. 368,066

Int. Cl.[6] H01L *21/84;31/0264;* **B05D** *5/12;* **G01J** *5/22*

U.S. Cl. 29—840 **10 Claims**



1. A method of fabricating an array of thermal sensitive elements for use with a hybrid thermal imaging system, the method comprising the steps of:

forming a layer of optical coating on a carrier substrate;

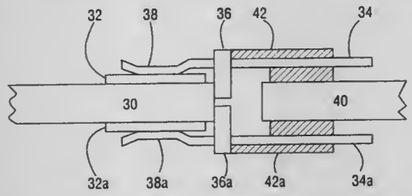
forming a film layer of pyroelectric material on the optical coating layer by mixing particles with liquid pyroelectric material to provide nucleation sites for growing the film layer;
depositing a first layer of electrically conducting material between the optical coating layer and the pyroelectric film layer; and
forming a second layer of electrically conducting material on the pyroelectric film layer opposite from the first layer of electrically conducting material; and
patterning the pyroelectric film layer to form an array of thermal sensitive elements.

5,644,839

SURFACE MOUNTABLE SUBSTRATE EDGE TERMINAL

William M. Stone, Austin, Tex., assignor to Xetel Corporation, Austin, Tex.

Continuation-in-part of Ser. No. 257,864, Jun. 10, 1994, Pat. No. 5,509,197. This application Jun. 7, 1995, Ser. No. 476,400
Int. Cl.[6] H01R *9/00*
U.S. Cl. 29—842 **18 Claims**



1. A method of forming an edge connector on a substrate, the substrate having a first side and a second side and having at least one connector pad disposed proximate an edge, comprising:
coupling at least one connector pin to a carrier, each pin having a head end and a tail end;
placing the carrier adjacent the substrate with the head end of the at least one pin positioned adjacent the at least one connector pad;
fastening the head end of the at least one connector pin to the at least one connector pad;
removing the carrier so as to expose the tail end of the at least one connector pin; and
installing a shroud over the at least one connector pin.

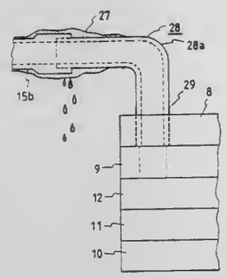
5,644,840

METHOD OF PRODUCING A PLATE-TYPE HEAT EXCHANGER

Youichi Hisamori, Hyogo; Mitunori Kurachi, Wakayama; Masaaki Taniguchi, Wakayama; Tutomu Noma, Wakayama; Masao Kohashi, Tokyo, and Yoshihiro Sumida, Hyogo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 75,873, Jun. 14, 1993, Pat. No. 5,429,183. This application Apr. 14, 1995, Ser. No. 422,171
Claims priority, application Japan, Jun. 17, 1992, 4-157664; Mar. 16, 1993, 5-55657
Int. Cl.[6] B23P *15/26*
U.S. Cl. 29—890.043 **2 Claims**

1. A method of producing a plate-type heat exchanger, the method comprising the steps of:
disposing, between end plates, a lamination structure of a plurality of intermediate plates each having a groove-like fluid communication passage formed through each of said intermediate plates and being laminated on one another through heat exchange plates;
joining said lamination structure and said end plates at the same time by brazing;



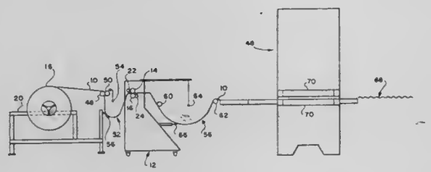
providing a joint structure constituted by a copper pipe and a pipe material having a polarization potential lower than that generated between a copper piping material and a heat exchanger body material and being joined in advance with said copper pipe by brazing with a brazing material which performs brazing at a temperature higher than a brazing temperature of the heat exchanger body, or by welding;
arranging said joint structure to a pipe side of the joint structures having the lower polarization; and
connecting said joint structure with the end plates of said heat exchanger body by a brazing material at the same time of the brazing of said heat exchanger body.

5,644,841

METHOD FOR MANUFACTURING A HEAT TRANSFER COIL

Robert T. Stewart, Grenada, and Paul L. Mitchell, Duckhill, both of Miss., assignors to Heatcraft Inc., Grenada, Miss.

Continuation of Ser. No. 293,879, Aug. 19, 1994, abandoned. This application Jun. 5, 1996, Ser. No. 658,313
Int. Cl.[6] B23P *15/26*
U.S. Cl. 29—890.046 **20 Claims**



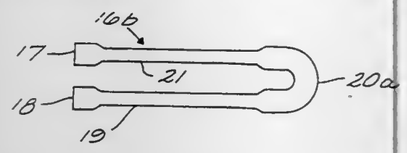
1. A method of manufacturing a fin of a heat transfer coil, said method comprising the steps of:
providing a fin lubricator having lubricant-applying first and second rollers;
supplying a sheet of fin stock to said lubricator;
operating said first and second rollers to pull the sheet through said lubricator and supplying a lubricant to said first and second rollers so that said first and second rollers apply a predetermined amount of the lubricant to respective opposed first and second sides of the sheet as the sheet is pulled through said lubricator;
providing a fin-forming press;
feeding the sheet into said press after the lubricant has been applied to the sheet;
operating said press to pull the sheet through said press and to form the sheet into at least one fin as the sheet is pulled through said press; and
coordinately controlling operation of said lubricator and said press to control movement of the sheet therethrough.

5,644,842

METHOD OF MAKING PROFILED TUBE AND SHELL HEAT EXCHANGERS

Rick L. Coleman, 1095 Warwick Cir. S., Hoffman Estates, Ill. 60194

Filed Jan. 5, 1995, Ser. No. 369,086
Int. Cl.[6] B23P *15/00*
U.S. Cl. 29—890.053 **20 Claims**



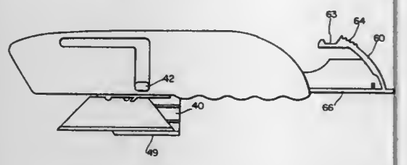
1. A method of producing a heat exchanger having improved flow and heat exchange properties which comprises:
providing a hollow tube, cylindrical along its entire length,
then deforming a predetermined length of an intermediate portion of said tube into a substantially elliptical cross section symmetrical with the center line of said tube without deforming the ends of the tube from their cylindrical shape,
providing at least one tube sheet having a predetermined number of circular holes having a diameter substantially the same as the O.D. of said tube cylindrical ends, and
securing said tube cylindrical ends in said tube sheet circular holes.

5,644,843

EASILY LOADED UTILITY KNIFE

Monte Young, 7175 Sulphur Well Rd., Nicholasville, Ky. 40356

Filed Oct. 30, 1995, Ser. No. 550,342
Int. Cl.[6] B26B *1/08; 1/10*
U.S. Cl. 30—124 **7 Claims**



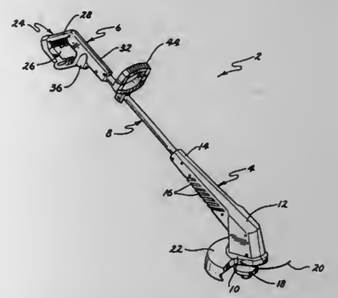
1. A utility knife comprising:
a handle having a front end and a back end, with the front end having an opening therethrough for passage of a knife blade during use of the utility knife to perform a cutting operation;
said handle being separated generally along a vertical parting plane extending longitudinally along the handle to form a pair of mating housing shells with a central cavity defined therebetween;
each of said housing shells having an outer substantially convex surface and an inner substantially concave surface;
a plurality of horizontal and vertical housing ribs extending longitudinally and transversely to said handle, respectively, and at approximately right angles from said inner substantially concave surfaces;
at least one of said vertical housing ribs separating said central cavity into a forward longitudinal cavity and a rearward longitudinal cavity;
a blade carrier member being received within said forward longitudinal cavity and having a plurality of longitudinal blade carrier ribs that slidably engage with a plurality of said horizontal housing ribs for supporting and guiding said blade carrier member during longitudinal movement of said blade carrier member to extend and retract a knife blade through said front end opening;
at least one of said blade carrier ribs being received within a substantially vertical groove defined between two of said vertical housing ribs for guiding said blade carrier member during movement of said blade carrier member in a direction substantially perpendicular to said longitudinal movement to a position extending below a bottom side of said handle, in which position a knife blade carried by said blade carrier member can be replaced.

5,644,844

FILAMENT TRIMMER

Anthony N. Pink, Shorewood, Minn., assignor to The Toro Company, Minneapolis, Minn.

Continuation-in-part of Ser. No. 11,342, Aug. 2, 1993, Pat. No. Des. 369,364. This application Feb. 8, 1994, Ser. No. 193,368
Int. Cl.[6] A01D *50/00*
U.S. Cl. 30—276 **13 Claims**



1. A filament trimmer, which comprises:
(a) a lower housing and an upper handle connected to the lower housing for allowing an operator to position the lower housing adjacent the ground while holding the upper handle;
(b) a filament trimmer head carrying an outwardly extending length of filament line which head is rotatably carried on a lower end of the lower housing;
(c) electrical motor means for rotating the filament trimmer head;
(d) means for supplying electrical power to the motor means which includes an electrical plug carried on the upper handle; and
(e) means carried on the upper handle for locking an extension cord to the electrical plug to connect the plug to a remotely located electrical outlet, the cord lock means comprising:
(i) a plurality of interconnected members which form a hand grip in the upper handle, wherein the hand grip forming members define a hand grip space for receiving an operator's hand when the operator holds the trimmer by the hand grip;
(ii) an opening in the hand grip forming members extending from outside the hand grip space into the hand grip space; and
(iii) a hook that protrudes inwardly into the hand grip space from at least one of the hand grip forming members such that the hook is contained within the hand grip space and points in a direction away from the opening to allow a loop formed by a doubled over portion of the extension cord to be hooked and retained thereon with the extension cord having a tail leading from the doubled over portion to be connected into the electrical plug on the upper handle.

5,644,845

DEVICE FOR THE PIVOTABLE FASTENING OF A SAW BASE TO A JIG SAW

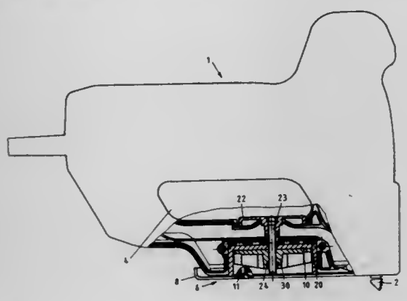
Paul Dürr, Ulisbach, and Armin Breitenmoser, Wattwil, both of Switzerland, assignors to CEKA Elektrowerkzeuge AG + Co. KG, Wattwil, Switzerland

Filed Dec. 14, 1995, Ser. No. 572,080

Claims priority, application European Pat. Off., Dec. 16, 1994, 94119921

Int. Cl.[6] B23D *51/02*

U.S. Cl. 30—376 **9 Claims**



1. In combination with a saw base and a housing of a saw, a device for pivotally fastening the saw base to the housing of the saw, comprising:

a first fastener connected to the saw base and having an outwardly toothed, semi-cylindrically shaped surface;

a second fastener having at least a partially, inwardly toothed, semi-circular surface such that the second fastener is configured in a complementary manner to the first fastener; and

a connector which detachably connects the first and the second fasteners, the first and the second fasteners permitting an angular pivotal fastening of the housing of the saw relative to the saw base.

5,644,846

RECIPROCATING STROKE DRIVE MECHANISM FOR JIGSAWS

Paul Dürr, Ulisbach, and Armin Breitenmoser, Wattwil, both of Switzerland, assignors to CEKA Elektrowerkzeuge AG & Co. KG, Wattwil, Switzerland

Filed Dec. 14, 1995, Ser. No. 572,031

Claims priority, application European Pat. Off., Dec. 16, 1994, 94119920

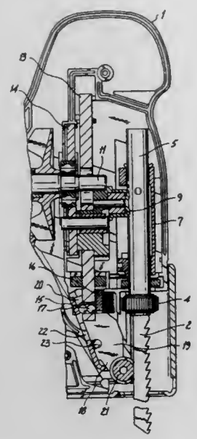
Int. Cl.[6] B27B *11/02*

U.S. Cl. 30—393 **19 Claims**

1. In combination with a saw of the type having housing, a slide, a saw blade selectively fastened to said slide, a motor having a shaft, and a connecting link which is driven eccentrically by the shaft for vertically reciprocating the slide, a reciprocating stroke drive mechanism comprising:

a balancing mass which is slidable with the slide; and

a pivotally mounted fork having a first arm and a second arm, the first arm contacting the saw blade, the second arm including a slide surface which is inclined relative to the horizontal along which the balancing mass slides for horizontally reciprocating the saw blade while exerting a downward-directed vertical pressure.



5,644,847

COMPASS SAW

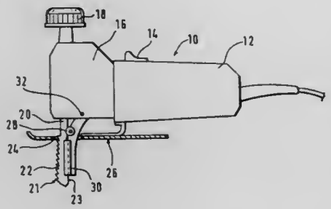
Alfred Odendahl, Waldenbuch, Germany; Aldo Di Nicolantonio, Recherswil, and Urs Ruepp, Solothurn, both of Switzerland, assignors to Scintilla AG, Solothurn, Switzerland

Filed Apr. 3, 1996, Ser. No. 625,600

Claims priority, application Germany, Apr. 7, 1995, 195 13 076.6

Int. Cl.[6] B27B *11/02*

U.S. Cl. 30—394 **13 Claims**



1. A compass saw, comprising a base plate; a saw blade having a plurality of teeth provided on one side and a saw blade back provided on the other side, said saw blade extending beyond said base plate downwardly and being supported under said base plate on said saw blade back; a lifting rod for receiving said saw blade; a guiding sword forming a supporting element for said saw blade and extending parallel and in alignment with said saw blade beyond said base plate, said guiding sword being turnable about an axis which is located above said base plate and extending substantially parallel to said base plate.

5,644,848

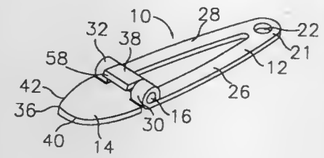
FOLDING SAFETY CAN OPENER AND METHOD FOR OPENING CANS

Roger W. Totten, 10372C W. Florida Ave., Lakewood, Colo. 80232

Filed Jun. 19, 1995, Ser. No. 492,226

Int. Cl.[6] B67B *7/46*

U.S. Cl. 30—450 **27 Claims**





1. A can opener comprising:

a handle formed with a wishbone shape including a flexible segment with a pawl formed thereon;

a cutter pivotably mounted to the handle said cutter comprising a tip for penetrating an end of a can and a lug for engaging a seam of the can to allow a user to press the tip into the can end to form an opening. said cutter further comprising a surface shaped to move the pawl upon rotation of the cutter by the user; and

an indentation formed in the surface, said indentation formed with a first edge shaded to receive the pawl upon rotation of the cutter in a first direction and a second edge shaped to prevent rotation of the cutter in a second direction and to lock the cutter in a first position.

5,644,849

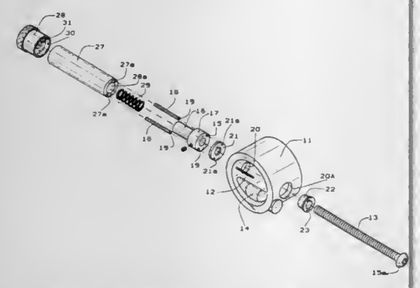
BOW SIGHT MOUNT FOR ABSORBING THE FORCES OF SHEAR

Scott O. Slates, County of St. Charles, Mo., assignor to Toxonigs Manufacturing, Inc., Wentzville, Mo.

Filed Nov. 16, 1995, Ser. No. 558,712

Int. Cl.[6] F41G *1/467*

U.S. Cl. 33—265 **6 Claims**



1. An archery bow and bow string having a bowsight frame carried by the bow subject to vibration shock and shear forces on release of the bow string comprising a vibration shock absorbing attachment for the bowsight frame having a threaded shaft projecting outwardly from said bowsight frame, said shaft having a headed end in said frame, a bushing received on said shaft in said frame with a headed end abutted by said shaft headed end, a sight alignment sleeve threaded upon said shaft, said alignment sleeve also having a headed end presented against said frame, and a shock pad disposed on said shaft between said sleeve headed end and said frame.

5,644,850

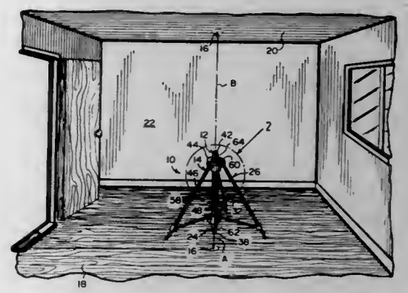
LASER PLUMB DEVICE

Straf G. Costales, 2117 Komo Mai Dr., Pearl City, Hi. 96782

Filed Oct. 16, 1995, Ser. No. 543,399

Int. Cl.[6] G01C *15/00*

U.S. Cl. 33—282 **1 Claim**



1. A laser plumb device for transferring a layout point on a floor to an overhead ceiling comprising:

a) means comprising a dual laser unit for emitting first and second narrow light beams in which the light beams are opposite and aligned to each other;

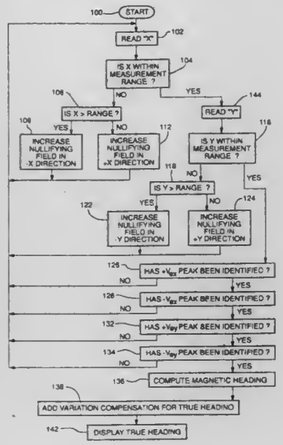
b) means for supporting said light emitting means in a vertical position comprising a tripod having a disk shaped platform three adjustable legs hinged to and extending from said disk shaped platform, and a center post suspended down from and rigidly attached to said disk shaped platform, said light emitting means being mounted within said center post and extending up through said platform, and said disk shaped platform including a horizontal extension portion, so that when said supporting means is placed over a layout mark upon a floor under a ceiling in a building, said light emitting means will cast the first narrow light beam onto the layout mark upon the floor and will simultaneously cast the second narrow light beam onto the ceiling to transfer the layout mark from the floor to the ceiling;

c) said dual laser unit comprising a first laser generator having a first laser light concentrator for producing a first narrow light beam, a second laser light generator having a second laser light concentrator for producing the second narrow light beam, said first and second laser generators and first and second light concentrators being arranged along a vertical axis, and first and second adjustment heads to said first and second laser light concentrators, respectively, so as to focus the first and second narrow light beams onto the layout market on the floor and on the ceiling, respectively;

d) means for placing said center post in a vertical position comprising a vertical bubble mounted in the side of said center post and a round bubble level mounted in the top surface of said platform on said horizontal extension portion; and

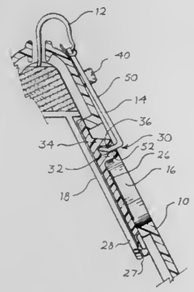
e) power supply means for said laser light generators comprising a side open compartment formed in said center post containing an electric battery and a latched curved door hinged on said center post for providing when opened access to said compartment, and on/off switch means supported on said center post for turning said generators on and off.

5,644,851
COMPENSATION SYSTEM FOR ELECTRONIC COMPASS
Rodney K. Blank, 273 Country Club Rd., Holland, Mich. 49423; Richard J. Gahan, 1749-2 Ottawa Beach Rd.; Howard J. Haselhuhn, Jr., 2477 Oak Forest Dr., both of Holland, Mich. 49424; Kenneth L. Schierbeek, 8644 Fairview La., Zeeland, Mich. 49464, and Kenneth Schofield, 4793 Crestridge Ct., Holland, Mich. 49423
Continuation-in-part of Ser. No. 811,578, Dec. 20, 1991, Pat. No. 5,255,442. This application Oct. 25, 1993, Ser. No. 142,509
Int. Cl.[6] G01C *17/28*
U.S. Cl. 33—361 34 Claims



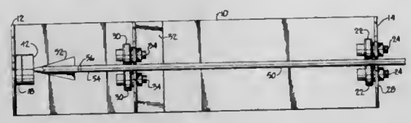
1. A method for compensating for the effect of a deviating magnetic field in a vehicle compass, said compass comprising:
first and second magnetoresistive sensors responsive to an external magnetic field for developing electronic signals representative of said external magnetic field, said external magnetic field being a combination of the earth magnetic field and a deviating field of the vehicle,
said first and second sensors being oriented in a predetermined angular relation with each other, and being aligned in a predetermined angular relation with respective axes of said vehicle,
each of said sensors including means for nullifying at least part of a deviating magnetic field which impinges on it, said method comprising the steps of:
determining whether the value of the sensor signal of each sensor is different from a nominal value which corresponds approximately to the value of the earth magnetic field,
if it is, using said nullifying means for adjusting the magnetic field impinging on each sensor to adjust the sensor signal to a value approximately equal to the nominal value,
determining the maximum and minimum peak values of each sensor signal,
determining the average of said peak values of each sensor signal,
and mathematically compensating the actual value of each sensor signal in accordance with the respective average value.

5,644,852
CHALK LINE REEL
Anthony B. Fuller, DeWitt; Toby J. Beckmann, Seward; Joseph A. Sorensen, South Bend, and Thomas M. Chervenak, Beatrice, all of Nebr., assignors to American Tool Companies, Inc., Lincoln, Nebr.
Filed Mar. 5, 1996, Ser. No. 611,065
Int. Cl.[6] B44D *3/38*
U.S. Cl. 33—414 11 Claims



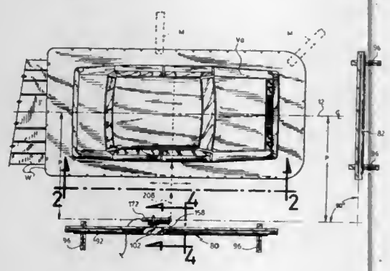
1. In a chalk line reel comprising a housing, a spool rotatably mounted in the housing, a chalk line wound on the spool, and a clip secured to a free end of the chalk line, the improvement comprising:
an opening in the housing;
a movable door mounted on the housing and movable to a closed position, in which the door obstructs the opening;
a first element on the door configured to releasably couple the clip to the door; and
a second element on the housing configured to releasably couple the clip to the housing;
said first and second elements positioned such that the clip resists movement of the door away from the closed position when the clip is coupled to the first and second elements.

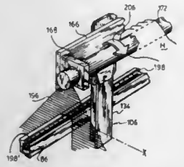
5,644,853
BROADHEAD ALIGNER
Vernon L. Dixon, 107 Skyline Dr., Perry, Okla. 73077
Filed May 6, 1996, Ser. No. 643,780
Int. Cl.[6] G01M *1/16*
U.S. Cl. 33—506 7 Claims



1. Apparatus for aligning an arrowhead with the longitudinal axis of an arrow shaft, said apparatus comprising:
a base,
means on said base for establishing an alignment axis and for supporting an arrow shaft for rotation about said axis,
a centering fixture of magnetic material having a recess therein for receiving an arrowhead,
magnet means mounted on said base and spaced from said supporting means for holding said fixture at a location in general alignment with said axis with said recess positioned to receive the head of an arrow on said supporting means, and
said fixture and said magnet means having contacting surfaces extending transversely of said axis to provide a floating mount for said fixture to permit it to seek a position aligning a received arrowhead with an associated rotatably supported arrow shaft.

5,644,854
MEASURING DEVICE FOR VEHICLE BODY REPAIR
Marcel J. Bergeron, 288 Rang St-Edouard, Iberville, Québec, Canada
Filed May 20, 1994, Ser. No. 246,784
Int. Cl.[6] G01B *11/03;5/004*
U.S. Cl. 33—608 18 Claims



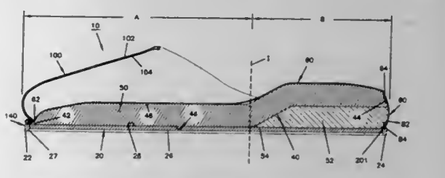


1. A measuring device for use in vehicular repair comprising an upright frame adapted to be positioned along a vehicle to be repaired, target means adapted to be suspended from the vehicle underside to establish a generally horizontal datum plane underneath said vehicle, a laser support movably carried by said frame for movements in horizontal and vertical directions in a movement plane normal to said datum plane and substantially parallel or normal to the centre line of said vehicle, a laser supported by said laser support, a horizontal and a vertical scale supported by said upright frame in planes parallel to said movement plane, and laser beam orienting means operable in any position of said laser in said movement plane to selectively direct the laser beam emitted by said laser in a vehicle direction normal to said movement plane and in scale directions normal to said scales so that the position of the area of the vehicle illuminated by said laser beam can be measured on said scales as right angular coordinates of a selected reference point on said datum plane; wherein each scale is a tape with graduations starting at a zero graduation and further including means to support said tapes in longitudinally adjusted positions to bring by means of said laser beam said zero graduation in line with said reference point.

5,644,855
CRYOGENICALLY PURGED MINI ENVIRONMENT
Wayne Thomas McDermott, Allentown; Richard Carl Ockovic, Northampton, and Robert William Wimmer, II, Allentown, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.
Filed Apr. 6, 1995, Ser. No. 417,585
Int. Cl.[6] F26B *3/00*
U.S. Cl. 34—516 14 Claims

11. A method for transporting various contamination-sensitive components under high purity conditions in a portable transport container while purging said container with high purity inert gas to maintain such high purity conditions, comprising:
(a) placing said contamination-sensitive components in a chamber for containing said components in spaced relationship one to another, wherein said chamber has a first orifice for admitting said high purity inert gas, a closeable aperture for inserting and removing said components in said chamber, and a second orifice for controllably releasing said high purity inert gas from said chamber, said second orifice designed to maintain an elevated pressure in said chamber in relation to the flow of high purity inert gas through said first orifice;
(b) maintaining a quantity of liquefied high purity inert gas in an insulated storage vessel mounted on said chamber, said insulated storage vessel having sufficient heat leak through its walls to controllably vaporize said liquefied high purity inert gas, wherein said insulated storage vessel has at least one opening in its upper region for filling said insulated storage vessel with liquefied high purity inert gas and dispensing vaporized high purity inert gas from said liquefied high purity inert gas, wherein said opening is above the level of the liquefied high purity inert gas when said vessel is filled with said liquefied high purity inert gas;
(c) dispensing vaporized high purity inert gas from said liquefied high purity inert gas through a conduit communicating between said opening in said insulated storage vessel and said first orifice in said chamber to dispense vaporized high purity inert gas from said insulated storage vessel to said chamber under elevated pressure to purge said chamber and said contamination-sensitive components and reduce the contamination of said components stored in said chamber.

5,644,856
WEDGE SLIPPER
Walter T. Bray, Jr., Reynoldsburg, Ohio, assignor to R.G. Barry Corporation, Pickerington, Ohio
Filed Feb. 29, 1996, Ser. No. 607,980
Int. Cl.[6] A43B *3/12;9/10*
U.S. Cl. 36—11.5 11 Claims



1. An article of footwear comprising:
an outsole extending from a toe end to a heel end and having a ground engaging bottom surface and an upper surface;
a cushion filler having a bottom surface and an upper surface and extending from a toe and to a heel end, said filler positioned in overlying relation on said upper surface of said

outsole with said toe and heel ends of said filler aligned with said toe and heel ends of said outsole;

said filler having a varying thickness from a first thickness portion at said toe end and an enlarged second thickness portion at said heel end, said second thickness portion presenting a raised surface at said heel end and extending upwardly away from said outsole;

a fabric cover having an outer finished surface and an inner unfinished surface, said cover sized to wrap around said raised surface of said filler;

a bottom peripheral edge of said cover fastened at a first line of fastening to said outsole at said outsole heel end and with said finished surface of said cover at said bottom peripheral edge turned to be facing toward said upper surface of said outsole and with said bottom peripheral edge of said cover folded inwardly to be disposed between said filler and said outsole, said unfinished surface of said cover facing said raised surface of said filler, said cover having an upper peripheral edge adjacent said upper surface of said filler;

a fabric insole having a finished surface and an unfinished surface and extending from a toe end to a heel end, said insole disposed in overlying relation to said filler with said insole unfinished surface facing toward said filler upper surface, said toe ends of said insole, outsole and filler in alignment and said heel ends of said insole, outsole and filler in alignment opposing surfaces of said insole and said outsole defining an uninterrupted chamber extending from said toe end to said heel end with said filler received within said chamber;

said upper peripheral edge of said cover fastened along a second line of fastening to a first position of a peripheral edge of said insole adjacent said upper peripheral edge, said finished surfaces of said cover and said insole turned at said second line of fastening for said finished surfaces of said cover and said insole to be facing toward each other along said second line of fastening;

a vamp having an inner surface and an outer surface and having a peripheral edge, said vamp positioned with said inner surface of said vamp facing toward said finished surface of said insole at said insole toe end;

said peripheral edge of said vamp fastened along a third line of fastening to a second portion of said peripheral edge of said insole adjacent said peripheral edge of said vamp and to said outsole, said inner surface of said vamp facing toward said finished surface of said insole at said third line of fastening, said unfinished surface of insole facing toward said upper surface of said outsole at said third line of fastening, said peripheral edge of said vamp and said second portion disposed extending away from said filler.

5,644,857

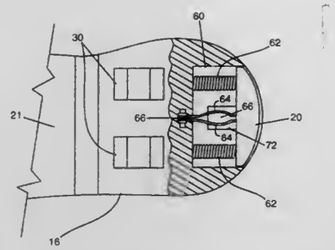
GOLF SHOES WITH INTERCHANGAEABLE SOLES

Ryan R. Ouellette, 1628 Calle Plumerias; James M. Rice, 165 S. El Camino Real, Suite K, both of Encinitas, Calif. 92024, and Dan Gomez, 3535 Chauncey Rd., Oceanside, Calif. 92056

Filed May 10, 1996, Ser. No. 644,173
Int. Cl.[6] A43C *13/00*
U.S. Cl. 36—15 **13 Claims**

1. A shoe including a removable sole comprising,

an upper shoe portion, a midsole permanently attached to the underside of the upper shoe portion, said midsole having a bottom, said bottom including a rear portion, a first female mating means, said first female mating means located proximal said rear portion, said first female mating means having a open position and a neutral position, said first female mating means further being connected to a push-button, said first female mating means being selectively operable between said open position and said neutral position by the actuation of said push-button,



a removable sole, said sole including an upper side and a lower side, said upper side including a first male mating means, said first male mating means to be received in said first female mating means,

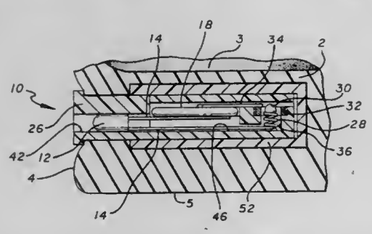
whereby said first male mating means is secured within said first female mating means when said first female mating means is in the neutral position and then, when said push-button is engaged, said first female mating means is in said open position, permitting said first male mating means to be inserted or removed.

5,644,858

INERTIALLY RESPONSIVE FOOTWEAR LIGHTS

Jon L. Bemis, Santa Monica, Calif., assignor to L.A. Gear, Inc., Santa Monica, Calif.

Filed Dec. 2, 1993, Ser. No. 162,423
Int. Cl.[6] A43B *23/00*
U.S. Cl. 36—137 **20 Claims**



11. Footwear having a lighting system that flashes on and off in response to inertial forces acting upon the footwear, comprising:

a flexible upper portion adapted to surround at least a portion of an upper surface of a wearer's foot;

a sole portion attached to the upper portion and adapted to underlie the wearer's foot and to contact the ground;

at least one electrical light source disposed in the footwear such that light emitted from the source is visible exteriorly of the footwear;

a battery for powering the light source;

electrical circuit means for electrically connecting the battery to the light source; and

switching means for flashing the light source on and off in response to forces incident upon the footwear, said switching means comprising:

a base disposed within the footwear;

an electrically conductive spring-mass system resiliently mounted on the base and electrically connected to the circuit means, the spring-mass system having at least one degree of freedom of harmonic motion relative to an equilibrium position on the base in response to a force acting on the base; and,

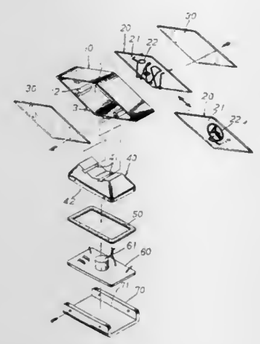
an electrically conductive surface connected to the circuit means and mounted in opposed relation to, and within a range of motion of, the spring-mass system such that, when the spring-mass system moves into contact with the electrically conductive surface, the battery is electrically connected to the light, thereby switching the light source on, and when the spring-mass system and the electrically conductive surface are separated, the battery is electrically disconnected from the light source, thereby switching the light source off.

5,644,859

BILLBOARD

Jessica Hsu, No. 18 Ting Juang Village, Hsiwn See Hsiang,, Chan Hua Hsien, Taiwan

Filed Apr. 2, 1996, Ser. No. 626,783
Int. Cl.[6] G09F *13/26*
U.S. Cl. 40—545 **2 Claims**



1. A billboard comprising:

a main body provided with a receiving space having a plurality of fastening blocks and a dovetailed protruding strip at a bottom side thereof;

a replaceable lamp set comprising a middle partition with a neon lamp tube fastened thereto, said lamp set is secured in said receiving space of said main body such that an A and a B division are formed, said neon lamp tube is shaped to form a symbol chosen by a user, said symbol extends into said A division, said neon lamp tube is fastened to said middle partition and extends into said B division so as to enable said A division and said B division to be illuminated;

two transparent pieces fastened to said main body such that said transparent pieces and said fastening blocks of said main body are retained by a fastening means;

a bottom seat having a top surface with a shape corresponding to a shape of said bottom side of said main body, said bottom seat includes a slot to receive said dovetailed protruding strip of said main body to secure said main body to said bottom seat, a lower surface of said bottom seat includes a receiving slot,

a waterproof plastic pad having an open center and fastened to said bottom seat;

a bottom board provided with a current switching device and a wire, said bottom board is fastened to said waterproof plastic pad such that said current switching device and said wire are received in said receiving slot of said bottom seat to provide said neon lamp tube with power; and

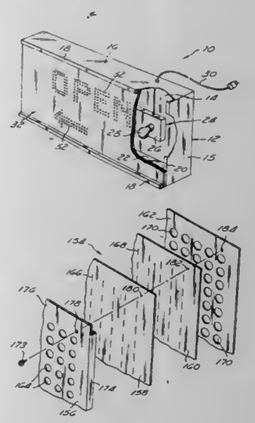
a base seat with a U-shaped slot, said U-shaped slot receives said bottom board, said waterproof plastic pad, and said bottom seat.

5,644,860

ILLUMINATED SIGNAGE

Timothy M. Piper, and Christine M. Busnardo, both of 27 Silver Glade Dr., Suite H, Laguna Niguel, Calif. 92677

Continuation-in-part of Ser. No. 579,741, Dec. 28, 1995, which is a continuation-in-part of Ser. No. 532,087, Sep. 22, 1995.
This application Aug. 14, 1996, Ser. No. 696,795
Int. Cl.[6] A63H *3/04*
U.S. Cl. 40—579 **9 Claims**



1. A changeable reusable illuminated sign, comprising:

a housing defining an opening;

a light source disposed within said housing;

a display assembly attached to said housing and covering said opening, said display assembly comprising:

a perforated outer plate defining front and back surfaces and including a plurality of apertures disposed therein;

a first flexible, opaque diaphragm sheet secured to the back surface of the outer plate and including a plurality of slits disposed therein which are aligned with respective ones of the apertures of the outer plate;

a second flexible, opaque diaphragm sheet in laminar juxtaposition to said first diaphragm sheet, said second diaphragm sheet including a plurality of slits disposed therein which are aligned with respective ones of the apertures of the outer plate and off-set relative to the slits of the first diaphragm sheet; and

a plurality of light-transmitting pegs, each of said pegs being extensible through respective ones of the apertures and pairs of the off-set slits of the first and second diaphragm sheets;

said off-set slits of the first and second diaphragm sheets being sized and configured to frictionally retain the pegs within the display assembly when the pegs are extended therethrough, and to provide overlapping material to block the passage of light from the light source through the apertures of the outer plate when the pegs are not extended therethrough.

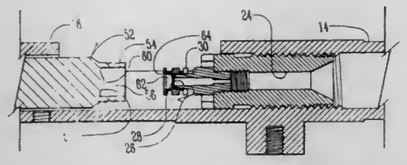
5,644,861

FIRING MECHANISM FOR MUZZLELOADING RIFLES

William A. Knight, Centerville, Iowa, assignor to Modern Muzzleloading, Inc., Centerville, Iowa

Filed Sep. 22, 1995, Ser. No. 532,521
Int. Cl.[6] F41C *7/00*
U.S. Cl. 42—51 **15 Claims**

1. A firing mechanism for a muzzleloading rifle having a stock, a rifle barrel, a breech plug in the rearward end of said barrel, a receiver on said stock, a bolt and hammer assembly in said receiver



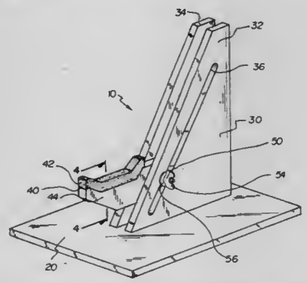
rearwardly of said breech plug, and a trigger assembly operatively secured to said bolt and hammer assembly, the firing mechanism comprising,

a nipple secured to said rearward end of said breech plug, said nipple having an enlarged central portion and a reduced outer diameter rearward end,

an adapter element mounted on said reduced outer diameter rearward end of said nipple and having a rearward end, and

a rifle primer mounted on the rearward end of said adapter element.

5,644,862
ADJUSTABLE GUN RESTING SYSTEM
Neil Folmer, 136 Creek Dr., Slippery Rock, Pa. 16057
Filed Apr. 29, 1996, Ser. No. 641,107
Int. Cl.[6] F41A *31/00*
U.S. Cl. 42—94 **5 Claims**



1. An Adjustable Gun Resting System comprising: gun resting base;

a supporting means secured to the gun resting base;

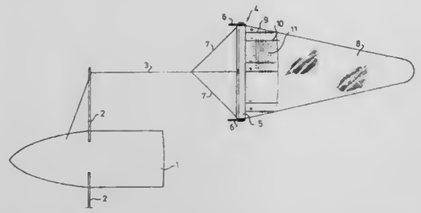
a gun holding means slidably secured to the supporting means;

an adjusting means for adjusting the height of the gun holding means; and

wherein the supporting means comprises a first triangular-support member formed to the shape of a right-triangle with a first adjusting slot paralleling the hypotenuse edge of the first triangular-support member.

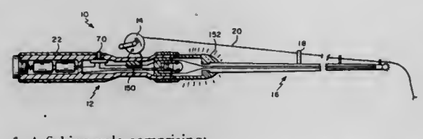
5,644,863
FISHING GEAR FOR ELECTRIC FISHING
Abraham Leendert Verburg, Havenstraat 11, NL-4486 AA Colijnsplaat, Netherlands
PCT No. PCT/NL94/00086, § 371 Date Dec. 21, 1995, § 102(e) Date Dec. 21, 1995, PCT Pub. No. WO94/26101, PCT Pub. Date Nov. 24, 1994
PCT Filed Apr. 21, 1994, Ser. No. 545,699
Claims priority, application Netherlands, May 6, 1993, 9300773
Int. Cl.[6] A01K *73/02;79/02*
U.S. Cl. 43—9.6 **11 Claims**

1. In a fishing gear for electric fishing, comprising an elongate beam and a net which is connected to the beam along a longitudinal back side thereof as seen in the direction of drag, said beam



being at least as long as the maximum width of said net, said beam supporting electrodes over which a potential difference can be generated, as well as a power source and a pulse generator; the improvement wherein the power source and the pulse generator are housed in watertight chamber means inside the beam and the electrodes extend from within said chamber means.

5,644,864
SAFETY FISHING POLE
Thomas Kelly, 70 Bourne St., Auburndale, Mass. 02166
Filed Nov. 13, 1995, Ser. No. 557,361
Int. Cl.[6] A01K *87/00*
U.S. Cl. 43—17.5 **18 Claims**



1. A fishing pole comprising:

(a) a substantially hollow handle having an outer surface, a front extremity, and a rear extremity;

(b) said handle having a light transmissive portion adjacent to said front extremity, said light transmissive portion having an outer surface;

(c) said handle having a handle light source inside said handle that illuminates said light transmissive portion when energized, an electric power source, and a manually operated main electric switch;

(d) a rod extending from said front extremity, said rod having a rod light source at the extremity of said rod remote from said handle;

(e) said main electric switch selectively energizing said handle light source and said rod light source from said electric power source; and

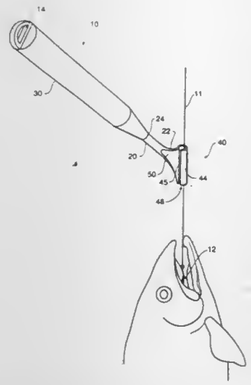
(f) said handle including a rigid, light transmissive overlay having an inner surface adjacent to said handle outer surface and being mounted for longitudinal movement along said handle outer surface between an inactive position, where said overlay is not overlapping any part of said light transmissive portion outer surface, and an active position, where said overlay overlaps at least a part of said light transmissive portion outer surface.

5,644,865
FISH HOOK REMOVER
Michael A. Harrison, and Mark S. Farris, both of Ketchum, Id., assignors to C-I Design Group L.L.C., Ketchum, Id.
Filed Apr. 28, 1995, Ser. No. 430,871
Int. Cl.[6] A01K *97/00*
U.S. Cl. 43—53.5 **13 Claims**

1. A fish hook remover comprising

an elongated body extending along a first axis comprising a first end and a second end,

a removal tip coupled to said first end comprising a tubular head,

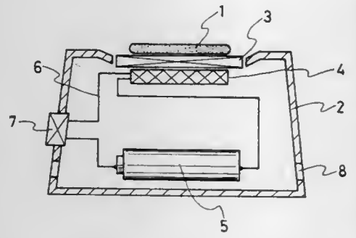


said tubular head extending along a second axis offset from said first axis, said tubular head having an axial length exceeding a transverse width of said tubular head,

said tubular head having a surface defining a slot, and

said tubular head having an interior defining a chamber for engaging a fish hook dressed as an artificial fly.

5,644,866
BATTERY-ACTUATED INSECTICIDE TRANSPIRATOR AND METHOD FOR TRANSPIRATING INSECTICIDE
Yoshio Katsuda, 2-10-10, Kamikoutouen, Nishinomiya-shi, Hyogo-ken, and Tsutomu Kanzaki, Takarazuka, both of Japan, assignors to Yoshio Katsuda, Hyogo-ken, Japan
Filed Jul. 10, 1995, Ser. No. 500,245
Claims priority, application Japan, Jul. 15, 1994, 6-194517
Int. Cl.[6] A01M *13/00*
U.S. Cl. 43—129 **5 Claims**

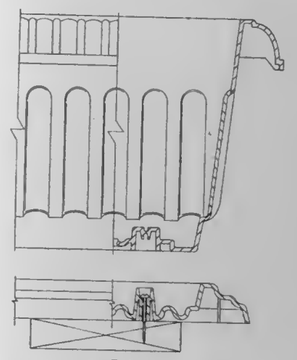


1. A battery-actuated insecticide transpirator comprising:

a radiation plate located in contact with an insecticide; and

a heating means using a battery, wherein the surface of the radiation plate is heated to a temperature of from 90° to 130° C. for transpirating the insecticide, wherein the heating means consists of a battery connected to a positive temperature coefficient thermistor comprising: (i) a mixture of thermoplastic polyolefin resin and carbon, (ii) an electrode plate, and (iii) an insulator; and the insecticide is a cyclopropane carboxylic ester pyrethroid having a vapor pressure of 1.0×10^{-4} mmHg or higher at 20° C.

5,644,867
PLANTER BOX
G. Thomas Gay, 3275 Georgian Ct., Erie, Pa. 16506
Filed Aug. 10, 1993, Ser. No. 105,351
Int. Cl.[6] A01G *9/04*
U.S. Cl. 47—71 **3 Claims**



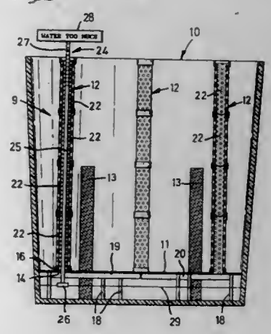
1. A planter comprising:

a. a first base for attachment to an object, the base having a plurality of upwardly directed projections, each projection having a first geometric cross-section in a first size;

b. a planter member for mounting on the first base, the planter member having a bottom and sides including a plurality of flutes around the sides, the bottom including a plurality of upwardly directed receptacles, matching in number the plurality of upwardly directed projections on the base, each receptacle having an inner geometric configuration and size to mate with one of the upwardly directed projections of the base; and,

c. said sides having a top edge, a bottom edge and a lip member, said lip defining a plurality of alternating sculptured surface (**60**, **62**) about said planter member.

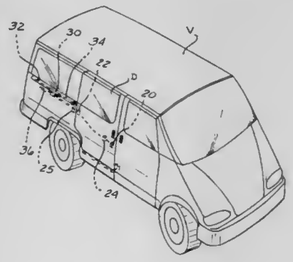
5,644,868
PLANT CONTAINER WATER-KEEPING ASSEMBLY
To Yan Lui, Room 3301, Block B, Kaitin Tower, Kaitin Road, Lamtin, Kowloon, Hong Kong
Continuation-in-part of Ser. No. 315,416, Sep. 29, 1994, abandoned. This application Mar. 21, 1995, Ser. No. 407,186
Int. Cl.[6] A01G *31/02*
U.S. Cl. 47—81 **9 Claims**



1. A water-keeping assembly for use in a plant container having a bottom comprising:

a perforated partition arranged to extend across the bottom of said container for dividing the interior of the container into an upper compartment for holding planting soil and a lower compartment for collecting water drained out of the planting soil through the partition, ventilation means arranged to extend upwards from the partition for venting the lower compartment, and at least one water absorbent bar arranged to extend upwards from the lower compartment through the partition into the upper compartment for drawing water collected in the lower compartment upwards into the planting soil in the upper compartment by means of capillary action, said at least one water absorbent bar having a perforated sleeve with a closed bottom end filled with plant material through which the capillary action takes place.

5,644,869
POWER DRIVE FOR A MOVABLE CLOSURE WITH BALL NUT DRIVE SCREW
Harry C. Buchanan, Jr., Spring Valley, Ohio, assignor to ITT Automotive Electrical Systems, Inc., Auburn Hills, Mich.
Filed Dec. 20, 1995, Ser. No. 575,823
Int. Cl.[6] E05F *11/34;15/00*
U.S. Cl. 49—362 **29 Claims**



1. In a power drive system for a sliding door mounted on at least one side of a vehicle for sliding movement forwardly and rearwardly of the vehicle between an open position and a closed position, said system including reversible power drive means operable when actuated to selectively drive said door in opening or closing movement, the improvement comprising:

an elongated drive member connected to said sliding door; and

ball nut drive means for selectively moving said drive member longitudinally to position said sliding door between said open and closed positions.

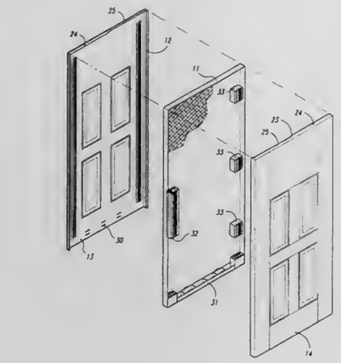
5,644,870
COMPRESSION MOLDED DOOR ASSEMBLY
Kuei Yung Wang Chen, Taipei, Taiwan, assignor to Nan Ya Plastics Corporation, Taipei, Taiwan
Filed Jun. 14, 1995, Ser. No. 490,125
Int. Cl.[6] E06B *3/00;3/96*
U.S. Cl. 49—501 **11 Claims**

1. A door assembly structure with opposing molding door panels forming its surfaces comprising:

two molded door panels of compression molded thin skins overlaid with each other to form door with a hollow core, said skins having interlocking members on their inner surfaces;

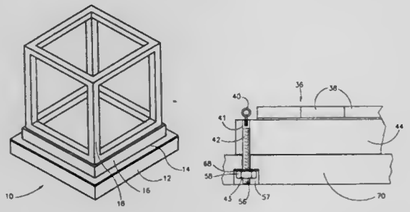
injected molded sealing edges on said door panels operable to interlock with said sealing edges of the opposing panel when said panels are overlaid with one another;

interlocking reinforced parts located respectively between said panels in the area where the handle and hinges will be attached operable to interlock with said interlocking members of said door panels; and



a polyurethane core formed in place between said door panels to produce a real wood like door.

5,644,871
MODULAR BUILDING SYSTEM
Ben-Zion Cohen, Pardesiya, and Eliyahu Gonen, Natanya, both of Israel, assignors to Eli Gonen, Israel
Filed Jul. 18, 1995, Ser. No. 503,664
Int. Cl.[6] E04B *1/00;5/02*
U.S. Cl. 52—125.1 **6 Claims**



1. A modular building system comprising:

a floor core having suitable thickness and composition for supporting a predetermined mechanical load, said floor core having an upper surface and a lower surface;

a floor covering bonded to said upper surface of said floor core;

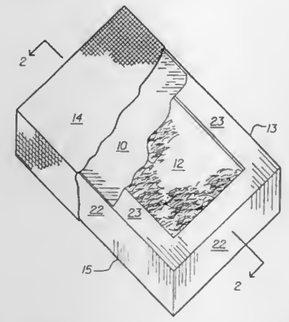
a plurality of lift bolts each having an upper portion and a lower portion, said upper portion embedded vertically within said floor core so as not to extend above said upper surface, said lower portion extending downwardly from said lower surface, said lower portion for securing said floor core to a frame;

a plurality of removable hooks, each coupled to said upper portion of one of said plurality of lift bolts, said plurality of removable hooks for providing lift points for said floor core;

a plurality of ceiling bolts each having a top portion and a bottom portion, said top portion embedded vertically within said floor core, said bottom portion extending downwardly from said lower surface; and

a plurality of ceiling beams each coupled to one or more of said ceiling bolts, said ceiling beams for providing means for attachment of a ceiling to said lower surface.

5,644,872
SOUND ABSORBING PANEL
Jay Perdue, Rte. 6 Box 105, Amarillo, Tex. 79124
Filed Mar. 6, 1995, Ser. No. 398,868
Int. Cl.[6] E04B *1/82*
U.S. Cl. 52—144 **6 Claims**



1. A panel comprised of:

a) a mat of rockwool bounded by flat front and rear surfaces and four straight perimeter edges disposed in a rectangular array, said mat having a density between 6 and 8 pounds per cubic foot and a thickness between one and two inches,

b) front and rear sheets of non-woven interadhered continuous filament fiberglass bonded to said flat front and rear surfaces, respectively, of said rockwool mat, said sheets having interior and exterior surfaces defining a thickness between 20 and 30 mils, and having a weight in the range of 0.75 to 3 ounces/square foot,

c) a rigid rectangular frame comprised of four elongated straight sections, each section comprised of paired spaced apart parallel front and rear sidewalls disposed to lie against said flat front and rear surfaces, respectively, of said mat of rockwool, and an end wall disposed orthogonally to said sidewalls as a continuous integral extension thereof and forming with said sidewalls a structure of uniform U-shaped trough-like cross sectional configuration, said end wall disposed to lie against an edge of said rockwool mat, and

d) a cloth facing tautly disposed upon the exterior surface of said front sheet of fiberglass and extending around said frame sections and bonded to the rear sidewalls of said sections.

5,644,873
STAIRS FOR SWIMMING-POOL
Jean Bourgault, 1, Bercy Street, Candiac, Quebec, Canada
Filed May 25, 1995, Ser. No. 450,815
Claims priority, application Canada, May 5, 1995, 2148777
Int. Cl.[6] E04F *11/00*
U.S. Cl. 52—182 **5 Claims**

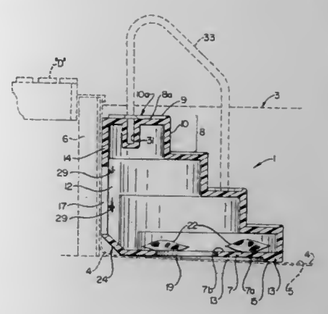
1. A structure defining a set of stairs for a swimming pool, said swimming pool comprising a bottom floor, wherein said structure comprises:

a base;

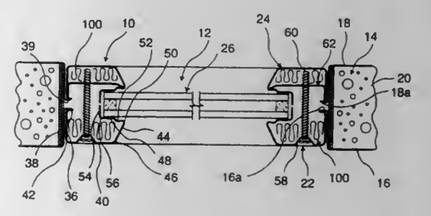
at least one step having a tread;

at least one means supporting the tread and connecting this latter to the base; and

at least one means for positioning said structure against the bottom floor of said swimming pool and preventing motion of said structure in the swimming pool, said means being provided on said base and adapted to cooperate with the bottom floor of the swimming pool, wherein said means of the base for positioning the structure and preventing motion of the latter comprise at least one protuberance having a bearing surface sufficient to provide pressure on the bottom of the swimming-pool and at the same time position and prevent motion of said structure, and wherein means of the base for positioning the structure and preventing motion of the latter consist of one tongue making an integral part of the bottom of the base near a peripheric edge of said base, and wherein the tongue is configured in a generally rounded shape extending around a major portion of the bottom of said base.



5,644,874
LIGHT FRAME SYSTEM
H. Smith McKann, Fredericksburg, Va., assignor to General Products Company, Inc., Fredericksburg, Va.
Continuation-in-part of Ser. No. 415,460, Apr. 3, 1995, abandoned. This application Jan. 11, 1996, Ser. No. 584,550
Int. Cl.[6] E06B *3/26*
U.S. Cl. 52—202 **27 Claims**



1. A frame assembly for a door light, comprising

inner and outer half-frames sandwiching a translucent panel therebetween, each of said inner and outer half-frames being separately and substantially similarly formed of sheet material and having a plurality of substantially similar side members defining a closed polygon;

each of said side members of said inner and outer half-frames including, in cross-section,

a flat portion for supporting the frame in an opening in a support,

a face portion extending in a generally perpendicular direction from said flat portion toward a center of said polygon,

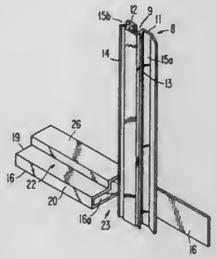
a third portion extending generally inwardly from said face portion toward the other half-frame to a position adjacent said translucent panel,

a fourth portion extending from said third portion in a direction generally parallel to said face portion and away from the center of said polygon, and

a fifth portion extending inwardly from said fourth portion toward the fifth portion of the other half-frame and about a peripheral edge of said translucent panel; and

fastener means coupling said half-frames and securing said half-frames in the support opening.

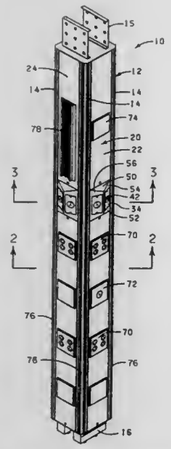
5,644,875
SEALING ARRANGEMENT FOR A GLASS-CARRYING WINDOW FRAME
Elgård Schandorff Nielsen, Ostbirk, Denmark, assignor to V. Kann Rasmussen Industri A/S, Soborg, Denmark
Filed Jun. 1, 1995, Ser. No. 457,121
Claims priority, application Denmark, Dec. 4, 1992, 1460/92
Int. Cl.[6] E06B *7/14*
U.S. Cl. 52—204.591 **5 Claims**



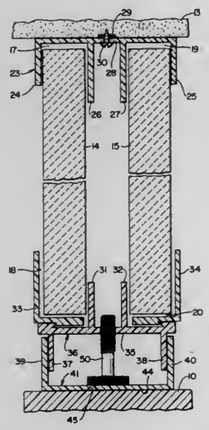
1. A window having a frame comprising a top member, a bottom member and side members, each of said side members being formed with a recess having a bottom wall and a side wall, for receiving side edges of an insulating glass pane with an inner side of said pane facing the bottom wall of said recess, external glazing profiles for arrangement on external sides of said side and bottom members to retain said pane in said recesses and against said bottom member and a sealing arrangement comprising first and second sealing profiles of an elastomeric material for arrangement between the inner side of said pane and opposing surfaces of said recesses and said frame bottom member, respectively, said first sealing profile being provided with a first pair of projecting flaps facing the window opening and providing a drainage channel extending in the longitudinal direction of the respective frame side members, said second sealing profile forming against the inner side of the pane a substantially V-shaped drainage channel and being formed at the side facing said pane at each of two corner joints between the frame bottom and side members with a depression forming a drainage opening, said first and second sealing profiles crossing each at said corner joint to provide a drainage communication between said longitudinally extending drainage channel in said first sealing profile and said drainage opening.

5,644,876
MODULAR MEDICAL GAS SERVICES COLUMN
James A. Walker, Oklahoma City, Okla., assignor to Gaddis-Walker Electric, Inc., Oklahoma City, Okla.
Filed Aug. 26, 1994, Ser. No. 297,193
Int. Cl.[6] E04C *2/52*
U.S. Cl. 52—220.7 **8 Claims**

1. A modular medical gas services unit comprising:
a vertical frame defining a plurality of planar external support surfaces and an internal space;
at least one angled medical gas outlet panel superimposed on at least two of the plurality of external support surfaces, each of the angled outlet panels having first and second planar outlet support surfaces, which outlet support surfaces are adjacent and define planes which intersect to form an angle; and
a medical gas supply assembly supported in each of the first and second planar outlet support surfaces on each of the at least two angled medical gas outlet panels, each said medical gas supply assembly including:
an outlet housing supported in each of the planar outlet support surfaces, the housing having a first end with an exposed outlet and a second end extending through the underlying planar external support surface and into the internal space of the frame.

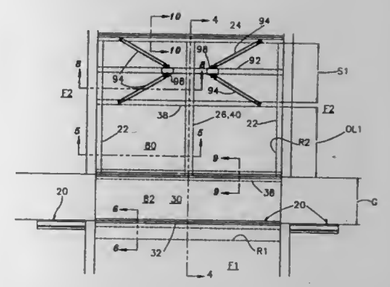


5,644,877
DEMOUNTABLE CEILING CLOSURE
Richard J. Wood, 18 Fox Chase Rd., Bloomfield, Conn. 06002
Filed Jul. 25, 1995, Ser. No. 506,826
Int. Cl.[6] E04H *1/00*
U.S. Cl. 52—241 **7 Claims**

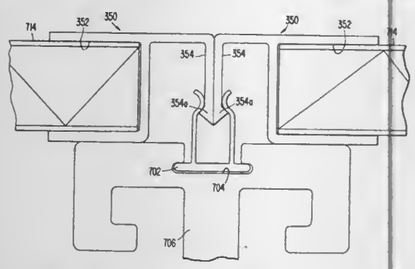


1. A wall panel mounting system for temporarily mounting a panel of structural wall material to form a demountable ceiling closure between a portable, furniture-type wall and a ceiling, comprising:
an elongated bottom track having a bottom surface for securing said ceiling closure to the top of said furniture-type wall and having a first pair of longitudinal legs extending upwardly which form a U-shaped channel;
an elongated ceiling track having a base portion for securing said ceiling closure to a ceiling above said bottom track and having a second pair of longitudinal legs extending downwardly therefrom which form a U-shaped channel to entrain the upper edge of said panel;

an elongated panel support track having a first horizontal surface with a first longitudinal leg extending upwardly therefrom, and with a first longitudinal lip extending therefrom, said lip comprising an escarpment facing said first upwardly extending leg, and having a third pair of longitudinal legs extending downwardly, said third pair of legs fitting within the channel of said bottom track, so that said bottom track locates and supports said panel support track; and
an elongated L-shaped member having a second longitudinal leg extending upwardly and having a second horizontal surface with a second longitudinal lip extending therefrom, said second lip comprising an escarpment adjacent to the escarpment of said first lip with said L-shaped member resting on said panel support track so that said first leg and said L-shaped member form a U-shaped channel to entrain the lower edge of said panel.



5,644,878
REUSABLE FINISH TRIM FOR PREFABRICATED CLEAN ROOM WALL SYSTEM
Gary Wehrmann, San Antonio, Tex., assignor to Sony Corporation, Japan, and Sony Electronics Inc.
Filed Jan. 11, 1995, Ser. No. 371,375
Int. Cl.[6] E04B *2/06*
U.S. Cl. 52—287.1 **19 Claims**



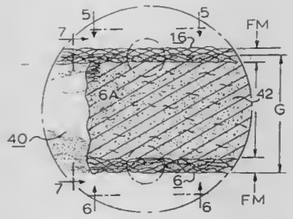
1. A clean room construction comprising:
a stud having a predetermined shaped slot;
a wall panel which is located adjacent said stud;
a clip member which is detachably received in the predetermined shaped slot formed in said stud; and
a trim having a channel-shaped receiving portion which is fitted onto an edge of the panel, said trim having a barbed portion which is arranged to be received by said clip member and to connect and support said wall panel in a predetermined spatial relationship with respect to said stud.

5,644,879
SEISMIC EXPANSION JOINT COVER ASSEMBLY
Thomas A. Shreiner, Picture Rocks; Roger W. Barr, Williamsport, and Howard Williams, Muncy, all of Pa., assignors to Construction Specialties, Inc., Cranford, N.J.
Filed Feb. 3, 1995, Ser. No. 383,572
Int. Cl.[6] E04B *1/684*
U.S. Cl. 52—393 **58 Claims**

1. A seismic expansion joint cover installation comprising
first and second portions of a building floor spaced apart to define a gap between them,
a rectangular floor bridge panel adapted to span the gap in all relative positions of the first and second floor portions and having a first end, a second end and spaced apart sides,
first elongated linear slide bearing means interposed between the floor bridge panel adjacent the first end thereof and the first floor portion and supporting the floor bridge panel on the first floor portion for horizontal movement thereof relative to said first floor portion in the direction of a second axis parallel to the gap and for limited horizontal movement thereof in the direction of a first axis perpendicular to the second axis and for limited upward vertical movement thereof relative to the first floor portion,
second elongated linear slide bearing means interposed between the floor bridge panel adjacent the second end thereof and the second floor portion and supporting the floor bridge panel on the second floor portion for horizontal movement thereof relative to second floor portion in the direction of the first axis and for limited horizontal movement thereof in the direction of the second axis and for limited upward vertical movement thereof relative to the second floor portion,
a cover plate frame affixed to the second floor portion and having side members closely adjacent the sides of the floor bridge panel and an end member spaced apart from the second end of the floor bridge panel so as to permit movement of the floor bridge panel relative to the cover plate frame in the direction of the first axis,
a second cover plate supported by the cover plate frame and by a portion of the floor bridge panel adjacent the second end thereof, and
means for coupling the second cover plate to the cover plate frame for preventing horizontal movements of the second cover plate relative to the cover plate frame while permitting at least a portion of the second cover plate to lift from supported relation on the cover plate frame upon relative tilting movements of the floor portions and the floor bridge panel in an earthquake.

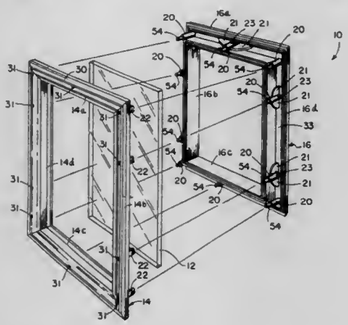
5,644,880
GYPSUM BOARD AND SYSTEMS CONTAINING SAME
Charles W. Lehnert, Fort Myers, Fla., and Brian G. Randall, Stone Mountain, Ga., assignors to Georgia-Pacific Corporation, Atlanta, Ga.
Continuation of Ser. No. 187,199, Jan. 26, 1994, which is a division of Ser. No. 58,898, May 6, 1993, Pat. No. 5,319,900, which is a division of Ser. No. 725,946, Jun. 27, 1991, Pat. No. 5,220,762, which is a continuation of Ser. No. 481,710, Feb. 15, 1990, abandoned, which is a continuation of Ser. No. 262,229, Oct. 21, 1988, abandoned, which is a continuation of Ser. No. 769,582, Aug. 26, 1985, abandoned, which is a continuation-in-part of Ser. No. 583,874, Feb. 27, 1984, Pat. No. 4,647,496. This application Jun. 7, 1995, Ser. No. 480,800
Int. Cl.[6] E04B *5/00*
U.S. Cl. 52—408 **8 Claims**

1. A gypsum board comprising set gypsum-containing core and at least one sheet of porous mat comprising randomly distributed non-woven, chopped glass strand fibers bonded by adhesive, said fibers consisting essentially of fibers selected from the group consisting of miner fibers, synthetic resin fibers, and combinations of these, said mat being adhered to said set gypsum core by a



portion of said set gypsum being mechanically interlocked with at least a portion of said fibers, said mat having an outer surface which is substantially free of set gypsum from said core.

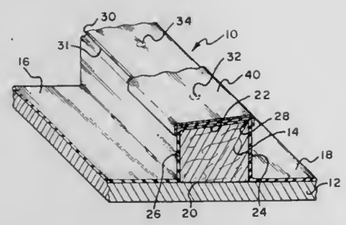
5,644,881
WINDOW FRAME WITH INTEGRAL CONNECTORS
Albert J. Neilly, Holland, Mich., assignor to ODL, Incorporated, Zeeland, Mich.
Filed Nov. 2, 1995, Ser. No. 556,806
Int. Cl.[6] F06B *3/68*
U.S. Cl. 52—455 **18 Claims**



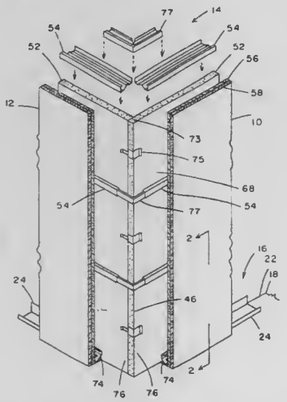
1. A window frame comprising:
a first frame half including a plurality of integral, one-piece first connector halves; and
a second frame half intersecured with said first frame half by a fastening means, said second frame half including a plurality of integral, one-piece second connector halves, each of said one-piece second connector halves being aligned with and frictionally intersecured within one of said one-piece first connector halves to define a pair to releasable intersecure said first and second frame halves together in the absence of said fastening means; and
said fastening means passing through said first and second connector halves for securing said pair of frame halves together.

5,644,882
ROOFING SYSTEM
Carlton Brown, Jr., 534 W. Oak Rd., Vineland, N.J. 08360
Filed May 17, 1996, Ser. No. 649,085
Int. Cl.[6] E04B *7/00; 1/38*
U.S. Cl. 52—462 **5 Claims**

1. A roofing system comprising:
a substantially flat roof structure;
at least one elongated member extending upwardly from said roof structure, said elongated member having two opposing ends, first and second planar side surfaces, a bottom surface and an upper surface, said first planar side surface being higher than said second planar side surface, said upper surface slanting downwardly form said first planar side surface to said second planar side surface;
first and second flexible panels being comprised of a waterproof material, each of said flexible panels having a side edge, said first flexible panel being positioned adjacent said first planar side surface, said second flexible panel being positioned adjacent said second planar side surface and in at least partial contact with said upper surface of said elongated member, said side edge of said first flexible panel overlying said second flexible panel and being positioned adjacent said second planar side surface of said elongated member, and
means for securing said first and second flexible panels to said upper surface of said elongated member.

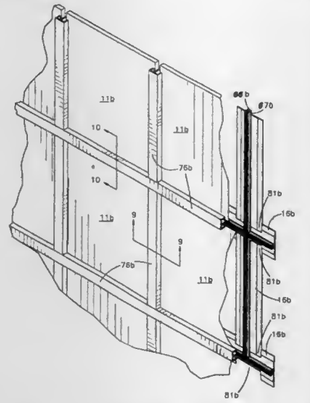


5,644,883
MULTIPLE USE CORNER CLIP
Robert J. Menchetti, Buffalo, N.Y., assignor to National Gypsum Company, Charlotte, N.C.
Continuation of Ser. No. 92,968, Jul. 19, 1993, abandoned, which is a continuation-in-part of Ser. No. 22,590, Feb. 25, 1993, abandoned. This application Dec. 15, 1995, Ser. No. 573,595
Int. Cl.[6] E04B *2/00*
U.S. Cl. 52—489.1 **13 Claims**



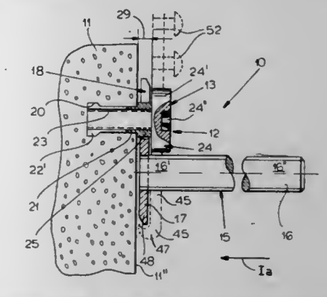
1. A horizontal stud wall corner structure comprising two vertical walls abutting one another at an angle and forming thereat a vertical wall corner, each said wall comprising substantially horizontal floor and ceiling tracks, a plurality of horizontal metal studs extending between and substantially horizontal with said floor and ceiling tracks, each of said studs have a cross-sectional shape formed by a plurality of wall portions, a plurality of rigid, horizontally extending core boards disposed between said studs whereby said wall has alternating horizontal studs and horizontally extending core boards, said horizontal studs of each of said walls being at substantially the same vertical height as said horizontal studs of the other of said walls, said two walls being adjoined at said corner by a plurality of stud corner clips, each said stud corner clip having two segments extending at an angle, one to the other, equal to said angle between said walls, said segments each having a cross-sectional shape similar to a portion of said cross-sectional shape of said studs, and said segments interfitting with studs whereby said segments are each respectively affixed to one of said horizontal studs, said segments each having a board-supporting portion disposed between said wall portions of said studs and said core board, providing support for maintaining said core board in a fixed position.

5,644,884
WALL SYSTEM PROVIDING AN ARRAY OF INDIVIDUAL PANELS
Michael J. Dobija, Lake Forest, Calif., assignor to Commercial and Architectural Products, Inc., Dover, Ohio
Continuation of Ser. No. 929,759, Aug. 12, 1992, Pat. No. 5,417,020. This application May 23, 1995, Ser. No. 448,133
Int. Cl.[6] E04B *2/94*
U.S. Cl. 52—506.01 **26 Claims**



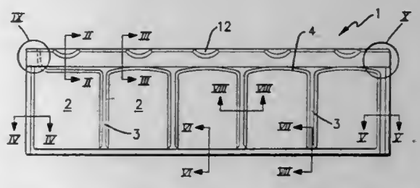
1. A wall panel system comprising a vertically extending support wall, first rails and second rails, one of said first and second rails comprising a plurality of horizontally extending vertically spaced positioning rails mounted on said support wall, said rails providing horizontally extending alignment means, a plurality of individual panels engaging said alignment means of associated horizontally extending positioning rails and being positioned thereby in horizontally aligned courses of panels, adhesive bonding said panel to said support wall, the vertical spacing between said horizontally extending positioning rails operating to vertically position each course with respect to the next adjacent course to form a uniform pattern of panels providing a finished panel wall surface, said horizontally extending positioning rails providing vertically spaced upper and lower parallel lateral walls, the upper of said lateral walls providing said horizontally extending alignment means, the other of said first and second rails comprising a plurality of vertically extending positioning rails located along vertical joints between adjacent panels in said courses, said vertically extending positioning rails having vertically extending alignment means engaging adjacent edges of panels along said vertical joints, said positioning rails having base portions disposed against said support wall with said alignment means projecting from said base portions engaging associated ones of said panels, indexing means associated with said first and second rails, said indexing means including a notch in said base portion of said first rail for receiving an end of said base portion of said second rail, said second rail also having said alignment means extending beyond said end of said base portion of said second rail for overlying engagement with the base portion of said first rail, and battens mounted on said lateral walls, said battens providing trim between panels within one course of panels and between the adjacent course of panels.

5,644,885
MOUNTING FOR FACING PANELS
Karl Eischeid, Schulweg 23, D-51766 Engelskirchen, Germany
PCT No. PCT/DE94/00632, § 371 Date Dec. 5, 1995, § 102(e) Date Dec. 5, 1995, PCT Pub. No. WO95/00728, PCT Pub. Date Jan. 5, 1995
PCT Filed Jun. 8, 1994, Ser. No. 557,186
Claims priority, application Germany, Jun. 23, 1993, 9309306 U; Oct. 12, 1993, 9315386 U
Int. Cl.[6] E04F *13/14;* **E04B** *2/88*
U.S. Cl. 52—513 **17 Claims**



1. Mounting (**10**) comprising facing panels (**11**) which have several securing bolts (**12**) with panel-parallel securing collars (**13**) projecting from an inner side of the panel, behind which engages at least one hook-like wall anchor (**15**) which is able to be anchored to a wall (**14**) by an anchor bolt (**16**) and which receives the securing bolts (**12**) in suspension slots (**18**), whereby a detachable auxiliary mounting means is provided, characterized in that the detachable auxiliary mounting means comprising a spring element between the securing bolt (**12**) and the wall anchor (**15**), which pulls the wall anchor (**15**) towards the securing bolt (**12**) and is fastened to one edge of the panel (**11'**).

5,644,886
ROOFING
Ellert Ekmark, Hjortstigen 21, S-731 42 Köping, and Erik Salomonsson, Kungsör, both of Sweden, assignors to Ellert Ekmark, Koping, Sweden
Filed Dec. 21, 1994, Ser. No. 360,430
Claims priority, application Sweden, Oct. 31, 1994, 9403726
Int. Cl.[6] E04D *3/362; 1/00*
U.S. Cl. 52—518 **8 Claims**



1. A rectangular roof element, comprising a sheet-like material having an upper surface and an opposite lower surface, an upper edge and an opposite lower edge, and a side edge and an opposite side edge, a first segment which is bent back towards said upper surface at said upper edge to form a first hook which extends

towards said opposite lower edge and substantially across a width of said upper surface from said side edge to said opposite side edge, a second segment which is bent back towards said opposite lower surface at said opposite lower edge to form a second hook which extends towards said upper edge and substantially across a width of said opposite lower surface from said side edge to said opposite side edge, said first segment having a mating configuration relative to said second segment, said side edge comprising a gutter which extends substantially from said upper edge to said opposite lower edge, and said opposite side edge comprising a stepped portion which extends substantially from said upper edge to said opposite lower edge, said gutter having a mating configuration relative to said stepped portion.

5,644,887

EXTRUDED FACADE TILE

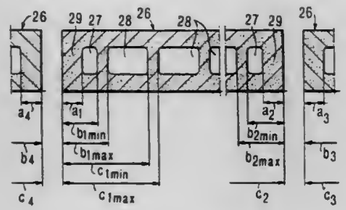
Max Gerhaher, Dr.-Aicher-Strasse 3, 94405 Landau, Germany, and Franz Gerhaher, Stadtgraben 20, 94315 Straubing, Germany

Filed Jul. 29, 1994, Ser. No. 282,615

Claims priority, application Germany, Aug. 2, 1993, 43 25 873.5

Int. Cl.[6] E04F *13/00*

U.S. Cl. 52—606 **8 Claims**



1. An extruded bracket mountable tile for an exterior wall for back ventilated bracket mounting to an exterior wall, for constructional purposes or for decorative purposes, the tile having a marginal hole at each marginal end and internal holes, the marginal holes and internal holes extending in a direction of extrusion of the tile, wherein an exterior wall of the tile is connected together by internal webs and marginal webs and the marginal webs are arranged between marginal surfaces extending parallel to the marginal holes and the internal holes, the marginal holes and the marginal webs having a width which is at least twice that of the internal webs and a width of one or both of the marginal holes is less than or equal to half a width of the internal holes adjacent to the marginal holes and smaller than or equal to a width of the marginal web.

5,644,888

HEAVY CONSTRUCTION SYSTEM USING COMPOSITE MEMBERS

David W. Johnson, San Diego, Calif., assignor to Ebert Composites Corporation, San Diego, Calif.

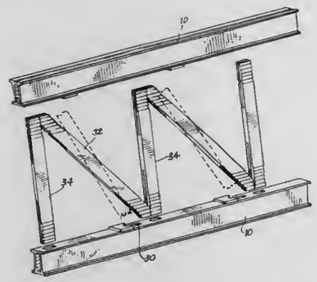
Continuation-in-part of Ser. No. 7,079, Jan. 21, 1993, Pat. No. 5,319,901. This application Jun. 14, 1994, Ser. No. 259,431

The portion of the term of this patent subsequent to Feb. 15, 2011, has been disclaimed.

Int. Cl.[6] E04H *12/02*

U.S. Cl. 52—651.01 **18 Claims**

1. A beam and support member system using pultruded members in general construction in heavy construction projects, in which a pultruded composite beam and at least one support member are configured to couple together to define a joint, said system comprising:



(a) a pultruded composite beam having a longitudinal direction and defining a longitudinal internal seating channel extending substantially the entire length of said beam and having an entryway side, and being substantially completely enclosed except for at least one window to said channel open to the outside adjacent said entryway side of said channel;

(b) at least one support member having at least one seating end insertable into said seating channel through said at least one window;

(c) said channel defining support member retaining structure along at least a portion of the length thereof to rigidly engage the seating end of a support member butted through said window into said channel; and,

(d) said at least one seating end of said at least one support member defining locking means cooperating with said retaining structure to insert into said channel and engage said retaining structure to define a rigid joint with said support member butted into said beam.

5,644,889

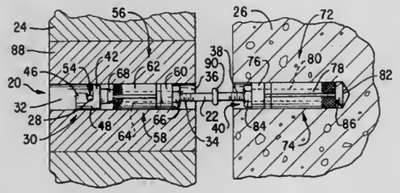
REMEDIAL WALL ANCHOR SYSTEM

Stephen H. Getz, Michigan City, Ind., assignor to Dur-O-Wal, Inc., Arlington Heights, Ill.

Filed Aug. 5, 1994, Ser. No. 286,857

Int. Cl.[6] E04B *1/38;* **F16B** *13/00*

U.S. Cl. 52—713 **20 Claims**



1. A remedial wall anchor system capable of re-connecting an existing facade wall to a back-up wall, comprising:

an elongated reinforcing rod or wire extendable along the facade wall and securable to the facade wall;

a tie member insertable through a hole extending through the facade wall into engagement with the back-up wall, including activation means accessible from a front portion of the tie member for causing the tie member to be connectable with both the facade wall and the back-up wall; and

capturing means associated with a front end of the tie member for capturing a portion of the elongated reinforcing rod or wire to the tie member.

5,644,890

METHOD TO CONSTRUCT THE PRESTRESSED COMPOSITE BEAM STRUCTURE AND THE PRESTRESSED COMPOSITE BEAM FOR A CONTINUOUS BEAM THEREOF

Min-Se Koo, Inchoen, Rep. of Korea, assignor to Dae Nung Industrial Co., Ltd., Chungcheongnam-Do, and Dae Nung Construction Co., Ltd., Kyeongsangnam-Do, both of Rep. of Korea

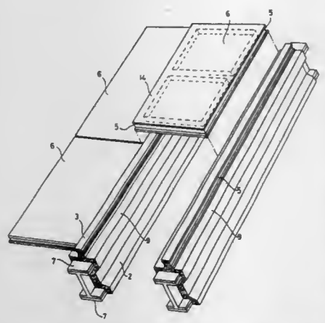
PCT No. PCT/KR94/00025, § 371 Date Nov. 22, 1994, § 102(e) Date Nov. 22, 1994, PCT Pub. No. WO94/23147, PCT Pub. Date Oct. 13, 1994

PCT Filed Mar. 23, 1994, Ser. No. 343,562

Claims priority, application Rep. of Korea, Apr. 1, 1993, 5489/1993; May 21, 1993, 8710/1993; Jul. 15, 1993, 13278/1993

Int. Cl.[6] E04B *1/00*

U.S. Cl. 52—742.14 **16 Claims**



1. A method for connecting prestressed beams having lower flanges cast with compressively prestressed concrete to construct a prestressed continuous beam having a moment equal to zero at both ends thereof and negative moments at at least one connection point of said prestressed beams, the method comprising the steps of:

placing the prestressed beams in end to end relation thereby forming a row of prestressed beams including a first end prestressed beam at one end of the row and a second end prestressed beam at an opposite end of the row; said first and second end prestressed beams each having an outer end which is not adjacent to an end of any other prestressed beam in the row, adjacent ends of the prestressed beams in the row defining said at least one connection point;

connecting the prestressed beams together at said connection point;

deflecting the prestressed beams at said connection point within the limitation of elasticity of the prestressed beams;

casting and curing concrete on the prestressed beams at said connection point to a deflected position; and

at least partially returning the prestressed beams at said connection point from the deflected position whereby compressive stress is introduced to the concrete cast and cured on the prestressed beams at said connection point.

5,644,891

MORTAR PLOW FOR USE IN THE MANUFACTURE OF BRICK WALL PANELS

Zygmunt Grant Kafarowski, P.O. Box 149, 523 Bower Road, Concord, Ontario, Canada

Filed May 11, 1995, Ser. No. 439,572

Claims priority, application Canada, Jul. 22, 1994, 2128644

Int. Cl.[6] E04B *2/54;2/88*

U.S. Cl. 52—745.05 **5 Claims**

1. A method for manufacturing integral wall panels from masonry bricks using a vibrating mortar plow, each of said bricks having a top surface, a bottom surface, a front face, a rear face opposite the front face, and two end faces opposite one another, each brick having a plurality of holes extending therethrough from the top surface to the bottom surface;

the mortar plow comprising a bottom mortar engaging face carrying a plurality of spaced parallel fins extending substantially perpendicularly downwardly from the bottom mortar engaging face;

said method comprising:

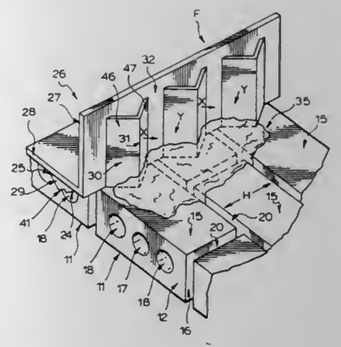
laying each brick on its front face on a flat surface to form a plurality of rows of bricks, leaving mortar spaces between adjacent rows of bricks and between the end faces of bricks in each row;

orienting the bricks such that the end faces of the bricks in adjacent rows are staggered and at least one of said holes in each brick lines up with a hole in a brick of an adjacent row;

applying wet mortar to the rear faces of the bricks;

moving the vibrating mortar plow forwardly with the fins extending into the mortar spaces between adjacent rows of bricks, whereby the fins direct mortar downwardly into the spaces and into the holes to substantially completely fill the mortar spaces and the holes in the bricks;

guiding the mortar plow along the rows of bricks with the fins being received in the mortar spaces between rows of bricks.



5,644,892

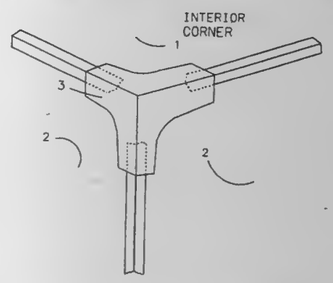
PRE-FABRICATED 3-WAY INSIDE DRYWALL CORNER

Timothy D. Smythe, Jr., Waikoloa, Hi., assignor to Drywall Systems International Inc., Woodinville, Wash.

Filed Jul. 21, 1995, Ser. No. 505,797

Int. Cl.[6] E04B *2/00*

U.S. Cl. 52—745.05 **14 Claims**



1. A method of finishing interior drywall corners comprising the steps of:

applying tape along a joint formed by the intersection of two wallboard surfaces starting said tape 2–6 inches from a first interior 3-way corner;

ending said tape 2–6 inches from a second interior 3-way corner;

placing a prefabricated 3-way drywall corner piece with flanges in at least one of said interior 3-way corners, whereby the flanges of said prefabricated corner are placed on top of the ends of said tape;

killing edges of said flanges with drywall mud using a flat tool to produce a flush surface with said drywall surfaces.

5,644,893

METHOD AND APPARATUS FOR CONSTRUCTING MULTI-STOREY BUILDINGS

Gregory John Neighbours, 24 Thorn Street, Edgecliff, NSW 2025, Australia

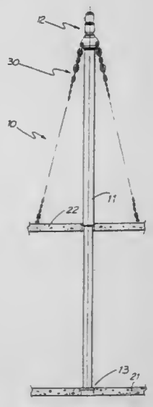
PCT No. PCT/AU92/00643, § 371 Date Aug. 18, 1994, § 102(e) Date Aug. 18, 1994, PCT Pub. No. WO95/11315, PCT Pub. Date Jun. 10, 1993

PCT Filed Nov. 30, 1992, Ser. No. 244,340

Claims priority, application Australia, Nov. 29, 1991, PK9756; Aug. 27, 1992, PL4371

Int. Cl.[6] E04B *1/35*

U.S. Cl. 52—745.19 **16 Claims**



1. A method for constructing a multi-storey building comprising the steps of:

i) providing a plurality of extendible props having a head portion, a foot portion and an extendible portion stretching therebetween;

ii) providing a plurality of floor or ceiling slabs with a plurality of apertures therethrough spread about the slab area;

iii) connecting a first said slab to a plurality of said extendible props positioned in respective apertures, each head portion being positioned above and connected to said first slab, said extendible portion of each of said props projecting downwardly through respective apertures whereby each said foot portion is supported by a second said slab below said first slab;

iv) extending said extendible portion of said props to lift said first slab to a desired position;

v) supporting said first slab at said desired position by a support member;

vi) retracting said extendible portion of each extended prop through its respective aperture to detach said foot portion from said second slab; and

vii) engaging said foot portion with said first slab to raise a subsequent slab.

5,644,894

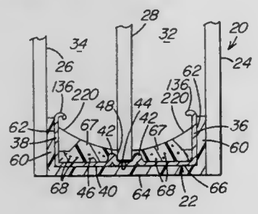
MULTI-SHEET GLAZING UNIT AND METHOD OF MAKING SAME

Joseph E. Hudson, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 20, 1994, Ser. No. 326,580

Int. Cl.[6] E04C *2/54*

U.S. Cl. 52—786.13 **13 Claims**



1. A glazing unit comprising:

a pair of outer sheets defined as a first sheet and a second sheet, each of the first and second sheets having a major surface and a marginal edge portion on the major surface;

a spacer frame having at least two sides and a corner therebetween, the spacer frame having a pair of upright legs and a base between and connecting the upright legs to one another to provide a generally U-shape cross section, portions of the base defined as a first base portion and other portions of the base defined as a second base portion with the second base portion having an elevation different than the first base portion and extending between the upright legs, wherein the first base portion of the base extending along each of the at least two sides and at the corner is unitary and continuous, and the second base portion of the base extending along each of the at least two sides is unitary and continuous and separated at the corner by a separation that extends through a thickness of the base, and

means for securing the marginal edge portions of the first sheet to an outer surface of one of the upright legs and marginal edge portions of the second sheet to an outer surface of the other one of the upright legs to space the first and second sheets from one another.

5,644,895

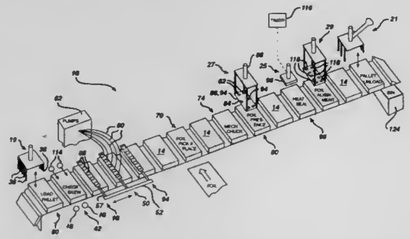
PACKAGING ARRANGEMENT

Russell James Edwards, Jacksonville, Fla.; Hirokazu Kitagawa, Chiba-Pref., Japan; Kiyoshi Imai; Masao Funo, both of Saitama-Pref., Japan; William Edward Holley, Ponte Vedra Beach, Fla.; Charles R. Hood, and Richard Wayne Abrams, both of Jacksonville, Fla., assignors to Johnson & Johnson Vision Products, Inc., Jacksonville, Fla.

Filed May 1, 1995, Ser. No. 431,891

Int. Cl.[6] B65B *7/28;47/00;55/22;57/02*

U.S. Cl. 53—55 **17 Claims**



1. A packaging arrangement for packaging products, comprising:

a. at an initial station a loader which loads an array of individual blister package bases, each of which has a contact lens therein, into a support pallet stopped at the initial station;

b. a movable endless conveyor which transports a plurality of the support pallets, spaced equally apart along the endless conveyor, each of which is designed to support and align an array of individual package bases;

c. means for intermittently moving the endless conveyor through substantially equal incremental movements from an upstream direction to a downstream direction, with stops between each movement, such that each support pallet with an array of individual package bases thereon is sequentially stopped at spaced stations in the packaging arrangement; and

d. a slide unit supported above the endless conveyor for reciprocating upstream and downstream movement relative to the endless conveyor, said slide unit supporting an array of operating means for performing operating functions on an array of individual package bases supported in a pallet positioned below the slide unit.

5,644,896

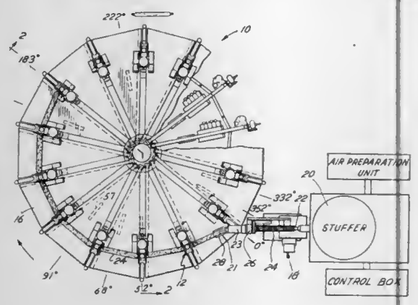
CONTINUOUSLY ROTATING PLATFORM WITH MULTIPLE MOUNTED DOUBLE CLIPPERS FOR CONTINUOUSLY FORMING LINK PRODUCT

Alfred J. Evans, Raleigh; Grant K. Chen, Cary; Dennis J. May, Pittsboro, and Edward P. Brinson, Raleigh, all of N.C., assignors to Delaware Capital Formation, Inc., Wilmington, Del.

Continuation of Ser. No. 90,396, Jul. 12, 1993, Pat. No. 5,471,815, which is a continuation of Ser. No. 685,900, Apr. 12, 1991, Pat. No. 5,259,169; which is a continuation of Ser. No. 270,222, Nov. 14, 1988, Pat. No. 5,020,298, which is a continuation-in-part of Ser. No. 105,665, Oct. 7, 1987, Pat. No. 4,821,485. This application Jul. 19, 1994, Ser. No. 277,188

Int. Cl.[6] B65B *9/15;51/05*

U.S. Cl. 53—138.4 **17 Claims**



1. An improved packaging device for filling flexible casing and sealing discrete lengths of filled casing comprising, in combination:

a clipper mounting assembly including a floor mounted frame and a plurality of separate and distinct radial guide members supported by the frame, said radial guide members rotatable in a horizontal plane relative to the frame;

a plurality of clippers mounted on the plurality of radial guide members, each clipper spaced radially from a vertical axis through the center of the plurality of radial guide members, each clipper including a mechanism for attaching a clip about filled casing by gathering said casing and subsequently forming a clip about the gathered casing to seal the gathered casing, each of said clippers positioned radially outward from the vertical axis through the center of the radial guide members;

means for continuously rotating the radial guide members and clippers mounted thereon about said axis in a uniform direction;

means positioned at one side of the radial guide members for feeding filled casing sequentially into each clipper as each one of said clippers moves past the means for feeding; and

means for sequentially operating the clippers as the radial guide members are rotated whereby as each clipper is in position to receive filled casing as it moves past the means for feeding, said clipper operates to subsequently gather the casing, to form a clip about the casing, to separate the casing into links, to release the link and to discharge the link from the device.

5,644,897

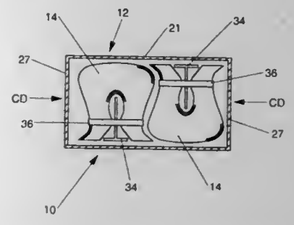
DISPENSING PACKAGE FOR DISCRETE STAGE COMPRESSED TISSUES, COMPRESSED TISSUES THEREFOR, AND METHOD OF DISPENSING SUCH TISSUES

Mark Douglas Young, West Chester; John Paul Erspamer, Cincinnati; Mark Edwin Forry, Hamilton, and Charles John Berg, Jr., Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 458,958, Jun. 2, 1995, Pat. No. 5,507,130. This application Feb. 20, 1996, Ser. No. 603,140

Int. Cl.[6] B65B *1/24*

U.S. Cl. 53—438 **9 Claims**



1. A process for installing tissues into and dispensing tissues from a dispensing package, said process comprising the steps of:

providing multiple pluralities of tissues to be dispensed, each said plurality being disposed in a stack and compressed from a free height to a first stage compression height and restrained with a first stage restraint;

juxtaposing said multiple pluralities of tissues together, said multiple pluralities being further compressed, so that each said plurality of tissues is compressed to a second stage compression height, said second stage compression height being less than said first stage compression height;

restraining said multiple pluralities of tissues with a second stage restraint, said second stage restraint and said first stage restraint being independently releasable;

providing a dispensing package complementary to one said plurality of said tissues, said dispensing package being adapted to receive one said plurality of tissues and having a dispensing opening for dispensing tissues therethrough;

releasing said second stage restraint so that an individual plurality of tissues can be retrieved, and retrieving a first plurality from said multiple pluralities;

releasing said tissues of said first plurality of tissues from said first stage restraint;

installing said first plurality of tissues and first stage restraint in said dispensing package; and

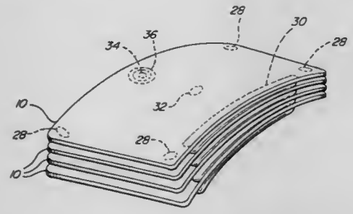
dispensing said tissues from said dispensing package.

5,644,898

GLASS PACKAGING SYSTEM AND METHOD

Stuart Craig Shepherd, Brampton, Canada, and Thomas Carl Zito, Maineville, Ohio, assignors to FANUC Robotics North America, Inc., Auburn Hills, Mich.

Filed Jul. 11, 1995, Ser. No. 500,662
Int. Cl.[6] B65B *35/50*
U.S. Cl. 53—445 **22 Claims**



1. A method for preparing a plurality of substantially rigid sheet-like members for packaging, the method comprising:

a. applying a liquified material to a plurality of selected locations on a surface of a first sheet-like member;

b. cooling the liquified material to form a removable solid element adhering to each of the selected locations on the surface; and

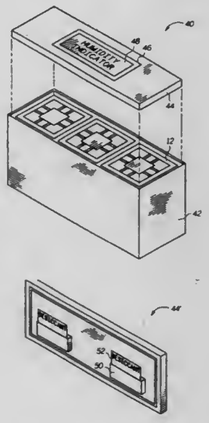
c. stacking a second sheet-like member against the first sheet-like member for packaging such that the solid elements act as interleaving spacers therebetween protecting the sheet-like members from handling and shipping damage.

5,644,899

METHOD FOR PACKAGING SEMICONDUCTOR COMPONENTS FOR SHIPMENT

Robert Truesdale, Dripping Springs, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 26, 1995, Ser. No. 578,134
Int. Cl.[6] B65B *35/50*
U.S. Cl. 53—447 **20 Claims**



1. A method for packaging moisture sensitive semiconductor components comprising the steps of:

providing a plurality of semiconductor components, each being encapsulated in a plastic package body capable of absorbing moisture;

providing a rectangular shipping container, wherein the rectangular shipping container is composed of a polymer-based, volumetric electrostatic-discharge-protected material;

placing the plurality of semiconductor components into the rectangular shipping container;

sealing the rectangular shipping container with a reclosable lid to provide an airtight environment for the plurality of semiconductor components contained in the rectangular shipping container, wherein the reclosable lid is also composed of an electrostatic-discharge-protected material; and

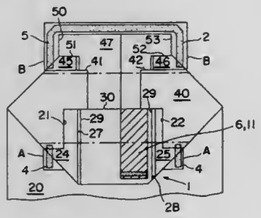
stacking the rectangular shipping container having the plurality of semiconductor components therein into an outer box for transporting the plurality of semiconductor components to a user, wherein the rectangular shipping container and the reclosable lid are reusable for shipping other semiconductor components.

5,644,900

MULTIWALL BAG

Raymond George Steele, Manurewa; Stephen John Grace, Parua; John Frederick Robinson, Titirangi; Andreas Karl Haussrer, Kelston; Eric John Brown, Papakura; Michael John Kane, Point Chevalier; Allan Paul MacFarlane, Pakuranga, and Ian Murray Allerby, Epsom, all of New Zealand, assignors to Stone Container Corporation, Chicago, Ill.

Division of Ser. No. 192,710, Feb. 7, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 484,643
Int. Cl.[6] B65B *11/58*
U.S. Cl. 53—449 **6 Claims**



1. A method of forming a container comprising the steps of:

advancing a feed of a substantially flexible inner tube and a substantially flexible outer tube, the inner tube being disposed within the outer tube,

heat sealing a first end of the advanced inner tube,

spreading the first end of the advanced outer tube out together with part of the sealed first end of the inner tube to define a lie flat base;

forming flap members in said first end of said outer tube, said flap members extending in opposite directions from said base, and parallel to the direction of advancement of said inner and outer tubes; and

thereafter adhesively inter-engaging said flap members, beyond the sealed end of the inner tube, in such a manner that the flap members may thereafter be peel-opened so as to permit access to the inner tube without substantially damaging the outer tube,

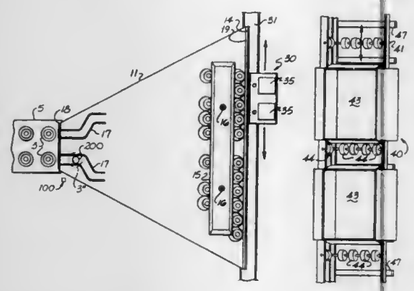
said inter-engaging of said flap members of said outer tube occurring without interlocking affixation of the first end of said inner tube to the first end of said outer tube.

5,644,901

YARN SPOOL APPARATUS AND METHOD

Kiyohiro Tsuzuki, Greenville, S.C., assignor to TNS Mills, Inc., Greenville, S.C.

Continuation of Ser. No. 370,627, Jan. 10, 1996, abandoned. This application Apr. 3, 1996, Ser. No. 627,921
Int. Cl.[6] B65B *43/26*
U.S. Cl. 53—459 **25 Claims**



16. A method of packaging yarn spools, comprising the steps of:

providing a staging station, a translatably movable bagging station for supporting preformed bags, and a boxing station;

providing said boxing station extending along a longitudinal direction with a supply of boxes;

feeding yarn spools to said staging station;

letting said yarn spools at said staging station form a predetermined configuration having multiple locations from which yarn spools may be removed from;

moving said bagging station in a direction parallel to said longitudinal direction of said yarn boxing station in the area immediately adjacent said yarn staging station and until said bagging station is adjacent one of said multiple locations of said predetermined configuration;

automatically opening at least one bag provided at said bagging station;

removing at least one yarn spool from said one of said multiple locations of said predetermined configuration formed on said staging station;

placing said at least one yarn spool in said automatically opened bag to obtain a bagged spool, removing said bagged spool from said bagging station, causing another bag to be automatically opened; and

placing said bagged spool in one of the boxes in said supply of boxes.

5,644,902

APPARATUS AND METHOD FOR A DOG PACK HARNESS

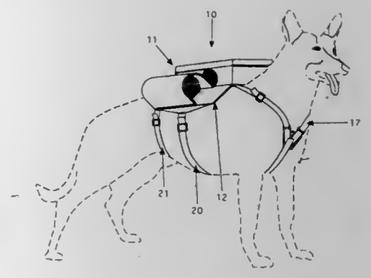
Brian J. Kemp, 4949 N. Broadway #101A, Boulder, Colo. 80304

Filed Aug. 7, 1995, Ser. No. 512,169
Int. Cl.[6] B68C *1/00*
U.S. Cl. 54—37.1 **16 Claims**

5. An apparatus enabling a dog to carry loads comprising:

(a) a pack means for containing loads and a flexible surface member attached under said pack means for containing said loads,

(b) a Y-shape strap assembly means for maintaining said flexible surface member in a desired position, said Y-shape strap assembly means upper double ends attached to the front of said flexible surface member and opposing single end of said Y-shape strap assembly means to an unopposed end of a tee shape means for connecting three straps and,



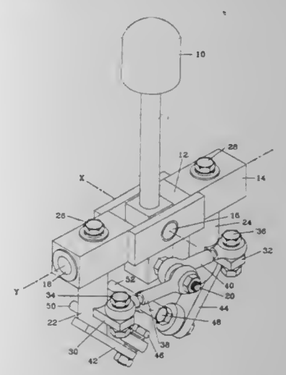
(c) a second strap assembly means for maintaining said flexible surface member in a desired position having two sections, each attached rearward to said flexible surface member with each opposing end attached to an opposing end of said tee shape means.

5,644,903

STEERING CONTROL FOR ZERO TURN RADIUS MOWER

Robert D. Davis, Jr., 627 Andrew Ave., Jackson, Mich. 49202

Filed Aug. 30, 1995, Ser. No. 521,320
Int. Cl.[6] A01D *69/00;* **B62D** *11/04*
U.S. Cl. 56—10.8 **17 Claims**

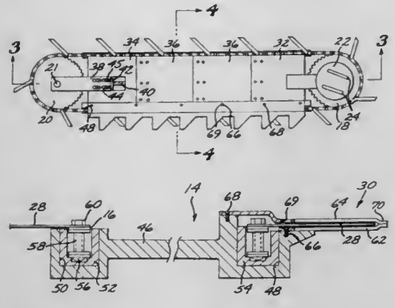


1. A speed and direction control for a self-propelled lawn mower comprising a pivot box mounted on the mower for rotation constrained about a first axis,

a lever handle rotatably attached to the pivot box, said lever handle constrained to rotate about a second axis, said second axis being non-parallel to the first axis,

mower control means linking the speed and direction control to the mower, said mower control means separately connected to the pivot box and the lever handle whereby movement of the lever handle about one of the axes effects forward or reverse movement of the mower and movement about the other of the axes effects steering movement of the mower.

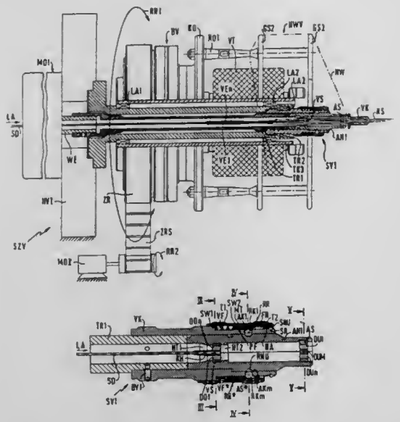
5,644,904
SICKLE APPARATUS
Harvey Olinger, Huntington Beach, Calif., assignor to Harvey and Anne Olinger Trust, Huntington Beach, Calif.
Filed Apr. 17, 1995, Ser. No. 423,713
Int. Cl.[6] A01D *34/28*
U.S. Cl. 56—292 **19 Claims**



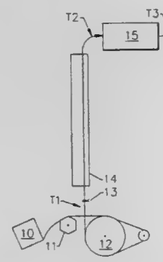
11. A sickle apparatus, comprising:
a cutter bar drive section having a leading edge and rotatably supporting a drive sprocket;
a cutter bar tail section having a leading edge, supporting an idler sprocket, and attachable to said drive section so as to align leading edges;
an adjustment mechanism for altering the longitudinal position of the idle sprocket relative to the tail section;
a cutter bar intermediate section having a leading edge insertable in between said drive and tail section so as to align said leading edges;
a plurality of fixed blades attached to said leading edges; and
a drive chain extending about said sprockets having traveling blades attached thereto that engage said fixed blades to effect a cutting action upon rotation of said drive sprocket whereby the length of said cutter bar is determined by the number of intermediate sections inserted in between said drive and tail sections.

5,644,905
STRANDING DEVICE WITH AN EXCHANGEABLE SUPPLY MEMBER AND AN ASSOCIATED METHOD
Reiner Luthardt, and Günter Wünsch, both of Bundesrepublik, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
PCT No. PCT/DE94/01192, § 371 Date Jun. 12, 1995, § 102(e) Date Jun. 12, 1995, PCT Pub. No. WO95/10843, PCT Pub. Date Apr. 20, 1995
PCT Filed Oct. 11, 1992, Ser. No. 454,224
Claims priority, application Germany, Oct. 14, 1993, 43 35 090.9; Jul. 8, 1994, 44 24 174.7
Int. Cl.[6] D02G *3/36;* **D01H** *13/26*
U.S. Cl. 57—17 **27 Claims**

1. A device for stranding elongated stranding elements, comprising:
an axially extending supply member having a surface on which stranding elements are fed to a stranding disk;
a first suspension device having a first receiving device for holding a first end of the supply member on an input side of the device, and a second suspension device having a second receiving device for holding a second end of the supply member on an output side of the device;
first and second locking devices for respectively mounting the first and second receiving devices in the first and second suspension devices, respectively, such that in a release position of a respective locking device, a respective receiving device is completely displaceable in an axial direction for installing or removing the supply member, and such that in a lock position of the respective locking device, the respective receiving device is secured against detachment during operation of the supply member.

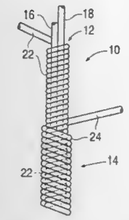


5,644,906
HOT FEED DRAW TEXTURING FOR DARK DYEING POLYESTER
Charlie King, Charlotte, N.C., assignor to Wellman, Inc., Shrewsbury, N.J.
Division of Ser. No. 58,291, May 4, 1993, Pat. No. 5,471.828. This application May 10, 1995, Ser. No. 437,996
Int. Cl.[6] D01H *13/26;* **D02G** *3/02*
U.S. Cl. 57—208 **2 Claims**



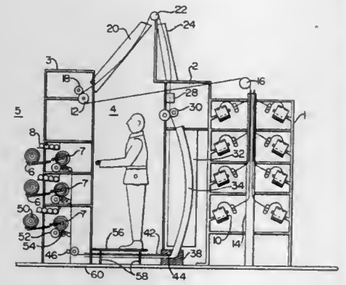
1. A texturized polyester fiber having:
a dye uptake of between 15 and 160 percent;
a breaking strength of between 2.9 and 3.6 grams per denier;
a breaking elongation of between 17 and 31 percent;
a hot air shrinkage of between 12 and 18 percent; and
a hot air crimping of between 5 and 16 percent.

5,644,907
CUT RESISTANT YARN AND PROTECTIVE GARMENT MADE THEREFROM
Nathaniel H. Kolmes, 204 Timberwood La., Rte. 10, Hickory, N.C. 28601, and Harold F. Plemmons, Rte. 1, Box 628, Millers Creek, N.C. 28651
Continuation of Ser. No. 766,846, Aug. 16, 1985, abandoned. This application Mar. 31, 1988, Ser. No. 176,075
Int. Cl.[6] D02G *3/12*
U.S. Cl. 57—230 **12 Claims**



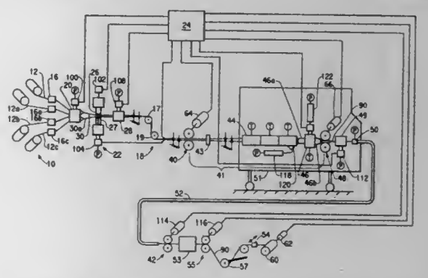
1. A yarn for use in making strong flexible items, the yarn being essentially aramid free and comprising a core and a covering:
the core including at least one strand of wire and at least one strand of an extended chain polyethylene fiber;
said wire and said polyethylene fiber being positioned parallel to each other; and
said covering including at least two strands of fiber wrapped about said parallel positioned core strands, said covering strands being wrapped in opposite directions relative to each other.

5,644,908
YARN FALSE TWIST CRIMPING APPARATUS
Heinz Schippers; Peter Dammann; Karl Bauer, and Michael Hanisch, all of Remscheid, Germany, assignors to Barmag AG, Remscheid, Germany
Continuation of Ser. No. 269,066, Jun. 30, 1994, abandoned. This application Dec. 11, 1995, Ser. No. 570,243
Claims priority, application Germany, Sep. 4, 1993, 43 29 925.3; Oct. 11, 1993, 43 34 587.5; Jan. 31, 1994, 44 02 832.6; Feb. 11, 1994, 44 04 302.3
Int. Cl.[6] D01H *7/00*
U.S. Cl. 57—290 **33 Claims**



1. A yarn false twist crimping apparatus comprising
a processing frame (**2**),
a creel (**1**) for supporting at least one yarn package and positioned adjacent said processing frame,
a take-up frame (**3**) laterally spaced from said processing frame (**2**) so as to define an operator aisle (**4**) therebetween, and so as to also define a service aisle (**5**) on the side of said take-up frame opposite said processing frame,
false twist imparting means for imparting false twist to an advancing yarn and comprising a first yarn feed system (**18**), an elongate first heater (**20**), an elongate cooling plate (**24**), a false twist unit (**28**), a second yarn feed system (**30**), and a yarn take-up device (**7**),
wherein said first yarn feed system is mounted on said take-up frame, said false twist unit and said second yarn feed system are mounted on said processing frame, and said first heater and said cooling plate are mounted so as to define a yarn path extending across said operator aisle and from the take-up frame to the processing frame, wherein said take-up device is positioned so as to be serviceable both from said operator aisle and from said service aisle, and wherein said creel is positioned on one side of said processing frame and said take-up frame is positioned on the other side of said processing frame.

5,644,909
METHOD AND APPARATUS FOR MAKING ALTERNATE TWIST PLIED YARN AND PRODUCT
Warren Francis Knoff, Richmond, Va.; Robert William McAllister; Peter Popper, both of Wilmington, Del.; Steven Kikuo Shibata, Salisbury, Md.; Robert Edward Taylor, Columbia, and Paul Wesley Yngve, Chapin, both of S.C., assignors to E.I. Du Pont de Nemours and Company, Wilmington, Del.
Division of Ser. No. 339,103, Nov. 14, 1994, Pat. No. 5,557,915. This application Sep. 10, 1996, Ser. No. 711,522
Int. Cl.[6] D01H *5/00;7/46*
U.S. Cl. 57—293 **14 Claims**



1. A process for making an alternate twist plied yarn from a plurality of strands with a bond in the plied yarn between ply reversals, comprising the steps of:
advancing the strands at a predetermined rate under tension in a path adjacent each other;
twisting the strands each the same in a first direction and rate as they advance along said path;
plying the twisted strands to form a first half-cycle of plied yarn;
advancing said plied yarn at a first predetermined rate at a first tension using a first roll advancing means;
advancing said plied yarn at a second predetermined rate less than said first rate and at a second tension less than said first tension using a second roll advancing means spaced from said first roll advancing means by a distance that is predetermined to place a previously formed bond adjacent the second roll advancing means when the advancing of the yarns is stopped;
twisting the plied yarn at a position adjacent the upstream side of the second roll advancing means to overply the plied yarn;
stopping the advancing of said strands and said plied yarn;
bonding said plied yarn to form a bond;
stopping the twisting of the strands, and stopping the twisting of the plied yarn, then;
repeating said steps while twisting said strands each the same in the opposite manner, and twisting said plied yarns each the same in the opposite manner, to form a second half-cycle of plied yarn substantially the same as the first half-cycle of plied yarn.

5,644,910

OPEN-END SPINNING ROTOR WITH SMOOTH NON-IMPACTED SURFACES

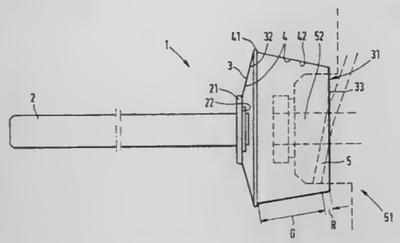
Anthony A. Ball, Charleston, S.C.; Heinz Müller, Metzingen, and Wolfgang Thierron, Kösching, both of Germany, assignors to Rieter Ingolstadt Spinnereimaschinenbau AG, Ingolstadt, Germany

Filed Nov. 15, 1994, Ser. No. 340,276

Claims priority, application Germany, Dec. 23, 1993, 43 44 012.6

Int. Cl.[6] D01H *4/00*

U.S. Cl. 57—416 **7 Claims**



1. A spinning rotor for an open-end spinning device, said spinning rotor comprising:

a shaft;

a rotor plate configured at an end of said shaft, said rotor plate comprising a bottom, a fiber collection groove, and an open side defined by an edge, said rotor plate further comprising a fiber gliding surface defined therein adjacent said fiber collection groove, said fiber gliding surface being impacted by fibers fed to said spinning rotor; and

said rotor plate further comprising non-impacted inner surfaces comprising a smooth ring-shaped zone between said edge and said fiber gliding surface and an area of said rotor plate bottom defined therein which are not impacted by fibers fed to said spinning rotor during yarn spinning operations, said non-impacted inner surfaces having a surface smoothness greater than that of said fiber gliding surface so as to prevent the buildup of, deposits thereon.

5,644,911

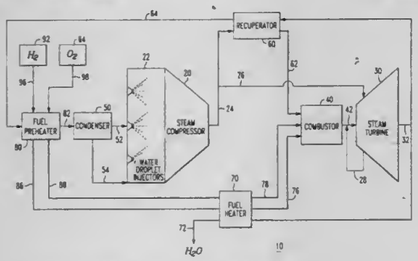
HYDROGEN-FUELED SEMI-CLOSED STEAM TURBINE POWER PLANT

David John Huber, Winter Park, Fla., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 10, 1995, Ser. No. 513,500

Int. Cl.[6] F02C *3/30*

U.S. Cl. 60—39.05 **11 Claims**



1. A steam turbine power system, comprising:

a steam compressor receiving steam having a first pressure level and generating high pressure steam having a scond pressure level greater than the first pressure level;

a combustor receiving high pressure steam from the steam compressor, the high pressure steam having a first temperature, the combustor injecting and combusting a stoichiometric ratio of hydrogen fuel and oxygen oxidant in the high pressure steam to generate superheated steam having a second temperature greater than the first temperature, the injection and combustion of hydrogen fuel and oxygen oxidant producing little byproduct other than H_2O; and

a steam turbine receiving superheated steam generated by the combustor and generating mechanical energy from the superheated steam, wherein a portion of the high pressure steam generated by the steam compressor is received by and used to cool the steam turbine.

5,644,912

SYSTEM FOR DIAGNOSING DETERIORATION OF CATALYST IN EXHAUST SYSTEM OF INTERNAL COMBUSTION ENGINE

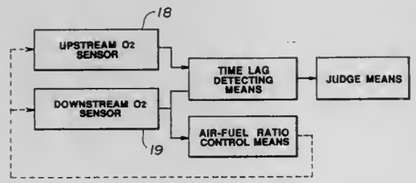
Katsuhiko Kawamura, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Continuation of Ser. No. 104,569, Aug. 11, 1993, abandoned. This application Jul. 17, 1995, Ser. No. 503,256

Claims priority, application Japan, Aug. 27, 1992, 4-228107

Int. Cl.[6] F01N *3/28*

U.S. Cl. 60—276 **26 Claims**



1. A system for diagnosing deterioration of a catalyst of a three-way catalytic converter installed in an exhaust system of an internal combustion engine, comprising:

first and second oxygen sensors installed in said exhaust system at respective positions upstream and downstream of said converter;

an air-fuel ratio control means which usually controls in a feedback control manner the air-fuel ratio of mixture fed to the engine in accordance with an output signal issued from said first oxygen sensor;

a time lag detecting means which detects the elapsed time from the time on which the output signal from said first oxygen sensor carries out a rich-lean reverse to the time on which the output signal from said second oxygen sensor carries out a corresponding rich-lean reverse; and

a judging means which judges a deterioration degree of the catalyst in accordance with said time lag,

wherein said air-fuel ratio control means includes means for causing a step change, upon a given diagnosing mode thereof, in a feedback correction factor in synchronization with the rich-lean reverse of the output signal from said second oxygen sensor, thereby correcting said air-fuel ratio of mixture to a generally stoichiometric value.

5,644,913

HEATING SYSTEM FOR CATALYTIC CONVERTER

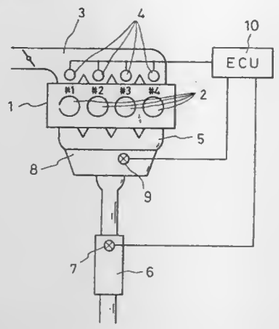
Nobuo Iwai; Seiji Hayashi, and Motoaki Akai, all of Tsukuba, Japan, assignors to Ministry of International Trade and Industry, Agency of Industrial Science and Technology, Tokyo, Japan

Filed Dec. 8, 1995, Ser. No. 569,938

Claims priority, application Japan, Dec. 19, 1994, 6-333763

Int. Cl.[6] F01N *3/36*

U.S. Cl. 60—284 **1 Claim**



1. A heating system for a catalytic converter, the heating system comprising:

a multi-cylinder, spark-ignition engine having a plurality of cylinders;

a combustor provided with an ignition means which is installed downstream from an exhaust gas manifold of the engine and upstream from a catalytic converter; and

a controller which controls an operation of the multi-cylinder, spark ignition engine so that, up to a point where a catalyst in the catalytic converter is activated to convert exhaust gas from the engine, half of the cylinders of the plurality of cylinders are operated on a rich gas mixture with an excess air ratio of 0.6 or less to produce a combustible gaseous mixture comprising hydrogen, carbon monoxide, and unburned fuel components, the combustible gaseous mixture being sent to the combustor, and the remaining half of the cylinders of the plurality of cylinder are operated to feed air to the combustible gaseous mixture in the combustor, to produce a flammable gas mixture including said gaseous mixture and the air, the flammable gas mixture being burned in said combustor by ignition of said ignition means to provide heat energy to activate the catalyst during a warm up period after a cold start of the engine, and after the catalyst has been activated all cylinders are operated in a normal manner.

5,644,914

EXHAUST PRESSURE PULSATION CONTROL APPARATUS FOR A MARINE PROPULSION SYSTEM

Gregory B. Deavers, Perkins; Loren T. Powers, Stillwater, and George E. Brown, Perkins, all of Okla., assignors to Brunswick Corporation, Lake Forest, Ill.

Filed Aug. 7, 1995, Ser. No. 512,026

Int. Cl.[6] F01N *3/02*

U.S. Cl. 60—310 **20 Claims**

1. In a marine propulsion system having an internal combustion engine exhausted through a water jacketed exhaust elbow into and through an exhaust tube, an exhaust pressure pulsation control apparatus located within the exhaust tube comprising:

a front ring;

a reflector disk located downstream of the front ring;

wherein the apparatus is mounted longitudinally within the exhaust tube so that a mixture of water and water cooled exhaust passing through the exhaust tube also passes through the apparatus and a space between the front ring and the reflector disk is sufficiently large so that there is no significant restriction to the mixture of water and water cooled exhaust passing through the apparatus.

5,644,915

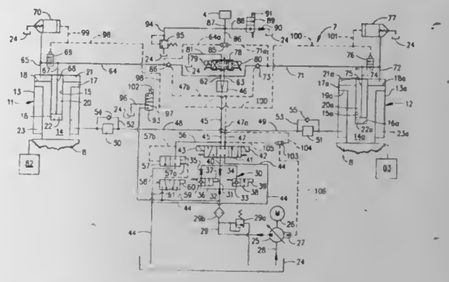
CONTROL SYSTEM FOR A HYDRAULIC PRESS BRAKE

Paul A. Dressing, and Dean M. Valvano, both of Cincinnati, Ohio, assignors to Cincinnati, Incorporated, Harrison, Ohio

Filed Apr. 25, 1996, Ser. No. 637,447

Int. Cl.[6] F16D *31/02*; **F15B** *11/00*

U.S. Cl. 60—426 **21 Claims**



1. A system for controlling the movement of the ram of a press brake having a ram and first and second cylinder assemblies with pistons operatively attached to the top of said ram adjacent the sides thereof, said control system comprising a programmable processor, a pressure transducer providing output signals to said processor indicating the pressure applied to said pistons, a linear potentiometer for each of said ram sides providing output signals to said processor including ram position and levelness, a hydraulic circuit comprising a reservoir for hydraulic fluid, a variable volume load sense-controlled pump having an inlet line connected to said reservoir, a speed control assembly, a directional valve with two actuating solenoids, a flow divider, said pump having an output line supplying hydraulic fluid through said speed control assembly, said dual solenoid actuated directional valve and said flow divider to said first and second cylinders, said speed control assembly comprising at least first and second lines connected to said output line of said pump and connected to a speed control assembly outlet line to said directional valve, a restricting orifice being located in at least one of said at least two lines of said speed control assembly, a normally closed solenoid actuated valve being located in at least one of said at least two speed control assembly lines, said processor having an output to actuate the solenoid of each solenoid actuated valve of said hydraulic circuit.

5,644,916

HYDRAULIC PRESSURE SUPPLY SYSTEM FOR VARIABLE TORQUE TRANSFER OF FOUR-WHEEL DRIVE VEHICLE

Koichi Hayasaki, Ebina, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

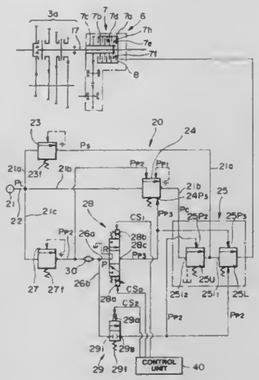
Filed Oct. 11, 1994, Ser. No. 320,544

Claims priority, application Japan, Nov. 2, 1993, 5-274238; Nov. 30, 1993, 5-300666

Int. Cl.[6] F16D *31/02*

U.S. Cl. 60—436 **16 Claims**

1. A hydraulic pressure supply system for a variable torque transfer of a four-wheel drive vehicle in which a driving-torque distribution ratio between front and rear road wheels is varied by adjusting a clutch pressure applied to a variable torque clutch assembled in said transfer, said system comprising:



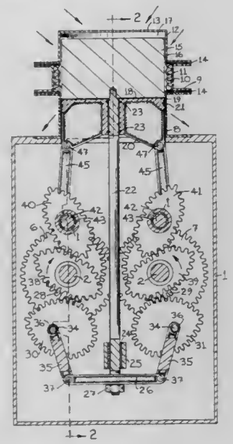
an oil pressure source supplying a pressurized working fluid into a hydraulic line;

pressure regulating valve means fluidly connected to said line, for decreasingly regulating said pressurized working fluid at a predetermined clutch pressure;

directional control valve means fluidly connected to said pressure regulating valve means, for directing said clutch pressure to said clutch; and

electromagnetic valve means controlling said pressure regulating valve means and said directional control valve means, for selectively supplying one of a stand-by pressure and a clutch engaging pressure to said clutch, said stand-by pressure being slightly less than a predetermined pressure level at which said clutch starts to engage and said clutch engaging pressure at which said clutch is engaged.

5,644,917
KINEMATIC STIRLING ENGINE
Thomas David McWaters, 113 Miami Gardens Dr., Miami, Ariz. 85539
Filed May 13, 1996, Ser. No. 645,077
Int. Cl.[6] F01B *29/10*
U.S. Cl. 60—517 **12 Claims**



1. A hot gas engine operating in accordance with the Stirling cycle including:

a hot cylinder forming a hot chamber in which heat can be added to working gas in said chamber from an external source;

a displacer piston able to reciprocate in said hot cylinder, said displacer piston determining the volume of working gas within said hot chamber;

a regenerator being a heat sink which extracts heat from working gas hotter than said regenerator flowing through said regenerator and delivers heat to working gas colder than said regenerator flowing through said regenerator;

a cold cylinder forming a cold chamber in which heat can be rejected from working gas in said chamber to an external receptor;

a power piston able to reciprocate in said cold cylinder, said power piston determining the volume of working gas within said cold chamber;

a passage communicating said regenerator to said hot chamber so that working gas may travel from said hot chamber to said regenerator and vice-versa;

a passage communicating said regenerator to said cold chamber so that working gas may travel from said cold chamber to said regenerator and vice-versa;

a quantity of working gas contained within said hot chamber, said passages, said regenerator, said cold chamber, and the clearance spaces associated with said hot cylinder and said cold cylinder;

a mainshaft;

a displacer piston kinematic transmission train consisting of a non-circular displacer piston driving gear affixed to said mainshaft driving a non-circular displacer piston driven gear, said driven gear driving a displacer piston crank journal by which it is connected by a connecting rod to said displacer piston so that rotary motion of said mainshaft is converted into longitudinal motion of said displacer piston within said hot cylinder, and vice-versa;

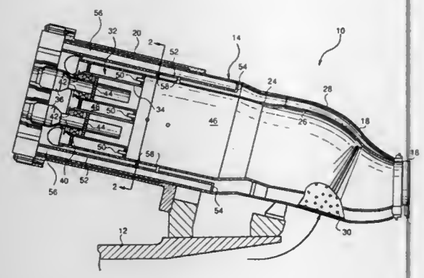
a power piston kinematic transmission train consisting of a non-circular power piston driving gear affixed to said mainshaft driving a non-circular power piston driven gear, said driven gear driving a power piston crank journal by which it is connected by a connecting rod to said power piston so that rotary motion of said mainshaft is converted into longitudinal motion of said power piston within said cold cylinder, and vice-versa;

a relationship between the said motions of said power piston and the said motions of said displacer piston such that said working gas experiences four separate and contiguous strokes during the engine cycle, said strokes being an expansion stroke during which on a time-basis average at least 82 percent of the total volume of said working gas remains within said hot chamber, then a stroke to transfer at least 90 percent of the total volume of said working gas from said hot chamber to said cold chamber during which stroke the total volume of said working gas changes no more than 4 percent, then a contraction stroke during which on a time-basis average at least 95 percent of the total volume of said working gas remains within said cold chamber, and to complete said cycle a final stroke to transfer at least 70 percent of the total volume of said working gas from said cold chamber to said hot chamber during which stroke the total volume of said working gas changes no more than 12 percent.

5,644,918
DYNAMICS FREE LOW EMISSIONS GAS TURBINE COMBUSTOR
Anil Gulati, Cincinnati, Ohio; Anthony John Dean, Scotia, N.Y.; David Graham Holmes, Schenectady, N.Y., and Eayre Bruce Voorhees, Sloansville, N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Nov. 14, 1994, Ser. No. 337,704
Int. Cl.[6] F02C *7/045*
U.S. Cl. 60—725 **12 Claims**

1. A gas turbine combustor comprising:

a casing having an upstream end and a downstream end;

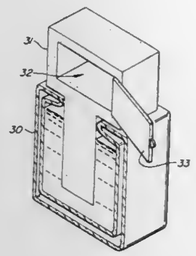


a liner disposed in said casing, said liner defining a combustion chamber;

a head end Helmholtz resonator defined by a first plate and second plate located in the upstream end of said casing, said first and second plates and said liner defining a first substantially closed cavity and at least one head end resonator tube connecting said first cavity and said combustion chamber; and

a side-mounted Helmholtz resonator defined by a sleeve located between said casing and said liner, said sleeve and said casing defining a second substantially closed cavity and at least one side-mounted resonator tribe connecting said second cavity and said combustion chamber.

5,644,919
CRYOGENIC COLD STORAGE DEVICE
Anna L. Baker, and Darryl F. Garrigus, both of Seattle, Wash., assignors to The Boeing Company, Seattle, Wash.
Division of Ser. No. 404,015, Mar. 13, 1995, which is a division of Ser. No. 124,419, Jul. 28, 1993, Pat. No. 5,441,682, which is a continuation of Ser. No. 527,600, May 23, 1990, abandoned, which is a continuation-in-part of Ser. No. 381,498, Jul. 18, 1989, abandoned, which is a continuation-in-part of Ser. No. 698,496, Feb. 5, 1985, Pat. No. 5,041,321, which is a continuation-in-part of Ser. No. 667,508, Nov. 1, 1984, abandoned. This application Jun. 5, 1995, Ser. No. 465,280
Int. Cl.[6] F17C *1/00*
U.S. Cl. 62—45.1 **4 Claims**



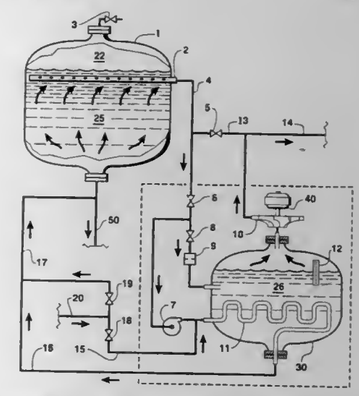
1. A refrigerator for the cold storage of samples, comprising:

(a) a compartment having a body defining a storage cavity with an opening on one face and having an integral stopper attached to the body;

(b) a cryogenic dewar including a throat sized to receive the stopper; and

(c) at least one door attached to the body and movable between an open position permitting access to the cavity and a closed position, wherein the stopper is adapted for wicking cryogenic liquid from the dewar to the body to cool the cavity.

5,644,920
LIQUID PROPELLANT DENSIFICATION
Tibor I. Lak, Huntington; Steve P. Petrilla, Irvine, and Martin E. Lozano, Whittier, all of Calif., assignors to Rockwell International Corporation, Seal Beach, Calif.
Filed Sep. 25, 1995, Ser. No. 533,423
Int. Cl.[6] F11C *5/02*
U.S. Cl. 62—47.1 **11 Claims**



1. Apparatus for liquid densification in a vehicle liquid propellant tank comprising:

a vehicle tank for containing a liquid propellant,

a recirculation manifold in the vehicle tank for removing liquid propellant from the vehicle tank,

a heat exchanger tank for holding a liquid coolant,

a heat exchanger in the heat exchanger tank, for immersion in the liquid coolant,

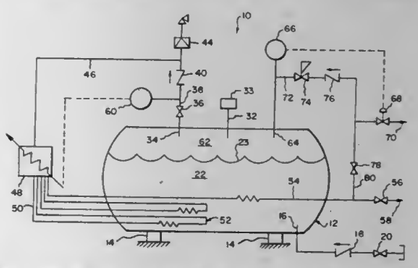
a recirculation line connecting the recirculation manifold in the vehicle tank to the heat exchanger for transporting liquid propellant to the heat exchanger for being cooled,

a return line connecting the heat exchanger to the vehicle tank, for transporting cooled liquid propellant to the vehicle tank and lowering the temperature of the propellant therein,

a compressor attached to the heat exchanger tank for lowering the liquid coolant vapor pressure and temperature, thereby cooling the liquid propellant in the heat exchanger.

5,644,921
ULTRA HIGH PURITY DELIVERY SYSTEM FOR LIQUEFIED COMPRESSED GASES
Naser Mahmud Chowdhury, Orefield, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.
Filed May 22, 1996, Ser. No. 651,311
Int. Cl.[6] F17C *9/02*
U.S. Cl. 62—48.1 **14 Claims**

1. A method for delivering a gaseous product of ultra high purity



from a storage tank containing an inventory of non-cryogenic

liquid product with a gaseous vapor space above said liquid product, comprising the steps of:

withdrawing said gaseous product from said gaseous vapor space in said storage tank;

heating using a source of heat in excess of ambient heat and passing said withdrawn gaseous product in heat exchange relationship with said inventory of liquid product;

continuing to withdraw said gaseous product from said tank and heating and heat exchanging said withdrawn gaseous product with said liquid product as necessary to vaporize said liquid product in said storage tank to maintain pressure of said gaseous product inside said tank; and

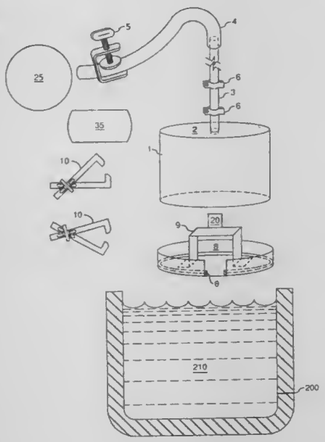
withdrawing and venting gaseous product during periods when no demand for said gaseous product is placed on said storage tank in order to maintain pressure of said gaseous product in said vapor space of said tank.

5,644,922

CYLINDRICAL CHAMBER FOR THE RAPID COOLING AND WARMING OF SAMPLES BETWEEN ROOM AND CRYOGENIC TEMPERATURES IN A DRY GAS ATMOSPHERE

Derek S. Linden, Hanscom AFB, and Daniel E. Godin, Saugus, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 30, 1995, Ser. No. 521,206
Int. Cl.[6] F25B *19/00*
U.S. Cl. 62—51.1 **7 Claims**



1. A cryogenic temperature adjustment system which can adjust a temperature of an object of interest to near cryogenic temperatures in a moisture-free environment, said cryogenic temperature adjustment system comprising:

a non-airtight chamber which holds the object of interest in an enclosed internal atmosphere of moisture-free gas;

a container of a cryogenic liquid which contains said non-airtight container and which can lower the temperature of the object of interest when the chamber is placed at least partially within the container;

a means of supplying the chamber with said moisture-free gas;

a means for providing ingress of a cryogenic liquid into the container when it vaporizes off due to heat exchange with the object of interest; and

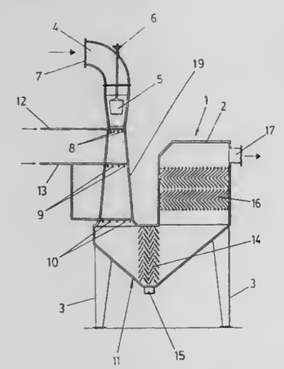
a means for placing the non-airtight chamber within the container.

5,644,923

SYSTEM FOR FILTERING RESIDUAL CONTAMINANT PARTICLES FOR SMOKE AND GAS THROUGH ATOMIZED ULTRAFREEZING

Eusebio Moro-Franco, Partida Sol del Horta, s/n° , 12110 Alcora (Castellón), Spain

PCT No. PCT/ES95/00006, § 371 Date Dec. 18, 1995, § 102(e) Date Dec. 18, 1995, PCT Pub. No. WO95/18666, PCT Pub. Date Jul. 13, 1995
PCT Filed Jan. 10, 1995, Ser. No. 522,253
Claims priority, application Spain, Jan. 11, 1994, 9400043
Int. Cl.[6] B01D *8/00;47/10*
U.S. Cl. 62—55.5 **8 Claims**



1. A system for filtering residual contaminant particles from a gas stream through atomized ultrafreezing comprising:

a housing having an inlet mouth and an outlet mouth; and

a separator means, disposed in said housing, including:

a fluid temperature regulating element disposed within said inlet mouth;

a venturi-type valve having a fluid speed regulator disposed downstream of said temperature regulating element;

a down pipe disposed downstream of said venturi-type valve;

at least one atomized water injector at the inlet of said down pipe which is capable of spraying the gas stream exiting said venturi-type valve with water;

at least one liquid nitrogen shower element disposed in said down pipe downstream of said water injector which is capable of freezing the water, wherein water containing contaminant particles is capable of solidifying into hail and precipitating;

a decanter connected to the outlet of said down pipe having:

a first separator for removing the hail from the gas stream;

a discharge valve at the bottom of said decanter for discharging the hail from the separator means; and

a second separator disposed downstream of said first separator and upstream of

said outlet mouth for removing the hail from the gas stream; and

means for separating the contaminant from the hail by ultrasound, said means being disposed at the bottom of said decanter.

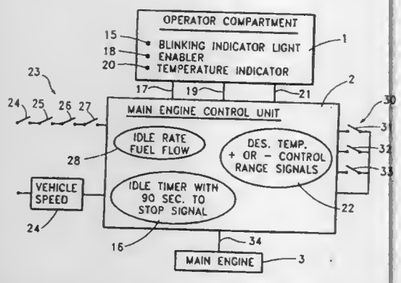
5,644,924

VEHICLE ENGINE CONTROL FOR OPERATOR COMPARTMENT TEMPERATURE MAINTENANCE

Douglas E. Carr, Chillicothe, and Thomas R. Sandborg, Mapleton, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Nov. 15, 1995, Ser. No. 559,782
Int. Cl.[6] B60H *1/32*
U.S. Cl. 62—133 **14 Claims**

1. Apparatus for control of the combination, of an operator compartment, a main engine control unit and a main engine, of a



vehicle, for service by said main engine as an energy supply in maintaining a comfortable temperature in said operator compartment of said vehicle comprising in combination:

enablement means for said apparatus, located in said operator compartment and adapted for communication with said main engine control unit, said enablement means including,

a multi criteria enablement acceptance indicator, and,

an operator actuated enabler,

means monitoring the temperature in said operator compartment and delivering signals from said monitoring of the temperature of said operator compartment to said main engine control unit,

disconnect means located in said operator compartment and adapted for an operator to disconnect said apparatus,

signal processing means located in said engine control unit,

said signal processing means being responsive to signals indicating, absence of vehicle motion, and,

main engine operation condition signals measured at and communicated from said main engine, and,

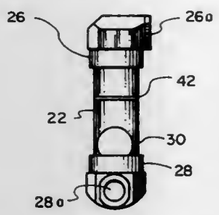
said signal processing means, responsive to signals from said means monitoring the temperature in said operator compartment, being adapted to provide signals representative of a designed temperature within a plus or minus control range, with high and low temperature signals being at the extremes of said control range being adapted to produce start and stop signals and communicated to said main engine.

5,644,925

AIR CONDITIONING SYSTEM CONDENSING TRAP

Manuel J. Chaves, 276 Manning St., Hudson, Mass. 01749-1037

Filed Jul. 2, 1996, Ser. No. 674,765
Int. Cl.[6] F25D *21/14*
U.S. Cl. 62—289 **11 Claims**



1. A condensate trap for an air conditioning system comprising:

a chamber having an upstream port for coupling to the air conditioning system and a downstream port open to external atmosphere;

a sealing device disposed in the chamber;

a lower seat member positioned in the chamber, the sealing device, contacting the seat member to prevent air from the air conditioning system from exiting to the external atmosphere; and

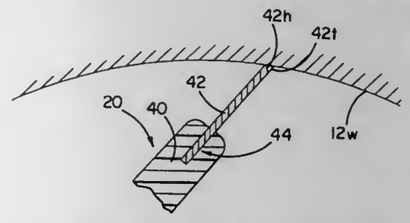
an upper seat member, disposed in the chamber between the sealing device and the upstream port, the sealing device, in response to a negative pressure at the upstream port, contacting the upper seat member and forming a seal which prevents ingress of air from the external atmosphere into the air conditioning system.

5,644,926

TWO-PIECE SCRAPING BLADE CONSTRUCTION

John E. Kress, Waterloo, Wis., assignor to APV Crepaco, Inc., Rosemont, Ill.

Continuation-in-part of Ser. No. 396,553, Mar. 1, 1995, and a continuation-in-part of Ser. No. 495,331, Jun. 27, 1995. This application Oct. 3, 1995, Ser. No. 538,364
Int. Cl.[6] A23G *9/16*
U.S. Cl. 62—342 **14 Claims**



14. A two-piece blade for use in a scraped surface heat exchanger including a heat exchange surface and an agitator in spaced relation to the heat exchange surface, the blade comprising:

a plastic frame piece including a body portion connected to the agitator and a side edge proximate the heat exchange surface including a receiving slot; and

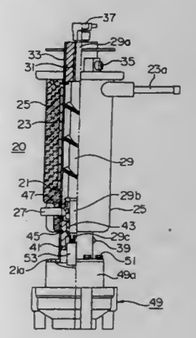
a metal edge having a first portion received within the slot of the plastic frame piece and an outer heel in scraping engagement with the heat exchange surface, the outer heel portion being of reduced cross section such that it is substantially self-sharpening when the agitator is rotated.

5,644,927

AUGER-TYPE ICE MAKING MACHINE

Susumu Tatematsu, Nagoya; Yasumitsu Tsukiyama, Toyoake; Noboru Watanabe, Nagoya, and Hideyuki Ikari, Kariya, all of Japan, assignors to Hoshizaki Denki Kabushiki Kaisha, Toyoaki, Japan

Filed Mar. 22, 1995, Ser. No. 408,490
Claims priority, application Japan, Mar. 23, 1994, 6-052183
Int. Cl.[6] F25C *1/14*
U.S. Cl. 62—354 **10 Claims**



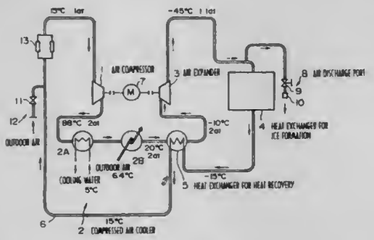
1. An auger-type ice making machine comprising:
a vertically extending ice making barrel;
an auger disposed coaxially in said ice making barrel;
an upper bearing and a lower bearing provided in an upper section and a lower section, respectively, of said ice making barrel and supporting said auger rotatably within said ice making barrel;
a drive unit connected to a bottom end section of said auger for rotating said auger;
a casing covering said drive unit; and
a connecting flange extending radially outwardly from a bottom end of said ice making barrel, said connecting flange being formed integrally with said ice making barrel by friction welding therebetween, said connecting flange being tightened onto a top surface of said casing by bolts.

5,644,928

AIR REFRIGERANT ICE FORMING EQUIPMENT

Motohisa Uda; Isao Nikai, both of Yokohama, and Junji Matsuda, Narashino, all of Japan, assignors to Kajima Corporation, Tokyo, Japan

Continuation of Ser. No. 428,128, Apr. 28, 1995, abandoned. This application Oct. 3, 1996, Ser. No. 724,872
Claims priority, application Japan, Oct. 30, 1992, 4-314372
Int. Cl.[6] F25B *9/00*
U.S. Cl. 62—402 **9 Claims**



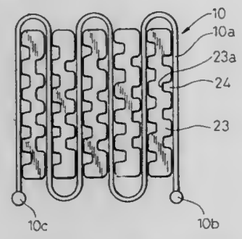
7. An air refrigerant ice forming equipment having formed therein a refrigeration cycle using air as a working medium, said refrigeration cycle comprising a passage for air circulation incorporating an air compressor, a compressed air cooler for cooling the air compressed by the compressor with heat transfer media outside the refrigeration cycle, an air expander for expanding the air which has passed through the cooler to provide cold air and a heat exchanger for ice formation using the cold air which has passed the air expander disposed in the indicated order along the flow of air, said passage for air circulation including a return passage for returning the air which has passed through said heat exchanger for ice formation to said air compressor characterized in
that said equipment further comprising a heat exchanger for heat recovery wherein the air before entering the air expander is heat exchanged with the air which has passed through the heat exchanger for ice formation before the latter air is returned to the air compressor, .
that said air expander has a rotor caused to rotate by the action of air flowing through said passage for air circulation, a rotating shaft of said rotor being coupled via a one-way clutch to a rotating shaft of a power means for driving said air compressor and
that the air circulated through the passage for air circulation is dry substantially free from moisture and said equipment is further provided with an exit port for discharging a part of the dry and cold air outside the equipment after the dry and cold air has passed through said air expander either on its way to said heat exchanger for ice formation or while it is passing through said heat exchanger for ice formation and with an inlet port having an air dehumidifier in said return passage for introducing dry air into said passage for air circulation by inhaling atmospheric air.

5,644,929

HEAT REGENERATING TYPE COOLING APPARATUS

Hisashi Tanaka; Yuichi Shirota; Hikaru Sugi; Masami Konaka; Kazushi Yamamoto; Seiji Miwa, and Manabu Miyata, all of Kariya, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 15, 1995, Ser. No. 573,276
Claims priority, application Japan, Dec. 16, 1994, 6-313187; Dec. 16, 1994, 6-313621; Sep. 13, 1995, 7-235504
Int. Cl.[6] F25D *17/04*
U.S. Cl. 62—406 **61 Claims**



1. A heat regenerating type cooling apparatus for generating a current of cold air blown into an objective cooling area, including:
a pack-shaped member accommodating therein heat regenerating material;
a heat regenerator having a tube in which refrigerant is circulated, said pack-shaped member being in close contact with a surface of said tube of said heat regenerator so as to be cooled by said heat regenerator; and
air blowing means for generating a current of air to be cooled by said pack-shaped member and formed into said current of cold air discharged toward said objective cooling area;
wherein said pack-shaped member is provided with a surface having a recess formed therein, said recess and said surface of said tube of said heat regenerator defining an air path therebetween, and
wherein said air blowing means causes said current of air to flow through said air path to be cooled by said pack-shaped member before said current of air is blown into said objective cooling area as said current of cold air.

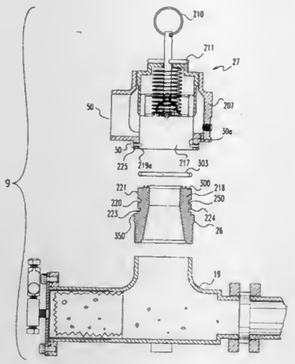
5,644,930

MECHANICAL PRESSURE RELIEF VALVE HAVING A VARIABLE POSITION OUTLET

Luther D. Albertson, 3934 Carver St., New Albany, Ind. 47150; Walter R. Key, 6362 Minlo Dr., Indianapolis, Ind. 46227, and Mark B. Key, 526A Paradise Way West, Greenwood, Ind. 46143

Continuation-in-part of Ser. No. 288,814, Aug. 11, 1994, Pat. No. 5,577,389. This application Mar. 31, 1995, Ser. No. 414,292
Int. Cl.[6] F25B *43/04;* **F16L** *17/00*
U.S. Cl. 62—475 **22 Claims**

1. In combination:
a mechanical refrigeration system;
a rupture disk connected to the mechanical refrigeration system; and
a pressure relief system connected to said rupture disk, comprising:
a valve body, said valve body having an inlet and an outlet;
a conduit being positioned within said inlet;
a first fluid tight seal between said inlet and said conduit for preventing the leakage of fluid therebetween;
said valve body rotatable relative said conduit without substantially diminishing the first fluid tight seal between said inlet and said conduit;
a circumferential locking channel on one of said inlet and said conduit; and



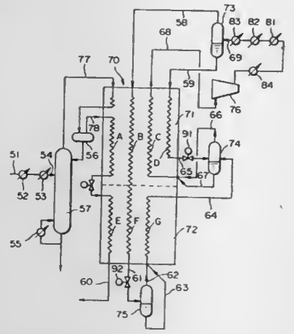
at least one fastener engageable between said circumferential locking channel and the other of said inlet and said conduit for preventing movement between said valve body and said conduit.

5,644,931

GAS LIQUEFYING METHOD AND HEAT EXCHANGER USED IN GAS LIQUEFYING METHOD

Koichi Ueno, and Kenichiro Mitsuhashi, both of Takasago, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Dec. 8, 1995, Ser. No. 569,901
Claims priority, application Japan, Dec. 9, 1994, 6-331942; Dec. 9, 1994, 6-331943
Int. Cl.[6] F25J *3/00*
U.S. Cl. 62—612 **9 Claims**



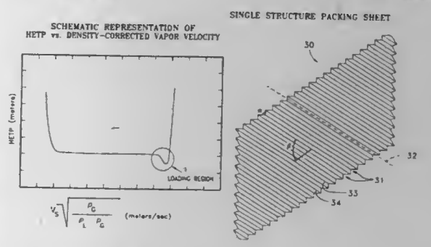
1. A gas liquefying method which is carried out by a plate-fin type heat exchanger having a high temperature region having at least four kinds of flow passages at the upper side and a low temperature region having at least three kinds of flow passages at the lower side mounted in such a way that one preferable plate surface may be stood upright comprising the steps of:
separating the high pressure multi-component refrigerant partially condensed through a heat exchanging with the single component refrigerant into the high pressure vapour flow and the high pressure condensed liquid flow;
gas and liquid separating the high pressure vapour flow of the multi-component refrigerant liquefied and extracted from the lower part of the low temperature region into the vapour part and the liquid part got through expansion, mixing the separated vapour part with the liquid part to obtain the second low pressure multi-component refrigerant flow;
mixing the second low pressure multi-component refrigerant flow extracted from the upper part of said low temperature region with the flow got through expansion of the high pressure condensed liquid flow of the multi-component refrigerant after passing through the high temperature region so as to separate gas and liquid, mixing the separated vapour part and liquid part to each other to get the first low pressure multi-component refrigerant flow;
compressing the first low pressure multi-component refrigerant flow extracted as vapour from the upper part of said high temperature region so as to get said partial condensed high pressure multi-component refrigerant;
feeding each of the gas flow, the high pressure vapour flow of the multi-component refrigerant and the high pressure condensed liquid flow of the multi-component refrigerant from the upper parts of three kinds of flow passages in the flow passages in said high temperature region, feeding the first low pressure multi-component refrigerant flow from the lower part of one kind of flow passage in the passages of said high temperature region, heat exchanging the gas flow, the high pressure vapour flow of the multi-component refrigerant and the high pressure condensed liquid flow of the multi-component refrigerant with the first low pressure multi-component refrigerant flow so as to cool them;
feeding each of the gas flow cooled at said high temperature region and the high pressure vapour flow of the multi-component refrigerant from each of the two kinds of flow passages in the flow passages of said low temperature region, feeding the second low pressure multi-component refrigerant flow from the lower part of one kind of flow passage in the flow passages of the low temperature region, and heat exchanging the gas flow and the high pressure vapour flow of the multi-component refrigerant with the second low pressure multi-component refrigerant flow so as to perform a further cooling operation; and
extracting the liquefied gas flow from the lower part of said low temperature region and recovering it.

5,644,932

USE OF STRUCTURED PACKING IN A MULTI-SECTIONED AIR SEPERATION UNIT

Brian Roy Dunbobbin, Fogelsville; Douglas Leslie Bennett, Allentown, and Mark Robert Pillarella, Macungie, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

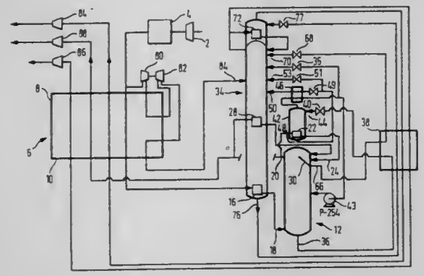
Filed May 21, 1996, Ser. No. 651,032
Int. Cl.[6] F25J *3/04*
U.S. Cl. 62—640 **14 Claims**



1. A process for the cryogenic separation of air to recover at least one of its constituent components, which is carried out in an air separation unit having at least one distillation column; wherein the distillation column has at least two mass transfer sections, wherein, in each mass transfer section, a flow of vapor and a flow of liquid are counter-currently contacted to accomplish mass transfer and the flow of vapor or liquid or vapor and liquid is different in one section as compared to the other section; wherein contact of

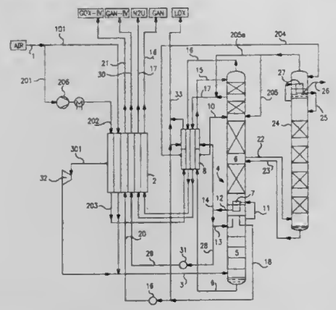
the flows of vapor and liquid in each mass transfer section is accomplished using a structured packing; wherein the structured packing comprises elements which are corrugated with substantially parallel corrugations, wherein the parallel corrugations have a longitudinal axis at an angle β relative to horizontal and wherein each corrugation when approximated to be a triangular cross-section has a crimp angle α defined by the two sides of the corrugation; characterized in that the structured packing used in each mass transfer section have different angles α and/or β selected such that each mass transfer section is operated in the loading region at which the dimensionless grouping S is in the range between substantially $3.0-10^{-6}$ and substantially 8.0×10^{-6}, where $S=T_s m/\sigma$, wherein T_s is the shear stress at the liquid-vapor interface ($kgm^{-1}s^{-2}$), m is the film thickness of liquid flowing over the element (m), and o is the surface tension of the liquid (kgs^{-2}).

5,644,933
AIR SEPARATION
Thomas Rathbone, Farnham, England, assignor to The BOC Group plc, Windlesham, England
Filed Jan. 3, 1996, Ser. No. 582,594
Claims priority, application United Kingdom, Jan. 5, 1995, 9500120
Int. Cl.[6] F25J *3/04*
U.S. Cl. 62—646 **10 Claims**



1. A method of separating air, comprising the steps of:
a) separating pre-cooled and purified air in a higher pressure rectifier into oxygen-enriched liquid and nitrogen vapour;
b) separating a stream of the oxygen-enriched liquid by rectification within a further rectifier at a pressure between the pressure at the top of the higher pressure rectifier and that at the bottom of a lower pressure rectifier so as to form a liquid further enriched in oxygen and an intermediate vapour, the liquid further enriched in oxygen being partially reboiled by indirect heat exchange with another stream of nitrogen from the higher pressure rectifier;
c) separating a stream of the further-enriched liquid in the lower pressure rectifier into oxygen and nitrogen;
d) providing liquid nitrogen reflux for the higher and lower pressure rectifiers; and
e) condensing a stream of the intermediate vapour and introducing at least a part of the resulting condensate into the lower pressure rectifier;
f) a part of the liquid nitrogen reflux being formed by condensing a stream of said nitrogen vapour by indirect heat exchange with liquid from an intermediate mass transfer region of the lower pressure rectifier;
g) another part of said liquid nitrogen reflux being formed by vaporising impure oxygen product of the lower pressure rectifier in indirect heat exchange with vaporous nitrogen product of the lower pressure rectifier.

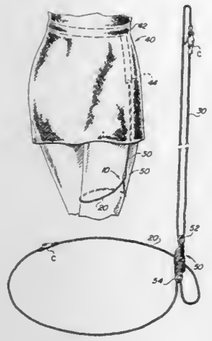
5,644,934
PROCESS AND DEVICE FOR LOW-TEMPERATURE SEPARATION OF AIR
Gerhard Pompl, Munich, Germany, assignor to Linde Aktiengesellchaft, Wiesbaden, Germany
Filed Dec. 4, 1995, Ser. No. 566,701
Claims priority, application Germany, Dec. 5, 1994, 44 43 190.2
Int. Cl.[6] F25J *3/04*
U.S. Cl. 62—647 **26 Claims**



1. A process for low-temperature separation of air comprising:
cooling a first stream of compressed and purified air, feeding said first stream to a main rectification system comprising at least one rectification column, wherein said first stream is separated into liquid oxygen and gaseous nitrogen;
vaporizing a liquid product fraction in a first condenser-vaporizer by indirect heat exchange with a second stream of compressed and purified air;
at least partially condensing said second stream by indirect heat exchange in said first condenser-vaporizer;
feeding an argon-containing oxygen fraction removed from said main rectification system to a crude argon column and separating said argon-containing oxygen fraction into a vaporous crude argon stream and an oxygen-rich residual liquid:
liquefying said vaporous crude argon of said crude argon column by indirect heat exchange in a second condenser-vaporizer with said second stream downstream of said first condenser-vaporizer, whereby at least a portion of said second stream is vaporized;
wherein all, or essentially all, of the refrigeration needed for liquefaction of crude argon is produced by vaporization of said second stream.

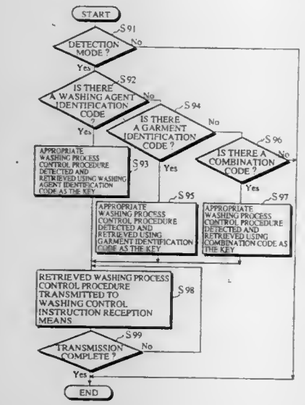
5,644,935
DECORATIVE THIGH CIRCLET
Gregory Thomas Jonovich, and Joyce Lillie Jonovich, both of 4310 N. 30th St., Phoenix, Ariz. 85016
Filed Dec. 8, 1994, Ser. No. 351,832
Int. Cl.[6] A44C *25/00*
U.S. Cl. 63—4 **17 Claims**

1. An Article of adornment adapted to be worn on the person, comprising:
a) an elongated flexible suspension means having an upper end and a lower end;
b) a flexible circlet having a length and a cross-section attached to said lower end of said suspension means and having a dimension large enough to allow said circlet to be draped loosely around a selected human body part:
c) a link means having a rigid opening larger than the cross-section of said circlet, for movably coupling said circlet and said suspension member;
d) said circlet having a substantially rounded cross-section that causes said circlet, in combination with said opening, to pivot around its longitudinal axis within said opening and to slide



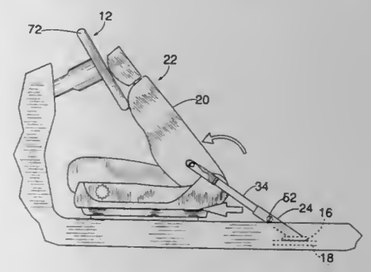
along its longitudinal axis within said opening responsively to motion of the human body part, without substantial deformation of said rigid opening.

5,644,936
WASHING CONTROL DEVICE AND WASHING CONTROL SYSTEM
Kouichi Yasutake, Kyoto; Syusuke Haruna, Itami; Yuki Kusumi, Kashiba; Takuya Sekiguchi, and Toshihiro Hishida, both of Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan
Filed Sep. 19, 1995, Ser. No. 529,987
Claims priority, application Japan, Sep. 30, 1994, 6-237975
Int. Cl.[6] D06F *33/02*
U.S. Cl. 68—12.02 **9 Claims**



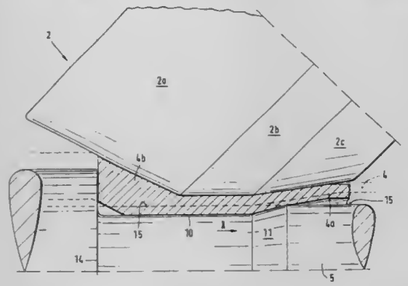
1. A washing control system for executing washing processes by automatically controlling each washing process according to an appropriate washing process control procedure, comprising:
a washing process control procedure display mark which is an encoded set of washing instructions fixed according to at least one of a washing agent and a garment to be washed, said display mark being displayed on one of a washing agent package, a garment to be washed and a booklet;
reading means for reading the washing process control procedure display mark and at least one of a washing agent identification code displayed as a mark and a garment identification code displayed as a mark;
storage means for storing read washing process control procedures;
retrieval means for retrieving an appropriate washing process control procedure out of the stored washing process control procedures;
interpretation means for interpreting information in a retrieved washing process control procedure; and
execution means for automatically controlling every washing process in accordance with the interpreted information in the washing process control procedure, wherein the washing process control procedure, the washing agent identification code and the garment identification code read by the reading means are each represented by a separate bar code, and the read washing process control procedure is a predetermined set of an execution order for each washing process, a number of executions for each washing process, an execution duration for each washing process and any other control information, for each separate washing case in accordance with one of a kind of washing agent, a kind of garment to be washed, and a combination of a kind of washing agent and a kind of garment to be washed.

5,644,937
VEHICLE THEFT PREVENTION DEVICE
Joseph Farino, 302-310 Broadway, Passaic, N.J. 07055
Filed Apr. 30, 1996, Ser. No. 640,150
Int. Cl.[6] A47C *31/00*; **E05B** *65/44*
U.S. Cl. 70—261 **25 Claims**



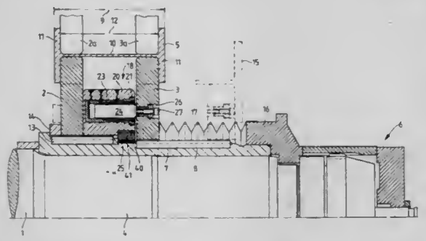
1. A theft prevention device used in combination with a vehicle seat and a vehicle frame portion said vehicle seat mounted to and moveable with respect to said vehicle frame portion, the vehicle seat including a seat member and a lumbar support member, comprising:
an extension member having a first end pivotally secured to the frame portion of the vehicle and a second end pivotally secured to the vehicle seat, the extension member being extendable between a first compact length and a second extended length; and
locking means coupled to the extension member for selectively locking the extension member at desired lengths;
wherein the extension member is adapted to be locked at desired lengths to lock the vehicle seat in a forward position to thereby prevent a thief from accessing the passenger compartment of the vehicle.

5,644,938
METHOD OF AND ROLL STAND FOR DIAGONAL ROLLING OF TUBES
Hermann Moeltner, St. Bernhard Strasse 41, 41516 Grevenbroich, and Karlhans Staat, Wagnerstrasse 25, 40882 Ratingen, both of Germany
Filed Aug. 11, 1995, Ser. No. 514,700
Claims priority, application Germany, Aug. 12, 1994, 44 28 530.2
Int. Cl.[6] B21B *25/00*
U.S. Cl. 72—96 **15 Claims**



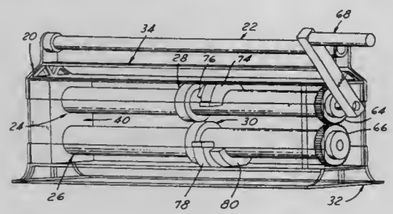
1. A method of diagonal rolling of medium and thin-walled tube ingot, comprising the steps of introducing into a tube ingot a mandrel rod; then introducing both the mandrel rod and the tube ingot into a caliber opening formed by rollers and axially displacing the mandrel rod and the tube ingot during rolling; rolling a rear end of the tube ingot as considered in a rolling direction in a rear constriction of the controllably axially displaceable mandrel rod so as to produce a thickened wall over a short length, retaining mandrel end always at an inlet side of said rollers; and pulling back the mandrel rod to the inlet side after the tube ingot end with the thickened wall passes through the caliber opening so as to thereby strip the tube ingot from the mandrel rod at an outlet side.

5,644,939
STRAIGHTENING MACHINE FOR ROLLED BEAMS
Markus Willems, Erkrath, Germany, assignor to SMS Schloemann-Siemag Aktiengesellschaft, Dusseldorf, /Germany
Filed Jan. 20, 1995, Ser. No. 375,906
Int. Cl.[6] B21D *3/04*
U.S. Cl. 72—164 **10 Claims**



1. A straightening machine for rolled beams, the beams having flanges, the flanges having insides facing each other, the straightening machine comprising a rotatable straightening shaft, two straightening disks mounted on the straightening shaft, wherein at least one of the two straightening disks is axially displaceable, further comprising a support ring mounted between the straightening disks, the support ring having a circumference, the support ring comprising a plurality of hydraulic cylinders arranged distributed over the circumference of the support ring, each hydraulic cylinder having an adjusting piston, wherein the adjusting pistons are connected to the axially displacable straightening disk.

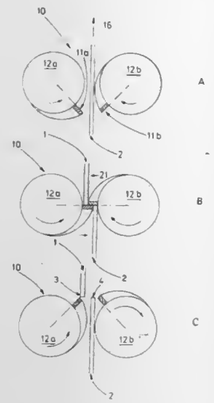
5,644,940
PORTABLE SHEET METAL WORK-ROLL APPARATUS
Arthur B. Chubb, Romulus; Douglas G. Break, Livonia; Douglas J. Chubb, Dearborn Heights, and James E. Suyak, Lincoln Park, all of Mich., assignors to Tapco International Corporation, Plymouth, Mich.
Filed Sep. 22, 1994, Ser. No. 310,431
Int. Cl.[6] B21B *31/02*
U.S. Cl. 72—197 **20 Claims**



1. A portable opposed rotary work-roll apparatus comprising:
first and second hollow rotary shafts each having a generally cylindrical peripheral surface and a central axis,
frame means having end frame means for supporting said shafts adjacent to axially opposite ends of said shafts for rotation about their respective axes oriented generally parallel with one another, and having laterally spaced first and second beam means extending between and interconnecting said end frame means and disposed in positions flanking said shafts, said first and second beam means being disposed respectively laterally outwardly adjacent to said first and second shafts,
drive means for imparting counterrotation to said shafts,
workpiece rolls mounted in mutually opposed cooperative relation on said shafts for performing a work operation on a sheet material workpiece fed therebetween by applying opposed forces on the workpiece via said rolls, and
opposed first and second support block means disposed in mutual shaft-flanking journalled engagement respectively along said first and second shafts axially between said end frame means and respectively nested between said first and second shafts and said first and second beam means.

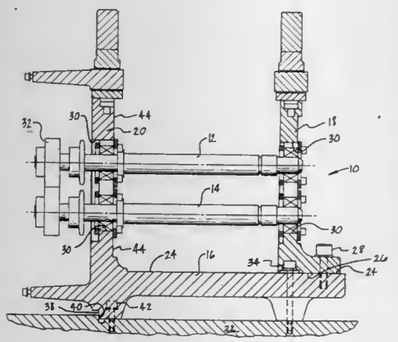
5,644,941
METHOD AND ARRANGEMENT FOR SEVERING AND CONTROLLED COOLING OF INDIVIDUAL RODS FROM A ROLLED SECTION
Rolf Stodt, Kaarst, and Hans Peter Drügh, Zülpich, both of Germany, assignors to SMS Schloemann-Siemag Aktiengesellschaft, Dusseldorf, Germany
Filed May 25, 1995, Ser. No. 450,973
Claims priority, application Germany, May 31, 1994, 44 18 917.6
Int. Cl.[6] B23D *25/12*
U.S. Cl. 72—201 **11 Claims**

1. A method for severing and controlled cooling of individual rods from a rolled section which emerges hot from rolling at final speed from a rolling line of a finishing train, the method comprising dividing the section into cut lengths as the section travels through rotation shears comprising knives which rotate on both sides of the section in a horizontal plane, wherein each cut length has an end and the section has a front end adjacent the end of the cut length, laterally displacing the end of the cut length relative to the front end of the section by means of cams as deflectors



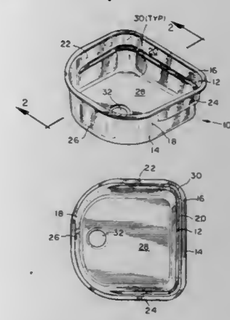
mounted at the knives of the rotation shears by a distance in the horizontal plane, wherein the distance is such that the front end of the section can travel past the end of the cut length, and conveying each cut length to a cooling unit.

5,644,942
ROLL STAND RAFT ASSEMBLY
Philip E. Bradbury, McPherson, Kans., assignor to The Bradbury Company, Inc., Moundridge, Kans.
Filed Oct. 14, 1994, Ser. No. 323,139
Int. Cl.[6] B21B *31/02*
U.S. Cl. 72—238 **6 Claims**



1. A removable raft assembly utilized in roll forming lines for supporting multiple spindle stations and their associated forming rolls comprising:
a combined horizontal raft plate and a first vertical stand formed together in an L-shaped single cast, the first vertical stand including bearing supports for multiple station spindles, the raft plate including machined bearing surfaces for attaching a second vertical stand; and
a plurality of second vertical stands having bearing supports for selected ones of said multiple spindles and having a machined bearing surface for attachment to said raft plate.

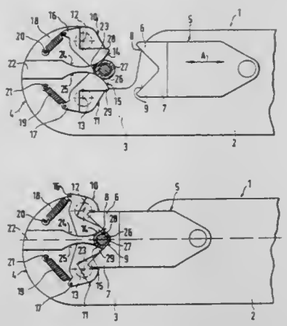
5,644,943
METHOD FOR FORMING A SEAMLESS STAINLESS STEEL SINK BOWL WITH A GRID LEDGE AND PRODUCT
Melchior Lanz, Sumiswald, Switzerland, assignor to Franke Inc., North Wales, Pa.
Filed Apr. 22, 1996, Ser. No. 635,850
Int. Cl.[6] B21D *22/00;22/21*
U.S. Cl. 72—348 **11 Claims**



1. A method for forming a seamless stainless steel sink bowl having a rim, a sidewall and a bottom surface interconnected by smooth corner surfaces from a single sheet, the sink bowl having a finished length, width and depth, the method comprising the steps of:
clamping a stainless steel blank having a thickness of at least approximately 1.2 mm to a surface of a first draw die;
drawing the blank between the first draw die and a first forming die to form a first drawn blank having an unfinished bowl with a length, width and depth which are less than the finished length, width and depth;
generating a deformation warmth in the blank at the corner surfaces in proximity to the rim as the first drawn blank is being formed to a temperature of between approximately 70° C. and 90° C.;
immediately removing the first drawn blank from the first draw die and the first forming die;
immediately clamping the first drawn blank to a surface of a finish draw die; and
finish drawing the first drawn blank, prior to loss of the deformation warmth, between the finish draw die and a finish forming die to form a finish drawn blank having a finished bowl with the finished length, width and depth, the finish drawing including tangentially expanding a non-continuous portion of the sidewall of the first drawn blank and forming the tangentially expanded non-continuous portion between a step in the finish draw die and a complementary shoulder in the finish forming die to form a non-continuous ledge at a medial position in the portion of the sidewall of the finished bowl.

5,644,944
PRESSING INSTRUMENT FOR PRESSING ON BUSHINGS, CABLE LUG PRESSES, OR SIMILAR ITEMS
Helmut Dischler, Dröste-Hülshoff-Str. 9, D-41464 Neuss, Germany
Continuation of Ser. No. 391,088, Feb. 21, 1995, abandoned, which is a continuation of Ser. No. 174,051, Dec. 28, 1993, abandoned. This application Dec. 11, 1995, Ser. No. 570,190
Claims priority, application Germany, Dec. 31, 1992, 92 17 886 U
Int. Cl.[6] H01R *43/048*
U.S. Cl. 72—400 **22 Claims**

1. Press device for pressing deformable elements onto a workpiece, comprising:



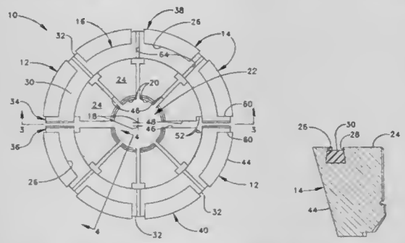
a) first and second tools between which there is a press area in which a workpiece is to be positioned;
b) one of said tools is reciprocally movable relative to the other of said tools;
c) said first tool includes a first pair of press cheeks pivotal between an open position and a final press position, each press cheek having a press surface, and said first pair of press surfaces converge and open toward the press area for engagement with the workpiece;
d) said second tool includes a second pair of press cheeks opposed diametrically to said first pair of press cheeks, each cheek of said second pair having a press surface, and said second pair of press surfaces converge and open toward the press area for engagement with the workpiece; and
e) a stationary cheek plate having a press surface, said cheek plate secured to said first tool and disposed between and cooperating with said first pair of press surfaces so that when said one tool approaches said other tool said first and second pair of press cheeks initially engage each other and thereafter said first pair of press cheeks pivot from said open position to said final press position while maintaining said first pair of press surfaces in convergence and reducing the size of the press area so that the converging surfaces impart to the deformable element a configuration corresponding to the configuration of the converging press surfaces.

5,644,945

CRIMPING DIE FOR USE IN A CRIMPING MACHINE

Arden E. Baldwin, Peoria, and Peter Kalman, Pekin, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Mar. 29, 1996, Ser. No. 625,617
Int. Cl.[6] B21D *39/04;41/04*
U.S. Cl. 72—402 **12 Claims**



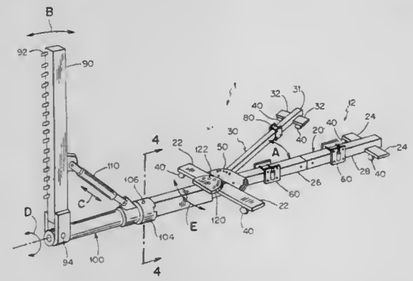
1. In a crimping die for use in a crimping machine for radially crimping the collar of a hose coupling onto the end of a hose, the improvement wherein said crimping die comprises:
a die assembly having a plurality of die segments and at least one unitary retention and separator band, said die segments being adapted for arrangement into a circular array about a central axis and with each of said die segments having a radially inner surface forming a section of a common collar bore about said central axis for receipt of said collar of the hose coupling;
each die segment including a top surface having an arcuate groove formed therein, said groove having a predetermined cross-sectional configuration with an open upper end that is provided with a lesser width than the width of at least a portion of the groove below said upper end; and
said unitary retention and separator band being constructed of an elastomeric material and having a like plurality of die segment retaining portions and a plurality of spacer portions, each retaining portion having a cross-sectional configuration that mates with and is adapted for receipt into the groove of a respective one of said segments for retaining said segments together, and said spacer portions being spaced along said band for disposition between adjacent ones of said die segments and having a length to space said segments a predetermined distance apart when said die assembly is in a free state.

5,644,946

VEHICLE REPAIRING DEVICES

Bradley R. Weschler, South Huntington, N.Y., assignor to Quick-Stick Inc., Hauppauge, N.Y.

Continuation-in-part of Ser. No. 401,764, Mar. 10, 1995, abandoned, and a continuation-in-part of Ser. No. 401,765, Mar. 10, 1995, abandoned. This application Mar. 22, 1996, Ser. No. 620,989
Int. Cl.[6] B21D *1/12*
U.S. Cl. 72—457 **19 Claims**



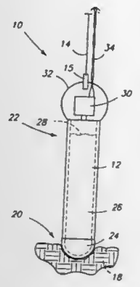
1. A device for straightening damaged unibodies of vehicles comprising:
a first elongated member which is selectively positionable under a damaged unibody of a vehicle while three wheels of the vehicle rest on the ground;
a second elongated member selectively attachable to said first elongated member at an angle of less than 90 degrees;
two clamps slidably mounted on said first elongated member for attaching said first elongated member to pinch welds of said damaged unibody;
a clamp slidably mounted on said second elongated member for attaching said second elongated member to a pinch weld of said damaged unibody; and
means for applying a pulling force mounted on said first elongated member.

5,644,947

TENSIOMETER AND METHOD OF DETERMINING SOIL MOISTURE POTENTIAL IN BELOW-GRADE EARTHEN SOIL

Joel M. Hubbell, and James B. Sisson, both of Idaho Falls, Id., assignors to Lockheed Idaho Technologies Company, Idaho Falls, Id.

Filed Jan. 19, 1995, Ser. No. 376,165
Int. Cl.[6] G01N *7/10*
U.S. Cl. 73—73 **4 Claims**



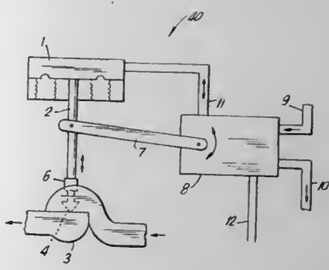
1. A portable tensiometer to in situ determine below-grade soil moisture potential of earthen soil within a bore hole comprising:
a body having opposite first and second ends and being adapted for complete insertion into earthen soil below grade;
a porous material provided at the first body end, the porous material at least in part defining a fluid chamber within the body at the first body end, the fluid chamber being fluidically sealed within the body but for the porous material;
a degassed liquid received within the fluid chamber;
a pressure transducer mounted in fluid communication with the fluid chamber and on the body;
the body, pressure transducer and degassed liquid having a combined mass of about 1 to about 5 pounds;
a suspension means connected to the body adjacent the second body end, the suspension means being of sufficient strength to gravitationally freely self suspend the combined mass and to lower said combined mass down the bore hole such that the porous material contacts the earthen soil within the bore hole; and
the combined mass being sufficient to effectively impart hydraulic communication between below-grade earthen soil contacted by the porous material under the weight of the combined mass, the combined mass producing a force contact between the porous material and the soil of about 0.1 to about 10 pounds per square inch of surface area of the porous material.

5,644,948

CONTROL VALVE WITH A DRIVE OPERATED BY A PRESSURE MEDIUM AND A POSITION CONTROLLER

Thomas Karte, Lemgo; Heiko Kresse, Insernhagen; Alexander Kleist, and Wolfgang Backe, both of Aachen, all of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Germany

Filed Jun. 2, 1995, Ser. No. 459,492
Claims priority, application Germany, Jun. 2, 1994, 44 20 393.4; Dec. 7, 1994, 44 45 058.3
Int. Cl.[6] G01N *19/02*
U.S. Cl. 73—168 **5 Claims**



1. In a control valve including a valve housing; a drive operated by a pressure medium; a position controller controlling operation of the drive through application of the pressure medium upon application of a control current to the position controller; a spindle extending from the drive and into the valve housing; a distance indicator coupled between the spindle and the position controller; a valve element positioned on an end of the spindle within the valve housing; and means for sealing the valve housing, the spindle extending into the valve housing through the sealing means and controlled to move into and out of the valve housing by the drive against a frictional force exerted by the sealing means; said position controller comprising:
means for sensing both application of the control current to said position controller and movement of said distance indicator, for measuring a first interval between a first application of the control current to said position controller and an initial movement of said distance indicator, for measuring a second interval between a second application of said control current to said position controller and a stop in movement of said distance indicator, and for determining a third interval defined by a difference between said first interval and said second interval;
means for receiving a signal representative of said third interval from said sensing means and for determining a first coefficient of friction value for the sealing means from said signal representing said third interval; and
means for receiving said first coefficient of friction value from said determining means and for monitoring the frictional force exerted by the sealing means based upon said first coefficient of friction value.

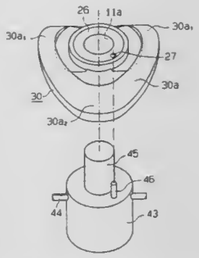
5,644,949

COMPRESSOR CAM AND METHOD FOR MANUFACTURING THE SAME

Kazuo Murakami; Kazuo Awamura, and Shinya Saito, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Continuation-in-part of Ser. No. 539,128, Oct. 4, 1995, Pat. No. 5,542,340, and a continuation-in-part of Ser. No. 539,228, Oct. 4, 1995, which is a continuation-in-part of Ser. No. 538,238, Oct. 3, 1995, which is a continuation-in-part of Ser. No. 475,043, Jun. 7, 1995, Pat. No. 5,601,416, which is a continuation-in-part of Ser. No. 363,609, Dec. 23, 1994, which is a continuation-in-part of Ser. No. 254,970, Jun. 7, 1994, abandoned. This application Jan. 3, 1996, Ser. No. 582,540
Claims priority, application Japan, Jan. 9, 1995, 7-001299
Int. Cl.[6] F16H *25/12;53/00;* **F01B** *3/00*
U.S. Cl. 74—56 **15 Claims**

1. A compressor cam having front and rear cam surfaces, said cam comprising:
a positioner formed on the cam for positioning the cam with respect to a jig used for grinding the cam surfaces;
wherein said cam surface is adapted to be formed by grinding the front and rear surfaces into a convex shape while being positioned on the jig with the positioner, the front cam surface and the rear cam surface each having an identical shape, the phases of which are offset by a predetermined angle with respect to one another, and wherein said positioner is located



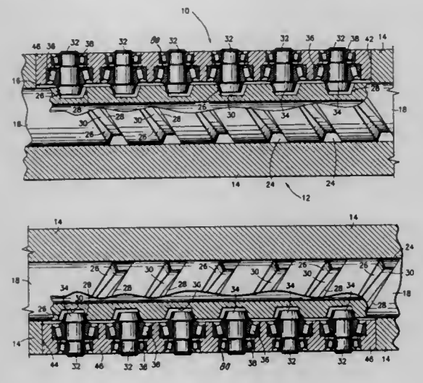
at a position that is the same with respect to the shape of the front surface as it is with respect to the shape of the rear surface.

5,644,950

HEAVY-DUTY MECHANICAL OSCILLATOR

John D. Parsons, Bethel, Conn., assignor to Norco, Inc., Georgetown, Conn.

Filed Nov. 17, 1995, Ser. No. 560,375
Int. Cl.[6] F16C *19/54;* **F16H** *25/12*
U.S. Cl. 74—57 **10 Claims**



1. A heavy-duty mechanical oscillator comprising, in combination:

a) a shaft having a pair of axially-spaced endless cam grooves in its periphery, said grooves being identical but circumferentially oriented 180 degrees apart,

b) a nut body carried by and slidable along the peripheral portion of said shaft,

c) a pair of axially-spaced roller pins carried by said nut body and circumferentially oriented 180 degrees apart, said roller pins having nose portions respectively extending into and engaging walls of said endless grooves and having tail portions disposed deeply in the nut body,

d) said nose portions being conical whereby the roller pins are subjected to loading comprised of both radial and axial components,

e) two sets of paired anti-friction roller bearings carried by the nut body, each pair of bearings respectively carrying one roller pin,

f) said pairs of anti-friction bearings each comprising a primary tapered roller bearing disposed adjacent the nose portion of its respective roller pin and oriented to counter high radial forces and lesser axial forces experienced by said nose portion and with respect to the roller pin axis, and a secondary tapered roller bearing located adjacent the said primary bearing and engaged with a tail portion of the roller pin,

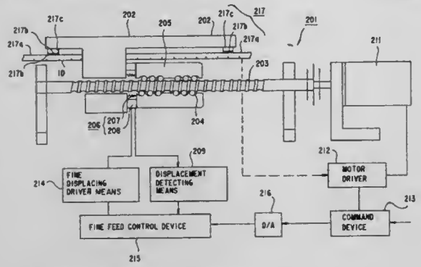
g) said secondary roller bearing being oriented to mainly counter radial forces experienced by the nose portion of its respective roller pin and with respect to the roller pin axis.

5,644,951

FEED SCREW APPARATUS AND PRECISE POSITIONING AND FINE FEED SYSTEM

Yotaro Hatamura, 12-11, Kobinata 2-chome, Bunkyo-ku, Tokyo, 112, Japan

PCT No. PCT/JP92/01490, § 371 Date Dec. 28, 1994, § 102(e) Date Dec. 28, 1994, PCT Pub. No. WO93/09911, PCT Pub. Date May 27, 1993
PCT Filed Nov. 13, 1992, Ser. No. 87,699
Claims priority, application Japan, Nov. 15, 1991, 3-327017; Nov. 18, 1991, 3-328335; Nov. 20, 1991, 3-332571
Int. Cl.[6] F16H *25/22*
U.S. Cl. 74—89.15 **41 Claims**



1. A feed screw apparatus, comprising:

a fixed member;

a feed screw shaft supported by the fixed member and being rotatable;

a nut mounted to the feed screw shaft;

a movable member attached to the nut, wherein a force is transferred to the movable member from the fixed member through the feed screw shaft and the nut;

an elastic member elastically deformable in an axial direction provided at a portion through which the force is transferred; and

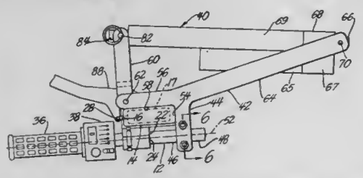
a force detecting means for detecting the force through detection of an amount of elastic deformation of the elastic member.

5,644,952

MODIFIED VEHICLE BRAKE ACTUATOR

Paul A. Petrovich, Fowlerville; Jack G. Rodgers, Roseville, and John J. Schmitz, St. Clair Shores, all of Mich., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 29, 1996, Ser. No. 605,304
Int. Cl.[6] G05G *11/00*
U.S. Cl. 74—480 R **12 Claims**



1. A vehicle braking mechanism adapted for both manual and remote control, comprising:

a base;

means for releasably fixing the base to the vehicle;

a brake cylinder;

a lever swingable on the base about a lever axis;

means to connect the lever to the cylinder, the cylinder biassing the lever away from a brake applying direction;

a link having a pivotal connection to the base and a hinge connection point remote from the pivotal connection;

a carrier of the link connected thereto, the carrier closer to the pivotal connection than to the hinge connection point, the carrier sliding on the lever as the link swings on the base;

a frame;

a first frame member of the frame connected to the base;

a second frame member of the frame fixed relative to the first frame member;

a motor unit;

hinged connections attaching the motor unit between the hinge connection point and the second frame member;

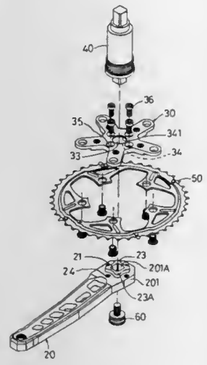
an extensor translatable relative to the motor unit, translation of the extensor swinging the link on the base.

5,644,953

CRANK ASSEMBLY FOR A BICYCLE

Tony Leng, Nan-Tou City, Taiwan, assignor to Cyclone Precision, Inc., Taiwan

Filed Sep. 12, 1995, Ser. No. 527,340
Int. Cl.[6] G05G *1/14*
U.S. Cl. 74—594.2 **1 Claim**



1. A crank assembly for a bicycle, the bicycle including a fixed rotating shaft of a rectangular cross-section and a sprocket mounted on said shaft, the crank assembly including a drive plate adapted to be fixed to the sprocket so as to achieve synchronous rotation of said drive plate and the sprocket, and an elongated crank arm which has an end portion connected securely to the drive plate, wherein the improvement comprises:

the elongated crank arm and the drive plate being separately formed, the drive plate having an internal peripheral wall the defines a shaft hole of a predetermined shape therein, an inward flange projecting from the inner peripheral wall into said shaft hole in such a manner that the shaft of said sprocket extends through said shaft hole of said drive plate, and several angularly equidistant through-holes formed through the drive plate around said shaft hole; and

the crank arm having a fastener hole formed therethrough, an annular flange portion which projects horizontally from a side surface of an end portion thereof and which has a vertical abutting face that abuts on said inward flange of said drive plate, and a rectangular receiving space formed through said flange portion so as to form a portion of said fastener hold and so as to receive the shaft of the sprocket therein, said annular flange portion having the predetermined shape so as to be fitted within said shaft hole of said drive plate, said fastener hole of said crank arm further having an outer section which has a cross-section with a shape different from that of said rectangular receiving space, said crank arm further having several threaded holes formed in a surface of the end portion thereof around the flange portion; and

several locking bolts extending through the through-holes of the drive plate to engage threadably within the threaded holes of the crank arm, thereby fastening together the drive plate and the crank arm;

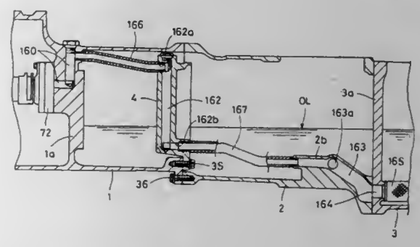
whereby, the rotating shaft of the sprocket can extend into said rectangular receiving space of said inward flange portion of said crank arm through said shaft hole of said drive plate so as to engage threadably a threaded fastener which is received within the outer section of said fastener hole of said crank arm, thereby securing said crank assembly to the sprocket in such a manner that said crank assembly can rotate synchronously with the sprocket.

5,644,954

TRANSMISSION ASSEMBLY FOR TRACTORS

Mizuya Matsufuji, Sanda, Japan, assignor to Kanzaki Kokyukoki Mfg. Co., Ltd., Amagasaki, Japan

Filed Oct. 10, 1995, Ser. No. 541,480
Claims priority, application Japan, Nov. 11, 1994, 6-302794
Int. Cl.[6] B60K *17/06*
U.S. Cl. 74—606 R **5 Claims**



1. A transmission assembly for tractors which comprises: a front housing (**1**) including an internal partition wall (**1***a*) and an open rear end; a transmission casing (**2**) including an open front end and being fastened to the rear end of said front housing; a fluid-operated first speed change mechanism (**12**) disposed within said front housing at a location behind said partition wall; a second speed change mechanism (**15**) disposed within said transmission casing; and a bearing support frame (**4**) fixedly disposed within a rear end portion of said front housing for supporting said first speed change mechanism at a rear side of the said change mechanism and for supporting said second speed change mechanism at a front side of the said change mechanism, the improvement comprising:

a fluid pump (**72**) mounted on said partition wall (**1***a*) for supplying fluid to said first speed change mechanism (**12**);

a fluid passage (**162**) within said bearing support frame (**4**), said fluid passage having a first open end (**162***a*) at a front surface of said support frame and a second open end (**162***b*) at a rear surface of said support frame;

a first fluid supply passage means (**166**; **266**) disposed within said front housing (**1**) for connecting between a fluid suction passage (**160**) of said fluid pump (**72**) and said first open end (**162***a*) of said fluid passage (**162**) within said support frame (**4**); and

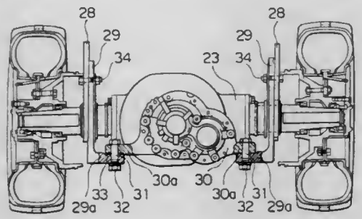
a second fluid supply passage means (**167**; **267**) disposed within said transmission casing (**2**) for connecting between a fluid sump filter (**165**) and said second open end (**162***b*) of said fluid passage (**162**) within said support frame (**4**).

5,644,955

STRUCTURE FOR SUPPORTING DRIVING REACTION FORCE ON DIFFERENTIAL HOUSING

Kenji Yamamoto, Kariya, Japan, assignor to Kabushi Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Aug. 31, 1995, Ser. No. 521,685
Claims priority, application Japan, Sep. 1, 1994, 6-208771
Int. Cl.[6] B60K *17/16*
U.S. Cl. 74—607 **10 Claims**



1. In a vehicle having a longitudinal direction and a transverse direction, a generally horizontal frame extending in said longitudinal direction and having opposite side members which are spaced apart in said transverse direction, a pair of axle brackets respectively attached to said opposite side members of said frame in transverse alignment with each other, and a differential housing mounted in said frame between said pair of axle brackets and having a differential carrier and a carrier cover connected thereto and extending therefrom in said longitudinal direction of the vehicle, said vehicle further having an engine and a transmission separated in said longitudinal direction from said differential housing, said differential carrier, and said carrier cover, the improvement comprising a structure for supporting a driving reaction force of said vehicle on said differential housing, said structure comprising:

a first arm portion on and extending in said transverse direction of said vehicle from one of said differential carrier and said carrier cover towards one of said axle brackets;

a second arm portion on and extending in said transverse direction of said vehicle from said one axle bracket to overlapping relation with said first arm portion, one of said arm portions above the other in a vertical direction with reference to said horizontal frame whereby the interface between said overlapping arm portions extends substantially in the direction of said horizontal frame; and

a driving reaction force receiving bolt extending in said vertical direction and coupling said vertically overlapping first and second arm portions together.

5,644,956

ROTARY DRILL BIT WITH IMPROVED CUTTER AND METHOD OF MANUFACTURING SAME

Mark Philip Blackman, Lewisville; Jay Stuart Bird, Waxahachie, and Michael Steve Beaton, Cedar Hill, all of Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Division of Ser. No. 221,371, Mar. 31, 1994, Pat. No. 5,429,200. This application May 31, 1995, Ser. No. 454,936
Int. Cl.[6] B21K *5/02;* **F21B** *10/08*
U.S. Cl. 76—108.2 **19 Claims**

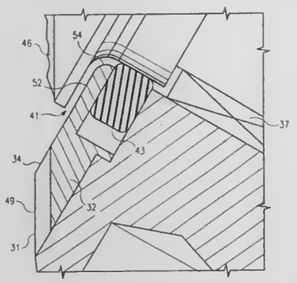
1. A method of manufacturing a rotary cone drill bit with a plurality of roller cone cutters with each cutter having a generally conical configuration and a composite cone body having a base with a backface formed of a hard material and a tip comprising the steps of:

constructing said base;

constructing said tip;

depositing a desired coating thickness of powdered metal on a low alloy steel core;

heating said steel core and said powdered metal together to bond said powdered metal with said steel core; and



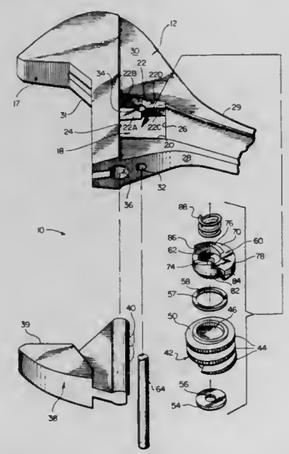
joining together said previously constructed tip and base by inertial welding.

5,644,957

ADJUSTABLE WRENCH WITH WORM LOCKING MECHANISM

Eric T. Gustafson, and Jeffrey H. Hoff, both of Kenosha, Wis., assignors to Snap-on Technologies, Inc., Lincolnshire, Ill.

Filed Dec. 26, 1995, Ser. No. 567,685
Int. Cl.[6] B25B *13/16*
U.S. Cl. 81—165 **21 Claims**



1. An adjustable wrench having locked and unlocked conditions, the wrench comprising:

a wrench body including a fixed jaw;

a movable jaw slidably mounted on the wrench body;

the wrench body having first and second contact walls, the second contact wall having a wall cam surface;

an adjuster assembly including a worm gear on the body between the contact walls and threadedly engaged with the movable jaw for moving the movable jaw toward and away from the fixed jaw, the worm gear having an axis;

a locking disc disposed between the worm gear and the second contact wall and having a disc cam surface engagable with the wall cam surface of the second contact wall, the locking disc being rotatable by a user's finger between the locked and unlocked conditions, the disc cam surface engaging the wall cam surface in the locked condition for wedging the adjuster assembly and the locking disc between the first and second contact walls to substantially prevent rotation of the worm gear and movement of the movable jaw, the locking disc in the unlocked condition releasing the disc cam surface from engagement with the wall cam surface so that the worm gear is free to rotate; and

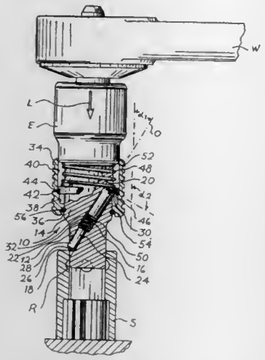
structure for preventing axial movement of the worm gear when the locking disc is rotated from the unlocked to the locked condition.

5,644,958

QUICK RELEASE MECHANISM FOR TOOLS SUCH AS SOCKET WRENCHES

Peter M. Roberts, Chattanooga, Tenn., and C. Robert Moon, Joliet, Ill., assignors to Roberts Tool International (USA), Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 50,514, Apr. 20, 1993, which is a continuation-in-part of Ser. No. 959,215, Oct. 9, 1992, Pat. No. 5,233,892. This application Aug. 2, 1994, Ser. No. 284,387
Int. Cl.[6] B25B *23/16*
U.S. Cl. 81—177.8 **21 Claims**



1. In a quick-release mechanism for a tool comprising a drive stud, said drive stud comprising an out-of-round drive portion, an adjacent portion, and a passageway extending obliquely with respect to a longitudinal axis defined by the drive stud between a first end at the drive portion and a second end at the adjacent portion, said out-of-round portion shaped to fit within a tool attachment to apply torque to the tool attachment and said mechanism comprising a locking element slideably received in the passageway to slide between a tool attachment engaging position and a tool attachment release position; the improvement comprising:

a releasing spring biasing the locking element toward the tool attachment releasing position;

an actuator movably mounted on the drive stud adjacent the second end for movement between a first position, in which the actuator holds the locking element in the tool attachment engaging position, and a second position, in which the actuator allows the releasing spring to move the locking element to the tool attachment release position.

5,644,959

UNIVERSAL SOCKET WRENCH

Herman S. Howard, Hallandale, Fla., assignor to Media Group, Stamford, Conn.

Filed May 22, 1996, Ser. No. 653,695
Int. Cl.[6] B25B *13/58*
U.S. Cl. 81—185 **12 Claims**

1. A universal socket wrench comprising:

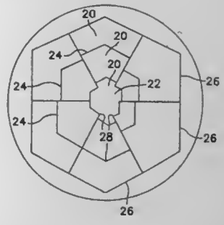
a housing enclosing a longitudinal chamber having an open first end, and a second end;

a plurality of members, at least one of said members being of nonuniform shape and size, and said plurality of members having first and second ends and being longitudinally oriented in said chamber in a first position in which said first ends of said members are proximally located with said first end of said chamber for engagement with a fastener component;

said members having a second position to which said members will be forced when said first ends of said members contact said fastener component;

means, within said chamber, for suspending said members in longitudinal slidable relationship to each other;

means for returning said members to their first positions once contact with said fastener component is terminated.

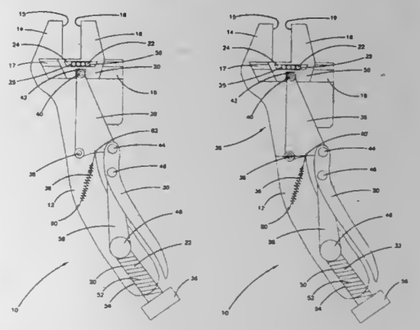


5,644,960

ADJUSTABLE LOCKING WRENCH

William P. O'Brien, 13326 SW. 26th St., Davie, Fla. 33325, assignor to William P. O'Brien, Davie, Fla.

Filed Dec. 2, 1994, Ser. No. 348,500
Int. Cl.[6] B25B *7/12*
U.S. Cl. 81—363 **52 Claims**



1. A wrench, comprising:

a body having a first fixed jaw;

a second movable jaw residing within a lower channel formed on the body, the lower channel residing below an upper channel formed on the body within which a plurality of ball bearings are disposed, the plurality of ball bearings being uniformly spaced apart from each other and retained together by a cage separator;

a rotating cam pivotably connected to the body at a first point, wherein the rotating cam interacts with the second movable jaw at a point midway between opposite ends of the base of the second movable jaw; and

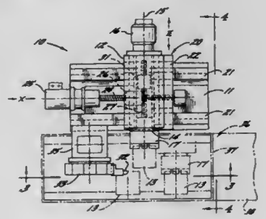
a handle fixedly connected to the rotating cam at a second point so that action of the handle effects a range of motion in the second movable jaw within the channel towards a fully open position and a fully closed position relative to the first fixed jaw.

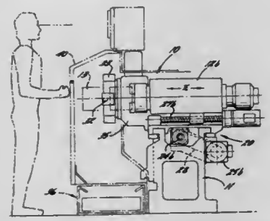
5,644,961

MACHINE TOOL WITH CANTILEVERED CHUCK MOVABLE ALONG THE X AND Z AXES

Osamu Nishio; Norio Tanaka; Takayasu Asano, all of Charlotte, and Eddie M. Godwin, Monroe, all of N.C., assignors to Okuma America Corporation, Charlotte, N.C.

Filed Nov. 9, 1994, Ser. No. 336,844
Int. Cl.[6] B23B *13/02;19/02*
U.S. Cl. 82—127 9 Claims





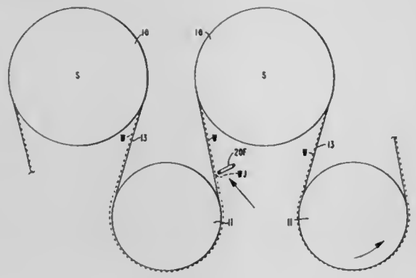
1. A machine tool for machining workpieces comprising:
a machine bed which includes an upper surface having peripheral side edges which define an upper periphery;
a tool holder mounted to said machine bed so as to define a cutting position which is horizontally spaced from said peripheral side edges of said upper surface of said machine bed and which is outside of the periphery defined by said side edges;
a spindle mounting a workpiece engaging chuck; and
means rotatably mounting said spindle to said upper surface of said machine bed for rotation about a horizontal spindle axis and for selective movement in a horizontal direction parallel to said spindle axis and in a horizontal direction perpendicular to said spindle axis, and so that said workpiece engaging chuck may be moved proximate to said cutting position and the cutting operation may be performed at a location horizontally spaced from and outside of the periphery of said upper surface of said machine bed.

5,644,962

DRYER SECTION OF A PAPER OR BOARD MACHINE INCLUDING AN ARRANGEMENT FOR CUTTING A LEADER OF THE WEB

Ismo Koponen; Ilmari Rintasalo; Jari Vainio, all of Rauma, and Juha Kaihovirta, Jyväskylä, all of Finland, assignors to Valmet Corporation, Helsinki, Finland

Continuation-in-part of Ser. No. 81,358, Jun. 22, 1993, Pat. No. 5,445,055. This application Mar. 4, 1994, Ser. No. 206,533
Claims priority, application Finland, Nov. 19, 1991, 915450
Int. Cl.[6] B26F *3/00;* D21F *5/04*
U.S. Cl. 83—177 9 Claims



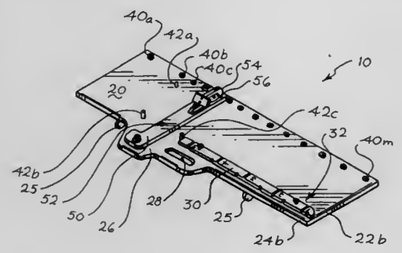
1. A dryer section in a paper or board machine including an arrangement for cutting at least one of a leader of a web and a diagonal tail portion of a web, the dryer section comprising
a plurality of cylinders,
at least one drying wire for carrying a web over said cylinders, the web having first and second opposed faces, at least one of said cylinders and said at least one drying wire in the dryer section being structured and arranged to support the web in a run along which said first faces of the web is in contact with said at least one drying wire and said second face of the web is exposed, and
water jet means arranged in opposed relationship to said second face of the web along said supported run of the web in which said first face of the web is in contact with said at least one drying wire and said second face of the web is exposed for directing a pressurized water jet at said second face of the web to cut the web and said at least one drying wire, said water jet having a pressure from about 40 bar to about 400 bar.

5,644,963

ROOFING SHINGLE CUTTING GUIDE

Thomas A. Fountas, Racine, Wis., assignor to George Seater, Jr., Racine, Wis.

Filed May 17, 1996, Ser. No. 650,100
Int. Cl.[6] B26D *7/02*
U.S. Cl. 83—454 6 Claims



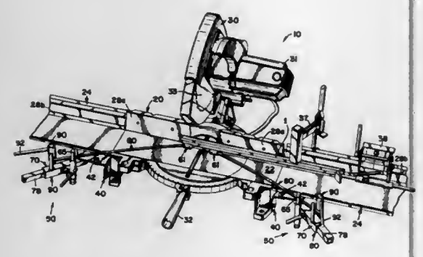
1. A cutter work guide, for roofing shingles, comprising:
a. a substantially rectangularly shaped, generally flat, base member having first and second sides and two ends;
b. a plurality of discs arranged in a row, spaced and fixedly attached along and parallel to the first side, having substantially upright surfaces for guiding a roofing shingle;
c. a guide member for guiding a cutting tool, said guide member being pivotally attached to the base member near the second side;
d. a plurality of locator pins fixedly attached to the base member, which serve to fix the guide member at predetermined angles relative to a longitudinal axis of the base member; and
e. a handle pivotally attached to the guide member.

5,644,964

WORKPIECE CLAMPING MECHANISM

T. David Price, 4543 Woodlane Dr., Woodbury, Minn. 55125

Filed Feb. 10, 1994, Ser. No. 194,715
Int. Cl.[6] B26D *7/02*
U.S. Cl. 83—459 21 Claims



1. A clamping mechanism for securing a workpiece proximate a power tool on a work surface, wherein a support surface is defined on the work surface and extends generally orthogonal thereto, the clamping mechanism comprising:
(a) a clamp member having first and second ends, wherein the first end of the clamp member is configured to operatively abut a workpiece in a working area defined for the power tool;
(b) force applying means, moving between repeatable unlocked and locked positions, for applying a force to the clamp member in the locked position to secure the workpiece between the clamp member and the support surface, wherein the clamp member thereby applies a force to the workpiece, the force applied by the clamp member having first and second components directed in a plane generally parallel to the work surface, the first component being directed substantially perpendicular to the support surface, and the second component being directed substantially parallel to the support surface in a direction away from the working area; whereby the clamp member resists pulling forces applied by the power tool to the workpiece; and
(c) stop means, abutting the force applying means in the locked position, for limiting movement of the force applying means beyond the locked position.

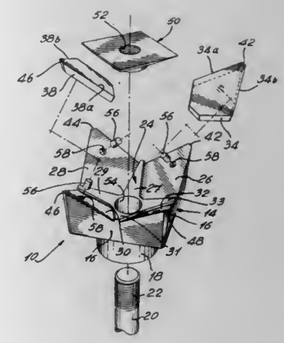
5,644,965

SAW TOOTH FOR CIRCULAR SAW

Charles D. MacLennan, Hudson Heights; Nick Palfy, Chomedey; Laurier Savard, Terrebonne, and Robert E. Mitchell, Montreal, all of Canada, assignors to Quadco Equipment Inc., St-Eustache, Canada

Filed Jun. 29, 1994, Ser. No. 267,242
Claims priority, application Canada, Apr. 5, 1994, 2120595
Int. Cl.[6] B27B *33/12*
U.S. Cl. 83—842 8 Claims

1. A replaceable saw tooth for a circular saw blade having an axis of rotation, wherein the tooth comprises a tooth head of frusto-pyramidal configuration, having a front face, a rear face, and planar side walls extending therebetween, a central bore extending axially of the head between the rear face and the front face, the front face of the tooth head having seat means and for receiving at least two inserts, each insert defining a single cutting tip with a pair of receding cutting edges such that the pair of inserts provides a pair of spaced-apart cutting tips subtending a cutting edge which is remote from the axis of rotation of the blade, each insert and the seat means having cooperating apertures and locating pins, clamp means overlying a portion of the inserts, bolt means extending through the bore and secured to the clamp means such that the inserts are securely held by means of the combination of the locating pins and apertures and the clamp means.



5,644,966

PRESSURE REGULATING CIRCUIT

Noboru Kimura, Nagoya, Japan, assignor to Hirotaka Engineering Co., Ltd., Aichi-ken, Japan

Filed Jul. 1, 1996, Ser. No. 684,772
Claims priority, application Japan, Jul. 5, 1995, 7-169737; Apr. 19, 1996, 8-098618
Int. Cl.[6] F01B *31/12*
U.S. Cl. 91—1 3 Claims

1. A pressure regulating circuit comprising:
a main valve (**6**) with a pressure chamber (**8**), the pressure chamber (**8**) having an exhaust side and being connected to a pressurized air supply (**R**) via an air supply valve member (**12**), an exhaust chamber (**14**) connected to or disconnected from the pressure chamber (**8**) via an exhaust valve member (**16**) and connected to the outside air via an exhaust port, a piston rod (**26**) for positioning the air supply valve member (**12**) and the exhaust valve member (**16**) into a closed position when the piston rod (**26**) is in a neutral position, positioning the air supply valve member (**12**) into an opened position when the piston rod (**26**) moves down, and positioning the exhaust valve member (**16**) into an opened position when the piston rod (**26**) moves up, a control chamber (**22**) connected to the pressure chamber (**8**), a piston pressure chamber (**24**) opposed to the control chamber (**22**) and connected to the pressurized air source (**R**), and a pressure control piston (**20**) displaced according to the difference in pressure between the

control chamber (**22**) and the piston pressure chamber (**24**) for raising and lowering the piston rod (**26**);

a pneumatic cylinder (**2**) with a working chamber (**4**) connected to the pressure chamber (**8**) of the main valve (**6**) and a piston (P) to which a load according to the weight of a workpiece is applied via a load transferring means and also an exerting force against the workload is applied by the pressurized air in the working chamber (**4**);

a workpiece retention member including a pressure reducing valve (**29**), the pressure reducing valve (**29**) having a counter-force chamber (**38**) in which a pressure approximately equal to the pressure in the working chamber (**4**) when the load counteracts the exerting force is produced when the load of the workpiece is exerted and including a linking member (**150**); and

a pressure retention means.

5,644,967

SERVO VALVE ARRANGEMENT

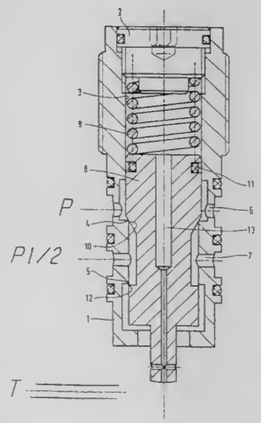
Wolfgang Joerg, Stuttgart; Jaromir Bordovsky, Berglen; Aydogan Cakmaz, Stuttgart; Hubert Heck, Duesseldorf; Arno Roehringer, Ditzingen; Claus Gall, Fellbach; Reinhold Abt, Neuhausen; Rainer Strauss, Kaarst, and Karl-Hans Koehler, Wernau, all of Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany

Filed Jun. 28, 1995, Ser. No. 495,993

Claims priority, application Germany, Jun. 28, 1994, 44 22 553.9

Int. Cl.[6] F15B *11/08*

U.S. Cl. 91—457 **10 Claims**



1. A servo valve arrangement having a high-pressure connection, a low-pressure connection, and a motor connection, the servo valve arrangement comprising:

a pressure control valve arranged between the high-pressure connection and the motor connection;

a return control valve arranged between the motor connection and the low-pressure connection;

wherein said pressure control valve is normally closed and said return control valve is normally open, both said pressure control and said return control valves including axially displaceable control parts arranged equiaxially with respect to one another;

an actuating member common to both said pressure control and said return control valves, said actuating member actuating the axially displaceably control parts while closing said return control valve and opening said pressure control valve;

wherein said pressure control valve is a seat valve;

wherein said axially displaceably control parts are arranged as parts of a common valve piston; and

wherein said return control valve is a slide valve having first and second control edges interacting with each other.

5,644,968

VARIABLE CAPACITY SWASH PLATE TYPE COMPRESSOR WITH AN IMPROVED IIINGE UNIT FOR INCLINABLY SUPPORTING A SWASH PLATE

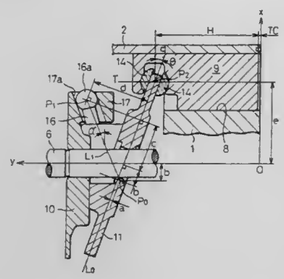
Kazuya Kimura; Osamu Hiramatsu, and Shigeki Kanzaki, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Jun. 18, 1996, Ser. No. 665,541

Claims priority, application Japan, Jun. 20, 1995, 7-153179; Nov. 2, 1995, 7-286156

Int. Cl.[6] F01B *3/00;13/04*

U.S. Cl. 92—12.2 **6 Claims**



1. A variable capacity swash plate type compressor, comprising:

a housing means defining therein a crank chamber, a suction chamber, a discharge chamber, and a plurality of cylinder bores fluidly communicated with said suction, discharge and crank chambers;

a piston provided in each cylinder bore to be capable of reciprocatingly sliding in said cylinder bore, said piston having a compressing end thereof adapted for cooperating with each of said cylinder bores to compress a refrigerant;

a drive shaft supported by said housing means to be rotated about an axis of rotation thereof;

a rotor provided in said crank chamber and mounted on said drive shaft for rotation therewith;

a swash plate pivotally supported by said rotor via a hinge means so as to be permitted to change an angle of inclination thereof; and

a connecting means provided between said swash plate and each of said plurality of pistons, said connecting means being provided to convert a wobbling motion of said swash plate into a reciprocating motion of said pistons, wherein the inclination angle of said swash plate is controlled by pressure in said crank chamber so that compression capacity of said compressor is changed,

said hinge means comprising a support arm protruding rearward from said rotor, and a guide pin, one end of which is fixed onto said swash plate, said support arm having a guide surface which is parallel with a surface determined by an axis of rotation of said drive shaft and also determined by the top dead center of said swash plate, said guide surface extending in a predetermined direction in which said guide surface approaches said axis of rotation of said drive shaft from said outside thereof, said guide surface being formed so that at least a front part of a section of said guide surface taken perpendicularly to a center line of said guide surface is formed in a circular arc, and said other end of said guide pin being provided with a spherical element engaged with said guide surface, the predetermined extending direction of said guide surface being determined by taking into account a position about which said swash plate is turned to change an angle of inclination thereof, a center of said spherical element of said guide pin, and the maximum and minimum angles of inclination of said swash plate whereby an amount of the top clearance TC of each piston defined as a gap between said compressing end of each piston and an end of the associated cylinder bore being unchanged at the maximum and minimum compression capacities of said compressor.

5,644,969

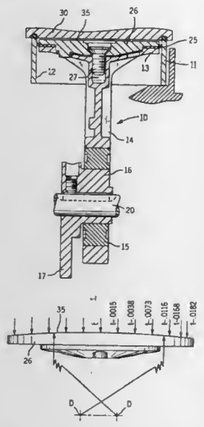
WOBBLE PISTON AND CYLINDER ARRANGEMENT

Shawn A. Leu, Sheboygan, and Mark A. Schuessler, Sheboygan Falls, both of Wis., assignors to Thomas Industries Inc., Sheboygan, Wis.

Filed Jun. 28, 1996, Ser. No. 671,985

Int. Cl.[6] F01B *31/14;11/02*

U.S. Cl. 92—60.5 **12 Claims**



1. In a piston head for a wobble piston usable in a cylinder having a flat upper end, the improvement wherein:

the upper surface of the piston head is curved convexly in the plane of the wobble motion of the piston and is straight in a plane that is transverse to the plane of the wobble motion.

5,644,970

BEARING ARRANGEMENT IN SWASH PLATE TYPE COMPRESSOR WITH DOUBLE HEADED PISTONS

Hiromi Michiyuki; Masanobu Yokoi; Yasunori Ueda, and Hayato Ikeda, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Nov. 21, 1995, Ser. No. 561,409

Claims priority, application Japan, Nov. 22, 1994, 6-288367

Int. Cl.[6] F01B *3/00*

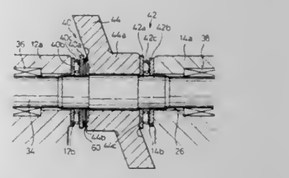
U.S. Cl. 92—71 **7 Claims**

1. A swash plate type compressor comprising:

a cylinder block comprising axially arranged front and rear cylinder block halves, said cylinder block having a central bore, a plurality of cylinder bores around the central bore, a crank chamber intersecting the central bore and the cylinder bores, and inner wall portions having said central bore arranged therein and axially opposite front and rear supporting seats;

front and rear housings attached to the cylinder block and having central bores;

double headed pistons arranged in the respective cylinder bores to form compression chambers on either side of the pistons;



a drive shaft inserted in the central bores of the front housing and the cylinder block and rotatably supported by front and rear radial bearings and front and rear thrust bearings;

a swash plate arranged in the crank chamber and fixed to the drive shaft to engage with the pistons for reciprocatingly moving the pistons, said swash plate having a boss having axially opposite front and rear supporting seats, the front and rear supporting seats of the boss of the swash plate facing the front and rear supporting seats of the inner wall portions of the cylinder block, respectively;

one of the front and rear thrust bearings being rigidly arranged between one pair of the facing supporting seats;

the other of the front and rear thrust bearings being arranged between the other pair of the facing supporting seats; and

a belleville spring arranged between said other thrust bearing and the supporting seat of the boss of the swash plate.

5,644,971

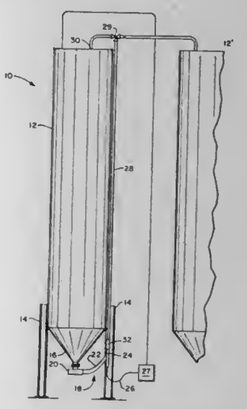
VESSEL FOR STEEPING OF GRAIN

Stephen Daniel Ward, Lewisburg, Pa., assignor to Andritz Sprout-Bauer, Inc., Muncy, Pa.

Filed Jun. 13, 1995, Ser. No. 489,818

Int. Cl.[6] A23B *9/00*

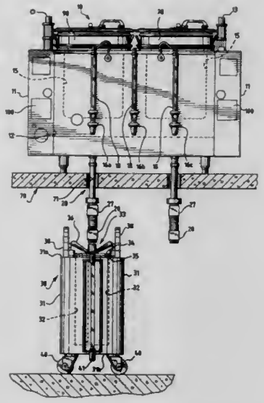
U.S. Cl. 99—278 **48 Claims**



1. An apparatus for the steeping of grain comprising:

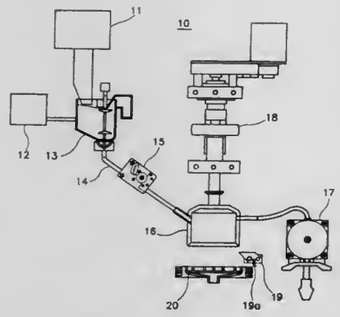
a tank for steeping grain having a top portion and a bottom portion;
a slurry, comprising grain and a liquid, in said tank; and
grain transport means for fluidly circulating said slurry between the bottom portion of the tank and the top portion of the tank.

5,644,972
SYSTEM AND METHOD FOR BREWING AND DISPENSING A HOT BEVERAGE
William A. Dahmen, Ingleside, Ill.; Christopher Paul Lojacono, Seattle, Wash., and Zbigniew Malec, River Grove, Ill., assignors to American Metal Ware Co., and Starbucks Coffee Company
Filed Aug. 3, 1994, Ser. No. 285,044
Int. Cl.[6] A47J *31/40;31/46*
U.S. Cl. 99—280 **26 Claims**



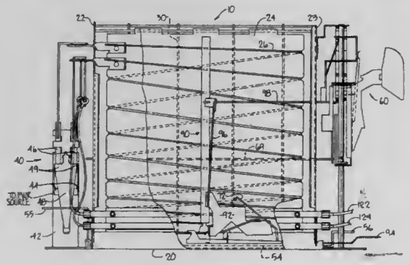
1. A system for brewing and dispensing hot beverages comprising:
an urn having at least one liner for brewing a hot beverage at a brewing temperature;
at least one mobile storage canister for storing and transporting the hot beverage from one location to another location at a lower temperature than the brewing temperature;
a dispensing tap for dispensing the beverage;
a first transfer tube attachable between the urn and the canister for transferring the hot beverage from the urn to the canister;
a second transfer tube attachable between the canister and the dispensing tap for transferring the hot beverage from the canister to the dispensing tap; and
a means for moving the hot beverage from the canister, through the second transfer tube, and to the dispensing tap.

5,644,973
DEVICE FOR BREWING THE ROASTED AND GROUND BEANS OF THE COFFEE IN A VENDING MACHINE
Tae Ho Kang, and Dae-ryong Yun, both of Bok-Gu, Rep. of Korea, assignors to Kwangju Electronics Co., Ltd., Kwangju, Rep. of Korea
Filed Jun. 14, 1996, Ser. No. 664,377
Claims priority, application Rep. of Korea, Jun. 22, 1995, 1995-14361; Nov. 18, 1995, 1995-42096
Int. Cl.[6] A47J *31/32;31/40*
U.S. Cl. 99—289 R **9 Claims**



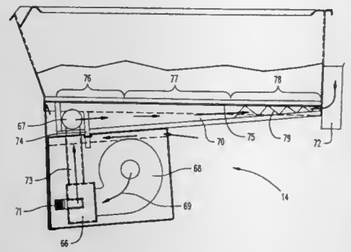
1. A device for brewing the roasted and ground beans of the coffee in a vending machine comprising a ground beans receptacle (**11**) for containing the roasted and ground beans of the coffee, a mixing means (**13**) for mixing said ground beans of the coffee with a hot water, an extracting chamber (**16**) for providing a space used to extract a coffee liquid, an extracting means (**17**) for extracting said coffee liquid by jetting a pressurized air against the mixture of said roasted and ground beans and hot water, a filter mechanism (**50**) arranged below said extracting chamber (**16**) for filtering said coffee liquid, a reciprocating means (**18**) for lowering and raising said extracting chamber (**16**), and a sweeper (**19**) for removing the residue remaining on said filter mechanism (**50**), characterized in that said filter mechanism (**50**) further comprises a porous filter part for passing pure coffee liquid only, a support part (**53**) for supporting said filter part not to be distorted by an external pressure, and a buffer (**54**) arranged between said filter part and said support part (**53**) for absorbing the jetting force of said pressurized air and the tearing force of said sweeper (**19**).

5,644,974
AUTOMATIC RESETTING HEAT REDUCTION ASSEMBLY FOR TOASTER APPLIANCE
Timothy J. Slavin, Columbia, Mo., assignor to Toastmaster, Inc., Columbia, Mo.
Filed Nov. 21, 1996, Ser. No. 752,574
Int. Cl.[6] A47J *37/08;* **H05B** *1/02;3/06*
U.S. Cl. 99—328 **21 Claims**



1. An electric appliance for toasting bagels, bread, and other food products, said toaster having a full heat mode and a reduced heat mode, said full heat mode for toasting said food products such that both sides are evenly toasted, said reduced heat mode for toasting said food products such that one side is toasted more than the other side, said toaster automatically resetting to said full heat mode at the end of a toasting cycle, said toaster comprising:
(a) at least one cavity for receiving said food products;
(b) a plurality of heating elements for toasting said food products;
(c) a heat activation assembly electrically connected to a power source and to said heating elements wherein said heat activation assembly completes a circuit between said power source and said heating elements when said heat activation assembly is activated, said power source thereby energizing said heating elements;
(d) a carriage assembly movable between a nontoasting position and a toasting position, said carriage assembly operably connected to said heat activation assembly wherein said carriage assembly activates said heat activation assembly when said carriage assembly is in said toasting position; and
(e) a heat reduction assembly movable between a full heat position and a reduced heat position, said heat reduction assembly electrically connected to said heat activation assembly wherein all of said heating elements operate at full heat when said heat activation assembly is activated and said heat reduction assembly is in said full heat position, and wherein selected heating elements operate at full heat and other selected heating elements operate at a lower heat when said heat activation assembly is activated and said heat reduction assembly is in said reduced heat position.

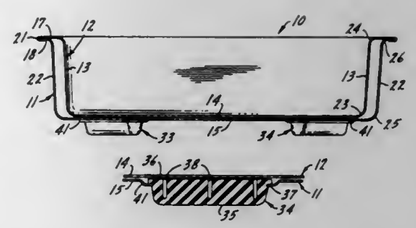
5,644,975
GAS COOKING APPARATUS
James P. Bedford, Willoughby; Gary R. Fortuna, Willoughby Hills, both of Ohio; Wayne S. Hollingshead, Ontario, Canada; David S. Schwerzler, Chagrin Falls, and Thomas J. Willis, Solon, both of Ohio, assignors to Cleveland Range, Inc., Cleveland, Ohio
Filed Jun. 5, 1995, Ser. No. 463,998
Int. Cl.[6] A47J *37/12*
U.S. Cl. 99—407 **2 Claims**



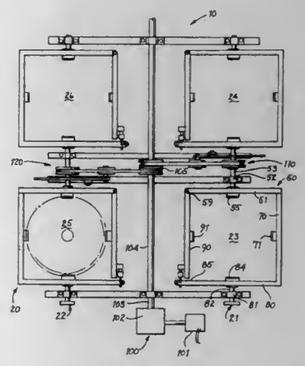
1. A gas cooking apparatus having a surface to be heated, comprising:
a burner pan attached underneath said surface to thereby enclose a gas combustion chamber having a cross-sectional area which tapers from a front portion of said cooking apparatus down towards a rear portion of said cooking apparatus;
a burner enclosed within said combustion chamber at the from portion of said cooking apparatus; and
a baffle enclosed within said combustion chamber at the rear portion of said cooking apparatus, wherein said baffle has a series of graduated restrictions which are larger in size in the middle than toward either end to control combustion gas propagation through said combustion chamber.

5,644,976
FOOTED COOKING UTENSIL
Jay Z. Muchin, Manitowoc, and Todd Kroscher, Two Rivers, both of Wis., assignors to Newell Operating Company, Freeport, Ill.
Filed Jul. 31, 1995, Ser. No. 509,557
Int. Cl.[6] A47J *37/01*
U.S. Cl. 99—422 **3 Claims**

2. A cooking utensil capable of being transported from a hot oven to a counter-top without causing damage to the counter-top and without requiring a hot pad or similar protective device to be placed on the counter-top underneath the cooking utensil, the cooking utensil comprising an upper surface, a lower surface and a plurality of feet attached to the lower surface of the cooking utensil for supporting the lower surface above the counter-top; the upper surface being the top of an upper sheet and the lower surface being the bottom of a lower sheet; the upper and lower sheets being spaced apart and defining an insulating space therebetween; the lower sheet including a plurality of apertures disposed therein; and the feet being fixedly accommodated within the apertures.



5,644,977
DRUM COOLER
Henry Rodriguez, 7066 N. Rodriguez Rd., McNeil, Ariz. 85617
Filed Sep. 14, 1995, Ser. No. 528,324
Int. Cl.[6] A23L *1/00*
U.S. Cl. 99—517 **12 Claims**



1. A drum cooler comprising:
a support,
a drum encircling holder having a central axis, rotatably mounted on each side on the support at the central axis, and having an openable and releasably latchable gate portion,
a drive assembly mounted on the support and coupled to the drum holder for selectively rotating the drum holder about the drum holder central axis, and
a water sprayer supported near the holder for spraying water onto the holder during rotation of the holder.

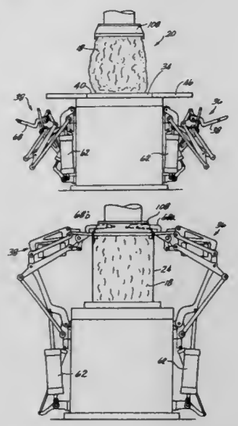
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5,644,978

WIRE TYING APPARATUS FOR DOWN-PACKER COTTON PRESS

Howard W. Jaenson, Covina, and Bradley P. Actis, Rancho Cucamonga, both of Calif., assignors to H.W.J. Designs for Agribusiness, Fontana, Calif.

Filed Feb. 29, 1996, Ser. No. 608,701
Int. Cl.[6] B65B *13/24*
U.S. Cl. 100—8 18 Claims



1. A wire tying device for mounting on a down-packer type baling press in which cotton is boxed for baling at a loading side of a substantially horizontal rotating turntable, which turntable rotates the cotton box to position it beneath a press ram oriented to compress the cotton into a bale by applying pressure from above, the turntable defining a base plate, when rotated into the pressing position, against which the cotton is compressed, the tying device mounted below the turntable base plate for tying wire having pre-formed interlocking ends around a bale formed in the down-packer press, the tying device comprising:

first and second wire bend assemblies pivotally mounted on opposite sides of the baling press for holding and bending first and second pre-formed interlocking ends of a wire upwardly around a compressed bale as each bend assembly pivots from a first wire loading position to a second fully extended position, the first and second wire bend assemblies including means for retracting said assemblies downwardly away from the wire loading position to a fully retracted position below the horizontal rotational arc of the turntable.

5,644,979

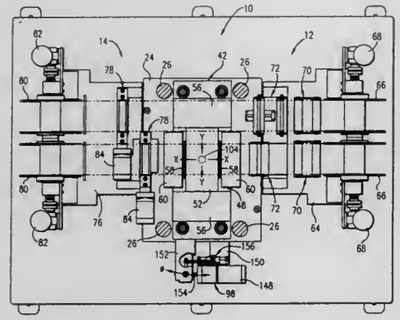
DIE CUTTING AND STAMPING PRESS HAVING SIMULTANEOUS X, Y, AND Ø AXES DIE REGISTRATION MECHANISM AND METHOD

Charles C. Raney, Lenexa, Kans., assignor to Preco Industries, Inc., Lenexa, Kans.

Filed Apr. 30, 1996, Ser. No. 641,413
Int. Cl.[6] B30B *15/02*; B26D *5/00*
U.S. Cl. 100—35 16 Claims

14. A method for successively positioning a die unit in a desired predetermined relationship to defined areas of elongated material as successive defined areas are brought into a position to be processed by the die unit, the material including indicia provided in predetermined positions relative to each of the defined areas, the method comprising the steps of:

longitudinally advancing the material along a path of travel to successively feed the defined areas of the material a predetermined distance toward the die unit;



focusing at least one camera on the desired locations that are occupied by the indicia when the defined areas of the material are in the predetermined relationship relative to the die unit, and receiving images from the camera;

providing reference image data representative of the desired locations of the indicia relative to the die unit;

comparing the reference image data with the actual positions of the indicia within the images received by the at least one camera after the material has been advanced by the feeding means;

generating longitudinal, lateral and angular difference data representative of the difference in position between the indicia within the image and the desired locations of the indicia; and

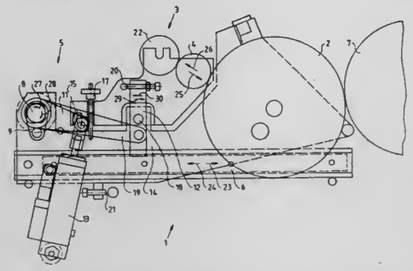
simultaneously moving the die along the path of travel of the material, along a direction of travel transverse to the path of travel, and relative to the base platen about a reference axis perpendicular to a plane containing the material to register the die unit with the material so that one of the defined areas of the material is positioned in the desired predetermined relationship with the die unit.

5,644,980

NUMBERING BOX

Hans-Jürgen Kusch, Neckargemünd; Bernd Ruf, Weiterstadt, and Rudi Stellberger, Kronau, all of Germany, assignors to Heidelberger Druck maschinen AG, Heidelberg, Germany

Filed Dec. 6, 1995, Ser. No. 567,845
Claims priority, application Germany, Dec. 7, 1994, 44 43 516.9
Int. Cl.[6] B41J *1/32*
U.S. Cl. 101—72 13 Claims



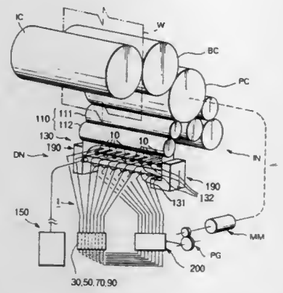
1. In combination with a printing press having a printing-press housing and an impression cylinder, a numbering box having a numbering-box shaft for holding numbering devices, an inking device with an ink form roller, and a switching or control device, the combination comprising telescopic rails mounted in the printing-press housing, the numbering box being disposed on said telescopic rails and being displaceable thereon into and out of engagement with the impression cylinder, and a mechanism for engaging and disengaging the inking device and the numbering-box shaft simultaneously with the engagement and disengagement, respectively, of the numbering box with the impression cylinder.

5,644,981

ABNORMALITY DETECTOR FOR NOZZLE TYPE DAMPENING SYSTEMS

Kinichiro Ohno, Machida; Noboru Fujio, Hamura, and Tamaki Obkawara, Kawasaki, all of Japan, assignors to Tokyo Kikai Seisakusho, Ltd., Tokyo, Japan

Filed Nov. 6, 1995, Ser. No. 554,002
Claims priority, application Japan, Apr. 3, 1995, 7-077588
Int. Cl.[6] B41F *7/24*
U.S. Cl. 101—147 7 Claims



1. An abnormality detector for nozzle-type dampening systems in printers for causing dampening solution to inject from nozzles onto a receiving area by intermittently opening said nozzles with a nozzle opening signal generated by a nozzle operation controller, characterized in that said abnormality detector comprises

electrically conductive members provided in dampening solution flying areas between said nozzles and said receiving area,

an injected dampening solution detecting means for detecting voltage generated in accordance with the state of injection of said dampening solution between said nozzles and said electrically conductive members,

a comparing means for comparing a detection signal generated by said injected dampening solution detecting means with a preset threshold value,

an intermediate processing means that is brought into a signal output state by a nozzle opening signal generated by a nozzle operation controller and releases said signal output state with an output signal from said comparing means, and

an abnormality judgment means for generating an abnormality judgment signal when said nozzle opening signal is received from said nozzle operation controller under the state where said abnormality judgment means receives an output signal from said intermediate processing means.

5,644,982

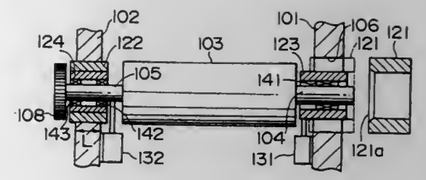
PRINTING PRESS

Kazuyuki Koura; Jiro Tanaka, and Takuji Tsugawa, all of Mihara, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 479,405, Jun. 7, 1995, abandoned, which is a division of Ser. No. 242,321, May 13, 1994, Pat. No. 5,458,061. This application Aug. 2, 1996, Ser. No. 691,352
Int. Cl.[6] B41F *5/00*
U.S. Cl. 101—216 4 Claims

1. A printing press comprising:

a printing cylinder having shafts at both ends thereof;



a bearing sleeve supporting one of the shafts of the printing cylinder;

inner and outer bearing sleeves supporting the other shaft of the printing cylinder;

bearings arranged between said one shaft and the bearing sleeve and between the other shaft and the inner bearing sleeve, respectively;

a frame arranged outside of the bearing sleeve and the outer bearing sleeve, respectively; and

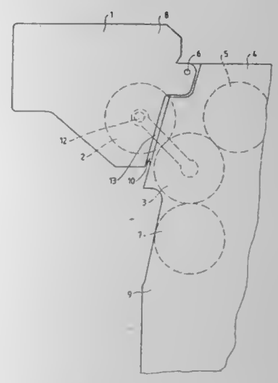
a thrusting device for pushing up the inner bearing sleeve so as to substantially relieve the outer sleeve surrounding said inner bearing sleeve from supporting part of a weight of the cylinder and shafts, said thrusting device being fixed to the frame outside of the outer bearing sleeve and arranged closely to a lower side of the inner bearing sleeve on an inner side of the frame.

5,644,983

COUPLING ARRANGEMENT FOR COUPLING PRINTING STANDS TO ONE ANOTHER IN A PRINTING PRESS AND METHOD FOR COUPLING PRINTING STANDS TO ONE ANOTHER IN A PRINTING PRESS

Bernd Herrmann, Malsch, and Hans-Jürgen Kusch, Neckargemünd, both of Germany, assignors to Heidelberger Druckmaschinen Aktiengesellschaft, Heidelberg, Germany

Filed Nov. 28, 1995, Ser. No. 562,221
Claims priority, application Germany, Nov. 28, 1994, 44 42 279.2
Int. Cl.[6] B41F *7/02*
U.S. Cl. 101—218 20 Claims



1. A device for coupling a printing unit to a printing stand in a printing press, said coupling device comprising: apparatus establishing:

a first position wherein a plate cylinder is engaged in contact with a blanket cylinder, and a plate cylinder drive mechanism is engaged with a printing stand drive mechanism;

a second position wherein a plate cylinder is disengaged out of contact with a blanket cylinder, and a plate cylinder drive mechanism is engaged with a printing stand drive mechanism; and

a third position wherein a plate cylinder is disengaged out of contact with a blanket cylinder, and a plate cylinder drive mechanism is disengaged from a printing stand drive mechanism;

said apparatus comprising at least one eccentric;

said at least one eccentric comprising an arrangement for being rotatably mounted to an end of a plate cylinder shaft;

said at least one eccentric establishing:

a first angular position;

said first angular position corresponding to said first position;

a second angular position;

said second angular position corresponding to said second position;

a third angular position; and

said third angular position corresponding to said third position;

said coupling device comprising at least one coupling element;

an end of said at least one coupling element being rotatably mounted on said at least one eccentric; and

an opposite end of said at least one coupling element comprising an arrangement for being connected to the printing stand.

5,644,984

CYLINDER WITH PLATE CLAMPING DEVICE

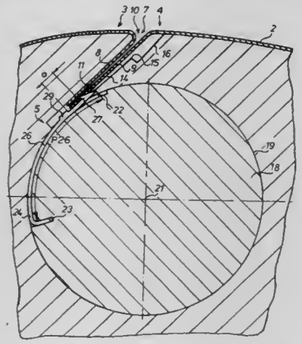
Helmut Puschnerat, Wachenheim; Wolfgang Günter Ruckmann, Würzburg, and Peter Schröder, Hessheim, all of Germany, assignors to Koenig & Bauer-Albert Aktiengesellschaft, Wurzburg, Germany

Filed Mar. 15, 1996, Ser. No. 616,578

Claims priority, application Germany, Mar. 16, 1995, 195 09 563.4

Int. Cl.[6] B41F *1/28;1/30*

U.S. Cl. 101—409 **12 Claims**



1. A cylinder having a plate clamping device usable to clamp a plate with beveled ends on a surface of the cylinder in a rotary printing press comprising:

an axially extending, generally radially inwardly directed slit in said cylinder, said slit being adapted to receive plate beveled ends, said slit having an inner end and an outer end and at least a first lateral face, and with an axially extending bending edge formed in said first lateral face intermediate said slit inner and outer ends;

a rotatable pivot lever positioned in said cylinder and extending generally parallel to said slit;

a plurality of tongues disposed in said slit and having inner ends secured to said pivot lever, said tongues being shiftable in said slit in response to rotation of said pivot lever;

a barb on an outer end of each of said tongues, each said barb being engageable with a cutout in a beveled plate end; and

a spring-back chamber formed in said first lateral face of said slit intermediate said bending edge and said outer end of said slit, said barb on said outer end of each of said tongues being deflectable into said spring-back chamber.

5,644,985

PRINTING BLANKET AND PRINTING CYLINDER FITTED WITH THIS BLANKET

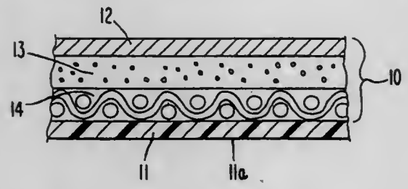
Hugues Serain, Wattwiller, and Denis Hertzog, Bevrwiller, both of France, assignors to Rollin S.A., France

Filed Mar. 31, 1995, Ser. No. 414,512

Claims priority, application France, Mar. 31, 1994, 94 03849

Int. Cl.[6] B41F *21/00*

U.S. Cl. 101—415.1 **17 Claims**



1. An improved printing blanket for placement around a printing cylinder, said printing cylinder having an axial gap for receiving opposite ends of the printing blanket, said blanket comprising a printing layer, a compressible layer beneath the printing layer, and an outer reinforcing layer adjacent to the compressible layer, wherein the improvement comprises a layer of polymeric material fastened to the surface of the reinforcing layer opposite the compressible layer and extending over substantially all of said surface of the reinforcing layer.

5,644,986

METHOD AND APPARATUS FOR CLEANING A ROLLER SURFACE

Erik Gydesen, Vejle, Denmark, assignor to Maskinfabriken Tresu A/S, Denmark

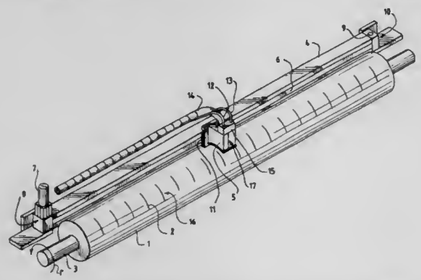
PCT No. PCT/DK94/00276, § 371 Date Feb. 6, 1996, § 102(e) Date Feb. 6, 1996, PCT Pub. No. WO95/01876, PCT Pub. Date Jan. 19, 1995

PCT Filed Jul. 6, 1994, Ser. No. 571,824

Claims priority, application Denmark, Jul. 9, 1993, 831/93

Int. Cl.[6] B41F *35/00*

U.S. Cl. 101—424 **12 Claims**



1. A method for automatic cleaning of a cylinder, especially a cylinder of a printing machine, said printing machine including a print plate, a print carrier, and a cleaning apparatus wherein a

surface of the cylinder becomes smudged, during printing, with printing ink, particles detached from said print carrier, such as dust or fibers, and other foreign objects, said method comprising the steps of providing a cleaning apparatus having a mixing chamber and nozzles connected thereto providing a flow of pressurized fluid consisting of pressurized air and a liquid into the mixing chamber, introducing the pressurized fluid to the print plate through the nozzles connected with the mixing chamber, exposing an area of the cylinder surface to be cleaned to the pressurized fluid so that the particles inside the area on the cylinder surface are detached, and vacuuming said area to remove said detached particles and any other material deriving from said flow of pressurized fluid.

5,644,987

PROCESS AND APPARATUS FOR PRINTING USING A MAGNETIC TONER WHICH IS ELECTROSTATICALLY CHARGED

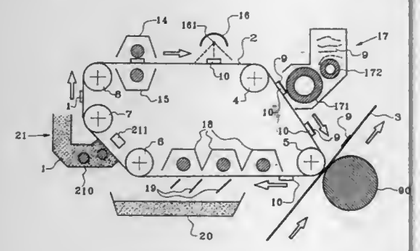
Jean-Jacques Eltgen, Danjoutin, France, assignor to Nipson, Belfort, France

Filed Jun. 20, 1994, Ser. No. 262,500

Claims priority, application France, Jun. 23, 1993, 93 07608

Int. Cl.[6] B41N *1/04;* **G03G** *19/00;13/28*

U.S. Cl. 101—478 **26 Claims**



1. A process for printing at least one image, with a predetermined press run, using a press, by transfer of a colorant vehicle (**9**) between an intermediate transfer element and a printing carrier (**3**), including the steps of:

a. making the intermediate transfer element in the press by developing zones on a substrate (**2**) by magnetic imaging, each zone having a different affinity for the colorant vehicle, certain of which zones correspond to the image to be printed;

b. fixing an insulating and hardenable material (**1**) to the substrate (**2**) to constitute the zones with different affinities;

c. hardening and subjecting the insulating and hardenable material (**1**) to an electrostatic charge (**10**) by surface charging the material in order to lend the zones representing the image the affinity for the colorant vehicle (**9**);

d. depositing the colorant vehicle (**9**) having electrostatic properties on electrostatically charged zones of the hardened material (**1**), and transferring the colorant vehicle (**9**) to the printing carrier (**3**) by direct contact with the intermediate transfer element; and

e. cleaning the substrate by removal of the hardenable material when a new image is to be printed.

5,644,988

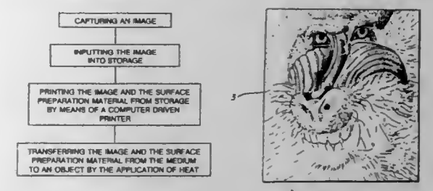
PRINTING METHOD OF APPLYING A POLYMER SURFACE MATERIAL AND SUBSTRATE PRODUCED BY THE METHOD

Ming Xu, and Nathan S. Hale, both of Mt. Pleasant, S.C., assignors to Sawgrass Systems, Inc., Mt. Pleasant, S.C.

Division of Ser. No. 309,933, Nov. 7, 1994, Pat. No. 5,522,317, which is a continuation of Ser. No. 195,851, Feb. 10, 1994, Pat. No. 5,431,501, which is a continuation-in-part of Ser. No. 724,610, Jul. 2, 1991, Pat. No. 5,302,223, which is a continuation-in-part of Ser. No. 549,600, Jul. 9, 1990, abandoned. This application Jan. 16, 1996, Ser. No. 586,406

Int. Cl.[6] B41L *35/14*

U.S. Cl. 101—488 **10 Claims**



1. A method of printing a design and a polymeric surface material, comprising the steps of:

a. printing a design by means of a computer driven printer onto a medium;

b. printing a polymeric surface material by means of a computer driven printer onto the medium and over said design, so as to cover said design with said polymeric surface material, but wherein said polymeric surface material is not substantially printed onto said medium beyond outside margins of said design, and wherein said printing of said polymeric surface material is at a temperature which is below the temperature at which said polymeric surface material is activated; and

c. transferring said design and said polymeric surface material from said medium to a substrate on which the design is to permanently appear by applying heat to said medium at a temperature which is above the temperature at which said polymeric surface material activates, wherein said polymeric surface material is activated and said polymeric surface material is bonded to said substrate, and said design deposited onto said substrate from said medium is bonded to said substrate by means of said polymeric surface material.

5,644,989

DOUBLE-DECKER RAILCAR WITH CONTINUOUS CIRCULATION ON THE UPPER DECK AND ACCESS FROM A HIGH PLATFORM

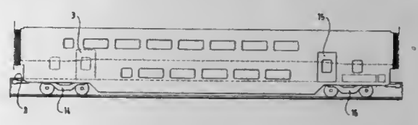
Patrick Blanchier, Nieul sur Mer, and Patrick Hargulndeguy, Angoulins sur Mer, both of France, assignors to GEC Alsthom Transport SA, Paris, France

Filed Sep. 3, 1996, Ser. No. 707,074

Claims priority, application France, Sep. 4, 1995, 95-10-341

Int. Cl.[6] B61D *3/02*

U.S. Cl. 105—340 **7 Claims**



1. A double-decker railcar with continuous circulation on the upper deck and access from a high platform, including:

at least one access door to said railcar the bottom of which is at the level of said high platform,

an intermediate access landing to said railcar inside said railcar, level with said bottom of said access door,

an access stairway to the upper deck running from said intermediate landing,

an access stairway to the lower deck running from said intermediate landing,

a stairwell containing at least parts of said access stairway to said lower deck, said intermediate landing and said access stairway to said upper deck, and

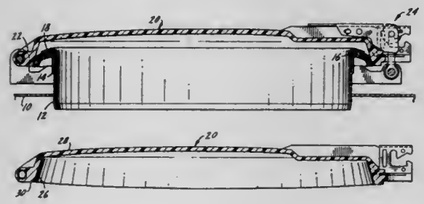
a floor of said upper deck truncated in a given area delimiting said stairwell at the level of said upper deck, said floor of said upper deck defining a continuous plane to enable continuous circulation on said upper deck.

5,644,990

RAILROAD CAR HATCH COVER

Robert F. Seitz, Batavia, Ill., assignor to Dev-Mark, Inc., North Aurora, Ill.

Filed Mar. 11, 1996, Ser. No. 613,489
Int. Cl.[6] B61D *39/00*
U.S. Cl. 105—377.07 **4 Claims**



1. A railroad car hatch cover assembly including a ring defining a car body opening, a peripheral seal attached to said ring, a hatch cover for closing upon said ring and seal to close the car body opening, a hinge adjacent said ring for pivotally mounting said hatch cover and a lock assembly generally diametrically opposite said hinge for securing said hatch cover in a closing position upon said ring and seal,

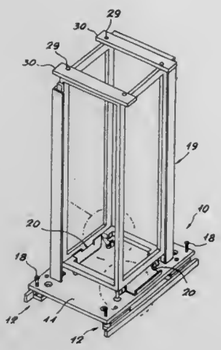
said hatch cover having a peripheral sloping side wall and an integral top, said side wall having a bottom surface, the angle between the sloping peripheral side wall and a plane which is an extension of the side wall bottom surface and is parallel to a plane which represents the intersection of the side wall and the integral top being constant over the interior periphery of said cover, the height of the sloping side wall gradually increasing from a minimum height adjacent the hinge and locking assembly to a maximum height generally midway between the hinge and lock assembly.

5,644,991

TRANSPORT PALLET

Jean-Paul Prévot, Avrillé, and Pascal Ricou, St-Georges S/Loire, both of France, assignors to Bull S.A., Louveciennes, France

Filed Jul. 7, 1995, Ser. No. 499,374
Claims priority, application France, Jul. 13, 1994, 94 08763
Int. Cl.[6] B65D *19/38*
U.S. Cl. 108—54.1 **30 Claims**



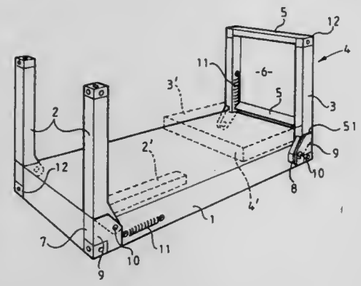
1. A pallet for transporting a load, comprising a deck, skid means for supporting said deck at a predetermined distance above a reference plane, said skid means being removably attached to the deck, screw jack means disposed on the deck and adjustable to operate between first and second states, said screw jack means operating in said first state when said skid means is removed from the deck, for supporting the deck and for varying the height of the deck relative to said reference plane, and said screw jack means operating in said second state when said skid means is attached to the deck, for having no contact with said reference plane.

5,644,992

COLLAPSIBLE FLATRACK WITH RAMP END WALLS

Martin Clive-Smith, 66 Leam Terrace, Leamington Spa CV31 1BQ, England

Filed Oct. 23, 1995, Ser. No. 551,885
Claims priority, application United Kingdom, Oct. 24, 1994, 9421349; Oct. 11, 1995, 9520794; Oct. 16, 1995, 9521412
Int. Cl.[6] B65D *19/00*
U.S. Cl. 108—55.1 **26 Claims**



1. A platform based cargo carrier having:

a base;

and at least one normally upright post pivotally attached to said base by hinge means, said post being pivotable about a first pivot axis of said hinge means between first and second positions and about a second pivot axis of said hinge means between said second position and a third position;

wherein said first and second pivot axes are formed by respective spaced apart first and second pivot means;

wherein in said first position said post is folded inwardly onto said base, in said second position said post is an upright attitude on said base and in said third position said post is folded outwardly away from said base to form a ramp leading to said base;

and wherein said cargo carrier further comprises:

abutment means for supporting said post in said second position;

locking means on said base for locking said post in said upright attitude on said base;

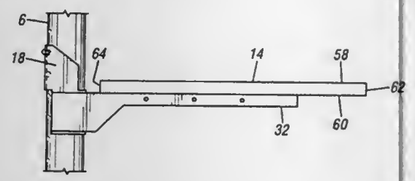
and counterbalance means on said base operable to resist pivoting of said post away from said second position towards said first position.

5,644,993

ADJUSTABLE SHELVING UNIT

Jason Dohnalik, Cameron, Tex., assignor to Balt, Inc., Cameron, Tex.

Filed Jan. 16, 1996, Ser. No. 585,800
Int. Cl.[6] A47B *9/00*
U.S. Cl. 108—108 **13 Claims**



13. An adjustable means for attaching shelves to an upright frame comprising:

a tubular oval bracket having a longitudinal axis, an inside surface defining an inside diameter, an outside surface, a first end, a second end, a front, and a back;

said tubular oval bracket having a first saddle-shaped cut-out in the back of the bracket extending longitudinally at an angle parallel to the longitudinal axis from said second end approximately ⅔ of the length of the bracket towards said first end and extending transversely at an angle perpendicular to the longitudinal axis approximately ⅓ of the depth of the bracket and

a second saddle-shaped cut-out in the front of the bracket having a first portion extending longitudinally an angle acute to the longitudinal axis away from the first end approximately ⅙ of the length of the bracket, extending transversely at an angle acute to the longitudinal axis approximately ⅓ of the depth of the bracket, connected to a second portion extending longitudinally at an angle parallel to the longitudinal axis approximately ⅙ of the length of the bracket and extending transversely at an angle an angle perpendicular to the longitudinal axis approximately ⅙ of the depth of the bracket;

a bracket locking means positioned on the inside surface near the first end and the back of the bracket:

said bracket locking means being removably engageable with an upright frame having laterally spaced holes for receiving said bracket locking means such that when said tubular oval bracket is rotated relative to the longitudinal axis said bracket locking means is disengaged.

5,644,994

FOLDING COLLAPSIBLE TABLE

Chao-C Liang, and Chao-Ming Liang, both of No. 15, Lane 35, San Min Rd., Hsin-Tien City, Taipei County, Taiwan

Filed Aug. 20, 1996, Ser. No. 700,105
Int. Cl.[6] A47B *3/02*
U.S. Cl. 108—116 **1 Claim**

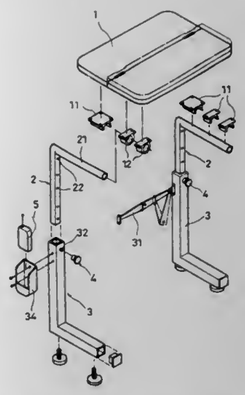
1. A folding collapsible table comprising:

two stands respectively made from hollow bars, each of said stands having a radial pin hole near a top end thereof, and an externally threaded annular flange extending from an outside surface thereof around said radial pin hole;

a folding connecting plate connected on opposing ends to each of said stands for holding said stand in spaced parallel relationship;

two extension supports respectively inserted into said two stands, each of said extension supports having a plurality of vertically spaced lock holes formed therein for selective alignment with the pin hole of the respective stand, each of said extension supports having a horizontal extension rod disposed at a top end thereof;

two locks respectively mounted on the externally threaded annular flanges of said stands for releasably coupling said extension supports in said stands, each of said locks including (a) an internally threaded cup threaded onto the externally threaded annular flange of a respective stand and having a centrally disposed hole formed therethrough, (b) a knob mounted in the center hole of said internally threaded cup and having a lock pin extending from a front side thereof adapted for insertion through the pin hole of the corresponding stand into a selected one of said plurality of lock holes of the corresponding extension support, (c) a locating pin fastened to said knob in an intermediate portion thereof and disposed outside the corresponding stand within said internally threaded cup, and (d) a spring mounted around said knob and connected between said locating pin and an inside wall of said internally threaded cup; and



a folding table plate adapted to be supported on the horizontal extension rods of said extension supports, said folding table plate including (a) first and second symmetrical halves hingedly coupled together, (b) a plurality of first coupling plates secured to a bottom side of opposing ends of said first symmetrical half and a bottom side of a first end of said second symmetrical half, each of said plurality of first coupling plates being releasably engageable with a respective horizontal extension rod to support said folding table plate thereon and be removable therefrom, and (c) a second coupling plate secured to a second end of said second symmetrical half on a bottom side thereof, said second coupling plate having a closed annular contour and being sleeved onto the horizontal extension rod of one extension support for permitting said folding table plate to be rotated about the corresponding horizontal extension rod subsequent to disengagement of said plurality of first coupling plates form said horizontal extension rods and folding of said first symmetrical half with respect to said second symmetrical half.

5,644,995

RAPIDLY ASSEMBLED AND DISASSEMBLED PORTABLE TABLE, WORK BENCH, OR THE LIKE

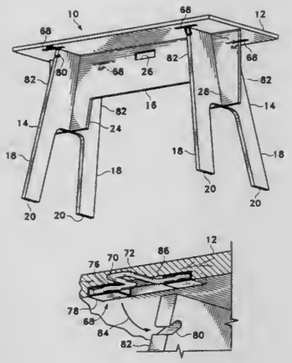
Hugh David Gurwell, and Nancy C. Gurwell, both of 9607 Walmer, Overland Park, Kans. 66212

Filed Oct. 11, 1995, Ser. No. 541,115
Int. Cl.[6] A47B *83/02*
U.S. Cl. 108—188 **1 Claim**

1. A portable table comprising:

a. a pair of spaced pedestals each having a bottom edge resting on a supporting surface, wherein each said pedestal further comprises a pedestal slot formed from a top edge of each said pedestal to a point about one-half of the distance from said top edge of said pedestal to an upper end of a U-shaped cut out portion of each said pedestal;

b. a central brace member between said pedestals and means for connecting said pedestals to said central brace member,



wherein said central brace member further comprises a trapezoidal cut-out portion having its long dimension along a bottom edge of said central brace member and said central brace member further comprises a pair of slots running from a bottom edge of said central brace member to a point about one-half of the distance between said bottom edge and a top edge of said central brace member, with said pedestal slots engaging and mating with said brace member slots, whereby said top edges of said pedestals and of said central brace member lying in a single plane;

c. a top seated on said top edges of said pedestals and said top edge of said central brace member, with said top edge of said central brace member contacting said top along a line along a longitudinal center of said top; and

d. means for retaining said top on said top edges of said pedestals and said top edge of said central brace member; and

e. means for fastening said top to said pedestals, wherein said fastening means further comprises a plurality of locking clip mechanisms, each said locking clip mechanism comprising a bent wire, each said bent wire having a protruding U-shaped centrally located portion and a straight connecting portion extending from each of two legs at the ends of the U-shaped portion, each straight connecting portion having a V-shaped notch therein, with said straight connecting portions seated in a recess in a bottom surface of said top adapted to toggle into an aligned slot in an edge of said pedestal.

5,644,996

METHOD AND ARRANGEMENT FOR REBURNING LIME SLUDGE IN A FLUIDIZING BED

Martin Wimby, and Charlotta Hanson, both of Gothenburg, Sweden, assignors to Kvaerner Pulping Technologies AB, Sweden

PCT No. PCT/SE93/01036, § 371 Date Sep. 7, 1995, § 102(e) Date Sep. 7, 1995, PCT Pub. No. WO94/16140, PCT Pub. Date Jul. 21, 1994

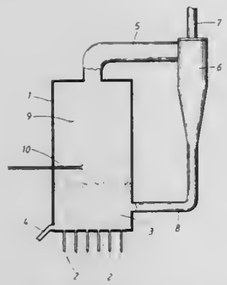
PCT Filed Dec. 2, 1993, Ser. No. 481,424

Claims priority, application Sweden, Jan. 11, 1993, 9300044

Int. Cl.[6] F23G *5/00*

U.S. Cl. 110—245 **21 Claims**

1. A method for lime sludge reburning in a fluidising bed using hot gases as a fluidising medium, characterized in that a cooling medium (**10**) is injected immediately above the fluidising bed (**3**).



5,644,997

WASTE PYROLYSIS ROTARY FURNACE WITH INTERNAL HEATING

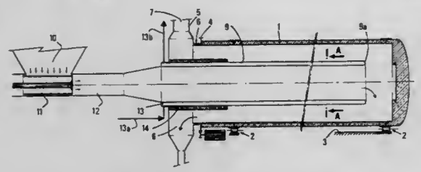
Gérard Martin, and Eric Marty, both of Rueil-Malmaison, France, assignors to Institut Francais du Petrole, Rueil Malmaison, France

Filed May 30, 1995, Ser. No. 454,563

Claims priority, application France, May 30, 1994, 94 06660

Int. Cl.[6] A47J *36/00*

U.S. Cl. 110—246 **8 Claims**



1. A furnace for the thermal treatment of solid materials which comprises a rotary element in which said solid materials circulate longitudinally; a heating means for heating said solid materials which extends longitudinally in the furnace, said heating means comprising a stationary tubular array of heating elements arranged coaxially and inside the rotary element; and means for moving the solid materials forward initially through the tubular array and then through a space between the tubular array and the rotary element; said tubular array defining an axial zone wherein the solid materials receive highest temperatures of the thermal treatment.

5,644,998

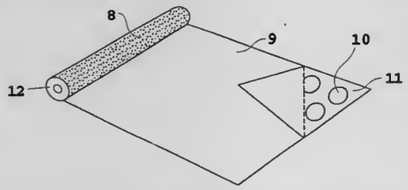
ALL PURPOSE MULCH SYSTEM

Edward Krolick, 230 Peconic St., Ronkonkoma, N.Y. 11779

Filed Mar. 13, 1995, Ser. No. 403,511

Int. Cl.[6] A01C *11/00*

U.S. Cl. 111—102 **9 Claims**



1. An agricultural growth enhancement method comprising the steps of:

a. sowing a selected type of seed upon the earth in a manner consistent with the type of seed selected; and

b. providing an opaque sheet of unitary composition selectively pre-perforated with a predetermined pattern of visible holes of a predetermined size and shape with a predetermined space between them, said opaque sheet having an upper and lower surface; and

c. applying a gummous weatherproof sticky substance onto said opaque sheet except where said holes occur; and

d. applying diatomaceous earth to said gummous weatherproof sticky substance on said opaque sheet to loosely affix said diatomaceous earth to said opaque sheet; and

e. placing said opaque sheet upon the seeded earth so that only a predetermined fraction of said seeds exposed by said holes will germinate and continue to grow.

5,644,999

APPARATUS AND METHOD FOR TRANSFERRING SEEDLINGS FROM PLANT TRAYS

Geoffrey Allan Williames, Warragul, Australia, assignor to Speedling, Inc., Sun City, Fla.

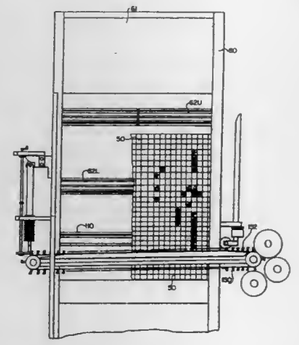
PCT No. PCT/US94/08783, § 371 Date Nov. 1, 1995, § 102(e) Date Nov. 1, 1995, PCT Pub. No. WO95/04451, PCT Pub. Date Feb. 16, 1995

PCT Filed Aug. 2, 1994, Ser. No. 537,918

Claims priority, application Australia, Aug. 4, 1993, PM 0348

Int. Cl.[6] A01C *11/00*

U.S. Cl. 111—105 **16 Claims**



1. A transplanter comprising:

a plant tray having a plurality of cells for containing plugs of growing medium with plants extending therefrom, said cells each having a drain hole and said cells arranged in a plurality of longitudinal rows, and said tray having a bottom surface having a plurality of longitudinally extending indexing grooves thereon separating said rows;

a loading frame having a back side and a front side for slidably supporting said plant tray with said bottom surface of said tray facing said back side of said loading frame;

a quick release indexing drum support frame mounted adjacent said back side of said loading frame;

a plurality of indexing rods arranged in spaced, parallel relationship around the circumference of a circle to form an indexing drum having an interior cavity and a central axis, with said indexing drum being rotatably and demountably connected to said quick release indexing drum support frame and held in position relative to said loading frame to allow engagement of said indexing rods with said indexing grooves;

means for intermittently rotating said indexing drum about its central axis and positively engaging said indexing drum in successive plug ejection positions;

a plug ejection mechanism mounted to said indexing drum support frame for effecting the ejection of the plugs from said plant tray.

5,645,000

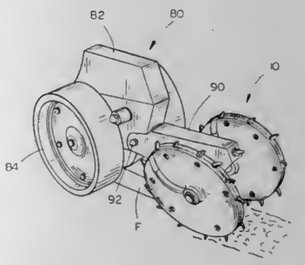
SEED FURROW CLOSING APPARATUS FOR AGRICULTURAL PLANTERS

Walter R. Carroll, HCR 65, Box 77, Wauneta, Nebr. 69045

Continuation-in-part of Ser. No. 517,252, Aug. 21, 1995, which is a division of Ser. No. 33,272, Mar. 15, 1993, Pat. No. 5,443,023. This application Jun. 6, 1996, Ser. No. 659,549

Int. Cl.[6] A01B *17/00*

U.S. Cl. 111—195 **3 Claims**



1. In a seed planter having a frame, a seed furrow opener depending from said frame and engagable with the soil to produce a seed furrow, means for dropping seeds into said seed furrow at spaced intervals, a subframe extending rearwardly from said frame and having a pair of laterally spaced axles with axes oppositely angularly disposed relative to a horizontal reference, a seed furrow closing apparatus, comprising:

(a) a tine wheel having a hub for operative engagement upon said axles and having a plurality of circumferentially spaced tines projecting radially from said hub; and

(b) inner and outer press plates, each having a sidewall with a circumferential shoulder, said circumferential shoulder having a plurality of spaced slots through which extend said tines, said inner and outer press plates selectively securable to, and removable from, said tine wheel.

5,645,001

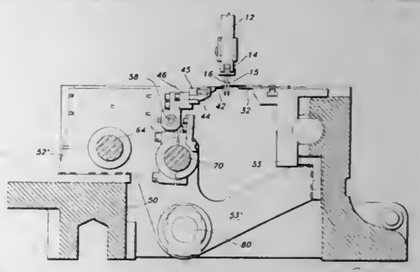
LINEAR MOTION LOOPER APPARATUS FOR TUFTING MACHINE

Jerry Green, Signal Mountain; Michael E. Shipley, Soddy-Daisy, and Richard J. Pribard, Hixson, all of Tenn., assignors to Tuftco Corp., Chattanooga, Tenn.

Filed May 24, 1996, Ser. No. 653,152

Int. Cl.[6] D05C *15/24;15/22*

U.S. Cl. 112—80.55 **16 Claims**

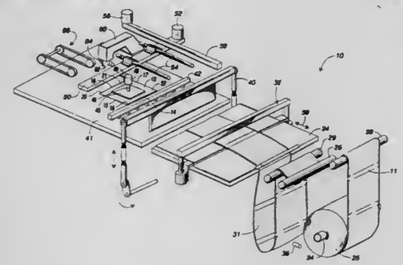


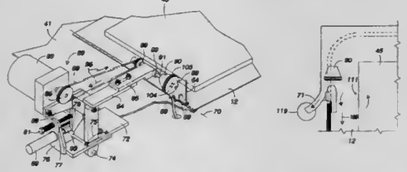
9. In a tufting machine having a frame, a plurality of transversely spaced horizontally reciprocable needles for introducing

yarns through a base fabric to form loops, a plurality of transversely spaced hooks mounted in a vertically reciprocable hook bar and cooperative with said needles in a tufting area, a plurality of knives mounted upon a knife shaft and tensioned against said hooks, a tensioning means comprising:

a linkage extending between said hook bar and a thrust bearing loaded stub shaft mounted in the frame of the tufting machine.

5,645,002
EDGE HEMMER WITH CORNER CONTROLLER
Charles E. Brocklehurst, Fountain Inn, S.C., assignor to Sew Simple Systems, Inc., Fountain Inn, S.C.
Filed Mar. 21, 1996, Ser. No. 619,010
Int. Cl.[6] D05B *21/00;37/04;1/20*
U.S. Cl. 112—470.07 **13 Claims**





11. Apparatus for hemming about the edges of approximately rectangular segments of flexible textile fabric having edges intersecting one another at corners about the segment comprising:

a substantially flat horizontal work surface;

a sewing station positioned at said work surface and defining a sewing path through said sewing station for sewing about the edges of said segments;

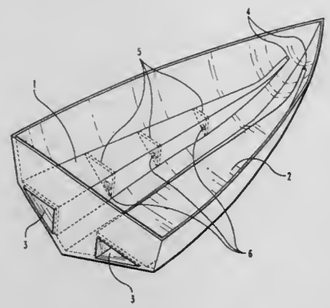
a transport plate movable about said work surface for urging a segment of material across said work surface and along the sewing path and through said sewing station;

transport plate control means for moving said transport plate and a segment engaged by said transport plate about said work surface and for rotating said transport plate and said segment with respect to said sewing station for forming a hem about the edges and corners of a segment;

corner control means positioned to engage said segment up the sewing path from the sewing station for urging the segment across the sewing path as a corner of the segment moves into said sewing station.

5,645,003
HULL FOR A HIGH SPEED BOAT
Geir Grinde, Parkveien 49, N-0256 Oslo 2, Norway
PCT No. PCT/NO93/00061, § 371 Date Dec. 13, 1995, § 102(e) Date Dec. 13, 1995, PCT Pub. No. WO94/23988, PCT Pub. Date Oct. 27, 1994
PCT Filed Apr. 13, 1993, Ser. No. 532,706
Int. Cl.[6] B63B *39/03*
U.S. Cl. 114—125 **4 Claims**

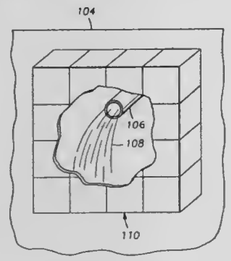
1. A hull for a high speed motorboat, comprising:



a substantially V-shaped hull bottom for a high speed motorboat symmetrically formed about a longitudinal center axis from the bow to the stern of said hull bottom;

a pair of enclosed channels within said hull bottom extending substantially from the bow to the stern of said hull bottom and disposed symmetrically about and apart from said longitudinal center axis, with the bow ends of said enclosed channels open to the atmosphere above the water line of said hull bottom, and with substantially all of the remaining portions of said enclosed channels disposed below the water line of said hull bottom, and with the stern ends of said enclosed channels permanently open below the water line of said hull bottom, and with each of said enclosed channels being formed utilizing said hull bottom as one of the enclosing walls thereof.

5,645,004
MARINE VESSEL FUEL SPILL PREVENTION DEVICE
Herbert W. Holland, 2314 Chimney Rock, Houston, Tex. 77056
Division of Ser. No. 424,173, Apr. 20, 1995, Pat. No. 5,566,731, which is a division of Ser. No. 265,418, Jun. 24, 1994, Pat. No. 5,518,797. This application Oct. 17, 1996, Ser. No. 730,847
Int. Cl.[6] B63B *25/08*
U.S. Cl. 114—211 **11 Claims**

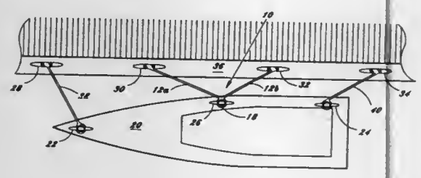


1. A method of containing, collecting and removing hydrocarbons from the ventilation valve of the fuel tank of a vessel being fueled before the hydrocarbons spill onto the surface of the water proximate a marine fueling facility dock area, comprising the steps of:

providing a spill containment device formed as a low profile box by a pillow-like floor section surrounded on its periphery by a belt section of upright walls, each section having an outer envelope layer of textile material, a plurality of chambers formed in stratification therein by internal layers of textile material with a polymer material disposed within the chambers of the device having a property of acting to absorb and solidify liquid hydrocarbon substances coming into contact with the device and migrating to its interior, and a plurality of quilting seams formed in the device to define hydrocarbon absorption consolidation points within the device and establish the chambers as distinct hydrocarbon absorption units within the device; and

placing the spill containment device over the ventilation valve of the fuel tank of the vessel being fueled in a location where fuel forced out of the fuel tank of the vessel via its ventilation valve will come in contact with the containment device.

5,645,005
SPRING LINE FOR MARINE VESSEL AND METHOD OF USE
Stanley Golland, 1231 SW. 87th Terr., Plantation, Fla. 33324
Filed Jan. 11, 1996, Ser. No. 583,949
Int. Cl.[6] B63B *21/00*
U.S. Cl. 114—230 **6 Claims**



1. An improved spring line for a marine vessel for securing a vessel to a pier or dock structure comprising:

a line, said line having a first, elongated section with a first free end, a second, elongated section with a second free end, said first and second elongated sections being unitarily continuously connected together; and

an enlarged loop segment formed by said line and disposed between said first line end and said second line end, forming a segment of said line, said loop segment being integrally connected and formed integrally and connected with said first and second line sections, forming a continuous line that includes said first line section, said loop segment, and said second line section, said loop segment including two interwoven connection junction locations that are integrally woven into said line continuous from said first free end to said second free end, said junction locations define a short line segment disposed between said loop segment and said line, wherein an extremely strong structure is formed and said loop segment cannot separate from said line.

5,645,006
BLADDER ASSEMBLY FOR RETAINING FLUID UNDER PRESSURE
Paul E. Moody, Barrington, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Jan. 17, 1996, Ser. No. 587,412
Int. Cl.[6] B63G *8/32*
U.S. Cl. 114—238 **13 Claims**

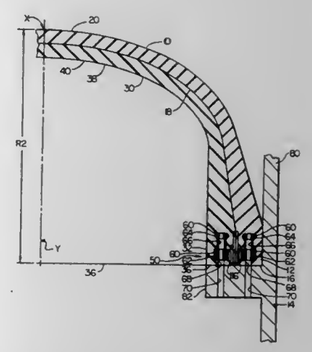
1. A bladder assembly for retaining and discharging a fluid under pressure, said assembly comprising:

a rigid foundation;

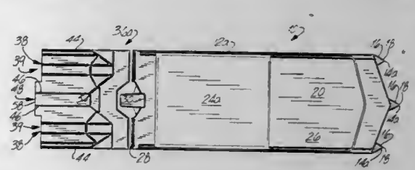
a first expandable elastomeric bladder member having a first annularly-shaped base end for anchoring to said foundation and defining a first fixed end, and a first dome-shaped wall portion upstanding from said first fixed end and defining a first movable end;

a second expandable elastomeric bladder member disposed within and contiguous to said first bladder member, said second bladder member having a second annularly-shaped base end for anchoring to said foundation and defining a second fixed end, and a second dome-shaped wall portion upstanding from said second fixed end and defining a second movable end; and

said first and second bladder members and said foundation being provided with means for fixing said first and second base ends to said foundation.



5,645,007
PERSONAL WATERCRAFT MOORING AND TRANSPORTATION SYSTEM
Mark Benton, Lake Havasu City, Ariz., assignor to Ski Deck, LLC, Las Vegas, Nev.
Filed Mar. 15, 1996, Ser. No. 616,373
Int. Cl.[6] B63B *35/44*
U.S. Cl. 114—263 **23 Claims**



1. A vessel and personal watercraft system comprising:

(i) a vessel including a powerplant for driving the vessel in the water;

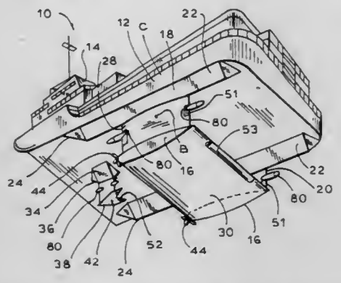
(ii) at least one personal watercraft;

(iii) a mooring defined at the transom of the vessel to receive and moor the personal watercraft for transportation by the vessel, the mooring including,

(a) at least one receptacle proximate the water's surface to slidably nest the personal watercraft from the water's surface into a moored position, the receptacle having a configuration to mate with the personal watercraft and defining a support surface to support the personal watercraft at least partially out of the water for transportation with the vessel under power of the powerplant when moored in the receptacle; and

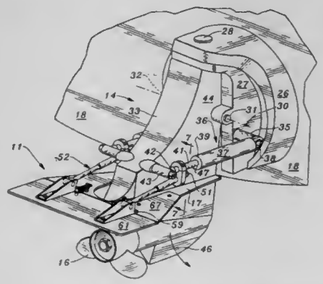
(b) means to secure the personal watercraft to the vessel in the moored position for transportation therewith.

5,645,008
MID FOIL SWAS
Steven Loui, Honolulu, Hi., assignor to Pacific Marine Supply Co., Ltd., Honolulu, Hi.
Continuation-in-part of Ser. No. 352,141, Dec. 1, 1994, which is a continuation-in-part of Ser. No. 159,596, Dec. 1, 1993, Pat. No. 5,433,161. This application Oct. 24, 1995, Ser. No. 547,378
Int. Cl.[6] B63B *1/24*
U.S. Cl. 114—274 **3 Claims**



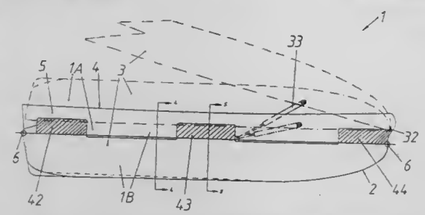
1. A high speed ship comprising a hull structure having a bow portion and a stern portion and being normally supported above the surface of the water at a design waterline when in operation, a forward strut depending from the bow portion of the hull structure subtended by a first buoyancy means, at least one aft strut depending from the hull structure at approximately midship, said at least one aft strut being subtended by a second buoyancy means whose beam is equal to or greater than its length extending laterally beneath the ship, said at least one aft strut and said second buoyancy means providing more than 70% of the buoyancy for the ship during operation to maintain said hull structure above the surface of the water during operation and said forward strut and first buoyancy means providing 30% or less of the buoyancy of the vessel during operation; and wherein the center of buoyancy of the ship is located within the periphery of the second buoyancy means when viewed from above.

5,645,009
POWER BOAT TRIM AUGMENTATION DEVICE
James R. Lexau, P.O. Box 44, Herald, Calif. 95638
Filed Jul. 22, 1996, Ser. No. 684,808
Int. Cl.[6] B63B *1/24*
U.S. Cl. 114—274 **10 Claims**



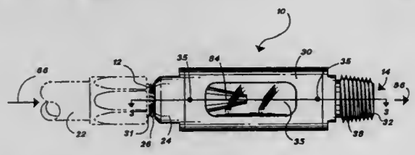
1. In a power boat propulsion unit pivotally mounted on a transom bracket for rotation about a substantially vertical axis for steering and a substantially horizontal axis for trimming and tilting, the unit including a propeller and an anticavitation plate, a trim augmentation device comprising:
a. a mounting plate attached to the anticavitation plate, said mounting plate extending from a front end to a rear end;
b. a deflector plate extending from a forward end to an after end;
c. hinge means for connecting said forward end of said deflector plate to said rear end of said mounting plate for movement between a base position in which said deflector plate is substantially coplanar with said mounting plate and a deployed position in which said deflector plate is angularly inclined to intercept a predetermined portion only of the propeller backwash in forward operating mode of the propulsion unit; and,
d. means for urging said deflector plate toward said deployed position in dependence upon the extent of trim rotation of the unit about the horizontal axis.

5,645,010
DEVICE FOR A BOX
Hans Lundström, Ljungvägen 15, S-435 31, Mölnlycke, Sweden
PCT No. PCT/SE94/01109, § 371 Date May 22, 1996, § 102(e) Date May 22, 1996, PCT Pub. No. WO95/14590, PCT Pub. Date Jun. 1, 1995
PCT Filed Nov. 22, 1994, Ser. No. 648,163
Claims priority, application Sweden, Nov. 26, 1993, 9303918.8
Int. Cl.[6] B63B *7/04*
U.S. Cl. 114—352 **18 Claims**



1. A device (1) at a box (1A) consisting of an upper part (3) and a lower part (5) of a load box, which by said parts (3, 5) can be coupled together to each other to form a storage box (1A) and that the box also is provided to be used as a boat, characterized therein, that said box parts (3, 5) are, with one of the box parts (5) receivable on top of the other box part (3), and able to couple together, in order to form a boat (1B) or a similar vessel by the lower part of the load box (5), in a position coupled together with the upper part of the load box (3), being provided to function as the upper part of the boat body when forming a boat (1B).

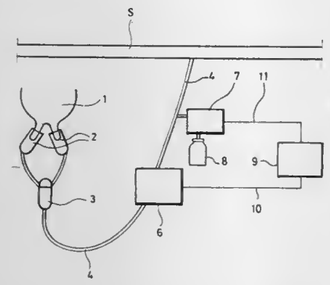
5,645,011
FLUID FLOW INDICATOR
Bruce Winkler, and Rocky Van Asten, both of Madison, Wis., assignors to PDQ Food Stores, Inc., Middleton, Wis.
Filed Jul. 28, 1994, Ser. No. 282,531
Int. Cl.[6] G01F *15/00;* **B01D** *35/00*
U.S. Cl. 116—264 **7 Claims**



1. A fluid flow indicator comprising:
(a) a cage member having a first open end, a second open end, and a window therebetween;

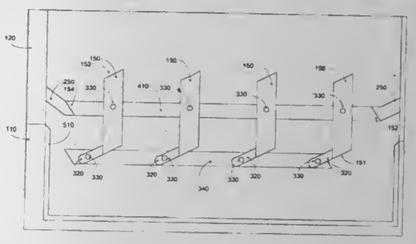
(b) a first transparent cylindrical member contained within the cage member, wherein the first member has a first open end and a second open end; and
(c) a second transparent cylindrical member contained within the first transparent cylindrical member, wherein the second member has a first open end and a second open end, the window having a width approximately equal to the diameter of the second transparent cylindrical member;
(d) two metal spacers, one of the metal spacers being located between the first open ends of the first and second members, and the other of the metal spacers being located between the second open ends of the first and second members; and
(e) a conical filter member located within the second transparent cylindrical member, the conical filter member including a wide filter base and a narrow filter tip, the wide filter base being located adjacent the first open end of the second transparent cylindrical member and the narrow filter tip being generally centrally located along the length of the window, and wherein the first open end of the second member serves as a fluid inlet.

5,645,012
METHOD FOR EXTRACTING FROM A MILKING FLOW AN ANALYSIS SAMPLE HAVING A PROPORTIONAL AMOUNT
Tilman Hoefelmayr, Niederteufen, Switzerland, assignor to Bio-Melktechnik Hoefelmayr & Co., Niederteufen, Switzerland
Filed Sep. 9, 1994, Ser. No. 303,867
Claims priority, application Germany, Sep. 14, 1993, 43 31 203.9
Int. Cl.[6] A01J *5/00*
U.S. Cl. 119—14.14 **19 Claims**



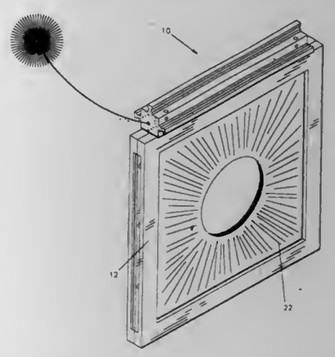
1. Method for extracting an analysis sample amount of milk from a milk flow milked from a cow, which amount is proportional to the amount of milk which has been milked, comprising the steps of: transporting the milk flow through a milk duct, determining a rate of milk flow, extracting sample partial amounts from the milk flow through a valve at an extraction rate dependent on the rate of milk flow, determining a valve cycle time and a valve opening time so that the valve cycle time and the valve opening time each lie within a specified range of values, controlling a time duration of the valve cycle time whereby each valve cycle time includes the valve opening time and a valve closing time, determining an expected total amount of milk milked from the cow by previous milking experiences, holding a sum of the sample partial amounts below a maximum amount of 50 ml, controlling at least one of the valve opening time and the valve cycle time dependent on the rate of milk flow, and changing the valve opening time and the valve cycle time in an equal ratio to the values lying within the specified range of values thereby avoiding the valve opening time and valve cycle time lying outside the specified range of values as a result of a change in the rate of milk flow.

5,645,013
PET LITTER BOX
H. Graham Redmond, Sr., Sunrise, Fla., assignor to Redmond Innovations, Inc., Bayside, N.Y.
Filed Apr. 2, 1996, Ser. No. 626,442
Int. Cl.[6] A01K *29/00*
U.S. Cl. 119—170 **17 Claims**



1. A pet litter box comprising:
A. a first compartment;
B. a false floor means at the bottom of said first compartment and a means of opening said false floor means operatively connected to said false floor means, said opening means effective to permit any material in said first compartment to pass through said opening means unimpeded; and
C. a second compartment under said false floor means wherein said first and second compartments and an interface thereof are substantially free of holes through which urine can leak through to the exterior of said litter box, or from one compartment to the other, during normal use of said litter box.

5,645,014
MODULAR PET HABITAT
Stefan Chilcote, 3841 4th Ave., Ste. 194, San Diego, Calif. 92103
Filed Jun. 13, 1995, Ser. No. 489,853
Int. Cl.[6] A01K *1/00*
U.S. Cl. 119—498 **2 Claims**

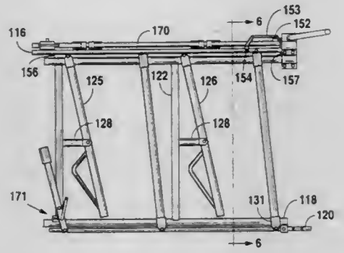


1. A modular pet habitat comprising:
a plurality of panels, each of said panels includes a panel frame and an insert, said panel frame includes means to secure said insert, said panel frames comprise two frame elements, each said element including around its perimeter on an interior side an alternating series of pegs and holes, the panel frames further including an axial, angled securing rib on each interior side of said frame element, and an axial positioning rib at a central section of alternatiog interior sides of the panel frame; such that when a first frame element is rotated 90° relative to a second frame element, the pegs of the first element align

with the holes of the second element, thereby creating a friction fit of the two frame elements, securing them together and

connecting means adapted to allow a user to connect said panels together in various conformations, the connections being accomplished without the use of tools.

5,645,015
ADJUSTABLE STANCHION
John A. DaSilveira, P.O. Box 1408, Lovington, N. Mex. 88260
Filed Dec. 1, 1994, Ser. No. 347,714
Int. Cl.[6] A01K *1/08*
U.S. Cl. 119—741 **26 Claims**



1. A stanchion comprising:

a frame cumprising a substantially horizontal extending first frame member, a substantially horizontal extending second frame member in general proximate relation to said substantially horizontal extending first frame member, a substantially horizontal extending third frame member, a substantially horizontal extending fourth frame member in general proximate relation to said substantially horizontal extending third frame member, a first substantially vertical extending side frame member coupling said substantially horizontal extending first frame member and said substantially horizontal extending third frame member, and a second substantially vertical extending side frame member coupling said substantially horizontal extending second frame member and said substantially horizontal extending fourth frame member wherein said second substantially vertical extending side frame member displaces generally longitudinally from said first substantially vertical extending side frame member, and said frame members define a stanchion opening therebetween; and,

a restraining member disposed in said stanchion opening, said restraining member being pivotally mounted to said frame for movement between a first position with said restraining member extending diagonally across said stanchion opening and a second position with said restraining member having a substantially vertical orientation.

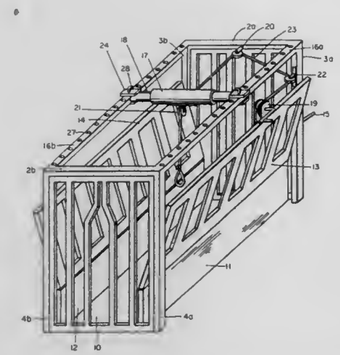
5,645,016
CATTLE STABILIZER
Dan Mahurin, Rte. 1, Box 114, Republic, Mo. 65738
Filed Feb. 20, 1996, Ser. No. 603,340
Int. Cl.[6] A61D *3/00*
U.S. Cl. 119—752 **14 Claims**

1. An animal squeeze chute having a chute area comprising:

a pair of chute moveable sides defining a channel therebetween into which the body of an animal to be confined can be received;

each side having an elongated top rail extending longitudinally of the side;

a telescopically adjustable beam adjustably connected to each top rail, said beam having a pair of inner struts connected to a



slidably adjustable outer tubular member, said tubular member supporting and adjustably positioning said first pulley over the chute area;

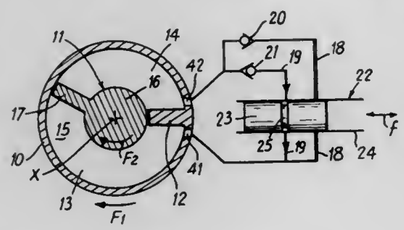
a second pulley pivotally mounted on an end rail of said chute;

a third pulley pivotally mounted on a back rail of said chute;

a winch assembly mounted on a side bar of one of said chute sides;

a cable having a free operating end and a captive end attached to said winch assembly for winding thereon, said cable passing over said pulleys such that the free end depends from said first pulley and such that actuation of the winch assembly causes the free end of the cable to be pulled upwardly for applying force to a chain for engaging a part of the animal, whereby the part of the animal in the chute is pulled upwardly and toward the pulley to subdue the animal.

5,645,017
COUPLING FOR THE TRANSMISSION OF ALTERNATING TORQUES
Jean Frédéric Melchior, 126 Bld du Montparnasse, 75 014 Paris, France
PCT No. PCT/FR90/00009, § 371 Date Sep. 13, 1990, § 102(e) Date Sep. 13, 1990, PCT Pub. No. WO90/08248, PCT Pub. Date Jul. 26, 1990
PCT Filed Jan. 5, 1990, Ser. No. 576,451
Claims priority, application France, Jan. 13, 1989, 89 00366
Int. Cl.[6] F01L *1/34*
U.S. Cl. 123—41.15 **39 Claims**



1. An internal combustion engine comprising:

a camshaft which actuates an element;

a main shaft which drives said camshaft; and

a variable phase coupling for transmission of an alternating torque between said main shaft and said camshaft where the parts in operation are subjected to alternating resistant and driving torques including

a cylinder to which one of said shafts is connected;

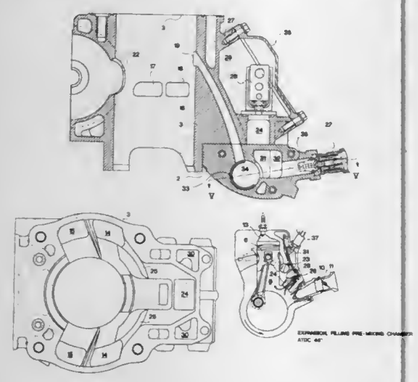
a piston to which the other one of said shafts is connected and which is disposed relative to said cylinder such that at least

two antagonistic chambers are provided in said cylinder and such that a relative and single position between said piston and said cylinder corresponds to an angular phase difference value between said shafts, said chambers having a substantially constant total volume and being filled with a hydraulic liquid which is practically incompressible at normal pressures of operation of the coupling;

two communications circuits of substantially constant volume which interconnect said chambers and which allow fluid communication between said chambers only in respective opposite directions; and

a distributing means for bringing into fluid communication said chambers through one or the other of said communication circuits while preventing fluid communication through the other of said communication circuits and for blocking fluid communication between said chambers, selectively, such that the phase difference between said shafts is selectively increased, decreased, or maintained constant.

5,645,018
TWO CYCLE INTERNAL COMBUSTION ENGINE
Yoici Ishibashi, and Masahiro Asai, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 19, 1996, Ser. No. 716,623
Claims priority, application Japan, Sep. 19, 1995, 7-263696
Int. Cl.[6] F02M *35/10*; **F02B** *75/02*
U.S. Cl. 123—73 PP **20 Claims**

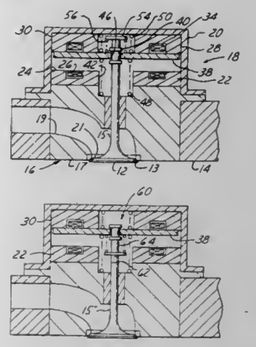


1. In a two-cycle internal combustion engine having a first chamber formed in a scavenging passage communicating between a crank chamber and a combustion chamber, with a sealable inlet control valve being disposed in an inlet of said first chamber and a sealable outlet control valve being disposed in an outlet of said first chamber and a fuel feed system for supplying fuel into said first chamber comprising:

said first chamber being in selective communication with a second scavenging passage; and

the sealable outlet control valve being disposed in the outlet of the first chamber formed on the combustion chamber side and on a scavenging downstream side and being positioned on a bottom portion of the second scavenging passage communicating with a mixing chamber with respect to the sealable inlet control valve disposed in the inlet on the crank chamber side.

5,645,019
ELECTROMECHANICALLY ACTUATED VALVE WITH SOFT LANDING AND CONSISTENT SEATING FORCE
Feng Liang, Canton, and Craig Hammann Stephan, Ann Arbor, both of Mich., assignors to Ford Global Technologies, Inc., Dearborn, Mich.
Filed Nov. 12, 1996, Ser. No. 747,533
Int. Cl.[6] F01L *9/04*
U.S. Cl. 123—90.11 **18 Claims**



12. An internal combustion engine for use in a vehicle comprising:

a cylinder head mounted to the engine;

an engine valve having a head portion and a stem portion slidably mounted within the cylinder head;

an actuator housing mounted to the cylinder head and surrounding a portion of the valve stem;

a first electromagnet, fixedly mounted relative to the actuator housing and encircling a portion of the valve stem;

a second electromagnet, fixedly mounted relative to the actuator housing and encircling a portion of the valve stem farther from the head of the engine valve than the first electromagnet and spaced from the first electromagnet;

a disk slidably mounted to the engine valve stem and located between the first and second electromagnet;

a first spring mounted between the disk and the cylinder head for biasing the disk toward the second electromagnet;

a second spring mounted between the disk and the actuator housing for biasing the disk toward the first electromagnet;

stop means for limiting the sliding of the disk along the valve stem between two predetermined locations on the valve stem; and

secondary biasing means for biasing the disk toward one of the two predetermined locations.

5,645,020
CAM ASSEMBLY INSTALLATION IN ENGINE
Yoshihiko Yamada, Komae, Japan, assignor to Unisia Jecs Corporation, Atsugi, Japan
Filed Mar. 1, 1996, Ser. No. 609,441
Claims priority, application Japan, Mar. 3, 1995, 7-043897
Int. Cl.[6] F01L *13/00*
U.S. Cl. 123—90.17 **17 Claims**

1. An installation in an internal combustion engine comprising:

a cylinder head;

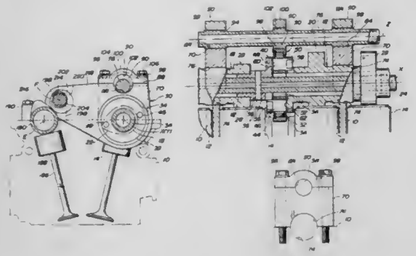
a plurality of hollow cams;

a driving shaft extending through said plurality of hollow cams and rotatable about a shaft axis;

a plurality of drive members rotatable with said driving shaft;

a plurality of supports;

a plurality of intermediate members supported in said plurality of supports, respectively, for rotation about an axis thereof so as to rotate eccentrically with respect to said shaft axis;



each of said plurality of drive members being coupled with the adjacent one of said plurality of intermediate members by a first coupling at a first position spaced from said shaft axis,

each of said plurality of hollow cams being coupled with the adjacent one of said plurality of intermediate members by a second coupling at a second position angularly spaced from said first position with respect to said shaft axis,

each of said first and second couplings having a movable connection with the adjacent one of said plurality of intermediate members to permit variation in its distance from said axis of said intermediate member during operation,

a plurality of brackets fixedly secured to said cylinder head to rotatably support said plurality of hollow cams on said cylinder head;

a control member rotatable about an axis thereof and having a plurality of control cams arranged distant one after another along said axis of said control member;

each of said plurality of brackets being formed with a recess supporting said control member;

a control member holder on said plurality of brackets to keep said control member rotatable on said plurality of brackets;

each of said plurality of supports being formed with a recess supporting the adjacent one of said plurality of control cams; and

a control cam holder on said plurality of supports to keep said control cams operatively cooperating with said plurality of supports in such a manner as to cause said plurality of supports to move in a plane perpendicular to said shaft axis to vary the eccentricity of said intermediate members.

5,645,021

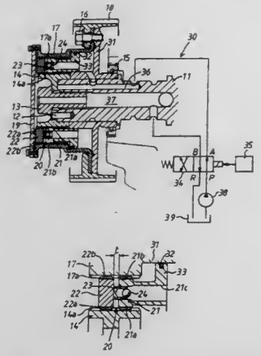
VALVE TIMING ADJUSTING MECHANISM FOR INTERNAL COMBUSTION ENGINE

Katsuhiko Eguchi, Kariya, and Naoki Kira, Anjo, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Aichi-pref., Japan

Filed Jul. 26, 1996, Ser. No. 686,425
Claims priority, application Japan, Jul. 28, 1995, 7-193745
Int. Cl.[6] F01L *1/344*
U.S. Cl. 123—90.17 **4 Claims**

1. A valve timing adjusting mechanism for an internal combustion engine comprising an internal gear formed with external teeth and mounted on either one of a crankshaft or a cam shaft of the engine for rotation therewith, an external gear formed with internal teeth and assembled in surrounding relationship with the internal gear, the external gear being driving connected to the other one of the crankshaft and camshaft for rotation therewith, and an intermediate gear set disposed in an annular space between the internal and external gears to be moved by fluid under pressure applied thereto in an axial direction for effecting relative rotation of the internal and external gears,

wherein the intermediate gear set comprises a primary gear formed with internal teeth in meshing engagement with the external teeth of the internal gear and external teeth in meshing engagement with the internal teeth of the external gear, an auxiliary gear formed with internal teeth in meshing engagement with the external teeth of the internal gear and external teeth in meshing engagement with the internal teeth of the external gear, and restriction means interposed between the



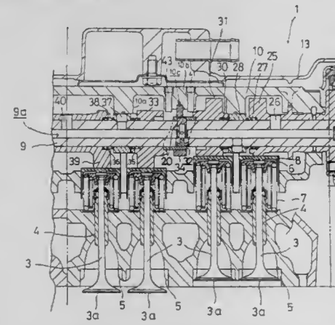
primary and auxiliary gears in a condition where the primary and auxiliary gears have been disposed in the annular space between the internal and external gears, the restriction means being adapted to adjust an axial distance between the primary and auxiliary gears and being non-movably retained in a position where backlashes at the meshed portions of the component gears are eliminated.

5,645,022

ENGINE VALVE DRIVE CONTROL DEVICE

Toshio Yamamoto; Takaaki Tsukui; Takashi Ichimura, and Noriaki Okano, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 467,832, Jun. 6, 1995, abandoned.
This application Sep. 18, 1996, Ser. No. 714,293
Claims priority, application Japan, Jun. 6, 1994, 6-147102
Int. Cl.[6] F01L *13/00*
U.S. Cl. 123—90.17 **19 Claims**



1. An engine valve drive control device for an engine having a rotatable cam shaft, the cam shaft being rotatably driven by the engine and the control device comprising:

a cam lobe mounted on the cam shaft and selectively being rotated by the cam shaft, the cam lobe being rotated when engaged with the rotating cam shaft to thereby drive a valve of the engine, the cam lobe being slidable in an axial direction with respect to the cam shaft;

cam rotation halting means for stopping rotation of the cam lobe to thereby deactivate the valve, the cam rotation halting means sliding the cam lobe in the axial direction to connect and disconnect the cam lobe from the cam shaft;

a joint pin movably mounted in the cam shaft, the joint pin being extendable from and retractable into the cam shaft, the joint pin extending beyond an outer circumference of the cam shaft when extended therefrom; and

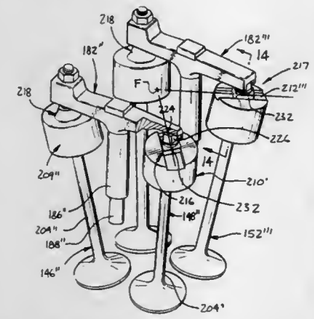
a cam lobe slider rotatably fitted on the cam shaft, the cam lobe slider having a joint hole for receiving the joint pin, the joint pin being movable into the joint hole to thereby rotate the cam lobe slider with the cam shaft to slide the cam lobe in the axial direction.

5,645,023

VALVE TRAIN FOR AN INTERNAL COMBUSTION ENGINE

Jose F. Regueiro, Rochester Hills, Mich., assignor to Chrysler Corporation, Auburn Hills, Mich.

Filed Apr. 8, 1996, Ser. No. 629,161
Int. Cl.[6] F01L *1/26*
U.S. Cl. 123—90.27 **2 Claims**



1. A valve train mechanism for an internal combustion engine having a cylinder head fixedly mounted on an engine block provided with one or more cylinders each of which has a piston reciprocally supported therein along the axial center line of the associated cylinder, a combustion chamber in each of said cylinders of said engine and being defined by a recess in said cylinder head and the top of said piston, at least a pair of valves located in said cylinder head, each of said valves being inclined outwardly from said combustion chamber at substantially equi-angular orientation relative to said axial center line, an inverted bucket tappet mounted on the upper end of each of said valves, a camshaft, an actuator member operated by said camshaft for moving each of said valves to an open position, a spherical joint assembly comprising a ball member and at least one socket member, said spherical joint assembly being located between said actuator member and the top of said inverted bucket tappet, and a flat surface-to-surface sliding connection provided by one of said ball member and said at least one socket member between said actuator member and said top of said inverted bucket tappet for assuring that said actuator member maintains a force applying connection with said inverted bucket tappet as said actuator moves said valve to said open position, wherein said actuator is formed with an elongated slot and said ball member is configured as a half-ball and is formed with a pair of laterally spaced side walls slidably located in said slot.

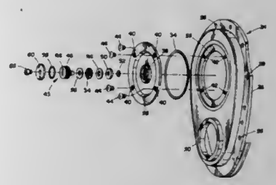
5,645,024

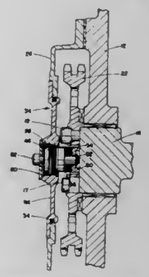
CAMSHAFT END-PLAY ADJUSTMENT DEVICE

Timothy R. Allen, Paris, and Matthew A. Tompkins, Russellville, both of Ark., assignors to Cloyes Gear & Products, Paris, Ark.

Filed Oct. 26, 1995, Ser. No. 548,872
Int. Cl.[6] F01L *1/02;* **F01M** *9/10*
U.S. Cl. 123—90.38 **12 Claims**

1. In an internal combustion engine having an engine block and an output shaft connected by a timing drive to a camshaft, a cover assembly comprising:





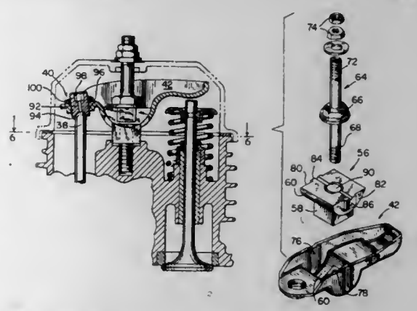
a cover member surrounding said timing drive and mounted to said engine block, the cover assembly including an opening in general axial alignment with an exposed end of the camshaft, a cap member mounted to the cover member and generally seated in said opening, said cap member including a hole in general axial alignment with said camshaft, an adjustable button having a first end secured in said hole and a second end engaging said camshaft, said first end being accessible for adjustment without removal of the cover assembly.

5,645,025

INTERNAL COMBUSTION ENGINE

Donald M. Caya, Wales, and Thomas L. Barnhardt, Hartford, both of Wis., assignors to Briggs & Stratton Corporation, Wauwatosa, Wis.

Filed Mar. 27, 1996, Ser. No. 625,393
Int. Cl.[6] F01L *1/18;1/20*
U.S. Cl. 123—90.42 **17 Claims**



10. An internal combustion engine, comprising:

a cylinder having a bore therein;

a cast cylinder head disposed adjacent to an end of said cylinder;

first and second spaced, cast ribs integrally formed with said cast cylinder head without machining;

a valve operating apparatus that operates an engine valve, comprising

a rotatable cam shaft having at least one cam thereon;

a push rod that moves in response to said cam;

a rocker arm, having a longitudinal axis, that is pivoted in response to the movement of said push rod, said rocker arm having an aperture therein;

a fulcrum having a surface that engages said rocker arm and having a block portion that is received in said rocker arm aperture, said fulcrum block having two opposed, substantially flat sides that are received between said first and second ribs; and

means for substantially immobilizing said fulcrum;

wherein said first rib forms an angle of about 0.5 to 5 degrees with a line that is at least one of normal and parallel to said longitudinal axis.

5,645,026

INTERNAL COMBUSTION ENGINE FOR A PORTABLE HANDHELD WORK APPARATUS

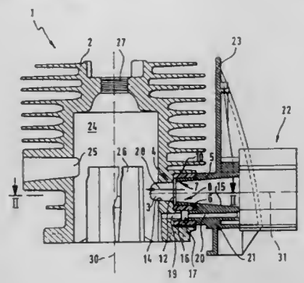
Helmut Schlessmann, Prüm, Germany, assignor to Andreas Stihl, Waiblingen, Germany

Filed Aug. 5, 1996, Ser. No. 692,102

Claims priority, application Germany, Aug. 12, 1995, 295 13 019.9

Int. Cl.[6] F02M *29/00*

U.S. Cl. 123—184.46 **15 Claims**



1. An internal combustion engine for a portable handheld work apparatus such as a motor-driven chain saw or the like, the internal combustion engine comprising:

a cylinder defining a combustion chamber and having an inlet passage for conducting a fuel mixture into said combustion chamber;

said cylinder having an annular flange formed thereon and disposed in surrounding relationship to said inlet passage;

an intake pipe defining a longitudinal axis and having an end section;

said end section and said annular flange being axially inserted one into the other in overlapping relationship to each other;

said annular flange and said end section conjointly defining an annular space therebetween radially of said longitudinal axis; and,

a seal clamped between said annular flange and said end section in said annular space.

5,645,027

ORBITING PISTON COMBUSTION ENGINE

Karim Esmailzadeh, 3905 Viola Rd. Northeast, Rochester, Minn. 55906

Continuation of Ser. No. 369,740, Jan. 6, 1995, abandoned. This application Mar. 13, 1996, Ser. No. 616,234

Int. Cl.[6] F02B *53/00*

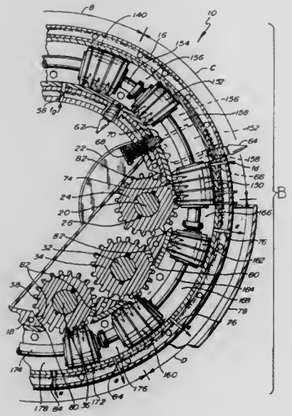
U.S. Cl. 123—245 **20 Claims**

1. An orbiting piston combustion engine comprising:

(a) a toroidal cylindrical block with a continuous toroidal cylinder;

(b) a continuously orbiting piston assembly within the continuous toroidal cylinder including a compression piston slidably mounted on a guidance and push shaft with a compression chamber therebehind in the direction of rotation within the cylinder, the compression chamber formed by the cylinder, the compression piston and a power piston, the power piston being rigidly connected to the shaft ahead of the compression piston in the direction of rotation within the cylinder and a combustion chamber behind the power piston in the direction of rotation within the cylinder, the combustion chamber formed by the cylinder, the power piston and the compression piston; and

(c) a power transfer mechanism engageable with the continuously orbiting piston assembly for power transfer from the engine.



5,645,028

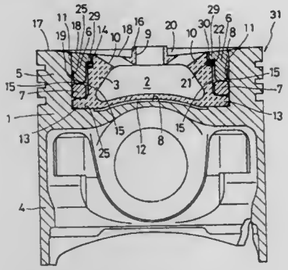
PISTON STRUCTURE WITH A COMBUSTION CHAMBER

Hiroshi Matsuoka, Yamato, and Hideo Kawamura, Samukawa-machi, both of Japan, assignors to Isuzu Motors Limited, Tokyo, Japan

Filed Nov. 21, 1995, Ser. No. 561,002

Int. Cl.[6] F02B *19/08*

U.S. Cl. 123—276 **8 Claims**



1. A piston structure comprising:

a piston body made of a metal material and having a cavity formed at the center of a piston head portion;

a combustion chamber structure made of a heat-resistant, high-temperature high-strength material installed in the cavity, the combustion chamber structure including a combustion chamber formed almost at the center of the piston head portion, a nozzle insertion hole formed almost at the center of the combustion chamber, and communication holes spaced from each other and arranged around the nozzle insertion hole;

heat insulating air layers formed between a wall surface of the cavity in the piston body and the combustion chamber structure; and

a mounting ring made of almost the same kind of material as that of the piston body and joined with the piston body, the mounting ring engaging the outer circumference of the combustion chamber structure installed in the cavity to fix the combustion chamber structure inside the cavity;

wherein a gap is formed between an inner circumferential surface of the mounting ring and an outer circumferential surface of the combustion chamber structure.

5,645,029

INTAKE SYSTEM FOR INTERNAL COMBUSTION ENGINE

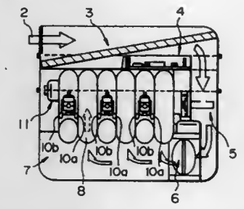
Minoru Ohsuga; Takuya Shiraishi; Junichi Yamaguchi; Ryoichi Komuro, and Masakichi Momono, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 336,203, Nov. 4, 1994, Pat. No. 5,564,384. This application Jul. 3, 1996, Ser. No. 675,576

Claims priority, application Japan, Nov. 8, 1993, 5-278649

Int. Cl.[6] F02B *31/00*

U.S. Cl. 123—306 **16 Claims**



1. An intake system for an internal combustion engine having an air cleaner and at least one cylinder with at least one intake port and an intake valve for opening and closing the at least one intake port, the intake valve having a valve stem, an upper surface and a lower surface, said intake system comprising:

intake air delivery means for delivering air from the air cleaner to the intake valve and through the at least one intake port, said air delivery means having an intake passage therein;

fuel injection valve means having at least one fuel nozzle hole open to the intake passage, for spraying fuel toward the intake valve; and

high-velocity air flow supply means for supplying air flow into the cylinder at a velocity higher than the velocity of air flow guided by said intake air delivery means, said high velocity air flow supply means having at least one air injection nozzle hole for injecting the high-velocity air in at least one air stream line directed between the intake port and the entire upper surface of the intake valve to a position remote from said high-velocity air flow supply means and beyond the valve stem of the intake valve;

whereby one of tumble flow and swirl flow of a fuel-air mixture is produced in the cylinder.

5,645,030

MOTORBRAKE FOR A DIESEL ENGINE

Ulrich Letsche, Stuttgart, Germany, assignor to Daimler-Bauz AG, Stuttgart, Germany

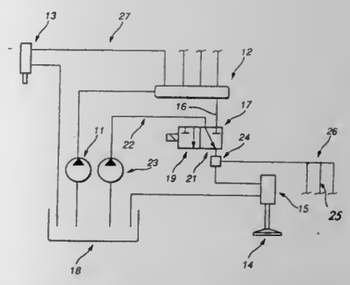
Filed Jul. 15, 1996, Ser. No. 680,449

Claims priority, application Germany, Aug. 4, 1995, 195 28 792.4

Int. Cl.[6] F02D *13/04*

U.S. Cl. 123—321 **6 Claims**

1. A motorbraking arrangement for a Diesel engine with at least one engine breathing valve and at least one fuel injector per cylinder and a high pressure fuel pump with a high pressure fuel reservoir for supplying fuel under high pressure to said fuel injectors, said arrangement comprising a control valve operable for actuating said breathing valves during a compression stroke of said engine by high pressure fuel from said high pressure fuel reservoir and a lower pressure fluid supply system capable, of actuating said breathing valves during normal engine operation and, switch-over means for connecting to said valve actuating means, to said high pressure fuel reservoir during engine braking operation when no fuel is supplied to said injectors and to said lower pressure fluid supply system during normal engine operation when the valves are to be operated only against a low gas pressure in the cylinders.



5,645,031

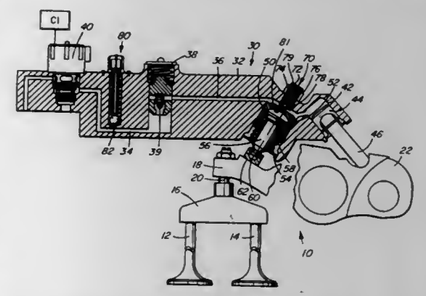
COMPRESSION RELEASE BRAKE WITH HYDRAULICALLY ADJUSTABLE TIMING

Vincent Allan Meneely, 9837 McKinnon Crescent, R.R. No. 10, Langley, British Columbia, Canada

Filed Jan. 18, 1996, Ser. No. 588,083

Int. Cl.[6] F02D *13/04*

U.S. Cl. 123—322 **22 Claims**



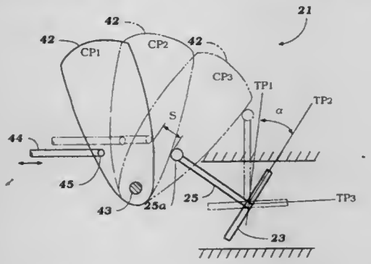
1. A compression release brake for an internal combustion engine having exhaust valves with exhaust valve opening mechanisms, the brake comprising a master hydraulic actuator, a slave hydraulic actuator hydraulically connected to the master hydraulic actuator, the slave hydraulic actuator being operatively connected to the exhaust valve opening mechanism of one said exhaust valve, the master hydraulic actuator being movable by an engine component to move the slave hydraulic actuator and open said one exhaust valve near top dead center of compression strokes when the brake is operational, and a lash adjusting mechanism for the slave hydraulic actuator, the lash adjusting mechanism including means for adjusting hydraulic pressure acting on the slave hydraulic actuator during exhaust strokes and thereby adjusting lash between the slave hydraulic actuator and the exhaust valve opening mechanism on each compression stroke prior to opening said one exhaust valve.

5,645,032

ENGINE CONTROL SYSTEM

Hitoshi Motose, Hamamtsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Oct. 18, 1995, Ser. No. 544,826
Claims priority, application Japan, Oct. 18, 1994, 6-251972
Int. Cl.[6] F02D *17/02;9/16*
U.S. Cl. 123—339.16 46 Claims



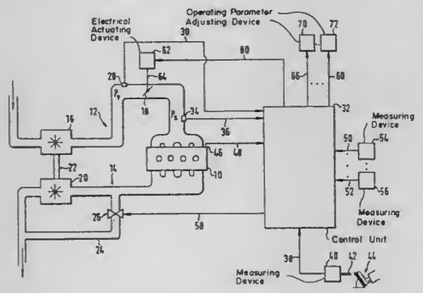
1. An internal combustion engine having a plurality of combustion chambers, an induction system for supplying an air charge to said combustion chambers, a charge forming system for supplying fuel to said combustion chambers for combustion therein, an ignition system for igniting the charge in said combustion chambers for effecting combustion therein, a throttle valve in said induction system for controlling the flow therethrough, said throttle valve being held in a substantially open position at idle to permit substantially more air flow than required for idle operation, a load selectively driven by said engine, and means for controlling the idle speed of said engine by controlling the system associated with at least some of said combustion chambers for precluding combustion therein, the number disabled being dependent on the driving condition between said engine and said load.

5,645,033

METHOD AND ARRANGEMENT FOR CONTROLLING THE DRIVE POWER OF A MOTOR VEHICLE

Martin Person, Oberriexingen; Martin Streib, Vaihingen; Thomas Mössner, Pforzheim, and Tobias Roulet, Leonberg, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Sep. 8, 1994, Ser. No. 301,814
Claims priority, application Germany, Sep. 8, 1993, 43 30 368.4
Int. Cl.[6] F02D *7/00*
U.S. Cl. 123—399 13 Claims



1. A method for controlling the drive power of a motor vehicle having a spark-ignition engine equipped with an air charger and a throttle device through which air is supplied to the engine, the drive power of the engine being controlled via a control means by adjusting said throttle device and said air charger, the method comprising the steps of:

measuring variables (β, Nmot) representing a driver command;

reading said variables (β, Nmot) into said control means;

determining a desired adjusting value (DKdes) for said throttle device in dependence upon said driver command;

determining a desired pressure value (PVdes) for said air charger in dependence upon said driver command;

associating said desired adjusting value (DKdes) and said desired charger pressure valise (Pvdes) to said driver command so that said drive power is controlled by adjusting an air charging pressure of said air charger in dependence upon said driver command in at least a first range of values thereof while said throttle device is at a constant adjustment;

forming a first adjusting signal (DK) for said throttle device in dependence upon said desired adjusting value (DKdes);

forming a second adjusting signal (TV) for said air charger in dependence upon said desired charger pressure value (Pvdes); and,

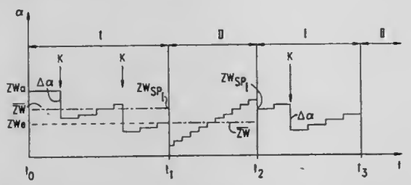
driving said throttle device and said air charger with said first adjusting signal (DK) and said second adjusting signal (TV), respectively.

5,645,034

METHOD FOR THE ADAPTIVE KNOCK CONTROL OF AN INTERNAL COMBUSTION ENGINE

Robert Entenmann, Benningen; Stefan Unland; Oskar Torno, both of Schwieberdingen; Werner Haeming, Neudenau-Herboldzheim; Ulrich Rothhaar, Stuttgart; Iwan Surjadi, Vaihingen/Enz; Wolfgang Hilbert, Moeglingen; Robert Sloboda, Markgroeningen; Michael Baeuerle, Besigheim-Ottmarsheim, and Klaus Schenk, Bietigheim-Bissingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE93/01154, § 371 Date Sep. 1, 1995, § 102(e) Date Sep. 1, 1995, PCT Pub. No. WO94/16213, PCT Pub. Date Jul. 21, 1994
PCT Filed Dec. 4, 1993, Ser. No. 481,407
Claims priority, application Germany, Jan. 9, 1993, 43 00 406.7
Int. Cl.[6] F02P *5/15*
U.S. Cl. 123—425 6 Claims



1. A method for an adaptive knock control of an internal combustion engine, comprising the steps of:

selecting an ignition angle for operating the engine from a characteristic diagram as a function of at least one recorded operating parameter of the engine;

retarding the ignition angle in a cylinder of the engine when knocking occurs in the cylinder;

subsequently returning the ignition angle toward the characteristic-diagram ignition angle when no knocking occurs;

subdividing an operating range of the engine into a plurality of operating sub-ranges as a function of the at least one operating parameter;

forming and storing an updated value of the ignition angle associated with an operating sub-range, when the engine leaves the operating sub-range, as a function of a current value of the ignition angle and of past values of the ignition angle during engine operation in the operating sub-range;

if the engine returns to the operating sub-range, outputting the updated value of the ignition angle as an initial ignition value for operation of the engine;

returning the initial ignition value toward the characteristic-diagram ignition angle when no knocking occurs;

activating an ignition-angle-change threshold when the engine changes from a first operating sub-range to a second operating sub-range; and

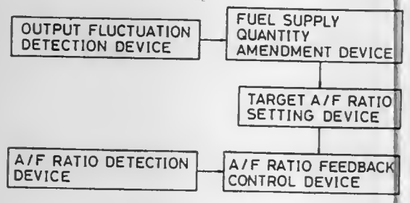
if the ignition-angle-change threshold is exceeded, altering the updated value of the ignition angle for the first operating sub-range to a stored ignition angle value for the second operating sub-range, the updated value of the ignition angle being altered in a plurality of steps.

5,645,035

METHOD AND APPARATUS FOR ELECTRONICALLY CONTROLLING A FUEL SUPPLY TO AN INTERNAL COMBUSTION ENGINE

Naoki Tomisawa, Atsugi, Japan, assignor to Unisia Jecs Corporation, Atsugi, Japan

Division of Ser. No. 277,262, Jul. 21, 1994, Pat. No. 5,579,737.
This application Sep. 10, 1996, Ser. No. 711,506
Claims priority, application Japan, Jul. 21, 1993, 5-180293; Jul. 23, 1993, 5-182852
Int. Cl.[6] F02D *41/14*
U.S. Cl. 123—435 10 Claims



1. A method of electronically controlling a fuel supply to an internal combustion engine comprising the steps of:

detecting engine output fluctuations, amending the fuel supply quantity to the engine so that the engine output fluctuations approach a previously set permissible limit value, setting a target air-fuel ratio of an air-fuel ratio feedback control, based on the amendment amount of the fuel supply quantity amended in accordance with the engine output fluctuations, and

feedback controlling the fuel supply quantity to the engine so that the air-fuel ratio of the engine intake mixture approaches the set target air-fuel ratio.

5,645,036

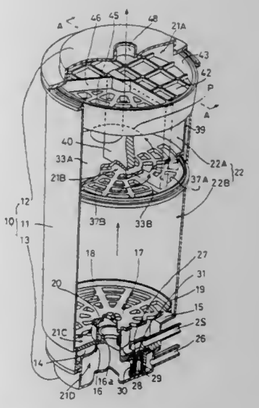
FUEL VAPOR CAPTURING CANISTER HAVING INCREASED DISTANCE OF FLOW OF FUEL VAPOR PASSING THROUGH ADSORBENT LAYER

Hideki Matsumoto; Naritoshi Muramatsu; Hiroaki Mihara, all of Wako; Masahiko Uchiyama, Hamakita; Kouichi Ikuma, Hamakita, and Takenori Suzuki, Hamakita, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, and Toyo Roki Seizo Kabushiki Kaisha, Hamakita, both of Japan

Filed Oct. 10, 1995, Ser. No. 541,797
Claims priority, application Japan, Oct. 18, 1994, 6-279953
Int. Cl.[6] F02M *37/04*
U.S. Cl. 123—519 5 Claims

1. A fuel vapor capturing canister comprising:

a hollow cylindrical casing closed at opposite ends and having a first opening at one end for communication with the atmosphere and a second opening at the other end for selective communication with a fuel storage system and an intake system of an engine;



an adsorbent material disposed in the casing to form at least one layer therein;

transversely extending plate means disposed at longitudinally spaced locations along the casing to define the ends of said at least one layer of adsorbent material;

a fluid impervious deflecting plate extending longitudinally of said casing between said transversely extending plate means and protruding at one edge from a casing wall to a position spacing the opposite edge of the deflecting plate from said casing wall adjacent thereto; and

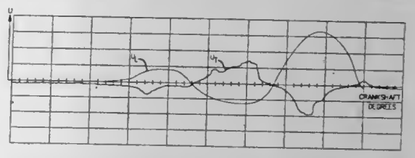
communicating holes formed in said transversely extending plate means for effecting a flow of fluid generally longitudinally through said casing between said first and second openings therein, said communicating holes being disposed in a plate forming one of said transversely extending plate means on one side of said deflecting plate and in another plate defining said transversely extending plate means on the opposite side of said deflecting plate wherein fluid flowing through said layer of adsorbent material has a transverse component of direction imposed thereon by said deflecting plate.

5,645,037

IGNITION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE, PARTICULARLY FOR USE IN A CHAIN SAW OR THE LIKE

Per-Anders Chrintz-Gath, Västervik, and Per Johan Udden, Ankarsrum, both of Sweden, assignors to FHP Elmotor Aktiebolag, Ankarsrum, Sweden

PCT No. PCT/SE94/01152, § 371 Date Jul. 28, 1995, § 102(e) Date Jul. 28, 1995, PCT Pub. No. WO95/15437, PCT Pub. Date Jun. 8, 1995
PCT Filed Nov. 30, 1994, Ser. No. 495,525
Claims priority, application Sweden, Dec. 1, 1993, 9303998
Int. Cl.[6] F02P *3/06*
U.S. Cl. 123—601 9 Claims



1. Ignition system for an internal combustion engine, comprising a magnetically conducting core (10) having three legs (11,12,13)

and supporting a charging winding (**21**) and a triggering winding (**22**), a flywheel (**14**) having at least one magnetic field generating member (**15**) and adapted to cooperate with the magnetically conducting core (**10**) to cause, when passing, voltages to be induced in the windings (**21**,**22**), and an electronic switch means (**27**) adapted to trigger, in response to a trigger pulse generated by the triggering winding (**22**), the discharge of a first capacitor (**26**), which has been charged by a voltage generated in the charging winding (**21**), via the primary (**18**) of an ignition coil (**17**) the secondary (**19**) of which comprises a spark plug (**20**), wherein the triggering winding (**22**) is wound about a first two (**11**,**12**) of the three legs, as seen in a normal direction of rotation of the flywheel, on the magnetically conducting core (**10**) whereas a third of said three legs (**13**) supports the charging winding (**21**).

5,645,038

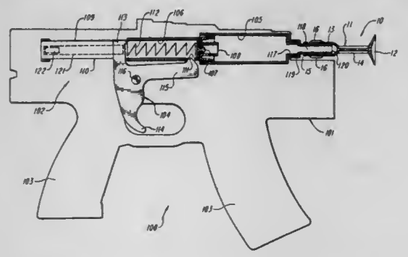
TOY DART AND TOY GUN FOR LAUNCHING THE SAME

Ka Shiu Luk, Shatin, Hong Kong, assignor to Heep Tung Manufactory Limited, Hong Kong, Hong Kong

Filed Apr. 2, 1996, Ser. No. 626,485

Int. Cl.[6] **F41B** *11/14*

U.S. Cl. 124—67 **5 Claims**



1. In combination, a toy gun for launching a toy dart, and the toy dart;

said toy dart has an elongated body comprising a front end in the form of a suction cup, an intermediate portion, and a rear end which is hollow and has an enlarged cross-section; and

said toy gun comprises a body and an air compression mechanism provided by a piston and a cylinder inside the body for launching said toy dart, said cylinder having a tubular opening end over and around which the hollow rear end of said toy dart is to be fitted for launching, wherein the tubular end is removable to reveal another opening of the cylinder for the insertion of the hollow end of a said toy dart and is provided by a tube having opposite ends of different diameters.

5,645,039

WIRE CONNECTING DEVICE FOR DIAMOND WIRE SAWS

Franz Egger, Vomp, and Josef Plattner, Jenbach, both of Austria, assignors to Tyrolit Schleifmittelwerke Swarovski K.G., Tirol, Austria

Filed Jun. 12, 1995, Ser. No. 490,022

Claims priority, application Austria, Jun. 13, 1994, GM117/94

Int. Cl.[6] **B28D** *1/08*

U.S. Cl. 125—21 **8 Claims**

1. A wire saw used for cutting natural stone, masonry and concrete comprising a main wire made of several intertwined wire strands and cutting beads, said cutting beads being spaced at certain distances on the main wire, and at least one wire connector for connecting the ends of said main wire to form a closed cutting wire loop, said wire connector comprising at least one clamping



sleeve having a clamping zone, said clamping sleeve including a recess and an elastic mass situated in said recess between the main wire and the clamping zone of said clamping sleeve, said elastic mass being under permanent, uniform compressive stress generated by the clamping together of said clamping zone and said elastic mass with said main wire.

5,645,040

CABLE SAW MACHINE FOR CUTTING CONCRETE BODIES, ROCKS OR THE LIKE

Hans Bieri jun., Pfäffikon, Switzerland, assignor to Hydrostress AG, Pfäffikon, Switzerland

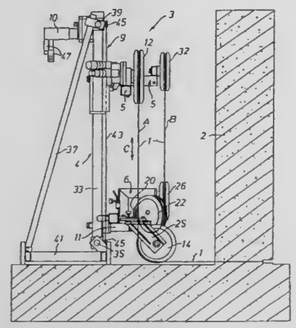
PCT No. PCT/CH94/00186, § 371 Date Dec. 12, 1995, § 102(e) Date Dec. 12, 1995, PCT Pub. No. WO95/28263, PCT Pub. Date Oct. 26, 1995

PCT Filed Sep. 21, 1994, Ser. No. 564,199

Claims priority, application Switzerland, Apr. 13, 1994, 01 107/94

Int. Cl.[6] **A21B** *1/00*

U.S. Cl. 125—21 **7 Claims**



1. Rope-type sawing machine for making severing cuts in rock, bodies of concrete, masonry or the like, having

a motor-driven saw rope (**1**) equipped with abrasive material, and guided in a sawing loop,

said machine comprising

a pulley-block rope storage arrangement including

a frame (**4**) and stationary and movably mounted pulleys (**12**, **13**, **14**, **16**);

two pulley carriers (**5**, **6**), at least one (**6**) of which is movable, mounting said pulleys, said saw rope (**1**) being looped around said pulleys (**12**, **13**, **14**, **16**), and further including inclined pulleys (**22**, **24**) for deflecting the sawing rope (**1**) into different running planes (A, B), located on at least one (**6**) of said pulley carriers (**5**, **6**); and

a linear power drive (**10**, **45**) coupled to one (**6**) of said pulley carriers for linear movement of said pulley carriers (**5**, **6**) by said linear power drive with respect to each other.

5,645,041

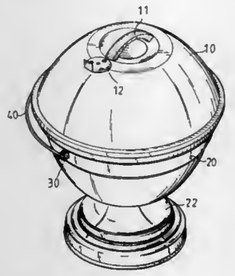
BARBECUE COOKER

Norman Y. C. Yu, No.57,Sec.1,Ten-Sin RD., Fong-Yuan City, Taichung Hsien, Taiwan

Filed Jun. 26, 1996, Ser. No. 670,419

Int. Cl.[6] **A47J** *37/00*

U.S. Cl. 126—25 R **5 Claims**



1. A barbecue cooker comprising:

a cover having a curved top and a handle extending upwardly from a center of said top,

a bowl, said cover adapted for mounting on said bowl;

said bowl having two ears diametrically disposed to an outer peripheral surface thereof, each of said ears having a curved upper surface, a vertical side, a horizontal side and an outer surface, said vertical side having a first flange extending therefrom and said horizontal side having a second flange extending therefrom, said first flange having a first plate extending perpendicularly from an outer edge thereof and said second flange having a second plate extending perpendicularly from an outer edge thereof so as to define a recess between said first flange, said second flange, said first plate, said second plate and said outer surface of said ear, a hole defined in each of said ears, and a gap defined between the first and second plates; and

a handgrip having a U-shaped configuration and having two extending portions, each extending portion having a protrusion extending transversely from a distal end thereof, each of said protrusions inserted through said gap and into said hole of said ear corresponding thereto and each of said extending portions alternatively disposable between a vertical position between said first plate and said outer surface, and a horizontal position between said second plate and said outer surface of said ear corresponding thereto.

5,645,042

GAS GRILL AFTERBURNER

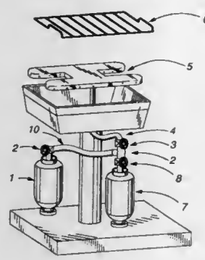
Allen Coles Tompkins, Jr., P.O. Box 240, Dolores, Colo. 81323

Filed Jan. 16, 1996, Ser. No. 587,000

Int. Cl.[6] **F24C** *3/00*

U.S. Cl. 126—41 R **1 Claim**

1. A method of cleaning a grill surface on a gas barbecue grill



comprising:

closing a cover of said gas barbecue grill thereby enclosing a burner and a grill therein;

providing a gas supply line having a valve and gas regulator therein, one end of said gas supply line being connected to a gas source and an opposite end of said gas supply line connected to said burner, and a normally empty gas cylinder connected in open communication with said gas supply line between said gas valve and said gas regulator;

closing said gas valve and allowing gas accumulated in said gas cylinder to continue operation of said burner until said gas cylinder is substantially depleted of gas in order to burn off substances from said grill.

5,645,043

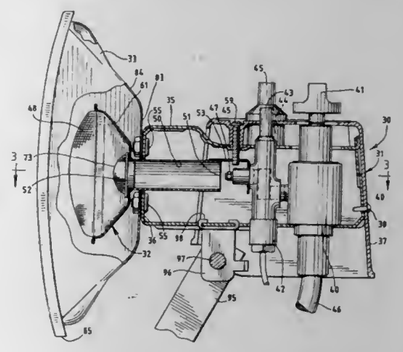
RADIANT HEATER

Norris R. Long; Clyde R. Schulte; Rick L. Looslie, all of Wichita, and Franklin T. Schmidt, Mulvane, all of Kans., assignors to The Coleman Company, Inc., Wichita, Kans.

Continuation of Ser. No. 374,423, Jan. 25, 1995, abandoned. This application Jan. 22, 1996, Ser. No. 589,642

Int. Cl.[6] **F24C** *3/04*

U.S. Cl. 126—92 AC **31 Claims**



1. A burner assembly for a heater comprising a burner tube having a rear inlet end and a forward outlet end and a fuel passage therethrough, a burner head mounted on the outlet end of the burner tube, the burner head including a first screen which is spaced forwardly from the outlet end of the burner tube, the first screen having a central portion which is aligned with the fuel passage of the burner tube and an outer portion which extends laterally outwardly beyond the burner tube, a second screen which is smaller than the first screen and which is attached to the central portion of the first screen and which extends over at least a portion of the central portion of the first screen, a burner pan having an outer periphery and a central opening through which the burner tube extends, and a third screen enclosing the periphery of the burner pan and spaced in front of the first screen.

5,645,044

SOLAR THERMAL CELL

Mauno Sakari Reiala, Hyvinkää , Finland, assignor to Sunin Ltd., Hyvinkää , Finland

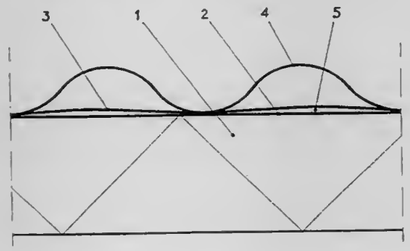
PCT No. PCT/FI93/00257,§ 371 Date Feb. 14, 1995, § 102(e) Date Feb. 14, 1995, PCT Pub. No. WO93/25855, PCT Pub. Date Dec. 23, 1993

PCT Filed Jun. 14, 1993, Ser. No. 211,158

Claims priority, application Finland, Jun. 16, 1992, 922793; Jul. 3, 1992, U920449; Jan. 11, 1993, U930005

Int. Cl.[6] F24J *2/24*

U.S. Cl. 126—655 **1 Claim**



1. A solar thermal cell positioned for stopping and absorbing solar radiant energy from a solar energy source, comprising:

a light-admitting cover layer;

a light-admitting liquid containment layer in contiguous relationship with a surface of such cover layer which is opposite of direction of entry of energy from such solar energy source, and

an insulating layer in contiguous relationship with such liquid containment layer at a location opposite of direction of entry of energy from such solar energy source into such containment layer,

such insulating layer consisting of mineral wool board presenting a dark porous surface layer,

such surface layer being contiguous to such liquid containment layer for stopping such solar radiant energy.

5,645,045

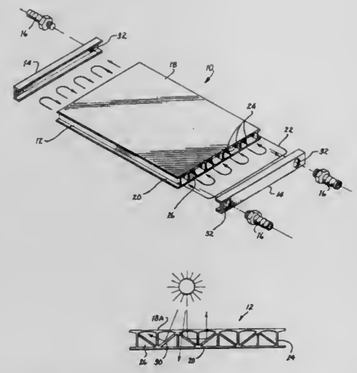
FLUID HEATING APPARATUS USING LIGHT ENERGY AND METHOD THEREOF

Patrick William Breslin, Peoria, Ariz., assignor to BRES LLC, Glendale, Ariz.

Filed Jun. 2, 1995, Ser. No. 458,694

Int. Cl.[6] F24J *2/24*

U.S. Cl. 126—669 **20 Claims**



1. An apparatus for heating a liquid using light energy comprising, in combination:

lens means for focusing said light energy on said liquid to be heated;

bottom portion means coupled to said lens means for defining a water tight tubular passage in which said liquid to be heated flows, said bottom portion means comprising refractive means for refracting said light energy through a greater distance of said tubular passage increasing adsorption of said light energy by said liquid within said tubular passage;

end cap means coupled to each end of said tubular passage for forming a liquid tight seal to prevent said liquid from spilling out of said tubular passage; and

nozzle means coupled to said end cap means for allowing said liquid to enter said tubular passage to be heated and for allowing said liquid to exit said tubular passage once said liquid has been heated.

5,645,046

BREATHING EQUIPMENT

Francis Xavier Kay, Bucks, United Kingdom, assignor to F. X. K. Patents Limited, United Kingdom

Filed Jul. 28, 1995, Ser. No. 508,487

Claims priority, application United Kingdom, Aug. 3, 1994, 9415722

Int. Cl.[6] A62B *9/06*

U.S. Cl. 128—201.18 **10 Claims**



4. Breathing equipment including a mouthpiece and a gas conduit extending to the mouthpiece for supplying a breathing gas, and a nostril blocker comprising a resilient element including a collar having an aperture extending therethrough through which said gas conduit extends along a first axis and further including a bifurcated part extending from said collar parallel with said first axis but spaced therefrom, said bifurcated part defining two limbs extending parallel with said first axis and ending in free terminations such that said two limbs define a V-shaped channel therebetween, wherein, with the nostril blocker fitted on said conduit so that said first axis extends forwardly from a wearer's face, said two limbs can straddle the nasal septum of the wearer, with said free terminations projected into respective nostrils of the wearer in a direction parallel with said first axis to engage posterior surfaces of the nostrils and surfaces of said limbs remote from said first axis can obturate nostril openings of the wearer.

5,645,047

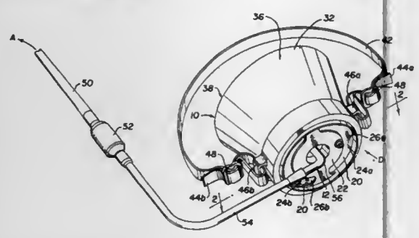
INHALATION MASK

Edward G. Akers, Granbury, Tex., assignor to Stand-By Systems, Inc., Dallas, Tex.

Filed Apr. 30, 1996, Ser. No. 641,197

Int. Cl.[6] A62B *18/10*

U.S. Cl. 128—201.28 **10 Claims**



1. An valve device comprising:

a mask section adapted for mating with a desired subject;

means for introducing a desired fluid into an interior chamber of said mask section;

at least one plate assembly having a thin, pliable outer section;

plate mounting means with said mask section for retaining said plate assembly, said plate mounting means having at least one pair of passages formed therethrough for communicating the fluid out of the interior chamber and an external fluid into the interior chamber of said mask section;

compatible portions of said pliable outer section movably covering said passages in the plate mounting means forming at least one inlet valve permitting the flow of the external fluid into the interior chamber of said mask section and a second outlet valve permitting the flow of fluid out of the interior chamber of said mask section.

5,645,048

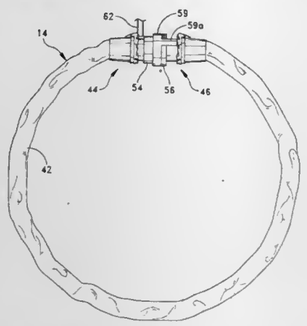
PATIENT VENTILATING APPARATUS WITH MODULAR COMPONENTS

David L. Brodsky, West Palm Beach, Fla., and Harry O. Olsen, Warwick, R.I., assignors to The Kendall Company, Mansfield, Mass.

Continuation-in-part of Ser. No. 878,968, May 6, 1992, Pat. No. 5,355,876. This application Jul. 5, 1994, Ser. No. 270,254

Int. Cl.[6] A61M *16/00*

U.S. Cl. 128—202.27 **7 Claims**



1. In an apparatus for ventilating and aspirating the respiratory system of a patient, said apparatus having a patient module including tubular connecting means connectable to a supply of air and to the trachea of the patient for involuntarily supplying air to and withdrawing air from the lungs of the patient; a center module including a first end element connected to said patient module, a second end element, an elongated flexible tubular catheter element permanently connected to said second end element and extending slidably and sealingly through said first end element, and an elongated, collapsible, tubular plastic sleeve connected to said first and second end elements and extending therebetween around said catheter element; and a vacuum module connected to said second end element and adapted to be connected to a source of vacuum for applying vacuum to said catheter element, said vacuum module including means for controlling the application of vacuum to said catheter element, the improvement comprising said first end element being releasably connected to said patient module and said second end element being releasably connected to said vacuum module, said first and second end elements also being connectable one with the other to coact with said sleeve in enclosing and isolating said catheter from the surrounding environment.

5,645,049

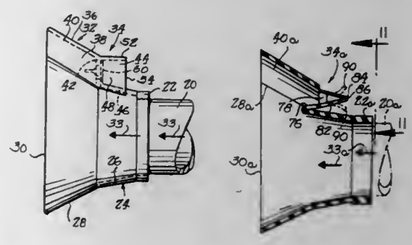
EXHALATION VALVE FOR FACE MASK WITH SPACER CHAMBER CONNECTION

Martin P. Foley, and Robert Morton, both of London, Canada, assignors to Trudell Medical Limited, London, Canada

Continuation-in-part of Ser. No. 973,280, Nov. 9, 1992, abandoned. This application Jul. 5, 1994, Ser. No. 270,752

Int. Cl.[6] A61M *16/00;* **A62B** *18/02;18/10*

U.S. Cl. 128—203.29 **27 Claims**



1. A mask for the inhalation of medication by a human being, said mask being molded of plastic material or the like having an interior and a central through opening comprising an open front portion adapted to receive a hollow body having air with medication dispersed therein, said mask comprising:

means for minimizing dead space inside said mask yet providing efficient inhalation and exhalation flow paths that purge said mask of exhaled air;

a sidewall expanding outwardly from said front portion to a rear portion adapted to fit sealingly on a human face and covering the mouth and nose, said sidewall including a tunnel-like extension projecting outwardly of said sidewall and substantially parallel thereto, and adapted to overlie a nose, said extension extending substantially from said rear portion toward said front portion and having a front end terminating short of said front portion of said mask, and

means for providing a short exhalation flow path comprising a normally closed one-way exhalation valve adjacent said front end of said extension and adapted for positioning directly adjacent the nostrils of the nose, said exhalation valve communicating on one side inwardly of said mask into said extension and on the other side communicating outwardly of said mask to outside air,

said exhalation valve opening on exhalation to pass exhaled air from said mask and closing in the absence of exhaled air to prevent entry of outside air.

5,645,050

POWDER INHALER WITH POWDER CARRIER CONSISTING OF REGULAR MICROSTRUCTURES

Bernd Zierenberg, and Dieter Hochrainer, both of Bingen, Germany, assignors to Boehringer Ingelheim KG, Ingelheim am Rhein, Germany.

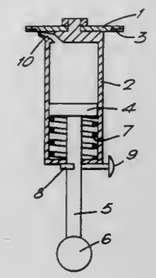
PCT No. PCT/EP92/02867, § 371 Date Aug. 10, 1994, § 102(e) Date Aug. 10, 1994, PCT Pub. No. WO93/12831, PCT Pub. Date Jul. 8, 1993

PCT Filed Dec. 11, 1992, Ser. No. 244,879

Claims priority, application Germany, Dec. 20, 1991, 41 42 238.4

Int. Cl.[6] A61M *15/00*

U.S. Cl. 128—203.15 **8 Claims**



1. A powder inhaler device having a powder carrier comprising individual, elevated microstructures having a height of between about 10 and about 500 μm, said microstructures being arranged in a regular configuration in one or more sectors on a planar surface, wherein said microstructures define therebetween a contiguous surface onto which a powdered solid medicament can be deposited and from which said medicament can be released from each of said sectors individually.

5,645,051

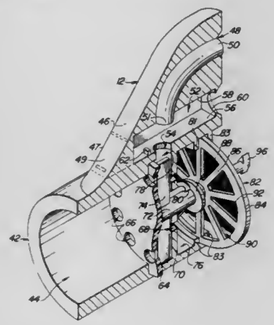
UNIT DOSE DRY POWDER INHALER

Robert K. Schultz, Poway, and Robert F. Eisele, Laguna Niguel, both of Calif., assignors to Dura Pharmaceuticals, Inc., San Diego, Calif.

Filed Apr. 21, 1995, Ser. No. 426,600

Int. Cl.[6] A61M *15/00*

U.S. Cl. 128—203.15 **22 Claims**



1. A dry powder inhaler comprising:
a front section including:
a mixing chamber;
an impeller rotatably mounted in the mixing chamber;
a powdered drug carrier containing a powdered drug; and
a supply port extending between the drug carrier and the mixing chamber; and
a rear section attachable to the front section and including a motor for spinning the impeller; and
a plunger in the front section aligned with the powdered drug and the supply port, when the front section is attached to the rear section.

5,645,052

ANAESTHETIC VAPORIZER WITH EXPANDABLE/CONTRACTABLE RESERVOIR FOR PUMPING LIQUID ANAESTHETIC

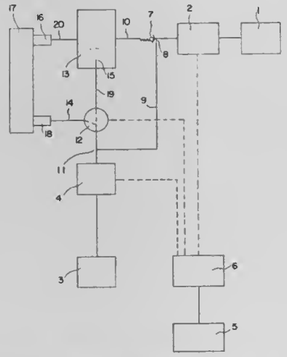
Clifford Graham Kersey, Keighley, Great Britain, assignor to The BOC Group plc, Surrey, England

Continuation of Ser. No. 137,210, Oct. 25, 1993, abandoned. This application Jan. 16, 1996, Ser. No. 587,063

Claims priority, application United Kingdom, Apr. 26, 1991, 91 09021

Int. Cl.[6] A61M *16/00;* **F23D** *11/00;14/00;* **H05B** *3/00*

U.S. Cl. 128—203.26 **13 Claims**



1. An anaesthetic vaporizer which comprises an inlet for receiving a carrier gas, an outlet for discharging carrier gas and anaesthetic agent, and a vaporizing chamber intermediate the inlet and the outlet wherein liquid anaesthetic agent is vaporized into the stream of carrier gas, the improvement comprising a pump for delivering a quantity of an anaesthetic agent into said vaporizing chamber, said pump comprising:
(a) a chamber having an inlet port for connection to a supply of liquid anaesthetic, a reservoir port and an outlet port fluidly connected to said vaporizing chamber;
(b) a valve member which can be moved between a first position in which the anaesthetic agent can flow from the supply of liquid anaesthetic through the chamber between the inlet port and the reservoir port, and a second position in which the agent can flow through the chamber between the reservoir port and the outlet port;
(c) a reservoir connected to the reservoir port in which the agent can be retained prior to delivery, the reservoir being defined by a flexible, expandable body;
(d) a drive unit connected to said reservoir body to expand said reservoir body to draw liquid anaesthetic from the supply of liquid anaesthetic through said valve member or to contract said reservoir body to force anaesthetic agent from said reservoir through said valve member to said vaporizing chamber: and
(e) a control unit controlling said drive unit to expand said reservoir body at an independently selected rate to draw a predetermined amount of the liquid anaesthetic and to contract said reservoir body at an independently selected rate to force a predetermined quantity of liquid anaesthetic to said vaporizing chamber.

5,645,053

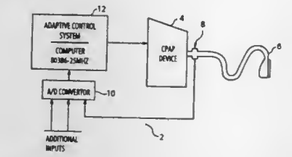
AUTO CPAP SYSTEM AND METHOD FOR PREVENTING PATIENT DISTURBANCE USING AIRFLOW PROFILE INFORMATION

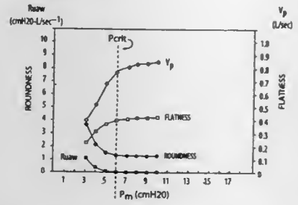
John Edward Remmers, and Thomas Richard Feroah, both of Calgary, Canada, assignors to University Technologies International, Inc., Calgary, Canada

Continuation of Ser. No. 868,199, Apr. 14, 1992, abandoned, which is a continuation of Ser. No. 791,733, Nov. 14, 1991, abandoned. This application Jan. 29, 1993, Ser. No. 93,131

Int. Cl.[6] A61M *16/00;* **A62B** *7/00;* **F16K** *31/02*

U.S. Cl. 128—204.23 **52 Claims**





1. Method for adaptively providing continuous positive airway pressure in an upper airway system said method comprising the steps of:
detecting airflow in the upper airway system in predetermined increments of time during a breath to provide an airflow profile for the breath;
averaging said airflow information over a plurality of breaths;
distinguishing respiratory and non-respiratory components of said airflow using said averaged airflow information;
using non-respiratory airflow information to identify periods of inspiration and expiration and to provide a respiratory airflow profile;
extracting from the respiratory airflow profile information a first peak inspiratory airflow and a first airflow profile;
introducing a pressure change to a second pressure, which produces a second peak inspiratory airflow and a second airflow profile;
comparing the first and second peak inspiratory airflow and the first and second airflow profile; and
preventing a patient disturbance from occurring by setting pressure in said upper airway system using said comparison.

5,645,054

DEVICE AND METHOD FOR THE TREATMENT OF SLEEP APNEA SYNDROME

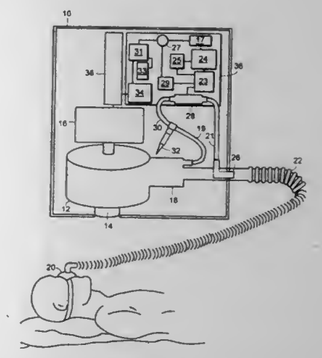
Ronald L. Cotner, Derry; Gerald J. Parise, Bedford; Thomas E. Asacker, Exeter, all of N.H.; Bijan Sadrnoori, N. Andover, Mass., and Robert A. Muller, Manchester, N.H., assignors to SleepNet Corp., Manchester, N.H.

Continuation-in-part of Ser. No. 184,976, Jan. 24, 1994, abandoned, which is a continuation-in-part of Ser. No. 890,815, Jun. 1, 1992, abandoned. This application Oct. 27, 1994, Ser. No. 331,030

Int. Cl.[6] A61M *16/00;* **A62B** *7/00;* **F16K** *31/02*

U.S. Cl. 128—204.23 **11 Claims**

1. System for treating critical airflow limitation in a patient, the system comprising:
means for generating a pressurized gas flow;
a conduit in fluid communication with said generating means for delivering the gas flow to an airway of a patient;
a flow sensor in fluid communication with the gas flow for generating a breath signal having an amplitude representative of patient breathing; and
circuitry for regulating the gas flow responsive to said breath signal by controlling the generating means, said circuitry comprising:
a) means for providing a base level pressure of gas flow;
b) means for monitoring the breath signal to identify a normal breath attribute sensed by said flow sensor;
c) means for monitoring the breath signal to identify a critical airflow limitation;
d) means for continuously and non-incrementally increasing pressure of the gas flow to no greater than a preselected maximum system pressure upon detection of a critical airflow limitation indicated by absence of a normal breath attribute in a single breath in said breath signal within a predetermined period from detection of a normal breath attribute; and
e) means for decreasing pressure of the gas flow upon detection of restored breathing indicated by presence of said normal breath attribute in a single breath in said breath signal, said normal breath attribute corresponding to a time-based amplitude in a single breath.



5,645,055

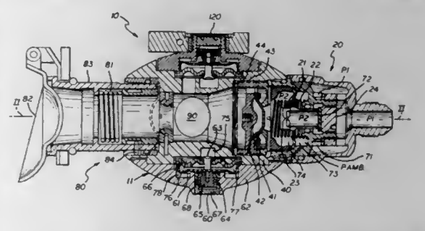
OXYGEN BREATHING CONTROLLER

Joseph S. Danon, Los Angeles, Calif., assignor to Conax Florida Corporation, St. Petersburg, Fla.

Continuation-in-part of Ser. No. 929,701, Aug. 12, 1992. This application Feb. 10, 1994, Ser. No. 194,702

Int. Cl.[6] A63B *9/02*

U.S. Cl. 128—204.25 **16 Claims**



1. A breathing controller means connected to a breathable gas supply and an ambient air supply for regulating flow of the breathable gas and the ambient air to a user in a phased dilution manner during successive inhalation events, which comprises:

a) first means for supplying the user with substantially 100% oxygen as the breathable gas during a first phase of an inhalation event; and

b) second means for diluting the substantially 100% oxygen with the ambient air during a second phase of the said inhalation event to thereby provide the breathing gas and the ambient air to the user in the phased dilution manner so that during a first phase of the inhalation event, substantially 100% oxygen is inhaled into a respiratory portion of the lungs and during a second phase of the said inhalation event, the ambient air diluted oxygen fills into a conducting portion of the respiratory system, the conducting portion leading to the respiratory portion of the lungs, and wherein during a next successive inhalation event, the breathing controller means again provides the breathing gas and the ambient air to the user in the phased dilution manner.

5,645,056

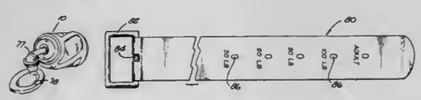
VARIABLE VOLUMETRIC INFLATABLE PUMP

Paul E. Pomeroy, Lake Elsinore, Calif., assignor to Survival Resources, Inc., Lake Elsinore, Calif.

Continuation-in-part of Ser. No. 909,756, Jul. 7, 1992, Pat. No. 5,297,944. This application Mar. 22, 1994, Ser. No. 216,182

Int. Cl.[6] A62B *7/00*; **F04B** *17/00;35/00;43/08*

U.S. Cl. 128—205.13 **8 Claims**



1. A pump, comprising:

an inflatable housing that has a side portion that joins a pair of end portions, said inflatable housing has a first inflatable ring located at one of said end portions and a second inflatable ring located adjacent to said first inflatable ring, said inflatable housing having a third inflatable ring located at an end opposite from said first inflatable ring, said inflatable housing having a plurality of inflatable springs that extend between said first inflatable ring and said third inflatable ring, said inflatable springs being separated by a plurality of non-inflatable segments and extending at an oblique angle relative to said first and third inflatable rings, said inflatable housing further having an inner chamber;

a valve assembly that allows air to enter and exit said inner chamber of said inflatable housing; and,

a port that allows said inflatable spring, said first inflatable ring, said second inflatable ring, and said third inflatable ring to be inflated with air.

5,645,057

MELTBLOWN BARRIER WEBS AND PROCESSES OF MAKING SAME

James M. Watt, Piedmont, and Deborah K. Lickfield, Easley, both of S.C., assignors to Fiberweb North America, Inc., Simpsonville, S.C.

Division of Ser. No. 475,949, Jun. 7, 1995, Pat. No. 5,620,785. This application Jul. 2, 1996, Ser. No. 677,443

Int. Cl.[6] A62B *23/00;23/06;* **B32B** *5/26;5/32*

U.S. Cl. 128—206.12 **29 Claims**

1. A face mask for covering a portion of the face of a wearer of the mask, said face mask comprising:

an absorbent facing layer for contacting a portion of the face of a wearer of the mask;

a cover layer; and

an inner filtration layer sandwiched between said cover layer and said absorbent layer, said filtration layer having a basis weight of less than ten grams per square meter and comprising a plurality of thermoplastic microfine fibers having an average fiber diameter of less than 1.5 microns which were melt blown from a polymer having a melt flow rate greater than about 1000 g/10 min.

5,645,058

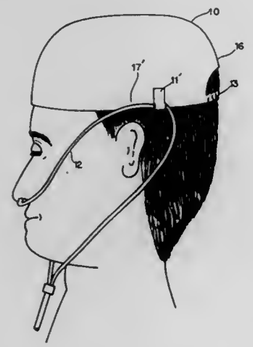
CAP WITH SUPPORT FOR MEDICAL TUBING

Donald M. Odom, 10215 W. Landmark Ct., Boise, Id. 83704

Filed Oct. 25, 1995, Ser. No. 548,287

Int. Cl.[6] A62B *7/00*

U.S. Cl. 128—207.18 **1 Claim**



1. A cap including means for supporting medical tubing on a wearer of the cap, said cap having a front, a back, and two sides having midpoints half-way between the said front and back, said cap being snugly fitted to a wearer's head, covering a substantial portion of the top of a wearer's head, not contacting the ears of a wearer, having said cap having no shaped crown and no brim, said means for supporting medical tubing including a plurality of integral supports, one on each side near the bottom edge of the cap and behind the midpoint of the side for receiving and supporting the medical tubing, said integral supports not being part of a strap or band of said cap, and said integral supports being located on the cap so they are positioned above and behind the ears of a wearer.

5,645,059

MEDICAL SENSOR WITH MODULATED ENCODING SCHEME

Michael E. Fein, Mountain View; David C. Jenkins, Loomis; Michael J. Bernstein, San Ramon; K. L. Venkatachalam, Palo Alto; Adnan I. Merchant, Fremont, and Charles H. Bowden, San Ramon, all of Calif., assignors to Nellcor Incorporated, Pleasanton, Calif.

Filed Dec. 17, 1993, Ser. No. 168,449

Int. Cl.[6] A61B *5/00*

U.S. Cl. 128—633 **3 Claims**

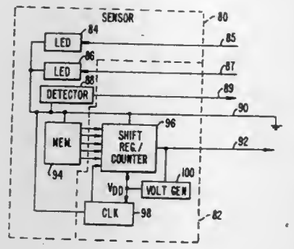
1. A pulse oximeter sensor comprising:

a first light emitting means for emitting light of a first known wavelength;

means for sensing the light emitted by said first light emitting means;

transmitting means for coupling said sensor to a remote oximeter;

means, coupled to said transmitting means, for encoding said first known wavelength as a modulated signal,



wherein said sensor is compatible with oximeters providing a current signal to read a resistance value in a sensor, said sensor providing compatibility by including in said means for encoding:

means for causing said modulated signal to have an average voltage corresponding to a resistance value identifying said first known wavelength in response to a current received from an oximeter.

5,645,060

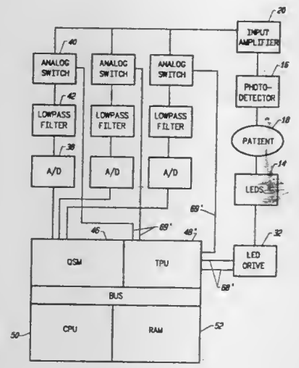
METHOD AND APPARATUS FOR REMOVING ARTIFACT AND NOISE FROM PULSE OXIMETRY

Thomas J. Yorkey, San Ramon, Calif., assignor to Nellcor Puritan Bennett Incorporated, Pleasanton, Calif.

Filed Jun. 14, 1995, Ser. No. 490,315

Int. Cl.[6] A61B *5/00*

U.S. Cl. 128—633 **17 Claims**



1. A method for measuring saturation of a blood constituent in a patient comprising the steps of:

irradiating said patient with electromagnetic radiation of two discrete, different wavelengths;

sensing an intensity of said radiation for each of said wavelengths after it passes through a portion of said patient to produce first and second intensity signals including motion components; and

determining said saturation by mathematically manipulating said first and second intensity signals without subtracting said motion components and with the assumptions that

i) an amount of motion is the same at the same time for each of said intensity signals, and

ii) the motion components of said intensity signals are proportional to one another.

5,645,061

PROCESS AND DEVICE FOR THE DETERMINATION OF LOCAL DYE CONCENTRATION AND OF SCATTERING PARAMETERS IN ANIMAL AND HUMAN TISSUES

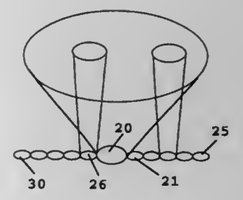
Manfred Kessler, Schlehenstr. 14, and Klaus Frank, Schlehenstr. 14A, both of D-8520 Erlangen, Germany

Continuation of Ser. No. 178,670, Jan. 7, 1994, abandoned, which is a division of Ser. No. 801,618, Dec. 2, 1991, Pat. No. 5,284,137, which is a continuation-in-part of Ser. No. 385,617, Jul. 26, 1989, abandoned. This application Sep. 1, 1994, Ser. No. 299,816

Claims priority, application Germany, Jul. 26, 1988, 38 25 352.6

Int. Cl.[6] A61B *1/07*

U.S. Cl. 128—634 **3 Claims**



1. A method of noninvasively determining changes in the sizes of selected tissue particles in a tissue in a living animal or human, comprising:

providing a device which comprises

(i) a light source,

(ii) coupled to said light source, an illuminating light guide for radiating light into an animal or human tissue to produce back-scattered light, said light guide having an end which is distal to said light source,

(iii) at least two receiving light guides having distal ends located at different radial distances from the end of the illuminating light guide, for receiving back-scattered light, wherein the distal ends of said irradiating light guide and receiving light guides terminate in a common plane,

(iv) evaluating means coupled to each of the receiving light guides, for evaluating, as a function of time, the relative intensities of back-scattered light received by each receiving light guide, to provide a back-scatter profile as a function of time, and

means for determining, from said profile, a change in size of said tissue particles;

placing the distal ends of the illuminating and receiving light guides of said device adjacent a target tissue of said animal or human;

illuminating the tissue with said illuminating light guide under conditions effective to generate back-scattered light from tissue particles in the target tissue;

measuring the intensities of light received by said receiving light guides using said evaluation means, to obtain a back-scatter profile as a function of time; and

determining, from said profile, a change in size of said tissue particles.

5,645,062

BIOMEDICAL ELECTRODE DEVICE

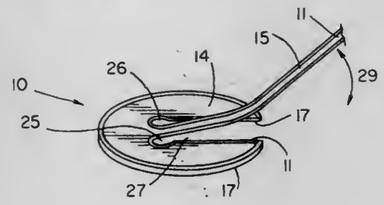
John McCune Anderson, 16 Torgrange, Holywood, County Down, BT18 ONG, Northern Ireland; Eric Thomas McAdams, Ormsdale, 52 Cable Road, Whitehead, County Antrim, Northern Ireland BT38 9 PZ; Dermot Frances McCafferty, 50 Cesaeldone Rise, Belfast, BT6 9RA, Northern Ireland; James Andrew McLaughlin, 9 Hampton Gardens, Hampton Court Village, Belfast BT7 3DF, Northern Ireland, and Aaron David Woolfson, 6 Malone Meadows, Belfast BT9 5BG, Northern Ireland, all of United Kingdom

Filed Feb. 15, 1994, Ser. No. 196,465

Claims priority, application Ireland, Feb. 15, 1993, 930103

Int. Cl.[6] A61B *5/0408*

U.S. Cl. 128—640 **13 Claims**



1. A biomedical electrode device comprising an electrically insulating substrate, a first electrode on the substrate, the first electrode having thereon a non-tacky moisture-activated electrically conductive bioadhesive layer which has a water content of less than 25% w/w and which is activated without pre-moistening when offered to moist fetal skin to adhere to such skin with an adhesion of between 50 and 500 g/cm^2, and a further electrode on the substrate at a position to serve as a nonskin contacting reference electrode, the substrate further having first and further electrically conductive leads thereon respectively connected to the first and further electrodes.

5,645,063

SKIN ELECTRODE HAVING MULTIPLE CONDUCTIVE CENTER MEMBERS

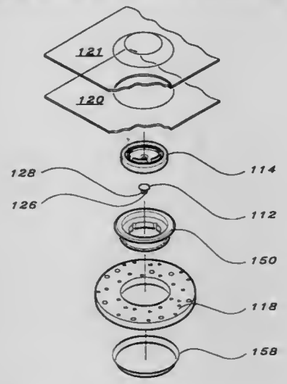
Lawrence J. Straka, Jr., Issaquah, Wash., assignor to Quinton Instrument Company, Bothell, Wash.

Filed Jun. 5, 1995, Ser. No. 464,040

Int. Cl.[6] A61B *5/0416*

U.S. Cl. 128—641 **17 Claims**

1. A medical electrode assembly for attachment to the skin of a



patient and improving the quality of physiological signal detection in clinical, research or comparative studies, said electrode assembly comprising:

at least one conductive member capable of receiving and conducting physiological signals for receipt by a plurality of acquisition devices;

a plurality of post members operatively associated with said at least one conductive member to enable the simultaneous acquisition of physiological signals from said at least one conductive member to a plurality of physiological signal acquisition devices; and

a sheet member associated with said at least one conductive member for securing the electrode assembly to the skin of the patient.

5,645,064

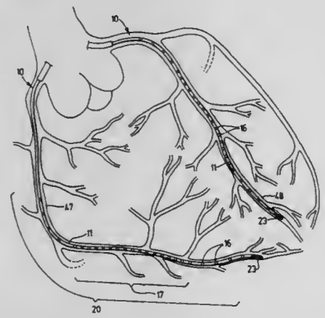
HIGH RESOLUTION INTRAVASCULAR SIGNAL DETECTION

Laszlo Littmann, Charlotte, N.C.; Liming Lau, Menlo Park, and Omar Amirana, Palo Alto, both of Calif., assignors to Cardima, Inc., Fremont, Calif.

Division of Ser. No. 443,657, May 18, 1995, which is a continuation-in-part of Ser. No. 188,619, Jan. 27, 1994, Pat. No. 5,509,411, which is a continuation-in-part of Ser. No. 57,294, May 5, 1993, abandoned, which is a continuation-in-part of Ser. No. 43,449, Apr. 5, 1993, abandoned, which is a continuation-in-part of Ser. No. 10,818, Jan. 29, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 484,202

Int. Cl.[6] A61B *5/04*

U.S. Cl. 128—642 **3 Claims**



1. A method of detecting electrical activity of a patient's heart from within a blood vessel thereof, comprising:

a) introducing into a patient's vasculature an intravascular catheter which has

an elongated catheter shaft having proximal and distal ends, a first array of sensing electrodes on a distal section having a relatively small interelectrode spacing and a second array of sensing electrodes on the distal section with an interelectrode spacing which is larger than the interelectrode spacing in the first array, and means to transmit electrical activity sensed by the individual electrodes in the first array and the second array to electrical connector means on a proximal extremity of the shaft;

b) advancing the catheter within the patient's vasculature until the distal section of such catheter is disposed within a first coronary artery or cardiac vein of the patient's heart;

c) detecting electrical activity of the patient's heart from within the cardiac vein or the coronary artery by means of the electrodes in the second array of sensing electrodes to detect a general region within the patient's heart where the electrical activity is located; and

d) detecting electrical activity of the patient's heart from within the cardiac vein or the coronary artery by means of the sensing electrodes in the first array of sensing electrodes to more accurately detect the location within the patient's heart of the electrical activity.

5,645,065

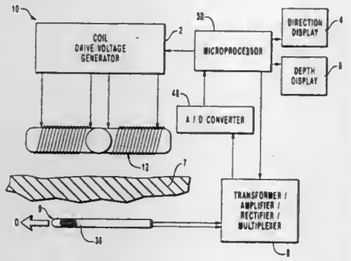
CATHETER DEPTH, POSITION AND ORIENTATION LOCATION SYSTEM

Alan R. Shapiro, and Donald A. Kay, both of Sharon, Mass., assignors to Navion Biomedical Corporation, Stoughton, Mass.

Continuation-in-part of Ser. No. 755,024, Sep. 4, 1991, Pat. No. 5,425,367. This application Apr. 11, 1995, Ser. No. 420,020

Int. Cl.[6] A61B *5/05*

U.S. Cl. 128—653.1 **40 Claims**



1. For externally locating a sensor in tissue, a system comprising:

a) an external probe including at least first and second output coils having respective non-parallel first and second output-coil axes;

b) an output coil-driver circuit that alternately so energizes the first and second output coils as to generate first and second time-varying magnetic fields that penetrate the tissue;

c) a sensor coil that has a sensor-coil axis and develops first and second sensor signals in response to the first and second time-varying magnetic fields, respectively; and

d) a distance determinator that determines from the first and second sensor signals, independently of the relative angles between the projection of the sensor-coil axis and the projections of the first and second output-coil axes into a plane parallel to the first and second output-coil axes, the distance between the sensor coil and the output coils and generates a distance signal representative of the distance thus determined.

5,645,066

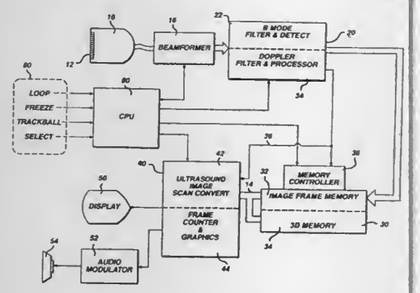
MEDICAL ULTRASONIC DIAGNOSTIC IMAGING SYSTEM WITH SCANNING GUIDE FOR THREE DIMENSIONAL IMAGING

Rebecca L. Gandini, Issaquah; Delfin M. Catunao, Seattle; Jens Ulrich Quistgaard, Seattle, and Lisa M. Butler, Seattle, all of Wash., assignors to Advanced Technology Laboratories, Inc., Bothell, Wash.

Filed Apr. 26, 1996, Ser. No. 639,163

Int. Cl.[6] A61B *8/00*

U.S. Cl. 128—660.07 **27 Claims**



1. A medical ultrasonic diagnostic imaging system which acquires ultrasonic echo information over a volumetric region of the body for presentation in a three dimensional display format, comprising:

an ultrasonic probe for scanning a patient to acquire ultrasonic echo information from a volumetric region of the body;

a storage device for storing signals derived from said ultrasonic echo information;

a processor for processing said ultrasonic echo information to form a three dimensional ultrasonic representation of said volumetric region; and

a scanning guide which is observable by a user to aid the user in scanning a patient with the probe during the acquisition of echo information from a volumetric region of the body.

5,645,067

Patent Not Issued For This Number

5,645,068

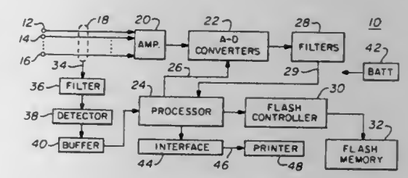
METHODS AND APPARATUS FOR AMBULATORY AND NON-AMBULATORY MONITORING OF PHYSIOLOGICAL DATA USING DIGITAL FLASH STORAGE

Gary P. Mezack, Norco, Calif., and James H. Luby, Oklahoma City, Okla., assignors to BioScan, Inc., Oklahoma City, Okla.

Filed Mar. 20, 1995, Ser. No. 407,303

Int. Cl.[6] A61B *5/0205*

U.S. Cl. 128—670 **17 Claims**



1. A battery operated ambulatory monitor for recording patient physiological data comprising:

a plurality of sensors for attachment to an ambulatory patient for providing analog signals to a plurality of input channels, said analog signals representing different physiological parameters including ECG, EEG, EMG, EOG, respiratory activities, respiratory mechanics, and blood oxygen saturation;

A-D converter means for converting said analog sensor signals to digital data;

processor means coupled to said A-D converter means for taking appropriate measurements from said digital data related to said physiological parameters;

digital storage means coupled to said processor means for storing both said physiological digital data and said appropriate measurements, said storage means comprising a non-volatile flash memory;

controller means coupled between said processor means and said flash memory for causing said digital data measurements and said physiological digital data to be transferred between said processor means and said flash memory in data blocks;

said controller means causing said processor means to be powered down between data block transfers to conserve power; and

variable selection means in said processor means for selecting one or more of said channels providing said physiological parameters received from said sensors for processing and recording.

5,645,069

SYSTEM FOR AND METHOD OF ANALYZING ELECTROCARDIOGRAMS EMPLOYING CHAOS TECHNIQUES

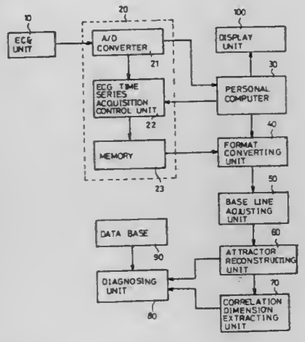
Ki Hak Lee, Seoul, Rep. of Korea, assignor to LG Electronics Inc., Seoul, Rep. of Korea

Filed May 24, 1995, Ser. No. 448,993

Claims priority, application Rep. of Korea, May 26, 1994, 11520/1994; Dec. 1, 1994, 32469/1994

Int. Cl.[6] A61B *5/0402*

U.S. Cl. 128—702 **16 Claims**



12. An electrocardiogram analyzing system comprising:

detecting means for detecting an electrocardiogram signal from an examinee and extracting electrocardiogram time series data from the detected electrocardiogram signal;

executing means for executing a base line adjustment for the extracted electrocardiogram time series data;

reconstructing means for reconstructing an electrocardiogram attractor of the examinee on the basis of the base line adjusted electrocardiogram time series data; and

comparing means for comparing the reconstructed electrocardiogram attractor with a variety of electrocardiogram attractors previously derived and diagnosing health and psychological conditions of the examinee on the basis of the result of the comparison.

5,645,070

METHOD AND APPARATUS FOR DETERMINING THE ORIGINS OF CARDIAC ARRHYTHMIAS MORPHOLOGY DYNAMICS

Robert Turcott, Redwood City, Calif., assignor to Ventritex, Inc., Sunnyvale, Calif.

Filed Sep. 25, 1995, Ser. No. 533,300

Int. Cl.[6] A61B *5/04*

U.S. Cl. 128—702 **23 Claims**

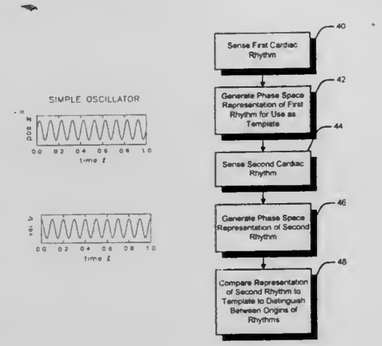
1. A method for distinguishing between cardiac rhythms having different origins comprising the steps of:

sensing a first cardiac rhythm;

generating a phase space representation of the dynamical behavior of said first cardiac rhythm for use as a template;

sensing a second cardiac rhythm;

generating a phase space representation of the dynamical behavior of said second cardiac rhythm; and



comparing the representation of said second cardiac rhythm to said template to distinguish between the origins of said first and second cardiac rhythms.

5,645,071

METHOD FOR THE MEASUREMENT OF THE MOLAR MASS OF GASES OR GAS MIXTURES AND AN APPARATUS FOR THE PERFORMANCE OF THE METHOD

Karl Harnoncourt; Dieter Patzold, both of Graz, Austria; Walter Guggenbuhl, Stäfe, and Christian Buess, Zürich, both of Switzerland, assignors to NDD Medizintechnik GmbH, Wurzburg, Germany

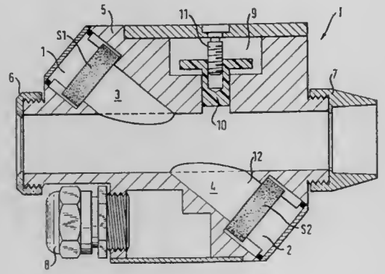
PCT No. PCT/EP94/01629, § 371 Date Apr. 12, 1995, § 102(e) Date Apr. 12, 1995, PCT Pub. No. WO94/28790, PCT Pub. Date Dec. 22, 1994

PCT Filed May 19, 1994, Ser. No. 379,465

Claims priority, application Germany, Jun. 4, 1993, 43 18 690.4

Int. Cl.[6] A61B *5/08*

U.S. Cl. 128—719 **29 Claims**



1. A method of measuring a molar mass of a gas or gas mixture, comprising:

flowing the gas or gas mixture through a holder on which one or more sonic or ultrasonic transmit and receive cells are arranged to define a baseline,

wherein the sonic or ultrasonic transmit-receive cells radiate a pulsed sonic signal,

measuring transit times of sonic pulses of the sonic signal along the baseline,

performing temperature compensation measurements, and

determining the molar mass from the transit times of the pulses of the sonic signal and the temperature compensation measurements,

wherein the molar mass M is determined using the equation:

$$M = k_1 \cdot k_A \cdot T \left(\frac{t_1 - t_2}{t_1 + t_2} \right)^2$$

wherein k_1 is a dimension-related constant, k_A is a dimensionless constant for adiabatic exponent correction, T is a mean temperature along the baseline, and t_1 and t_2 represent transit times along the baseline reduced by time used for assembly and measurement.

5,645,072

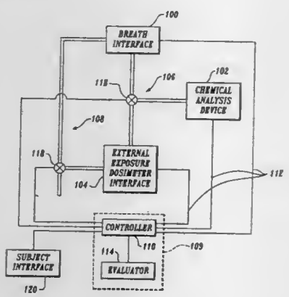
REAL TIME CHEMICAL EXPOSURE AND RISK MONITOR

Karla D. Thrall, 3804 Alder Lake Ct., West Richland, Wash. 99353; Donald V. Kenny, 6947 Sparrow La., Worthington, Ohio 43235; George W. R. Endres, 2112 Briarwood Ct., Richland, Wash. 99352, and Daniel R. Sisk, 1211 Marshall Ave., Richland, Wash. 99352

Filed Sep. 28, 1995, Ser. No. 535,929

Int. Cl.[6] A61B *5/09*

U.S. Cl. 128—719 **21 Claims**



1. An apparatus for quantitatively assessing an exposure in terms of a total integrated exposure, dose, and predicted response of a person exposed to at least one hazardous chemical, said apparatus comprising:

(a) a breath interface for receiving breath from a person;

(b) an external exposure dosimeter interface for receiving a lapel tube from a person;

(c) a chemical analysis device having at least one inlet port with at least one valve for receiving a first gas sample from said breath interface, and for receiving a second gas sample from said external exposure dosimeter interface; and

(d) an electronic processor for controlling said valve(s) and for receiving data from said chemical analysis device and for analyzing said data at a rate of at least once per breath for assessing said exposure.

5,645,073

METHOD AND AN APPARATUS FOR USE IN ELECTROMYOGRAPHY TO DETERMINE RISK OF MUSCULAR DISORDER

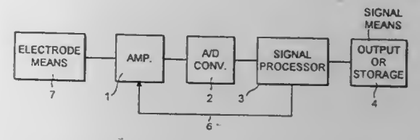
Roland Kadefors; Leif Sandsjö, both of Göteborg, and Tommy Öberg, Eksjó, all of Sweden, assignors to Synectics Medical AB, Stockholm, Sweden

Continuation-in-part of Ser. No. 973,228, Nov. 6, 1992, Pat. No. 5,318,039, which is a continuation of Ser. No. 558,638, Jul. 27, 1990, abandoned. This application Jun. 7, 1994, Ser. No. 255,256

Claims priority, application Sweden, Jul. 31, 1989, 8902626

Int. Cl.[6] A61B *5/0488*

U.S. Cl. 128—733 **33 Claims**



1. A method for detecting, over a period of time, muscular status to determine risk of muscular disorder, said method comprising producing analog myoelectric signals in response to activity of a muscle under examination, amplifying said signals to produce amplified signals, converting the amplified signals into digital signals, in successive calculation periods, producing from said digital signals a signal which characterizes myoelectric signals during each calculation period, comparing the signals which characterize the myoelectric signals to a base signal related to the frequency spectrum sensed on commencement of said period of time of detection, producing output signals based on said comparing to represent muscular status for enabling detection of risk of muscle disorder based on the occurrences of intervals during which the muscle activity is below a predetermined level and transforming said output signals representing muscular status into a state perceivable by a human being.

5,645,074

INTRACANAL PROSTHESIS FOR HEARING EVALUATION

Adnan Shennib, Fremont, and Richard Urso, Redwood City, both of Calif., assignors to Decibel Instruments, Inc., Hayward, Calif.

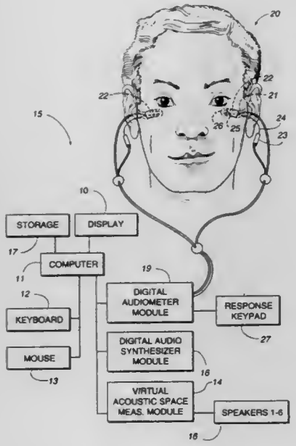
Filed Aug. 17, 1994, Ser. No. 292,067

Int. Cl.[6] A61B *1/00*

U.S. Cl. 128—746 **24 Claims**

1. A system for assessment of the hearing function in humans, comprising:

an intracanal prostheses that is representative of a hearing aid prostheses, said intracanal prostheses containing a receiver therein for reproducing synthesized acoustic signals and further comprising means for measuring in-the-ear-canal acoustic response near the tympanic membrane; and



an audiometric module coupled to said intracanal prostheses for at least one of audiometric evaluation, hearing aid prescription, hearing aid simulation, and hearing aid fitting.

5,645,075

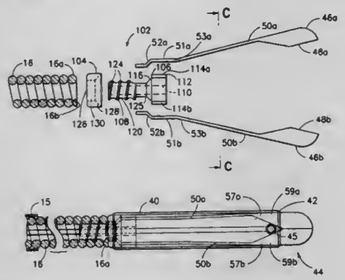
JAW ASSEMBLY FOR AN ENDOSCOPIC INSTRUMENT

Matthew A. Palmer, Miami; Charles R. Slater, Fort Lauderdale; Vincent A. Turturro, Miramar; Matthew S. Solar, Cooper City; Saul Gottlieb, Miami; Jose L. Francese, Miami Springs, and John Jairo Damarati, Miami, all of Fla., assignors to Symbiosis Corporation, Miami, Fla.

Continuation-in-part of Ser. No. 189,937, Feb. 1, 1994, Pat. No. 5,542,432, which is a continuation-in-part of Ser. No. 837,046, Feb. 18, 1992, Pat. No. 5,507,296. This application May 12, 1995, Ser. No. 440,327

Int. Cl.[6] A61B *10/00*

U.S. Cl. 128—749 **28 Claims**



12. An endoscopic instrument comprising:

a) an elongate member having proximal and distal portions;

b) a cylindrical member;

c) first and second end effectors each having arms biased away from each other; and

d) coupling means for coupling said arms of said first and said second end effectors to said distal portion of said elongate member, said coupling means comprising a hollow screw, said screw having a head with a pair of arm receiving grooves, and said screw having a threaded portion which engages said distal portion of said elongate member, and

e) actuation means coupled to either said cylindrical member or to said first and second end effectors for causing said cylindrical member and said first and second end effectors to move relative to each other so as to cause said cylindrical member, in a first position, to extend over at least a portion of the first and second end effectors so as to force said arms of said first and second end effectors toward each other and assume a relatively closed position, and, in a second position, to permit said first and second end effectors to extend away from each other and assume a relatively open position.

5,645,076

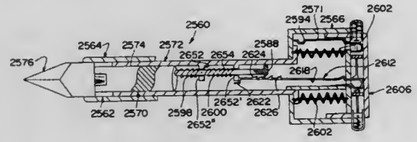
AUTOMATIC RETRACTABLE SAFETY PENETRATING INSTRUMENT

InBae Yoon, 2101 Highland Ridge Dr., Phoenix, Md. 21131

Division of Ser. No. 196,027, Feb. 14, 1994, which is a division of Ser. No. 945,177, Sep. 15, 1992, which is a continuation-in-part of Ser. No. 745,071, Aug. 14, 1991, abandoned, Ser. No. 800,507, Nov. 27, 1991, abandoned, Ser. No. 805,506, Dec. 6, 1991, Pat. No. 5,330,432, Ser. No. 808,325, Dec. 16, 1991, Pat. No. 5,324,268, Ser. No. 848,838, Mar. 10, 1992, Pat. No. 5,445,614, Ser. No. 868,578, Apr. 15, 1992, Pat. No. 5,336,176, Ser. No. 929,338, Aug. 14, 1992, Pat. No. 5,360,405, and Ser. No. 868,566, Apr. 15, 1992, Pat. No. 5,320,610. This application Mar. 15, 1995, Ser. No. 406,217

Int. Cl.[6] A61B *10/00*

U.S. Cl. 128—754 **4 Claims**



1. An automatic retractable safety penetrating instrument for introducing a sleeve into a cavity in the body comprising

a sleeve for providing a passage through a cavity wall and having a distal end for positioning in the body cavity, a proximal end for positioning externally of the body cavity and a lumen extending between said distal and proximal ends;

a penetrating member disposed in said lumen of said sleeve and having a distal end for penetrating the cavity wall and terminating proximally at a hub;

a retracting mechanism for moving said distal end of said penetrating member proximally relative to said sleeve from an extended position where said distal end of said penetrating member protrudes beyond said distal end of said sleeve to a retracted position within said sleeve;

a locking and releasing mechanism for automatically actuating said retracting mechanism to move said distal end of said penetrating member to said retracted position in response to said distal end of said sleeve entering the body cavity; and

control means carried by said hub for selectively disabling said locking and releasing mechanism to prevent automatic retraction of said distal end of said penetrating member from said extended position.

5,645,077

INERTIAL ORIENTATION TRACKER APPARATUS HAVING AUTOMATIC DRIFT COMPENSATION FOR TRACKING HUMAN HEAD AND OTHER SIMILARLY SIZED BODY

Eric M. Foxlin, Cambridge, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jun. 16, 1994, Ser. No. 261,364

Int. Cl.[6] A61B *5/103*

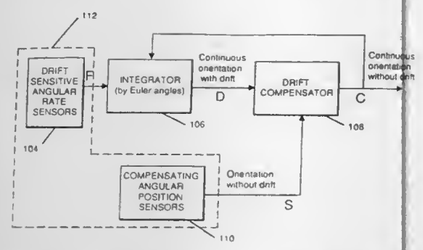
U.S. Cl. 128—774 **44 Claims**

1. An apparatus to be attached to a body having a size between the sizes of a human finger and a human torso, said body having an orientation, relative to an external reference frame, said apparatus generating an orientation signal that corresponds to at least two degrees of freedom of said orientation of said body, said apparatus comprising:

a. a self contained sensor that generates first sensor signals that correspond to x^{th} order integrals of rotational accelerations of said body about at least two axes of said body, x being selected from the group consisting of 0, 1 and 2 and said first sensor signals being impervious to any interference from electromagnetic, acoustic, optical and mechanical sources;

b. a mechanism for mounting said sensor to said body; and

c. coupled to said sensor, a signal processor that generates an orientation signal that corresponds to said at least two degrees of freedom of said orientation of said body.



5,645,078

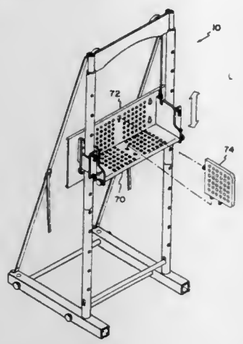
MOBILE ASSESSMENT APPARATUS AND METHOD

Keith S. Marmer, Medford, N.J.; Glenda L. Key, Minneapolis, and Richard Brown, Eagan, both of Minn., assignors to Key Functional Assessments, Inc., Minneapolis, Minn.

Filed Sep. 30, 1994, Ser. No. 315,561

Int. Cl.[6] A61B *5/05*

U.S. Cl. 128—782 **20 Claims**



1. An assessment apparatus for use in testing functional capacity of individuals, comprising:

a base;

a pair of vertical support members extending vertically from the base, each of the vertical support members having a first end detachably connected to the base and having a second end;

a first horizontal support member detachably connected to the second ends of the pair of vertical support members;

a pair of angled support members each detachably connected to the base and proximate to the second ends of the vertical support members, wherein the pair of angled support members each comprise a strap having a first end with a first hook for connection to the base, and a second end with a second hook for connection proximate to the second ends of the vertical support members; and

an assessment unit, detachably connected to the pair of vertical support members, for use in testing functional capacity of individuals.

5,645,079

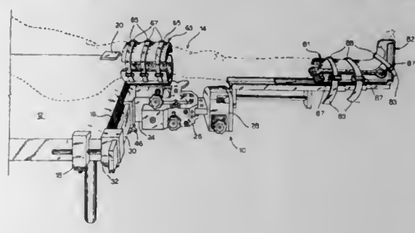
APPARATUS FOR MECHANICALLY HOLDING, MANEUVERING AND MAINTAINING A BODY PART OF A PATIENT DURING ORTHOPEDIC SURGERY

Hormoz Zahiri; Christopher A. Zahiri, both of 11718 Chenault St., Los Angeles, Calif. 90049; Norman C. Christensen, and Kenneth N. Christensen, both of 10702 Spyglass Hill Rd., Whittier, Calif. 90601

Filed Dec. 2, 1994, Ser. No. 348,321

Int. Cl.[6] A61F *5/37*

U.S. Cl. 128—846 **28 Claims**



1. An orthopedic apparatus for mechanically holding, maneuvering and maintaining a patient's leg during an orthopedic surgery and used in conjunction with an operating table which has two opposite clamps located adjacent to one end of the operating table, the apparatus comprising:

a. a clamping section, a tilting section, a swinging section, and an extended rotatable section;

b. said clamping section including an elongated cross bar with two opposite ends, two clamping blocks slidably attached at two opposite ends of the cross bar respectively, and a sliding block slidably attached on the cross bar between the two clamping blocks, where each clamping block has an integrally connected extension rod attachable to a respective one of said two opposite clamps on said operating table for holding the cross bar adjacent and paralltel to said end of said operating table;

c. said tilting section including a tilting gear box integrally attached to said sliding block and having a self-locking tilting gear mechanism, a tilting part hingeably connected to the tilting gear box, a spring loaded lever mounted on the tilting part and engagable with the tilting gear mechanism for quick and rough adjustment of the tilting part, and a pair of tilting wheels connected to the tilting gear mechanism for fine adjustment of an up-and-down tilting of the tilting part;

d. said swinging section including a swinging gear box integrally attached to said tilting part of said tilting section and having a self-locking swinging gear mechanism, a swinging part hingeably connected to the swinging gear box, and a pair of swinging wheels connected to the swinging gear mechanism for adjusting a lateral swinging of the swinging part;

e. said extended rotatable section including a rotation gear box integrally attached to said swinging part of said swinging section and having a self-locking rotation gear mechanism, an elongated sliding track rotatably connected to the rotation gear box, and a pair of rotation wheels connected to the rotation gear mechanism for rotating the elongated sliding track about its longitudinal axis;

f. said elongated sliding track having a proximal portion and a distal portion, the proximal portion having two support shafts extending down and an elongated rod attached therebetween and having a proximal end connected to the rotation gear box, the distal portion having a foot holder for receiving and having means for securing thereto an ankle and foot of said

patient and slidably attached to the proximal portion so that the length of the sliding track is adjustable to fit said patient's leg; and

g. a U-shaped thigh support holder attached to said tilting section for receiving a thigh of said patient and having means for securing the patient's thigh thereto;

h. whereby when said patient is lying on said operating table and a buttocks of said patient is located adjacent to said end of said operating table, a surgeon can slide said sliding block laterally to align said orthopedic apparatus with said patient's leg which is to be operated on, and independently adjust the tilting, swinging, length and rotation of said respective sections of said orthopedic apparatus to maneuver said patient's leg so that the leg is properly positioned and held in a proper position throughout the surgical operation, and the surgeon can further adjust the position of said patient's leg from time to time during the surgery with great accuracy.

5,645,080

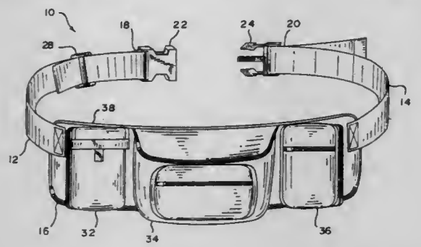
WAIST SUPPORTED CARRYING CASE INCLUDING A BACK SUPPORT

Victor Toso, 771 Harding St., NE., Minneapolis, Minn. 55413

Filed Jun. 18, 1996, Ser. No. 666,625

Int. Cl.[6] A61F *5/37*

U.S. Cl. 128—876 **20 Claims**



1. A waist supported carrying case including a therapeutic back support for supporting the lower back region of a user in a seated position, comprising:

a belt for securing the carrying case to the waist of an individual;

a pouch assembly positioned on the belt, wherein the pouch assembly includes at least one pocket secured to the outside of the pouch assembly providing an individual with a storage compartment and at least one sleeve having a therapeutic back support therein, the therapeutic back support being selectively positioned within the at least one sleeve when the therapeutic back support is in its storage position and removed from within the at least one sleeve when the therapeutic back support is in its use position; and

wherein the belt may be secured to the waist of an individual whether the therapeutic back support is in its storage position or its use position.

5,645,081

METHOD OF TREATING TISSUE DAMAGE AND APPARATUS FOR SAME

Louis C. Argenta, Winston-Salem, and Michael J. Morykwas, Pfafftown, both of N.C., assignors to Wake Forest University, Winston-Salem, N.C.

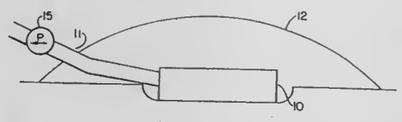
Filed Nov. 14, 1991, Ser. No. 792,001

The portion of the term of this patent subsequent to Mar. 9, 2013, has been disclaimed.

Int. Cl.[6] A61B *19/00*

U.S. Cl. 128—897 **82 Claims**

1. An apparatus for facilitating the healing of wounds, comprising:



vacuum means for creating a negative pressure between about 0.1 and 0.99 atmospheres on the area of skin including and surrounding the wound;

sealing means operatively associated with said vacuum means for maintaining said negative pressure on said wound by contacting the skin surrounding said wound; and

screen means for positioning at the wound within the sealing means for preventing the overgrowth of tissue in the wound.

5,645,082

INTRAVASCULAR METHOD AND SYSTEM FOR TREATING ARRHYTHMIA

Ruey Sung, Hillsborough, and Gene Samson, Fremont, both of Calif., assignors to Cardima, Inc., Fremont, Calif.

Continuation-in-part of Ser. No. 10,818, Jan. 29, 1993, and a continuation-in-part of Ser. No. 43,449, Apr. 5, 1993, abandoned, and a continuation-in-part of Ser. No. 57,294, May 5, 1993, abandoned. This application Jan. 27, 1994, Ser. No. 188,384

Int. Cl.[6] A61B *19/00*

U.S. Cl. 128—897 **15 Claims**

1. A method for locating and treating tissue of a patient's heart exhibiting arrhythmia, comprising:

a) locating tissue within the patient's heart which is causing or is involved with the arrhythmia by detecting electrical activity by means of at least one intravascular device disposed within a coronary artery or cardiac vein of the patient;

b) determining which coronary artery feeds oxygenated blood to the located tissue causing or involved with the arrhythmia; and

c) delivering an occluding element to the coronary artery to occlude the artery blocking blood flow to the located tissue causing or involved with the arrhythmia and to thereby terminate the arrhythmia.

5,645,083

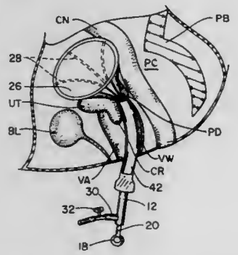
PERITONEAL SURGICAL METHOD

Mitchell N. Essig, 227 High Brook Ct., Pelham, N.Y. 10803, and Peter J. Wilk, 185 West End Ave., New York, N.Y. 10023

Filed Feb. 10, 1994, Ser. No. 195,930

Int. Cl.[6] A61M *1/00*

U.S. Cl. 128—898 **20 Claims**



1. A method for use in pelvic or peritoneal surgery, comprising the steps of:

providing a trocar sleeve and a funnel shaped membrane;

positioning said sleeve in the abdominal wall of the patient so that a distal end portion of said sleeve extends through a perforation into the abdominal cavity;

inserting said membrane in a closed configuration through said sleeve into the abdominal cavity of the patient;

upon emergence of said membrane into the abdominal cavity, spreading said membrane from said closed configuration to an opened configuration;

positioning the opened membrane and an internal organ of the patient relative to one another so that said organ, while attached to the patient, is disposed essentially vertically above said opened membrane;

operating on said organ while said organ is disposed above said opened membrane and is attached to the patient, whereby tissue particles and fluid escaping said organ during the operation fall into said opened membrane; and

upon termination of said step of operating, removing said membrane and collected tissue particles and fluid from said abdominal cavity.

5,645,084

METHOD FOR SPINAL FUSION WITHOUT DECORTICATION

William F. McKay, Memphis, Tenn., assignor to Danek Medical, Inc., Memphis, Tenn.

Filed Jun. 7, 1995, Ser. No. 482,038

Int. Cl.[6] A61B *19/00*

U.S. Cl. 128—898 **28 Claims**

1. A surgical procedure for stabilizing, vertebrae in a spine, comprising the steps of:

exposing cortical bone of a portion of each of adjacent vertebrae each said portion being outside an intervertebral disc space between the adjacent vertebrae; and

placing an osteoinductive material within an area between the portions of the adjacent vertebrae in contact with only the cortical bone of the portions.

5,645,085

METHOD AND MACHINE FOR SIMULTANEOUSLY PRODUCING A NUMBER OF CIGARETTE RODS

Fausto Mengoli, Sasso Marconi, and Fiorenzo Draghetti, Medicina, both of Italy, assignors to G.D Societa' Per Azioni, Bologna, Italy

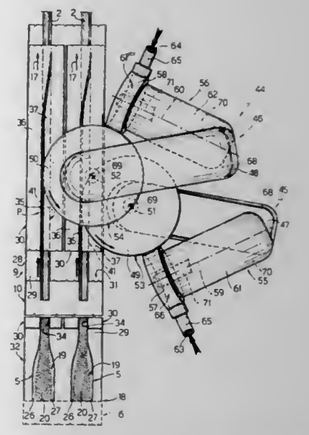
Filed Jul. 26, 1996, Ser. No. 686,511

Claims priority, application Italy, Jul. 27, 1995, B095A0369

Int. Cl.[6] A24C *5/24*

U.S. Cl. 131—67 **29 Claims**

1. A method of simultaneously producing a number of cigarette rods (**2**), the method comprising the steps of feeding at least two strips (**5**) of paper, by means of respective conveyor belts (**11**), along a given path (P) extending in a given traveling direction (**17**) through a loading station (**18**), each conveyor belt (**11**) coming into contact with an outer surface (**15**) of the relative strip (**5**); transferring a respective continuous layer (**20**) of tobacco (**7**) on to an inner surface (**19**) of each said strip (**5**) at the loading station (**18**); feeding the strips (**5**) and respective layers (**20**), by means of said conveyor belts (**11**), along a forming beam (**28**); gradually deforming the conveyor belts (**11**) transversely, by means of the forming beam (**28**), to gradually wind the respective strips (**5**) about the respective layers (**20**) and so form respective tubular wrappings (**41**) presenting respective longitudinal lateral appendixes (**42**) projecting outwards and presenting respective longitudinal lateral inner surface portions (**43**); gumming, on each strip (**5**) and by means of a respective gumming device (**45**, **46**), a lateral surface portion (**26**) corresponding to the relative said lateral inner surface portion (**43**); and turning said appendixes (**42**) over on to the respective tubular wrappings (**41**) to form respective continuous cigarette rods (**2**); characterized in that the strips (**5**) are deformed transversely so as to form respective said appendixes (**42**) with their lateral inner surface portions (**43**) all facing the same way;



said lateral inner surface portions (**43**) being gummed at an intermediate point (**38**) of the forming beam (**28**) by means of respective gumming devices (**45**, **46**) located on the same side of the forming beam (**28**).

5.645,086

APPARATUS FOR EVACUATING SURPLUS AIR FOR THE DISTRIBUTOR OF A TOBACCO PROCESSING MACHINE

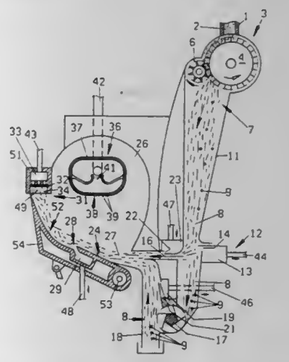
Peter Brand, Hamburg; Andreas Ducci, Escheburg, and Wolfgang Steiniger, Börnsen, all of Germany, assignors to Hauni Maschinenbau AG, Hamburg, Germany

Filed Feb. 6, 1996, Ser. No. 597,700

Claims priority, application Germany, Mar. 8, 1995, 195 08 139.0

Int. Cl.[6] A24C *5/18*

U.S. Cl. 131—84.3 **5 Claims**



1. Apparatus for evacuating surplus air from a chamber having a substantially centrally located zone and being bounded at least in part by a substantially concave guide for the advancement of a mixture of air and fragments of smokable material in the chamber toward a unit for the building of a filler of smokable material, comprising a stationary pneumatic air withdrawing device disposed at least in part in said substantially centrally located zone of said chamber and including means for withdrawing surplus air from the chamber by suction, said device including a substantially tubular member having an upper side confronting a top portion of

said chamber and an underside facing away from said top portion and having at least one inlet for the flow of surplus air from said chamber into said tubular member.

5,645,087

METHOD OF AND APPARATUS FOR DECONTAMINATING THE EXPOSED SURFACES OF FILTER MOUTHPIECES IN SMOKERS' PRODUCTS

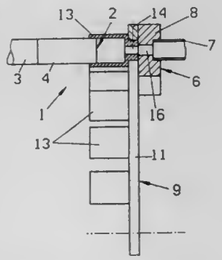
Firdausia Chebab, Hamburg; Stefan Fietkau, Westerau; Peter-Franz Arnold; Thomas Juschus, both of Hamburg, and Clemens Schmick, Geesthacht, all of Germany, assignors to Hauni Maschinenbau AG, Hamburg, Germany

Filed Mar. 20, 1996, Ser. No. 618,965

Claims priority, application Germany, Apr. 5, 1995, 195 12 732.3

Int. Cl.[6] A24C *5/60*

U.S. Cl. 131—88 **5 Claims**



1. A method of processing smokers' products wherein a plurality of aligned rod-shaped components include at least one multiple-unit-length filter rod section containing plastic fibers and a pair of tobacco-containing components flanking the at least one section, comprising the steps of severing the products across their sections so that the severed sections develop pairs of mouthpieces having end faces at which at least some of the fibers tend to become separated from the respective mouthpieces; and preventing uncontrolled separation of fibers from the respective mouthpieces including intentionally removing said at least some fibers from the respective mouthpieces by electrically separating the at least some fibers from the respective mouthpieces.

5,645,088

DEVICE FOR TREATING SMOKE ADDICTION

Gudmar Olovson, 64, rue Saint-Charles, F-75015, Paris, France

PCT No. PCT/SE92/00779, § 371 Date Dec. 21, 1994, § 102(e) Date Dec. 21, 1994, PCT Pub. No. WO93/09687, PCT Pub. Date May 27, 1993

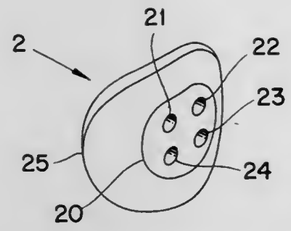
PCT Filed Nov. 21, 1992, Ser. No. 244,908

Claims priority, application Sweden, Nov. 14, 1991, 91 03366

Int. Cl.[6] A24F *47/00*

U.S. Cl. 131—270 **6 Claims**

1. A device adapted to be held enclosed in the space between the frontal surfaces of the teeth and the inner surface of the lips of a user, said device having a central part and a peripheral part, said central part being provided with at least one hole having a cross-section specifically sized so that airflow drawn through said at least one hole meets with a resistance that essentially corresponds to air resistance met by airflow through a smokable device, said central



part being made of one of a plastic material and rubber material, said peripheral part being made of a saliva-dissolvable material.

5,645,089

PREPARATORY MATERIALS FOR AN ARTICLE FOR SMOKING AND A SLEEVE SECTION THEREFOR

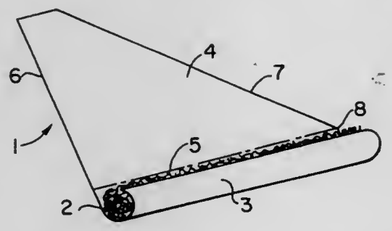
Christian Burger, and Beat Burger, both of Burg, Switzerland, assignors to Burger Soehne AG Burg, Burg, Switzerland

Filed Mar. 10, 1994, Ser. No. 209,435

Claims priority, application Switzerland, Mar. 13, 1993, 00745/93

Int. Cl.[6] A24D *1/02*

U.S. Cl. 131—365 **5 Claims**



1. Prepared materials for making a hand-rolled smoking article, said materials comprising a sleeve section having a tube shaped sleeve and a filler made from tobacco, said materials characterized in that:

the filler consists of finely cut tobacco; and

the sleeve section is manufactured from tobacco leaf or a tobacco foil and includes a substantially rectangular base part which receives the filler and a wrapper part which connects to one long side of the rectangle of the base part, in which the length of the base part and correspondingly the referenced long side of the rectangle determine the length of the sleeve and the width of the rectangle corresponds at least to the sleeve circumference, and in which the wrapper part is defined on the one hand by a straight line which is a continuation of the short side of the rectangle and on the other hand by a line which projects from an opposite corner of the base part and extends at an acute angle to the referenced long side of the rectangle.

5,645,090

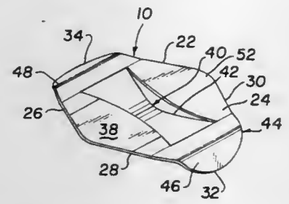
DEVICE, KIT AND METHOD OF APPLYING POLISH TO TIP OF NAIL

Kathryn A. Juhl; S. Rozan Christian, both of Dallas; Max L. Christian, Sherman County, and Clarence Zierhut, Dallas County, all of Tex., assignors to Juhl, Christian and Christian, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 410,335, Mar. 24, 1995. This application Apr. 28, 1995, Ser. No. 430,380

Int. Cl.[6] A45D *29/00*

U.S. Cl. 132—285 **4 Claims**



1. A device used for applying a polish to a tip of a finger nail and to prevent the polish from being applied to another portion of the nail, said device comprising:

a thin-walled body, said thin walled body including:

a shielding portion disposed at one end of said thin-walled body, said shielding portion having a size sufficient to prevent the polish from contacting the other portion of said finger nail away from the tip of said nail, said shielding portion further including a deformation section having a convex curve extending along a cylindrical axis, the cylindrical axis being disposed to extend substantially parallel to an elongate axis of the finger;

a demarcation shoulder disposed along an edge of said shielding portion, said demarcation shoulder interacting with said finger nail to form a line of demarcation along which the polish exists on the nail on one side of the demarcation shoulder and does not exist on the nail on the other side of the demarcation shoulder;

a first shoulder extending from a first side of said shielding portion in a first plane that is substantially parallel to the elongate axis of a finger to which said shielding portion is detachably connected; and

a second shoulder extending from a second side of said shielding portion in a second plane that is substantially parallel to the elongate axis of the finger to which said shielding portion is detachably connected, wherein said first and said second shoulders are on diametrically opposed sides of said shielding portion; and

means for detachably connecting said shielding portion to said finger having said finger nail to which said polish is applied to the tip, said connecting means including a belt-shaped member attached to said shielding portion on a side opposite to said demarcation shoulder, the belt-shaped member having a size sufficient to permit the finger to extend therethrough;

wherein said shielding portion is sufficiently flexible to be deflected from a nail engaging position to a removing position when a force is applied against opposed first and second sides of said shielding portion.

5,645,091

APPARATUS FOR SOAKING AND PRESERVING PAINT ROLLER COVERS IN WET SUSPENSION IN A RECEPTACLE

Dale E. Hoeft, 24 Fowler St., Randolph, Mass. 02368

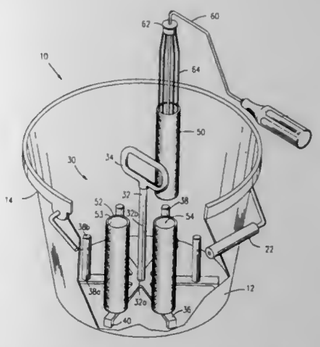
Filed Feb. 22, 1996, Ser. No. 604,892

Int. Cl.[6] B08B *9/02*

U.S. Cl. 134—84 **17 Claims**

1. An apparatus for soaking and preserving paint roller covers in wet

suspension comprising:



an open top receptacle having bottom and side walls for containing a liquid;

a roller cover storage rack for removable insertion into said receptacle through said open top, said rack having a base portion, said base portion having a plurality of upwardly extending rods fixedly attached thereto, each said rod being small enough in diameter to receive a paint roller cover thereover for soaking and preserving;

means connected to said rack for supporting each roller cover to be soaked and preserved thereon such that the top of each roller cover, when in position for soaking and preserving, is higher than the top of each said rod around which it is to be soaked and preserved by an amount sufficient to permit the insertion of the spindle portion of a paint roller holder along the interior cylindrical surface of the roller cover until the interior surface of the paint roller cover frictionally engages the spindle portion of the paint roller holder so as to permit the removal of each paint roller cover from said rack in said receptacle without the need for contact by a user's hand;

means connected to said rack for maintaining the paint roller covers in spaced relationship with one another and with said walls of said receptacle so that paint sediment can fall away from the paint roller covers toward the bottom wall of said receptacle to a point below the paint roller covers; and

means connected to said rack for supporting the paint roller covers above said bottom wall to define a paint sediment settling space between the bottom of the paint roller covers and said bottom wall so that the paint roller covers are out of contact with settled paint sediment while being soaked and preserved.

5,645,092

PROCESS AND INSTALLATION FOR CLEANING PARTIALLY DE-LEAFED LEAFY SALAD VEGETABLES AND REMOVING SMALL FOREIGN BODIES THEREFROM

Laurent Beaumont, Coutances, France, assignor to Soleco "Societe Legumiere Ducotentin", Lessay, France

Filed Sep. 15, 1995, Ser. No. 529,130

Claims priority, application France, Oct. 12, 1994, 94 12173

Int. Cl.[6] B08B *3/02*

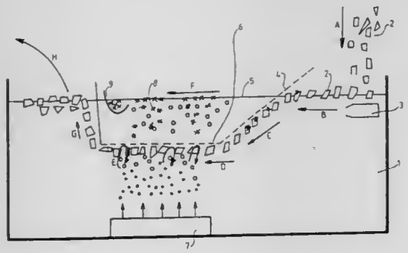
U.S. Cl. 134—102.2 **8 Claims**

1. An installation for cleaning pieces of partially de-leafed leafy salad vegetables and for removing particles of foreign bodies therefrom, said installations comprising:

A—a bath (**1**) for receiving the pieces to be cleaned (**2**);

B—means (**3**) for causing the pieces to circulate in the bath (**1**);

C—a deflector (**4**,**6**), having a first surface positioned below a surface level of the bath (**1**), said deflector maintaining the pieces of partially deleafed leafy salad vegetables (**2**) below said first surface, wherein said deflector is selectively permeable to said particles (**8**) and impermeable to said pieces;



D—a source of gas bubbles (**7**) emitting gas bubbles below the deflector (**4**, **6**) so that the gas bubbles entrain the particles and cause the particles to permeate through the deflector to thereby separate the particles (**8**) from the pieces; and

E—a particle collector (**9**) for recovering and removing the particles (**8**) which have permeated through the deflector and are floating on the surface level of the bath (**1**).

5,645,093

PRODUCT COLLECTING DEVICE FOR USE IN APPARATUS COATING SEED WITH GEL

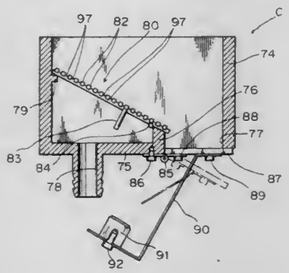
Yoichi Ido; Yasushi Kohno, and Kazushi Nakatsukasa, all of Susono, Japan, assignors to Yazaki Corp., Tokyo, Japan

Filed Nov. 21, 1995, Ser. No. 561,424

Claims priority, application Japan, Nov. 25, 1994, 6-291216

Int. Cl.[6] B08B *3/04;13/00*

U.S. Cl. 134—104.3 **3 Claims**



1. A product collecting device for use in an apparatus for coating seeds with a gel in which a surface of gel coated seeds are rinsed in a water wash bath, then the gel coated seeds are carried out from the water wash bath and are collected by means of the product collecting device, the product collecting device comprising:

a product receiving case having an open top portion, sides, and a bottom wall;

a partition wall extending upward from the bottom wall;

a product collecting port provided on one side of the partition wall, said partition wall having a slope toward the product collecting port;

a draining hole provided on the other side of the partition wall, said draining hole located directly under a carrying out side end portion for the water wash bath;

a draining chute arranged over said draining hole and above the bottom wall, said draining chute having an inclined slope toward said product collecting port such that the gel coated seeds can roll on the draining chute to the product collecting port; and

a plurality of water breaking holes arranged in the draining chute such that they cross at right angles to said product collecting port.

5,645,094

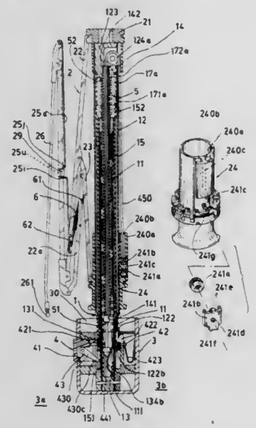
MULTIPLE-FOLD AUTOMATIC UMBRELLA WITH REINFORCED RIBS AND SIMPLIFIED MECHANISM

Woh-Wen Wu, P. O. Box 10160, Taipei (100), Taiwan

Continuation-in-part of Ser. No. 654,142, May 28, 1996, Pat. No. 5,617,889. This application Nov. 4, 1996, Ser. No. 743,345

Int. Cl.[6] A45B *25/14*

U.S. Cl. 135—24 **4 Claims**



1. An automatic umbrella comprising:

a central shaft means defining a longitudinal axis therein and having an upper tubular shaft slidably telescopically engageable with a middle tubular shaft, said middle tubular shaft telescopically engageable with a lower tubular shaft, said lower tubular shaft secured on a grip, an inner block formed in an upper end portion of the upper shaft having an upper guiding roller rotatably mounted in the inner block, a lower sleeve fixed in the grip within the lower shaft having a triangular block portion formed in the lower sleeve inclined inwardly downwardly, and an upper sleeve fixed in the inner block of the upper shaft;

a rib assembly having at least a top rib pivotally secured to an upper notch fixed on a top portion of said upper shaft, a stretcher rib pivotally secured with said top rib and pivotally secured to a lower runner slidably held on said central shaft means, a middle rib secured to a middle joint member pivotally connected with the top rib, a rear rib secured to an outer joint member pivotally connected with the middle rib, a connection rib pivotally connected between the stretcher rib and the middle joint member, and a resilient rib connected between the top rib and the outer joint member;

an extending spring retained in between said inner block and said lower sleeve for operatively opening the umbrella, and said extending spring disposed around said upper sleeve;

a plurality of retraction restoring springs each said retraction restoring spring having an inner spring end secured on said connection rib and an outer spring end secured to said top rib for operatively closing the umbrella from an opened state of the umbrella; and

a control means including: a push button slidably held in the grip at the first side of the grip; an opening controller having a pair of bifurcated members bifurcated towards the first side of the grip and slidably held in a central portion of the grip to be normally contacting with the push button and slidably disposing about an outer circumferential surface of the upper shaft, a wedge portion tapered downwardly inwardly towards said longitudinal axis of the central shaft means and formed on a rear portion of the bifurcated members and engageable with at least one engaging hole formed in said upper shaft, and a controller restoring spring held in a spring socket formed in the grip at the second side of the grip for urging the wedge portion to be engaged with the engaging hole of the upper shaft when closing the umbrella; a closing controller having a pushing rod pivotally secured in said push button and normally restored horizontally and protruding horizontally towards the second side of the grip through a rod hole respectively formed in said lower shaft and in said lower sleeve; a locking head means having a locking head portion formed on a bottom portion of the locking head portion; and a rope having a lower rope portion connected to the locking head portion and having an upper rope end portion secured to the inner block adjacent to the upper notch by passing the rope through a central portion of the shaft means, the upper sleeve and deflectively winding the rope on the upper guiding roller formed on the inner block downwardly to the lower runner and then deflectively winding the rope upwardly through a lower guiding roller rotatably mounted on the lower runner to be upwardly extended to the upper notch, said locking head portion, upon the folding of the umbrella, operatively biased by a resilient plate protruding inwardly from the lower sleeve at the second side of the grip to be locked on the triangular block portion formed on the lower sleeve at the first side of the grip; and the locking head portion operatively disengaged from the triangular block portion of the lower sleeve when thrusted by the pushing rod when closing an opened umbrella;

the improvement which comprises:

said lower runner including a rope guiding member longitudinally formed on said runner having two rope grooves disposed in two opposite sides of a central partition stem of the rope guiding member for an easy winding of said rope on the lower guiding roller rotatably mounted on a roller shaft formed on said runner; a coupling spring resiliently retained between said inner block adjacent said upper notch and an upper portion of said middle shaft;

said tipper shaft having a lower engaging hole formed in a lower portion of the upper shaft, a lower convex portion curved outwardly from the longitudinal axis of the shaft means and positioned below said lower engaging hole, a lowest engaging hole formed in a lowest portion of the upper shaft below the lower convex portion, and a lowest convex portion positioned below the lowest engaging hole adjacent to a lower end portion of said upper shaft, each said engaging hole engageable with said wedge portion of said control means; and

said resilient rib including a central U-shaped portion slidably engageable with the middle rib with a coupling ring, said central U-shaped portion having an inner arm portion higher than said coupling ring for preventing dogging by said coupling ring with said central U-shaped portion when upwardly bending an opened umbrella rib means.

5,645,095

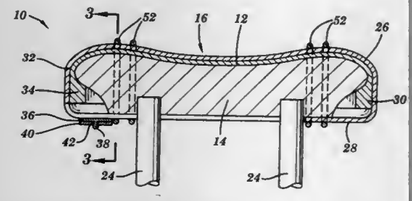
LOW FRICTION CRUTCH PAD COVER

Roland Ramonowski, 1320 4th Ave., Schenectady, N.Y. 12303

Filed Oct. 16, 1996, Ser. No. 733,026

Int. Cl.[6] A61H *3/02*

U.S. Cl. 135—68 **11 Claims**



1. A crutch pad cover comprising:

an elongate slotted body member for receiving a crutch pad therein, said body member including first and second sides which are adapted to partially encircle said crutch pad thereby forming a slot, and first and second end portions, said first end portion including an inwardly directed flanged section, said first and second sides and said inwardly directed flanged section forming a cavity for receiving and securing a first end of said crutch pad therein, said first and second sides and said second end portion forming a continuous sheath adapted to cover a second end of said crutch pad; and

means for securing said first and second sides of said body member about said crutch pad proximate the second end thereof.

5,645,096

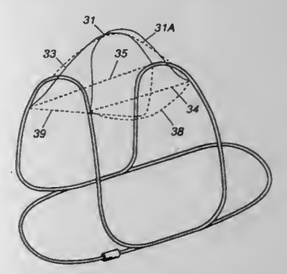
NON-SYMMETRICAL LOOP POP UP TENT STRUCTURE AND METHOD

Daniel P. Hazinski, 4481 SW. 34th Ter., Ft. Lauderdale, Fla. 33312, and Sidney Samole, 6755 SW. 152 St., Miami, Fla. 33157

Continuation-in-part of Ser. No. 246,946, May 20, 1994, abandoned, which is a continuation-in-part of Ser. No. 191,370, Feb. 3, 1994, Pat. No. 5,396,917. This application Aug. 1, 1995, Ser. No. 510,050

Int. Cl.[6] E04H *15/40*

U.S. Cl. 135—126 **15 Claims**



1. Pop-up tent apparatus comprising

a frame comprising at least one elastic rod formed into a first ground loop and a second transverse side wall and roof loop,

said first and second loops being non-symmetrical with the second loop being larger in circumferential length than the first loop,

at least one connector means joining together ends of said single rod or multiple rods,

fabric covering configured to fit over said first and second loops,

said first and second loops fitting within sleeve means provided with said fabric covering said sleeve means being configured to coincide with the configuration of said first and second loops.

5,645,097

CONTROL CIRCUIT FOR A SOLENOID VALVE

Jürgen Zechmann, Heilbronn; Berend-Wilhelm Doden, Ludwigsburg; Michael Wolf, Kornwestheim, and Helmut Wiss, Möglingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE94/00124, § 371 Date Oct. 21, 1994, § 102(e) Date Oct. 21, 1994, PCT Pub. No. WO94/19810, PCT Pub. Date Sep. 1, 1994

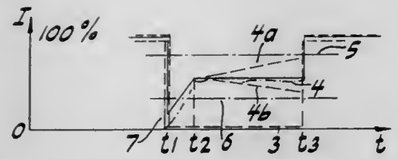
PCT Filed Feb. 8, 1994, Ser. No. 325,227

Claims priority, application Germany, Feb. 23, 1993, 43 05 488.9

Int. Cl.[6] F16K *31/06*

U.S. Cl. 137—1 **7 Claims**

1. A method for controlling a solenoid valve, comprising the steps of:



adjusting the valve from a closed position to an open position when an actuation current reaches a first actuation current value; and

adjusting the valve from the open position to the closed position when the actuation current reaches a second actuation current value;

wherein, when the valve is adjusted to the open position, the actuation current is initially briefly adjusted beyond the first actuation current value and subsequently adjusted to a level between the first actuation current value and the second actuation current value.

5,645,098

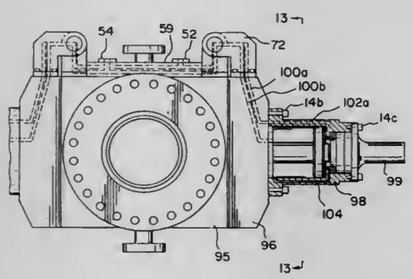
LOW PROFILE AND LIGHTWEIGHT HIGH PRESSURE BLOWOUT PREVENTER

Charles D. Morrill, Humble, Tex., assignor to Hydril Company, Houston, Tex.

Division of Ser. No. 372,397, Jan. 13, 1995, abandoned. This application Feb. 9, 1996, Ser. No. 599,246

Int. Cl.[6] E21B *33/06*

U.S. Cl. 137—15 **3 Claims**



1. The method of preparing a housing for a ram-type blowout preventer for an oil or gas well for use where there is limited contiguous lateral available space, which comprises

providing a body with a central vertical opening for allowing the presence of drilling or production tubing therethrough, said body also including a pair of opposing guideways transverse to said vertical opening for the operation of a pair of rams to close and open said vertical opening,

providing a first bonnet for being bolted on a first side of said body and a second bonnet for being bolted on a second side of said body opposite said first side, each of said bonnets including a guideway extension contiguously in line with one of said opposing guideways for respectively accommodating the drive end of one ram of said pair of rams, and

providing a hinge plate spanning a selected side of said body to provide for hinging said first and second bonnets to said body so as to allow each of said bonnets to be unbolted and swung in a direction toward said hinge plate.

5,645,099

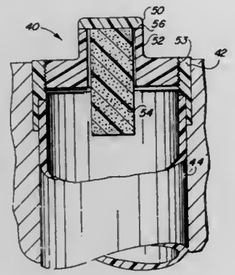
SEWER RELIEF VALVE

Dean L. Eaton, 950 E. Lehi Rd., Mesa, Ariz. 85203, and Michael L. Steele, Mesa, Ariz., assignors to Dean L. Eaton, and Michael Steele, both of Mesa, Ariz.

Filed Jul. 8, 1996, Ser. No. 680,505

Int. Cl.[6] E03F *5/08;* **F16K** *31/22;33/00*

U.S. Cl. 137—15 **13 Claims**



11. A method for assembling a sewage relief valve comprising the steps of:

a. providing a sewage flow riser tube having an open end that is flush with a ground level area;

b. inserting a plug within said riser tube open end for substantially closing said riser tube open end and being flush therewith; said plug having an upstanding wall portion extending above said ground level;

c. providing a central passageway within said plug extending from said upstanding wall portion to a bottom end of said plug disposed within said riser and below said riser tube open end;

d. placing a cap means across said wall for covering and sealing said central passageway;

e. providing a float means having a first portion positioned within said central passageway and a second portion extending into the riser beneath said plug bottom end;

f. attaching a cap means to said float means defining a float member, wherein said float member unseals said central passageway, while allowing said float member to vertically eject from said central passageway when subjected to a predetermined hydrostatic pressure, in response to a predetermined sewage level within said riser tube.

5,645,100

HAND PUMP FOR ENGAGING WITH DIFFERENT TIRE VALVES

Louis Chuang, No. 7th Floor-8, No. 20, Ta Lon Road, Taichung, Taiwan, and Scott Wu, No. 2, Lane 296, Ming Sheng Road, Wu Feng Hsiang, Taichung, Taiwan

Filed Jul. 31, 1995, Ser. No. 509,242

Int. Cl.[6] F16K *15/20;11/07*

U.S. Cl. 137—223 **5 Claims**

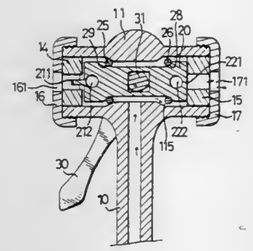
1. A hand pump for engaging with different tire valves comprising:

a tube including an upper portion having a pipe laterally secured thereon so as to form a T-shaped configuration, said pipe including two end portions, said pipe including two valve seats formed therein,

two caps secured to said end portions of said pipe, said caps each including an opening formed therein for engaging with the tire valves,

two gaskets engaged in said end portions of said pipe,

a plug means slidably engaged in said pipe and engaged between said gaskets, said plug means including two plug portions for engaging with said valve seats of said pipe, and



cam means for moving said plug means so as to engage said plug portions with said valve seats.

5,645,101

DEVICE FOR INFLATING PNEUMATIC TIRES

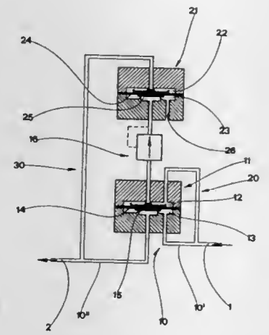
Rino Spaggiari, Corregio, Italy, assignor to G.S. S.r.l., Corregio, Italy

Filed Sep. 29, 1995, Ser. No. 536,387

Claims priority, application Italy, Jul. 26, 1995, MO95A0111

Int. Cl.[6] F16K *31/385*

U.S. Cl. 137—225 **6 Claims**



1. A device for inflating pneumatic tires, comprising:

an inlet of pressurized air and an outlet for sending said air to a pneumatic tire to be inflated;

a first circuit comprising a initial tract of pipe connecting said inlet to a pressure-sensitive first on-off valve, and a final tract of pipe connecting said first on-off valve to said outlet;

a second circuit originating at said inlet and connecting said inlet to a first chamber of said first on-off valve; said first chamber being separated from a second chamber of said first on-off valve, which second chamber is in direct communication with the inlet, by means of a membrane; said membrane being associated to an obturator for intercepting an air flow in outlet coming from said second chamber; said first chamber also being connected to a pressure regulator connected at an outlet thereof to a second on-off valve for intercepting air flow;

a third circuit connecting said outlet to a first chamber of said second on-off valve; said first chamber of said second on-off valve being separated from a second chamber of said second on-off valve by means of a membrane; said membrane being associated to an obturator for intercepting an air flow in inlet to said second chamber of said second on-off valve, said air flow in inlet coming from the outlet of said pressure regulator.

5,645,102

LEAK RESISTANT, SWITCHING, DOUBLE VALVE SYSTEM

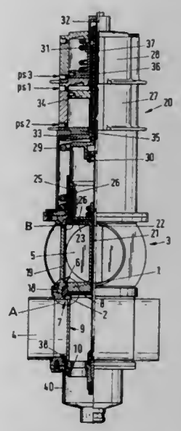
Wolfgang Bräckelmann, Unna-Uelzen; Norbert Schramm, Unna, and Frank Baumbach, Soeset, all of Germany, assignors to APV Rosista GmbH, Unna-Königsborn, Germany

Filed Sep. 20, 1994, Ser. No. 308,920

Claims priority, application European Pat. Off., Sep. 21, 1993, 93115203

Int. Cl.[6] F16K *11/20;31/122;* **B08B** *9/02*

U.S. Cl. 137—238 **20 Claims**



1. A double valve, said valve comprising:

a valve housing;

a first valve body disposed within said valve housing;

a second valve body disposed within said valve housing;

said first valve body and said second valve body being slidably displaceable;

said first valve body and said second valve body being slidably displaceable together to provide a closed position and an open position of said valve;

a first valve seat disposed within said valve housing;

said first valve body being in contact with said first valve seat in said closed position;

a second valve seat disposed within said valve housing;

said second valve body being in contact with said second valve seat in said closed position;

said first valve body being slidably displaceable between said closed position and a flushing position of said first valve body;

said second valve body being slidably displaceable between said closed position and a flushing position of said second valve body;

at least one input and at least one output;

said first valve body and said first valve seat and said second valve body and said second valve seat being disposed in tandem to permit at least a substantial portion of any flow between said at least one input and said at least one output to flow through said first valve seat and to also flow through said second valve seat;

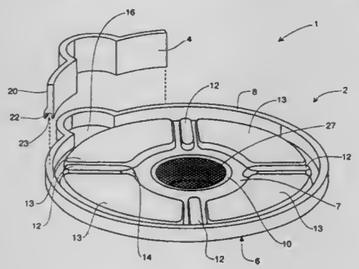
said first valve body and said first valve seat and said second valve body and said second valve seat being disposed between said at least one input and said at least one output for permitting flow and stopping flow between said at least one input and said at least one output;

first means for limiting movement of said first valve body, said first means for limiting movement being disposed a distance from said first valve seat;

second means for limiting movement of said second valve body, said second means for limiting movement being disposed a distance from said second valve seat;

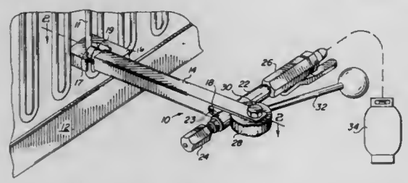
a cavity;
said cavity being disposed between said first valve body and said second valve body;
said cavity providing a flushing passage to permit flushing agent passing between said first valve body and said first valve seat and by said first means for limiting movement upon said second valve body being seated against said second valve seat, and to permit flushing agent passing between said second valve body and said second valve seat and by said second means for limiting movement upon said first valve body being seated against said first valve seat, and thus permitting flushing agent to enter said cavity and to exit said valve housing;
first means for moving said first valve body in a first direction of movement from said closed position to said open position;
second means for moving said first valve body in a second direction of movement from said closed position to said flushing position to free said first valve body from said first valve seat, said first valve body and said first valve seat being disposed away from one another in said flushing position;
said second direction of movement being opposite to said first direction of movement;
third means for moving said second valve body in a third direction of movement from said closed position to said open position;
fourth means for moving said second valve body in a fourth direction of movement from said closed position to said flushing position to free said second valve body from said second valve seat, said second valve body and said second valve seat being disposed away from one another in said flushing position;
said fourth direction of movement being opposite to said third direction of movement;
said first direction of movement being the same as said third direction of movement; and
said second direction of movement being the same as said fourth direction of movement.

5,645,103
WATER HEATER STAND WITH OVERFLOW CATCH BASIN
David S. Whittaker, R.R. #3, Box 8, New Era Village, Belington, W. Va. 26250
Filed Mar. 18, 1996, Ser. No. 617,119
Int. Cl.[6] F24H *9/06;9/16*
U.S. Cl. 137—312 **6 Claims**



1. A water heater stand comprising:
a stand member having a floor surface, the floor surface bounded by a continuous wall disposed along a perimeter of the floor surface;
a drain in the floor surface;
a plurality of elevated support members extending upward from the floor surface, all of the elevated support members having an upper surface at an equal elevation to one another and below a top edge of the wall;
a plurality of drainage channels formed between the support members; and
a vertically extended splash guard removably attachable to at least a portion of the stand member adjacent a water heater drain valve, thereby forming a retainable dike-like area for preventing a discharge of fluids from the drain valve from splashing outside of the water heater stand.

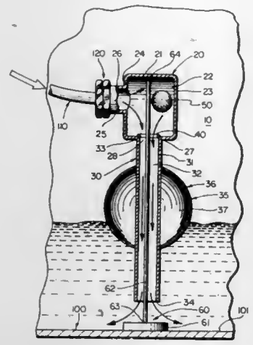
5,645,104
LINE EVACUATION DEVICE
A. C. Baumgartner, 503 W. Sundance Way, Chandler, Ariz. 85224
Filed Oct. 7, 1996, Ser. No. 726,951
Int. Cl.[6] F16L *41/06;* **B21D** *28/28*
U.S. Cl. 137—318 **20 Claims**



1. A device for use in evacuating fluid from a tubular line including in combination:
an elongated hollow tubular frame having first and second ends and open at least at the first end thereof;
an inner hollow tube with first and second ends located within said elongated hollow tubular frame for reciprocal movement between first and second positions within said hollow tubular frame;
a piercing point carried on said first end of said inner tube located to project from said first end of said elongated hollow tubular frame in at least said first position of said inner tube;
a seating extension attached to said first end of said frame and having a portion spaced from said first end of said frame for engaging a tubular line in a position substantially centered at right angles to the reciprocating direction of movement of said piercing point carried on said first end of said inner tube;
a seal of resilient material surrounding said piercing point for movement therewith; and
a cam member carried on said tubular frame for engaging and moving said inner tube between said first and second positions to cause said piercing point to pierce said line engaged by said seating extension in said first position of said inner tube, with said seal sealingly engaging said line and for allowing fluid to be evacuated through said piercing point and said inner hollow tube; said piercing point, and for releasing said piercing point and said inner tube for movement to said second position thereof away from said line for removal of said device line.

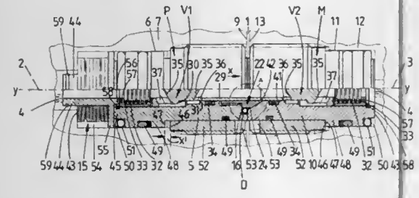
5,645,105
TANK-FILLING SHUT-OFF VALVE
John R. Grayson, Inverness, Ill., assignor to Aquion Partners Limited Partnership, Elk Grove Village, Ill.
Filed Apr. 5, 1996, Ser. No. 628,330
Int. Cl.[6] F16K *31/20;33/00*
U.S. Cl. 137—430 **13 Claims**

1. A valve mechanism for supplying liquid to a container until the surface of the liquid reaches a predetermined level, comprising:
a valve body removably disposable in the container and defining a cavity and including an inlet port for communication with a liquid source and an outlet port communicating with the interior of the container;
a valve seat in Raid cavity adjacent to said outlet port;
a valve member in said cavity and moveable between a normal closed condition and an open condition relative to sand seat for respectively closing and opening said outlet port;



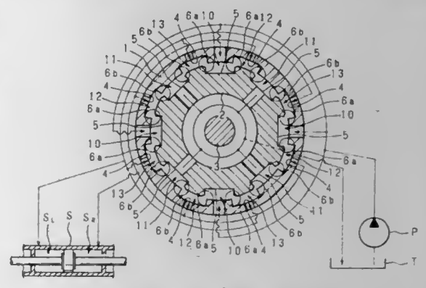
a valve actuator discrete from said valve member and freely separable therefrom and from said valve body and mounted in the container and extending upwardly therefrom; and
a float carried by the valve body and free of the container for floating the valve body in the liquid in the container with said outlet port aligned with said actuator,
said actuator being directly engageable with said valve member in response to movement of said valve body with the liquid level in the container for holding said valve member in its open condition when the surface of the liquid in the container is below the predetermined level, and
said actuator being responsive to movement of said valve body with the liquid level in the container for allowing said valve member to move to its normal closed condition when the surface of the liquid in the container is at least at the predetermined level.

5,645,106
PLUG-TYPE COUPLER
Norbert Ricken, Bochum, Germany, assignor to Carl Kurt Walther GmbH & Co. KG, Wuppertal, Germany
Filed May 19, 1995, Ser. No. 444,702
Claims priority, application Germany, Jun. 6, 1994, 44 19 77.2
Int. Cl.[6] F16L *37/28*
U.S. Cl. 137—614.04 **7 Claims**



1. A plug-type coupler comprising:
a male part and a female part, the coupler being suitable for a connecting of fluid conducting conduits, there being an abutment place between the male part and the female part;
a metallic ring packing disposed on said male part in a region of the abutment place, said ring packing having a circumferential slot facing radially inward and being located in a transverse plane of the coupler, said slot enabling expansion of said ring packing in its cross section in a presence of pressure of a fluid within the coupling, said ring packing resting partly on said male part and partly on said female part upon connection of said male part to said female part;
an annular shoulder disposed on said male part, there being a frustoconical surface which extends from said shoulder and tapers towards an axis of said male part, wherein said slot has a forward side and a back side opposite said forward side, said forward side lies between said back side and an insertion end of said male part, and said ring packing is gripped over by said annular shoulder on said forward side of said slot;
an abutment surface of said female part, and a mating surface of said female part lying opposite said frustoconical surface and extending into said abutment surface, said abutment surface urging said ring packing toward said male part upon connection of said male part to said female part; and
wherein said frustoconical surface and said mating surface permit a passage of fluid up to said ring packing.
2. A plug-type coupler according to claim 1, wherein said male part comprises a housing and a bushing enclosed by the housing, said bushing having said frustoconical surface disposed on an end surface of the bushing;
an outer surface of said bushing extends in front of said slot; and
a rear section of said bushing is in form-locked engagement with said housing of said male part.
3. A plug-type coupler according to claim 2, wherein said male part comprises a central flow tube and said female part comprises a mating tube for said flow tube, the coupler being a closure coupler;
an inner surface of said bushing is seated on the central flow tube, an end surface of the flow tube acts on an end surface of the mating tube in a closure-valve controlling manner; and
said mating surface of said female part abuts said frustoconical surface along an interface inclined at an acute angle to an axis of the coupler away from said packing ring upon connection of said male part to said female part.

5,645,107
HYDRAULIC PRESSURE CONTROL VALVE
Masanori Kobayashi, Yamato-Kooriyama; Yoshiyuki Saito, Kashihara; Takashi Ohata, Kashiwara; Fumiyoshi Ono, Shiki-gun, and Noboru Minamoto, Ikoma-gun, all of Japan, assignors to Koyo Seiko Co., Ltd., Osaka, Japan
Filed Nov. 17, 1995, Ser. No. 559,138
Claims priority, application Japan, Dec. 26, 1994, 6-323144; Jul. 12, 1995, 7-176464; Jul. 19, 1995, 7-183084
Int. Cl.[6] F15B *9/10;13/04*
U.S. Cl. 137—625.23 **32 Claims**



1. A hydraulic pressure control valve comprising:
a cylindrical valve body having first oil grooves and first lands alternately provided on and along the peripheral inside surface; and
a cylindrical valve spool coaxially fitted in the valve body to allow a relative angular displacement therebetween, the valve spool having second oil grooves arranged in zigzag positions with the first oil grooves and second lands provided alternately with the second oil grooves on and along the peripheral outside surface;
wherein the second oil grooves constitute oil supply chambers connected to an oil supply source and oil drain chambers connected to an oil drain end, and the first oil grooves constitute oil transfer chambers connected to the oil transfer end through the oil supply chambers and the oil drain cham-

bers on both sides thereof, each of the first and second adjacent oil grooves constituting throttles therebetween, and the throttling extent being changeable in accordance with the relative angular displacement between said spool and said valve body;

each of the second lands having chamfered portions at the corners, the chamfered portions being slanted to the peripheral top surface thereof toward the respective throttles; and

the first oil grooves are circumferentially provided in offset arrangement such that the throttles on both sides of the oil supply chambers are of larger width relative to the throttles on both sides of the oil drain chambers.

5,645,108

SOLENOID CONTROLLED VALVE

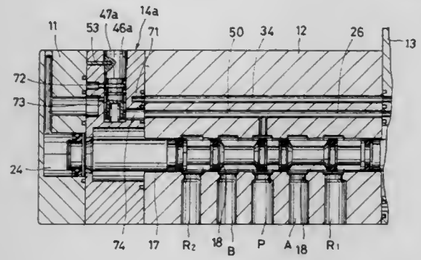
Takashi Doi, Kodair; Naoki Homma, Hoya, and Shinichiro Hamada, Tokyo, all of Japan, assignors to Koganei Corporation, Tokyo, Japan

Filed Jan. 6, 1995, Ser. No. 369,716

Claims priority, application Japan, Jan. 6, 1994, 6-000266; Jan. 17, 1994, 6-003216

Int. Cl.[6] F15B *13/043*

U.S. Cl. 137—625.64 **2 Claims**



1. A solenoid controlled valve including

a housing having a valve hole, an intake port opening into said valve hole, and output and exhaust ports communicating with said intake port through said valve hole;

a valve shaft, fitted in said valve hole and slideable in the axial direction thereof, said valve shaft having a large diameter piston at one end portion and a small diameter piston at the opposite end portion thereof, said valve shaft having a plurality of valves;

the solenoid controlled valve comprising:

a plurality of solenoids including;

a first solenoid for controlling communication between a common communicating passage formed in said housing and communicating with a large diameter pressure chamber in said housing and containing said large diameter piston;

and a second solenoid for controlling communication between said common communicating passage and a second operating passage communicating with a small diameter pressure chamber in said housing containing said small diameter piston;

said housing having a by-pass including a spool shaft hole communicating between said intake port and said small diameter pressure chamber by communicating said second operating passage with said intake port;

converting means for altering operating characteristics of said solenoid controlled valve in response to operation of said solenoids and movable between an initial position and an actuated position, said converting means formed to be fixable at both said initial position and said actuated position;

when said converting means is in said initial position said by-pass is blocked to communicate said intake port with said small diameter pressure chamber when said second solenoid is energized; whereby,

when said converting means is in said initial position fluid is supplied to said large diameter pressure chamber by energizing said first solenoid to actuate said valve shaft, and when said first solenoid is energized by fluid supplied to said small diameter pressure chamber via said by-pass;

and when said converting means is in said actuated position, fluid is supplied to said large diameter pressure chamber by energizing said second solenoid to actuate said valve shaft, and when the energizing of said first and second solenoids is stopped, said valve shaft is held at the position in which said valve shaft existed when said solenoids were energized.

5,645,109

FLEXIBLE TUBULAR PIPE COMPRISING AN INTERLOCKED ARMORING WEB AND PROCESS FOR PRODUCING IT

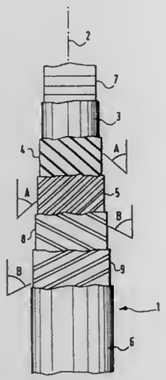
José Mallen Herrero, Paris, and Jany Feret, Marly le Roi, both of France, assignors to Coflexip, and Institut Francais du Petrole, both of France

Continuation of Ser. No. 835,978, Mar. 31, 1992, abandoned. This application May 27, 1994, Ser. No. 249,350

Claims priority, application France, Jun. 29, 1990, 90 08298

Int. Cl.[6] F16L *11/08*

U.S. Cl. 138—134 **2 Claims**



1. A flexible tubular pipe comprising an inner sealing sheath and a plurality of armoring webs surrounding said sheath and composed of a plurality of wires each wound with an angle less than 80° in relation to a central axis of said flexible tubular pipe, said winding angles of said wires of said armoring webs being set so as to obtain a balanced flexible tubular pipe, such that a first innermost armoring web of said plurality of armoring webs includes a plurality of interlockable wires, such that each other web of said plurality of armoring webs disposed outside of said first innermost armoring web comprises a plurality of non-interlockable wires, wherein said plurality of interlockable wires of said first armoring web are wound with an angle A1 and said plurality of non-interlockable wires of said each other armoring web are wound with an angle A2 wherein a tangent of A1 multiplied by a tangent of A2 falls within a range of 1.9 and 2.2, inclusive.

5,645,110

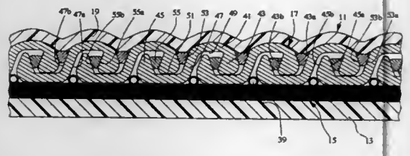
FLEXIBLE HIGH PRESSURE PIPE

Philippe Nobileau, 410 Avenue des Roches Rouges, 83530 Agay, France

Filed Dec. 1, 1994, Ser. No. 347,878

Int. Cl.[6] F16L *11/16*

U.S. Cl. 138—134 **15 Claims**



1. A pipe for transporting fluid under high pressure, comprising in combination:

a reinforcement structure formed of overlapping layers of circumferentially extending structural material and having a longitudinal axis;

tension means for providing tension capability to the pipe while not transporting fluid under high pressure;

positioning means for positioning the overlapping layers in a selected position relative to each other and for connecting the reinforcement structure to the tension means for longitudinal movement therewith; and wherein

the positioning means of the overlapping layers allows limited longitudinal movement of the overlapping layers relative to each other while not transporting fluid under high pressure to accommodate flexing of the pipe during installation of the pipe; and

the fluid pressure caused by transporting fluid under high pressure causes the overlapping layers to press one against the other, generating friction forces between the overlapping layers to resist at least some of the loads induced on the pipe by the fluid pressure.

5,645,111

DEVICE FOR CONTROLLING OPERATIONS OF SHAFT FRAMES OF A WEAVING MACHINE

Bo Lindblom, Älmhult, Sweden, assignor to Texo AB, Almhult, Sweden

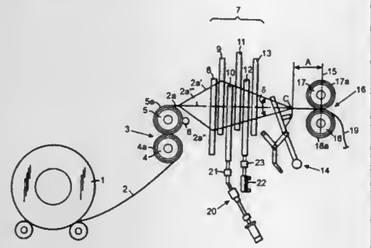
PCT No. PCT/SE93/00497, § 371 Date Dec. 5, 1994, § 102(e) Date Dec. 5, 1994, PCT Pub. No. WO93/25740, PCT Pub. Date Dec. 23, 1993

PCT Filed Jun. 4, 1993, Ser. No. 347,388

Claims priority, application Sweden, Jun. 10, 1992, 9201779

Int. Cl.[6] D03C *15/00;9/06*

U.S. Cl. 139—55.1 **18 Claims**



1. A weaving machine comprising:

tension rolls for guiding and adjusting a tension of warp thread in said weaving machine;

shaft frames for positioning the warp thread for weaving;

feed rollers for feeding out of said weaving machine a fabric produced by said weaving machine;

shuttles for inserting weft threads between warp threads;

a reed operating toward and away from a butting edge of the fabric situated in front of the feed rollers, said reed moving weft threads toward said butting edge;

detecting mechanisms for detecting parameters regarding said shaft frames, said parameters representing feedback data;

an individual control unit for each of said shaft frames, said control units adjusting said shaft frames in one or more positions to create open and closed sheds in the warp threads to enable the weft threads to be inserted by said shuttles as the warp threads change position, said control units receiving the feedback data of at least one of said parameters from said detecting mechanisms, such that operation of said control units incorporates said feedback data; and

control systems for controlling said control units via linkage systems to create a substantially constant level in the butting edge of the fabric irrespective of the positions of the shaft frames.

5,645,112

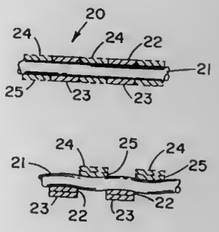
PAPERMAKERS FABRIC WITH ALTERNATING CRIMPED CMD YARNS

Henry J. Lee, Summerville, S.C., assignor to Asten, Inc., Walterboro, S.C.,

Continuation of Ser. No. 288,158, Aug. 10, 1994, Pat. No. 5,449,026, which is a continuation of Ser. No. 43,016, Apr. 5, 1993, abandoned, which is a continuation of Ser. No. 855,904, Apr. 13, 1992, Pat. No. 5,199,467, which is a continuation of Ser. No. 534,164, Jun. 6, 1990, Pat. No. 5,103,874. This application Sep. 7, 1995, Ser. No. 524,800

Int. Cl.[6] D03D *13/00;15/00*

U.S. Cl. 139—383 A **30 Claims**



1. A woven papermakers fabric having top and bottom sides comprising:

a single layer of first system yarns;

a second system of yarns including at least a first subsystem of yarns interwoven with said layer of first system yarns in a selected repeat pattern; and

said first subsystem yarns of said second system repeating with respect to four yarns of said single layer of first system yarns with a float over three of said single layer of first system yarns and woven in a balanced weave pattern where said first subsystem yarns consist of a repeat of only two types of alternating adjacent yarns, the first type floating over every first, second and third first system yarns and weaving under every fourth yarn in each repeat, the second type floating over every third, fourth and first first system yarns and weaving under every second first system yarn in each repeat such that said first subsystem yarns impart crimp to every said second and fourth first system yarn in each repeat, whereby said subsystem of second system yarns define floats on the top side of the fabric.

5,645,113

REFILLABLE DISTRIBUTING CONTAINER, FILLING DEVICE AND PROCESS FOR FILLING THE DISTRIBUTING CONTAINER

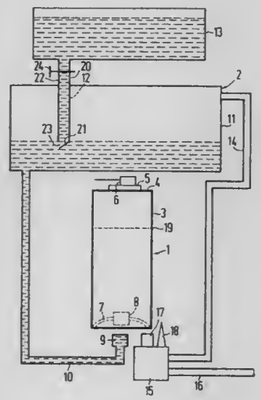
Siegfried Humm, Schoental-Westernhausen; Gabor Palosi, Oehringen-Buettelbronn, and Bernd Weidner, Ingelfingen, all of Germany, assignors to Adolf Wurth GmbH & Co. KG, Kuenzelsau, Germany

Filed Jan. 4, 1995, Ser. No. 369,521

Claims priority, application Germany, Jan. 4, 1994, 44 00 062.6; Aug. 17, 1994, 44 29 161.2

Int. Cl.[6] B65B *1/04*

U.S. Cl. 141—3 **38 Claims**



1. A refillable distributing container (**1**, **1'**, **1"**) for a liquid medium comprising:

a container;

a distributing valve (**5**) disposed in an upper portion of the container; said distributing valve being constructed exclusively for distributing the liquid medium from the container;

a filling valve (**8**, **8'**, **8"**) on the container being constructed for filling the container (**1**, **1'**, **1"**) both with the liquid medium and with pressurized gas from a filling device (**2**, **2'**, **2"**);

the filling device having a filling connection (**9**, **9'**, **9"**) constructed as a valve openable by the filling valve (**8**, **8'**, **8"**) and a separate control valve for controlling the flow of media to the filling connection (**9**, **9'**, **9"**);

the container having a surface portion which is constructed as an operating member for operating the control valve (**15**, **15'**, **15"**) of the filling device;

the operating member being provided with a mechanical coding structure (**37**) for indicating at least one of the nature of the liquid medium to be filled into the container and the volume of the distributing container, the mechanical coding structure corresponding to a corresponding coding structure (**17"**, **40**) of a filling device providing at least one of the liquid medium and the volume indicated by the mechanical coding structure of the operating member for ensuring that, from a plurality of distributing containers each having different mechanical coding structures, only a distributing container with the corresponding mechanical coding structure can be filled by the filling device and that distributing containers having non-corresponding mechanical coding structure are prevented from being filled by the filling device.

5,645,114

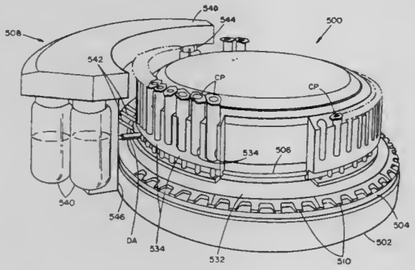
DISPENSING ASSEMBLY WITH INTERCHANGEABLE CARTRIDGE PUMPS

Steven A. Bogen, Sharon, and Herbert H. Loeffler, Arlington, both of Mass., assignors to CytoLogix Corporation, Sharon, Mass.

Continuation-in-part of Ser. No. 881,397, May 11, 1992, Pat. No. 5,316,452. This application May 31, 1994, Ser. No. 251,597

Int. Cl.[6] G01N *1/00*

U.S. Cl. 141—145 **19 Claims**



1. A dispensing assembly comprising:

an assembly base;

a slide rotor adapted to carry slide frames for holding microscope slides carrying tissue samples and to rotate on the assembly base;

a plurality of slide frames, each for holding at least one microscope slide, each slide frame comprising a slide frame base supporting a slide and a slide frame housing adapted to fit over the slide frame base with a gasket therebetween to create an individual sealed cavity over each microscope slide for receiving liquid; and

a reagent rotor adapted to carry different reagents to be applied to selected cavities and rotate on the assembly base.

5,645,115

DISPENSING NOZZLES

James E. Kesterman; Paul B. Anderson; Chester W. Wood, all of Cincinnati; Mark D. Dalhart, Hamilton, and David K. Larson, Sharonville, all of Ohio, assignors to Dover Corporation, New York, N.Y.

Filed Sep. 6, 1994, Ser. No. 300,996

Int. Cl.[6] B67D *5/00*

U.S. Cl. 141—206 **48 Claims**

1. A nozzle for the dispensing of liquid fuels and other liquids, said nozzle comprising

a nozzle body adapted, at an inlet end, for connection with a source of pressurized fuel,

spout means projecting from an opposite one end of the nozzle body,

said nozzle body and spout means compositely forming a fuel flow passage way that extends from the inlet end of the nozzle body to the distal end of the spout means,

fuel valve means, mounted in the nozzle body, for controlling flow of fuel through said fuel flow passage,

said valve means having a normally closed position, preventing flow of fuel,

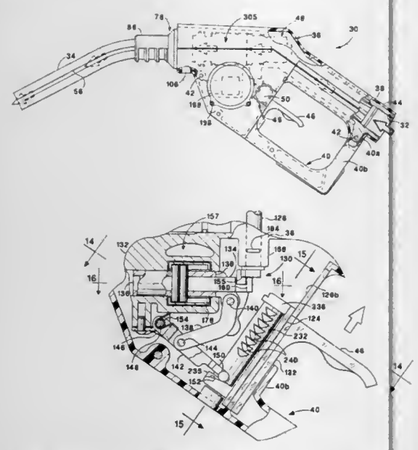
a manually operated trigger for controlling said valve means, and

control means for controlling the operative position of said valve means in response to manual positioning of the trigger,

characterized in that

the control means comprise

an input lever pivotally mounted, at one end, in fixed relation relative to the nozzle body, and



a link pivotally mounted at one end on the input lever at a location spaced from said fixed relation mount on said one end of said input lever, said link, at a portion of the link remote from said one end of the link, being pivotally connected to the slidable input member and, interconnecting the input lever and the slidable input member,

an outer end portion of said input lever being pivoted in response movement of the trigger in one direction, so that the slidable input member is displaced in a direction causing the valve means to open.

5,645,116

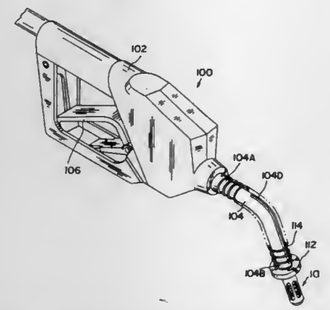
METHOD AND ASSEMBLY FOR PREVENTING DRIPPING OF A LIQUID DISPENSING NOZZLE

Rodney R. McDonald, Ithaca, Mich., assignor to Environmental Spout Company, Lansing, Mich.

Filed Nov. 6, 1995, Ser. No. 553,917

Int. Cl.[6] B67D *5/00*

U.S. Cl. 141—208 **20 Claims**



1. A non-drip assembly for use with a liquid dispensing nozzle, which comprises:

(a) a conduit having opposed ends with a sidewall therebetween providing a channel along a longitudinal axis of the assembly, the sidewall having an aperture and one of the ends of the conduit having an opening and being configured to connect to a dispensing end of the liquid dispensing nozzle wherein an inner surface of the one end of the conduit has threads which mate with threads on an outer surface of a threaded connector which is mounted in the dispensing end of the nozzle;

(b) a valve means mounted in the channel of the conduit adjacent the aperture in the sidewall to control a flow of liquid into the assembly including:

(i) a stopper mounted adjacent to the opening in the one end of the conduit and configured to extend into the opening in the one end of the conduit to close the opening to prevent the flow of liquid into the assembly;

(ii) a biasing means mounted adjacent the stopper to move the stopper into the opening in the one end of the conduit wherein after deactivation of the nozzle, liquid pressure forcing the stopper in a direction away from the opening is less than a force of the biasing means tending to move the stopper toward the opening.

5,645,117

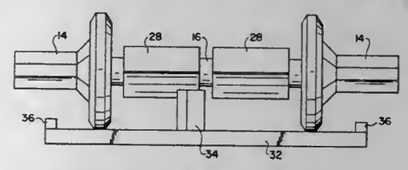
TOMPKINS TURNER

John Wirth, Jr.; Jay L. Sanger, both of Casper, Wyo., and Mark P. Tompkins, Albuquerque, N. Mex., assignors to Woodworker's Supply, Wyo.

Filed May 31, 1996, Ser. No. 655,772

Int. Cl.[6] B27M *3/00*

U.S. Cl. 144—28 **20 Claims**



1. An apparatus for use with a cutting device and useful for shaping soft materials including wood, comprising:

a mandrel having a first end and a second end, and a longitudinal axis extending between said first and said second ends;

a first mandrel wheel detachably secured to said first end of said mandrel, said first mandrel wheel having a first finger gripping portion extending axially relative to said mandrel; and

a second mandrel wheel detachably secured to said second end of said mandrel, said second mandrel wheel having a second finger gripping portion extending axially relative to said mandrel.

5,645,118

DEVICE FOR WINDING THE SUSPENSION CORD OF BLINDS

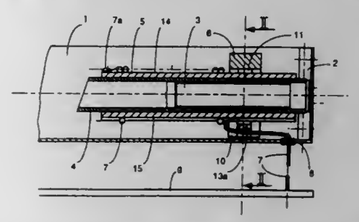
Eric Lagarde, Sallanches, France, assignor to SOMFY, France

Filed Dec. 28, 1995, Ser. No. 580,142

Claims priority, application France, Jan. 4, 1995, 95 00040

Int. Cl.[6] E06B *9/30*

U.S. Cl. 160—170 **5 Claims**



1. A device for winding at least one suspension cord with two ends of a blind comprising a winding drum (**5**) to which is fixed ode end (**7***a*) of said suspension cord (**7**) and means for ensuring that said cord is wound in even turns without overlapping, wherein

said winding drum (5) is mounted fixed in translation in a frame (1) having cord guiding means (8) for guiding said cord entering said frame and wherein said ensuring means comprise a traveling nut (6) which is blocked in rotation and engages with a screw thread formed on said winding drum (5), said traveling nut moving between said end of said cord fixed to said drum and said cord guiding means (8).

5,645,119

VEHICLE SUNSHIELD

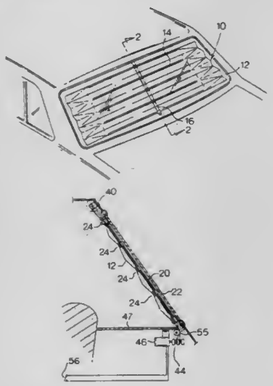
Tony Caruso, Edenvale, South Africa, assignor to Caruso Engineering CC, Kempton Park, South Africa

Filed Aug. 11, 1995, Ser. No. 514,219

Claims priority, application South Africa, Aug. 11, 1994, 94/6026

Int. Cl.[6] B60J *1/20*

U.S. Cl. 160—370.23 **6 Claims**



1. A vehicle sunshield comprising:

a blind shaped and sized to substantially cover a curved vehicle windscreen having an inward curvature at each of its opposite sides;

a plurality of elongated spars extending horizontally in use to support the blind at spaced intervals;

guide means arranged to act midway along each spar for guiding the blind between a stowed position in which the windscreen is unshaded and a deployed position in which the windscreen is shaded; and

drive means for driving the guide means between the stowed position and the deployed position;

said guide means including a substantially rigid and stationary guide track to be mounted in a plane towards the center of the windscreen substantially flush against an inner surface thereof and between upper and lower edges of the windscreen, and a plurality of carriages wherein each spar is supported by one carriage and said carriages are mounted slidably to the guide track;

said blind being formed from a semi-rigid material which has alternate parallel folds formed therein so as to allow the blind to concertina into the stowed position;

wherein inwardly folded portions are formed towards opposite side edges of the blind, the inwardly folded portions being arranged to allow the side edges of the blind to fold inwardly in conformity with the inward curvature of the curved sides of the vehicle windscreen.

5,645,120

JOINT STRUCTURE FOR CASTING NOZZLE

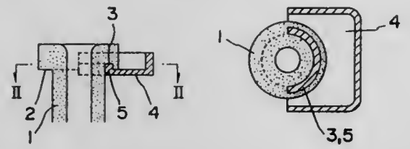
Koji Tsuyuguchi, Düsseldorf, Germany; Haruyoshi Kimura; Hideaki Kawabe, both of Fukuoka-ken, Japan, and Eizaburo Arimitsu, Guipuzcoa, Spain, assignors to Krosaki Corporation, Fukuoka-ken, Japan

Continuation of Ser. No. 114,118, Aug. 30, 1993, abandoned. This application Jun. 22, 1995, Ser. No. 493,513

Claims priority, application Japan, Sep. 2, 1992, 4-234950

Int. Cl.[6] B22D *11/00;41/50*

U.S. Cl. 164—437 **11 Claims**



1. A casting nozzle joint structure comprising a casting nozzle, a supported nozzle, said supported nozzle comprising an elongated nozzle body and a nozzle flange which is integral with said nozzle body, said nozzle flange having an outer diameter greater than the outer diameter of said nozzle body, a rigid U-shaped pressure clamper structure for supporting said supported nozzle and for moving said supported nozzle between a pressed position in which the supported nozzle is pressed against said casting nozzle and a separated position in which said supported nozzle is separated from said casting nozzle, said supported nozzle having a first mating surface on said nozzle flange, said rigid U-shaped pressure clamper structure having a second mating surface, one of said first and second mating surfaces comprising a concave surface, the other of said first and second mating surfaces comprising a convex surface, said concave surface receiving and directly contacting said convex surface when said supported nozzle is in said pressed position such that said supported nozzle is thereby directly contacted and supported by said pressure clamper structure when said pressure clamper structure is in said pressed position and when said pressure clamper structure is moved between said pressed position and said separated position, a recess indented into said concave surface and a ridge projecting from said convex surface, said recess receiving said ridge when said concave surface receives and directly contacts said convex surface.

5,645,121

METHOD OF CONTINUOUS CASTING USING SEALED TUNDISH AND IMPROVED TUNDISH SEAL

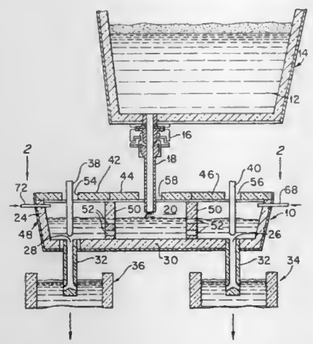
Thomas Barnes, Ecorse, Mich., assignor to National Steel Corporation, Mishawaka, Ind.

Filed Jan. 5, 1996, Ser. No. 583,720

Int. Cl.[6] B22D *11/10*

U.S. Cl. 164—475 **9 Claims**

1. A sealed tundish for use in a continuous steel casting operation comprising a refractory lined vessel having a bottom wall with at least one pouring opening therein, upwardly extending sidewalls, and an open top, and a top cover removably supported on and substantially closing said open top, said cover having a plurality of openings extending therethrough for the insertion of a shroud tube and one or more stopper rods into the tundish through the top cover, and sealing means extending over said open top and beneath said top cover, said sealing means including a plurality of elongated, generally rectangular, substantially planar sealing boards positioned in abutting side-by-side relation and cooperating to form a substantially continuous panel covering the open top of the tundish and forming a gasket seal between the tundish open top



and the top cover and extending over and effectively closing said plurality of openings in the top cover, said sealing boards being formed from a refractory ceramic fiber material which is dimensionally stable, self-supporting and capable of being penetrated by a shroud tube and a ladle stopper rods through said openings in said top cover to permit the ladle shroud tube and one or more stopper rods to be inserted into the tundish during casting.

5,645,122

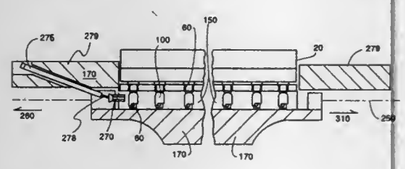
BLOCK FIXATION AND ADJUSTMENT IN A CONTINUOUS CASTER

Erich Luginbühl, Sigriswil; Marcel Witschi, Thun, and Ernst Zürcher, Reichenbach, all of Switzerland, assignors to Lauener Engineering, Ltd., Golden, Colo.

Filed Mar. 30, 1994, Ser. No. 221,041

Int. Cl.[6] B22D *11/06*

U.S. Cl. 164—479 **18 Claims**



1. A method for securing a block assembly to a support beam in a continuous block caster, comprising the steps of:

(a) providing a block assembly having a plurality of pin apparatus extending from said block assembly;

(b) providing a support beam having a latch apparatus comprising a plurality of toggles corresponding to said plurality of pin apparatus on said block assembly, mounted on said support beam;

(c) disposing said block assembly in close relation to said support beam such that said plurality of pin apparatus are in close physical proximity to said plurality of toggles;

(b) substantially simultaneously actuating at least a portion of said plurality of said toggles by application of a force to a single point, wherein at least a portion of said toggles engage at least a portion of said pin apparatus substantially simultaneously, to create tension in said pin apparatus, thereby securing said block assembly to said support beam.

5,645,123

SEMICONDUCTOR DEVICE HAVING TEMPERATURE REGULATION MEANS FORMED IN CIRCUIT BOARD

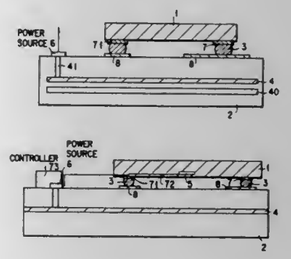
Kazuhide Doi, and Naohiko Hirano, both of Kawasaki, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 1, 1994, Ser. No. 352,780

Claims priority, application Japan, Dec. 28, 1993, 5-352837

Int. Cl.[6] F25B *29/00*

U.S. Cl. 165—48.1 **8 Claims**



1. A flip-chip type semiconductor device comprising:

a circuit board having a wiring circuit on one surface thereof;

temperature regulation means formed in said circuit board; and

a semiconductor chip having connecting electrodes on one surface thereof, said connecting electrodes facing the one surface of the circuit board and being connected with the wiring circuit on the one surface of said circuit board in a manner resulting in transfer of stress due to thermal expansion between the chip and the circuit board.

5,645,124

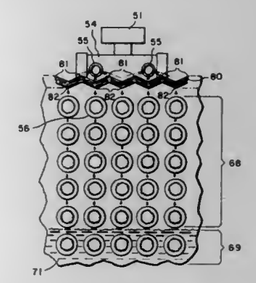
FALLING FILM EVAPORATOR WITH REFRIGERANT DISTRIBUTION SYSTEM

Jon P. Hartfield, and Duane F. Sanborn, both of La Crosse, Wis., assignors to American Standard Inc., Piscataway, N.J.

Division of Ser. No. 449,965, May 25, 1995, Pat. No. 5,588,596. This application Aug. 2, 1996, Ser. No. 692,032

Int. Cl.[6] A23C *3/04;* **B05B** *1/14*

U.S. Cl. 165—117 **14 Claims**



1. A liquid refrigerant distributor for use within a heat exchanger comprising:

a body of heat exchange tubes;

a mesh screen located above the body of heat exchanger tubes; and

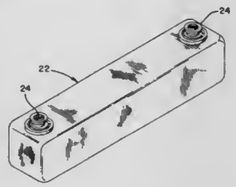
a liquid refrigerant sprayer, said liquid refrigerant sprayer adapted to spray refrigerant on said mesh screen and said mesh screen adapted to pass liquid and vapor refrigerant.

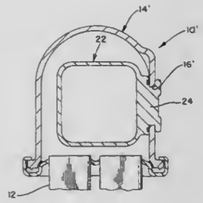
5,645,125

VEHICLE RADIATOR FOR USE WITH OR WITHOUT OIL COOLER

Karl Paul Kroetsch, Williamsville, and Don Clair Corser, Lockport, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 25, 1996, Ser. No. 719,497
Int. Cl.[6] F28F *9/02*
U.S. Cl. 165—137 **3 Claims**





1. A vehicle radiator assembly adapted for use with or without an in tank oil cooler, comprising,

a radiator core,

at least one hollow manifold tank sealed to said core and adapted to have an oil cooler selectively mounted within said tank, and,

a substantially hollow, impervious coolant displacer adapted to be mounted within said tank in place of said oil cooler and having a comparable volume to said oil cooler,

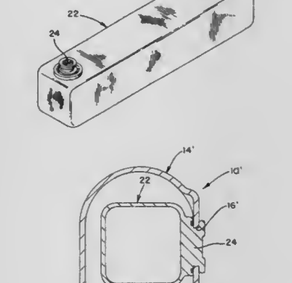
whereby, when said radiator assembly is used without said oil cooler, a volume of coolant comparable thereto is displaced from said tank, thereby reducing the weight of said radiator assembly accordingly.

5,645,126

LAMINATED HEAT EXCHANGER

Kunihiko Nishishita, and Takashi Sugita, both of Konan, Japan, assignors to Zexel Corporation, Tokyo, Japan

Filed Sep. 21, 1995, Ser. No. 531,381
Claims priority, application Japan, Sep. 22, 1994, 6-254538
Int. Cl.[6] F28D *1/03*
U.S. Cl. 165—153 **7 Claims**



1. A laminated heat exchanger comprising:

a tank assembly comprising a plurality of fluidly connected tube elements, said assembly having a first end and a second end, and each said tube element comprising a pair of tanks and a U-shaped passage communicating said pair of tanks;

fins positioned between said tube elements of said assembly;

a first end plate structure positioned at said first end of said tank assembly defining coolant inlet and outlet passageways;

a second end plate structure at said second end of said tank assembly;

said assembly defining a pair of tank groups that each comprises said tanks of said pairs of tanks of said tube elements that are communicated with each other between said first end plate structure and said second end plate structure and a plurality of communicating areas that are defined by partitioning said pair of tank groups at a specified position;

wherein one of said tanks of a said pair of tanks of said tube elements is larger than others of said tanks, said one of said tanks comprising a tank portion that has an opening portion and a reinforced portion located at a position facing opposite to said opening portion; and

a communicating pipe communicating said coolant inlet passage with one of said communicating areas, said communicating pipe being inserted into said opening portion of said tank portion of said one of said tanks;

wherein said reinforced portion comprises a projection on an outer surface of said tank portion that projects outwardly of said tank portion;

wherein said pairs of tanks of said tube elements have pairs of communicating holes therein; and

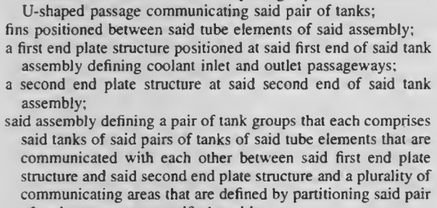
wherein said projection comprises a first projection that is located on a reference line that connects said pairs of communicating holes as seen in the direction of lamination and a second projection that is perpendicular to said first projection.

5,645,127

COOLANT SUPPLY ARRANGEMENT FOR JET ENGINE TURBINE WALLS

Heinrich Enderle, Groebenzell, and Achim Ottenstein, Eichenau, both of Germany, assignors to MTU Motoren-Und Turbinen-Union Muenchen GmbH, Munich, Germany

Filed May 9, 1994, Ser. No. 240,585
Claims priority, application Germany, May 7, 1993, 43 15 256.2
Int. Cl.[6] F28D *7/06*
U.S. Cl. 165—176 **18 Claims**



1. A turbo jet engine coolant flow system for an engine wall member formed of first and second wall members spaced from one another with an outwardly facing surface of one wall member being impinged on by hot fluid flow during engine operations, said coolant flow system comprising:

a plurality of first tubular coolant channels extending substantially parallel to one another between the wall members, said first tubular coolant channels extending substantially parallel to the two wall members and being bounded on respective opposite lateral sides by said two wall members,

a plurality of second tubular coolant channels extending substantially parallel to one another between the wall members, said second tubular coolant channels extending substantially parallel to the two wall members and being bounded on respective opposite lateral sides by said two wall members,

a plurality of first coolant flow apertures in one of said wall members which open into corresponding ones of said first tubular coolant channels for accommodating coolant flow in a direction transverse to said first tubular coolant channels,

a plurality of second coolant flow apertures in one of said wall members which open into corresponding ones of said second tubular coolant channels for accommodating coolant flow in a direction transverse to said second tubular coolant channels,

and a first tube guide extending in a longitudinal direction which is transverse to said first tubular coolant channels, said first tube guide having a longitudinal slot which opens to said plurality of first coolant flow apertures by way of said longitudinal slot, said first tube guide being sealingly connected to said one of said wall members by weld seams extending at respective opposite lateral sides of the longitudinal slot, whereby said first tube guide forms a coolant header for said plurality of first tubular coolant channels,

and a second tube guide extending in a longitudinal direction which is transverse to said second tubular coolant channels, said second tube guide having a longitudinal slot which opens to said plurality of second coolant flow aperture by way of the longitudinal slot, said second tube guide being sealingly connected to said one of said wall members by weld seams extending at respective opposite lateral sides of the longitudinal slot, whereby said second tube guide forms a coolant header for said plurality of second tubular coolant channels

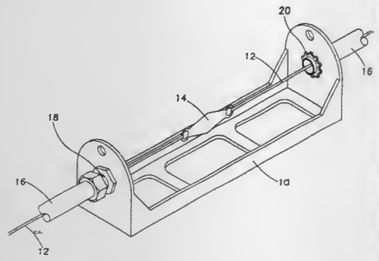
wherein said first and second tube guides are spatially separated apart from one another.

5,645,128

FIRE SAFETY GREASE SEAL

Charles F. Schwall, 321 Heritage Way, Algonac, Mich. 48001

Filed Jun. 5, 1995, Ser. No. 464,291
Int. Cl.[6] A62C *37/36*
U.S. Cl. 169—42 **1 Claim**



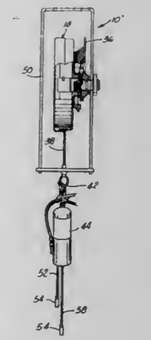
1. In a fire sensing and detecting system including a frame, a cylindrically shaped adapter having a throughgoing aperture and external threads, a ridge forming a butting surface surrounding the aperture at the midpoint between the ends, extending through an aperture in a wall of the frame and secured by the butting surface engaging the wall on one side and a nut threaded on the adapter from the opposed side and engaging the wall; a tube; a cable passing through the tube and connected at one end, proximate the frame, to a fusible link; a tube nut threadedly engaging the adapter and connecting the tube to the adapter, the improvement comprising: a grease seal interposed between the tubing and the adapter comprising a circular member having planar surfaces and a through going aperture centrally positioned therein and adapted to allow the cable to pass through without interference.

5,645,129

FIRE EXTINGUISHER DISPENSER

Edward M. Renna, 3231 Drane Field Rd., Lakeland, Fla. 33811

Filed Feb. 5, 1996, Ser. No. 596,522
Int. Cl.[6] A62C *13/06*
U.S. Cl. 169—51 **20 Claims**



1. A fire extinguisher dispenser assembly comprising:

(a) a frame having a lower opening therein;

(b) a dispenser reel assembly mounted within said frame;

(c) a dispensing cable wound around a portion of said dispenser reel assembly, said dispensing cable having a loop connector at its depending free end with said loop connector being configured to support a fire extinguisher therefrom;

(d) a release plate covering said lower opening of said frame, said release plate having a slot therein sized to allow said dispensing cable to pass therethrough;

(e) means secured to said dispensing cable and spaced from said loop connector for preventing the further passage of said dispensing cable through said slot, and;

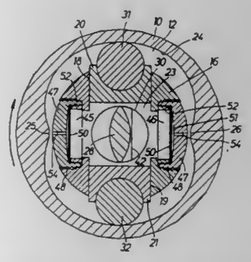
(f) means for releasing said plate from said frame, thereby allowing said dispensing cable, and said fire extinguisher, to be dispensed downwardly away from said dispenser reel assembly.

5,645,130

HYDRAULIC TORQUE IMPULSE MECHANISM

Knut Christian Schoeps, Tyresö, Sweden, assignor to Atlas Copco Tools AB, Nacka, Sweden

Filed Dec. 26, 1995, Ser. No. 579,581
Claims priority, application Sweden, Dec. 30, 1994, 9500001
Int. Cl.[6] B25D *15/00*
U.S. Cl. 173—93.5 **5 Claims**



1. Hydraulic torque impulse mechanism intended for a torque delivering tool, comprising a rotatively driven drive member (**10**) provided with a concentric fluid chamber (**12**) as well as a radially acting cam mechanism (**25**, **26**, **28**), an output shaft (**16**) extending through said drive member fluid chamber (**12**) and having two

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radially extending cylinder bores (**18**, **19**) which communicate continuously with a central high pressure chamber (**23**), and two oppositely disposed piston elements (**20**, **21**) which are reciprocable in said cylinder bores (**18**, **19**) by said cam mechanism (**25**, **26**, **28**), wherein:

said output shaft (**16**) comprises at least one impulse moderating chamber (**45**, **46**) which communicates continuously with said high pressure chamber (**23**) to add volume to said high pressure chamber (**23**), and

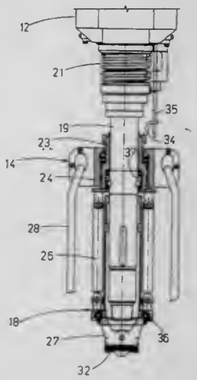
said at least one impulse moderating chamber (**45**, **46**) comprises a pressure responsive and elastically yielding wall section (**50**) by which the elasticity of the pressurized fluid volume in said high pressure chamber (**23**) is increased as the pressure difference between said high pressure chamber (**23**) and said drive member fluid chamber (**12**) is only below a certain level.

5,645,131

DEVICE FOR JOINING THREADED RODS AND TUBULAR CASING ELEMENTS FORMING A STRING OF A DRILLING RIG

Davide Trevisani, Cesena, Italy, assignor to Soilmec S.p.a., Cesena, Italy

Filed Jun. 8, 1995, Ser. No. 488,613
Claims priority, application Italy, Jun. 14, 1994, TO94A0489
Int. Cl.[6] E21B *19/00*
U.S. Cl. 175—171 **8 Claims**



1. A device for joining an element to a string of elements already mounted, including threaded rods and tubular casing elements covering walls of a borehole, for use in drilling equipment having a rotary head driving said string with a combined movement of rotation about a substantially vertical axis and translation along said axis, said device comprising:

clamping and guiding means for clamping and guiding a single element in an axially aligned position relative to the elements already mounted, said clamping and guiding means being idly mounted to the rotary head;

friction screwing means operatively coupled to said clamping and guiding means, said friction screwing means comprising a first, rotating portion having a lower friction device mounted to an output rotary shaft of said rotary head for sliding along and rotating with said rotary shaft, and

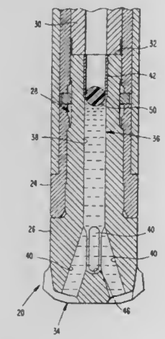
a second, non-rotating portion rotationally locked to the rotary head to rotate therewith, said second, non-rotating portion comprising actuator means acting on said friction device, said actuator means having a first, axially retracted position not interfering with said single element while clamping and transferring said single element and a second, axially extended screwing position in which said friction device engages and rotates said single element such that a lower end of said single element is screwed to an uppermost element of the string.

5,645,132

DRILL BIT HAVING SPRINGLESS CHECK VALVE AND METHOD OF BLOCKING BACKFLOW DURING DRILLING

Bengt Åsberg, Houston, Tex., assignor to Sandvik AB, Sandviken, Sweden

Filed Mar. 4, 1996, Ser. No. 610,234
Int. Cl.[6] E21B *10/38*
U.S. Cl. 175—318 **13 Claims**



13. A method of blocking fluid backflow during upwards drilling comprising the steps of:

A) advancing upwardly through a subterranean formation a drill body comprising a body having a front drilling face, a fluid passage extending from a rear end of the body to the drilling face to conduct flushing fluid to the drilling face, and a check valve for closing the fluid passage; the fluid passage including a main portion extending from the rear end of the body and terminating short of the drilling face, and a plurality of branch lines extending from a forward end of the main portion to the drilling face; the body including a non-sealing front seat and a sealing rear seat spaced apart in a front-to-rear direction along the main portion; the check valve comprising a plug freely movable in the main portion between contact with the front and rear seats; the plug being free of throughholes; the rear seat being sealingly contacted by the plug when the plug gravitates downwardly thereagainst, to create a fluid seal across the fluid passage; and

B) conducting flushing fluid upwardly through the drill passage to force the plug off the rear seat and into non-sealing contact with the front seat, to enable flushing fluid to travel past the plug and into the branch lines for travel to the drilling face.

5,645,133

PIVOTABLE HOOD STRUCTURE

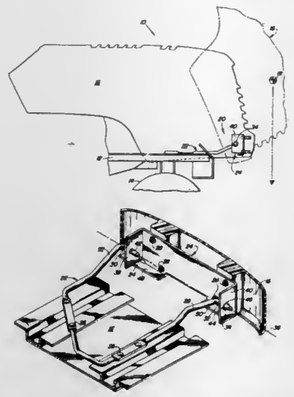
John Lee Thompson, Madison; Barry Joseph Goebert; Eugene Gary Hayes, both of Beaver Dam, and Richard Donald Teal, Horicon, all of Wis., assignors to Deere & Company, Moline, Ill.

Filed Jul. 17, 1995, Ser. No. 503,110
Int. Cl.[6] B62D *25/12*; **E05D** *7/10*
U.S. Cl. 180—69.21 **11 Claims**

1. For use of a vehicle having a first frame member and a second body member;

means between the first and second members for removably securing one member with the other including:

a guide structure carried by one member,



bracket means carried by the one member, the bracket means having first and second spaced apart surfaces with respective first and second openings, the first surface being adjacent to the guide structure and the second surface including receivable locking means;

rod means carried by the other member, the rod means having first and second spaced apart end portions with the second end portion having latching means;

said first and second end portions being respectively receivable in the first and second openings of the surfaces;

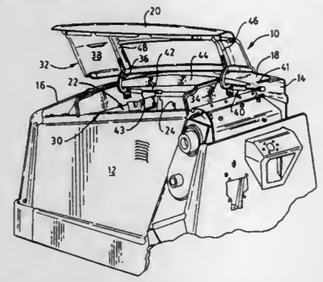
the first end portion being registerable with the guide member and slidable therealong to position the first end portion in the first opening and align the second end portion in the second opening whereby the latching means can be lockably received in the locking means when the second portion is received in the second opening.

5,645,134

ENGINE ENCLOSURE ASSEMBLY

David B. Frankel, Cary, N.C.; Scott E. Jeffers, Peoria, Ill., and John E. Myslik, Holly Springs, N.C., assignors to Caterpillar Inc., Peoria, Ill.

Filed Nov. 14, 1995, Ser. No. 557,913
Int. Cl.[6] B62D *25/10*
U.S. Cl. 180—69.24 **6 Claims**



1. An engine enclosure assembly for a work machine, comprising:

a substantially vertical first side panel;

a substantially vertical second side panel;

a substantially vertical front enclosure;

a substantially horizontal first top enclosure;

a substantially horizontal second top enclosure, said first and second top enclosures adapted to enclose the area defined by said first and second side panels and said front enclosure, said first top enclosure being substantially fixed and said second top enclosure being moveable between a first closed position and a second open position;

first and second hinges connected to said second top enclosure; and

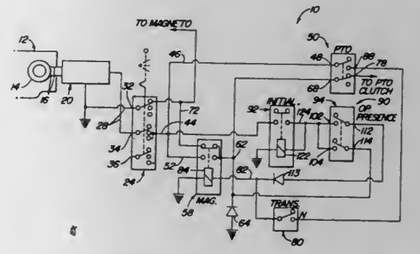
first and second opening devices connected directly to said respective first and second hinges.

5,645,135

INTERLOCK CIRCUIT FOR A WALK-BEHIND MOWER

Rudolph Andrew Peterson, Jr., Beaver Dam, Wis., assignor to Deere & Company, Moline, Ill.

Filed Jan. 31, 1996, Ser. No. 594,739
Int. Cl.[6] B60K *28/00*
U.S. Cl. 180—272 **15 Claims**



1. In a vehicle having an engine, a source of electrical power, an ignition switch having on and off positions, an electrically engageable power take off (PTO), a PTO switch connected between the source and the PTO, a transmission, and a transmission switch responsive to selection of a neutral condition of the transmission, a selectively engageable transmission clutch, an operator control device operably connected to the transmission clutch and having a released position wherein the transmission is engaged, an interlock circuit comprising:

means connecting the transmission switch and the PTO switch to the ignition switch for permitting starting of the engine when the operator control device is in the released position only when the ignition switch is on and the PTO switch is off and the transmission is in the neutral condition;

an operator presence switch providing an indication of operator presence at a specific location relative to the vehicle; and

means connecting the operator presence switch to the transmission switch and the ignition switch for permitting the engine to run with the transmission out of the neutral condition if the indication of operator presence is provided.

5,645,136

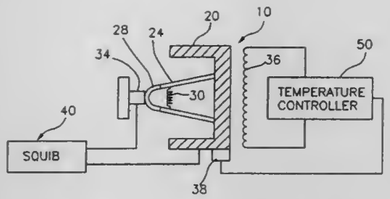
DEVICE FOR OPERATING A SIDE AIRBAG

Sung-Kwang Byon, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Sep. 27, 1995, Ser. No. 534,431
Claims priority, application Rep. of Korea, Sep. 28, 1994, 94-24441; Sep. 28, 1994, 94-24446
Int. Cl.[6] B06R *21/32*
U.S. Cl. 180—274 **4 Claims**

1. In a device for operating a side airbag module comprising a gas generator and a side airbag inflated by gas generated from the gas generator, the gas generator comprising a squib and an inflator, the device comprising:

a U-shaped beam installed inside a vehicle door, electrically connected to said squib and deformed in the event of a crash to generate heat;



a plurality of pairs of plate springs fixed along an inner base surface of said U-shaped beam at a predetermined interval, each of the pairs of plate springs being fixed opposingly in a direction perpendicular to a length direction of said U-shaped beam,

each of the pairs of plate springs having ends connected by a respective thin metal plate,

each of the pairs of plate springs being connected by a respective shape memory alloy member, each of the shape memory alloy members being capable of bending the respective pair of plate springs against resilient force thereof at a transformation temperature;

a contact installed at a distance apart from each of said thin metal plates, electrically connected to said squib and coming into contact with at least one of said thin metal plates by a deformation of the respective shape memory alloy member, the deformation being caused by heat generated from said U-shaped beam in the event of a crash; and

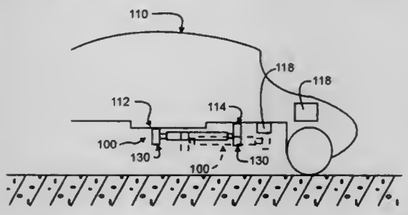
a temperature holding portion including a heating member installed on said U-shaped beam, a temperature sensor sensing the temperature of said U-shaped beam, and a temperature controller controlling said heating member to constantly keep the temperature of said U-shaped beam lower than said transformation temperature of said shape memory alloy members.

5,645,137

COMPACT, PORTABLE, VEHICLE DISABLING DEVICE AND METHOD

David R. Pacholok, 1815 W. Higgins Rd., Sleepy Hollow, Ill. 60118

Filed Mar. 27, 1996, Ser. No. 622,388
Int. Cl.[6] B60R *25/00*
U.S. Cl. 180—287 **24 Claims**



1. A device, having a housing and an attaching means adaptable to attach the device to a vehicle, the device being easily attached to and concealed on the vehicle and capable of disrupting an electronic systems required for vehicle operation of the vehicle:

(a) the housing having mounted therein a direct current source, an antenna, a radio control receiver, a safety arming switch, an inverter, a high voltage switching device, two isolation resistors, and an energy storage capacitor;

(b) the housing having a first end and a second end;

(c) a first securing device being connected to the first end, the first securing device being adapted to be securable to the vehicle; and

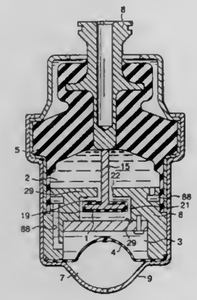
(d) a second securing device being connected to the second end, the second securing device being adapted to be securable to the vehicle.

5,645,138

DILATANT FLUID-SEALED VIBRATION-INSULATING DEVICE

Hitoshi Tajima, Ichinomiya, and Takashi Maeno, Aichi-ken, both of Japan, assignors to Toyoda Gosei Co., Ltd., Aichi-ken, Japan

Filed Jun. 19, 1996, Ser. No. 665,374
Claims priority, application Japan, Jun. 19, 1995, 7-176813; Jun. 21, 1995, 7-179567; Jun. 21, 1995, 7-179568
Int. Cl.[6] F16F *13/00*
U.S. Cl. 180—300 **13 Claims**



1. A dilatant fluid-sealed vibration-insulating device comprising:

a connection member constructed and arranged to be connected to one member;

a holder disposed generally opposite to the connecting member and constructed and arranged to be connected to another member;

an insulator provided between said connection member and said holder, said insulator being made of an elastic material;

a main chamber and an auxiliary chamber serially provided below said insulator;

a partition plate separating said main chamber from said auxiliary chamber;

an orifice formed in said partition plate communicating said main chamber with said auxiliary chamber;

an air chamber adjacent said auxiliary chamber and open to atmosphere;

a diaphragm separating said air chamber from said auxiliary chamber;

a dilatant fluid sealed in said main chamber and said auxiliary chamber, said dilatant fluid being provided in such a manner as to exhibit a relatively small viscosity increase when vibrations, having very low frequency of approximately 5 Hz and a large amplitude are inputted to said vibration-insulating device, said viscosity increase being insufficient to dampen said vibrations; and

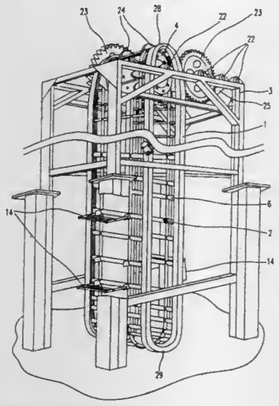
a piston connected to said connection member for reciprocal movement therewith so as to compress the dilatant fluid between said piston and said partition plate thereby suppressing said very low-frequency large-amplitude vibrations, said orifice having a flow passage area so as to achieve a predetermined damping effect for a flow of the dilatant fluid caused by low-frequency, medium-amplitude vibrations which are higher in frequency and smaller in amplitude than said very low-frequency, large-amplitude vibrations.

5,645,139

CIRCULATABLE LADDER

David Liou, 40, Tzu Chiang Rd., Chung Ho, Taipei Hsien, Taiwan

Filed Nov. 18, 1994, Ser. No. 342,211
Int. Cl.[6] A62B *1/00*
U.S. Cl. 182—44 **18 Claims**



1. A circulatable ladder comprising:

a track set;

a circulatable chain mounted along said track set;

a securing device adapted to be secured to a building for securing thereon said track set; and

a decelerator mounted on said securing device for slowing down a circulating speed of said circulatable chain, the decelerator comprising at least one wind resistor;

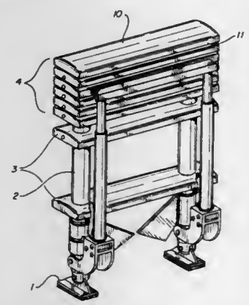
said wind resistor further comprising at least one wind leaf having a sub-leaf overlappingly attached and movably parallel to said wind leaf, and a spring mounted between said sub-leaf and said wind leaf for urging said sub-leaf to a retracted position.

5,645,140

SELF-SUPPORTED COLLAPSIBLE LADDER

Ghassoub A. Mouneimneh, 81 Independence Rd., Feeding Hills, Mass. 01030

Filed May 8, 1995, Ser. No. 437,618
Int. Cl.[6] E06C *1/00*
U.S. Cl. 182—195 **5 Claims**



1. A collapsible ladder assembly comprising:

a lower section having two ends and a mid-point, two pivotally attached support feet at one end, two side rails substantially parallel to each other and attached to two transversely extending rungs, wherein one of said rungs is attached to the opposite end of said rails and the other is attached at the mid-point of said rails of the lower section;

a plurality of ladder sections each having two side rails which are open at each end and are affixed at one end through a perpendicular rung and sleeves, said side rails being of equal length and of varying width wherein the width of the side rails of any given ladder section are slightly greater than the width of the side rails of the superjacent ladder section such that the superjacent ladder section slides freely within the side rails of the given ladder section and nests therein when the ladder is in a closed position;

a pin mechanism attached to an underside of each rung, said pin mechanism being a means for locking adjacent ladder sections in an open position and for unlocking or closing the superjacent ladder section of any ladder section; said pin mechanism being comprised of a housing bracket, a pin, and a spring; and whereby said spring forces said pin through a hole in the ladder section side rail and an aligned hole in the side rail of the superjacent ladder section, thereby locking the ladder sections in an open and extended position; and whereby the ladder sections are released or closed by pulling the pin out of said holes, thereby collapsing the ladder sections; and

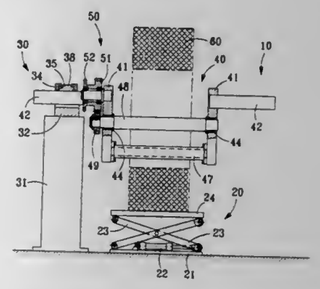
a means for making the ladder self-supporting having a support brace attached to each side rail at the lower section of the ladder below the lowest rung by means of cuffs which encircle said rails and rotate 90° such that the braces extend from the cuffs to the support rail when open and in use and inward or toward each other when closed or not in use and a support rail connector pivotally attached to each rail below said cuffs, said support rail connectors having two substantially parallel support rails extending therefrom, which are connected at the opposite end by a perpendicular cross rail.

5,645,141

HOIST FOR ROLL MATERIAL SURFACE TREATMENT

Shou Tang Tseng, No.4, Chungsan Rd., Heng San Tsun, Ta Ya Conuty, Taichung, Taiwan

Filed Sep. 20, 1995, Ser. No. 530,923
Int. Cl.[6] B66B *9/02*
U.S. Cl. 187—269 **5 Claims**



1. A hoist for roll material surface treatment comprising:

a hoist means including a pair of spaced supporting boards having a plural number of suspending bars disposed on the top portion thereof and extending outward, at least one support beam engaged therebetween at the lower protion, at least one rotary shaft housed at both ends in a pair of bearings disposed in the supporting board, one end of the rotry shaft extending outward of the supporting board and having a driven gear fixed thereon, and a gear shaft disposed at same side of the driven gear;

a transmission means having a driving gear and a chain wheel disposed on the gear shaft through beatings, wherein the driving gear engages with the driven gear; and

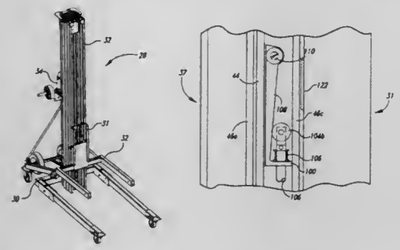
a securing means including a base frame, a pair of spaced V-shape block disposed on the top surface of the base frame, an upward flange having a protrusive edge disposed on one side of the V-shape block, a holding seat having an inverted T-shape slot disposed on another side of the V-shape block, an anchor block having a cylinder disposed therein located beside the anchore block, wherein the cylinder shaft of the cylinder is extendable and engageable with the protrusive edge of the upward flange to hold the suspending bar in the V-shape block.

5,645,142

WEDGE BRAKING SYSTEM FOR MULTI-STAGE LIFTS

Matthew G. Kraemer, Seattle; Richard M. Curtin, Redmond, and Paul K. Smith, Kirkland, all of Wash., assignors to Genie Industries, Redmond, Wash.

Filed Apr. 18, 1994, Ser. No. 228,605
Int. Cl.[6] B60T *8/72;* **B66B** *5/12*
U.S. Cl. 187—372 **13 Claims**



1. A braking system for first and second vertically moveable members having opposed wedging faces diverging apart in the downward direction;

a guide element projecting from one of said members and providing a vertical guide opening aligned with a tapered space between said wedging faces;

a vertical slide unit slidably mounted in said guide opening;

a wedging unit on the upper end of said guide element in said tapered space;

a compression spring seated on said guide element and normally compressed by engagement of the top of said spring by said slide unit; and

the combined weight of said slide unit and wedging unit being such as to permit said spring to expand responsive to downward acceleration of one of said members relative to the other member, thereby causing said wedging unit to seat between said wedging faces and stop further relative vertical movement between said members.

5,645,143

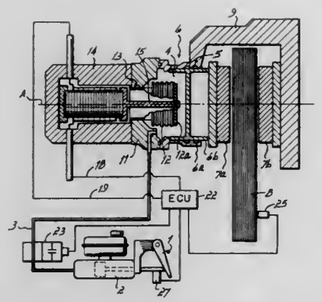
ELECTRONICALLY CONTROLLABLE BRAKING SYSTEM FOR GROUND VEHICLES AND METHOD FOR OPERATING SAME

Kurt Mohr, Halsenbach/Ehr, and Ulrich Seuser, Neuwied, both of Germany, assignors to Lucas Industries public limited company, United Kingdom

Filed Mar. 26, 1996, Ser. No. 622,122
Claims priority, application Germany, Mar. 30, 1995, 19511811
Int. Cl.[6] F16D *65/20;* **B60T** *1/06;8/00;13/74*
U.S. Cl. 188—72.1 **17 Claims**

1. An electronically controllable braking system for ground vehicles, comprising

a cylinder/piston arrangement (**6**) which is able to introduce friction forces (F_{akt}) into a friction element (**8**) which is



coupled with a vehicle wheel, by subjecting a hydraulic chamber (**4**) of the cylinder/piston arrangement (**6**) with hydraulic fluid,

an electrically actuatable displacement element (**12**) projecting into the hydraulic chamber (**4**) of the cylinder/piston arrangement (**6**), which is actuatable as a function of at least one control signal from an electronic controller (**22**), for increasing or decreasing the pressure acting on the hydraulic fluid in the hydraulic chamber (**4**) in order to increase or decrease, respectively, the friction forces (F_{akt}) which, during a braking operation, are introduced into the friction element (**8**); and

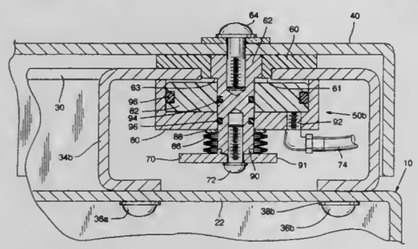
a valve arrangement (**23**) integrated with the displacement element (**12**), the valve arrangement (**23**) including an opening (**23***a*) formed in the displacement element (**12**), so that during an actuation of the displacement element (**12**) for increasing the pressure of the hydraulic fluid, the valve arrangement (**23**) prevents draining of the hydraulic fluid from at least one region (**4***b*) of the hydraulic chamber (**4**).

5,645,144

CONTROL MECHANISM FOR SLIDING PANEL

Andrew G. Schaefers, and George K. Austin, Jr., both of Newberg, Oreg., assignors to A-Dec, Inc., Newberg, Oreg.

Filed Aug. 22, 1995, Ser. No. 517,870
Int. Cl.[6] F16D *65/24*
U.S. Cl. 188—170 **5 Claims**



1. A mechanism for guiding and controlling the movement of a sliding member in relation to a fixed member comprising:

a guide attached to the sliding member and extending through an elongate opening in the fixed member, the elongate opening defining a path of movement of the sliding member, wherein the guide comprises a brake that includes;

a piston housing and a piston disposed within the piston housing, wherein the piston housing normally contacts the fixed member and wherein actuation of the actuator causes the piston housing to move away from contact with the fixed member;

a spring member that normally urges the piston housing into contact with the fixed member, thereby fixing the position of the sliding member with relation to the fixed member; and

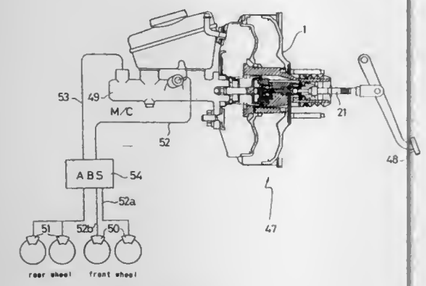
an actuator that, when actuated, releases the contact between the piston housing and the fixed member, allowing the sliding member to move along the path defined by the opening.

5,645,145

BRAKE BOOSTER

Masahiro Ikeda, Higashimatsuyama, Japan, assignor to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Apr. 29, 1996, Ser. No. 639,445
Claims priority, application Japan, May 29, 1995, 7-130785
Int. Cl.[6] B60T *13/00*
U.S. Cl. 188—356 **5 Claims**



1. A brake booster comprising,

front and rear shells attached together to form a space therein,

a valve body situated in the space to move forwardly and backwardly and piercing the rear shell sealingly and slidably,

a power piston connected to the valve body and dividing the space into a constant pressure chamber in which vacuum force is introduced and a variable pressure chamber in which atmosphere is introduced during braking,

a valve plunger slidably disposed in the valve body,

an input shaft connected to the valve plunger and arranged to move forwardly and backwardly in the valve body, said input shaft receiving a brake operation at one end thereof,

a vacuum valve disposed in the valve body and controlled by a movement of the valve plunger, said vacuum valve controlling communication between the constant chamber and the variable chamber,

an air valve disposed in the valve body and controlled by the movement of the valve plunger, said air valve controlling communication between the variable chamber and atmosphere,

an output shaft connected to the valve body for outputting the braking operation to an external device,

a first fluid chamber disposed between the valve plunger and the output shaft and filled with fluid,

a second fluid chamber situated adjacent to the first fluid chamber and filled with fluid, and

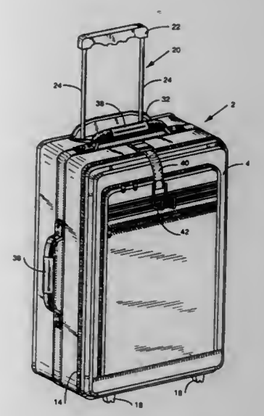
a fluid flow control valve situated between the first and second fluid chambers, said control valve blocking fluid communication from the first fluid chamber to the second fluid chamber when the valve plunger moves forwardly at a speed less than a predetermined speed at a normal braking, and permitting fluid communication from the first fluid chamber to the second fluid chamber when the valve plunger moves forwardly at a speed more than the predetermined speed at an emergency braking so that the air valve opens widely to immediately perform the braking operation at a maximum condition.

5,645,146

SUITCASE WITH RETRACTABLE PULL HANDLE

David Bieber, East Greenwich, R.I.; Hyun S. Kim, New Castle, Pa.; Richard L. Conrad, Dublin, Ohio, and John N. Gualtieri, Hauppauge, N.Y., assignors to Airway Industries, Inc., Ellwood City, Pa.

Filed Nov. 8, 1994, Ser. No. 335,584
Int. Cl.[6] A45C *5/14;13/22;13/26*
U.S. Cl. 190—18 A **18 Claims**



1. A suitcase comprising:

generally parallel spaced apart front and back panels connected about their peripheries to a wall member, said wall member extending between said front and back panels, thereby defining a volume;

said wall member having a top portion and a bottom portion positioned opposite one another with at least a portion of said wall member being rigid;

roller means mounted in juxtaposition to said bottom portion of said wall member adjacent the periphery of the wall member and one of said front and back panels to at least partially support said suitcase when in an upright position and for enabling rolling movement of the suitcase across a surface;

a rigid telescoping pull handle having a gripping member thereon, said pull handle mounted in juxtaposition to said top portion of said wall member and extending generally outwardly from the top portion of said wall member and generally parallel to said panels, said pull handle being movably mounted to carrier means positioned within said volume and alternately retractable into said volume and extensible therefrom; the pull handle being operable when extended to enable rolling movement of the suitcase across a surface on said roller means with the weight of said suitcase being divided between said pull handle and said roller means;

a handle receptacle mounted on said wall member, said handle receptacle having a portion recessed inside said volume and positioned to receive said gripping member of said pull handle when said pull handle is retracted, said pull handle being movable in a telescoping motion between a retracted position in which said gripping member is inside said recessed portion of said handle receptacle and an extended position in which said gripping member is extended outside of said handle receptacle to permit the rolling movement of the suitcase by a user; and

closure means for securing said gripping member inside said recessed portion of said handle receptacle when the pull handle is retracted and enclosed inside said volume, thereby securing said pull handle from accidental extension from said portion recessed inside said volume.

5,645,147

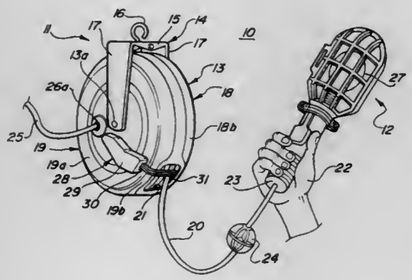
AUTOMATICALLY SWITCHED TROUBLE LIGHT AND RETRACTING CORD REEL APPARATUS

James D. Kovacik, Brecksville, and Paul S. Blanch, Broadview Heights, both of Ohio, assignors to Alert Lite Safety Products Co. Inc., Bedford Heights, Ohio

Filed Nov. 6, 1995, Ser. No. 553,879

Int. Cl.[6] H02G *11/02*

U.S. Cl. 191—12.2 R 8 Claims



1. A unitary switch apparatus for a trouble light and retracting extension cord reel assembly, the assembly including a cord reel having a housing, an extension cord extending through an opening in the cord reel housing, a trouble light connected to the extension cord, an extension cord retracting mechanism for rewinding the extension cord into the cord reel housing and a stop attached to the extension cord for engaging the cord reel housing and stopping rewinding of the extension cord, the unitary switch apparatus comprising:

an elongated switch housing formed of a plastic material and adapted to be mounted on an exterior side surface of the cord reel housing, said switch housing having an open side for facing the exterior side surface of the cord reel housing and an end having an actuating arm opening formed therein, said switch housing having a pivot post, at least one mounting post and at least one boss formed on an interior surface thereof;

a fastener means for engaging said boss, said fastener means adapted to attach to the exterior side surface of the cord reel housing for mounting said switch housing;

a switch means for establishing an electrical connection or disconnection attached to said mounting post in said switch housing and adapted to be connected between a power cord and the extension cord connected to the trouble light, said switch means being biased to a normally closed position for electrically connecting the power cord to the extension cord; and

an actuating arm pivotally mounted in said switch housing on said pivot post and having a first portion extending partially outside said switch housing through said actuating arm opening for contacting the stop on the extension cord and a second portion inside said housing for actuating said switch means whereby when said switch housing is mounted on the cord reel housing by said fastener means and said boss, and said switch means is connected between the power cord and the extension cord, said actuating arm is rotated about said pivot post by contact with the stop on the extension cord to actuate said switch means to an open position to electrically disconnect the extension cord from the power cord and wherein said switch housing, said switch means and said actuating arm are removable from the cord reel housing as a unit.

5,645,148

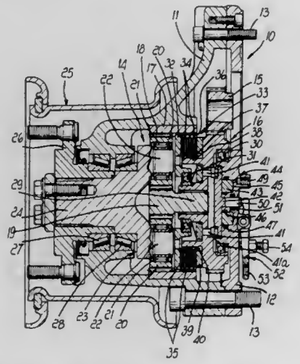
TRANSMISSION WITH BUILT-IN BRAKE, PARTICULARLY FOR VEHICLES

Claudio Saurin, Rubano, and Giampietro Rizzo, Este, both of Italy, assignors to ZF Padova S.p.A., Caselle Di Selvazzano Dentro, Italy

Filed Jun. 23, 1995, Ser. No. 494,644

Int. Cl.[6] B60K *41/26;* F16D *41/24;65/14*

U.S. Cl. 192—4 A 5 Claims



1. A transmission with built-in brake, particularly for vehicles, comprising:

a containment and supporting casing enclosing an oil bath;

an epicyclic reduction unit;

at least two gears for transmitting motion to said epicyclic unit, a driven gear of said two gears being axially fixed and coaxial to a sun gear of said epicyclic unit and coupled therewith through a splined coupling;

a disk brake arranged between said epicyclic reduction unit and said driven gear, said disk brake having at least one first disk being rigidly coupled to an internally-toothed ring gear which is fixedly connected to said casing, and at least one second disk being rigidly coupled to and rotatable together with said driven gear;

axially movable pusher means for packing together said first and second disks of said brake, wherein said pusher means comprise: a flange; a fluid-activated actuator including a piston integrated in said casing and acting on said flange; a pin rigidly coupled to said flange and protruding from said casing; and actuation means acting on said actuator and on said pin; wherein said fluid-activated actuator comprises in addition to said piston: an annular seat built into a lid of said casing for sliding of said piston; sealing rings; and ports for feeding hydro-dynamic fluid and for venting; and wherein said actuation means comprise a parking brake system acting on said pin; and

wherein said venting port lies at a right angle to the feed port and runs parallel to an outer surface of said lid.

5,645,149

FREEWHEEL-RETAINER RING WITH CENTRIFUGAL FORCE TAKEOFF

Ruprecht Maurer; Karlheinz Timtner, both of Bad Homburg, and Siegfried Jackwerth, Friedrichsdorf, all of Germany, assignors to Ringspann GmbH, Bad Homburg, Germany

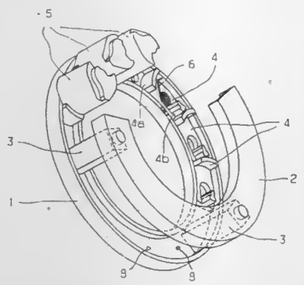
Filed Nov. 30, 1995, Ser. No. 565,802

Claims priority, application Germany, Dec. 9, 1994, 44 43 723.4

Int. Cl.[6] F16D *41/07*

U.S. Cl. 192—45.1 19 Claims

1. A freewheel retainer ring comprising two opposite-facing ring-shaped edge rings (1, 2; 11, 12) extending substantially in a radial direction of the retainer ring, the rings being connected with each other by axial connecting bolts (3) thereby forming an axial interspace, the edge rings having between them a plurality of clamping members (5; 15) which are swivelably mounted in the retainer ring and are pretensioned by at least one spring (6; 16) in a direction of engagement of the retainer ring, whereby under action of centrifugal force the clamping members (5; 15) execute a swivel motion in a direction of disengagement and acting against the at least one spring, each clamping member including two axial extensions and opposite end faces, two separate pockets (4, 4'; 14, 14') being allocated to each clamping member (5; 15) at the axial extensions of each clamping member, the pockets engaging with the opposite end faces of the clamping member (5; 15) and guiding the clamping member at least in a circumferential direction of the retainer ring, and one of the two pockets (4; 14) being connected with one of the two edge rings (1; 11), and the other of the pockets (4'; 14') being connected with the opposite-facing edge ring (2, 12).



5,645,150

MODULAR CLUTCH CONSTRUCTION

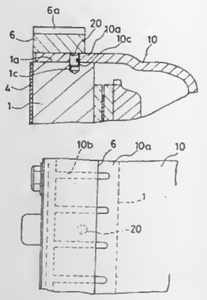
Koji Kajitani; Hiroshi Takeuchi; Yasunobu Fukatani; Hiroshi Teramae, and Masaaki Asada, all of Neyagawa, Japan, assignors to Daikin Clutch Corporation, Osaka, Japan

Continuation of Ser. No. 331,206, Oct. 28, 1994, abandoned, which is a continuation of Ser. No. 35,116, Mar. 19, 1993, Pat. No. 5,392,888. This application Oct. 20, 1995, Ser. No. 546,395

Claims priority, application Japan, Mar. 24, 1992, 4-15427 U; Apr. 2, 1992, 4-19769 U; Apr. 2, 1992, 4-19770 U; Apr. 2, 1992, 4-19771 U

Int. Cl.[6] F16D *13/58*

U.S. Cl. 192—70.16 5 Claims



1. A modular clutch construction comprising:

a flywheel having an outer radial surface and an axial face;

an annular pressure plate having an outer radial face, said annular pressure plate being coaxially disposed adjacent to said flywheel and facing said axial face of said flywheel;

a clutch cover encompassing said outer radial surfaces of said pressure plate and said flywheel, a radial inner surface of said clutch cover contacting said outer radial surface of said flywheel at a contact position;

a ring gear fitted onto a peripheral surface of said clutch cover radially over said contact position, said ring gear being shrink fitted on said peripheral surface of said clutch cover;

a plurality of axially extending slits formed circumferentially spaced on an interior margin of said clutch cover at said contact position; and

a clutch disc assembly coaxially disposed between said pressure plate and said flywheel.

5,645,151

FLYWHEEL FOR THE FRICTION CLUTCH OF A MOTOR VEHICLE, THE FLYWHEEL HAVING TWO CENTRIFUGAL MASSES AND A FRICTION DEVICE

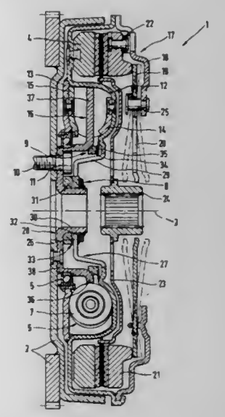
Joachim Lindner, Schweinfurt, and Bernhard Schierling, Kürnach, both of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Germany

Filed Aug. 15, 1995, Ser. No. 515,263

Claims priority, application Germany, Aug. 17, 1994, 44 28 832.8

Int. Cl.[6] F16F *15/139;* F16D *13/60*

U.S. Cl. 192—70.17 19 Claims



1. A friction clutch assembly such as for a transmission for a motor vehicle, said friction clutch assembly comprising:

a flywheel;

a clutch housing;

a hub;

said hub defining an axis of rotation and an axial direction parallel to said axis of rotation;

a clutch disc disposed within said clutch housing, said clutch disc coaxially surrounding said hub;

pressure plate means disposed within said clutch housing and being movable in said axial direction, said pressure plate means for applying an axial force to said clutch disc along the axial direction;

biasing means for biasing said pressure plate means in the axial direction;

said flywheel comprising a first centrifugal mass and a second centrifugal mass;

said first centrifugal mass being disposed substantially adjacent said clutch disc axially opposite said pressure plate means;

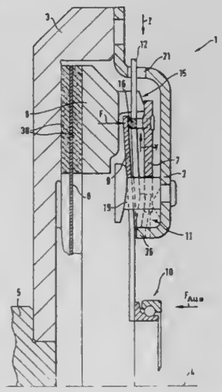
said clutch disc being disposed between said pressure plate means and said first centrifugal mass;

said second centrifugal mass being disposed adjacent said first centrifugal mass axially opposite said clutch disc and said pressure plate means;

said clutch disc comprising at least one friction lining;

said at least one friction lining being disposed substantially between said pressure plate means and said first centrifugal mass;
a hub disc;
said hub disc being disposed adjacent said second centrifugal mass;
said hub disc having a central portion disposed substantially adjacent said axis of rotation;
means for connecting said hub disc to said second centrifugal mass;
a friction device;
said friction device being disposed substantially adjacent said central portion;
means for providing frictional engagement with said friction device;
said means for providing frictional engagement with said friction device being disposed adjacent said second centrifugal mass;
at least a portion of said means for providing frictional engagement with said friction device being disposed substantially adjacent said central portion;
said at least a portion of said means for providing frictional engagement with said friction device being disposed adjacent and in contact with said friction device;
said friction device being frictionally engaged with said means for providing frictional engagement with said friction device;
said means for connecting said hub disc to said second centrifugal mass comprising a plurality of fastening means;
said plurality of fastening means being disposed to surround said central portion;
said plurality of fastening means being disposed at a first radial distance with respect to said central portion: and
said friction device being disposed radially within said first radial distance with respect to said central portion.

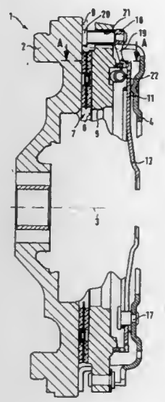
5,645,152
FRICTION CLUTCH WITH ADJUSTMENT FOR WEAR
Reinhold Weidinger, Unterspiesheim, Germany, assignor to Fichtel & Sachs AG, Schweinfurt, Germany
Filed Oct. 10, 1995, Ser. No. 541,628
Claims priority, application Germany, Oct. 10, 1994, 44 36 111.4
Int. Cl.[6] F16D *13/75*
U.S. Cl. 192—70.25 **13 Claims**



1. A friction clutch for a motor vehicle with automatic compensation for wear, said friction clutch comprising:
a clutch housing;
a clutch disc for being disposed on a transmission input shaft, the transmission input shaft having a longitudinal axis defining an axial direction parallel to the longitudinal axis, said clutch disc being axially movable along the transmission input shaft;
pressure plate means for engaging and disengaging said clutch disc with a flywheel, said pressure plate means being axially movable along the transmission input shaft;
said clutch disc comprising:
friction lining means disposed between said pressure plate means and the flywheel for contacting the flywheel and said pressure plate means upon engagement of said clutch disc;
membrane spring means disposed between said clutch housing and said pressure plate means for applying pressure to said pressure plate means;
a disengagement system for engaging and disengaging said clutch disc and said pressure plate means;
said disengagement system for engaging and disengaging being connected at a first part of said membrane spring means;
first means for supporting said membrane spring means;
said first means for supporting said membrane spring means comprising means for supporting said membrane spring means with respect to a first portion of said clutch housing;
said first supporting means comprising at least one fastening element;
said at least one fastening element being fastened to said clutch housing;
second means for supporting said membrane spring means;
said second means for supporting said membrane spring means comprising means for supporting said membrane spring means with respect to said pressure plate means;
said second means for supporting said membrane spring means comprising a plate spring;
said plate spring having a first side and a second side;
said first side of said plate spring being operatively supported by said clutch housing;
said second side of said plate spring being operatively supported by said pressure plate means;
said plate spring comprising means for applying a force substantially parallel to said longitudinal axis, toward said pressure plate means;
wear compensation means;
said membrane spring means comprising means for applying a force on said wear compensation means;
said membrane spring means comprising means for reducing the force on said wear compensation means upon wear of said friction lining means;
said wear compensation means comprising means for substantially maintaining said first part of said membrane spring means substantially fixed with respect to said clutch housing upon wear of said friction lining means;
said wear compensation means being disposed adjacent and in contact with said membrane spring means;
said wear compensation means comprising at least one ring portion;
said at least one ring portion being disposed concentrically with respect to said longitudinal axis;
said membrane spring means having an outer circumferential portion;
said outer circumferential portion of said membrane spring means being disposed adjacent and in contact with said at least one ring portion;
said first side of said plate spring being disposed toward said at least one ring portion;
said second side of said plate spring being disposed opposite said first side of said plate spring, and facing away from said at least one ring portion;
said first side of said plate spring comprising a first surface;
said second side of said plate spring comprising a second surface;
each of said first surface and said second surface of said plate spring being disposed to lie in a plane, each said plane being perpendicular to said longitudinal axis;
said plate spring having an outer circumference;
said at least one ring portion comprising a first ring portion and a portion of said plate spring.

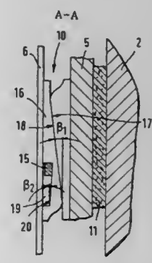
said portion of said plate spring comprising a portion being disposed at a substantial angle with respect to said plane of said first surface and said second surface of said plate spring;
said portion of said plate spring being disposed in said first surface and said second surface of said plate spring;
said portion of said plate spring comprising an undulation;
said undulation being formed concentrically within said outer circumference of said plate spring;
said undulation having a first surface and a second surface;
said first surface and said second surface of said undulation being disposed substantially parallel to one another; and
said first surface and said second surface of said undulation being disposed at a substantial angle with respect to said plane of said first surface and said second surface of said plate spring.

5,645,153
FRICTION CLUTCH FOR AN INTERNAL COMBUSTION ENGINE IN AN AUTOMOBILE
Reinhold Weidinger, Unterspiesheim, Germany, assignor to Fichtel & Sachs AG, Schweinfurt, Germany
Filed Oct. 10, 1995, Ser. No. 541,910
Claims priority, application Germany, Oct. 10, 1994, 44 36 109.2
Int. Cl.[6] F16D *13/75*
U.S. Cl. 192—70.25 **19 Claims**



1. A friction clutch for a motor vehicle with automatic compensation for wear, said friction clutch comprising:
a clutch housing;
a clutch disc for being disposed on a transmission input shaft having a longitudinal axis, said clutch disc being axially movable along the transmission input shaft;
pressure plate means for engaging and disengaging said clutch disc with a flywheel, said pressure plate means being axially movable along the transmission input shaft;
said clutch disc comprising:
friction lining means disposed between said pressure plate means and the flywheel for contacting the flywheel and said pressure plate means upon engagement of said clutch disc;
membrane spring means disposed between said clutch housing and said pressure plate means for applying pressure to said pressure plate means and for biasing said pressure plate means towards the flywheel;
wear compensation means;
said wear compensation means comprising:
a ring disposed on, and in contact with, said pressure plate means substantially concentrically with respect to the longitudinal axis;
a portion of said ring lying in a plane, which plane is substantially perpendicular to the longitudinal axis;
said ring comprising a first surface and a second surface;
said second surface of said ring being disposed in contact with said pressure plate means;
said first surface of said ring being disposed opposite said second surface of said ring;
said first surface of said ring having at least one portion being angled with respect to said plane;
a portion of said membrane spring means comprising a first surface and a second surface disposed opposite one another;
at least one portion of said first surface of said portion of said membrane spring means comprising means for providing at least one angled portion being disposed at an angle substantially greater than zero degrees with respect to said plane;
said at least one angled portion of said ring being disposed adjacent, and in contact with, said at least one angled portion of said membrane spring means;
said ring and said portion of said membrane spring means together having a combined initial width dimension for providing contact between said friction lining means and said pressure plate means;
said combined width dimension of said ring and said portion of said membrane spring means being disposed substantially parallel to said longitudinal axis; and
biasing means for rotating said ring with respect to said portion of said membrane spring means and for increasing the combined width dimension of said ring and said portion of said membrane spring means, to compensate for wear of said friction lining means.

5,645,154
FRICTION CLUTCH WITH AUTOMATIC WEAR COMPENSATION
Reinhold Weidinger, Unterspiesheim, Germany, assignor to Fichtel & Sachs AG, Schweinfurt, Germany
Filed Nov. 9, 1995, Ser. No. 555,770
Claims priority, application Germany, Nov. 11, 1994, 44 40 412.3
Int. Cl.[6] F16D *13/75*
U.S. Cl. 192—70.25 **17 Claims**



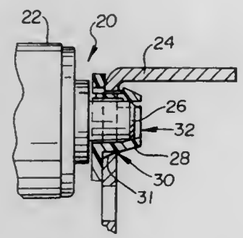
1. A clutch for a motor vehicle, said clutch having a rotational axis, said clutch comprising:
a pressure plate;
friction lining means;
a spring;
said spring being disposed to generate a force of engagement on said pressure plate to bring said pressure plate in contact with said friction lining means;
wear adjustment means;
said wear adjustment means being substantially disposed between said spring and said pressure plate;

said wear adjustment means having an axial width;
the axial width of said wear adjustment means changing according to a predetermined force-displacement characteristic upon said friction lining means wearing from an intially installed positon to a worn position;
said wear adjustment means comprising a first ring member;
said first ring member comprising:
a first side;
said first side of said first ring member being disposed adjacent to said spring;
a second side; and
said second side of said first ring member being disposed opposite said first side of said first ring member;
said wear adjustment means comprising a second ring member;
said second ring member comprising:
a first side;
said first side of said second ring member being disposed adjacent to said pressure plate;
a second side; and
said second side of said second ring member being disposed opposite said first side of said second ring member;
at least a portion of said second side of said first ring member being disposed to contact at least a portion of said second side of said second ring member;
said at least a portion of said second side of said first ring member and said at least a portion of said second side of said second ring member being configured to vary the axial width of said wear adjustment means upon relative rotation of said first ring member with respect to said second ring member;
said first ring member having at least one notch;
said at least one notch extending through the radial thickness of said first ring member;
said at least one notch being disposed along said first side of said first ring member;
said at least one notch having a substantial angular width with respect to the rotational axis;
said at least one notch comprising:
a first notch edge portion;
said first notch edge portion having a first axial width;
a second notch edge portion;
said second notch edge portion having a second axial width;
said first notch edge portion being disposed from said second notch edge portion by the substantial angular width of said at least one notch; and
the first axial width being substantially different than the second axial width;
said at least one notch comprising at least one contoured portion;
said at least one contoured portion having an angular width with respect to the rotational axis substantially equal to the angular width of said at least one notch;
said wear adjustment means comprising wear sensing means for sensing a wear of said friction lining means;
said wear sensing means comprising means for limiting a change in the axial width of said wear adjustment means to be less than the wear of said friction lining means;
said wear sensing means comprising a projection;
said projection being disposed to extend into said at least one notch;
a portion of said projection being disposed within said at least one notch; and
said portion of said projection having a surface disposed to operatively contact a portion of said at least one contoured portion to limit the rotation of said first ring member with respect to said second ring member.

5,645,155
CONVEYOR NOISE ISOLATION AND WEAR PREVENTION SYSTEM

Harry Houghton, Orland Park, Ill., assignor to Automotion, Inc., Worth, Ill.

Filed Mar. 31, 1995, Ser. No. 414,487
Int. Cl.[6] B65G *13/00*
U.S. Cl. 193—35 R **15 Claims**



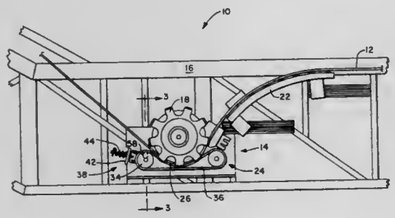
1. A conveyor roller noise isolator system for mounting a conveyor roller to a conveyor system support frame, said noise isolator system comprising;
a frame having an opening therein defined by a peripheral surface;
a conveyor roller axle;
a resilient unitary bushing insertable into the frame opening,
said bushing having a body with an inside surface and an outside surface separated by a wall,
said outside surface having a non-circular cross-section that is shaped and sized to be received by the opening in the frame,
said inside surface defining an axle opening having a non-circular cross-section that is shaped and sized to receive the axle, and
at least one of the axle opening and the outside surface cross sections of the bushing being shaped and sized for an interference fit between the bushing and the frame or between the bushing and the axle for deforming the wall to securely engage the bushing to the frame and to the axle when the bushing is inserted into the frame and the axle is inserted into the bushing.

5,645,156
DEVICE FOR MONITORING ESCALATOR HANDRAIL SPEED

Vlad Zaharia, Rocky Hill, Conn., and Denis Cho, Campinas, Brazil, assignors to Otis Elevator Company, Farmington, Conn.

Filed Sep. 1, 1993, Ser. No. 115,331
Int. Cl.[6] B65G *43/00*
U.S. Cl. 198—323 **7 Claims**

1. A handrail speed monitoring device for determining the speed

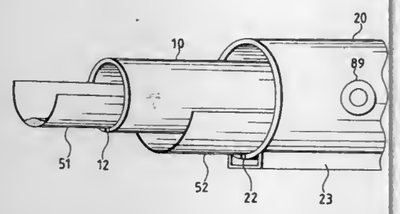


of an escalator handrail having a pulley assembly having a plurality of idlers and a belt around the idlers that contacts the handrail along an extended surface so the belt moves at the same speed as the handrail uninterrupted by the operative conditions of the escalator; said device comprising:
(a) means for reflecting a signal mounted at various locations on one of the idlers; and
(b) means for emitting and receiving the signal indicative of the handrail speed adjacent to the targets and not interfered with by the handrail.

5,645,157
FLEXIBLE CONVEYOR BELT

Kimikazu Kitano, Osaka; Takao Kanda, Aichi; Takao Henmi, Kanagawa; Futoshi Makino, Kanagawa, and Junji Sato, Kanagawa, all of Japan, assignors to Mitsuboshi Belting Ltd., Hyogo, Japan

Filed Jan. 23, 1995, Ser. No. 377,014
Claims priority, application Japan, Jan. 24, 1994, 6-023114
Int. Cl.[6] B65G *15/08;15/34;15/60*
U.S. Cl. 198—811 **10 Claims**



1. A pipe conveyor comprising a circular pipe which defines a lower inner wall, a flexible conveyor belt which runs in a curved shape which elongates along said lower inner wall of said circular pipe while defining a space between said belt and said lower inner wall, and means for introducing pressurized air into the space, said belt having a thickness y (mm) and a width x (mm) and being mainly made of rubber, wherein said thickness y and said width x of said belt satisfy the following relationship:

$$y \leqq 0.143 + 6.486 \times 10^{-3}x + 7.904 \times 10^{-6}x^2$$

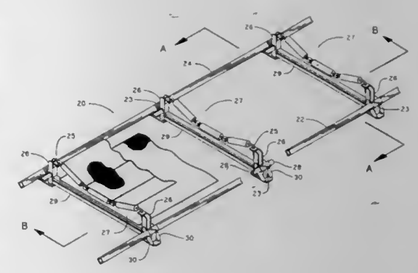
and wherein said belt runs while being supported above said lower inner wall by the pressurized air which is introduced into the space between said belt and said lower inner wall.

5,645,158
EXTENSIBLE CONTINUOUS HAULAGE SYSTEM

Alan R. Polka, Slickville; James J. Szalankiewicz, Indiana, and Scott A. Walter, Kittanning, all of Pa., assignors to S & S Slides, Inc., Kittanning, Pa.

Continuation-in-part of Ser. No. 314,881, Sep. 29, 1994, Pat. No. 5,590,757, which is a continuation-in-part of Ser. No. 125,598, Sep. 23, 1993, Pat. No. 5,353,920. This application Jun. 2, 1995, Ser. No. 460,236
Int. Cl.[6] B65G *21/14*
U.S. Cl. 198—812 **15 Claims**

1. An extensible conveyor apparatus for a continuous haulage system, comprising:
a. a continuous conveyor belt for carrying mined material discharged from a continuous miner in an underground mine;
b. a top roller for supporting said continuous conveyor belt;
c. a bottom belt return for supporting said continuous conveyor belt on its return cycle;
d. a holding frame for holding said top roller, said holding frame comprising a plurality of floor-supported frame members held in position by belt tension;

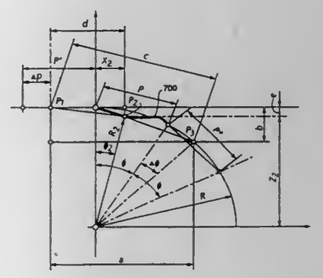


e. rails for connecting and holding adjacent frame members in position by press-fit attachment of said rails to said frame members;
f. pins attached to said holding frame for bolt-free press-fit attachment of said rails to said frame members; and
g. a rail continuity insert positioned between rail ends to provide and maintain a continuity in the rail top surface for wheels of a mobile bridge or other dolly or carriage to run on the top side of said rails, wherein said rails are rotatable to change the top wear surface.

5,645,159
METHOD AND APPARATUS FOR CONTINUOUSLY CASTING METAL

Erich Luginbühl, Sigriswil; Michel Meyer, Steffisburg; Rudolf Roder; Marcel Witschi, both of Thun, and Ernst Zürcher, Reichenbach, all of Switzerland, assignors to Lauener Engineering, Ltd., Golden, Colo.

Filed Mar. 30, 1994, Ser. No. 221,172
Int. Cl.[6] B65G *15/60*
U.S. Cl. 198—838 **14 Claims**

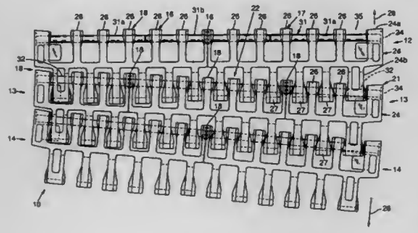


1. An apparatus comprising:
(a) a track having at least one linear section and at least one bend, said track comprising at least one polygon effect compensating curve which approximates a sinusoidal curve;
(b) a beam chain disposed upon said track, said beam chain comprising a plurality of interconnected support beams; and
(c) means for driving said beam chain along said track.

5,645,160
CONNECTING ROD RETENTION IN A PLASTIC CONVEYOR BELT

Karl V. Palmaer, Folsom, and Eric K. Palmaer, Rancho Cordova, both of Calif., assignors to KVP Systems, Inc., Rancho Cordova, Calif.

Continuation of Ser. No. 450,528, May 25, 1995, Pat. No. 5,547,071, which is a continuation of Ser. No. 239,953, May 9, 1994, Pat. No. 5,419,428, which is a continuation of Ser. No. 999,301, Dec. 31, 1992, Pat. No. 5,310,046, which is a continuation of Ser. No. 594,623, Oct. 9, 1990, Pat. No. 5,181,601. This application Feb. 12, 1996, Ser. No. 600,193
Int. Cl.[6] B65G *17/40*
U.S. Cl. 198—853 **3 Claims**



1. In a plastic conveyor belt including a series of connected and serially interdigited molded plastic belt modules connected by rods extending transversely to the length of the conveyor belt, each belt module having a plurality of first spaced projections extending in one direction from the module and a plurality of second spaced projections extending in an opposite direction, the first and second projections of serially adjacent modules being longitudinally overlapping and juxtaposed when the modules are connected serially in the conveyor belt by the connecting rods extending through transverse openings in the projections, the improvement comprising,

each connecting rod being discontinuous and formed of a plurality of aligned connecting rod sections, with a side connecting rod section at each side of the belt,

each side connecting rod section extending through at least the transverse openings in the outermost projections of each of two serially connected belt modules and into the transverse opening of the next adjacent projection, and

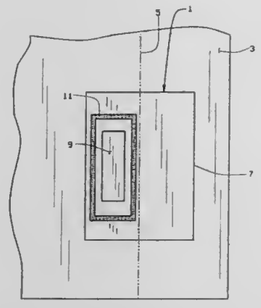
rod retaining means at the outer end of each side connecting rod section, for securing the side connecting rod sections to the modules and preventing axial separation of the discontinuous connecting rods.

5,645,161
FRAGRANCE PACKET SAMPLER

Douglas Whitaker, Chattanooga, Tenn., and Sven Dobler, New York, N.Y., assignors to Orlandi Inc.

Filed Jan. 22, 1996, Ser. No. 589,796
Int. Cl.[6] F17C *13/00*
U.S. Cl. 206—0.5 **2 Claims**

1. A pull-apart film laminated fragrance sampler including a carrier, a fold line formed in said carrier, a barrier applied to the carrier to cover the fold line, said barrier comprising film of saran coated polyester; the fold line dividing the barrier into a first portion and a second portion; a liquid fragrance sample applied to one of said first and second portions of said barrier; wherein said carrier and barrier are folded over upon themselves along said fold line to define a pocket in which said fragrance sample is situated, said first and second portions of said barrier being heat sealed around said fragrance sample to hold said first and second portions

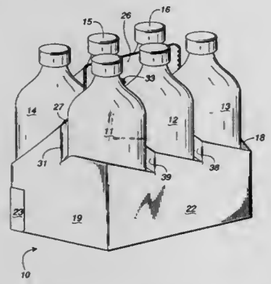


of said barrier together and to substantially prevent the premature release of said fragrance from said sampler.

5,645,162
BASKET-STYLE CARRIER WITH AUTOMATIC BOTTOM AND REINFORCED HANDLE

Glen R. Harrelson, Gainesville, Ga., assignor to Riverwood International Corporation, Atlanta, Ga.

Filed Mar. 28, 1996, Ser. No. 623,203
Int. Cl.[6] B65D *75/00*
U.S. Cl. 206—175 **8 Claims**



1. A basket-style carrier for containing and carrying a plurality articles, said carrier comprising:

first and second end panels opposite each other;

first and second side panels opposite each other and connected to said first and second end panels;

an automatic bottom connected to said end panels and said side panels, said automatic bottom comprising a first bottom panel connected to said first side panel, a second bottom panel connected to said first end panel, a third bottom panel connected to said second side panel, and a fourth bottom panel connected to said second end panel, with said first bottom panel being secured to said fourth bottom panel and said second bottom panel being secured to said third bottom panel, said automatic bottom being automatically formed as said carrier is changed from a flat folded configuration to an erected configuration;

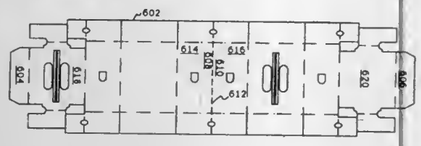
a three-ply central handle comprising first, second, and third handle panels secured to one another and in a juxtaposed, overlying relation to one another, with at least one of said handle panels being connected to said first end panel and at least another of said handle panels being connected to said second end panel; and

a plurality of partitions connected to and extending between said central handle and said first and second side panels.

5,645,163
DETACHABLE MULTI-UNIT PACKAGE HAVING INTERNAL HANDLE

Elmer D. Werth, Arvada, Colo., assignor to Material Savers, Inc., Denver, Colo.

Division of Ser. No. 437,685, May 9, 1995, Pat. No. 5,579,911, which is a continuation-in-part of Ser. No. 341,367, Nov. 17, 1994, abandoned. This application Nov. 17, 1995, Ser. No. 560,347
Int. Cl.[6] B65D *5/42;71/12*
U.S. Cl. 206—192 **13 Claims**



1. A package for holding a plurality of containers as a single unit, wherein said package is separable into two sub-packages, said package comprising:

a wrapper having two sections, each section forming a sub-package, wherein each section comprises a sub-package bottom, a first sub-package side connected to said sub-package bottom, a sub-package top connected to said first sub-package side, and a second sub-package side connected to said sub-package top and said sub-package bottom, wherein said package has a wrap-around dimension extending through centers of each of said sub-package sides; and

at least two end flaps connected to ends of said package, wherein at least one end flap is connected to an end of said package opposite an end of said package having at least one other end flap connected thereto, and further wherein each of said end flaps has at least one hole and a long dimension oriented parallel to said wrap-around dimension, and still further wherein each of said end flaps has a glue flap separably connected thereto, said sub-packages being connected to form said package by attaching each glue flap on one of said sub-packages to the other of said sub-packages;

wherein when said sub-packages are combined into said package, a bottom of a first of said sub-packages is located adjacent a top of a second of said sub-packages, to hide said top of said second of said sub-packages from view before separation of said sub-packages, and wherein upon separation of said sub-packages, said top of said second of said sub-packages is visible.

5. A package for holding a plurality of containers as a single unit, wherein said package is separable into upper and lower sub-packages, said package comprising:

a wrapper having an upper connection flap, an upper sub-package bottom connected to said upper connection flap, a first upper sub-package side connected to said upper sub-package bottom, an upper sub-package top connected to said first upper sub-package side, a second upper sub-package side connected to said upper sub-package top, a first lower sub-package side separably connected to said second upper package side, a lower sub-package bottom connected to said first lower sub-package side, a second lower sub-package side connected to said lower sub-package bottom, a lower sub-package top connected to said second lower sub-package side, and a lower connection flap connected to said lower sub-package top, and a wrap-around dimension extending through centers of each of said sub-package sides;

four end flaps, one connected to each end of said first upper sub-package side and one connected to each end of said second lower sub-package side, wherein each of said four end flaps has a long dimension oriented parallel to said wrap-around dimension, and wherein each of said end flaps has a glue flap separably connected thereto;

a first pair of end flaps separably connected, wherein a first end flap of said first pair of end flaps is connected to a first end of said second upper sub-package side and a second end flap of said first pair of end flaps is connected to a first end of said first lower sub-package side, wherein each of said end flaps of said first pair of end flaps has a long dimension oriented parallel to said wrap-around dimension;

a second pair of end flaps separably connected, wherein a first end flap of said second pair of end flaps is connected to a second end of said second upper sub-package side and a second end flap of said second pair of end flaps is connected to a second end of said first lower sub-package side, wherein each of said end flaps of said second pair of end flaps has a long dimension oriented parallel to said wrap-around dimension;

wherein said lower sub-package top is hidden when said upper and lower sub-packages are combined into said package, and upon separation of said upper sub-package and said lower sub-package, said lower sub-package top is visible.

10. A package for holding a plurality of containers as a single unit, wherein said package is separable into two sub-packages, said package comprising:

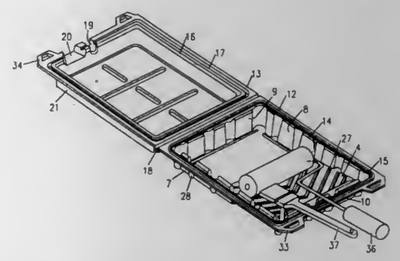
a wrapper having two sections, each section forming a sub-package, wherein each section comprises a sub-package bottom, a first sub-package side connected to said sub-package bottom, a sub-package top connected to said first sub-package side, and a second sub-package side connected to said sub-package top and said sub-package bottom, wherein said package has a wrap-around dimension extending through centers of each of said sub-package sides; and

at least two end flaps connected to ends of said package, wherein at least one end flap is connected to an end of said package opposite an end of said package having at least one other end flap connected thereto, and further wherein each of said end flaps has a long dimension oriented parallel to said wrap-around dimension, and still further wherein each of said end flaps has a glue flap separably connected thereto, said sub-packages being connected to form said package by attaching each glue flap on one of said sub-packages to the other of said sub-packages, and still further wherein each of said end flaps has a hole substantially spanning said separable connection between said end flap and said glue flap, said hole being usable for separating said end flap from said glue flap.

5,645,164
PAINT ROLLER TRAY WITH COVER

Homer Douglas Hocking, P.O. Box 2275, Lake Arrowhead, Calif. 92352

Filed Jul. 5, 1996, Ser. No. 676,061
Int. Cl.[6] B65D *43/16*
U.S. Cl. 206—209 **16 Claims**



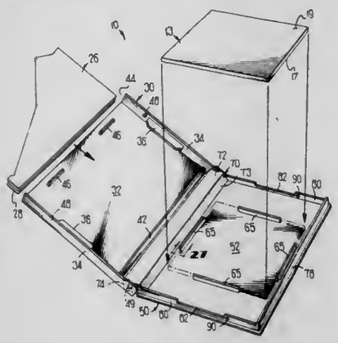
1. A Paint Roller Tray with Cover, comprised essentially

a. a tray body, with a front sidewall, a back sidewall, a left side wall, and a right sidewall, and each sidewall has two neighboring sidewalls, and said tray body also has an outer tray flange located around the perimeter of the tray body;

b. the bottom of said tray body comprised essentially of a sloped rollout platform starting at the front end and sloping down into a paint well, said paint well located at the rear of the tray body;

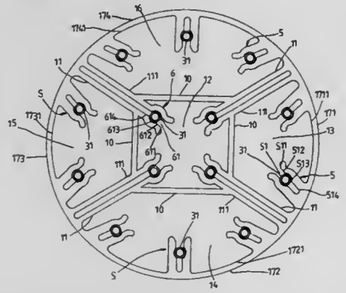
c. said sloped rollout platform has a paint flow channel within the platform's surface, and said paint flow channel also functions as a tray leg;
d. a hinge, located at the interface between said tray body and tray cover, and the tray cover with an elevated top surface on said tray cover, and said tray cover further has an outer cover flange located around the cover's perimeter;
e. said tray cover has a rectangular opening at its front end, and a semicircular opening at its front end;
f. said hinge also acts as a preliminary alignment device, aligning a tray inner radius, located on the tray body, with a cover inner radius, located on the tray cover, so that said radius may be matedly connected when said tray cover is in the closed position; and
g. the hinge further acts as a preliminary alignment device, aligning a tray body alignment tang, located on the tray body, with a cover alignment tang, located on the tray cover, so that said radius' may be matedly connected when said tray cover is in the closed position.

5,645,165
STORAGE CONTAINER FOR MINI-DISK CARTRIDGES
Yoshihiko Taniyama, Alpharetta, Ga., assignor to Sony Corporation, Tokyo, Japan
Division of Ser. No. 227,903, Apr. 15, 1994, Pat. No. 5,495,940, which is a continuation of Ser. No. 929,276, Aug. 13, 1992, abandoned, and a continuation-in-part of Ser. No. 889,598, May 26, 1992, abandoned, which is a continuation-in-part of Ser. No. 869,815, Apr. 16, 1992, Pat. No. 5,310,054. This application Feb. 22, 1995, Ser. No. 392,204
Int. Cl.[6] B65D *85/57*
U.S. Cl. 206—308.1 **8 Claims**



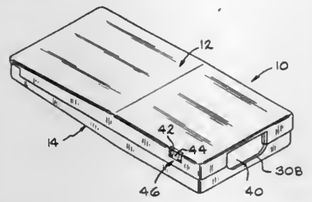
1. An enclosure adapted to hold a single mini-disk cartridge in the shape of a hexahedron and capable of being stored in retail racks for audio tape cassette containers and compact disk containers, said enclosure comprising:
a base tray including:
an inside bottom surface,
a pair of side walls protruding upwardly from said inside bottom surface,
a rear wall extending upwardly from said inside bottom surface,
a front wall extending upwardly from said inside bottom surface, and
means for securing a single mini-disk cartridge within the enclosure, said securing means comprising four flexible extensions, formed integrally with and protruding upwardly from said inside bottom surface and being located spaced and along respectively to said side walls, said rear wall and said front wall of the base tray, and wherein when said mini-disk cartridge is inserted in the enclosure, said extensions flex outwardly substantially surrounding the mini-disk cartridge to ensure that the mini-disk cartridge is secured therebetween;
a cover including,
an inside top surface,
a pair of parallel side walls protruding downwardly from said inside top surface, and
a rear wall;
hinge means for hingedly connecting said base tray to said cover such that said cover can be moved between an open position and a closed position with respect to said base tray, and wherein when said cover is in its closed position with respect to said base tray, said extension corresponding to said rear wall of said base tray acts as a means for supporting said rear wall of said cover; and
wherein said base tray and said cover are of a predetermined length and height to allow the enclosure to be stored in retail racks for audio cassette containers and compact disk containers.

5,645,166
LOCATING BLOCK OF A GOLF BAG
Po-Tang Su, No. 52, Lane 42, Chung Nan Street, Nan Kang District, Taipei, Taiwan
Filed Jun. 26, 1996, Ser. No. 670,652
Int. Cl.[6] A63B *55/00*
U.S. Cl. 206—315.6 **1 Claim**



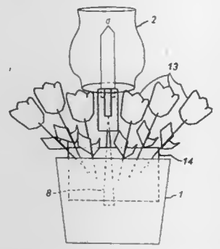
1. A locating block mounted in the top cuff of a golf bag for keeping golf clubs in the golf club bag in good order, the locating block comprising: a plurality of first partition walls defining a center chamber, a plurality of second partition walls radially connected between the periphery and said first partition walls and defining a plurality of peripheral chambers around said center chamber, a plurality of outer locating ribs respectively raised from the periphery and radially projecting into said peripheral chambers for holding golf clubs, each of said outer locating ribs having a longitudinal split, the longitudinal split of each of said outer locating ribs comprising a broad mouth at an outer end facing one of said first partition walls, an elongated narrow tail section near the periphery of the locating block, a neck between the mouth and elongated narrow tail section of the respective outer locating rib, and a rounded receiving section between the neck and elongated narrow tail section of the respective outer locating rib and adapated for holding one golf club, and a plurality of inner locating ribs respectively and radially raised from said second partition walls and respectively projecting into said center chamber for holding golf clubs, each of said inner locating ribs having a longitudinal split, the longitudinal split of each of said inner locating ribs comprising a broad mouth at an outer end facing the center of the locating block, an elongated narrow tail section extending into the respective second partition wall, a neck between the mouth and elongated narrow tail section of the respective inner locating rib, and a rounded receiving section between the neck and elongated narrow tail section of the respective inner locating rib and adpated for holding one golf club.

5,645,167
PAINT BRUSH CONTAINER
Keith Conrad, 16 Wardpark Rd., Grand Island, N.Y. 14072
Filed Aug. 30, 1996, Ser. No. 707,203
Int. Cl.[6] B65D *83/10*
U.S. Cl. 206—361 **6 Claims**



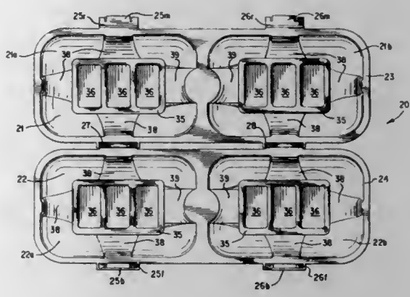
1. A paint brush container for maintaining the integrity of professional paint brushes, comprising:
a) a first tray having a first side wall extending from a relatively planar first panel, wherein the first side wall is provided with a first inlet;
b) a second tray having a second side wall extending from a relatively planar second panel, wherein the second side wall is provided with a second inlet facing the first inlet of the first tray;
c) a hinge connecting the first tray and the second tray for movement of the trays between an open container position and a closed container position with the first side wall of the first tray at least partially received in and surrounded by the second side wall of the second tray; and
d) a fastener means comprising at least one fastener opening provided through the side wall of one of the first or the second trays adjacent to the respective first or second inlets and at least one mating protruding member provided on the other tray adjacent to the inlet of the other tray, wherein the length of the protruding member along the longitudinal axis of the container is less than that of the opening along the same longitudinal axis and wherein with the first and second trays in the closed position, the first and second inlets of the first and second trays provide a second opening for a paint brush handle and the first and the second trays are locked in the closed position with the protruding member mated in the fastener opening.

5,645,168
COMBINED FLORAL DISPLAY AND KEEPSAKE
Bryan K. Honkawa, Venice, Calif., assignor to Teleflora LLC, Los Angeles, Calif.
Filed Feb. 17, 1995, Ser. No. 390,688
Int. Cl.[6] B65D *85/52;* **A47G** *33/04*
U.S. Cl. 206—423 **10 Claims**



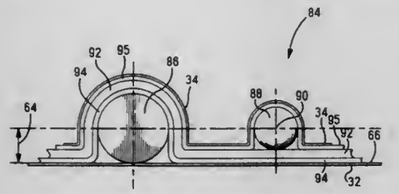
1. A multipurpose combined keepsake and floral display comprising:
a. a container having a bottom and a container wall extending upwardly from the bottom, creating a cavity above the bottom, capable of having a floral arrangement displayed therein,
b. a pick with a top end and a base positioned within said container, with the base attached to the container bottom,
c. a keepsake with a bottom portion and a top portion, and
d. means for attaching the top end of said pick to the bottom portion of the keepsake, thus elevating the keepsake above the container, where said attachment means is a clip secured onto the top end of said pick; said clip having a coupler extending vertically along a central axis of the container with a top end and a bottom end, the bottom end having a hollow point into which the top end of the pick can be inserted and secured, and a plurality of prongs connected to a side of the coupler distributed around the coupler to support the keepsake above the coupler.

5,645,169
PACKAGE FOR USE IN THE TRANSPORT OF WATER-SOLUBLE BAGS OF AGRICULTURAL CHEMICALS IN GEL OR LIQUID FORM
Lawrence Clifford Dull, Greensboro, and Larry Arnold Simmons, Winston-Salem, both of N.C., assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.
PCT No. PCT/US93/05402, § 371 Date Jan. 10, 1995, § 102(e) Date Jan. 10, 1995, PCT Pub. No. WO94/02381, PCT Pub. Date Feb. 3, 1994
Continuation-in-part of Ser. No. 913,960, Jul. 17, 1992, abandoned. This PCT application Jun. 11, 1993, Ser. No. 367,157
Claims priority, application WIPO, Jun. 11, 1993, PCT/US93/05402
Int. Cl.[6] B65D *85/84;81/05*
U.S. Cl. 206—589 **12 Claims**



1. A package for transport of a water-soluble film bag having two edge seams and containing gel or liquid, comprising a base and four side walls defining a compartment, the edge of said side walls having a perimeter rim which defines an opening for receiving a water-soluble film bag within the compartment, wherein the base contains a raised base frame including a plurality of unraised base, surface portions and the four side walls each have a centrally disposed raised side surface portion which extends from the perimeter rim to the raised base frame such that said raised base frame and said raised side surface portions are capable of deflecting shock waves generated in the bag during transport thereof.

5,645,170
TAPE PACKAGING SYSTEM FOR ELECTRICAL TERMINALS
Craig W. Hornung, Harrisburg, Pa., assignor to The Whitaker Corporation, Wilmington, Del.
Filed Apr. 28, 1995, Ser. No. 431,207
Int. Cl.[6] B65D *73/02;85/20;* **B65B** *19/34*
U.S. Cl. 206—714 **14 Claims**

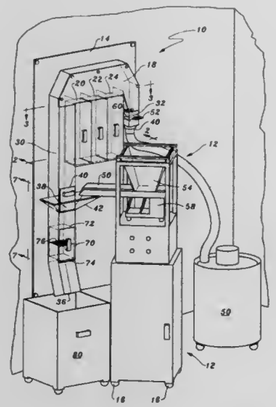


1. A package containing a plurality of electrical terminals for holding and accurately positioning each said terminal, in seriatim, both axially and laterally with respect to a workstation in a tool that electrically attaches said terminal to a conductor, comprising:
(a) a carrier tape having a width, a length, and a major surface, and a datum running along said length;
(b) a cover tape attached to said major surface of said carrier tape, thereby forming a plurality of pockets along said major surface;
(c) a plurality of electrical terminals, each of which includes a crimping barrel having a longitudinal centerline and a crimping zone, each said terminal being held in a respective one of said pockets so that its crimping zone is spaced a standardized distance from said datum, said plurality of terminals being taken from a range of terminals of differing nominal sizes; and
(d) a shim tape disposed between at least some of said plurality of terminals and said major surface.

12. In a method of making a tape and a terminal package for use in a terminal applicator tool, the steps comprising:
(a) advancing a carrier tape from a supply reel at a downstream position to a take-up reel at an upstream position;
(b) positioning a first terminal on the carrier tape;
(c) applying a layer of shim tape over a portion of said carrier tape and said first terminal;
(d) positioning a second terminal on said shim tape, said second terminal comprises a different nominal size relative to said first terminal;
(e) applying a cover tape adjacent said first and second terminals and said layer of shim tape; and
(f) attaching said cover tape to said carrier tape to form respective pockets thereof for holding and positioning said first and second terminals.

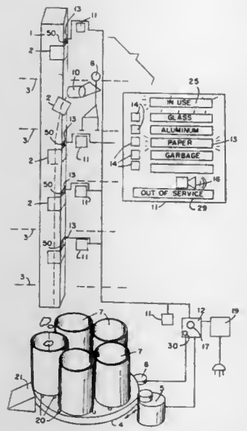
5,645,171
MATERIAL SEPARATOR SYSTEM UTILIZING VACUUM INDUCED AIRFLOW
Richard W. Felden, P.O. Box 980243, West Sacramento, Calif. 95798
Filed Apr. 27, 1995, Ser. No. 429,861
Int. Cl.[6] B07B *4/00*
U.S. Cl. 209—139.1 **13 Claims**

1. Apparatus for sorting a plurality of discrete objects into separate groups based on one or more physical characteristics of said discrete objects, said apparatus comprising, in combination:
a plurality of separate vertically oriented collection chambers arranged side by side and defined by chamber side walls and a chamber bottom wall, said collection chambers being open at the upper ends thereof;
airflow path defining means defining an airflow path in communication with said collection chambers at the open upper ends of said collection chambers, said airflow path defining means including a hollow, substantially vertically oriented column located at a first side of said plurality of collection chambers defining an air inlet opening and an airflow exit on a second, opposed side of said plurality of collection chambers;
vacuum applying means for applying a vacuum to said airflow path defining means to induce an airflow upwardly through said hollow, substantially vertically oriented column, over the open upper ends of said collection chambers in seriatim, and out said airflow exit whereby discrete objects entrained in said airflow will be apportioned based on one or more physical characteristics thereof by falling into said collection chambers under the influence of gravity; and
discrete object introducing means for introducing a plurality of discrete objects into the interior of said hollow, substantially vertically oriented column for entrainment by said airflow, said discrete object introducing means introducing a plurality of discrete objects into the interior of said hollow, substantially vertically oriented column at a location above said air inlet opening, said hollow substantially vertically oriented column defining an inlet opening at said location, and said discrete object introducing means including a hopper spaced from said hollow, substantially vertically oriented column, support means for supporting discrete objects and conveying discrete objects from said hopper to said inlet and a vibrator for vibrating said support means.



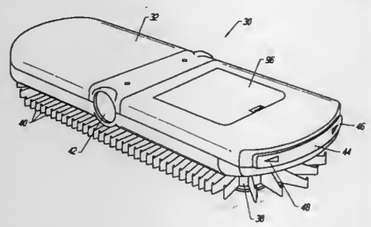
5,645,172
SEPARATED WASTE COLLECTION CONTROL FOR MULTISTORY BUILDING
Mark D. Shantzis, 6061 Collins Ave., #6F, Miami Beach, Fla. 33147
Filed Aug. 31, 1995, Ser. No. 521,882
Int. Cl.[6] B07C *7/04*
U.S. Cl. 209—703 **19 Claims**

1. In a system for selective, separated collection of waste in a plurality of waste collection receptacles in a building having a plurality of floors having a chute with access door at each floor from which waste is to be collected, a receptacle mover for moving a selected one of a plurality of receptacles beneath the chute to receive a particular category of waste deposited through an access door, remote door lock means connected to each door to controllably prevent access to the chute, door sensing means for signalling when a door is closed, waste category selection means at each access door for selecting a category of waste to be received by a receptacle, and means for controlling the receptacle mover to move a receptacle beneath the chute suitable for a selected waste category while locking access doors, the improvement comprising:



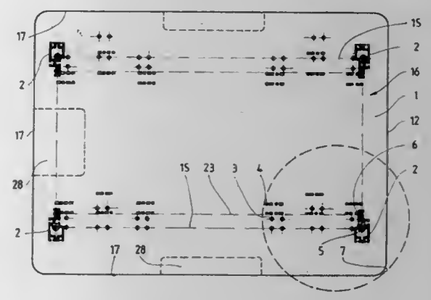
compacting means for periodically compressing waste within said receptacles, said compacting means including a ram means suspended above the level of the tops of said receptacles and having vertical motion into and out of a receptacle;
compaction control means for first moving a receptacle beneath the ram means after a predetermined number of plural deposits therein; second moving said ram means into said receptacle; and third moving said ram means out of said receptacle after a predetermined pressure has been applied by said ram means.

5,645,173
CLOTHING ACCESSORY ORGANIZER
Charles E. Taylor, San Rafael, Calif., and Blaine M. Smith, Lincoln City, Oreg., assignors to The Sharper Image Corporation, San Francisco, Calif.
Division of Ser. No. 129,602, Sep. 29, 1993, Pat. No. 5,474,187.
This application Oct. 31, 1995, Ser. No. 550,595
Int. Cl.[6] A47F *3/08*
U.S. Cl. 211—1.56 **13 Claims**



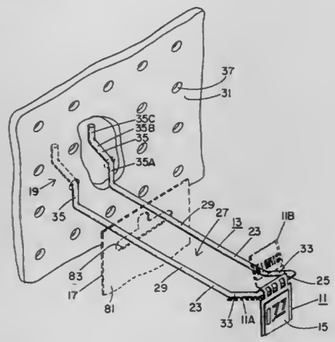
1. An apparatus for organizing articles of clothing, comprising:
a housing;
first and second drums rotatably mounted to the housing;
a belt, engaged around the first and second drums, having a plurality of first hook members for hanging articles thereon;
a drive mechanism for rotating one of the first and second drums to cause rotation of the belt; and
an automatic control device for selective continuous activation of the drive mechanism for a period of time sufficient to enable viewing of substantially all of said plurality of hook members from a viewing position in front of said housing while said belt is rotating about said first drum and said second drum.

5,645,174
RACK FOR AN EQUIPMENT CABINET
Uwe Rieger, Karlsbad; Henning Wick; Hans-Martin Schwenk, both of Straubenhardt, and Frank Rost, Neuenbürg, all of Germany, assignors to Schroff GmbH, Straubenhardt, Germany
Filed Nov. 14, 1995, Ser. No. 557,806
Claims priority, application United Kingdom, Nov. 18, 1994, 9418448
Int. Cl.[6] A47F *7/00*
U.S. Cl. 211—26 **8 Claims**



1. A rack for an equipment cabinet for the installation of electronics modules, comprising:
(A) a rectangular roof plate and an identically constructed base plate, said roof plate and said base plate each having four corner regions, each respective corner region including:
(1) three groups of four fastening holes each, two of the four fastening holes in each group being disposed on the longitudinal side of a rectangle located within the edges of the base plate and the roof plate, the three groups being located next to each other and spaced apart from one another, said three groups comprising:
(a) an outer group in which the fastening holes are arranged in a square layout;
(b) an inner group in which the fastening holes are arranged in the same square layout as in the outer group; and
(c) a center group in which the fastening holes are arranged in a rectangular layout; and
(2) three sections of four pairs of stop lugs each, said stop lugs projecting from the respective base plate and the roof plate, said three sections comprising:
(a) an outer section allocated to the outer group of fastening holes, the pairs of stop lugs of the outer section being positioned in a rectangular layout;
(b) an inner section allocated to the inner group of fastening holes, the pairs of stop lugs of the inner section being disposed in a rectangular layout identical to the rectangular layout of the stop lugs of the outer section; and
(c) a center section allocated to the center group of fastening holes, the pairs of stop lugs of the center section being disposed in an essentially square layout; wherein two pairs of stop lugs of each section are arranged on a straight line which is parallel to the longitudinal side of the rectangle, and wherein each pair of stop lugs forms a gap; and
(B) at least four profiled pillars, each having:
(1) at least one fastening bore for receiving a fastening screw extending through a respective fastening hole; and
(2) at least one profiled rib provided next to the fastening bore and being disposed in the gap formed by a pair of stop lugs adjacent to the fastening bore when the profiled pillars are positioned on and screwed to the base plate and the roof plate, whereby the respective ends of the profiled pillars are fastened to an upper side of the base plate and the roof plate.

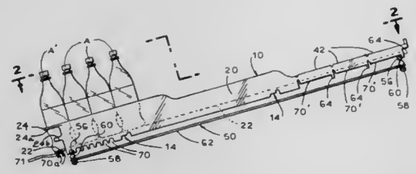
5,645,175
INFORMATION TAG FOR BUTTERFLY HOOK
James Michael Wood, 5125 Partridge Rd., Fort Worth, Tex. 76132
Filed Jul. 11, 1996, Ser. No. 678,303
Int. Cl.[6] B42F *1/00;* **G09F** *3/00*
U.S. Cl. 211—57.1 **9 Claims**



1. An apparatus for use in displaying merchandise, comprising:
a) a hook having two spaced apart lateral portions, each lateral portion having a first end and a second end, the first ends of the lateral portions being coupled together by a cross-piece, the second end of each lateral portion being structured and arranged to coupled to a wall, the lateral portions being structured and arranged to receive the merchandise;
b) a tag comprising a plate, the plate having first and second surfaces that are structured and arranged to receive printed information thereon, the plate having first and second ends;
c) the tag further comprising a hinge coupled to the plate first end, the hinge comprising a knuckle that is curved around a bore toward one of the first or second surfaces of the plate, the knuckle having an end, the end of the knuckle being separated from the one of the first or second surfaces of the plate by a gap;
d) the tag being removably coupled to the hook with the cross-piece being received in the bore of the hinge, with the tag being capable of swinging between a first position, a second position, and a third position wherein in the first position, the tag depends from the cross-piece so as to display the first surface of the plate to a point of view that is located on a side of the cross-piece opposite from the second end of the hook lateral portions and in the second position, the tag is elevated above the cross-piece so as to display the second surface of the plate to a point of view that is located on the side of the cross-piece opposite from the second ends of the hook lateral portions, and in the third position, the tag is parallel to the first end of the hook so as to allow the merchandise to be placed onto the hook with the tag in place on the hook.

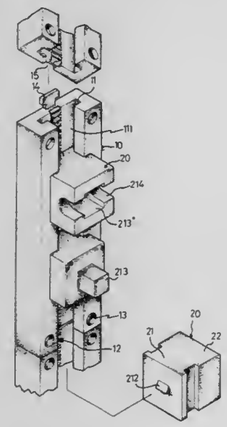
5,645,176
DISPLAY RACK WITH CHANNEL FRONT MEMBER
Richard Jay, Westport, Conn., assignor to Display Technologies, Inc., Whitestone, N.Y.
Filed Aug. 8, 1996, Ser. No. 694,310
Int. Cl.[6] A47F *1/04*
U.S. Cl. 211—59.2 **28 Claims**

1. A display rack for supporting and displaying upright elongate articles, comprising:
(A) a plurality of elongate channels, each said channel defining:
(i) a pair of laterally spaced upstanding sidewalls,
(ii) a substantially planar article-supporting track connecting said sidewalls at the bottoms thereof, and



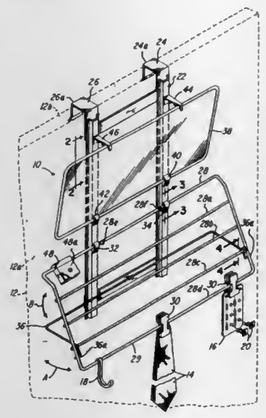
(iii) a front member spaced above said track, secured to at least one of said sidewalls, and at least partially bridging said sidewalls;
the bottom of said front member, the top of the front of said track, and the front of said sidewalls cooperatively defining an aperture through which an upright substantial portion of a lead article in said channel may be viewed; and
(B) means securing said channels in side-by-side, longitudinally parallel and transversely adjacent relationship.

5,645,177
TOOL RACK
Da-sen Lin, No. 15-6, West Pingnan Lane Lintso Li, Hsitun Dist., Taichung, Taiwan
Filed May 6, 1996, Ser. No. 643,611
Int. Cl.[6] A47F *7/00*
U.S. Cl. 211—70.6 **5 Claims**



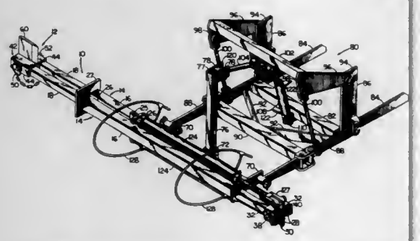
1. A tool rack comprising:
a rack having a first end and a second end, said rack having a T-shaped slot defined longitudinally in a front surface thereof and said T-shaped slot including a bottom surface, a plurality of notches defined in said bottom surface and each of said notches defined by an inclined surface extending toward said bottom surface and a horizontal bottom, and
at least one block engaged with said T-shaped slot and including a rear part and a front part, said rear part being T-shaped for engagement with said T-shaped slot and having a triangular protrusion extending from a distal end thereof for engagement with said notch, said front part having an engaging means disposed to a distal end thereof,
wherein said engaging means of said front part of said block is a plygonal extension extending therefrom.

5,645,178
METHOD AND SYSTEM FOR STORING AND HANGING ARTICLES
Ralph F. Conley, Jr., Miamisburg, Ohio, assignor to Graph-It, Inc., Miamisburg, Ohio
Filed Feb. 23, 1996, Ser. No. 602,109
Int. Cl.[6] A47F *5/08*
U.S. Cl. 211—87.01 **42 Claims**



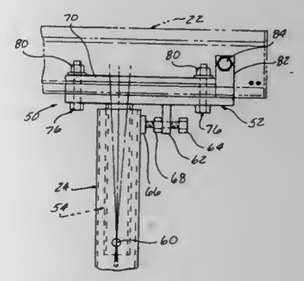
1. A hanging system comprising:
a support for hanging on a surface;
a mirror having a bottom edge pivotally secured to said support;
a mirror latch secured to said support at a location above said mirror and having a plurality of downwardly projecting stops, wherein each of said plurality of stops is positioned to hold a top edge of said mirror whereby said mirror is positionable at any one of a plurality of tilt angles relative to said support; and
an article receiver adjustably secured to said support for supporting an article above the ground;
said article receiver being adjustably secured to said support such that it can move towards and away from said surface.

5,645,179
MULTIPLE IMPLEMENT EQUIPMENT BOOM
Donald A. Mohar, 1001 Mohar Rd., Grandview, Wash. 98188
Filed Dec. 3, 1990, Ser. No. 621,652
Int. Cl.[6] B66C *23/04*
U.S. Cl. 212—180 **10 Claims**



1. A multiple implement equipment boom, said boom comprising:
a boom body, said boom body being attachable to a vehicle;
a connecting link, said connecting link connectable to said boom body and to a plurality of working implements of varying configurations;
at least one telescoping shaft, each said telescoping shaft having a hollow outer beam and an inner beam, each said inner beam being slidably fit within said corresponding outer beam and being longer than said corresponding outer beam;
at least one horizontal driver, each said horizontal driver attached to at least one said shaft so that said horizontal driver causes said inner beam to move relative to said outer beam;
a receiving box, said receiving box having at least one hollow tube, said tube fitting slidably over an end of said inner beam where there is one receiving box for each working implement to be used with said boom; and
a locking mechanism, said locking mechanism securing said receiving box on said end of said inner beam.

5,645,180
FLOOR MOUNTED ROTATABLE JIB CRANE
James Zaguroli, Jr., Drayton Plains, Mich., assignor to Knight Industries, Inc., Auburn Hills, Mich.
Filed Oct. 26, 1994, Ser. No. 329,243
Int. Cl.[6] B66C *23/84*
U.S. Cl. 212—253 **6 Claims**



1. A jib crane comprising:
a vertical mast;
a stanchion comprising an open-ended pipe and support means fixing said pipe in an upright position, said pipe rotatably receiving a lower end of said mast;
an elongated boom adapted to provide support for a traveling hoist, said boom extending horizontally from a hollow upper end of said mast;
adjustable angle connecting means connecting said boom to said upper end of said mast, said connecting means including a depending post and means fixing said post to said boom to extend down therefrom at a fixed angle, said post extending down within said hollow upper end of said mast with a clearance space between said post and the inside of said hollow upper end of said mast, a pivotal connection at a lower end of said post pivotally mounting said post lower end to said mast allowing limited relative tilting of said boom and said post together as a unitary structure about an axis defined by said post pivotal connection to the extent of said clearance space between said post and said inside of said hollow upper end of said mast, and adjustable securement means securing said post and said mast in any relatively tilted position of said post in said upper end of said mast, whereby the angle whereat said boom extends from said mast can be selectively adjusted within the limits of said clearance space.

5,645,181

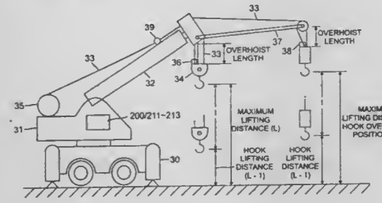
METHOD FOR DETECTING A CRANE HOOK LIFTING DISTANCE

Akinori Ichiba, Satte, and Yukio Tsutsumi, Saitama, both of Japan, assignors to Kato Works Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 834,331, Feb. 12, 1992, abandoned. This application Jun. 23, 1994, Ser. No. 264,418

Int. Cl.[6] B66C *13/08*

U.S. Cl. 212—281 **3 Claims**



1. A method for accurately determining lifting distances of a load hook on a crane with a frame, at least one extensible length boom mounted on said frame and adapted for movement between a plurality of angles in at least one vertical plane, a rope for hoisting and lowering a load attached to the hook, said hook being operatively connected to said rope and supportively suspended from said boom, winch means mounted on said frame for hoisting and lowering said rope and hook therewith, a CPU means, a key group for entering data in the CPU means, a screen means for graphically and numerically displaying operation modes of the crane, a plurality of crane operation parameter sensors mounted on the crane at predetermined positions for generating and transmitting signals representative of the boom length, angle, rope lengths and the hook positions to the CPU means, comprising the steps of:

a) setting the frame and boom of the crane in a first preselected operation state and entering the data representative of said state into the CPU means by the key group;

b) using the data from the first preselected operation state of the boom for establishing a first hook overhoist position below a selected portion of said boom;

c) using the first hook overhoist position for determining a hook lifting distance relative to a preselected datum located vertically below said first hook overhoist position;

d) generating signals by operation parameter sensors to indicate changes in the boom length and angle relative to said first preselected operation state, and transmitting the generated signals to the CPU means;

e) measuring the extension and retraction lengths of the rope when hoisting and lowering the hook;

f) determining the distance of the hook from the first overhoist position by calculating the accumulated extension and retraction lengths values of the rope with the CPU means and a rope movement parameter sensor;

g) resetting the accumulated rope extensions and retraction lengths to a zero (0) value in response to the load hook reaching said first overhoist position; and

h) displaying graphically and numerically the boom length, boom angle and hook lifting distance between said preselected datum and said first hook overhoist position.

5,645,182

ADJUSTABLE SHELF SUPPORT STRUCTURE

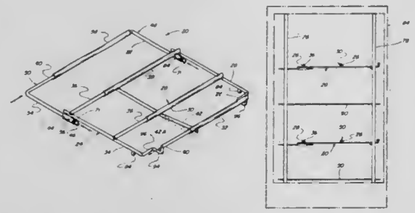
Donald J. Miller, Jr., Belleville, Ill., and Keith Harbour, Florissant, Mo., assignors to Paul Flum Ideas, Inc., St. Louis, Mo.

Continuation-in-part of Ser. No. 320,735, Oct. 11, 1994, Pat. No. 5,450,971. This application Jul. 26, 1995, Ser. No. 506,908

Int. Cl.[6] A47F *5/00*

U.S. Cl. 211—134 **23 Claims**

1. A shelf support structure adaptable for use with existing product merchandising display equipment comprising first and second relatively movable members, each of said first and second movable members having at least one portion thereof forming one opposed side portion of said support structure and each having a plurality of spaced members arranged transversely to said associated side portion, said plurality of spaced transverse members defining the width of said support structure and the length of said associated side portions defining the depth thereof, at least some of the spaced transverse members associated with each of said plurality of spaced transverse members having cross-sectional shapes adaptable for slidably receiving and engaging each other so as to enable said first and second members to be arranged in telescoping relationship with each other whereby said first and second members can be moved relative to each other to change the overall width of said support structure, each side portion of said first and second members including means for adjusting the effective length thereof so as to change the overall depth of said support structure, each of said adjustment means including an additional member having a first portion extending substantially parallel to said side portions and a second portion extending substantially perpendicular thereto, said first and second members when engaged with each other forming an open grid structure capable of both width and depth adjustment to accommodate the varying width and depth dimensions associated with existing product merchandising display equipment.



5,645,183

MULTI-LAYER CONTAINERS

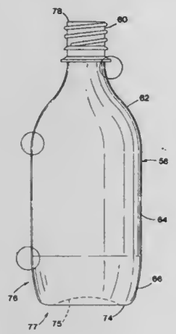
William A. Slat, Brooklyn, Mich., and Richard C. Darr, Seville, Ohio, assignors to Plastipak Packaging, Inc., Plymouth, Mich.

Continuation-in-part of Ser. No. 271,088, Jul. 6, 1994, Pat. No. 5,464,106. This application Nov. 2, 1995, Ser. No. 552,076

The portion of the term of this patent subsequent to Jul. 16, 2014, has been disclaimed.

Int. Cl.[6] B65D *23/02*

U.S. Cl. 215—12.2 **29 Claims**

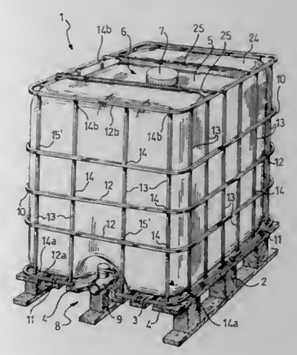


1. A multilayer container, comprising:

an upper wall portion formed from at least an inner layer and an outer layer of material wherein the inner layer of material has a first thickness at the upper wall portion;

an intermediate side wall portion formed from at least the inner and the outer layer of material, wherein the inner layer of material has a second thickness at the intermediate side wall portion thinner than the first thickness at the upper wall portion, the intermediate side wall portion positioned beneath the upper wall portion; and

a self-supporting base wall portion formed from at least the inner layer and the outer layer of material, wherein the inner layer of material has a third thickness at the self-supporting base wall portion thicker than the second thickness at the intermediate side wall portion, the self-supporting base wall portion positioned beneath the intermediate side wall portion and designed to support the container.



5,645,184

AIRCRAFT CARGO CONTAINER

David Paul Rowse; Debra Anne Sewell, both of Bristol; Jan Anthony Booth, Lancashire, and Rob William Ince, Swindon, all of Great Britain, assignors to Royal Ordnance Public Limited Company, Lancashire, Great Britain

Filed Mar. 31, 1994, Ser. No. 220,596

Claims priority, application United Kingdom, Dec. 24, 1991, 9127408

Int. Cl.[6] B65D *90/02*

U.S. Cl. 220—1.5 **5 Claims**



1. A container comprising a plurality of panels, at least one of said plurality of panels having a blast attenuation means, said attenuation means comprising an expandable region for expansion under blast loading thereby absorbing a portion of a blast energy contained in a blast, said expandable region comprising one of a sheet of woven fabric material and a sheet of knitted fabric material expandable in a lateral direction, said fabric material being encapsulated within a matrix wherein an embedded length of fibers of one of the sheet of woven fabric material and a sheet of knitted fabric material along any axis within the material is substantially greater than a length of the material along the axis, wherein the plurality of panels forms a closed container.

5,645,185

CRATE FOR PALLETS

Virginio Cassina, Bergamo, Italy, assignor to Futisplast S.p.A., Bergamo, Italy

Filed Jun. 13, 1996, Ser. No. 675,461

Claims priority, application European Pat. Off., Jul. 25, 1995, 95830321

Int. Cl.[6] B65D *19/00*

U.S. Cl. 220—1.5 **11 Claims**

1. A pallet crate comprising metal tubes, arranged in a lattice structure and welded at crossing points, the metal tubes including respective flat faces facing each other at the crossing points, recesses formed in said flat faces each extending along the longitudinal axis of the respective metal tube and transverse the respective recess of the facing metal tube, the recesses including an extensive portion with a flat base and bounded by shoulders extending above said flat base and extending parallel to said tubes, the flat bases of the recesses in mutually facing positions adhering to each other when welding has been effected, forming said pallet crate.

5,645,186

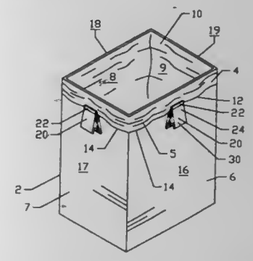
TRASH CONTAINER WITH LINER SECURING DEVICE

Robert W. Powers, and Leigh McIntosh Powers, both of 442 N. Stewart, North Liberty, Iowa 52317

Filed Oct. 15, 1996, Ser. No. 730,113

Int. Cl.[6] B65D *25/16*

U.S. Cl. 220—404 **20 Claims**



1. A trash container for receiving a thin-walled flexible liner, the trash container having an open mouth, comprising

an open topped generally rigid bin,

the bin having a generally upstanding sidewall,

the sidewall having an outer surface,

the outside surface of said sidewall having at least one clasp member mounted thereto,

the at least one clasp member having a pair of opposing jaws,

said opposing jaws biased to remain in touching engagement therebetween,

said at least one clasp member selectively operable to separate said jaws,

said jaws disposed toward said open mouth of said container,

whereby said jaws may grasp an edge of the liner overlying the outer surface of the sidewall.

5,645,187

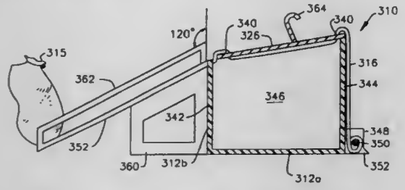
SELF-EJECTING GARBAGE RECEPTACLE

Rita Corlette Brown, 2120 First Ave., #252, New York, N.Y. 10029

Continuation-in-part of Ser. No. 923,387, Aug. 3, 1992, Pat. No. 5,316,170. This application May 23, 1994, Ser. No. 247,244

Int. Cl.[6] B65D *42/26*

U.S. Cl. 220—409 **9 Claims**



1. A self-ejecting garbage receptacle comprising:

a container for holding a bag containing refuse, said container having an open upper end, a bottom, a plurality of walls each being connected with said bottom, a first of said walls being taller than a second of said walls;

a tray member movable between a first lowered position within said container and a second raised position located proximal to said open upper end, said first lowered position being parallel relative to said bottom, said second raised position being angled relative to said bottom;

a belt draped in said container having first and second opposite ends, with said first end being fixed to one of said walls adjacent said open upper end, said belt being supportively coupled to said tray member;

a retractor coupled to said container for raising said belt and consequently raising said tray and said garbage bag, said retractor being shaped to receive said second end of said belt;

a pivotable ramp, having a top and two sides, coupled to said container proximal to said open upper end of said container.

5,645,188

FLUID CONTAINER AND CAPSULE THEREFOR

Alan Gray, Banbury, and Barry Adams, Rickmansworth, both of United Kingdom, assignors to Alcan International Limited, Montreal, Canada

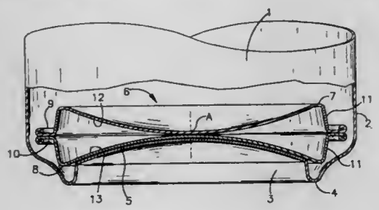
PCT No. PCT/GB93/01805, § 371 Date Apr. 10, 1995, § 102(e) Date Apr. 10, 1995, PCT Pub. No. WO94/04433, PCT Pub. Date Mar. 3, 1994

PCT Filed Aug. 24, 1993, Ser. No. 392,767

Claims priority, application United Kingdom, Aug. 24, 1992, 9218003

Int. Cl.[6] B65D *25/02*

U.S. Cl. 220—501 **6 Claims**



1. A fluid container having a generally cylindrical body and comprising a top, a base and an annular side wall, at least part of the body defining a closed primary chamber openable by manually operable means in the top, the base having an upwardly projecting inner surface projecting inwardly of the primary chamber, a member formed of an aluminum alloy of a thickness no greater than 500 μm having a dished formation and a rim secured to the inner surface so that the member and the part of the inner surface inwardly of the rim including an edge and being secured to the inner surface so that the member and the part of the inner surface inwardly of the rim constitute a secondary chamber and means in the member to communicate between the interior of the secondary chamber and the exterior thereof, said edge being coated with a protective material.

5,645,189

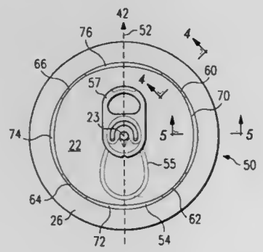
CONTAINER END HAVING ANNULAR PANEL WITH NON-UNIFORM RADIUS OF CURVATURE

Ernest J. Clowes, Lower Burrell, Pa., assignor to Metal Container Corporation, St. Louis, Mo.

Filed Nov. 21, 1994, Ser. No. 342,737

Int. Cl.[6] B65D *6/34*

U.S. Cl. 220—623 **41 Claims**



1. A container end formed from a rolled sheet of metal having a stock thickness and a rolling direction, said container end comprising:

(a) a central panel having a centerpoint and an outer periphery;

(b) an outer annular panel having an inner periphery;

(c) an inner annular panel having an inner periphery, an outer periphery, and a generally uniform thickness substantially equal to the stock thickness of the sheet of metal; the inner periphery of said inner annular panel being joined to the outer periphery of said central panel, the outer periphery of said inner annular panel being joined to the inner periphery of said outer annular panel; said inner annular panel having a generally arcuate cross section, viewed along a radial plane from the centerpoint of said central panel; said inner annular panel comprising:

(i) a plurality of first segments spaced apart about the circumferential length of said inner annular panel, and

(ii) a plurality of second segments, with at least one first segment being positioned between each adjacent pair of second segments,

the generally arcuate cross section of each of said plurality of first segments having a radius of curvature, viewed in radial cross section, which is substantially less than the radius of curvature, viewed in radial cross section, of the generally arcuate cross section of each of said plurality of second segments, the radius of curvature on the upward-facing surface of any said segment being substantially equal to the radius of curvature for the through-adjacent downward-facing surface to equally space said upward-facing surface and said downward-facing surface from one another throughout said segment.

5,645,190

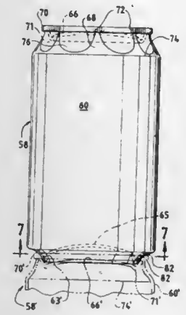
ALUMINUM BEVERAGE CAN

Norton Robert Goldberg, 8029 Keeler, Skokie, Ill. 60076

Filed Sep. 29, 1995, Ser. No. 536,664

Int. Cl.[6] B65D *6/02*

U.S. Cl. 220—674 **19 Claims**



1. An aluminum beverage can which comprises:

(a) a main body portion having (i) the shape of a right circular cylinder, (ii) a given diameter, and (iii) a given wall thickness;

(b) a bottom wall (i) operatively connected to the main body portion, and (ii) having a wall thickness greater than the given wall thickness of the main body portion;

(c) a top wall that (i) has a maximum transverse dimension substantially smaller than the given diameter of the main body portion, (ii) has a wall thickness greater than the given wall thickness of the main body portion, (iii) has an outlet opening defined therein for pouring the beverage out of the can, and (iv) is substantially in the form of a geometric shape taken from the class consisting of:

a polygon having at least four sides, all of which sides are of substantially equal length,

a Reuleaux triangle,

an extended Reuleaux triangle,

a symmetrical curve of constant width derived from a regular polygon having an odd number of sides at least five in number, and

an extended symmetrical curve of constant width derived from a regular polygon having an odd number of sides at least five in number;

(d) an airtight closure for said outlet opening, which closure can be opened manually by the user; and

(e) an upper shoulder portion that (i) is operatively connected to the main body portion and to the top wall, (ii) is circular at the bottom, (iii) is substantially the same shape and size as the top wall at the top, and (iv) necks down in size from the bottom of said shoulder portion up to the top of the shoulder portion.

5,645,191

DISPOSABLE SAFETY CUP

Lillian Neville, 3751 N. 54th Ave., Hollywood, Fla. 33021

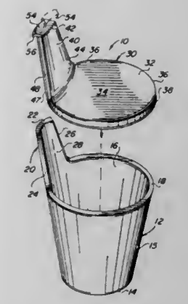
Continuation-in-part of Ser. No. 302,492, Nov. 4, 1994, abandoned. This application Nov. 16, 1995, Ser. No. 559,022

Int. Cl.[6] A47G *19/22*

U.S. Cl. 220—717 **6 Claims**

1. A drinking container comprising:

a cup including a bottom, a side wall surrounding an interior of said cup and having an upper peripheral edge, and a U-shaped elongate trough integrally formed with said surrounding side wall and extending upwardly therefrom beyond said upper peripheral edge and terminating at a distal edge, said trough including opposite side edges extending from said upper peripheral edge to said distal edge and an inner concave surface between said opposite side edges and extending from within said interior of said cup to said distal edge,



a lid including a generally circular base having a top surface, a bottom surface, and an outer peripheral zone including a downwardly extending peripheral flanged lip structured for releasable attachment over said upper peripheral edge of said side wall, said lid further including a trough cover integrally formed with said base and extending upwardly from said outer peripheral zone to a top end, said trough cover including an outer convex surface, an inner concave surface, and opposite sides each including a flanged lip structured for releasable attachment over said opposite side edges of said trough, and

said combined trough and said trough cover, when attached, defining a drinking spout in fluid flow communication with said interior of said cup, and said distal edge and said top end forming a drinking spout opening.

5,645,192

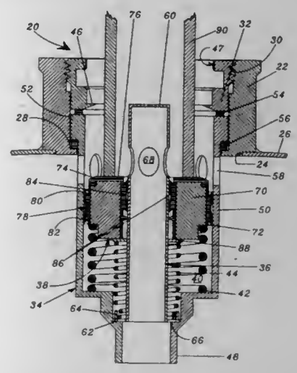
SELF REGULATING VALVE ASSEMBLY FOR CONTROLLING FLUID INGRESS AND EGRESS FROM A TRANSPORTABLE CONTAINER WHICH STORES AND DISTRIBUTES LIQUID UNDER PRESSURE

Bradford G. Amidzich, Oconomowoc, Wis., assignor to Vent-Matic Co., Inc., Milwaukee, Wis.

Filed Sep. 30, 1996, Ser. No. 723,295

Int. Cl.[6] B65D *83/14*

U.S. Cl. 222—1 **22 Claims**



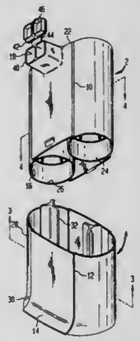
20. A method of controlling the flow of a liquid from a container, said container having an opening formed therein in which is inserted a riser pipe and a dispensing tower, an annular chamber being formed between said riser pipe and said dispensing tower, an ingress/egress portal being formed in said riser pipe, said method comprising:

(A) mechanically driving a sealing ring to move downwardly within said chamber
(1) from a first position preventing gas or liquid flow out of said container, and
(2) to a second position in which gas flow through said ingress/egress portal from above said sealing ring and liquid flows past said sealing ring from below and out of said container; and
(B) generating gas pressure of above a designated magnitude within said container, wherein said gas pressure causes at least one of said sealing ring and said dispensing tower to move axially relative to said riser pipe such that
(1) said sealing ring seals against said riser pipe at a location above said ingress/egress portal, and such that
(2) gas is free to flow out of said container, thereby relieving said gas pressure.

5,645,193
DISPENSING CONTAINER WITH TELESCOPICALLY ARRANGED DISPOSABLE REFILL CARTRIDGE AND REUSABLE BASE

James Gentile, Orange, and John Eimer, Danbury, both of Conn., assignors to Chesebrough-Pond's USA Co., Greenwich, Conn.

Filed Aug. 29, 1996, Ser. No. 705,370
Int. Cl.[6] B67D *5/52*
U.S. Cl. 222—137 **5 Claims**

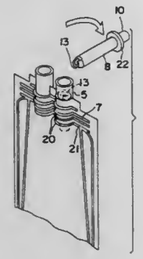


1. A multi-dispensing container for the co-extrusion of at least two flowable materials comprising:
a refill cartridge comprising an outlet mechanism and at least two hollow and separate parallel cylinders, each containing one of the flowable materials, the cylinders having a first generally closed end and a second end slidingly accommodating at least two parallel piston heads which conform to ride sealingly along interior walls of the cylinders so as to force the flowable materials to flow toward the first end of the cylinder upon relative compression of the cylinders and piston heads, the piston heads having an upper and lower surface, the outlet mechanism being in fluid communication with the cylinders and including adjacent outlet openings from which a single banded, unmixed stream of the materials exits the container; and
a reusable base having a first and second end, the first end telescopically receiving the second end of the refill cartridge, the base including at least two separate parallel piston support posts having upper and lower ends, the lower ends being attached to the second end of the base, the upper ends being facilely insertable into a recess of the piston head, the posts being formed with at least two outwardly projecting arms and the arms having lateral clearance from skirt walls of the recess to be easily removable therefrom.

5,645,194
SYSTEM FOR FILLING MEDICAL NUTRITION CONTAINERS

Clifford A. Tyner, Grass Valley, Calif., assignor to U.S. Medical, Inc., Hingham, Mass.

Division of Ser. No. 388,183, Feb. 13, 1995, Pat. No. 5,494,196, which is a continuation of Ser. No. 851,960, Mar. 16, 1992, abandoned. This application Feb. 27, 1996, Ser. No. 607,700
Int. Cl.[6] B65B *1/04*
U.S. Cl. 222—147 **1 Claim**



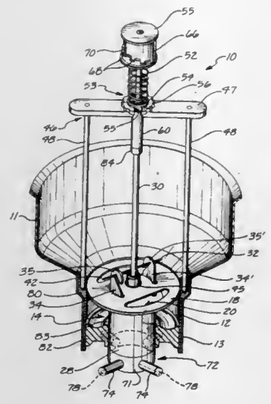
1. A method for filling an infusion bag having a bladder, at least two ports and a valve, where said valve comprises a valve stem reciprocably disposed in at least one of said ports where said valve stem defines a bladder end and a filling end where said valve stem is also provided with an axial bore formed partially therethrough with an aperture provided at its filling end; said valve stem being moveable between an "open" and a "closed" position where said "open" position allows for fluid flow through said valve stem into said bladder, and said closed position prevents fluid flow through said valve stem, the method comprising the steps of:
filling the bag with a desired fluid through said valve stem;
closing the valve by pulling the valve stem to a "closed" position to prevent fluid flow therethrough;
removing the filling end of said valve stem to prevent said valve stem from being moved to an open position.

5,645,195
DOUGH AND BATTER DISPENSER

Thomas E. Belshaw, 9727 - 45th Ave. SW., Seattle, Wash. 98136-2708; Frank W. Ebelle, 2323 N. 82nd Ave., Seattle, Wash. 98107, and Christopher L. Bowers, 634 NW. 178th Pl., Seattle, Wash. 98177

Filed Jul. 11, 1995, Ser. No. 500,036
Int. Cl.[6] B67D *5/32*
U.S. Cl. 222—153.09 **37 Claims**

2. An apparatus for dispensing dough comprising:
a hopper for storing the dough, wherein the hopper narrows at its bottom to form a discharge chute into which the dough is metered;
a plate coupled to a lower end of the discharge chute, the plate having a hole through center;
a reciprocating dispensing rod having an upper end and a lower end, the dispensing rod extending through the center of the hopper;
a valve unit carried by the reciprocating dispensing rod and slidably mounted within discharge chute such that a valve chamber is defined between the valve unit the discharge chute and the plate, the valve unit including:
a) a valve chest that reciprocates through the hole defined through the plate in unison with the dispensing rod the valve chest having:
i) an inlet in fluid communication with the valve chamber;
ii) an outlet through which dough is discharged; and
iii) a pair of integrally formed, opposing arms, each arm including a shoulder which extends upwardly from an upper end of the valve chest, and a hook being mounted upon the shoulder of each arm such that the hook of one arm faces in the direction opposite the hook of the opposing arm;
b) valve plate attached to the lower end of the dispensing rod the valve plate having:
i) a pair of cutouts through which dough from the hopper is metered into the valve chamber; and
ii) pair of arm slots through which the arms of the valve chest extend; and
c) a plunger that floats between the upper end of the valve chest and the valve plate, the plunger including:
i) a plunger valve housed within the valve chest for metering the discharge of dough through the outlet of the valve chest:
ii) a plunger plate having a pair of arm slots through which the arms of the valve chest extend, wherein the plunger plate rides on the shoulders of the arms of the valve chest between the upper end of the valve chest and the valve plate such that the plunger plate and the valve plate cooperate to meter the flow of dough from the hopper into the valve chamber, and from the valve chamber into the valve chest; and
iii) a plunger stem extending upwardly from the plunger valve and terminating at the plunger plate.

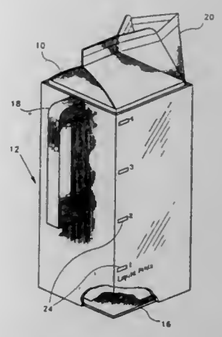


5,645,196
LIQUID DRINK CARTON HOLDER

Charles O. Hancuff, 1729 Cypress Point Glen, Escondido, Calif. 92026

Filed Aug. 15, 1995, Ser. No. 515,396
Int. Cl.[6] A47G *19/14*
U.S. Cl. 222—183 **6 Claims**

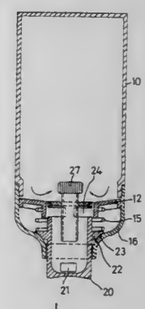
1. A combined carton holder and liquid measuring container which comprises:
a rectangular tubular sleeve sized to slidingly receive and frictionally engage a conventional flexible-walled carton for liquids;
an end closure sealingly closing one end of said sleeve for substantially uniformly supporting a bottom surface of said carton;
a handle on an external surface of said sleeve and extending outwardly of said sleeve for lifting said sleeve and pouring liquid from a carton housed in said sleeve;
said handle being rectangular with substantially straight portions extending out from the sleeve and with a substantially straight cross piece extending approximately parallel to the sleeve, said cross piece being closely adjacent to said sleeve leaving room to insert fingers between sleeve and cross piece;
hinge means on said handle so that said handle can be moved between a storage position flat against said sleeve and a deployed position extending approximately perpendicular to said sleeve;
latch means at said hinge means for latching said handle in said deployed and storage positions; and
indicia along at least one sleeve surface indicating quantity of liquid in said holder when said holder is filled to different levels.



5,645,197
ADJUSTABLE VOLUME DOSING DISPENSER FOR FISH FOOD

Guan-Zhon Chen, No. 13, Lane 430, Section 2, Yuan Lu Road, Yi Min Tsuen, Pu Hsin Hsiang, Chang Hua Hsien, Taiwan

Filed Jul. 1, 1996, Ser. No. 672,750
Int. Cl.[6] B65D *88/54*
U.S. Cl. 222—305 **4 Claims**



1. A fish feed container comprising:
a body for containing fish feed therein, said body including an open upper portion,
a plate engaged on top of said body and including an aperture formed therein,
a cover secured on top of said body and including an orifice formed therein,
a tube slidably engaged in said aperture of said plate and slidably engaged in said orifice of said cover, said tube including an upper portion having an outlet formed therein and including a lower portion having at least one inlet formed therein,
a lid secured to said bottom portion of said tube, and
means for biasing said lid to enclose said aperture of said plate and for biasing said upper portion of said tube to move

outward of said orifice of said cover so as to allow said outlet to be located outward of said cover,

said lid being biased to enclose said aperture of said plate by said biasing means so as to prevent the fish feed from flowing into said tube, and said lid being caused to be disengaged from said aperture of said plate in order to allow the fish feed to flow into said tube via said inlet when said tube is depressed inward of said cover against said biasing means.

5,645,198

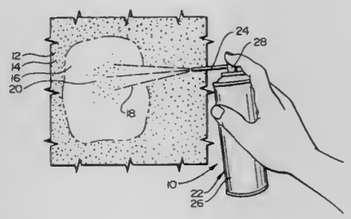
SPRAY TEXTURING APPARATUS AND METHOD

Donald J. Stern, Bellingham, and James A. Tryon, Seattle, both of Wash., assignors to Homax Products, Inc., Bellingham, Wash.

Continuation of Ser. No. 424,793, Apr. 18, 1995, Pat. No. 5,489,048, which is a continuation of Ser. No. 238,471, May 5, 1994, Pat. No. 5,409,148, which is a continuation of Ser. No. 840,795, Feb. 24, 1992, Pat. No. 5,310,095. This application Feb. 6, 1996, Ser. No. 597,195

Int. Cl.[6] B65D *83/14*

U.S. Cl. 222—402.1 **36 Claims**



1. A method of texturing a surface to match a pre-existing texture pattern, the method comprising the steps of:

providing texture material;

providing a propellant material that is in a liquid state when held under pressure and which gassifies when pressure thereon is released;

placing the texture material and the propellant material in an aerosol device, where the aerosol device is operable to allow the propellant material to gassify and discharge the texture material from the aerosol device;

providing a plurality of dispensing structures, where each dispensing structure defines a dispensing passageway, each dispensing passageway has a predetermined cross-sectional area, and each predetermined cross-sectional area corresponds to one of a plurality of predetermined textured patterns;

determining a selected predetermined texture pattern from the plurality of predetermined texture patterns, where the selected predetermined texture pattern most closely matches the pre-existing texture pattern;

selecting the dispensing structure associated with the selected desired texture pattern;

mounting the selected dispensing structure onto the aerosol container such that texture material dispensed from the aerosol container in the stream of pressurized propellant material passes through the dispensing passageway of the selected dispensing structure;

operating the aerosol device such that the propellant material gassifies and discharges the texture material out of the aerosol device through the dispensing passageway of the selected dispensing structure; wherein

the texture material and propellant material are formulated such that, when the propellant material discharges the texture material out of the aerosol device, the texture material forms a spray comprising a plurality of particles of texture material that are deposited onto the surface in the selected desired texture pattern to closely match the pre-existing texture pattern.

5,645,199

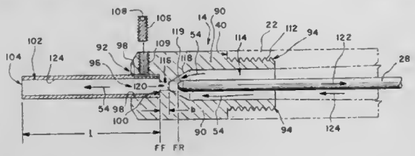
FOAM GUN TIP ASSEMBLY

Paul J. Schnitzler, 11802 Sherman St., Northglenn, Colo. 80233

Filed Jan. 26, 1995, Ser. No. 378,280

Int. Cl.[6] B67D *5/00*

U.S. Cl. 222—567 **14 Claims**



1. A foam gun tip assembly comprising:

a housing having a forward, nozzle end and a rearward, foam gun barrel-connecting end and wherein said housing further comprises: (1) a forward chamber for receiving a detachable foam-dispensing tube, (2) said detachable foam-dispensing tube, (3) means for affixing the detachable foam-dispensing tube in the forward chamber, (4) a central chamber for slidably receiving a needle valve rod moved into and out of said central chamber by operation of a trigger device of a foam gun and thereby serving as a valve means for dispensing foam, (5) a rearward chamber that serves as a conduit for the needle valve rod and for foam being forced toward the nozzle end of the housing and wherein said rearward chamber has a forward end that has a truncated cone configuration that serves to constrict flow of foam being forced forward toward the forward, nozzle end of the housing and into the central chamber when said central chamber is not occupied by the needle valve rod and (6) means for attaching the foam gun tip assembly to a barrel component of a foam gun.

5,645,200

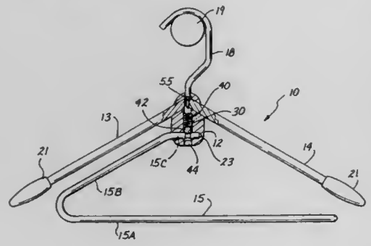
GARMENT HANGER

Philip Richard McDowell, Lake Forest; Robert Wilson McDowell, Gridley, and Matthew Fife McDowell, Santa Monica, all of Calif., assignors to McDowell Bros., Laguna Hills, Calif.

Filed Jul. 14, 1995, Ser. No. 502,529

Int. Cl.[6] A47G *25/40;25/18;25/14*

U.S. Cl. 223—89 **8 Claims**



8. A garment hanger for garments and the like such as a jacket, wherein the garments are suspended from the same hanger with one located within the other, comprising:

a hanger body member having mounted thereon jacket arm means including arms extending in generally opposite directions and inclined with respect to each other and adapted to receive and support a jacket;

rod means mounted on said hanger body member below said arms for receiving another garment and supporting the same within the jacket but in lateral spaced relation to said arms;

hook means mounted on said hanger body member for supporting said garment hanger on a hook receiving support means;

said hook means including an angled bottom section received in said hanger body member,

said rod means including a rod section located vertically below said arms and spaced laterally therefrom whereby a garment may be positioned on the rod means absent displacement of a jacket supported by said arms in order to place a garment on said rod means;

said rod means being pivotable from one position displaced away from said arms to another position vertically below and in parallel spaced relation to said arms,

said rod means including detent means and said hanger body member includes biased means coacting with said detent means to position said rod means in one of two positions,

said jacket arm means and said rod means being separate from said hanger body member,

said hanger body member including a plurality of apertures therein for receiving said jacket arm means, said hook means and said rod means, and

means within said hanger body member to secure said hook means and said jacket arm means together.

5,645,201

Patent Not Issued For This Number

5,645,202

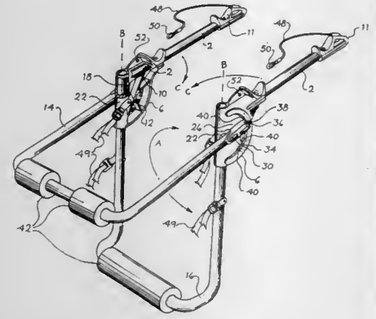
COLLAPSIBLE CARRIER

John Kaloustian, 830 W. Main St., Northville, Mich. 48167

Filed Jul. 13, 1994, Ser. No. 275,051

Int. Cl.[6] B60R *9/00;9/10*

U.S. Cl. 224—314 **12 Claims**



1. A carrier for attachment to a vehicle comprising:

upper and lower mounting members;

a first pivot joint associated with the upper and lower mounting members such that the upper mounting member may be pivoted with respect to the lower mounting member about a mounting member pivot axis;

a support member; and

a second pivot joint associated with the support member and the lower mounting member such that the support member may be pivoted with respect to the lower mounting member about a support member pivot axis, wherein the support member pivot axis is substantially perpendicular to the mounting member pivot axis;

whereby the lower mounting member, the upper mounting member and the support member can be positioned in a substantially coplanar storage position;

an array of stops arranged around the mounting member pivot axis, wherein the upper mounting member engages a selected one of the stops to fix the upper mounting member in position with respect to the lower mounting member with respect to pivotal movement about the mounting member pivot axis, and wherein the stops are configured such that pivotal movement of the support member about the support member pivot axis moves the stops toward and away from the upper mounting member.

5,645,203

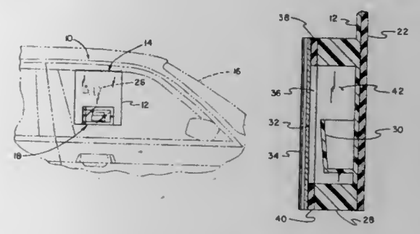
BUSINESS CARD DISPENSING HOLDER

Philip Tappenden, 1312 Naamans Creek Rd., Boothwyn, Pa. 19061

Filed May 30, 1995, Ser. No. 450,667

Int. Cl.[6] B60R *11/00*

U.S. Cl. 224—482 **4 Claims**



1. A business card dispensing holder comprising:

a base plate being substantially rectangular in shape, the base plate having a central upper surface including indicia marked thereon;

a mounting means for securing the base plate relative to a vehicle, the mounting means comprising a depending lip formed along an upper edge of the base plate, the depending lip being shaped so as to project in a substantially spaced and parallel orientation relative to a rear surface of the base plate such that a window of a vehicle can be positioned between the depending lip and the base plate, a protective backing material coextensively positioned along the rear surface of the base plate and extending along an interior surface of the depending lip; and

a dispensing means secured to a front of the base plate for supporting and permitting selective manual dispensing of business cards therefrom, the dispensing means being mounted proximal to a lower edge of the base plate such that the indicia is readily viewable along the central upper portion of the base plate the dispensing means comprising a substantially rectangular perimeter frame secured to a front face of the base plate; a pocket member mounted to the base plate and positioned within the perimeter frame; a door pivotally mounted to a vertical lateral edge of the perimeter frame; a vertical sealing strip extending along a vertical portion of the perimeter frame proximal to a pivotal mounting of the door to the perimeter frame; upper and lower horizontal sealing strips extending along upper and lower horizontal portions of the perimeter frame; cooperative sections of hook and loop material interposed between a lateral edge of the door and a lateral portion of the perimeter frame; and a knob secured to the door and projecting exteriorly thereof to facilitate manual pivoting of the door relative to the perimeter frame.

5,645,204

ENCASEMENT ENCLOSED PORTABLE ATTACHABLE/ DETACHABLE ENTERTAINMENT UNIT:"THE BOX"

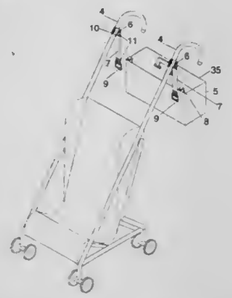
Cheryl Renee Struzer, 53 Glenmanor Way, Thornhill, Ontario, Canada

Continuation-in-part of Ser. No. 830,864, Feb. 4, 1992, abandoned. This application Jul. 1, 1993, Ser. No. 84,596

Claims priority, application Canada, Aug. 21, 1991, 2049579-1

Int. Cl.[6] B60R *11/02*

U.S. Cl. 224—547 **1 Claim**



1. An article carrying device for transporting an entertainment unit on a transport vehicle, the article carrying device comprising:

an encasement box for holding the entertainment unit with a pair of hooks attached to said encasement box;

means for attaching said encasement box to the transport vehicle including a flexible strap having a first end and a second end, a first square ring attached to said first end of said flexible strap and having curved extensions for securing around a portion of the transport vehicle, and a second square ring attached to said second end of said flexible strap and adapted to removably receive said hooks of said encasement box.

5,645,205

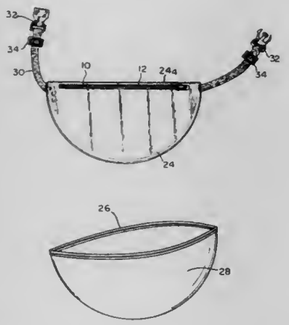
WATERPROOF SWIMMING POUCH

Linda Kennedy, P.O. Box 680398, Park City, Utah 84068

Continuation of Ser. No. 803,128, Dec. 4, 1991. This application Jan. 19, 1994, Ser. No. 183,918

Int. Cl.[6] A45F *3/00*

U.S. Cl. 224—676 **6 Claims**



1. A lightweight waterproof pouch for carrying personal objects in a wet environment and keeping those objects safe and dry, comprising

an outer enclosure having a geometric shape and being of comfortable size formed of flexible material, the enclosure having an upper end portion, and first and second side portions, and a bottom portion,

an opening formed in the upper end portion of the enclosure,

outer enclosure closure means formed at the opening in the upper end portion of the outer enclosure for securely closing the opening when desired,

a removable flaccid inner pouch liner for insertion into said enclosure, the inner pouch liner being formed of a waterproof flexible material and having an upper end portion, side portions, and a bottom portion,

the inner pouch liner being shaped to fit the geometric shape of the enclosure without folding of the inner pouch liner,

an opening in the upper end portion of the inner pouch liner,

resealable inner pouch liner closure means formed at the opening in the inner pouch liner for closing the opening in the inner pouch liner when desired, for forming a watertight compartment inside the inner pouch liner, for keeping objects safe and dry, and

a flexible strap mounted on the enclosure for holding the pouch around a wearer's body.

5,645,206

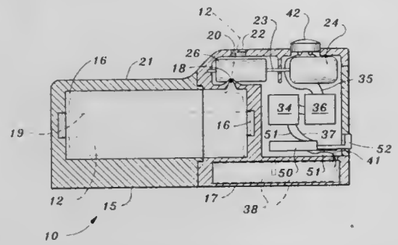
AUTOMATED DENTAL FLOSS DISPENSING APPARATUS

Kevin Ippisch, 427 Rosedale Ct., Capitola, Calif. 95010

Continuation of Ser. No. 298,791, Aug. 31, 1994, abandoned, which is a continuation-in-part of Ser. No. 27,339, Mar. 8, 1993, abandoned. This application Sep. 16, 1996, Ser. No. 714,621

Int. Cl.[6] B65H *75/00;* **A61C** *15/04*

U.S. Cl. 225—10 **16 Claims**



1. An automated dental floss dispensing apparatus for dispensing waxed or unwaxed dental floss from a source of material, comprising:

a dispenser housing having a spool receptacle for enclosing and retaining a spool of floss, said spool receptacle having a conically shaped discharge aperture having inwardly slanted walls allowing said dental floss to be fed and guided through said conically shaped discharge aperture; said dispenser housing includes a dispensing aperture for dispensing said floss;

a cutter disposed adjacent to said dispensing aperture, said cutter being positioned adjacent to and protruding into said dispensing aperture allowing for guidance, positioning, and cutting of said floss;

drive means operably mounted within said dispenser housing;

a pair of rollers mounted within said dispenser housing directly above said conically shaped discharge aperture and directly below the dispensing aperture; said pair of rollers receive and engage said floss from said spool; the pair of rollers are operably coupled to said drive means allowing each roller to rotate independently of each other, and;

control means for controlling and actuating said drive means for automatically dispensing a selected length of the floss to be dispensed.

5,645,207

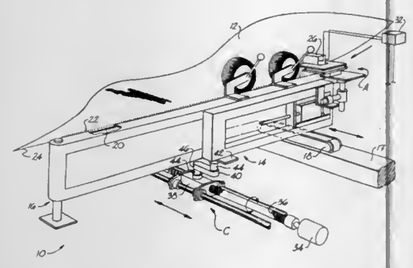
APPARATUS AND METHOD FOR SECURING A MOVING FABRIC

William O. Young, Jr., Spartanburg; Ebun Surka, Moore, and George Lark, Spartanburg, all of S.C., assignors to Young Engineering, Inc., Spartanburg, S.C.

Filed Jul. 3, 1995, Ser. No. 497,840

Int. Cl.[6] B23Q *15/06;* **B65H** *26/02;43/08*

U.S. Cl. 226—1 **24 Claims**



1. A method for handling a material of indeterminate length, comprising the steps of:

moving the material at least partially through a material handling apparatus along a path of travel;

detecting deviation of at least one edge of said material from a corresponding normal operating path; and

effecting corrective reaction of said material handling apparatus, when said edge is determined to be outside its said normal operating path, at a predetermined rate, said predetermined rate varying in a predetermined pattern based upon time said edge remains out of its said normal operating path.

5,645,208

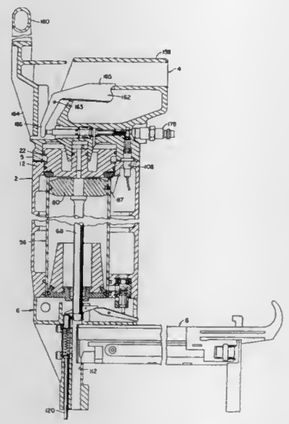
PNEUMATIC FASTENING TOOL WITH SAFETY INTERLOCK

Harry M. Haytayan, 32 Indian Rock Rd., Nashua, N.H. 03063

Filed Oct. 17, 1995, Ser. No. 544,126

Int. Cl.[6] B25C *1/04*

U.S. Cl. 227—8 **12 Claims**



1. A pneumatic tool comprising:

a hollow housing having oppositely disposed upper and lower ends;

first and second end means closing off said upper and lower ends respectively of said housing;

a hollow cylinder mounted in said housing, said cylinder having upper and lower ends;

a piston slidably mounted in said cylinder;

a hammer connected to said piston and slidably positioned in a bore in said second end means;

an air reservoir within said housing exterior of said cylinder;

an inlet for connecting said tool to a source of high pressure air;

a passageway connecting said inlet to said air reservoir;

a safety valve mounted to said housing for alternately (1) transmitting high pressure air from said air reservoir to said lower end of said cylinder below said piston, and (2) exhausting high pressure air from said lower end of said cylinder below said piston;

a rod movably carried by said second end means for operating said safety valve;

a poppet valve within said housing for rapidly opening or closing said upper end of said cylinder above said piston, in order that high pressure air supplied via said inlet may or may not be admitted to the upper end of said cylinder above said piston;

a control valve disposed in said first end means above said poppet valve, said control valve comprising a movable control valve member movable between a first position in which said control valve member allows transmittal of high pressure air from said inlet to said poppet valve and a second position in which said control valve member blocks transmittal of high pressure air to said poppet member and instead allows high pressure air to be exhausted from said poppet valve;

manually-operated means for moving said control valve member so that said control valve will alternately (1) transmit high pressure air from said inlet to said poppet valve so as to cause said poppet valve to close off said end of said cylinder above said piston, or (2) exhaust said high pressure air from said poppet valve so as to cause said poppet valve to open up said upper end of said cylinder above said piston, in order that said piston may be driven from said upper end of said cylinder to said lower end of said cylinder when (a) said rod-operated safety valve has exhausted high pressure air from said lower end of said cylinder below said piston and (b) said control valve has exhausted said high pressure air from said poppet valve so as to cause said poppet valve to open up said upper end of said cylinder above said piston to the high pressure air supplied via said air inlet; and

pneumatically-operated means for preventing operation of said control valve by said trigger, said pneumatically-operated means comprising a pneumatically operated mechanical member and means supporting said pneumatically operated mechanical member for reciprocal movement into and out of intercepting and blocking relation with said control valve member.

5,645,209

SELF CONTAINED GAS POWERED SURGICAL APPARATUS

David T. Green, Westport; Mitchell J. Palmer, New Milford; Keith L. Milliman, Norwalk; Robert C. Savage, Stratford; Richard C. McClure, Monroe, and Lisa W. Heaton, Norwalk, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

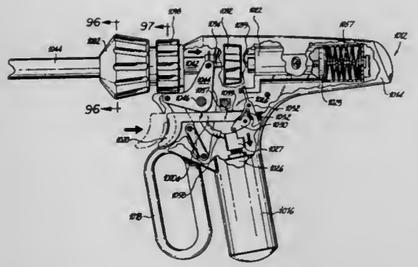
Division of Ser. No. 133,549, Oct. 8, 1993, Pat. No. 5,478,003, which is a continuation-in-part of Ser. No. 24,533, Mar. 1, 1993, Pat. No. 5,312,023, which is a continuation-in-part of Ser. No. 949,685, Sep. 23, 1992, Pat. No. 5,326,013, which is a continuation-in-part of Ser. No. 915,425, Jul. 17, 1992, abandoned, which is a continuation-in-part of Ser. No. 781,012, Oct. 18, 1991, abandoned. This application Nov. 17, 1995, Ser. No. 559,227

Int. Cl.[6] A61B *17/068*

U.S. Cl. 227—175.2 **11 Claims**

5. A surgical apparatus for driving surgical fasteners comprising:

a) a frame portion defining a longitudinal axis;



b) an elongated body portion extending distally from said frame portion;
c) a fastener applying assembly operatively associated with a distal end portion of said body portion and including;
  i) a cartridge member containing a plurality of surgical fasteners; and
  ii) an anvil member mounted adjacent said cartridge member, said cartridge member and said anvil member being relatively movable between an open position and a closed position;
d) fastener ejection means actuable from said frame portion for sequentially ejecting said plurality of surgical fasteners from said cartridge member to be driven against said anvil member;
e) a pneumatic actuation system disposed within said frame portion and operatively associated with said fastener ejection means, said pneumatic actuation system including;
  i) a canister of compressed gas having a fixed longitudinal orientation with respect to said frame portion; and
  ii) a valve member configured to communicate with said canister of compressed gas; and
f) an actuation assembly including a pivotable link, said link being movable to cause said valve member to move relative to said canister to effect communication therebetween and cause gas to be expelled from said canister to actuate said fastener ejection means.

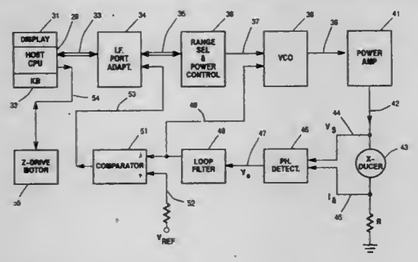
5,645,210

HIGH SPEED BONDING TOOL CONTACT DETECTOR

Eugene Michael Toner, Quakertown, and Avner Guez, Dresher, both of Pa., assignors to Kulicke and Soffa Investments, Inc., Wilmington, Del.

Filed Feb. 9, 1996, Ser. No. 598,986
Int. Cl.[6] H01L *21/607*
U.S. Cl. 228—102 **13 Claims**

1. A high speed detector for sensing contact of an ultrasonic



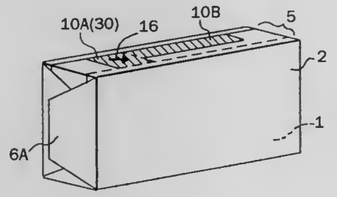
bonding tool on a bonding target, comprising:
a ultrasonic generator,
a power amplifier coupled to the output of said ultrasonic generator
an ultrasonic transducer coupled to the output of said power amplifier,
a bonding tool mounted in said ultrasonic transducer,
phase detector means coupled across said ultrasonic transducer for detecting predetermine changes in electrical value when said bonding tool contacts said bonding target,
computer control means coupled to said phase detector means responsive to said changes in electrical values which occur upon touch down of said bonding tool on said bonding target, and
Z-axis drive motor means coupled to said computer means for positioning said bonding tool prior to touch down and for controlling the bonding force on said bonding tool within several cycles of said ultrasonic generator after actual contact or touch down of said bonding tool on said bonding target.

5,645,211

EASILY REMOVABLE PACKAGING FILM

Toshiyuki Shimada, Mito, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Mar. 28, 1996, Ser. No. 626,624
Claims priority, application Japan, Mar. 30, 1995, 7-100535
Int. Cl.[6] B65D *65/32*
U.S. Cl. 229—87.05 **10 Claims**



1. A packaging film for wrapping a cubic article by bonding an overlapped portion of said packaging film by applying heat and by folding and sealing open ends of said packaging film, comprising:
a first non-bonded portion provided as opening means on said overlapped portion by leaving a part of said overlapped portion not bonded, said first non-bonded portion having a width which is not larger than that of said overlapped portion, and
a second non-bonded portion provided on said overlapped portion by leaving another part of said overlapped portion not bonded, said second non-bonded portion being connected continuously to said first non-bonded portion and having a narrower width than that of said first non-bonded portion.

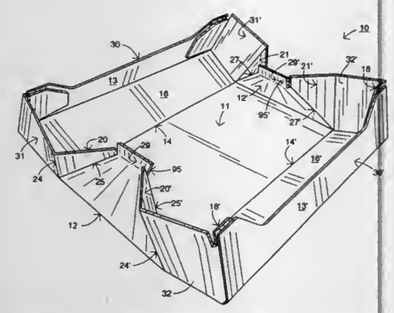
5,645,212

FOLDABLE DISPLAY TRAY

Jerry L. Potter, Greensboro, N.C., assignor to Packaging Resources, Inc., Greensboro, N.C.

Filed Nov. 29, 1995, Ser. No. 564,821
Int. Cl.[6] B65D *5/355*
U.S. Cl. 229—101 **19 Claims**

1. A foldable tray comprising: a bottom, opposing sides, opposing ends, each of said opposing ends having a concave portion, said sides and said ends perpendicularly joined to said bottom, said ends each connected to both of said sides, said opposing sides each defining a pair of vertical score lines and a pair of angular score lines, one each of said vertical score lines and one each of said angular score lines intersecting proximate said bottom, said bottom defining a pair of parallel score lines extending from said intersection on a first one of said sides to the intersection on an opposite one of said sides whereby said sides can be partially folded along said vertical and said angular score lines while said bottom is



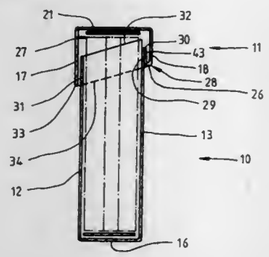
folded along said parallel score line to allow said ends to align parallel with said bottom so said concave portions oppose to define an access aperture.

5,645,213

HINGE-LID BOX FOR CIGARETTES OR THE LIKE

Heinz Focke, and Harald Gosebruch, both of Verden, Germany, assignors to Focke & Co. (GmbH & Co.), Verden, Germany

Filed Sep. 21, 1995, Ser. No. 531,850
Int. Cl.[6] B65D *43/14*
U.S. Cl. 229—160.2 **7 Claims**



1. A hinged-lid box for cigarettes constructed of thin cardboard comprising a box body having a box front wall a box rear wall, box side walls and a bottom wall, and a lid having a lid front wall, a lid rear wall and lid side walls, the lid rear wall being hingedly joined at the box rear wall to an intermediate material strip which forms a Z-fold with the rear walls of the box and lid, the intermediate material strip being joined to the lid rear wall by a first transverse hinge-fold line and to the box rear wall by a second transverse fold line, said material strip positioned between the interior surface of the lid rear wall and the exterior surface of the box rear wall and bonded to the box rear wall, whereby in the closed position, the lid covers and overlaps an outside upper portion of the box.

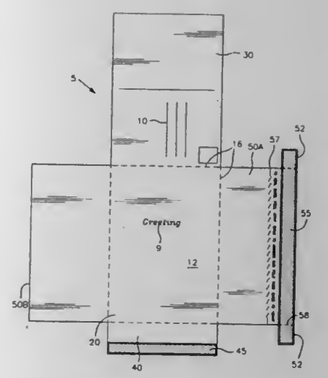
5,645,214

COMBINATION ENVELOPE AND GREETING CARD

Celina M. Taganas, P.O. Box 3023, Pismo Beach, Calif. 93448

Filed Oct. 2, 1995, Ser. No. 537,452
Int. Cl.[6] B65D *27/34*
U.S. Cl. 229—313 **1 Claim**

1. A combination envelope and greeting card comprising:
a primary rectangular panel, and a pair of side, a top, and a bottom ancillary panels foldably joined adjacently, contiguously, and separately, to the primary panel;
the primary panel providing, an obverse surface for placement of a greeting message, and a reverse surface providing indicia



for guiding placement of an addressee address, a return address and for postage;
the top ancillary panel providing a reverse surface for placement of a greeting introduction indicia;
the bottom ancillary panel providing an obverse surface so that with the top panel folded into contact with the obverse surface of the primary panel, the obverse surface of the bottom panel is positionable against the reverse surface of the top panel;
one of the side panels providing a permanent adhesive layer on the obverse side thereof, such that with the other of the side panels folded into contact with the reverse sides of the top and bottom panels, the adhesive layer is adherable to the combination thereby securing the combination in a folded state for mailing;
the one side panel further including a pair of opposing and laterally extending tabs in positions for folding into contact with the reverse side of the primary panel for adhesive contact to secure the folded combination for mailing;
the one side panel further including a means for tearing the one side panel to enable unfolding of the combination;
the top, the bottom and the side panels each being attached to the primary panel by a perforated line such that the top, bottom and side panels may be torn-off of the primary panel after unfolding the combination;
the bottom panel, on the obverse side thereof, including a bottom panel adhesive layer adapted for temporary adherence, for removably fixing the bottom panel to the reverse side of the top panel when folded thereagainst, the bottom panel further including a curved edge cutout means for gripping an edge of the bottom panel for peeling the bottom panel away from the top panel when opening the combination.

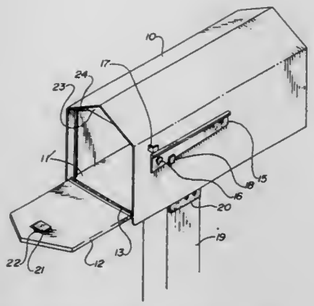
5,645,215

SECURITY MAILBOX

Judy Marendt, 510 Whispering Pine Rd., Little Rock, Ark. 72210-5423, and Kevin Brannon, Vilonia, Ark., assignors to Judy Marendt, Little Rock, Ark.

Filed Feb. 12, 1996, Ser. No. 601,431
Int. Cl.[6] B65D *91/00*
U.S. Cl. 232—17 **2 Claims**

1. A security mailbox, comprising:
an enclosure having an interior space accessible by a hinged door having at least an open position, a closed and unlocked position, and a closed and locked position;
a lock mounted to said hinged door, said lock having a latching member;
a striking member affixed to said enclosure whereby said latching member engages said striking member when said hinged door is in said closed and locked position; and



releasable engaging means for holding said hinged door in said closed and unlocked position whereby said hinged door is manually movable to either said open position or said closed and locked position;

wherein said releasable engaging means comprises a magnetic catch slidably mounted to said enclosure whereby said hinged door is releasably held by said magnetic catch in said closed and unlocked position and further whereby sliding movement of said magnetic catch allows said hinged door to be manually urged into said closed and locked position.

5,645,216

BEARING FOR A PART OF A RAILROAD TRACK

Sebastian Benenowski, Butzbach; Albrecht Demmig, Kirchmöser; Hans-Ulrich Dietze, Wusterwitz; Alfred Kais, Lich-Eberstadt, and Erich Nuding, Aalen, all of Germany, assignors to BWG Butzbacher Weichenbau GmbH, Butzbach, Germany

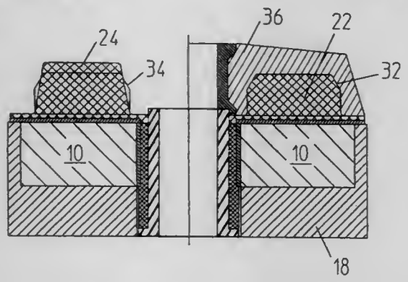
PCT No. PCT/EP93/02658, § 371 Date Mar. 31, 1995, § 102(e) Date Mar. 31, 1995, PCT Pub. No. WO94/08093, PCT Pub. Date Apr. 14, 1994

PCT Filed Sep. 30, 1993, Ser. No. 411,834

Claims priority, application Germany, Oct. 1, 1992, 42 32 990.6

Int. Cl.[6] E01B *9/62*

U.S. Cl. 238—283 **21 Claims**



1. The bearing for a section of railroad track which is traversed by rolling stock with a wheel load, said bearing supporting a rail section and being connected to a sleeper support, said bearing including a rail-fastening plate (**10**), a first elastic element (**18**) supporting said rail-fastening plate, a prestressing device (**36, 44, 46, 48**) including at least one second elastic element (**22, 24, 50, 52**) for prestressing said railroad track section in relation to said sleeper support, wherein said first and said second elastic element are a first and a second spring, each spring exhibiting a characteristic curve (**20, 28**) describing a force versus displacement relationship, said first and said second spring forming a spring system with a combined characteristic curve (**21**) in an operative range (**16**) within the range of forces introduced by wheel loads, wherein said combined characteristic curve of said spring system exhibits a kink such that when a force is applied to said spring system that is less than the forces acting in said operative range (**16**), the characteristic curve rises steeply up to the kink, and the characteristic curve is substantially flat in said operative range after the kink.

5,645,217

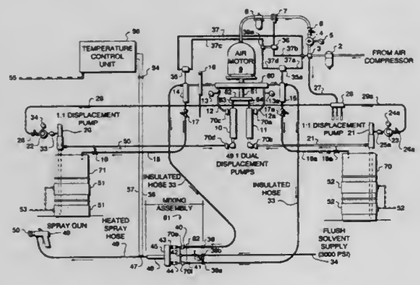
TWO-PART COMPOUND SPRAY-APPLICATION SYSTEM AND METHOD

Daniel Warren, 18 Church St., South Carver, Mass. 02366

Continuation of Ser. No. 224,419, Apr. 8, 1994, abandoned. This application Apr. 10, 1996, Ser. No. 629,913

Int. Cl.[6] A62C *37/00*

U.S. Cl. 239—75 **11 Claims**



1. A spray application system for a two-part, self-setting compound, comprising:

a first container for the first part of the compound;

a first temperature-controlled heater for maintaining the first part of the compound in said first container at a selected elevated temperature;

a first low pressure pump for drawing the first part of the compound out of said first container;

a first recirculating loop for selectively returning some or all of the first part of the compound from said first low pressure pump back into said first container, for mixing and evenly heating the first part of the compound in said first container;

a second container for the second part of the compound;

a second temperature-controlled heater for maintaining the second part of the compound in said second container at a selected elevated temperature;

a second low pressure pump for drawing the second part of the compound out of said second container;

a second recirculating loop for selectively returning some or all of the second part of the compound from said second low pressure pump back into said second container, for mixing and evenly heating the second part of the compound in said second container;

a first high-pressure, positive-displacement pump fed by said first low pressure pump, for boosting the pressure of the first part of the compound;

a second high-pressure, positive-displacement pump fed by said second low pressure pump for boosting the pressure of the second part of the compound;

an air-driven motor mechanically coupled to both of said high-pressure pumps for driving both of said high-pressure pumps in tandem to ensure correct relative flow of both parts of the compound;

a static mixer, fed from both of said high-pressure pumps, for intermingling the two parts of the compound;

a spray device for spray applying the compound; and

a temperature-controlled, heated hose between said static mixer and said spray device, for maintaining the compound at an elevated temperature until it is sprayed.

5,645,218

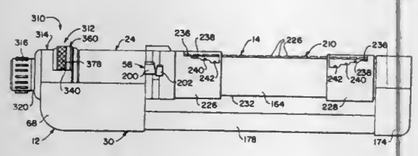
UNITIZED SPRINKLER ASSEMBLY WITH ADJUSTABLE WATER CONTROL MECHANISM

Lawrence P. Heren; Jerry R. Hayes, both of East Peoria, Ill., and Thomas R. Kruer, Edgewood, Ky., assignors to L. R. Nelson Corporation, Peoria, Ill.

Continuation-in-part of Ser. No. 252,555, Jun. 1, 1994, Pat. No. 5,511,727. This application May 26, 1995, Ser. No. 451,828

Int. Cl.[6] B05B *3/16*

U.S. Cl. 239—242 **54 Claims**



1. A unitized sprinkler assembly comprising

a first housing assembly having an inlet end constructed and arranged to be connected with a source of water under pressure and a spaced outlet end,

a second housing assembly having an inlet end and a spaced outlet end,

the inlet end of said second housing assembly being constructed and arranged to mate with the outlet end of said first housing assembly and being connected in water pressure communicating relation therewith,

a manually adjustable control mechanism carried by said first housing assembly between the inlet end and outlet end thereof constructed and arranged to control the flow of water under pressure from the inlet end thereof to the outlet end thereof in accordance with the manual adjustment of said manually adjustable control mechanism,

a sprinkler head assembly having an inlet end disposed to receive water under pressure flowing from the outlet end of said second housing assembly,

a base assembly constructed and arranged to support all of said assemblies on a ground area to be sprinkled and having said assemblies disposed in supported relation thereon,

a structural connection between said sprinkler head assembly and said second housing assembly constructed and arranged to enable said sprinkler head assembly to oscillate about an oscillatory axis with respect to said second housing assembly,

an oscillating mechanism mounted in said second housing assembly constructed and arranged to be operated by the flow of water under pressure between the inlet end and outlet end of said second housing assembly and connected with said sprinkler head assembly to oscillate said sprinkler head assembly about said oscillatory axis through repeated oscillating head cycles,

said sprinkler head assembly being constructed and arranged to discharge water under pressure flowing through the inlet end thereof in a predetermined stream configuration so as to be distributed on the ground to be sprinkled in a predetermined water pattern determined by the oscillating head cycle thereof,

each of said oscillating head cycles including a head stroke in one direction and a return head stroke in the opposite direction so that a corresponding dimension of said water pattern corresponds with the distance of the head stroke of each oscillating head cycle, and

an adjusting mechanism constructed and arranged to enable the distance of the head stroke of each oscillating head cycle to be adjusted within a range between a minimum head stroke distance and a maximum head stroke distance so as to vary the corresponding dimension of said water pattern within a range between a minimum dimension and a maximum dimension.

5,645,219

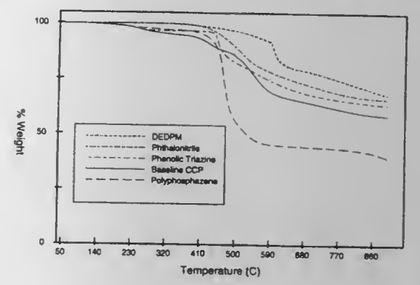
ADDITION-POLYMERIZATION RESIN SYSTEMS FOR FIBER-REINFORCED NOZZLE ABLATIVE COMPONENTS

Michael W. Miks, North Ogden, and John K. Shigley, Ogden, both of Utah, assignors to Thiokol Corporation, Ogden, Utah

Filed Aug. 3, 1993, Ser. No. 101,227

Int. Cl.[6] B63H *11/00;* **B64D** *33/04*

U.S. Cl. 239—265.11 **30 Claims**



1. A fiber-reinforced ablative rocket motor nozzle comprising:

a phthalonitrile resin, present in the nozzle composite material from about 20% to about 40% by weight;

a fiber reinforcement present in the nozzle composite material from about 45% to about 65% by weight; and

a filler present in the nozzle composite material from about 3% to about 15% by weight;

wherein the nozzle composite material is ablative at solid rocket propellant flame temperatures.

5,645,220

AIR NOZZLE WITH VARIABLE SPRAY PATTERN

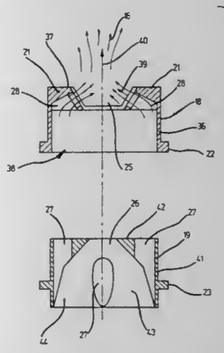
Wolfgang Höbndorf, Tuttlingen, Germany, assignor to Chiron-Werke GmbH & Co. KG, Germany

Filed Apr. 21, 1995, Ser. No. 427,282

Claims priority, application Germany, Dec. 20, 1994, 9420324 U

Int. Cl.[6] B05B *1/26*

U.S. Cl. 239—301 **11 Claims**



1. An air nozzle, for ejecting a central jet of spray medium along an outlet axis, in particular for a spray gun, comprising:

a flow bush including an end wall with a first central flow hole aligned with said outlet axis, and an inlet opening opposing said end wall;

an air distributor rotationally fitted onto said flow bush for rotation with respect to said flow bush at least through one rotational range between two rotational end positions, said air distributor including adjacent to said end wall of said flow bush a further end wall having a second central flow hole aligned with said outlet axis;

whereby spray medium fed to the flow bush via the inlet opening is ejected from the air nozzle through said two central flow holes, thereby forming said central jet along said outlet axis;

means for shaping said central jet, said shaping means arranged for directing a part of said spray medium onto said central jet in a first direction substantially intersecting said outlet axis when said air distributor is in one of said two rotational end positions relative to said flow bush; and

bypass means arranged for ejecting said part of said spray medium from said air nozzle as an additional jet to said central jet, in a second direction substantially nonintersecting with said outlet axis when said air distributor is in said rotational range between said two rotational end positions, said additional jet being substantially separate from said central jet.

5,645,221

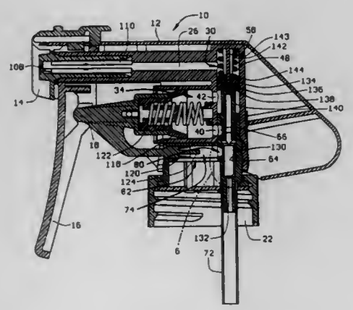
TRIGGER SPRAYER HAVING AIR VENT SLEEVE WITH INTEGRAL CHECK VALVE

Donald D. Foster, St. Charles, Mo., assignor to Contico International, Inc., St. Louis, Mo.

Continuation-in-part of Ser. No. 363,512, Dec. 12, 1994. This application Jun. 2, 1995, Ser. No. 459,725

Int. Cl.[6] B05B *9/043*

U.S. Cl. 239—333 **13 Claims**



1. A sprayer for attachment to a liquid container, comprising:

a sprayer housing;

a connector for attaching the sprayer housing to a liquid container;

a pump chamber in the sprayer housing;

a pump mechanism mounted to the pump chamber for reciprocating movement of the pump mechanism between a charge position and a discharge position;

a trigger on the sprayer housing for manually reciprocating the pump mechanism between the charge and discharge positions;

a vent valve positioned in the sprayer housing for venting air from the pump chamber in response to the pump mechanism being moved to the discharge position when priming the pump chamber, the vent valve includes a resilient sleeve; and

a check valve in contact with the vent valve and positioned in the sprayer housing for preventing liquid in the pump chamber from entering the liquid container when the pump mechanism is moved towards the discharge position after the pump chamber has been primed.

5,645,222

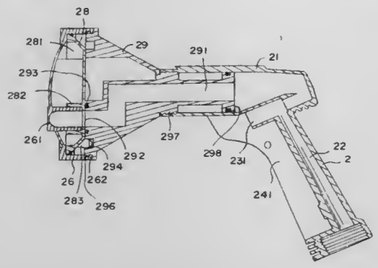
SPRAY-PATTERN DIAL MOUNTING STRUCTURE FOR WATER SPRAYERS

E-Shun Chih, No. 5, Tian-Yang Section, Lu-Gung Town, Chang-Hau Hsien, Taiwan

Filed Sep. 7, 1995, Ser. No. 524,796

Int. Cl.[6] B05B *1/16*

U.S. Cl. 239—394 **2 Claims**



1. A spray-pattern dial mounting structure comprising a spray-pattern dial having a plurality of nozzles and radial lines of pores, a partition plate mounted within said spray-pattern dial, and a connector to connect said spray-pattern dial to the body of a water sprayer and to guide water from the body of said water sprayer to said spray-pattern dial through said partition plate, permitting water to be further forced out of said spray-pattern dial through said radial lines of pores or said nozzles, wherein said partition plate comprises a recessed portion at one side, and a plurality of longitudinal troughs at said recessed portion respectively connected to the nozzles of said spray-pattern dial, said recessed portion defining with said spray-pattern dial a water accumulation chamber for accumulating water from said water sprayer for permitting accumulated water to be further forced by water pressure out of the radial lines of pores of said spray-pattern dial.

5,645,223

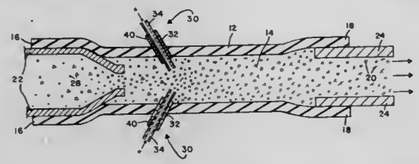
LIQUID/FOAM/MIXING/AERATION ADAPTER APPARATUS

Harold L. Hull, 401 Canyon Way #43, Sparks, Nev. 89434, and Zack J. Carrillo, P.O. Box 5315, Incline Village, Nev. 89450

Filed Oct. 19, 1995, Ser. No. 547,680

Int. Cl.[6] B05B *7/28*

U.S. Cl. 239—428.5 **3 Claims**



1. A liquid/foam/mixing/aeration adapter apparatus comprising; an elongated flexible tubular member which forms a mixing chamber therein for receiving and directing a liquid/foam/air solution therefrom, said member having first and second open ends, said first end being frictionally attachable over a nozzle, said second end being of a shape and size to frictionally receive therein a tubular insert for expelling said liquid/foam/air solution therefrom, said member having at least two substantially opposed angular bores for receiving aeration means there through with said bores being in open communication with said chamber, said aeration means comprising; first and second tubular members each having first and second ends, said first tubular member being of a size and shape to be threadably engaged within one of said bores, said first tubular member being of a size and shape to threadably adjustably receive said second tubular member there through, said second tubular member being of a length to extend substantially half way into said chamber, said second end of said second tubular member being of a size and shape to threadably receive a nut thereon and said second end of said first tubular member acting as a stop means for said nut, whereby; said aeration means is adjustable.

5,645,224

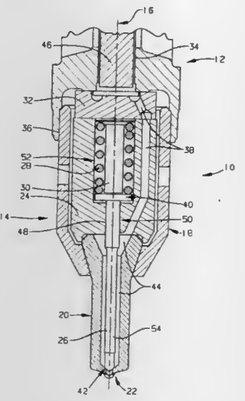
MODULATING FLOW DIVERTER FOR A FUEL INJECTOR

Roger D. Koch, Pekin, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Mar. 27, 1995, Ser. No. 411,132

Int. Cl.[6] F02M *47/00*

U.S. Cl. 239—533.4 **10 Claims**



1. A unit injector nozzle and tip assembly having a case, a check tip having at least one fuel spray orifice, a check sleeve, a high pressure fluid chamber defined by said check sleeve and said check tip, each of said check sleeve and said check tip having a longitudinal extending bore, the improvement comprising:

a check being moveable between an open position and a closed position within said check sleeve and said check tip bore in response to fluid pressure in said high pressure fluid chamber;

a controlled leak path in fluid communication with the high pressure fluid chamber for diverting fluid flow in a direction away from said at least one spray orifice as said check moves between said open and said closed positions.

5,645,225

VARIABLE INJECTION HOLE TYPE FUEL INJECTION NOZZLE

Toshiyuki Hasegawa; Shinya Nozaki, and Takeshi Miyamoto, all of Higashi-Matsuyama, Japan, assignors to Zexel Corporation, Tokyo, Japan

Filed Nov. 14, 1995, Ser. No. 557,572

Claims priority, application Japan, Nov. 15, 1994, 6-304236; Apr. 11, 1995, 7-109189

Int. Cl.[6] F02M *61/18*

U.S. Cl. 239—533.12 **6 Claims**

1. A variable injection hole type fuel injection nozzle, comprising:

a nozzle body having a leading end portion in which a fuel introduction hole for introducing pressurized fuel is defined; and

a rotary valve disposed in the leading end portion of said nozzle body so as to be rotatable in the fuel introduction hole and having a plurality of fuel guide holes;

wherein said nozzle body has a plurality of injection holes circumferentially arranged in a peripheral wall of the fuel introduction hole at predetermined intervals and at axially different circumferential levels, and the injection holes at each circumferential level are set different in diameter, and the fuel guide holes correspond to the injection holes at the respective circumferential levels; and

wherein the fuel guide holes of said rotary valve and the injection holes of said nozzle body are arranged in such a relationship that, irrespective of the rotary position of the rotary valve, the fuel guide holes at one or more than one circumferential level are each made to communicate with the injection holes at one or more than one corresponding circumferential level and that the fuel guide holes at the other circumferential levels are not allowed to communicate with any of said injection holes.

5,645,226

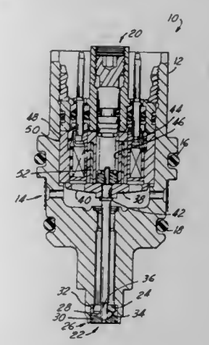
SOLENOID MOTION INITIATOR

John S. Bright, Newport News, Va., assignor to Siemens Automotive Corporation, Auburn Hills, Mich.

Filed Feb. 13, 1995, Ser. No. 387,681

Int. Cl.[6] F02M *51/06*

U.S. Cl. 239—585.1 **8 Claims**



1. In a solenoid-operated fuel injector having:

a housing forming an enclosure;

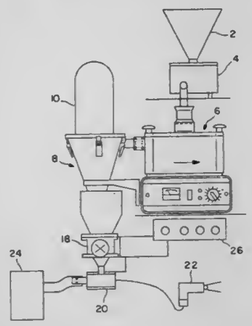
stator means with an inner and outer pole located in said enclosure;
a solenoid coil wound on said stator means, said solenoid being selectively energized by electric current to operate the fuel injector;
an inlet to convey liquid fuel into said enclosure;
an outlet via which fuel is ejected from said enclosure;
means within said enclosure providing a flow path from said inlet to said outlet;
an armature for opening and closing said flow path;
a valve mechanism disposed within said flow path and operated by said solenoid coil acting through said armature to open and close said flow path; wherein the improvement comprises:
solenoid motion initiator means, comprising a piezoelectric device, for initiating motion of said armature during de-energization of said solenoid, said motion initiator being initiated when said solenoid is de-energized to provide force to separate said armature from said stator means.

5,645,227

SUPPLYING METHOD OF POWDER PAINTS TO COATERS AND POWDER COATING MACHINE CAPABLE OF PULVERIZING POWDER PAINT PELLETS INTO A SPRAYABLE POWDER

Koichi Tsutsui, Kyoto, Japan, and Samuel A. Rhue, Rocky River, Ohio, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Division of Ser. No. 123,469, Sep. 20, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 461,980
Int. Cl.[6] B05B *7/14*
U.S. Cl. 239—654 **3 Claims**



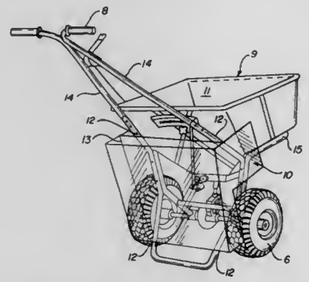
1. A powder coating machine capable of pulverizing paint chips and spraying resultant powdered paint as a coating on articles comprising:
supply means for supplying said paint chips to a pulverizing means,
said pulverizing means for pulverizing into a sprayable powder said paint chips fed by said supply means,
classifying means for receiving and classifying said powder paint from the pulverizing means
cyclone means for removing ultra fine particles from said powder paint classified by said classifying means,
cold insulation storage means for temporarily storing powder paint filtered by said cyclone means,
transport means for transporting the powder paint stored in said cold insulation storage means,
shifter means for removing any sintered powder paint contained in said powder paint transported by said transport means from said cold insulation storage means,
plurality of powder coating guns, and
delivery means for delivering the powder paint from said shifter means to each of said powder coating guns.

5,645,228

SAFETY SHIELD FOR SPREADER

Richard K. Zwart, Vestal, N.Y., assignor to Herman N. Zwart, Johnson City, N.Y.

Filed Mar. 15, 1995, Ser. No. 404,860
Int. Cl.[6] A01C *17/00*
U.S. Cl. 239—687 **4 Claims**



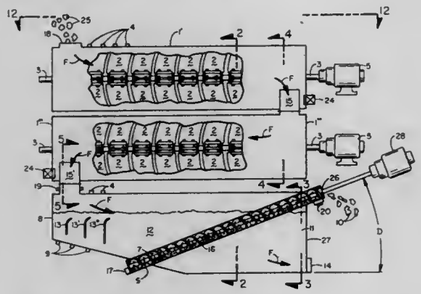
1. A safety shield for a rotary-type spreader that protects an operator of said rotary-type spreader against spreader blow-back, and other bouncing materials, whereby granules, particles and lawn-care materials that are radially thrust outwardly from a rotary paddle of the spreader are blocked from impinging upon the operator, said spreader comprising wheels carried upon a tubular frame that includes two handle sections, said safety shield comprising a plastic plate with partial wrap-around portions that forms a transparent, rectangular housing, said plate being removably connected to said spreader at a rear portion of said tubular frame, about said two handle sections, said safety shield further forming an L-shaped, cut-out section in said transparent, rectangular housing about said wheels, and having an upper lid to prevent particles from bouncing upwardly toward said operator.

5,645,229

APPARATUS FOR AND METHOD OF PULPING WASTE PAPER

Mark W. Spencer, 1451 Milwaukee St., Delafield, Wis. 53018, and Donald C. Cheesman, 993 Lake Country Ct., Oconomowoc, Wis. 53066

Continuation-in-part of Ser. No. 659,878, Jun. 7, 1996, Pat. No. 5,593,098. This application Sep. 26, 1996, Ser. No. 718,968
Int. Cl.[6] B02C *18/40;23/18*
U.S. Cl. 241—20 **5 Claims**



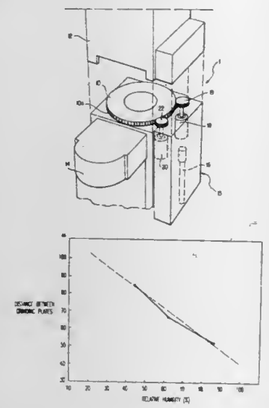
1. Method of pulping waste paper comprising;
a—waste paper added to water in a twin tube pulping cylinder tank mounted horizontally and,
b—said twin tube pulping cylinder tank mounted horizontally above and parallel to a lower twin tube pulping cylinder tank and said waste paper entering in paper feed opening on the top of said twin tube pulping cylinder tank mounted over said lower twin tube pulping cylinder tank and,
c—said paper feed opening of said twin tube pulping cylinder tank located at the top and end of said upper twin tube cylinder tank and,
d—continuous beating of said waste paper added to water in said twin tube pulping cylinder by means of a shaft in each of said twin tube pulping cylinders, and each said shaft extending to an electric motor for rotating of said shafts and,
e—a plurality of arcuate flinger arms, attached to split ring fasteners on each said shaft and,
f—a pulp slurry outlet extending from said upper twin tube pulping cylinder tank mounted above said lower twin tube cylinder tank, and said outlet of said upper twin tube cylinder tank extending into said lower twin tube cylinder tank and,
g—pulp slurry flowing through outlet from said lower twin tube pulping cylinder tank to a crude pulp slurry tank and,
h—means for aeration comprising aeration nozzles for compressed air inlet through said nozzles into bottom of said of said crude pulp slurry tank and said aeration nozzles directing air flow upward through crude pulp slurry upward to vertically mounted baffle plates and,
i—screening of crude pulp slurry by means of at least one perforated conveyor trough, mounted diagonally upward in said crude pulp slurry tank and,
j—a revolving perforated screw conveyor mounted in said perforated trough and,
k—a collection tank mounted under said perforated conveyor trough for collection of screened pulp slurry from said perforated troughs and perforated screws.

5,645,230

DEVICE FOR CONTROLLING THE GRINDING OF COFFEE, A GRINDING AND DOSING MACHINE PROVIDED WITH THIS DEVICE AND A PROCESS FOR CONTROLLING THE GRINDING OF COFFEE

Enrico Marogna, and Enrico Mura, both of Viale S. Avendrace, 30, I-09100 Cagliari, Italy

Filed Feb. 29, 1996, Ser. No. 609,979
Claims priority, application Italy, Mar. 31, 1995, T095A0246
Int. Cl.[6] B02C *7/14*
U.S. Cl. 241—27 **19 Claims**



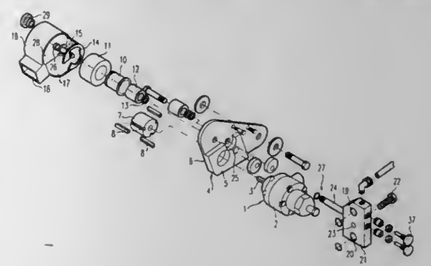
16. A process for the control of coffee grinding by a doser-grinder machine, comprising:
a pair of facing grinding plates,
means for adjusting the distance between said grinding plates so as to be able to vary the dimensions of the coffee grains obtainable upon grinding, the process comprising the steps of:
detecting the ambient humidity, and
adjusting the distance between said grinding plates in dependence on the detected humidity value.

5,645,231

GLASS CHOPPERS

John Smith, Burnsville, Minn., assignor to Xerxes Corporation, Minneapolis, Minn.

Filed Aug. 18, 1995, Ser. No. 516,532
Int. Cl.[6] B02C *25/00*
U.S. Cl. 241—36 **16 Claims**



1. A chopper for chopping continuous glass roving into discrete fiber lengths, comprising::
(a) a motor including a drive shaft extending from one end thereof;
(b) a rotor mounted on said drive shaft for rotation therewith;
(c) at least one blade mounted on the periphery of said rotor;
(d) a backing roll mounted for cooperation with the blade or said rotor for chopping the glass roving;
(d) a cover adapted to enclose said rotor and backing roll, said cover having an opening therein for discharging material cut by said blade;
(e) a line for transmitting power to said motor;
(f) a first connector portion attaching said line to said cover;
(g) a second connector portion secured in fixed relationship to said motor adapted to cooperate with said first connector portion for releasably locking said cover in position enclosing said rotor and backing roll and simultaneously communicating power transmission from said line to said motor;
(h) whereby power transmission to said motor is interrupted by removal of said cover from its position enclosing said rotor and backing roll.

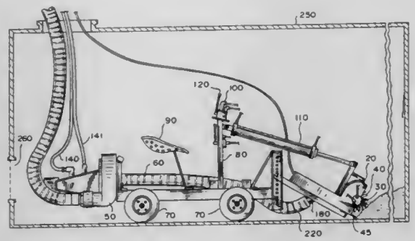
5,645,232

TANK CLEANING APPARATUS AND METHOD

Wesley A. Staples, Rte. 3, Box 1512, and Russell E. Staples, Rte. 5, Box 8082, both of Palatka, Fla. 32177

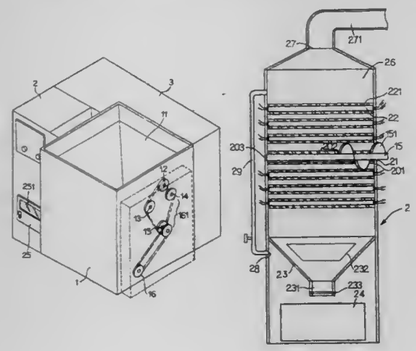
Continuation of Ser. No. 331,946, Oct. 31, 1994, abandoned. This application May 29, 1996, Ser. No. 654,935
Int. Cl.[6] B02C *19/00*
U.S. Cl. 241—60 **31 Claims**

1. A tank-cleaning apparatus, comprising:
a frame;
a header mounted on a first portion of said frame, said header comprising a shroud;
a cutter head rotatably disposed in an interior portion of said header and being substantially enclosed within said shroud;
a throat portion disposed toward a rear portion of said header, said throat portion receiving material from the cutter head when said cutter head is rotatably actuated by a drive mechanism;
a cross-chopper disposed within said throat portion of said header, said cross-chopper further reducing the material received by the throat portion from the cutter head; and



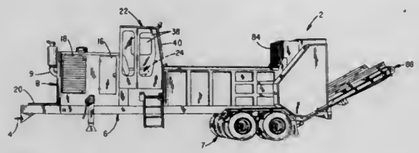
an opening located at the rear portion of the header for receiving the reduced material therethrough.

5,645,233
APPARATUS FOR RECYCLING SCRAPPED POLYLON
I-Chung Chen, 2nd Floor, 146 Yan-chi Street, Tu Chan City, Taipei Hsien, Taiwan
Filed Apr. 2, 1996, Ser. No. 625,260
Int. Cl.[6] B02C *18/40;19/12*
U.S. Cl. 241—65 **7 Claims**



1. An apparatus for recycling scrapped POLYLON, comprising a scrap crashing and feeding unit, a scrap melting unit for electrically heating and melting said scrapped POLYLON, and a waste gas treatment unit for filtering waste gas produced during melting process in said melting unit; said scrap crashing and feeding unit further comprising a housing in which a hopper is disposed at an upper portion thereof to receive and accommodate said scraps dumped thereinto, said hopper being provided at a lower portion thereof with a top roller, and a left and a right rollers disposed below said top roller, said top roller being provided on a shaft thereof with two laterally symmetrically positioned cutters, and said left and said right rollers being provided on a respective shaft thereof with two diametrically opposite scrap push boards and two diametrically opposite cutters normal to said two scrap push boards, said cutters on said top and said left and right rollers being used to crash and break said scrapped POLYLON dumped into said hopper to smaller pieces and said scrap push boards being used to push said crashed and broken smaller pieces of scrapped POLYLON onto a feeding roller extended into said melting unit, said feeding roller being disposed below and between said left and said right rollers and having a spiral blade formed to axially extend along a shaft thereof, said spiral blade providing spiral grooves on said feeding roller to receive said crashed scrap pieces from said top, said left and said right rollers, so that said crashed scrap pieces are automatically guided and fed into said scrap melting unit when said feeding roller is rotated.

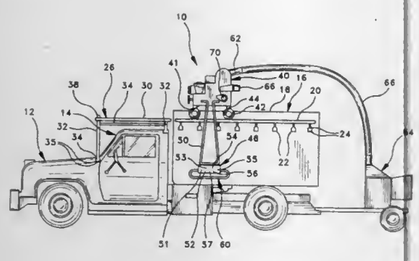
5,645,234
COMPACT REDUCTION GRINDER
William M. Del Zotto, 2300 Commonwealth Ave., Duluth, Minn. 55805-1699
Filed Jun. 18, 1996, Ser. No. 665,489
Int. Cl.[6] B02C *21/02*
U.S. Cl. 241—101.76 **13 Claims**



10. Grinding apparatus comprising:
a) a multi-wheeled trailer chassis having a frame which supports an operator cab, an engine and hydraulic pump means coupled to said engine for distributing pressurized hydraulic fluids;
b) a feed hopper having a compartment space for collecting reduction materials and mounted to said frame forward of said cab and partially overlying a telescoping hydraulic cylinder, wherein the hydraulic cylinder comprises a body having a plurality of piston sections, and wherein the piston sections telescope from one another and said body;
c) shear means including a bar mounted at the floor of said feed hopper and means for raising and lowering said bar;
d) grinding means including a grinding head exposed at a wall of said feed hopper and coupled to a grinding motor and a belt drive linkage coupled to one end of said grinding head and having a plurality of teeth secured to a surface exposed to contact the reduction materials;
e) a plurality of grates mounted to define an arcuate reduction channel about said grinding head, wherein each of said grates includes a plurality of apertures, wherein the size aperture of each grate is different from the other grates and the grates are mounted to present apertures of progressively increasing size from a leading edge to a trailing edge of the reduction channel, wherein said grates are mounted closer to said grinding head at a leading edge and further away at a trailing edge of said reduction channel, and wherein the bar of said shear means controls the exposure to said reduction channel;
f) feed means having a ram head mounted to said telescoping cylinder for directing reduction materials into said grinding head;
g) control means including first and second joy sticks coupled to solenoid valves for distributing said hydraulic fluid to said telescoping cylinder, said shear means and said grinding motor; and
h) a discharge conveyor mounted to said frame and having a conveyor motor coupled to said control means, wherein said conveyor includes a plurality of cross supports a high density plastic bearing at a surface contacting a conveyor belt.

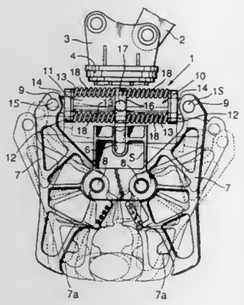
5,645,235
DUMP TRUCK WITH MOUNTED COMMINUTING DEVICE
Joseph H. Witte, 414 Dudley St., Narberth, Pa. 19072
Filed Sep. 25, 1995, Ser. No. 533,311
Int. Cl.[6] B02C *19/00*
U.S. Cl. 241—101.741 **16 Claims**

1. A vehicle, comprising:
a passenger cab region;
a dump bed region positionable between a flat orientation and an inclined orientation;
a comminution device for comminuting solid material; and



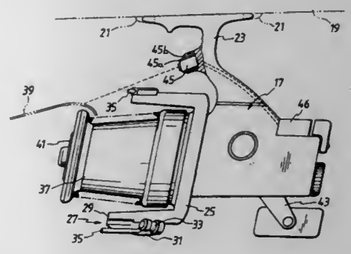
a support means for selectively supporting said comminution device over said dump bed region when in said flat orientation and supporting said comminution device over said passenger cab region when said dump bed region is in said inclined orientation.

5,645,236
CRUSHING EQUIPMENT
Yoshitsugu Sugiura, and Fumikazu Fukatami, both of Toyohashi, Japan, assignors to Teisaku Corporation, Japan
Continuation of Ser. No. 461,684, Jun. 5, 1995, abandoned. This application Jul. 8, 1996, Ser. No. 676,908
Claims priority, application Japan, Oct. 29, 1993, 5-272125
Int. Cl.[6] B02C *1/06*
U.S. Cl. 241—266 **5 Claims**



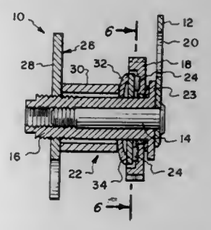
1. Crushing equipment comprising a pair of crashing members disposed symmetrically with respect to a frame in juxtaposed relationship with each other, said crushing members being pivotally supported at substantially central portions thereof by said frame and having crushing portions each formed on one side of each said crushing member and confronting each other, and a fluid-pressure cylinder connecting the other sides of said crushing members to each other, characterized in that a fitting member is vertically movably mounted on said frame, that said fluid-pressure cylinder is movably supported by said fitting member in a longitudinal direction of a cylinder tube of said fluid-pressure cylinder, and that damper means is interposed between said fitting member and each of portions of said fluid-pressure cylinder positioned on both sides thereof, so that said fluid-pressure cylinder is resiliently held against said fitting member.

5,645,237
SPINNING REEL FOR FISHING
Kyoichi Kaneko, Tokyo, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan
Filed Jul. 18, 1994, Ser. No. 275,717
Claims priority, application Japan, Jul. 26, 1993, 5-184031
Int. Cl.[6] A01K *89/01*
U.S. Cl. 242—224 **5 Claims**



1. A spinning reel for fishing, comprising:
a reel main body;
a handle;
a rotor supported rotatably by said reel main body and rotatable in response to a winding operation of said handle;
a spool;
a fishing line guide device mounted on said rotor for winding a fishing line on said spool in response to a rotation of said rotor when said fishing line guide device is in a fishing line winding position;
transmission means, when said fishing line guide device is switched from said fishing line winding position to a fishing line play-out position, for emitting ultrasonic signals onto the fishing line played out spirally from said spool;
receiving means for receiving the ultrasonic signals reflected from the fishing line;
counting means for counting the number of play-outs of said fishing line played out spirally from said spool in response to said ultrasonic signals;
calculation means for calculating a length of the fishing line played out from said spool according to the number of play-outs counted by said counting means; and
means for displaying a representation of the length of said fishing line played out from the spool.

5,645,238
FISHING REEL
George N. Saitta, Jr., 17911 Denvale Cir., Huntington Beach, Calif. 92649
Filed Jun. 7, 1995, Ser. No. 482,496
Int. Cl.[6] A01K *89/015*
U.S. Cl. 242—264 **12 Claims**



1. In a fishing reel apparatus, the combination of: reel means for selectively collecting, storing, and releasing fishing line; drag means for exerting a drag force on the fishing line in opposition to

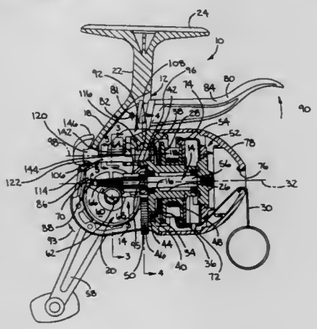
the line being pulled from said reel means, said drag means including a post member having a longitudinal axis, said drag means further including at least one bearing disposed radially about said post member in a plane normal to said longitudinal axis, said drag means further including compressing means for exerting compressive force on said at least one bearing, said drag means further including linkage means for converting said compressive force on said at least one bearing into said drag force on the fishing line.

5,645,239

FISHING REEL ANTI-REVERSE SYSTEM WITH DUAL-PURPOSE ACTUATOR SWITCH

Kent Zwayer, and Nyle C. Erxleben, both of Tulsa, Okla., assignors to Zebco Division of Brunswick Corporation, Tulsa, Okla.

Filed Jul. 13, 1994, Ser. No. 274,625
Int. Cl.[6] A01K *89/02*
U.S. Cl. 242—300 **2 Claims**



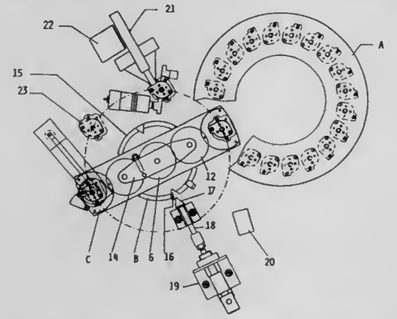
1. A fishing reel comprising:
a reel body;
a shaft;
means for mounting the shaft to the red body for rotation about a first axis;
a line carrying spool;
means for mounting the line carrying spool to the reel body;
means for directing the line onto the spool as an incident of the shaft rotating in one rotational direction; and
anti-reverse means placeable selectively in a) an engaged position for limiting rotation of the shaft in a direction opposite of the one direction and b) a disengaged position in which the shaft can rotate in the direction opposite to the one direction,
said anti-reverse means including a pawl and means for mounting the pawl for movement relative to the reel body between first and second positions,
said anti-reverse means including means cooperating between the pawl and shaft for limiting rotation of the shaft in the direction opposite to the one direction with the pawl in the first position and for allowing the shaft to rotate in the direction opposite to the one direction with the pawl in the second position,
said anti-reverse means further including an actuating switch moveable between on and off positions corresponding respectively to the engaged and disengaged positions for the anti-reverse means,
wherein the shaft, line carrying spool, means for mounting the line onto the spool and anti-reverse means comprise pans of an operating mechanism, said operating mechanism having a) a retrieve state and b) a casting state,
there further being an actuator for changing the operating mechanism from its retrieve state into its casting state, said actuator being moveable relative to the body between first and second positions,
there being means cooperating between the actuator and operating mechanism for changing the operating mechanism from its retrieve state into its casting state as an incident of the actuator moving from its first position into its second position,
said actuating switch having a slot thereon to accept a portion of the actuator,
wherein the actuator portion extends into the slot fully through the actuating switch.

5,645,240

APPARATUS FOR INSERTING FILM INTO A SPOOL

Roberto Signoretto, Milan, Italy, assignor to Systel International S.p.A., Milan, Italy

Filed Apr. 25, 1996, Ser. No. 637,344
Claims priority, application Italy, Apr. 28, 1995, VE95A0011
Int. Cl.[6] G03B *19/00;1/58*
U.S. Cl. 242—332.4 **15 Claims**



1. An apparatus for inserting film into a spool, said apparatus comprising:
a magazine with a plurality of cells containing empty spools,
an element rotating about a fixed shaft and supporting at one end at least one container arranged to receive by gravity a spool housed in a cell of said magazine,
a unit for inserting said film into said spool, said unit being located in a position different from a region in which said spool is inserted into said at lease one container, and
a magazine into which spools carrying said rewound film are inserted, wherein said at least one container is mounted rotatable relative to said rotary element, means being provided which for each rotation of said rotary element in one direction cause said at least one container to undergo a similar rotation about its axis in a opposite direction.

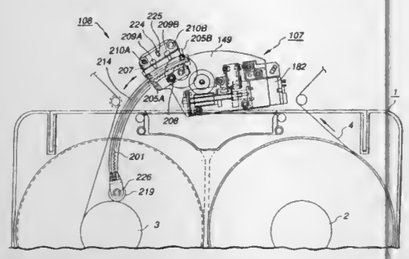
5,645,241

DEVICE FOR WINDING MAGNETIC TAPE OF TAPE CASSETTE IN GOOD ORDER

Hirohisa Koga, Kanagawa; Manabu Hanjo, Tokyo, and Takayuki Kurabara, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 3, 1995, Ser. No. 552,862
Claims priority, application Japan, Nov. 8, 1994, 6-298952
Int. Cl.[6] G11B *15/43*
U.S. Cl. 242—336 **17 Claims**

1. A device for winding a magnetic tape in a trim state on the outer periphery of a tape reel, said device being arranged at a mid portion between a pair of tape reels on an inner peripheral side of a running path of the magnetic tape pulled out from a tape cassette, comprising:
a touch roll abutted against the magnetic tape along the tape width for affording a constant contact pressure against the outer periphery of the tape reel as the tape is wound thereon;



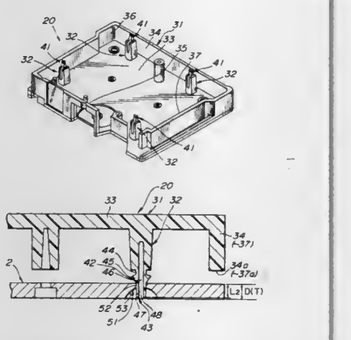
an arcuately-shaped roll arm member rotatably supporting said touch roll at one end thereof for arranging said touch roll to face an inside of the tape cassette;
a roll arm supporting member for slidably supporting said roll arm member so that said touch roll is moved in a diametrical direction with respect to said tape reel;
a plate on which said roll arm supporting member is assembled; and
a roll arm driving mechanism for sliding said roll arm member along said roll arm supporting member, wherein
said roll arm member is moved by said roll arm driving mechanism along said roll arm supporting member so that a line of force of the contact pressure applied to said magnetic tape taken up on the outer periphery of said tape reel traverses a center of rotation of said tape reel.

5,645,242

TAPE CARTRIDGE AND ASSEMBLY METHOD OF SAME CARTRIDGE

Shuichi Kikuchi, and Shintaro Higuchi, both of Miyagi, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 25, 1995, Ser. No. 428,517
Claims priority, application Japan, Apr. 28, 1994, 6-091672
Int. Cl.[6] G11B *23/04*
U.S. Cl. 242—347 **9 Claims**



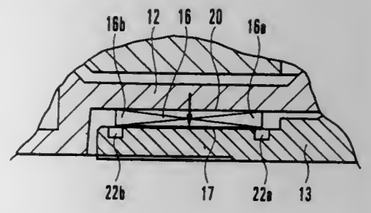
1. A tape cartridge, comprising:
a base plate, having at least one engaging section and an engaging hole formed therein;
a cover having a main body; and
at least one pin for coupling said main body of said cover with said base plate of the tape cartridge, said pin being integrally formed with said main body of said cover and engageable with said engaging hole in said engaging section formed in said base plate, said pin including a first engagement portion engageable with said engaging hole and coupling said main body of said cover to said base plate, whereby a portion of said main body is in contact with said base plate, and a second engagement portion engageable with said engaging hole and temporarily coupling said main body of said cover to said base plate, whereby said main body is separated from said base plate.

5,645,243

RECORDING AND/OR REPRODUCING APPARATUS HAVING CLUTCH MECHANISM

Kiyoshi Kumagai, Kanagawa-ken, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 7, 1995, Ser. No. 511,723
Claims priority, application Japan, Aug. 31, 1994, 6-207810
Int. Cl.[6] G11B *15/32*
U.S. Cl. 242—356.5 **14 Claims**



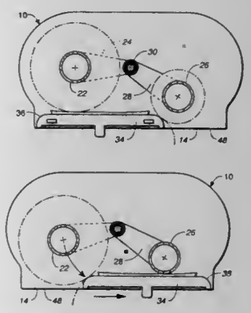
1. A clutch mechanism comprising:
a) first and second rotating elements supported to be rotatable coaxially;
b) a transmission member fixed to a face of said first rotating element with an adhesive member;
c) urging means for pushing said second rotating element against said transmission member; and
d) a recessed part formed in the face of said first rotating element to which said transmission member is fixed, said recessed part being arranged to accumulate and retain a pressure sensitive adhesive seeping from said adhesive member.

5,645,244

DISPENSER APPARATUS FOR DISPENSING PAPER SHEET MATERIAL

John R. Moody, Antioch, Calif., assignor to James River Corporation of Virginia, Richmond, Va.

Filed Mar. 5, 1996, Ser. No. 611,985
Int. Cl.[6] B65H *23/06;19/00*
U.S. Cl. 242—422.5 **7 Claims**



1. Dispenser apparatus for dispensing paper sheet material from at least one paper roll having a central opening, said dispenser apparatus comprising, in combination:

a housing defining a housing interior and a bottom opening communicating with said housing interior;

paper roll positioning means engaging a paper roll having a lead end within said housing interior for positioning said paper roll within said housing interior with said paper roll rotatably mounted on said paper roll positioning means; and

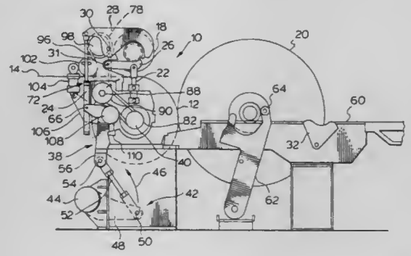
a paper roll support slidably connected to said housing and located at said bottom opening and partially closing said bottom opening, and said paper roll support and said housing forming a dispensing opening comprising a portion of said bottom opening, said paper roll support having a roll engagement surface located adjacent to said paper roll engaged by and at least partially supporting said paper roll, and said paper roll positioning means being movable relative to said paper roll support and maintaining said paper roll in engagement with said roll engagement surface to form a nip between said paper roll and said roll engagement surface while said paper roll rotates during dispensing of paper sheet material therefrom through said dispensing opening, said roll engagement surface extending downwardly and partially defining said dispensing opening, and said paper roll projecting alongside and downwardly from said roll engagement surface and into said dispensing opening with the paper sheet material lead end of said paper roll extending from the remainder of said paper roll and from said nip downwardly through said dispensing opening, said paper roll support being slidably movable relative to said housing between a first position wherein a first portion of said bottom opening is not closed by said paper roll support and comprises the dispensing opening and a second position wherein a second portion of said bottom opening is not closed by said paper roll support and comprises the dispensing opening, the weight of said paper roll projecting alongside and downwardly from said roll engagement surface exerting a biasing force on said paper roll support biasing said paper roll support to either said first position or said second position.

5,645,245

CENTER WIND ASSIST DRIVING WHEEL MECHANISM

Djuro Kremar, #31-40th Ave., Notre Dame, Ile Perrot Quebec J7V 5X8, Canada

Filed Aug. 9, 1995, Ser. No. 513,125
Claims priority, application Canada, May 25, 1995, 2150168
Int. Cl.[6] B65H *18/14;18/26*
U.S. Cl. 242—541.1 **7 Claims**



1. A web winding device for winding a substantially continuous web onto a rotating reel bar, said winding device including:

a) a driving drum having an axis about which said drum is rotated, said driving drum maintaining a nip driving engagement with said reel bar to drive rotation of said reel bar and transfer the web passing over a surface of said driving drum onto said reel bar;

b) transfer arm means for moving said reel bar from a primary winding position, where the web begins to wind onto said reel bar, to a secondary winding position, said transfer arm means maintaining said reel bar in nip driving engagement with said driving drum as said reel bar moves from the primary winding position to the secondary winding position; and,

c) center wind assist means for applying a driving torque to said reel bar as said reel bar moves from the primary winding position to the secondary winding position, comprising:

(i) a drive assist support arm pivotally mounted to said transfer arm means to move therewith and pivot relative thereto,

(ii) a driving wheel rotatably connected to one end of said drive assist support arm,

(iii) drive means for rotatably driving transmission means, and said transmission means for rotatably driving said driving wheel, said drive means including a motor having a driving shaft, and said transmission means including a linking and driving shaft passing through said transfer arm means and journalled therewith, a first belt means interconnecting said motor driving shaft and said linking and driving shaft, and a second belt means interconnecting said linking and driving shaft with said driving wheel, and

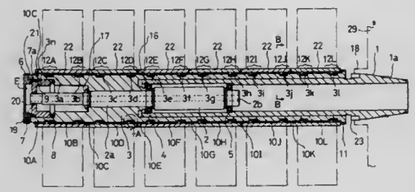
(iv) tensioning means, connected to said transfer arm means, for maintaining said driving wheel in driving and torque transfer relation with a peripheral surface portion of said reel bar.

5,645,246

BOBBIN HOLDER

Takami Sugioka, and Noriki Ishimaru, both of Matsuyama, Japan, assignors to Teijin Seiki Co., Ltd., Osaka-fu, Japan

Continuation of Ser. No. 283,056, Jul. 29, 1994, abandoned.
This application Sep. 4, 1996, Ser. No. 703,783
Claims priority, application Japan, Jul. 31, 1993, 5-208246
Int. Cl.[6] B65H *75/24*
U.S. Cl. 242—573.7 **12 Claims**



2. A bobbin holder for mounting a yarn-winding bobbin on a yarn winding machine, the bobbin holder comprising:

a unitary supporting shaft for supporting the bobbin coaxially with said supporting shaft, said supporting shaft having a generally cylindrical outer surface and a plurality of axially spaced concaves formed as circumferentially oriented depressions in said outer surface; and

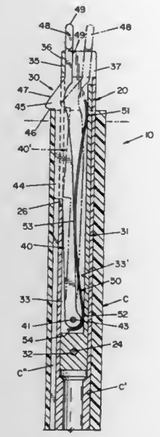
a plurality of chucking members arranged with at least a portion of each said chucking member disposed in a corresponding one of said concaves, said chucking members being configured to move radially outwardly upon being pressed in a longitudinal direction so as to engage an inner surface of the bobbin to secure the bobbin on the supporting shaft and also to move radially inwardly to release the bobbin when not being pressed in said longitudinal direction, whereby said supporting shaft withstands radial loads caused by said chucking members when said chucking members move radially outwardly and engage said inner surface of the bobbin.

5,645,247

BOBBIN POST COP LOCKING MECHANISM

Richard C. Voigt, Akron, Ohio, assignor to Karg Corporation, Tallmadge, Ohio

Filed Feb. 15, 1996, Ser. No. 601,796
Int. Cl.[6] B65H *75/24;49/26;79/00*
U.S. Cl. 242—597.3 **18 Claims**



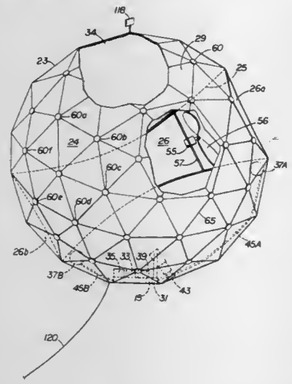
1. A bobbin post locking mechanism for selectively operatively retaining a cop having a throughbore on a bobbin post spindle comprising, a cylindrical post fixedly mounted on the spindle, a bore in said cylindrical post, an axially extending cutout in said cylindrical post communicating with said bore, a carrier mounted in said bore in said cylindrical post, and a lever mechanism housed in said carrier mounted to move radially outwardly of said cylindrical post for engaging the throughbore of the cop to preclude relative rotation and axial displacement of the cop relative to said cylindrical post.

5,645,248

LIGHTER THAN AIR SPHERE OR SPHEROID HAVING AN APERTURE AND PATHWAY

J. Scott Campbell, 310 W. 106th St., New York, N.Y. 10025

Filed Aug. 15, 1994, Ser. No. 288,715
Int. Cl.[6] B64B *1/06*
U.S. Cl. 244—30 **3 Claims**



1. A substantially spherical lighter than air apparatus having a quantity of lighter than air gas disposed therein providing the lighter than air apparatus with a desired buoyancy and capable of maintaining its bearing and position relative to the Earth, comprising:

a flexible sheeting material having an outer surface of a substantially spherical shape when filled with a quantity of lighter than air gas, the sheeting material having first and second apertures in the outer surface;

a pathway coupled within the sheeting material, such that the pathway is coupled between the first and second apertures, the pathway permitting air to flow through the first and second apertures;

at least one control surface coupled proximately to one of the first and second apertures and the pathway, the control surface deflecting air passing through the pathway, such that the control surface controls the bearing of the lighter than air apparatus;

a propulsion unit coupled within the pathway, the propulsion unit propelling air through the pathway to the control surface, such that the propulsion unit controls the position of the lighter than air apparatus relative to the Earth;

an air ballast pump coupled to the lighter than air apparatus;

at least one second ballonet disposed within the sheeting material and coupled to the air ballast pump via a first valve, such that gas having a density at least that of air is pumped into the second ballonet by the air ballast pump via the first valve;

a second valve coupled to the ballonet, the second valve purging the gas in the second ballonet outside of the lighter than air apparatus;

a station keeping system coupled to the control surface, the station keeping system monitoring a position and altitude of the lighter than air apparatus relative to the Earth and controlling the control surface to maintain the position;

at least one Global Positioning System device coupled to a power source, such that a position of the lighter than air apparatus can be determined;

at least one ballast tank coupled within the sheeting material;

a pump; and

line coupled between the pump and the ballast tank, such that the pump moves liquid to and from the ballast tank to change a center of gravity of the lighter than air apparatus;

wherein the station keeping system comprises:

a compass indicating a bearing of the lighter than air apparatus;

an altimeter providing a measurement of an altitude of the lighter than air apparatus;

an external anemometer coupled to an exterior of the lighter than air apparatus measuring wind velocity impinging upon the lighter than air apparatus;

an internal anemometer coupled within the pathway measuring velocity impinging upon the pathway of the lighter than air apparatus;

a wind vane measuring wind direction impinging upon the lighter than air apparatus; and

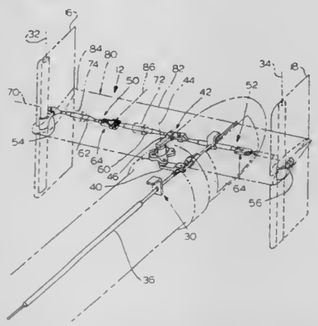
a computer coupled to the control surface, propulsion unit, Global Positioning System device, pump, compass, altimeter, internal and external anemometers, and the second ballonet, the computer outputting signals to control the propulsion unit, the inflation and deflation of the ballonet, deflection of the control surface, and pumping of ballast from and to the ballast tank based upon readings from the compass and comparisons of actual values of the wind velocity, wind direction, altitude and position from the internal and external anemometers, wind vane, altimeter, and Global Position System device and preselected values of the wind velocity, wind direction, altitude, and position to maintain the lighter than air apparatus at a desired position and altitude.

5,645,249

HELICOPTER STOWABLE HORIZONTAL STABILIZER

Jeff M. Hein, Fountain Hills, Ariz., assignor to McDonnell Douglas Corporation, Huntington Beach, Calif.

Filed Aug. 29, 1994, Ser. No. 297,394
Int. Cl.[6] B64C 3/56
U.S. Cl. 244—49 8 Claims



1. An aircraft which includes an airfoil having top and bottom parts and at least one fin on said airfoil, and a control rod assembly for transmitting push-pull forces along a force line that lies between said top and bottom parts, to transmit said forces between a control and said fin, wherein:

said airfoil includes inboard and outboard airfoil parts that are pivotally connected about a main pivot axis that is spaced from said force line, to pivot between a flight position wherein said airfoil part extend substantially in line and a stowed position wherein said airfoil parts extend largely 90 degrees to each other;

said control rod assembly includes inboard and outboard control rods having respective outer and inner ends, and a pair of slide bearings that are each mounted on a different one of said airfoil parts and that each supports a corresponding one of said control rods in movement along said force line, in said flight position of said airfoil parts;

a linkage which connects said outer end of said outboard control rod to said inner end of said outboard control rod and which transmits push-pull forces along said force line in said flight position;

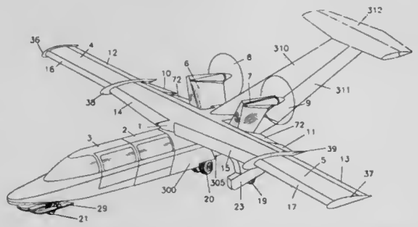
said linkage comprises a first link pivotally connected about a first axis to the outer end of said inboard control rod, a second link having first and second ends respectively pivotally connected to said first link at a second axis, and to said inner end of said outboard control rod at a third axis, said first and second and third axes extending substantially parallel to said main pivot axis and lying substantially on said force line in said flight position.

5,645,250

MULTI-PURPOSE AIRCRAFT

David E. Gevers, P.O. Box 430, Brownsburg, Ind. 46112

Filed Aug. 26, 1993, Ser. No. 112,877
Int. Cl.[6] B64C 03/54;11/46;25/52;35/00
U.S. Cl. 244—101 16 Claims



1. A multi-purpose aircraft comprising

(a) a fuselage having a generally cylindrical structure defining a forward end to an aft end, the fuselage being closed at the forward end by a nose section and closed at the aft end by a tail section, said fuselage further having a hull-shaped underside having forward and aft landing gear openings, said fuselage further having a port lateral recess and a starboard lateral recess;

(b) a compound aircraft wing attached to said fuselage comprising

(1) a fixed wing section comprising a bilaterally symmetrical aircraft wing providing lift in response to the flow of air thereacross defining leading and trailing edges and defining port and starboard halves, said fixed wing section being at least partially hollow and being open at the port and starboard ends, said fixed wing section further having a recess along the top surface of both the port and starboard halves;

(2) a port wing extension panel comprising a forward port lift spar, a center port drag spar, and an aft port lift spar, which port spars are disposed in parallel relation and each spar being substantially the same length as said fixed wing section, substantially one-half the length of said spars being enclosed by and giving structural support to an outer skin so as to form a port aircraft wing extension section ending in a wing tip, said port wing extension section providing lift in response to the flow of air thereacross, said port wing extension panel being extendably mounted inside said fixed wing section such that said port wing extension panel is extendable from the port opening of the fixed wing section such that substantially all of the port aircraft wing extension section protrudes from the port end of the fixed wing section and the portion of the port spars not enclosed by an outer skin being still inside said fixed wing section, said port wing extension panel further being mounted inside said fixed wing section such that said port wing extension panel is retractable within said fixed wing section such that substantially all of the port wing extension panel is enclosed by said fixed wing section;

(3) a starboard wing extension panel comprising a forward starboard lift spar, a center starboard drag spar, and an aft starboard lift spar, which starboard spars are disposed in parallel relation and each spar being substantially the same length as said fixed wing section, substantially one-half the length of said spars being enclosed by and giving structural support to an outer skin so as to form a starboard aircraft wing extension section ending in a wing tip, said starboard wing extension section providing lift in response to the flow of air thereacross, said starboard wing extension panel being extendably mounted inside said fixed wing section such that said starboard wing extension panel is extendable from the starboard opening of the fixed wing section such that substantially all of the starboard aircraft wing extension section protrudes from the starboard end of the fixed wing section and the portion of the starboard spars not enclosed by an outer skin being still inside said fixed wing section, said starboard wing extension panel further being mounted inside said fixed wing section such that said starboard wing extension panel is retractable within said fixed wing section such that substantially all of the starboard wing extension panel is enclosed by said fixed wing section, said port wing extension panel and said starboard wing extension panel being mounted in such relation that said port spars and said starboard spars are in interlocking juxtaposition inside the fixed wing section so as to permit the complete retraction of both the port and starboard wing extension panels within said fixed wing section at the same time; and

(4) means for effecting the extension and retraction of said port and starboard wing extension panels;

(c) one or more engines, mounted on the inside of the fuselage, each of said one or more engines, when operating, causing rotation of an engine shaft;

(d) a port mounting armature comprising a unitary body pivotally mounted on the trailing edge of the port half of the fixed wing section, the pivotal mount defining an upper portion and a lower portion of said port mounting armature, the armature being positioned on the fixed wing section and shaped so that when pivoted to port, the lower portion of said port mounting armature nests in said port fuselage recess and the upper portion of said port mounting armature nests in the recess in the port half of the fixed wing section, the upper portion of said port mounting armature including at least one port propeller nacelle in which a port shaft and propeller assembly is rotatably mounted, which port shaft and propeller assembly extends aft of said at least one port propeller nacelle such that the propeller portion of the port shaft and propeller assembly is positioned aft of the trailing edge of the fixed wing section, said propeller portion being a pusher propeller, the lower portion of said port mounting armature further comprising integrated pontoon and wheel landing gear, said port mounting armature being further shaped such that when pivoted to starboard, the wheel and the pontoon are oriented, at separate points of rotation of the port mounting armature, to a position appropriate for contact with the landing surface upon landing, and the upper portion of the port mounting armature is raised above said fixed wing section;

(e) a starboard mounting armature comprising a unitary body pivotally mounted un the trailing edge of the starboard half of the fixed wing section, the pivotal mount defining an upper portion and a lower portion of said starboard mounting armature, the armature being positioned on the fixed wing section and shaped so that when pivoted to starboard, the lower portion of said starboard mounting armature nests in said starboard fuselage recess and the upper portion of said starboard mounting armature nests in the recess in the starboard half of the fixed wing section, the upper portion of said starboard mounting armature including at least one starboard propeller nacelle in which a starboard shaft and propeller assembly is rotatably mounted, which starboard shaft and propeller assembly extends aft of said at least one starboard propeller nacelle such that the propeller portion of the starboard shaft and propeller assembly is positioned aft of the trailing edge of the fixed wing section, said propeller portion being a pusher propeller, the lower portion of said starboard mounting armature further comprising integrated pontoon and wheel landing gear, said starboard mounting armature being further shaped such that when pivoted to port, the wheel and the pontoon are oriented, at separate points of rotation of the starboard mounting armature, to a position appropriate for contact with the landing surface upon landing and the upper portion of the starboard mounting armature is raised above said fixed wing section;

(f) belt drive means connecting each engine shaft to at least one propeller shaft in such a manner that rotation of the engine shaft causes rotation of each propeller shaft and propeller to which said belt drive means is attached;

(g) compound landing gear comprising

(1) a forward landing gear component positioned forward of the center of gravity of the aircraft, substantially completely retractable into the fuselage through said forward opening in the fuselage, including integrated steerable ski and steerable wheel subcomponents; and

(2) a main central landing gear component, substantially completely retractable into the fuselage through said aft opening in the fuselage, including integrated skis and steerable wheel subcomponents, which, when retracted, assist in formation of a step in the fuselage.

5,645,251

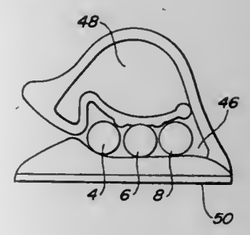
Patent Not Issued For This Number

5,645,252

FASTENING DEVICE

John L. Fisher, Roscommon, Mich., assignor to Goodwill Industries of Mid-Michigan, Inc., Flint, Mich.

Filed Mar. 22, 1995, Ser. No. 407,974
Int. Cl.[6] F16L 3/08
U.S. Cl. 248—74.2 7 Claims



1. A fastening device for retaining elongated objects, said fastening device comprising:

a base;

a bracket secured to an edge of said base and extending from said base in an overhanging manner;

said bracket including clamping means for engaging at least one elongated object and for urging the elongated object into contact against said base; and

said clamping means further comprising centering means for locating and for retaining the elongated object at a centered location between said base and said bracket;

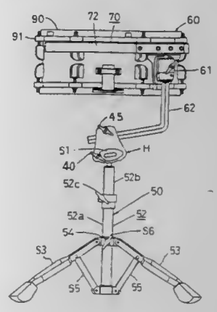
said centering means comprising at least two protrusions extending toward said base with one of said protrusions disposed on each side of said elongated object to position said elongated object within said clamping means.

5,645,253

UNIVERSAL SUPPORT FOR DRUMS

Yoshiki Hoshino, Aichi-Ken, Japan, assignor to Hoshino Gakki Co., Ltd., Japan

Filed Apr. 28, 1995, Ser. No. 431,141
Claims priority, application Japan, Feb. 8, 1995, 7-001403
Int. Cl.[6] F16M 11/14
U.S. Cl. 248—181.1 5 Claims



1. A universal support comprising:

a receiving member;

a first press attached to said receiving member, an elongated support, said receiving member and said first press each having a first contoured surface adapted to accommodate said elongated support relative to a support stand having an attach-

ment member, said elongated support sandwiched between said first contoured surfaces of said receiving member and said first press; and

a second press attached to said receiving member and spaced from said first press, said receiving member and said second press each having a second contoured surface adapted to accommodate said attachment member of said support stand sandwiched between said second contoured surfaces of said receiving member and said second press;

a bracket attachable to an end of said elongated support opposite the end attached to said universal support;

a curved arm is attached to said bracket, said curved arm adapted to extend partially around the peripbery of a drum having a lower hoop and an upper hoop;

a plurality of hoop installations on said upper hoop;

said bracket having a vibration-absorbing means to abut said lower hoop of a said drum; and

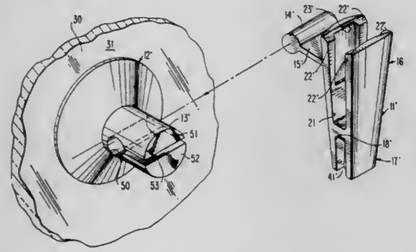
said curved arm connected to each of said hoop installations through a vibration-absorbing seat, said vibration-absorbing seat having a vibration-absorbing upper seat and a vibration-absorbing lower seat, with said vibration-absorbing upper seat and said vibration-absorbing lower seat adapted to sandwich at least one of said hoop installations therebetween.

5,645,254

SEASONAL DECORATION MOUNTING ARRANGEMENT

Samuel Ng; David A. Parshad, both of Ontario, Canada, and Charles W. Fennessy, Lemont, Ill., assignors to Noma, Inc., Toronto, Canada

Filed Feb. 2, 1995, Ser. No. 382,971
Int. Cl.[6] F16B *47/00*
U.S. Cl. 248—206.2 **1 Claim**



1. An arrangement for mounting holiday decorations on a smooth surface of a support, comprising:

a) a mounting element having a bifurcated first end portion forming a first channel for receiving a portion of a garland, said bifurcated first end portion of said mounting element including two first arms defining said first channel, each of said first arms having a pair of spaced ribs substantially aligned with those of the other of said first arms for constricting the cross section of said first channel thereat, and a bifurcated second end portion forming a second channel for receiving a portion of a greeting card, said bifurcated second end portion of said mounting element including two second arms defining said second channel, one of said second arms having a pair of spaced ribs and the other having a single rib situated substantially midway between said pair of ribs for forming a tortuous path for the passage of said portion of said greeting card therethrough, each of said ribs extending along a longitudinal direction;

b) a suction cup component constructed to suctionally adhere to the smooth support surface, said suction cup component having a socket bounding a cylindrical seat, said seat having flaps; and

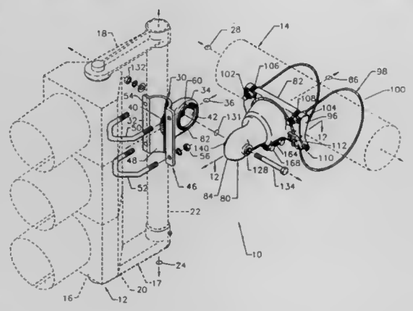
c) means for connecting said mounting element with said suction cup component, said connecting means including a generally planar extension extending from said mounting element in a plane generally perpendicular to said longitudinal direction, said extension having opposite planar surfaces engaged by said flaps, said connecting means also having a cylindrical joint portion mounted in said cylindrical seat.

5,645,255

ARTICULATING CLAMP ASSEMBLY FOR TRAFFIC CONTROL DEVICE

Stephen P. Parduhn, Edmond, Okla., assignor to Pelco Products, Inc., Edmond, Okla.

Filed May 31, 1995, Ser. No. 455,921
Int. Cl.[6] A47B *96/06*
U.S. Cl. 248—214 **14 Claims**



1. A clamp assembly for supporting a traffic control device on an elongate support member, the clamp assembly comprising:

a first clamp having a first end and a second end, an opening in the first end, an opening in the second end, and an internal channel connecting the openings in the first and second ends;

a connecting assembly on the first end of the first clamp adapted to removably attach the first end of the first clamp member to the traffic control device;

a second clamp having a first end, a second end and a longitudinal axis, and further having an opening in the first end, an opening in the second end, and an internal channel connecting the openings in the first and second ends, and wherein the first end is rotatable on the longitudinal axis relative to the second end;

a connecting assembly on the first end of the second clamp adapted to removably attach the first end of the second clamp to the elongate support member so that the second clamp extends generally perpendicular to the elongate support member and so that the second clamp can be attached to the elongate support member in a plurality of positions along the length of the elongate support member and in a plurality of positions about the circumference of the elongate support member;

a first serrated ring on the second end of the first clamp;

a second serrated ring on the second end of the second clamp, wherein the second serrated ring is adapted to removably mate with the first serrated ring in a plurality of selected positions and so that the openings in the second ends of the first and second clamps are aligned to connect the internal channels when the first and second serrated rings are interengaged; and

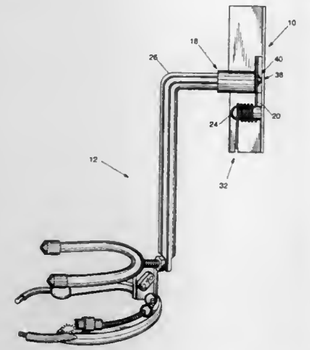
a connector assembly for rigidly connecting the second end of the first clamp member to the second end of the second clamp member when the first and second serrated rings are interengaged in a selected position.

5,645,256

MOUNTABLE LATCHING CLAMP FOR INSTRUMENT STANDS

Richard G. Thomas, II, 219 W. Milling, Lancaster, Calif. 93534

Filed Aug. 15, 1994, Ser. No. 290,242
Int. Cl.[6] G10D *3/00*
U.S. Cl. 248—222.11 **15 Claims**



1. A mounting clamp for an instrument stand, comprising:

(a) a bracket;

(b) an instrument stand;

(c) receiver means, connected to the bracket, for coupling with the instrument stand, wherein the receiver means comprises a keyed receiver having a multi-sided interior to prevent the instrument stand from rotating when inserted therein to a fully inserted position; and

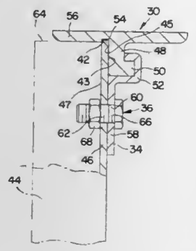
(d) a latch for securing the instrument stand in the receiver means, wherein the latch comprises a spring coiled about a collar attached to the bracket.

5,645,257

ADJUSTABLE SUPPORT APPARATUS

Michael A. Ward, Wilkes-Barre, Pa., assignor to Metro Industries, Inc., Reno, Nev.

Filed Mar. 31, 1995, Ser. No. 414,213
Int. Cl.[6] A47G *29/02*
U.S. Cl. 248—248 **16 Claims**



1. An adjustable support apparatus, comprising:

a standard having perpendicular side surfaces and formed with a channel therein;

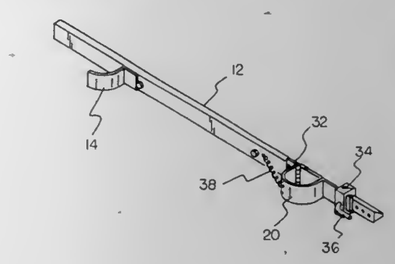
a support having a first surface with a horizontal rear edge and a second surface having a vertical rear edge substantially perpendicular to and extending beyond said horizontal rear edge, said horizontal rear edge of said first surface and said second surface abutting respectively said perpendicular side surfaces of said standard, said first surface adapted to bear a load; and securing means, separate from said support, for securing said support to said standard when said vertical rear edge of said second surface is embraced by said channel.

5,645,258

HOSPITAL BED WALL SECURING DEVICE

Michael R. Flowers, 4625 Harrison St., Bellaire, Ohio 43906

Filed Jun. 12, 1995, Ser. No. 489,670
Int. Cl.[6] A47B *96/06*
U.S. Cl. 248—298.1 **1 Claim**



1. A hospital bed wall securing device comprising:

an elongated mounting plate securable to a wall surface, the mounting plate shaped so as to define a plurality of apertures extending therethrough permitting passage of mounting fasteners through the mounting plate shaped and into a portion of the wall surface, the mounting plate shaped so as to define a plurality of adjustment apertures directed into a front face of the mounting plate and extending from a second end thereof along a portion of a longitudinal length of the mounting plate;

a fixed engaging member mounted to the mounting plate proximal to a first end thereof for receiving a first leg of a bed;

a movable engaging member pivotally mounted proximal to the second end of the mounting plate by a hinge for engaging a second leg of the bed so as to secure the legs relative to the wall surface to preclude movement of the bed, a securing collar slidably mounted to the mounting plate and including a through-extending aperture, a spring coupled to the movable engaging member and extends under tension to couple with the mounting plate;

a securing pin projecting through the movable engaging member and positioned into one of the adjustment apertures so as to lock the moyable engaging member relative to the mounting aperture.

5,645,259

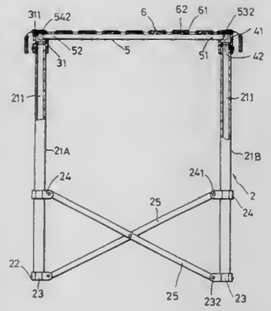
FOLDABLE LEG ASSEMBLY FOR A TABLE

Kao-San Chen, No. 282, Sec. 2, Shu-Lin St., Tainan City, Taiwan

Filed Jun. 21, 1996, Ser. No. 668,542
Int. Cl.[6] F16M *11/38*
U.S. Cl. 248—436 **6 Claims**

1. A foldable leg assembly adapted to permit a table top to be placed thereon, said assembly comprising:

an adjacent pair of upright rail retaining legs, each of which has a rail accommodation chamber therein and an upper end provided with a fixed hollow rail retaining seat, each of said rail retaining seats having a vertical side wall, a horizontal top wall connected securely to an upper end of said side wall, and a retaining slot which extends from said top wall to said side wall and which is formed through said top and side walls, each of said hollow rail retaining seats having an interior space communicated with the rail accommodation chamber in a respective one of the rail retaining legs;



an adjacent pair of upright rail positioning legs, each of which has an upper end provided with a fixed rail positioning seat, each of said rail positioning seats having a top surface formed with a generally straight positioning slot which has two open ends;

four sliding blocks respectively and slidably sleeved on the rail retaining legs and the rail positioning legs, respectively;

eight links each of which interconnects an adjacent pair of said rail retaining legs and said rail positioning legs and is pivoted to one of the sliding blocks at an end thereof and to one of said rail retaining legs and said rail positioning legs at the other end thereof, in such a manner that two of the links which are interposed between each adjacent pair of said rail retaining legs and said rail positioning legs are pivoted to each other at middle portions thereof so as to form an X-shape, thereby enabling said links to be folded on said legs by moving said blocks on said legs; and

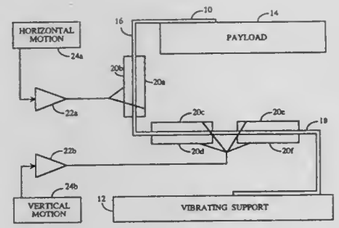
two parallel support rails, each of which has a first enlarged end and a second enlarged end that are sized so as not to pass through said retaining slot of a corresponding one of said rail retaining seats, thus confining said first enlarged ends of said rails within said rail retaining seats respectively while keeping said second enlarged ends of said rails outside of said rail retaining seats respectively, and each of which extends into said straight positioning slot in a corresponding one of said rail positioning seats so as to position said rails on said rail retaining legs and said rail positioning legs for placement of the table top on the rails, said second enlarged ends of said rails being capable of being removed manually from said rail positioning seats and then turned upward to erect said rails so as to permit said rails to fall into said rail accommodation chambers of said rail retaining legs, in order to fold said links on said rail retaining legs and said rail positioning legs for transportation and storage.

5,645,260

ACTIVE PIEZO-ELECTRIC VIBRATION ISOLATION AND DIRECTIONAL BRACKET

Eric T. Falangas, Huntington Beach, Calif., assignor to The Aerospace Corporation, El Segundo, Calif.

Filed May 15, 1995, Ser. No. 441,263
Int. Cl.[6] A01K *97/10*
U.S. Cl. 248—550 **8 Claims**



PAYLOAD-SUPPORT ISOLATION BRACKET

1. A bracket for isolating a payload from vibrations of a support, said bracket receiving electrical control signals for attenuating said vibrations through said bracket, said bracket comprising,

a first end for bonding to said payload,

a second end for bonding to said support,

a strip portion between said first end and said second end, and

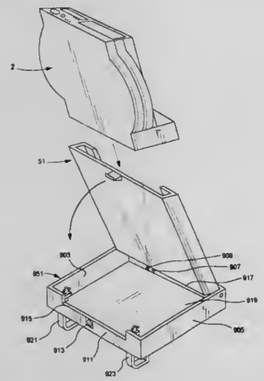
piezoelectric actuator means receiving said electrical control signals and bonded to said strip portion for contracting or expanding said strip portion, said contracting or expanding attenuating said vibrations through said bracket.

5,645,261

COMPUTER COMPONENT SECURITY DEVICE

Kenneth P. Glynn, Township of Raritan, County of Hunterdon, N.J., assignor to Ideal Ideas, Inc., Flemington, N.J.

Filed Jan. 30, 1995, Ser. No. 380,033
Int. Cl.[6] F16M *13/00*
U.S. Cl. 248—551 **8 Claims**



1. A computer component securing device, which comprises:

(a) a main housing having a bottom, sidewalls, a front, back and an open top, wherein at least one of said front and back has a first cut-out creating a central portion of shorter wall height and outer portions of higher wall height relative to one another, said housing having at least one second cut-out in at least one of said front, back and sidewalls, for passing a table securing device at least partially therethrough;

(b) a lid having a bottom, sidewalls, and a front and back, wherein one of said front and back is sufficiently open to permit a computer component to pass therethrough for a nesting in said lid, the other of said front and back has sufficient height to prevent said computer component from passing therethrough and said sidewalls include inward ledges facing inwardly toward a central area of said lid of sufficient length to prevent said computer component from being lifted upwardly therefrom, said lid being hingedly connected to said main housing so as to have a first, open position whereby said computer component may be slid into and nested in said lid and so as to have a second, closed position such that a nested computer component cannot be removed therefrom but such that said first cut-out on said housing may expose functional aspects of said computer component for utilization by a user when said lid is in its second, closed position;

(c) locking means connected to said lid and said main housing and adapted so as to permit locking and unlocking of one of said lid and said main housing when said lid is in its second, closed position; and,

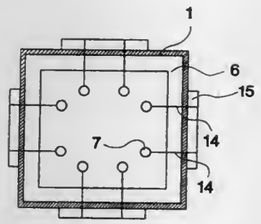
(d) table securing means extending through said at least one second cut-out in said main housing and connected to said main housing inside said main housing, and having an attachment mechanism outside of said main housing which is securably connectable to a table, wherein said table securing means may be attached to said table by operating said table securing means from the inside of said main housing and when said lid is in its second, closed position and is locked said table securing means cannot be unattached from said table without damaging said device or said table to which said table securing means is attached.

5,645,262

PORTABLE CD MOUNT FOR OFF ROAD VEHICLES

Matthew Glen Hamlin, P.O. Box 736, Flora Vista, N. Mex. 87415

Filed Nov. 2, 1995, Ser. No. 551,962
Int. Cl.[6] F16M *13/00*
U.S. Cl. 248—581 **4 Claims**



1. A mounting assembly for mounting an audio play back machine in a vehicle comprising:

an outer casing having a bottom and four sides,

means on said bottom for mounting said outer casing to a vehicle,

a plurality of first apertures in said sides of said outer casing,

an inner plate having a bottom surface, a top surface and four sides,

a plurality of second apertures extending through said top and bottom surfaces of said inner plate,

resilient means attached to each of said second apertures,

each of said resilient means extending through one of said first apertures in said sides of said outer casing,

means on an outside of said outer casing for anchoring said resilient means,

said means for anchoring said resilient means comprising an abutment bar which is separate from said outer casing, and larger than said apertures in said sides of said outer casing,

an end of said resilient means extending through said apertures in said sides of said outer casing and engaging said abutment,

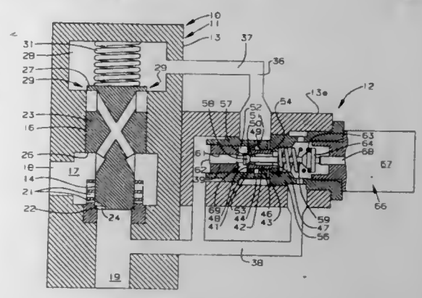
whereby said inner plate will be resiliently mounted with respect to said outer casing and said abutment will prevent said resilient means from passing back through said apertures in said sides of said outer casing.

5,645,263

PILOT VALVE FOR A FLOW AMPLYIFYING POPPET VALVE

James A. Aardema, Joliet, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Oct. 4, 1993, Ser. No. 130,937
Int. Cl.[6] F16K *31/383*
U.S. Cl. 251—30.02 **11 Claims**



1. A flow amplifying poppet valve comprising:

a housing having a main fluid passage having an inlet port and an outlet port;

a main poppet disposed between the inlet and outlet ports and defining a first control chamber in the housing, the poppet including a first annular reaction surface continuously subjected to pressurized fluid from the inlet port and a variable orifice communicating the inlet port with the first control chamber;

a pilot fluid passage having an inlet portion communicating with the first control chamber and an outlet portion communicating with the outlet port;

a two-stage pilot valve disposed within the pilot fluid passage including:

a second stage poppet disposed between the inlet and outlet portions and defining a second control chamber in the housing, the second stage poppet having a fluid passage extending axially therethrough and a second annular reaction surface continuously subjected to pressurized fluid from the inlet portion, the second stage poppet being movable between a closed flow blocking position and an open position establishing a variable flow regulating orifice between the inlet and outlet portions;

a pilot stage poppet having a stem extending through the fluid passage in the second stage poppet and a frusto-conical section engagable with one end of the second stage poppet;

an orifice communicating the inlet portion with the second control chamber;

a spring resiliently biasing the frusto-conical section into blocking engagement with the second stage poppet; and

means for selectively exerting a variable control force to urge the pilot stage poppet in a valve opening direction so that a variable flow control orifice is established between the frusto-conical section and the second stage poppet.

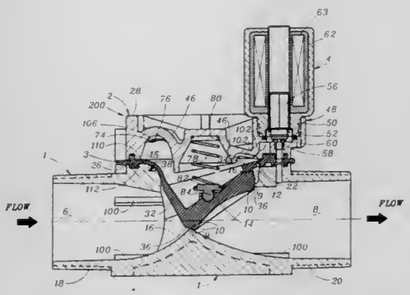
5,645,264

TILTED SEAT DIAPHRAGM VALVE

Carl L. C. Kah, Jr., 778 Lakeside Dr., N. Palm Beach, Fla. 33408

Filed Jul. 22, 1994, Ser. No. 279,326
Int. Cl.[6] F16K *31/385;31/126*
U.S. Cl. 251—30.02 **21 Claims**

1. A flow control valve for controlling the flow of fluid having a housing including a passage having an inlet and an outlet, a valving means obliquely disposed in said passage between the inlet and the outlet for controlling flow therebetween, said valving means comprising a valve seat obliquely disposed to the direction



of flow and valve plug means complementary thereto for engaging said valve seat, said valve plug means made from a flexible material including a unitary formed hinge portion extending along a portion thereon and spaced from a peripheral portion thereof for rotating said valve plug means about said hinge portion for seating and unseating said valve plug means on and off of said valve seat, a pressure responsive means mounted in said housing adjacent said valving means, said pressure responsive means controlling the movement of the valve plug means, said valve plug means being moved between an open and closed position by pressure forces acting on opposite sides of said pressure responsive means, said valve seat being round, said valve plug means being spherically shaped where it contacts said round valve seat in its closed position to provide good self-centering and sealing characteristics as a function of said hinge portion.

5,645,265

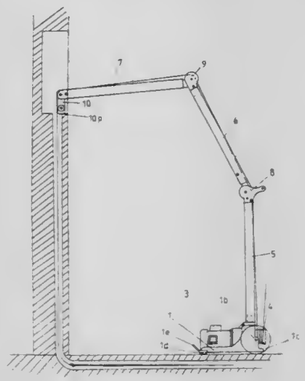
FOLDABLE WIRE DRAW BENCH

Rui-Chi Shu, 108, Ba Feng Street, Jia Dong Li, Ba De City, Tao Yuan Shien, Taiwan

Filed Jan. 19, 1996, Ser. No. 588,736

Int. Cl.[6] E21C *29/16*

U.S. Cl. 254—134.3 FT **1 Claim**



1. A foldable wire draw bench comprising:

a main body **1**;

a retarding motor **3** disposed on said main body **1**;

a first section arm **5** disposed at a front upper portion of said main body **1**;

a second section arm **6** and said first section arm **5** connected by a first positioning device **8**;

a third section arm **7** and said second section arm **6** connected by a second positioning device **9**;

a wire-leading position device **10** connecting a distal end of said third section arm **7**;

a grip **1***e* disposed at a rear end of said main body **1**, two parallel positioning fins **1***a* disposed on said front upper portion of said main body **1** to position said first section arm **5**, two wheels **1***c* fastened on said main body **1**, a positioning bearing **2** disposed between a pivot **3***a* of said retarding motor **3** and a spool **4**.

a width of said first section arm **5** larger than a width of said second section arm **6**, and said width of said second section arm **6** larger than a width of said third section arm **7**;

said first positioning device **8** containing a first reel **8***a*, a first shaft **8***b*, a pair of first bearings **8***c*, two pads **8***d*, two positioning toothed plates **8***e*, two slip-resistant packings **8***f*, two positioning plates **8***g*, a pair of first nuts **8***h*, two nut-retaining plates **8***i*, a second reel **8***j*, a second shaft **8***k*, a pair of second bearings **8***l*, a pair of second nuts **8***m*, a positioning pin **8***n*, a positioning ring **8***o*, a first spring **8***p*, and a first spring cover **8***q*;

each end of said first shaft **8***b* passing through a first bearings **8***c*, a pad **8***d*, a positioning toothed plate **8***e*, a slip-resistant packing **8***f*, a positioning plate **8***g*, and a nut **8***h*; a bar positioning shaft **8***s* inserted in a handle bar **8***r*; two opposite ends of said bar positioning shaft **8***s* each inserted in a respective one of said positioning plates **8***g* and one of a pair of third nuts **8***t*; said second shaft **8***k* being inserted in said second reel **8***j*; two opposite ends of said second shaft **8***k* each inserted in a respective one of said second bearings **8***l*, said positioning plates **8***g*, and said second nuts **8***m*; said nut-retaining plates **8***i* adjacent to said positioning plates **8***g*; said positioning pin **8***n* has two toothed ends each passing through a respective one of said nut-retaining plates **8***i* and a respective one of said positioning plates **8***g*; said positioning ring **8***o* receiving one end of said positioning pin **8***n* tightly; said first spring cover **8***q* having said first spring **8***p* therein receiving an opposite end of said positioning pin **8***n* tightly; said positioning toothed plates **8***e* connecting said second section arm **6** pivotally; said positioning plates **8***g* connecting said first section arm **5** pivotally;

a third shaft **8***v* inserted into a sleeve **8***u*; two ends of the sleeve **8***u* each passing through a respective one of the positioning toothed plates **8***e* and positioned by two U-shaped retaining rings **8***w*;

said second positioning device **9** containing a fourth shaft **9***b*, a third reel **9***a*, two second positioning toothed plates **9***e*, two second slip-resistant packings **9***f*, two fixing plates **9***g*, two fourth nuts **9***h* and two second nut-retaining plates **9***i*; said fourth shaft **9***b* having two threaded ends disposed in said third reel **9***a*; each end of said fourth shaft **9***b* passing through a round bearing **9***c*, a round pad **9***d*, a second positioning toothed plate **9***e*, a second slip-resistant packing **9***f*, a fixing plate **9***g*, and a fourth nut **9***h*; a second positioning pin **9***j* having which two toothed ends, each passing through one of said second nut-retaining plates **9***i* and one of said fixing plates **9***g*; a second positioning ring **9***k* receiving one end of said positioning pin **9***j* tightly; a second spring cover **91** which has a second spring **9***m* therein receiving an opposite end of said second positioning pin **9***j* pivotally;

said second positioning toothed plates **9***e* connecting said third section arm **7** pivotally; said fixing plates **9***g* connecting said second section arm **6** pivotally;

said wire-leading position device **10** having a U-shaped plate **10***p*; a fifth shaft **10***b* inserted in a fourth reel **10***a*; two opposite ends of said fifth shaft **10***b* each inserted in one of a pair of fourth bearings **10***c* and positioned by two retaining rings **10***d*; said fourth reel **10***a* disposed between two arms of said U-shaped plate **10***p*; a sixth shaft **10***f* inserted in a fifth reel **10***e*; two opposite ends of said sixth shaft **10***f* each inserted in one of a pair of fifth bearings **10***g* and each positioned by a slip-resistant packing **10***h*; said fifth reel **10***e* disposed between said arms of said U-shaped plate **10***p*; a settling pin **10***l* which has two toothed ends each passing through one of nut-retaining plates **10***k* and one of two settling plates **10***i*; a settling ring **10***m* receiving one end of said settling pin **10***l* tightly; a third spring cover **10***o* which has a third spring **10***n* therein receiving an opposite end of said settling pin **10***l* pivotally; and said settling plates **10***i* connecting said third section arm **7** pivotally.

5,645,266

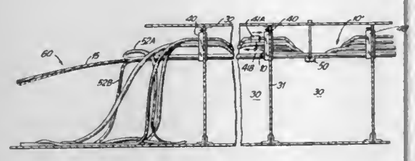
NAVAL ELECTRICAL POWER CABLE AND METHOD OF INSTALLING THE SAME

Howard C. Faust, Kinnelon; Nicholas Adams, Mahwah, and Wesley R. Kegerise, Oakland, all of N.J., assignors to The Okonite Company, Ramsey, N.J.

Continuation of Ser. No. 801,452, Dec. 2, 1991, Pat. No. 5,457,285, which is a continuation-in-part of Ser. No. 644,940, Jan. 23, 1991, Pat. No. 5,166,473. This application Oct. 4, 1995, Ser. No. 539,184

Int. Cl.[6] B65H *59/00*

U.S. Cl. 254—134.3 R **3 Claims**



1. A method of installing an electrical power cable in a vessel having two or more compartments each defined by walls through which cable passing transits are installed to permit the electrical power cable to pass from one compartment to an adjacent compartment and thence to a cable-spreading space, with an airtight and watertight seal being formed between the interface of said electrical power cable and the sealing material of each said transit, said method comprising the steps:

(a) providing an electrical power cable including a plurality of insulated electrical conductors each having a longitudinal extent and being helically intertwined with the other of said electrical conductor so as to form a core conductor assembly having a longitudinal extent and at least a pair of outer interstices adjacent said insulated electrical conductors,

at least a pair of strip cords, each said strip cord being disposed along the longitudinal extent of said core conductor assembly and into and out of said outer interstices in a spatially periodic manner, and

a water blocking layer disposed about said core conductor assembly and said strip cords so as to prevent passage of water along the interstices about said electrical conductors, and

a jacket layer disposed over and adjacent to said water blocking layer;

(b) passing said electrical power cable through said transits in said compartments;

(c) packing each said transit so as to provide a watertight seal between said jacket layer of said cable and said transit sealing material of each said transit; and

(d) removing in said cable spreading space, a predetermined length of said water blocking layer and said jacket layer by (i) exposing a portion of each strip cord, (ii) gripping each said strip cord with a tool, (iii) manually gripping said tool and pulling said strip cords along the longitudinal extent of said electrical power cable and up to said predetermined length of said cable, thereby cutting simultaneously said jacket layer and water blocking layer and forming at least two strip-like layers of jacket and water blocking material, and (iv) peeling each said strip-like layer of jacket and water blocking material, so as to expose said insulated conductors for spreading.

5,645,267

METHOD AND APPARATUS FOR INSTALLING TRANSMISSION LINES

Michael H. Reeve, and Stephen A. Cassidy, both of Ipswich, England, assignors to British Telecommunications public limited company, London, England

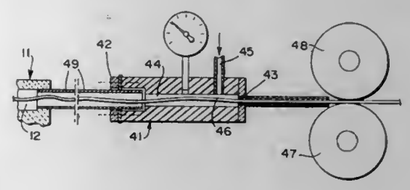
Division of Ser. No. 970,464, Nov. 2, 1992, Pat. No. 5,456,450, which is a division of Ser. No. 554,927, Jul. 20, 1990, Pat. No. 5,169,126, which is a continuation of Ser. No. 86,849, Aug. 19, 1987, Pat. No. 4,948,097, which is a continuation-in-part of Ser. No. 848,950, Apr. 7, 1986, Pat. No. 4,691,896, which is a continuation of Ser. No. 551,640, Nov. 8, 1983, abandoned. This application Jun. 2, 1995, Ser. No. 460,268

Claims priority, application United Kingdom, Nov. 8, 1982, 8231840; Aug. 4, 1983, 8309671

The portion of the term of this patent subsequent to Apr. 7, 2006, has been disclaimed.

Int. Cl.[6] B60F *3/24*

U.S. Cl. 254—134.4 **32 Claims**



1. A method of installing a cable into a duct comprising:

connecting to the duct an apparatus comprising

a cable injection means having;

a hollow, substantially rectilinear cable lead-through channel in said injection means with an entrance end and an exit end for leading in and leading out a cable which has to be injected into the duct;

at least one pair of wheels mounted opposite to each other for propelling a cable disposed between said wheels of said at least one pair into said duct in a direction of said exit end, and a motor coupled to at least one of said wheels for providing a driving couple thereto; and

gas inserting means including a gas channel, which opens into said cable lead-through channel and which is adapted for inserting compressed gas into said lead-through channel between said wheels and the exit end of said lead-through channel;

wherein the motor is capable of providing a driving couple, which driving couple is larger than the force which has to act on the cable to compensate the difference between the pressure inside and the pressure outside the cable lead-through channel, so that pushing forces can be exerted by the wheels on the cable as a consequence of the cooperative effect of the driving couple;

and wherein gas introduced through said gas channel passes, in use, into and along said cable duct, in the desired direction of travel of the cable, the gas flowing at a high relative flow velocity with respect to the cable whereby viscous drag forces are exerted upon said cable in the desired direction of advance, the combined effect of said viscous drag forces and the pushing forces exerted by the wheels serving to install said cable in said duct;

and connecting the apparatus to a source of compressed gas, inserting the cable into the apparatus and advancing the cable along the cable duct under the combined effect of viscous drag forces within the duct and the pushing force exerted by the wheels of the apparatus.

5,645,268

LAYING AND TRANSPORTING APPARATUS

Kenichi Konno, c/o Kyowakogyo Co., Ltd., 22-20, Asahi-cho 1-chome, Atsugi-shi, Kanagawa 243, Japan

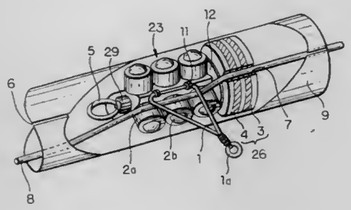
PCT No. PCT/JP95/00137, § 371 Date Sep. 26, 1995, § 102(e) Date Sep. 26, 1995, PCT Pub. No. WO95/21482, PCT Pub. Date Aug. 10, 1995

PCT Filed Jan. 31, 1995, Ser. No. 525,798

Claims priority, application Japan, Feb. 4, 1994, 6-043004; Jan. 18, 1995, 7-005734

Int. Cl.[6] B65H *59/00*

U.S. Cl. 254—134.4 **12 Claims**



1. A laying or transporting apparatus comprising:

a pipe (**9**) having a slit (**6**) along a longitudinal direction thereof throughout a full length thereof;

a sealing wire rod (**8**) which can block the slit (**6**) is arranged in the pipe (**9**) throughout the full length of the pipe;

a moving body (**23**) inserted in the pipe (**9**) and being movable in the pipe (**9**) by means of compressed air fed into the pipe (**9**) said moving body comprising a center shaft (**29** which coincides with a center of the pipe at a shaft center thereof, a sealing portion (**26**) in gastight contact with an inner face of the pipe (**9**) and fixed to the center shaft (**29**), a guide groove (**7**) formed on the sealing portion (**26**) in a longitudinal direction of the pipe (**9**) for guiding the wire rod, a plurality of bearing cases (**2***a*) fixed radially on the center shaft (**29**), and a plurality of bearing balls (**2***b*) contained in the bearing cases (**2***a*) and being capable of rolling on an inner face of the pipe (**9**); and

a connection member (**1**) connected to the moving body (**23**) in the pipe (**9**) at a base and thereof, passing through the slit (**6**) and positioned outside the pipe (**9**) at a leading and thereof to which a material (**15**) to be laid or an object is connected.

5,645,269

SHEAVE CABLE GUARDING AND GUIDING DEVICE

John A. Peterson, Brigham City, Utah, assignor to Wireline Technologies, Woods Cross, Utah

Filed Jun. 7, 1995, Ser. No. 482,026

Int. Cl.[6] B66D *1/00*

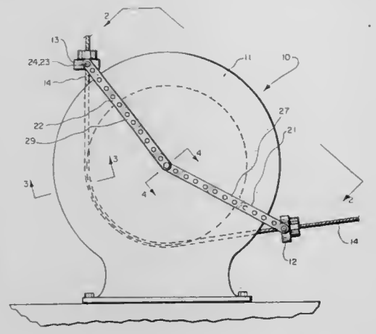
U.S. Cl. 254—398 **24 Claims**

1. A cable guarding and guiding device for use upon a sheave assembly, said sheave assembly including a cable engaging sheave wheel mounted to rotate about a fixed axis upon a supporting structure, said guarding and guiding device comprising:

a body assembly carrying a cable engaging and guiding bore therethrough coplanar with the sheave wheel;

means mounting the body assembly upon the supporting structure freely movable to cable engaging locations; and

axle means securing the body assembly to the mounting means to rotate, without contact with said sheave assembly, about an axis perpendicular to the plane of the sheave wheel and also perpendicular to the plane of the cable engaging and guiding bore.



5,645,270

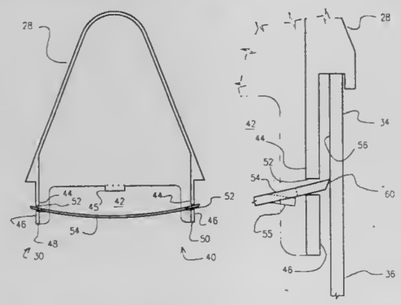
PLASTIC COMPONENT CONNECTION SYSTEM

Lloyd L. Lawrence, 2050 W. 7th Ave., Denver, Colo. 80204

Filed Jun. 24, 1996, Ser. No. 667,594

Int. Cl.[6] E04H *17/14*

U.S. Cl. 256—66 **13 Claims**



10. A system for connecting at least two components of plastic fence, the system comprising:

at least one element containing a hollow female portion having a cavity with a plastic inner surface;

at least one component including a male portion having at least two spaced apart sections, the spaced apart sections being adapted for fitting within the cavity of the female portion within close proximity to the plastic inner surface of the female portion,

the spaced apart sections defining a cavity therebetween, and each spaced apart section having an opening therethrough;

at least one retention means comprising an elongate resilient body of a length that is greater than the distance between the spaced apart sections and having at least two ends, each end being adapted for insertion through the openings in the spaced apart sections, each end further having at least one protrusion, the protrusion being adapted for limiting the insertion of the end of the retention means through the opening of the spaced apart sections, so that the insertion of one end of the retention means through the opening in one spaced apart section and the other end of the retention means is inserted in the opening in another spaced apart section pretensions the retention means assumes a generally arched shape prior to insertion of the male portion into the female portion, so that the insertion of the male portion into the female portion allows the retention means to flex within the cavity of the male portion, biasing the ends of the retention means against the inner surface of the female portion.

5,645,271

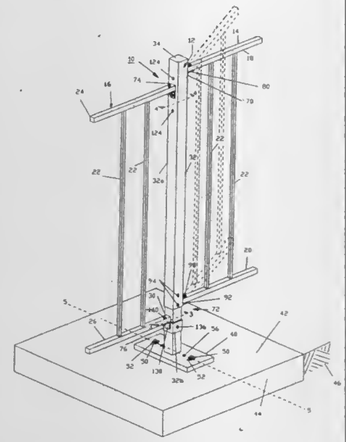
METAL FENCE POST WITH ADJUSTABLE RAIL MOUNTING

Marcos D. Nunez, 11309 Telechron Rd., Whittier, Calif. 90605

Filed Jul. 11, 1994, Ser. No. 272,551

Int. Cl.[6] E04H *17/16*

U.S. Cl. 256—67 **18 Claims**



1. An adjustable fence post apparatus for metal fences, said apparatus comprising:

a. a rigid metal post comprising an inner sleeve and an outer sleeve;

b. a base plate having fixed thereto one end region of said post, said base plate being configured for enabling said post to be detachably attached to a mounting pad;

c. first means for detachably attaching a first pair of spaced apart upper and lower fence rails to a first side region of said outer sleeve of said post; and

d. second means for detachably attaching a second pair of spaced apart upper and lower fence rails to a second side region of said post, said second attaching means enabling the second pair of fence rails to be detachably attached to said second side region of said post at least one different elevation from the elevation at which said first pair of upper and lower fence rails are attached to the post.

5,645,272

LIFTING AND POSITIONING DEVICE FOR CABINETS AND CONSTRUCTION PANELS

Richard Brennan, Sr., North Babylon, N.Y., assignor to Kim-Rick, Incorporated, Bayonne, N.J.

Filed Dec. 6, 1994, Ser. No. 349,801

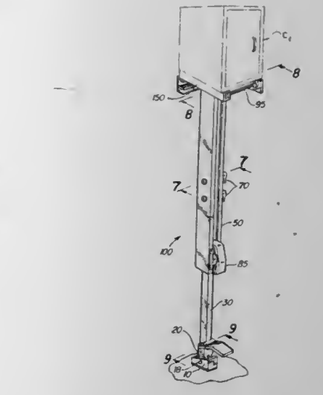
Int. Cl.[6] E04G *21/14*

U.S. Cl. 269—68 **9 Claims**

1. An apparatus for supporting a workpiece, said apparatus comprising:

a longitudinal member having portions defining a cavity;

a strut member pivotally connected to said longitudinal member, said strut member having a stop and portions defining a partial hole; and



a fastener mounted in said cavity, said fastener biased to engage said partial hole so as to hold said strut member and said longitudinal member in a longitudinally extensible position and when said fastener is moved out of said partial hole, said stop causes said longitudinal member to rotate in one direction.

5,645,273

SHEET ORIGINAL SUPPLY APPARATUS AND IMAGE FORMING APPARATUS WITH IT

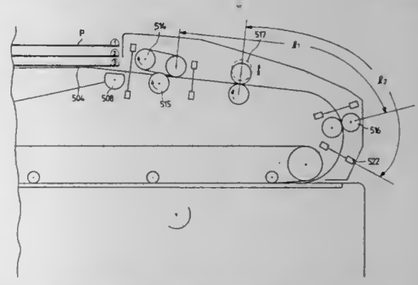
Tomohito Nakagawa, Matsudo; Masakazu Hiroi; Chikara Sato, both of Yokohama; Yoshinori Isobe, Tokyo, and Akimaro Yoshida, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 197,852, Feb. 17, 1994, abandoned. This application May 18, 1995, Ser. No. 443,557

Claims priority, application Japan, Feb. 19, 1993, 5-055095

Int. Cl.[6] B65H *5/00*

U.S. Cl. 271—10.1 **13 Claims**



1. An original supply apparatus for supplying originals to a reading means, said reading means for reading an original during feeding at a reading position on a glass platen, comprising:

rotary convey belt means for conveying the original on the glass platen through the reading position; and

a pair of rotary supply means arranged directly upstream of said rotary convey belt means for supplying the original to said rotary convey belt means,

wherein the glass platen has a reading start position located midway of the glass platen in the original feeding direction so that when a leading end of the original reaches the reading start position, a trailing end of the original is located upstream of, and is not restrained by, said rotary convey belt means,

wherein said pair of rotary supply means is disposed at a location wherein a distance between the reading start position and said pair of rotary supply means is smaller than a length of the original, and

wherein after the original starts to be conveyed by said rotary convey belt means and before the original is read at said reading start position, restraint exerted by said pair of rotary supply means on the original is released by separating said pair of rotary supply means from each other.

5,645,274

SHEET SUPPLY APPARATUS

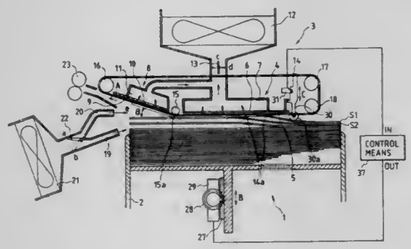
Shinsuke Ubayashi; Yasumi Yoshida, both of Yokohama, and Ryusei Kominato, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Japan

Filed Sep. 20, 1994, Ser. No. 309,141

Claims priority, application Japan, Sep. 22, 1993, 5-261783; Sep. 27, 1993, 5-262952; Dec. 27, 1993, 5-354389; Dec. 29, 1993, 5-355503

Int. Cl.[6] B65H *3/12*

U.S. Cl. 271—94 **20 Claims**



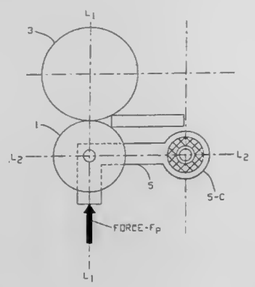
1. A sheet supply apparatus comprising:

sheet supporting means for supporting sheets;

sheet absorb means for absorbing a sheet supported by said sheet supporting means to thereby separate the sheet from the other sheets;

convey means for conveying the sheet absorbed by said sheet absorb means; and

sheet feature detecting means for detecting a rigidity of the sheet absorbed by said sheet absorb means.



tion, and is adapted to accommodate thickness anomalies in said sheets, yet maximize driving contact therewith.

5,645,276

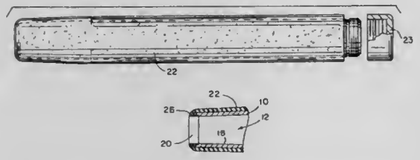
FORMED GRIP FOR EXPANDABLE BATONS

Kevin L. Parsons, Appleton, Wis., assignor to Armament Systems and Procedures, Inc., Appleton, Wis.

Filed Mar. 27, 1995, Ser. No. 410,764

Int. Cl.[6] A63B *67/00*

U.S. Cl. 463—47.7 **12 Claims**



1. A handle cover in combination with an expandable baton, wherein the baton is formed in part of a tube having a first end, a middle portion, and a second end, the first end of the tube having an end surface and an annular recess defined around the inner surface adjacent the end surface, and further defined by a reduced, tapered section, wherein the middle portion and the second end are of substantially the same outer diameter, the cover comprising:

a first portion having an inner diameter and an outer diameter, wherein the inner diameter Of the first portion of the cover is substantially the same as the outer diameter of the second end and middle portion of the tube of the baton;

a second portion having an inner diameter and an outer diameter defining a cross sectional thickness, the inner and outer diameters of the second portion of the cover conforming to the reduced, tapered section of the first end of the tube of the baton, wherein the inner diameter Of the second portion of the cover is less than the inner diameter of the first portion of the handle cover and the outer diameter of the second portion of the cover is less than the outer diameter of the first portion of the handle cover;

an end portion attached to the second portion of the cover, the end portion of the cover molded to fit around the end surface of the first end of the tube of the baton; and

a lip attached to the end portion of the cover, wherein the lip is molded to fit in the annular recess of the first end of the tube of the baton.

5,645,275

DAMPED PINCH-ROLL FOR DOCUMENT FEED

Michael N. Tranquilla, Livonia, Mich., assignor to Unisys Corporation, Blue Bell, Pa.

Division of Ser. No. 549,886, Oct. 30, 1995, Pat. No. 5,524,878, which is a division of Ser. No. 76,292, Jun. 10, 1993, Pat. No. 5,303,913. This application Jun. 5, 1996, Ser. No. 658,295

Int. Cl.[6] B65H *5/06*

U.S. Cl. 271—274 **38 Claims**

1. A sheet feed array comprising roll advance means mounted to rotate about its center to engage prescribed sheets, at a prescribed contact-site whereby to advance them, said roll advance means being mounted on relatively rigid arm means pivoted at a pivot point distal from said roll-center and including resilient means which, alone, couples said arm means to its pivot point in opera

5,645,277

CONTROLLER FOR A VIDEO GAME CONSOLE

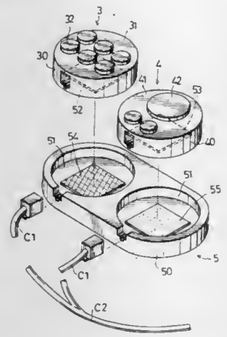
Chou Cheng, Miao-Li Hsien, Taiwan, assignor to Top Game & Company Ltd., Taipei, Taiwan

Filed Nov. 13, 1995, Ser. No. 556,509

Claims priority, application China, Nov. 15, 1994, 94243459.5

Int. Cl.[6] A63F *9/22*

U.S. Cl. 273—148 B **12 Claims**



1. A controller for a video game console, comprising first and second handheld control units, each of which has a housing with a finger operating surface that is provided with a control button unit, means for transmitting signals to the video game console when said control button unit of each of said control units is operated and means for releasably interconnecting said housings of said handheld control units, said interconnecting means including a retaining seat having a top side formed with a pair of spaced retaining recesses, each of said retaining recesses removably receiving a respective one of said housings therein.

5,645,278

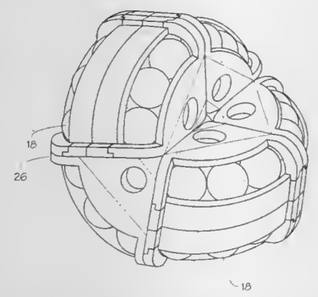
THREE-DIMENSIONAL BALL-IN-TRACK PUZZLE

John D. Harris, 22475 Parton, Santa Ana, Calif. 92707-2624

Continuation-in-part of Ser. No. 306,391, Sep. 15, 1994, abandoned. This application Feb. 2, 1996, Ser. No. 594,646

Int. Cl.[6] A63F *9/08*

U.S. Cl. 273—153 S **2 Claims**



1. A mechanical puzzle comprising

six rigid bodies attached in a closed loop via pivot mechanisms, each said rigid body holding two of said pivot mechanisms so that axes of said mechanisms remain in rigid relation to each other, said axes forming a group which is symmetrical about a single line of symmetry, said rigid bodies having track segments on their surface said track segments continuing across said bodies, said track segments on a particular body aligning with said track segments on another body, said track segments retaining game pieces movable along said track segments, said pieces movable from one body to another body by way of alignment of said track segments, the degree of pivoting of said bodies determining which of said track segments align.

5,645,279

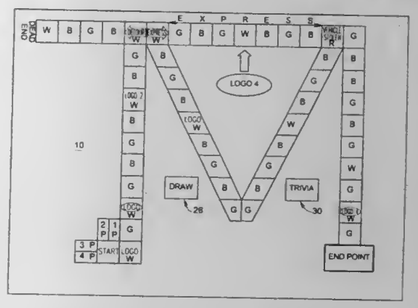
VEHICLE HISTORY AND TRIVIA RACE GAME

Alicia L. Reutlinger, 3509 Hycliffe Ave., Louisville, Ky. 40207

Filed May 20, 1996, Ser. No. 650,321

Int. Cl.[6] A63F *3/00*

U.S. Cl. 273—249 **20 Claims**



1. A vehicle history and trivia game, comprising:

a) a game board having a course layout which includes a symbol selected from the group consisting of a name, letter, or acronym of a particular vehicle;

b) a set of draw cards;

c) a set of trivia cards;

d) a set of playing pieces depicting vehicles having specifications and features described by said trivia cards; and

e) means for advancing said playing pieces along said course according to chance.

5,645,280

EDUCATIONAL BOARD GAME FOR AMUSEMENT AND VOCABULARY BUILDING

Loren Zelmer, P.O. Box 3391, Santa Cruz, Calif. 95063

Continuation-in-part of Ser. No. 407,386, Mar. 17, 1995, abandoned. This application Mar. 15, 1996, Ser. No. 619,826

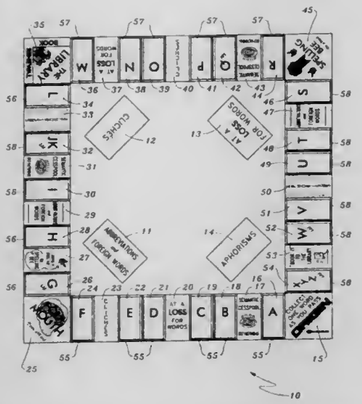
Int. Cl.[6] A63F *3/00*

U.S. Cl. 273—256 **11 Claims**

1. A vocabulary board game for two to six players, the players playing in successive player turns, comprising:

a rectangular game board having four corner spaces and four sides, each of said four sides having at least one distinct characteristic color as well as a pluraliiy of sequential spaces which feature different letters of the alphabet and other spaces which feature indicia which direct a player's actions in accordance with a set of game rules;

a set of vocabulary word cards having indicia thereon including a letter of the alphabet corresponding to a letter space appearing in ones of said sequential spaces which feature different letters of the alphabet, as well as a word from specific sources pre-selected to meet certain educational objectives and pronunciation and definition of said word, and further including indicia proclaiming acquisition of a nonexclusive interest in the corresponding letter space on said game board by a player correctly pronouncing and defining said word, said vocabulary word cards being adapted for chance selection of a card one at a time;



a set of question cards having vocabulary-related questions and answers appearing thereon and adapted for chance selection of a card one at a time;

acquisition by choice of a nonexclusive interest in one of said plurality of sequential spaces which feature letters of the alphabet being obtained by any player correctly responding to the vocabulary related question on one of said set of question cards;

a set of instruction cards for dictating play in accordance with instructions appearing thereon and adapted for chance selection of a card one at a time;

a plurality of space markers, one of said plurality of place markers being assigned to each player;

chance means for indicating a number of said plurality of sequential spaces a player must move said assigned place marker along said four sides of said game board during a particular player turn; and

said plurality of sequential spaces providing positions on said game board on which one of said plurality of place markers lands, said plurality of sequential spaces being traversed one at a time in the course of play, and indicating one of said sets of cards from which a card must be selected and instructions for play which do not require card selection.

5,645,281

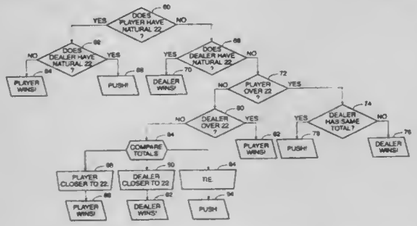
METHOD OF PLAYING A CARD GAME

Michael A. Hesse, Westlake Village, and Vincent A. Oliver, Hermosa Beach, both of Calif., assignors to Helix Information Services, Inc., Westlake Village, Calif.

Continuation-in-part of Ser. No. 442,057, May 16, 1995, abandoned. This application Oct. 20, 1995, Ser. No. 546,293

Int. Cl.[6] A63F *1/00*

U.S. Cl. 273—292 **18 Claims**



14. A method of playing a card game between a Dealer and at least one player comprising:

providing at least one deck of cards;

establishing numerical values for each card in the deck;

dealing a hand of cards to each player and dealing a hand of cards to the Dealer;

separately totalling up the numerical value of the cards in each player's hand and the Dealer's hand;

separately comparing the total numerical value of the cards in each player's hand with the total numerical value of the cards in the Dealer's hand, with the highest numerical value under a target numerical value winning each comparison, and the Dealer winning if the numerical value of all hands is over the target numerical value, wherein if both the Dealer's hand and any player's hand have the same numerical value either under or over the target numerical value, there is no winner.

5,645,282

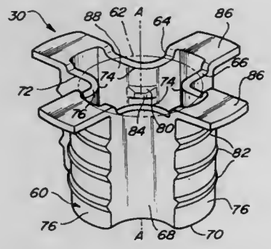
MULTI-PURPOSE GROMMET

Jerome G. Belter, Mt. Prospect, Ill., assignor to Dana Corporation, Toledo, Ohio

Filed Mar. 14, 1995, Ser. No. 404,001

Int. Cl.[6] F16J *15/10;* **F16B** *37/04*

U.S. Cl. 277—11 **18 Claims**



1. A flexible annular grommet extending along a longitudinal axis that is adapted to radially deform and frictionally engage a bore of one of two separate but communicating mechanical components of an internal combustion engine, locate a gasket with respect to the mechanical components, and retain a threaded fastener prior to final assembly of the mechanical components, said grommet comprising:

a continuous sidewall comprising a plurality of symmetrically spaced circumferentially disposed grooves extending longitudinally from a first longitudinal end of said grommet to a second longitudinal end of said grommet, each said groove extending radially inwardly, an innermost periphery of said sidewall defined by a base of each of said grooves and adapted to frictionally engage the fastener, an outermost periphery of said sidewall extending circumferentially between said each of said grooves and adapted to frictionally engage the gasket and one of the mechanical components, wherein said innermost periphery and said outermost periphery of said sidewall comprise a plurality of locking projections extending radially away from said sidewall to promote frictional engagement between said grommet and the gasket, fastener, and the one of the mechanical components; and

at least one radially outwardly extending flange secured to said outermost periphery of said grommet at one of said longitudinal ends of said grommet and adapted to be disposed between said gasket and the other one of the mechanical components.

5,645,283

RADIAL SHAFT SEAL HAVING DUST LIP WITH NOTCHES

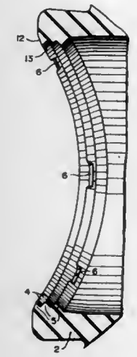
Rolf Drucktenheogst, Lampertheim, and Rolf Vogt, Ofter-sheim, both of Germany, assignors to Carl Freudenberg, Weinheim, Germany

Filed Apr. 30, 1996, Ser. No. 640,994

Claims priority, application Germany, May 20, 1995, 195 18 577.3

Int. Cl.[6] F16J *15/34*

U.S. Cl. 277—153 **8 Claims**



1. A radial shaft seal comprising a primary sealing lip surrounding the shaft and an anti-dust lip surrounding the shaft and axially separated from the primary sealing lip, the anti-dust lip having at least two first sealing edges separated by a gap with each sealing edge interrupted by at least one groove that opens toward the shaft at points distributed around the seal circumference such that no two grooves are arranged at a common point.

5,645,284

GASKET

Andrew Fitton, Liversedge, England, assignor to Flexitallic Limited, England

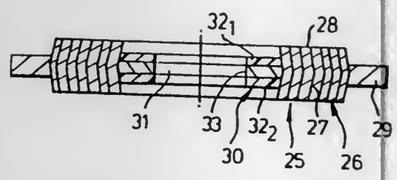
PCT No. PCT/GB94/01171, § 371 Date Jun. 12, 1995, § 102(e) Date Jun. 12, 1995, PCT Pub. No. WO94/29621, PCT Pub. Date Dec. 22, 1994

PCT Filed May 31, 1994, Ser. No. 454,223

Claims priority, application United Kingdom, Jun. 12, 1993, 9312174

Int. Cl.[6] F16J *15/00*

U.S. Cl. 277—204 **12 Claims**



1. A sealing gasket for disposition within a fluid containment joint between opposing faces off flange members by which compressive loading is applied to the sealing gasket, comprising: a substantially planar spiral wound gasket element including a longitudinally grooved resilient metal form interleaved with a compressible filler, and an inner annular ring located radially inwardly of said spiral wound gasket element, said inner annular ring including a pair of flat, radially extending faces formed of compressible, exfoliated graphite material reinforced by an inner annular core, said exfoliated graphite material having a substantially uniform thickness along said pair of faces.

5,645,285

ELECTRICALLY INSULATING LOCKING INSERT FOR A SEAL, CORRESPONDING SEAL, AND METHOD OF MANUFACTURING SUCH INSERTS

Alain Percebois, Blenod-les-Pont-a-Mousson; Daniel Auproux, Foug, and Philippe Renard, Vandoeuvre-les-Nancy, all of France, assignors to Pont-A-Mousson S.A., Nancy, France

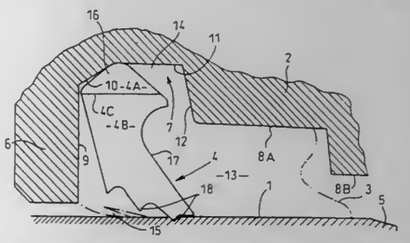
PCT No. PCT/FR94/00885, § 371 Date Mar. 20, 1995, § 102(e) Date Mar. 20, 1995, PCT Pub. No. WO95/03507, PCT Pub. Date Feb. 2, 1995

PCT Filed Jul. 15, 1994, Ser. No. 397,242

Claims priority, application France, Jul. 23, 1993, 93 09133

Int. Cl.[6] F16L *37/084;25/02;21/03;* **F16J** *15/46*

U.S. Cl. 277—207 A **14 Claims**



1. A pipe joint locking insert (**4**) embedded in an annular elastomeric seal (**3**) establishing a coupling joint between male and female ends of pipes carrying fluids under pressure, said insert having a generally planar shape, and comprising two metal parts (**4A**, **4B**) fixed to each other at a junction, and an electrically insulating layer (**4C**) disposed between the two parts and forming said junction therebetween, wherein an inner end of an innermost metal part of an embedded locking insert is configured to bite into an outer surface of said male pipe end to prevent an axial separation of said coupling joint.

5,645,286

RESIN BOOT FOR CONSTANT VELOCITY UNIVERSAL JOINTS

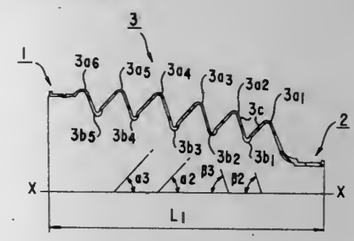
Toshiharu Katoh, Okayama, Japan, assignor to NTN Corporation, Osaka-fu, Japan

Continuation of Ser. No. 301,641, Sep. 7, 1994, abandoned. This application Aug. 26, 1996, Ser. No. 697,500

Claims priority, application Japan, Sep. 30, 1993, 5-053038 U

Int. Cl.[6] F16J *15/32*

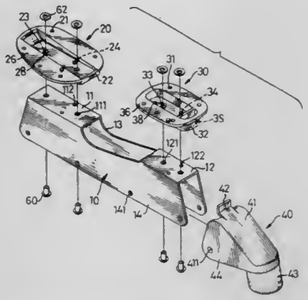
U.S. Cl. 277—212 FB **2 Claims**



1. A resin boot for constant velocity universal joints comprising a larger diameter portion, a smaller diameter portion and a bellows

portion between said larger and smaller diameter portions, said bellows portion comprising a sequence of ridges and troughs arranged alternately, the ratio of the thickness of each trough to the thickness of each adjoining ridge being in the range of from more than 1.0 to less than 1.5, the thicknesses of each trough being substantially the same, and the thicknesses of each ridge being substantially the same, the angle of inclination formed with respect to the center line of the boot by the slope extending from the ridge to the trough toward the larger diameter portion of the bellows portion being smaller than that of the slope which extends from the ridge to the trough toward the smaller diameter portion.

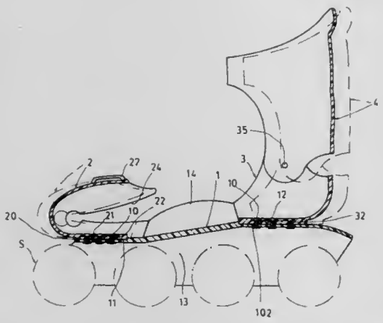
5,645,287
FRAME FOR IN-LINE ROLLER SKATE
Mike Soo, No. 931, Chung Shan Rd., Jen Teh Hsiang, Tainan Hsien, Taiwan
Filed Oct. 4, 1995, Ser. No. 538,877
Int. Cl.[6] A63C *17/14*
U.S. Cl. 280—11.2 **6 Claims**



1. A frame for an in-line roller skate, adapted to receive a boot and a plurality of wheels thereon, comprising:
a body portion formed by extrusion molding of aluminum alloy and configured to have a front plate, a rear plate and a pair of side walls each extending down from and between the front and rear plates, said side walls defining a plurality of pairs of holes adapted to receive wheel shaft assemblies;
a front sole attaching portion formed by a plastic molding and configured to have an inclined top face, said front sole attaching portion being fixedly attached on the front plate in a manner that the inclined top face is declined from a front end toward a rear end of the body portion;
a heel sole attaching portion formed by a plastic molding and configured to have a flat top face, said heel sole attaching portion being fixedly attached on the rear plate with the flat top face having a level higher than that of the inclined top face of the front sole attaching portion; and
a brake assembly comprising a housing and a braking block fixedly attached to the housing, said housing being formed by a plastic molding and configured to have a top tongue engaging the heel sole attaching portion and a pair of side walls pivotably connected with the side walls of the body portion.

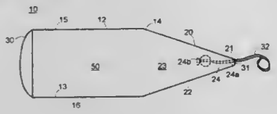
5,645,288
SIZE ADJUSTABLE IN-LINE ROLLER SKATE
Jinny Lu, c/o Hung Hsing Patent Service Center P.O. Box 55-1670, Taipei (10477), Taiwan
Filed Jun. 18, 1996, Ser. No. 666,615
Int. Cl.[6] A63C *1/22*
U.S. Cl. 280—11.26 **4 Claims**

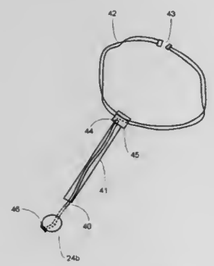
1. A roller skate comprising:
a chassis (**1**) having a plurality of wheels (**5**) linearly rotatably mounted under the chassis (**1**);



a toe box member (**2**) slidably engageable with and adjustably secured on a front portion of the chassis (**1**) for wearing toes of a wearer within the toe box member (**2**); and
a heel enclosing member (**3**) slidably engageable with and adjustably secured on a rear portion of the chassis (**1**); whereby upon a sliding adjustment of the toe box member (**2**) and the heel enclosing member (**3**) on the chassis (**1**), a length between the toe box member (**2**) and the heel enclosing member (**3**) is obtained to meet a size of a wearer's foot or footwear;
said chassis (**1**) including: a front groove (**11**) longitudinally recessed in a front portion of the chassis (**1**) having a plurality of screw holes (**101**) linearly formed in the front groove (**11**), each said screw hole (**101**) inserted therein by a screw (**10**) for fixing the toe box member (**2**) on the front portion of the chassis (**1**), a rear groove (**12**) longitudinally recessed in a rear portion of the chassis (**1**) having a plurality of screw holes (**101**) linearly formed in the rear groove (**12**), each said screw hole (**101**) inserted therein by a screw (**10**) for fixing the heel enclosing member (**3**) on the rear portion of the chassis (**1**), and a pair of side flaps (**14**) formed on two opposite side portions of the chassis for securing a buckle on said chassis.

5,645,289
CYLINDER SLED
Stanley B. Harmon, Williams Rd, R.R. 2, Box 166D, Alfred, Me. 04002
Continuation-in-part of Ser. No. 434,279, May 3, 1995, abandoned. This application Jul. 12, 1996, Ser. No. 679,651
Int. Cl.° B62B *15/00*
U.S. Cl. 280—28.12 **16 Claims**

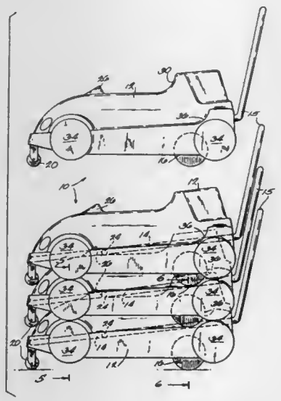




1. A sled container designed to be dragged over various types of terrain, said sled container comprising:

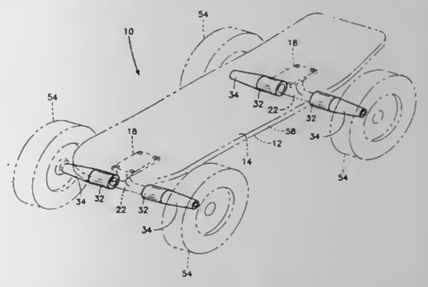
a. a cylindrically-shaped main body;
b. a tapered front section coupled to said cylindrically-shaped main body;
c. an access section for accessing an interior storage space of said cylindrically-shaped main body, wherein said access section forms a portion of said cylindrically-shaped main body; and
d. coupling means for detachably coupling said tapered front section to a belt of a sled-container user, wherein said coupling means includes a flexible attachment piece located within a rigid stand-off member, wherein a first end of said flexible attachment piece is coupled to said tapered front section by connecting means retained within said front tapered section, wherein said connecting means couples said first end of said flexible attachment piece to said tapered front section such that said sled container is free to rotate without causing a twisting of said flexible attachment piece, wherein said rigid stand-off member may fit into said tapered front section, and wherein a second end of said flexible attachment piece is releasably couplable to an attachment release device that is couplable to said belt.

5,645,290
STACKABLE STROLLER
Edward J. Gaffney, Pewaukee, and Thomas R. Wargin, Milwaukee, both of Wis., assignors to Ortho-Kinetics, Inc., Waukesha, Wis.
Continuation of Ser. No. 332,347, Oct. 31, 1994, abandoned. This application Sep. 3, 1996, Ser. No. 706,981
Int. Cl.° B62B *7/00*
U.S. Cl. 280—33.998 **5 Claims**



1. A stroller comprising a rounded body having a top opening capable of substantially enclosing an occupant;
a frame attached to said body having a pair of front wheels and a pair of rear wheels attached thereto;
a handle assembly attached to the rear of said stroller for pushing the same;
said body having at least one upwardly extending projection located, in a front to rear position, between said pair of front wheels and said pair of rear wheels
a horizontal cross member attached to said frame and located, in a front to rear position, between said pair of front wheels and said pair of rear wheels and in alignment with a rearwardmost surface of said upwardly extending projection whereby, when a first one of said strollers is placed atop a second one of said strollers, said crossmember of the first stroller engages said upwardly extending projection of the second stroller and enables the nesting of the first stroller atop the second stroller.

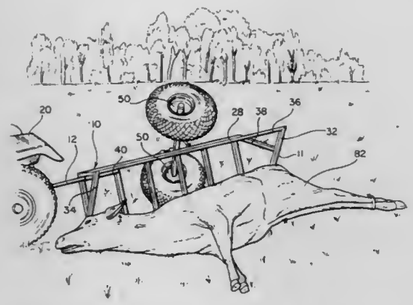
5,645,291
ALL TERRAIN SKATEBOARD
Sandy F. Ramage, 19601 Green Mountain Dr., Newhall, Calif. 91321-2147
Filed Mar. 11, 1996, Ser. No. 613,495
Int. Cl.[6] B62M *1/00*
U.S. Cl. 280—87.042 **3 Claims**



1. In combination with a skateboard, said skateboard having an elongated platform, said elongated platform having a peripheral edge, said elongated platform having a top surface and a bottom surface, said top surface having an operating plane, a human adapted to stand on said operating plane, a pair of trucks fixedly mounted on said bottom surface, said trucks located in a spaced apart arrangement, each said truck having an axle, each said axle terminating in a pair of opposite ends, each said opposite end having an exterior cylindrical surface, each said exterior cylindrical surface being within the range of twenty to forty percent of the total length of said axle, each said opposite end having a threaded shaft, an adapter mounted on each said threaded shaft with there being a separate adapter for each said threaded shaft, said adapter being constructed of a rigid material, each said adapter comprising:
an elongated body having an internal screw-threaded through opening, said elongated body extending beyond said peripheral edge of said elongated platform, said elongated body having an internal cavity, said internal screw-threaded through opening connecting with said internal cavity, said threaded shaft being threadably secured with said internal screw-threaded opening, said exterior cylindrical surface being matingly located within said internal cavity; and
a wheel having a threaded wheel axle, said threaded wheel axle being threadably secured within said screw-threaded through opening, a portion of said wheel being located above said operating plane.

5,645,292
ATV TRAILER
James Scott McWilliams, 302 Mills, and Archie Gene Scribner, 306 Mills, both of Dumas, Tex. 79029
Filed Aug. 29, 1995, Ser. No. 520,644
Int. Cl.[6] B60P *3/05*
U.S. Cl. 280—494 **6 Claims**

1. A trailer including a center longitudinal frame member and longitudinal sides mounted from said frame member and diverging Upwardly therefrom, an elongated transverse wheeled axle assembly including a central portion anchored relative to said longitudinal frame member and opposite end portions from which ground wheels are journaled, and a generally upright brace including upper and lower ends extending between each of said axle assembly end portions and an upper portion of the corresponding trailer side with said upper and lower ends anchored relative to said trailer side and axle end portion, said axle assembly including a longitudinal



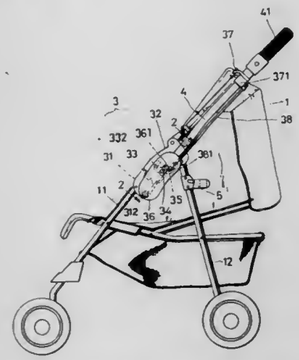
central mounting arm projecting horizontally laterally outwardly therefrom underlying, generally paralleling and secured to said longitudinal frame member.

5,645,293

COLLAPSIBLE STRUCTURE FOR A STROLLER

Ying-Hsiung Cheng, No. 14, Lane 477, Chung Shan Road, Jen Te Hsiang, Tainan Hsien, Taiwan

Filed Jul. 28, 1995, Ser. No. 508,681
Int. Cl.[6] B62B *7/06*
U.S. Cl. 280—642 **1 Claim**



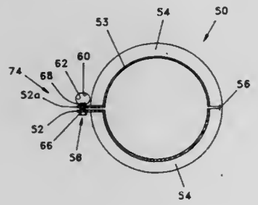
1. A collapsible structure for a stroller comprising:
a pair of front wheel rods displaced from one another in a lateral direction, each of said front wheel rods having a top end;
a main connect base coupled to each said top end of each said front wheel rod, said main connect base having a cavity formed in an upper end thereof and a hook block projecting in said lateral direction from a lower end thereof;
a pair of rear wheel rods each having a top end;
an auxiliary connect base coupled to each said top end of each said rear wheel rod for detachable coupling to said upper end of said main connect base, said auxiliary connect base having a retractable insert block extending therefrom for locking and unlocking said auxiliary connect base to said main connect base, said auxiliary connect base including a first spring for biasing said insert block into an extended position for insertion of said insert block into said cavity formed in said upper end of said main connect base, said insert block having formed thereon a projecting member extending in said lateral direction;
an elongate pivot pin extending through said auxiliary connect base in said lateral direction;
a base pivotally coupled to said pivot pin, said base having a recess formed in a lower end thereof for releasable coupling to said hook block projecting from said main connect base, said base having formed therein an elongate tubular cavity extending in a transverse direction and a first and a second recess positioned along said tubular cavity, said base having a side with a rectangular hole formed therethrough;
an elongate push rod pivotally coupled to said pivot pin, said push rod having an upper end with a push handle fixed thereto and a lower end for slidable insertion into said elongate tubular cavity formed in said base, said lower end including a projecting stop for slidable insertion into said first recess formed in said base, said first recess including a second spring abutting said projecting stop for providing a resilient bias between said push rod and said base;
a sleeve having a push ring formed thereon, said sleeve being slidably mounted on said upper end of said push rod for coupling to an upper end of a connecting rod, said connecting rod having a lower end for slidable insertion into said second recess formed in said base, said lower end of said connecting rod being coupled to one end of a third spring, said third spring having an opposing end fixed to said base for providing a resilient bias between said connecting rod and said base, said lower end of said connecting rod having formed thereon a bent end extending laterally through said rectangular hole formed through said side of said base;
a hook plate positioned between said auxiliary connect base and said base and pivotally coupled to said pivot pin, said hook plate having a first end coupled to said bent end of said connecting rod and a second end disposed proximal to said projecting member of said insert block;
whereby the stroller is rotatively repositioned about said pivot pin by an upward transverse displacement of said push ring, said upward transverse displacement causing said bent end of said connecting rod to engage and correspondingly displace said base, said corresponding displacement of said base disengaging said recess of said base from said hook block, and whereby said push rod of the stroller is collapsed by a downward transverse displacement of said push ring, said downward transverse displacement causing a corresponding pivotal displacement of said second end of said hook plate, said second end of said hook plate engaging said projecting member of said insert block and forcing said insert block into a retracted position within said auxiliary connect base responsive to said pivotal displacement.

5,645,294

WHEEL STEERING AXIS INCLINATION, CASTER, AND CAMBER ADJUSTMENT ASSEMBLY SEAL AND PROTECTIVE COVER

Arlen Thad Ward, 4-Ward, Rte. 1, Box 40, Pawnee Rock, Kans. 67567

Continuation-in-part of Ser. No. 10,075, Jan. 28, 1993, abandoned. This application Dec. 10, 1993, Ser. No. 165,083
Int. Cl.[6] B62D *17/00*
U.S. Cl. 280—661 **4 Claims**



1. A method for sealing a coupling between a drive axle assembly and drive wheel assembly having a caster, steering axis of inclination, and camber adjustment assembly comprising the steps of:

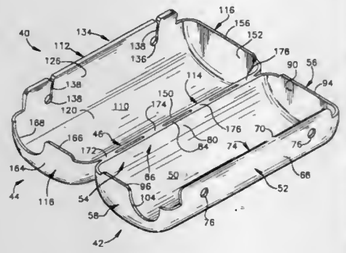
(a) severing a driven axle housing into a first severed housing portion and a second severed housing portion;
(b) providing a first flange member having a first flange recess and a second flange member having a second flange recess;
(c) securing the first flange member to the first severed housing portion;
(d) securing the second flange member to the second severed housing portion;
(e) disposing an inner seal assembly in the first flange recess and in the second flange recess;
(f) coupling the first flange member to the second flange member to produce a coupling;
(g) providing an outer flange cover assembly;
(h) disposing the outer flange cover assembly on an outer surface of the first flange member and the second flange member; said outer flange cover assembly comprising two semi-circular opposing ring halves generally U-shaped in vertical cross-section; said ring halves comprising a first end and a second end; said first end comprising a hinge member engaged to one of the ends of each of the ring halves such that said hinge member is inaccessible from outside of said ring halves, and a lip member secured to the other end of each of the ring halves; each of said lip members comprising a structure defining at least one aperture;
(i) disposing a bolt member through the apertures of said lip members, such that the lip members and said bolt member defines a latch assembly; said bolt member having an aperture at one end such that a wire member may be disposed therein; said wire member being joined at both ends by a lead seal means for provision of a tamper-evident seal, such that the bolt member may not be removed without breaking the lead seal means or cutting the wire member, in order to seal said coupling of said step (f).

5,645,295

SEAT MOUNTED AIR BAG MODULE

Michael J. White, Jr., Shelby Township, and Richard E. Shellabarger, Sterling Heights, both of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Apr. 2, 1996, Ser. No. 626,480
Int. Cl.[6] B60R *21/22*
U.S. Cl. 280—730.2 **19 Claims**



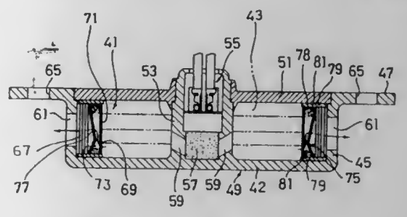
1. A vehicle safety apparatus for helping to protect an occupant of a vehicle seat in the event of an impact to the vehicle, said apparatus comprising:
an inflatable vehicle occupant protection device having a deflated condition and being inflatable into a position adjacent to the vehicle occupant;
an inflator actuatable to provide inflation fluid for inflating said inflatable device from the deflated condition to an inflated condition; and
a cover including first and second cover parts which are releasably interconnected by a rupturable portion of said cover;
said cover having a closed condition in which said first and second cover parts enclose said inflatable device when said inflatable device is in the deflated condition;
said rupturable portion of said cover forming a first hinge about which said cover parts are pivotable relative to each other into the closed condition to enclose said inflatable device;
said cover being movable, due to the force of inflation of said inflatable device, from the closed condition to an open condition in which said rupturable portion of said cover is ruptured and said first and second cover parts are spaced apart from each other to enable inflation of said inflatable device out of said cover.

5,645,296

AIR BAG INFLATION GAS GENERATOR

Takeshi Okada; Michio Sioda, and Takasi Minamizawa, all of Fukushima-ken, Japan, assignors to Nippon Koki Co., Ltd., Tokyo, Japan

Filed Nov. 1, 1995, Ser. No. 551,679
Int. Cl.[6] B60R *21/26*
U.S. Cl. 280—736 **29 Claims**



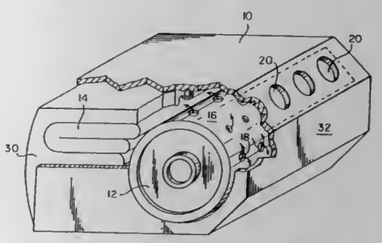
1. An air bag inflation gas generator comprising gas outlets to an air bag which are directly formed on an outer wall of a combustion chamber accommodating gas generating agents, and an annular gas filter which is disposed inside said outer wall.

5,645,297

REGULATION OF PRESSURE IN AN AUTOMOTIVE AIRBAG MODULE

Larry D. Rose, Layton; Paul D. Kidd, Plain City, and Joseph L. Ralston, North Ogden, all of Utah, assignors to Morton International, Inc., Chicago, Ill.

Filed Aug. 22, 1995, Ser. No. 517,783
Int. Cl.[6] B60R *21/28*
U.S. Cl. 280—739 **1 Claim**



1. In an automotive passenger airbag module comprising a module housing having a wall, a gas generator disposed in said module housing and an inflatable cushion disposed in said module housing, the improvement which comprises: at least one vent port, provided in said wall in said module housing to relieve the pressure on said inflatable cushion during its inflation when a hot event occurs in the generation of gas to inflate the cushion and a thin membrane covering said at least one vent port, said wall being spaced from said gas generator, wherein said at least one vent port

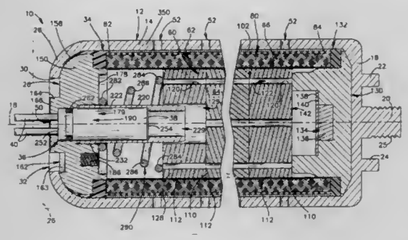
in the module housing is located directly in the path of gas exhausting through a gas generator hot port that is opposite to said at least one vent port.

5,645,298

INFLATOR FOR AN INFLATABLE VEHICLE OCCUPANT PROTECTION DEVICE

Bruce A. Stevens, Mesa, and Michael C. Riley, Gilbert, both of Ariz., assignors to TRW Inc./TRW Vehicle Safety Systems, Inc., Lyndhurst, Ohio

Filed Jan. 5, 1996, Ser. No. 583,292
Int. Cl.[6] B60R *21/26*
U.S. Cl. 280—741 **18 Claims**



1. Apparatus comprising:
a housing containing a body of ignitable gas generating material;
a closure cap at one end of said housing, said closure cap having inner surfaces defining a passage centered on an axis, said inner surfaces including a first annular surface;
a cylindrical retainer tube in an installed position extending axially in said passage, said retainer tube having a second annular surface facing axially toward said first annular surface; and
an igniter having a cylindrical casing extending in said passage coaxially within said retainer tube, said casing being retained axially between said first and second annular surfaces;
said retainer tube and said closure cap together comprising locking means for interlocking said retainer tube with said closure cap as a result of movement of said retainer tube to said installed position in said passage.

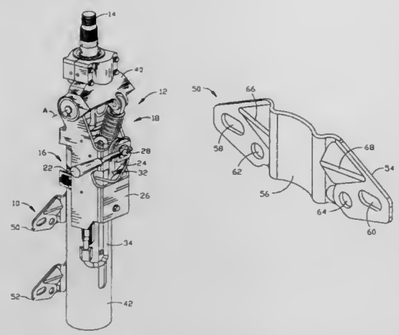
5,645,299

STEERING COLUMN SUPPORT

Gary L. Dies; Mark A. Cartwright, both of Lafayette, and Jonathan A. Lewis, Kokomo, all of Ind., assignors to TRW Inc., Lyndhurst, Ohio

Filed May 31, 1996, Ser. No. 656,066
Int. Cl.[6] B62D *1/16*
U.S. Cl. 280—779 **10 Claims**

1. A steering column support for mounting a steering column in a vehicle comprising a first mounting plate having first surface means for engaging the vehicle, second surface means for defining a channel for receiving the steering column, said first and second surface means being located on opposite sides of said first mounting plate, said first mounting plate being connectable in any one of a plurality of positions along an axis of the steering column, said



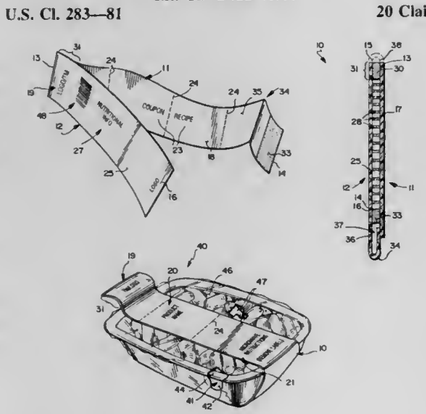
first mounting plate further including slots located on opposite sides of said channel for receiving fasteners for connecting said first mounting plate to the vehicle.

5,645,300

VEGETABLE LABEL WRAPPER

Walt Hill, Visalia, Calif., assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Sep. 29, 1995, Ser. No. 537,367
Int. Cl.[6] B42D *15/00*
U.S. Cl. 283—81 **20 Claims**



1. A label assembly comprising:
a first flexible strip of material having first and second opposite faces and first and second ends, and a first length between said first and second ends;
a second flexible strip of material having first and second opposite faces and first and second ends, and a second length between said first and second ends different from said first length;
a first permanent adhesive pattern substantially permanently connecting said first and second strips together adjacent said first end thereof to form a header;
a second adhesive pattern disposed on said second strip second face and comprising a plurality of individual adhesive elements spaced from each other on said second strip second face;
said first strip second face having adhesive release material in face-to-face engagement with said second adhesive pattern;
a third pattern of permanent adhesive spaced from said second pattern and disposed on said second face of one of said first

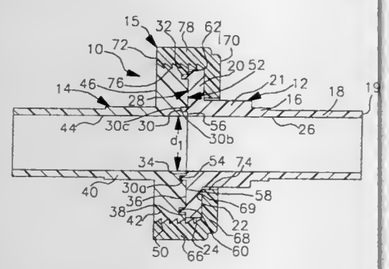
and second strips and adjacent said second end of one of said first and second strips, and in face-to-face engagement with adhesive release material on one of said first and second strips; and
indicia or graphics imaged on said first face of at least one of said first and second strips, including on said header.

5,645,301

FLUID TRANSPORT COUPLING

Kenji A. Kingsford, Devore, and David R. Martinez, Corona, both of Calif., assignors to Furon Company, Laguna Niguel

Filed Nov. 13, 1995, Ser. No. 556,403
Int. Cl.[6] F16L *55/00*
U.S. Cl. 285—14 **31 Claims**



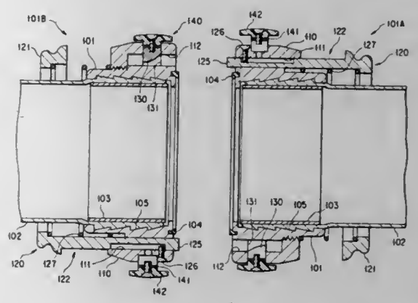
1. A coupling apparatus comprising:
first and second coupling members each in the form of a hollow conduit and each comprising:
a radially extending flange having an axially facing frontside surface at a first end of each coupling member;
a sleeve extending axially away from the flange to a second end of each coupling member that is adapted to accommodate attachment with a fluid handling member; and
a fluid flow passageway extending through the coupling member from the first to the second end;
wherein the frontside surface of the first coupling member flange includes at least one tongue that projects axially a distance outwardly away from the frontside surface and is positioned concentrically around the passageway, the tongue having non-tapered radially directed surfaces; and
wherein the frontside surface of the second coupling member flange includes at least one groove disposed therein that is positioned to accommodate placement of a respective first coupling member tongue therein, the groove having non-tapered radially directed surfaces and a radial width between non-tapered radially directed surfaces that is less than a radial width of the tongue, and the tongue having an axial length that is greater than an axial length of the groove, the differences in radial width and axial length of the tongue and groove providing an interference fit therebetween that forms a liquid-tight seal between the first and second coupling members when the frontside surfaces of the first and second coupling member flanges are brought together; and
means for maintaining frontside surfaces of the first and second coupling member flanges joined together.

5,645,302

COUPLING APPARATUS

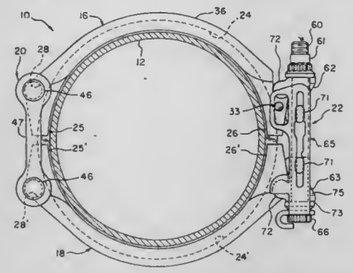
Akira Horimoto, Nishinasunomachi, Japan, assignor to Sakura Rubber Co., Ltd., Tokyo, Japan

Filed Apr. 26, 1995, Ser. No. 429,304
Claims priority, application Japan, Apr. 27, 1994, 6-089529; Mar. 17, 1995, 7-086264
Int. Cl.[6] F16L *35/00*
U.S. Cl. 285—70 **19 Claims**



1. A coupling apparatus comprising:
said pair of couplers have substantially the same structure and are complementary to each other;
said couplers respectively comprising cylindrical bodies having distal end faces that are abutted against each other when said couplers are coupled to each other;
said cylindrical bodies each including a locking member and a to-be-locked member, said locking member projecting axially from each cylindrical body towards the to-be-locked member of the other cylindrical body when said couplers are in a coupled state, said to-be-locked member being supported for radial movement relative to the respective cylindrical body and being biassed radially inwards to a locking position, said locking members and said to-be-locked members being axially opposed to one another in an arrangement in which in said coupled state said distal end faces of said cylindrical bodies are brought into abutment against each other, said locking members radially displace said to-be-locked members against the radial bias thereof after which said to-be-locked members are biassed radially inwards to said locking positions thereof; and
disengaging mechanisms on said couplers for displacing said to-be-locking members radially outwards to disengage said to-be-locked members from said locking members and enable the couplers to be uncoupled;
and wherein said locking members are movable in the axial direction with respect to said cylindrical bodies and comprise elastic means for biasing said locking members to move backward in a direction away from distal ends of said cylindrical bodies; and when said couplers are in an uncoupled state, said locking members are moved to a retreat position by said elastic means and distal end portions of said locking members are retained adjacent to said cylindrical bodies; and when said pair of couplers are in said coupled state, said locking members are moved forward against a biasing force of said elastic means and engage said to-be-locked members.

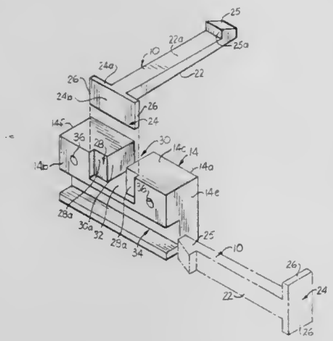
5,645,303
COMPACT PIPE COUPLING DEVICE
Kevin S. Warehime, Taneytown; Daniel T. Munley, Laurel; Thomas S. Oh, Columbia, and Jeffrey E. Swensen, Eldersburg, all of Md., assignors to EG&G Pressure Science, Inc., Beltsville, Md.
Filed Oct. 27, 1994, Ser. No. 329,985
Int. Cl.[6] B65D *63/02;* **F16L** *17/06*
U.S. Cl. 285—409 **80 Claims**



1. A pipe coupling device for releasably coupling a pair of pipes with peripheral end flanges together, comprising:
a first arcuate retainer including a first end with a first pivot point adjacent thereto, a second end having a first coupling slot with a first coupling surface, and a first gripping groove with an inner gripping surface extending between said first and second ends for receiving a first portion of each of the peripheral end flanges of the pipes therein;
a second arcuate retainer including a first end with a second pivot point adjacent thereto, a second end having a second coupling slot with a second coupling surface, and a second gripping groove with an inner gripping surface extending between said first and second ends of said second arcuate retainer for receiving a second portion of each of the peripheral end flanges of the pipes therein;
a hinge pivotally coupling said first ends of said first and second retainers together; and
a latch releasably coupling said second end of said second retainer to said second end of said first retainer, said latch including
a first coupling member having a first tenon for engaging said first coupling surface of said first coupling slot and a first fastener hole extending therethrough,
a second coupling member having a second tenon for engaging said second coupling surface of said second coupling slot to be retained therein and a second fastener hole extending therethrough,
a threaded fastener having a head for engaging one of said coupling members and a threaded shaft received in said fastener holes of said first and second coupling members to releasably couple said second ends of said retainers together, and
a nut threadedly engaging said shaft of said fastener,
at least one of said coupling surfaces of one of said coupling slots forming a mortise to fixedly retain one of said tenons thereto via a tenon and mortise arrangement.

5,645,304
MOUNTING BRACKET FOR PRONG-TYPE LATCH
Laura Richardson, and Ira L. Richardson, both of 2140 S. Walnut, Springfield, Ill. 62704
Filed Feb. 29, 1996, Ser. No. 610,052
Int. Cl.[6] E05C *19/00*
U.S. Cl. 292—1 **7 Claims**

1. A bracket for mounting a latch prong having an elongated shaft with a mounting base at one end thereof, said bracket comprising a block which provides:

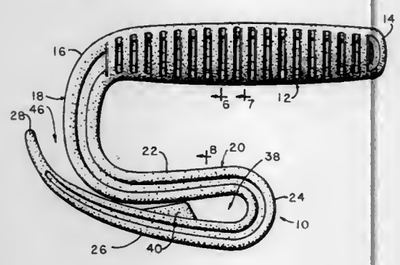


a) a cavity into which said base is insertable;
b) an elongated chamber into which said shaft is insertable longitudinally; and,
c) a partition between said cavity and said chamber.

5,645,305
SHOVEL FOR GAINING INCREASED LEVERAGE
Robert Lispi, 20212 Red Cedar Dr., Walnut, Calif. 91789
Filed Jun. 3, 1996, Ser. No. 656,830
Int. Cl.[6] A01B *1/00*
U.S. Cl. 294—58 **2 Claims**

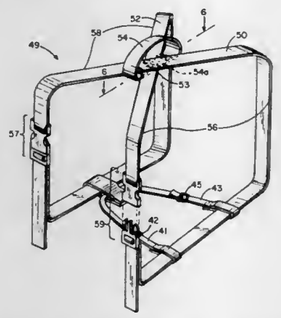
1. A new and improved shovel which enables a user to gain more leverage when digging, the shovel comprising, in combination:
a handle having a first end and a second end and an intermediate extent therebetween, a hand hold coupled to the first end of the handle;
an inner connection member including a tubular sleeve component and an arch component, the arch component having a closed end and an open end an intermediate extent therebetween, the closed end of the arch secured to the tubular sleeve component, the tubular sleeve component inserted over and secured to the second end of the handle;
a planar rectangular grip spanning the intermediate extent of the arch component approximate the closed end;
a foot rest spanning the intermediate extent of the arch component approximate the closed end, the foot rest having a central portion and an upper surface, a top and a bottom, a surface depression formed within the central portion of the foot rest, the depression extending away from the closed end of the arch, texture-creating protrusions positioned upon the upper surface of the foot rest; and
a blade having a first end and a second end and an intermediate extent therebetween, the first end of the blade secured to the bottom of the foot rest.

5,645,306
BAG HANDLE
Steve Kosteniuk, 1813 Munroe Ave., Saskatoon, Canada
Filed May 16, 1996, Ser. No. 649,017
Int. Cl.[6] B65D *33/06*
U.S. Cl. 294—137 **13 Claims**



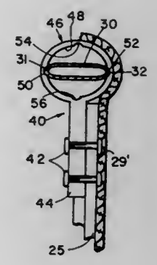
1. A bag handle comprising:
a single, generally U-shaped seat including a lower arm, an upper arm and a bight joining the upper and lower arms;
an elongate hand grip including a front end and a free back end; and
means coupling the hand grip to the seat with the upper arm between the hand grip and the lower arm, and the bight centred between the ends of the hand grip, said means consisting of a front member extending from the front end of the hand grip to a front end of the upper arm of the seat, the seat and grip being otherwise unconnected.

5,645,307
STRAP-STYLE ARTICLE CARRIER
James J. Wengler, Minneapolis, Minn., assignor to Robert Davidson, Southport, Conn.
Continuation of Ser. No. 314,223, Sep. 28, 1994, Pat. No. 5,558,382. This application Jul. 25, 1996, Ser. No. 686,492
Int. Cl.[6] A45F *5/10;* **B65D** *63/18*
U.S. Cl. 294—157 **13 Claims**



1. A carrier for a heavy article such as an outboard motor having a top portion, sides, a front, a rear, and a fore and aft axis, said carrier comprising,
a strap means that has a pair of article-encircling loops of flexible strap material including a rear strap loop for encircling the rear of the article and a from strap loop encircling the from of the article,
a hand grip member for providing a comfortable gripping surface, said hand grip member is supported upon the article-encircling loops of strap material at a top portion of the article during use to provide a hand grip for the carrier,
each of said article-encircling loops of strap material is positioned during use in an inclined plane wherein the rear strap loop projects rearwardly from the hand grip member at an oblique angle and the front strap loop projects forwardly at an oblique angle whereby the strap loops lie in inclined planes and encircle the article obliquely when in place on the article such that the strap loops are spread apart at a bottom portion of the article,
portions of the loops of strap material are together at the top of the carrier adjacent to the hand grip member,
the portions of the loops of strap material that are together and said hand grip member are both oriented to lie across the top portion of said article so as to extend from one side thereof to the other side at right angles to the fore and aft axis thereof,
releasable fastener means secured to at least one of the strap loops for holding the carrier in place on the article during use, and
the hand grip member extends at least partially around an upper portion of the article-encircling loops where the loops pass over the top surface of the article that is being carded and the loops extend all the way from one side of the article across the top of the article and thence downwardly across an opposite side thereof.

5,645,308
SLIDING VISOR
Lisa A. Fink, Holland, Mich., assignor to Prince Corporation, Holland, Mich.
Filed Aug. 29, 1995, Ser. No. 521,041
Int. Cl.[6] B60J *3/02*
U.S. Cl. 296—97.9 **18 Claims**



1. A visor assembly comprising:
a visor body;
a polymeric torque device fixedly secured to said visor body, said polymeric torque device having a deformable generally cylindrical bore with at least one detent formed therein and extending longitudinally within said generally cylindrical bore; and
a visor rod extending within said cylindrical bore of said torque fitting and having an end extending from said visor body for attachment to vehicle, wherein said visor rod has an obround tubular cross section for selectively frictionally engaging said cylindrical bore of said torque fitting as said visor body is rotated with respect to said visor rod.

5,645,309

DRIVE ARRANGEMENT FOR A RETRACTABLE FOLDING ROOF

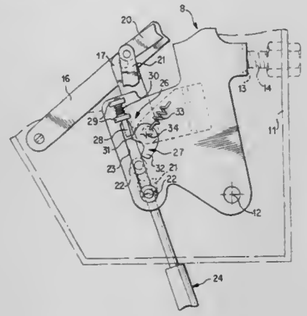
Thomas Graf, Sindelfingen, Germany, assignor to Mercedes Benz AG, Stuttgart, Germany

Filed Jul. 7, 1995, Ser. No. 499,690

Claims priority, application Germany, Jul. 7, 1994, 44 23 834.7

Int. Cl.[6] B60J *7/12*

U.S. Cl. 296—121 **10 Claims**



1. A drive arrangement for a retractable folding roof having a front roof part and a rear roof part, comprising:

a pivot drive for the front roof part, the front roof part being mounted on a vehicle body through lateral pillars and two double-acting operating cylinders, each one of said two double-acting operating cylinders being supported at one end on said body and at another end in an articulated manner on a lever arm of an assigned lateral pillar;

a lever mechanism for a movement coupling of the rear roof part to the front roof part during common pivot-movement phases, wherein the lever mechanism comprises on each side of the retractable folding roof, an L-shaped crank-rocker lever mounted on the assigned lateral pillar and having a rocker end for pivoting an assigned side leg of the rear roof part and a lever linkage coupled at one end to the L-shaped crank rocker lever and at another end to one of said two double-acting operating cylinders;

wherein said two double-acting operating cylinders, serving as said pivot drive for the front roof part also serve for relative pivoting of the rear roof part;

a rotary-slide articulation through which said two double-acting operating cylinders are connected to the respective lever arm of the respective lateral pillar;

wherein said rotary-slide articulation for the operating cylinder includes a joint bolt slidingly guided in a slot of said lever arm; and

wherein said slot is a linear guide and, when the lateral pillar is upright, said slot extends in an approximately axis-parallel manner to a central longitudinal axis of the operating cylinder.

5,645,310

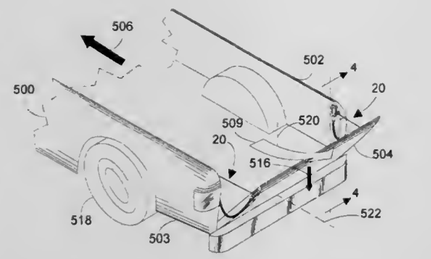
RETAINING DEVICE AND METHOD FOR HOLDING A VEHICLE TAILGATE IN A PREDETERMINED PARTIALLY OPEN POSITION

Gary McLaughlin, 13300 Wingo St., Arleta, Calif. 91331

Filed Dec. 8, 1995, Ser. No. 569,799

Int. Cl.[6] B62D *33/03*

U.S. Cl. 296—180.5 **18 Claims**



1. In a vehicle having a bottom-hinged tailgate, the tailgate having a substantially vertical closed position and a substantially horizontal fully open position, a retaining device for holding the tailgate in a predetermined partially open position between the closed position and the fully open position, comprising:

a connector of a predetermined length, said connector having a first end and a second end opposite to said first end;

a first attachment means for connecting said first end to the vehicle;

a second attachment means for connecting said second end to the tailgate;

at least one of said first and second attachment means having a portion attached to the vehicle in the case of said first attachment means, or to said tailgate in the case of said second attachment means, such that said connector will be overlapped when said tailgate is closed; and

said predetermined length being such that when said connector is connected to the vehicle and to the tailgate, the tailgate is held in said predetermined partially open position.

5,645,311

SUN AND WIND SCREEN ARRANGEMENT FOR OPEN MOTOR VEHICLES

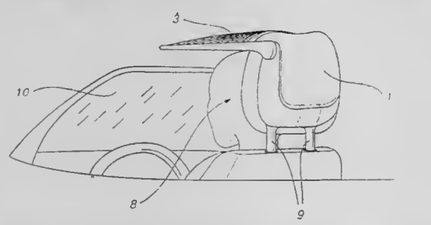
Ludwig Emmer, Grafenau; Michael Koch, Sindelfingen, and Ferdinand Greiner, Wildberg, all of Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany

Filed May 9, 1996, Ser. No. 645,007

Claims priority, application Germany, May 9, 1995, 195 16 921.2

Int. Cl.[6] B60J *7/22*

U.S. Cl. 296—180.5 **3 Claims**



1. Sun and wind screen arrangement for open motor vehicles, consisting of a screen which is swivellably mounted in an area above a head of occupants on parts fixed to the vehicle,

wherein the screen is arranged in such a manner in an upper area on a headrest assigned to a vehicle seat that it can be swivelled in a driving direction toward a vehicle front beyond an upper edge of the headrest into an approximately horizontal position above an occupant's head,

wherein the upper edge of the headrest can be selectively moved upwards so far that it projects beyond the occupant's head,

wherein the screen is mounted on a hinge arranged on both sides on the headrest, and

wherein detent devices for holding the screen in two end positions are assigned to the hinge, one end position being the operative position in the horizontal position above the occupant's head and the other end position being an inoperative position extending in parallel to the rear side of the seat.

5,645,312

SUPPORTING STRUCTURE OF A BODY OF A PASSENGER CAR

Norbert Enning, Denkendorf, and Heinrich Timm, Ingolstadt, both of Germany, assignors to Audi AG, Ingolstadt, Germany

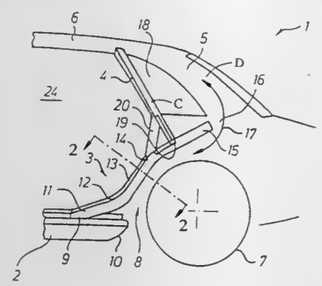
PCT No. PCT/EP92/00554, § 371 Date Sep. 24, 1993, § 102(e) Date Sep. 24, 1993, PCT Pub. No. WO92/18369, PCT Pub. Date Oct. 29, 1992

PCT Filed Mar. 13, 1992, Ser. No. 119,241

Claims priority, application Germany, Apr. 19, 1991, 41 12 814.1

Int. Cl.[6] B62D *23/00*

U.S. Cl. 296—203 **8 Claims**



1. A rear supporting structure for the body of a passenger vehicle comprising in operative combination,

a) a bottom sill member extending in a longitudinal direction on the vehicle side, said sill member having a forward end and a rearward end and having joined thereto a composite rear wheel housing, said composite rear wheel housing having an inner panel and an outer panel;

b) a rear wheel housing carrier member having a first forward end and a second rearward end, said first forward end of said carrier member in rigid and secure connection to said sill member at a point forward of said rearward end of said sill member, said carrier member comprising,

i) a plurality of straight sections joined by at least one intermediate arcuate section;

ii) a first of said straight sections defining a lower carrier region extending obliquely upwardly and rearwardly at a first angle above the horizontal from said connection with said sill member,

iii) a second of said straight sections defining an intermediate carrier region extending upwardly and rearwardly at a second angle above the horizontal, said second straight section joined to said first straight section by a first arcuate section comprising at least one of said arcuate sections,

iv) said first arcuate section joining being disposed above said rearward end of said sill, said second straight section connected to the rear wheel housing and defining the forward edge of said rear wheel housing;

c) a roof structure;

d) a first forward roof support post having a first root end and a second roof end, said root end is rigidly connected to said wheel-housing carrier member and said second roof end is rigidly connected to said roof structure.

5,645,313

DENTIST'S OR OTHER CHAIRS

Robert Edward Best, 30, Grovebury Court, Chase Road, Southgate London, United Kingdom, and Gordon Allen Lawrence, 1, Cedar Lawn Avenue, Barnet, Herts , United Kingdom

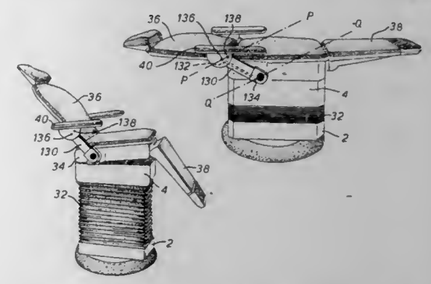
PCT No. PCT/GB93/00938, § 371 Date Jan. 6, 1995, § 102(e) Date Jan. 6, 1995, PCT Pub. No. WO93/21887, PCT Pub. Date Nov. 11, 1993

PCT Filed May 6, 1993, Ser. No. 331,609

Claims priority, application United Kingdom, May 6, 1992, 9209787

Int. Cl.[6] A47C *1/02;* **A61G** *15/02;15/04;15/06*

U.S. Cl. 297—68 **9 Claims**



1. A dentist's or other chair including a back rest, a chair seat and a leg or foot rest and having a reclining mechanism interlinking the back rest, the chair sear and the leg or foot rest for raising and reclining the back rest, for tilting the chair seat, and for lowering and raising the leg or foot rest together, the mechanism further including means for disengaging the chair seat so that with the chair seat disengaged and horizontal, the back rest can be reclined and the leg or foot rest can be raised both also to horizontal.

5,645,314

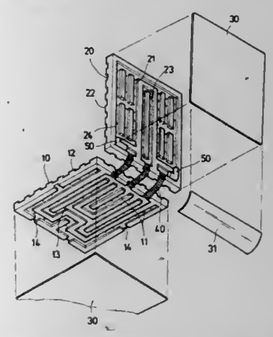
VENTILATION CUSHION FOR CHAIRS

Yaw-Tyng Liou, No. 116, Shih chien St., Fengyuan City, Taichung Hsien, Taiwan

Filed Sep. 21, 1995, Ser. No. 531,702

Int. Cl.[6] A47C *7/74*

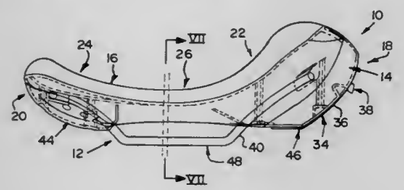
U.S. Cl. 297—180.14 **1 Claim**



1. A ventilation cushion comprising a hinge, two base plates joined by said hinge, a seat cushion and a back cushion respectively mounted on said base plates, said seat cushion and said back cushion each comprising an upper portion and a lower portion, longitudinally and transversely aligned rows of flat blocks raised from said upper portion, a plurality of longitudinally and trans-

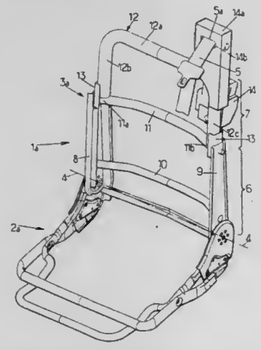
versely aligned air holes disposed in the spaces defined among said flat blocks, and a plurality of air passages in said lower portion and in communication with said air holes respectively, and a plurality of air hoses connected between the air passages in said seat cushion and the air passages in said back cushion, the air passages of said seat cushion including a plurality of inner air passages forming an air circulation loop and an outer air passage surrounding said air circulation loop, said outer air passage having a plurality of side holes for guiding air sideways out of said seat cushion, the air passages of said back cushion includes two opposite lateral air passages and a plurality of intermediate air passages between said lateral air passages, said lateral inner air passages being connected to the air passages of said seat cushion by a respective one of said air hoses for guiding air to said inner air passages of said seat cushion, said intermediate air passages being connected to said seat cushion by one of said air hoses for receiving air from said seat cushion, the air holes of said seat cushion being air outlet holes for guiding air out of said seat cushion, the air holes of said back cushion including a plurality of air inlet holes respectively disposed in communication with two opposite lateral air passages on said back cushion, a plurality of air outlet holes respectively disposed said intermediate air passages of the back cushion, and two air fan means bilaterally installed in said back cushion adjacent to said seat cushion and controlled to draw air through said back cushion and said seat cushion via said air holes and said air passages, the upper portions of said seat cushion and said back cushion being made of soft materials, and the lower portions thereof being made of harder materials than that of said upper portions, said seat cushion and said back cushion being respectively molded in integrity.

5,645,315
CYCLE SADDLE FOR A FEMALE
Martin David Walker, 35 Halford Road, Berea, Durban, Kwa Zulu, and Edward Joseph Khoury, Alberton, both of South Africa, assignors to Martin David Walker, Durban, South Africa
Filed Jan. 16, 1996, Ser. No. 587,036
Claims priority, application South Africa, Jan. 13, 1995, 95/0265
Int. Cl.[6] B62J *1/00*
U.S. Cl. 297—215.1 **10 Claims**



1. A cycle saddle for a female, comprising a saddle body defining an operative posterior region, an operative anterior region and an operative intermediate region disposed between the posterior and the anterior regions, the posterior region defining an operatively raised laterally flared cantle that defines a support surface that extends operatively downwardly from a region of the sacrum of a female operatively supported on the saddle body, to conform substantially to the shape of the female's buttocks, the intermediate and anterior regions forming a horn section transitioning from the posterior region, the intermediate region and the anterior region defining a support surface conforming to and providing support for perineal and pubic regions of a female operatively seated thereon, with the support surface defined by the anterior region being operatively raised at a furthermost anterior end thereof between 40 and 70 mm with respect to the support surface defined by the intermediate region, thereby permitting the posterior, intermediate and anterior regions to define a continuous substantially longitudinally concave support surface for snugly supporting buttock, perineal and pubic regions of a female supported on the saddle body.

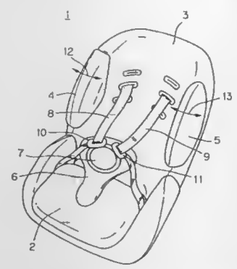
5,645,316
VEHICLE SEATBACK FRAME, AND A SEAT INCLUDING SUCH A FRAME
Christophe Aufrere, Marcoussis, and Bruno Hamelin, Combs la Ville, both of France, assignors to Bertrand Faure Equipements SA, France
Filed Jul. 2, 1996, Ser. No. 674,508
Claims priority, application France, Jul. 3, 1995, 95 07992
Int. Cl.[6] B60N *2/42*; **B60R** *21/00*
U.S. Cl. 297—216.13 **7 Claims**



1. A seatback frame for a vehicle seat, said frame having an upper portion mechanically connected with a seat belt, the frame comprising an upper structure mounted on a lower structure, the lower structure having at least first and second substantially vertical side uprights, the upper structure comprising both a horizontal torsion bar extending longitudinally between first and second ends respectively mounted on the first and second side uprights of the lower structure, and secondly a superstructure which is disposed above the torsion bar and which is secured at least to the second end of the torsion bar, the first end of the torsion bar being prevented from rotating relative to the first upright of the lower structure, and the second end of the torsion bar pivoting freely relative to the second upright of the lower structure, the superstructure of the upper structure comprising a portion situated adjacent to the second upright of the lower structure, the seat belt being mechanically connected with said portion of the superstructure and applying a rotary torque to said portion of the superstructure when said seat belt is itself subjected to a traction force, the torsion bar and the superstructure being dimensioned so as to deform plastically when the seat belt is subjected to a traction force exceeding a predetermined value, and the upper structure then exerting a resistive force on the seat belt of less than 3,500N.

5,645,317
CHILD SEAT APPARATUS
Ichiro Onishi, and Kenzou Kassai, both of Osaka, Japan, assignors to Aprica Kassai Kabushikikaisha, Osaka, Japan
Continuation of Ser. No. 266,941, Jun. 27, 1994, abandoned.
This application Jan. 5, 1996, Ser. No. 583,668
Claims priority, application Japan, Jul. 7, 1993, 5-167930; Jun. 1, 1994, 6-120133
Int. Cl.[6] A47C *1/08*
U.S. Cl. 297—250.1 **10 Claims**

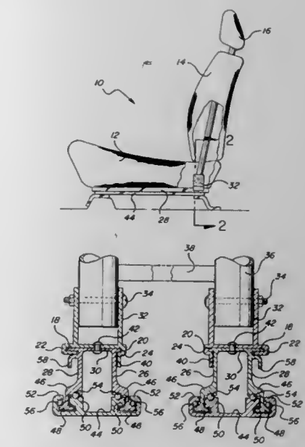
1. A child seat apparatus for seating a child, comprising
a seat member,
a backrest member comprising a backrest core upwardly extending from a rear end of said seat member and including a lower



portion adapted to receive the lower back of the child and an upper portion adapted to receive the head of the child,
a pair of head guards forwardly extending from two side edges of said backrest member at said upper portion and not at said lower portion, wherein each of said head guards comprises a respective head guard core, and
a pair of hinge members respectively connecting said head guard cores to said backrest core, wherein each of said hinge members is a single integral member including a first flange portion connected to said head guard core, a second flange portion connected to said backrest core, and a hinge joint portion disposed between and continuously flexibly joining said first and second flange portions, wherein said hinge joint portion has a reduced thickness compared to said first and second flange portions, wherein said head guard cores and said hinge members are made of a resin material, wherein said hinge members are respectively integrally formed with said head guard cores, wherein said first flange portions are respectively integral extensions of said head guard cores, and wherein said second flange portions are mounted on said backrest core, and
wherein said head guards are rotatable about said hinge joint portions so as to change a spacing distance between said head guards.

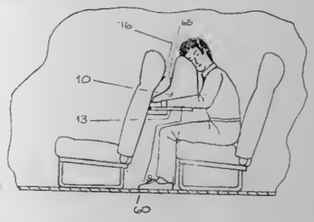
5,645,318
SEAT BACK SUPPORT CONNECTION
Gregory Allison, Kego Harbor, Mich., assignor to Lear Corporation, Southfield, Mich.
Filed May 29, 1996, Ser. No. 654,911
Int. Cl.[6] B60N *2/02*;*2/06*
U.S. Cl. 297—383 **10 Claims**

1. A seat assembly of the type utilized in automotive vehicles for supporting an occupant, the assembly comprising:
a seat frame defining an occupant sitting area, said seat frame comprising a pair of channel members as viewed in cross-section spaced from one another on opposite sides of said seat assembly, each of said channel members define an upper rail of a seat track which includes a lower rail slidably connected to said upper rail, said channel members including first and second sides and a top extending between said first and second sides;
a back frame defining an occupant back supporting area, said back frame including a pair of brackets extending along a portion of the length of said respective channel, each of said brackets defining a first and second groove;
support mechanism for supporting said back frame on said seat frame;
said support mechanism including a tongue extending outwardly from each of said first and second sides of said channel



members for mounting said back frame to said seat frame by sliding said tongues into said respective grooves.

5,645,319
PASSENGER'S PILLOW
Robert R. Parks, Jr., 2415 Midway Rd. #101, Carrollton, Tex. 75006
Filed Mar. 13, 1995, Ser. No. 403,184
Int. Cl.[6] A47C *7/38*;*7/62*
U.S. Cl. 297—391 **10 Claims**



1. In combination, a tandem seating arrangement having a first seat in front of a second seat and a substantially horizontal support surface extending rearwardly from a backrest of said first seat and located above an occupant supporting surface of said second seat, the seating arrangement also including a predefined space between said first and second seats, wherein said predefined space is also bounded in part by said substantially horizontal support surface;
a remote air supply; and
a passenger's pillow, the passenger's pillow comprising:
an inflatable airtight chamber, the inflatable airtight chamber having an outer chamber wall, the inflatable airtight chamber divided into a plurality of compartments, the compartments in airflow communication with each other across one or more openings within the inflatable airtight chamber;
a valve, the valve provided in the outer chamber wall, the valve regulating inflation and deflation of the inflatable airtight chamber;
the inflatable airtight chamber also having a predetermined three-dimensional shape when substantially inflated, the predetermined three-dimensional shape being selected so as to be adaptable to rest on the substantially horizontal support surface while operable to support the head of a passenger leaning forward from a sitting position in the second set;

the outer chamber wall made from a plastic material, the plastic material being sealed to form the inflatable airtight chamber using a heat-sealing process; and

a flexible tube, the flexible tube having a continuous internal passageway, the flexible tube also having a first end and a second end, the first end of the flexible tube adapted to fit over the valve so as to keep the valve in airflow communication with the continuous internal passageway the second end of the flexible tube adapted to fit over the remote air supply so as to keep the remote air supply in airflow communication with the continuous internal passageway.

5,645,320

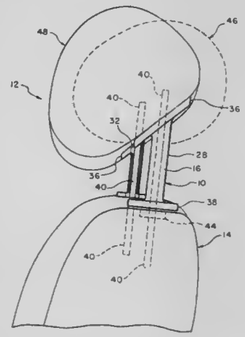
HEADREST SUPPORT FOR VEHICLE SEAT

Ronald Jones, 2406 Birch Dr., Silver Spring, Md. 20910

Filed Jan. 22, 1996, Ser. No. 589,631

Int. Cl.[6] A47C *1/10;7/46*

U.S. Cl. 297—410 **16 Claims**



4. A headrest assembly for a vehicle seat comprising:

a headrest having a bottom surface;

at least one support rod having an upper end attached to said bottom surface of said headrest and a lower end coupled to a vehicle seat, said vehicle seat having a top surface;

an adjustment mechanism coupled to said seat and operatively connected to said support rod for selectively adjusting the height of said headrest with respect to said vehicle seat; and

a support member removably coupled to said support rod and having an upper end engaging said bottom surface of said headrest and a lower end engaging said top surface of said vehicle seat, said support member supporting said headrest and fixing the height of said headrest with respect to said vehicle seat and preventing said headrest from retracting in the event of failure of said adjustment mechanism.

5,645,321

PLANE FOR THE SEAT OF ARMCHAIRS, DIVANS, CHAIRS OR SIMILAR, WITH DEVICES FOR THE FIXING OF THE BELTS THAT TAKE ADVANTAGE OF THE TENSION OF THEMSELVES IN ORDER TO CONSTRAIN THEM TO THE SUPPORT FRAMEWORK

Giuseppe Seroldi, Via Baracca, 18 20038, Seregno (Milan), Italy

Filed Mar. 20, 1996, Ser. No. 618,940

Claims priority, application Italy, Apr. 21, 1995, MI9500282 U

Int. Cl.[6] A47C *7/32*

U.S. Cl. 297—452.63 **4 Claims**

1. A plane for a seat of an armchair, divan, chair or similar furniture, the plane comprising:



a pair of spaced apart lateral sections, each lateral section having a downwardly protruding tongue;

a pair of U shaped elements corresponding to the pair of downwardly protruding tongues, one U shaped element oriented around each protruding tongue;

a plurality of belts connected between the pair of spaced apart lateral sections, each belt having a pair of ends, one end of each belt passing around outside one of the U shaped elements, folded back and interposed between the same U shaped element and corresponding protruding tongue; the other end of each belt fastened in the same manner to the other U shaped element and other protruding tongue; and

means for tensioning each of the plurality of belts, wherein the tension exerted by each belt is directed against each U shaped element such that each end of each belt is blocked against the corresponding protruding tongue, thereby constraining the belt in the framework.

5,645,322

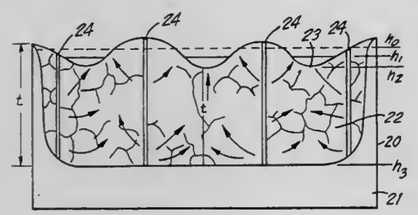
IN-SITU CHEMICAL REACTOR FOR RECOVERY OF METALS AND SALTS

Kenneth Hsu; Peter Hsu, both of Zurich, Switzerland, and Frank W. Dickson, Sparks, Nev., assignors to Tarim Associates for Scientific Mineral & Oil Exploration, Zurich, Switzerland

Filed Mar. 14, 1995, Ser. No. 403,364

Int. Cl.[6] B01D *37/00;* **E21B** *43/241;43/247;43/28*

U.S. Cl. 299—5 **12 Claims**



1. A process for recovering salts and metals from fluid ore-deposits comprising the step of inducing hydrodynamic flow of a salt- or metal-bearing solution through a chemical filter layer into a natural or artificial basin having walls and a floor constructed on a deposit site bearing desired metals or salts, said chemical filter layer being located on said floor, said floor of said basin lying below the groundwater table and the flow rate is regulated through a change of the hydrodynamic gradient, to promote chemical reaction between the fluid and the chemicals in the basin and thereafter separating the reactor product.

10. A process for recovering metals from an ore bearing body comprising the steps of:

subjecting said ore bearing body to shale burning to oxidize said ore beating body to enable fluid to permeate and to react with said ore-beating body;

recovering said metals from said burnt, ore-bearing body by subjecting said burnt ore beating body to leaching by inducing hydrodynamic flow of a leaching solution through said body lying below a groundwater table, the flow rate being regulated through a change of the hydrodynamic gradient, and thereafter separating said metals from the reaction product.

5,645,323

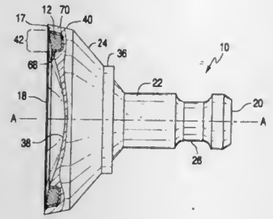
CONCAVE CUTTER BIT WITH SACRIFICIAL CONSTRAINT

Wayne H. Beach, Roaring Spring, Pa., assignor to Kennametal Inc., Latrobe, Pa.

Filed Dec. 11, 1995, Ser. No. 570,310

Int. Cl.[6] E21C *35/183*

U.S. Cl. 299—111 **22 Claims**



17. A cutter bit for impinging a substrate, the cutter bit comprising:

an elongate bit body having an impingement end,

a sacrificial constraint adjacent to the impingement end, and

at least one insert connected to the bit body at the sacrificial constraint,

wherein the bit body contains a cavity at the impingement end thereof, and the cavity has an open end defined by the sacrificial constraint.

5,645,324

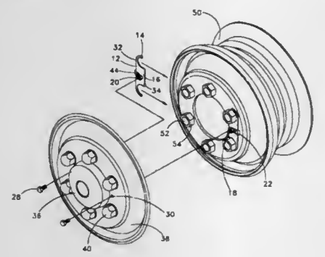
WHEEL TRIM ATTACHMENT SYSTEM FOR IMPORT TRUCKS OR WHEELS HAVING LUG NUTS HAVING AN OFFSET

James P. Wright; Timothy L. Bates; Kevin D. Nash; Barry Lynn Roberts, all of Cookeville, and John Davenport, Crossville, all of Tenn., assignors to Phoenix USA, Inc., Cookeville, Tenn.

Filed Feb. 20, 1996, Ser. No. 603,729

Int. Cl.[6] B60B *7/06*

U.S. Cl. 301—37.37 **9 Claims**



10

1. A system for attaching a wheel liner to a wheel having plural lug nuts with offsets comprising:

a. a pair of collars each having a pair of yokes partially encircling two of said corresponding lug nuts and received by said offsets;

b. means for attaching said liner to said mounting nut of said collars; and

c. a pair of rubber bands, each of said rubber bands attached to each of said collars to releasibly affix each of said collars to each of said corresponding lug nuts.

5,645,325

ELECTROMAGENTICALLY ACTUATED VALVE FOR SLIP-CONTROLLED HYDRAULIC BRAKE SYSTEMS

Klaus Mueller, Tamm; Bernhard Heugle, Grossbottwar; Kurt Herzog, Bietigheim-Bissingen; Martin Oehler, Leingarten; Günther Hohl, Stuttgart, and Hans-Jürgen Herderich, Kernen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

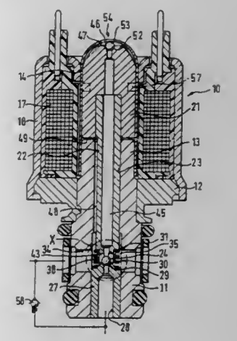
PCT No. PCT/DE94/01075, § 371 Date Mar. 25, 1996, § 102(e) Date Mar. 25, 1996, PCT Pub. No. WO95/08460, PCT Pub. Date Mar. 30, 1995

PCT Filed Sep. 17, 1994, Ser. No. 619,465

Claims priority, application Germany, Sep. 23, 1993, 43 32 371.5

Int. Cl.[6] B60T *8/36;8/50;* **F16K** *31/06;* **G05D** *16/20*

U.S. Cl. 303—119.2 **8 Claims**



1. An electromagnetically actuated valve (**10**), for slip-controlled hydraulic brake systems in motor vehicles, which comprises:

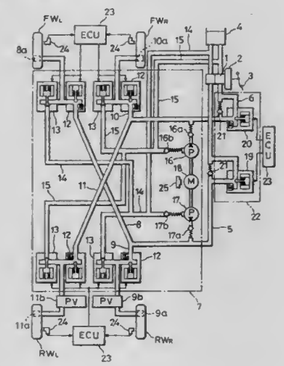
a cylindrical magnet armature (**21**) is accommodated in longitudinally movable fashion between a closed tubular valve dome (**14**), and a pole core (**13**), the valve dome (**14**) is surrounded by a solenoid (**17**), emanating from the magnet armature (**21**) is a valve tappet (**22**) with a closing member (**24**) arranged at an end remote from the armature, a valve body (**27**) with a valve seat (**29**) as a pressure-medium inlet is secured in a housing (**11**) of the valve (**10**), with the solenoid (**17**) unexcited, a return spring (**31**) raises the closing member (**24**) to an open position, the closing member (**24**) and that part of the valve body (**27**) which has the valve seat (**29**) form a first seat valve (**30**) and are situated in a valve chamber (**35**) which is connected to a pressure-medium outlet of the valve (**10**), the valve chamber (**35**) has a valve subchamber (**43**) which acts as a fluid retaining space and from there emanates a first pressure-medium passage (**45**) in said armature that leads to a control chamber (**47**) situated between an end of the magnet armature (**21**) which is remote from the closing member and the valve dome (**14**), a second pressure-medium passage (**48**) leads from an end (**49**) of the magnet armature (**21**) along a flat on said valve tappet **22** to the valve chamber (**35**), a pressure generated in the valve subchamber (**43**) is capable of bringing about a force in the control chamber (**46**) that acts counter to the force of the return spring (**31**) on the magnet armature (**21**) and as a result the force on the seat valve (**30**) assumes a partially closed position which differs from its rest position, a second seat valve (**54**), which controls passage through the first pressure-medium passage (**45**) is provided, in the rest position of the magnet armature (**21**), the first pressure-medium passage (**45**) is closed by the second seat valve (**54**), with the magnet armature (**21**) displaced longitudinally from the rest position, the first press-medium passage (**45**) is freed by the second seat valve (**54**).

5,645,326

TURN CONTROL APPARATUS FOR A VEHICLE

Yoshiaki Sano, Okazaki, Japan, assignor to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 28, 1996, Ser. No. 671,641
Claims priority, application Japan, Jun. 30, 1995, 7-166404
Int. Cl.[6] B60T *8/32*
U.S. Cl. 303—146 **8 Claims**



1. A vehicle turn control apparatus, which includes a hydraulic circuit connecting a master cylinder connected to a brake pedal and wheel brakes provided corresponding individually to wheels of a vehicle, a pump adapted to generate and supply a hydraulic pressure to the hydraulic circuit when actuated, and a hydraulic pressure control valve unit arranged in the hydraulic circuit so as to be located between the pump and the wheel brakes and adapted to adjust the hydraulic pressure generated by the pump, and which supplies the hydraulic pressure, generated by the pump and adjusted by means of the hydraulic pressure control valve unit, to one or more required wheel brakes while there is a turn control request, said apparatus comprising:

required control valve calculating means for deriving a required control valve for yaw moment control in accordance with an operating condition and/or behavior of the vehicle;

pre-pressurization control means for actuating the pump when a first predetermined value is reached by the required control valve; and

hydraulic pressure control means for controlling the operation of the hydraulic pressure control valve unit in accordance with the required control valve, the hydraulic pressure control means being adapted to discriminate the turn control request and start the operation control for the hydraulic pressure control valve unit when a second predetermined value greater than the first predetermined value is reached by the required controlled variable.

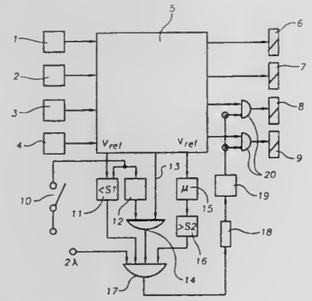
5,645,327

ANTILOCK CONTROL SYSTEM

Leo Steinke, Waiblingen; Armin Czinczel, Korntal-Münchingen, and Thomas Isella, Markgröningen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE94/00870, § 371 Date Mar. 3, 1995, § 102(e) Date Mar. 3, 1995, PCT Pub. No. WO95/03955, PCT Pub. Date Feb. 9, 1995
PCT Filed Jul. 27, 1994, Ser. No. 392,876
Claims priority, application Germany, Jul. 31, 1993, 43 25 780.1
Int. Cl.[6] B60T *8/32*
U.S. Cl. 303—157 **10 Claims**

1. Method for controlling brake pressure at the wheels of a motor vehicle, said method comprising



measuring speeds of the wheels,

determining when braking begins,

determining a vehicle speed V_{Ref} when braking begins,

determining slippage at each wheel based at least on said wheel speeds,

producing at least one brake pressure reduction signal for each wheel where slippage occurs, said at least one signal having a duration and including at least a first reduction signal, the duration of said first reduction signal being dependent on said vehicle speed V_{Ref} when braking begins, and

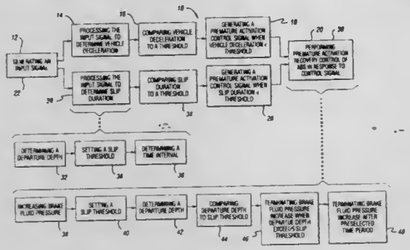
decreasing brake pressure at each wheel where slippage occurs in stages having durations corresponding to the durations of said at least one pressure reduction signal at said each wheel where slippage occurs.

5,645,328

EARLY ACTIVATION RECOVERY CONTROL METHOD AND SYSTEM FOR VEHICLE ANTI-LOCK BRAKE SYSTEM

Bernard W. Johnson, Brighton, and Mark Luckevich, Ann Arbor, both of Mich., assignors to Kelsey-Hayes Company, Romulus, Mich.

Continuation of Ser. No. 303,767, Sep. 9, 1994, abandoned. This application Aug. 14, 1995, Ser. No. 514,836
Int. Cl.[6] B60T *8/94*
U.S. Cl. 303—158 **26 Claims**



1. A control method for a vehicle anti-lock brake system, the method providing for recovery from premature activation of the vehicle anti-lock brake system, the method comprising:

generating an input signal representing a vehicle wheel velocity;

processing the input signal to determine a vehicle deceleration;

comparing the vehicle deceleration to a deceleration threshold;

generating a premature activation recovery control signal when the vehicle deceleration fails to exceed the deceleration threshold; and

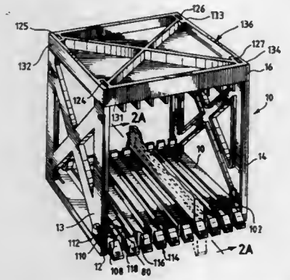
performing premature activation recovery control of the anti-lock brake system in response to the premature activation recovery control signal.

5,645,329

MODULAR COMPACT DISC CASE HOLDER WITH DISC CASE EJECTION MECHANISM

Michael F. Madock, 7616 Division, River Forest, Ill. 60305

Filed Dec. 21, 1995, Ser. No. 576,021
Int. Cl.[6] A47B *81/06*
U.S. Cl. 312—9.63 **19 Claims**



1. A modular holder for a plurality of compact discs each of which is stored in an associated case comprising:

a bottom wall having a plurality of upstanding ribs spaced along a width of said bottom wall and defining a plurality of compact disc case holding areas, said bottom wall including in each of said compact disc case holding areas a spring and a retaining member disposed opposite of said spring for opposing the force thereof to maintain a compact disc case between said spring and said retaining member when said retaining member is in a first position, said retaining member being movable to a second position for releasing a compact disc case to allow said spring to partially eject said case from said holder, wherein said retaining member is formed as an integral part of said bottom wall;

a first side wall mountable on a first side of said bottom wall;

a second side wall mountable on a second side of said bottom wall opposite said first side; and

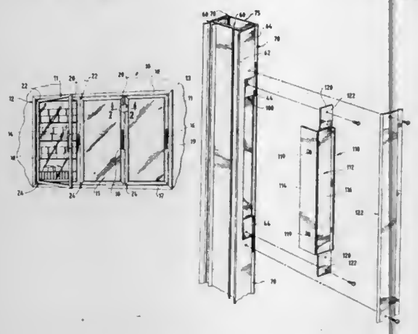
a top wall mountable on said first and second side walls.

5,645,330

REFRIGERATED DISPLAY CABINETS WITH IMPROVED MULLION ASSEMBLY

Paul J. Artwohl, Flossmoor; Melvin Kaspar, La Grange Park, both of Ill., and Richard A. Mamelson, Crown Point, Ind., assignors to Ardco Incorporated, Chicago, Ill.

Filed Sep. 19, 1996, Ser. No. 719,087
Int. Cl.[6] A47F *3/04*; **F21V** *5/02*
U.S. Cl. 312—116 **3 Claims**



1. An improved refrigerated cabinet assembly having a perimetric frame and a plurality of elongated vertical mullions spaced along the length of the cabinet assembly, each mullion being secured at its top and its bottom to said perimetric frame, and a series of rectangular doors mounted on said frame for swinging movement on vertical hinge axes between open positions and closed positions,

each said mullion being generally rectangular and hollow and having a front surface facing outwardly of said cabinet assembly, a back surface facing inwardly of said cabinet assembly, and a pair of side walls, said rectangular doors defining surfaces confronting the front surfaces of said mullions and being adapted to seal therewith, one of said side walls of each said mullion defining an access opening,

a ballast assembly, said ballast assembly comprising a ballast drawer, a fluorescent ballast removably secured thereto, and means for removeably securing said ballast assembly to a said mullion, said ballast drawer being adapted for sliding insertion into said mullion access opening and for withdrawal therefrom, and

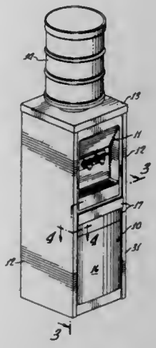
whereby said fluorescent ballast may be quickly and easily removed for service by withdrawing said drawer from said mullion and may be quickly and easily reinstalled by slidingly inserting said ballast into said mullion from the side thereof.

5,645,331

LOWER FRONT FOR WATER COOLERS, AND APPARATUS AND METHOD FOR RENOVATING WATER COOLERS

John W. Eddy, Riverside; Kelley S. Needham, Yorba Linda, and Jeffrey L. Harlan, Corona, all of Calif., assignors to Kel-Jac Engineering and Plastic Sales, Inc., Riverside, Calif.

Continuation of Ser. No. 497,092, Jun. 30, 1995, abandoned, which is a continuation-in-part of Ser. No. 315,333, Sep. 30, 1994, Pat. No. 5,528,810. This application Aug. 16, 1996, Ser. No. 689,710
Int. Cl.[6] A47B *45/00*
U.S. Cl. 312—205 **20 Claims**



1. A front for a domestic water cooler, which comprises:

(a) a first panel having a top edge, a bottom edge, and side edges,

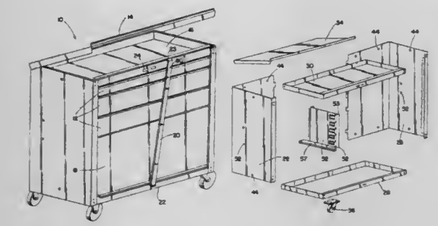
(b) a second panel having a top edge, a bottom edge, and side edges,

said first and second panels being partially overlapped relative to each other in such manner that said bottom edge of one of said panels overlaps said top edge of the other of said panels,

(c) means to mount said first and second panels in partially overlapped condition relative to each other, with different degrees of overlapping, and

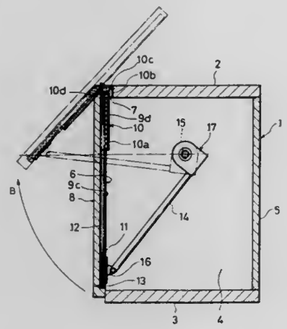
(d) means to mount said panels on the front of a domestic water cooler.

5,645,332
EASY TO ASSEMBLE STORAGE UNIT
Steven R. Snoke, Batavia; Gary Silvis, and Thomas E. Howland, both of Georgetown, all of Ohio, assignors to Stanley Mechanics Tools, Georgetown, Ohio
Filed Feb. 21, 1995, Ser. No. 391,211
Int. Cl.[6] A47B *43/00*
U.S. Cl. 312—257.1 7 Claims



1. A storage container, comprising:
a pair of oppositely disposed wall members substantially identical in shape to each other, wherein each of said wall members has a side wall portion and a rear wall portion, wherein said rear wall portions are connected to form a rear wall;
at least one upper tab integral with at least one of said wall members wherein said upper tab is offset from a surface of said wall member, said upper tab having a proximal edge and a distal end;
an upper catch integral with said upper tab along a proximal edge of said upper catch, said proximal edge of said upper catch located at a point intermediate between said proximal edge of said upper tab and said distal end of said upper tab, said upper catch extending from said proximal edge of said upper catch to a distal end of said upper catch, said distal end of said upper catch located between said proximal edge of said upper catch and said proximal edge of said upper tab, said upper catch being bent along said proximal edge of said upper catch, such that said distal end of said upper catch is biased towards said surface of said wall member;
at least one lower tab integral with at least one of said wall members, wherein said lower tab is offset from a surface of said wall member said lower tab having a proximal edge and a distal end;
a lower catch integral with said lower tab along a proximal edge of said lower catch, said proximal edge of said lower catch located at a point intermediate between said proximal edge of said lower tab and said distal end of said lower tab, said lower catch extending from said proximal edge of said lower catch to a distal end of said lower catch, said distal end of said lower catch located between said proximal edge of said lower catch and said proximal edge of said lower tab, said lower catch being bent along said proximal edge of said lower catch, such that said distal end of said lower catch is biased towards said surface of said wall member;
a floor panel having side portions connected to said wall members;
at least one opening formed in a surface of one of said floor panel side portions, wherein said opening receives said distal end of said lower catch;
a top wall having side portions connected to said wall members; and
at least one opening formed in a surface of one of said top wall side portions, wherein said opening receives said distal end of said upper catch.

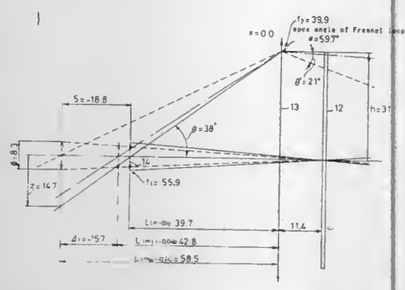
5,645,333
OVERHEAD DOOR
Masanori Sakurai, Tokyo, Japan, assignor to Sugatsune Industrial Co., Ltd., Tokyo, Japan
Filed Apr. 17, 1995, Ser. No. 422,960
Claims priority, application Japan, Apr. 15, 1994, 6-102333
Int. Cl.[6] A47B *67/02;* A47F *3/00*
U.S. Cl. 312—322 5 Claims



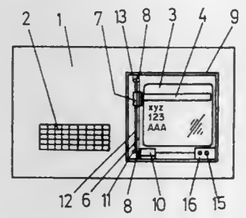
3. An overhead door swingably secured to inner lateral wall surfaces of a cabinet by means of a pair of support arm/damper assemblies such that a damper of each of the assemblies is rigidly fitted to a corresponding lateral wall of the cabinet and a distal end of a support arm of each of the assemblies is secured to a rotary shaft of the damper while a proximal end is pivotably fitted to an inner surface of the door at a position close to a lower edge thereof, characterized in that the door is provided on the inner surface thereof with a pair of longitudinally arranged slide rail assemblies, each of said slide rail assemblies comprising a relatively long outer rail and a short inner rail arranged vis-a-vis the long outer rail and a short inner rail arranged vis-a-vis the outer rail with a ball retainer interposed therebetween and pivotably secured at an upper end to a front edge of a roof wall of the cabinet, so that the door can be swung open or closed as a combined effect of slewing and sliding motions and, when fully opened, the door is placed on the roof wall of the cabinet.

5,645,334
PROJECTOR AND FOCUSING METHOD THEREIN
Yasuyuki Tejima; Nobutaka Minefuji, and Masakuni Iwanaga, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, and Casio Computer Co., Ltd., both of Tokyo, Japan
Filed Aug. 11, 1995, Ser. No. 514,221
Claims priority, application Japan, Aug. 12, 1994, 6-190846; Apr. 27, 1995, 7-104369
Int. Cl.[6] G03B *21/14*
U.S. Cl. 353—101 7 Claims

1. A projector comprising:
a light source;
a transmission type picture panel;
a screen; and
a projection lens system have a Fresnel condenser lens and an imaging lens, said projection lens system having a half angle of view being between 30° and 45°, and a projection magnification greater than five times;
wherein light emitted from the light source is made incident upon the transmission type picture panel and projected onto the screen through the projection lens system, and
wherein said condenser lens and said imaging lens are movable, with respect to the transmission type picture panel, in an optical axis direction, so that when a projection distance from the projection lens system to the screen is varied, both said condenser lens and said imaging lens are relatively moved, with respect to the transmission type picture panel, to adjust a focus of the emitted light on the screen.



5,645,335
DEVICE FOR CONVERTING THE PICTURES DISPLAYED ON A LUMINOUS SURFACE INTO ELECTRICAL SIGNALS
Alex Brunner, Milford, Mich., and Ferdinand Porsche, Stuttgart, Germany, assignors to Werner Tabarelli, Austria
Filed Dec. 2, 1993, Ser. No. 160,899
Claims priority, application Austria, Dec. 3, 1992, A2386/92
Int. Cl.[6] G03B *21/00*
U.S. Cl. 353—122 20 Claims

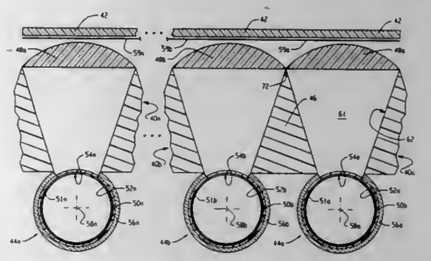


1. A device for converting the picture displayed on a screen into electric signals, characterized in that the device comprises a bar (4) with a plurality of picture sensors (5); at least one guide element, the bar being movably guided by the at least one guide element; means (8,8',18–21) for securing the at least one guide element (6) in a specific position relative to the screen (3) said means making direct contact with a glass of said screen; and wherein the securing means (8,8',18–21) and each of the at least one guide elements (6) being designed in such a way that, with a device which is mounted to the screen (3), the bar (4) travels close in front of a front side of the screen which faces the observer.

5,645,336
ILLUMINATED FLUID LEVEL INDICATOR
David E. Brown, Strongsville; Mark A. Colman, Brunswick Hills, and Michael J. Kett, Parma Hts., all of Ohio, assignors to Clark-Reliance Corporation, Strongsville, Ohio
Division of Ser. No. 440,014, May 12, 1995, abandoned. This application May 29, 1996, Ser. No. 654,842
Int. Cl.[6] G01D *11/28;* G01F *23/38*
U.S. Cl. 362—26 20 Claims

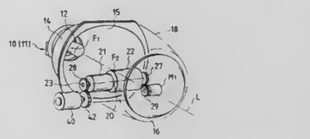
1. A lighting assembly for directly illuminating a magnetic indicator which indicates a level of a fluid in a container to which said magnetic indicator is attached, said lighting assembly comprising:
a substantially flat illumination panel located proximate at least one indicator element on the magnetic indicator and comprising a plurality of fiber optic fibers;
an attachment mechanism connected to said illumination panel for attaching said substantially flat illumination panel to the fluid container proximate said indicator element; and
an illumination source optically coupled to said substantially flat illumination panel.

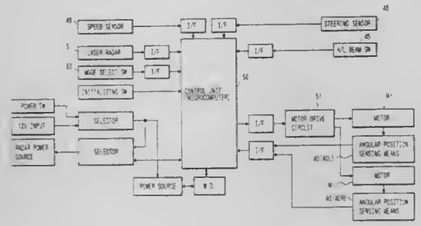
5,645,337
APERTURED FLUORESCENT ILLUMINATION DEVICE FOR BACKLIGHTING AN IMAGE PLANE
Philip Gleckman, Wilsonville, Oreg., assignor to Interstate Electronics Corporation, Anaheim, Calif.
Filed Nov. 13, 1995, Ser. No. 557,692
Int. Cl.[6] G01D *11/28*
U.S. Cl. 362—29 23 Claims



19. A backlighting system for a generally planar display, comprising:
a plurality of fluorescent lamps each having an interior surface thereof substantially coated with a phosphor and an aperture for emitting illumination toward the generally planar display; and
a corresponding plurality of reflectors for collecting said emitted illumination and reflecting said collected illumination toward the planar display, said reflectors being positioned intermediate said fluorescent lamps and the display, each of the plurality of reflectors being positioned adjacent to one another.

5,645,338
LIGHT DISTRIBUTION CONTROL DEVICE FOR VEHICULAR HEADLAMP
Shoji Kobayashi, Shizuoka, Japan, assignor to Koito Manufacturing Co., Ltd., Tokyo, Japan
Filed Jul. 27, 1994, Ser. No. 281,088
Claims priority, application Japan, Aug. 3, 1993, 5-192357
Int. Cl.[6] B60Q *1/04*
U.S. Cl. 362—61 **14 Claims**

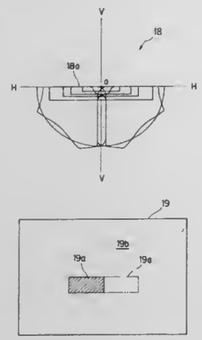




1. A light distribution control device for a vehicular headlamp, comprising:
a sensor for measuring a distance between a first vehicle carrying said control device and a second vehicle running in front of said first vehicle;
a rotatable shade for setting a cut-line in an output beam from said headlamp in accordance with a rotational position of said shade; and
a shade rotation control unit for controlling the rotational position of the shade, and for storing as table data rotational positions of the shade at which a quantity of glare at eye points specified by corresponding distances between vehicles is smaller than a tolerable quantity of glare, the control unit controlling the rotational position of the shade on the basis of distance information provided by the sensor and the table data;
wherein the table data contains data representative of shade angular positions for approaching and forerunning vehicles, and said shade rotation control unit differentiates distance information sequentially obtained from said sensor with respect to time and determines whether the vehicle running in front of the control-device carrying vehicle is an approaching vehicle or a forerunning vehicle based on speed information resulting from the differentiation.

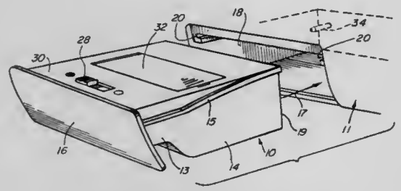
5,645,339
VEHICLE HEADLAMP CONSTRUCTION FOR A WELL DEFINED LOWER BEAM PATTERN
Masashi Tatsukawa, Shimizu, Japan, assignor to Koiko Manufacturing Co., Ltd., Tokyo, Japan
Filed Aug. 25, 1994, Ser. No. 296,190
Claims priority, application Japan, Aug. 25, 1993, 5-230724
Int. Cl.[6] B60Q *1/04*
U.S. Cl. 362—61 **8 Claims**

1. A vehicular headlamp for providing a lower beam pattern having a sharply defined top edge cutoff, wherein the improvement comprises:
(a) a light source;
(b) a reflector reflecting light emitted by the light source, the reflector producing a basic beam pattern of symmetrical shape



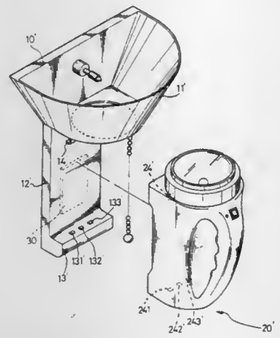
which is wholly disposed below a horizon and which has a top edge cutoff extending horizontally; and
(c) a front lens producing a lower beam pattern by raising part of the basic beam pattern above the top edge cutoff and by horizontally expanding the rest of the basic beam pattern;
(d) whereby the lower beam pattern has a top edge cutoff as sharply defined as the top edge cutoff of the basic beam pattern.

5,645,340
FLASHLIGHT REPLACEMENT FOR VEHICLE ASHTRAY
Orren L. Colton, P.O. Box 5010, Huntington Beach, Calif. 92615-5010
Filed Jun. 19, 1995, Ser. No. 492,231
Int. Cl.[6] B60Q *3/06*
U.S. Cl. 362—80 **20 Claims**



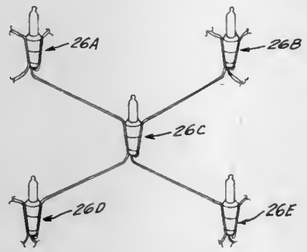
1. A flashlight assembly comprising, in combination:
a substantially elongated housing having a first end and a second end;
said first end of said substantially elongated housing being sized and dimensioned so as to be secured in an ashtray opening in a dashboard of a vehicle;
said first end being substantially rectangular and secured to said substantially elongated housing and having a lighting portion, including a bulb, a lens and a reflector;
said substantially elongated housing including means for releasably capturing said flashlight assembly in said ashtray opening; and
said substantially elongated housing including a substantially rectangular front handle portion secured to said substantially elongated housing, away from said first end, for manipulating said flashlight and inserting said first end into, or removing said first end from said ashtray opening.

5,645,341
WALL LAMP
King-Pro Liao, No. 3, Lane 121, Chienhsing Rd., Taya Hsiang, Taichung Hsien, Taiwan
Filed Sep. 16, 1996, Ser. No. 714,767
Int. Cl.[6] F21L *7/00*
U.S. Cl. 362—183 **19 Claims**



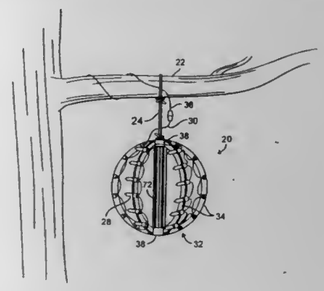
11. A wall lamp comprising;
a pedestal and a base perpendicularly extending from a bottom of the pedestal, an L-shaped tongue protruding from an upper portion of the pedestal, and a plurality of contact points disposed on the base;
a flashlight composed of a plastic housing having a suspension rod for engaging with the L-shaped tongue of the pedestal thereby retaining the flashlight on the pedestal, corresponding number of contact pins formed at a bottom of the plastic housing for electrically connecting with the contact points of the base, a rechargeable battery provided within the plastic housing, a bulb, and a power switch on the plastic housing for controlling the bulb; and
a control means for electrically controlling the flashlight.

5,645,342
DECORATIVE CHRISTMAS TREE ILLUMINATION ASSEMBLY
Chin Chen Chang, No. 9, Lane 305, Pei Ta Road, Hsin Chu, Taiwan
Filed May 20, 1996, Ser. No. 650,800
Int. Cl.[6] F21P *1/00*
U.S. Cl. 362—252 **12 Claims**



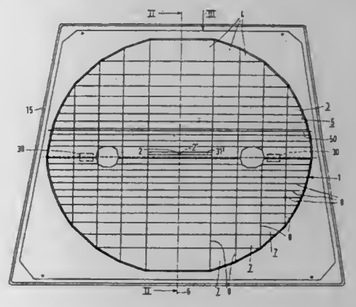
1. A decorative Christmas tree light assembly comprising a web including a plurality of Christmas tree light bulbs, the web being adapted to be draped over a Christmas tree; the assembly comprising:
(a) at least three pairs of insulated wires, each pair of insulated wires comprising a first insulated wire and a second insulated wire;
(b) said wires being formed into the web with the wires crossing at nodes of the web, a socket being positioned at least at about every node of the web; and
(c) wherein at each node said socket is joined to a wire passing through that node.

5,645,343
LIGHT-STRING HOLDER
John C. Rinehimer, 9289 N. Morning Glory Rd., Paradise Valley, Ariz. 85253
Filed Sep. 13, 1996, Ser. No. 713,947
Int. Cl.[6] F21P *1/00*
U.S. Cl. 362—252 **20 Claims**



1. A light-string holder comprising:
a first hub having a plurality of receptacles;
a second hub having a plurality of receptacles; and
a plurality of lamp-cluster holders, each of said lamp-cluster holders designed to mate with one of said receptacles of said first hub and one of said receptacles of said second hub.

5,645,344
LUMINAIRE
Hendrik Wijbenga, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Division of Ser. No. 305,115, Sep. 13, 1994, Pat. No. 5,544,030.
This application Mar. 4, 1996, Ser. No. 610,686
Claims priority, application Belgium, Sep. 13, 1993, 09300958; European Pat. Off., Mar. 11, 1994, 92400635
Int. Cl.[6] F21V *7/12*
U.S. Cl. 362—346 **21 Claims**



1. A reflector for a light source, comprising:
a body having a concave reflecting surface having an optical axis, a plane of symmetry and a light emission window, said

reflecting surface surrounding the optical axis and comprising a plurality of plane facets,

said plane facets being arranged in rows between first planes and bounded by second planes which are substantially parallel to one another and transverse to the first planes,

the first planes being mutually substantially parallel and substantially parallel to the plane of symmetry, and

the second planes being substantially parallel to the optical axis.

5,645,345

APPARATUS FOR MIXING FIBROUS TYPE MATERIAL

Oliver O'Neill, Kilgreaney, and Thomas Foley, Borris, both of Ireland, assignors to Salford Engineering Limited, Borris, Ireland

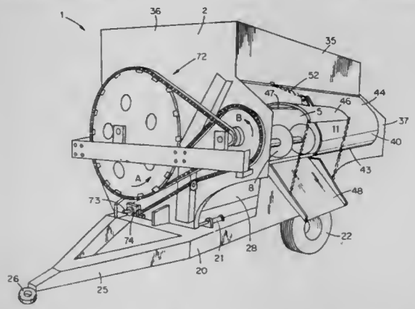
PCT No. PCT/IE94/00014, § 371 Date Sep. 11, 1995, § 102(e) Date Sep. 11, 1995, PCT Pub. No. WO94/19932, PCT Pub. Date Sep. 15, 1994

PCT Filed Mar. 10, 1995, Ser. No. 522,250

Claims priority, application Ireland, Mar. 10, 1993, S930177

Int. Cl.[6] B01F *7/04*

U.S. Cl. 366—186 **20 Claims**



1. Apparatus for mixing and dispensing fibrous materials, the apparatus (**1**) comprising a container (**2**) defining a hollow interior region (**3**) which forms an elongated mixing compartment (**4**) of substantially semi-circular transverse cross-section defining a longitudinally extending main central axis (**39**) which is co-axial with the axis of generation of the semi-circular portion (**28**) of the mixing compartment (**4**), a mixing rotor (**7**) being rotatable in the mixing compartment (**4**) about a rotational axis coinciding with the main central axis (**39**), the mixing rotor (**7**) comprising at least one mixing paddle (**56**) for mixing material in the mixing compartment (**4**), the mixing paddle (**56**) extending substantially longitudinally relative to the main central axis (**39**) and having a leading surface (**69**) extending substantially longitudinally and radially relative to the main central axis (**39**) and terminating in an outer free edge (**65**) extending in a generally longitudinal direction and defining an outer peripheral edge (**65**) of the mixing paddle (**56**), characterised in that the mixing paddle (**56**) is further provided with a bevelled trailing surface (**71**) extending from the outer free edge (**65**) of the leading surface (**69**) and defining with the leading surface (**69**) an included acute angle (α).

5,645,346

FOOD PREPARATION BLENDER WITH A ROTATING AND VERTICALLY OSCILLATING MIXING BLADE

Michael C. Thuna, DesPlaines, Ill., assignor to 24th & Dean, Inc., Chicago, Ill.

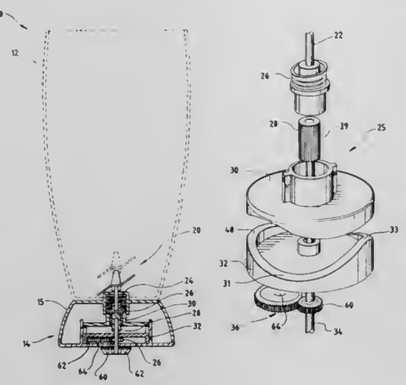
Filed May 2, 1996, Ser. No. 641,883

Int. Cl.[6] A47J *43/08*

U.S. Cl. 366—205 **3 Claims**

1. A blender for preparing food comprising:

a container, transmission, and an electric motor;



said container attachable to said transmission;

said transmission further including a housing with a drive shaft disposed therein that is operatively connected to said electric motor;

a mixing blade attachable to said drive shaft, said mixing blade rotated by the operation of said electric motor;

a speed reducer contained within said housing of said transmission, said speed reducer operatively driven by said electric motor;

a waveform ramp configured to have at least one elevation and at least one depression, said waveform ramp operatively rotated by said speed reducer at a slower rotational rate than said mixing blade; and

a guide that operatively engages said mixing blade and said at least one elevation and depression of said waveform ramp, said engagement of said guide oscillates said mixing blade on a vertical axis.

5,645,347

MIXING APPARATUS WITH MIXING ROD SUPPORTING LID

Klaus Draenert, Gabriel-Max-Str. 3, 8000 Munich 90, Germany

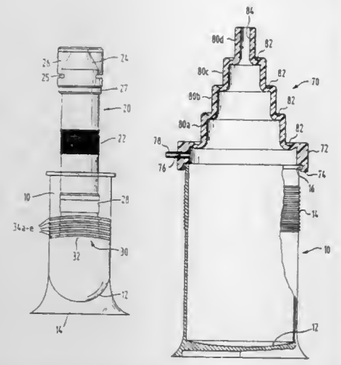
Continuation of Ser. No. 730,501, Jul. 11, 1991, Pat. No. 5,374,121, which is a continuation of Ser. No. 302,689, Jan. 23, 1989, abandoned. This application Nov. 17, 1993, Ser. No. 154,168

Claims priority, application Germany, May 21, 1987, 37 17 134.8

Int. Cl.[6] B01F *15/00;3/08*

U.S. Cl. 366—242 **16 Claims**

1. A mixing apparatus comprising a mixing bowl having an interior and having a generally vertical, longitudinal axis and a lid for sealing the mixing bowl in a vacuum-tight manner, said lid comprising a passage therethrough receiving a mixing rod, wherein the lid is relatively rigid in the axial direction of the mixing bowl against a vacuum established within the mixing bowl while the lid is flexible enough for transverse movement of at least a portion of the mixing rod in a radial direction of the mixing bowl such that a stirring movement can be carried out by means of the mixing rod in the interior of the mixing bowl, said mixing apparatus further



comprising a feed-through connector disposed in said lid for connecting the interior of the mixing bowl to a vacuum means.

5,645,348

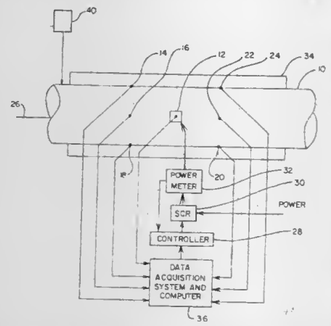
METHOD AND APPARATUS FOR MEASURING PRESSURE IN A PIPELINE WITHOUT TAPPING

Foster B. Stulen, Galena; Susan T. Brown, Dublin; Glenda S. Holderbaum, Hilliard; David B. Philips, Bexley, and Arthur C. Eberle, Upper Arlington, all of Ohio, assignors to Columbia Gas of Ohio, Inc., Columbus, Ohio

Filed Jun. 20, 1994, Ser. No. 262,696

Int. Cl.[6] G01N *25/00;* **G01K** *13/02;* **G01F** *1/68;* **G01L** *7/00*

U.S. Cl. 374—45 **3 Claims**



1. A process for determining conditions of a fluid inside a pipe of unknown volume without contacting said fluid directly comprising:

said pipe having an axis, a top, a bottom and two sides and being of relatively uniform composition;

continuously applying heat to the exterior surface of said pipe at a first location;

before applying said heat, measuring the temperature of the exterior surface of said pipe on one of said sides at a second location spaced more than 2 inches and less than 25 inches from where the heat is applied;

after a period of time from beginning to apply said heat, again measuring the temperature at the said second location;

comparing the measured temperatures at said second location to determine said fluid in said pipe to be a gas;

after determining said fluid to be a gas, in a plane extending generally perpendicular to said axis, downstream of said first location and passing through said second location, continuously measuring the temperatures of the exterior surface of said pipe at said top, said second location and said bottom;

continuously calculating the temperature differences between said top and bottom;

continuously calculating the rate of rise of said temperature differences between said top and bottom and the rate of temperature rise at said second location to determine a peak rate of rise of said temperature difference between said top and bottom and a peak rate of temperature rise at said second location; and

comparing said calculated peak rates of rise with data from another source to make a determination of the pressure of said gas in said pipe.

5,645,349

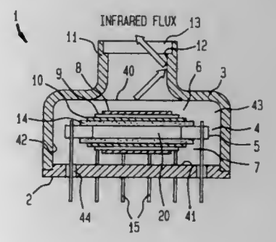
NONCONTACT ACTIVE TEMPERATURE SENSOR

Jacob Fraden, La Jolla, Calif., assignor to Thermoscan Inc., San Diego, Calif.

Filed Jan. 10, 1994, Ser. No. 179,431

Int. Cl.[6] G01K *7/00;1/20;7/16*

U.S. Cl. 374—120 **9 Claims**



1. An apparatus for determining the temperature of a remote object, comprising:

a radiation sensitive sensor assembly comprising a first remote object sensor element and a second reference sensor element wherein said first and second sensor elements are separated by a low heat conductivity barrier effective to thermally decouple said first and second sensor elements from each other and each sensor element providing an output signal,

first and second individually controlled heater elements for controlled heating of said first remote object land second reference sensor elements;

a temperature compensating circuit for controlling said first and second individually controlled heater elements;

first and second temperature sensors thermally coupled to said first remote object and second reference sensor elements for sensing the temperature of said first remote object and second reference sensor elements;

said compensating circuit generating a compensating output signal responsive to temperature signals from said temperature sensors compared with reference signals, said output signal including a second output signal to said first and second heater elements and a first output signal to a third heater element in said first sensor element;

a sensor housing means for enclosing said radiation sensitive sensor assembly, wherein said sensor housing means includes an infrared radiation passage oriented to allow infrared radiative communication of said remote object with said first sensor element and prevents infrared radiative communication between said second sensor element and radiation sources external to said sensor housing means, said second sensor element disposed in said sensor housing means effective for receiving thermal radiation indicative of the thermal environment in said sensor housing means in which both of said sensor elements are housed; and

temperature sensing means for determining the temperature of said remote object from said output signal from each of said first remote object sensor element and said second reference sensor element;

wherein said sensor housing means further provides an environment so that said first and second sensor elements exhibit essentially equivalent conductive and convective heat flux in response to ambient conditions.

9. A method for determining the temperature of a remote object, comprising:

providing a radiation sensitive sensor assembly comprising a first remote object sensor element and a second reference sensor element wherein said first and second sensor elements are separated by a low heat conductivity barrier effective to thermally decouple said first and second sensor elements from each other, and each of said first remote object sensor and second reference sensor elements providing an output signal;

controlling the temperature of said first and second sensor elements by providing first and second individually controlled heater elements therefor and thermally coupled thereto and providing first and second temperature sensors therefor, including individually controlling said heater elements by means of a compensating circuit generating a compensating output signal responsive to temperature signals from said temperature sensors compared with reference signals, said output signal including a second output signal to said heater elements in both said first and second sensor elements and a first output signal to a third heater in said first sensor element;

providing a sensor housing means for enclosing said radiation sensitive sensor assembly, wherein said sensor housing means includes an infrared radiation passage oriented to allow infrared radiative communication of said remote object with said first sensor element and prevents infrared radiative communication between said second sensor element and radiation sources external to said sensor housing means, said second sensor element disposed in said sensor housing means effective for receiving thermal radiation indicative of the thermal environment in said sensor housing means in which both of said elements are housed;

determining the temperature of said remote object from said output signals from said first remote object sensor element and said second reference sensor element;

said sensor housing means further providing an environment in which said first and second sensor elements exhibit essentially equivalent conductive and convective heat flux in response to ambient conditions.

5,645,350

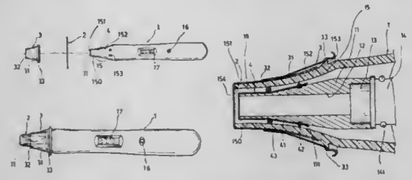
HYGIENIC PROTECTING DEVICE FOR AN ELECTRONIC THERMOMETER

Chen-Chang Jang, c/o Hung Hsing Patent Service Center P.O. Box 55-1670, Taipei, Taiwan

Filed Apr. 12, 1996, Ser. No. 631,164

Int. Cl.[6] G01K *1/08;* **A61B** *1/227;5/00;6/00*

U.S. Cl. 374—158 **5 Claims**



1. A hygienic protecting device for an electronic thermometer including a probe formed in the front housing portion of the thermometer for measuring a body temperature and having an air gap defined between said probe and an inside wall in the front housing portion, the hygienic protecting comprising:

a disposable wrapping film made of a thin, flexible, transparent and radiation-wave transmissible film, disposed about the front housing portion of the thermometer;

a fastening cup member having a front portion thereof truncated, said cup member being detachably secured on a rear portion of the front housing portion of the thermometer for fastening the disposable wrapping film on the front housing portion of said thermometer; and

a dust-proof device wrapping a probe portion of the probe within the front housing portion of the thermometer for preventing dust contamination of the probe;

and wherein upon finishing a temperature measurement by said thermometer, said disposable wrapping film is removed and disposed, and said cup member is repeatedly used in future temperature measurement.

5,645,351

TEMPERATURE MEASURING METHOD USING THERMAL EXPANSION AND AN APPARATUS FOR CARRYING OUT THE SAME

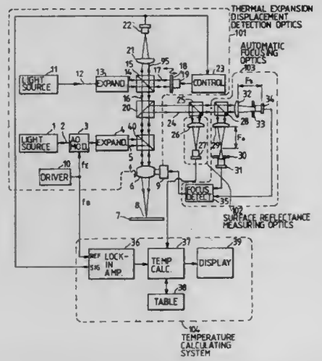
Toshihiko Nakata, Hiratsuka; Shigeki Hirasawa, Ishioka; Yoko Saito, Tsukuba; Takanori Ninomiya, Hiratsuka, and Mineo Nomoto, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 886,014, May 20, 1992, Pat. No. 5,377,006, and Ser. No. 994,150, Dec. 21, 1992, Pat. No. 5,479,259, which is a continuation-in-part of Ser. No. 886,014. This application Dec. 27, 1994, Ser. No. 364,777

Claims priority, application Japan, Mar. 18, 1994, 6-048314

Int. Cl.[6] G01J *5/38*

U.S. Cl. 374—161 **32 Claims**



1. A temperature measuring method comprising the steps of:

irradiating at least one measuring point on a surface of a sample at least with one light beam for effecting heating of the sample;

detecting a displacement of the at least one measuring point on the surface of the sample resulting from thermal expansion of the sample in response to the one light beam impinging thereon and heating the sample and producing a signal indicative of the displacement; and

determining the temperature of the at least one measuring point of the sample from the signal.

5,645,352

CIRCUIT CONFIGURATION AND METHOD FOR ASCERTAINING THE TEMPERATURE OF A CURRENT-REGULATED ELECTRICAL COIL

Frank Menten, Regensburg, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

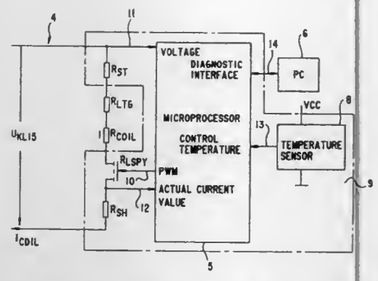
Filed Jul. 27, 1994, Ser. No. 281,482

Claims priority, application European Pat. Off., Jul. 27, 1993, 93112002

Int. Cl.[6] G01K *7/00*

U.S. Cl. 374—183 **8 Claims**

1. In a circuit configuration for ascertaining the temperature of a current-regulated electric coil having a winding, by measurement of an ohmic resistance of the winding, the improvement comprising:



a coil current circuit in which the coil and other resistances are connected;

a control and evaluation circuit being connected to said coil current circuit and having a pulse-width modulated regulating signal for regulating a mean current through the coil;

a temperature sensor connected to said control and evaluation circuit;

said control and evaluation circuit ascertaining a correction value once the temperature of the coil has been aligned with the temperature of said temperature sensor, taking into account an influence of interference of said other resistances in said coil current circuit upon the temperature thereof; and

the temperature of the coil being calculated from a supply voltage to the coil, a pulse-interval ratio of the coil current, and the coil current itself, taking the correction value into account.

5,645,353

MAIL BAGS

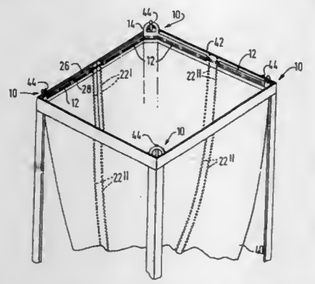
Michael Charles Linnell, and Linda Rose Linnell, both of 94 Abbey Road, Barking, Essex IG11 7BT, England

Continuation of Ser. No. 777,368, Nov. 22, 1991, abandoned. This application Dec. 21, 1993, Ser. No. 171,262

Claims priority, application United Kingdom, May 23, 1989, 8911780

Int. Cl.[6] B65D *33/02;33/14*

U.S. Cl. 383—22 **19 Claims**



1. In a fabric bag, a frame for supporting the mouth of the bag, said frame comprising four generally flat and elongate parts, the length of each of which is no greater than substantially equal to one-quarter of the length of the perimeter of the mouth of the bag, said elongate parts being formed integrally with an apertured attaching member substantially at the midpoint of a longitudinally extending edge thereof to extend generally normally away therefrom, each of said elongate parts being bendable with respect to the vertical axis of its attaching member, said elongate parts are of a flexible moulded plastics material sewn to the fabric of the bag to attach the support to the fabric of the bag adjacent the mouth of the bag with the apertured attaching member extending generally orthogonally of the free edge of the bag, said elongate parts being arranged in spaced end to end relationship from each other, permitting the opening of said bag when said elongate parts are bent and closing of the mouth when said elongate parts are folded over each other.

5,645,354

AEROSTATIC BEARING AND METHOD OF MANUFACTURING AN AEROSTATIC BEARING

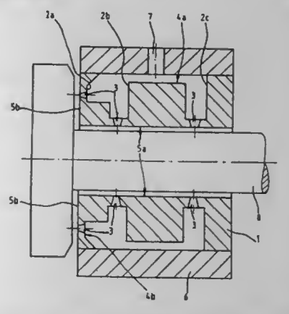
Joachim Heinzl, Dreisesselbergstr. 16, D-81549 Munich; Michael Muth, Wichernweg 12, D-81737 Munich, and Bernd Schulz, Albrecht-Dürer-Str. 56b, D-85579 Neubigerg, all of Germany

Filed Sep. 25, 1995, Ser. No. 533,226

Claims priority, application Germany, Oct. 10, 1994, 44 36 156

Int. Cl.[6] F16C *32/06*

U.S. Cl. 384—100 **10 Claims**



1. An aerostatic bearing, comprising a thin material thickness area having a bearing surface and a back side opposite to the bearing surface; a plurality of nozzle-forming microholes formed in the thin material area and drilled with a laser beam applied from the back side; and a bearing body, the thin material thickness area forming part of the bearing body, and the bearing body having, in regions directly surrounding the microholes, a targeted material weakness.

5,645,355

BEARING UNIT

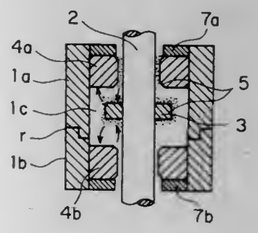
Hidekazu Tokushima, Matsudo; Motohiro Miyasaka, Nagareyama; Michihiro Aizawa; Hideo Sbikata, both of Matsudo, and Katsutoshi Nii, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Powdered Metals Co., Ltd., Matsudo, both of Japan

Filed Jun. 3, 1996, Ser. No. 656,912

Claims priority, application Japan, Jun. 5, 1995, 7-138118

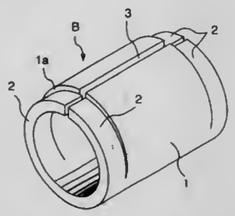
Int. Cl.[6] F16C *17/02*

U.S. Cl. 384—133 **6 Claims**



1. A bearing unit comprising:
non-magnetic bearing housings;
a rotary shaft made from a material having permeability and provided within said non-magnetic bearing housings;
two oil sintered slide bearings fitted in said non-magnetic bearing housings to be spaced away from each other;
a magnetic fluid interposed between said rotary shaft and said oil sintered slide bearings to rotatably support said rotary shaft, and
a ring-shaped permanent magnet fixedly provided between said two oil sintered slide bearings to be spaced therefrom.

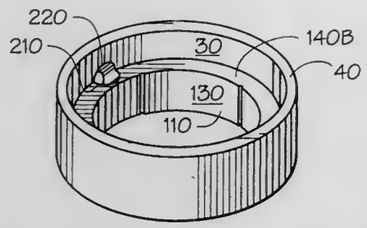
5,645,356
BUSH AND INTEGRAL SEAL
Takayuki Shibayama, and Masatoshi Inoue, both of Nagoya, Japan, assignors to Daido Metal Company Ltd., Nagoya, Japan
Filed Jul. 7, 1995, Ser. No. 499,496
Claims priority, application Japan, Jul. 18, 1994, 6-188839
Int. Cl.[6] F16C *33/74*
U.S. Cl. 384—138 **14 Claims**



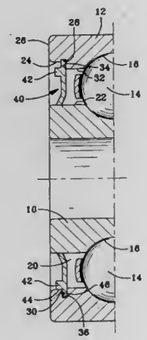
1. A bush comprising:
a generally cylindrical body portion having a tubular wall with a plate thickness, a body axis, an inner body diameter, an outer body diameter, and two opposite ends along the body axis, each of the ends having a respective end surface; and
a generally cylindrical seal portion at each of the opposite ends, each seal portion being integral and unitary with the body portion, each seal portion comprising an arm and a non-arm portion, the non-arm portion being continuous with the body portion and the arm;
the arm having an inner arm diameter less than the inner body diameter, and
the arm having an outer arm diameter less than the outer body diameter and greater than the body inner diameter.

5,645,357
BI-DIRECTIONAL LUBRICATING BUSHING
George Alain, #2 4035 Ogden Road S.E., Calgary, Alberta, Canada
Filed Jun. 5, 1996, Ser. No. 659,147
Int. Cl.[6] F16C *33/10*
U.S. Cl. 384—397 **5 Claims**

1. A bushing for mounting upon a shaft, the bushing comprising:
a cylindrical outer wall including an outer wall outer annular surface and an outer wall inner annular surface, the outer and inner annular surfaces of the outer wall joined by a outer wall side surface on one side of the bushing;
a cylindrical inner wall including an inner wall outer annular surface and an inner wall inner annular surface, the outer and inner annular surfaces of the inner wall joined by an inner wall outer side surface on the other side of the bushing, the inner wall providing an inner side surface in opposition to the outer side surface;
the outer annular surface of the inner wall and the outer annular surface of the inner wall being consonant so as to make a single continuous composite surface so that the outer and inner cylindrical walls are joined as a single integral part;
the outer and inner walls defining an aperture therein, the aperture extending from the outer annular surface of the outer wall, through the outer wall, a first portion of the aperture terminating at the inner annular surface of the outer wall, and a second portion of the aperture terminating at the inner side surface of the inner wall.

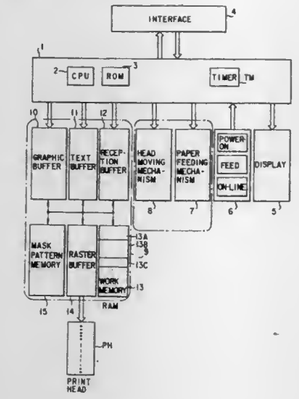


5,645,358
ANTIFRICTION BEARING WITH A SEAL LOCKED AGAINST ROTATION
Salvatore Acampora, Jr., Bristol, Conn., assignor to The Torrington Company, Torrington, Conn.
Filed Oct. 30, 1996, Ser. No. 739,776
Int. Cl.[6] F16C *33/78;15/32*
U.S. Cl. 384—477 **4 Claims**



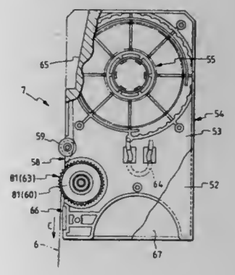
1. An antifriction bearing comprising:
an inner ring having an inner ring raceway;
an outer ring having an inside diameter greater than the outside diameter of the inner ring thereby providing an inner ring-outer ring annulus, said outer ring having an outer ring raceway;
rolling members around the circumference of the inner ring in rolling contact with the inner ring and outer ring raceways;
the outer ring inside diameter having a pair of axially separated, radially extending annular shoulders forming an annular groove, the radial dimension of the axially outer shoulder being defined by an axially extending eccentric surface such that the axially outer annular shoulder has a radial dimension that continuously increases around a first arcuate portion and then continuously decreases around a second arcuate portion;
an annular seal in the inner ring-outer ring annulus, said annular seal having concentric circumferentially separated protrusions, the annular seal having an annular portion extending into said outer ring annular groove dimensioned so that when the annular seal is inserted into the annular groove and rotated, at least one of the circumferentially separated protrusions abuts against the eccentric surface to lock the seal against rotation.

5,645,359
BIDIRECTIONAL SERIAL PRINTER
Koji Goto, Numazu, and Akira Oda, Shizuoka-ken, both of Japan, assignors to Kabushiki Kaisha TEC, Shizuoka-ken, Japan
Filed Apr. 17, 1995, Ser. No. 422,983
Claims priority, application Japan, Apr. 19, 1994, 6-080020
Int. Cl.[6] B41J *19/30*
U.S. Cl. 400—323 **3 Claims**



1. A serial printer comprising:
a paper feeding mechanism for feeding paper in a paper feeding direction;
a print head having a plurality of dot printing elements arranged in the paper feeding direction;
a head moving mechanism for moving said print head in a direction substantially perpendicular to the paper feeding direction to scan the paper;
a raster buffer for storing bit map pattern data for a scanning area of said print head; and
a control section for causing said print head to print a dot image corresponding to the bit map pattern data stored in said raster buffer while moving said print head in a printing direction and reversing the printing direction after printing the dot image;
wherein said control section includes text processing means for detecting that printing data externally supplied is constructed in a text form containing character codes, determining a coordinate position for each character code, selecting each group of character codes whose printing area is set within the scanning area of said print head, producing bit map pattern data in said raster buffer by converting the character codes of a selected group of character codes into a dot data form, the produced bit map pattern data representing a whole image of the characters of the selected group of character codes, driving said dot printing elements according to the bit map pattern data while moving said print head, and feeding the paper to set the printing area to the scanning area of said print head, wherein said control section further includes:
upper and lower work buffers each for storing lines of dot data the number of which is equal to half the number of dot printing elements; and
graphic processing means for detecting that the printing data externally supplied is constructed in a graphic form containing lines of dot data, determining a coordinate position for each dot data line, selecting each group of sequential dot data lines the number of which is equal to half the number of dot printing elements of said print head, storing the sequential dot data lines of a selected group in said lower work buffer, producing bit map pattern data in said raster buffer by selectively masking, with a mask pattern, a combination of dot data items retrieved from said upper and lower work buffers, driving said dot printing elements according to the bit map pattern data while moving said print head, feeding the paper by a distance equal to half the printing height of said print head determined by the number of dot printing elements and the pitch thereof, saving the lines of dot data stored in said lower work buffer into said upper work buffer, and reversing the mask pattern.

5,645,360
TAPE CASSETTE USED IN TAPE PRINTING APPARATUS
Yasuhiko Iwane, and Masahiko Mori, both of Iwate-ken, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan
Filed Dec. 21, 1995, Ser. No. 576,360
Claims priority, application Japan, Dec. 28, 1994, 6-328090
Int. Cl.[6] B41J *2/315;32/00*
U.S. Cl. 400—613 **4 Claims**



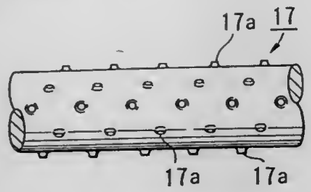
1. A tape cassette for loading and use in a tape printing apparatus, the tape apparatus being equipped with a printing head, a head positioning mechanism for positioning said printing head, a driving motor and a driving force transmission mechanism for transmitting a driving force of said driving motor, said tape cassette comprising:
a cassette case;
a tape-type recording medium accommodated in the cassette case and having an end portion extending through an opening formed in the cassette case;
a platen roller rotatably mounted in the cassette case adjacent the opening; and
a cam surface formed on a surface of said cassette case, the cam surface being shaped to cooperatively engage said head positioning mechanism such that when the tape cassette is loaded into the tape printing apparatus, the printing head is press-contacted against said platen roller with the end portion of the tape-type recording medium located therebetween.

5,645,361

THERMAL-TRANSFER-TYPE COLOR PRINTER HAVING A FEED ROLLER WITH MICRO PROJECTIONS

Susumu Mitsushima; Hayami Sugiyama; Hitoshi Nakagawa; Hiromitsu Ogita; Minoru Yamakuni; Kenichi Kawahara; Shigeyuki Kawamura, and Kazuhiro Tsuji, all of Ise, Japan, assignors to Shinko Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 296,104, Aug. 25, 1994, abandoned.
This application May 6, 1996, Ser. No. 643,403
Claims priority, application Japan, Aug. 31, 1993, 5-216778; Sep. 7, 1993, 5-222663; Sep. 22, 1993, 5-051590; Sep. 27, 1993, 5-052169; Jan. 10, 1994, 6-000956; Jan. 20, 1994, 6-004886
Int. Cl.[6] G41J *13/076*
U.S. Cl. 400—636 8 Claims



1. A thermal-transfer-type color printer for a sheet member comprising:
a thermal head;
a platen roller located to face said thermal head, said platen roller being rotatable in a direction in accordance with a carrying movement of a sheet member passing thereof;
a sheet member feed roller whose outer surface is formed as part of the material of the sheet member feed roller with integral micro projections of a predetermined shape over which the sheet member travels, said sheet member feed roller spaced apart from said platen roller and located along a carrying direction of the sheet member, said sheet member feed roller being driven to rotate to carry the sheet member with said platen roller being rotated by the sheet member as it is moved by said sheet member feed roller;
an ink ribbon having a surface on which a plurality of colors of ink are painted in defined bands, said ink ribbon being pressed against the sheet member by being sandwiched between said thermal head and said platen roller to transfer the colors of ink onto the sheet member in accordance with print data; and
control means operable in a printing mode of the printer for controlling rotatable movement of said platen roller at a speed of rotation slower than the speed of rotation of said sheet member feed roller to establish a predetermined amount of tension on the sheet member between said platen roller and said sheet member feed roller.

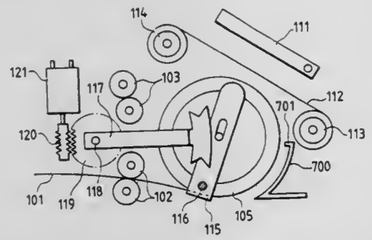
5,645,362

PRINTER

Jyun-ichi Aizawa; Kunihiko Nakagawa; Hiroshi Nakao; Hitoshi Ezaki, and Kouhei Sunaga, all of Kyoto, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 53,016, Apr. 27, 1993, Pat. No. 5,433,544, which is a continuation of Ser. No. 520,709, May 8, 1990, abandoned. This application May 1, 1995, Ser. No. 431,756
Claims priority, application Japan, May 8, 1989, 1-114631; Jun. 15, 1989, 1-154906; Aug. 21, 1989, 1-97544 U; Aug. 21, 1989, 1-215239; Aug. 21, 1989, 1-215240; Jan. 29, 1990, 2-19449; Mar. 2, 1990, 2-52103; Mar. 2, 1990, 2-52111; Mar. 16, 1990, 2-27518 U; Apr. 6, 1990, 2-92640
Int. Cl.[6] B41J *13/10*
U.S. Cl. 400—642 10 Claims

1. A printer for transferring an image onto recording paper that is transported from an input path to a printing position comprising:



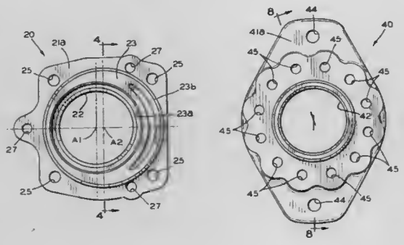
an input means for conveying a sheet of recording paper along said input path;
a cylindrical platen roller disposed at said printing position and rotatable in at least a first direction of rotation about a longitudinal axis of rotation, said platen comprising a circumferential outer surface sized to hold said paper, said roller being further disposed so that said circumferential outer surface is substantially tangential to said input path as a first circumferential position of said roller;
a guide member disposed at a second circumferential position of said roller in said first direction of rotation, said guide member comprising a hook-shaped projection which is disposed toward said circumferential outer surface; and
wherein said hook-shaped projection is formed in the center of the top part of said guide member and is formed with a round contour.

5,645,363

BEARING CAP AND PUMP MOUNTING FLANGE FOR POWER TAKE-OFF UNIT

Richard L. Dafforn, Munith, and Wm. David Adams, Chelsea, both of Mich., assignors to Dana Corporation, Toledo, Ohio

Filed Apr. 15, 1994, Ser. No. 227,971
Int. Cl.[6] F16B *7/18*
U.S. Cl. 403—3 22 Claims



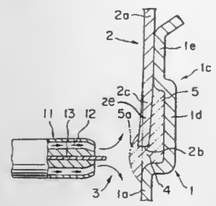
1. A bearing cap for use in a power take-off unit comprising:
a body having a relatively large central opening formed therethrough and a protrusion formed about said central opening extending from one side of said body, said central opening defining a first axis, said protrusion having an inner surface which is concentric about said first axis and an outer surface which is concentric about a second axis; and
a plurality of apertures formed through said body.

5,645,364

STRUCTURE FOR JOINING PLATE ELEMENTS

Yasuo Hodozuka, Oura-Machi; Tadashi Iida, Menuma-Machi; Yoshikazu Yamaga, Ojima-Machi; Satoshi Ueda, and Yasuo Imaizumi, both of Oota, all of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Japan

Division of Ser. No. 264,356, Jun. 22, 1994, Pat. No. 5,476,210. This application Mar. 16, 1995, Ser. No. 406,100
Claims priority, application Japan, Jun. 25, 1993, 5-155648; Jun. 25, 1993, 5-155649
Int. Cl.[6] B23K *9/02*
U.S. Cl. 403—270 8 Claims



1. A plate joining structure for joining a first plate element and a second plate element, comprising:
a joggled portion formed contiguously to and along an entire width of a general portion of said first plate element, said joggled portion including:
a major portion defining a joining surface of said first plate element along said entire width,
a shoulder between said general portion and said joggled portion, and
a band-shaped offset reinforcing portion extending from said shoulder along said entire width and displaced from said major portion in a direction perpendicular to maid major portion so as to strengthen said joining surface of said first plate element without deformation;
an edge portion of said second plate element defining a joining surface of said second plate element and a free end, said joining surface of said second plate element abutting said joining surface of said first plate element in a face-to-face contact therewith, such that said joining surface of said first plate element bears said joining surface of said second plate element, said band-shaped offset reinforcing portion forming a band-shaped recess opening toward said edge portion of said second plate element and said free end of said edge portion is separated from said band-shaped offset reinforcing portion and said shoulder by a gap; and
a weld fixedly securing said joggled portion and said edge portion to each other.

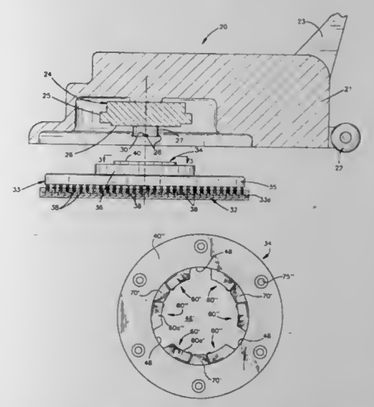
5,645,365

COUPLING DEVICE FOR FLOOR MAINTENANCE MACHINES

Terrance J. Malish, Willoughby Hills; Kenneth L. Shary, Twinsburg, and John D. Blazek, Willoughby, all of Ohio, assignors to The Malish Brush & Specialty Company, Willoughby, Ohio

Continuation-in-part of Ser. No. 971,485, Nov. 4, 1992, abandoned, which is a continuation-in-part of Ser. No. 277,176, Jul. 19, 1994, abandoned. This application Sep. 25, 1995, Ser. No. 533,083
Int. Cl.[6] B25G *3/00*
U.S. Cl. 403—348 34 Claims

1. A coupling device for use with a floor maintenance machine of the type that detachably mounts a rotatable brush or pad holder member for carrying a cleaning element, such machine including a drive hub having a plurality of integral, drive lugs projecting radially therefrom, said coupling device comprising:
a) a plate member having a front side and a back side;



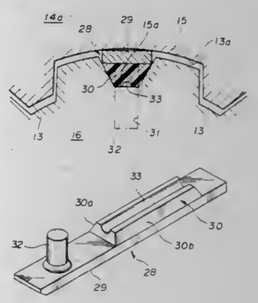
b) a generally circular opening defined within said plate member, said opening including a plurality of circumferentially spaced, arcuate and radially extending recess portions adapted to receive the drive lugs therethrough;
c) a first series of inner peripheral cam-like ramps that communicate at one end with said recess portions and are located on said front side of said plate member;
d) a second series of inner peripheral cam-like ramps communicating with opposite ends of said recess portions and are located on said back side of said plate member, said second series of cam ramps each including multiple tapered surfaces;
e) centering structure for centering said device relative to said drive hub when said device is connected; and
f) axial stabilizing structure for stabilizing said device relative to said drive hub and ensuring a snug, stable fit between said device and drive hub when said device is connected to said drive hub whereby relative axial movement between said device and said drive hub is inhibited.

5,645,366

SHAFT COUPLING STRUCTURE OF DRIVE SHAFT

Toshio Ishibashi; Sinichi Kondou; Mitsuyasu Moriya, and Yoshiyuki Watanabe, all of Atsugi, Japan, assignors to Unisia Jecs Corporation, Atsugi, Japan

Continuation of Ser. No. 391,682, Feb. 21, 1995. This application Aug. 9, 1996, Ser. No. 694,755
Claims priority, application Japan, Feb. 28, 1994, 6-30687; May 31, 1994, 6-119256; Jan. 31, 1996, 7-14001
Int. Cl.[6] F16B *3/04*
U.S. Cl. 403—359 11 Claims



1. A shaft coupling structure comprising:
an internally splined female shaft;

an externally splined male shaft, the male shaft being coaxially received in the female shaft to establish a spline connection therebetween;

means defining an axially extending space between mutually overlapped surfaces of the female and male shafts; and

a first play suppression member interposed between the male and female shafts for suppressing play between the male and female shafts, the play suppression member including:

an elongate base plate member;

an elastic block fixed to the elongate base plate member, the elastic block being compressed when the play suppression member is properly set in the axially extending space; and

a pin fixed to one end of the elongate base plate member, the pin being thrust in an engaging hole formed in the male shaft when the play suppression member is properly set in the axially extending space.

5,645,367

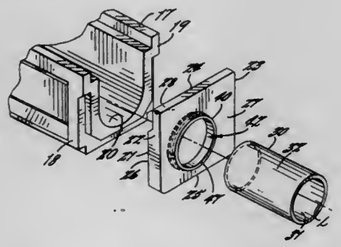
DRAINAGE SYSTEM HAVING AN EMBEDDED CONDUIT CONNECTOR

Charles E. Gunter, Mooresville, N.C., assignor to ABT, Inc., Troutman, N.C.

Filed Jul. 11, 1995, Ser. No. 500,832

Int. Cl.[6] E01C *11/22*

U.S. Cl. 404—3 **31 Claims**



26. A unitary conduit connector which secures a conduit having a predetermined size and shape within a wall of a precast component of a drainage system such that the wall of the precast component surrounding the conduit connector is substantially continuous, the conduit connector comprising:

a unitary connector body defining an aperture having a predetermined shape and size which correspond to the predetermined shape and size of the conduit such that the conduit is snugly received within the aperture defined by said connector body, and

said connector body having a predetermined thickness which is no greater than the thickness of the substantially continuous wall of precast component of the drainage system in which the conduit connector is embedded such that the conduit connector does not protrude outwardly beyond the precast component.

5,645,368

RACE TRACK WITH NOVEL CRASH BARRIER AND METHOD

Henry Yunick, 957 N. Beach, Daytona Beach, Fla. 32117

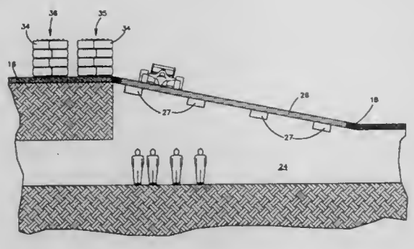
Continuation of Ser. No. 303,386, Sep. 9, 1994, abandoned. This application May 29, 1996, Ser. No. 654,793

Int. Cl.[6] E01F *15/08;15/10*

U.S. Cl. 404—6 **30 Claims**

27. A method of providing and maintaining a racetrack crash barrier comprising:

a) providing a ring of barrier support material around a racetrack with ring and crash barrier modules to be mounted on the



material to provide module moving impact resistance to a possible impact of maximum anticipated force by a race vehicle;

b) providing a plurality of the crash barrier modules each having a longitudinal dimension, positioning the modules on said material in end to end relationship to form a barrier ring circumscribing a racetrack; and,

c) providing a repair module of lesser longitudinal dimension than the modules of the ring whereby upon module displacing impact, the barrier ring may be quickly restored to an operative condition by removing an impacted module and replacing it with the repair module.

5,645,369

PLATE-SHAPED PAVING STONE, IN PARTICULAR MADE OF CONCRETE

Peter Geiger, Regensburger Str. 160, D-92318 Neumarkt, Germany

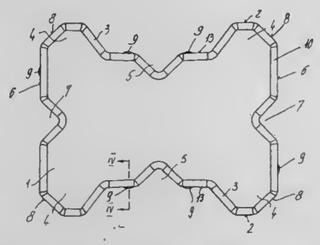
PCT No. PCT/EP94/04028, § 371 Date Aug. 2, 1995, § 102(e) Date Aug. 2, 1995, PCT Pub. No. WO95/16076, PCT Pub. Date Jun. 15, 1995

PCT Filed Dec. 3, 1994, Ser. No. 501,084

Claims priority, application European Pat. Off., Dec. 8, 1993, 93119745

Int. Cl.[6] E01C *5/00*

U.S. Cl. 404—34 **5 Claims**



1. A concrete paving stone formed from a block having four vertical side surfaces and a top surface, comprising:

two opposed side surfaces, each side surface having a trapezoidal recess formed therein bordered by a bordering surface, each bordering surface having an additional recess formed therein;

two opposed end surfaces extending transversely between said two opposed side surfaces, each end surface having a further recess formed therein; and

four corner surfaces, each corner surface located adjacent to a side surface and being oriented obliquely thereto.

5,645,370

VIBRATION TAMPER

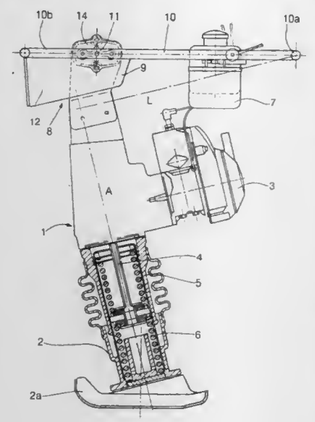
Arno Zürbes, Bruchweiler, and Helmut Rötsch, Beltheim, both of Germany, assignors to Bomag GmbH, Boppard, Germany

Filed Sep. 28, 1995, Ser. No. 535,880

Claims priority, application Germany, Oct. 10, 1994, 44 36 081.9

Int. Cl.[6] E01C *19/34*

U.S. Cl. 404—133.1 **10 Claims**



1. A tamper for soil packing, comprising a built-in drive (**3**) which executes nearly vertical vibrations, a guide handle (**10**) for holding the tamper by an operator, the guide handle (**10**) being elastically hinged on a tamper head (**8**) about a pivot point (**11**) and having a grip (**10***a*) on one end and an extension (**10***b*) on another end extending beyond the pivot point (**11**), the pivot point (**11**) being displaced from a longitudinal axis (A) in a direction toward the grip (**10***a*), wherein at least one of the following relationships is satisfied:

(a) the pivot point (**11**) is arranged on the tamper head (**8**) above an imaginary perpendicular (L) extending from the grip (**10***a*) to the longitudinal axis (A) of the tamper, and

(b) a distribution of mass of the guide handle (**10**), with the pivot point (**11**) as an imaginary dividing point, satisfies the following equation:

$$\frac{m_V \cdot l_V \cdot l_{VG}}{m_B \cdot l_B \cdot l_{BG}} = 0.6 - 1.5 \text{ (quotient)}$$

wherein

m_V=mass of the extension (**10***b*) plus attached parts;

m_B=mass of the guide handle extending from the point (**11**) to the grip (**10***a*) plus attached parts;

l_V=distance between a center of gravity of my and the pivot point (**11**);

l_B=distance between a center of gravity of m_B and the pivot point (**11**);

l_{VG}=distance between the center of gravity of my and the grip (**10***a*);

l_{BG}=Distance between the center of gravity of m_B and the grip (**10***a*).

5,645,371

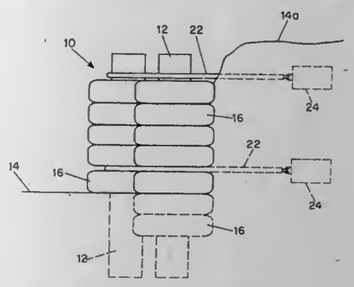
BULKHEAD SYSTEM

Raffaele Marzullo, 407 Pulaski Rd., Greenlawn, N.Y. 11740

Filed Nov. 3, 1995, Ser. No. 552,541

Int. Cl.[6] E02B *3/06*

U.S. Cl. 405—33 **20 Claims**



1. A bulkhead system to resist waterfront wave forces, comprising:

a first row of spaced nominally vertical piles, each of a plurality of said piles extending into and above a ground surface in a self-supporting configuration;

a second row of spaced nominally vertical piles, each of a plurality of said piles extending into and above the ground surface in a self-supporting configuration, said second row positioned in a longitudinally staggered relationship to said first row;

a stack of annular units positioned on each of a plurality of piles of said first and second rows, each said annular unit comprised of a vehicle tire containing a ballast material;

adjacent piles of said first and second rows positioned to have a pile-to-pile spacing to accommodate adjacent stacks of said annular units in a nominally periphery-to-periphery configuration; and

intercoupling means, coupled to at least selected piles of said first and second rows, for structurally intercoupling said piles to distribute wave forces incident on one pile to other piles on a shared basis.

5,645,372

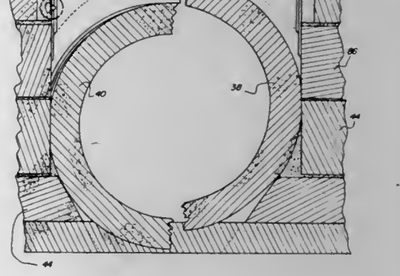
FORM FOR CONSTRUCTION OF A CATCH BASIN

Raymond F. Hahn, 11 First St., Mine Hill, N.J. 07801

Filed Nov. 29, 1995, Ser. No. 564,646

Int. Cl.[6] E02D *29/12*

U.S. Cl. 405—52 **9 Claims**



1. A new and improved form for construction of a catch basin for receipt of surface water runoff comprising in combination:

a generally rectangular adjustable mortar insert form having a front insert wall, a rear insert wall and a pair of side insert walls, each wall having a flat top edge, the front and rear insert walls each having a concave bottom edge with a ridge centrally positioned thereon, the front insert wall having front knockouts along the bottom edge and adjacent one of the side walls, the rear insert wall having rear knockouts along the bottom edge and adjacent the side wall adjacent the front knockouts;

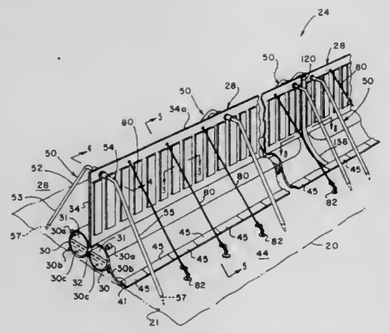
the adjustable mortar insert form being capable of being positioned over an inlet pipe and an outlet pipe of a catch basin for bridging thereof, the adjustable mortar insert form being positionable over the inlet pipe and the outlet pipe when a first course of blocks being completed around the outlet pipe and the inlet pipe, the front knockouts and the rear knockouts capable of having one of each being broken away from another knockout, one of each knockouts being broken off for aligning the mortar insert form with the first course of blocks, when the outlet pipe and the inlet pipe being unaligned;

a pair of self taping thumb screws having a screw head and a screw tip, one of each thumb screw being capable of being positioned through one of the side walls of the adjustable mortar insert form;

a generally rectangular adjustable height mortar bridge form having a front bridge wall, a rear bridge wall and a pair of side bridge walls, each wall having a top edge with the top edge of the front bridge wall and the rear bridge wall having a greater width than the top edge of each side wall, the front bridge wall and the rear bridge wall each having a concave bottom edge, the front bridge wall having a front inner wall sloping downwardly from the top edge thereof to form a front crossrib, the rear bridge wall having a rear inner wall sloping downwardly from the top edge thereof to form a rear crossrib;

the adjustable height mortar bridge form capable of being positioned within the adjustable mortar insert form, the adjustable height mortar bridge form capable of sliding upwardly and downwardly within the adjustable mortar insert form increasing a height of the insert form, as needed, for accommodation of a second and third course of blocks, the adjustable height mortar bridge being locked within the adjustable mortar insert form, when the desired height being obtained, by one of the thumb screws; and

the adjustable height mortar bridge being locked in position being capable of receiving a quantity of mortar therein for forming a block mortar sheet, the adjustable height mortar being capable of supporting the mortar curing therein while the second and third course of blocks being positioned thereabout.



5,645,373

FLOOD CONTROL BARRIER SYSTEM AND METHOD

John T. Jenkins, Irving, Tex., assignor to Maca/Orsi, L.L.C., El Paso, Tex.

Filed Jul. 11, 1995, Ser. No. 499,599
Int. Cl.[6] E02B *7/20*
U.S. Cl. 405—91 **21 Claims**

1. A portable flood control barrier system characterized by:

at least one elongated flexible inflatable ballast member operable to be disposed on the earth's surface, said ballast member forming a closeable chamber which may be filled with a ballast fluid;

a generally planar flexible sheet barrier wall connected to said at least one ballast member and adapted to be extended substantially vertically upward from said at least one ballast member; and

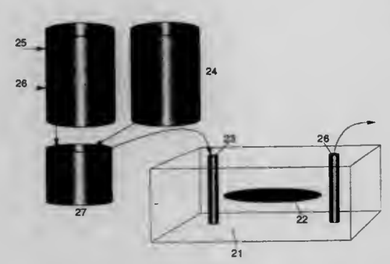
means connected to said barrier wall at spaced apart points thereon for supporting said barrier wall in a substantially vertical erect position above said at least one ballast member to prevent flooding of a space adjacent to said barrier system.

5,645,374

METHOD FOR DEHALOGENATING CONTAMINATED WATER AND SOIL

Suzanne Lesage, Hamilton; Susan Jean Brown, Cambridge, and Kelly Rose Millar, Mississauga, all of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of the Environment, Hull, Canada

Filed Nov. 27, 1995, Ser. No. 563,038
Int. Cl.[6] B09C *1/08;* **C02F** *1/68;1/70*
U.S. Cl. 405—128 **13 Claims**



1. A method of anaerobic treatment of soil, ground water or industrial effluent contaminated with halogenated organic compounds, said method comprising contacting the soil, ground water or industrial effluent with a reduced titanium mixture which is not hazardous to the environment in the presence of a catalytic amount of corrin or porphyrin catalyst to reductively dehalogenate the organic contaminants wherein the reduced titanium mixture is a titanium oxalate solution.

5,645,375

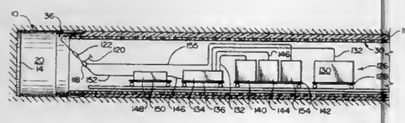
METHOD AND APPARATUS FOR GROUTING OF TUNNEL LINERS

Patrick J. Stephens, 1276 Chuckanut Dr., Bellingham, Wash. 98225

Filed Jun. 7, 1995, Ser. No. 472,115
Int. Cl.[6] F16L *55/18*
U.S. Cl. 405—146 **8 Claims**

1. A method for filling a cavity in an excavation, said method comprising the steps of:

providing a cement slurry solution;



mixing a sodium silicate solution with said cement slurry solution in an amount sufficient to accelerate hardening of a resulting cementitious mixture to a predetermined initial set time;

mixing aqueous foam with said cementitious mixture so as to entrain air therein and thereby form a viscous, low shear-strength foamed cement grout, said aqueous foam being added to said cementitious mixture in an amount sufficient to provide said foamed cement grout with a viscosity which is sufficiently high to minimize flow of said grout through and out of said void prior to said initial set time; and

flowing said grout into said cavity so that said cavity is filled thereby.

5,645,376

SOIL SOLIDIFICATION APPARATUS WITH A SHEAR BLADE OF ADJUSTABLE LENGTH AND ROTATION SPEED FOR CREATING A RIBBED SOIL-CEMENT PILE

Osamu Taki, P.O. Box 1297, Belmont, Calif. 94002

Continuation-in-part of Ser. No. 115,228, Sep. 1, 1993, Pat. No. 5,411,353. This application Feb. 14, 1995, Ser. No. 388,293
Int. Cl.[6] E02D *3/12*
U.S. Cl. 405—241 **14 Claims**

1. A drilling apparatus for producing a pile with ribs, the drilling apparatus comprising:

a hollow shaft having a first and second ends, and a port proximate the first end;

an auger bit attached at the first end of the shaft to rotate with the shaft;

an excavation blade attached to rotate with the shaft, the excavation blade attached proximate the auger bit;

a cutting blade attached to rotate with the shaft; and

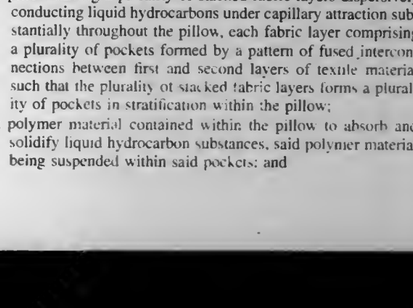
a shear blade having a first end and a second end, the shear blade mounted about the shaft at a fixed longitudinal position such that the shear blade can rotate about a longitudinal axis of the shaft independent of rotation of the shaft, the length of the shear blade being greater than the excavation blade such that the first and second ends of the shear blade extend radially outward from the shaft beyond the excavation blade, and the first and second ends of the shear blade are each positioned in a plane angled from a horizontal plane, the first and second ends of the shear blade being adjustable in position between a position parallel to the horizontal plane and a position perpendicular to the horizontal plane.

5,645,377

APPARATUS FOR INSITU REMEDIATION OF WASTE THROUGH MULTI-POINT INJECTION

Joseph L. Kauschinger, Alpharetta, Ga., and Scott T. Evans, Sandy, Utah, assignors to Christensen Boyles Corporation, Salt Lake City, Utah

Continuation of Ser. No. 432,546, May 2, 1995, abandoned. This application Aug. 2, 1996, Ser. No. 691,448
Int. Cl.[6] B09B *1/00*
U.S. Cl. 405—269 **8 Claims**



1. Apparatus for use in creating a lined injection hole through material to be treated by injection of a fluid into the material through which pressurized treating fluid may be injected into the material, comprising:

a hardened drive point having a pointed forward end and tapering outwardly therefrom to a rear portion;

a length of tubular hole lining material having a forward end and rearward end, said tubular hole lining material being cutable by a high pressure stream of fluid directed outwardly from inside the tubular material;

means on the rear portion of the drive point for attaching the forward end of the tubular hole lining material to the rear portion of the drive point;

a drive rod having a forward and rearward end;

means centered in the rear portion of the drive point for removably attaching the forward end of the drive rod to the drive point, whereby the drive point can be driven into and through the material to be treated by forwardly directed pressure transmitted to the drive rod.

5,645,378

LIQUID HYDROCARBON SORBING AND SOLIDIFYING PILLOW

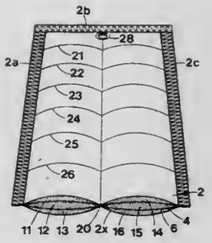
Herbert W. Holland, 2314 Chimney Rock, Houston, Tex. 77056

Continuation of Ser. No. 506,091, Jul. 24, 1995, Pat. No. 5,588,785, which is a continuation-in-part of Ser. No. 222,844, Apr. 5, 1994, Pat. No. 5,462,785. This application Oct. 30, 1996, Ser. No. 740,473
Int. Cl.[6] E02D *31/00;* **B32B** *3/00*
U.S. Cl. 405—270 **13 Claims**

1. A liquid hydrocarbon absorbent device comprising:

a pillow having a plurality of stacked fabric layers dispersively conducting liquid hydrocarbons under capillary attraction substantially throughout the pillow, each fabric layer comprising a plurality of pockets formed by a pattern of fused interconnections between first and second layers of textile material such that the plurality of stacked fabric layers forms a plurality of pockets in stratification within the pillow;

a polymer material contained within the pillow to absorb and solidify liquid hydrocarbon substances, said polymer material being suspended within said pockets; and



a seam joinder of the peripheries of the layers to promote migration of liquid hydrocarbons under capillary attraction to the pockets.

5,645,379

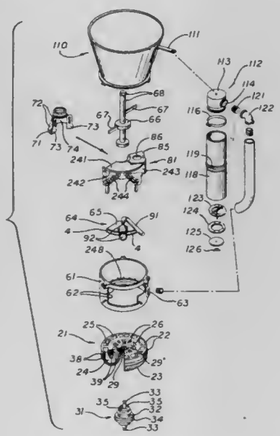
MATERIAL FLOW AND AIR-QUALITY PROTECTION, IN A PARTICULATE-MATERIAL GUN USABLE WITH SILICA FUME

David J. Stoner, Corona Del Mar; Steven L. Lang, Victorville, both of Calif.; Paul E. Sulman, Zephyr, Canada; David C. Lawrence, Upland, Calif.; Richard Ellis, Chino, Calif., and Fernando Lopez, Alta Loma, Calif., assignors to Reed Manufacturing, Inc., Walnut, Calif.

Filed Nov. 22, 1995, Ser. No. 561,788

Int. Cl.[6] B65G *53/00*

U.S. Cl. 406—67 **34 Claims**



1. A rotary feed structure for apparatus that conveys particulate material from a hopper to a delivery tube; said rotary feed structure comprising:

a substantially polymeric body defining multiple chambers in a generally circular array about an axis, said chambers having substantially polymeric surfaces for contacting such particulate material;

a metal wear plate fixed to the substantially polymeric body; and

means for mounting the body in such a particulate-material conveying apparatus, for driven rotation about the axis.

5,645,380

INJECTOR DEVICE FOR FEEDING COATING POWDER

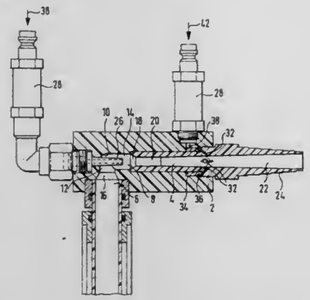
Guido Rutz, Gossau, Switzerland, assignor to Gema Volstatic AG, Switzerland

Filed Dec. 18, 1995, Ser. No. 574,390

Claims priority, application Germany, Dec. 24, 1994, 44 46 797.4

Int. Cl.[6] B65G *53/14*

U.S. Cl. 406—153 **9 Claims**



3. An injector device for conveying coating powder in a powder coating installation, said injector device having a powder duct, a suction zone at an upstream: commencement of said powder duct for sucking coating powder through a powder intake duct into said powder duct, at least one air duct adapted for supplying compressed air into said powder duct with at least one of such air ducts being adapted to supply conveying air which draws coating powder into said suction zone, a powder barrier located in a down stream end of at least one air duct, said powder barrier having a filter element of microporous filter material which is permeable to air but not to coating powder and which prevents the penetration of coating powder from the powder path, which is formed by said suction zone and said powder duct, through said powder barrier into a connected air duct, and wherein said filter element forms a hollow cylinder arranged in an air duct such that an air current flows in a transverse direction and in a longitudinal direction of said cylinder through a circumferential filter wall.

5,645,381

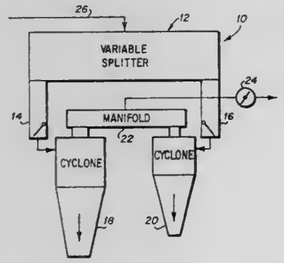
VARIABLE-SPLIT BLOWDOWN COAL FEED SYSTEM

Robert Henry Guidetti, Redondo Beach, and Douglas Bruce Sheppard, Torrance, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Sep. 13, 1994, Ser. No. 304,987

Int. Cl.[6] B65G *53/56*

U.S. Cl. 406—156 **8 Claims**



3. A feed means for supplying coal particles entrained in transport air to a two-stage combustor, comprising a precombustor and a slagging combustor, from a common supply of coal, said feed means comprising:

a pair of cyclones, each of said cyclones having a bottom;

splitting means for receiving and proportionately splitting the coal particles into first and second streams and feeding said first and second streams to said cyclones, respectively, said cyclones operating in a blowdown mode for exhausting a portion of said transport air while permitting another portion of said transport air to be blown down at said bottom of each respective cyclone together with said coal particles, wherein a first stream of air and coal particles is produced from the bottom of one of said cyclones and a second stream of air and coal particles is produced from said bottom of another of said cyclones; and

means for feeding said first stream of air and coal particles from the one cyclone to said precombustor and said second stream of air and coal particles from the other cyclone to said slagging combustor.

5,645,382

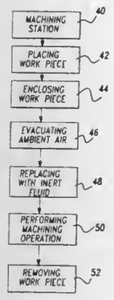
CONTROLLED ATMOSPHERE MACHINING

George Homanick, Northville, and Edward J. Early, Oakland, both of Mich., assignors to Cargill Detroit Corporation, Clawson, Mich.

Filed Sep. 13, 1995, Ser. No. 527,491

Int. Cl.[6] B23Q *11/00*; **B23C** *9/00*

U.S. Cl. 409—131 **8 Claims**



1. A method for machining a workpiece in a controlled atmosphere comprising the steps of:

providing a machining station for performing a machining operation on the workpiece;

placing said workpiece on said machining station;

providing an enclosure, said enclosure including a chamber and enclosing said workpiece within said chamber;

replacing ambient air in said chamber with an inert fluid;

performing said machining operation on said workpiece and removing said workpiece from said enclosure after said machining operation has been performed;

said step of replacing said ambient air with an inert fluid are performed through an inlet port and an outlet port on said enclosure wherein a vacuum system draws the ambient air from the chamber through the outlet port and replaces it with an inert fluid through the inlet port;

said step of vacuuming particulate matter resulting from performance of the machining operation wherein said particulate matter is vacuumed from the enclosed chamber, transported to and collected in a collecting tank, the step of vacuuming said particulate matter further includes the step of cooling the inert fluid prior to circulating back to the machine.

5,645,383

BLIND RIVET

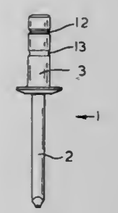
Graham Frank Harry Williams, West Midlands, United Kingdom, assignor to Emhart Inc., Newark, Del.

Filed Feb. 21, 1996, Ser. No. 604,636

Claims priority, application United Kingdom, Mar. 1, 1995, 9504095

Int. Cl.[6] F16B *13/04*;*19/08*

U.S. Cl. 411—43 **6 Claims**



1. A blind fastener comprising

a hollow sleeve having a shank, a flange at one end, and an abutment surface at the other,

and a mandrel having a pulling stem and an enlarged head adapted to engage the abutment surface and cause the sleeve shank to expand outwards to form a blind head as the mandrel is pulled through the sleeve,

characterized in that the hollow sleeve is provided with two external grooves of differing shape, the first of said two external grooves being of trapezoidal cross-section, and the second being of elliptical cross-section.

5,645,384

RECEPTACLE FOR QUICK-RELEASE FASTENER

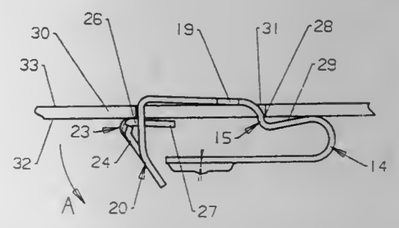
Andrew Charles Walden Wright, Surry, and Derrin John Bond, Hampshire, both of United Kingdom, assignors to Dzus Fastener Europe Limited, Farnham, United Kingdom

Filed Feb. 15, 1996, Ser. No. 601,727

Claims priority, application United Kingdom, Feb. 17, 1995, 9503153

Int. Cl.[6] F16B *37/02*;*37/04*

U.S. Cl. 411—174 **12 Claims**



1. A one-part receptacle of a quick-release fastener for from mounting in a support, said support having a front and rear face, and an aperture therethrough in which said receptacle is mounted in use, said receptacle comprising:

a substantially planar first element, said first element comprising a retention mechanism for engaging and retaining in use a stud of said fastener connected therewith;

a generally U-shaped bight portion;

a substantially planar second element, said bight position being disposed between said first and second elements to connect said elements and to space said second element from said first element, said second element comprising

a pair of flexible elongate components, and

a pair of transverse tabs disposed adjacent said bight portion, said tabs being adapted to engage said front face of said support and said bight portion engaging said rear face in use; and,

a depending third element, said third element connected to said second element and being disposed at the opposite end of said second element from said bight portion and having

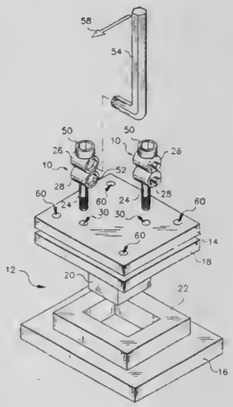
a flexible barb portion adapted to flex on insertion of said receptacle in said aperture and to engage said rear face thereafter, in order to retain said receptacle in said aperture.

5,645,385

CAM ACTUATED CLAMPING TOOL

Michael Long, Rochester, and James A. White, Conesus, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 21, 1995, Ser. No. 561,474
Int. Cl.[6] F16B *19/00*
U.S. Cl. 411—354 **22 Claims**



1. A clamping device comprising:

(a) a pair of stacked cams, each of said stacked cams having a cam surface, said cam surfaces engaging one another, each of said stacked cams capable of rotational movement about a corresponding axis, said axes being separated by a first distance;

(b) a bolt having a threaded end a head at an opposite end, said bolt passing through said pair of stacked cams and through a first object with said threaded end engaging a second object;

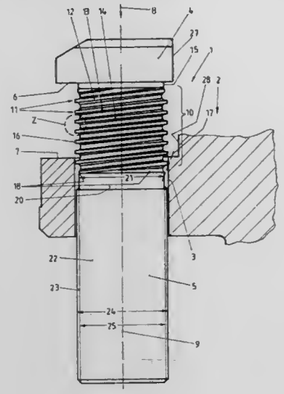
(c) means for rotating said pair of stacked cams, said cam surfaces being shaped such that through rotation of said pair of stacked cams said axes become separated by a second distance which is greater than said first distance causing one of said stacked cams to bear against said head thereby placing said bolt in tension while imparting no substantial force perpendicular to a longitudinal axis of said bolt.

5,645,386

FORCE FIT CONNECTING ELEMENT ESPECIALLY WHEEL STUD

Klaus Damm, Homberg/Ohm; Walter Mages, Alsfeld, and Andreas Mohr, Antrifttal, all of Germany, assignors to Kamax-Werke Rudolf Kellermann GmbH & Co. KG, Osterode, Germany

Continuation of Ser. No. 250,009, May 27, 1994, abandoned. This application Mar. 22, 1996, Ser. No. 620,483
Claims priority, application Germany, Jun. 4, 1993, 43 18 494.4
Int. Cl.[6] F16B *35/04*
U.S. Cl. 411—412 **15 Claims**



1. A removable and reusable force fit connector comprising:

a corresponding part of a first material having a drilled hole, said drilled hole having an open ended and generally cylindrical surface extending along the circumference of said drilled hole through the corresponding part;

a force fit connecting element of a second material of a greater strength than said first material for being axially forced into said drilled hole, said connecting element including an elongated and generally cylindrical shank formed about a longitudinal axis, said shank having a breadth, a first end, and an opposed second end;

a stop formed at the first end of said shank, said stop having a breadth greater than the breadth of said shank;

a threaded section formed on said shank adjacent said second end thereof, said threaded section having at least one helical thread defined thereon, said at least one helical thread having an outer thread diameter sized smaller than the diameter of said drilled hole;

a force fit section formed on said shank intermediate said stop and said threaded section, said force fit section including at least three generally non-deformable threads sized and shaped to align said shank within said drilled hole, each of said at least three threads having a generally helical profile and an oversized outer diameter sized greater than the diameter of said drilled hole, each of said at least three threads being sized and shaped to elastically deform the cylindrical surface of said drilled hole engaged by said at least three threads, as said connecting element is axially forced into said drilled hole;

said threads of said force fit section including a conical region tapered inwardly toward said threaded section for centering said connecting element in the hole of said corresponding part;

said shank including a transition region between said conical region and said threaded section of smaller breadth than the breadth of said force fit section;

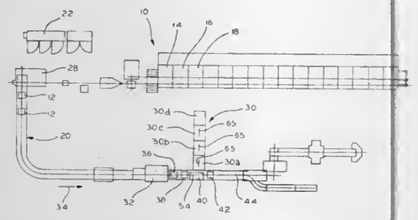
each of said at least three threads of said force fit section forming a contact area with at least a portion of the cylindrical surface of said drilled hole, said contact area having a contact area fraction between the portions of said at least three threads engaged with the cylindrical surface of said drilled hole with respect to the total cylindrical surface of the drilled hole of at least thirty per-cent.

5,645,387

METHOD AND APPARATUS FOR AFFIXING INSERTS WITHIN BOOKS ON A BINDING LINE

Frank Scalet, Warsaw; Joseph P. Berger; Hal B. Harting, both of Winona Lake; Anthony J. Majewski, Warsaw; Khrystal L. Neibert, Winona Lake; Lois C. Tucker; Judy E. Walters, both of Warsaw, and Steven D. Weaver, Claypool, all of Ind., assignors to R. R. Donnelley & Sons Company, Chicago, Ill.

Filed Feb. 13, 1995, Ser. No. 387,260
Int. Cl.[6] B42B *5/00*
U.S. Cl. 412—I **38 Claims**



1. In a binding line for binding a book including a plurality of packer boxes along a binding line conveyor together with means for actuating at least some of said packer boxes to gather signatures from said packer boxes to build groups of signatures into said books, the improvement comprising:

means for feeding at least one insert for association with all or specific ones of said books;

means for affixing each of said inserts to a signature within one of said books at a point along said binding line;

said inserts each being contained in an insert-containing enclosure comprising an envelope carrying at least one of said inserts therewithin;

said binding line including a stitcher downstream of said packer boxes and said feeding means including a feeder downstream of said stitcher for feeding said envelopes in a direction generally perpendicular to the direction of travel of said books on said binding line conveyor.

5,645,388

CANTILEVER LIFT ASSEMBLY FOR STATIONARY SMALL AIRCRAFT

Maurice Lacasse, 310, avenue des Rosiers, Blainville (Québec), Canada

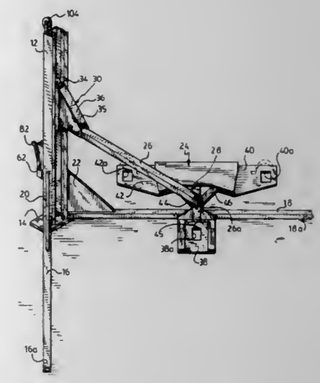
Filed Sep. 28, 1995, Ser. No. 539,024
Int. Cl.[6] B66F *7/00*
U.S. Cl. 414—227 **5 Claims**

1. A lift assembly for raising and continuously maintaining spacedly over ground a small aircraft in cantilevered fashion so that another small aircraft can be parked underneath the raised aircraft, the aircraft to be raised being of the type having three landing gear wheels; said lift assembly including:

(a) an elongated column member, having a lengthwise channel, with a lengthwise mouth;

(b) a pair of ground support legs, integrally mounted to one end of said column member in diverging fashion wherein said column member can be maintained in upright condition;

(c) a platform assembly including first, second and third wheel support beds, each of said wheel support beds having a top surface for supporting the aircraft wheels;



(d) an elongated cantilever member having an outer end portion, pivotally mounted to and retaining said platform assembly at a location intermediate said support beds, and an inner end portion, rollingly mounted through said column mouth and into said column member channel, wherein said cantilever member extends in a downwardly outwardly inclined angular fashion from said column member;

(e) power means, for power displacing said cantilever member inner end portion vertically along said column member channel; and

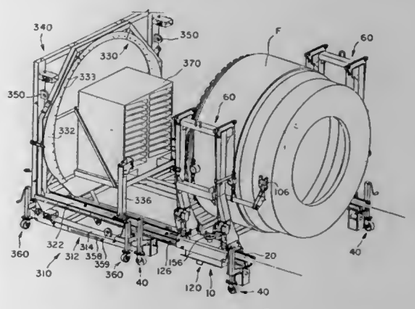
(f) automatic brake means, for releasably locking said cantilever member inner end portion to said column at any position along said column member whenever said power means is deactivated.

5,645,389

SHIPPING FRAME FROM FAN SECTION OF AIRCRAFT ENGINE

Gerald D. Lilja, Parker, Colo.; Frank Fowler, Gilford, Conn., and Robert F. Hatch, Aurora, Colo., assignors to Stanley Aviation Corporation, Aurora, Colo.

Filed Nov. 30, 1995, Ser. No. 565,384
Int. Cl.[6] B60P *1/04*
U.S. Cl. 414—343 **41 Claims**



1. A shipping frame for transporting a loaded jet aircraft engine fan section including a plurality of fan blades in either a horizontal or vertical position, said shipping frame comprising:

a frame including at least one rail member for supporting the fan section loaded thereon;

a fan support template attached to said frame for releasably securing the fan section thereto;

a train mechanism slidably engageable with said rail member for receiving the fan section and transferring it to said fan support template; and

a platform rotatably connected to said frame, said platform being independently and selectively deployable with respect to said support template for positioning the fan section in the horizontal position.

8. A shipping frame for transporting a loaded jet aircraft engine fan section including a plurality of fan blades in either a horizontal or vertical position, said shipping frame comprising:

frame means for supporting the fan section loaded thereon;

template means attached to said frame means for releasably securing the fan section thereto; and

platform means rotatably connected to said frame means, said platform means being independently and selectively deployable with respect to said template means for selective deployment of the fan section to the horizontal position.

5,645,390

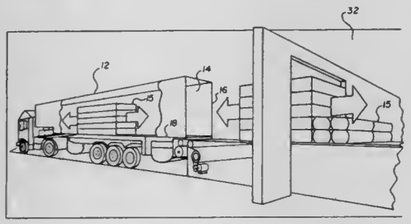
SYSTEM AND METHOD FOR CONVEYING CARGO CONTAINERS THROUGH ENVIRONMENTALLY CONTROLLED ENCLOSURES

Richard J. Filiberti, Rochester; Fredric Salsburg, Victor, and William E. Roberts, Fairport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 27, 1994, Ser. No. 267,262

Int. Cl.[6] **B65G** *47/00*

U.S. Cl. 414—390 **7 Claims**



1. A system for conveying cargo containers in the absence of contamination through a vehicle having a storage compartment defined by a first floor portion, a first ceiling portion and first sidewalls surrounding said first floor and first ceiling portions and then through at least two environmentally controlled enclosures: each said environmentally controlled enclosures having a second floor portion, a second ceiling portion and adjoining second sidewalls surrounding said second floor and second ceiling portions, said system comprising:

an entrance abutting said vehicle for positioning at least one of said at least two enclosures proximate to said storage compartment of said vehicle, said entrance port comprising means for sealing an exit end of said vehicle and said at least one of said at least two enclosures against the ingress of particulate contamination;

a first means for precisely aligning and snugly positioning said exit end of said vehicle with said entrance port;

a second means operatively associated with said vehicle for conveying said cargo containers from said storage compartment of said vehicle, through said entrance port and into said proximate enclosure;

a third means in the proximal enclosure for conveying the cargo container in a predetermined direction so as to selectively load or unload the cargo containers in said proximal enclosure or into said storage compartment of said vehicle; and,

a system control means cooperatively associated with said vehicle and said environmentally controlled enclosures for automatically actuating said second and third means once said aligning and positioning means has been confirmed.

5,645,391

SUBSTRATE TRANSFER APPARATUS, AND METHOD OF TRANSFERRING SUBSTRATES

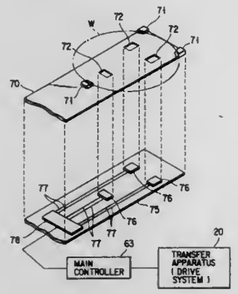
Tetu Ohsawa, Sagamihara, and Kiyohisa Tateyama, Kumamoto, both of Japan, assignors to Tokyo Electron Limited, Tokyo, and Tokyo Electron Tohoku Limited, Esashi, both of Japan

Continuation of Ser. No. 71,269, Jun. 4, 1993, abandoned. This application May 31, 1995, Ser. No. 455,662

Claims priority, application Japan, Jun. 5, 1992, 4-169891; Jun. 11, 1992, 4-175940

Int. Cl.[6] **B65G** *49/07*

U.S. Cl. 414—416 **19 Claims**



1. An apparatus for transferring substrates from a first substrate support to a second substrate support, comprising:

a base unit capable of moving between a first position at which to transfer a substrate from said first substrate support and a second position at which to transfer the substrate to said second substrate support;

a substrate-transferring member provided on said base unit and capable of moving back and forth with respect to said base unit, for receiving the substrate from said first substrate support and for transferring the substrate to said second substrate support, said substrate-transferring member including an aperture; and

a non-contact type sensor unit provided on said substrate-transferring member for detecting whether said substrate is present on said substrate-transferring member, and for detecting a distance in a vertical direction between said substrate-transferring member and said substrate, said non-contact type sensor unit including a sensor disposed on a lower plate, and wherein said lower plate is disposed below said substrate-transferring member such that said non-contact type sensor unit senses said substrate through said aperture.

5,645,392

DUNNAGE HANDLING SYSTEM

Deryll L. Leichty, Berne; Dave P. Reinhart, Portland, both of Ind., and Thomas W. Youngblutt, Brighton, Mich., assignors to Micromatic Operations, Inc., Holland, Mich.

Filed Sep. 8, 1995, Ser. No. 525,946

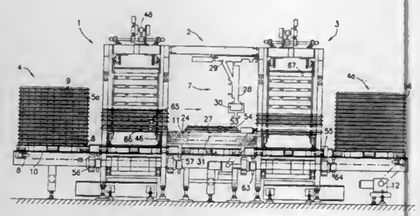
Int. Cl.[6] **B65G** *65/02*

U.S. Cl. 414—416 **11 Claims**

1. Apparatus for handling multiple work pieces arranged in trays, said trays stacked vertically in horizontal layers from a bottom tray to a top tray and said stack of trays supported from beneath by a pallet, said apparatus comprising:

a tray destacking station, a work piece unloading station, and a tray stacking station, said stations connected by a pallet transport system and a tray transport system to move the pallets and the trays sequentially from station to station;

first lift means at the destacking station to move vertically up and down to raise and lower the stack of trays;



first rack means at the destacking station to move horizontally to engage, suspend and release the stack of trays;

system control means operatively associated with the first lift means to cause the lift means to raise and lower the stack of trays, and to cause the rack means to engage, suspend, and release the stack according to a predetermined sequence in which the stack of trays are lifted and suspended above the pallet to allow the pallet to be moved from under the stack by the pallet transport system and the stack is sequentially lifted and suspended above the bottom tray of the stack to allow the bottom tray to be moved from under the stack by the tray transport system while the upper trays are suspended;

first means in the transport system to direct the bottom tray into the workpiece unloading station after said bottom tray is removed from the bottom of the stack;

pick-up means at the workpiece unloading station to unload the workpieces from the tray;

second means in said transport system to direct the unloaded tray from the unloading station into the stacking station;

second lift means at the stacking station to move vertically up and down to raise and lower the stack of trays;

second rack means at the stacking station to move horizontally to engage, suspend, and release the stack of trays;

said system control means further operatively associated with the second lift means to cause said second lift means to raise and lower the stack of trays, and with the second rack means to cause the second rack means to engage, suspend, and release said stack according to a predetermined sequence in which the stack of trays are lifted and suspended to allow the unloaded tray to be moved under the stack by the tray transport system and to raise said unloaded tray to said stack to add said unloaded tray to the bottom of the stack; and when the stack of unloaded trays are assembled, the stack of unloaded trays are sequentially lifted and suspended to allow the pallet to be moved under the stack on the pallet transport means to allow the pallet to be raised to the stack of unloaded trays and the pallet and trays to be lowered onto the pallet transport system.

5,645,393

IC STOCKER, IC UNLOADING AND POSITIONING APPARATUS, AND IC FEED SYSTEM

Mitoshi Ishii, Ohita, Japan, assignor to Ishii Tool & Engineering Corporation, Ohita, Japan

PCT No. PCT/JP92/01571, § 371 Date Jul. 29, 1993, § 102(e) Date Jul. 29, 1993, PCT Pub. No. WO93/11061, PCT Pub. Date Jun. 10, 1993

PCT Filed Nov. 30, 1992, Ser. No. 94,039

Claims priority, application Japan, Dec. 4, 1991, 3-348180

Int. Cl.[6] **B65B** *69/00*

U.S. Cl. 414—417 **11 Claims**

1. An IC stocker, comprising:

a frame;

a moving table (**9**) for moving on said frame (**6**);

means (**16–21**) for driving said moving table (**9**) to move to a desired position on said frame (**6**), thereby positioning said moving table (**9**);

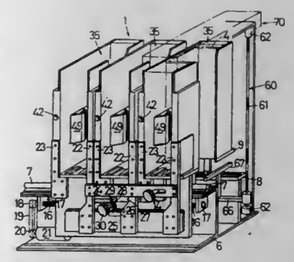
a plurality of alternating first and second vertical plates which hold a respective cassette, for stocking a stack of a plurality of ICs, between adjacent ones of first and second vertical plates, said vertical plates being mounted on said moving table;

first connecting means (**24**, **25**) for connecting together said first vertical plates (**22**);

second connecting means (**27**) for connecting together said second vertical plates (**23**);

means (**26**, **27**, **29** . . .) for driving said first and second vertical plates (**22**, **23**) to move relative to each other; and

an IC lifting mechanism (**60**) disposed at one end of said frame for pushing against the ICs and lifting said ICs (**2**) stacked in said cassette (**4**) up relative to the bottom of said cassette (**4**) when said cassette (**4**) is positioned at said end by said moving table.



5,645,394

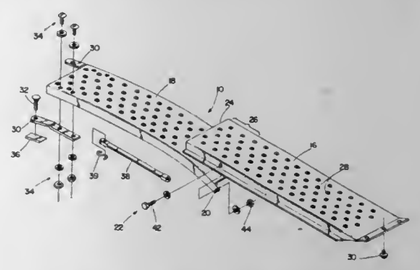
UTILITY RAMP

William A. Hays, New Albany, Ohio, assignor to Ohio Steel Industries, Inc., Columbus, Ohio

Filed Jun. 11, 1996, Ser. No. 661,823

Int. Cl.[6] **B65G** *67/02*

U.S. Cl. 414—537 **4 Claims**



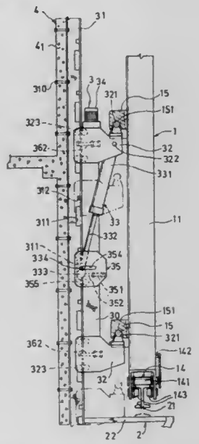
1. A utility ramp for loading a first motorized vehicle having a bed with a second motorized vehicle from a ground level into the bed of said first vehicle comprising:

a first elongate member having a skid resistant upper surface for tractionally engaging the tires of said second vehicle and a proximal and distal extent, wherein said first elongate member is adapted to receive a hinge along a hinge axis, wherein said hinge axis defines an overlapping portion of said first elongate member which extends from said hinge axis to said distal extent, said distal extent of first elongate member being engaged with the ground during loading of a second vehicle; and

a cambered second elongate member having a skid resistant upper surface for tractionally engaging the tires of said second vehicle and a proximal and distal extent, said distal extent being engageable with the bed of said first vehicle and being hingedly coupled at said proximal extent of said second elongate member to said first elongate member along said hinge axis and being foldable at the hinge axis against the

body of said first member and thus transportable in the bed of said first vehicle when said ramp is not engaged with said vehicle bed.

5,645,395
BUILDING CRANE APPARATUS CLIMBABLE ON BUILDING WALLS
Hsin-Tsung Huang, P.O. Box 55-1670, Taipei (104), Taiwan
Filed Jun. 6, 1995, Ser. No. 467,908
Int. Cl.[6] B66C *5/02;* **B65G** *67/02;7/00*
U.S. Cl. 414—560 **8 Claims**

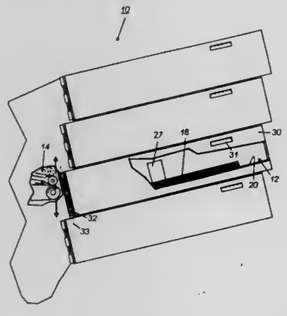


1. A crane apparatus comprising:

a crane means slidably held on a base rail means mounted on a building, said crane means including a pair of gantry stands disposed on two walls of the building each said stand having a roller means secured in a bottom groove recessed in a bottom of each said stand to be engageable with a rail of the base rail means, a girder transversely connected between the two gantry stands and horizontally positioned at an upper portion of the crane means, a trolley having a hoisting unit provided on the trolley slidably held on the girder for hoisting purpose, and at least one catching member formed on an inside surface of each said gantry stand and engageable with a head portion of a lifting elbow member of the elevating means to be lifted by the elbow member of the elevating means; said base rail means including a pair of rails longitudinally disposed on the two walls of the building, each said rail defining a rail axis at a longitudinal center of each said rail and having a horizontal track on an upper portion of the rail for rotatably engaging the roller means of the crane means, and a plurality of brackets longitudinally distributed and secured on each said wall of the building for fixing each said rail on each said bracket; and

a pair of elevating means fixed on the building and operatively lifting the crane means from a low standing position of the building to a high standing position of the building, each said elevating means including a pair of vertical columns parallelly vertically secured on each said wall of the building, at least a pair of lifting elbow members transversely secured on two opposite end portions of a frame for lifting each said catching member formed on each said gantry stand of the crane means, a pair of climbing leg members, each said leg member pivotally secured to each said lifting elbow member and normally inclinedly supported on each said vertical column and operatively extended as driven by a pair of driving means secured on the frame, a locking means normally locking each said lifting elbow member on each said vertical column, and a leg controller for locking and unlocking the climbing leg member on and from the vertical column, whereby upon an extending of the climbing leg member to raise the lifting elbow member, the gantry stand with the catching member engaged with the lifting elbow member will be lifted to raise the crane means corresponding to the rising of the building under construction.

5,645,396
PRINTER MAILBOX SETS ACCESS AND REMOVAL SYSTEM
Robert F. Romanowski, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Apr. 25, 1996, Ser. No. 637,514
Int. Cl.[6] B65H *31/30*
U.S. Cl. 414—789.9 **6 Claims**

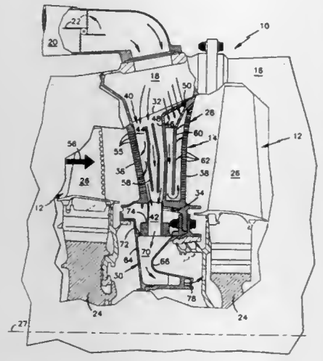


1. In a printer mailboxing system with an array of multiple locked mailbox bins in which printed sheet print jobs from a printer are stacked into respective said mailbox bins selectively designated for different respective users of said printer, which mailbox bins are selectively electrically unlockable to provide frontal access for said respective users to their respective mailbox bins for removal of their print jobs from their respective mailbox bins, each said mailbox bin having an access door and a printed sheet stacking and supporting surface, the improvement comprising:

said mailbox bins including a print job removal system for said removal of print jobs from respective said mailbox bins, and a pivotal mounting system individually pivotally mounting said access door and said print job removal system so that said access door and said print job removal system of respective ones of said mailbox bins freely pivotally swing out away from said array of multiple mailbox bins when said mailbox bin is electrically unlocked, to pivot all said print jobs in said mailbox bin out away from said array of multiple mailbox bins for improved said access and removal of said print jobs from said mailbox bin;

wherein said pivotally mounting system of said access door and said print job removal system of said mailbox bins are on a substantially vertical common axis of rotation adjacent one frontal corner of said access door to provide substantially horizontal outward rotation of said access doors and said print job removal system of said mailbox bins.

5,645,397
TURBINE VANE ASSEMBLY WITH MULTIPLE PASSAGE COOLED VANES
Friedrich O. Soechting; William L. Plank, both of Tequesta, Fla., and Kenneth B. Hall, Klingnau, Switzerland, assignors to United Technologies Corporation, Hartford, Conn.
Filed Oct. 10, 1995, Ser. No. 541,854
Int. Cl.[6] F01D *9/06*
U.S. Cl. 415—115 **12 Claims**



1. A stationary vane assembly for a gas turbine engine, comprising:

a plurality of vanes, each vane having a leading edge, a trailing edge, an outer radial end, an inner radial end, and an internal cavity, said internal cavity including a forward compartment adjacent said leading edge, and an aft compartment adjacent said trailing edge;

an inner vane support, said inner vane support having a plurality of seats for receiving said inner radial ends of said vanes, and a plurality of exit apertures through which cooling air may exit said inner vane support; and

an outer casing, positioned radially outside of said vanes, having an annulus disposed within said outer casing, wherein said outer radial ends of said vanes attach to said outer casing;

a plurality of jumper tubes, extending between said annulus and said forward compartment, said jumper tubes providing a travel path for cooling air between said annulus and said forward compartments; and

a flow meter, positioned between said annulus and said aft compartment of each said vane cavity, wherein cooling air traveling between said annulus and said aft compartments must pass through said flow meter.

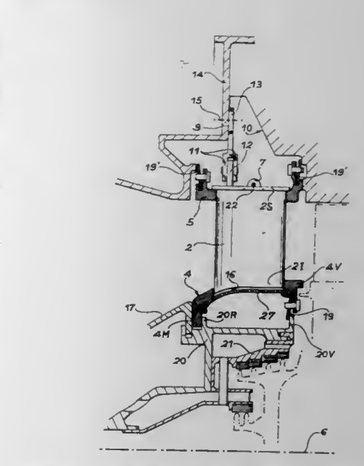
5,645,398
UNSECTORED, ONE PIECE DISTRIBUTOR OF A TURBOJET TURBINE STATOR
Josette Benoist, Le Mee S/Seine; Paul Martyez, Montgeron, and Jean-Claude Christian Taillant, Vaux Le Penil, all of France, assignors to Societe Nationale D'Etude Et De Construction De Moteurs D'Aviation "Snecma", Paris, France
Filed Nov. 24, 1995, Ser. No. 562,597
Claims priority, application France, Dec. 7, 1994, 94 14692
Int. Cl.[6] F01D *25/26*
U.S. Cl. 415—134 **4 Claims**

1. An unsectored one piece nozzle of a turbine engine stator having a longitudinal axis comprising:

vanes which radially extend about the longitudinal axis;

an inner platform to which a first inner end of the vanes are axially fixed;

an outer platform to which a second outer end of the vanes are fixed; and



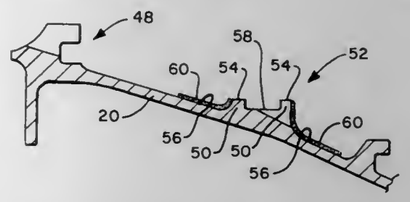
means for fixing the nozzle so as to permit a radial expansion of the vanes and the inner and outer platforms;

wherein:

the vanes are mounted so as to radially slide in the inner platform which is fixed with respect to a hub of a stator; and

the fixing means comprise rods, each of the rods having a first end and a second end, the first end of each of the rods being fitted in a pivoting manner to said outer platform, and the second end of each of the rods being fitted in a pivoting manner to a case of the stator.

5,645,399
GAS TURBINE ENGINE CASE COATED WITH THERMAL BARRIER COATING TO CONTROL AXIAL AIRFOIL CLEARANCE
Todd James Angus, Simsbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.
Filed Mar. 15, 1995, Ser. No. 404,230
Int. Cl.[6] F01D *25/14*
U.S. Cl. 415—178 **1 Claim**



1. A gas turbine engine including a compressor, a combustor, and a turbine, said gas turbine engine being enclosed in an engine case, said casing including a forward attachment point and a rear attachment point, said compressor and said turbine including alternating rows of stationary vanes and rotating blades, said rotating blades being secured within a rotating disk, said vanes being mounted onto said engine case by attachment at said forward and rear attachment points, said forward attachment point having more mass and being thicker than said rear attachment point, said rear attachment point having an inner rail surface for abutment with said vanes, and an outer rail surface comprising the inner surface of said casing immediately adjacent said inner rail surface, said gas turbine engine characterized by:

a thermal barrier coating being applied onto said outer rail surface and having a limited axial extent and extending fully circumferentially, said inner rail surface remaining free of

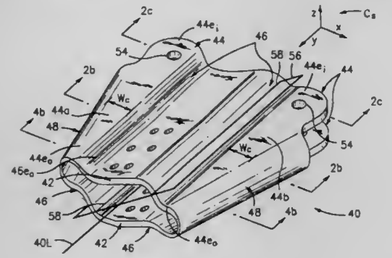
coating whereby tilting of said vanes around said attachment point is minimized to maintain axial spacing between said rotating blades and said stator vanes.

5,645,400

COMPOSITE CUFF STRUCTURE FOR HELICOPTER ROTORS

David H. Hunter, Cheshire, and Karl B. Scherer, Stratford, both of Conn., assignors to Sikorsky Aircraft Corporation, Stratford, Conn.

Filed Mar. 18, 1996, Ser. No. 617,012
Int. Cl.[6] B64C *27/37;27/35*
U.S. Cl. 416—134 A **19 Claims**



10. A composite cuff structure (**40**) for mounting a root end (**14***e*) of a rotor blade assembly (**14**) to radial arms (**24***a*, **24***b*) of a rotor assembly yoke (**24**), the composite cuff structure (**40**) characterized by:

a unitary body having a generally tubular shape and defining a longitudinal axis (40_L), said unitary body including:

a blade-receiving sleeve portion (**42**) for being disposed in combination with the root end (**14***e*) of the rotor blade assembly (**14**), said blade-receiving portion (**42**) having first and second blade mounting segments (**42***a*, **42***b*) which define a rotor blade attachment plane P_B,

a yoke mounting portion (**44**) for being disposed in combination with the radial arms (**24***a*, **24***b*) of the rotor assembly yoke (**24**), said yoke mounting portion (**44**) having fore and aft pairs (**44-1**, **44-2**) of first and second yoke mounting segments (**44***a*, **44***b*), said pairs (**44-1**, **44-2**) being disposed laterally of said blade mounting segments (**42***a*, **42***b*), said yoke mounting segments (**44***a*, **44***b*) defining a yoke attachment plane P_Y;

spanwise fold portions (**46**) having first and second complementary curve segments (**46***a*, **46***b*) for structurally interconnecting said blade and yoke mounting segments (**42***a*, **42***b*, **44***a*, **44***b*), such that said rotor blade attachment plane P_B forms an angle θ with respect to said yoke attachment plane P_Y, said angle θ being between about 4 degrees to about 30 degrees with respect to said yoke attachment plane P_Y.

said spanwise fold segments (**46***a*, **46***b*), furthermore defining longitudinal mold lines (**58**), said longitudinal mold lines (**58**) being substantially parallel to said longitudinal axis (40_L); and

sidelobe portions (**48**) having fore and aft curved segments (**48***a*, **48***b*) for structurally interconnecting said first and second yoke mounting segments (**44***a*, **44***b*);

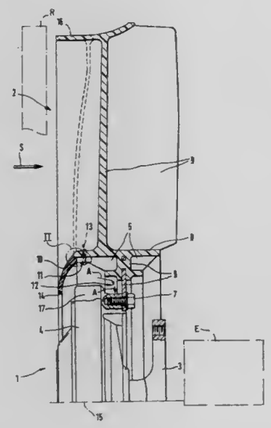
said unitary body, furthermore, being fabricated from a composite material having reinforcing fibers (**70**) disposed in a binding matrix.

5,645,401

AXIAL FAN FOR A RADIATOR OF A MOTOR VEHICLE ENGINE

Hans Martin, Stuttgart, and Uwe Blass, Möglingen, both of Germany, assignors to Behr GmbH & Co., Stuttgart, Germany

Filed Dec. 14, 1995, Ser. No. 572,625
Claims priority, application Germany, Dec. 21, 1994, 44 45 671.9
Int. Cl.[6] F04D *29/34*
U.S. Cl. 416—169 A **8 Claims**



1. Axial fan for a motor vehicle system having a radiator and a motor vehicle engine drivingly connected with a fluid friction clutch, comprising:

a fan hub carrying radially outwardly extending fan blades defining a path for main cooling air flow for cooling and traversing the radiator when in an in use position on a vehicle, said fan hub being connectable with a clutch housing in such a manner as to accommodate a secondary cooling air flow radially inwardly of the hub and over the clutch housing,

and an air guiding ring at an air inlet side of the fan hub which extends with a curved profile radially inwardly and forwardly of the fan hub to thereby separate and guide the main and secondary cooling air flows.

5,645,402

TURBINE BLADE VIBRATION DAMPENING

Charles C. Cornelius; Gregory P. Pytanowski, and Jonathan S. Vendituoli, all of San Diego, Calif., assignors to Solar Turbines Incorporated, San Diego, Calif.

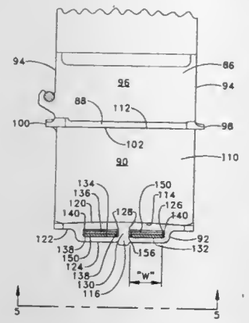
Filed Apr. 10, 1996, Ser. No. 631,313
Int. Cl.[6] F01D *5/22*
U.S. Cl. 416—190 **19 Claims**

1. A turbine wheel assembly comprising:

a disk;

a plurality of blades, each of said plurality of blades being mounted in said disk at a root portion, each of said plurality of blades having a tip portion, said tip portion defining an outer surface, a bridge member being attached to the outer surface and extending substantially an entire length of said outer surface and an opening having a preestablished cross-sectional configuration being defined between the outer surface and the bridge member; and

a strap being movably positioned in said opening of corresponding ones of the plurality of blades and said strap having a preestablished cross-sectional configuration being substantially of the configuration of the preestablished cross-sectional configuration of the opening.

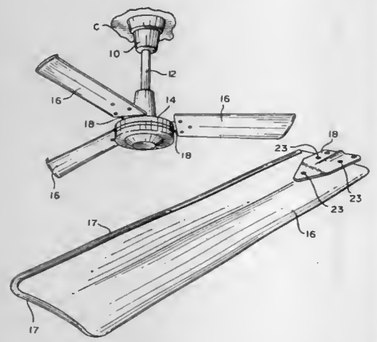


5,645,403

METAL CONTOURED BLADE WITH ROLLED EDGES AT IMPACT SURFACES

Gerald I. Bogage, 2245 NW. 72nd Ave., Miami, Fla. 33122

Filed Feb. 14, 1996, Ser. No. 601,611
Int. Cl.[6] F04D *29/38*
U.S. Cl. 416—235 **3 Claims**



1. A ceiling fan comprising a motor and a plurality of fan blades rotated thereby,

supporting means for supporting the fan from a ceiling,

each fan blade being a contoured metal blade for directing air flow,

each fan blade having a thickness of less than three-sixteenths of an inch,

each contoured metal blade having a leading edge, a trailing edge, and an end edge that joins said leading edge to said trailing edge, and

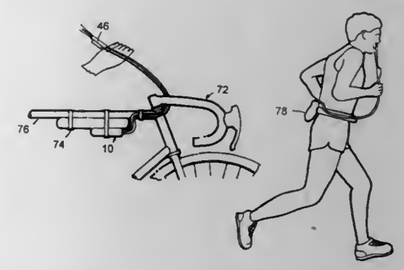
a continuous rolled edge being formed on said leading and end edges, said rolled edge being at least three sixteenths of an inch in thickness to function as an impact absorbing surface for low height applications.

5,645,404

PERSONAL FLUID DISPENSING DEVICE

John M. Zelenak, West Bloomfield, Mich., assignor to Z Industry, Inc., Southfield, Mich.

Filed Dec. 29, 1994, Ser. No. 365,688
Int. Cl.[6] F04B *49/00*
U.S. Cl. 417—1 **20 Claims**



1. A personal fluid delivery device comprising:

a hand-portable fluid reservoir operable for containing a fluid;

a hand-portable electronic pump disposed in communication with said fluid reservoir, said pump operable for delivering fluid from said reservoir;

an electrical power supply for supplying power to the pump;

a dispensing tube disposed in communication with said pump, said dispensing tube operable for providing a passageway for dispensing fluid from said fluid reservoir; and

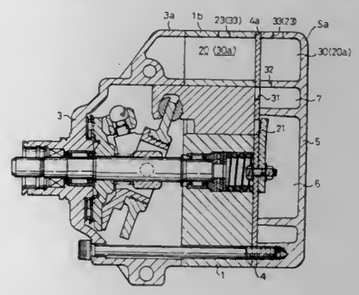
an actuating device disposed in electrical communication with at least one of said electrical power supply and said pump, said actuating device operable for selectively actuating said pump in response to a manipulation of said dispensing tube to a specific orientation.

5,645,405

RECIPROCATING TYPE COMPRESSOR WITH MUFFLING CHAMBERS

Masaki Ota; Hisakazu Kobayashi; Soukichi Hibino; Masaya Nakamura, and Yuichi Kato, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Mar. 14, 1996, Ser. No. 615,102
Claims priority, application Japan, Mar. 17, 1995, 7-059392
Int. Cl.[6] F04B *25/04*
U.S. Cl. 417—269 **6 Claims**



1. A reciprocating type compressor comprising:

a cylinder block having an outer shell, a front end, a rear end and a plurality of cylinder bores formed therein;

a housing attached to the front end of the cylinder block and having a crank chamber formed therein;

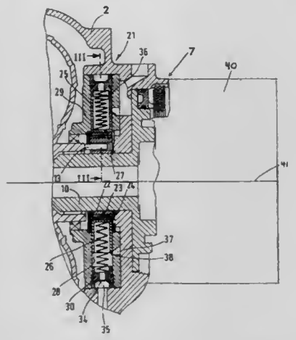
a cylinder head attached to the rear end of the cylinder block via a seal means and having an outer shell, a suction chamber and a discharge chamber formed therein;
single headed pistons movably arranged in the cylinder bores to form compression chambers, the compression chambers are in fluid communication with the suction chamber and the discharge chamber by valve means;
a drive shaft rotatably arranged in the cylinder block and the housing;
a cam plate means arranged in the crank chamber and supported by the drive shaft to engage with the pistons for reciprocatingly moving the pistons;
an integral wall laterally extending from the outer shell of the cylinder block to form a first muffling chamber, the first muffling chamber having a first end opening and a first end rim around the first end opening;
an integral extension wall laterally extending from the outer shell of the cylinder head to form a second muffling chamber, the second muffling chamber having a second end opening and a second end rim around the second end opening, the second end opening being arranged opposite the first end opening; one of the first and second muffling chambers being connected to the suction chamber by a restricted passage and the other of the first and second muffling chambers being connected to the discharge chamber by a restricted passage; and
an extension seal portion integrally formed with the seal means, the extension seal portion being arranged between the extension walls of the cylinder block and the cylinder head to seal the first and second end rims together.

5,645,406

TRANSMISSION ASSEMBLY WITH POSITIVE-DISPLACEMENT PUMP WITH SUCTION THROTTLE DRIVEN BY A HYDRODYNAMIC CONVERTER

Gerald Rowe, Lindau; Walter Kuhn, Friedrichshafen; Christof Zippel, Salem, and Michael Reichenmiller, Waldstetten, all of Germany, assignors to ZF Friedrichshafen AG, Friedrichshafen, Germany

PCT No. PCT/EP92/02726, § 371 Date May 27, 1994, § 102(e) Date May 27, 1994, PCT Pub. No. WO93/11376, PCT Pub. Date Jun. 10, 1993
PCT Filed Nov. 26, 1992, Ser. No. 244,534
Claims priority, application Germany, Nov. 30, 1991, 41 39 611.1
Int. Cl.[6] F04B *1/04*
U.S. Cl. 417—273 **4 Claims**



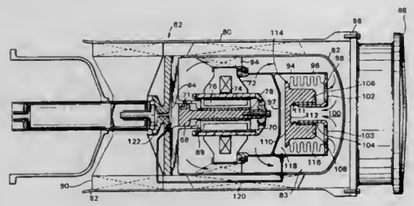
1. A transmission suitable for use as an automatic or continuously variable transmission for motor vehicles which comprises a positive-displacement pump which supplies one or more of a lubricating device, control devices and activation devices of the transmission and wherein the positive-displacement pump is a suction-restricted radial piston pump having a suction throttle and an eccentric and said pump is driven by the rotation of a drive motor including an hydrodynamic converter having a pump wheel which is connected to the eccentric of the radial piston pump to thereby drive said pump.

5,645,407

BALANCED SINGLE STAGE LINEAR DIAPHRAGM COMPRESSOR

James Kralick, Albany, and Nicholas Vitale, Watervliet, both of N.Y., assignors to Mechanical Technology Inc., Latham, N.Y.

Filed May 25, 1995, Ser. No. 450,357
Int. Cl.[6] F04B *9/103*
U.S. Cl. 417—383 **14 Claims**



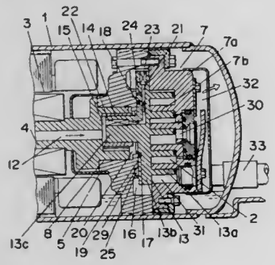
1. A compressor comprising:
a diaphragm with a first side and a second side;
a reciprocating piston means impinging upon a volume formed on a first side of said diaphragm;
driving means for reciprocating said piston means;
a reciprocating balance mass;
wherein said piston means and said balance mass reciprocate along a common longitudinal axis and said piston means and said balance mass are in communication with each other via a fluid-filled cavity whereby a change in position of said piston means changes a volume of said fluid-filled cavity thereby urging said balance mass to change position to compensate for changes in volume of said fluid-filled cavity, wherein reciprocation of said piston means and reciprocation of said balance mass are 180° out of phase thereby balancing the compressor during operation.

5,645,408

SCROLL COMPRESSOR HAVING OPTIMIZED OIL PASSAGES

Katsuharu Fujio, Koga-gun; Kiyoshi Sano, Otsu; Syouzou Hase, Hikone; Takashi Morimoto, Nagaokakyo, and Shuichi Yamamoto, Otsu, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Filed Jan. 17, 1996, Ser. No. 586,321
Claims priority, application Japan, Jan. 17, 1995, 7-004882
Int. Cl.[6] F04C *18/04;27/00;29/02*
U.S. Cl. 418—55.4 **12 Claims**



1. A scroll compressor comprising:
a generally cylindrical casing;

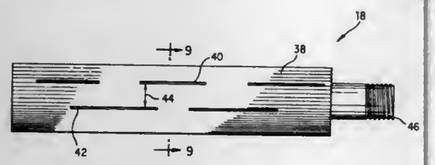
a stationary scroll member accommodated in said cylindrical casing and having a stationary end plate and a stationary scroll wrap protruding axially from said stationary end plate, said stationary scroll member also having a discharge port defined therein at a central portion thereof and a suction chamber formed outside said stationary scroll wrap;
an orbiting scroll member accommodated in said cylindrical casing and having an orbiting end plate and an orbiting scroll wrap protruding axially from said orbiting end plate so as to engage with said stationary scroll wrap to define a plurality of compression chambers therebetween, said orbiting end plate having an oil passage defined therein;
a drive shaft rotatably accommodated in said cylindrical casing for orbiting said orbiting scroll member relative to said stationary scroll member;
a frame for rotatably supporting said drive shaft, said frame having a thrust bearing formed thereon for axially supporting said orbiting end plate;
a rotation constraint element for preventing rotation of said orbiting scroll member about its own axis;
an annular seal member received in an annular groove defined in one of said orbiting end plate and said thrust bearing;
said orbiting scroll member being disposed between said stationary scroll member and said frame with an axial gap defined therebetween;
first, second, and third back chambers formed on an opposite side of said orbiting end plate with respect to said compression chambers, said first and second back chambers being partitioned by said annular seal member, said second back chamber being provided radially outwardly of said first back chamber and between said orbiting end plate and said thrust bearing, said third back chamber being provided radially outwardly of said second back chamber; and
an oil passage means for introducing lubricating oil accommodated in said cylindrical casing into said first chamber in which a discharge pressure acts, said oil passage means supplying a portion of said lubricating oil to said second chamber and then to said third chamber through said oil passage in said orbiting end plate while reducing a pressure of said portion of said lubricating oil until said portion of said lubricating oil is eventually introduced into said suction chamber.

5,645,409

SLOTTED BURNER FOR GAS FIREPLACE

Li Ni; Robert A. Borgeson, both of Cleveland; Nick M. Kules, Parma, and John Schmidt, Brunswick, all of Ohio, assignors to Gas Research Institute, Chicago, Ill.

Filed Feb. 29, 1996, Ser. No. 609,066
Int. Cl.[6] F23D *14/46*
U.S. Cl. 431—8 **13 Claims**



1. A method of combustion comprising the steps of:
introducing a fuel into a burner manifold having at least one elongated port at a rate of about 5,000 BTUH to about 30,000 BTUH per square inch of port area, the at least one elongated port having a length to width aspect ratio greater than about 10 to 1;
introducing from about 0 to about 30 percent by volume of combustion air into the burner manifold, producing a fuel/air mixture; and
combusting said fuel/air mixture passing through the at least one elongated port, said fuel/air mixture leaving said at least one elongated port having a Froude Number in the range of about 0.05 to 4.0.

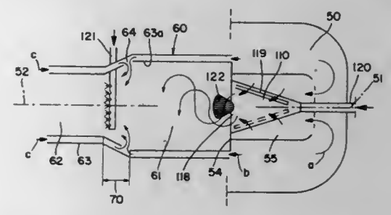
174-432 O.G.-97-9: QL3

5,645,410

COMBUSTION CHAMBER WITH MULTI-STAGE COMBUSTION

Joseph Brostmeyer, Stockton, N.J., assignor to Asea Brown Boveri AG, Baden, Switzerland

Filed Nov. 16, 1995, Ser. No. 558,535
Claims priority, application Germany, Nov. 19, 1994, 44 41 235.5
Int. Cl.[6] F23C *6/04*
U.S. Cl. 431—10 **3 Claims**



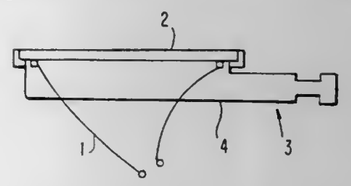
1. A method of operating a multi-stage combustion chamber having at least one primary flame-stabilizing premixing burner in which fuel injected via nozzles is intensively mixed with primary combustion air inside a premixing space before ignition, and having a primary combustion space and at least one secondary combustion space downstream of the primary combustion space, the combustion chamber having a double-wall enclosure defining a cooling air duct between an inner and an outer wall, the method comprising the steps of:
operating the primary burner at a lower stability limit to combust a fuel and air mixture in the primary space to produce a combustion gas flow,
introducing air from the cooling air duct into the combustion gas flow leaving the primary combustion space,
accelerating the combustion gas flow and introduced air into the secondary combustion space, and
introducing additional fuel into the combustion gas flow at an inlet to the secondary combustion space, wherein a self-igniting mixture of fuel and combustion air is formed for combustion in the secondary space.

5,645,411

RADIATION GAS BURNER WITH SAFETY DEVICE

Kurt Schaupert, Hofheim-Wallau, and Michael Kahlke, Mainz-Kastel, both of Germany, assignors to Schott Glaswerke, Mainz, Germany

Filed Oct. 13, 1995, Ser. No. 543,118
Claims priority, application Germany, Oct. 20, 1994, 44 37 510.7
Int. Cl.[6] F23N *5/00*
U.S. Cl. 431—77 **13 Claims**



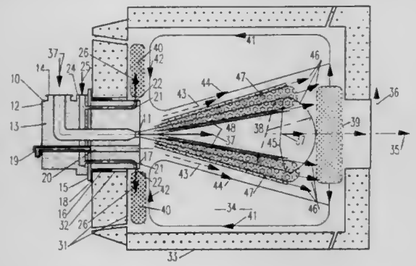
1. A gas radiation burner, comprising a burner plate; and safety means providing an ignition safety for non-burnt discharging gas for igniting gas or interrupting a gas supply, said safety means being formed by contacting said burner plate via electrical conductors thereby forming a temperature measuring resistance of a material of said burner plate.

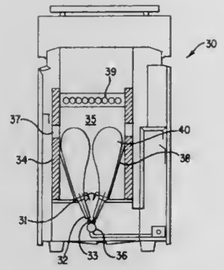
5,645,412

BURNER FOR LOW NO_x MULTISTAGE COMBUSTION OF FUEL WITH PREHEATED COMBUSTION AIR

Ferdinand K. Besik, 2562 Oshkin Crt., Mississauga, Ontario, Canada

Filed Jan. 26, 1996, Ser. No. 592,652
Int. Cl.[6] F23D *14/02*
U.S. Cl. 431—115 **6 Claims**





1. A burner for minimizing the formation of NOx in combustion of fuel with preheated combustion oxidant in a furnace system comprising:

a furnace for combustion of said fuel with said preheated combustion oxidant in a furnace chamber, said furnace chamber having a longitudinal axis and including a front wall at a first end thereof with an opening for a burner therein, side walls and an end wall at a second end thereof and said furnace having an exit opening located in said second end wall for discharging of combustion products out of said furnace, and

a burner including a burner head means mounted in said opening of said front wall of said furnace chamber in the vicinity of said longitudinal axis and including means for discharging fuel radially adjacent said front wall of said furnace chamber and means for discharging oxidant into said furnace chamber toward said second end wall of said furnace chamber and at an angle diverging from said discharged fuel to provide recirculation of combustion products in said furnace chamber and drawing pyrolytically decomposed fuel from a precombustion zone located adjacent said discharged fuel and mixing said pyrolytically decomposed fuel with combustion products to provide dilution of said pyrolytically decomposed fuel and transporting said diluted pyrolytically decomposed fuel through a multiple of combustion reaction zones formed in said furnace chamber to achieve a multistage combustion of said diluted pyrolytically decomposed fuel with said oxidant with minimum formation of NOx therein and discharging said combustion products out of said furnace chamber.

secondary oxidant means for introducing a secondary oxidant into said combustion chamber downstream of said combustion means whereby products of combustion are recirculated into said primary combustion zone flame.

5,645,413

LOW NO_x STAGED-AIR COMBUSTION CHAMBERS

Karen R. Benedek, Winchester; Philip C. Carbone, Groveland; Bo-Xiong He, Newton; Peter J. Loftus, Somerville, all of Mass., and Charles E. Benson, Windham, N.H., assignors to Gas Research Institute, Chicago, Ill.

Filed Jan. 20, 1995, Ser. No. 376,114
Int. Cl.[6] F23L *17/00*
U.S. Cl. 431—116 **19 Claims**

1. A combustion apparatus comprising:

at least one combustion chamber wall defining a combustion chamber;

combustion means for burning a fuel-rich mixture of a fuel and a primary oxidant to form a primary combustion zone flame within said combustion chamber;

flame guide means for attachment and cooling of said primary combustion zone flame disposed within said combustion chamber; and

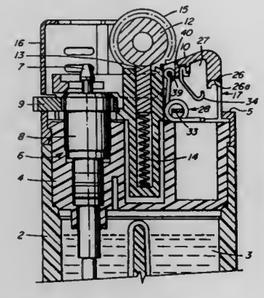
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5,645,414

CHILD-RESISTANT, AUTOMATICALLY LOCKING LIGHTER

Zhengge Wang, Vancouver, Canada, assignor to American Tectrade Enterprises, Vancouver, Canada

Filed Oct. 30, 1995, Ser. No. 550,376
Claims priority, application China, Jun. 23, 1995, 95 2 13586.8
Int. Cl.[6] F23D *11/36*
U.S. Cl. 431—153 **8 Claims**



1. A child resistant lighter comprising:

a fuel tank;

a tank cover on said fuel tank;

a fuel valve operatively disposed in said tank cover for controllably releasing fuel from said tank;

a spark wheel, a flint and a spring mounted on said tank cover with said spring urging said flint against said spark wheel to direct a spark towards said fuel valve on rotation of said spark wheel to ignite fuel expelled through said fuel valve;

an abutment on said tank cover;

a lever attached to said tank cover and pivotable on said tank cover for actuating said fuel valve;

said lever having a first end operatively engaged with said fuel valve and a second end;

said lever being slidable, by manually pushing said lever, towards said fuel valve into a locked position, in which said fuel valve remains longitudinally closed and said second end engages said abutment to prevent pivoting of said lever relative to said tank cover, and also being longitudinally slidable, by manually pulling said lever away from said fuel valve, into a released position, in which said second end is released from said abutment and said lever is free to pivot relative to said

tank cover from the released position to an actuated position so as to open said valve;

a spring resiliently urging said lever towards said fuel valve into the locked position;

a first retainer on said tank cover; and

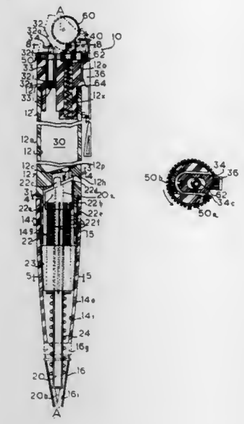
a second retainer on said lever, said second retainer being engageable with said first retainer against the action of said spring for releasably retaining said lever in the released position, and said second retainer being disengageable from said first retainer by pivoting of said lever from the released position to the actuated position, to thereby allow said lever to be automatically returned to the locked position by said spring following release of said lever from the actuated position.

5,645,415

CHILD-PROOF GAS LIGHTERS AND PENS THEREWITH

Gilles Hamel, 8 Place Morley, Tourraine, Qc, J6Z 3A6, Canada

Continuation-in-part of Ser. No. 490,199, Jun. 14, 1995. This application Dec. 29, 1995, Ser. No. 581,215
Int. Cl.[6] F23D *11/36*
U.S. Cl. 431—153 **20 Claims**



1. A child-proof gas lighter comprising:

a gas reservoir, said gas reservoir having a gas valve,

a lever having one end and another end, and a pivot therebetween said ends, in order to enable rocking of said lever,

said lever defining a protrusion sideways, between one of said ends of said lever and said pivot,

said protrusion having a side and another side opposite thereto,

said gas valve being operatively connected to said one end of said lever, for opening and closing said gas valve in an open and close position,

a means for biassing said lever toward said close position,

in space relation to said gas valve, a means for igniting gas from said gas valve,

an interfering piece rotatably mounted on said lighter, in space relation to said lever, said interfering piece having an arm outwardly projected from said interfering piece,

said interfering piece upon rotation in one direction having a portion displaceable toward said lever, for contacting said portion of said interfering piece against said lever to jam said lever, and to prevent displacements of said lever for opening said valve,

and upon rotating said interfering piece counter to said one direction, said portion of said interfering piece, being displaceable away from said lever, and said lever becoming displaceable into said open position allowing opening of said valve,

and said arm of said interfering piece, extending in space relation to said protrusion sideways of said lever, for cooperating with said protrusion,

whereby on acting counter to said one direction, on said interfering piece, said arm of said interfering piece moving from said lever, said arm moving on one side of the protrusion and resting against that protrusion, to enable a gap between the portion of said interfering piece and the lever, in order to enable displacement of said lever for opening of said gas valve,

and upon pressing the lever for opening of said gas valve, said arm of said interfering piece is slipping from the protrusion, to lean against the side of the lever, on the other side of the protrusion, thereby jamming the lever upon return of the lever in said close position for closing said gas valve,

thus said interfering piece being rotatably displaceable from an open unlock position toward a close lock position each time that the lever is press for opening of said gas,

a means for biassing said interfering piece toward said one direction, to induce rotation of said interfering piece toward said one direction.

5,645,416

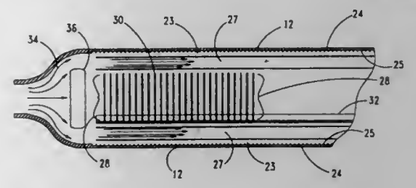
Patent Not Issued For This Number

5,645,417

DIMPLED THERMAL PROCESSING FURNACE TUBE

Keith W. Smith, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Oct. 9, 1995, Ser. No. 559,592
Int. Cl.[6] F27B *9/04*
U.S. Cl. 432—152 **4 Claims**



1. A thermal processing furnace, comprising:

a. a furnace tube having an inner surface describing an elongated cylindrical chamber for receiving and processing a plurality of axially aligned spaced apart semiconductor wafers, the inner surface having a plurality of dimples disposed thereon;

b. an inlet for introducing reactant and/or inert gases into one end of the cylindrical chamber to flow axially within the chamber by the wafers; and

c. an outlet for removing the gases from the cylindrical chamber.

5,645,418

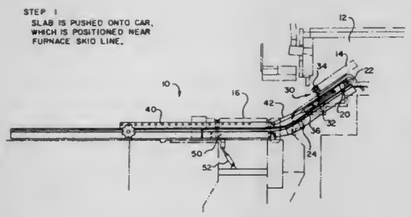
PUSHER FURNACE DROP-OUT CONVEYOR

John E. Thomas, Pittsburgh, Pa., assignor to Tippins Incorporated, Pittsburgh, Pa.

Filed Feb. 20, 1996, Ser. No. 603,397
Int. Cl.[6] F27D *3/04;3/00*
U.S. Cl. 432—239 **19 Claims**

1. A drop-out conveyor for a pusher-type furnace, said conveyor comprising:

at least one reciprocating slab cart movable between a first loading position within the furnace for receiving a slab thereon, and a second discharge position outside of the furnace for discharging the slab;



a reciprocating slab table positioned on each said slab cart, said slab table horizontally movable relative to a horizontal position of said slab cart between an extended slab receiving position and a retracted slab transporting position;

a track supporting each said cart, said track extending at least between said first loading position and said second discharge position; and

a means for reciprocating each said cart between said first position and said second position.

5,645,419

HEAT TREATMENT METHOD AND DEVICE

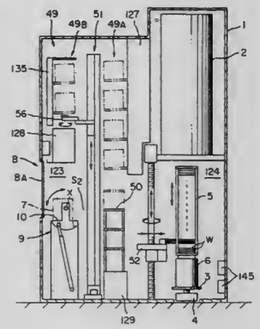
Tetsu Ohsawa; Hiroyuki Iwai, both of Sagamihara; Hisashi Kikuchi, Esashi; Shingo Watanabe, Kanagawa-Ken; Keiji Takano, Esashi; Tsutomu Haraoka, and Ken Nakao, both of Sagamihara, all of Japan, assignors to Tokyo Electron Kabushiki Kaisha, Tokyo-To, and Tokyo Electron Tohoku Kabushiki Kaisha, Iwate-Ken, both of Japan

Filed Mar. 23, 1995, Ser. No. 409,098

Claims priority, application Japan, Mar. 29, 1994, 6-082400; Apr. 4, 1994, 6-089099; Jul. 5, 1994, 6-176080

Int. Cl.[6] F23D *11/44*

U.S. Cl. 432—241 **10 Claims**



1. A treatment method for conveying carriers holding plural sheets of objects to be treated parallelly vertical into a vertical heat treatment furnace through a carriers feed in/out opening of a handling chamber accommodating the vertical heat treatment furnace, the method comprising the steps of;

swinging the carriers near the carriers feed in/out opening of the handling chamber on a rotational center into a territory of lower sides of the carriers to change the posture of the objects to be treated from the vertical position to the horizontal position;

conveying the carriers whose posture has been changed to a carriers storage unit provided in an area above the carriers feed in/out opening, and

wherein orientation flat alignment of the objects to be treated is conducted by independent orientation flat arranging means prior to the posture changing step.

5,645,420

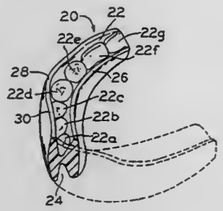
MULTI-RACIAL PREFORMED ORTHODONTIC TREATMENT APPLICANCE

Earl O. Bergersen, Winnetka, Ill., assignor to Ortho-Tain, Inc., Bayamon, Puerto Rico

Continuation of Ser. No. 89,577, Jul. 12, 1993, abandoned. This application Mar. 21, 1995, Ser. No. 407,919

Int. Cl.[6] A61C *3/00*

U.S. Cl. 433—6 **36 Claims**



1. An orthodontic appliance which is preformed to be generally U-shaped in plan view and includes a preformed tooth receiving trough formed between lingual and labial/buccal side flanges in at least an upper side thereof, which trough includes prefabricated tooth receiving depressions of predetermined dimensions for receiving and positioning teeth from central and lateral incisors to and including at least a molar, said appliance, trough and depressions being preformed of said predetermined dimensions without reference to a particular patient's dentition, said labial/buccal flange, in an area adapted to engage said incisors, extending gingivally from a tooth receiving surface of said trough by more than 10 mm so as to constantly engage a patient's gingival labial tissue and place constant distillizing guidance against a patient's pre-maxilia, said lingual flange having laterally spaced apart, vertically oriented lingually extending recesses of 0.1 to 1 mm in depth which extend slightly laterally at a mesial area and a distal edge of the central incisors and at a distal edge and a mesial edge of the lateral incisors so as to be positioned adjacent to the lateral edges of a lingual side of all four incisors, said recesses being defined by adjacent portions of said lingual flange which are not recessed and which are adapted to engage the lateral edges of the lingual side of all four incisors.

5,645,421

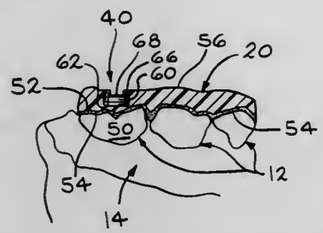
ORTHODONTIC APPLIANCE DEBONDER

Gary Lee Slootsky, Clarence, N.Y., assignor to Great Lakes Orthodontics Ltd., Tonawanda, N.Y.

Filed Apr. 28, 1995, Ser. No. 430,441

Int. Cl.[6] A61C *3/00*

U.S. Cl. 433—6 **9 Claims**



1. In an orthodontic appliance including a plastic body having a first continuous surface adapted to be bonded to a patient's tooth and a second surface spaced therefrom to define a thickness of the body, the improvement comprising a debonder comprising screw means carried in said body and having a first end spaced inwardly from said first surface and having a second, opposite end provided with a formation engageable by a tool so that upon rotation by the tool to advance said screw means through said body and toward and through said first surface said first end of said screw means engages the tooth causing said screw means to apply a lifting force to said body to break the bond between said first surface of said bond and the tooth thereby allowing removal of the appliance from the tooth.

5,645,422

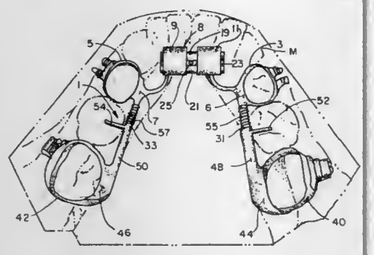
MANDIBULAR AND MAXILLARY ARCH ANDER

Michael O. Williams, 58 Shoreline La., Gulfport, Miss. 39503

Filed Sep. 11, 1995, Ser. No. 526,686

Int. Cl.[6] A61C *7/00*

U.S. Cl. 433—7 **10 Claims**



1. A fixed mandibular arch expander comprising;

a first forward orthodontic band and a second forward orthodontic band;

expansion means between said first and second orthodontic band;

a first rear orthodontic band;

a first spring-loaded rod and tube assembly connecting said first forward orthodontic band to said first rear orthodontic band

a second rear orthodontic band;

a second spring-loaded rod and tube assembly connecting said second forward orthodontic band to said second rear orthodontic band;

wherein said expansion means between said first and second forward orthodontic bands effects lateral mandibular arch expansion and said first and second spring loaded rod and tube assemblies effect distal archlength expansion.

5,645,423

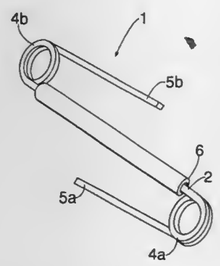
MANDIBULAR ADVANCEMENT APPLIANCE

John A. Collins, Jr., 1116 Mishawaka Ave., South Bend, Ind. 46615

Filed Jun. 10, 1994, Ser. No. 258,047

Int. Cl.[6] A61C *3/00*

U.S. Cl. 433—21 **14 Claims**



1. An orthodontic appliance for interarch correction, comprising:

a wire body including:

a central straight segment with a first end and a second end;

a first double helical loop curved segment contiguous to the first end of the central straight segment; and a first arm contiguous to the first curved segment and extending in a first direction;

a second double helical loop curved segment of opposite curvature relative to the first curved segment and contiguous to the second end of the central straight segment; and a second arm contiguous to the second curved segment and extending in a second direction generally opposite the first direction.

5,645,424

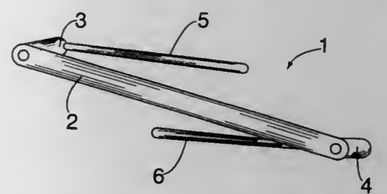
MANDIBULAR ADVANCEMENT APPLIANCE

John Albert Collins, Jr., 1116 Mishawaka Ave., South Bend, Ind. 46615

Continuation-in-part of Ser. No. 258,047, Jun. 10, 1994. This application Sep. 20, 1995, Ser. No. 531,360

Int. Cl.[6] A61C *7/00*

U.S. Cl. 433—21 **18 Claims**



1. A mandibular advancement assembly, comprising:

two attachment means adapted to be affixed to each of a pair of opposing upper and lower teeth on one side of a patient's dental arch;

an orthodontic appliance which includes a central straight segment, a pair of opposing pivotable connectors disposed at opposite ends of the central straight segment, and a pair of arms each extending from one of the oppositely disposed pivotable connectors;

wherein the arms are each oppositely directed inward toward the central straight segment and secured in place by the attachment means; and

wherein the attachment means, arms and pivotable connectors cooperate to allow full lateral movement of the upper and lower jaw when the arms of the orthodontic appliance are secured in place.

5,645,425

DISPOSABLE DENTAL ARTICULATOR

Lars E. Callne, San Jose, Calif., assignor to Nu-Logic Dental Mfg., Inc., Lyons, Ill.

Filed Jun. 20, 1996, Ser. No. 667,065

Int. Cl.[6] A61C *11/00*

U.S. Cl. 433—54 **8 Claims**

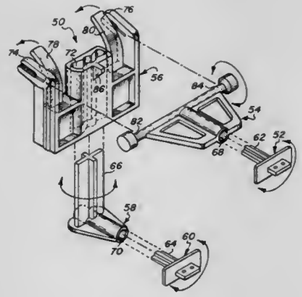
1. A dental model and articulator system (**10**), comprising:

a pair of upper and lower dental casts (**12**, **16**) each with a corresponding anchor (**20**, **34**) in their respective vertical posterior faces;

an articulator main body (**30**) with a transverse horizontal hinge attachment (**24**, **26**, **28**) on its top that detachably connects to an upper arm (**22**) and the upper dental cast anchor (**20**);

a vertical pivot (**32**) provided in the bottom end of the articulator main body (**30**) that connects to the lower dental cast anchor (**34**);

an upper dental cast anchor stem-in-sleeve arrangement (**40**) that attaches the upper dental cast anchor (**20**) to said upper arm (**22**) and that provides for independent lateral tilting of the



upper dental cast (**12**) for occlusal and masticatory registration and for fixing at least one aspect of said registration;

a lower dental cast anchor stem-in-sleeve arrangement (**42**) that attaches the lower dental cast anchor (**34**) to the vertical pivot (**32**) and that provides for independent lateral tilting of the lower dental cast for occlusal and masticatory registration and for fixing at least one aspect of said registration; and

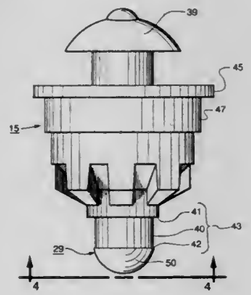
a pivot stem-in-sleeve arrangement (**44**) that attaches the vertical pivot (**32**) to the articulator main body (**30**) and that provides for occlusal and masticatory registration of the upper and lower dental casts (**12**, **16**) and for fixing at least one aspect of said registration.

5,645,426

DENTAL PROPHY ANGLE

Carlton L. Grim, Red Lion, Pa., and David B. Schumaker, Morristown, Tenn., assignors to Dentsply Research & Development Corp., Milford, Del.

Filed Sep. 27, 1995, Ser. No. 534,811
Int. Cl.[6] A61C *3/06*
U.S. Cl. 433—125 **9 Claims**



1. A dental prophylaxis angle of the type having the shaft of a tool mounting member journaled in a strut in the dental prophylaxis angle's housing, the mounting member having been mounted by passing an enlarged portion at its outer end sized to require forcible insertion through a hole in the strut, the enlarged portion having at least one camming surface to aid passage through said hole and at least one mating retaining surface that is not tapered toward said hole after insertion through said hole whereby said prophylaxis tool mounting member is permanently retained against withdrawal when mounted through said hole in the strut with said retaining surface and at least one mating retaining surface on said strut in mating engagement, the improvement comprising:

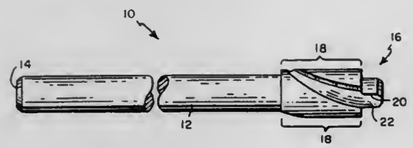
said shaft having a journaled shaft portion having a first circumference and said at least one camming surface of said enlarged portion comprising at least one lateral extension projecting laterally beyond said first circumference a greater distance than portions of said outer end of said shaft circumferentially adjacent thereto.

5,645,427

DENTAL IMPLANT MILLING TOOL AND METHODS OF THE USE THEREOF

Thomas S. Peterson, Lynn, Mass., and Dirk Schwichtenberg, Lage, Germany, assignors to North Shore Dental Porcelains Laboratories, Inc., Lynn, Mass.

Filed Mar. 2, 1995, Ser. No. 397,632
Int. Cl.[6] A61C *8/00*
U.S. Cl. 433—173 **2 Claims**



1. A method for joining a restoration to a dental implant comprising at least one screw-threaded cylinder, said method comprising:

(a) aligning a milling tool comprising a two-ended shaft which can fit at one end into a chuck of a milling machine or handpiece; while at the other end the shaft has a plurality of cutting surfaces, wherein: one cutting surface is provided on the sides of the tool; another end cutting surface is provided on the face end of the tool; and another tip cutting surface is provided as an axial extension from the center of the shaft end; parallel to the long axis of a replica of an implant;

(b) determining a vertical stop distance in the cylinder;

(c) milling the restoration sufficiently to form a screw channel for a retaining screw comprising a shaft and a head, said milling being in line with the long axis of the replica and extending apically from the occlusal surface of the restoration to a distance about equal to the base of the head of the retaining screw;

(d) milling the screw channel to form a seat for the head of the retaining screw; and

(e) joining the restoration and the implant, wherein when the retaining screw is threadably engaged to the vertical stop distance, the head of the retaining screw seats flush against the base of the restoration, and the shalt and axial walls of the retaining screw are spaced from the cylinder and the restoration, respectively.

5,645,428

METHOD FOR WHITENING TEETH

David K. Yarborough, Birmingham, Ala., assignor to BriteSmile, Inc., Salt Lake City, Utah

Filed Dec. 12, 1995, Ser. No. 570,901
Int. Cl.[6] A61K *6/00;33/10;33/08;7/20*
U.S. Cl. 433—215 **37 Claims**

1. A method for whitening a patient's teeth comprising the steps of:

(a) preparing a mixture comprising an oxygen radical generating agent and an oxygen radical releasing agent;

(b) applying said mixture to said patient's teeth; and

(c) exposing said patient's teeth to laser light for a selected interval to accelerate whitening, wherein said preparing step includes selecting said oxygen radical generating agent from the peroxide group consisting of hydrogen peroxide, carbamide peroxide, calcium bicarbonate peroxide, and sodium bicarbonate peroxide.

5,645,429

METHOD FOR ADHERING TO TOOTH STRUCTURE

Gordon Blackwell, Konstanz, Germany; Chin-Teh Huang, Dover, and Steven Jefferies, Milford, both of Del., assignors to Dentsply Research & Development Corp., Milford, Del.

Continuation of Ser. No. 294,931, Aug. 26, 1994, abandoned, which is a continuation-in-part of Ser. No. 292,104, Aug. 22, 1994, abandoned. This application May 3, 1996, Ser. No. 642,808
Int. Cl.[6] A61K *6/08*
U.S. Cl. 433—217.1 **43 Claims**

1. A method for adhesion of restorative material to a natural tooth, comprising:

a) applying a first portion of photopolymerizable liquid primer/adhesive dental composition to tooth surface, said composition consisting essentially of a photoinitiator, at least fifteen percent by weight polymerizable material and at least fifty percent by weight of a volatile organic solvent, said polymerizable material comprising one or more polymerizable acrylate compounds at least a portion of said polymerizable acrylate compounds being a multifunctional polymerizable compound having at least three acrylate moieties and one phosphate moiety,

b) impinging light on said first portion of said liquid composition whereby a portion of said first portion of said liquid composition polymerizes to form a first coating on said tooth,

c) applying a second portion of said liquid composition to said first coating, and

d) impinging light on said second portion of said liquid composition whereby at least a portion of said second portion of said composition polymerizes to form a treated tooth surface adapted to retain a restorative material with an adhesion to natural tooth material of at least 12 MPa.

5,645,430

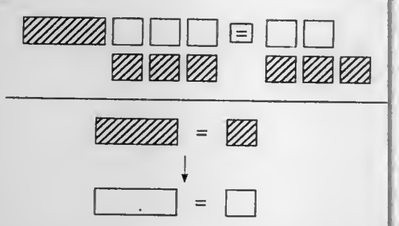
Patent Not Issued For This Number

5,645,431

TEACHING APPARATUS AND METHOD FOR VISUALLY REPRESENTING MATHEMATICAL EXPRESSIONS

Ricardo Dreyfous, Condominio Montebello, Apt. J119, Trujillo Alto, Puerto Rico

Filed Mar. 24, 1994, Ser. No. 217,108
Int. Cl.[6] G09B *1/34*
U.S. Cl. 434—195 **7 Claims**



4. A method of visually representing mathematical expressions using a plurality of four-sided members, at least two sides of said members being equal in length, the method comprising the steps of:

representing a variable in a mathematical expression with an area of each of said plurality of four-sided members;

representing a first factor of said mathematical expression with a first set of four-sided members of said plurality of four-sided members;

representing a second factor of said mathematical expression with a second set of four-sided members of said plurality of members, wherein said first and second sets each comprise at least one four-sided member of said plurality of four-sided members;

enabling each of said plurality of four-sided members to distinguish whether said variable is positive or negative; and

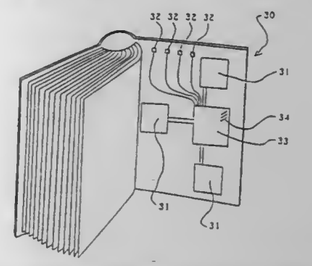
representing at least one operator of said mathematical expression with a third set of four-sided members of said plurality of members.

5,645,432

TOY OR EDUCATIONAL DEVICE

Richard Vernon Jessop, 15 Maresfield Gardens, Hampstead, London, United Kingdom

PCT No. PCT/GB93/00397, § 371 Date Aug. 28, 1995, § 102(e) Date Aug. 28, 1995, PCT Pub. No. WO93/17764, PCT Pub. Date Sep. 16, 1993
PCT Filed Feb. 26, 1993, Ser. No. 507,493
Claims priority, application United Kingdom, Feb. 26, 1992, 9204128
Int. Cl.[6] C09B *5/00*
U.S. Cl. 434—322 **7 Claims**



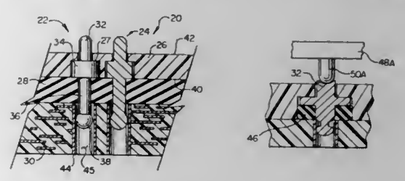
2. A book or magazine comprising front and back covers, a spine and a plurality of pages carrying printing, a plurality of pressure sensors carried on the book and mounted on at least one of the front and back covers of the book to sense when a finger touches a page overlying the corresponding cover at a location aligned with a sensor, and a sound generator connected to the sensors, the sensors being adapted to cause the sound generator to generate sounds associated with the positions of the sensor, and in dependence upon the page which is touched.

5,645,433

CONTACTING SYSTEM FOR ELECTRICAL DEVICES

David A. Johnson, St. Louis Park, Minn., assignor to JohnsTech International Corporation, Minneapolis, Minn.

Filed May 9, 1994, Ser. No. 240,021
Int. Cl.[6] H01R *9/09*
U.S. Cl. 439—66 **43 Claims**



1. Apparatus for electrically interconnecting a first terminal to a second terminal wherein the first terminal is spaced a distance from the second terminal, comprising:

(a) a conductive element having an upper end and a lower end, the conductive element comprising a first contact located at the upper end and a second contact located at the lower end, the first contact being electrically coupled to the first terminal and the second contact being electrically coupled to the second terminal when the first terminal is brought into engagement with the second terminal; and

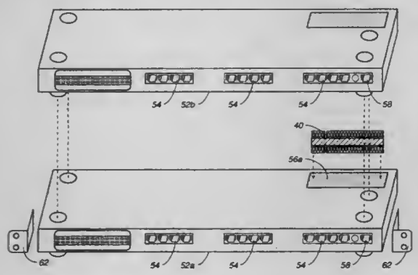
(b) means, comprising an elastomeric material, mounting the conductive element, for resiliently biasing the conductive element to an original position, the resilient biasing means being overcome when a force is applied to the conductive element, thereby allowing the conductive element to move in a direction against the bias of the biasing means in response to the force, the resilient biasing means returning the conductive element to the original position when the force is removed.

5,645,434

CONNECTOR ELEMENT AND COMPONENT ARRANGEMENT FOR A STACKABLE COMMUNICATIONS NETWORK HUB

Tommy Y. Leung, San Jose, Calif., assignor to Asante Technologies, Inc., San Jose, Calif.

Filed Dec. 1, 1995, Ser. No. 565,911
Int. Cl.[6] H01R *13/648*
U.S. Cl. 439—74 **16 Claims**



1. A connector element for electrically connecting communication network hubs, comprising:

an inner layer containing electrically conductive signal leads;

an outer layer surrounding the inner layer, the outer layer having first and second surfaces, each surface having electrical traces disposed thereon which are connected to the signal leads, the electrical traces including ground traces and signal traces;

first and second conductive layers located on portions of the first and second surfaces of the outer layer,

wherein the connector element is capable of cooperating with receiving slots in each of two communication network hubs to electrically connect the two communication network hubs, each receiving slot having ground contacts and signal contacts which are brought into electrical contact with ground traces and signal traces, respectively, when the connector element cooperates with the receiving slots, and the first and second conductive layers provide RF shielding in a region between the two communication network hubs.

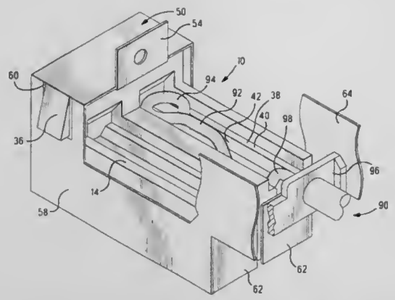
5,645,435

ELECTRICAL CONNECTOR

Nicholas Robert Cimino, Camp Hill, and Phillip Mark Fortney, Harrisburg, both of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Aug. 2, 1995, Ser. No. 510,452
Int. Cl.[6] H01R *13/648*
U.S. Cl. 439—92 **15 Claims**

1. An electrical connector, comprising:



a housing having a top, a front, a back, and a contact receiving cavity extending from the back to the front, the top being open to the cavity, and a guide rail extending along a top portion of the contact receiving cavity;

a contact disposed within the contact receiving cavity and having a contact section which is accessible through the open top of the housing; and

a ground member disposed around the housing and having a connection section for making ground connection with a matable contact and having a mounting section for mounting the connector;

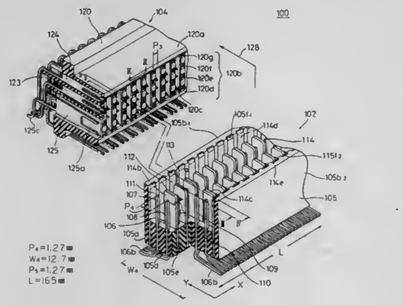
whereby the guide rail guides the matable contact through the open top and into proper mating with the contact.

5,645,436

IMPEDANCE MATCHING TYPE ELECTRICAL CONNECTOR

Manabu Shimizu, and Hideo Miyazawa, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 425,767, Apr. 20, 1995, abandoned, which is a continuation of Ser. No. 183,311, Jan. 19, 1994, abandoned. This application Sep. 30, 1996, Ser. No. 723,290
Claims priority, application Japan, Feb. 19, 1993, 5-030900
Int. Cl.[6] H01R *13/658*
U.S. Cl. 439—108 **15 Claims**



1. A plug connector comprising:

a plug housing made of an insulator material;

a plurality of male signal terminals arranged in a plurality of columns and rows and fixed to said plug housing; and

plate-shaped male conductors respectively having ground lead ends and fixed to said plug housing so that each male conductor is positioned between two adjacent rows formed by said male signal terminals,

each male conductor further has first and second ear portions bent on both ends of the male conductor in a direction taken along a width of the male conductor,

said first ear portions confront the individual male signal terminals which form a respective first column and are arranged along said respective first column, and

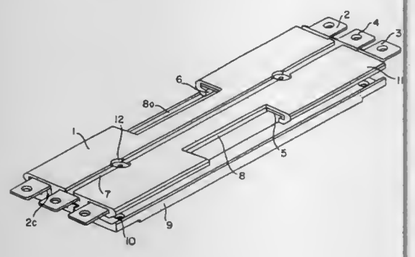
said second ear portions confront the individual male signal terminals which form a respective second column and are arranged along said respective second column.

5,645,437

DEVICE OF A PLUG AND SOCKET

Amiram Meir, Nof Ramot 73/14, Jerusalem, Israel

Filed Feb. 3, 1994, Ser. No. 190,922
Claims priority, application Israel, Feb. 4, 1993, 104618
Int. Cl.[6] H01R *25/00*
U.S. Cl. 439—110 **29 Claims**



1. An electrical plug and socket device comprising:

a socket including an elongated body made of a rigid non-conductive material and including at least one station for insertion and removal of the plug therein, said body comprised of a lower part for attachment to a wall, an upper part disposed thereon and plural conductors connected to a power source and disposed between the upper and lower parts, the lower part including one of a protrusion and groove passing along a center thereof, the upper part including the other of said protrusion and groove on the underside thereof adapted to be inserted, fit and fixed on the protrusion or groove of the lower part, the lower part and the upper part being contoured so that when joined, plural grooves are formed between the upper and lower parts in which the plural conductors extend, at least one of the grooves having a cross section including a plurality of successive inclines defined by at least three angularly offset planar sections; and

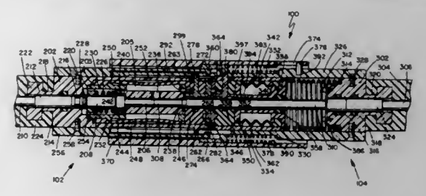
a plug comprising a body made of a non-conductive material, at least two immovable conductive bodies located at an underside of the plug and connected to an electrical cable passing through the body, at least one of the conductive bodies is a conductor having a cross section including a plurality of successive inclines defined by at least three angularly offset conductive planar sections conforming to the plurality of successive inclined planar sections of the groove, wherein the plug fits for entry and removal in the socket through the station which enables the conductive bodies of the plug to be slid and grasped through the socket grooves with the successive inclines of the plug fitting into the successive inclines of the groove while continuously touching the conductors inside the grooves.

5,645,438

UNDERWATER-MATEABLE CONNECTOR FOR HIGH PRESSURE APPLICATION

James L. Cairns, Ormond Beach, Fla., assignor to Ocean Design, Inc., Ormond Beach, Fla.

Filed Jan. 20, 1995, Ser. No. 375,957
Int. Cl.[6] H01R *13/44*
U.S. Cl. 439—139 **18 Claims**



1. A submersible connector sealing mechanism for opening and closing a passage through a connector unit, said sealing mechanism having an open position and a closed position, said sealing mechanism comprising:

a moveable gate body including a gate bore, said gate bore being substantially aligned with said passage in said open position, said moveable gate body being moveable in a lateral direction within said connector unit;

a device for moving said moveable gate body in said lateral direction from said open position to said closed position and from said closed position to said open position; and

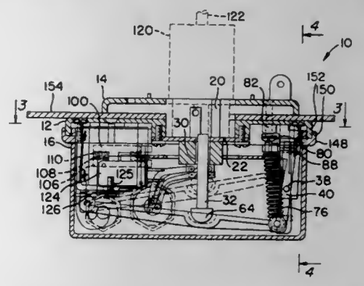
a plug probe forming a substantially fluid-tight seal with the gate bore when said plug probe is inserted into the gate bore.

5,645,439

AUTOMATIC POWER LINE DISCONNECT APPARATUS

Thomas H. Nugent, Jr., Port Jefferson Station, and Ernest A. Kussmaul, Sayville, both of N.Y., assignors to Kussmaul Electronics Company, Inc., West Sayville, N.Y.

Filed Jan. 16, 1996, Ser. No. 585,841
Int. Cl.[6] H01R *13/62*
U.S. Cl. 439—159 **5 Claims**



1. An automatic power line disconnect apparatus for disconnection of an external cable connected to said apparatus comprising:

a housing means;

electrical connector means mounted in said housing for connection of said external cable;

electrical sensor means for sensing increased current flow through said connector;

ejector means for ejection of said external cable responsive to said electrical sensor means sensing increased current flow through said connector with said ejector means comprising:

elongated ejector bracket means for ejection of said external cable from said connector, with said ejector bracket means having a first end and a second end with said first end pivotally mounted in said housing;

trigger means having a first end and a second end and an intermediate portion, with said intermediate portion pivotally mounted in said housing, with said first end of sid trigger means comprising detent means removably engaging said first end of said ejector bracket means, with said second end of said trigger means connected to said electrical sensor means, with said electrical sensor means capable of actuating said trigger means to disengage said detent means from said ejector bracket means to allow said ejector bracket means to eject said external cable from said connector means; and

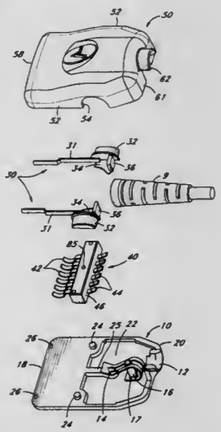
spring means disposed in said housing and urging said ejector bracket means to eject said external cable when said ejector bracket means is disengaged from said trigger means.

5,645,440

PATIENT CABLE CONNECTOR

David R. Tobler, Westminister; Thomas J. Gerhardt, Littleton; Eugene E. Mason, Boulder, and Mike A. Mills, Golden, all of Colo., assignors to Masimo Corporation, Mission Viejo, Calif.

Filed Oct. 16, 1995, Ser. No. 543,297
Int. Cl.[6] H01R *13/62*
U.S. Cl. 439—160 **10 Claims**



1. An electrical connector for use with a sensor plug, said sensor plug having a plurality of signal contacts and a locking hole at an insertion end, said connector comprising:

a housing having a passageway configured to accept at least the insertion end of the sensor plug;

a locking member located within said housing passageway, said locking member sized to cooperate with said locking hole to inhibit unintentional retraction of said insertion end with said sensor plug inserted in said passageway;

a stop member positioned within said housing passageway to prevent insertion of said sensor beyond a defined limit;

at least one release mechanism movable from a normal position to a release position, said release mechanism extending into said passageway and engaging said insertion end when said insertion end is inserted into said passageway, said release mechanism having a tab portion to displace said insertion end within said passageway so as to disengage said locking hole from said locking member when said release mechanism is moved to said release position, said release mechanism having spring members to automatically return said release mechanism to said normal position; and

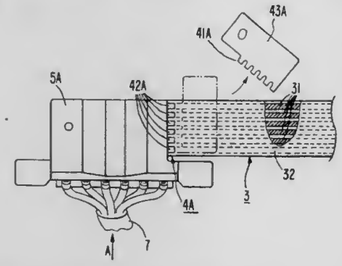
a signal connector secured within the housing, said signal connector having contacts which are positioned within the housing at a position to cooperate with said signal contacts of said sensor plug with said insertion end positioned within said passageway.

5,645,441

ROTARY CONNECTOR DEVICE

Takeshi Okuhara; Tsuyoshi Matsumoto, and Takashi Sakamaki, all of Omorinishi, Japan, assignors to Niles Parts Co., Ltd., Japan

Filed May 18, 1995, Ser. No. 444,040
Int. Cl.[6] H01R *35/04*
U.S. Cl. 439—164 **4 Claims**



1. A rotary connector device comprising:

a stator housing (**1**);

a rotor housing (**2**) rotatably mounted to said stator housing (**1**);

a flexible cable (**3**) spirally accommodated in a space defined between said stator housing (**1**) and said rotor housing (**2**);

a terminal (**4A**) electrically connected to exposed conductors (**31**) of said flexible cable (**3**); and

a support (**5A**) resin-molded around said terminal (**4A**), and fixedly mounted to at least one of said stator housing (**1**) and said rotor housing (**2**);

wherein said terminal (**4A**) has electrically opposed ends each of which has stress concentration portions (**41A**, (**41A'**) on which a stress is concentrated when an external force is applied to said terminal (**4A**), said terminal (**4A**) being adapted to be bent at said stress concentration portions (**41A**, **41A'**) to be separated at said stress concentration portions (**41A**, **41A'**) when said stress is concentrated thereon; and

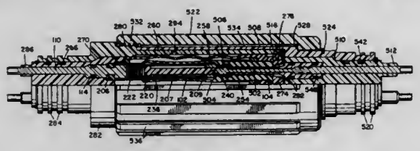
wherein said terminal (**4A**) includes a plurality of terminal elements (**42A**) and two connecting elements (**43A**, **43A'**) provided at each of said electrically opposed ends, and said connecting elements electrically connecting said terminal elements (**42A**) together, and said terminal elements (**42A**) being continuous with said connecting elements (**43A**, **43A'**) via said stress concentration portions (**41A**, **41A'**).

5,645,442

SEALED, FLUID-FILLED ELECTRICAL CONNECTOR

James L. Cairns, Ormond Beach, Fla., assignor to Ocean Design, Inc., Ormond Beach, Fla.

Filed Jan. 19, 1995, Ser. No. 374,803
Int. Cl.[6] H01R *4/60*
U.S. Cl. 439—201 **17 Claims**



1. A submersible connector suitable for use in an outside environment, comprising:

a receptacle, including:

a receptacle shell;

a module chamber containing dielectric fluid and disposed in said receptacle shell, said module chamber having a wall comprising a compliant member, said compliant member flexing to compensate for pressure and volumetric variations within said module chamber;

a circuit contact located within said module chamber;

a sealable opening from said module chamber to said outside environment, said sealable opening including a sealing member incorporating a plurality of annular seals, said plurality of annular seals forming a plurality of spaces therebetween, said plurality of annular seals being in series, said plurality of spaces retaining dielectric fluid, an innermost space of said plurality of spaces being disposed adjacent said module chamber;

a resiliently biased stopper movably disposed within said module chamber, said stopper including an elongate shaft having a tip, said stopper being movable between a first position in which said shaft protrudes through said sealable opening, sealably engaging at least one of said plurality of annular seals, and a second position in which said shaft is retracted from said sealable opening into said module chamber, said elongate shaft in collaboration with said sealing member forming a fluid-tight seal between said module chamber and said outside environment when said stopper is in said first position; and

a plug, including:

a plug shell; and

a conductive plug probe having a tip, said plug probe being adapted for insertion into said module chamber through said sealable opening, said plug probe engaging said circuit contact when said stopper is in said second position, said plug probe forming a fluid-tight seal between said module chamber and said outside environment when said plug probe is disposed within said sealing member;

wherein, as said plug probe is inserted into the sealing member of said sealable opening, the tip of said plug probe engages the tip of said stopper, urging said stopper from said first position toward said second position, any excess of dielectric fluid between said plurality of annular seals being urged along with said stopper by said plug probe through said sealing member and into said module chamber; and

wherein said plug probe forms light seals between said plurality of spaces formed by the plurality of annular seals, said light seals comprising means for restricting flow between said spaces and between said innermost space and the module chamber to seepage in response to any pressure gradients across said light seals.

5,645,443

POTENTIAL DISTRIBUTOR ESPECIALLY FOR FUSE BOXES OF MOTOR VEHICLES

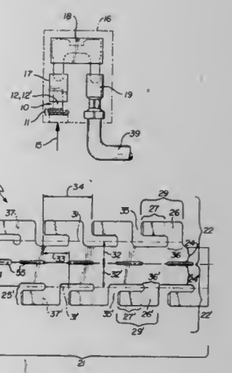
Thomas Schaller, Wuppertal, Germany, assignor to Delphi Automotive Systems Deutschland GmbH, Germany

Filed Apr. 18, 1995, Ser. No. 423,795
Claims priority, application Germany, Apr. 21, 1994, 44 13 880.6
Int. Cl.[6] H01R *4/60*
U.S. Cl. 439—212 **12 Claims**

1. A potential distributor (**10**), especially for fuse boxes of motor vehicles, having a two-layer flat base rail (**11**) of sheet-metal material which has an end piece (**13**) for an electrical connection, and having a plurality of flat plug tongues (**12**,**12'**) which project from the base rail (**11**) and are oriented transversely with respect to the course of the rail,

which are stamped and bent out of the sheet-metal material of the two-layer flat base rail and connected in an alternating sequence either to a first layer or to a second layer of the two-layer flat base rail,

wherein,



the first and second layers of the base rail (**11**) are made from the two folded limbs (**24**,**24'**) of a longitudinally folded (**40**), integral strip (**20**),

having a longitudinal folding line (**30**) which produces a first longitudinal edge (**41**) of the base rail (**11**) between two folded limbs (**24**,**24'**) which are pressed flat against one another,

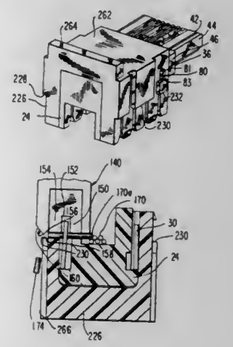
the strip (**20**) having on its two mutually opposite strip edges (**25**,**25'**) profile elements (**29**,**29'**) which are arranged on alternate sides with respect to one another by means of a longitudinal offset (**33**), which provide a third layer (edge parts **26**,**26'**) made of sheet-metal material in the base rail (**11**) in certain sections (**36**,**36'**) by means of further folds (**43**) of edge parts of the original strip (**20**) on two parallel folding lines (**31**,**31'**) which are parallel to the longitudinal folding line (**30**), the third layer (edge parts **26**,**26'**) supporting the flat plug tongues (**12**,**12'**).

5,645,444

ELECTRICAL CONDUCTOR CONNECTING SYSTEM INCORPORATING CUTTING LEDGE

Douglas Sahlberg, Snohomish, and DeWayne Anderson, Kirkland, both of Wash., assignors to Leviton Manufacturing Co., Inc., Little Neck, N.Y.

Filed Jan. 20, 1995, Ser. No. 376,597
Int. Cl.[6] H01R *4/24*
U.S. Cl. 439—392 **2 Claims**



1. An electrical connector, such as a voice and/or data telecommunications jack, or the like, comprising, in combination:

a body formed with portions thereof capable of carrying electrical contacts and conductors,

a first electrical conductor,

an insulated second conductor formed with a central conductor surrounded by electrical insulation material,

at least one contact supported by said body in electrical communication with said first electrical conductor and being formed of electrically conducting material, said contact being capable of conducting electricity between said first conductor and said insulated second conductor after connection of the insulated second conductor to the contact,

said contact being formed with at least one penetrating edge capable of penetrating the second conductor's surrounding electrical insulation so as to come into electrical communication with its said central conductor, said penetrating edge extending between relatively upper and lower contact portions, said contact upper portion being formed with a surface capable of initially engaging a portion of a relatively permanent length of said insulated second conductor during an initial assembly time prior to electrical connection of the central conductor of said insulated second conductor to said contact,

said body being further formed with an external integral outwardly extending anvil projection including an anvil support/severing surface,

said anvil projection support/severing surface comprising means for (a) supporting a relatively temporary length of said second conductor in substantially coaxial alignment with respect to said relatively permanent length thereof at a connection time when said lower contact portion is in electrical communication with said central conductor, (b) supporting a predetermined portion of the relatively permanent length during said connection, and (c) thereafter receiving severing forces transmitted by a tool through said second conductor at a location intermediate said permanent and temporary lengths thereof and proximate said contact, thereby facilitating a final severing of said temporary length from said permanent length by means of said tool.

5,645,445

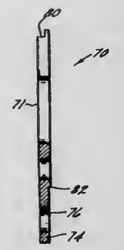
WIRE TERMINATION BLOCK

John A. Siemon, Woodbury, and Howard Reynolds, Plainville, both of Conn., assignors to The Siemon Company, Watertown, Conn.

Continuation of Ser. No. 932,495, Aug. 20, 1992, abandoned. This application Jul. 7, 1994, Ser. No. 272,120

Int. Cl.[6] H01R *4/24*

U.S. Cl. 439—395 **14 Claims**



1. A connecting block for housing a plurality of insulation penetrating beam contacts, comprising:

a housing having first and second spaced apart sidewalls and opposed upper and lower ends;

a plurality of spaced apart insulation penetrating beam contacts in said housing extending between said upper and lower ends, each of said contacts having a first aperture therethrough, each of said beam contacts including a pair of beams extending from a first end of said aperture and a tail extending from a second end of said aperture opposite said first end, said tail including solderless connector means for connecting said tail into an opening through a circuit board;

a first coined section in said beams and a second coined section in said tail, said first and second coined sections being oppositely disposed to generate substantially pure axial forces during insertion of said tail in an opening through a circuit board;

a plurality of spaced openings through said second sidewalls of said housing, one of each of said openings being aligned with one each of said apertures in said beam contacts; and

a plurality of spaced contact retention posts integrally molded to said first sidewall of said housing and extending laterally from said first sidewall, one of each of said posts being mutually aligned with one each of said openings and one of said apertures wherein said posts are forced under pressure to break away from said first sidewalls and are positioned through said apertures and openings to thereby retain said beam contacts within said housing.

5,645,446

TURN KNOB LAMPHOLDER

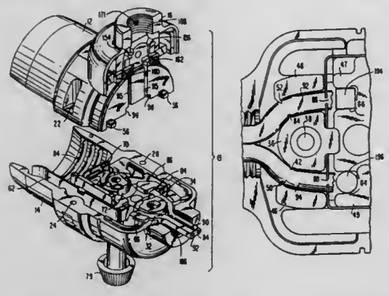
Arkady Getselis, Staten Island; Anthony Tufano, North Massapequa; Charles Chase, East Meadow, all of N.Y., and Anthony DeVincentis, Spring Hill, Fla., assignors to Leviton Manufacturing Co., Inc., Little Neck, N.Y.

Continuation of Ser. No. 346,057, Nov. 29, 1994, Pat. No. 5,514,006, which is a continuation-in-part of Ser. No. 8,339, Feb. 9, 1993, abandoned. This application Apr. 29, 1996, Ser. No. 639,566

The portion of the term of this patent subsequent to Nov. 29, 2014, has been disclaimed.

Int. Cl.[6] H01R *33/22*

U.S. Cl. 439—419 **4 Claims**



1. A lampholder having a unitary lamp socket portion for receiving a lamp therein and a switch portion for selective coupling to the individual conductors of a two conductor lampcord comprising:

a) bottom housing means having two conductor channels, each channel adapted to receive one conductor of said two conductor lampcord, said channels each having a first end and a second end;

b) a first electrical contact having a first end and a second end positioned in a first of said two channels for engaging a first individual conductor of said two conductor lampcord when inserted in said first of said two channels and adjacent said first electrical contact first end;

c) a second electrical contact having a third end and a fourth end positioned in the second of said two channels for engaging the second individual conductor of said two conductor lampcord when inserted in said second of said two channels and adjacent said second electrical contact third end;

d) top housing means having a main body portion and an access door portion, said main body portion being permanently secured to said bottom housing means leaving a portion of said first and second electrical contacts and said bottom housing means exposed;

e) said access door rotatably and slideably coupled to said main body portion to permit said access door to move between a position on and perpendicular to said main body portion to a position in line with said main body portion to cover the exposed portion of said bottom housing means and said first and second electrical contacts;

f) rotatable fastening means in said access door engageable with said bottom housing means to position said access door in intimate contact with said bottom housing means and force a first individual conductor of said two conductor lampcord placed in said first of said two channels into contact with said first electrical contact and said second individual conductor of said two conductor lampcord placed in said second of said two channels into contact with said second electrical contact;

g) a rotatable segmented switch commutator positioned in said switch portion between said bottom housing means and said main body portion of said top housing means;

h) key means extending through said bottom housing means and connected to said rotatable segmented switch commutator for selectively positioning said rotatable segmented switch commutator to one of a plurality of preset positions;

i) a first extension coupled to said first electrical contact second end and extending into said lamp socket portion to engage the screwshell of a lamp inserted into said lamp socket portion;

j) a second extension having a first end coupled to said fourth end of said second electrical contact and a second end to engage selected segments of said rotatable segmented switch commutator; and

k) a third electrical contact having a fifth end and a sixth end, said fifth end engaging selected segments of said rotatable segmented switch commutator and said sixth end extending into said lamp socket portion to engage the base contact of a lamp inserted into said lamp socket portion whereby when said rotatable segmented switch commutator is in a first position a complete electrical path is completed between a first individual conductor of a two conductor lampcord, said first electrical contact, said first extension, the screwshell of a lamp inserted in said lamp socket portion, the first filament of an inserted lamp to its base contact, said third electrical contact, said segments of said rotatable segmented switch commutator, said second extension, said second electrical contact to the second of said individual conductors of a two conductor lampcord and cause a first filament of a lamp inserted in said lamp socket portion to light and when said rotatable segmented switch is in a second position the path remains open and the first filament of a lamp inserted in said lamp socket portion is extinguished.

5,645,447

ELECTRICAL CONNECTOR WITH FUNNEL CAP

John L. Sandor, Wallingford, Conn., assignor to Hubbell Incorporated, Orange, Conn.

Continuation of Ser. No. 474,171, Jun. 7, 1995, abandoned. This application Aug. 7, 1996, Ser. No. 694,007

Int. Cl.[6] H01R *13/58*

U.S. Cl. 439—467 **32 Claims**

1. An electrical wiring device adapted to be coupled to an end of an electrical cord with a plurality of electrical conductors, comprising:

a housing including first and second cover halves coupled together to form an electrical cord receiving cavity therebetween, each of said cover halves having a retaining member coupled thereto;

a contact retainer body with a plurality of terminals coupled thereto, said contact retainer body being coupled to said housing and having a plurality of access openings for receiving terminal screws; and

a funnel cap with wire openings being retained to said contact retainer body by said retaining members for retaining said terminals in said contact retainer body and for funneling said electrical conductors to said terminals, said contact retainer body and said retaining members being positioned relative to each other to non-movably hold said funnel cap within said housing,

said funnel cap and said contact retainer body including a head and socket arrangement for releasably coupling said funnel cap to said contact retainer body,

said funnel cap having at least two tabs for engaging said contact retainer body within said plurality of access openings.

5,645,448

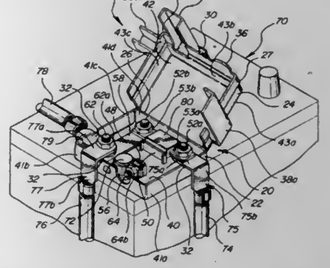
BATTERY CONNECTING MODULE WITH FUSE MOUNTING

Mark George Hill, Novi, Mich., assignor to Yazaki Corporation, Tokyo, Japan

Filed Oct. 16, 1995, Ser. No. 541,194

Int. Cl.[6] H01R *13/52*

U.S. Cl. 439—522 **5 Claims**



1. A battery mounted connecting module for establishing electrical connection between a battery post extending from a first exterior surface of an automotive battery, an alternator cable, a plurality of electrical circuits, and a main fuse, the battery connecting module comprising:

a housing having a surface with a hole formed therein;

a battery post-receiving terminal mounted inside of the housing adjacent the hole for establishing electrical connection with the battery post when the battery connecting module is mounted to the battery, the battery terminal having terminal connecting means for establishing electrical connection with the main fuse and with the plurality of electrical circuits;

fuse mounting means located inside of the housing adjacent the battery terminal such that the fuse is securable in electrical connection between the alternator cable and the terminal connecting means;

an alternator cable terminal connectable to the alternator cable and removably connectable to the fuse, connection of the

alternator cable terminal to the fuse placing the alternator cable terminal in close proximity to a second exterior surface of the battery; and

a second cable terminal connectable to at least one of the plurality of electrical circuits and removably connectable to the terminal connecting means, connection of the second cable terminal to the terminal connecting means placing the second cable terminal in close proximity to a third exterior surface of the battery.

5,645,449

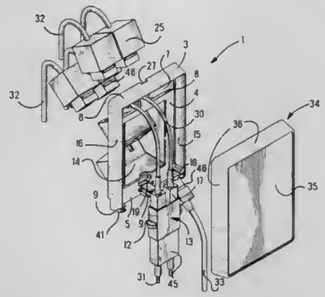
LOW PROFILE MIXED MEDIA INFORMATION OUTLET

James Michael Sabo, Middletown, Pa., assignor to The Whitaker Corporation, Wilmington, Del.

Filed Feb. 21, 1995, Ser. No. 395,393

Int. Cl.[6] H01R *13/60*

U.S. Cl. 439—540.1 **10 Claims**



1. A low profile information outlet suitable for attachment to a mounting surface comprising:

a housing having first and second opposite sides, said housing comprising a surface plate with a cable entrance disposed substantially adjacent said first side, a receptacle retention member disposed on said second side, and a connector well recessed from said surface plate and rearward of the mounting surface, said connector well having an attachment plate comprising a frame having a plurality of openings latchably receiving modular receptacles, said attachment plate oriented between 75 and 25 degrees with respect to said surface plate.

5,645,450

SHIELDED CONNECTOR

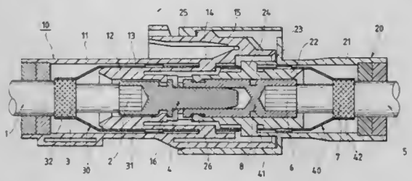
Satoshi Yamada; Hisaharu Katoh, and Norio Matsumura, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Nov. 27, 1995, Ser. No. 562,989

Claims priority, application Japan, Nov. 29, 1994, 6-295068

Int. Cl.[6] H01R *4/66*

U.S. Cl. 439—585 **11 Claims**



1. A shield connector for shielding a terminal connected to a shield cable including a shield braid circumscribing a core conductor, said shield connector comprising:

a unitary connector housing;

a unitary metal shield connectable to said shield braid, said unitary metal shield substantially surrounding said terminal so as to electromagnetically shield said shield cable, said unitary metal shield and said terminal being removably insertable into said connector housing in an axially forward direction;

axial locking means for retaining said terminal within said connector housing to prevent axial movement of said terminal with respect to said connector housing; and

rotation locking means for preventing said unitary metal shield and said terminal from rotating with respect to said connector housing.

5,645,451

WATERPROOF TAP FOR A CONNECTOR

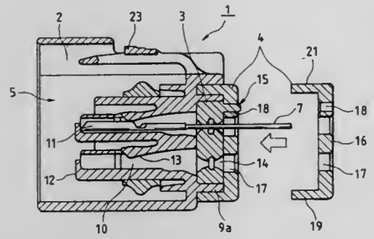
Hideki Ohsumi, and Yoshinori Tomita, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Mar. 30, 1995, Ser. No. 413,639

Claims priority, application Japan, Apr. 1, 1994, 6-065239

Int. Cl.[6] H01R *13/424*

U.S. Cl. 439—587 **20 Claims**



1. A waterproof tap device for a connector, comprising:

a housing part including a plurality of housing part wire insertion holes formed in one surface thereof and a plurality of terminal storage chambers in communication with said wire insertion holes;

a waterproof tap including a plurality of waterproof tap wire insertion holes, respectively corresponding to said housing part wire insertion holes, extending through said waterproof tap, and further including a projecting portion; and

a waterproof tap cover including a plurality of waterproof tap cover wire insertion holes respectively corresponding to said housing part wire insertion holes and said waterproof tap wire insertion holes, and further including a projecting portion insertion hole through which said projecting portion of said waterproof tap can be inserted, said waterproof tap cover wire insertion holes and said projecting portion insertion hole extending through said waterproof tap cover, wherein said projecting portion of said waterproof tap protects through said projecting portion insertion hole only when assembly of said waterproof tap for a connector is properly completed.

5,645,452

CONNECTOR HOUSING

Shinji Kodama, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Jun. 13, 1995, Ser. No. 489,960

Claims priority, application Japan, Jun. 17, 1994, 6-135973

Int. Cl.[6] H01R *13/40*

U.S. Cl. 439—595 **4 Claims**

1. A connector housing, comprising:

a partition wall having a hole;

a plurality of terminal receiving chambers separated from each other by said partition wall;

a flexible lance having at its distal end a beak projecting into a respective one of said terminal receiving chambers, a distal end portion of said flexible lance being retractable into said hole of said partition wall;

a side beak formed on a side surface of said flexible lance; and

a substantially rigid stopper for engaging with said side beak and for preventing excessive displacement of said flexible lance, said stopper being formed on a portion of said partition wall near said hole into which said flexible lance is to be displaced.

5,645,453

CONNECTOR

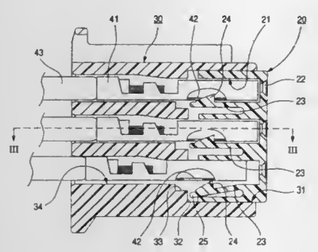
Noboru Yamaguchi, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Mar. 27, 1996, Ser. No. 624,862

Claims priority, application Japan, Mar. 31, 1995, 7-075353

Int. Cl.[6] H01R *13/436*

U.S. Cl. 439—595 **4 Claims**



1. A connector, comprising:

a housing;

a front holder removably mounted to said housing from a front side of said housing, said front holder including a terminal holding portion for holding a terminal in which an elastic retaining piece for retaining the terminal is formed;

a front holder receptacle formed in a front portion of said housing for receiving said front holder;

a terminal receptacle formed in said housing to receive the terminal, said terminal receptacle being arranged to open to said front holder receptacle;

a holder abutting portion formed on said terminal receptacle, said holder abutting portion preventing full insertion of said front holder into said front holder receptacle when the elastic retaining piece is not properly engaged with the terminal and a leading edge portion of the elastic retaining piece abuts against said holder abutting portion; and

a holding portion formed on said terminal receptacle so as to be arranged into a step configuration together with said holder abutting portion, said holding portion preventing a disengaging movement of the elastic retaining piece from the terminal.

5,645,454

RIGHT ANGLE COAXIAL CONNECTOR AND METHOD OF ASSEMBLING SAME

Michael Lawrence Kosmala, Aliso Viejo, Calif., assignor to ITT Corporation, New York, N.Y.

Filed Nov. 24, 1995, Ser. No. 562,486

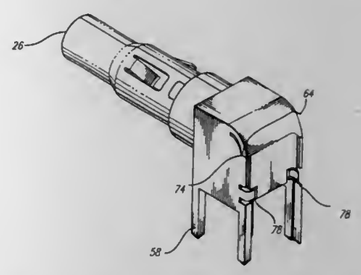
Int. Cl.[6] H01R *17/04*

U.S. Cl. 439—675 **13 Claims**

1. A right angle coaxial connector comprising:

an insulator having a horizontally-extending bore therethrough;

a right angle center contact mounted in said bore, said contact having a forward mating portion and a rear vertically-extending leg at a rear portion of said insulator;



a conductive enclosure substantially enclosing said center contact and said insulator;

said enclosure having a forward outer contacting portion and a rear die cast housing, said housing having a generally rectangular configuration and includes a front wall, an upper wall, opposite side walls having rear edges and at least one downwardly-extending grounding post;

said upper wall embodying a rearwardly-extending flap bent downwardly to a position adjacent to said rear edges of said side walls behind said center contact leg; and

said side walls having arcuate-shaped forming surfaces thereon facing said flap, over which said flap is bent.

5,645,455

JOINT CONNECTOR

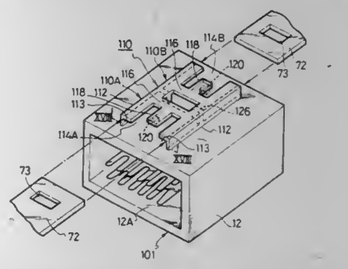
Yoshinobu Seki, Shizuoka-ken, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Jan. 27, 1995, Ser. No. 379,989

Claims priority, application Japan, Feb. 2, 1994, 6-10881; Jun. 27, 1994, 6-144791

Int. Cl.[6] H01R *11/09*

U.S. Cl. 439—723 **14 Claims**



1. An electrical joint connector, comprising: a connector housing formed with a first joint opening and joining with a first mated connector on a first end of said connector housing and a second joint opening joining with a second mated connector on a second end side of said connector housing, said connector housing having a first slide engage portion selectively engageable with a mounting member for fixing the joint connector to a support member and a second slide engage portion selectively engageable with the same mounting member for securing the joint connector to the same said support member, each of said first slide engage portion and said second slide engage portion comprising a pair of guide rails for guiding the mounting member, a deformable arm formed between said pair of guide rails, said arm being formed with an engage projection engageable with an engage hole formed in the mounting member, a stopper wall formed between said guide rails to limit insertion of the mounting member into each of said slide engage portions; and

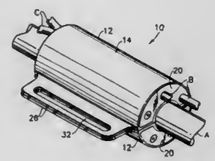
a bus bar housed in said connector housing and formed with a plurality of branch terminal portions extending toward the

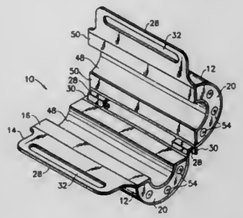
first and second end sides of said connector housing and arranged symmetrically from end to end as viewed from either of the first and second end sides of said connector housing.

5,645,456
ELECTRICAL CONNECTOR WITH CABLE ATTACHMENT

Carl C. Petersen, Danbury; Robert J. Shiley, II, Monroe, and Frederick D. J. Hooper, Norwalk, all of Conn., assignors to Burndy Corporation, Norwalk, Conn.

Filed Jun. 2, 1995, Ser. No. 458,574
Int. Cl.[6] H01R *11/09*
U.S. Cl. 439—724 **20 Claims**





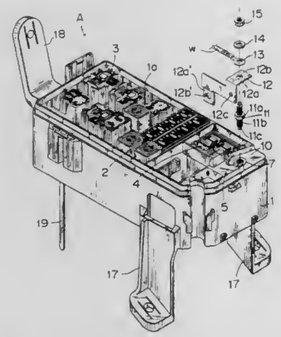
1. An electrical junction connector comprising:
a frame adapted to surround a portion of an electrical cable for mechanically connecting the frame to the cable; and
an electrical contact mounted in the frame, the contact being comprised of a sheet metal member cut and formed to have at least two contact terminals for connection to two separate conductors, wherein the two conductors are electrically connected to each other by the contact and are mechanically connected to the cable by the frame.

5,645,457
SCREW TIGHTENING STRUCTURE

Yasuo Hirayama, Toyota; Hidetoshi Sato, Gotenba; Keiji Ushiyama, Gotenba, and Koji Miyakoshi, Gotenba, all of Japan, assignors to Yazaki Corporation, Tokyo, Japan

Continuation of Ser. No. 504,591, Jul. 20, 1995. This application Sep. 11, 1996, Ser. No. 712,194
Claims priority, application Japan, Jul. 22, 1994, 6-170790
Int. Cl.[6] H01R *4/30*
U.S. Cl. 439—801 **8 Claims**

1. A switch box and screw tightening structure comprising
a screw room;
a connecting electric wire means for supply or output to a bus bar on an inside of said switch box, said connecting electric wire means having an end terminal which is tightened securely and freed to said bus bar;
a bilateral bolt having a pair of screw portions each ending in a pointed end portion, wherein a first screw portion is on a first side of a head of said bilateral bolt and a second screw portion is on a second opposing side of said head of said bilateral bolt and said first screw portion is screwed into an embedded nut

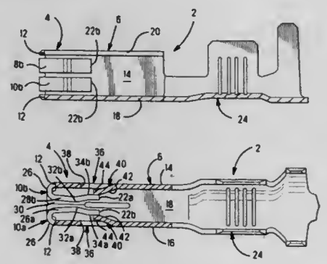


so that one said pointed end portion projects into said screw room and said second screw portion mates with a nut to fix said end terminal of a connecting electric wire to said bus bar; and
said embedded nut provided in a notched surface of said switch box, said notched surface for allowing easy access of a wrench to said head of said bilateral bolt.

5,645,458
ELECTRICAL RECEPTACLE TERMINAL

Gheorghe Hotea, Griesheim, Germany, assignor to The Whitaker Corporation, Wilmington, Del.

Filed Aug. 21, 1995, Ser. No. 555,371
Claims priority, application United Kingdom, Aug. 19, 1994, 9416791; Aug. 19, 1994, 9416870
Int. Cl.[6] H01R *11/22*
U.S. Cl. 439—852 **11 Claims**

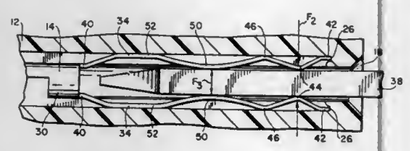


1. A one piece electrical receptacle terminal comprising a box-like structure with opposing cantilevered contact arms that extend forwardly from the box-like structure through a reverse bent nose section such that free ends of the contact arms are within the box-like structure, where the box-like structure further includes at least one port for the receiving a locking latch of a housing therein, the receptacle terminal being characterized in that a tab extends inwardly into the interior of the box-like structure from the box-like structure at the port for supporting abutment by the free end of the contact arms as a mating terminal is inserted therebetween.

5,645,459
ELECTRICAL CONNECTOR WITH FEMALE CONTACT SECTION HAVING DUAL CONTACT AREAS AND STATIONARY HOUSING MOUNTS

Paul E. Fitting, Camp Hill, Pa., assignor to Burndy Corporation, Norwalk, Conn.

Filed Mar. 16, 1994, Ser. No. 214,811
Int. Cl.[6] H01R *11/22*
U.S. Cl. 439—857 **13 Claims**

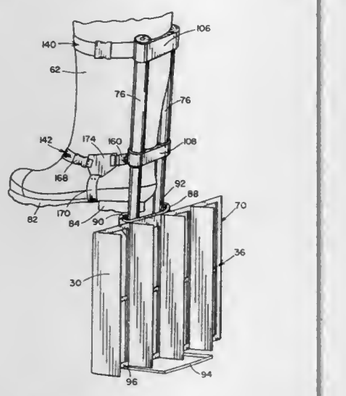


1. An electrical connector comprising:
a housing having contact receiving areas; and
electrical contacts fixedly mounted to the housing and being located, at least partially, in the contact receiving areas, at least some of the contacts each including a female receiving area, the female receiving area having a first end stationarily fixed to the housing, a second end stationarily entrapped in a pocket of the housing, and a middle between the two ends adapted to be contacted by a male contact inserted into the female receiving area, wherein the middle has a general M-shaped contact leaf with two spaced contact areas for contacting the male contact.

5,645,460
RETRACTABLE FIN ASSEMBLY

Carroll L. Johnson, 2658 Paradise Way, Grand Junction, Colo. 81506

Continuation-in-part of Ser. No. 200,751, Feb. 23, 1994, Pat. No. 5,531,621. This application Oct. 23, 1995, Ser. No. 553,770
Int. Cl.[6] A63B *31/11*
U.S. Cl. 441—61 **23 Claims**

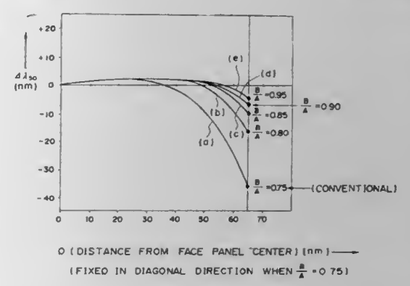


1. A retractable fin assembly for attachment to a boot of a float tube user, the boot having a heel and sole, said assembly comprising:
a fin member slidingly moveable between a first position wherein said fin member is adapted to project below the boot for propelling the float tube user forwardly in the water and a second position wherein said fin member is adapted for retraction relative to the heel of the boot to permit walking on land by the float tube user;
propulsion vane means carried by said fin member and having a closed position for providing substantial resistance to the flow of water as said fin member is moved in a rearward direction relative to the user, and an open position for providing substantially reduced resistance to the flow of water as said fin member is moved in a forward direction relative to the user; and
means for attaching said fin member to the boot of the user such that said first position aligns the plane of said propulsion vane means at a pre-selected angle of 90° or greater between said fin member propulsion vane means and the boot sole as said propulsion vane means project downwardly from and behind the heel of the boot, and said second position aligns said fin member behind the boot heel and ankle of the user above the sole of the boot.

5,645,461
METHOD OF MANUFACTURING PROJECTION CATHODE RAY TUBE WITH UNIFORM OPTICAL MULTIPLE INTERFERENCE FILM

Yasuo Iwasaki, Nagaokakyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 29,935, Mar. 10, 1993, abandoned, which is a continuation of Ser. No. 747,865, Aug. 20, 1991, abandoned. This application Jun. 27, 1994, Ser. No. 266,110
Claims priority, application Japan, Aug. 20, 1990, 2-219532
Int. Cl.[6] H01J *29/89*
U.S. Cl. 445—11 **9 Claims**



1. A method of manufacturing a projection cathode-ray tube, comprising the steps of:
(a) providing a glass face panel with a skirt portion, the glass face panel being formed to satisfy the following formula

$$0.85 \leq B/A$$

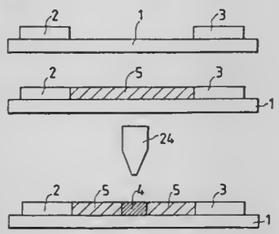
wherein A is a long edge length of the inner surface of the glass face panel and B is a short edge length of the inner surface of the glass face panel;
(b) mounting the glass face panel on a fixed support so that the glass face panel is fixed; and
(c) forming a uniformly thick optical multiple layered interference film by alternately evaporating high and low refraction materials onto the inner surface of the glass face panel using at least one fixed evaporation source.

5,645,462

ELECTRON-EMITTING DEVICE, AND ELECTRON BEAM-GENERATING APPARATUS AND IMAGE-FORMING APPARATUS EMPLOYING THE DEVICE

Yoshikazu Banno, Ebina; Ichiro Nomura; Hidetoshi Suzuki, both of Atsugi; Takashi Noma, Tsukuba, and Rie Ueno, Hadano, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 304,216, Sep. 12, 1994, Pat. No. 5,530,314, which is a continuation of Ser. No. 956,974, Oct. 6, 1992, abandoned. This application Jan. 24, 1996, Ser. No. 590,511
Claims priority, application Japan, Oct. 8, 1991, 3-260360
Int. Cl.[6] H01J *9/02*
U.S. Cl. 445—51 **3 Claims**



1. A method for processing an electron-emitting device having an electron-emitting portion between electrodes on a substrate, comprising:

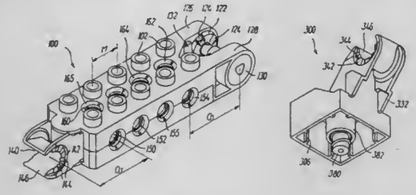
a step of forming the electron-emitting portion at an electroconductive film located between the electrodes, which step is characterized by a step of irradiating a portion of the electroconductive film with radiation to oxidize or reduce the portion of the electroconductive film.

5,645,463

TOY BUILDING SET

Flemming Højberg Olsen, Espergærde, Denmark, assignor to Interlego AG, Baar, Switzerland

PCT No. PCT/DK92/00319, § 371 Date May 5, 1994, § 102(e) Date May 5, 1994, PCT Pub. No. WO93/08886, PCT Pub. Date May 13, 1993
PCT Filed Nov. 5, 1992, Ser. No. 232,251
Claims priority, application Denmark, Nov. 6, 1991, 1828/91
Int. Cl.[6] A63H *33/12*
U.S. Cl. 446—104 **12 Claims**



1. A toy building set comprising:

box-shaped toy building elements of a first type, each of said first type of building element including a first type of coupling means comprising coupling studs on an outer surface thereof and recesses for receiving coupling studs on another surface thereof, whereby elements of said first type can be releasably stacked with the coupling studs of one of said first type of elements engaging recesses of another element of said first type in a releasable frictional interconnection;

toy building elements of a second type having an elongated body with a second type of coupling means, said second type of coupling means allowing establishing a releasable pivotal interconnection between two toy building elements of the second type, the coupling means of said second type not being directly interconnectable with the coupling means of said first type;

toy building elements of a third type, each of said third type of building element comprising coupling studs on an outer surface thereof allowing interconnection with recesses of toy building elements of said first type and having coupling means of the second type allowing interconnection with toy building elements of the second type, said outer surface of said third type of building element being further provided with a threaded hole for receiving a screw; and

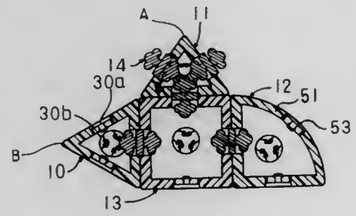
toy building elements of a fourth type, each of said fourth type of building element having recesses of toy building elements of said first type for receiving the coupling studs of said third type of building element in a releasable frictional interconnection and having a threaded screw receivable in said threaded hole of said third type of building element.

5,645,464

SUSTAINABLE ASSEMBLY BLOCKS

Yen-Shing Chen, 3FL, 23, Alley 4, Lane 155, Pateh Rd., SEC 3, Taipei, Taiwan

Filed Mar. 22, 1996, Ser. No. 620,600
Int. Cl.[6] A63H *33/06;33/08*
U.S. Cl. 446—120 **17 Claims**



1. A block assembly, comprising:

a. at least two blocks, each having at least one wall with an opening, a flange located adjacent to and recessed within the opening, a central aperture and at least two holes, in communication with said aperture located in the flange;

b. knob retaining means located adjacent to each one of said at least two holes and attached to said flange;

c. a switch lock having a rigid disc and two shafts attached at opposite sides of the rigid disc, each shaft having a head remote from the rigid disc and at least two projection means; and

d. said heads and said at least two projections of said switch lock being insertabe through said openings and said at least two holes of said at least two blocks respectively, and insertable to engage said at least two projections with said retaining means for interconnecting said at least two blocks, where said rigid disc of said switch lock abuts against said flanges and is located within said openings of said at least two blocks.

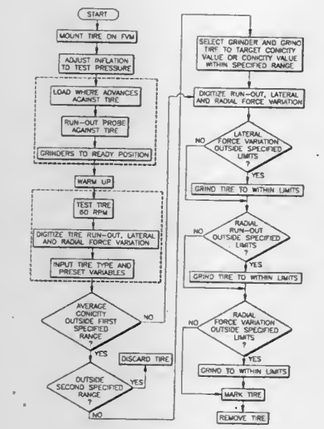
5,645,465

METHOD OF CORRECTING CONICITY, RADIAL RUN OUT, AND FORCE VARIATIONS IN A PNEUMATIC TIRE

Frederick Forbes Vanoan, III, Lawton, Okla., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 27, 1995, Ser. No. 534,809
Int. Cl.[6] B24B *49/04*
U.S. Cl. 451—5 **22 Claims**

1. A method for correcting a tire having a circumferential tire tread with top and bottom shoulder regions and a central region



between said top and bottom shoulder regions for excessive conicity, said method comprising the steps of:

a) indexing said tire tread into a series of circumferential increments, each of said increments including said top and bottom shoulder regions;

b) measuring the average lateral force in the clockwise direction (LSCW) corresponding to said series of circumferential increments of said tire tread;

c) measuring the average lateral force in the counterclockwise direction (LSCCW) corresponding to said series of circumferential increments of said tire tread;

d) calculating a conicity value (CV) equal to one half of the difference between said average lateral force in the clockwise direction (LSCW) and said average lateral force in said counterclockwise direction (LSCCW);

e) comparing said conicity value (CV) to a first preset range of specified acceptable conicity values between SCV_1 and SCV_2 where said conicity value of said tire is acceptable and wherein:

1) if said conicity value (CV) is within said first preset range of conicity values (SCV_1 to SCV_2), discontinuing said method of correcting said tire for excessive conicity;

2) if said conicity value (CV) is outside a second preset range of conicity values (SCV_3 to SCV_4), discontinuing said method of correcting said tire for excessive conicity; and

3) if said conicity value is between a third preset range of conicity values (SCV_2 and SCV_4) or a fourth preset range of conicity values (SCV_1 and SCV_3), continuing with step f;

f) pre-positioning (PREP) a grinder assembly including the steps of:

1) inputting whether said tire being tested is a Type 1 or Type 2 tire;

2) inputting said CV as calculated in Step d;

3) selecting which of said top and bottom shoulder regions is to be ground; and

4) PREP said grinder assembly with respect to said shoulder region selected to be ground;

g) calculating a conicity grind value (CGV) equal to the difference between a preset conicity value (LIM) and the actual conicity value (NCV) of said tire;

h) calculating the required grind time (RGT) for grinding said selected one of said top and bottom shoulder regions to be ground by dividing said conicity grind value (CGV) by a preset conicity grind ease constant (CGEC) corresponding to said tire; and

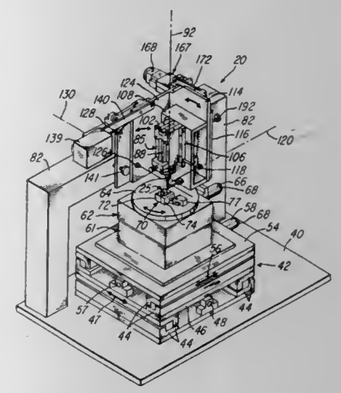
i) grinding rubber from said selected one of said top and bottom shoulders regions for said required grind time (RGT).

5,645,466

APPARATUS AND METHOD FOR CONTOUR GRINDING GAS TURBINE BLADES

Kenneth C. Wikle, 1107 Belvoir Ave., Dayton, Ohio 45409

Continuation of Ser. No. 262,005, Jun. 17, 1994, Pat. No. 5,503,589. This application Apr. 1, 1996, Ser. No. 625,335
Int. Cl.[6] B24B *49/00*
U.S. Cl. 451—5 **19 Claims**



1. Contour grinding apparatus for removing weld flash from the tip of a gas turbine blade having a base and a curved and tapering peripheral surface, said apparatus comprising a holder for gripping and supporting the blade, a first support member supporting said holder and said blade on a first axis, a grinding wheel having a second axis extending generally parallel to said first axis, a motor having a shaft connected to rotate said grinding wheel on said second axis, a second support member supporting said motor and said grinding wheel, motor driven means connected to provide relative movement between said first and second support members for relatively moving said grinding wheel around said blade and for simultaneously producing tilting movement of said grinding wheel and said second axis relative to said blade and said first axis, a blade surface detector spaced from said grinding wheel and positioned for detecting said blade surface inwardly of said weld flash towards said base, and a controller for actuating said motor driven means according to a predetermined program for relatively revolving said grinding wheel and said blade surface detector around said blade and said first axis to produce an outer weld surface forming a smooth continuation of said curved and tapering peripheral surface of said blade.

5,645,467

METHOD FOR THE PRECISION MACHINING OF GEAR-WHEELS

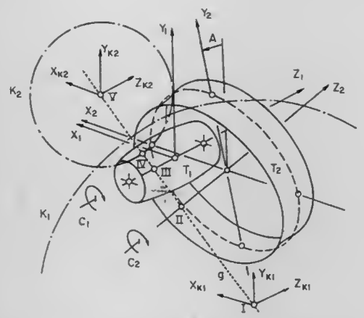
Herbert Schriefer, Gauting, Germany, assignor to The Gleason Works, Rochester, N.Y.

Filed Sep. 1, 1994, Ser. No. 299,563
Claims priority, application Germany, Sep. 1, 1993, 43 29 358.1
Int. Cl.[6] B23F *19/06*
U.S. Cl. 451—8 **12 Claims**

1. A method for the precision machining of flanks of gear-wheel-shaped workpieces, in particular those with convex teeth, with an internally toothed tool, said tool and workpiece having respective base bodies and axes of rotation, said method comprising:

meshing said tool with said workpiece whereby said axes intersect at a cross-axes angle,

moving said tool relative to said workpiece, the relative movement taking place simultaneously along three mutually per-



pendicular axes (X, Y, Z) and pivotally (A) about an axis perpendicular to said crossed-axes angle whereby said cross-angle varies,

wherein tooth flanks of said tool and workpiece have tangential contact with one another and said base bodies of the tool and workpiece, which touch one another at a contact point of continuously changing position, continuously have tangential contact with one another, and,

further wherein a straight line orthogonally penetrating the base body of the tool and the base body of the workpiece at the respective point of contact intersects the axis of the workpiece, or of its base body, and the axis of the tool, or of its base body, said straight line also passing through the center of an ideal envelope sphere of the base body of the workpiece at said point of contact.

5,645,468

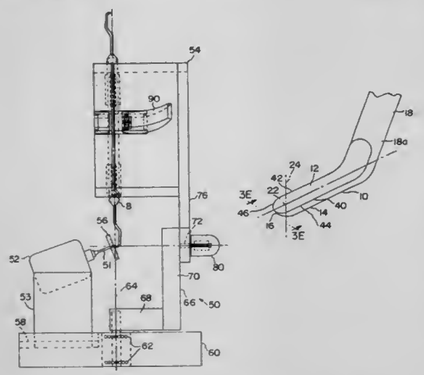
DENTAL CURET AND SHARPENING MACHINE SYSTEM

Gunnar K. Svanberg, 2814 NW. 58th Blvd., Gainesville, Fla. 32606

Continuation-in-part of Ser. No. 38,326, Mar. 29, 1993, abandoned, which is a division of Ser. No. 726,618, Jul. 8, 1991, Pat. No. 5,197,227, which is a continuation-in-part of Ser. No. 407,688, Sep. 14, 1989, Pat. No. 5,030,091, which is a continuation of Ser. No. 92,887, Sep. 4, 1987, abandoned. This application Dec. 27, 1993, Ser. No. 174,653

Int. Cl.[6] B24B *9/04*

U.S. Cl. 451—11 **14 Claims**



1. A machine for sharpening a dental curet, wherein said dental curet comprises a handle and, attached to each end of said handle, a shank with a cutting blade at the distal portion of said shank, said cutting blade having a face with an arc-center of a semi-circular tip and with a cutting edge formed by two essentially parallel side portions and said semi-circular tip portion, the rake angle of said curets being defined as the angle between the longitudinal axis of said handle and the face of said cutting blade; wherein said machine comprises the following elements:

(a) a base;

(b) sharpening element attached to said base; and

(c) an instrument guide unit attached to said base, wherein said instrument guide unit comprises:

(i) a support portion secured to said base; and,

(ii) a fixture portion for holding said curet such that said face of said curet can be sharpened by said sharpening element;

wherein said instrument guide unit and said sharpening element can move in relation to each other such that the entire cutting edge of said curet can be sharpened without moving said curet in said fixture portion; wherein said instrument guide unit has placement means such that, regardless of the rake angle, when said curet is secured in said fixture portion, the face at the arc-center of the tip of the cutting blade is perpendicular to an axis around which said instrument guide unit rotates.

5,645,469

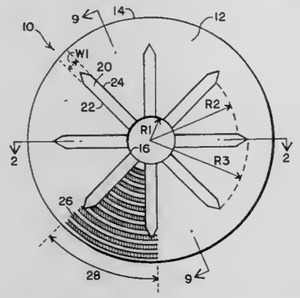
POLISHING PAD WITH RADIALLY EXTENDING TAPERED CHANNELS

Peter A. Burke, and Bradley J. Yellitz, both of Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Sep. 6, 1996, Ser. No. 709,179

Int. Cl.[6] B24B *1/00*

U.S. Cl. 451—41 **49 Claims**



1. A polishing pad, comprising:

a polishing surface comprising a plurality of radially extending tapered channels, wherein the polishing surface includes an inner radius within an outer radius, the channels extend from the inner radius to the outer radius, and the channels taper at the outer radius.

5,645,470

METHOD OF HONING A KNIFE BLADE

Andre Ludwig, 1075 Carrick St., Thunder Bay Ontario, Canada

Filed Nov. 15, 1995, Ser. No. 559,715

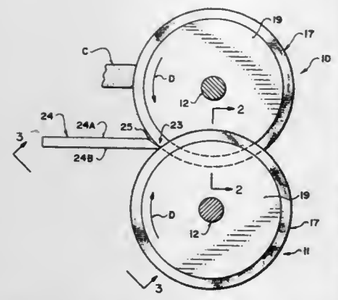
Int. Cl.[6] B24B *1/00*

U.S. Cl. 451—45 **12 Claims**

1. A method of sharpening a knife blade comprising:

providing a knife blade having a first flat surface, a second flat surface parallel to the first flat surface and spaced therefrom by a thickness of the knife blade and a third surface inclined at a predetermined angle from the first surface to the second surface;

grinding the third surface of the knife blade at the predetermined angle relative to the first flat surface to render the third surface



substantially flat and to define a cutting edge at a junction between the first and third surfaces;

the grinding causing formation of a burr wire at the junction between the first and third surfaces;

and removing the burr wire by the steps of:

providing a first and a second honing body, each honing body having an axis of rotation;

each honing body having thereon at least one disc defining a generally cylindrical outer surface and two side surfaces at right angles to an axis of the disc, the disc axis being coaxial with the axis of rotation of the honing body;

mounting the honing bodies with the axes thereof parallel and spaced by distance less than a sum of the radii of the discs and with the discs of the honing bodies offset in a direction parallel to the axes such that said at least one disc of the first honing body intermeshes with said at least one disc of the second honing body to define a cusp therebetween;

forming the discs such that the cylindrical outer surfaces thereof are defined by a flexible, radially compressible fibrous material;

engaging the knife into the cusp so as to engage simultaneously the first and second honing bodies;

the knife blade having a length greater than an axial length between the side surfaces of the discs so as to engage simultaneously in said cusp at least one disc of each of said first and second honing bodies;

rotating each of the honing bodies about its axis in a direction such that the outer surface of said at least one disc moves into the cusp;

and moving the knife blade while in the cusp in a direction parallel to the axes of the honing bodies.

5,645,471

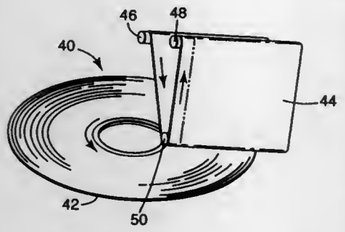
METHOD OF TEXTURING A SUBSTRATE USING AN ABRASIVE ARTICLE HAVING MULTIPLE ABRASIVE NATURES

Darlene N. Strecker, Oakdale, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 11, 1995, Ser. No. 514,491

Int. Cl.[6] B24B *29/00*

U.S. Cl. 451—59 **12 Claims**



1. A method of texturing a surface of a rigid disk to simultaneously impart a first area on said surface having a first surface finish and a second area on said surface having a second surface finish, said method comprising the steps of:

(a) contacting said surface with a coated abrasive article comprising a first region having a first abrasive nature and a second region having a second abrasive nature, both regions bonded to a backing, said first abrasive nature being different than said second abrasive nature; and

(b) moving at least one of said coated abrasive article or said rigid disk with respect to each other under conditions to impart said first and second surface finishes.

5,645,472

POLISHING DEVICE

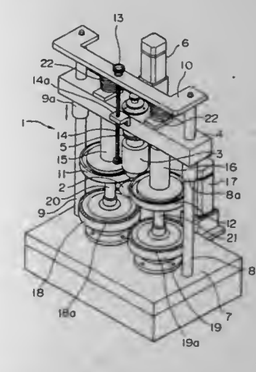
Isao Nagabashi, Ayase, and Yoshishige Takahashi, Nagaoka, both of Japan, assignors to Speedfam Company Limited, Tokyo, Japan

Filed Apr. 16, 1996, Ser. No. 633,195

Claims priority, application Japan, Dec. 22, 1995, 7-350612

Int. Cl.[6] B24B *7/17*

U.S. Cl. 451—261 **4 Claims**



1. A polishing device for a disc comprising,

a pair of upper supporting members having upper polishing pads at lower surfaces thereof, said upper supporting members being rotatable and movable up and down;

a first driving device connected to the upper supporting members for rotating the upper supporting members;

a pair of lower supporting members having lower polishing pads at upper surfaces thereof, said lower polishing pads facing the upper polishing pads;

a second driving device connected to the lower supporting members for rotating the lower supporting members;

a disc holding device situated between the upper supporting members and between the lower supporting members, said disc holding device being rotatable and movable up and down and adapted to hold, in polishing, a disc such that the disc contacts the upper and lower polishing pads for polishing;

a third driving device connected to the disc holding device for rotating the disc holding device;

an elevating device rotationally holding the upper supporting members and the disc holding device for moving the upper supporting members and the disc holding device together;

a base on which said lower supporting members are rotationally situated; and

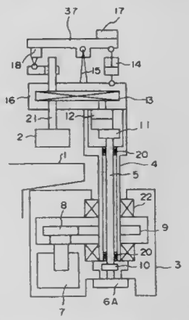
a plurality of positioning poles situated on the base to extend upwardly therefrom, said positioning poles passing through the elevating device for supporting the same.

5,645,473

POLISHING APPARATUS

Tetsuji Togawa, Fujisawa, and Toyomi Nishi, Yokohama, both of Japan, assignors to Ebara Corporation, Tokyo, Japan

Filed Mar. 28, 1996, Ser. No. 621,790
Claims priority, application Japan, Mar. 28, 1995, 7-094535
Int. Cl.[6] B24B *5/00;29/00*
U.S. Cl. 451—287 **9 Claims**



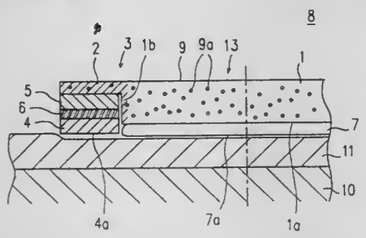
1. A polishing apparatus for polishing a surface of a workpiece, said apparatus comprising:
a turntable;
a top ring positioned above said turntable for holding a workpiece to be polished and pressing the workpiece toward said turntable;
a first motor positioned below said turntable for rotating said top ring;
a second motor positioned below said turntable for swinging said top ring;
a hollow shaft connected to said second motor for swinging said top ring; and
a rotation shaft positioned within said hollow shaft, said rotation shaft being connected to said top ring and to said first motor for rotating said top ring.

5,645,474

WORKPIECE RETAINING DEVICE AND METHOD FOR PRODUCING THE SAME

Naoto Kubo; Yoshitane Shigeta, and Hideyuki Ishii, all of Yamatokoriyama, Japan, assignors to Rodel Nitta Company, Japan

Filed Apr. 16, 1996, Ser. No. 632,675
Claims priority, application Japan, Nov. 30, 1995, 7-313380
Int. Cl.[6] B24B *5/00*
U.S. Cl. 451—287 **9 Claims**



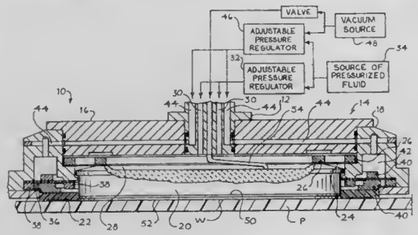
1. A device for retaining a workplace to allow the work piece to slide against a polishing pad located on a polishing board opposed to the device, the device comprising:
a plate including a permeable portion through which air is absorbed toward a first surface thereof for attaching and attracting the work piece to a second surface thereof opposite to the first surface, and a less permeable portion having a lower permeability than the permeable portion and provided around an outer periphery of the permeable portion;
a retainer ring provided on an outer peripheral portion of the plate for preventing an outer edge of the work piece from being overhung by polishing; and
a backup ring located between the plate and the retainer ring for putting the retainer ring into pressure contact with the polishing pad.

5,645,475

WAFER POLISHING HEAD

Konstantin Volodarsky, San Francisco, and David E. Weldon, Los Gatos, both of Calif., assignors to OnTrak Systems, Inc., Milpitas, Calif.

Filed Jan. 24, 1996, Ser. No. 590,861
Int. Cl.[6] B24B *5/00;29/00*
U.S. Cl. 451—288 **13 Claims**



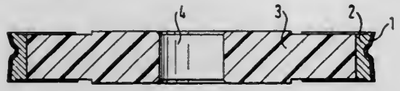
1. A polishing head for polishing a semiconductor wafer, said polishing head comprising:
a housing;
a wafer carrier mounted to the housing, said wafer carrier comprising a wafer-supporting surface;
a wafer retainer mounted to the housing, said wafer retainer shaped to retain a wafer in place on the wafer-supporting surface;
at least one of the wafer carrier and the wafer retainer movably mounted to the housing;
means for adjusting a biasing force on the wafer retainer independently of the biasing force on the wafer carrier during a wafer polishing operation.

5,645,476

GRINDING WHEEL FOR GRINDING EDGES OF EYE GLASSES

Hans-Robert Meyer, Hollern-Twielenfleth, Germany, assignor to Ernst Winter & Sohn (GmbH & Co.), Hamburg, Germany

Division of Ser. No. 659,863, Feb. 25, 1991, abandoned. This application Jun. 6, 1994, Ser. No. 254,346
Claims priority, application Germany, Mar. 3, 1990, 40 06 660.1
Int. Cl.[6] B24D *5/02*
U.S. Cl. 451—544 **8 Claims**



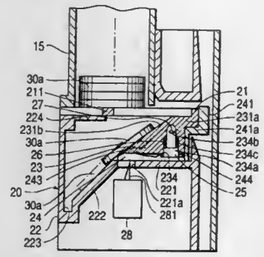
1. A method for assembling a precision grinding disk comprising the steps:
a) directly applying a mixture comprising abrasive particles and metal particles onto a metal ring to form an abrasive coat;
b) sintering the abrasive coat onto the metal ring to form an annular module having an inner circumference and a peripheral face, with the abrasive coat sintered to the peripheral face and the inner circumference being free of the abrasive coat; and
b) bonding the inner circumference of the annular module to an outer circumference of a plastic disk to form the precision grinding disk,
whereby the precision grinding disk has a sufficient level of symmetry and thermal conductivity to effectively grind eye glass edges, and whereby the metal ring has sufficient stiffness to withstand the sintering step without deformation.

5,645,477

CHANGE RETURNING DEVICE OF COIN MECHANISM

Naoto Satoh, and Kazumi Obsato, both of Mashashi, Japan, assignors to Sanden Corporation, Isesaki, Japan

Filed May 17, 1996, Ser. No. 649,109
Claims priority, application Japan, May 19, 1995, 7-121849
Int. Cl.[6] G07D *1/02*
U.S. Cl. 453—40 **7 Claims**



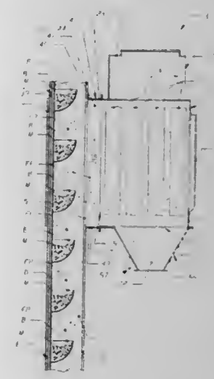
1. A coin mechanism including at least one tube for layeredly stacking change coins therewithin and a change returning device, said change returning device comprising;
a ring-shaped member disposed at a position adjacent to a lower end of said at least one tube and capable of containing the lowest coin which is stacked within said at least one tube,
a stationary member including a first sloped portion which comprises an upper edge and a lower edge, and a flat portion which extends from the upper edge of said first sloped portion,
a sliding plate slidably disposed on said flat portion of said stationary member,
a block member slidably disposed on said sliding plate, said block member including a second sloped portion which comprises an upper edge and a lower edge, and a flat portion which extends from the upper edge of said second sloped portion and is fixedly connected to a lower end surface of a first peripheral portion of said ring-shaped member,
driving means operatively connected to said sliding plate so as to slidably reciprocate said sliding plate on said flat portion of said stationary member between a first furthermost point and a second furthermost point, said second furthermost being in a direction opposite to said first furthermost point, said sliding plate reciprocating in a direction generally perpendicular to both the lower edge of the second sloped portion and the upper edge of the first sloped portion,
a receiving element receiving a second peripheral portion of said ring-shaped member opposite to said flat portion of said block member,
engaging means for engaging said sliding plate with said block member in response to demand, and
an inclined vertical groove extending from the lower edge of said first sloped portion,
wherein the lower edge of the second sloped portion of said block member projects beyond the upper edge of the first sloped portion of said stationary member when said sliding plate reaches the first furthermost point together with said block member during a reciprocating motion of said sliding plate, and
wherein the second sloped portion of said block member is generally aligned with the first sloped portion of said stationary member when said sliding plate reaches the second furthermost point together with said block member during the reciprocating motion of said sliding plate.

5,645,478

MATERIAL ELEVATOR FILTER APPARATUS

Fred M. Edmaiston, 8309 Honey Hill Cove, Germantown, Tenn. 38138

Filed Sep. 20, 1996, Ser. No. 717,304
Int. Cl.[6] B01D *46/04*
U.S. Cl. 454—49 **11 Claims**



1. A filter apparatus for a material elevator of the type including a hollow casing having an interior, and including means mounted within the interior of the hollow casing for moving material through the interior of the hollow casing; the filter apparatus comprising:
(a) filter means for removing fugitive airborne particles from air; the filter means having an inlet for receiving air, a filtered air outlet for discharging filtered air, and a captured particles outlet for discharging captured particles; and
(b) inlet means for attaching the filter means to the hollow casing of the material elevator, for forming a passageway between the interior of the hollow casing of the material elevator and the inlet of the filter means, and for allowing air to pass from the interior of the hollow casing of the material elevator into the inlet of the filter means.

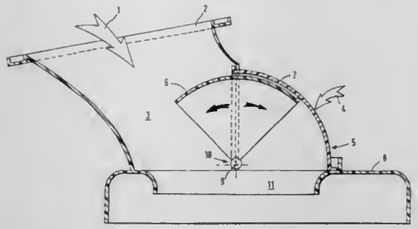
5,645,479

AIR INLET FOR A HEATING OR AIR CONDITIONING SYSTEM

Michael Komowski, Stuttgart, Germany, assignor to Behr GmbH & Co., Stuttgart, Germany

Filed Apr. 21, 1995, Ser. No. 426,722
Claims priority, application Germany, Apr. 22, 1994, 44 14 036.3
Int. Cl.[6] B60H *1/26*
U.S. Cl. 454—139 **28 Claims**

1. Air inlet arrangement for a heating or air-conditioning system of a motor vehicle comprising:
a circulating air inlet,
an outside air inlet,



a controllable circulating air flap disposed to control the circulating air inlet opening, and

a controllable ram air flap disposed to control the circulating air inlet opening, said ram air flap being controllably movable independently of the circulating air flap to thereby control ram air pressure of air flowing through said outside air inlet independently of the position of the circulating air flap,

wherein the circulating air flap and ram air flap are supported for pivotal movement about a common bearing axis.

5,645,480

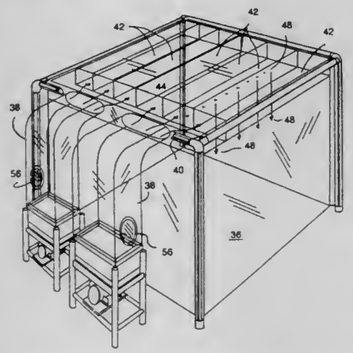
CLEAN AIR FACILITY

Charles W. Spengler, 3024 W. Prospect, Fort Collins, Colo. 80526

Filed May 1, 1995, Ser. No. 431,805

Int. Cl.[6] F24F *7/007*

U.S. Cl. 454—187 **9 Claims**



1. A clean air facility which comprises a clean air room, said clean air room is formed with sides and a ceiling by a suitable clear plastic or other synthetic sheets in which each sheet of the clear plastic are welded together to form said sides and ceiling to prevent any movement between the sheets and to prevent any airborne particles from forming due to friction along a joint, said clean air room includes parallel side-by-side air flow cells which are situated between said ceiling and an upper enclosed side of said clean air room, said air flow cells extend across a width and length of said ceiling of said clean air room and said ceiling includes apertures in an area of said cells through which air is forced into said clean air room from a filter-blower connected with said air flow cells.

5,645,481

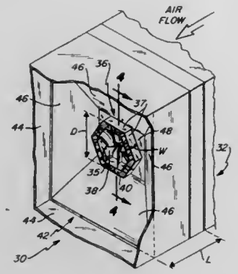
STATIC AIR MIXING APPARATUS

Keith D. Robinson, Wheatridge, and Thomas A. Erickson, Lakewood, both of Colo., assignors to Blender Products, Inc., Denver, Colo.

Continuation of Ser. No. 358,850, Dec. 19, 1994, Pat. No. 5,536,207. This application Apr. 26, 1996, Ser. No. 638,361

Int. Cl.[6] F24F *13/04*

U.S. Cl. 454—261 **6 Claims**



1. A static air mixing apparatus adapted for intermixing airstreams of different temperatures flowing through a common duct having walls defining a passageway, said apparatus comprising:

an inner enclosure partially traversing said passageway defining a core area;

an outer enclosure surrounding said inner enclosure defining an outer area including said core area;

a first plurality of radially extending vanes diverging away from a center of said inner enclosure and terminating at their outer distal ends adjacent to said inner enclosure;

a second plurality of radially extending vanes spaced around said first plurality of vanes, said second plurality of vanes diverging away from said inner enclosure and terminating at their outer distal ends adjacent to said outer enclosure; and

wherein said outer enclosure has a depth ratio defined by the ratio of a depth dimension W of said outer enclosure to a minimum diameter D of said outer enclosure of between about 0.25 and 0.35.

5,645,482

CLOSE COUPLED CONTRACTIBLE VENT CONNECTOR

William R. Moss, and John L. Andersen, both of Jacksonville, Tex., assignors to Builder's Best Inc., Jacksonville, Tex.

Filed Aug. 30, 1996, Ser. No. 705,636

Int. Cl.[6] F24F *7/00*

U.S. Cl. 454—339 **14 Claims**

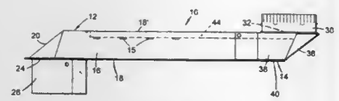
1. A telescopically extensible-contractible air duct connector comprising:

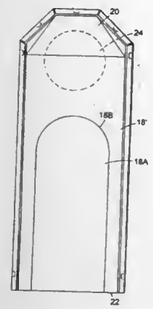
an elongated outer duct element having an open end, a closed end, and a lateral opening adjacent said closed end;

an inner duct element telescopically interfitting within said outer duct element, having an open end within said outer duct element, a closed end located outside said outer duct element, a lateral opening adjacent said closed end, and a laterally projecting sleeve around said lateral opening;

said outer duct element having an elongated slot extending from said open end and of a width slightly greater than that of said laterally projecting sleeve of said inner duct element to receive said laterally projecting sleeve of said inner duct element upon telescopic contraction of said connector; and

said inner duct element having an extended panel within said outer duct element, adjacent said slot, and of a width greater





than the width of said slot to cover said slot when said connector is at least partially extended.

5,645,483

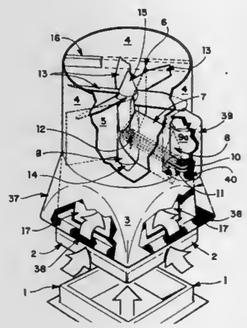
SMOKE REDUCING POWER ROOF VENTILATOR

Stewart Cushman, 138 Kirkland Dr., Naples, Fla. 34110, assignor to Stewart Cushman, Naples, Fla.

Filed Aug. 12, 1996, Ser. No. 695,898

Int. Cl.[6] F24F *7/007*

U.S. Cl. 454—353 **15 Claims**



1. A smoke reducing ventilator mounted over a square opening in a roof of an establishment where there is smoke produced below, said ventilator having a lower transitional section transforming a square configuration at its lower end to a round configuration at its upper end and said ventilator further having an upper section in the form of a cylinder conforming to said round configuration and attached thereto at a lower end, an axial force fan located in said cylinder and driven by a motor from the outside of said cylinder to create an upwardly moving smoke-laden air stream and a cover mounted on top of said cylinder, said cover being divided into two equal sectors and having hinge means at their dividing line diagonally across a top of said cylinder, said hinge means allowing said cover sectors to stand upwardly when the air stream is operating and move downwardly and into a closed position when there is an absence of the air stream, lateral openings symmetrically placed in said lower transitional section in its wall, whereby, when the smoke-laden air stream is moving through said lower section ambient air is aspirated through said lateral openings to substantially mix the ambient air into the smoke-laden air.

5,645,484

TURNING DRUM FOR SELF-PROPELLING HARVESTER THRESHER

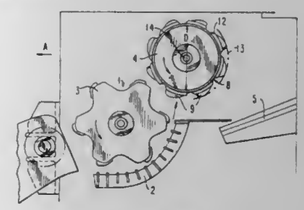
Helmut Claas, Harsewinkel, Germany, assignor to Claas Ohg Beschraenkt Haftende Offene Handels-Gesellschaft, Harsewinkel, Germany

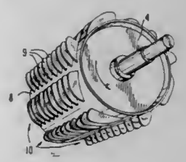
Filed Jul. 24, 1995, Ser. No. 506,397

Claims priority, application Germany, Aug. 4, 1994, 44 27 578.1

Int. Cl.[6] A01F *12/18*

U.S. Cl. 460—62 **8 Claims**





7. A turning drum for arranging in a self-propelling harvester thresher after a threshing mechanism operating in accordance with the principle of a tangential flow and before a separating and cleaning device, the turning drum comprising a closed casing having an outer surface and an axis of rotation; and a plurality of rows of inclined ribs arranged on said casing, said ribs being arranged on said outer surface of said casing, said rows of ribs extending parallel to said axis of rotation of said casing, said ribs being arranged in each row at equal distances from one another, said ribs being inclined relative to a travelling direction of said drum, said ribs being inclined so as to deviate a moving speed and travelling direction of grains and to reduce striking energy of said grains moving from said threshing mechanism to said separating and cleaning device.

5,645,485

MULTI-PLY TICKET AND ELECTRONIC TICKET DISPENSING MECHANISM

Ronald C. Clapper, Jr., 20753 Horace St., Chatsworth, Calif. 91311

Continuation of Ser. No. 306,108, Sep. 14, 1994, Pat. No. 5,487,544, which is a continuation of Ser. No. 879,747, May 6, 1992, Pat. No. 5,348,299. This application Aug. 7, 1995, Ser. No. 512,062

Int. Cl.[6] A63F *9/24*

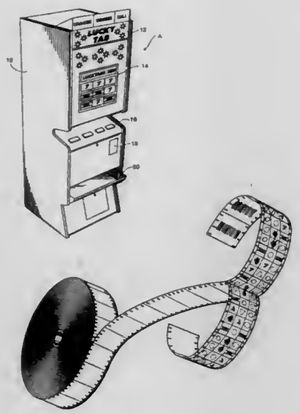
U.S. Cl. 463—17 **19 Claims**

1. A unique multi-ply ticket used in a game of chance activity and which can be dispensable from any of a plurality of selected ticket dispensers, said ticket being comprised of:

a) a first ply having an inner surface and an exterior surface;

b) information bearing indicia presented on and readily viewable on said inner surface when exposed;

c) a second ply covering the inner surface of said first ply rendering the inner surface non-viewable until the second ply



is removed therefrom and when said second ply is removed from the first ply it is removed from the entire inner surface of the first ply rendering the enter inner surface of the first ply to be viewable;

d) said first and second plies being removably secured together in such manner that when the second ply is removed the plies cannot be recombined in the original form without significantly altering the ticket such that any tampering with the ticket would be evident; and

e) a code representative of the indicia on the inner surface of the first ply located on an exterior face of said ticket and which is unintelligible by visual examination and only machine readable, said code being usable to create a display representative of indicia on the inner surface of the first ply.

5,645,486

GAMING SYSTEM THAT PAYS OUT A PROGRESSIVE BONUS USING A LOTTERY

Yuji Nagao, and Keiji Yano, both of Tokyo, Japan, assignors to Sega Enterprises, Ltd., Japan

Continuation-in-part of Ser. No. 348,243, Nov. 28, 1994, abandoned. This application Aug. 23, 1995, Ser. No. 518,342

Claims priority, application Japan, Nov. 30, 1993, 5-326345

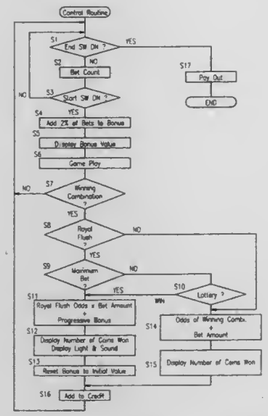
Int. Cl.[6] A63F *9/24*

U.S. Cl. 463—27 **34 Claims**

1. A progressive gaming system that pays out a progressively increasing bonus to a player who wins a game with a predetermined bonus winning combination among a plurality of predetermined winning combinations, the progressive gaming system comprising:

a plurality of gaming controllers for detecting when a player associated therewith gets one of said plurality of predetermined winning combinations and paying out a predetermined number of coins or tokens corresponding to said one winning combination, each of said plurality of gaming controllers counting coins or tokens bet by a player before a game is started and outputting an indication signal of the amount of the bet coins or tokens; and

a master controller operatively connected to said plurality of gaming controllers for receiving the indication signal from each of said plurality of gaming controllers, adding a predetermined percentage of a total number of bet coins or tokens contained in each of the gaming controllers to a bonus value, performing a lottery when a player gets said predetermined bonus winning combination, and controlling said plurality of gaming controllers to pay out coins or tokens corresponding to a predetermined reward, including said bonus value, to said



player having said predetermined bonus winning combination, if he wins the lottery.

5,645,487

CONSTANT VELOCITY RATIO UNIVERSAL JOINT OF THE TRIPODE TYPE

Richard Anthony Lloyd, Coventry, and Stephen Charles Bartlett, Bridgnorth, both of England, assignors to GKN Automotive AG, Germany

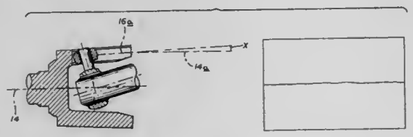
PCT No. PCT/GB93/00914, § 371 Date Dec. 22, 1994, § 102(e) Date Dec. 22, 1994, PCT Pub. No. WO93/22577, PCT Pub. Date Nov. 11, 1993

PCT Filed Apr. 30, 1993, Ser. No. 325,229

Claims priority, application United Kingdom, May 1, 1992, 9209451

Int. Cl.[6] F16D *3/205*

U.S. Cl. 464—111 **8 Claims**



1. A constant velocity ratio universal joint of the tripode type, comprising:

an outer joint member having a rotational axis and three tracks, each track having opposed side portions and a center line and said center lines of the tracks being equally circumferentially spaced about said rotational axis of the outer joint member and extending lengthwise of the outer joint member in respective planes which also contain said rotational axis of the outer joint member; a point in each said track center line being disposed at a pitch circle radius r relative to said rotational axis of the outer joint member; said outer joint member having a closed end and an open end;

an inner joint member having a rotational axis and three arms equally circumferentially spaced about said rotational axis of the inner joint member and extending perpendicularly to said rotational axis of the inner joint member outwardly of the inner joint member into respective said tracks of the outer joint member;

a respective roller carried by each arm and having an external surface which engages opposed side portions of the respective said track, each roller being able to tilt within its respective track and move there along so that the inner and outer joint

members are able to move axially relative to one another and undergo relative articulation;

a shaft connected to the inner joint member and extending therefrom along said rotational axis thereof out of said open end of the outer joint member, said shaft having a length L;

wherein the center lines of the tracks are inclined to said rotational axis of the outer joint member so as to diverge therefrom as they extend from said closed end of the outer joint member to said open end thereof, at an angle approximately equal to arctan (r/L), whereby third order transmission error is substantially eliminated form the joint.

5,645,488

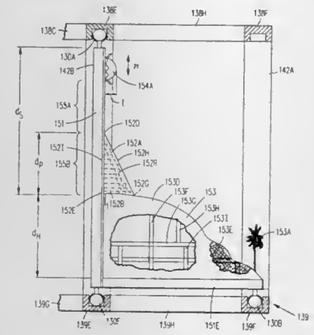
BACKGROUND SCREEN FOR A STAGE

Michael Alan Collins, Reno, Nev., assignor to Collins Entertainment Systems, Inc., Reno, Nev.

Continuation-in-part of Ser. No. 912,861, Jul. 13, 1992, abandoned, and a continuation-in-part of Ser. No. 93,601, Jul. 19, 1993, abandoned. This application Jun. 28, 1994, Ser. No. 268,151

Int. Cl.[6] A63J *1/02*

U.S. Cl. 472—77 **19 Claims**



1. A background screen for forming an illusion, said background screen comprising:

means for displaying a projected image, said means for displaying having a three-dimensional shape, said means for displaying having an area substantially incapable of displaying a portion of said projected image; and

means for correcting said portion of said projected image on said area, said means for correcting being located on said area of said means for displaying.

5,645,489

HOBBY HORSE WITH PROTECTIVE SHEATH

Eric Laiche, Houston; Chris Wheat, Greenwood, and Roy L. Ruggles, Columbus, all of Miss., assignors to Roadmaster Corporation, Olney, Ill.

Filed Jun. 7, 1995, Ser. No. 482,301

Int. Cl.[6] A63G *15/00*

U.S. Cl. 472—103 **9 Claims**

1. A riding device, comprising:

a rider support device;

one or more elastic members, the elastic members connected to the rider support device;

one or more extendable, flexible sheaths, the extendable sheath covering one or more corresponding elastic members;

a structural support;

a fastener assembly for connecting the elastic member to the structural support, where the extendable sheath covers the fastener; and



a protective cap fit over the fastener which leaves a portion of the fastener accessible for connecting the elastic member.

5,645,490

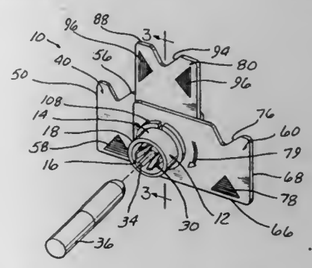
ADJUSTABLE CUE BRIDGE

Lester B. Lodrick, 603 E. Meyers, Hazel Park, Mich. 48030

Filed Dec. 20, 1995, Ser. No. 575,552

Int. Cl.[6] A65D *15/00*

U.S. Cl. 473—42 **16 Claims**



1. A cue bridge mountable on a tubular member comprising:

a body;

receiver means, carried with the body, for receiving a tubular member;

first and second members, each rotatably carried on the body;

each of the first and second members having a planar configuration with a plurality of angularly disposed, peripheral side edges; and

one cue receiving notch formed in each of at least two of the plurality of side edges of at least one of the first and second members.

5,645,491

APPARATUS AND METHOD FOR PLACING GOLF BALL ON TEE

Louis S. Brown, 401 Colbert Ave., Pensacola, Fla. 32507

Filed Aug. 8, 1996, Ser. No. 695,172

Int. Cl.[6] A63B *57/00*

U.S. Cl. 473—135 **17 Claims**

1. An apparatus for positioning a golf ball onto a tee, comprising:

a source of negative pressure;

a tee having a ball-supporting surface and a base;

a bore extending from said ball-supporting surface through said base to place said ball-supporting surface in fluid communication with said source of negative pressure so that a golf ball seated on said ball-supporting surface is held thereto by negative pressure;

said tee having a first, substantially horizontal position and a second, substantially vertical position;



tee reciprocating means for reciprocating said tee between said substantially horizontal position and said substantially vertical position;

a tee-loading station where a golf ball is positioned onto said tee when said tee is in said substantially horizontal position;

said tee-loading station having a size sufficient to admit thereinto only one golf ball at a time;

a tray for holding a plurality of golf balls, said tray being sloped toward said tee-loading station to deliver golf balls to said tee-loading station;

tee-loading means for driving a ball in said tee loading station into engagement with said ball-supporting surface only when said tee is in its substantially horizontal position;

control means for activating said tee-reciprocating means to move said tee from said substantially horizontal position to said substantially vertical position after said ball has been driven into engagement with said ball-supporting surface by said tee-loading means and for rotating said tee from said substantially vertical position to said substantially horizontal position when said ball is disengaged from said ball-supporting surface;

said control means activating said tee-loading means only when said tee is in its substantially horizontal position;

said tee-reciprocating means including a first actuator having a reciprocating plunger slideably mounted therein, said reciprocating plunger of said first actuator having a retracted position and an extended position;

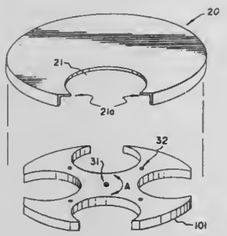
said tee reciprocating means including an internally bored block in fluid communication with said source of negative pressure, an elongate flexible tube having a trailing end mounted to said internally bored block in fluid communication with said source of negative pressure, and said elongate flexible tube having a leading end in fluid communication with said tee;

a rotatably mounted arm having a bore formed therein for receiving said elongate flexible tube;

said tee being in a substantially horizontal position when said plunger is retracted and in a substantially vertical position when said plunger is extended;

said elongate flexible tube being substantially straight when said plunger is retracted and having a gradual ninety degree bend formed therein when said plunger is extended.

5,645,493
PENDULUM PUTTER
Gustavo Garcia, 1944 Turnbull Canyon Rd., Hacienda Heights, Calif. 91745
Filed Jun. 24, 1996, Ser. No. 668,736
Int. Cl.[6] A63B *53/04;53/14*
U.S. Cl. 473—203 **5 Claims**





1. A golf putter for putting with a true pendulum swing comprising in combination:

a shaft connected to a generally rectangular head and a generally rectangular grip;

said head having a flat top portion, a non-flat sole portion, a heel, a toe, a ball striking front face and a rear face with two weight receiving circular recesses extending forward from said rear face to said front face, one of said recesses being located close to the heel of said head and the other being located close to the toe of said head, and a plurality of heavy weight discs and light spacer discs adapted to fit snugly in said recesses, whereby said weights may be assembled side-by-side in said cavities to align the center of gravity of said putter with the centerline of said shaft;

said shaft having a mid-shaft ungripping surface and a primary longitudinal axis being divergent from a vertical axis passing through said top portion of said putter head by at least ten degrees;

each of said openings corresponds to an open portion of a corresponding circular aperture, wherein each corresponding circular aperture has a geometric center which is disposed by a selected radial distance from a center of the planar base, wherein each selected radial distance for each circular aperture is different, whereby the width of the opening is adjusted based upon a selection of the radial distance, the width of the opening corresponding to a width of a segment of each circular aperture which is outside of the perimeter of the base.

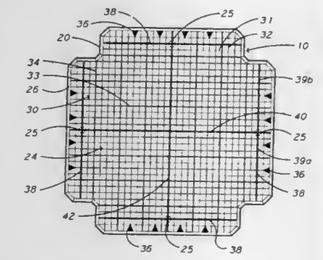
5,645,492
SELECTABLE TARGET PUTTING TRAINER
Kevin Anderson, 11500 White Oak Ct., Herndon, Va. 20170
Filed Sep. 26, 1996, Ser. No. 721,376
Int. Cl.[6] A63B *69/36*
U.S. Cl. 473—185 **13 Claims**

1. A putting trainer, comprising:

a planar base having a circular outer perimeter, said outer perimeter having a plurality of openings therein, with each of said plurality of openings having a different width, wherein

said grip connected to said shaft and having thumb tip and finger tip gripping surfaces with low contact resistance on two parallel sides.

5,645,494
INSTRUCTIONAL GOLF MAT
Thomas A. Dionne, 8806 Croydon Ave., Los Angeles, Calif. 90045, and Douglas W. Bokath, 1016 E. Edie Way, Lancaster, Calif. 93535
Filed Nov. 1, 1994, Ser. No. 332,960
Int. Cl.[6] A63B *69/36*
U.S. Cl. 473—278 **9 Claims**



1. An instructional golf mat, comprising:

a base; and

a top surface mounted to the base and including,

a first grid pattern comprising a plurality of intersecting lines at which a golfer may relatively position his or her feet and a ball, the grid pattern extending over substantially the entire top surface between the feet and ball positions,

a second grid pattern located within the first grid pattern and at which a golfer may relatively position his or her feet and a ball, the second grid pattern comprising selected intersecting lines of the first grid pattern which are uniformly-spaced and which are highlighted in relation to other of the lines of the first grid pattern, the second grid pattern extending over substantially the entire top surface between the feet and ball positions,

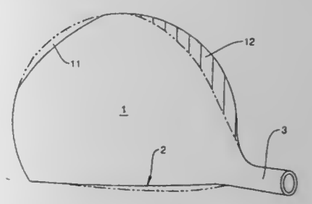
at least two hitting stations located at respective regions of the top surface, each hitting station being defined by a third grid pattern comprising highlighted intersecting lines, and

a plurality of golf club swing paths at each hitting station, the golf club swing paths being defined by the first and second grid patterns.

5,645,495
GOLF CLUB
Mitsuhiro Saso, Kanzaki-gun, Japan, assignor to Himeji Lodge Hakuba Co., Ltd., Himeji, Japan
Continuation of Ser. No. 321,588, Oct. 11, 1994, abandoned, which is a continuation of Ser. No. 962,586, Dec. 30, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 479,142
Claims priority, application Japan, May 1, 1991, 3-130375; Dec. 21, 1991, 3-355888
Int. Cl.[6] A63B *53/04*
U.S. Cl. 473—345 **7 Claims**

1. A golf club comprising:

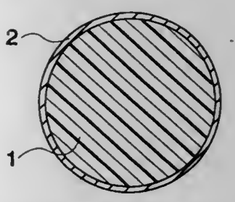
a metallic wood type head having a heel side and a toe side, the mass of the heel side being increased as much as the mass of the toe side of the head is decreased so as to shift the center of gravity of the head toward the heel side, the head having a portion of a surface shaped such that the curvature of the surface approximates the curvature of a sphere, the portion of the surface of the head having substantially the same curvatures along the transverse direction thereof as along a longitudinal direction thereof;



a shaft having an upper end and lower end, the lower end being connected to the head at the heel side; and

said metallic wood type head further comprising a toe, a heel and a back side profile shape extending from the toe side to the heel side, said back side profile shape between the toe and a most rearwardly point of said metallic wood type head having a radius of curvature that is larger than the radius of curvature of said back side profile shape between the most rearwardly point of said metallic wood type head and the heel.

5,645,496
TWO-PIECE GOLF BALL
Seiichiro Endo, Akashi, and Kuoiyasu Horiuchi, Kobe, both of Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo-ken, Japan
Filed Dec. 28, 1994, Ser. No. 365,537
Claims priority, application Japan, Dec. 28, 1993, 5-353772
Int. Cl.[6] A63B *37/06*
U.S. Cl. 473—372 **7 Claims**



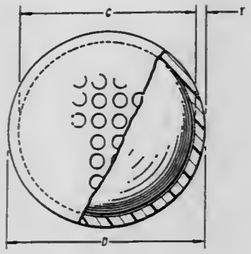
1. A two-piece golf ball which consists essentially of a core and a cover covering the core, wherein said core is made of a rubber composition comprising 100 parts by weight of a base rubber, 20 to 45 parts by weight of a co-crosslink agent and 0.3 to 5.0 parts by weight of an organic peroxide, a hardness of the core is within a range of 40 to 56 in the vicinity of its center and 70 to 95 in the vicinity of its surface; a difference between a hardness in the vicinity of the surface and that in the vicinity of the center is within a range of 20 to 40; and a compression deformation amount formed between initial loading 10 kg and final loading 130 kg is 3.1 to 4.5 mm; said hardness being measured by means of JIS-C type hardness tester.

5,645,497
GOLF BALL
Michael J. Sullivan, Chicopee, and R. Dennis Nesbitt, Westfield, both of Mass., assignors to Lisco, Inc., Tampa, Fla.
Filed Oct. 3, 1995, Ser. No. 538,340
Int. Cl.[6] A63B *37/06;37/12*
U.S. Cl. 473—377 **7 Claims**

1. A golf ball comprising

a solid non-wound core; and

a cover about said core;



said core and cover having a combined weight of between 47 grams and 53 grams and said core and cover having a combined coefficient of restitution of at least substantially 0.800; and

said ball having an outside diameter substantially less than 1.68 inches.

5,645,498

GOLF TEE AND BALL PLACER AND HOLDING SYSTEM

Joseph Cretella, 135-56 124th St., Ozone Park, N.Y. 11420

Filed Jul. 1, 1996, Ser. No. 672,968
Int. Cl.[6] A63B *57/00*
U.S. Cl. 473—386 **11 Claims**

1. A Golf Tee and Ball Placer and Holding System comprising:

a hollow shaft member;

a tee driver member positioned inside the hollow shaft member;

a golf ball holding member mounted to the hollow shaft member;

a golf tee and ball placer holder for holding the golf tee and ball placer;

the hollow shaft member comprises a hollow shaft ground opening at one end and a hollow shaft top plate including a top plate opening at the opposing end; and

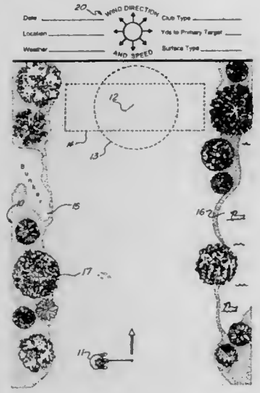
a tee receiving opening projects through an exterior surface of the hollow shaft member near the hollow shaft ground opening for receiving a golf tee.

5,645,499

GOLFWRITE STATISTICAL ANALYSIS

Bob Lewis, P.O. Drawer 740849, New Orleans, La. 70174

Filed Oct. 16, 1995, Ser. No. 543,369
Int. Cl.[6] A63B *67/02*
U.S. Cl. 473—407 **9 Claims**



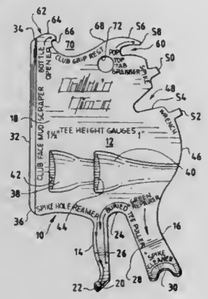
1. Golf practicing aid means for aiding a user in developing their golf swing, comprising a markable substrate depicting a diagrammatical layout of a golf hole including hazards graphically depicted thereon, on which substrate a user can mark practice golf shots with reference to a target area graphically depicted thereon, said golf practicing aid means further comprising a statistical tabulation markable substrate on which the user inscribes the number of good shots within a target area and the number of poor shots, whereby the user can then calculate the percentage of good shots versus poor shots, said statistical tabulation markable substrate further comprising poor shot indicia, setting forth a breakdown of categories of poor shots, said poor shot indicia arranged to enable a user to indicate on said statistical tabulation markable substrate the number of poor shots in each of said categories, and thereby discern particular areas of weakness in said user's golf swing.

5,645,500

GOLF TOOL

Teddy H. Borden, 315 W. Braeside, Arlington Heights, Ill. 60004

Filed Sep. 23, 1996, Ser. No. 717,571
Int. Cl.[6] A63B *57/00*
U.S. Cl. 473—408 **6 Claims**



1. A multipurpose golf tool comprising:

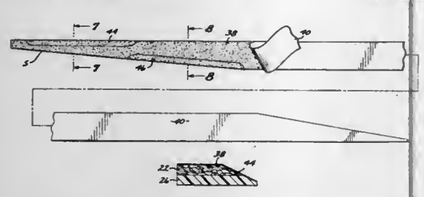
an elongated generally flat body section having a top, two vertical sides and a bottom, a pair of generally irregularly shaped legs extending downwardly and slightly angled apart from one another and connected to the bottom of said body section, one of said legs terminating in a foot having a toe pointing away from the other leg to form a spike hole reamer, said other leg having a width greater than said one leg and terminating in a beveled concave end for cleaning debris from a spike and repair ball marks on the greens, said pair of legs joining at an arch at the bottom of said body section and providing a means of leveraging a buried tee out of the ground as the tee slides between the angled legs toward said arch, a straight beveled edge extending approximately the vertical length of one side of the body section and terminating in rounded corners at either end thereof for cleaning the golf club face and its grooves therein, respectively, a pair of tee shaped indentations in line with one another in a generally horizontal arrangement across said body section for engaging the head and a portion of the tapered shank of a tee for placing it into the ground despite the hardness of the ground at the tee box and for placing the tee head and the golf ball at a consistent and predetermined height above the ground for a tee shot, a spike wrench having a pair of spaced apart shoulders on the generally upper fight hand portion of the body section extending outwardly from the side opposite said straight beveled edge in a direction generally perpendicular to said legs, a pair of protrusions on the outermost ends of each shoulder to accommodate holes in the base of golf spikes, said shoulders having a spike cavity therebetween extending into the body section so that the golfer achieves leverage between the spike wrench protrusions in the spike holes and the legs when twisting on or off the spike in the golf shoe, a pop top tab grabber located in the upper right hand corner of the body section having a finger extending in an are toward the upper shoulder and spike wrench protrusion for pulling pop top tabs off a beverage can without touching a digit on the golfer hand, a bottle opener on the upper left hand corner having a blunted protrusion extending in the direction of the finger ending in a hook for pulling off a bottle cap and a swale between the bottle opener and grabber having a generally concave shape for receiving a club grip therein when the legs are placed into the ground to hold the body section in a generally perpendicular alignment to the ground.

5,645,501

GRIP CONSTRUCTION

Ben Huang, 19472 Woodlands La., Huntington Beach, Calif. 92648

Continuation-in-part of Ser. No. 637,931, Jan. 14, 1991, abandoned, Ser. No. 890,383, May 26, 1992, abandoned, Ser. No. 953,190, Sep. 29, 1992, and Ser. No. 58,313, May 3, 1993. This application Nov. 13, 1995, Ser. No. 542,009
Int. Cl.[6] A63B *49/08*
U.S. Cl. 473—549 **10 Claims**



1. The combination of a handle for an impact imparting device and a shock absorbing resilient grip applied over such handle to conform to the external configuration of the handle, the handle having a butt end, said combination comprising:

a strip which is spirally wrapped about said handle, the strip having a starting end which engages the butt end of the handle, the strip consisting of an open-pored felt layer having a generally flat inner surface abutting the handle and a smooth closed pore polyurethane layer having its inner surface bonded to the outer surface of the felt layer, with the pores of such polyurethane layer extending generally normal to the longitudinal axis of the strip, the thickness ratio of the polyurethane layer to the thickness of the textile layer being equal to or larger than approximately 0.18, and with the textile layer providing strength for the polyurethane layer while the polyurethane layer both absorbs shocks and provides tackiness so as to inhibit slippage of a user's hand relative to said handle;

an adhesive material applied over the inner surface of the felt layer;

the strip being spirally wrapped about the handle with the side edges of the strip being in tight abutment and with the side edges of the felt layer being in firm contact with one another whereby the exterior surface of the strip is of smooth non-overlapping configuration and unraveling of the strip is inhibited; and

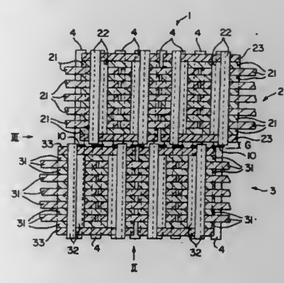
the starting end of the strip being formed with outwardly and downwardly slanted leading and trailing areas on opposite sides of such starting edge, the rear portion of the leading area overlapping the trailing area to provide a smooth configuration of the strip on the butt end of the handle.

5,645,502

PHASED CONTINUOUSLY VARIABLE TRANSMISSION CHAIN

Shozo Wakabayashi, Hirakata; Yukio Tomimura; Koji Morishige, both of Nabari; Hirosbi Umeda, Mie; Park Woo Serk, Nabari, all of Japan, and Mark Alan Boshart, Cortland, N.Y., assignors to Borg-Warner Automotive, K.K., Nabari, Japan

Filed Oct. 16, 1995, Ser. No. 543,441
Claims priority, application Japan, Oct. 17, 1994, 6-277126
Int. Cl.[6] F16H *7/00*
U.S. Cl. 474—85 **9 Claims**



1. A power transmission chain-belt engageable with pulleys each having a V-shaped groove, comprising:

at least two chains arranged in side-by-side parallel relationship with each other, each of said two chains including a plurality of sets of parallel links and pivot members, said sets of parallel links being connected to each other by said pivot members, said two chains being offset from each other in a longitudinal direction thereof by a distance equal to approximately one-half pitch of said sets of parallel links;

a plurality of load block members arranged in spaced-apart parallel relationship with each other and alternately engaging an inner side of each of said two chains, each of said load blocks being oriented transversely to said two chains and having a length which substantially covers a total width of said two chains, each of said load block members having opposite end faces which define said length thereof;

each of said plurality of sets of parallel links including a plurality of links plates, each of said link plates having an inner-side

end face facing said load block members and a pair of legs extending from the inner-side for engaging said load block members;

a stopper member located at an intermediate portion of said load block member, said stopper member being spaced apart from said chains to permit limited movement of said load block member in a direction transverse to said chains.

5,645,503

POWER TRANSMISSION CHAIN HAVING A SPRING LINK

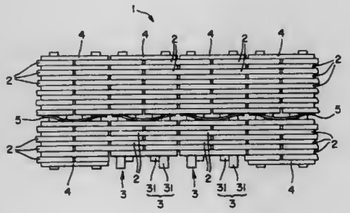
Tomonori Okuda, Nabari, Japan, and John C. Skurka, Brooktondale, N.Y., assignors to Borg-Warner Automotive, K.K., Nabari, Japan, and Borg-Warner Automotive, Inc., Sterling Heights, Mich.

Filed Aug. 31, 1995, Ser. No. 523,520

Claims priority, application Japan, Sep. 2, 1994, 6-234073

Int. Cl.[6] F16G *13/04*

U.S. Cl. 474—214 **4 Claims**



1. A power transmission chain comprising,

a plurality of inner links interleaved in rows of adjacent links, each of said inner links having a pair of apertures, said inner links being connected by connecting pins inserted in said apertures,

guide links located on the outermost sides of some of said rows of inner links; and,

a plurality of spring links, each of said spring links having a pair of apertures for insertion of said connecting pins, said spring links being located between said guide links and said inner links, said spring links having a plurality of contacting portions in contact with said guide links and said inner links, two of said contacting portions being located at opposite ends of said spring link at a position outside of said apertures.

5,645,504

POWER TRANSMISSION BELT WITH TEETH REINFORCED WITH A FABRIC MATERIAL

William L. Westhoff, Denver, Colo., assignor to The Gates Corporation, Denver, Colo.

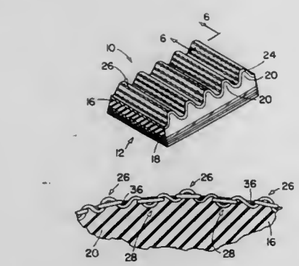
Filed Sep. 29, 1995, Ser. No. 536,292

Int. Cl.[6] F16G *1/28;1/04;5/00*

U.S. Cl. 474—250 **11 Claims**

1. A power transmission belt of the type with a body of belt material, a tensile member embedded in the body, and a plurality of belt teeth formed of the body and reinforced with a cloth fabric material and wherein the improvement comprises:

the fabric material being a weft knitted structure in the form of a 1×1 rib with a plurality of ribs formed at opposite sides of the fabric and laterally offset from each other, the knitted structure stretched in a direction lateral of the ribs and in a manner that enlarges interstices between successive ribs, the ribs of an inside surface of the fabric material embedded in the body and



the interstices at least partially filled with belt material leaving ribs of an outside of fabric material at least partially exposed at surfaces of the belt teeth.

5,645,505

Patent Not Issued For This Number

5,645,506

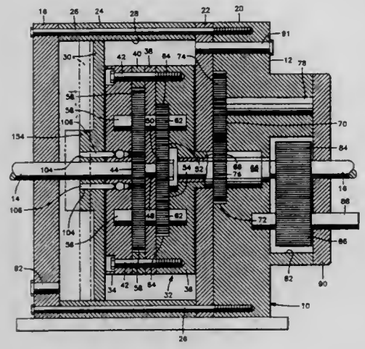
VARIABLE DRIVE TRANSMISSION

Alexander E. Mleczko, 6506 Hwy 72, Stillman Valley, Ill. 61084

Filed Sep. 19, 1995, Ser. No. 530,025

Int. Cl.[6] F16H *3/74*

U.S. Cl. 475—257 **6 Claims**



1. An infinitely variable ratio transmission including coaxial first and second rotary shafts, a rotary carrier journaled relative to said shafts, axially spaced first and second sun gears mounted on said first and second shafts, respectively, for rotation therewith, said carrier including sets of axially spaced first and second planet gears journaled therefrom and meshed with said first and second sun gears, respectively, selectively operable first rotation inhibiting means operable to inhibit rotation of said carrier and second rotation inhibiting means operable to inhibit relative rotation between said first planet gears and said first sun gear, control structure means operably interconnecting said first and second rotation inhibiting means, and operative to gradually actuate said second rotation inhibiting means in response to gradual actuation of said first rotation inhibiting means, said carrier driving a live gear of a first gear pump for pumping liquid and said first rotation inhibiting means including first throttle structure for throttling the liquid discharge from said first gear pump.

5,645,507

CONTINUOUSLY VARIABLE TRANSMISSION SYSTEM

Nigel Anthony Hathaway, Bath, Great Britain, assignor to Eryx Limited, Douglas, Great Britain

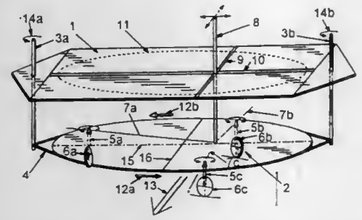
PCT No. PCT/GB93/00544, § 371 Date Oct. 26, 1994, § 102(e) Date Oct. 26, 1994, PCT Pub. No. WO93/19308, PCT Pub. Date Sep. 30, 1993

PCT Filed Mar. 16, 1993, Ser. No. 295,904

Claims priority, application United Kingdom, Mar. 17, 1992, 9205753

Int. Cl.[6] F16H *15/04*

U.S. Cl. 476—47 **15 Claims**



1. A continuously variable transmission system comprising:

at least two rotary members,

a common member mounted on the rotary members,

a surface with which the rotary members cooperate, the rotary members being free to rotate about their own axes of rotation and having perimeter regions cooperating with the surface at respective regions of cooperation in such a manner that substantial slippage of each rotary member relative to the surface in a direction parallel to the axis o rotation of the rotary member is prevented,

and steering means operative to steer each rotary member about a respective axis,

the common member and the surface being mounted for first and second kinds of motion relative to one another, the first kind of motion being relative rotation of the common member and the surface about an axis which is fixed relative to the common member and around which the rotary members are spaced, and the second kind of motion being a different relative motion of the common member and the surface,

the steering means being arranged to steer the rotary members to vary continuously the ratio of the amount of the first kind of relative motion of the common member and the surface to the amount of the second kind of relative movement of the common member and the surface.

5,645,508

FAIL-SAFE DEVICE FOR AUTOMATIC TRANSMISSION SYSTEM

Han-il Kim, Suwon, Rep. of Korea, assignor to Hyundai Motor Company, Seoul, Rep. of Korea

Filed Jun. 16, 1995, Ser. No. 490,692

Claims priority, application Rep. of Korea, Jun. 22, 1994, 94-14220

Int. Cl.[6] B60K *41/04*

U.S. Cl. 74—336 R **14 Claims**

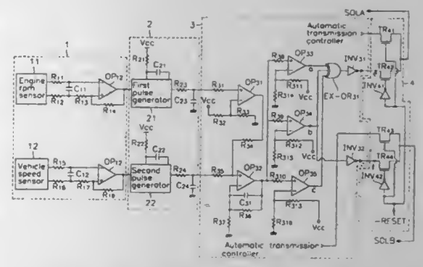
1. A fail-safe device for an automatic transmission system of a vehicle, comprising:

vehicle driving sensing means for outputting a corresponding signal by sensing both a vehicle speed and an engine rpm which are each varied according to a vehicle driving state;

signal-converting means, connected with said vehicle driving sensing means, for converting a signal from said vehicle driving sensing means into AC (alternating current) voltage by varying each pulse generating rate according to the vehicle speed and the engine rpm;

signal-processing means, connected with said signal-converting means, for amplifying the AC voltage from said signal-converting means, comparing the amplified AC voltage with a first fixed reference voltage, and outputting driving signals of first and second shift control solenoid valves based on a result of said comparison; and

signal-output means, connected with said signal-processing means, for varying an operating state of said automatic transmission based on a reset signal from an automatic transmission controller, and controlling output of said driving signals from said signal-processing means.



5,645,509

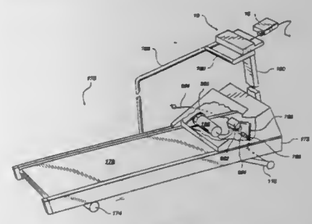
REMOTE EXERCISE CONTROL SYSTEM

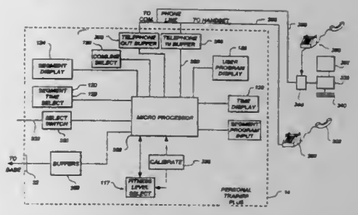
Dane P. Brewer, and Curt G. Bingham, both of Salt Lake City, Utah, assignors to Icon Health & Fitness, Inc., Logan, Utah

Continuation of Ser. No. 990,605, Dec. 14, 1992, abandoned, which is a continuation of Ser. No. 836,105, Feb. 14, 1992, abandoned, which is a continuation-in-part of Ser. No. 724,732, Jul. 2, 1991, Pat. No. 5,512,025. This application Jul. 22, 1994, Ser. No. 278,994

Int. Cl.[6] A63B *24/00*

U.S. Cl. 482—4 **16 Claims**





1. A control and evaluation system for an exercise machine having a frame, a movable element for movement in performance of exercise by a user, and adjustment means positioned between the frame and the movable element for regulating the movement, the system comprising:

sensing means for sensing movement of the moveable element and for providing movement signals indicative of the movement;

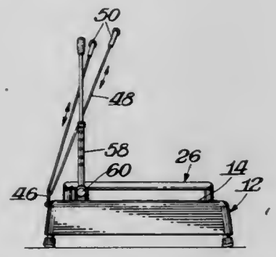
first and second ports connectable between a communications device, the first port being remote from the exercise machine and the second port being proximate to the exercise machine;

control means local to the exercise machine for receiving the movement signals, and for providing signals reflective of the movement signals to the second port;

evaluation means remote from the exercise machine for receiving through the communications device and the first port the signals reflective of the movement signals, and for providing through the first port external control signals containing information regarding adjustments to be made to the adjustment means to regulate the movement; and

in which the control means receives the external control signals through the communication device and the second port, and provides internal control signals reflective of the external control signals to the adjustment means to regulate the movement.

5,645,510
COMBINATION EXERCISE DEVICE
William T. Wilkinson, Sevenside Farm, 300 Kyle Rd., Crownsville, Md. 21032-0572
Continuation-in-part of Ser. No. 151,957, Nov. 15, 1993, Pat. No. 5,533,948, which is a continuation-in-part of Ser. No. 986,487, Dec. 7, 1992, abandoned, and a continuation-in-part of Ser. No. 56,930, May 5, 1993, Pat. No. 5,284,461, and a continuation-in-part of Ser. No. 55,750, May 3, 1993, abandoned, which is a continuation-in-part of Ser. No. 945,373, Sep. 16, 1992, Pat. No. 5,207,622. This application May 31, 1994, Ser. No. 251,105
Int. Cl.[6] A63B *21/00*
U.S. Cl. 482—27 **10 Claims**

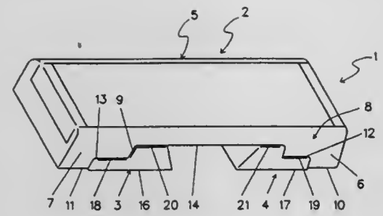


1. A combination exercise device comprising a step, said step having a horizontal rigid platform upon which a user may repeatedly step on and off in an aerobic exercise, a trampoline, said trampoline comprising a peripheral frame, a resiliently mounted spring member secured to said frame and having an upper surface upon which the user may jump, downwardly extending feet mounted to said frame for elevating said spring member, and mounting means mounting said trampoline directly to and directly above said step.

5,645,511
EXERCISE APPARATUS
Philippe A. Le Roux, Northampton, and David A. Edgerley, London, both of England, assignors to Green Journal Ltd., Northampton, England
Continuation-in-part of Ser. No. 886,699, May 21, 1992, Pat. No. Des. 353,636. This application Dec. 16, 1992, Ser. No. 991,460
Claims priority, applicatinn United Kingdom, Nov. 21, 1991, 2019088; Nov. 21, 1991, 2019089; Nov. 21, 1991, 9124740
Int. Cl.[6] A03B *21/012*
U.S. Cl. 482—52 **13 Claims**

1. An exercise apparatus, comprising:

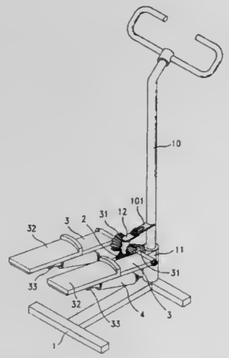
a bridge, the bridge being of elongate form and having two end regions, and two support elements, each support element



being adapted to engage a respective end region of the bridge, the bridge and the support elements being so configured that lateral translation of the support elements causes the support elements to engage the bridge in different relative positions, thus supporting the bridge at different heights,

wherein each support element comprises means defining a base to engage the ground and an upper surface having a lower portion and an upper portion, each end of the bridge having an under surface defining at least two levels which are spaced apart vertically, and adapted selectively to engage said portions of the upper surface of the support element.

5,645,512
STEP EXERCISING MACHINE
Hui-Nan Yu, P.O. Box 372, Hsin-chu, Taiwan
Filed Jul. 29, 1996, Ser. No. 687,940
Int. Cl.[6] A63B *22/04*
U.S. Cl. 482—53 **3 Claims**



1. A step exercising machine comprising:

a base frame having an upright support;

a T-shaped steering rod having a horizontal rod section and a vertical rod section perpendicularly and downwardly extending from said horizontal rod section and mounted in a hole in said upright support;

a first steering gear mounted around the vertical rod section of said T-shaped steering rod above said upright support;

two pedals having a respective fixed end turned about one end of the horizontal rod section of said T-shaped steering rod, and a respective free end for pedaling by the user;

a second steering gear and a third steering gear respectively mounted around the two opposite ends of the transverse top of said steering rod between said pedals and meshed with said first steering gear at two opposite sides;

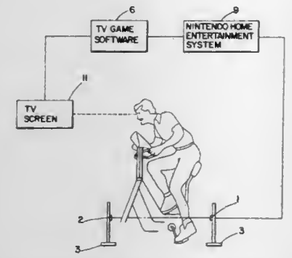
a handle stem mounted in said upright support in front of said steering rod and having a lug near a bottom end thereof;

a connecting plate connected between the lug of said handle stem and the transverse top of said steering rod; and

a damping mechanism adapted for imparting a damping force to said pedals when said pedals are pedaled;

wherein said second steering gear and said third steering gear are alternatively turned relative to said first steering gear when said pedals are alternatively stepped up and down by the user, thereby causing said pedals to oscillate leftwards and rightwards alternatively.

5,645,513
EXERCISING APPARATUS WHICH INTERACTS WITH A VIDEO GAME APPARATUS DURING EXERCISE
Christopher J. Haydocy, Dublin; H. Dwight Eberhart, Powell, and Robert J. Caruso, Hilliard, all of Ohio, assignors to Computer Athlete, Inc., Dublin, Ohio
Continuation of Ser. No. 467,105, Jun. 6, 1995, abandoned, which is a continuation of Ser. No. 195,981, Feb. 10, 1994, abandoned, which is a continuation of Ser. No. 970,341, Nov. 2, 1992, abandoned. This application Jun. 14, 1996, Ser. No. 663,590
Int. Cl.[6] A63F *9/00*
U.S. Cl. 482—57 **7 Claims**



1. An exercising apparatus for exerciser interaction with a video game apparatus during exercise comprising:

a fixed energy source for transmitting energy to a fixed receptor and spaced a sufficient fixed distance from said receptor of said energy to permit various portions of the body of an exerciser, chosen by the exerciser, repetitively to interrupt the energy between said source and said receptor,

means for measuring the frequency of interruption of said energy between said energy source and said receiver,

means for transmitting said frequency of interruption so measured to computer software,

said computer software being so designed so as to provide visual feedback and entertainment to said exerciser from said video game apparatus dependent upon information concerning the frequency of movement of said exerciser so transmitted.

5,645,514
PULLING TYPE EXERCISER
Paul Chen, 5F., No. 31, Gan Tzou 2nd Street, Shi Tun Chu, Taichung, Taiwan
Filed Sep. 20, 1996, Ser. No. 716,894
Int. Cl.[6] A63B *21/00;21/02*
U.S. Cl. 482—72 **3 Claims**

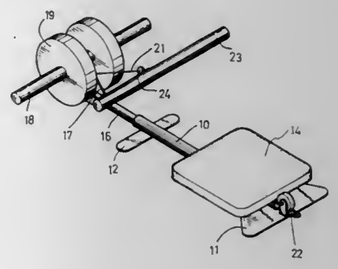
1. An exerciser comprising:

an elongated base tube,

an extension slidably engaged in said elongated base tube along the longitudinal axis thereto, said extension including a front end movable outward of said base tube,

a frame secured to said front end of said extension, having a pulley provided therein, and moved in concert with said extension,

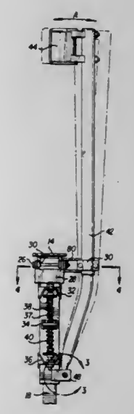
a shaft secured on said frame for moving said extension outward of said base tube,



at least one wheel rotatably secured on said shaft for facilitating movement of said extension, and

a means for biasing said extension toward said base tube including a resilient band received in said base tube and said extension, said resilient band includes a rear end secured to said base tube and includes a front end engaged over said pulley.

5,645,515
STILT SYSTEM
William D. Armstrong, 516 53rd St., Galveston, Tex. 77551, and Joe Lin, 4114 Kingcotton La., Missouri City, Tex. 77459
Filed Jul. 19, 1995, Ser. No. 504,378
Int. Cl.[6] A63B *25/02*
U.S. Cl. 482—75 **4 Claims**



1. An improved stilt comprising:

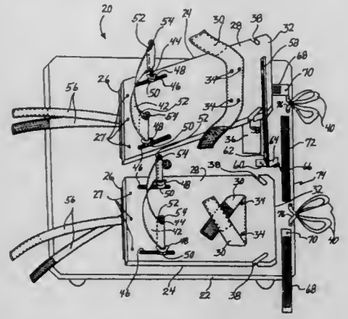
a floor platform,

a shoe platform,

a pair of substantially vertically mounted supports pivotally connecting said floor platform and said shoe platform, said vertical supports spring-biased so as to maintain said vertical supports and said platforms in a parallelogram configuration,

a leg support mounted to one of said vertically mounted supports and to said shoe platform, said mounting including a capturing bracket for engaging the lower end of said leg support and a resiliently lined yoke for engaging the leg support at the attachment to said shoe platform, said lower end and said capturing bracket engaged by a fastener so as to remain engaged despite failure of said fastener.

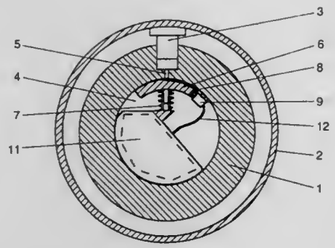
5,645,516
THERAPEUTIC LOWER EXTREMITY EXERCISER AND FOOT REST
Betty J. Foster, 5820 W. Broadway, Crystal, Minn. 55428
Filed Jun. 15, 1994, Ser. No. 259,866
Int. Cl.[6] A63B *23/08*
U.S. Cl. 482—79 14 Claims



1. A lower extremity exercise kit having a plurality of interactive components, combination of the components in a plurality of configurations to form a plurality of means for strengthening the lower extremity of a patient having limited lower extremity strength and motor ability, the lower extremity exercise kit comprising:
a) a base plate;
b) at least one pedal having a heel end and a toe end having a pair of slots formed along opposite lateral edges of each pedal intermediate the heel end and toe end, said pedal hingedly attached at only the heel end thereof directly to the relatively larger base plate, said pedal adapted and designed for receiving the patient's foot for allowing the patient to perform dorsiflexion and plantar flexion movements;
c) a heel strap, having adjustment means to accommodate a variety of foot sizes, mounted near the heel end of each pedal for positioning the heel of the patient during use;
d) a toe strap, affixed near the toe end of each pedal, with fasteners mounted at ends of each strap, for releasably receiving patient's toes by the pedal;
e) at least one elastomeric band, affixed to an edge of the base plate and centered in front of the toe end of each pedal, said elastomeric band looped around the toe end of each pedal and held in position by said pair of slots formed along opposite lateral edges near the toe end formed within each pedal, for providing resistance against dorsiflexion movements of the patient's foot;
f) a pair of ankle straps attached to said base for maintaining the position of the patient's heel adjacent the pedal during use for internal and external rotation of the foot; and
g) the base plate sized to extend completely beyond an exterior perimeter of the pedal.

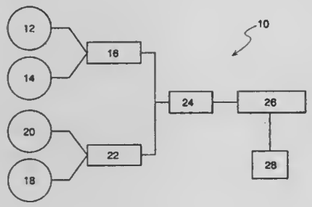
5,645,517
DEFLECTION ADJUSTING ROLL
Wolf Gunter Stotz, Ravensburg, Germany, assignor to Voith Sulzer Papiermaschinen GmbH, Heidenheim, Germany
Filed Jul. 24, 1995, Ser. No. 506,210
Claims priority, application Germany, Jul. 27, 1994, 44 26 513
Int. Cl.[6] B21B *27/00*
U.S. Cl. 492—7 29 Claims

1. A deflection adjusting roll comprising a fixed carrier and a roll jacket, with the roll jacket being rotatable about the carrier, wherein the roll jacket is supported on a plurality of hydraulic support elements, with the support elements being provided with a



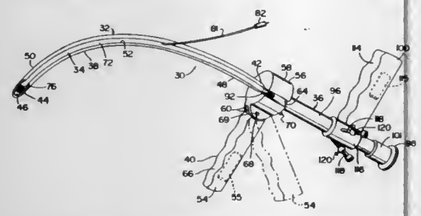
hydraulic pressure medium via a bore axially extending in common with the carrier as well as via further bores, discharging into the axially extending bore, with the further bores also being in communication with at least each one of the support elements and being substantially radially extending, wherein each one of the radially extending bores is associated with a controllable sealing and throttling element, with the sealing and throttling element being slidably disposed within the axially extending bore of the carrier, for influencing the passage of the pressure medium and the sealing and throttling elements are so shaped and are pressed, via at least one biasing element each, against an inside surface of the axially extending bore, so that at least one connecting channel, for the pressure medium, between each of the radially extending bores and the axially extending bore, is provided and that at least the cross section of this connecting channel of the respective sealing and throttle element is controllable via an actuator.

5,645,518
METHOD FOR STABILIZING LOW-LEVEL MIXED WASTES AT ROOM TEMPERATURE
Arun S. Wagh, Joliet, and Dileep Singh, Westmont, both of Ill., assignors to The University of Chicago, Chicago, Ill.
Filed Jan. 31, 1995, Ser. No. 380,922
Int. Cl.[6] A62D *3/00*; B09B *3/00*; G21F *9/00*
U.S. Cl. 588—252 27 Claims



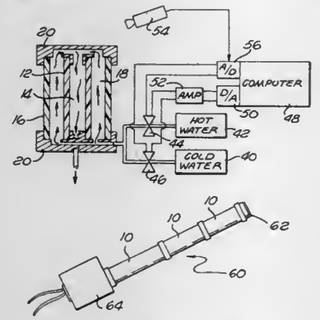
1. A method for using phosphate ceramic material to stabilize solid and liquid waste at room temperature comprising:
a) grinding the solid waste to a predetermined particle size;
b) combining the now ground solid waste with a starter oxide to obtain a powder;
c) contacting the powder with phosphate-containing solution to create phosphates of the oxide in a slurry, said solution containing the liquid waste;
d) mixing the slurry while maintaining the slurry below a predetermined temperature;
e) shaping the now-mixed slurry into a predetermined form; and
f) allowing the now-formed slurry to set into a phosphate ceramic waste form to chemically and physically encapsulate the solid and liquid waste.

5,645,519
ENDOSCOPIC INSTRUMENT FOR CONTROLLED INTRODUCTION OF TUBULAR MEMBERS IN THE BODY AND METHODS THEREFOR
Jai S. Lee, 1205 Clearfield Cir., Lutherville, Md. 21093, and InBae Yoon, Phoenix, Md., assignors to Jai S. Lee, Lutherville, Md.
Filed Mar. 18, 1994, Ser. No. 214,527
Int. Cl.[6] A61B *1/00*
U.S. Cl. 600—114 36 Claims



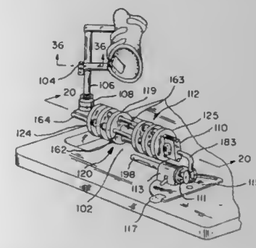
1. An instrument for introducing a tubular member at a site in the body comprising:
a tubular member having a distal end for being introduced at the site in the body;
a blade releasably assembled to said tubular member for guiding introduction of said tubular member distal end at the site in the body, said blade including a distal end for being positioned in the body and a configuration to retract tissue to permit movement of said tubular member toward the site in the body, said tubular member being movable along said blade, and
a remote viewing device disposed in said tubular member including means for visualizing introduction of said tubular member distal end at the site in the body from a location remote from the site in the body.

5,645,520
SHAPE MEMORY ALLOY ACTUATED ROD FOR ENDOSCOPIC INSTRUMENTS
Yoshihiko Nakamura, Tokyo, and Minoru Hashimoto, Kagoshima, both of Japan, assignors to Computer Motion, Inc., Goleta, Calif.
Filed Oct. 12, 1994, Ser. No. 322,778
Int. Cl.[6] A61B *1/00*
U.S. Cl. 600—151 5 Claims



1. A surgical instrument comprising a bendable mechanical arm, wherein the arm comprises:
a first tube;
a second tube, the second tube formed of a shape memory alloy and having a diameter smaller than the first tube, the second tube nested within the first tube thus defining a gap between the first tube and the second tube, the gap configured to provide a passageway for fluid to flow therethrough such that the second tube deflects at an angle in response to the temperature of the fluid flowing through the gap;
means for providing fluid flow through the gap;
means for controlling the temperature of the fluid provided by the means for providing fluid flow; and
wherein the means for providing fluid flow and the means for controlling the temperature are in electrical communication.

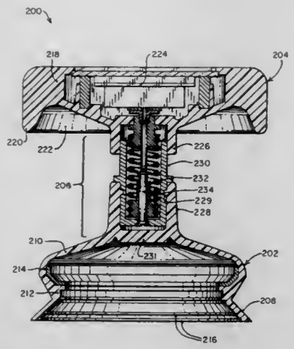
5,645,521
SHOULDER PHYSICAL THERAPY DEVICE
George R. Hepburn, Severna Park, and Russell Vedeloff, Greensboro, both of Md., assignors to Dynasplint Systems, Inc., Severna Park, Md.
Continuation-in-part of Ser. No. 493,403, Jun. 22, 1995, Pat. No. 5,558,624. This application Jan. 17, 1996, Ser. No. 587,961
Int. Cl.[6] A61F *5/04*
U.S. Cl. 601—33 19 Claims



1. In an articulated should physical therapy device for improving the range of motion of a shoulder which allows for the active multiaxial physical therapy of a shoulder, said device being provided with a forearm strut which is attached by an elbow hinge to a first end of a reciprocating telescopic upper arm strut and with the second end of said reciprocating telescopic upper arm strut being attached to a shoulder hinge and being provided with means for accommodating the multiaxial rotation of the shoulder, the physical therapy device also being supplied with one or more tensioning means to place stress on the shoulder during active multiaxial physical therapy to thereby improve the mobility of the shoulder and hasten the return of the shoulder to normal mobility, the device comprising the improvement wherein said reciprocating telescopic upper arm strut is formed of converse sets of multiple rods and multiple scope plates, with the reciprocating telescopic upper arm strut allowing for the lengthening or shortening of the upper arm strut during active multiaxial physical therapy of the shoulder.

5,645,522
DEVICES AND METHODS FOR CONTROLLED EXTERNAL CHEST COMPRESSION
Keith G. Lurie, Minneapolis, Minn., and Todd J. Cohen, Port Washington, N.Y., assignors to The Regents of the University of California, Oakland, Calif., and AMBU International A/S, Copenhagen, Denmark
Continuation-in-part of Ser. No. 686,542, Apr. 17, 1991. This application May 4, 1993, Ser. No. 58,195
Int. Cl.[6] A61H *31/00*
U.S. Cl. 601—43 6 Claims

1. A device for performing cardiopulmonary resuscitation of a patient, said device comprising:
an applicator body having an upper surface and a lower surface;
a handle secured to and extending upwardly from the upper surface of the applicator;



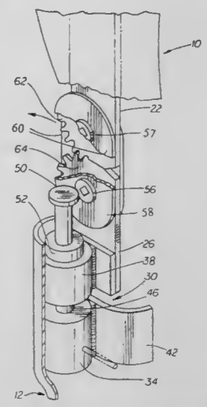
means on the applicator body for adhering the lower surface to the patient's chest, whereby the performer can alternately compress and actively expand the patient's chest by pressing and pulling on the applicator using the handle; and

a pressure gauge on the handle, said pressure gauge measuring compression force applied by the applicator.

5,645,523

Patent Not Issued For This Number

5,645,524
KNEE SUPPORT
Brian Peter Doyle, 390 Wellesly St. E, Toronto, Canada
Filed Feb. 1, 1996, Ser. No. 593,146
Int. Cl.[6] A61F *5/01*
U.S. Cl. 602—16 **7 Claims**



1. A knee support for supporting an injured knee while permitting bending and straightening movements of such knee, such movements involving both displacement of the femur portion of such joint away from the tibia portion thereof and also involving tilting movement of such femur portion relative to such tibia portion, said knee support comprising:

an upper cuff adapted to be secured around a portion of a leg, above said knee;

a lower cuff adapted to be secured around said leg below said knee;

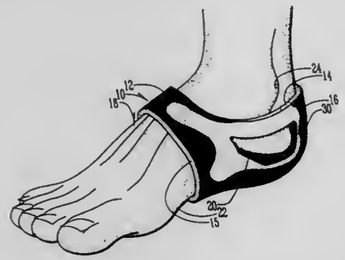
upper attachment plate means secured on said upper cuff adjacent either side of said knee;

swingable link means connected to said upper attachment plate means on either side of said respective cuff, by first pivotal connection means;

lower attachment plate means secured to said swingable link means by second pivotal means adjacent either side of said knee;

linear bearing means movably connected to said lower attachment plate means and said lower cuff on either side of said knee, said linear bearing means being adapted to permit movement of one said cuff towards and away from the other said cuff, thereby enabling free movement of said knee both as to displacement and as to tilting as aforesaid.

5,645,525
HEEL STABILIZING DEVICE AND METHOD FOR TREATING HEEL PAIN
Ronald S. Krivosha, Bellevue, Wash., assignor to Brown Medical Industries, Hartley, Iowa
Filed Jul. 21, 1995, Ser. No. 505,378
Int. Cl.[6] A61F *5/00*
U.S. Cl. 602—62 **21 Claims**



1. A device for stabilizing the heel of a foot comprising:

an elastic sleeve adapted to fit around the foot and heel of a person the sleeve having a front toe opening and a top ankle opening, when in operative position on a person's foot the toe opening is located to position a border thereof along the longitudinal arch, the top ankle opening is located to position a border thereof to extend above the heel without making contact with the ankle so as not to effect the mobility of the ankle; and

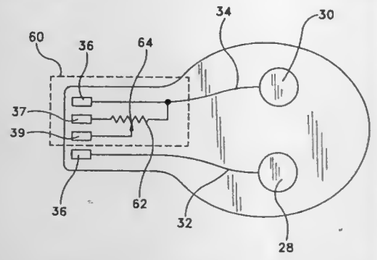
a first and second pad positioned on opposite sides of the sleeve adjacent the border of the top ankle opening proximate the medial and lateral sides of the calcaneus of the heel and below both the talo calcaneal joint and the ankle for applying pressure to the calcaneus.

16. A method for selectively stabilizing a person's heel below the talo calcaneal joint without effecting the range of motion of the ankle joint, comprising the steps of:

placing an elastic sleeve having a front toe opening and a top ankle opening around the foot and heel of a person and below the ankle such that the toe opening is positioned along the longitudinal arch and the top ankle opening is positioned to extend above the heel and below the ankle; and

positioning first and second pads adjacent a border of the top ankle opening proximate the medial and lateral sides of the calcaneus below the talo calcaneal joint such that the pads exert pressure on the medial and lateral sides of the heel to stabilized the heel without exerting pressure on the ankle joint.

5,645,526
APPARATUS AND METHOD FOR ENSURING COMPATIBILITY OF A REUSABLE IONTOPHORETIC CONTROLLER WITH AN IONTOPHORETIC PATCH
Ronald J. Flower, Vernon, N.J., assignor to Becton Dickinson and Company, Franklin Lakes, N.J.
Filed Sep. 30, 1994, Ser. No. 315,372
Int. Cl.[6] A61N *1/30*
U.S. Cl. 604—20 **17 Claims**



1. An iontophoretic drug delivery device comprising:

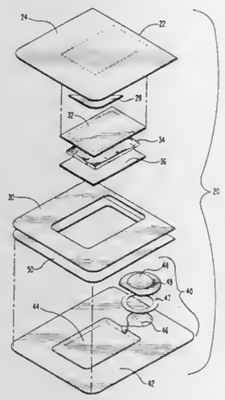
a reusable controller having a power source;

a patch for attaching to the skin of a patient, the patch including electrodes in the form of an anode and a cathode, one of the said anode and said cathode including a reservoir containing an ionizable substance for transcutaneous delivery to the patient, said patch being removably, electrically connectable to said controller for delivering current from the controller to the patch electrodes; and

means for determining whether the controller is compatible with the patch, the determining means including means for preventing current from the controller from being delivered to said patch electrodes when th epatch is connected to the controller if said controller and patch are deemed incompatible.

5,645,527
HYDRATION ASSEMBLY FOR HYDRATING A BIOELECTRODE ELEMENT
Jon E. Beck, Salt Lake City, Utah, assignor to IOMED, Inc., Salt Lake City, Utah
Filed Feb. 9, 1996, Ser. No. 599,129
Int. Cl.[6] A61N *1/30;* **A61B** *17/06;* **B65D** *35/24*
U.S. Cl. 604—20 **29 Claims**

1. A hydratable bioelectrode element for use in an iontophoretic delivery device comprising:



an electrical current distribution element;

a hydratable matrix member in electrical communication with the electrical current distribution element;

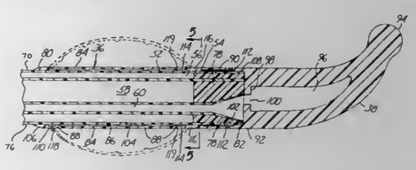
hydration means positioned to fluidly communicate with the hydratable matrix member for hydrating said matrix member, said hydration means including a hydration assembly comprising:

a hydrating liquid stored within a volume between a first pocket in a first side and a second pocket in a second side of a sealed liquid-storage component;

at least one of said first and second pockets of said sealed liquid-storage component being a collapsible pocket, the other pocket being more rigid than said collapsible pocket to thereby maintain its shape during use, such that said collapsible pocket collapses into an intact inverted position substantially fittingly aligned within the other pocket in response to an applied force to thereby substantially eliminate said volume between said first pocket and said second pocket; and

a selected release site between said first side and said second side of said sealed liquid storage component, said selected release site adapted to become unsealed and to release said hydrating liquid therethrough in response to said applied force.

5,645,528
UNITARY TIP AND BALLOON FOR TRANSURETHRAL CATHETER
Scott P. Thome, Waite Park, Minn., assignor to Urologix, Inc., Minneapolis, Minn.
Filed Jun. 6, 1995, Ser. No. 468,801
Int. Cl.[6] A61M *29/00*
U.S. Cl. 604—96 **11 Claims**



1. An intraurethral catheter comprising:

an elongate, generally tubular shaft having a first end, a second end, and an outer surface and at least one lumen extending between the first end and the second end of the shaft; and

a tip mounted on the second end of the shaft, the tip comprising a monolithic member including an inflatable balloon portion and a tip portion extending from the balloon portion and configured to facilitate insertion of the catheter within a urethra, the balloon portion being arranged and configured to slip fit over and be secured on the shaft second end, thereby securing the tip portion to the shaft.

5,645,529
DEVICES FOR SELECTIVELY DIRECTING INFLATION DEVICES
John R. Fagan, Pepperell; Jeffrey M. Kling, Tewksbury, and Michael D. Barbere, Dunstable, all of Mass., assignors to C. R. Bard, Inc., Murray Hill, N.J.
Continuation of Ser. No. 29,447, Mar. 11, 1993, abandoned. This application Mar. 14, 1994, Ser. No. 213,463
Int. Cl.[6] A61M *29/00*
U.S. Cl. 604—101 **5 Claims**

1. A method for treating a constricted region in a blood vessel, said constricted region having first and second portions disposed in a plane orthogonal to the blood vessel, comprising the steps of:



inserting into the blood vessel a dilatation catheter having a dilatation element affixed thereto;

locating the dilatation element in said constricted region;

establishing contact between said dilatation element and said first and second portions of said constricted region; and

applying a first, diffuse, cushioned dilatation force to said first contacted portion of said constricted region disposed in said plane and a second, focused, dilatation force to said second contacted portion of said constricted region disposed in said plane, said second dilatation force being higher than said first dilatation force.

5,645,530

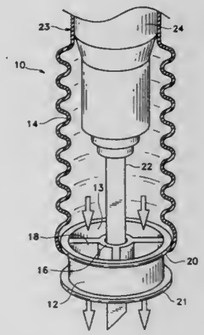
PHACOEMULSIFICATION SLEEVE

Mikhail Boukhny, Laguna Beach, and Thomas G. Capetan, Corona Del Mar, both of Calif., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.

Filed Aug. 28, 1995, Ser. No. 494,270

Int. Cl.[6] A61N *1/30*

U.S. Cl. 604—22 **26 Claims**



1. A phacoemulsification sleeve, comprising:

i) a rigid sleeve having a bore, an outwardly extending ring held within the bore and a flange on an end of said sleeve for preventing the sleeve from being dislodged from a phacoemulsification incision when inserted therein, the rigid sleeve being sized and shaped to fit within a phacoemulsification incision; and

ii) a flexible irrigation bellows connected to the rigid sleeve forming an irrigation fluid path, the irrigation fluid path extending through the sleeve and into the phacoemulsification incision when said sleeve is inserted into a phacoemulsification incision.

5,645,531

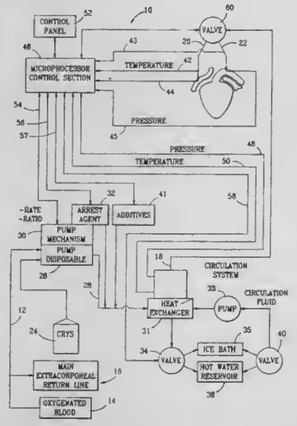
CONSTANT PRESSURE BLOOD MIXTURE DELIVERY SYSTEM AND METHOD

Thomas C. Thompson, McKinney; Martyn Abbott, Richardson, and Kenneth A. Jones, McKinney, all of Tex., assignors to Quest Medical, Inc., Allen, Tex.

Continuation-in-part of Ser. No. 67,683, May 26, 1993, Pat. No. 5,385,540. This application Mar. 1, 1994, Ser. No. 204,530

Int. Cl.[6] A61M *31/00*

U.S. Cl. 604—67 **29 Claims**



1. A method for establishing constant pressure blood mixture fluid delivery to a patient comprising the steps of:

(a) connecting a fluid delivery tube between the patient and an adjustable rate pump of a type for pumping blood mixture fluid at an adjustable flow rate;

(b) increasing the rate of pumping of fluid to the patient through the tube;

(c) measuring pressure in the fluid delivery tube while increasing the flow rate there through; and

(d) upon measuring a desired pressure, simultaneously disengaging a manual flow rate adjustment mechanism and engaging an automatic control mechanism by which the flow rate in said fluid delivery tube is automatically adjusted to maintain said desired pressure.

5,645,532

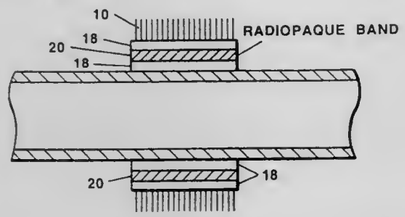
RADIOPAQUE CUFF PERITONEAL DIALYSIS CATHETER

Donna Horgan, Berkley, Mass., assignor to Sil-Med Corporation, Taunton, Mass.

Filed Mar. 4, 1996, Ser. No. 610,526

Int. Cl.[6] A61F *2/00*

U.S. Cl. 604—117 **3 Claims**



1. In a peritoneal catheter adapted for implantation in the human body having a distal end arranged to reside in the peritoneal cavity,

a proximal end arranged to reside external to the body, and a subcutaneous section between said distal and proximal ends, the improvement which compises:

at least one radiopaque fibrous cuff positioned at, surrounding, and attached to said subcutaneous section, said cuff adapted to integrate with body tissue to seal said catheter upon said implantation, said cuff observable by X-ray imaging techniques, said radiopaque cuff comprising an outer band of fibrous material and an inner band of radiopaque material said inner and outer bands attached by an adhesive and said inner band and said subcutaneous section attached by an adhesive.

5,645,533

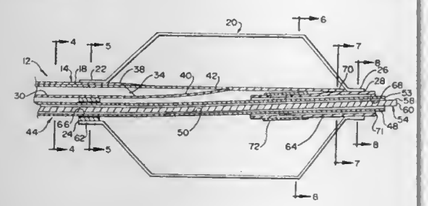
APPARATUS AND METHOD FOR PERFORMING AN INTRAVASCULAR PROCEDURE AND EXCHANGING AN INTRAVASCULAR DEVICE

David Blaeser, Champlin; Janita Burmeister, White Bear Lake; Peter Keith, Fridley, and Thomas Ressemann, St. Cloud, all of Minn., assignors to SciMed Life Systems, Inc., Maple Grove, Minn.

Continuation of Ser. No. 55,695, Apr. 29, 1993, abandoned, which is a continuation-in-part of Ser. No. 725,064, Jul. 5, 1991, Pat. No. 5,281,203, and Ser. No. 843,647, Feb. 28, 1992, abandoned. This application Jan. 26, 1995, Ser. No. 379,091

Int. Cl.[6] A61M *29/02*

U.S. Cl. 604—164 **9 Claims**



1. An intravascular catheter assembly comprising:

an elongate inflation tube with an inflation lumen extending therethrough;

an inflatable balloon secured to a distal end portion of the inflation tube and in fluid flow communication with the inflation lumen;

an elongated guide member adapted to receive a guide wire, said guide member coextending exteriorly with the inflation tube and coextending interiorly with the balloon;

a distal sealing port located distal of the balloon and adapted to slidably receive the guide member therethrough said distal sealing port having a proximal end in fluid communication with said inflation lumen and a distal seal member disposed therein for sealing said port when said guide member is disposed therethrough; and

a proximal sealing port located proximal of the balloon and adapted to slidably receive the guide member therethrough, said proximal sealing port having a distal end in fluid communication with said inflation lumen and a proximal seal member disposed therein for sealing said port when said guide member is disposed therethrough.

5,645,534

TIME OF LAST INJECTION INDICATOR FOR MEDICATION DELIVERY PEN

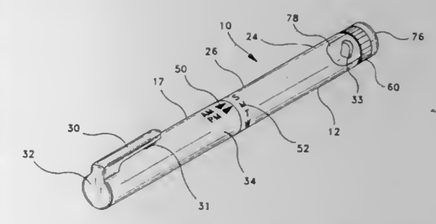
Lawrence H. Chanoch, Mahwah, N.J., assignor to Becton Dickinson and Company, Franklin Lakes, N.J.

Filed Jun. 24, 1994, Ser. No. 267,097

Int. Cl.[6] A61M *3/00;5/00*

U.S. Cl. 604—189 **7 Claims**

1. A medication delivery pen comprising:



a pen body assembly comprising a distal end, a proximal end, means for setting a desired dose of medication to be dispensed by said pen body assembly and means for dispensing the desired dose of medication from the distal end of said pen body assembly, said pen body assembly including a plurality of indicia thereon;

a cap for covering said distal end of said pen body assembly, said cap having an indicia thereon; and

means integral with and on said pen body assembly and said cap for indicating when the desired dose of medication was dispensed from said pen body assembly when said cap is attached to the distal end of said pen body assembly, wherein said indicating means is interposed between said distal end and said proximal end of said pen body assembly when said cap covers said distal end of said pen body assembly,

wherein each of said plurality of indicia on said pen body assembly represent a day of a week, whereby said indicating means display the day of the week the desired dose was dispensed, when said cap is attached to the distal end of said pen body assembly, and

wherein said indicia on said cap comprises an AM indicia and a PM indicia, whereby one of said cap indicia can be aligned with one of said plurality of indicia on said pen body assembly for said indicating means to display a time of day and the day of the week the desired dose was dispensed, when said cap is attached to the distal end of said pen body assembly.

5,645,535

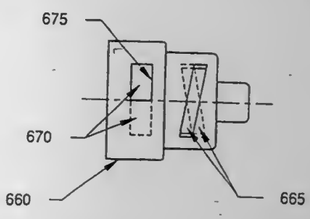
RETRACTABLE SYRINGE

Jerry Goldberg, Houston, Tex., assignor to Retrax, Inc., Houston, Tex.

Continuation of Ser. No. 934,521, Oct. 5, 1992, Pat. No. 5,393,301, which is a continuation-in-part of Ser. No. 771,762, Oct. 4, 1991, Pat. No. 5,205,823, which is a continuation-in-part of Ser. No. 592,623, Oct. 4, 1990, Pat. No. 5,112,315. This application Feb. 27, 1995, Ser. No. 395,024

Int. Cl.[6] A61M *5/32*

U.S. Cl. 604—195 **10 Claims**



1. A retractable syringe for use with a hypodermic needle cartridge, comprising:

a barrel having a proximal end and a distal end, said proximal end of said barrel including a mounting collar with a bore having a wall;

a piston plunger telescopingly received within said distal end of said barrel, said plunger including a snap lock coaxial with said plunger;

a needle carrier located at said proximal end of said barrel;

a groove formed in said wall and having a distal constriction and a proximal constriction located near said distal end of said barrel. the width of said groove being at least equal to the width of said snap lock;

said distal constriction and said proximal constriction each having an interior diameter less than the diameter of said groove and each having a proximal side and a distal side;

said distal constriction interior diameter being smaller than said proximal constriction interior diameter.

5,645,536

PARENTERAL DEVICE

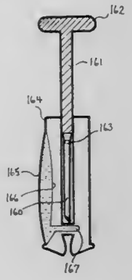
Maxwell Edmund Whisson, Nedlands, Australia, assignor to Eastland Technology Australia Pty Ltd., Australia

Continuation of Ser. No. 960,379, Jan. 11, 1993, Pat. No. 5,425,722. This application Jun. 19, 1995, Ser. No. 492,169

Claims priority, application Australia, Jul. 4, 1990, PK1008; Aug. 20, 1990, PK1835

Int. Cl.[6] A61M *5/24;5/28*

U.S. Cl. 604—200 **7 Claims**



1. A parenteral device comprising a body, the body having a chamber which is stationary relative to the body, a hollow needle having a pointed one end with a first aperture at the one end, the needle being supported in the body for slidable movement between a first position and a second position wherein said first position comprises said needle being fully accommodated in the body, said second position comprises said one end of said needle extending beyond the body, said needle having a second aperture inward of the first aperture, said needle in movement from the first position to the second position being capable of piercing the chamber and causing the second aperture to be brought into open communication with the interior of the chamber when in the second position to allow flow of fluid between the chamber and the first aperture, the needle being substantially co-linear with the body and said second aperture being spaced axially along said needle from the one end and wherein on movement of the needle from the first position to the second position, the one end of the needle successively pierces opposed sides of the chamber to pass through the chamber when bringing the second aperture into open communication with said interior.

5,645,537

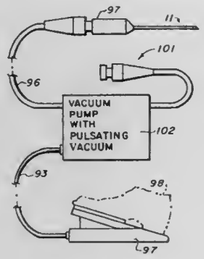
ASPIRATION NEEDLE AND SYRINGE FOR USE THEREWITH, APPARATUS INCORPORATING THE SAME AND KIT FOR USE IN FINE NEEDLE ASPIRATION CYTOLOGY, AND METHOD

Trevor J. Powles, Chipstead Surrey, United Kingdom, and Mir A. Imran, Palo Alto, Calif., assignors to Advanced Cytometrix, Inc., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 49,998, Apr. 20, 1993, Pat. No. 5,330,443. This application Apr. 15, 1994, Ser. No. 228,551

Int. Cl.[6] A61M *5/00;5/31*

U.S. Cl. 604—240 **4 Claims**



1. Apparatus for use by an operator in fine needle aspiration cytology for collecting cells from tissue in a living body to provide a sample comprising a fine aspiration needle having proximal and distal extremities, cell visualization means carried in alignment with the proximal extremity of the fine needle and permitting the operator to see the cells as the cells are being collected, a subambient vacuum source remote from the needle and having an outlet, tubing connecting the outlet of the vacuum source to the proximal extremity of the needle and foot-operated means for controlling the supply of a vacuum from the vacuum source to the needle to thereby control the aspiration of cells from the tissue through the needle while the collection of cells for the sample is taking place and while the visualization means is being viewed by the operator.

5,645,538

NEEDLELESS VALVE FOR USE IN INTRAVENOUS INFUSION

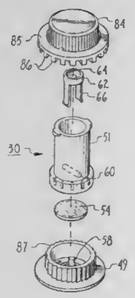
Frank M. Richmond, 205 A Grant St., Harvard, Ill. 60033

PCT No. PCT/US94/10477, § 371 Date Mar. 12, 1996, § 102(e) Date Mar. 12, 1996, PCT Pub. No. WO95/07720, PCT Pub. Date Mar. 23, 1995

PCT Filed Sep. 15, 1994, Ser. No. 612,875

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—256 **5 Claims**



1. A device for holding liquid medicament, comprising:

an IV component having an opening formed therein;

a valve including a valve body operably engaged with the opening and having a first position, wherein a passageway for fluid communication is established through the opening, and a second position, wherein fluid communication through the opening is not permitted, the valve including a male valve element having a skirt disposed in the valve body and an engagement surface extending outwardly beyond the valve body for contacting a spikeless/needleless connector to cause the valve element to reciprocate relative to the IV component;

wherein the valve is biased to the second position and is engageable with the spikeless/needleless connector to establish the first position of the valve.

5,645,539

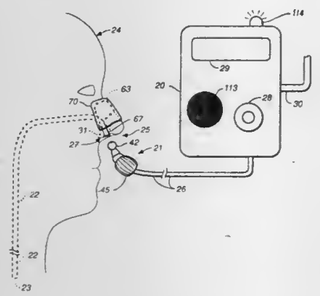
ELONGATED MEDICAL CHANNEL ASSEMBLY AND METHOD OF PREVENTING DISLODGEMENT

Lewis S. Solomon, Santa Rosa, and Peter D. Dieterich, Jr., Corte Madera, both of Calif., assignors to Innocare One, Ltd., Sausalito, Calif.

Filed Nov. 14, 1994, Ser. No. 338,647

Int. Cl.[6] A61M *25/00*

U.S. Cl. 604—283 **41 Claims**



1. An elongated medical channel assembly comprising:

an indwelling elongated channel-defining member formed and dimensioned for positioning of an end thereof at an indwelling position in a patient;

an external elongated channel-defining member; and

a coupling assembly formed for relative angular displacement of said external elongated channel-defining member relative to said indwelling elongated channel-defining member without disconnection, said coupling assembly releasably coupling together said indwelling elongated channel-defining member and said external elongated channel-defining member for communication of one of a fluid and a signal therebetween at a location along a length of said medical channel assembly positioning said coupling assembly substantially at an exit site of said indwelling elongated channel defining member from said patient when said medical channel assembly is in use, and said coupling assembly being further formed for uncoupling of said external elongated channel-defining member from said indwelling elongated channel-defining member with a disconnect force less than a force required to dislodge said indwelling elongated channel-defining member as mounted in an indwelling position in said patient.

5,645,540

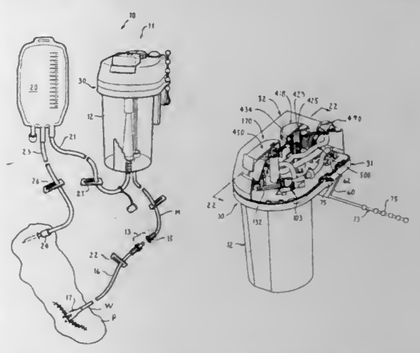
BLOOD CONSERVATION SYSTEM

Bruce D. Henniges; Kurt J. Knipers, and Richard F. Huyser, all of Kalamazoo, Mich., assignors to Stryker Corporation, Kalamazoo, Mich.

Filed Oct. 11, 1994, Ser. No. 320,940

Int. Cl.[6] A61M *1/00*

U.S. Cl. 604—320 **32 Claims**



1. Medical apparatus for vacuum draining a surgical wound on a patient comprising:

a reservoir evacuable to subatmospheric pressure and means for drawing liquid thereinto from a draining wound;

an evacuation means for placing the reservoir under subatmospheric pressure and including an evacuation pump for producing a subatmospheric pressure, expandable/contractible means connected in a subatmospheric pressure path with said evacuation pump and reservoir for contraction in response to reduction of air pressure in said reservoir by operation of said evacuation pump, energizing means responsive to contraction of said expandable/contractible means for turning off said pump and responsive to an expansion of said expandable/contractible means for turning on said pump.

5,645,541

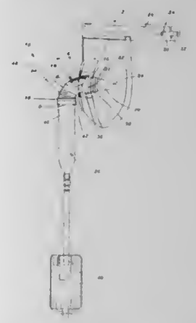
URINAL DEVICE

Richard E. Bouser, 655 Brookfield Ave., Masury, Ohio 44438

Continuation-in-part of Ser. No. 278,811, Jul. 22, 1994, Pat. No. 5,520,671. This application Apr. 11, 1996, Ser. No. 630,845

Int. Cl.[6] A61F *5/44*

U.S. Cl. 604—353 **9 Claims**



1. A urinal device for the reception therein of a user's penis, said device comprising:

collar means for the reception therein of the user's penis said collar means having a length of at least 2 inches, said collar means having a first and a second portion;

support means adapted to be worn by the user for supporting said collar means relative to the user;

said first and second portions being disposed on opposite sides of said support means with said first portion for being disposed nearest to the user and between the user and said support means for supporting therein the user's penis, the arrangement being such that in use of the device, the user's penis is inserted through said collar means, said collar means having a first and second end the arrangement being such that in use of the device, any tendency for the user's penis to retract away from said first portion is inhibited thereby preventing leakage therepast;

flexible tubular means fabricated from latex material for sealing said device relative to the user's penis, said tubular means having a first and second extremity, said first extremity sealingly engaging said first end of said collar means, said second extremity for sealingly cooperating with the user's penis;

collection means sealingly cooperating with said second end of said collar means, the arrangement being such that in use of the device, the user's penis is sealingly supported by said tubular means so that the user's penis is disposed within said collar means;

said collection means including:

a tubular sleeve connected to said second end of said collar means;

a collection bag connected to said tubular sleeve such that said tubular sleeve is disposed between said collar means and said bag; and

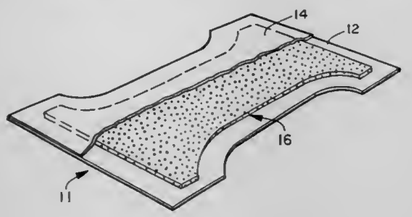
said tubular sleeve being fabricated from latex material.

5,645,542

ELASTOMERIC ABSORBENT STRUCTURE

Sriram Padmanabhan Anjur; Ketan Narendra Shah, both of Appleton, and Anthony John Wisneski, Kimberly, all of Wis., assignors to Kimberly-Clark Worldwide, Inc., Neenah, Wis.

Filed Dec. 29, 1994, Ser. No. 366,066
Int. Cl.[6] A61F *13/15;13/20*
U.S. Cl. 604—368 **17 Claims**



1. An elastomeric absorbent structure comprising:

a. from about 35 to about 65 weight percent wettable staple fiber; and

b. from greater than about 35 to about 65 weight percent thermoplastic elastomeric fiber;

wherein all weight percents are based on the total weight of the wettable staple fiber and the thermoplastic elastomeric fiber in the elastomeric absorbent structure, and wherein the elastomeric absorbent structure exhibits the following properties:

i. a Specific Liquid Saturated Retention Capacity value of at least about 5 grams of liquid absorbed to a gram of absorbent structure basis;

ii a Maximum Stretch value in a dry condition that is greater than about 60 percent;

iii. a Maximum Stretch value in a 100 percent liquid saturated condition that is greater than about 150 percent;

iv. a Stretch Recovery value in a dry condition that is greater than about 70 percent; and

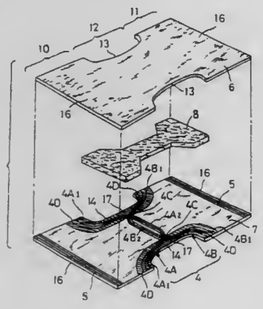
v. a Stretch Recovery value in a 100 percent liquid saturated condition that is greater than about 75 percent.

5,645,543

DISPOSABLE GARMENTS

Hironori Nomura; Hirofumi Ohnishi, both of Ehime-ken; Yoshinori Matsura, Kanonji, and Tohru Sasaki, Kawanoe, all of Japan, assignors to Uni-Charm Corporation, Ehime-ken, Japan

Continuation of Ser. No. 274,440, Jul. 13, 1994, abandoned, which is a continuation of Ser. No. 2,028, Jan. 8, 1993, Pat. No. 5,334,152, which is a continuation of Ser. No. 738,447, Jul. 31, 1991, Pat. No. 5,197,960, which is a continuation of Ser. No. 626,783, Dec. 13, 1990, Pat. No. 5,055,103. This application Dec. 6, 1995, Ser. No. 567,834
Claims priority, application Japan, Dec. 18, 1989, 1-328022
Int. Cl.[6] A41B *9/00;* **A61F** *13/15*
U.S. Cl. 604—385.2 **10 Claims**



1. A disposable garment in assembled condition comprising:

a topsheet and a backsheet disposed in an overlying relationship,

spaced apart first and second leg openings, each leg opening having an upper end portion, a lower end portion, a mid-portion between said upper end portion and said lower end portion, a front side portion generally disposed between said upper end portion and said mid-portion, and a rear side portion generally disposed between said mid-portion and said lower end portion,

a crotch area extending between said mid-portions of said leg openings,

means for elastically surrounding each of said leg openings, the improvement comprising

said means for elastically surrounding each of said leg openings comprising a plurality of first elastic members and a plurality of second elastic members,

said first elastic members extending along the front side portion of said first leg opening, across said crotch area and then along one of said side portions of said second leg opening,

said second elastic members extending along the rear side portion of said first leg opening, across said crotch area and then along the other of said side portions of said second leg opening,

said plurality of first and second elastic members converging toward each other from said lower end portion toward said mid-portion of each leg opening and extending across said crotch area along lines that are generally parallel to each other over a substantial portion of the crotch area,

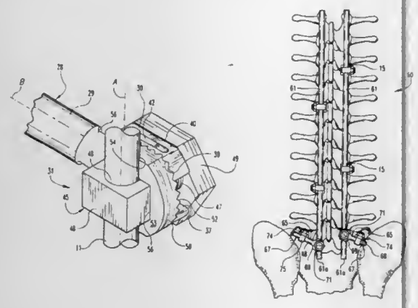
the tensile stress of said plurality of first and second elastic members decreasing toward the upper end portion of each leg opening.

5,645,544

VARIABLE ANGLE EXTENSION ROD

Joseph Tai, and Michael C. Sherman, both of Memphis, Tenn., assignors to Danek Medical, Inc., Memphis, Tenn.

Filed Sep. 13, 1995, Ser. No. 527,410
Int. Cl.[6] A61B *17/56*
U.S. Cl. 606—61 **14 Claims**



1. A spinal fixation system comprising:

an elongated spinal element configured to extend adjacent the spine;

a plurality of fixation elements each having a bone engaging portion configured for engaging the spine and engaging means for engaging said fixation element to said elongated spinal element;

an extension member having a head portion and an elongated portion extending therefrom, said elongated portion configured for placement adjacent the spine and adapted to receive one of said plurality of fixation elements engaged thereon by said engaging means, and said head portion defining a variable angle surface; and

a clamping member for clamping said extension member to said elongated spinal element, said clamping member having a mating surface configured for mating engagement with said variable angle surface of said extension member to permit orientation of said elongated portion of said extension member at a plurality of angles relative to said elongated spinal element.

5,645,545

SELF REAMING INTRAMEDULLARY NAIL AND METHOD FOR USING THE SAME

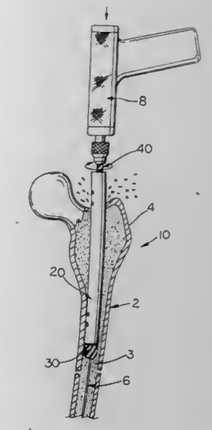
Mark A. Bryant, Auburn, Ind., assignor to Zimmer, Inc., Warsaw, Ind.

Filed Aug. 14, 1995, Ser. No. 514,577
Int. Cl.[6] A61B *17/56*
U.S. Cl. 606—62 **10 Claims**

1. A surgical nail adapted for use with a rotational driver for fixation within a bone comprising:

a cannulated nail body having a proximal end and a distal end and a longitudinal bore extending therethrough,

a reaming head rotatably connected relative to said body distal end and including blade means for cutting a portion of said bone to prepare said bone for receiving said nail when said reaming head is rotated,



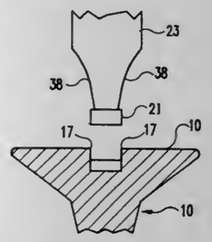
a drive shaft within said body bore for connecting said reaming head to said rotational driver to transfer rotational movement from said driver to said reaming head.

5,645,546

BONE SCREW AND SCREW DRIVER BLADE SYSTEM FOR ORAL AND MAXILLOFACIAL SURGICAL PROCEDURES

Mike M. Fard, Santa Ana, Calif., assignor to MicroAire Surgical Instruments, Valencia, Calif.

Continuation of Ser. No. 944,777, Sep. 14, 1992, abandoned. This application Apr. 3, 1995, Ser. No. 396,534
Int. Cl.[6] A61B *17/56*
U.S. Cl. 606—72 **11 Claims**



1. A bone screw and screw driver blade adapted in combination to allow a surgeon using only one hand to pick up said bone screw with said blade, insert said bone screw into a bone, and release said bone screw from said blade, comprising in combination:

a screw slot having opposing side walls, spaced apart by a first predetermined distance, and a bottom wall surface in said bone screw;

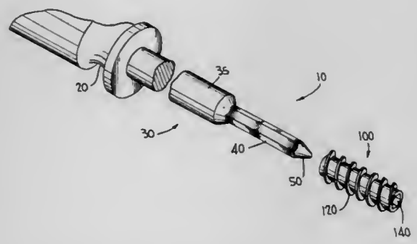
a recess extending into said bone screw from said bottom wall surface, said recess forming in said screw opposing wall surfaces that are spaced apart from one another by a first predetermined dimension, said first predetermined dimension being larger than said first predetermined distance;

a screw driver blade having a bottom surface and side walls extending from said bottom wall surface that are spaced apart from one another by a second predetermined distance;

a pin on said screw driver blade extending from said bottom surface, said pin having opposing wall surfaces that are spaced apart from one another by a second predetermined dimension that is larger than said second predetermined distance;

said pin and said recess each so dimensioned, one relative to the other, so that said second predetermined dimension and said first predetermined dimension overlap by an amount such that when said pin is inserted into said recess there is an interference fit between said pin and said recess.

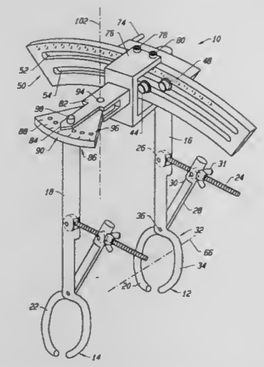
5,645,547
REVISABLE INTERFERENCE SCREW
R. Glen Coleman, Clearwater, Fla., assignor to Linvatec Corporation, Largo, Fla.
Division of Ser. No. 987,477, Dec. 7, 1992, Pat. No. 5,354,299. This application Apr. 20, 1994, Ser. No. 230,561
Int. Cl.[6] A61B *17/86*
U.S. Cl. 606—73 **33 Claims**



19. A unitary surgical self-tapping interference screw, said screw being substantially symmetric about a plane bisecting a longitudinal axis thereof, and consisting of:
a rigid shank with a central longitudinal screw axis and first and second ends;
at least one exterior helical self-tapping thread formed integrally with said shank between said first and second ends;
a bore being formed in said shank, said bore extending longitudinally and coaxially throughout the entire length of said shank between said first and second ends and said bore having a uniform continuous transverse cross-section extending from one end of said shank through to the other end thereof, for torque-transmitting engagement with a correspondingly-shaped driver inserted into said bore from either of said first and second ends.

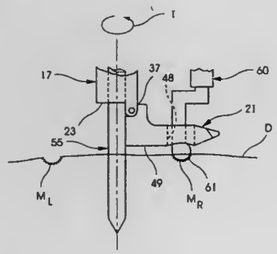
5,645,548
OSTEOTOMY FRAME
Samuel F. Augsburger, 2409 Woodruff Way, Lexington, Ky. 40515
Filed Feb. 15, 1996, Ser. No. 601,797
Int. Cl.[6] A61B *17/56*
U.S. Cl. 606—87 **13 Claims**

1. An osteotomy frame for aligning first and second bone portions comprising:
a first clamp for holding the first bone portion and a second clamp for holding the second bone portion, said first and second clamps comprising lockable jaw portions for locking said clamps to said first and second bone portions;
an arm connected to said first clamp;
pivoting means for rotating said arm connected to said first clamp relative to a longitudinal axis of said first bone portion; and



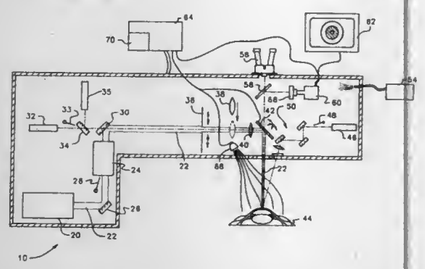
a scale, said arm interacting with said scale to show a value of rotation about said axis.

5,645,549
TEMPLATE FOR POSITIONING INTERBODY FUSION DEVICES
Lawrence M. Boyd, Memphis, and Eddie Ray, III, Cordova, both of Tenn., assignors to Danek Medical, Inc., Memphis, Tenn.
Filed Apr. 24, 1995, Ser. No. 427,432
Int. Cl.[6] A61B *17/58; A61F 2/00*
U.S. Cl. 606—96 **15 Claims**



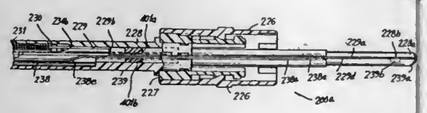
1. A template assembly to facilitate the placement of an implant or instrument at a portion of the spine, such as the disc space between adjacent vertebrae comprising:
a tubular body sized for introduction into a patient for advancement to the portion of spine, said tubular body having a longitudinal axis, and a proximal end disposed outside the patient and a distal end disposed adjacent the portion of the spine when said body is within the patient;
an elongated guide foot having an axis and defining an opening therethrough sized to receive the implant or instrument extending therethrough, said guide foot being pivotably connected to said tubular body at a hinge disposed at said distal end, whereby said guide foot is pivotable between a first position in which said axis of said foot is generally parallel to said longitudinal axis of said tubular body for introduction into the patient, and a second position in which said axis is oriented at an angle relative to said longitudinal axis of said tubular body with said opening oriented toward the portion of the spine; and
deployment means extending through said tubular body and operating on said guide foot for causing said guide foot to pivot about said hinge between said first position and said second position.

5,645,550
METHOD AND APPARATUS FOR PROVIDING PRECISE LOCATION OF POINTS ON THE EYE
Kristian Hohla, Vaterstetten, Germany, assignor to Chiron Technolas GmbH Ophthalmologische System, Germany
Filed Apr. 8, 1994, Ser. No. 225,306
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—108 **9 Claims**



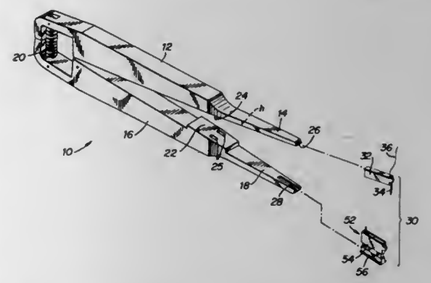
1. An aiming assistance fixture for providing improved performance of an eye tracking system used in conjunction with an eye, the eye tracking system having a range of observation of the eye, the eye including a treatment area in which a laser would remove tissue, said aiming assistance fixture comprising:
a wall, said wall having a profile with a profile height and a profile width, said wall forming the periphery of a substantially closed shape, and said wall surrounding the area of treatment;
wherein the shape formed by said wall is within the range of observation of the eye tracking system;
wherein said wall is of sufficiently low mass such that it freely follows the movement of the eye; and
wherein the shape is oblong.

5,645,551
APPARATUS AND METHOD FOR APPLYING SURGICAL CLIPS
David T. Green, Westport; Henry Bolanos, East Norwalk, both of Conn.; Wayne P. Young, Brewster, N.Y.; Richard A. McGarry, Norwalk, Conn.; Lisa W. Heaton, Norwalk, Conn., and Keith Ratcliff, Sandy Hook, Conn., assignors to United States Surgical Corporation, Norwalk, Conn.
Continuation of Ser. No. 860,650, Mar. 30, 1992, Pat. No. 5,423,834, which is a continuation of Ser. No. 381,265, Jul. 18, 1989, Pat. No. 5,100,420. This application Sep. 2, 1994, Ser. No. 300,254
The portion of the term of this patent subsequent to Jul. 18, 2009, has been disclaimed.
Int. Cl.[6] A61B *17/04*
U.S. Cl. 606—143 **14 Claims**



1. A surgical apparatus comprising:
(a) a frame and at least one actuating handle movably mounted with respect to the frame;
(b) an elongated section having a proximal end connected to the frame;
(c) flexible opposing jaws positioned at the distal end of the elongated section;
(d) a cam member having a proximal end which extends into the frame and a distal end which at least partially surrounds the flexible opposing jaws, the cam member being movably positioned within the elongated section between a proximal position and a distal position wherein the flexible opposing jaws are cammed into closure;
(e) a pusher member having a proximal end which extends into the frame and a distal end, the pusher member being movably positioned within the elongated section between a proximal position and a distal position whereby a clip is moved within the flexible opposing jaws; and
(f) a spring positioned within the frame and abutting the cam member and the pusher member, the spring biasing the cam member proximally and the pusher member distally.

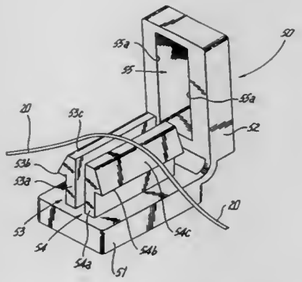
5,645,552
SURGICAL APPARATUS FOR SUTURING BODY TISSUE
Charles R. Sherts, Southport, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.
Filed Jan. 11, 1995, Ser. No. 371,200
Int. Cl.[6] A61B *17/04*
U.S. Cl. 606—145 **29 Claims**



29. A surgical apparatus for suturing body tissue comprising:
a first jaw and a second jaw;
a first needle retaining section having a first needle securing mechanism mounted therein, the first section being removably mounted to the first jaw; and
a second needle retaining section having a second needle securing mechanism mounted therein, the second section being fixedly mounted to the second jaw, wherein a surgical needle is transferrable from the first section to the second section and from the second section to the first section such that the surgical needle can be retained by the respective securing mechanism.

5,645,553
SUTURE CLIP APPLIER
Michael S. Kolesa, Norwalk; Dominick L. Mastri, Bridgeport, both of Conn.; Wayne P. Young, Brewster, N.Y., and Henry Bolanos, East Norwalk, Conn., assignors to United States Surgical Corporation, Norwalk, Conn.
Division of Ser. No. 297,333, Aug. 29, 1994, Pat. No. 5,462,558. This application May 15, 1995, Ser. No. 440,797
The portion of the term of this patent subsequent to Oct. 9, 2012, has been disclaimed.
Int. Cl.[6] A61B *17/08*
U.S. Cl. 606—157 **5 Claims**

1. A suture fastening device which comprises:
a) a first member having a lengthwise extension defined by its longest side and including a base portion,
first and second legs projecting from said base portion and extending lengthwise along the base portion,
said first and second legs parallel to each other along the lengthwise direction of the base, and being resiliently biased toward a spaced apart position from each other and movable toward each other in response to force applied thereto;



b) a second member having a lengthwise extension defined by its longest side, said second member having an aperture for receiving said first and second legs of said first member; and

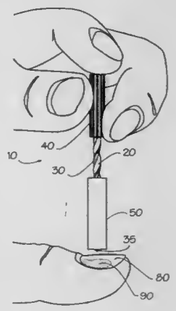
c) a hinge portion connecting said first and second member, said hinge portion comprising a thin strip.

5,645,554

TREPHINATOR FOR TREATING SUBUNGUAL HEMATOMAS

Donald C. Hugh, 26137 Marina Dr., Rolling Hills Estates, Calif. 90274

Filed May 14, 1996, Ser. No. 645,651
Int. Cl.[6] A61B *17/14*
U.S. Cl. 606—180 **5 Claims**



1. A nail boring device comprising:

an elongate means for boring a hole, the hole boring means providing a side wall having at least one cutting flute impressed therein and further providing a cutting edge;

a means for holding the hole boring means so that the device may be manually rotated;

a means for controlling drilling depth of the hole boring means;

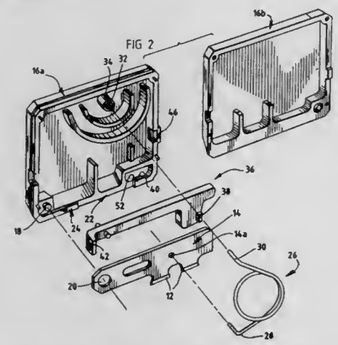
the depth controlling means being a tube having an annular end shoulder extending around the boring means and an internal circular side wall, the side wall being engaged with the at least one flute enabling the tube to move longitudinally along the hole boring means as the tube rotates on the hole boring means.

5,645,555

ROTARY LANCET

Richard Micheal Davis, Guntersville; Stephen P. Lisak, Arab, and Rowland W. Kanner, Guntersville, all of Ala., assignors to Ryder International Corporation, Arab, Ala.

Continuation of Ser. No. 281,065, Jul. 27, 1994, Pat. No. 5,476,474. This application Aug. 15, 1995, Ser. No. 515,161
Int. Cl.[6] A61B *17/32*
U.S. Cl. 606—182 **16 Claims**



1. A lancet actuator for sequentially advancing and retracting a lancet blade in a skin penetration operation, comprising:

a housing containing a lancet blade structure and having an aperture for projection therethrough of a blade portion of the blade structure;

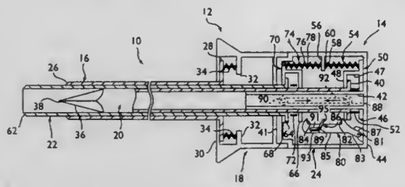
spring means insertably mounted in said housing and arranged to drive pivotal motion of said blade structure and blade portion, said blade structure continuously pivoting on a pivot without translation relative thereto throughout both sequential pivotal thrusting of said blade portion from said aperture followed by immediate pivotal retracting of the blade portion from said aperture into said housing during said pivotal motion of said blade structure.

5,645,556

SAFETY PENETRATING INSTRUMENT WITH TRIGGERED PENETRATING MEMBER RETRACTION AND SINGLE OR MULTIPLE SAFETY MEMBER PROTRUSION

InBae Yoon, 2101 Highland Ridge Dr., Phoenix, Md. 21131

Continuation-in-part of Ser. No. 83,220, Jun. 24, 1993, Pat. No. 5,431,635, Ser. No. 83,728, Jun. 29, 1993, Pat. No. 5,466,224, Ser. No. 115,152, Sep. 2, 1993, Pat. No. 5,578,053, and Ser. No. 177,616, Jan. 4, 1994, said Ser. No. 83,220and Ser. No. 83,728, , each is a continuation-in-part of Ser. No. 628,899, Dec. 18, 1990, Pat. No. 5,226,426, and Ser. No. 817,113, Jan. 6, 1992, Pat. No. 5,350,393. This application Jul. 22, 1994, Ser. No. 279,170
Int. Cl.[6] A61M *5/00*
U.S. Cl. 606—185 **61 Claims**



1. A safety penetrating instrument for establishing a portal in a wall of an anatomical cavity comprising

a housing;

a cannula mounted by said housing and having a distal end for positioning within the anatomical cavity, a proximal end for positioning externally of the anatomical cavity wall and a lumen extending between said distal and proximal ends of said cannula;

a penetrating member disposed in said cannula and having a distal end for penetrating the anatomical cavity wall;

a safety member movable relative to said housing between a safety member retracted position exposing said distal end of said penetrating member and a safety member extended position placing said distal end of said penetrating member in a protected, non-exposed state;

retracting means for moving said penetrating member proximally relative to said housing from a penetrating member extended position to a penetrating member retracted position;

extending means for moving at least one of said cannula and said safety member distally relative to said housing from a retracted position to an extended position;

locking means for locking said penetrating member in said penetrating member extended position and at least one of said cannula and said safety member in said retracted position to prevent distal movement thereof relative to said housing beyond said retracted position; and

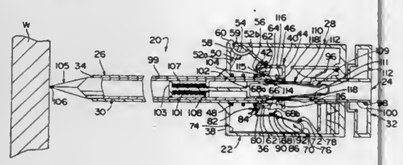
releasing means responsive to entry of said safety penetrating instrument into the anatomical cavity for triggering release of said locking means to permit said retracting means to move said penetrating member proximally relative to said housing from said penetrating member extended position to said penetrating member retracted position and to permit said extending means to move at least one of said cannula and said safety member distally relative to said housing from said retracted position to said extended position to protect said distal end of said penetrating member.

5,645,557

SAFETY PENETRATING INSTRUMENT WITH TRIGGERED PENETRATING MEMBER RETRACTION AND SAFETY MEMBER PROTRUSION

InBae Yoon, 2101 Highland Ridge Dr., Phoenix, Md. 21131

Continuation-in-part of Ser. No. 83,220, Jun. 24, 1993, Pat. No. 5,431,635, Ser. No. 83,728, Jun. 29, 1993, Pat. No. 5,466,224, Ser. No. 115,152, Sep. 2, 1993, Pat. No. 5,578,053, and Ser. No. 177,616, Jan. 4, 1994, said Ser. No. 83,220and Ser. No. 83,728, , each is a continuation-in-part of Ser. No. 628,899, Dec. 18, 1990, Pat. No. 5,226,426, and Ser. No. 817,113, Jan. 6, 1992, Pat. No. 5,350,393. This application Jul. 22, 1994, Ser. No. 279,172
Int. Cl.[6] A61M *5/00*
U.S. Cl. 606—185 **37 Claims**



1. A safety penetrating instrument for establishing a portal in a wall of an anatomical cavity comprising

a hub;

a penetrating member mounted by said hub and movable relative thereto between a penetrating member extended position and a penetrating member retracted position, said penetrating member having a sharp distal end for penetrating the anatomical cavity wall;

a safety member movable relative to said hub between a safety member retracted position exposing said sharp distal end of said penetrating member when said penetrating member is in said penetrating member extended position and a safety member extended position protecting said sharp distal end of said penetrating member;

retracting means for moving said penetrating member proximally relative to said hub from said penetrating member extended position to said penetrating member retracted position;

extending means for moving said safety member distally relative to said hub from said safety member retracted position to said safety member extended position;

locking means for locking said penetrating member in said penetrating member extended position and said safety member in said safety member retracted position to prevent distal movement of said safety member relative to said hub beyond said safety member retracted position; and

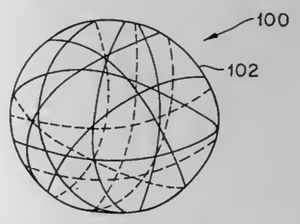
releasing means responsive to entry of said safety penetrating instrument into the anatomical cavity for triggering release of said locking means to permit said retracting means to move said penetrating member proximally relative to said hub from said penetrating member extended position to said penetrating member retracted position and to permit said extending means to move said safety member distally relative to said hub from said safety member retracted position to said safety member extended position to protect said sharp distal end of said penetrating member.

5,645,558

ANATOMICALLY SHAPED VASOOCCLUSIVE DEVICE AND METHOD OF MAKING THE SAME

Joseph A. Horton, Charleston, S.C., assignor to Medical University of South Carolina, Charleston, S.C.

Filed Apr. 20, 1995, Ser. No. 425,106
Int. Cl.[6] A61B *17/12*
U.S. Cl. 606—191 **2 Claims**



1. An occlusive device comprising at least one strand of a flexible material movable between an inoperable substantially linear configuration for insertion into and through a means for delivering the device to a desired portion of a vesicle, and an operable, substantially spherical configuration being substantially hollow for occluding at least a portion of said vesicle, said substantially spherical configuration assuming a substantially minimal energy configuration for said strand.

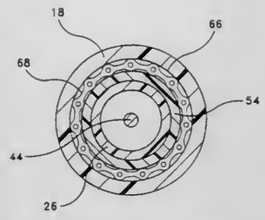
5,645,559

MULTIPLE LAYER STENT

Steven W. Hachtman, Chanhassen; Liann M. Johnson, Golden Valley; Scott T. Johnson, Anoka; Joseph E. Laptewicz, Jr., Eden Prairie; Paul J. Thompson, New Hope; Amjad Ahmad, Eagan, all of Minn.; John A. Scholl, Danville, Calif., and Richard J. Thompson, Watertown, Minn., assignors to Schneider (USA) Inc, Plymouth, Minn.

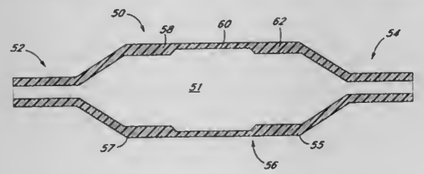
Continuation-in-part of Ser. No. 880,435, May 8, 1992, abandoned. This application Dec. 21, 1993, Ser. No. 172,516
Int. Cl.[6] A61M *29/00*
U.S. Cl. 606—198 **22 Claims**

1. A stent comprising:



a first layer of material defining a generally hollow, tubular construction;
a second layer of material comprising a plurality of thread elements helically wound around a longitudinal axis to provide a self-expanding braided mesh construction and defining a generally hollow, tubular construction disposed inside of the first layer of material; and
a layer of polymeric material disposed between the first layer of material and the second layer of material.

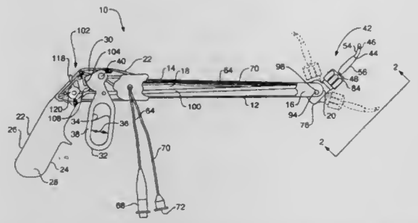
5,645,560
FIXED FOCAL BALLOON FOR INTERACTIVE ANGIOPLASTY AND STENT IMPLANTATION
Michael Crocker, Mission Viejo; Lynn M. Shimada, Irvine, and Robert J. Elicker, Rancho Santa Margarita, all of Calif., assignors to Cardiovascular Dynamics, Inc., Irvine, Calif.
Continuation-in-part of Ser. No. 572,783, Dec. 15, 1995. This application May 2, 1996, Ser. No. 640,533
Int. Cl.[6] A61M *29/00*
U.S. Cl. 606—192 **10 Claims**



1. A multiple zone balloon catheter, comprising:
an elongate flexible tubular body;
an inflatable balloon mounted on the tubular body;
a first zone on the balloon, inflatable to a first inflated diameter at a first inflation pressure;
a second zone on the balloon, inflatable to a second inflated diameter at the first inflation pressure, said second inflated diameter greater than said first inflated diameter;
a third zone on the balloon, inflatable to the first inflated diameter at the first inflation pressure, wherein the second zone is disposed intermediate the first zone and the third zone, and the second zone is substantially noncompliant;
wherein each of the first and second zones comprises a generally cyclindrical shape in an unconstrained expansion at the first pressure.

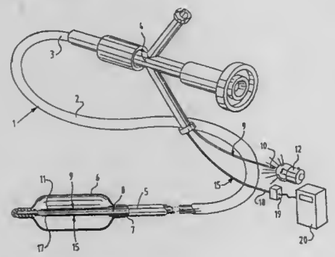
5,645,561
UTERINE MANIPULATOR
Roger E. Smith, Bountiful; Eric M. King, West Jordan, and David A. Bush, Bountiful, all of Utah, assignors to Utah Medical Products, Inc., Midvale, Utah
Filed Jul. 29, 1994, Ser. No. 283,382
Int. Cl.[6] A61M *29/00*
U.S. Cl. 606—193 **23 Claims**

1. A hand-held gynecologic instrument comprising:
a rigid elongate body having a proximate end and a distal end;



a manipulation member pivotally connected to said elongate body at said distal end;
a handle connected to said proximate end of said elongate body with at least a portion of said handle angularly disposed from said elongate body;
an actuating lever pivotally connected to said instrument adjacent said handle, said actuating lever disposed and configured to allow the same hand to simultaneously hold said handle and pivot said actuating lever; and
a rod having a first end pivotally connected to said actuating lever and having a second end pivotally connected to said manipulation member such that said rod translates pivotal movement of said actuating lever with respect to said elongate body into pivotal movement of said manipulation member with respect to said elongate body,
wherein said manipulation member comprises:
an appendage having a tip end and a securement end;
a pivot block having an opening for receiving said securement end of said appendage, said pivot block being pivotally connected to said rod and also pivotally connected to said elongate body at said distal end; and
an appendage securement for securing in releasable engagement said securement end of said appendage within said opening of said pivot block, wherein said tip end of said appendage comprises a curved portion and wherein said appendage securement includes means for releasably securing said appendage within said opening of said pivot block at a plurality of rotational orientations and at various distances from said elongate body.

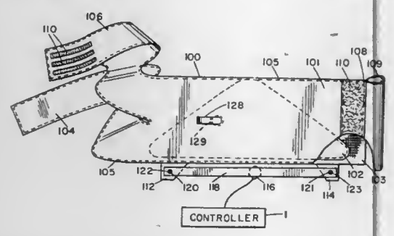
5,645,562
BALLOON CATHETER WITH LIGHT CONDUCTOR
Marcel Gerhard Haan, Roden, and Hendrikus Cornelis Geert Ligtenberg, Leek, both of Netherlands, assignors to Cordis Corporation, Miami Lakes, Fla.
Filed Mar. 11, 1996, Ser. No. 613,343
Claims priority, application Netherlands, Mar. 13, 1995, 9500495
Int. Cl.[6] A61M *29/00*
U.S. Cl. 606—194 **10 Claims**



1. A balloon catheter, which comprises:
a tube-like basic body with a distal end and a proximal end;
a balloon member positioned adjacent said distal end;

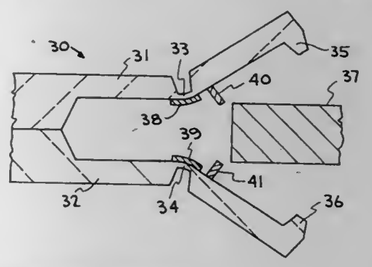
a first light conductor extending from said proximal end into said balloon member;
said first light conductor having a light-absorbing section adjacent said proximal end and a light-emitting section at a location within said balloon member;
a second light conductor connected to and continuous with said first light conductor;
said second light conductor having a light-emitting section at a location adjacent said proximal end to provide feedback of light emitted from the light-emitting section of said first light conductor.

5,645,563
CHILD-BIRTH ASSISTING SYSTEM
Soonkap Hahn, Poway, and John Merritt, San Clemente, both of Calif., assignors to Novatrix, Inc., San Clemente, Calif.
Continuation-in-part of Ser. No. 86,099, Jun. 30, 1993, Pat. No. 5,405,356. This application Jan. 24, 1995, Ser. No. 377,145
Int. Cl.[6] A61B *17/42*
U.S. Cl. 606—202 **18 Claims**



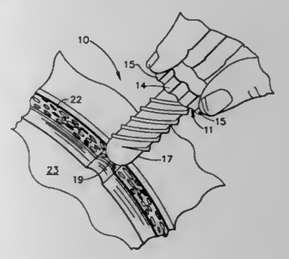
1. An improved girdle for use in a system for assisting in childbirth, the system comprising a girdle having at least one inflatable bladder adapted to be positioned over a patient's abdomen for applying pressure to the abdomen, a contraction monitor for generating an electrical signal indicative of the patient's contractions, an automatic controller means in electrical communication with said contraction monitor for controlling the inflation and deflation of said at least one inflatable bladder in response to said electrical signal wherein the pressure is increased to a target intrauterine pressure at the onset of a contraction and decreased after the contraction is over, said automatic controller means having means for controlling air from an air source for inflating said girdle, and tubing having a first end attached to said girdle and a second end attached to said automatic controller means for conducting air between said girdle and said automatic controller means, the improved girdle comprising:
a belt having a first end, a second end, an upper edge, a lower edge, an inner layer and an outer layer, said inner layer having a soft contact surface for placement against the patient's abdomen, said outer layer being a non-expandable material, wherein said inner and outer layers are sealed together at at least said first and second ends and said upper and lower edges;
fastening means disposed at each of said first and second ends for releasably fastening said first end to said second end so that said belt fits closely around the patient's abdomen; and
an inflatable bladder held by said belt at a position of said belt corresponding to the patient's abdomen so that said inflatable bladder is immovable, said inflatable bladder having an inlet means for connecting to said first end of said tubing for admitting air into said bladder.

5,645,564
MICROFABRICATED THERAPEUTIC ACTUATOR MECHANISMS
Milton A. Northrup, Berkeley; Dino R. Ciarlo, Livermore; Abraham P. Lee, Walnut Creek, and Peter A. Krulevitch, Los Altos, all of Calif., assignors to Regents of the University of California, Oakland, Calif.
Filed May 22, 1995, Ser. No. 446,146
Int. Cl.[6] A61B *17/28*
U.S. Cl. 606—205 **30 Claims**



1. A microgripper, comprising:
a pair of flexible members constructed to have a cross-section capable of operating in an area having a diameter as small as 250 μm,
at least one of said flexible members being adapted to grip an associated object, and
means in contact with said member for retaining said member in gripping contact with an associated object, and for releasing said member from gripping contact with an associated object.

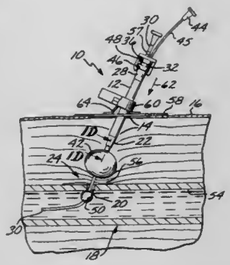
5,645,565
SURGICAL PLUG
Ray G. Rudd, Peachtree, Ga.; Douglas E. Sedgwick, New Richmond, and Sandra L. Schlosser, Cincinnati, both of Ohio, assignors to Ethicon Endo-Surgery, Inc., Cincinnati, Ohio
Filed Jun. 13, 1995, Ser. No. 489,857
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—213 **12 Claims**



1. A one-piece surgical plug for minimizing leakage of insufflation fluid during an endoscopic surgical procedure from within an interior body cavity of a surgical patient through an opening of a given diameter made in a body wall of said patient to provide access to said body cavity, said one-piece plug comprising:
an impervious cap having a diameter greater than said opening diameter, said cap disposable externally of said body cavity and adjacent said body wall for plugging said opening; and
a generally solid cylindrical shaft extending from said cap, said solid shaft extendable interiorly into said interior body cavity of said patient, said solid shaft having an outer surface with an outer surface diameter and proximal and distal ends, said

outer surface diameter sized so as to provide a friction fit between said shaft and said opening when said shaft is inserted through said opening, and said outer surface having a helical tissue engaging thread thereon from adjacent said proximal end to adjacent said distal end, said thread for facilitating the insertion of said solid shaft through said opening into said interior body cavity.

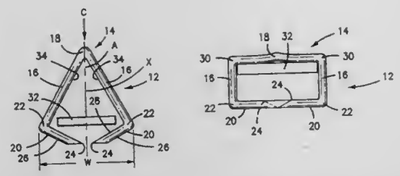
5,645,566
APPARATUS AND METHOD FOR PERCUTANEOUS SEALING OF BLOOD VESSEL PUNCTURES
Rodney Brenneman, Dana Point, Calif., and Andrew H. Cragg, Edina, Minn., assignors to Sub Q Inc., Minneapolis, Minn.
Filed Sep. 15, 1995, Ser. No. 528,892
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—213 **53 Claims**



1. A device for promoting hemostasis in a blood vessel puncture by compressing the subcutaneous tissue adjacent the puncture, wherein the puncture is accessed subcutaneously through an incision, the device comprising:
an introducer configured to provide access to the puncture through the incision, the introducer having a proximal portion, a distal end initially positionable within the puncture, and an axial channel therebetween;
a catheter dimensioned to be received within the axial channel and having an axial lumen communicating with an open distal end, the introducer being axially movable relative to the catheter between a distal position and a proximal position, the distal end of the catheter being enclosed within the introducer when the introducer is in its distal position, and being exposed to the subcutaneous tissue distally from the distal end of the introducer when the introducer is moved to its proximal position;
an elongate, flexible locator member extending through the catheter lumen and the distal end of the catheter and having a distal portion extensible into the interior of the vessel through the puncture; and
expansible compression means attached to the distal end of the catheter, for compressing the subcutaneous tissue adjacent the puncture sufficiently to promote hemostasis at the puncture, the compression means having a collapsed position when the distal end of the catheter is enclosed, and an expanded tissue-compressing position when the distal end of the catheter is exposed.

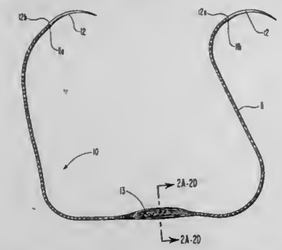
5,645,567
SURGICAL STAPLE AND STAPLER DEVICE THEREFOR
Lawrence Crainich, Ceda Road, P.O. box 996, Charlestown, N.H. 03603
Division of Ser. No. 281,307, Jul. 27, 1994, Pat. No. 5,544,802. This application Feb. 29, 1996, Ser. No. 608,827
Int. Cl.[6] A61B *17/064*
U.S. Cl. 606—219 **12 Claims**

1. A surgical staple, comprising:



a base having first and second base segments defining in an un-deformed state a substantially V-shaped configuration having an apex, each base segment having a first end and a second end wherein the first end of the first base segment is joined to the first end of the second base segment at the apex of the V-shaped configuration as so to define a first interior angle between the first base segment and the second base segment of less than about 180°; and
first and second substantially straight legs each having a first end and a second end terminating, wherein each second end terminates in a point, the first and second legs being connected at the first ends to the second ends of the first and second base segments respectively; and
wherein the points of the first and second legs extend generally toward each other from the second ends of first and second base segments on converging paths.

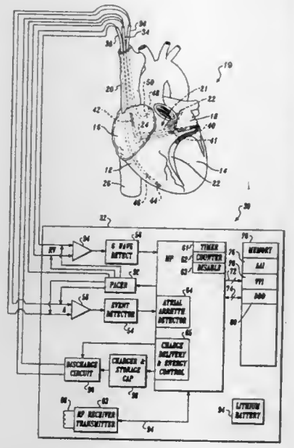
5,645,568
EXPANDABLE BODY SUTURE
Alan Chervitz, and Ramarao Gundlapalli, both of Logan, Utah, assignors to MedicineLodge, Inc., Logan, Utah
Filed Nov. 20, 1995, Ser. No. 560,682
Int. Cl.[6] A61B *17/04*
U.S. Cl. 606—228 **12 Claims**



1. An expandable body suture comprising, a suture body formed from conventional suture materials as an envelope to fully contain at least one pledget device that has an elongate body having a greater diameter than the diameter of the suture body adjacent to said pledget and is formed of a biocompatible material; a guide means having a cross sectional diameter that is equal to or slightly less than the diameter of said suture body portion and covered pledget device and is secured to an end of said suture body.

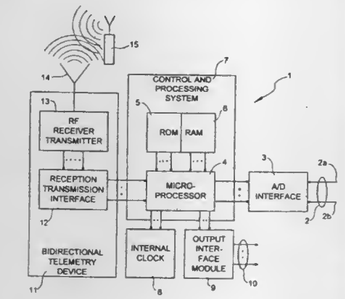
5,645,569
POST ATRIAL CARDIOVERSION ATRIAL PACING AND METHOD
Gregory M. Ayers, Redmond, Wash., assignor to InControl, Inc., Redmond, Wash.
Filed Jun. 4, 1996, Ser. No. 659,138
Int. Cl.[6] A61N *1/39*
U.S. Cl. 607—4 **22 Claims**

1. An implantable atrial defibrillator comprising:
cardioverting means for applying cardioverting electrical energy to atria of a heart when the atria are in need of cardioversion; and



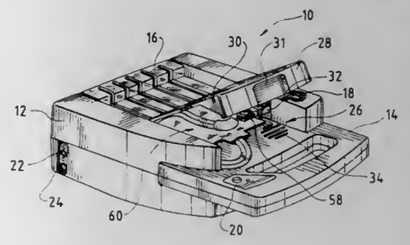
pacing means for pacing the atria of the heart responsive to and immediately after each application of cardioverting electrical energy to the atria of the heart by the cardioverting means.

5,645,570
METHOD AND DEVICE FOR MONITORING AND DETECTING SYMPATHO-VAGAL ACTIVITY AND FOR PROVIDING THERAPY IN RESPONSE THERETO
Giorgio Corbucci, San Giovanni In Persiceto, Italy, assignor to Sorin Biomedica S.p.A., Vercelli, Italy
Continuation of Ser. No. 36,934, Mar. 25, 1993, abandoned. This application Jun. 17, 1994, Ser. No. 261,497
Claims priority, application Italy, Mar. 26, 1992, TO92A0268
Int. Cl.[6] A61N *1/39*
U.S. Cl. 607—5 **53 Claims**



1. A method of providing therapy to a patient comprising:
implanting at least one sensor in the proximity of the patient's heart;
sensing the electrical activity of the patient's heart from the at least one sensor;
generating an electrocardiology signal from the sensed electrical activity of the patient's heart;
repeatedly calculating from the signal a time differential between consecutive R-R intervals;
comparing the time differentials with a predetermined time differential threshold value;
counting the number of time differentials which exceed the predetermined time differential threshold value during a predetermined time interval, that number being equal to the number of useful events;
determining whether the number of useful events lies within a predetermined band of normal values; and
providing therapy to the patient if the number of useful events does not lie within the predetermined band of normal values.

5,645,571
AUTOMATED EXTERNAL DEFIBRILLATOR WITH LID ACTIVATED SELF-TEST SYSTEM
Kenneth F. Olson, Minneapolis; Byron L. Gilman, Plymouth, and Katherine H. Anderson, Golden Valley, all of Minn., assignors to SurvivaLink Corporation, Minneapolis, Minn.
Continuation-in-part of Ser. No. 509,990, Aug. 1, 1995. This application Aug. 8, 1995, Ser. No. 512,441
Int. Cl.[6] A61N *1/39*
U.S. Cl. 607—5 **25 Claims**

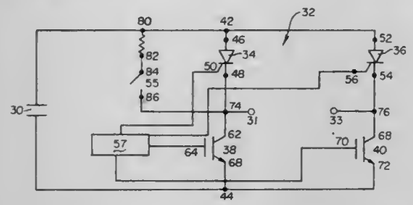


1. An automated external defibrillator, comprising:
a case;
a pair of defibrillator electrodes electrically connected to one another within a package and including lead wires with connectors extending from the package being removably disposed within the case;
electrode terminals being disposed within the case and configured for electrical interconnection to the lead wire connectors of the defibrillator electrodes;
a battery compartment and battery terminals in the case, the battery compartment and terminals configured for holding and interconnecting to one or more batteries;
a high voltage circuit being disposed within the case and coupled to the battery terminals and the electrode terminals, for generating defibrillation pulses and applying the pulses to the electrode terminals;
a maintenance indicator on the case; and
a digital control system being disposed within the case and coupled to the electrode terminals, battery terminals, high voltage circuit and maintenance indicator, and including self-test means for periodically and automatically performing a self-test of the functionality of one or more defibrillator components, and for actuating the maintenance indicator if a malfunctioning component is identified wherein the self-test means includes means for checking the defibrillator electrodes by providing selected communications through a circuit formed in part of the lead wires and the electrically connected pair of electrodes.

5,645,572
IMPLANTABLE CARDIOVERTER DEFIBRILLATOR WITH SLEW RATE LIMITING

Mark W. Kroll, Minnetonka, and Joseph S. Perttu, Chanhassen, both of Minn., assignors to Angeion Corporation, Plymouth, Minn.

Filed Mar. 12, 1996, Ser. No. 615,516
Int. Cl.[6] A61N *1/39*
U.S. Cl. 607—5 **20 Claims**



11. A pectorally implantable defibrillation system for delivering at least one electrical cardioversion/defibrillation countershock, the system comprising:

housing means for housing the ICD;

pulse generating means positioned in the housing means for generating at least one countershock;

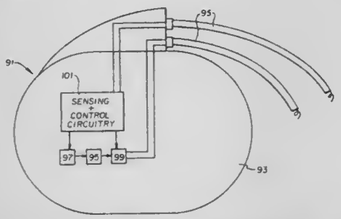
electrode means defining an active housing electrode for electrical connection to the pulse generating means; and

slew rate limiting means connected between the pulse generating means and the electrode means for reducing capacitive coupling effects during the at least one countershock.

5,645,573
OPTIMAL PULSE DEFIBRILLATOR

Mark W. Kroll, and Charles U. Smith, both of Minnetonka, Minn., assignors to Angeion Corporation, Plymouth, Minn.

Continuation of Ser. No. 322,189, Oct. 12, 1994, Pat. No. 5,549,643. This application Jun. 7, 1995, Ser. No. 478,001
Int. Cl.[6] A61N *1/39*
U.S. Cl. 607—7 **7 Claims**



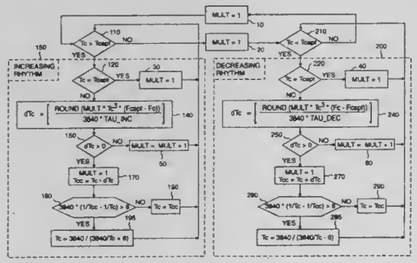
1. An improved implantable defibrillator apparatus for producing a capacitive-discharge defibrillation waveform to be delivered through at least two electrodes adapted for implantation in a human patient, the implantable defibrillator apparatus including a self-contained human implantable housing having electrical connections to at least two electrodes adapted for implantation in the human patient, the implantable housing containing a waveform-generating capacitor means for storing an electrical charge, means for charging the waveform-generating capacitor means, and means for selectively discharging the electrical charge in the capacitor means through the at least two electrodes in response to a control signal from a means for sensing of a cardiac arrhythmia in the human patient, the improvement comprising:

the means for selectively discharging including means for controlling the discharge of the capacitor means through the at least two electrodes to produce a defibrillation waveform comprising at least one electrical pulse having a predetermined optimum pulse duration that is set by the apparatus according to at least one pre-selected criterion selected from the set consisting of a fixed duration for the pulse waveform, a fixed tilt for truncation the pulse waveform, a minimum duration of the pulse waveform, a minimum tilt for the pulse waveform, and any combination thereof.

5,645,574
APPARATUS AND PROCESS FOR CONTROL OF IMPLANTABLE RATE-ADAPTIVE CARDIAC PACEMAKER

Anne Bouhour, Paris, and Thierry Legay, Fontenay les Briis, both of France, assignors to Ela Medical S.A., Montrouge, France

Filed Nov. 29, 1994, Ser. No. 346,027
Claims priority, application France, Dec. 6, 1993, 93 14578
Int. Cl.[6] A61N *1/365*
U.S. Cl. 607—17 **39 Claims**



29. In an implantable rate-adaptive cardiac pacemaker having a delivered stimulation frequency and a sensor to detect a control parameter representative of the physical activity of a patient, apparatus for controlling the delivered stimulation frequency comprising:

means for calculating a stimulation frequency corresponding to said sensed control parameter;

means for comparing an existing delivered stimulation frequency (Fstart) and a calculated stimulation frequency (Ftarget); and

means for controlling the delivered stimulation frequency to change between Fstart and Ftarget as a dependent non-linear mathematical function of time that approximates a physiological cardiac rhythm change over time.

5,645,575
CARDIAC PACEMAKER AND PACING METHOD USING DETECTION OF PHYSICAL STRESS FOR ADJUSTING STIMULATION RATE

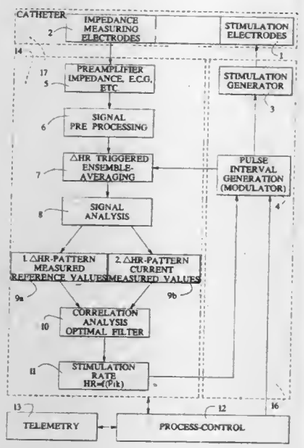
Karl Stangl; Michael Laule, and Roland Heinze, all of Berlin, Germany, assignors to Pacesetter AB, Solna, Sweden

Filed Dec. 21, 1995, Ser. No. 576,755
Claims priority, application Germany, Dec. 29, 1994, 44 47 447.4
Int. Cl.[6] A61N *1/362*
U.S. Cl. 607—17 **42 Claims**

1. An implantable cardiac pacemaker comprising:

a pulse generator which emits successive stimulation pulses at a stimulation rate with said pulses respectively separated by a pulse interval;

electrode means, adapted for in vivo interaction with cardiac tissue, connected to said pulse generator for delivering said stimulation pulses to cardiac tissue, and comprising means for detecting a non-mechanical physiological characteristic indicative of cardiac demand and generating a cardiac demand-indicative signal corresponding thereto;



regulator means, connected to said pulse generator, for setting and changing the pulse interval of said stimulation pulses emitted by said pulse generator and thereby setting and changing said stimulation rate;

control means, connected to said regulator means, for causing said regulator means to modulate said stimulation rate in a plurality of modulation sequences, each modulation sequence starting from a different base stimulation rate;

processing means, connected to said electrode means, for processing said cardiac demand-indicative signals for generating a reference field consisting of a plurality of reference sequences of said cardiac demand-indicative signals respectively obtained with a patient in whom said cardiac pacemaker is implanted experiencing different levels of physical stress with at least one sequence of said cardiac demand-indicative signals being obtained during each modulation sequence for each different level of physical stress;

storage means for storing said reference field; and

comparator means, connected to said processing means, said storage means and said regulator means, for, after said reference field is generated and stored, comparing a current sequence of said cardiac demand-indicative signals to each of said reference sequences in said reference field for identifying a highest correlating reference sequence in said reference field with which said current sequence has a highest correlation, and for commanding said regulator means to set a pulse interval to cause said pulse generator to emit said stimulation pulses at a stimulation rate equal to the basic stimulation rate of the modulation sequence which produced said highest correlating reference sequence.

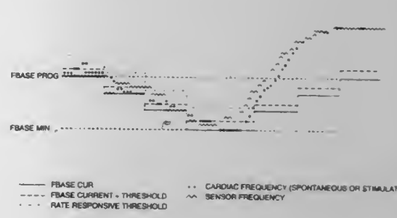
5,645,576
METHOD AND APPARATUS FOR CONTROLLING THE BASE FREQUENCY OF A CARDIAC PACEMAKER

Marcel Limousin, Montrouge; Jean-Luc Bonnet, Vanves, and Anne Bouhour, Paris, all of France, assignors to ELA Medical S.A., Montrouge, France

Filed Mar. 16, 1995, Ser. No. 405,286
Claims priority, application France, Mar. 16, 1994, 94 03039
Int. Cl.[6] A61N *1/36;1/365*
U.S. Cl. 607—19 **48 Claims**

1. A process for controlling a base frequency of a cardiac pacemaker having a sensor monitoring a physiological parameter and circuits for monitoring stimulated and spontaneous cardiac events, the base frequency having a corresponding base interval, comprising the steps of:

(a) providing an initial programmed base frequency;



(b) monitoring an activity level of a patient;

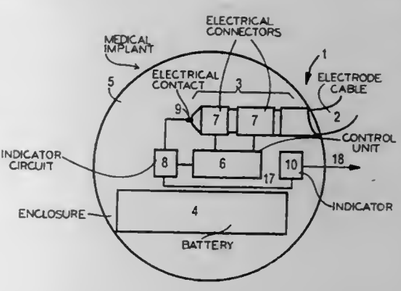
(c) determining whether the patient activity level corresponds to one of a rest phase and an active phase; and

(d) adjusting the base frequency and corresponding base interval as a function of the determined rest phase to control the base frequency wherein the adjusted base frequency is variable relative to the initial programmed base frequency.

5,645,577
CONNECTION INDICATOR FOR MEDICAL DEVICE

Paul Fröberg, Bromma; Per Frånberg, Stockholm; Kurt Högnelid, Bromma; Fredrik Killander, Täby; Peter Magnusson, Nacka, and Per Nyman, Djursholm, all of Sweden, assignors to Pacesetter AB, Solna, Sweden

Filed Jun. 19, 1995, Ser. No. 492,279
Claims priority, application Sweden, Jun. 29, 1994, 9402297
Int. Cl.[6] A61N *1/375*
U.S. Cl. 607—37 **12 Claims**



1. In a medical implant system having an enclosure, an electrode cable having a proximal end, and a connector part attached to said enclosure in which said proximal end of said electrode cable is inserted, the improvement of a device for indicating when said proximal end of said cable is correctly inserted in said connector part, comprising:

means in said enclosure for generating an electrical control signal when said proximal end of said electrode cable is correctly inserted in said connector part; and

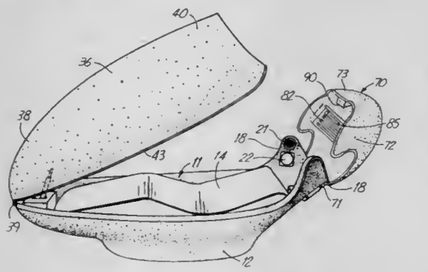
an indicator in said enclosure supplied with said control signal which electrically emits an indicator signal, detectable outside of said enclosure, in response to said control signal, said indicator comprising a light-emitting diode disposed in said enclosure and a light-conductor having an end disposed at an exterior of said enclosure, said light-emitting diode emitting light in response to said control signal.

5,645,578

TOTAL THERAPY SAUNA BED SYSTEM

Steven J. Daffer, Edina; Roger E. Mitchell, Bloomington, and Mirsaeed Rouzegar, Minneapolis, all of Minn., assignors to Sybaritic, Inc., Edina, Minn.

Filed Nov. 16, 1994, Ser. No. 340,788
Int. Cl.[6] A61N 5/00; A61H 1/00; A61G 10/00
U.S. Cl. 607—91 19 Claims



1. A therapy module comprising a hood member adapted to overlie a substantial portion of a rear and a top of a head of a user and having an opening in a direction in a field of view of the user, and at least one light box within the hood member having a selectively energized high intensity white light source positioned to project light from the light source directly downwardly across eyes of a user to illuminate a head of a user sufficiently to simulate positioning and intensity of natural mid day light projected directly from the white light source without reflection.

5,645,579

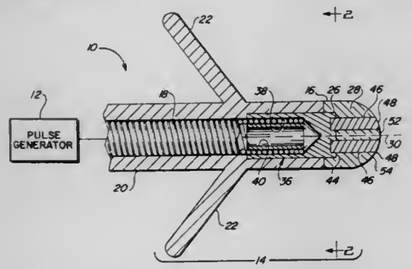
Patent Not Issued For This Number

5,645,580

IMPLANTABLE MEDICAL DEVICE LEAD ASSEMBLY HAVING HIGH EFFICIENCY, FLEXIBLE ELECTRODE HEAD

Shawn Moaddeb, West Hills, and John R. Helland, Saugus, both of Calif., assignors to Pacesetter, Inc., Sylmar, Calif.

Continuation of Ser. No. 984,753, Dec. 3, 1992, abandoned. This application Jul. 21, 1994, Ser. No. 278,345
Int. Cl.[6] A61N 1/05
U.S. Cl. 607—122 42 Claims



1. A lead assembly adapted to transmit electrical signals between an implantable medical device and selected body tissue, the lead assembly having a proximal end and a distal end and an electrode head forming said distal end, the electrode head being a unitary soft flexible elastomeric structure having a tip surface portion for contacting selected body tissue and at least one electrically conductive electrode in electrical communication with the medical device and extending within the electrode head to the tip surface portion thereof for making electrical contact with the selected body tissue; and

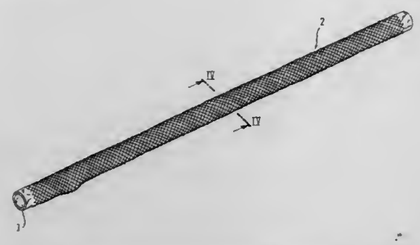
the electrode head further including anchoring means projecting from the electrode head for anchoring the electrode head to the selected body tissue.

5,645,581

VASCULAR PROSTHESIS

Heinz Robert Zurbrügg, Bündackerstrasse 158, CH-3047 Bremgarten, Switzerland

Filed Nov. 29, 1994, Ser. No. 346,151
Claims priority, application Germany, Nov. 30, 1993, 43 40 755.2
Int. Cl.[6] A61F 2/06;2/04
U.S. Cl. 623—1 18 Claims



1. A vascular prosthesis for replacing a human or animal blood vessel, comprising:

a section of replacement vessel taken from a human or animal body, said replacement vessel having an external diameter that varies along the length of the vessel; and

a fibro-elastic tube drawn over said vessel-section, said tube being formed of intersecting threads wound in spiral form around a longitudinal axis of the tube, said tube having a diameter than is adjustable at substantially each point along the longitudinal axis of said tube, said adjustment in diameter being accomplished by a selected one of longitudinal extension or longitudinal compression of said tube at points at which said adjustment is made, said tube diameter having been adjusted so as to vary along the length of the tube to adapt the tube diameter to the varying external diameter of said vessel-section.

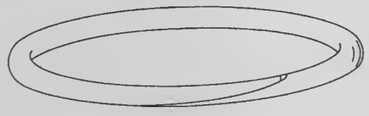
5,645,582

OVERLAPPING RING DEVICE FOR CORNEAL CURVATURE ADJUSTMENT

Thomas Silvestrini, Alamo, and Mark Mathis, Fremont, both of Calif., assignors to KeraVision, Inc., Fremont, Calif.

PCT No. PCT/US93/08770, § 371 Date Feb. 28, 1995, § 102(e) Date Feb. 28, 1995, PCT Pub. No. WO94/06381, PCT Pub. Date Mar. 31, 1994
PCT Filed Sep. 16, 1993, Ser. No. 392,911
Int. Cl.[6] A61F 2/14
U.S. Cl. 623—5 10 Claims

1. A method for implanting an intracorneal ring in an eye, comprising the steps of:



placing a split ring having first and second end portions in the cornea of the eye; and

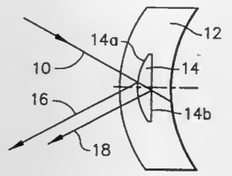
coupling together the first and second end portions such that they form a substantially smooth and continuous ring surface.

5,645,583

INJECTABLE POLYETHYLENE OXIDE GEL IMPLANT AND METHOD FOR PRODUCTION

Franck L. Villain, Annecy, France; Jean-Marie A. Parel, Miami Shores; William Gerald Lee, Miami Beach, both of Fla., and Gabriel Simon, Barcelona, Spain, assignors to University of Miami, Miami, Fla.

Continuation of Ser. No. 299,583, Sep. 1, 1994, which is a continuation-in-part of Ser. No. 836,711, Feb. 19, 1992, Pat. No. 5,372,580, which is a continuation-in-part of Ser. No. 551,807, Jul. 12, 1990, Pat. No. 5,090,955. This application Jun. 5, 1995, Ser. No. 463,595
Int. Cl.[6] A61F 2/14;2/16
U.S. Cl. 623—5 4 Claims



1. A method of implanting a biocompatible gel into the cornea of a mammal, comprising the steps of:

dissolving a sample of polyethylene oxide in a saline solution;

transferring the polyethylene oxide solution to a sealed canister;

removing the free oxygen from said canister;

replacing the oxygen within said canister with an inert gas;

irradiating said canister to crosslink the polyethylene oxide to form a sterile biocompatible gel;

inserting said sterile gel into a syringe;

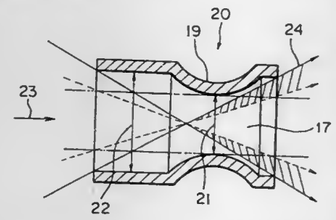
and implanting said sterile gel into a cornea to form a space filling implant.

5,645,584

TYMPANOSTOMY TUBE AND METHOD FOR PRODUCING THE SAME

Takayuki Suyama, Chiba, Japan, assignor to Suyama Dental Laboratory Inc., Chiba, Japan

Filed Feb. 21, 1996, Ser. No. 604,607
Int. Cl.[6] A81F 2/18
U.S. Cl. 623—10 1 Claim



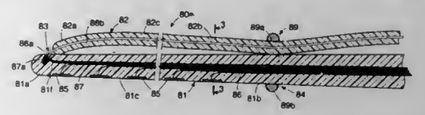
1. A tympanostomy tube used in the treatment of a middle ear disorder, which is made of pure titanium or a titanium alloy, said tympanostomy tube comprising an elongated tubular member having a lumen formed longitudinally therein, said tubular member having substantially uniform diameter over the length thereof, said tubular member defining a wall of substantially uniform thickness, and said wall having a concavity inwardly formed on a portion of said elongated tubular member in a circumferential direction at right angles to a longitudinal direction thereof, said concavity being spaced from one end of said tubular member to form a flange portion on said tubular member, said lumen being longitudinally different in diameter and having a smaller diameter at a position at which the concavity is formed than at a position at which the concavity is not formed.

5,645,585

COCHLEAR ELECTRODE IMPLANT ASSEMBLY WITH POSITIONING SYSTEM THEREFOR

Janusz A. Kuzma, Englewood, Colo., assignor to Cochlear Ltd., Lane Cove, Australia

Filed Mar. 15, 1996, Ser. No. 616,299
Int. Cl.[6] A61F 2/18; A61N 1/05
U.S. Cl. 623—10 7 Claims



1. A self-positioning cochlear electrode implant assembly adapted to be implanted in the scala tympani of the spirally curved cochlea of a human ear for stimulating cells of the spiral ganglion, which assembly includes a rod-shaped cochlear electrode carrier made of a biocompatible plastic material and sufficiently flexible to be able to assume the spiral curvature of the cochlea, said electrode carrier having leading and trailing end regions and tapering in cross-section from said trailing end region to said leading end region; an array of cochlear electrode elements supported by said electrode carrier at respective longitudinally spaced locations thereon in a medial region of said electrode carrier between said leading and trailing end regions thereof, said electrode elements having respective contact faces exposed along a first longitudinal side region of said electrode carrier; a rod-shaped electrode carrier-positioning member made of a biocompatible plastic material and sufficiently flexible to be able to assume the spiral curvature of the cochlea, said positioning member having leading and trailing end regions and being juxtaposed to and extending lengthwise of said electrode carrier along a second longitudinal side region of the latter opposite said first longitudinal side region thereof so as to have said leading and trailing end regions of said positioning member located adjacent said leading and trailing end regions, respectively, of said electrode carrier; and means connecting said leading and trailing end regions of said positioning member to said leading and trailing end regions, respectively, of said electrode carrier so as to leave a medial region of said positioning member separated from said medial region of said electrode carrier and adapted to assume an arched configuration relative to said medial region of said electrode carrier, so that when said assembly is inserted into the scala tympani and said medial region of said positioning member has assumed said arched configuration against the constraint of the radially outer wall of the cochlea, said electrode carrier is in engagement at said first longitudinal side region thereof with the radially inner wall of the cochlea so as to position said contact faces of said array of electrode elements in close proximity to the spiral ganglion cells of the cochlea, and the connection between said trailing end region of said electrode carrier and said trailing end region of said positioning member serves to stabilize said assembly in and lock the same against inadvertent reverse movement out of the cochlea;

wherein the improvement comprises that:

said means connecting said leading end regions of said electrode carrier and said positioning member to each other comprises a latchless rod-and-socket joint including a rod-part supported by one of said positioning member and electrode carrier and a correspondingly configured socket-part supported by the other of said positioning member and electrode carrier, said socket part being constructed for slidingly receiving said rod-part without the two parts becoming latched to each other; and

said means for connecting said trailing end regions of said electrode carrier and said positioning member to each other comprises a ring-shaped member made of a biocompatible plastic material and defining a passageway extending therethrough dimensioned for jointly accommodating said electrode carrier and said positioning member with a close fit; and said ring-shaped member has a cross-sectional configuration defining a circumferential boundary surface for said passageway which, when said positioning member is in said arched state thereof and in the absence of a longitudinally and rearwardly directed force of an appropriate magnitude externally applied by the surgeon to said positioning member, frictionally restrains said positioning member against inadvertent reverse movement through said ring-shaped member and out of the cochlea.

5,645,586

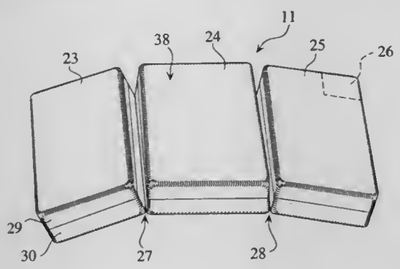
CONFORMING IMPLANTABLE DEFIBRILLATOR

Mark J. Meltzer, San Francisco, Calif., assignor to Ventritex, Inc., Sunnyvale, Calif.

Filed Jul. 8, 1994, Ser. No. 272,722

Int. Cl.[6] A61F *2/00*

U.S. Cl. 623—11 **5 Claims**



1. A housing for an implantable defibrillator for implantation in the pectoral region of a patient, the housing comprising:

at least two discrete, cooperating housing segments constructed of a biocompatible material, the segments positioned such that an edge of one segment is proximate to and coaxial with an edge of the other segment, and such that the segments define an integrated, articulated housing structure having a contoured periphery, wherein the segments are adapted to pivot at at least one hinge axis located between said segments, whereby the housing is configured to conform to the contour of an implantation site in the pectoral region of the patient's chest and to flex in compliance with movement at said implantation site through pivotal movement of said segments, one relative the other, about said hinge axis.

5,645,587

PREVENTION OF CALCIFICATION AND DEGENERATION OF BIOLOGICAL TISSUE GRAFTS FOR IMPLANTATION IN HUMANS

Jyotirmay Chanda, Bejpara, Sreedhar Tank Road, Jessore 7400, Bangladesh, and Ryosei Kuribayashi, 187- Higashida, Kashiwagimachi, Hiraka, Minami tsugaru-gun, Aomori 036-01, both of Japan

Filed Jun. 5, 1996, Ser. No. 658,694

Int. Cl.[6] A61F *2/10*

U.S. Cl. 623—11 **11 Claims**

1. A calcification retardant bioprosthetic xenograft comprising removing tissue from a donor animal; cross-linking said tissue with glutaraldehyde;

treating said cross-linked tissue with partially degraded heparin; and

treating said cross-linked tissue with gentamicin, glycine and chitosan before treatment with degraded heparin.

5,645,588

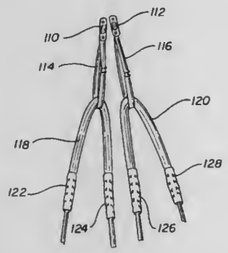
GRAFT ATTACHMENT DEVICE

Ben K. Graf, Madison, Wis.; Thomas D. Rosenberg, Salt Lake City, Utah; Joseph H. Sklar, Longmeadow, and Michael C. Ferragamo, No. Dighton, both of Mass., assignors to Acufex Microsurgical, Inc., Mansfield, Mass.

Continuation of Ser. No. 162,509, Dec. 3, 1993, abandoned, which is a division of Ser. No. 16,411, Feb. 11, 1993, Pat. No. 5,306,301. This application Oct. 10, 1995, Ser. No. 541,394

Int. Cl.[6] A61F *2/08*

U.S. Cl. 623—13 **11 Claims**



8. A graft attachment device for attaching an anterior cruciate ligament graft to a bone wherein a passage is drilled through the bone for attachment thereto, comprising:

a graft connection element comprising a sling member having a width sufficient to carry the graft during and after implantation;

an elongated body sized to pass through the passage in the bone and having an upper surface, a lower surface, a leading end, and a trailing end, each said end having a hole defined by said elongated body configured to carry a filament, a portion of said body disposed between said hole in said leading end and said hole in said trailing end being configured for attaching to said body the graft connection element and enabling said body to rotate relative to the graft from an initial insertion position, along an axis substantially parallel to the graft, to a final fixation position transverse to the graft to secure the graft relative to the bone; and

filament threaded through said hole in said leading end and said hole in said trailing end.

5,645,589

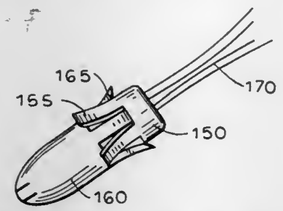
ANCHOR AND METHOD FOR SECUREMENT INTO A BORE

Lehmann K. Li, Milford, Conn., assignor to Li Medical Technologies, Inc., Shelton, Conn.

Filed Aug. 22, 1994, Ser. No. 294,067

Int. Cl.[6] A61F *2/08;2/28*

U.S. Cl. 623—16 **67 Claims**



1. A medical anchor for securement into a bore formed in a living body and defined by a bore side wall and an opening into the bore, comprising:

a first generally hollow biocompatible section having a first plurality of spaced longitudinally directed fingers pointed toward the opening;

a second generally hollow biocompatible section having a second plurality of spaced longitudinally directed fingers;

the first and second sections being arranged opposed to each other with the fingers of each section being interdigitated with the fingers of the other section;

an elongated body mechanically engaged with the first section;

the first and second sections being adapted to receive a compression force moving the two sections relatively toward each other, the first and second hollow sections having a combined longitudinal size such that they are entirely received within the bore after the compression force is applied, said two sections being both longitudinally movable in respective opposed directions of movement with the fingers of each section moving radially outwardly while moving in the respective direction of movement, the fingers of each section being adapted to penetrate into the bore side wall in the respective direction of movement to secure the two sections in the bore without anchoring the elongated body at the opening into the bore;

at least one of the first and second sections being slidable along the elongated body without relative rotational movement of the elongated body and the at least one section.

5,645,590

PIVOT DEVICE BETWEEN PARTS OF AN ORTHOPEDIC AID

Paul Gerad van de Veen, Enschede, Netherlands, assignor to Otto Rock Orthopadische Industrie Besitz-und Verwaltungs-Kommanditgesellschaft, Duderstadt, Germany

Filed May 31, 1995, Ser. No. 454,691

Claims priority, application Netherlands, Nov. 25, 1994, 9401975

Int. Cl.[6] A61F *2/64*

U.S. Cl. 623—44 **4 Claims**

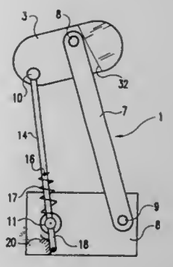
2. Pivot device for use between parts of an orthopedic aid comprising:

a multi-element kinematic joint chain having at least four joint elements;

rotation means connecting respective ones of said joint elements, wherein the elements connected with one another have a common rotational axis, and said rotation means are positioned parallel to one another,

wherein, in a first position of said joint chain, a first element of said joint elements executes two different types of movements with respect to other elements of said joint elements connected to said first element, wherein a first type of movement of said two different types of movements, following movement of said joint chain from said first position, blocks a second type of movement of said two different types of movements,

said device further comprising an upper element of said joint elements pivotally connected to said first element and a lower element of said joint elements pivotally connected to said first element, wherein said first element comprises a rear element, wherein said first type of movement comprises translational movement of said rear element toward said lower element.



5,645,591

SYNTHETIC BONE MATRIX

Thangavel Kuberasampath, Medway, and Lawrence Berlowitz Tarrant, Harvard, both of Mass., assignors to Stryker Corporation, Natick, Mass.

Filed May 29, 1990, Ser. No. 529,852

Int. Cl.[6] A61F *2/28*

U.S. Cl. 623—16 **13 Claims**



1. A method for inducing endochondral bone growth in a mammal comprising the steps of:

(a) providing a biocompatible, synthetic, porous matrix comprising a polymer of collagen and glycosaminoglycan cross-linked ex vivo to an Mc value of about 800 to about 60,000 and comprising greater than 1% by weight, of said glycosaminoglycan;

(b) dispersing within said matrix an osteogenic protein in an amount sufficient to induce endochondral bone formation substantially in the shape of said matrix; and

(c) implanting the product of step b in a mammal at a vascularizable site to induce in vivo bone formation.

5,645,592

USE OF HYDROGELS TO FIX BONE REPLACEMENTS

Luigi Nicolais, Ercolano; Luigi Ambrosio, Ottaviano; Paolo Antonio Netti, S. Gennaro Vesuviano, and Lanfranco Callegaro, Ponte di Brenta, all of Italy, assignors to M.U.R.S.T. Italian Ministry for Universities and Scientific and Technological Research, Rome, Italy

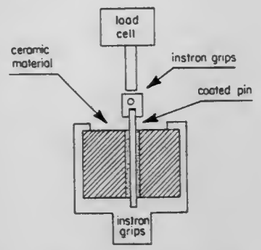
PCT No. PCT/EP93/01288, § 371 Date Apr. 27, 1995, § 102(e) Date Apr. 27, 1995, PCT Pub. No. WO93/23094, PCT Pub. Date Nov. 25, 1993

PCT Filed May 21, 1993, Ser. No. 341,541

Claims priority, application Italy, May 20, 1992, PD92A0088

Int. Cl.[6] A61F 2/28

U.S. Cl. 623—16 26 Claims



1. An orthopedic fastener or replacement, covered with a second coating comprising a hydrogel or other biocompatible, biodegradable material which expands in the presence of a liquid, wherein said hydrogel or other biocompatible, biodegradable material is a member selected from the group consisting of polyhydroxyethylmethacrylate, a semi-interpenetrating polymer network composed of crosslinked poly(2-hydroxyethylmethacrylate) and poly(caprolactone), a copolymer of 2-hydroxyethylmethacrylate and methylmethacrylate, poly(2-hydroxyethylmethacrylate), a hyaluronic acid ester, and a crosslinked ester of hyaluronic acid resulting from the esterification of hyaluronic acid with polyhydric alcohols; and

wherein said fastener or replacement is first coated with a first coating of a non-swelling polymer possessing groups chemically and/or physically related to those of said hydrogel or said biocompatible, biodegradable material before coating said fastener or replacement with either said hydrogel or said biocompatible, biodegradable material.

5,645,593

PROSTHESIS COMPONENT

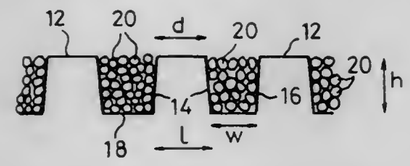
John Stephen Woods; Derek Redvers Cooper, and Caradoc John Morgan Thomas, all of Cirencester, England, assignors to Corin Medical Limited, United Kingdom

Filed Mar. 17, 1995, Ser. No. 406,298

Claims priority, application United Kingdom, Apr. 12, 1994, 9407195

Int. Cl.[6] A61F 2/28;2/32

U.S. Cl. 623—16 7 Claims



1. A bone-contacting prosthesis component, comprising:

a surface intended, in use, to come into contact with bone tissue, wherein at least part of said surface is textured to provide an array of lands separated by troughs, each of said lands being substantially circular, said troughs being depressions below the level of said lands and containing sintered particles embedded in a biocompatible bonding material such that said particles fill said troughs up to said level of said lands, said troughs each have sidewalls, said particles coating said sidewalls of said troughs, said array of lands serving to interrupt shear forces acting to shear away and dislodge said particles from said prosthesis component when said prosthesis component is in contact with bone tissue.

5,645,594

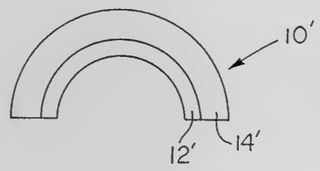
POLYMER COMPOSITE IMPLANT AND METHOD OF MAKING THE SAME

Thirumalai Devanathan, and Richard S. King, both of Warsaw, Ind., assignors to Zimmer, Inc., Warsaw, Ind.

Continuation of Ser. No. 225,873, Apr. 11, 1994, abandoned. This application Nov. 14, 1995, Ser. No. 557,246

Int. Cl.[6] A61F 2/28

U.S. Cl. 623—16 5 Claims



1. A non-metallic orthopaedic implant comprising:

a first layer adapted for sliding contact with a second component,

a second outer layer,

the first layer being formed from a polymer material from a family of polyethylene,

the second layer being formed from a homogeneous blend of polyethylene and poly methyl methacrylate.

5,645,595

Patent Not Issued For This Number

5,645,596

CERAMIC VERTEBRAE PROSTHESIS

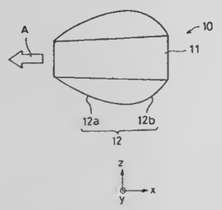
Phyo Kim, and Masao Suzuki, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 6, 1994, Ser. No. 268,103

Claims priority, application Japan, Jul. 7, 1993, 5-037185; Nov. 12, 1993, 5-060953

Int. Cl.[6] A61F 2/44

U.S. Cl. 623—17 21 Claims



1. A ceramic vertebra prosthesis to be inserted in a cavity defined between upper and lower vertebra bodies with a removed intervertebral disk or disks, said vertebra prosthesis comprising a ceramic having a porosity of 20 to 55%, wherein the vertebra prosthesis is provided with upper and lower convex contact surfaces that are adapted to come into contact with upper and lower vertebra bodies, each of said upper and lower convex contact surfaces comprises a curved surface whose curvature in a section in a direction perpendicular to a direction of insertion of said vertebra prosthesis into the cavity between the upper and lower vertebra bodies is different than in a direction parallel to the direction of insertion of the vertebra prosthesis;

wherein said prosthesis comprises calcium phosphate ceramic;

wherein a width of said prosthesis decreases in a direction toward an insertion end of said prosthesis; and

wherein said width of said prosthesis is greatest at a point disposed between a center and an end opposite said insertion end of said prosthesis.

5,645,597

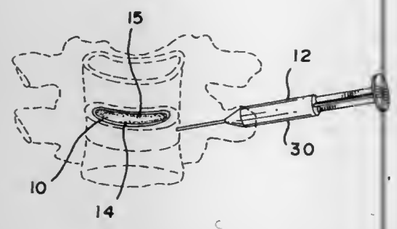
DISC REPLACEMENT METHOD AND APPARATUS

Pavel I. Krapiva, 10008 Edward Ave., Bethesda, Md. 20814

Filed Dec. 29, 1995, Ser. No. 580,826

Int. Cl.[6] A61F 2/44

U.S. Cl. 623—17 6 Claims



1. A method for replacing a nucleus pulposus of an intervertebral disc, comprising the steps of:

removing the nucleus pulposus from the intervertebral disc to create a space defined by an inner wall of an annulus fibrosis, wherein a hole is created in the intervertebral disc upon the removal of the nucleus pulposus;

introducing a flexible prosthetic disc within the space formerly occupied by the nucleus pulposus, wherein the flexible prosthetic disc includes an elastic flexible ring, an upper membrane secured to an upper edge of the flexible ring and a lower membrane secured to a lower edge of the flexible ring to define a cylindrical space, such that the prosthetic disc expands as a result of the flexible ring to fill the space defined by the inner wall of the annulus fibrosis;

positioning a syringe filled with a gel through the hole within the intervertebral disc and into the cylindrical space defined by the prosthetic disc; and

filling the prosthetic disc with the gel by forcing the gel from within the syringe.

5,645,598

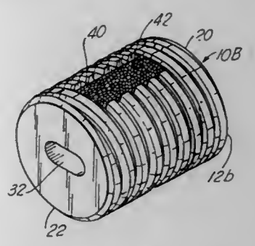
SPINAL FUSION DEVICE WITH POROUS MATERIAL

Robert E. Brosnahan, III, Germantown, Tenn., assignor to Smith & Nephew, Inc., Memphis, Tenn.

Continuation-in-part of Ser. No. 585,526, Jan. 16, 1996. This application Apr. 15, 1996, Ser. No. 631,135

Int. Cl.[6] A61F 2/44

U.S. Cl. 623—17 10 Claims



1. An implant for insertion into at least one bore formed between opposing vertebrae of a spine where the vertebrae are separated by a space and each vertebrae has end plates, the implant comprising:

a) a solid generally cylindrical body having a first and a second end, an outer surface, opposing sides and a longitudinal axis;

b) the body having threads on a portion of the outer surface between the first and second ends, the threads configured for threading into bone;

c) the body including at least one through slot positioned between the opposing sides, the through slot containing a biocompatible porous material for allowing the growth of bone through the slot; and

d) the through slot being positioned between generally opposing sides of the body so as to provide contact between the biocompatible porous material and the end plates of the opposing vertebrae when the implant is inserted into at least one bore formed between the opposing vertebrae.

5,645,599

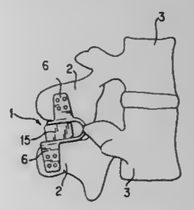
INTERSPINAL VERTEBRAL IMPLANT

Jacques Samani, St. Cyr Au Mont D'Or, France, assignor to Fixano, Bourg En Bresse, France

Filed Apr. 22, 1996, Ser. No. 635,735

Int. Cl.[6] A61F 2/44; A61B 17/58

U.S. Cl. 623—17 7 Claims



1. An interspinal vertebral implant comprising:

a U-shaped body having a central portion and two branches, wherein at least the central portion is elastically flexible;

two pairs of brackets, wherein each pair of brackets projects from an outer face of one of the two branches, and wherein each pair of brackets comprises a stirrup for receiving a spinous process of a vertebrae; and

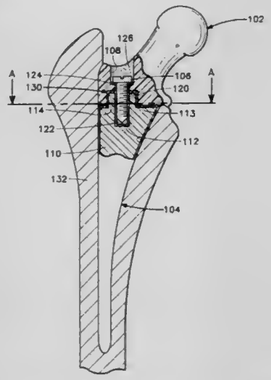
means wherein said brackets includes for attaching the brackets to spinous processes of the vertebrae.

5,645,600

HIGH PERFORMANCE STEM FOR ARTHROPLASTY

Lev A. Bimman, 2747 Del Medio Ct. Apt. 301, Mountain View, Calif. 94040

Filed Sep. 12, 1994, Ser. No. 304,576
Int. Cl.[6] A61F *2/30;2/32*
U.S. Cl. 623—18 **12 Claims**



1. A joint prosthesis for replacement of the articular head of an elongated bone, comprising:

(a) a stem portion for insertion into the intramedullary canal of the elongated bone comprising,

(a1) a stem core made of a strong resilient material which is not body-compatible and which has flexure characteristics substantially similar to that of the elongated bone, said stem core consisting of one of (i) spring steel, or (ii) hardened steel,

(a2) an insulation layer completely covering the exterior surface of the stem core, said insulation layer being made of a body compatible material and insulating the stem core from surrounding body fluids and tissues;

(b) a head portion made of a body-compatible material for interfacing with a joint socket of an adjacent bone; and,

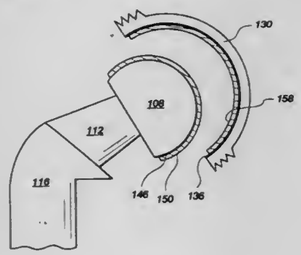
(c) a means for connecting the stem and head portions.

5,645,601

PROSTHETIC JOINT WITH DIAMOND COATED INTERFACES

Bill J. Pope, and Richard M. Garrick, both of Provo, Utah, assignors to Diamicron, Inc., Orem, Utah

Continuation of Ser. No. 289,696, Aug. 12, 1994, abandoned. This application Apr. 16, 1996, Ser. No. 631,877
Int. Cl.[6] A61F *2/30;2/32;2/38*
U.S. Cl. 623—18 **11 Claims**



1. A prosthetic joint comprising:

a pair of load-bearing surfaces forming the joint and disposed in sliding engagement relative to each other; and

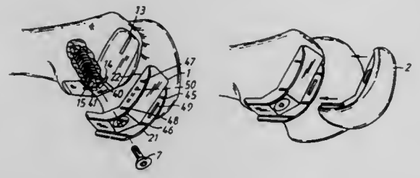
coating means disposed on each of the load-bearing surfaces to contact the coating means on the other load-bearing surface to facilitate sliding therebetween, the coating means comprising polycrystalline diamond.

5,645,602

KNEE JOINT PROSTHESIS

Björn Albrektsson, Onsala; Lars Valter Carlsson, Kullavik; Carl Magnus Gösta Jacobsson, Göteborg; Tord Valter Röstlund, Kullavik, and Stig Gösta Wennberg, Angered, all of Sweden, assignors to Astra Aktiebolag, Sodertalje, Sweden

PCT No. PCT/SE93/00451, § 371 Date Dec. 14, 1994, § 102(e) Date Dec. 14, 1994, PCT Pub. No. WO93/24079, PCT Pub. Date Dec. 9, 1993
PCT Filed May 19, 1993, Ser. No. 343,423
Claims priority, application Sweden, May 27, 1992, 9201671
Int. Cl.[6] A61F *2/38*
U.S. Cl. 623—20 **5 Claims**



1. A joint prosthesis requiring only one operation to be permanently anchored in the bone tissue of one of the articulating parts of a joint in a human body, in particular the femur side of a knee joint, said prosthesis comprising:

a) an attachment having an inner surface for bearing against the bone tissue and an outer surface, the attachment including:

a first and a second essentially planar part oriented generally at an angle relative to each other;

an intermediate part joining the planar parts; and

flanges disposed on the outer surface over the planar parts and the intermediate part and oriented parallel to the direction of articulation movement of the joint, the flanges each having a groove disposed over and oriented parallel to the second planar part;

b) means for securing the attachment to the bone tissue;

c) an articulation element disposed over the outer surface of the attachment and having an interior shape which is complementary to the outer surface, the articulation element including beads projecting from opposed side surfaces of the articulation element and engaging the grooves; and

d) locking means for fixing the articulation element to the attachment when the articulation element is disposed over the attachment and the beads are engaged in the grooves.

5,645,603

METHOD OF ENHANCING PHYSICAL PROPERTIES OF NON-ELASTOMERIC THERMOPLASTIC MATERIALS AND RESULTING COMPOSITIONS

William E. Peters, 1026 Richwood Dr., Danville, Ind. 46122

Filed Jul. 25, 1995, Ser. No. 505,522
Int. Cl.[6] A61F *2/30;* **C08K** *3/30;3/10;* **C08L** *23/02*
U.S. Cl. 623—20 **12 Claims**

6. A method of fluoridating thermoplastic materials by using polytetrafluoroethylene, the method comprising the steps of:

preassociating polytetrafluoroethylene and molybdenum disulfide;

blending the preassociated polyterrafluoroethylene and molybdenum disulfide with an elastomeric block copolymer to form a modifier; and

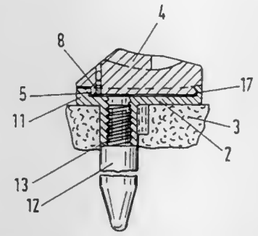
blending the modifier with the thermoplastic.

5,645,604

TIBIA PLATFORM FOR A KNEE JOINT PROSTHESIS

Markus Schneider, Amriswil, and Walter Moser, Herrenschwanden, both of Switzerland, assignors to Sulzer Medizinaltechnik AG, Winterthur, and Protek AG, Muensing/Bern, both of Switzerland

Filed Mar. 27, 1996, Ser. No. 625,441
Claims priority, application European Pat. Off., Apr. 20, 1995, 95810263
Int. Cl.[6] A61F *2/38*
U.S. Cl. 623—20 **3 Claims**



1. A tibia platform (**1**) for a knee joint prosthesis comprising an anchoring part (**2**) for the attachment to a tibia bone (**3**) and a joint support (**4**), the joint support (**4**) being configured for latching to the anchoring part (**2**) by resilient deflection and snapping into place of at least one spring tongue (**5**) formed on said joint support (**4**); wherein a shoulder (**6**) is formed on the joint support (**4**) in a spring-back direction (**10**) of the spring tongue (**5**) in order to provide an intermediate space (**9**) , said shoulder (**6**) having a defined spacing (**7**) from the spring tongue (**5**); and wherein a compression member (**8**) configured to be inserted into the intermediate space (**9**) when the joint support (**4**) is latched, said compression member (**8**) filling out the intermediate space (**9**) in order to prevent springing back of the spring tongue (**5**).

5,645,605

IMPLANT DEVICE TO REPLACE THE CARPOMETACARPAL JOINT OF THE HUMAN THUMB

Jerome Klawitter, Austin, Tex., assignor to Ascension Orthopedics, Inc., Austin, Tex.

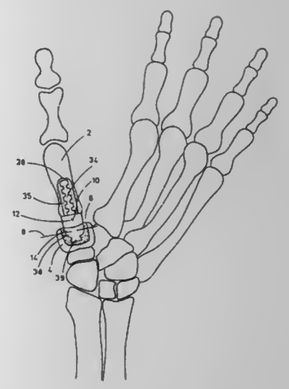
Filed Sep. 18, 1995, Ser. No. 531,150
Int. Cl.[6] A61F *2/42*
U.S. Cl. 623—21 **10 Claims**

1. A prosthetic device designed for replacement of the carpometacarpal joint of the human thumb comprising

a first element which is shaped to replace the proximal articular portion of the first metacarpal bone and

a second element which is shaped to replace the corresponding articular portion of the trapezium.

said first and second elements being formed with mating non-congruent articulating surfaces which permit smooth relative angular movement between said first and second elements and each surface is curved to provide matingly surface contact solely along two curved lines of contact, said lines of contact lying in perpendicular planes.

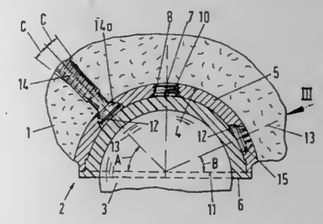


5,645,606

OUTER SHELL FOR AN AT LEAST TWO-SHELL JOINT SOCKET OF A HIP JOINT PROSTHESIS

Jürg Oehy; Kurt Bider, both of Winterthur, and Martin Schoch, Stallikon, all of Switzerland, assignors to Sulzer Medizinaltechnik AG, Winterthur, Switzerland

Filed Jan. 13, 1995, Ser. No. 372,416
Claims priority, application European Pat. Off., Feb. 7, 1994, 94810065
Int. Cl.[6] A61F *2/32*
U.S. Cl. 623—22 **8 Claims**



1. An outer shell for a joint socket of a hip joint prosthesis comprising:

a shell body having inner and outer sides and a thickness therebetween, the shell body defining a plurality of through-holes extending from the inner to outer sides and being adapted to receive fastening elements for fastening the shell body in a bone seat, the through-holes each including a countersink facing the inner side of the shell body; and

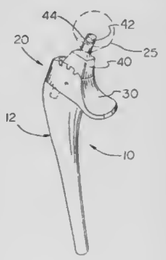
at least one closure plugs inserted into at least one of the through-holes from the inner sides of the shell body, the closure plugs each having a sealing surface supported in and extending around the countersink of the corresponding through-hole, the closure plugs each including a plurality of flexible springs inserted into the corresponding through-hole and protruding from the sealing surface towards the outer side of the shell body to form a snap connection between the closure plug and the corresponding through-hole, the closure plugs having a length less than or equal to the thickness of the shell body.

5,645,607

HIP STEM PROVISIONAL HAVING ADJUSTABLE NECK OFFSETS

Paul Francis Hickey, Leesburg, Ind., assignor to Zimmer, Inc., Warsaw, Ind.

Filed Mar. 2, 1995, Ser. No. 399,107
Int. Cl.[6] A61F *2/36*
U.S. Cl. 623—23 **17 Claims**



1. A hip stem provisional comprising:.

a base part located on said stem provisional and including an elongated mounting surface,

a neck part extending outwardly from said base part, and

means for shiftably connecting said neck part to said base part for shiftable movement along said mounting surface between a first position and second position to provide at least two different selectable discrete neck offsets, and wherein said neck part is nonrotatably, shiftably connected to said base part along said mounting surface at a first angular orientation when said neck part is in its said first position and at a second angular orientation, different from said first angular orientation, when said neck part is in its said second position.

5,645,608

COLD WATER WASH METHOD

Theodore R. Cooper, 1979 S. Wasatch Dr., Salt Lake City, Utah 84108; Allyson T. Toney, 1129 N. 3000 West, West Point, Utah 84015, and John B. McParlane, 731 Fifth Ave., #4, Salt Lake City, Utah 84103

Division of Ser. No. 582,612, Jan. 3, 1996. This application Apr. 17, 1996, Ser. No. 633,573
Int. Cl.[6] D06B *19/00;* **D06L** *3/04*
U.S. Cl. 8—137 **20 Claims**

1. A method of reducing the soil load on a soiled textile using cold water in a washing machine containing the textile, the washing machine having an outer shell for containing fluids and an internal assembly for containing the textile and fluids, said method comprising:

introducing a first break wash into the outer shell and internal assembly, thus contacting the textile with the first break wash and wetting the textile, said first break wash comprising cold water and an organic solvent;

combining a second break wash with the first break wash in the outer shell and internal assembly, said second break wash comprising water, a surfactant, and an alkali;

removing the combined first and second break washes and any associated soil from the internal assembly and the outer shell;

introducing a first rinse solution into the outer shell and internal assembly, thus contacting the textile with said first rinse solution, said first rinse solution comprising cold water;

removing the first rinse solution and any soil associated therewith from the internal assembly and the outer shell;

introducing a second rinse solution into the outer shell and internal assembly to contact said second rinse solution with the textile, said second rinse solution comprising ozonated cold water and an acid;

removing the second rinse solution and any associated soil from the internal assembly and the outer shell; and

introducing a third rinse solution into the outer shell and internal assembly to contact the textile with said third rinse solution, said third rinse solution comprising ozonated cold water, thereby reducing the soil load on the textile.

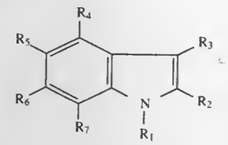
5,645,609

COMPOSITIONS WHICH CONTAIN AND PROCESSES WHICH USE AN INSOLUBLE PIGMENT OBTAINED BY THE OXIDATIVE POLYMERIZATION OF INDOLE DERIVATIVES FOR THE TEMPORARY DYEING OF KERATINOUS FIBERS

Hervé Andrean, Paris; Alex Junino; Louis Lezoray, both of Livry-Gargan; Jean Cotteret, Verneuil-sur-Seine; Marie Pascale Audousset, Levallois-Perret, and Mireille Maubru, Chatou, all of France, assignors to L'Oreal, Paris, France

Continuation of Ser. No. 190,094, May 13, 1994, abandoned. This application Mar. 18, 1996, Ser. No. 616,935
Claims priority, application France, Aug. 1, 1991, 91 09823
Int. Cl.[6] A61K *7/13*
U.S. Cl. 8—405 **22 Claims**

17. Composition for the temporary dyeing of keratinous fibers, comprising, in a medium suitable for temporary dyeing, an effective amount of particles consisting of an insoluble pigment to temporarily dye said fibers, said pigment consisting of the oxidative polymerization product of an indole compound corresponding to the formula (I)



in which:

R^1 and R^3 represent, independently of one another, a hydrogen atom or a C_1–C_4 alkyl group;

R^2 represents a hydrogen atom, a C_1–C_4 alkyl group, a carboxyl group of a (C_1–C_4 alkoxy)carbonyl group;

R^4 and R^7 represent, independently of one another, a hydrogen atom, a hydroxyl group, a C_1–C_4 alkyl group, an amino group, a C_1–C_4 alkoxy group, a (C_2–C_4 acyl)oxy group or a (C_2–C_4 acyl)amino group;

R^5 represents a hydrogen atom, a hydroxyl group, a C_1–C_4 alkoxy group, a C_1–C_4 alkyl group, a halogen atom, an amino group, a (C_2–C_{14} acyl)oxy group, a (C_2–C_4 acyl)amino group or a trimethylsilyloxy group;

R^6 represents a hydrogen atom, a hydroxyl group, a C_1–C_4 alkoxy group, an amino group, a (C_2–C_4 acyl)oxy group, a (C_2–C_4 acyl) amino group, a trimethylsilyloxy group or a hydroxy (C_2–C_4 alkyl) amino group;

with the proviso that R^5 and R^6 cannot simultaneously designate a C_1–C_4 alkoxy radical;

it being possible for R^5 and R^6, together with the carbon atoms to which they are attached, to form a carbonyldioxy ring;

with the additional provisos that at least one of the radicals R^4 to R^7 represents a group OZ or NHR^8; at most one of the radicals R^4 to R^7 represents NHR^8; at most two of the radicals R^4 to R^7 represents OZ; when Z represents a hydrogen atom and there are two OZ groups, the two OZ groups are in positions 5 and 6; at least one of the radicals R^4 to R^7 represents a hydrogen atom; and, in the case where only one of the radicals R^4 to R^7 represents a hydrogen atom, then only one radical from among R^4 to R^7 represents NHR^8 or OZ, the other radicals representing a C_1–C_4 alkyl group;

the radical R^8 of the group NHR^8 denoting a hydrogen atom or a C_2–C_4 acyl or C_2–C_4 hydroxyalkyl group, and the radical Z of the group OZ denoting a hydrogen atom, a C_2–C_{14} acyl group, a C_1–C_4 alkyl group or a trimethylsilyl group,

or their alkali metal, alkaline earth metal, ammonium or amine salts,

and a film-forming latex.

5,645,610

SUBSTITUTED 2-ALKYLAMINO-4-AMINO-1-ALKYLBENZENE COMPOUNDS AND OXIDATION HAIR DYE COMPOSITIONS BASED ON SAID COMPOUNDS

Wolfgang R. Balzer, Schlesier Strasse 9a, 64665 Alsbach; Anke Frank, Alte Falterstrasse 29, 65933 Frankfurt, and Alexa Weinges, Langgewann 9, 69121 Heidelberg, all of Germany

Filed May 26, 1995, Ser. No. 450,476
Claims priority, application Germany, Jun. 18, 1994, 44 21 397.2
Int. Cl.[6] A61K *7/13;* **C07C** *209/00*
U.S. Cl. 8—411 **7 Claims**

1. An oxidation hair dye composition containing an effective amount of at least one developer substance and an effective amount of at least one coupler substance selected from the group consisting of 4-amino-2-(2'-hydroxyethyl)amino- 5-methoxytoluene and 4-amino-2-(2'-hydroxyethyl)amino-5-chlorotoluene.

5,645,611

METHOD OF MAKING REDUCED ENVIRONMENTAL HAZARD LECLANCHE CELL HAVING IMPROVED PERFORMANCE

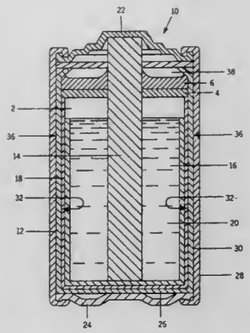
Ronald J. Ekern, and Terry G. Messing, both of Verona, Wis., assignors to Rayovac Corporation, Madison, Wis.

Division of Ser. No. 275,019, Jul. 13, 1994. This application Jun. 7, 1995, Ser. No. 475,203
Int. Cl.[6] H01M *6/08*
U.S. Cl. 29—623.2 **15 Claims**

1. A method of making an electrochemical LeClanche cell, comprising the steps of:

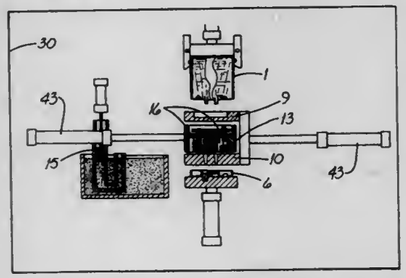
(a) selecting a cathode material comprising manganese dioxide;

(b) selecting an electrolyte comprising chloride as a primary component;



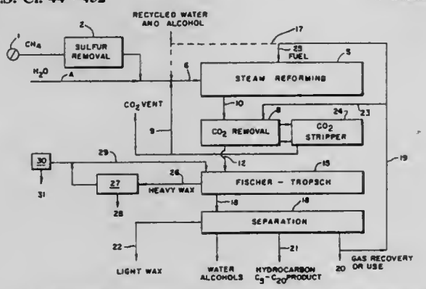
(c) selecting a zinc anode configured for use in the cell, the anode consisting essentially of a zinc alloy containing at least 95% zinc and no more than about 12 ppm iron by weight;
(d) selecting a cathode current collector comprising carbonaceous material;
(e) selecting an ionically permeable separator having first and second major opposing surfaces;
(f) placing the first surface of the separator propinquant to the anode;
(g) placing the cathode material propinquant to the second surface of the separator;
(h) placing the cathode current collector propinquant to the cathode material;
(i) wetting at least one of the anode, the separator and the cathode material with the electrolyte, and
(j) sealing the cell to at least inhibit the ingress of air therein.

5,645,612
WELDING AND COVER SEALING MACHINE APPARATUS FOR BATTERY ASSEMBLY AND AN IMPROVED METHOD OF MANUFACTURING STORAGE BATTERIES
John K. Shannon, and James M. Shannon, both of Racine, Wis., assignors to Enersafe Corporation, Racine, Wis.
Filed Dec. 6, 1995, Ser. No. 567,928
Int. Cl.[6] H01M 2/24
U.S. Cl. 29—623.2 **9 Claims**



1. A method of manufacturing a battery having a dielectric case with opposed first and second endwalls, sidewalls and cell partitions therebetween together forming complete cells each of which contains a cell group of plates where each plate has at least one plate lug, the case formed of first and second case portions, each having a respective one of the endwalls and forming subparts of each complete cell, the first case portion further having a part of each sidewall and partition and sealed edge-to-edge to the remaining parts of each sidewall and partition of the second case portion, comprising:
putting a cell group into the cell subparts of the first case portion;
vertically aligning the case portions in opposed spaced positions;
heating the sidewall and partition edges of the case portions;
substantially simultaneously with the heating step, dispensing molten lead into a plurality of plate strap mold wells located in the second case portion;
bringing the two case portions together for the edge-to-edge sealing and to partially immerse at least one plate lug in the lead in the wells for electrical union therewith, thereby sealing the battery and the cells.

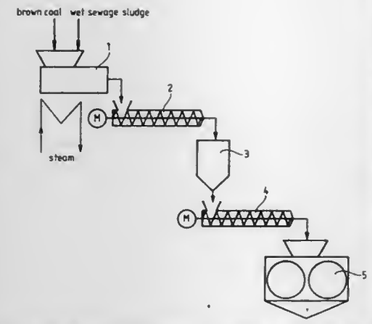
5,645,613
PROCESS FOR THE PRODUCTION OF HYDROCARBONS
Charles B. Benham, Arvada; Mark S. Bohn, Golden, and Dennis L. Yakobson, Westminster, all of Colo., assignors to Rentech, Inc., Denver, Colo.
Continuation-in-part of Ser. No. 140,479, Nov. 18, 1993, abandoned, which is a division of Ser. No. 867,456, Apr. 13, 1992, Pat. No. 5,324,335. This application Sep. 16, 1994, Ser. No. 307,014
Int. Cl.[6] C10L 1/18
U.S. Cl. 44—452 **1 Claim**



1. A diesel fuel additive for reducing particulate emissions comprising a synthetic slurry naphtha or diesel or mixtures thereof containing alcohols containing at least five carbon atoms produced by Fischer Tropsch reaction with a promoted iron-based catalyst said additive to be added with the diesel fuel in sufficient quantity to produce an oxygen content in the diesel fuel of at least 2% by weight, without exceeding diesel fuel specification limits for viscosity.

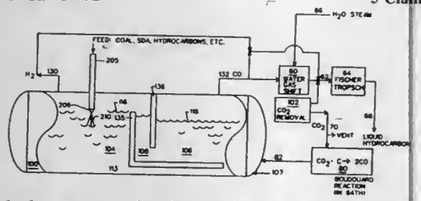
5,645,614
PROCESS FOR THE UTILIZATION OF SEWAGE SLUDGES
Hans-Ulrich Dummersdorf, Burscheid; Günther Herbst, Odenthal; Manfred Erken, Bergheim; Franz-Josef Menge, Pulheim, and Helmut Kreusing, Aachen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, and Rheinbraun Aktiengeselischaft, Cologne, both of Germany
Filed Sep. 8, 1994, Ser. No. 302,576
Claims priority, application Germany, Sep. 13, 1993, 43 30 884.8
Int. Cl.[6] C10L 5/06
U.S. Cl. 44—596 **7 Claims**

1. A process for the preparation of fuel briquettes from municipal or industrial sewage sludges comprising the steps of:
(a) forming a mixture consisting essentially of
(i) wet sewage sludge having a water content of 30% to 80%, and
(ii) dried brown coal having a water content of 10% to 30%, either alone or together with brown coal coke,
wherein the ratio of (i) to (ii) is from 1:3 to 3:1; and



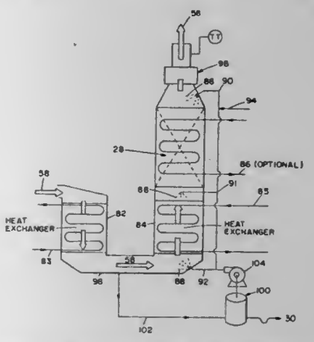
(b) compacting said mixture, at a compaction pressure above 50 bar, to form a dimensionally stable fuel briquette.

5,645,615
MOLTEN DECOMPOSITION APPARATUS AND PROCESS
Donald P. Malone, Grayson; Charles B. Miller, Ashland, both of Ky., and Jonathan A. Wiseman, Pedro, Ohio, assignors to Ashland Inc.
Continuation of Ser. No. 163,468, Dec. 7, 1993, abandoned, which is a continuation-in-part of Ser. No. 930,250, Aug. 13, 1992, abandoned. This application Aug. 9, 1995, Ser. No. 513,035
Int. Cl.[6] C10J 3/57
U.S. Cl. 48—92 **5 Claims**



1. In a process for decomposing carbon- and hydrogen-containing feed materials in a molten metal bath comprising:
injecting said carbon- and hydrogen-containing feed materials into said molten bath, dissolving a portion of said carbon in said metal bath, creating a carbon monoxide stream comprising CO from said dissolved carbon, oxidizing a portion of said CO to CO_2, recycling said CO_2 back to said bath by injecting at least a portion of said CO_2 into said molten metal at a point where said molten metal contains substantial quantities of dissolved carbon, whereby said dissolved carbon reacts with said CO_2 to form approximately two moles of CO for each mole of CO_2, thereby cooling the temperature of said bath, the improvement wherein said step of injecting said feed materials into said bath comprises injecting said feed materials substantially downwardly into said bath under sufficient pressure so as to penetrate the surface of the bath and causing mixing of said feed materials within said molten metal below the surface of said bath, wherein said lance comprises a conduit having a nozzle at a lower end of said conduit, and wherein said feed materials are injected from said nozzle, with the lower end of the lance located below the surface of the bath, wherein said conduit is substantially jacketed, and wherein said process further comprises flowing a cooling media through said jacket so as to substantially cool said conduit and said feed materials flowing therein, and wherein the velocity of the cooling media is controlled to prevent the temperature of the feed materials from exceeding about 315° C. (about 600° F.), and said process further comprises the step of controlling the velocity of the feed materials leaving the nozzle to that in the range of about 30–300 meters per second (about 100–1000 feet per second), whereby coking of the carbon and hydrogen-containing feed materials is prevented within the conduit upstream of the nozzle and within the nozzle, and wherein the velocity of the feed materials leaving the nozzle is sufficient to facilitate mixing of the carbon content thereof, with the molten metal by disassociation.

5,645,616
BLACK LIQUOR GASIFIER
Robert A. McIlroy, Marlboro Township, Stark County; Robert A. Kuchner, Plain Township, Stark County; John E. Monacelli, Green, and Dennis W. Johnson, Barberton, all of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.
Division of Ser. No. 201,447, Feb. 24, 1994, abandoned. This application Apr. 18, 1995, Ser. No. 424,741
Int. Cl.[6] C10L 3/00
U.S. Cl. 48—202 **10 Claims**



1. A method for producing a product gas, comprising the steps of:
introducing a residual waste liquor into at least one fluidizing bed of a gasifier reactor;
heating the at least one fluidizing bed in the gasifier reactor directly with a heated fluid stream that both heats and fluidizes the at least one fluidizing bed;
operating the at least one fluidizing bed at a temperature ranging from 800° F. to 1400° F. for generating a product gas stream from the residual waste liquor without forming smelt;
removing dust from the product gas stream with dust collector means located downstream from the gasifier reactor;
recovering heat from the product gas by passing the product gas downwardly through a first condensing heat exchanger means positioned downstream of the dust collector means, the first condensing heat exchanger means having tubes with an inert cover, the tubes being situated to be cooled with a cooling fluid and exposed to the product gas stream to cool the product gas to a first selected temperature;
channeling the product gas through a duct connecting the first condensing heat exchanger means with a second condensing heat exchanger means;
passing the product gas upwardly through the second condensing heat exchanger means connected in series to the first condensing heat exchanger means for further cooling the product gas to a temperature below an adiabatic saturation temperature of the product gas and removing an acid gas therefrom along with particulate, the second condensing heat exchanger means having tubes with an inert cover, the tubes being situated to be cooled with a cooling fluid and exposed to the product gas stream;
spraying a reagent into the product gas stream in an inlet and an exit of the second condensing heat exchanger means for removing the acid gas along with particulate from the product gas in the second condensing heat exchanger means; and

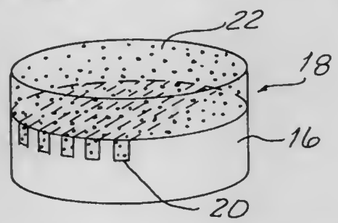
collecting condensate and reagent in a sump of the duct for recycling the reagent and the acid gas.

5,645,617

COMPOSITE POLYCRYSTALLINE DIAMOND COMPACT WITH IMPROVED IMPACT AND THERMAL STABILITY

Robert H. Frushour, 2313 Devonshire, Ann Arbor, Mich. 48104

Filed Sep. 6, 1995, Ser. No. 523,868
Int. Cl.[6] B24D *11/00*
U.S. Cl. 51—309 13 Claims



1. A process for preparing a polycrystalline diamond compact in a protective shield enclosure in a reaction cell of a high pressure/high temperature apparatus, the process comprising the steps of:

placing a mass of abrasive crystals in successive layers varying from coarser to finest crystals in successive layers in a protective shield enclosure;

placing a substrate in a protective shield enclosure, the substrate contacting the finest layer of crystals; and

subjecting the layers of abrasive crystals and the substrate to high pressure and high temperature to bond the layers to each other and to the substrate.

5,645,618

METHOD FOR MAKING AN ABRASIVE ARTICLE

Larry D. Monroe, Eagan, and Thomas E. Wood, Stillwater, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 333,224, Nov. 2, 1994, Pat. No. 5,593,467, which is a continuation-in-part of Ser. No. 151,540, Nov. 12, 1993, abandoned. This application Dec. 19, 1995, Ser. No. 575,181
Int. Cl.[6] B24D *3/00*
U.S. Cl. 51—309 57 Claims

1. A method for making an abrasive article, said method comprising the steps of:

(a) preparing a dispersion comprising a liquid medium and a sufficient amount of alpha alumina particles which, after steps (b) and (c), provides a plurality of crystalline ceramic, alpha alumina-based abrasive grain having a hardness of at least 16 GPa, a density of at least 3.58 g/cm^3, an average alpha alumina crystallite size of less than 2 micrometer, and, on a theoretical oxide basis, less than 0.3 percent by weight SiO_2 and no more than 0.4 percent by weight Na_2O, based on the total weight of said abrasive grain, said alpha alumina particles having an average size of less than 2 micrometer, said dispersion containing no more than 1% by weight alpha alumina monohydrate, based on the total solids content of said dispersion;

(b) deliquifying said dispersion to provide alpha alumina-based abrasive grain precursor material;

(c) sintering said precursor material at a temperature no greater than 1600.0° C. and at a pressure no greater than 100.0 atm for a time sufficient to provide said plurality of abrasive grain; and

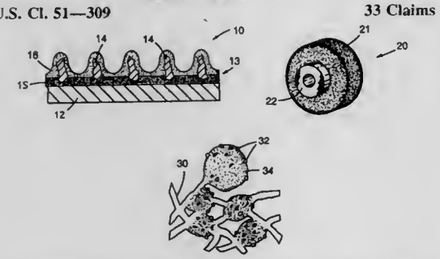
(d) combining at least a portion of said plurality of abrasive grain with binder to provide said abrasive article.

5,645,619

METHOD OF MAKING ALPHA ALUMINA-BASED ABRASIVE GRAIN CONTAINING SILICA AND IRON OXIDE

Dwight D. Erickson, Oakdale; Larry D. Monroe, Eagan; Thomas E. Wood, Stillwater, and David M. Wilson, Bloomington, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 492,720, Jun. 20, 1995, abandoned. This application Jun. 26, 1996, Ser. No. 670,889
Int. Cl.[6] C09C *1/68*
U.S. Cl. 51—309 33 Claims



1. A method for preparing alpha alumina-based ceramic abrasive grain, said method comprising:

(a) preparing a dispersion comprising liquid medium, a peptizing agent, boehmite, a source of iron oxide, and a source of amorphous silica;

(b) converting said dispersion to an abrasive grain precursor; and

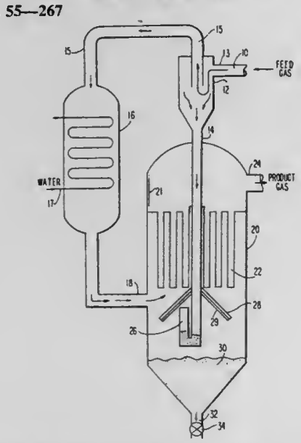
(c) sintering said abrasive grain precursor to provide an alpha alumina-based ceramic abrasive grain comprising, on a theoretical oxide basis, Al_2O_3, 0.1 to 10 percent by weight Fe_2O_3, and 0.1 to 20 percent by weight SiO_2.

5,645,620

SYSTEM FOR SEPARATING PARTICULATES AND CONDENSABLE SPECIES FROM A GAS STREAM

Jack David Shenker, Kinnelon Morris, N.J., assignor to Foster Wheeler Development Corp., Clinton, N.J.

Filed May 25, 1995, Ser. No. 450,511
Int. Cl.[6] B01D *50/00*
U.S. Cl. 55—267 11 Claims



11. A system for separating particulate solids and condensable vapor species from a feed gas stream, the system comprising:

(a) a cyclone gas-solids separator having a tangential inlet conduit connection, an upper outlet conduit connection for clean gas overhead flow from the separator, and a lower outlet conduit for coarse particulate solids withdrawal, said lower outlet conduit containing a J-valve containing particulate solids for sealing differential pressure between the higher pressure cyclone gas-solids separator and the lower portion of the outlet conduit;

(b) a filter vessel having its lower portion flow connected to said gas-solids separator lower outlet conduit, so as to convey coarse particulate solids from said gas-solids separator into the filter vessel lower portion, said filter vessel having an inlet conduit connection for cleaned gas flow, an upper outlet connection for product gas removal, and a lower outlet connection for solids withdrawal, said filter vessel containing a solids filtering surface located entirely between the inlet conduit connection and the upper gas outlet connection for removal of fine solids;

(e) a heat exchanger flow connected to the cyclone separator upper outlet conduit connection for cooling the cyclone separator overhead gas flow stream before it is introduced through the inlet conduit connection into the filter vessel; and

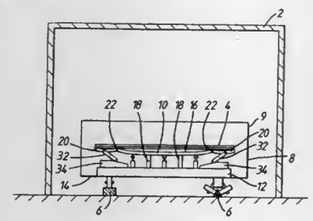
(d) a thermal shield provided in said filter vessel between the gas inlet conduit connection from said heat exchanger and the lower outlet conduit for the coarser particulate solids flow, whereby coarser solid particles are removed from the feed gas stream in the cyclone separator and passed through the lower outlet conduit connection to the filter vessel, the clean overhead gas stream containing reduced concentration of finer particles is passed through the gas cooling heat exchanger and through the filtering surface element in the filter vessel, and a cleaned gas product stream is withdrawn from the filter vessel upper outlet connection, the finer particles removed by the filtering surface element and a mixed coarse/fine solids stream are withdrawn from the filter vessel lower outlet connection.

5,645,621

APPARATUS FOR AND METHOD OF BENDING GLASS SHEETS

David Sykes, Wigan, United Kingdom, assignor to Pilkington Glass Limited, Merseyside, United Kingdom

Filed Jun. 7, 1995, Ser. No. 482,839
Int. Cl.[6] C03B *23/025;23/03*
U.S. Cl. 65—107 20 Claims



1. An apparatus for bending a glass sheet in a gravity bending step and in a subsequent press bending step, the apparatus including a gravity bending mould comprising a fixed mould portion and an articulated wing portion adjacent to the fixed mould portion, a base on which the fixed mould portion is mounted and a hinged locking arm mounted between the wing portion and the base, the locking arm being movable from an unlocked position in which the wing portion is capable of moving vertically relative to the base to a locked position in which the wing portion is fixed in position relative to the base.

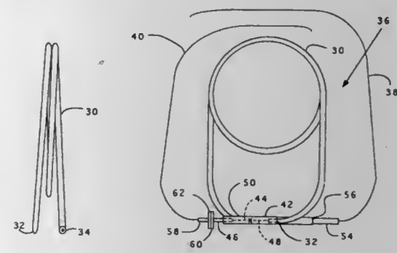
15. A method of bending a glass sheet, the method comprising placing at least one glass sheet on a gravity bending mould comprising a fixed mould portion and an articulated wing portion adjacent to the fixed mould portion, the gravity bending mould being mounted on a base on a movable carriage; conveying the gravity bending mould carrying the at least one glass sheet through a furnace; heating the glass sheet to a glass softening point; bending the glass sheet by gravity in a gravity bending step until a periphery of the glass sheet is in contact with and conforms to a shape of the upper surface of the gravity bending mould, the wing portion being provided with a locking arm which, during the gravity bending step, progressively moves as a result of articulation of the gravity bending mould from an unlocked position to a locked position at which the wing portion is fixed in a predetermined position corresponding to a desired shape of the glass sheet; press bending the glass sheet with an upper pressing die while the glass sheet is supported by the gravity bending mould, the locking arm locking the articulated wing portion in said predetermined position; cooling the glass sheet and removing the glass sheet from the gravity bending mould.

5,645,622

METHOD OF ANNEALING A FIBER WITHIN A COILED TUBE TO THEREBY MAKE A FIBER COIL FOR A FARADAY-EFFECT CURRENT-SENSOR

Bryon J. Cronk, Hudson, Wis.; Ted F. Hutchinson, Cedar Park, Tex.; Dale R. Lutz, Maplewood, Minn.; Trevor W. MacDougall, Cedar Park, Tex., and James R. Onstott, Hudson, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 205,880, Mar. 3, 1994, Pat. No. 5,492,552. This application Mar. 21, 1995, Ser. No. 407,905
Int. Cl.[6] C03B *23/20;23/00;37/00*
U.S. Cl. 65—378 4 Claims



1. A method of making a fiber optic coil subassembly for a Faraday-effect sensor, comprising the steps of:

obtaining an optical fiber having a known coefficient of thermal expansion;

threading said optical fiber through a coiled tubular holder having first and second ends, constructed of a material which has a coefficient of thermal expansion approximately equal to the coefficient of thermal expansion of the optical fiber; and

annealing said optical fiber to form an optical fiber coil having first and second ends exiting said first and second ends of said holder, respectively, by heating said holder and optical fiber to at least 550° C. for at least five hours.

5,645,623

PROCESS FOR DISPOSAL OF DECOMPOSABLE ORGANIC WASTE

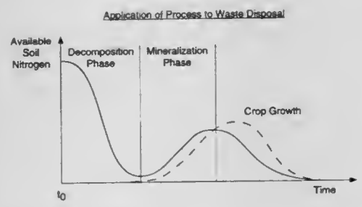
R. Paul Voroney, Guelph, Canada, assignor to Organic Resource Management Inc., Mississauga, Canada

Filed Jan. 26, 1995, Ser. No. 378,738
Int. Cl.[6] C05F *9/04*
U.S. Cl. 71—9 14 Claims

1. A process for disposing of a decomposable oil-containing organic waste material, comprising:

incorporating the waste material into disposal soil;

applying nutrient material to the disposal soil thereby to induce a decomposition phase in which soil organisms absorb the applied nutrient material and decompose the waste material



and a mineralization phase following the decomposition phase in which the soil organisms release nutrient materials to the disposal soil; and,

growing a crop in the disposal soil that requires the nutrient material for crop growth, the growth of the crop being timed such that the crop only begins to absorb nutrient material from the disposal soil during the mineralization phase.

5,645,624

GRANULAR FERTILIZER WITH A MULTILAYER COATING

Hiroshi Naka, Yokohama, and Shunsuke Takase, Fuji, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

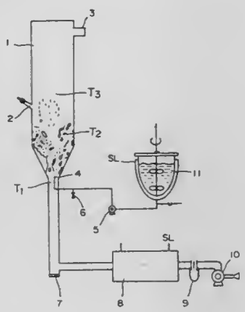
PCT No. PCT/JP94/01178, § 371 Date Nov. 29, 1994, § 102(e) Date Nov. 29, 1994, PCT Pub. No. WO95/03260, PCT Pub. Date Feb. 2, 1995

PCT Filed Jul. 19, 1994, Ser. No. 347,449

Claims priority, application Japan, Jul. 21, 1993, 5-180318

Int. Cl.[6] C05G *3/00;5/00*

U.S. Cl. 71—64.07 **7 Claims**

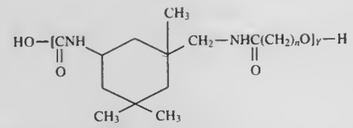


1. A granular fertilizer with a multilayer coating comprising a first layer as an inner layer containing at least one rapidly biodegradable polymer selected from the group consisting of poly-L-lactic acid having a weight-average molecular weight of 70,000 to 500,000, polycaprolactone having a weight-average molecular weight of 10,000 to 70,000, aliphatic polyester having a weight-average molecular weight of 10,000 to 50,000 represented by the following formula (1):

$$HO-[(CH_2)_m-OC-(CH_2)_2CO]_x-H \quad (1)$$

wherein m is 2 or 4, and x is 50 to 500;

and polyurethane having a weight-average molecular weight of 25,000 to 500,000 represented by the following formula (2):



(2)

wherein n is 5 or 6 and Y is 70 to 1500;

and a water-insoluble second layer as an outer layer containing at least one slowly biodegradable polymer selected from the group consisting of at least one cellulose derivative having a weight-average molecular weight of 10,000 to 300,000 selected from the group consisting of of nitrocellulose, ethyl cellulose and triacetyl cellulose, low molecular weight polyethylene having a weight-average molecular weight of 500 to 10,000, low molecular weight wax having a weight-average molecular weight of 300 to 800, and a low molecular weight paraffin having a weight-average molecular weight of 300 to 800 or light degradable resin;

wherein the first layer is in an amount sufficient to control the dissolving-out rate of the fertilizer nutrients, and the second layer is in an amount sufficient to control the biodegradability of the first layer.

5,645,625

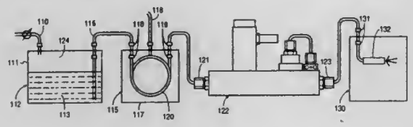
DEVICE FOR REMOVING DISSOLVED GAS FROM A LIQUID

Bart J. van Schravendijk, Sunnyvale; Christopher W. Burkhart, San Jose; Tito H. Santiago, San Mateo; Charles E. Pomeroy, Santa Clara, and Jeffrey W. Lind, Santa Cruz, all of Calif., assignors to Novellus Systems, Inc., San Jose, Calif.

Continuation of Ser. No. 270,515, Jul. 5, 1994, Pat. No. 5,425,803, which is a continuation of Ser. No. 978,216, Nov. 16, 1992, abandoned. This application Feb. 23, 1995, Ser. No. 394,128

Int. Cl.[6] B01D *19/00*

U.S. Cl. 95—46 **29 Claims**



1. A method of dispensing a liquid through a vaporizer within a chemical vapor deposition reactor, said method comprising the steps of:

subjecting said liquid to a pressurized gas in a supply vessel so as to force said liquid through a liquid outlet of said supply vessel, some of said pressurized gas thereby becoming dissolved in said liquid;

removing at least some of said dissolved gas from said liquid by passing said liquid through a gas permeable structure subjected to a pressure differential;

passing said liquid through a liquid mass flow controller, said step of removing at least some of said dissolved gas inhibiting formation of bubbles of said gas and thereby improving the accuracy of said liquid mass flow controller;

passing said liquid to said vaporizer within said chemical vapor deposition reactor; and

dispensing said liquid through said vaporizer.

5,645,626

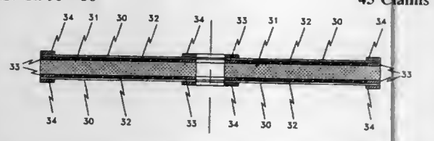
COMPOSITE HYDROGEN SEPARATION ELEMENT AND MODULE

David J. Edlund, Redmond; David D. Newbold, and Chester B. Frost, both of Bend, all of Oreg., assignors to Bend Research, Inc., Bend, Oreg.

Continuation-in-part of Ser. No. 359,917, Dec. 19, 1994, Pat. No. 5,498,278, which is a continuation-in-part of Ser. No. 148,999, Nov. 8, 1993, Pat. No. 5,393,325, which is a continuation-in-part of Ser. No. 986,692, Dec. 7, 1992, Pat. No. 5,259,870, which is a continuation-in-part of Ser. No. 566,092, Aug. 10, 1990, abandoned. This application Jan. 11, 1996, Ser. No. 583,969

Int. Cl.[6] B01D *53/22*

U.S. Cl. 95—56 **43 Claims**



1. A process for the separation of hydrogen from other gases comprising:

(a) providing a feed gas comprising a mixture of gases containing hydrogen;

(b) providing a hydrogen separation element which, after fabrication, comprises a nonporous hydrogen-permeable coating metal layer supported by a rigid ceramic, carbon, or metal support matrix, and a porous intermediate layer between said coating metal layer and said support matrix, wherein, at a temperature of from about 200° C. to about 1000° C.,

said intermediate layer does not chemically react with hydrogen or with said coating metal layer or with said support matrix to form a hydrogen-impermeable layer, and said support matrix does not react with hydrogen or with said intermeiate layer to substantially reduce the tensile strength of said support matrix,

and wherein each of said coating metal layer, said support matrix and said inter mediate layer are planar and have at least one common axis hole therethrough in alignment along a common axis and having a gas-tight gasket about the periphery of said at least one hole of said coating metal layer;

(c) contacting said feed gas with said hydrogen separation element to form a hydrogen permeate stream; and

(d) collecting said hydrogen permeate stream.

5,645,627

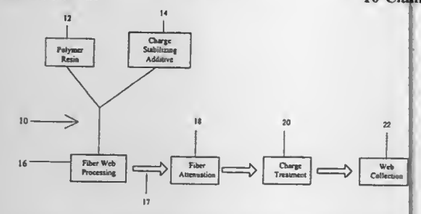
CHARGE STABILIZED ELECTRET FILTER MEDIA

Norman Lifshutz, Nashua, N.H.; Richard E. Gahan, Wrentham, and Graham C. Stevens, Quincy, both of Mass., assignors to Hollingsworth & Vose Company, East Walpole, Mass.

Filed Feb. 28, 1995, Ser. No. 395,661

Int. Cl.[6] B03C *3/28*

U.S. Cl. 96—15 **10 Claims**



1. A filter media comprising an electret melt-blown polymer fiber web having a charge stabilizing melt-blown additive selected from the group consisting of stearic esters of perfluoroalcohols; and mixtures of nonionic fatty acid amides with nonionic, oleophobic fluorochemical surfactants, wherein the melt-blown additive is present at a concentration in the range of about 0.1 to 3.5% by weight to thereby reduce alpha decay in the electret melt-blown polymer fiber web.

5,645,628

ELECTROLESS PLATING BATH USED FOR FORMING A WIRING OF A SEMICONDUCTOR DEVICE, AND METHOD OF FORMING A WIRING OF A SEMICONDUCTOR DEVICE

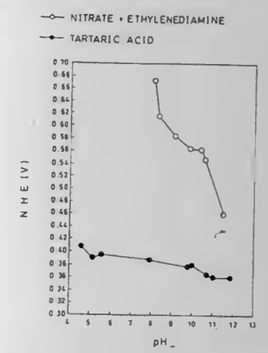
Masayuki Endo; Akemi Kawaguchi; Mikio Nishio, and Shin Hashimoto, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 13, 1995, Ser. No. 502,175

Claims priority, application Japan, Jul. 14, 1994, 6-162030

Int. Cl.[6] C23C *18/31;18/40;18/44*

U.S. Cl. 106—1.23 **2 Claims**



1. An electroless plating bath to be used for forming a wiring of a semiconductor device, comprising:

a metallic material containing metallic ions;

a reducing agent of said metallic ions which contains no metal in the chemical formula thereof;

a complexing agent of said metallic ions which contains no metal in the chemical formula thereof; and

a pH control agent which contains no metal in the chemical formula thereof,

wherein said metallic ions are silver ions, copper ions, gold ions or palladium ions, and

said reducing agent comprises at least one substance selected from the group consisting of tartaric acid, tartrate containing no metal in the chemical formula thereof, monosaccharide, disaccharide, polysaccharide and polyol.

5,645,629

CALCINED PENCIL LEADS AND METHOD OF MANUFACTURING THE SAME

Katsunori Kitazawa, Takasaki, and Kazutaka Aoki, Iwata, both of Japan, assignors to Mitsubishi Pencil Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 7, 1995, Ser. No. 554,479

Claims priority, application Japan, Nov. 17, 1994, 6-283058; Nov. 17, 1994, 6-283059; Nov. 17, 1994, 6-283060

Int. Cl.[6] C09D *13/00;* **B43K** *19/18*

U.S. Cl. 106—31.11 **12 Claims**

1. Pencil leads containing in open cells of calcined pencil leads having open cells, as at least a colorant, any of

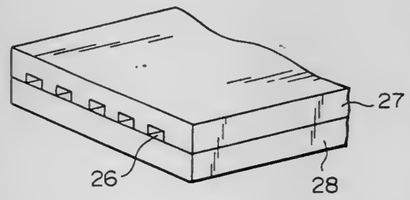
(1) an organic pigment obtained by impregnating the open cells with a solution containing the organic pigment, and then solidifying the organic pigment in the open cells,

(2) a pigment obtained by subjecting a pigment precursor to a pigment forming reaction in the open cells, and
(3) a pigment obtained by forming a lake of a dye in the open cells by a precipitant.

5,645,630
INK COMPOSITION, PROCESS FOR ITS PREPARATION, AND INK-JET RECORDING PROCESS
Hideto Yamazaki, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Jul. 10, 1996, Ser. No. 677,929
Claims priority, application Japan, Jul. 19, 1995, 7-180093
Int. Cl.[6] C09D *11/02*
U.S. Cl. 106—31.32 **9 Claims**

1. An ink composition comprising a dye or a pigment, dissolved or dispersed in an aqueous medium; said ink composition having chromium in a content less than 0.5 ppm.

5,645,631
CLOTH SUITABLE FOR INK-JET TEXTILE PRINTING AND INK-JET TEXTILE PRINTING METHOD
Shoji Koike, and Tomoya Yamamoto, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 8,332, Jan. 25, 1993, Pat. No. 5,494,733. This application Nov. 8, 1995, Ser. No. 555,077
Claims priority, application Japan, Jan. 27, 1992, 4-034064
Int. Cl.[6] C09D *11/02*; **B41J** *3/407*
U.S. Cl. 106—31.36 **26 Claims**

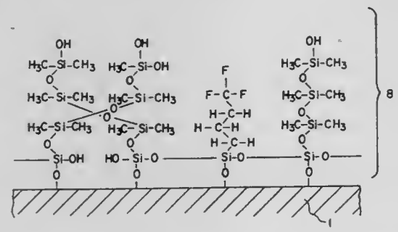


1. An ink-jet textile-printing method comprising the steps of:
1) imparting an ink to a cloth, wherein said cloth comprises primarily cellulosic fibers having an average fiber length of 25 to 60 mm, said cloth having a moisture regain of 13.5 to 108.5% by weight;
2) fixing said ink to the cloth; and
3) washing said cloth.

5,645,632
DIESTERS OF POLYMERIZED FATTY ACIDS USEFUL IN FORMULATING HOT-MELT INKS
Mark S. Pavlin, Lawrenceville, N.J., assignor to Union Camp Corporation, Wayne, N.J.
Filed Feb. 14, 1996, Ser. No. 601,208
Int. Cl.[6] C09D *11/02*
U.S. Cl. 106—31.29 **25 Claims**

1. A solid diester prepared by reacting about 2 equivalents of liquid polymerized fatty acid with about x equivalents of C_{20} monohydric linear primary alcohol and about y equivalents of diamine, where x+y is equal to about 2 and y is 0 to about 1.

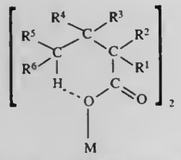
5,645,633
FINISHING AGENTS AND METHOD OF MANUFACTURING THE SAME
Kazufumi Ogawa, Nara, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Division of Ser. No. 173,779, Dec. 27, 1993, Pat. No. 5,435,839, which is a continuation-in-part of Ser. No. 68,661, May 27, 1993, abandoned. This application Apr. 12, 1995, Ser. No. 420,650
Claims priority, application Japan, Dec. 24, 1992, 4-344190; Mar. 19, 1993, 5-059782
Int. Cl.[6] C09K *3/18*
U.S. Cl. 106—287.14 **5 Claims**



1. An organosiloxane-based finishing agent comprising (a) a chemically adsorbent component comprising a first compound containing at least one organosiloxane bond chain and at least one chlorosilyl group, wherein said chlorosilyl group is a group represented by the formula $—SiCl_nX_{3-n}$ group, wherein n represents 1, 2 or 3, and wherein X represents a functional group, and (b) a nonaqueous liquid or solid medium having a boiling point not less than 100° C.

5,645,634
COMPOSITION AND METHOD FOR FORMING $BA_{1-x}SR_xTI_yO_3$ THIN FILMS
Katumi Ogi; Tadashi Yonezawa; Tsutomu Atsuki, and Keiko Endo, all of Omiya, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan
Filed Jun. 10, 1996, Ser. No. 661,115
Claims priority, application Japan, Jun. 9, 1995, 7-143212; Jun. 12, 1995, 7-144537; Jun. 23, 1995, 7-157729
Int. Cl.[6] C04B *35/46*
U.S. Cl. 106—287.19 **31 Claims**

1. A composition comprising:
an organic barium compound, an organic strontium compound, a titanium alkoxide and an organic solvent, at a molar ratio of Ba:Sr:Ti=(1−x):x:y with $0<x<1$, and $0.9 \leqq y \leqq 1.1$,
wherein said organic barium compound and said organic strontium compound are metal salts of carboxylic acids, said carboxylic acids are the same or different, and are represented by the formula: $C_nH_{2n+1}COOH$ wherein $3 \leqq n \leqq 7$, and said barium and strontium compounds can be represented by formula (I):


[I]

wherein R^1, R^2, R^3, R^4, R^5 and R^6 each independently represent a hydrogen atom, a methyl group or an ethyl group, and M represents Ba or Sr.

13. A composition comprising:

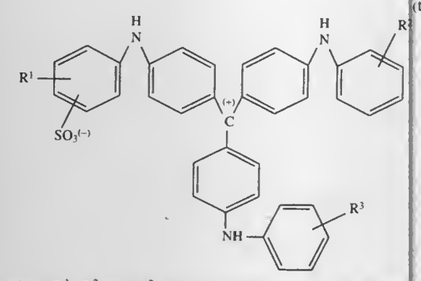
a barium carboxylate, a strontium carboxylate, a titanium alkoxide and an organic solvent at a molar ratio of Ba:Sr:Ti=(1−x):x:y with $0 \leqq x \leqq 1.0$, and $0.9 \leqq y \leqq 1.1$,
wherein said organic solvent comprises a carboxylic acid and an ester; and
said organic solvent comprises said carboxylic acid in an amount 2–11 molar times as much as the titanium of said titanium alkoxide.

5,645,635
DELAMINATED KAOLIN PIGMENTS, THEIR PREPARATION AND USE IN PAPER FILLING APPLICATIONS
Sanjay Behl, Macon, Ga.; Saad Nemeh, West Long Branch, N.J.; Mitchell J. Willis, Macon, Ga., and Joseph P. Berberich, Barnegat, N.J., assignors to Engelhard Corporation, Iselin, N.J.
Continuation-in-part of Ser. No. 384,973, Feb. 7, 1995, abandoned. This application Sep. 28, 1995, Ser. No. 535,416
Int. Cl.[6] C04B *14/10*
U.S. Cl. 106—416 **7 Claims**

1. A delaminated kaolin pigment in form of thin platelet particles derived from kaolin stacks and consisting essentially of thin platelet particles which are at least 85% by weight finer than 2 micrometers, e.s.d., 50% by weight in the range of 0.65 micrometers to 1.20 micrometers, 25% by weight or less finer than 0.5 micron, 10% by weight or less finer than 0.3 micrometers, and 5% by weight or less finer than 0.2 microns, said particles having a BET surface area in the range of 7 to 12 m^2/g and a ratio of surface area as measured by Mercury porosimetry to surface area as measured by BET in the range of 0.6 to 0.95, said pigment having a Delamination Index in the range of 20 to 45.

5,645,636
PASTY PIGMENT PREPARATIONS, PREPARATION THEREOF AND USE THEREOF
Manfred Schneider, Eppstein/Taunus; Rainer Schunck, Bad Soden am Taunus; Dieter Schnaitmann, Eppstein/Taunus, and Udo Brost, Offenbach, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany
Continuation of Ser. No. 697,103, May 8, 1991, abandoned. This application Nov. 3, 1994, Ser. No. 333,886
Claims priority, application Germany, May 10, 1990, 40 14 953.6
Int. Cl.[6] C08K *5/16*
U.S. Cl. 106—493 **18 Claims**

1. A pasty pigment preparation consisting essentially of
a) from 5% to 50% by weight of at least one pigment of the formula I


(I)

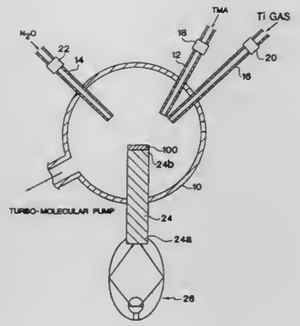
where R^1, R^2 and R^3 are each independently of the others hydrogen, halogen, C_1–C_3-alkyl, C_1–C_3-alkoxy or nitro;
b) at least one long-oil alkyd resin which is derived essentially from a polyester and has an oil content of from 70% to 80% by weight, said oil content being due to the modification of the polyester with a drying, semidrying or nondrying oil, a mixture of a plurality of these oils or with corresponding fatty acids or a combination thereof, the dicarboxylic acid component of the polyester being based on a mixture of isophthalic and orthophthalic acid and a small proportion of at least one α,β-unsaturated dicarboxylic acid or anhydride of the underlying dicarboxylic acid and the polyhydric alcohol component of the polyester comprising a mixture containing glycerol and pentaerythritol;
c) at least one hydrocarbon resin having an average molecular weight in the range from 600 to 1700, or at least one natural resin ester derived essentially from modified or unmodified natural resin acids and monohydric or polyhydric alcohols of from 1 to 20 carbon atoms,
the weight ratio of component b) to component c) varying within the range from 1:3 to 3:1;
d) at least one flushing aid based on a condensation product of an aliphatic amine or a corresponding quaternary ammonium compound with a polyester derived from essentially a monobasic aliphatic hydroxycarboxylic acid; and
e) a high-boiling mineral oil.

5,645,637
FOAMED MAGNESITE CEMENT AND ARTICLES MADE THEREWITH
Itzhak Yaniv, Beer-Sheva, Israel, assignor to Baran Advanced Materials 94 Ltd., Haifa, Israel
Filed May 26, 1995, Ser. No. 450,490
Claims priority, application Israel, May 30, 1994, 109825; Sep. 22, 1994, 111031
Int. Cl.[6] C04B *9/00*
U.S. Cl. 106—677 **41 Claims**

1. A process for making a foamed magnesite cement, comprising the step of mixing:
(a) water;
(b) magnesium oxide;
(c) a magnesium salt selected from the group consisting of magnesium chloride and magnesium sulfate; and
(d) an organic compound selected from the group consisting of monocarboxylic acids having a foaming coefficient lower than about 1.8, anhydrides of said monocarboxylic acids, and salts of said monocarboxylic acids;
thereby producing a foaming magnesite cement mixture.

5,645,638
METHOD AND APPARATUS FOR PREPARING CRYSTALLINE THIN-FILMS FOR SOLID-STATE LASERS
Hiroshi Kumagai, Wako, and Kouichi Toyoda, Kawagoe, both of Japan, assignors to Rikagaku Kenkyusho, Saitama, Japan
Continuation of Ser. No. 191,191, Feb. 3, 1994, abandoned. This application Jan. 29, 1996, Ser. No. 590,678
Claims priority, application Japan, Feb. 4, 1993, 5-040551
Int. Cl.[6] C30B *25/14*
U.S. Cl. 117—89 **14 Claims**

1. A method for preparing crystalline thin-films for solid-state lasers comprising the steps of heating a substrate in a vessel under a high vacuum condition, supplying a material for forming a laser host crystal onto the surface of said substrate in the form of gas, ion, single metal or metal compound to grow said host crystal on the surface of said substrate, and separately supplying a material of active ionic species onto the surface of said substrate simultaneously with supply of said material for forming said laser host crystal, thereby controlling the valence number of said material of



active ionic species so as to be identical with the valence number of the metal ion constituting the crystal of said laser host crystal.

5,645,639

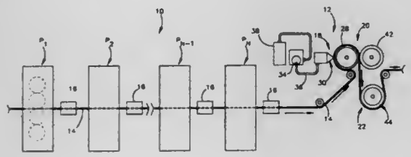
APPARATUS FOR APPLYING A PROTECTIVE FINISH TO A WEB

Eric John Doesburg, Alpharetta, and Marc L. Zirkle, Lawrenceville, both of Ga., assignors to Nordson Corporation, Westlake, Ohio

Division of Ser. No. 362,737, Dec. 22, 1994, Pat. No. 5,520,958, which is a continuation of Ser. No. 5,237, Jan. 15, 1993, abandoned. This application Dec. 18, 1995, Ser. No. 574,203

Int. Cl.[6] B05C *13/00*

U.S. Cl. 118—60 **18 Claims**



1. An apparatus for applying a protective finish to a web of paper stock, comprising:

a. a heated transfer roll for heating a back side of the web of paper stock prior to a top side being coated;

b. a coating station for coating said top side of the web of paper stock with a layer of a hot melt varnish;

c. a working roll for working the layer of hot melt varnish to a top protective finish, said working roll and said heated transfer roll forming a working nip through which the coated paper stock passes as the layer of hot melt varnish is being worked, said nip being located at a position on said heated transfer roll which is substantially circumferentially distanced from said coating station; and

d. a finishing station for contacting and chilling the worked layer of varnish to fix the finish in the layer of varnish.

5,645,640

Patent Not Issued For This Number

5,645,641

DEVICE FOR PRETREATING AND/OR COATING THE RUNNING SURFACES OF CYLINDERS

Kurt Maier, Leonbert, Germany, assignor to Mahle GmbH, Stuttgart, Germany

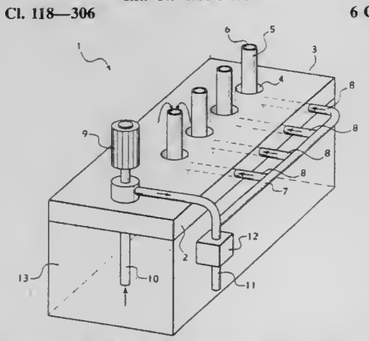
PCT No. PCT/DE94/00211, § 371 Date Sep. 6, 1995, § 102(e) Date Sep. 6, 1995, PCT Pub. No. WO94/24340, PCT Pub. Date Oct. 27, 1994

PCT Filed Feb. 25, 1994, Ser. No. 522,401

Claims priority, application Germany, Apr. 10, 1993, 49 11 859.3

Int. Cl.[6] B05C *7/00*

U.S. Cl. 118—306 **6 Claims**



1. A device for coating the running surface of an individual or a plurality of cylinders combined in one unit by causing different treatment liquors to surge around the surfaces to be coated, the treatment liquors being externally stored from the device and sequentially fed for producing a nickel dispersion coating, the device comprising:

a receiving surface (**3**) for receiving cylinders with their open bore ends;

at least one feed opening (**4**) disposed in said receiving surface for feeding the treatment liquors around the surfaces to be coated;

at least one drain device (**5–6**) disposed within said at least one feed opening for draining the treatment liquors after coating, said drain device extending upward from said receiving surface across the height of the cylinder to be coated and into the cylinder bore; and

a pump (**9**) disposed on said receiving surface and coupled to said at least one feed opening for feeding the externally stored treatment liquors into the cylinder bores.

5,645,642

METHOD FOR IN-SITU LIQUID FLOW RATE ESTIMATION AND VERIFICATION

Hiroshi Nishizato, Kumamoto, Japan; Visweswaren Sivaramakrishnan, Cupertino, and Jun Zhao, Milpitas, both of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Division of Ser. No. 191,977, Feb. 4, 1994, Pat. No. 5,520,969. This application Apr. 3, 1996, Ser. No. 626,954

Int. Cl.[6] C23C *16/00*

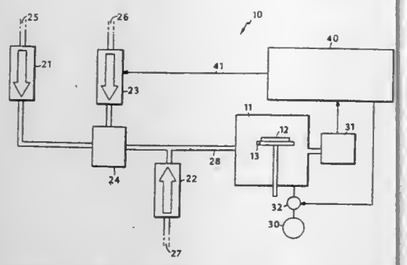
U.S. Cl. 118—692 **8 Claims**

1. An apparatus for controlling a vapor deposition process in a deposition chamber to which a vacuum pump is connected, said apparatus comprising:

a pressure sensor connected to said chamber, said pressure sensor generating a signal that is indicative of a pressure inside of said chamber;

a vaporization device connected to said chamber;

a carrier gas flow controller connected between a source of carrier gas and said vaporization device, said carrier gas flow controller controlling a flow of carrier gas into said vaporization device for delivery into said chamber;



a liquid mass flow controller connected between a source of liquid precursor and said vaporization device, said liquid mass flow controller controlling a liquid mass flow rate of the liquid precursor into said vaporization device for delivery into said chamber;

a programmed control unit receiving the signal from said pressure sensor and controlling the operation of the liquid mass flow controller and the carrier gas flow controller, said programmed control unit programmed to perform the steps of:

measuring a steady-state base pressure of the chamber;

after measuring said base pressure, causing said carrier gas flow controller to flow carrier gas into said chamber at a preselected rate;

with carrier gas flowing into the chamber at the preselected rate, measuring a first steady-state pressure of the chamber;

after measuring said first steady-state pressure, sending a first control signal to the liquid mass flow controller, said first control signal controlling a flow of liquid precursor into the vaporization device;

with liquid precursor flowing into the vaporization device under control of the first control signal, measuring a second steady-state pressure in said chamber; and

computing a calibration constant, C, from the base pressure and the first and second steady-state pressures; and

modifying said control signal by said calibration constant.

5,645,643

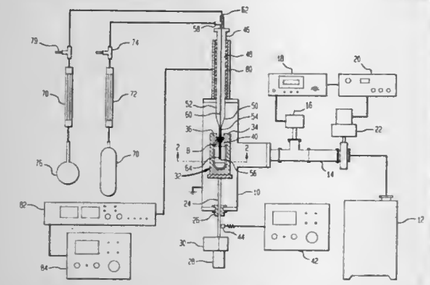
METHODS AND APPARATUS FOR DEPOSITING BARRIER COATINGS

H. Ronald Thomas, Easton; Robert J. Babacz, Bethlehem, and Robert R. Newton, Nazareth, all of Pa., assignors to Polar Materials, Inc., Martins Creek, Pa.

Division of Ser. No. 196,896, Feb. 15, 1994, Pat. No. 5,378,510, which is a continuation of Ser. No. 889,637, May 28, 1992, abandoned. This application Nov. 21, 1994, Ser. No. 342,718

Int. Cl.[6] C23C *16/00*

U.S. Cl. 118—723 MP **5 Claims**



1. Gas supply apparatus comprising:

(a) a plasma chamber defining an interior space;

(b) first gas inlet means for supplying a first gas to the interior space of said chamber;

(c) plasma conversion means for converting said first gas to a plasma in said interior space so as to form plasma-activated species;

(d) second gas Supply means for supplying a second gas reactive with said active species; and

(e) means defining an activated species outlet orifice communicating with said plasma chamber, and a second gas outlet orifice connected to said second gas supply means, one of said outlet orifices surrounding the other one of said outlet orifices whereby said second gas and said activated species will be discharged from said outlet orifices as streams and one of said streams will surround the other one of said streams.

5,645,644

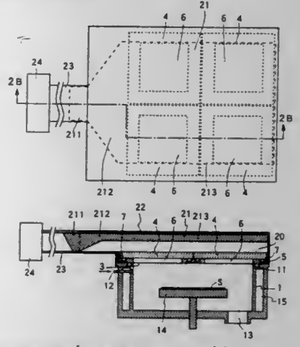
PLASMA PROCESSING APPARATUS

Hiroshi Mabuchi; Takahiro Yoshiki, both of Amagasaki; Kyoichi Komachi, Kobe, and Tadashi Miyamura, Amagasaki, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Oct. 20, 1995, Ser. No. 546,342

Int. Cl.[6] C23C *16/00*

U.S. Cl. 118—723 MW **7 Claims**



1. A plasma processing apparatus comprising:

means of supplying a microwave;

a reaction chamber having a microwave lead-in opening, with a sample stage being disposed inside said chamber;

a microwave window for introducing the microwave provided by said microwave supply means into said reaction chamber through said microwave lead-in opening; and

a supporting member having beams for supporting said microwave window.

5,645,645

METHOD AND APPARATUS FOR PLASMA TREATMENT OF A SURFACE

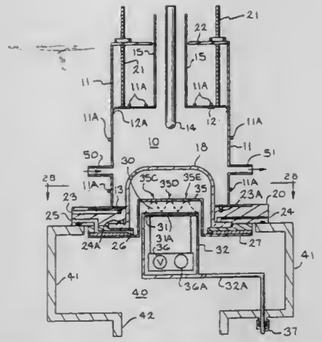
Jie Zhang, East Lansing, and Jes Asmussen, Okemos, both of Mich., assignors to Board of Trustees operating Michigan State University, East Lansing, Mich.

Division of Ser. No. 418,383, Apr. 7, 1995, Pat. No. 5,571,577. This application Jun. 28, 1996, Ser. No. 672,456

Int. Cl.[6] C23C *16/00*

U.S. Cl. 118—723 MW **9 Claims**

1. In a plasma generating apparatus for treating a substrate with a plasma including a plasma source employing a radiofrequency, including UHF or microwave, wave coupler means which is metallic and optionally including a static magnetic field around the plasma which aids in coupling radiofrequency energy at electron cyclotron resonance and aids in confining ions in the plasma in an electrically insulated chamber means in the coupler means, mounted in closely spaced and sealed relationship to an area of the coupler means with an opening from the chamber means at one



end; waveguide means for coupling the radiofrequency waves to the coupler means; and a stage means which forms part of the coupler means and provides for mounting a substrate adjacent the plasma, the improvement which comprises:

(a) a conductive plate with at least one orifice mounted at the opening from the chamber between the stage means and the chamber;

(b) an inlet and an outlet for gas flow through the orifice and through the plasma which is in a region between the orifice and the stage means and then removal from the region; and

(c) tuning means for positioning the radiofrequency waves between the orifice and the stage means.

5,645,646

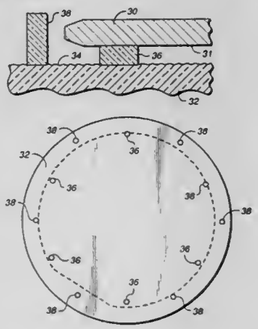
SUSCEPTOR FOR DEPOSITION APPARATUS

Israel Beinglass, Sunnyvale; Mahalingam Venkatesan, and Roger N. Anderson, both of San Jose, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Continuation of Ser. No. 536,650, Sep. 29, 1995, abandoned, which is a continuation-in-part of Ser. No. 202,142, Feb. 25, 1994, abandoned. This application Nov. 14, 1996, Ser. No. 752,742

Int. Cl.[6] C23C *16/00*

U.S. Cl. 118—730 **24 Claims**



1. A susceptor for an apparatus for depositing a layer of a material on a surface of a wafer comprising:

a plate having a continuous surface; and

a plurality of support posts coupled to and projecting from the continuous surface of the plate, said support posts being arranged in spaced relation in a pattern which permits a wafer to be seated on the support posts with the wafer being spaced from the surface of the plate said support posts being sized and spaced sufficient to allow a gas to flow and/or diffuse between said continuous surface and substantially the entire back surface of the wafer, but still allow heat transfer from the plate to the wafer mainly by conduction.

5,645,647

MODIFIED POLYDEXTROSE AND PROCESS THEREFOR

Donald B. Guzek, Stonington; Russell J. Hausman, East Lyme, both of Conn., and Bharat K. Shah, Terre Haute, Ind., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 574,993, Aug. 29, 1990, which is a continuation-in-part of Ser. No. 302,153, Jan. 26, 1989, abandoned. This application Feb. 28, 1992, Ser. No. 843,695

Int. Cl.[6] C13F *3/00;* **A23L** *1/236;* **C08B** *37/02;* **C07H** *1/06*

U.S. Cl. 127—30 **30 Claims**

1. A process for preparing an improved water-soluble highly-branched polydextrose containing 0.3 mol percent or less of citric acid bound in the form of ester groups which comprises reducing the mol percent of citric acid bound in the form of ester groups of unimproved highly-branched polydextrose in order to reduce the bitterness thereof, which unimproved highly-branched polydextrose has been prepared by a process which comprises melting dextrose at a temperature below its decomposition point in the presence of 0.5 to 3.0 mol percent of citric acid, said process of reducing the mol percent of citric acid bound in the form of ester groups comprises passing an aqueous solution of the unimproved highly-branched polydextrose through one or more resins selected from the group consisting of an adsorbent resin, a weakly basic ion exchange resin, a Type I strongly basic ion exchange resin, a Type II strongly basic ion exchange resin and a mixed bed resin comprising a basic ion exchange resin and a cation exchange resin.

5,645,648

PROCESS FOR CLEANING AND DISINFECTING DEVICES IN THE BREWING INDUSTRY

Bernhard Laut, Köln; Peter Mesters, Winterberg, and Robert Rixen, Tönisforst, all of Germany, assignors to Karl Löffler GmbH & Company KG, Köln, Germany

Continuation of Ser. No. 307,241, Sep. 16, 1994, abandoned. This application Oct. 19, 1995, Ser. No. 547,693

Claims priority, application Germany, Sep. 21, 1993, 43 31 942.4

Int. Cl.[6] B08B *3/08;9/00;* **C23G** *1/00;1/02*

U.S. Cl. 134—2 **10 Claims**

1. A method for cleaning and disinfecting brewing equipment comprising the following steps:

(a) preparing an aqueous cleaning composition containing 2 to 50% by weight of at least one disinfecting compound having a peroxide group and a halocarboxylic acid;

1 to 25% by weight of at least one amine oxide compound stable to oxidizing agents as a surfactant foam booster component;

a remainder of up to 100% water;

(b) charging said aqueous cleaning composition into a pressurized foam apparatus, thereby forming a foam cleaner; and

(c) applying said foam cleaner to a contaminated surface to clean and disinfect said surface.

5,645,649

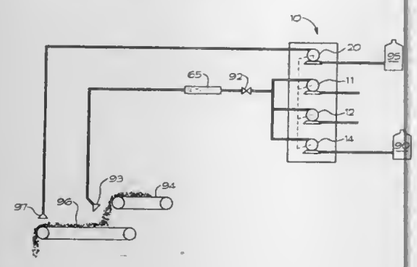
METHOD AND CONTROLLING FOAM FORMATION FOR PROPORTIONING THE FLOW OF FOAMING AND DEFOAMING AGENTS

Howard W. Cole, Jr., 2745 Waterworks Rd., Danville, Ky. 40422

Continuation of Ser. No. 72,916, Jun. 7, 1993, abandoned, which is a continuation-in-part of Ser. No. 831,417, Feb. 5, 1992, abandoned. This application May 30, 1995, Ser. No. 453,789

Int. Cl.[6] B08B *7/04;15/00*

U.S. Cl. 134—18 **3 Claims**



1. A method for proportioning a flow of foaming and defoaming agents and controlling foam formation on a substrate, comprising the steps of:

supplying a controlled quantity of water, air, and at least one selected surfactant foaming agent;

metering at least one surfactant foaming agent;

mixing said air, said water, and said selected surfactant foaming agent under pressure using a foam generating device generating a quantity of small bubble foam containing residual surfactant;

continuously applying said small bubble foam containing said residual surfactant in a selected quantity at a selected rate of flow to a substrate having dust particles, treating said substrate and said dust particles and controlling a formation of dust, whereby said substrate adsorbs a small amount of residual surfactant on a surface thereof forming a foam treated substrate determining an amount of residual surfactant foaming agent remaining on said foam treated substrate;

determining an amount of a selected defactant selected from the group consisting of methanol, ethanol, polypropylene glycol, polyglycol esters, ethyleneoxide and propyleneoxide copolymers, polydimethyl siloxane sulfonates, ethoxylated fatty alcohols, polyethylene glycol, polysiloxane blends, dimethyl silicone, thereof;

proportionally applying at a continuous rate at least one selected defactant to said foam treated substrate in a predetermined proportion based upon the amount of said residual surfactant foaming agent remaining on said foam treated substrate for neutralizing said residual surfactant foaming agent remaining on said foam treated substrate prior to mixing said foam treated substrate with an aqueous solution.

5,645,650

COMPOSITION AND PROCESS FOR TREATING MAGNESIUM-CONTAINING METALS AND PRODUCT THEREFROM

Sadao Ishizaki, Tochigi-Ken; Masahiko Nishida, Utsunomiya, and Yokichi Sato, Kunitachi, all of Japan, assignors to Henkel Corporation, Plymouth Meeting, Pa.

PCT No. PCT/US94/12193, § 371 Date Apr. 29, 1996, § 102(e) Date Apr. 29, 1996, PCT Pub. No. WO95/12010, PCT Pub. Date May 4, 1995

PCT Filed Oct. 27, 1994, Ser. No. 637,635

Claims priority, application Japan, Oct. 29, 1993, 5-272504

Int. Cl.[6] C23C *22/18*

U.S. Cl. 148—260 **6 Claims**

1. A process of forming a conversion coating on a metal surface containing at least 55% by weight of magnesium by contacting with said metal surface, for a time of 0.2 to 6 minutes at a temperature of 30° to 65° C., an aqueous liquid composition having a pH in a range from 2.0 to 5.0 and comprising water and:

(A) a concentration of a phosphorus-containing inorganic acid componant;

(B) a concentration of divalent manganese cations: and

(C) a concentration of a component of organic amines.

5,645,651

MAGNETIC MATERIALS AND PERMANENT MAGNETS

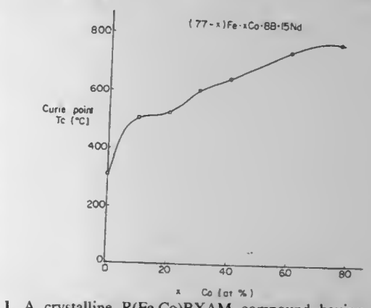
Setsuo Fujimura, Kyoto; Yutaka Matsuura, Hyogo-ken, and Masato Sagawa, Kyoto, all of Japan, assignors to Sumitomo Special Metals Co., Ltd., Osaka, Japan

Division of Ser. No. 194,647, Feb. 10, 1994, Pat. No. 5,466,308, which is a continuation of Ser. No. 15,886, Feb. 10, 1993, abandoned, which is a continuation of Ser. No. 794,673, Nov. 18, 1991, abandoned, which is a continuation of Ser. No. 286,637, Dec. 19, 1988, abandoned, which is a division of Ser. No. 516,841, Jul. 25, 1983, Pat. No. 4,792,368, and a continuation-in-part of Ser. No. 224,411, Jul. 26, 1988, Pat. No. 5,096,512, which is a division of Ser. No. 13,165, Feb. 10, 1987, Pat. No. 4,770,723, which is a continuation of Ser. No. 510,234, Jul. 1, 1984, abandoned. This application Jun. 7, 1995, Ser. No. 485,183

Claims priority, application Japan, Aug. 21, 1982, 57-145072; Sep. 27, 1982, 57-166663; Nov. 15, 1982, 57-200204; Jan. 19, 1983, 58-5813; Jan. 19, 1983, 58-5814; Mar. 8, 1983, 58-37896; Mar. 8, 1983, 58-37897; Mar. 8, 1983, 58-37898; Mar. 8, 1983, 58-37899; May 31, 1983, 58-94876; May 14, 1983, 58-84858; May 14, 1983, 58-84859; May 14, 1983, 58-84860

Int. Cl.[6] C22C *38/00;19/07;38/10*

U.S. Cl. 148—302 **24 Claims**



1. A crystalline R(Fe,Co)BXAM compound having a stable tetragonal crystal structure having lattice constants of a_o about 8.8 angstroms and c_o about 12 angstroms, in which R is at least one element selected from the group consisting of Nd, Pr, La, Ce, Tb, Dy, Ho, Er, Eu, Sm, Gd, Pm, Tm, Yb, Lu and Y, X is at least one element selected from the group consisting of S, C, P and Cu, A is at least one element selected from the group consisting of H, Li, Na, K, Be, Sr, Ba, Ag, Zn, N, F, Se, Te and Pb, and M is at least

one element selected from the group consisting of Ti, Ni, Bi, V, Nb, Ta, Cr, Mo, W, Mn, Al, Sb, Ge, Sn, Zr, Hf and Si.

5,645,652

SPINDLE-SHAPED MAGNETIC IRON-BASED ALLOY PARTICLES CONTAINING COBALT AND IRON AS THE MAIN INGREDIENTS AND PROCESS FOR PRODUCING THE SAME

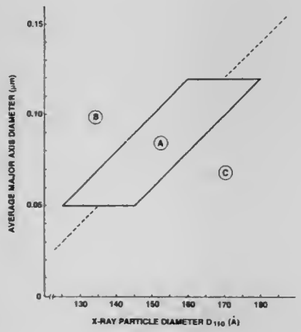
Kenji Okinaka, and Yasutaka Ota, both of Hiroshima, Japan, assignors to Toda Kogyo Corporation, Japan

Filed May 1, 1995, Ser. No. 433,871

Claims priority, application Japan, Dec. 13, 1994, 6-332611; Dec. 13, 1994, 6-332612

Int. Cl.[6] B22F *9/26*; H01F *1/20*

U.S. Cl. 148—307 **15 Claims**



1. Spindle-shaped magnetic iron-based alloy particles containing cobalt and iron as the main ingredients in which the Co content is 8.0 to 50.0 atm %, based on the total Fe in the spindle-shaped magnetic iron-based alloy particles, and which the spindle-shaped magnetic iron-based alloy particles have an average major axis diameter of 0.05 to 0.12 μm, a size distribution, standard deviation/major axis diameter, of not more than 0.25, an average minor axis diameter of 0.010 to 0.020 μm, an aspect ratio, major axis diameter/minor axis diameter, of 4 to 7, an X-ray crystallite size D_{110} of 125 to 180 Å, a coercive force of 1850 to 2500 Oe, a saturation magnetization of not less than 130 emu/g, a decrement percentage of saturation magnetization of not more than 17% and a squareness of not less than 0.500.

5,645,653

RAILS

Vijay Jerath, Yorsbire; David J. Price, Scunthorpe, and Ian W. Martin, South Yorkshire, all of Great Britain, assignors to British Steel plc, Great Britain

PCT No. PCT/GB94/01326, § 371 Date Feb. 22, 1996, § 102(e) Date Feb. 22, 1996, PCT Pub. No. WO95/00707, PCT Pub. Date Jan. 5, 1995

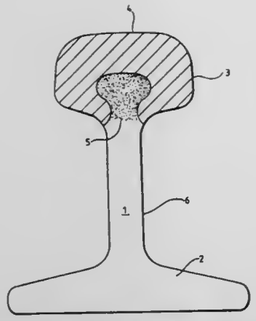
PCT Filed Jun. 20, 1994, Ser. No. 557,169

Claims priority, application United Kingdom, Jun. 24, 1993, 9313060

Int. Cl.[6] E01B *5/08*; C21D *9/04*

U.S. Cl. 148—320 **9 Claims**

1. A rail for use in the railway having, in section, a head and a foot, wherein the head comprises a traffic carrying surface composed of martensite of up to 0.4% by weight carbon and up to 1% by weight chromium.



5,645,654

NONMAGNETIC STAINLESS STEEL FOR HIGH BURRING AND METHOD OF MANUFACTURING THE SAME

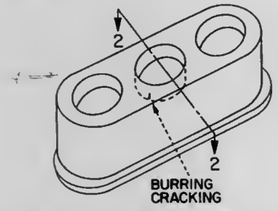
Kiyoaki Nishikawa; Yoshihiro Ozeki, and Toshiyuki Ono, all of Samukawa-machi, Japan, assignors to Nippon Mining & Metals Co., Ltd., Tokyo, Japan

Filed Sep. 20, 1995, Ser. No. 530,913

Claims priority, application Japan, Sep. 28, 1994, 6-257253

Int. Cl.[6] C22C *38/58*

U.S. Cl. 148—327 **7 Claims**



1. A nonmagnetic stainless steel for high burring consisting of, by weight, 1 to 3% manganese, 9 to 15% nickel, 15 to 20% chromium, 0.01 to 0.05% carbon, the balance being iron and unavoidable impurities, wherein the absolute value of the plane anisotropy Δr of the Lankford value r for the steel is 0.12 or under, the Δr being $\Delta r=(r_0+r_{90}-2r_{45})/2$ wherein r_0, r_{45}, and r_{90} are the r-values at angles of 0°, 45°, and 90°, respectively, to the direction of rolling to which the steel is subjected.

5,645,655

PROCESS TO ANNEAL STEEL STRIPS IN AN ANNEALING FURNACE WITHOUT GENERATING CARBON BLACK

Gerhard Gross, Willich, and Peter Zylla, Krefeld, both of Germany, assignors to Messer Greiesheim GmbH, Frankfurt, Germany

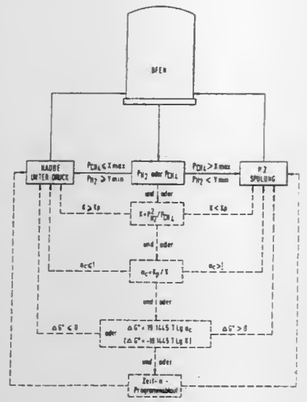
Filed Jun. 8, 1995, Ser. No. 488,776

Claims priority, application Germany, Dec. 11, 1992, 42 41 746.5

Int. Cl.[6] C21D *1/76*

U.S. Cl. 148—634 **18 Claims**

1. A process to anneal a steel strip in an annealing furnace in an inert-gas atmosphere containing hydrogen, with reduced formation of carbon black and encompassing the phases of heating, retention and cooling, wherein on the surface of the steel strip are impurities



ERSATZBLATT

containing carbon components, and wherein during the annealing, there is a reaction between the H_2 and the carbon components of the impurities on the surface of the steel strip, whereby said reaction changes the composition of the inert gas atmosphere in the annealing furnace from an inert gas containing H_2 into a gas mixture containing H_2 and CH_4, which forms an H_2—CH_4 system, and wherein the annealing furnace is flushed during the phase of retention, the phase of cooling, or during both the phases of retention and cooling, as a function of at least one of the thermodynamic limit values of the H_2—CH_4 system.

5,645,656

METHOD OF MANUFACTURING A STEEL HAVING GOOD FORMABILITY AND GOOD RESISTANCE TO INDENTATION

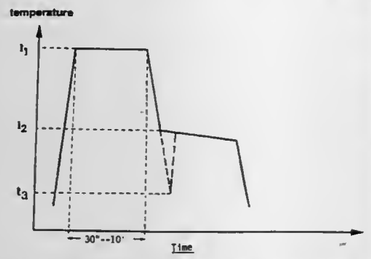
Jose Manuel Rubianes, Montigny Les Metz, France, assignor to Sollac, Puteaux, France

Filed Sep. 13, 1995, Ser. No. 528,210

Claims priority, application France, Sep. 23, 1994, 94 11481

Int. Cl.[6] C21D *8/02*

U.S. Cl. 148—651 **8 Claims**



1. A method of manufacturing a soft, low carbon steel sheet by hot rolling of an ingot, followed by cold rolling of the hot-rolled sheet, followed by a first high temperature annealing of the cold-rolled sheet; wherein the first annealing of the cold-rolled sheet is an annealing involving recrystallization and dissolution of more than 6–10 ppm of the carbon contained in the steel, followed by an optional accelerated age-hardening step after which the amount of dissolved carbon is still above 6–10 ppm; and after the first high temperature annealing the sheet is subjected to a second annealing, at low temperature, whereby the dissolved carbon is precipitated as iron carbide, wherewith thereafter work-hardening is effected by an additional, minor cold-rolling operation.

5,645,657

PNEUMATIC TIRE INCLUDING CENTRAL PART

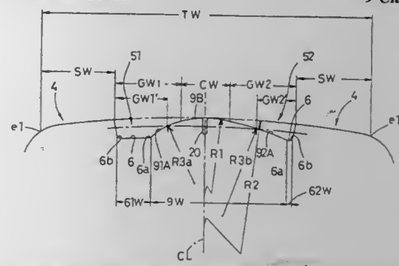
Naoaki Iwasaki, Kobe, Japan, assignor to Sumitomo Rubber Industries, Ltd., Hyogo-ken, Japan

Filed Apr. 11, 1995, Ser. No. 419,938

Claims priority, application Japan, Apr. 15, 1994, 6-101833

Int. Cl.[6] B60C *11/04*; *11/00*

U.S. Cl. 152—209 A **9 Claims**



1. A pneumatic tire comprising a tread part having two circumferential grooves continuously extending in the circumferential direction, one of said circumferential grooves being on one side of the tire's equator and the other circumferential groove being on the other side of the tire's equator so as to divide the tread part into a pair of shoulder parts, which are located outside outer bottom edges of the circumferential grooves in the axial direction of tire, and a central part, which is located between inner bottom edges of the circumferential grooves in the axial direction of tire; wherein

the central part has a surface comprising successive convex curves composed of

a pair of inner groove walls extending inside, in the axial direction of tire, along a curve convex outwardly in the radial direction from the inner bottom edges of the circumferential grooves, and

a central ground-contacting surface smoothly connected between the pair of the inner groove walls,

the surface of the central part is asymmetrical about the tire equatorial plane CL,

the central ground-contacting surface is substantially in contact with a virtual tread line between outer surfaces of the shoulder parts and is symmetrical about the tire equatorial plane CL, and

when the tire is mounted a regular rim, inflated with regular internal pressure and applied with normal load, the circumferential grooves have a groove width GW being not less than 35 mm and not more than 0.35 times a ground-contacting width TW of the tread part.

5,645,658

TIRE WITH TWO TREADS HAVING BETWEEN TREADS A REINFORCEMENT RING WHOSE LOAD-ELONGATION CURVE IS NON-LINEAR

François Gerard, Riom, and Patrice Peyraud, Chalmieres, both of France, assignors to Compagnie Generale des Etablissements Michelin - Michelin & Cie, Clermont-Ferrand Cedex, France

PCT No. PCT/EP94/00498, § 371 Date Aug. 18, 1995, § 102(e) Date Aug. 18, 1995, PCT Pub. No. WO94/20316, PCT Pub. Date Sep. 15, 1994

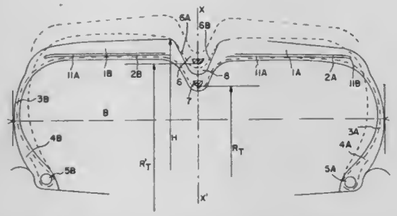
PCT Filed Feb. 21, 1994, Ser. No. 481,370

Claims priority, application France, Mar. 1, 1993, 93 02537

Int. Cl.[6] B60C *3/00*; *11/00*

U.S. Cl. 152—209 WT **5 Claims**

1. A tire having two treads (1A and 1B), spaced axially from each other by a connecting zone comprising a groove (8) and, in its middle, a reinforcement ring (7) of a radius R_7 less than that of the treads (1A and 1B), characterized by the fact that the reinforcement ring (7) has a curve C of the circumferential tensile load F in daN as a function of the relative elongation ϵ which is non-linear,

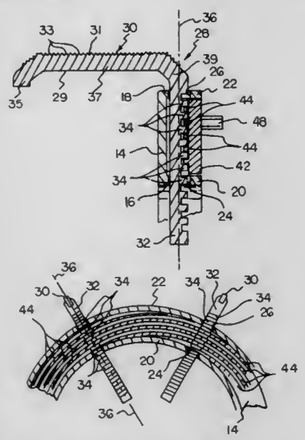


monotonic, increasing, and having at each of its points a tangent the slope of which is positive, being formed of three segments OA, AB, BR, a first segment OA for which the circumferential tensile rigidity is substantially constant and permits easy elongation of the ring, a second segment BR for which the circumferential tensile rigidity is substantially constant and greater than the rigidity relating to the first segment OA, the two segments OA and BR being connected by a strongly curved segment AB, said curve C being included within a region of the plane bordered by two curves C1 and C2, each of these curves being formed of successive linear segments:

the first curve C1 comprising a first segment OA1 extending from the point of origin O to a point A1 of a relative elongation ϵ_{A1} equal to 0.01 and having a slope of 12×10^4 daN, followed by a second segment extending beyond the point A1 and having a slope of 28×10^4 daN,

the second curve C2 comprising a first segment extending from the point of origin O to a point A2 of relative elongation equal to 0.01 and having a slope of 2×10^4 daN, a second segment extending from the point A2 to a point B2 of a relative elongation equal to 0.025 and having a slope of 4×10^4 daN, this second segment being followed by a third segment extending beyond the point B2 and having a slope of 6×10^4 daN.

5,645,659
TIRE ADD-ON TRACTION APPARATUS
Vadnjal Ivan, Bazoviska 15, 66320 Portoroz, Slovenia
Filed Apr. 3, 1996, Ser. No. 626,810
Int. Cl.[6] B60C *27/20;27/14*
U.S. Cl. 152—216 **14 Claims**



1. A tire add-on traction apparatus, comprising:

a ring-shaped housing which includes a ring-shaped base wall which has a circular inner edge portion and a circular outer edge portion, a hoop-shaped inner wall connected to said inner edge portion of said base wall, and a hoop-shaped outer wall connected to said outer edge portion of said base wall, wherein said inner wall includes a plurality of inner access apertures distributed circumferentially around said inner wall, wherein said outer wall includes a plurality of outer access apertures distributed circumferentially around said outer wall, and wherein each of said inner access apertures is in alignment with one of said outer access apertures,

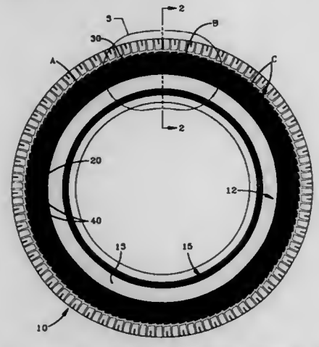
a plurality of traction elements supported by said housing, wherein each traction element includes a tire-contacting portion and a radial adjustment portion connected to said tire-contacting portion, wherein each of said radial adjustment portions extends through one of said outer access apertures and one of said inner access apertures, wherein each of said radial adjustment portions includes an associated longitudinal axis and a plurality of teeth arrayed longitudinally adjacent to said associated longitudinal axis, wherein each of said teeth is oriented transversely with respect to said associated longitudinal axis,

a spiral screw assembly supported by said housing, wherein said spiral screw assembly includes a ring-shaped screw base and a spiral screw element supported by said screw base, wherein portions of said spiral screw element are meshed with said teeth on said radial adjustment portions of said traction elements,

retainer means, connected to said housing, for retaining said screw base and said spiral screw element in said housing, and

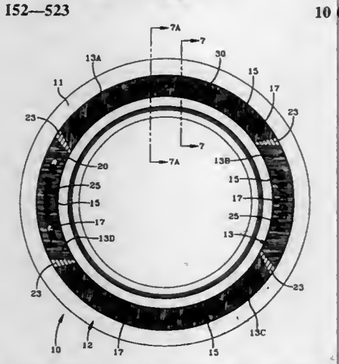
a plurality of wrench connectors connected to said screw base of said spiral screw assembly and extending away from said spiral screw element.

5,645,660
DESIGN PATTERNS FOR A TIRE SIDEWALL
John Steven Attinello, Hartville, and Samuel Patrick Landers, Uniontown, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Jun. 28, 1995, Ser. No. 497,055
Int. Cl.[6] B60C *13/02*
U.S. Cl. 152—523 **2 Claims**



1. A tire having a sidewall, the sidewall having an exterior surface, the exterior surface comprising: a design pattern A, the pattern A having a plurality of spaced ridges of similar substantially triangular or trapezoidal cross-sectional shape, each ridge being substantially radially extending and substantially parallel to an adjacent ridge and having a peak, a height, a depth, a base width and a spacing S from base to adjacent ridge base and where the ridges vary in height (h) or depth(d), as measured from peak to base spacing S for height and the radially outermost peak to the space S for depth from base to base of adjacent ridges, the varied height or depth of one ridge being different from an adjacent parallel ridge and the ridges being arranged in a repeating sequence around the circumference of the exterior surface forming a wide band wherein the ridges have a variation in height of $h_L>h_{M2}>h_{M1}>h_S$ or a variation of depth $d_L>d_{M2}>d_{M1}>d_S$, the ridges being arranged in a repeating sequence of small to large to small of h_S, h_{M1}, h_{M2}, h_L, h_{M2}, h_{M1}, h_S or d_S, d_{M1}, d_{M2}, d_L, d_{M2}, d_{M1}, d_S.

5,645,661
TIRE SIDEWALL
Michel Clementz, Arlon; Gilbert Feller, Burden, and Raymond Merx, Junglinster, all of Belgium, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Nov. 9, 1995, Ser. No. 555,739
Int. Cl.[6] B60C *13/02*
U.S. Cl. 152—523 **10 Claims**



1. In a tire having a tire sidewall that has an annular outer surface, the annular outer surface having a design pattern, the design pattern having a first design pattern, the first pattern having a plurality of ridges of similar cross sectional shape, each ridge of the first pattern being inclined relative to the circumferential direction; a second design pattern superimposed over a portion of the first design pattern, wherein the improved tire sidewall is characterized by:

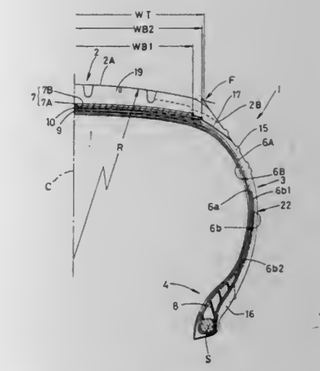
a plurality of circumferentially adjacent sidewall sectors extending circumferentially around the tire sidewall annular outer surface, each sector having a first design pattern and a second design pattern, the first design pattern within each sector having parallel ridges oriented in the range of 45° to 90° relative to the orientation of the parallel ridges of the first design pattern within a circumferentially adjacent sector and wherein parallel planes aligned with and passing through the ridges of the first pattern and perpendicular to a plane (T), plane (T) being parallel to the equatorial plane and perpendicular to the axis of rotation of the annular tire sidewall, form lines at the intersection of plane (T) and the parallel planes, the lines being parallel and all having the same slope.

5,645,662
PNEUMATIC RADIAL TIRE WITH FIRST AND SECOND DAMPING RUBBER LAYERS
Minoru Terada, Kobe, Japan, assignor to Sumitomo Rubber Industries, Ltd., Hyogo-ken, Japan
Filed Nov. 14, 1995, Ser. No. 557,945
Claims priority, application Japan, Nov. 15, 1994, 6-306789
Int. Cl.[6] B60C *9/00;9/08;9/14;9/18*
U.S. Cl. 152—532 **4 Claims**

1. A pneumatic radial tire comprising

a carcass comprising an outermost ply and an inner next ply, each carcass ply made of organic fiber cords and extending between bead portions through a tread portion and sidewall portions,

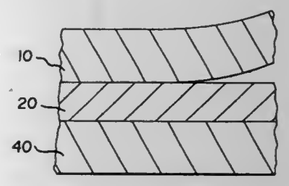
a belt disposed radially outside the carcass in the tread portion and comprising a radially innermost ply and a radially outer next ply, each belt ply made of steel belt cords,



a first damping rubber layer disposed between the outermost carcass ply and the inner next carcass ply, the first damping rubber layer having an axial width of 0.8 to 1.2 times the axial width of the radially innermost belt ply and a thickness of 0.5 to 2.0 mm, and

a second damping rubber layer disposed between the outermost carcass ply and the radially innermost belt ply, the second damping rubber layer having an axial width of 0.8 to 1.2 times the axial width of the radially innermost belt ply and a thickness of 0.5 to 2.0 mm.

5,645,663
METHOD OF MANUFACTURING A LUMINOUS SHEET RADIATING FLOURESCENCE UPON IRRADIATION OF ULTRAVIOLET RAYS
Takeshi Nakayama, and Hidehiko Murayama, both of Tokyo, Japan, assignors to Lintec Corporation, and Nemoto & Co., Ltd., both of Tokyo, Japan
Continuation of Ser. No. 365,461, Dec. 28, 1994, abandoned. This application Aug. 2, 1996, Ser. No. 691,429
Claims priority, application Japan, Dec. 28, 1993, 5-338483
Int. Cl.[6] C09K *11/00*
U.S. Cl. 156—67 **4 Claims**



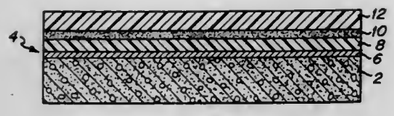
1. A method of manufacturing a luminous sheet radiating fluorescence upon irradiation of ultraviolet rays comprising the steps of: applying an ultraviolet-excited luminous material, which is a mixture of a fluorescent material and a resin solution and can radiate fluorescence upon irradiation of ultraviolet rays, wherein the specific gravity of said fluorescent material is selected to be three times or more the specific gravity of said resin solution which is a mixture of a resin and a solvent; and drying said ultraviolet-excited luminous material over a base sheet to form a light emitting layer; applying a resin solution and drying over an upper surface of said light-emitting layer to form a back layer such that said light-emitting layer and said back layer become a one-piece body; and peeling said base sheet off from said light-emitting layer.

5,645,664

HIGH MOISTURE EMISSION CONCRETE FLOOR COVERING AND METHOD

William Robert Clyne, Los Gatos, Calif., assignor to Floor Seal Technology, Inc., San Jose, Calif.

Filed Mar. 21, 1996, Ser. No. 619,344
Int. Cl.[6] E04F *15/00*
U.S. Cl. 156—71 7 Claims



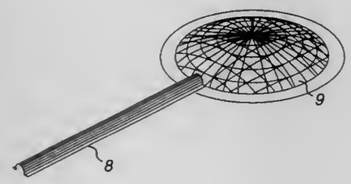
1. A method for applying a high moisture permeability floor covering material to a concrete surface comprising the steps of:
a) applying a layer of inert fibers to the concrete surface, at least a portion of the fibers including inorganic fibers;
b) applying an aqueous acrylate polymer emulsion to the layer of fibers to form localized bonding penetrations of the emulsion through the layer of fibers to the concrete surface and to form a continuous coating of emulsion on the upper surface of the layer of fibers, the coated fiber layer having interconnected moisture transmission passageways communicating with the concrete surface and extending laterally throughout the fiber layer for redistributive diffusion under the continuous coating of moisture vapor from high emission surfaces of the concrete to lower emission surfaces of the concrete; and
c) permitting the applied emulsion to set.

5,645,665

INTRAOCULAR LENS FABRICATION

Mike A. Salazar, Albuquerque, and Larry R. Foreman, Los Alamos, both of N. Mex., assignors to The Regents of the University of California Office of Technology Transfer, Alameda, Calif.

Filed May 26, 1995, Ser. No. 451,707
Int. Cl.[6] B29D *11/00*
U.S. Cl. 156—73.1 7 Claims



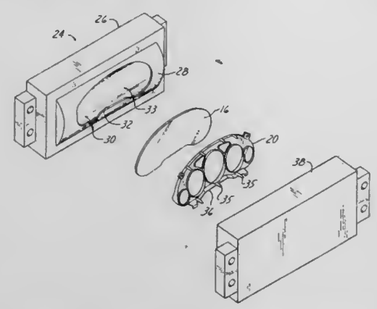
1. A method of fabricating an intraocular lens, comprising the following steps: fastening a thin clear plastic film to a ring, placing said ring in a forming fixture that is capable of heating, forming the film into a lenticular shape with a longitudinal half section of a fill tube projecting therefrom, said forming fixture providing the proper optical finish for an intraocular lens, repeating the process to obtain a second lenticular shaped film with a longitudinal half section of a fill tube projecting therefrom, and bonding together the two shaped films to form a lens including a fill tube.

5,645,666

METHOD OF MANUFACTURE OF LENS AND RETAINER ASSEMBLY FOR INSTRUMENT CLUSTER

William Dennis Jones, Durand, Mich., assignor to Delco Electronics Corporation, Kokomo, Ind.

Filed Jun. 21, 1995, Ser. No. 493,069
Int. Cl.[6] B32B *31/16*
U.S. Cl. 156—73.1 7 Claims



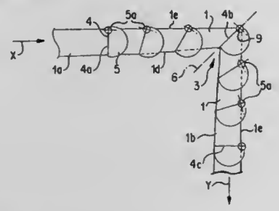
1. A method of forming a curved lens for an instrument cluster and assembling to a curved retainer comprising the steps of:
cutting a flat lens from a flat sheet of plastic material;
forming the lens into a contour by pressing the lens against the retainer to conform to the curvature of the retainer;
and ultrasonically bonding the lens to the retainer.

5,645,667

METHOD FOR APPLYING A VISCOUS MATERIAL EDGE STRIP TO A CORNER AREA SURFACE

Michael Kusen, Bremen, Germany, assignor to Mercedes-Benz AG, Germany

Filed Feb. 2, 1996, Ser. No. 595,790
Claims priority, application Germany, Feb. 16, 1995, 195 05 162.945
Int. Cl.[6] B29C *47/06*
U.S. Cl. 156—108 4 Claims



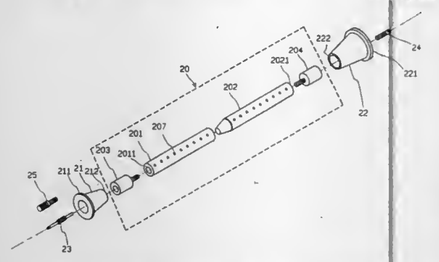
1. A method for applying an edge strip made of a viscous material to a surface with a corner area, comprising the steps of
(a) discharging the material from a slot-shaped nozzle without interruptions over the corner area,
(b) guiding the nozzle with relative movement over the surface, and
(c) when approaching a corner at the corner area, rotating the nozzle continuously from a position with a nozzle slot positioned essentially transversely with respect to a longitudinal direction of a first applied edge strip section in the direction of a position with the nozzle slot positioned in parallel to a median line of the corner area and, during subsequent removal from the corner, continuously in the direction of a position with a nozzle slot positioned essentially transversely to a second longitudinal direction of a second applied edge strip section.

5,645,668

METHOD OF FORMING COMPOSITE ARTICLES USING A MANDREL ASSEMBLY

Chin-I Lin, Tainan; Chung-Lin Wu, Hsinchu; Rong-Shian Liu, Hsinchu, and Gou-Don Chu, Hsinchu, all of Taiwan, assignors to Industrial Technology Research Institute, Taiwan

Division of Ser. No. 381,038, Jan. 31, 1995, Pat. No. 5,580,416.
This application Aug. 2, 1995, Ser. No. 510,454
Int. Cl.[6] B65H *81/00*
U.S. Cl. 156—175 11 Claims



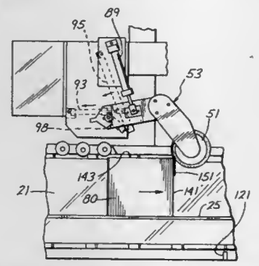
1. A method for making a hollow product comprising the steps of:
a) providing a mandrel assembly including a main tube having two ends and a plurality of holes and two annular sleeves sleeved on said two ends of said main tube;
b) winding a fiber on said mandrel assembly;
c) blowing air into said main tube for releasing said wound fiber from said mandrel assembly;
d) disengaging at least one of said annular sleeves from said main tube;
e) detaching said wound fiber from said main tube; and
f) shaping said wound fiber.

5,645,669

METHOD FOR LABELING TRANSVERSE SIDES OF AN ARTICLE

Michael Craukshaw, Santa Fe Springs, and William F. Akerboom, El Monte, both of Calif., assignors to Label-Aire, Inc., Fullerton, Calif.

Division of Ser. No. 147,736, Nov. 4, 1993, Pat. No. 5,421,948.
This application Mar. 3, 1995, Ser. No. 398,434
Int. Cl.[6] B32B *31/00*
U.S. Cl. 156—212 21 Claims



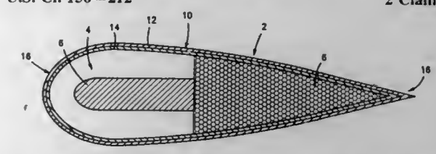
11. A method of applying a label to an article comprising:
dispensing a label onto a label carrier with the label carrier rotating and with the label carrier being in a label receiving position;
moving the label carrier from the label receiving position to a label applying position;
terminating rotation of the label carrier to position the label; and
applying the label on the label carrier to the article by forcing the label against the article and with the article acting to rotate the label carrier as the label is applied to the article.

5,645,670

METHOD FOR APPLYING A SKIN LAYER TO AN AIRFOIL STRUCTURE

William C. Reinfelder, Woodbridge; David A. Kovalsky, Shelton, and Corey D. Jones, Prospect, all of Conn., assignors to Sikorsky Aircraft Corp., Stratford, Conn.

Continuation of Ser. No. 283,347, Aug. 1, 1994, Pat. No. 5,520,532. This application Oct. 10, 1995, Ser. No. 541,669
Int. Cl.[6] B32B *31/04*
U.S. Cl. 156—212 2 Claims



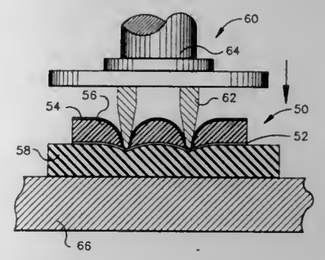
1. A method of applying an outer skin layer to an airfoil having a chord line, a pitch axis, a leading edge section, and a trailing edge section, said method comprising the steps of:
a) applying a uniform substantially rigid pressure to said skin layer in said leading edge section of the airfoil to provide said skin with a highly controlled curvature over the leading edge section of the airfoil; and
b) concurrently applying a uniform compliant pressure to said skin layer in said trailing edge section of the airfoil so as to provide a uniform pressure on said skin across said trailing edge section of the airfoil which is operable to smoothly conform said skin layer to said trailing edge section despite dimensional variations of internal airfoil components.

5,645,671

METHOD FOR MANUFACTURING COMPOSITE PADS

Ted Tillinghast, Cardiff-by-the-Sea, Calif., assignor to Smith & Nephew DonJoy Inc., Carlsbad, Calif.

Filed Dec. 30, 1994, Ser. No. 366,676
Int. Cl.[6] B32B *31/18;31/20*
U.S. Cl. 156—222 16 Claims



1. A method for manufacturing a composite pad to be worn with an orthopedic brace comprising the steps of:
forming a sealed perimeter of the pad from a stock comprising:
a relatively thin first sheet having a surface for contacting the brace when the pad is formed,
a relatively thin second sheet having a surface for contacting the wearer when the pad is formed, the second sheet generally opposing the first sheet, the first and second sheets being sealable to one another when the sheets contact one another under predetermined conditions, and
a relatively thick layer of a soft, cushioning material disposed between the first and second sheets, by
positioning the stock on a deformable, resilient sealing surface, such that the first sheet adjoins the sealing surface with the cushioning material and the second sheet extending outwardly from the sealing surface;
aligning a sealing tool above the second sheet, the sealing tool having a sharp edge shaped to define the perimeter of the pad;

pressing the sealing tool against the stock to cause a portion of the second sheet to displace a portion of the cushioning material, the sealing tool thereafter causing the second sheet to contact a portion of the first sheet to form a seal around the perimeter of the pad oriented away from the second sheet and in the direction of the first sheet; and

then severing the pad from the adjacent portions of the stock with the same sharp edge while maintaining the sealing tool in the alignment used to seal the pad.

5,645,672

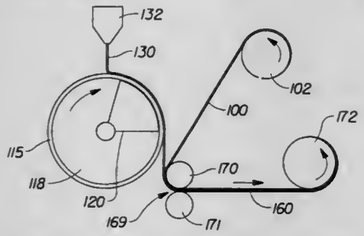
METHOD FOR FORMING A COMPOSITE ELASTIC MATERIAL

George Christopher Dobrin, Cincinnati, Ohio, assignor to The Proctor & Gamble Company, Cincinnati, Ohio

Filed Jun. 24, 1996, Ser. No. 669,686

Int. Cl.[6] A61F *13/00;* **B32B** *31/16*

U.S. Cl. 156—244.18 **22 Claims**



1. A method for forming a composite elastic material, said method comprising the steps of:

a) extruding a thermoplastic film;

b) feeding said thermoplastic film while still in a molten condition onto a rotating forming structure exhibiting a multiplicity of apertures therein;

c) applying a pneumatic vacuum to the thermoplastic film to produce apertures in said thermoplastic film while on said forming surface; and

d) placing an elastic member comprising at least one elastic strand against a surface of said thermoplastic film while said thermoplastic film is still in a molten condition.

5,645,673

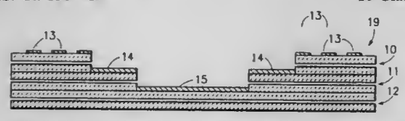
LAMINATION PROCESS FOR PRODUCING NON-PLANAR SUBSTRATES

Benjamin Vito Fasano, New Windsor; Mark J. LaPlante, Walden; David Clifford Long, Wappinger Falls; Keith Colin O'Neil, Hughsonville; Brenda Lee Peterson, Wappingers Falls; Glenn A. Pomerantz, Kerhonkson, all of N.Y., and Timothy Titus Popp, Knoxville, Tenn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 2, 1995, Ser. No. 460,307

Int. Cl.[6] B32B *31/18;31/12*

U.S. Cl. 156—89 **10 Claims**



1. Process for producing non-planar multi-layer ceramic components comprising the steps of:

(a) producing a plurality of ceramic greensheet layers;

(b) applying a thin, patterned layer of barrier material between at least two of said ceramic greensheet layers;

(c) adhering or laminating said greensheet layers, said patterned layer of barrier material being located therebetween; and

(d) cutting down through one or more of said greensheet layers to at least the upper surface of said layer of thin patterned barrier material to expose at least the edge of said barrier material;

(e) removing at least a portion of said layer of barrier material and any remaining overlying ceramic material to produce a non-planar ceramic component.

5,645,674

METHODS FOR ACHIEVING IMPROVED BOND STRENGTH BETWEEN UNVULCANIZED AND VULCANIZED RUBBERS

Georg G. A. Böhm, Akron, and James F. Cetnar, Uniontown, both of Ohio, assignors to Bridgestone Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 29,500, Mar. 11, 1993, abandoned. This application Nov. 23, 1994, Ser. No. 344,474

Int. Cl.[6] B32B *31/00;25/04*

U.S. Cl. 156—273.5 **4 Claims**



1. An improved method for achieving enhanced bond strength between components of unvulcanized and at least partially vulcanized rubber the improvement comprising the steps of:

selecting first and second initially unvulcanized rubber components for the manufacture of a vulcanized rubber article, both said components containing crosslinking agents;

applying an interphase layer of rubber material, devoid of crosslinking agents capable of vulcanizing said interphase layer alone, in any amount capable of vulcanizing said interphase layer and containing from about 0.1 to about 4 parts by weight of at least one accelerator, per 100 parts by weight of rubber, to said first unvulcanized component;

prevulcanizing said interphase layer and said first component together whereby said first component becomes vulcanized and a gradient crosslink density is established in the interphase layer thereby providing a lower crosslink concentration at the surface of said interphase layer opposite said first component;

applying said second unvulcanized rubber component to said surface of lower crosslink density; and

covulcanizing said components together, wherein said first and second unvulcanized rubber components and said interphase layer comprise rubber selected from the group consisting of natural and synthetic rubber and blends thereof, said interphase layer requiring the migration of a portion of said crosslinking agents from both said first and second rubber components to become fully vulcanized.

5,645,675

SELECTIVE PLANARIZATION APPARATUS

Subhash Gupta, San Jose, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

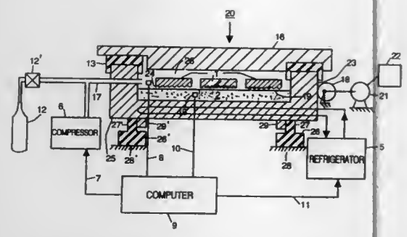
Division of Ser. No. 119,903, Sep. 10, 1993, Pat. No. 5,348,615. This application May 12, 1994, Ser. No. 241,847

Int. Cl.[6] H01L *21/00*

U.S. Cl. 156—345 **8 Claims**

1. Apparatus for smoothing a substrate using an etchant having a liquid-solid phase locus comprising:

chamber means, said chamber means including means to contain a liquid etchant and to freeze said liquid etchant material to create a frozen layer of said etchant, said chamber means



further including means for permitting said substrate to be smoothed to be placed into contact with said frozen layer of etchant; and

means, in operation, for increasing the force between said substrate and said frozen layer sufficiently to melt the etchant beneath protuberances in the surface of said substrate.

5,645,676

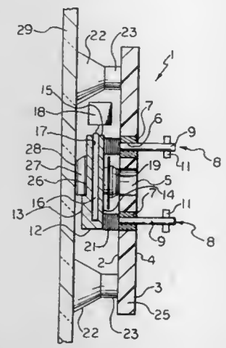
REWORK FIXTURE FOR APPLYING ADHESIVE-COATED MIRROR BUTTONS

Frederick Leo Menko, White Lake, Mich., and Joseph Paul Hoppe, Kernersville, N.C., assignors to Dow Corning Corporation, Midland, Mich.

Filed Aug. 21, 1995, Ser. No. 463,606

Int. Cl.[6] B30B *15/34*

U.S. Cl. 156—359 **3 Claims**



1. A rework fixture comprising a unitary frame having a four-legged cross configuration, said frame having a center aperture, a front and a back;

the legs of said cross being of equal length and equidistant from one another, with each leg having a near end and a distal end;

each leg having a suction cup affixed to the distal end on the front of the frame;

said frame having two identical openings therethrough located on opposing legs and near the center aperture of the frame;

each opening having a high temperature bearing located therein;

each bearing supporting a guide rod, each guide rod having a near end and a distal end, the near end of each guide rod having a stop collar attached thereto;

the distal end of each guide rod having a compressible spring slidably mounted thereon, and being attached to a common block having a top, a front, a back, and comprised of metal capable of being heated;

said block having a well in its interior which opens through the top of said block to accommodate a heating element;

the back surface of said block having mounted thereon a thermostat to control said heating element; and

said block being configured on the front surface to accommodate a mirror mounting button having a surface in contact with said block and an opposing surface.

5,645,677

MACHINE FOR THE SIMULTANEOUS LAYING DOWN AND WINDING OF A PLURALITY OF INDIVIDUAL FIBER ROVINGS

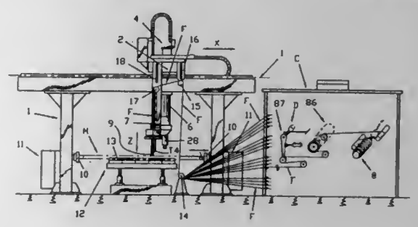
Georges Jean Joseph Cahuzac, Le Bouscat; Bernard André Jollivet, Le Haillan; Jean-Claude Baudry, Pessac; Bruno Dubearn, Merignac, and Laurent Sabary, Carbon-Blanc, all of France, assignors to Societe Anonyme dite Aerospatiale Societe Nationale Industrielle, Cedex, France

Filed May 24, 1994, Ser. No. 248,410

Claims priority, application France, May 26, 1993, 93 06613

Int. Cl.[6] B65H *81/00*

U.S. Cl. 156—361 **18 Claims**



1. Machine for simultaneously winding/laying down of a plurality of individual rovings, comprising:

a gantry;

a laying down/winding head carrier mechanism plate supported by said gantry and movable in three Cartesian directions;

at least one laying down/winding head rotatably mounted on said mechanism plate around at least one vertical axis;

a laying down/winding roller rotatably mounted on each said at least one head, and movable with respect to an element to be covered;

means for presenting rovings on each said roller positioned as at least two tangential laps;

means for driving each roving and means for cutting each roving, said means for driving and said means for cutting being selectively activated;

a plurality of spools mounted on a fixed creel for delivering rovings to said at least one head; and

sets of return pulleys structured and arranged to guide the rovings between the fixed creel and said at least one head, said sets of return pulleys comprising a first set of fixed pulleys having a horizontal axis adjacent to a ground surface and perpendicular to said element to be covered; a second set of pulleys integral with a carriage supporting said head carrier mechanism plate having an axis parallel to said horizontal axis, said first set of fixed pulleys and said second set of pulleys being structured and arranged so that the rovings between the first and second sets of pulleys move along a substantially vertical plane, in accordance with movement of said at least one head; and cascade pulleys integral with said carriage for feeding said rovings from said second sets of pulleys to a set of pulleys integral with said head carrier mechanism plate and disposed vertical to said at least one head.

5,645,678

DEVICE FOR PRODUCING INSULATING GLASS PANES FILLED WITH HEAVY GAS

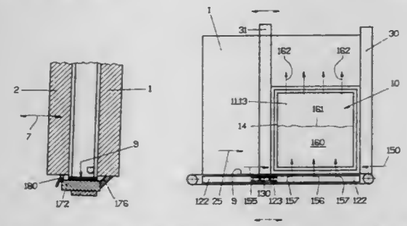
Peter Lisec, Bahnhofstrasse 34, A-3363 Amstetten-Hausmening, Austria

Filed Mar. 24, 1995, Ser. No. 410,306

Claims priority, application Austria, Mar. 24, 1994, 628/94; Mar. 24, 1994, 631/94; Jun. 17, 1994, 1204/94; Sep. 13, 1994, 1749/94

Int. Cl.[6] B30B *15/00*; C03C *27/06*; E06B *3/677*

U.S. Cl. 156—382 9 Claims



1. In a device for producing insulating glass panes (**10**) filled with heavy gas, comprising upright plates (**1**,**2**) which are adapted to be located on either side of one of said insulating glass panes (**10**) and having at least one movable plate (**2**) adjustably movable (arrow **7**) transverse to its plane relative to the other plate (**1**), gas-tight conveyor means (**9**) for supporting a lower edge of said one of said panes (**10**), and upright sealing means (**30**, **31**, **80**) adapted to seal against opposite upright edges of said one of said insulating glass panes (**10**); the improvement comprising a seal (**170**, **180**) that seals between lower edge of said movable plate (**2**) and said gas-tight conveyor means (**9**), said seal (**170**) being disposed against the lower edge of said movable plate (**2**) and against a guide beam (**172**) for said conveyor means (**9**), said conveyor means comprising a belt conveyor (**121**, **173**), said seal (**170**) having a sealing strip (**175**), and drive means (**171**) for positioning said sealing strip (**175**) in an active sealing position between the lower edge of said movable plate (**2**) and a guide strip (**172**) of said conveyor means (**9**).

5,645,679

APPARATUS FOR FEEDING SHEET-LIKE PRODUCTS TO A PROCESSING DEVICE FOR PRINTED PRODUCTS

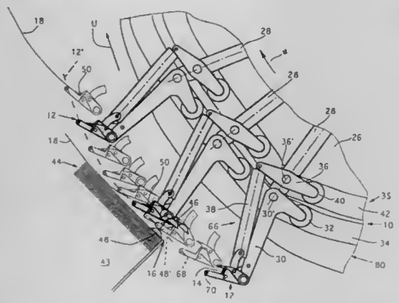
Egon Hansch, Wetzikon, Switzerland, assignor to Ferag AG, Switzerland

Filed Mar. 23, 1995, Ser. No. 409,792

Claims priority, application Switzerland, Mar. 24, 1994, 00887/94

Int. Cl.[6] B32B *31/00*

U.S. Cl. 156—566 18 Claims



1. An apparatus for feeding sheet-like products to a processing device for printed products, comprising:

a plurality of rotational elements driven in rotation along a continuous rotational path and spaced apart, one behind the other, in the direction of rotation;

a plurality of clamps arranged to seize the products as the clamps run past a delivery location and to transport the products to a transfer region, each clamp being articulated, to both a carrying arm and a linking member, both the carrying arm and the linking member being articulate to one of the rotational elements; and

a control device for separately controlling the carrying arm and the linking member so as to pivot the clamps about an articulation axis on the carrying arm but independently of movement of the carrying arm.

5,645,680

PRODUCE LABELLER

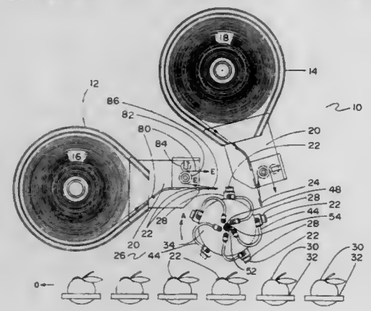
William Rietheimer, Kelowna, Canada, assignor to Systematic Packaging Controls Corporation, Kelowna, Canada

Filed Jun. 6, 1995, Ser. No. 469,070

Claims priority, application Canada, Feb. 17, 1995, 2142960

Int. Cl.[6] B65C *9/08*

U.S. Cl. 156—567 10 Claims



1. A produce labeller comprising:

first and second selectively actuable label supply means for selectively supplying labels from said first or second selectively actuable label supply means to corresponding first and second label transfer positions in a first plane,

a rotatable label transfer means housing, selectively rotatable in said fast plane in a first rotational direction by rotation means, said rotatable label transfer means housing having mounted therein in said first plane, a resiliently biased radially telescoping label transfer means for picking up a label from said first or second selectively actuable label supply means at said fast or second label transfer position and rotationally carrying said label for said first rotational direction from said first or second label transfer position to a label deposit point,

said label carried on an exposed end of said resiliently biased radially telescoping label transfer means by a selectively actuable vacuum means mounted on said exposed end,

cam means in a second plane parallel to said first plane for moving in a radial direction said resiliently biased radially telescoping label transfer means between a retracted label pick-up position at said first and second label transfer positions and an extended label deposit position at said label deposit point,

said first plane adjacent to said second plane and said resiliently biased radially telescoping label transfer means having cam follower means cooperating with said cam means,

wherein said cam means comprises a fixed cam surface housing and said selectively actuable vacuum means comprises a first vacuum port in said exposed end communicating via vacuum communication means with a vacuum plenum in said rotatable label transfer means housing,

said rotatable label transfer means housing mounted adjacent said fixed cam surface housing so as to bear a planar first bearing surface on said rotatable label transfer means housing against a planar second bearing surface on said fixed cam surface housing, said vacuum plenum having a vacuum plenum aperture on said first bearing surface, said vacuum plenum aperture cooperating with a vacuum manifold in said fixed cam surface housing, via an arcuate aperture on said second bearing surface, said vacuum plenum aperture corresponding to said arcuate aperture, said arcuate aperture extending between a vacuum initiating point, corresponding to the location of said vacuum plenum aperture when said first vacuum port has been rotated in said first rotational direction on mid rotatable label transfer means housing to said first label transfer position, and a vacuum removal point corresponding to when said first vacuum port has been rotated in said first rotational direction on said rotatable label transfer means housing to a point past said label deposit point,

whereby, as said rotatable label transfer means housing is rotated by said rotation means in said first rotational direction relative to said fixed cam surface housing, when said first vacuum port is at said first label transfer position said vacuum plenum aperture corresponds

to said vacuum initiating position on said arcuate aperture and a vacuum applied to said vacuum manifold is communicated to said first vacuum port and maintained as said rotatable label transfer means housing is rotated in said first rotational direction so as to rotate said first vacuum port from said first label transfer position to said label deposit point,

and whereby, as said first vacuum port is rotated in said first rotational direction past said label deposit point, said vacuum plenum aperture is rotated out of corresponding alignment with said vacuum removal point on said arcuate aperture so as to remove communication of said vacuum in said vacuum manifold with said first vacuum port thereby to release a label releasably carried on said exposed end.

5,645,681

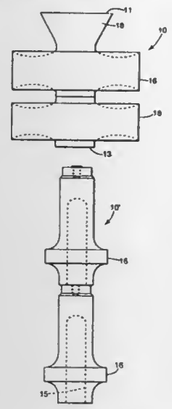
STACKED ROTARY ACOUSTIC HORN

Haregoppa S. Gopalakrishna, and Satinder K. Nayar, both of Woodbury, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 5, 1996, Ser. No. 676,050

Int. Cl.[6] B29C *65/08*

U.S. Cl. 156—580.2 11 Claims



1. A rotary acoustic horn for imparting energy at a selected wavelength, frequency, and amplitude, wherein the horn comprises:

a base portion having an axial input end and an axial output end;

a plurality of weld faces operationally connected to the base portion, each having a diameter that is greater than the diameter of the base portion and that expands and contracts with the application of acoustic energy to the input end of the base portion, wherein the weld faces are spaced from each other, and wherein the weld faces are mounted in one of series and parallel with each other.

5,645,682

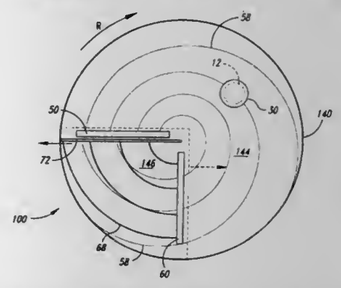
APPARATUS AND METHOD FOR CONDITIONING A PLANARIZING SUBSTRATE USED IN CHEMICAL-MECHANICAL PLANARIZATION OF SEMICONDUCTOR WAFERS

John Skrovan, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed May 28, 1996, Ser. No. 654,134

Int. Cl.[6] B24B *53/007*

U.S. Cl. 156—636.1 14 Claims



1. A method for chemically conditioning a surface of a planarizing substrate while a semiconductor wafer may be planarized thereon, the method comprising the steps of:

dispensing a planarizing solution onto the surface of the substrate as the substrate moves along a substrate path of travel, the planarizing solution being dispensed at a first location up-stream from the wafer with respect to the substrate path of travel;

dispensing a conditioning solution onto the surface of the substrate at a second location down-stream from the wafer with respect to the substrate path of travel, the conditioning solution removing an adequate amount of waste matter from the substrate without mechanical abrasion to bring the substrate into a desired condition; and

removing the planarizing solution and the conditioning solution from the substrate, the planarizing solution being removed after it contacts the wafer and the conditioning solution being removed before it can contact the wafer.

5,645,683

ETCHING METHOD FOR ETCHING A SEMICONDUCTOR SUBSTRATE HAVING A SILICIDE LAYER AND A POLYSILICON LAYER

Hidenobu Miyamoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 7, 1995, Ser. No. 385,124

Claims priority, application Japan, Feb. 7, 1994, 6-013315

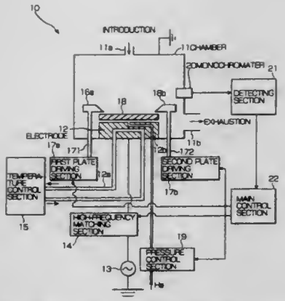
Int. Cl.[6] H01L *21/00*

U.S. Cl. 156—643.1 8 Claims

1. An etching method for etching a semiconductor substrate comprising a polysilicon layer and a silicide layer by plasma etching to produce a processed semiconductor substrate having a patterned silicide layer and a patterned polysilicon layer, said etching method comprising the steps of:

locating said semiconductor substrate on a supporting member;

controlling a temperature of said supporting member to substantially equal a first temperature;



etching said silicide layer into said patterned silicide layer by plasma etching;

cooling said supporting member to substantially equal a second temperature; and

etching said polysilicon layer into said patterned polysilicon layer by plasma etching to produce said processed semiconductor substrate.

5,645,684

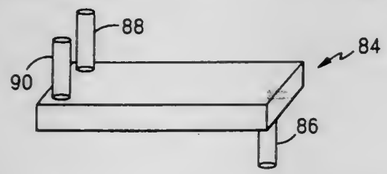
MULTILAYER HIGH VERTICAL ASPECT RATIO THIN FILM STRUCTURES

Christopher G. Keller, Albany, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Continuation-in-part of Ser. No. 207,459, Mar. 7, 1994. This application Jun. 7, 1995, Ser. No. 485,815

Int. Cl.[6] H01L *21/00*

U.S. Cl. 156—643.1 **39 Claims**



1. A method of fabrication of a micromechanical element, comprising:

providing a mold having a depth;

coating said mold with a sacrificial thin film layer;

filling a first portion of said mold with a material having properties;

filling a second portion of said mold with a material having properties at least one of which is different from the material filling said first portion of said mold; and

etching said sacrificial thin film layer.

5,645,685

VENETIAN BLINDS

Thomas C. Furhman, 1521 Trenton Rd., McAllen, Tex. 78504

Filed Jan. 5, 1996, Ser. No. 583,706

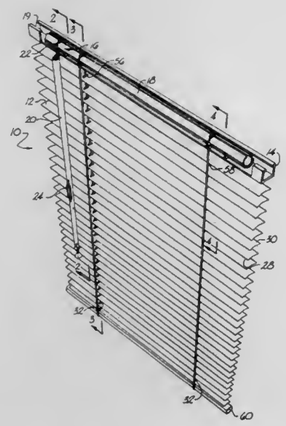
Int. Cl.[6] E06B *9/30*

U.S. Cl. 160—168.1 **15 Claims**

1. An improved venetian blind, comprising:

a head rail, said head rail being elongated and defining a channel therein;

a rotator member, said rotator member being elongated and carried in said channel of said head rail for rotation between a first position and a second position; said rotator member defining a first side and a second side substantially opposite said first side;



a plurality of slats extending substantially parallel to one another beneath said head rail, each of said slats having a first edge and a second edge opposite said first edge;

a tilt band fixedly connected to said first edge of each of said slats and to said rotator member;

at least one rotator band fixedly connected to each of said first and second sides of said rotator member such that downward movement of said rotator band adjacent said first side of said rotator member rotates said rotator member towards said first position and causes said first edges of said slats to move upwardly, and downward movement of said rotator band adjacent said second side of said rotator member rotates said rotator member towards said second position and causes said first edges of said slats to move downwardly; and

an elongated handle defining a channel and an opening to said channel, said rotator band being carried in said channel for movement relative to said channel.

5,645,686

PROCESS FOR BLEACHING A PULP IN A SEQUENCE INCLUDING AN ENZYME STAGE

Nicholas A. Troughton; François Desprez; Johan Devenyns; Pierre Ledoux, all of Brussels, and René Detroz, Ohain, all of Belgium, assignors to Solvay Interox (Société Anonyme), Brussels, Belgium

Filed Oct. 13, 1994, Ser. No. 322,419

Claims priority, application Belgium, Oct. 22, 1993, 09301131

Int. Cl.[6] D21C *9/147;9/16*

U.S. Cl. 162—65 **30 Claims**

1. A process for bleaching pulp comprising bleaching the pulp with one of the following bleach sequences, wherein each bleach sequence consists essentially of the following stages:

an oxygen stage with seguestering agent, followed by a stage with an enzyme, followed by a stage with hydrogen peroxide, followed by a stage with a peroxyacid, followed by a stage with hydrogen peroxide; an oxygen stage with an enzyme followed by a stage with sequestering agent, followed by a stage with hydrogen peroxide, followed by a stage with a peroxyacid, followed by a stage with hydrogen peroxide; an oxygen stage with an enzyme and with a sequestering agent, followed by a stage with hydrogen peroxide, followed by a stage with a peroxyacid, followed by a stage with hydrogen peroxide; or an oxygen stage with an enzyme reinforced with a sequestering agent, followed by a stage with hydrogen peroxide, followed by a stage with a peroxyacid, followed by a stage with hydrogen peroxide.

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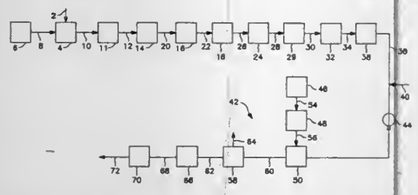
PROCESS FOR MANUFACTURING BLEACHED PULP WITH REDUCED CHLORIDE PRODUCTION

Raman Ambady; Dale E. Nutter, Jr., both of Pensacola, and Dewey W. Barnes, Defuniak Springs, all of Fla., assignors to Champion International Corporation, Stamford, Conn.

Filed Jul. 10, 1995, Ser. No. 499,871

Int. Cl.[6] D21C *9/153*

U.S. Cl. 162—65 **25 Claims**



1. A process for manufacturing bleached wood pulp of the type comprising subjecting wood pulp after at least one brown stock washing stage to a base bleach process comprising the steps of:

bleaching said pulp in a first acidic bleaching stage to form a first acidic bleached pulp;

bleaching said first acidic bleached pulp in a first alkaline bleaching stage to form a first alkaline bleached pulp;

bleaching said first alkaline bleached pulp in a second acidic bleaching stage to form a second acidic bleached pulp comprising mixing said first alkaline bleached pulp after acidification with a gaseous mixture comprising an effective amount of ozone to form a mixture and maintaining said mixture for a residence time and at a residence temperature sufficient to allow consumption of all or a portion of said ozone by one or more chemically reactive components of said pulp to form said second acidic bleached pulp; and

bleaching said second acidic bleached pulp in a third acidic bleaching stage with an active bleaching agent comprising chlorine dioxide or a mixture of chlorine dioxide and elemental chlorine in the absence of an intermediate washing stage to provide third acidic bleached pulp having a brightness ceiling which is higher than the brightness ceiling of a third acidic bleached pulp bleached in a bleach sequence identical to that used to form the third acidic bleached pulp and having the same number of bleaching stages except that ozone is not used as the active bleaching agent in the second acidic bleaching stage.

5,645,688

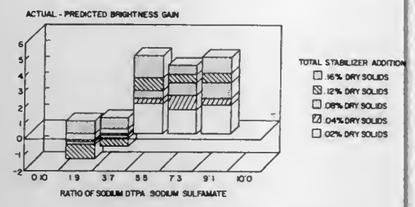
BLEACHING COMPOSITIONS AND PROCESSES EMPLOYING SULFAMATES AND POLYAMINOCARBOXYLIC ACIDS

James H. Payton, Marietta, and Nicholas M. Canaris, Atlanta, both of Ga., assignors to Vinings Industries, Inc., Atlanta, Ga.

Filed Jan. 30, 1995, Ser. No. 380,593

Int. Cl.[6] D21C *1/08*

U.S. Cl. 162—76 **7 Claims**



1. A pulp bleaching process comprising the steps of:

(a) adding to the pulp to be bleached a composition consisting essentially of a polyaminocarboxylic acid or salt thereof and an alkali metal sulfamate; and

(b) treating the pulp resulting from step (a) under alkaline pH conditions with at least one bleach selected from the group consisting essentially of peroxides, oxygen and mixtures thereof.

5,645,689

MULTILAYER HEADBOX

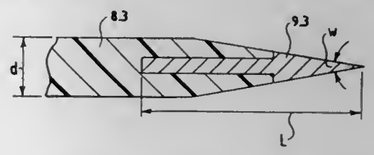
Wolfgang Ruf, Heidenheim; Frank Fey, Schwäbisch Gmünd; Thomas Dietz, Königsbronn; Klaus Pimiskern, Daisendorf, and Gerhard Wernlein, Eriskirch, all of Germany, assignors to Voith Sulzer Paplermachinen GmbH, Heidenheim, Germany

Filed Nov. 13, 1995, Ser. No. 557,719

Claims priority, application Germany, Nov. 10, 1994, 44 40 079.9

Int. Cl.[6] D21F *1/02*

U.S. Cl. 162—258 **23 Claims**



1. A multilayer headbox of a paper manufacturing machine, said headbox for the introduction of at least two fiber suspension streams to a forming section of the paper manufacturing machine, each suspension stream spanning across a width of the machine, said headbox comprising:

(a) a nozzle chamber having a machine-wide outlet gap at a downstream portion thereof with respect to a direction of fluid flow through the machine, said nozzle chamber defined by first and second machine-wide stream guide walls and first and second side walls, each guide wall having an end disposed at said outlet gap;

(b) at least one machine-wide lamella disposed in the nozzle chamber, said lamella separating at least two fiber suspension streams flowing through the headbox all the way to the outlet gap, said lamella having a body and a tip made from a hard material, said tip made from at least one of

(i) a strip having a sharp tip-edge, said strip integrated into the body of the lamella, and

(ii) a coating, said lamella being narrowed toward said coating forming the tip, said tip coating being integrated into the lamella at at least one of the two sides of the lamella, forming a sharp tip-edge.

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PRESSURE RELIEF SYSTEM FOR TREATING FIBROUS MATERIALS UNDER PRESSURE

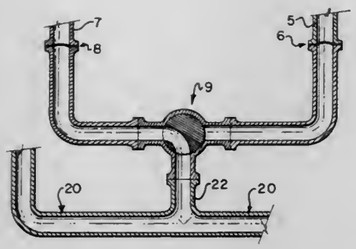
James P. Cox, Jr., Barlow, Ky., assignor to Westvaco Corporation, New York, N.Y.

Filed Sep. 11, 1996, Ser. No. 712,359

Int. Cl.[6] D21D *1/00;1/20*

U.S. Cl. 162—261 **14 Claims**

1. Apparatus for refining fibrous material in a pressurized refining device which comprises at least one pair of refining disks located in a refiner housing and mounted for relative rotation with respect to one another, said refining disks including inner refining surfaces which define a refining space therebetween through which the fibrous material passes during refining, an inlet conduit for feeding fibrous material into said housing for refining, and a discharge conduit for removing the refined fibrous material from



said housing, the improvement wherein at least two pressure relief devices are provided in communication with said discharge conduit and a means is provided for exposing only one pressure relief device at a time to the pressure in said discharge conduit said means actuated when an increase in the pressure within the discharge conduit is sufficient to cause a failure of one of the pressure relief devices.

5,645,691

EXTENDED NIP PRESS ROLL FOR A PAPERMAKING MACHINE

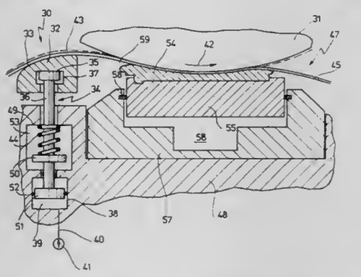
Thomas Zuefle; Christian Schiel, both of Heidenheim, and Karl Steiner, Herbrechtingen, all of Germany, assignors to Voith Sulzer Papiermaschinen, Germany

Filed Apr. 20, 1995, Ser. No. 425,818

Claims priority, application Germany, May 4, 1994, 44 15 645.6

Int. Cl.[6] O21F *3/08*

U.S. Cl. 162—358.3 **16 Claims**



1. Press roll for a shoe press for extracting liquid from a pulp web passing through a press nip of a paper making machine, comprising:

a press shoe supported hydraulically on a stationary carrying body of said shoe press roll for taking up press forces in the nip;

a press blanket passing over said press shoe for supporting said pulp web;

a plurality of strip elements for supporting said press blanket, arranged outside said press nip and extending substantially in an axial direction of said roll; and

a plurality of supporting elements coupled to at least one of said strip elements for supporting said one strip element, said supporting elements engaging and coupled to said stationary carrying body at one end thereof and engaging said one strip element at the other end thereof, said one strip element being supported on said stationary carrying body by said plurality of supporting elements, said supporting elements being structured and arranged so that a predetermined profile of a bending curve of said one strip element is provided irrespective of a bending of said stationary carrying body under load of said press shoe.

5,645,692

PROCESS FOR THE STABILIZATION OF CRUDE OILS AT THE OUTLET OF THE EXTRACTION WELL AND DEVICE FOR IMPLEMENTATION THEREOF

Jean-Paul Gourlia, La Mulatiere; Jacques Tournier Lasserve, Pau; Georges Bihn-Cirlot, Couladiere, and Jean Vandermeersch, Montreuil Sous Bois, all of France, assignors to Elf Aquitaine Production, Courbevoie, France

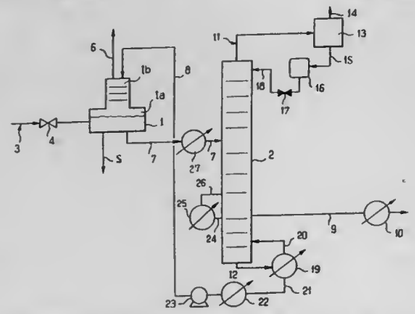
PCT No. PCT/FR94/00950, § 371 Date Jun. 26, 1995, § 102(e) Date Jun. 26, 1995, PCT Pub. No. WO95/04116, PCT Pub. Date Feb. 9, 1995

PCT Filed Jul. 28, 1994, Ser. No. 406,908

Claims priority, application France, Jul. 30, 1993, 93 09459

Int. Cl.[6] C10C *1/04;* **B01D** *3/14*

U.S. Cl. 196—46 **29 Claims**



1. A process for the stabilization of virgin crude oil at the outlet of a well, utilizing least one separation stage, which comprises:

feeding the crude oil under a well outlet pressure of 10–100 bars to a decompression unit;

decompressing said crude oil by said decompression unit;

feeding the decompressed crude oil to at least one distillation column; and

distilling said depressurized crude oil under pressure in the at least one distillation column utilizing at least two cuts, including a gaseous C_1 to C_5 hydrocarbon cut recovered at the head of the column and a stabilized crude oil cut recovered below an injection point of said crude oil into the column; wherein the gaseous cut is selectively separated into two fractions, one fraction comprising light C_3^- hydrocarbons and the other fraction comprising C_4 and C_5 hydrocarbons and a portion of the C_3 hydrocarbons;

and further wherein only the C_4 and C_5 hydrocarbons is recovered, then condensed and finally reinjected at the head of the column.

5,645,693

PLANT FOR SEA WATER DESALINIZING USING SOLAR ENERGY

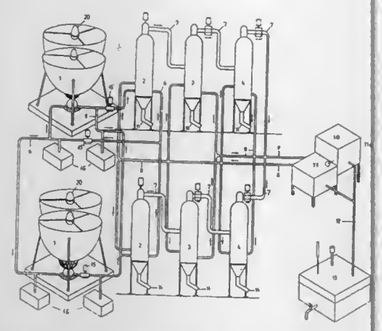
Gábor Göde, 1126 Budapest, Böszörményi út 3/a, Hungary

Continuation of Ser. No. 170,237, Feb. 10, 1994, abandoned. This application Aug. 18, 1995, Ser. No. 516,509

Int. Cl.[6] B01D *3/10;* **C02F** *1/14*

U.S. Cl. 202—173 **11 Claims**

1. Apparatus for desalination of sea water by the utilization of solar energy for distillation of said sea water, comprising a heat caption unit that automatically follows the movement of the sun serving as a heat source, a sea water collecting tank, a pre-heating tank having a discharge duct, a plurality of evaporators which serve to evaporate steam out of sea water, said plurality of evaporators being connected in series, and distilled water storage tanks; said preheating tank which pre-heats the sea water and cools the steam and said sea water collecting tank being situated beside each other at different levels, the adjoining walls of the two tanks having an opening for a through-flow tube; the discharge duct of the preheating tank connecting into the plurality of evaporators, the



first of the plurality of evaporators having a heating agent inlet and a heater heated by the heating agent, the second and the subsequent evaporators having a heating system consisting of pipe rings utilizing hot vapor and pipes connecting the pipe rings, at least one parabolic collector made up of module elements serving as heat collecting units for heating the heating agent that heats the first evaporator, said heat collecting units having a funnel-shape means with a bottom hollow, a high heat-resistant metal or ceramic coating covering the wall of said means, a heat receiver means having an inlet pipe and a discharge pipe, baffle plates or pipe bundles inside said receiver for heating the heating agent, wherein the inlet pipe of the receiver is connected to a discharge pipe of the first evaporator discharging a cooled heating agent, while the discharge pipe of the receiver is connected to the heating agent inlet of the first evaporator.

5,645,694

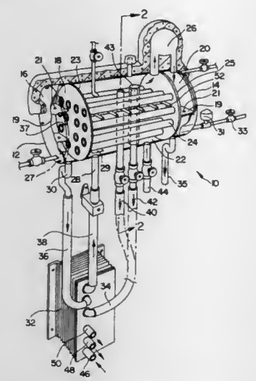
PROCESS AND APPARATUS FOR VAPOR COMPRESSION DISTILLATION

James M. Stewart, Greenville, and Bobby D. Morris, Greer, both of S.C., assignors to Vacom II, L.P., Atlanta, Ga.

Filed Mar. 31, 1993, Ser. No. 40,767

Int. Cl.[6] B01D *1/28*

U.S. Cl. 203—22 **25 Claims**



1. A vapor compression distillation apparatus comprising:

a container having a substantially horizontal longitudinal center axis;

two opposing end plates closing each end of the container;

a first and second passage area defined within and on opposing ends of the container, each adjacent one of said end plates;

a collecting chamber defined within the container between said first and second passage areas;

a plurality of generally horizontal tubes spacedly disposed within said collecting chamber generally parallel to the longitudinal axis of the container, each of said tubes having two opposing ends which open into said first and second passage areas respectively;

two opposing plates positioned on opposite ends of said horizontal tubes, each plate engaging similar ends of said horizontal tubes;

elastomer grommets sealing said horizontal tubes with said plates positioned on opposite ends of said horizontal tubes;

a vapor compressor attached to the container such that said vapor compressor communicates directly with an upper area of said collecting chamber and with said second passage area;

at least one passage for passing a liquid into or out of said collecting chamber at a bottom area of said collecting chamber; and

a first conduit for passing a liquid into or out of said first passage area at a bottom area thereof.

5,645,695

SEPARATION OF 2-METHYL-1-PROPANOL FROM 2-METHYL-1-BUTANOL BY AZEOTROPIC DISTILLATION

Lloyd Berg, 1314 S. 3rd Ave., Bozeman, Mont. 59715

Filed Jul. 8, 1996, Ser. No. 676,779

Int. Cl.[6] B01D *3/36;* **C07C** *29/84*

U.S. Cl. 203—57 **1 Claim**

1. A method for recovering 2-methyl-1-propanol from a mixture of 2-methyl-1-propanol and 2-methyl-1-butanol which consists essentially of distilling said mixture in the presence of an azeotrope forming agent, recovering the 2-methyl-1-propanol and the azeotrope forming agent as overhead product and obtaining the 2-methyl-1-butanol as bottoms product, wherein said azeotrope forming agent consists of one material selected from the group consisting of butyl formate, dimethyl carbonate, methyl propionate, methyl pivalate, 3-pentanone, 3-methyl-2-butanone, 4-methyl-2-pentanone, 2-butanone, acetal, isopropyl ether, 1,4-dioxane, 2,2-dimethoxypropane, dioxolane, triethyl amine, toluene, cyclopentane, cyclohexane, cyclohexene, 1-octene, 2,2,4-trimethylpentane, diethyl amine, 2,3-dimethylpentane, methyl acetate, isobutyl acetate, propyl formate, tert.-butyl acetate, sec.-butyl acetate, ethyl formate, methyl formate, methyl butyrate, propyl acetate, isopropyl acetate and tetrahydrofuran.

5,645,696

PROCESS FOR PREPARING UNSATURATED CARBOXYLIC ACID ESTERS AND APPARATUS FOR PREPARING THE SAME

Boo Gon Woo; Kwang Ho Park; Hwa Myung Joo, all of Daejeon, and Han Sun Lee, Seoul, all of Rep. of Korea, assignors to Lucky Ltd., Seoul, Rep. of Korea

Filed Nov. 21, 1994, Ser. No. 346,191

Int. Cl.[6] B01D *3/34*

U.S. Cl. 203—60 **8 Claims**

1. An apparatus for continuously preparing unsaturated carboxylic acid esters with an esterifying reaction, wherein an (aliphatic) alcohol reactant having 1 to 8 carbon atoms is reacted with an unsaturated carboxylic acid reactant in the presence of a cation exchange resin catalyst, said apparatus comprising:

a fixed bed reactor divided into 1 to 10 steps, wherein each step comprises a catalyst bed, a filter and an air inlet, and wherein said reactor has a thermal insulating outer wall and a top and a bottom portion,

a column tower having a top and a bottom portion, wherein the bottom portion of the column tower is connected to the top portion of said reactor,

heat exchanging means outside said reactor for supplying a vaporizing heat for extracting water that is produced during the reaction.

circulating means for circulating the reactants between the reactor and the heat exchanging means,

contacting means for contacting an azeotropic composition of an alcohol and water vaporized by the heat exchanging means with either:

(i) an alcohol circulating in said column tower, or (ii) a raw alcohol supplied from an alcohol inlet located on the top portion of said column tower,

to thereby recycle a high boiling point component of the reaction mixture into the top portion of the reactor and, at the same time, to transfer a low boiling point component of the reaction mixture to the top portion of the tower column, where the low boiling point component condenses and forms a condensate,

separating means for separating the condensate into an organic layer and a water layer,

recycling means for recycling the organic layer into the top portion of the reactor, and

removing means for removing the water produced during the reaction;

provided that the process is conducted by continuously circulating said reactants in contact with said catalyst from the top portion to the bottom portion of the reactor.

5,645,697

PREVENTING CONTAMINANT BUILD-UP IN BEER LINES

David Leslie Phillip Middleton, 19 Rosemont Ave. Broadbeach, Gold Coast, Australia; David Brian Telfer, and Clive Barnes, both of 48/22 Jennifer Ave., Runaway Bay, Gold Coast, Australia

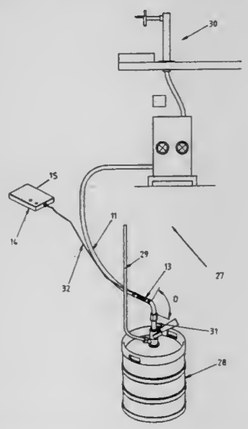
PCT No. PCT/AU93/00482, § 371 Date Mar. 23, 1995, § 102(e) Date Mar. 23, 1995, PCT Pub. No. WO94/07790, PCT Pub. Date Apr. 14, 1994

PCT Filed Sep. 21, 1993, Ser. No. 406,866

Claims priority, application Australia, Sep. 25, 1992, PL4932

Int. Cl.[6] C12H *1/00*

U.S. Cl. 204—155 **18 Claims**



1. A method for preventing or removing contaminant build-up in a beer supply line between beer storage means and beer dispensing means, said method including the steps of locating electromagnetic field generating means adjacent a section of said beer supply line, applying a frequency modulated square wave voltage signal to said electromagnetic field generating means to generate a varying frequency electromagnetic field in said section of said supply line, and subjecting said line to said electromagnetic field for an extended period of time to inhibit or remove contaminant cell growth in said beer supply line.

5,645,698

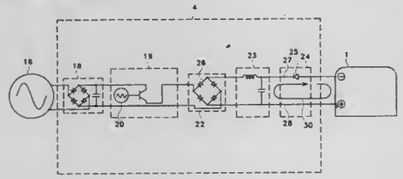
TOPOGRAPHICALLY PRECISE THIN FILM COATING SYSTEM

Manabu Okano, Tokyo, Japan, assignor to Advanced Energy Industries, Inc., Fort Collins, Colo.

Continuation of Ser. No. 954,151, Sep. 30, 1992, abandoned. This application Aug. 25, 1994, Ser. No. 296,093

Int. Cl.[6] C23C *14/34*

U.S. Cl. 204—192.12 **23 Claims**



1. A topographically precise thin film coating system comprising:

a. a coating chamber;

b. a material target disposed to expose coating material within said chamber;

c. a cathode within the deposition chamber;

d. an anode within the deposition chamber;

e. a DC power source wherein said DC power source is connected across said anode and said cathode;

f. a filter element which creates a load circuit loop with said cathode and said anode; and

g. a transient reverse current element within said load circuit loop.

5,645,699

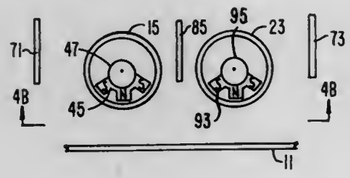
DUAL CYLINDRICAL TARGET MAGNETRON WITH MULTIPLE ANODES

Peter A. Sieck, Santa Rosa, Calif., assignor to The BOC Group, Inc., New Providence, N.J.

Continuation of Ser. No. 301,114, Sep. 6, 1994, abandoned. This application Jun. 21, 1996, Ser. No. 667,773

Int. Cl.[6] C23C *14/35*

U.S. Cl. 204—192.12 **9 Claims**



1. In a magnetron having at least first and second targets from which material is sputtered in order to deposit a film on a substrate, each of said first and second targets being symmetrically shaped about an axis, said targets being held with their said axes oriented parallel to each other and with a space between the targets in a direction orthogonal to said axes, an improved anode arrangement, comprising:

first and second elongated anodes with lengths thereof positioned parallel to said axes, said first and second anodes being spaced apart from said targets along sides thereof remote from said space, and

at least a third elongated anode positioned parallel to said axes and in the space between said first and second targets.

8. A method of depositing electrically conductive films on substrates within a vacuum chamber including at least first and second targets including electrically conductive material and provided with magnetic structures to form respective first and second elongated closed loop sputtering zones across surfaces of the targets, thereby to form zones of electron drift around the sputtering zones, comprising utilizing four anode surface areas adjacent the first and second targets with one of said four anode surface areas positioned at each end of said first and second elongated sputtering zones with an orientation that captures electrons that leave the sputtering zones at the ends thereof.

5,645,700

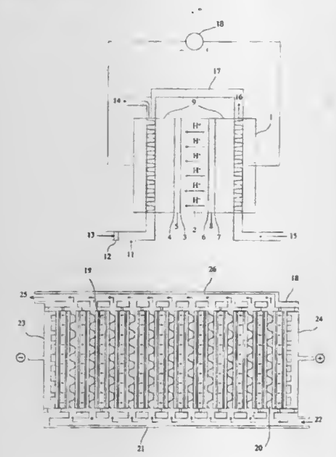
POLYMER MEMBRANE BASED ELECTROLYTIC CELL AND PROCESS FOR THE DIRECT GENERATION OF HYDROGEN PEROXIDE IN LIQUID STREAMS

James H. White; Michael Schwartz, and Anthony F. Sammells, all of Boulder, Colo., assignors to Eltron Research, Inc., Boulder, Colo.

Filed Dec. 28, 1994, Ser. No. 366,292

Int. Cl.[6] C25B *9/00*; C25C *7/00*; C25D *17/00*

U.S. Cl. 204—252 **9 Claims**



1. A hydrogen peroxide generator device comprising a multiplicity of electrolytic adjacent cells for generating hydrogen peroxide in a stream of water, each cell comprising:

a cathode containing a catalyst for the reduction of oxygen;

an anode containing a catalyst for the oxidation of water;

a polymer membrane, semipermeable to protons and having a first face interfacing to said cathode and a second face interfacing to said anode so that when a stream of water containing dissolved oxygen, oxygen bubbles, or emulsified oxygen is passed over the cathode and a stream of water is passed over the anode and an electric current is passed between the anode and the cathode, hydrogen peroxide is generated at the cathode and oxygen is generated at the anode;

means for delivering a stream of water containing oxygen to and from each of said cells wherein the water containing hydrogen peroxide exiting the cathode of each cell mingles with water containing oxygen supplied to the anode of the adjacent cell; and

means for electrically connecting said cells and passing an electrical current through the cells so that oxygen is reduced adjacent to the cathode of each cell, resulting in the generation of hydrogen peroxide in the water stream.

5,645,701

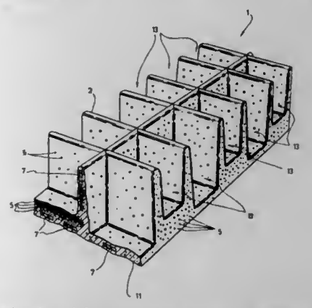
CAPPING BOARD WITH PULTRUDED FILLING BARS

Jean L. Dufresne, 2020 Garden Vale, St-Bruno de Montarville Quebec, Canada, and Robert P. Dufresne, 40 Guilbert, St-Bruno de Montarville Quebec, Canada

Filed Mar. 8, 1996, Ser. No. 613,150

Int. Cl.[6] C25D *17/06*

U.S. Cl. 204—279 **8 Claims**



1. A capping board for supporting electrodes immersed into an electrolytic cell, said capping board being molded from a plastic resin selected from the group consisting of polytetrafluoroethylene, acid resistant polyester, vinylester, epoxy and phenolic resins and blends thereof, and containing from 3 to 30% by weight of glass fibers, from 2 to 10% by weight of silica sand, from 2 to 10% by weight of mica and from 2 to 40% by weight of silica rocks, said capping board also comprising at least one embedded bar,

wherein each of said at least one bar consists of a pultruded bar obtained by pultrusion of fibers selected from the group consisting of glass fibers, cizal fibers, resins fibers and carbon fibers, with a resin selected from the group consisting of polyester, vinylester and epoxy and phenolic resins and their mixtures, said at least one pultruded bar being further coated with a surface layer of a resin bonding agent.

5,645,702

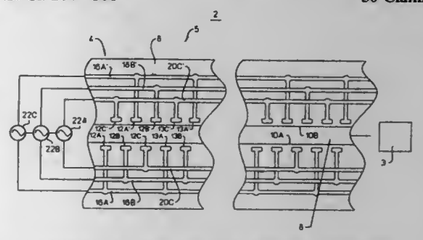
LOW VOLTAGE MINIATURIZED COLUMN ANALYTICAL APPARATUS AND METHOD

Klaus E. Witt, Keltern; Patrick Kaltenbach, Bischweier; Fritz Bek, Waldbronn, all of Germany; Sally A. Swedberg, Los Altos, and Laurie S. Mittelstadt, Belmont, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 7, 1995, Ser. No. 483,217

Int. Cl.[6] G01N *27/26;27/447*

U.S. Cl. 204—501 **30 Claims**



1. A miniaturized column analytical apparatus comprising:

(a) a miniaturized column device comprising:

(i) a body having an elongate separation compartment having first and second opposing sides along the elongate dimension;

(ii) two or more sets of spaced apart antennas positioned along the opposing sides of the separation compartment, each set containing a plurality of antennas, one antenna from each set being associated with at least one antenna

from each of the other sets to form repeating sequences of antennas along the separation compartment on said sides of the separation compartment, each set of the antennas being associated with a different oscillating alternating current electrical potential to provide a plurality of oscillating electric fields along the elongate separation compartment to draw a target substance along said elongate separation compartment toward an exit end thereof, and

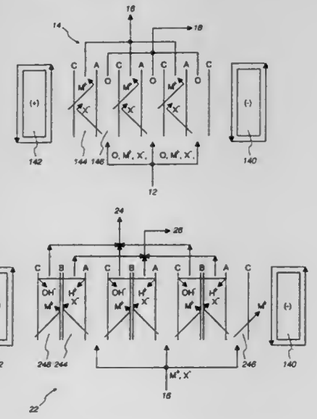
(b) a detector for detecting the target substance passing through the elongate separation compartment.

5,645,703

ELECTRODIALYSIS-BASED SEPARATION PROCESS FOR SALT RECOVERY AND RECYCLING FROM WASTE WATER

Shih-Perng Tsai, Naperville, Ill., assignor to University of Chicago, Chicago, Ill.

Filed Dec. 20, 1995, Ser. No. 587,452
Int. Cl.[6] B01D *61/58;61/44;61/46*
U.S. Cl. 204—538 **16 Claims**



1. A method for recovering purified acid, alkali, and organic compounds from a process stream which contains salts and organic contaminants comprising:

a.) directing the process stream to a desalting electrodialysis unit so as to create a concentrated salt permeate and a de-salted organic compound containing stream;

b.) contacting said concentrated salt permeate to a water-splitting electrodialysis unit so as to convert said salt to its corresponding base and acid; and

c.) biologically treating the de-salted organic compound containing stream.

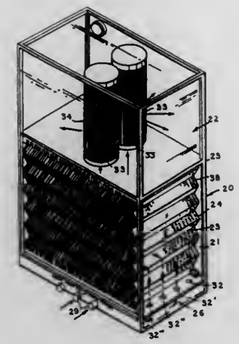
5,645,704

ELECTROSTATIC FILTER DEVICE

Gerald J. Axtman, Bismarck, N. Dak., assignor to Eugene Sandler, Rockville, Md.

Filed May 3, 1994, Ser. No. 237,597
Int. Cl.[6] B03C *5/02;* **B01D** *35/06*
U.S. Cl. 204—665 **2 Claims**

1. A filter device comprising an electrostatic chamber and a collection chamber separate from one another with the collection chamber positioned adjacent to the electrostatic chamber and being separated from said electrostatic chamber by a wall; said electrostatic chamber and said collection chamber each having inlet and



outlet port means with said outlet port means of said electrostatic chamber communicating with said inlet port means of said collection chamber;

said electrostatic chamber having a plurality of rectangular perforated metal panels positioned in a longitudinally extending row so as to extend in width and height laterally of the length of the row and spaced from one another longitudinally to allow fluid to pass therebetween;

said panels having a plurality of bent portions bent longitudinally to allow panels, adjacent one another, to laterally and alternately overlap one another in the longitudinal spaces between the panels at a plurality of intervals laterally along the height of the panels so as to interrupt a straight path for fluid laterally along the longitudinal spaces upward between the panels;

said inlet port means of said electrostatic chamber comprising inlet opening means positioned along the bottom of the chamber adjacent to an end of the row of panels; said outlet port means being formed in the wall separating said electrostatic chamber and said collection chamber and being offset longitudinally and laterally up from said inlet port means of said electrostatic chamber;

means to apply a high voltage to said panels in alternating relation longitudinally along the row whereby an electrostatic field may be produced on the panels;

pump means to pump fluid into said electrostatic chamber through said inlet port means, whereby fluid having minute particles may be pumped into said electrostatic chamber and may travel laterally up along the longitudinal spaces between the panels and may travel longitudinally through the perforations in the panels; and the fluid in traveling laterally along the longitudinal spaces between the panels, may flow along a reflective path off the bent portions of the panels from one of said panels to the next adjacent panel and back within the electrostatic chamber, with the alternating polarity of the panels next to one another causing flocculation of the minute particles in the fluid;

and whereby said fluid may travel longitudinally through the perforations in the panels to cause flocculation of the minute particles with said flocculation increasing the size of the minute particles;

said collection chamber having filtering means surrounding said inlet port means of the collection chamber and being adapted to receive fluid from the electrostatic chamber with said fluid flowing through the filtering means to said outlet port means of the collection chamber to filter out the minute particles increased in size through flocculation.

5,645,705

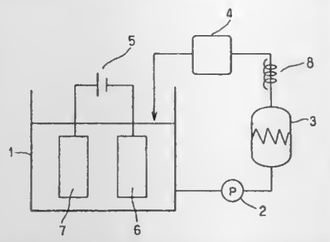
Patent Not Issued For This Number

5,645,706

PHOSPHATE CHEMICAL TREATMENT METHOD

Shigeki Matsuda, Okazaki, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Continuation of Ser. No. 175,416, Aug. 9, 1994, abandoned.
This application Nov. 1, 1995, Ser. No. 551,695
Claims priority, application Japan, Apr. 30, 1992, 4-137833
Int. Cl.[6] C25D *9/02*
U.S. Cl. 205—82 **21 Claims**



21. A method of forming a phosphate chemical film on an electroconductive metal comprising the steps of:

(i) contacting an electroconductive metal with a phosphate chemical treatment solution comprising a phosphate ion, a nitrogen-containing oxoacid ion and a chemical film forming metal ion;

(ii) subjecting said electroconductive metal to an electrolytic treatment in said phosphate chemical treatment solution wherein an electric current is caused to pass through said phosphate chemical treatment solution by connecting said electroconductive metal and said phosphate chemical treatment solution to an electric power source;

(iii) controlling energy sources affecting said phosphate chemical treatment solution, wherein said controlling step includes maintaining said phosphate chemical treatment solution at a temperature not greater than about 40° C. and maintaining in said phosphate chemical treatment solution a concentration of said phosphate ion of 4 to 150 g/l, a concentration of said chemical film forming metal ion of 1.5 to 40 g/l, a concentration of said nitrogen-containing oxoacid ion of 3 to 150 g/l, a pH of 2 to 4, a redox potential of 460 to 860 mV as a standard hydrogen electrode potential, and an electric current of 0.01 to 4 A/dm^2, said current density being measured with respect to a surface area of said electroconductive metal, such that said phosphate chemical treatment solution is substantially free of energy-destabilizing sludge; and

(iv) circulating a portion of said phosphate chemical treatment solution through a circulating path, and filtering said portion with a filter comprising an inorganic material,

wherein a thermodynamic energy balance in said phosphate chemical treatment solution is thereby controlled and stabilized to prevent the formation of solids from the chemical components contained therein.

5,645,707

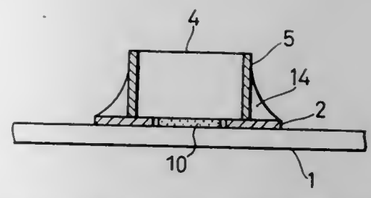
BONDING METHOD FOR CHIP-TYPE ELECTRONIC PARTS

Masatoshi Omoto, Osaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 18, 1995, Ser. No. 516,560
Claims priority, application Japan, Aug. 25, 1994, 6-200555
Int. Cl.[6] C25D *2/00*
U.S. Cl. 205—114 **11 Claims**

1. A bonding method for electrically connecting an electronic part comprising a semiconductor chip to a metal wiring pattern formed so as to be exposed to a surface of a wiring substrate comprising:

(a) prefixing the electronic part on an element-mounting section of the wiring substrate by using a non-conductive adhesive



agent such that an external metal electrode of the electronic part is placed on the metal wiring pattern formed on said wiring substrate, and the external metal electrode is brought in close proximity to, or in contact with, the metal wiring pattern on the wiring substrate without having any member between the external metal electrode and the metal wiring pattern; and

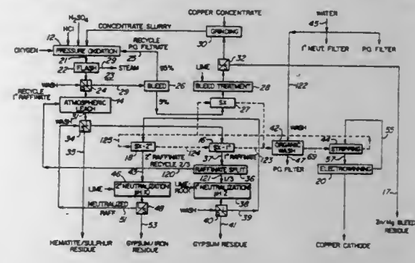
(b) carrying out an electroplating process on the wiring substrate and the electronic part that has been prefixed thereon while they are immersed in a plating liquid containing a metal component with the metal wiring pattern being connected to one of the electrodes of an electroplating device, so that the metal component, which is specifically deposited only on the metal wiring pattern, grows to form a metal layer in such a manner that the external metal electrode and the metal wiring pattern are connected to each other through only the metal layer, whereby the external metal electrode and the metal wiring pattern are stably connected electrically and mechanically through only the metal layer formed by an electroplating process.

5,645,708

CHLORIDE ASSISTED HYDROMETALLURGICAL COPPER EXTRACTION

David L. Jones, Delta, Canada, assignor to Cominco Engineering Services Ltd., Vancouver, Canada

Continuation-in-part of Ser. No. 98,874, Jul. 29, 1993, Pat. No. 5,431,788. This application Apr. 21, 1995, Ser. No. 425,117
Claims priority, application WIPO, Dec. 20, 1994, PCT/CA94/00696
Int. Cl.[6] B01D *61/44*
U.S. Cl. 205—580 **51 Claims**



1. A process for the extraction of copper from a sulphide copper ore or concentrate, comprising the steps of:

subjecting the ore or concentrate to pressure oxidation in the presence of oxygen and an acidic chloride solution to obtain a resulting pressure oxidation filtrate and an insoluble basic copper sulphate salt, characterized in that the pressure oxidation is conducted in the presence of a source of bisulphate or sulphate ions which is selected from the group consisting of sulphuric acid and a metal sulphate which hydrolyzes in the acidic solution and wherein the amount of the source of bisulphate or sulphate ions which is added contains at least the stoichiometric amount of sulphate or bisulphate ions required to produce the basic copper sulphate salt less the amount of sulphate generated in situ in the pressure oxidation.

5,645,709

METHODS AND APPARATUS FOR ELECTROCHEMICAL MEASUREMENTS

Brian Jeffrey Birch, Chelveston; Nicholas Andrew Morris, Kempston, both of England, and Vincent Bonnafoux, Meyreuil, France, assignors to Van den Bergh Foods Co., Division of Conopco, Inc., Ill.

Filed Dec. 7, 1994, Ser. No. 350,862

Claims priority, application United Kingdom, Dec. 8, 1993, 9325189

Int. Cl.[6] G01N *27/26*

U.S. Cl. 205—775 **17 Claims**

1. A non-enzymic method of selectively determining the content of reducing sugars only in an aqueous solution, comprising forming a thin layer having a thickness of less than about 1 mm of a solution to be tested in an alkaline environment containing a soluble redox mediator and in the absence of enzymes catalyzing reactions of reducing sugars;

determining electrochemically the amount of reduction product of the redox mediator; and

determining from the amount of reduction product the content of reducing sugars in the aqueous solution.

5,645,710

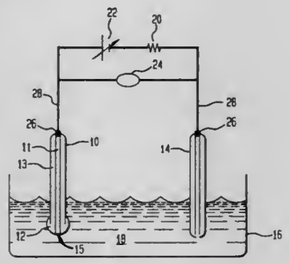
GLUCOSE SENSOR AND ASSAY METHOD

Paul Shieh, Fremont, Calif., assignor to Biomedix, Inc., Fremont, Calif.

Division of Ser. No. 319,618, Oct. 7, 1994, Pat. No. 5,522,977. This application Mar. 18, 1996, Ser. No. 617,278

Int. Cl.[6] G02N *27/26;* **C12Q** *1/54;1/28*

U.S. Cl. 205—778 **1 Claim**



1. A method for the assay of glucose in aqueous media comprising:

a) forming an electrolytic cell by bringing a redox electrode and a reference electrode into simultaneous contact with an aqueous medium containing KCl, phosphate buffer mixture, glucose oxidase, peroxidase, and 3,3',5,5'-tetramethylbenzidine dihydrochloride, said redox electrode comprising;

an electrically conductive member,

a redox membrane in direct contact with said electrically conductive member, said redox membrane comprising;

a polymer matrix, said polymer matrix containing;

a plasticizer, and

a complex of 7,7,8,8-tetracyanoquinodimethane and tetrathiafulvalene wherein the complex comprises a complex having an ultraviolet absorption spectrum with broad absorption from about 340 nanometers to about 550 nanometers.

said redox membrane having an electrical potential; and

b) monitoring the electrical potential of said redox membrane until it is stable; and

c) adding a sample containing glucose to said aqueous medium; and

d) observing a change of the electrical potential of said redox membrane.

5,645,711

PROCESS FOR UPGRADING THE FLASH ZONE GAS OIL STREAM FROM A DELAYED COKER

Thomas L. Hraban; Paul E. Seyler, both of Ponca City, Okla., and Todd W. Dixon, Lake Charles, La., assignors to Conoco Inc., Ponca City, Okla.

Filed Jan. 5, 1996, Ser. No. 583,576

Int. Cl.[6] C10G *9/14*

U.S. Cl. 208—131 **8 Claims**

1. In a delayed coking process in which overhead vapors from a coking drum are fed to a coker fractionator where said vapors are separated into an overhead vapor stream, intermediate liquid streams, and a flash zone gas oil stream containing a substantial amount of particulate solid material, the improvement comprising:

(a) subjecting said flash zone gas oil stream to a filtration step to reduce the amount of particulate solid material therein; and

(b) passing the filtered flash zone gas oil stream from step (a) to a fixed bed catalytic hydroprocessing unit.

5,645,712

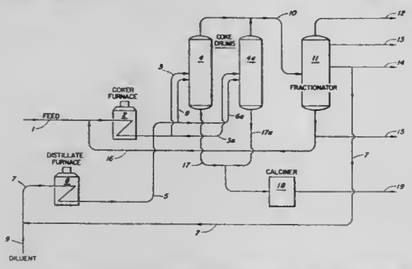
METHOD FOR INCREASING YIELD OF LIQUID PRODUCTS IN A DELAYED COKING PROCESS

Jim R. Roth, Ponca City, Okla., assignor to Conoco Inc., Ponca City, Okla.

Filed Mar. 20, 1996, Ser. No. 618,876

Int. Cl.[6] C10G *9/14*

U.S. Cl. 208—131 **14 Claims**



1. In a delayed coking process in which a liquid coking feedstock is heated to an elevated temperature and is charged to a coking drum under delayed coking conditions wherein such liquid feedstock soaks in its contained heat which is sufficient to convert the feedstock to cracked vapors, which cracked vapors upon cooling are condensed to liquid products, and coke, the improvement which comprises introducing to the coking drum a non-coking hydrocarbon diluent heated separately from the coker feedstock and which has a heat content which is sufficient to increase the temperature level of the liquid feedstock in the coking drum, whereby liquid products from the coking process are increased and coke product is decreased.

5,645,713

THREE PHASE REMOVAL OF HALIDES FROM LIQUID HYDROCARBONS

Tsoung Y. Yan, Wayne, Pa., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed Dec. 30, 1994, Ser. No. 367,411

Int. Cl.[6] C10G *7/00;19/00;35/085*

U.S. Cl. 208—308 **15 Claims**

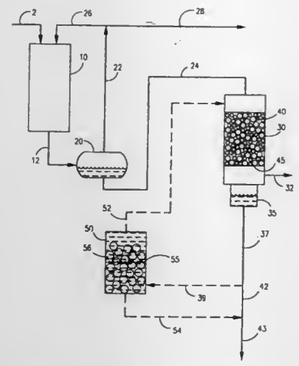
1. A process for producing a low halide reformate using a Pt and halide containing reforming catalyst comprising:

a. hydrotreating and distilling a naphtha fraction to produce a hydrotreated naphtha containing less than 1 wt ppm acidic halide compounds and less than 50 wt ppm water;

b. catalytically reforming said hydrotreated naphtha over a halide and Pt containing reforming catalyst at catalytic reforming conditions to produce a reformate liquid fraction containing at least 0.1 wt ppm acidic halide compounds and less than 10 wt ppm water;

c. adding additional water to the reformate so that the weight ratio of halide to (native +added) water is within the range of 1:1 to 50:1 and

d. reactively extracting said liquid reformate acidic halide compounds by contact with particles consisting essentially of solid caustic having at least 10% interstitial volume at reactive extraction conditions sufficient to remove at least a majority of said acidic halide compounds and produce a dehalided reformate which is removed from contact with said solid caustic as a product of the process.



5,645,714

OIL SAND EXTRACTION PROCESS

William L. Strand, Edmonton, and Anthony F. Banks, Saskatoon, both of Canada, assignors to Bitman Resources Inc., Calgary, Canada

Filed May 3, 1995, Ser. No. 434,065

Claims priority, application Canada, May 6, 1994, 2123076

Int. Cl.[6] C10G *1/04*

U.S. Cl. 208—391 **39 Claims**

1. A method for processing lumps of oil sand containing bitumen to produce a bitumen froth and nonsegregating tailings of a solid material and a sludge, comprising:

(a) depositing the lumps into a bath of warm water at a temperature of between about 40° Celsius and about 75° Celsius;

(b) conditioning the lumps of oil sand in the absence of added caustic by gently rolling the lumps in the bath to contact the lumps with the warm water to liberate and separate bitumen from the oil sand while minimizing the dispersal into the bath of fine material contained in the oil sand;

(c) removing from the bath and collecting for further processing the solid material remaining after the liberation and separation of the bitumen from the oil sand;

(d) removing from the bath and collecting for further processing the warm water containing bitumen and dispersed fine material;

(e) separating the warm water containing bitumen and dispersed fine material into the bitumen froth and a suspension of dispersed fine material;

(f) dewatering the suspension of dispersed fine material to produce the sludge; and

(g) combining the solid material and the sludge to produce the tailings.

5,645,715

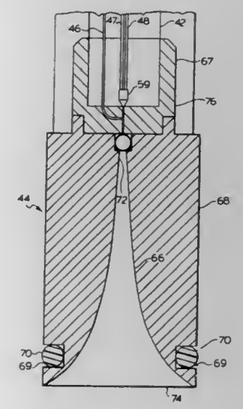
COLLECTION TIP FOR FRACTIONATING SOLUTION GRADIENTS

David H. Coombs, Fredericton, Canada, assignor to Biocomp Instruments Inc., Fredericton, Canada

Filed May 2, 1995, Ser. No. 433,849

Int. Cl.[6] B01D *17/12*

U.S. Cl. 210—94 **7 Claims**



4. A fractionation apparatus for the fractionation of a density gradient of liquids comprising:

a gradient holder having a centrifuge tube hole configured for receiving a centrifuge tube containing a density gradient of liquids having individual bands;

a black, rigid displaceable piston operably mounted relative to the gradient holder for inserting the piston into the centrifuge tube;

a collection means connected to the displaceable piston for collecting the density gradient;

a rinsing means connected to the displaceable piston for rinsing the collection means;

an air pressure means for injecting air into the collection means using contents thereof out of the collection means;

an actuator means connected to the displaceable piston for incrementally and accurately moving the displaceable piston into and out of the centrifuge tube; and

an illuminating means for illuminating the density gradient to determine the exact position of each individual band; said displaceable piston having a collection tip which has a seal to prevent liquids from escaping by the piston as said displaceable piston is displaced within the centrifuge tube and which has an axially extending passageway for pushing liquids from within the centrifuge tube to the collection means as said displaceable piston is inserted into said tube, the improvement comprising said passageway being generally elongate and having a wide end and a narrow end, said passageway narrowing smoothly and convexly from said wide end to said narrow end for enhancing laminar flow therethrough, said wide end for presenting to said liquids and said narrow end for connecting to said collector.

5,645,716

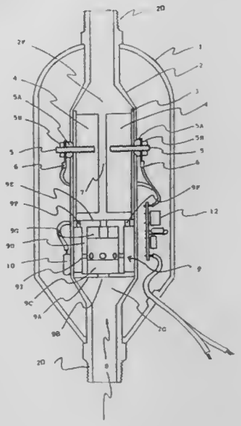
ELECTROPURIFIER AND SOFTENER SYSTEM OF CONTINUOUS FLOW FOR WATER AND LIQUIDS FOR HUMAN, AGRICULTURAL AND INDUSTRIAL CONSUMPTION

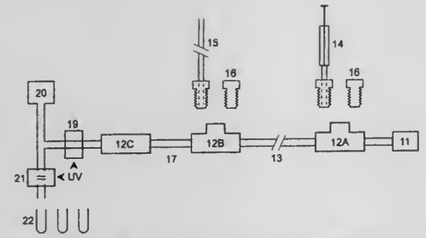
Jose Antonio Izaguirre-Martinez, Manzanillo #410 Int. 9 Col. Granjas San Isidro 27100, Torreon, Coah., and Juan Pablo Izaguirre-Franco, Zacatecas #104 Col. Las Rosas, 35090, Gomez Palacio, Durango, both of Mexico

Filed Dec. 14, 1995, Ser. No. 572,111

Int. Cl.[6] C02F *1/48*

U.S. Cl. 210—97 **5 Claims**





1. A liquid purifying and softening system comprising in combination:

a protective plastic cover internally containing a liquid flow passageway through a non ferromagnetic metallic body; and

a purifying and softening system contained within said metallic body further including

a pair of graphitized coal electrodes for creating an electric field,

an electrical system for carrying electricity to said electrodes, and

a magnetic switching system for energizing said electrical system only in the presence of liquid flow through said metallic body.

5,645,717

HYDROPHOBIC POLYMERS FROM WATER-SOLUBLE MONOMERS AND THEIR USE AS CHROMATOGRAPHY MEDIA

Stellan Hjertén, and Jia-Li Liao, both of Uppsala, Sweden, assignors to Bio-Rad Laboratories, Inc., Hercules, Calif.

Continuation of Ser. No. 123,366, Sep. 17, 1993, abandoned, which is a continuation-in-part of Ser. No. 860,613, Mar. 30, 1992, abandoned, which is a continuation of Ser. No. 518,347, May 3, 1992, which is a continuation-in-part of Ser. No. 297,501, Jan. 13, 1989, abandoned. This application Mar. 2, 1995, Ser. No. 400,419

Int. Cl.[6] B01D *15/08*

U.S. Cl. 210—198.2 **18 Claims**

16. A non-water-soluble chromatographic medium comprised of a crosslinked polymer formed by polymerization of acrylamide monomer and N,N'-methylenebisacrylamide crosslinking agent in an aqueous solution, in concentrations such that the sum of the weight percents of acrylamide monomer and N,N'-methylenebisacrylamide are from about 2% to about 4%, and the mole fraction of said N,N'-methylenebisacrylamide crosslinking agent relative to the sum of said acrylamide monomer and said N,N'-methylenebisacrylamide crosslinking agent is from about 0.4 to about 0.6.

5,645,718

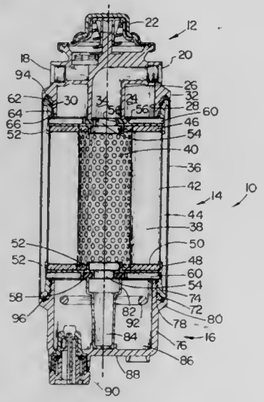
REVERSIBLE FILTER ELEMENT

Steven D. Hardison, and Walter H. Stone, both of Modesto, Calif., assignors to Parker Hannifin Corporation, Cleveland, Ohio

Division of Ser. No. 888,688, May 22, 1992, Pat. No. 5,362,389, which is a continuation-in-part of Ser. No. 683,096, Apr. 10, 1991, Pat. No. 5,244,571, which is a continuation of Ser. No. 586,827, Sep. 24, 1990, abandoned, which is a division of Ser. No. 370,097, Jun. 20, 1989, Pat. No. 4,997,555, which is a continuation of Ser. No. 242,791, Sep. 9, 1988, abandoned, which is a continuation of Ser. No. 32,834, Mar. 30, 1987, abandoned, which is a continuation-in-part of Ser. No. 784,292, Oct. 7, 1985, Pat. No. 4,692,245, which is a continuation-in-part of Ser. No. 733,808, May 14, 1985, Pat. No. 4,668,393. This application Aug. 26, 1994, Ser. No. 296,568

Int. Cl.[6] B01D *27/08*

U.S. Cl. 210—232 **37 Claims**



1. A fuel filter element comprising:

a housing;

an annular filter medium separating a central fuel chamber from a peripheral fuel chamber within said housing;

a first ring shaped member;

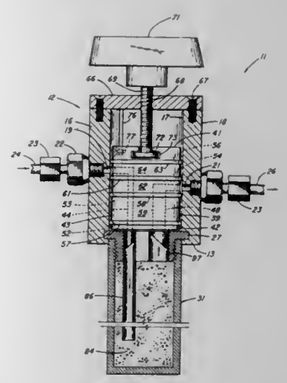
a second ring shaped member;

said housing having a lower turned in edge portion in supporting relation with said first ring shaped member and said filter medium;

said housing further having an upper turned in edge portion, said second ring shaped member positioned intermediate of said upper turned in edge portion and said filter medium;

said first ring shaped member having a first annular threaded portion whereby a collection bowl may be removably attached to said filter element, and wherein said filter element further includes a third flow passage not extending through said filter medium enabling contaminants to pass from said peripheral chamber downwardly and interiorly of said first threaded portion of said first ring shaped member, whereby contaminants may be collected within said collection bowl when attached; and

said second ring shaped member having a second annularly threaded portion whereby said element may be removably attached to a filter head, said element further including a second flow passage not extending through said filter medium enabling fuel to pass downwardly and interiorly of said second annularly threaded portion of said second ring shaped member to said peripheral chamber, and a first flow passage enabling fuel to flow upwardly from said central fuel chamber, whereby fuel is enabled to pass from said element to said head when attached.



5,645,719

FILTER CLAMPING DEVICE FOR WATER PURIFIERS

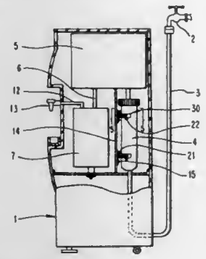
Dong-Kyu Ha, Suwon, and Duk-Hee Lee, Inchon, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jul. 29, 1996, Ser. No. 688,028

Claims priority, application Rep. of Korea, Jul. 29, 1995, 95-23145

Int. Cl.[6] B01D *21/08;27/14*

U.S. Cl. 210—232 **5 Claims**



1. A water purifier comprising:

a casing;

a bracket disposed inside the casing and mounted to a vertical wall, the bracket including a plurality of snap rings each having an open mouth; and

a plurality of filters elastically clamped within respective ones of the snap rings, each filter including upper and lower abutments, the upper abutment being engageable with a top surface of a respective snap ring, and the lower abutment engageable with a bottom surface of the respective snap ring, the upper and lower abutments preventing vertical movement of the filter relative to the bracket.

5,645,720

MOUNTING HEAD WITH BY-PASS VALVE FOR USE WITH CARTRIDGE FILTERS

David L. Godines, Orangevale, Calif., assignor to R & D Separations, Inc., Rancho Cordova, Calif.

Filed Mar. 2, 1995, Ser. No. 398,625

Int. Cl.[6] B01D *27/10*

U.S. Cl. 210—282 **15 Claims**

1. A filter apparatus comprising:

a. a cylinder having an upper end and an open lower end and a wall therebetween;

b. a piston movable in said cylinder, said piston having a top portion, a bottom portion, and a peripheral sidewall therebetween, said piston further having an inlet passageway leading from a first side of said sidewall to said bottom portion thereof, and an outlet passageway leading from a second side of said sidewall to said bottom portion thereof;

c. an inlet port on one side of said cylinder;

d. an outlet port on another side of said cylinder;

e. a filter cartridge having an inflow aperture and an outflow aperture on one end, thereof;

f. means for detachably coupling said one end of said filter cartridge to said, lower end of said cylinder;

g. means defining a bypass passageway between adjacent portions of said cylinder wall and said piston sidewall;

h. means for selectively translating said piston from a first position, in which said inlet passageway interconnects said inlet port and said inflow aperture of said filter cartridge, and in which said outlet passageway interconnects said outflow aperture of said filter cartridge with said outlet port, to a second position, in which said bypass passageway means interconnects said inlet port directly with said outlet port, and in which said inlet and outlet passageways are disengaged from said filter cartridge.

5,645,721

FILTER FOR LAUNDRY SYSTEM HAVING TORIDAL SHARED FILTER ELEMENTS

John D. Carroll, Jr., Charlton, Mass., assignor to Hydrokinetics, Inc., Auburn, Mass.

Division of Ser. No. 216,818, Mar. 23, 1994, Pat. No. 5,501,792. This application Sep. 20, 1995, Ser. No. 530,990

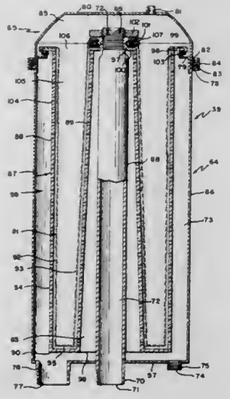
Int. Cl.[6] B01D *36/02*

U.S. Cl. 210—315 **4 Claims**

1. A filter apparatus for filtering solids from a liquid which contains solids in suspension, said filter apparatus comprising:

(a) a housing having a first end, a second end, an annular inner wall and an annular outer wall which is spaced from and surrounds said inner wall, said housing having an inner chamber within said inner wall which extends from said first end to said second end, an annular outer chamber which surrounds said inner chamber and is separated from said annular inner chamber by said inner wall, said housing having an end chamber at the first end of said housing which is fluidly connected to each of said inner and outer chambers, said housing having a first outer opening to said inner chamber end and a second outer opening to said outer chamber;

(b) a rigid generally toroidal shaped perforated basket which is located within said outer chamber, said basket being positioned within said outer chamber and spaced from said inner and outer walls, said basket having an annular space, an



annular opening to said annular space at one end of said basket, said annular opening being connected to said end chamber, said annular space being closed at the opposite end of said basket from said one end; and

(c) a generally toroidal shaped porous filter bag which is located within the annular space of said basket, said filter bag having an annular outer wall, an annular inner wall, the annular outer and inner walls of said filter element defining an annular inner space, said inner space being closed adjacent the closed end of said basket, one end of said filter bag having an annular opening to said inner space which is coextensive with the annular opening of said basket, said one end of said filter being fixedly connected to the open end of said basket so that the end chamber of said housing is connected to the annular inner space of said filter bag, said first outer opening being an inlet opening for receiving the liquid to be filtered and said second outer opening being an outlet opening for exit of said liquid from said housing for enabling said to liquid pass from said inner chamber into the annular inner space of said filter bag through said filter bag into said outer chamber and to said outlet opening.

5,645,722

Patent Not Issued For This Number

5,645,723

PROCESS AND APPARATUS FOR THE EXTRACTION AND PURIFICATION OF DNA

Masatoshi Fujishiro; Akio Togashi; Youichiro Tani, and Takamaro Ishii, all of Tokyo, Japan, assignors to Tomy Seiko Co., Ltd., Tokyo, Japan

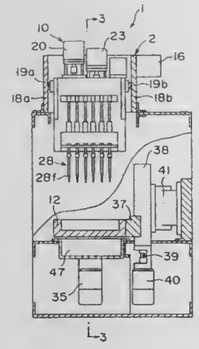
Filed Jan. 4, 1996, Ser. No. 582,700
Claims priority, application Japan, Aug. 4, 1995, 7-199391
Int. Cl.[6] B01D *63/00*
U.S. Cl. 210—321.75 **9 Claims**

1. Apparatus for the extraction and purification of DNA, comprising:

a first tube rack having disposed therein at least one first filter tube for the extraction and purification of DNA;

a second tube rack having disposed therein at least one second filter tube for the extraction and purification of DNA;

a vacuum device for applying suction to the filters included in said first and second filter tubes;



a first transfer device for moving said first tube rack vertically;

a second transfer device for moving said second tube rack vertically;

a third transfer device for moving at least one of said first and second tube racks horizontally; and

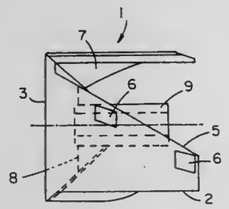
control means for controlling said first, second, and third transfer devices and said vacuum device.

5,645,724

ROTOR-EQUIPPED CYLINDRICAL SCREENS

Jean Pierre Lamort, St. Amand Sur Fion, France, assignor to E & M Lamort, Vitry le Francois, France

Filed Aug. 9, 1995, Ser. No. 513,043
Claims priority, application France, Aug. 10, 1994, 94 09886
Int. Cl.[6] B07B *1/20;* **B01D** *29/64;29/62*
U.S. Cl. 210—415 **6 Claims**



1. Cylindrical screen within which rotates a rotor fitted with means generating pressure variations and/or turbulence,

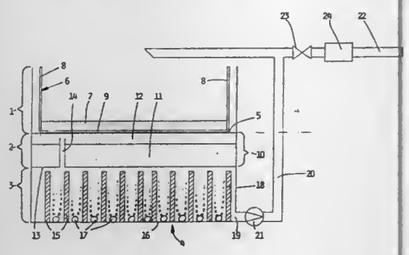
wherein said rotor (**1**) consists of one or more cylindrical surface segments (**2**) which when geometrically developed are right triangles of which the two perpendicular sides (**3**, **4**) respectively corresponding to the cylinder base made of one or more of the first one of said tow perpendicular sides (**3**) and to the height of the cylindrical triangle made of the height of the second one of said two perpendicular sides (**4**) and of which the oblique side (**5**) of each cylindrical triangle constitutes the hypothenuse.

5,645,725

PROCESS AND DEVICE FOR THE BIOLOGICAL TREATMENT OF ORGANICALLY POLLUTED WASTE WATER AND ORGANIC WASTE

Dorit Zitzelsberger, Weiden; Gerd Ahne, Merseburg; Josef Winter, Karlsruhe, and Karl Bleicher, Duggendorf, all of Germany, assignors to Protec Partner Fuer Umwelttechnik GmbH, Weiden, Germany

PCT No. PCT/DE93/00713, § 371 Date Feb. 8, 1995, § 102(e) Date Feb. 8, 1995, PCT Pub. No. WO94/03402, PCT Pub. Date Feb. 17, 1994
PCT Filed Aug. 9, 1993, Ser. No. 379,676
Claims priority, application Germany, Aug. 10, 1992, 42 26 416.2; Mar. 12, 1993, 43 08 408.7
Int. Cl.[6] C02F *3/30;3/12;3/10*
U.S. Cl. 210—605 **36 Claims**



1. A process for biologically treating an organic waste mixture containing organically polluted waste water and solid components, the process comprising the steps of:

exposing the organic waste mixture to a first decomposition stage, the step of exposing including the steps of:

separating the solid components and the waste water from one another; and

decomposing the solid components under predominantly aerobic conditions;

passing the waste water from the first decomposition stage to a second decomposition stage;

decomposing the waste water at the second decomposition stage under anoxic conditions;

passing the waste water from the second decomposition stage to a third decomposition stage;

decomposing the waste water at the third decomposition stage under aerobic conditions thereby creating recirculation water;

returning at least a portion of the recirculation water from the third decomposition stage to the first decomposition stage for continuously recirculating water through and between respective ones of the first decomposition stage, the second decomposition stage and the third decomposition stage.

5,645,726

TREATMENT OF WASTE LIQUOR IN A VERTICAL SHAFT BIOREACTOR

David C. Pollock, Calgary, Canada, assignor to Deep Shaft Technology Inc., Galgary, Canada

Filed Mar. 14, 1996, Ser. No. 615,436
Int. Cl.[6] C02F *3/20*
U.S. Cl. 210—626 **17 Claims**

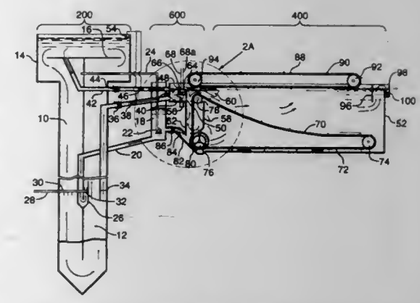
1. A process for effecting heterogeneous bubble nucleation in a waste mixed liquor of a bioreactor treatment system having:

a) a deep vertical bioreactor having an upper zone and a lower zone;

b) a solids flotation/separation vessel;

c) a source of first mixed liquor from said lower zone of said bioreactor; and

d) a source of second mixed liquor from said upper zone of said bioreactor; said process comprising admixing said first liquor with said second liquor to effect said nucleation to provide an admixed substantially denucleated effluent liquor.

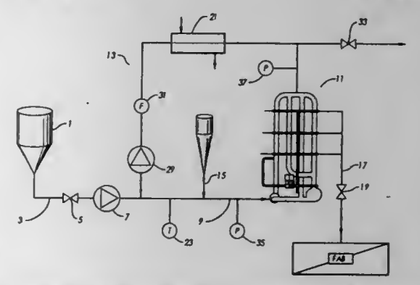


5,645,727

ON-LINE OZONATION IN ULTRA PURE WATER MEMBRANE FILTRATION

Ramesh R. Bhave, Cranberry Township, and James L. Filson, Wexford, both of Pa., assignors to Illinois Water Treatment, Inc., Warrendale, Pa.

Continuation-in-part of Ser. No. 239,218, May 6, 1994, Pat. No. 5,518,624. This application May 16, 1996, Ser. No. 648,919
Int. Cl.[6] B01D *61/00*
U.S. Cl. 210—651 **20 Claims**



1. A process for separating particle contaminants from ultra pure water in a feed solution containing ultra pure water and particle contaminants comprising:

(a) passing a feed of corrosive, high purity water by cross-flow filtration through a sintered monolithic metal oxide membrane on ceramic support to form a permeate of ultra pure water; and

(b) passing on-line ozone as part of said feed cross-flow through said metal oxide membrane on ceramic support.

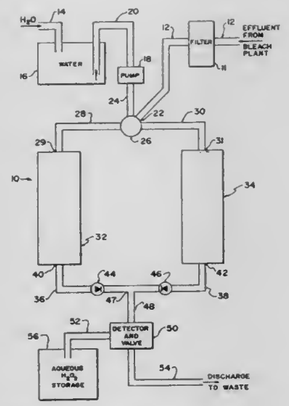
5,645,728

HYDROGEN PEROXIDE RECOVERY FROM COLORED AQUEOUS SOLUTIONS

Martin Blake Hocking, Victoria, and David John Herbert, Vancouver, both of Canada, assignors to University of Victoria Innovation and Development Corporation, Victoria, Canada

Filed May 1, 1995, Ser. No. 432,254
Int. Cl.[6] B01D *15/08*
U.S. Cl. 210—656 **14 Claims**

1. A method of separating coloured constituents from hydrogen peroxide in a coloured aqueous hydrogen peroxide solution, said



solution containing coloured constituents having a higher molecular weight relative to that of hydrogen peroxide, comprising the steps of:

(a) introducing a batch of said coloured aqueous hydrogen peroxide solution into a mass of size exclusion medium comprising a plurality of pores through each particle, said pores being sufficiently large to permit hydrogen peroxide to pass through the pores and said pores being sufficiently small to substantially prevent entry or passage of said coloured constituents through the pores thereby causing said coloured constituents to pass through the medium more rapidly than the hydrogen peroxide;

(b) introducing a flow of liquid into said medium to elute said solution through said medium.

5,645,729

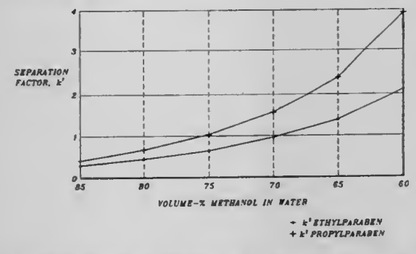
SEPARATIONS BY SIMULATED MOVING BED CHROMATOGRAPHY OPERATING AT LOW K' VALUES USING WEAKLY INTERACTING ADSORBENTS AS THE STATIONARY PHASE

James W. Priegnitz, Elgin, and Beth Mc Culloch, Clarendon Hills, both of Ill., assignors to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 387,984, Feb. 13, 1995, Pat. No. 5,518,625. This application Dec. 15, 1995, Ser. No. 572,911

Int. Cl.[6] B01D *15/08*

U.S. Cl. 210—659 **3 Claims**



1. In a process for the separation of at least one material from a mixture of organic materials by simulated moving bed chromatography using a weakly interacting adsorbent as a solid stationary phase, said stationary phase having a heat of adsorption for said organic materials of no more than about 4 kcal per mole, said stationary phase selected from the group consisting of reverse phase adsorbents, carbon, and ion-exchange resins, the improvement comprising effecting said separation using a liquid mobile phase which affords a retention capacity, k', such that $0.1<k'<1.0$.

5,645,730

ACID WASTEWATER TREATEMENT

Edward Malachosky, Coppell, and Ronnie D. Gordon, Richardson, both of Tex., assignors to Envirocorp Services & Technology, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 570,231, Dec. 11, 1995, which is a continuation-in-part of Ser. No. 391,202, Feb. 21, 1995, Pat. No. 5,474,684. This application Apr. 29, 1996, Ser. No. 638,716

Int. Cl.[6] C02F *1/64*

U.S. Cl. 210—665 **13 Claims**

1. A process for treating acid wastewater containing heavy metals, the process comprising

adding an effective amount of fluidized bed fly ash to the acid wastewater to raise the pH to at least about 7,

mixing together the fluidized bed fly ash and acid wastewater to produce a solid residue containing said heavy metals and neutralized waste water, wherein hydrous gelatinous iron hydroxide precipitate is not formed, and removing said solid residue from said neutralized wastewater to reduce heavy metals content of the neutralized wastewater to at most 100 parts per million.

5,645,731

AQUEOUS SUSPENSIONS OF POLY(ETHYLENE OXIDE) USEFUL AS A FLOCCULENT

Charles Lee Burdick, Landenberg, Pa., and Elliott Echt, Wilmington, Del., assignors to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 471,936, Jun. 6, 1995, Pat. No. 5,578,168, which is a division of Ser. No. 55,653, Apr. 30, 1993, abandoned. This application Aug. 26, 1996, Ser. No. 704,027

Int. Cl.[6] B03D *3/06*

U.S. Cl. 210—728 **5 Claims**

1. A method for using an aqueous suspension of at least 15% of poly(ethylene oxide) as a flocculent in an aqueous slurry containing finely divided materials, comprising:

a) dispersing poly(ethylene oxide) in an aqueous solution of at least one salt selected from the group consisting of sodium formate, potassium formate, sodium hydroxide, potassium hydroxide, sodium citrate, potassium citrate, sodium acetate, potassium acetate, sodium chloride and mixtures thereof, to form a poly(ethylene oxide) suspension having at least 15% of poly(ethylene oxide) by total weight;

b) dissolving said dispersion in an aqueous system, and:

c) adding said dissolved aqueous system in conjunction with a solution of a coagulant or synthetic flocculents selected from the group consisting of alum, polyaluminum chloride, sodium aluminates, polyamines, polyacrylamides, copolymers of acrylamide with cationic or anionic monomers, and polyethylene imine, to the aqueous slurry containing finely divided materials;

whereby said dissolved aqueous dispersion enhances the separation of the finely divided materials from the liquid in the aqueous slurry.

5,645,732

SEPTIC SYSTEM FILTER ASSEMBLY, FILTER ARRANGEMENT AND METHOD OF USING

Byron Charles Daniels, R.D. #1 - Box 269-2, Effort, Pa. 18330

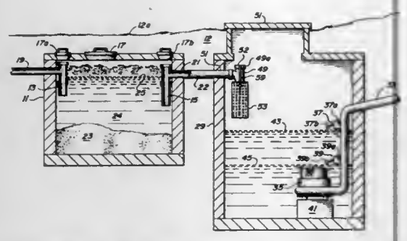
Division of Ser. No. 40,013, Mar. 30, 1993, Pat. No. 5,427,679, which is a continuation-in-part of Ser. No. 601,985, Oct. 23, 1990, Pat. No. 5,198,113. This application Jun. 27, 1995, Ser. No. 495,004

The portion of the term of this patent subsequent to Oct. 23, 2010, has been disclaimed.

Int. Cl.[6] B01D *29/23*

U.S. Cl. 210—747 **5 Claims**

1. A method of filtering septic effluent comprising:



(a) providing a substantially U-shaped filter means having an open upper portion and a closed cup-shaped lower portion with a central perforated double casing retaining a polymeric filter medium between inner and outer casing sections,

(b) positioning said U-shaped filter means in a filtering chamber in a position under an overflow discharge from a septic tank such that septic effluent falls through the open upper portion of the U-shaped filter,

(c) allowing a body of effluent to build up in the cup-shaped lower portion of the filter means to a minimum predetermined depth and maintaining such body of effluent in the lower portion whereby the force of descending effluent is cushioned and excessive drying of the filter is avoided during periods of low septic overflow, and

(d) allowing the depth of the septic effluent to increase during periods of high septic overflow and filter through the polymeric filter medium at the level of the perforations in the casing, and flow over the top of the polymeric filter medium when septic overflow is greater than the filtering capacity to prevent blockage of the filter.

5,645,733

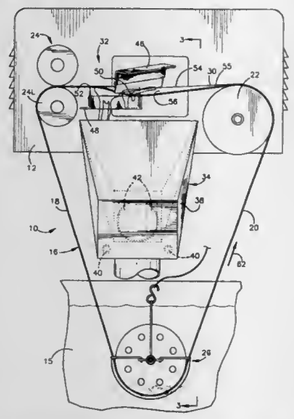
HYDROCARBON REMOVAL APPARATUS AND METHOD

Mark Thomas Hobson, Chagrin Falls, Ohio, assignor to Abanaki Corporation, Auburn, Ohio

Filed May 16, 1995, Ser. No. 442,388

Int. Cl.[6] C02F *1/40*

U.S. Cl. 210—776 **24 Claims**



11. A process of removing hydrocarbons of high viscosity from a body of water comprising:

a) suspending an endless belt from a belt drive mechanism and thereby positioning a lower portion of the belt in a body of water;

b) operating the belt drive mechanism to cause a depending reach of the belt to enter the water and collect hydrocarbons on surfaces of the belt, the collected hydrocarbons being from a floating quantity of hydrocarbons on the surface of the water;

c) continuing to operate the drive mechanism to bring an ascending reach of the belt bearing collected hydrocarbons to a wiping station;

d) at the wiping station, wiping collected hydrocarbons from the belt while skewing the belt such that one belt side edge is lower than the other to provide a draining depression to cause the hydrocarbons to flow off the belt into a collection space and collecting such wiped hydrocarbons in the collection space; and,

e) causing collected hydrocarbons to gravity flow from the space by heating collected hydrocarbons in the space to reduce the viscosity of the collected hydrocarbons while controlling the heating to avoid overheating of the collected hydrocarbons.

5,645,734

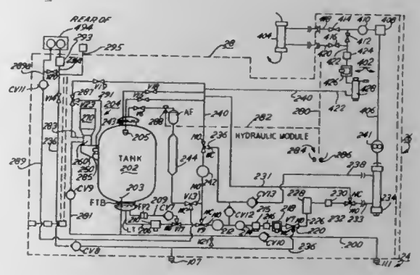
DIALYSATE SEPARATION METHOD

Rodney S. Kenley, Libertyville; Dawn Matthews, Grayslake; Dennis M. Treu, Gurnee; Frederick H. Peter, Jr., Barrington; Thomas M. Feldsein, Palatine, all of Ill., and H. Gordon Minns, Jackson, Wyo., assignors to Aksys, Ltd., Lincolnshire, Ill.

Division of Ser. No. 388,275, Feb. 13, 1995, Pat. No. 5,591,344. This application Feb. 23, 1995, Ser. No. 559,090

Int. Cl.[6] B01D *17/00;61/30*

U.S. Cl. 210—805 **7 Claims**



1. A method for maintaining separation of old and new dialysate in a batch dialysate preparation tank, comprising the steps of:

storing said new dialysate in said tank at a first temperature;

withdrawing said new dialysate from the bottom of said tank;

returning old dialysate to said tank at the top of said tank at a second temperature warmer than said first temperature in a manner so as to substantially prevent turbulence of said old dialysate during the return of said old dialysate to said tank;

the temperature differential between the first and second temperatures of dialysate and the manner of returning said old dialysate causing old and new dialysate to be maintained in substantially discrete zones with said old dialysate in a first zone above the new dialysate in a second zone with a boundary therebetween, said boundary lowering as dialysis of the patient proceeds.

5,645,735

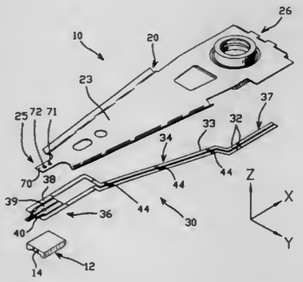
GIMBAL FLEXURE AND ELECTRICAL INTERCONNECT ASSEMBLY

Jeffry S. Bennin, Hutchinson; Todd Boucher, Stewrt, both of Minn.; Jeffrey W. Green, Sioux Falls, S. Dak.; Gary E. Gustafson, Darwin, Minn.; Ryan Jurgenson, Hutchinson, Minn., and Brent D. Lien, Minneapolis, Minn., assignors to Hutchinson Technology Incorporated, Hutchinson, Minn.

Division of Ser. No. 227,960, Apr. 15, 1994, Pat. No. 5,491,597. This application Oct. 31, 1995, Ser. No. 550,611

Int. Cl.[6] B44C *1/22*

U.S. Cl. 216—22 **9 Claims**



1. A method of manufacture for a gimbal flexure and electrical interconnect assembly for attachment to a disk drive suspension assembly which positions a floating head assembly over selected tracks on the surface of a rotating data storage device, wherein said suspension assembly includes a load beam having a first surface and a distal end portion shaped and arranged for supporting a gimbal flexure, the method of manufacture, comprising:

manufacturing a set of traces out of a single layer sheet of spring material, the set of traces including one or more elongated substrateless low-profile conductors, the set of traces having a load beam portion shaped and arranged to extend over and to match the surface topology of at least a section of the first surface of the load beam, and a gimbal portion located at a distal end of the set of traces shaped and arranged as a gimbal flexure means for mechanically coupling with the distal end portion of the load beam, providing gimballing support for the floating head assembly, and electrically coupling to electrical terminals on the head assembly;

coating at least part of the set of traces with a thin dielectric material.

5,645,736

METHOD FOR POLISHING A WAFER

Derryl D. J. Allman, Colorado Springs, Colo., assignor to Symbios Logic Inc., Fort Collins, Colo.

Filed Dec. 29, 1995, Ser. No. 580,674

Int. Cl.[6] C09G *1/00;* **B24B** *1/00*

U.S. Cl. 216—89 **21 Claims**

1. A method of polishing or planarizing a surface of a workpiece, the method comprising the steps of:

applying a polishing composition to the surface of the workpiece, the polishing composition including a polishing media particle and a film forming binder for suspending the particle and forming a temporary film on the surface of the workpiece, the temporary film being dissolvable in a subsequently applied polishing wash, whereby the polishing media particle is freed to polish the surface of the workpiece; and

polishing or planarizing the surface of the workpiece by dissolving the film forming binder, thereby gradually freeing the polishing media particles and allowing the freed particles to abrade the surface of the workpiece to an extent.

5,645,737

WET CLEAN FOR A SURFACE HAVING AN EXPOSED SILICON/SILICA INTERFACE

Karl M. Robinson, and Michael A. Walker, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Feb. 21, 1996, Ser. No. 604,427

Int. Cl.[6] B08B *3/04;* **C23G** *1/00*

U.S. Cl. 216—99 **23 Claims**



1. A method for cleaning a surface comprising:

contacting a silicon/silica interface of a surface with a hydrofluoric acid solution; and

contacting said silicon/silica interface of said surface with an organic carboxylic acid surfactant composed of citric acid having pH less than about 4.

5,645,738

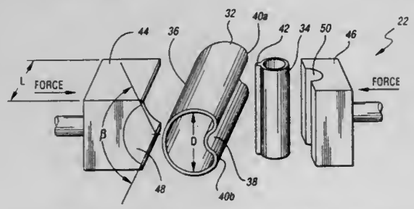
APPARATUS AND METHOD FOR RESISTANCE WELDING TUBULAR PARTS

Dimitrios G. Cecil, 1277 Ashover Dr., Bloomfield Hills, Mich. 48304

Filed Sep. 15, 1995, Ser. No. 528,716

Int. Cl.[6] B23K *11/24*

U.S. Cl. 219—110 **27 Claims**



1. A resistance projection welding apparatus for resistance welding tubular parts together, said apparatus comprising:

a weld gun having a first and a second electrode being displaceable relative to each other, said first and said second electrode respectively having a first and a second arcuate contact face, said first and said second arcuate contact face respectively engaging a first and a second tubular part at a surface opposite to a welding location on said first and said second tubular part, said first and said second electrode being movable to apply a force to said first and said second tubular part to force them together for resistance welding them at said welding location;

wherein said first and said second arcuate contact face respectively engage said first and said second tubular part over an arcuate angle and an axial length sufficiently large enough to distribute the force applied to said first and said second tubular part to limit deformation of said first and said second tubular part thereby minimizing displacement between said first and said second electrode;

a weld controller coupled to the weld gun for applying a welding power to said first and said second electrode;

a displacement sensor coupled to the weld gun for generating a displacement sensor signal responsive to displacement between said first and said second electrode; and

a test computer cooperating with the displacement sensor and the weld controller, said test computer processes the displacement sensor signal to cooperate with said weld controller to terminate the welding power when displacement between said first and said second electrode falls within a predetermined displacement range indicative of properly resistance welding said first and said second tubular part together.

5,645,739

METHOD OF MANUFACTURING A LIGHT SOURCE UNIT

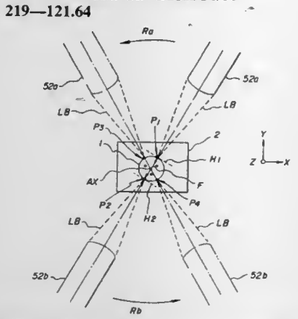
Naotarou Nakata; Naofumi Aoki, and Kazutoshi Yamazaki, all of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Continuation of Ser. No. 189,876, Feb. 1, 1994, abandoned, which is a division of Ser. No. 964,155, Oct. 21, 1992. This application Jan. 26, 1996, Ser. No. 592,524

Claims priority, application Japan, Oct. 21, 1991, 3-302279; Oct. 21, 1991, 3-302280; Nov. 5, 1991, 3-318493; Dec. 17, 1991, 3-353671; Feb. 20, 1992, 4-033026; Feb. 20, 1992, 4-033027; Mar. 31, 1992, 4-076530

Int. Cl.[6] B23K *26/00*

U.S. Cl. 219—121.64 **2 Claims**



1. A method of manufacturing a light source unit, comprising the steps of:

providing a light beam supplying means;

providing a fixing member configured to have said light beam supplying means connected thereto;

arranging said light beam supplying means at a predetermined position on said fixing member, such that said light beam supplying means can supply a light beam along an axis which is perpendicular to a surface of the fixing member;

laser welding said light beam supplying means to said fixing member, said laser welding being performed simultaneously at a first contact point and a second contact point of a periphery of said light beam supplying means and said one surface of the fixing member, said first point and said second point being on opposite sides of the periphery of the light beam supplying means.

5,645,740

SYSTEM AND ASSEMBLAGE FOR PRODUCING MICROTEXTURIZED SUBSTRATES AND IMPLANTS

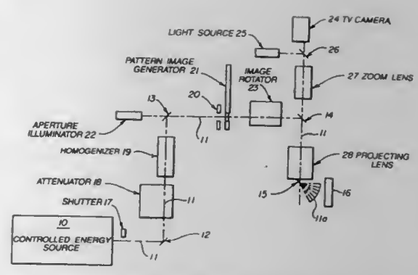
Charles S. Naiman, 160 Lancaster Ter., Brookline, Mass. 02146, and Arthur Lamson, 16 Middle St., Westnewbury, Mass. 01895

Filed Nov. 1, 1993, Ser. No. 146,718

Int. Cl.[6] B23K *26/06*

U.S. Cl. 219—121.68 **5 Claims**

1. An assemblage for producing pre-determined microgeometric texturized designs on the surface of implants and substrates comprising:



(a) an excimer laser for producing an optical laser beam;

(b) at least a first optical mirror positioned to direct said optical laser beam to an attenuator capable of controlling the excitation voltage of said excimer laser and an homogenizer capable of maximizing the usable fraction of said optical laser beam and forming said optical laser beam to have a pre-determined, geometric cross section configuration;

(c) at least a second optical mirror positioned to direct said optical laser beam from said attenuator to a mask carousel having a plurality of masks, each of which defines pre-selected line and space combinations;

(d) at least a third optical mirror positioned to direct said optical laser beam from said mask carousel to a surface of said implant or substrate; and,

(e) an aperture and aperture illuminator which, in combination, are capable of projecting a pre-selected segment of an image of said optical laser beam exiting from said mask carousel onto the surface of said implant or substrate.

5,645,741

ARC PROCESSING APPARATUS COMPRISING DRIVING MEANS FOR CONTROLLING OUTPUT TRANSISTOR SO THAT OUTPUT VOLTAGE BECOMES PREDETERMINED NO-LOAD VOLTAGE

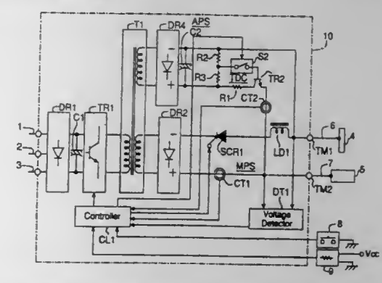
Kikuo Terayama, Kawabe-gun; Ichiro Umezawa, Kobe; Satoru Yamaguchi, Ibaraki, and Hitosige Nakamura, Osaka, all of Japan, assignors to Daihen Corporation, Osaka, Japan

Filed Dec. 26, 1995, Ser. No. 578,458

Claims priority, application Japan, Dec. 28, 1994, 6-338656

Int. Cl.[6] B23K *9/067*

U.S. Cl. 219—130.4 **12 Claims**



1. An arc processing apparatus for supplying an electric power for an arc process through output terminals to a load containing an electrode and a workpiece to be processed, comprising:

a main power source for supplying an electric power for arc process through said output terminals to said load;

an auxiliary power source for supplying another electric power through said output terminals to said load, said auxiliary power source having a no-load voltage higher than that of said main power source and an electric power capacity smaller than that of said main power source;

first output switching means for turning on or off supply of the electric power from said main power source;

second output switching means for turning on or off supply of the electric power from said auxiliary power source;

arc detecting means for detecting generation of an arc by detecting whether or not a voltage between said output terminals is lower than a predetermined threshold voltage, and outputting an arc detection signal;

control means for turning on said second output switching means so as to short-circuit said electrode with said workpiece and to perform an arc activation, and thereafter, in response to the arc detection signal, for turning on said first output switching means;

output control transistor electrically connected in series between said auxiliary power source and said output terminals; and

driving means for controlling said output control transistor so that an output voltage from said output terminals becomes a predetermined no-load voltage in a range of an output current flowing in said output terminals from zero to a predetermined threshold current.

5,645,742

GLOW PLUG WITH ZIRCONIUM DIOXIDE COATING AND NICRALY ADHESIVE LAYER

Gabriele Schmidt; Karl-Heinz Schmidt, both of Ludwigsburg, and Hans Delesky, Sachsenheim, all of Germany, assignors to Beru Ruprecht GmbH & Co. KG, Ludwigsburg, Germany

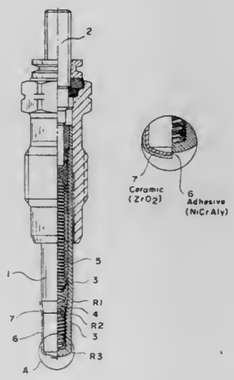
PCT No. PCT/EP94/03367, § 371 Date Jun. 12, 1995, § 102(e) Date Jun. 12, 1995, PCT Pub. No. WO95/10736, PCT Pub. Date Apr. 20, 1995

PCT Filed Oct. 12, 1994, Ser. No. 448,344

Claims priority, application Germany, Dec. 10, 1993, 43 34 771.1

Int. Cl.[6] F23Q *7/00*

U.S. Cl. 219—270 **7 Claims**



1. Glow plug with a heating rod comprised of an inner pole and a glow tube in which there is a heating element which is electrically connected to the inner pole, the glow plug, at least in a tip area thereof, being provided with a coating of ceramic material, wherein an adhesive layer of Ni Cr Al Y is formed on the glow tube and the coating of ceramic material is formed of a cover layer of yttrium-stabilized zirconium dioxide provided on adhesive layer.

5,645,743

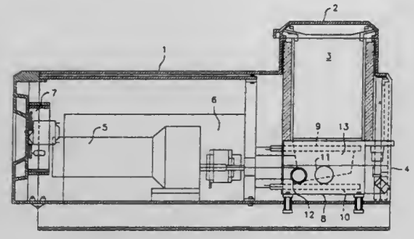
MULTIPLE HEAT SOURCE GRID ASSEMBLY

Jon C. Zook, Hendersonville, Tenn., assignor to Illinois Tool Works Inc., Glenview, Ill.

Filed May 18, 1995, Ser. No. 441,471

Int. Cl.[6] F27B *14/00*

U.S. Cl. 219—422 **7 Claims**



1. An apparatus for melting solid and quasi-solid material, comprising:

a melter body, the melter body having a plurality of material melt spaces;

heating fins disposed adjacent and between the melt spaces;

the heating fins having a base region and a tip region;

at least one lower heating element disposed in the melter body adjacent the fin base region;

at least one upper heating element disposed in the fins adjacent the fin tip region;

the upper and lower heating elements being disposed in a serpentine shape in the fins and the base region, the heating elements running the entire longitudinal length of each fin;

wherein heat energy added through the heating elements results in a relatively narrow temperature range over heating surfaces presented to the material before, during, and after melting.

5,645,744

RETORT FOR ACHIEVING THERMAL UNIFORMITY IN INDUCTION PROCESSING OF ORGANIC MATRIX COMPOSITES OR METALS

Marc R. Matsen, Seattle, Wash., and Karl A. Hansen, deceased, late of Seattle, Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 341,779, Nov. 18, 1994, which is a continuation-in-part of Ser. No. 169,655, Dec. 16, 1993, Pat. No. 5,530,227, which is a continuation-in-part of Ser. No. 777,739, Oct. 15, 1991, Pat. No. 5,410,132, said Ser. No. 341,779is a continuation-in-part of Ser. No. 92,050, Jul. 15, 1993, Pat. No. 5,410,133, which is a division of Ser. No. 681,004, Apr. 5, 1991, Pat. No. 5,229,562, which is a continuation-in-part of Ser. No. 151,433, Nov. 12, 1993, Pat. No. 5,420,400. This application Jun. 6, 1995, Ser. No. 469,984

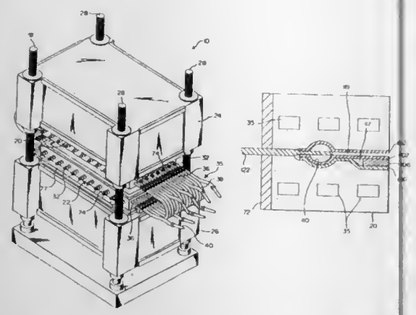
Int. Cl.[6] H05B *6/10*

U.S. Cl. 219—634 **1 Claim**

1. A retort for induction processing of a workpiece, comprising:

(a) at least two metal sheets surrounding the workpiece; and

(b) means for temporarily sealing the metal sheets around the workpiece, wherein the metal sheets are susceptible to heating by induction and have a Curie temperature so that the sheet



becomes nonmagnetic and thereby has a lower susceptability to induction at a temperature greater than or equal to the Curie temperature.

5,645,745

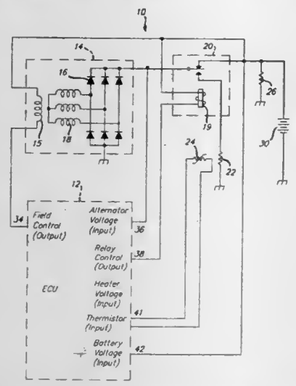
CIRCUIT AND CONTROL METHOD FOR ELECTRICALLY HEATING A CATALYST

Larry R. Hartwick, Rochester Hills; Anson Lee, St. Clair; Jan S. Pyko, Bloomfield Township, and Bruce H. Teague, Grosse Pointe Park, all of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed Sep. 2, 1994, Ser. No. 299,985

Int. Cl.[6] H05B *1/02*

U.S. Cl. 219—497 **18 Claims**



9. In an exhaust system of a engine including a power source and a plurality of vehicle loads, an apparatus for electrically heating a catalyst, the apparatus comprising:

a multi-phase alternator electrically coupled to the power source, the multi-phase alternator rectifying AC to DC by a diode rectifier bridge internal to the multi-phase alternator;

similar means for switching DC from the diode rectifier bridge of the multi-phase alternator to an electrically heated catalyst and cutting off DC supplied to the power source from the multi-phase alternator, the switching means electrically coupled to the multi-phase alternator;

an electrically heated catalytic converter for receiving DC supplied by the multi-phase alternator electrically coupled to the singular switching means, the catalytic converter including a catalyst for purifying exhaust gases of the engine and a heating element for bringing the catalytic converter expediently within peak operating temperature;

an Electronic Control Unit (ECU), the ECU including a microprocessor, memory capabilities, and at least one bus line for energizing and de-energizing the singular switching means, the ECU electrically coupled to the singular switching means;

a temperature sensor in close proximity to the catalytic converter heating element for reading a temperature of the heating element and having outputs, the temperature sensor outputs in communication with the ECU and for imparting an electrical signal representation of the catalyst temperature to the ECU; and

whereby the multi-phase alternator alternatively supplies DC to the power source and the catalyst heating element of the catalytic converter via the singular switching means.

5,645,746

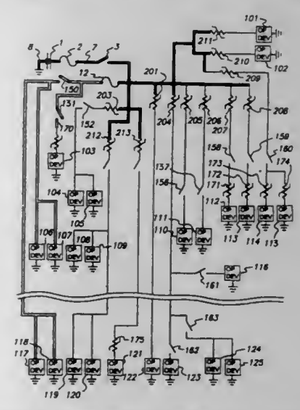
USE OF PTC DEVICES

Malcolm R. Walsh, Redwood City, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 110,593, Aug. 23, 1993, abandoned. This application Nov. 30, 1995, Ser. No. 566,588

Int. Cl.[6] H05B *1/02*

U.S. Cl. 219—505 **52 Claims**



1. An electrical system which is installed in a road vehicle, an airplane, or a ship, and which comprises

(1) a source of electrical power;

(2) a supply connection means which is electrically connected to a first pole of the power source, and which has, at its weakest current-carrying point, a current-carrying capacity of I_{LINK} amps,

(3) a return connection means which is electrically connected to a second pole of the power source; and

(4) a plurality of branch circuits which are electrically connected in parallel between the supply connection means and the return connection means, at least two of the branch circuits being PTC-protected branch circuits, each of said branch circuits comprising

(a) a branch PTC circuit protection device which

(i) is electrically connected to the supply connection means directly or via at least one other PTC-protected branch circuit, and

(ii) is taken from a batch of PTC devices made by the same manufacturing process, the largest steady state current which will not cause any of the devices in the batch to trip being I_{PASS} and the smallest steady state current which will cause all of the devices in the batch to trip being I_{TRIP}, I_{TRIP} being less than I_{LINK};

(b) an operative electrical device which is spaced apart from the branch PTC circuit protection device; and

(c) an elongate PTC-protected branch connection means which

(i) electrically connects the branch PTC device and the operative device, and

(ii) has at all points a current-carrying capacity of at least I_{DAMAGE} amps, I_{DAMAGE} being more than I_{TRIP};

whereby, if the PTC-protected branch connection means is accidentally connected to the first and second poles of the power source by connections which do not include the operative device, there is created a fault circuit which contains the branch PTC circuit protection device and in which the current is initially greater than I_{TRIP}, thus causing the branch PTC device to trip and reduce the current to a steady state value substantially below I_{TRIP};

wherein at least one of the following conditions is fulfilled:

(A) in at least one of the PTC-protected branch circuits,

(i) at all temperatures between 0° and 80° C. the I_{PASS} of the branch PTC device in that PTC-protected branch circuit is at least 1.1 times I_{LOAD}, and

(ii) at at least one temperature between –40° C. and 85° C., the I_{PASS} of the branch PTC device in that PTC-protected branch circuit is at most 1.3 times I_{LOAD},

where I_{LOAD} is the maximum steady state current in that PTC-protected branch circuit under normal operating conditions;

(B) in at least one of the PTC-protected branch circuits,

(i) at all temperatures between 0° and 80° C., the I_{DAMAGE} of the branch connection means in that PTC-protected branch circuit is at least 1.1 times the I_{TRIP} of the branch PTC device in that PTC-protected branch circuit and

(ii) at at least one temperature between –40° and 85° C., the I_{DAMAGE} of the branch connection means in that PTC-protected branch circuit is at most 1.5 times the I_{TRIP} of the branch PTC device in that PTC-protected branch circuit;

(C) the total number of PTC-protected branch circuits is p, and at all temperatures between 0° and 80° C., in q of the PTC-protected branch circuits, where q is at least 0.1 p, the I_{DAMAGE} of the branch connection means in that PTC-protected branch circuit is equal to or lower than I_{22}, where I_{22} is the I_{DAMAGE} of PVC-insulated copper wire having a cross-sectional area of 0.324 mm^2 (22 AWG); or

(D) some of the PTC-protected branch connection means are insulated copper wires having an I_{DAMAGE} equal to or less than I_{22}, and some of the PTC-protected branch connection means are insulated copper wires having an I_{DAMAGE} greater than I_{22}, where I_{22} is the I_{DAMAGE} of a PVC-insulated copper wire having a cross-sectional area of 0.324 mm^2 (22 AWG), and at all temperatures between 0° and 80° C., the total length of the PTC-protected branch connection means having an I_{DAMAGE} greater than I_{22} is not more than x times the total length of the PTC-protected branch connection means in which I_{DAMAGE} is equal to or less than I_{22}, where x is 10.

5,645,747

COMPOSITE CONSOLIDATION USING INDUCTION HEATING

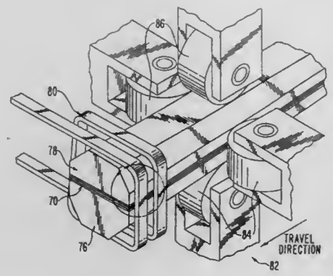
Marc R. Matsen, Seattle; Donald M. Montgomery, Rochester, and Susan V. Laurenti, Bothell, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Division of Ser. No. 92,050, Jul. 15, 1993, Pat. No. 5,410,133, which is a division of Ser. No. 681,004, Apr. 5, 1991, Pat. No. 5,229,562. This application Mar. 13, 1995, Ser. No. 404,014

Int. Cl.[6] H05B *6/10*

U.S. Cl. 219—645 **6 Claims**

1. In a process for roll consolidating a metal matrix composite by applying pressure through a metal mandrel, the mandrel surrounding a layup of the raw materials of the metal matrix composite and heating the layup through the mandrel, the improvement



comprising the step of applying a release agent between the mandrel and the layup, the release agent keeping the metal matrix composite from bonding with the mandrel.

5,645,748

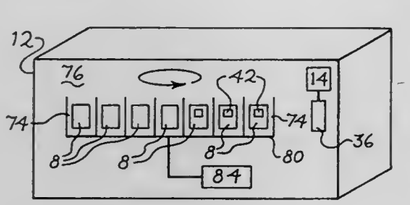
SYSTEM FOR SIMULTANEOUS MICROWAVE STERILIZATION OF MULTIPLE MEDICAL INSTRUMENTS

Robert Frank Schiffmann, New York, N.Y., and Jeffery Scott Held, Chicago, Ill., assignors to Quiclave, L.L.C., Chicago, Ill.

Filed Jun. 7, 1995, Ser. No. 486,208

Int. Cl.[6] H05B *6/68;6/80;* **A61L** *9/12*

U.S. Cl. 219—710 **15 Claims**



1. A microwave sterilization system, comprising:

a microwave oven having a microwave source that produces microwave radiation and wherein said oven encloses a first chamber and a second chamber;

said first chamber having a first pouch positioned therein so as to be exposed to said microwave radiation, wherein said first pouch has a first interior which contains a first metallic object;

said second chamber having a second pouch positioned therein so as to be exposed to said microwave radiation, wherein said second pouch has a second interior which contains a second metallic object;

a sensor system for detecting the temperatures of said first interior and said second interior and produces signals representative of those temperatures;

wherein said signals are sent to said microwave source so as to control the emission of microwave radiation from said microwave source so that said first and second metallic objects are sterilized while preventing arcing of the first and second metallic objects.

5,645,749

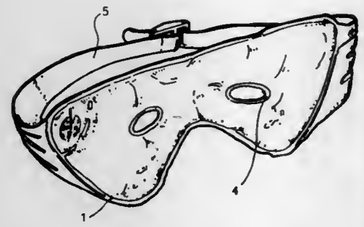
HEAT PACK CAPABLE OF BEING RECHARGED BY MICROWAVE ENERGY

Charles Wang, 6F-3, No. 213, Fu-Ho Road,, Yung-Ho City, Taipei, Taiwan

Filed Aug. 4, 1995, Ser. No. 511,219

Int. Cl.[6] H05B *6/80;* **F24J** *1/00*

U.S. Cl. 219—759 **1 Claim**



1. A reusable heat pack regenerated by microwave energy comprising: a flexible water-tight plastic bag having two opposite side walls welded together around a periphery of the heat pack and at least one internal weld connected between said side walls inside the periphery of the heat pack; a saturated sodium acetate solution contained in said plastic bag; and an activator disposed within the bag in contact with said saturated sodium acetate solution, said activator comprising a generally flat metal spring plate having a coarse outside wall to provide a non-reflecting outside surface for microwaves and operated to activate said saturated sodium acetate solution to crystallize.

5,645,750

Patent Not Issued For This Number

5,645,751

FABRIC FINISHING STIFFENING COMPOSITION

Kalliopi S. Haley, Byron Center, Mich., assignor to Amway Corporation, Ada, Mich.

Continuation of Ser. No. 114,069, Sep. 2, 1993, abandoned, which is a continuation-in-part of Ser. No. 950,118, Sep. 23, 1992, abandoned. This application Jan. 26, 1995, Ser. No. 379,095

Int. Cl.[6] D06M *15/643;15/333;15/19*

U.S. Cl. 252—8.91 **12 Claims**

1. A ready-to-use fabric finish composition consisting essentially of:

a) a water soluble polymer that casts a clear, continuous film from aqueous solution selected from the group consisting of polyvinyl alcohol, polymers and copolymers of acrylates and methacrylates and salts thereof present at a level of up to about 8%;

b) a film-compatible silicone ironing aid/lubricant selected from the group consisting of a polydimethylsiloxane microemulsion containing a quaternary ammonium compound, an amino-functional polydimethylsiloxane, a dimethicone copolyol isostearate and mixtures thereof having a particle size ranging up to 0.1 micron and present at a level of up to about 3%; and,

c) water, wherein the composition, when dried, forms a colorless and transparent, flexible film.

5,645,752

THIXOTROPIC MAGNETORHEOLOGICAL MATERIALS

Keith D. Weiss, Eden Prairie, Minn.; Donald A. Nixon, Wilson, N.C.; J. David Carlson, Cary, N.C., and Anthony J. Margida, Apex, N.C., assignors to Lord Corporation, Cary, N.C.

Continuation of Ser. No. 355,821, Dec. 14, 1994, abandoned, which is a continuation of Ser. No. 968,655, Oct. 30, 1992, abandoned. This application Dec. 20, 1995, Ser. No. 575,240

Int. Cl.[6] H01F *1/44*

U.S. Cl. 252—62.54 **39 Claims**

1. A magnetorheological material comprising:

about 40 to 95 volume percent, based on the total volume of the magnetorheological material, of a carrier fluid;

a paramagnetic, superparamagnetic or ferromagnetic particle component having a particle diameter ranging from about 1.0 to 500 microns;

0.1 to 10 volume percent, based on the total volume of the magnetorheological material, of at least one thixotropic additive selected from the group consisting of a hydrophilic silicone oligomer and a copolymeric organo-silicon oligomer, wherein the organo-silicon oligomer has organic and silicone monomeric units in a block or graft arrangement;

and a colloidal additive, the colloidal additive being a metal oxide powder that contains surface hydroxyl groups wherein the surface of the metal oxide is rendered hydrophobic through the reaction of the surface hydroxyl groups with organofunctional monomeric silanes or silane coupling agents.

5,645,753

PIEZO-ELECTRIC CERAMIC COMPOSITION

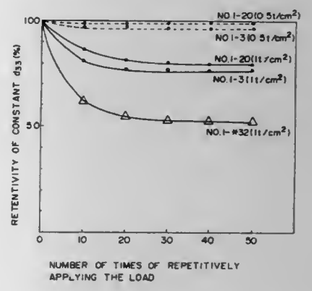
Shuichi Fukuoka; Kousei Kamigaki; Kazutaka Uchi, and Katsuhiko Onitsuka, all of Kokubu, Japan, assignors to Kyocera Corporation, Kyoto, Japan

Filed May 19, 1995, Ser. No. 445,151

Claims priority, application Japan, May 19, 1994, 6-105334; Dec. 14, 1994, 6-310278

Int. Cl.[6] C04B *35/49*

U.S. Cl. 252—62.9 PZ **8 Claims**



1. A piezo-electric ceramic composition of a composite perovskite compound containing, as metal components, Pb, Zr, Ti, Zn, Sb, Sr, Ba and optionally Ni and Te, wherein the composition is expressed as:

$$Pb_{1-x-y}Sr_xBa_y(Zn_{1/3}Sb_{2/3})_aZr_b(Ni_{1/2}Te_{1/2})_cTi_{1-a-b-c}O_3$$

and wherein x, y, a, b and c satisfy the following relationships:

$0.04 \leqq x \leqq 0.12$

$0.02 \leqq y \leqq 0.12$

$0.01 \leqq a \leqq 0.12$

$0.43 \leqq b \leqq 0.58$

$0 \leqq c \leqq 0.02$.

5,645,754

COMPOSITIONS INCLUDING A HEXAFLUOROPRPOANE AND DIMETHYL ETHER FOR HEAT TRANSFER

Barbara Haviland Minor, Elkton, Md., and Glenn Scott Shealy, Hockessin, Del., assignors to E. I. Du Pont de Nemours and Company, Wilminton, Del.

Continuation-in-part of Ser. No. 187,934, Jan. 27, 1994, abandoned, which is a continuation-in-part of Ser. No. 141,184, Oct. 26, 1993, abandoned, which is a continuation-in-part of Ser. No. 25,017, Mar. 2, 1993, abandoned. This application Dec. 22, 1994, Ser. No. 362,309

Int. Cl.[6] C09K *5/04;* **C08J** *9/14*

U.S. Cl. 252—67 **5 Claims**

1. An azeotropic or azeotrope-like composition consisting essentially of 1–72 weight percent 1,1,1,2,2,3-hexafluoropropane and 28–99 weight percent dimethyl ether or and 75–99 1,1,1,3,3,3-hexafluoropropane and 1–25 dimethyl ether wherein the vapor pressure of the composition is higher or lower than the vapor pressure of the individual components when the temperature has been adjusted to about 25° C.

5,645,755

ICE-MELTING COMPOSITION HAVING ANTI-CORROSION PROPERTIES

Arnold Wiesenfeld, Mahwah, and James K. Barbour, Lincroft, both of N.J., assignors to Castlebar Industries Corp., Red Bank, N.J.

Filed Jul. 20, 1995, Ser. No. 504,515

Int. Cl.[6] C09K *3/18*

U.S. Cl. 252—70 **21 Claims**

1. An ice-melting composition having anti-corrosion properties, comprising:

a) an ice-melting chemical selected from the group consisting of a chloride salt, urea, ammonium sulfate, calcium magnesium acetate, and combinations thereof, said ice-melting chemicals being at least 95% by weight of said ice-melting composition;

b) said ice-melting chemicals having a pH value of greater than 7 so as to be alkaline; and

c) an anti-corrosion compound being 2 butyne-1,4 diol in said ice-melting composition in the range of trace amounts up to 5% by weight of said ice-melting composition.

5,645,756

HARDNESS SUPPRESSION IN UREA SOLUTIONS

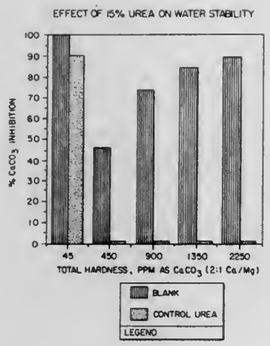
Leonard Dubin, Skokie, Ill.; W. Robert Epperly, New Canaan; Barry Normand Sprague, Bethlehem, both of Conn., and Thure von Harpe, Meerbusch, Germany, assignors to Nalco Fuel Tech, Naperville, Ill.

Division of Ser. No. 770,857, Oct. 3, 1991, Pat. No. 5,441,713, which is a continuation-in-part of Ser. No. 576,424, Nov. 27, 1990, abandoned, which is a continuation-in-part of Ser. No. 187,943, Apr. 29, 1988, abandoned. This application Jun. 7, 1995, Ser. No. 472,468

Int. Cl.[6] C02F *5/10*

U.S. Cl. 252—181 **9 Claims**

1. A composition comprising water containing hardness factors, from 1 to 65% of a water-soluble NH-containing composition selected from the group consisting of ammonia, urea, urea precursors, urea hydrolysis products, carbamates, ammonium carbonate, ammonium bicarbonate, cyanurates, ammonium salts of organic acids, other amidozine-generating compositions and mixtures of these, and a hardness-suppressing composition comprising a member selected from the group of water soluble polymers effective to suppress hardness, water soluble phosphonates selected from the group consisting of organo phosphonates, amino phosphonates and amino polyphosphonates effective to suppress hardness, water soluble chelants effective to suppress hardness, water soluble phosphates effective to suppress hardness and mixtures of these, in an amount effective to moderate the tendency for precipitation of hardness factors.



5,645,757

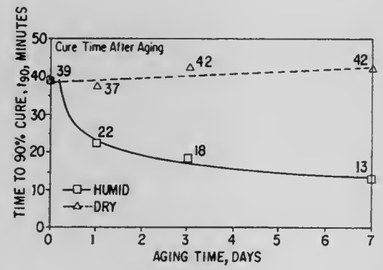
DRY POURABLE POWDER PREMIX COMPOSITION FOR INCLUSION IN A HALOGEN-CONTAINING VULCANIZABLE POLYMER COMPOSITION COMPRISING THIOESTER DERIVATIVE OF 2,5-DIMERCAPTO-1,2,4-THIADIAZOLE CROSSLINKING AGENT, GLYCERIN AND FINELY DIVIDED MATERIAL

Jay Bernard Class, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Continuation of Ser. No. 262,798, Jun. 20, 1994, abandoned, which is a division of Ser. No. 184,719, Jan. 21, 1994, abandoned, which is a continuation-in-part of Ser. No. 168,696, Dec. 16, 1993, abandoned. This application May 25, 1995, Ser. No. 449,869

Int. Cl.[6] C08K *5/46*

U.S. Cl. 252—182.17 **10 Claims**



1. A composition in the form of a dry pourable powder cure premix composition for inclusion in a halogen-containing vulcanizable polymer composition, consisting essentially of a thioester derivative of 2,5-dimercapto-1,3,4-thiadiazole crosslinking agent, glycerin and about 10–50%, by weight of the composition, of pourable siliceous finely divided material selected from the group consisting of silica, talc and clay.

5,645,758

LIQUID CRYSTAL COMPOSITION, LIQUID CRYSTAL DEVICE USING THE SAME, LIGHT CONTROLLING ELEMENT, RECORDING MEDIUM, AND LIGHT SHUTTER

Masaya Kawasumi; Hisato Takeuchi; Arimitsu Usuki, and Akane Okada, all of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi-ken, Japan

Filed Apr. 13, 1995, Ser. No. 421,407

Claims priority, application Japan, Apr. 14, 1994, 6-102208; May 19, 1994, 6-131180; Jun. 24, 1994, 6-166313; Jun. 24, 1994, 6-166314

Int. Cl.[6] C09K *19/52;19/54;* **G02F** *1/13*

U.S. Cl. 252—299.01 **12 Claims**

1. A liquid crystal composition comprising a non-polymeric liquid crystal and a second substance dispersed therein, the second substance having affinity for the liquid crystal and being composed of particles having a particle size of from 0.1 to 20 μm and an aspect ratio of 2 or more, said particles being present in said composition in an amount to form domains in the liquid crystal.

5,645,759

LIQUID CRYSTAL COMPOSITION AND A LIQUID CRYSTAL DISPLAY ELEMENT USING THE SAME

Yoshitaka Tomi; Etsuo Nakagawa, and Shinichi Sawada, all of Chiba, Japan, assignors to Chisso Corporation, Osaka-fu, Japan

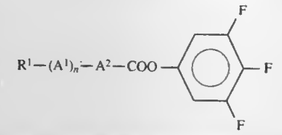
Filed Sep. 6, 1995, Ser. No. 524,441

Claims priority, application Japan, Sep. 6, 1994, 6-238555

Int. Cl.[6] C09K *19/30;19/12;19/20;* **G02F** *1/13*

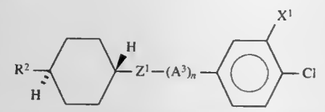
U.S. Cl. 252—299.63 **21 Claims**

1. A liquid crystal composition which comprises as a first component, at least one compound expressed by the formula (1):



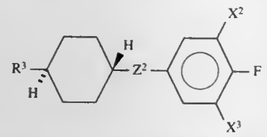
wherein R^1 represents an alkyl group of 1 to 10C; n represents 0 or 1; and A^1 and A^2 each independently represent trans-1,4-cyclohexylene or 1,4-phenylene,

as a second component, at least one compound expressed by the formula (2):



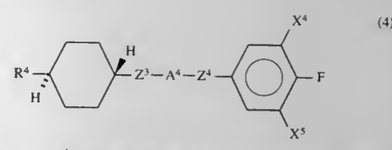
wherein R^2 represents an alkyl group of 1 to 10C; n represents 0 or 1; Z^1 represents $—C_2H_4—$ or a single bond; A^3 represents trans-1,4-cyclohexylene or 1,4-phenylene; and X^1 represents H, F or Cl,

as a third component, at least one compound chosen from among a group of compounds expressed by the formula (3):



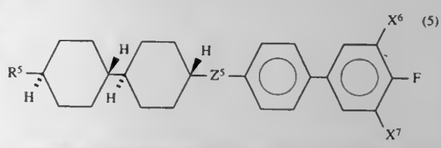
wherein R^3 represents an alkyl group of 1 to 10C; Z^2 represents $—C_2H_4—$ or a single bond; and X^2 and X^3 each independently represent H or F;

the formula (4):



wherein R^4 represents an alkyl group of 1 to 10C; Z^3 and Z^4 each independently represent $—C_2H_4—$ or a single bond; A^4 represents trans-1,4-cyclohexylene or 1,4-phenylene; and X^4 and X^5 each independently represent H or F or

the formula (5):



wherein R^5 represents an alkyl group of 1 to 10C; Z^5 represents $—C_2H_4—$ or a single bond; and X^6 and X^7 each independently represent H or F.

5,645,760

POLYMERIC COMPOUNDS, AND LIQUID CRYSTAL ELEMENT USING THE SAME

Nobuaki Yamada, Higashiosaka; Shuichi Kozaki, Nara; Hoyo Mizobe, Soka; Masahiko Yoshida, Soka, and Kenji Suzuki, Soka, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, and Kanto Kagaku Kabushiki Kaisha, Tokyo, both of Japan

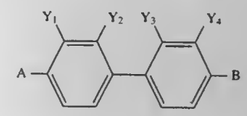
Filed Jun. 6, 1995, Ser. No. 466,042

Claims priority, application Japan, Jun. 14, 1994, 6-132288

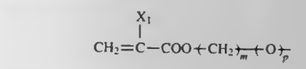
Int. Cl.[6] C09K *19/12;* **G02F** *1/13;* **C08F** *12/20;12/32*

U.S. Cl. 252—299.66 **7 Claims**

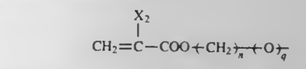
1. A polymeric compound represented by the following general formula (I):



wherein A represents



B represents a hydrogen atom,



X_1 represents a hydrogen atom or a methyl group, m represents and integer of 0 to 14, p represents 0 to 1, and each of Y_1, Y_2, Y_3, and Y_4, represents independently a hydrogen atom or a fluorine atom, wherein two or more of Y_1, Y_2, Y_3, and Y_4 are fluorine atoms,

with the proviso that p is 0 when m is 0.

5,645,761

PHOSPHOR MATERIAL BASED ON MANGANESE-DOPED ZINC SILICATE AND METHOD FOR OBTAINING SUCH A MATERIAL

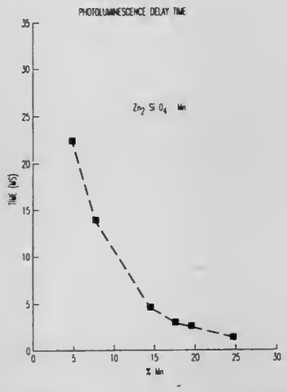
Antoinette Morell, Villebon S/Yvette, and Nathalie Goumard, Paris, both of France, assignors to Thomson-CSF, Puteaux, France

Division of Ser. No. 433,032, May 3, 1995, Pat. No. 5,518,655, which is a continuation of Ser. No. 224,187, Apr. 7, 1994, abandoned, which is a continuation of Ser. No. 896,973, Jun. 11, 1992, abandoned. This application Feb. 22, 1996, Ser. No. 605,839

Claims priority, application France, Jun. 11, 1991, 91 07075

Int. Cl.[6] C09K *11/54*

U.S. Cl. 252—301.6 F 7 Claims



1. A method for making a phosphor material comprising:

1) mixing, in an aqueous medium, zinc oxide, silica gel_2 and manganese carbonate to prepare an aqueous suspension;

2) drying said aqueous suspension; and

3) treating the dried aqueous suspension in an oven at a temperature that is a function of the manganese content in said aqueous suspension.

5,645,762

DEFOAMER COMPOSITION AND METHOD OF USING THE SAME

Anthony B. Cook, Simpsonville, S.C.; John J. Palmer, Stanfield, N.C., and Jose M. Rodriguez, Fort Mill, S.C., assignors to Henkel Corporation, Plymouth Meeting, Pa.

Continuation of Ser. No. 322,900, Oct. 13, 1994, abandoned. This application Aug. 28, 1996, Ser. No. 704,180

Int. Cl.[6] B01D *19/04;* D21H *21/12*

U.S. Cl. 252—321 7 Claims

1. A method of defoaming a black liquor obtained from the treatment of wood fibers comprising adding to the liquor a defoaming effective amount of a defoamer composition comprising the reaction product of at least one epoxide fatty acid compound selected from epoxide fatty acids, epoxide vegetable oils and mixtures thereof and at least one secondary compound selected from the group consisting of alkoxylated alkylamides having from 4 to 20 carbon atoms, ethoxylated tetramethyl decynediol, and polyether siloxanes.

5,645,763

USE OF LIQUID ESTERS AS SOLVENTS FOR ISOCYANATES

Johann Klein, Duesseldorf; Peter Daute, Essen; Roland Gruetzmacher, Wuelfrath, and Rainer Hoefer, Duesseldorf, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

Filed Nov. 14, 1994, Ser. No. 339,035

Int. Cl.[6] C09K *3/00;* B01F *17/34*

U.S. Cl. 252—364 19 Claims

1. A process for reducing the viscosity of at least one member selected from the group consisting of isocyanates and isocyanurates comprising: adding to said member at least one ester selected from the group consisting of esters of C_{6-22} fatty acids with monohydric alcohols and esters of C_{6-22} fatty alcohols with monocarboxylic acids, said esters being a liquid at room temperature wherein the ratio by weight of the ester added to the member is from 5:95 to 80:20.

5,645,764

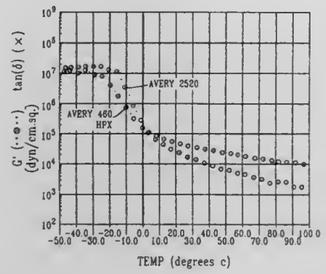
ELECTRICALLY CONDUCTIVE PRESSURE SENSITIVE ADHESIVES

Marie Angelopoulos, Cortlandt Manor, N.Y.; Jeffrey Donald Gelorme, Plainville, Conn., and Joseph Paul Kuczynski, Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 19, 1995, Ser. No. 375,036

Int. Cl.[6] H01B *1/00;1/20;1/24*

U.S. Cl. 252—500 29 Claims



1. A composition of matter of an electrically conducting admixture of an organic solvent soluble or water soluble pressure sensitive adhesive formulation selected from the group consisting of polyisoprenes, styrene-diolefin triblock copolymers, styrene-butadiene copolymers, polyisobutylenes, ethylene-vinylacetate copolymers, acrylics, poly(vinyl alkyl ethers) precursors and subsequently cured silicones and urethanes and between about 0.3% and 40% by weight of an electrically conducting polymer wherein said electrically conductive polymer is substituted and unsubstituted polyanilines, substituted and unsubstituted polyparaphenylenes, substituted and unsubstituted polyparaphenylenevinylenes, substituted and unsubstituted polythiophenes, substituted and unsubstituted polyazines, substituted and unsubstituted polyfuranes, substituted and unsubstituted polypyrroles, substituted and unsubstituted polyselenophenes, substituted and unsubstituted polyphenylene sulfides and substituted and unsubstituted polyacetylenes formed from soluble precursors, blends of said substituted and unsubstituted polymers, and copolymers made from the monomers used to form said polymers and wherein the constituents comprising said admixture do not phase separate, and said glass transition temperature of said blend is below 30° C.

5,645,765

LEAD-FREE CONDUCTIVE PASTE

Eiichi Asada, and Tetsuya Tanaka, both of Tokyo, Japan, assignors to Shoei Chemical Inc., Tokyo, Japan

Filed May 22, 1996, Ser. No. 651,412

Claims priority, application Japan, May 9, 1996, 8-114783

Int. Cl.[6] H01B *1/22;* H01C *7/00*

U.S. Cl. 252—518 10 Claims

1. A conductive paste for forming a thick film conductor comprising:

(a) a lead-free glass frit having a crystallization temperature of 700°–870° C. and consisting essentially of, by weight %, 20–38% of SiO_2, 5.5–13.5% of B_2O_3, 8–15.5% of Al_2O_3, 4–19% of CaO, 20–29% of ZnO, 0–6% of ZrO_2, 4–16% of TiO_2 and 0.1– 3.8% of MoO_3;

(b) finely divided particles of electrically conductive material;

(c) at least one inorganic additive selected from the group consisting of bismuth oxide, zinc oxide-containing oxide material, manganese oxide, copper oxide and molybdenum oxide; and

(d) an organic medium in which all of said components (a), (b) and (c) are dispered.

5,645,766

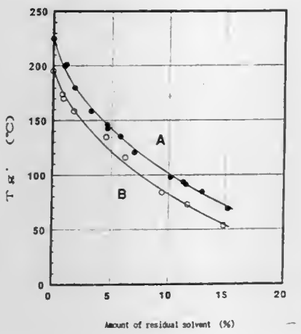
FILM OF AROMATIC POLYETHERSULFONE PROCESS FOR THE PRODUCTION THEREOF AND SOLUTION COMPOSITION FOR THE PRODUCTION THEREOF

Takashi Shiro; Kaoru Iwata; Hideaki Nitta; Takeshi Sasaki, and Utami Yonemura, all of Hino, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Mar. 30, 1995, Ser. No. 415,136

Int. Cl.[6] F21V *9/00;* C08K *5/15*

U.S. Cl. 252—582 15 Claims



1. A process for the production of an optically isotropic film of an aromatic polyethersulfone, comprising:

(1) casting an aromatic polyethersulfone solution composition comprising 15 to 40 parts by weight of a solvent which contains at least 60% by weight of 1,3-dioxolane and can dissolve an aromatic polyethersulfone and 10 parts by weight of an aromatic polyethersulfone on a substrate, and (2) heating the case solution composition containing the solvent to evaporate the solvent off,

said step (2) comprising

(i) a pre-drying step in which the solvent is evaporated off up to a solvent content of 5 to 25% by weight to form a self-supporting pre-dried film, and

(ii) a post-drying step in which the pre-dried film is dried at a drying temperature T (° C.) by stepwise or continuously increasing the drying temperature in a state where the pre-dried film is shrinkable in its width direction,

the drying temperature T (° C.) being increased to satisfy the following inequality (I):

$$Tg'-50<T<Tg' \quad (I)$$

wherein Tg' (° C.) is a glass transition temperature of the aromatic polyethersulfone containing a residual solvent, and this Tg' (° C.) temperature increases with a decrease in the residual solvent amount which decreases as the drying proceeds.

5,645,767

PHOTOCHROMIC INDENO-FUSED NAPHTHOPYRANS

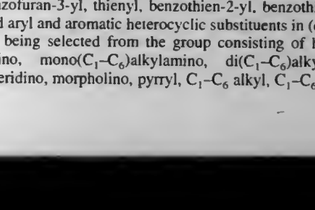
Barry Van Gemert, Murrysville, Pa., assignor to Transitions Optical, Inc., Pinellas Park, Fla.

Continuation-in-part of Ser. No. 333,701, Nov. 3, 1994, abandoned. This application Oct. 13, 1995, Ser. No. 542,993

Int. Cl.[6] C08K *5/15;* G02B *5/23;* C07D *311/78;405/04*

U.S. Cl. 252—586 22 Claims

1. A naphthopyran compound represented by the following graphic formula:



wherein,

(a) R_1 and R_2 together form an oxo group, a spiro heterocyclic group having 2 oxygen atoms and from 3 to 6 carbon atoms including the spirocarbon atom, or R_1 and R_2 are each hydrogen, hydroxy, C_1–C_6 alkyl, C_3–C_7 cycloalkyl, allyl, phenyl, mono-substituted phenyl, benzyl, mono-substituted benzyl, chloro, fluoro, the group, —C(O)W, wherein W is hydroxy, C_1–C_6 alkyl, C_1–C_6 alkoxy, phenyl, mono-substituted phenyl, amino, mono(C_1–C_6)alkylamino, or di(C_1–C_6)alkylamino, or R_1 and R_2 are each the group, —OR_5, wherein R_5 is C_1–C_6 alkyl, phenyl(C_1–C_3)alkyl, mono(C_1–C_6)alkyl substituted phenyl(C_1–C_3)alkyl, mono(C_1–C_6)alkoxy substituted phenyl(C_1–C_3)alkyl, C_1–C_6 alkoxy(C_2–C_4)alkyl, C_3–C_7 cycloalkyl, mono(C_1–C_4)alkyl substituted C_3–C_7 cycloalkyl, C_1–C_6 chloroalkyl, C_1–C_6 fluoroalkyl, allyl, the group, —$CH(R_6)X$, wherein R_6 is hydrogen or C_1–C_3 alkyl and X is CN, CF_3, or $COOR_7$, and R_7 is hydrogen or C_1–C_3 alkyl, or R_5 is the group, —C(O)Y, wherein Y is hydrogen, C_1–C_6 alkyl, C_1–C_6 alkoxy, the unsubstituted, mono- or di-substituted aryl groups phenyl or naphthyl, phenoxy, mono- or di-(C_1–C_6)alkyl substituted phenoxy, mono- or di-(C_1–C_6)alkoxy substituted phenoxy, amino, mono(C_1–C_6)alkylamino, di(C_1–C_6)alkylamino, phenylamino, mono- or di-(C_1–C_6)alkyl substituted phenylamino, or mono- or di-(C_1–C_6)alkoxy substituted phenylamino, each of said phenyl, benzyl and aryl group substituents being C_1–C_6 alkyl or C_1–C_6 alkoxy;

(b) R_3 and R_4 are each C_1–C_6 alkyl, C_1—C_6 alkoxy, chloro, or fluoro, and m and n are each the integers 0, 1, or 2;

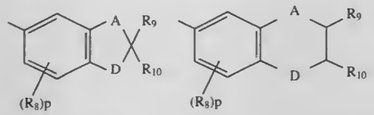
(c) B and B' are each selected from the group consisting of:

(i) the unsubstituted, mono-, di-, and tri-substituted aryl groups, phenyl and naphthyl;

(ii) the unsubstituted, mono-, and di-substituted aromatic heterocyclic groups pyridyl, furanyl, benzofuran-2-yl, benzofuran-3-yl, thienyl, benzothien-2-yl, benzothien-3-yl, said aryl and aromatic heterocyclic substituents in (c)(i) and (ii) being selected from the group consisting of hydroxy, amino, mono(C_1–C_6)alkylamino, di(C_1–C_6)alkylamino, piperidino, morpholino, pyrryl, C_1–C_6 alkyl, C_1–C_6 chloro-

alkyl, C_1–C_6 fluoroalkyl, C_1–C_6 alkoxy, mono(C_1–C_6)alkoxy(C_1–C_4)alkyl, acryloxy, methacryloxy, chloro and fluoro;

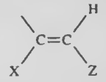
(iii) the groups represented by the following graphic formulae:



wherein A is carbon or oxygen and D is oxygen or substituted nitrogen, provided that when D is substituted nitrogen, A is carbon, said nitrogen substituents being selected from the group consisting of hydrogen, C_1–C_6 alkyl, and C_2–C_6 acyl; each R_8 is C_1–C_6 alkyl, C_1–C_6 alkoxy, hydroxy, chloro or fluoro; R_9 and R_{10} are each hydrogen or C_1–C_6 alkyl; and p is the integer 0, 1, or 2;

(iv) C_1–C_6 alkyl, C_1–C_6 chloroalkyl, C_1–C_6 fluoroalkyl, C_1–C_6 alkoxy(C_1–C_4)alkyl, C_3–C_6 cycloalkyl, mono(C_1–C_6) alkoxy(C_3–C_6)cycloalkyl, mono(C_1–C_6)alkyl(C_3–C_6)cycloalkyl, chloro(C_3–C_6)cycloalkyl and fluoro(C_3–C_6)cycloalkyl; and

(v) the group represented by the following graphic formula:



wherein X is hydrogen or C_1–C_4 alkyl and Z is selected from the unsubstituted, mono-, and di-substituted members of the group consisting of naphthyl, phenyl, furanyl, and thienyl, each of said group substituents being C_1–C_4 alkyl, C_1–C_4 alkoxy, fluoro, or chloro; or

(vi) B and B' taken together form fluoren-9-ylidene, mono-, or di-substituted fluoren-9-ylidene or a member selected from the group consisting of saturated C_3–C_{12} spiro-monocyclic hydrocarbon rings, saturated C_7–C_{12} spiro-bicyclic hydrocarbon rings, and saturated C_7–C_{12} spiro-tricyclic hydrocarbon rings, each of said fluoren-9-ylidene substituents being selected from the group consisting of C_1–C_4 alkyl, C_1–C_4 alkoxy, fluoro and chloro.

5,645,768

PHOTOCHROMIC COMPOUNDS

Manfred Melzig, Wessling, and Herbert Zinner, Pentling, both of Germany, assignors to Optische Werke G. Rodenstock, Munich, Germany

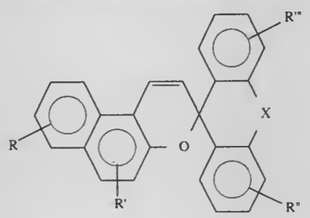
Continuation-in-part of Ser. No. 392,969, Feb. 28, 1995, abandoned. This application Dec. 28, 1995, Ser. No. 580,298

Claims priority, application Germany, Jun. 28, 1993, 43 21 485.1

Int. Cl.[6] **G02B** *5/23;* **C07D** *311/82*

U.S. Cl. 252—586 **4 Claims**

1. A photochromic compound having the formula:



wherein

R is H or OCH_3;

R' is H, OCH_3, Br or $OCOCH_3$;

R" is H;

R"' is H, CH_3, $OCOC_6H_5$ or 2,3-benzo; and

X is S, O, $—CH_2—CH_2—$, $—CH_2—$ or a single bond.

5,645,769

HUMIDIFIED COOL WIND SYSTEM FOR VEHICLES

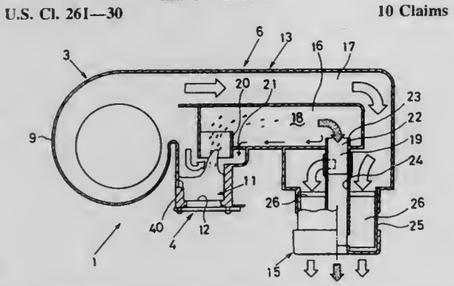
Makoto Tamaru, Kariya; Kazuhiko Nakagawa, Chita-gun, and Shouichi Yamaguchi, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 16, 1995, Ser. No. 491,090

Claims priority, application Japan, Jun. 17, 1994, 6-135401; Oct. 19, 1994, 6-253648

Int. Cl.[6] **B01F** *3/04*

U.S. Cl. 261—30 **10 Claims**



1. A humidified cool wind system for vehicles, comprising:

an air passage arranged over a driver for passing air therethrough, said air passage having a downwardly directed air outlet for blowing out the air from above the driver toward the driver;

a blower for producing an air flow from said air outlet toward the driver; and

atomizing means for atomizing water to produce the atomized water in said air passage,

wherein said air passage includes a humidified wind passage to be fed with the air and the atomized water atomized by said atomizing means and an ordinary wind passage to be fed with an ordinary wind containing no atomized water, said air outlet includes an internal cylinder for blowing out the humidified wind passing through said humidified wind passage and an external cylinder for blowing out the ordinary wind passing through said ordinary wind passage from around said internal cylinder.

5,645,770

LIQUID COLLECTOR-DISTRIBUTOR DEVICE, SYSTEM AND METHOD

Kenneth J. McNulty, Atkinson, N.H., and Neil Yeoman, Merrick, N.Y., assignors to Koch Engineering Company, Inc., Wichita, Kans.

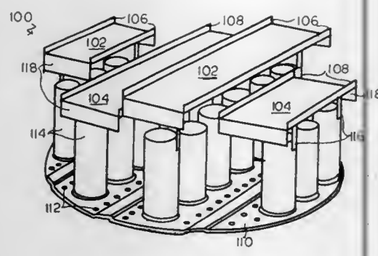
Continuation-in-part of Ser. No. 576,126, Dec. 21, 1995, abandoned, which is a continuation of Ser. No. 273,359, Jul. 11, 1994, abandoned. This application Apr. 18, 1996, Ser. No. 634,656

Int. Cl.[6] **B01F** *3/04*

U.S. Cl. 261—97 **23 Claims**

1. A collector-distributor device for use in a fluid exchange column, said column with a shell having an interior vertical wall surface and a horizontal cross-sectional area, to promote radial mixing of liquid on a tray surface without impeding upward gas flow, which device comprises:

a) a tray having a tray surface arranged and constructed to extend generally horizontally across said cross-sectional area of said column, to collect downwardly flowing liquid on said tray surface prior to its being distributed to a lower section of the column;



b) a plurality of gas riser means on said tray to provide for the upward movement of an upwardly flowing gas in said column and through said tray;

c) liquid distributor means to provide for the generally uniform distribution of said liquid on said tray surface to a lower section of said column;

d) chimney hat means having a first and second end and an upper surface to collect and distribute downwardly flowing liquid on said upper surface, said chimney hat means extending over said plurality of gas risers and generally vertically spaced apart therefrom;

e) said tray surface having the collected liquid on the tray surface to be distributed to a lower section of the column, comprising:

i) downwardly flowing liquid directly collected on the tray surface;

ii) downwardly flowing liquid collected and distributed onto the tray surface by chimney hat means; and

iii) downwardly flowing liquid on the tray surface from the interior surface of the column shell; and

f) said chimney hat means having widths which extend beyond the widths of said underlying gas risers and extending toward adjacent chimney hat means, to provide for said upper surfaces of said chimney hats to cover at least 30 percent of said cross-sectional area of said tray surface, said chimney hat means positioned at different vertical heights above said gas risers to permit the upward flow of gas between open vertical spaces formed between the different heights of said chimney hat means, said chimney hat means designed to collect said downwardly flowing liquid on said upper surface and to direct the collected liquid toward said peripheral interior wall surface of said column shell, thereby providing mixing of the collected downwardly flowing liquid and the liquid downwardly flowing on and near said interior surface of said column shell.

5,645,771

GAS INJECTION APPARATUS AND METHOD HAVING APPLICATION TO GOLD LEACHING

Rustam H. Sethna, New Brunswick; Atul M. Athalye, Chatham, and Michael K. Sabm, Annendale, all of N.J., assignors to The BOC Group, Inc., New Providence, N.J.

Filed Sep. 21, 1995, Ser. No. 531,988

Int. Cl.[6] **B01F** *3/04*

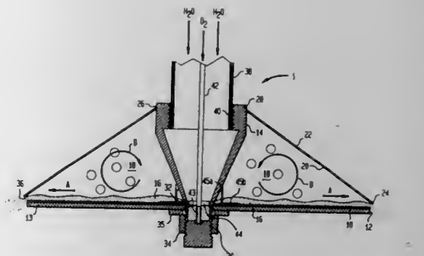
U.S. Cl. 261—123 **9 Claims**

1. A gas injection apparatus for injecting a gas into a liquid comprising:

a baffle plate having an outer peripheral region;

a discharge nozzle to discharge at least said liquid;

said discharge nozzle oriented normally to said baffle plate so that a fluid stream composed of at least said liquid is directed against said plate and produces an oppositely directed flow, towards said outer peripheral regions of said baffle plate;



said oppositely directed flow having a sheet-like turbulent flow regime located adjacent to said plate and means forming a circulating flow regime located above said turbulent flow regime; and

means for mixing said gas into said liquid so that smaller bubbles are entrained in said turbulent flow regime and are discharged with said liquid flowing in said turbulent flow regime from said outer peripheral region of said baffle plate and larger bubbles float into said circulating flow regime to break up into said smaller bubbles to be entrained in said turbulent flow regime.

5,645,772

REFRACTORY CERAMIC MASS FOR LINING THE BOTTOMS OF ELECTRIC ARC FURNACES AND PROCESS FOR THEIR REPAIR

Franz-Adolf Petio, Leoben, and Wilfried Eckstein, Trofaiach, both of Austria, assignors to Veitsch-Radex Aktiengesellschaft fur Feuerfeste Erzeugnisse, Vienna, Australia

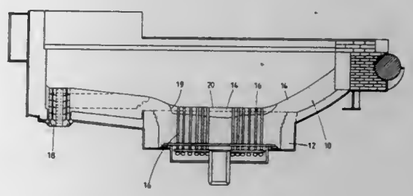
PCT No. PCT/EP93/01506, § 371 Date Dec. 23, 1994, § 102(e) Date Dec. 23, 1994, PCT Pub. No. WO94/00400, PCT Pub. Date Jan. 6, 1994

PCT Filed Jun. 15, 1993, Ser. No. 367,135

Claims priority, application Germany, Jun. 26, 1992, 42 21 101.8

Int. Cl.[6] **B32B** *35/00;* **C04B** *35/04;* **C21B** *7/06;* **F27D** *1/16*

U.S. Cl. 264—30 **9 Claims**



1. Use of a refractory ceramic mass comprising

a) one or more refractory oxides in a grain fraction of less than 8 mm and

b) 10 to 40 wt. % relative to the refractory ceramic mass of finely dispersed metallic additives in a grain fraction of less than 0.1 mm for lining bottoms of d.c. furnaces in an area of metallic electrodes,

wherein the refractory ceramic mass is placed within the area of the metallic electrodes to ensure an electrically conductive contact between the refractory ceramic mass and the metallic electrodes by formation of metallic channels in the refractory ceramic mass after melting of the finely dispersed metallic additives.

5,645,773

METHOD FOR PLACING CONCRETE FOR CONSTRUCTION OF A MASTER CONCRETE STRUCTURE

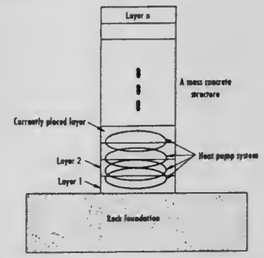
Yasuaki Ichikawa, Nagoya, Japan, assignor to E.R.C. Co., Ltd., Nagoya, Japan

Filed Jun. 7, 1995, Ser. No. 483,416

Claims priority, application China, Nov. 30, 1994, 94112848.2

Int. Cl.[6] E04B *1/16*

U.S. Cl. 264—31 **4 Claims**



1. A method for placing concrete on a rock foundation to construct a massive concrete structure, including the following steps for preventing concrete from being stressed beyond a predetermined stress limit for initiation and propagation of cracks therein, including:

(a) finding a temperature influence function for the concrete being placed, for enabling calculation of a thermal stress distribution in the concrete responsive to a temperature change by using results of a numerical analysis;

(b) using said temperature influence function and a function of thermal change in the structure for identifying a portion of the concrete at which a crack is predicted to develop;

(c) changing of a temperature of the identified portion and of a local vicinity thereof for redistributing an excess stress which would produce the crack in the identified portion; and

(d) reducing thermal stress in the concrete by transferring an excessive amount of heat from the identified portion of the structure at which a crack is predicted to develop to a different portion thereof other than an identified portion at which a crack is predicted to develop.

5,645,774

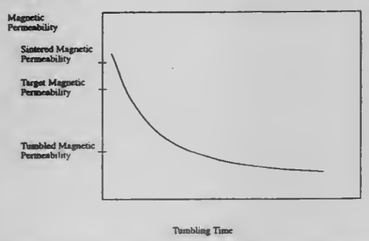
METHOD FOR ESTABLISHING A TARGET MAGNETIC PERMEABILITY IN A FERRITE

Steven T. Reczek, Penfield; Alexander Rozin, E. Rochester, and Thomas F. Pomponio, Rochester, all of N.Y., assignors to Ferronics Incorporated, Fairport, N.Y.

Filed Jan. 23, 1995, Ser. No. 376,758

Int. Cl.[6] B28B *11/00*

U.S. Cl. 264—40.1 **14 Claims**



1. A method of manufacturing a batch of ferrite parts having a target magnetic permeability, comprising:

(a) forming the batch of parts of an unsintered material;

(b) sintering the batch of parts at a sufficient temperature to introduce a magnetic permeability greater than the target magnetic permeability;

(c) tumbling the sintered batch of parts in a flowable medium to suppress the magnetic permeability below the target magnetic permeability;

(d) exposing the batch of tumbled parts to an acid wash;

(e) continuously monitoring the magnetic permeability of a subset of the batch in response to the acid wash; and

(f) terminating the wash when the magnetic permeability of the subset reaches the target magnetic permeability.

5,645,775

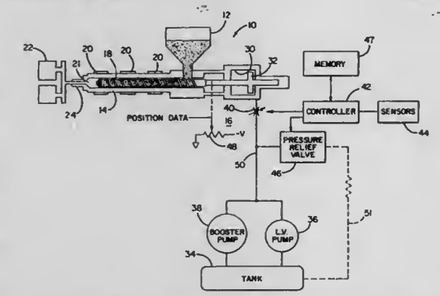
ADAPTIVE CONTROLLER FOR INJECTION MOLDING

David K. Spahr, Roscoe, and Dennis C. Tibbitts, Rockford, both of Ill., assignors to Barber-Colman Company, Loves Park, Ill.

Filed Oct. 4, 1995, Ser. No. 539,099

Int. Cl.[6] B29C *45/77*

U.S. Cl. 264—40.5 **22 Claims**



1. A method for providing a smooth transition between an injection stage to a packing stage in an injection molding apparatus comprising the steps of:

anticipating the transition from the injection stage to the packing stage;

calculating an approximate control point for operating a pressure relief valve;

presetting the pressure relief valve according to an open-loop control equation to adjust the pressure relief valve to the control point;

establishing a time limit for operating the pressure relief valve during the open-loop control period; and

controlling the pressure relief valve according to a closed-loop control equation after the time limit has expired.

5,645,776

METHOD OF ENCAPSULATING SEMICONDUCTOR DEVICES BY A DIRECT DRIVE ELECTRO-MECHANICAL PRESS

Tiang Siong Lian, Singapore, Singapore, assignor to Advanced Systems Automation PTE, Ltd., Singapore, Singapore

Continuation of Ser. No. 339,076, Nov. 14, 1994, abandoned, which is a division of Ser. No. 162,642, Dec. 3, 1993, abandoned. This application Jul. 18, 1996, Ser. No. 683,159

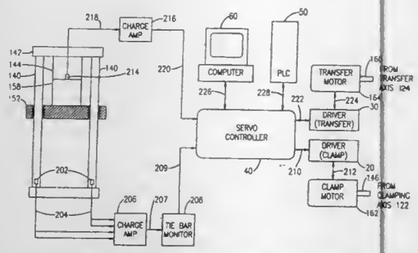
Claims priority, application United Kingdom, Dec. 4, 1992, 9225356

Int. Cl.[6] B29C *45/02;45/66;45/80*

U.S. Cl. 264—40.5 **7 Claims**

1. A method for encapsulating semiconductor devices, comprising the steps of:

providing a molding system and a close-loop control system which is coupled to the molding system, the close-loop control system including a computer, a programmable logic control, a servo motor controller, and a clamping driver and a transfer driver, said servo motor controller being coupled to said computer and said programmable logic control, said servo motor controller being further coupled to said clamping and transfer drivers, and said clamping and transfer drivers being coupled to the molding system;



clamping together at least one set of top and bottom molds of the molding system, the molding system including a clamping means having a clamping axis, the close-loop control system being coupled to the clamping means;

feeding a molding compound into a cavity formed by a space between the at least one set of top and bottom molds, the molding system further including a transfer means having a transfer axis aligned with the clamping axis;

alternating a gear switching means of the molding system between a high speed mode and a high torque mode along said clamping axis, the gear switching means being coupled to said clamping means; and

providing feedback from the close-loop control system to the clamping means and the transfer means of the molding system in minimizing disproportionate drive along said clamping and transfer axes.

5,645,777

DISPENSING APPARATUS

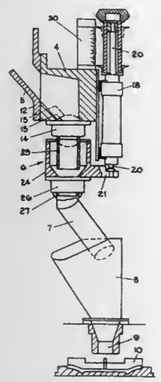
David Kenneth Hulse, and William Colin Barnett, both of Stoke-on-Trent, England, assignors to Royal Doulton (UK) Limited, Stoke-on-Trent, England

Filed Mar. 1, 1995, Ser. No. 396,688

Claims priority, application United Kingdom, Mar. 4, 1994, 9404161

Int. Cl.[6] B29C *31/00*

U.S. Cl. 264—40.4 **7 Claims**



1. A process for the manufacture of pressed ceramic articles comprising:

a) adjusting the relative positions of a casing and a vertically disposed tube extending into a chamber defined by the casing;

b) closing an outlet valve for controlling flow through a chamber outer;

c) opening an inlet valve for controlling flow through a tube inlet;

d) flowing a quantity of ceramic material through the tube into the chamber until the level of material in the chamber reaches a tube outlet thereby terminating flow into the chamber;

e) following step (d) continuing the flow of material until the tube is filled with material to provide a predetermined quantity of material in the chamber and tube, the predetermined quantity being controlled by the adjusted relative positions of the dispensing member and the tube;

f) closing the inlet valve;

g) opening the outlet valve to deposit such predetermined quantity in a mold;

h) repeating steps (b) through (g) for a desired number of cycles;

i) following step (g) of each cycle compressing the material in the mold to form a pressed ceramic article and removing the formed article from the mold;

j) after the desired number of cycles has been completed replacing the mold with another mold and adjusting the relative positions of the tube and casing to provide a new predetermined quantity of material during each cycle appropriate for filling said another mold; and,

k) thereafter repeating steps (b) through (I) for another desired number of cycles.

5,645,778

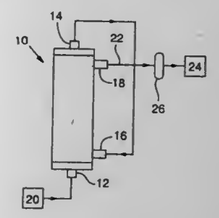
PROCESS OF MAKING A CELLULOSE ACETATE SEMIPERMEABLE MEMBRANE

John M. Radovich, Ft. Lauderdale; Melvin Rothberg, Plantation, and George Washington, Miramar, all of Fla., assignors to Althin Medical, Inc., Del.

Continuation-in-part of Ser. No. 327,431, Oct. 21, 1994, which is a continuation of Ser. No. 976,949, Nov. 16, 1992, abandoned. This application Jun. 1, 1995, Ser. No. 456,345

Int. Cl.[6] B29C *67/20;* **D01D** *5/247*

U.S. Cl. 264—41 **10 Claims**



1. A method for making a cellulose acetate semipermeable membrane, comprising the steps:

(a) providing a molten liquid comprising cellulose acetate, a solvent for cellulose acetate, and a non-solvent for cellulose acetate;

(b) extruding the molten liquid to produce an extruded membrane;

(c) removing the solvent and the non-solvent from the extruded membrane to produce a semipermeable membrane having a water permeability; and

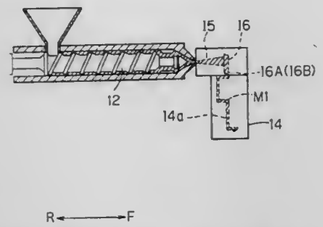
(d) impregnating the semipermeable membrane with a liquid consisting essentially of water so as to render the semipermeable capable of being stored until time of use while retaining the water permeability of the semipermeable membrane.

5,645,779

MOLDING PART OF THERMOPLASTIC RESIN AND METHOD OF FABRICATING SAME

Koichi Matsumoto, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Japan

Continuation of Ser. No. 208,539, Mar. 9, 1994, abandoned. This application Apr. 3, 1995, Ser. No. 415,772
Claims priority, application Japan, Mar. 15, 1993, 5-081262
Int. Cl.[6] B29D 9/00
U.S. Cl. 264—45.5 2 Claims



1. A method of manufacturing a molded part of thermoplastic resin containing both foamed and unfoamed areas, said method comprising the steps of:

feeding a thermoplastic resin material and a foaming agent into a cylinder of an injection molding machine having a nozzle communicating with an injection gate;

rotating a screw disposed in said cylinder at a rotational speed sufficient to knead and plasticize said thermoplastic resin and said foaming agent in said cylinder;

injecting said plasticized thermoplastic resin from said injection gate into a cavity in a mold; and

cooling said thermoplastic resin in said cavity and then removing said molded part of thermoplastic resin from said mold,

said injection gate being coupled to a portion of said cavity corresponding to an area of said molded part requiring strength,

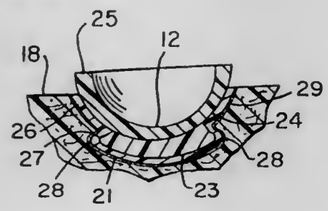
said rotational speed of said screw being controlled such that the thermoplastic resin injected into said cavity is rendered unfoamed only in a region corresponding to the volume of said area requiring strength at an outlet of said injection gate and said thermoplastic resin injected into said cavity is foamed in areas not requiring strength.

5,645,780

METHOD OF PLACING AN EYEPIECE IN A TAXIDERMY MANNIKIN USING A PROTECTIVE AND RELEASE COATING

John R. Rinehart, Milton, Wis., assignor to American Institute of Taxidermy, Inc., Janesville, Wis.

Filed Mar. 19, 1996, Ser. No. 618,627
Int. Cl.[6] B29C 44/12;44/18
U.S. Cl. 264—46.4 14 Claims



1. A method of placing an artificial eyepiece in a taxidermy animal head mannikin, comprising the steps of:

(a) providing a mold which defines a cavity surface contoured for correct anatomical features of the mannikin including features immediately surrounding an eye, and an eye socket recess in the cavity surface for snugly receiving a front portion of the eyepiece;

(b) applying a protective and release coating to a front portion of the artificial eyepiece to prevent damage to the eyepiece when it is inserted into the mold, and allowing the applied coating to set up;

(c) inserting into the eye socket recess of the mold the coated front portion of the artificial eyepiece such that the eyepiece is held in the eye socket recess in a desired position and such that a rear portion of the artificial eyepiece projects into the mold cavity;

(d) introducing a liquid foamable hardenable material into the mold cavity to foam, expand and harden, thereby forming the mannikin and locking the eyepiece into the mannikin in a proper position therein;

(e) separating the mold from the formed mannikin; and

(f) removing the protective and release coating by peeling the coating from the front portion of the artificial eyepiece.

5,645,781

PROCESS FOR PREPARING TEXTURED CERAMIC COMPOSITES

Dragan Popovic', Tucson, Ariz.; John W. Halloran, Ann Arbor, Mich.; Gregory E. Hilmas, Saline, Mich.; Guy Allen Brady, Ann Arbor, Mich.; Scott Somers, East Lansing, Mich.; Andrew Barda, Battle Creek, Mich., and Gregory Zywicki, Warren, Mich., assignors to The Regents of the University of Michigan, Ann Arbor, Mich.

Filed Sep. 21, 1994, Ser. No. 309,853
Int. Cl.[6] B29C 47/06;63/00; B28B 5/00
U.S. Cl. 264—639 14 Claims



1. A method for preparing a green fibrous monolith comprising

extruding at least a first feed rod to provide a green ceramic fiber, the first feed rod being prepared by forming a first ceramic-laden composition comprising a thermoplastic polymer and at least about 40 vol. % of a ceramic particulate into a substantially cylindrical core and applying a second ceramic-laden composition comprising a thermoplastic polymer and at least about 40 vol. % of a ceramic particulate which differs from the first ceramic-laden composition onto the core, and

forming a green ceramic monolith by shaping at least the green ceramic fiber,

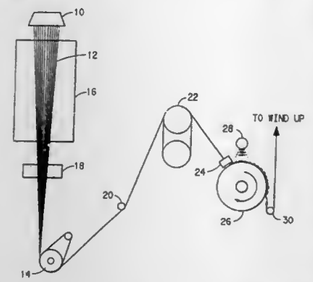
wherein during the extrusion step, each ceramic-laden composition has a viscosity that is approximately equivalent to that of each other ceramic-laden composition.

5,645,782

PROCESS FOR MAKING POLY(TRIMETHYLENE TEREPHTHALATE) BULKED CONTINUOUS FILAMENTS

James Milton Howell, Greenville, N.C.; Wae-Hai Tung, Seaford, Del., and Frank Werny, West Chester, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 268,585, Jun. 30, 1994, abandoned. This application Jun. 30, 1995, Ser. No. 497,585
Int. Cl.[6] D01D 5/092; D01F 6/62; D02G 1/16
U.S. Cl. 264—103 10 Claims



1. A process for the production of poly(trimethylene terephthalate) bulked continuous filaments comprising the steps of:

a) extruding molten poly(trimethylene terephthalate) polymer at a temperature from 245° C. to 285° C. through a spinneret to form filaments, said poly(trimethylene terephthalate) polymer having an intrinsic viscosity in the range of 0.6 to 1.3 and a water content of less than 100 ppm by weight;

b) cooling the filaments in a quench chimney by means of air flowing perpendicularly to the filaments at a velocity in the range of 0.2 to 0.8 m/sec.;

c) coating the filaments with a spin finish;

d) heating the filaments to a temperature greater than the glass transition temperature of the filaments, but less than 200° C. prior to drawing the filaments;

e) drawing the filaments between a set of feed rolls and a set of draw rolls to a draw ratio high enough that the break elongation of the drawn filaments is between 10 to 90%, the temperature of the draw rolls being from 120° to 200° C.;

f) feeding the drawn filaments from the draw rolls at a speed of at least 800 m/min. to a hot-fluid jet bulking unit in which the filaments are blown and deformed in three dimensions with hot bulking fluid having a temperature at least as high as that of the draw rolls to form bulked continuous filaments having random 3-dimensional curvilinear crimp;

g) cooling the bulked continuous filaments to a temperature less than the glass transition temperature of the filaments;

h) winding up the filaments at a speed at least 10% lower than that of the draw rolls.

5,645,783

APPARATUS AND METHOD FOR MOLDING GRINDING WHEELS

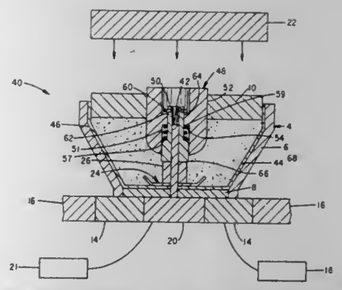
Naseem A. Ansari, and Omar R. Ansari, both of 4811 Dusharme Dr., Minneapolis, Minn. 55429-3940

Filed Apr. 19, 1996, Ser. No. 635,029
Int. Cl.[6] B29C 43/18
U.S. Cl. 264—112 12 Claims

1. Apparatus for molding a grinding wheel from an abrasive mixture into concentric registry with an arbor, comprising:

a) a liner for containing a quantity of the abrasive mixture;

b) a mold having a shell, a bottom plate and a top plate, wherein said bottom and top plates mount to said shell, and wherein said bottom plate includes locater means for locating said liner within said shell and said arbor within said liner;



c) nub means mounted to said locater means for defining a recess in the grinding wheel and having positioner means for displacing a surface of said nub means a predetermined distance from said arbor;

d) a top mold plate which mounts to said shell and includes means for locating said nub means to said top plate; and

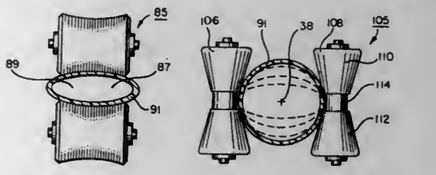
f) means for pressing said top plate and nub to compact said mixture.

5,645,784

DIAMETER REDUCTION INSERTION METHOD FOR LINING TUBULAR MEMBERS

Jim S. McMillan, Benbrook, and Simon Tarsha, Fort Worth, both of Tex., assignors to Pipe Rehab International, Inc., Memphis, Tenn.

Continuation of Ser. No. 858,545, Mar. 27, 1992, Pat. No. 5,340,524, which is a continuation-in-part of Ser. No. 643,950, Jan. 22, 1991, abandoned. This application Aug. 19, 1994, Ser. No. 293,063
Int. Cl.[6] B29C 63/42
U.S. Cl. 264—229 4 Claims



1. A method of lining a tubular member with a generally cylindrical, elastomeric liner having an outside diameter which is initially greater than the inside diameter of the tubular member, the method comprising the steps of:

reducing the outside diameter of a length of the generally cylindrical liner to a downsized outside diameter by feeding a length of the liner through multiple sets of downsizing rollers, each set of downsizing rollers having a liner receiving opening between the downsizing rollers with a midpoint of the liner receiving opening being located on a first axis which defines a first path of travel for the liner, each set of downsizing rollers being arranged about the elastomeric liner to compress the liner at focused wall compression zones and progressively downsize the liner, wherein each roller of one set of downsizing rollers has an axis of rotation and is positioned about the first axis so that its axis of rotation is at an angularly rotated position about the first axis relative to an axis of rotation of each roller of a preceeding set of downsizing rollers to thereby maximize the number of focused wall compression zones and more uniformly distribute stress over the liner circumference;

shaping the liner from a generally cylindrical shape into an eliptical shape by passing the length of downsized generally cylindrical liner which exits the downsizing rollers through a set of shaping rollers having a liner receiving opening

between the shaping rollers with a midpoint of the liner receiving opening of the shaping rollers located on the first axis, wherein the eliptically shaped liner has both a minor axis and a major axis;

after shaping the liner, feeding the eliptically shaped liner through an orienting means which turns the eliptically shaped liner about its major axis and guides the eliptically shaped liner along a second path of travel, wherein the second path of travel is oriented along a different axis from the axis of the first path of travel;

feeding the eliptically shaped liner through at least one additional orienting means which turns the eliptically shaped liner about its major axis and guides the eliptically shaped liner along an additional path of travel, wherein the additional path of travel is oriented along a different axis from the second path of travel;

thereafter, passing the eliptically shaped liner through a set of reshaping rollers to reshape the length of the eliptically shaped liner into a generally cylindrical shape while retaining a downsized external diameter;

inserting the downsized, generally cylindrically shaped liner into the tubular member to be lined;and

allowing the downsized liner to expand to substantially its original outside diameter to thereby secure the liner within the tubular member.

5,645,785

DEVICE FOR EXTRUDING A POLYMER FRAME ONTO A PLATE-SHAPED OBJECT

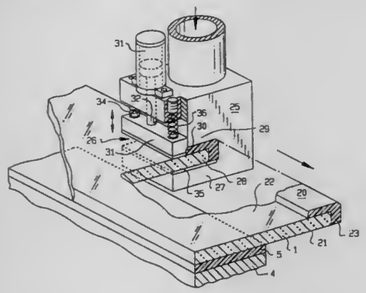
Gerd Cornils, Merzenich; Herbert Joeris, Wurselen; Rolf Kotte, Alsdorf, and Heinz Scholl, Eschweiler, all of Germany, assignors to Saint Gobain Vitrage, Courbevoie, France

Continuation-in-part of Ser. No. 286,725, Aug. 5, 1994, Pat. No. 5,507,994. This application Oct. 10, 1995, Ser. No. 540,858

Claims priority, application Germany, Aug. 9, 1993, 43 26 650.9; France, Oct. 10, 1994, 294080

Int. Cl.[6] B29C *47/02*

U.S. Cl. 264—252 **34 Claims**



1. An apparatus for producing a shaped polymer frame on a plate having top and bottom main surfaces and a peripheral edge, which comprises:

an extrusion die having a body which defines a plate-receiving recess for receiving the edge of the plare and portions of the main surfaces adjacent thereto;

a first sealing ledge which is movable between (1) a retracted position which allows entry of the plate edge into the recess, and (2) an engaged position in contact with one of the main surfaces of the plate which defines an open area between the die body, sealing ledge and the plate in the shape of a polymer frame; and

means for moving the plate relative to the extrusion die, where the moving means advances the edge of the plate through the recess to receive the shaped polymer frame on the edge and one of the main surfaces of the plate.

22. A process for producing a shaped polymer frame on a plate having top and bottom main surfaces and a peripheral edge, which process comprises:

placing an extrusion die adjacent the plate edge, wherein the extrusion die has a body which defines a plate-receiving recess for receiving the edge of the plate and portions of the main surfaces adjacent thereto; and a first sealing ledge which is movable between (1) a retracted position which allows entry of the plate edge into the recess, and (2) an engaged position in contact with one of the main surfaces of the plate which defines an open area between the die body, sealing ledge and the plate in the shape of a polymer frame;

receiving the plate edge in the recess of the extrusion die;

moving the first sealing ledge into contact relation with at least one of the main surfaces of the plate;

advancing the plate edge through the recess; and

depositing polymer onto the plate edge and a portion of at least one of the adjacent main surfaces through the open area of the die during movement of the plate edge through the recess to provide the polymer frame thereon.

5,645,786

METHOD OF MANUFACTURING A MULTILAYER MOLDING

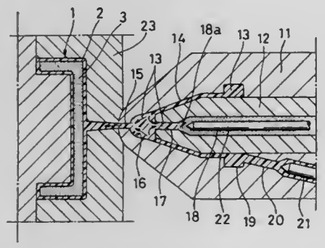
Haruo Okada; Hidemi Aoki; Yasuhiko Takeuchi, and Kunio Yuhara, all of Hanishina-gun, Japan, assignors to Nissei Plastic Industrial Co., Ltd., Nagano-ken, Japan

Continuation of Ser. No. 343,258, Nov. 22, 1994, abandoned. This application Jul. 9, 1996, Ser. No. 677,193

Claims priority, application Japan, Dec. 20, 1993, 5-345054

Int. Cl.[6] B29C *45/16*

U.S. Cl. 264—255 **1 Claim**



1. A method of manufacturing a molding having an inner core surrounded by an outer layer using a double nozzle structure, said method comprising the steps of:

providing an outer nozzle for injecting a first resin material to form the outer layer of the molding,

providing an inner nozzle disposed within said outer nozzle for injecting a second resin material to form the core surrounded by the outer layer,

providing a shut-off pin disposed in the inner nozzle to independently control resin flow through said inner nozzle,

injecting the first resin material from the outer nozzle into a mold,

concurrently injecting the second resin material from an aperture of the inner nozzle into the mold, wherein said shut-off pin is positioned to permit resin flow through said inner nozzle,

terminating the step of injecting the second resin material to produce a low pressure condition in the inner nozzle,

allowing the second resin material proximate the aperture of the inner nozzle to be driven back into the inner nozzle by the pressure of the first resin material,

positioning the shut-off pin to independently stop resin flow back into said inner nozzle, and

terminating the step of injecting the first resin material from the outer nozzle.

5,645,787

PROCESS FOR PRODUCING SEMICONDUCTOR DEVICES USING RESIN TABLETS

Tomohiro Taruno; Shinichi Kanai; Hiroyuki Asao; Syoichi Kimura, and Yoshio Toyoda, all of Osaka, Japan, assignors to Nitto Denko Corporation, Osaka, Japan

Division of Ser. No. 328,953, Oct. 24, 1994, which is a continuation of Ser. No. 978,439, Nov. 18, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 464,386

Claims priority, application Japan, Mar. 20, 1991, 3-81696; Dec. 6, 1991, 3-349648

Int. Cl.[6] B29C *45/02;45/14*

U.S. Cl. 264—272.17 **9 Claims**

1. A process for producing a semiconductor device comprising sealing a semiconductor chip with a resin tablet having a compressibility of not less than 98% and a metallic impurity content of less than 50 ppm which is obtained by cooling and solidifying a molten resin composition, by transfer molding.

5,645,788

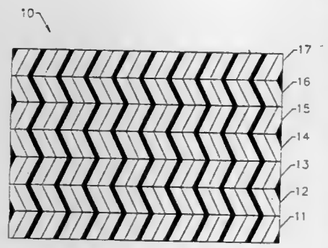
MAKING HIGHLY ORIENTED MULTILAYER FILM

Solomon Bekele, Taylors, S.C., assignor to W.R. Grace & Co.-Conn., Duncan, S.C.

Division of Ser. No. 216,201, Mar. 22, 1994, Pat. No. 5,482,770, which is a continuation-in-part of Ser. No. 970,896, Nov. 3, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 469,165

Int. Cl.[6] B29C *35/10;47/06*

U.S. Cl. 264—469 **23 Claims**



1. A process for making an oriented multilayer film, comprising the steps of:

coextruding and quenching a barrier layer comprising a barrier composition and an orientation-compatible layer comprising an orientation-compatible composition;

orienting the barrier layer and orientation-compatible layer at an orientation ratio of at least 9 at a temperature of from about 165° F. to about 212° F.;

wherein said process is carried out so that:

said barrier layer has a thickness of from about 0.01 to 0.75 mils, said barrier layer comprising polymerized ethylene vinyl alcohol having an ethylene content of from about 32 to 60 weight percent, said barrier layer occupying from about 2 to 15 volume percent of the oriented multilayer film;

said orientation-compatible layer has a total thickness of from about 0.49 to 4.5 mils, and a modulus of at least about 4×10^4 psi;

said film has an oxygen permeability at 0% relative humidity of from about 0.1 and 6 cm^3-mil/day-m^2-atm; and

said film has a thickness of from about 0.5 to 5 mils.

5,645,789

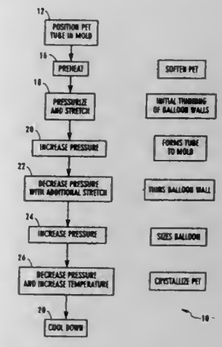
DISTENSIBLE PET BALLOON AND METHOD OF MANUFACTURE

Leo R. Roucher, Jr., Escondido, Calif., assignor to Navius Corporation, San Diego, Calif.

Filed Jul. 20, 1995, Ser. No. 504,537

Int. Cl.[6] B29C *49/08;49/18*

U.S. Cl. 264—529 **18 Claims**



1. A method for manufacturing a semi-compliant polyethylene terephthalate (PET) balloon which comprises the steps of:

positioning a tube of PET material across a mold cavity, said tube having a lumen extending therethrough;

preheating said tube in said cavity to a first temperature to soften said PET material;

pressurizing said lumen to a first pressure;

stretching said tube a first predetermined distance to lengthen said tube;

forming said balloon by raising said first pressure to a second pressure;

thinning said balloon by decreasing said second pressure to a third pressure and additionally stretching said tube a second predetermined distance;

sizing said balloon by increasing said third pressure to a fourth pressure;

crystallizing said PET material of said balloon by decreasing said fourth pressure to a fifth pressure and increasing said first temperature to a second temperature; and

cooling said PET material of said balloon by decreasing said second temperature to a third temperature.

5,645,790

APPARATUS AND PROCESS FOR POLYGONAL MELT-BLOWING DIE ASSEMBLIES FOR MAKING HIGH-LOFT, LOW-DENSITY WEBS

Eckhard C. A. Schwarz; Douglas B. Brown, and Michael S. Angell, all of Neenah, Wis., assignors to Biax-Fiberfilm Corporation, Neenah, Wis.

Filed Feb. 20, 1996, Ser. No. 603,735

Int. Cl.[6] D01D *5/08;* **D04H** *3/03*

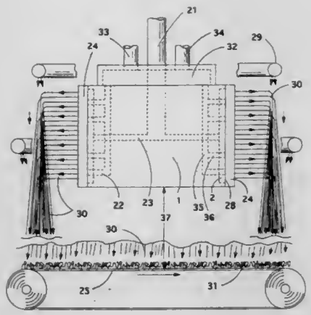
U.S. Cl. 264—555 **6 Claims**

6. A process for forming a low density fiber web comprising the steps of:

providing a polymer melt to a polymer supply cavity centrally positioned in a die head, said supply cavity being operably joined through supply channels to a multiplicity of spinnerettes positioned to spin polymer fibers in a multiplicity of directions radially away from said die head,

distributing pressurized gas from a central air supply to said spinnerettes,

forming an attenuating gas stream which serves to attenuate said polymer fibers and to carry them in a multiplicity of directions radially away from said spinnerettes,



forming a secondary gas stream by means of a gas ring which surrounds said die head and directs said secondary gas stream in a direction that is contrary to the direction of the attenuating air stream so as to cause the fibers carried therein to change direction approximately 90 degrees and become entangled.

collecting said fibers on a collecting device, and

forming a low density fiber web on said collecting device.

5,645,791

CHARGE PREHEATER

Gerhard Fuchs, Kehl-Bodersweiler; Joachim Ehle, Lautenbach, and Klaus von Ploetz, Offenburg, all of Germany, assignors to Fuchs Systemtechnik GmbH, Willstatt-Legelshurst, Germany

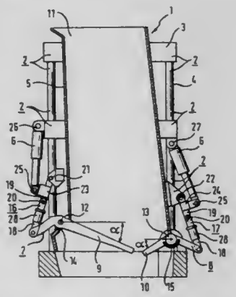
PCT No. PCT/EP94/02405, § 371 Date Aug. 21, 1995, § 102(e) Date Aug. 21, 1995, PCT Pub. No. WO95/04910, PCT Pub. Date Feb. 16, 1995

PCT Filed Jul. 21, 1994, Ser. No. 507,270

Claims priority, application Germany, Aug. 5, 1993, 43 26 369.0

Int. Cl.[6] C21B *7/00*

U.S. Cl. 266—175 **13 Claims**



I. A charging material preheater liar preheating charging material for metallurgical smelting plant, said charging material preheater comprising

a shaft fixed in a frame structure and having a wall, a lower region and an internal space, and in the lower region having mutually oppositely disposed closure members each of which is pivotable by a control member.

said closure members including parallel fingers mounted in a first rotary mounting supported on the frame structure, and

said closure members being pivotable downwardly between

a closed position in which the inner portion of each of said fingers projects into the internal space of the shaft to retain charging material in the shaft and

a release position in which the inner portion of each of said fingers faces downwardly and to release the charging material from the shaft,

wherein

each of said fingers is mounted by its central portion in the first rotary mounting

each of said fingers is mounted by its outer portion in a second rotary mounting on the frame structure

said outer portion of each finger is passed outwardly through an opening in the shaft wall by way of an elbow lever mechanism having lower and upper lever arms which are connected together by a hinge joint, and

the lower or the upper lever arms of at least two elbow lever mechanisms are connected together by a connecting member which is pivotably engaged by an control member supported in a third rotary mounting of the frame structure.

5,645,792

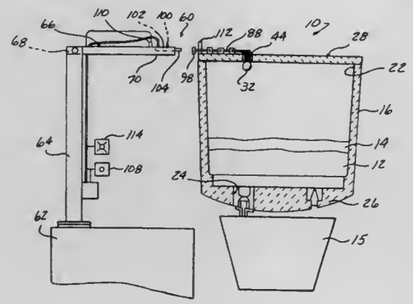
SLAG CONTROL SHAPE RELEASE APPARATUS FOR MOLTEN METAL VESSELS

Gary L. Forte, Northville; David B. Vinson, Redford, both of Mich., and Thomas Connors, Dyer, Ind., assignors to AJF, Inc., Plymoutn, Mi

Filed Jan. 16, 1996, Ser. No. 586,967

Int. Cl.[6] B22D *41/14*

U.S. Cl. 266—230 **12 Claims**



I. A slag control shape release apparatus for a molten metal receptacle having a top cover and a bore formed in and extending through the cover, the apparatus comprising:

means, mountable on the cover, for releasably mounting a slag control shape on the cover, the mounting means movable between a first position releasably mounting a slag control shape on the cover and a second position releasing the slag control shape for descent into the molten metal receptacle, the mounting means including a mounting member pivotally mounted on the cover and releasably engagable with a slag control shape mounted through the bore in the cover;

means, mounted on the cover and engagable with the mounting means, for moving the mounting means from the first position to the second position; and

means, separate from the with the moving means, for actuating the moving means to move the mounting means from the first position, the actuating means being operable from a position remote from the cover.

5,645,793

CARTRIDGE HANDLING HAND OF A CARTRIDGE SYSTEM SLIDING VALVE APPARATUS FOR A MOLTEN METAL VESSEL

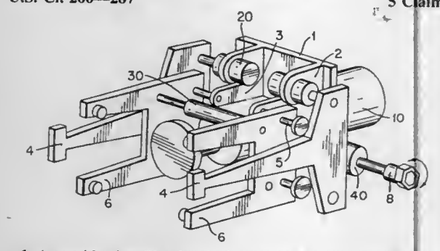
Kenji Yamamoto, Okayama-ken; Mototsuga Osada, Bizen; Shuichi Aoyama, and Koji Ishii, both of Okayama, all of Japan, assignors to Shinagawa Refractories Co., Ltd., Tokyo, Japan

Filed Jul. 20, 1995, Ser. No. 504,577

Claims priority, application Japan, Jul. 29, 1994, 6-178167

Int. Cl.[6] C22B *7/00;* **B22D** *41/08*

U.S. Cl. 266—287 **5 Claims**



1. A cartridge handling hand of a cartridge system sliding valve apparatus comprising:

a mounting plate;

a device attached to a first side surface of said mounting plate for mounting a carrier arm;

a cartridge pressing cylinder secured to said first side surface of said mounting plate;

a first pair of cylinder support arms and a second pair of support arms attached to a second side surface of said mounting plate;

lock pins fixed to said first pair of cylinder support arms for attachment to positioning metal fittings on said sliding valve apparatus;

guide pins arranged vertically in an outer side of said second pair of support arms;

cartridge clamp arms slidably fitted in said second pair of support arms; and

a cylinder coupled to said cartridge clamp arms for opening and closing said cartridge clamp arms.

5,645,794

LOW ALLOY STEEL FOR THE MANUFACTURE OF MOLDS FOR PLASTICS AND FOR RUBBER

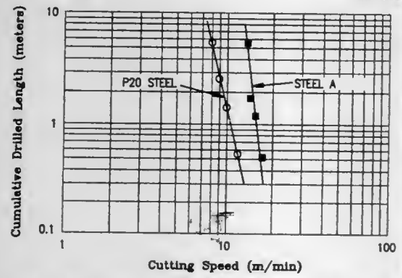
Jean Beguinot; Frédéric Chenou, both of Le Creusot, and Gilbert Primon, Saint Vallier, all of France, assignors to Creusot Loire Inudstrie, Puteaux, France

Filed Oct. 6, 1995, Ser. No. 540,011

Claims priority, application France, Oct. 31, 1994, 94 13029

Int. Cl.[6] C22C *38/32;38/54*

U.S. Cl. 420—106 **11 Claims**



1. A low alloy steel, the chemical composition of which comprises, by weight:

0.24%≦0.35%

1%≦Mn≦2.5%

0.3%≦Cr≦2.5%

0.1%≦Mo+W/2≦0.8%

0.1%≦W/2≦0.8%

Ni≦2.5%

0%≦V≦0.3%

Si≦0.5%

0.002%≦B≦0.005%

0.005%≦Al≦0.1%

0%≦Ti≦0.1%

P≦0.02%

Cu≦2%

optionally at least one element taken from Nb, Zr, S, Se, Te, Bi, Ca, Sb, Pb, In and rare earths, in amounts of less than 0.1%, the balance being iron and impurities associated with smelting, the chemical composition furthermore satisfying the relationships:

$$U=409(\%\ C)+19.3[\%\ Cr+(\%\ Mo+\%\ W/2)+\%\ V]+29.4\ (\%\ Si)+10(\%\ Mn)+7.2(\%\ Ni)<200$$

and

$$R=3.82(\%\ C)+9.79(\%\ Si)+3.34(\%\ Mn)+11.94(\%\ P)+2.39(\%\ Ni)+1.43(\%\ Cr)+1.43(\%\ Mo+\%\ W/2)<11.14$$

5,645,795

ALLOY COMPOSITION FOR A TRANSMISSION GEAR OF AN AUTOMIBLE

Hyoung-oh Ban, Kyungsangnam-do, Rep. of Korea, assignor to Hyundai Motor Company, Seoul, Rep. of Korea

Filed Dec. 29, 1994, Ser. No. 366,590

Claims priority, application Rep. of Korea, Dec. 30, 1993, 93-31613

Int. Cl.[6] C22C *38/44;38/46;38/48*

U.S. Cl. 420—109 **1 Claim**



1. An alloy composition for a transmission gear of an automobile consisting of 0.15–0.25 wt. % carbon, 0.10–0.15 wt. % silicon, 0.45–0.65 wt. % manganese, 0–0.015 wt. % phosphorus, 0–0.015 wt. % sulfur, 1–2.5 wt. % nickel, 0.5–0.6 wt. % chromium, 0.4–0.8 wt. % molybdenum, 0.02–0.06 wt. % niobium, 0.02–0.06 wt. % vanadium, 0–0.3 wt. % copper, and the remainder iron and inevitable impurities.

5,645,796

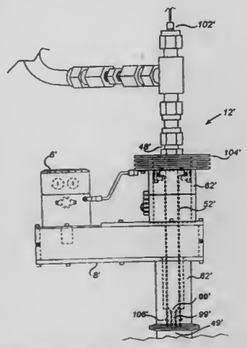
PROCESS FOR PLASMA STERILIZING WITH PULSED ANTIMICROBIAL AGENT TREATMENT

Ross A. Caputo, Long Grove; Thomas J. Amsler, Grayslake; Kangyan Du, Vernon Hills; Jeffery Jones, Antioch, all of Ill.; Kern A. Moulton, Sparks, Nev., and Bryant A. Campbell, deceased, late of Los Gatos, Calif., assignors to Abtox, Inc., Mundelein, Ill.

Continuation-in-part of Ser. No. 266,129, Jun. 27, 1994, abandoned, which is a division of Ser. No. 65,859, May 21, 1993, Pat. No. 5,413,758, which is a continuation-in-part of Ser. No. 749,041, Aug. 27, 1991, Pat. No. 5,244,629, which is a continuation-in-part of Ser. No. 576,235, Aug. 31, 1990, Pat. No. 5,084,239. This application Jun. 5, 1995, Ser. No. 461,412

Int. Cl.[6] A61L *2/00;2/14*

U.S. Cl. 422—22 **2 Claims**



1. A process for plasma sterilization of an interior of a chamber and any articles **1**, therein, comprising:

exposing said interior of said chamber and any articles therein to at least one combination sterilizing cycle, each combination sterilizing cycle comprising:

a pulsed treatment with gaseous antimicrobial agent, said pulsed treatment comprising one or more pulse-vacuum cycles, each pulse-vacuum cycle comprising the steps of evacuating said chamber and exposing the interior of said chamber and any articles therein to gaseous antimicrobial agent for a predetermined duration;

removing the antimicrobial agent after the pulsed treatment by evacuating said chamber; and

a plasma treatment comprising exposing the interior of said chamber and any articles therein to a stream of plasma, said plasma being generated in a separate plasma generating chamber and being supplied to effect sterilization in said chamber; wherein:

said plasma generating chamber comprises a quartz tube with an inlet and an outlet, and said outlet further comprises a restrictor.

5,645,797

METHOD AND APPARATUS FOR GAS/LIQUID CONTACT

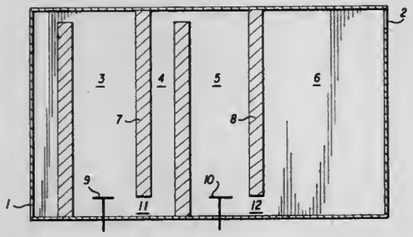
Sin-Man Lo, Oxon, England, assignor to Anglian Water Services, Ltd., Huntingdon, United Kingdom

Filed Jul. 13, 1994, Ser. No. 274,505

Claims priority, application United Kingdom, Jul. 14, 1993, 9314617

Int. Cl.[6] C02F *1/78*

U.S. Cl. 422—28 **6 Claims**



1. Apparatus for gas/liquid contact, said apparatus comprising an enclosure having a floor and an inlet and outlet for liquid and a flow path therebetween, said flow path including, in immediate succession, a first downward flow zone including a first gas bubble inlet located within said first downward flow zone and a first upward flow zone, a second downward flow zone including a second gas bubble inlet located within said second downward flow zone and a second upward flow zone, the adjacent first and second downward and upward flow zones each being separated by a wall spaced away from said enclosure and having a lower end beneath which a gap is formed by a space between said floor and said wall for the flow between said zones, wherein said first and second gas bubble inlets are positioned at a height from said floor of at least 50% of the space between said floor of said enclosure and said lower end of said wall which forms said gap.

5,645,798

TEST ELEMENTS IN SEALED CHAMBERS FOR ANALYZING COMPOUNDS CONTAINED IN LIQUID SAMPLES

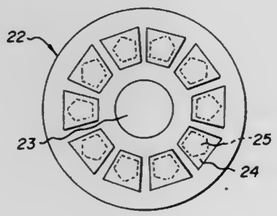
Joerg Schreiber, Heddesheim; Wilfried Schmid; Hans-Juergen Kuhr, both of Mannheim; Heino Eikmeier, Zvewegemer, and Klaus-Dieter Sacherer, Kirchheim, all of Germany, assignors to Boehringer Mannheim GmbH, Mannehim, Germany

Division of Ser. No. 231,712, Apr. 22, 1994, Pat. No. 5,489,414. This application Jun. 5, 1995, Ser. No. 464,405

Claims priority, application Germany, Apr. 23, 1993, 43 13 252.9; Aug. 27, 1993, 43 28 816.2

Int. Cl.[6] G01N *35/10*

U.S. Cl. 422—58 **11 Claims**



1. An integrated array comprising a plurality of test elements, said test elements being radially arranged on a common plane, said integrated array also including a plurality of chambers therein, wherein each test element of the plurality of test elements is individually sealed in a chamber of said plurality of chambers, and wherein each test element includes a test field wherein detectable changes occur upon addition of sample liquids thereto, each test element including a piercing means thereupon for piercing a seal of the chamber when said each test element is pushed into contact with the seal.

5,645,799

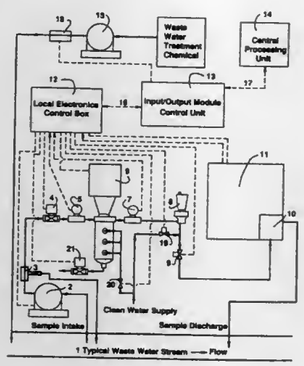
APPARATUS FOR A CONTINUOUS POLYMER DOSAGE OPTIMIZATION AND WASTE WATER ANALYSIS SYSTEM

Jitendra T. Shah; Ananthasubramanian Sivakumar, both of Naperville, and David W. Scheimann, Joliet, all of Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Continuation-in-part of Ser. No. 399,255, Mar. 6, 1995, abandoned. This application Nov. 2, 1995, Ser. No. 552,215

Int. Cl.[6] G01N *21/64*

U.S. Cl. 422—62 **8 Claims**



1. An apparatus for optimizing the dosage of a chemical waste water treatment agent to a waste water treatment system, comprising:

a metering pump attached to the waste water treatment system, the pump being constructed and adapted to pump water having a substantial solids content, the pump being capable of accepting an external pump control signal for providing an amount of fluorescently traced chemical treatment agent to the waste water treatment system;

an extraction pump located down stream from the metering pump to continuously extract a representative sample of waste water treated with a traced chemical treatment agent from the waste water treatment system, the sample comprising a water phase filtrate and a solid phase;

a filtration apparatus connected to the extraction pump for continuously separating the chemical treatment agent by separating suspended solids from the filtrate;

an air removal unit connected to the titration apparatus to continuously remove air entrained in the sample during sampling, processing and separation of the wastewater sample;

an analyzer connected to the air removal unit for analyzing the filtrate of the extracted waste water, wherein the analyzer is selected from the group consisting of a fluorometer, a streaming current detector and a colorimeter and wherein the analyzer is in electronic communication with a recorder that maintains records of the analysis carried out by the analyzer;

an electronic storage component that is in electronic communication with the recorder, the storage component comprising a database containing historical records of previous analysis of samples taken from the system; and

an optimization controller that is in electronic communication with the metering pump and the recorder and which contains the storage component, wherein the controller optimizes the chemical treatment agent dosage by comparing the analysis records in the recorder to the historical records in the electronic storage component and signalling the metering pump to adjust the amount of chemical waste water treatment agent according to optimal standards obtained from the historical records.

5,645,800

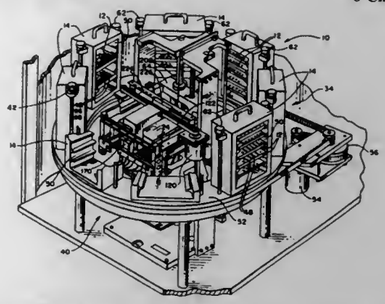
SPECIMEN PROCESSING AND ANALYZING SYSTEMS WITH ASSOCIATED FLUID DISPENSING APPARATUS

Brian K. Masterson, Placerville; Randolph L. Campbell, Sacramento, and Craig M. Daniel, El Dorado Hills, all of Calif., assignors to Dade MicroScan Inc., West Sacramento, Calif.

Division of Ser. No. 270,728, Jul. 5, 1994, Pat. No. 5,518,686, which is a continuation of Ser. No. 786,184, Oct. 31, 1991, abandoned. This application Jun. 2, 1995, Ser. No. 458,315

Int. Cl.[6] G01N *35/04*

U.S. Cl. 422—65 **6 Claims**



1. A specimen incubator comprising:

means defining an axially elongate vertically extending annular incubation volume for receiving and incubating plural specimens therein;

means for environmental control of said incubation volume;

support structure extending vertically within said annular incubation volume;

a carrier member movable vertically on said support structure, said carrier member also being movable horizontally from within said annular incubation volume outwardly into said incubation volume to extract therefrom and replace there into a selected one of said plural specimens;

detection means associated with said carrier member for detecting a physical response of said selected specimen; and

fluid dispensing means disposed vertically outside of and axially adjacent to said incubation volume, said support structure extending vertically outside of said incubation volume and to traverse said fluid dispensing means, and said carrier member being movable vertically on said support structure outside of said annular incubation volume and to said fluid dispensing means, whereby said carrier member is movable on said support structure to said fluid dispensing means to deliver said selected specimen to said fluid dispensing means.

5,645,801

DEVICE AND METHOD FOR AMPLIFYING AND DETECTING TARGET NUCLEIC ACIDS

Stanley R. Bouma, Grayslake; Ronald A. Coules, Barrington; Julian Gordon, Lake Bluff; Eric B. Shain, Glencoe; Natalie A. Solomon, Buffalo Grove, and Peter Zaun, Libertyville, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation of Ser. No. 141,491, Oct. 21, 1993, abandoned. This application Aug. 18, 1995, Ser. No. 516,728

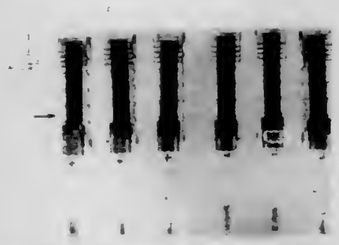
Int. Cl.[6] C12Q *1/68;* **C12M** *1/40;* **C12P** *19/34*

U.S. Cl. 422—68.1 **41 Claims**

1. An article of manufacture for use as a nucleic acid sample analysis device comprising:

an elongated reaction unit having a lower closed end and an upper open end, said reaction unit having an interior chamber, the upper end being adapted for receiving an amplification reaction sample into the interior chamber;

a detection unit having an opening into a detection chamber, said detection chamber housing means for collecting amplified target nucleic acid, whereby said amplified target nucleic acid can enter said detection unit through said opening;



wherein at least one of said reaction unit and said detection unit includes means for sealably engaging the open end of said reaction unit to the opening of said detection unit to form a sealed reaction/detection unit such that the interior chamber of said reaction unit is in fluid communication with the detection chamber.

5,645,802

METHOD AND APPARATUS FOR THE TREATMENT OF A WASTE GAS CONTAINING DISTS AND CHEMICAL CONTAMINANTS

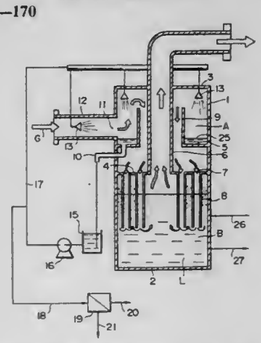
Hiroshi Yanagioka, Yokohama; Yoshio Ogawa, Tokyo; Yoshiaki Komatsubara, Tokyo, and Kenji Kobayashi, Yokohama, all of Japan, assignors to Chiyoda Corporation, Japan

Division of Ser. No. 515,756, Apr. 30, 1990, Pat. No. 5,120,518. This application Dec. 4, 1991, Ser. No. 802,184

Claims priority, application Japan, May 2, 1989, 1-112861

Int. Cl.[6] B01D *50/00*

U.S. Cl. 422—170 **8 Claims**



1. An apparatus for the treatment of a waste gas containing dust and chemical contaminants, said apparatus comprising:

a vertical column defined by a top, bottom and vertical cylindrical side wall with a side inlet for admission of a flow of the waste gas to be treated;

at least one liquid sprayer, depending from said top, for spraying droplets of a cooling liquid countercurrently into said waste gas flow;

interior wall means within said column, spaced from said side wall, for redirecting the waste gas flow first into a vertically ascending flow for the countercurrent contact with the droplets of cooling liquid and then into a vertically descending flow;

a dust-eliminating chamber provided in an upper portion of said column and defined by a collecting plate located beneath said one liquid sprayer for collecting said droplets of cooling liquid and dust and by said interior wall means, said one liquid sprayer being mounted within said column to direct said droplets of cooling liquid downward into said dust-eliminating chamber for cooling said waste gas and for removing dust from said gas;

a chemical treatment chamber, provided in said column below said dust-eliminating chamber and separated therefrom by said collecting plate, for containing a liquid absorbent for said chemical contaminants, for receiving said vertically descending flow and for contacting said vertically descending flow with said liquid absorbent to convert said waste gas into a treated gas by absorption of the chemical contaminants into the liquid absorbent;

a gas outlet for exit of the treated gas from said column; and

a liquid effluent outlet for discharge of the dust and cooling liquid collected on said collecting plate from said vertical column.

5,645,803

CATALYST MEANS FOR THE CATALYTIC TREATMENT OF EXHAUST GAS CATALYTIC CONVERTER

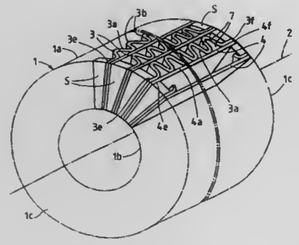
Pieter D. Steenackers, Heverlee, and J. W. Jörg Alexnat, Vliermaal, both of Belgium, assignors to Scambia Industrial Developments Aktiengesellschaft, Schaan, Liechtenstein

Filed Apr. 11, 1995, Ser. No. 420,176

Claims priority, application Switzerland, Apr. 11, 1994, 1064/94

Int. Cl.[6] B01D *50/00*

U.S. Cl. 422—177 **40 Claims**



1. Catalyst means for catalytic treatment of an exhaust gas, comprising at least one packet of alternating first and second sheet metal members; and a plurality of spacer members arranged between adjacent respective first and second sheet metal members,

wherein each of the first and second sheet metal members has two opposite edges,

wherein each second sheet metal member has two opposite sections defining said two edges of the second sheet metal member and having each a straight cross-section along a line crossing said two edges, and each first sheet metal member has an intermediate main section provided with protuberances and two retaining sections provided on opposite sides of said intermediate main section, located adjacent to said two opposite edges of the first sheet metal member, respectively, and having each a straight cross-section along a line crossing said two edges,

wherein each spacer member extends between a respective retaining section of a respective first sheet metal member and a respective second sheet metal member substantially along respective edges of said respective first and second sheet metal members,

wherein each of first and second sheet metal members, which are located between opposite end sheet metal members of said at least one packet, has a first surface section resting against a respective spacer member and a second surface section, remote from the respective spacer member and resting against one of a respective one of the first and second sheet metal members and another spacer member,

wherein first and second sheet metal members and spacer members resting against each other are fixedly connected with each other, and

wherein respective first and second sheet metal members define pairwise respective exhaust gas passages.

5,645,804

METHOD FOR CLEANING EXHAUST GAS CONTAINING NITROGEN OXIDES

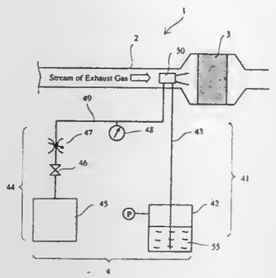
Satoshi Sumiya; Seiji Makino; Kiyohide Yoshida; Yoshikazu Takahashi; Masataka Furuyama; Akira Abe; Nobuyuki Matsumura, and Gyo Muramatsu, all of Kumagaya, Japan, assignors to Kabushiki Kaisha Riken, Tokyo, Japan

Continuation of Ser. No. 901,067, Jun. 19, 1992, abandoned. This application May 30, 1995, Ser. No. 453,086

Claims priority, application Japan, Jun. 28, 1991, 3-183319; Jul. 31, 1991, 3-214323; Jan. 28, 1992, 4-037299; Feb. 24, 1992, 4-072913; Apr. 23, 1992, 4-130184; Apr. 23, 1992, 4-130195

Int. Cl.[6] B01D *53/56*

U.S. Cl. 423—239.1 **24 Claims**



1. A method of cleaning an exhaust gas containing nitrogen oxides and oxygen in a larger amount than a stoichiometric amount relative to unburned components in said exhaust gas, which comprises

disposing an exhaust gas cleaner comprising a heat-resistant, porous ceramic body and a catalyst supported by said porous ceramic: body in a flow path of said exhaust gas;

introducing a liquid hydrocarbon which is in a liquid state at room temperature and 1 atmosphere into a stream of said exhaust gas on the upstream side of said exhaust gas cleaner; and

bringing said liquid hydrocarbon into contact with said catalyst at a temperature of 200°–600° C., said catalyst consisting essentially of V and Cu, a weight ratio of said Cu to V being in the range of 5/1 to 1/15, said catalyst being 5–20 weight % as a metal component based on said porous ceramic body, whereby said liquid hydrocarbon is reacted as a reducing agent with nitrogen oxides in said exhaust gas.

21. A method of cleaning an exhaust gas containing nitrogen oxides, which comprises

disposing an exhaust gas cleaner comprising a heat-resistant, porous ceramic body in a flow path of said exhaust gas, said porous ceramic body having a porous ceramic layer formed on a surface thereof with said porous ceramic powder layer being 5–20 weight % based on said porous ceramic body, and

introducing liquid hydrocarbons in a liquid state at room temperature and 1 atmosphere into a stream of said exhaust gas on the upstream side of said exhaust gas cleaner,

said heat-resistant, porous ceramic body carrying a catalyst consisting essentially of:

(a) 40–90 weight % of transition elements composed of V and at least one element selected from the group consisting of Cu, Co and Mn, a weight ratio of said at least one element selected from the group consisting of Cu, Co and Mn to V being in the range of 5/1 to 1/15; and

(b) 10–60 weight % of at least one member selected from the group consisting of Ce and La,

said catalyst being 0.5–15 weight % based on said porous ceramic body, and the temperature of said exhaust gas passing through said exhaust gas cleaner being kept at 200°–600° C., whereby gasified hydrocarbon functions as a reducing agent for reducing nitrogen oxides in said exhaust gas.

5,645,805

REDUCTION OF ACID RAIN AND OZONE DEPLETION PRECURSORS

Klaus Heinrich Oehr, Surrey, Canada; Girard A. Simons, Lynnfield, Mass., and Jiahua Zhou, Vancouver, Canada, assignors to Dynamotive Corporation, Vancouver, Canada

Continuation-in-part of Ser. No. 130,123, Sep. 30, 1993, Pat. No. 5,458,083. This application Jun. 19, 1995, Ser. No. 491,751

Int. Cl.[6] B01D *53/60;* **C01B** *21/00;* **C10L** *10/00*

U.S. Cl. 423—239.1 **11 Claims**

1. A method of reducing acid emissions and ozone deletion precursors from a flue gas produced by the combustion of sulphur- or nitrogen-containing fuel or acid emissions and ozone depletion precursors from chemical plants, the method comprising the step of introducing into a flue containing the flue gas a liquor additive comprising a pyrolysis liquor, which is initially acidic due to the presence of one or more acidic components and is at least partially neutralized by a basic alkaline earth metal, whereby the liquor contains at least one thermolabile alkaline earth metal compound which is formed by the reaction of said one or more acidic components with said basic alkaline earth metal compound and is able to decompose at flue gas temperature to produce an alkaline compound able to react with sulphur dioxide and oxides of nitrogen.

5,645,806

DECOMPOSITION OF ORGANOHALOGEN COMPOUNDS IN DUST-LADEN-WASTE GASES

Klaus Hess, Bad Dürkheim; Roland Spahl, Lorsch; Hans Christoph Horn, Lambsheim; Ingo H. Dorn, Dannstadt-Schauernheim; Günter Dinkhauser, Limburgerhof, and Hans-Ingo Joschek, Mannheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigsbafen, Germany

Filed Jul. 14, 1994, Ser. No. 274,694

Claims priority, application Germany, Jul. 17, 1993, 43 24 085.2

Int. Cl.[6] C01B *7/00*

U.S. Cl. 423—240 S **4 Claims**

1. A process for decomposing organohalogen compounds which are present in dust-laden gases which have a carbon content of less than 0.6% by weight of the dust, by oxidative breakdown with the aid of solid catalysts suitable for this purpose, wherein

a) the dust is deposited from the gases at 250°–500° C., and the dust-free gas is passed together with oxygen or an oxygen-containing gas over the catalyst, or

b) the deposition of the dust takes place at below 250° C., the organohalogen compounds are desorbed from the dust in an oxygen-containing gas stream at 250°–500° C., and the gas stream is passed over the catalyst, or

c) the dust-laden gas is passed in the presence of oxygen over the catalyst at 250°–500° C., and the dust is subsequently removed.

5,645,807

MAGNESIUM-ENHANCED SULFUR DIOXIDE SCRUBBING WITH GYPSUM FORMATION

John W. College; Shiaw C. Tseng, both of Pittsburgh, and Russell C. Forsythe, Ellwood City, all of Pa., assignors to Dravo Lime Company, Pittsburgh, Pa.

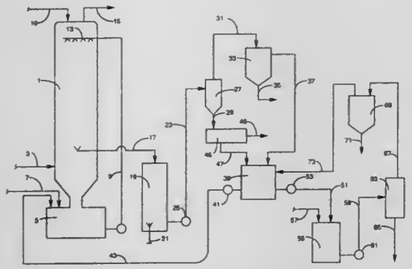
Continuation of Ser. No. 234,932, Apr. 28, 1994, abandoned. This application May 24, 1995, Ser. No. 446,959

Int. Cl.[6] C01B *17/22:* **C01F** *11/36*

U.S. Cl. 423—243.1 **10 Claims**

1. A method of removing sulfur dioxide from a gaseous stream with a magnesium-enhanced lime scrubbing medium so as to produce a gypsum by-product comprising:

passing said gaseous stream through a wet scrubbing unit while contacting said gaseous stream with an aqueous slurry of



magnesium-enhanced lime, where said aqueous slurry contains between 13–20 percent by weight calcium sulfite solids, and with magnesium sulfite and magnesium sulfate dissolved therein;

directing said aqueous slurry, after contact with said gaseous stream, to a hold tank and adding lime and magnesium thereto to replenish reacted lime and magnesium;

recycling said replenished aqueous slurry to said wet scrubbing unit for further contact with said gaseous stream passing therethrough;

removing a bleed stream of said aqueous slurry, containing calcium sulfite, magnesium sulfite and magnesium sulfate, and having a pH of between 4.5–5.6, from said wet scrubbing unit, after contact with said gaseous stream and prior to directing the same to said hold tank;

passing the removed aqueous slurry directly to an oxidizing unit, without separation of calcium sulfite solids, magnesium sulfite and magnesium sulfate therefrom;

oxidizing said calcium sulfite and magnesium sulfite to produce gypsum and magnesium sulfate, said gypsum precipitating as a solid and said magnesium sulfate dissolving in said aqueous medium;

removing any residual solids and said gypsum from said aqueous slurry to produce a clarified solution;

separating said gypsum from residual aqueous medium and returning said separated aqueous medium to said wet scrubbing unit; and

returning said clarified solution along with said separated aqueous medium to said wet scrubbing unit for admixture with said aqueous slurry.

5,645,808

CATALYTIC OXIDATION OF VOLATILE CARBON COMPOUNDS

Karl Robert Krause, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 440,958, May 15, 1995, abandoned. This application Aug. 7, 1996, Ser. No. 693,727

Int. Cl.[6] C07C *11/24*

U.S. Cl. 423—245.3 **12 Claims**

1. A process for the oxidation of at least one volatile carbon compound contained in a gas stream also containing molecular oxygen, said process comprising heating an electrically conductive metal or metal oxide catalyst by electrical induction to a temperature sufficiently high to oxidize said volatile carbon compound and contacting said stream with the heated catalyst wherein the catalyst has a melting point of at least 400 degrees C. and higher than the temperature of operation.

5,645,809

METHOD OF PRODUCING GLASSY CARBON CONTAINING METAL PARTICLES

Matthew R. Callstrom, Columbus, and Richard L. McCreery, Worthington, both of Ohio, assignors to Ohio State University, Ohio

Division of Ser. No. 20,198, Feb. 19, 1993, Pat. No. 5,453,169, which is a continuation-in-part of Ser. No. 748,263, Aug. 21, 1991, abandoned. This application Sep. 18, 1995, Ser. No. 529,658

Int. Cl.[6] C01B *31/00*

U.S. Cl. 423—445 R **21 Claims**

1. A method of producing glassy carbon containing metal particles, comprising

providing a metal complexed to a molecule which cross-links when heated to form a glassy carbon; and

heating said metal complex for a period of time for said molecule to cross-link to form glassy carbon containing metal particles.

5,645,810

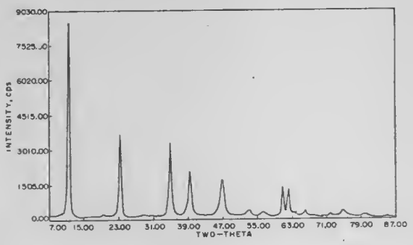
HIGH SURFACE AREA MEIXNERITE FROM HYDROTALCITES

Michael A. Easley, Arnold, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Jun. 7, 1995, Ser. No. 473,828

Int. Cl.[6] C01F *7/16*

U.S. Cl. 423—600 **17 Claims**



1. A synthetic activated meixnerite having a B.E.T. surface area of about 290 m^2/g or greater made from a process consisting of:

(a) activating a magnesium aluminum hydroxycarbonate hydrotalcite material;

(b) hydrating said activated material in a substantially carbon dioxide-free environment; and

(c) reactivating said hydrated material at one or more temperatures between about 500° and 850° C. in a substantially carbon dioxide-free environment.

11. A method for making an activated meixnerite comprising:

(a) activating a magnesium aluminum hydroxycarbonate hydrotalcite material;

(b) cooling said activated material in a substantially carbon dioxide-free environment;

(c) hydrating said material in a substantially carbon dioxide-free environment;

(d) reactivating said hydrated material at one or more temperatures between about 500° and 850° C. in a substantially carbon dioxide-free environment; and

(e) cooling said reactivated material in a substantially carbon dioxide-free environment.

5,645,811

PROCESS FOR THE PRODUCTION OF VERY FINE-PARTICLE ZEOLITIC ALKALI METAL ALUMINUM SILICATES

Peter Kuhm, Hilden; Rainer Salz, and Gerhard Blasey, both of Duesseldorf, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP94/00836, § 371 Date Sep. 22, 1995, § 102(e) Date Sep. 22, 1995, PCT Pub. No. WO94/21558, PCT Pub. Date Sep. 29, 1994

PCT Filed Mar. 16, 1994, Ser. No. 525,699

Claims priority, application Germany, Mar. 25, 1993, 43 09 656.5

Int. Cl.[6] C01B *39/16;39/20*

U.S. Cl. 423—700 **18 Claims**

1. A process for the production of very fine-particle zeolitic alkali metal aluminum silicates corresponding to formula (I):

$$xMe_2O.Al_2O_3.y\ SiO_2.zH_2O \quad (I)$$

in which

Me is sodium and/or potassium,

x is a number of 0.8 to 1.3,

y is a number of 1,3 to 10, and

z is a number of 0 to 6,

comprising the steps of

A) mixing together two reaction components, wherein the two reaction components are an aqueous solution of at least one sodium or potassium alkali metal silicate and an aqueous solution of at least one sodium or potassium alkali metal aluminate, in the presence of more than the stoichiometrically necessary quantity of an aqueous solution of at least one alkali metal hydroxide selected from the group consisting of sodium hydroxide and potassium hydroxide, wherein the mixing is carried out with intensive stirring over a period of less than 10 minutes at a temperature in the range of from about 20° to about 70° C. to form an amorphous alkali metal aluminum silicate gel and wherein at least one of the two reaction components is present in less than the stoiciometrically necessary quantity, or both reaction components are present in the stoichiometrically necessary quantity:

B) mixing the reaction mixture from step A) for from about 5 to about 40 minutes at a temperature in the range of from about 20° to about 70° C. to age the amorphous gel formed in step A);

C) heating the reaction mixture while mixing for from about 5 to about 30 minutes at a temperature of more than about 70° C. to the boiling point of the reaction mixture; and

D) adding thereto from about 2 to about 50 mole % of at least one of the alkali metal aluminate and alkali metal silicate reaction components, based on the quantity of the reaction components used in step A), wherein the addition is in an amount sufficient to either make up the balance to the stoichiometrically necessary quantity thereof or as a stoichiometric excess, while maintaining the amorphous alkali metal aluminum silicate gel for at least about 10 minutes at a temperature in the range of more than about 70° C. to the boiling point of the reaction mixture to crystallize said gel; wherein the term "stoichiometrically necessary quantity" is based on the stoichiometry of the zeolitic alkali metal aluminum silicate of formula I; and wherein the compounds of formula I include zeolites of the A type, zeolites of the P type, and zeolites of the faujasite type.

174–432 O.G.–97–13: QL3

5,645,812

ZEOLITE ZSM-11 AND A PROCESS FOR PREPARING ZEOLITE ZSM-11 USING A 3,5-DIMETHYLPIPERIDINIUM TEMPLATING AGENT

Yumi Nakagawa, Oakland, Calif., assignor to Chevron U.S.A. Inc., San Francisco, Calif.

Continuation-in-part of Ser. No. 130,348, Oct. 1, 1993, abandoned. This application Sep. 30, 1994, Ser. No. 316,010

Int. Cl.[6] C01B *39/36*

U.S. Cl. 423—706 **29 Claims**

1. A process for preparing the zeolite ZSM-11 which comprises:

(a) preparing an aqueous solution comprising sources of (1) an alkali metal oxide, alkaline earth metal oxide or mixtures thereof; (2) an oxide selected from the oxides of aluminum, boron, iron, gallium, indium, titanium, or mixtures thereof; (3) an oxide selected from oxides of silicon, germanium or mixtures thereof; and (4) at least one 3,5-dimethylpiperidinium compound;

(b) maintaining the aqueous solution under conditions sufficient to form crystals of ZSM-11; and

(c) recovering the crystals of ZSM-11.

5,645,813

Patent Not Issued For This Number

5,645,814

HEXADENTATE COMPLEXES USEFUL IN RADIOGRAPHIC IMAGING AGENTS

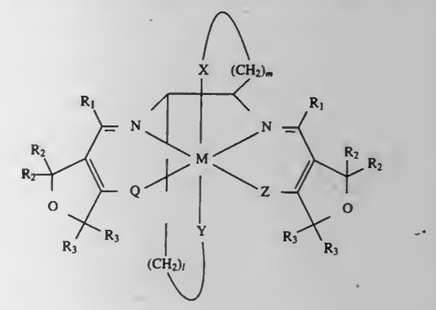
Steven R. Woulfe, Ballwin, and Raghavan Rajagopalan, Maryland Heights, both of Mo., assignors to Mallinckrodt Medical, Inc., St. Louis, Mo.

Division of Ser. No. 909,377, Jul. 6, 1992, Pat. No. 5,338,864. This application Apr. 18, 1994, Ser. No. 229,037

Int. Cl.[6] A61K *51/04;* **C07F** *13/00*

U.S. Cl. 424—1.65 **15 Claims**

1. A radionuclide complex having the general formula:



wherein M is a radionuclide; and wherein R_1, R_2 and R_3 are the same or different and are selected from the group consisting of hydrogen, alkyl, aryl, hydroxyl, alkoxyl, mono- or poly- hydroxyalkyl, mono- or poly- alkoxyalkyl, alkoxycarbonyl or carbamoyl; l and m may be the same or different and are from 1 to 6; Q and Z may be the same or different and are an O, N or S atom; and X and Y are $—P(R_4)R_5$ wherein $R_4$and R_5 may be the same or different and are selected from the group consisting of hydrogen, methyl, ethyl, and aryl groups.

5,645,815

RADIOLABLED COMPOUNDS FOR THROMBUS IMAGING

Richard T. Dean; John Lister-James, both of Bedford, and Edgar R. Civitello, Bradford, all of N.H., assignors to Diatide, Inc., Londonderry, N.H.

Continuation of Ser. No. 44,825, Apr. 8, 1993, abandoned, which is a continuation-in-part of Ser. No. 653,012, Feb. 8, 1991, abandoned. This application May 12, 1995, Ser. No. 439,905

Int. Cl.[5] **A61K** *51/00;* **A61M** *36/14*

U.S. Cl. 424—1.69 **25 Claims**

1. A reagent for preparing a thrombus imaging agent for imaging thrombi within a mammalian body, comprising, in combination, a radiolabel binding moiety that is capable of binding technetium-99m, indium-111 or gallium-68, and that is covalently linked to a specific binding compound that is less than 10,000 daltons in molecular weight and that binds to a platelet glycoprotein IIb/IIIa receptor, wherein the reagent inhibits human platelet aggregation in platelet-rich plasma by 50% (IC_{50}) when present at a concentration of no more than 0.3 μM.

5,645,816

SYNTHETIC POLYURONIC AND HYPOOSMOTIC POLYMER COMPOSITIONS IN ADMIXTURE WITH PROTEINACEOUSLY BOUND CONTRAST AGENTS FOR MRI

Evan C. Unger, Tucson, Ariz., assignor to ImaRx Pharmaceutical Corp., Tucson, Ariz.

Division of Ser. No. 465,431, Jun. 5, 1995, which is a division of Ser. No. 251,484, May 31, 1994, which is a division of Ser. No. 960,591, Oct. 13, 1992, Pat. No. 5,368,840, which is a continuation-in-part of Ser. No. 507,125, Apr. 10, 1990, abandoned. This application Jun. 6, 1995, Ser. No. 465,862

Int. Cl.[6] **A61B** *5/055*

U.S. Cl. 424—9.34 **157 Claims**



1. A contrast medium for use in magnetic resonance imaging of a patient comprising an aqueous solution or suspension of a biocompatible polymer in admixture with a contrast agent bound to a proteinaceous macromolecule, wherein the contrast medium is hypoosmotic to bodily fluids of the patient.

5,645,817

GRANULOCYTE-BINDING ANTIBODY CONSTRUCTS, THEIR PREPARATION AND USE

Gerhard Seemann, Marburg-Elnhausen, and Klaus Bosslet, Marburg, both of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg, Germany

Continuation of Ser. No. 100,963, Aug. 3, 1993, abandoned. This application Jun. 2, 1995, Ser. No. 459,310

Claims priority, application Germany, Aug. 5, 1992, 42 25 853.7

Int. Cl.[6] **C12P** *21/08;* **A61K** *39/395;39/44;* **C07K** *16/28*

U.S. Cl. 424—9.341 **13 Claims**

1. An antibody light chain, containing a polypeptide of the amino acid sequence (SEQ ID No: 17)

Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser
Val Gly Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Ser Ser
Val Ser Tyr Met His Trp Tyr Gln Gln Lys Pro Gly Lys Ala
Pro Lys Pro Leu Ile Tyr Ala Thr Ser Asn Leu Ala Ser Gly
Val Pro Ser Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe
Thr Phe Thr Ile Ser Ser Leu Gln Pro Glu Asp Ile Ala Thr
Tyr Tyr Cys Gln Gln Trp Ser Ser Asn Pro Leu Thr Phe Gly
Gln Gly Thr Lys Val Glu Ile Lys Arg.

5,645,818

DIAGNOSTIC COMPOSITIONS COMPRISING A COMPLEX FORMED BY A NITROGENOUS MACROCYCLIC LIGAND WITH METAL IONS

Susan C. Jackels, Winston-Salem, N.C., and Dominique Meyer, Saint-Maur, France, assignors to Guerbet S.A., Villepinte, France, and Wake Forest University, Winston-Salem, N.C.

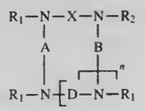
Continuation of Ser. No. 237,914, May 4, 1994, abandoned, which is a continuation of Ser. No. 768,391, Nov. 20, 1991, abandoned. This application Jan. 12, 1995, Ser. No. 371,893 Claims priority, application France, Mar. 24, 1989, 89 03938

Int. Cl.[6] **A61K** *49/00*

U.S. Cl. 424—9.363 **27 Claims**

1. Method for in vivo imaging by nuclear magnetic resonance or X-rays, comprising the steps of administering to a human or an animal an effective amount of a diagnostic composition and subjecting the animal or human to a magnetic field or X-rays; said diagnostic composition comprising an effective amount of a neutral or anionic, mono- or polymetallic complex formed by:

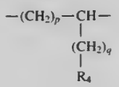
1) a ligand of formula



I

in which:

a) A and B each represents independently a linear or branched C_1–C_8 alkylene group, a linear or branched C_1–C_8 hydroxyalkylene group, a linear or branched C_1–C_8 polyhydroxyalkylene group, a $—(CH_2—CH_2—O)_z—CH_2—CH_2—$ group, z being an integer from 1 to 3, or a group of formula



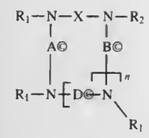
i) p being equal to an integer from 1 to 7,

ii) q being equal to an integer from 0 to 8, and

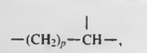
iii) R_4 representing

aa) a group for the binding of the macrocycle of formula I to a biomolecule or a polymer, or

bb) a group of formula



in which one of A', B', and D' denotes

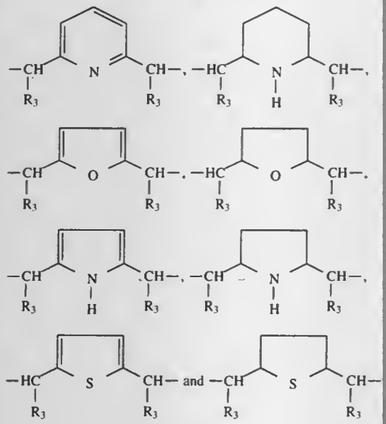


p being previously defined, and two of A', B', and D' are two of A, B and D, respectively,

b) n is 1,

c) D is X,

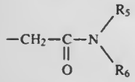
d) X is selected from the group consisting of



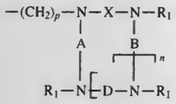
in which R_3 is selected from the group consisting of hydrogen, C_1–C_5 alkyl, C_1–C_5 hydroxyalkyl and C_1–C_5 polyhydroxyalkyl,

e) R_1 is selected from the group consisting of $—CH_2—COOH$ and $—CH_2—PO_3H_2$ and the corresponding anions $—CH_2—COOH$ and $—CH_2—PO_3^-$,

f) R_2 is selected from the group consisting of hydrogen, C_1–C_4 alkyl, C_1–C_4 hydroxyalkyl, C_1–C_4 polyhydroxyalkyl, $—CH_2—COOH$, $—CH_2—PO_3H_2$, $—CH_2COO^-$, $—CH_2PO_3^-$, a group



in which R_5 and R_6 is each independently selected from the group consisting of hydrogen C_1–C_4 alkyl, C_1–C_4 hydroxyalkyl, and C_1–C_4 polyhydroxyalkyl, and a group



X, A, B, D, R_1, n and p being as previously defined; and

2) a metal ion selected from the group consisting of Gd^{3+}, Mn^{2+}, Fe^{3+}, Dy^{3+}, Ho^{3+}, Tb^{3+}, Er^{3+}, En^{3+}, Pr^{3+}, Yb^{3+}, Pb^{3+}, Ce^{3+}, La^{3+}, Bi^{2+}, and Ba^{2+};

or a salt of said complex with a pharmaceutically acceptable mineral or organic base or a basic amino acid.

5,645,819

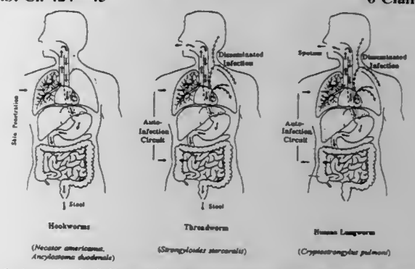
METHODS OF DIAGNOSING AND TREATING AN INTESTINAL AND LUNG ROUNDWORM INFECTION

Lawrence A. Klapow, 1010 Park Ave., Burlingame, Calif. 94010

Filed Mar. 13, 1995, Ser. No. 403,278

Int. Cl.[6] **A61K** *9/12*

U.S. Cl. 424—45 **6 Claims**



1. A method of diagnosing the presence of roundworms in lungs, comprising the steps of:

(a) providing i) a subject suspected of being infected with *Cryptostrongylus pulmoni* and ii) aerosolized thiabendazole for inhalation in a daily dose ranging between approximately 25 mg and 210 mg;

(b) administering said aerosolized thiabendazole by inhalation to said subject,

(c) collecting sputum samples from said subject following said administering; and

(d) analyzing said sputum samples for the presence of said *Cryptostrongylus pulmoni* in the lungs of said subject.

5,645,820

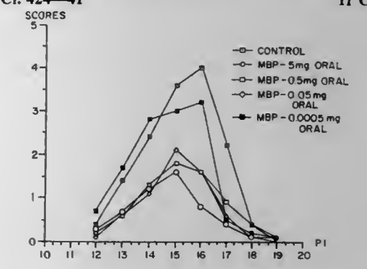
TREATMENT OF AUTOIMMUNE DISEASES BY AEROSOL ADMINISTRATION OF AUTOANTIGENS

David Allen Hafler, W. Newton, and Howard L. Weiner, Brookline, both of Mass., assignors to AutoImmune, Inc., Lexington, Mass.

Continuation of Ser. No. 53,306, Apr. 26, 1993, abandoned, which is a continuation of Ser. No. 454,806, Dec. 20, 1989, abandoned, which is a continuation-in-part of Ser. No. 379,778, Jul. 14, 1989, abandoned, and a continuation-in-part of Ser. No. 2,139, Jun. 24, 1988, which is a continuation-in-part of Ser. No. 65,734, Jun. 24, 1987, abandoned. This application Apr. 10, 1995, Ser. No. 419,502

Int. Cl.[6] **A61K** *9/12;38/02*

U.S. Cl. 424—41 **11 Claims**



1. A method for suppressing an autoimmune response associated with a cell-mediated autoimmune disease in a mammal, which comprises the step of nasally administering to said mammal a composition consisting essentially of an effective amount for suppressing said autoimmune response of at least one agent selected from the group consisting of an autoantigen specific for said disease, and an autoimmune response suppressive fragment of said autoantigen.

5,645,821

ALKALINE ORAL HYGIENE COMPOSITION

Barry M. Libin, 15 Thornhedge Rd., Bellport, N.Y. 11713

Filed Oct. 6, 1995, Ser. No. 540,249

Int. Cl.[6] A61K *7/16*

U.S. Cl. 424—49 **10 Claims**

1. A peroxide-free alkaline oral hygiene composition in a paste or cream form applicable to surfaces of teeth and adjacent gingival tissues in an acidic environment of the oral cavity, said composition consisting essentially of:

A. water in an amount sufficient to impart wetness to the composition;

B. a gelling agent to form said paste or cream;

C. an anionic surfactant in an amount sufficient to impart detergent and foaming properties to the composition; and

D. a mixture of magnesium hydroxide, magnesium carbonate and calcium carbonate in fine powder form serving as cleansing agents having minimum abrasiveness in relative amounts sufficient to impart to the composition an overall pH in excess of about 9 to cause said composition to retain its alkalinity in said acidic environment and thereby counteract the formation of plaque and neutralize acids in the oral cavity environment causing tooth decay, the alkaline composition acting to saponify foreign materials accumulating on the surfaces of the teeth and adjacent gingival tissues whereby those materials may be washed away.

5,645,822

METHOD AND APPARATUS FOR SUNLESS TANNING

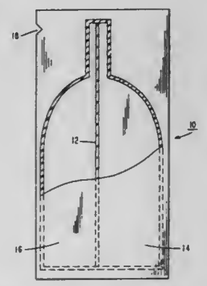
Thomas A. Meyer, Germantown, and Michael E. Ando, Memphis, both of Tenn., assignors to Schering-Plough Health-Care Products, Inc., Memphis, Tenn.

PCT No. PCT/US93/11906, § 371 Date Jun. 6, 1995, § 102(e) Date Jun. 6, 1995, PCT Pub. No. WO94/13258, PCT Pub. Date Jun. 23, 1994

Continuation-in-part of Ser. No. 991,666, Dec. 16, 1992, abandoned. This PCT application Dec. 14, 1993, Ser. No. 448,578

Int. Cl.[6] A61K *7/42;31/74*

U.S. Cl. 424—59 **37 Claims**



1. Apparatus for imparting artificial tan to skin, comprising:

(a) a receptacle containing a fluid formulation comprising dihydroxyacetone;

(b) a receptacle containing a fluid formulation comprising a secondary polyamine; and

(c) dispensing means for simultaneously or sequentially providing said fluid formulations in amounts to yield dihydroxyacetone to polyamine molar ratios about 0.1 to about 14.

5,645,823

KERATINOUS TISSUE CONDITIONER

Bernice Eileen Thrall, and Judith Ann Noel, both of P.O. Box 479, La Salle, Colo. 80645

Filed Jul. 7, 1995, Ser. No. 499,357

Int. Cl.[6] A61K *7/04*

U.S. Cl. 424—61 **20 Claims**

1. A composition for the treatment and conditioning of keratinous, hairless, tissues and their adjacent tissues such as those of equine hooves and human finger and toe nails that have been damaged by environmental factors, consisting essentially of:

a. 65 to 99 percent by weight of water, and

b. 0.0 to 10.0 percent by weight of an antimicrobial, and

c. 0.1 to 15.0 percent by weight of a chelating agent, and

d. 0.0 to 5.0 percent by weight of an alkylated nonionic surfactant;

e. said composition being a safe, aqueous solution of components that work in concert to supply water, liquids, and other organic compounds that rapidly penetrate a plurality of keratinous, hairless, tissues and a plurality of their adjacent tissues, to impart strength, hardness and flexibility necessary for normal functioning of said tissues;

f. said composition when applied to said keratinous, hairless, tissues and their said adjacent tissues restores and establishes normal, healthy metabolic function and compositional balance.

5,645,824

COLOR CHANGING REAGENT COMPOSITION FOR COATING ON NEEDLES USED IN MEDICAL APPLICATIONS

Min H. Lim, 502 Andrew St., Greenbrook, N.J. 08812, and Michael G. Marinangleli, 244 E. 86 St. #23, New York, N.Y. 10028

Filed Oct. 2, 1995, Ser. No. 541,488

Int. Cl.[6] D06P *5/00;* **C09B** *67/00;* **G01N** *33/00;* **A61M** *5/00*

U.S. Cl. 424—70.1 **3 Claims**

1. A reagent composition for coating onto needles of hypodermic syringes and needle containing medical devices contacting bodily fluids blood, mucous, saliva and semen, comprising:

a colorless, reduced leuco dye which upon contact with a bodily fluid containing a hydroperoxide catalyst will, upon oxidation, cause the coated needle to become visually colored, wherein the reduced leuco dye is selected from the group consisting of guaiac acid, Barfoeds solution, Benedicts solution, cresol, cathecol, phenylenediamine, Haynes solution, leuco malachite green, leucocrystal violet, peroxidase, pseudoperoxidase, tetramethylbenzedene and 2,2-azino-di-(3-ethylbenzyl)thiazoline sulfonic acid (ABTS).

5,645,825

DEPILATORY COMPOSITIONS COMPRISING SULFHYDRYL COMPOUNDS

Greg George Hillebrand, Fairfield, and Vladimir Gartstein, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 7, 1995, Ser. No. 479,878

Int. Cl.[6] A61K *7/15;7/06;31/095*

U.S. Cl. 424—73 **7 Claims**

1. A method of removing unwanted vellus facial hair in mammals comprising topically applying to the face of a mammal in need of treatment a composition comprising:

a) a safe and effective amount of a sulfhydryl compound selected from the group consisting of cysteine, homocysteine, glutathione, thioglycerol, thiomalic acid, 2-mercaptopropionic acid, 3-mercaptopropionic acid, 2-mercaptoethanol, dithiothreitol, thiosalicylic acid, N-acetyl-L-cysteine, and cosmetically- and/or pharmaceutically-acceptable salts thereof, and

b) a safe and effective amount of a topical carrier, the composition having a pH of 7 or below.

5,645,826

METHOD OF TREATING DAMAGED TISSUE WITH SEMI-OCCLUSIVE SALICYLIC ACID OINTMENT

Robert M. Posner, Merrick, N.Y., assignor to Abbe Cosmetic Group International, Inc., Farmingdale, N.Y.

Continuation-in-part of Ser. No. 570,997, Dec. 12, 1995, abandoned. This application May 31, 1996, Ser. No. 657,838

Int. Cl.[6] A61K *31/74*

U.S. Cl. 424—78.02 **44 Claims**

1. A method of treating damaged tissue comprising applying a pharmaceutically effective amount of a composition to damaged tissue, the composition comprising a semi-occlusive ointment base and salicylic acid in an amount effective to produce keratoplasticity and ineffective to cause keratolysis, the ointment base being yellow/amber petrolatum and anhydrous lanolin.

5,645,827

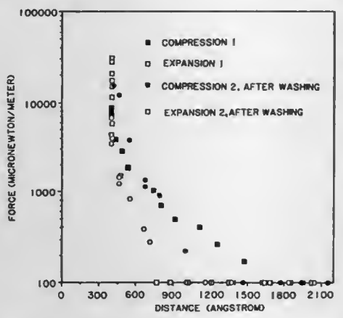
MUCO-ADHESIVE POLYMERS

Lawrence Marlin, Bridgewater, N.J., and Ronald Kenichi Yamamoto, San Francisco, Calif., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 329,104, Oct. 25, 1994, abandoned, which is a continuation of Ser. No. 954,753, Sep. 30, 1992, Pat. No. 5,358,706. This application Jan. 19, 1995, Ser. No. 375,498

Int. Cl.[6] A61K *31/74;47/36*

U.S. Cl. 424—78.04 **17 Claims**



1. In a method for delivery of an anionic therapeutic agent to a mucosal surface, which method comprises providing a composition to said mucosal surface, said composition comprising:

(a) water;

(b) an effective amount of a cationic polysaccharide polymer to provide substantivity to the mucosal surface; and

(c) an effective amount of an anionic therapeutic agent to provide delivery of the anionic therapeutic agent to the mucosal surface; The improvement wherein:

(i) said cationic polvsaccharide comprises a quaternary-nitrogen radical substituted with members selected from the group consisting of alkyl and alkoxyalkyl radicals each containing up to 4 carbon atoms, said quaternary-nitrogen radical substituted on said polysaccharide at a degree of cationic substitution of greater than 0.1; and

(ii) said composition comprises an effective amount of a salt to provide a clear solution of said composition.

5,645,828

METHODS AND COMPOSITIONS FOR RETARDING AND ERADICATING INFESTATION IN TREES AND TREE DERIVED PRODUCTS

Vincent R. Palmere, Knoxville; Allan H. Dietrich, Corryton, and Stanley D. Galyon, Maynardville, all of Tenn., assignors to Nisus Corporation, Knoxville, Tenn.

Division of Ser. No. 231,108, Mar. 14, 1994, Pat. No. 5,460,816, which is a division of Ser. No. 847,345, Mar. 6, 1992, Pat. No. 5,296,240, which is a division of Ser. No. 528,838, May 24, 1990, Pat. No. 5,104,664. This application Jun. 5, 1995, Ser. No. 465,434

Int. Cl.[6] A01N *59/14;* **A61K** *33/22*

U.S. Cl. 424—78.08 **15 Claims**

1. A method of preventing or eradicating an infestation in a tree derived product comprising the steps of:

diluting an environmentally safe composition which is the product of a mixture or the reaction product of of a mixture of alkylene glycols including at least one short chain polyalkylene glycol having an average molecular weight of between about 200 and about 400, and at least one short chain alkylene glycol; and boron provided as a glycol soluble boron containing composition in an amount effective to prevent or eradicate infestation with water in an amount of between about 1 part boron to about 8.8 parts water to about 1 part boron to about 85.5 part water;

and applying said composition to a surface of said tree derived product, wherein said composition exhibits improved depth of penetration.

5,645,829

MESOTHELIAL CELL GENE THERAPY

Ty Robert Shockley, Highland Park, Ill.; Robert William Jackman, and Janice Ann Nagy, both of Brookline, Mass., assignors to Beth Israel Hospital Association, Brookline, Mass.

Filed Jun. 18, 1993, Ser. No. 80,474

Int. Cl.[6] C12N *15/00;5/00;* **A61K** *48/00;* **A01N** *63/00*

U.S. Cl. 424—93.21 **25 Claims**

15. In a method for gene therapy, the improvement which comprises genetically modifying the mesothelial system of a mammalian recipient via the steps of

introducing an expression vector for expressing in a mesothelial cell, a therapeutic agent into an isolated mesothelial cell to form a genetically modified mesothelial cell, wherein the non-immortalized isolated mesothelial cell is from the same species as the mammalian recipient, and wherein the expression vector is useful for expressing the therapeutic agent in somatic cell types for human gene therapy;

denuding a mesothelial cell-compatible site of the mammalian recipient; and

administering said genetically modified mesothelial cell to the denuded mesothelial cell-compatible site of the mammalian recipient and allowing the genetically modified mesothelial cell to implant thereon, wherein the mammalian recipient has a condition that is treatable by local delivery of the therapeutic agent to the mesothelial cell-compatible site or by administration of the therapeutic agent to the systemic circulation.

5,645,830

LACTOBACILLUS AND SKIM MILK COMPOSITIONS AND METHODS FOR PREVENTING MICROBIAL UROGENITAL INFECTIONS

Gregor Reid, London, and Andrew W. Bruce, Toronto, both of Canada, assignors to Research Corporation Technologies, Inc., Tucson, Ariz.

PCT No. PCT/CA92/00491, § 371 Date Sep. 19, 1994, § 102(e) Date Sep. 19, 1994, PCT Pub. No. WO93/09793, PCT Pub. Date May 27, 1993

PCT Filed Nov. 13, 1992, Ser. No. 244,096

Claims priority, application United Kingdom, Nov. 15, 1991, 9124335

Int. Cl.[6] A61K *35/20;* C12N *1/20*

U.S. Cl. 424—93.45 16 Claims

1. A method for the prevention of urogenital infection in a mammal caused by pathogenic organisms which comprises administering to the mammal as an active agent, a therapeutically effective amount of skim milk powder, or skim milk powder and one or more Lactobacillus strains wherein said skim milk powder has been buffered, sterilized, and lyophilized.

5,645,831

BACILLUS THURINGIENSIS STRAIN AND METABOLITE WHICH ARE ACTIVE AGAINST CORN ROOTWORM

Chris N. Chilcott; Peter Wigley; Andrew Broadwell, all of Auckland, New Zealand; Sherry Darlene Heins, and Pamela Gail Marrone, both of Davis, Calif., assignors to BioDiscovery New Zealand Ltd., Auckland, New Zealand, and AgraQuest, Inc., Davis, Calif.

Filed Mar. 22, 1996. Ser. No. 621,774

Int. Cl.[6] A01N *63/02*

U.S. Cl. 424—93.461 7 Claims

1. An isolated, pure culture of a novel strain of *Bacillus thuringiensis* BD#32, NRRL B-21530, or mutants thereof that maintain all the identifying characteristics of the deposited strain, wherein said strain exhibits insecticidal activity against corn rootworm but not against Drosophila.

5,645,832

USE OF LIPASES FOR PRODUCING DRUGS

Reinhard Braatz, Wedel; Roland Kurth, Limburgerhof; Elke Menkel-Conen, Speyer; Hansjoerg Rettenmaier, Gruenstadt; Thomas Friedrich, Darmstadt, and Thomas Subkowski, Mutterstadt, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Division of Ser. No. 170,358, Dec. 28, 1993, Pat. No. 5,489,530. This application Apr. 17, 1995, Ser. No. 422,921

Claims priority, application Germany, Jul. 1, 1991, 41 21 704.7

Int. Cl.[6] A61K *38/46*

U.S. Cl. 424—94.6 1 Claim

1. A method of treating digestive enzyme disorders, which comprises administering to a host in need thereof an effective amount of purified lipase from *Pseudomonas spec.* DSM 6535, which lipase is active at pH 3.5–9.0 and which is not inhibited by about 5–10 mM sodium deoxycholate.

5,645,833

INHIBITOR RESISTANT SERINE PROTEASES

Keith Martyn Dawson, and Richard James Gilbert, both of Cowley, United Kingdom, assignors to British Biotech Pharmaceuticals Limited, Oxford, United Kingdom

PCT No. PCT/GB93/01632, § 371 Date Feb. 3, 1995, § 102(e) Date Feb. 3, 1995, PCT Pub. No. WO94/03614, PCT Pub. Date Feb. 17, 1994

PCT Filed Aug. 3, 1993, Ser. No. 379,621

Claims priority, application United Kingdom, Aug. 4, 1992, 9216558

Int. Cl.[6] A61K *38/48;* C12N *9/68;15/55;15/63*

U.S. Cl. 424—94.64 22 Claims

1. A plasmin modified so as to exhibit resistance to inhibitors of plasmin, characterized in that the modification comprises the mutation of the residue in a region corresponding to residue 17 according to the numbering of SEQ ID NO 2.

5,645,834

METHOD AND PRODUCT FOR TREATING FAILURE OF PASSIVE TRANSFER AND IMPROVING MILK PRODUCTION IN BOVINE SPECIES

Richard H. Cockrum, Minburn, Iowa, assignor to Immuno-Dynamics, Inc., Perry, Iowa

Continuation-in-part of Ser. No. 937,540, Aug. 28, 1992, abandoned. This application May 9, 1994, Ser. No. 239,886

Int. Cl.[6] A61K *39/395;38/02;38/30;38/40*

U.S. Cl. 424—130.1 18 Claims

2. A method of treatment for failure of passive immunity transfer (FPT) in calves, said method comprising:

collecting colostrum from dairy cows;

removing casein and fat from said colostrum to produce a protein-rich when product comprising immunoglobulins and nonspecific proteins including proteins having a size of less than 10,000 Daltons present in said colostrum;

sterilizing said preparation; and administering said preparation to a calf following gut closure.

5,645,835

THERAPEUTIC ANTIBODY BASED FUSION PROTEINS

Henry Perry Fell, Jr., Redmond, and Margit Ann Gayle, Woodinville, both of Wash., assignors to Oncogen, Seattle, Wash.

Division of Ser. No. 468,390, Jan. 22, 1990, Pat. No. 5,314,995. This application May 23, 1994, Ser. No. 247,437

Int. Cl.[6] A61K *39/395*

U.S. Cl. 424—134.1 2 Claims

1. A method of increasing an antitumor immune response comprising exposing tumor cells, in the presence of immune effector cells, to an antibody-based fusion protein comprising a variable region of an immunoglobulin molecule capable of binding to an antigen on the surface of the tumor cell linked via peptide linkage to an IL-2 molecule capable of promoting lymphocyte proliferation.

2. The method of claim 1 in which the variable region of the antibody-based fusion protein is derived from the L6 antibody, produced by hybridoma L6 deposited with the ATCC and having accession number HB 8677.

5,645,836

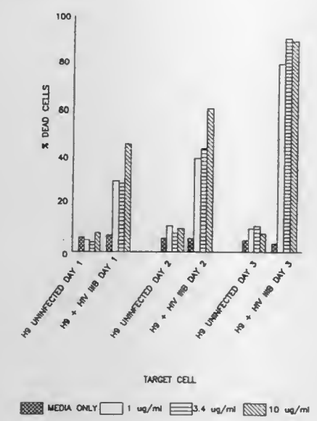
ANTI-AIDS IMMUNOTOXINS

George Barrie Kitto, Austin, Tex., assignor to Research Development Foundation, Carson City, Nev.

Filed Apr. 14, 1995, Ser. No. 422,578

Int. Cl.[6] A61K *39/42;* C07K *16/10*

U.S. Cl. 424—181.1 3 Claims



1. A composition of matter, comprising an immunotoxin, said immunotoxin comprising a toxin chemically conjugated to a monoclonal antibody directed against an HIV viral reverse transcriptase.

5,645,837

PEPTIDES THAT INHIBIT T CELL ACTIVATION AND METHODS OF USING THE SAME

Bradford A. Jameson, Philadelphia; Swati Choksi, Broomall, both of Pa., and Robert Korngold, Cherry Hill, N.J., assignors to Thomas Jefferson University, Philadelphia, Pa.

Filed Jan. 17, 1995, Ser. No. 372,952

Int. Cl.[6] A61K *38/12;* C07K *5/12*

U.S. Cl. 424—185.1 18 Claims

1. A conformationally restricted peptide consisting of 4 to 25 amino acids including SEQ ID NO: 2,

wherein said peptide inhibits CD8 mediated T cell activation.

5,645,838

ASSAY FOR CHAGAS' DISEASE AND REAGENTS FOR ITS USE

Martin A. Winkler, Lindenhurst, and Alfred A. Pan, Grayslake, both of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 275,086, Jul. 13, 1994, Pat. No. 5,550,027, which is a continuation of Ser. No. 911,590, Jul. 10, 1992, abandoned. This application May 25, 1995, Ser. No. 450,442

Int. Cl.[6] A61K *39/02;* C07K *1/00*

U.S. Cl. 424—269.1 1 Claim

1. A Gp60/50 antigen made by a process comprising:

a. isolating the membrane of the epimastigote stage of *T. cruzi* by dounce homogenization;

b. extracting the Gp60/50 antigen;

c. applying the resultant extract of step (b) to a *Galanthus nivalis* lectin affinity column and eluting with a carbohydrate;

d. purifying the eluate with an affinity column comprising a monoclonal antibody specific for Gp60/50.

5,645,839

COMBINED USE OF ANGIOTENSIN INHIBITORS AND NITRIC OXIDE STIMULATORS TO TREAT FIBROSIS

Aram Chobanian, Natick, and Peter Brecher, West Newton, both of Mass., assignors to Trustees of Boston University, Boston, Mass.

Filed Jun. 7, 1995, Ser. No. 482,819

Int. Cl.[6] A61K *9/00*

U.S. Cl. 424—400 9 Claims

1. A method of treating fibrosis in a patent, comprising administering a pharmaceutically effective amount of a combination of at least one angiotensin inhibitor and at least one nitric oxide stimulator, said amount of said combination being effective to inhibit or reverse fibrosis.

5,645,840

ULTRAFINE SODIUM BICARBONATE POWDER

M. Stephen Lajoie, Basking Ridge, and Anthony E. Winston, East Brunswick, both of N.J., assignors to Church & Dwight Co., Inc., Princeton, N.J.

Division of Ser. No. 248,687, May 25, 1994, Pat. No. 5,518,727. This application Oct. 12, 1995, Ser. No. 543,856

Int. Cl.[6] A61K *9/14*

U.S. Cl. 424—400 5 Claims

1. Alkali metal bicarbonate powder which consists of monoclinic crystalline particles having an average particle size between about 20–150 microns, and having surfaces coated with between about 0.5–20 weight percent of adherent ultrafine alkali metal bicarbonate particles having an average particle size between about 0.5–10 microns.

5,645,841

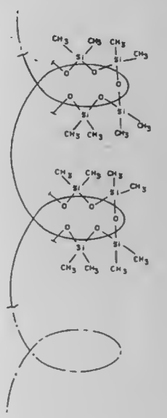
ULTRAMULSION BASED ORAL CARE RINSE COMPOSITIONS

Ira D. Hill, Locust; Peter P. Walters, Neshanic, both of N.J., and Dale G. Brown, Wharton, Tex., assignors to WhiteHill Oral Technologies, Inc., Chadds Ford, Pa.

Filed Jun. 5, 1995, Ser. No. 462,930

Int. Cl.[6] A61K *6/00*

U.S. Cl. 424—401 26 Claims



1. An oral care rinse composition wherein said composition comprises an aqueous-free high shear ULTRAMULSION dispersion, formed by heating a mixture of surfactant and silicone, followed by high shear mixing wherein:

a. the silicone is insoluble in said surfactant, has a viscosity of greater than about 100,000 cs and a particle size up to about 10 microns;
b. the surfactant to silicone ratio in the ULTRAMULSION dispersion is from between about 400:1 and about 1:1; and the surfactant has an orienting effect on the silicone;
c. the ULTRAMULSION dispersion forms stable dispersions in aqueous containing oral care rinse compositions, and
d. said rinse composition exhibits enhanced substantivity to surfaces in the oral cavity while the dispersed silicone phase of said ULTRAMULSION dispersion functions as a reservoir for additional lipid soluble and lipid dispersible oral care active ingredients, selected from the group consisting of essential oils, triclosan, chlorhexidine phenol and its homologs, metronidazole, quaternary ammonium compounds and mixtures thereof.

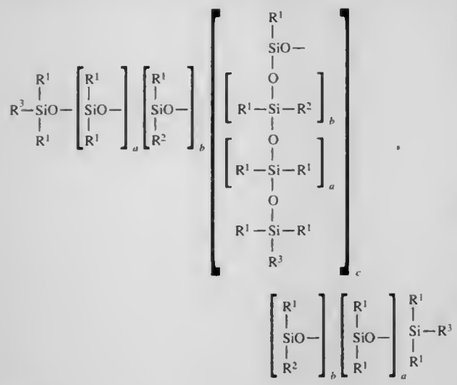
5,645,842

COSMETIC OR PHARMACEUTICAL PREPARATIONS

Burghard Grüning, and Christian Weitemeyer, both of Essen, Germany, assignors to Th. Goldschmidt AG., Essen, Germany

Continuation of Ser. No. 138,299, Oct. 18, 1993, abandoned. This application Jul. 18, 1996, Ser. No. 684,797
Claims priority, application Germany, Oct. 31, 1992, 42 36 861.8
Int. Cl.[6] A61K *7/48*
U.S. Cl. 424—401 **4 Claims**

1. Cosmetic or pharmaceutical preparation containing oils selected from the group consisting of of ester oils, animal oils, vegetable oils, mineral oils and fats and exhibiting an improved spreading behavior, comprising organopolysiloxane of the formula



wherein
R^1 is the same or different and represents alkyl groups with 1 to 4 carbon atoms, with the proviso that at least 90% of the R^1 groups are methyl groups,
R^2 is the same or different and
(1) can be linear or branched alkyl groups 8 to 30 carbon atoms, wherein the alkyl groups can be interrupted by an oxygen atom, or
(2) can be linear or branched alkoxy groups with 8 to 30 carbon atoms, wherein the alkyl group of the alkoxy groups can be interrupted by an oxygen atom,
R^3 represents the R^1 or the R^2 group.
a has a value of 5 to 80,
b as a value of 0 to 20, and
c has a value of 0 to 5,
in an amount of about between 0.003 and 20% by weight based on the total weight of oil and organopolysiloxane with the proviso that (i) in an average molecule at least two R^2 groups are present and are as defined in (1), (2), or both above,
(ii) a>b and the sum of the units with the subscript a>10, and
(iii) the organopolysiloxane is homogeneously miscible with the oil in a concentration of 0.01 to 20% by weight.

5,645,843

SAFENED PESTICIDAL RESIN COMPOSITIONS FOR CONTROLLING SOIL BORNE PESTS AND PROCESS FOR THE PREPARATION THEREOF.

Joseph Fredrick Cannelongo, Piscataway, N.J., assignor to American Cyanamid Company, Madison, N.J.

Division of Ser. No. 239,850, May 9, 1994, which is a division of Ser. No. 925,326, Aug. 6, 1992, abandoned, which is a continuation of Ser. No. 447,960, Dec. 7, 1989, abandoned, which is a continuation of Ser. No. 114,821, Nov. 5, 1987, abandoned, which is a continuation-in-part of Ser. No. 933,842, Nov. 24, 1986, abandoned. This application Jun. 5, 1995, Ser. No. 461,091
Int. Cl.[6] A01N *250/08*
U.S. Cl. 424—405 **11 Claims**

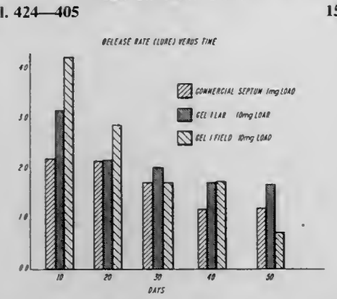
1. A method for protecting plants throughout the growing season from attack by insects, nematodes and arachnids which feed on the root systems and foliage of said plants, said method comprising: applying to the soil in close proximity to the propagating organs of said plants at the time of planting, a pesticidally-effective amount of a pesticidal composition containing about 1.0% to 65.0%, by weight, of a pesticide, the technical grade of said pesticide having an oral and/or dermal LD50, as measured on rats or rabbits, of less than 50 mg/kg; about 5.0% to 60.0%, by weight, of a polyvinylic suspension resin having a weight average molecular weight of about 41,000 to 130,000; about 0.2% to 2.0% by weight, of a heat stabilizing agent or mixture of heat stabilizing agents for the resin; about 0.0% to 1.0%, by weight, of a lubricant; about 0.0% to 50.0%, by weight, of a secondary plasticizing agent; about 20.0% to 80.0%, by weight, of a mineral additive; and about 0.0% to 10.0% of silicon dioxide.

5,645,844

NEGATIVELY CHARGED CHITOSAN DERIVATIVE SEMIOCHEMICAL DELIVERY SYSTEM

Susan Elizabeth Henderson, Wellington; Dennis Thomas Curran, and Clive M. Elson, both of Halifax, all of Canada, assignors to Chitogenics, Inc., Cedar Knolls, N.J.

Filed Jun. 7, 1995, Ser. No. 483,996
Int. Cl.[6] A01N *25/10*
U.S. Cl. 424—405 **15 Claims**



1. A composition for providing sustained release of a volatile semiochemical into the atmosphere at ambient temperature; said composition comprising a N,O-carboxymethylchitosan (NOCC) semiochemical gel system having entrapped therein a semiochemical which has a substantial vapor pressure at an ambient temperature such that said semiochemical is released from said NOCC at a sustained rate over an extended time period.

5,645,845

INSECTICIDE-COMPRISING GEL FORMULATIONS FOR VAPOR-PRODUCING SYSTEMS

Hermann Neumann, Haan, and Dietmar Kalder, Leverkusen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jul. 12, 1995, Ser. No. 501,748
Claims priority, application Germany, Jul. 14, 1994, 44 24 786.9
Int. Cl.[6] A01N *25/04*
U.S. Cl. 424—405 **11 Claims**

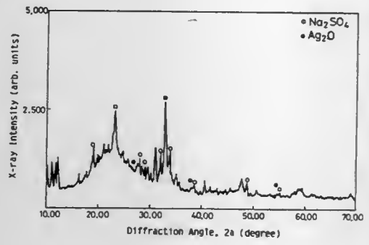
1. A gel formulation for vapor-producing systems for the controlled and sustained release of an insecticidally active compound, the formulations comprising at least one insecticidally active pyrethroid compound selected from the group consisting of 2,3,5,6-tetrafluorobenzyl(+)-1R-trans-2,2-dimethyl- 3-(2,2-dichlorovinyl)-cyclopropane-carboxylate, 2-methyl-3-propargyl-4-oxo-2-cyclopenten-1-yl2,2-dimethyl-3-(2-methylpropenyl)-cyclopropane carboxylate, 3-allyl-2-methylcyclopent-2-en-4-on-1-yl D-cis/trans-chrysanthemate, 1-ethinyl-2-methyl-2-pentenyl 2,2-dimethyl-3-(2-methyl-1-propenyl)-cyclopropane-carboxylate, natural pyrethrum, and mixtures thereof, a silica gel former and at least one vaporization modifier selected from the group consisting of ortho-terphenyl, meta-terphenyl, para-terphenyl and isomeric mixtures of partially hydrogenated terphenyls, wherein the vaporization modifier is present in an amount of 40–80%, the gel former present in an amount of 1–8% add the ratio of active compound/vaporization modifier is between 9 and 0.5.

5,645,846

METHOD OF DISINFECTING AN OBJECT AND ANTIVIRAL DISINFECTION LIQUID THEREFOR

Hiroaki Oka, Yawata; Toshikazu Tomioka, Ibaraki; Katsumi Tomita, Hirakata; Kenji Hoshino, Takatsuki; Atsushi Nishino, Neyagawa, and Shigeharu Ueda, Suita, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 420,182, Apr. 11, 1995, Pat. No. 5,516,519, which is a division of Ser. No. 134,124, Oct. 8, 1993, Pat. No. 5,429,819. This application Jan. 4, 1996, Ser. No. 582,786
Claims priority, application Japan, Oct. 14, 1992, 4-275706; Dec. 28, 1992, 4-348113; Jan. 19, 1993, 5-006410
Int. Cl.[6] A61K *9/16*
U.S. Cl. 424—405 **4 Claims**



1. A method for disinfecting a non-human object comprising: subjecting said object contaminated with virus to contact with an antiviral solution of a thiosulfate salt and at least one thiosulfate complex salt of at least one metal selected from the group consisting of silver, copper and zinc in water, an alcohol or a mixed solution of water and an alcohol, and suppressing growth of said virus.

5,645,847

SAFENED PESTICIDAL RESIN COMPOSITION FOR CONTROLLING SOIL PESTS AND PROCESS FOR THE PREPARATION THEREOF

Joseph Fredrick Cannelongo, 9 Revere Rd., Middlesex County, Piscataway, N.J. 08854

Continuation of Ser. No. 239,850, May 9, 1994, which is a division of Ser. No. 925,326, Aug. 6, 1992, abandoned, which is a continuation of Ser. No. 447,960, Dec. 7, 1989, abandoned, which is a continuation of Ser. No. 114,821, Nov. 5, 1987, abandoned, which is a continuation-in-part of Ser. No. 933,842, Nov. 24, 1986, abandoned. This application Jun. 5, 1995, Ser. No. 465,629
Int. Cl.[6] A01N *25/08*
U.S. Cl. 424—408 **3 Claims**

1. A process for preparing a safened pelletized pesticidal composition from a dry blended concentrate which comprises from about 4.0% to about 50% by weight of a pesticide of a technical grade having an oral and/or dermal LD50 of less than 50 mg/kg, as measured on rats or rabbits; from about 5.0% to about 60% by weight of a polyvinylic suspension resin having a weight average molecular weight of from about 50,000 to about 69,000; from about 0.2% to about 2% by weight of a heat stabilizing agent or mixture of agents for the resin; and from 0.0% to about 2.0% by weight SiO_2, said process comprising:
(a) forming a mixture by combining said concentrate with from about 20% to about 55% by weight of a mineral additive, and from 0.2% to about 25% by weight of a secondary plasticizing agent, based on the total weight of said mixture;
(b) blending said mixture in a high intensity mixer at a temperature in the approximate range of 75°–110° C.;
(c) cooling the resulting blended mixture to about 70° C.;
(d) introducing said cooled mixture into an extruder or melt pump in which said mixture is heated to a temperature in the approximate range of 155°–160° C., and extruding said heated mixture through a die;
(e) cutting the thus-formed extrudate into pellets.

5,645,848

CONTROLLED RELEASE COMPOSITION FOR ACTIVE SUBSTANCES INTO AN AQUEOUS MEDIUM

Nimai C. De, Rochester, and Anil M. Salpekar, Pittsford, both of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

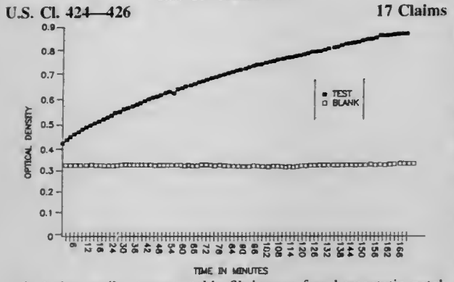
Division of Ser. No. 245,151, May 17, 1994, which is a continuation of Ser. No. 997,423, Dec. 28, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 471,669
Int. Cl.[6] A01N *25/32*
U.S. Cl. 424—408 **12 Claims**

1. A composition for delayed release of a neutralizing component into a solution of hydrogen peroxide for disinfecting contact lenses, comprising:
a capsule that swells in said solution, allowing moisture to enter said capsule;
a neutralizing component within the capsule that is capable of neutralizing hydrogen peroxide; and
a capsule decomposing agent within the capsule that is activated by the entering of said moisture to sufficiently decompose said capsule and release said neutralizing component into said solution;
wherein release of the neutralizing component is timed to occur after said disinfecting is completed, thereby neutralizing residual hydrogen peroxide.

5,645,849
HEMOSTATIC PATCH

Thaddeus P. Pruss, Baltimore, Md., and James A. Will, Columbus, Wis., assignors to Clarion Pharmaceuticals, Inc., Madison, Wis.

Continuation of Ser. No. 146,360, Nov. 3, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 487,659
Int. Cl.[6] A61K *9/70*
U.S. Cl. 424—426 **17 Claims**



1. A dry sterile storage stable fibrinogen-free hemostatic patch comprising a biodegradable matrix selected from the group consisting of absorbable gelatin, calcium alginate, calcium/sodium elginate, collagen and oxidized regenerated cellulose, and containing a hemostasie-promoting amount of thrombin and an amount of epsilon aminocaproic acid effective to raise the pH of the local environment of a bleeding wound surface onto which the hemostatic patch is applied to a value in the range of 7.0–9.0, inclusive, effective to accelerate the activation of the thrombin of the hemoetatic patch and thus accelerate clot formation at the interface between the wound surface and the hemostatic patch.

5,645,850
BLENDING CONTAINING ABSORBABLE POLYOXAAMIDES

Rao S. Bezwada, Whitehouse Station, and Dennis D. Jamiolkowski, Long Valley, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Division of Ser. No. 611,532, Mar. 5, 1996, Pat. No. 5,597,579, which is a continuation-in-part of Ser. No. 554,614, Nov. 6, 1995, abandoned, which is a continuation-in-part of Ser. No. 399,308, Mar. 6, 1995, Pat. No. 5,464,929. This application Aug. 7, 1996, Ser. No. 695,158
Int. Cl.[6] A61F *2/00;* **C08F** *283/04*
U.S. Cl. 424—426 **26 Claims**

1. A polymer blend comprising an aliphatic polyoxaamide composed of a first divalent repeating unit of formula I:

$$[X—C(O)—C(R_1)(R_2)—O—(R_e)—O—C(R_1)(R_2)—C(O)—] \quad I$$

and a second repeating unit selected from the group of formulas consisting of:

$$[—Y—R_{17}—]_T, \quad I$$

$$[—O—R_5—C(O)—]_B, \quad III$$

$$([—O—R_9—(O)]_P—O—)_LG \quad XI$$

and combinations thereof, wherein X and Y are selected from the group consisting of —O— and —N(R)—, provided that X and Y cannot both be —O—; R, R_1 and R_2 are independently selected from the group consisting of hydrogen and an alkyl group containing 1 to 8 carbon atoms; R_3 is selected from the group consisting of an alkylene unit and an oxyalkylene group of the following formula:

$$—[(CH_2)_C—O—]_D—(CH_2)_E— \quad IV$$

wherein C is an integer in the range of from 2 to about 5, D is an integer in the range of from 0 to about 2,000, and E is an integer in the range of from about 2 to about 5, except when D is zero, in which case E will be an integer in the range of from 2 to 12; R_{17} is an alkylene unit containing from 2 to 8 carbon atoms which may have substituted therein an internal ether oxygen, an internal $—N(R_{18})—$ or an internal $—C(O)—N(R_{21})—$; T is an integer in the range of from 1 to 2,000; R_{18} and R_{21} are independently selected from the group consisting of hydrogen and an alkyl group containing 1 to 8 carbon atoms; R_5 and R_9 are selected from the group consisting of $—C(R_6)(R_7)—$, $—(CH_2)_3—O—$, $—CH_2—CH_2—O—CH_2—$, $—CR_8H—CH_2—$, $—(CH_2)_5—$, $—(CH_2)_P—O—C(O)—$ and $—(CH_2)_K—C(O)—CH_2—$; R_6 and R_7 are independently selected from the group consisting of hydrogen and an alkyl containing from 1 to 8 carbon atoms; R_8 is selected from the group consisting of hydrogen and methyl; F and K are independently selected integer in the range of from 2 to 6; B is an integer in the range of from 1 to n such that the number average molecular weight of formula III is less than about 200,000; P is an integer in the range of from 1 to m such that the number average molecular weight of formula XI is less than about 1,000,000; G represents the residue minus from 1 to L hydrogen atoms from the hydroxyl groups of an alcohol previously containing from 1 to about 200 hydroxyl groups; and L is an integer from about 1 to about 200; and

a second polymer selected from the group consisting of homopolymer and copolymer of lactone type polymers with the repeating units described by formulas III and XI, aliphatic polyurethanes, polyether polyurethanes, polyester polyurethanes, polyethylene copolymers, polyamides, polyvinyl alcohols, poly(ethylene oxide), polypropylene oxide, polyethylene glycol, polypropylene glycol, polytetramethylene oxide, polyvinyl pyrrolidone, polyacrylamide, poly(hydroxy ethyl acrylate), poly(hydroxyethyl methacrylate) and combinations thereof.

5,645,851
PRODUCT FOR ALLEVIATING THE SYMPTONS OF ARTHRITIS IN MAMMALS

Eugene R. Moore, 5600 Woodview Pass, Midland, Mich. 48642

Continuation-in-part of Ser. No. 202,723, Feb. 28, 1994, Pat. No. 5,529,786. This application Apr. 9, 1996, Ser. No. 629,744
Int. Cl.[6] A61K *9/10;9/20;35/32;35/44*
U.S. Cl. 424—439 **13 Claims**

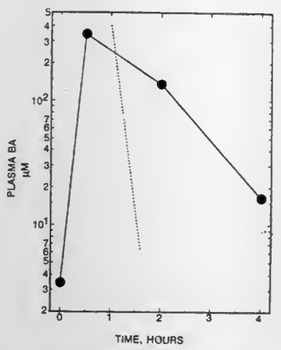
1. A composition useful as an edible supplement for alleviating the symptoms of arthritis for oral consumption by mammals, said composition comprising at least on one member of the group consisting of cartilage add vitreous humor derived from warm blooded animals and containing water-insoluble Type II collagen, which has been separated from non-Type II collagen containing tissue and has been sterilized without changing the original structure of the Type II collagen.

5,645,852
BUTYRIC ESTER CYTO-DIFFERTIATING AGENTS

Harold L. Newmark, Maplewood, N.J., assignor to Sloan-Kettering Institute for Cancer Research, New York, N.Y.

Continuation of Ser. No. 150,512, Nov. 10, 1993, abandoned. This application Sep. 13, 1995, Ser. No. 527,744
Int. Cl.[6] A61K *31/215*
U.S. Cl. 424—439 **3 Claims**

1. A method of inducing cell differentiation in a subject by administration to the subject of one or more oral bolus doses of a pharmaceutical composition comprising an effective cell differentiating amount of tributyrin and a pharmaceutically acceptable carrier.



5,645,853
CHEWING GUM COMPOSITIONS AND THE USE THEREOF FOR REMINERALIZATION OF LESIONS IN TEETH

Anthony E. Winston, East Brunswick, and Norman Usen, Marlboro, both of N.J., assignors to Enamelon Inc., East Brunswick, N.J.

Filed Aug. 8, 1995, Ser. No. 512,286
Int. Cl.[6] A61K *9/68*
U.S. Cl. 424—440 **24 Claims**

1. A chewing gum product for remineralizing at least one subsurface lesion and/or mineralizing at least one exposed dentinal tubule in at least one tooth, comprising:

(i) a water-soluble cationic portion comprising from about 0.01% to 15.0% of at least one water-soluble calcium salt;

(ii) a water-soluble anionic portion comprising from about 0.01% to 15.0% of at least one water-soluble phosphate salt;

(iii) from about 10.0% to 95.0% of a gum base; and

(iv) at least one encapsulating coating disposed on one or both of said cationic and anionic portions, wherein said encapsulating coating is present in an amount and is comprised of a material such that (a) said encapsulating coating substantially inhibits reaction of said cationic and anionic portions during storage of said product, and (b) when said product is chewed and contacted with saliva, said encapsulating coating releases said encapsulated cationic and/or anionic portion at a rate such that said cationic and anionic portions of said product are simultaneously released into said saliva, thereby forming a mixed aqueous solution which comprises cations released by said cationic portion and anions released by said anionic portion and further which simultaneously delivers said cations and anions to a surface of said tooth, said cationic and anionic portions each having a pH in water such that said mixed aqueous solution has a pH of from about 4.0 to 7.0.

5,645,854
MOLECULAR TRANSDERMAL TRANSPORT SYSTEM

John J. Masiz, 26 High St., Topsfield, Mass. 01983

Continuation-in-part of Ser. No. 227,365, Apr. 13, 1994, Pat. No. 5,460,821, which is a continuation-in-part of Ser. No. 81,567, Jun. 23, 1993, abandoned. This application Oct. 12, 1995, Ser. No. 542,068
Int. Cl.[6] A61F *13/00*
U.S. Cl. 424—449 **17 Claims**

1. A transdermal delivery system for delivering an active ingredient through the skin of a living body, comprising:

a. an active ingredient;

b. first means for enhancing the blood supply to the site of transport of said active ingredient through said skin, said first means comprising a topical counter irritant;

c. second means for enhancing the permeation of said active ingredient through said skin; and

d. third means for binding said active ingredient and said first and second means into a singular transport vehicle, said third means releasing said active ingredient upon contact with a bodily fluid that has a non-neutral pH.

5,645,855
ADHESIVE COMPOSITIONS INCLUDING POLYVINYLPYRROLIDONE ACRYLIC ACID POLYMERS, AND POLYAMINES

Donald H. Lorenz, Basking Ridge, N.J., assignor to Ridge Scientific Enterprises, Inc., Basking Ridge, N.J.

Filed Mar. 13, 1996, Ser. No. 615,624
Int. Cl.[6] A61M *37/00;* **A61K** *9/10;* **C09J** *9/02;139/06*
U.S. Cl. 424—449 **26 Claims**

1. A composition comprising a cross-linked salt of:

(a) a polyvinylpyrrolidone having ring opened pyrrolidone groups;

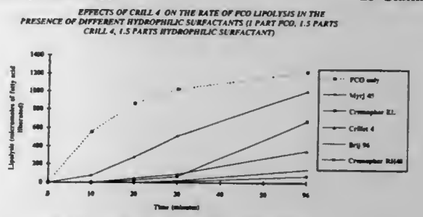
(b) at least one acrylic acid-containing or methacrylic acid containing polymer; and

(c) an amine-containing polymer, wherein said polyvinylpyrrolidone and said amine-containing polymer are present in said composition at a weight ratio of polyvinylpyrrolidone to amine-containing polymer of from about 40:1 to about 150:1, and said acrylic acid-containing polymer or methacrylic acid-containing polymer is present in said composition at a weight ratio of polyvinylpyrrolidone to acrylic acid-containing polymer or methacrylic acid-containing polymer of from about 8:1 to about 16:1.

5,645,856
DELIVERY SYSTEMS FOR HYDROPHOBIC DRUGS

Jonathan Ernest Lacy, Swindon, and Jonathan Kenneth Embleton, Berkshire, both of United Kingdom, assignors to R. P. Scherer Corporation, Troy, Mich.

PCT No. PCT/GB95/00561, § 371 Date Jun. 6, 1995, § 102(e) Date Jun. 6, 1995, PCT Pub. No. WO95/24893, PCT Pub. Date Sep. 21, 1995
PCT Filed Mar. 16, 1995, Ser. No. 446,874
Claims priority, application United Kingdom, Mar. 16, 1994, 9405304
Int. Cl.[6] A61K *9/10;9/48*
U.S. Cl. 424—455 **23 Claims**



1. A pharmaceutical composition comprising:

(a) a hydrophobic drug comprising progesterone, and

(b) a drug carrier system comprising:

(i) a digestible oil, and

(ii) a pharmaceutically acceptable surfactant for dispersing the oil in vivo upon administration of the carrier system, said surfactant comprising a hydrophilic surfactant component, and being such that it does not substantially inhibit the lipolysis of the digestible oil, said pharmaceutical composition comprising from 0.1% to 50% by weight of said hydrophobic

drug and correspondingly from 50% to 99.9% by weight of said drug carrier system.

5,645,857

PHARMACEUTICAL COMPOSITION HAVING ANALGESIC ACTIVITY

Federico Stroppolo, Pregassona, Switzerland; Daniele Bonadeo, Varese, Israel; Gian Franco Fornasini, Milan, Italy, and Annibale Gazzaniga, Rescaldina, Italy, assignors to Zambon Group S.p.A., Vicenza, Italy

Continuation of Ser. No. 255,776, Jun. 7, 1994, Pat. No. 5,500,226. This application Oct. 27, 1995, Ser. No. 549,206

Claims priority, application Italy, Jun. 21, 1993, M193A1325

Int. Cl.[6] A61K *9/14;9/20;31/195;31/19*

U.S. Cl. 424—464 **1 Claim**

1. A method for obtaining onset of the analgesic effect greater and faster than that obtained by orally administering an equivalent amount of (S)-Ibuprofen in free acid form or in the form of its arginine salt, said method comprising administering a pharmaceutical dosage form containing a mixture of arginine and (S)-Ibuprofen in a molar ratio between 1.1 and 1.9 in admixture with pharmaceutically acceptable excipients.

5,645,858

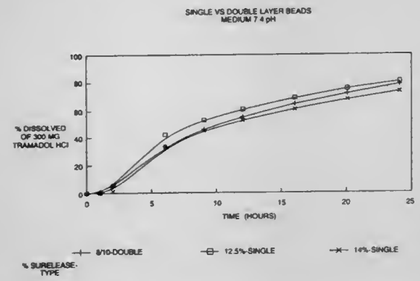
MULTILAYERED CONTROLLED RELEASE PHARMACEUTICAL DOSAGE FORM

Pramod M. Kotwal, Blue Bell, Pa., and Stephen A. Howard, Flemington, N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Division of Ser. No. 319,186, Oct. 6, 1994, Pat. No. 5,474,786. This application Dec. 7, 1995, Ser. No. 568,907

Int. Cl.[6] A61K *9/36*

U.S. Cl. 424—495 **10 Claims**



1. A multilayered controlled release pharmaceutical dosage form for water soluble drugs comprising a plurality of coated particles each comprising: a drug active core comprising a mixture of hydroxypropyl methylcellulose, polyethylene glycol and propylene glycol which is sequentially overcoated with a first controlled release barrier layer comprising ethyl cellulose; and at least one additional layer containing drug active comprising a mixture of hydroxypropyl methylcellulose, polyethylene glycol and propylene glycol which is overcoated with an additional controlled release layer comprising ethyl cellulose; whereby, the amount of drug active and the controlled release barrier material utilized in each coating layer thereof is provided in amounts effective to achieve a desirable plasma level of drug active in a patient over a preselected twelve to twenty-four hour period.

5,645,859

PROCESS FOR PRODUCING AN ALPHA OR BETA-HYDROXY ACID-VINYLPYRROLIDONE POLYMER, COPOLYMER OR GRAFT POLYMER COMPLEX IN THE FORM OF FREE-FLOWING POWDERS HAVING A HIGH ACID LOADING

Ratan K. Chaudhuri, Lincoln Park; Russell B. Biss, Wayne, and John J. Merianos, Middletown, all of N.J., assignors to ISP Investments Inc., Wilmington, Del.

Filed Oct. 2, 1995, Ser. No. 537,566

Int. Cl.[6] A61K *9/14*

U.S. Cl. 424—501 **17 Claims**

1. A process for the production of alpha or beta-hydroxy acid-vinylpyrrolidone (PVP) polymer, copolymer or graft polymer complexes in the form of free-flowing powders containing about 20–60% by weight of said acid and less than 2.5% by weight of water which comprises applying an aqueous solution or slurry of said acid to said PVP polymer, copolymer or graft polymer, substantially immediately thereafter, evaporating the water to form a free-flowing powder of the complex of the acid and said PVP polymer, copolymer or graft polymer having said composition.

5,645,860

TISSUE GRAFT AND METHOD FOR URINARY UROTHELIUM RECONSTRUCTION REPLACEMENT

Peter M. Knapp, Jr.; James E. Lingeman, both of Indianapolis; Robert J. Demeter, Mooresville, and Stephen F. Badylak, W. Lafayette, all of Ind., assignors to Purdue Research Foundation, West Lafayette, and Methodist Hospital of Indiana, Inc., Indianapolis, both of Ind.

Continuation of Ser. No. 418,516, Apr. 7, 1995, abandoned. This application Apr. 16, 1996, Ser. No. 632,756

Int. Cl.[6] A61K *35/38*

U.S. Cl. 424—551 **3 Claims**

1. A method of repairing a damaged or diseased portion of a urinary bladder by promoting the growth of endogenous urinary bladder tissues having a urine impermeable layer and a functional muscle layer which comprises

a) surgically removing the damaged or diseased portion of the urinary bladder and

b) replacing the removed portion of the bladder with a tissue graft construct comprising intestinal submucosa delaminated from both the tunica muscularis and the luminal portion of the tunica mucosa.

5,645,861

GUIDE ROLLER ASSEMBLY FOR A VACUUM SIZING TANK

David H. Czarnik, Twining, Mich., and Robert Henry Bessemer, York, Pa., assignors to The Conair Group, Inc., Pittsburgh, Pa.

Filed Aug. 7, 1995, Ser. No. 512,149

Int. Cl.[6] B29C *35/16;47/90*

U.S. Cl. 425—71 **15 Claims**

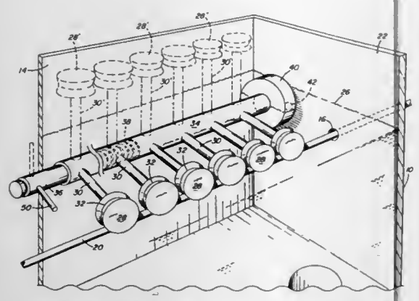
8. An improved guide roller assembly for use in a vacuum sizing apparatus having an elongated vacuum cooling tank containing a water bath through which plastic extrudate passes longitudinally, said improved guide roller assembly comprising:

a plurality of guide rollers each individually mounted on its own roller axle;

a roller assembly pivot shaft comprising two telescoping sections spring biased to expand said shaft longitudinally whereby said roller assembly pivot shaft may be readily inserted into and removed from said vacuum cooling tank;

said guide roller axles being secured at one end to said roller assembly pivot shaft and extending perpendicularly therefrom;

said roller assembly pivot shaft being removably and pivotally positioned within said vacuum cooling tank parallel to the



longitudinal walls of said vacuum cooling tank so that said roller assembly pivot shaft may be pivoted relative to said vacuum cooling tank between a working position wherein said guide rollers are positioned to guide said extrudate and a non-working position wherein said guide rollers are rotated with said pivot shaft out of contact with said extrudate;

said roller assembly pivot shaft having a collar fixed to it at one end thereof, said collar having a plurality of recesses formed therein;

a spring loaded detent fixed to a wall of said vacuum cooling tank whereby said detent is forced against said collar and enters one of said plurality of recesses when said roller assembly pivot shaft is positioned so that said guide rollers are in said working position and enters another one of said recesses when said guide rollers are in said non-working position.

5,645,862

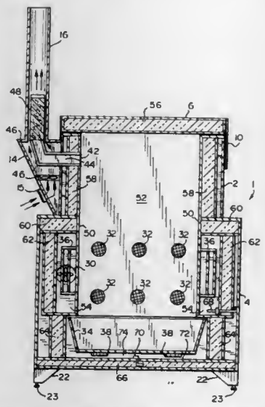
APPARATUS FOR THE THERMAL DENSIFICATION OF THERMOPLASTIC ARTICLES

Lewis E. Sable, Rochester, and Richard A. Wenzel, Pittsford, both of N.Y., assignors to Tenneco Plastics Company, Evanston, Ill.

Continuation-in-part of Ser. No. 210,268, Mar. 17, 1994, Pat. No. 5,470,521, and a continuation of Ser. No. 991,725, Dec. 15, 1992, abandoned, which is a continuation of Ser. No. 775,621, Oct. 10, 1991, abandoned, which is a continuation-in-part of Ser. No. 476,087, Feb. 7, 1990, abandoned. This application Sep. 26, 1995, Ser. No. 533,805

Int. Cl.[6] B29C *35/02*

U.S. Cl. 425—73 **8 Claims**



1. An apparatus for the batch thermal densification of thermoplastic articles, comprising:

a) a thermally insulated closeable cabinet including a top access with a lid for loading thermoplastic articles and a lower access for the removal of densified thermoplastic material;

b) a hopper mounted within the cabinet, the hopper comprised of:

i) an upper section;

ii) a lower pan chamber having a top and a bottom, the lower pan chamber being in communication with the upper section and the access, wherein the lower pan chamber contains a separate front access; and

iii) an air distribution plenum located at the top of the lower pan chamber;

c) a convection heating system comprising:

i) an air heat exchange chamber having an upper section and a lower section and positioned between the cabinet and the hopper wherein the air heat exchange chamber is adapted to create a circulating air flow around the hopper;

ii) an upper heater chamber adjacent to the hopper and in communication with the air heat exchange chamber, the upper heater chamber being adapted to create a circulating air flow around the hopper and into the air distribution plenum;

iii) a heater in the heater chamber adapted to heat the circulating air flow to a temperature effective for the thermal densification of thermoplastic articles in the hopper; and

iv) an air temperature control responsive to a temperature sensor located in the upper heater chamber, wherein the air temperature control and the means for heating cooperate to maintain the upper heater chamber circulating air flow at a temperature effective for the thermal densification of thermoplastic articles;

g) a removable pan located in the lower pan chamber for collecting densified thermoplastic material; and

h) a pan heater system adapted to maintain the pan at a temperature suitable for the even filling of the pan with densified thermoplastic material responsive to a pan temperature sensor.

5,645,863

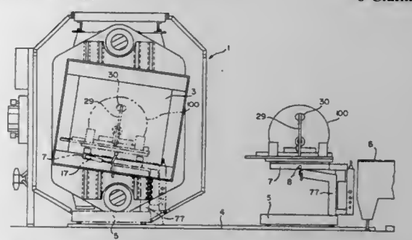
EQUIPMENT FOR UNMOLDING SANITARY WARE

Giorgio Cuman, Cordenons, and Delfino Rovere, Cusano Di Zoppola, both of Italy, assignors to American Standard Inc., Piscataway, N.J.

Filed Jun. 2, 1995, Ser. No. 459,582

Int. Cl.[6] B28B *1/26*

U.S. Cl. 425—84 **6 Claims**



1. An apparatus for de-molding a casting from a porous mold secured to a molding press, said mold including a pair of mold pads, first mold part and second mold part, said first mold part disposed directly opposite and facing said second mold part, said mold parts movable to and from an open position and a closed position, comprising:

a set of rails extending from a point outside a first side of said mold press through said press to a second point inside said press aligned below said pair of mold parts;

a movable carriage mounted on said set of rails, said carriage movable in a direction parallel to said rails;

a movable frame structure disposed on said carriage wherein said structure rotates about an axis perpendicular to said rails;

a movable form capable of matching an exterior of said casting;

a coupling means coupling said form to said movable frame structure, said coupling means including a platform positioned on an intermediate support means integral with said frame structure and held thereto by an elastic means; and

a pneumatic means for holding said form to said casting.

5,645,864

RESIN ENCAPSULATING MOLDING DIE FOR MANUFACTURING A SEMICONDUCTOR DEVICE

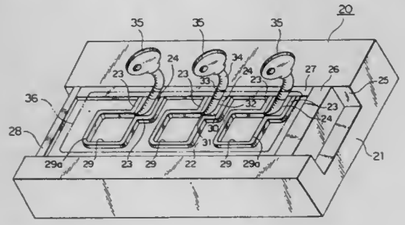
Noriaki Higuchi, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 25, 1996, Ser. No. 639,331

Claims priority, application Japan, Oct. 23, 1995, 7-274202

Int. Cl.[6] B29C *45/02;45/14;45/37*

U.S. Cl. 425—116 **14 Claims**



14. A resin encapsulating molding die comprising:

a cavity piece including a cavity wall defining a cavity for receiving a semiconductor element mounted on a lead frame and first and second sealing dams defining a space communicating with an interior of the cavity for receiving a gate piece, the cavity wall having an inner surface and an upper surface, the first and second sealing dams each extending transversely from the cavity wall and having an upper surface substantially coplanar with the upper surface of the cavity wall; and

a gate piece detachably received in the space defined by the sealing dams and having a sub-runner communicating with the interior of the cavity for introducing a molten resin into the cavity, the first and second sealing dams extending along first and second sides of the gate piece for blocking flow of molten resin from the sub-runner toward leads of the lead frame.

5,645,865

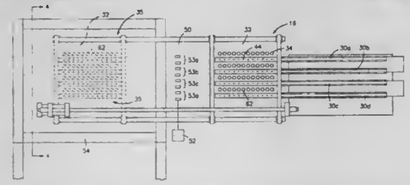
INSERT MOLDING SYSTEM

Robert D. Schad, Toronto, Canada, and William C. Young, Ypsilanti, Mich., assignors to Husky Injection Molding Systems Ltd., Canada

Filed Dec. 22, 1995, Ser. No. 577,826

Int. Cl.[6] B29C *45/14;45/76*

U.S. Cl. 425—126.1 **25 Claims**



1. A system for manufacturing multi-layered preforms from inserts, comprising:

means for molding said inserts into said multi-layered preforms;

means for arranging said inserts used in forming said preforms into proper position for subsequent relocation to said means for molding;

a first loading station for receiving said inserts from said means for arranging, wherein said inserts are properly positioned for said means for molding when located with said first loading station;

a second loading station;

means for moving said inserts from said first loading station to said second loading station;

means for relocating said inserts from said second loading station to said means for molding; and

means for detecting if said inserts are at least one of present and absent during movement through said system.

5,645,866

PRESSURE CONTROLLING AND/OR REGULATING DEVICE FOR A FLUID MEDIUM, IN PARTICULAR AIR OR GAS

Helmut Eckardt; Johann Holzschuh, both of Meinerzhagen; Jürgen Ehritt, Hilchenbach; Michael Renger, and Rolf Schwesinger, both of Meinerzhagen, all of Germany, assignors to Battlefeld GmbH, Meinerzhagen, Germany

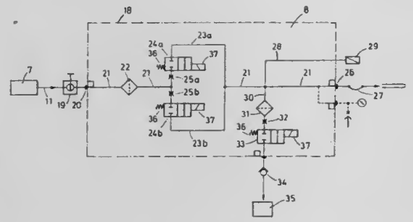
PCT No. PCT/EP93/03021, § 371 Date Jul. 11, 1995, § 102(e) Date Jul. 11, 1995, PCT Pub. No. WO94/09962, PCT Pub. Date May 11, 1994

PCT Filed Oct. 29, 1993, Ser. No. 424,349

Claims priority, application Germany, Oct. 29, 1992, 42 36 460.4

Int. Cl.[6] B29C *45/16*

U.S. Cl. 425—130 **10 Claims**



1. A pressure device for controlling and regulating fluid medium fed to an injection mold in addition to molten plastics and arranged between a pressure source of the fluid medium and injection means for injecting the fluid medium into the injection mold, said pressure controlling and regulating device comprising:

a main line extending between the pressure source and the injection means;

at least two parallel flow paths branching from said main line;

two inflow control valves having different flow cross-sections for controlling flow in said at least two flow paths, respectively;

first and second branch lines branching from said main line downstream of a junction of said two flow paths, one of said first and second branch lines including an outflow control valve for controlling an amount of the fluid medium fed to the mold;

a pressure sensor for sensing pressure of the fluid medium in the mold, said pressure sensor having one side thereof connectable with the mold, and another of said first and second branch lines being connected with another side of said sensor, said pressure sensor controlling operation of said outflow control valve; and

a final control element of a regulating circuit for stepwisely controlling at least one of said inflow control valves in accordance with a control signal generated by said pressure sensor and representing a pressure difference between the pressure in the mold and pressure in said another of said first and second branch lines.

5,645,867

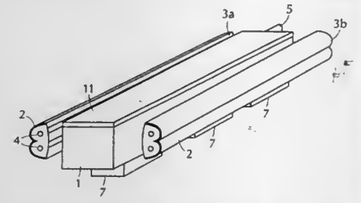
HEATED DISTRIBUTION MANIFOLD

Doug Crank, and John Carter, both of Holland, Mich., assignors to Donnelly Corporation, Holland, Mich.

Continuation of Ser. No. 258,738, Jun. 13, 1994, abandoned. This application Jul. 16, 1996, Ser. No. 680,977

Int. Cl.[6] B29C *45/78*

U.S. Cl. 425—144 **21 Claims**



1. A distribution manifold assembly for carrying a fluid, comprising:

a manifold body having at least one fluid channel running therethrough, and having an external surface;

at least one infrared radiation source dimensioned and disposed to apply infrared radiation with a substantially constant energy flux across said external surface of said manifold body, so that said external surface has a substantially even temperature profile;

control means for controlling application of infrared radiation by said infrared radiation source so that a temperature within said fluid channel remains within a predetermined range, said control means comprising,

measuring means for measuring an absolute temperature of said fluid; and

a computer or process controller for controlling at least one said infrared radiation source in accordance with said absolute temperature of said fluid measured by said measuring means.

5,645,868

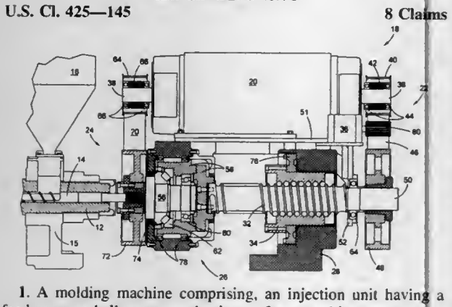
DRIVE APPARATUS FOR AN INJECTION UNIT

William A. Reinhart, Georgetown, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Nov. 17, 1995, Ser. No. 560,129

Int. Cl.[6] B29C *45/76*

U.S. Cl. 425—145 **8 Claims**



1. A molding machine comprising, an injection unit having a feed screw, a ball screw mechanism, a frame, a drive motor and a transmission means for alternately rotating the feed screw and the ball screw mechanism to perform respectively extrusion and injection functions in the injection unit, the transmission means comprising:

(a) a first one-way clutch interposed between the feed screw and the frame of the injection unit,

(b) a second one-way clutch interposed between the drive motor and the feed screw,

(c) a third one-way clutch interposed between the drive motor and the ball screw mechanism,

such that when the drive motor is operated in a forward direction,

(i) the third one-way clutch is engaged, rotating the ball screw mechanism which results in forward translational movement of the feed screw,

(ii) the second one-way clutch slips, and

(iii) the first one-way clutch is engaged to prevent rotation of the feed screw;

when the drive motor is operated in a reverse direction,

(iv) the second one-way clutch is engaged, rotating the feed screw

(v) the first one-way clutch slips, and

(vi) the third one-way clutch slips, allowing rotation of the ball screw mechanism commensurate with rearward translational movement of the feed screw.

5,645,869

MACHINE FOR SHAPING HAMBURGERS

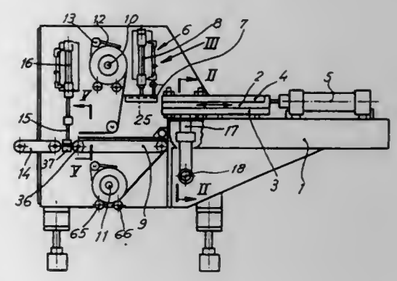
Narcis Garganta Riubrugent, Girona, Spain, assignor to Industrias Gaser, S.L., Girona, Spain

Filed Jan. 24, 1995, Ser. No. 377,805

Claims priority, application Spain, Jan. 24, 1994, 9400125

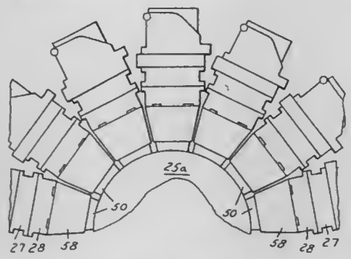
Int. Cl.[6] A22C *7/00*

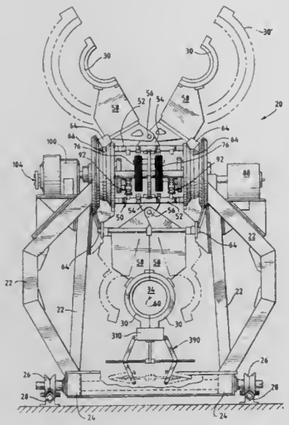
U.S. Cl. 425—149 **18 Claims**



1. A hamburger-shaping machine, comprising: a table-frame; a mold disposed above the table-frame, the mold being horizontally displaceable between a first position for loading ground meat to a second position for unloading a hamburger that has been shaped; a first conveyor belt positioned adjacent said second position of said mold; expelling means for expelling the hamburger above the first conveyor belt; an upper roll of flexible sheet material, said upper roll being above a plane of displacement of the hamburger along said first conveyor belt; a lower roll of flexible sheet material, said lower roll being below said plane of displacement of the hamburger along said first conveyor belt; a second conveyor belt positioned at a downstream end of said first conveyor belt; cutting means for cutting said flexible sheets between said first conveyor belt and said second conveyor belt; conduit means for supplying ground meat, said conduit means being connected to a ground meat supply and being connected to said mold for supplying ground meat to an interior of said mold; adjustment means for detecting a pressure of ground meat within said mold and generating a signal for initiating an operation for expelling the hamburger; antistick means for preventing the hamburger from sticking to said expelling means by using atmospheric filtered air; an intermittent first conveyor belt drive for intermittent-feed movement of said first conveyor belt for stopping the hamburger which has been freshly enveloped with flexible sheet, in front of said cutting means; detachment means for detaching edges of flexible sheet enveloping the hamburger from said cutting means; and inertia brake means for braking a feed of said upper roll and said lower roll.

5,645,870
BLOW MOLDING APPARATUS HAVING A CYLINDRICAL HUB
W. Bruce Larsen, Holland, Ohio, assignor to Owens-Brockway Plastic Products Inc., Toledo, Ohio
Filed Aug. 2, 1995, Ser. No. 510,227
Int. Cl.[6] B29C *49/36;49/64*
U.S. Cl. 425—182 **4 Claims**





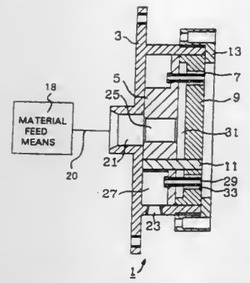
1. A blow molding apparatus comprising
a frame,
a wheel plate,
a shaft rotatably mounted on said frame and extending horizontally,
means for supporting said wheel plate on said shaft for rotation with said shaft,
a first hub mounted said shaft for rotation with said shaft,
a plurality of sets of molds defining a mold cavity when closed, each said set comprising a pair of mold sections,
said first hub having a cylindrical surface having an axis aligned with the axis of said shaft,
one mold section of each said set having an arcuate surface engaging and being mounted on said cylindrical surface of said first hub such that said mold sections are circumferentially spaced about said first hub,
a plurality of mold section slide assemblies removably mounting a second mold section of each said set on said wheel plate in circumferentially spaced relation and radial alignment with each said one mold section and for movement radially toward and away from said one mold section,
the number of mold section slide assemblies corresponding to the number of set of molds,
such that the number of mold section slide assemblies can be changed by adding or removing mold section slide assemblies.

5,645,871
PLASTIC TILE CORRUGATOR AND MOLD BLOCKS
John S. Berns, Cleveland, and Heinrich Dickhut, Charleston, both of Tenn., assignors to Cullom Machine Tool & Die, Inc., Cleveland, Tenn.
Continuation of Ser. No. 215,491, Mar. 21, 1994, abandoned, which is a division of Ser. No. 48,355, Apr. 15, 1993, abandoned. This application Jan. 17, 1996, Ser. No. 590,063
Int. Cl.[6] B29C *47/90;53/30*
U.S. Cl. 425—326.1 **30 Claims**

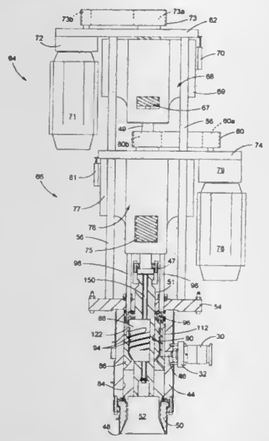
1. A vacuum machine for molding corrugated tubes, comprising:
a plurality of separate carriages for carrying mold blocks about a continuous path, each of said carriages carrying a pair of mold blocks pivotable about an axis into mating engagement with one another along a molding section of the continuous path to form an axial portion of a mold tunnel in the molding section, each mold block pair having a substantially flat sealing surface parallel to said mold tunnel with
a vacuum port through said sealing surface and communicating with vacuum openings about the formed axial portion of the mold tunnel,
a first cooling water passage in each mold block pair,

5,645,872
APPARATUS FOR PROCESSING FOOD INTO TUBULAR SHAPE
Noritaka Funahashi, Kasugai, Japan, assignor to Mitsutoyo Kiko, Co., Ltd., Kasugai, Japan
Continuation of Ser. No. 418,492, Apr. 7, 1995, abandoned. This application Aug. 8, 1996, Ser. No. 695,127
Claims priority, application Japan, Aug. 23, 1994, 6-198463
Int. Cl.[6] B29C *47/20;47/88*
U.S. Cl. 425—380 **6 Claims**

1. A konnyaku die for forming konnyaku food material into a plurality of tubular members each having a hollow interior, said konnyaku die comprising:
a guide plate having a plurality of peripherally disposed apertures extending therethrough;
flowable konnyaku food material feed means communicating with each of said plurality of peripherally disposed apertures for supplying the konnyaku food material thereto;
hot liquid feed means for filling the interiors of formed tubular members to prevent collapse of the tubular members and facilitate coagulation of the konnyaku food material, said hot liquid feed means comprising a plurality of hot liquid feed pins, with each pin having an orifice extending axially therethrough for feeding a hot liquid through each associated hot liquid pin; and
each hot liquid feed pin being centrally disposed within one of said plurality of peripherally disposed apertures to define a plurality of annular passages between an outer surface of said hot liquid feed pins and an opposed surface of each of said plurality of peripherally disposed apertures extending through said guide plate;
whereby when the konnyaku food material is supplied and extruded through said annular passages and formed into a plurality of tubular members, each having a hollow interior, the hot liquid is simultaneously fed through said orifices of said hot liquid feed pins for filling the hollow interiors of each formed tubular member.

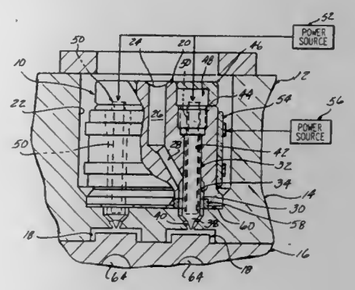


5,645,873
ELECTROMECHANICAL DRIVE ASSEMBLY FOR AN ACCUMULATOR HEAD
Jerry A. Carter, Jr., Batavia, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio
Filed Aug. 14, 1995, Ser. No. 514,578
Int. Cl.[6] B29C *49/04*
U.S. Cl. 425—532 **5 Claims**



1. In an extrusion blow molding machine that includes an extruder to supply plasticized material to an accumulator head having a plunger to eject plasticized material collected within a chamber in the accumulator head through an annular die outlet to form a tubular parison, the annular die outlet being defined by diverging or converging tooling that includes a die outer ring and an inner mandrel, wherein the inner mandrel is movable to alter the size of the annular die outlet, and an electromechanical drive assembly for the accumulator head comprising:
(a) a programming actuator including a first ball screw driven by an electric motor and a first ball nut assembly that is connected to the mandrel of the accumulator head, wherein the first ball nut assembly and mandrel are linearly driven when the first ball screw is rotated to move the mandrel and alter the size of the die outlet;
(b) a purging actuator including a second ball screw driven by an electric motor and a second ball nut assembly that is connected to the plunger of the accumulator head, wherein the second ball nut assembly and plunger are linearly driven when the second ball screw is rotated to move the plunger and eject the plasticized material collected within the chamber;
(c) a frame for supporting the programming actuator and purging actuator such that the axes of the first ball screw and the second ball screw are parallel, the frame including a plurality of guide rods positioned parallel to the axes of the ball screws; and
(d) a yoke configured to engage the guide rods included in each of the first and second ball nut assemblies, the yoke of the first ball nut assembly connecting to the mandrel, and the yoke of the second ball nut assembly connecting to the plunger.

5,645,874
MULTIPLE GATE INJECTION NOZZLE
Jesus' M. Osuna-Diaz, 908 Ravine Terrace Ct., Rochester Hills, Mich. 48307
Filed Aug. 31, 1992, Ser. No. 937,140
Int. Cl.[6] B29C *45/22*
U.S. Cl. 425—549 **2 Claims**

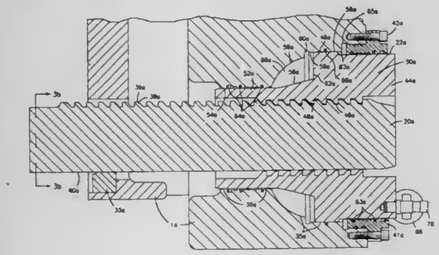


1. A multiple gate injection nozzle comprising:
a generally cylindrical main body;
a central flow passage extending axially into said main body formed with a seal pocket at one end of said main body adapted to mate with an injection machine;
a circular array of gates extending out of said main body at an other end opposite said one end;
a circumferential array of elongated probes each disposed in a corresponding axial bore in said main body, each probe having a tip at one end disposed in a respective gate;
an annular space surrounding each probe and extending into said gate;
a radial cross passage extending from each annular space to said central flow passage;
a copper sealing ring encircling each annular space and having a side protruding from said other end of said main body to enable contact with a mold plate
an elongated insert heater disposed within each probe enabling direct heating of each of said probes.

5,645,875
SECURING/CLAMPING ASSEMBLY FOR INJECTION MOLDING MACHINES

Pierre Glaesener, Bissen, Luxembourg, and Martin Richard Kestle, Everett, Canada, assignors to Husky Injection Molding Systems Ltd., Canada

Filed Jun. 7, 1995, Ser. No. 482,870
Int. Cl.[6] B29C *45/64*
U.S. Cl. 425—589 **15 Claims**



1. A securing/clamping assembly for clamping platens of an injection molding machine, comprising:

means for connecting said platens; and

a body member having a structure which is movable as a single unit, said body member including means for securing said means for connecting to at least one platen and including means for conveying a clamping force to said platens for clamping said platens during injection molding, said body member adapted to be attached to at least one of said platens wherein said means for securing includes engagement means for placing said means for securing into and out of locking engagement with said means for connecting, such that when said engagement means is out of locking engagement with said means for connecting, said body member and said means for connecting are relatively movable, wherein said body member is rotatable relative to said means for connecting for placing said engagement means into and out of engagement with said means for connecting.

5,645,876
DEHYDRATED VEGETABLES AND METHOD FOR THEIR PREPARATION

Persis Jebakumari Subramaniam, Surrey, United Kingdom; Sylvia Anna Jones, London, England, and Iain Cunningham Mutter Dea, Surrey, United Kingdom, assignors to CPC International Inc., Englewood Cliffs, N.J.

Continuation of Ser. No. 359,173, Dec. 19, 1994, abandoned. This application May 31, 1996, Ser. No. 656,596
Claims priority, application United Kingdom, Jan. 14, 1994, 9400603
Int. Cl.[6] A23B *7/02;* **A23L** *1/0524*
U.S. Cl. 426—50 **17 Claims**

1. A method for producing dehydrated vegetables comprising preparing the vegetables, holding the prepared vegetables for a time and at a temperature to activate endogenous pectinmethylesterase, blanching and drying, wherein the prepared vegetables are held at from 45° to 70° C. for from 10 to 60 minutes.

5,645,877
FERMENTED FOOD PRODUCT AND PREPARATION THEREOF

Walter Gaier, Le Mont Pelerin, Switzerland, assignor to Nestec S.A., Vevey, Switzerland

Filed Jun. 2, 1995, Ser. No. 458,299
Claims priority, application European Pat. Off., Jun. 29, 1994, 94110063
Int. Cl.[6] A23B *4/22;* **A23C** *9/123;* **A23K** *1/10;* **A23J** *1/00*
U.S. Cl. 426—56 **16 Claims**

1. A process for preparing a fermented food product comprising:

preparing an emulsified composition comprising, in admixture, a milk and dispersed particles of a protein material and a collagenic material;

simultaneously homogenizing and pasteurizing the emulsified composition so that collagen is extracted from the collagenic material for thickening and stabilizing the emulsified composition for obtaining an emulsified and pasteurized composition;

inoculating the emulsified and pasteurized composition with at least one strain of lactic acid bacteria; and

incubating the inoculated composition to obtain a fermented feed product.

5,645,878
NO DRY COATING PROCESS FOR COATED FOOD PRODUCTS

James C. Breslin, Bellevue; Alicia A. Perdon, Battle Creek; James B. Holder, Battle Creek; Stephen J. Kalchik, Battle Creek, and Jerald L. Longman, Climax, all of Mich., assignors to Kellogg Company, Battle Creek, Mich.

Continuation-in-part of Ser. No. 222,704, Apr. 14, 1994, Pat. No. 5,516,541. This application Jun. 7, 1995, Ser. No. 479,159
Int. Cl.[6] A23L *1/18;1/164;* **A23B** *9/14*
U.S. Cl. 426—103 **42 Claims**

1. A process for producing a surface coating on a food stuff comprising:

introducing a hot food product into a coating vessel having an inlet area and a discharge area;

causing the food product to move from the inlet area to the discharge area;

providing a coating solution of a desired concentration and moisture content;

pressurizing the coating solution;

superheating the pressurized coating solution while essentially maintaining the solution moisture content;

spraying the superheated concentrated solution of the coating onto the surface of the food product for at least a portion of the time while the food product moves from the inlet area to the discharge area to form a coated food product;

maintaining a flow of air in the coating vessel countercurrent to the movement of the food product; and

exhausting the coating vessel near the inlet area.

5,645,879
FIRMNESS IN PROCESSED VEGETABLES AND FRUITS

Malcolm C. Bourne, Geneva, N.Y., assignor to Cornell Research Foundation, Inc., Ithaca, N.Y.

Division of Ser. No. 262,353, Jun. 20, 1994, which is a continuation of Ser. No. 135,575, Oct. 13, 1993, abandoned, which is a continuation of Ser. No. 22,433, Feb. 16, 1993, abandoned, which is a continuation of Ser. No. 540,399, Jun. 19, 1990, abandoned, which is a continuation of Ser. No. 279,907, Dec. 5, 1988, abandoned. This application Jun. 6, 1995, Ser. No. 465,740
Int. Cl.[6] A23B *7/005;7/06;7/10*
U.S. Cl. 426—321 **7 Claims**

1. A process for producing canned fruits and vegetables which are subjected to sterilization after canning, which process comprises, before canning, blanching a fruit or vegetable different from green beans, wax beans and cauliflower at a temperature of from about 125° F. to 155° F. for a time sufficient to cause said fruit or vegetable to remain firmer after sterilization as compared to said same fruit or vegetable after canning and subsequent sterilization without said blanching step.

5,645,880
PROTEIN-POLYSACCHARIDE COMPLEX COMPOSITION AND METHOD OF USE

Blaise McArdle, 17 Leonard St., Annisquam, Mass. 01930

Continuation-in-part of Ser. No. 523,162, Sep. 5, 1995, Pat. No. 5,591,473, which is a continuation-in-part of Ser. No. 263,001, Jun. 17, 1994, abandoned, which is a continuation-in-part of Ser. No. 89,268, Jul. 8, 1993, abandoned. This application Dec. 26, 1995, Ser. No. 579,595
Int. Cl.[6] A23B *4/20;* **A23L** *1/05;3/3472*
U.S. Cl. 426—327 **28 Claims**

1. A food preserving composition for treating edible products to maintain or refurbish desirable organoleptic qualities thereof comprising: a mixture of at least one stabilizing acid and a protein-polysaccharide complex composition comprising:

between about 90% to 99.5% by weight of a water-soluble polysaccharide impregnated with between about 10% to 0.5% by weight of a substantially water-insoluble protein.

5,645,881
REDUCED CALORIE ICE CREAM-TYPE FROZEN DESSERT AND BUTTER FAT MIMETICS THEREFOR

Krystyna U. Tancibok, Union, and Bernard C. Sekula, Glen Gardner, both of N.J., assignors to CPC International Inc., Englewood Cliffs, N.J., and ARCO Chemical Technology, L.P., Greenville, Del.

Filed Dec. 13, 1995, Ser. No. 571,574
Int. Cl.[6] A23L *1/00;* **A23G** *9/00*
U.S. Cl. 426—531 **21 Claims**

1. A butter fat mimetic composition comprised of a fatty acid-esterified propoxylated glycerin composition having a melting profile similar to the melting profile for butter fat.

5,645,882
CROSS-LINKED POLYETHYLENE OXIDE COATINGS TO IMPROVE THE BIOCOMPATIBILITY OF IMPLANTABLE MEDICAL DEVICES

Gerard Llanos, Fort Worth, Tex., assignor to Alcon Laboratories, Inc., Fort Worth, Tex.

Division of Ser. No. 340,671, Nov. 16, 1994, Pat. No. 5,507,804. This application Nov. 29, 1995, Ser. No. 564,696
Int. Cl.[6] B05D *3/06;3/10*
U.S. Cl. 427—2.24 **1 Claim**

1. A method of producing a polyethyleneoxide-coated implantable medical device which is to be sterilized using ethylene oxide, wherein the method comprises

(a) modifying the surface of the medical device in a heptylamine gas plasma;

(b) exposing the modified surface to a buffered solution of an aldehyde terminated-polyethyleneoxide having a molecular weight of about 8000 and sodium cyanoborohydride for a time sufficient to covalently bind the terminal aldehyde of the polyethyleneoxide to the modified surface; and

(c) exposing the bound polyethyleneoxide to an argon plasma for a time sufficient to cause the polyethyleneoxide to form a cross-linked, insoluble network; and

(d) sterilizing the medical device using ethylene oxide.

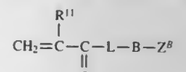
5,645,883
ZWITTERIONIC MATERIALS

Jeremy Colin Russell; Richard Neil Templar Freeman, both of Middlesex, and Stephen Alexander Charles, Oxon, all of United Kingdom, assignors to Biocompatibles Limited, Middlesex, England

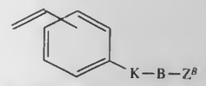
PCT No. PCT/GB94/00178, § 371 Date Jun. 7, 1995, § 102(e) Date Jun. 7, 1995, PCT Pub. No. WO94/16749, PCT Pub. Date Aug. 4, 1995
PCT Filed Jan. 28, 1994, Ser. No. 464,677
Claims priority, application United Kingdom, Jan. 28, 1993, 9301701
Int. Cl.[6] B05D *3/02;* **A61L** *27/00*
U.S. Cl. 427—2.25 **24 Claims**

1. A method for preparing a coated substrate, comprising the steps (a) and (b) of

(a) coating onto a surface of a substrate a solution or dispersion in a solvent of a polymer formed by polymerizing a monomer selected from compounds of formula (XII) and (XIII):



(XII)



(XIII)

said polymer being obtained by copolymerizing a polymerizable comonomer containing a zwitterionic group Z and a second comonomer containing a group that binds the copolymer to a surface, or by polymerizing a polymerizable monomer containing both a zwitterionic group Z and a group that binds the polymer to a surface,

wherein in formula (XII) and (XIII):

R^{11} is hydrogen or a C_1–C_4 alkyl group;

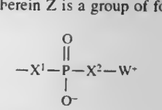
L is —O— or —NR^{12}— wherein R^{12} is selected from the group consisting of hydrogen, C_1–C_4 alkyl, and —B—Z^B, wherein B and Z^B are as defined below:

K is selected from the group consisting of —$(CH_2)_pOC(O)$—, —$(CH_2)_pC(O)O$—, —$(CH_2)_pOC(O)O$—, —$(CH_2)_pNR^{13}$—, —$(CH_2)_pNR^{13}C(O)$—, —$(CH_2)_pC(O)NR^{13}$—, —$(CH_2)_pNR^{13}C(O)O$—, —$(CH_2)_pOC(O)NR^{13}$—, —$(CH_2)_pNR^{13}C(O)NR^{13}$— wherein the R^{13} groups are the same or different, —$(CH_2)_pO$—, —$(CH_2)_pSO_3$—, and a covalent bond, wherein p is from 1 to 12 and R^{13} is hydrogen or a C_1–C_4 alkyl;

B is selected from the group consisting of a covalent bond, straight and branched alkylene, oxaalkylene and oligo-oxaalkylene groups, each containing up to 12 carbon atoms, and each optionally containing one or more fluorine atoms; and

Z^B is a zwitterionic group selected from the group consisting of Z and groups of formulae XIV, XV and XVI

wherein Z is a group of formula (II)



(II)

wherein:

X^1 and X^2, which are the same or different, are selected from the group consisting of —O, —S—, —NH—, and a covalent bond; and

W^+ is a cationic group selected from the group consisting of —W^1—$N^+R^3{}_3$, —W^1—$P^+R^{3a}{}_3$, —W^1—$S^+R^{3a}{}_2$ and —W^1—Het^+, wherein

W^1 is selected from the group consisting of an alkylene having at least 5 carbon atoms, and optionally containing one or more ethylenically unsaturated double or triple bonds, a disubstituted-aryl, an aryl alkylene, an alkylene aryl alkylene, a disubstituted cycloalkyl, an alkylene cycloalkyl, a cycloalkyl alkylene, and an alkylene

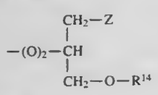
cycloalkyl alkylene, any one of which optionally contains one or more fluorine substituents and/or one or more functional groups,

the R^3 groups are the same or different, and each is hydrogen or an alkyl having from 1 to 4 carbon atoms, wherein two of the R^3 groups are optionally bonded together with the nitrogen atom to which they are attached to form a heterocyclic ring containing from 5 to 7 atoms, or the three R^3 groups are optionally bonded together with the nitrogen atom to which they are attached to form a fused ring structure containing from 5 to 7 atoms in each ring, and optionally one or more of the R^3 groups is substituted by a hydrophilic functional group,

the R^{3a} groups are the same or different and each is R^3 or $—OR^3$, where R^3 is as defined above; and

Het is selected from the group consisting of an aromatic nitrogen-containing ring, an aromatic phosphorus-containing ring, and an aromatic sulphur-containing ring.

(ii) formula (XIV)



(XIV)

wherein:

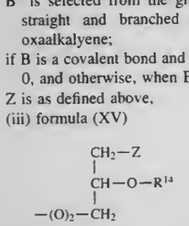
R^{14} is hydrogen or a group of formula $—C(O)B^1R^{14a}$ wherein R^{14a} is hydrogen or methyl;

B^1 is selected from the group consisting of a covalent bond, straight and branched alkylene, oxaalkylene and oligo-oxaalkalyene;

if B is a covalent bond and K is other than a covalent bond, z is 0, and otherwise, when B is a covalent bond, z is 1;

Z is as defined above,

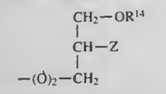
(iii) formula (XV)



(XV)

wherein R^{14}, B^1, z, and Z are as defined above, and

(iv) formula (XVI)



(XVI)

wherein R^{14}, B^1, z, and Z are as defined above; and

(b) evaporating the solvent to obtain a coating of said polymer on the surface of said substrate.

5,645,884

AUTOMATED THREE-DIMENSIONAL PRECISION EFFECTOR METHOD

Albert L. Harlow, Jr., Chagrin Falls, Ohio; Richard E. Bechtold, Hunt Valley, Md.; David Parker, Orem, Utah; Francis L. Merat, University Heights, Ohio; Mark Podany, Parma Heights, Ohio, and Raymond C. Laning, Chesterland, Ohio, assignors to Advanced Robotic Technologies, Inc., Cleveland, Ohio

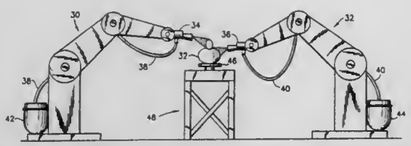
Division of Ser. No. 109,312, Aug. 19, 1993, Pat. No. 5,429,682. This application Apr. 10, 1995, Ser. No. 418,650

Int. Cl.[6] B05D *1/12*

U.S. Cl. 427—8 **26 Claims**

1. A method for utilizing a stored representation of a surface of a three-dimensional object, comprising the steps of:

selecting a plurality of areas of the surface for application of a corresponding plurality of differently colored coatings; and



for each selected area, selecting a coatings application path of points along the surface.

5,645,885

PROCESS FOR PRODUCING A MULTILAYERED THIN FERROELECTRIC FILM

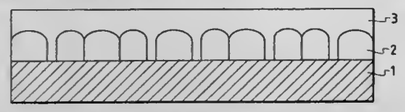
Keiichi Nishimoto, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Division of Ser. No. 130,882, Oct. 4, 1993, Pat. No. 5,558,946. This application Feb. 5, 1996, Ser. No. 596,576

Claims priority, application Japan, Oct. 5, 1992, 4-288152

Int. Cl.[6] B05D *5/12*

U.S. Cl. 427—126.3 **11 Claims**



1. A process for producing a transparent multilayered thin ferroelectric film useful as an optical element and comprising (1) a first layer of polycrystalline ferroelectric film of an organometallic compound formed on a substrate, said first layer of polycrystalline ferroelectric film having a refractive index equivalent to that of a monocrystal of the substance forming the first ferroelectric layer; and (2) a second layer of polycrystalline ferroelectric film of an organometallic compound formed on said first layer of polycrystalline ferroelectric film, said second layer of polycrystalline ferroelectric film having a density lower than the density of the first layer, a lower refractive index than that of said first ferroelectric layer, and a surface which is smoother than that of said first ferroelectric layer, said process comprising a plurality of steps, each including applying a solution of an organometallic compound to said substrate and performing a heat treatment at a temperature, wherein said temperatures in said plurality of steps are different from each other, wherein the temperature of a first heat treatment of an organometallic compound is in a temperature range of 400° to 1,000° C. and sufficient to form said first layer of polycrystalline ferroelectric film on said substrate and the temperature of a second heat treatment of an organometallic compound is in a temperature range of 200° to 600° C. and sufficient to form said second layer of polycrystalline ferroelectric film on said first layer of polycrystalline ferroelectric film, the temperature of the heat treatment to form said second layer being lower than the temperature of a first heat treatment used to form said first layer of polycrystalline ferroelectric film.

5,645,886

METHOD AND SYSTEM FOR SEALING A RADIOFREQUENCY SIGNAL ABSORBING COATING

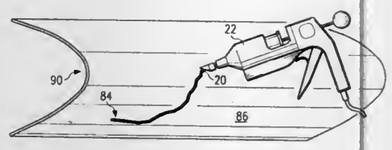
John T. Schueler, II, Irving, and Stanley L. Ramirez, Fort Worth, both of Tex., assignors to Lockheed Fort Worth Company, Fort Worth, Tex.

Continuation of Ser. No. 184,228, Jan. 19, 1994, abandoned. This application Sep. 1, 1995, Ser. No. 522,826

Int. Cl.[6] B32B *35/00*

U.S. Cl. 427—140 **20 Claims**

11. A method for using a kit comprising a heat-responsive compound for sealing an exposed area of a surface primarily coated with a radiofrequency signal absorptive coating, comprising:



transforming a heat-responsive compound from a solid state to viscous melted state at temperatures above a selected temperature and returning to a solid state after cooling to temperatures below said selected temperature, said heat-responsive compound comprising a metallic filler material selected to associate with selected radiofrequency signal absorbing coating;

applying the heat-responsive compound in the viscous melted state to cover the exposed area; and

concealing any gap or fastener associated with said exposed area with a tape; and

covering a portion of said tape with the heat-responsive compound to make a smooth surface between said tape and said selected radiofrequency signal absorbing coating.

5,645,887

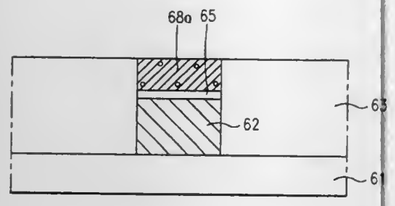
METHOD FOR FORMING PLATINUM SILICIDE PLUGS

Jeong Soo Byun, Chungcheongbuk-do, Rep. of Korea, assignor to LG Semicon Co., Ltd., Chungcheongbuk-do, Rep. of Korea

Continuation-in-part of Ser. No. 182,844, Jan. 14, 1994, abandoned. This application Sep. 5, 1995, Ser. No. 523,749

Int. Cl.[6] C23C *16/00;* **H01L** *21/28*

U.S. Cl. 427—248.1 **14 Claims**



1. A method for forming a platinum silicide plug, the method comprising the steps of:

(a) providing a silicon substrate having a conductive layer on a portion of the silicon substrate;

(b) forming an insulating layer on the silicon substrate and the conductive layer;

(c) patterning the insulating layer to form a contact hole on the conductive layer;

(d) exposing the conductive layer to air and thereby forming a native oxide film on the conductive layer;

(e) forming a polysilicon film on the native oxide film and the insulating layer so as to completely fill the contact hole;

(f) etching back the polysilicon film to expose the insulating layer, thereby forming a silicon plug in the contact hole;

(g) forming a platinum layer on the silicon plug and the insulating layer;

(h) performing heat treatment to convert the silicon plug to a platinum silicide plug; and

(i) removing the platinum layer remaining on the platinum silicide plug and the insulating layer.

5,645,888

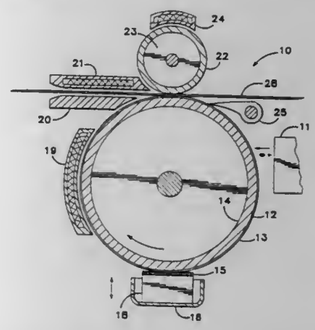
REACTIVE INK COMPOSITIONS AND SYSTEMS

Donald R. Titterington, Tualatin; Loc V. Bui; Linda M. Hirschy, both of Portland, and C. Wayne Jaeger, Beaverton, all of Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

Division of Ser. No. 5,970, Jan. 19, 1993, Pat. No. 5,380,769. This application Aug. 5, 1994, Ser. No. 286,718

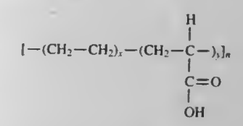
Int. Cl.[6] B05D *5/00;1/36;3/10;* **B41F** *31/00*

U.S. Cl. 427—256 **18 Claims**



1. A method for printing using a reactive ink composition in which a base ink component comprising a phase change ink carrier constituent and a cross-linkable constituent are applied to a substrate separately from a cross-linking agent, the method comprising:

using as the cross-linkable constituent one selected from the group consisting of ethylene-acrylic acid copolymer having the following structure



where

x=from about 75% to about 99%;

y=from about 1% to about 25%; and

a dimer acid;

applying the cross-linking agent to the surface of a receiving substrate to produce a coated surface; and

subsequently applying the base ink component to the coated surface using ink jet printing techniques and, upon exposure of the cross-linkable constituent of the base ink component to the cross-linking agent of a curing component, producing a cross-linked ink layer.

5,645,889

DECORATIVE SURFACE COVERINGS AND METHODS FOR MAKING

Milton J. Potosky, Hamilton Square, and Robert J. Scheer, Belle Mead, both of N.J., assignors to Congoleum Corporation, Lawrenceville, N.J.

Filed Jun. 7, 1995, Ser. No. 472,308

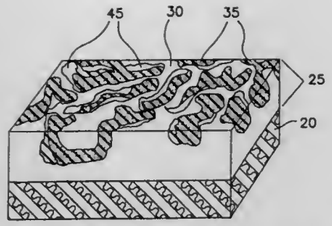
Int. Cl.[6] B05D *5/06;1/36*

U.S. Cl. 427—256 **17 Claims**

1. A method of making a decorative surface covering comprising the steps of:

(a) applying to a substrate a coating of a fluid plastisol composition comprising a first color;

(b) distributing onto said applied first colored fluid plastisol a fluid plastisol composition comprising a second color to form a layer comprising a patterned fluid plastisol mixture wherein



said second colored fluid plastisol penetrates into the thickness of said first colored plastisol coating; and

(c) forming said patterned fluid plastisol mixture into a patterned solid plastisol mixture.

5,645,890

PREVENTION OF CORROSION WITH POLYANILINE

Alan G. MacDiarmid, Drexel Hill, and Naseer Ahmad, West Chester, both of Pa., assignors to The Trustess of the University of Pennsylvania, Philadelphia, Pa.

Filed Feb. 14, 1995, Ser. No. 388,474

Int. Cl.[6] B05D *3/10*

U.S. Cl. 427—302 **20 Claims**

1. A method of improving the corrosion inhibition of a metal or metal alloy substrate, comprising applying to an exposed surface of an iron or steel alloy substrate a coating of polyaniline, wherein said application of said polyaniline is accomplished by contacting said substrate surface with a solution comprising said polyaniline dissolved in an organic solvent.

5,645,891

CERAMIC POROUS MATERIAL AND METHOD OF MAKING SAME

Jun Liu, Richland; Anthony Y. Kim, Kennewick, and Jud W. Virden, Richland, all of Wash., assignors to Battelle Memorial Institute, Richland, Wash.

Filed Nov. 23, 1994, Ser. No. 344,330

Int. Cl.[6] B05D *3/02*

U.S. Cl. 427—376.2 **30 Claims**



1. A method for making a mesoporous ceramic material, comprising the steps of:

(a) placing a reactive mixture of at least one ceramic precursor with at least one surfactant into a reactive vessel;

(b) providing a substrate and placing said substrate in contact with said reactive mixture; and

(c) forming micellar aggregates in said reactive mixture and then forming the mesoporous ceramic material on the substrate.

5,645,892

METHOD AND COMPOSITIONS FOR PROVIDING AN IMPROVED FINISH FOR BRUSHED OR PILE TEXTILE FABRICS

David Anderson Whitley, Rock Hill, S.C., and Carl Lewis Wolhar, Charlotte, N.C., assignors to IVAX Industries, Inc., Horsham, Pa.

Filed Oct. 31, 1995, Ser. No. 550,742

Int. Cl.[6] B05D *3/02*

U.S. Cl. 427—393.4 **22 Claims**

1. A method of treating pile or brushed fabric to decrease marking and streaking when the fabrics are stroked, rubbed or handled and to improve the softness and hand of the fabrics, said method comprising the application to the fabric of a liquid composition containing by weight:

a) about 80–100% of a water-dispersible, hydrophilic polyester or polyurethane dispersed in an aqueous medium;

b) about 0–20% of a carrier of the type used to enhance the penetration of dyes and other materials into the polymer structure of polyester fibers; and

c) about 0–10% of a non-rewetting wetting agent.

5,645,893

THERMAL BARRIER COATING FOR A SUPERALLOY ARTICLE AND METHOD OF APPLICATION

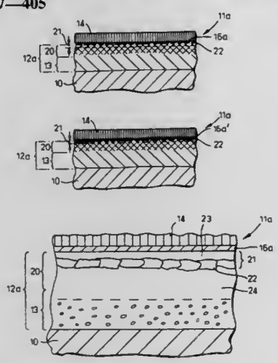
David S. Rickerby, Derby, England; Daniel K. White, Garnerville, N.Y., and Stanley R. Bell, Herts, England, assignors to Rolls-Royce plc, London, and Chromalloy United Kingdom Limited, Nottingham, both of England

Filed Dec. 8, 1995, Ser. No. 569,480

Claims priority, application United Kingdom, Dec. 24, 1994, 9426257

Int. Cl.[6] B05D *1/36;* **C23C** *8/80;* **C21D** *5/00;* **B21C** *1/00*

U.S. Cl. 427—405 **23 Claims**



1. A method of applying a multi-layer thermal barrier coating to a superalloy article comprising the steps of:

applying an aluminum-containing alloy bond coating to the superalloy article,

applying a layer of platinum-group metal to the aluminum-containing alloy bond coating,

heat treating the superalloy article at a temperature of 1100°–1200° C. to fully diffuse the platinum-group metal into the bond coating to create a platinum-group metal enriched outer layer of the bond coating, of which a surface layer predominantly comprises at least one stable platinum-group metal aluminide,

creating an adherent layer of oxide on the enriched layer,

and applying an insulating ceramic coating to the oxide layer, wherein the oxide comprises alumina.

5,645,894

METHOD OF TREATING RAZOR BLADE CUTTING EDGES

Hoang Mai Trankiem, Watertown, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Jan. 17, 1996, Ser. No. 587,410

Int. Cl.[6] B05D *1/02;3/02;5/08*

U.S. Cl. 427—421 **20 Claims**

1. A method of forming a polytetrafluoroethylene coating on a razor blade cutting edge comprising the steps of:

(a) dispersing a polytetrafluoroethylene in a supercritical fluid;

(b) coating said razor blade cutting edge with the dispersion; and

(c) heating the coating sufficiently to adhere the polytetrafluoroethylene to the blade edge.

5,645,895

METHOD FOR PAINTING A VEHICLE BODY

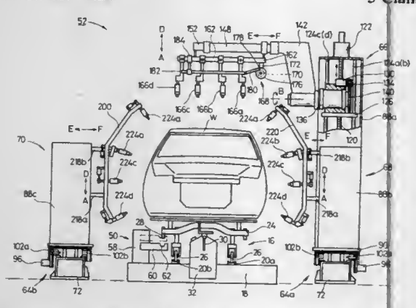
Junichi Murayama; Niichi Toyama; Kazuhide Matsuo; Hideki Takashima; Katsushi Sadamitsu; Kiichi Sugino, and Kazuto Iiyama, all of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 745,769, Aug. 12, 1991, abandoned, which is a continuation of Ser. No. 293,432, Jan. 4, 1989, abandoned. This application Feb. 7, 1992, Ser. No. 831,644

Claims priority, application Japan, Sep. 5, 1988, 63-221532

Int. Cl.[6] B05D *1/02*

U.S. Cl. 427—424 **5 Claims**



1. A method of painting a front end, engine hood, front pillars, a roof, rear pillars, a trunk lid and a rear end of a vehicle body having a longitudinal axis comprising the steps of:

moving said vehicle body by a conveyor mechanism in a direction of the longitudinal axis;

directing paint spraying means substantially perpendicularly to surfaces to be coated of said vehicle body which is being conveyed, said surfaces having different angles of inclination;

spacing said paint spraying means from said surfaces of the vehicle body;

controlling the velocity of movement of said paint spraying means to vary horizontal and vertical components of velocity of the paint spraying means dependent on said different angles of inclination of said surface such that said surfaces will be coated at a constant relative velocity by said paint spraying means, the direction of movement of the paint spraying means being generally along the longitudinal axis of the vehicle body, the controlling including adjusting height of the paint spraying means; and

ejecting paint sprays from said paint spraying means to form paint coatings on said surfaces of the vehicle body while the vehicle body and the paint spraying means both continue to be moved.

5,645,896

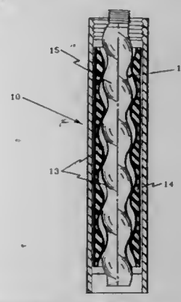
METHOD OF APPLYING A FILLED IN METAL CARBIDE HARD FACING TO THE ROTOR OF A PROGRESSING CAVITY PUMP

Robert A.R. Mills, Bragg Creek, Canada, assignor to Kudu Industries Inc., Canada

Division of Ser. No. 454,589, May 30, 1995, Pat. No. 5,498,142. This application Jan. 18, 1996, Ser. No. 588,141

Int. Cl.[6] C23C *4/10*

U.S. Cl. 427—450 **10 Claims**



1. A method of hardfacing a rotor for a progressing cavity pump having a ferrous metal rotor body, comprising the steps of

plasma spraying a metal carbide material onto the rotor body to form a metal carbide layer on the rotor body having a grainy surface with a multiplicity of peaks and intermediate depressions, the peaks being formed by metal carbide grains at the surface of the metal carbide layer;

applying a metallic material top layer onto the metal carbide layer at such a thickness that it completely covers the metal carbide layer; and

polishing the top layer until a majority of the peeks of the metal carbide layer are exposed.

5,645,897

PROCESS AND DEVICE FOR SURFACE-MODIFICATION BY PHYSICO-CHEMICAL REACTIONS OF GASES OR VAPORS ON SURFACES, USING HIGHLY-CHARGED IONS

Jurgen Andra, Hammer Strasse 41b, D-48153, Muenster, Germany

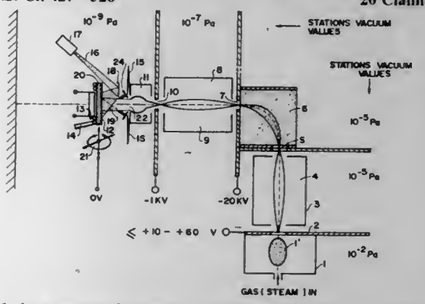
PCT No. PCT/EP93/00214, § 371 Date Jan. 18, 1995, § 102(e) Date Jan. 18, 1995, PCT Pub. No. WO93/16213, PCT Pub. Date Aug. 19, 1993

PCT Filed Jan. 30, 1993, Ser. No. 284,632

Claims priority, application Germany, Feb. 15, 1992, 42 04 650.5

Int. Cl.[6] C23C *14/04;14/00;* **H05H** *1/30*

U.S. Cl. 427—526 **20 Claims**



1. In a process for surface modification by physico-chemical reactions, said process comprising the steps of:

(a) contacting a solid surface having a crystalline or amorphous structure with a reactive, gaseous fluid which is to interact with the surface; and

(b) supplying activating energy to both said fluid and said surface by means of ions or plasmas, in order to trigger reactions between said fluid and said surface,

the improvement comprising providing an activating energy in the form of an electronic potential energy of ions having a charge of $q \geqq 2$ with a low kinetic energy, or by streams of plasmas, which contain a high proportion of an arithmetically averaged charge state $\Sigma q \cdot f(g) = qm \geqq 2$, where $f(g)$ is a fraction of particles in charge state $q=0,1,2, \ldots$, with said low kinetic energy, wherein said low kinetic energy is below about 100·q eV and determined to meet a condition that said ions are allowed to closely approach atoms of said surface, but not to penetrate said surface.

5,645,898

METHOD FOR MANUFACTURING A MAGNETIC RECORDING MEMBER

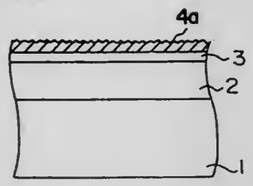
Kenji Sato; Iwao Okamoto, and Chiaki Okuyama, all of Kanagawa, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 22, 1996, Ser. No. 589,217

Claims priority, application Japan, Jan. 23, 1995, 7-008252; Nov. 10, 1995, 7-292359

Int. Cl.[6] H05H *1/00*

U.S. Cl. 427—539 **25 Claims**



1. A method for manufacturing a magnetic recording medium comprising the steps of:

forming a recording film of a magnetic material on a nonmagnetic substrate;

forming a protection film containing at least a first and a second nonmagnetic materials on said recording film; and

selectively etching one of said first material and said second material of said protection film to transform a surface of said protection film into a rough surface.

5,645,899

METHOD AND APPARATUS FOR APPLYING COLOR IDENTIFIERS TO A LEAD

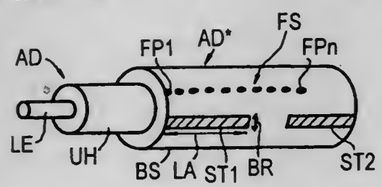
Siegfried Unterberger, Coburg, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Oct. 18, 1995, Ser. No. 544,566

Claims priority, application Germany, Oct. 25, 1994, 44 38 090.9

Int. Cl.[6] B05D *3/06*

U.S. Cl. 427—558 **24 Claims**



1. A method for applying color identifiers to a lead selected from a group consisting of electrical leads and optical leads, said method comprising the steps of applying a primer coming on the lead to surround the outer surface thereof, while the primer coating is still unhardened, injecting individual paint droplets of a color in a line into the unhardened primer coating from at least one nozzle arrangement, said paint droplets being integrated into the primer coating by penetrating and then drying the primer coating with the integrated paint droplets to complete the formation of the coating with color identifier.

5,645,900

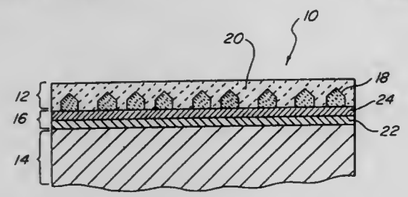
DIAMOND COMPOSITE FILMS FOR PROTECTIVE COATINGS ON METALS AND METHOD OF FORMATION

Tiong P. Ong, Austin, Tex., and Yuh-han Shing, Hsinchu, Taiwan, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation of Ser. No. 52,419, Apr. 22, 1993, abandoned. This application Oct. 25, 1994, Ser. No. 328,947

Int. Cl.[6] H05H *1/02*; **C23C** *16/32;16/42*

U.S. Cl. 427—571 **4 Claims**



1. A method for forming a structure of multiple diamond crystallite composites on a metal or carbon substrate within an electron cyclotron resonance microwave plasma chemical vapor deposition chamber, the method comprising:

a first step of reacting the substrate with silane and hydrogen to form a metal silicide on the substrate if the substrate is metal or reacting the substrate with silane, methane and hydrogen to form silicon carbide on the substrate if the substrate is carbon

a second step of depositing diamond crystallites onto the metal silicide or silicon carbide layer;

a third step of depositing an amorphous layer onto the diamond crystallites and onto exposed portions of the metal silicide or silicon carbide layer; and

repeating the first step through the third step at least one time, each iteration creating one diamond crystallite composite.

5,645,901

ELECTRODE SUBSTRATE FOR LIQUID CRYSTAL DISPLAY DEVICE AND LIQUID CRYSTAL DISPLAY DEVICE

Shunsei Fukuchi, Nara; Makoto Iwamoto, Yamatokooriyama; Akihiro Kitabatake, Osaka; Masahiro Tanimoto, Daito; Masaki Maekawa, Takatsuki, and Naoki Shimoyama, Otsu, all of Japan, assignors to Sharp Kabushiki Kaisha; Sanyo Vacuum Industries Co., Ltd., and Toray Industries, Inc., all of Japan

PCT No. PCT/JP94/02067, § 371 Date Jul. 27, 1995, § 102(e) Date Jul. 27, 1995, PCT Pub. No. WO95/16936, PCT Pub. Date Jun. 22, 1995

PCT Filed Dec. 8, 1994, Ser. No. 495,666

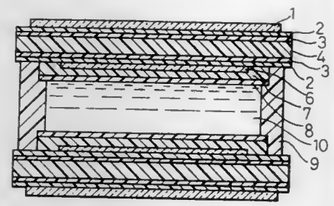
Claims priority, application Japan, Dec. 13, 1993, 5-342553

Int. Cl.[6] G02F *1/1333*

U.S. Cl. 428—1 **21 Claims**

1. An electrode substrate for a liquid crystal display device which comprises:

(A) a resin substrate comprising a transparent resin of a copolymer containing not less than 20% by weight of maleimide



type monomer units, having a crosslinked structure and having a glass transition temperature of not lower than 160° C. and not higher than 200° C., and with a thickness of 0.1 to 0.8 mm;

(B) a cured coating laminated to said resin substrate comprising a polyvinyl alcohol crosslinked with at least one epoxysilane selected from the group represented by the general formula (1) and a hydrolysate thereof:

$$R^1SiX_3 \quad (1)$$

wherein R^1 is an organic group of 1 to 10 carbon atoms having a glycidyl group and X is a hydrolyzable group;

(C) a siloxane cured coating containing fine silica particles aminated to said cured coating of polyvinyl alcohol; and

(D) an ITO film laminated to said siloxane cured coating having a grainy surface with grains of a diameter of not larger than 500 nm, formed at a substrate temperature of not higher than 100° C., and having a thickness of 15 to 500 nm.

5,645,902

DECORATIVE PULL BOW

Peter S. C. Cheng, 99 Glencairn Street, Toronto, Ontario, Canada

Filed Oct. 6, 1994, Ser. No. 319,380

Int. Cl.[6] D04D *7/10*

U.S. Cl. 428—5 **14 Claims**



13. A bow-forming assembly, comprising:

at least one longitudinal flexible ribbon;

a plurality of pairs of cuts spaced along said ribbon, each said pair of cuts defining one of a plurality of segments of said ribbon, each said pair of cuts including a cut on each of two opposite edges of said ribbon, each said cut of a pair being offset longitudinally relative to the other cut of said pair, each said pair of cuts being longitudinally offset at an angle opposite to the offset angle of each adjacent said pair;

a plurality of stiff retainers, each said retainer defining an aperture engaging the narrowest portion of said ribbon between said cuts of one of said pairs of cuts, each said retainer being restrained generally transversely across said ribbon at said offset angle of said pair of cuts;

at least one drawstring slidingly engaging said plurality of apertures and attached to a distal end of a distal segment of said ribbon for gathering said ribbon to form said plurality of segments into a plurality of loops to create a bow with said distal end of said distal segment in the center of said bow; and

a thematic character, said character having an edge tied to said distal end of said distal segment of said ribbon to cause said character to be held in a substantially upright orientation in the center of said bow by at least one of said loops, upon gathering of said ribbon to create said bow.

5,645,903

SOLID O/W-TYPE COSMETIC COMPOSITION

Yoichiro Tanaka, and Kazuo Suzuki, both of Tokyo, Japan, assignors to Kose Corporation, Tokyo, Japan

Division of Ser. No. 171,615, Dec. 22, 1993. This application Jun. 6, 1995, Ser. No. 466,769

Claims priority, application Japan, Mar. 10, 1993, 5-019236; Jun. 29, 1993, 5-182237

Int. Cl.[6] A45D *40/00*

U.S. Cl. 428—34.1 **8 Claims**

1. An article comprising a container having a cover containing a solid oil-in-water cosmetic composition characterized by having a water-absorbing material secured to a part or whole of receptacle of the container.

5,645,904

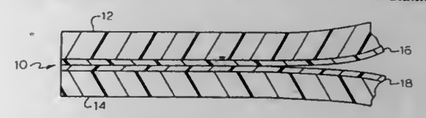
METHOD AND COMPOSITIONS THAT RENDER MATERIALS RF RESPONSIVE

Lecon Woo, Libertyville; Ying Lo, Mundelein; Michael T. K. Ling, Vernon Hills; Dean Laurin, Hawthorn Woods; Byron Gleason, Algonquin; Lillian A. Buan, Crystal Lake, and William D. Johnston, Kildeer, all of Ill., assignors to Baxter International Inc., Deerfield, Ill.

Filed Dec. 11, 1991, Ser. No. 805,218

Int. Cl.[6] B32B *1/08*

U.S. Cl. 428—35.7 **4 Claims**



1. A material structure comprising:

a first substrate layer with inner and outer surfaces and a dielectric loss approximately less than 0.2 at approximately 27–60 MHz over a temperature range of ambient to approximately 310° C.;

a second substrate layer with inner and outer surfaces and a dielectric loss approximately less than 0.2 at approximately 27–60 MHz over a temperature range of ambient to approximately 310° C., the second substrate layer inner surface being positioned adjacent to the first substrate layer inner surface to define an interface;

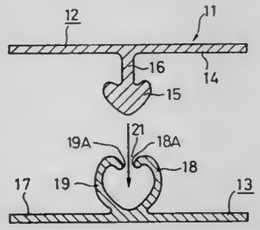
a first deposit within a portion of the interface defining an RF sealable area, the first deposit has a dielectric loss approximately greater than 0.2 at approximately 27–60 MHz over a temperature range of ambient to approximately 310° C., the first deposit being a polymer generated from or containing a member selected from the group consisting of vinyl ketone, vinylene carbonate, vinyl carbonate, imide, carbonate, sulfone, sulfoxide, phosphate, phosphonate, urethane, lactone, lactam, phenoxy, thermoplastic block copolymer and combinations thereof; and,

a seal within said RF sealable area created by means for applying electromagnetic radiation having a frequency within a range of 27–60 MHz to the RF sealable area attaching the first substrate layer to the second substrate layer along the first deposit.

5,645,905
SNAP ZIPPER

Toyokazu Takubo, and Ken-ichi Tanaka, both of Himeji, Japan, assignors to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 147,876, Nov. 4, 1993, abandoned. This application Oct. 10, 1995, Ser. No. 541,624
Claims priority, application Japan, Nov. 9, 1992, 4-298624; Nov. 9, 1992, 4-298625
Int. Cl.[6] B65D *33/25*
U.S. Cl. 428—35.7 **11 Claims**

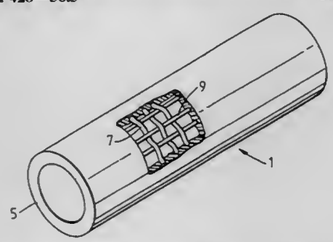


1. A snap zipper having a portion to be fused to a bag body made of a material comprising at least one of a polyester elastomer and a polybutylene terephthalate (PBT) resin, the resin in said portion to be fused having a bending modulus of elasticity of less than 10,000 kg/cm^2.

5,645,906
RADIALLY-RECOVERABLE SLEEVE OF COMPOSITE

George Barry Park, Nr. Swindon; Frank James Lowe, Swindon; George Michael John Ganbuehler, Swindon; Norman Hutt, Swindon; Stephen Alan Webb, Nr. Swindon, all of England, and Hendrick Graulus, Herent, Belgium, assignors to Raychem Limited, United Kingdom

Continuation of Ser. No. 271,537, Jul. 7, 1994, which is a continuation of Ser. No. 985,540, Dec. 4, 1992, abandoned, which is a division of Ser. No. 552,370, Jul. 16, 1990, abandoned, which is a continuation of Ser. No. 296,480, Jan. 12, 1989, abandoned. This application Jul. 15, 1994, Ser. No. 276,005
Claims priority, application United Kingdom, Jan. 12, 1988, 8800625; Aug. 11, 1988, 8819134; Aug. 22, 1988, 8819896
Int. Cl.[6] B29D *22/00;* **B65B** *53/00;* **B32B** *7/00*
U.S. Cl. 428—36.3 **30 Claims**

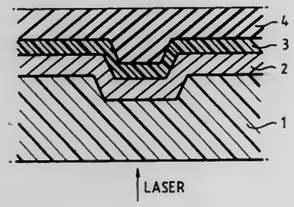


1. A radially-recoverable sleeve formed of composite material comprising dimensionally-recoverable matrix material and circumferentially-extending multifilament reinforcement fibres, and having heat softenable fibers that, at least after recovery, at least hinder the passage of fluid from the directions selected from the group consisting longitudinally along interstices of the fibres, along outer surfaces of the fibres between the fibres and the matrix material, and longitudinally along interstices of the fibres and also along outer surfaces of the fibres between the fibres and the matrix material, said sleeve having hybrid fibres combined from at least two different fibre types, comprising at least:
a) strength fibres, and
b) said heat softenable fibers formed from or in the form of fibres that will block
interstices of the fibres on at least one of:
i) heating of the composite material,
ii) compression of the composite material, and
iii) irradiation of the composite material.

5,645,907
ORGANIC OPTICAL RECORDING MEDIUM AND METHOD FOR THE PREVENTION OF REWRITE THEREIN

Jung Hoi Kim; Young Jae Heo, both of Seoul, and Tae Young Nam, Suwan, all of Rep. of Korea, assignors to Cheil Synthetics, Inc., Kyoungsangbuk-do, Rep. of Korea

Filed Dec. 22, 1994, Ser. No. 362,385
Claims priority, application Rep. of Korea, Feb. 28, 1994, 94-3803
Int. Cl.[6] D32B *3/00*
U.S. Cl. 428—64.1 **4 Claims**



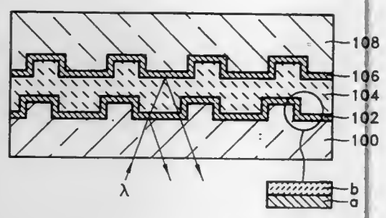
1. A WORM type organic optical recording medium comprising a substrate,
a recording layer, a reflective layer and a protective layer, wherein the recording layer is between 0.1 and less than 2 μm thick, wherein said recording layer consists of a thermosetting or photocuring resin and near infrared absorbing dye capable of absorbing a laser beam and of generating heat, wherein said infrared absorbing dye is selected from the group consisting of cyanines, quinones, pthalocyanines, and chroconiums, and wherein said near infrared absorbing dye is dispersed in said resin of said recording layer in an amount of 2 to 40% by weight based on the weight of said resin.

5,645,908
MULTI-LAYER OPTICAL RECORDING DEVICE

Se-kyoon Shin, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Oct. 5, 1995, Ser. No. 539,741
Claims priority, application Rep. of Korea, Nov. 11, 1994, 1994-29603
Int. Cl.[6] B32B *3/00*
U.S. Cl. 428—64.1 **5 Claims**

1. A multi-layer optical recording medium comprising:
a plurality of reflecting films having different optical reflecting characteristics from each other and including information capable of being read optically, wherein at least a first of said

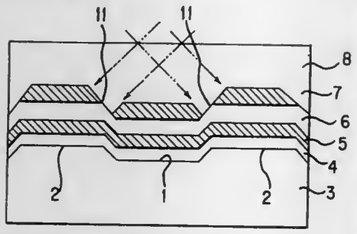


reflecting films which is next to an optical incident surface is composed of two layers, said two layers having different refractive indices with respect to one another.

5,645,909
OPTICAL RECORDING MEDIUM AND METHOD FOR FORMING SAME

Hideo Kobayashi; Osamu Ueno, and Hironori Gotoh, all of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 18, 1995, Ser. No. 544,938
Claims priority, application Japan, Oct. 19, 1994, 6-253971
Int. Cl.[6] B32B *3/00*
U.S. Cl. 428—64.1 **8 Claims**



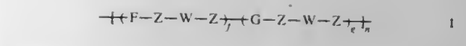
1. An optical recording medium for land and groove recording having a medium structure in which a protection layer, a recording layer, an interference layer and a reflection layer are laminated, recording tracks comprising grooves and lands are formed, and information signals are recorded and reproduced by utilizing a change of reflectance obtained by irradiating an optical beam to both the grooves and the lands, wherein
at least one of the protection layer, the recording layer and the interference layer is formed to a layer thickness different between the groove and the land, whereby upon irradiation of the optical beam to a predetermined track, the reflectance of of the optical beam to a predetermined track, the reflectance of the optical beam in a portion of a track adjacent to the predetermined track in a recorded state is equal to the reflectance of the optical beam in a portion of a track in an unrecorded state.

5,645,910
FORMAZAN-CYANINE COPOLYMERS DYES FOR OPTICAL RECORDING LAYERS AND ELEMENTS

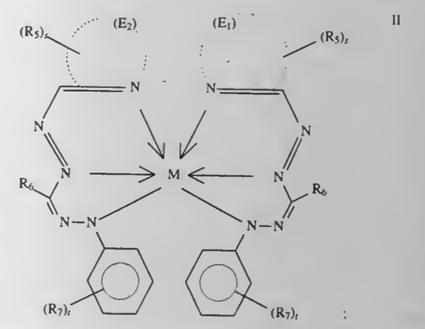
Elizabeth Gertrude Burns, Rochester; Ramanuj Goswami, Webster, and Csaba Andras Kovacs, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 22, 1996, Ser. No. 621,287
Int. Cl.[6] B32B *3/00*
U.S. Cl. 428—64.1 **8 Claims**

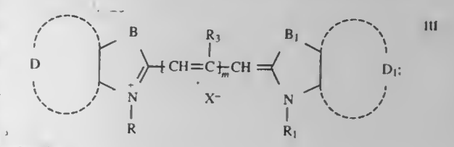
1. A copolymer comprising 70 to 100 mole percent of repeating units according to formula I:



wherein
F represents a divalent formazan dye radical derived from structure II:



wherein
E_1 and E_2 represent the atoms necessary to complete a 5- or 6-membered heterocyclic ring such as pyridine and thiazole which may bear fused aromatic rings such as phenyl or heteroaromatic rings such as pyridine, and pyrazine;
R_5 represents hydrogen, C_1–C_{20} alkyl, C_6–C_{10} aryl, C_7–C_{30} aralkyl, heteroaryl such as pyridyl, C_2–C_{20} alkenyl; alkoxy, C_1–C_{10} alkoxycarbonyl, C_6–C_{10} aryloxy, C_6–C_{10} aryloxycarbonyl, carbamyl, sulfamoyl, C_1–C_{10} acylamino, sulfonylamino, halogen, ureido, hydroxy, carbamoyloxy, C_1–C_{10} alkoxycarbonylamino, nitro, cyano, thiocyano, and carboxy;
R_6 represents C_1–C_{20} alkyl, heterocyclic such as pyridyl, an aromatic ring such as phenyl, C_1–C_{10} alkoxyphenyl, C_1–C_{10} alkylphenyl, and C_1–C_{10} alkoxycarbonylphenyl;
R_7 represents a substituent defined for R_5 above;
M represents a complexing metal ion such as nickel, palladium, and zinc; and
s and t represent integers from 0 to 4;
G represents a divalent radical derived from a cyanine dye of structure III:

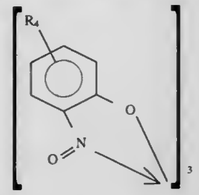


wherein
D and D_1 represent sufficient atoms to form a fused substituted or unsubstituted aromatic ring such as phenyl, naphthyl; and heterocyclic ring such as pyridyl;
B and B_1 represent —O—, —S—, $>C(CH_3)_2$, —Se—, —CH=CH—,



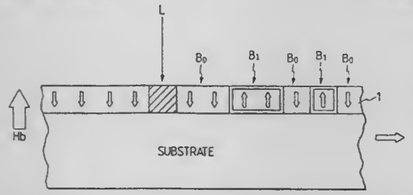
in which E represents an substituted or unsubstituted C_1 to C_{10} alkyl and an aromatic ring such as phenyl and naphthyl; or B may combine with D, or B_1 may combine with D_1, to form fused aromatic rings;
R and R_1 represent C_1 to C_{10} alkyl and C_7 to C_{20} arylalkyl such as benzyl and phenethyl;
R_3 represents hydrogen, C_1 to C_{10} alkyl, C_7 to C_{20} arylalkyl such as benzyl and phenethyl; and halogen such chlorine and bromine;

X represents a anionic counter ion selected from



R_4 represents hydrogen, C_1 to C_{10} alkyl, C_1 to C_{10} alkoxy, and halogen such as chlorine, bromine and fluorine; R_4 represents the atoms necessary to form a fused aromatic ring;
m represents an integer from 1 to 2;
W represents C_2–C_{18}-alkylene; C_3–C_8-cycloalkylene; C_1–C_4 alkylene bonded to C_3–C_8 cycloalkylene bonded to C_1–C_4 alkylene; C_1–C_4 alkylenearylene bonded to C_1–C_4 alkylene; C_2–C_4 alkoxy bonded to C_2–C_4 alkylene; arylene bonded to C_1–C_4 alkylene bonded to arylene; and C_3–C_8 cycloalkylene bonded to C_1–C_4-alkylene bonded to C_3–C_8 cycloalkylene;
Z represents a divalent radical derived from carbonate, urethane, urea, ester; or amide;
f represents 10 to 65 mole percent of the repeating unit and g represents the remainder of the repeating unit;
n represents the repeating units needed to build a copolymer chain of a size that corresponds to a polymethylmethacrylate chain of weight average molecular weight (M_w) of 5,000 to 1,000,000.

5,645,911
OVER-WRITABLE METHOD OF MAGNETOOPTICAL RECORDING
Hiroyuki Matsumoto, Tokyo, Japan, assignor to Nikon Corporation, Tokyo, Japan
Continuation of Ser. No. 736,649, Jul. 26, 1991, abandoned, which is a division of Ser. No. 581,199, Sep. 10, 1990, abandoned, which is a continuation of Ser. No. 368,849, Jun. 20, 1989, abandoned. This application May 2, 1995, Ser. No. 434,119
Claims priority, application Japan, Jun. 24, 1988, 63-156552
Int. Cl.[6] G11B *5/66*
U.S. Cl. 428—64.3 **4 Claims**



1. An over-writable method of magnetooptical recording, comprising:
providing an over-write capable magnetooptical disk recording medium having a substrate and a magnetic layer structure stacked on said substrate and including a first layer having perpendicular magnetic anisotropy and constituting a recording layer and a second layer having perpendicular magnetic anisotropy and constituting a reference layer,
wherein said second layer comprises an alloy composition given by the formula:

$$(Tb_U Dy_{100-U})_V (Fe_{100-W} Co_W)_{100-V}$$

where U=0 to 50 atomic %
V=15 to 35 atomic % and
W=1 to 50 atomic %
and said medium satisfies the following conditions at a room temperature:

$$H_{c1} > \frac{\sigma_w}{2M_{s1}t_1}$$

and

$$H_{c2} > \frac{\sigma_w}{2M_{s2}t_2}$$

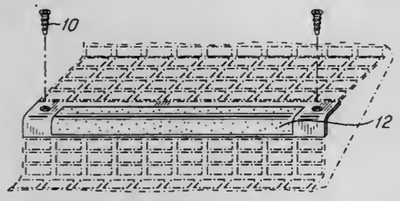
wherein
H_{C1}: coercivity of first layer,
σ_w: exchange coupling force,
M_{s1}: saturation magnetization of first layer,
t_1: film thickness of first layer,
H_{C2}: coercivity of second layer,
M_{s2}: saturation magnetization of second layer, and
t_2: film thickness of second layer,
said method further comprising the following steps:
providing magnetization of said second layer in a predetermined direction at a region thereof to be recorded;
rotating said medium; and
irradiating said region with a laser beam pulse-modulated between a first intensity level and a second, higher, intensity level in accordance with binary information to be recorded, while applying a bias field to said region, wherein one of the following conditions is satisfied:

(i) $T_R < T_L < T_{C1} < T_H \leqq T_{C2}$

(ii) $T_R < T_L < T_H \leqq T_{C1} \leqq T_{C2}$

where T_R: room temperature
T_{C1}: Curie temperature of first layer
T_{C2}: Curie temperature of second layer
T_L: temperature of recording medium when first intensity level laser beam is radiated
T_H: temperature of recording medium when second intensity level laser beam is radiated
whereby bits are recorded in said first layer having either of two directions of magnetization dependent upon said first intensity level and said second intensity level, respectively.

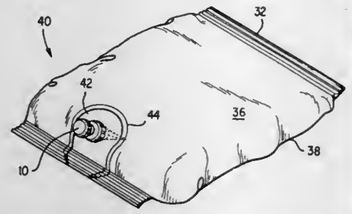
5,645,912
ANTI-SKID STAIRCASE TREADS
John Robert Nelson, 3, Lorong Galing 71, Taman Air Putih, 25300 Kuantan, Pahang, Malaysia, and Richard Forbes Donald-Hill, 43 Jalan Istana, Taman Istana, Ipoh 30000, Perak, Malaysia
Filed Nov. 14, 1995, Ser. No. 557,291
Claims priority, application Malaysia, Nov. 30, 1994, UI 9403194
Int. Cl.[6] B32B *9/00*
U.S. Cl. 428—67 **10 Claims**



1. An anti-skid staircase tread for affixing to a staircase step over the stairnose, which comprises an elongated rigid member angled to fit over the stairnose to conform to the shape of the staircase step, said rigid member having a substantially horizontal portion providing an upper surface and a substantially vertical portion providing a front surface;

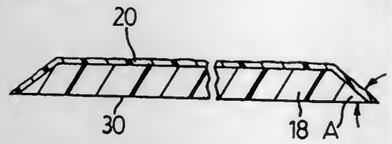
a flexible tape dimensioned so as to fit over both upper and front surfaces of the rigid member and having an anti-skid material on the upper surface of said tape; and
a sealant applied to the lower surface of the tape for affixing the tape to the rigid member but permitting removal from the rigid member when desired.

5,645,913
FILM AND POUCH WITH PATCH OF HIGH ELONGATION
Kent Lee Rogers, Grove City, Ohio, assignor to W. R. Grace & Co.-Conn., Duncan, S.C.
Filed Mar. 2, 1995, Ser. No. 397,608
Int. Cl.[6] B32B *7/02;* **B65D** *85/72*
U.S. Cl. 428—77 **16 Claims**



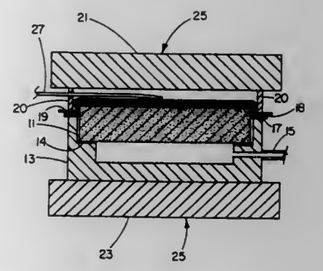
1. A laminate suitable for forming into a pouch for pumpable products, the laminate comprising:
a) a thermoplastic packaging film, wherein the thermoplastic packaging film is characterized by an elongation at break, at 73° F. (ASTM D 882) of less than 700% in each of the machine and transverse directions, and
b) a patch adhered to the packaging film, the patch comprising a thermoplastic material and characterized by an elongation at break, at 73° F. (ASTM D 882) of between 700% and 1000% in each of the machine and transverse directions.

5,645,914
ANTI-FATIGUE MAT
Allan J. Horowitz, 9640 Bayview Avenue, Suite 1, Richmond Hill, Ontario, Canada
Filed Apr. 11, 1995, Ser. No. 420,171
Claims priority, application Canada, Apr. 11, 1995, 2121023
Int. Cl.[6] B32B *3/02;* **A47G** *9/06*
U.S. Cl. 428—81 **8 Claims**



1. A mat adapted to relieve fatigue in a person standing thereon without shoes or boots, comprising:
(a) a central portion having a substantially planar upper surface and a substantially planar lower surface parallel to said upper surface,
(b) a border portion extending around said central portion and forming a downwardly sloping edge around said central portion,
(c) said border portion sloping at an angle of between 10° and 80° with respect to the plane of said top and bottom surfaces,
(d) said central and border portions being formed integrally of a resilient flexible foam, said foam having a thickness of between 0.75 and 1.5 inches, a density of between 1.5 and 2.5 pounds per cubic foot, and a compressive strength at 25% compression of between 10 and 17 pounds per square inch,
(e) and a thin carpet material surfacing said central and border portions and extending without seams across said central and border portions.

5,645,915
HIGH STRENGTH POROUS PTFE SHEET MATERIAL
Thane L. Kranzler, and Jon P. Moseley, both of Flagstaff, Ariz., assignors to W. L. Gore & Associates, Inc., Newark, Del.
Continuation of Ser. No. 281,396, Jul. 27, 1994, abandoned. This application Mar. 29, 1996, Ser. No. 625,785
Int. Cl.[6] B29D *9/00;23/00*
U.S. Cl. 428—105 **58 Claims**



1. A high strength, flexible, porous polytetrafluoroethylene sheet material comprised of multiple layers of porous polytetrafluoroethylene laminated together, said layers each having a fibrillar orientation wherein the fibrillar orientation of adjacent layers with respect to each other is at an included angle of less than ninety degrees, said sheet material being capable of assuming the form of a flat plane, and further having a minimum tensile strength in substantially all directions within the flat plane between 32.6 and 97.5 megapascals.

5,645,916
PATTERNED SPUNLACED FABRICS CONTAINING WOODPULP OR ABACA FIBERS
James Marshall Oathout, Mt. Juliet, Tenn., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Division of Ser. No. 20,040, Feb. 19, 1993, Pat. No. 5,459,912, which is a continuation-in-part of Ser. No. 857,689, Mar. 31, 1992, abandoned. This application Jun. 8, 1995, Ser. No. 486,445
Int. Cl.[6] D04H *1/42;1/46*
U.S. Cl. 428—131 **6 Claims**

1. A patterned spunlaced fabric comprising a mixture of 50–95 wt. % synthetic fibers selected from the group consisting of polyester, polypropylene, polyamide, polyacrylonitrile resins and combinations thereof and 5–50 wt. % woodpulp or abaca fibers, said fabric having a pattern of apertures of between 10 and 40 openings per inch, dry particle count no greater than 8000 particles/ft^3, a wet particle count no greater that 6.5×10^7 particles/m$_2$, the absorbency rate is at least 0.1 g/g/sec and the absorbency capacity is at least 300%.

5,645,917

MAGNETIC RECORDING MEDIUM

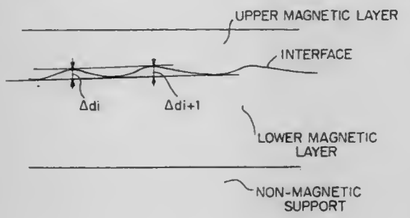
Kiyomi Ejiri; Hiroo Inaba; Shinji Saito, and Satoru Hayakawa, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 822,975, Jan. 21, 1992, Pat. No. 5,258,223. This application Apr. 24, 1992, Ser. No. 873,201

Claims priority, application Japan, Apr. 25, 1991, 3-121873; Apr. 25, 1991, 3-121875; Jul. 15, 1991, 3-198309; Jan. 8, 1992, 4-018416; Jan. 10, 1992, 4-021782

Int. Cl.[6] G11B *5/66*

U.S. Cl. 428—141 17 Claims



1. A magnetic recording medium comprising a non-magnetic support having provided thereon at least one lower non-magnetic layer comprising a binder having dispersed therein a non-magnetic powder and at least one upper magnetic layer comprising a binder having dispersed therein a ferromagnetic powder which is coated while said lower non-magnetic layer is wet, wherein said upper magnetic layer has an average dry thickness (d) of not more than 1.0 μm, and an average thickness variation ($^{\Delta}$d) at the interface between said upper magnetic layer and lower non-magnetic layer is not more than d/2.

5,645,918

MAGNETIC RECORDING MEDIUM HAVING AN AROMATIC POLYAMIDE SUBSTRATE

Nobuaki Ito, Otsu; Akimitsu Tsukuda, Kyoto, and Kazumasa Yoneyama, Otsu, all of Japan, assignors to Toray Industries, Inc., Japan

Filed Sep. 12, 1995, Ser. No. 527,269

Claims priority, application Japan, Sep. 14, 1994, 6-219676

Int. Cl.[6] G11B *5/704*

U.S. Cl. 428—141 2 Claims

1. A magnetic recording medium, comprising:

a base film consisting essentially of an aromatic polyamide, said base film having opposing surfaces and a longitudinal direction, and

a magnetic layer formed on at least one of said opposing surfaces;

said base film being characterized by:

(a) a tensile Young's modulus of about 700 kg/mm^2 or more in at least one direction,

(b) a dimensional change of about 2% or less when a load of 1 kg/mm^2 is applied at 100° C. for 10 minutes in said longitudinal direction of said base film, and

(c) materials extractable with methylene chloride in an amount of no less than about 0.1 ppm and no greater than about 0.5 wt %.

5,645,919

SELF-SUPPORTING SHEET-LIKE STRUCTURE HAVING AT LEAST ONE STRUCTURED SURFACE

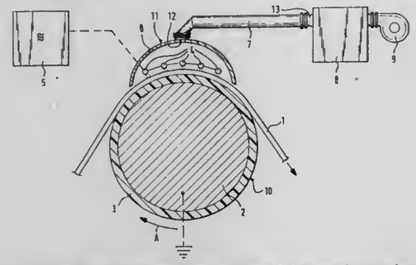
Lothar Bothe, Mainz; Hermann Dallmann, Wiesbaden; Peter Dinter, Oestrich-Winkel, and John Derek Gribbin, Schlangenbad, all of Germany, assignors to Hoechst Aktiengesellschaft Corporation, Germany

Continuation of Ser. No. 847,878, Mar. 10, 1992, abandoned, which is a continuation of Ser. No. 390,932, Aug. 8, 1989, abandoned. This application Jul. 10, 1995, Ser. No. 499,873

Claims priority, application Germany, Aug. 16, 1988, 38 27 631.3

Int. Cl.[6] B32B *5/16*; B05D *3/14;7/02*; B29C *71/04*

U.S. Cl. 428—143 13 Claims



1. A self-supporting sheet structure containing a substrate layer and a coating on at least one surface of the substrate layer, wherein said coating consists essentially of individual organic and/or inorganic inert particles, said organic and/or inorganic inert particles being deposited from an aerosol containing said organic and/or inorganic inert particles in discrete form dispersed in an aqueous solvent or dispersant, together with a carrier gas stream and being affixed directly on said surface of said substrate layer, forming a coating by means of an electric corona discharge which takes place in a corona discharge space between a high voltage electrode and a counter-electrode, the aerosol being simultaneously introduced into said space during said corona discharge.

5,645,920

RECORDING PAPER AND RECORDING APPARATUS USING SAME

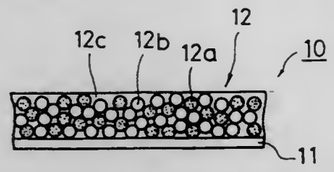
Masataka Nishiyama, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 230,112, Apr. 20, 1994, abandoned, which is a continuation of Ser. No. 934,403, Aug. 24, 1992, Pat. No. 5,329,300. This application Sep. 30, 1996, Ser. No. 725,845

Claims priority, application Japan, Aug. 30, 1991, 3-246895; Aug. 30, 1991, 3-246896; Aug. 30, 1991, 3-246897

Int. Cl.[6] B32B *3/00*

U.S. Cl. 428—195 7 Claims



1. A recording paper having on a recording surface thereof a first layer and a second layer overlying and blocking said first layer, said first layer being colored a first color and said second layer being of a second color different from said first color, said second layer being opaque to said first layer and formed of a compound that becomes transparent to said first layer when said second layer is exposed to a beam of light of a specific wavelength.

5,645,921

ELECTROSTATIC CHUCKING DEVICE

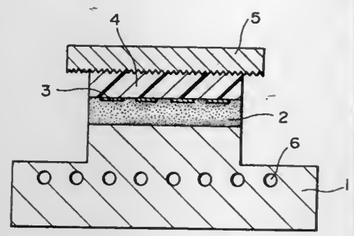
Tadao Matsunaga, Shizuoka; Takaya Matsushita, Yokkaichi, and Kei Hattori, Yokohama, all of Japan, assignors to Tomoegawa Paper Co., Ltd., Tokyo, and Kabushiki Kaisha Toshiba, Kanagawa-ken, both of Japan

Filed Nov. 22, 1995, Ser. No. 561,731

Claims priority, application Japan, Nov. 22, 1994, 6-311335

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—209 1 Claim



1. An electrical chucking device comprising:

a) an electrically insulating layer having a first face capable of providing for suction and a second face opposite the first face having an electrode layer comprising one of a metal-deposited layer and a metal-plated layer adjacent thereto;

b) an adhesive layer, one face adjacent said electrode layer; and

c) a metal base layer adjacent a face of said adhesive layer opposite said one face.

5,645,922

IMPERMEABLE ELASTIC MEMBRANE

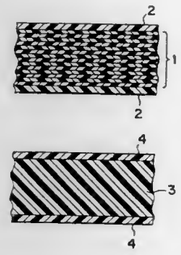
Benoit Le Rossignol, Rennes, France, assignor to Automobiles Peugeot, Paris, and Automobiles Citroen, Neuilly Sur Seine, both of France

Filed Jan. 12, 1994, Ser. No. 180,381

Claims priority, application France, Jan. 13, 1993, 93 00252

Int. Cl.[6] B32B *27/30;27/34*

U.S. Cl. 428—226 9 Claims



1. An impermeable elastic membrane for use in a hydropneumatic accumulator to separate gas and liquid compartments, said membrane being 450 to 1400 microns thick layer gas-impermeable film of plasticized completely hydrolyzed polyvinyl acetate.

5,645,923

GAS BARRIER LAMINATED MATERIAL

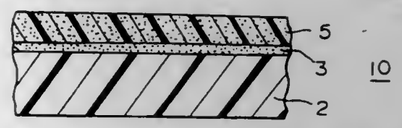
Ryukichi Matsuo; Toshiaki Yoshihara; Takashi Miyamoto, all of Saitama, and Mika Gamo, Ibaraki, all of Japan, assignors to Toppan Printing Co., Ltd., Tokyo, Japan

Division of Ser. No. 314,802, Sep. 29, 1994, Pat. No. 5,589,252. This application Jun. 6, 1995, Ser. No. 468,749

Claims priority, application Japan, Sep. 30, 1993, 5-245443; Mar. 31, 1994, 6-64187

Int. Cl.[6] B32B *7/02;27/30*

U.S. Cl. 428—216 9 Claims



1. A gas barrier laminated material comprising a polymeric sheet or film, a layer of an inorganic compound having a thickness of from 50 to 3,000 angstroms on the polymeric sheet or film, and a protective layer having a thickness of from 0.01 to 100 μm on the layer of the inorganic compound; wherein the protective layer is formed by coating the layer of the inorganic compound with a water-based coating coin position consisting essentially of a water-soluble polymer and from 10 to 1900 parts by weight per 100 parts by weight of the water-soluble polymer of at least one of (a) a metal alkoxide or a hydrolyzate thereof or (b) a tin chloride; and then heating and drying the water-based coating composition.

5,645,924

ELASTIC WOVEN FABRIC

Cathy Jane Hamilton, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 339,168, Nov. 10, 1994, Pat. No. 5,478,514. This application Sep. 19, 1995, Ser. No. 529,962

Int. Cl.[6] D03D *3/00*

U.S. Cl. 442—184 7 Claims

1. An elastic stretch woven fabric which is the product of a process that comprises the steps of

weaving a fabric with warp yarns and weft yarns, wherein at least half of the warp yarns or of the weft yarns are combination yarns which comprise an elastomeric strand and a non-elastomeric companion yarn, the non-elastomeric companion yarn being of partially molecularly oriented synthetic organic polymer and the elastic strand having a heat setting temperature that is higher than the heat setting temperature of the non-elastomeric companion yarn,

stretching the woven fabric by 25 to 85% in the direction of at least the warp combination yarns or the weft combination yarns,

heat setting the stretched woven fabric for at least 20 seconds while in the stretched condition at a temperature in the range of 80° to 180° C., said temperature being below the heat setting temperature of the elastomeric strand, and

finishing the heat-treated fabric in an aqueous bath for at least ½ hour at temperature that is no higher than 135° C.

5,645,925

ADVANCED COMPOSITE BLENDS

Clyde H. Sheppard, Bellevue, Wash., and Hyman R. Lubowitz, Rolling Hills Estates, Calif., assignors to Boeing Company, Seattle, Wash.

Continuation of Ser. No. 167,604, Mar. 14, 1988, abandoned. This application Nov. 29, 1990, Ser. No. 619,677

Int. Cl.[6] B32B *27/34*; C08F *283/04*

U.S. Cl. 442—128 45 Claims

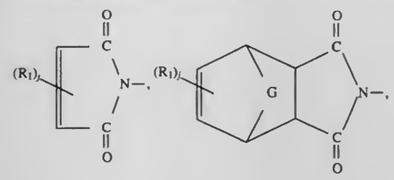
8. An advanced composite blend comprising a mixture of at least one oligomer of the general formula:

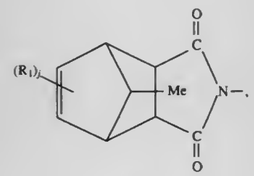
D_i—A—D_i

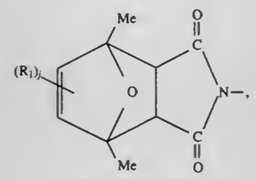
wherein

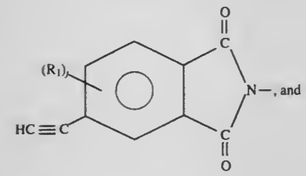
i=2;

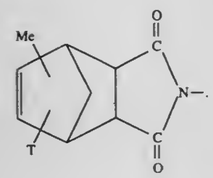
D=an unsaturated hydrocarbon radical that includes a segment selected from the group consisting of:











R_1=lower alkyl, aryl, substituted alkyl, substituted aryl, lower alkoxy, aryloxy, halogen, or mixtures thereof;

R=hydrogen, lower alkyl, or phenyl;

G=—O—, —S—, —SO_2—, —CH_2—, —CO—, —SO—, —CHR—, or —CR_2—;

j=0, 1 or 2;

T=allyl or methallyl;

Me=methyl;

A=a hydrocarbon residue including an aromatic, aliphatic or mixed aromatic and aliphatic backbone; and

at least one compatible, noncrosslinking polymer from a different chemical family than the oligomer, the oligomer and polymer being selected from the following table of oligomer/polymer pairs:

OLIGOMER	POLYMER
amideimide	imide
imide	amideimide
amideimide	heterocycle
heterocycle	amideimide
amideimide	heterocycle sulfone
heterocycle sulfone	amideimide
imide	heterocycle
heterocycle	imide
imide	heterocycle sulfone
heterocycle sulfone	imide
imide	amide
amide	imide
ester	amide
amide	ester
estersulfone	amide
amide	estersulfone
ester	imide
imide	ester
estersulfone	imide

wherein heterocycle is selected from the group consisting of oxazole, thiazole and imidazole.

11. A prepreg comprising the blend of claim **8** and a reinforcing additive in fiber or particulate form.

12. A composite comprising the cured prepreg of claim **11**.

5,645,926

FIRE AND HEAT RESISTANT MATERIALS

Arthur Richard Horrocks, Bolton; Subhash Chander Anand, Harwood, and Barry Jakeman Hill, Epsom, all of England, assignors to British Technology Group Limited, London, England

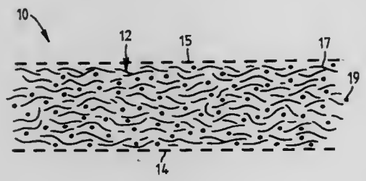
PCT No. PCT/GB93/00567, § 371 Date Feb. 3, 1995, § 102(e) Date Feb. 3, 1995, PCT Pub. No. WO93/18824, PCT Pub. Date Sep. 30, 1993

PCT Filed Mar. 19, 1993, Ser. No. 307,646

Claims priority, application United Kingdom, Mar. 20, 1992, 9206060; Nov. 10, 1992, 9223545

Int. Cl.[6] **A62C** *8/06;* **B32B** *5/26;* **D06M** *23/08;* **D04M** *1/42*

U.S. Cl. 442—234 **29 Claims**



1. A flexible fire and heat resistant material comprising an intimate mixture of organic intumescent filler and organic fibers, said organic intumescent filler and said organic fibers each being adapted to char intensely within the temperature range of 200° C. to 500° C.

5,645,927

HEAT-RESISTING CUSHION MATERIAL AND METHOD FOR PRODUCING THE SAME

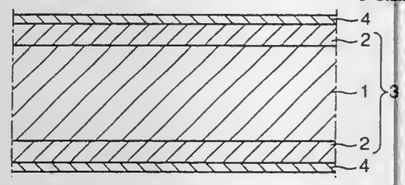
Hiroyuki Oda, Kashiwa; Tetsuo Takeuchi, Ichikawa, and Kazuyuki Shimizu, Matsudo, all of Japan, assignors to Ikchikawa Co., Ltd., Tokyo, Japan

Filed Dec. 18, 1995, Ser. No. 574,601

Claims priority, application Japan, Dec. 16, 1994, 6-333979

Int. Cl.[6] **B32B** *27/34*

U.S. Cl. 442—388 **3 Claims**



1. A cushion material comprising:

a base layer of heat-resisting fibers, the base layer comprising a ground body of substantially all meta-aromatic polyamide fibers and a bonding layer of a fabric web having non-drawn meta-aromatic polyamide fibers as its main constituent; and

an airtight layer comprising a non-woven sheet of meta-aromatic polyamide fibers formed on said bonding layer.

5,645,928

HEAT INSULATION PANELS MANUFACTURED FROM MODIFIED POLYISOCYANURATE FOAMS

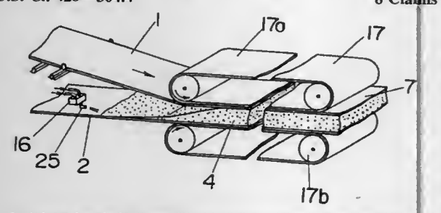
Morihiro Matsumoto, Osaka; Noboru Yoshida, Nishinomiya; Kiyotake Morimoto, Koshigaya, and Satoshi Nakamura, Tokyo, all of Japan, assignors to Daido Steel Sheet Corporation, Hyogo, and Nisshinbo Industries, Tokyo, both of Japan

Filed Jun. 22, 1995, Ser. No. 493,408

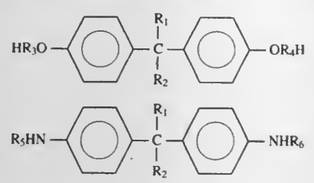
Claims priority, application Japan, Jul. 12, 1994, 6-304020

Int. Cl.[6] **C08G** *18/16;* **B32B** *3/26*

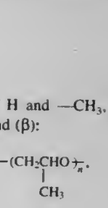
U.S. Cl. 428—304.4 **8 Claims**



1. A heat insulation panel comprising a foam of modified polyisocyanurate which is provided by a reaction of (a) a polyisocyanate having an equivalent ratio (NCO/OH) of 1.8 or more, a polyol having a hydroxyl value of 50–400 mg KOH/g, water reacting with (a) to form carbon dioxide as a blowing agent, a first catalyst promoting isocyanurate linkages, (e) a second catalyst of phosphorene oxide promoting carbodiimide linkages and generating carbon dioxide as a blowing agent, and an aromatic compound represented by one of the following formulas (I) and (II):



wherein R_1 and R_2 represent one of H and —CH_3, R_3 and R_4 represents one of the following (α) and (β):



(α) (β)

R_5 and R_6 represent C_1–C_4 alkyl group, and n represents an integer from 1 to 4; and a pair of plates for sandwiching said foam.

5,645,929

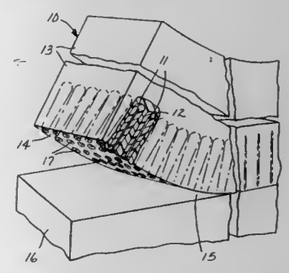
COMPOSITE ARTICLE COMPRISING ORIENTED MICROSTRUCTURES

Mark K. Debe, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 266,970, Jun. 27, 1994, abandoned, which is a continuation of Ser. No. 720,188, Jun. 24, 1991, Pat. No. 5,336,558. This application Apr. 12, 1996, Ser. No. 631,495

Int. Cl.[6] **B32B** *5/16*

U.S. Cl. 428—323 **34 Claims**



1. A composite article comprising a layer having a dense array of discrete ceramic microstructures partially encapsulated therein by an encapsulant, wherein one distal end of each of said ceramic microstructures is exposed, wherein said exposed distal ends of said ceramic microstructures and a surface of said layer are on a common side of said layer, said ceramic microstructures have a mean diameter in the range from about 1 to about 5000 nanometers, said discrete ceramic microstructures being formed on a surface of a substrate, said substrate having a surface topography, and said exposed distal ends of said ceramic microstructures, which have been delaminated from said substrate, form a surface topography that is the inverse of said surface topography of said substrate.

5,645,930

DURABLE ELECTRODE COATINGS

Yu-Min Tsou, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

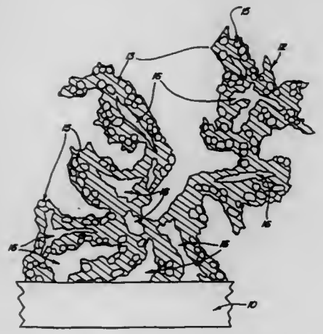
Filed Aug. 11, 1995, Ser. No. 513,581

Int. Cl.[6] **B32B** *5/16;* **C25B** *11/04*

U.S. Cl. 428—328 **6 Claims**

1. An electrode for use in electrochemical reactions comprising (1) an electrically conducting, electrocatalytically inert metal substrate or a non-metallic substrate having an electrically conducting, electrocatalytically inert metallic surface thereon and (2) an electrocatalytically active coating consisting of:

A) a porous, dendritic, heterogeneous, electrocatalytically active primary phase coating on said substrate having a substantial



internal surface area comprising a platinum group metal matrix in admixture with a particulate material,

B) a secondary phase intermediate coating comprising a water insoluble, adhesion promoting polymer having a nitrogen-containing functional group and an electroless metal plating catalyst; and

C) an outer phase metal reinforcement coating comprising a transition metal or alloy thereof.

5,645,931

ONE STEP THROMBORESISTANT LUBRICIOUS COATING

You-Ling Fan, East Brunswick, and Lawrence Marlin, Bridgewater, both of N.J., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Division of Ser. No. 31[illegible],723, Sep. 22, 1994, Pat. No. 5,558,900. This application Jun. 5, 1995, Ser. No. 465,140

Int. Cl.[6] B32B *27/40*

U.S. Cl. 428—334 **5 Claims**

1. An article having a surface at least partially covered with a hydrophilic, polymeric coating which provides a biocompatible surface, said hydrophilic, polymeric coating comprising a substantially homogeneous composite of a first polymer and a second polymer,

a) said first polymer comprising a poly(ethylene oxide) having a molecular weight of from about 100,000 to 8,000,000 grams per gram mole;

b) said second polymer comprising a polyisocyanate having a molecular weight of from about 100 to 100,000 grams per gram mole; and

wherein: (i) the weight ratio of said first polymer to said second polymer is from about 0.5/1.0 to 1.25/1; (ii) the coating comprises less than about 1 weight percent of polyols which can react with the polyisocyanate to form polyurethanes; and (iii) less than about 1 weight percent of polyurethanes.

5,645,932

CIRCUIT-LIKE METALLIC FOIL SHEET AND THE LIKE AND PROCESS FOR PRODUCING THEM

Shinya Uchibori, Hiroshima, Japan, assignor to Kabushiki Kaisha Miyake, Japan

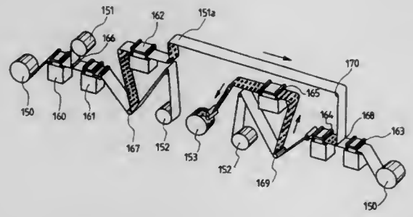
Filed Dec. 30, 1994, Ser. No. 366,548

Claims priority, application Japan, Dec. 30, 1993, 5-354105; Dec. 1, 1994, 6-323506

Int. Cl.[6] B32B *7/12*

U.S. Cl. 428—347 **15 Claims**

1. A process for fabricating a circuit-like metallic foil sheet for resonant tag and the like,



said process using a laminate comprising a carrier sheet such as a paper or a plastic film having adhered thereto a metallic foil as the base material, and

said process comprising:

patterning the metallic foil of said laminate using a stamping die to provide a predetermined circuit-like pattern on the metallic foil;

disposing the surface of a support opposed to the side of said laminate having thereon the metallic foil; and

transferring the circuit-like metallic foil to the surface of the support by heating only said circuit-like patterned portion from the carrier sheet side of said laminate or from the support side.

5,645,933

POLYPROPYLENE MONOAXIALLY ORIENTED MATERIAL, WOVEN OR NON-WOVEN FABRIC, LAMINATED PRODUCT AND PREPARATION METHOD

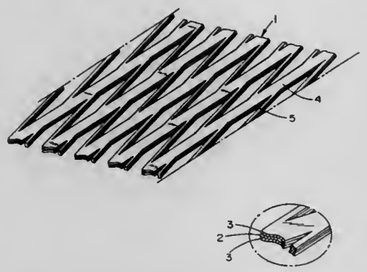
Suehiro Sakazume, Imba-gun; Tsutomu Miyamoto, Kita Soma-gun, and Hiroshi Shimizu, Sakura, all of Japan, assignors to Nippon Petrochemicals Company, Limited, Tokyo, Japan

Filed Apr. 20, 1995, Ser. No. 425,369

Claims priority, application Japan, Apr. 22, 1994, 6-107966; Apr. 26, 1994, 6-110384

Int. Cl.[6] B32B *3/10;7/12*

U.S. Cl. 442—290 **10 Claims**



1. A monoaxially oriented material comprising a propylene resin layer and at least one adhesive layer laminated to at least one surface of said polypropylene resin layer, said adhesive layer comprising 70% to 95% by weight of a propylene-ethylene random copolymer and 5% to 30% by weight of polyethylene having a density of at least 0.94 g/cm^3.

5,645,934

COMPOSITE MATERIALS USING BONE BIOACTIVE GLASS AND CERAMIC FIBERS

Michele S. Marcolongo, Lansdowne, and Paul Ducheyne, Rosemont, both of Pa., assignors to Trustees Of The University Of Pennsylvania, Philadelphia, Pa.

Continuation-in-part of Ser. No. 152,962, Nov. 15, 1993, Pat. No. 5,468,544. This application May 8, 1995, Ser. No. 436,585

Int. Cl.[6] C04B *33/24;35/44*

U.S. Cl. 428—357 **6 Claims**



1. A bioactive glass fiber comprising 40–60% SiO_2, 10–21% CaO, up to about 6.3% P_2O_5, at least 19% Na_2O, and greater than 0.2% Al_2O_3, by mole, said amount of Al_2O_3 selected such that the surface reactivity of the fiber is reduced.

5,645,935

TWO-COMPONENT LOOP YARNS COMPRISING ARAMID FILAMENTS, MANUFACTURE THEREOF AND USE THEREOF

Wilbert Kemper, Bobingen, and Richard Neuert, Winkelhaid, both of Germany, assignors to Hoechst Trevira GmbH & Co. KG, Germany

Filed Dec. 5, 1995, Ser. No. 567,289

Claims priority, application Germany, Dec. 7, 1994, 44 43 456.1

Int. Cl.[6] D02G *3/00*

U.S. Cl. 428—370 **13 Claims**

1. A two-component loop yarn comprising core filaments and effect filaments, at least part of the core filaments consisting of aromatic copolyamides, wherein the aromatic copolyamides contain the structural repeat units of the formula I and II

$$—OC—Ar^1—CO—NH—Ar^2—NH— \quad (I)$$

$$—OC—Ar^1—CO—NH—Ar^3—NH— \quad (II),$$

where Ar^1, Ar^2 and Ar^3 are each independently of the others a bivalent mono- or polycyclic aromatic radical whose free valences are disposed para or meta or comparably parallel, coaxial or angled to each other, and wherein respective monomer components underlying the polymer are selected so as to produce an aromatic polyamide which forms isotropic solutions in organic solvents.

5,645,936

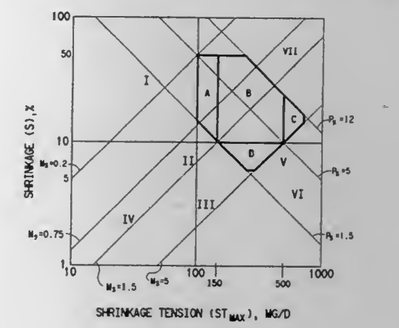
CONTINUOUS FILAMENTS, YARNS, AND TOWS

Hans Rudolf Edward Frankfort, Winterville, N.C.; Benjamin Hughes Knox, Wilmington, Del., and Girish Anant Pal, Matthews, N.C., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 85,266, Jun. 29, 1993, Pat. No. 5,384,082, Ser. No. 786,585, Nov. 1, 1991, Pat. No. 5,223,198, Ser. No. 786,582, Nov. 1, 1991, Pat. No. 5,244,616, Ser. No. 786,584, Nov. 1, 1991, Pat. No. 5,223,197, Ser. No. 35,988, Mar. 23, 1993, Pat. No. 5,364,701, Ser. No. 753,529, Sep. 3, 1991, Pat. No. 5,229,060, Ser. No. 753,769, Sep. 3, 1991, Pat. No. 5,261,472, Ser. No. 5,672, Jan. 19, 1993, Pat. No. 5,288,553, and Ser. No. 15,733, Feb. 10, 1993, Pat. No. 5,250,245, said Ser. No. 5,672and Ser. No. 15,733, , each is a continuation-in-part of Ser. No. 647,381, Jan. 29, 1991, abandoned, and Ser. No. 860,776, Mar. 27, 1992, abandoned, which is a continuation-in-part of Ser. No. 647,371, Jan. 29, 1991, abandoned, said Ser. No. 85,266Ser. No. 786,585, Ser. No. 786,582, Ser. No. 786,584, Ser. No. 35,988, Ser. No. 753,529, Ser. No. 753,769, , each is a continuation-in-part of Ser. No. 338,251, Apr. 14, 1989, Pat. No. 5,066,447, which is a continuation-in-part of Ser. No. 53,309, May 22, 1987, abandoned, which is a continuation-in-part of Ser. No. 824,363, Jan. 30, 1986, abandoned. This application Jan. 24, 1995, Ser. No. 378,132

Int. Cl.[6] B32B *27/34;27/36;* **D02G** *3/00*

U.S. Cl. 428—395 **4 Claims**



1. Spin-oriented polyester filaments having:

i) a shrinkage (S), such that the value of $1-(S/S_m)$ is between 0.25 and 0.9, where S_m is $[(6.5-RDR)/6.5]\times100\%$, an elongation-to-break (E_B) between 40% and 90%, a post yield modulus (M_{PY}) of less than 12 g/dd, and a residual draw ratio (RDR) between 1.4 and 1.9, where RDR is $1+(E_B/100)$;

ii) a maximum shrinkage tension (ST_{max}) between 0.1 g/d and 0.7 g/d at a peak shrinkage tension temperature $T(ST_{max})$ between $[0.65\ (T_m°+273)-273]$ and $[0.725\ (T_m°+273)-273]$, where $T_m°$ is the zero-shear polymer melting point and is between 240° C. and 280° C.;

iii) a shrinkage power Ps of 1.5 to 12 (g/d)% and a shrinkage modulus M_s up to 5 g/d.

5,645,937

THIN FILM LAYERED MEMBER

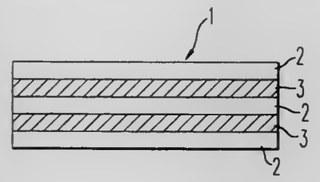
Shoji Noda, Aichi-ken; Kiyoshi Uchida, Toyota; Akio Itoh, Nagoya; Kazuo Higuchi, Seto; Mikio Niimi, Handa; Shun-ichi Murasaki, Nagoya, and Yoshinobu Honkura, Aichi-ken, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi-ken, and Aichi Steel Works, Ltd., Tokai, both of Japan

Filed Dec. 28, 1995, Ser. No. 579,764

Claims priority, application Japan, Dec. 28, 1994, 6-328387; Dec. 27, 1995, 7-340857

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—408 18 Claims



1. A thin film-layered member, comprising at least two diamond layers and at least one interlayer of a brazing alloy containing at least one carbide-forming metal, said at least two diamond layers and said at least one interlayer being laminated alternately and said diamond layers forming outer surfaces of said thin film layered member,

wherein said brazing alloy has a thermal conductivity of not less than about 30 W/(m·K) and a coefficient of thermal expansion ranging from 10×10^{-6} K^{-1} to 35 to 10^{-6} K^{-1}.

5,645,938

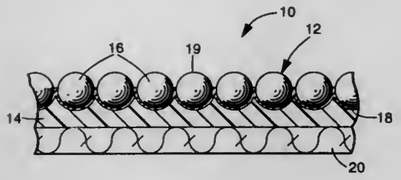
RETROREFLECTIVE ARTICLE CONTAINING A POLYESTER POLYURETHANE BINDER LAYER

Michael D. Crandall, North Oaks, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 15, 1995, Ser. No. 528,568

Int. Cl.[6] B32B *9/04*

U.S. Cl. 428—411.1 32 Claims



1. A retroreflective article comprising:

a layer of retroreflective elements at least partially embedded in a binder layer that comprises a polyurethane polymer that is the reaction product of (i) a polyester polyol and (ii) a polyisocyanate that contains at least two isocyanate groups bonded non-conjugatively to at least one aromatic nucleus.

5,645,939

SURFACE-TREATED SUBSTRATE

Takashige Yoneda; Tsuneo Wakabayashi, and Yukiko Takano, all of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Continuation of Ser. No. 183,299, Jan. 19, 1994, Pat. No. 5,464,704, which is a continuation of Ser. No. 883,391, May 15, 1992, Pat. No. 5,314,731. This application Jun. 1, 1995, Ser. No. 457,537

Claims priority, application Japan, May 17, 1991, 3-141413; May 17, 1991, 3-141414; May 17, 1991, 3-141415; May 17, 1991, 3-141416; Nov. 20, 1991, 3-331367

Int. Cl.[6] B32B *17/06*

U.S. Cl. 428—429 19 Claims

1. A surface-treated substrate consisting essentially of a substrate having at least two different treated surface layers wherein the first layer constituting the outermost layer among the treated surface layers is a layer obtained by treatment with a hydrolyzable silane compound (I) capable of forming a surface having a contact angle of at least 70° against water and the second layer constituting an underlayer in contact with the outermost layer is a layer obtained by treatment with an organic group containing isocyanate silane compound wherein the isocyanate group is directly bonded to silicon.

5,645,940

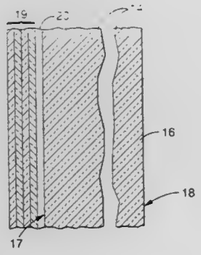
SHATTER-RESISTANT GLASS HAVING POLYESTER LAYERS

Charles J. Teddington, Jr., deceased, late of West Orange, N.J., and by Charles E. Teddington, IV, administrator, 165 Majorca Cir., Sacramento, Calif. 95823

Filed May 31, 1995, Ser. No. 455,316

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—430 19 Claims



1. A shatter resistant glass laminate, comprising:

(a) a glass layer, said glass layer having a thickness of approximately 0.125 inch;

(b) an optically clear adhesive layer, said adhesive layer bonded to a surface of said glass layer, said adhesive layer having a peel strength of at least 3,000 grams per square inch, said adhesive layer having a thickness of at least 0.001 inch; and

(c) an optically clear coating layer, said coating layer including first, second, and third polyester plies, said coating layer bonded to said adhesive layer;

(d) said adhesive layer and said coating layer having a combined thickness of between approximately 0.004 inch and approximately 0.010 inch.

5,645,941

SILICONE RESIN/SILICONE RUBBER COMPOSITE MATERIAL

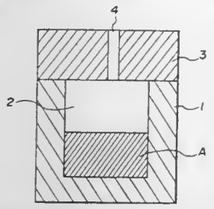
Noriyuki Meguriya, and Takeo Yoshida, both of Annaka, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 154,513, Nov. 19, 1993, abandoned. This application May 12, 1995, Ser. No. 440,056

Claims priority, application Japan, Nov. 19, 1992, 4-333616; Aug. 19, 1993, 5-226409

Int. Cl.[6] B32B *9/04;* C08F *283/12;* C08L *83/04*

U.S. Cl. 428—447 12 Claims



1. A silicone resin/silicone rubber composite material comprising (a) a cured product of an addition curable silicone resin composition having a hardness of at least 85 as specified in JIS K-6301 and measured on a Type A spring hardness tester, integrated with (b) a cured product of an addition or peroxide curable silicone rubber composition having a hardness of 20 to 85 as specified in JIS K-6301 and measured on a Type A spring hardness tester, that is obtained by curing or semi-curing the addition curable silicone resin composition (a), placing the addition or peroxide curable silicone rubber composition (b) in close contact with the cured or semi-cured silicone resin composition (a), and heat curing the silicone rubber composition (b),

said silicone resin composition (a) comprising an organopolysiloxane of the following general formula (1):

$$R_n(C_6H_5)_mSiO_{(4-n-m)/2} \quad (1)$$

wherein R is independently a substituted or unsubstituted aliphatic or alicyclic monovalent hydrocarbon radical having 1 to 20 carbon atoms, 0.1 to 30 mol % of R being an aliphatic unsaturated hydrocarbon radical, and letters n and m are positive numbers satisfying $1\leq n+m<2$ and $0.05\leq m/(n+m)\leq 0.5$.

5,645,942

FOAM COATED ROLLS AND METHOD FOR PREPARING SAME

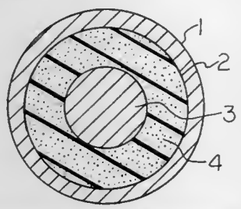
Manabu Sutoh, Chiba Prefecture, Japan, assignor to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

Filed Jun. 13, 1995, Ser. No. 489,873

Claims priority, application Japan, Jun. 29, 1994, 6-170021

Int. Cl.[6] B32B *15/04;5/14;27/08*

U.S. Cl. 428—447 5 Claims



1. In an improved foam-coated roll comprising a metal roll core, a cured silicone foam layer covering said roll core and a fluororesin film covering said cured foam layer, the improvement comprising the presence as said foam layer of a cured organosiloxane composition that has been foamed during curing of said composition using hydrogen generated by the reaction of an organohydrogensiloxane with an effective amount of a compound containing at least one hydroxyl group.

4. A method for fabricating a foam-coated roll comprising a cured silicone foam layer on a metal core and a fluororesin film layer laminated on said foam layer, said method comprising the sequential steps of

A. forming a continuous layer of a fluoresin film on the interior surface of a hollow cylindrical mold,

B. placing a metal roll core in the center of said cylindrical mold,

C. injecting a curable and foamable liquid organosiloxane composition between said fluororesin film and the metal roll core, and

D. foaming and curing said composition; wherein the blowing agent for said foam is hydrogen gas generated by the reaction of an organohydrogenpolysiloxane with an effective amount of a compound containing at least one hydroxyl group during curing of said foam, and said organohydrogenpolysiloxane and said compound are ingredients of said organosiloxane composition.

5,645,943

ELECTRIFIED OBJECT CONTACT COMPONENT

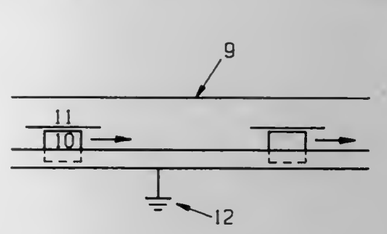
Tadahiro Ohmi, Sendai, and Hitoshi Inaba, Machida, both of Japan, assignors to Takasago Netsugaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 674,322, Apr. 19, 1991, abandoned. This application Oct. 20, 1995, Ser. No. 546,192

Claims priority, application Japan, Aug. 18, 1989, 1-212146

Int. Cl.[6] B32B *15/04*

U.S. Cl. 428—457 8 Claims



1. A contact member for one of manipulating and supporting an electrically charged semiconductor material, said contact member including a metal surface for contacting said semiconductor material, said contact member formed by the process of forming an oxide film on at least a portion of said metal surface in a pure oxidizing atmosphere, said film having a thickness of about ten to one hundred Angstroms.

5,645,944

APPLICATION OF MOLYBDENUM ALLOYS

Gerhard Dipl-Ing Leichtfried, Reutte, and Hans-Peter Martinz, Hofen, both of Austria, assignors to Schwarzkopf Technologies Corp., New York, N.Y.

Filed Jul. 18, 1995, Ser. No. 503,598

Claims priority, application Austria, Aug. 1, 1994, 1511/94

Int. Cl.[6] C22C *27/00*

U.S. Cl. 428—469 7 Claims

1. A die for extruding light and nonferrous metals, said die being made from a molybdenum alloy superficially hardened by means of nitriding.

5,645,945

MULTI-LAYER FILMS MADE FROM COPOLYAMIDES

Werner Nielinger; Helmut Schulte; Bernhard Schulte, all of Krefeld, and Edgar Ostlinning, Duesseldorf, all of Germany, assignors to Bayer Aktiengesellschaft

Continuation of Ser. No. 26,839, Mar. 5, 1993, abandoned. This application Nov. 27, 1995, Ser. No. 563,130
Claims priority, application Germany, Mar. 16, 1992, 42 08 362.1
Int. Cl.[6] B32B *27/08;27/32;27/34*
U.S. Cl. 428—476.3 4 Claims

1. A transparent, multilayer film made from polyolefins and polyamides, wherein at least one layer of the film consists of a copolyamide, the copolyamide containing 84 to 87 wt-% of ε-caprolactam and 13 to 16 wt-% of a polyamide having equimolar amounts of units of a diamine selected from the group consisting of hexamethylene diamine, trimethyl hexamethylene diamine, isophorone diamine, bis-(4 -aminocyclohexyl)-methane, and 3,3'-dimethyl-4,4'-diamino dicyclohexylmethane, and wherein the copolyamide exhibits a crystallization enthalpy of 4 to 8 J/g, determined by differential thermal analysis, when cooled at 40 K/min.

5,645,946

PROTECTIVE ADHESIVE ARTICLE

Jeffrey R. Janssen, Woodbury; Eugene G. Joseph, Vadnais Heights, and Louis E. Winslow, Stillwater, all of Minn., assignors to Minnesota Mining and Manufacturing Co., St. Paul, Minn.

Filed May 22, 1995, Ser. No. 446,444
Int. Cl.[6] B32B *27/32*
U.S. Cl. 428—521 22 Claims

10. A recyclable, protective adhesive article for protecting a motor vehicle from damage during manufacture, transport or storage thereof, the adhesive article comprising:

(a) a backing having opposed top and bottom surfaces; and

(b) a pressure sensitive adhesive on the bottom surface of the backing, the pressure sensitive adhesive comprising:

(1) a substantially uncrosslinked poly-α-olefin polymer having an inherent viscosity of about 1.0 to 5.0 dl/g and selected from the group consisting of polyhexene, polyoctene, a copolymer of hexene and octene, a copolymer of hexene and propylene, a copolymer of octene and propylene, and mixtures thereof; and

(2) an effective amount of a cold flow restricting agent.

5,645,947

SILICON-CONTAINING DEPOSITED FILM

Masaaki Hirooka, Toride; Kyosuke Ogawa, Sakurashinmachi; Shunichi Ishihara, Ebina, and Isamu Shimizu, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 280,561, Jul. 25, 1994, abandoned, which is a continuation of Ser. No. 101,285, Aug. 3, 1993, abandoned, which is a continuation of Ser. No. 913,755, Jul. 17, 1992, abandoned, which is a continuation of Ser. No. 714,988, Jun. 14, 1991, abandoned, which is a continuation of Ser. No. 305,546, Feb. 3, 1989, abandoned, which is a division of Ser. No. 161,386, Feb. 22, 1988, Pat. No. 4,835,005, which is a continuation of Ser. No. 889,606, Jul. 28, 1986, abandoned, which is a continuation of Ser. No. 641,021, Aug. 15, 1984, abandoned. This application Jun. 7, 1995, Ser. No. 477,269
Claims priority, application Japan, Aug. 16, 1983, 58-149366; Aug. 17, 1983, 58-149758; Aug. 18, 1983, 58-151027
Int. Cl.[6] B32B *9/00;* G03G *5/04*
U.S. Cl. 428—688 9 Claims

1. A semiconductor device comprising:

(a) a substrate; and



(b) a deposition film comprising silicon as a matrix and containing 1 to 40 atomic % of hydrogen or halogen formed on the substrate,

wherein said deposition film is prepared by forming a gaseous precursor in a decomposition space (B) by decomposing a starting material selected from the group consisting of the compounds of the formulas:

Si_nX_{2n+2}

$(SiX_2)_n$

Si_nHX_{2n+1}

$Si_nH_2X_{2n}$

wherein n is an integer from 1 to 3 and X is selected from the group consisting of F, Cl, Br and I;

forming a gaseous activated species in another decomposition space (C) by decomposing another starting material selected from the group consisting of H_2, SiH_4, SiH_3Br, SiH_3I and SiH_3F; and

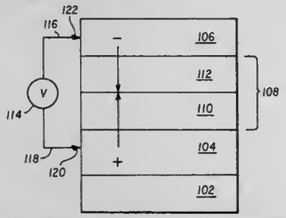
separately introducing said gaseous precursor and said activated species into a deposition space (A) at a flow ratio of said gaseous precursor to said activated species from 10:1 to 1:10, wherein the activated species is capable of undergoing chemical interaction with the precursor to form the film on the substrate, said process being conducted (i) without exposing a film-forming surface of the substrate to a plasma atmosphere; (ii) by maintaining the substrate at a temperature no greater than 280° C.; and (iii) at a deposition rate of 12–35 Å/sec.

5,645,948

BLUE ORGANIC ELECTROLUMINESCENT DEVICES

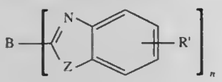
Jianmin Shi, Webster; Ching Wan Tang, Rochester, and Chin Hsin Chen, Mendon, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 20, 1996, Ser. No. 700,252
Int. Cl.[6] H05B *33/20*
U.S. Cl. 428—690 11 Claims



1. An organic EL device, comprising an anode and a cathode, and at least one organic luminescent medium containing a compound of benzazoles of the formula:

Formula I



wherein:

n is an integer of from 3 to 8;

Z is O, NR or S; and

R and R' are individually hydrogen; alkyl of from 1 to 24 carbon atoms, for example, propyl, t-butyl, heptyl, and the like; aryl or hetero-atom substituted aryl of from 5 to 20 carbon atoms for example, phenyl and naphthyl, furyl, thienyl, pyridyl, quinolinyl and other heterocyclic systems;

or halo such as chloro, fluoro; or atoms necessary to complete a fused aromatic ring;

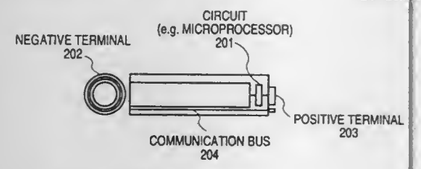
B is a linkage unit consisting of alkyl, aryl, substituted alkyl, or subsituted aryl which conjugately or unconjugately connects the multiple benzazoles together.

5,645,949

BATTERY CELL HAVING AN INTERNAL CIRCUIT FOR CONTROLLING ITS OPERATION

Steven J. Young, Milpitas, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 310,802, Sep. 12, 1994. This application Jun. 7, 1995, Ser. No. 482,950
Int. Cl.[6] H01M *14/00*
U.S. Cl. 429—7 26 Claims



1. A battery cell comprising:

a positive terminal;

a negative terminal;

a battery cell core coupled to the negative terminal and positive terminal to provide power externally using the positive terminal and the negative terminal;

a processor coupled to the battery cell core, wherein the processor is programmed to internally monitor the battery cell state and internally control operation of the battery cell by executing a series of instructions; and

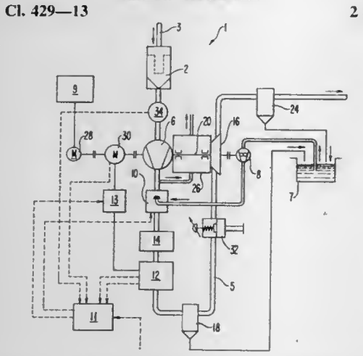
a charging device coupled to the battery cell core to charge the battery cell core.

5,645,950

PROCESS FOR SUPPLYING AIR TO A FUEL CELL SYSTEM

Uwe Benz, Uhldingen; Wolfram Fleck, Erbach, and Gerald Hornburg, Elchingen, all of Germany, assignors to Daimler-Benz AG, Stuttgart, Germany

Division of Ser. No. 257,325, Jun. 7, 1994, Pat. No. 5,434,016. This application Mar. 9, 1995, Ser. No. 400,931
Claims priority, application Germany, Jun. 7, 1994, 43 18 818.4
Int. Cl.[6] H01M *8/04*
U.S. Cl. 429—13 2 Claims



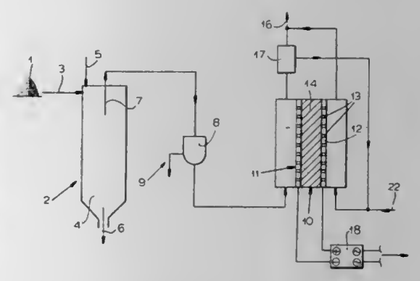
1. A process for operating an apparatus controlling output of an air-breathing fuel cell system, comprising the steps of determining, based on measured fuel cell current, a desired value for air volume flow, regulating an actual value of the air volume flow by adjusting rotary speed of a compressor to the desired value, and adjusting pressure in a cathode space of the fuel cell to a predetermined working pressure by adjusting an expander absorption capacity.

5,645,951

METHOD OF GENERATING ELECTRIC ENERGY FROM BIOLOGICAL RAW MATERIALS

Wolf Johnssen, München, Germany, assignor to Hannelore Binsmaier Nee Gallin-Ast, Erdweg-Grossberghofen, Germany

Continuation of Ser. No. 295,356, Aug. 24, 1994, abandoned, which is a continuation of Ser. No. 29,797, Mar. 10, 1993, abandoned. This application Apr. 2, 1996, Ser. No. 630,884
Claims priority, application Germany, Mar. 13, 1992, 42 07 975.6; Aug. 20, 1992, 42 27 485.0; Oct. 16, 1992, 42 35 017.4
Int. Cl.[6] H01M *8/00;6/00*
U.S. Cl. 429—16 18 Claims



1. A method of generating electrical energy from biological raw materials, comprising the steps of:

(a) comminuting biological raw materials consisting of at least predominantly of C_4 reed plants substantially free from naturally occurring sulfur;

(b) generating a combustible gas containing carbon monoxide and hydrogen from said biological raw materials with an oxygenous gasification agent by partial oxidation of said raw materials performed with a supply of externally generated heat in an oxidation reactor;

(c) adjusting and maintaining an oxygen/biological raw materials proportion of ingredients and a gas phase temperature which ensures production of a combustible gas virtually free of nitrogen oxide in the oxidation reactor;

(d) discharging said combustible gas from said oxidation reactor;

(e) removing suspended matter from the combustible gas discharged from the oxidation reactor in a separator; and

(f) converting the combustible gas discharged from said oxidation reactor and free from suspended matter into electrical energy in a fuel cell having a porous anode, a porous cathode and an electrolyte consisting of a carbonate melt, the carbonate melt being constituted substantially of alkali metal carbonates and alkali metal aluminates, and the carbonate melt having a pasty flow property at an operating temperature of the fuel cell, the fuel cell being operated at a temperature >130° C., a platinum/rhodium catalyst or a platinum catalyst with molybdenum or tungsten oxide being used in at least one electrode of said fuel cell, carbon dioxide being extracted in a recycler from a combustible waste gas discharged at an anode side of said fuel cell and is supplied to said fuel cell as a combustion agent to a cathode side of said fuel cell.

5,645,952

METHOD AND APPARATUS FOR CHARGING AND DISCHARGING ELECTRIC ENERGY

Markku Lampinen, Louhentie 20 E 37, FIN-02130 Espoo; Minna Viitanen, Jokioinen; Jaakko Lamminen, Järvenpää, all of Finland, and Marina Fomino, Ames, Iowa, assignors to Markku Lampinen, Espoo, Finland

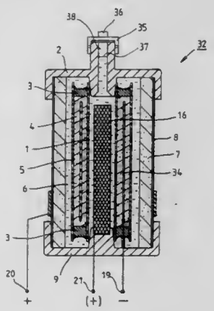
PCT No. PCT/FI93/00154, § 371 Date Oct. 13, 1994, § 102(e) Date Oct. 13, 1994, PCT Pub. No. WO93/21664, PCT Pub. Date Oct. 28, 1993

PCT Filed Apr. 13, 1993, Ser. No. 318,727

Claims priority, application Finland, Apr. 14, 1992, 921655

Int. Cl.[6] H01M *12/08*

U.S. Cl. 429—25 **24 Claims**



1. A method for storing and producing electrical energy, comprising

providing an electrochemical cell comprising

a closed container containing an electrolytic solution having immersed therein a cathode comprising a porous air electrode and an anode comprising a hydrogen-containing metal hydride such that there is a gas space between a surface of said solution and a cover of said container;

means for supplying an oxygen-containing gas to said porous air electrode;

means for supplying electrons to said cathode;

means for collecting and withdrawing electrons from said anode;

providing an oxygen-containing gas in said gas space at an overpressure which is greater than a pressure of ambient air outside said electrochemical cell.

5,645,953

SECONDARY BATTERY AND METHOD FOR CONTROLLING THE SELF-DISCHARGE OF A NICKEL/METAL HYDRIDE SECONDARY BATTERY

Young-Woo Kim, Seoul; Sung-Keun Lee, Ansan; Jal-Young Lee, Seoul; Jon-Ha Lee, and Han-Ho Lee, both of Daejeon, all of Rep. of Korea, assignors to Hyundai Motor Company, Ltd., Seoul, Rep. of Korea

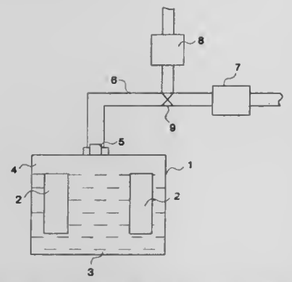
Continuation-in-part of Ser. No. 434,532, May 4, 1995, abandoned. This application Jul. 31, 1996, Ser. No. 690,559

Claims priority, application Rep. of Korea, May 4, 1994, 94-9779

Int. Cl.[6] H01M *6/14*

U.S. Cl. 429—48 **8 Claims**

1. A nickel/metal hydride secondary battery which exhibits a reduced amount of self-discharge, said secondary battery containing battery cells, an electrolyte, and a gas environment above the electrolyte, wherein the gas environment is hydrogen gas or a hydrogen-inert gas mixture.



5,645,954

BATTERY HOLDER CAPABLE OF READILY ATTACHING OR DETACHING DRY BATTERY

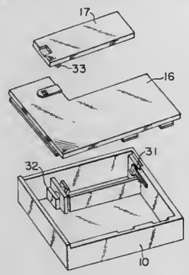
Toshiyuki Tamaru, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 25, 1995, Ser. No. 547,940

Claims priority, application Japan, Oct. 28, 1994, 6-287196

Int. Cl.[6] H01M *2/10*

U.S. Cl. 429—100 **11 Claims**



1. A battery holder for receiving a dry battery, said battery holder comprising:

a housing having first and second walls opposed to each other and a cavity defined between said first and second walls to receive said dry battery;

a first terminal fixed to said first wall;

a second terminal which is movably mounted on said second wall to be moved toward said first wall and which has a contact plate fixed at a top end of said second terminal; and

a battery cover having an arm for moving said contact plate toward the first terminal when said battery cover covers said cavity.

5,645,955

BATTERY

Anthony Maglica, Anaheim, Calif., assignor to Mag Instrument, Inc., Ontario, Calif.

Division of Ser. No. 196,860, Feb. 15, 1994. This application Jun. 7, 1995, Ser. No. 475,061

Int. Cl.[6] H01M *2/14*

U.S. Cl. 429—129 **3 Claims**

1. A battery comprising

a cylindrical casing having a rim at either end thereof;

a positive terminal at a first end of said casing axially inwardly of one of said rims;

a negative terminal at a second end of said casing;

a resilient contact in electroconductive contact with said positive terminal and extending axially outwardly of the adjacent said rim.

5,645,956

RESILIENT BATTERY SEPARATOR

Peter John Degen, Huntington; Joseph Yuen Lee, South Setauket, and Ioannis P. Sipsas, Forest Hills, all of N.Y., assignors to Pall Corporation, East Hills, N.Y.

Filed Jul. 27, 1995, Ser. No. 508,061

Int. Cl.[6] H01M *2/16*

U.S. Cl. 429—142 **23 Claims**

1. A battery separator comprising a nonwoven web of first and second fibers having a mean diameter of about 15 μm or less, wherein said first fibers comprise at least about 60 wt. % of a first polyolefin having a first melting temperature and no more than about 40 wt. % of a second polyolefin having a second melting temperature which is lower than said first melting temperature, said second fibers comprise a third polyolefin having a third melting temperature which is higher than said second melting temperature, said nonwoven web has two sides, one of which sides has been contacted with a heated surface such that said nonwoven web has been subjected to a temperature higher than the second melting temperature and lower than the first and third melting temperatures so as to render said contacted side more smooth than the other side, said battery separator is spontaneously wettable by an electrolyte, said battery separator has a thickness of at least about 50 μm, and said battery separator has a percent rebound thickness of at least about 92% after the application of pressure up to 80 kPa.

5,645,957

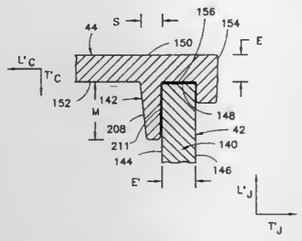
LEAD-ACID BATTERY HAVING A COVER EXTENDING BEYOND A JAR

Sudhan S. Misra, North Wales, and Franz Wagner, Lansdale, both of Pa., assignors to C & D Charter Power Systems, Inc., Blue Bell, Pa.

Division of Ser. No. 833,433, Feb. 10, 1992. This application May 17, 1995, Ser. No. 446,904

Int. Cl.[6] H01M *2/04*

U.S. Cl. 429—163 **32 Claims**



1. A lead-acid cell comprising:

a. a case having a cover and a jar;

i. said cover contacting said jar and extending transversely outwardly respecting an outer surface of said jar wall beyond said jar wall and facingly complementally overlapping a portion of said jar wall outer surface perpendicularly extending from said cover in the longitudinal direction respecting said jar wall; and

ii. joined jar and cover material fixedly connecting said jar and said cover substantially along a portion of said cover contacting said jar, along said cover portion extending outwardly respecting said jar wall and along substantially the length of said portion of jar wall outer surface facingly complementally overlapped by said perpendicular portion of said cover extending in the longitudinal direction respecting said jar wall;

b. positive and negative plates within said case; and

c. electrolyte contacting said plates to facilitate electrochemical interaction therebetween.

5,645,958

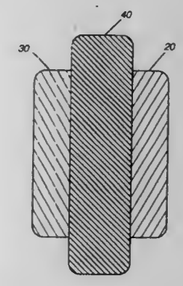
SUPERABSORBENT POLYMER ELECTROLYTES FOR ELECTROCHEMICAL CELLS AND ELECTROCHEMICAL CELLS USING SAME

Jinshan Zhang, Coral Springs, and Ganesh Venugopal, Plantation, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 31, 1994, Ser. No. 251,066

Int. Cl.[6] H01M *6/18*

U.S. Cl. 429—192 **35 Claims**



25. An electrochemical cell comprising:

a positive electrode;

a negative electrode; and

an electrolyte system comprising a liquid electrolyte absorbed into a superabsorbent polymer support structure.

5,645,959

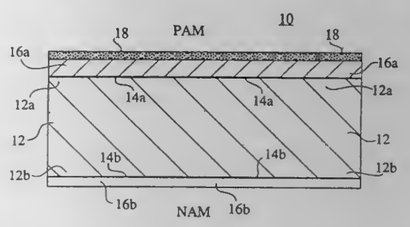
BATTERY PLATES WITH SELF-PASSIVATING IRON CORES AND MIXED ACID ELECTROLYTE

John J. Rowlette, Monrovia, Calif., assignor to Bipolar Power Corporation, Whittier, Calif.

Continuation-in-part of Ser. No. 96,118, Jul. 22, 1993, and Ser. No. 932,521, Aug. 20, 1992, Pat. No. 5,334,464. This application Jul. 29, 1994, Ser. No. 283,120

Int. Cl.[6] H01M *2/10*

U.S. Cl. 429—210 **15 Claims**



1. A lead-acid battery, comprising:

a central core element, formed of a material including iron or steel; and

protection layers, covering said central core element;

said central core element and protection layers being maintained in an acid environment.

5,645,960

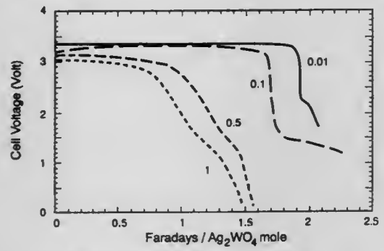
THIN FILM LITHIUM POLYMER BATTERY

Bruno Scrosati, Rome, Italy; Richard A. Marsh, Tipp City, and Lawrence G. Scanlon, Jr., Fairborn, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washiogton, D.C.

Filed May 19, 1995, Ser. No. 446,090

Int. Cl.[6] H01M *2/04*

U.S. Cl. 429—219 **11 Claims**



1. A solid state electrochemical cell comprising:

(a) an electrolyte comprising a polymeric matrix, an inorganic salt and a solvent;

(b) an anode comprising a thin film of lithium metal or an alloy thereof; and

(c) a cathode comprising a polymeric matrix, a conductive carbon and a metal salt, M_2ZO_4, wherein M is Ag or Cu and Z is W, Mo or Cr.

5,645,961

ZINC ANODE CAN OF A BATTERY, METHOD OF MANUFACTURE THEREOF, AND MANGANESE DRY BATTERY USING SUCH ZINC CAN PREPARED BY SUCH METHOD

Yoshiteru Nakagawa; Shinji Nittono; Takaaki Yasumura, all of Kosai; Chihiro Murata, Toyohashi; Kazuo Matsui, Toyohashi; Kuniyoshi Nishida, Toyohashi; Mitsuo Murakoshi, Hamana-gun, and Akihide Izumi, Kosai, all of Japan, assignors to FDK Corporation, Tokyo, Japan

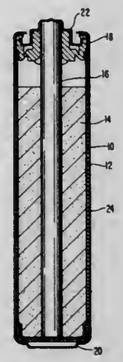
PCT No. PCT/JP95/00845, § 371 Date Dec. 21, 1995, § 102(e) Date Dec. 21, 1995, PCT Pub. No. WO95/29510, PCT Pub. Date Nov. 2, 1995

PCT Filed Apr. 27, 1995, Ser. No. 564,233

Claims priority, application Japan, Apr. 27, 1994, 6-089674; Apr. 27, 1994, 6-089675; Apr. 24, 1995, 5-098864

Int. Cl.[6] H01M *4/02*

U.S. Cl. 429—229 **12 Claims**



1. An anode can shaped suitably to be used as an anode of a battery and to contain an electrolyte of the battery, said can being formed of a zinc base alloy including 0.004–0.75 wt % of indium and 0.001–0.25 wt % of titanium, without containing mercury, cadmium or lead.

5,645,962

METHOD FOR PHOTOGRAPHICALLY PRODUCING MULTI-COLOR FILTER ARRAYS FOR USE IN LCD

Luc Vanmaele, Lochristi; Jean-Pierre Tahon, Leuven, and Raymond Roosen, 's Gravenwezel, all of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Jan. 19, 1996, Ser. No. 588,891

Claims priority, application European Pat. Off., Feb. 8, 1995, 95200306

Int. Cl.[6] G03C *9/00;* **C09K** *19/02*

U.S. Cl. 430—7 **9 Claims**

1. A method for manufacturing a multicolor filter array element, firmly associated with a transparent electrode layer in a multicolor liquid crystal display device, comprising the steps of:

(i) exposing a silver halide color photographic print material comprising a plurality of differently spectrally sensitive silver halide emulsion layers on a glass support, by a single step multicolor pixelwise exposure to form an exposed print material,

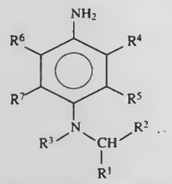
(ii) color processing said exposed print material with a color processing solution to produce a color processed printed material wherein each silver halide emulsion layer contains a differently color pixel pattern,

(iii) applying a hydrophobic water-impermeable organic resin layer to said color processed print material at silver halide emulsion layer side

(iv) curing said organic resin layer by heating said layer at temperatures between 100° C. and 250° C. and

(v) depositing an transparent electrode layer on said organic resin layer,

wherein said color processing solution comprising a p-phenylene diamine derivative according to the formula I:



t

wherein, R^1, R^2, R^3 and R^6 each independently represents a methyl or ethyl group, and R^4, R^5 and R^7 are hydrogen.

5,645,963

METHOD FOR MAKING COLOR FILTER ELEMENTS USING LAMINABLE COLORED PHOTOSENSITIVE MATERIALS

Jeffrey C. Chang, North Oaks, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 20, 1995, Ser. No. 590,266

Int. Cl.[6] G03C *11/12*

U.S. Cl. 430—7 **7 Claims**

1. A method for making a color filter array having multiple colored images in a single plane comprising the steps of:

(i) providing a receptor comprising a transparent substrate having a top surface and a bottom surface, said top surface having deposited thereon a microporous crosslinked silicated coating, and a plurality of laminable photosensitive color elements having different colors, comprising, in order;

(a) a temporary releasable support,

(b) a colored photoresist layer, and

(c) an optional photo-imageable adhesive layer;

(ii) laminating one of said photosensitive color elements onto said microporous coating to form a laminate structure;

(iii) removing said temporary support from said laminate structure;

(iv) exposing said colored photoresist layer and said optional photo-imageable adhesive layer in an imagewise pattern;

(v) removing non-exposed areas of said colored photoresist and non-exposed areas of said optional photo-imageable adhesive layer with a developer solution to form an image;

(vi) repeating steps (ii), (iii), (iv) and (v) with another one of said laminable photosensitive color elements having a different color until all of said multiple colored images are formed on said receptor; and

(vii) applying heat and pressure to said laminate structure a second time after step (iii) and before step (iv).

5,645,964

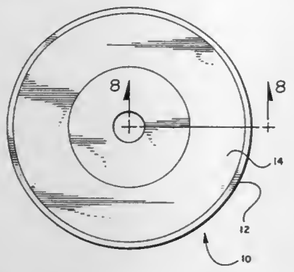
DIGITAL INFORMATION RECORDING MEDIA AND METHOD OF USING SAME

Ronald Sinclair Nohr, Alpharetta, and John Gavin MacDonald, Decatur, both of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

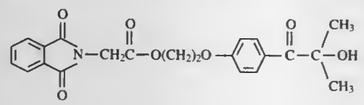
Continuation-in-part of Ser. No. 403,240, Mar. 10, 1995, abandoned, which is a continuation-in-part of Ser. No. 373,958, Jan. 17, 1995, abandoned, which is a continuation-in-part of Ser. No. 360,501, Dec. 21, 1994, and a continuation-in-part of Ser. No. 359,670, Dec. 20, 1994, abandoned, said Ser. No. 360,501is a continuation-in-part of Ser. No. 336,813, Nov. 9, 1994, abandoned, and a continuation-in-part of Ser. No. 258,858, Jun. 13, 1994, abandoned, said Ser. No. 359,670is a continuation-in-part of Ser. No. 336,813, Nov. 9, 1994, abandoned, and a continuation-in-part of Ser. No. 258,858, Jun. 13, 1994, abandoned, which is a continuation-in-part of Ser. No. 119,912, Sep. 10, 1993, abandoned, which is a continuation-in-part of Ser. No. 103,503, Aug. 5, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 462,103

Int. Cl.[6] G11B *7/00;7/24*

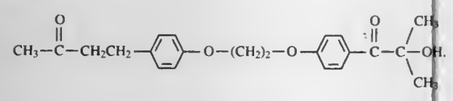
U.S. Cl. 430—21 **6 Claims**



1. A recording medium comprising a substrate and a recording layer disposed thereon, the recording layer comprising a colored composition comprising a colorant and a radiation transorber, the colorant being mutable upon exposure of the composition to ultraviolet radiation, wherein the radiation transorber is selected from



and



5,645,965

SYMMETRICAL PERYLENE DIMERS

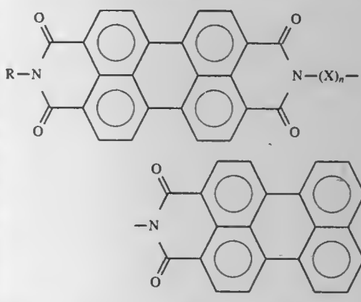
James M. Duff, Mississauga; Charles G. Allen, Waterdown; Ah-Mee Hor, and Gordon K. Hamer, both of Mississauga, all of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 8, 1996, Ser. No. 700,326

Int. Cl.[6] G03G *5/06;5/047*

U.S. Cl. 430—59 **83 Claims**

1. Photoconductive imaging members comprised of a symmetrical dimeric perylene as a charge generator, wherein said perylene is of the following formula



wherein R is hydrogen, alkyl, cycloalkyl, oxaalkyl, substituted alkyl, aryl, substituted aryl, aralkyl or substituted aralkyl, and X is the symmetrical bridging moiety, N—N when n is zero, alkylene, substituted alkylene, cycloalkylene, arylene, substituted arylene, aralkylene, or substituted aralkylene.

5,645,966

IMAGE FORMING METHOD

Yoshiro Koga, Nagano, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 159,630, Dec. 1, 1993, Pat. No. 5,467,174. This application Aug. 9, 1995, Ser. No. 513,089

Claims priority, application Japan, Dec. 3, 1992, 4-324439; Aug. 24, 1993, 5-209666

Int. Cl.[6] G03G *13/16*

U.S. Cl. 430—101 **14 Claims**

1. An image forming method, comprising:

charging a latent image carrier to a predetermined potential via a contact charging member;

exposing said latent image carrier to light to form a latent electrostatic image;

developing said latent electrostatic image by imparting a toner to said latent image to render it visible;

pressing an impression transfer member into contact with said latent image carrier to transfer developed toner to a recording medium, said toner being comprised of matrix resin particles having an external additive in an amount of 0.4 to 1.6 wt %; and

pressing a cleaning member into contact with said latent image carrier to remove toner remaining on said carrier after said transfer.

5,645,967

CHARGE CONTROLLING AGENT COMPOSITION AND TONER CONTAINING SAID COMPOSITION

Sinichi Sato; Nobuo Suzuki; Hiroyoshi Yamaga, and Sigeo Hosaka, all of Tokyo, Japan, assignors to Hodogaya Chemical Company Limited, Kawasaki, Japan

PCT No. PCT/JP93/01102, § 371 Date Feb. 3, 1995, § 102(e) Date Feb. 3, 1995, PCT Pub. No. WO94/03841, PCT Pub. Date Feb. 17, 1994

PCT Filed Aug. 5, 1993, Ser. No. 379,444

Claims priority, application Japan, Aug. 5, 1992, 4-227804; Jul. 16, 1993, 5-197641

Int. Cl.[6] G03G *9/097*

U.S. Cl. 430—110 4 Claims

1. A charge controlling agent composition, which is produced by adding carbon black after completion of the synthetic reaction of a charge controlling agent.

5,645,968

CATIONIC TONER PROCESSES

Guerino G. Sacripante; Maureen M. Kedian; Raj D. Patel, all of Oakville; Walter Mychajlowskij, Georgetown, and Beng S. Ong, Mississauga, all of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 7, 1996, Ser. No. 726,600

Int. Cl.[6] G03G *9/087*

U.S. Cl. 430—137 27 Claims

1. A process for the preparation of toner comprising

(i) preparing, or providing a cationic emulsion resin latex comprised of a resin derived from at least one olefinic nonpolar monomer, a cationic olefinic monomer, a cationic free radical initiator, and optionally a chain transfer agent in an aqueous mixture comprised of a nonionic surfactant and a cationic surfactant, and which mixture is heated at a temperature of from about 60° C. to about 95° C.;

(ii) adjusting the pH of said cationic latex to from about 10 to about 14 by the addition of a base;

(iii) preparing, or providing a pigment dispersion, which dispersion is comprised of a pigment and an anionic surfactant, and optionally a charge control agent;

(iv) shearing said pigment dispersion with the pH adjusted latex of (ii) and heating below about the resin Tg to form electrostatically bound toner size aggregates, and optionally adding a cationic surfactant to stabilize the size of the toner aggregates; and

(v) heating said electrostatically bound toner size aggregates above about the Tg of the resin to form coalesced toner particles; followed by optionally filtering, washing and drying the toner obtained.

5,645,969

PHOTOSENSITIVE COMPOSITION AND PHOTOSENSITIVE LITHOGRAPHIC PRINTING PLATE

Fumiyuki Matsuo; Daisuke Kanazawa; Mitsuru Sasaki, all of Yokohama; Shinichi Matsubara; Katsuhiko Higashino, both of Hino, and Toshiaki Yokoo, Yokohama, all of Japan, assignors to Mitsubishi Chemical Corporation, and Konica Corporation, both of Tokyo, Japan

Filed Dec. 21, 1995, Ser. No. 576,136

Claims priority, application Japan, Dec. 27, 1994, 6-337070; Jan. 6, 1995, 7-000692

Int. Cl.[6] G03F *7/023*

U.S. Cl. 430—165 14 Claims

1. A photosensitive composition comprising a quinonediazide compound and a binder resin, wherein said resin is a resin obtained by condensing a phenol component comprising the following (1) to (3), and an aldehyde or a ketone, and X≧0.57, where X=A/B, where A is an integrated value of peaks from 23.0 to 31.0 ppm, and B is an integrated value of peaks from 23.0 to 37.0 ppm, in the ^{13}C-NMR spectrum of a dimethyl sulfoxide deuteride solution of this resin:

Phenol Component

(1) a phenol: from 50 to 100 mol %

(2) a m-alkylphenol: from 0 to 50 mol %

(3) a p-alkylphenol: from 0 to 50 mol %.

14. A photosensitive lithographic printing plate comprising a support and a photosensitive layer formed thereon, wherein the photosensitive layer is made of a photosensitive composition comprising a quinonediazide compound and a binder resin, wherein said resin is a resin obtained by condensing a phenol component comprising the following (1) to (3), and an aldehyde or a ketone, and X≧0.57, where X=A/B, where A is an integrated value of peaks from 23.0 to 31.0 ppm, and B is an integrated value of peaks from 23.0 to 37.0 ppm, in the ^{13}C-NMR spectrum of a dimethyl sulfoxide deuteride solution of this resin:

Phenol Component

(1) a phenol: from 50 to 100 mol %

(2) a m-alkylphenol: from 0 to 50 mol %

(3) a p-alkylphenol: from 0 to 50 mol %.

5,645,970

WEAK BASE DEVELOPABLE POSITIVE PHOTORESIST COMPOSITION CONTAINING QUINONEDIAZIDE COMPOUND

Hua-Chi Cheng, Hsinchu; Chao H. Tseng, Taipei, and Pao-Ju Hsieh, Keelung, all of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Oct. 25, 1995, Ser. No. 547,753

Int. Cl.[6] G03F *7/023*

U.S. Cl. 430—192 15 Claims

1. A positive photoresist composition comprising a photosensitive compound and a phenolic resin, wherein said phenolic resin is prepared from a monomeric composition comprising formaldehyde and a mixture of phenol monomers, and said mixture of phenol monomers comprises:

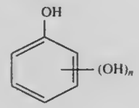
(a) no more than 98 mole percent of a mixture of monohydroxy phenols, said mixture of monohydroxy phenols comprises:

(1) about 50–80 mole percent of meta-methylphenol;

(ii) about 10–30 mole percent of 2,5-dimethylphenol; and

(iii) about 10–40 mole percent of 2,3,5-trimethylphenol; and

(b) at least 2 mole percent of at least one polyhydroxybenzene, said polyhydroxybenzene being presented by the following formula:



wherein n is an integer of 1 or 2.

5,645,971

METHOD FOR MAKING A LITHOGRAPHIC PRINTING PLATE ACCORDING TO THE SILVER SALT DIFFUSION TRANSFER PROCESS

Ludo Van Rompuy, Destelbergen; René De Keyzer, Waasmunster; Jean-Marie Dewanckele, Drongen; Marcel Monbaliu, Mortsel, and Jos Vaes, Betekom, all of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Continuation of Ser. No. 986,071, Dec. 4, 1992, abandoned, which is a continuation of Ser. No. 810,146, Dec. 19, 1991, abandoned, and a continuation of Ser. No. 810,150, Dec. 19, 1991, Pat. No. 5,200,294, and a continuation of Ser. No. 810,151, Dec. 19, 1991, abandoned. This application Jun. 20, 1996, Ser. No. 666,053

Claims priority, application European Pat. Off., Apr. 7, 1992, 92200990

Int. Cl.[6] G03C *8/32;8/06;* G03F *7/07*

U.S. Cl. 430—204 4 Claims

1. A method for making a lithographic printing plate according to the silver salt diffusion transfer process comprising the steps of image-wise exposing an imaging element comprising on a support a photosensitive layer comprising a silver halide emulsion and an image receiving layer containing physical development nuclei and developing said imaging element in the presence of developing agent(s) using an alkaline processing liquid comprising a mesoionic triazolium thiolate compound and an alkanolamine.

5,645,972

METHOD FOR PREPARING AN ALUMINIUM FOIL FOR USE AS A SUPPORT IN LITHOGRAPHIC PRINTING PLATES

Marcus Jonkheere, Oostkamp, Belgium, assignor to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Nov. 21, 1995, Ser. No. 561,003

Claims priority, application European Pat. Off., Dec. 14, 1994, 94203623

Int. Cl.[6] G03C *8/28;* G03F *7/07;* B41N *1/00*

U.S. Cl. 430—231 9 Claims

1. A method for preparing an aluminum foil comprising the steps of roughening and anodizing an aluminum foil, posttreating said roughened and anodized aluminum foil with an aqueous bicarbonate solution and subsequently rinsing said posttreated foil with water characterized in that the temperature of said water ranges from 40° C. to 55° C.

5,645,973

PROCESS FOR ADJUSTING THE SENSITIVITY TO RADIATION OF PHOTOPOLYMERIZABLE COMPOSITIONS

Manfred Hofmann, Marly, Switzerland; Bernd Klingert, Inzlingen, Germany; Max Hunziker, Düdingen, Switzerland; Rolf Wiesendanger, Basel, Switzerland; Adrian Schulthess, Tentlingen, Switzerland, and Paul Bernhard, Fribourg, Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Division of Ser. No. 437,737, May 9, 1995, Pat. No. 5,573,889, which is a continuation of Ser. No. 234,499, Apr. 28, 1994, abandoned, which is a continuation of Ser. No. 603,032, Oct. 24, 1990, abandoned. This application Jan. 29, 1996, Ser. No. 592,899

Claims priority, application Switzerland, Oct. 27, 1989, 3901/89

Int. Cl.[6] G03F *7/20;7/095;* B29C *35/08;67/24*

U.S. Cl. 430—269 2 Claims

1. A process for the production of three-dimensional objects, starting from a photopolymerizable composition which can be photopolymerized by a plurality of emission lines of different wavelength from an applied UV/VIS laser light source, which composition is prepared by

(a) providing a photopolymer formulation containing at least one photopolymerizable compound,

(b) mixing with said photopolymer formulation at least two photoinitiators to yield a final composition such that the ratio of the concentrations of the individual photoinitiators in the final composition has virtually the same optical density at a given depth for the radiation of each emission line of the applied UV/VIS laser light source which affects the photopolymerization of the composition, wherein the strength properties of said photopolymerizable composition do not suffice for the build-up of three-dimensional objects and which can be changed by irradiation so that a strength adequate for the build-up of three-dimensional objects is obtained, said process comprising the steps:

i) placing the photopolymerizable composition in a container,

ii) irradiating at the same time a predetermined fraction of the volume of the with different emission lines from a UV/VIS laser light source so that a predetermined portion of the medium solidifies in the irradiated areas.

2. A process for the production of three-dimensional objects from a photopolymerizable composition which can be photopolymerized by a plurality of emission lines of different wavelength from an applied UV/VIS laser light source, which composition is prepared by

(a) providing a photopolymer formulation containing at least one photopolymerizable compound,

(b) mixing with said photopolymer formulation at least two photoinitiators to yield a final composition such that the ratio of the concentrations of the individual photoinitiators in the final composition has virtually the same optical density at a given depth for the radiation of each emission line of the applied UV/VIS laser light source which affects the photopolymerization of the composition, wherein the strength properties of said photopolymerizable composition do not suffice for the build-up of three-dimensional objects and which can be changed by irradiation so that a strength adequate for the build-up of three-dimensional objects is obtained, said process comprising the steps:

i) placing the photopolymerizable composition in a container,

ii) irradiating at the same time a selected surface of the photopolymerizable composition over its whole area or in a predetermined pattern with different emission lines from the applied UV/VIS laser light source so that a layer solidifies in a desired layer thickness in the irradiated areas,

iii) forming a new layer of the photopolymerizable medium on the solidified layer, and

iv) repeatedly irradiating the surface in accordance with step ii) in order to build up a succession of solidified layers which adhere to one another and which together form the three-dimensional object.

5,645,974

PROCESS FOR THE PRODUCTION OF PRINTING PLATES

Katsuyuki Ohta, Atsugi; Toshiya Takagi, and Toshimi Aoyama, both of Fujisawa, all of Japan, assignors to Tokyo Ohka Kogyo, K.K., Kanagawa, Japan, and Ciba-Geigy Corporation, Tarrytown, N.Y.

Division of Ser. No. 417,186, Apr. 5, 1995, Pat. No. 5,541,038, which is a continuation of Ser. No. 179,893, Jan. 10, 1994, abandoned, which is a continuation of Ser. No. 784,861, Oct. 30, 1991, abandoned. This application Apr. 22, 1996, Ser. No. 635,814

Claims priority, application Japan, Nov. 5, 1990, 2-297088

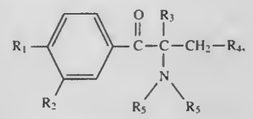
Int. Cl.[6] G03F *7/00*

U.S. Cl. 430—306 15 Claims

1. A process for the production of printing plates by imagewise irradiation with light in the range 200–600 nm comprising the steps of: applying to a base a layer of photopolymerizable composition comprising a linear base polymer, an ethylenically unsaturated addition-polymerizable compound and a photopolymerization ini-

tiator; characterized in that said photopolymerization initiator comprises a combination of the following components (A) and (B) wherein

(A) is a compound of formula I



(I)

wherein

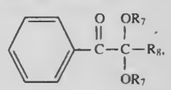
R_1 and R_2 independently of one another are hydrogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, halogen or a group $—N(R_6)_2$,

R_3 is C_1–C_8-alkyl,

R_4 is phenyl,

R_5 and R_6 independently of one another are C_1–C_4-alkyl or both R_5 or both R_6 together with the nitrogen atom, to which they are bonded, form a 5- or 6-membered saturated or unsaturated ring, which may be interrupted by —O— or—$N(CH_3)$— and;

(B) is a compound of formula II



(II)

wherein

R_7 is C_1–C_8-alkyl, phenyl or C_1–C_8-alkyl substituted by C_1–C_4-alkoxy,

R_8 is phenyl,

wherein (A) and (B) are present in the photopolymerizable composition in an amount effective to give sufficient sensitivity for the production of thick-film printing plates;

exposing selected portions of the layer to irradiation and subsequently removing unexposed parts of the layer.

5,645,975

SCREEN PRINTING STENCIL COMPOSITION WITH IMPROVED WATER RESISTANCE

Alexander S. Gybin; Kyle K. Johnson; Toshifumi Komatsu, and Lawrence C. Vaniseghem, all of Duluth, Minn., assignors to The Chromaline Corporation, Duluth, Minn.

Division of Ser. No. 147,381, Oct. 26, 1993. This application May 26, 1995, Ser. No. 450,903

Int. Cl.[6] G03F *7/12*; B41C *1/14*

U.S. Cl. 430—308 **13 Claims**

1. A method of forming a screen printing assembly, comprising a screen and a stencil composition, said stencil composition comprising a photoreactive resist composition and at least 5 wt-% of a vinyl polymer having repeating units derived from a heterocyclic nitrogen compound polymer, wherein said vinyl polymer is aqueous insoluble at an alkaline pH, and a carrier, said method comprising the steps of:

(a) applying said stencil composition to said screen, wherein a stencil composition is an emulsion that is imaged after the emulsion is applied to the screen; and

(b) contacting the image with an aqueous alkaline composition to harden said stencil composition.

13. A method of forming a screen printing assembly, comprising a screen and a hand-cut imaged stencil composition, said composition comprising at least 5 wt-% of a vinyl polymer having repeating units derived from a heterocyclic nitrogen compound polymer, wherein said vinyl polymer is aqueous insoluble at an alkaline pH, and a carrier, said method comprising the steps of:

(a) applying said imaged stencil composition to said screen; and

(b) contacting the image with an aqueous alkaline composition to harden said stencil composition.

5,645,976

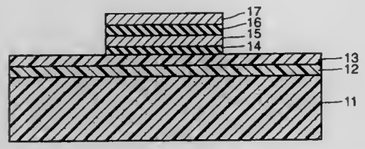
CAPACITOR APPARATUS AND METHOD OF MANUFACTURE OF SAME

Masamichi Azuma, Colorado Springs, Colo., assignor to Matsushita Electronics Corporation, Takatsuki, Japan

Division of Ser. No. 136,029, Oct. 14, 1993, abandoned. This application Aug. 4, 1994, Ser. No. 286,801

Int. Cl.[6] G03F *7/00*

U.S. Cl. 430—313 **13 Claims**



1. A method of manufacturing a capacitor on a substrate comprising the steps of:

forming an insulation layer on the surface of said substrate, selectively forming a layer of barrier metal on a portion of said insulation layer; and

sequentially depositing a first metal electrode, a dielectric thin film and a second metal electrode on said barrier metal layer;

wherein said forming of said barrier metal layer comprises the steps of:

depositing said barrier metal on the surface of said insulation layer;

depositing a photosensitive resist material on said barrier metal;

selectively exposing a pattern on said photosensitive resist material;

selectively removing said patterned portions of said resist material to expose portions of the underlying barrier metal layer; and

selectively removing said exposed portions of the barrier metal layer to expose portions of said insulation layer.

5,645,977

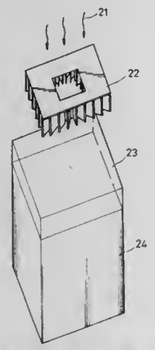
METHOD OF MAKING MOLDS FOR MANUFACTURING MULTIPLE-LEAD MICROSTRUCTURES

Tung-Chuan Wu, Hsinchu; Jar-Sian Hsiau, Taipei; Min-Chieh Chou, Taipei; Jiing-Song Lu, and Mu-Tien Liang, both of Hsinchu, all of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Sep. 22, 1995, Ser. No. 532,951

Int. Cl.[6] C25D *1/10*

U.S. Cl. 430—320 **2 Claims**



1. A method for making molds for use in manufacturing multiple-lead micro structures, wherein each of said molds comprises a set of punch head molds and a set of matching die plate molds, and said method comprises the steps of:

(a) dividing said multiple-lead microstructure into a plurality of portions, each portion is to be prepared by a respective pair of a punch head, which contains a plurality of protrusions, and a die plate, which contains a plurality of matching recesses;

(b) preparing each of said punch head molds using a first lithographic technique; and

(c) preparing each of said die plate molds using a second lithographic technique;

(d) further wherein said first lithographic technique comprises the following steps:

(i) forming a thick layer of a photoresist on a baseplate;

(ii) irradiating an x-ray or ultraviolet ray onto said photoresist via a first photomask;

(iii) developing said photoresist to remove undesired portion thereof;

(iv) electroplating a metal or metal-ceramic composite material onto said photoresist that has been developed;

(v) removing said photoresist to form a micromold having recesses matching said portion of said microstructure to be prepared; and

(d) said second lithographic technique comprises the following steps:

(i) forming a thick layer of a photoresist on another baseplate;

(ii) irradiating an x-ray or ultraviolet ray onto said photoresist via a second photomask, which is a conjugate of said first photomask;

(iii) developing said photoresist to remove undesired portion thereof;

(iv) electroplating a metal or metal-ceramic composite material onto said photoresist that has been developed;

(v) removing said photoresist to form a micromold having protrusions matching said portion of said microstructure to be prepared.

5,645,978

METHOD FOR MANUFACTURING OPTICAL DISK

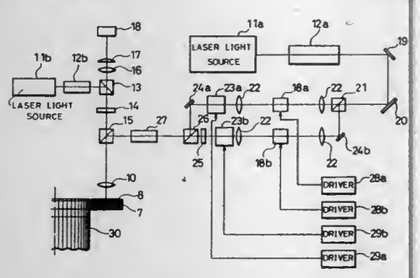
Tetsuya Inui; Akira Takahashi, both of Nara, and Kenji Ohta, Kitakatsuragi-gun, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 58,931, May 7, 1993, Pat. No. 5,383,176. This application Sep. 28, 1994, Ser. No. 314,194

Claims priority, application Japan, May 15, 1992, 4-123429; Mar. 16, 1993, 5-056005

Int. Cl.[6] G03C *5/00*

U.S. Cl. 430—321 **10 Claims**



1. A method of manufacturing an optical disk comprising the steps of:

depositing a photosensitive material on a substrate;

forming a predetermined pattern by projecting a light spot onto said photosensitive material;

producing a master disk using said pattern; and

manufacturing an optical disk from said master disk, said optical disk having spiral or concentric grooves and land portions between the grooves,

wherein in the step of forming said pattern, two light spots are projected onto said photosensitive material so that areas of said photosensitive material exposed to a first light spot form the pattern of spiral or concentric grooves and that areas of said photosensitive material which correspond to said land portions and are exposed to a second light spot form a predetermined pit pattern,

wherein said grooves have interrupted portions, a first series of pits recorded as address information in said interrupted portion, and a second series of pits recorded as address information in a portion of land, the portion of said land and the interrupted portion of said groove being located in different radial directions, and

further wherein in the step of forming the pattern, exposing of said photosensitive material to the first light spot for forming the pattern of said grooves and exposing of said photosensitive material for forming said first series of pits are successively performed, and areas of said photosensitive material corresponding to said lands are exposed to the second light spot to form the pattern of said second series of pits.

5,645,979

HEAT-RESISTANT PHOTORESIST COMPOSITION AND NEGATIVE-TYPE PATTERN FORMATION METHOD

Amane Mochizuki; Michie Ishii; Masako Maeda, and Kazumi Higashi, all of Osaka, Japan, assignors to Nitto Denko Corporation, Osaka, Japan

Division of Ser. No. 594,720, Jan. 31, 1996, Pat. No. 5,595,856. This application Sep. 6, 1996, Ser. No. 708,938

Claims priority, application Japan, Feb. 14, 1995, 7-25132

Int. Cl.[6] G03F *7/32*; *7/38*

U.S. Cl. 430—325 **7 Claims**

1. A method of forming a negative-type pattern, which comprises forming a photosensitive layer on a substrate using a heat-resistant composition comprising a resin component having a carbodiimide unit represented by the following formula (I) in the molecule thereof, and a compound capable of inducing a basic compound by irradiation with actinic rays;

$$+R—N=C=N+ \quad (I)$$

wherein R represents a divalent organic group, irradiating the photosensitive layer with actinic rays via a photo mask, subjecting the photosensitive layer thus irradiated to a heat treatment, and removing the unexposed portions of the photosensitive layer with a developer.

5,645,980

ADDENDA FOR AN AQUEOUS PHOTOGRAPHIC RINSING SOLUTION

Hugh Gerald McGuckin; John Stuart Badger; Ronald Anthony Gogle, all of Rochester; Paul Joseph Riesenberger, Fairport, and Michael William Orem, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 327,769, Oct. 24, 1994, which is a division of Ser. No. 105,828, Aug. 11, 1993, abandoned. This application Jan. 16, 1996, Ser. No. 586,359

Int. Cl.[6] G03C *7/407*

U.S. Cl. 430—372 **13 Claims**

1. A method of processing a silver halide photographic element comprising, after development, bleaching and fixing, rinsing the photographic element a final time with a rinsing solution consisting essentially of a working concentration of from about 0.05 to about 0.6 g/l of a nonionic surfactant and a working concentration of from about 0.05 to about 1 g/l of an anionic surfactant, wherein said solution has a surface tension of 32 dynes/cm or less, and wherein said solution is free of a dye stabilizing compound,

said anionic surfactant having either:

(a) the chemical formula R_2-(A)-C, wherein R_2 is an alkyl group having 8 to 20 carbon atoms, A is a phenyl group or a hydroxy ethylene group, and C is $SO_3^-M^+$, wherein $M^+$is NH_4^+, Na^+, K^+, or Li^+, or

(b) the chemical formula $(R_3)_n$-$(B)_x$-$(E)_y$-C, wherein

R_3 is an alkyl group having 4 to 20 carbon atoms and n is 1 when x is 0, and n is 1, 2 or 3 when x is 1,

B is a phenyl group and x is 0 or 1,

E is a —(CH_2CH_2)—group and y is an integer from 1 to 8, and

C is $SO_3^-M^+$or $SO_4^-M^+$, wherein said $M^+$is ammonium, sodium, potassium or lithium ion; and

said nonionic surfactant is a nonionic hydrocarbon polyethoxylated surfactant having the chemical formula R_1-$(B)_x$-$(E)_m$-D, wherein R_1 is an alkyl group having 8 to 20 carbon atoms, B is a phenyl group, x is 0 or 1, E is a —(OCH_2CH_2)—, m is an integer from 6 to 20, and D is —OH or —OCH_3.

5,645,981

PHOTOGRAPHIC SILVER HALIDE MATERIALS AND PROCESS COMPRISING A PYRAZOLOTRIAZOLE COUPLER

Robert Fogg Romanet; Arlyce Tolman Bowne, both of Rochester, and Sharon Eileen Normandin, Macedon, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 931,102, Aug. 14, 1992, abandoned, which is a continuation of Ser. No. 592,146, Oct. 3, 1990, abandoned, which is a continuation of Ser. No. 241,513, Sep. 7, 1988, abandoned, which is a continuation-in-part of Ser. No. 23,519, Mar. 9, 1987, abandoned. This application Apr. 6, 1994, Ser. No. 225,417

Int. Cl.[6] G03C *7/38*

U.S. Cl. 430—558 **15 Claims**

1. A photographic element comprising a support bearing at least one photographic silver halide emulsion layer and a dye-forming pyrazolotriazole coupler wherein

the pyrazolotriazole coupler comprises a ballast group containing from 14 to 40 carbon atoms and having one water-solubilizing group on the ballast group and having an ether group (—O—) bonded directly to a carbon atom that is bonded directly to the pyrazolotriazole nucleus;

wherein the pyrazolotriazole is capable of forming an immobile dye in a gelatino silver halide emulsion and is free of coupling-off groups that reduce silver.

5,645,982

METHOD FOR SCREENING POTENTIAL THERAPEUTICALLY EFFECTIVE ANTIVIRAL AGENTS

Mark L. Bonyhadi, Belmont; Joseph M. McCune, San Francisco, and Hideto Kaneshima, Palo Alto, all of Calif.; assignors to SyStemix, Inc., Palo Alto, Calif.

Filed Aug. 19, 1993, Ser. No. 109,305

Int. Cl.[6] C12N *5/08*

U.S. Cl. 435—5 **14 Claims**

1. A method of screening agents for potential anti-viral efficacy comprising the steps of:

a) providing intact unstimulated human thymic lobules;

b) incubating the lobules prior to infection for a time and under conditions to maintain cell viability;

c) exposing the lobules to a virus under conditions sufficient to induce infection;

d) exposing the lobules to a potential anti-viral agent to be screened; and

e) assaying cells from the lobules for viral activity;

wherein the potential anti-viral agent is determined to be an anti-viral agent if viral replication and/or pathology is suppressed relative to cultured lobules in a control sample.

5,645,983

CORE ANTIGEN PROTEIN OF HEPATITIS C VIRUS, AND DIAGNOSTIC METHOD AND KIT USING THE SAME

Jaw-Ching Liao, and Cheng-Nan Wang, both of Taipei, Taiwan, assignors to BioNova Corporation, San Francisco, Calif.

Division of Ser. No. 963,483, Oct. 16, 1992, abandoned. This application Oct. 26, 1993, Ser. No. 143,578

Int. Cl.[6] C12Q *1/70;* **G01N** *33/576;* **C07K** *16/08*

U.S. Cl. 435—5 **19 Claims**

1. A method for detecting hepatitis C virus (HCV) antibodies in a sample, comprising contacting a partially purified, bacterially-produced core-env polypeptide having the amino acid sequence as given in SEQ ID No: 4, wherein said core-env polypeptide has a molecular weight of about 25,000 daltons and which core-env polypeptide is an hepatitis C virus core antigen polypeptide fused to a part of an envelope region of an hepatitis C virus, with said sample under conditions which allow binding of said polypeptide with antibodies directed against an HCV antigen in said sample to form a antigen-antibody complex, and then detecting said antigen-antibody complex.

5,645,984

PROCESS FOR DEPLETING VIRUSES IN SOLUTIONS AND DETERMINING THEIR DEPLETION RATE

Werner Nader, Eppelheim, Germany, assignor to Sanorell Pharma GmbH & Co. KG, Baiersbronn, Germany

Continuation of Ser. No. 934,760, Aug. 4, 1993, abandoned. This application Jun. 1, 1995, Ser. No. 456,621

Claims priority, application Germany, Feb. 6, 1990, 40 03 543.3

Int. Cl.[6] C12Q *1/70*

U.S. Cl. 435—5 **20 Claims**

1. A method of depleting pathogens in a solution or suspension of organic material which comprises:

(a) calibrating a removal rate of an ultrafilter or ultrafiltration unit by introducing at least one test virus comprising a leviviridae virus or another bacteriophage of equivalent size through the ultrafiltration apparatus;

(b) determining the titer of virus before and after ultrafiltration;

(c) calculating the removal rate from (b); and

(d) passing the organic material through the ultrafiltration apparatus comprising an ultrafilter or ultrafiltration unit the removal rate of which was previously determined, thereby depleting pathogens in the solution or suspension of organic material.

5,645,985

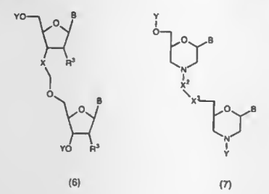
ENHANCED TRIPLE-HELIX AND DOUBLE-HELIX FORMATION WITH OLIGOMERS CONTAINING MODIFIED PYRIMIDINES

Brian Froehler; Rick Wagner, both of Belmont; Mark Matteucci, Burlingame; Robert J. Jones, Millbrae; Arnold J. Gutierrez, Sandy Lane, and Jeff Pudlo, Burlingame, all of Calif., assignors to Gilead Sciences, Inc., Foster City, Calif.

Continuation-in-part of Ser. No. 965,941, Oct. 23, 1992, abandoned, which is a continuation-in-part of Ser. No. 935,444, Aug. 25, 1992, abandoned, which is a continuation-in-part of Ser. No. 799,824, Nov. 26, 1991, Pat. No. 5,484,908. This application Nov. 25, 1992, Ser. No. 976,103

Int. Cl.[6] C07H *21/00;21/02;21/04;* **C12Q** *1/68*

U.S. Cl. 435—6 **18 Claims**



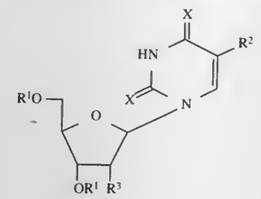
(6) (7)

X^2 = CO, CS or SO_2

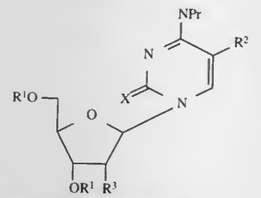
X^3 = O, S, CH_2, CF_2, CFH, NH, NCH_3

1. A nucleomonomer having the structural formula (3) or (4):

(3)



(4)



wherein each X is independently O or S;

each R^1 is independently H or a blocking group selected from the group consisting of H-phosphonate, a phosphoramidite, an alkylphosphonamidite, and FMOC;

R^2 is selected from the group consisting of vinyl, 1-butenyl, 1-pentenyl, 1-hexenyl, 1-heptenyl, 1 -octenyl, 1,3-pentadiynyl, 1-propynyl, 1-butynyl, 1-pentynyl, 3-methyl-1 -butynyl, 3,3-dimethyl-1-butynyl, 3-buten-1-ynyl, bromovinyl, 1-hexynyl, 1 -heptynyl, 1-octynyl, —C≡C—Z wherein Z is C_{1-10} alkyl or C_{1-10} haloalkyl, 5-heteroaromatic group, and a 5-(1-alkynyl)-heteroaromatic group; wherein the 5-heteroaromatic group and the 5-(1-alkynyl)-heteroaromatic group are optionally substituted on a ring carbon by oxygen or C_{1-4} alkyl or substituted on a ring nitrogen by C_{1-4} alkyl;

Pr is $(H)_2$ or a protecting group; and

R^3 is selected from the group consisting of H, OH, F, OCH_3, OC_2H_5, OC_3H_7, SCH_3, SC_2H_5, SC_3H_7, OC_3H_5, and SC_3H_5, with the proviso that if R^3 is H or OH, and both R^1 are H, R^2 is 2-, 3-, and 4-pyridine-ethynyl, 2-pyrimidine-ethynyl, 4-pyrimidine-ethynyl, 5 -pyrimidine-ethynyl, triazine-ethynyl, 2-pyrimidinyl, 2- and 4-imidazolyl, 2- and 3-pyrrolyl-ethynyl, 2- and 3-furanyl-ethynyl, 2- and 3-thienyl-ethynyl, 2-, 4- and 5-imidazolyl-ethynyl, 2-, 4-, and 5-thiazolyl-ethynyl, 2-, 4- and 5 -oxazolyl-ethynyl, 2-, 4- and 5-thiazolyl, 4- and 5-oxazolyl, or 3-pyrrolyl.

5,645,986

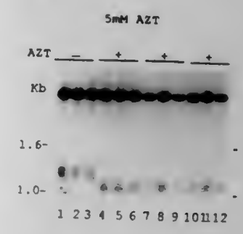
THERAPY AND DIAGNOSIS OF CONDITIONS RELATED TO TELOMERE LENGTH AND/OR TELOMERASE ACTIVITY

Michael D. West, San Carlos; Calvin B. Harley, Palo Alto; Catherine M. Strahl, San Francisco; Michael J. McEachern, San Francisco, all of Calif.; Jerry Shay, Dallas; Woodring E. Wright, Arlington, both of Tex.; Elizabeth H. Blackburn, San Francisco, Calif., and Homayoun Vaziri, Toronto, Canada, assignors to Board of Reagents, The University of Texas System, Dallas, Tex.; The Reagents of the University of California, Oakland, and Geron Corporation, Menlo Park, both of Calif.

Continuation-in-part of Ser. No. 60,952, May 13, 1993, which is a continuation-in-part of Ser. No. 38,766, Mar. 24, 1993, Pat. No. 5,489,508, which is a continuation-in-part of Ser. No. 882,438, May 13, 1992, abandoned. This application Nov. 12, 1993, Ser. No. 153,051

Int. Cl.[6] C12Q *1/68;* **C12P** *19/34;* **C12N** *9/12*

U.S. Cl. 435—6 **27 Claims**



1. Method for screening for an agent which inhibits telomerase activity, comprising the steps of

combining in a reaction mixture a potential said agent, an active telomerase, a substrate oligonucleotide for said telomerase, and nucleotide triphosphates;

incubating said reaction mixture for a predetermined time for said substrate oligonucleotide to be extended;

determining whether extended substrate oligonucleotide is formed by contacting products of said reaction mixture with an oligonucleotide probe which hybridizes to a telomere repeat sequence; and

comparing hybridization of said probe to said products with hybridization of said probe to products of a reaction mixture in which said agent is not present; and,

correlating reduced hybridization in presence of said agent compared with hybridization observed in absence of said agent with inhibition of telomerase activity by said agent.

5,645,987

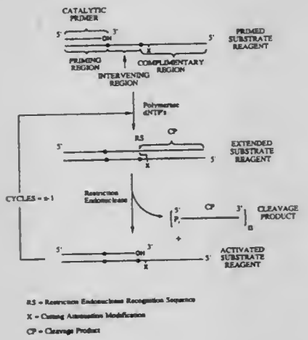
ENZYMATIC SYNTHESIS OF OLIGONUCLEOTIDES

Rodney M. Richards, Louisville, Colo., assignor to Amgen Inc., Thousand Oaks, Calif.

Continuation of Ser. No. 50,712, Apr. 19, 1993, abandoned, which is a continuation of Ser. No. 762,140, Sep. 23, 1991, abandoned, which is a continuation of Ser. No. 586,368, Sep. 21, 1990, abandoned. This application Feb. 23, 1994, Ser. No. 200,897

Int. Cl.[6] C12P *19/34;* C12Q *1/68*

U.S. Cl. 435—6 44 Claims



1. A method for generating a cascade of oligonucleotide products comprising:

(a) contacting a first nucleic acid template sequence having a cutting attenuation modification with a primer complementary to a portion of said template sequence, an excess of nucleoside triphosphates, and an agent for polymerization to generate a first nucleic acid sequence complementary to said first template sequence, thus forming a first duplex nucleic acid sequence;

(b) contacting said first duplex nucleic acid sequence with a first nucleases to generate a first oligonucleotide cleavage product while the primed first template sequence remains substantially intact due to the presence of the cutting attenuation modification;

(c) contacting a second nucleic acid template sequence having a cutting attenuation modification with said first oliganucleotide cleavage product, an excess of nucleoside triphosphates, and an agent for polymerization to a generate a second nucleic acid sequence complementary to said second template sequence, thus forming a second dulplex nucleic acid sequence, wherein said first oligonucleotide cleavage product acts as a primer for said second nucleic acid template sequence;

(d) contacting said second duplex nucleic acid sequence with a second nuclease to generate a second oligonucleotide cleavage product while the primed second template sequence remains substantially intact due to the presence of the cutting attenuation modification; and

(e) repeating steps (b) through (d) thereby generating a cascade of oligonucleotide products.

5,645,988

METHODS OF IDENTIFYING DRUGS WITH SELECTIVE EFFECTS AGAINST CANCER CELLS

George F. Vande Woude, Berryville, Va.; Han-Mo Koo, Gaithersburg, and Anne Monks, Clarksburg, both of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 169,962, Dec. 20, 1993, which is a continuation of Ser. No. 880,525, May 8, 1992, abandoned, which is a continuation-in-part of Ser. No. 696,923, May 8, 1991, abandoned. This application Jun. 15, 1994, Ser. No. 260,515

Int. Cl.[6] C12Q *1/68*

U.S. Cl. 435—6 19 Claims

1. A method of identifying a drug which selectively inhibits the growth of a particular type of cancer cell, which method comprises:

(a) contacting with said drug at least two cancer cells derived from the same type of biological material, wherein said cancer cells differ as to the presence of a particular DNA sequence that was acquired in vivo,

(b) measuring the effect of said drug on the growth of said cancer cells, and

(c) determining whether there is a correlation between the effect of said drug on said cancer cells and the presence or absence of said DNA sequence in said cancer cells.

5,645,989

Patent Not Issued For This Number

5,645,990

IDENTIFICATION AND PATERNITY DETERMINATION BY DETECTING PRESENCE OR ABSENCE OF MULTIPLE NUCLEIC ACID SEQUENCES

Jack D. Love, Rockville, Md., assignor to Gen Trak, Inc., Plymouth Meeting, Pa.

Continuation of Ser. No. 965,537, Oct. 23, 1992, abandoned, which is a continuation of Ser. No. 598,955, Oct. 17, 1990, abandoned. This application Nov. 22, 1994, Ser. No. 343,738

Int. Cl.[6] C12Q *1/68;* C07H *21/04*

U.S. Cl. 435—6 19 Claims

1. A kit comprising:

a plurality of nucleic acid probes, each having a limited presence polymorphism, wherein the nucleic acid probes are complementary to nucleotide sequences present in individual organisms in a population of the organisms which includes a test subject organism, and wherein the nucleic acid probes each provides positive hybridizations occurring at a frequency of about 10% to about 90% in the organism population, .

wherein the plurality of nucleic acid probes is of a number whose hybridization signals, when combined, represent a polymorphic pattern sufficient to determine individuality of the test subject organism in the organism population and wherein the number of probes is sufficient to result in a probability (P) of hybridization signal pattern repetition in the organism population of less than 1×10^{-5}, where P is the product of individual sequence repeat probabilities for each nucleotide sequence region probed with the labeled nucleic acid probes, each individual sequence repeat probability (X) being calculated as

$$X=\left(\frac{\text{percentage presence frequency}}{100}\right)^2+$$

-continued

$$\left(1-\frac{\text{percentage presence frequency}}{100}\right)^2;$$

and

a suitable container.

5,645,991

TRANSPOSON-CONTAINING DNA CLONING VECTOR AND USES THEREOF

Claire M. Berg, W. Willington, Conn.; Douglas E. Berg, St. Louis, Mo., and Gan Wang, Storrs, Conn., assignors to Univ. of Connecticut, Storrs, Conn., and Washington University, St. Louis, Mo.

Continuation-in-part of Ser. No. 57,314, May 4, 1993, abandoned. This application Mar. 14, 1995, Ser. No. 403,582

Int. Cl.[6] C12N *15/00*

U.S. Cl. 435—6 19 Claims

1. A double stranded DNA cloning vector comprising:

a) a transposon containing an origin of replication, said transposon being flanked by two contraselectable genes that are different from one another; and

b) a cloning site inserted between the two contraselectable genes and exterior to the transposon.

5,645,992

NUCLEIC ACID SEQUENCES AND METHODS FOR DETECTING CANDIDA TROPICALIS IN BLOOD

Timothy J. Lott; Christine J. Morrison, both of Atlanta; Errol Reiss, Chamblee; Brent Lasker, Atlanta, and Sandra Zakroff, Clarkston, all of Ga., assignors to The United States of America As Represented By The Secretary of Health and Human Services, Washington, D.C.

Division of Ser. No. 65,845, May 20, 1993, Pat. No. 5,426,027. This application Apr. 26, 1995, Ser. No. 429,522

The portion of the term of this patent subsequent to Jun. 20, 2012, has been disclaimed.

Int. Cl.[6] C12Q *1/68;* C07H *21/02;21/04*

U.S. Cl. 435—6 9 Claims

1. An isolated double stranded nucleic acid consisting of the nucleotide sequence defined in the Sequence Listing by SEQ ID NO: 7.

3. A method of diagnosing systemic candidiasis in a subject comprising the steps of:

a) collecting blood from the subject into tubes containing detergent, polypropylene glycol, sodium polyanetholesulfonate, and sodium ethylene diamine tetraacetic acid;

b) lysing Candida cells using ZYMOLYASE®-100T with agitation;

c) extracting and precipitating the DNA from the lysed cells;

d) amplifying the precipitated DNA using universal fungal primer pairs that amplify the internal transcribed spacer regions of the Candida ribosomal DNA; and

e) detecting amplified DNA from as few as 1 *Candida tropicalis* cell per 100 microliters of blood by hybridizing the amplified DNA with a probe that specifically hybridizes with the nucleic acid of claim 1, the presence of hybridization indicating systemic candidiasis.

5,645,993

DELETION IN CHROMOSOME 17P11.2-12 WHICH CAUSES THE DISORDER HEREDITARY NEUROPATHY WITH LIABILITY TO PRESSURE PALSIES

Phillip F. Chance, Philadelphia, Pa.; Mary Kathryn Alderson; Shannon J. Odelberg, both of Salt Lake City, Utah, and M. William Lensch, Devon, Pa., assignors to University of Utah, Salt Lake City, Utah

Continuation of Ser. No. 122,971, Sep. 16, 1993, abandoned. This application May 18, 1995, Ser. No. 443,561

Int. Cl.[6] C12Q *1/68;* C12P *19/34;* C07H *21/04;* C12N *15/00*

U.S. Cl. 435—6 19 Claims

1. A method for diagnosing Hereditary Neuropathy with Liability to Pressure Palsies (HNPP) in an individual with symptoms thereof and for diagnosing a predisposition to HNPP in an individual prior to onset of symptoms thereof from a sample containing DNA from the individual to be tested comprising the step of detecting in the sample the presence or absence of a DNA deletion at a gene locus associated with HNPP.

5,645,994

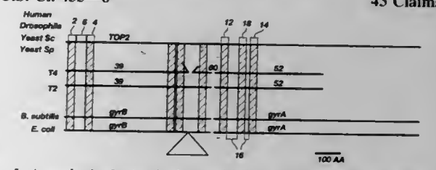
METHOD AND COMPOSITIONS FOR IDENTIFICATION OF SPECIES IN A SAMPLE USING TYPE II TOPOISOMERASE SEQUENCES

Wai Mun Huang, Salt Lake City, Utah, assignor to University of Utah Research Foundation, Salt Lake City, Utah

Continuation-in-part of Ser. No. 106,482, Aug. 13, 1993, abandoned, which is a continuation-in-part of Ser. No. 548,138, Jul. 5, 1990, abandoned. This application Jun. 6, 1995, Ser. No. 470,179

Int. Cl.[6] C12Q *1/68;* C07H *21/04*

U.S. Cl. 435—6 43 Claims



1. A method of selectively amplifying DNA segments of one or more species of organisms in a sample, comprising the steps of:

providing a database containing a plurality of reference sequences each comprising a subunit sequence of a selected signature region of a macromolecule selected from the group consisting of: type II topoisomerase enzymes and homologues of type II topoisomerase enzymes; each of the reference sequences being specific to a different individual species of a chosen group, and the selected macromolecule further having first and second conserved regions adjacently flanking the selected signature region;

providing a universal primer composition comprising a primer pair constructed to bind to a DNA encoding the macromolecule;

making an extract of DNA molecules from a sample; and

using the primer composition to selectively amplify DNA segments of the signature region in the extract to produce amplified DNA segments.

5,645,995

METHODS FOR DIAGNOSING AN INCREASED RISK FOR BREAST OR OVARIAN CANCER

Dirk G. Kieback, Houston, Tex., assignor to Baylor College of Medicine, Houston, Tex.

Filed Apr. 12, 1996, Ser. No. 629,939

Int. Cl.[6] C12Q *1/68;* C12N *15/00*

U.S. Cl. 435—6 24 Claims

1. A method for diagnosing an increased risk for breast or ovarian cancer comprising the steps of:

(A) obtaining, from a test subject, test nucleic acid comprising codon 660 within EXON 4 of the human progesterone receptor gene; and

(B) assaying for the presence of a G to T point mutation in the first nucleotide of codon 660 within EXON 4 of the human progesterone receptor gene,

wherein the presence of said point mutation in said test nucleic acid indicates an increased risk for breast or ovarian cancer.

5,645,996

MELITTIN-RELATED POLYPEPTIDES, MIXTURE SETS AND LIBRARIES THEREOF

Sylvie Blondelle, San Diego; Richard A. Houghten, Solana Beach, and Enrique Perez-Paya, San Diego, all of Calif., assignors to Torrey Pines Institute for Molecular Studies, San Diego, Calif.

Filed Aug. 24, 1994, Ser. No. 295,086

Int. Cl.[6] G01N *33/53*

U.S. Cl. 435—7.1 **13 Claims**

1. A set of polypeptides that comprises a mixture of equimolar amounts of polypeptide chain members having the sequence

$Xaa^1Xaa^2Xaa^3GlyIleGlyAlaValLeuXaa^{10}ValLeu-$ (SEQ ID NO:2)

$Xaa^{13}Xaa^{14}Xaa^{15}Xaa^{16}Xaa^{17}AlaLeuIleSer-$

$TrpIleLysArgXaa^{26}Xaa^{27}Xaa^{28}Xaa^{29}$

wherein for each polypeptide

(a) each of Xaa^1, Xaa^2 and Xaa^3 is present or absent, but Xaa^2 is present only if Xaa^3 is present, and Xaa^1 is present only if Xaa^2 is present;

(b) Xaa^3, when present, is an amino acid residue selected from the group consisting of Asp, Glu, Asn, Gln, Ser, Lys and Arg;

(c) Xaa^2, when present, is an amino acid residue selected from the group consisting of Asp, Glu, Asn, Gln, Ser, Lys and Arg;

(d) Xaa^1, when present, is an amino acid residue selected from the group consisting of Ala, Val, Leu, Ile, Trp and Phe;

(e) Xaa^{10} is an amino acid residue selected from the group consisting of Lys, Asp and Glu;

(f) Xaa^{26}, Xaa^{27}, Xaa^{28} and Xaa^{29} are present or absent, but Xaa^{27} is present only if Xaa^{26} is present, Xaa^{28} is present only if Xaa^{27} is present, and Xaa^{29} is present only if Xaa^{28} is present; and

(g) Xaa^{26}, when present, is Lys, Xaa^{27}, when present, is Arg, Xaa^{28}, when present, is Gln and Xaa^{29}, when present, is Gln-NH_2; and

(h) each of Xaa^{13}, Xaa^{14}, Xaa^{15}, Xaa^{16} and Xaa^{17} is one of at least six different predetermined amino acid residues; and

wherein for said set

(a') one or more of Xaa^{13}, Xaa^{14}, Xaa^{15}, Xaa^{16} and Xaa^{17} is the same, predetermined residue, present at the same chain position in each polypeptide; and

(b') at least one other chain position occupied by Xaa^{13}, Xaa^{14}, Xaa^{15}, Xaa^{16} and Xaa^{17} contains an equimolar amount of said at least six different amino acid residues.

5,645,997

ASSAY AND TREATMENT FOR DEMYELINATING DISEASES SUCH AS MULTIPLE SCLEROSIS, RELATED HYBRIDOMAS AND MONOCLONAL ANTIBODIES

Ellis L. Kline, Pendleton, S.C., and Daniel H. Zimmerman, Bethesda, Md., assignors to Molecular Rx, Inc., Pendleton, S.C., and Cell Med, Inc., Bethesda, Md.

Continuation of Ser. No. 166,171, Dec. 16, 1993, abandoned, which is a continuation-in-part of Ser. No. 992,641, Dec. 18, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 487,066

Int. Cl.[6] G01N *33/53;* **C07K** *16/18;* **C12N** *5/20*

U.S. Cl. 435—7.1 **18 Claims**

1. A hybridoma cell line 6D4.2 which is deposited under the ATCC accession number HB11152.

2. A hybridoma cell line 3D3.3 which is deposited under the ATCC accession number HB11153.

5,645,998

METHODS AND COMPOSITIONS FOR THE EARLY DETECTION AND TREATMENT OF INSULIN DEPENDENT DIABETES MELLITUS

Mark A. Atkinson, Gainseville, and Noel K. Maclaren, Archer, both of Fla., assignors to University of Florida Research Foundation, Gainesville, Fla.

Continuation of Ser. No. 746,443, Aug. 16, 1991, abandoned, which is a continuation-in-part of Ser. No. 569,324, Aug. 17, 1990, abandoned, which is a continuation-in-part of Ser. No. 427,051, Oct. 25, 1989, abandoned, which is a continuation-in-part of Ser. No. 283,633, Dec. 13, 1988, abandoned. This application May 13, 1994, Ser. No. 242,689

Int. Cl.[6] G01N *33/564;33/573*

U.S. Cl. 435—7.4 **5 Claims**

1. A method for the early detection of the onset of insulin dependent diabetes, said method comprising the following steps:

(a) contacting serum collected from a human or animal to be tested for insulin dependent diabetes with an entire recombinantly produced glutamic acid decarboxylase protein wherein said glutamic acid decarboxylase protein is capable of binding with 64K autoantibodies to form an immunocomplex comprising said glutamic acid decarboxylase protein bound to said 64K autoantibodies; and

(b) detecting insulin dependent diabetes by determining whether any of said immunocomplex is formed.

5. A method for the early detection of the onset of insulin dependent diabetes, said method comprising the following steps:

(a) contacting serum collected from a human or animal to be tested for insulin dependent diabetes with an entire mammalian glutamic acid decarboxylase protein wherein said glutamic acid decarboxylase protein is capable of binding with 64K autoantibodies to form an immunocomplex comprising said glutamic acid decarboxylase protein bound to said 64K autoantibodies, and wherein said glutamic acid decarboxylase protein is isolated from a non-human source; and

(b) detecting insulin dependent diabetes by determining whether any of said immunocomplex is formed.

5,645,999

ASSAYS FOR COMPOUNDS THAT MODULATE OR ALTER CYCLIN E ACTIVITY

James M. Roberts; Motoaki Ohtsubo; Andrew C. Koff, all of Seattle, Wash., and Frederick Cross, New York, N.Y., assignors to Fred Hutchinson Cancer Research Center, Seattle, Wash.

Continuation of Ser. No. 947,311, Sep. 16, 1992, Pat. No. 5,449,755, which is a continuation-in-part of Ser. No. 764,309, Sep. 20, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 485,859

Int. Cl.[6] C12Q *1/02;1/48;* **G01N** *33/50*

U.S. Cl. 435—7.4 **8 Claims**

1. A screening assay for identifying a compound that modulates or alters cyclin E activity in a cell, comprising the steps:

establishing replicate test and control cultures of cells that express cyclin E,

administering a candidate compound to the cells in the test culture but not the control culture,

measuring the G1 phase of cells in the test and the control cultures, and

determining that the candidate compound modulates or alters cyclin E activity in a cell if the G1 phase measured for the test culture is shorter or longer than the G1 phase measured for the control culture.

5,646,000

COMPOUNDS AND METHODS FOR IDENTIFYING ACTIVATED PLATELETS

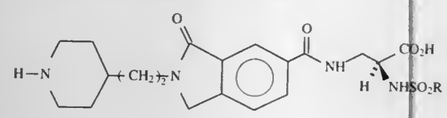
Bohumil Bednar, North Wales; Melissa Egbertson, Ambler; Robert J. Gould, Green Lane; George D. Hartman, Landsdale, and Jules A. Shafer, Gwynedd Valley, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Sep. 29, 1994, Ser. No. 315,034

Int. Cl.[6] G01N *33/567;* **C07D** *401/14;401/06*

U.S. Cl. 435—7.21 **24 Claims**

I. A fluorescent compound of the formula



wherein

R is selected from the group consisting of R^5, C_{1-6} alkyl substituted with R^5, and a mono- or fused polycylic aromatic or heteroaromatic system comprised of 6-membered aromatic or 5 to 6-membered heteroaromatic rings that are either unsubstituted or substituted with one or more of R^1 and R^2, wherein the heteroaromatic ring contains one to four heteroatoms selected from N, O or S;

R^1 and R^2 are each independently selected from

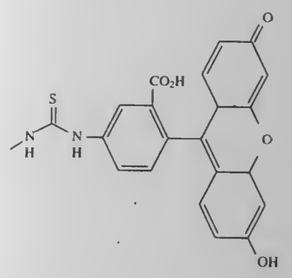
C_{1-6} alkyl,
carboxyl,
hydroxyl,
azido,
nitro,
amino,
C_{1-6} alkylamino,
C_{1-6} dialkylamino,
arylamino,
aryl C_{1-6} alkylamino,
hydroxysulfonyl or
arylazo;

aryl is a phenyl or naphthyl ring which is unsubstituted or substituted with one or more of R^3 and R4;

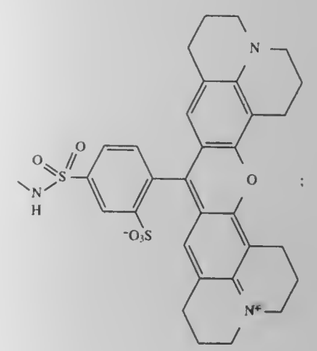
R^3 and R^4 are each independently selected from

C_{1-6} alkyl,
azido,
nitro,
amino,
C_{1-6} dialkylamino or
hydroxysulfonyl; and

R^5 is



or



provided that when R is an unsubstituted monocyclic ring, the monocyclic ring is not phenyl or pyridyl;

and the pharmaceutically acceptable salts thereof.

12. A method of monitoring GP IIb/IIIa receptor occupancy on platelets of a patient being treated with a GP IIb/IIIa inhibitor compound comprising taking a blood sample from the patient measuring total fluorescence of a fluorescent probe compound of claim 1 which binds to the GP IIa/IIIb receptor, adding the fluorescent probe compound to the blood sample to bind the fluorescent probe compound to the GP IIb/IIIa receptor, measuring fluorescence of unbound fluorescent probe compound in the sample, measuring the difference between total fluorescence and unbound fluorescence, and identifying, based on a showing of difference between total fluorescence and unbound fluorescence, the level of receptor occupancy on platelets.

5,646,001

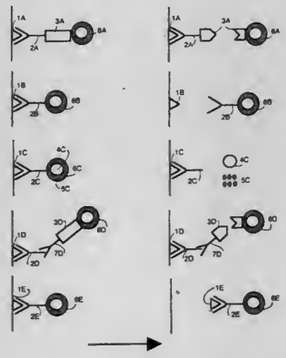
AFFINITY-BINDING SEPARATION AND RELEASE OF ONE OR MORE SELECTED SUBSET OF BIOLOGICAL ENTITIES FROM A MIXED POPULATION THEREOF

Leon W. M. M. Terstappen, Huntingdon Valley, Pa.; Galla C. Rao, Princeton, N.J.; Dhanesh I. Gohel, Levittown, Pa.; Brian P. Feeley, Easton, Pa.; Steven Gross, Ambler, Pa.; Ellen S. Church, Trenton, N.J., and Paul A. Libertl, Huntington Valley, Pa., assignors to Immunivest Corporation, Wilmington, Del.

Continuation-in-part of Ser. No. 6,071, Jan. 15, 1993, Pat. No. 5,466,574, which is a continuation-in-part of Ser. No. 674,678, Mar. 25, 1991, Pat. No. 5,186,827. This application Feb. 28, 1995, Ser. No. 395,967

Int. Cl.[6] G01N *33/567*

U.S. Cl. 435—7.21 **38 Claims**



1. A method for isolating a selected subset of biological entities from among a plurality of subsets in a mixed population of said biological entities, said biological entities being selected from the group consisting of cells, bacteria, viruses, or components thereof and toxins, said plurality of subsets comprising a first subset having a first characteristic determinant and at least one other subset having at least a second characteristic determinant, one of said first subset and said at least one other subset being said selected subset, said method comprising the steps of:

(a) providing a plurality of capture agents, each capture agent comprising a receptor attached to a solid support, said plurality of capture agents including a first capture agent comprising a receptor which specifically binds, either directly or indirectly, to said first characteristic determinant and at least one other capture agent comprising a receptor which specifically binds, either directly or indirectly, to said second characteristic determinant, the subset to which each said capture agent binds being its target subset;

(b) contacting a test sample comprising said mixed population of biological entities with said plurality of capture agents, whereby the receptor of said first capture agent specifically binds to said first subset and the receptor of said at least one other capture agent specifically binds to said at least one other subset, at least one of said first and said second capture agents being dissociably linked to its target subset;

(c) collecting on a collection surface the bound subsets from said test sample and separating from said bound subsets any subset of said population than is not bound to a capture agent;

(d) selectively releasing one dissociably linked target subset, among said bound subsets, from said collection surface by dissociating said one dissociably linked subset from all or part of the capture agent to which it is bound; and,

(e) isolating said selectively released target subset.

3. A method as claimed in claim 1, wherein said first or said second capture agent, bearing its target subset and remaining attached to its solid support after performing steps (a)–(e), is dissociably bound to its target subset, and said method further includes the steps of dissociating said remaining capture agent from its target subset and isolating the subset dissociated from said remaining capture agent.

5,646,002

METHOD FOR INCREASING THE SENSITIVITY OF ASSAYS FOR TARGET LIGAND

Peter S. Linsley; Vincent Ochs; Diane Horn, and Joseph P. Brown, all of Seattle, Wash., assignors to Oncogen Limited Partnership, Seattle, Wash.

Continuation of Ser. No. 703,587, May 20, 1991, abandoned, which is a continuation of Ser. No. 107,040, Oct. 9, 1987, abandoned. This application Feb. 14, 1994, Ser. No. 195,987

Int. Cl.[6] G01N *33/53*

U.S. Cl. 435—7.23 **10 Claims**

1. A method for determining the presence of a sialic acid masked tumor-associated antigenic determinant in an individual, comprising:

treating a serum sample obtained from the individual with neuraminidase;

contacting under conditions conducive to immune complex formation the neuraminidase treated serum sample with an antibody specific for the tumor-associated antigenic determinant; and

detecting immune complex formation and thereby determining the presence of the sialic acid masked tumor-associated antigenic determinant in the individual.

5,646,003

PREIMPLANTATION FACTOR

Eytan R. Barnea, 1697 Lark La., Cherry Hill, N.J. 08003, and Carolyn B. Coulam, 11015 Bryar Lynn Ct., Fairfax Sta., Va. 22039

Filed Mar. 23, 1994, Ser. No. 216,618

Int. Cl.[6] G01N *33/53*

U.S. Cl. 435—7.24 **14 Claims**

1. A method for determining prior to implantation whether fertilization has occurred in a female mammal which comprises:

(a) withdrawing a blood sample from the mammal at least about four days after insemination; and

(b) determining the presence or absence of a factor in the sample which enhances the binding of lymphocytes to platelets; whereby the presence of such a factor indicates that fertilization has occurred.

9. An assay for preimplantation factor (PIF) in mammalian blood which comprises:

(a) separating serum from said blood;

(b) subjecting said serum to heat deactivation;

(c) recovering from donor blood lymphocytes containing platelets;

(d) providing activated complement;

(e) providing monoclonal antibodies to CD-2 receptors on lymphocytes;

(f) admixing said deactivated serum, lymphocytes, complement and antibodies; and

(g) determining in the admixture the percentage of lymphocytes bound to platelets; whereby a percentage significantly higher than the percentage in non-pregnant individuals indicates the presence of PIF in the blood.

5,646,004

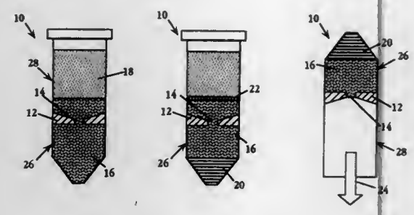
METHODS FOR ENRICHING FETAL CELLS FROM MATERNAL BODY FLUIDS

Peter Van Vlasselaer, Sunnyvale, Calif., assignor to Activated Cell Therapy, Inc., Mountain View, Calif.

Filed Aug. 31, 1994, Ser. No. 299,468

Int. Cl.[6] G01N *33/555;* **B01L** *11/00*

U.S. Cl. 435—7.25 **19 Claims**



1. A method of enriching fetal cells from a cell mixture, comprising:

layering a cell mixture containing fetal cells onto a density gradient solution contained in a centrifuge tube, said tube having a first closed end defining an inner bottom wall and an opposite open end, an annular member disposed in said tube and defining an opening therethrough, wherein said opening has an area less than the area of a cross section of said tube, said annular member defining a lower portion of the tube extending between said member and said tube bottom wall and an upper portion above said annular member, said tube containing a density gradient solution which fills said lower portion and a part of said upper portion to a level above said annular member prior to centrifugation of said tube,

said density gradient solution having an osmolality of 280±10 mOsm/kg H_2O and a specific density within 0.0005 gr/ml of the specific density of said fetal cells;

centrifuging said tube at a gravitational force sufficient to pellet cells having specific densities greater than the specific density of the density gradient material in said tube; and

collecting from the upper portion of said tube an enriched population of fetal cells.

5,646,005

USE OF AN IL-6 ASSAY FOR PREDICTING THE DEVELOPMENT OF POST-TRAUMA COMPLICATIONS

Kenneth A. Kudsk, 956 Court Ave., Memphis, Tenn. 38163

Filed Apr. 28, 1994, Ser. No. 234,154

Int. Cl.[6] G01N *33/543*

U.S. Cl. 435—7.32 **16 Claims**

1. A method for determining the predisposition of an individual subjected to a blunt trauma to a complication of said trauma prior to the onset of overt clinical symptoms of such complication, which comprises determining the concentration of the cytokine, Interleukin-6 present in a biological fluid of said individual about one day post-trauma, wherein said method comprises the steps:

(A) determining the concentration of Interleukin-6 in the biological fluid of said individual subjected to said trauma; and

(B) correlating said determined serum concentration with the mechanism of injury (MI) of said trauma, the Injury Severity Score (ISS) of the severity of said trauma, or the Abdominal Trauma Index (ATI) of said trauma to thereby determine said individual's predisposition to complication of said trauma prior to the onset of overt clinical symptoms thereof.

5,646,006

Patent Not Issued For This Number

5,646,007

METHOD FOR DETERMINATION OF ANTITHROMBIN III ACTIVITY AND REAGENT KIT THEREFOR

Masayasu Enomoto, Takatsuki, and Haruhiko Nishimura, Osaka, both of Japan, assignors to Nippon Shoji Kaisha Ltd., Osaka, Japan

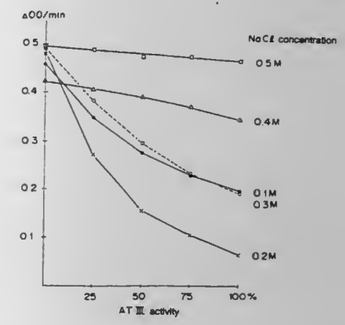
PCT No. PCT/JP94/01024, § 371 Date Feb. 17, 1995, § 102(e) Date Feb. 17, 1995, PCT Pub. No. WO95/00663, PCT Pub. Date Jan. 5, 1995

PCT Filed Jun. 27, 1994, Ser. No. 381,882

Claims priority, application Japan, Jun. 28, 1993, 5-157001

Int. Cl.[6] C12Q *1/56;1/00;* **G01N** *33/53;33/48*

U.S. Cl. 435—13 **14 Claims**



1. A method for the determination of antithrombin III activity which comprises

adding an excess amount of thrombin to a sample,

reacting antithrombin III in the sample with the thrombin in the presence of heparin and a salt to form a reaction mixture, and then measuring a remaining throbin activity in the reaction mixture with a chromogenic substrate which develops a color by the reaction with thrombin, thereby indirectly determining the antithrombin III activity of the sample,

the concentration of said salt in the reaction mixture being more than 0.20M to not more than 0.90M.

5,646,008

VERTEBRATE APOPTOSIS GENE: COMPOSITIONS AND METHODS

Craig B. Thompson; Lawrence H. Boise, both of Chicago, Ill., and Gabriel Nuñez, Ann Arbor, Mich., assignors to The Regent of the University of Michigan, Ann Arbor, Mich.

Filed Jun. 22, 1993, Ser. No. 81,448

Int. Cl.[6] C12N *5/10;5/12*

U.S. Cl. 435—69.1 **12 Claims**

```
bcl-x_L                                                          KSQS
bcl-x_S                                                          KSQS

bcl-x_L NRELVVDFLS YKLSQKGYSW SQFSDVEENR TRAPEGTESE METPSAINGN
bcl-x_S NRELVVDFLS YKLSQKGYSW SQFSDVEENR TRAPEGTESE METPSAINGN

bcl-x_L FSWHLADSPA VNGATAHSSS LDAREVIPMA AVKQALREA  GDEFELRYRR
bcl-x_S FSWHLADSPA VNGATAHSSS LDAREVIPMA AVKQALREA  GDEFELRYRR

bcl-x_L AFSDLTSQLH ITPGTAYQSF EQVVNELFRD GVNWGRIVAF FSFGGALCVE
bcl-x_S AFSDLTSQLH ITPGTAYQSF EQ..... ..... ..... .....
bcl-x_1                        VVNELFRD GVNWGRIVAF FSFGGALCVE

bcl-x_L SVDKEMQVLV SRIAAWMATY LNDHLEPWIQ ENGGWDTFVE LYGNNAAAES
bcl-x_S ..... ..... ..... ..... .....DTFVE LYGNNAAAES
bcl-x_1 SVDKEMQVLV SRIAAWMATY LNDHLEPWIQ ENGGW

bcl-x_L RKGQERFNRW FLTGMTVAGV VLLGSLFSRK
bcl-x_S RKGQERFNRW FLTGMTVAGV VLLGSLFSRK
        •————————————————————————————••
```

1. An isolated and purified polynucleotide that encodes BCL-X_L.

5,646,009

HYBRID VECTOR AND METHOD RESULTING IN PROTEIN OVERPRODUCTION BY EUKARYOTIC CELLS

Robert E. Rhoads, and Arrico De Benedetti, both of Shreveport, La., assignors to The University of Kentucky Research Foundation, Lexington, Ky.

Continuation-in-part of Ser. No. 956,937, Oct. 5, 1992, abandoned, which is a continuation of Ser. No. 580,040, Sep. 10, 1990, abandoned. This application Jan. 19, 1994, Ser. No. 184,632

Int. Cl.[6] C12P *21/06;* **C12N** *5/00;15/63*

U.S. Cl. 435—69.1 **15 Claims**

7. A method of increasing the expression of a polypeptide or protein in a eukaryotic host cell, comprising

transforming a eukaryotic host cell which expresses said polypeptide or protein with a replicating hybrid vector comprising a DNA segment encoding a gap-binding protein which binds to the cap structure of translationally repressed mRNA and mediates ribosome-binding, said cap-binding protein consisting of eIF-4E factor or a mutant thereof which maintains eIF-4E cap binding function; and

culturing the transformed cell in an expression medium whereby said cap-binding protein and said polypeptide or protein are expressed at a level higher than that without the hybrid vector.

5,646,010

METHODS AND COMPOSITIONS FOR EXPRESSION OF COMPETENT EUKARYOTIC GENE PRODUCTS

Peter Bromley, Chene-Bougeries, Switzerland, and Richard Voellmy, Miami, Fla., assignors to Rockwell Property Limited, Isle of Man, United Kingdom

Continuation of Ser. No. 8,090, Jan. 22, 1993, abandoned, which is a continuation of Ser. No. 794,641, Nov. 18, 1991, abandoned, which is a continuation of Ser. No. 423,564, Oct. 16, 1989, abandoned, which is a continuation of Ser. No. 848,657, Apr. 4, 1986, abandoned, which is a continuation-in-part of Ser. No. 626,588, Jul. 3, 1984, abandoned, which is a continuation of Ser. No. 568,176, Jan. 5, 1984, abandoned, which is a continuation-in-part of Ser. No. 504,593, Jun. 17, 1983, abandoned, which is a continuation-in-part of Ser. No. 464,232, Feb. 7, 1983, abandoned. This application Feb. 17, 1994, Ser. No. 197,565

Int. Cl.[6] C12P *21/02;* **C12N** *15/85;5/16*

U.S. Cl. 435—69.1 **14 Claims**

1. A method for producing competent gene translation products, said method comprising the steps of:

a) providing a DNA construct in which a foreign structural gene encoding for a protein of interest is operably linked to the promoter of an eukaryotic heat-shock gene,

b) introducing said DNA construct in host cells either by transformation or by transfection to form transformed or transfected host cells,

c) subjecting said transformed or transfected host cells to a transient shift up in temperature and permitting translation to occur after the temperature has been returned to the normal growth temperature of said host cells, whereby the production of said protein of interest occurs,

d) recovering said protein of interest.

5,646,011

CISPLATIN RESISTANCE GENE AND USES THEREFOR

Shiro Yokoyama, 1-17-7, Miwamidoriyama, Machida-City, Tokyo 195, Japan

Filed Apr. 8, 1994, Ser. No. 224,983

Int. Cl.[6] C12P *21/02;* **C12N** *15/53;1/00;5/10;15/63*

U.S. Cl. 435—69.1 **15 Claims**

9. A method for conferring cisplatin or heavy metal resistance on a cell comprising introducing into the cell a nucleic acid encoding the human ND1 subunit of the human NADH-ubiquinone oxidoreductase complex, or a portion thereof, the nucleic acid being in a form suitable for expression of the human ND1 subunit, or portion thereof, in the cell such that cisplatin or heavy metal resistance is conferred on the cell.

5,646,012

YEAST PROMOTER AND USE THEREOF

Reinhard Fleer, Bures Sur Yvette; Alain Fournier, Chatenay Malabry; Jean-Francois Mayaux, Fontenay aux Roses, and Patrice Yeh, Paris, all of France, assignors to Rhone-Poulenc Rorer S.A., Antony, France

Continuation of Ser. No. 140,093, Nov. 1, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 483,639

Claims priority, application France, Apr. 30, 1991, 91 05294

Int. Cl.[6] C12P *21/02;* **C12N** *1/19;15/81;* **C07K** *19/765*

U.S. Cl. 435—69.1 **23 Claims**

1. An isolated and purified DNA sequence selected from the group consisting of:

(a) the sequence presented in FIG. 1 (SEQ ID NO: 1);

(b) a derivative of the sequence of (a); and

(c) a fragment of the sequence of (a);

wherein said DNA sequence possesses transcriptional promoter activity.

5,646,013

METHOD OF PRODUCING FOREIGN GENE PRODUCTS

Toshiya Takano, Saitama, and Minoru S.H. Ko, Chiba, both of Japan, assignors to Daiichi Seiyaku Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 139,877, Oct. 22, 1993, abandoned, which is a continuation of Ser. No. 841,269, Feb. 26, 1992, abandoned, which is a continuation of Ser. No. 269,044, Nov. 9, 1988, abandoned. This application Jun. 28, 1995, Ser. No. 495,838

Claims priority, application Japan, Nov. 9, 1987, 62-282893

Int. Cl.[6] C12N *15/00;5/00;1/38;* **C12P** *21/06*

U.S. Cl. 435—69.1 **5 Claims**

1. A method of producing gene products in mammalian cells comprising:

(1) transfecting mammalian cells with both:

(a) a first expression plasmid, comprising a mouse mammary tumor virus (MMTV) long terminal repeat (LTR) operably linked to a glucocorticoid receptor protein gene (GRP), wherein on transfection said cells produce glucocorticoid receptor protein as a result of expression of said first expression plasmid; and

(b) a second expression plasmid, comprising an MMTV LTR operably linked to a gene encoding a physiologically active substance, wherein on transfection said cell produces said physiologically active substance as a result of expression of said second expression plasmid;

wherein on exposing the resulting transfected cells to a glucocorticoid, transfected mammalian cells that exhibit greater expression of said physiologically active substance in the presence of said glucocorticoid than in the absence thereof are selected;

(2) propagating the thus-obtained transfected cells in the presence of said glucocorticoid to induce expression of said physiologically active substance; and

(3) obtaining said physiologically active substance.

5,646,014

PEPTIDE, ANTIBACTERIAL AGENT, PEPTIDE GENE, RECOMBINANT DNA AND METHOD FOR PREPARING THE PEPTIDE

Seiichi Hara, Noda, Japan, assignor to Agriculture, Forestry and Fisheries Technical Information Society, Japan

Filed Aug. 29, 1995, Ser. No. 520,599

Claims priority, application Japan, Aug. 31, 1994, 6-207342; May 24, 1995, 7-125440

Int. Cl.[6] C12P *21/06;* **C07K** *14/00;* **C07H** *21/00*

U.S. Cl. 435—69.1 **14 Claims**

1. A peptide represented by (a) the amino acid sequence described in SEQ ID NO: 1 or (b) an amino acid sequence homologous to (a) which contains one or more additions, deletions or replacements of one or more amino acid residues within SEQ ID NO: 1 and exhibits an antibacterial activity.

5,646,015

EXCRETION OF HETEROLOGOUS PROTEINS FROM *E. COLI*

W. K. Raymond Wong, Mississauga, Canada, and Margaret L. Sutherland, Cambridge, United Kingdom, assignors to Astra AB, Sodertalje, Sweden

Continuation of Ser. No. 28,144, Mar. 9, 1993, abandoned, which is a division of Ser. No. 395,797, Aug. 18, 1989, Pat. No. 5,223,407, which is a continuation-in-part of Ser. No. 239,145, Aug. 31, 1988, abandoned. This application May 11, 1995, Ser. No. 439,132

Int. Cl.[6] C12N *15/16;15/70*

U.S. Cl. 435—69.4 **20 Claims**

1. A method for the production of a parathyroid hormone, comprising the steps of

(a) obtaining a healthy *E. coli* bacterium with an excretion vector comprising

(i) a coding region comprised of a first DNA that encodes the ompA signal peptide and a second DNA that encodes said parathyroid hormone, wherein said first DNA is linked in-frame to said second DNA;

(ii) a control region comprised of a third DNA, said control region operably-linked to said coding region to enable expression of said parathyroid hormone, wherein said third DNA comprises the tac promoter, the lac operator, and a ribosome binding site, and

(iii) a selection region comprised of a fourth DNA that encodes a second protein which, upon expression, imparts a selectable phenotype to said bacterium;

(b) culturing said transformed *E. coli* bacterium in a suitable medium; and

(c) recovering said parathyroid hormone from said medium without lysing said bacterium.

5,646,016

PEPTIDE AND PROTEIN FUSIONS TO THIOREDOXIN, THIOREDOXIN-LIKE MOLECULES, AND MODIFIED THIOREDOXIN-LIKE MOLECULES

John McCoy, Reading; Elizabeth DiBlasio-Smith, Tyngsboro; Kathleen Grant, Salem, and Edward R. LaVallie, Tewksbury, all of Mass., assignors to Genetics Institute, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 921,848, Jul. 28, 1992, Pat. No. 5,292,646, which is a continuation-in-part of Ser. No. 745,382, Aug. 14, 1991, Pat. No. 5,270,181, which is a continuation-in-part of Ser. No. 652,531, Feb. 6, 1991, abandoned. This application Dec. 10, 1993, Ser. No. 165,301

Int. Cl.[6] C12N *15/62;1/00;15/63;* **C07K** *1/22;14/00*

U.S. Cl. 435—69.7 **41 Claims**

1. An isolated DNA encoding a fusion protein comprising a first DNA sequence encoding a first protein and a second DNA fused in frame and encoding a second protein,

said first DNA comprising a DNA sequence encoding

(a) two or more metal chelating histidine residues, wherein said residues are:

(i) separated by a sequence of 10 or more amino acid residues, and

(ii) responsible for chelation of said protein to a metal; and

(b) a thioredoxin protein.

5,646,017

METHODS OF GENERATING DESIRED AMINO-TERMINAL RESIDUES IN PROTEINS

Andreas Bachmair, Cologne, Germany; Daniel Finley, Cambridge, and Alexander Varshavsky, Boston, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 239,800, May 9, 1994, Pat. No. 5,496,721, which is a continuation of Ser. No. 988,807, Dec. 10, 1992, abandoned, which is a continuation of Ser. No. 821,720, Jan. 15, 1992, Pat. No. 5,196,321, which is a continuation of Ser. No. 356,378, May 24, 1989, Pat. No. 5,093,242, which is a continuation-in-part of Ser. No. 178,924, Apr. 7, 1988, Pat. No. 5,132,213, which is a continuation-in-part of Ser. No. 103,910, Oct. 1, 1987, abandoned, which is a continuation-in-part of Ser. No. 915,151, Oct. 2, 1986, abandoned. This application Jun. 7, 1995, Ser. No. 473,180

Int. Cl.[6] C12N *15/62;15/63;* **C07K** *14/435;* **C12P** *21/04*

U.S. Cl. 435—69.7 **1 Claim**

1. A non-naturally occuring fusion protein produced by recombinant DNA techniques, the fusion protein being encoded by a gene construct, the gene construct comprising a DNA sequence encoding ubiquitin joined to a DNA sequence encoding a protein or polypeptide of interest having a predetermined amino acid residue at its amino terminus, the ubiquitin being proteolytically cleavable by a ubiquitin-specific endoprotease at the junction with the amino-terminus of the protein or polypeptide of interest such

that cleavage results in the exposure of the predetermined amino-terminal residue of the protein or polypeptide of interest, the amino-terminal residue being selected from the group consisting of valine, methionine, glycine and proline.

5,646,018

BROAD HOST SPECTRUM RHIZOBIACEAE NODULATION SIGNALS

William John Broughton, Geneva, Switzerland; Jean Louis Claude Denarie, Castanet-Tolosan; Fabienne Chantal Marie Maillet, Pompertuzat, both of France; Neil Philip John Price, Athens, Ga.; Danielle Jean Claudine Prome; Jean-Claude Adrien Paul Prome, both of Pechbusque, France; Biserka Relic, Geneva, Switzerland, and Franck Jean Bernard Talmont, Toulouse, France, assignors to Institut National de la Recherche Agronomique - I.N.R.A., and Centre National de la Recherche Scientifique - C.N.R.S., both of Paris Cedex, France

PCT No. PCT/FR93/00653, § 371 Date Feb. 1, 1995, § 102(e) Date Feb. 1, 1995, PCT Pub. No. WO94/00466, PCT Pub. Date Jan. 6, 1994

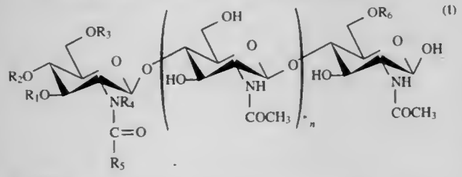
PCT Filed Jun. 29, 1993, Ser. No. 356,319

Claims priority, application France, Jun. 29, 1992, 92 07958

Int. Cl.[6] **C07H** *3/06;* **C12P** *19/26;* **A01N** *43/16;* **A61K** *31/715*

U.S. Cl. 435—84 **17 Claims**

1. A NodNGR-type factor of the following formula (I):



(I)

in which:

R_1, R_2 and R_3 represent a hydrogen atom, a carbamoyl group or an acetyl group;

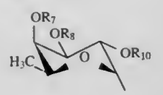
R_5 represents the aliphatic chain of a fatty acid;

n is between 1 and 4, and wherein:

one or more of the substituents R_1, R_2 or R_3 is a carbamoyl group, and/or

R_4 represents a methyl group, and/or

R_6 has the general formula (II)



(II)

in which:

R_7 and R_8 represent a hydrogen atom, an acetyl group or a sulfate group,

R_{10} represents a hydrogen atom or a methyl group.

5,646,019

METHOD FOR PRODUCING PRIMED NUCLEIC ACID TEMPLATES

Kirk B. Nielson, San Diego, and Eric J. Mathur, Solana Beach, both of Calif., assignors to Stratagene, La Jolla, Calif.

Continuation of Ser. No. 425,867, Oct. 24, 1989, abandoned. This application Apr. 7, 1994, Ser. No. 224,981

Int. Cl.[6] **C12P** *19/34*

U.S. Cl. 435—91.5 **16 Claims**

1. A method of preparing a primed template, whereby nonspecific primer hybridization is reduced which method comprises:

(a) forming a nucleic acid hybridization reaction admixture by admixing hybridization-effective amounts of (i) a primer nucleic acid which specifically hybridizes to a template nucleic acid to form a substrate for polynucleotide synthesis, (ii) said template nucleic acid, (iii) an isolated single-stranded nucleic acid binding protein, and (iv) a divalent cation; and

(b) maintaining said nucleic acid hybridization reaction admixture under hybridizing conditions for a time period sufficient for said primer nucleic acid to specifically bind said template nucleic acid, thereby forming said primed template.

5,646,020

HAMMERHEAD RIBOZYMES FOR PREFERRED TARGETS

James A. Swiggen, Solon, and J. Anthony Mamone, Parma, both of Ohio, assignors to Ribozyme Pharmaceuticals, Inc., Cleveland, Ohio

Continuation of Ser. No. 884,074, May 19, 1992, abandoned. This application Dec. 10, 1993, Ser. No. 166,664

Int. Cl.[6] **C12P** *19/34*

U.S. Cl. 435—91.31 **43 Claims**

I. A method for synthesizing a hammerhead ribozyme, comprising the steps of:

selecting a site in a substrate comprising a 5' -XXUH/YY-3' nucleotide sequence, wherein XX is selected from the group consisting of 5'-GA-3', 5'-UC-3', 5'-GU-3', 5'-AC-3', 5'-GC-3', 5'-GG-3', and 5'-CC-3'; and wherein YY is selected from the group consisting of 5'-GA-3', 5'-GU-3', 5'-AC-3', 5'-CG-3', 5'-GC-3', 5'-GG-3', and 5' -CC-3'; H is selected from the group consisting of U, A and C, and the / represents the cleavage site; and

synthesizing a hammerhead ribozyme to said site in said substrate, wherein: (a) said hammerhead ribozyme comprises a substrate binding portion comprising two variable portions; (b) said ribozyme comprises an interior loop when said ribozyme is hybridized with said substrate by base pairing of the substrate with said substrate binding portion; (c) said variable portions are adjacent said interior loop with one portion on either side of said loop; and (d) said variable portions comprise bases complementary to said XX and YY in said site.

5,646,021

FINDERONS AND METHODS OF THEIR PREPARATION AND USE

John Goodchild, Westborough, and Thomas E. Leonard, Marlboro, both of Mass., assignors to Hybridon, Inc., Cambridge, Mass.

Division of Ser. No. 315,287, Sep. 29, 1994. This application Jun. 7, 1995, Ser. No. 477,883

Int. Cl.[6] **C12P** *19/34;* **C12Q** *1/68;* **C07H** *21/02;21/04*

U.S. Cl. 435—91.31 **12 Claims**

1. A method of preparing a finderon having the ability to endonucleolytically cleave a target sequence of 3' to 5' linked ribonucleotides, the method comprising the steps of:

(a) forming a first flanking region by covalently linking from four to fifteen nucleotides each having 3' and 5' termini, the 3' terminus of one nucleotide being linked to the 5' end of another nucleotide,

at least a portion of the first flanking region being complementary to a first target region located at a 3' position of a cleavage site on a substrate RNA molecule;

(b) covalently linking one or more non-nucleotidic units to the 5' terminus of the first flanking region, thereby forming a rigid molecular linker linked to the first flanking region,

the linker being capable of maintaining the cleavage site in a trigonal bipyramidal transition state conformation, and

the non-nucleotidic unit being selected from the group consisting of a cyclohexane diol, a steroid, a lupene diol, an isosorbide, and combinations thereof;

(c) covalently linking the 3' terminus of a nucleotide having 3' and 5' termini to the linker; and

(d) covalently linking from three to fifteen nucleotides, one at a time, to the nucleotide bound to the linker in step (c), the 3' terminus of one nucleotide being linked to the 5' end of another nucleotide, thereby forming a second flanking region linked to the linker,

at least a portion of the second flanking region being complementary to a second target region located at a 5' position of the cleavage site,

wherein the covalent linkage formed between the non-nucleotidic unit and the nucleotide, and the nucleotides in the first and second flanking regions is selected from the group consisting of a phosphodiester, an alkylphosphonate, a phosphorothioate, a phosphorodithioate, an alkylphosphonothioate, a phosphoramidate, a phosphate ester, a carbamate, a carbonate, an acetamidate, a carboxymethyl ester, and combinations thereof, and

wherein a linear distance of about 15 to 30 Angstroms is established between the first and second flanking regions.

5,646,022

PROCESS FOR THE PRODUCTION OF GAMMA NONALACTONES IN NATURAL FORM

Mario Villa, via dei Fiori 18, 13058 Ponderano; Claudio Fuganti, via G.B. Nazari 8, 20129 Milano; Gioia Zucchi, via Bezzecca 7, 22030 Oliveto Lario; Gianna Allegrone, via Tofane 44, 10141 Torino; Masimo Barbeni, corso Monte Cucco 130/D, 10141 Torino, and Paolo Cabella, corso Sommeiller 17, 10128 Torino, all of Italy

Filed Jul. 28, 1995, Ser. No. 508,661

Claims priority, application Italy, Jul. 28, 1994, TO94A0628

Int. Cl.[6] **C12P** *17/08*

U.S. Cl. 435—124 **12 Claims**

1. Process for the production of gamma lactones with 9 carbon atoms, saturated or unsaturated or a combination thereof, characterized in that it involves culturing a microorganism selected from the group comprising *Pichia ohmeri* and *Pichia stipitis*, or both of these, in a substrate comprising an unsaturated C_{18} hydroxy-acid, wherein the hydroxyl is at C_{13}, or a glyceride containing such an hydroxy-acid to yield a mixture comprising gamma lactones with 9 carbon atoms, saturated or unsaturated or a combination thereof, and recovering said mixture comprising said gamma lactones from the culture.

5,646,023

MODULATION OF SUGAR CONTENT IN PLANTS

Gary A. Secor; Alexander Y. Borovkov; Phillip E. McClean, all of Fargo, and Joseph R. Sowokinos, Grand Forks, all of N. Dak., assignors to J.R. Simplot Company, Boise, Id., and North Dakota State University of Agriculture and Applied Sciences, Bismarck, N. Dak.

Continuation of Ser. No. 48,027, Apr. 15, 1993, abandoned. This application Oct. 19, 1995, Ser. No. 545,228

Int. Cl.[6] **C07H** *21/04;* **C12N** *15/29;15/82;* **A01H** *5/00*

U.S. Cl. 435—172.3 **14 Claims**

1. A method of inhibiting accumulation of hexose sugars in a potato plant, the method comprising introducing into the potato plant an expression cassette comprising a promoter sequence operably linked to a polynucleotide sequence from a potato gene encoding UDP-glucose pyrophosphorylase in an antisense orientation such that transcription of the polynucleotide sequence inhibits expression of an endogenous UDP-glucose pyrophosphorylase gene and accumulation of hexose sugars is inhibited.

5,646,024

GENETICALLY ENGINEERED PLANT CELLS AND PLANTS EXHIBITING RESISTANCE TO GLUTAMINE SYNTHETASE INHIBITORS, DNA FRAGMENTS AND RECOMBINANTS FOR USE IN THE PRODUCTION OF SAID CELLS AND PLANTS

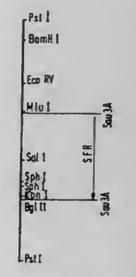
Jan Leemans, Heusden; Johan Botterman, Zwijnaarde; Marc De Block, Gentbrugge, all of Belgium; Charles Thompson, Grand Lancy/Genege, and Rao Mouva, Geneva, both of Switzerland, assignors to Plant Genetic Systems, N.V., Ghent, Belgium

Division of Ser. No. 525,300, May 17, 1990, Pat. No. 5,561,236, which is a continuation of Ser. No. 131,140, Nov. 5, 1987, abandoned. This application Jun. 5, 1995, Ser. No. 463,241

Claims priority, application United Kingdom, Mar. 11, 1986, 86400521; Jan. 21, 1987, 87400141

Int. Cl.[6] **C12N** *15/00;* **A01H** *4/00*

U.S. Cl. 435—172.3 **43 Claims**



1. A process for the production of a plant cell that is tolerant or resistant to the herbicidal activity of a glutamine synthetase inhibitor including phosphinothricin or a compound with a phosphinothricin moiety, which comprises the step of incorporating into the nuclear genome of a starting plant cell a recombinant DNA comprising:

a) a promoter recognized by the polymerases of said starting plant cell, and

b) a coding region comprising a DNA fragment from a microorganism which produces said glutamine synthetase inhibitor, wherein said DNA fragment encodes a protein with acetyltransferase activity to said glutamine synthetase inhibitor.

5,646,025

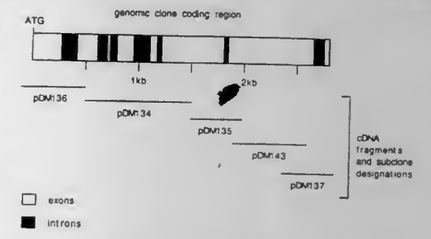
SCYTALIDIUM CATALASE GENE

Donna Moyer, Davis, Calif., assignor to Novo Nordisk A/S, Bagsvaerd, Denmark

Filed May 5, 1995, Ser. No. 435,925

Int. Cl.[6] **C12N** *9/08;15/53;15/63;15/80*

U.S. Cl. 435—192 **21 Claims**



1. A nucleic acid construct comprising a nucleic acid sequence encoding a catalase endogenous to the genus Scytalidium wherein the nucleic acid coding sequence is selected from the group consisting of:

(a) a naturally-occurring catalase gene isolated from a Scytalidium strain, wherein the naturally-occurring catalase gene hybridizes with at least one coding exon of SEQ ID NO:1 at a stringency defined by 65° C., five-fold SSC, 0.1% lauroylsarcosine, 0.02% SDS and 1% blocking reagent; and,

(b) a nucleic acid sequence encoding the amino acid sequence of an endogenous Scytalidium catalase.

5,646,026

RIBOSOME-INACTIVATING PROTEINS, INACTIVE PRECURSOR FORMS THEREOF, A PROCESS FOR MAKING AND A METHOD OF USING

Terence A. Walsh; Timothy D. Hey, both of Zionsville, Ind., and Alice E. R. Morgan, Midland, Mich., assignors to Dow-Elanco, Indianapolis, Ind.

Division of Ser. No. 378,761, Jan. 26, 1995, which is a continuation of Ser. No. 987,927, Dec. 9, 1992, abandoned, which is a continuation-in-part of Ser. No. 535,636, Jun. 11, 1990, Pat. No. 5,248,606. This application Jun. 7, 1995, Ser. No. 485,286

Int. Cl.[6] **C12N** *9/22;* **C12P** *21/06*

U.S. Cl. 435—199 **9 Claims**

1. An isolated DNA encoding a protein, said protein having an amino acid sequence of SEQ ID NO:2 termed a pro-Ribosome Inactivating Protein (proRIP), wherein the proRiP has a selectively removable, internal peptide linker sequence that has from about 9 to 25 amino acids which is at least 70% homologous to residues 162 through 186 of SEQ ID NO:2 and is incapable of substantially inactivating eukaryotic ribosomes, but which can be converted by removal of the linker into a protein having α and β fragments and being capable of substantially inactivating eukaryohic ribosomes, wherein the α fragment has the amino acid sequence of residues 17 to 161 of SEQ ID NO:2 and the β fragment has the amino acid sequence of residues 187 to 287 of SEQ ID NO;2.

5,646,027

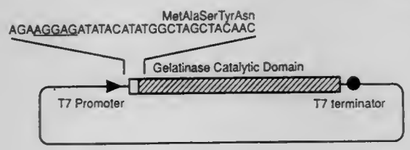
PROCESS FOR THE PRODUCTION OF GELATINASE CATALYTIC DOMAIN PROTEIN

Qi-Zhuang Ye; Linda Lea Johnson, and Donald John Hupe, all of Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Sep. 8, 1994, Ser. No. 303,270

Int. Cl.[6] **C12N** *15/57;15/63;* **C12P** *21/00*

U.S. Cl. 435—219 **6 Claims**



pGEMEX - GCD

1. A process for the production of the catalytic domain, without propeptide, C-terminal domain, and fibronectin-like insert, of human 72 kDa gelatinase having SEQ ID NO: 1 comprising culturing an *E. coli* host cell transformed with a replicable expression vector which expresses recombinant human 72 kDa gelatinase catalytic domain protein.

5,646,028

ALKALINE SERINE PROTEASE *STREPTOMYCES GRISEUS* VAR. *ALKALIPHUS* HAVING ENHANCED STABILITY AGAINST UREA OR GUANIDINE

Scott D. Leigh, Castro Valley, Calif., assignor to The Clorox Company, Oakland, Calif.

Continuation of Ser. No. 292,924, Aug. 18, 1994, abandoned, which is a continuation of Ser. No. 973,343, Nov. 6, 1992, abandoned, which is a continuation of Ser. No. 718,303, Jun. 18, 1991, abandoned. This application Oct. 17, 1995, Ser. No. 544,143

Int. Cl.[6] **C12N** *9/52;9/50;* **C11D** *7/42*

U.S. Cl. 435—220 **11 Claims**

1. A serine protease in substantially pure form derived from *Streptomyces griseus* var. *alkaliphilus* No. 33, said serine protease having enhanced stability against urea or guanidine and having an apparent molecular weight of about 19,000 daltons as determined by reducing SDS-polyaerylamide gel electrophoresis analysis.

5,646,029

PLANT ARABINOGALACTAN PROTEIN (AGP) GENES

Chao-Guang Chen, Brunswick; Shaio-Lim Mau, Waverley; He Du, North Melbourne; Alison M. Gane, North Carlton; Antony Bacic, Eltham, and Adrienne E. Clarke, Parkville, all of Australia, assignors to Cooperative Research Centre for Industrial Plant Biopolymers, Parkville, Australia

Continuation-in-part of Ser. No. 161,944, Dec. 3, 1993, abandoned. This application Jul. 18, 1994, Ser. No. 276,452

Int. Cl.[6] **C12N** *1/21;5/00;5/14;5/06*

U.S. Cl. 435—325 **56 Claims**

1. A cloned DNA fragment encoding a protein backbone of a plant arabinogalactan protein (AGP), characterized by a high content of hydroxyproline, alanine, serine and threonine such that the sum of the hydroxyproline, alanine, serine and threonine constitutes at least about 35% of the amino acyl residues, wherein said cloned DNA fragment hybridizes at high stringency to a nucleotide sequence selected from the group consisting of SEQ ID NO:11, SEQ ID NO:21, SEQ ID NO:24, SEQ ID NO:25, SEQ ID NO:62, SEQ ID NO:63, SEQ ID NO:69 and SEQ ID NO:72.

5,646,030

METHOD FOR ISOLATING MUTANT CELLS

Bryan L. Ray, Burlington; Edmund C. C. Lin, Boston, both of Mass., and Roberto Crea, San Mateo, Calif., assignors to President and Fellows of Harvard College, Cambridge, Mass.

Continuation-in-part of Ser. No. 991,115, Dec. 16, 1992, Pat. No. 5,348,872, which is a continuation-in-part of Ser. No. 856,876, Mar. 24, 1992, abandoned, which is a continuation of Ser. No. 541,895, Jun. 21, 1990, abandoned. This application Aug. 23, 1994, Ser. No. 294,386

Int. Cl.[6] **C12N** *5/00;* **C12P** *21/06*

U.S. Cl. 435—172.3 **22 Claims**

1. A method for isolating a mutant cell that produces a desired compound, comprising:

(a) providing a starter cell selected from the group consisting of protista, monera, fungi, plant, animal and human cells which:

(i) is an auxotroph that has a requirement for a first molecule for its growth in a solid growth medium, and mutates spontaneously to lack the requirement at a frequency of less than 10^{-10} per cell division,

the first molecule being selected from the group consisting of sugars, amino acids, growth factors, enzymes, cofactors, cytokines, lymphokines, trophic factors, fatty acids, lipids, interleukins, vitamins, and carbohydrates, the first molecule being other than the desired compound;

(ii) is resistant to lambdoid bacteriophage infection;

(iii) excretes a second molecule selected from the group consisting of a vitamin, amino acid, nucleic acid, cofactor, and sugar into the solid growth medium; and

(iv) grows on a solid medium that supports the growth of bacteria;

(b) modifying the cellular DNA of the starter cell so as to increase the probability that the starter cell will excrete the desired compound;

(c) providing an *Escherichia coli* cell which:

(i) is an auxotroph that requires said second molecule and a polypeptide nutrient for growth on the solid growth medium,

said second molecule being other than said first molecule or said nutrient, and said nutrient being other than said first molecule;

(ii) is susceptible to lambdoid bacteriophage infection; and

(iii) excretes the first molecule into the solid growth medium;

(d) culturing a plurality of modified starter cells and *E. coli* cells together in the solid growth medium in the presence of a reversibly noninfective modified lambdoid bacteriophage having a head and a tail which:

(i) has reduced or no capacity for lytic infection;

(ii) carries a gene encoding said polypeptide nutrient; and

(iii) further comprises a gpV protein having the amino acid sequence set forth in SEQ ID NO: 1 linked to an antibody or matrix through a target molecule, wherein the connection between the gpV protein and the target molecule is selected from the group consisting of

truncation of the carboxy-terminal 24 amino acids of said sequence and genetic fusion of the truncated gpV protein to the target molecule, and

substitution of an amino acid residue selected from the group consisting of histidine, cysteine, tryptophan, and tyrosine for amino acid position 246 of said sequence and chemical coupling of the target molecule to the substituted gpV protein, and wherein the linkage of the target molecule to the antibody or matrix has rendered the bacteriophage reversibly noninfective,

the bacteriophage becoming infective if one of the modified starter cells excretes the desired compound,

whereby the infective bacteriophage infects at least one of the *E. coli* cells, thereby enabling the infected *E. coli* cell to produce the nutrient;

(e) detecting a colony formed when the modified starter cell which excretes the desired compound excretes the first molecule and the infected *E. coli* cell excretes the second molecule, thereby enabling the *E. coli* and starter cells to grow; and

(f) isolating the modified starter cell from the *E. coli* cells in the colony.

5,646,031

SARMV AND SCYMVI HAIRPIN RIBOZYMES

Mary Beth DeYoung, Elmhurst; Andrew M. Siwkowski, Sycamore, and Arnold E. Hampel, DeKalb, all of Ill., assignors to Northern Illinois University, DeKalb, Ill.

Filed May 16, 1995, Ser. No. 442,513

Int. Cl.[6] **C07H** *21/04;* **C12Q** *1/68;* **A61K** *48/00;* **C12N** *15/85*

U.S. Cl. 435—325 **6 Claims**

1. A ribozyme modeled from negative strands of satellite RNA from chicory yellow mottle virus (sCYMVI) including a hairpin portion and binding sites for cleaving an RNA substrate at a site which has a GUA sequence following the site of cleavage.

3. A ribozyme modeled from negative strands of satellite RNA from arabis mosaic virus (sArMV) including a hairpin portion and binding sites for cleaving an RNA substrate at a site selected from the group consisting of a GUA sequence following the site of cleavage, a GUG sequence following the site of cleavage, and a GUU sequence following the site of cleavage.

5. A vector comprising a DNA sequence encoding said catalytic RNA according to claims 1 and 3, said DNA being operatively linked to expression control sequences.

6. A host cell transformed with a vector according to claim 5 wherein said cell is capable of expressing said catalytic RNA.

5,646,032

RECOMBINANT FOAMY VIRUS VECTORS FOR MEDICINAL, AND DIAGNOSTIC USES, AND PROCESSES FOR PREPARING RECOMBINANT FOAMY VIRUS VECTORS

Volker ter Meulen, Rimpar, and Axel Rethwilm, Würzburg, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 249,509, May 26, 1994, abandoned. This application Nov. 28, 1994, Ser. No. 345,278

Claims priority, application Germany, Jun. 3, 1993, 43 18 387.5

Int. Cl.[6] **C12N** *5/16;15/86*

U.S. Cl. 435—325 **19 Claims**

1. Infectious or non-infectious DNA of human spumaretrovirus pHSRV-1 or pHSRV-2 comprising an internal deletion, that spans a portion of each of the bel-1, bel-2 and bel-3 genes or an internal deletion that spans a portion of each of the bel-2 and bel-3 genes, but not the bel-1 gene.

5,646,033

AFRICAN GREEN MONKEY KIDNEY CELL LINES USEFUL FOR MAINTAINING VIRUSES AND FOR PREPARATION OF VIRAL VACCINES

Louis Potash; Robert M. Chanock, both of Bethesda; Robert H. Purcell, Boyds, and Albert Z. Kapikian, Rockville, all of Md., assignors to Dyncorp, Reston, Va., and National Institutes of Health, Bethesda, Md.

Filed Nov. 30, 1994, Ser. No. 351,079

Int. Cl.[6] **C12N** *5/06*

U.S. Cl. 435—364 **1 Claim**

1. A composition comprising cells selected from the group consisting of cells deposited as ATCC #CRL 11756 and variants thereof which propagate the same viruses as cells of ATCC #CRL 11756, and a culture medium.

5,646,034

INCREASING RAAV TITER

Michael Mamounas, 871 Stevens Ave., #1306, Solana Beach, Calif. 92075; Flossie Wong-Staal, 12737 Monterey Cypress Way, San Diego, Calif. 92130; Mark Leavitt, 8460 Via Sonoma, #47, La Jolla, Calif. 92037, and Mang Yu, 1525 First St., Apt. T-207, Coronado, Calif. 92118

Filed Jun. 7, 1995, Ser. No. 487,080

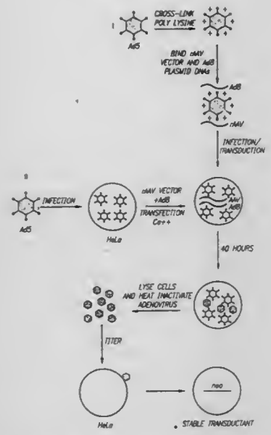
Int. Cl.[6] **C12N** *5/22;15/86*

U.S. Cl. 435—325 **30 Claims**

1. A method for producing high titers of recombinant adeno-associated virus (AAV) vector comprising the steps of:

(i) binding a recombinant encapsidatable rAAV nucleic acid and a recombinant AAV helper nucleic acid, wherein the AAV helper nucleic acid comprises sequences necessary for rAAV replication and encapsidation, to an AAV helper virus, thereby producing a bound AAV helper virus;

(ii) contacting a cell with the bound AAV helper virus; and



(iii) culturing the cell under conditions which permit replication and encapsidation of the rAAV nucleic acid, thereby producing an rAAV vector.

5,646,035

METHOD FOR PREPARING AN EXPANDED CULTURE AND CLONAL STRAINS OF PANCREATIC, THYROID OR PARATHYROID CELLS

Hayden G. Coon, Gaithersburg, Md.; Francesco Saverio Ambesi-Impiombato, Tricesimo, and Francesco Curcio, Pagnacco, both of Italy, assignors to Human Cell Cultures, Inc., Gaithersburg, Md.

Continuation of Ser. No. 83,772, Jun. 30, 1993, abandoned, which is a continuation-in-part of Ser. No. 44,010, Apr. 8, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 480,149

Int. Cl.[6] C12N *5/06;5/08;5/00*

U.S. Cl. 435—378 **16 Claims**

1. A method for producing an expanded, enriched, non-transformed cell culture of mammalian pancreatic endocrine cells, comprising the steps of:

(a) selecting said pancreatic endocrine cells from pancreatic tissue;

(b) concentrating said selected cells;

(c) resuspending said concentrated cells in a culture medium;

(d) culturing said resuspended cells for a time and under conditions to effect sustained cell division; and

(e) passaging said cultured cells periodically to expand said culture;

wherein said culture medium is Coon's 4506.035 or Coon's 4506.07, and said culture is substantially free of fibroblast, macrophage, and capillary endothelial cells.

5,646,036

NUCLEIC ACIDS ENCODING HEPATOCYTE GROWTH FACTOR RECEPTOR ANTAGONIST ANTIBODIES

Ralph H. Schwall, Pacifica, and Kelly Helen Tabor, Hillsborough, both of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Filed Jun. 2, 1995, Ser. No. 459,388

Int. Cl.[6] C12N *15/13;15/85;1/21;* **C07K** *16/28*

U.S. Cl. 435—252.3 **12 Claims**

1. An isolated nucleic acid encoding a hepatocyte growth factor (HGF) receptor antagonist which is a monovalent antibody that specifically hinds to a HGF receptor.

5,646,037

YEAST VECTORS

Frank Buxton, Muttenz, Switzerland, assignor to Ciba-Geigy Corporation, Tarrytown, N.Y.

Continuation of Ser. No. 80,650, Jun. 21, 1993, abandoned, which is a continuation of Ser. No. 839,642, Feb. 21, 1992, abandoned. This application Nov. 2, 1994, Ser. No. 333,894

Claims priority, application European Pat. Off., Feb. 25, 1991, 91810124

Int. Cl.[6] C12N *1/15;1/21;15/81*

U.S. Cl. 435—252.33 **33 Claims**

1. A manufactured circular yeast two micron-like plasmid comprising two invertedly repeated FRT sites, functional FLP, REP1, REP2 and D open reading frames and an expression cassette which codes for the production of a heterologous protein in a yeast cell, wherein the two regions between invertedly repeated FRT sites of the circular form of said plasmid have a ratio in length of from about 1:1 to about 5:4.

5,646,038

PROCESS FOR BLEACHING SURFACTANT SOLUTIONS

Juergen Gruetzke, Bochum, and Stefan Schmidt, Haltern, both of Germany, assignors to Huels Aktiengesellschaft, Marl, Germany

Filed Sep. 14, 1995, Ser. No. 527,919

Claims priority, application Germany, Sep. 14, 1994, 44 32 621.1

Int. Cl.[6] D06M *16/00*

U.S. Cl. 435—264 **13 Claims**

1. A process for bleaching a concentrated aqueous surfactant solution comprising:

(1) adding a bleaching agent to said solution to bleach the surfactant solution, wherein the bleaching agent comprises hydrogen peroxide in the presence of a stabilizer,

(2) optionally decomposing peroxide by contacting said solution with a transition metal and/or transition metal compound on a catalyst bed, and

(3) decomposing excess unreacted hydrogen peroxide and/or oxidizing secondary products resulting therefrom by addition of a catalytic enzyme to said solution.

5,646,039

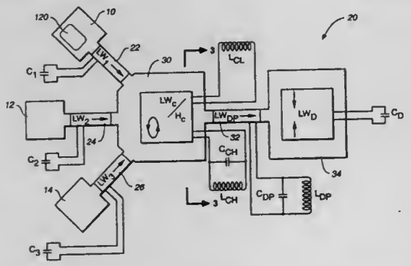
MICROFABRICATED REACTOR

M. Allen Northrup, and Richard M. White, both of Berkeley, Calif., assignors to The Regents of the University of California, Oakland, Calif.

Division of Ser. No. 938,106, Aug. 31, 1992. This application Jun. 6, 1995, Ser. No. 473,275

Int. Cl.[6] C12M *1/02;1/42*

U.S. Cl. 435—287.2 **6 Claims**



1. A microfabricated reactor, comprising:

a substrate defining a chamber in which a measurement of viscosity may occur corresponding to a parameter of a reaction, said chamber having a thin film wall;

an element microfabricated on said thin film wall for manipulation of a property of said reaction;

at least one Lamb-wave transducer located on another wall of said chamber;

such that said at least one Lamb-wave transducer measures the viscosity of contents of said chamber corresponding to said parameter, thereby preventing boundary layer effects from reducing the effectiveness of said viscosity measurement.

5,646,040

MAMMALIAN TUB GENE

Patrick W. Kleyn, Cambridge, and Karen J. Moore, Maynard, both of Mass., assignors to Millennium Pharmaceutical, Inc., Cambridge, Mass.

Filed Apr. 12, 1996, Ser. No. 631,200

Int. Cl.[6] C12N *5/10;15/11;15/12;15/63*

U.S. Cl. 435—325 **31 Claims**

14. An isolated nucleic acid molecule encoding a mammalian tub protein.

5,646,041

MONOCLONAL ANTIBODY TO HERPES SIMPLEX VIRUS AND CELL LINE PRODUCING SAME

Elisabeth Harfeldt, 19 Catalpa Rd., Convent Station, N.J. 07961; Philip Lake, 70 Brooklawn Dr., Parsippany, N.J. 07950; Barbara Nottage, 1-31 Berdan Ave., Fair Lawn, N.J. 07410, and Lars G. Ostberg, 19 Catalpa Rd., Convent Station, N.J. 07961

Continuation-in-part of Ser. No. 759,279, Sep. 13, 1991, abandoned, which is a continuation of Ser. No. 355,595, May 22, 1989, abandoned, which is a continuation-in-part of Ser. No. 13,763, Feb. 12, 1987, abandoned. This application Sep. 13, 1994, Ser. No. 305,683

Int. Cl.[6] C07K *16/00;* **C12N** *5/00;15/00;* **C12P** *21/04*

U.S. Cl. 435—339.1 **14 Claims**

1. A human monoclonal antibody that binds to a gD antigen of Herpes Simplex Virus-1 (HSV-1) and Herpes Simplex Virus-2 (HSV-2) and neutralizes said viruses, said monoclonal antibody designated 64-683.

5,646,042

C-MYB TARGETED RIBOZYMES

Dan T. Stinchcomb; Kenneth Draper; James McSwiggen, and Thale Jarvis, all of Boulder, Colo., assignors to Ribozyme Pharmaceuticals, Inc., Boulder, Colo.

Continuation-in-part of Ser. No. 987,132, Dec. 7, 1992, abandoned, and a continuation-in-part of Ser. No. 192,943, Feb. 7, 1994, which is a continuation of Ser. No. 936,422, Aug. 26, 1992, abandoned, and a continuation of Ser. No. 245,466, May 18, 1994, abandoned. This application Jan. 13, 1995, Ser. No. 373,124

Int. Cl.[6] C12N *5/22;5/16;9/22;* **C12Q** *1/68*

U.S. Cl. 435—366 **220 Claims**

1. An enzymatic RNA molecule which specifically cleaves c-myb RNA.

5,646,043

METHODS FOR THE EX VIVO REPLICATION OF HUMAN STEM CELLS AND/OR EXPANSION OF HUMAN PROGENITOR CELLS

Stephen G. Emerson; Michael F. Clarke, and Bernhard O. Palsson, all of Ann Arbor, Mich., assignors to Regents of the University of Michigan, Ann Arbor, Mich.

Continuation of Ser. No. 164,779, Dec. 10, 1993, Pat. No. 5,437,994, which is a continuation of Ser. No. 737,024, Jul. 29, 1991, abandoned, which is a continuation-in-part of Ser. No. 628,343, Dec. 17, 1990, abandoned, which is a continuation-in-part of Ser. No. 366,639, Jun. 15, 1989, abandoned. This application Mar. 10, 1995, Ser. No. 401,978

Int. Cl.[6] C12N *5/00;5/02*

U.S. Cl. 435—373 **43 Claims**

1. A method for obtaining ex vivo human stem cell division comprising culturing a human hematopoietic stem cell composition in a liquid culture medium which is replaced at a rate of at least 50% daily replacement, while maintaining said culture under physiologically acceptable conditions.

5,646,044

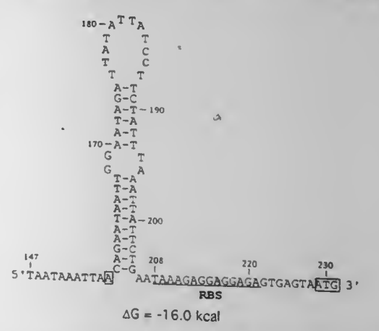
EXPRESSION SYSTEMS FOR THE PRODUCTION OF TARGET PROTEINS IN BACILLUS

Charles R. Wilson, Santa Rosa; Maria R. Tang, Fairfield, both of Calif.; Harald Berger, Grevenbroich, Germany; Teresa M. Christianson, Petaluma, Calif., and Dieter Hansen, Langenfeld, Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

Filed Mar. 2, 1995, Ser. No. 397,602

Int. Cl.[6] C12N *1/21;15/75;* **C07H** *21/04;* **C12P** *21/00*

U.S. Cl. 435—252.31 **38 Claims**



1. A DNA sequence which controls the expression of a target gene, which extends from nucleotide 1 to nucleotide 312 as shown in FIG. **24** (Seq. ID 8) and which includes the ATCC 53926 alkaline protease promoter region, modified stemloop region, ribosomal binding site, initiation codon and the pre region of the 53296 alkaline protease gene, where the stem-loop region has been modified by deleting at least one base between nucleotide 161 and 203 on the ATCC 53926 DNA sequence as shown in FIGS. **2** and **24** (Seq. ID No. 8).

5,646,045

CELLULOSE IN FOOD MATRIX QUANTIFICATION

Jit F. Ang, Chesterfield, Mo., assignor to Protein Technologies International, St. Louis, Mo.

Filed May 17, 1995, Ser. No. 443,008

Int. Cl.[6] G01N *33/04*

U.S. Cl. 436—20 **11 Claims**

1. A method of determining the quantity of particulate cellulose dispersed in a food matrix comprising the steps of applying to the

food matrix a stain having the capacity to visually selectively color cellulose as differentiated from the food matrix, and comparing the degree of resulting coloration of the food matrix against a standard.

5,646,046

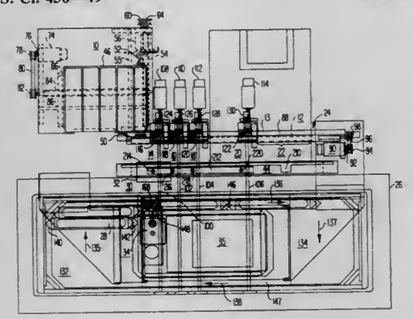
METHOD AND INSTRUMENT FOR AUTOMATICALLY PERFORMING ANALYSIS RELATING TO THROMBOSIS AND HEMOSTASIS

Timothy J. Fischer, Raleigh; Janet B. Callahan, Chapel Hill; Paul Joseph Braun, Durham; Thomas Beecher Givens, Rougemont, all of N.C.; Julie F. Hoffman, Ypsilanti, Mich.; William Chester Hulette, Hillsborough, N.C.; John Glenn Link, Durham, N.C., and Charles Hermas Swope, Raleigh, N.C., assignors to AKZO Nobel N.V., Arnhem, Netherlands

Continuation of Ser. No. 107,381, Aug. 16, 1993, abandoned, which is a continuation-in-part of Ser. No. 833,950, Feb. 11, 1992, Pat. No. 5,236,666, which is a continuation-in-part of Ser. No. 443,951, Dec. 1, 1989, abandoned. This application Feb. 14, 1995, Ser. No. 389,986

Int. Cl.[6] G01N *35/02*

U.S. Cl. 436—49 40 Claims



1. A method for performing qualitative and quantitative coagulation, chromogenic and immunological assays for hemostasis and thrombosis parameters on each of a multiplicity of samples of plasma, serum or whole blood, wherein each sample is selected for assay on a random access basis without a drop in speed of sample through-put, comprising:

a) identifying each of a multiplicity of samples, selecting each sample and scheduling one or more of a plurality of assays selected from each of qualitative and quantitative coagulation, chromogenic and immunological assays for hemostasis and thrombosis parameters, to be performed on each sample;

b) providing a plurality of test wells for said plurality of assays and a specimen handling means for automatically transferring at a sample insertion station an aliquot of each sample from a holding device to a respective test well of said plurality of test wells;

c) automatically selecting and adding reagents needed for said plurality of assays selected from each of qualitative and quantitative coagulation, chromogenic and immunological assays to measure hemostasis or thrombosis parameters of the samples in the test wells, wherein in a predetermined first constant time after the sample is delivered to the test well at the sample insertion station, the test well is disposed at a first reagent delivery probe station where a predetermined volume of reagent is optionally added to the test well depending upon the type of assay being performed on the sample in the test well, the volume and temperature of the reagent being variable depending upon which thrombosis or hemostasis assay is being performed;

and wherein in a predetermined second constant time after the test well passes through the first reagent delivery probe station, the test well is disposed at a second reagent delivery probe station where a predetermined volume of a second reagent is optionally added depending upon the type of assay being performed on the sample in the test well, the volume and temperature of the second reagent being variable depending upon which thrombosis or hemostasis assay is being performed;

and wherein in a predetermined third constant time after the test well passes through the second reagent delivery probe station, the test well reaches an optical monitoring station where a reaction of the sample and one or more reagents is monitored by an optical monitoring system for measuring changes in an optical transmission of the sample;

and wherein each of said predetermined constant times remains the same regardless of the hemostasis or thrombosis assay being performed on the sample;

said monitoring of the reaction of the sample comprising detecting the reaction in each test well and measuring data from each reaction,

mathematically processing the measured data to evaluate a change in or magnitude of the measured data from the reaction in the well, and

reporting results of the processing of the measured data.

5,646,047

METHOD AND REAGENT KIT FOR DETERMINING PAPER DEGREDATION IN TRANSFORMERS

Frederick John Bird, Surrey; Nicola Dominelli, Coquitlam, and Gordon R. Ashby, Surrey, all of Canada, assignors to Powertech Labs Inc., Surrey, Canada

Continuation-in-part of Ser. No. 376,490, Jan. 20, 1995, abandoned, which is a continuation-in-part of Ser. No. 139,431, Oct. 20, 1993, abandoned. This application Dec. 20, 1995, Ser. No. 575,288

Int. Cl.[6] G01N *33/26*

U.S. Cl. 436—128 9 Claims

6. A process for determining extent of paper degradation in a transformer containing paper and oxidized transformer oil by detecting the presence of furaldehyde in the oxidized transformer oil comprising:

(a) withdrawing about 3 mL of the oxidized transformer oil into a first pipette containing about 0.1 mL of aniline;

(b) adding the 3 mL of oxidized transformer oil and the 0.1 mL of aniline contents of the first pipette to a transparent vessel containing about 3 mL of about 15 weight to volume percent of acetic acid and about 85 volume percent of tetrachloroethylene;

(c) adding to the vessel and its contents the contents of a second pipette containing 1.25 mL of about 25 weight to volume percent citric acid in distilled water;

(d) capping the vessel and shaking the contents of the vessel for a time sufficient to permit the contents to chemically react with one another, and subsequently ceasing the shaking to permit the contents to separate into layers with a distilled water layer on top and a transformer oil reagent layer on the bottom;

(e) observing the intensity of a pink/red colour characteristic of the presence and concentration of a furaldehyde complex in the water layer on top of the transformer oil reagent layer; and

(f) comparing the intensity of the pink/red colour with the intensity of a colour on a calibrated colour standards medium which correlates colour intensity with concentration of furaldehyde and degree of paper degradation.

5,646,048

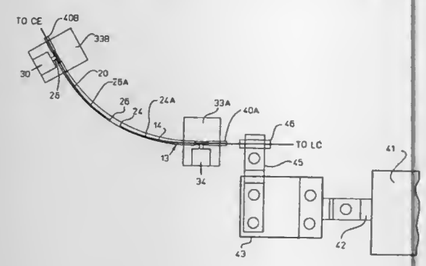
MICROCOLUMNAR ANALYTICAL APPARATUS WITH MICROCOLUMNAR FLOW GATING INTERFACE AND METHOD OF USING THE APPARATUS

Catherine Keely Templin, Los Altos, and Douglass McManigill, Palo Alto, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 24, 1995, Ser. No. 505,941

Int. Cl.[6] G01N *1/10;30/02;* B01D *15/08*

U.S. Cl. 436—180 28 Claims



20. A method for analyzing a liquid sample, comprising:

(a) transferring the liquid sample through a first microcolumnar device which includes a first microcolumn;

(b) coupling the first microcolumn to a second microcolumn which is part of a second microcolumn device to control fluid flow from the first microcolumn to the second microcolumn, comprising:

(A) using the inwardly facing wall of a channel to nonfixedly constrain an outlet end portion of a first microcolumnar section operatively connected to and in fluid communication with the first microcolumn and to constrain an inlet end portion of a second microcolumnar section operatively connected to and in fluid communication with the second microcolumn, by the relative curvature and elasticity of the microcolumnar sections and the channel, such that an outlet end of said outlet end portion is proximate an inlet end of said inlet end portion and such that center lines of said outlet end portion are inlet end portion are substantially parallel to facilitate the transfer of fluid from said outlet end of the first microcolumnar section to said inlet end of the second microcolumnar section when desired, the channel being adapted to conduct a flush fluid flow;

(B) substantially preventing transfer of fluid from the first microcolumnar section to the second microcolumnar section by flushing the flush fluid in the channel through a gap between the outlet end of the first microcolumnar section and the inlet end of the second microcolumnar section to substantially carry away fluid exiting said outlet end; and

(C) transferring fluid from the first microcolumnar section to the second microcolumnar section by reducing the amount of fluid exiting said outlet end from being carried away by the flush fluid; and

(c) analyzing the fluid transferred from the first microcolumnar device to the second microcolumnar device.

174–432 O.G.–97–15: QL3

5,646,049

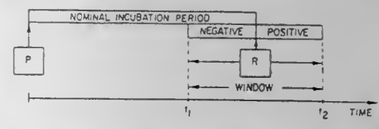
SCHEDULING OPERATION OF AN AUTOMATED ANALYTICAL SYSTEM

Apparao Tayi, Grayslake, Ill., assignor to Abbott Laboratories, Abbott Park, Ill.

Continuation-in-part of Ser. No. 126,411, Sep. 24, 1993, abandoned, which is a continuation-in-part of Ser. No. 859,218, Mar. 27, 1992, abandoned, Ser. No. 915,162, Jul. 20, 1992, Pat. No. 5,376,313, Ser. No. 915,163, Jul. 20, 1992, abandoned, Ser. No. 915,164, Jul. 20, 1992, abandoned, Ser. No. 915,166, Jul. 20, 1992, abandoned, Ser. No. 915,167, Jul. 20, 1992, abandoned, Ser. No. 915,168, Jul. 20, 1992, abandoned, Ser. No. 916,425, Jul. 20, 1992, abandoned, Ser. No. 916,551, Jul. 20, 1992, abandoned, Ser. No. 916,556, Jul. 20, 1992, abandoned, Ser. No. 916,737, Jul. 20, 1992, Pat. No. 5,451,528, Ser. No. 917,253, Jul. 20, 1992, abandoned, Ser. No. 917,634, Jul. 20, 1992, abandoned, Ser. No. 27,268, Mar. 18, 1993, abandoned, Ser. No. 27,270, Mar. 18, 1993, abandoned, Ser. No. 27,387, Mar. 18, 1993, abandoned, Ser. No. 27,388, Mar. 18, 1993, abandoned, Ser. No. 27,481, Mar. 18, 1993, abandoned, Ser. No. 27,269, Mar. 18, 1993, abandoned, and Ser. No. 27,482, Mar. 18, 1993, abandoned, which is a continuation-in-part of Ser. No. 916,556, which is a continuation-in-part of Ser. No. 859,218, said Ser. No. 915,162Ser. No. 915,163, Ser. No. 915,164, Ser. No. 915,166, Ser. No. 915,167, Ser. No. 915,168, Ser. No. 916,425, Ser. No. 916,551, Ser. No. 916,556, Ser. No. 916,737, Ser. No. 917,253, Ser. No. 917,634, Ser. No. 27,268, Ser. No. 27,270, Ser. No. 27,387, Ser. No. 27,388, and Ser. No. 27,481, is a continuation-in-part of Ser. No. 859,218, said Ser. No. 27,269is a continuation-in-part of Ser. No. 917,634, which is a continuation-in-part of Ser. No. 859,218. This application Jan. 3, 1994, Ser. No. 176,172

Int. Cl.[6] G01N *33/543;35/02*

U.S. Cl. 436—518 18 Claims



1. A method for simultaneously performing at least two assays, said assays comprising a plurality of activities, for a plurality of liquid samples on a continuous analytical system, said method comprising the steps of:

combining an aliquot of a first liquid sample with at least one reagent in a first reaction container to form a first assay reaction mixture for said first liquid sample;

combining an aliquot of a second liquid sample with at least one reagent in a second reaction container to form a second assay reaction mixture for said second liquid sample;

incubating said first and said second assay reaction mixtures at least one time;

performing activities associated with each assay other than said combining and said incubating on the first and second assay reaction mixtures to complete each assay, said other activities including analyzing the incubated assay reaction mixtures; and

scheduling the steps of said combining, said incubating, and said performing activities other than said combining and said incubating associated with each of the assays according to a predetermined protocol, said protocol specifying:

(a) what activities are to be performed for a given assay;

(b) an order in which said activities of (a) are to be performed;

(c) at least one incubation period between said activities of (a), said at least one incubation period comprising a nominal period of time for the performance of an incubating step between activities of (a) and a specified window of time for varying the duration of the nominal period between activities of (a) to optimize performance;

(d) how said activities of (a) are to be performed; and

(e) duration of said activities of (a).

5,646,050

INCREASING STABILIZED PERFORMANCE OF AMORPHOUS SILICON BASED DEVICES PRODUCED BY HIGHLY HYDROGEN DILUTED LOWER TEMPERATURE PLASMA DEPOSITION

Yaun-Min Li; Murray S. Bennett, both of Langhorne, Pa., and Liyou Yang, Plainsboro, N.J., assignors to Amoco/Enron Solar, Frederick, Md.

Continuation of Ser. No. 217,799, Mar. 25, 1994, abandoned. This application Feb. 9, 1996, Ser. No. 600,154

Int. Cl.[6] H01L *31/20*

U.S. Cl. 437—4 **7 Claims**

1. A process comprising the steps of:

fabricating semiconductor devices comprising a layer of amorphous silicon supported on a substrate, by plasma enhanced chemical vapor deposition of said amorphous silicon layer under the following conditions:

a substrate temperature ranging from 80° C. to 220° C.;

a pressure ranging from 2 to 50 Torr;

a plasma discharge power density ranging from 20 to 150 mW/cm^2;

a feedstock gas highly diluted with a diluent gas selected from the group consisting of hydrogen, deuterium, and combinations thereof;

said feedstock gas comprising at least one member of the group consisting of: silane, disilane, tetramethyl silane, SiF_4, $SiHF_3$, SiH_2Cl_4, and other gases having the general formula $Si_NH_{2N+2-M}Y_M$ wherein;

Si=silicon

H=hydrogen or deuterium

Y=a halogen

N=positive integer $\geqq 1$

M=positive integer; and $2N+2-M \geqq 0$; and

the dilution ratio of said diluent gas to said feedstock gas ranging from about 20:1 to about 400:1.

5,646,051

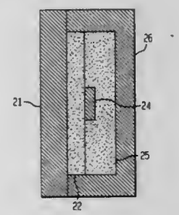
PROCESS FOR FORMING A MAGNETORESISTIVE SENSOR FOR A READING HEAD

Stuart A. Solin, Princeton Junction, N.J., assignor to NEC Research Institute, Inc., Princeton, N.J.

Filed May 5, 1995, Ser. No. 435,254

Int. Cl.[6] H01L *21/00*

U.S. Cl. 437—7 **2 Claims**



1. A process of forming a semiconductive device comprising the steps of:

forming a conductive first layer on a support member, the layer having an active edge and a non-active oppositely positioned non-active edge;

depositing a semiconductive second layer over a portion of the first layer, the second layer having an active edge coplanar with the active edge of the first layer, leaving a portion of the first layer exposed;

depositing an insulative third layer over part of the exposed portion of the first layer and overlapping a portion of the semiconductive second layer along the edge opposite its active edge;

depositing a conductive fourth layer that has an active edge coplanar with the active edges of the first and second layers and extends across the width of the entire second layer and a portion of the third layer;

depositing a semiconductive fifth layer that has an active edge coplanar with the active edges of the first, second, and fourth layers and that extends completely across the semiconductive second layer, to contact the third layer; and

depositing a conductive sixth layer that has an active edge that is coplanar with the active edges of the first, second, fourth and fifth layers and extends completely across the fourth layer and contacts the first layer whereby the active edge portions of the first, third, fourth, and sixth layers form an inner planar surface that includes a conductive region made up of part of the fourth layer that is surrounded by a semiconductive region made up of parts of the second and fifth layers that is surrounded by an outer conductive region made up of parts of the first and sixth layers.

5,646,052

ISOLATION REGION STRUCTURE OF SEMICONDUCTOR DEVICE AND METHOD FOR MAKING

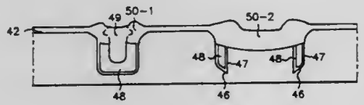
Chang Jae Lee, Chungcheongbuk-do, Rep. of Korea, assignor to Goldstar Electron Co., Ltd., Rep. of Korea

Continuation of Ser. No. 296,175, Aug. 29, 1994, abandoned. This application Apr. 16, 1996, Ser. No. 633,002

Claims priority, application Japan, Jun. 16, 1994, 6-13625

Int. Cl.[6] H01L *21/76*

U.S. Cl. 437—67 **22 Claims**



1. A method for making a semiconductor device, comprising the steps of:

(a) forming an insulating layer on a substrate and then a mask layer on the insulating layer;

(b) removing a portion of the mask layer in a first field region and a portion of the mask layer in a second field region, spaced apart from the first region, the removed portion of said mask layer in said first region having a first width, the removed portion of said mask layer in said second field region having a second width greater than said first width, such that an area of the insulating layer exposed in the first field region is narrower than an area of the insulation layer exposed in the second field region;

(c) applying a first oxidation process to the exposed insulating layer in the field regions thereby to form first field oxide layers of differing maximum thickness such that the maximum thickness of the first field layer in the first field region is less than the maximum thickness of the first field layer in the second field region;

(d) etching said first field oxide layers so that the first field oxide layer in the first field region is removed and so that side portions of the first field oxide layer in the second field region are removed while leaving an island of first field oxide layer material in the center of the second field region, said island being recessed into said substrate to form a wide trench;

(e) etching the exposed surface of the substrate so as to form an intermediate-width trench in the first field region and to form at least one peripheral narrow trench-deepening extension of said wide trench corresponding in location to a side portion of the second field region;

(f) forming an oxidizable layer in the trenches of the first and second field regions;

(g) performing a second field oxidation process on the oxidizable layer to form a second field oxide layer in the first and second field regions.

5,646,053

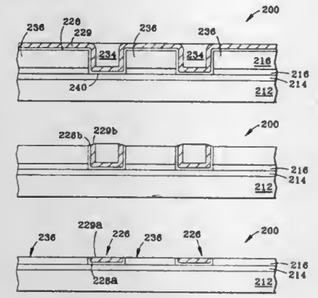
METHOD AND STRUCTURE FOR FRONT-SIDE GETTERING OF SILICON-ON-INSULATOR SUBSTRATES

Dominic Joseph Schepis, Wappingers Falls, and Joseph Francis Shepard, Hopewell Junction, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1995, Ser. No. 575,458

Int. Cl.[6] H01L *21/306*

U.S. Cl. 437—10 **43 Claims**



1. A method for gettering impurities from a silicon-on-insulator (SOI) substrate, the method comprising the steps:

providing an SOI substrate comprising a base layer, an insulating layer disposed over the base layer and a semiconductor layer disposed over the insulating layer;

forming a gettering layer disposed over and in direct contact with the semiconductor layer;

forming a plurality of shallow trenches extending through the semiconductor layer and disposing within the shallow trenches a polish stop structure, the polish stop structure having a thickness;

annealing the substrate for enabling gettering of the impurities from the semiconductor layer to the gettering layer; and

removing the gettering layer by chemical-mechanical polishing, wherein the thickness of the polish stop structure disposed in the shallow trenches is employed to determine when removal is complete.

5,646,054

METHOD FOR MANUFACTURING MOS TRANSISTOR OF HIGH BREAKDOWN VOLTAGE

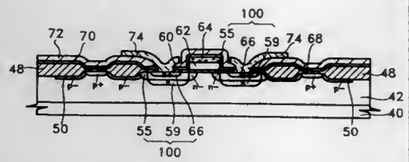
Tae-pok Rhee, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Aug. 31, 1995, Ser. No. 521,982

Claims priority, application Rep. of Korea, Aug. 31, 1994, 94-21904

Int. Cl.[6] H01L *21/266*

U.S. Cl. 437—30 **4 Claims**



1. A method for manufacturing an MOS transistor of high breakdown voltage comprising the steps of:

(a) forming a first photosensitive film pattern which partially exposes a region to be formed as a source or a drain on a semiconductor substrate;

(b) implanting first impurity ions to a low concentration, thereby forming a low concentration impurity layer;

(c) removing said first photosensitive film pattern;

(d) forming a second photosensitive film pattern which partially exposes said region to be formed as a source or a drain;

(e) implanting second impurity ions to a medium concentration, thereby forming a medium concentration impurity layer;

(f) removing said second photosensitive film pattern;

(g) forming a gate insulation film and gate electrode on the resultant semiconductor substrate;

(h) forming a third photosensitive film pattern which partially exposes said region to be formed as a source or a drain on said semiconductor substrate; and

(i) implanting third impurity ions to a high concentration, thereby forming a high concentration impurity layer.

5,646,055

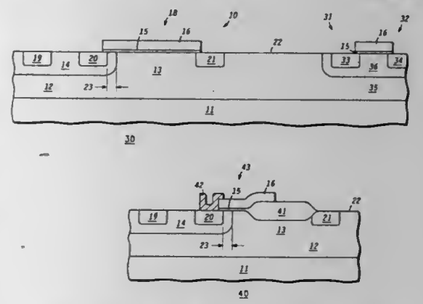
METHOD FOR MAKING BIPOLAR TRANSISTOR

Hak-Yam Tsoi, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 1, 1996, Ser. No. 641,393

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—31 **18 Claims**



1. A method of fabricating an integrated circuit comprising the steps of:

providing a substrate;

providing an epitaxial layer overlying the substrate, the epitaxial layer having a surface and a thickness, a portion of the epitaxial layer forming a collector region of a first conductivity type;

forming an electrical conductor overlying a portion of the surface of the epitaxial layer and a portion of the collector region;

forming a base region of a second conductivity type in the epitaxial layer and self-aligned to the electrical conductor, the base region having a depth in the epitaxial layer wherein the depth is less than the thickness of the epitaxial layer; and

forming a base width in the base region by forming an emitter region of the first conductivity type in the base region, the base width being a portion of the base region between the emitter region and the collector region, the emitter region self-aligned to the electrical conductor.

5,646,056

METHOD OF FABRICATING ULTRA-LARGE-SCALE INTEGRATION METAL-OXIDE SEMICONDUCTOR FIELD EFFECT TRANSISTOR

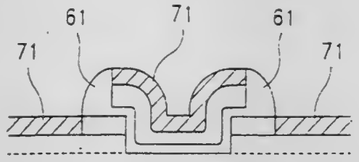
Chih-Hung Lin, Yi-Lan; Hwi-Huang Chen, Taipei, and Gary Hong, Hsin-Chu, all of Taiwan, assignors to United Microelectronics Corp., Taiwan

Filed Oct. 11, 1995, Ser. No. 540,776

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—40 **10 Claims**

1. A method of forming a transistor in and on a substrate having a well region therein, said method comprising the steps of:



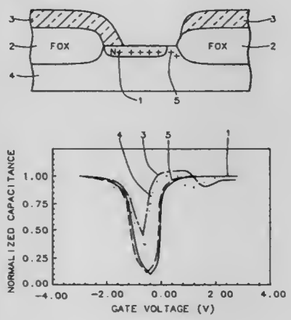
forming a polysilicon layer on the well region;
heavily implanting ions into said polysilicon layer, the conductivity of said ions being opposite to the conductivity of the well region;
diffusing said ions further into an upper portion of said well region to form a heavily doped layer;
forming a first photoresist layer on the polysilicon layer, a pattern of said first photoresist layer defining a gate region:
removing portions of said heavily doped layer and said polysilicon layer using said first photoresist layer as a mask;
forming a gate oxide layer on the polysilicon layer and the heavily doped layer;
forming a gate polysilicon layer on the gate oxide layer;
forming a second photoresist layer on the gate polysilicon layer, a pattern of said second photoresist layer covering the gate region;
removing portions of said gate polysilicon layer using said second photoresist layer as a mask:
forming a dielectric layer on the gate polysilicon layer and the gate oxide layer;
etching portions of the dielectric layer and the gate oxide layer until the gate polysilicon layer and the polysilicon layer are exposed, thereby forming spacers on the side walls of the gate polysilicon layer and the gate oxide layer;
forming a metal layer on the gate polysilicon layer, the spacers and the polysilicon layer; and
reacting the polysilicon layer and the gate polysilicon layer with the metal layer, thereby forming a plurality of silicides in an upper portion of said gate polysilicon layer, and upper portions of said polysilicon layer not covered by the spacers.

5,646,057

METHOD FOR A MOS DEVICE MANUFACTURING

Chwen-Ming Liu; Jenn-Ming Huang, both of Hsinchu; Hsien-Wei Chin, Hsin Chu; Huan-Chung You, Hsin-Chu, and Jang-Cheng Hsieh, Hsin-Chu, all of Taiwan, assignors to Taiwan Semiconductor Manufacturing Company, Hsinchu, Taiwan

Continuation of Ser. No. 280,220, Jul. 25, 1994, abandoned. This application Sep. 1, 1995, Ser. No. 524,153
Int. Cl.[6] H01L *21/8234*
U.S. Cl. 437—40 R **7 Claims**



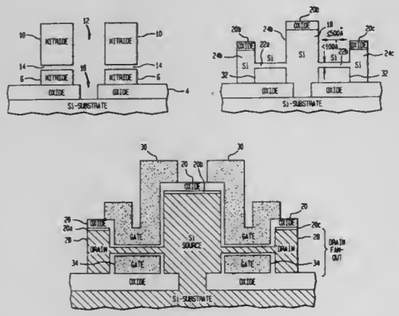
1. A method for manufacturing a MOS (metal-oxide-semiconductor) device comprising the following sequential steps of:
providing a silicon substrate with field oxide isolation regions and implanting ions in regions between said field oxide regions;
subjecting said silicon substrate to a rapid thermal anneal treatment and;
directly after said rapid thermal anneal, heating said MOS device in a gaseous atmosphere containing more than about 10% of hydrogen gas at a temperature between about 450° and 500° C.

5,646,058

METHOD FOR FABRICATING A SELF-ALIGNED DOUBLE-GATE MOSFET BY SELECTIVE LATERAL EPITAXY

Yuan Taur, Bedford, and Hon-Sum Philip Wong, Chappagua, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 407,175, Mar. 21, 1995, Pat. No. 5,604,368, which is a continuation-in-part of Ser. No. 276,072, Jul. 15, 1994, abandoned. This application Aug. 1, 1996, Ser. No. 690,152
Int. Cl.[6] H01L *21/8234*
U.S. Cl. 437—40 R **4 Claims**



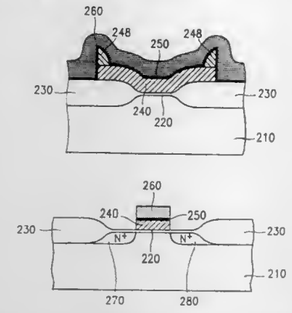
1. A method for fabricating a double-gate MOSFET, comprising the steps of:
providing a silicon substrate;
forming an oxide layer on the silicon substrate;
forming a sacrificial dielectric film on the oxide layer;
forming a spacer film on the sacrificial dielectric film;
forming a sacrificial dielectric layer on the spacer film;
patterning the sacrificial dielectric layer, the spacer film and the sacrificial dielectric film to form a channel therein;
etching the spacer film to form a gap between the sacrificial dielectric layer and the sacrificial dielectric film;
etching a slot in the oxide layer to expose the silicon substrate;
growing epitaxial silicon in the slot, the channel and the gap, such that the silicon emerges from the gap at its ends;
doping exposed regions of the epitaxial silicon;
oxidizing the exposed silicon regions;
stripping the patterned sacrificial dielectric film and the patterned sacrificial dielectric layer;
forming oxide layers of about 100 Å or less on the epitaxial silicon in the regions from which the sacrificial dielectric film was removed;
depositing polysilicon to form a top gate in the region formerly occupied by the patterned sacrificial dielectric layer, and a bottom gate in the region formerly occupied by the patterned sacrificial dielectric film.

5,646,059

PROCESS FOR FABRICATING NON-VOLATILE MEMORY CELLS HAVING IMPROVED VOLTAGE COUPLING RATIO BY UTILIZING LIQUID PHASE

Yau-Kae Sheu, and Gary Hong, both of Hsinchu, Taiwan, assignors to United Microelectronics Corporation, Hsinchu, Taiwan

Filed Apr. 17, 1995, Ser. No. 422,876
Int. Cl.[6] H01L *21/8247*
U.S. Cl. 437—43 **10 Claims**



1. A process for fabricating a non-volatile memory cell having improved voltage coupling ratio, comprising the steps of:
(a) defining an active region of said non-volatile memory cell on a substrate;
(b) forming field oxide layers in an area on said substrate except for the active region;
(c) forming a channel oxide layer on the active region;
(d) forming a first polycide layer on said channel oxide layer and said field oxide layers and forming a photoresist layer on said first polycide layer;
(e) applying a photomasking procedure to contour said photoresist layer on a floating gate region of said active region so as to define said first polycide layer as a floating gate of said non-volatile memory cell, said floating gate having a floating gate thickness;
(f) depositing a liquid phase deposited oxide layer on a region of said field oxide layers not covered by said photoresist layer, said liquid phase deposited oxide layer having a liquid phase deposited oxide layer thickness larger than said floating gate thickness;
(g) removing said photoresist layer, and depositing a second polycide layer on said liquid phase deposited oxide layer and said first polycide layer;
(h) etching back said second polycide layer to form polysilicon spacers at sidewalls of said liquid phase deposited oxide layer and on said floating gate;
(i) removing said liquid phase deposited oxide layer and forming a dielectric layer on said polysilicon spacers and on said floating gate; and
(j) forming an electrically conducting layer on said dielectric layer.

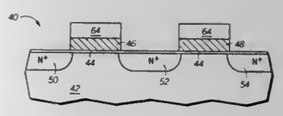
5,646,060

METHOD FOR MAKING AN EEPROM CELL WITH ISOLATION TRANSISTOR

Ko-Min Chang; Danny Pak-Chum Shum, and Kuo-Tung Chang, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 225,868, Apr. 11, 1994, Pat. No. 5,471,422. This application May 30, 1995, Ser. No. 471,619
Int. Cl.[6] H01L *21/8247*
U.S. Cl. 437—43 **17 Claims**

1. A method for making an electrically erasable and programmable memory cell, comprising the steps of:
providing a semiconductor substrate;



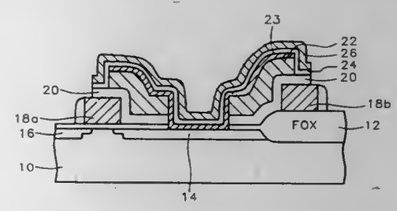
forming a tunnel dielectric on the semiconductor substrate;
depositing and patterning a first conductive layer on the tunnel dielectric to form an isolation gate and a floating gate on the tunnel dielectric;
forming an interlayer dielectric over the isolation gate and floating gate; and
depositing and patterning a second conductive layer to form a control gate overlying the floating gate.

5,646,061

TWO-LAYER POLYSILICON PROCESS FOR FORMING A STACKED DRAM CAPACITOR WITH IMPROVED DOPING UNIFORMITY AND A CONTROLLABLE SHALLOW JUNCTION CONTACT

Chen-Jong Wang, and Mong-Song Liang, both of Hsin-Chu, Taiwan, assignors to Taiwan Semiconductor Manufacturing Company, Ltd., Hsin-Chu, Taiwan

Filed Apr. 22, 1996, Ser. No. 635,829
Int. Cl.[6] H01L *21/70;27/00*
U.S. Cl. 437—52 **26 Claims**



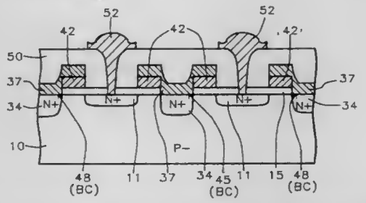
1. A method for forming the lower plate of a capacitor and its contact to a semiconductor device on a silicon wafer comprising:
(a) providing a silicon wafer having a semiconductor device formed within its surface;
(b) forming an insulative layer over said silicon wafer;
(c) forming a conductive layer over said silicon wafer;
(d) depositing a first photoresist layer over said silicon wafer;
(e) patterning said first photoresist layer to define a contact opening to an active area of said semiconductor device;
(f) etching said conductive layer and said insulative layer with a unidirectional etching technique to provide a vertical walled opening exposing said active area of said semiconductor device;
(g) removing said first photoresist layer;
(h) depositing an un-doped polysilicon layer;
(i) annealing said silicon wafer;
(j) depositing a second photoresist layer;
(k) patterning said second photoresist layer to define said lower plate of said capacitor; and
(l) etching said un-doped polysilicon layer and said conductive layer with a unidirectional etching technique to expose said insulative layer around said lower plate.

5,646,062

METHOD FOR ESD PROTECTION CIRCUIT WITH DEEP SOURCE DIFFUSION

Lee Chung Yuan, Chung-Li, and Joe Ko, Hsin-Chu, both of Taiwan, assignors to United Microelectronics Corporation, Hsin-Chu, Taiwan

Filed Jan. 19, 1995, Ser. No. 374,965
Int. Cl.[6] H01L *21/70;27/00*
U.S. Cl. 437—60 **3 Claims**



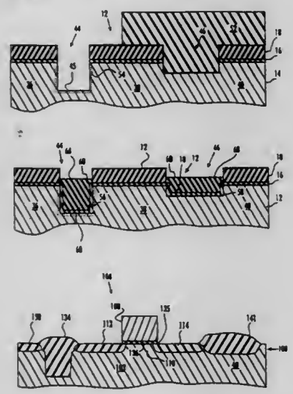
1. A method for manufacturing a protection circuit in a semiconductor substrate for a semiconductor device comprising the following steps:
- forming and patterning a layer of a first conductive layer as part of gate electrode elements;
- forming a doped second conductive layer over said portions of gate electrode elements thereby forming gate electrodes, wherein said second conductive layer further overlies a region where a source diffusion is to be formed in the semiconductor substrate, thereby forming a buried contact for said source diffusion,
- forming a drain diffusion in the semiconductor substrate;
- forming the source diffusion under the buried contact by out diffusing dopants from the doped second conductive layer through the buried contact, the source diffusion extending deeper into said substrate than the drain diffusion.

5,646,063

HYBRID OF LOCAL OXIDATION OF SILICON ISOLATION AND TRENCH ISOLATION FOR A SEMICONDUCTOR DEVICE

Sunil Mehta, and Yowjuang W. Liu, both of San Jose, Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Mar. 28, 1996, Ser. No. 621,714
Int. Cl.[6] H01L *21/76*
U.S. Cl. 437—67 **20 Claims**



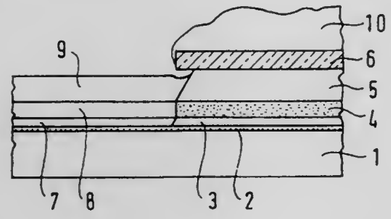
1. A method of fabricating a semiconductor structure having at least one wide spacing and at least one narrow spacing formed in a semiconductor substrate, the semiconductor substrate having a pad oxide layer formed over the substrate, and a nitride layer formed over the pad oxide layer, the method comprising steps of:
- selectively providing an etch resist layer over the wide spacing and exclusive of the narrow spacing;
- etching the semiconductor structure to increase the depth of the narrow spacing to form a narrow trench;
- growing an oxide liner in the narrow trench and in the wide spacing;
- providing a trench fill oxide layer over the nitride layer and the oxide liner in the wide spacing and in the narrow trench; and
- field oxidizing the wide spacing and the narrow trench.

5,646,064

METHOD OF FABRICATING A SEGMENTED MONOCRYSTALLINE CHIP

Elisabeth Gaumont-Goarin, Montrouge; Christine Labourie, Villejuif, and Jean-Yves Emery, Paris, all of France, assignors to Alcatel N.V., Rijswijk

Filed Jan. 20, 1995, Ser. No. 375,982
Claims priority, application France, Jan. 21, 1994, 94 00636
Int. Cl.[6] H01L *21/20*
U.S. Cl. 437—133 **6 Claims**



1. A method of fabricating a segmented monocrystalline chip that is to include first and second structures respectively occupying first and second segments extending one after the other along a length direction of the chip, each structure being made up of superposed layers of different compositions, the two structures being formed on a common bottom layer that forms a portion of the chip, said method comprising the following steps:
- forming the bottom layer and the first structure by epitaxial deposition on said bottom layer in both of said segments;
- forming a protective deposit on said structure in the first segment;
- etching said first structure so as to be eliminated down to said bottom layer in the second segment while being protected by the protective deposit in the first segment; and
- after said first structure etching step, forming the second structure by epitaxial deposition on the bottom layer;
- wherein said etching of the first structure includes dry etching followed by a step of final wet etching that reaches the bottom layer.

5,646,065

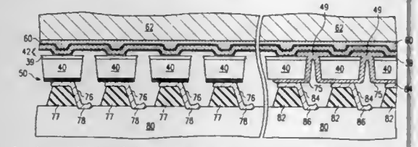
Patent Not Issued For This Number

5,646,066

METHOD FOR FORMING ELECTRICAL CONTACT TO THE OPTICAL COATING OF AN INFRARED DETECTOR FROM THE BACKSIDE OF THE DETECTOR

Steven N. Frank, McKinney; James F. Belcher; Charles E. Stanford, both of Plano; Robert A. Owen, Rowlett, and Robert J. S. Kyle, Rowlett, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 1, 1995, Ser. No. 396,944
Int. Cl.[6] H01L *21/44*
U.S. Cl. 437—180 **5 Claims**



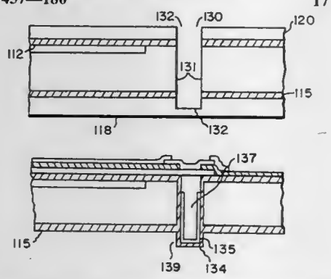
1. A method of forming an electrical contact to an optical coating of an infrared detector, said method comprising:
- providing a substrate, said substrate having a top and a bottom;
- forming thermal isolation trenches and bias contact vias in said top of said substrate;
- depositing a trench filler in said thermal isolation trenches and in said bias contact vias;
- depositing a common electrode layer over said thermal isolation trenches;
- depositing an optical coating above said common electrode layer;
- thinning said bottom of said substrate to expose said trench filler in said thermal isolation trenches and said bias contact vias;
- removing said trench filler from said bias contact vias;
- depositing a first contact metal on said bottom of said substrate; and
- removing said first contact metal and said trench filler from said thermal isolation trenches to form pixel mesas of said first contact metal and said substrate.

5,646,067

METHOD OF BONDING WAFERS HAVING VIAS INCLUDING CONDUCTIVE MATERIAL

Stephen Joseph Gaul, Melbourne, Fla., assignor to Harris Corporation, Palm Bay, Fla.

Filed Jun. 5, 1995, Ser. No. 461,951
Int. Cl.[6] H01L *21/28*
U.S. Cl. 437—180 **17 Claims**



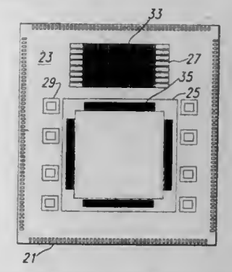
1. A method for fabricating surface mountable integrated circuits comprising the steps of:
- providing a device wafer of monocrystalline silicon material with first and second surfaces and with integrated circuits formed on the first surface of said device wafer;
- forming an oxide layer between the second surface of the device wafer and a handle wafer, said oxide layer bonding the handle wafer to the device wafer for supporting the device wafer;
- forming a via in the device wafer, said via comprising a first open end on the first surface of the device wafer, an elongated passage extending from said open end a controlled depth into the handle wafer and terminating at a second end closed by said handle wafer;
- depositing a conductive material in the via over the elongated surface and the closed end of the via;
- removing the handle wafer to expose the conductive material coated on the via surface.

5,646,068

SOLDER BUMP TRANSFER FOR MICROELECTRONICS PACKAGING AND ASSEMBLY

Arthur M. Wilson; Mark A. Kressley, both of Richardson, Tex.; Dean L. Frew, Springfield, Va.; Juanita G. Miller, Richardson, Tex.; John E. Hanicak, Plano, Tex.; Philip E. Hecker, Garland, Tex., and James M. Drumm, Crystal Lake, Ill., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 3, 1995, Ser. No. 384,506
Int. Cl.[6] H01L *21/44*
U.S. Cl. 437—183 **24 Claims**



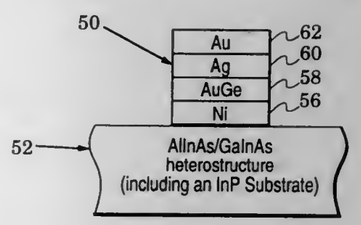
1. A method of making a microelectronic circuit comprising the steps of:
- (a) providing a substrate;
- (b) forming regions on said substrate for connection of electrical components to said substrate using a first metallurgy;
- (c) forming a pattern of bumps of a second metallurgy different from said first metallurgy on a coupon; and
- (d) applying said bumps from said coupon to said substrate.

5,646,069

FABRICATION PROCESS FOR $AL_xIN_{1-x}AS/GA_yIN_{1-y}AS$ POWER HFET OHMIC CONTACTS

Linda Jelloian, Northridge; Mehran Matloubian, Encino; Loi D. Nguyen, Thousand Oaks, and Adele Schmitz, Newbury Park, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jun. 7, 1995, Ser. No. 472,165
Int. Cl.[6] H01L *29/45;21/283*
U.S. Cl. 437—184 **8 Claims**



1. A method of forming an ohmic contact through an $Al_xIn_{1-x}As$ semiconductor member to a $Ga_yIn_{1-y}As$ semiconductor member,

wherein y is between 0 and 1, and x is between 0.48 and 1, said method comprising the steps of:

depositing, onto said $Al_xIn_{1-x}As$ semiconductor member, a metal system that has layers in the sequence of Ni/AuGe/Ag/Au, with said Ni layer adjoining said $Al_xIn_{1-x}As$ semiconductor member; and

alloying said metal system for a alloy time greater than 5 seconds and at a alloy temperature in the range of 340–450 degrees Centigrade;

said Ag layer being deposited with a thickness in the range of 400–1600 Å at which thickness it causes said metal system to form an ohmic contact with said $Ga_xIn_{1-x}As$ semiconductor member when allowed at said alloy time and said alloy temperature.



5,646,070

METHOD OF FORMING CONDUCTIVE REGION ON SILICON SEMICONDUCTOR MATERIAL, AND SILICON SEMICONDUCTOR DEVICE WITH SUCH REGION

Henry Wei-Ming Chung, Cupertino, Calif., assignor to Philips Electronics North American Corporation, Tarrytown, N.Y.

Continuation of Ser. No. 82,324, Jun. 24, 1993, which is a continuation of Ser. No. 630,105, Dec. 19, 1990. This application Mar. 6, 1995, Ser. No. 400,778

Int. Cl.[6] H01L *29/43;21/822*

U.S. Cl. 437—200 **13 Claims**



1. A method of forming electrically conductive contacts to a surface of silicon semiconductor material comprising the steps of

(a) forming a first silicide layer of a first conductive material on the surface of the silicon semiconductor material;

(b) forming a second different silicide layer of a second different conductive material on said first silicide layer by physical vapor deposition, said second silicide layer being formed by substances that individually are chemically inert to said first silicide layer; and

(c) forming a third electrically conductive layer of a third conductive material on said second silicide layer by chemical vapor deposition, said third conductive layer being electrically coupled to said second silicide layer, said third conductive layer being adhesively connected to said first silicide layer by said second silicide layer, and said first silicide layer being protected from any chemical employed in said chemical vapor deposition of said third conductive layer by said second silicide layer, wherein said first silicide layer, said second silicide layer and said third conductive layer are formed in a self-aligned manner on said surface of silicon semiconductor material.

5,646,071

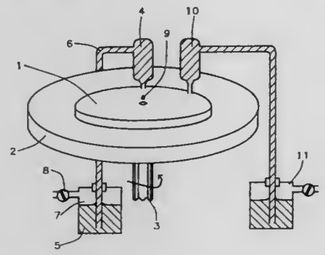
EQUIPMENT AND METHOD FOR APPLYING A LIQUID LAYER

Ting-Hwang Lin, Shin Chu; Shih-Ming Wang, Kaohsiung, and Li-Chum Chen, Hsin-chu, all of Taiwan, assignors to Taiwan Semiconductor Manufacturing Company, Ltd., Hsin-Chu, Taiwan

Filed Jan. 19, 1995, Ser. No. 374,856

Int. Cl.[6] H01L *21/465;* **B05D** *3/12*

U.S. Cl. 437—228 **16 Claims**



1. A method for applying a layer of a single liquid, having a viscosity and a drying time, to the surface of a semiconductor wafer, comprising:

providing the wafer with rotational speed;

applying the liquid to the surface of the wafer, while said wafer is being rotated, through at least two nozzles, said nozzles being positioned at some height above said turntable, with one of the nozzles being directly over the axis of rotation of said turntable; and

for each nozzle independently, controlling the rate at which liquid emerges from the nozzles by means of applied gas pressure.

5,646,072

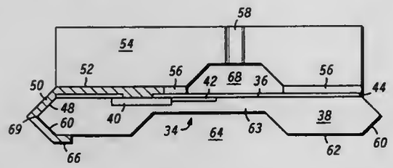
ELECTRONIC SENSOR ASSEMBLY HAVING METAL INTERCONNECTIONS ISOLATED FROM ADVERSE MEDIA

Theresa Maudie, Phoenix, and David J. Monk, Mesa, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 3, 1995, Ser. No. 415,287

Int. Cl.[6] H01L *21/00*

U.S. Cl. 437—228 **14 Claims**



1. A method of forming a sensor assembly, comprising the steps of:

forming a sensing element on a top surface of a first active die;

etching said top surface to form a first interconnect opening at an edge of said first active die;

forming a metal layer on at least said top surface so that said metal layer is in contact with said sensing element, and a first portion of said metal layer is disposed in said first interconnect opening;

attaching a bottom surface of said first active die to a mounting substrate; and

disposing a conductive bump in electrical contact with said metal layer.

5,646,073

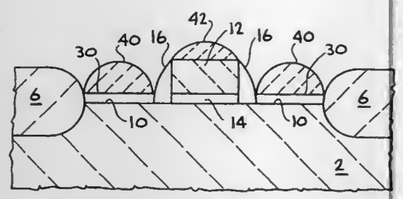
PROCESS FOR SELECTIVE DEPOSITION OF POLYSILICON OVER SINGLE CRYSTAL SILICON SUBSTRATE AND RESULTING PRODUCT

Douglas T. Grider, Pleasanton, and Jon S. Owyang, San Jose, both of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed Jan. 18, 1995, Ser. No. 374,193

Int. Cl.[6] H01L *21/38*

U.S. Cl. 437—233 **11 Claims**



1. In a process for forming shallow source/drain regions in a single crystal silicon substrate, by depositing an implantable layer of polycrystalline silicon over said single crystal silicon substrate, implanting said polycrystalline silicon layer with a dopant, and then diffusing said dopant from said polycrystalline silicon layer into said single crystal silicon substrate the improvement which comprises selectively forming said polycrystalline layer over said single crystal silicon substrate without forming on adjacent silicon oxide surfaces by the steps of:

a) first selectively depositing, over exposed portions of said single crystal silicon substrate where source/drain regions will be formed, a layer of a material which is lattice mismatched to silicon, selected from the group consisting of germanium, a silicon/germanium alloy, a silicon/germanium/carbon alloy, a Group III–V compound, and a Group II–VI compound, and having a thickness sufficient to inhibit the single crystal growth of a silicon layer subsequently formed thereon, whereby:

i) native oxide on said underlying single crystal silicon substrate will be dissolved by said lattice mismatched layer;

ii) single crystal growth of a subsequently deposited silicon layer will be inhibited to thereby permit faster diffusion of implanted dopant through said subsequently formed silicon layer to said underlying silicon substrate to form said source/drain regions; and

iii) selective formation of said silicon layer over said lattice mismatched layer in preference to adjacent silicon oxide surfaces will be promoted; and

b) selectively depositing polycrystalline silicon over said layer of lattice mismatched material to a minimum thickness sufficient to permit implantation of a dopant therein while inhibiting passage of dopant atoms through the polycrystalline silicon layer and underlying lattice mismatched layer into said single crystal silicon substrate during said implanting step, to thereby control the depth of the source/drain regions formed in said single crystal silicon substrate during a subsequent annealing step.

5,646,074

METHOD OF FORMING GATE OXIDE FOR FIELD EFFECT TRANSISTOR

Rickey Chen, and Rex Chen, both of Hsinchu, Taiwan, assignors to Mosel Vitelic, Inc., Taiwan, Taiwan

Filed Dec. 15, 1995, Ser. No. 573,960

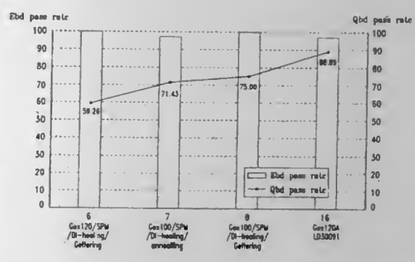
Int. Cl.[6] H01L *21/02*

U.S. Cl. 437—239 **5 Claims**

1. A process for manufacturing a gate oxide of a MOSFET on a wafer, comprising the steps of:

pre-cleaning the wafer to clean a surface of a gate oxide region of the MOSFET;

forming a gate oxide layer on the wafer; coating a photo resist;



exposing a portion of the photo resist by a photolithography-process;

developing the photo resist;

implanting ions over the developed photo resist;

removing the photo resist;

post-cleaning the gate oxide layer, wherein the post-cleaning provides good attachment of a gate polysilicon layer,

healing the gate oxide layer by pouring DI water over the gate oxide layer; and annealing the gate oxide layer.

5,646,075

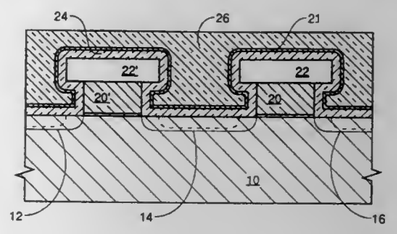
METHOD FOR OPTIMIZING THERMAL BUDGETS IN FABRICATING SEMICONDUCTORS

Randhir P. S. Thakur, and Fernando Gonzalez, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 427,941, Apr. 25, 1995, Pat. No. 5,474,955, which is a continuation-in-part of Ser. No. 102,908, Aug. 6, 1993, Pat. No. 5,409,858. This application Nov. 15, 1995, Ser. No. 559,511

Int. Cl.[6] H01L *21/324;21/477*

U.S. Cl. 437—247 **47 Claims**



1. A method used during fabrication of a dynamic random access memory, said method comprising the steps of:

forming a glass layer superjacent patterned structures on a semiconductor substrate, where said patterned structures have an aspect ratio of at least 1:1;

heating said glass layer in the presence of steam to a temperature of at least 800° C. for at least 15 minutes; and

exposing said glass layer to a gas and radiant energy.

5,646,076

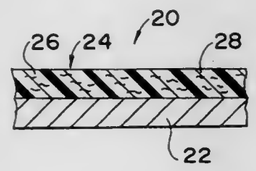
FRICTION CONTROLLING DEVICES AND METHODS OF THEIR MANUFACTURE

David N. Bortz, 2400 Woodmere Dr., Cleveland Heights, Ohio 44106

Continuation of Ser. No. 210,072, Mar. 17, 1994, abandoned, which is a continuation of Ser. No. 691,672, Apr. 25, 1991, abandoned, which is a continuation of Ser. No. 361,741, Jun. 1, 1989, abandoned, which is a continuation of Ser. No. 781,190, Sep. 25, 1985, abandoned, which is a continuation of Ser. No. 598,357, Apr. 11, 1984, abandoned, which is a continuation of Ser. No. 105,893, Dec. 21, 1979, abandoned. This application Jun. 6, 1995, Ser. No. 468,632

Int. Cl.[6] F16D *69/00*; B32B *1/04;5/06*; D04H *1/58*

U.S. Cl. 442—136 17 Claims



1. In a friction clutch or brake mechanism having two relatively movable engageable parts, the improvement comprising an engageable surface of one being a heat and wear resistant fiber reinforced polymer composite constructed to influence relative movement between the parts and to effectively resist heat and wear of said mechanism, said surface comprised at least in part of a drylaid, nonwoven and carded, batt, mat or web fibrous form that is comprised of at least about 20% by weight individual, initially separable, flexible, and non-abrasive staple fibers, said fibers being predominantly noncarbonized or nongraphitized and selected from the group consisting of fluoropolymer fibers, aramid fibers and polybenzimidazole fibers, and said fibrous form having interstices and being an intrasupportive network of fibers greater and ⅛ inch in length and said fibers being needlepunched-entangled at a density of 8–6000 penetrations per square centimeter per layer or lap of said batt, mat or web, and said form combined with at least one polymer resin, such that said resin adheres to and impregnates said fibrous form.

5,646,077

BINDER FIBER AND NONWOVEN FABRICS USING THE FIBER

Nobuhiro Matsunaga, and Katsuyoshi Niikura, both of Amagasaki, Japan, assignors to Unitika Ltd, Hyogo, Japan

Division of Ser. No. 295,753, Sep. 1, 1994, abandoned. This application Jun. 5, 1995, Ser. No. 462,224

Claims priority, application Japan, Jan. 7, 1993, 5-018173

Int. Cl.[6] D04H *1/58*

U.S. Cl. 442—415 21 Claims

1. A nonwoven fabric wherein a principal fiber is bonded by a binder fiber, said binder fiber being a polyester copolymer which includes ε-caprolacton as a polyester component and has a melting point of not less than 100° C.

5,646,078

ALUMINUM NITRIDE POWDER

Masahide Mohri; Shinichiro Tanaka, both of Ibaraki, and Takeshi Miyai, Chiba, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jul. 12, 1995, Ser. No. 501,580

Claims priority, application Japan, Jul. 12, 1994, 6-184093

Int. Cl.[6] C04B *35/581*

U.S. Cl. 501—98 2 Claims



1. An aluminum nitride powder comprising polycrystalline particles which have clearly observed grain boundaries, an agglomerated particle size of 0.5 to 100 μm when measured by a particle size distribution analyzer, a tapped bulk density of 0.55 to 2.0 g/cm^3, and a ratio of a number average particle size calculated from a SEM photograph image to a particle size calculated from a BET specific surface area of 1.1 to 3; provided that (1) said aluminum nitride powder is obtained by calcinating an alumina powder consisting essentially of α-alumina particles that have (i) polyhedral shapes with at least 8 faces and (ii) a D/H ratio of 0.5 to 0.3 where D is a maximum particle size in a direction parallel to a hexagonal lattice plane, and H is a particle size in a direction perpendicular to the hexagonal lattice plane, in an atmosphere containing nitrogen in the presence of a reducing agent, and (2) said aluminum nitride powder has a BET specific surface area larger than that of a raw material alumina powder.

5,646,079

REFRACTORY CERAMIC MASS AND ITS USE

Wilfried Eckstein, Trofaiach, Austria, assignor to Veitsch-Radex Aktiengesellschaft Fur Feuerfeste Erzeungnisse, Vienna, Austria

Continuation of Ser. No. 327,104, Oct. 21, 1994, abandoned. This application Jul. 5, 1995, Ser. No. 498,436

Claims priority, application Germany, Oct. 23, 1993, 43 36 269.9

Int. Cl.[6] C04B *35/04;35/10*

U.S. Cl. 501—100 18 Claims

1. Method of lining a hearth of an electric furnace, comprising the steps of

providing a refractory ceramic mass comprising a refractory oxide as a matrix material, the matrix material further comprising carbon and a reactive silica, the carbon comprises graphite, flake graphite, carbon black, petroleum coke, or combinations thereof, and

lining the hearth of the electric furnace with the ceramic mass.

5,646,080

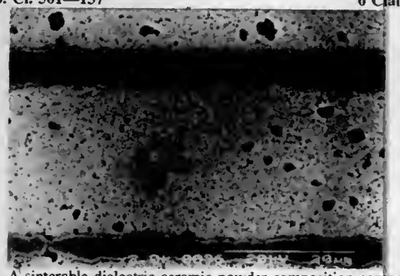
DIELECTRIC STABLE AT HIGH TEMPERATURE

Mike Ssu-Hai Chu, Lewiston; John Bultitude, Youngstown, both of N.Y.; Michael Rand, Witney, United Kingdom; Kay Louise Nimmo, Wallingford, United Kingdom; Ian Thompson, Buckingham, United Kingdom, and Christopher Hood, Reading, United Kingdom, assignors to Tam Ceramics, Inc., Niagara Falls, N.Y.

Filed Nov. 20, 1995, Ser. No. 561,122

Int. Cl.[6] C04B *35/468*

U.S. Cl. 501—137 6 Claims



1. A sinterable dielectric ceramic powder composition comprising 95 to 98 parts by weight of a major ingredient consisting of 97.0 to 99.5 mole % barium titanate, 0.5 to 3.0 mole % magnesium oxide or a precursor therefor and 0 to 2.0 mole % manganese oxide or a precursor therefor and 0 to 0.2 moles cobalt oxide or a precursor therefor; 2 to 5 parts by weight of a minor ingredient consisting of a ternary mixture of 15 to 30 mole % barium oxide or a precursor therefor, 15 to 30 mole % silicon dioxide or a precursor therefor and 40 to 70 mole % calcium titanate, which composition can be fabricated into multilayer ceramic capacitors with nickel, nickel alloy, palladium or palladium/silver alloy inner electrodes, the so formed capacitors having a variation of capacitance with temperature of less than ±20% over the range −55° C. to 140° C. as compared to the value at 25° C. and not containing any second phases after sintering.

5,646,081

NON-REDUCED DIELECTRIC CERAMIC COMPOSITIONS

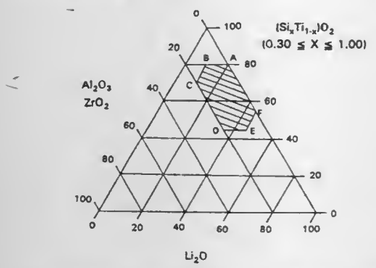
Toshiki Nishiyama, Takefu, and Yukio Hamaji, Otsu, both of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Apr. 9, 1996, Ser. No. 631,699

Claims priority, application Japan, Apr. 12, 1995, 7-087135

Int. Cl.[6] C04B *35/468*

U.S. Cl. 501—138 20 Claims



1. A non-reduced dielectric ceramic composition comprising:

a main component comprising $BaTiO_3$; at least one rare earth metal oxide (Re_2O_3) selected from the group consisting of Tb_2O_3, Dy_2O_3, Ho_2O_3, and Er_2O_3; and Co_2O_3;

an sub-component comprising BaO, MnO, MgO, and at least one compound selected from the group consisting of NiO and Al_2O_3; and an oxide glass consisting essentially of Li_2O—$(Si_xTi_{1-x})O_2$—M wherein M represents at least one member selected from the group consisting of Al_2O_3 and ZrO_2 and X is from 0.3 to 1.

5,646,082

CRYSTALLINE ALUMINOSILICATE, PROCESS FOR PRODUCING THE SAME, AND CATALYST EMPLOYING THE SAME FOR CATALYTIC CRACKING OF HYDROCARBON OIL

Masaki Tan-no, Saitama; Seiichi Harima, Tokyo; Mitsugu Tsujii, Chiba, and Mitsuru Ohi, Saitama, all of Japan, assignors to Cosmo Research Institute, and Cosmo Oil Co., Ltd., both of Tokyo, Japan

Continuation of Ser. No. 80,308, Jun. 24, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 471,201

Int. Cl.[6] B01J *29/08*

U.S. Cl. 502—65 6 Claims

1. A catalytic cracking catalyst for catalytic cracking of a hydrocarbon oil which catalyst comprises a crystalline aluminosilicate and an inorganic oxide matrix wherein at least one rare earth metal is incorporated in said crystalline aluminosilicate and said crystalline aluminosilicate has the following characteristics:

(A) an SiO_2/Al_2O_3 molar ratio as determined by chemical analysis of from 5 to 11;

(B) a unit cell dimension of from 24.45 to 24.55 Å;

(C) a molar ratio of the Al contained in the zeolite framework to the total Al contained in the aluminosilicate of from 0.3 to 0.9, said molar ratio being calculated using the following equations (1) to (3):

$$N_{Al}=(a_0-2.425)/0.000868 \quad (1)$$

where a_0 is the unit cell dimension (nm) and N_{Al} is the number of Al atoms per unit cell,

$$(Si/Al)=(192-N_{Al})/N_{Al} \quad (2)$$

where 192 is the number of Si and Al atoms per unit cell of zeolite Y, and

(Al in the zeolite framework)/total (Al)={(Si/Al) determined by chemical analysis}/{(Si/Al) determined by using equation (2)}(3);

(D) an alkali metal content, in terms of oxide, of from 0.02 to 1.5% by weight;

(E) an X-ray diffraction pattern having peaks characteristic of zeolite Y; and

(F) an ignition loss of from 0.5 to 20% by weight.

5,646,083

PROCESS FOR THE PREPARATION OF A BRIDGED METALLOCENE COMPOUND AS WELL AS A CATALYST COMPONENT AND A PROCESS FOR THE POLYMERIZATION OF OLEFINS

Johannus A.M. van Beek, Brunssum, Netherlands, assignor to DSM N.V., Netherlands

Continuation of Ser. No. 940,287, Sep. 3, 1992, abandoned. This application Feb. 28, 1994, Ser. No. 202,738

Claims priority, application Netherlands, Sep. 6, 1991, 9101502

Int. Cl.[6] C08F *4/42*

U.S. Cl. 502—104 15 Claims

1. A process for preparing a bridged metallocene compound having the formula:

$$R''(CpR_n)(CpR'_m)Me(Q)_p$$

wherein

CpR_n is a cyclopentadienyl or indenyl group, whether or not substituted with one or more alkyl, phosphine, amine, alkyl ether, thio, or aryl ether groups;

CpR'_m is a cyclopentadienyl or indenyl group, whether or not substituted with one or more alkyl, phosphine, amine, alkyl ether, thio or aryl ether groups;

R" is a structural bridge between the Cp rings;

Me is a metal from Group 4*b* of the Periodic System of Elements;

each Q is independently selected from the group consisting of alkyl-, aryl-, arylalkyl-, alkylaryl-, amide-, alkoxy-, halogenide-, sulphide-, hydride- and phosphorous-containing groups, and

m, n and p are integers, wherein $0 \leqq n \leqq 4$, $0 \leqq m \leqq 4$, and $1 \leqq p \leqq 4$ which comprises,

(a) allowing a bridged double ligand having at least two chemically interbonded cyclopentadiene groups to react with a proton acceptor which is capable of reacting with said bridged double ligand whereby a bridged double anion is obtained,

(b) converting said bridged double anion into said bridged metallocene compound by allowing said bridged double anion to react with a metal compound wherein the metal component thereof is selected from the group consisting of metals from Group 4*b* of the Periodic System of Elements, in a liquid dispersant which comprises at least one weak Lewis base, the conjugated acid of which has a dissociation constant pKa wherein the pKa is $\leqq -2.5$,

wherein the liquid dispersant contains from 0 to at most 1 mole equivalent, relative to the metal compound, of a strong Lewis base, the conjugated acid of which has a pKa which is greater than −2.5.

5,646,084

POLYMERIZATION PROCESS USING DIENE CONTAINING CATALYSTS

Jasson Todd Patton; David D. Devore; Franis J. Timmers; Jorge Soto; Gregory F. Schmidt, and David R. Wilson, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 267,991, Jun. 28, 1994, Pat. No. 5,543,480. This application May 22, 1995, Ser. No. 447,312

Int. Cl.[6] B01J *31/12*

U.S. Cl. 502—152 **10 Claims**

1. A composition of matter comprising:

1) at least one metal complex corresponding to the formula:

$$L_mMD_dX_pX'_q$$

wherein:

M is titanium in the +2 formal oxidation state;

L is an anionic group containing an aromatic π-system through which the group is bound to M;

D is a C_{4-40} conjugated diene selected from the group consisting of 1,3-pentadiene, 1,4-diphenyl-1,3-butadiene, 3-methyl-1,3-pentadiene, 1,4-dibenzyl-1,3-butadiene, 2,4-hexadiene, 1,4-ditolyl-1,3-butadiene, and 1,4-bis(trimethylsilyl)-1,3-butadiene;

X is an anionic ligand group having up to 40 atoms exclusive of the class of ligands defined by L;

X' independently each occurrence is a neutral ligating compound having up to 20 atoms, with the proviso that X' is not π-bound to M through an arene group;

d is 1 or 2;

m is 0 or 1;

p is 0, 1, or 2;

q is 0, 1 or 2; and

2) an activating cocatalyst, the molar ratio of 1) to 2) being from 1:10,000 to 100:1, or the reaction product formed by converting 1) to an active catalyst by use of bulk electrolysis.

5,646,085

MATERIAL BASED ON TUNGSTEN CARBIDE(S), CATALYST AND PROCESS USEFUL FOR THE HYDROGENATION OF AN AROMATIC NITRO OR NITROSO DERIVATIVE EMPLOYING THIS CATALYST

Roland Jacquot, Sainte Foy les Lyon, and Claude Mercier, Lyons, both of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Division of Ser. No. 955,196, Oct. 2, 1992, abandoned. This application Jul. 8, 1994, Ser. No. 272,288

Claims priority, application France, Oct. 4, 1991, 91 12269; Oct. 4, 1991, 91 12270; Jul. 10, 1992, 92 08581

Int. Cl.[6] B01J *27/22;* **C07C** *209/00*

U.S. Cl. 502—177 **6 Claims**

1. A reagent for hydrogenation of a nitroaromatic compound or a nitrosoaromatic compound, comprising

(a) a tungsten carbide catalyst prepared by subjecting tungsten carbide, or a composite containing tungsten carbide, in liquid medium to hydrogenation at a temperature and pressure selected from the group consisting of (i) a temperature of at a temperature of at least 100° C. at a pressure of at least 10 atmospheres, and (iii) a temperature of at least 150° C. at a pressure of at least 2 atmospheres;

(b) hydrogen at a pressure of at least 2 atmospheres; and

(c) a liquid phase.

5,646,086

ALKYLATION CATALYST FOR C_4-C_5 ISOPARAFFINS USING AT LEAST ONE C_2-C_6 OLEFIN

Eric Benazzi, Montesson; Jean-François Joly, Paris, and Christian Marcilly, Houilles, all of France, assignors to Institut Francais Du Petrole, Rueil-Malmaison, France

Filed May 4, 1995, Ser. No. 433,961

Claims priority, application France, May 4, 1994, 94 05493

Int. Cl.[6] B01J *21/02;27/02;* **C07C** *2/58*

U.S. Cl. 502—202 **21 Claims**

1. A catalyst comprising a porous organic or mineral support and an acidic phase comprising $B(OSO_2CF_3)_3$ and at least one acid selected from the group consisting of sulphuric acid (H_2SO_4) and trifluoromethane sulphonic acid (CF_3SO_3H), said support being impregnated with said acidic phase and said support prior to impregnation having a total pore volume between 0.1 and 0.6 cm^3/g, said catalyst being essentially constituted by particles with an average diameter of between 0.1 and 30 μm, said catalyst being characterised in that said acidic phase comprises:

between 0.1 and 70% by weight of $B(OSO_2CF_3)_3$;

between 0 and 90% by weight of H_2SO_4;

between 0 and 90% by weight of CF_3SO_3H; with the provision that the combined total of H_2SO_4 and CF_3CO_3H is above zero.

5,646,087

PROMOTED SILVER ACATALYST PREPARATION

Nabil Rizkalla, Riverdale, and William Armstrong, Ramsey, both of N.J., assignors to Scientific Design Company, Inc., Little Ferry, N.J.

Continuation-in-part of Ser. No. 348,340, Dec. 2, 1994, Pat. No. 5,504,052. This application Jan. 16, 1996, Ser. No. 587,281

Int. Cl.[6] B01J *23/50*

U.S. Cl. 502—347 **6 Claims**

1. In a process for the preparation of a supported silver catalyst suitable for use in the oxidation of ethylene to ethylene oxide wherein an inert support is impregnated with a silver/amine solution and with one or more alkali metal selected from potassium, rubidium and cesium and calcined, the improvement which comprises heating the impregnated support to 300°–500° C. for a time sufficient to convert the silver to metallic silver and to decompose



and remove organic materials, the impregnated support being maintained under an inert gas atmosphere essentially free of oxygen at temperatures of 250° C. or higher.

5,646,088

THERMOSENSITIVE RECORDING MATERIAL AND PRODUCTION PROCESS THEREOF

Kunihiko Hada; Yasutomo Mori; Motoi Orihara, and Shuji Miyamoto, all of Numazu, Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Feb. 15, 1996, Ser. No. 600,903

Claims priority, application Japan, Feb. 16, 1995, 7-050342

Int. Cl.[6] B41M *5/30*

U.S. Cl. 503—209 **24 Claims**

1. A thermosensitive recording material, comprising a substrate and a thermosensitive coloring layer, formed on said substrate, said thermosensitive coloring layer comprising a leuco dye and a coloring developer for inducing color formation in said leuco dye upon application of heat thereto, wherein said thermosensitive coloring layer comprises an ultraviolet stabilizer, comprising 2-(2-hydroxy-3-tert-butyl-5-methylphenyl)-5-chlorobenzotriazole, and a fluorescent brightening agent, comprising one or more 4,4'-diamino stilbene-2,2'-disulfonic acid compounds.

5,646,089

HEAT TRANSFER COVER FILMS

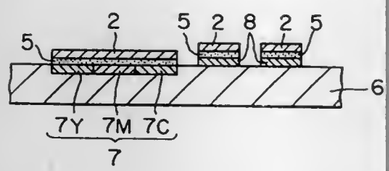
Katsuyuki Oshima; Jitsuhiko Ando, and Masanori Torii, all of Tokyo, Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Japan

Division of Ser. No. 396,791, Mar. 1, 1995, Pat. No. 5,527,759, which is a division of Ser. No. 22,865, Mar. 1, 1993, Pat. No. 5,427,997, which is a division of Ser. No. 663,952, Apr. 12, 1991, abandoned. This application May 26, 1995, Ser. No. 451,971

Claims priority, application Japan, Jul. 14, 1989, 1-180472; Jul. 14, 1989, 1-180473; Jul. 19, 1989, 1-180471; Sep. 20, 1989, 1-241929; Dec. 18, 1989, 1-325870; May 31, 1990, 2-140011

Int. Cl.[6] B41M *5/035;5/38*

U.S. Cl. 503—227 **1 Claim**



1. A heat transfer cover film comprising:

a substrate film;

a transparent resin layer releasably provided on the substrate film, said transparent resin layer comprising at least one material selected from the group consisting of a wax, a slip agent, an ultraviolet absorber, an antioxidant and a fluorescent brightener;

a release layer interleaved between said substrate film and said transparent resin layer, said release layer comprising a water soluble polymer selected from the group consisting of polyvinyl alcohol, polyvinyl pyrrolidone, gelatin, carboxymethylcellulose, methylcellulose, polyethylene oxide, gum arabic, water soluble butyral, water soluble polyester, water soluble polyurethane, water soluble polyacrylic, water soluble polyamide, and mixtures thereof;

a heat-sensitive adhesive layer provided on said transparent resin layer, said heat-sensitive adhesive layer comprising a resin having a mean polymerization degree of 50–300 and a glass transition temperature lying in the range of 40° to 75° C., said resin being selected from the group consisting of polyvinyl chloride, polyvinyl acetate, a vinyl chloride/vinyl acetate copolymer and mixtures thereof; and

a dye layer provided on said substrate film.

5,646,090

THERMAL TRANSFER IMAGE-RECEIVING SHEET

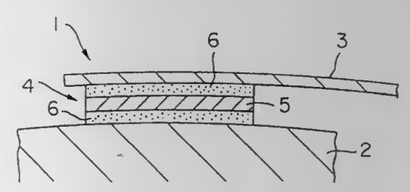
Yoshihiko Tamura; Hitoshi Saito; Minoru Furuse; Mineo Yamauchi, and Takumi Horii, all of Tokyo-To, Japan, assignors to Dai Nippon Printing Co., Ltd., Japan

Filed Apr. 1, 1996, Ser. No. 625,147

Claims priority, application Japan, Apr. 6, 1995, 7-106925; Apr. 21, 1995, 7-096335

Int. Cl.[6] B41M *5/035;5/38*

U.S. Cl. 503—227 **7 Claims**

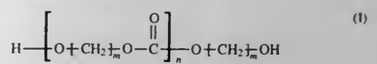


1. A thermal transfer image-receiving sheet comprising: a substrate; and an intermediate layer and a receptive layer formed in that order on at least one surface of the substrate,

the intermediate layer containing a polyurethane resin having a glass transition temperature of 40° C. or above,

the polyurethane resin being a reaction product of a polycarbonate diol with an isocyanate compound,

the polycarbonate diol having a structure represented by the following chemical formula (I):



(I)

wherein m is 2 to 10 and n is 1 to 10.

5,646,091

REHMANNIA GLUTINOSA EXTRACT AND A SAFENER COMPOSITION HAVING SAFENER ACTIVITY TO A HERBICIDE PARAQUAT

Hee Sui Lee, Eunma Apt. 16-603, 318, Daechi-dong, Kangnam-ku, Seoul, Rep. of Korea

Filed Jun. 19, 1995, Ser. No. 491,698

Claims priority, application Rep. of Korea, Jun. 20, 1994, 94-13950

Int. Cl.[6] A01N *25/32*

U.S. Cl. 504—108 **10 Claims**



1. A method of treating a plant comprising applying an extract of *Rehmannia glutinosa* having a safener activity to a herbicide paraquat.

5,646,092

PRETREATED CLAYS, THEIR PREPARATION AND USE IN FORMULATION DRILLING MUDS NOT AGGRESSIVE TO LAYER CLAYS

Stefano Carminati, Seriate-Bergamo, and Giovanni Burrafato, Tavazzano-Milan, both of Italy, assignors to Agip S.p.A., and Eniricerche S.p.A., both of Milan, Italy

PCT No. PCT/EP93/02586, § 371 Date Mar. 13, 1995, § 102(e) Date Mar. 13, 1995, PCT Pub. No. WO94/06881, PCT Pub. Date Mar. 31, 1994

PCT Filed Sep. 23, 1993, Ser. No. 397,056

Claims priority, application Italy, Sep. 24, 1992, MI92A2188

Int. Cl.[6] C09K *7/02*

U.S. Cl. 507—107 **14 Claims**

1. A process for preparing aqueous clay-based drilling muds, which consists essentially of:

(i) forming a dispersion of a clay in an aqueous medium consisting of water and an amount of a dispersing agent selected from the group consisting of lignosulfonates, lignites, polyacrylates and partially hydrolyzed polyacrylamides necessary to fluidify the clay, thereby adsorbing at least some of the dispersing agent on the surface of the clay;

(ii) separating the clay of step (i) having dispersing agent adsorbed therein from the aqueous solution containing any remaining non-adsorbed dispersant; and

(iii) redispersing the treated clay of step (ii) in water, in order to formulate said drilling mud, which is not aggressive to layer clays.

5,646,093

MODIFIED POLYGALACTOMANNANS AS OIL FIELD SHALE INHIBITORS

David Joseph Dino, Cranbury, N.J., assignor to Rhone-Poulenc Inc., Cranbury, N.J.

Continuation of Ser. No. 304,996, Sep. 13, 1994, abandoned. This application Aug. 13, 1996, Ser. No. 696,097

Int. Cl.[6] C09K *7/02*

U.S. Cl. 507—209 **9 Claims**

1. A method for the stabilization of a hydratable shale formation during a well drilling which comprises contacting at least a portion of the hydratable shale formation with an amount that is effective to inhibit shale hydration, of a composition comprising:

a) a polygalactomannan having hydrophilic groups and hydrophobic groups wherein said hydrophilic groups are selected from the group consisting of 2-hydroxybutyl ether, hydroxyethyl, hydroxypropyl, and alkyl groups having between one and four carbon atoms and mixtures thereof wherein the hydrophilic Substituent is present in an M.S. from about 0.2 to about 1 and wherein said hydrophobic groups are selected from the group consisting of RO—, HOR^1—O— and $R^2OCH_2C(OH)HCH_2O$— wherein R is an alkyl group which contains about 8 to about 28 carbon atoms, wherein R^1 is an alkylene group which contains about 8 to about 28 carbon atoms having the —OH group on the carbon atom that is beta to the ether group, and wherein R^2 is an alkyl group containing from about 5 to about 25 carbon atoms and wherein the hydrophobic substituent is present in an M.S. of about 0.001 to about 0.2;

b) one or more drilling fluid additives selected from the group consisting of weighing agents and drilling mud and mixtures thereof; and

c) water or brine.

5,646,094

RARE EARTH SUBSTITUTED THALLIUM-BASED SUPERCONDUCTORS

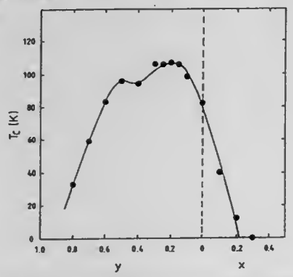
Jeffrey Lewis Tallon, 3 Marine Drive, York Bay, Eastbourne, and Murray Robert Presland, 4/1 Mahina Bay Road, Mahina Bay, Eastbourne, both of New Zealand

Continuation of Ser. No. 284,741, Aug. 2, 1994, abandoned, which is a continuation of Ser. No. 974,684, Nov. 12, 1992, abandoned, which is a continuation of Ser. No. 659,102, Feb. 21, 1991, abandoned. This application Apr. 13, 1995, Ser. No. 421,019

Claims priority, application New Zealand, Feb. 21, 1990, 232633; Apr. 27, 1990, 233482; Jun. 11, 1990, 234014

Int. Cl.[6] H01B *12/00;* **C04B** *35/50*

U.S. Cl. 505—120 **2 Claims**



1. A material which exhibits high temperature superconductivity at above 101 K., of formula

$$Tl_{0.5}Pb_{0.5}CaSr_{2-z}La_zCu_2O_7$$

wherein $0.15 \leqq z \leqq 0.3$.

5,646,095

SELECTIVE INSULATION ETCHING FOR FABRICATING SUPERCONDUCTOR MICROCIRCUITS

Walter Eidelloth, Yorktown Heights, and William Joseph Gallagher, Ardsley, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 154,673, Nov. 19, 1993, abandoned, which is a continuation of Ser. No. 716,889, Jun. 18, 1991, abandoned. This application Oct. 5, 1994, Ser. No. 318,576

Int. Cl.[6] H01L *21/00*

U.S. Cl. 505—330 **26 Claims**

1. A method for selectively etching insulative material composed of $SrTiO_3$ or MgO in the presence of a copper oxide perovskite superconductive material by treating the insulative material with a liquid insulative-material selective etchant solution comprising hydrogen fluoride in water for a period of time defining an etching time period, insulative material being etched away by the etchant solution at an insulative-material etch etched away by the etchant solution at an insulative-material etch rate over the etching time period to remove a quantity of the insulative material, any copper oxide perovskite superconductive material which comes into contact with the etchant solution during the etching time period being etched away by the etchant solution at a superconductive-material etch rate which is substantially lower than the insulative-material etch rate and treating said copper oxide perovskite superconductive material exposed to said liquid insulative material selective etchant with another etchant to remove a surface layer.

5,646,096

PROCESS FOR FABRICATION SUPERCONDUCTING WIRING LINES

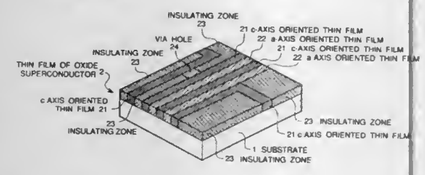
Hiroshi Inada; Takao Nakamura, and Mitchimoto Iiyama, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Japan

Division of Ser. No. 798,232, Nov. 1, 1991. This application Jun. 7, 1995, Ser. No. 472,641

Claims priority, application Japan, Nov. 1, 1990, 2-295661; Nov. 7, 1990, 2-301311

Int. Cl.[6] H01L *39/24;* **B05D** *5/12*

U.S. Cl. 505—430 **5 Claims**



1. A process for fabricating a superconducting circuit, comprising

depositing a first thin film of an oxide superconductor on a substrate such that the first thin film has a c-axis which is oriented perpendicular to a surface of the substrate,

removing predetermined areas of said first thin film to expose a surface of said substrate and leave a pattern of first superconducting wiring lines, and

depositing a second thin film of said oxide superconductor on said exposed surface of said substrate from which said first thin film has been removed to produce second superconducting wiring lines, the a-axis of said second thin film being oriented perpendicular to said first superconducting wiring lines and in parallel with said surface of the substrate.

5,646,097

METHOD OF FABRICATING A (1223) TL-BA-CA-CU-O SUPERCONDUCTOR

John Eric Tkaczyk, Delanson; Kenneth Wilbur Lay, Schenectady, both of N.Y., and Qing He, Knoxville, Tenn., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 364,872, Dec. 27, 1994, abandoned. This application Dec. 15, 1995, Ser. No. 573,602

Int. Cl.[6] B05D *5/12*

U.S. Cl. 505—470 **14 Claims**

1. A method of fabricating a polycrystalline (1223) thallium barium-calcium-copper-oxide superconductor which comprises the steps of:

depositing on a metal or ceramic substrate a powder precursor consisting essentially of compounds, except thallium compounds, that form the (1223) thallium-barium-calcium-copper-oxide superconductor in a stoichiometric amount;

increasing the density of the powder precursor on the substrate by compressing said powder precursor at a pressure of at least about 1000 kg/cm^2 to promote granular orientation; and then

soaking the compressed powder precursor on the substrate with thallium at a temperature between 840°–930° C. in the presence of a partial pressure of a thallium-containing vapor for a period of time to form the (1223) thallium-barium-calcium-copper-oxide superconductor with C-axis orientation of the superconducting crystals.

5,646,098

CARBONYL CONTAINING COMPOUNDS AND THEIR DERIVATIVES AS MULTI-FUNCTIONAL FUEL AND LUBE ADDITIVES

Stanley J. Brois, Westfield, N.J., assignor to Exxon Chemical Patents Inc, Linden, N.J.

Continuation-in-part of Ser. No. 48,625, Apr. 16, 1993, abandoned, which is a continuation-in-part of Ser. No. 927,990, Aug. 11, 1992, abandoned, which is a continuation of Ser. No. 844,064, Mar. 2, 1992, abandoned, which is a continuation-in-part of Ser. No. 775,878, Oct. 11, 1991, abandoned, which is a continuation-in-part of Ser. No. 556,243, Jul. 23, 1990, Pat. No. 5,057,564. This application May 13, 1994, Ser. No. 242,750

Int. Cl.[6] C10M *159/12;129/86;139/00*

U.S. Cl. 508—189 **11 Claims**

1. A product formed by reacting (a) an adduct of a hydrocarbyl and a vicinal polycarbonyl compound having three or more carbonyl groups, the adduct having a value of greater than 1, wherein n is the average number of vicinal polycarbonyl compounds incorporated per adduct, with (b) a reagent, wherein said reagent comprises a nucleophile selected from the group consisting of polyamines, polyols, amino alcohols and mixtures thereof.

5,646,099

AUTOMATIC TRANSMISSION FLUIDS OF IMPROVED VISCOMETRIC PROPERTIES

Raymond Frederick Watts, Long Valley, and Ricardo Alfredo Bloch, Scotch Plains, both of N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Filed Jul. 17, 1995, Ser. No. 503,052

Int. Cl.[6] C10M *171/02;171/04;119/04*

U.S. Cl. 508—232 **7 Claims**

1. An automatic transmission fluid comprising:

(a) from 0 to 80 weight percent of a natural lubricating oil having a kinematic viscosity from 2 to 8 mm^2/s at 100° C.;

(b) from 2 to 80 weight percent of a synthetic lubricating oil having a kinematic viscosity from 2 to 100 mm^2/s at 100° C.;

(c) from 1 to 30 weight percent of a seal swelling agent;

(d) from 0.05 to 2.0 weight percent of a flow improver, wherein the flow improver is selected from the group consisting of C_8 to C_{18} dialkylfumarate vinyl acetate copolymers, styrene-maleic anhydride copolymers, polymethacrylates, polyacrylates, and their mixtures, providing the styrene-maleic anhydride copolymers, polymethacrylates and polyacrylates each have a molecular weight no greater than 500,000 atomic mass units; and

(e) from 0.01 to 5.0 weight percent of a friction modifier;

providing that the resulting fluid has a kinematic viscosity of at least 4.0 mm^2/s at 100° C., a −40° C. Brookfield viscosity no greater than 10,000 centipoise, a high temperature high shear viscosity at least 1.5 centipoise at a shear rate of 1×10^6 $sec.^{-1}$ and temperature of 150° C., and no greater than a 0.25 centipoise difference between a high temperature low shear viscosity measured at a shear rate of 2×10^2 $sec.^{-1}$ and temperature of 150° C. and said high temperature high shear viscosity.

5,646,100

MILD, AQUEOUS SKIN CLEANSING COMPOSITION

Peter D. Haugk, Lincoln Park; Teresa Pavlak, Fanwood, and Laura Briceno, Perth Amboy, all of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 195,235, Feb. 14, 1994, abandoned. This application Feb. 10, 1995, Ser. No. 386,399

Int. Cl.[6] C11D *1/29;1/90;1/94;3/48*

U.S. Cl. 510—131 **3 Claims**

1. An aqueous mild to the skin cleansing composition comprising

a. about 4 to 10 wt. % of a laureth sulfate having an average of one to four ethoxy groups,

b. about 1.5 to a maximum of 5 wt. % of an alkyl carboxy amido alkylene betaine wherein alkyl is about 8 to 18 carbon atoms and alkylene is from two to four carbon atoms,

c. about 1.5 to 8 wt. % of an alkyl polyglycoside wherein the average degree of polymerization is from about 1.3 to 1.8 and

d. an antibacterial effective mount of triclosan.

5,646,101

MACHINE DISHWASHING DETERGENTS CONTAINING AN OXYGEN BLEACH AND AN ANTI-TARNISHING MIXTURE OF A PARAFFIN OIL AND SEQUESTRANT

Fiona Susan MacBeath, Newcastle upon Tyne, Great Britain, assignor to The Procter & Gamble Company, Cincinnati, Ohio

PCT No. PCT/US94/00570, § 371 Date Oct. 20, 1995, § 102(e) Date Oct. 20, 1995, PCT Pub. No. WO94/16048, PCT Pub. Date Jul. 21, 1994

PCT Filed Jan. 14, 1994, Ser. No. 491,969

Claims priority, application European Pat. Off., Jan. 18, 1993, 93870004; May 28, 1993, 93870090

Int. Cl.[6] C11D *7/18;7/24;7/36;* **C23G** *1/18*

U.S. Cl. 510—220 **13 Claims**

1. A machine dishwashing detergent composition having silver anti-silver tarnishing properties containing

from 1% to 80% by weight of detergent builder compound

an oxygen-releasing bleaching agent such that the level of available oxygen in the composition measured according to the method herein is from 0.3% to 2.5%, and

an anti-silver tarnishing mixture containing:

from 0.05% to 2.5% by weight of a paraffin oil

from 0.005% to 3% by weight of a heavy metal ion sequestrant.

5,646,102

Patent Not Issued For This Number

5,646,103

BUILDER FOR DETERGENTS OR CLEANING COMPOSITIONS

Beatrix Kottwitz; Joerg Poethkow, both of Duesseldorf; Peter Krings, Krefeld, and Horst Upadek, Ratingen, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP94/00228, § 371 Date Sep. 15, 1995, § 102(e) Date Sep. 15, 1995, PCT Pub. No. WO94/18295, PCT Pub. Date Aug. 18, 1994

PCT Filed Jan. 27, 1994, Ser. No. 495,639

Claims priority, application Germany, Feb. 5, 1993, 43 03 448.9

Int. Cl.[6] C11D *3/37;3/22;1/12*

U.S. Cl. 510—361 **16 Claims**

1. In a detergent or cleaning composition, the improvement wherein the composition contains an incrustation inhibiting quantity in the amount from about 0.5 to about 30% by weight of the composition of at least one biodegradable terpolymer consisting of the monomer units of (a) from about 40 to about 60% by weight of at least one of a monoethylenically unsaturated C_{3-8} monocarboxylic acid and a salt thereof, (b) from about 10 to about 30% by weight of at least one of a 2-alkyl or aryl allylsulfonic acid and a salt thereof, and (c) from about 15 to about 40% by weight of a carbohydrate and from about 10 to about 65% by weight of a water-containing zeolite, a crystalline layer silicate, or a mixture thereof.

5,646,104

MICROEMULSION LIGHT DUTY LIQUID CLEANING COMPOSITIONS

Rita Erilli, Liege, Belgium, and Barbara Thomas, Princeton, N.J., assignors to Colgate-Palmolive Company, Piscataway, N.J.

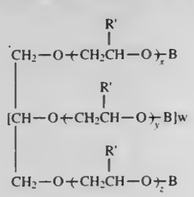
Continuation-in-part of Ser. No. 392,569, Feb. 23, 1995, Pat. No. 5,523,025. This application Oct. 6, 1995, Ser. No. 539,925

Int. Cl.[6] C11D *17/00;1/83;1/74*

U.S. Cl. 510—365 **10 Claims**

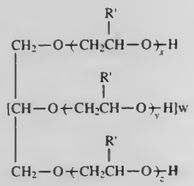
1. A light duty liquid microemulsion composition comprising approximately by weight: 1% to 26% of at least one anionic surfactant selected from the group consisting of sulfonate surfactants, alkyl sulfate surfactants and ethoxylated alkyl ether sulfate surfactants and mixtures thereof; 0 to 25% of a zwitterionic surfactant; 0.5% to 29% of a biodegradable compound selected from the group consisting of a mixture of an ethoxylated nonesterified polyhydric alcohol, an ethoxylated fully esterified polyhydric alcohol and an ethoxylated partially esterified polyhydric alcohol; 0.4% to 10% of a water insoluble hydrocarbon, essential oil, or a perfume; 1 to 20% of a cosurfactant; and the balance being water wherein the biodegradable compound is a mixture of:

Formula (I)



and

Formula (II)



wherein w equals one to, four, B is selected from the group consisting of hydrogen and a group represented by:



wherein R is selected from the group consisting of alkyl group having about 6 to 22 carbon atoms, and alkenyl groups having about 6 to 22 carbon atoms, wherein at least one of the B groups is represented by said



and R' is selected from the group consisting of hydrogen and methyl groups; x, y and z have a value between 0 and 60, provided that (x+y+z) equals about 2 to about 100, wherein Formula (I) the ratio of monoester/diester/triester is 45 to 90/5 to 40/to 20, wherein the ratio of Formula (I) to Formula (II) is a value between about 3 to about 0.02.

5,646,105

CLEANING DISINFECTANT

Klaus Hachmann, Hilden, and Carsten Friese, Hamburg, both of Germany, assignors to Henkel Ecolab GmbH & Co., Duesseldorf, Germany

PCT No. PCT/EP93/02670, § 371 Date May 4, 1995, § 102(e) Date May 4, 1995, PCT Pub. No. WO94/09105, PCT Pub. Date Apr. 28, 1994

PCT Filed Sep. 30, 1993, Ser. No. 411,715

Claims priority, application Germany, Oct. 9, 1992, 42 34 070.5

Int. Cl.[6] C11D *7/32;7/50*

U.S. Cl. 510—382 **14 Claims**

1. A clear aqueous cleaning and disinfectant composition comprising from about 5% to about 40% by weight of the reaction product of:

(a) an N-substituted propylenediamine corresponding to formula I:

$$R_1—NH—CH_2—CH_2—CH_2—NH_2 \quad (I)$$

in which R_1 is a linear alkyl radical containing 12 to 14 carbon atoms, and

(b) a compound corresponding to formula II:

$$R_2—O—CO—CH_2—CH_2—CH(NH_2)—COOH \quad (II)$$

in which R_2 is a hydrogen atom or an alkyl radical containing 1 to 4 carbon atoms, in a molar ratio of (a) to (b) of from about 1:1 to about 1:2, respectively, and containing

(c) from about 5% to about 35% by weight of an organic water-soluble solvent selected from an alcohol containing 1 to 4 carbon atoms, a glycol containing 2 to 4 carbon atoms and the diglycols and dialycol ethers derived therefrom, and

(d) from about 3% to about 30% by weight of a solubilizer selected from the group consisting of benzyl alcohol, 2-phenoxyethanol. 1-phenoxypropanol, and mixtures thereof, based on the weight of said composition.

5,646,106

COLD PEARLIZING CONCENTRATES

Pu Chen, and Siew Fang Yoong, both of Singapore, Singapore, assignors to Rhone-Poulenc Specialty Chemicals Asia Pacific PTE LTD

Filed Dec. 30, 1994, Ser. No. 367,495

Int. Cl.[6] C11D *1/18;1/38;1/12;1/755*

U.S. Cl. 510—416 **5 Claims**

1. A cold pearlizing concentrate consisting essentially of:

a) from about 15 to 25 percent weight of an emulsifier selected from the group consisting of, polyethylene glycol monostearate, polyethylene glycol distearate, ethylene glycol monostearate, ethylene glycol distearate, and mixtures thereof;

b) from about 1 to about 20 weight percent of a nonionic alcohol ethoxylate of the formula:

$$R—O—(CH_2CH_2O)_n—H$$

wherein R is a C_8 to C_{22} alkyl and n is 1 to 40;

c) from about 1 to about 20 weight percent of an anionic surfactant selected from the group consisting of the formulas:

$$R_1—O—SO_3M \text{ and } R_1—O—(CH_2CH_2O)_n—SO_3M,$$

wherein R_1 is C_8–C_{20} alkyl or C_8–C_{20} alkyl C_6– C_{12} aryl; n is 1–40; and M is selected from the group consisting of sodium, calcium, magnesium, ammonium and triethanolamine;

d) from about 1 to about 10 weight percent of a zwitterionic surfactant selected from the group consisting of

i) betaines

ii) amidobetaines, and

iii) sulfobetaines; and

e) water.

5,646,107

PRODUCTION OF ANIONIC SURFACTANT GRANULES

William Derek Emery; Kenneth Metcalfe, and Peter James Tollington, all of Wirral, United Kingdom, assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Filed Aug. 24, 1995, Ser. No. 518,901

Claims priority, application United Kingdom, Aug. 26, 1994, 9417356

Int. Cl.[6] C11D *17/06;3/10*

U.S. Cl. 510—457 **8 Claims**

1. A process for the production of detergent particles consisting essentially of at least 75%, by weight of an anionic surfactant and no more than 10% by weight of water which comprises feeding a paste materials comprising water in an amount of more than 10% by weight of the paste and the surfactant into a drying zone, heating the paste material to a temperature In the range of about 130° to 170° C. in the said drying zone to reduce the water content to not more than 10% by weight and subsequently cooling the material to form detergent particles wherein at least 80% of the particles have a particle size of 180 to 1500 μm and less than 10% have a particle size less than 180 μm.

5,646,108

Patent Not Issued For This Number

5,646,109

CONVERTIBLE MICROEMULSION FORMULATIONS

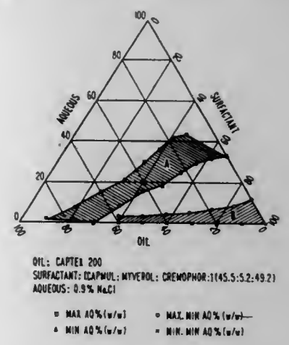
Albert J. Owen, West Chester, Pa., and Seang H. Yiv, Wilmington, Del., assignors to LDS Technologies, Inc., Boothwyn, Pa.

Continuation of Ser. No. 885,202, May 20, 1992, Pat. No. 5,444,041, which is a continuation-in-part of Ser. No. 841,931, Feb. 25, 1992, abandoned, which is a continuation-in-part of Ser. No. 837,347. Feb. 14, 1992, abandoned, which is a continuation-in-part of Ser. No. 687,691, Apr. 19, 1991, abandoned. This application Apr. 20, 1995, Ser. No. 425,475

Claims priority, application WIPO, Apr. 15, 1992, PCT/US92/03086

Int. Cl.[6] A61K *9/107;38/00;38/16;39/00*

U.S. Cl. 514—2 **21 Claims**



1. A method of administering to animals a biologically-active material, which method consists essentially of:

(a) providing a water-in-oil microemulsion composition that converts to an oil-in-water emulsion upon the addition of water, comprising:

(1) up to about 60 volume percent, based upon the total volume of the microemulsion, of an internally dispersed aqueous phase comprising an effective amount of a biologically-active material wherein the biologically-active material is a water-soluble protein or peptide and is therapeutic;

(2) from about 5 to 90 volume percent of a continuous oil phase comprising at least one pharmaceutically-acceptable oil; and

(3) from 1 to 70 volume percent of a surfactant or mixture of surfactants, wherein the surfactant or surfactant mixture has a hydrophilic-lipophilic balance value of from 7 to 14, and

(b) administering a therapeutically effective amount of the water-in-oil microemulsion to the body of an animal, wherein the water-in-oil microemulsion is administered orally; and

(c) achieving an up-take of a therapeutically effective amount of the biologically-active material in the body of the animal.

5,646,110

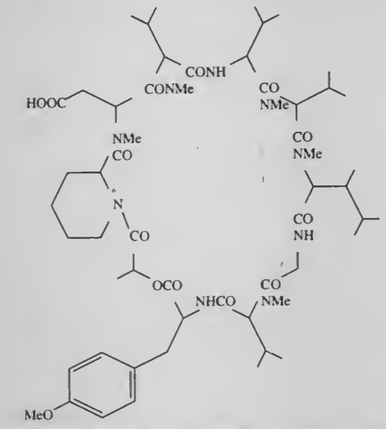
FUNGICIDALLY ACTIVE COMPOUNDS

Jens Breinholt, Bagsvaerd; Ruby Ione Nielsen, Farum, and Georg Wilhelm Jensen, Bagsvaerd, all of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

Division of Ser. No. 984,563, Mar. 5, 1993, Pat. No. 5,514,648.
This application Jun. 6, 1995, Ser. No. 470,381
Claims priority, application Denmark, Sep. 27, 1990, 2236/90
Int. Cl.[6] C12N *1/14;* **A01N** *63/04;* **C07K** *11/02;* **C12P** *21/04*
U.S. Cl. 514—9 **19 Claims**

1. A fungicidal composition comprising as an active ingredient a compound of formula III

(III)



cyclo-[Pec-MeAsp-MeVal-Val-MeVal-MeIle-Gly-MeVal-TyrOMe-D-Lact] (III) wherein each amino acid residue and the lactate residue independently may occur in L- or D-form, and derivatives thereof in combination with other biocidal agents.

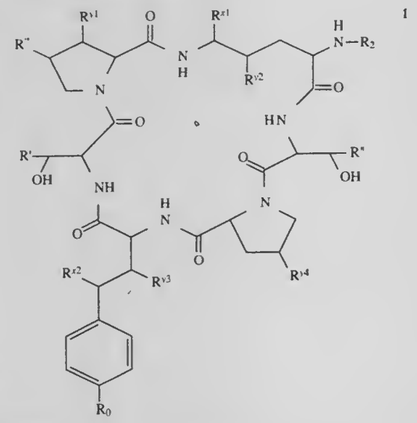
5,646,111

CYCLIC PEPTIDE ANTIFUNGAL AGENTS

Peter S. Borromeo, Fishers; James A. Jamison; Michael J. Rodriguez, both of Indianapolis; William W. Turner, Bloomington, and Venkatraghaven Vasudevan, Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 418,341, Apr. 7, 1995, abandoned.
This application Mar. 7, 1996, Ser. No. 612,208
Int. Cl.[6] C07K *7/64;7/50*
U.S. Cl. 514—11 **64 Claims**

1. A compound of formula I:



wherein:

R' is hydrogen, methyl or $NH_2C(O)CH_2$—;

R" and R'" are independently methyl or hydrogen;

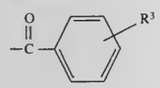
R^{x1}, R^{x2}, R^{y1}, R^{y2}, R^{y3}, and R^{y4} are independently hydroxy or hydrogen;

R_0 is a group of the formula



R_1 is C_1–C_6 alkyl, C_1–C_6 alkoxy, phenyl, p-halo-phenyl, p-nitrophenyl, phenoxy, benzyl, p-halo-benzyl, or p-nitro-benzyl;

I) R_2 is a group of the formula



where:

A) R_3 is C_1–C_{12} alkyl, C_1–C_6 alkoxy or quinolyl;

B) R_3 is —O—$(CH_2)_m$—[O—$(CH_2)_n$]$_p$—O—(C_1–C_{12} alkyl);

m and n are independently 2, 3 or 4;

p is 0 or 1; or

C) R_3 is —Y—(C_1–C_{12} alkyl);

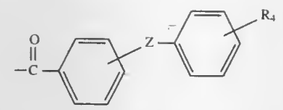
Y is —C≡C— or —CH=CH—; or

D) R_3 is —O—$(CH_2)_q$—G;

q is 2, 3 or 4;

G is C_7–C_{10} bicycloalkyl or C_7–C_{14} tricycloalkyl; or

II) R_2 is a group of the formula



where:

Z is —O—, —C≡C—, —CH=CH—, —CH_2—CH_2—, —CH_2—, or a bond;

A) R_4 is hydrogen, C_1–C_{12} alkyl, C_1–C_{12} substituted alkyl, C_2–C_{12} alkenyl, C_2–C_{12} substituted alkenyl, C_2–C_{12} alkynyl, C_2–C_{12} substituted alkynyl, C_1–C_{12} alkoxy, C_3–C_{12} cycloalkyl, C_7–C_{10} bicycloalkyl, C_7–C_{14} tricycloalkyl, C_3–C_{12} cycloalkoxy, naphthyl, pyridyl, thienyl, benzothienyl, quinolyl or phenyl; or

B) R_4 is phenyl substituted by amino, C_1–C_{12} alkylthio, halo, C_1–C_{12} alkyl, C_2–C_{12} alkenyl, C_2–C_{12} alkynyl, C_1–C_{12} substituted alkyl, C_2–C_{12} substituted alkenyl, C_2–C_{12} substituted alkynyl, C_1–C_{12} alkoxy, trifluoromethyl, phenyl, substituted phenyl, or phenyl substituted with a group of the formula —O—$(CH_2)_m$—[O—$(CH_2)_n$]$_p$—O—(C_1–C_{12} alkyl) where m, n and p are as defined above; or

C) R_4 is C_1–C_{12} alkoxy substituted with halo, C_3–C_{12} cycloalkyl, C_7–C_{10} bicycloalkyl, C_7–C_{14} tricycloalkyl, C_1–C_6 alkoxy, C_2–C_{12} alkynyl, amino, C_1–C_4 alkylamino, di(C_1–C_4 alkyl) amino, formamido, C_2–C_{12} alkanoylamino, or phenyl substituted with a group of the formula —O—$(CH_2)_m$—[O—$(CH_2)_n$]$_p$—O—(C_1–C_{12} alkyl) where m, n and p are as defined above; or

D) R_4 is —O—$(CH_2)_r$—W—R_5;

r is 2, 3 or 4;

W is pyrrolidino, piperidino or piperazino;

R_5 is hydrogen, C_1–C_{12} alkyl, C_3–C_{12} cycloalkyl, benzyl or C_3–C_{12} cycloalkylmethyl; or

E) R_4 is —Y^1—R_6;

Y^1 is —C≡C— or —CH=CH—;

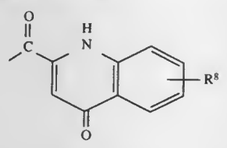
R_6 is C_3–C_{12} cycloalkyl, C_7–C_{10} bicycloalkyl, C_7–C_{14} tricycloalkyl, C_3–C_{12} cycloalkenyl, naphthyl, benzothiazolyl, thienyl, indanyl, fluorenyl, or phenyl substituted with C_1–C_{12} alkylthio, C_2–C_{12} alkenyl, C_2–C_{12} alkynyl, halo(C_1–C_6 alkoxy) or a group of the formula —O—$(CH_2)_r$—W—R_5 where r, W and R_5 are as defined above; or

R_6 is phenyl substituted with a group of the formula —O—$(CH_2)_m$—[O—$(CH_2)_n$]$_p$—O—(C_1–C_{12} alkyl) where m, n and p are as defined above; or

F) R_4 is C_1–C_{12} alkoxy substituted with a group of the formula —NHC(O)R_7;

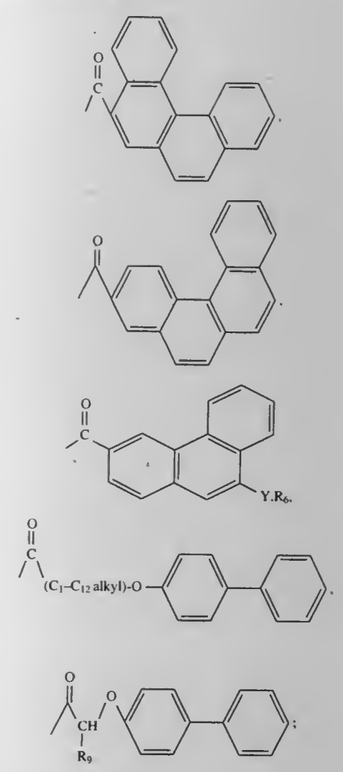
R_7 is C_1–C_6 alkoxy, or phenyl (C_1–C_6 alkoxy); or

III) R_2 is a group of the formula



where R^8 is C_1–C_{12} alkoxy or a group of the formula —O—$(CH_2)_m$—[O—$(CH_2)_n$]$_p$—O—(C_1–C_{12} alkyl) where m, n and p are as defined above; or

IV) R_2 is a group of the formula



where:

Y and R_6 are as defined above;

R_9 is phenyl, C_1–C_{12} alkyl, or C_1–C_{12} alkoxy; or

V) R_2 is naphthoyl substituted with R_4 where R_4 is as defined above;

or a pharmaceutically acceptable salt thereof.

5,646,112

Patent Not Issued For This Number

5,646,113

TREATMENT OF PARTIAL GROWTH HORMONE INSENSITIVITY SYNDROME

Kenneth Attie, San Francisco, Calif.; Lena Mariana Susann Carlsson, Gothenburg, Sweden; Neil Gesundheit, Los Altos, and Audrey Goddard, San Francisco, both of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Filed Apr. 7, 1994, Ser. No. 224,982
Int. Cl.[6] A61K *14/00;38/27;38/14*
U.S. Cl. 514—12 **8 Claims**

1. A method for increasing the growth rate of a human patient having partial growth hormone insensitivity syndrome comprising administering an effective amount of growth hormone that increases the growth rate of the patient to said patient, whereby said patient has a height less than about −2 standard deviations

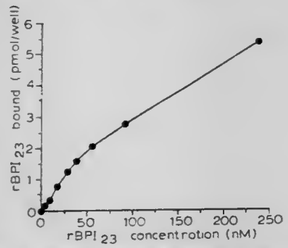
below normal for age and sex, and has serum levels of high-affinity growth hormone binding protein and IGF-1 that are at least 2 standard deviations below normal levels and has a mean or maximum stimulated serum level of growth hormone that is at least normal, wherein the patient does not have Laron syndrome.

5,646,114

ANTI-PROTOZOAN METHODS

Lewis H. Lambert, Jr., Fremont, Calif., assignor to XOMA Corporation, Berkeley, Calif.

Filed Jul. 11, 1994, Ser. No. 273,470
Int. Cl.[6] A61K *38/00*
U.S. Cl. 514—12 **7 Claims**



1. A method of treating protozoan infections comprising the step of administering a composition comprising an active agent selected from the group consisting of bactericidal/permeability-increasing (BPI) holoprotein, N-terminal fragments thereof commencing at residue 1 and ending at about residue 193 to 199, dimeric forms thereof, and $rBPI_{21}$, at a dose of about 100 μg/kg to about 100 mg/kg, to a mammalian subject infected with a protozoan species selected from the group consisting of *Toxoplasma gondii*, Leishmania species, *Trypanosoma cruzi, Plasmodium vivax, Plasmodium falciparum, Plasmodium ovale* and *Plasmodium malariae*.

5,646,115

ECTOPARASITE SALIVA PROTEINS AND APPARATUS TO COLLECT SUCH PROTEINS

Glenn R. Frank, Wellington; Shirley Wu Hunter, and Lynda Wallenfels, both of Ft. Collins, all of Colo., assignors to Heska Corporation, Ft. Collins, Colo.

Filed Oct. 7, 1994, Ser. No. 319,590
Int. Cl.[6] A61K *35/64;39/35;* **C07K** *1/16;14/435*
U.S. Cl. 514—12 **33 Claims**

1. A composition comprising a protein selected from the group consisting of fspE, fspF, fspG, fspH, fspI, fspJ1, fspJ2, fspK, fspL1, fspL2, fspM, fspN1, fspN2, fspN3 and mixtures thereof.

5,646,116

COMPOSITION AND METHOD FOR THE TREATMENT OF OSTEOPOROSIS IN MAMMALS

Robert Roland Bürk, Bottmingen, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Continuation of Ser. No. 252,061, Jun. 1, 1994, abandoned, which is a continuation of Ser. No. 990,821, Dec. 14, 1992, abandoned, which is a continuation of Ser. No. 686,309, Apr. 16, 1991, abandoned, which is a continuation of Ser. No. 460,416, Jan. 3, 1990, abandoned. This application Mar. 1, 1995, Ser. No. 396,884
Int. Cl.[6] A61K *38/30*
U.S. Cl. 514—12 **13 Claims**

1. A method for the treatment of osteoporosis in a mammal having reduced bone mineral density or prevention thereof in a mammal prone thereto comprising administering to said mammal in need thereof an effective amount for said treatment or prevention, respectively, of IGF-I.

5,646,117

THERAPEUTIC AGENT FOR TREATING WOUNDS USING MONOCYTE CHEMOTACTIC AND ACTIVATING FACTOR

Kouji Matsushima, Kanazawa, and Masanobu Naruto, Kamakura, both of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

PCT No. PCT/JP94/01512, § 371 Date Jul. 12, 1995, § 102(e) Date Jul. 12, 1995, PCT Pub. No. WO95/07710, PCT Pub. Date Mar. 23, 1995
PCT Filed Sep. 13, 1994, Ser. No. 433,519
Claims priority, application Japan, Sep. 13, 1993, 5-227385
Int. Cl.[6] A61K *38/19*
U.S. Cl. 514—12 **10 Claims**

1. A method of treating wounds comprising administering to a patient in need thereof an effective amount of a therapeutic agent having as an active ingredient a compound selected from the group consisting of monocyte chemotactic and activating factor, a variant thereof having monocyte attracting properties, a derivative of monocyte chemotactic and activating factor and a variant of said derivative.

5,646,118

PRODUCT CONTAINING GROWTH FACTOR AND GLUTAMINE AND USE OF GROWTH FACTOR FOR THE TREATMENT OF INTESTINAL MUCOSA

Reinhold Kihlberg, Österskär; Svante Bengt Liodgren, Märsta, and Lars Göran Sandberg, Rimbo, all of Sweden, assignors to Pharmacia & Upjohn AB, Stockholm, Sweden

Continuation of Ser. No. 975,558, Feb. 23, 1993, Pat. No. 5,462,924. This application May 5, 1995, Ser. No. 435,481
Claims priority, application Sweden, Aug. 24, 1990, 9002732
Int. Cl.[6] A61K *31/22;31/23;9/00;* **C07C** *69/30*
U.S. Cl. 514—12 **23 Claims**

1. Product containing
a) at least one member selected from the group consisting of glutamine, L-amino acid of glutamine, N-acetyl-L-glutamine and glutamine-containing peptide;
b) fatty acid containing 2–12 carbon atoms; and
c) IGF-1 for simultaneous, separate or sequential administration to a patient in need thereof for treating atrophy of the gut mucosa.

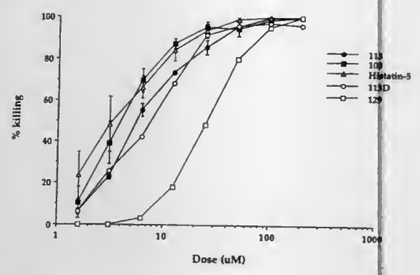
5,646,119

D-AMINO ACID HISTATIN-BASED PEPTIDES AS ANTI-FUNGAL AND ANTI-BACTERIAL AGENTS

Frank G. Oppenheim, Chestnut Hill; Tao Xu, Newton, and Peter Spacciapoli, Newbury, all of Mass., assignors to Periodontix, Inc., Del., and The Trustees of Boston University, Mass.

Continuation-in-part of Ser. No. 287,717, Aug. 9, 1994, Pat. No. 5,486,503, which is a continuation of Ser. No. 145,030, Oct. 28, 1993, abandoned, which is a continuation of Ser. No. 786,571, Nov. 1, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 485,273
Int. Cl.[6] A61K *38/08;38/10;* **C07K** *7/06;7/08*
U.S. Cl. 514—12 **5 Claims**

1. A composition for treating a fungal or bacterial infection comprising a histatin-based peptide having an amino acid sequence of at least eight amino acids and comprising one or more D-amino acids wherein,
a) the amino acid sequence of histatin 9 as set forth in SEQ ID NO: 9;
b) the amino acid sequence of peptide 101 as set forth in SEQ ID NO: 13;



c) the amino acid sequence of peptide 102 as set forth in SEQ ID NO: 14;
d) the amino acid sequence of peptide 103 as set forth in SEQ ID NO: 15;
e) the amino acid sequence of peptide 104 as set forth in SEQ ID NO: 16;
f) the amino acid sequence of peptide 105 as set forth in SEQ ID NO: 17;
g) the amino acid sequence of peptide 113 as set forth in SEQ ID NO: 18;
h) the amino acid sequence of histatin 11 as set forth in SEQ ID NO: 11;
i) the amino acid sequence of peptide 129 as set forth in SEQ ID NO: 23;
j) the amino acid sequence of peptide 117 as set forth in SEQ ID NO: 19;
k) the amino acid sequence of peptide 118 as set forth in SEQ ID NO: 20;
l) the amino acid sequence of peptide 119 as set forth in SEQ ID NO: 21;
m) the amino acid sequence of peptide 120 as set forth in SEQ ID NO: 22; and
n) combinations of two or more of the above.

5,646,120

PEPTIDE-BASED INHIBITORS OF HIV REPLICATION

Martin Sumner-Smith, Bolton; Richard W. Barnett, Mississauga; Lorne S. Reid, Toronto, and Nahum Sonenberg, St. Luc, all of Canada, assignors to Allelix Biopharmaceuticals, Inc., Missauga, Canada

Continuation of Ser. No. 779,735, Oct. 23, 1991, abandoned, which is a continuation-in-part of Ser. No. 602,953, Oct. 24, 1990, abandoned. This application Dec. 14, 1994, Ser. No. 357,056
Int. Cl.[6] A61K *38/08;* **C07K** *5/00*
U.S. Cl. 514—14 **28 Claims**

1. A compound of the formula

R1—(X)—R2

wherein:
R1 is H, lower alkanoyl or a deaminated amino acid;
R2 is OH, lower alkyl, amino, N-(loweralkyl)amino, N,N-di-(loweralkyl)amino or a decarboxylated amino acid; and
X represents a D-arginine homopolymer consisting of from 7 to 12 D-arginine residues.

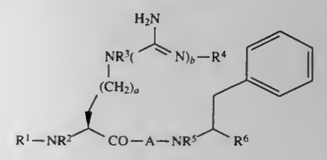
5,646,121

PSEUDOPEPTIDES WITH ANTIVIRAL ACTIVITY

Dieter Häbich, Wuppertal; Thomas-J. Schulze, Köln; Jürgen Reefschläger; Jutta Hansen, both of Wuppertal; Rainer Neumann, Köln; Gert Streissle, Wuppertal, and Arnold Paessens, Haan, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Sep. 7, 1994, Ser. No. 302,064
Claims priority, application Germany, Sep. 14, 1993, 43 31 134.2
Int. Cl.[6] C07D *241/04;211/06;* **A61K** *31/16;31/165*
U.S. Cl. 514—18 **9 Claims**

1. A pseudopepetide of the formula



in which
a represents a number 1, 2 or 3,
b represents a number 0 or 1,
R^1 represents hydrogen, or represents an amino protecting group selected from the group consisting of allyloxycarbonyl, vinyloxycarbonyl, cyclohexyloxycarbonyl, adamantylcarbonyl, phthaloyl, 2,2,2 -trichloroethoxycarbonyl, 2,2,2-trichloro-tert-butoxycarbonyl, menthyloxycarbonyl, fluorenyl-9-methoxycarbonyl, formyl, acetyl, propionyl, pivaloyl, 2-chloroacetyl, 2-bromoacetyl, 2,2,-trifluoroacetyl, phthalimido, isovaleroyl, or represents a radical of the formula $R^7—NR^8—CO—$, $R^9—(CH_2)_c—CO—$, $R^{10}—(CH_2)_d—O—CO$, or represents a radical of the formula $—SO_2—R^{11}$, in which
R^7 denotes cycloalkyl having 3 to 6 carbon atoms, or denotes straight-chain or branched alkyl having up to 18 carbon atoms which is optionally substituted by hydroxyl, straight-chain or branched alkoxy having up to 4 carbon atoms, halogen, trifluoromethyl, trifluoromethoxy or cycloalkyl having 3 to 6 carbon atoms, or substituted by aryl having 6 to 10 carbon atoms which in turn is substituted identically or optionally differently up to 2 times by carboxyl, cyano, hydroxyl, halogen, perhalogenoalkyl having up to 5 carbon atoms, or by straight-chain of branched acyl, having up 6 carbon atom, alkoxy, having up to 6 carbon atoms or alkoxy carbonyl having up to 6 carbon atoms, or alkyl is optionally substituted by a group of the formula $—CO_2R^{12}$, in which
R^{12} denotes hydrogen, or straight-chain or branched alkyl or alkenyl having in each case up to 8 carbon atoms which are optionally substituted by phenyl, or
R^7 denotes aryl having 6 to 10 carbon atoms which is optionally substituted identically or differently up to 3 times by carboxyl, amino, halogen, hydroxyl, cyano, perhalogenoalkyl having up to 5 carbon atoms, or substituted by straight-chain or branched acyl, alkoxy, vinyl alkoxy, carbonyl, alkoxycarbonyl or having in each case up to 6 carbon atoms, which in turn is substituted by straight-chain or branched alkoxy having up to 6 carbon atoms, or denotes an amino acid radical of the formula



in which
R^{13} and R^{14} are identical or different and denote hydrogen or methyl, or
R^{13} and R^{14} together form a 5- or 6-membered saturated carbocyclic ring, or
R^{13} denotes hydrogen or methyl, and

R^{14} denotes cycloalkyl having 3 to 8 carbon atoms or aryl having 6 to 10 carbon atoms, or hydrogen, or straight-chain or branched alkyl having up to 8 carbon atoms where the alkyl is optionally substituted by methylthio, hydroxyl, mercapto or guanidyl, or by a group of the formula $—NR^{16}R^{17}$ or $R^{18}—OC—$, in which

R^{16} and R^{17}, independently of each other, denote hydrogen, straight-chain or branched alkyl having up to 8 carbon atoms, or phenyl, and

R^{18} denotes hydroxyl, benzyloxy, alkoxy having up to 6 carbon atoms, or the above listed group $—NR^{16}R^{17}$,

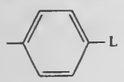
R^{15} denotes straight-chain or branched alkyl having up to 8 carbon atoms which is optionally substituted by hydroxyl or straight-chain or branched alkoxy having up to 6 carbon atoms, or denotes carboxyl, allyloxycarbonyl, straight-chain or branched alkoxycarbonyl having up to 8 carbon atoms, or benzyloxycarbonyl,

or the alkyl is optionally substituted by cycloalkyl having 3 to 8 carbon atoms, or substituted by aryl having 6 to 10 carbon atoms which, for its part, is optionally substituted by hydroxyl, halogen, nitro, alkoxy having up to 8 carbon atoms, or substituted by the group $—NR^{16}R^{17}$, in which

R^{16} and R^{17} have the abovementioned meaning,

or the alkyl is optionally substituted by a 5- to 6-membered nitrogen-containing heterocycle in which the —NH— functions are optionally substituted by alkyl having up to 6 carbon atoms or by an amino protective group,

R^7 denotes a radical of the formula,



in which

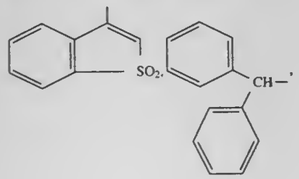
L denotes phenyl or pyridyl,

R^8 denotes hydrogen, straight-chain or branched alkyl having up to 6 carbon atoms, or an amino-protective group,

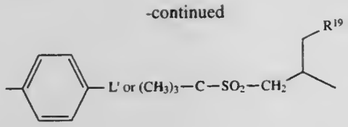
R^9 denotes straight-chain or branched alkyl having up to 8 carbon atoms, which is optionally substituted by pyridyl or phenyl, or aryloxy or aryl having in each case 6 to 10 carbon atoms, indolyl, quinolyl, quinoxalilyl, isoquinolyl, or a 5- to 7-membered, saturated or unsaturated, heterocycle having up to 3 heteroatoms selected from the group consisting of S, N or O, wherein said rings are substituted identically or differently up to 3 times by carboxyl, cyano, hydroxyl, halogen, amino, nitro, methylamino, perhalogenoalkyl having up to 5 carbon atoms, or substituted by straight-chain or substituted by straight-chain or branched alkyl, acyl, alkoxy or alkoxycarbonyl having in each base up to 6 carbon atoms,

or aryl is also optionally substituted by a 5- to 7-membered, saturated or unsaturated, heterocycle having up to 3 heteroatoms selected from the group consisting of S, N or O, which in turn is optionally substituted by phenyl, or

R^9 denotes a radical of the formula



-continued



in which

L' has the abovementioned meaning of L and is identical to or different from the latter,

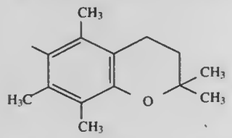
R^{19} denotes phenyl or naphthyl,

c denotes a number 0, 1, 2 or 3,

d denotes a number 0, 1, 2 or 3,

R^{10} has the abovementioned meaning of R^9 and is identical to or different from the latter,

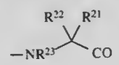
R^{11} denotes methyl, phenyl or naphthyl which is optionally substituted identically or differently up to 4 times by methyl or methoxy, or denotes a radical of the formula



R^2, R^3 and R^5 are identical or different and represent hydrogen or straight-chain or branched alkyl having up to 4 carbon atoms, or represent an aminoprotective group,

R^4 represents an aminoprotective group or a group of the formula $SO_2—R^{20}$ in which R^{20} independently has any of the above mentioned meanings of R^{11}

A represents a bond or a radical of the formula



in which

R^{21} and R^{22} are identical or different and have the abovementioned meaning of R^{13} and R^{14} and are identical to or different from the latter,

R^{23} independently has any of the abovementioned meanings of R^2, R^3 or R^5,

R^6 represents formyl or carboxyl, or represents straight-chain or branched alkoxycarbonyl having up to 8 carbon atoms, or represents a radical of the formula $—CH_2—OR^{24}$ or $—CH(OR^{25})_2$, in which

R^{24} and R^{25} are identical or different and denote hydrogen, straight-chain or branched alkyl having up to 6 carbon atoms, or a hydroxyl protective group,

or a pharmaceutically acceptable salt thereof, with the proviso that A must not represent valine.

5,646,122

SPECIFIC EATABLE TASTE MODIFIERS

Robert J. Kurtz, New York, N.Y., and William D. Fuller, San Diego, Calif., assignors to Bioresearch, Inc., Arlington, Va.

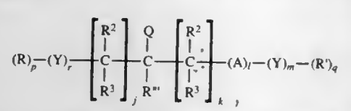
Division of Ser. No. 451,063, May 25, 1995, which is a continuation of Ser. No. 67,537, May 26, 1993, abandoned, which is a continuation-in-part of Ser. No. 799,207, Nov. 27, 1991, abandoned, which is a continuation-in-part of Ser. No. 531,388, Jun. 1, 1990, Pat. No. 5,232,735. This application Jun. 1, 1995, Ser. No. 456,796

Int. Cl.[6] A61K *38/05*

U.S. Cl. 514—19 **13 Claims**

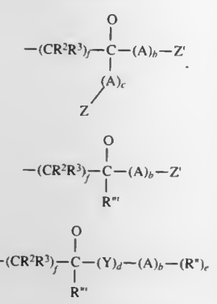
1. A composition comprising an eatable having at least one taste selected from bitter and metallic, and at least one tastand in a substantially tasteless amount of about 0.0000001 to about 300% by weight, based on the weight of the eatable, which amount is

sufficient to reduce said at least one bitter and metallic taste, said tastand being selected from the group consisting of compounds which are substantially tasteless in the amount used and have the structure:



W-1

wherein r, 1, and m are 0 or 1; j and k are 0, 1, 2, or 3; each R^2 and R^3 which may be the same or different are independently selected from the group consisting of H, trifluoromethyl, halogen, cyano; and substituted or unsubstituted alkyl, alkylene, branched alkyl, branched alkylene, aryl, aralkyl, cycloalkyl, acyl, benzoyl, alkoxy, aryloxy, heterocyclic, polycyclic; each Y which may be the same or different is selected from N, O, and S; when r or m is 1 and Y is N, p or q are 2 or 3; when r or m is 1 and Y is N, p or q are 2 or 3; when r or m is 1 and Y is O, p or q is 1; when r or m is 1 and Y is S, p is 1 or 2; A is selected from the group consisting of H, C═O, O═S═O, S═O, O═P(H)OH, O═$P(OH)_2$, and O═B(H)OH; Q is selected from the group consisting of H, trifluoromethyl, halogen, cyano; and substituted or unsubstituted alkyl, alkylene, branched alkyl, branched alkylene, aryl, aralkyl, cycloalkyl, acyl, benzoyl, alkoxy, aryloxy, heterocyclic, polycyclic; R'" and Q together may form a cyclic structure; any of the R^3's and Q together may form a cyclic structure; any of the R^3's and R'" together may form a cyclic structure; each R which may be the same or different when p>1 and each R' which may be the same or different when q>1 are independently selected from the group consisting of H, trifluoroacetyl, and substituted or unsubstituted alkyl, dialkyl, aralkyl, aryl, diaryl, acyl, cycloalkyl, benzoyl, alkyloxycarbonyl, aryloxycarbonyl, alkylaminocarbonyl, arylaminocarbonyl, amidines, alkylamidines, arylamidines, a monosaccharide, a disaccharide, a trisaccharide, an oligosaccharide, phosphorylated saccharides, arylacyl, alkylene, heterocyclic, polycyclic; and one of the following three structures W-2:



W-2

wherein Y which may be the same or different is selected from N, O, and S; when d is 1, b is O and Y is N, e is 2 or when d is 1, b is O and Y is O, e is 1; f is 0,1, 2, 3, 4, 5, 6, 7, 8, 9, or 10; when d is 1, b is O and Y is S, e is 1 or 2; A is selected from H, C═O, O═S═O, S═O, O═P(H)OH or O═$P(OH)_2$, and O═B(H)OH; Q is selected from the group consisting of H, trifluoromethyl, halogen, cyano; and substituted or unsubstituted alkyl, alkylene, branched alkyl, branched alkylene, aryl, aralkyl, cycloalkyl, acyl, benzoyl, alkoxy, aryloxy, heterocyclic, polycyclic; b is 0, 1, or 2 and c is or 1; Z and Z' are the same or different and are selected from $—O^-X^+$, OR", NH_2, NHR" and $N(R")_2$; R" is selected from alkyl, branched alkyl, aryl, aralkyl, alkaryl, cycloalkyl, substituted alkyl, substituted cycloalkyl, substituted aryl, substituted aralkyl and substituted alkaryl; R'" is selected from alkyl, branched alkyl, aryl, aralkyl, alkaryl, cycloalkyl, substituted alkyl, substituted cycloalkyl, substituted aryl, substituted aralkyl, substituted alkaryl, and an amino acid side chain; where CH—CH or $CH_2—CH_2$ bonds exist the level of unsaturation may be increased by removing one or more hydrogen atoms from each carbon atom participating in the CH—CH or $CH_2—CH_2$ bonds; and physiologically acceptable salts of all of the foregoing.

5,646,123

TIME DEPENDENT ADMINISTRATION OF OLIGOSACCHARIDE GLYCOSIDES RELATED TO BLOOD GROUP DETERMINANTS HAVING A TYPE I OR TYPE II CORE STRUCTURE IN REDUCING INFLAMMATION IN A SENSITIZED MAMMAL ARISING FORM EXPOSURE TO AN ANTIGEN

Robert M. Ippolito; Waslmul Haque, both of Edmonton, Canada; Cong Jiang, San Diego, Calif.; H. Rizk Hanna, Edmonton, Canada; Andre P. Venot, Agoura Hills, Calif.; Pandurang V. Nikrad, Edmonton, Canada; Mohammed A. Kashem, Thousand Oaks, Calif.; Richard Smith, Edmonton, and Om P. Srivastava, Jackson Heights, both of Canada, assignors to Alberta Research Council, Alberta, Canada

Continuation of Ser. No. 81,214, Jun. 25, 1993, abandoned, which is a continuation of Ser. No. 988,518, Dec. 10, 1992, abandoned, which is a continuation-in-part of Ser. No. 895,930, Jun. 9, 1992, abandoned, which is a continuation-in-part of Ser. No. 889,017, May 26, 1992, abandoned, which is a continuation-in-part of Ser. No. 714,161, Jun. 10, 1991, abandoned. This application Mar. 17, 1995, Ser. No. 405,785

Int. Cl.[6] A61K *31/70*; **C07H** *15/00*

U.S. Cl. 514—25 **4 Claims**

1. A method for reducing inflammation in a mammal arising from initiation of a mammal's secondary immune response due to antigen exposure which method comprises administering to said mammal an inflammation reducing effective amount of an oligosaccharide glycoside related to blood group determinants having a type I or type II core structure

wherein said oligosaccharide glycoside has from 2 to 6 saccharide units and has either a core type I disaccharide structure of βGal(1–3)βGlcNAc—OR or a core type II disaccharide structure of βGal(1–4)βGlcNAc—OR wherein R is an aglycon having from 1 to 10 carbon atoms, or said oligosaccharide glycoside is an analog of said type I or type II disaccharide wherein the —NHAc group at the 2-position of the βGlcNAc saccharide unit is replaced with a substituent selected from the group consisting of $—N_3$, $—NH_2$, or $—C(O)CH_2CH_3$

provided that if said oligosaccharide glycoside has only 2 saccharide units then said oligosaccharide has at least one substituent which carries a charge at physiological pH which substituent is selected from the group consisting of a sulfate group, a phosphate group and a carboxyl group at either the 2, 3, or 6 position of the galactose unit,

wherein said administration is after initiation of the mammal's secondary immune response to the antigen exposure but at or prior to one-half that period of time required for maximal inflammatory response to the antigen exposure.

5,646,124

METHOD OF TREATING CANCER BY CONJUNCTIVE THERAPY WITH N,N'-BIS[3-(ETHYLAMINO)PROPYL]-1,7-HEPTANEDIAMINE AND A CYTOTOXIC AGENT

Nellikunja J. Prakash, Cincinnati, and Terry L. Bowlin, Maineville, both of Ohio, assignors to Merrell Pharmaceuticals Inc., Cincinnati, Ohio

Division of Ser. No. 437,469, May 9, 1995, Pat. No. 5,561,136, which is a continuation of Ser. No. 187,437, Jan. 26, 1994, abandoned, which is a continuation-in-part of Ser. No. 62,693, May 17, 1993, abandoned, which is a continuation of Ser. No. 985,515, Dec. 2, 1992, abandoned, which is a continuation of Ser. No. 863,526, Apr. 3, 1992, abandoned, which is a continuation of Ser. No. 626,814, Dec. 13, 1990, abandoned. This application Jun. 2, 1995, Ser. No. 458,596

Int. Cl.[6] A61K *31/70;38/00;31/40;31/13*

U.S. Cl. 514—34 **12 Claims**

1. A method of treating a patient suffering from a neoplastic disease state comprising administering to said patient an effective antineoplastic amount of N,N'-bis[3-(ethylamino)propyl]-1,7-hepanediamine and an antibiotic selected from the group consisting of adriamycin, dactinomycin, daunorubicin, bleomycin, plicamycin and mitomycin wherein a synergistic antineoplastic effect results.

5,646,125

POLYSUBSTITUTED BENZIMIDAZOLES AS ANTIVIRAL AGENTS

Leroy B. Townsend, and John C. Drach, both of Ann Arbor, Mich., assignors to The Regents of the University of Michigan, Ann Arbor, Mich.

Division of Ser. No. 50,470, May 3, 1993, which is a continuation-in-part of Ser. No. 607,899, Nov. 1, 1990, Pat. No. 5,248,672. This application Jun. 6, 1995, Ser. No. 473,037

Int. Cl.[6] A01N *43/52;* **C07D** *235/04*

U.S. Cl. 514—43 **4 Claims**

1. An antiviral compound selected from the group consisting of compounds having the following formula, and pharmaceutically acceptable salts thereof:



wherein:

R_1 is Cl, R_2 is Cl, R_3 is Cl, R_4 is Cl, R_5 is Cl and R_6 is 2-hydroxyethoxymethyl (denoted compound 166 in the text).

5,646,126

STEROL MODIFIED OLIGONUCLEOTIDE DUPLEXES HAVING ANTICANCER ACTIVITY

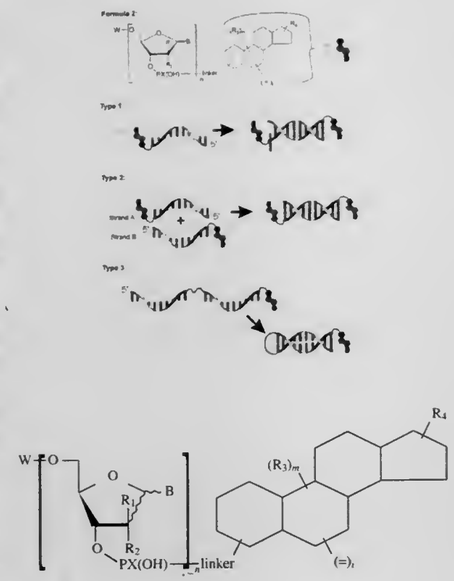
Yung-chi Cheng, Woodbridge, Conn.; Eugeny A. Lukhtanov, Bothell; Rich B. Meyer, Jr., Woodinville, both of Wash.; Balakrishna S. Pai, New Haven, Conn.; Michael W. Reed, Seattle, Wash., and James H. Zhou, West Haven, Conn., assignors to Epoch Pharmaceuticals, and Yale University

Filed Feb. 28, 1994, Ser. No. 202,927

Int. Cl.[6] A61K *48/00;* **C12Q** *1/68;* **C07H** *21/02;21/04*

U.S. Cl. 514—44 **32 Claims**

1. A duplex of two strands of oligonucleotides each of which has the formula



wherein each of B independently is a nucleotide base residue;

the wavy line between the sugar and the base B represents a glycosidic bond of either α or of β configuration;

X is S or O, with the proviso that there are no more than 3 X=S groups in each oligonucleotide;

R_1 is H, OH, or F;

R_2 is H, or F;

W is H or YO(OH)XP-;

Y is H, alkyl of 1–20 carbons, branched chain alkyl or cycloalkyl of 3 to 25 carbons, $(CH_2)_sOH$, $(CH_2)_sNH_2$, hydroxy branched chain alkyl or hydroxy cycloalkyl of 3–25 carbons, amino branched chain alkyl of 3 to 25 carbons or amino cycloalkyl of 3 to 25 carbons, or a lipophilic group which may be connected to the phosphate residue with an appendant connecting group of 1 to 10 atom length, s is an integer between 2–25;

n is an integer having a value between 8 and 18;

the linker is a group of 0 to 12 atom length covalently linking the A ring of the steroid skeleton to the 3'-phosphate end of the oligonucleotide;

R_3 is H, C_1–C_6 alkyl, or C_2–C_6 alkenyl and is attached to the A, B or C ring of the steroid skeleton, m is an integer having the values 0 to 4, i is an integer having the values 0 to 4, and R_4 is H or a C_1 to C_{15} alkyl group, or a C_2 to C_{15} alkenyl group having 1 to 3 double bonds and the R_4 group is attached to the D ring of the steroid skeleton;

the nucleotide base residues B are selected such that the two strands of the oligonucleotides are substantially complementary to one another for Watson Crick type base pairing and the two strands form a stable duplex in aqueous solution at physiological temperature.

5,646,127

TREATMENT OF CARDIAC ISCHEMIA BY ADMINISTRATION OF A FRACTION OF PARTIALLY HYDROLYZED DNA

Ennio Lanzarotti, Milan; Marisa Mantovani, Villa Guardia; Giuseppe Prino, Milan; Roberto Porta, Cernobbio; Cedro Armando, Cislago, and Danilo Moltrasio, Rovellasca, all of Italy, assignors to Crinos Industria Farmacobiologica S.p.A., Como, Italy

Division of Ser. No. 985,726, Dec. 4, 1992. This application Aug. 3, 1995, Ser. No. 510,622

Claims priority, application Italy, Dec. 9, 1991, MI91A3294

Int. Cl.[6] A61K *31/70*

U.S. Cl. 514—44 **6 Claims**

1. A method for the treatment of cardiac ischemia in a patient in need of such treatment, comprising:

administering an effective anti-ischemic amount of an oligodeoxyribonucleotide having the following analytical parameters: mol. wt. 4000–10000, h<10, A+T/C+G 1.100–1.455, A+G/C+T 0.800–1.160, spec. rot +30°–+46.8° to said patient.

6. The method according to claim 1, wherein said spec. rot, is in the range of from +30°–+46.2°.

5,646,128

METHODS FOR TREATING ADENOSINE KINASE RELATED CONDITIONS

Gary S. Firestein, Del Mar; Bheemarao G. Ugarkar, Escondido; Leonard P. Miller, Carlsbad; Harry E. Gruber, Rancho Santa Fe; David A. Bullough, San Diego; Mark D. Erion, Del Mar; Angelo J. Castellino, San Diego, all of Calif., and Clinton E. Browne, Gainesville, Fla., assignors to Gensia, Inc., San Diego, Calif.

Continuation of Ser. No. 192,645, Feb. 3, 1994, abandoned, which is a continuation-in-part of Ser. No. 14,190, Feb. 3, 1993, abandoned, which is a continuation-in-part of Ser. No. 812,916, Dec. 23, 1991, abandoned, which is a continuation-in-part of Ser. No. 647,117, Jan. 23, 1991, abandoned, which is a continuation-in-part of Ser. No. 466,979, Jan. 18, 1990, abandoned, which is a continuation-in-part of Ser. No. 408,707, Sep. 15, 1989, abandoned. This application Dec. 1, 1994, Ser. No. 349,125

Int. Cl.[6] A61K *31/70*

U.S. Cl. 514—46 **13 Claims**

1. A method of treating a condition involving an inflammatory response selected from arthritis and SIRS in a patient in need of treatment therefor which comprises administering to said patient an inflammatory response decreasing effective amount of a compound which selectively inhibits adenosine kinase.

5,646,129

METHOD OF USING LOW MOLECULAR WEIGHT HYALURONIC ACID FOR STIMULATING BONE FORMATION

Lanfranco Callegaro, Padova, and Aurelio Romeo, Rome, both of Italy, assignors to Fidia S.p.A., Abano Terme, Italy

PCT No. PCT/EP93/00932, § 371 Date Jan. 17, 1995, § 102(e) Date Jan. 17, 1995, PCT Pub. No. WO93/20827, PCT Pub. Date Oct. 28, 1993

PCT Filed Apr. 16, 1993, Ser. No. 318,804

Claims priority, application Italy, Apr. 17, 1992, PD92A0071

Int. Cl.[6] H61K *31/715*

U.S. Cl. 514—54 **3 Claims**

1. A method of stimulating growth of bone forming cells comprising exposing mesenchymal cells to hyaluronic acid having a molecular weight of 20–60 kD.

5,646,130

LOW MOLECULAR WEIGHT SULFATED POLYSACCHARIDES AND USES THEREOF

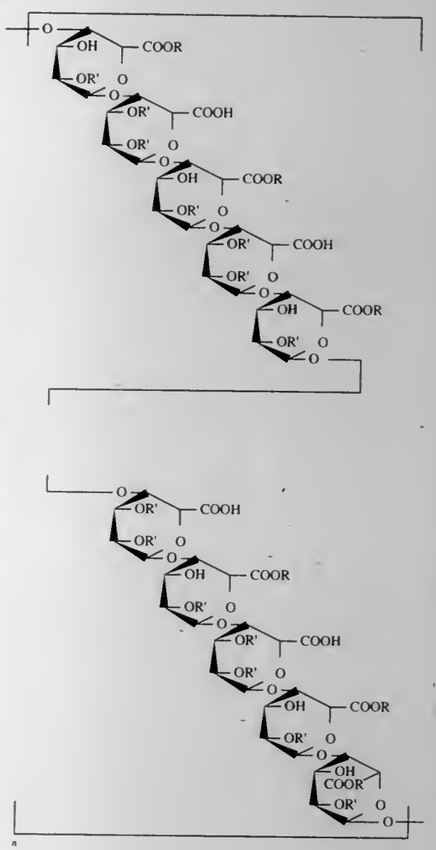
Guan Hua Shi, Oingdao, China, assignor to Ocean University of Oingdao, Oingdao, China

Filed Jun. 30, 1995, Ser. No. 498,013

Int. Cl.[6] A61K *31/715;* **C07H** *1/00;1/08*

U.S. Cl. 514—54 **27 Claims**

1. A compound represented by formula (I):



wherein:

R is $—(CH_2)_pCH(OH)(CH_2)_m(CH_3)$ or $CH_2(CH_2)_sOH$ in which p, m and s are independently 0 to 6;

R' is SO_3Na;

n is about 1 to about 3; and

the resulting compound has a molecular weight less than about 5 kilodaltons.

5,646,131

METHOD FOR SOLUBILIZING DRUGS USING CYCLODEXTRINS AND CARBOXYLIC ACIDS

Adnan Badwan; Abdullah Abumalooh; Muwaffak Haddadin, and Hussein Ibrahim, all of Amman, Jordan, assignors to The Arab Company For Drug Industries And Medical Appliances (ACDIMA), Amman, Jordan

Continuation of Ser. No. 199,523, Feb. 22, 1994, abandoned. This application Jun. 2, 1995, Ser. No. 460,631

Int. Cl.[6] A61K *31/715;31/54;31/445;31/19*

U.S. Cl. 514—58 **43 Claims**

1. A method for enhancing the solubilization of a drug which is insoluble or sparingly soluble in water with cyclodextrin, said method comprising combining in water said drug with cyclodextrin and an effective solubility-enhancing amount of saturated or unsaturated C_2–C_6 carboxylic acid having from one to three —COOH groups and bearing from zero to four —OH substituents, provided that when the acid has only one —COOH group, then said acid must bear at least one —OH substituent, or a pharmaceutically acceptable salt of said acid, the weight ratio of cyclodextrin to carboxylic acid being from about 1:50 to about 50:1.

5,646,132

2(1H)-QUINOLONE COMPOUNDS

Alex Cordi, Suresnes; Patrice Desos, Courbevoie, and Jean Lepagnol, Chaudon, all of France, assignors to Adir et Compagnie, Courbevoie, France

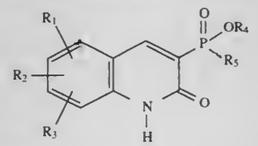
Division of Ser. No. 297,793, Aug. 30, 1994, Pat. No. 5,536,709. This application Jul. 10, 1995, Ser. No. 499,946 Claims priority, application France, Aug. 31, 1993, 93 10379

Int. Cl.[6] A61K *31/675*

U.S. Cl. 514—82 **9 Claims**

1. A method for treating cerebral ischemia in a mammal, comprising the step of administering to the mammal an amount of a compound selected from those of formula (I):

(I)

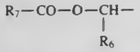


in which:

R_1, R_2, and R_3, which are identical or different, represent hydrogen, halogen, linear or branched (C_1–C_6) alkyl which is unsubstituted or substituted with one or a number of halogen atoms or nitro, cyano, or aminosulfonyl groups,

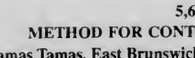
or alternatively, when two of R_1, R_2, and R_3, are located on adjacent carbons, form, with the carbon atoms to which they are attached, a (C_3–C_7) cycloalkene ring or a benzene ring which is unsubstituted or substituted with one or a number of halogen atoms or linear or branched (C_1–C_6) alkyl, linear or branched (C_1–C_6) alkoxy, or trihalomethyl groups,

R_4 represents hydrogen, linear or branched (C_1–C_6) alkyl, phenyl which is unsubstituted or substituted with one or a number of halogen atoms or linear or branched (C_1–C_6) alkyl, linear or branched (C_1–C_6) alkoxy, or trihalomethyl, or a group



in which R_6 and R_7, which are identical or different, represent a hydrogen atom or linear or branched (C_1–C_6) alkyl, which is unsubstituted or substituted with (C_3–C_7) cycloalkyl or with phenyl,

R_5 represents hydrogen, hydroxyl, linear or branched (C_1–C_6) alkoxy, phenoxy, mercapto, linear or branched (C_1–C_6) alkylthio, linear or branched (C_1–C_6) alkyl which is unsubstituted or substituted with (C_3–C_7) cycloalkyl, phenyl which is unsubstituted or substituted with one or a number of halogen atoms or with linear or branched (C_1–C_6) alkyl, linear or branched (C_1–C_6) alkoxy, or trihalomethyl, or amino which is unsubstituted or substituted with one or two linear or branched (C_1–C_6) alkyl, or a group



in which R_6 and R_7 are as defined above,

its isomers, and its addition salts with a pharmaceutically-acceptable acid or base, which is effective for alleviation of said condition.

5,646,133

POLYASPARTIC ACID AND ITS ANALOGUES IN COMBINATION WITH INSECTICIDES

J. Larry Sanders, Bedford Park, Ill., assignor to Donlar Corporation, Bedford Park, Ill.

Filed Mar. 14, 1996, Ser. No. 615,445

Int. Cl.[6] A01N *57/00;57/02;57/10;57/12;57/16;47/10;25/00*

U.S. Cl. 514—86 **25 Claims**

1. An insecticide composition which comprises,

an insecticide selected from the group consisting of carbamate insecticides and organophosphate insecticides, and

a small but insecticide absorption enhancing effective amount of a water soluble, non-aromatic, polyorganic acid or salt thereof which is polyaspartic acid, said polyaspartic acid having a molecular weight larger than 1500.

5,646,134

ALENDRONATE THERAPY TO PREVENT LOOSENING OF, OR PAIN ASSOCIATED WITH, ORTHOPEDIC IMPLANT DEVICES

Ashley J. Yates, Westfield, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Apr. 21, 1994, Ser. No. 230,670

Int. Cl.[6] A61K *31/66*

U.S. Cl. 514—108 **6 Claims**

1. A method of preventing loosening of an orthopedic prosthesis in a patient comprising administering orally to the patient a bone resorption inhibiting amount of alendronate or a pharmaceutically acceptable salt thereof.

5,646,135

METHOD FOR CONTROLLING COCCIDIOSIS

Tamas Tamas, East Brunswick, and Dan A. Ostlind, Watchung, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 324,556, Oct. 18, 1994, abandoned. This application Mar. 12, 1996, Ser. No. 614,450

Int. Cl.[6] A61K *31/65*

U.S. Cl. 514—152 **6 Claims**

1. An improved method for controlling coccidiosis in poultry which comprises administering, in sequence, to said poultry a first anticoccidial compound for two to four weeks, then switching to a second anticoccidial compound, wherein the improvement comprises: administering an additional anticoccidial medication up to 5 days prior to the switching and continuing said medication for up to 5 days after the switching.

5,646,136

METHODS OF INHIBITING ANGIOGENESIS AND TUMOR GROWTH, AND TREATING OPHTHALMOLOGIC CONDITIONS WITH ANGIOSTATIC AND THERAPEUTIC STEROIDS

Vladimir Petrow, Chapel Hill, and Alan D. Proia, Durham, both of N.C., assignors to Duke University, Durham, N.C.

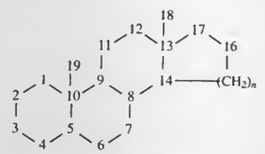
Filed Jan. 4, 1994, Ser. No. 177,287

Int. Cl.[6] A61K *31/56*

U.S. Cl. 514—167 **13 Claims**

1. A method of combatting a condition in a subject in need of such treatment, said condition being selected from the group consisting of angiogenesis, tumor growth, and ocular hypertension, said method comprising administering to said subject an effective condition-combatting amount of a compound of Formula I:

(I)



said compound being optionally substituted:

at position 1 from one to two times each with halogen, hydroxyl, lower alkyl, sulfo, phosphono, carboxyl, lower alkyloxyformyl, formamido, or lower alkanoyloxy;

at positions 2 and 4 from one or two times with: halogen; lower alkyl optionally substituted with phosphono, sulfo, hydroxy, lower alkanoyloxy, succinoyl, carbamoyl, or lower alkoxy; carboxyl; lower alkyloxyformyl; formamido; hydroxy; phosphono; sulfo; lower alkoxy; lower alkanoyloxy; succinoyl; carbamoyl; or methanoyl, or

one time with oxo or lower alkylidene which is unsubstituted or substituted one time with methanoyl, carboxyl, lower alkyloxyformyl, or formamido;

at position 3 one or two times with:

lower alkyl optionally substituted with carboxyl, lower alkyloxyformyl, formamido, hydroxy, lower alkoxy, lower alkanoyloxy, succinoyl, carbamoyl, sulfo, phosphono, halogen, or methanoyl; hydroxyl; lower alkoxy; phosphono; sulfo; lower alkanoyloxy; succinoyl; carbamoyl; formamido; methanoyl; carboxyl; lower alkyloxyformyl; formamido; azide; or amine unsubstituted or substituted one time with lower alkyl, aryl or alkylaryl, or

one time with: oxo; sulfur; oximo; lower alkyloximo; carboxymethyloximino; or lower alkylidene unsubstituted or substituted one time with alkoxy, hydroxy, lower alkanoyloxy, succinoyl, carbamoyl, sulfo, phosphono, carboxyl, lower alkyloxyformyl, or formamido;

at position 5 one time with methyl, lower alkoxy, or hydroxy;

at position 6 one or two times with: halogen; hydroxyl; lower alkoxy; lower alkanoyloxy; succinoyl; carbamoyl; sulfo; phosphono; cyano; methanoyl; oximino; lower alkyloximino; lower alkyl optionally substituted 1 to 3 times with halogen, hydroxyl, azide, or cyano; carboxyl; lower alkyloxyformyl; or formamido;

or one time with oxo, oximino, lower alkyloximino; or carboxymethyloximino;

at position 7 with lower alkyl, halogen, aryl, carboxyl, formamido, or lower alkyloxyformyl;

at position 9 one time with halogen, hydroxyl, halogenated lower alkyl, or lower alkyl;

at position 11 from one to two times with hydroxyl, lower alkoxy, lower alkanoyloxy, succinoyl, carbamoyl, halogenated lower alkanoyloxy, or lower alkyl, or one time with lower alkylidene or oxo;

at position 16 from one to two times with: lower alkyl optionally substituted one time with carboxyl, hydroxy, lower alkoxy, sulfo, or phosphono; halogenated lower alkyl; hydroxyl; lower alkoxy; lower alkanoyloxy; succinoyl; carbamoyl; sulfo; phosphono; nitroalkyl; cyano; carboxyl; lower alkyloxyformyl; formamido; or methanoyl; or one time with lower alkylidene optionally substituted one to three times with halogen or one time with oxo;

said compound being substituted at position 17 with a first substituent selected from the group consisting of:

lower alkyl which is optionally substituted with hydroxy, lower alkoxy, lower alkanoyloxy, succinoyl, carbamoyl, sulfo, phosphono, methanoyl, carboxyl, lower alkyloxyformyl, formamido, or amino optionally substituted 1 or 2 times with aryl or lower alkylcarbonyl; lower alkenyl optionally substituted one time with lower alkoxy; lower alkynyl; halogen; halogenated lower alkyl; hydroxy; alkoxy; alkanoyloxy; succinoyl; carbamoyl; sulfo; phosphono; methanoyl; carboxyl; lower alkyloxyformyl; formamido; carbonyl substituted with saturated or unsaturated lower alkyl optionally substituted with hydroxy, lower alkoxy, lower alkanoyloxy, succinoyl, carbamoyl, carboxyl, methanoyl, sulfo, phosphono, aryl, lower alkyloxyformyl, or formamido; hydroxymethyl substituted with aryl or with saturated or unsaturated lower alkyl optionally substituted with hydroxy, alkoxy, lower alkanoyloxy, succinoyl, carbamoyl, sulfo, phosphono, carboxyl, or methanoyl; aryl; aryloxy; aroyloxy; or amino optionally substituted 1 or 2 times with aryl or lower alkylcarbonyl;

and said compound being unsubstituted or substituted with a second substituent at position 17 selected from the group consisting of:

hydroxy; phosphono; sulfo; lower alkanoyloxy; saturated or unsaturated lower alkyl optionally substituted with hydroxy, lower alkoxy, lower alkanoyloxy, succinoyl, carbamoyl, phosphono, or sulfo; halogen; carboxyl; amino optionally substituted 1 or 2 times with aryl or lower alkylcarbonyl; azide; and cyano;

or wherein said compound is substituted so that positions 16 and 17 together form an unsubstituted or substituted isoxazolidine or methylene dioxy moiety;

or wherein position 17 is substituted one time with oxo, oximino, lower alkyloximino, carboxymethyloximino, or lower alkylidene substituted with hydroxy, lower alkanoyloxy, succinoyl, carbamoyl, sulfo, phosphono, carboxyl, lower alkyloxyformyl, or formamido;

at position 18 with lower alkyl;

at position 19 with lower alkyl optionally substituted with hydroxy, lower alkoxy, lower alkanoyloxy, succinoyl, carbamoyl, phosphono, sulfo, thio, lower alkylthio, lower alkylsulfo, carboxyl, lower alkyloxyformyl, formamido, or methanoyl;

n is 1 or 2;

wherein said compound can be unsaturated between positions 1 and 2, 2 and 3, 3 and 4, 4 and 5, 5 and 6, 6 and 7, 7 and 8, 8 and 9, 9 and 11, 11 and 12, 15 and 16, and 16 and 17;

wherein said compound can include epoxide moieties linked to each of positions 1 and 2, 2 and 3, 3 and 4, 4 and 5, 5 and 6, 6 and 7, 8 and 9, 9 and 11, 11 and 12, 15 and 16, and 16 and 17; and

wherein exocyclic methylene groups optionally substituted 1 to 2 times with halogen may be linked to each of positions 1 and 2, 2 and 3, 3 and 4, 4 and 5, 5 and 6, 6 and 7, 7 and 8, 15 and 16, and 16 and 17;

or a pharmaceutical salt thereof.

5,646,137

COMBINATION TREATMENT FOR OSTEOPOROSIS

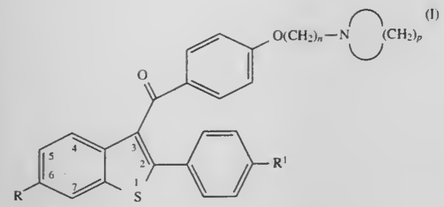
Larry J. Black, Indianapolis, and George J. Cullinan, Trafalgar, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 189,399, Jan. 28, 1994, Pat. No. 5,591,753. This application Aug. 20, 1996, Ser. No. 700,184

Int. Cl.[6] A61K *31/56;31/55;31/445;31/40*

U.S. Cl. 514—171 **6 Claims**

1. A pharmaceutical formulation for inhibiting bone loss comprising (1) a compound of formula I,



(I)

wherein

R and R^1, independently, are hydrogen, hydroxyl, C_1–C_6-alkoxy, C_1–C_6 acyloxy, C_1–C_6 alkoxy-C_2–C_6-acyloxy, R^2-substituted aryloxy, R^2-substituted aroyloxy, R^3-substituted carbonyloxy or halo;

R^2 is C_1–C_3-alkyl, C_1–C_3-alkoxy, hydrogen or halo; and

R^3 is C_1–C_6-alkoxy or aryloxy;

n is 2, 3 or 4; and

p is 4, 5 or 6;

or a pharmaceutically acceptable salt or solvate thereof; and (2) a progestin selected from medroxyprogesterone, norethindrone or norethynodrel, or a pharmaceutically acceptable salt thereof; in amounts such that the combination inhibits bone loss, together with one or more pharmaceutically acceptable carriers.

5,646,138

CONTIGNASTEROL COMPOUNDS AND PHARMACEUTICAL COMPOSITIONS COMPRISING THE SAME

Raymond J. Andersen, Vancouver; Theresa M. Allen, Edmonton, and David L. Burgoyne, Vancouver, all of Canada, assignors to University of British Columbia, Vancouver, and University of Alberta, Edmonton, both of Canada

PCT No. PCT/CA93/00558, § 371 Date Sep. 5, 1995, § 102(e) Date Sep. 5, 1995, PCT Pub. No. WO94/14451, PCT Pub. Date Jul. 7, 1994

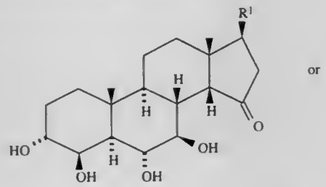
PCT Filed Dec. 21, 1993, Ser. No. 464,758

Claims priority, application Canada, Dec. 23, 1992, 2086221

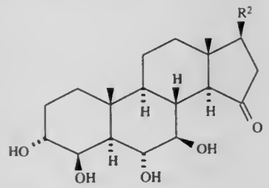
Int. Cl.[6] A61K *31/58;* **C07J** *9/00*

U.S. Cl. 514—172 **9 Claims**

1. An isolated compound for the prevention of inflammatory or allergic reactions or the treatment of cardiovascular or haemodynamic disorders having the formula:

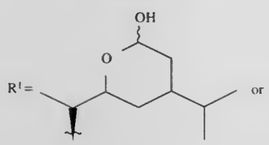


or

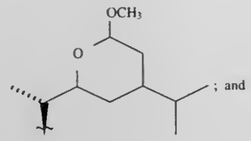


wherein

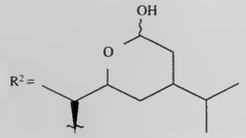
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or



; and



including pharmaceutically acceptable salts thereof.

5,646,139

ANTIMICROBIAL CARBAPENEM QUINOLONES

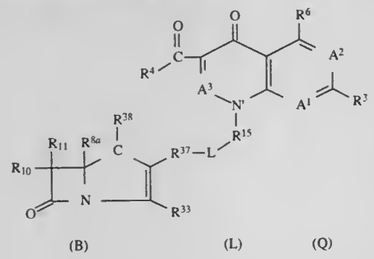
Ronald Eugene White, South Plymouth, and Thomas Prosser Demuth, Jr., Norwich, both of N.Y., assignors to The Proctor & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 692,821, Apr. 26, 1991, which is a continuation of Ser. No. 416,645, Oct. 10, 1989, abandoned, which is a continuation-in-part of Ser. No. 261,948, Oct. 24, 1988, abandoned. This application Jun. 7, 1995, Ser. No. 477,968

Int. Cl.[6] C07D *477/06;463/00;* **A61K** *31/435;31/40*

U.S. Cl. 514—210 **45 Claims**

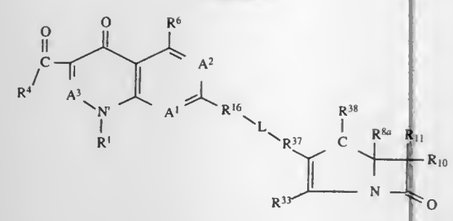
1. A compound having the structure:



(B) (L) (Q)

or

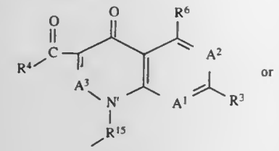
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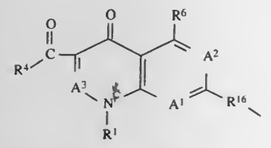
(Q) (L) (B)

wherein

(A) Q is of structure



or



(1) A^1 is N or $C(R^7)$; where

(i) R^7 is hydrogen, hydroxy, alkoxy, nitro, cyano, halogen, C_1–C_8 alkyl, or $N(R^8)(R^9)$, and

(ii) R^8 and R^9 are, independently, R^{8a} where R^{8a} is hydrogen; C_1–C_8 alkyl; C_2–C_8 alkenyl; a 3-9 atom monocyclic or 7–17 atom polycyclic carbocycle; or a 3–9 atom monocyclic or 7–17 atom polycyclic heterocycle; or R^8 and R^9 together form a 3–9 atom monocyclic or 7–17 atom polycyclic heterocycle including the nitrogen to which they are bonded; and wherein said heterocycles have one or more heteroatoms selected from O, N, or S;

(2) A^2 is N or $C(R^2)$; where R^2 is hydrogen or halogen;

(3) A^3 is N or $C(R^5)$; where R^5 is hydrogen or R^5 forms a ring with R^1 or R^4;

(4) A^1 is hydrogen, R^{15}, or when A^3 is $C(R^5)$, R^1 and R^5 may form a ring;

(5) R^3 is hydrogen, halogen or R^{16};

(6) R^{15} is a C_1–C_8 alkyl; a 3–9 atom monocyclic or 7–17 atom polycyclic carbocycle; a 3–9 atom monocyclic or 7–17 atom polycyclic heterocycle; alkoxy; hydroxy; C_2–C_8 alkenyl; arylalkyl; or $N(R^8)(R^9)$; and wherein said arylalkyl is a C_1–C_8 alkyl substituted with an aryl group; wherein said heterocycles have one or more heteroatoms selected from O, N, or S;

(7) R^{16} is a C_1–C_8 alkyl; a 3–9 atom monocyclic or 7–17 atom polycyclic carbocycle; or a 3–9 atom monocyclic or 7–17 atom polycyclic heterocycle; wherein said heterocycles have one or more heteroatoms selected from O, N, or S;

(8) R^4 is hydroxy or when A^3 is $C(R^5)$, R^4 and R^5 may form a ring; and

(9) R^6 is hydrogen, halogen, nitro, or $N(R^8)(R^9)$;

(B) wherein:

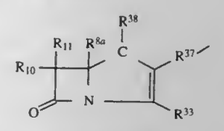
(1) when A^1 is $C(R^7)$, R^1 and R^7 may together form a 3–9 atom monocyclic or 7–17 atom polycyclic heterocycle including N' and A^1; wherein said heterocycles have one or more heteroatoms selected from O, N, or S;

(2) when A^2 is $C(R^2)$, R^2 and R^3 may together form —O—$(CH_2)_n$—O—, where n is an integer from 1 to 4;

(3) when A^3 is $C(R^5)$, R^4 and R^5 may together form a 3–9 atom monocyclic or 7–17 atom polycyclic heterocycle including the carbon atoms to which R^4 and R^5 are bonded and the carbon atom to which said carbon atoms are bonded; and wherein said heterocycles have one or more heteroatoms selected from O, N, or S; and

(4) when A^3 is $C(R^5)$, R^1 and R^5 may together form a 3–9 atom monocyclic or 7–17 atom polycyclic heterocycle including N' and the adjacent carbon to which R^5 is bonded; and wherein said heterocycles have one or more heteroatoms selected from O, N, or S;

(C) B is of structure



and R^{10} is hydrogen; halogen; C_1–C_8 alkyl; C_2–C_8 alkenyl; a 3–8 atom heteroalkyl having 1 or 2 heteroatoms selected from O, N, or S; a 3–9 atom monocyclic or 7–17 atom polycyclic carbocycle; a 3–9 atom monocyclic or 7–17 atom polycyclic heterocycle; R^{8a}—O—; $R^{8a}CH{=}N$-; $(R^8)(R^9)N$—; R^{17}—C(=CHR^{20})—C(=O)NH—; R^{17}—C(=NO—R^{19})—C(=O)NH—; or R^{18}—$(CH_2)_m$—C(=O)NH—; and wherein said heterocycles have one or more heteroatoms selected from O, N, or S; and where

(1) m is an integer from 0 to 9;

R^{17} is hydrogen; C1–C_8 alkyl; C_2–C_8 alkenyl; a 3–8 atom heteroalkyl having 1 or 2 heteroatoms selected from O, N, or S; a 3–8 atom heteroalkenyl having 1 or 2 heteroatoms selected from O, N, or S; a 3–9 atom monocyclic or 7–17 atom polycyclic carbocycle; or a 3–9 atom monocyclic or 7–17 atom polycyclic heterocycle; wherein said heterocycles have one or more heteroatoms selected from O, N, or S;

(3) R^{18} is R^{17}, —Y^1, or —$CH(Y^2)(R^{17})$;

(4) R^{19} is R^{17}; arylalkyl; heteroarylalkyl; —$C(R^{22})(R^{23})$COOH; —C(=O)O—R^{17}; or —C(=O)NH—R^{17}; wherein said arylalkyl is a C_1–C_8 alkyl substituted with an aryl group and wherein said heteroarylalkyl is a C_1–C_8 alkyl substituted with an aryl group having one or more heteroatoms selected from O, N, or S; and where R^{22} and R^{23} are, independently, R^{17} or together form a 3–9 atom monocyclic or 7–17 atom polycyclic carbocycle or a 3–9 atom monocyclic or 7–17 atom polycyclic heterocycle, including the carbon atom to which R^{22} and R^{23} are bonded; and wherein said heterocycles have one or more heteroatoms selected from O, N, or S;

(5) R^{20} is R^{19}, halogen, —Y^1, or —$CH(Y^2)(R^{17})$;

(6) Y^1 is —C(=O)OR^{21}, —C(=O)R^{21} —N(R^{24})R^{21}, —$S(O)_pR^{29}$, or —OR^{29}; and Y^2 is Y^1 or —OH, —SH, or —SO_3H;

(a) p is an integer from 0 to 2;

(b) R^{24} is hydrogen; C_1–C_8 alkyl; C_2–C_8 alkenyl; a 3–8 atom heteroalkyl having 1 or 2 heteroatoms selected from O, N, or S; a 3–8 atom heteroalkenyl comprised of 1 or 2 heteroatoms selected from O, N, or S; a 3–9 atom monocyclic or 7–17 atom polycyclic carbocycle; a 3–9 atom monocyclic or 7–17 atom polycyclic heterocycle; —SO_3H; —C(=O)R^{25}; or, when R^{18} is —$CH(N(R^{24})R^{21})(Rp^{17})$, R^{24} and R^{21} may together form a 3–9 atom monocyclic or 7–17 atom polycyclic heterocycle; wherein said heterocycles consists of one or more heteroatoms selected from O, N, or S; and

(c) R^{25} is R^{17}; $NH(R^{17})$; $N(R^{17})(R^{26})$; $O(R^{26})$; or $S(R^{26})$; where R^{26} is C_1–C_8 alkyl; C_2–C_8 alkenyl; a 3–9 atom monocyclic or 7–17 atom polycyclic carbocycle; a 3–9 atom monocyclic or a 7–17 atom polycyclic heterocycle; or when R^{25} is $N(R^{17})(R^{26})$, R^{26} and R^{17} may together form a 3–9 atom monocyclic or a 7–17 atom polycyclic heterocycle; wherein said heterocycles have one or more heteroatoms selected from O, N, or S; and

(7) R^{21} is R^{29} or hydrogen; where R^{29} is C_1–C_8 alkyl; C_2–C_8 alkenyl; arylalkyl, consisting of a C_1–C_8 alkyl substituted with an aryl group; a 3–8 atom heteroalkyl, having 1 or 2 heteroatoms selected from O, N, or S; a 3–8 atom heteroalkenyl, having 1 or 2 heteroatoms selected from O, N, or S; heteroarylalkyl, consisting of a C_1–C_8 alkyl substituted with an aryl group substituted with a heteroatom; a 3–9 atom monocyclic or a 7–17 atom polycyclic carbocycle; a 3–9 atom monocyclic or a 7–17 atom polycyclic heterocycle; or, when Y^1 is $N(R^{24})R^{21}$ and R^{21} is R^{29}, R^{21} and R^{24} may together form a 3–9 atom monocyclic or a 7–17 atom polycyclic heterocycle including the nitrogen atom to which R^{24} is bonded; wherein said heterocycles have one or more heteroatoms selected from O, N, or S;

(D) R^{11} is hydrogen, halogen, alkoxy, or $R^{27}C(=O)NH$—, where R^{27} is hydrogen or C_1–C8 alkyl;

(E) R^{33} is H or COOH;

(F) R^{38} is hydrogen, C_1–C_8 alkyl or alkoxy;

(G) R^{37} is nil; C_1–C_8 alkyl; C_2–C_8 alkenyl; a 3–9 atom monocyclic or a 7–17 atom polycyclic carbocycle; or a 3–9 atom monocyclic or a 7–17 atom polycyclic heterocycle; wherein said heterocycles have one or more heteroatoms selected from O, N, or S; and

(H) L links Q to B and is L', $—X^2_t—R^{39}—L'$, or $X^3_t—R^{39}—L'$, where L' is Q', $—X^2—Q''$, $—X^3—Q''$, $—X^4_t—C(=Y^3_u)—z—Q''$, $—X^5_t—PO(Y^4_uR^{8a})—Z'—Q''$, or $X^5_t—SO_2—Z'—Q''$, $—X^3—Q'$ and —O—C(=O)—Z—Q'',

where

(1) t and u are, independently, 0 or 1;

(b **2**) R^{39} is C_1–C_8 alkyl; C_2–C_8 alkenyl; a 3–8 atom heteroalkyl having 1 or 2 heteroatoms selected from O, N, or S; a 3–8 atom heteroalkenyl having 1 or 2 heteroatoms selected from O, N, or S; a 3–9 atom monocyclic or a 7–17 atom polycyclic carbocycle; or a 3–9 atom monocyclic or a 7–17 atom polycyclic heterocycle, wherein said heterocycles have one or more heteroatoms selected from O, N, or S;

(3) X^2 is oxygen, or $S(O)_v$, where v is an integer from 0 to 2;

(4) X^3 is nitrogen; $N(R^{40})$; $N^+(R^{41})(R^{42})$; or $R^{43}—N(R^{41})$; and is linked to R^{37} by a single or double bond; where

(a) R^{40} is R^{8a}; $—OR^{8a}$; or $—C(=0)R^{8a}$;

(b) R^{41} and R^{42} are, independently, hydrogen; C_1–C_8 alkyl; C_2–C_8 alkenyl; a 3–9 atom monocyclic or a 7–17 atom polycyclic carbocycle; a 3–9 atom monocyclic or a 7–17 atom polycyclic heterocycle; or, together with Q", form a 3–9 atom monocyclic or a 7–17 atom polycyclic heterocycle as R^{15} or R^{16}; wherein said heterocycles have one or more heteroatoms selected from O, N, or S;

(c) R^{43} is $N(R^{41})$, oxygen or sulfur;

(5) X^4 is oxygen, sulfur, NR^{40}, or R^{43} —NR^{41};

(6) X^5 is oxygen or NR^{41};

(7) Y^3 is oxygen, sulfur, NR^{40} or $N+(R^{41})(R42)$;

(8) Y^4 is oxygen or NR^{41};

(9) Z is nil, oxygen, sulfur, nitrogen, NR^{40}, or $N(R41)—R^{43}$;

(10) Z' is nil, oxygen, nitrogen, or NR^{41};

(11) Q' is R^{15} or R^{16}; and

(12) Q" is Q'; or together with X^2, X^3, Z or Z', is an R^{15} or R^{16} group; and pharmaceutically-acceptable salts and biohydrolyzable esters thereof, and hydrates thereof.

5,646,140

1,5-BENZODIAZEPINE DERIVATIVES HAVING CCK ANTAGONISTIC OR AGONISTIC ACTIVITY

Elizabeth Ellen Sugg; Christopher Joseph Aquino; Jerzy Ryszard Szewczyk, all of Research Triangle Park, N.C.; Harry Finch, and Robin Arthur Ellis Carr, both of Stevenage, United Kingdom, assignors to Glaxo Wellcome Inc., Research Triangle Park, N.C.

PCT No. PCT/EP94/01131, § 371 Date Oct. 13, 1995, § 102(e) Date Oct. 13, 1995, PCT Pub. No. WO94/24149, PCT Pub. Date Oct. 27, 1994

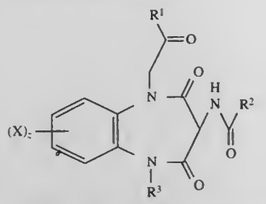
PCT Filed Jan. 4, 1994, Ser. No. 525,659

Claims priority, application United Kingdom, Apr. 15, 1993, 9307833

Int. Cl.[6] C07D *243/12;* **A61K** *31/55*

U.S. Cl. 517—221 **17 Claims**

1. A compound of Formula (I)

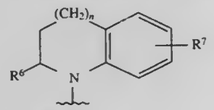


(I)

and physiologically salts and solvate thereof wherein:

X is either hydrogen. trifluoromethyl, alkyl, C_{1-4}alkylthio, —O(C_{1-4}alkyl) or halogen;

R^1 is either Formula II or $—NR^4R^5$;



(II)

R^2 is either:

(1) a heterocycle linked at its 2-position and selected from pyrrole, tetrahydropyrrole, indole, benzofuran, thiophene, benzothiophene, indoline, quinoline or 4-oxobenzopyran and wherein said pyrrole, tetrahydropyrrole, indole or indoline may optionally be substituted on the ring nitrogen thereof by the group R^8 as defined hereunder and said indole, indoline, quinoline, benzofuran, benzothiophene or 4-oxo-benzopyran may optionally be substituted in the benzo ring thereof by the group R^9 as defined hereunder or

(2) phenyl or phenyl mono- or disubstituted independently with halogen, hydroxy, cyano, carboxy, —O(C_{1-4}alkyl), —O($CH_2C_6H_5$), —COO(C_{1-4} alkyl), dimethylamino. —NHR^{10}, 1-pyrrolidinyl or tetrazolyl; or

(3) pyridine or pyridinyl mono- or disubstituted independently with halogen, methyl, hydroxy. nitro, cyano, carboxy, —O(C_{1-4}alkyl), —O($CH_2C_6H_5$), —COO(C_{1-4}alkyl), amino or dimethylamino; or

(4) —NHR^{11} where R^{11} is defined hereinunder or R^{11} is 7-indazolyl containing a group R^{10} at the N–1 position;

R^3 is hydrogen, C_{1-6}alkyl, C_{3-6}cycloalkyl, phenyl or phenyl mono- or disubstituted independently with halogen;

R^4 is independently C_{3-6}alkyl, C_{3-6}cycloalkyl, C_{3-6}alkenyl, phenyl, —$(CH_2)_p$CN or —$(CH_2)_p$COO(C_{1-4}alkyl) and R^5 is independently C_{3-6}alkyl C_{3-6}cycloalkyl, C_{3-6} alkenyl, benzyl, phenyl or phenyl mono- or disubstituted independently with C_{1-3}alkyl, cyano, hydroxy, dimethylamino, —O(C_{1-4}alkyl), —O($CH_2C_6H_5$), —NH(C_{1-4}alkyl), —COO(C_{1-4}alkyl), -N(C_{1-4}alkyl)$_2$ pyrrolidino, morpholino or halogen or R^4 is C_{1-2}alkyl and R^5 is phenyl substituted at the 2- or 4-position with chloro, methyl, methoxy or methoxycarbonyl;

R^6 is hydrogen or methyl;

R^7 is hydrogen, hydroxy, fluoro, dimethylamino, —O(C_{1-4}alkyl) or —O($CH_2C_6H_5$);

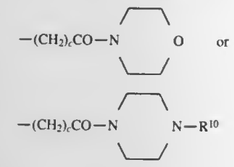
R^8 is —$(CH_2)_b$COOH;

R^9 is methyl, chloro, nitro, hydroxy, methoxy or —NHR^{10};

R^{10} is hydrogen, acetyl, C_{1-4}alkyl, —SO_3H, —SO_2CH_3, —SO_2CF_3 or —$SO_2C_6H_5$, C_{1-4}alkoxycarbonyl;

R^{11} is phenyl or phenyl mono- or disubstituted independently with fluorine, trifluoromethoxy, C_{1-4}alkylthio, -$(CH_2)_c$COOH, —$(CH_2)_c$COO(C_{1-4}alkyl), —$(CH_2)_c$SCH$_3$, —$(CH_2)_c$SOCH$_3$, —$(CH_2)_c$SO$_2$CH$_3$, —$(CH_2)_c$CONH$_2$, —SCH$_2$COOH, —CONH(SO_2CH_3), —CONH(SO_2CF_3), —$(CH_2)_c$N(C_{1-4}alkyl)$_2$, —$(CH_2)_c$NH(SO_2CF_3), —$(CH_2)_c$N(SO_2CF_3)(C_{1-4}alkyl), —$(CH_2)_c$SO$_2$NHCO(C_{1-4} alkyl), —$(CH_2)_c$SO$_2$N(C_{1-4}alkyl)CO(C_{1-4}alkyl), —$(CH_2)_c$CONHSO$_2$(C_{1-4} alkyl) —$(CH_2)_c$CON(C_{1-4}alkyl)SO$_2$(C_{1-4}alkyl), —$(CH_2)_c$OR^{12} —$(CH_2)_c$NHR^{10} or phenyl monosubstituted with —$(CH_2)_c$(tetrazolyl), —$(CH_2)_c$ (carboxamidotetrazolyl) or —$(CH_2)_c$(pyrrolidinyl) or R^{11} is selected from pyridine or pyridinyl mono- or disubstituted independently with halogen, methyl, hydroxy, nitro, cyano, carboxy, —O(C_{1-4}alkyl), dimethylamino, —NHR^{10};

R^{12} is hydrogen, C_{1-6}alkyl, C_{3-6}cycloalkyl, —$CH_2C_6H_5$, —CH_2COOH, — CH_2CO NH$_2$, —CH_2CON H(C_{1-4}alkyl), —CH_2CON(C_{1-4}alkyl)$_2$ or



or

z is 1 or 2;

n is 1 or 2;

p is an integer from 1–4;

b is an integer from 0–3; and

c is 0 or 1.

11. A method of treatment of a mammal including man for conditions where modulation of the effects of and/or CCK is of a therapeutic benefit comprising administration of an effective amount of a compound according of claim **1**.

5,646,141

COMPOUNDS USEFUL AS ANTIPROLIFERATIVE AGENTS AND GARFT INHIBITORS

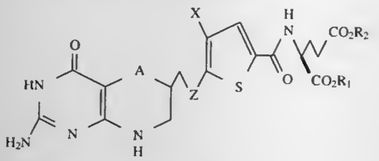
Michael D. Varney, Carlsbad, and William H. Romines, San Diego, both of Calif., assignors to Agouron Pharmaceuticals, Inc., La Jolla, Calif.

Division of Ser. No. 281,639, Jul. 28, 1994. This application Jun. 6, 1995, Ser. No. 467,945

Int. Cl.[6] A61K *31/54;31/535;* **C07D** *401/14;403/14*

U.S. Cl. 514—222.8 **31 Claims**

1. A compound of the Formula I:



(I)

wherein:

A is sulfur, CH_2 or selenium;

Z is a substituted or unsubstituted C_1–C_3 alkyl group, a substituted or unsubstituted C_2–C_3 alkenyl group, a substituted or unsubstituted C_2–C_3 alkynyl group, a substituted or unsubstituted amino group, sulfur or oxygen; wherein when Z is substituted, the substituents are selected from C_1–C_6 alkoxyl, C_1–C_6 alkyl, C_2–C_6 alkenyl, C_2–Ch_6 alkynyl, acyl, halogen, amino, hydroxyl, nitro, mercapto, monocyclic carbocycle,. monocyclic heterocycle, nonfused polycyclic carbocycle, nonfused polycyclic heterocycle, hydroxy C_1–C_6 alkyl and C_1–C_6 alkoxy C_1–C_6 alkyl;

X is a substituted or unsubstituted C_1–C_6 alkyl group; a substituted or unsubstituted C_2–C_6 alkenyl group; a substituted or unsubstituted C_2–C_6 alkynyl group; —C(O)E, wherein E is hydrogen, a substituted or unsubstituted C_1–C_3 alkyl group, a substituted or unsubstituted C_2–C_3 alkenyl group, a substituted or unsubstituted C_2–C_3 alkynyl group, a substituted or unsubstituted C_1–C_3 alkoxy, or $NR_{10}R_{11}$, wherein R_{10} and R_{11} are independently selected from hydrogen, substituted and unsubstituted C_1–C_3 alkyl groups, substituted and unsubstituted C_2–C_3 alkenyl groups, substituted and unsubstituted C_2–C_3 alkynyl groups; $NR_{10}R_{11}$, wherein R_{10} and R_{11} are independently defined as set forth above; hydroxyl; nitro; SR_{12}, wherein R_{12} is hydrogen, a substituted or unsubstituted C_1–C_6 alkyl group, a substituted or unsubstituted C_2–C_6 alkenyl group, or a substituted or unsubstituted C_2–C_6 alkynyl group; cyano; or a substituted or unsubstituted C_1–C_3 alkoxy; wherein when X is substituted, the substituents are selected from OH, NH_2, O-methyl, O-ethyl, SH, SCH_3 and NH-methyl; and

R_1 and R_2 are each independently hydrogen or a moiety that forms, together with the attached CO_2, a readily hydrolyzable ester group;

or a pharmaceutically acceptable salt thereof.

5,646,142

THIOPHENE SULFONAMIDES USEFUL AS CARBONIC ANHYDRASE INHIBITORS

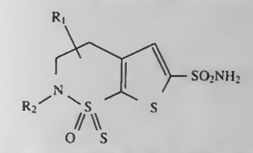
Anura P. Dantanarayana, Fort Worth; Thomas R. Dean, Weatherford, and Jesse A. May, Fort Worth, all of Tex., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.

Filed Jul. 8, 1994, Ser. No. 272,896

Int. Cl.[6] C07D *513/04;* **A61K** *31/54*

U.S. Cl. 514—226.5 **9 Claims**

1. A compound having the following structure:



I

or a pharmaceutically acceptable salt thereof wherein:

R_1 is H; OH; C_{1-6} alkoxy; C_{1-6} alkyl unsubstituted or substituted optionally with OH, NR_3R_4, OC(=O)R_5 or C(=O)R_5; NR_3R_4; OC(=O)R_5; C(=O)R_5; C_{2-4} alkoxy substituted optionally with OH, NR_3R_4, halogen, C_{1-4} alkoxy or C(=O)R_5; phenyl or R_6 either of which can be unsubstituted or substituted optionally with OH, $(CH_2)_nNR_3R_4$, halogen, C_{1-4} alkoxy, C_{1-4} haloalkoxy, C(=O)R_5, S(=O)$_m$$R_7$ or $SO_2NR_3R_4$; wherein m is 0–2 and n is 0–2; provided that when R_1 is OH, alkoxy, NR_3R_4 or OC(=O)R_5 it is attached to the 4-position and when R_1 is R_6 and is attached to the 3 position, the R_6 ring is attached by a carbon carbon single bond;

R_2 is C_{2-8} alkyl substituted with S(=O)$_m$$R_7$; C_{4-7} alkenyl substituted with S(=O)$_m$$R_7$ wherein m is 0–2;

R_3 & R_4 are the same or different and are H; C_{1-8} alkyl; C_{2-4}alkyl substituted optionally with OH, halogen, C_{1-4} alkoxy or C(=O)R_5; C_{1-4} alkoxy; C_{2-4} alkoxy substituted optionally with OH, halogen, C_{1-4} alkoxy or C(=O)R_5; or R_3 and R_4 can be joined to form a ring of 5 or 6 atoms selected from O, S, C or N which can be unsubstituted or substituted optionally on carbon with OH, (=O), halogen, C_{1-4} alkoxy, C(=O)R_5, C_{1-6} alkyl, C_{1-6} alkyl substituted optionally with OH, halogen, C_{1-4} alkoxy, C(=O)R_5 or on nitrogen with C_{1-4} alkoxy, C(=O)R_5, S(=O)$_m$$R_7$, C_{1-6} alkyl or C_{2-6} alkyl substituted optionally with OH, halogen, C_{1-4} alkoxy, C(=O)R_5 or on sulfur by (=O)$_m$, wherein m is 0–2;

R_5 is C_{1-8} alkyl; C_{1-8} alkyl substituted optionally with OH, NR_3R_4, halogen, C_{1-4} alkoxy or $C(=O)R_8$; C_{1-4} alkoxy; C_{2-4} alkoxy substituted optionally with OH, NR_3R_4, halogen or C_{1-4} alkoxy; or NR_3R_4;

R_6 is a monocyclic ring system selected from the group consisting of furan, thiophene, pyrrole, pyrazole, imidazole, triazole, tetrazole, oxazole, isoxazole, isothiazole, thiazole, thiadiazole, pyridine, pyrimidine, pyridazine, and pyrazine;

R_7 is C_{1-4} alkyl; C_{3-5} alkenyl, C_{2-4} alkyl substituted optionally with OH, NR_3R_4, C_{1-4} alkoxy or $C(=O)R_5$; phenyl or R_6 either of which can be unsubstituted or substituted optionally with OH, $(CH_2)_nNR_3R_4$, halogen, C_{1-4} alkoxy, C_{1-4} haloalkoxy, $C(=O)R_5$, $S(=O)_mC_{1-4}$ alkyl or $SO_2NR_3R_4$; wherein m is 0–2 and n is 0–2; and

R_8 is C_{1-4} alkyl; C_{1-4} alkoxy; amino, C_{1-3} alkylamino, of di-C_{1-3} alkylamino.

5,646,143

δ-AMINO-γ-HYDROXY-ω-ARYL-ALKANOIC ACID AMIDES

Richard Göschke, Bottmingen, Switzerland; Jürgen Klaus Maibaum, Weil-Haltingen, Germany; Walter Schilling, Himmelried; Stefan Stutz, Basel, both of Switzerland; Pascal Rigollier, Sierentz, France; Yasuchika Yamaguchi, Basel, Switzerland; Nissim Claude Cohen, Village-Neuf, France, and Peter Herold, Arlesheim, Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

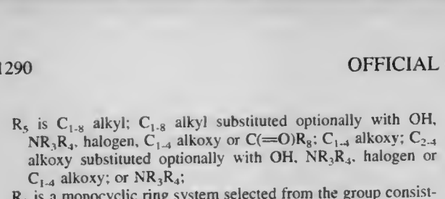
Division of Ser. No. 416,242, Apr. 4, 1995, Pat. No. 5,559,111. This application Jul. 25, 1996, Ser. No. 687,277

Claims priority, application Switzerland, Apr. 18, 1994, 1169/94

Int. Cl.[6] **A61K** *31/335;31/535;* **C07D** *317/64;413/12*

U.S. Cl. 514—233.8 **10 Claims**

1. An δ-amino-γ-hydroxy-ω-aryl-alkanoic acid amide of formula I



(I)

wherein

R_1 is hydrogen, hydroxy, lower alkoxy, cycloalkoxy, lower alkoxy-lower alkoxy or free or esterified or amidated carboxy-lower alkoxy,

R_2 is hydrogen, lower alkyl, cycloalkyl, lower alkoxy-lower alkyl, lower alkoxy-lower alkoxy-lower alkyl, cycloalkoxy-lower alkyl, hydroxy, optionally lower alkanoylated, halogenated or sulfonylated hydroxy-lower alkoxy; amino-lower alkyl that is unsubstituted or substituted by lower alkyl, by lower alkanoyl and/or by lower alkoxycarbonyl; optionally hydrogenated heteroaryl-lower alkyl; amino-lower alkoxy that is substituted by lower alkyl, by lower alkanoyl and/or by lower alkoxycarbonyl; oxo-lower alkoxy, lower alkoxy, cycloalkoxy, lower alkenyloxy, cycloalkoxy-lower alkoxy, lower alkoxy-lower alkoxy, lower alkoxy-lower alkenyl, lower alkenyloxy-lower alkoxy, lower alkoxy-lower alkenyloxy, lower alkenyloxy-lower alkyl, lower alkanoyl-lower alkoxy, optionally S-oxidised lower alkylthio-lower alkoxy, lower alkylthio-(hydroxy)-lower alkoxy, aryl-lower alkoxy, optionally hydrogenated heteroaryl-lower alkoxy, cyano-lower alkoxy, free or esterified or amidated carboxy-lower alkoxy or free or esterified or amidated carboxy-lower alkyl,

R_3 together with R_4 is lower alkylenedioxy or a fused-on benzo or cyclohexane ring,

X is methylene or hydroxymethylene,

R_5 is lower alkyl or cycloalkyl,

R_6 is unsubstituted or N-mono- or N,N-di-lower alkylated or N-lower alkanoylated amino,

R_7 is lower alkyl, lower alkenyl, cycloalkyl or aryl-lower alkyl, and is lower alkyl, cycloalkyl, free or aliphatically esterified or etherified

R_8 hydroxy-lower alkyl; amino-lower alkyl that is unsubstituted or N-lower alkanoylated or N-mono- or N,N-di-lower alkylated or N,N-disubstituted by lower alkylene, by hydroxy-, lower alkoxy- or lower alkanoyloxy-lower alkylene, by unsubstituted or N'-lower alkanoylated or N'-lower alkylated aza-lower alkylene, by oxa-lower alkylene or by optionally S-oxidised thia-lower alkylene; free or esterified or amidated carboxy-lower alkyl, free or esterified or amidated dicarboxy-lower alkyl, free or esterified or amidated carboxy-(hydroxy)-lower alkyl, free or esterified or amidated carboxycycloalkyl-lower alkyl, cyano-lower alkyl, lower alkanesulfonyl-lower alkyl, unsubstituted or N-mono- or N,N-di-lower alkylated thiocarbamoyl-lower alkyl, unsubstituted or N-mono- or N,N-di-lower alkylated sulfamoyl-lower alkyl, or a heteroaryl radical bonded via a carbon atom and optionally hydrogenated and/or oxo-substituted, or lower alkyl substituted by a heteroaryl radical bonded via a carbon atom and optionally hydrogenated and/or oxo-substituted,

or a salt thereof.

5,646,144

1-ACYLPIPERIDINE COMPOUNDS

Walter Schilling, Himmelried; Silvio Ofner, Münchenstein, and Siem J. Veenstra, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

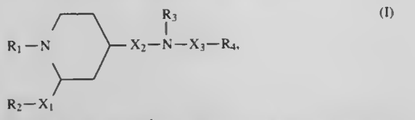
Division of Ser. No. 196,360, Apr. 4, 1994, Pat. No. 5,541,195, which is a division of Ser. No. 929,186, Aug. 11, 1992, Pat. No. 5,310,743. This application Jun. 7, 1995, Ser. No. 482,704

Claims priority, application Switzerland, Aug. 12, 1991, 2374/91

Int. Cl.[6] **A61K** *31/47;* **C07D** *215/12;409/00*

U.S. Cl. 514—241 **8 Claims**

1. A 1-acylpiperidine compound of the formula I



(I)

in which R_1 is an optionally substituted aralkyl, aryloxyalkyl, heteroaralkyl, aroyl, heteroaroyl, cycloalkylcarbonyl, aralkanoyl, heteroarylalkanoyl, aralkoxycarbonyl or arylcarbamoyl radical or the acyl radical of an α-amino acid which is optionally N-substituted by lower alkanoyl or carbamoyl-lower-alkanoyl, R_2 is cycloalkyl or an optionally substituted aryl or heteroaryl radical, R_3 is hydrogen, alkyl, carbamoyl or an alkanoyl or alkenoyl radical which is optionally substituted by carboxyl or esterified or amidated carboxyl, R_4 is an optionally substituted aryl or optionally partially hydrogenated heteroaryl radical, X_1 is methylene, ethylene, a direct linkage, an optionally ketalised carbonyl group or an optionally etherified hydroxymethylene group, X_2 is alkylene, carbonyl or a direct linkage, and X_3 is carbonyl, oxo-lower-alkylene, oxo(aza)-lower-alkylene or an alkylene radical which is optionally substituted by phenyl, hydroxymethyl, optionally esterified or amidated carboxyl or, in higher than the α position, by hydroxyl, or a salt thereof.

5,646,145

METHOD OF CONTROLLING INSECTS

Claude Flückiger, Magden; Alfred Rindlisbacher, Muttenz; Robert Senn, Basel, and Solang Uk, Rheinfelden, all of Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

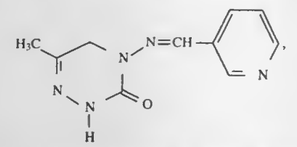
Continuation of Ser. No. 342,687, Nov. 21, 1994, abandoned, which is a continuation of Ser. No. 111,343, Aug. 24, 1993, abandoned. This application May 30, 1995, Ser. No. 453,934

Claims priority, application Switzerland, Sep. 10, 1992, 2847/92; Nov. 20, 1992, 3558/92

Int. Cl.[6] **A01N** *43/64*

U.S. Cl. 514—242 **10 Claims**

1. A method of controlling insects, which comprises applying an insecticidally effective amount of an insecticidal composition, said composition including at least one compound of the formula



(I)

in free form or in agrochemically acceptable salt form, as active ingredient, and at least one adjuvant, to insects of the family Aleyrodidae, Cicadellidae or Delphacidae.

5,646,146

HETEROCYCLIC COMPOUNDS AND THEIR PREPARATION AND USE

Peter Faarup; Palle Jakobsen, both of Værløse; Anker Steen Jørgensen, København, and Henrik Klitgaard, Birkerød, all of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

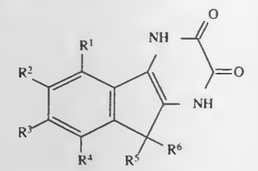
Division of Ser. No. 189,524, Jan. 31, 1994, Pat. No. 5,468,748. This application May 25, 1995, Ser. No. 450,836

Claims priority, application Denmark, Feb. 2, 1993, 0122/93

Int. Cl.[6] **A61K** *31/495;31/675;* **C07D** *241/38;* **C07F** *9/6509*

U.S. Cl. 514—250 **29 Claims**

1. A compound of formula (I) or a tautomeric form thereof



(I)

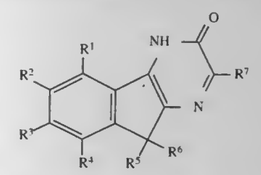
wherein

R^1, R^2, R^3 and R^4 independently are hydrogen, halogen, C_{1-6}-alkyl or C_{1-6}-alkoxy; and

R^5 is hydrogen; hydroxy; halogen; cyano; C_{1-6}-alkyl optionally substituted with hydroxy; C_{1-6}-alkoxy optionally substituted with one or two phenyl group(s) wherein the phenyl group(s) is/are optionally substituted with halogen; C_{1-6}-(alkoxyalkoxy); C_{1-6}-thioalkyl optionally substituted with an amino group wherein the amino group is optionally mono or disubstituted with C_{1-6}-alkyl; C_{1-6}-acyloxy; phosphono; C_{1-6}-alkoxy disubstituted phosphonyl; or a morpholino or piperazinyl group which is optionally substituted with a C_{1-6}-alkyl group wherein the alkyl group is optionally substituted by hydroxy or wherein the morpholino or piperazinyl group is optionally substituted with one or two phenyl group(s) wherein the phenyl group(s) is/are optionally substituted with methoxy; and R^6 is hydrogen, C_{1-6}-alkyl or phenyl; or R^5 and R^6 together represent a carbonyl group, a hydroxyimino group or a benzyloxyimino group; or

a pharmaceutically acceptable salt thereof.

17. A compound of formula (I) or a tautomeric form thereof



(I)

wherein

R^1, R^2, R^3 and R^4 inoependently are hydrogen, halogen, C_{1-6}-alkyl or C_{1-6}-alkoxy;

R^5 is hydrogen; hydroxy; halogen; cyano; C_{1-6}-alkyl optionally substituted with hydroxy; C_{1-6}-alkoxy optionally substituted with one or two phenyl group(s) wherein the phenyl group(s) is/are optionally substituted with halogen; C_{1-6}-(alkoxyalkoxy); C_{1-6}-thioalkyl optionally substituted with an amino group wherein the amino group is optionally mono or disubstituted with C_{1-6}-alkyl; C_{1-6}-acyloxy; phosphono; C_{1-6}-alkoxy disubstituted phosphonyl; or a morpholino or piperazinyl group which is optionally substituted with a C_{1-6}-alkyl group wherein the alkyl group is optionally substituted by hydroxy or wherein the morpholino or piperazinyl group is optionally substituted with one or two phenyl group(s) wherein the phenyl group(s) is/are optionally substituted with methoxy and/or by hydroxy; and R^6 is hydrogen, C_{1-6}-alkyl or phenyl; or R^5 and R^6 together represent a carbonyl group, a hydroxyimino group or a benzyloxyimino group; and

R^7 is phenyl or $—CH_2OR^8$ wherein R^8 is hydrogen or benzyl; or

a pharmaceutically acceptable salt thereof.

26. A compound which is:

9-Hydroxyimino-9H-indeno[1,2-b]pyrazin-3(4H)-one;

9-Chloro-9H-indeno[1,2-b]pyrazine-3(4H)-one;

9-Hydroxy-9H-indeno[1,2-b]pyrazine-3(4H)- one;

9-Hydroxy-9-phenyl-9H-indeno[1,2-b]pyrazine-3(4H)-one;

9-Acetoxy-9-phenyl-9H-indeno[1,2-b]pyrazine-3(4H)-one; or

a pharmaceutically acceptable salt thereof.

5,646,147

ACARICIDAL, INSECTICIDAL AND NEMATICIDAL SUBSTITUTED (HETERO)ARYLALKYL KETONE OXIME O-ETHERS, PROCESSES FOR THEIR PREPARATION, AGENTS CONTAINING THEM, AND THEIR USE AS PESTICIDES

Birgit Kuhn, Hattersheim/Main; Gerhard Salbeck, deceased, late of Kriftel/Taunus; Uwe Döller, Rodgau; Stefan Schnatterer, Hattersheim/Main, all of Germany; Hans-Herbert Schubert, Tokyo, Japan; Werner Knauf, Eppstein/Taunus, Germany; Anna Waltersdorfer, Frankfurt am Main, Germany, and Manfred Kern, Lörzweiler, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

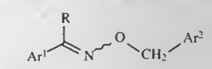
Continuation of Ser. No. 50,000, Apr. 20, 1993, abandoned. This application Apr. 20, 1994, Ser. No. 230,134

Claims priority, application Germany, Apr. 22, 1992, 42 13 149.9

Int. Cl.[6] **C07D** *401/00;401/02;403/00;403/02;* **A61K** *31/50;31/495;31/44;31/38*

U.S. Cl. 514—252 **16 Claims**

1. A compound of the formula I in the form of the syn or the anti compound or a mixture of these or a salt thereof,

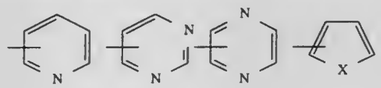


(I)

in which

R is CF_3;

Ar^1 is phenyl, naphthyl, indanyl, benzofuryl, benzothienyl



or



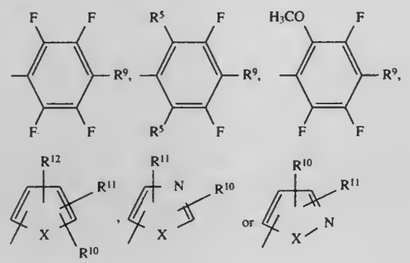
and has optionally up to 5 identical or different substituents R^1 selected from the group consisting of

1) $(C_1–C_6)$-alkyl,
2) $(C_2–C_6)$-alkenyl,
3) $(C_2–C_6)$-alkynyl
4) $(C_3–C_8)$-cycloalkyl which is optionally substituted by up to 6 identical or different radicals selected from the group consisting of halogen and $(C_1–C_4)$-alkyl,
5) halogen,
6) $(C_1–C_6)$-haloalkyl,
7) $(C_2–C_6)$-haloalkenyl,
8) $(C_2–C_6)$-haloalkynyl,
9) $(C_1–C_6)$-alkoxy-$(C_1–C_6)$-alkyl,
10) $(C_6–C_{12})$-aryl which is optionally up to trisubstituted by identical or different radicals selected from the group consisting of $(C_1–C_6)$-alkyl, $(C_1–C_6)$-alkoxy, $(C_1–C_6)$-haloalkyl and $(C_1–C_6)$-haloalkoxy,
11) heteroaryl which has up to 10 carbon atoms and which is optionally substituted as described under 10.,
12) $(C_6–C_{12})$-aryl-$(C_1–C_4)$-alkyl which is optionally substituted in the aryl moiety as described under 10.,
13) heteroaryl-$(C_1–C_4)$-alkyl which has up to 10 carbon atoms in the heteroaryl moiety and is optionally substituted in this moiety as described under 10.,
14) $(C_1–C_6)$-alkoxy,
15) $(C_2–C_6)$-alkenyloxy,
16) $(C_2–C_6)$-alkynyloxy,
17) $(C_3–C_8)$-cycloalkyloxy which is optionally substituted as described under 4.,
18) $(C_1–C_6)$-alkoxy, $(C_1–C_4)$-alkoxy,
19) $(C_6–C_{12})$-aryloxy which is optionally substituted as described under 10.,
20) heteroaryloxy which has up to 10 carbon atoms and which is optionally substituted as described under 10.,
21) $(C_1–C_6)$-haloalkoxy,
22) $(C_2–C_6)$-haloalkenyloxy,
23) $(C_2–C_6)$-haloalkynyloxy,
24) —O—N=CR'$_2$ in which R' radicals are identical or different radicals selected from the group consisting of hydrogen, $(C_1–C_6)$-alkyl, $(C_3–C_8)$-cycloalkyl and $(C_6–C_{12})$-aryl,
25) $(C_1–C_6)$-alkylamino,
26) di-$(C_1–C_6)$-alkylamino,
27) $(C_3–C_8)$-cycloalkylamino which is optionally substituted as described under 4.,
28) $(C_6–C_{12})$-arylamino which is optionally substituted as described under 1.b) 10.,
29) heteroarylamino which has up to 10 carbon atoms and is optionally substituted as described under 10.,
30) $(C_1–C_6)$-alkylmercapto,
31) $(C_6–C_{12})$-arylmercapto,
32) heteroarylmercapto having up to 10 carbon atoms,
33) $(C_1–C_6)$-alkylsulfinyl,
34) $(C_6–C_{12})$-arylsulfinyl,
35) heteroarylsulfinyl having up to 10 carbon atoms,
36) $(C_1–C_6)$-alkylsulfonyl,
37) $(C_6–C_{12})$-arylsulfonyl,
38) heteroarylsulfonyl having up to 10 carbon atoms,
39) nitro,
40) cyano,
41) cyano-$(C_1–C_6)$-alkyl,
42) $(C_1–C_6)$-alkoxycarbonyl,
43) $(C_6–C_{12})$-aryloxycarbonyl and
44) heteroaryloxycarbonyl having up to 10 carbon atoms in the heteroaryl moiety, or
45) a) two of the substituents represent methylenedioxy,
b) the methylenedioxy group optionally being substituted by one or two identical or different radicals selected from the group consisting of halogen and $(C_1–C_4)$-alkyl;

X is O, S or MR^3;

R^3 is hydrogen,
$(C_1–C_6)$-alkyl,
$(C_2–C_6)$-alkenyl,
$(C_2–C_6)$-alkynyl
$(C_3–C_8)$-cycloalkyl which is optionally substituted by up to 6 identical or different radicals selected from the group consisting of halogen and $(C_1–C_4)$-alkyl,
$(C_1–C_6)$-haloalkyl,
$(C_2–C_6)$-haloalkenyl,
$(C_2–C_6)$-haloalkynyl
$(C_1–C_6)$-alkoxy-$(C_1–C_6)$-alkyl,
$(C_6–C_{12})$-aryl-$(C_1–C_4)$-alkyl,
heteroaryl-$(C_1–C_4)$-alkyl having up to 10 carbon atoms in the heteroaryl moiety,
cyano-$(C_1–C_6)$-alkyl,
$(C_1–C_6)$-alkoxycarbonyl,
$(C_6–C_{12})$-aryloxycarbonyl or
heteroaryloxycarbonyl having up to 10 carbon atoms;

Ar^2 is



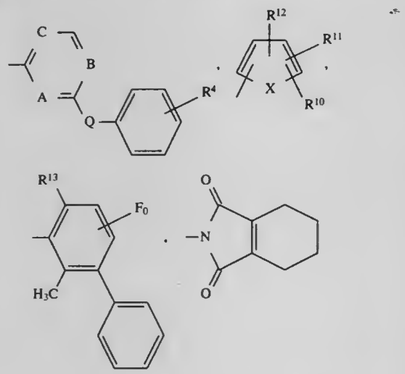
X is as defined above;

X' is NR^3 and R^3 is as defined above;

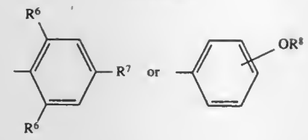
R^5 is hydrogen, methyl or methoxy;

R^9 is $(C_1–C_6)$-alkyl, $(C_1–C_6)$-alkoxy, $(C_1–C_6)$-halogenalkyl or $(C_1–C_{10})$-halogenalkoxy; and

R^{10}, R^{11} and R^{12} are identical or different and are hydrogen or are one of the substituents defined above under 1.–45., or Ar^2 if not encompassed by the preceding definitions, additionally denotes



-continued



one of the groups A, B and C is nitrogen and the remaining two groups are identical or different and are CH or C-Hal;

Q is O, S, NH or CH_2,

R^4 is hydrogen, halogen, O—CH_2—CH=CH_2 or O—CH_2—C≡CH,

Hal is halogen,

X" is O or S,

R^{10}, R^{11} and R^{12} are as defined above

R^{13} is hydrogen, fluoro or methyl,

o is 0, 1 or 2,

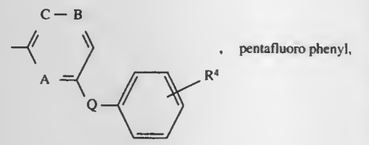
R^6 is hydrogen, fluoro or $(C_1–C_6)$-alkyl,

R^7 is halogenophenoxy, halogenobenzyl, O—CH_2—CH=CH_2, O—CH_2—C≡CH, CH_2—CH=CH_2 or CH_2—C≡CH and

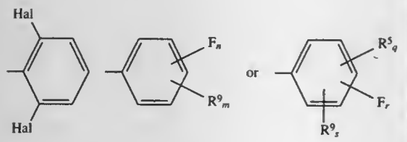
R^8 is $(C_2–C_6)$-alkenyl or $(C_2–C_6)$-halogenalkyl; and in case Ar^1 is one of the heteroaryl groups selected from the group consisting of benzofuryl, benzothienyl, pyridyl, pyrimidinyl, pyrazinyl,



in which X is as defined above, which heteroaryl group is optionally substituted as defined above for Ar^1, then Ar^2, if not encompassed by the preceding definitions additionally denotes



pentafluoro phenyl,



A, B and C are identical or different and are N, CH or C-Hal,

Q, R^4, Hal and R^9 are as defined above,

m and n are identical or different and are in each case 1, 2, 3 or 4,

m+n is 5,

R^5 is as defined above,

q, r, s are identical or different and are in each case 1, 2 or 3 and q+r+s is 5.

5,646,148

HIV PROTEASE INHIBITORS USEFUL FOR THE TREATMENT OF AIDS

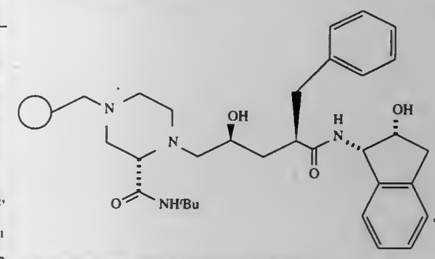
Joel R. Huff, Gwynedd Valley; Joseph P. Vacca, Telford, and Bruce D. Dorsey, Harleysville, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 170,475, Dec. 20, 1993, abandoned, which is a continuation-in-part of Ser. No. 168,013, Dec. 15, 1993, abandoned. This application Mar. 29, 1995, Ser. No. 412,509

Int. Cl.[6] **A61K** *31/495;31/52;* **C07D** *407/06;491/048*

U.S. Cl. 514—253 **6 Claims**

1. A compound of the formula:



(I)

or a pharmaceutically acceptable salt thereof, wherein:



is benzofuryl which is unsubstituted or substituted with OH, halo, or lower C_{1-4} alkyl.

5,646,149

COMPOUNDS HAVING BOTH POTENT CALCIUM ANTAGONIST AND ANTIOXIDANT ACTIVITY AND USE THEREOF AS CYTOPROTECTIVE AGENTS

Mark R. Hellberg; George Barnes, and Robert J. Collier, Jr., all of Arlington, Tex., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.

Continuation of Ser. No. 163,980, Dec. 8, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 472,685

Int. Cl.[6] **A61K** *31/495;31/445;* **C07D** *405/06;411/06*

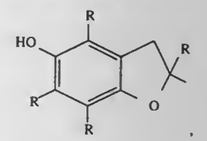
U.S. Cl. 514—253 **40 Claims**

1. A compound of the formula:

A—Y—B

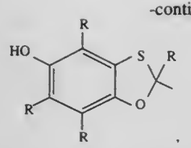
wherein:

A is an antioxidant selected from the group consisting of:

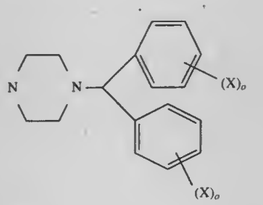


and

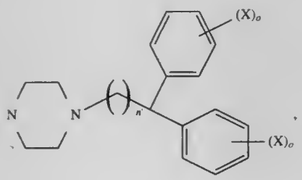
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wherein R is C_1 to C_6 alkyl;
Y is $(CH_2)_n$ or $CH{=}CH(CH_2)_n$, wherein n is a whole number of from 1 to 6; and
B is selected from the group consisting of:



and

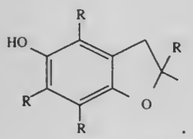


wherein:
n' is a whole number of from 1 to 6;
X is F, Cl, I, Br, OH, OR', SH, $S(O)_mR'$, CN or NO_2, wherein R' is C_1 to C_6 alkyl and m is 0, 1 or 2; and
o is 0, 1, 2 or 3, or a pharmaceutically acceptable salt thereof.

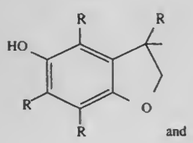
28. A method of preventing or reducing damage to ophthalmic tissues at the cellular level, which comprises administering to the eye of a human patient a therapeutically effective amount of a composition comprising 0.001 to 5 wt. % of a compound of the following formula:

A—Y—B

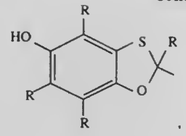
wherein:
A is an antioxidant selected from the group consisting of:



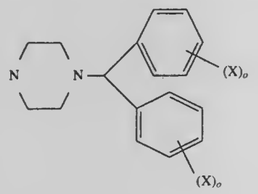
and



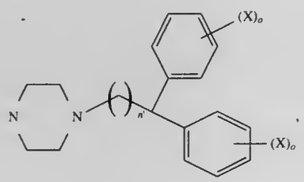
-continued



wherein R is C_1 to C_6 alkyl;
Y is $(CH_2)_n$ or $CH{=}CH(CH_2)_n$, wherein n is a whole number of from 1 to 6; and
B is selected from the group consisting of:



and



wherein:
n' is a whole number of from 1 to 6;
X is F, Cl, I, Br, OH, OR', SH, $S(O)_mR'$, CN or NO_2, wherein R' is C_1 to C_6 alkyl and m is 0, 1 or 2; and
o is 0, 1, 2 or 3, or a pharmaceutically acceptable salt thereof; and a pharmaceutically acceptable vehicle therefor.

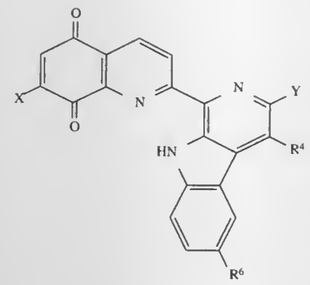
5,646,150

METHODS OF USING LAVENDAMYCIN ANALOGS

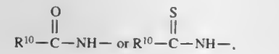
Mohammad Behforouz, Muncie, and Ronald L. Merriman, Indianapolis, both of Ind., assignors to Ball State University, Muncie, Ind.

Continuation-in-part of Ser. No. 71,648, Jun. 4, 1993, Pat. No. 5,525,611. This application Nov. 28, 1994, Ser. No. 345,509
Int. Cl.[6] A61K *31/44;31/495;* **C07D** *471/04;401/04*
U.S. Cl. 514—254 **6 Claims**

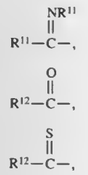
1. A method of treating a bacterial or parasitic infection comprising administering to an animal suffering from such an infection an effective amount of a compound having the following formula:



wherein,
X is

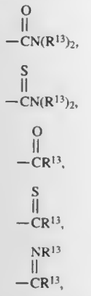


Y is H, OR^{11}, SR^{11}, $N(R^{11})_2$, $NR^{11}N(R^{11})_2$, a halogen atom, NO_2, CN,



or an alkyl, aryl, cycloalkyl, alkynyl, alkenyl or heterocyclic residue, said heterocyclic residue being selected from the group consisting of thienyl, furyl, pyrrolyl, imidazolyl, pyrazolyl, pyridyl, pyrazinyl, pyrimidinyl, pyridazinyl, oxazolyl, isothiazolyl, isoxazolyl, thiazolyl, oxadiazolyl, and thiadiazolyl, each of said residues may be unsubstituted or substituted with a single substituent selected from the group consisting of R^x, NH_2, R^xNH, $(R^x)_2N$, CN, N_3, NO_2, OH, halogen, SH, R^xS, R^xSO_2, R^xSO, R^xO, COOH, $COOR^x$, COR^x, CHO and $CON(R^x)_2$,

R^4 and R^6, which may be the same or different, each is independently H, a halogen atom, NO_2, CN, OR^{13}, SR^{13}, $N(R^{13})_2$,



or an alkyl, aryl, cycloalkyl, alkenyl, alkynyl or heterocyclic residue, said alkyl residue optionally containing a heteroatom selected from the group consisting of oxygen, sulfur and nitrogen, said heterocyclic residue being selected from the group consisting of thienyl, furyl, pyrrolyl, imidazolyl, pyrazolyl, pyridyl, pyrazinyl, pyrimidinyl, pyridazinyl, oxazolyl, isothiazolyl, isoxazolyl, thiazolyl, oxadiazolyl, and thiadiazolyl, each of said residues may be unsubstituted or substituted with a single substituent selected from the group consisting of R^x, NH_2, R^xNH, $(R^x)_2N$, CN, N_3, NO_2, OH, halogen, SH, R^xS, R^xSO_2, R^xSO, R^xO, COOH, $COOR^x$, COR^x, CHO and $CON(R^x)_2$,

R^{10}, R^{11} and R^{13}, which may be the same or different, each is independently H or an alkyl, cycloalkyl, alkenyl, alkynyl, aryl or heterocyclic residue, said heterocyclic residue being selected from the group consisting of thienyl, furyl, pyrrolyl, imidazolyl, pyrazolyl, pyridyl, pyrazinyl, pyrimidinyl, pyridazinyl, oxazolyl, isothiazolyl, isoxazolyl, thiazolyl, oxadiazolyl, and thiadiazolyl, each of said residues may be unsubstituted or substituted with a single substituent selected from the group consisting of R^x, NH_2, R^xNH, $(R^x)_2N$, CN, N_3, NO_2, OH, halogen, SH, R^xS, R^xSO_2, R^xSO, R^xO, COOH, $COOR^x$, COR^x, CHO and $CON(R^x)_2$,

R^{12} is H, $N(R^{11})2$, OR^{11}, SR^{11}, $NR^{11}N(R^{11})_2$, $OR^{14}N(R^{11})_2$, or an alkyl, cycloalkyl, aryl, alkenyl, alkynyl or heterocyclic residue, said heterocyclic residue being selected from the group consisting of thienyl, furyl, pyrrolyl, imidazolyl, pyrazolyl, pyridyl, pyrazinyl, pyrimidinyl, pyridazinyl, oxazolyl, isothiazolyl, isoxazolyl, thiazolyl, oxadiazolyl, and thiadiazolyl, each of said residues may be unsubstituted or substituted with a single substituent selected from the group consisting of R^x, NH_2, R^xNH, $(R^x)_2N$, CN, N_3, NO_2, OH, halogen, SH R^xS R^xSO R^xSO R^xO COOH, $COOR^x$ COR^x CHO and $CON(R^x)_2$,

R^{14} is an alkylene residue, and

R^x is an alkyl, cycloalkyl, aryl, alkenyl, alkynyl or heterocyclic residue, said heterocyclic residue being selected from the group consisting of thienyl, furyl, pyrrolyl, imidazolyl, pyrazolyl, pyridyl, pyrazinyl, pyrimidinyl, pyridazinyl, oxazolyl, isothiazolyl, isoxazolyl, thiazolyl, oxadiazolyl, and thiadiazolyl,

or a pharmaceutically-acceptable salt thereof.

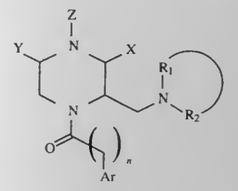
5,646,151

KAPPA AGONIST COMPOUNDS AND PHARMACEUTICAL FORMULATIONS THEREOF

Lawrence I. Kruse, Haddonfield, N.J.; Virendra Kumar, Laoli, Pa.; An-Chih Chang, Phoenixville, Pa.; Diane L. DeHaven-Hudkins; John J. Farrar, both of Chester Springs, Pa., and Alan L. Maycock, Malvern, Pa., assignors to Adolor Corporation, Malvern, Pa.

Filed Mar. 8, 1996, Ser. No. 612,680
Int. Cl.[6] A61K *31/495;* **C07D** *241/04*
U.S. Cl. 514—255 **10 Claims**

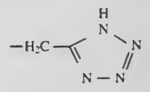
1. A compound of the formula I or a pharmaceutically acceptable salt thereof



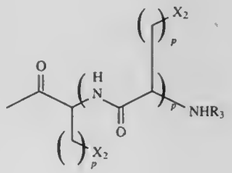
(I)

wherein
n is 1–3;
R_1 and R_2 are independently $—CH_3$; $—(CH_2)_m$, where m is 4–8; $—CH_2CH(OH)(CH_2)_2—$; $—CH_2CH(F)(CH_2)_2—$; $—(CH_2)_2O(CH_2)_2—$; or $—(CH_2)_2CH{=}CHCH_2—$;
Ar is unsubstituted or mono-, or di-substituted phenyl wherein said substituents are selected from the group consisting of halogen, OCH_3, SO_2CH_3, CF_3, amino, alkyl, and 3,4-dichloro; benzothiophenyl; benzofuranyl; naphthyl; diphenyl methyl; or 9-fluorene;
Z is
$—P(O)(OBn)_2$; $—P(O)(OH)_2$; $—(CH_2)_pC(O)NHOH$; $—(CH_2)_pCO_2H$; $—SO_2CH_3$; $—SO_2NH_2$; $—CO(CH_2)_pCH(NH_2)(CO_2H)$; $—COCH(NH_2)(CH_2)_pCO_2H$; $—CO_2CH_3$; $—CONH_2$; $(CH_2)_pO(CH_2)_pCO_2H$;

$-(CH_2)_pO(CH_2)_pCONHOH$; $-(CH_2)_pNHSO_2CH_3$; $-(CH_2)_pNHC(S)NHCH(CO_2H)(CH_2)_pCO_2H$; $-(CH_2)_pSO_3H$; or



or Z is



wherein

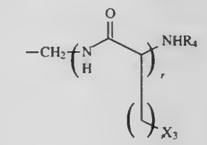
p is 0–20;

R_3 is —H or —AC;

X_2 is $-CO_2H$; $-NHSO_2CH_3$; $-NHP(O)(OBn)_2$; $-NHP(O)(OH)_2$; $-OP(O)(OBn)_2$; or $-OP(O)(OH)_2$,

X and Y are independently

$-CH_2NHSO_2CH_3$; $-CH_2NHP(O)(OBn)_2$; $-CH_2NHP(O)(OH)_2$; $-CH_2OP(O)(OBn)_2$; $-CH_2OP(O)(OH)_2$; $-(CH_2)_qO(CH_2)_qCO_2H$; $-(CH_2)_qO(CH_2)_qSO_3H$; $-(CH_2)_qO(CH_2)_qCHNHOH$; $-CH_2NHC(S)NHCH(CO_2H)(CH_2)_qCO_2H$; or



wherein

q is 1–20

r is 1–20

R_4 is —H or —Ac and

X_3— is $-CO_2H$; $-NHSO_2CH_3$; $-NHP(O)(OBn)_2$; $-NHP(O)(OH)_2$; $-OP(O)(OBn)_2$; or $-OP(O)(OH)_2$.

5,646,152

METHODS OF ADMINISTERING CRF ANTAGONISTS

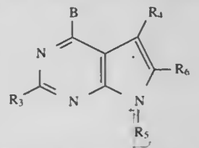
Gene M. Bright, Groton; Yuhpyng L. Chen, Waterford, and Willard M. Welch, Mystic, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Jun. 15, 1994, Ser. No. 259,835

Int. Cl.[6] A61K *31/505*

U.S. Cl. 514—258 **7 Claims**

1. A method for the treatment of certain disorders, which comprises administering to a subject in need of such treatment an effective amount of a compound of the formula

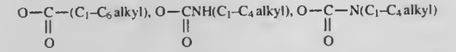


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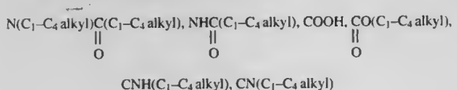
or a pharmaceutically acceptable acid addition salt thereof, wherein

B is NR_1R_2, $CR_1R_2R_{11}$, $C(=CR_2R_{12})R_1$, $NHCR_1R_2R_{11}$, $OCR_1R_2R_{11}$, $SCR_1R_2R_{11}$, $NHNR_1R_2$, $CR_2R_{11}NHR_1$, $CR_2R_{11}OR_1$, $CR_2R_{11}SR_1$, or $C(O)R_2$;

R_1 is hydrogen, or C_1–C_6 alkyl which may be substituted by one or two substituents R_7 independently selected from the group consisting of hydroxy, fluoro, chloro, bromo, iodo, C_1–C_8 alkoxy,

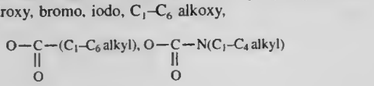


(C_1–C_2 alkyl), amino, $NH(C_1$–C_4alkyl), $N(C_1$–C_4alkyl)(C_1–C_4alkyl), $S(C_1$–C_6 alkyl),

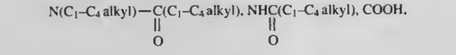


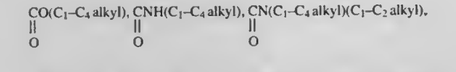
(C_1–C_2 alkyl), SH, CN, NO_2, $SO(C_1$–C_4alkyl), $SO_2(C_1$–C_4 alkyl), $SO_2NH(C_1$–C_4 alkyl), $SO_2N(C_1$–alkyl) (C_1–C_2 alkyl), and said C_1–C_6 alkyl may contain one or two double or triple bonds;

R_2 is C_1–C_{12} alkyl, aryl or (C_1–C_{10} alkylene)aryl wherein said aryl is phenyl, naphthyl, thienyl, benzothienyl, pyridyl, quinolyl, pyrazinyl, pyrimidyl, imidazolyl, furanyl, benzofuranyl, benzothiazolyl, isothiazolyl, benzisothiazolyl, thiazolyl, isoxazolyl, benzisoxazolyl, benzimidazolyl, triazolyl, pyrazolyl, pyrrolyl, indolyl, pyrrolopyridyl, oxazolyl, or benzoxazolyl; 3- to 8-membered cycloalkyl or (C_1–C_6 alkylene) cycloalkyl, wherein said cycloalkyl may contain one or two of O, S or N—Z wherein Z is hydrogen, C_1–C_4 alkyl, benzyl or C_1–C_4 alkanoyl, wherein R_2 may be substituted independently by from one to three of chloro, fluoro, or C_1–C_4 alkyl, or one of hydroxy, bromo, iodo, C_1–C_6 alkoxy,



(C_1–C_2 alkyl), $S(C_1$–C_6 alkyl), NH_2, $NH(C_1$–C_2 alkyl), $N(C_1$–C_2 alkyl) (C_1–C_4 alkyl),



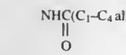


SH, CN, NO_2, SO (C_1–C_4 alkyl), $SO_2(C_1$–C_4 alkyl), $SO_2NH(C_1$–C_4alkyl), $SO_2N(C_1$–C_4 alkyl) (C_1–C_2 alkyl), and wherein said C_1–C_{12} alkyl or C_1–C_{10} alkylene may contain one to three double or triple bonds; or

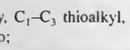
NR_1R_2 or $CR_1R_2R_{11}$, may form a saturated 3- to 8-membered ring of which the 5- to 8-membered ring may contain one or two double bonds or one or two of O, S or N—Z wherein Z is hydrogen, C_1–C_4 alkyl, benzyl or C_1–C_4 alkanoyl;

R_3 is hydrogen, C_1–C_6 alkyl, fluoro, chloro, bromo, iodo, hydroxy, amino, $O(C_1$–C_6 alkyl), $NH(C_1$–C_6 alkyl), $N(C_1$–C_4 alkyl)(C_1–C_2 alkyl), SH, $S(C_1$–C_4 alkyl), $SO(C_1$–C_4 alkyl), or $SO_2(C_1$–C_4 alkyl), wherein said C_1–C_4 alkyl and C_1–C_6 alkyl may contain one double or triple bond and may be substituted by from 1 to 3 substituents R_8 independently selected from the group consisting of hydroxy, C_1–C_3 alkoxy, fluoro, chloro or C_1–C_3 thioalkyl;

R_4 is hydrogen, C_1–C_6 alkyl, fluoro, chloro, bromo, iodo, C_1–C_6 alkoxy, amino, $NH(C_1$–C_6 alkyl), $N(C_1$–C_6 alkyl) (C_1–C_2 alkyl), $SO_n(C_1$–C_6 alkyl), wherein n is 0, 1 or 2, cyano, hydroxy, carboxy, or amido, wherein said C_1–C_6 alkyls may be substituted by one hydroxy, trifluoromethyl, amino, carboxy, amido,



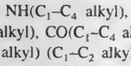
$NH(C_1$–C_4 alkyl), $N(C_1$–C_4 alkyl) (C_1–C_2 alkyl),



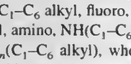
C_1–C_3 alkoxy, C_1–C_3 thioalkyl, fluoro, bromo, chloro, iodo, cyano or nitro;

R_5 is phenyl, naphthyl, thienyl, benzothienyl, pyridyl, quinolyl, pyrazinyl, pyrimidyl, imidazolyl, furanyl, benzofuranyl, benzothiazolyl, isothiazolyl, benzisothiazolyl, thiazolyl, isoxazolyl, benzisoxazolyl, benzimidazolyl, triazolyl, pyrazolyl, pyrrolyl, indolyl, pyrrolopyridyl, benzoxazolyl, oxazolyl, pyrrolidinyl, thiazolidinyl, morpholinyl, piperidinyl, piperazinyl, tetrazolyl, or 3- to 8-membered cycloalkyl or 9- to 12-membered bicycloalkyl, optionally containing one or two of O, S or N—Z wherein Z is hydrogen, C_1–C_4 alkyl, C_1–C_4 alkanoyl, phenyl or phenylmethyl, wherein each one of the above groups may be substituted independently by from one to three of fluoro, chloro, bromo, formyl, C_1–C_6 alkyl, C_1–C_6 alkoxy or trifluoromethyl, or one of hydroxy, iodo, cyano, nitro, amino, $NH(C_1$–C_4 alkyl), $N(C_1$–C_4) (C_1–C_2 alkyl), $COO(C_1$–C_4 alkyl), $CO(C_1$–C_4 alkyl), $SO_2NH(C_1$–C_4 alkyl), $SO_2N(C_1$–C_4 alkyl) (C_1–C_2 alkyl), SO_2NH_2, $NHSO_2(C_1$–C_4 alkyl), $S(C_1$–C_6 alkyl), $SO_2(C_1$–C_6 alkyl), wherein said C_1–C_4 alkyl and C_1–C_6 alkyl may be substituted by one or two of fluoro, chloro, hydroxy, C_1–C_4 alkoxy, amino, methylamino, dimethylamino or acetyl wherein said C_1–C_4 alkyl and C_1–C_6 alkyl may contain one double or triple bond; with the proviso that R_5 is not unsubstituted phenyl;

R_6 is hydrogen, C_1–C_6 alkyl, fluoro, chloro, bromo, iodo, C_1–C_6 alkoxy, formyl, amino, $NH(C_1$–C_6 alkyl), $N(C_1$–C_6 alkyl)(C_1–C_2 alkyl), $SO_n(C_1$–C_6 alkyl), wherein n is 0, 1 or 2, cyano, carboxy, or amido, wherein said C_1–C_6 alkyls may be substituted by one hydroxy, trifluoromethyl, amino, carboxy, amido,



$NH(C_1$–C_4 alkyl), $N(C_1$–C_4 alkyl)(C_1–C_2 alkyl),



C_1–C_3 alkoxy, C_1–C_3 thioalkyl, fluoro, bromo, chloro, iodo, cyano or nitro;

R_{11} is hydrogen, hydroxy, fluoro, chloro, $COO(C_1$–C_2 alkyl), cyano, or $CO(C_1$–C_2 alkyl); and

R_{12} is hydrogen or C_1–C_4 alkyl; with the proviso that (1) B is not straight chain C_1–C_{12} alkyl, (2) when R_5 is unsubstituted cycloalkyl, R_3 and R_4 are hydrogen, and R_6 is hydrogen or methyl, then B is not NHR_2 wherein R_2 is benzyl or thienylmethyl, and (3) when R_5 is p-bromophenyl, and R_3, R_4 and R_6 are methyl, then B not methylamino or hydroxyethylamino, said disorders being selected from the group consisting of panic, agoraphobia, social phobia, simple phobia, obsessive-compulsive disorder, post-traumatic stress disorder, single episode depression, recurrent depression, dysthymia, bipolar disorders, cyclothymia, postpartum depression, child abuse induced depression, sleep disorders, stress induced pain perception, fibromyalgia, fibromyalgic sleep disorders, rheumatoid arthritis, osteroarthritis, psoriasis, euthyroid sick syndrome, syndrome of inappropriate antidiarrhetic syndrome hormone (ADH), bulimia nervosa eating disorder, and obesity.

5,646,153

BIS MONO- AND BICYCLIC ARYL AND HETEROARYL COMPOUNDS WHICH INHIBIT EGF AND/OR PDGF RECEPTOR TYROSINE KINASE

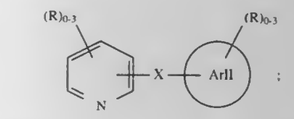
Alfred P. Spada, Lansdale; Michael R. Myers, Reading; Martin P. Maguire, Mont Clare, and Paul E. Persons, King of Prussia, all of Pa., assignors to Rhone-Poulenc Rorer Pharmaceuticals Inc., Collegeville, Pa.

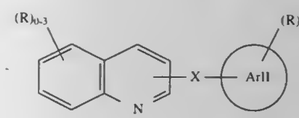
Division of Ser. No. 166,199, Dec. 10, 1993, Pat. No. 5,480,883, which is a continuation-in-part of Ser. No. 988,515, Dec. 10, 1992, abandoned, which is a continuation-in-part of Ser. No. 698,420, May 10, 1991, abandoned. This application May 11, 1995, Ser. No. 439,027

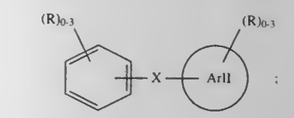
Int. Cl.[6] A61K *31/505;31/44;31/47;31/38*

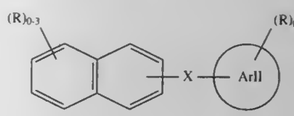
U.S. Cl. 514—259 **18 Claims**

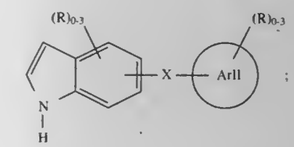
1. A method for the treatment of vascular reocclusion disorder in a patient suffering from such disorder comprising administering to said patient a pharmaceutically effective amount of a compound of formula

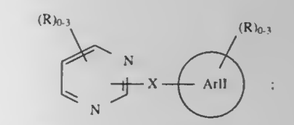


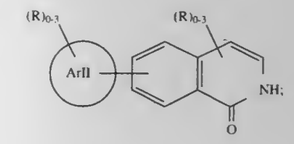




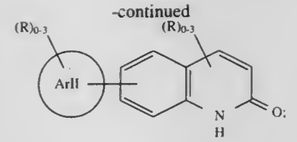


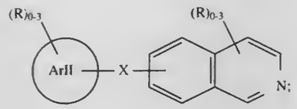


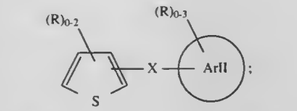


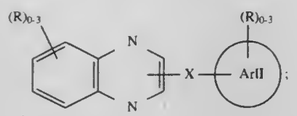


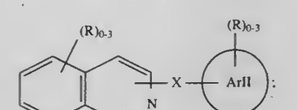
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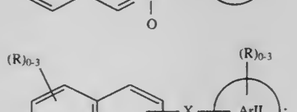


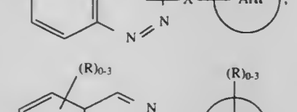


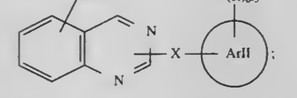


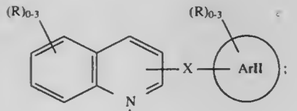


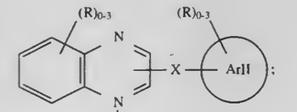


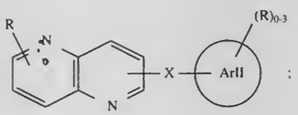




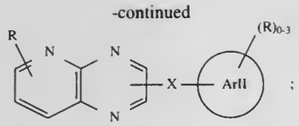


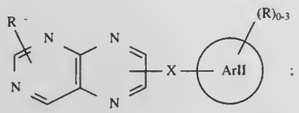


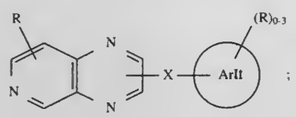


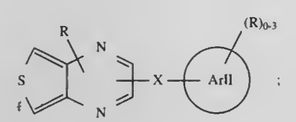


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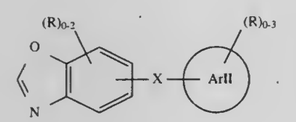








or



wherein



is a substituted or unsubstituted monocyclic or bicyclic aryl or heteroaryl ring system of about 5 to about 12 atoms, wherein the monocyclic ring system optionally contains 0 to about 3 hetero atoms and the bicyclic ring system optionally contains 0 to about 4 hetero atoms, wherein the hetero atoms are selected from N, O and S, or optionally the ring of the monocyclic ring system is a saturated carbocyclic optionally containing 0 to about 2 hetero atoms or optionally at least one ring of the bicyclic ring system is a saturated carbocyclic optionally containing 0 to about 4 hetero atoms, wherein the carbocyclic is of about 3 to about 7 atoms, provided that the hetero atoms are not vicinal oxygen or sulfur atoms, and the substituents are described by R and located at any appropriate position of the ring system;

X is $(CHR_1)_{0-4}$ or $(CHR_1)_m$—Z—$(CHR_1)_n$;

Z is O, NR', S, SO or SO_2;

m and n are 0 to 3, provided that the sum of m and n is 0 to 3;

R is independently hydrogen, alkyl, alkenyl, phenyl, aralkyl, aralkenyl, hydroxy, hydroxyalkyl, alkoxy, alkoxyalkyl, aralkoxy, acyloxy, halo, haloalkyl, nitro, amino, monoalkylamino, dialkylamino, acylamino, carboxy, carboxyalkyl, carbalkoxy, carbaralkoxy, carbalkoxyalkyl, carbalkoxyalkenyl, amlnoalkoxy, amido, monoalkylamido, dialkylamido, N,N-cycloalkylamido, phenyl, halophenyl or benzoyl, or two R taken together with the carbon atom to which the two R are attached form keto; or

R1 and R' are hydrogen or alkyl; or

a pharmaceutically acceptable salt thereof.

5,646,154

PHARMACEUTICAL COMPOSITIONS FOR INHIBITING THE FORMATION OF TUMOR NECROSIS FACTOR

Kenji Irie, Nishinomiya; Yutaka Ueda, and Norio Fujiwara, both of Toyonaka, all of Japan, assignors to Sumitomo Pharmaceuticals Co., Ltd., Osaka, Japan

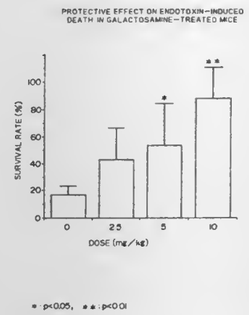
PCT No. PCT/JP93/01443, § 371 Date May 12, 1995, § 102(e) Date May 12, 1995, PCT Pub. No. WO94/07498, PCT Pub. Date Apr. 14, 1994

PGT Filed Oct. 7, 1993, Ser. No. 411,595

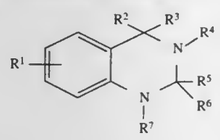
Claims priority, application Japan, Oct. 7, 1992, 4-296457

Int. Cl.[6] A01N *43/54*

U.S. Cl. 514—260 **4 Claims**



1. A method of inhibiting tumor necrosis factor formation and/or secretion comprising the step of administering an effective amount of a pharmaceutical composition comprising as an active ingredient a compound represented by formula (1)

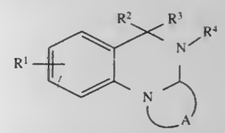


(1)

wherein

R^1 represents a hydrogen atom, a halogen atom, a hydroxy group, an amino group, a substituted amino group, a nitro group, a cyano group, an alkyl group, an alkoxy group, an alkylthio group, an acyl group, a carboxyl group or an alkoxycarbonyl group; R^2 represents a phenyl group, a substituted phenyl group, a thienyl group, a furyl group, a cycloalkyl group, a cycloalkenyl group, an alkyl group, an amino group or a substituted amino group; R^3 represents a hydrogen atom and R^4 represents a hydrogen atom or an alkyl group, or R^3 and R^4 are combined together to form a bond; in R^5, R^6 and R^7, R^5 and R^6 are combined together to form an oxo group or a thioxo group and R^7 represents a hydrogen atom, an alkyl group, a haloalkyl group, a phenyl group, a substituted phenyl group or a group shown by formula: —X—Y (wherein X represents an alkylene group and Y represents a cycloalkyl group, a phenyl group, a substituted phenyl group, a carboxyl group, a hydroxy group, an alkoxy group, an aminocarbonyl group, a substituted aminocarbonyl group, an alkoxycarbonyl group, an amino group or a substituted amino group), or, R^6 and R^7 are combined together to form a bond and R^5 represents a hydrogen atom, an alkyl group, an amino group, a halogen atom, a haloalkyl group, a hydroxyamino group, a hydrazino group, an alkylhydrazino group, an acylhydrazino group or an acylamino group; or

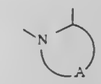
a compound represented by formula (2)



(2)

wherein

R^1, R^2, R^3 and R^4 have the same definitions as described above and the formula therein:



represents a heterocyclic group containing 2 to 4 nitrogen atoms; or a salt thereof.

5,646,155

DRUGS TO PREVENT RECURRENT HERPES VIRUS INFECTIONS

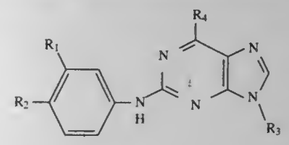
George E. Wright, Worcester, Mass., assignor to University of Massachusetts Medical Center, Worcester, Mass.

Continuation-in-part of Ser. No. 241,686, May 12, 1994, abandoned. This application Dec. 29, 1994, Ser. No. 365,769

Int. Cl.[6] A61K *31/52*; C07D *473/32;473/18;473/16*

U.S. Cl. 514—261 **30 Claims**

1. A 9-substituted-N^2-phenylguanine of the formula



wherein each

R_1 and R_2, independently, =H, a hydrophobic and electron-attracting group, or CH_2CH_3;

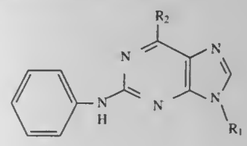
R_3=$CH_2CH(OH)CH_2OH$, $(CH_2)_nOH$ (where n is 2–5), $(CH_2)_nCOOH$, (where n is 1–4), $CH_2CH(OH)CH_2OCOR_5$, $(CH_2)_nOCOR_5$ (where n is 2–5), or $(CH_2)_nCOOR_5$ (where n is 1–4);

R_5=CH_3, CH_2CH_3, $CH_2CH_2NH_2$, $CH_2CH_2N(C_2H_5)_2$, or $CH_2CH_2CO_2H$; and

R_4=OH, H, Cl, or NH_2;

or a pharmaceutically acceptable salt thereof.

8. An N^2-phenylguanine of the formula:



wherein

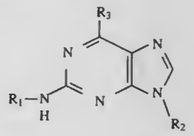
R_1=2-deoxyribofuranosyl, $(CH_2)_nOH$ (where n is 2–5), $CH_2CH(OH)CH_2OH$, $(CH_2)_n$—COOH (where n is 1–4),:

$CH_2CH(OH)CH_2$—O—COR_3, $(CH_2)_n$—O—COR_3 (where n is 2–5), or $(CH_2)_n$CO—OR_3 (where n is 1–4), wherein R_3=CH_3, CH_2CH_3, $CH_2CH_2NH_2$, $CH_2CH_2N(C_2H_5)_2$, or $CH_2CH_2CO_2H$; and

R_2=H or Cl,

or a pharmaceutically acceptable salt thereof.

13. An N^2-alkylguanine of the formula:



wherein

R_1=normal or branched chain C_nH_{2n+1} (where n is 1–12);

R_2=H, 2-deoxyribofuranosyl, $(CH_2)_nOH$ (where n is 2–5), $CH_2CH(OH)CH_2OH$, $(CH_2)_n$—COOH (where n is 14), $CH_2CH(OH)CH_2$—O—COR_4, $(CH_2)_n$—O—COR_4 (where n is 2–5), or $(CH_2)_nCO$—OR_4 (where n is 1–4);

R_4=CH_3, CH_2CH_3, $CH_2CH_2NH_2$, $CH_2CH_2N(C_2H_5)_2$, or $CH_2CH_2CO_2H$; and

R_3=OH, H, Cl, or NH_2;

or a pharmaceutically acceptable salt thereof.

22. A method of treating a patient with a latent herpes virus infection, said method comprising administering 9-(2-deoxyribofuranosyl)-N^2-phenylguanine to said patient.

5,646,156

INHIBITION OF EOSINOPHIL ACTIVATION THROUGH A3 ADENOSINE RECEPTOR ANTAGONISM

Marlene A. Jacobson, Elkins Park; Robert G. Johnson, Rosemont, and Christopher A. Salvatore, North Wales, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Apr. 25, 1994, Ser. No. 233,009

Int. Cl.[6] A61K *31/52*

U.S. Cl. 514—263 **6 Claims**

1. A method for treating or preventing allergic and inflammatory diseases which comprises contacting the eosinophil A3 adenosine receptor with an amount of an A3 adenosine receptor subtype specific antagonist effective to prevent eosinophil activation.

5,646,157

DISPOSAL OF OBSOLETE TREATED SEED

Kaspar J. Hohl, Therwil, Switzerland, assignor to Novartis Corporation, Tarrytown, N.Y.

Continuation-in-part of Ser. No. 207,781, Mar. 8, 1994, abandoned, which is a continuation-in-part of Ser. No. 977,317, Nov. 17, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 473,820

Claims priority, application Germany, Dec. 5, 1991, 91810946.3

Int. Cl.[6] A01N *43/48;43/54;* **C05F** *11/00*

U.S. Cl. 514—272 **20 Claims**

1. A process for disposing of obsolete planting seed treated with seed-protectant coatings selected from the group consisting of captan, pirimiphos-methyl and thiram wherein said process comprises subjecting said seed having an initial level of protectant coatings to a compostation under conditions that ensure sufficient aeration and moisture content and a suitable C:N ratio that is optimal for the development and activity of the microorganisms involved in the compostation process wherein the initial level of said seed-protectant coatings is reduced by 20% within the first two weeks of said compostation process.

5,646,158

1,3,3-(TRISUBSTITUTED)CYCLOHEX-1-ENE MONOMERS AND RELATED COMPOUNDS

Siegfried B. Christensen, IV, Philadelphia; Joseph M. Karpinski; M. Dominic Ryan, both of Pottstown, all of Pa., and Paul E. Bender, Cherry Hill, N.J., assignors to SmithKline Beecham Corporation, Philadelphia, Pa.

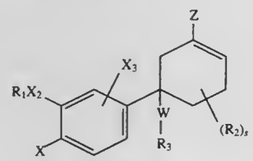
PCT No. PCT/US95/16713, § 371 Date Feb. 27, 1996, § 102(e) Date Feb. 27, 1996, PCT Pub. No. WO96/19993, PCT Pub. Date Jul. 4, 1996

PCT Filed Dec. 21, 1995, Ser. No. 605,178

Int. Cl.[6] A61K *31/435;* **C07D** *213/02*

U.S. Cl. 514—277 **6 Claims**

1. A compound of Formula (Ia) or (Ib)



(Ia) (Ib)

wherein:

R_1 is —$(CR_4R_5)_nC(O)O(CR_4R_5)_mR_6$, —$(CR_4R_5)_nC(O)NR_4(CR_4R_5)_mR_6$, —$(CR_4R_5)_nO(CR_4R_5)_mR_6$, or —$(CR_4R_5)_rR_6$ wherein the alkyl moieties are unsubstituted or substituted with one or more halogens;

m is 0 to 2;

n is 0 to 4;

r is 0 to 6;

R_4 and R_5 are independently hydrogen or a C_{1-2} alkyl;

R_6 is hydrogen, methyl, hydroxyl, aryl, halo substituted aryl, aryloxyC_{1-3} alkyl, halo substituted aryloxyC_{1-3} alkyl, indanyl, indenyl, C_{7-11} polycycloalkyl, tetrahydrofuranyl, furanyl, tetrahydropyranyl, pyranyl, tetrahydrothienyl, thienyl, tetrahydrothiopyranyl, thiopyranyl, C_{3-6} cycloalkyl, or a C_{4-6} cycloalkyl containing one or two unsaturated bonds, wherein the cycloalkyl or heterocyclic moiety is optionally substituted by 1 to 3 methyl groups, one ethyl group or an hydroxyl group;

provided that:

a) when R_6 is hydroxyl, then m is 2; or

b) when R_6 is hydroxyl, then r is 2 to 6; or

c) when R_6 is 2-tetrahydropyranyl, 2-tetrahydrothiopyranyl, 2-tetrahydrofuranyl, or 2-tetrahydrothienyl, then m is 1 or 2; or

d) when R_6 is 2-tetrahydropyranyl, 2-tetrahydrothiopyranyl, 2-tetrahydrofuranyl, or 2-tetrahydrothienyl, then r is 1 to 6;

e) when n is 1 and m is 0, then R_6 is other than H in —$(CR_4R_5)_nO(CR_4R_5)_mR_6$;

X is YR_2, fluorine, NR_4R_5, or formyl amine;

Y is O or $S(O)_{m'}$;

m' is 0, 1, or 2;

X_2 is O or NR_8;

X_3 is hydrogen or X;

R_2 is —CH_3 or —CH_2CH_3 unsubstituted or substituted by 1 or more halogens;

s is 0 to 4;

W is alkyl of 2 to 6 carbons, alkenyl of 2 to 6 carbons or alkynyl of 2 to 6 carbons;

R_3 is $COOR_{14}$, $C(O)NR_4R_{14}$ or R_{15};

Z is $S(O)_{m'}R_9$, $OS(O)_2R_9$, OR_9, $OC(O)NR_7R_7$, $OC(O)(O)_qR_7$, $O(CR_4R_5)_nOR_9$, or NR_9R_9;

q is 0 or 1;

R_7 is hydrogen or R_9;

R_8 is hydrogen or C_{1-4} alkyl unsubstituted or substituted by one to three fluorines, or when R_8 and R_{10} are as —NR_8R_{10} they together with the nitrogen form a a 5 to 7 membered ring comprised only of carbon atoms or carbon atoms and at least one heteroatom selected from O, N, or S;

R_9 is C_{1-10} alkyl, C_{2-10} alkenyl, C_{3-7}cycloalkyl, C_{4-6} cycloalkenyl, aryl, arylalkyl, heteroaryl, heteroarylalkyl, each of which are optionally substituted by one or more fluorine atoms, or two R_9 terms appearing as NR_9R_9 together with the nitrogen form a 5 to 7 membered ring comprised only of carbon atoms or carbon atoms and at least one heteroatom selected from O, N, or S;

R_{10} is OR_8 or R_8;

R_{11} is C_{1-4} alkyl unsubstituted or substituted by one to three fluorines;

R_{12} is R_{13}, C_3–C_7 cycloalkyl, or an unsubstituted or substituted aryl or heteroaryl group selected from the group consisting of (2-, 3- or 4-pyridyl), pyrimidyl, pyrazolyl, (1- or 2-imidazolyl), pyrrolyl, piperazinyl, piperidinyl, morpholinyl, furanyl, (2- or 3-thienyl), quinolinyl, naphthyl, and phenyl;

R_{13} is a substituted or unsubstituted heteroaryl group selected from the group consisting of oxazolidinyl, oxazolyl, thiazolyl, pyrazolyl, triazolyl, tetrazolyl, imidazolyl, imidazolidinyl, thiazolidinyl, isoxazolyl, oxadiazolyl, and thiadiazolyl, and where R_{13} is substituted on R_{12} or R_{13} the rings are connected through a carbon atom and each second R_{13} ring are optionally substituted by one or two C_{1-2} alkyl groups unsubstituted or substituted on the methyl with 1 to 3 fluoro atoms;

R_{14} is hydrogen or R_{15}; or when R_{10} and R_{14} are as $NR_{14}R_{14}$ they may together with the nitrogen form a 5 to 7 membered ring comprised only of carbon atoms or carbon atoms and at least one heteroatom selected from O, N, or S;

R_{15} is —$(CR_4R_5)_rR_{12}$ or C_{1-6} alkyl wherein the R_{12} or C_{1-6} alkyl group is unsubstituted or substituted by one or more times by methyl or ethyl unsubstituted or substituted by one to three fluorines, —F, —Br, —Cl, —NO_2, —$Si(R_4)_2$, —NR_8R_{10}, —$C(O)R_8$, —$C(O)OR_8$, —$O(CH_2)_qR_8$, —CN, —$C(O)NR_8R_{10}$, —$O(CH_2)_qC(O)NR_8R_{10}$, —$O(CH_2)_qC(O)R_{10}$, —$NR_{10}C(O)NR_8R_{10}$, —$NR_{10}C(O)R_8$, —$NR_{10}C(O)OR_9$, —$NR_{10}C(O)R_{13}$, —$C(NR_{10})NR_8R_{10}$, —$C(NCN)NR_8R_{10}$, —$C(NCN)SR_{11}$, —$NR_{10}C(NCN)SR_{11}$, —$NR_{10}C(NCN)NR_{10}R_8$, —$NR_{10}S(O)_2R_9$, —$S(O)_mR_{11}$, —$NR_{10}C(O)C(O)NR_8R_{10}$, —$NR_{10}C(O)C(O)R_{10}$, or R_{13};

t is 0, 1, or 2;

provided that:

f) when q is 1 in $OC(O)(O)_qR_7$, then R_7 is not hydrogen;

g) R_7 is not C_{1-4} alkyl unsubstituted or substituted by one to three fluorines;

or the pharmaceutically acceptable salts thereof.

5,646,159

WATER-SOLUBLE ESTERS OF CAMPTOTHECIN COMPOUNDS

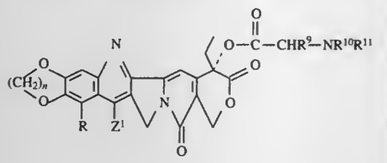
Monroe E. Wall, Chapel Hill, and Mansukh C. Wani, Durham, both of N.C., assignors to Research Triangle Institute, Research Triangle Park, N.C.

Filed Jul. 20, 1994, Ser. No. 277,642

Int. Cl.[6] A61K *31/470*

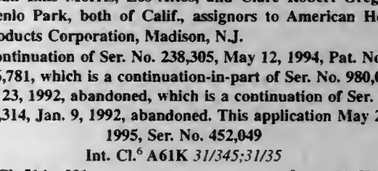
U.S. Cl. 514—279 **7 Claims**

1. A camptothecin ester having the structure:



-continued

or



wherein

R is NO_2, NH_2, N_3, hydrogen, halogen, COOH, OH, O—C_{1-3} alkyl, SH, S—C_{1-3} alkyl, CN, CH_2NH_2, NH—C_{1-3} alkyl, CH_2—NH—C_{1-3} alkyl, $N(C_{1-3}$ alkyl$)_2$, $CH_2N(C_{1-3}$ alkyl$)_2$, O—, NH— and S— $CH_2CH_2N(CH_2CH_2OH)_2$, O—, NH— and S—$CH_2CH_2CH_2N(CH_2$ $CH_2OH)_2$, O—, NH— and S—$CH_2CH_2N(CH_2CH_2CH_2OH)_2$, O—, NH— and S—$CH_2CH_2CH_2N(CH_2CH_2CH_2OH_2)_2$, O—, NH— and S—$CH_2CH_2N(C_{1-3}$ alkyl$)_2$, O—, NH— and S—$CH_2CH_2CH_2N(C_{1-3}$ alkyl$)_2$, CHO or C_{1-3} alkyl;

Z^1 is H, C_{1-8} alkyl, or $CH_2NR^1R^2$ where (a) R^1 and R^2 are, independently, hydrogen, C_{1-6} alkyl, C_{3-7} cycloalkyl, C_{3-7} cycloalkyl-C_{1-6} alkyl, C_{2-6} alkenyl, hydroxy-C_{1-6} alkyl, C_{1-6} alkoxy-C_{1-6} alkyl, (b) R^1 is hydrogen, C_{1-6} alkyl, C_{3-7} cycloalkyl, C_{3-7} cycloalkyl-C_{1-6} alkyl, C_{2-6} alkenyl, hydroxy-C_{1-6} alkyl or C_{1-6} alkoxy-C_{1-6} alkyl and R^2 is —COR^3 where R^3 is hydrogen, C_{1-6} alkyl, perhalo-C_{1-6} alkyl, C_{3-7} cycloalkyl, C_{3-7} cycloalkyl-C_{1-6} alkyl, C_{2-6} alkenyl, hydroxy-C_{1-6} alkyl, C_{1-6} alkoxy, C_{1-6} alkoxy-C_{1-6} alkyl;

R^9 is the side chain of one of the naturally occurring α -amino acids selected from the group consisting of glycine, alanine, valine, leucine, isoleucine, serine, threonine, proline, phenylalanine, tyrosine, tryptophan, lysine, arginine, histidine, aspartate, glutamate, asparagine, glutamine, cysteine and methionine;

R^{10} and R^{11} are, independently, hydrogen or C_{1-8} alkyl;

m is an integer of 1 to 6; and

n is an integer of 1 or 2; and pharmaceutically acceptable salts thereof.

5,646,160

METHOD OF TREATING HYPERPROLIFERATIVE VASCULAR DISEASE WITH RAPAMYCIN AND MYCOPHENOLIC ACID

Randall Ellis Morris, Los Altos, and Clare Robert Gregory, Menlo Park, both of Calif., assignors to American Home Products Corporation, Madison, N.J.

Continuation of Ser. No. 238,305, May 12, 1994, Pat. No. 5,516,781, which is a continuation-in-part of Ser. No. 980,000, Nov. 23, 1992, abandoned, which is a continuation of Ser. No. 819,314, Jan. 9, 1992, abandoned. This application May 26, 1995, Ser. No. 452,049

Int. Cl.[6] A61K *31/345;31/35*

U.S. Cl. 514—291 **11 Claims**

1. A method of treating a hyperproliferative vascular disease selected from the group consisting of intimal smooth muscle cell proliferation, restenosis, and vascular occlusion, wherein the intimal smooth muscle cell proliferation, restenosis, or vascular occlusion is caused by an infectious disorder, a metabolic disorder, hypothermia, or irradiation, which comprises administering an antiproliferative effective amount of a combination of rapamycin and mycophenolic acid to said mammal orally, parenterally, intravascularly, intranasally, intrabronchially, transdermally, rectally, or via a vascular stent impregnated with rapamycin and mycophenolic acid.

5,646,161

HETEROARYLPYRROLIDINES AND THEIR USE AS ANTIPSYCHOTICS AND ANALGESICS

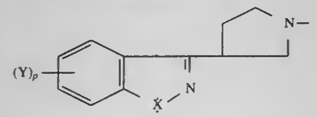
Edward J. Glamkowski, Warren, and Yulin Chiang, Covent Station, both of N.J., assignors to Hoechst-Marion-Roussel, Inc., Kansas City, Mo.

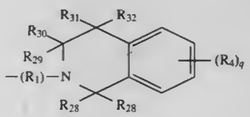
Division of Ser. No. 329,000, Oct. 25, 1994, which is a continuation-in-part of Ser. No. 144,265, Oct. 28, 1993, abandoned, which is a continuation-in-part of Ser. No. 969,383, Oct. 30, 1992, Pat. No. 5,364,866, which is a continuation-in-part of Ser. No. 788,269, Nov. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 944,705, Sep. 5, 1991, abandoned, which is a continuation of Ser. No. 619,825, Nov. 29, 1990, abandoned, which is a continuation of Ser. No. 456,790, Dec. 29, 1989, abandoned, which is a continuation-in-part of Ser. No. 354,411, May 19, 1989, abandoned. This application Jun. 6, 1995, Ser. No. 471,755

Int. Cl.[6] A61K *31/47;* **C07D** *401/06*

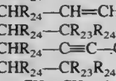
U.S. Cl. 514—307 **15 Claims**

1. A compound of the formula:





wherein, X is —O—, —S—, —NH—, or



R_2 is selected from the group consisting of lower alkyl, aryl lower alkyl, aryl, $(C_3–C_{10})$cycloalkyl, aroyl, alkanoyl, and phenylsulfonyl groups;

aryl is as defined hereinafter;

p is 1 or 2;

Y is hydrogen, lower alkyl, hydroxy, chlorine, fluorine, bromine, iodine, lower alkoxy, trifluoromethyl, nitro, or amino;

R_1 is $—CR_{24}R_{27}-(CR_{23}R_{24})_n—CR_{24}R_{27}—$, where n is 0, 1, 2, or 3; or

$—CHR_{24}CH═CH—CHR_{24}—$,

$—CHR_{24}—C≡C—CHR_{24}—$,

$—CHR_{24}—CH═CH—CR_{23}R_{24}—CHR_{24}—$,

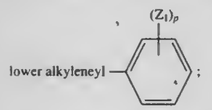
$—CHR_{24}—CR_{23}R_{24}—CH═CH—CHR_{24}—$,

$—CHR_{24}—C≡C—CR_{23}R_{24}—CHR_{24}—$, or

$—CHR_{24}—CR_{23}R_{24}—C≡C—CHR_{24}$.

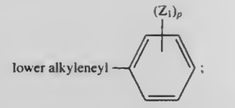
the —CH═CH— bond being cis or trans;

R_{23} is hydrogen, $(C_1–C_{18})$ linear alkyl, phenyl, hydroxy, $(C_1–C_{18})$alkoxy, aryloxy, aryl $(C_1–C_{18})$alkyloxy, $(C_1–C_{18})$alkanoyloxy, hydroxy $(C_1–C_6)$alkyl, $(C_1–C_{18})$alkoxy $(C_1–C_6)$alkyl, phenyl $(C_1–C_6)$alkyloxy, aryl $(C_1–C_{18})$alkyloxy $(C_1–C_6)$alkyl, $(C_1–C_{18})$alkanoyloxy $(C_1–C_6)$alkyl, or



where Z_1 is lower alkyl, —OH, lower alkoxy, $—CF_3$, $—NO_2$, $—NH_2$, or halogen, and p is as previously defined;

R_{24} is hydrogen, $(C_1–C_{18})$ linear alkyl, phenyl, hydroxy $(C_1–C_6)$alkyl, $(C_1–C_{18})$alkoxy $(C_1–C_6)$alkyl, phenyl $(C_1–C_6)$alkyloxy, aryl $(C_1–C_{18})$alkyoxy $(C_1–C_6)$alkyl, $(C_1–C_{18})$alkanoyloxy $(C_1–C_6)$alkyl, or



where Z_1 and p are as previously defined;

R_{27} is hydrogen, or R_{24} and R_{27} taken together with the carbon to which they are attached form C═O or C═S;

R_4 is hydrogen, lower alkyl, lower alkoxy, hydroxy, tri$(C_1–C_6)$alkylsilyloxy, hydroxy lower alkyl, alkanoyloxy lower alkyl, amino, mono- or dialkylamino, $(C_1–C_{18})$acyl amino, $(C_1–C_{18})$alkanoyl, trifluoromethyl, chlorine, fluorine, bromine, nitro, —O—C(═O)—$(C_1–C_{18}$ straight or branched chain)alkyl or —C(═O)-aryl;

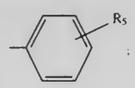
R_{28} is hydrogen, $(C_1–C_6)$alkyl, aryl $(C_1–C_6)$alkyl, or aryl;

R_{29} and R_{30} are hydrogen, $(C_1–C_6)$alkyl, aryl $(C_1–C_6)$alkyl, or aryl;

R_{31} and R_{32} are hydrogen, hydroxy, $(C_1–C_6)$alkyl, aryl $(C_1–C_6)$alkyl, aryl, hydroxymethyl, or $CHOR_{33}$ where R_{33} is $(C_1–C_{18})$alkanoyl; or

either R_{29} and R_{30} taken together or R_{31} and R_{32} taken together with the carbon group to which they are attached form a C═O or C═S group;

aryl is phenyl or



where R_5 is hydrogen, lower alkyl, lower alkoxy, hydroxy, chlorine, fluorine, bromine, iodine, lower monoalkylamino, lower dialkylamino, nitro, cyano, trifluoromethyl, or trifluoromethoxy;

q is 1, 2, 3, or 4; and

any hydroxyl group attached to an aliphatic or aromatic carbon atom, or any primary or secondary nitrogen atom may be acylated with a $(C_4–C_{18})$carboxylic group, in addition, any nitrogen atom may alternatively be acylated with a $(C_4–C_{18})$ alkoxycarbonyl group;

all geometric, optical, and stereoisomers thereof; or a pharmaceutically acceptable acid addition salt thereof.

5,646,162

OXY-PHENYL-(PHENYL)GLYCINOLAMIDES WITH HETEROCYCLIC SUBSTITUENTS

Ulrich Müller, Wuppertal, Germany; Richard Connell, Trumbull, Conn.; Siegfried Goldmann; Klaus-Helmut Mohrs, both of Wuppertal, Germany; Siegfried Raddatz, Köln, Germany; Michael Matzke, Wuppertal, Germany; Rudi Grützmann, Solingen, Germany; Martin Beuck, Milford, Conn.; Stefan Wohlfeil, Hilden, Germany; Hilmar Bischoff, and Dirk Denzer, both of Wuppertal, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

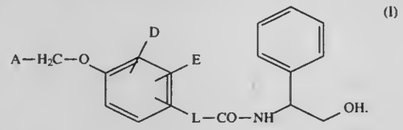
Filed Dec. 1, 1995, Ser. No. 566,460

Claims priority, application Germany, Dec. 9, 1994, 44 43 891.5

Int. Cl.[6] C07D *401/12;215/14;* **A61K** *31/47*

U.S. Cl. 514—311 **11 Claims**

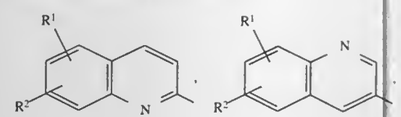
1. An oxyphenyl-(phenyl)glycinolamide with heterocyclic substituents of the formula



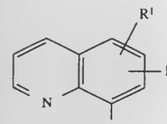
(I)

in which

A represents a radical of the formula



or



wherein

R^1 and R^2 are identical or different and denote hydrogen, halogen, hydroxyl or straight-chain or branched alkoxy having up to 4 carbon atoms,

D and E are identical or different and represent hydrogen, cycloalkyl having 3 to 8 atoms, azido, hydroxyl, halogen, straight-chain or branched alkyl, alkoxy or alkenyl having in each case up to 6 carbon atoms, or a 5- to 6-membered heterocyclic radical selected from the group consisting of thienyl, furyl, pyrrolyl, pyrazolyl, pyridyl, pyrimidyl, pyrazinyl, pyridazinyl, thiazolyl, oxazolyl, imidazolyl, pyrrolidinyl, piperidinyl, piperazinyl, piperidyl, morpholinyl, piperazinyl or pyrrolidinyl, or represent a radical of the formula $—NR^3R^4$ or $—NR^5SO_2—R^6$,

wherein

R^3, R^4 and R^5 are identical or different and denote hydrogen or straight-chain or branched alkyl having up to 4 carbon atoms or phenyl,

R^6 denotes straight-chain or branched alkyl having up to 4 carbon atoms, benzyl or phenyl, which is optionally substituted by straight-chain or branched alkyl having up to 4 carbon atoms,

L represents a bond, or represents a radial of the formula



wherein

R^7 denotes hydrogen, hydroxyl, methoxy or halogen,

R^8 denotes hydrogen, hydroxyl, halogen, straight-chain or branched alkenyl or alkoxy having in each case up to 8 carbon atoms or cycloalkyl or cycloalkenyl having in each case 3 to 14 carbon atoms, or denotes straight-chain or branched alkyl having up to 8 carbon atoms, which is optionally substituted by cycloalkyl having 3 to 8 carbon atoms, phenyl or tetrahydropyranyl, which in their turn are optionally substituted by halogen, or denotes a radical of the formula $—CH_2SiR^9R^{10}R^{11}$ or an indanyl radical,

wherein

R^9, R^{10} and R^{11} are identical or different and denote straight-chain or branched alkyl having up to 4 carbon atoms

or

R^7 and R^8 together with the carbon atom form a saturated carbocyclic ring having 5 to 7 carbon atoms, which is optionally substituted up to twice in an identical or different manner by straight-chain or branched alkyl having up to 4 carbon atoms,

or

R^7 and R^8 together form a radical of the formula═O or a double bond radical of the formula



wherein

a denotes the number 2, 3, 4, 5 or 6, or a pharmaceutically acceptable salt thereof

excluding 2(R*)- and 2(S*)-2-[4-(quinolin-2-yl-methoxy)phenyl]-2-cyclopentylacetic acid (S)-phenylglycinolamide.

5,646,163

QUINOLONE 5-(N-HETEROSUBSTITUTED AMINO) ANTIMICROBIALS

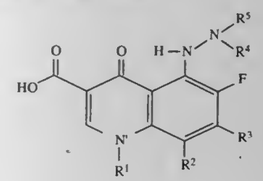
Thomas Prosser Demuth, Jr., Montgomery, and Ronald Eugene White, West Chester, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 968,960, Oct. 30, 1992, abandoned. This application Apr. 28, 1994, Ser. No. 235,003

Int. Cl.[6] A61K *31/47;* **C07D** *215/233;215/58*

U.S. Cl. 514—312 **20 Claims**

1. A compound having a structure according to Formula (I), or a pharmaceutically-acceptable salt, biohydrolyzable ester, biohydrolyzable amide, or solvate thereof:



(I)

wherein

(A)

(1)

(a) R^1 is alkyl; alkenyl; a carbocyclic ring; a heterocyclic ring; or $—N(R^6)(R^7)$, where R^6 and R^7 are, independently, hydrogen, alkyl, alkenyl, a carbocyclic ring, a heterocyclic ring, or R^6 and R^7 together comprise a heterocyclic ring that includes the nitrogen to which they are bonded; and

(b) R^2 is hydrogen, halogen, lower alkyl, or lower alkoxy;

(B) R^3 is a heterocyclic ring or a carbocyclic ring; and

(C)

(1) R^4 and R^5 are, independently, hydrogen; lower alkyl; cycloalkyl; heteroalkyl; or $—C(═O)—X—R^8$, where X is a covalent bond, N, O, or S, and R^8 is lower alkyl, lower alkenyl, arylalkyl, a carbocyclic ring, or a heterocyclic ring; or

(2) R^4 and R^5 together comprise a heterocyclic ring that includes the nitrogen to which they are bonded.

5,646,164

α-METHYLENE-γ-BUTYROLACTONES: NEW INHIBITORS OF PLATELET AGGREGATION

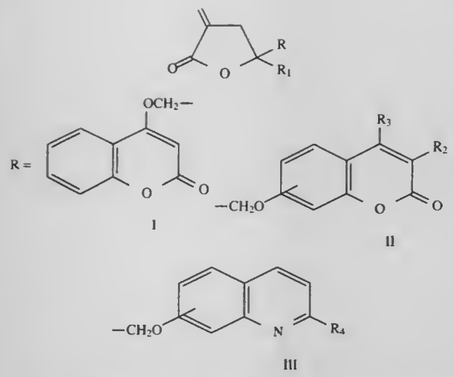
Cherng-Chyi Tzeng; Yeh-Long Chen; Tai-Chi Wang, all of Kaohsiung, and Che-Ming Teng, Taipei, all of Taiwan, assignors to National Science Council, Taipei, Taiwan

Filed Nov. 14, 1995, Ser. No. 557,268

Int. Cl.[6] C07D *405/12;407/12;* **A61K** *31/47;31/37*

U.S. Cl. 514—314 **5 Claims**

1. A compound represented by the general formula I–III as follow:



I II III

For the formula I, R_1 is a methyl, a phenyl group optionally substituted with one or two group selected from halide, $(C_1–C_4)$ alkyl, $(C_1–C_4)$ alkoxy, phenyl, nitro, amino;

For the formula II, R_1 is a methyl, a phenyl group optionally substituted with one or two group selected from halide, $(C_1–C_4)$ alkyl, $(C_1–C_4)$ alkoxy, phenyl, nitro, amino; R_2 represents hydrogen, halide, $(C_1–C_4)$ alkyl, phenyl, nitro, amino; R_3 represents hydrogen, halide, $(C_1–C_4)$ alkyl, phenyl, nitro, amino;

For the formula III, R_1 is a methyl, a phenyl group optionally substituted with one or two group selected from halide, $(C_1–C_4)$ alkyl, $(C_1–C_4)$ alkoxy, phenyl, nitro, amino; R_4 represents hydrogen, hydroxy, $(C_1–C_4)$ alkyl.

5,646,165

METHIONINE SULFONE AND S-SUBSTITUTED CYSTEINE SULFONE DERIVATIVES AS ENZYME INHIBITORS

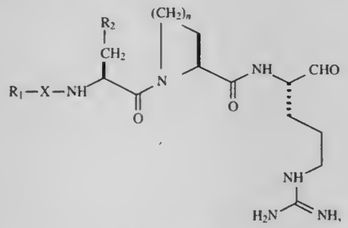
Matthew M. Abelman, Solana Beach; Robert J. Ardecky, Encinitas, and Ruth F. Nutt, San Diego, all of Calif., assignors to Corvas International, Inc., San Diego, Calif.

Continuation of Ser. No. 234,811, Apr. 28, 1994, which is a continuation-in-part of Ser. No. 229,298, Apr. 18, 1994. This application Jun. 6, 1995, Ser. No. 485,826

Int. Cl.[6] A61K *31/445;* **C07D** *295/03*

U.S. Cl. 514—315 **22 Claims**

1. A compound of the formula:



(a) X is selected from the group consisting of —C(O)—, —$S(O_2)$—, —O—$S(O_2)$—, —NH—$S(O_2)$— and —N(R')—$S(O_2)$—, wherein R' is alkyl of 1 to about 4 carbon atoms, aryl of about 6 to about 14 carbon atoms, or aralkyl of about 6 to about 15 carbon atoms;

(b) R_1 is selected from the group consisting of:

(1) alkyl of about 3 to about 10 carbon atoms,

(2) alkyl of 1 to about 3 carbon atoms substituted with cyclic alkyl of about 5 to about 8 carbon atoms,

(3) alkenyl of about 3 to about 6 carbon atoms,

(4) alkenyl of about 3 to about 6 carbon atoms which is substituted with cyclic alkyl of about 5 to about 8 carbon atoms,

(5) aryl of about 6 to about 14 carbon atoms,

(6) aryl of about 6 to about 14 carbon atoms which is substituted with Y_1,

(7) aryl of about 6 to about 14 carbon atoms which is substituted with Y_1 and Y_2,

(8) aralkyl of about 6 to about 15 carbon atoms,

(9) aralkyl of about 6 to about 15 carbon atoms which is substituted in the aryl ring with Y_1,

(10) aralkyl of about 6 to about 15 carbon atoms which is substituted in the aryl ring with Y_1 and Y_2,

(11) aralkenyl of about 8 to about 15 carbon atoms,

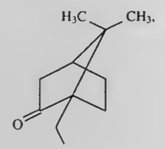
(12) aralkenyl of about 8 to about 15 carbon atoms which is substituted in the aryl ring with Y_1,

(13) aralkenyl of about 8 to about 15 carbon atoms which is substituted in the aryl ring with Y_1 and Y_2,

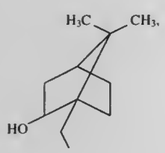
(14) perfluoroalkyl of 1 to about 12 carbon atoms,

(15) perfluoroaryl of about 6 to about 14 carbon atoms,

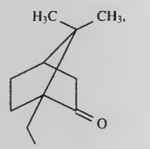
(16) trimethylsilylalkyl of about 4 to about 8 carbon atoms,



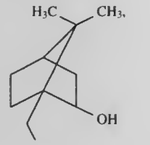
(17)



(18)



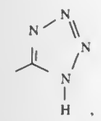
(19)



(20)

wherein

Y_1 and Y_2 are independently selected from the group consisting of bromo, chloro, fluoro, —Z_1, —OH, —OZ_1, —NH_2, —NHZ_1, —NZ_1Z_2, —NH—C(O)—Z_1, —$N(Z_1)$—C(O)—Z_2, —NH—C(O)—OZ_1, —$N(Z_1)$—C(O)—OZ_2, —NH—C(O)—NH_2, —NH—C(O)—NHZ_1, —NH—C(O)—NZ_1Z_2, —$N(Z_1)$—C(O)—NHZ_2, —$N(Z_1)$—C(O)—NZ_2Z_3, —C(O)—OH, —C(O)—OZ_1, —C(O)—NHZ_1, —C(O)—NZ_1Z_2, —SH, —SZ_1, —S(O)—Z_1, —$S(O_2)$—Z_1, —$S(O_2)$—OH, —$S(O_2)$—OZ_1, —$S(O_2)$—NH_2, —$S(O_2)$—NHZ_1, —$S(O_2)$—NZ_1Z_2 and



wherein Z_1, Z_2 and Z_3 are independently selected from the group consisting of trifluoromethyl, pentafluoroethyl, alkyl of 1 to about 12 carbon atoms, aryl of about 6 to about 14 carbon atoms, and aralkyl of about 6 to about 15 carbon atoms,

R' is alkyl of 1 to about 4 carbon atoms, aryl of about 6 to about 14 carbon atoms, or aralkyl of about 6 to about 15 carbon atoms,

(c) R_2 is selected from the group consisting of

—CH_2—S—CH_3,

—CH_2—S(O)—CH_3,

—CH_2—$S(O_2)$—CH_3,

—CH_2—S—$(CH_2)_m$—C(O)—OH,

—CH_2—S(O)—$(CH_2)_m$—C(O)—OH,

—CH_2—$S(O_2)$—$(CH_2)_m$—C(O)—OH,

—CH_2—S—$(CH_2)_m$—C(O)—OR',

—CH_2—S(O)—$(CH_2)_m$—C(O)—OR',

—CH_2—$S(O_2)$—$(CH_2)_m$—C(O)—OR',

—CH_2—S—$(CH_2)_m$—C(O)—NH_2,

—CH_2—S(O)—$(CH_2)_m$—C(O)—NH_2,

—CH_2—$S(O_2)$—$(CH_2)_m$—C(O)—NH_2,

—CH_2—S—$(CH_2)_m$—C(O)—NHR',

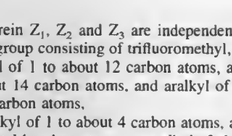
—CH_2—S(O)—$(CH_2)_m$—C(O)—NHR',

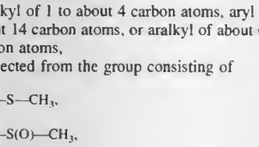
—CH_2—$S(O_2)$—$(CH_2)_m$—C(O)—NHR',

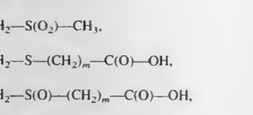
—CH_2—S—$(CH_2)_m$—C(O)—NR'R",

—CH_2—S(O)—$(CH_2)_m$—C(O)—NR'R",

—CH_2—$S(O_2)$—$(CH_2)_m$—C(O)—NR'R",







—S—CH_3,

—S(O)—CH_3,

—$S(O_2)$—CH_3,

—S—$(CH_2)_m$—C(O)—OH,

—S(O)—$(CH_2)_m$—C(O)—OH,

—$S(O_2)$—$(CH_2)_m$—C(O)—OH,

—S—$(CH_2)_m$—C(O)—OR',

—S(O)—$(CH_2)_m$—C(O)—OR',

—$S(O_2)$—$(CH_2)_m$—C(O)—OR',

—S—$(CH_2)_m$—C(O)—NH_2,

—S(O)—$(CH_2)_m$—C(O)—NH_2,

—$S(O_2)$—$(CH_2)_m$—C(O)—NH_2,

—S—$(CH_2)_m$—C(O)—NHR',

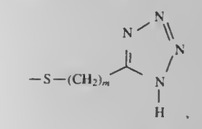
—S(O)—$(CH_2)_m$—C(O)—NHR',

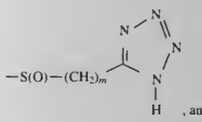
—$S(O_2)$—$(CH_2)_m$—C(O)—NHR',

—S—$(CH_2)_m$—C(O)—NR'R",

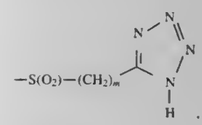
—S(O)—$(CH_2)_m$—C(O)—NR'R",

—$S(O_2)$—$(CH_2)_m$—C(O)—NR'R",





, and



wherein is 1, 2, 3, 4, 5 or 6; and

(d) n is 3; or pharmaceutically acceptable salts thereof.

5,646,166

USE OF 5-ACYL-1,4-DIHYDROPYRIDINES

Klaus Urbahns, Wuppertal; Hans-Georg Heine, Krefeld; Thomas Glaser, Overath; Reilinde Wittka, Köln; Jean-Marie-Viktor De Vry, Rösrath, and Henning Sommermeyer, Köln, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 8, 1995, Ser. No. 569,438

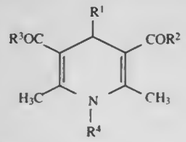
Claims priority, application Germany, Dec. 16, 1994, 44 44 864.3

Int. Cl.[6] A61K *31/44*

U.S. Cl. 514—355 **4 Claims**

1. A method of treating a patient suffering from a disorder of the central nervous system that is responsive to a selective modulating action on potassium channels, said method comprising administering to said patient an effective amount therefor of a 1-alkyl-5-acyl-

1,4-dihydropyridine of the formula (I):



(I)

in which

R^1 represents aryl having 6 to 10 carbon atoms, which is optionally substituted up to 5 times by identical or different nitro, cyano, halogen or trifluoromethyl substituents or by straight-chain or branched alkylthio having up to 6 carbon atoms,

R^2 and R^3 are identical or different and each represent straight-chain or branched alkyl having up to 8 carbon atoms or phenyl, or

R^2 represents straight-chain or branched alkoxy having up to 8 carbon atoms or phenoxy, and

R^4 represents straight-chain or branched alkyl having up to 4 carbon atoms.

5,646,167

ARYLSULFONAMIDO-SUBSTITUTED HYDROXAMIX ACIDS

Lawrence J. MacPherson, Hampton, and David T. Parker, Livingston, both of N.J., assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Continuation-in-part of Ser. No. 333,676, Nov. 3, 1994, Pat. No. 5,552,419, which is a continuation-in-part of Ser. No. 265,296, Jun. 24, 1994, Pat. No. 5,506,242, which is a continuation-in-part of Ser. No. 1,136, Jan. 6, 1993, Pat. No. 5,455,258. This application Jun. 7, 1995, Ser. No. 475,166

Int. Cl.[6] A61K *31/44;* **C07D** *213/42*

U.S. Cl. 514—357 **16 Claims**

I. A method treating tumors selected from human breast carcinoma, lung carcinoma, bladder carcinoma, colon carcinoma, prostate carcinoma, skin carcinoma and ovarian carcinoma which comprises administering to a subject in need thereof a therapeutically effective amount of N-hydroxy-2(R)-[(4-methoxybenzenesulfonyl)(3-picolyl)amino]-3-methylbutanamide or a pharmaceutically acceptable salt thereof.

5,646,168

HYPOGLYCEMIC HYDROXYUREA DERIVATIVES

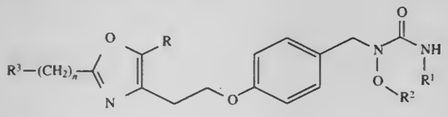
Steven Wayne Goldstein, 176 Bel-Aire Dr., Mystic, Conn. 06355, and Ruth Elsbree McDermott, 38 Meadow La., Salem, Conn. 06420

Division of Ser. No. 391,308, Feb. 17, 1995, Pat. No. 5,463,070, which is a continuation of Ser. No. 279,322, Jul. 22, 1994, abandoned, which is a division of Ser. No. 983,538, Feb. 22, 1993, Pat. No. 5,334,604, which is a continuation of Ser. No. 572,745, Aug. 23, 1990, abandoned. This application Oct. 10, 1995, Ser. No. 544,010

Int. Cl.[6] C07D *413/06*

U.S. Cl. 514—364 **6 Claims**

1. A compound of the formula



wherein

R is hydrogen or C1 to C3 alkyl;

R^1 and R^2 are taken together and are carbonyl;

R^3 is C1 to C9 alkyl, C3 to C7 cycloalkyl, phenyl, naphthyl, furyl, benzofuryl or thienyl or one of said groups mono- or disubstituted with C1 to C3 alkyl, Cl to C3 alkoxy, C1 to C3 alkoxy-carbonyl, trifluoromethyl, fluoro or chloro; and

n is 0 or 1; or

a pharmaceutically acceptable cationic salt thereof.

5,646,169

COMPOUNDS FOR TREATING EATING DISORDERS IN WHICH BLOOD GLUCOSE LEVELS ARE RAISED

Richard Mark Hindley, and Michael Antony Cawthorne, both of Epsom, England, assignors to Beecham Group p.l.c., Middlesex, England

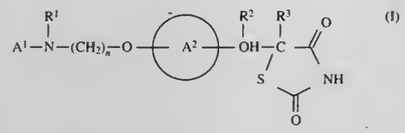
Continuation of Ser. No. 358,327, Dec. 19, 1994, which is a continuation of Ser. No. 53,997, Apr. 26, 1993, abandoned, which is a continuation-in-part of Ser. No. 641,474, Jan. 15, 1991, Pat. No. 5,232,925, Continuation-in-part of Ser. No. 457,272, Dec. 27, 1989, Pat. No. 5,002,953, which is a continuation-in-part of Ser. No. 238,764, Aug. 30, 1988, abandoned. This application Jun. 1, 1995, Ser. No. 457,154

Claims priority, application United Kingdom, Sep. 4, 1987, 8720825; Nov. 30, 1987, 8727987; Feb. 4, 1988, 8802454

Int. Cl.[6] A61K *31/425*

U.S. Cl. 514—369 **14 Claims**

1. A method for the treatment and/or prophylaxis of eating disorders in which blood glucose levels are elevated in a human or non-human mammal, which comprises administering to said human or non-human mammal in need thereof, an effective, non-toxic amount of a compound of formula (I) to lower such blood glucose levels:



(I)

or a tautomeric form thereof and/or a pharmaceutically acceptable salt thereof and/or a pharmaceutically acceptable solvate thereof, wherein:

A^1 represents a substituted or unsubstituted aromatic heterocyclyl group;

R^1 represents a hydrogen atom, an alkyl group, an acyl group, an aralkyl group, wherein the aryl moiety may be substituted or unsubstituted, or a substituted or unsubstituted aryl group;

R^2 and R^3 each represent hydrogen, or R^2 and R^3 together represent a bond;

A^2 represents a benzene ring having in total up to five substituents; and

n represents an integer in the range of from 2 to 6.

5,646,170

TETRAZOLE ALKYL AMIDE ACAT INHIBITORS

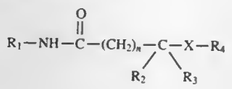
Helen Tseowhei Lee, Ann Arbor; Patrick Michael O'Brien, Stockbridge; Joseph Armand Picard, Ypsilanti; Claude Forsey Purchase, Jr.; Bruce David Roth, both of Ann Arbor; Drago Robert Sliskovic, Ypsilanti, and Andrew David White, Lakeland, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 274,088, Jul. 12, 1994, Pat. No. 5,441,975, which is a division of Ser. No. 19,411, Feb. 18, 1993, Pat. No. 5,366,987, which is a continuation-in-part of Ser. No. 913,643, Jul. 20, 1992, abandoned, which is a continuation-in-part of Ser. No. 748,568, Aug. 22, 1991, abandoned. This application May 3, 1995, Ser. No. 433,776

Int. Cl.[6] A61K *31/41;* **C07D** *257/04*

U.S. Cl. 514—381 **22 Claims**

1. A compound of the formula



wherein n is 0, 1, or 2;

wherein R_1 is selected from

(a) phenyl which is substituted with from one to three substituents selected from:

alkyl having from one to four carbon atoms and which is straight or branched,

alkoxy having from one to three carbon atoms and which is straight or branched,

alkylthio having from one to three carbon atoms and which is straight or branched,

hydroxy,

phenyl,

fluorine,

chlorine,

bromine,

nitro,

cyano,

trifluoromethyl,

—COOH,

—COOalkyl wherein alkyl has from one to four carbon atoms and which is straight or branched,

$-(CH_2)_mNR_5R_6$ wherein m is 0 or 1, and each of R_5 and R_6 is hydrogen or a straight or branched alkyl group having one to four carbon atoms;

(b) 1- or 2-naphthyl which is unsubstituted or substituted with one to three substituents selected from:

alkyl having from one to four carbon atoms and which is straight or branched,

alkoxy having from one to three carbon atoms and which is straight or branched,

hydroxy,

fluorine,

chlorine,

bromine,

nitro,

cyano,

trifluoromethyl,

—COOH,

—COOalkyl wherein alkyl has from one to four carbon atoms and is straight or branched,

$-(CH_2)_mNR_5R_6$ wherein m, R_5, and R_6 have the meanings defined above;

wherein R_2 and R_3 are the same or different and are selected from:

(a) hydrogen or halo or hydroxy;

(b) a straight or branched alkyl group having from one to 12 carbon atoms, or a cycloalkyl group having from three to eight carbon atoms;

(c) a phenyl or phenylalkyl group where alkyl is from one to four carbon atoms and which the phenyl ring is unsubstituted or substituted with from one to three substituents selected from straight or branched alkyl having from one to four carbon atoms, straight or branched alkoxy having from one to four carbon atoms, alkylthio, straight or branched having one to four carbon atoms, hydroxy, fluorine, chlorine, bromine, trifluoromethyl, cyano, nitro, phenyl, cycloalkyl, or $(CH_2)_mNR_5R_6$ wherein m, R_5, and R_6 have the meanings defined above;

(d) a straight or branched alkenyl group having from two to six carbon atoms; or

(e) R_2 and R_3 taken together with the carbon atom to which they are attached form an alkylidene group of one to four carbon atoms, a benzylidene or a spiroalkyl group having from three to seven carbon atoms; or

(f) 1- or 2-naphthyl which is unsubstituted or substituted with one to three substituents selected from:

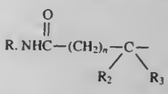
alkyl having from one to four carbon atoms and which is straight or branched,

alkoxy having from one to three carbon atoms and which is straight or branched,

wherein X is tetrazole;

wherein R_4 is a straight or branched hydrocarbon chain having from 12 to 20 carbon atoms and is saturated or is unsaturated and has one double bond or has two nonadjacent double bonds or is alkyl substituted with trifluoromethyl; and

R_4 is in the two position of the tetrazole ring and the side chain,



is attached to the carbon atom of the tetrazole ring or a pharmaceutically acceptable salt or individual enantiomeric isomer thereof.

5,646,171

ANGIOTENSIN II ANTAGONIST 1-BIPHENYLMETHYLIMIDAZOLE COMPOUNDS AND THEIR THERAPEUTIC USE

Hiroaki Yanagisawa; Yoshiya Amemiya; Yasuo Shimoji; Takuro Kanazaki; Hiroyuki Koike, and Toshio Sada, all of Tokyo, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

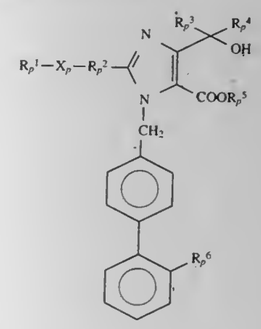
Division of Ser. No. 378,650, Jan. 26, 1995, which is a continuation-in-part of Ser. No. 69,595, Jun. 1, 1993, abandoned, and a continuation-in-part of Ser. No. 839,482, Feb. 20, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 465,369

Claims priority, application Japan, Feb. 21, 1991, 3-027098; Apr. 26, 1991, 3-096588; Jun. 6, 1991, 3-134889; Jul. 8, 1991, 3-167138; Jul. 15, 1991, 3-173972; Jul. 24, 1991, 3-184841; Jun. 2, 1992, 4-141160

Int. Cl.[6] C07D *405/08;257/04;233/90;* **A61K** *31/415;31/41*

U.S. Cl. 514—381 **38 Claims**

1. A compound of formula $(Ia)_p$



(Ia)$_p$

in which:

R_p^1 represents a hydrogen atom, an alkyl group having from 1 to 6 carbon atoms, a cycloalkyl group having from 3 to 6 ring carbon atoms or an alkanoyl group having from 1 to 6 carbon atoms;
R_p^2 represents a single bond or an alkylene or alkylidene group having from 1 to 4 carbon atoms;
R_p^3 and R_p^4 are independently selected from the group consisting of hydrogen atoms and alkyl groups having from 1 to 6 carbon atoms;
R_p^5 represents a hydrogen atom,
an alkyl group having from 1 to 4 carbon atoms,
an unsubstituted phenyl group,
a phenyl group substituted by at least one substituent selected from the group consisting of methyl groups, ethyl groups, methoxy groups, ethoxy groups, fluorine atoms and chlorine atoms,
a naphthyl group,
an unsubstituted benzyl group,
a benzyl group substituted by at least one substituent selected from the group consisting of methyl groups, ethyl groups, methoxy groups, ethoxy groups, fluorine atoms and chlorine atoms,
a diphenylmethyl group,
a naphthylmethyl group,
an alkanoyloxyalkyl group in which the alkanoyl part has from 1 to 5 carbon atoms and the alkyl part has from 1 to 4 carbon atoms,
a cycloalkanecarbonyloxyalkyl group in which the cycloalkane part has 5 or 6 carbon atoms and the alkyl part has from 1 to 4 carbon atoms,
an alkoxycarbonyloxyalkyl group in which the alkoxy and alkyl parts each have from 1 to 4 carbon atoms,
a cycloalkyloxycarbonyloxyalkyl group in which the cycloalkyl part has 5 or 6 carbon atoms and the alkyl part has from 1 to 4 carbon atoms,
a (5-phenyl-2-oxo-1,3-dioxolen-4-yl)methyl group,
a (5-alkyl-2-oxo-1,3-dioxolen-4-yl)methyl group,
in which the alkyl part has from 1 to 4 carbon atoms, or
a phthalidyl group;
R_p^6 represents a carboxy group or a tetrazol-5-yl group; and
X_p represents an oxygen or sulfur atom;
and pharmaceutically acceptable salts thereof.

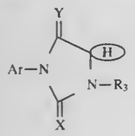
5,646,172

METHOD OF INDUCING ANTIANDROGENIC ACTIVITY USING IMIDAZOLIDINES SUBSTITUTED WITH A HETEROCYCLE

Andre Claussner, Villemomble; Francois Goubet, Paris, and Jean-Georges Teutsch, Pantin, all of France, assignors to Roussel Uclaf, France

Filed Sep. 7, 1995, Ser. No. 524,508
Claims priority, application France, Sep. 29, 1994, 94 11649
Int. Cl.[6] C07D *401/04;403/04;* **A61K** *31/445;31/415*
U.S. Cl. 514—391 **3 Claims**

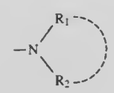
1. A method of inducing antiandrogenic activity in warm-blooded animals comprising administering to said warm-blooded animals an antiandrogenically effective amount of a compound of the formula



I

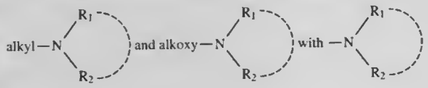
wherein (H) is a-saturated heterocyclic with 4 to 7 ring members containing: either an oxygen, nitrogen or optionally oxidized sulfur, the nitrogen being optionally substituted by R_3 or the saturated heterocyclic contains two oxygen and optionally one boron which is atom substituted by phenyl, the heterocycle being optionally substituted on a carbon atom with oxo, at least one alkyl optionally substituted, or cycloalkyl of 4 to 7 members, Ar is aryl optionally substituted by at least one member of the group consisting of

i) halogen, cyano, nitro, trifluoromethyl, trifluoromethoxy, hydroxyl, free, salified, esterified or amidified carboxy,



in which the nitrogen atom is optionally oxidized and R_1 and R_2 are individually selected from the group consisting of hydrogen and optionally substituted alkyl or form together with the nitrogen atom to which they are attached a monocyclic of 5, 6 or 7 ring members or a condensed ring of 8 to 14 ring members, both optionally containing, at least one heteroatom selected from the group consisting of oxygen, nitrogen and sulfur, and being optionally substituted,

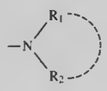
iii) optionally substituted alkyl, alkoxy, alkylthio and arylthio,



as defined above,

X is oxygen or sulfur,

Y is oxygen or sulfur or NH, R_3 is selected from the group consisting of hydrogen, aryl and alkyl, alkenyl and alkynyl of up to 6 carbon atoms optionally interrupted by at least one oxygen, nitrogen or optionally oxidized sulfur, all being optionally substituted, the substituents of the ring



and the alkyl, aryl, alkoxy, alkenyl and alkynyl indicated above as optionally substituted are selected from the group consisting of halogen, optionally salified, esterified or etherified hydroxy, alkoxy, aryloxy, alkyl, haloalkoxy, haloalkyl, mercapto, alkylthio and arylthio in which the sulfur is optionally oxidized, acyl and acyloxy of an organic carboxylic acid of up to 6 carbon atoms, free, salified, esterified or amidified carboxy, cyano, nitro, amino, mono or dialkylamino, aryl and arylalkyl, the last two being optionally substituted by at least one member of the group consisting of halogen, hydroxyl, alkyl and alkoxy of up to 6 carbon atoms, trifluoromethyl trifluoromethoxy, nitro, cyano, free, salified or esterified carboxy and tetrazolyl, all the sulfurs being optionally oxidized into sulfoxide or sulfone, with the proviso Ar is not unsubstituted phenyl, x and y are not both oxygen, H is not piperidino substituted with isopropyl, n-butyl or benzyl and R_3 is not hydrogen, acyl or phenyl, the said products of formula I being in all the possible racemic, enantiomeric and diastereoisomeric isomer forms and their non-toxic, pharmaceutically addition salts with acids or bases.

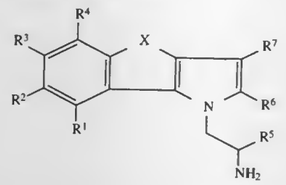
5,646,173

TRICYCLIC PYRROLE DERIVATIVES USEFUL AS 5-HT SELECTIVE AGENTS

Michael Bös, Rheinfelden, Switzerland; Jürgen Wichmann, Lörrach, Germany, and Ulrich Widmer, Rheinfelden, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 317,258, Oct. 3, 1994, abandoned. This application Feb. 21, 1996, Ser. No. 594,533
Claims priority, application Switzerland, Oct. 22, 1993, 3202/93; Aug. 17, 1994, 2529/94
Int. Cl.[6] C07D *209/58;* **A61K** *31/40*
U.S. Cl. 514—411 **25 Claims**

1. A compound of the formula



I

wherein
R^1 to R^4 are, independently, hydrogen, halogen, lower alkyl, phenyl, cycloalkyl or lower alkoxy and R^2 additionally is lower alkoxycarbonyl, acyloxy or mesyloxy;
R^5 to R^7 are, independently, hydrogen or lower alkyl;
X is $—CH_2CH(C_6H_5)—$, $—CH=C(C_6H_5)—$, $—YCH_2—$, $—CH=CH—$ or $—(CR^{11}R^{12})_n$;
R^{11} and R^{12} are, independently, hydrogen, phenyl, lower alkyl or halogen;
n is 1 to 3 and
Y is O or S,
or a pharmaceutically acceptable salt of a basic compound of formula I with an acid.

5,646,174

USE OF KETOROLAC FOR TREATMENT OF ORAL DISEASES AND CONDITIONS

Gary Robert Kelm; Harvey Marvin Pickrum; Matthew Joseph Doyle, and William Buchanan, all of 8700 Mason-Montgomery Rd., Mason, Ohio 45040

Division of Ser. No. 280,163, Jul. 25, 1994, Pat. No. 5,464,609, which is a continuation of Ser. No. 132,426, Oct. 5, 1993, abandoned, which is a continuation of Ser. No. 947,193, Sep. 18, 1992, abandoned, which is a continuation-in-part of Ser. No. 930,493, Aug. 14, 1992, abandoned, which is a continuation of Ser. No. 651,061, Feb. 8, 1991, abandoned, which is a continuation-in-part of Ser. No. 494,697, Mar. 16, 1990, abandoned. This application Jul. 18, 1995, Ser. No. 511,493
Int. Cl.[6] A61K *31/40;31/19;7/22*
U.S. Cl. 514—413 **3 Claims**

1. A method for prevention or treatment of bone loss due to oral osseous surgery comprising topical administration to gingival mucosal tissue of the oral cavity after surgery, of a composition providing from about 0.001% to about 0.2% of ketorolac in the oral cavity, wherein said composition is not swallowed and is expectorated after about at least 15 seconds in the mouth.

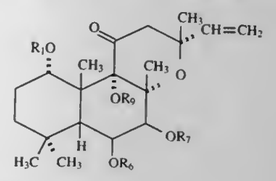
5,646,175

CARBAMOYLOXYLABDANE COMPOUNDS

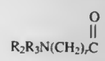
Raymond W. Kosley, Jr., Bridgewater; Robert Joseph Cherill, Somerset, both of N.J., and Gerard O'Malley, Newton, Pa., assignors to Hoechst Marion Roussel, Inc., Somerville, N.J.

Division of Ser. No. 295,130, Aug. 24, 1994, Pat. No. 5,543,427, which is a division of Ser. No. 37,148, Mar. 25, 1993, Pat. No. 5,374,650, which is a continuation of Ser. No. 443,526, Nov. 29, 1989, abandoned, which is a division of Ser. No. 137,998, Dec. 28, 1987, abandoned. This application Jun. 1, 1995, Ser. No. 456,890
Int. Cl.[6] A61K *31/41;31/36;* **C07D** *239/20;319/08*
U.S. Cl. 514—422 **2 Claims**

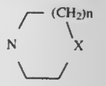
1. A method of treating cardiac failure comprising administering to a mammal requiring cardiac failure treatment, a cardiac failure treating effective amount of a compound of the formula



wherein:
(a) R_1 is hydrogen or a group of the formula



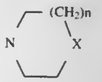
wherein R_2 and R_3 are independently hydrogen or loweralkyl of 1 to 6 carbon atoms and r is 0 or 1; and R_2 and R_3 taken together with the nitrogen atom to which they are attached form a group of the formula



wherein X is O, S a group of the formula NR_{19} wherein R_{19} is loweralkyl of 1 to 6 carbon atoms or a group of the formula CHR_4 wherein R_4 is hydrogen, loweralkyl of 1 to 6 carbon atoms or a group of the formula OR_5 wherein R_5 is hydrogen, loweralkyl of 1 to 6 carbon atoms or a group of the formula



wherein R_{10} is loweralkyl and n is 0or 1;
(b) $R_9$is hydrogen;
(c) R_1 and R_9 taken together form a group of the formula CO, a group of the formula SO or a group of the formula $CHNR_{11}R_{12}$ wherein R_{11} and R_{12} are each independently loweralkyl of 1 to 6 carbon atoms; and R_{11} and R_{12} taken together with the nitrogen atom to which they are attached form a group of the formula



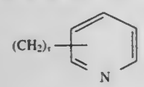
wherein X and n are as above;
(d) R_6 and R_7 independently are hydrogen, a group of the formula



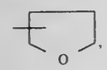
wherein R_{20} is hydrogen or loweralkyl of 1 to 6 carbon atoms, or a group of the formula



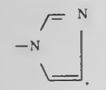
wherein R_{13} is hydrogen, loweralkyl of 2 to 6 carbon atoms, hydroxyloweralkyl of 1 to 6 carbon atoms, loweralkoxyloweralkyl having 1 to 6 carbon atoms in the alkoxy group and 2 to 6 carbon atoms in the alkyl group; or a group of the formula $HOCH_2CH(OH)CH_2$; R_{14} is hydrogen, hydroxyl, loweralkoxy of 1 to 6 carbon atoms, loweralkyl of 1 to 6 carbon atoms, hydroxyloweralkyl of 2 to 6 carbon atoms, loweralkoxyloweralkyl of 1 to 6 carbon atoms in the alkoxy group and 2 to 6 carbon atoms in the alkyl group, loweralkanoyl of 2 to 6 carbon atoms, loweralkanoylloweralkyl of 2 to 6 carbon atoms in the alkanoyl group and 1 to 6 carbon atoms in the alkyl group, a group of the formula



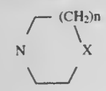
wherein s is 1 or 2, a group of the formula



a group of the formula



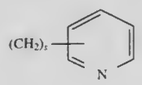
a group of the formula $HOCH_2CH(OH)CH_2$, a group of the formula $(CH_2)_rNR_{21}R_{22}$ wherein R_{21} and R_{22} are independently loweralkyl of 1 to 6 carbon atoms and t is 0, or 2 to 6, R_{21} and R_{22} taken together with the nitrogen atoms to which they are attached form a group of the formula



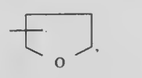
wherein X and n are as above, a group of the formula OR_{23} wherein R_{23} is hydrogen, loweralkyl of 1 to 6 carbon atoms, a group of the formula $(CH_2)_rNR_{21}R_{22}$ wherein t' is 2 to 6, R_{21} and R_{22} are as above, a group of the formula



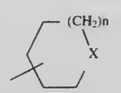
wherein R_{24} is hydrogen, loweralkyl of 1 to 6 carbon atoms, lowercycloalkyl of 3 to 6 carbon atoms, loweralkenyl of 2 to 6 carbon atoms, haloloweralkenyl of 2 to 6 carbon atoms, loweralkanoylloweralkyl of 2 to 6 carbon atoms in the alkanoyl group and 1 to 6 carbon atoms in the alkyl group, loweralkoxyloweralkyl of 1 to 6 carbon atoms in each group, loweralkoxycarbonylloweralkyl of 1 to 6 carbon atoms in each group, loweralkylamino of 1 to 6 carbon atoms, lowerdialkylamino of 2 to 6 carbon atoms, a group of the formula



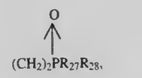
wherein s is as above, a group of the formula



a group of the formula $(CH_2)_rNR_{21}R_{22}$ wherein R_{21}, R_{22} and t' are as above, a group of the formula



wherein X and n are as above, a group of the formula $(CH_2)_uN(R_{25})COR_{26}$, wherein u is 1, 2 or 3 and R_{25} and R_{26} are independently hydrogen or loweralkyl of 1 to 6 carbon atoms, a group of the formula



wherein R_{27} and R_{28} are loweralkyl of 1 to 6 carbon atoms, with the provisos:

(e) that R_1, R_6 and R_7 are not simultaneously hydrogen,

(f) that when R_1 and R_6 are hydrogen, R_7 is not



(g) that R_6 and R_7 are not simultaneously



(h) that when r is 1, either R_6 or R_7 is



(i) that when R_1 and R_6 are hydrogen, R_{13} or R_{14} are not simultaneously loweralkyl of 1 to 6 carbon atoms, and

(h) that when R_1 and R_9 taken together form a group of the formula CO, SO, or $CHNR_{11}R_{12}$, R_6 and R_7 are not simultaneously hydrogen; the optical or geometric isomers thereof; or the pharmaceutically acceptable salts thereof.

5,646,176

PHOSPHONOOXYMETHYL ETHERS OF TAXANE DERIVATIVES

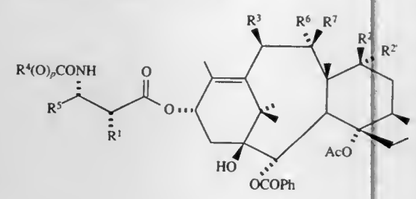
Jerzy Golik, Southington; Dolatrai Vyas, Madison; John J. Wright, Guilford; Henry Wong, Durham; John F. Kadow, Wallingford, all of Conn.; John K. Thottathil, Robbinsville; Wen-Sen Li, Marlboro, both of N.J.; Murray A. Kaplan, Syracuse; Robert K. Perrone, Liverpool, both of N.Y., and Mark D. Wittman, Cheshire, Conn., assignors to Bristol-Myers Squibb Company, Princeton, N.J.

Continuation of Ser. No. 245,119, May 17, 1994, abandoned, which is a continuation-in-part of Ser. No. 154,840, Nov. 24, 1993, abandoned, which is a continuation-in-part of Ser. No. 108,015, Aug. 17, 1993, abandoned, which is a continuation-in-part of Ser. No. 996,445, Dec. 24, 1992, abandoned. This application May 19, 1995, Ser. No. 445,360

Int. Cl.[6] A61K *31/38;* **C07D** *305/14*

U.S. Cl. 514—444 **43 Claims**

1. A compound having the formula



wherein

R^1 is hydroxy, $—OCH_2(OCH_2)_mOP(O)(OH)_2$, $—OC(O)R^x$ or $—OC(O)OR^x$;

$R^{2'}$ is hydrogen, and R^2 is hydrogen, hydroxy, $—OCH_2(OCH_2)_mOP(O)(OH)_2$, $—OC(O)R^x$ or $—OC(O)OR^x$;

R^3 is hydrogen, hydroxy, C_{1-6}alkyloxy, $—OC(O)R^x$, $—OCH_2(OCH_2)_mOP(O)(OH)_2$ or $—OC(O)OR^x$;

one of R^6 or R^7 is hydrogen and the other is hydroxy, C_{1-6} alkanoyloxy, or $—OCH_2(OCH_2)_mOP(O)(OH_2)$; or R^6 and R^7 together form an oxo group; with the proviso that at least one of R^1, R^2, R^3, R^6 or R^7 is $—OCH_2(OCH_2)_mOP(O)(OH)_2$;

m is zero or an integer one to six inclusive;

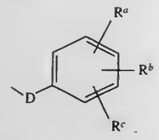
R^4 and R^5 are independently C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, or $—Z—R^6$;

Z is a direct bond, C_{1-6} alkyl or C_{2-6} alkenyl;

R^6 is aryl, substituted aryl, C_{3-6} cycloalkyl, or heteroaryl;

p is 0 or 1; and

R^x is C_{1-6} alkyl optionally substituted with one to six same or different halogen atoms, C_{3-6} cycloalkyl, C_{2-6} alkenyl or hydroxy; or R^x is a radical of the formula



wherein D is a bond or C_{1-6} alkyl; and R^a, R^b and R^c are independently hydrogen, amino, C_{1-6} alkylamino, di-C_{1-6}alkylamino, halogen, C_{1-6} alkyl, or C_{1-6} alkoxy.

5,646,177

GLUTATHIONE DERIVATIVES OF ANTHRACYCLINES

Tad H. Koch, and Giorgio Gaudiano, both of Boulder, Colo., assignors to Board of Regents of The University of Colorado, Boulder, Colo., and Consiglio Nazionale Delle Richerche, Rome, Italy

Filed May 2, 1995, Ser. No. 432,836

Claims priority, application Italy, May 2, 1994, RM94A0269

Int. Cl.[6] C07D *319/04;319/08;50/22*

U.S. Cl. 514—452 **11 Claims**

1. A compound which is a glutathione aglycon conjugate of an anthracycline or a semi-synthetic anthracycline or pharmaceutically acceptable salts of the anion thereof wherein the anthracycline or semi-synthetic anthracycline is substituted at the C-7 position with the glutathione.

5,646,178

CRANBERRY EXTRACT AND BIOLOGICALLY ACTIVE COMPOUNDS DERIVED THEREFROM

Edward B. Walker; Richard A. Mickelsen, Jr., and Jennifer N. Mickelsen, all of Ogden, Utah, assignors to JLB, Inc., Ogden, Utah

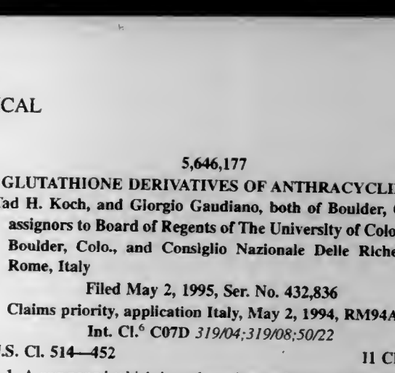
Continuation-in-part of Ser. No. 409,703, Mar. 24, 1995, and Ser. No. 189,889, Feb. 1, 1994, Pat. No. 5,525,341, which is a continuation-in-part of Ser. No. 959,222, Oct. 9, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 473,864

Int. Cl.[6] A61K *31/16;31/045;31/725;35/78*

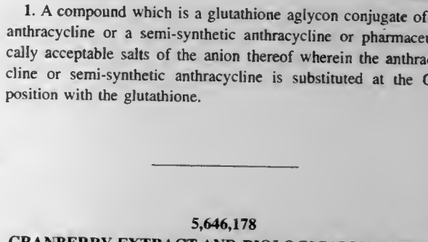
U.S. Cl. 514—456 **33 Claims**

1. A method of interfering with non-viral microbial tissue adhesion to a body tissue comprising topically administering a proanthocyanidin having a structure selected from I, II and III

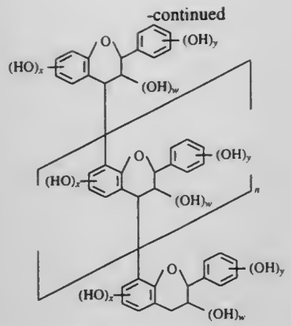
(I)



(II)



-continued



wherein x, y=1 to 3, w=0 or 1, n=0 to 18.

5,646,179

γ-PYRONES, γ-PYRIDONES, AND γ-THIOPYRONES, THEIR USE AS MEDICAMENTS AND PROCESS FOR PREPARING SAME

Lutz Müller-Kuhrt, Berlin, and Andreas Immelmann, Dusseldorf, both of Germany, assignors to Analyticon Gesellschaft fur Chemische Analytik und Consulting GmbH, Berlin, and Diagen Institut fur Molekularbiologische Diagnostik GmbH, Hilden, both of Germany

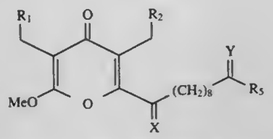
Continuation of Ser. No. 105,971, Aug. 6, 1993, abandoned. This application Dec. 12, 1995, Ser. No. 571,027

Claims priority, application Germany, Feb. 8, 1991, 41 03 904.1

Int. Cl.[6] A61K *31/35*

U.S. Cl. 514—460 **8 Claims**

1. An anti-viral medicament comprising an effective anti-viral amount of a compound having the formula:



(II)

wherein R_1, R_2, R_5, X, and Y are defined as follows:

No.	R_1	R_2	R_5	X	Y
1	H	H	Me	H_2	H_2
2	H	H	H	H_2	H_2
3	H	H	Me	H_2	H, OAc
4	Me	H	Me	H_2	=O
5	Me	H	Me	H_2	H, OH
6	Me	H	Me	H_2	H, OAc
7	Me	Me	Me	H_2	H, OAc
8	H	H	Me	=O	H_2
9	Me	H	H	=O	H_2
10	Me	H	Me	=O	H_2

together with a pharmaceutically acceptable carrier.

5,646,180

TREATMENT OF THE CNS EFFECTS OF HIV

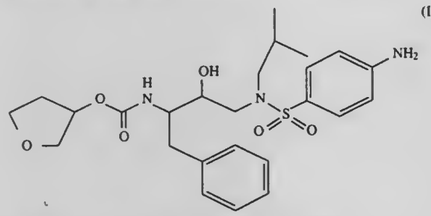
Pravin Ramsewak Chaturvedi, Quincy, Mass., assignor to Vertex Pharmaceuticals Incorporated, Cambridge, Mass.

Filed Dec. 5, 1995, Ser. No. 567,199

Int. Cl.[6] A16K *31/34*

U.S. Cl. 514—471 **2 Claims**

1. A method for treating the CNS effects of HIV comprising the step of administering to a patient a pharmaceutical composition comprising a compound of Formula I:



(I)

in an amount effective to inhibit HIV in the CNS.

5,646,181

METHOD AND COMPOSITIONS FOR TREATING IMPOTENCE

Ho-Leung Fung, Getzville, and John Anthony Bauer, Williamsville, both of N.Y., assignors to Research Foundation of State University of New York, Albany, N.Y.

Continuation-in-part of Ser. No. 199,280, Mar. 1, 1994, Pat. No. 5,489,610, which is a continuation-in-part of Ser. No. 908,224, Jul. 2, 1992, Pat. No. 5,278,192. This application May 2, 1995, Ser. No. 432,892

Int. Cl.[6] A61K *31/04*

U.S. Cl. 514—506 **7 Claims**

1. A pharmaceutical composition for the treatment of male impotence or erectile dysfunction comprising a sufficient amount of an organic nitrite in a pharmaceutically acceptable topical carrier to provide about 0.1 mg–20 mg of nitrite per dose applied to the penis, said nitrite being selected from the group consisting of 1,3-propane dinitrite, 1,5-pentane dinitrite, 1,7-heptane dinitrite, cyclohexylmethyl nitrite, 2-phenylethyl nitrite, 3-chloro-2,2-dimethylpropyl nitrite, tertamyl nitrite, 2-methyl-2-hexyl nitrite, hexyl nitrite, 2-methyl-1,3-propane dinitrite, 2,2,dimethyl-1,3-propane dinitrite, 2-methyl-2-propyl-1,3-propane dinitrite, 2-methyl-2 -propyl-1,3-propane dinitrite, 3-hexyl nitrite, octyl nitrite, 4-methyl-2-pentyl nitrite, 4 -methyl-1-pentyl nitrite, 2-heptyl nitrite, 3-octyl nitrite, 2-methyl-2-pentyl nitrite, 5-methyl-2-hexyl nitrite, 6-methyl-2-heptyl nitrite, glyceryl dinitrite, glyceryl mononitrite, isosorbide 5-mononitrite, isoidide 5-mononitrite, isomannide 5-mononitrite, pentaerythrityl mononirite, pentaerythrityl dinitrite, pentaerythrityl trinitrite and pentaerythrityl tetranitrite.

5,646,182

METHODS FOR TREATING AUTOIMMUNE DISEASES

Stanislaw R. Burzynski, 20 W. Rivercrest, Houston, Tex. 77042

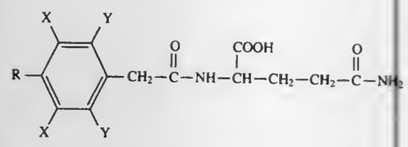
Filed Jun. 15, 1992, Ser. No. 898,295

Int. Cl.[6] A61K *31/235;31/195*

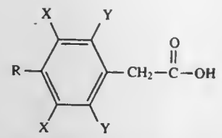
U.S. Cl. 514—532 **20 Claims**

1. A method of treating autoimmune disease in an afflicted human host comprising:

administering to the host a pharmaceutical composition containing a therapeutically effective amount of a combination of compounds of the formula:



and



in a weight ratio ranging from about 1:1 to about 1:10 (A:B);

wherein R is OH, NH_2, OW, or H;

X is H, F, Cl, Br, I, OH, OW, NO_2, or NH_2;

Y is H, F, Cl, Br, or I;

W is



or a C_1 to C_{12} aliphatic group;

Z is an aliphatic or aromatic group of C_1 to C_{12};

X and Y can both vary within the compound; or pharmaceutically acceptable salts thereof, together with a pharmaceutical carrier.

5,646,183

PHENYL AMIDINE ALKANOIC ACIDS USEFUL AS PLATELET AGGREGATION INHIBITORS

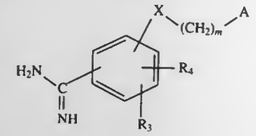
Norman Anthony Abood, Morton Grove, Ill.; Robert Everett Manning, St. Louis, Mo., and Masateru Miyano, Salem, S.C., assignors to G. D. Searle & Co., Chicago, Ill.

Division of Ser. No. 256,707, Jul. 21, 1994, Pat. No. 5,504,106, which is a continuation-in-part of Ser. No. 904,237, Jun. 25, 1992, abandoned. This application May 25, 1995, Ser. No. 450,069

Int. Cl.[6] A01N *37/36;* **C07C** *229/42*

U.S. Cl. 514—538 **7 Claims**

1. A compound of the formula



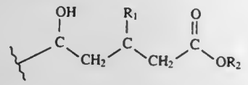
or a pharmaceutically acceptable salt thereof, wherein

R_3 and R_4 are each independently selected from the group consisting of hydrogen, alkyl having 1 to 6 carbon atoms, hydroxy, alkoxy having 1 to 6 carbon atoms and halo;

X is $—CH_2CH_2—$, —CH=CH—, —C≡C— or HNCO

m is an integer from 1 to 3; and

A is the group



wherein

R_1 is hydrogen; hydroxy; alkyl having 1 to 6 carbon atoms; alkenyl having 2 to 6 carbon atoms which may be optionally substituted by halo; alkynyl having 2 to 6 carbon atoms; alkoxycarbonylalkyl; phenylsulfonylalkyl; alkylsulfonylalkyl; phenyl which may be optionally substituted by alkyl having 1 to 6 carbon atoms, alkoxy having 1 to 6 carbon atoms and hydroxy; or cycloalkyl having 3 to 6 carbon atoms; and

R_2 is hydrogen or alkyl having 1 to 6 carbon atoms.

5,646,184

PREPARATION FOR EXTERNAL APPLICATION TO THE SKIN AND NOVEL BENZOIC ACID DERIVATIVES

Akira Sakaguchi, Wakayama; Takashi Kitahara, Tochigi; Keiko Koizumi, Tochigi; Noriko Sato, Tochigi; Kimihiko Hori, Tochigi, and Hiroyuki Shinta, Tochigi, all of Japan, assignors to Kao Corporation, Tokyo, Japan

PCT No. PCT/JP94/00477, § 371 Date Nov. 9, 1994, § 102(e) Date Nov. 9, 1994, PCT Pub. No. WO94/21591, PCT Pub. Date Sep. 29, 1994

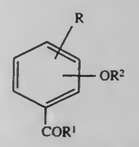
PCT Filed Mar. 25, 1994, Ser. No. 335,854

Claims priority, application Japan, Mar. 25, 1993, 5-066779; Dec. 15, 1993, 5-315606

Int. Cl.[6] A61K *31/235;31/19;31/165*

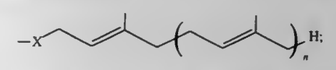
U.S. Cl. 514—543 **32 Claims**

1. A preparation for external application to the skin which comprises at least one of benzoic acid derivatives represented by formula (I):



(I)

wherein R^1 represents —OH, $—OR^3$ or $—NHR^3$; R^2 represents a hydrogen atom, a lower alkyl group or a lower acyl group; R represents —O—R^4 or



R^3 represents an alkyl group, an alkenyl group or a hydroxyalkyl group; R^4 represents a straight-chain or branched, saturated or unsaturated alkyl group or cycloalkylalkyl group having from 4 to 10 carbon atoms; X represents —O— or —NH—; and n represents 1 or 2,

or a pharmacologically acceptable salt thereof as an active ingredient and an acceptable carrier for the skin.

5,646,185

TUMOR TREATMENT METHOD

Amato J. Giaccia, Stanford, and Albert C. Koong, Palo Alto, both of Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed Oct. 14, 1993, Ser. No. 137,238

Int. Cl.[6] A01N *37/02*

U.S. Cl. 514—548 **18 Claims**

1. A method of selectively killing cells in a solid tumor in a subject comprising

administering to the subject, a compound effective to activate protein kinase C activity in the cells of the tumor, via a route effective to direct the compound to hypoxic cells in the tumor, where said compound is selected from the group consisting of a phorbol ester protein kinase C activator, a diacylglycerol activator of protein kinase C, and thapsigargin, and

by said administering, achieving a substantially higher degree of cytotoxicity in such hypoxic cells than in normally oxygenated cells.

5,646,186
RETINOID COMPOSITION
Jonas C. T. Wang, Robbinsville, N.J., and Stephen J. Wisniewski, Doylestown, Pa., assignors to Johnson & Johnson Consumer Products, Inc., Skillman, N.J.
Filed May 17, 1994, Ser. No. 241,446
Int. Cl.[6] A61K *31/19;31/07*
U.S. Cl. 514—557 11 Claims

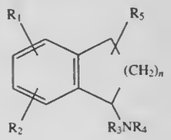
1. In a skin care composition comprising retinol as an active ingredient, the improvement wherein the retinol irritating properties of the composition are ameliorated by employing retinol irritation ameliorating amounts of glycolic acid.

5,646,187
USE OF ALPHA-KETOGLUTARATE
Erik Vinnars, Sigtuna, and Jan Wernerman, Stockholm, both of Sweden, assignors to AB Erik Vinnars, Sigtuna, Sweden
Continuation of Ser. No. 175,403, Jan. 7, 1994, abandoned.
This application May 26, 1995, Ser. No. 451,262
Claims priority, application Sweden, May 20, 1992, 9201584
Int. Cl.[6] A01N *37/18;* A61K *31/195;31/04;31/40*
U.S. Cl. 514—557 7 Claims

1. A method for treating critically ill patients suffering from one or multiple organ failure or sepsis and a general protein catabolism having more than a 50% reduction of the intracellular glutamine level in skeletal muscles and under intensive care the improvement comprising the step of administering alpha-ketoglutarate, in order to improve the protein synthesis capacity, maintaining the energy level and to preserve the lean body mass, wherein more than 0.25 g/kg body weight/day of alpha-ketoglutarate is administered to the patient.

5,646,188
POLYAMINE DERIVATIVES OF 1-AMINOINDAN
Gad Gilad; Varda Gilad, both of Givatayim; Jeffrey Sterling, Jerusalem; Yaacov Herzig, Raanana; David Lerner, Jerusalem; Alex Veinberg, Rehovot; Isaac Milman, Maale Adumim, and Nina Finkelstein, Jerusalem, all of Israel, assignors to Teva Pharmaceutical Industries, Ltd., Jerusalem, Israel
Filed Jul. 5, 1995, Ser. No. 498,095
Int. Cl.[6] A61K *31/135;31/155;* C07C *211/42;279/12*
U.S. Cl. 514—634 41 Claims

1. A compound of the formula:



wherein n is 1 or 2;

R_1 and R_2 are each independently hydrogen, hydroxy, substituted or unsubstituted C_{1-4} alkyl, substituted or unsubstituted C_{1-4} alkoxy or halogeno;

R_5 is hydrogen, substituted or unsubstituted C_{1-4} alkyl or NR_6R_7;

R_3, R_4, R_6 and R_7 are each independently hydrogen or $(CH_2)_m$—$[NH(CH_2)_x]_y$—NHR_{11} wherein m is from 1–5, y is from 0–5 and each x is independently from 1–5 and R_{11} is hydrogen or $C(NH)NH_2$;

provided that when R_3 and R_4 are both hydrogen, R_5 is NR_6R_7; pharmaceutically acceptable salts and optically active isomers thereof.

5,646,189
PREVENTION OF HIV INFECTION
Jess G. Thoene, 1308 Brooks St., Ann Arbor, Mich. 48103
Continuation of Ser. No. 136,697, Oct. 15, 1993, abandoned.
This application Jun. 22, 1995, Ser. No. 492,478
Int. Cl.[6] A16K *31/13*
U.S. Cl. 514—665 24 Claims

1. A method of inhibiting transmission of HIV infection, comprising topically applying an effective amount of a compound selected from the group consisting of cysteamine, cystamine, phosphocysteamine, and pharmaceutically acceptable salts thereof.

5,646,190
ACNE TREATING-WOUND HEALING COMPOSITIONS AND METHODS FOR PREPARING AND USING SAME
Alain Martin, Ringoes, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.
Continuation-in-part of Ser. No. 340,579, Nov. 11, 1994, abandoned, which is a continuation-in-part of Ser. No. 53,922, Apr. 26, 1993, abandoned, which is a continuation of Ser. No. 663,500, Mar. 1, 1991, abandoned. This application May 22, 1995, Ser. No. 446,988
Int. Cl.[6] A61K *31/045;31/07;31/355*
U.S. Cl. 514—724 19 Claims

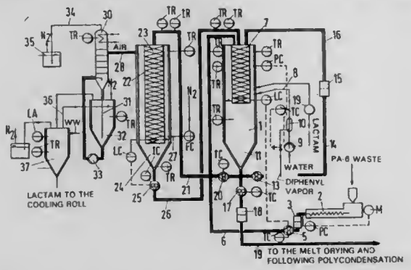
1. A therapeutic antiacne-wound healing composition for the topical treatment of acne vulgaris which comprises a therapeutically effective amount of tretinoin and a wound healing composition, wherein the wound healing composition comprises:

(a) pyruvate selected from the group consisting of pyruvic acid, pharmaceutically acceptable salts of pyruvic acid, and mixtures thereof;

(b) an antioxidant; and

(c) a mixture of saturated and unsaturated fatty acids wherein the fatty acids are those fatty acids required for the repair of cellular membranes resuscitation of injured mammalian cells; wherein components a, b, and c are present in amounts sufficient to synergistically enbance wound healing.

5,646,191
METHOD AND APPARATUS FOR THE PRODUCTION OF POLYAMIDE 6 FROM POLYAMIDE WASTE
Karl-Heinz Wiltzer, Bad Blankenburg; Peter Lausmann, Rudolstadt-Schwarza, and Baldur Ebert, Bad Blankenburg, all of Germany, assignors to Polymer Engineering GmbH, Germany
Continuation of Ser. No. 189,067, Jan. 28, 1994, abandoned.
This application May 10, 1995, Ser. No. 438,487
Claims priority, application European Pat. Off., Jan. 28, 1993, 93101273
Int. Cl.[6] C08J *11/14;* B01D *39/00*
U.S. Cl. 521—49.8 10 Claims



1. A method for the depolymerization and reprocessing of material selected from the group consisting of polyamide 6 waste, oligomer-containing polyamide 6 waste, oligomer-containing lactim residues and oligomer-containing lactim, by hydrolysis in a pressure reactor with the addition of water, the method comprising the steps of melting said material and then continuously conducting it at predetermined temperature through the pressure reactor, controlling the inside pressure of the reactor by dosage feeding of water or steam such that the material in the pressure reactor is brought to 230°–290° C. to a uniformly low degree of polymerization with a solution of viscosity of more than 1.5, conducting the water-containing melt before, during or after passage through the pressure reactor, through a shearing filter which linearly deforms crosslinked polyamide particles and recovering linear polyamide which has a uniform low degree of polymerization.

5,646,192
POLYTETRAFLUOROETHYLENE MOLDING POWDER
John W. Dolan, Boothwyn, Pa., and Charles E. Singleton, Wilmington, Del., assignors to W. L. Gore & Associates, Inc., Newark, Del.
Continuation-in-part of Ser. No. 21,409, Feb. 23, 1993, abandoned. This application Oct. 12, 1994, Ser. No. 323,461
Int. Cl.[6] C08J *9/16;9/22*
U.S. Cl. 521—56 3 Claims

1. A polymeric molding resin comprising comminuted, sheared, and ground elongated particulate and being made of expanded porous polytetrafluoroethylene, said particulate having a nodular-microfibrillar structure, an irregular shape, a mean particulate size between 5 and 500 micrometers, and said particulate being entangled with one another.

5,646,193
PROCESS TO PREPARE TWO PHASE FOAM COMPOSITIONS AND TWO PHASE FOAM COMPOSITIONS
Thomas Fairchild Brownscombe; Ronald Marshall Bass; Pui Kwan Wong; George Constantine Blytas; William Peter Gergen, and Maryanne Mores, all of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.
Filed Nov. 17, 1995, Ser. No. 560,140
Int. Cl.[6] C08J *9/28*
U.S. Cl. 521—63 11 Claims

1. A process for the production of a porous crosslinked polymeric foam comprising the steps of:

providing a first water-in-oil emulsion comprising (i) a first mixture of polymerizable monomers comprising at least one oil-soluble vinyl monomer and from about 2 to about 70 weight percent, based on the mixture, of a multifunctional unsaturated crosslinking monomer, (ii) at least 70 weight percent, based on the emulsion, of water as the internal phase (iii) an effective amount to produce the water-in-oil emulsion of a first surfactant, and (iv) a first polymerization initiator;

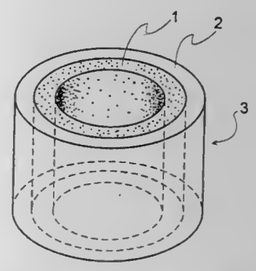
providing a second water-in-oil emulsion comprising (i) a mixture of polymerizable monomers comprising at least one oil-soluble vinyl monomer and from about 2 to about 70 weight percent, based on the mixture, of a second multifunctional unsaturated crosslinking monomer, (ii) at least 70 weight percent, based on the emulsion, of water as the internal phase (iii) an effective amount to produce the water-in-oil emulsion of a second surfactant, and (iv) a second polymerization initiator;

combining the first and second emulsions; and

curing said polymerizable monomers under conditions effective to polymerize and crosslink the polymer prior to significant diffusion between the emulsions;

wherein the first emulsion is an emulsion that, after curing and water removal, will be a hydrophobic foam, and the second emulsion is an emulsion that, after curing and water removal, will be a hydrophilic foam.

5,646,194
PLASTIC FOAM MATERIAL COMPOSED OF THERMOPLASTIC RESIN AND SILANE-MODIFIED THERMOPLASTIC RESIN AND METHOD FOR MAKING SAME
Tomoyuki Kobayashi; Kenji Miyazaki, both of Kyoto, and Masanori Nakamura, Osaka, all of Japan, assignors to Sekisui Chemical Co., Ltd., Osaka, Japan
Division of Ser. No. 309,960, Sep. 21, 1994, Pat. No. 5,552,448.
This application May 22, 1996, Ser. No. 651,519
Claims priority, application Japan, Sep. 21, 1993, 5-235037
Int. Cl.[6] C08J *9/00;3/22;* B29C *47/88*
U.S. Cl. 521—79 4 Claims



1. A method for preparing a plastic foam material comprising thermoplastic resins, comprising the steps of:

preparing about 100 parts by weight of at least two substantially incompatible resins selected from the group consisting of a polyethylene, polypropylene, ethylene-propylene copolymer, ethylene-vinyl acetate copolymer, and polystyrene to form a first mixture;

adding from about 1 to about 50 parts by weight of a silane-modified thermoplastic resin of the same polymer type as at least one of said two substantially incompatible resins to said first mixture;

adding from about 0.001 to about 2.5 parts by weight of a cross-linking catalyst effective to cross-link said silane-modified thermoplastic resin and;

adding from about 1 to about 20 parts by weight of a foaming agent to said first mixture to form a blended resin composition;

extruding said blended resin composition to form an object;

exposing said object to a first cross-linking source to form a cross-linked object wherein said cross-linked object includes only cross-linked silane-modified thermoplastic resin; and

exposing said object to a foaming heat source to form said plastic foam material.

5,646,195
CATALYST FOR POLYURETHANE CARPET BACKINGS AND CARPETS PREPARED THEREWITH
Larry Wayne Mobley, Cohutta, Ga., assignor to The Dow Chemical Company, Midland, Mich.
Filed Mar. 7, 1995, Ser. No. 399,869
Int. Cl.[6] C08G *18/24;* C08J *9/00;* B32B *33/00*
U.S. Cl. 521—121 4 Claims

1. A process for preparing a polyurethane backed textile comprising the steps of

(A) admixing a polyurethane formulation including

(1) a polyisocyanate selected from the group consisting of MDI, PMDI, an MDI prepolymer, a PMDI prepolymer, a carbodiimide modified MDI, a uretonimine modified MDI, and mixtures thereof,

(2) an active hydrogen containing compound, and

(3) a delayed action catalyst,

wherein the delayed action catalyst is a dialkyltin sulfide, the alkyl groups of the dialkyltin sulfide are methyl, butyl or octyl groups, and the formulation is substantially free of other polyurethane catalysts; and

(B) applying the polyurethane formulation admixture to a textile.

5,646,196

C_3 TO C_5 POLYFLUORCALKANES PROPELLANTS

Claus-Dieter Sommerfeld, Overath; Wilhelm Lamberts, Cologne; Dietmar Bielefeldt, Ratingen; Albrecht Marhold, Leverkusen, and Michael Negele, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 469,622, Jan. 24, 1990, Pat. No. 5,496,866.

This application Jan. 26, 1996, Ser. No. 592,769

Claims priority, application Germany, Feb. 4, 1989, 39 03 336.8

Int. Cl.^{6} C08J *9/00;* **C08G** *18/00*

U.S. Cl. 521—131 **2 Claims**

1. A method of forming plastic foam compositions comprising foaming a plastic based on isocyanate in the presence of a propellant the improvement wherein the propellant comprises a polyfluoroalkane of the formula:

$CHF_2—CF_2—CFH_2$.

5,646,197

ANTIMICROBIAL ROOT CANAL SEALER

Howard Martin, 1106 Spring St., Silver Spring, Md. 20910

Filed Oct. 16, 1995, Ser. No. 543,378

Int. Cl.^{6} A61K *6/08*

U.S. Cl. 523—118 **1 Claim**

1. A root canal sealer, comprising:

15.5–20.5 weight % zinc oxide;

12.5 weight. % hydrogenated rosin glycerol ester (staybelite resin);

5 weight % bismuth subcarbonate

5 weight % radiopague agent consisting of barium sulfate;

0.5% weight % anhydrous sodium borate;

2.5–7.5 weight % antimicrobial agent consisting of triiodomethane; and

mixed with 50 weight % eugenol.

5,646,198

COATING COMPOSITION AND ANTIFOULING PAINT

Hiroyuki Tanaka, Mito; Seiji Tai, Hitachi; Koichi Kamijima, Hitachi; Yumiko Wada, Hitachi; Tsutomu Mamiya, Choshi; Makoto Murakami, Ibaraki-ken, and Teruo Yoshida, Hitachi, all of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Filed Dec. 21, 1994, Ser. No. 360,316

Claims priority, application Japan, Dec. 24, 1993, 5-327096; Jan. 25, 1994, 6-006082; Jan. 25, 1994, 6-006083; Feb. 28, 1994, 6-029486; Apr. 25, 1994, 6-086479; Apr. 27, 1994, 6-089680; Apr. 28, 1994, 6-091631; May 12, 1994, 6-098271; Jul. 21, 1994, 6-169542; Oct. 14, 1994, 6-249569

Int. Cl.^{6} C09D *5/16;* **C08K** *5/3467*

U.S. Cl. 523—122 **10 Claims**

1. An antifouling coating composition comprising

(A) a polymer obtained by polymerizing (a1) one or more unsaturated acid anhydrides or unsaturated carboxylic acids and (a2) one or more other unsaturated monomers copolymerizable with the component (a1),

(B) at least one compound selected from the group consisting of compounds having both hydrophobic and hydrophilic groups in the molecule,

(C) at least one compound selected from the group consisting of a benzotriazole unsubstituted or substituted with a member selected from the group consisting of alkyl, aryl, halogen, nitro, alkoxy, and alkylamino and a triazole unsubstituted or substituted with a member selected from the group consisting of alkyl, aryl, aralkyl, halogen, amino, and hydroxy, and

(D) an antifouling agent.

5,646,199

COMPOSITION FOR MOLD

Akira Yoshida; Kazuhiko Kiuchi; Naoki Kyochika; Akio Mamba, and Hitoshi Funada, all of Aichi, Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Jul. 21, 1992, Ser. No. 915,678

Claims priority, application Japan, Jul. 22, 1991, 3-180948; Jul. 22, 1991, 3-180959

Int. Cl.^{6} B22C *1/10;* **C08F** *283/00;* **C08G** *8/28*

U.S. Cl. 123—139 **36 Claims**

1. A binder resin composition comprising a water-soluble phenolic resin curable with an organic ester compound and a compound containing a metallic element in an amount of from 0.0005 to 5% by weight, in terms of the metallic element, and based on the weight of the water-soluble phenolic resin, wherein said metallic element is selected from the group consisting of Sc, Y, Al, Ga, In, Tl, Ti, Zr, Hf, Sn, Pb, Bi, Cr, Mo, W, Po, Mn, Tc, Re, Fe, Co, and Ni.

5,646,200

COMPOSITIONS CONTAINING ZIRCONIUM COMPOUNDS

Robert Hume Duncan, Stockton on Tees, England, assignor to Tioxide Specialties Limited, United Kingdom

Filed Jun. 20, 1995, Ser. No. 492,825

Claims priority, application United Kingdom, Jun. 22, 1994, 9412579

Int. Cl.^{6} C09D *5/00;11/00*

U.S. Cl. 523—160 **18 Claims**

1. A printing ink comprising a polymeric binder, a solvent therefor and an adhesion promoting agent comprising the reaction product of a zirconium orthoester and ethyl acetoacetate in which the molar ratio of zirconium to ethyl acetoacetate is from 1:1 to 1:4.

5,646,201

AQUEOUS DISPERSION OF FLUORINE-CONTAINING COPOLYMER

Takayuki Araki; Nobuhiko Tsuda, and Yasushi Yonei, all of Settsu, Japan, assignors to Daikin Industries, Ltd., Osaka, Japan

PCT No. PCT/JP94/01530, § 371 Date Mar. 13, 1996, § 102(e) Date Mar. 13, 1996, PCT Pub. No. WO95/08582, PCT Pub. Date Mar. 30, 1995

PCT Filed Sep. 16, 1994, Ser. No. 612,866

Claims priority, application Japan, Sep. 22, 1993, 5-236493

Int. Cl.^{6} C08L *15/02;27/16*

U.S. Cl. 523—201 **6 Claims**

1. An aqueous dispersion of a fluorine-containing copolymer which is obtainable by, in an aqueous dispersion containing fluorine-containing copolymer particles which comprise 70 to 95% by mole of vinylidene fluoride and 5 to 30% by mole of chlorotrifluoroethylene, seed-polymerizing 20 to 100 parts by weight of an acrylic acid ester and/or a methacrylic acid ester in the presence of 100 parts by weight of the fluorine-containing copolymer particles.

5,646,202

POLYARYLENE SULFIDE MOLDING COMPOSITION

Andreas Schleicher, Einhausen; Jan-Peter Piesold, Augsburg, and Klaus Kohlhepp, Eppstein, all of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Continuation of Ser. No. 337,158, Nov. 9, 1994, abandoned.

This application Jun. 21, 1996, Ser. No. 667,041

Claims priority, application Germany, Nov. 11, 1993, 43 38 541.9

Int. Cl.^{6} C08K *9/06*

U.S. Cl. 523—212 **8 Claims**

1. A molding composition comprising

(A) from 20 to 80% by weight of at least one polyarylene sulfide,

(B) from about 13 to about 15% by weight of at least one mineral filler selected from the group consisting of chalk and talc,

(C) from about 32 to about 40% by weight of at least one surface-modified mineral filler selected from the group consisting of mica, koalin and quartz, and

(D) from 0.01 to 0.4% by weight of at least one saturated, long-chain carboxylic ester.

5,646,203

MICROCAPSULE-CONTAINING OIL-BASED COATING LIQUID, INK, COATED SHEET, AND METHOD OF PREPARING THE SAME

Kei Etoh; Akira Hirasawa; Hisano Higurashi, and Makoto Kawamura, all of Tokyo, Japan, assignors to Toppan Moore Co., Ltd., Tokyo, Japan

Filed Mar. 30, 1995, Ser. No. 413,690

Claims priority, application Japan, Mar. 31, 1994, 6-085978; Jul. 29, 1994, 6-209029; Jul. 29, 1994, 6-209030

Int. Cl.^{6} C08K *5/053;7/22;* **C08J** *9/32;* **B32B** *5/18*

U.S. Cl. 523—218 **11 Claims**

1. A method of preparing a microcapsule-containing nonaqueous coating liquid, which comprises mixing a microcapsule-containing aqueous dispersion with an oil varnish for ink use or a resin for surface-coating use and a solvent which has an affinity for both the varnish or the resin and the surface layer of the microcapsule wall material, and removing the water in the mixture by distillation in vacuum to convert said microcapsules in an aqueous system into microcapsules in an non-aqueous system in a state of individually dispersed microcapsule particles intact.

5,646,204

EPOXY RESIN COMPOSITION AND RESIN-ENCAPSULATED SEMICONDUCTOR DEVICE

Masatsugu Akiba, Ibaraki-ken; Yutaka Shiomi, Osaka-fu; Kazuo Takebe, Osaka-fu; Noriaki Saito, Osaka-fu, and Takashi Morimoto, Ehime-ken, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

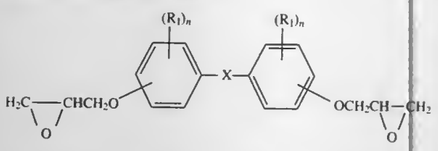
Filed Sep. 8, 1995, Ser. No. 525,159

Claims priority, application Japan, Sep. 8, 1994, 6-214820

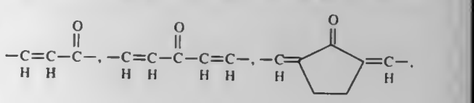
Int. Cl.^{6} C08G *59/24;59/62;* **H01L** *23/29*

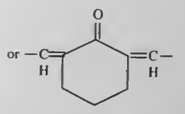
U.S. Cl. 523—443 **9 Claims**

1. An epoxy resin composition comprising (A) an epoxy represented by the general formula (1)



wherein each R_1, independent of the other, represents hydrogen, an alkyl group having 1 to 6 carbon atoms, inertly substituted- or nonsubstituted-phenyl groups or halogen, and X represents





and n represents an integer of 0 to 4, (B) about 0.7 to about 1.2 equivalents, per epoxy equivalent, of a polyvalent phenol and (C) about 25 to about 92 percent by weight of the total composition of an inorganic filler.

5,646,205

ION COMPLEX MEMBRANE AND A METHOD FOR PRODUCING SAME

Kew Ho Lee; Jung Hoon Kim, and Jong Geon Jegal, all of Daejeon, Rep. of Korea, assignors to Korea Research Institute of Chemical Technology, Daejeon, Rep. of Korea

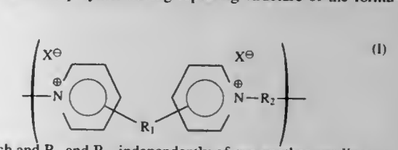
Filed Jun. 14, 1995, Ser. No. 490,124

Claims priority, application Rep. of Korea, Oct. 5, 1994, 1994-25651

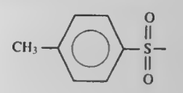
Int. Cl.^{6} C08L *5/00;* **B01D** *53/22;15/04*

U.S. Cl. 524—27 **17 Claims**

1. A cationic polymer having repeating structure of the formula(I)



in which and R_1 and R_2, independenily of one another, are linear or branched C_1– C_{10} alkylene, and bonded at ortho-, meta- or para-position, and X is Br, Cl, F,



or



5,646,206

FILMS FABRICATED FROM MIXTURES OF PECTIN AND POLY(VINYL ALCHOHOL)

David R. Coffin, Glenside, and Marshall L. Fishman, Lansdale, both of Pa., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Continuation-in-part of Ser. No. 51,415, Apr. 23, 1993, Pat. No. 5,451,673. This application Sep. 18, 1995, Ser. No. 529,299

Int. Cl.^{6} C08L *5/00*

U.S. Cl. 524—27 **10 Claims**

1. A film consisting essentially of a blend of pectin and poly(vinyl alcohol) in amounts effective for the formation of a film.

5,646,207

AQUEOUS SIZING COMPOSITIONS FOR GLASS FIBERS PROVIDING IMPROVED WHITENESS IN GLASS FIBER REINFORCED PLASTICS

Philip L. Schell, Assen, Netherlands, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 212,539, Mar. 14, 1994, abandoned. This application Feb. 15, 1995, Ser. No. 388,959

Int. Cl.[6] C08L *3/00*

U.S. Cl. 524—47 20 Claims

1. An aqueous sizing composition for glass fibers adapted to reinforce thermoplastic or thermosetting matrix polymers comprising:

(a) a film forming material compatible with thermosetting or thermoplastic matrix polymers,

(b) a fluorescent whitening agent which is at least dispersed emulsified or solubilized in water,

(c) a coupling agent,

(d) a stabilizing agent, and

(e) a lubricant which is a partial ester of a branched carboxylic acid copolymer.

5,646,208

TRANSESTERIFICATION-INHIBITED POLYESTER MELT BLEND COMPOSITIONS HAVING MODIFIED THERMAL PROPERTIES

Wendell W. Cattron, Hinckley, and Robert J. Schiavone, Geneva, both of Ill., assignors to Amoco Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 434,185, May 3, 1995, abandoned. This application Jul. 19, 1996, Ser. No. 684,709

Int. Cl.[6] C08L *67/02*

U.S. Cl. 524—128 10 Claims

1. A polyester melt blend composition of polyesters comprising:

(a) 10 to 90 parts by weight of a modified polyester compound of modified polyethylene terephthalate containing a transesterification inhibitor, selected from the group consisting of pentaerythritol diphosphite, phosphoric acid, polyphosphoric acid, zinc diisopropyl dithiophosphate, tris(2,4-di-t-butylphenyl) phosphite, tris(monononylphenyl)phosphite and mixtures thereof, wherein said modified polyester compound contains from 0.1 to about 5 weight percent of said transesterification inhibitor,

(b) 10 to 90 parts by weight of a modified polyester compound of modified polyethylene isophthalate containing a transesterification inhibitor, selected from the group consisting of pentaerythritol diphosphite, phosphoric acid, polyphosphoric acid, zinc diisopropyl dithiophosphate, tris(2,4-di-t-butylphenyl) phosphite, tris(mononylphenyl)phosphite and mixtures thereof, wherein said modified polyester compound contains from 0.1 to about 5 weight percent of said transesterification inhibitor, and

(c) said polyester melt blend composition having a melting point T_m within the range of from about 245° C. to about 255° C. by differential scanning calorimetry and a glass transition temperature within the range of from about 60° C. to about 80° C. by differential scanning calorimetry herein each modified polyester compound retains its inherent physical characteristics and provides these characteristics to said melt blend composition to the degree that each modified polyester compound is present in said melt blend composition.

5,646,209

THERMOPLASTIC RESIN COMPOSITION COMPRISING LIQUID CRYSTALLINE POLYESTER, AROMATIC POLYCARBONATE AND GLASS FIBER

Motonobu Furuta, Chiba, and Takanari Yamaguchi, Ibaraki, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed May 19, 1995, Ser. No. 444,686

Claims priority, application Japan, May 20, 1994, 6-106656; May 20, 1994, 6-130950

Int. Cl.[6] C08L *69/00*

U.S. Cl. 524—252 14 Claims

1. A thermoplastic resin composition comprising 100 parts by weight of a mixture of: (A) 1 to 30 wt. % of a liquid crystalline polyester, (B) 99 to 70 wt. % of an aromatic polycarbonate, (C) 1 to 100 parts by weight of glass fibers surfaces of which are not treated and which have a number average fiber diameter of 5 to 25 μm, a number average fiber length of 30 to 1000 μmm, and a ratio of number average fiber length to number average fiber diameter of 2 to 150, and (D) 0.0001 to 3 parts by weight of a diamine.

5,646,210

METHOD FOR THE PREPARATION OF POLYMERIC SPACING PARTICLES

Daniel Timmerman, Mortsel; Ronny De Clercq, Aalter; Geert Defieuw, Kessel-Lo, all of Belgium; Wolfgang Podszun, Köln, Germany, and Rainer Brandt, Walsrode, Germany, assignors to AGFA-Gevaert, N.V., Mortsel, Belgium

Filed Aug. 15, 1995, Ser. No. 515,209

Claims priority, application European Pat. Off., Aug. 24, 1994, 94202424

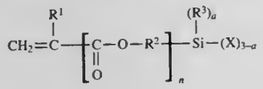
Int. Cl.[6] C08F *2/16*

U.S. Cl. 525—288 9 Claims

1. A method for the preparation of finely divided solid spherical polymer beads having an average particle size between about 0.1 and about 10 μm and having a glass transition temperature of at least 40° C., comprising the steps of:

A) dissolving in an aqueous reaction medium:

1) a silane monomer corresponding to the following general formula:



wherein

R^1= H or CH_3

R^2= a linear or branched C_2–C_{12}—alkylene group, the chain of which may be interrupted by at least one member selected from the group consisting of —O—, —NH—, —COO— or —NH—COO— groups

R^3= a linear or branched C_1–C_6 alkyl group or a phenyl group

X= a hydrolysable group

a= 0, 1 or 2

n= 0 or 1

2) at least one α,β-ethylenically unsaturated monomer, different from said silane monomer, capable of forming a polymer that is soluble in the α,β-ethylenically unsaturated monomer present in said aqueous reaction medium but which is insoluble in water

3) a free radical-forming polymerization initiator that is soluble in the aqueous reaction medium, and

4) a graft-polymerizable polymer containing hydrophilic groups, and capable of forming a graft polymer that remains soluble in said aqueous reaction medium,

wherein the amount of said silane monomer present in said aqueous reaction medium is higher than 1% and lower than 25% in weight with respect to the total monomer content and the weight ratio of said graft-polymerizable polymer to said monomer is in the range from 1.0:100 to 8:100 and the weight ratio of polymerization initiator to monomer from 0.1:100 to 6:100, and

B) heating the solution to a temperature from 50° C. to the reflux temperature thereof with continuous stirring.

5,646,211

AUTODEPOSITION COATING COMPOSITION

Takumi Honda, and Kazuhisa Naito, both of Kanagawa-ken, Japan, assignors to Henkel Corporation, Plymouth Meeting, Pa.

Continuation of Ser. No. 284,404, Aug. 1, 1994, abandoned. This application Apr. 19, 1996, Ser. No. 634,132

Claims priority, application Japan, Jan. 31, 1992, 4-040571

Int. Cl.[6] C08K *3/10*

U.S. Cl. 524—406 19 Claims

1. An aqueous autodeposition coating composition having a pH in the range of about 1.6 to about 5.0 which comprises:

a) water dispersible or water-soluble organic film forming resin;

b) at least one of fluoride ion or fluoride ion and complex fluoride ion;

c) additional metal ions of at least one metal selected from the group consisting of zinc, cobalt, manganese, nickel, iron and aluminum;

d) at least one of tungstate ion and molybdate ion; and

e) water, wherein said aqueous autodeposition coating composition is essentially chromium-free.

5,646,212

POLYALKYLENE GLYCOL ANHYDROXY CARBOXYLIC ACID DISPERSANT

Peter Glynn Hibbert, Newark, Del., assignor to ICI Americas Inc., Wilmington, Del.

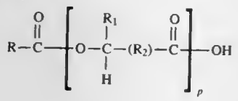
Filed Sep. 2, 1994, Ser. No. 300,287

Int. Cl.[6] C08G *63/00;* C08F *20/00*

U.S. Cl. 524—400 29 Claims

1. A copolymer of the general formula $(A—COO)_2—B$, wherein

A has a molecular weight of at least 500 and is a residue of an oil-soluble complex monocarboxylic acid having the general structural formula:



in which

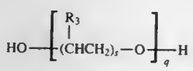
R is hydrogen or a monovalent hydrocarbon group;

R_1 is hydrogen or a monovalent C_1 to C_{24} hydrocarbon group;

R_2 is a divalent C_1 to C_{24} hydrocarbon group;

p is an integer from 1 up to 200;

and wherein each polymeric component B has a molecular weight of less than 500 and is the divalent residue of an alkyl glycol or polyalkylene glycol having the structure of the following general formula:



wherein

R_3 may be the same or different and is selected from the group consisting of hydrogen, methyl, ethyl and propyl;

q is an integer from 1 to 11

s is an integer from 1 to 17.

5,646,213

HIGH-SOLIDS AND POWDER COATINGS FROM HYDROXY-FUNCTIONAL ACRYLIC RESINS

Shao-Hua Guo, West Goshen, Pa., assignor to ARCO Chemical Technology, L.P., Greenville, Del.

Filed Jun. 28, 1996, Ser. No. 673,400

Int. Cl.[6] C08L *29/06;33/06;33/08;33/10*

U.S. Cl. 524—562 25 Claims

1. A high-solids coating which comprises:

(a) an acrylic resin which comprises recurring units of:

(1) an allylic alcohol or a propoxylated allylic alcohol;

(2) a vinyl aromatic monomer; and

(3) one or more acrylate monomers;

(b) a crosslinking agent selected from the group consisting of polyisocyanates, silanes, and melamine compounds;

(c) from about 20 to about 50 wt. % of an organic solvent; and

(d) optionally, a pigment and a crosslinking catalyst.

5,646,214

COATING COMPOSITION CONTAINING POLYESTER POLYMERS WITH TERMINAL CARBAMATE GROUPS AND POLYMERIC POLYOL DERIVED FROM ETHYLENICALLY UNSATURATED MONOMERS

Michael A. Mayo, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

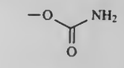
Division of Ser. No. 562,234, Nov. 21, 1995, Pat. No. 5,593,733. This application Aug. 23, 1996, Ser. No. 702,376

Int. Cl.[6] C08G *63/91*

U.S. Cl. 525—10 18 Claims

1. An adherent film-forming composition comprising:

(a) 25 to 70 percent by weight of a polymer or oligomer containing repeating ester groups in the polymer or oligomer backbone and containing a plurality of terminal carbamate groups of the structure:



(b) 30 to 75 percent by weight of a hydroxyl functional polymer derived from ethylenically unsaturated monomers; and

(c) 25 to 50 percent by weight of an aminoplast crosslinking agent;

the percentages by weight of (a) and (b) being based on total resin solids weight of (a) plus (b); the percentage by weight of (c) being based on total weight of resin solids in the film-forming composition.

5,646,215

POLYBUTYLENE CONTAINING REACTIVE UNSATURATED FUNCTIONALITY

Kenneth Michael Lee, Bay City, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Oct. 31, 1996, Ser. No. 740,573

Int. Cl.[6] C08L *73/02;71/02*

U.S. Cl. 525—285 16 Claims

1. A functionalized polybutylene prepared by reacting

(A) an anhydride-functional polybutylene with

(B) an allyl-functional compound having at least one hydroxyl-containing group in its molecule.

5,646,216

INJECTABLE CURABLE COMPOSITION FOR MAKING SOFT RESILIENT INTEROCCLUSAL DENTAL APPLIANCE

Sherman L. Watson, 14447 E. Burnside #202, Portland, Oreg. 97233; Jimmie J. Jones, 4416 SE. 34th St., Portland, Oreg. 97202, and Richard W. Moore, 2103 NW. 272nd Ave., Camas, Wash. 98607

Continuation of Ser. No. 261,859, Jun. 17, 1995, which is a continuation-in-part of Ser. No. 829,728, Mar. 11, 1992, Pat. No. 5,271,590. This application Jun. 13, 1995, Ser. No. 489,761

Int. Cl.[6] C08F *265/04;* A61C *3/00*

U.S. Cl. 252—309 27 Claims

1. A unitary plural-material, interocclusal dental appliance for use in connection with orthodontic/orthopedic treatment of the teeth, jaws and mandible of a patient's mouth, comprising:

a first region made from a first material that provides a relatively hard expanse with first and second surfaces, the second surface being contactable by one such set of teeth;

a second region joined to the first region, and being made from a second mammal that provides a relatively soft, persistently resilient enclosure for the other such set of teeth, the second region including plural zones each of which is structured to allow an adjacent enclosed tooth to move toward the first surface of the first region, with such movement resulting in penetration of corresponding teeth into the relatively hard first material for a relatively precise distance, and with such penetration defining lateral borders in the first material around such teeth so that the appliance accommodates relatively fixed lateral and vertical positioning of the mandible by enclosing such teeth upon desired biting action by the patient.

5,646,217

POLYMER COMPOSITION CONTAINING POLYHYDROXYALKANOATE AND METAL COMPOUND

Timothy Hammond, Cleveland, United Kingdom, assignor to Zeneca Limited, London, England

PCT No. PCT/GB93/02280, § 371 Date May 5, 1995, § 102(e) Date May 5, 1995, PCT Pub. No. WO94/11440, PCT Pub. Date May 26, 1994

PCT Filed Nov. 4, 1993, Ser. No. 433,343

Claims priority, application United Kingdom, Nov. 6, 1992, 9223351

Int. Cl.[6] C08L *67/04;* C08G *63/06*

U.S. Cl. 525—450 9 Claims

1. A polymer composition comprising a first component which is a polyhydroxyalkanoate (PHA), a second component which is a different PHA or a synthetic polyester which is a polypropiolactone, polybutyrolactone, polyvalerolactone, polycaprolactone or copolymer thereof, a polyactide, a polyester containing a combination of a dicarboxylic acid component and diol, the dicarboxylic acid component being selected from the group consisting of malonic, succinic, glutaric, adipic, pimelic, azelaic, sebacic, fumaric, 2,2-dimethylglutaric, suberic, 1,3-cyclopentane dicarboxylic, 1,4-dicyclohexane-dicarboxylic, 1,3-cyclohexane dicarboxylic, diglycolic, iraconic, maleic, 2,5-norbornane dicarboxylic, ester forming derivatives thereof and combinations thereof and the diol being selected from the group consisting of ethylene glycol, diethylene glycol, propylene glycol, 1,3-propanediol, 2,2-dimethyl-1,3-propanediol, 1,3 butanediol, 1,4-butanediol, 1,5-pentanediol, 1,6-hexanediol, 2,2,-trimethyl-1,6-hexanediol, thiodiethanol, 1,3-cyclobutanediol, triethyleneglycol, tetraethyleneglycol, di-, tri-, tetra-propyleneglycol, combinations thereof, a cellulose, cellulose acetate, cellulose butyrate, and the copolymer of succinic acid and butylene glycol, in which 5% to 90% of each of said first and second components are present by weight and 0.1 to 5 phr of at least one transesterification catalyst which is an oxy compound of a metal from Group 11A or 111A or IVA of the Periodic Table, or of a metalloid having a valency of at least 3 from a B Group of the Periodic Table.

5,646,218

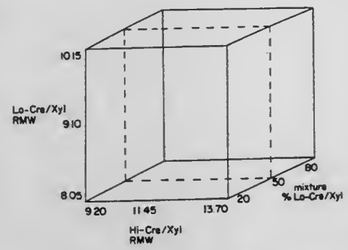
NOVOLAK RESIN BLENDS FOR PHOTORESIST APPLICATIONS

Thomas J. Lynch, North Eastou, Mass.; Chester J. Sobodacha, Coventry, and Dana L. Durham, East Greenwich, both of R.I., assignors to Hoechst-Celanese Corp., Somerville, N.J.

Continuation of Ser. No. 304,317, Sep. 12, 1994, abandoned, which is a division of Ser. No. 996,924, Dec. 29, 1992, Pat. No. 5,374,693. This application Aug. 5, 1996, Ser. No. 692,306

Int. Cl.[6] C08F *283/00;* C08G *8/28;* C08L *61/00;61/06*

U.S. Cl. 525—501 27 Claims



1. A positive photoresist composition comprises an admixture of:

a) a photosensitive component in an amount sufficient to uniformly photosensitize the photoresist composition; and

b) a water insoluble, aqueous alkali soluble novolak resin blend "wherein the lithographic performance, L, equals RMW_a–RMW_b and L is greater than or equal to 2.0, " comprising providing a mixture of two novolak resins, with the same or different chemical composition, relative molecular weights (RMW) that differ by more than about 5% and dissolution rates DR that differ by less than 2.0; and

c) a suitable solvent.

5,646,219

METHOD OF PREPARING BINDER SYSTEM AND PRODUCT THEREOF

Zygmunt Teodorczyk, Batavia, Ill., assignor to Masonite Corporation, Chicago, Ill.

Division of Ser. No. 447,839, May 23, 1995, which is a continuation of Ser. No. 107,522, Aug. 17, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 480,431

Int. Cl.[6] C08F *283/00;* C08G *59/14*

U.S. Cl. 525—524 12 Claims

1. A method for the preparation of a binder system comprising a modified phenol-aldehyde resole resin, comprising the steps of:

(a) reacting a phenolic compound and an aldehyde at a molar ratio of aldehyde to phenolic compound of about 1.2:1 to about 2.0:1, said reaction taking place in the presence of an alkaline catalyst present in an amount of about 0.1 to about 0.2 moles catalyst per mole of said phenolic compound;

(b) reacting a dihydroxybenzene modifier with the product of step (a) wherein (1) the molar ratio of said phenolic compound to said modifier is about 1:1 to about 10:1 and (2) the molar ratio of said aldehyde to the total of said phenolic compound and said modifier is greater than about 1:1; and

(c) combining said modified phenol-aldehyde resin with a curing agent comprising an organic resin comprising an aldehyde to produce said binder system.

5,646,220

CYCLOOLEFIN BLOCK COPOLYMERS AND A PROCESS FOR THEIR PREPARATION

Michael-Joachim Brekner, Frankfurt am Main; Frank Osan, and Jürgen Rohrmann, both of Kelkheim, all of Germany, assignors to Hoechst Aktiengesellschaft, Germany

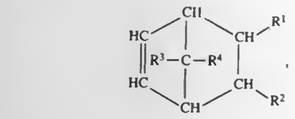
Continuation of Ser. No. 240,823, May 10, 1994, which is a division of Ser. No. 19,094, Feb. 18, 1993, Pat. No. 5,331,057. This application Jun. 1, 1995, Ser. No. 457,357

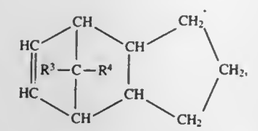
Claims priority, application Germany, Feb. 22, 1992, 42 05 416.8

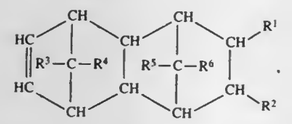
Int. Cl.[6] C08F *4/52;4/602;32/00;297/08*

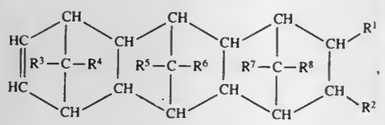
U.S. Cl. 526—160 1 Claim

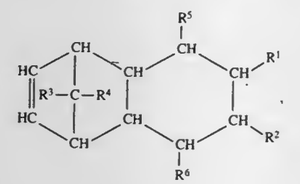
1. A cycloolefin block copolymer obtained by the process of employing 0.1 to 95% by weight with respect to the total amount of the monomer employed, of at least one monomer of the formulae I, II, III, IV, V or VI

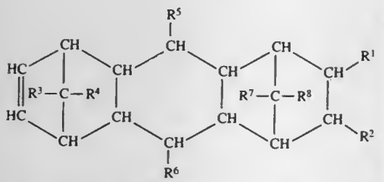

(I)


(II)


(III)


(IV)


(V)


(VI)

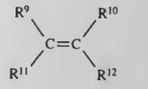
in which R^1, R^2, R^3, R^4, R^5, R^6, R^7 and R^8 are identical or different and are a hydrogen atom or a C_1–C_8-alkyl radical, it being possible for the same radicals in the various formulae to have different meanings,

0 to 95% by weight, with respect to the total amount of monomers employed, of a cycloolefin of the formula VII


(VII)

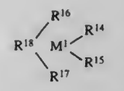
in which n is a number from 2 to 10, and

0 to 99% by weight, with respect to the total amount of monomers employed, of at least one acyclic olefin of the formula VIII


(VIII)

in which R^9, R^{10}, R^{11} and R^{12} are identical or different and are a hydrogen atom or a C_1–C_8-alkyl radical,

polymerizing at temperatures of −78° to 150° C. and a pressure of 0.01 to 64 bar, in the presence of a catalyst, a cocatalyst and a metallocene of the formula XI


(XI)

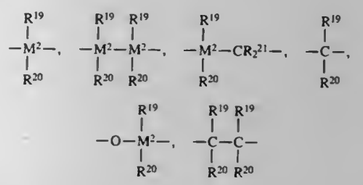
in which

M^1 is titanium, zirconium, hafnium, vanadium, niobium or tantalum,

R^{14} and R^{15} are identical or different and are a hydrogen atom, a halogen atom, a C_1–C_{10}-alkyl group, a C_1–C_{10}-alkoxy group, a C_6–C_{10}-aryl group, a C_6–C_{10}-aryloxy group, a C_2–C_{10}-alkenyl group, a C_7–C_{40}-arylalkyl group, a C_7–C_{40}-alkylaryl group or a C_8–C_{40}-arylalkenyl group,

R^{16} and R^{17} are a mononuclear or polynuclear hydrocarbon radical which can form a sandwich structure with the central atom M^1,

R^{18} is



$=BR^{19}$, $=AlR^{19}$, —Ge—, —Sn—, —O—, —S—, =SO, $=SO_2$, $=NR^{19}$, =CO, $=PR^{19}$, or $=P(O)R^{19}$, where R^{19}, R^{20} and R^{21} are identical or different and are a hydrogen atom, a halogen atom, a C_1–C_{10} -alkyl group, a C_1–C_{10}-fluoroalkyl group, a C_6–C_{10}-fluoroaryl group, a C_6–C_{10}-aryl group, a C_1–C_{10}-alkoxy group, a C_2–C_{10}-alkenyl group, a C_7–C_{40}-arylalkyl group, a C_8–C_{40}-aralkenyl group or a C_7–C_{40}-alkylaryl group, or R^{19} and R^{20}, or R^{19} and R^{21}, form a ring, in each case with the atoms linking them, and

M^2 is silicon, germanium or tin, and, in each case at a molecular weight distribution M_w/M_n of less than 2, always with respect to the polymer block forming, the reaction conditions are changed one or more time in such a way that the monomer/comonomer ratio changes by at least 10% or a further polymerizable monomer of the formulae I–VIII is metered into the monomer or the monomers.

5,646,221

ADHESIVE BASE MATERIAL

Toshio Inagi, Mishima, and Makoto Kanebako, Fuji, both of Japan, assignors to Kowa Co., Ltd., Nagoya, Japan

Filed Mar. 25, 1996, Ser. No. 622,288
Claims priority, application Japan, Mar. 31, 1995, 7-075050
Int. Cl.[6] C08F 224/00
U.S. Cl. 526—238.23 12 Claims

1. An adhesive base material comprising a polymer obtained by polymerizing a glucosyloxy alkyl (meth)acrylate, a hydroxyalkyl (meth)acrylate, an alkyl (meth)acrylate and a polyfunctional monomer, and wherein a molar ratio of the glucosyloxy alkyl (meth)acrylate, hydroxyalkyl (meth)acrylate and alkyl (meth)acrylate falls within a range of 0.1–10:10–40:5–20.

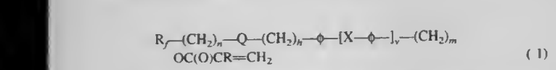
5,646,222

POLYFLUOROHYDROCARBON GROUP-CONTAINING MONOMERS, THEIR POLYMERS AND APPLICATIONS OF THE POLYMERS

Takashige Maekawa; Ryoko Osawa; Satoshi Kamata, and Seisaku Kumai, all of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Division of Ser. No. 394,207, Feb. 24, 1995, Pat. No. 5,565,607, which is a continuation of Ser. No. 83,534, Jun. 30, 1993, abandoned. This application Jul. 16, 1996, Ser. No. 682,010
Claims priority, application Japan, Jul. 3, 1992, 4-200680; Feb. 9, 1993, 5-044566
Int. Cl.[6] C08F 12/30
U.S. Cl. 526—243 14 Claims

1. A polymer of at least one type of a polyfluorohydrocarbon group-containing acrylate of the formula (1):



$$R_f\text{—}(CH_2)_n\text{—}Q\text{—}(CH_2)_h\text{—}\phi\text{—}[X\text{—}\phi\text{—}]_y\text{—}(CH_2)_m\text{—}OC(O)CR{=}CH_2 \quad (1)$$

wherein R_f is a polyfluorohydrocarbon group having from 2 to 22 carbon atoms to which fluorine atoms are bonded, wherein some of such carbon atoms may be substituted by ether-type oxygen atoms,

ϕ is a p-phenylene group which may be substituted by one or more halogen atoms selected from fluorine and chlorine, provided that when a plurality of ϕ are present in one molecule, such plurality of ϕ may be the same or different from one another,

R is a hydrogen atom, a methyl group, a fluorine atom, a chlorine atom or a bromine atom,

Q is a oxygen atom or a sulfur atom,

X is a single bond, —CH=CH—, —N=CH—, —CH=N—, or —C(O)—,

n is an integer of from 1 to 22,

h is an integer of from 0 to 22,

m is an integer of from 1 to 11, and

y is an integer of from 0 to 5.

5,646,223

PERFLUORODIOXOLES, THE PREPARATION PROCESS THEREOF, AND HOMOPOLYMERS AND COPOLYMERS THEREFROM

Walter Navarrini, Boffalora Ticino; Vito Tortelli; Pasqua Colaianna, both of Milan, and Julio A. Abusleme, Saronno, all of Italy, assignors to Ausimont S.p.A., Milan, Italy

Division of Ser. No. 560,196, Nov. 21, 1995, Pat. No. 5,571,932, which is a division of Ser. No. 466,387, Jun. 6, 1995, Pat. No. 5,495,028, which is a division of Ser. No. 270,149, Jul. 1, 1994, Pat. No. 5,498,682. This application Aug. 7, 1996, Ser. No. 694,509
Claims priority, application Italy, Jul. 5, 1993, MI93A1445
Int. Cl.[6] C08F 16/24
U.S. Cl. 526—247 6 Claims

1. Polymers selected from the group consisting of homopolymers of perfluorodioxoles having the following formula:



(I)

wherein: R_F is a perfluoroalkyl radical having from 1 to 5 carbon atoms; and X_1 and X_2, equal or different from each other, are F or CF_3, and copolymers of perfluorodioxoles of formula (I) with one or more comonomers having olefinic unsaturation.

5,646,224

RUBBER COMPOSITION

Takashi Kawata; Shoei Tsuji, both of Mie-ken, and Yoji Mori, Yokkaichi, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Jan. 3, 1996, Ser. No. 580,998
Claims priority, application Japan, Jan. 19, 1995, 7-023290
Int. Cl.[6] C08L 23/16;19/00; C08F 210/18
U.S. Cl. 526—282 10 Claims

1. A rubber composition comprising a single ethylene-α-olefin-non-conjugated diene copolymer in which the non-conjugated diene is a combination of 5-ethylidene-2-norbornene and dicyclopentadiene, and which has

(1) a Mooney viscosity (ML_{1+4}, 100° C.) of 80 to 200,

(2) a weight average molecular weight/number average molecular weight ratio of 6 or more as measured by a gel permeation chromatography (GPC), and

(3) a stress-retention of 0.2 or more after 100 seconds at 80° C. in the compression type stress-relaxation test.

5,646,225

WATER-REDUCIBLE RESINS FOR COATINGS AND 1NKS

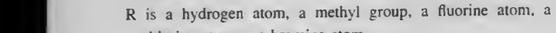
Shao-Hua Guo, West Goshen, Pa., assignor to ARCO Chemical Technology, L.P., Greenville, Del.

Filed May 13, 1996, Ser. No. 645,393
Int. Cl.[6] C08F 20/06
U.S. Cl. 526—318.5 8 Claims

1. A water-reducible resin which comprises recurring units of:

(a) from about 50 to about 90 wt. % of a vinyl aromatic monomer;

(b) from about 5 to about 50 wt. % of a propoxylated allyl alcohol of the formula:



$$CH_2{=}CR\text{—}CH_2\text{—}(A)_n\text{—}OH$$

in which A is an oxypropylene group, R is hydrogen or a C_1–C_4 alkyl group, and n, which is the average number of oxypropylene groups in the propoxylated allyl alcohol, has a value within the range of about 1 to about 2; and

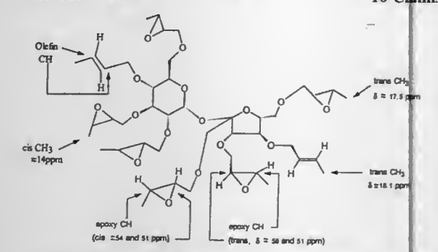
(c) from about 1 to about 50 wt. % of an acrylic acid monomer; wherein the resin has a number average molecular weight within the range of about 500 to about 10,000, a hydroxyl number within the range of about 15 to about 250 mg KOH/g, and an acid number within the range of about 5 to about 330 mg KOH/g.

5,646,226

EPOXY MONOMERS FROM SUCROSE

Navzer D. Sachinala, Aiea, Hi., and Morton H. Litt, Cleveland, Ohio, assignors to Hawaii Agriculture Research Center, Aiea, Hi.

Division of Ser. No. 388,569, Feb. 14, 1995, Pat. No. 5,571,907, which is a continuation-in-part of Ser. No. 199,695, Feb. 28, 1994, Pat. No. 5,470,931, which is a continuation-in-part of Ser. No. 28,545, Mar. 8, 1993, abandoned, which is a continuation-in-part of Ser. No. 877,813, May 4, 1992, Pat. No. 5,248,747, which is a continuation-in-part of Ser. No. 697,983, May 10, 1991, Pat. No. 5,116,961, which is a continuation-in-part of Ser. No. 623,548, Dec. 7, 1990, abandoned. This application Jun. 6, 1996, Ser. No. 659,593
Int. Cl.[6] C08G 59/20
U.S. Cl. 527—306 16 Claims



1. A method for producing a crosslinked resin, which comprises reacting a mixture comprising:

(a) sucrose-based epoxy monomers having one to eight epoxy groups per molecule of sucrose; and

(b) a curing agent, in relative amounts sufficient to produce a sucrose-based crosslinked resin.

12. The crosslinked resin produced by the method of claim 1.

14. An adhesive comprising a sucrose-based epoxy resin.

5,646,227

LOW SURFACE ENERGY POLYISOCYANATES AND THEIR USE IN ONE- OR TWO-COMPONENT COATING COMPOSITIONS

William E. Slack, Moundsville, W. Va.; Edward P. Squiller, and Philip E. Yeske, both of Pittsburgh, Pa., assignors to Bayer Corporation, Pittsburgh, Pa.

Filed Feb. 1, 1996, Ser. No. 593,129
Int. Cl.[6] C08G 77/04
U.S. Cl. 528—28 20 Claims

1. A polyisocyanate mixture

i) having an NCO content of 5 to 35% by weight and prepared from an organic diisocyanate,

ii) containing up to 25% by weight of isocyanurate groups (calculated as N_3, C_3, O_3, MW 126),

iii) containing allophanate groups in an amount such that there are more equivalents of allophanate groups than urethane and urea groups and such that the polyisocyanate mixture remains stable and homogeneous in storage for 3 months at 25° C. and

iv) containing siloxane groups (calculated as SiO, MW 44) in an amount of 0.002 to 50% by weight,

wherein the preceding percentages are based on the solids content of the polyisocyanate mixture, excluding any unreacted organic diisocyanate, and wherein the siloxane groups are incorporated by reacting an isocyanate group with a compound containing two or more isocyanate-reactive groups directly attached to carbon atoms and one or more siloxane groups.

174–432 O.G.–97–17: QL3

5,646,228

PROCESS FOR THE PREPARATION OF BLOCKED POLYISOCYANATES, AND THEIR USE IN POLYURETHANE COATING SYSTEMS

Rainer Gras, Bochum, and Siegfried Brandt, Haltern, both of Germany, assignors to Huels Aktiengesellschaft, Marl, Germany

Division of Ser. No. 351,165, Nov. 30, 1994, Pat. No. 5,541,279. This application Mar. 16, 1995, Ser. No. 405,355
Claims priority, application Germany, Feb. 28, 1994, 44 06 443.8
Int. Cl.[6] C08G 18/81
U.S. Cl. 528—45 16 Claims

1. A process for the preparation of a totally or partially blocked polyisocyanate comprising continuously reacting in an apparatus selected from the group consisting of an intensive kneading apparatus, a single screw extruder and a multi-screw extruder, a blocking agent, a polyisocyanate containing at least two free NCO groups and a chain extender, wherein said reaction is solvent-free, to result in a blocked polyisocyanate.

5,646,229

COMPOSITIONS FOR MOISTURE CURING HOT MELT ADHESIVES

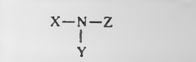
Kazuho Kudo, Shiga-ken, Japan, assignor to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 272,121, Jul. 8, 1994, abandoned, which is a continuation of Ser. No. 937,855, Oct. 15, 1992, abandoned. This application May 6, 1996, Ser. No. 643,526
Claims priority, application Japan, Apr. 8, 1991, 3-75161
Int. Cl.[6] C08G 18/00;18/08;18/18
U.S. Cl. 528—53 22 Claims

1. A moisture curing hot melt adhesive composition consisting essentially of:

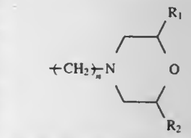
100 parts by weight of a urethane prepolymer having an isocyanate group in its end which is obtained by the addition reaction of a polyol having a hydroxyl group in its molecular end and a polyisocyanate having an isocyanate group in its molecular end, said polyol having a hydroxyl group in its molecular end being a polyalkylene glycol; and

0.01 to 5 parts by weight of a compound having a structure represented by the following formula:



$$X\text{—}N(Y)\text{—}Z \quad (I)$$

(wherein X, Y and Z in the formula (I) are alkyl groups or groups represented by the following formula (II), and at least one of X, Y and Z is a group represented by the following formula (II):



$$+CH_2\rightarrow_n N(R_1)(R_2)\text{—}O \quad (II)$$

n in the formula (II) is an integer from 1 to 2, and R_1 and R_2 are hydrogen or alkyl groups).

5,646,230

ISOCYANATE-TERMINATED PREPOLYMERS, A PROCESS OF PRODUCING POLYURETHANE/POLYUREA ELASTOMERS THEREFROM, AND THE RESULTANT ELASTOMERS

Richard S. Pantone, New Martinsville; James W. Rosthauser, Glendale, and Karl W. Haider, New Martinsville, all of W. Va., assignors to Bayer Corporation, Pittsburgh, Pa.

Filed Dec. 21, 1995, Ser. No. 575,979

Int. Cl.[6] C08G *18/75*

U.S. Cl. 528—64 **13 Claims**

1. An isocyanate-terminated prepolymer having a viscosity less than about 6000 mPa•s at 80° C. and an NCO content of about 3 to 10%, and comprising the reaction product of

a) an aromatic diisocyanate,

b) a polyether polyol having an OH number of about 25 to 125 and containing from about 1.8 to 2.5 hydroxyl groups, and

c) an aliphatic diisocyanate,

wherein the equivalents ratio of said polyether polyol to said aromatic diisocyanate is from about 1.0:0.7 to 1.0:1.1.

5,646,231

RIGID-ROD POLYMERS

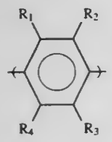
Matthew Louis Marrocco, III, Santa Ana; Robert R. Gagné, Pasadena, and Mark Steven Trimmer, Monrovia, all of Calif., assignors to Maxdem, Incorporated, San Dimas, Calif.

Continuation of Ser. No. 847,321, Mar. 6, 1992, abandoned, which is a continuation-in-part of Ser. No. 397,732, Aug. 23, 1989, Pat. No. 5,227,457, which is a continuation-in-part of Ser. No. 157,451, Feb. 17, 1988, abandoned. This application Jan. 5, 1995, Ser. No. 369,162

Int. Cl.[6] C08G *8/02;14/00*

U.S. Cl. 528—125 **26 Claims**

1. A soluble rigid rod polymer having repeat units of the formula:



wherein each R_1, R_2, R_3 and R_4 on each monomer unit, independently, is H or a solubilizing side group, where at least one out of one hundred of the monomer units incorporate a solubilizing side group and wherein the polymer has an intrinsic viscosity of greater than about 3 deciliters/gram when measured at 40° C. in a solvent selected from the group consisting of 0.05M lithium bromide in N-methylpyrrolidinone, N-methylpyrrolidinone, dimethylacetamide, phenylether, m-cresol, sulfuric acid, anisole, 5% N-methylpyrrolidinone/95% $CHCl_3$, and chlorobenzene.

5,646,232

RIGID-ROD POLYMERS

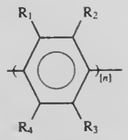
Matthew Louis Marrocco, III, Santa Ana; Robert R. Gagné , Pasadena, and Mark Steven Trimmer, Monrovia, all of Calif., assignors to Maxdem Incorporated, San Dimas, Calif.

Division of Ser. No. 369,162, Jan. 5, 1995, which is a continuation of Ser. No. 847,321, Mar. 6, 1992, abandoned, which is a continuation-in-part of Ser. No. 397,732, Aug. 23, 1989, Pat. No. 5,227,457, which is a continuation-in-part of Ser. No. 157,451, Feb. 17, 1988, abandoned. This application Jun. 1, 1995, Ser. No. 456,396

Int. Cl.[6] C08G *8/00*

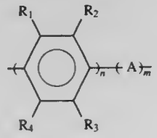
U.S. Cl. 528—126 **3 Claims**

1. A process for the preparation of a rigid-rod polymer having monomer repeat units of the formula:

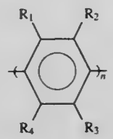


wherein R_1 on each monomer unit is benzoyl and R_2–R_4 on each monomer unit are independently selected from H or a solubilizing side group, where at least one out of one hundred of the monomer units incorporates a solubilizing side group and wherein the polymer has a number average degree of polymerization of at least about 25, the process comprising reductive coupling polymerization of 2,5-dichlorobenzophenone with Zn in an anhydrous amide solvent in the presence of 1) a nickel catalyst, 2) a promoter selected from the group consisting of nil, alkali metal chlorides, alkali metal bromides, alkali metal iodides, and zinc chloride, and 3) a phosphine ligand.

3. A process for the preparation of a segmented rigid-rod polymer having the formula



wherein



is a rigid-rod polyphenylene segment and wherein each R_1, R_2, R_3 and R_4 on each monomer unit, independently, is H or a solubilizing side group, where at least one out of one hundred of the monomer units in the rigid-rod segments incorporate a solubilizing side group, and

$$-[A]_m-$$

are non-rigid segments, wherein n is the average number of monomer units in the rigid-rod polyphenylene segments, and wherein said rigid-rod polyphenylene segments have a number average segment length (SL_n) of at least about 8, and m is 1 or greater, the process comprising reductive coupling polymerization of an aroyl-2,5-dichlorobenzene and a non-rigid dichloroarene with Zn in a anhydrous amide solvent in the presence of 1) a nickel catalyst, 2) a promoter selected from the group consisting of nil, alkali metal chlorides, alkali metal bromides, alkali metal iodides, and zinc chloride, and 3) a phosphine ligand.

5,646,233

POLYCARBONATE COPOLYCARBONATE RESIN COMPOSITIONS AND PREPARING METHOD THEREOF

Takeshi Sakashita, Utsunomiya; Tomoaki Shimoda, Moka, and Takashi Nagai, Utsunomiya, all of Japan, assignors to General Electric Company, Pittsfield, Mass.

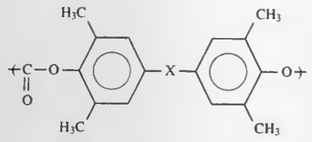
Filed Dec. 1, 1995, Ser. No. 555,100

Claims priority, application Japan, Dec. 28, 1994, 6-327767

Int. Cl.[6] C08G *63/64*

U.S. Cl. 528—176 **3 Claims**

1. A copolycarbonate comprising component units in the amount of 50–99 mole % having the formula



wherein

X is



R_1 and R_2 are phenyl.

5,646,234

PRODUCTION OF FIBERS OR FILMS USING SPECIFIC FORMING SOLUTIONS AND THE FIBERS OF FILMS OBTAINABLE THEREBY

Holger Jung, Niedernhausen; Richard Neuert, Winkelhaid; Peter Klein, Wiesbaden, and Georg-Emerich Miess, Regensburg, all of Germany, assignors to Hoechst AG, Frankfurt, Germany

Filed Apr. 4, 1995, Ser. No. 416,148

Claims priority, application Germany, Apr. 6, 1994, 44 11 755.8

Int. Cl.[6] C08G *69/12*

U.S. Cl. 528—184 **21 Claims**

1. A process for producing fibers or films, comprising the following steps:

a) preparing an aromatic polyamide by polycondensation of dicarbonyl dihalides or mixtures thereof with at least two diamines in N-alkyllactams as solvent, optionally in the presence of a salt for enhancing the solubility of the aromatic polyamide in said solvent, the polycondensation being of at least 90 mol%, based on the total amount of discarbonyl dihalides in the reaction mixture, of compounds of the formula I or mixtures of such compounds

Hal—OC—Ar^1—CO—Hal (I)

with at least 90 mol%, based on the total amount of diamines in the reaction mixture, of compounds of the formula I and optionally III or mixtures of such compounds

H_2N—Ar^2—NH_2 (II), H_2N—Ar^3—NH_2 (III)

where Ar^1 and Ar^2 are independently of each other a bivalent aromatic radical and Ar^3 is a bivalent aromatic radical the proportion of structural repeat units in the aromatic polyamide derived from the compounds of the formula II, based on the proportion of the structural repeat units derived from the compounds of the formula II and III, being at least 50 mol%, and said aromatic polyamide is soluble in organic solvents,

b) optionally storing the reaction solution obtained in step a) at temperatures from 40° to 100° C.,

c) forcing the solution of the aromatic polyamide obtained in step a) and optionally stored as per step b) through dies of the desired cross-sectional shape at temperatures from 40° to 120° C. to form fibers or films,

d) removing the organic solvent to produce solvent-leaner or -free fibers or films sufficiently mechanically stable and non-tacky for further processing, and

e) optionally drawing the resulting fibers or films and wherein a neutralization step is not carried out after the aromatic polyamide has been prepared.

5,646,235

REDUCTIVE ALKYLATION OF POLYAMINES

Robert LeRoy Zimmerman, Austin; Wheeler Conrad Crawford, Houston, and Rodney Frederick Lloyd, Katy, all of Tex., assignors to Huntsman Petrochemical Corporation, Austin, Tex.

Continuation of Ser. No. 410,847, Mar. 27, 1995, abandoned. This application Jun. 18, 1996, Ser. No. 665,989

Int. Cl.[6] C08G *12/04*

U.S. Cl. 528—266 **8 Claims**

1. A method for producing a tertiary amine, said method comprising:

subjecting a polyamine having at least two primary amino groups to a reaction zone in the presence of a hydrogenation catalyst and hydrogen under reductive conditions; and

continuously over a predetermined period of time supplying a carbonyl compound to said reaction zone to reductively alkylate said polyamine having at least two primary amino groups,

said carbonyl compound is a carbonyl compound of formula (I)

(I)

wherein R^1 and R^2 each independently represents a hydrogen atom, a saturated or unsaturated, linear, branched or cyclic aliphatic hydrocarbon group having from 1 to 24 total carbon atoms, an aromatic group-substituted aliphatic hydrocarbon group having at most 24 total carbon atoms, or a substituted or unsubstituted aromatic hydrocarbon group having at most 24 total carbon atoms, or R^1 and R^2 in combination form an aliphatic hydrocarbon ring.

5,646,236

POLYESTERS AND THEIR USE AS ADDITIVES IN COATING COMPOSITIONS

Markus A. Schafheutle, Hochheim; Achim Voelker, Wiesbaden; Susanne Wehner, Villmar; Gerd Walz, Wiesbaden, and Joachim Zoeller, Mainz, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Filed Jan. 30, 1995, Ser. No. 380,662

Claims priority, application Germany, Jul. 1, 1994, 44 23 141.5

Int. Cl.[6] C08G *63/44;69/44*

U.S. Cl. 528—288 **30 Claims**

1. A polyester obtained by reacting compounds consisting of

(A) from 5 to 50 parts of at least one linear or branched, aliphatic or cycloaliphatic, at least dihydric alcohol selected from the group consisting of: linear, aliphatic diols (A1) selected from the group consisting of ethylene glycol, 1,2-propylene glycol, 1,2-butylene glycol, 1,3-propane diol, 1,4-butane diol, 1,6-hexane diol and 1,12-dodecane diol; branched, aliphatic diols (A2) selected from the group consisting of isobutylene glycol, neopentyl glycol, pinacol, 3-methyl 1,2-butane diol and 3,4-diethyl hexane diol; cycloaliphatic diols (A3) selected from the group consisting of cyclohexane diol, perhydrogenated bisphenol A and cyclohexane dimethanol; polyhydric linear alcohols (A4) selected from the group consisting of glycerol, erythritol, arabitol, adonitol, xylitol, mannitol, sorbitol, perseitol and volemitol; and polyhydric alcohols (A5) selected from the group consisting of trimethylol ethane, trimethylol propane, pentaerythitol, dipentaerythritol and ditrimethylol propane,

(B) from 2 to 40 parts of at least one at least dibasic, aromatic carboxylic acid,

(C) from 0 to 40 parts of at least one 2-alkenyldicarboxylic anhydride,

(D) from 10 to 30 parts of at least one at least dibasic, linear or branched, aliphatic carboxylic acid,

(E) from 0 to 15 parts of an aliphatic, linear or branched hydroxy acid,

(F) from 2 to 15 parts of an aliphatic, linear or branched polyamine having at least one primary and at least one secondary or tertiary amino group,

(G) from 0 to 15 parts of a glycidyl ester of a branched, aliphatic monocarboxylic acid or of a glycidyl ether of a branched, aliphatic alcohol, and

(H) from 0 to 15 parts of polyhydroxyamine, wherein parts are parts by weight and the total parts add up to 100.

5,646,237

WATER-DISPERSIBLE COPOLYESTER-ETHER COMPOSITIONS

Scott Ellery George; Edgar William Lefler, IV, and James Marshall Spain, Jr., all of Kingsport, Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Aug. 15, 1995, Ser. No. 515,400

Int. Cl.[6] C08G *63/688*

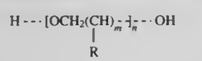
U.S. Cl. 528—295 **9 Claims**

1. A linear, water-dispersible sulfopolyester having a Tg of −20° C. to 100° C. and an inherent viscosity of 0.1 to 1.1 dl/g, said sulfopolyester consisting essentially of the reaction product of:

(A) 60 to 95 mole %, based on moles of acid in the sulfopolyester, of at least one difunctional dicarboxylic acid which is not a sulfomonomer, said dicarboxylic acid being selected from the group consisting of succinic, glutaric, adipic, azelaic, sebacic, fumaric, maleic, itaconic, 1,3-cyclohexane dicarboxylic, 1,4-cyclohexanedicarboxylic, diglycolic, 2,5-norbornanedicarboxylic, phthalic, terephthalic, 1,4-naphthalenedicarboxylic, 2,5-naphthalenedicarboxylic, diphenic, 4,4'-oxydibenzoic, 4,4'-sulfonyldibenzoic, and isophthalic acid;

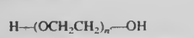
(B) 5 to 40 mole %, based on moles of acid in the sulfopolyester, of at least one difunctional sulfomonomer selected from the group consisting of sulfophthalic acid, sulfoterephthalic acid, sulfoisophthalic acid, 4-sulfonaphthalene-2,7-dicarboxylic acid, and esters thereof;

(C) 0.1 to 50 mole %, based on moles of glycol in the sulfopolyester, of at least one higher order polyalkylene glycol having a number average molecular weight of 650 to 2,000 and having the structure:



wherein R is selected from the group consisting of hydrogen and an alkyl group having 1 to 12 carbon atoms, n is an integer of 2 to 200, m is an integer of 1 to 10 when R is an alkyl group or m is an integer of 2 to 10 when R is hydrogen, provided that the mole % of the higher order polyalkylene glycol is inversely proportional to the value of n;

(D) 0.1 to 99.9 mole %, based on moles of glycol in the sulfopolyester, of at least one polyethylene glycol having a number average molecular weight of less than 300 and having the structure:



wherein n' is an integer of 2 to 500 provided that the mole % of the polyethylene glycol is inversely proportional to the value of n'; and

(E) 10 to 75 mole %, based on moles of glycol in the sulfopolyester, of a glycol which is not a polyalkylene or polyethylene glycol, said glycol being selected from the group consisting of cycloaliphatic glycols having 6 to 20 carbon atoms, aliphatic glycols having 3 to 20 carbon atoms, and mixtures thereof;

the sulfopolyester containing substantially equal molar proportions of acid equivalents (100 mole percent) and glycol equivalents (100 mole percent).

5,646,238

PREPARATION PROCESS OF POLYHYDROXYCARBOXYLIC ACID

Kan Ikeda; Shoji Obuchi, and Masahiro Ohta, all of Fukuoka-ken, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Jul. 18, 1995, Ser. No. 503,768

Claims priority, application Japan, Jul. 27, 1994, 6-175137; Jul. 27, 1994, 6-175138; Aug. 26, 1994, 6-201896; Aug. 29, 1994, 6-203135

Int. Cl.[6] C08G *63/06*

U.S. Cl. 528—361 **7 Claims**

1. A process for preparing solid polyhydroxycarboxylic acid consisting essentially of charging an organic solvent solution of polyhydroxycarboxylic acid into a kneader and discharging a solid mixture of the polymer and the organic solvent while carrying out cooling and kneading or consisting essentially of cooling and solidifying an organic solvent solution of polyhydroxycarboxylic acid to obtain a solid mixture of the polymer and the organic solvent and thereafter grinding the solid mixture of the polymer and the organic solvent.

5,646,239

ORGANIC PRODUCTS CONTAINING REACTIVE THIOL FUNCTIONS, ONE METHOD FOR PREPARING SAME, AND BIOMATERIALS CONTAINING SAID PRODUCTS

Alain Constancis, Lyons, and Gérard Soula, Meyzieu, both of France, assignors to Flamel Technologies, France

PCT No. PCT/FR94/00914, § 371 Date Mar. 6, 1996, § 102(e) Date Mar. 6, 1996, PCT Pub. No. WO95/03272, PCT Pub. Date Feb. 2, 1995

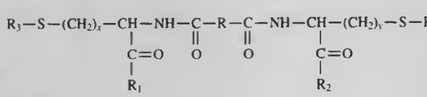
PCT Filed Jul. 21, 1994, Ser. No. 578,539

Claims priority, application France, Jul. 21, 1993, 93 09198

Int. Cl.[6] C08G *75/00*

U.S. Cl. 528—373 **43 Claims**

1. Organic product containing at least two thiol or derived functions or carbonyl functions, said organic product having the following general formula:

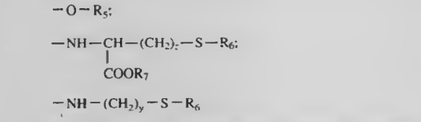


(I)

in which:

R is a hydrocarbon chain,

R_1 and R_2 are identical or different and are chosen from the following groups:



R_3, R_4, R_5, R_6 and R_7 independently represent hydrogen or an aliphatic group, an alicyclic group or an aromatic group,

x,y and z=1 or 2,

with the exception of the products of formula (I) in which:

R=—$(CH_2)_t$ with T=2, 4 or 6 to 12,

R_1 and R_2 are identical and correspond to OH, —O—alkyl, —NH_2 or —N—alkyl,

R_3 and R_4 are identical and represent hydrogen, —CH_3 or —CH_2—COOH,

x and y are identical and are equal to 1 or 2.

5,646,240

DIGUANAMINES AND PREPARATION PROCESS, DERIVATIVES AND USE THEREOF

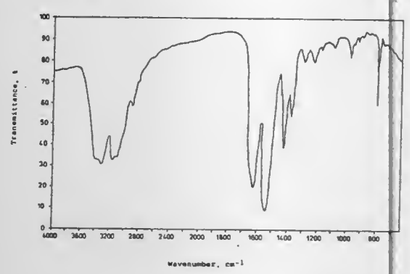
Tetsuya Oishi, Kanagawa-ken; Jin Suzuki, Tokyo; Koubei Ohkawa, Kanagawa-ken, and Hiroshi Ono, Osaka, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Division of Ser. No. 414,011, Mar. 30, 1995, which is a division of Ser. No. 201,391, Feb. 24, 1994, Pat. No. 5,596,039, which is a continuation-in-part of Ser. No. 186,550, Jan. 26, 1994, abandoned, which is a continuation of Ser. No. 983,855, Mar. 2, 1993, abandoned. This application Mar. 21, 1996, Ser. No. 619,084

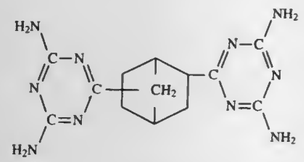
Claims priority, application Japan, Feb. 24, 1993, 5-035198; Feb. 24, 1993, 5-035199; Feb. 24, 1993, 5-035200; Mar. 3, 1993, 5-043048; Mar. 12, 1993, 5-051775; Apr. 14, 1993, 5-087499

Int. Cl.[6] C08G *59/00;73/06*

U.S. Cl. 528—403 **5 Claims**

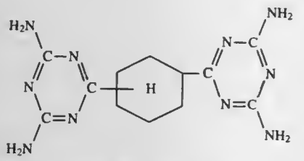


1. A process for the preparation of a diguanamine derivative, which comprises reacting at least one diguanamine selected from diguanamines represented by the following formula (1):



(1)

wherein the bonding sites of the 4,6-diamino-1,3,5-triazin-2-yl groups are the 2,5- or 2,6-positions, or by the following formula (2):



(2)

wherein the bonding sites of the 4,6-diamino-1,3,5-triazin-2-yl groups are the 1,2-, 1,3- or 1,4-positions, with at least one amine selected from amines containing at least one amino group and at least two carbon atoms.

5,646,241

BLEED RESISTANT CYANATE ESTER-CONTAINING COMPOSITIONS

Stephen M. Dershem, and Deborah L. Derfelt, both of San Diego, Calif., assignors to Quantum Materials, Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 439,975, May 12, 1995, abandoned. This application Jun. 7, 1995, Ser. No. 475,006

Int. Cl.[6] C08G *73/00;* **C08K** *5/16*

U.S. Cl. 528—422 **25 Claims**

1. A composition for attaching a device to a substrate, said composition comprising:

a monomer vehicle comprising at least one polycyanate ester monomer;

a quantity of a tertiary amine sufficient to reduce resin bleed upon application of said composition to a substrate; wherein said tertiary amine has in the range of about 18 up to about 100 total carbon atoms, and wherein one side chain of said tertiary amine is at least about 16 carbon atoms in length; and optionally

a metal catalyst.

5,646,242

SELECTIVE ACYLATION OF EPSILON-AMINO GROUPS

Jeffrey C. Baker; Victor J. Chen, both of Indianapolis; Jose M. Hanquier, Martinsville; Aidas Kriauciunas; Brian A. Moser, both of Indianapolis, and Robert T. Shuman, Greenwood, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Nov. 17, 1994, Ser. No. 341,231

Int. Cl.[6] A61K *38/28;* **C07K** *14/62*

U.S. Cl. 530—303 **21 Claims**

1. A process of selectively acylating proinsulin, insulin, or an insulin analog having one or more free α-amino groups, and a free ε-amino group with a fatty acid, which comprises reacting the ε-amino group with a soluble activated fatty acid ester at pH greater than about 9.0 in a polar solvent.

5,646,243

Patent Not Issued For This Number

5,646,244

CYCLODEPSIPEPTIDE COMPOUND

Hitoshi Nishiyama, Neyagawa; Masaru Ohgaki, Kobe; Ryo Yamanishi, Ibaraki, and Toshihiko Hara, Miho-mura, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

PCT No. PCT/JP94/01446, § 371 Date Mar. 6, 1996, § 102(e) Date Mar. 6, 1996, PCT Pub. No. WO95/07272, PCT Pub. Date Mar. 16, 1995

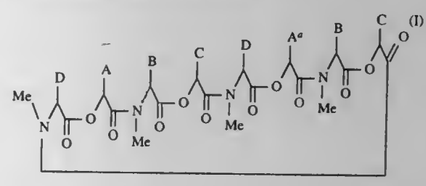
PCT Filed Aug. 31, 1994, Ser. No. 605,064

Claims priority, application Japan, Sep. 6, 1993, 5-246323

Int. Cl.[6] C07K *11/02;* **A61K** *1/395*

U.S. Cl. 530—317 **11 Claims**

1. A compound of the general formula:



(I)

wherein A is a substituted benzyl group,
A^a, B and D are each lower alkyl, and
C is hydrogen or lower alkyl,
or a salt thereof.

5,646,245

PROCESS FOR PREPARING SIDE CHAIN DERIVATIVES OF CYCLOHEXAPEPTIDYL LIPOPEPTIDES

James M. Balkovec, 210 Clinton Ave., North Plainfield, N.J. 07063; Frances A. Bouffard, 1521 Cooper Rd., Scotch Plains, N.J. 07076; James F. Dropinski, 307 Hampshire Ct., Piscataway, N.J. 08854; Akinlolu A. Adefarati, 180C Overlook Ct., Woodbridge, N.J. 07095, and Jan S. Tkacz, 620 South Randolphville Rd., Piscataway, N.J. 08854

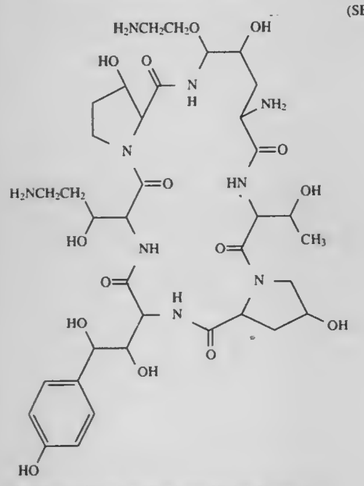
Continuation of Ser. No. 295,176, Aug. 23, 1994, abandoned. This application May 16, 1996, Ser. No. 648,741

Int. Cl.[6] C07K *7/64;* **A61K** *38/12*

U.S. Cl. 530—317 **1 Claim**

1. A compound having the formula

(SEQ ID NO. 4)



and pharmaceutically acceptable salts thereof.

5,646,246

ISOLATION AND STRUCTURAL ELUCIDATION OF THE HUMAN CANCER CELL GROWTH INHIBITORY CYCLIC PEPTIDES PHAKELLISTATIN 4, 5, 6, 7, 8 AND 9

George R. Pettit, Paradise Valley, and Junping Xu, Tempe, both of Ariz., assignors to Arizona Board of Regents acting on behalf of Arizona State University, Tempe, Ariz.

Filed Nov. 14, 1994, Ser. No. 338,383

Int. Cl.[6] C07K *5/12;7/64*

U.S. Cl. 530—321 **14 Claims**

1. A cyclic peptide selected from the group consisting of phakellistatin 4, phakellistatin 5, phakellistatin 6, phakellistatin 7, phakellistatin 8, and phakellistatin 9.

5,646,247

MEROZOITE ANTIGENS LOCALIZED AT THE APICAL END OF THE PARASITE

John W. Barnwell, and Mary R. Galinski, both of New York, N.Y., assignors to New York University, New York, N.Y.

Continuation-in-part of Ser. No. 334,270, Apr. 6, 1989, abandoned, and Ser. No. 608,639, Nov. 2, 1990, abandoned, which is a continuation of Ser. No. 334,041, Apr. 5, 1989, abandoned. This application Oct. 4, 1991, Ser. No. 792,865

Int. Cl.[6] C07K *14/44;* **C12N** *15/30;* **A61K** *39/005;39/00*

U.S. Cl. 530—350 **4 Claims**



1. A purified, isolated antigen immunochemically reactive with antibodies raised against native merozoite apical end protein (MAEP), wherein said antigen comprises an amino acid sequence encoded by a nucleic acid sequence selected from the group consisting of SEQ I.D. No. 1 and SEQ I.D. No. 2.

5,646,248

E-SELECTION BINDING SOLUBLE LAMP-1 POLYPEPTIDE

Ritsuko Sawada, San Diego, Calif.; John B. Lowe, Ann Arbor, Mich., and Minoru Fukuda, San Diego, Calif., assignors to La Jolla Cancer Research Foundation, La Jolla, Calif.

Filed Jun. 8, 1993, Ser. No. 73,807

Int. Cl.[6] C07K *14/435;* **C12N** *15/12*

U.S. Cl. 530—350 **6 Claims**

1. A lamp-1 polypeptide having the amino acid sequence shown in SEQ ID NO.: 17, wherein the lamp-1 polypeptide is glycosylated with sialyl Le^x, soluble in an aqueous solvent and binds to E-selectin.

4. A lamp-1 polypeptide having the amino acid sequence shown in SEQ ID NO.: 18, wherein the lamp-1 polypeptide is glycosylated with sialyl Le^x, soluble in an aqueous solvent and binds to E-selectin.

5,646,249

ISOLATION AND CHARACTERIZATION OF A NOVEL CHAPERONE PROTEIN

Frederic J. Kaye, Bethesda, and Gregory A. Otterson, Columbia, both of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Feb. 28, 1994, Ser. No. 203,905

Int. Cl.[6] C07K *9/00*

U.S. Cl. 530—350 **3 Claims**

1. Purified protein comprising SEQ ID NO:2 or SEQ ID NO:14.

5,646,250

CADHERIN POLYPEPTIDES

Shintaro Suzuki, Torrance, Calif., assignor to Doheny Eye Institute, Los Angeles, Calif.

Continuation of Ser. No. 49,460, Apr. 19, 1993, abandoned, which is a continuation-in-part of Ser. No. 872,643, Apr. 17, 1992, abandoned. This application Nov. 1, 1994, Ser. No. 332,638

Int. Cl.[6] C07K *14/435;* **C12N** *15/12*

U.S. Cl. 530—350 **3 Claims**

1. A purified and isolated full length human cadherin polypeptide selected from the group consisting of the cadherin-5 polypeptide of SEQ ID NO: 50, the cadherin-8 polypeptide of SEQ ID NO: 54, the cadherin-11 polypeptide of SEQ ID NO: 58, the cadherin-12 polypeptide of SEQ ID NO: 60, and the cadherin-13 polypeptide of SEQ ID NO: 62.

5,646,251

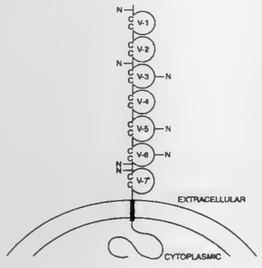
ALLOREACTION-ASSOCIATED ANTIGEN (ARAG): A NOVEL MEMBER OF THE IMMUNOGLOBULIN GENE SUPERFAMILY

Curtis L. Ruegg, San Carlos; Alberto Rivas, Palo Alto; Reiner Laus, Belmont, and Edgar G. Engleman, Atherton, all of Calif., assignors to The Board of Trustees of Leeland Stanford Jr. Univ., Palo Alto, Calif.

Continuation-in-part of Ser. No. 149,212, Nov. 5, 1993, abandoned. This application Jun. 30, 1995, Ser. No. 497,025

Int. Cl.[6] C07K *7/00;14/705;* **C12N** *15/00*

U.S. Cl. 530—350 **14 Claims**



1. A purified alloreaction-associated antigen (ARAg) polypeptide comprising at least 20 contiguous amino acids from the amino acid sequence shown in FIG. 7A (SEQ. ID No. 3) and having an antigenic determinant common to a protein comprising the amino acid sequence shown in FIG. 7A.

5,646,252

HEMOGLOBIN COMPOSITION AND PREPARATION THEREOF

Wilhelmus Antonius Berbers, Utrecht; Petrus Theodorus Maria Biessels, Oegstgeest; Willem Karel Bleeker, Amsterdam, and Joachim Cornelis Bakker, Koog aan de Zaan, all of Netherlands, assignors to Staat der Nederlanden, De Minister van Defensie, voor deze: Het Hoofd van de Afdeling Militair Geneeskundig Beleid, Netherlands

Continuation-in-part of Ser. No. 281,260, Jul. 27, 1994, abandoned, which is a continuation of Ser. No. 777,353, Feb. 10, 1992, abandoned. This application Oct. 16, 1995, Ser. No. 543,478

Int. Cl.[6] C07K *14/805*

U.S. Cl. 530—385 **15 Claims**

1. A stroma-free hemoglobin composition comprising a polymerized human hemoglobin intramolecularly cross-linked through the two β-chains of the hemoglobin by reaction of a pyridoxal 5-phosphate derivative having two aldehyde groups with one amino group in each β-chain.

5,646,253

RECOMBINANT HUMAN ANTI-LK26 ANTIBODIES

Thomas Paul Wallace, Gight; William Joseph Harris, Carnoustie; Francis Joseph Carr, Balmedie, all of Great Britain; Wolfgang J. Rettig; Pilar Garin-Chesa, both of Biberach, Germany, and Lloyd J. Old, New York, N.Y., assignors to Memorial Sloan-Kettering Cancer Center, New York, N.Y., and Scotgen Biopharmaceuticals, Inc., Menlo Park, Calif.

Filed Mar. 8, 1994, Ser. No. 207,996

Int. Cl.[6] C07K *16/46*

U.S. Cl. 530—387.3 **2 Claims**

2. An antibody having a humanized variable region wherein the variable region light chain is selected from the group consisting of LK26HuVK; LK26HuVKY; LK26HuVKPW; and LK26HuVKPW,Y, and the variable region heavy chain is selected from the group consisting of LK26HuVH; LK26HuVH FAIS,N; LK26HuVH SLF; LK26HuVH I, I; and LK26KOLHuVH.

5,646,254

ANTIBODIES FOR HUMAN PHOSPHOLIPASE INHIBITORY PROTEIN (HPIP)

Lorin K. Johnson, Pleasanton, and John P. Longenecker, Mountain View, both of Calif., assignors to Scios Nova Inc., Mountain View, Calif.

Division of Ser. No. 115,316, Sep. 1, 1993, Pat. No. 5,342,764, which is a division of Ser. No. 871,577, Apr. 20, 1992, Pat. No. 5,264,550, which is a continuation of Ser. No. 538,692, Jun. 14, 1990, abandoned, which is a continuation of Ser. No. 883,598, Jul. 9, 1986, abandoned, which is a continuation-in-part of Ser. No. 723,046, Apr. 15, 1985, abandoned. This application Apr. 26, 1994, Ser. No. 233,464

Int. Cl.[6] C07K *16/00;16/40*

U.S. Cl. 530—388.85 **2 Claims**

1. Antibodies which react with an hPIP protein having an amino acid sequence identical to the hPIP amino acid sequence of FIG. 13.

5,646,255

IMMUNOGENS AND THE USE THEREOF FOR OBTAINING ANTIBODIES AGAINST HBA_{1C}

Christian Klein, Weilheim; Christa Hübner-Parajsz; Hans-Georg Batz, both of Tutzing; Wolfgang Rollinger, Weilheim; Ulrich Essig, Planegg, and Lorenz Kerscher, Penzberg, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

Continuation of Ser. No. 61,830, May 14, 1993, abandoned, which is a continuation of Ser. No. 873,663, Apr. 23, 1992, abandoned, which is a continuation of Ser. No. 304,808, Jan. 31, 1989, abandoned. This application Aug. 15, 1994, Ser. No. 290,342

Claims priority, application Germany, Feb. 4, 1988, 38 03 330.5; Feb. 26, 1988, 38 06 198.8

Int. Cl.[6] C07K *16/28*

U.S. Cl. 530—389.6 **6 Claims**

1. Composition of matter consisting essentially of polyclonal antibodies which specifically bind to HbA_{1c} and which have less than 5.0% cross reactivity with HbA_0, wherein said polyclonal antibodies are produced by immunizing an animal with an immunogen consisting of:

(a) a carrier protein,

(b) a spacer of formula:

$$-NH-CH-(CH_2)_n-X-B$$
$$\quad\quad\quad COOH$$

wherein X is S or —NH—, n is a number from 1–4, comprises a succinimide group, and

(c) an immunogenic peptide consisting of amino acid sequence Val His Leu Thr.

5,646,256

SATA AND OTHER THIOL PRECURSORS

William Shackelford, Towson, Md.; Josephine Readio, Sparta, N.J.; Samuel L. Moore, Owing Mills, Md., and Herman Rutner, Hackensack, N.J., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Sep. 19, 1994, Ser. No. 308,765

Int. Cl.[6] C07K *17/06;* **G01N** *33/53;33/543*

U.S. Cl. 530—391.1 **12 Claims**

1. A method of generating and stabilizing thiols from S-acetylated thiol derivatives, comprising:

a) deblocking said derivative(s) with carboxymethoxylamine (CMA) in a pH range of 7–10 to generate the corresponding thiol; and

b) stabilizing the thiol(s) from said thiol precursor.

5,646,257

AZODYESTUFFS, THEIR PREPARATION AND THEIR USE

Karin Hassenrück, Düsseldorf; Karl-Heinz Reinhardt, Leverkusen; Peter Wild, Odenthal, and Klaus Wunderlich, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

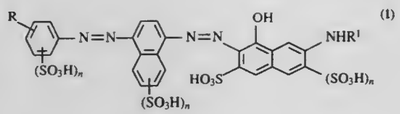
Filed Nov. 18, 1994, Ser. No. 342,295

Claims priority, application Germany, Nov. 26, 1993, 43 40 354

Int. Cl.[6] C09D *11/00*

U.S. Cl. 534—689 **8 Claims**

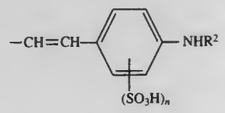
1. A dyestuff of the formula (I)



(I)

wherein

R represents NHR^2, $—CH=CH—R^3$, $—CH_2—CH_2—R^3$ or



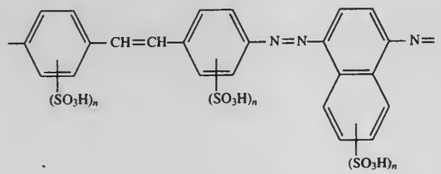
R^1 represents hydrogen, unsubstituted or substituted C_1–C_4 alkyl, unsubstituted or substituted C_1–C_4 alkylcarbonyl, unsubstituted or substituted phenyl or unsubstituted or substituted phenylcarbonyl,

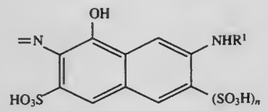
R^2 represents $—W—NHR^3$

wherein

W represents a bridge member,

R^3 represents





and n represents, in each case independently of one another, 0 or 1.

5,646,258

METHOD OF SYNTHESIZING ALKYL GLUCOSIDES

Burghard Grüning, Essen; Siegfried Peter, Uttenreuth-Weiher; Manfred Recksik, Essen; Eckhard Weidner, and Zhengfeng Zhang, both of Erlangen, all of Germany, assignors to M. Goldschmidt AG, Essen, Germany

Filed Nov. 8, 1995, Ser. No. 555,564

Claims priority, application Germany, Nov. 18, 1994, 44 41 072.7

Int. Cl.[6] C07H *1/00*

U.S. Cl. 536—18.6 **13 Claims**

1. A method for synthesizing alkyl glucosides by acetalizing a sugar with an excess amount of an alcohol and subsequently separating the excess alcohol by extraction, comprising the steps of extracting the alcohol with an extraction agent, close to a critical point, at a reduced pressure in the range of 0.8 to 1.3 provided that the density of the extraction agent, close to the critical point, is greater than 180 kg/m^3.

5,646,259

DNA ENCODING HAEMOPHILUS ADHESION PROTEINS

Joseph W. St. Geme, III, St. Louis, and Stephen J. Barenkamp, Webster Groves, both of Mo., assignors to St. Louis University, and Washington University, both of St. Louis, Mo.

Filed Mar. 24, 1995, Ser. No. 409,995

Int. Cl.[6] C07H *21/02;* **A61K** *39/02;* **C12P** *21/06;* **C12N** *15/00*

U.S. Cl. 536—23.1 **9 Claims**

1. A recombinant nucleic acid comprising DNA which is capable of hybridizing under high stringency conditions to the nucleic acid of SEQ ID NO:1 and which encodes a Haemophilus adhesion protein.

5,646,260

OLIGONUCLEOTIDES HAVING MODIFIED INTERNUCLEOSIDE LINKAGES

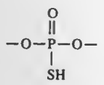
Robert L. Letsinger, 316 3rd St., Wilmette, Ill. 60091, and Sergei M. Gryaznov, 2 Clark Dr., San Mateo, Calif. 94401

Division of Ser. No. 376,291, Jan. 23, 1995, Pat. No. 5,476,295, which is a continuation of Ser. No. 12,050, Feb. 1, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 471,248

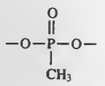
Int. Cl.[6] C07H *21/00*

U.S. Cl. 536—23.1 **1 Claim**

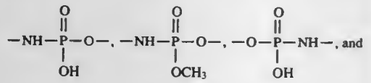
1. An oligodeoxyribonucleotide consisting of nucleosides wherein the base is selected from adenine, thymine, cytosine, guanine, and uracil and at least one internucleoside link having the structure

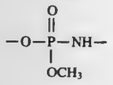


and



and at least one internucleoside link having the structure





and wherein the remainder of the internucleoside links are phosphodiester links.

5,646,261

3'-DERIVATIZED OLIGONUCLEOTIDE ANALOGS WITH NON-NUCLEOTIDIC GROUPINGS, THEIR PREPARATION AND USE

Eugen Uhlmann, Glashütten; Anuschirwan Peyman, Kelkheim, both of Germany; Gerard O'Malley, Newtown, Pa.; Matthias Helsberg, Kelkheim, and Irvin Winkler, Liederbach, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

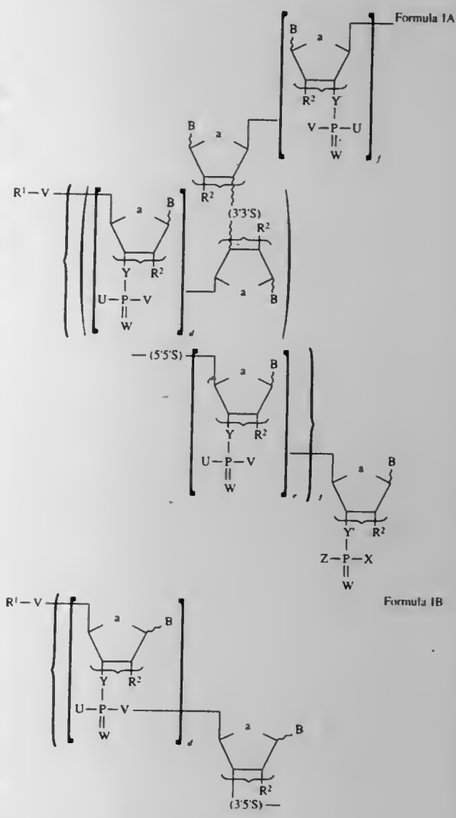
Filed Jan. 19, 1993, Ser. No. 5,283

Claims priority, application Germany, Jan. 22, 1992, 42 01 663.0

Int. Cl.[6] C07H *21/04*

U.S. Cl. 536—24.3 **9 Claims**

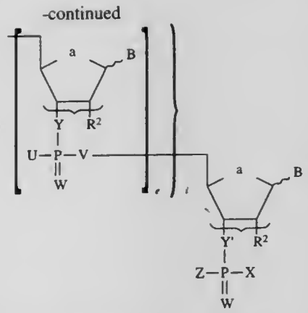
1. An oligonucleotide analog of the formula IA or IB



Formula IA

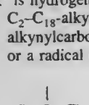
Formula IB

-continued



or its physiologically tolerated salt, wherein

R^1 is hydrogen, C_1–C_{18}-alkyl, C_2–C_{18}-alkenyl, C_2–C_{18}-alkynyl, C_2–C_{18}-alkylcarbonyl, C_3–C_{19}-alkenylcarbonyl, C_3–C_{19}-alkynylcarbonyl, C_6–C_{20}-aryl, (C_6–C_{14})-aryl-(C_1–C_8)-alkyl, or a radical of the formula II



(II)

R^2 is hydrogen, hydroxyl, C_1–C_{18}-alkoxy, halogen, azido or NH_2;

B is a conventional base in nucleotide chemistry;

a is oxy or methylene;

d,e,f independently of each other are an integer from 0 to 50;

i is an integer from 1 to 10;

r is an integer zero or 1, with the proviso that if r is equal to zero, V is = Y', and if i is greater than 1 r is =1;

w is oxo, selenoxo or thioxo;

v as oxy, thio or imino;

Y is oxy, thio, imino or methylene;

Y' as oxy, thio, imino, $(CH_2)_m$ or $V(CH_2)_m$, where

m as an integer from 1 to 18;

X is hydroxyl or mercapto;

U is hydroxyl, mercapto SeH, C_1–C_{18}-alkoxy, C_1C_{18}-alkyl, C_6–C_{20}-aryl, (C_6– C_{14})-aryl-(C_1–C_8)-alkyl, NHR^3, NR^3R^4 or a radical of the formula $(OCH_2CH_2)_pO(CH2)CH_2R_{11}$ where

R^3 is C_1–C_{18}-alkyl, C_6–C_{20}-aryl, (C_6–C_{14})-aryl-(C_1–C_8)-alkyl, $—(CH_2)_c$-$[NH(CH_2)_c]_d$-$NR^{12}R^{12}$, where c is an integer from 2 to 6 and d is an integer from 0 to 6, and each R^{12} independently of the other is hydrogen or C_1–C_6-alkyl or C_1–C_4-alkoxy-C_1–C_6-alkyl;

R^4 is C_1–C_{18}-alkyl, C_6–C_{20}-aryl or (C_6–C_{10})-aryl-(C_1–C_8)-alkyl, or, in the case of NR^3R^4, is, together with R^3 and the nitrogen atom carrying them, a 5-6 -membered heterocyclic ring, which can additionally contain a further hetero atom selected from the group consisting of O, S, and N,

p is an integer from 1 to 100,

q is an integer from 0 to 18,

R^{11} is hydrogen or a functional group;

S is a group of the formula III

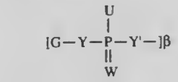
(III)

where

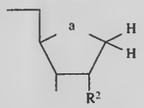
g and g' are an integer zero or 1

h is an integer from zero to 10;

G is C_1–C_{12}-alkylene, where one or more positions of alkylene can optionally be substituted by halogen, amino, hydroxyl, C_1–C_{18}-alkyl, C_1–C_{18}-alkoxy, C_1–C_{18} -alkylcarbonyloxy, C_6–C_{14} -aryl, C_6–C_{14}-aryl-C_1–C_{18}-alkyl, or C_6C_{14}-aryl-C_1 –C_8-alkoxy, C_6–C_{14}-aryl-di-C_1–C_8-alkylene, C_6–C_{18}-arylene, a group of the formula $(CH_2CH_2V)_\alpha CH_2CH_2$ or $(CH_2V)_{60}CH_2$, where α is an integer from 1 to 11, a unit of the formula



where β is an integer from 1 to 6, or a group of the formula



Z=Z' are hydroxyl, mercapto, SeH, C_1–C_{22}-alkoxy, $—O—(CH_2)_6$-$NR^{12}R^{13}$, where b is an integer from 1 to 6, and R^{13} is C_1–C_6-alkyl or R^{12} and R^{13} together with the nitrogen atom carrying them form a 3-6-membered ring, C_1–C_{18}-alkyl, C_6–C_{20} -aryl, (C_6–C_{14})-aryl-(C_1–C_8)-alkyl, (C_6–C_{14})-aryl-(C_1–C_8)-alkoxy, where aryl includes heteroaryl, and aryl is optionally substituted by 1, 2 or 3 identical or different radicals selected from the group consisting of carboxyl, amino, nitro, C_1–C_4-alkylamino, hydroxyl, halogen and cyano, C_1–C_{18}-alkylmercapto, NHR^3, NR^3R^4, a radical of the formula III, a group which favors intracellular uptake, a labeling group, a binding group, an intercalating group, a cleavage group, and a crosslinking group;

the curved bracket in the 2'- and 3'-position indicates that R^2 and the neighboring phosphoryl residue can also be located the opposite way round in the 3'- and 2'-position, where each nucleotide can be present in its D- or L-configuration and the base B can be located in the α or β-position, with the proviso that, if Z= hydroxyl, mercapto, methyl, or ethoxy, at least one of the groups X, Y, Y', V, and W is not hydroxyl, oxy, or oxo, or R^1 is not hydrogen.

5,646,262

ANTISENSE OLIGONUCLEOTIDES AGAINST HEPATITIS B VIRAL REPLICATION

Brent E. Korba, Laurel, and John L. Gerin, Bethesda, both of Md., assignors to Georgetown University, Washington, D.C.

Filed Jul. 28, 1994, Ser. No. 281,106

Int. Cl.[6] C07H *21/04*

U.S. Cl. 536—24.5 **23 Claims**

1. A composition for inhibiting replication of hepatitis B virus in a host cell, comprising a single-stranded antisense oligonucleotide that (i) binds the encapsidation sequence of an mRNA intermediate derived from the HBV DNA genome and that (ii) modulates an HBV-related function in said host cell.

5,646,263

HIGH EFFICIENCY METHOD FOR ISOLATING TARGET SUBSTANCES USING A MULTISAMPLE SEPARATION DEVICE

Steven J. Ekenberg, Mt. Horeb; Paula R. G. Brisco, Madison, both of Wis., and Anne Louise Oaklander, Baltimore, Md., assignors to Promega Corporation, Madison, Wis., and The Johns Hopkins University, Baltimore, Md.

Filed Sep. 19, 1994, Ser. No. 308,819

Int. Cl.[6] C07H *1/06;21/00*

U.S. Cl. 536—25.4 **23 Claims**

1. A method for isolating a biological target substance from interfering biological debris in a medium utilizing a multi-well separation device wherein the target substance interacts with a second species to form a complex, the second species having a receptor capable of binding the target substance, said complex being collectable by application of an external force to the medium; the method comprising the steps of:

providing a mixture comprising the target substance and debris in the medium;

distributing the mixture to a separation device comprising a multiple well array;

precipitating the biological debris in the wells;

adding non-magnetic masking or blocking particles to the wells;

centrifuging the well array to generate multiple individual wells, each of said wells having therein from bottom to top:

biological debris having thereover;

a layer of the non-magnetic particles; and

medium comprising the target particles;

adding the second species to the medium and permitting it to interact with the target substance to generate a complex; and

separating the complex from the medium by application of external force.

5,646,264

DNA COMPLEXES WITH DYES DESIGNED FOR ENERGY TRANSFER AS FLUORESCENT MARKERS

Alexander N. Glazer, Orinda, and Scott C. Benson, Albany, both of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Continuation of Ser. No. 9,704, Jan. 27, 1993, Pat. No. 5,401,847, which is a continuation-in-part of Ser. No. 831,823, Feb. 6, 1992, abandoned, which is a continuation-in-part of Ser. No. 493,307, Mar. 14, 1990, abandoned. This application Jan. 23, 1995, Ser. No. 340,749

Int. Cl.[6] C07H *21/00;19/04*

U.S. Cl. 536—25.32 **3 Claims**

1. A kit comprising at least two fluorescent multimers, each multimer having at least two fluorophores, at least one fluorophore comprising benzthiazole, at least one of said multimers characterized by:

a) comprising at least two different fluorophores, which fluorophores absorb and emit at different wavelengths when bound to dsDNA;

b) having a Stokes shift of at least about 25 nm;

c) capable of intercalating dsDNA at a ratio of at least one dye per 200 bp;

d) having from 2 to 4 fluorophores; wherein at least two of said fluorescent multimers can be excited within the same narrow light bandwidth range of not more than 30 nm when bound to dsDNA, and have emission maxima at least 25 nm apart, wherein said multimer has a fluorophore comprising benzthiazole.

5,646,265

PROCESS FOR THE PREPARATION OF 2'-O-ALKYL PURINE PHOSPHORAMIDITES

Daniel Peter Claude McGee, Boulder, Colo., assignor to Isis Pharmceuticals, Inc., Carlsbad, Calif.

Continuation-in-part of Ser. No. 968,849, Oct. 30, 1992, abandoned, which is a continuation-in-part of Ser. No. 967,267, Oct. 27, 1992, which is a continuation-in-part of Ser. No. 918,362, Jul. 23, 1992, Pat. No. 5,506,351, which is a continuation-in-part of Ser. No. 463,358, Jan. 11, 1990, abandoned, and Ser. No. 566,977, Aug. 13, 1990, abandoned. This application Mar. 23, 1995, Ser. No. 410,002

Int. Cl.[6] C07H *19/20*

U.S. Cl. 536—25.34 **15 Claims**

1. A process for preparing a 2'-O-alkylated guanosine 3'-O-phosphoramidite comprising the steps of:

alkylating a 2,6-diamino-9-(ribofuranosyl)purine to form a 2,6-diamino-9-(2'-O-alkylated ribofuranosyl)purine;

deaminating said 2,6-diamino-9-(2'-O-alkylated ribofuranosyl)purine to form a 2'-O-alkylated guanosine;

blocking the 5'-hydroxyl moiety of said 2'-O-alkylated guanosine; and

phosphitylating the 3'-position of said 5'-blocked 2'-O-alkylated guanosine.

9. A process for preparing a 2'-O-alkylated 2,6-diamino-9-(β-D-ribofuranosyl)purine 3'-O-phosphoramidite comprising the steps of:

alkylating a 2,6-diamino-9-(β-D-ribofuranosyl)purine to provide a 2'-O-alkylated 2,6-diamino-9-(β-D-ribofuranosyl)purine;

blocking the 5'-hydroxyl moiety of said 2'-O-alkylated 2,6-diamino-9-(β-D-ribofuranosyl)purine; and

phosphitylating the 3'-position of said 5'-blocked 2'-O-alkylated 2,6-diamino-9-(β-D-ribofuranosyl)purine.

5,646,266

Patent Not Issued For This Number

5,646,267

METHOD OF MAKING OLIGONUCLEOTIDES AND OLIGONUCLEOTIDE ANALOGS USING PHOSPHOLANES AND ENANTIOMERICALLY RESOLVED PHOSPHOLANE ANALOGUES

Wojciech J. Stec; Andrzej Grajkowski, and Bogdan Uznanski, all of Lodz, Poland, assignors to Polish Academy of Sciences, Lodz, Poland

Continuation of Ser. No. 108,878, Aug. 18, 1993, abandoned, which is a division of Ser. No. 883,622, May 12, 1992, Pat. No. 5,359,052, which is a continuation-in-part of Ser. No. 826,929, Jan. 23, 1992, abandoned, which is a continuation-in-part of Ser. No. 740,435, Aug. 5, 1991, abandoned. This application Jun. 5, 1995, Ser. No. 462,418

Int. Cl.[6] C07H *21/02;21/04*

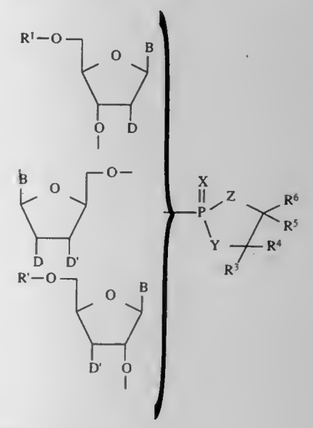
U.S. Cl. 536—25.33 **7 Claims**

1. A method of synthesizing a P-chiral oligonucleotide phosphorothioate of a predetermined length, the P-chiral oligonucleotide comprising a sequence of nucleosides or nucleoside analogs and phosphorothioate or phosphodiester linkages, the phosphorothioate linkages being R_p chiral or S_p chiral, the method comprising the steps of:

(a) providing a first nucleoside or nucleoside analog attached to a solid phase support, the first nucleoside or nucleoside analog having a protected hydroxyl;

(b) deprotecting the protected hydroxyl to form a free hydroxyl;

(c) reacting with the free hydroxyl a synthon selected from the group defined by the formula:



wherein:

R^I is a hydroxyl protecting group;

B is a purine or a pyrimidine;

D is hydrogen, halogen, hydroxyl, or —OR', wherein R' is alkyl having from 1 to 3 carbon atoms or a 2'-hydroxyl protecting group;

D' is hydrogen, hydroxyl, or —OR" such that R" is a 3'-hydroxyl protecting group;

X is sulfur, Y is oxygen, and Z is sulfur; and

R^3, R^4, R^5, and R^6 are separately hydrogen or alkyl having from 1 to 4 carbon atoms or are separately or together with the carbon atoms to which they are attached aryl or alkyl-substituted aryl having from 6 to 12 carbon atoms; and

(d) repeating steps (b) and (c) until the predetermined length of the P-chiral oligonucleotide phosphorothioate is achieved.

5,646,268

PROCESS PRODUCING LOWER MOLECULAR WEIGHT RANGE OLIGODEOXYRIBONUCLEOTIDES

Ennio Lanzarotti, Milan; Marisa Mantovani, Villa Guardia; Giuseppe Prino, Milan; Roberto Porta, Cernobbio; Armando Cedro, Cislago, and Danilo Moltrasio, Rovellasca, all of Italy, assignors to Crinos Industria Farmacobiologica S.p.A., Como, Italy

Division of Ser. No. 985,726, Dec. 4, 1992. This application Jan. 31, 1996, Ser. No. 594,522

Claims priority, application Italy, Dec. 9, 1991, 91A03294

Int. Cl.[6] C07H *21/04*

U.S. Cl. 536—25.4 **9 Claims**

1. A process for producing an oligodeoxyribonucleotide having the following analytical parameters: mol. wt. 4000–10000, h<10, A+T/C+G 1.100–1.455, A+G/C+T 0.800–1.160, spec. rot +30°–+46.8° comprising:

precipitating 0.8M sodium acetate aqueous solutions of polydeoxyribonucleotide sodium salts at 20° C. by addition of an alkyl alcohol selected from the group consisting of ethyl, propyl and isopropyl alcohol.

8. A process for producing an oligodeoxyribonucleotide having the following analytical parameters: mol. wt. 4000–10000, h<10, A+T/C+G 1.100–1.455, A+G/C+T 0.800–0 1.160, spec. rot+30°–+46.8° comprising:

(a) adding 0.8 volume of alcohol to a 0.8M sodium acetate solution containing 4% w/v of polydeoxyribonucleotides to precipitate a substantial part of higher molecular weight polydeoxyribonucleotide fraction;

(b) adding alcohol to said hydroalcoholic solution in order to obtain a second solution having 1 volume of organic phase per volume of said aqueous 0.8M sodium acetate buffer solution of step (a) and subsequent removal of a supernatant with recovery of a formed precipitate;

(c) mixing the supernatant from step (b) with alcohol to obtain a third solution having 2 volumes of alcohol per volume of said aqueous 0.8M sodium acetate buffer solution of step (a) and recovery of a substance which separates out of the third solution;

(d) dissolving the precipitate recovered in step (b) in 0.8M sodium acetate, adding 1 volume alcohol/volume of aqueous solution and recovering, from the hydroalcoholic solution, a precipitate by centrifugation;

(e) mixing the remaining hydroalcoholic solution of step (d) with alcohol to obtain a solution having 2 volumes of alcohol per volume of aqueous phase and recovering the precipitate.

5,646,269

METHOD FOR OLIGONUCLEOTIDE ANALOG SYNTHESIS

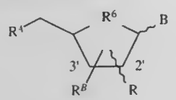
Mark D. Matteucci, Burlingame, and Jiancun Zhang, San Francisco, both of Calif., assignors to Gilead Sciences, Inc., Foster City, Calif.

Filed Apr. 28, 1994, Ser. No. 234,452

Int. Cl.[6] C07H *19/06;19/16*

U.S. Cl. 536—26.7 **21 Claims**

1. A compound having the structure



wherein

B is a purine or pyrimidine base;

R is H, O-alkyl (1–6C), O-alkenyl (1–6C) or halogen;

R^A is XR^{7A}, XR^{7B}, SR^{7D}, OR^3 or $OCH_2O(O)P(R^1)(R^2)$;

R^B is linked to the 2' or 3' position and is XR^{7A}, XR^{7B}, XH, SR^{7D}, OR^3 or $OCH_2O(O)P(R^1)(R^2)$, provided that either R^A or R^B is $OCH_2O(O)P(R^1)(R^2)$, but not both R^A and R^B are $OCH_2O(O)P(R^1)(R^2)$;

R^1 and R^2 are independently,

alkyl (1–18C),

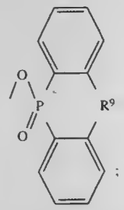
alkyl (1–18C) substituted with 1, 2 or 3 substituents selected from the group consisting of halogen, nitro (NO_2), cyano (CN), O-alkyl (1–10C), O-aryl (6–10C), $COOR^8$, COR^8, SO_2R^8, $N(R^8)_2$ and $CON(R^8)_2$, wherein R^8 is alkyl (1–10C), aryl (6–10C), alkyl-aryl (7–12C) or heteroaryl (3–12C),

aryl (6–10C),

aryl (6–20C) substituted with 1, 2 or 3 groups or atoms selected from the group consisting of alkyl (1–10C), halogen, NO_2, CN, O-alkyl (1–10C), O-aryl (6–10C), $COOR^8$, COR^8, SO_2R^8, $N(R^8)_2$ and $CON(R^8)_2$;

heteroaryl (3–5C),

heteroaryl (3–5C) substituted with 1, 2 or 3 groups or atoms selected from the group consisting of alkyl (1–10C), halogen, NO_2, CN, O-alkyl (1–10C), O-aryl (6–10C), $COOR^8$, COR^8, SO_2R^8, $N(R^8)_2$ and $CON(R^8)_2$ or R^1 and R^2 together with the phosphorus atom to which they are attached form the structure



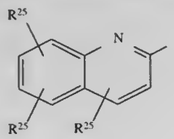
R^3 is a lewis acid stable protecting group;

R^6 is O or CH_2;

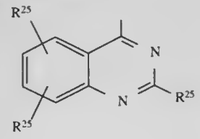
R^{7A} is an electron withdrawing sulfur protecting group excluding benzyl;

R^{7B} is a protecting group that is stable to S^- anion nucleophiles;

R^{7D} is a compound of structure 34–41 and 45

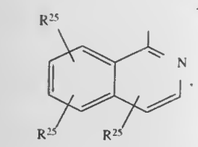


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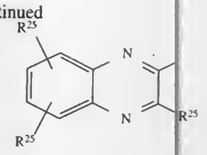


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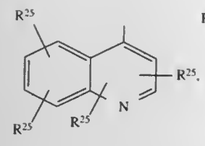
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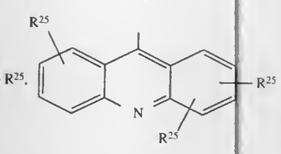
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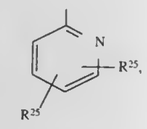
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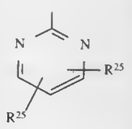
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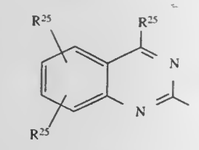
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41



45

or R^9 is O or CH_2;

R^9 is O or CH_2;

R^{25} is hydrogen, alkyl (1–6C), OR^{26}, $C(O)R^{26}$, $C(O)OR^{26}$, CN, NO_2, $N(CH_3)_2$, SO or SO_2 wherein R^{26} is alkyl (1–6C) or substituted alkyl (1–6C), or two R^{25} together on the same ring form a 5-membered aromatic ring comprising carbon atoms and 1 or 2 atoms or groups selected from the group consisting of S, O, N and $N(CH_3)_2$, provided that no adjacent atoms are both O, or two R^{25} together on the same ring form a 6-membered aromatic ring comprising carbon atoms and 0, 1 or 2 nitrogen atoms, provided that there is no more than one $N(CH_3)_2$ group in any single protecting group; and

X is oxygen (O) or sulfur (S).

5,646,270

ACIDIC POLYSACCHARIDE

Noboru Fujii, Miyazaki, and Genichi Kadota, Kumamoto-ken, both of Japan, assignors to Kabushikigaisha Sopy, Kochi-ken, Japan; Frederick L. Luth, Garland, Tex.; James J. King, Garland, Tex., and Leo C. Johnson, Dallas, Tex.

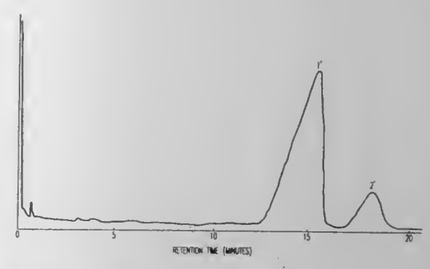
Filed Mar. 20, 1995, Ser. No. 406,584

Claims priority, application Japan, Mar. 22, 1994, 6-073784

Int. Cl.[6] C07H *13/02;* **A61K** *31/715;* **C12P** *19/00;* **C08B** *37/00*

U.S. Cl. 536—119 **1 Claim**

1. A waste water-treating agent having acidic polysaccharide



obtainable by culturing acidic polysaccharide-producing bacteria belonging to Aureobasidium sp. as an effective ingredient.

5,646,271

BLEACHING AUXILIARY

Albert Stehlin, Rosenau, France; Klaus Huber, Freiburg, and Thomas Maier, Schliengen, both of Germany, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

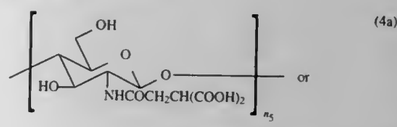
Division of Ser. No. 352,998, Dec. 9, 1994, which is a continuation-in-part of Ser. No. 255,495, Jun. 8, 1994, abandoned. This application Jun. 2, 1995, Ser. No. 459,436

Claims priority, application Switzerland, Jun. 11, 1993, 1744/93

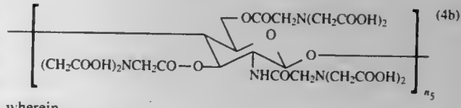
Int. Cl.[6] C07H *1/00;3/00;* **C01B** *15/00*

U.S. Cl. 536—123.1 **3 Claims**

1. A compound of the formula



(4a)



(4b)

wherein

n_5 is 200 to 13000.

5,646,272

BILE ACID CONJUGATES OF PROLINE HYDROXYLASE INHIBITORS

Werner Kramer, Mainz, and Günther Wess, Erlensee, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Division of Ser. No. 208,192, Mar. 10, 1994, Pat. No. 5,462,933, which is a continuation of Ser. No. 806,799, Dec. 12, 1991, abandoned, which is a continuation of Ser. No. 581,390, Sep. 12, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 476,941

Claims priority, application Germany, Sep. 14, 1989, 39 30 696.8

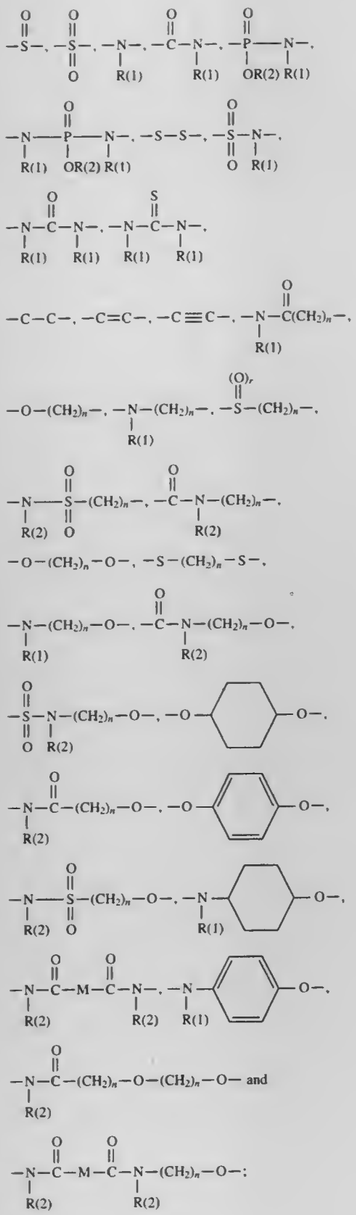
Int. Cl.[6] A61K *31/58;* **C07J** *43/00*

U.S. Cl. 540—5 **3 Claims**

1. A bile acid conjugate compound of the formula I

W—X—G I

wherein W is a proline hydroxylase inhibitor G is a bile acid radical in the form of the free acid, an ester or amide or a salt or a form derivatized on the alcohol groups, and X is a connecting member selected from the following groups



a phenyl radical which is unsubstituted or monosubstituted to trisubstituted by F, Cl, Br, $(C_1–C_4)$-alkyl or $(C_1–C_4)$-alkoxy, or a benzyl radical which is unsubstituted or monosubstituted to trisubstituted by F, Cl, Br, $(C_1–C_4)$-alkyl or $(C_1–C_4)$-alkoxy,

R(2)=H, $(C_1–C_8)$-alkyl, a phenyl radical which is unsubstituted or monosubstituted to trisubstituted by F, Cl, Br, $(C_1–C_4)$-alkyl or $(C_1–C_4)$-alkoxy, or a benzyl radical which is unsubstituted or monosubstituted to trisubstituted by F, Cl, Br, $(C_1–C_4)$-alkyl or $(C_1–C_4)$-alkoxy,

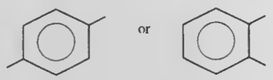
m=0–6,

n=1–16,

p=1, 2 or 3,

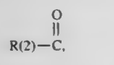
r=0–2 and

M=$—(CH_2)_m—$, $—(CH=CH)_p—$, $—C\equiv C—$,



in which

R(1)=H, $(C_1–C_8)$-alkyl the group



5,646,273

PHTHALOCYANINE COMPOUND AND OPTICAL RECORDING MEDIUM CONTAINING IT

Takahisa Oguchi, Mobara; Hideki Umehara, Yokohama; Kenichi Sugimoto, Yokohama; Ryu Oi, Yokohama, and Hisato Itoh, Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, and Yamamoto Chemicals, Inc., Yao, both of Japan

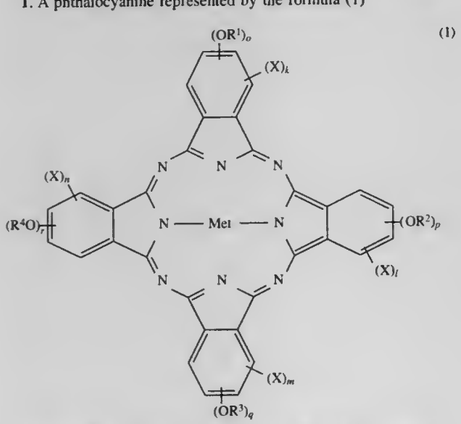
Continuation of Ser. No. 221,257, Mar. 31, 1994, abandoned. This application Sep. 20, 1995, Ser. No. 531,059

Claims priority, application Japan, Apr. 9, 1993, 5-082353

Int. Cl.[6] C09B *47/04*

U.S. Cl. 540—122 **16 Claims**

1. A phthalocyanine represented by the formula (1)



(1)

wherein each of (OR^1), (OR^2), (OR^3) and (OR^4) is independently a branched alkoxy group substituted by 0 to 5 halogen atoms and having 5 to 20 carbon atoms, an alkenyloxy group substituted by 0 to 5 halogen atoms and having 2 to 20 carbon atoms or an alkynyloxy group substituted by 0 to 5 halogen atoms and having 2 to 20 carbon atoms, wherein each halogen atom substituted on R^1, R^2, R^3 and R^4 is chlorine, bromine or iodine and at least one of R^1, R^2, R^3 and R^4 is substituted by the halogen atom; X is a halogen atom; each of k, l, m and n is independently a value of from 0 to 3; each of o, p, q and r is independently a value of 0, 1 or 2, and all of them are not 0 simultaneously; each sum of k and o, l and p, m and q, and n and r is independently in the range of from 0 to 4; Met is two hydrogen atoms, a divalent metal atom, a trivalent mono-substituted metal atom, a tetravalent di-substituted metal atom or an oxy-metal atom.

5,646,274

PHTHALOCYANINE MONOAZO COMPOUNDS AND A PROCESS FOR PRODUCING THE SAME

Toshiyuki Araki, Hirakata; Takemi Tokieda, Nara; Shin-ichi Yabushita, Osaka; Yasuyoshi Ueda, Hirakata, and Bunzi Tsukise, Kobe, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

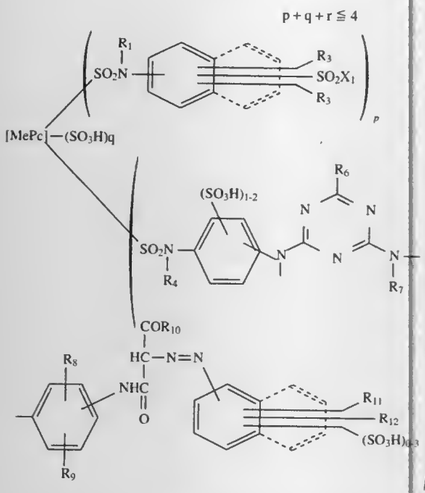
Filed Oct. 30, 1995, Ser. No. 550,370

Claims priority, application Japan, Nov. 4, 1994, 6-271318

Int. Cl.[6] C09B *47/24;* **C07D** *403/10*

U.S. Cl. 540—126 **6 Claims**

1. A phthalocyanine monoazo derivative represented by the formula (I):



(I)

wherein

Pc represents a phthalocyanine group; Me represents nickel, cobalt or copper;

R_1 represents a hydrogen atom or an unsubstituted or substituted lower alkyl group;

R_2 and R_3 are the same or different and represent a hydrogen atom, an unsubstituted or substituted lower alkyl group, a lower alkoxy group or a sulfo group;

R_4, R_5 and R_7 are the sane or different and represent a hydrogen atom, or an unsubstituted or substituted lower alkyl group;

R_6 represents a chlorine atom, a fluorine atom, a bromine atom, a lower alkoxy group, an unsubstituted or substituted lower alkylamino group, a 6-member nitrogen-containing monocyclic group which may further contain oxygen atom attached to the triazine nucleus via nitrogen or a phenylamino group which is unsubstituted or substituted by 1–3 groups or atoms selected from an unsubstituted or substituted lower alkyl group, a lower alkoxy group, a chlorine atom, a fluorine atom, a bromine atom, —COOH, $—SO_3H$ or $—SO_2X_2$ group on the phenyl ring and which is unsubstituted or substituted by a substituted or unsubstituted lower alkyl group at the nitrogen atom of the amino group;

R_8 and R_9 are the same or different and represent a hydrogen atom, an unsubstituted or substituted lower alkyl group, a lower alkoxy group or a sulfo group;

R_{10} represents an unsubstituted or substituted lower alkyl group;

R_{11} and R_{12} are the same or different and represent a hydrogen atom, an unsubstituted or substituted lower alkyl group, a lower alkoxy group, a phenoxy group, an acetylamino group, a propionylamino group, a maleinylamino group, a fumarylamino group, a succinylamino group or $—SO_2X_3$;

X_1, X_2 and X_3 are the same or different and represent $—CH=CH_2$ or $—CH_2CH_2Y$; Y represents a sulfate group a thio sulfate group, a phosphate group, a group $OCOCH_3$, a chloro group, a fluoro group or a bromo group;

p is from 0 to 2; q is from 1 to 3; r is from 1 to 2; and p+q+r is 4 or less;

provided that when p is 0, R_6 is a chlorine atom, a fluorite atom, a bromine atom or a phenylamino group which is substituted by at least one group SO_2X_2;

or a salt thereof.

5,646,275

AZETIDINONE INTERMEDIATES TO CARBACEPHALOSPORINS AND PROCESS

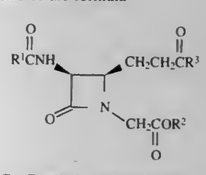
John P. Gardner, and Billy G. Jackson, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 104,383, Aug. 9, 1993, Pat. No. 5,453,503, which is a continuation of Ser. No. 958,589, Oct. 7, 1992, abandoned, which is a continuation of Ser. No. 773,745, Oct. 10, 1991, abandoned, which is a continuation of Ser. No. 652,808, Feb. 7, 1991, abandoned, which is a continuation-in-part of Ser. No. 405,602, Sep. 11, 1989, abandoned, which is a continuation-in-part of Ser. No. 256,538, Oct. 11, 1988, abandoned. This application Apr. 25, 1995, Ser. No. 428,613

Int. Cl.[6] C07D *205/085;463/00*

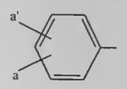
U.S. Cl. 540—364 **11 Claims**

1. A compound of the formula

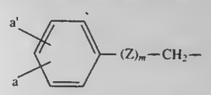


(II)

wherein R^1 is $C_1–C_6$ alkyl; a phenyl group



wherein a and a' independently are hydrogen, $C_1–C_4$ alkyl, $C_1–C_4$ alkoxy or halogen; a group represented by the formula



wherein Z is O or S, m is 0 or 1, and a and a' have the same meanings as defined above; or R^1 is R^{11} O wherein R^{11} represents $C_1–C_4$ alkyl, $C_5–C_7$ cycloalkyl, benzyl, nitrobenzyl, methoxybenzyl, or halobenzyl;

R^2 is a carboxy protecting group; and

R^3 is a leaving group of the formula $—OR^4$, wherein R^4 is $C_2–C_6$ alkenyl, phenyl, or phenyl substituted with one, two or three substituents selected from $C_1–C_6$ alkylthio, nitro, halo, carboxy.

5,646,276

DIAZEPINE CONTAINING DUAL ACTION INHIBITORS

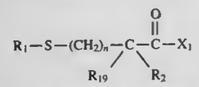
Jeffrey A. Robl, Newtown, Pa., assignor to Bristol-Myers Squibb Co., Princeton, N.J.

Division of Ser. No. 160,540, Dec. 1, 1993, Pat. No. 5,552,397, which is a continuation-in-part of Ser. No. 61,606, May 13, 1993, abandoned. This application Jun. 19, 1996, Ser. No. 666,158

Int. Cl.[6] C07D *487/04;513/04;* **A61K** *31/55*

U.S. Cl. 540—500 **8 Claims**

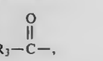
1. A compound of the formula



(I)

and pharmaceutically acceptable salts thereof wherein:

R_1 is hydrogen,



or R_{18}—S—;

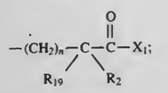
R_2 and R_{19} are independently selected from the group consisting of hydrogen, alkyl, cycloalkyl-$(CH_2)_m$—, substituted alkyl, aryl-$(CH_2)_m$—, substituted aryl-$(CH_2)_m$—, and heteroaryl-$(CH_2)_m$— or R_2 and R_{19} taken together with the carbon atom to which they are attached complete a cycloalkyl ring or a benzofused cycloalkyl ring;

n is zero or one;

m is zero or an integer from 1 to 6;

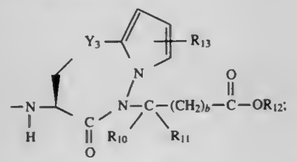
R_3 is alkyl, substituted alkyl, cycloalkyl-$(CH_2)_m$—, aryl-$(CH_2)_m$—, substituted aryl-$(CH_2)_m$—, or heteroaryl-$(CH_2)_m$—;

R_{18} is alkyl, substituted alkyl, cycloalkyl-$(CH_2)_m$—, aryl-$(CH_2)_m$—, substituted aryl-$(CH_2)_m$—, heteroaryl-$(CH_2)_m$— or —S—R_{18} completes a symmetrical disulfide wherein R_{18} is of the formula



(II)

X_1 is of the formula



(XIII)

Y_3 is —CH_2— or

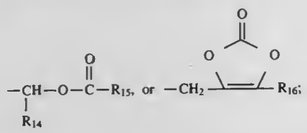


s is zero, one, or two;

R_{10} and R_{11} are independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, alkenyl, substituted alkenyl, cycloalkyl —$(CH_2)_m$—, aryl-$(CH_2)_m$—, substituted aryl-$(CH_2)_m$—, and heteroaryl-$(CH_2)_m$—;

b is zero or one;

R_{12} is hydrogen, alkyl, substituted alkyl, aryl-$(CH_2)_m$—, substituted aryl-$(CH_2)_m$—, heteroaryl-$(CH_2)_m$—;



R_{13} is hydrogen, lower alkyl, or substituted lower alkyl;

R_{14} is hydrogen, lower alkyl, cycloalkyl, or phenyl;

R_{15} is hydrogen, lower alkyl, lower alkoxy or phenyl;

R_{16} is lower alkyl or aryl-$(CH_2)_m$—;

the term "alkyl" refers to straight and branched chain radicals having one to seven carbon atoms;

the term "substituted alkyl" refers to such straight or branched chain radicals of 1 to 7 carbons wherein one or more hydrogens have been replaced by a hydroxy, amino, halo, trifluoromethyl, cyano, —NH(lower alkyl), —N(lower alkyl)$_2$, lower alkoxy, lower alkylthio or carboxy;

the term "alkenyl" refers to straight or branched chain radicals of 3 to 7 carbon atoms having one or two double bonds;

the term "substituted alkenyl" refers to such straight or branched radicals of 3 to 7 carbons having one or two double bonds wherein a hydrogen has been replaced by a hydroxy, amino, halo, trifluoromethyl, cyano, —NH(lower alkyl), —N(lower alkyl)$_2$, lower alkoxy, lower alkylthio, or carboxy;

the term "cycloalkyl" refers to saturated rings of 3 to 7 carbon atoms;

the term "aryl" refers to phenyl, 1-naphthyl, and 2-naphthyl;

the term "substituted aryl" refers to phenyl, 1-naphthyl, and 2-naphthyl having a substituent selected from lower alkyl, lower alkoxy, lower alkylthio, halo, hydroxy, trifluoromethyl, amino, —NH(lower alkyl), and —N(lower alkyl)$_2$, di- and tri-substituted phenyl, 1-naphthyl, or 2-naphthyl wherein said substituents are selected from methyl, methoxy, methylthio, halo, hydroxy, and amino;

the term "heteroaryl" refers to unsaturated monocyclic rings of 5 or 6 atoms containing one or two O and S atoms and/or one to four N atoms provided that the total number of hetero atoms is four or less and bicyclic rings wherein the five or six membered ring as defined above is fused to a phenyl or pyridyl ring, said heteroaryl ring is attached by way of an available carbon or nitrogen atom; and said monocyclic or bicyclic ring can be substituted at an available carbon atom by lower alkyl of 1 to 4 carbons, halo, hydroxy, benzyl, or cyclohexylmethyl, or can be substituted at an available nitrogen atom by benzyloxymethyl, p-toluene sulfonyl, 2,4-dinitrophenyl, lower alkyl of 1 to 4 carbons, benzyl or benzhydryl;

the term "lower alkyl" refers to straight or branched chain radicals having one to four carbons;

the term "substituted lower alkyl" refers to such straight or branched chain radicals having one to four carbons wherein one hydrogen has been replaced by a hydroxy, amino, halo, trifluoromethyl, cyano, —NH(lower alkyl), —N(lower alkyl)$_2$, lower alkoxy, lower alkylthio, or carboxy;

the terms "lower alkoxy" and "lower alkylthio" refer to such lower alkyl groups as defined above attached to an oxygen or sulfur; and

the term "halo" refers to chloro, bromo, fluoro, and iodo.

5,646,277

PREPARATION OF CAOPROLACTAM

Eberhard Fuchs, Frankenthal, and Tom Witzel, Ludwigshafen, both of Germany, assignors to BASF Aktiengellschaft, Ludwigshafen, Germany

PCT No. PCT/EP94/03782, § 371 Date May 16, 1996, § 102(e) Date May 16, 1996, PCT Pub. No. WO95/14665, PCT Pub. Date Jun. 1, 1995

PCT Filed Nov. 15, 1994, Ser. No. 646,278

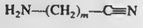
Claims priority, application Germany, Nov. 20, 1993, 43 39 648.8

Int. Cl.[6] C07D *201/08*

U.S. Cl. 540—539 **5 Claims**

1. A process for preparing cyclic lactams by reacting amino carbonitriles with water in the presence of catalysts, wherein the reaction is carried out in liquid phase in a fixed bed reactor in the presence of heterogeneous catalysts which have no soluble constituents under the reaction conditions.

3. A process as defined in claim 1, wherein amino carbonitriles of the formula



where

m is 3, 4, 5 or 6 are employed.

4. A process as defined in claim 3, wherein 6-aminocapronitrile is employed as amino carbonitrile.

5,646,278

AMIDRAZONES AND THEIR USE AS INSECTICIDAL AND AGENTS

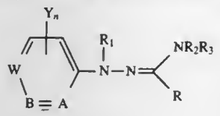
Joseph Augustus Furch, Lawrenceville, N.J.; David George Kuhn, and David Allen Hunt, both of Newtown, Pa., assignors to American Cyanamid Company, Madison, N.J.

Division of Ser. No. 998,105, Dec. 29, 1992, Pat. No. 5,420,165. This application Apr. 28, 1995, Ser. No. 431,154

Int. Cl.[6] C07D *213/76;237/20;239/42*

U.S. Cl. 544—224 **1 Claim**

1. A compound having the structure of formula I



(I)

wherein

A is C—R_4 or N;

B is C—R_5 or N;

W is C—R_6 or N with the proviso that at least one of A, B or W must be other than N and at least one of A, B or W is N;

Y is halogen, CN, NO_2, C_1–C_6alkyl, C_1–C_6haloalkyl, C_1–C_6alkoxy or C_1–C_6haloalkoxy;

n is an integer of 0, 1 or 2;

R is hydrogen,

C_1–C_{10}alkyl optionally substituted with one or more halogens, C_3–C_6 cycloalkyl, C_1–C_4alkoxy, C_1–C_4haloalkoxy, (C_1–C_4alkyl)SO_x,

phenyl optionally substituted with one to three halogen, C_1–C_4alkyl, C_1–C_4haloalky, l C_1–C_4alkoxy, C_1–C_4haloalkoxy, (C_1–C_4alkyl)SO_x, (C_1–C_4haloalkyl)SO_x, NO_2 or CN groups, or

phenoxy optionally substituted with one to three halogen, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy, C_1–C_4haloalkoxy, (C_1–C_4alkyl)SO_x, (C_1–C_4haloalkyl)SO_x, NO_2 or CN groups,

C_3–C_{12} cycloalkyl optionally substituted with one or more halogens, C_1–C_6alkyl, C_1–C_6haloalkyl, C_1–C_4alkoxy, C_1–C_4haloalkoxy, (C_1–C_4-alkyl)SO_x, (C_1–C_4haloalkyl)SO_x,

phenyl optionally substituted with one to three halogen, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy, C_1–C_4haloalkoxy, NO_2 or CN groups, or

phenoxy optionally substituted with one to three halogen, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy, C_1–C_4haloalkoxy, NO_2 or CN groups, or

phenyl optionally substituted with one or more halogen, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4-alkoxy, C_1–C_4haloalkoxy, NO_2 or CN groups;

R_1 is hydrogen or C_1–C_4alkyl;

R_2 and R_3 are each independently hydrogen,

C_1–C_{10}alkyl optionally substituted with one or more halogen, hydroxy, C_1–C_4alkoxy, (C_1–C_4-alkyl)SO_x, $CONR_7R_8$, CO_2R_9, R_{10}, R_{11},

C_3–C_6cycloalkyl optionally substituted with one to three halogen, C_1–C_4alkyl, C_1–C_4 haloalkyl, C_1–C_4alkoxy, C_1–C_4haloalkoxy, NO_2 or CN groups,

phenyl optionally substituted with one or more halogen, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy, C_1–C_4haloalkoxy, NO_2 or CN groups, or

pyridyl optionally substituted with one or more halogen, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy, C_1–C_4haloalkoxy, NO_2 or CN groups,

C_3–C_{10}alkenyl optionally substituted with one or more halogen, hydroxy, C_1–C_4alkoxy, (C_1–C_4alkyl)SO_x, $CONR_7R_8$, CO_2R_9, R_{10}, R_{11},

C_3–C_6cycloalkyl optionally substituted with one to three halogen, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy, C_1–C_4haloalkoxy, NO_2 or CN groups,

phenyl optionally substituted with one or more halogen, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy, C_1–C_4haloalkoxy, NO_2 or CN groups, or

pyridyl optionally substituted with one or more halogen, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy, C_1–C_4haloalkoxy, NO_2 or CN groups,

C_3–C_{10}alkynyl optionally substituted with one or more halogen, hydroxy, C_1–C_4alkoxy, (C_1–C_4alkyl)SO_x, $CONR_7R_8$, CO_2R_9, R_{10}, R_{11},

C_3–C_6cycloalkyl optionally substituted with one to three halogen, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy, C_1–C_4haloalkoxy, NO_2 or CN groups,

phenyl optionally substituted with one or more halogen, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy, C_1–C_4haloalkoxy, NO_2 or CN groups, or

pyridyl optionally substituted with one or more halogen, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy, C_1–C_4haloalkoxy, NO_2 or CN groups,

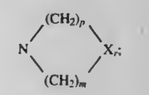
C_3–C_{12}cycloalkyl optionally substituted with one or more halogen, hydroxy, C_1–C_4alkoxy, (C_1–C_4alkyl)SO_x, $CONR_7R_8$, CO_2R_9, R_{10}, R_{11},

C_3–C_6cycloalkyl optionally substituted with one to three halogen, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy, C_1–C_4haloalkoxy, NO_2 or CN groups,

phenyl optionally substituted with one or more halogen, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy, C_1–C_4haloalkoxy, NO_2 or CN groups, or

pyridyl optionally substituted with one or more halogen, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy, C_1–C_4haloalkoxy, NO_2 or CN groups or

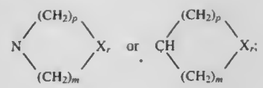
R_2 and R_3 may be taken together to form a ring represented by the structure



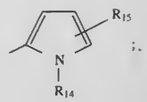
R_4, R_5 and R_6 are each independently hydrogen, halogen, CN, NO_2, (C_1–C_4alkyl)SO_x, (C_1–C_4haloalkyl)SO_x, C_1–C_6alkyl, C_1–C_6haloalkyl, C_1–C_6alkoxy or C_1–C_6haloalkoxy;

R_7, R_8 and R_9 are each independently hydrogen or C_1–C_4 alkyl;

R_{10} is $NR_{12}R_{13}$,



R_{11} is



R_{12}, R_{13}, R_{14} and R_{15} are each independently hydrogen or C_1–C_4alkyl;

X is O, S or NR_{14};

r is an integer of 0 or 1;

p and m are each independently an integer of 0, 1, 2 or 3 with the proviso that the sum of p+m+r must be 4, 5 or 6;

x is an integer of 0, 1 or 2; or

the acid addition salts thereof with the proviso that when one of A, B or W is N, then Y must be other than C_1–C_{10} alkyl or one of R_4, R_5, or R_6 must be other than C_1–C_6alkyl.

5,646,279

SUBSTITUTED 4-PIPERAZINYLMETHYL 2-PHENYLIMIDAZOLES; DOPAMINE RECEPTOR SUBTYPE SPECIFIC LIGANDS

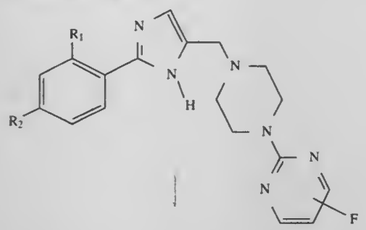
Andrew Thurkauf, Danbury, and Alan Hutchison, Madison, both of Conn., assignors to Neurogen Corporation, Branford, Conn.

Continuation of Ser. No. 344,552, Nov. 23, 1994, abandoned, which is a continuation-in-part of Ser. No. 313,435, Sep. 27, 1994, which is a continuation-in-part of Ser. No. 81,317, Nov. 8, 1993, Pat. No. 5,428,164, which is a continuation-in-part of Ser. No. 635,256, Dec. 28, 1990, Pat. No. 5,159,083. This application Jun. 1, 1995, Ser. No. 457,036

Int. Cl.[6] **C07D** *403/04;403/06;233/64;* **A61K** *31/415*

U.S. Cl. 544—295 **3 Claims**

I. A compound of the formula:



or the pharmaceutically acceptable salts thereof wherein

R_1 and R_2 are independently selected from hydrogen and fluoro with the proviso that at least one of the R_1 and R_2 is fluoro.

5,646,280

SUBSTITUTED 4-(ALKYL, DIALKYL) OR CYCLOALKYL)AMINOMETHYL 2-PHENYLIMIDAZOES: DOPAMINE RECEPTOR SUBTYPE SPECIFIC LIGANDS

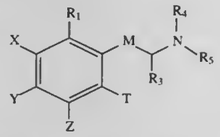
Andrew Thurkauf, Danbury, and Alan Hutchison, Madison, both of Conn., assignors to Neurogen Corporation, Branford, Conn.

Continuation of Ser. No. 344,552, Nov. 23, 1994, abandoned, which is a continuation-in-part of Ser. No. 313,435, Sep. 27, 1994, which is a continuation-in-part of Ser. No. 81,317, Nov. 8, 1993, Pat. No. 5,428,164, which is a continuation-in-part of Ser. No. 635,256, Dec. 28, 1990, Pat. No. 5,159,083. This application Jun. 1, 1995, Ser. No. 457,989

Int. Cl.[6] **C07D** *333/64;401/04;401/06;403/04;403/06;* **A61K** *31/415*

U.S. Cl. 544—295 **20 Claims**

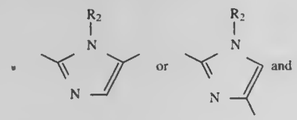
I. A compound of the formula:



or the pharmaceutically acceptable salts thereof wherein:

R_1 and T are the same or different and represent hydrogen, halogen, hydroxy, straight or branched chain lower alkyl having 1–6 carbon atoms, or straight or branched chain lower alkoxy having 1–6 carbon atoms;

M is



R_2 is hydrogen or straight or branched chain lower alkyl having 1–6 carbon atoms;

X and Z are the same or different and represent hydrogen, halogen, hydroxy, straight or branched chain lower alkyl having 1–6 carbon atoms, straight or branched chain lower alkoxy having 1–6 carbon atoms or SO_2R_6 where R_6 is straight or branched chain lower alkyl having 1–6 carbon atoms;

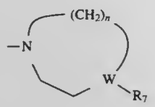
Y is hydrogen, amino, halogen, or straight or branched chain lower alkyl having 1–6 carbon atoms;

R_3 is hydrogen or straight or branched chain lower alkyl having 1–6 carbon atoms, or R_3 and R_4 together represent $—(CH_2)_{n2}—$ where n_2 is 3 or 4;

R_4 and R_5 are the same or different and represent hydrogen, straight or branched chain lower alkyl having 1–6 carbon atoms, aryl straight or branched chain lower alkyl having 1–6 carbon atoms or R_2 and R_5 together represent $—(CH_2)_{n3}—$ where n_3 is 2 or 3; or

NR_4R_5 represents 2-(1,2,3,4-tetrahydroisoquinolinyl), either unsubstituted or mono or disubstituted with halogen, hydroxy, straight or branched chain lower alkyl having 1–6 carbon atoms, or straight or branched chain lower alkoxy having 1–6 carbon atoms; or

NR_4R_5 represents



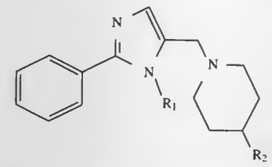
where

W is N or CH;

R_7 is hydrogen, phenyl, arylalkyl, pyridyl or pyrimidinyl, unsubstituted or mono or disubstituted with halogen, hydroxy, straight or branched chain lower alkyl having 1–6 carbon atoms, or straight or branched chain lower alkoxy having 1–6 carbon atoms; and

n is 1, 2, or 3.

19. A compound of the formula:

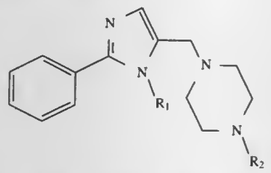


or the pharmaceutically acceptable salts thereof wherein

R_1 is lower alkyl; and

R_2 is benzyl where the phenyl ring is unsubstituted or mono or disubstituted with halogen, hydroxy, lower alkyl or lower alkoxy.

20. A compound of the formula:



or the pharmaceutically acceptable salts thereof wherein

R_1 is lower alkyl; and

R_2 is benzyl where the phenyl ring is unsubstituted or mono or disubstituted with halogen, hydroxy, lower alkyl or lower alkoxy.

5,646,281

CERTAIN 4-PIPERIDINO- AND PIPERAZINOMETHYL-2-PHENYL IMIDAZOLE DERIVATIVES; DOPAMINE RECEPTOR SUBTYPE SPECIFIC LIGANDS

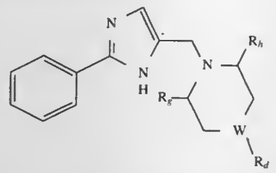
Andrew Thurkauf, Danbury; Raymond F. Horvath, North Branford; Jun Yuan, Clinton, and John M. Peterson, New Haven, all of Conn., assignors to Neurogen Corporation, Branford, Conn.

Continuation of Ser. No. 344,154, Nov. 23, 1994, abandoned, which is a continuation-in-part of Ser. No. 81,317, Nov. 8, 1993, Pat. No. 5,428,164, which is a continuation-in-part of Ser. No. 635,256, Dec. 28, 1990, Pat. No. 5,159,083. This application Jun. 5, 1995, Ser. No. 461,135

Int. Cl.[6] **C07D** *403/06;403/04;401/04;401/06;233/64;* **A61K** *31/415*

U.S. Cl. 544—295 **4 Claims**

I. A compound of the formula:



or the pharmaceutically acceptable salts thereof wherein

W is nitrogen;

R_g and R_h are methyl, or

R_g and R_h form an ethylene group and together with the ring system to which they are attached form a diazabicyclo(3.2.1)octane group; and

R_d is pyridyl, pyrimidinyl, phenylalkyl, or phenyl, each of which is unsubstituted or substituted with halogen, hydroxy, lower alkyl or lower alkoxy.

5,646,282

Patent Not Issued For This Number

5,646,283

TETRACYCLIC COMPOUND

Fumio Suzuki; Yoshisuke Nakasato; Hiroshi Tsumuki; Soichiro Sato; Tadafumi Tamura, and Hiroshi Nakajima, all of Shizuoka, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

PCT No. PCT/JP94/01591, § 371 Date May 22, 1995, § 102(e) Date May 22, 1995, PCT Pub. No. WO95/09153, PCT Pub. Date Apr. 6, 1995

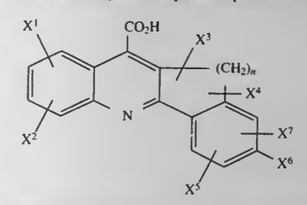
PCT Filed Sep. 28, 1994, Ser. No. 436,370

Claims priority, application Japan, Sep. 28, 1993, 5-241360

Int. Cl.[6] **C07D** *221/18*

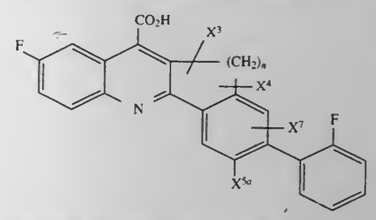
U.S. Cl. 546—61 **5 Claims**

1. A novel tetracyclic compound represented by formula (I)



(I)

or its pharmacologically acceptable salt, wherein X^1 and X^2 are the same or different and each represents hydrogen, a lower alkyl, halogen, nitro, hydroxy or a lower alkoxy, X^3 and X^4 are the same or different and each represents hydrogen or a lower alkyl, X^5 and X^7 are the same or different and each represents hydrogen, a lower alkyl, halogen, hydroxy or a lower alkoxy, X^6 represents a substituted or unsubstituted aryl, a substituted or unsubstituted aromatic heterocyclic group, cycloalkyl, bicycloalkyl or tricycloalkyl, and n is an integer of 1 to 4; provided that when n is 2, X^6 represents a substituted aryl, a substituted or unsubstituted aromatic heterocyclic group, cycloalkyl, bicycloalkyl or tricycloalkyl, or X^6 represents an unsubstituted aryl, and at least one of C^5 and X^7 represents a substituent mentioned above other than hydrogen; and provided that when formula (I) is represented by formula (II),



(II)

X^{5a} represents a lower alkyl, halogen or a lower alkoxy.

5,646,284

POLARIZABLE PHENANTHROLINE COMPLEX CRYSTAL HAVING IMPROVED STABILITY TO HEAT AND MOISTURE

Arimitsu Usuki, Nagoya; Hisato Takeuchi, Chita; Naribito Tatsuda, Nagoya; Akane Okada, Obu; Toshio Kurauchi; Hiromitsu Tanaka, both of Aichi-ken; Shinobu Okayama, Toyota; Kazuo Tojima, Toyota; Akio Fukui, Toyota, and Toshiro Okamoto, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, and Kabushiki Kaisha Toyota Chuo Kenkyusho, both of Japan

Continuation of Ser. No. 202,925, Feb. 28, 1994, abandoned, which is a continuation of Ser. No. 987,961, Dec. 11, 1992, abandoned. This application Aug. 3, 1995, Ser. No. 510,755

Claims priority, application Japan, Dec. 12, 1991, 3-329115; Jul. 14, 1992, 4-187020; Dec. 4, 1992, 4-325592; Jun. 29, 1993, 5-159398

Int. Cl.[6] C07D *471/04*

U.S. Cl. 546—88 **18 Claims**

1. A complex crystal consisting essentially of the anion of triiodine; the cation of a phenanthroline selected from the group consisting of 1,7-phenanthroline, 1,10-phenanthroline, 4,7-phenanthroline, 4-methyl-1,10-phenanthroline, 5-methyl-1,10-phenanthroline, 2,9-dimethyl-1,10-phenanthroline, 4,7-dimethyl-1,10-phenanthroline, 5,6-dimethyl-1,10-phenanthroline, 5-methoxy-1,10-phenanthroline, and 5-amino-1,10-phenanthroline, and having a basic property; and the anion of a Bronsted acid selected from the group consisting of sulfuric, hydrochloric, phosphoric, hydroiodic, sulfonic, monocarboxylic, and dicarboxylic acids, wherein the phenanthroline cation and the Bronsted acid anion form a neutral salt, so that an electron placed on the complex crystal is likely to move because of an interaction between the salt and the triiodine anion.

5,646,285

COMBINATORIAL NON-PEPTIDE LIBRARIES

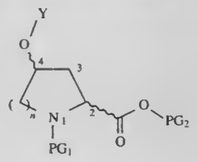
Nand Baindur, Edmonds, and Virender M. Labroo, Mill Creek, both of Wash., assignors to ZymoGenetics, Inc., Seattle, Wash.

Filed Jun. 7, 1995, Ser. No. 483,496

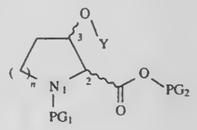
Int. Cl.[6] C07D *207/04;211/06*

U.S. Cl. 546—298 **3 Claims**

1. An orthogonally-protected compound of the formula:



or



wherein

PG_1 is a first protecting group that is unreactive to a chemistry used at another position within the compound, and that is capable of selective removal without affecting PG_2 or linkage to a solid support;

PG_2 is a second protecting group that is unreactive to a chemistry used at another position within the compound, and that is capable of selective removal without affecting PG_1 or linkage to a solid support;

Y is CH_2COOH, CH_2SO_2OH, CH_2PO_2ROH, CH_2Ph—COOH, CH_2Ph—SO_2OH, or CH_2Ph—PO_2ROH;

R is H or a substituted or unsubstituted alkyl, cycloalkyl, aryl, arylalkyl, heteroaryl, or heteroarylalkyl; and

n is 1 or 2.

5,646,286

PALLADIUM CATALYZED VINYLIC SUBSTITUTION REACTIONS WITH 2-SUBSTITUTED-PYRIDINES

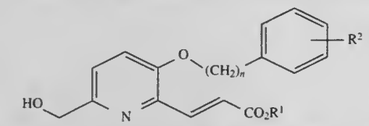
Peter William Sheldrake, Tunbridge Wells; Laurence Charles Powling, Maidstone, and Peter William Bickle, Tunbridge Wells, all of England, assignors to SmithKline Beecham plc, England

Filed May 26, 1995, Ser. No. 452,200

Int. Cl.[6] C07D *213/63;213/66;213/65*

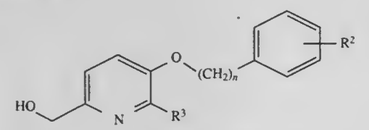
U.S. Cl. 546—301 **12 Claims**

1. A process for the preparation of a compound of formula (I):



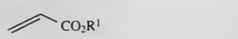
(I)

in which n is 1 to 20; R^1 is hydrogen, C_{1-6}alkyl or hydroxyC_{1-6}alkyl; and R^2 is hydrogen, C_{1-6}alkyl, C_{1-6}alkoxy or trifluoromethyl, which process comprises coupling a compound of formula (II):



(II)

in which n and R^2 are as defined in formula (I) and R^3 is halogen with a compound of formula (III):



(III)

in which R^1 is as defined in formula (I) in the presence of palladium catalyst.

5,646,287

REAGENTS FOR ENANTIOSELECTIVE ACYLATION AND RELATED REACTIONS

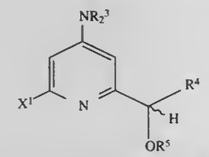
Edwin Vedejs, and Xinhai Chen, both of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed May 17, 1995, Ser. No. 442,580

Int. Cl.[6] C07D *213/30*

U.S. Cl. 546—312 **22 Claims**

1. A chiral DMAP derivative which is represented by the general formula (II)



(II)

wherein R^2 is a C_1 to C_7 alkyl group or NR^3_2 is a cyclic amine group which is pyrrolidinyl, piperidinyl, piperazinyl or morpholinyl; X^1 is hydrogen, halogen, alkyl, aryl or heteroaryl; R^4 is a C_1 to C_7 branched or unbranched alkyl group; and R^5 is hydrogen, alkyl, benzyl, aryl, heteroaryl or acyl.

5,646,288

PROCESS FOR THE PREPARATION OF AQUEOUS NICOTINALDEHYDE

Urs Siegrist, Eiken, and Henry Szczepanski, Wallbach, both of Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Division of Ser. No. 194,191, Feb. 9, 1994, Pat. No. 5,484,918. This application Jun. 2, 1995, Ser. No. 458,392

Claims priority, application United Kingdom, Mar. 2, 1993, 9304191

Int. Cl.[6] C07D *213/02*

U.S. Cl. 546—315 **8 Claims**

1. A process for the preparation of an aqueous medium of 10 to 60% nicotinaldehyde by weight by the catalytic reduction of 3-cyanopyridine under hydrogen in the presence of Raney-nickel, characterised in that

a) the Raney-nickel catalyst is present in an amount between 2 and 10 weight-% with respect to the cyanopyridine,

b) the solvent is aqueous carboxylic acid,

c) the pH is between 3.5 and 7,

d) the temperature is less than or equal to 40° C.,

e) the hydrogen pressure is between 0.2 and 5 bar,

f) the amount of hydrogen taken up is up to 110% with respect to the cyanopyridine, and

g) the mount of water present is in excess with respect to the cyanopyridine.

5,646,289

HETEROCYCLIC COMPOUNDS AND THEIR PREPARATION AND USE

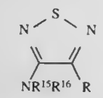
Charles A. Alt, Greenwood; Leander Merritt; Gary A. Rhodes, both of Indianapolis; Roger L. Robey; Eldon E. Van Meter, both of Greenwood; John S. Ward, Indianapolis, and Charles H. Mitch, Columbus, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 443,673, Jun. 1, 1995, abandoned, which is a continuation-in-part of Ser. No. 327,766, Oct. 24, 1994. This application Jun. 6, 1995, Ser. No. 468,481

Int. Cl.[6] C07D *285/10*

U.S. Cl. 548—110 **2 Claims**

1. A process for preparing a compound of formula IV



IV

wherein:

R^{15} and R^{16} are independently $R^{10}R^{11}R^{12}Si$ or $R^{13}R^{14}R^{15}Si$;

R is hydrogen, amino, NHR^6, NR^6R^7, R^4, —OR^4, —SR^4, —SOR^4, —SO_2R^4, C_{3-10}-cycloalkyl, C_{4-12}-(cycloalkylalkyl), -Z-C_{3-10}-cycloalkyl or -Z-C_{4-12}-(cycloalkylalkyl); or

R is phenyl or benzyloxycarbonyl, each of which is optionally substituted with one or more halogen, —CN, C_{1-4}-alkyl, C_{1-4}-alkoxy, —OCF_3, —CF_3, —$CONH_2$ or —CSNH substituents; or

R is —OR^5Y, —SR^5Y, OR^5-Z-Y, —SR^5ZY, —O—R^5-Z-R^4 or —S—R^5-Z-R^4;

R^4 is C_{1-15}-alkyl, C_{2-15}-alkenyl, or C_{2-15}-alkynyl, each of which is optionally substituted with one or more halogen, —CF_3, —CN, Y, phenyl or phenoxy substituents wherein phenyl or phenoxy is optionally substituted with one or more halogen, —CN, C_{1-4}-alkyl, C_{1-4}-alkoxy, —OCF_3, —CF_3, —$CONH_2$ or —$CSNH_2$ substituents;

R^5 is C_{1-15}-alkylene, C_{2-15}-alkenylene, or C_{2-15}-alkynylene;

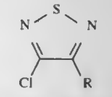
R^6 and R^7 independently are hydrogen or C_{1-6}-alkyl; or

R^6 and R^7 together form a C_3–C_5-alkylene group which together with the nitrogen atom form a 4- to 6-membered ring;

Y is a 5 or 6 membered heterocyclic group; and

Z is oxygen or sulphur;

comprising reacting a compound of the formula III



III

with $R^8N[(R^{10}R^{11}R^{12}Si)(R^{13}R^{14}R^{15}Si)]$, wherein

R^8 is Li, Na, or K; and

R^{10},R^{11}, R^{12}, R^{13}, R^{14} and R^{15} are independently (C_1–C_6)-alkyl, aryl, or aryl (C_1–C_3)alkyl.

5,646,290

THIAZOLYLISOINDOLENINE DYESTUFFS

Manfred Lorenz, Köln, and Klaus Wilfried Wanken, Leverkusen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

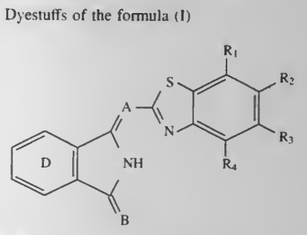
Filed May 18, 1995, Ser. No. 444,133

Claims priority, application Germany, May 25, 1994, 44 18 148.5; Jan. 31, 1995, 195 02 943.7

Int. Cl.[6] C07D *514/00*

U.S. Cl. 548—159 **5 Claims**

1. Dyestuffs of the formula (I)



(I)

in which

A represents a cyanomethylene radical,

B represents a radical of the formula C(CN)$COOR_5$ or N—R_6,

R_1 to R_4, independently of one another, denote hydrogen, halogen, substituted or uasubstituted C_1–C_8-alkyl or C_5–C_8-cycloalkyl, uninterrupted or oxygen-interrupted C_1–C_{10}-alkoxy, substituted or unsubtituted C_6–C_{10}-aryloxy, CF_3, or substituted or unsubstituted dialkylamine, or any two adjacent R_1 to R_4 radicals together with the aromatic ring C atoms form a fused benzene or naphthalene ring which is further unsubsituted or substituted,

R_5 represents a substituted or unsubstituted, uninterrupted of oxygen-interrupted, saturated or unsaturated C_1–C_{20}-alkyl radical, C_6–C_{10}-aryl-C_1–C_{10}-alkyl or hetarylalkyl

R_6 represents substituted or unsubstituted, uninterrupted or oxygen-interrupted C_1–C_{20}-alkyl, cycloalkyl, cycloalkylalkyl, or aralkyl, and

ring D is unsubstituted or carries at least one substituent which, if desired, together with a further substituent in the o position and the ring C atoms forms a fused benzene or naphthalene ring, or

A represents N,

R_5 represents a substituted or unsubstituted, uninterrupted or oxygen-interrupted, sautrated or unsaturated C_4–C_{20} alkyl radical, C_6–C_{10}-aryl-C_1–C_{10}-alkyl or hetarylalkyl and

B, R_1 to R_4, R_6 and D have the above mentioned meanings.

5,646,291

PROCESS FOR THE MANUFACTURE OF 2-PHENYL-4,5-OXAZOLEDIONE 4-PHENYLHYDRAZONE DERIVATIVES

Hajime Hoshi, Fukushima; Kazuhiko Sunagawa, Iwaki, and Takeo Watanabe, Fukushima, all of Japan, assignors to Kureha Chemical Industry Co., Ltd., Tokyo, Japan

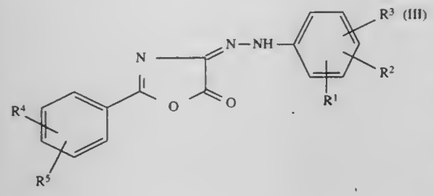
Continuation-in-part of Ser. No. 88,914, Jul. 8, 1993, abandoned, which is a continuation of Ser. No. 814,097, Dec. 26, 1991, abandoned. This application May 1, 1995, Ser. No. 431,573

Claims priority, application Japan, Dec. 27, 1990, 2-414631; Sep. 5, 1991, 3-254846

Int. Cl.[6] **C07D** *263/18*

U.S. Cl. 548—228 **13 Claims**

1. A process for producing a 2-phenyl-4,5-oxazoledione-4-phenylhydrazone compound of Formula (III):



(III)

wherein:

R^1 is Cl, F, I, (C_1–C_3) alkyl, CF_3 or NO_2;

R^2 is H, Cl, or CH_3;

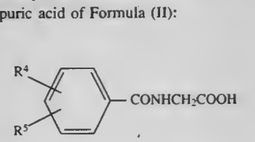
R^3 is H or CH_3; and

R^4 and R^5 are H's,

which comprises contacting a mixture comprising:

(a) acetic anhydride;

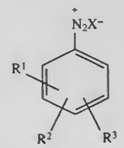
(b) a hippuric acid of Formula (II):



(II)

wherein R^4 and R^5 are the same as defined above

(c) a water-containing acidic solution of a benzenediazonium salt of Formula (I):



(I)

wherein R^1, R^2 and R^3 are the same as defined above and X is an anion; and

(d) a neutralizing agent: without contacting well a substantially water-free mixture comprising acetic anhydride and said hippuric acid, at a temperature and for a length of time suitable for cyclocondensation of from said hippuric acid to the corresponding 2-(substituted or unsubstituted)phenyl-5-(4H)-oxazolone.

5,646,292

BLOWING AGENTS OF TETRAZOLES AND THEIR DERIVATIVES

Satoshi Nakagawa, Himeji; Hideki Ogawa, Takasago; Hiroaki Tanaka, Takasago, and Atsuhiro Onishi, Takasago, all of Japan, assignors to Toyo Kasei Kogyo Company Limited, Osaka, Japan

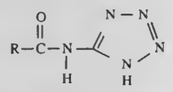
Filed May 6, 1996, Ser. No. 643,357

Claims priority, application Japan, Jun. 9, 1995, 7-168215

Int. Cl.[6] **C07D** *257/06*

U.S. Cl. 548—251 **5 Claims**

1. Aminotetrazole derivatives represented by the following general formula (1):



(1)

wherein R represents CH_3—, CH_3CH_2—$CH_3(CH_2)_2$—, or $CH_3(CH_2)_3CH(CH_2CH_3)CH_2$—.

5,646,293

PREPARATION OF N-ALKENYLAZOLES

Jochem Henkelmann, Mannheim; Marc Heider, Neustadt, and Thomas Rühl, Frankenthal, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

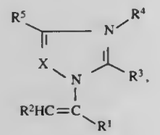
Filed Jul. 3, 1996, Ser. No. 675,588

Claims priority, application Germany, Jul. 6, 1995, 195 24 618.7

Int. Cl.[6] **C07D** *249/08;235/08;235/18;233/58*

U.S. Cl. 548—262.2 **16 Claims**

1. A process for preparing N-alkenylazoles of the general formula I



(I)

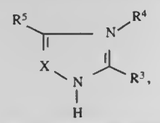
where

X is CH—R^6 or nitrogen,

R^1 and R^2 are hydrogen or C_1- to C_8-alkyl,

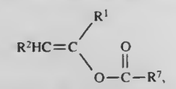
R^3, R^4, R^5 and R^6 are hydrogen, C_1- to C_{40}-alkyl, C_2- to C_{40}-alkenyl, C_3- to C_{20}-cycloalkyl, C_4- to C_{20}-alkylcycloalkyl, C_4- to C_{20}-cycloalkylalkyl, aryl, C_7- to C_{20}-alkylaryl or C_7- to C_{20}-aralkyl, or aryl, C_7- to C_{20}-alkylaryl or C_7- to C_{20}-aralkyl which are mono- to pentasubstituted by C_1- to C_8-alkyl, C_1- to C_8-alkoxy or halogen, or R^3 and R^4 or R^4 and R^5 or R^5 and R^6 together are a C_2- to C_{10}-alkylene chain which is unsubstituted or mono- to hexasubstituted by C_1- to C_8-alkyl

by reaction of azoles of the general formula II



(II)

where X, R^3, R^4 and R^5 have the abovementioned meanings, with an alkenyl carboxylate of the general formula III



(III)

where R^1 and R^2 have the abovementioned meanings and R^7 is hydrogen, C_1- to C_{40}-alkyl, C_3- to C_{20}-cycloalkyl, C_4- to C_{20}-alkylcycloalkyl, aryl, C_7- to C_{20}-alkylaryl, C_7- to C_{20}-aralkyl, or aryl or C_7- to C_{20}-aralkyl which is mono- to trisubstituted by C_1- to C_8-alkyl, at from 0° to 180° C. and from 0.01 to 10 bar, which comprises carrying out the reaction in the presence of a base and of a quaternary salt.

5,646,294

ORALLY ACTIVE AZOLE DERIVATIVES

Javier Bartroli; Enric Turmo; Manuel Anguita; Elena Carceller, and Carmen Almansa, all of Barcelona, Spain, assignors to J. Uriach & Cia. S.A., Spain

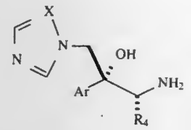
Division of Ser. No. 213,208, Mar. 15, 1994, Pat. No. 5,478,826. This application Oct. 13, 1995, Ser. No. 542,680

Claims priority, application Spain, Mar. 15, 1993, 9300537

Int. Cl.[6] **C07D** *249/08;233/61*

U.S. Cl. 548—267.2 **5 Claims**

1. A process for the preparation of an optically active compound of formula III



III

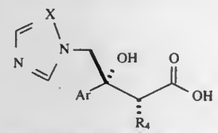
wherein

X is CH or N;

Ar represents phenyl or a phenyl ring substituted with one or more halogen and/or trifluoromethyl groups; and

R_4 is C_{1-4} alkyl,

which comprises treating a compound of formula VIII



VIII

wherein X, Ar and R_4 are as defined above, with diphenylphosphorylazide or alternatively forming first the acid chloride of VIII and then treating said acid chloride with sodium azide, to produce an acylazide intermediate, and then heating said acylazide intermediate in the presence of a base in a solvent at a temperature between room temperature and that of the boiling point of the solvent, followed by hydrolysis of the resulting intermediate oxazolidinone.

5,646,295

DIAZAPENTALENE DERIVATIVES AS A SPECIFIC REAGENT FOR THIOL COMPOUNDS

Rudolf Gompper, München; Manfred Kubbies, Penzberg; Axel Schmidt, München, and Bernhard Virnekas, München, all of Germany, assignors to Boebringer Mannheim GmbH, Mannheim, Germany

PCT No. PCT/EP95/01981, § 371 Date Jan. 31, 1996, § 102(e) Date Jan. 31, 1996, PCT Pub. No. WO95/32969, PCT Pub. Date Dec. 7, 1995

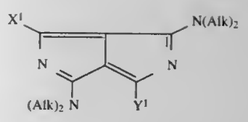
PCT Filed May 25, 1995, Ser. No. 586,826

Claims priority, application Germany, Jun. 1, 1994, 44 19 097.2

Int. Cl.[6] **C07D** *403/04;487/02;209/52;* **C07F** *9/02;* **G01N** *33/48;33/00*

U.S. Cl. 548—311.7 **19 Claims**

1. A diazapentalene compound suitable for use as a thiol group-specific fluorochrome, said compound of the formula



I

wherein

Alk is C_1-C_6 alkyl, and

X^1 and Y^1 are independently each a leaving group that is less nucleophilic than a thiol compound, which leaving group is other than chlorine.

5,646,296

METAL ION BINDING MONOMER AND POLYMER

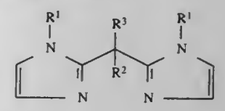
J. Thomas Ippoliti; Gary A. Mabbott, both of St. Paul, Minn.; Jeremy Hans, Madison, Wis., and Michelle Stohlmeyer, Dubuque, Iowa, assignors to Research Corporation Technologies, Inc., Tucson, Ariz.

Continuation-in-part of Ser. No. 130,330, Oct. 1, 1993, Pat. No. 5,455,359. This application Oct. 3, 1994, Ser. No. 317,433

Int. Cl.[6] **C07D** *403/06;233/54*

U.S. Cl. 548—314.4 **16 Claims**

1. A compound of the formula:

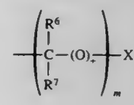


or a salt thereof wherein

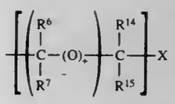
R^1 is hydrogen, lower alkyl, lower alkenyl, lower alkynyl, or lower alkoxy;

R^2 is lower alkoxy or hydroxy or acryloxy;

R^3 is carboxy vinyl or lower carbalkoxy vinyl, wherein the alkyl group thereon is unsubstituted or substituted with phenyl, or $(CH_2)_l$—OH or combination thereof,



or



wherein R^6 and R^7 taken together with the carbon atom to which they are attached form



each R^8 and R^9 are independently hydrogen, lower alkenyl, lower alkynyl, carboxyl, or lower carbalkoxy;

R^{14} and R^{15} are independently hydrogen, lower alkenyl, lower alknyl, lower alkoxy, halogen, sulfato, nitro, lower alkanoyl, formyl, carboxy, or lower carbalkoxy;

X is hydrogen, lower alkenyl, lower alknyl, lower alkoxy, halogen, sulfato, nitro, lower alkanoyl, formyl, carboxy, or lower carbalkoxy;

m=1–15;

t=0 or 1; and

l=0–5.

5,646,297

PROCESS FOR PREPARATION OF 2-EQUIVALENT 4-ARYLTHIO-5-PYRAZOLONE MAGENTA COUPLERS

Anna Maria Canuti, Genoa, and Enzo Coraluppi, Carcare, both of Italy, assignors to Imation Corp., St. Paul, Minn.

Filed Aug. 1, 1996, Ser. No. 693,837

Claims priority, application European Pat. Off., Sep. 18, 1995, 95114620

Int. Cl.[6] C07D *231/52*

U.S. Cl. 548—366.4 **7 Claims**

1. A process for preparation of 2-equivalent 4-arylthio-5-pyrazolone magenta couplers which comprises the steps of:

(i) reacting a 4-equivalent 5-pyrazolone magenta coupler and a diaryldisulfide compound in the presence of 1,8-diazabicyclo-[5,4,0]-undecen-7-ene and an organic solvent to obtain a reaction product between 4-arylthio-5-pyrazolone magenta coupler and 1,8-diazabicyclo-[5,4,0]-undecen-7-ene, and

(ii) converting the reaction product with an inorganic acid into the 4-arylthio-5 -pyrazolone magenta coupler.

5,646,298

CYCLOPROPYLINDOLE PRODRUGS

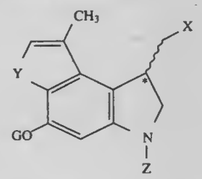
Michael J. Powell, Danville, Calif., assignor to ProCoron, Inc., Danville, Calif.

Filed Jun. 7, 1995, Ser. No. 482,753

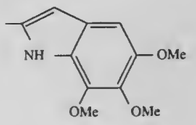
Int. Cl.[6] C07D *209/56;405/14*

U.S. Cl. 548—427 **8 Claims**

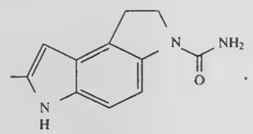
I. A compound having the formula:



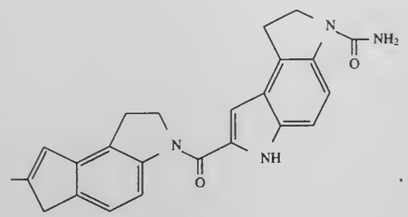
wherein G is a glycosyl moiety; Y is selected from the group consisting of O and NH; X is selected from the group consisting of Cl, Br, or $—OSO_2CH_3$ and Z is selected from the group consisting of $—SO_2—CH_3$ and —C(O)—R where R is selected from the group consisting of $—NHNH_2$,



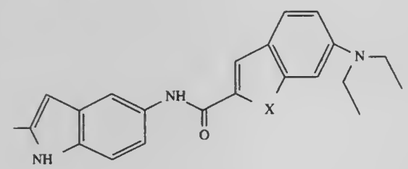
Trimethoxyindole- TMI,



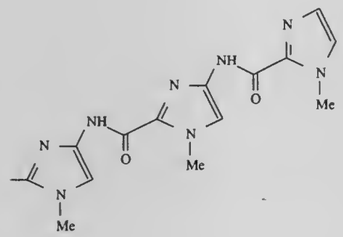
$CDPI_1$



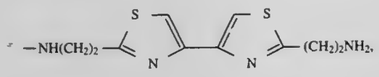
$CDPI_2$



where X=NH, O or S,



and



and wherein the asterisk (*) represents an assymmetric carbon giving rise to all optically-active and non-optically-active stereoisomers, as well as racemic and non-racemic mixtures.

5,646,299

TWO NEW CRYSTAL MODIFICATIONS OF A DIKETOPYRROLOPYRROLE PIGMENT

Zhimin Hao, Marly; Abul Iqbal, Arconciel, and Fritz Herren, Düdingen, all of Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

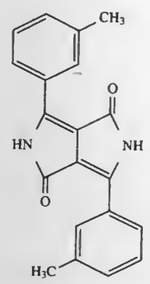
Filed Jun. 22, 1995, Ser. No. 493,776

Claims priority, application Switzerland, Jun. 29, 1994, 2076/94

Int. Cl.[6] C01D *487/06*

U.S. Cl. 548—453 **2 Claims**

1. A diketopyrrolopyrrole of the formula



(I)

a) in its β-modification, whose X-ray diffraction pattern is characterized by the following diffraction lines

Interplanar spacings (d values in Å)	double glancing angle (2Θ)	relative intensity
13.7172	6.44	100
5.4273	16.32	44
4.7045	18.85	18
4.5517	19.49	31
4.3463	20.42	22
4.1056	21.63	11
3.4241	26.00	70
3.2844	27.13	31
3.0960	28.81	16
3.0625	29.14	18

or

b) in its γ-modification, whose X-ray diffraction pattern is characterized by the following diffraction lines

Interplanar spacing (d values in Å)	double glancing angle (2Θ)	relative intensity
11.1386	7.93	100
6.9644	12.70	19
4.6733	18.98	10
4.3887	20.22	12
4.0033	22.19	19
3.6052	24.67	84
3.3749	26.39	12
3.2335	27.56	49
2.9053	30.75	13.

5,646,300

(1H-INDOL-1-YL)-2-(AMINO)ACETAMIDES AND RELATED (1H-INDOL-1-YL)-(AMINOALKYL)AMIDES, PHARMACEUTICAL COMPOSITION AND USE

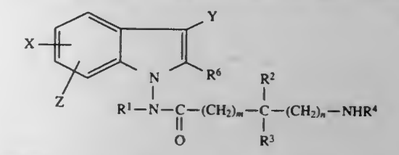
Raymond W. Kosley, Jr.; Denise M. Flanagan, both of Bridgewater; Lawrence L. Martin, Lebanon, and Peter A. Nemoto, Piscataway, all of N.J., assignors to Hoechst Marion Roussel, Inc., Cincinnati, Ohio

Division of Ser. No. 218,211, Mar. 25, 1994, which is a division of Ser. No. 863,273, Apr. 3, 1992, Pat. No. 5,319,096. This application Jun. 1, 1995, Ser. No. 457,649

Int. Cl.[6] C07D *209/10;493/04*

U.S. Cl. 548—475 **2 Claims**

1. A process for the preparation of the compound of Formula I



(I)

wherein

X is hydrogen, chloro, bromo, fluoro, hydroxy, loweralkoxy, aryloweralkoxy, acyloxy, loweralkylaminocarbonyloxy, diloweralkylaminocarbonyloxy, amino, loweralkylamino, diloweralkylamino, acylamino, loweralkyl or trifluoromethyl;

Y is hydrogen, loweralkyl, chloro or bromo;

Z is hydrogen, loweralkyl, loweralkoxy or halogen; or X and Z taken together can form a methylenedioxy group;

R^1 is hydrogen, loweralkyl, aryloweralkyl, carboxyloweralkyl, aryloweralkoxycarbonyloweralkyl or loweralkoxycarbonyl-loweralkyl;

R^2 is hydrogen, loweralkyl or hydroxyloweralkyl;

R^3 is hydrogen or loweralkyl; or

R^2 and R^3 together with the carbon to which they are attached form $(C_3–C_7)$cycloalkyl;

R^4 is hydrogen or loweralkyl;

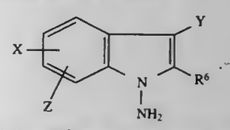
R^6 is hydrogen, chloro, bromo, arylcarbonyl, loweralkylcarbonyl, aryl(hydroxy)loweralkyl or hydroxyloweralkyl;

m and n are independently 0 to 5;

and pharmaceutically acceptable addition salts thereof and optical or geometrical isomers or racemic mixtures thereof

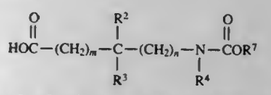
which process comprises

reacting an aminoindole of Formula II



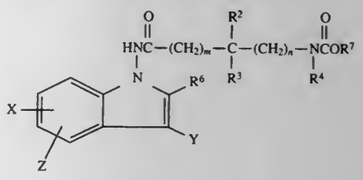
(II)

wherein X, Y, Z and R^6 are as defined above with a compound of Formula III



(III)

wherein R^2, R^3, R^4, m and n are as defined above and R^7 is loweralkyl or aryloweralkyl in the presence of a condensing agent to yield the compound of Formula IV

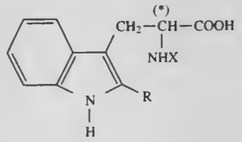


(IV)

wherein X, Y, R^2, R^3, R^4, R^6, m and n are as defined above and R^7 is loweralkyl or aryloweralkyl; and
deprotecting the compound of Formula IV and obtaining the compounds of Formula I.

5,646,301
D-2-ALKYL TRYPTOPHAN COMPOUNDS
Romano Deghenghi, Chesaux-Dessus, 1264-St. Cergue, Italy, assignor to Romano Deghenghi, St. Cergue, Switzerland
Division of Ser. No. 16,862, Feb. 10, 1993, which is a continuation-in-part of Ser. No. 672,300, Mar. 20, 1991, abandoned. This application Apr. 4, 1996, Ser. No. 627,282
Claims priority, application Italy, May 11, 1990, 20273-A
Int. Cl.[6] C07D *209/16*
U.S. Cl. 548—496 **4 Claims**

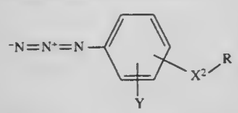
1. A D-2-alkyl tryptophan compound of formula



wherein
R is a lower alkyl group;
X is a 9-fluorenyl methyloxy carbonyl, benzoyl or benzyloxy carbonyl protecting group; and
(*) indicates that the compound is in the form of its D-isomer.

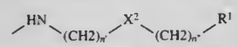
5,646,302
HETEROTRIFUNCTIONAL COMPOUNDS FOR PHOTOAFFINITY LABELLING
Richard Barner, Witterswil; Walter Huber, Kaiseraugst; Josef Hübscher, Nunningen; Jürg Hurst, Basel, and Daniel Schlatter, Oberwil, all of Switzerland, assignors to Roche Diagnostic Systems, Inc., Branchburg, N.J.
Filed Jun. 30, 1993, Ser. No. 85,719
Claims priority, application Switzerland, Jul. 10, 1992, 2179/92
Int. Cl.[6] C07C *247/16;247/18;* **C07D** *207/452*
U.S. Cl. 548—542 **4 Claims**

1. A heterotrifunctional compound of the formula



I

wherein X^1 is a sulfonyl group; Y is selected from the group consisting of hydrogen, Y' or X^1Y'; Y' is selected from the group consisting of a hydroxy group, an amino group and an alkoxy group; R is a functional group of the formula

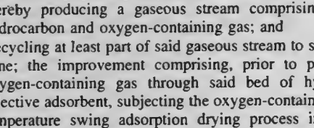


II

wherein X^2 is a disulfide or methylene group; R^1 is selected from the group consisting of an amino group (—NH—R^2); a reactive group selected from the group consisting of isocyanate, isothiocyanate, vinylsulfonamide (—NH—SO_2—CH=CH_2), maleimide, 2-halocarboxamides and monoamides from dicarboxylic acid dihalides; and a carboxyl derivative CO—R^3 selected from the group consisting of acid halide, hydrazide, anhydride a dithiopyridyl (—NH—$(CH_2)_n$"—S—S— pyridyl), and a reactive ester with the group consisting of hydroxysuccinimide, isourea and hydroxysuccinimide-sulfonic acid; wherein when X^2 is a methylene group, R^1 must contain a disulfide group; R^2 is hydrogen or a derivatized carboxylalkanoyl group; and n', and n" and n"' are independently integers from 1–6.

5,646,303
METHOD FOR CONTROLLING EMESIS CAUSED BY CHEMOTHERAPEUTIC AGENTS AND ANTIEMETIC AGENTS USEFUL THEREIN
Jung-Hui Sun, Dublin, and Chih-Yun Johnny Tu, Columbus, both of Ohio, assignors to Pharmacia Inc., Dublin, Ohio
Continuation of Ser. No. 905,215, Sep. 9, 1986, Pat. No. 4,772,459. This application Sep. 20, 1988, Ser. No. 246,716
Int. Cl.[6] C07D *207/09*
U.S. Cl. 548—567 **1 Claim**

1. A compound of the formula (I):



(I)

wherein Z is selected from the group consisting of:
—$CH_2OCH_2CH_2OR^4$
where R^4 is lower alkenyl or lower alkynyl, the unsaturated carbon atom may not be directly attached to an oxygen atom; R represents a hydrogen atom, a halogen atom, a lower alkyl group, a cycloalkyl group, a lower alkoxy group, —NH_2, a lower alkyl-substituted amino group, an acylamido group, sulfamoyl, a sulfonamido group or nitro; n is an integer of 1 to 3; W is a straight chain or branched chain alkylene group of 1 to 4 carbon atoms; and X represents the carbon and hydrogen atoms necessary to complete a 5 or 6 membered ring; or nontoxic pharmaceutically acceptable salts, hydrates, solvates or quaternary ammonium salts thereof.

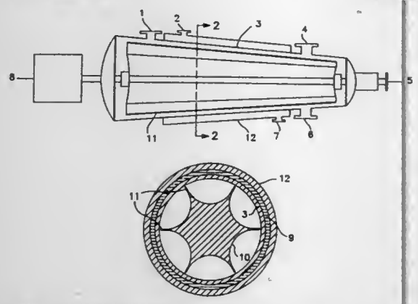
5,646,304
PROCESS FOR THE PRODUCTION OF PETROCHEMICALS
Divyanshu R. Acharya, Bridgewater, and Satish S. Tamhankar, Scotch Plains, both of N.J., assignors to The BOC Group, Inc., New Providence, N.J.
Filed Jun. 23, 1995, Ser. No. 494,293
Int. Cl.[6] C07D *307/60*
U.S. Cl. 549—259 **19 Claims**

1. In a method of producing a petrochemical comprising:
(a) contacting a hydrocarbon with an oxygen-containing gas selected from air and oxygen-enriched air in a reaction zone in the presence of an appropriate oxidation catalyst under conditions which produce a product gas comprising said petrochemical, unreacted hydrocarbon, and moisture;
(b) removing said petrochemical from said product gas in a petrochemical recovery zone, thereby producing petrochemical-free gas;
(c) passing at least part of said petrochemical-free gas through a hydrocarbon-selective adsorbent, thereby adsorbing unreacted hydrocarbon onto said hydrocarbon-selective adsorbent and producing hydrocarbon-depleted waste gas;
(d) at least partially regenerating said hydrocarbon-selective adsorbent by passing oxygen-containing gas therethrough, thereby producing a gaseous stream comprising desorbed hydrocarbon and oxygen-containing gas; and
(e) recycling at least part of said gaseous stream to said reaction zone; the improvement comprising, prior to passing said oxygen-containing gas through said bed of hydrocarbon-selective adsorbent, subjecting the oxygen-containing gas to a temperature swing adsorption drying process in a system comprised of at least two beds of moisture-selective adsorbent which are operated out of phase and in such a manner that there is always at least one bed of adsorbent in oxygen-containing gas-drying service and at least one bed of adsorbent undergoing regeneration; said at least one bed of adsorbent undergoing regeneration being at least partially regenerated by passing therethrough said hydrocarbon-depleted waste gas.

5,646,305
OXYGEN ENRICHMENT PROCESS FOR AIR BASED GAS PHASE OXIDATIONS WHICH USE METAL OXIDE REDOX CATALYSTS
Matthew Lincoln Wagner, White Plains, N.Y.; Donald Walter Welsh Kirkwood, Oakville, Canada, and Kazuo Kiyonaga, Honolulu, Hi., assignors to Praxair Technology, Inc., Danbury, Conn.
Filed Dec. 27, 1995, Ser. No. 579,109
Int. Cl.[6] C07D *307/60;* **C07B** *33/00*
U.S. Cl. 549—259 **18 Claims**

1. In an improved process for the selective gas phase oxidation of an organic reactant using a metal oxide redox catalyst, wherein the organic reactant and air feeds are at a substantially continuous level, the improvement comprising adding oxygen to the gas phase in alternating relatively high and relatively low amounts.

5,646,306
PROCESS FOR CONTROLLED DEPOLYMERIZATION OF FEED MATERIAL TO PRODUCE A PRODUCT WITH LOWER MOLECULAR WEIGHT
A. Frederick Elsasser, Jr., Anderson Township, Hamilton County, Ohio, assignor to Henkel Corporation, Plymouth Meeting, Pa.
Continuation of Ser. No. 315,663, Sep. 30, 1994, abandoned, which is a continuation of Ser. No. 667,135, Mar. 11, 1991, abandoned. This application Apr. 3, 1996, Ser. No. 624,338
Int. Cl.[6] C07D *321/04;321/12*
U.S. Cl. 549—267 **20 Claims**



1. In a depolymerization process for the synthesis of cyclic esters from linear polyesters, branched polyesters, or higher molecular weight cyclic polyesters wherein a liquid or solid polyester feed material is contacted with a heated, solid, chemically inert surface, the improvement wherein the process comprises the steps of:
(A) contacting said liquid or solid feed material with a heated, solid, chemically inert surface in a reaction zone having a thickness not greater than 20 mm for a contact time sufficient to cause at least part of the feed material to depolymerize and react to form a gaseous cyclic ester product, in the presence of a positive driving force which assures that none of the feed material and none of any liquid or solid residue coproduced therefrom during the depolymerization of the feed material remains in contact with said heated, solid, chemically inert surface for a time sufficiently long to form a solid residue that adheres to said heated, solid, chemically inert surface, and wherein said heated, solid, chemically inert surface is a part of the boundary of said reaction zone, said reaction zone being surrounded by a gas tight enclosure and being connected via a passageway freely traversable by vapor to a condensation zone distinct from but within the same gas tight enclosure as is the reaction zone; and
(B) passing the gaseous cyclic ester product from step (A) to said condensation zone to condense the gaseous cyclic ester product therein.

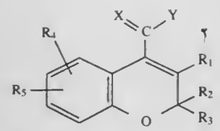
17. In a depolymerization process wherein a liquid or solid feed material containing a polymeric compound is contacted with a heated, solid, chemically inert surface, the improvement wherein the process comprises the steps of:
(A) contacting said liquid or solid feed material with a heated, solid, chemically inert surface in a reaction zone having a thickness not greater than 20 mm for a contact time sufficient to cause at least part of the feed material to depolymerize to a gaseous product of lower molecular weight than the feed material, which gaseous product may undergo further chemical reaction to form another desired gaseous product, in the presence of a positive driving force which assures that none of the feed material and none of any liquid or solid residue coproduced therefrom during the depolymerization of the feed material remains in contact with said heated, solid, chemically inert surface for a time sufficiently long to form a solid residue that adheres to said heated, solid, chemically inert surface, and wherein said heated, solid, chemically inert surface is a part of the boundary of said reaction zone, said reaction zone being surrounded by a gas tight enclosure and being connected via a passageway freely traversable by vapor to a condensation zone distinct from but within the same gas tight enclosure as is the reaction zone; and
(B) passing the gaseous product from step (A) to said condensation zone to condense the gaseous product therein.

5,646,307
PREPARATION OF γ-BUTYROLACTONE
Rolf Pinkos, Bad Dürkheim, and Rolf Fischer, Heidelberg, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany
PCT No. PCT/EP94/03683, § 371 Date May 16, 1996, § 102(e) Date May 16, 1996, PCT Pub. No. WO95/14010, PCT Pub. Date May 26, 1995
PCT Filed Nov. 9, 1994, Ser. No. 640,879
Claims priority, application Germany, Nov. 18, 1993, 43 39 269.5
Int. Cl.[6] C07D *307/02*
U.S. Cl. 549—295 **10 Claims**

1. A process for the preparation of γ-butyrolactone, wherein 2,5-dihydrofuran or 2,3-dihydrofuran or a mixture of these two dihydrofurans is caused to react in the gas phase in the presence of water and in the presence or absence of additional hydrogen at elevated temperature over a hydrogenating catalyst.

5,646,308
BENZOPYRAN DERIVATIVES
Hiroshi Koga, and Hiroyuki Nabata, both of Shizuoka, Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan
PCT No. PCT/JP93/00086, § 371 Date Jul. 18, 1994, § 102(e) Date Jul. 18, 1994, PCT Pub. No. WO93/15068, PCT Pub. Date Aug. 5, 1993
PCT Filed Jan. 25, 1993, Ser. No. 256,580
Claims priority, application Japan, Jan. 24, 1992, 4-010819
Int. Cl.[6] C07D *311/58*
U.S. Cl. 549—404 **7 Claims**

1. A benzopyran derivative represented by the following general formula (I):



(I)

wherein

R_1 represents a hydrogen atom

R_2 and R_3 represent, in common with each other or independently, a substituted lower alkyl group containing a halogen atom as a substituent, simultaneously, though.

R_4 and R_5 represent, in common with each other or independently, a hydrogen atom, a lower alkyl group, a lower haloalkyl group, a halogen atom, a lower alkoxy group, a lower haloalkoxy group, an amino group, an acylamino group, a nitro group, a cyano group, an ester group, a lower alkylsulfonyl group or an arylsulfonyl group,

X represents =O, =S or =N—Z, wherein Z represents a hydrogen atom, a lower alkyl group, an aryl group, a hydroxyl group, a lower alkoxy group, a cyano group, a carbamoyl group or a sulfamoyl group, and

Y represents $—NR_6R_7$, $—OR_8$ or $—SR_9$, wherein R_6 and R_7 represent, in common with each other or independently, a hydrogen atom, a hydroxyl group, a lower alkoxy group, a cyano group, an amino, a saturated or unsaturated lower alkyl group optionally containing a cyano group, an aryl group, a cycloalkyl group, a heteroaryl group, or R_6 and R_7, in combination, represent a heterocycle with a nitrogen atom, and R_8 and R_9 represent a hydrogen atom, a lower alkyl group or an aryl group.

5,646,309

INTERMEDIATES IN THE SYNTHESIS OF CHROMAN DERIVATIVES

Eva Maria Hammarberg; Lars George Johansson, both of Södertälje; Lars-Gunnar Larsson, Hölö ; Rolf Noréen, Huddinge; Lucy Anna Renyi, Skärholmen; Svante Bertil Ross, Södertälje; Daniel Dungan Sohn, Södertälje; Björn Eric Svensson, Södertälje, and Seth-Olov Thorberg, Järna, all of Sweden, assignors to Astra Aktiebolag, Sodertalje, Sweden

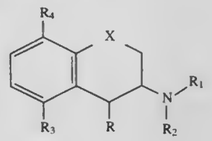
Division of Ser. No. 144,671, Oct. 28, 1993, Pat. No. 5,420,151, which is a continuation-in-part of Ser. No. 957,214, Oct. 6, 1992, abandooed, and Ser. No. 780,531, Oct. 18, 1991, abandoned, said Ser. No. 957,214is a continuation-in-part of Ser. No. 780,531, Oct. 18, 1991, abandoned, which is a continuation-in-part of Ser. No. 633,247, Dec. 21, 1990, abandoned. This application May 30, 1995, Ser. No. 453,494

Claims priority, application Sweden, Dec. 22, 1989, 8904361; Oct. 8, 1991, 9102905; Jun. 29, 1992, 9202000

Int. Cl.[6] C07D *239/26;311/04;311/68;213/02*

U.S. Cl. 549—404 **11 Claims**

1. A compound of the formula



wherein

X is O;

R is hydrogen, or C_1–C_6 alkyl;

R_1 is hydrogen, C_1–C_6 alkyl or C_1–C_6 alkenyl;

R_2 is hydrogen, C_1–C_6 alkyl, C_2–C_6 alkenyl, or C_1–C_4 alkylaryl wherein the aryl moiety may contain 1 or 2 heteroatoms selected from the group consisting of N, O and S and may optionally be substituted by halogen, CN, CF_3, C_1–C_6 alkyl, C_2–C_6 alkenyl or C_1–C_4 alkoxy;

R_3 is COR_7, CN, SO_3CF_3, or N_3;

R_4 is hydrogen;

R_7 is hydrogen, hydroxy, chloro or bromo;

an enantiomer or a salt thereof.

5,646,310

N-(2-CYANOETHYL)-6-FLUOROALKYL-2H-1-BENZOPYRAN DERIVATIVES

Hiroshi Koga; Harubiko Sato, and Takenori Ishizawa, all of Shizuoka, Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP94/00682, § 371 Date Jun. 7, 1995, § 102(e) Date Jun. 7, 1995, PCT Pub. No. WO94/25021, PCT Pub. Date Nov. 10, 1994

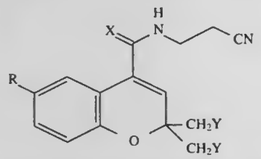
PCT Filed Apr. 25, 1994, Ser. No. 448,576

Claims priority, application Japan, Apr. 23, 1993, 5-132308; May 7, 1993, 5-141111

Int. Cl.[6] C07D *311/58;* **A61K** *31/35*

U.S. Cl. 549—405 **6 Claims**

1. A benzopyran derivative represented by the formula:



(I)

wherein R, X and Y represent any of the following combinations:

R	X	Y
C_2F_5	O	H
C_2F_5	S	H
CF_3	S	F
C_2F_5	S	F
C_3F_7	S	F

or and a pharmaceutically acceptable salt thereof.

5,646,311

RECOVERY OF TOCOPHEROLS

Tracy K. Hunt, Kankakee, Ill.; Lutz Jeromin, Hilden, Germany; Wilhelm Johannisbauer, Erkratb, Germany; Bernhard Gutsche, Hilden, Germany; Volkmar Jordon, Mettman, Germany, and Herbert Wogatzki, Duesseldorf, Germany, assignors to Henkel Corporation, Plymouth Meeting, Pa.

Division of Ser. No. 531,366, Sep. 20, 1995, which is a continuation of Ser. No. 180,592, Jan. 13, 1994, abandoned, which is a continuation of Ser. No. 103,628, Aug. 6, 1993, abandoned. This application May 28, 1996, Ser. No. 654,483

Int. Cl.[6] C07D *311/72;* **C07C** *69/24*

U.S. Cl. 549—413 **18 Claims**

1. An evaporative process for the separation of fatty acid lower alkyl esters from a mixture additionally comprising tocopherols and sterols, said process comprising:

introducing said mixture into a moderately heated zone of elevated temperature and reduced pressure, said zone containing multiple packing elements in an essentially continuous bed, said elevated temperature and reduced pressure being effective to provide within said continuous bed a first vapor phase enriched with respect to said mixture in alkyl fatty acid esters and a first liquid phase enriched with respect to said mixture in tocopherols and sterols;

removing liquid phase enriched in tocopherols and sterols from said continuous bed at a point gravitationally below the point of introduction of said mixture into said heated zone;

removing vapor phase enriched in alkyl fatty acid esters from said continuous bed at a point gravitationally above the point of introduction of said mixture into said heated zone;

applying said liquid phase enriched in tocopherols and sterols as a film to a highly heated surface in proximity with a zone of reduced vapor pressure to provide a second vapor phase enriched with respect to said liquid phase in alkyl fatty acid esters and a second liquid phase enriched with respect to said first liquid phase in tocopherols and sterols as a film in contact with said heated surface;

removing said vapor enriched in alkyl fatty acid esters from said zone and removing said film of said second liquid phase from said heated surface, said removing of said film being accomplished by mechanical agitation; and

removing said second liquid phase from proximity with said zone of reduced vapor pressure to an environment of essentially ambient temperature.

5,646,312

PROCESS OF AQUEOUS EXTRACTION OF MALTOL

Raoul Arsenault, Pointe-Claire; Michel Trottier, Sherbrooke; Esteban Chornet, Sherbrooke, and Paul Jollez, Sherbrooke, all of Canada, assignors to Florasynth, Inc., Teterboro, N.J.

Filed Jan. 3, 1996, Ser. No. 582,382

Int. Cl.[6] C07D *309/40*

U.S. Cl. 549—418 **21 Claims**

1. A process for aqueous extraction of maltol from a source material containing maltol comprising the steps of:

(a) collecting the source material containing maltol;

(b) extracting maltol from the source material with water at a temperature less than 70° C., in a series of about 5 to about 10 relatively short soak cycles wherein the aqueous extracts from each soak cycle are recovered and combined and each soak cycle begins with fresh water;

(c) performing reverse osmosis on the combined aqueous extracts of step (b) to concentrate the maltol;

(d) passing the concentrated aqueous extracts of step (c) through a column containing a bed of adsorbent material, wherein the adsorbent material adsorbs said maltol;

(e) desorbing the adsorbed maltol with a hydrophilic solvent; and

(f) separating the maltol from the hydrophilic solvent.

5,646,313

AMINO ACID DERIVATIVES, PROCESSES FOR THEIR PREPARATION AND THEIR THERAPEUTIC APPLICATION

Denis Danvy, Yvetot; Thierry Monteil, Mont-Saint-Aignan; Christophe Lusson, Rouen; Jean-Charles Schwartz, Paris; Claude Gros, Paris; Nadine Noel, Paris; Jeanne-Marie LeComte, Paris; Pierre Duhamel, Mont-Saint-Aignan, and Lucette Duhamel, Mont-Saint-Aignan, all of France, assignors to Societe Civile Bioprojet, Paris, France

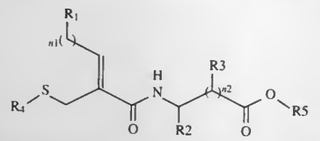
Division of Ser. No. 276,665, Jul. 18, 1994. This application Jun. 5, 1995, Ser. No. 463,049

Claims priority, application France, Jul. 16, 1993, 93 08765

Int. Cl.[6] C07C *323/29;327/06;* **C07D** *317/50*

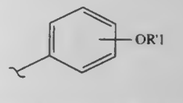
U.S. Cl. 549—441 **8 Claims**

1. Process for preparing acid derivatives having the general formula

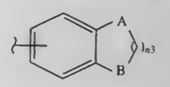


(Ib)

in which R_1 represents a hydrogen atom, a phenyl group which is optionally mono- or polysubstituted with a halogen atom, a trifluoromethyl group, a nitro group, a cyano group or an amino group, a lower alkyl group or a lower phenylalkylene group; the group



where R'_1 represents a hydrogen atom, a lower alkyl group, a phenyl group or a lower phenylalkylene group; a group



where A, B and n_3 have the meanings given below

A	B	n3
O	O	1
O	CH2	1
CH2	CH2	1
O	O	2
CH2	CH2	2
O	CH2	2

a biphenyl group, alpha and beta naphthyl,

n_1 varies from 0 to 10

n_2 varies from 1 to 10

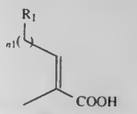
R_2 represents a hydrogen atom; a lower alkyl group; a lower hydroxyalkylene group; a phenyl group; a lower phenylalkylene group; a lower hydroxyphenylalkylene group; a lower aminoalkylene group; a lower guanidinoalkylene group; a lower mercaptoalkylene group; a lower thioalkylene lower alkyl group; a lower imidazolylalkylene group; a lower indolylalkylene group; a lower carbamylalkylene group; a lower carboxyalkylene group;

R_3 is one of the groups mentioned above for the definition of R_2;

R_4 represents a hydrogen atom;

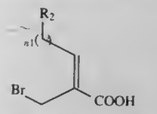
R_5 represents a hydrogen atom; a linear or branched lower alkyl group; a phenyl group or a lower phenylalkylene group, the two last-mentioned groups being optionally mono- or polysubstituted on the phenyl ring; a linear or branched substituent containing one or more oxygen atoms, comprising successively:

a) carrying out an allylic bromination of an ethylenic acid of (E) configuration of formula (II)



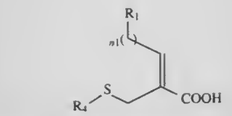
(II)

in which R_1 has the above-mentioned meaning, with a brominating agent in the presence of a catalytic amount of benzoyl peroxide in order to form an acid of formula (III)



(III)

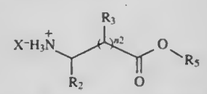
b) substituting the bromine of the acid of formula (III), with a thioacid R_4—SH, in order to form the thioacyl ethylenic acid of (Z) configuration of formula (IV)



(IV)

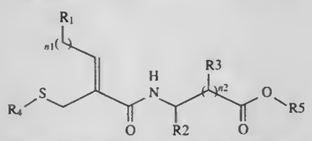
where R_4 has the definition given above,

c) coupling the acid of formula (IV) with the desired amino ester salt of formula (V)



(V)

where R_2, R_3, R_5 and n_2 have the meanings given above and X represents halides, benzenesulphonate, methanesulphonate and toluenesulphonate, in order to form the compound of (Z) configuration of formula (Ib)

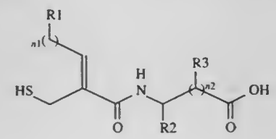


(I.b)

where R_4 is a linear or branched aliphatic acyl radical, an aromatic acyl radical which is optionally mono- or polysubstituted, or a linear or branched acyl radical containing one or more oxygen atoms and

R_5 is a linear or branched lower alkyl group; a phenyl group or a lower phenylalkylene group, the two last-mentioned groups being optionally mono- or polysubstituted on the phenyl ring; a linear or branched substituent containing one or more oxygen atoms;

d) subjecting the compound of formula (Ib) to an alkaline deprotection in order to form the compounds of (Z) configuration of formula (Ib) where R_4 and R_5 are hydrogen atoms



(I.b)

5,646,314

PROCESS FOR TITANIUM SILICALITE-CATALYZED EPOXIDATION

Guy L. Crocco, Wilmington, Del., and John G. Zajacek, Devon, Pa., assignors to ARCO Chemical Technology, L.P., Greenville, Del.

Continuation-in-part of Ser. No. 340,700, Nov. 16, 1994, abandoned. This application Feb. 28, 1995, Ser. No. 396,319

Int. Cl.[6] C07C *301/12*

U.S. Cl. 549—531 **18 Claims**

1. A method for expoxidizing an olefin comprising reacting said olefin with hydrogen peroxide in a liquid phase within a reaction zone in the presence of a titanium silicalite catalyst and a nonbasic salt selected from the group consisting of neutral salts and acidic salts which when dissolved at a concentration of 0.1N, or to saturation if the maximum possible concentration is less than 0.1N, in water at 25° C. provide a solution having pH greater than 4, said nonbasic salt being present at a concentration of from 0.00001M to 0.02M in said liquid phase.

5,646,315

POLYGLYDICYLPHENYL ETHERS OF ALKYLOXY CHAINS FOR USE IN MICROELECTRONICS ADHESIVES

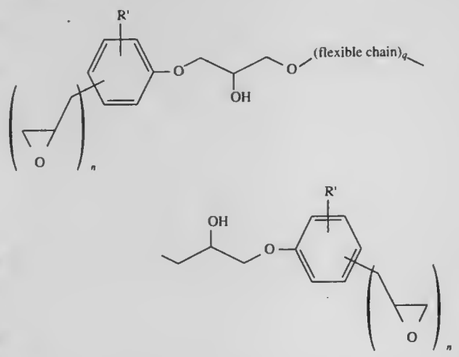
Rose Ann Schultz, Princeton, and Steven P. Fenelli, Hillsborough, both of N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Continuation-in-part of Ser. No. 482,541, Jun. 7, 1995, abandoned. This application May 31, 1996, Ser. No. 656,597

Int. Cl.[6] C07D *407/00*

U.S. Cl. 549—554 **4 Claims**

1. A flexible epoxy compound, characterized in that it has a total chlorine content of less than 0.1% by weight, having the general structure:



in which:

R' is H, C_{1-18} alkyl, C_{1-5} alkoxy or aryl or alkylaryl, C_{1-5} perfluoroalkyl, or C_{1-5} acyl; and

n is an integer 1–3; and

the flexible chain is $CH_2CH_2CH_2CH_2O$ wherein q is an integer 1–6; or

the flexible chain is CH_2CH_2O wherein q is an integer 3–10.

5,646,316

BILE ACID INHIBITORS OF METALLOPROTEINASE ENZYMES

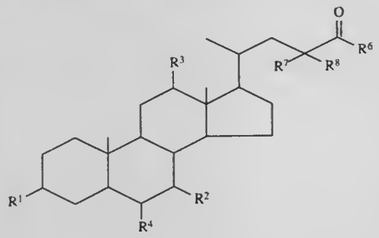
Alan R. Jacobson, Somerville; Douglas G. Gabler, Cambridge, and Jozef Oleksyszyn, Arlington, all of Mass., assignors to OsteoArthritis Sciences, Inc., Cambridge, Mass.

Continuation of Ser. No. 224,427, Apr. 8, 1994, abandoned. This application Apr. 25, 1995, Ser. No. 430,129

Int. Cl.[6] C07J *9/00;41/00*

U.S. Cl. 552—554 **5 Claims**

1. A matrix metalloproteinase inhibitor represented by the following structural formula:

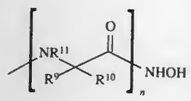


wherein:

a) R^1, R^2, R^3 and R^4 are each independently selected from the group consisting of H, OH, OR^5, SR^5, $S(O)R^5$, $S(O)_2R^5$, $S(O)_2OR^5$ and NR^5;

b) R^5 is selected from the group consisting of alkyl, substituted alkyl, aryl, substituted aryl, heteroaryl and substituted heteroaryl;

c) R^6 is;



d) R^7, R^8, R^9 and R^{11} are each independently selected from the group consisting of alkyl, substituted alkyl, aryl, substituted aryl, heteroaryl and substituted heteroaryl;

e) R^{10} is selected from the group consisting of alkyl, substituted alkyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl and the side chain of an amino acid selected from the group consisting of alanine, β-leucine valine, leucine, isoleucine, phenylglycine, p-hydoxyphenylglycine, tyrosine, histidine, tryptophan, homophenylalanine, serine, threonine, cystsine, homocysteine, homoserine, arginine, lysine, methionine, glutamatic acid, aspartic acid, glutamine, asparagine, proline, and hydroxyproline; wherein

aryl is selected from the group consisting of phenyl, naphthyl and anthracyl;

heteroaryl is selected from the group consisting of pyridyl, benzothiophene, indole, quinoline and phenothiazine;

substituted alkyl has one or more substituents selected from the group consisting of hydroxy, alkoxy, aryloxy, amino, thiol, halo, carbonylbenzyloxy (CBZ), N-tert-butoxycarbonyl, aryl, substituted aryl, heteroaryl and substituted heteroaryl; and

substituted aryl and substituted heteroaryl each independently have one or more substituents selected from the group consisting hydroxy, alkoxy, aryloxy, amino, thiol, halo, carbonylbenzyloxy, N-tert-butoxycarbonyl, alkyl, aryl, and heteroaryl; and

f) n is one or two.

5,646,317

PROCESSES FOR THE PREPARATION OF N-(LONG-CHAIN ACYL)AMINO ACID AND SALT THEREOF, AND INTERMEDIATE AMIDONITRILE AND PROCESS FOR THE PREPARATION THEREOF

Youhei Kaneko, and Kohshiro Sotoya, both of Wakayama, Japan, assignors to Kao Corporation, Tokyo, Japan

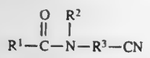
Filed Oct. 18, 1994, Ser. No. 325,025

Claims priority, application Japan, Oct. 25, 1993, 5-266166

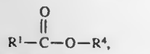
Int. Cl.[6] C07C *231/00*

U.S. Cl. 554—69 **11 Claims**

1. A process for the preparation of an amidonitrile represented by the following formula (1):

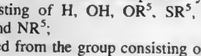


wherein R^1CO— represents a saturated or unsaturated fatty acid residue having 8 to 22 carbon atoms; R^2 represents a hydrogen atom or a linear or branched alkyl group having 1 to 3 carbon atoms; and R^3 represents ethylene, which comprises a step of reacting a lower alkyl ester of a fatty acid represented by the following formula (2):



(2)

wherein R^1CO— is as defined above; and R^4 represents an alkyl group having 1 to 4 carbon atoms, with an aminonitrile represented by the formula (3):



(3)

wherein R^2 and R^3 are each as defined above, in the presence of a basic catalyst which is an alkali or alkaline earth metal alcoholate having 1 to 3 carbon atoms.

5,646,318

PROCESS FOR THE PREPARATION OF HYDROXYALKYLAMIDES

Maurice Dery, Putnam Valley, N.Y., and Nils Brolund, Dueren, Germany, assignors to Akzo Nobel nv, Netherlands

Filed Apr. 26, 1995, Ser. No. 429,337

Int. Cl.[6] C07C *231/00*

U.S. Cl. 554—69 **29 Claims**

1. A process for producing a hydroxyalkylamide which comprises reacting alkyl ester and alkanolamine to provide a reaction mixture containing hydroxyalkylamide product, low boiling by-product and unreacted alkyl ester and alkanolamine and thereafter cooling the reaction mixture to solidify hydroxyalkylamide product and shift the reaction equilibrium to the production of additional hydroxyalkylamide product and low boiling by-product accompanied by a reduction in the amounts of unreacted alkyl ester and alkanolamine, the process being conducted without removing any appreciable amount of low boiling by-product from the reaction mixture.

5,646,319

SYNTHESIS OF N-ACYL-N-ALKYLCARBOXYLATES

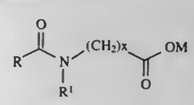
James Carey Letton, Forest Park, and Larry Eugene Miller, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 23, 1995, Ser. No. 493,976

Int. Cl.[6] C07C *231/00*

U.S. Cl. 554—69 **20 Claims**

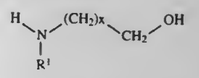
1. A method for preparing N-acyl-N-alkylcarboxylates and salts thereof of the formula



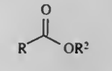
(I)

wherein R is a C_1 or higher hydrocarbyl substituent, R^1 is a C_1–C_6 C_6 hydrocarbyl substituent, x is an integer from 1 to 6, and M is a cationic moiety selected from alkali metal salts and hydrogen, comprising the steps of;

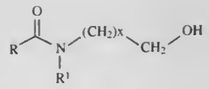
(a) reacting, in the presence of a base catalyst, a N-alkyl-N-alkanolamine of the formula



wherein R^1 and x are as described before; with a carboxylic acid ester of the formula



wherein R is as described before, R^2 is a C_1 or higher hydrocarbyl substituent, to form, after work up, a N-alkyl-N-hydroxyalkylamide of the formula;



and;

(b) oxidizing the hydroxy group on said amide to a carboxy group; and

(c) optionally, neutralizing the N-acyl-N-alkylcarboxylate formed by step (b) to form the N-acyl-N-alkylcarboxylate salt (I), whereby M is an alkali metal cation.

5,646,320

PROCESS FOR MAKING ISETHIONATE ESTER SALTS

Timothy John Cassady, Hamilton; Norman Milstein, Montgomery, both of Ohio, and Richard P. Crews, Simpsonville, S.C., assignors to Henkel Corporation, Plymouth Meeting, Pa.

Continuation-in-part of Ser. No. 144,266, Oct. 28, 1993, abandoned. This application Jun. 16, 1994, Ser. No. 260,932

Int. Cl.[6] C07C *51/00*

U.S. Cl. 554—149 **18 Claims**

1. A process for making an aqueous solution of a fatty acid ester of an isethionate salt comprising the steps of: (1) reacting ethylene oxide and a bisulfite salt in an aqueous solution while (a) maintaining the pH in the range of from about 5.5 to about 6.5 by the controlled addition of an acid or base to the reaction mixture, and (b) maintaining the temperature in the range of from 25° C. to 85° C. to form an aqueous isethionate salt solution; and (2) reacting said isethionate salt in said aqueous solution with at least one fatty acid to produce an aqueous solution of a fatty acid ester of an isethionate salt having a content of fatty acid esters of ethylene glycol of less than 0.85% based on the weight of a 60% solution of the isethionate salt and wherein said aqueous solution resulting from step (2) is clear at ambient temperature.

5,646,321

GUERBET MEADOWFOAM ESTERS

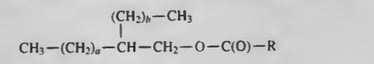
Anthony J. O'Lenick, Jr., Lilburn, Ga., assignor to Siltech Inc., Norcross, Ga.

Filed Aug. 17, 1995, Ser. No. 516,138

Int. Cl.[6] C07C *57/00*

U.S. Cl. 554—224 **14 Claims**

1. An ester which conforms to the following structure:

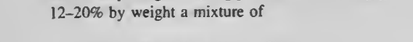


wherein:

R is

60–65% by weight $—(CH_2)_3—CH=CH—(CH_2)_{13}—CH_3$

12–20% by weight a mixture of



and



and

15–28% by weight



a, b, c and d are independently integers ranging from 4 to 20.

5,646,322

INDENYL COMPOUNDS AND CATALYST COMPONENTS FOR THE POLYMERIZATION OF OLEFINS

Johannus A. M. van Beek; Johannes G. de Vries, both of Maastricht; Henricus J. Arts, Sittard; Radjindrakumar Persad, Wessem, and Gerardus H. J. van Doremaele, Sittard, all of Netherlands, assignors to DSM N.V., Heerlen, Netherlands

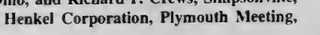
Filed May 11, 1995, Ser. No. 439,449

Claims priority, application Netherlands, Nov. 11, 1992, 9201970

Int. Cl.[6] C07F *17/00;7/00;5/00*

U.S. Cl. 556—11 **13 Claims**

1. An indenyl compound represented by the general formula:



(I)

wherein

Ind represents an indenyl group,

R' represents a substituent, other than hydrogen, bound to the Ind group at the 2-position,

Cp represents a cyclopentadienyl group,

M represents a transition metal from group 3, 4, 5, or 6 of the Periodic System of Elements,

Q represents a ligand to M, and

k is an integer linked to the valence of M, and wherein compounds in which the Cp-group is an indenyl group and in which either:

a) the Ind- and the Cp-groups are bridged over the respective 1-positions,

b) indenyl compound is bis(2,3-dimethyl-1-indenyl)zirconiumdichloride, or

c) the indenyl compound is either ethyene-1-(3-but-3-enyl)inden-1-yl-2-((1-but-3-enyl)-inden-2-yl)-zirconiumdichloride, or ethylene-1-((3-allyldimethylsilyl)inden-1-yl)-2-((1-allyldimethylsilyl)inden-2-yl)zirconium-dichloride,

are disclaimed.

5,646,323

PROCESS FOR PREPARING METALLOCENE COMPOUNDS

Krisztina Frey; Gabriele von Massow; Helmut G. Alt, all of Bayreuth, Germany, and M. Bruce Welch, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 303,982, Sep. 9, 1994, Pat. No. 5,563,284. This application May 19, 1995, Ser. No. 444,794

Int. Cl.[6] C07F *15/00;17/02;9/00;17/00*

U.S. Cl. 556—21 **8 Claims**

1. A process for preparing a metallocene comprising reacting a cyclopentadienyl-type ligand, an alkali metal alkyl, and a metal halide to form said metallocene,

wherein said cyclopentadienyl-type ligand is represented by the formula ZA,

wherein Z is a cyclopentadienyl-type group, and is an unsubstituted cyclopentadienyl, substituted cyclopentadienyl, unsubstituted indenyl, substituted indenyl, unsubstituted fluorenyl, or substituted fluorenyl, wherein the substituents on said cyclopentadienyl-type group are hydrocarbyl groups containing 1 to 12 carbon atoms, alkoxy groups containing 1 to 12 carbon atoms, trialkylsilyl groups where each alkyl group contains 1 to 12 carbon atoms, alkyl halide groups where the alkyl group contains 1 to 12 carbon atoms, or halide;

wherein A is $—YPR_2$, or $—YNR_2$, wherein Y is an alkylene group containing 1 to 24 carbon atoms, wherein each R is individually selected from alkyl groups containing 1 to 20 carbon atoms;

wherein said alkali metal alkyl contains 1 to 8 carbon atoms

wherein said metal halide is represented by the formula MX_4, wherein M is a Group IVB or VB transition metal and X is a halide.

5,646,324

ZINC GLYCEROLATE MANUFACTURE

David A. Matkin, Maidenhead; Dennis C. Renshaw, Manchester, and Anthony R. Harrison, Shevington, all of United Kingdom, assignors to Pharmaserve Limited, Manchester, and Stiefel Laboratories (Ireland) Limited, Berkshire, both of United Kingdom

PCT No. PCT/GB94/02059, § 371 Date May 14, 1996, § 102(e) Date May 14, 1996, PCT Pub. No. WO95/08524, PCT Pub. Date Mar. 30, 1995

PCT Filed Sep. 22, 1994, Ser. No. 612,837

Claims priority, application United Kingdom, Sep. 23, 1993, 9319675; Apr. 12, 1994, 9407230

Int. Cl.[6] C07F *3/06*

U.S. Cl. 556—130 **11 Claims**

1. A process for preparing zinc glycerolate by heating a mixture of zinc oxide, or zinc oxide precursor compound, with glycerol, characterized in that the reaction temperature is 15° C. to 105° C.

5,646,325

PROCESS FOR THE PREPARATION OF 3-ACRYLOYLOXYPROPYLALKOXYSILANES

Jaroslaw Monkiewicz; Albert Frings; Michael Horn; Peter Jenkner; Hans-Joachim Koetzsch; Frank Kropfgans; Claus-Dietrich Seiler, all of Rheinfelden; Hans-Guenther Srebny, Duelmen-Rorup, and Burkhard Standke, Loerrach, all of Germany, assignors to Huels Aktiengesellschaft, Marl, Germany

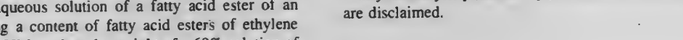
Filed Sep. 25, 1995, Ser. No. 533,313

Claims priority, application Germany, Sep. 24, 1994, 44 34 200.4

Int. Cl.[6] C07F *7/08;7/18*

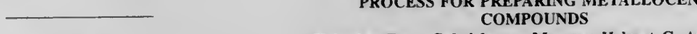
U.S. Cl. 556—440 **19 Claims**

1. A process for the preparation of 3-acryloyloxypropylalkoxysilanes of formula I:



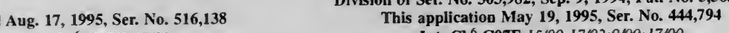
(I)

comprising: reacting a hydridosilane of formula II:



(II)

with an allyl ester of formula III:



(III),

where R is a hydrogen atom or a methyl group, R^1 and R^2 are each C_1 to C_6 alkyl groups or phenyl groups, and a is 0, 1 or 2, in the presence of a halogen-free platinum catalyst containing platinum in oxidation state +2.

5,646,326

ALKYLHYDROGENCHLOROSILANES, PROCESS FOR THEIR PREPARATION AND THEIR USE

Joachim Schuler, Marl, Germany, assignor to Huels Aktiengesellschaft, Marl, Germany

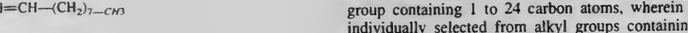
Filed Nov. 21, 1995, Ser. No. 561,320

Claims priority, application Germany, Dec. 1, 1994, 44 42 753.0

Int. Cl.[6] C07F *7/08*

U.S. Cl. 556—474 **16 Claims**

1. A process for preparing alkylhydrogenchlorosilanes of formula I



(I),

wherein m and n are each equal to 1 or 2 and m+n<3 and R is an alkyl group having from 1 to 5 carbon atoms, comprising:

reacting alkylchlorosilanes of formula II

(II),

wherein p is equal to 1 or 2 or 3, with hydrogen in the presence of a catalyst comprising at least one metal of Group VIII of the Periodic Table of the Elements thereby producing alkylhydrogenchlorosilanes; and

subsequently isolating the alkylhydogenchlorosilanes from the reaction product.

5,646,327

METHOD FOR PREPARING HYDROXYLAMINES USING VINYLIC COMPOUNDS WITHOUT BASE NEUTRALIZATION AND REACTION MIXTURE PRODUCED THEREBY

Elizabeth Gertrude Burns, Rochester; Lynda Woody McGarry, North Chili; Gary Stephen Proehl, and Lee Hamilton Latimer, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 8, 1995, Ser. No. 569,643

Int. Cl.[6] C07C *255/00;205/00;229/00;* **C07F** *9/22*

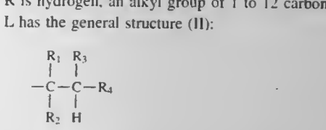
U.S. Cl. 558—452 **24 Claims**

1. A method for preparing a hydroxylamine of the general structure (I):

wherein

R is hydrogen, an alkyl group of 1 to 12 carbon atoms or L,

L has the general structure (II):



(II)

wherein

R_1 and R_2 are independently hydrogen or an alkyl group,

R_3 is hydrogen, halo or an alkyl group, and

R_4 is sulfo,

$—CONR_5R_6$ wherein R_5 and R_6 are independently hydrogen or an alkyl group of 1 to 4 carbon atoms.

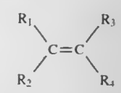
$—COOR_7$ wherein R_7 is hydrogen or an alkyl group of 1 to 4 carbon atoms.

phosphono,

cyano, or

a phenyl group substituted with one or more sulfo, $—CONR_5R_6$, phosphono, cyano, or $—COOR_7$ groups,

comprising reacting a vinylic compound having the structure (III):



(III)

wherein

R_1, R_2, R_3 and R_4 are defined above,

with a hydroxylamine having the structure HO-NHR wherein R is defined above,

said reacting step taking place in a reaction solvent that is water or a water-miscible organic solvent, or mixture thereof, in the absence of a neutralizing base.

5,646,328

PROCESS FOR REMOVING BY-PRODUCTS FROM DIURETHANES

Ludwig Deibele; Oswald Wilmes, and Jürgen Dahmer, all of Köln, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jun. 20, 1996, Ser. No. 667,893

Claims priority, application Germany, Jun. 23, 1995, 195 23 386.7

Int. Cl.[6] C07C *263/00*

U.S. Cl. 560—25 **13 Claims**

1. A process for removing low-boiling by-products from a diurethane prepared by a phosgene-free process which diurethane is represented by the general formula (I)

R—O—CO—NH—R'—NH—CO—O—R (I)

in which

R represents an alkyl group having from 1 to 6 carbon atoms, a cyclo-alkyl group having from 5 to 6 carbon atoms or a phenyl group and

R' represents a group obtainable by removing isocyanate groups from an organic diisocyanate which group has a molecular weight in the range from 140 to 300, comprising

a) subjecting the diurethane containing by-products to carrier vapor distillation using alcohol vapor as the carrier vapor,

b) recovering the low-boiling by-products removed as carrier vapor distillate, and

c) recovering the diurethane as the residue.

5,646,329

CYCLOPROPYLAMINE DERIVATIVES

Norbert Lui, Köln; Albrecht Marhold, Leverkusen, and Stefan Böhm, Krefeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

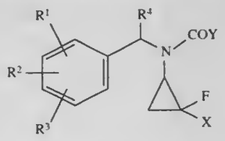
Filed Nov. 2, 1995, Ser. No. 554,325

Claims priority, application Germany, Nov. 9, 1994, 44 40 021.7

Int. Cl.[6] C07C *305/00*

U.S. Cl. 560—27 **3 Claims**

1. Cyclopropylamine derivatives of the formula



(II)

in which

R^1, R^2 and R^3 independently of one another in each case represent hydrogen, C_1–C_6-alkyl, halogen, C_1–C_6-halogenoalkyl or C_1–C_6-alkoxy,

R^4 represents hydrogen, C_1–C_6-alkyl or C_6–C_{12}-aryl, and

Y represents open-chain or cyclic C_1–C_{12}-alkoxy, C_6–C_{12}-aryl, C_7–C_{12}-aralkyl, C_7–C_{12}-aralkyloxy or open-chain or cyclic C_1–C_{12}-alkyl, and

X represents chlorine or bromine.

5,646,330

PRODUCTION OF ENANTIOMERICALLY ENRICHED ORTHO-SUBSTITUTED α,α-DIAROMATIC METHANOLS

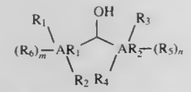
Wen-Chung Shieh, Berkeley Heights; William R. Cantrell, Summit, and John Alan Carlson, Berkeley Heights, all of N.J., assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

Filed Feb. 17, 1995, Ser. No. 390,255

Int. Cl.[6] C07C *229/34*

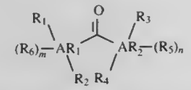
U.S. Cl. 560—43 **15 Claims**

1. A process for the production of an enantiomer of a compound of formula I



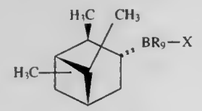
(I)

in a substantial enantiomeric excess comprising reducing a compound of formula II

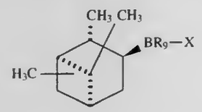


(II)

with a reducing agent selected from those compounds of formula III or IIIa



(III)



(IIIa)

wherein

AR_1 and AR_2 are each independently selected from carbocyclic and heterocyclic ring systems having one or two fused rings each, with each ring having from 1 to 7 ring members, and at least the ring bound to R_1 and R_3 being aromatic;

n and m are each independently an integer of from 0 to the number of free substitution positions on the AR group to which it relates;

R_1–R_4 are all ortho to the bond that connect the respective AR group to the central ketone (in formula II) or corresponding hydroxy group (in formula I);

one of R_1 and R_2 must be selected from —OH, —SH, and —NHR_7; and the other of R_1 and R_2 is selected from H, —OH, —SH, —NHR_7, and R_8;

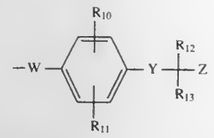
R_3 and R_4 are independently selected from the group consisting of H and R_8;

each R_5 and each R_6 is independently selected from the group consisting of R_8, H, —OH, —SH, and —NHR_7;

R_7 is selected from the group consisting of H, C_1–C_7alkyl, C_1–C_7alkanoyl, and C_1–C_7alkoxycarbonyl;

R_8 is selected from formula IV below, halogen, nitro, carboxy, —$Si(R_{14})_3$ (in which each R_{14} is independently selected from H, C_1–C_3alkyl, and phenyl), C_1–C_7alkoxy, C_1–C_7alkanoyloxy, C_1–C_7alkoxycarbonyl, C_1–C_7alkylthio, —$N(R_{15})_2$ (in which each R_{15} group is independently of the other R_7 or in which both R_{15} groups together with the nitrogen to which they are attached form a ring of 5–6 ring members having 0–2 additional heteroatoms selected from N, O, or S), —C(O)—$N(R_{15})_2$ (in which each R_{15} group is independently of the other R_7 or in which both R_{15} groups together with the nitrogen to which they are attached form a ring of 5–6 ring members having 0–2 additional heteroatoms selected from N, O, or S), unsubstitued or substituted phenoxy, unsubstituted or substitued phenylthio, the substituents on said phenyl groups in phenoxy and phenylthio being up to 3 and being independently selected from hydrogen, halogen, and trifluoromethyl;

formula IV is



(IV)

in which W is O or S;

Y is O, S, or NR_9;

R_{10} and R_{11} are each independently selected from H, halogen, C_1–C_7alkyl, and trifluoromethyl;

R_{12} is selected from hydrogen, C_1–C_7alkyl, and phenyl-C_1–C_7alkyl; and R_{13} is hydrogen; or R_{12} and R_{13} together are =O; and

Z is selected from —COR_{16}; in which R_{16} is selected from OH, C_1–C_7alkoxy, (amino, acylamino, mono- or di-C_{1-7}alkylamino)-C_1–C_7alkoxy, carboxy-C_1–C_7alkoxy, C_1–C_7alkoxycarbonyl-C_1–C_7alkoxy, α-(di-C_{1-7}alkylamino, amino, mono-C_{1-7}alkylamino, morpholino, piperidino, pyrrolidino, or 1-C_{1-7}alkylpiperazino)-carbonyl-C_1–C_7alkoxy, (carbocyclic or heterocyclic aryl)-C_1–C_7alkoxy (which is unsubstituted or substituted in the aryl group with up to three substituents selected from halo, C_{1-7}alkyl, and C_1–C_7alkoxy), 1-(hydroxy, C_1–C_7alkanoyloxy, or C_1–C_7alkoxy)-C_1–C_7alkoxy, (hydroxy, C_1–C_7alkanoyloxy, or C_1–C_7alkoxy)-C_1–C_7alkoxymethoxy, 1-(C_1–C_7alkoxycarbonyloxy)-C_1–C_7alkoxy, phenoxy, substituted phenoxy (in which the phenyl ring has one to three substituents, each independently selected from the group consisting of C_1–C_7alkyl, halogen, and trifluoromethyl), 5-indanyloxy, 3-phthalidoxy, (C_1–C_7alkyl, C_1–C_7alkoxy or halo)-substituted-3-phthalidoxy, dihydroxypropyloxy, and —$N(R_{15})_2$ (in which each R_{15} is as defined above),

R_9 is C_{1-6}alkyl, C_{5-6}cycloalkyl, phenyl, or isopinocampheyl (of the same configuration as the other isopinocampheyl group in the molecule); and

X is hydrogen or halogen.

5,646,331

PROCESS FOR WORKING UP RESIDUES FROM THE RAW ESTER DISTILLATION IN THE PREPARATION OF DIMETHYL TEREPHTHALATE(DMT)

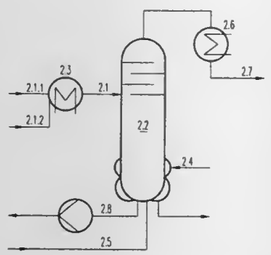
Ralf Thiel, Niederkassel, and Reinhard Auschner, Troisdorf, both of Germany, assignors to Huels Aktiengesellschaft, Marl, Germany

Filed Aug. 12, 1996, Ser. No. 695,777

Claims priority, application Germany, Aug. 23, 1995, 195 30 970.7

Int. Cl.[6] C07C *69/82*

U.S. Cl. 560—78 **20 Claims**



1. A process for working up a residue fraction resulting from raw ester distillation in a DMT process, comprising:

admixing the residue fraction with liquid or gaseous methanol, or both to give a reaction mixture;

providing the reaction mixture to a reactor, wherein, prior to entry into the reactor, the reaction mixture is at a temperature of from 230° to 265° C.; and

methanolysing the reaction mixture in the reactor, wherein a bottom portion of the reactor is maintained at a temperature of from 230° to 265° C.

5,646,332

BATCH KOCH CARBONYLATION PROCESS

Joseph V. Cusumano, Watchung; David C. Dankworth, Whitehouse Station; William D. Diana, Belle Mead; William B. Eckstrom, Fanwood, all of N.J.; Jacob I. Emert, Brooklyn, N.Y., and Keith R. Gorda, Little York, N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Continuation-in-part of Ser. No. 992,403, Dec. 17, 1992, abandoned. This application Jun. 17, 1994, Ser. No. 261,559

Int. Cl.[6] C07C *67/00*

U.S. Cl. 560—204 **19 Claims**

1. A rapid, batch carbonylation process comprising reacting alcohol, polymer olefin, and carbon monoxide for no more than about 2 hours in the presence of an acid catalyst having a Hammett acidity of < −7 and in the reliance or transition metal catalyst wherein the molar ratio of alcohol to polymer olefin is at least about 1:1 and the mole ratio of acid catalyst to alcohol is at least about 0.9:1; and recovering at least about 80% functionalized polymer, said functionalized polymer comprising predominantly ester.

5,646,333

PLANT PROMOTER USEFUL FOR DIRECTING THE EXPRESSION OF FOREIGN PROTEINS TO THE PLANT EPIDERMIS

Michael S. Dobres, Philadelphia, and Sevnur Mandaci, Ardsley, both of Pa., assignors to Drexel University, Philadelphia, Pa.

Filed Sep. 2, 1994, Ser. No. 299,953

Int. Cl.[6] A01H *5/00;5/10;* **C12N** *15/11;15/82*

U.S. Cl. 800—205 **20 Claims**

16. A plant prepared by a method of transforming plants comprising:

a. providing a plant,

b. preparing a construct of a Blec promoter sequence of SEQ ID NO: 1 or a fragment thereof having epidermal specific activity and a heterologous gene, thereby producing a promoter—gene construct, and

c. transforming said plant with said promoter—gene construct thereby producing a transformed plant.

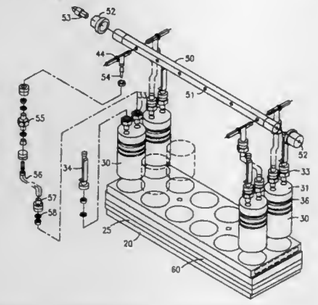
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5,646,334

MULTISAMPLE DYNAMIC HEADSPACE SAMPLER

Karl H. Scheppers, Scotts Valley, and Gregory I. Rudd, Aptos, both of Calif., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Sep. 12, 1995, Ser. No. 527,292
Int. Cl.[6] G01N *7/14*
U.S. Cl. 73—1.06 6 Claims



1. A method of operation for a multichamber dynamic headspace sampler, said dynamic headspace sampler including fittings, aluminum caps and NPT pipe threads, said method comprising the following steps:

pre-cleaning all said fittings and said aluminum caps by sonic treatment in an acetone bath followed by heating;

assembling the multichamber dynamic headspace sampler using PTFE teflon thread seal tape on all said NPT pipe threads;

connecting the multichamber dynamic headspace sampler to a hydrocarbon filter and then to a source of ultrapure gas that is controlled with a regulator using stainless steel tubing and appropriate connectors;

preheating an aluminum block to about 15 degrees below a target temperature;

placing samples in widemouth bottles, reserving one of said bottles for a method blank, and another of said bottles for a spike;

injecting a suitable internal standard into all bottles;

screwing the bottles onto said aluminum caps equipped with O-rings;

inserting a 6 mm outside diameter adsorbent containing tube into fittings on said caps and tightening a nut thereon finger tight;

marking each tube and its associated aluminum cap with the appropriate position number;

adjusting the gas pressure to between 10 and 15 psi;

setting the flow to the desired level using metering valves, while measuring the flow at the exit of each adsorbent tube;

placing the bottles into the heated aluminum block;

recording the time and temperature in a log book;

adding insulation to the top of the multichamber dynamic headspace sampler so as to completely blanket the multichamber dynamic headspace sampler; recording the time and temperature in the log book at intervals;

removing the insulation;

turning off the gas flow;

removing the bottles from the aluminum block;

removing the adsorbent containing tubes from the aluminum caps;

desorbing the adsorbent containing tubes; and

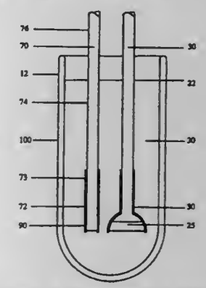
analyzing the contents with the appropriate instrumentation.

5,646,335

WICKLESS TEMPERATURE CONTROLLING APPARATUS AND METHOD FOR USE WITH PORE VOLUME AND SURFACE AREA ANALYZERS

Richard A. Wenman, Coral Springs, Fla., and Jon Fong, Manhattan Beach, Calif., assignors to Coulter Corporation, Miami, Fla.

Filed Aug. 24, 1995, Ser. No. 519,054
Int. Cl.[6] G01N *15/08*
U.S. Cl. 73—38 12 Claims



1. An apparatus used in measurement of morphological characteristics of a solid sample contained in a vessel comprising:

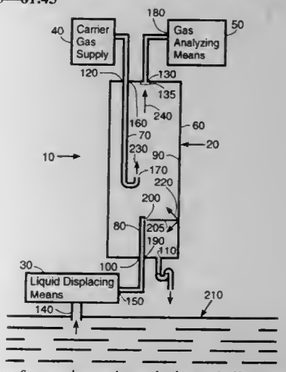
a means for providing a heat transfer between a cooling liquid and a solid sample contained in a sample vessel, said sample vessel being partially immersed in said liquid and extending above the surface of said cooling liquid, and wherein said means for providing a heat transfer is a heat conductive metallic material which extends from said sample vessel into said cooling liquid, and wherein said means for providing a heat transfer remains below the surface of said cooling liquid without being exposed to the atmosphere during measurement of morphological characteristics of said sample, and provides a stabilized temperature to said sample vessel.

5,646,336

ATOMIZING, CONTINUOUS, WATER MONITORING MODULE

Cyril V. Thompson, Knoxville, and Marcus B. Wise, Kingston, both of Tenn., assignors to Lockheed Martin Energy Systems, Inc., Oak Ridge, Tenn.

Filed May 10, 1996, Ser. No. 644,887
Int. Cl.[6] G01N *7/00;30/02;* A62C *35/68*
U.S. Cl. 73—61.43 11 Claims



1. A system for continuously analyzing volatile components of a liquid comprising:

an extraction means for continuously extracting volatile components contained in a liquid from said liquid; a liquid displacing means for continuously displacing said liquid at a predetermined flow rate, said liquid displacing means having an

inlet port and an outlet port; a carrier gas supply means for continuously supplying a carrier gas and a gas analyzing means for continuously analyzing said volatile components of said liquid, said gas analyzing means having a sample gas inlet port; said extraction means comprising a closed container, a carrier gas directing means and a liquid directing means, said closed container having an inside wall, a liquid inlet port, a liquid outlet port, a carrier gas inlet port and a sample gas outlet port, said liquid displacing means having a liquid inlet port and a liquid outlet port, said liquid outlet port of said liquid displacing means being in fluid communication with said liquid inlet port of said closed container of said extraction means, said carrier gas supply being in fluid communication with said carrier gas inlet port of said closed container of said extracting means, said carrier gas directing means having a carrier gas inlet port and a carrier gas outlet port, said carrier gas inlet port of said carrier gas directing means being in fluid communication with said carrier gas inlet port of said closed container of said extraction means, said sample gas outlet port of said closed container of said extraction means being in fluid communication with said sample gas inlet port of said gas analyzing means, said liquid directing means having a liquid inlet port and a liquid outlet port, said liquid inlet port of said liquid directing means being in fluid communication with said liquid inlet port of said closed container of said extraction means, said liquid outlet port of said liquid directing means contained within said closed container of said extraction means being positioned for directing said liquid against said inside wall of said closed container of said extraction means, said liquid directing means being a tube closed at one end and said tube having a small throughput hole drilled perpendicular into said tube to form a liquid exit orifice for directing said liquid against said inside wall of said closed container at a force sufficient to atomize said liquid into a liquid gas aerosol.

5,646,337

METHOD AND DEVICE FOR MEASURING PARAMETERS OF PLASTIC GROUND

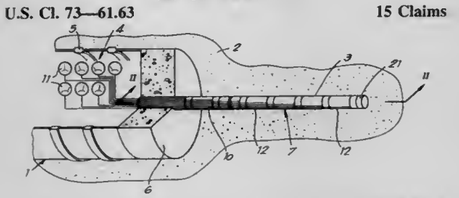
Alfons Frans Fonteyne, Vosselaar, Belgium, assignor to Studiecentrum Voor Kernenergie, instelling van openbaar nut, Brussel, Belgium

Filed Dec. 18, 1995, Ser. No. 574,040

Claims priority, application Belgium, Dec. 20, 1994, 09401146

Int. Cl.[6] G01N *1/16*

U.S. Cl. 73—61.63 **15 Claims**



1. A method of measuring parameters of underground fluids comprising:

forming a hole in the ground;

inserting a pipe into the hole, said pipe having a plurality of spaced chambers that are closed off at respective outer radial portions of the pipe by filters, said chambers being separate and closed from one another;

providing a plurality of conduits each of which are separately connected to a respective one of said separate chambers;

allowing the ground to settle against said pipe; and

measuring parameters related to flow of the fluids from said ground, through said filters, into said chambers and entering said conduits.

5,646,338

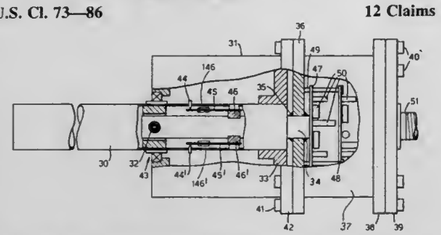
DEPOSITION SENSING METHOD AND APPARATUS

Michel Mercusot, Antwerp, and Ghislain Declercq, Pittem, both of Belgium, assignors to BetzDearborn Inc., Trevose, Pa.

Filed Jun. 5, 1995, Ser. No. 461,073

Int. Cl.[6] G01N *17/00*

U.S. Cl. 73—86 **12 Claims**



9. A sensor for determining the build-up of a deposit in industrial equipment, comprising:

an elongate probe having a proximal end and a distal end and adapted to be installed with said distal end in a region of the equipment where monitoring is to be effected;

a pivot support for said probe;

a flexurally deformable member arranged to be strained flexurally by pivoting of said probe about said pivot support;

at least one strain gauge for measuring the flexural strain of said flexurally deformable member in response to the weight of the probe and any accretion of deposit built up thereon; and

means for monitoring the magnitude of the flexural strain continuously through the life of the plant.

5,646,339

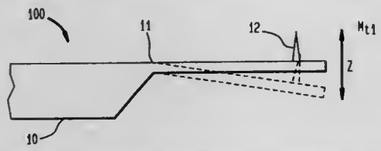
FORCE MICROSCOPE AND METHOD FOR MEASURING ATOMIC FORCES IN MULTIPLE DIRECTIONS

Thomas Bayer, Sindelfingen; Johann Greschner, Pliezhausen, and Martin Nonnenmacher, deceased, late of Schoenaich, all of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 195,401, Feb. 14, 1994, abandoned. This application Jun. 26, 1996, Ser. No. 675,429

Int. Cl.[6] G01N *23/00;* **H01J** *37/26*

U.S. Cl. 73—105 **23 Claims**



1. Sensor for imaging a surface structure by force measurement, comprising:

a measurement probe comprising a measurement tip,

an arm on which said measurement probe is mounted, whereby said measurement probe is induced to vibration in the vicinity of the surface to be imaged and the influence on the vibrations by the surface is measured,

said sensor comprises means for sensing at least two different vibration modes, so as to measure components of force in directions corresponding to each of the at least two different vibration modes,

said tip of said probe in said at least two different vibration modes vibrates in different directions.

5,646,340

ANALYTICAL TACHOMETERS

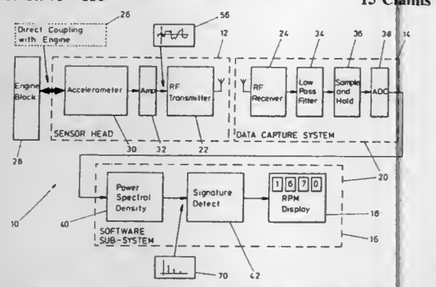
Bernard Gee, JG Oude Niedorp; Christiaan Hoede, TN Amsterdam, both of Netherlands; Alastair J. Hotchkiss, Norfolk, United Kingdom; Barbara L. Jones, Norfolk, United Kingdom, and Paul Smith, Norfolk, United Kingdom, assignors to Sun Electric U.K. Limited, Norfolk, England

Filed Jan. 23, 1996, Ser. No. 590,315

Claims priority, application United Kingdom, Jan. 24, 1995, 9501380

Int. Cl.[6] G01M *15/00*

U.S. Cl. 73—116 **15 Claims**



1. A method of tachometric engine analysis adapted to measure and indicate engine rotation rate over a tachometric engine speed range, said method comprising the steps of:

(a) providing vibration-responsive sensor means adapted to generate a signal related to sensed vibrations;

(b) installing the vibration-responsive sensor means in relation to an engine to be analyzed so as to sense and respond to vibrations caused by engine operation to produce a signal including a plurality of waveforms constituting a recognizable pattern or signature having a harmonic content characteristic of the configuration of the engine being analyzed;

(c) tracking the signal over the tachometric engine speed range;

(d) analyzing the signal to recognize the vibration pattern or signature and accordingly identify the corresponding engine type; and

(e) analyzing the harmonic content of the pattern or signature by an algorithm adapted to identify the particular peak corresponding to engine speed, or a related peak, by reference to the relevant harmonics thereof in the signature to provide a substantially real-time indication of engine speed over the tachometric engine speed range.

5,646,341

APPARATUS AND METHOD FOR DIAGNOSING AN ENGINE USING AN OIL PRESSURE MODEL

David R. Schricker, and Rolland D. Scholl, both of Dunlap, Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Jul. 28, 1995, Ser. No. 507,128

Int. Cl.[6] G01M *15/00*

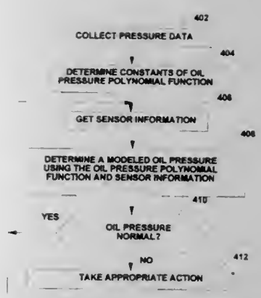
U.S. Cl. 73—117.3 **15 Claims**

1. An apparatus for modeling oil pressure of an engine, including:

means for sensing engine speed and responsively producing an engine speed signal;

means for sensing engine oil temperature and responsively producing an engine oil temperature signal;

means for receiving said engine speed signal and said engine oil temperature signal and responsively determining a modeled engine oil pressure value using an oil pressure polynomial function and said engine speed and engine oil temperature signals.



5,646,342

METHOD OF LOCATING HYDROCARBON RESERVES

Odd Bjarte Hagenes, Bekkjarvik, Norway, assignor to Schlumberger Technology Corporation, Sugar Land, Tex.

Continuation of Ser. No. 36,610, Mar. 24, 1993, abandoned. This application Jul. 31, 1995, Ser. No. 510,951

Claims priority, application United Kingdom, Mar. 27, 1992, 9206676

Int. Cl.[6] E21B *47/00;* **G01V** *1/00;1/34*

U.S. Cl. 73—152.02 **24 Claims**



1. A method of locating hydrocarbon reserves comprising: preparing a hydrocarbon hypothesis map for a region of interest below the surface of the earth, wherein said map represents groups of different pralities of points used to define a set of possible hydrocarbon containing patches, for all points lying therewithin, the probability of each point containing hydrocarbons;

determining, on the basis of said hydrocarbon hypothesis map, patches each comprising a plurality of graph points having probabilities of containing hydrocarbon reserves greater than a predetermined probability;

defining, from structural data on the region of interest obtained independently of the hydrocarbon hypothesis map and representing depth of earth substrate, a respective structural closure for each of the patches, each structural closure comprising an area capable of enclosing a hydrocarbon reserve and having a perimeter of constant depth substantially equal to the deepest point of the region of interest covered by the patch;

determining a measure of the geometrical difference between each patch and the respective structural closure using geometrical characteristics derived from each of the plurality Of graph points used to define said each patch;

and locating possible hydrocarbon reserves by selecting each patch having a measure of the geometrical difference less than a predetermined measure.

5,646,343

SYSTEM AND METHOD FOR MONITORING WIND CHARACTERISTICS

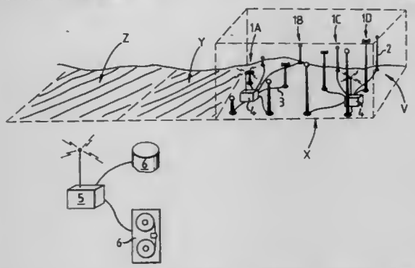
Declan Nigel Pritchard, Saudi Aramco Box 8647, Dhahran 31311, Saudi Arabia

Continuation-in-part of Ser. No. 269,546, Jul. 1, 1994, abandoned. This application Mar. 10, 1995, Ser. No. 419,031

Claims priority, application United Kingdom, Jul. 2, 1993, 9313727; Jan. 17, 1995, 9500873

Int. Cl.[6] G01B *1/00*

U.S. Cl. 73—170.08 11 Claims



1. A system for monitoring wind characteristics within a volume above an area of land, said system comprising:

a plurality of portable wind characteristic measuring means, each of said measuring means comprising means for outputting a data signal which is indicative of the magnitude of at least one wind characteristic and means for affixing said measuring means to the ground; comprising

a first set of wind characteristic measuring means deployed in a first line at a first predetermined height;

a second set of wind characteristic measuring means deployed in a second line at a second predetermined height; and

an nth set of wind characteristic measuring means deployed in an n line at an nth predetermined height wherein said n lines are spaced parallel to one another, the height above the ground of the wind responsive part of the detectors in a given line being higher than the height above the ground of the wind responsive part of the detectors in all lines to the windward side of that given line;

data signal receiving unit;

communication means for carrying the data signal from each wind characteristic measuring means to said data signal receiving unit; and processing means for processing said data signal and providing processed data, said processed data representing said wind characteristic within said volume.

5,646,344

DEVICE FOR DETERMINING A PULSATING AIR MASS FLOW IN AN INTERNAL COMBUSTION ENGINE

Uwe Konzelmann, Asperg, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE95/00436, § 371 Date Oct. 26, 1995, § 102(e) Date Oct. 26, 1995, PCT Pub. No. WO95/28560, PCT Pub. Date Oct. 26, 1995

PCT Filed Mar. 30, 1995, Ser. No. 549,839

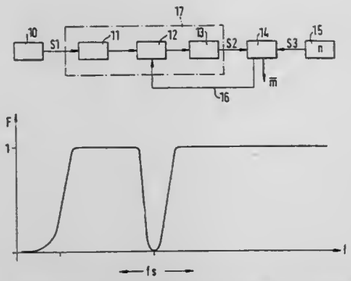
Claims priority, application Germany, Apr. 15, 1994, 44 13 078.3

Int. Cl.[6] G01D *13/02*; F02D *41/04*

U.S. Cl. 73—204.18 5 Claims

1. A device for determination of air mass flow in an internal combustion engine, said air mass flow having pulsations, and said device comprising

a sensor producing an output signal to be evaluated for determination of said air mass flow, said output signal having signal components characteristic of the pulsations of said air mass flow; and



a filter device for filtering said output signal of said sensor to form a filtered signal, said filter device having a low-pass characteristic, a bandpass characteristic with a center frequency and means for varying said center frequency of the bandpass characteristic as a function of rotation speed of the internal combustion engine so that said signal components of the output signal characteristic of the pulsations of said air mass flow are not substantially attenuated by the filter device.

5,646,345

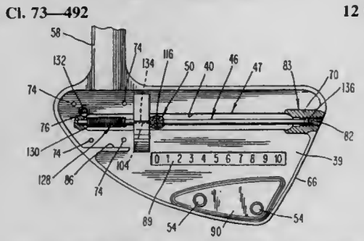
ACCELERATION RESPONSIVE DEVICE

Joseph H. Butler, Jr., Collierville, Tenn., assignor to Emhart Inc., Newark, Del.

Division of Ser. No. 290,668, Aug. 1, 1994, Pat. No. 5,520,049. This application Feb. 1, 1996, Ser. No. 595,118

Int. Cl.[6] G01P *15/04*

U.S. Cl. 73—492 12 Claims



1. An acceleration responsive device, which comprises: a support, a handle attached to the support, a track located on the support extending between at least a first portion to a second portion of the support and located at an angle with respect to the handle, a first member located on the track in a normal position at a prescribed location of the track adjacent the first portion of the support and having a first side which faces toward the second portion of the support and a second side which faces away from the second portion of the support, a second member located on the track in a normal position adjacent the first member and having a face which interfaces with the second side of the first member, each of the first and second members being located on the track for movement relative thereto, a biasing element attached to the second member for allowing the second member to move along the track and to biasingly return to the normal position thereof, whereby, upon movement of the support in a prescribed manner, and due to the acceleration applied thereto, the second member is caused to move along the track toward the second portion of the support against the biasing action of the biasing element to push the first member toward the second portion of the support where, after reaching the maximum acceleration during the movement, the second member returns under the action of the biasing element to the normal position of the second member and the first member remains at its moved position on the track as an indication of the acceleration of the support during the movement thereof.

5,646,346

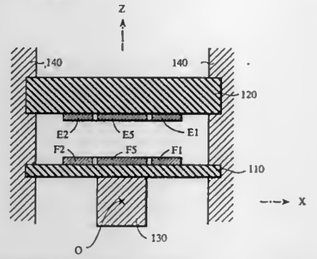
MULTI-AXIAL ANGULAR VELOCITY SENSOR

Kazuhiro Okada, 73, Sugaya 4-chome, Ageo-shi, Saitama 362, Japan

Continuation-in-part of Ser. No. 331,641, Nov. 10, 1994. This application Dec. 29, 1994, Ser. No. 366,026

Int. Cl.[6] G01P *3/44*

U.S. Cl. 73—504.04 14 Claims



4. A multi-axial angular velocity sensor for detecting angular velocity components about respective coordinate axes in a three-dimensional coordinate system, comprising:

a flexible substrate (**110**; **210**; **250**; **313**) having flexibility;

a fixed substrate (**120**; **230**; **290**; **340**) disposed so as to oppose the flexible substrate with a predetermined distance therebetween above the flexible substrate;

an oscillator (**130**; **211**, **241**; **260**; **321**) fixed on the lower surface of the flexible substrate;

a sensor casing (**140**; **220**, **230**; **270**, **280**, **290**; **322**, **330**, **340**) for supporting the flexible substrate and the fixed substrate and accommodating the oscillator therewithin;

excitation means (**E0** to **E5**, **F0** to **F5**; **G0** to **G10**) for oscillating the oscillator in respective coordinate axial directions; and

displacement detecting means (**E0** to **E5**, **F0** to **F5**; **G0** to **G10**) for detecting displacements in respective coordinate axial directions of the oscillator.

5,646,347

SUSPENSION FOR MICROMECHANICAL STRUCTURE AND MICROMECHANICAL ACCELERATION SENSOR

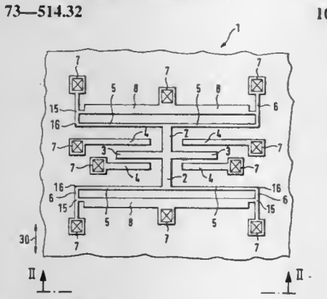
Kurt Weiblen, Metzingen; Michael Offenberg, Tuebingen, and Bernhard Elsner, Kornwestheim, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Aug. 31, 1995, Ser. No. 521,942

Claims priority, application Germany, Sep. 3, 1994, 44 31 478.7

Int. Cl.[6] G01P *15/125*

U.S. Cl. 73—514.32 10 Claims



1. A device comprising:

a substrate;

a micromechanical structure;

a first anchorage mounted on the substrate;

at least one lever element, a first side of the lever element being attached to the first anchorage, and a second side of the lever element being attached to the micromechanical structure to form a first point of action; and

an equalizing element for eliminating stresses on the micromechanical structure, the equalizing element being attached to the second side of the lever element to form a second point of action, the lever element being adapted to be flexed by a stress in the equalizing element.

5,646,348

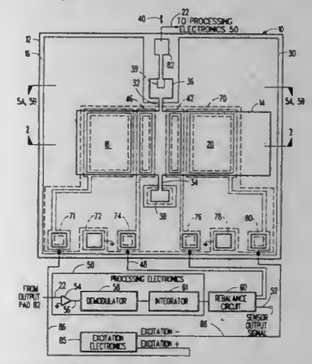
MICROMECHANICAL SENSOR WITH A GUARD BAND ELECTRODE AND FABRICATION TECHNIQUE THEREFOR

Paul Greiff, Wayland, and Jerome B. Sohn, Sudbury, both of Mass., assignors to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 297,655, Aug. 29, 1994. This application Sep. 5, 1995, Ser. No. 523,401

Int. Cl.[6] G02P *15/00*

U.S. Cl. 73—514.36 9 Claims



7. A micromechanical sensor device comprising:

a dielectric substrate having a surface;

a proof mass comprising an epitaxial layer suspended over said surface of said dielectric substrate, said proof mass being responsive to an input stimulus and forming a first capacitor plate;

a first electrode disposed over said surface of said dielectric substrate for coupling an excitation signal to said proof mass and forming a second capacitor plate;

a second electrode for sensing out-of-plane deflection of said proof mass;

an insulating layer disposed over said surface of said dielectric substrate in overlapping relationship with a portion of said first electrode and said second electrode; and

a guard band electrode disposed over said insulating layer so as to overlap said portion of said first electrode and said portion of said second electrode, said guard band electrode receiving a reference potential for shielding said proof mass from spurious charge on said surface of the dielectric substrate.

5,646,349

FLOATING MASS ACCELEROMETER

Robert David Twigg, Seattle, and Jeffrey Curtin Spengler, Bellevue, both of Wash., assignors to Plan B Enterprises, Inc., Medina, Wash.

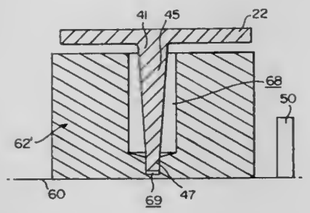
Continuation-in-part of Ser. No. 198,867, Feb. 18, 1994, Pat. No. 5,524,489. This application Jun. 8, 1995, Ser. No. 488,975

Int. Cl.[6] G01P *15/08*

U.S. Cl. 73—514.38 20 Claims

1. A same frame of reference accelerometer comprising:

a mass;



a rigid member;

a first elastic member linked to the mass at a first location, and attached to the rigid member at a second location wherein the first elastic member depends into a bore defined by the mass and whereby movement of the mass causes resisted deflection of the first elastic member;

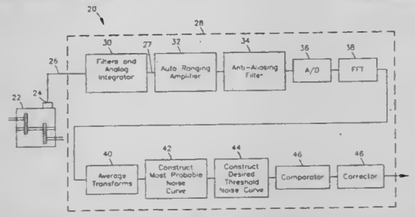
a first proximity sensor located proximate to the mass whereby the first proximity sensor provides information relating to the distance between the mass and the first proximity sensor.

5,646,350

MONITORING SLOW SPEED MACHINERY USING INTEGRATOR AND SELECTIVE CORRECTION OF FREQUENCY SPECTRUM

James C. Robinson, and Ronald G. Canada, both of Knoxville, Tenn., assignors to Computational Systems Inc., Knoxville, Tenn.

Filed Jan. 23, 1996, Ser. No. 590,340
Int. Cl.[6] G01N *29/00*
U.S. Cl. 73—602 **10 Claims**



1. A method of processing vibration signals to produce information corresponding to mechanical vibration in slow speed machinery, the method comprising the steps of:

producing a vibration signal measured in acceleration units corresponding to mechanical vibration generated by slow speed machinery, said vibration signal including amplitudes corresponding to frequencies below a pivot frequency, amplitudes corresponding to frequencies above the pivot frequency, and noise;

distorting the vibration signal by analog integration so that amplitudes corresponding to frequencies below the pivot frequency are amplified and amplitudes corresponding to frequencies above the pivot frequency are attenuated, thereby producing a distorted vibration signal measured in velocity units;

digitizing the distorted vibration signal during a predetermined time interval to produce a time series of digital vibration signals measured in velocity units;

producing a first preliminary output in the frequency domain corresponding to the time series of digital vibration signals;

calculating a most probable noise floor;

comparing the amplitudes of the first preliminary output to the most probable noise floor;

eliminating amplitudes in the first preliminary output that are below the most probable noise floor to produce a second preliminary output; and

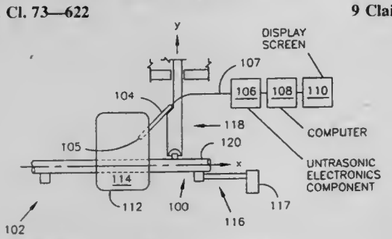
correcting the second preliminary output by a correction function that inversely corresponds to the distorting of the analog integration to produce a final output corresponding to mechanical vibration generated by the slow speed machinery.

5,646,351

ULTRASONIC MATERIAL HARDNESS DEPTH MEASUREMENT

Morris S. Good, Richland; George J. Schuster, and James R. Skorpik, both of Kennewick, all of Wash., assignors to Battelle Memorial Institute, Richland, Wash.

Continuation-in-part of Ser. No. 309,363, Sep. 20, 1994, abandoned. This application Sep. 18, 1995, Ser. No. 529,847
Int. Cl.[6] G01N *29/26*
U.S. Cl. 73—622 **9 Claims**



1. An apparatus for ultrasonically measuring hardness depth in a cylindrical metal part having an exterior surface, hardened zone and an unhardened core, said apparatus comprising:

(a) a part handler having a vessel filled with a couplant, and a part rotator for rotating the cylindrical metal part with respect to a sensor, said part rotator further having a surface follower upon which is mounted the sensor for maintaining a high tolerance fixed distance and non-perpendicular angular orientation between the sensor and the exterior surface, thereby excluding a zero incidence signal for determining said high tolerance fixed distance, and maintaining said couplant between the sensor and the part;

(b) said sensor having a frequency between about 5 MHZ and about 50 MHZ for maintaining a backscatter amplitude difference between said hardened zone and said unhardened core of at least a factor of two;

(c) an ultrasonic electronics component connected to the sensor for sending and receiving a plurality of signals to and from said sensor;

(d) a computer having a central processing unit;

(e) an A/D card that rectifies each of the plurality of signals, each signal received as a waveform from the ultrasonic electronics component, and smoothes a signal profile of the waveform, thereby enveloping the waveform, and subsequently averaging multiple envelopes of the plurality of waveforms to provide a robust composite profile, the A/D card further having a selective filter for setting profile filtering for obtaining a robust composite profile amplitude having a desired signal sensitivity and depth resolution;

(f) a control card for controlling a repetition rate of ultrasonic pulse generation, the control card further having a variable gain amplifier for scaling each of the plurality of waveforms from the A/D card so that each peak amplitude of the plurality of waveforms has a same height from measurement to measurement, thereby permitting measurements and data processing of parts independent of cylindrical metal part variations; and

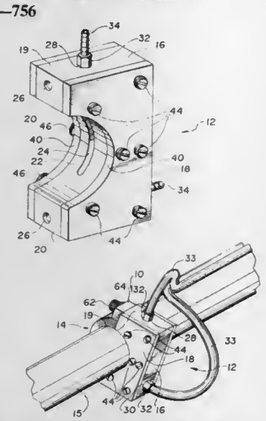
(g) an instruction set within the central processing unit for determining a hardness depth from the gain controlled robust composite profile.

5,646,352

METHOD AND APPARATUS FOR MEASURING A PARAMETER OF A MULTIPHASE FLOW

Daniel D. Joseph, 1920 S. First St., Apt. 2302, Minneapolis, Minn. 55454, and Runyuan Bai, 701 University Ave. SE., Apt. 203, Minneapolis, Minn. 55414

Filed Dec. 11, 1995, Ser. No. 570,628
Int. Cl.[6] G01L *7/00*
U.S. Cl. 73—756 **25 Claims**



1. A buffer chamber apparatus being in flow communication with a multiphase fluid in a pipe and retaining a sample of the fluid in a substantially non flowing condition for presenting the non flowing fluid to a sensor, the fluid having fluid components of differing density, comprising:

a chamber for retaining fluid; a coupling means being operatively coupled to the chamber for retaining the chamber in operative coupling with the pipe;

a chamber port being in flow communication with the fluid in the pipe; and

at least one sensor port defined in the chamber for presenting a selected fluid parameter to the sensor for measurement thereby,

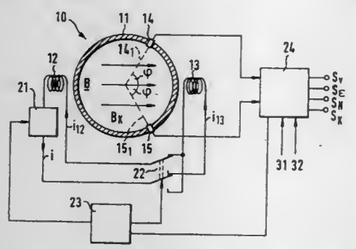
whereby the fluid components separate by density in the chamber.

5,646,353

ELECTROMAGNETIC FLOWMETER FOR MEASURING NON-NEWTONIAN FLUIDS

Franz Mesch, and Ansgar Trächtler, both of Karlsruhe, Germany, assignors to Endress + Hauser Flowtec AG, Reinach, Switzerland

Filed Oct. 17, 1996, Ser. No. 733,652
Claims priority, application European Pat. Off., Oct. 20, 1995, 95116555
Int. Cl.[6] G01F *1/60*
U.S. Cl. 73—861.16 **2 Claims**



1. An electromagnetic flowmeter for measuring the average velocity v_m and the flow index N of an electrically conductive non-Newtonian fluid flowing in a measuring tube whose portion coming into contact with the fluid is electrically non-conductive, said flowmeter comprising in addition to the measuring tube:

a first coil and a second coil disposed diametrically opposite to each other on the outside or in a wall of the measuring tube, said coils serving to produce a magnetic field cutting across the wall of the measuring tube and the fluid when a coil current flows through the coils;

a first electrode serving to pick off a first potential induced by the magnetic field;

a second electrode serving to pick off a second potential induced by the magnetic field;

a respective radius of the measuring tube at the point of each of the electrodes making a first angle of 60° or a second angle of 45° with the direction of the magnetic field;

a coil-current generator;

a double-pole switch with which the two coils are connectable either in series aiding or in series opposition; and evaluation electronics which form

either a first velocity signal proportional to the average velocity v_{m1} from a first potential difference u_{k1}, picked off the electrodes arranged under the first angle ϕ_1 with the coils connected in series aiding and, therefore, generating a magnetic field having the strenght B_k, using the following equation:

$$v_{m1}=u_{k1}/(3^{1/2}B_kR)$$

and a first flow index signal proportional to a first flow index N_1 from a third potential difference u_{g1}, picked off the electrodes with the coils connected in series opposition, and the first potential difference u_{k1}, using the following equation:

$$N_1=(2u_{g1}-bu_{k1})/(3bu_{k1}-10u_{g1})$$

or a second velocity signal proportional to the average velocity v_{m2} from a second potential difference u_{k2}, picked off the electrodes arranged under the second angle ϕ_2 with the coils connected in series aiding, using the following equation:

$$v_{m2}=u_{k2}/(2^{1/2}B_kR)$$

and a second flow index signal proportional to a second flow index N_2 from a fourth potential difference u_{g2}, picked off the electrodes with the coils connected in series opposition, and the second potential difference u_{k2} using the following equation:

$$N_2=(2^{1/2}u_{g2}-bu_{k2})/(3bu_{k2}-5\cdot 2^{1/2}u_{g2}).$$

5,646,354

MICROWAVE THERMAL TRACE FLOWMETER

Kim A. Lovejoy, Waukesha, Wis., assignor to Lovejoy Controls Corporation, Waukesha, Wis.

Filed Oct. 6, 1995, Ser. No. 540,182
Int. Cl.[6] G01F *1/68*
U.S. Cl. 73—861.95 **19 Claims**

8. A system for measuring the volume flow rate of a flowing fluidic material, comprising:

a conduit through which said material having an inherent temperature flows,

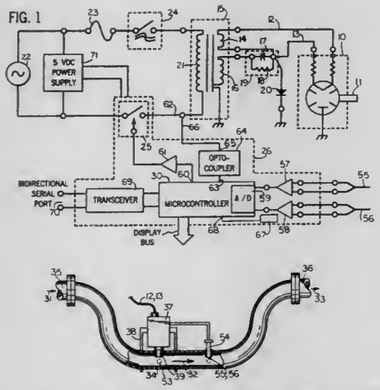
a microwave radiation generator coupled to said conduit for injecting a pulse of microwave radiation into said material at an upstream position for a quantity of a substance in said material to be heated by absorption of microwave energy

a transformer having primary and secondary windings and means coupling said secondary winding to said microwave radiation generator,

means coupling said primary winding to an ac source including a zero-crossing switch having an output in a circuit with said primary winding,

a thermal sensor coupled to said conduit downstream at a known distance from said upstream position for producing a signal value representative of the inherent temperature of the sub-

FIG. 1



stance and for producing a signal of a different value in response to transit of said sensor by the material including the quantity of the microwave heated substance,

a programmable microcontroller having signal input means and signal output means and means coupling said sensor to an input means,

means coupling an output means of said microcontroller to said zero-crossing switch for controlling said switch to switch to a conductive state for activating said microwave radiation generator,

a circuit coupling an input of said microcontroller to the output of the zero-crossing switch for signaling said microcontroller to initiate a time measuring interval coincident with occurrence of a zero crossing after said switch switches to said conductive state and to terminate said measuring interval in response to said signal from said thermal sensor indicating that said heated quantity of the substance is transiting said sensor,

means for entering data into said micro-controller including data representing the cross sectional area of said conduit and the distance between said upstream position where the microwave radiation is injected and the downstream position of said thermal sensor for said microcontroller to utilize said distance, duration of said time interval, and the area of said conduit to compute the rate of flow of material in said conduit and produce a signal representative of said rate, and

circuit means for transmitting said last named signal from an output of the microcontroller for display of said rate of flow.

5,646,355

TORQUE RESPONSIVE ROTATION CONTROL DEVICE

Shigeaki Fukushima, Hamamatsu, and Tatsuo Kawase, Iwata, both of Japan, assignors to NTN Corporation, Osaka, Japan

Filed Jun. 14, 1996, Ser. No. 663,910

Claims priority, application Japan, Jun. 14, 1995, 7-172925

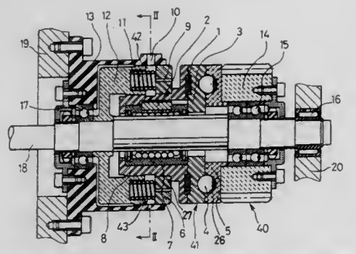
Int. Cl.[6] G01L *3/02*

U.S. Cl. 73—862.195 **9 Claims**

1. A torque responsive rotation control device which comprises a torque limiting mechanism interposed between an input rotary member and an output shaft coaxial with said input rotary member, said torque limiting mechanism including:

a torque cam mounted for non-rotation and axial movement relative to the output shaft and detachably engageable with the input rotary member in a direction of rotation thereof and

a spring means for biasing the torque cam in a direction required for the torque cam to engage the input rotary member, wherein said torque limiting mechanism also includes a plurality of balls arranged in a circumferential direction for



engaging the torque cam with the input rotary member and wherein said torque cam has a cam face serving as raceway along which the balls roll, said cam face representing a circumferentially extending groove having a depth varying cyclically in the circumferential direction.

5,646,356

MAGNETOELASTIC NON-CONTACTING TORQUE TRANSDUCER

Hans Ling, Spånga; Jarl Sobel, Västerås, and Dan J. Uggla, Kista, all of Sweden, assignors to Asea Brown Boveri AB, Vasteras, Sweden

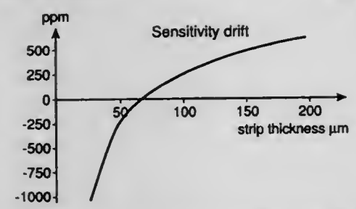
PCT No. PCT/SE95/00289, § 371 Date Sep. 4, 1996, § 102(e) Date Sep. 4, 1996, PCT Pub. No. WO95/27191, PCT Pub. Date Oct. 12, 1995

PCT Filed Mar. 22, 1995, Ser. No. 704,625

Claims priority, application Sweden, Mar. 30, 1994, 9401064

Int. Cl.[6] G01L *3/00*

U.S. Cl. 73—862.335 **10 Claims**



1. A magnetoelastic torque transducer for electrically measuring torsional stresses in a shaft (**1**) with a cylindrical part **5** which at least in a surface layer around the whole shaft is ferromagnetic and magnetoelastic, said transducer comprising a first device (**2**, **3**) for creating an axially directed magnetizing field, cyclically varying in time, in the magnetoelastic part of the shaft with a skin depth determined by taking into account the frequency as well as the amplitude of the varying magnetizing field, at least one zone (**6**, **7**) in the magnetoelastic part of the shaft provided with an anisotropy, the effect of which is to deflect the magnetic flux density in a direction away from the natural flux direction along the shaft, and a second device (**10**, **11**) for electrically measuring the changes of the reluctance, induced by the torsional stresses, in each one of the zones provided with anisotropy, wherein said anisotropy is achieved by the provision of a number of parallel strips (**8**, **9**) in good electrical contact with the magnetoelastic material in the surface, said strips being of a material with low resistivity and being directed at an angle to the longitudinal axis of the transducer shaft, the thickness of the strips being smaller than the skin depth of the shaft material at the frequency and amplitude of the magnetizing field, but greater than the skin depth multiplied by the ratio of the resistivity of the material in the strips to the resistivity of the material in the shaft.

5,646,357

AIR SAMPLING SYSTEM AND FLOW CALIBRATION SYSTEM FOR SAME

Michael Wayne Ogden, and David Lynn Heavner, both of Winston-Salem, N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Continuation of Ser. No. 249,487, May 26, 1994, Pat. No. 5,551,311. This application May 2, 1996, Ser. No. 641,788

Int. Cl.[6] G01N *1/16*

U.S. Cl. 73—863.31 **20 Claims**

1. A sampler head including a flow measuring system for use with at least two different sample collection means for use with an environmental air sampling system in which a single pump is used to draw environmental air to be sampled through said sampler head, said sampler head comprising:

a manifold block having a main air passageway fluidly connected to said pump and at least first and second parallel air passageways fluidly connected to said main air passageway;

at least two different sample collection means, each fluidly connected to one of said at least first and second air passageways such that said pump simultaneously draws air through said at least two different sample collection means; and

said flow measuring system for measuring air flow through said sampler head comprises;

means for securing said sampler head in such a manner that air flow exiting from said at least two different sample collection means is separately measured while said at least two different sample collection means are in operational positions on said sampler head;

means for separately measuring said air flow exiting each of said at least two different sample collection means and for generating first signals representative of such air flow; and

means for storing said first generated signals.

5,646,358

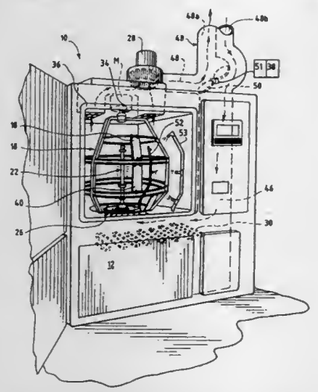
HIGH ACCURACY WEATHERING TEST MACHINE

Jacob Tikhtman, Northbrook, and Bhakti S. Patel, Bensenville, both of Ill., assignors to Atlas Electric Devices Co., Chicago, Ill.

Division of Ser. No. 393,060, Feb. 23, 1995, Pat. No. 5,503,032. This application Jan. 31, 1996, Ser. No. 594,154

Int. Cl.[6] G01N *17/00*

U.S. Cl. 73—865.6 **4 Claims**



1. The method of controlling temperature in a testing chamber having a heater and a variable openable and closable cooling air inlet vent, said method comprising the steps of:

providing a temperature sensor in said chamber to open and close said vent responsive to the temperature sensed by said sensor;

fixing said vent in a first vent position in response to the temperature sensed by said sensor;

controlling said temperature by said heater while said vent is fixed in said first vent position;

said controlling step comprising:

(a) defining a unit of time;

(b) periodically determining the temperature of the air in said chamber;

(c) comparing the difference of the temperature of the air in said chamber with a desired temperature;

(d) activating said heater for a portion of said unit of time, which portion is dependent on the compared temperature difference, while not activating said heater for the remainder of said unit of time; and

(e) repeating said process in subsequent units of time.

5,646,359

SILENCING METHOD AND APPARATUS FOR PIANOS

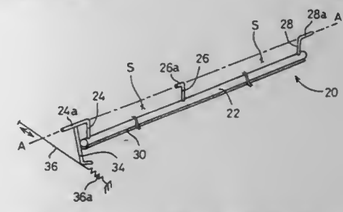
Tsutomu Kihara, Hamamatsu, and Kiyoshi Abe, Fukurol, both of Japan, assignors to Kabushiki Kaisha Kawai Gakki Seisakusho, Shizuoka-Ken, Japan

Filed May 30, 1995, Ser. No. 453,749

Claims priority, application Japan, May 31, 1994, 6-118260

Int. Cl.[6] G10C *3/00*

U.S. Cl. 84—216 **18 Claims**



1. A method for selectively damping string striking sounds in a piano comprising the steps of:

providing a stop rail for, when in a stop position, contacting hammer shanks of said piano and halting motion of said shanks, in response to depression of corresponding keys of said piano, before hammers of said shanks strike strings of said piano;

providing a plurality of arm members spaced axially along said stop rail and extending perpendicularly therefrom;

pivotally securing ends of said arm members, remote from said stop rail, to an internal structural member of said piano along a common axis of rotation such that said arm members and said stop rail are pivotable about said axis of rotation from said stop position to a retracted position, remote from said stop position, for permitting said hammers to strike said strings;

defining a space between each adjacent pair of arm members, said space being open on a side thereof remote from said stop rail, and when said stop rail is located in said retracted position, a range of motion of, at least one of a damper mechanism of said piano and said hammer shanks extends into said open spaces between adjacent pairs of arm members such that motion of said at least one of said damper mechanism and said hammer shanks is unhindered; and

selectively positioning said stop rail in said retracted position, during an acoustic sound mode and in said stop position, during an electronic sound mode.

4. A silencing apparatus for a piano comprising:

a stop rail, when in a stop position, for contacting hammer shanks of said piano and halting motion of said shanks, in response to depression of corresponding keys of said piano, before hammers on said shanks strike strings of said piano;

a plurality of arm members being spaced axially along said stop rail and extending substantially perpendicularly therefrom, ends of said arm members, remote from said stop rail, being

pivotally secured to an internal structural member of said piano along a common axis of rotation such that said arm members and said stop rail are pivotable about said axis of rotation from said stop position to a retracted position, remote from said stop position, for permitting said hammers to strike said strings;

wherein each adjacent pair of said arm members define an open space therebetween on a side thereof remote from said stop rail, and, when said stop rail is located in said retracted position, a range of motion of at least one of a damper mechanism of said piano and said hammer shanks extends into one of said open spaces between adjacent pairs of said arm members such that motion of said at least one of said damper mechanism and said hammer shanks is unhindered;

an axial portion, coincident with said rotational axis, which extends from at least one of said arm members;

an actuating lever which extends substantially perpendicularly from said axial portion;

a biasing member applies a biasing force to said actuating lever, at a location spaced from said rotational axis, to bias said stop rail into said retracted position; and

an operating wire with a first end thereof connected to said actuating lever at a location spaced from said rotational axis and a second end of said wire is connected to an operating device for pulling said actuating bar, via said wire, and applying a force to said actuating lever in opposition to said biasing force thereby moving said stop rail from said retracted position into said stop position.

5,646,360

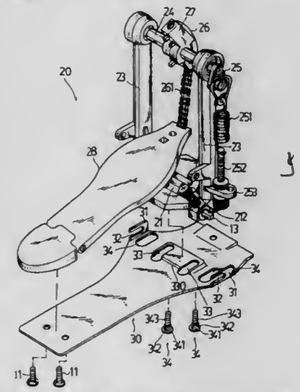
COLLAPSIBLE FOOT PEDAL ASSEMBLY OF A MUSICAL INSTRUMENT

Tsun-Chi Liao, Tiachung, Taiwan, assignor to Hwa Shin Musical Instrument Co., Ltd., Taichung, Taiwan

Filed Jun. 7, 1996, Ser. No. 660,447

Int. Cl.[6] G10D *13/02*

U.S. Cl. 84—422.1 **1 Claim**



1. A pedal assembly of the type comprising a pedal unit and a base plate, said base plate comprising two upright lugs bilaterally disposed near a front end thereof, said pedal unit comprising a mounting frame having two bottom screw holes, two upright supports raised from said mounting frame to hold a revolving shaft, a fly wheel and a beater holder mounted on said revolving shaft, a pedal coupled to said fly wheel by a chain, two locating elements fixedly fastened to two opposite sides of said mounting frame and respectively secured to the upright lugs of said base plate, wherein said base plate comprises a raised surface portion at a top side thereof between said upright lugs, two key holes partially cut through said raised surface portion and respectively connected to the bottom screw holes of said mounting frame of said pedal unit by a respective tie screw, and two tie screws respectively mounted in said key holes and threaded into the bottom screw holes of said mounting frame of said pedal unit, each of said key holes comprising a narrower front section and a broader rear section, each of said tie screws comprising a head stopped outside said key holes and having a smaller diameter than the width of the broader rear section of each of said key holes, a screw body inserted through the narrower front section of one key hole and threaded into one bottom screw hole of said mounting frame, and a collar connected between said screw head and said screw body and inserted through the broader rear section of the corresponding key hole and then forced into engagement with the narrower front section of the respective key hole, each of the upright lugs of said base plate having a backward coupling notch adapted for coupling to the locating elements of said pedal unit.

5,646,361

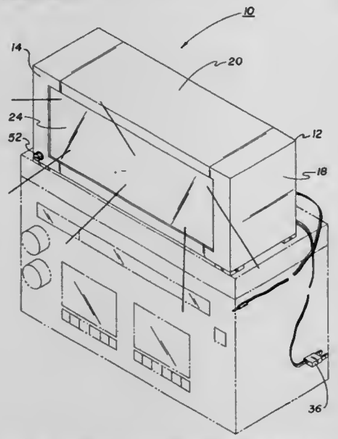
LASER EMITTING VISUAL DISPLAY FOR A MUSIC SYSTEM

Michael Morrow, 985 S. Monterosa Dr., Pueblo West, Colo. 81007

Filed Aug. 4, 1995, Ser. No. 511,279

Int. Cl.[6] A63J *17/00*

U.S. Cl. 84—464 R **5 Claims**



1. A new and improved laser emitting visual device for a music system comprising, in combination:

a rectangular housing including a horizontal planar top and bottom wall and a periphery formed therebetween consisting of a front wall, rear wall and pair of side walls thereby defining a a hollow interior, the housing further including a tinted transparent window integrated within the front wall;

a hollow tubular laser mount centrally coupled between the interior faces of the opposed side walls comprising a plurality of diametrically opposed apertures, the apertures forming a plurality of angles less than **60** degrees with respect to the horizontal;

a plurality of multi-color cylindrical lasers infixed within the apertures and comprising a laser emitting end and power receiving end with the laser emitting end facing in the general direction of the transparent window, the lasers adapted to emit a specific colored high intensity light beam when actuated via the power receiving end;

a control module situated in the rear of the housing coupled to an alternating current source, output of a music system, and each of the power receiving ends of the lasers; the control module comprising a plurality of switches coupled between the current source and each power receiving end of the lasers, each switch having an open orientation for withholding current from the particular laser and a closed orientation for allowing current to flow thereto; and control circuitry adapted to actuate different switches depending on the frequency and volume of a signal received via the output of the music system;

a plurality of mirrors lining the interior surfaces of the top and bottom walls and periphery of the housing adapted to enhance the visual effect of the lasers; and

an actuator switch positioned on the front face of the housing and coupled to the control module, the actuator switch having an open orientation for withholding current from the control module and closed orientation for allowing current to flow thereto thereby actuating the laser emitting visual device hence activating different lasers upon receipt of various signals from the output of the music system hence creating a coincident audio and visual effect.

5,646,362

SOUND PARAMETER EDITING DEVICE FOR AN ELECTRONIC MUSICAL INSTRUMENT

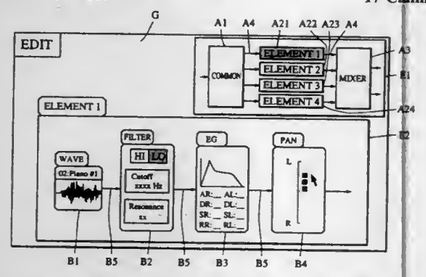
Masahiro Koyama; Takuro Sone, both of Hamamatsu, and Iwao Higashi, Shimonoseki, all of Japan, assignors to Yamaha Corporation, Japan

Continuation of Ser. No. 135,157, Oct. 12, 1993, abandoned. This application Feb. 26, 1996, Ser. No. 605,455

Claims priority, application Japan, Oct. 12, 1992, 4-298191; Dec. 10, 1992, 4-330504

Int. Cl.[6] G10H *1/18;7/00*

U.S. Cl. 84—615 **17 Claims**



1. A sound parameter editing device for an electronic musical instrument comprising:

a display device;

editing means for selecting an element from a plurality of elements for producing a sound, and for editing at least one sound parameter associated with the selected element, each said element including a plurality of independently editable function blocks each having at least one sound parameter associated therewith; and

display control means for controlling said display device so that, when the at least one sound parameter of the selected element is being edited, an elements schematic display of all elements for producing the sound is displayed, a particular portion of the elements schematic display corresponding to the selected element being displayed in a manner emphasizing the selected element, wherein a detailed display of all the function blocks corresponding to the selected element are concurrently displayed on the display device.

5,646,363

FREE PISTON MACHINE

Clifford Denchfield, Ellington, United Kingdom, assignor to Loral Europe Limited, Hoddesdon, Great Britain

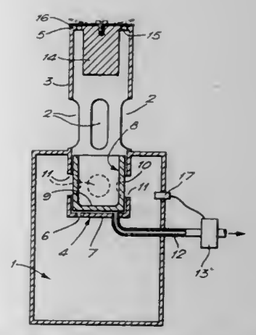
Filed Apr. 10, 1995, Ser. No. 420,305

Claims priority, application United Kingdom, Apr. 9, 1994, 9407067

Int. Cl.[6] F41A *33/04*

U.S. Cl. 89—7 **12 Claims**

1. A gunfire simulator comprising a cylinder having first and second partially closed ends, a free piston slidable in the cylinder between the partially closed ends, a first conduit communicating between a source of gas under pressure and the first partially closed end of the cylinder, a second conduit communicating between the first partially closed end of the cylinder and atmosphere, valve means controlling flow through the second conduit, a piston-controlled port in the cylinder and communicating between the cylinder and the source of gas under pressure, the arrangement being such that the piston closes the port when disposed at the first partially closed end of the cylinder, and an exhaust port in the cylinder located axially between the piston-controlled port and the second partially closed end for rapidly exhausting the gas under pressure to atmosphere to simulate an explosion.



5,646,364

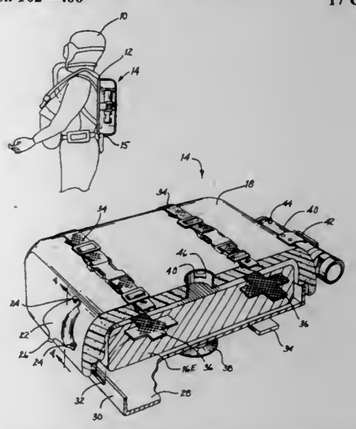
EXPLOSIVE DEVICE FOR USE IN UNDERWATER DEMOLITION OPERATIONS AND METHOD THEREFOR

Kevin R. McClung, Paulden, Ariz., and Donald Lee Chastain, 3124 E. Oak Hill St., Sierra Vista, Ariz. 85635, assignors to Donald Lee Chastain, Sierra Vasta, Ariz.

Filed Jun. 19, 1995, Ser. No. 491,729

Int. Cl.[6] F42B *22/00*

U.S. Cl. 102—406 **17 Claims**



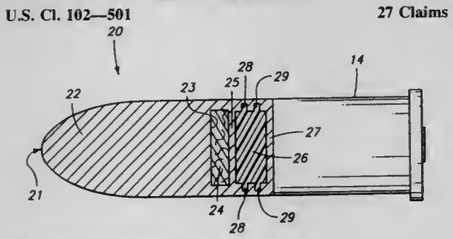
1. An explosive device for attachment to a user engaged in underwater demolition operations comprising, in combination:

explosive charge means to be delivered by said user to a target for detonation in proximity with said target;

buoyant carrier means to be carried by said user for containing said explosive charge means;
detonator means coupled to said buoyant carrier means for detonating said explosive charge means;
plate means carried by said user for permitting said attachment of said explosive device to said user;
said buoyant carrier means comprises:
tray means having member portions extending from portions of a perimeter of said tray means for retaining said explosive charge means, said member portions having a plurality of slots penetrating there through; and
buoyant cover means extending over said member portions and coupled to said tray means for enclosing said explosive charge means.

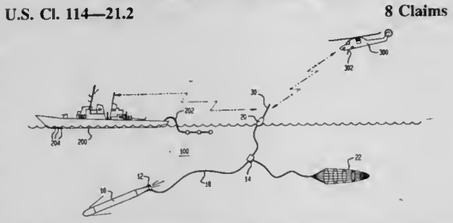
17. An explosive device for attachment to a user engaged in underwater demolition operations comprising, in combination:
explosive charge means to be delivered by said user to a target for detonation in proximity with said target;
buoyant carrier means to be carried by said user for containing said explosive charge means; and
detonator means coupled to said buoyant carrier means for detonating said explosive charge means; said buoyant carrier means comprises:
tray means for retaining said explosive charge means; and
buoyant cover means consisting of a buoyant material substantially completely surrounding five sides of said explosive charge means and coupled to said tray means for enclosing said explosive charge means said buoyant cover means having a thickness greater than a thickness of said tray means.

5,646,365
BULLET IDENTIFICATION
William E. Collier, 1601 S. Brand Blvd., Glendale, Calif. 91204
Continuation of Ser. No. 309,257, Sep. 20, 1994, Pat. No. 5,485,789, which is a continuation-in-part of Ser. No. 183,078, Jan. 18, 1994, abandoned. This application Nov. 13, 1995, Ser. No. 557,689
Int. Cl.[6] F42B *12/00*
U.S. Cl. 102—501 **27 Claims**



1. An identifiable bullet, comprising:
a main projectile portion having a front nose portion and a first rear wall opposite the front nose portion;
a chamber extending from the first rear wall;
an identification section mounted within the chamber adjacent the first rear wall of the main projectile portion having indicia affixed thereon for identification of the projectile portion after being discharged from a firearm; and
a plug mounted within the chamber adjacent the identification section to help secure and maintain the identification section within the chamber and protect the identification section from damage;
said plug and main projectile portion being constructed with features which engage with one another so as to resist relative motion of the plug forward toward the identification section and front nose portion of the main projectile.

5,646,366
UNDERWATER DEFENSE SYSTEM
Thomas A. O'Connell, North Kingstown, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Aug. 22, 1996, Ser. No. 701,322
Int. Cl.[6] F4IF *3/10;5/00;* **F42B** *19/46*
U.S. Cl. 114—21.2 **8 Claims**

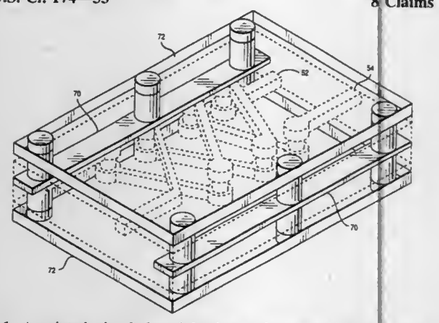


1. A communications system for an unmanned underwater vehicle (UUV) for communicating between the and a remotely located platform above the surface of a body of water, said system comprising:
housing;
a communications wire spooled within said housing, said communications wire having a first end and a second end, said first end coupled to said UUV such that said communications wire is paid out from said housing when said system is decoupled from said UUV wherein a pulling force is applied to said communications wire;
communications electronics coupled to said second end of said communications wire, said communications electronics including an RF antenna coupled to an RF receiver operating at a first frequency and to an RF transmitter operating at a second frequency, and a battery for supplying power to said RF receiver and said RF transmitter;
a buoy coupled to said communications electronics for floating said RF antenna to the surface of the water such that said RF antenna breaks the surface of the water; and
a drag drogue depending from said housing to supply a drag force to offset said pulling force such that said buoy is maintained at the surface of the water and said RF antenna is maintained above the surface of the water.

5,646,367
CONDUCTIVE PRIMER MIX
Robert B. Shanks; Frances G. Lopata, and Kevin N. Graves, all of Little Rock, Ark., assignors to Remington Arms Company, Inc., Madison, N.C.
Filed Mar. 1, 1996, Ser. No. 609,294
Int. Cl.[6] C06B *41/02*
U.S. Cl. 149—24 **5 Claims**

1. An electrically ignitable small arms primer mixture comprising about from 30 to 40% lead styphnate; about from 4 to 12% antimony sulfide; about from 40 to 55% barium nitrate; about from 4 to 8% aluminum; about from 0.5 to 2% carbon black and up to about 1% binder, and wherein the mixture is substantially free from tetrazene.

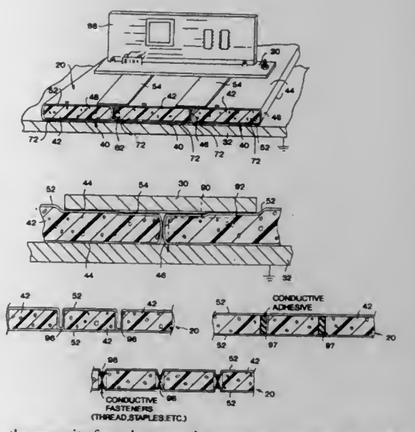
5,646,368
PRINTED CIRCUIT BOARD WITH AN INTEGRATED TWISTED PAIR CONDUCTOR
Jorge Enrique Muyshondt, Austin; Gary Parker, Round Rock, and Bruce James Wilkie, Georgetown, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 30, 1995, Ser. No. 565,373
Int. Cl.[6] H05K *1/00*
U.S. Cl. 174—33 **8 Claims**



1. A printed circuit board having a first and a second layer comprising:
at least two segmented conductor traces on the first and on the second layer crisscrossing each other;
a plurality of vias for connecting the at least two segmented conductor traces on the first layer to the at least two segmented traces on the second layer to form two continuous conductor traces;
a first ground plane atop the first layer and a second ground plane below the second layer; and
a continuous ground trace on either side of said two continuous conductor traces for shielding said traces.

5,646,369
SEGMENTED SHIELDING STRUCTURE FOR CONNECTOR PANELS
Stanley R. Miska, Pittsford; Daniel T. Courtney, Palmyra, and Kenneth W. Hermann, Rochester, all of N.Y., assignors to Schlegel Corporation, Rochester, N.Y.
Continuation-in-part of Ser. No. 415,627, Apr. 3, 1995. This application May 16, 1995, Ser. No. 442,027
Int. Cl.[6] H05K *9/00*
U.S. Cl. 174—35 GC **20 Claims**

1. A gasket for blocking electromagnetic radiation between at least two electrically conductive bodies over an arm having a length and a width, comprising:
a plurality of segments, each of the segments having a resilient core extending along at least part of one of the length and width, the segments being disposed laterally adjacent to one another between spaced edges of the gasket, such that at least two of the segments are laterally adjacent along said at least part of one of the length and width;
an electrically conductive material disposed on the segments and covering at least a majority of both opposite faces of the gasket, thereby providing conductive surfaces on both said opposite faces for bearing against the conductive bodies over said area; and,
wherein the electrically conductive material includes conductive material bridging between the opposite faces at points between the spaced edges defining conductive paths between the opposite faces between the segments such that the conductive material defines a plurality of electrically parallel paths between the conductive bodies.



5,646,370
PERMANENT ATTACHMENT OF GROUNDING WIRE
Douglas S. Perkins, Austin, Tex., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.
Filed Apr. 28, 1995, Ser. No. 431,111
Int. Cl.[6] H02G *15/103*
U.S. Cl. 174—51 **3 Claims**

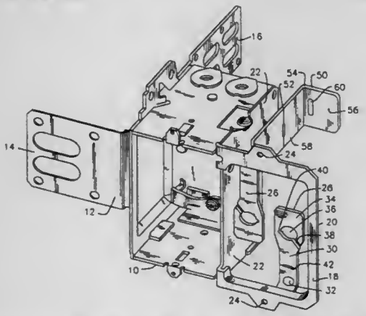
1. A ground connection kit for use with an adapter terminating an electrical cable including a conductor, insulation covering the conductor and a ground shield surrounding the insulation, the kit comprising:
a flexible, metal grounding strap adapted to be connected to the ground shield and extending along the cable for connection to a ground plane;
a ground wire soldered or brazed to said grounding strap and extending along the cable, said ground wire adapted to be attached to the exterior of said adapter for electrically grounding said adapter to the shield of the cable; and
an elastomeric cover for placement over the grounding strap and ground wire and in contact with the cable to protect the ground shield from contaminants and electrically insulate the ground shield;
wherein the grounding strap and the ground wire exit an end of the cover for connection to the ground plane and adapter, respectively.

5,646,371

ELECTRICAL OUTLET BOX AND PLATE THEREFOR INCORPORATING A REAR SUPPORT BRACKET

Mark Edward Fabian, St. Jean, Canada, assignor to Thomas & Betts Corporation, Memphis, Tenn.

Filed Apr. 13, 1994, Ser. No. 227,748
Claims priority, application Canada, Apr. 23, 1993, 2094790
Int. Cl.[6] H01R *13/46*
U.S. Cl. 174—58 **34 Claims**



1. An electrical outlet box having a top, bottom, first and second sides and a back, and defining a rectangular front opening, the outlet box including a rear support bracket secured to one of the sides thereof and extending rearwardly from the front opening for supporting the outlet box against one wall panel thereby limiting rearward movement thereof, one of the sides including a means for securing said outlet box to a structural wall member; and

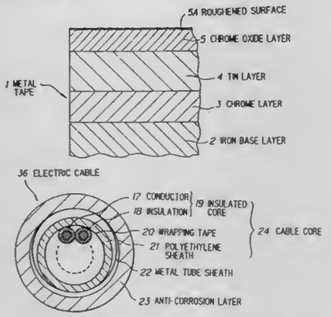
a means for abutting a second wall panel, said abutment means being provided adjacent to the front opening of the outlet box and being disposed on the other of the sides, said abutment means limiting forward movement of the outlet box relative to the second wall panel.

5,646,372

METAL TUBE AND ELECTRIC CABLE USING THE SAME

Takashi Sasaki; Ayumi Nishidate; Kenji Nagayama, and Yoshinobu Sato, all of Ibaraki, Japan, assignors to Hitachi Cable Ltd., Tokyo, Japan

Filed Apr. 3, 1995, Ser. No. 415,349
Claims priority, application Japan, Sep. 27, 1994, 6-231318
Int. Cl.[6] H01B *5/10*
U.S. Cl. 174—126.2 **2 Claims**



1. An electric cable comprising:

a cable core including at least one conductor, each said conductor having a respective first insulation, said cable core further including a second insulation surrounding said at least one conductor having said first insulation;

a metal tube sheath encircling said cable core for protecting said cable core; and

an anti-corrosion layer provided on said sheath;

said metal tube sheath being a metal tape which was rounded to provide an edge-abutted portion, said edge-abutted portion being welded to provide a butt seam, said metal tape including:

a base layer which is one metal selected from iron, copper, aluminum, and steel, said base layer being an inner layer of said metal tube sheath;

a chrome layer, provided on said base layer, having a coating amount of 80 to 140 mg/m^2; and

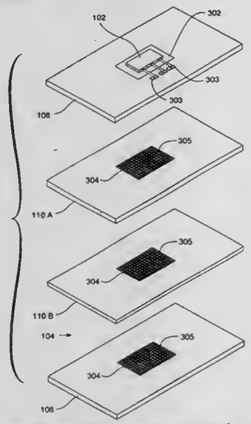
a chrome oxide layer provided on said chrome layer, said chrome oxide layer being an outer layer of said metal tube sheath and having an outer surface having a roughness of 0.6 to 1.5 m, and a coating amount of 8 to 20 mg/m^2.

5,646,373

APPARATUS FOR IMPROVING THE POWER DISSIPATION OF A SEMICONDUCTOR DEVICE

Larry C. Collins, Morton; James G. Cook, Hanna City, and John P. Hoffman, Peoria, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Continuation-in-part of Ser. No. 299,094, Sep. 2, 1994, abandoned. This application Oct. 5, 1995, Ser. No. 539,569
Int. Cl.[6] H05K *7/20*
U.S. Cl. 172—252 **4 Claims**



1. An apparatus for improving the power dissipation of a semiconductor device surface mounted on a printed circuit, comprising:

a top printed circuit board layer having a top surface and a bottom surface;

a bottom printed circuit board layer having a top surface and a bottom surface;

a first pad of metallic material connected to the top surface of said top printed circuit board layer, wherein the semiconductor device is connected to said first pad;

a second pad of metallic material connected to the top surface of said top printed circuit board layer, said second pad surrounding said first pad, said second pad being electrically isolated from the semiconductor device, said second pad having a plurality of apertures therein;

a plurality of intermediate printed circuit board layers, each of said intermediate layers having a metallic pad identical to that of said second pad connected to a top surface thereof, said second and intermediate layer metallic pads being aligned;

a plurality of vias for heat transfer through the printed circuit board layers, each of said vias being thermally coupled to each of said pads; and

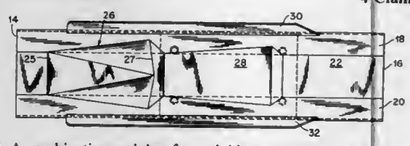
a heat sink thermally coupled to said plurality of vias.

5,646,374

CONVEYOR FOR A COMBINATION WEIGHER OR THE LIKE

Richard E. Stapp, San Lorenzo, and David R. Crowson, El Cerrito, both of Calif., assignors to The Paxall Group, Inc., Skokie, Ill.

Filed Dec. 6, 1994, Ser. No. 354,030
Int. Cl.[6] G01G *13/00;13/02;23/00*
U.S. Cl. 177—25.18 **4 Claims**



1. A combination weigher for weighing a plurality of articles of product having varying weights and delivering a collection of the weighed articles having a combined weight which most nearly approximates a predetermined weight, having a plurality of weigh hoppers, each of which receives and weighs a fraction of the collection, means for recording a predetermined target weight, control means for determining which of said weigh hoppers is in a ready state, generating and comparison means for generating the values of combinations of weights in the weigh hoppers which are in the ready state and comparing the values with the predetermined target weight and for selecting combinations of weigh hoppers having a combined weight which most nearly approximates the target weight, product receiving means and means for unloading the weigh hoppers of the selected combination for delivery to the product receiving means and means for loading the weigh hoppers which were unloaded, the improvement comprising an elongated trough having an inlet end, a discharge end and a pair of spaced apart walls; means for vibrating the trough to enhance a flow of material along said trough; first and second lift means extending across said trough between said side walls disposed between said inlet end and said outlet end for elevating essentially all of the particulate material to thereby slow the flow of material, and said first of said sift means comprising a relatively shallow ramp which abuts the side walls of said trough and extends across said trough between said side walls and is disposed between said inlet and said outlet end, and said ramp including entrance and exit ends and defining a relatively flat surface across its width at its entrance end and converging into a V-shaped exit end; said second lift means comprising a relatively shallow ramp which defines a relatively flat surface across the width of said trough and abutting the sides of said trough so that all of the particulate material flowing along said trough passes over said second lift means to further slow the flow of material, whereby said sift means regulates the flow of particulate material so that a trickle of material is delivered to one of the Weigh hoppers of the combination weigher.

5,646,375

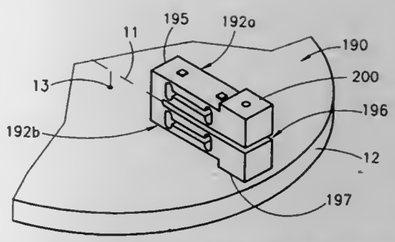
SYMMETRICAL LOAD CELLS FOR USE IN CONJUCTION WITH ROTARY MACHINES

Eli Neuman, Magdiel, Israel, assignor to Tedea-Huntleigh International Ltd., Herzliya, Israel

Continuation-in-part of Ser. No. 377,050, Jan. 23, 1995. This application Mar. 16, 1995, Ser. No. 404,963
Int. Cl.[6] G01G *13/00;3/08*
U.S. Cl. 177—54 **10 Claims**

1. A weighing device for determining the weight of an object while both the weighing device and the object are placed on a rotating table, said weighing device comprising:

at least a pair of load cells each having at least two deflectable beams, an outwardly-facing one of said pair of load cells being joined at an end thereof in series connection to an end of an inwardly-facing one of said pair of load cells, said load cells being arranged at a distance from the center of table rotation in reverse symmetry about a radial line emanating from the center of rotation, each of said load cells having a loading point integrally connected to the at least two deflectable beams, said outwardly facing load cell having its loading point further from the center than said inwardly-facing load cell: and



means in each of said load cells supported by at least one of said deflectable beams for measuring the deflection of said at least two deflectable beams and generating a proportional signal output.

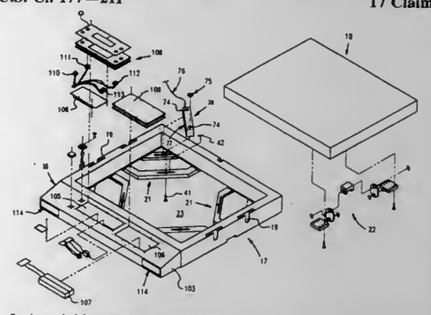
such that when the object to be weighed is placed so as to load said pair of load cells, said inwardly facing load cell beams deflected under the weight will produce output signals with positive errors and said outwardly-facing load cell beams deflected under the weight will produce output signals with essentially equal but negative errors, thus resulting in a summed output in which the positive and negative errors are mutually canceled to provide accurate weighing.

5,646,376

AIRCRAFT WEIGHING SCALE WITH IMPROVED BASE, PLATFORM AND LOAD CELL MOUNTING ASSEMBLY

William Kroll, Medina; Mark Browne, Osseo; Tom Bartsch, Plymouth, and Randie Evenson, Brooklyn Center, all of Minn., assignors to Intercomp Company, Minneapolis, Minn.

Filed Jun. 9, 1994, Ser. No. 257,077
Int. Cl.[6] G01G *3/14;19/08*
U.S. Cl. 177—211 **17 Claims**



1. A weighing scale, comprising:

(a) a base comprising a beam structure having load cell mounting means disposed at interior corners formed by said beam structure, said mounting means comprising at least two raised support positions, said support positions each comprising a raised surface having a central aperture for reception of a load cell mounting screw, at least one pin retaining slot extending from said central aperture and at least one cylindrical pin disposed in said pin retaining slot, said pin circumferential surface extending above said raised surface;

(b) at least one load cell mounted to said base by said mounting means;

(c) a platform for contact with a load; and

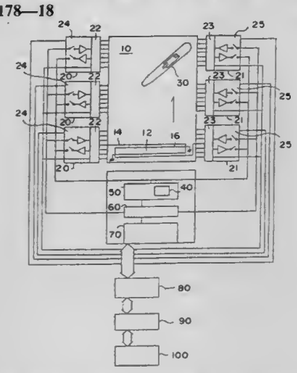
(d) means to mount said platform to said at least one load cell.

5,646,377

POINT DETECTING DEVICE AND METHOD OF SAME

Yasuo Oda, c/o Wacom Co., Ltd. 2-510-1 Toyonodai, Otone-machi, Kitasaitama-gun, Saitama, 349-11, Japan

Filed Feb. 16, 1995, Ser. No. 394,791
Claims priority, application Japan, Apr. 8, 1994, 6-095611
Int. Cl.[6] G08C *21/00;* G09G *3/02*
U.S. Cl. 178—18 38 Claims



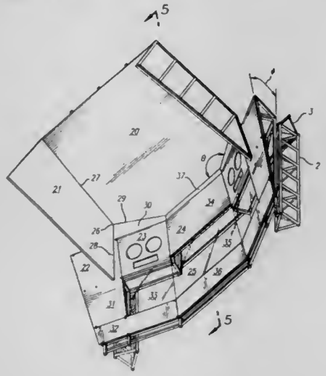
1. A point detecting device including a point sensing area and a pointing device capable of moving over the point sensing area, further comprising;
a plurality of electromagnetic coupling means arranged in parallel in a first axial direction within the point sensing area;
a pair of signal receivers each of which is arranged at either end of a second axial direction of the electromagnetic coupling means intersected perpendicularly to the first axial direction so that the signal receiver can receive the signal generated by the electromagnetic function between the electromagnetic coupling means and the pointing device located above the electromagnetic coupling means; and
a signal processor including an adder for adding the received signals by the receivers and means for arithmetically operating the coordinate values of the pointing device.

5,646,378

COLLAPSIBLE MODULAR SOUND REPRODUCTION SYSTEM

Vincent Van Haaff, 8927 Hollyplace, Los Angeles, Calif. 90046, and Ivan Kadey, 1827 - 9th St., Santa Monica, Calif. 90404

Filed Aug. 10, 1995, Ser. No. 513,354
Int. Cl.[6] E04B *1/99*
U.S. Cl. 181—30 13 Claims



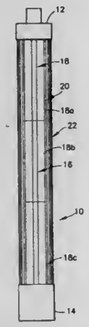
1. An apparatus comprising:
a support structure
a front panel coupled to the support structure
a right and a left side panel disposed adjacent to and symmetrically about the front panel and each defining a first predetermined angle therewith, the side panels tilted forward to each form a second predetermined angle with a vertical plane:
at least one speaker enclosure having a speaker baffle, the baffle being disposed in coplanar relation with at least one of the right and left side panels;
a top panel coupled to the support structure and having a right and left flap disposed on the top panel.

5,646,379

ATTENTUATOR FOR BOREHOLE ACOUSTIC WAVES

Chuar-Jian Hsu, Danbury; David L. Johnson, Bethel; Sergio Kostek, Ridgefield, all of Conn., and Abderrhamane Ounadjela, Paris, France, assignors to Schlumberger Technology Corporation, Ridgefield, Conn.

Filed Sep. 13, 1995, Ser. No. 527,736
Int. Cl.[6] G01V *1/00*
U.S. Cl. 181—101 20 Claims



1. Apparatus for use in a borehole comprising an acoustic wave attenuator which comprises a body which is formed from a permeable material having a substantially rigid matrix having insignificant compressibility under typical borehole pressures and is positionable in the borehole so as to be in pressure communication with fluid in the borehole.

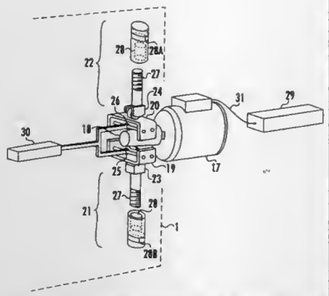
5,646,380

DRIVE ASSEMBLY FOR ACOUSTIC SOURCES

Svein Vaage, Øvertrøa 26, 7080 Heimdal, Norway

PCT No. PCT/NO94/00057, § 371 Date Nov. 20, 1995, § 102(e) Date Nov. 20, 1995, PCT Pub. No. WO94/22036, PCT Pub. Date Sep. 29, 1994
PCT Filed Mar. 11, 1994, Ser. No. 525,534
Claims priority, application Norway, Mar. 15, 1993, 930916
Int. Cl.[6] G01V *1/00*
U.S. Cl. 181—110 19 Claims

1. Drive assembly for acoustic sources having vibrationally excitable sound emitting surfaces, said drive assembly comprising:
an electric rotational motor having an axle which comprises at least one axle part, wherein the circumference of at least one transverse cross-section of the axle part is non-circular, wherein the axle part has a conicity, and
a push rod having an inner end and an outer end, wherein the push rod is arranged radially in relation to the axle, wherein the inner end of the push rod is communicable with the axle



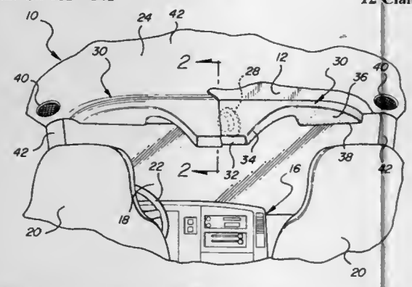
part, wherein the sound emitting surfaces are excitable into vibrational movement by the outer end of the push rod.

5,646,381

ROOF MOUNTED SOUND HORNS FOR VEHICLES

James M. Boyte, Jr., Carthage, N.C., assignor to Top Source Technologies, Palm Beach Gardens, Fla.

Filed Sep. 19, 1995, Ser. No. 531,222
Int. Cl.[6] H05K *5/00*
U.S. Cl. 181—141 12 Claims



1. An automotive vehicle (**10**) comprising;
a body having a roof (**12**) having forward and rearward edges,
an instrument panel (**16**) beneath said forward edge (**14**) of said roof (**12**),
a windshield window (**18**) disposed between said forward edge of said roof (**12**) and said instrument panel (**16**),
a rear window disposed below said rearward edge of said roof (**12**),
an acoustical speaker (**28**) mounted to said roof (**12**) adjacent one of said edges thereof, and
an acoustical horn extending from and receiving sound from said speaker and directing sound from said speaker (**28**) toward the adjacent edge of said roof (**12**).

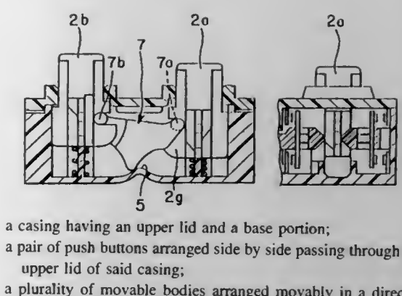
5,646,382

MULTIPLE PUSH BUTTON SWITCH ASSEMBLY WITH MULTISTAGE ACTUATOR INTERLOCK

Toshio Moriya, Mitaka, Japan, assignor to Kasuga Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 7, 1995, Ser. No. 511,753
Claims priority, application Japan, Aug. 18, 1994, 6-216680
Int. Cl.[6] H01H *9/26;13/02*
U.S. Cl. 200—50.33 4 Claims

1. A push button switch provided with a multistage actuation interlock function, which comprises:



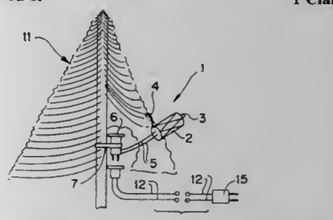
a casing having an upper lid and a base portion;
a pair of push buttons arranged side by side passing through said upper lid of said casing;
a plurality of movable bodies arranged movably in a direction perpendicular to a depression direction of said push buttons into said casing;
a plurality of movable contacts arranged on said base portion of said casing in confronting positional relationship with respect to said movable contacts, wherein:
whenever each of said push buttons is depressed in said depression direction at multistage strokes, each of said movable bodies is shifted in said direction perpendicular to said depression direction to bring each of said movable contacts into contact with each of said fixed contacts, respectively, in sequence; and
an interlock mechanism interposed between and operatively associated with said pair of push buttons within said casing.

5,646,383

CHRISTMAS TREE ORNAMENT POWER SWITCH

David Lloyd Deem, 8801 Hunters Lake Dr., Apt. 622, Tampa, Fla. 33647

Filed May 16, 1995, Ser. No. 442,325
Int. Cl.[6] H01H *35/00*
U.S. Cl. 200—52 R 1 Claim



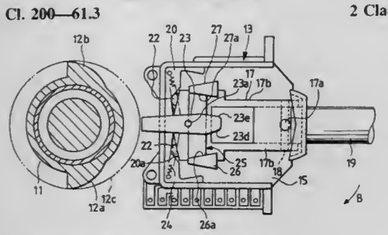
1. A device for controlling lights on a Christmas tree comprising:
plug means for connecting said lights to a source of electrical power,
ornament means for being attached to a Christmas tree,
switch means mounted inside said ornament means for turning electrical power to said plug means on and off,
means for turning said switch means on and off,
electrical wires connected at one end to said switch means and connected at another end to said plug means,
said plug means being separate and distinct from said switch means and being connected to said switch means only by said electrical wires,
said plug means having female contact means at one end for receiving a plug attached to at least one set of Christmas tree lights, and
said plug means has male contact means at another end for engagement with a source of electrical power.

VOL 1200 ISS 2 JL 8 1997 UMI

5,646,384
TURN SIGNAL CANCEL DEVICE

Yoshimi Noro, and Harumi Doke, both of Aichi, Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Filed Sep. 27, 1994, Ser. No. 313,463
Claims priority, application Japan, Sep. 28, 1993, 5-52402
Int. Cl.[6] H01H *3/16*
U.S. Cl. 200—61.3 **2 Claims**

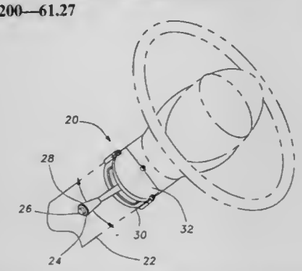


1. A turn signal cancel device comprising:
a bracket rotatably mounted and including an operation lever and a back plate having a pressed mender;
holding means for selectively holding the bracket at one of a neutral position, a right turn direction position and a left turn direction position;
a ratchet having a pressure member for pressing against the back plate of the bracket held at one of a right turn direction position and a left turn direction position in response to a rotation of a steering wheel so as to rotate and return the bracket to the neutral position, said ratchet including a center of rotation; and
the pressure member and the pressed member being formed in such a manner that a contact position defined between the pressure member and the pressed member is moved away from the center of rotation of the ratchet during rotation of the ratchet, wherein the pressure member includes a pair of press surfaces which differ in angle of inclination from each other.

5,646,385
COLUMN MOUNTED SWITCH ASSEMBLY FOR A VEHICLE

Dragan Bogovican, Sterling Heights, and Pavel Bucu, Clinton Township, both of Mich., assignors to United Technologies Automotive, Inc., Dearborn, Mich.

Filed Mar. 13, 1996, Ser. No. 614,738
Int. Cl.[6] H01H *3/16;21/76*
U.S. Cl. 200—61.27 **19 Claims**

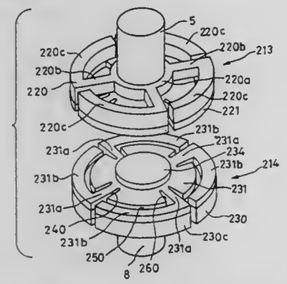


1. An electrical switch assembly to provide a turn signal indicator comprising:
a base having a track and at least two contact points;
a control stalk for controlling an electrical switch, said stalk having a collar at a column end of said stalk and a moving contact, said collar moveable along said track and guided by said track, said moving contact making selective electrical connection with said contact points as said collar moves along said track; and
said base also including a plurality of detents, said control stalk being received within one of said detents at each location where said moving contact is aligned with one of said contact points to define one of two "on" positions for a turn signal indicator, and there being a third detent intermediate said "on" detents defining an "off" position wherein said moving contact is not aligned with one of said contact points.
2. An assembly as defined in claim 1, wherein said track is arc-shaped and said collar moves on said track about an arcuate path centered on a pivot point spaced from said control stalk and said track, and on a first side of said track, said control stalk extending from said collar on an opposed side of said track from said first side.

5,646,386
VACUUM INTERRUPTER

Mitsumasa Yorita, Marugame; Hideaki Toya, Amagasaki; Hiroshi Hasegawa, Marugame, and Kenichi Koyama, Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 145,743, Nov. 4, 1993, Pat. No. 5,495,085.
This application Jun. 7, 1995, Ser. No. 478,392
Claims priority, application Japan, Nov. 10, 1992, 4-326090; Nov. 10, 1992, 4-326092; Nov. 19, 1992, 4-335146; Nov. 19, 1992, 4-335147; Jul. 5, 1993, 5-165429; Jul. 5, 1993, 5-165430; Jul. 22, 1993, 5-181300; Jul. 22, 1993, 5-181301; Oct. 29, 1993, 5-271959
Int. Cl.[6] H01H *33/66*
U.S. Cl. 218—129 **7 Claims**

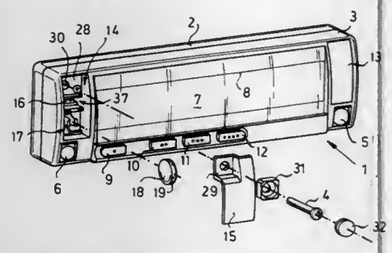


1. A vacuum interrupter having a pair of electrode assemblies arranged in an evacuated envelope in a manner to connect or disconnect with each other by respective electrode rods, at least one of the electrode assemblies comprising:
a main electrode: and
a coil electrode mounted on a back surface of said main electrode and including
a plurality of arm parts extending from said electrode rod, and
a plurality of coil parts each respectively connected to one of said plurality of arm parts, said coil parts extending toward said main electrode and collectively defining a peripheral upper surface substantially laterally coextensive with said coil part,
the upper surface extending substantially the entire length of said coil part of each of said coil parts of said coil electrode being in electrical contact with a back surface of said main electrode substantially along the entire length of said upper surface, so that a magnetic field in an axial direction of said electrode assemblies is generated between said pair of electrode assemblies by a current flowing through said main electrode and said coil electrode.

5,646,387
TAXIMETER

Mechtilde Schmid, Villingen-Schwenningen; Holger Jäckle, Rottweil, and Siegfried Koch, Villingen-Schwenningen, all of Germany, assignors to Mannesmann Kienzle, Villingen, Germany

Continuation of Ser. No. 229,035, Apr. 18, 1994, abandoned.
This application Oct. 16, 1996, Ser. No. 733,092
Claims priority, application Germany, Apr. 21, 1993, 9306016 U
Int. Cl.[6] G07B *13/00;* **G06F** *17/00*
U.S. Cl. 235—30 R **3 Claims**

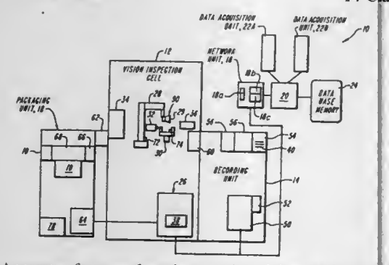


1. An arrangement for providing an electrical buffer in a taximeter, which comprises:
a buffer battery having at least one button cell;
a taximeter housing having an opening provided in the front side of the taximeter housing for receiving the button cell, wherein the opening is accessible from outside;
a cup-shaped mounting for retaining the button cell at a substantially right angle with respect to the front surface of the taximeter; and
a sealable cover arranged in the opening.

5,646,388
SYSTEMS AND METHODS FOR RECORDING DATA

William D'Entremont, Boxborough; Mark Mesher, Wenham, both of Mass.; Michael O'Dea, Bedford, N.H., and Myron Waite, Bedford, Mass., assignors to LAU Technologies, Acton, Mass.

Filed Sep. 30, 1994, Ser. No. 316,041
Int. Cl.[6] G06K *5/00*
U.S. Cl. 235—380 **14 Claims**

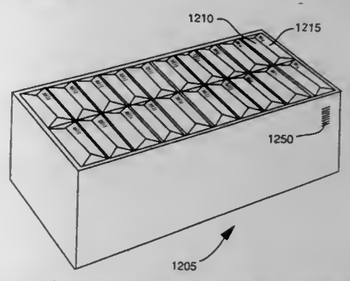


1. Apparatus for manufacturing a series of data cards, comprising
production means for recording information onto one or more blank cards, said production means having
a memory element for storing one or more data record signals each being associated with a respective one of said data cards and each having image information representative of one or more images,
recording means for recording image information from said data records on to respective ones of said blank cards, and
inspection means, coupled to said production means, for visually inspecting said data cards, and having
an image acquisition element for generating an image signal representative of said image information recorded on each said data card, and
image processing means for comparing said generated image signal with said respective data record signal and for generating a comparison signal representative of the accuracy of the recorded image relative to said data record signal, wherein said production means includes an output bin for storing said data cards, and said inspection means includes a collection element for retrieving said data cards from said output bin and for disposing said data cards in a support element.

5,646,389
INVENTORY MANAGEMENT SYSTEM USING CODED RE-ORDER INFORMATION

Richard Bravman, Smithtown, N.Y.; Ynjiun P. Wang, Meyers, Fla., and D. C. Toedt, III, Houston, Tex., assignors to Symbol Technologies, Inc., Holtsville, N.Y.

Continuation of Ser. No. 351,708, Dec. 8, 1994, abandoned, which is a division of Ser. No. 923,766, Aug. 3, 1992, Pat. No. 5,393,965, which is a continuation-in-part of Ser. No. 612,664, Nov. 13, 1990, abandoned, and a continuation-in-part of Ser. No. 642,775, Jan. 18, 1991, Pat. No. 5,159,635, which is a division of Ser. No. 653,822, Feb. 11, 1991, Pat. No. 5,113,445.
This application Jun. 11, 1996, Ser. No. 661,731
Int. Cl.[6] G06F *17/60*
U.S. Cl. 235—385 **22 Claims**



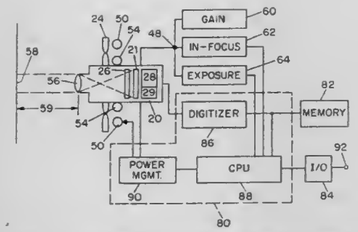
1. A system for storing and managing inventory comprising:
(a) an inventory item holder holding at least one inventory item;
(b) an inventory item record comprising a bar code symbol label applied to said inventory item holder, said record including encoded item identification information identifying the at least one inventory item, and reordering information for the at least one inventory item;
(c) a bar code reader including means for decoding said bar code symbol label to obtain said item identification information and said reordering information;
(d) means for comparing a count of the number of said inventory items physically present at the inventory holder with a reorder count in said reordering information; and
(e) means, responsive to the comparing means, for generating a reorder message.

5,646,390
DATAFORM READERS AND METHODS

Ynjiun P. Wang, and Paul P. Ju, both of Fort Myers, Fla., assignors to Metanetics Corporation, Fort Myers, Fla.

Continuation of Ser. No. 332,592, Oct. 31, 1994, Pat. No. 5,521,366, which is a continuation-in-part of Ser. No. 280,489, Jul. 26, 1994, Pat. No. 5,572,006. This application Mar. 25, 1996, Ser. No. 622,442
Int. Cl.[6] G06K *7/10*
U.S. Cl. 235—454 **20 Claims**

1. A dataform reader comprising:



an array of sensor elements readable to provide image signals, including a plurality of lines of sensor elements;

an array control assembly coupled to said array and arranged to initiate charge accumulation by a line of sensor elements in response to an exposure start signal, and to cause image signals to be read from sensor elements of said line in response to an exposure stop signal and coupled to an output point; and

an exposure control system coupled to said output point and successively responsive to the level of image signals read from selected lines of sensor elements to determine an exposure period for at least one subsequent line of sensor elements based on the level of image signals from at least one of said selected lines, and arranged to provide said exposure start and stop signals to said array control assembly to implement said exposure periods in a sequence causing the exposure period for one line of sensor elements to overlap the exposure period for at least one subsequent line of sensor elements.

5,646,391

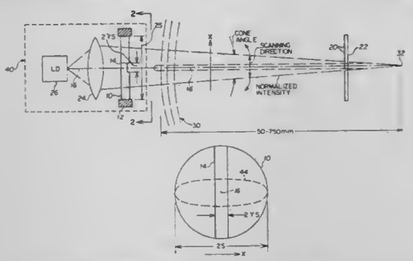
OPTICAL ASSEMBLY FOR CONTROLLING BEAM SIZE IN BAR CODE SCANNERS

Gregory William Forbes, Sydney, Australia; Anna M. Quinn, Rochester, and Jay M. Eastman, Pittsford, both of N.Y., assignors to PSC, Inc., Webster, N.Y.

Filed May 11, 1995, Ser. No. 438,821

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—462 **23 Claims**



1. An optical assembly for a bar code scanner which provides a laser beam which has a dimension in a scanning direction which the beam scans across the bars of the code, said assembly comprising a laser beam source which propagates outwardly from the scanner over a range having inner and outer ends closer and further from the scanner in which range the bar code can be located for scanning and reading, means for forming said beam into wavefronts curved convexly with respect to a point spaced in the vicinity of the outer end of said range, and

a masking member for altering a phase or amplitude of a central portion of the beam, the member having at least one centrally located transmission mask for performing the phase or amplitude altering to adjust the width of the beam in the scanning direction so as to resolve bars not exceeding a minimum width or being a minimum distance from one another.

5,646,392

CARD READER

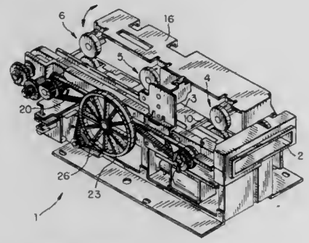
Katsuaki Oguchi, Nagano, Japan, assignor to Sankyo Seiki Mfg. Co., Ltd., Nagano-ken, Japan

Filed Jun. 12, 1995, Ser. No. 489,343

Claims priority, application Japan, Jun. 13, 1994, 6-130462; Jun. 13, 1994, 6-130463; Jun. 15, 1994, 6-132821

Int. Cl.[6] G06F *17/00*

U.S. Cl. 235—475 **9 Claims**



1. A card reader comprising:

a pad-roller supporting mechanism including:

a pad roller block for supporting a plurality of pad rollers for transporting a card inserted into a card traveling passage in cooperation with a plurality of drive rollers supported by a main-body block, said pad roller block being pivotally supported by said main-body block about pivotal shafts provided in parallel with the card traveling passage so as to be openable and capable of causing each of said pad rollers to come into contact with and move away from each of said drive rollers;

a spring member having a spring force for imparting to said pad roller block a rotating urging force in a closing direction in which said pad rollers approach said drive rollers; and

a pressing plate supported by said pad roller block and said spring member between an operating region and a nonoperating region of said spring member so as to be capable of being engaged with or disengaged from said pad roller block and said spring member, said rotating urging force being cancelled when the pressing plate occupies the non-operating region.

5,646,393

FOCUS DETECTING APPARATUS INCLUDING RAY ORIENTATION CHANGES

Takayuki Sensui, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 272,050, Jul. 8, 1994, Pat. No. 5,530,236. This application Mar. 7, 1996, Ser. No. 612,407

Claims priority, application Japan, Jul. 8, 1993, 5-169082

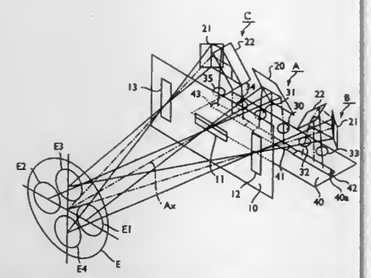
Int. Cl.[6] G01J *1/20*

U.S. Cl. 250—201.8 **18 Claims**

1. A focus detecting apparatus, comprising:

a plurality of focus detecting zones disposed on a focal plane, said plurality of focus detecting zones being arranged in a first orientation configuration, said focus detecting zones allowing bundles of rays from a photographing lens to pass through;

a plurality of condenser lenses disposed behind said focus detecting zones, each of said condenser lenses corresponding to each of said detecting zones;



plural pairs of separator lenses for splitting images seen through said plurality of focus detecting zones;

a sensor unit having multiple line sensors arranged in a second orientation configuration that differs from said first orientation configuration, said multiple line sensors being disposed on a reimaging plane for reimaging said split images, each of said line sensors corresponding to each of said plurality of focus detecting zones;

deflecting means for deflecting a bundle of rays passing through at least one of said plurality of focus detecting zones to be close to another bundle of rays passing through another of said plurality of detecting zones while said first orientation configuration is maintained; and

orientation changing means for changing an orientation configuration of said bundle of rays from said first orientation configuration passed through said plurality of focus detecting zones into said second orientation configuration, said changing means being positioned between said deflecting means and said separator lenses.

5,646,394

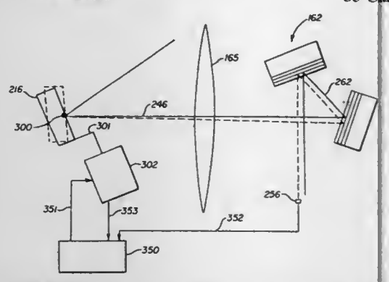
IMAGING DEVICE WITH BEAM STEERING CAPABILITY

Michael J. Steinle, Ft. Collins, and Joe A. Eccher, Loveland, both of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 16, 1995, Ser. No. 405,116

Int. Cl.[6] H01L *27/00;* **G01J** *1/20*

U.S. Cl. 250—208.1 **33 Claims**



1. A photoelectric imaging apparatus for producing machine-readable data representative of imaged objects comprising:

(a) a photosensor array;

(b) imaging means for directing a beam of light from an imaged object onto said photosensor array;

(c) physical adjustment means for aligning said beam with said photosensor array by selectively causing relative movement between at least a portion of said imaging means and said photosensor array in response to data signals generated by said photosensor array.

5,646,395

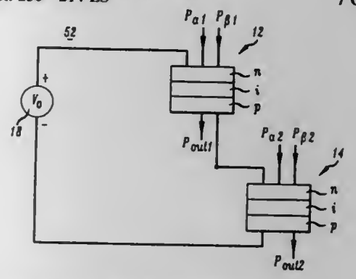
DIFFERENTIAL SELF-ELECTROOPTIC EFFECT DEVICE

David Andrew Barclay Miller, Fair Haven, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 134,024, Oct. 12, 1993, abandoned, which is a division of Ser. No. 997,414, Dec. 28, 1992, Pat. No. 5,288,990. This application Jun. 30, 1995, Ser. No. 497,640

Int. Cl.[6] H01L *51/00*

U.S. Cl. 250—214 LS **7 Claims**



1. A semiconductor apparatus comprising

first quantum well diode including

an optical input for receiving a first light beam, which is absorbed by said first quantum well diode, and

a second optical input for receiving a second light beam, an amount of absorbing of optical power from the second light beam being controlled by and varies as a function of the optical power absorbed from the first light beam; and

second quantum well diode electrically coupled to said first quantum well diode, including

an optical input for receiving a third light beam, which is absorbed by said second quantum well diode, and

a second optical input for receiving a fourth light beam, an amount of absorbing of optical power from the fourth light beam being controlled by and varies as a function of the optical power absorbed from the third light beam.

5,646,396

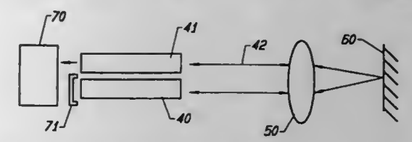
OPTICAL POSITION SYSTEM

Jenkin A. Richard, 2230 Haste, Apt. 110, Berkeley, Calif. 94704

Filed May 19, 1995, Ser. No. 444,883

Int. Cl.[6] H01J *3/14;* **G11B** *7/00*

U.S. Cl. 250—216 **44 Claims**



44. Apparatus for determining the position of a reflective target surface, comprising:

a first of two matched diode lasers for producing a stable-resonator output beam of coherent light;

a second of two matched lasers for producing a second stable-resonator output beam of coherent light;

means for electronically modulating said first output beam;

means for directing said first output beam onto said target surface;

said second of two matched diode lasers forming a receiving laser cavity means for receiving a portion of said output beam reflected from said target, said reflected first output beam combining with said second output beam in said receiving laser cavity to form a combined output beam;

means for measuring the impedance of said receiving diode laser; and

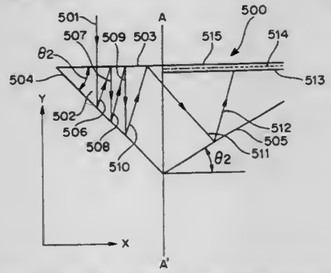
means for using time-dependent changes in the measured impedance of said receiving diode laser to derive positional information of said target.

5,646,397

OPTICAL DESIGN FOR PHOTO-CELL

Stewart Ross Wenham, Illawong, and Martin Andrew Green, Waverley, both of Australia, assignors to Unisearch Limited, Kensington, Australia

Continuation of Ser. No. 211,210, Mar. 23, 1994, abandoned.
This application Aug. 7, 1996, Ser. No. 689,225
Claims priority, application Australia, Oct. 8, 1991, PK8787
Int. Cl.[6] H01J *3/14*; **F16K** *3/36*
U.S. Cl. 250—216 **26 Claims**



1. A light receiver-director device for directing received light to at least one predetermined location, comprising:

a total-internal-reflection surface for the received light into the light receiver-director device, and for totally internally reflecting light incident from within the light receiver-director device at an angle within a total reflection range; and

a reflector having at least two reflector surfaces which are mutually disposed so as to form a groove having a base, with the groove being configured and disposed relative to the total-internal-reflection surface such that the base of the groove is at a tilt relative to the total-internal-reflection surface, and such that admitted light which has been reflected by at least one of the two reflector surfaces ultimately reaches the predetermined location.

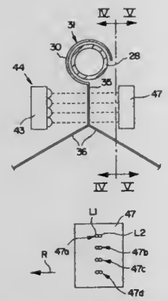
5,646,398

DEVICE FOR COUNTING AND DETERMINING A DIRECTION OF CONVEYED MATERIAL HANGING ON HANGERS PROVIDED WITH HANGER HOOKS

Dirk Sieksmeier, Halle, and Thomas Blattner, Bielefeld, both of Germany, assignors to Dürkopp Adler AG, Bielefeld, Germany

Filed Dec. 22, 1995, Ser. No. 577,514
Claims priority, application Germany, Dec. 23, 1994, 44 46 172.0
Int. Cl.[6] G06M *7/02*
U.S. Cl. 250—223 R **20 Claims**

17. A device for counting articles hanging on hangers having stems, each stem having a width, the articles being conveyed along a conveying path, the device comprising a light barrier including at least two receivers aligned vertically and disposed in a plane substantially parallel to the conveying path, each of the receivers including two sensors for generating signals, the two sensors being disposed next to each other along the conveying direction and operating independently of each other, each of the two sensors having a center and a width, a sum of a center-to-center distance



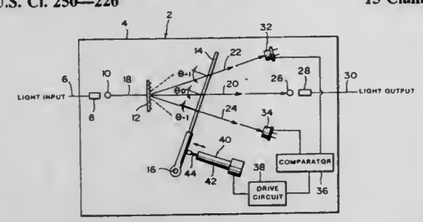
between the centers of the sensors plus the width of each sensor being less than or equal to the width of the stem of each hanger.

5,646,399

TUNABLE OPTICAL FILTER HAVING BEAM SPLITTER AND MOVABLE FILM FILTER

Nobubiro Fukushima, and Hiroshi Onaka, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Jan. 29, 1996, Ser. No. 593,211
Claims priority, application Japan, Aug. 28, 1995, 7-218408
Int. Cl.[6] H01J *40/14*
U.S. Cl. 250—226 **15 Claims**



1. A tunable filter module comprising:

beam splitting means for splitting an incident signal light beam into a first beam undeviated, a second beam deflected to one side of said first beam, and a third beam deflected to another side of said first beam;

a multilayer film filter located so as to transmit said first beam, said second beam, and said third beam;

a first photodetector located so as to detect said second beam;

a second photodetector located so as to detect said third beam;

a comparator connected to said first and second detectors, for comparing outputs from said first and second detectors and outputting a differential signal indicative of a difference between said outputs;

an actuator for moving said multilayer film filter; and

driving means for driving said actuator according to said differential signal so that a center wavelength in a passband of said multilayer film filter comes into coincidence with a center wavelength of said signal light beam.

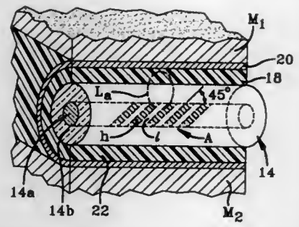
5,646,400

CORROSION DETECTING AND MONITORING METHOD AND APPARATUS

Ignacio M. Perez, Yardley, and Vinod S. Agarwala, Warminster, both of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 14, 1995, Ser. No. 502,661
Int. Cl.[6] G01J *3/18*
U.S. Cl. 250—227.18 **12 Claims**

1. Apparatus for nondestructive detection of corrosion in a structure comprising, in combination:



a light source for producing a broad bandwidth pulse;

an optical fiber having a proximal end connected to said light source for conducting said pulse in a direction through a distal segment of said optical fiber formed to be installed at a selected site on the structure;

a Bragg grating formed in said segment for refracting a narrow bandwidth component of the pulse from said fiber and a reflected amount of the component through said-fiber toward said light source;

sensor means applied to said fiber around said segment for reflecting a portion of the component toward said grating in response to corrosion of the structure at the selected site;

coupler means connected to said fiber between said light source and said grating for conducting a portion of the reflected amount from said fiber; and

spectrum analyzer means connected to said coupler means for receiving said portion and determining the amplitude distribution of the reflected amount in the narrow bandwidth; and

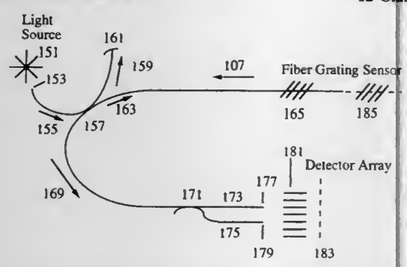
display means connected to said analyzer means for producing a graph of the reflected amount indicative of the corrosion at the selected site.

5,646,401

FIBER OPTIC GRATING AND ETALON SENSOR SYSTEMS

Eric Udd, 2555 NE 205th Ave., Troutdale, Oreg. 97060

Filed Dec. 22, 1995, Ser. No. 577,506
Int. Cl.[6] G01J *9/02*
U.S. Cl. 250—227.18 **12 Claims**



1. A sensor system to sense one or more environmental effects, said system including:

a light source producing a first light beam;

a first beamsplitter positioned to receive said first beam of light and to direct a second beam of light to a fiber sensor;

a second beamsplitter connected to said first beamsplitter positioned to receive a third beam of light generated by reflection of a portion of said second beam of light from said fiber sensor;

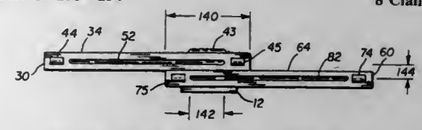
two spaced ends of said second beamsplitter arranged to generate an interference pattern from said third light beam and first detector array means positioned to measure said interference pattern.

5,646,402

EXPANDABLE HAND-HELD SCANNING DEVICE

Modest Khovaylo, Fort Collins, and Frank P. Carau, Sr., Loveland, both of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 5, 1995, Ser. No. 523,700
Int. Cl.[6] G06K *9/22*
U.S. Cl. 250—234 **8 Claims**



1. A hand-held optical scanning device comprising:

a first housing portion containing at least one photosensor array and imaging means for imaging an object on said photosensor array;

a second housing portion containing at least one photosensor array and imaging means for imaging an object on said photosensor array;

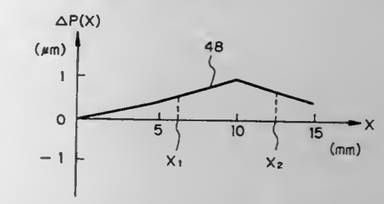
a connector that allows relative movement between said first housing portion and said second housing portion to allow said scanning device to be expanded from a relatively smaller carrying configuration to a relatively larger scanning configuration.

5,646,403

SCANNING ELECTRON MICROSCOPE

Futoshi Mori, Kanagawa-ken; Kazuhiko Fukazawa, Tokyo; Hiroshi Hirose, and Yoshiaki Kobama, both of Kanagawa-ken, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Oct. 6, 1995, Ser. No. 540,032
Claims priority, application Japan, Oct. 28, 1994, 6-264792; Oct. 28, 1994, 6-264793; Dec. 21, 1994, 6-318250; Dec. 21, 1994, 6-318251
Int. Cl.[6] H01J *37/28*
U.S. Cl. 250—310 **1 Claim**



1. A scanning electron microscope in which a surface of a sample is scanned with an electron beam, and an image in a predetermined observation field on said sample is displayed on an image display device by using an image signal obtained by detecting secondary electrons emitted from said sample, said scanning electron microscope comprising:

a feed screw-driven stage for two-dimensionally moving said sample on a plane which is scanned with said electron beam;

two pulse motors for rotationally driving two feed screws, respectively, of said stage;

a micro-step drive controller for driving said two pulse motors by a micro-step drive control method;

a pitch error memory for storing pitch errors of said two feed screws of said stage; and

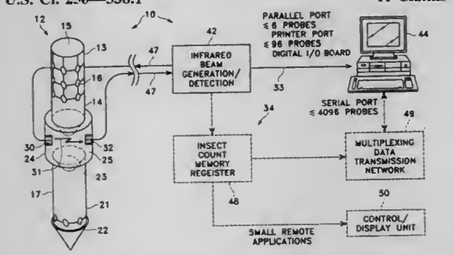
a field movement control unit which, when said observation field is to be moved by a predetermined amount on said sample, corrects said predetermined amount of movement on the basis of the pitch errors stored in said pitch error memory, and

which drives said pulse motors through an angle corresponding to the corrected amount of movement through said microstep drive controller.

5,646,404
ELECTRONIC GRAIN PROBE INSECT COUNTER (EGPIC)

Carl A. Litzkow, Newberry; Dennis Shuman, Gainesville, both of Fla.; Sergey Kruss, Norwood, Mass., and James A. Coffelt, Gainesville, Fla., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Feb. 17, 1995, Ser. No. 390,834
Int. Cl.[6] G01N *21/00*
U.S. Cl. 250—338.1 **11 Claims**



1. A system for quantitative detection of insect infestations in stored products comprising

at least one probe having an upper body section containing at least one aperture to permit ingress of insects, a lower body section and a sensor head located between and operatively connected to said upper and lower body sections wherein said sensor head comprises an infrared phototransistor and an infrared light-emitting diode;

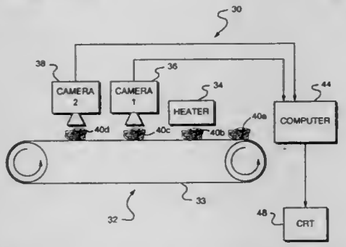
a detecting means for notifying a computer when any sensor head output change is detected and for reading a signal from each sensor head so that the computer can determine through which sensor an insect has dropped; and

an analyzing means connected to said detecting means for receiving and analyzing signals from said detecting means.

5,646,405
METHOD OF DETECTING CONTAMINANTS IN COTTON FIBERS

Avishai Nevel, Providence, and Kendall W. Gordon, Jr., North Kingston, both of R.I., assignors to Lawson-Hemphill, Inc., Central Falls, R.I.

Filed Nov. 29, 1995, Ser. No. 563,995
Int. Cl.[6] G01N *21/71;33/36*
U.S. Cl. 250—341.6 **20 Claims**



1. A method of determining the presence of contaminants in cotton fibers, including the steps of:

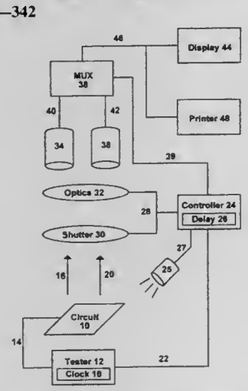
heating the cotton fibers; and

analyzing infrared emanations from the heated cotton, including determining areas of the cotton emanating at different infrared wavelengths than the cotton fibers to determine areas within the cotton with non-cotton infrared signatures as indicative of contaminants in the cotton.

5,646,406
STROBOSCOPIC PHOTOMETER

A. Nicholas Sporck, Saratoga, and Heng-Yang Lin, San Jose, both of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed May 24, 1996, Ser. No. 652,999
Int. Cl.[6] G01N *25/72*
U.S. Cl. 250—342 **23 Claims**



1. An apparatus for collecting photons emitted by hot spots in a circuit, comprising:

means for intermittently energizing the circuit,

a photon receptor for detecting the photons emitted by the circuit, and producing a photon signal,

a shutter disposed between the circuit and the photon receptor, and

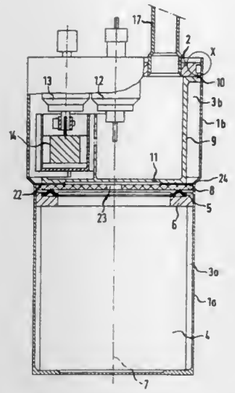
a controller for closing the shutter when the circuit is energized, and for opening the shutter when the circuit is not energized.

5,646,407
PROCESS OF PRODUCING AN ENCAPSULATED DETECTOR

Marc Berst, Schiltigheim, France; Jürgen Eberth, Köln, Germany; Herbert M Jäger, Aachen, Germany; Hans Kämmerling, Eschweiler, Germany; Rainer M. Lieder, Jülich, Germany, and Walter Renftle, Düren, Germany, assignors to Eurisis Measures, Tanneries, France; Universität zu Köln, Cologne, and Forschungszentrum Jülich GmbH, Jülich, both of Germany

Filed Jan. 22, 1996, Ser. No. 589,658
Claims priority, application Germany, Jul. 23, 1993, 43 24 710.05
Int. Cl.[6] G01T *1/24*
U.S. Cl. 250—370.15 **13 Claims**

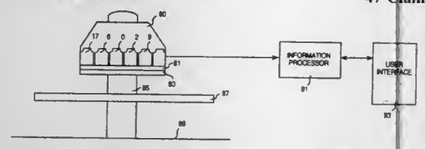
3. A capsule for a detector operating in an ultra high vacuum, comprising: a containment pot having a bottom area defining a detector chamber and an upper area above said detector chamber provided with an upwardly projecting rim, a detector disposed in said detector chamber, a lid received in said containment pot and having an upwardly extending welding lip disposed adjacent said rim, said lip and said rim being joined together by electron beam welding for sealing said containment pot and said lid to form a sealed capsule whereby said detector is protected from heat exposure during the welding procedure, said capsule further including a condensation chamber separate from said detector chamber and arranged so as to receive and condense any vapors generated during the electron beam welding of said rim and said welding lip.



5,646,408
SOFTWARE AND EVENT DRIVEN BASELINE CORRECTION

Edward M. Goldberg, Sunnyvale; Donald R. Wellnitz, and Peter Nellemann, both of Pleasanton, all of Calif., assignors to ADAC Laboratories, Milpitas, Calif.

Continuation of Ser. No. 317,787, Oct. 4, 1994, abandoned. This application Nov. 25, 1996, Ser. No. 756,185
Int. Cl.[6] G01T *1/164*
U.S. Cl. 250—363.07 **47 Claims**



1. In a gamma camera system having a scintillation detector with a photomultiplier array, wherein said photomultiplier array generates channel signals, an apparatus for correcting baseline voltages of said channel signals, said apparatus comprising:

a memory for storing information;

trigger means for generating a software trigger signal to initiate integration of said channel signals wherein each channel signal is integrated to generate an integration result;

sampling means for sampling each integration result and storing each integration result into a separate location of said memory;

averaging means for averaging data stored in memory and associated with each photomultiplier to determine an average sample value for each photomultiplier; and

correction means for correcting a baseline voltage offset value associated with each photomultiplier based on said average sample value of each photomultiplier and a constant ideal voltage value.

45. In a gamma camera system having an array of event detectors for detecting gamma events, said array generating channel signals for the event detectors, a method of correcting said channel signals, said method comprising the steps of:

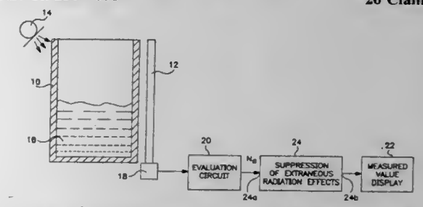
sampling said channel signals for each event detector to acquire a plurality of samples for each event detector; and

correcting a baseline voltage offset value associated with each event detector based on said samples.

5,646,409
METHOD OF SUPPRESSING EXTRANEOUS RADIATION EFFECTS IN RADIOACTIVE MEASURING METHODS

Ulrich Leisinger, and Joachim Neubaus, both of Lörrach, Germany, assignors to Endress & Hauser GmbH & Co., Maulburg, Germany

Continuation of Ser. No. 244,593, Sep. 19, 1994, abandoned. This application Mar. 6, 1996, Ser. No. 611,523
Claims priority, application Germany, Oct. 2, 1992, 42 33 278.8
Int. Cl.[6] G01N *23/00*
U.S. Cl. 250—395 **26 Claims**



1. A method of suppressing extraneous radiation effects in radioactive measuring methods which use irradiation by a radioactive source and which

continually provide a measured value of radiation; said method of suppressing comprising:

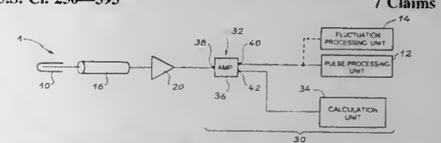
calculating a difference between a measured value immediately before the commencement of a period of extraneous radiation and a measured value during the period of extraneous radiation but after the extraneous radiation has attained a stable condition; and

then, for the duration of the period of extraneous radiation, decreasing the continually measured value by the calculated difference.

5,646,410
SYSTEM AND METHOD FOR VALIDATING THE DETECTION SIGNAL OF A MEASURING CHAIN WITH A WIDE BAND OF NUCLEAR RADIATIONS

Eric Barat, Paris; Alain Bourgerette, Mendes, and Jean-Christophe Trama, Paris, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Apr. 18, 1996, Ser. No. 634,356
Claims priority, application France, May 11, 1995, 95 05581
Int. Cl.[6] G01T *1/17*
U.S. Cl. 250—395 **7 Claims**



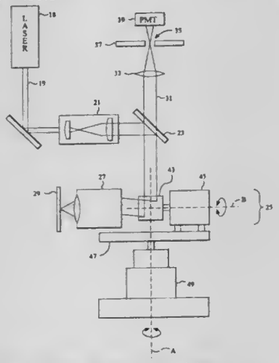
1. System for validating the signal of a nuclear radiation measuring chain and able to deliver a wide spectral band detection signal to at least one signal processing unit, wherein the validation system comprises means for copying the detection signal and a calculation unit, the copying means being able to deliver a copy of the detection signal to the calculation unit and the calculation unit being able to calculate spectral measuring information representative of the spectrum of the detection signal and compare the spectral measuring information with reference spectral information.

5,646,411

FLUORESCENCE IMAGING SYSTEM COMPATIBLE WITH MACRO AND MICRO SCANNING OBJECTIVES

Robert C. Kain, San Jose, Calif., and Christopher C. Alexay, Walpole, N.H., assignors to Molecular Dynamics, Inc., Sunnyvale, Calif.

Filed Feb. 1, 1996, Ser. No. 595,355
Int. Cl.[6] G01N *21/64*
U.S. Cl. 250—458.1 42 Claims



1. An optical scanning system comprising:
an objective defining an optical axis and a field of view, said objective positioned proximate to the sample to receive an incident beam of light and directing said beam onto the sample, producing an illuminated spot thereon with said objective collecting light emitted from said spot and forming a retro-beam, said objective having optical properties to provide a substantially uniform detection sensitivity across said field of view by introducing into said system a specified amount of axial chromatic aberrations while reducing lateral chromatic aberrations;
a beam source for emitting said incident beam;
means, in said optical axis, for scanning said spot, on said sample surface;
a detector;
a spatial filter, positioned proximate to said detector, having a substantially transmissive aperture, restricting light scattered rearwardly to increase signal response;
a focusing lens means, disposed in the path of said retro-beam, for directing said retro-beam onto said aperture, said focusing lens means having optical properties to compensate for axial chromatic aberrations introduced by said objective; and
means, positioned in said optical axis between said beam source and said objective, for separating said incident beam from said retro-beam, wherein said objective directs said retro-beam onto said separating means with said separating means directing said retro-beam through said aperture and onto said detector.

5,646,412

COATED RADIOGRAPHIC PHOSPHORS AND RADIOGRAPHIC PHOSPHOR PANELS

Philip Steven Bryan, Webster; Joseph F. Bringley, Rochester, and Richard E. Partch, Hannawa Falls, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 10, 1996, Ser. No. 629,493
Int. Cl.[6] G01J *1/58*
U.S. Cl. 250—483.1 23 Claims

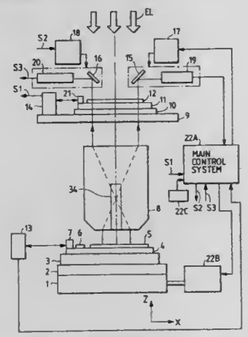
1. A radiographic phosphor panel comprising: a support and a luminescent layer, said luminescent layer overlying said support, said luminescent layer comprising binder and coated particles, said binder being a film-forming polymer, said coated particles being embedded in said binder, said coated particles each having a core and a shell, said core consisting essentially of radiographic phosphor, said shell being exterior to and substantially enclosing said core, said shell comprising vinyl-epoxy resin, said resin having uncured epoxy groups having a concentration of from about 1×10^{-5} to about 60 percent by weight relative to the weight of said shell, said resin having a different composition than said binder.

5,646,413

EXPOSURE APPARATUS AND METHOD WHICH SYNCHRONOUSLY MOVES THE MASK AND THE SUBSTRATE TO MEASURE DISPLACEMENT

Kenji Nishi, Yokobama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 476,912, Jun. 7, 1995, abandoned, which is a continuation of Ser. No. 203,037, Feb. 28, 1994, abandoned. This application Feb. 28, 1996, Ser. No. 608,086
Claims priority, application Japan, Feb. 26, 1993, 5-038077; Dec. 28, 1993, 5-334759
Int. Cl.[6] G01N *21/86*
U.S. Cl. 250—548 34 Claims



1. An exposure method for transferring, using an optical system for illuminating a mask having patterns to be transferred on a substrate and a projection optical system for projecting images of said patterns to said substrate, said patterns to said substrate through said projection optical system while scanning said mask and said substrate synchronously relative to said projection optical system, wherein said method comprises the steps of:
providing a plurality of measuring marks formed on said mask, and providing a plurality of reference marks formed on a stage for holding said substrate corresponding to said measuring marks;
measuring successively a displacement amount between said measuring marks on said mask and said reference marks while moving said mask and said reference marks synchronously; and
obtaining a correspondence relation between a coordinate system on said mask and a coordinate system on said stage according to said displacement amount.

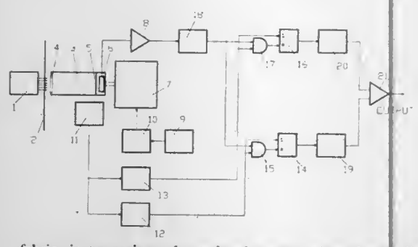
5,646,414

METHOD AND APPARATUS FOR MEASURING DISTORTION ANGLE OF WEFT IN TEXTILES

Edmund Kazimirz Lyczek, 428 Quail Ridge Cr., Spartanburg, S.C. 29303

Filed Jun. 6, 1995, Ser. No. 467,865
Int. Cl.[6] G01N *21/86*
U.S. Cl. 250—559.45 5 Claims

1. A method for measuring an angle of weft distortion in textiles comprising the steps of:
a. moving an optical system made of a cylindrical lens, a slotted aperture stop and a photocell, positioned in front of a passing fabric, with a light source located on the opposite side of the fabric, in an reciprocal rotational manner about lateral line perpendicular to the fabric's wrap called a "central angle" with a constant angular speed for measuring an amount of light passing through the fabric and,
b. detecting the moment the optical system crosses the central angle and,
c. detecting the moment the amount of light passing through the fabric reaches its maximum and,
d. measuring elapsed period of time from the moment the optical system crosses the central angle to the moment the amount of light passing through the fabric reaches its maximum and,
e. converting the elapsed period of time value to an electric signal for the purpose of using it as a fabric straightening machine control signal proportional to the angle of weft distortion.

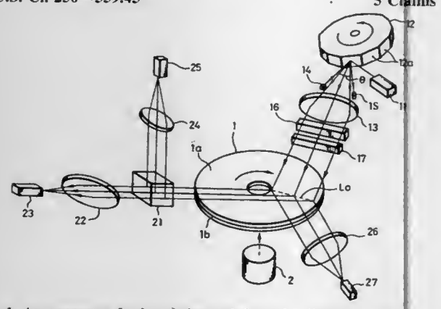


5,646,415

APPARATUS FOR DETECTING A DEFECT OF AN OPTICAL DISC BASED ON SENSOR OUTPUTS FOR ADJACENT POSITIONS

Yoshitake Yanagisawa, Shizuoka, Japan, assignor to Sony Disc Technology Inc., Kanagawa, Japan

Filed Aug. 18, 1995, Ser. No. 516,874
Claims priority, application Japan, Aug. 26, 1994, 6-202374
Int. Cl.[6] G01N *21/86*
U.S. Cl. 250—559.45 5 Claims



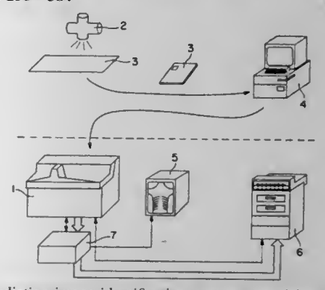
1. An apparatus for inspecting a defect of a disc comprising:
rotating means for rotating said disc;
laser radiating optical means for radiating laser light on said disc rotated by said rotating means, thereby scanning said disc;
sensor for detecting laser light reflected from said disc and outputting an output signal representing said detected laser light;
address generating means for generating address data identifying a respective position on said disc on which said laser light is radiated;
a memory in which output signals of said sensor are written together with said address data in unison with scanning of said laser light; and
defect detecting means for detecting a defect on said disc by reading out from said memory a sensor output corresponding to a predetermined disc address position written in said memory and sensor outputs corresponding to disc address positions adjacent to said predetermined disc address position and determining a difference between the sensor outputs corresponding to the nearby positions and the sensor output corresponding to the predetermined address position.

5,646,416

RADIATION IMAGE IDENTIFYING DEVICE

Stefan Van de Velde, c/o Agfa-Gevaert N.V., DIE 3800, Septestraat 27, B, 2640 Mortsel, Belgium

Filed Mar. 14, 1995, Ser. No. 403,622
Claims priority, application European Pat. Off., Mar. 22, 1994, 94200733.7
Int. Cl.[6] G01N *23/04*
U.S. Cl. 250—584 6 Claims



1. A radiation image identification system comprising
an information system comprising a data base having stored therein identification data of a number of patients,
an identification station arranged to identify a radiation image of a patient on the basis of patient identification data retrieved from said information system,
a network system interfacing said identification station and said information system,
data interchange means enabling interchange of data between said information system and said identification station connected by said network system,
means for converting the format of data supplied by said information system into a format that is interpretable by said identification station,
wherein said identification station comprises
means for initiating operation of said data interchange means and said conversion means,
means for storing converted data, and
means for resuming identification upon termination of said conversion by means of said converted data.

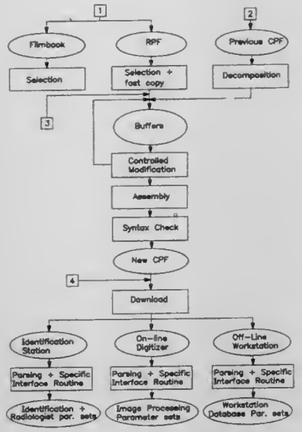
5,646,417

CUSTOMIZED AND CONFIGURATED RADIATION IMAGE READ OUT SYSTEM

Piet Dewaele, Berchem, and Pieter Vuylsteke, Mortsel, both of Belgium, assignors to Agfa-Gevaert, Mortsel, Belgium

Filed Apr. 26, 1995, Ser. No. 427,967
Claims priority, application European Pat. Off., Apr. 29, 1994, 94201183
Int. Cl.[6] G03B *42/02*
U.S. Cl. 250—584 7 Claims

1. A system for reading a radiation image that has been stored in a photostimulable phosphor screen and processing said image comprising
an identification station wherein data identifying said image are entered and displayed;
a read out station wherein said image is read out and converted into a digital image representation;
an image processing station for carrying out image processing on the digital image representation,



means generating customized identification, read out and processing parameters associated with an examination type and arranging these parameters in a parameter set;

storage means in each of said stations having stored therein said parameter set,

selection means in each station arranged to select from said parameter set only parameters that are required for operation of the station in which they are stored;

control means controlling the operation of a station on the basis of the parameters selected in said station.

5,646,418

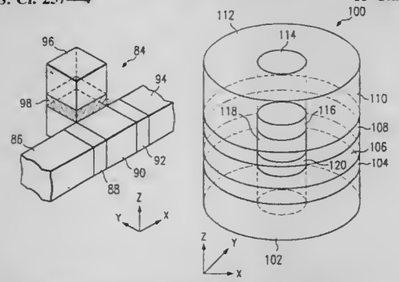
QUANTUM EFFECT SWITCHING DEVICE

Gary A. Frazier, Garland, and James H. Luscombe, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 608,509, Nov. 2, 1990, abandoned. This application Aug. 24, 1992, Ser. No. 933,974

Int. Cl.[6] H01L *47/00;29/06*

U.S. Cl. 257—4 **13 Claims**



5. A quantum effect switching device, comprising:

first and second quantum dot bodies disposed proximate one another in a semiconductor layer, each of said quantum dot bodies effectively providing carrier quantum confinement in each of three mutually perpendicular directions, and energy levels in said first and second quantum dot bodies coupled;

first and second tunnel barriers adjacent and separated from each other by said first quantum dot body;

third and fourth tunnel barriers adjacent and separated from each other by said second quantum dot body; and

a source adjacent said first tunnel barrier opposite said first quantum dot body and a drain adjacent said second tunnel barrier opposite said first quantum dot body;

a gate contact proximate said third tunnel barrier opposite said second quantum dot body, whereby a predetermined potential placed on said gate body modulates said first and second quantum dot bodies by affecting carrier quantization energy levels.

5,646,419

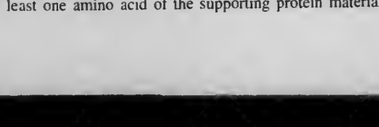
N-TYPE WIDE BANDGAP SEMICONDUCTORS GROWN ON A P-TYPE LAYER TO FORM HOLE INJECTION PN HETEROJUNCTIONS AND METHODS OF FABRICATING THE SAME

James O. McCaldin, San Diego; Michael W. C. Wang, and Thomas C. McGill, both of Pasadena, all of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Apr. 7, 1995, Ser. No. 418,274

Int. Cl.[6] H01L *29/06;33/00*

U.S. Cl. 257—13 **56 Claims**



1. A wide bandgap semiconductor light emitter comprising:

a two terminal device having:

a p-type layer having conduction and valence band energies:

an electron blocker layer deposited on the p-type layer to form a heterojunction and having conduction and valence band energies;

an n-type active layer deposited on the electron blocker layer and having conduction and valence band energies;

the conduction band energy of the active layer being greater than the conduction band energy of the p-type layer;

the valence band energy of the active layer being at least approximately equal to the valence band energy of the p-type layer;

the conduction band energy of the electron blocker layer being greater than the conduction band energy of the active layer;

the electron blocker layer having a thickness adequate to prevent significant electron tunneling through the electron blocker layer;

the active layer and the electron blocker layer each being selected from the group consisting of a specific material and an alloy of the specific material;

the wide bandgap semiconductor light emitter emitting light by the application of a forward bias voltage between the p-type layer and the active layer causing the injection of holes from the p-type layer into the active layer.

5,646,420

SINGLE ELECTRON TRANSISTOR USING PROTEIN

Ichiro Yamashita, Nara, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

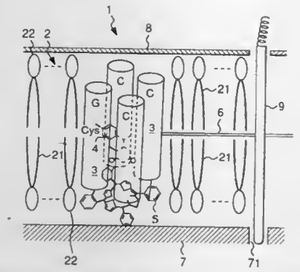
Filed Feb. 5, 1996, Ser. No. 596,756

Claims priority, application Japan, Feb. 3, 1995, 7-016857

Int. Cl.[6] H01L *29/06;31/328;31/336*

U.S. Cl. 257—17 **19 Claims**

1. A single electron transistor operable at room temperature, which comprises first and second electrodes used as a source and a drain, respectively, a supporting protein material positioned between the first and second electrodes, a quantum dot means supported by the protein material, and a control gate connected to the quantum dot means, said quantum dot means being combined to at least one amino acid of the supporting protein material and



being positioned between the first and second electrodes to generate tunnel phenomena.

5,646,421

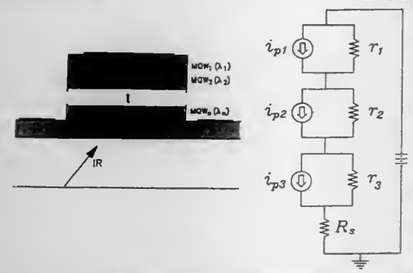
MULTICOLOR VOLTAGE TUNABLE QUANTUM WELL INTERSUBBAND INFRARED PHOTODETECTOR

Hui Chun Liu, 1400 Turner Crescent, Orleans Ontario, Canada

Continuation of Ser. No. 327,699, Oct. 24, 1994, abandoned, which is a continuation of Ser. No. 101,532, Jul. 16, 1993, abandoned. This application Oct. 25, 1996, Ser. No. 735,314

Int. Cl.[6] H01L *29/06*

U.S. Cl. 257—21 **13 Claims**



1. A mid and far infrared multi-colour unipolar detector comprising:

a substrate supported integrated heterostructure including:

semiconductor layers comprising at least a first and second serially connected quantum wells, the at least first and second quantum wells having differing conductivity values, the at least first and second quantum wells including a dopant that consists of a single type, either n-type or p-type, the first and second quantum wells separated by a doped conducting layer, and

contact means for electrically biasing the heterostructure and for sensing an electrical signal in response to radiation incident on said heterostructure.

5,646,422

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

Takeshi Hashizume, Hyogo-ken, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

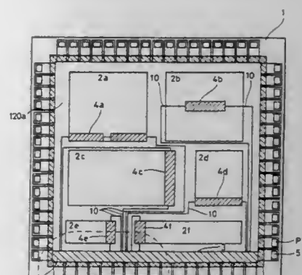
Continuation of Ser. No. 286,112, Aug. 4, 1994, abandoned, which is a continuation of Ser. No. 66,312, May 24, 1993, abandoned, which is a continuation of Ser. No. 730,133, Jul. 15, 1991, abandoned. This application Aug. 23, 1995, Ser. No. 518,622

Claims priority, application Japan, Aug. 31, 1990, 2-231643

Int. Cl.[6] H01L *27/10*

U.S. Cl. 257—48 **4 Claims**

1. A semiconductor integrated circuit device formed in a semiconductor chip, comprising:



an I/O buffer region formed along the entire periphery of said semiconductor chip to delineate a rectangular chip inner region, said I/O buffer region having input and output buffers formed therein for signal transmission with an external world;

inner circuitry region formed in said rectangular chip inner region including inner circuitry having a plurality of first components for implementing a signal processing function; and

a single test circuit region formed on said chip inner region and having test circuitry for testing at least the inner circuitry formed in said chip inner region, said test circuitry including a plurality of second components and said test circuit region including

no inner circuitry components for implementing the signal processing function,

first interconnection lines for interconnecting first selected second components of said test circuitry with first selected first components of said inner circuitry,

second interconnection lines for interconnecting second selected second components said test circuitry with the input and output buffers,

third interconnection lines for interconnecting second selected first components of said inner circuitry with the input and output buffers, and

no interconnection lines for interconnecting any first components of said inner circuitry with each other, wherein said inner circuitry region and said test circuit region each extend along substantially an entire length of one side of said rectangular chip inner region, said inner circuitry region forms a rectangular region sharing one side thereof with said test circuit region, and said test circuit region is placed between said I/O buffer region and said inner circuitry region.

5,646,423

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

Satoshi Meguro, Hinode-machi; Kiyofumi Uchibori, Hachioji; Norio Suzuki, Koganei; Makoto Motoyoshi, Hachioji; Atsuyoshi Koike, Kokubunji; Toshiaki Yamanaka, Houya; Yoshio Sakai, Shiroyama-machi; Toru Kaga, Urawa; Naotaka Hashimoto; Takashi Hashimoto, both of Hachioji; Shigeru Honjou, Kodaira, and Osamu Minato, Hinode-machi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 28,128, Mar. 9, 1993, Pat. No. 5,483,083, which is a division of Ser. No. 837,689, Feb. 19, 1992, Pat. No. 5,194,749, which is a continuation of Ser. No. 625,682, Dec. 12, 1990, abandoned, which is a continuation of Ser. No. 274,490, Nov. 22, 1988, abandoned. This application Jun. 6, 1995, Ser. No. 470,451

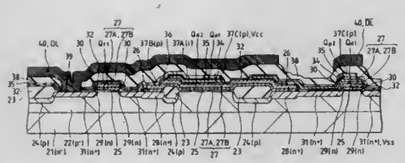
Claims priority, application Japan, Nov. 30, 1987, 62-305465; Dec. 23, 1987, 62-324094; Feb. 9, 1988, 63-26641

Int. Cl.[6] H01L *29/04;31/036*

U.S. Cl. 257—51 **30 Claims**

1. A semiconductor memory device comprising:

a semiconductor substrate having a main surface;



memory cells of a static random access memory, each of said memory cells including first and second inverter circuits which are cross-coupled, said first inverter circuit including a first drive MISFET and a first load MISFET coupled in series, and said second inverter circuit including a second drive MISFET and a second load MISFET coupled in series,

wherein each of said first and second drive MISFETs includes source and drain regions which are of n-type conductivity and formed in said semiconductor substrate, a gate insulating film formed over said main surface, and a gate electrode formed over said gate insulating film;

first polycrystalline silicon films of n-type conductivity formed over said main surface and being electrically connected to the drain regions of said first and second drive MISFETs of said each memory cell; and

a first insulating film formed over said gate electrodes of said first and second drive MISFETs of each memory cell so as to cover said main surface,

wherein said first and second load MISFETs are formed over said first insulating film, each load MISFET of a memory cell including a drain region, a source region, and a channel forming region, the drain, source and channel forming regions of said each load MISFET are formed in a respective one of plural second polycrystalline silicon films, and said each load MISFET further including a gate electrode and having a gate insulating film formed between said second polycrystalline silicon film associated therewith and the gate electrode thereof, and

wherein, in said each memory cell, the drain regions of said first and second load MISFETs have a p-type conductivity and are electrically connected to the drain regions of said first and second drive MISFETs through separate ones of said first polycrystalline silicon films, respectively.

5,646,424

TRANSISTOR DEVICE EMPLOYING CRYSTALLIZATION CATALYST

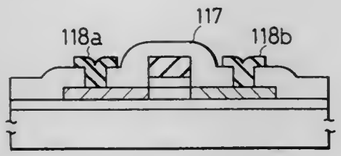
Hongyong Zhang; Toru Takayama, and Yasuhiko Takemura, all of Kanagawa, Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Atsugi, Japan

Continuation of Ser. No. 207,182, Mar. 8, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 477,941

Claims priority, application Japan, Mar. 12, 1993, 5-078997; Mar. 12, 1993, 5-078998

Int. Cl.[6] H01L *29/76;29/04;27/01*

U.S. Cl. 257—66 **31 Claims**



1. A semiconductor device comprising:

a semiconductor layer having a crystallinity formed on a substrate;

a pair of impurity regions of P or N type conductivity formed in said semiconductor layer and impurity being contained in said pairs of impurity regions, wherein said semiconductor layer contains a catalyst at a concentration not higher than 1×10^{20} atoms/cm^3 for promoting a crystallization thereof, and

an inner edge of at least one of said impurity regions is substantially aligned with at least one edge of a gate electrode.

5,646,425

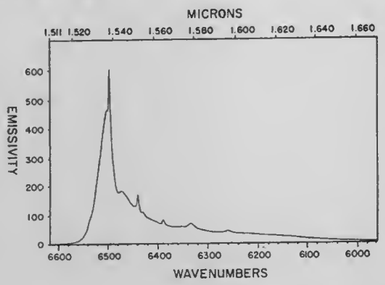
SUPERSATURATED RARE EARTH DOPED SEMICONDUCTOR LAYERS BY CHEMICAL VAPOR DEPOSITION

David Bruce Beach, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 207,942, Mar. 9, 1994, Pat. No. 5,534,079, which is a division of Ser. No. 940,416, Aug. 31, 1992, Pat. No. 5,322,813. This application Jun. 6, 1995, Ser. No. 468,367

Int. Cl.[6] H01L *33/00*

U.S. Cl. 257—102 **5 Claims**



1. An optoelectronic device comprising a substrate and an epitaxial semiconductor film adherent thereon, said semiconductor film comprising a semiconductor and erbium in substantially a single phase at a concentration which is higher than the equilibrium concentration for a single phase of said erbium in said semiconductor layer, said semiconductor being selected from the group consisting of silicon and mixtures of silicon and germanium, said film containing from about 8×10^{18} to about 8×10^{19} atoms/cm^3 of erbium and said film being substantially free of erbium silicide and erbium germanide precipitates and electrically degrading defects.

5,646,426

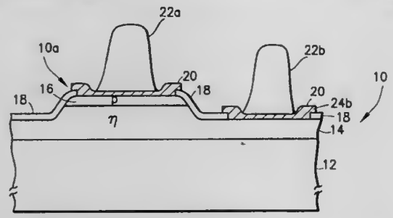
CONTACT METAL DIFFUSION BARRIER FOR SEMICONDUCTOR DEVICES

Charles A. Cockrum, Goleta, and Eric F. Schulte, Santa Barbara, both of Calif., assignors to Santa Barbara Research Center, Goleta, Calif.

Filed Dec. 12, 1995, Ser. No. 570,740

Int. Cl.[6] H01L *31/0328;27/10;31/00*

U.S. Cl. 257—188 **13 Claims**



1. A semiconductor device, comprising:

a photoresponsive body comprised of semiconductor material, said body having at least one electrical contact that is electrically coupled to said body, said at least one electrical contact being comprised of indium; and

at least one electrically conductive contact pad formed over a surface of said semiconductor material and interposed between said surface and said at least one electrical contact, said at least one electrically conductive contact pad being comprised of at least one layer, said at least one layer being comprised of a metal nitride that is selected to be resistant to a diffusion of indium from said at least one electrical contact.

5,646,427

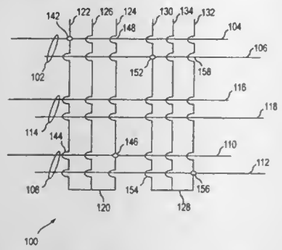
INTEGRATED CIRCUIT DEFECT TOLERANT ARCHITECTURE

Charles Russell Smith, Waterloo, Canada, and Michael George Farrier, Boyne City, Mich., assignors to Dalsa, Inc., Canada

Filed Aug. 23, 1995, Ser. No. 518,456

Int. Cl.[6] H01L *27/148*

U.S. Cl. 257—232 **26 Claims**



1. A structure for a charge coupled device (CCD) to minimize effects of masking defects of a predetermined dimensional extent, the structure comprising:

a plurality of sets of conductors, each set of conductors including a plurality of parallel elongate first conductors oriented in a first direction and disposed substantially in a first plane, each first conductor being comprised of a first material and characterized by a first sheet resistance per square of conductor; and

at least one strapping network, each strapping network comprising a plurality of parallel elongate second conductors oriented in a second direction transverse to the first direction and being disposed substantially in a second plane insulatively spaced apart from the first plane, each second conductor being comprised of a second material and characterized by a second sheet resistance per square of conductor, the second sheet resistance being less than the first sheet resistance,

wherein the plurality of sets of conductors includes at least a first set and a second set, each of the first and second sets of conductors including at least a first phase conductor,

wherein the at least one strapping network includes a first strapping network,

wherein the plurality of second conductors of the first strapping network includes at least a first strap conductor,

wherein the first strap conductor of the first strapping network is connected to the first phase conductor of the first set and not connected to the first phase conductor of the second set.

5,646,428

OUTPUT CIRCUIT PROVIDED WITH SOURCE FOLLOWER CIRCUIT HAVING DEPLETION TYPE MOS TRANSISTOR

Minoru Hamada, Ogaki, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

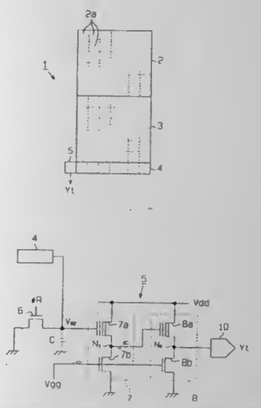
Filed Jun. 16, 1995, Ser. No. 491,504

Claims priority, application Japan, Jul. 5, 1994, 6-153941

Int. Cl.[6] H01L *29/78*

U.S. Cl. 257—239 **2 Claims**

1. An output circuit for use in a solid state image pickup device, said output circuit comprising a source follower type circuit and a reset transistor,



wherein said source follower type circuit comprises a resistor element and a depletion type MOS transistor which are coupled to each other,

wherein said depletion type MOS transistor comprises:

a drain region connected to a power supply;

a source region connected to said resistor element; and

a control gate provided above a floating gate and insulated from said floating gate, said source region serving as an output terminal of said output circuit, and

wherein said reset transistor has a grounded drain, a source connected to the control gate of said depletion type MOS transistor for accumulating information charges externally supplied thereto and a gate for receiving an externally supplied reset pulse signal, the source of said reset transistor serving as an input terminal of the output circuit, and wherein said reset transistor is responsive to said reset pulse signal for periodically initializing the potential level of said input terminal.

5,646,429

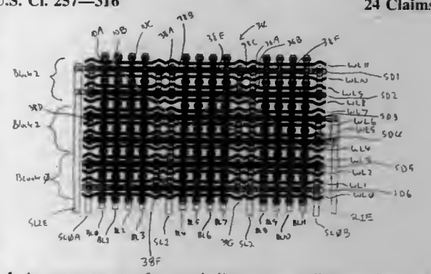
SEGMENTED NON-VOLATILE MEMORY ARRAY HAVING MULTIPLE SOURCES

Christophe J. Chevallier, Palo Alto, Calif., assignor to Micron Quantum Devices, Inc., Santa Clara, Calif.

Filed Feb. 23, 1996, Ser. No. 606,245

Int. Cl.[6] G11C *11/40;* **H01L** *27/15*

U.S. Cl. 257—316 **24 Claims**



1. An arrangement of non-volatile memory cells comprising:

a plurality of erase blocks, with each of the erase blocks including memory cells arranged in an array, with the memory cells each including

(a) a source region,

(b) a drain region spaced apart from the source region so as to define a channel region intermediate the source and drain regions,

(c) a control gate disposed over the channel region; and

(d) a floating gate positioned intermediate and electrically insulated from the channel region and the control gate;

with each erase block including a group of the memory cells arranged in an array comprising a plurality of rows and a plurality of columns, with each cell in one of the rows having their control gates connected to a common word line and with each cell in one of the columns having their drain regions connected to a common bit line and with each of the source regions being connected to a common source line structure, with each erase block including first and second opposite block edges extending generally parallel with the cell rows and with the source line structure of each erase block including

a non-metallic source line positioned to interconnect the source regions of cells located in one of the rows, and

a metallic source line positioned to interconnect the non-metallic source lines,

with first and second ones of the erase blocks being positioned relative to one another so that the first block edge of the first erase block is facing the second block edge of the second erase block and with the metallic source line of the first erase block extending across the first edge of the first erase block, extending across the second edge of the second erase block, extending across the second erase block and extending across the first edge of the second erase block.

5,646,430

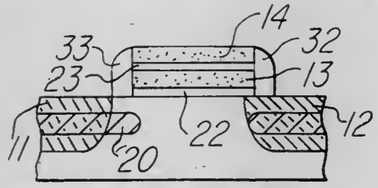
NON-VOLATILE MEMORY CELL HAVING LIGHTLY-DOPED SOURCE REGION

Cetin Kaya, and David Liu, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 66,816, May 24, 1993, Pat. No. 5,482,880, which is a division of Ser. No. 753,252, Aug. 30, 1991, Pat. No. 5,264,384. This application Aug. 28, 1995, Ser. No. 520,350

Int. Cl.[6] H01L *29/788*

U.S. Cl. 257—322 **25 Claims**



1. A non-volatile memory cell structure comprising:

heavily n-doped source and drain regions formed in the surface of a semiconductor substrate and separated by a p-doped channel region;

a floating gate formed over and insulated from said channel region;

a control gate formed over and insulated from said floating gate;

a lightly doped region formed in said channel region beneath said floating gate and adjoining said source region, said lightly doped region spaced from the surface of said substrate.

5,646,431

SURFACE BREAKDOWN REDUCTION BY COUNTER-DOPED ISLAND IN POWER MOSFET

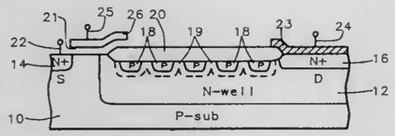
Ching-Hsiang Hsu, and Da-Chi Kuo, both of Hsin-Chu, Taiwan, assignors to United Microelectronics Corporation, Hsin-Chu, Taiwan

Division of Ser. No. 289,649, Aug. 12, 1994, Pat. No. 5,521,105. This application Feb. 28, 1996, Ser. No. 608,385

Int. Cl.[6] H01L *29/76;29/94;31/062;31/113*

U.S. Cl. 257—342 **12 Claims**

1. In a metal oxide semiconductor field effect transistor device with a substrate having at least a surface layer doped to a first conductivity type, the device including a well within the surface layer doped to a second conductivity type and source and drain regions doped to said first conductivity type, the improvement comprising



a plurality of counter-doped regions formed in said well along a surface of said well and spaced apart in a direction parallel to a conduction path between said source and drain regions.

5,646,432

SEMICONDUCTOR THIN FILM FORMED ON A SUPPORTING SUBSTRATE

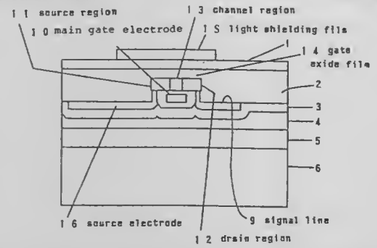
Tadao Iwaki; Tsuneo Yamazaki; Katsuki Matsushita; Shigeru Senbonmatsu, and Ryuichi Takano, all of Tokyo, Japan, assignors to Seiko Instruments Inc., Japan

Filed May 5, 1993, Ser. No. 57,987

Claims priority, application Japan, May 14, 1992, 4-122024

Int. Cl.[6] H01L *27/01;31/032;29/00;23/48*

U.S. Cl. 257—347 **49 Claims**



1. A semiconductor substrate comprising: a single crystal semiconductor thin film layer having an element region which includes at least a portion of a first surface thereof; an element smoothing layer formed on the element region of the single crystal semiconductor thin film layer; and a supporting substrate laminated to the element smoothing layer by a resin adhesive layer such that a rough surface formed by a circuit element formed on the first surface of the single crystal semiconductor thin film layer is smoothed by the element smoothing layer to avoid separation of the semiconductor thin film layer and the supporting substrate.

5,646,433

PAD PROTECTION DIODE STRUCTURE

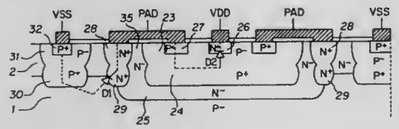
Jean Jimenez, Voiron, France, assignor to SGS Thomson Microelectronics S.A., Saint Genis, France

Continuation of Ser. No. 82,236, Jun. 24, 1993, Pat. No. 5,432,368. This application Jun. 7, 1995, Ser. No. 484,646

Claims priority, application France, Jun. 25, 1992, 92 08280

Int. Cl.[6] H01L *29/06;29/78*

U.S. Cl. 257—355 **9 Claims**



1. A diode structure for protecting an integrated circuit formed in a substrate of a first conductivity type, said integrated circuit being coupled between a pad and first and second supply terminals, said diode structure comprising:

a pocket of said first conductivity type;

a lowly doped region of a second conductivity type disposed between the substrate and said pocket;

an first area of said second conductivity type formed in said pocket, said area being coupled to the second supply terminal;

a second area of said first conductivity type formed in said pocket and coupled to said pad;

a ring of said second conductivity type being disposed around said pocket and coupled to said substrate, said ring being further coupled to said pad; and

a well of said first conductivity type coupled to said substrate and being disposed around said ring, said well being further coupled to the first terminal.

5,646,434

SEMICONDUCTOR COMPONENT WITH PROTECTIVE STRUCTURE FOR PROTECTING AGAINST ELECTROSTATIC DISCHARGE

Ioannis Chrysostomides, Munich; Xaver Guggenmos, Dachau; Wolfgang Nikutta, Munich; Werner Reczek, Ottobrunn; Johann Rieger, Zell; Johannes Stecker, and Hartmud Terletzki, both of Munich, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 4, 1996, Ser. No. 610,523

Claims priority, application Germany, Mar. 2, 1995, 195 07 313.4

Int. Cl.[6] H01L *23/62*

U.S. Cl. 257—355 **11 Claims**



1. A semiconductor component, comprising:

a semiconductor body having a terminal pad, a semiconductor function element, and an electrically conductive connecting line connecting said terminal pad to said semiconductor function element;

a protective element for protecting against electrostatic discharge, being connected between said terminal pad and said semiconductor function element;

a first supply line for a first supply potential, being connected to said semiconductor function element;

a second supply line for the first supply potential, being connected to said protective element and being electrically conductively connected to said first supply line; and

a clamp element being connected to said connecting line and to said first supply line, for limiting a voltage applied to said clamp element to a clamp value.

5,646,435

METHOD FOR FABRICATING CMOS FIELD EFFECT TRANSISTORS HAVING SUB-QUARTER MICROMETER CHANNEL LENGTHS WITH IMPROVED SHORT CHANNEL EFFECT CHARACTERISTICS

Charles Chiag-Hsiang Hsu, and Mong-Song Liang, both of Hsin-Chu, Taiwan, assignors to Taiwan Semiconductor Manufacturing Company, Ltd., Hsin-Chu, Taiwan

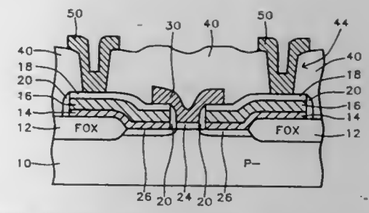
Filed Apr. 4, 1995, Ser. No. 416,168

Int. Cl.[6] H01L *29/76;21/265*

U.S. Cl. 257—382 **19 Claims**

1. A method for fabricating reverse self-aligned field effect transistors, comprising the steps of:

providing a semiconductor substrate doped with a first conductive type dopant;



forming field oxide areas on said semiconductor substrate surrounding and electrically isolating device areas;

depositing a first conducting layer on said devices areas and elsewhere on said field oxide areas;

depositing a first polysilicon layer on said first conducting layer, said first polysilicon layer doped with a second conductive type dopant;

depositing a first insulating on said first polysilicon layer;

etching openings having vertical sidewalls in said first insulating layer and said first polysilicon layer to the surface of said first conducting layer, said openings located at least over said device areas and said openings providing for the formation of the gate electrodes of said field effect transistors over said device areas;

etching anisotropically said first conducting layer in said openings to said substrate surface;

depositing a conformal second insulating layer on said first insulating layer and in said openings;

blanket etching back said second insulating layer to said first insulating layer, and thereby forming sidewall spacers on said vertical sidewalls in said openings, and thereby reducing the width of said openings;

implanting in said openings a channel ion implant dopant of said first conductive dopant type;

forming a gate oxide on the surface of said substrate in said openings by thermal oxidation;

heating said substrate and forming doped source/drain areas in portions of said device areas for said transistors by out diffusion of said second conductive dopant type from said first polysilicon layer through said first conductive layer;

depositing a conformal second polysilicon layer on said second insulating layer and in said openings and doped with said second conductive type dopant;

patterning said second polysilicon layer leaving portions over said openings, and thereby forming overlapping gate electrodes for said transistors;

depositing a third insulating layer over said overlapping gate electrodes and over said first insulating layer;

forming contact openings in said third and first insulating layers to said first polysilicon layer, and thereby providing contact means to said source/drain areas;

depositing a second conducting layer on said third insulating layer and in said contact openings;

patterning said second conducting layer, leaving portions over said contact openings, and thereby completing said reverse self-aligned transistors having source/drain areas with said second conducting layer contacts.

5,646,436

READ ONLY MEMORY (ROM) DEVICE PRODUCED BY SELF-ALIGNED IMPLANTATION

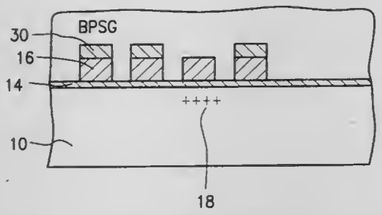
Gary Hong; Chen-Chiu Hsue, and Chen-Hui Chung, all of Hsinchu, Taiwan, assignors to United Microelectronics Corporation, Hsinchu, Taiwan

Division of Ser. No. 264,461, Jun. 23, 1994, abandoned. This application Sep. 29, 1995, Ser. No. 536,934

Int. Cl.[6] H07L *21/265*

U.S. Cl. 257—390 **3 Claims**

1. A read only memory device comprising:



(a) a substrate with a plurality of conductive bit-lines formed therein, a gate oxide layer formed on said bit-lines, and a plurality of conductive word-lines formed on said gate oxide, which together form an array of memory cells; and

(b) selected ones of said memory cells being programmed to a first state by impurities implanted in said substrate and said selected cells, the remaining cells, which are not programmed to said first state, being characterized by an aligning layer of material which overlies said word-lines of said remaining cells, said material having sidewalls which align with sidewalls of said word-lines, and the selected ones of said memory cells being characterized by not having the aligning layer of material which overlies said word-lines of the selected ones, wherein said material is a layer of silicon dioxide.

5,646,437

INDIUM ANTIMONIDE (INSB) PHOTODETECTOR DEVICE AND STRUCTURE FOR INFRARED, VISIBLE AND ULTRAVIOLET RADIATION

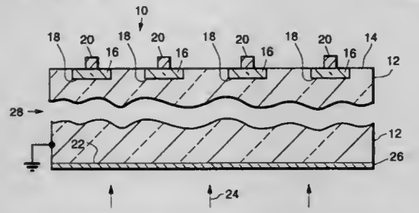
Ichiro Kasai, Solvang, and John R. Toman, Santa Barbara, both of Calif., assignors to Santa Barbara Research Center, Goleta, Calif.

Continuation of Ser. No. 68,897, May 28, 1993, abandoned, which is a continuation-in-part of Ser. No. 742,248, Aug. 8, 1991, abandoned. This application Jun. 2, 1994, Ser. No. 252,986

The portion of the term of this patent subsequent to Jun. 2, 2014, has been disclaimed.

Int. Cl.[6] H01L *27/14*

U.S. Cl. 257—437 **15 Claims**



13. A broadband photodetector device capable of detecting infrared (IR), visible and near-ultraviolet (UV) radiation, comprising:

an InSb substrate having a light receiving surface;

a Si_3N_4 passivation layer formed on said light receiving surface which does not react with the substrate to form a structure which would have carrier traps therein, said passivation layer being substantially transparent to a broadband spectrum that includes IR, visible and near-UV radiation components; and

at least one photosensitive semiconductor junction formed in said substrate.

5,646,438

PROGRAMMABLE SEMICONDUCTOR MEMORY

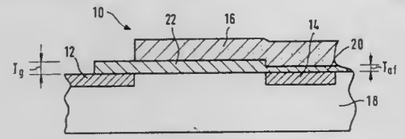
Heinz-Peter Frerichs, St. Peter, Germany, assignor to Deutsche ITT Industries GmbH, Freiburg, Germany

Filed Nov. 13, 1995, Ser. No. 555,910

Claims priority, application Germany, Dec. 11, 1994, 44 40 539.1

Int. Cl.[6] H01L *29/04*

U.S. Cl. 257—530 **20 Claims**



9. An integrated circuit including a plurality of programmable metal oxide semiconductor field-effect transistor memories, each of said memories comprising:

a drain region;

a source region laterally spaced from said drain region;

a gate electrode disposed over said drain region; and

an antifuse region disposed under said gate electrode and over said drain region, wherein said antifuse region is fabricated from a material exhibiting a first impedance state for electrically isolating said gate electrode from said drain region prior to an application of a programming voltage to said gate electrode, and exhibiting a second impedance state lower than said first impedance state upon the application of the programming voltage to said gate electrode which is greater than a supply voltage applied across said drain region and said source region.

5,646,439

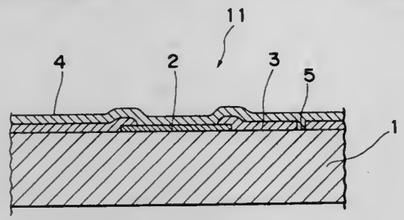
ELECTRONIC CHIP COMPONENT WITH PASSIVATION FILM AND ORGANIC PROTECTIVE FILM

Yoshifumi Kitayama, Hirakata; Kazuhiro Mori, Katano; Keiji Saeki, Kobe, and Takashi Akiguchi, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Continuation of Ser. No. 193,359, Feb. 3, 1994, abandoned, which is a continuation of Ser. No. 882,131, May 13, 1992, abandoned. This application Aug. 27, 1996, Ser. No. 703,876

Int. Cl.[6] H01L *23/58*

U.S. Cl. 257—632 **4 Claims**



1. An electronic chip component comprising:

a wafer having an active surface;

an electrode formed on a portion of said active surface;

a passivation film covering a portion of said active surface not covered by said electrode and a portion of said electrode, with another portion of said electrode not being covered by said passivation film, said passivation film comprising silicon dioxide or silicon nitride and forming a moisture barrier to said portion of said wafer; and

an organic protective film covering entirely and providing an air barrier for said another portion of said electrode and said passivation film, said organic protective film having an outer surface that is entirely exposed and uncovered, and said organic protective film being formed of material capable of, during a subsequent operation of pressing an external electrode against said organic protective film to bond such external electrode electrically and mechanically to said electrode, being destroyed by such pressure locally only in an area thereof in contact with the external electrode, while not being destroyed in any other area thereof and thereby maintaining said air barrier.

5,646,440

INTERLAYER DIELECTRIC STRUCTURE FOR SEMICONDUCTOR DEVICE

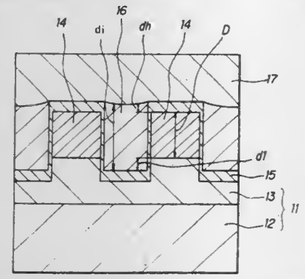
Toshiaki Hasegawa, Kanagawa, Japan, assignor to Sony Corporation, Japan

Filed Sep. 27, 1995, Ser. No. 534,405

Claims priority, application Japan, Oct. 3, 1994, 6-238821; Jan. 13, 1995, 7-003727

Int. Cl.[6] H01L *23/58*

U.S. Cl. 257—635 **28 Claims**



1. An interlayer dielectric film structure, for a semiconductor device, comprising:

a substrate made from a semiconductor material;

said semiconductor device fabricated from said substrate by semiconductor fabrication processes;

a main body formed by said semiconductor device and comprising a first dielectric film and a second dielectric film, at least a surface of said main body being insulative;

conductive interconnects formed on said main body;

said first dielectric film being formed so as to cover said conductive interconnects; and

said second dielectric film having a relative dielectric constant smaller than that of said first dielectric film, said second dielectric film existing at least between said conductive interconnects via said first dielectric film;

wherein said second dielectric film between said conductive interconnects has a thickness larger than a height of the conductive interconnects by 10 to 100% in directions of height and depth.

5,646,441

TCP TAB DESIGN WITH RADIAL OUTER LEADS

Altaf Hasan, Chandler; J. D. Wilson, and Tor Kalleberg, both of Phoenix, all of Ariz., assignors to Intel Corporation, Santa Clara, Calif.

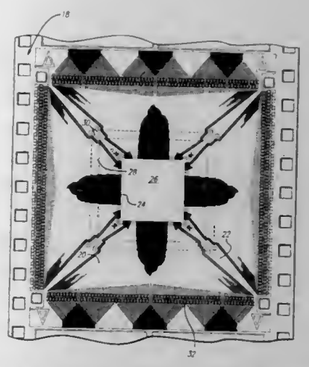
Continuation of Ser. No. 255,247, Jun. 7, 1994, abandoned. This application Apr. 18, 1996, Ser. No. 631,600

Int. Cl.[6] H01L *23/495*

U.S. Cl. 257—666 **3 Claims**

1. An integrated circuit package, comprising:

a substrate which has an integrated circuit mount portion that has a center point and a plurality of inner surface pads located in a rectangular pattern about said integrated circuit mount portion wherein at least one of said inner surface pads are oriented at an oblique angle relative to another one of said inner surface pads;



a rectangular integrated circuit mounted to said integrated circuit mount portion of said substrate, said integrated circuit having a plurality of adjacent edges and a plurality of outer surface pads; and,

a dielectric tape which has a plurality of conductive leads that each have a first end attached to said outer surface pads, each conductive lead also having a land portion attached to said inner surface pads of said substrate wherein at least one land portion has a segment that is perpendicular to an edge of said integrated circuit and a segment that is oriented at an oblique angle relative to said edge of said integrated circuit, each said land portion having a longitudinal axis that extends through the center point, wherein said attached oblique land portions each have an attached area that is oriented at an oblique angle relative to said edge of said integrated circuit.

5,646,442

CONTACT STRUCTURE FOR IC SOCKET

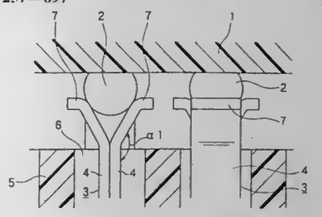
Shunji Abe, Yokohama, and Kazumi Uratsuji, Tokyo, both of Japan, assignors to Yamaichi Electronics Co., Ltd., Tokyo, Japan

Filed Sep. 14, 1995, Ser. No. 528,150

Claims priority, application Japan, Sep. 16, 1994, 6-248431

Int. Cl.[6] H01L *23/48*

U.S. Cl. 257—697 **9 Claims**



1. A contact structure for an IC socket and for use with an IC package having an array of terminals with circular cross-sectional shapes in a predetermined plane, said contact structure comprising:

an array of contacts adapted for alignment with the array of terminals;

wherein each of said contacts includes only one or two discrete contact pieces;

wherein each of said contact pieces is of a configuration for contacting a peripheral surface of one of the terminals by single-point contact;

wherein said one or two contact pieces of each of said contacts are positioned for contacting the respective terminal in such a manner as to prevent substantial movement of that respective terminal in at least one direction but not all directions;

wherein said array of contacts comprises at least a first group of contacts and a second group of contacts, each of said contacts of said first group has its one or two contact pieces arranged for preventing substantial movement in at least a first direction but not in a second direction, and each of said contacts of said second group has its one or two contact pieces arranged for preventing substantial movement in at least said second direction but not in said first direction: and

wherein said contacts together constitute a means for preventing substantial movement of the array of terminals in all directions in the predetermined plane.

5,646,443

SEMICONDUCTOR PACKAGE

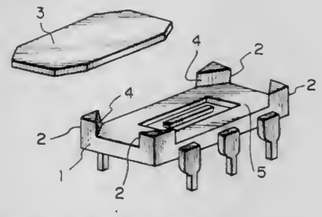
Takehiko Takahashi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 323,313, Oct. 14, 1994, abandoned. This application Jan. 11, 1996, Ser. No. 584,161

Claims priority, application Japan, Oct. 15, 1993, 5-281637

Int. Cl.[6] H01L *23/12*

U.S. Cl. 257—704 **1 Claim**



1. A semiconductor package comprising:

a cap for hermetically sealing said package;

a bottom portion comprising an adhering surface to which said cap may be adhered and a plurality of guides each having the form of a lug, wherein one guide is positioned at each corner of said adhering surface,

said cap having a plurality of corner regions shaped in a complementary fashion to said plurality of guides,

wherein said cap is positioned over said adhering surface such that said cap lies entirely between said guides, wherein

said guides have a triangular shape.

5,646,444

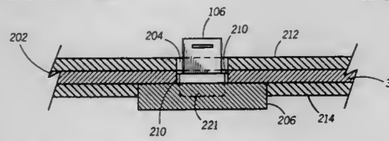
APPARATUS AND METHOD FOR MOUNTING A COMPONENT TO AN ELECTRICAL CIRCUIT

Michael H. Bartlett, Hurst, and Michael C. Wuensch, Fort Worth, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 5, 1995, Ser. No. 539,563

Int. Cl.[6] H01L *23/10;23/34*

U.S. Cl. 257—706 **22 Claims**



1. An apparatus comprising:

a) a substrate having first and second opposing sides, a substrate aperture and an internal ground layer existing internal to the substrate the internal ground layer existing substantially between the first and the second opposing sides of the substrate;

b) a heat sink having a first and a second side, wherein the first side of the heat sink is coupled to the substrate at the internal ground layer and at least partially overlaps the substrate aperture: and

c) a component coupled to the heat sink, wherein at least a portion of the component is located within the substrate aperture.

5,646,445

SEMICONDUCTOR DEVICE HAVING ELECTRODES EMBEDDED IN AN INSULATING CASE

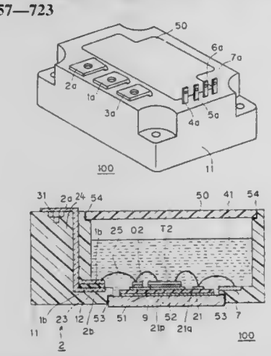
Toshikazu Masumoto, and Shinobu Takahama, both of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 6, 1995, Ser. No. 568,426

Claims priority, application Japan, Jul. 7, 1995, 7-172172

Int. Cl.[6] H01L *23/12;23/02*

U.S. Cl. 257—723 **20 Claims**



1. A semiconductor device comprising a circuit board being provided on a bottom surface portion of a box type electrically insulating case, a semiconductor element being provided on said circuit board for controlling a main current, and a pair of main electrodes having first end portions being electrically connected with said semiconductor element and second end portions being outwardly exposed from an upper end surface of said case so that said main current flows in opposite directions,

said pair of main electrodes being sealed in the interior of a side wall portion of said case in substantially parallel positional relation thereby being fixed to said case, said first end portions of said pair of main electrodes being not directly coupled to said circuit board but electrically connected to said semiconductor element through bonding wires.

5,646,446

THREE-DIMENSIONAL FLEXIBLE ASSEMBLY OF INTEGRATED CIRCUITS

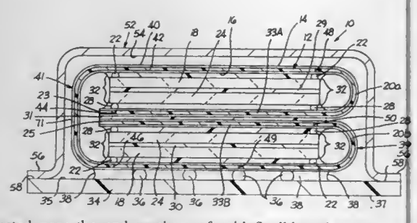
Earl R. Nicewarner, Jr., Gaithersburg, and Steven L. Frinak, Middletown, both of Md., assignors to Fairchild Space and Defense Corporation, Germantown, Md.

Filed Dec. 22, 1995, Ser. No. 577,843

Int. Cl.[6] H01L *23/34*

U.S. Cl. 257—723 **5 Claims**

1. An integrated circuit module assembly comprising: a thin flexible substrate support member having two sides and two end portions, said flexible substrate support member being folded with a portion of said flexible substrate support member located adjacent to and surrounding the two end portions of said flexible substrate support member with said end portions being connected together or to other portions of said flexible substrate support member, and a series of chips having backs located on at least one side of said flexible substrate support member including chips



located near the end portions of said flexible substrate support member, said series of chips comprising a first set of chips and a second set of chips whereby said folded flexible substrate support member and said chips provide an assembly of folded flexible substrate support member and chips with a portion of said flexible substrate support member upon which said first set of chips are located being located adjacent to another portion of said flexible substrate support member upon which said second set of chips are located with said first set of chips and said second set of chips comprising flip chips located in a back to back relationship, said assembly of folded flexible substrate support member and chips having two oppositely located exterior sides with a plurality of loops on one exterior side of said assembly of folded flexible substrate support member and chips; chip electrical connecting means for electrically connecting a plurality of said chips to said flexible substrate support member comprising groups of electrical connectors for said chips located on said flexible substrate support member, said groups of electrical connectors for said chips being unequally spaced on said flexible substrate support member to provide a greater portion of said flexible substrate support member between at least some of said groups of electrical connectors with a side of a greater portion of said flexible substrate support member also forming the opposite exterior side of said assembly of folded flexible substrate support member and chips from said oppositely located exterior side of said assembly of folded flexible substrate support member and chips having a plurality of loops; and means for electrically connecting said flexible substrate support member to electrical connections external to said flexible substrate support member located on a portion of one side of said flexible substrate support member, said portion of one side of said flexible substrate support member being located adjacent to a chip on said flexible substrate support member other than a chip located nearest one of the end portions of said flexible substrate support member.

5,646,447

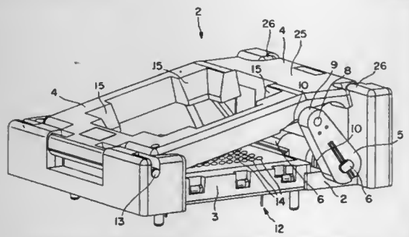
TOP LOADING CAM ACTIVATED TEST SOCKET FOR BALL GRID ARRAYS

James Michael Ramsey, Sellersburg, Ind.; Paul S. Chinnock, Phoenix, and Maria E. Ryan, Scottsdale, both of Ariz., assignors to PCD Inc., Peabody, Mass.

Filed Jun. 3, 1996, Ser. No. 657,517

Int. Cl.[6] H01L *23/48;23/52;29/40;23/34*

U.S. Cl. 257—727 **7 Claims**



1. A socket for ball grid array integrated circuit packages comprising:

a housing with a top structure with an opening large enough to allow the grid array package to pass through with the ball contacts facing said socket, the lower surfaces of the ball contacts defining a first plane,

a slidable top plate with through holes arranged to receive said ball contacts,

a plurality of electrical contacts fixed to said socket with a first end having at least one edge arranged to mate with said ball contacts, and where said first ends extending into said holes in the top plate from a direction opposite the ball contacts, and where the distance between the electrical contact and the edges or walls of through hole define an opening.

a cam axle means arranged to provide a displacement to said slidable plate in a direction parallel with said plane, where said cam axle acts to reduce said hole openings, such that interposing BGA ball contacts are pushed into said socket electrical contacts and captured between the hole edges and contact first ends,

a compression spring means for driving the said plate against the said cam axle such that in the open position the cam axle lower profile provides openings between the edges of said holes and each of said electrical contacts suitable for removal and insertion of said package ball contacts.

a torsion spring means of motivating the cam axle rotation from the open position to the actuated or cam thick position thereby moving the slidable plate such that said balls are driven into electrical continuity with said electrical contacts.

5,646,448

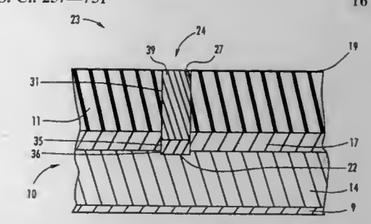
COPPER PELLET FOR REDUCING ELECTROMIGRATION EFFECTS ASSOCIATED WITH A CONDUCTIVE VIA IN A SEMICONDUCTOR DEVICE

Richard K. Klein, Mountain View; Darrell Erb, Los Altos; Steven Avanzino; Robin Cheung, both of Cupertino; Scott Luning, Menlo Park; Bryan Tracy, Oakland; Subhash Gupta, San Jose, and Ming-Ren Lin, Cupertino, all of Calif., assignors to Advanced Micro Devices, Sunnyvale, Calif.

Continuation of Ser. No. 461,428, Jun. 5, 1995, abandoned. This application Aug. 19, 1996, Ser. No. 699,821

Int. Cl.[6] H01L *23/522;23/532*

U.S. Cl. 257—751 **16 Claims**



1. In a multilayer semiconductor structure including a barrier layer formed over a conductive line, and an insulating layer formed over the barrier layer, the barrier layer preventing diffusion, the insulating layer having a via extending through the insulating layer and the barrier layer, the barrier layer having a top side adjacent the insulating layer and a bottom side adjacent the conductive line, the improvement comprising:

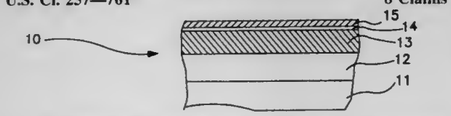
a pellet of metal having a high resistance to electromigration situated within the via at a bottom end of the via, the pellet having a top side located beneath the top side of the barrier layer and a bottom side coupled to the conductive line, the pellet being physically isolated from the insulating layer whereby the pellet reduces electromigration failures associated with the conductive line, wherein the via is filled with an aluminum plug located above the pellet.

5,646,449

SEMICONDUCTOR DEVICE HAVING A MULTI-LAYERED CONDUCTIVE STRUCTURE WHICH INCLUDES AN ALUMINUM ALLOY LAYER, A HIGH MELTING TEMPERATURE METAL LAYER, AND A HIGH MELTING TEMPERATURE NITRIDE LAYER

Makiko Nakamura; Yasuhiro Fukuda; Yasuyuki Tatara; Yusuke Harada, and Hiroshi Onoda, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 128,576, Sep. 30, 1993, abandoned.
This application Jul. 18, 1995, Ser. No. 504,062
Claims priority, application Japan, Oct. 2, 1992, 4-264559
Int. Cl.[6] H01L *23/48*
U.S. Cl. 257—761 **8 Claims**



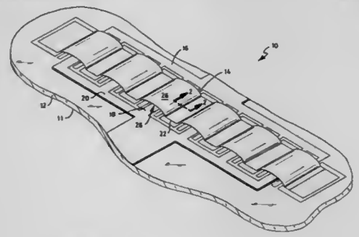
1. A multi-layered conductive structure for a semiconductor device, comprising:
a substrate;
an insulating layer on said substrate;
an aluminum alloy layer in direct contact with said insulating layer;
a metal layer formed on said alloy layer, said metal layer comprising a metal selected from the group consisting of Ti, Zr, Hf, V and Nb; and
a metal nitride layer formed on said metal layer, said metal nitride layer comprising a nitride selected from the group consisting of TiN, ZrN, HfN, VN and NbN.

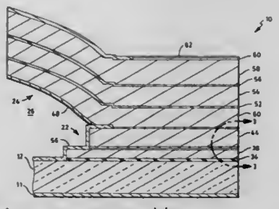
5,646,450

SEMICONDUCTOR STRUCTURES AND METHOD OF MANUFACTURING

Barry J. Liles, Westboro; Mark S. Durschlag, Waban, and James G. Oakes, Sudbury, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 251,879, Jun. 1, 1994, abandoned.
This application Jan. 31, 1996, Ser. No. 594,511
Int. Cl.[6] H01L *23/48;23/52;29/40*
U.S. Cl. 257—776 **6 Claims**





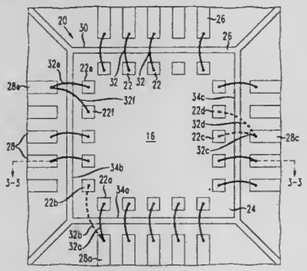
1. A semiconductor structure comprising:
a first electrode and a second electrode disposed on a surface of the structure; and
a bridging conductor connected between the first electrode and the second electrode, the bridging conductor comprising means for preventing dendrites and voids resulting from dislocation glide comprising a plurality of layers of different metals wherein the plurality of layers of different metals comprises at least three layers of an electrically conductive metal and at least four layers of a refractory metal, each one of the three layers of electrically conductive metal disposed between a corresponding pair of layers of the at least four layers of a refractory metal.

5,646,451

MULTIFUNCTIONAL CHIP WIRE BONDS

Ronald Lamar Freyman; Craig Joseph Garen, both of Bethlehem; Clinton Hays Holder, Jr., Slatington; Robert Nelson Kershaw, Harleysville, and Edward Clayton Morgan, Macungie, all of Pa., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jun. 7, 1995, Ser. No. 486,844
Int. Cl.[6] H01L *21/60*
U.S. Cl. 257—784 **21 Claims**



1. An electrical assembly comprising:
a multifunctional integrated circuit chip comprising a plurality of separate bonding pads including first and second bonding pads;
a plurality of conductive terminals including a first terminal;
a plurality of wire bonds connected between selected bonding pads and terminals; and
a control circuit coupled to the second bonding pad, the control circuit providing a first logic state to select the first function if the second bonding pad is coupled to the first bonding pad, the control circuit providing a second logic state to select the second function if the second bonding pad is electrically isolated from the first bonding pad, the chip providing a first function when the first bonding pad is wire bonded to the first terminal and the second bonding pad is separately wire bonded to the first terminal thereby forming a multiple wire bond at the first terminal and coupling the first and second bonding pads;
the chip providing a second function when the second bonding pad is devoid of a wire bond thereby electrically isolating the first and second bonding pads.

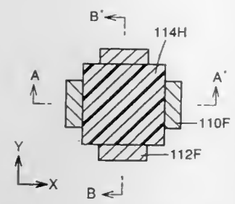
5,646,452

REGISTRATION ACCURACY MEASUREMENT MARK FOR SEMICONDUCTOR DEVICES

Koichiro Narimatsu, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 7, 1995, Ser. No. 477,835
Claims priority, application Japan, Oct. 18, 1994, 6-252080
Int. Cl.[6] H01L *23/544*
U.S. Cl. 257—797 **7 Claims**

2. A registration accuracy measurement mark, comprising:
a first measurement mark formed in a first layer on a semiconductor substrate,
a second measurement mark formed above said first measurement mark in a second layer on said first layer, and



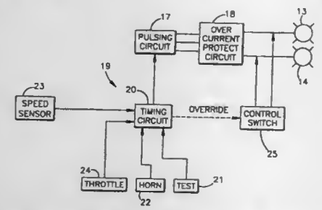
a third measurement mark formed substantially above said first measurement mark and said second measurement mark, and formed in a third layer on said second layer, used together with said first registration mark for measuring the offset between said first layer and said third layer in an X direction, and used together with said second measurement mark for measuring the offset between said second layer and said third layer in a Y direction, wherein
said first measurement mark includes a first sidewall and a second sidewall disposed in parallel with a first distance therebetween along said Y direction,
said second measurement mark includes a third sidewall and a fourth sidewall disposed in parallel with a second distance therebetween along said X direction, and
said third measurement mark includes a fifth sidewall and a sixth sidewall disposed in parallel with a third distance different from said first distance therebetween along said Y direction, and a seventh sidewall and an eighth sidewall disposed in parallel with a fourth distance different from said second distance therebetween along said X direction,
wherein said third measurement mark has said fifth sidewall and said sixth sidewall disposed in a region sandwiched by said first sidewall and said second sidewall of said first registration mark, and
wherein said third registration mark has said seventh sidewall and said eighth sidewall disposed in a region sandwiched by said third sidewall and said fourth sidewall of said second measurement mark.

5,646,453

DIGITAL DIMMING AND FLASHING CIRCUIT FOR LOCOMOTIVE DITCH LIGHTS

Donald C. Wetzel, Berea, and Robert A. Livsey, Richmond Heights, both of Ohio, assignors to Meg Trans Corp., Berea, Ohio

Continuation-in-part of Ser. No. 82,617, Jun. 25, 1993, Pat. No. 5,534,733. This application Aug. 2, 1994, Ser. No. 284,255
Int. Cl.[6] H05B *37/02*
U.S. Cl. 307—10.1 **19 Claims**



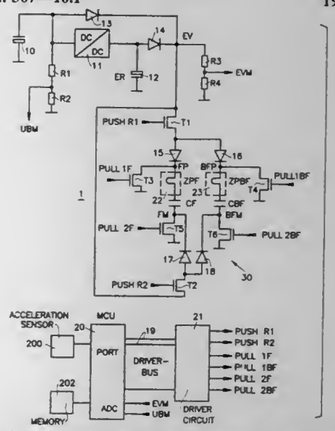
1. A control circuit for an element connectable across a voltage, comprising:
a switching circuit connected to control the voltage across the element;
a dimming circuit connected to control the switching circuit for selectively energizing the element with a series of voltage pulses at a specific duty cycle; and
an overcurrent protection circuit connected to control the switching circuit, the overcurrent protection circuit sensing current through the element above a predetermined level and de-energizing the element in response thereto.

5,646,454

ELECTRONIC SAFETY DEVICE FOR VEHICLE OCCUPANTS INCLUDING A MEMORY DEVICE FOR STORING FAULT CONDITIONS AND ASSOCIATED CONTROL COMMANDS

Bernhard Mattes, Sachsenheim; Werner Nitschke, Ditzingen; Hartmut Schumacher, Freiberg; Klaus Oswald, Baltmannsweiler; Norbert Crispin, Ludwigsburg, and Werner Weber, Vaihingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Jun. 6, 1995, Ser. No. 471,265
Claims priority, application Germany, Sep. 24, 1994, 44 34 204.7; Dec. 30, 1994, 44 47 174.2
Int. Cl.[6] B60R *21/32*
U.S. Cl. 307—10.1 **19 Claims**



1. An electronic safety device for occupants of a vehicle including an acceleration-sensitive sensor and at least one inertial restraining device, the safety device comprising:
a control unit coupled to the acceleration-sensitive sensor, the control unit including at least one microcomputer;
at least one output stage coupled to the control unit and controlling the at least one inertial restraining device, the at least one output stage including a squib; and
a memory device coupled to the at least one microcomputer, at least one fault condition of the electronic safety device and at least one associated control command being stored in the memory device, wherein the at least one inertial restraining device is activated in accordance with the at least one control command when the at least one fault condition occurs.

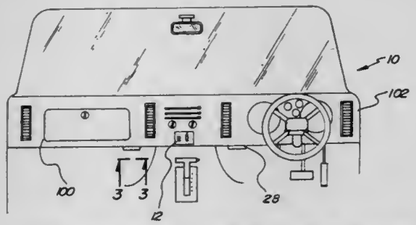
5,646,455

TIMER CONTROLLED HEATING AND COOLING APPARATUS FOR AN AUTOMOBILE

Alan Price, 7 Aldeburgh Close South Fens, Hartlepool Cleveland, England

Filed Sep. 11. 1995, Ser. No. 526,207
Int. Cl.[6] B60H *1/00*
U.S. Cl. 307—10.1 **1 Claim**

1. A timer controlled heating and cooling apparatus for an automobile for heating and cooling an interior of an automobile prior to a user's entrance comprising, in combination:



a control panel secured to a dashboard of an automobile in a position visibly accessible to a user, the control panel having an activation switch thereon, the control panel having a selector switch whereby a user can select a cool or a heat option, the control panel secured in a position accessible to a user, the control panel electrically coupled to an existing car battery;

at least one thermo electric heating and cooling mechanism mounted to an underside of a dashboard of an automobile, the thermo electric heating and cooling mechanism electrically coupled to the selector switch of the control panel and to an existing car battery, the thermo electric heating and cooling mechanism serving to selectively heat or cool an interior of an automobile;

at least one vent secured to a front surface of a corresponding thermo electric heating and cooling mechanism, the vent having an adjustable front surface whereby a user can direct flow of hot or cool air to a desired area of an interior of an automobile;

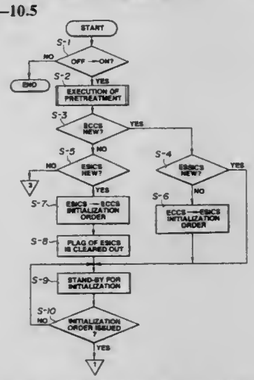
a timer mechanism secured to the control panel, the timer mechanism electrically coupled to an existing car battery and to the selector switch of the control panel, the timer mechanism preset to automatically activate and deactivate the thermo electric heating and cooling mechanism.

5,646,456

ANTI-THEFT CAR PROTECTION SYSTEM

Hiroshi Udoh, Chigasaki, and Hirosi Funakosi, Zama, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Dec. 23, 1994, Ser. No. 363,036
Claims priority, application Japan, Dec. 27, 1993, 5-331815
Int. Cl.[6] B60R *25/04*
U.S. Cl. 307—10.5 **38 Claims**



1. A method of operating an anti-theft car protection system for a motor vehicle powered by an engine, said system including a first control unit which controls the fuel injection to the engine and is capable of starting the engine responsive to an engine start instruction signal and of storing a first rolling code and a second control unit which is capable of storing a second rolling code, the method comprising the steps of:

storing said first and said second rolling codes for said first and said second control units respectively;

issuing an "ON" signal when an ignition switch of the vehicle is turned from an "OFF" position to an "ON" position and issuing an "OFF" signal when the ignition switch is turned from the "ON" position to the "OFF" position;

providing said first control unit with said second rolling code responsive to the "ON" signal; and

comparing said first and said second rolling codes, and issuing an agreement signal if the first and the second rolling codes are in agreement and issuing a disagreement signal if the first and the second rolling codes are in disagreement;

feeding the engine start instruction signal to said first control unit responsive to said agreement signal, and preventing the feeding of the engine start instruction signal to said first control unit responsive to said disagreement signal;

setting a fail-safe flag responsive to issuance of said agreement signal;

clearing out said fail-safe flag responsive to said "OFF" signal; and

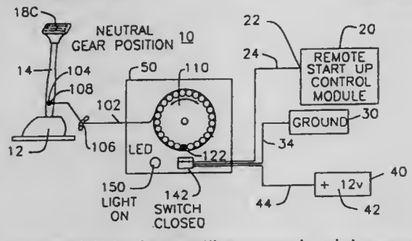
preventing suppression of the engine starting when said fail-safe flag is set.

5,646,457

NEUTRAL SAFETY SWITCH CONTROL DEVICE USING A ROTATABLE MAGNET FOR CONTROLLING REMOTE VEHICLE STARTING OF A VEHICLE EQUIPPED WITH A MANUAL TRANSMISSION

Violin S. Vakavtchlev, 765 Mountain Ave., #230, Springfield, N.J. 07081

Filed Feb. 20, 1996, Ser. No. 603,234
Int. Cl.[6] F02N *17/00*
U.S. Cl. 307—10.6 **10 Claims**



1. A control device for controlling a magnetic switch connected to a remote start control module, comprising:

a) a remote start control module for remotely starting an engine of a vehicle having a manual transmission;

b) a magnetic switch electrically connected to said remote start control module;

c) rotational means rotatably mounted adjacent to said magnetic switch;

d) means for rotating said rotational means relative to said magnetic switch;

e) said means for rotating including means for attachment to a gear shift of said manual transmission and for rotating said rotational means to a closing position for closing said magnetic switch; and

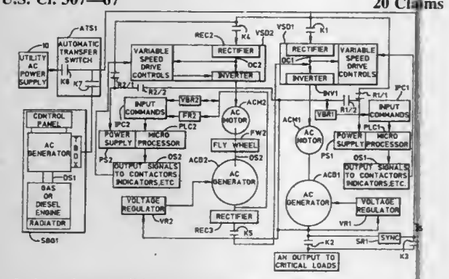
f) said rotational means including means for receiving a magnet at said closing position to close said magnetic switch to make an electrical connection with said remote start control module for remotely starting the engine of said vehicle with a manual transmission.

5,646,458

UNINTERRUPTIBLE POWER SYSTEM WITH A FLYWHEEL-DRIVEN SOURCE OF STANDBY POWER

Richard N. Bowyer, Pasadena, and Geoffrey West, Irvine, both of Calif., assignors to Atlas Energy Systems, Inc., South El Monte, Calif.

Filed Feb. 22, 1996, Ser. No. 603,855
Int. Cl.[6] H02J *9/08*
U.S. Cl. 307—67 **20 Claims**



1. An uninterruptible power system, including:

a first connection for receiving utility AC power;

an uninterruptible power system (UPS) power conditioning unit connected to the first connection;

a critical load connection on the UPS power conditioning unit for providing conditioned AC power to a critical load;

a standby DC power connection on the UPS power conditioning unit;

a standby DC power source coupled to the standby DC power connection for providing standby DC power to drive the UPS power conditioning unit during interruptions in utility AC power;

a first variable speed drive in the standby DC power source with a first motor driven output;

a flywheel-motor generator in the standby power source for generating AC power;

the flywheel-motor generator having a motor drive input connected to the first motor drive output; and

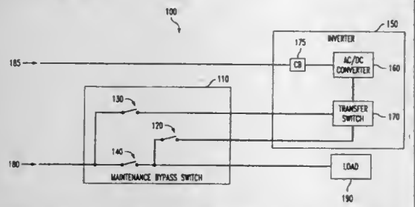
a rectifier connected to the flywheel motor-generator and to the standby power connection for producing the standby DC power by rectifying the AC power generated by the flywheel motor-generator.

5,646,459

INTEGRATED MAINTENANCE BYPASS SWITCH AND METHOD OF OPERATION THEREOF

Andrew K. Hatate, Dallas, and Franklin F. Makan, Rockwall, both of Tex., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Nov. 9, 1995, Ser. No. 556,445
Int. Cl.[6] H02J *1/00*
U.S. Cl. 307—85 **20 Claims**



1. In a backup power system capable of deriving power from alternate AC primary and DC backup power sources to provide continuous AC power to an AC load and including an inverter/switch module having DC and AC inputs and an AC output, a maintenance bypass switch for decoupling said AC primary and DC backup power sources from said backup power system to allow maintenance to be performed thereon, comprising:

a selector switch configured to function in alternate normal, standby bypass and maintenance bypass modes of operation, wherein:

in said normal mode, said selector switch couples said AC primary power source to said AC input of said inverter/switch module, said DC backup power source to said DC input of said inverter/switch module and said AC output of said inverter/switch module to said AC load,

in transitioning from said normal mode to said standby bypass mode, said selector switch decouples an inverter in said inverter/switch module from said DC backup power source when said AC primary power source is functioning,

in transitioning from said standby bypass mode to said maintenance bypass mode, said selector switch further couples said AC primary power source directly to said AC load, and

in said maintenance bypass mode, said selector switch decouples said AC primary power source from said AC input of said inverter/switch module, said DC backup power source from

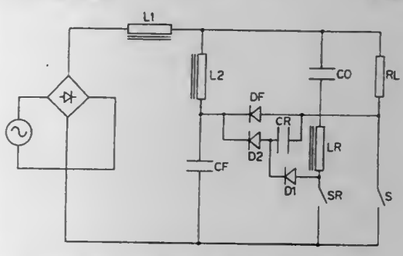
said DC input of said inverter/switch module and said AC output of said inverter/switch module to said AC load, said maintenance bypass switch providing said continuous AC power to said AC load throughout said transitioning.

5,646,460

DEVICE FOR CONTROLLING HEATING ELEMENT POWER

Cesare Bocchiola, Settimo Milanese; Paolo Tenti, Padua; Leopoldo Rossetto, Caltana, and Giorgio Spiazzi, Legnago, all of Italy, assignors to Whirlpool Europe B.V., Veldhoven, Netherlands

Filed Sep. 29, 1995, Ser. No. 536,226
Claims priority, application Italy, Sep. 30, 1994, M194A2006
Int. Cl.[6] H02J *3/00*
U.S. Cl. 307—109 **4 Claims**



1. A control device for heating elements, comprising:

a driven switch in series with the load;

a first capacitor acting as a filter in parallel with the load;

a second capacitor acting as a freewheeling capacitor operationally in series with a parallel circuit comprising the load and the first capacitor; and

at least one inductor means in series with the load, wherein:

a) the driven switch is a static switch hence able to assume an open state and a closed state;

b) a first inductor is provided in parallel with the load; and

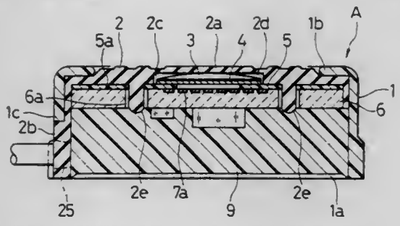
c) a freewheeling diode is connected between an intermediate point between the first inductor and the freewheeling capacitor and an intermediate point between the load and the static switch, so that when the static switch is in one state the freewheeling capacitor is charged via the freewheeling diode, the load and the at least one inductor means, whereas when in the other state the capacitor is discharged via the load, the first inductor and the static switch.

5,646,461

STOP SWITCH APPARATUS FOR AN ENGINE

Yosuke Kubota, Kokubunji, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Japan

Continuation of Ser. No. 114,063, Aug. 31, 1993, abandoned. This application Apr. 10, 1996, Ser. No. 629,457
Claims priority, application Japan, Sep. 21, 1992, 4-251578
Int. Cl.[6] H01H *35/00*
U.S. Cl. 307—116 **4 Claims**



1. A stop switch apparatus for an engine, comprising:
an insulating base plate;
a substrate laid on said insulating base plate;
an electrode printed on said substrate;
an insulating sheet laid on said substrate for covering said electrode;
an inside case laid on said insulating sheet and having a pressure-movable portion movable toward said electrode;
an outside case fixed to said insulating base plate for covering said inside case and said substrate;
a pressure sensitive member laid on said insulating sheet for contacting said electrode when said pressure-movable portion of said inside case is pushed;
a reversal member interposed between said pressure sensitive member and said inside case, said reversal member deforming when a predetermined force is applied thereto to contact said pressure sensitive member and move said pressure sensitive member toward said electrode; and
a stop switch circuit electrically connected to a source circuit including a switch, a thyristor and a resistor, said switch comprising said electrode and said pressure sensitive member, said thyristor being connected to said electrode and stopping said engine by grounding said source circuit when said thyristor receives a turn on signal, said resistor being directly connected to said source circuit and connected to said thyristor for providing a short circuit when said thyristor receives said turn on signal;
wherein said pressure sensitive member is an electrically conductive rubber and closes said stop switch circuit when moved into electrical contact with said electrode.

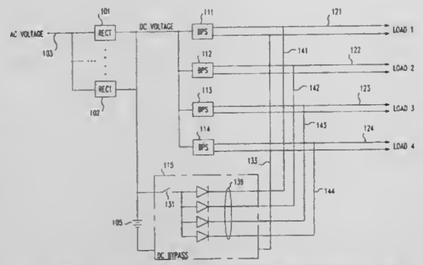
5,646,462

DC VOLTAGE BYPASS POWER SYSTEM ARCHITECTURE

Timothy M. Cortes, Richardson, Tex.; Robert John Kakalec, Madison, N.J., and Keith C. Schmid, Dallas, Tex., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Aug. 3, 1995, Ser. No. 510,833
Int. Cl.[6] H02M *1/084*
U.S. Cl. 307—127 **10 Claims**

1. A power plant system for providing redundant power through a co-axial cable connected to a DC/AC load; comprising:
a plurality of voltage polarity switching circuits for inverting an input DC voltage to a low frequency AC voltage to be delivered to the load;
each switching circuit being synchronized to other of the switching circuits, upon failure of a switching circuit or failure of synchronization between the switching circuits, each remaining operative switching circuit adapted to transmit a DC voltage to the load; and



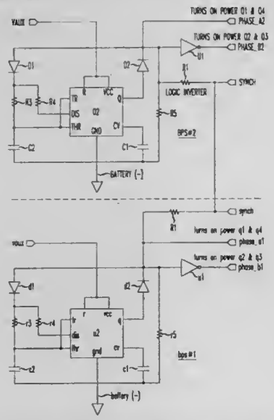
DC bypass circuitry for monitoring voltage outputs of the voltage switching circuits and including gating circuitry for applying a reserve DC voltage to individual outputs of each of the switching circuits, the reserve DC voltage being slightly less in magnitude than the primary DC voltage by at least the voltage drop of the gating circuit.

5,646,463

SYNCHRONIZATION CONTROL FOR INTERRELATED DC VOLTAGE/BATTERY POLARITY SWITCHING CIRCUITS

Yehoshua Mandelcorn, Dallas, Tex., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Aug. 4, 1995, Ser. No. 511,197
Int. Cl.[6] H02M *3/137*
U.S. Cl. 307—127 **20 Claims**



1. A synchronization control for providing a drive signal to a plurality of voltage/battery polarity switching circuits, each of the plurality of polarity switching circuits having at least one switch responsive to an occurrence of the drive signal, the synchronization control comprising:
a synchronization circuit, associated with corresponding each of the polarity switching circuits, including:
a two threshold relaxation oscillator having a voltage threshold responsive trigger input responding to place an output of the oscillator to a first state in response to a voltage below a first threshold voltage and a second state in response to a voltage above a second threshold voltage, the voltage threshold input detected across a voltage storage device coupled to the oscillator;
the output of the oscillator being connected to an OR-ing circuit with an output of another two-threshold relaxation oscillator of another synchronization circuit associated with another of the plurality of polarity switching circuits; and

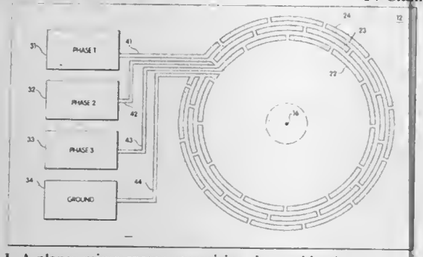
a synchronization interconnection between the synchronization circuit associated with the ones of the plurality of polarity switching circuits another synchronization circuit associated with another of the ones of the plurality of polarity switching circuits whereby one of synchronization circuits provides the drive signal to the plurality of polarity switching circuits.

5,646,464

PLANAR MICRO-MOTOR WITH BIFILAR MICRO-COILS

Edward N. Sickafus, Grosse Ile, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 43,956, Apr. 5, 1993, Pat. No. 5,412,265. This application Sep. 20, 1993, Ser. No. 123,180
Int. Cl.[6] H02K *7/00;1/22;1/12*
U.S. Cl. 310—40 MM **14 Claims**



1. A planar micro-motor comprising, in combination:
a substrate;
stator means, comprising circumferentially spaced bifilar micro-coils supported by the substrate and arrayed radially in a first plane, for receiving electrical current to generate electromagnetic fields; and
rotor means, comprising circumferentially spaced elongate radial members in a rotor body aligned over the bifilar micro-coils in a second plane parallel with the first plane, for rotation in the second plane in response to the electromagnetic fields generated by the bifilar micro-coils.

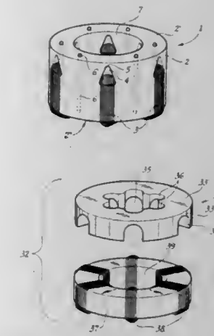
5,646,465

DRIVE FOR A SHAFTLESS SPINNING ROTOR OF AN OPEN-END SPINNING KMACHINE

Anton Paweletz, Stuttgart, Germany, assignor to SKF Textilmaschlen-Komponenten GmbH, Stuttgart, Germany

Filed Mar. 21, 1995, Ser. No. 407,770
Claims priority, application Germany, Mar. 30, 1994, 44 11 032.4
Int. Cl.[6] H02K *7/09*
U.S. Cl. 310—90.5 **14 Claims**

1. A stator of the type for use in a rotor assembly for an open-end spinning machine wherein the rotor assembly comprises an axial field motor having a rotor and a stator wherein the rotor defines an interior spinning chamber and an outward radial bearing face and the stator includes a radial bearing face disposed axially opposite the bearing face of the rotor, and means for producing a combined magnetic and gas bearing for supporting the rotor at a spacing relative to the stator defined by an intervening air gap, the bearing means including means for producing a first field of magnetic flux for orienting and maintaining a rotational axis of the rotor in a stationary disposition and means for producing a second field of magnetic flux for driving rotation of the rotor about the axis, wherein the stator is formed of an annular configuration and comprises a winding formed in segments arranged symmetrically about the axis of rotation of the rotor for generating the second field of magnetic flux for driving the rotor, the winding segments extending through channels that extend substantially radially with



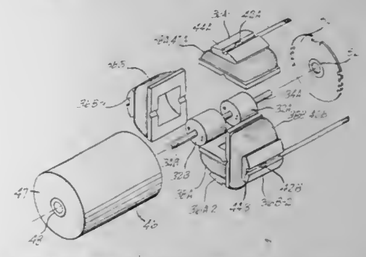
respect to the annular stator and are enclosed over at least a portion of their length by magnetically conductive material.

5,646,466

ACTUATING APPARATUS AND ACTUATOR

Takayoshi Noji, Omiya, and Sadayoshi Narusawa, Asahina-mura, both of Japan, assignors to Tamron Co., Ltd., Tokyo, and Nihon Mini Motor Co., Ltd., Saku, both of Japan

Filed Jul. 8, 1994, Ser. No. 272,212
Claims priority, application Japan, Jul. 9, 1993, 5-169958; Dec. 13, 1993, 5-311860
Int. Cl.[6] H02K *7/20;23/60*
U.S. Cl. 310—112 **2 Claims**



1. An actuating apparatus having an actuator including a rotor fixed on a rotating shaft and having magnetic poles at predetermined radial positions, a first driving coil and a second driving coil disposed to intersect with each other, a ferroelectric yoke encircling said rotor and said first and second driving coils, first rotation detecting means located between said rotor and said yoke and at a center of said second driving coil for detecting the rotating position of said rotor and outputting a sinusoidal wave signal different in phase substantially by 90 degrees from an output torque produced by said first driving coil, and second rotation detecting means located between said rotor and said yoke and at the center of said first driving coil for detecting the rotating position of said rotor and outputting a sinusoidal wave signal different in phase substantially by 90 degrees from an output torque produced by said second driving coil; and a driving circuit for driving said actuator in response to first and second external inputs, said driving circuit comprising:
first differential amplifying means for outputting a difference between an output of said first rotation detecting means and said first external input;
first power amplifying means for power-amplifying an output of said first differential amplifying means and applying it to said first driving coil;
second differential amplifying means for outputting a difference between an output of said second rotation detecting means and said second external input; and

second power amplifying means for power-amplifying an output of said second differential amplifying means and applying it to said second driving coil.

5,646,467

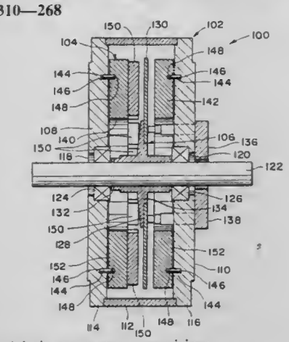
AXIAL AIRGAP DC MOTOR

John G. Floresta, Commack, and Darius T. Bobelis, Lindenhurst, both of N.Y., assignors to Kollmorgen Corporation, Waltham, Mass.

Continuation of Ser. No. 228,618, Apr. 15, 1994, abandoned. This application Jan. 24, 1996, Ser. No. 590,958

Int. Cl.[6] H02K *1/22;21/26;23/04*

U.S. Cl. 310—268 **21 Claims**



1. An axial air gap motor, comprising:

a housing establishing external dimensions for the motor and having a pair of spaced apart endplates with a space therebetween;

a stator assembly mounted within said housing;

a rotor assembly rotatably mounted within said housing, said rotor assembly including an annular disc shaped armature located in an axial air gap;

said stator assembly including a magnet assembly with axial dimensions secured between said endplates, a pair of flux return plates with axial dimensions which together with said magnet assembly substantially fill the axial space between said endplates to provide said air gap and for directing a magnetic field across said air gap in a direction normal to a plane of said armature, the flux return plates providing the magnetic flux return path between adjacent magnetic poles; and

wherein said stator assembly further includes means for adjusting performance characteristics of said axial air gap motor without changing the external dimensions of said housing; and wherein said means for adjusting performance characteristics comprises shims positioned between said endplates and said flux return plates to alter said air gap.

5,646,468

DIAMOND-LITAO$_3$ SURFACE ACOUSTIC WAVE DEVICE

Hideaki Nakahata; Kenjiro Higaki; Satoshi Fujii; Akihiro Hachigo, and Shin-ichi Shikata, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Japan

Continuation of Ser. No. 465,278, Jun. 5, 1995, abandoned. This application Jun. 7, 1996, Ser. No. 660,902

Claims priority, application Japan, Jun. 16, 1994, 6-134515; Sep. 2, 1994, 6-210105

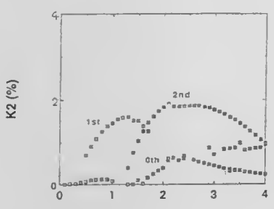
Int. Cl.[6] H03H *9/00;* **H01L** *41/08*

U.S. Cl. 310—313 A **8 Claims**

1. A surface acoustic wave device for 1st mode surface acoustic wave of a wavelength λ(μm) comprising:

a diamond layer,

an interdigital transducer formed onto the diamond layer, and



a polycrystalline C-axis-oriented $LiTaO_3$ layer formed over the interdigital transducer;

said surface acoustic wave device satisfying

a relationship of $0.4 \leqq kh_1 \leqq 1.0$, where the parameter kh_1 is defined as $kh_1=2\pi(t_1/\lambda)$, and t_1 (μm) is the thickness of the $LiTaO_3$ layer, and

a relationship of $1 \leqq kh_2$, where the parameter kh_2 is defined as $kh_2=2\pi(t_2/\lambda)$ and t_2 (μm) is the thickness of the diamond layer;

the surface acoustic wave propagation velocity V of said surface acoustic wave device being in the range of from 8,000 m/sec. to 12,000 m/sec.; and

the effective coupling coefficient K^2 of said surface acoustic wave device being in the range of from 2.2% to 3.6%.

5,646,469

VIBRATION DRIVEN MOTOR INCLUDING A VIBRATION MEMBER HAVING AN ELASTIC CONTACT PORTION AND A CONTACT MEMBER HAVING AN ELASTIC CONTACT PORTION

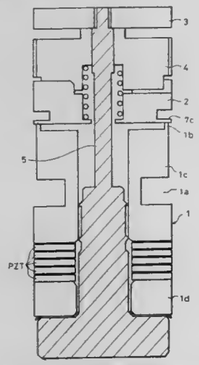
Takayuki Tsukimoto, Fujisawa; Shinichi Koreeda; Nobuyuki Kojima, both of Kawasaki, and Mitsuo Nishimura, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 155,860, Nov. 23, 1993, abandoned. This application Sep. 27, 1995, Ser. No. 534,294

Claims priority, application Japan, Dec. 3, 1992, 4-324236

Int. Cl.[6] H02N *2/10*

U.S. Cl. 310—323 **14 Claims**



1. A vibration driven motor comprising:

a vibration member for generating a vibration therein as a driving force, the vibration member including a body and a contact spring portion extending from the body of said vibration member and cantilevered in cross-section to provide a spring characteristic relative to the body of said vibration member, said contact spring portion of said vibration member being elastically deformable in a first direction; and

a contact member in press contact with said vibration member, said contact member including a body and a contact spring portion extending from the body of said contact member and cantilevered in cross-section to provide a spring characteristic relative to the body of said contact member, the contact spring portion of said contact member being in contact with the contact spring portion of said vibration member, said contact spring portion of said contact member being elastically deformable in a second direction different from the first direction, such that said vibration generated in the vibration member creates relative movement between the vibration member and the contact member.

5,646,470

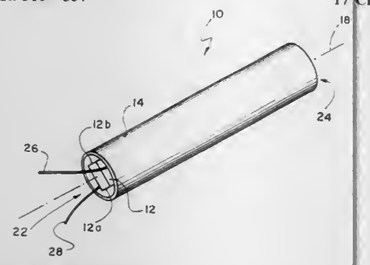
ACOUSTIC TRANSDUCER

Thomas J. de Groot, Fairhaven, Mass., assignor to Benthos, Inc., North Falmouth, Mass.

Continuation of Ser. No. 221,757, Apr. 1, 1994, abandoned. This application Nov. 22, 1994, Ser. No. 343,729

Int. Cl.[6] H01L *41/08*

U.S. Cl. 310—337 **17 Claims**



1. A transducer comprising

an elongated chamber having at least one open end to allow fluid to flow into the chamber,

a piezoelectric sensor mounted inside the chamber, the sensor having faces defined by edges, and

wicking material inside the chamber between the sensor and the chamber, for wicking fluid into the chamber.

5,646,471

CAPPED HIGH-PRESSURE DISCHARGE LAMP

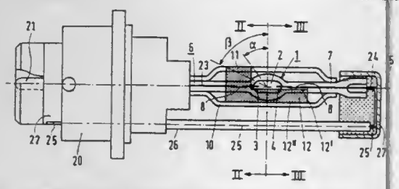
Klaus Schöller, Nideggen, and Helmut Tiesler-Wittig, Köln, both of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 9, 1995, Ser. No. 437,749

Claims priority, application European Pat. Off., May 10, 1994, 94201318

Int. Cl.[6] H01J *61/35*

U.S. Cl. 313—25 **10 Claims**



1. A capped high-pressure discharge lamp comprising:

a light-transmitting lamp vessel which is closed in a vacuumtight manner and which encloses a discharge space with an ionizable filling, wherein electrodes are arranged in mutual opposition so as to define a discharge path between them, which lamp vessel has an axis and a first and a second neck-shaped portion with a seal;

a glass tubular outer envelope around the discharge space, surrounding the discharge vessel with clearance, which envelope is connected to the lamp vessel and is filled with gas;

a lamp cap which is provided with contacts and in which the first neck-shaped portion is secured;

a first and a second current conductor, each connected to a respective electrode and extending through the respective first and second neck-shaped portion respectively to a respective contact at the lamp cap, the second current conductor having a return portion which extends along an outside of the outer envelope,

characterized in that the outer envelope has a light-absorbing coating in a zone situated near the first neck-shaped portion at the side thereof facing away from the return portion of the second current conductor, which zone extends least from a location enclosing an angle α of about 50° with the perpendicular to the outer envelope at the area of the centre between the electrodes, at least up to a location which encloses an angle β of approximately 65° with said perpendicular, the vertex points of α and β lying on the axis of the lamp vessel.

5,646,472

METAL HALIDE LAMP

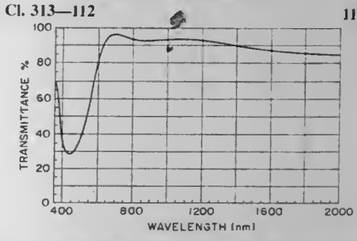
Souichirou Horikoshi, Gyouda, Japan, assignor to Iwasaki Electric Co., Ltd., Tokyo, Japan

Filed May 12, 1995, Ser. No. 439,940

Claims priority, application Japan, May 12, 1994, 6-122037; May 24, 1994, 6-132408

Int. Cl.[6] H01J *61/40;61/82*

U.S. Cl. 313—112 **11 Claims**



1. A metal halide lamp comprising an arc tube filled with metal halide, mercury and inert gas, electrodes at the opposite ends of said arc tube and a glass housing of housing said arc tube, wherein a selective transmission coating which transmits irradiation light of longer wavelengths generated between said electrodes and reflects the irradiation light of shorter wavelengths is applied to the outer surface of said arc tube,

wherein said selective transmittance coating is made of metal oxide and a multilayer optical interference coating having two or more layers, and has the spectral transmittance characteristics that the transmittance curve of said selective transmittance coating has one valley hollow like a downward-convex parabola shape having a minimum light transmittance of higher than 15% but lower than 40 % in the wavelength range of 400 to 500 nm, and that said selective transmittance coating has a light transmittance of 90 % or higher in the wavelength range of 700 to 900 nm, and that said selective transmittance coating has a light transmittance of a positive gradient slope in the wavelength range of 500 to 700 nm so that a color temperature of light radiated to the outside of the lamp is in the range of 3000 to 4000 K.

5,646,473

ELECTRIC REFLECTOR LAMP

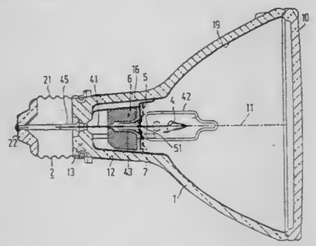
Hendrik J. Eggink, and Winand H. A. M. Friederichs, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 21, 1995, Ser. No. 517,048

Claims priority, application European Pat. Off., Aug. 26, 1994, 94202466

Int. Cl.[6] H01J 7/24

U.S. Cl. 313—113 8 Claims



1. An electric reflector lamp comprising:

a hollow molded reflector body with an optical axis and a neck surrounding said optical axis;

a lamp cap provided with contacts and connected to the neck;

a light source which is arranged in the reflector body, is electrically connected to the contacts of the lamp cap by means of current conductors, and is accommodated in a lamp vessel having a seal;

a metal mounting member in the neck which holds the lamp vessel and through which said seal of the lamp vessel is passed,

characterized in that: a ceramic body surrounding said seal of the lamp vessel is present in the neck, such that a substantial portion of said ceramic body is narrowly spaced from said seal.

5,646,474

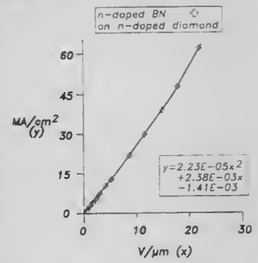
BORON NITRIDE COLD CATHODE

Roger W. Pryor, Bloomfield Hills, Mich., assignor to Wayne State University, Detroit, Mich.

Filed Mar. 27, 1995, Ser. No. 411,249

Int. Cl.[6] H01J 19/24;1/05

U.S. Cl. 313—310 7 Claims



1. A cathode-containing device in which a cathode emits electrons, comprising:

a body defining a vacuum space;

a cathode formed of boron nitride, said boron nitride being doped n-type; and

an electrode associated with said boron nitride cathode,

wherein a surface of said boron nitride cathode contacts said vacuum such that electrons are emitted from said boron nitride cathode into said vacuum space.

5,646,475

Patent Not Issued For This Number

5,646,476

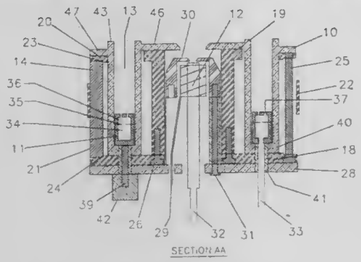
CHANNEL ION SOURCE

Graeme Aston, Monument, Colo., assignor to Electric Propulsion Laboratory, Inc., Monument, Colo.

Filed Dec. 30, 1994, Ser. No. 367,014

Int. Cl.[6] H05H 1/02; F03H 5/00

U.S. Cl. 313—359.1 20 Claims



1. An ion source comprising:

means for introducing a gas, ionizable to produce a plasma, into a closed figure channel within the ion source;

means within the ion source for establishing, within the closed figure channel, a magnetic field that is predominantly transverse to the axial orientation of the closed figure channel, said means for establishing a magnetic field comprising a permanent magnet circuit, the permanent magnet circuit including one or more permanent magnets comprising a selected one of rods, bars, sectors, and thin rings, the one or more permanent magnets being magnetized in a longitudinal direction and being aligned external to the outer boundary of the closed figure channel, the one or more permanent magnets being magnetized along an axial direction thereof, and the location of the one or more permanent magnets being a selected one of around the outer boundary of the closed figure channel, around the inner boundary of the closed figure channel, and both around the outer boundary of the closed figure channel and around the inner boundary of the closed figure channel, the one or more permanent magnets being positioned within a ferromagnetic material to shape and control a distribution of strength of the magnetic field produced thereby, the ferromagnetic material exhibiting a relative permeability of at least two orders of magnitude greater than unity;

means for orienting the magnetic field to present a first common magnetic pole outside an outer boundary of the closed figure channel and a second common magnetic pole inside an inner boundary of the closed figure channel, both common magnetic poles being located at an open end of the closed figure channel, and both common magnetic poles being of opposite polarity;

means for concentrating the magnetic field at an exit of the closed figure channel;

a hollow cathode and a keeper electrode disposed within the ion source and within an inner boundary of the closed figure channel proximate an open end of the closed figure channel;

means for introducing a gas, ionizable to produce a plasma, into the hollow cathode;

means for establishing a potential difference between the hollow cathode and the keeper electrode to produce a plasma discharge between the hollow cathode and the keeper electrode;

means for impressing a potential difference between the hollow cathode and an anode located at a closed end of the closed figure channel to produce electrons flowing from the hollow cathode and the keeper electrode plasma discharge in a generally 180 degree path to the anode in bombardment of the gas to create a plasma discharge in the closed figure channel; and

means for allowing electrons from the hollow cathode and the keeper electrode plasma discharge to flow into an ion beam emanating from the closed figure channel to thereby space-charge neutralize the ion beam.

5,646,477

X-RAY IMAGE INTENSIFIER

Shirofumi Yamagishi, Ohtawara, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

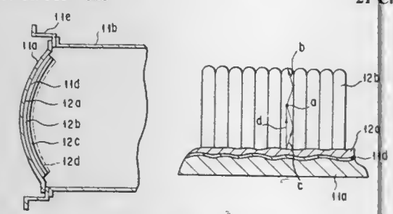
Continuation of Ser. No. 335,777, Nov. 16, 1994, abandoned.

This application Oct. 4, 1996, Ser. No. 725,502

Claims priority, application Japan, Mar. 17, 1993, 5-056270

Int. Cl.[6] H01J 31/26

U.S. Cl. 313—365 21 Claims



1. An X-ray image intensifier comprising:

a vacuum envelope comprising:

an X-ray input window, said input window being formed of metal or alloy and having an outer surface and an inner surface, and

a rough surface-hardened layer formed on said inner surface; and

an input screen having an entrance surface formed in direct contact with said rough surface-hardened layer and having a phosphor layer.

5,646,478

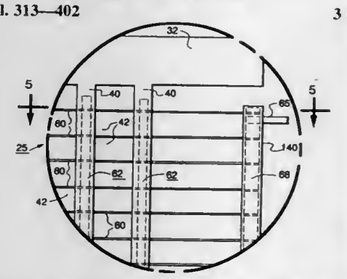
UNIAXIAL TENSION FOCUS MASK FOR A COLOR CRT WITH ELECTRICAL CONNECTION MEANS

Richard William Nosker, Princeton, and Joey John Michalchuk, Lambertville, both of N.J., assignors to Thomson Multimedia, S. A., Boulogne Cedex, France

Filed Jul. 26, 1995, Ser. No. 509,319

Int. Cl.[6] H01J 29/80

U.S. Cl. 313—402 3 Claims



1. In a color cathode-ray tube comprising an evacuated envelope having therein an electron gun for generating at least one electron beam, a faceplate panel having a luminescent screen with phosphor lines on an interior surface thereof, and a uniaxial tension focus mask, wherein the improvement comprising

said uniaxial tension focus mask having a plurality of spaced-apart first metal strands which are adjacent to an effective picture area of said screen and define a plurality of slots substantially parallel to said phosphor lines, said first metal strands being formed from a thin metal sheet having imperforate top and bottom portions, said right and left first metal end strands each having top and bottom ends separated from said top and bottom portions of said metal sheet by gaps to electrically isolate said right and left first metal end strands; and

a plurality of second metal strands oriented substantially perpendicular to said first metal strands and insulated therefrom across said effective picture area, said second metal strands being attached by a glass conductor layer to said right and left first metal end strands outside of said effective picture area to form busbars.

5,646,479

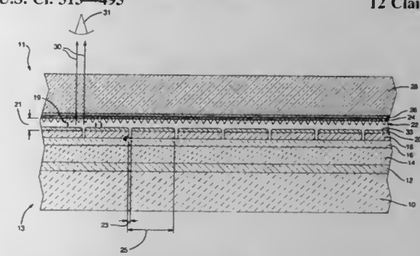
EMISSIVE DISPLAY INCLUDING FIELD EMITTERS ON A TRANSPARENT SUBSTRATE

John Richard Troxell, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 20, 1995, Ser. No. 546,211

Int. Cl.[6] H01J 1/30

U.S. Cl. 313—495 12 Claims



1. An emissive display comprising:

a first substrate including a plurality of controllable anodes;

a layer of phosphor on each of the controllable anodes, wherein each phosphor emits light when the anode on which the phosphor is located is activated and electrons bombard the phosphor;

a second substrate comprising a light transmissive lens having a display area through which a display is viewed, first and second electrically conductive layers and an insulating layer, wherein the first and second electrically conductive layers and the insulating layer are light transmissive, wherein the insulating layer is between the first and second electrically conductive layers and wherein the first and second electrically conductive layers and the insulating layer are on a side of the lens facing the controllable anodes and phosphor layers, wherein the second electrically conductive layer is located closer to the first substrate than the first electrically conductive layer and comprises a first plurality of holes corresponding to a second plurality of holes in the insulating layer;

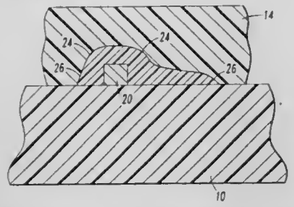
a plurality of opaque field emitter cones mounted to the first electrically conductive layer in the first and second plurality of holes, emitting electrons to selectively bombard the phosphors layers, wherein the plurality of opaque field emitter cones covers less than ten percent of the display area of the second substrate, wherein the emitted electrons travel through a space between the second electrically conductive layer and the phosphor layer, wherein light emitted from the phosphor layer travels back through said space and through the second substrate to be viewed by a viewer of the display.

5,646,480

METAL ASSIST STRUCTURE FOR AN ELECTROLUMINESCENT DISPLAY

Roger Carroll, Willimantic; Timothy Eschrich, Manchester, and William Tanski, Glastonbury, all of Conn., assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Jun. 19, 1995, Ser. No. 491,652
Int. Cl.[6] H05B *33/26*
U.S. Cl. 313—503 6 Claims



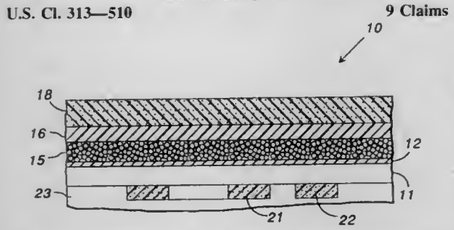
1. An electroluminescent display panel comprising:
a. a glass substrate;
b. a plurality of parallel metal assist structures deposited on the glass substrate;
c. a plurality of parallel transparent electrodes deposited over and aligned with the plurality of parallel metal assist structures such that each parallel metal assist structure is surrounded by a transparent electrode and each transparent electrode has a surface over which a first dielectric layer can be deposited, which surface has no sharp corners;
d. a first dielectric layer deposited on the surface of each of the plurality of parallel transparent electrodes;
e. a layer of phosphor material deposited on the first dielectric layer;
f. a second dielectric layer deposited on the layer of phosphor material; and
g. a plurality of metal electrodes deposited over the second dielectric layer.

5,646,481

EL LAMP WITH COLOR MATCHING OR HIDDEN GRAPHIC

Charles I. Zovko, 2105 N. Salida del Sol, Chandler, Ariz. 85224

Filed Nov. 3, 1995, Ser. No. 552,809
Int. Cl.[6] H01J *1/62*
U.S. Cl. 313—510 9 Claims



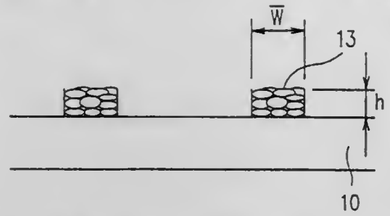
1. An electroluminescent lamp displaying a graphic when lit and hiding said graphic when not lit, said lamp comprising:
a transparent substrate;
a transparent front electrode overlying said substrate;
an electroluminescent layer overlying said front electrode;
an insulating layer overlying said electroluminescent layer;
a rear electrode overlying said insulating layer;
a first opaque graphic on said substrate; wherein
the color of said first opaque graphic is the same as the color of said electroluminescent layer as seen through said transparent electrode and said transparent substrate when said electroluminescent layer is not luminous; and
said first opaque graphic is visible when said lamp is lit but is not visible when said lamp is not lit.

5,646,482

ADC GAS DISCHARGE IMAGE DISPLAY DEVICE HAVING CATHODE MATERIAL DIMENSIONAL CONSTRAINTS

Shigeo Suzuki, Hirakata; Hidenobu Shintaku, Neyagawa; Taku Watanabe, Moriguchi; Mitsuo Asabe, Hirakata; Kazuo Takahashi, Takatsuki; Yoshiro Abe, Takatsuki; Hiroki Kono, Takatsuki, and Kazunori Hirao, Yao, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed May 30, 1995, Ser. No. 454,540
Int. Cl.[6] H01J *17/49;1/14;19/06;17/06*
U.S. Cl. 313—582 13 Claims



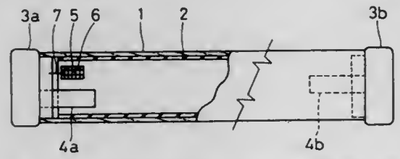
1. A DC gas discharge type image display apparatus comprising:
a front glass substrate;
a rear glass substrate facing the front glass substrate, interposing a discharge gas therebetween;
a set of anodes including a plurality of line electrodes formed on the rear glass substrate;
a set of cathodes including a plurality of line electrodes placed on the front glass substrate so as to perpendicularly cross the set of anodes; and
a plurality of discharge cells, each being provided so as to correspond to each of cross points of the set of anodes and the set of cathodes,
wherein the line electrodes included in the set of cathodes are formed by a spraying method for spraying particles of a predetermined cathode material from a spraying device toward a glass substrate,
wherein the cathode material is selected so that an average diameter d of a primary particle supplied to the spraying device is set in a range, upper limit thereof being a smaller value of h/2 and W/9 and lower limit thereof being 10 μm, where each of the line electrodes included in the set of cathodes has a width W and a thickness h.

5,646,483

DISCHARGE LAMP HAVING CESIUM COMPOUND

Minoru Myojo, Takatsuki; Haruo Yamazaki, Moriyama, and Toshiyuki Namura, Takatsuki, all of Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Filed May 30, 1995, Ser. No. 452,488
Int. Cl.[6] H01J *17/30;17/46;61/54*
U.S. Cl. 313—595 15 Claims



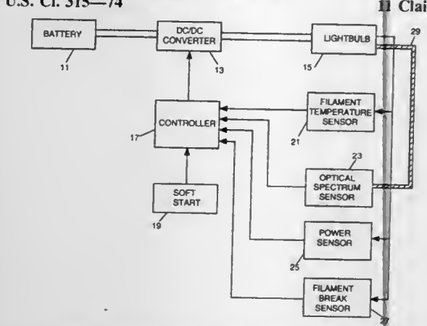
1. A cold cathode mercury discharge lamp comprising a bulb, a discharge gas in a discharge space inside the bulb at a pressure of 10 to 20000 Pa, a pair of electrodes disposed inside the bulb for providing electric power to the discharge space, wherein cesium oxide which emits electrons into the discharge space at lamp ignition in dark ambience is disposed inside the bulb and positioned so as not to contact the electrodes.

5,646,484

HIGH RELIABILITY INCANDESCENT PORTABLE ILLUMINATION SYSTEM

Madan Sharma, Palos Verdes; Ronald M. Schmidt, Burbank, and Alfred T. Schmidt, North Hollywood, all of Calif., assignors to Litebeams, Inc., Burbank, Calif.

Continuation of Ser. No. 333,221, Nov. 2, 1994, abandoned.
This application Oct. 23, 1995, Ser. No. 547,021
Int. Cl.[6] H01J *7/44*
U.S. Cl. 315—74 11 Claims



1. A system for controlling power from a low voltage power source supplied to a high voltage incandescent light source having a dispersive light isotropic radiation pattern, said system comprising:
a) a low voltage power source;
b) converter means coupled to said low voltage power source for producing a high voltage power source;
c) said high voltage incandescent light source having a filament coupled to said converter means;
d) controller means coupled to said converter means for generating a pulse width modulated pulse stream at a frequency which results in an optimum power being supplied to said light source as determined by said light source notwithstanding changes in power output by said low voltage power source and changes in the light output by said incandescent light source resulting from aging of said filament;
e) soft start circuit means coupled to said controller means and generating a signal for preventing an in rush current being supplied to said light source during turn-on;
f) filament sensor means coupled to said controller means for measuring relative temperature of said filament, relative power supplied to said filament and determining if said filament is about to break and generating a set of signals which are used by said controller means to modify the pulse stream output to said converter means;
g) optical spectrum sensor means coupled to said controller means for evaluating the spectral contents of the output of said incandescent light source and generating a signal which is used by said controller means to modify the pulse stream output to said converter means.

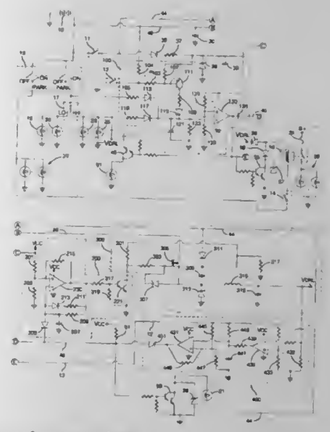
5,646,485

MOTOR VEHICLE DAYTIME RUNNING LIGHT SYSTEM HAVING BUCK SWITCH MODE CONVERTER

John David Simon, Darlington, Pa.; Michael Joseph Dreon, Utica, Mich.; William Lee Small, Cortland, Ohio; Pierre Youssef Abboud, Tucson, Ariz., and Brian Douglas Pasha, Cortland, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 14, 1995, Ser. No. 572,539
Int. Cl.[6] B60Q *1/02*
U.S. Cl. 315—82 8 Claims

8. A motor vehicle daytime running light system for operating a pair of headlamps at reduced intensity from normal headlamp operation, comprising:



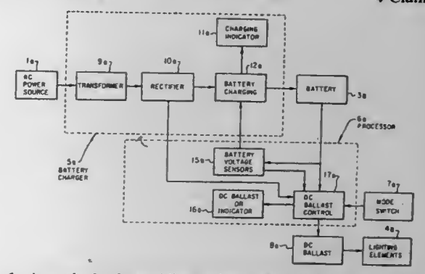
a source of system voltage;
an ignition switch selectively operable between closed and open positions;
a pair of headlamps operable at full intensity when connected to system voltage;
a buck switch-mode converter circuit having an output connected to the pair of headlamps and operable when enabled for producing a daytime running light voltage at the output thereof which is less than the system voltage; and,
daytime running light enabling circuit having a head light switch position input, and a park brake switch position input, said daytime running light enabling circuit effective to enable the buck switch-mode converter circuit when the headlight switch position input indicates that normal head light operation is not selected and the park brake switch position indicates that vehicle mobility is not impeded.

5,646,486

FAIL-SAFE UNINTERRUPTIBLE LIGHTING SYSTEM

M. Larry Edwards, 2616 2nd St., Woodward, Okla. 73801, and W. Joe Watson, 3005 Broken Bow Rd., Edmond, Okla. 73013

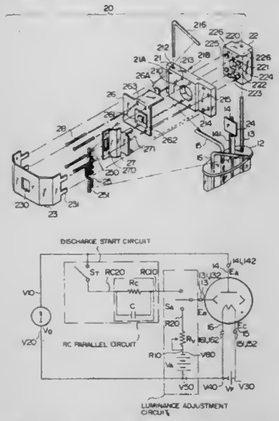
Division of Ser. No. 260,487, Jun. 15, 1994, Pat. No. 5,471,114, which is a continuation of Ser. No. 63,359, May 17, 1993, abandoned, which is a continuation of Ser. No. 792,025, Nov. 13, 1991, abandoned, which is a continuation-in-part of Ser. No. 629,256, Dec. 18, 1990, abandoned. This application Jun. 6, 1995, Ser. No. 476,673
Int. Cl.[6] H05B *37/02*
U.S. Cl. 315—86 4 Claims



1. A method of providing uninterrupted lighting comprising steps of:
(a) providing a plurality of lighting elements;
(b) providing a source of alternating current commercial power;

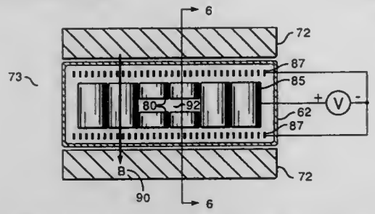
(c) providing a battery of capacity selected to power said plurality of lighting elements during a predetermined interval of time;
(d) providing circuits for changing alternating current from said commercial power to direct current for application to said lighting elements and said battery;
(e) applying said direct current to said lighting elements from both said battery and said commercial power concurrently when said direct current is available from said commercial power;
(f) applying direct current from said battery to said lighting elements when said direct current is not available from said commercial power;
(g) controlling said circuits in a first mode to normally energize said lighting elements from both said battery and said source of commercial power to provide continuing uninterrupted and unswitched power to said lighting elements from said battery when said source of commercial power is disabled;
(h) controlling said circuits in a second mode to disconnect said lighting elements from said source of commercial power and said battery to de-energize said lighting elements and, when said source of commercial power is disabled, to automatically and fully energize said lighting elements from said battery; and
(i) controlling said circuits in a third mode to override said first and second modes to energize said lighting elements irrespective of the condition of said source of commercial power.

5,646,487
LIGHTING DEVICE FOR GAS DISCHARGE TUBE WITH INSULATED DISCHARGE SHIELDING MEMBER
Tomoyuki Ikedo; Yoshinobu Ito, and Ryotaro Matui, all of Hamamatsu, Japan, assignors to Hamamatsu Photonics K.K., Hamamatsu, Japan
Filed Jul. 13, 1995, Ser. No. 502,011
Claims priority, application Japan, Aug. 31, 1994, 6-207714
Int. Cl.[6] H01J *17/02*
U.S. Cl. 315—94 **19 Claims**



13. A lighting device for a gas discharge tube having at least an envelope for sealing a gas therein, lead pins introduced into an inner space of said envelope from external of said envelope, and a light-emitting section in said envelope, positioned at distal ends of said lead pins and supported by said lead pins while spaced from an inner side wall of said envelope, said light-emitting section including a hot cathode for emitting thermoelectrons, an anode for receiving the thermoelectrons, a focusing electrode for converging paths of the thermoelectrons, and a window for outputting light caused by discharge between said hot cathode and said anode, said lighting device comprising:
an anode terminal adapted to be electrically connected to the anode of the gas discharge tube;
a focusing electrode terminal adapted to be electrically connected to the focusing electrode of the gas discharge tube;
a first and a second cathode terminals adapted to be electrically connected to both ends of the hot cathode of the gas discharge tube;
an electric field generating voltage source for generating an electric field from the anode to the hot cathode of the gas discharge tube, disposed between said anode terminal and said first and second cathode terminals, having a first terminal being connected to said anode terminal and a second terminal being connected to said first and second cathode terminals; and
a luminance adjustment circuit for adjusting a potential to be supplied to the focusing electrode of the gas discharge tube, disposed between said focusing electrode terminal and said first and second cathode terminals, said luminance including:
a luminance adjustment voltage source having a first terminal being connected to said first and second cathode terminals and a second terminal;
a variable resistor having a first terminal being connected to said second terminal of said luminance adjustment voltage source and a second terminal to be connected to said focusing electrode terminal through a luminance adjustment switch.

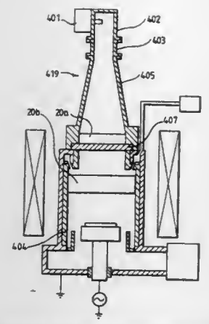
5,646,488
DIFFERENTIAL PUMPING STAGE WITH LINE OF SIGHT PUMPING MECHANISM
William K. Warburton, 1300 Mills St., Menlo Park, Calif. 94025
Filed Oct. 11, 1995, Ser. No. 540,806
Int. Cl.[6] H01J *7/24*
U.S. Cl. 315—111.81 **13 Claims**



1. A method which provides a line of sight path for photons to pass freely between two vacuum regions while pumping vapor species which attempt to travel between the two regions along the line of sight path, the method comprising the steps of:
ionizing the vapor species attempting to move along the line of sight path; and
removing the vapor species, so ionized, from the line of sight path by the use of electric and/or magnetic fields.

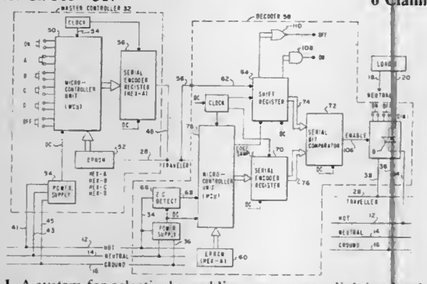
5,646,489
PLASMA GENERATOR WITH MODE RESTRICTING MEANS
Yutaka Kakehi, Hikari; Yoshinao Kawasaki, Kumage-gun; Keizo Suzuki, Kodaira; Kazuo Nojiri, Higashimurayama; Hiromichi Enami, Tachikawa; Tetsunori Kaji, Tokuyama; Seiichi Watanabe, and Yoshifumi Ogawa, both of Kudamatsu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Continuation of Ser. No. 10,051, Jan. 28, 1993, Pat. No. 5,433,789. This application May 2, 1995, Ser. No. 432,861
Claims priority, application Japan, Jan. 30, 1992, 4-14729; Jul. 20, 1992, 4-191878
Int. Cl.[6] H05H *1/46*
U.S. Cl. 315—111.21 **46 Claims**

1. A plasma generating apparatus comprising:
a microwave generator for generating microwaves;



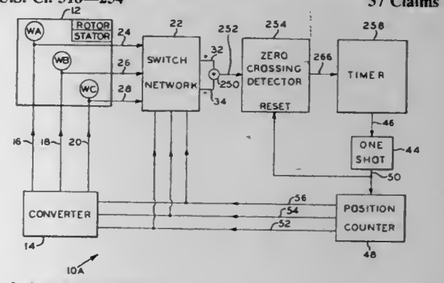
a processing chamber having a plasma-forming region therein;
a waveguide coupled to the microwave generator and the processing chamber for enabling microwaves to propagate from the microwave generator to the processing chamber, the microwaves propagating in a plurality of propagation modes in at least one portion of the waveguide, the waveguide and the processing chamber constituting a microwave propagating assembly; and
mode restricting means coupled to the microwave propagating assembly for restricting a number of propagation modes of microwaves arriving at the plasma-forming region to at least one predetermined propagation mode selected from the plurality of propagation modes, the at least one predetermined propagation mode being fewer in number than the plurality of propagation modes;
wherein microwaves emerge from an outlet of the mode restricting means in a desired propagation state having the at least one predetermined propagation mode and propagate from the outlet of the mode restricting means to at least the plasma-forming region of the processing chamber in the desired propagation state in only the at least one predetermined propagation mode without any change in propagation state and propagation mode occurring.

5,646,490
PHASE INDEPENDENT SIGNALING FOR MULTIPLE CHANNEL, MULTIPLE SCENE DIMMING SYSTEM
Steven R. Carson, Lucas, and Robert Anthony Floyd, Garland, both of Tex., assignors to The Genlyte Group Incorporated, Secaucus, N.J.
Filed Apr. 28, 1995, Ser. No. 431,689
Int. Cl.[6] H05B *37/02*
U.S. Cl. 315—317 **6 Claims**



1. A system for selectively enabling one or more lighting levels of a dimmer group regardless of differing line phase comprising, in combination:
signal means for generating a unique and predetermined analog data signal corresponding to a predetermined lighting level (scene);
receiver means for translating said analog data signal into a binary data signal and comparing said binary data signal with a predetermined binary number;
means for detecting a bit-by-bit match between the binary data signal and the predetermined binary number; and
means coupled to the comparator for producing an enable signal in response to a bit-by-bit match between the binary data signal and the predetermined binary number.

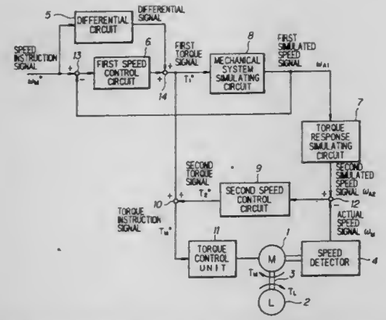
5,646,491
ELECTRICAL MOTOR WITH A DIFFERENTIAL PHASE BACK EMF SENSING CIRCUIT FOR SENSING ROTOR POSITION
David M. Erdman, and James A. Beatty, both of Fort Wayne, Ind., assignors to General Electric Company, Fort Wayne, Ind.
Filed May 11, 1995, Ser. No. 439,580
Int. Cl.[6] H02P *7/00*
U.S. Cl. 318—254 **37 Claims**



1. A motor comprising:
a stationary assembly and a rotatable assembly in magnetic coupling relation thereto, said stationary assembly including three windings, the rotation of said rotatable assembly inducing a back EMF in said windings;
a control circuit, for coupling to a power supply, for energizing each of the windings with a current according to a preselected sequence;
a switch network coupled to the each of the windings for providing two back EMF signals as a function of the back EMF induced in the remaining two of the windings when the control circuit is energizing said each winding; and
a signal processor coupled to the switch network for producing a difference signal corresponding to each of the windings, each of the difference signals representative of a difference between the remaining two back EMF signals, the control circuit being responsive to the signal processor for energizing each of the windings according to the preselected sequence as a function of its corresponding difference signal.

5,646,492
ELECTRIC MOTOR CONTROLLER HAVING INDEPENDENT RESPONSES TO INSTRUCTIONS AND EXTERNAL DISTURBANCES
Tetsuaki Nagano, and Seisuke Tsutsumi, both of Nagoya, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 4, 1995, Ser. No. 539,089
Claims priority, application Japan, Oct. 5, 1994, 6-241704
Int. Cl.[6] H02P *7/00*
U.S. Cl. 318—432 **19 Claims**

1. A controller for an electric motor comprising:
an electric motor for driving a load machine via a torque transfer mechanism;
a speed detecting means for detecting a rotational speed of said electric motor and outputting an actual speed signal;



a response simulating means for simulating a transmittance from an input of a torque control unit to a speed of said electric motor and outputting a simulated speed signal according to a first torque signal;

a differential means for differentiating a speed instruction signal and outputting a differential signal;

a first speed control means for outputting a signal according to said speed instruction signal and a simulated speed signal from said response simulating means;

a first adding means for summing a differential signal from said differential means and an output signal from said first speed control means and outputting a first torque signal;

a second speed control means for outputting a second torque signal according to a simulated speed signal from said response simulating means and an actual speed signal from said speed detecting means;

a second adding means for summing a first torque signal from said first adding means and a second torque signal from said second speed control means and outputting a torque instruction signal; and

a torque control unit for controlling a torque of said electric motor according to a torque signal from said adding means.

5,646,493

ROBGT PROFILE CONTROL METHOD

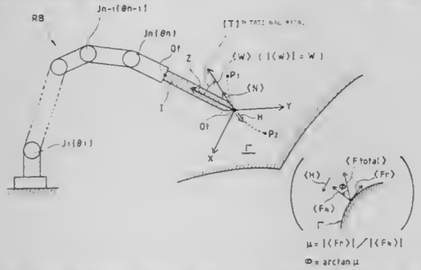
Ryuichi Hara, Fujiyoshida, and Ichiro Kanno, Oshino-mura, both of Japan, assignors to Fanuc Ltd., Yamanashi, Japan

Filed May 22, 1995, Ser. No. 446,299

Claims priority, application Japan, May 20, 1994, 6-129866

Int. Cl.[6] B25J *9/10*

U.S. Cl. 318—568.17 **6 Claims**



1. A robot profile control method for a robot having axes and which performs profile control of a workpiece having a profiling object plane, comprising the steps of:

(a) executing a positional instruction and a moving speed command to the robot;

(b) obtaining a force applied to each axis of the robot from the product of positional deviation and positional gain at each axis;

(c) obtaining an external force applied to an end effector of the robot, which is represented as a vector in three-dimensional space, based on the forces being applied to each axis of the robot, obtained in the step (b);

(d) calculating a normal line vector of the profiling object plane based on the vector of the external force obtained in the step (c);

(e) controlling an attitude of the robot with the positional gain of each axis fixed, such that the direction of the tool coordinate system set in advance for the robot coincides with the direction of the normal line direction of the profiling object plane;

(f) calculating a positional gain of each axis which serves to make the component of the external force obtained in the step (c), in the direction of a normal line vector of the profiling object plane, a predetermined value and then changing the positional gain of each axis to the calculated value;

(g) determining a moving direction of the robot and a moving target position of the robot in the moving direction, based on the contents of the position instruction of the step (a) and the normal line vector of the profiling object plane; and

(h) calculating an amount to be added to the positional deviation of each axis calculated at the positional deviation calculating section of the position control loop to realize the speed instructed in the step (a), and inputting the amount to be added to the positional deviation calculating section of each axis.

5,646,494

CHARGE INDUCTION APPARATUS OF ROBOT CLEANER AND METHOD THEREOF

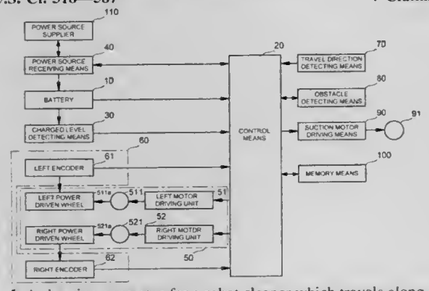
Suk-Jin Han, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Mar. 3, 1995, Ser. No. 397,993

Claims priority, application Rep. of Korea, Mar. 29, 1994, 94-6380; May 26, 1994, 94-11530

Int. Cl.[6] A47L *11/00*

U.S. Cl. 318—587 **7 Claims**



1. A charging apparatus for a robot cleaner which travels along a studied route for carrying out a cleaning operation, the apparatus comprising:

control means for controlling an overall operation of the robot cleaner;

a memory for storing a plurality of driving programs representing structures of various rooms for which cleaning operations will be performed;

driving means for moving the robot cleaner in forward and reverse directions and in left and right directions according to control signals from the control means;

travel distance detecting means for detecting a distance traveled by the driving means;

travel direction detecting means for detecting a travel direction varied by the driving means;

obstacle detecting means for detecting whether or not there is an obstacle within a cleaning area and for detecting a distance to the obstacle from the cleaner;

charge level detecting means for detecting a charge voltage level of a battery changing according to the travel of the cleaner;

an electric power source supplier for charging the battery to above a predetermined level when the charge voltage level of the battery detected by the charge level detecting means drops below the predetermined level; and

an electric power source receiving means for electrically connecting the electric power source supplier to the battery so that the power source supplied from the electric power source supplier can be applied to the battery;

said memory including a first storage area for storing initial information representative of said electric power source supplier, and a second storage area for storing current information representative of a current position of said robot cleaner, said control means controlling movement of said robot cleaner towards said electric power source provider based upon said initial information, said current information, and said charge voltage level detected by said charge level detecting means.

5,646,495

TANDEM CONTROL METHOD BASED ON A DIGITAL SERVOMECHANISM

Yukio Toyozawa, Kikuchi-gun; Kazuomi Maeda, Kamoto-gun, and Naoto Sonoda, Kamimashiki-gun, all of Japan, assignors to Fanuc, Ltd., Yamanashi, Japan

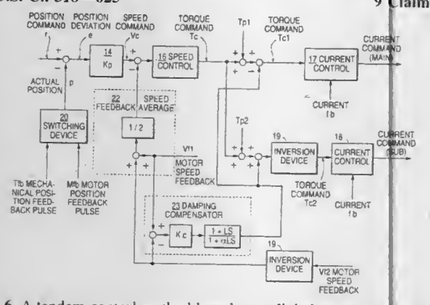
PCT No. PCT/JP95/01116, § 371 Date Feb. 6, 1996, § 102(e) Date Feb. 6, 1996, PCT Pub. No. WO96/00934, PCT Pub. Date Jan. 11, 1996

PCT Filed Jun. 6, 1995, Ser. No. 591,461

Claims priority, application Japan, Jun. 30, 1994, 6-170391

Int. Cl.[6] G05D *3/12;3/20*

U.S. Cl. 318—625 **9 Claims**



6. A tandem control method based on a digital servomechanism comprising two servo motors, namely, a main motor and a sub motor, as a control method for driving one axis, wherein current control is executed by both the main and sub motors, and

position control is executed by the motor corresponding to a move command being a difference of position commands, or the motor corresponding to a torque command being an output of a speed control section.

5,646,496

APPARATUS AND METHOD FOR GENERATING DIGITAL POSITION SIGNALS FOR A ROTATABLE SHAFT

Lane L. Woodland, Burlington, and Daryl J. Marvin, Unionville, both of Conn., assignors to Dana Corporation, Toledo, Ohio

Continuation of Ser. No. 336,317, Nov. 8, 1994, abandoned. This application Mar. 18, 1996, Ser. No. 619,267

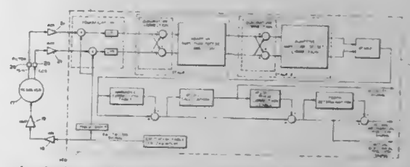
Int. Cl.[6] G05B *19/31*

U.S. Cl. 318—632 **18 Claims**

1. A method for generating signals which are representative of the position and velocity of a movable member comprising:

generating analog electrical output signals which are representative of an excitation signal modulated by both the sine and cosine of an electrical angular position of the movable member;

demodulating the sine and cosine signals by multiplication with the excitation signal;



adaptively conditioning the demodulated sine and cosine signals to insure quadrature and to correct for amplitude and offset variations;

determining a velocity signal for the movable member;

determining an actual electrical position signal for the movable member; and

determining an actual mechanical position signal for the movable member.

5,646,497

SWITCHING ARRANGEMENT FOR CONTROLLING THE RPM OF ELECTRIC MOTORS

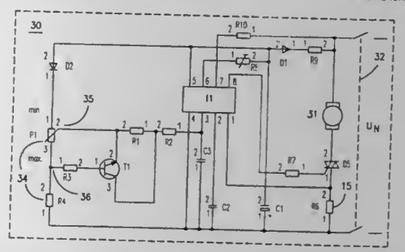
Wolfgang Stickel, Beuren, Germany, assignor to Metabowerke GmbH & Co., Germany

Filed Mar. 8, 1995, Ser. No. 399,974

Claims prinrity, application Germany, Mar. 8, 1994, 44 07 634.7

Int. Cl.[6] G05F *5/02*

U.S. Cl. 318—799 **8 Claims**



1. A switching arrangement for controlling rpm of an electric motor having an electronic power switch, comprising:

a voltage divider connected to an electric motor;

an IC phase-shift control circuit connected to the electric motor and said voltage divider, the trigger output of said IC phase-shift control circuit controlling the electronic power switch;

an adjusting resistor connected to said IC phase-shift control circuit;

at least one further adjusting resistor connected between said voltage divider and said adjusting resistor, said adjusting resistor and said at least one further adjusting resistor serving for setting a set value of the rpm; and

a switching device connected in parallel with said at least one further adjusting resistor and to said voltage divider.

5,646,498

CONDUCTED EMISSION RADIATION SUPPRESSION IN INVERTER DRIVES

Thomas A. Lipo, Middleton, and Er-Kuan Zhong, Madison, both of Wis., assignors to Eaton Corporation, Cleveland, Ohio

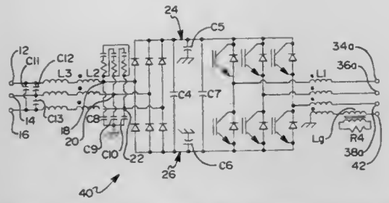
Filed Aug. 7, 1995, Ser. No. 511,821

Int. Cl.[6] H02M *5/458;7/162*

U.S. Cl. 318—800 **18 Claims**

1. An inverter-driven induction motor drive system comprising:

a plurality of input lines adapted to receive a three-phase alternating current input signal;



a rectifier circuit for converting said alternating current input signal into a direct current signal;

a gating circuit for converting said direct current signal into a variable voltage, variable frequency three-phase alternating current output signal for controllably driving said motor;

a plurality of output lines electrically connected between said gating circuit and said motor;

a ground wire electrically connecting said motor to ground; and

a four winding common mode inductance electrically connected in series between said output lines and at least one of said gating circuit and said ground wire for reducing the electromagnetic interference produced by said system.

5,646,499

INVERTER CONTROL APPARATUS

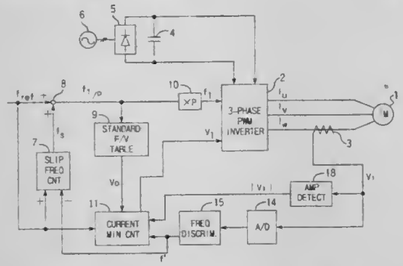
Yoshiaki Doyama, Hirakata; Keizo Matsui, Kobe; Yoshiteru Ito, Ibaraki; Kaneharu Yoshioka, Katano; Hideo Ogata, Yao; Izumi Yoshida, Nara-ken, and Shusaku Watakabe, Nara, all of Japan, assignors to Matsushita Electric Industrial Co.,Ltd., and Matsushita Refrigeration Company, both of Osaka-fu, Japan

Filed Aug. 18, 1995, Ser. No. 516,659

Claims priority, application Japan, Aug. 25, 1994, 6-200659; Nov. 28, 1994, 6-293324

Int. Cl.[6] H02P *5/408*

U.S. Cl. 318—801 **17 Claims**



1. An inverter control apparatus for controlling an inverter which, upon receipt of a command frequency and a command voltage, supplies AC power of a desired frequency to an induction motor, said inverter control apparatus comprising:

means for receiving a requested rotational speed of the induction motor;

current detection means for detecting a drive current supplied to the induction motor;

discrimination means for discriminating a frequency of a fluctuation component of the drive current detected by said current detection means, said fluctuation component frequency representing an actual rotational speed of the induction motor;

slip detection means for detecting a slip amount of the induction motor by taking a difference between said actual rotational speed and said requested rotational speed;

command frequency producing means for producing data commensurate with said command frequency by adding said slip amount to said requested rotational speed; and

command voltage generating means for generating said command voltage by monitoring said drive current and for setting said command voltage to a voltage acquired when said drive current is at a minimum value.

11. An inverter control apparatus for controlling an inverter which, upon receipt of a command frequency and a command voltage, supplies AC power of a desired frequency to an induction motor, said inverter control apparatus comprising:

current dection means for detecting a drive current supplied to the induction motor;

power calculation means for calculating a power consumption of the induction motor based on the sum of products of an integer at multiple periods of the cycle of an output voltage of the inverter and the drive current at a period greater than one cycle of the output voltage of the inverter; and

command voltage generating means for generating said command voltage by monitoring said power consumption and for setting said command voltage to a voltage acquired when said power consumption is at a minimum value.

5,646,500

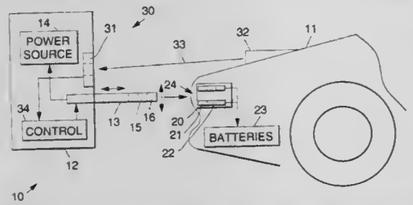
INDUCTIVELY COUPLED CHARGER HAVING A LIGHT-ACTIVATED MECHANICAL POSITIONING SYSTEM

David T. Wilson, Torrance, Calif., assignor to Delco Electronics Corp., Kokomo, Ind.

Filed Jan. 27, 1995, Ser. No. 379,234

Int. Cl.[6] H01M *10/46*

U.S. Cl. 320—2 **2 Claims**



1. An inductive charging system for charging propulsion batteries disposed in an electric vehicle, said system comprising:

vehicle mounted apparatus, including a charge port having a secondary core, a secondary winding that is coupled to the propulsion batteries and a light source that is aligned with the charge port; and

a charge station disposed remote from the electric vehicle including a power source, a charge probe having a primary core and a primary winding disposed adjacent to the primary core coupled to the power source, a light detector and a servo control system coupled to the light detector having X-Y-Z positioning means for moving the position of the charge probe relative to the position of the charge port in X, Y, and Z directions in response to signals provided by the light detector so as to couple the charge probe and the charge port.

5,646,501

FLEXIBLE POWER ARCHITECTURE WHICH SUPPORTS MULTIPLE BATTERY TECHNOLOGIES FOR USE WITH A PORTABLE DEVICE

David A. Fishman, Lakewood; John Fraterrigo, Toms River, and David A. Kiley, Brick, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

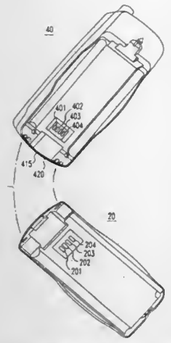
Filed Nov. 2, 1995, Ser. No. 551,971

Int. Cl.[6] H01M *10/44;10/46*

U.S. Cl. 320—2 **23 Claims**

1. An arrangement for accommodating each one of a plurality of battery types in a portable device, the arrangement comprising:

a first interface means in said portable device configured for receiving operating power for said portable device from a first battery type at a voltage output level suitable for operating said portable device; and



a second interface means associated with a second battery type, said second interface means being positioned between said first interface means and said second battery type for adjusting the voltage output level available from said second battery type to a level suitable for operating said portable device.

15. A method of accommodating each one of a plurality of battery types in a portable device, the method comprising the steps of:

configuring first interface circuitry in said portable device for receiving operating power for said portable device from a first battery type at a voltage output level suitable for operating said portable device;

configuring second interface circuitry associated with a second battery type for adjusting the voltage output level available from said second battery type to a level suitable for operating said portable device; and

positioning said second interface circuitry between said first interface circuitry and said second battery type.

5,646,502

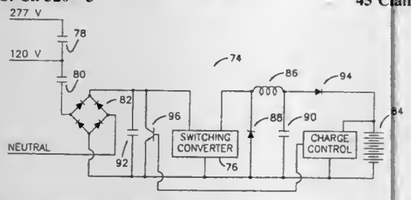
EMERGENCY LIGHTING CIRCUIT FOR SHUNT-REGULATED BATTERY CHARGING AND LAMP OPERATION

James C. Johnson, Conyers, Ga., assignor to NSI Enterprises, Inc., Atlanta, Ga.

Filed Aug. 28, 1995, Ser. No. 519,804

Int. Cl.[6] H01M *10/46*

U.S. Cl. 320—5 **45 Claims**



1. In a circuit including a first load operated on AC power and having a battery for providing current to a second load on discontinuation of AC power, the circuit being useful for charging the battery or a cell of the battery, comprising:

at least one current limited charging means for providing a source of charging current to the battery and for supplying current to the first load;

means for passing charging current through the battery to charge the battery; and,

shunt regulated switch means for providing a low impedance circuit path, the low impedance circuit path not including the battery on termination of charging of the battery.

5,646,503

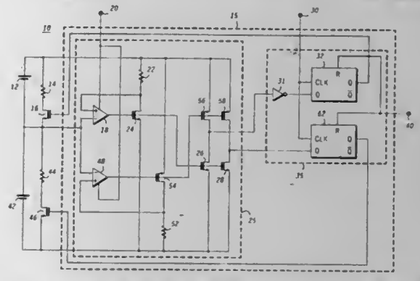
METHOD FOR BALANCING POWER SOURCES AND STRUCTURE THEREFOR

Troy L. Stockstad, Phoenix, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 4, 1995, Ser. No. 539,207

Int. Cl.[6] H01M *10/44;* **H02J** *7/00*

U.S. Cl. 320—13 **20 Claims**



1. A method for balancing power sources, comprising the steps of:

generating a first current by applying a voltage of a first power source across a first resistor having a predetermined resistance value;

generating a second current by applying a voltage of a second power source across a second resistor having the predetermined resistance value;

discharging the first power source in response to the first current being greater than the second current by a first amount, the first amount being more than a first predetermined current value; and

discharging the second power source in response to the second current being greater than the first current by a second amount, the second amount being more than a second predetermined current value.

18. A battery balancing circuit, comprising:

a first battery cell having a positive electrode and a negative electrode;

a second battery cell having a positive electrode and a negative electrode, wherein the positive electrode is coupled to the negative electrode of the first battery cell;

a first discharge resistor having a first electrode and a second electrode, wherein the first electrode is coupled to the positive electrode of the first battery cell;

a first discharge switch having a control electrode, a first current conducting electrode, and a second current conducting electrode, wherein the first current conducting electrode is coupled to the second electrode of the first discharge resistor and the second current conducting electrode is coupled to the negative electrode of the first battery cell;

a second discharge resistor having a first electrode and a second electrode, wherein the first electrode is coupled to the positive electrode of the second battery cell;

a second discharge switch having a control electrode, a first current conducting electrode, and a second current conducting electrode, wherein the first current conducting electrode is coupled to the second electrode of the second discharge resistor and the second current conducting electrode is coupled to the negative electrode of the second battery cell; and

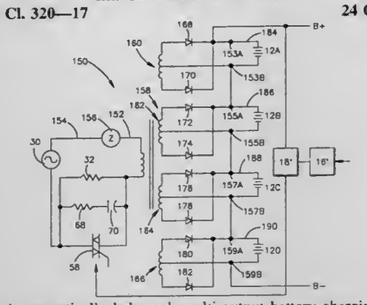
a balancing element having a clock input, a first input, a second input, a common input, a first output, and a second output, wherein the clock input is coupled for receiving a clock signal, the first input is coupled to the positive electrode of the first battery cell, the second input is coupled to the negative electrode of the second battery cell, the common input is coupled to the negative electrode of the first battery cell, the first output is coupled to the control electrode of the first discharge switch, and the second output is coupled to the control electrode of the second discharge switch.

5,646,504

MAGNETICALLY BALANCED MULTI-OUTPUT BATTERY CHARGING SYSTEM

Robert S. Feldstein, 4 Clinton Ave., Dobbs Ferry, N.Y. 10522

Filed Apr. 15, 1994, Ser. No. 228,341
Int. Cl.[6] H01M *10/44;10/46*
U.S. Cl. 320—17 **24 Claims**



1. A magnetically balanced, multi-output battery charging system for charging a string of batteries or battery groups serially connected at junctions to each other, comprising:

a multi-output transformer having a primary and secondary with multiple secondary outputs, each of said multiple secondary outputs being connected to one of said string of batteries or battery groups;

an impedance connected in series with said primary; and

means for controlling both primary current flow through said primary and charging current flow through said secondary with multiple secondary outputs in response to the charge level of each of said string of batteries or battery groups whereby said charging current is a function of said impedance in said primary so that the portion of charging current flowing from each of said multiple secondary outputs to each of said string of batteries or battery groups relates inversely to the voltage across each of said string of batteries or battery groups.

16. A method of charging a string of batteries or battery groups serially connected at junctions to each other, comprising the steps of:

connecting each of said multiple outputs of a multi-output transformer having a primary with an impedance connected in series and a secondary with multiple secondary outputs each connected to one of said string of batteries or battery groups; and

controlling both primary current flow through said of primary and charging current flow through said multiple secondary outputs in response to the charge level of each of said string of batteries or battery groups whereby said charging current is a function of said impedance in said primary so that the portion of charging current flowing from each of said multiple secondary outputs to each of said string of batteries or battery groups relates inversely to the voltage of each of said string of batteries or battery groups.

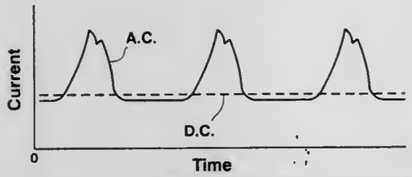
5,646,505

METHOD OF CHARGING A BATTERY USING ASYMMETRICAL CURRENT

Izot F. Melnikov, and Anatoliy G. Nikolayev, both of St. Petersburg, Russian Federation, assignors to Vista International, Inc., Alpharetta, Ga.

Continuation-in-part of Ser. No. 169,978, Dec. 17, 1993, Pat. No. 5,449,998, which is a continuation-in-part of Ser. No. 16,833, Feb. 12, 1993, abandoned. This application Sep. 8, 1995, Ser. No. 526,057
Int. Cl.[6] H01M *10/44*
U.S. Cl. 320—21 **4 Claims**

1. A method of charging a discharged battery comprising creating a level direct current carrier and a riding alternating current



charging vector which rides on the level direct current, the alternating current having a repeating waveform comprising:

two phase displacements per wavelength, comprising:

a first amplitudinal increase and a second amplitudinal increase, a first amplitudinal decrease and a second amplitudinal decrease, the second amplitudinal increase beginning substantially at the same time that the phase angle of the alternating current charging vector returns to a zero angle, the second amplitudinal decrease ending substantially at the same time that the phase angle of the alternating current charging vector returns to a forty five degree angle;

cyclically repeating said waveform is at a constant angular frequency, phase period and amplitude;

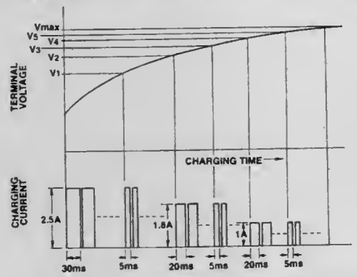
applying such alternating current through battery terminals for a sufficient period of time for the level direct current carrier to rise substantially to the original direct current voltage of the battery in accordance with the affectivity of the alternating current charging vector and to charge the battery.

5,646,506

METHOD OF CHARGING A SECONDARY BATTERY AND AN APPARATUS THEREFOR

Takeshi Suzuki, No. 10-26, Nakamachi 1-chome, Koganei-shi, Tokyo, Japan

Filed Aug. 21, 1996, Ser. No. 700,865
Int. Cl.[6] H01M *10/44;* **H02J** *7/00*
U.S. Cl. 320—21 **4 Claims**



1. A method of charging a secondary battery characterized by comprising the steps of;

intermittently passing a charging current through said secondary battery by applying voltage pulses higher than a rated terminal voltage of said secondary battery at predetermined intervals;

measuring a terminal voltage of said secondary battery while said voltage pulses are not applied and measuring said charging current while said voltage pulses are applied;

steppedly setting a plurality of terminal voltages different from each other within a range of variation in said rated terminal voltage from a course of charging to an end of charging;

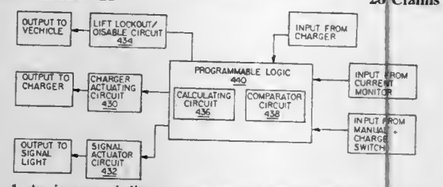
controlling said charging current pulses so that at least one of a peak value and a pulse width of said charging current varies everytime the measured terminal voltage of said secondary battery reaches the set terminal voltage at each stage whereby said secondary battery is charged until said terminal voltage reaches the set terminal voltage at the final stage.

5,646,507

BATTERY CHARGER SYSTEM

John B. Timmons, Winston-Salem; David P. Boden, Pfafftown, both of N.C., and Larry D. Stahl, Arlington, Tex., assignors to Douglas Battery Manufacturing Company, Winston-Salem, N.C.

Continuation of Ser. No. 141,484, Oct. 22, 1993, abandoned. This application Oct. 3, 1996, Ser. No. 728,132
Int. Cl.[6] H01M *10/46*
U.S. Cl. 320—21 **28 Claims**



1. An integrated direct current power source unit for powering an electric vehicle, comprising:

(a) battery charger;

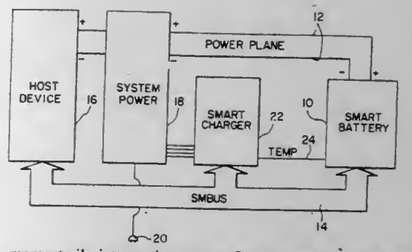
(b) a rechargeable lead acid battery having positive and negative terminals; and

(c) a battery charger control unit for providing a charge from said battery charger to said battery with an amount of electrical energy less than required to fully charge said battery during a partial restoration and with an amount of electrical energy which corresponds to an effective sum of electrical energy withdrawn since a previous full charge plus a selected additional amount of energy to slightly overcharge said battery during a full restoration, said battery charger control unit comprising:

(i) a charge monitor coupled to said terminals of said battery for determining the total flow of electrical energy into and out of said battery during any partial discharge and charge cycles since a previous full charge, wherein said charge monitor includes means for measuring a parameter corresponding to the amount of electrical energy charged to and discharged from said battery; and

(ii) a charge controller for controlling the flow of electrical energy into said battery by said battery charger,

(d) said battery, charger and charger control unit integrated together and carried by the vehicle to provide said single direct current power source unit.



momentarily interrupting current flow between said cells and said terminals in the event of a short;

(c) an analog means for generating analog signals representative of battery voltage and current at said terminals;

(d) a hybrid integrated circuit (IC) having an analog to digital convertor and a microprocessor for receiving the analog signals and converting them to digital signals representative of battery voltage, current and temperature, and calculating actual charge parameters over time from said digital signals, said charge parameters including at least a learned full charge capacity and remaining capacity;

(e) a data memory defined within said hybrid IC for storing said actual charge parameters, even when said battery is nominally fully discharged;

(f) means for supplying electrical power to the data memory from said voltage tap;

(g) a capacitor also electrically connected to the voltage tap for receiving electrical power therefrom, and for supplying power to said data memory in the event the supply of power to the data memory from the voltage tap is interrupted; whereby said memory is momentarily powered by said capacitor in the event of a short, until the short is removed or said fuse interrupts current flow to said positive terminal, said voltage tap providing power for said data memory after said positive thermal coefficient device has returned to a conductive state; and

(h) a delatching circuit for electrically decoupling both the memory area and the capacitor from the voltage tap under predetermined conditions.

5,646,508

BATTERY PACK HAVING A PROCESSOR CONTROLLED BATTERY OPERATING SYSTEM

Duong van Phuoc, Eching; Rudi Wieczorek, Munich; Elmar Zeising, Haindlfing, all of Germany; Louis W. Hruska, Northboro, Mass.; Alwyn H. Taylor, Wellesley Hills, Mass.; Daniel D. Friel, Woburn, Mass., and Matthew P. Hull, Jamestown, R.I., assignors to Duracell, Inc., Needham, Mass.

Division of Ser. No. 336,945, Nov. 10, 1994. This application Jun. 7, 1995, Ser. No. 486,071
Int. Cl.[6] H02J *7/04*
U.S. Cl. 320—30 **18 Claims**

1. A smart battery having a power management system capable of self powered operation, even if accidently shorted, said smart battery comprising:

(a) a plurality of rechargeable cells connected to positive and negative terminals to provide electrical power to an external device during a discharge mode and to receive electrical power during a charge mode, as provided or determined by said remote device, said battery including a separate voltage tap between said pair of terminals for defining a digital voltage source and a fuse between said tap and said positive terminal;

(b) a positive thermal coefficient device mounted in series with said cells and said terminals, said device having a conductive state for normal operation and a non-conductive state for

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5,646,509

BATTERY CAPACITY TEST AND ELECTRONIC SYSTEM UTILIZING SAME

Neil C. Berglund, Kasson; Todd J. Rosedahl, Zumbrota, and Steven W. Steele, Rochester, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 1, 1995, Ser. No. 565,873
Int. Cl.[6] H01M *10/44;* **H02J** *7/00;9/04;* **G01N** *27/416*
U.S. Cl. 320—48 **20 Claims**

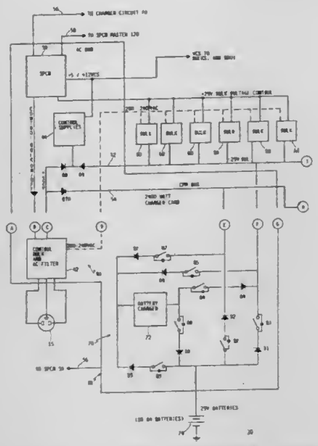
1. A method of testing a battery in a back-up power supply of an electronic system of the type operating in a first, operational mode and a second, power saving mode, the electronic system having a primary power source for providing power to the electronic system, the method comprising the steps of:

(a) testing a high discharge capacity for the battery to determine whether the battery is capable of supplying sufficient power to the electronic system during a conversion time in which the electronic system converts from the operational mode to the power saving mode; and

(b) testing a low discharge capacity for the battery to determine whether the battery is capable of supplying sufficient power to the electronic system during the power saving mode.

13. An electronic system of the type operating in a first, operational mode and a second, power saving mode, comprising:

(a) a primary power source for providing power over a system bus;



(b) a back-up power supply coupled to the system bus for providing power over the system bus when the primary power source is not operating, the back-up power supply including a battery; and

(c) a controller for testing the battery, the controller including:

(i) high discharge capacity testing means for testing a high discharge capacity of the battery to determine whether the battery is capable of supplying sufficient power to the electronic system during a conversion time in which the electronic system converts from the operational mode to the power saving mode; and

(ii) low discharge capacity testing means for testing a low discharge capacity of the battery to determine whether the battery is capable of supplying sufficient power to the electronic system during the power saving mode.

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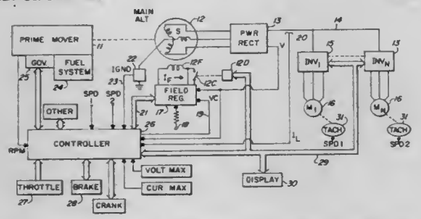
AC LOCOMOTIVE OPERATION WITH DC BUS CURRENT SENSOR FAILURE

Ajith Kuttannair Kumar, Erie, Pa., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 31, 1995, Ser. No. 414,899

Int. Cl.[6] H02P *9/04*

U.S. Cl. 322—16 **2 Claims**



1. A control system for a diesel electric locomotive of the type in which a diesel engine is connected in driving relationship to an electric power generator, power output terminals of the generator being connected to input terminals of an alternating current (AC) to direct current (DC) power converter and output terminals of the power converter being connected to relatively positive and relatively negative DC buses, a plurality of DC to AC inverters being connected in parallel to the DC buses, a plurality of DC to AC inverters being connected in parallel to the DC buses with each of the inverters being connected for supplying controlled AC power to at least one AC electric traction motor coupled in driving relationship to wheels of the locomotive, the control system being connected for controlling the power output of the inverters in response to an operator's command and to sensed operating conditions of the locomotive and wherein one of the sensed operating conditions is power output of the converter determined by measuring the voltage between the DC buses and the current output of the converter using a series connected current monitor, the improvement comprising:

means for sensing failure of the current monitor; and

means responsive to a sensed failure for modifying the control system to substitute a selected value for the sensed power output of the converter, the sensed power output being combined in a feedback control loop with a signal representative of the commanded power output to produce a power error signal, the failure responsive means including switch means for interrupting the power error signal and substituting for the power error signal a signal proportional to the commanded power output signal.

5,646,511

POWER SYSTEM COMPENSATOR APPARATUS AND POWER CONVERTER APPARATUS

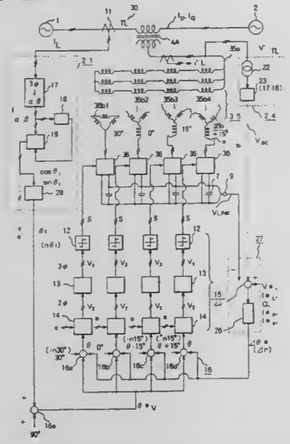
Masahiko Akamatsu; Shotaro Murakami, and Yasuhiko Hosokawa, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 2, 1995, Ser. No. 552,521

Claims priority, application Japan, May 29, 1995, 7-130702

Int. Cl.[6] H02J *3/06*

U.S. Cl. 323—207 **7 Claims**



1. A power system compensator apparatus comprising:

first power converter means for converting a power transmitted through a power transmission line in a power system and generating an output, said power converter means including a plurality of power converter units; and

first control means for controlling a link voltage of the non-power system side of said first power converter means by controlling a phase in relation to a phase of a fundamental wave of said power system and by generating a phase difference between each of the plurality of power converter units.

5,646,512

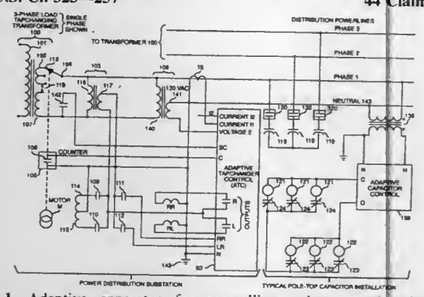
MULTIFUNCTION ADAPTIVE CONTROLS FOR TAPSWITCHES AND CAPACITORS

Robert W. Beckwith, 2794 Camden Rd., Clearwater, Fla. 34619

Filed Aug. 15, 1996, Ser. No. 698,315

Int. Cl.[6] G05F *1/153;5/00*

U.S. Cl. 323—257 **44 Claims**



1. Adaptive apparatus for controlling voltage tapchanging switches on transformers and regulators in an alternating current (AC) power system comprising in combination:

a) means for taking digital samples of said AC voltages and continuously processing said samples to obtain amplitudes of said AC voltages,

b) program means for entering AC voltages as setpoints and for establishing deadbands around said setpoints,

c) said program means further including means for determining deviations of said measurements inside and outside of said deadbands and for integrating linear and nonlinear functions of said deviations, and

d) output means for raising the position of said tapswitches when said AC voltages are below said deadbands and when said integration exceeds a threshold and for lowering the position of said tapswitches when said AC voltages are above said deadbands and when said integration exceeds said threshold

whereby said tapswitches operate to regulate said AC voltages.

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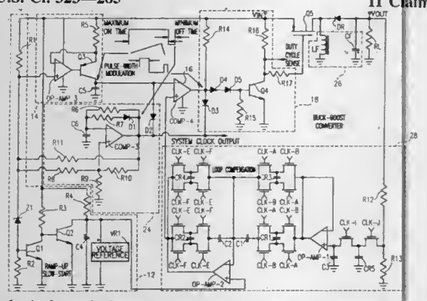
DYNAMIC LOOP COMPENSATOR FOR CONTINUOUS MODE POWER CONVERTERS

Salvatore R. Riggio, Jr., Boca Raton, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 10, 1995, Ser. No. 401,943

Int. Cl.[6] H02M *3/335*

U.S. Cl. 323—285 **11 Claims**



1. A dynamic loop compensator for use in continuous mode buck, boost, and buck-boost converter circuits, each of said converter circuit including means for producing a plurality of circuit condition signals including an input voltage, an output voltage, a system clock, and a duty cycle signal, said dynamic loop compensator comprising:

means for dynamic control, said means for control connected to one of said converter circuits, said means for control receiving at least certain of said plurality of circuit condition signals of said one converter circuit, said means for control including means for producing a plurality of variable frequency clock signals based upon the relative amplitudes and polarities of said input and output voltages, the system clock, and the duty cycle signal of said one converter circuit;

plurality of means for producing a variable resistance, each of said plurality of means for producing a variable resistance connected to said means for dynamic control and receiving at least one of said plurality of variable frequency clock signals, each of said plurality of variable frequency clock signals determining an effective resistance of at least one of said variable resistances;

means for amplifying, said means for amplifying connected to said plurality of means for producing variable resistances, said means for amplifying further connected to said one converter circuit, said means for amplifying producing a compensation signal based upon each effective resistance to compensate for variations in input voltage and output load current of said one converter circuit;

whereby said compensation signal maintains stability in the one converter circuit, irrespective of the type of converter circuit.

5,646,514

AC/DC CONVERTER USING A NON-LATCH TYPE SWITCHING DEVICE

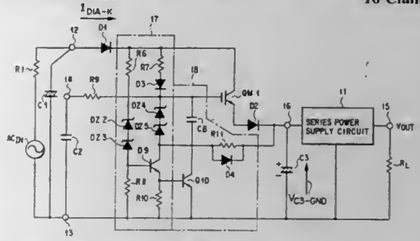
Yukio Tsunetsugu, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 13, 1994, Ser. No. 322,349

Claims priority, application Japan, Nov. 1, 1993, 5-273612

Int. Cl.[6] G05F *1/40*

U.S. Cl. 323—288 **16 Claims**



1. An AC/DC converter comprising:

rectifying means for rectifying a half wave of an input AC voltage;

an N-channel IGBT having a current path one end of which is supplied with a half-wave rectified output of said rectifying means, said current path having another end, and serving as a main switching device;

control means for turning on said N-channel IGBT when a voltage between a gate of said N-channel IGBT and the other end of the current path exceeds a first level, and for turning off said N-channel IGBT when a voltage between the gate of said N-channel IGBT and the other end of the current path exceeds a second level which is higher than the first level;

booster means for boosting the voltage between the gate of said N-channel IGBT and the other end of the current path up to a level which is higher than the second level, when the voltage between the gate of said N-channel IGBT and the other end of the current path exceeds the first level, said booster means having capacitor means arranged between the gate and the other end of the current path of said N-channel IGBT, and switching means for causing the capacitor means to be charged when the N-channel IGBT is off, and for causing the capacitor means to bootstrap the gate voltage of the N-channel IGBT when the N-channel IGBT is on; and

a series power supply circuit for receiving an output from the other end of the current path of said N-channel IGBT, and outputting a DC voltage.

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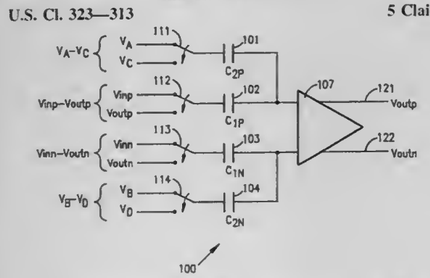
RATIOED REFERENCE VOLTAGE GENERATION USING SELF-CORRECTING CAPACITOR RATIO AND VOLTAGE COEFFICIENT ERROR

Michael K. Mayes, San Jose, and Sing W. Chin, Alameda, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Division of Ser. No. 348,737, Dec. 2, 1994, which is a division of Ser. No. 183,678, Jan. 19, 1994, abandoned. This application Feb. 28, 1995, Ser. No. 396,134

Int. Cl.[6] G05F *3/16*

U.S. Cl. 323—313 **5 Claims**



1. A ratioed reference voltage circuit with V_{ref} as an input voltage reference, the circuit comprising:

a voltage selector having a plurality of voltage selector inputs and a plurality of voltage selector outputs for applying a first voltage to a corresponding voltage selector output during a time period ϕ_1, and applying a second voltage to a corresponding voltage selector output during a following time period ϕ_2, wherein the voltage applied to one voltage selector output during any time period is not necessarily the same as the voltage applied to another voltage selector output;

an amplifier having a plurality of inputs and a differential voltage output; and

a plurality of sets of capacitances, each set of capacitances coupling an associated one of the voltage selector outputs to an associated one of the plurality of inputs of the amplifier and having a value such that the electrical combination of the voltages and capacitances provides a voltage level of $\pm V_{ref}/m$, where m is any desired number, at the differential output of the amplifier.

5,646,516

REFERENCE VOLTAGE GENERATING CIRCUIT

Yoichi Tobita, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 31, 1995, Ser. No. 522,439

Claims priority, application Japan, Aug. 31, 1994, 6-206555; May 31, 1995, 7-133257

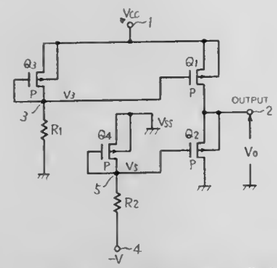
Int. Cl.[6] G05F *3/16*

U.S. Cl. 323—313 **21 Claims**

1. A reference voltage generating circuit, comprising:

current supplying means including an insulated gate type field effect transistor and coupled to a first potential node, for supplying current from said first potential node;

current setting means including an insulated gate type field effect transistor, for setting the current supplied by said current supplying means to a constant value with no dependency upon the voltage at said first potential node; and



voltage generating means including a current discharging means including an insulated gate type field effect transistor for discharging the current supplied by said current supplying means for generating a constant reference voltage with no dependency upon the voltage at said first potential node to an output node, said voltage generating means including means for canceling the dependency upon temperature of said reference voltage owing to the dependency upon temperature of a threshold voltage of respective said insulated gate type field effect transistors.

5,646,517

VOLTAGE REGULATOR FOR COUPLED-MODE LOGIC CIRCUITS

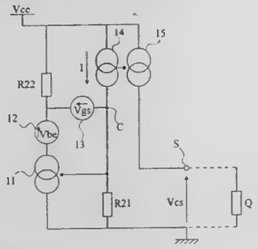
Didier Belot, Rives, and Patrick Bernard, Poisat, both of France, assignors to SGS-Thomson Microelectronics S.A., Saint Genis, France

Filed Nov. 22, 1995, Ser. No. 561,520

Claims priority, application France, Nov. 30, 1994, 94 14604

Int. Cl.[6] G05F *3/16*

U.S. Cl. 323—313 **29 Claims**



1. A voltage regulator, having first and second inputs, for receiving an input supply voltage, and an output for controlling at least one current source of at least one logic gate, comprising:

a first resistor coupled to the first input of the voltage regulator;

a first current source of a bipolar-type, coupled between the second input and the first resistor;

a second current source of a MOS-type having an input coupled to the first input of the voltage regulator and having an output;

a third current source, coupled between the first input and the output of the voltage regulator, and mirror-connected to the second current source such that a current value of the third current source equals a current value of the second current source;

a second resistor coupled between the output of the second current source and the second input of the voltage regulator; and

wherein said first current source is controlled by a voltage across the second resistor, and the current value of said second source determines a voltage at the output of the voltage regulator.

5,646,518

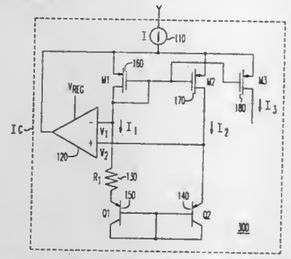
PTAT CURRENT SOURCE

Kadaba R. Lakshmikumar, Wescosville, Pa.; Krishnaswamy Nagaraj, Somerville, N.J.; David Arthur Rich, Woodmere, N.Y., and Khong-Meng Tham, Reading, Pa., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Nov. 18, 1994, Ser. No. 342,188

Int. Cl.[6] G05F *3/16*

U.S. Cl. 323—316 **16 Claims**



1. A current source that supplies a current substantially proportional to absolute temperature for use in an integrated circuit comprising:

a first current path and a second current path driven by a fixed current source;

said current paths being coupled so as to provide a first current and a second current flowing through the respective current paths at least during circuit operation, said first current and said second current being in a substantially predetermined direct proportion; and

an operational amplifier including respective input terminals respectively coupled to said first current path and said second current path, said operational amplifier being coupled in a feedback configuration so as to maintain substantially equal first and second voltages between a first substantially predetermined point and a second substantially predetermined point respectively located along said first current path and said second current path;

the respective first and second currents being related to the respective first and second voltages substantially in accordance with a junction diode equation.

5,646,519

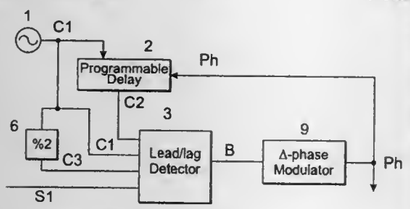
DIGITAL PHASE DETECTOR EMPLOYING A DIGITALLY CONTROLLABLE DELAY LINE

Michael M. Hamilton, San Jose; Morley M. Merriss, Montera, and George P. Zampetti, Livermore, all of Calif., assignors to Symmetricom, Inc., San Jose, Calif.

Filed Jun. 7, 1995, Ser. No. 472,214

Int. Cl.[6] H03K *17/28*

U.S. Cl. 324—76.82 **6 Claims**



1. A digital phase detector comprising:

input means providing a periodic digital signal having a repetition rate;

a source of a digital local clock signal having a repetition rate equal to that of the input signal;

digitally controllable signal delay means having a signal input, a signal output and a control input, said delay means being operative for conducting a signal present at said signal input to said signal output with a time delay having a duration determined by a control signal supplied to said control input, said signal input being connected to receive one of the periodic digital signal and the digital local clock signal;

a phase relation detector connected to receive a first input signal from said signal output of said signal delay means and a second input signal which comprises the one of the periodic digital signal and the digital local clock signal which is not received by said signal input of said signal delay means, for periodically comparing the phases of the first and second input signals and for producing a binary output signal composed of a succession of signal segments, each segment having a first value when the first input signal is leading the second input signal in phase and a second value when the first input signal is lagging the second input signal in phase; and

digital modulator means having an input connected to said phase relation detector for receiving the binary output signal from said phase relation detector and producing a first multi-bit digital output signal representative of the magnitude of the phase difference between the periodic digital signal and the digital local clock signal based on the values of successive signal segments of the binary output signal produced by said phase relation detector, wherein said digital modulator means comprise: a one-bit quantizer connected to said modulator means input for receiving the binary output signal from said phase relation detector and for producing a quantized signal having a first polarity in response to each binary output signal segment having the first value and having a second polarity in response to each binary signal segment having the second value; digital signal generating means connected to receive the quantized signal produced by said quantizer for producing a first digital signal having a value based on the polarities of the quantized signals associated with the values of a succession of binary output signal segments; step signal generating means connected to said modulator means input for receiving the binary output signal from said phase relation detector and for producing a second digital signal having a value which varies in response to each binary signal segment being received as a function of the relation between the values of the binary signal segment being received and the immediately preceding binary signal segment; and summing means connected for receiving and summing the first digital signal and the second digital signal to produce the first multi-bit digital output signal of said digital modulator means.

5,646,520

METHODS AND APPARATUS FOR SENSING CURRENTS

Richard Frank, Mountain View; Bruce Lee Inn, Santa Clara, and Tamas Szepesi, San Jose, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jun. 28, 1994, Ser. No. 267,818

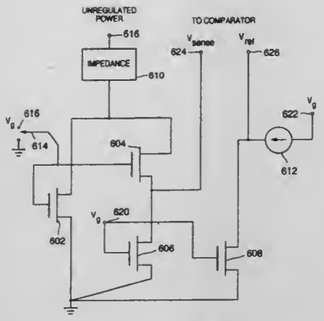
Int. Cl.[6] G01R *19/00;* **G11C** *27/02*

U.S. Cl. 324—158.1 **3 Claims**

1. A method of sensing current flowing through a switching device having resistive voltage-current characteristics, comprising the steps of:

sampling a potential generated across the switching device, the switching device repetitively interrupting the flow of current through an impedance;

generating a sensed potential by coupling to an output at least a portion of the sampled potential only during at least a portion of a period when the switching device is turned on; and



generating a reference potential for comparison with the sensed potential.

5,646,521

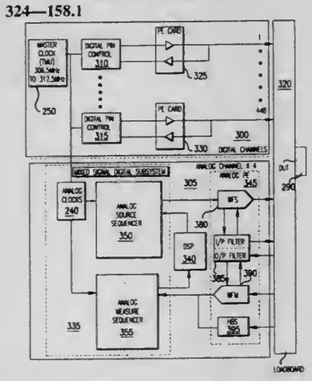
ANALOG CHANNEL FOR MIXED-SIGNAL-VLSI TESTER

Daniel Rosenthal, Saratoga; Kannan Konath, Fremont, both of Calif.; Robert Whyte, Ringwood, Hants, United Kingdom; Eric Norton, Cupertino, and Stuart Robert Pearce, San Jose, both of Calif., assignors to Schlumberger Technologies, Inc., San Jose, Calif.

Filed Aug. 1, 1995, Ser. No. 510,397

Int. Cl.[6] **G01R** *31/28*

U.S. Cl. 324—158.1 **22 Claims**



1. Apparatus for testing a mixed-signal integrated-circuit device-under-test (DUT), comprising:

a. a master clock **250**;

b. a plurality of digital channels, each digital channel having

i. digital pin slices **310**, **315** for receiving timing reference from the master clock **250** and communicating with digital pin electronics;

ii. digital pin electronics **325**, **330** communicating with the digital pin slices for applying digital signals to and receiving digital signals from a DUT **290**; and

c. a plurality of analog channels, each analog channel having

i. an analog source sequencer **350** under control of a DSP module **340** for generating digital representations of analog signals to be applied to the DUT **290**;

ii. analog pin electronics **345** responsive to the analog source sequencer **350** for applying analog signals to the DUT **290** and for receiving analog signals from a DUT **290**;

iii. an analog measure sequencer **355** responsive to the analog pin electronics **345** for preparing digital representations of analog signals produced by the DUT **290**; and

iv. a programmable DSP module **340** for processing representations of analog signals stored in the analog measure sequencer **355** and for supplying control information to the analog source sequencer **350**.

5,646,522

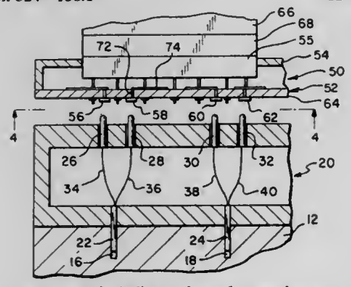
WIRELESS TEST FIXTURE FOR HIGH FREQUENCY TESTING

Alan Etemadpour, Van Nuys; Gary R. Haugh, Yorba Linda; Charles J. Lotka, Burbank, and Stephen Pizzica, San Pedro, all of Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Continuation of Ser. No. 951,502, Sep. 24, 1992, abandoned. This application Jun. 19, 1996, Ser. No. 755,756

Int. Cl.[6] **G01R** *1/04;31/28*

U.S. Cl. 324—158.1 **12 Claims**



1. A test system including a base for attachment to a test machine which provides electrical output signals, the base having an upper surface and having a plurality of spring contacts on the upper surface, the improvement comprising:

a test fixture including a printed wiring board, said printed wiring board having a lower surface, a plurality of contact pads on said lower surface corresponding to said spring contacts on said base, said test fixture having a connector thereon, said connector on said test fixture corresponding to the connector on an electronic module to be tested, a plurality of printed wiring traces on said printed wiring board interconnecting said pads with said connector on said printed wiring board, wherein said connector on said printed wiring board has pins thereon, wherein said pins extend through said printed wiring board and are soldered to said printed wiring board on the lower surface thereof, and said pins engage said printed wiring board for connection to printed wiring thereon; and

an output device to inform test personnel on status of the printed wiring board being tested,

wherein said contact pads receive said electrical output signals in predetermined combinations from said test machine, so that a module has a particular output signal sensed in said test machine and displayed on said output device.

5,646,523

APPARATUS FOR DETERMINING ANGULAR POSITION OF A MOTOR VEHICLE STEERING WHEEL

Harry Kaiser, Weberstrasse 37, D-71706 Markgröningen, and Manfred Abendroth, Strombergstrasse 9/1, D-71672 Marbach, both of Germany

PCT No. PCT/DE95/00343, § 371 Date Oct. 23, 1995, § 102(e) Date Oct. 23, 1995, PCT Pub. No. WO95/25660, PCT Pub. Date Sep. 28, 1995

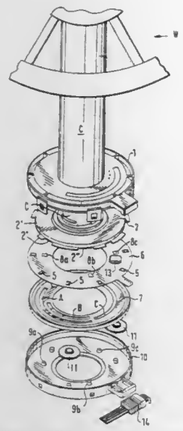
PCT Filed Mar. 14, 1995, Ser. No. 553,526

Claims priority, application Germany, Mar. 23, 1994, 44 09 892.8

Int. Cl.[6] **G01B** *7/30;* **B62D** *15/02;* **G01D** *5/249*

U.S. Cl. 324—207.2 **4 Claims**

1. An apparatus for determination of absolute angular position of a motor vehicle steering wheel (w) and steering column (c) attached to said steering wheel, said steering wheel and said



steering column being rotatable through a plurality of revolutions, said apparatus comprising

means for generating fine signals indicative of a relative angular position of said steering wheel during each of said revolutions, said means for generating said fine signals comprising a fine code disk (**2**) nonrotatably attached to said steering column and provided with circumferentially distributed code elements (**2'**,**2"**, **2"'**, . . .) and a plurality (n) of circumferentially distributed code element sensor means (**5**) for sensing said code elements (**2'**,**2"**, **2"'**, . . .) and for generating said fine signals so that said fine signals repeat after each revolution of said steering column; and

means for generating coarse signals indicative of an absolute angular position of said steering wheel and said steering column over the entire plurality of said revolutions thereof, said means for generating coarse signals comprising a coarse code disk (**7**) provided with at least three code tracks (A,B,C, . . .) spaced from each other on said coarse code disk (**7**) and at least three code track sensor means (**8***a*, **8***b*, **8***c* . . . .) for sensing respective ones of said at least three code tracks (A,B,C, . . .) and for generating a 3-bit coded signal indicative of said absolute angular position of the steering wheel over said plurality of said revolutions;

gear means (**11**,**7'**) for rotatably driving said coarse code disk (**7**) with said fine code disk(**2**), said gear means (**11**,**7'**) connecting said fine code disk and said coarse code disk to drive said coarse code disk with a predetermined gear reduction ratio, whereby an angular resolution of said means for generating the coarse signals is lower than an angular resolution of said means for generating the fine signals; and

means for logically combining and evaluating said coarse signals and said fine signals to determine said absolute angular position of said steering wheel and said steering column, said means comprising a microcontroller (**13**), so that said absolute angular position of said steering wheel can be determined with a precision according to the higher angular resolution of said means for generating said fine signals.

5,646,524

THREE DIMENSIONAL TRACKING SYSTEM EMPLOYING A ROTATING FIELD

Pinhas Gilboa, Haifa, Israel, assignor to Elbit Ltd., Haifa, Israel

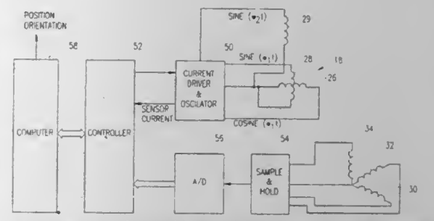
Filed Jun. 16, 1993, Ser. No. 77,523

Claims priority, application Israel, Jun. 16, 1992, 102218

Int. Cl.[6] **G01B** *7/14;* **G01S** *5/04;* **G01R** *33/02*

U.S. Cl. 324—207.17 **82 Claims**

1. Apparatus for determining the position and orientation of an object relative to a referenced frame, comprising:



a generator, associated with the reference frame, which produces a magnetic or electric field pattern rotating about a fixed axis;

a plurality of detectors, each of which generates at least one signal responsive to at least one of the electric and magnetic fields at at least one point associated with the object; and

calculation circuitry, responsive to the at least one signal, which determines the coordinates of the at least one point associated with each of said detectors with respect to the generator based on the total field strength at the at least one point, and which determines the three-dimensional position and orientation of the object,

wherein the object is a helmet, and the computation circuitry is operative to determine the orientation of the head of a person wearing the helmet.

5,646,525

THREE DIMENSIONAL TRACKING SYSTEM EMPLOYING A ROTATING FIELD

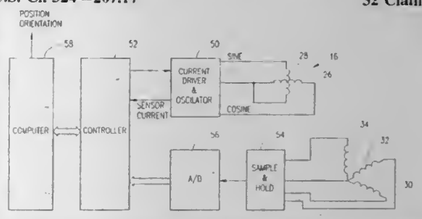
Pinhas Gilboa, Haifa, Israel, assignor to Elbit Ltd., Haifa, Israel

Continuation-in-part of Ser. No. 77,523, Jun. 16, 1993, Pat. No. 5,646,524. This application Feb. 8, 1995, Ser. No. 386,909

Claims priority, application Israel, Jun. 16, 1992, 102218; Feb. 8, 1994, 108599

Int. Cl.[6] **G01B** *7/14;* **G01S** *5/04;* **G01R** *33/02*

U.S. Cl. 324—207.17 **32 Claims**



1. Apparatus for determining the position and orientation of an object relative to a reference frame, comprising:

a generator, associated with the reference frame, which produces a magnetic or electric field pattern rotating about a fixed axis;

a plurality of detectors, each of which generates at least one signal responsive to at least one of the electric and magnetic fields at at least one point associated with the object; and

calculation circuitry, responsive to the at least one signal, which determines the coordinates of the at least one point associated with each of said detectors with respect to the generator based on the total field strength at the at least one point, and which determines the three-dimensional position and orientation of the object, wherein the generator comprises two dipole radiators having different orientation and phase.

5,646,526

JOSEPHSON SIGNAL DETECTOR, MEASUREMENT DEVICE USING THE SAME, AND METHOD OF USE

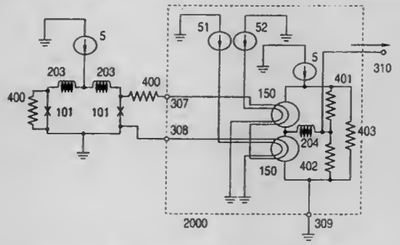
Eriko Takeda, Tokyo, and Toshikazu Nishino, Kawasaki, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 15, 1994, Ser. No. 356,495

Claims priority, application Japan, Dec. 20, 1993, 5-319403; Feb. 3, 1994, 6-011482

Int. Cl.[6] G01R *33/035;33/02;* **H03M** *1/12*

U.S. Cl. 324—248 **65 Claims**



1. A Josephson signal detector, comprising:

a sensor including at least one Josephson junction;

a comparator including Josephson junctions, for recognizing a magnitude of output voltage or output current of the sensor, so as to provide an output of the comparator;

a readout circuit including Josephson junctions, for reading out the output of the comparator; and

DC current sources, wherein the sensor, the comparator and the readout circuit are connected to the DC current sources so as to be powered substantially only by DC current.

5,646,527

HALL-EFFECT DEVICE WITH CURRENT AND HALL-VOLTAGE CONNECTIONS

Ramesh G. Mani, and Klaus von Klitzing, both of Stuttgart, Germany, assignors to R.G. Mani and K. Von Klitzing, Munich, Germany

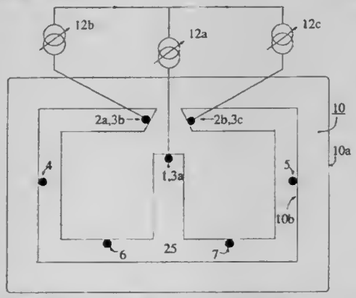
PCT No. PCT/EP94/00701, § 371 Date Dec. 1, 1995, § 102(e) Date Dec. 1, 1995, PCT Pub. No. WO94/20993, PCT Pub. Date Sep. 15, 1994

PCT Filed Mar. 8, 1994, Ser. No. 513,899

Claims priority, application Germany, Mar. 8, 1993, 43 07 249.6; Mar. 16, 1993, 43 08 375.7

Int. Cl.[6] G01K *33/07;* **H01L** *43/02;* **H03K** *3/38*

U.S. Cl. 324—251 **22 Claims**



1. A Hall effect device with at least one Hall element exhibiting a Hall voltage when subjected to a magnetic field having at least one component oriented vertically to the Hall element, said Hall element having a planar or platelike shape and being provided with current connections and Hall voltage connections, and at least one hole bounded by an inner edge in the plane perpendicular to the vertical magnetic field component with one of said connections arranged at said inner edge.

5,646,528

MAGNET ASSEMBLY

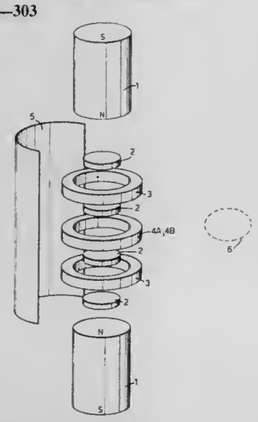
Peter Hanley, Lydney, United Kingdom, assignor to Oxford Instruments (UK) Ltd., Oxon, United Kingdom

Filed Jun. 12, 1995, Ser. No. 489,511

Claims priority, application United Kingdom, Jun. 15, 1994, 942012

Int. Cl.[6] G01V *3/00*

U.S. Cl. 324—303 **11 Claims**



1. A magnet assembly comprising:

a pair of substantially axially aligned, spaced apart first magnets having like poles facing each other;

one or more auxiliary second magnets axially aligned with the pair of first magnets such that all magnets in the assembly are axially aligned and a magnetic field of sufficient homogeneity to perform a nuclear magnetic resonance (NMR) process is generated in a working region laterally offset from said pair of first and said second magnets;

an oscillating magnetic field generating assembly for performing an NMR experiment, including:

a set of electrical coils connected to an oscillating electrical source, said coils being arranged between said pair of first magnets such that the magnetic field generated by said oscillating magnetic field generating assembly is also sufficiently uniform within said working region to perform and NMR experiment; and

a shield of electrically conductive material adjacent to and laterally offset from said set of electrical coils such that the magnetic field generated by said oscillating magnetic field generating assembly is asymmetrically offset from the axis of said pair of first magnets.

5,646,529

SYSTEM FOR PRODUCING HIGH-RESOLUTION MAGNETIC RESONANCE IMAGES WITH A SHORT MEASUREMENT TIME

Piero Barone, and Giovanni Sebastiani, both of Rome, Italy, assignors to Consiglio Nazionale delle Ricerche, Rome, Italy

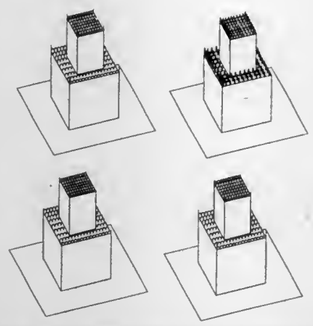
PCT No. PCT/IT92/00076, § 371 Date Jun. 6, 1995, § 102(e) Date Jun. 6, 1995, PCT Pub. No. WO94/10550, PCT Pub. Date May 11, 1994

PCT Filed Nov. 2, 1992, Ser. No. 424,394

Int. Cl.[6] G01V *3/00*

U.S. Cl. 324—309 **14 Claims**

1. A method for producing high-resolution magnetic resonance images with a short measurement time from the data measured by a MR machine, comprising the step of:



formation of each column of the image to be produced independently from the others, wherein a calculation is carried out of a plurality of groups of a finite number of extrapolated Fourier coefficients for each column, each group being determined by a unique and variable choice of the column data used for extrapolation and the order of an IIR filter, said column data being derived from data obtained from a MR machine.

5,646,530

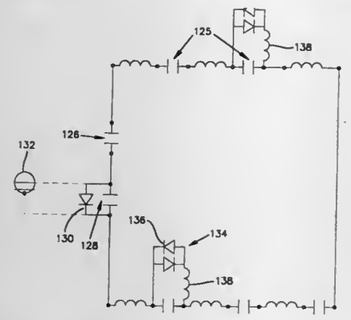
SURFACE COIL FOR HIGH RESOLUTION IMAGING USING A MAGNETIC RESONANCE IMAGING APPARATUS

Susan A. Strenk, and Lawrence M. Strenk, both of Aurora, Ohio, assignors to Diagnostic Instruments, Inc., Twinsburg, Ohio

Filed Sep. 19, 1995, Ser. No. 530,576

Int. Cl.[6] G01V *3/00*

U.S. Cl. 324—318 **20 Claims**



1. An RF surface coil for receiving magnetic resonance signals from a region to be imaged, comprising,

at least two turns of an electrical conductor formed in a solenoidal configuration, with said at least two turns being positioned in spaced apart relationship defining an interturn spacing therebetween;

each of said at least two turns including a predetermined number of capacitive splits spaced at intervals along the length of said electrical conductor forming said turns, said splits being chosen to reduce capacitive coupling between said turns and between said region; and

coupling means for providing electrical connection between said at least two turns and an RF receiver of a magnetic resonance imaging apparatus.

5,646,531

HIGH-FREQUENCY ANTENNA SYSTEM OF A DEVICE FOR NUCLEAR MAGNETIC RESONANCE

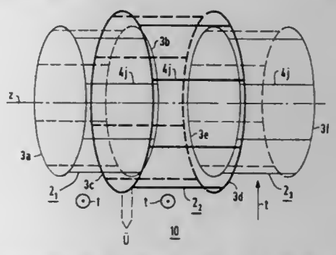
Wolfgang Renz, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, München, Germany

Filed Apr. 26, 1996, Ser. No. 639,372

Claims priority, application Germany, Apr. 27, 1995, 195 15 586.6

Int. Cl.[6] G01V *3/00*

U.S. Cl. 324—318 **11 Claims**



1. A high-frequency antenna system for a nuclear magnetic resonance device, the high-frequency antenna system having a longitudinal axis, the high-frequency antenna system comprising:

a plurality of antenna elements arranged substantially coaxially about the longitudinal axis and including adjacent antenna elements, each of the adjacent antenna elements having a portion which does not overlap a portion of another adjacent antenna element, each of the plurality of antenna elements being cage-shaped and including two end-located conductor rings and a plurality of conductor members,

wherein the plurality of conductor members are positioned substantially between the two end-located conductor rings, the conductor menders extending substantially parallel to the longitudinal axis.

5,646,532

PARTIAL BODY TOMOGRAPH

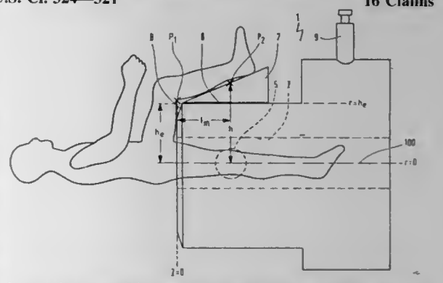
Bertold Knüttel, Rheinstetten, and Michael Westphal, Offenbach, both of Germany, assignors to Bruker Medizintechnik GmbH, Rheinstetten, Germany

Filed Sep. 19, 1994, Ser. No. 308,143

Claims priority, application Germany, Sep. 20, 1993, 43 31 843.6; Jan. 25, 1994, 44 02 027.9

Int. Cl.[6] G01R *33/30;* **A61B** *5/055*

U.S. Cl. 324—321 **16 Claims**



1. A nuclear magnetic resonance (NMR) tomography system, the system having a system geometry described by an orthogonal cylindrical coordinate system having a horizontal z-axis, an r-axis perpendicular thereto, and an azimuthal angle ϕ about the z-axis with a coordinate origin at z=r=0, the tomography system comprising:

a cryostat having a first axial end at z=0 and a horizontal room temperature bore having a bore radius between 10 cm and 25 cm, the cryostat also having an outer casing;

a vessel filled with liquid helium located within the cryostat and shaped asymmetrically about the z-axis; and

a superconducting solenoid coil shaped symmetrically about the z-axis and in thermal contact with the liquid helium, the solenoid coil generating a static homogeneous magnetic field having a homogeneity volume located within the room temperature bore, the homogeneity volume having a center location at $z=l_m$ and r=0, the outer casing having, within first azimuthal angular region $\Delta\phi_1$ and between z=0 and $z=l_m$, a first outer casing distance $r_1(z)$ from the horizontal axis which is greater than the bore radius and less than $(h-h_e)z/l_m+h_e$, where h_e is a maximum first outer casing distance at z=0 and h is the maximum first outer casing distance at $z=l_m$ with h<50 cm, h_e<35 cm, and l_m<35 cm, the outer casing having, within a second azimuthal angular region $\Delta\phi_2$, a second outer casing distance $r_2(z)$ from the z-axis which, for $0<z<l_m$, is greater than the first outer casing distance $r_1(z)$.

5,646,533

INDUCTION MEASUREMENT IN THE PRESENCE OF METALLIC, MAGNETIC WALLS

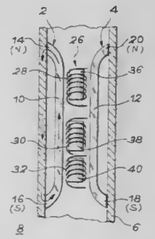
Marcel Locatelli, Montbonnot; Jean-Jacques Chaillout, St. Etienne de Crossey, and Michel Brochier, Jarrie, all of France, assignors to Commissariat a l'Energie Atomique, France

Filed Dec. 11, 1995, Ser. No. 570,086

Claims priority, application France, Dec. 9, 1994, 94 14848

Int. Cl.[6] G01V *3/28*

U.S. Cl. 324—339 **13 Claims**



1. Device for the induction measurement of a medium, adjacent a substantially cylindrical, metallic, magnetic walled well casing having a cylindrical axis, said device comprising:

means for magnetically saturating said magnetic wall, comprising at least two magnetic circuits for direct application to said magnetic wall, each of said magnetic circuits having a plate-like central portion, situated between two lateral portions, each lateral portion having a lateral end for contact with said wall, along a zone parallel to the cylindrical axis of said well,

means for inducing an induction signal in said medium beyond the magnetic wall, after magnetic saturation of said magnetic wall, and,

means for receiving a measurement signal retransmitted by said medium in response to said induction signal.

5,646,534

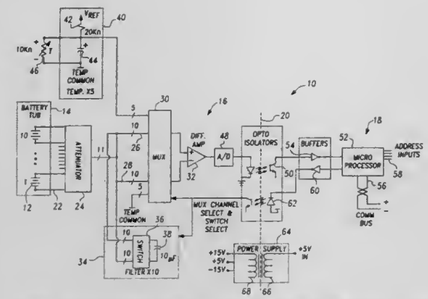
BATTERY MONITOR FOR ELECTRIC VEHICLES

John J. C. Kopera, Rochester Hills, Mich., assignor to Chrysler Corporation, Auburn Hills, Mich.

Filed Jan. 6, 1995, Ser. No. 369,250

Int. Cl.[6] G01R *31/36;* **G01N** *27/416*

U.S. Cl. 324—434 **17 Claims**



1. A battery monitor for monitoring a plurality of batteries, said battery monitor comprising:

means for providing battery voltage signals indicative of the battery voltage of each of the plurality of batteries;

a single multiplexing device having a predetermined number of channels, said multiplexing device being responsive to the battery voltage signals from the plurality of batteries through the means for providing battery voltage signals, said multiplexing device outputting a selected one of the battery voltage signals;

isolator means for receiving the selected battery voltage signal and transferring the selected battery voltage signal to a portion of the battery monitor isolated from the battery voltage signals from each of the plurality of batteries;

controller means for receiving the selected battery voltage signal, said controller means providing a signal indicative of the voltage of the selected battery voltage signal; and

switching means for allowing the controller means to determine the battery voltage of the selected battery voltage signal when current from the plurality of batteries is flowing in the battery monitor and when current from the plurality of batteries is interrupted, said switching means including at least one switched filter that is selectively switched into and out of the battery monitor by the controller means through the isolator means prior to the battery voltage signals being applied to the multiplexing device, said at least one switched filter allowing the controller means to provide an instantaneous battery voltage measurement when the switched filter is switched out of the battery monitor, and a filtered battery voltage measurement when the switched filter is switched into the battery monitor.

5,646,535

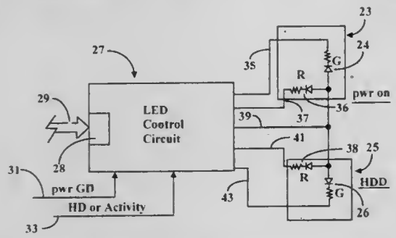
DIAGNOSTIC DISPLAY USING FRONT PANEL LEDS

Pascal Dornier, Sunnyvale, Calif., assignor to Elonex Ip Hudings, Ltd., London, United Kingdom

Filed Jan. 17, 1995, Ser. No. 373,017

Int. Cl.[6] G01R *31/02*

U.S. Cl. 324—556 **3 Claims**



1. A method for indicating state of completion of test procedures in a power on self test (POST) routine, comprising steps of:

(a) dividing the POST routine into discrete tests and groups of tests;

(b) inserting a control command into the post routine between one and another of the discrete tests and groups of tests, the control command configured to cause a write of a unique digital value to a port address;

(c) controlling the on-off and color state of two or more LEDs observable by a user in a combination to indicate the unique digital value.

5,646,536

METHOD FOR CALIBRATING CIRCUIT NETWORK MEASUREMENT DEVICES

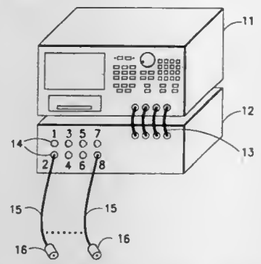
Atsushi Ishihara, Hyogo, Japan, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 19, 1995, Ser. No. 504,181

Claims priority, application Japan, Aug. 24, 1994, 06-222655

Int. Cl.[6] G01R *27/00*

U.S. Cl. 324—601 **3 Claims**



1. A method for using a through calibration procedure to correct transmission coefficients between N measurement ports of a circuit network measurement device, where N is at least three, said method comprising the steps of:

(a) measuring transmission coefficients between N combinations of measurement ports and determining error corrections therefrom; and

(b) determining by calculation, error corrections of transmission coefficients for all combinations of the N measurement ports from results obtained in step a.

5,646,537

ANTENNA-PROBE MEASURING MOISTURE IN SOIL AND OTHER MEDIUMS

Whitney Skaling, Buellton, and Percy E. Skaling, Santa Barbara, both of Calif., assignors to Soilmoisture Equipment Corp., Goleta, Calif.

Continuation of Ser. No. 398,641, Feb. 23, 1995, abandoned, which is a continuation of Ser. No. 142,833, Oct. 25, 1993, Pat. No. 5,420,517, which is a continuation of Ser. No. 855,950, Mar. 23, 1992, abandoned. This application May 9, 1996, Ser. No. 647,143

Int. Cl.[6] G01N *22/00*

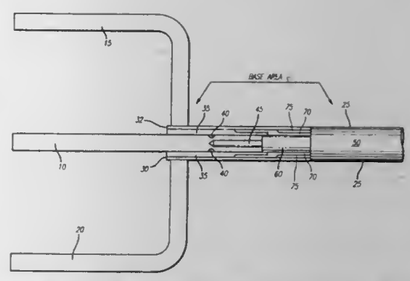
U.S. Cl. 324—643 **12 Claims**

1. A time domain reflectometry waveguide assembly for measuring the moisture content in a medium, comprising:

a probe having at least two spaced apart waveguide conductors for insertion into the medium;

a coaxial cable connected to said probe for transmission of a signal of the kind used in time domain reflectometry, said coaxial cable having a center conductor, an outer conductor and an insulator spacing said inner conductor from said outer conductor, said center conductor connected to one of said waveguide conductors and the outer conductor connected to the other of said waveguide conductors, wherein a specific impedance mismatch between the coaxial cable and the waveguide conductors independent of the impedance of said medium causes a detectable characteristic reference reflection in a time domain reflectometry signal transmitted through said coaxial cable and said probe; and

a processor calculating the apparent dielectric constant value of said medium based on a time delay measured in response to said detectable characteristic reference reflection, and correlating the apparent dielectric constant value with data reflecting the moisture content of the medium.



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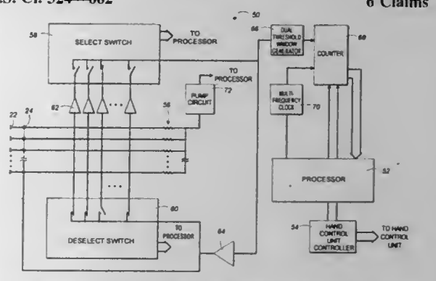
METHOD AND APPARATUS FOR FASTENER HOLE INSPECTION WITH A CAPACITIVE PROBE

Edward N. Lide, Atlanta, and Samuel R. Glidewell, Marietta, both of Ga., assignors to Measurement Systems, Inc., Marietta, Ga.

Filed Jun. 13, 1995, Ser. No. 487,254

Int. Cl.[6] G01R *27/26*

U.S. Cl. 324—662 **6 Claims**



1. An apparatus for inspecting the surface of a fastener hole for compliance with specified dimensional standards, comprising:

(a) a capacitive probe having a tubular, dielectric housing with a plurality of sensor elements arranged circumferentially within the housing at one or more levels for insertion into the fastener hole;

(b) means for grounding the fastener hole;

(c) an electronics unit electrically connected to said probe, said electronics unit comprising

(i) a select switch for sequentially selecting one of said plurality of sensor elements thereby defining a selected sensor element and a plurality of deselected sensor elements, said select switch having an input and an output,

(ii) a deselect switch having an input and an output, the output being connected to said plurality of deselected sensor elements,

(iii) voltage generation means for momentarily charging said selected sensor element with a charging voltage whereby a capacitance is developed between the fastener hole and said selected sensor element,

(iv) a resistor electrically connected between said selected sensor element and said voltage generation means,

(v) a dual threshold window generator electrically connected to the output of said select switch for monitoring a signal representing the charging voltage applied to said selected sensor element,

(vi) counting means electrically connected to said dual threshold window generator for counting the time required for the charging voltage to decay from a first predetermined voltage level to a second predetermined voltage level,

(vii) a drive amplifier electrically connected to the output of said select switch for applying the signal representing the charging voltage to the input of said deselect switch and to adjacent electrically conductive components,

(viii) a first buffer electrically connected between said selected sensor element and said select switch, and

(ix) processor means connected to said select switch, said deselect switch, said voltage generation means, and said counting means for determining the capacitance and distance between said selected sensor element and the surface of the fastener hole whereby compliance of the surface of the fastener hole with specified dimensional standards may be evaluated; and

(d) a data storage, processing, and retrieval means electrically connected to said processor.

5,646,539

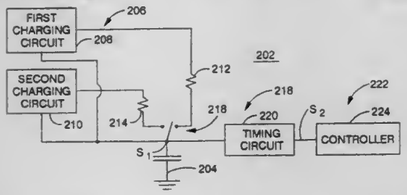
MULTI-PURPOSE CAPACITIVE SENSOR

George Codina, North Hollywood, Calif.; Chandrasekar Ramamoorthy, Normal, and Donna J. Murr, Dunlap, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Aug. 31, 1995, Ser. No. 521,719

Int. Cl.[6] G01N *27/22;11/02;15/04;* **G01F** *1/56*

U.S. Cl. 324—678 **8 Claims**



1. An apparatus for sensing two parameters of a hydraulic system having a hydraulic line, comprising:

a pair of electrodes contained within the line and being oppositely spaced, forming a capacitor;

charging means, coupled to said capacitor for alternately producing first and second charging currents having first and second constant magnitudes, respectively, and charging said capacitor to first and second predetermined voltages, respectively;

timing means, connected to said capacitor, for detecting the time at which said charging means begins to produce said first and second charging currents and the time at which said capacitor has been charged to said first and second predetermined voltages, and for producing a pulse width modulated signal having a series of alternating first and second pulses, said first and second pulses being indicative of the first and second parameters, respectively, said first pulses being defined by the start of said first charging current and the time at which said capacitor has been charged to said first predetermined voltage, said second pulses being defined by the start of said second charging current and the time at which said capacitor has been charged to said second predetermined voltage; and,

controlling means for receiving said pulse width modulated signal and responsively determining the two parameters.

5,646,540

APPARATUS AND METHOD FOR MEASURING ELECTROMAGNETIC AGEING PARAMETER OF A CIRCUIT ELEMENT AND PREDICTING ITS VALUES

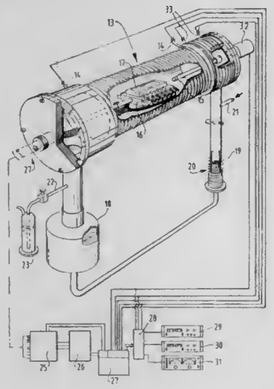
Lambert Mathias Maria Stals, Diepenbeek; Luc Irena Franciscus De Schepper, Hasselt; Ward Aimè Stefan De Ceuninck, Avelgem, and Jean Joseph Marie Roggen, Lummen, all of Belgium, assignors to Interuniversitair Micro-Elektronic Centrum VZW, Leuven-Heverlee, and Limburgs Universitair Centrum, Diepenbeek, both of Belgium

Continuation-in-part of Ser. No. 83,385, Jun. 28, 1993, abandoned, which is a continuation of Ser. No. 656,045, Feb. 14, 1991, abandoned. This application Jan. 13, 1995, Ser. No. 372,383

Claims priority, application Netherlands, Apr. 19, 1989, 89.00982; Nov. 22, 1989, 89.02891

Int. Cl.[6] G01R *31/02*

U.S. Cl. 324—691 **21 Claims**



1. A method for studying the change of an electromagnetic ageing parameter of a component over time, comprising the steps of:

placing the component in an oven at a predetermined temperature;

controlling the oven temperature so that the temperature has a sufficiently small variation that a parameter Z has a value approximately equal to 100, wherein Z is defined as

$$Z=(\Delta P/P)/MR,$$

where P is an ageing parameter of the component being measured, ΔP/P is the relative change in a value of P during a measurement process of duration Δt, and MR is a temperature dependent measurement resolution, thereby causing measured changes in the value of the component's ageing parameter to be predominantly a result of ageing of the component instead of temperature dependent changes of the parameter value; and

measuring a value of the electromagnetic ageing parameter of the component while it is in the oven at this temperature, wherein a plurality of measurements of the parameter are made over a time period of less than 48 hours.

5,646,541

APPARATUS AND METHOD FOR MEASURING CIRCUIT NETWORK

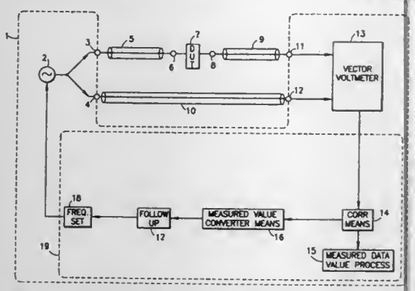
Kazuhiko Ninomiya, Hyogo, Japan, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 262,616, Jun. 20, 1994, abandoned. This application Mar. 22, 1995, Ser. No. 408,910

Claims priority, application Japan, Mar. 24, 1994, 6-077949

Int. Cl.[6] G01R *29/22;27/28*

U.S. Cl. 324—727 **6 Claims**



1. A circuit network measuring apparatus for applying a measurement signal from a signal source to a device under test (DUT) and to a reference path, signals from said DUT and said reference path being applied as first and second inputs to vector voltmeter means which provides an output indicative of a difference between said first and second inputs, said circuit network measuring apparatus including a software-controlled computer, and further comprising:

measured value converting means responsive to a vector voltage measurement value from said vector voltmeter means for outputting a phase angle value;

follow-up means responsive to said phase angle value for determining a frequency value from said phase angle; and

means responsive to said frequency value for outputting a frequency control signal to said signal source to cause a change in frequency output thereof in a direction which reduces said difference between said first and second inputs applied to said vector voltmeter.

5,646,542

PROBING ADAPTER FOR TESTING IC PACKAGES

Thomas J. Zamborelli, Colorado Springs, Colo., and Michael J. Steen, Wahpeton, N. Dak., assignors to Hewlett-Packard Co., Palo Alto, Calif.

Continuation of Ser. No. 265,853, Jun. 27, 1994, abandoned. This application Jan. 16, 1996, Ser. No. 587,344

Int. Cl.[6] H01H *31/02*

U.S. Cl. 324—755 **2 Claims**

1. A probe adapter for contacting leads of an integrated circuit package, the integrated circuit package having a top side and being mounted to a circuit board, the probe adapter comprising:

a probe wire assembly having a plurality of probe wires, the plurality of probe wires electrically connected to a first section of the leads of the integrated circuit package, the first section extending horizontally outward from the integrated circuit package, the probe wire assembly is formed from a ribbon-style cable having a plastic sheath, the plastic sheath prodding insolation between individual probe wires; and

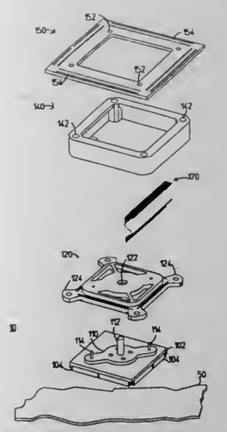
a mechanical assembly, which retains the probe wire assembly, the mechanical assembly aligns the probe wire assembly with the integrated circuit package, maintaining proper electrical connection between the leads and the plurality of probe wires, the mechanical assembly comprises: (i) an alignment member coupled to the integrated circuit package; (ii) a guide, coupled to the alignment member, the guide having a perimeter and a plurality of apertures positioned along the perimeter for retaining the plurality of probe wires; (iii) a frame, connected to the guide, for substantially encasing the probe wire assembly; and (iv) an adapter printed circuit board; connected to the frame, the adapter printed circuit board is electrically connected to the plurality of probe wires, wherein the alignment member comprises:

a rectangular frame;

at least two corner guides, positioned diagonally within the rectangular frame;

at least two guide teeth stubs, positioned along opposite sides within the rectangular frame, each of said at least two guide teeth stubs having teeth extending inwardly from the rectangular frame; and

at least two apertures, positioned diagonally along the rectangular frame, said at least two apertures accept screws to facilitate mounting the probe adapter to the circuit board.



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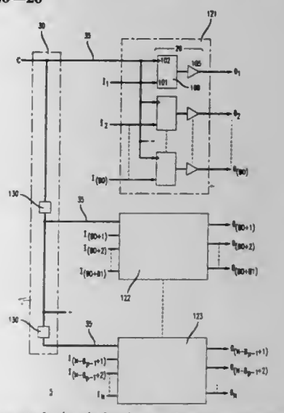
INTEGRATED CIRCUIT HAVING REDUCED INDUCTIVE NOISE

Attilio Joseph Rainal, Morristown, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Oct. 12, 1995, Ser. No. 542,242

Int. Cl.[6] H03K *17/16*

U.S. Cl. 326—26 **18 Claims**



1. An integrated circuit having at least one output section to transmit a plurality of data signals over a plurality of communication lines, the output section comprising:

a plurality of controllable drivers coupled to respective ones of the plurality of communication lines, the drivers further hav-

ing data inputs for receipt of data to be transmitted and control inputs, wherein each driver is capable of transmitting a data signal on a respective communication line corresponding to data at its data input upon receipt of a control signal at its control input; and

a controller coupled to the control inputs of the drivers, the controller providing control signals to the drivers to stagger the transmission of groups of data signals by the output drivers, wherein each group includes at least one data signal with at least one group including a different number of data signals than the other group or groups to achieve a reduction in inductive noise of greater than 25% relative to a corresponding non-staggered transmission of data signal, and wherein a substantially largest time interval in staggering the data signal of a last group relative to a first group is less than approximately five times the transition switching time of one of said drivers.

5,646,544

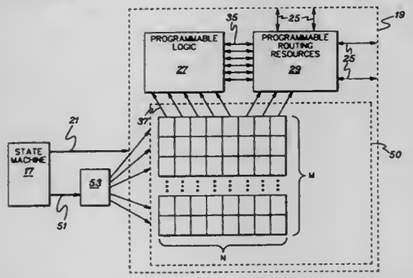
SYSTEM AND METHOD FOR DYNAMICALLY RECONFIGURING A PROGRAMMABLE GATE ARRAY

Joseph Andrew Iadanza, Hinesburg, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 5, 1995, Ser. No. 462,392

Int. Cl.[6] H03K *19/173*

U.S. Cl. 326—38 **17 Claims**



1. A configuration system for a logic cell within a programmable array, comprising:

a plurality of programming words simultaneously stored in said programmable array, of which each of at least two programming words is engagable to control a configuration of the logic cell; and

means to engage a selected programming word of said at least two programming words to control the configuration of the logic cell, including a wordline for each of said at least two programming words to selectively engage the respective programming word;

wherein said means to engage further includes means for coupling the wordlines to selected logic cells within the programmable array to facilitate engagement of the selected programming word by said selected logic cells.

5,646,545

TIME MULTIPLEXED PROGRAMMABLE LOGIC DEVICE

Stephen M. Trimberger, San Jose; Richard A. Carberry, Los Gatos; Robert Anders Johnson, San Jose, and Jennifer Wong, Fremont, all of Calif., assignors to Xilinx, Inc., San Jose, Calif.

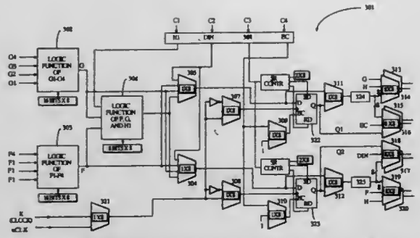
Filed Aug. 18, 1995, Ser. No. 516,186

Int. Cl.[6] H03K *19/173*

U.S. Cl. 326—38 **65 Claims**

61. A programmable logic device comprising:

at least one configurable element;



an interconnect structure for interconnecting said at least one configurable element;

a plurality of programmable logic elements for configuring said at least one configurable element, wherein at least one programmable logic element includes a plurality of memory cells for configuring said at least one configurable element, wherein the number of said plurality of memory cells in a first programmable logic element differs from the number of said plurality of memory cells in a second programmable logic element.

5,646,546

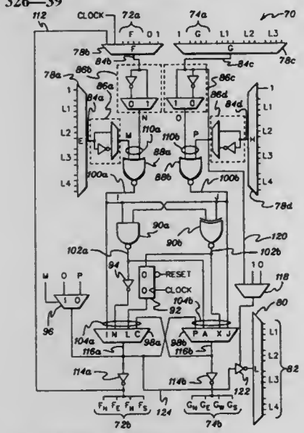
PROGRAMMABLE LOGIC CELL HAVING CONFIGURABLE GATES AND MULTIPLEXERS

Allan Robert Bertolet, Williston; Kim P. N. Clinton, Essex Junction; Christine Marie Fuller, Williston; Scott Whitney Gould, South Burlington; Steven Paul Hartman, Jericho; Joseph Andrew Iadanza, Hinesburg; Frank Ray Keyser, Colchester; Eric Ernest Millham, St. George; Timothy Shawn Reny, Underhill Center; Brian A. Worth, Milton; Gulson Yasar, South Burlington, and Terrance John Zittritsch, Williston, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 2, 1995, Ser. No. 460,481

Int. Cl.[6] H03F *19/177*

U.S. Cl. 326—39 **38 Claims**



1. A programmable logic cell comprising:

first and second logic gates, each of said first and second logic gates having at least two inputs, an output, and a control node, each of said first and second logic gates being configurable to perform one of a predetermined set of logic functions on logic signals supplied to its respective at least two inputs, each of said first and second logic gates being configured with its respective control node; and

third and fourth logic gates, each of said third and fourth logic gates having first and second inputs, one of the first and second inputs of each of the third and fourth logic gates being connected to the output of one of the first and second logic gates, each of the third and fourth logic gates further having an output.

5,646,547

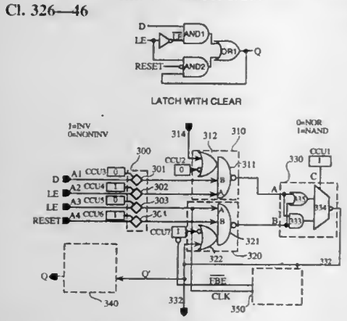
LOGIC CELL WHICH CAN BE CONFIGURED AS A LATCH WITHOUT STATIC ONE'S PROBLEM

F. Erich Goetting, Cupertino, Calif., assignor to Xilinx, Inc., San Jose, Calif.

Continuation of Ser. No. 234,764, Apr. 28, 1994, abandoned. This application Oct. 26, 1995, Ser. No. 548,654

Int. Cl.[6] H03K *3/289*

U.S. Cl. 326—46 **3 Claims**



1. A transparent latch comprising:

a data input section which receives a data input signal and a first internal clock signal, and generates a data output signal;

a feedback section which receives a feedback input signal and a second internal clock signal, and generates a feedback output signal;

a first selectively inverting input buffer for receiving an external clock signal and providing one of said external clock signal and the complement of said external clock signal as said first internal clock signal;

a second selectively inverting input buffer for receiving said external clock signal and providing one of said external clock signal and the complement of said external clock signal as said second internal clock signal;

means for causing one of said first and second selectively inverting input buffers to provide said external clock signal and the other of said first and second selectively inverting input buffers to provide the complement of said external clock signal;

a second section which generates an output signal from signals provided by said data input section and said feedback section, said output signal serving as said feedback input signal;

said first and second selectively inverting input buffers having a first trip point, and said data input section and said feedback section comprising logic gates having a second trip point lower than said first trip point.

5,646,548

EFFICIENT METHOD AND RESULTING STRUCTURE FOR INTEGRATED CIRCUITS WITH FLEXIBLE I/O INTERFACE AND POWER SUPPLY VOLTAGES

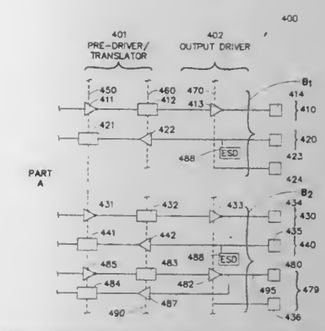
Chingchi Yao, Saratoga, and Poucheng Wang, Mt. View, both of Calif., assignors to Oki Semiconductor, Inc., Hackensack, N.J.

Continuation of Ser. No. 299,004, Aug. 31, 1994, Pat. No. 5,521,530. This application Feb. 14, 1996, Ser. No. 601,375

Int. Cl.[6] H03K *19/0185*

U.S. Cl. 326—80 **7 Claims**

1. A method of transferring an input signal through a semiconductor integrated circuit comprising the steps of:



providing a first input signal at one of a plurality of VHin/VLin voltage levels on an input pad located on a semiconductor integrated circuit;

sending said input signal through a level shifter, said level shifter being coupled to said input pad;

converting said first input signal from said one of said plurality of VHin/VLin voltage levels to a second input signal at another voltage level through an input translator, said input translator being coupled to said level shifter, said input translator being coupled to a power pad, said power pad supplying one of a plurality of power supply voltage levels; and

transmitting said second input signal for use in a core region of said semiconductor integrated circuit.

5,646,549

SEMICONDUCTOR DEVICE HAVING AN OUTPUT CIRCUIT FOR TRANSMITTING LOW-VOLTAGE DIFFERENTIAL SIGNALS

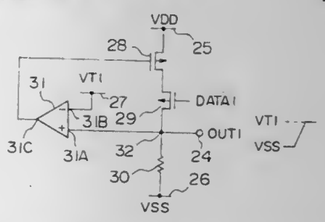
Keijiro Yamamoto, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 4, 1996, Ser. No. 582,931

Claims priority, application Japan, Jun. 21, 1995, 7-154160

Int. Cl.[6] H03K *19/0185*

U.S. Cl. 326—81 **12 Claims**



1. A semiconductor device having an output circuit which comprises:

a first field-effect transistor having a source connected to a line from which a first voltage is inputted;

a second field-effect transistor having a source connected to a drain of said first field-effect transistor, a gate connected to a data line from which a level signal is inputted, and a drain connected to an output terminal to which an output signal is outputted; and

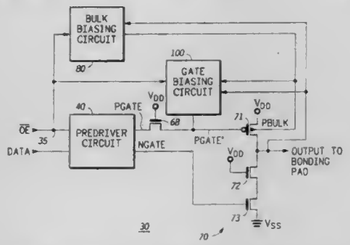
a control unit which controls a voltage at a gate of said first field-effect transistor when the second field-effect transistor is in ON state, so that a voltage at the drain of said second field-effect transistor is held at a second voltage, wherein said output circuit further comprises an input terminal from which the second voltage is inputted to said control unit.

5,646,550

HIGH RELIABILITY OUTPUT BUFFER FOR MULTIPLE VOLTAGE SYSTEM

Jules D. Campbell, Jr.; Rene M. Delgado, and Steve Lim, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 22, 1996, Ser. No. 605,422
Int. Cl.[6] H03K *19/0185*
U.S. Cl. 326—81 **10 Claims**



1. A high reliability output buffer for a multiple voltage system comprising:

an enable input terminal for receiving an enable signal;

a predriver circuit having a data input terminal for receiving a data signal, a control input terminal coupled to said enable input terminal, and first and second output terminals for providing first and second predrive signals;

said predriver circuit providing first predrive at a logic state corresponding to said data signal when said enable signal is active, and providing said first predrive signal at a logic state corresponding to a first power supply voltage terminal when said enable signal is inactive;

said predriver circuit providing said second predrive signal at a logic state corresponding to said data signal when said enable signal is active, and providing said second predrive signal at a logic state corresponding to a second power supply voltage terminal when said enable signal is inactive;

a first transistor of a first conductivity type having a first current electrode coupled to said first power supply voltage terminal, a control electrode coupled to the first output terminal of said predriver circuit, a second current electrode for providing an output signal, and a bulk electrode;

a second transistor of a second conductivity type having a first current electrode coupled to said second current electrode of said first transistor, a control electrode for receiving said second predrive signal, and a second current electrode coupled to said second power supply voltage terminal; and

a bulk biasing circuit having an input terminal coupled to said enable input terminal, and an output terminal coupled to said bulk of said first transistor, said bulk biasing circuit coupling said bulk electrode of said first transistor to said first power supply voltage terminal in response to said enable signal,

wherein said bulk biasing circuit further has a second input terminal for receiving said output signal, and wherein said bulk biasing circuit further couples said bulk of said first transistor to said output signal when a voltage of said output signal exceeds a voltage of said first power supply voltage terminal by a predetermined amount.

5,646,551

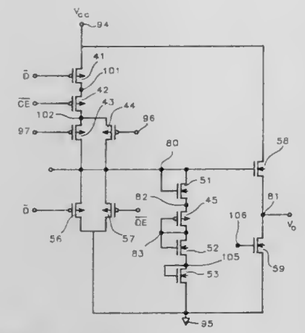
MIXED MODE OUTPUT BUFFER CIRCUIT FOR CMOSIC

Tah-Kang Joseph Ting, Hsinchu, Taiwan, assignor to Etron Technology Inc., Hsinchu, Taiwan

Division of Ser. No. 512,237, Aug. 7, 1995, Pat. No. 5,534,789.
This application Jun. 13, 1996, Ser. No. 663,440
Int. Cl.[6] H03K *19/0948*
U.S. Cl. 326—83 **2 Claims**

1. An internal voltage clamping circuit, comprising:

an internal voltage node;



a V_{cc} voltage supply node;

an output voltage node;

a ground node;

a modified OR-INVERT gate having inputs and an output wherein said output is connected to said internal voltage node;

an output N channel metal oxide semiconductor field effect transistor having a drain, a gate, and a source wherein said gate of said output N channel metal oxide semiconductor field effect transistor is connected to said internal voltage node, said drain of said output N channel metal oxide semiconductor field effect transistor is connected to said V_{cc} voltage supply node, and source of said output N channel metal oxide semiconductor field effect transistor is connected to said output voltage node; and

a series of a first, a second, and a third N channel metal oxide semiconductor field effect transistors, each having a drain connected to a gate and a source, and one P channel metal oxide semiconductor field effect transistor, having a drain connected to a gate and a source, connected so that the drain of the first said N channel metal oxide semiconductor field effect transistor in said series is connected to said internal voltage node, the source of the third said N channel metal oxide semiconductor field effect transistor in said series is connected to said ground node, the source of said P channel metal oxide semiconductor field effect transistor in said series is connected to the source of the first said N channel metal oxide semiconductor field effect transistor in said series, the drain of the second said N channel metal oxide semiconductor field effect transistor in said series is connected to the drain of said P channel metal oxide semiconductor field effect transistor in said series, and the source of the second said N channel metal oxide semiconductor field effect transistor in said series is connected to the drain of the third said N channel metal oxide semiconductor field effect transistor in said series.

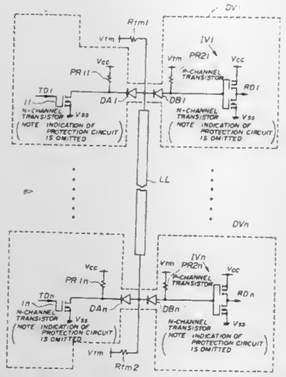
5,646,552

DATA TRANSMISSION DEVICE USED TOGETHER WITH SYSTEM INTERFACE HAVING IMPROVED DATA TRANSMISSION PERFORMANCE

Shuichi Ota, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Aug. 12, 1993, Ser. No. 105,069
Claims priority, application Japan, Aug. 14, 1992, 4-237626
Int. Cl.[6] H03K *19/0175*
U.S. Cl. 326—86 **12 Claims**

3. A data transmission device used for transmitting data between a first apparatus and a second apparatus through a system interface, wherein said data transmission device comprises cutting off means for substantially cutting off a path connecting said first apparatus and said system interface in response to a signal being output from said first apparatus which has a first predetermined signal level; and



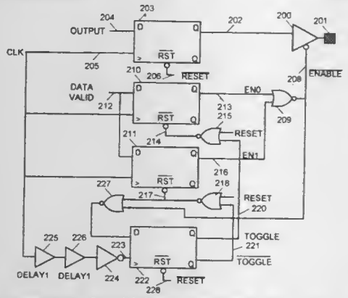
wherein said data transmission device comprises resistance means, having a predetermined resistance, for connecting said system interface and said first apparatus, said predetermined resistance being greater than a characteristic impedance of a transmission line comprising said system interface.

5,646,553

DRIVER FOR TRI-STATE BUS

Bruce W. Mitchell, and Mark S. Isfeld, both of San Jose, Calif., assignors to 3COM Corporation, Santa Clara, Calif.

Filed May 10, 1995, Ser. No. 438,488
Int. Cl.[6] H03K *19/0185;19/00*
U.S. Cl. 326—86 **15 Claims**



1. An apparatus for driving a particular line of a tri-state, synchronous bus having a bus cycle clock, comprising:

a driver having a data input, having an enable input, and having an output for connection to the particular line, the driver having a first state when an enable signal on the enable input has one value in which the output presents a high impedance to the particular line, a second state when an enable signal on the enable input has another value and a data signal on the data input has one binary value in which the driver supplies a high voltage signal to the particular line and a third state when an enable signal on the enable input has the other value and a data signal on the data input has another binary value in which the driver supplies a low voltage signal to the particular line;

an enable circuit which supplies the enable signal to the enable input of the driver, the enable signal causing turn on transitions in the driver from the first state to one of the second or third states corresponding to data on the data input at a particular phase of a bus cycle, and causing turn off transitions in the driver from one of the second or third states corresponding to data on the data input to the first state before the particular phase of a following bus cycle; and

a bus holder circuit, coupled to the particular line, which holds data on the particular line between turn off and turn on transitions of the driver;

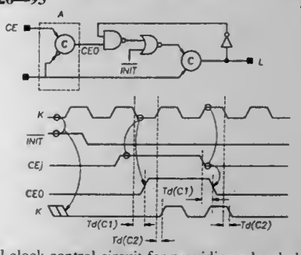
wherein the driver includes a register having an input coupled to the data input of the driver, and a clock input coupled to the bus cycle clock, for synchronizing data on the output of the driver with the bus cycle clock.

5,646,554

METHOD AND APPARATUS FOR SELECTIVE CLOCKING USING A MULLER-C ELEMENT

Seokjin Kim, Amherst, and Ramalingam Sridhar, East Amherst, both of N.Y., assignors to Research Foundation of State University of New York, Albany, N.Y.

Filed Mar. 16, 1995, Ser. No. 406,316
Int. Cl.[6] H03K *19/096*
U.S. Cl. 326—93 **20 Claims**



1. A local clock control circuit for providing a local clock signal to a controlled block of a digital circuit, comprising:

an enable signal relay for providing a secondary enable signal in response to detection of an enable signal, said enable signal relay having a first input for receiving an enable signal, a second input for receiving a source clock signal, and an output for providing said secondary enable signal; and

a signal joiner for providing a local clock signal in response to said secondary enable signal, said signal joiner having a first input for receiving said secondary enable signal, a second input for receiving said source clock signal, and an output for providing said local clock signal;

said enable signal relay comprising:

an inverter having an input for receiving said source clock signal and an output for providing an inverted source clock signal; and

a Muller C-element having a first input for receiving said enable signal, a second input for receiving said inverted source clock signal, and an output for providing said secondary enable signal to said signal joiner.

5,646,555

PIPELINE STRUCTURE USING POSITIVE EDGE AND NEGATIVE EDGE FLIP-FLOPS TO DECREASE THE SIZE OF A LOGIC BLOCK

Hiroyuki Morinaka, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

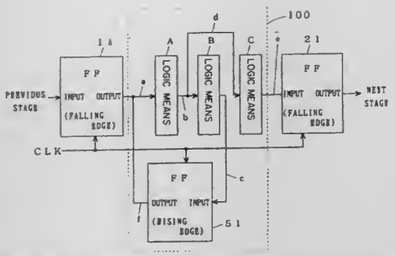
Filed Oct. 25, 1995, Ser. No. 548,167
Claims priority, application Japan, Nov. 21, 1994, 6-286632
Int. Cl.[6] H03K *19/0175*
U.S. Cl. 326—93 **7 Claims**

1. A semiconductor integrated circuit in a pipeline structure comprising:

a logic block for performing logic action in one period of a clock signal,

an input register for temporarily storing an input signal to said logic block, by operating in response to said clock signal, and

an output register for temporarily storing an output signal from said logic block, by operating in response to said clock signal.



wherein said logic block is divided into a first half operating section, with its input side connected to said input register, for performing logic action in a first half period of one period of said clock signal by at least one logic means, and a second half operating section, with its output side connected to said output register, for performing logic action in a second half period of one period of said clock signal by at least one logic means,

the logic means of said first half operating section and the logic means of said second half operating section include at least one common logic means to be shared between said first half operating section and said second half operating section, and

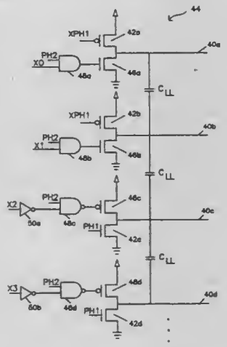
said logic block comprises memory means for temporarily storing the output of said first half operating section by operating complementarily to said input and output registers, with its input side connected to the output side of said first half operating section, and output side connected to the input side of said second half operating section.

5,646,556

APPARATUS AND METHOD FOR PRECHARGING BUS CONDUCTORS TO MINIMIZE BOTH DRIVE DELAY AND CROSSTALK WITHIN THE BUS

Michael L. Longwell, and Joseph P. Geisler, both of Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Nov. 27, 1995, Ser. No. 562,805
Int. Cl.[6] H03K *19/003*
U.S. Cl. 326—93 **15 Claims**



1. A bus, comprising:

a plurality of parallel-spaced conductors, wherein four of said plurality of parallel-spaced conductors comprise a first pair of conductors arranged in substantially the same plane and adjacent to a second pair of conductors;

two pull-up transistors coupled between a power supply and respective said first pair of conductors;

two pull-down transistors coupled between respective said second pair of conductors and ground; and

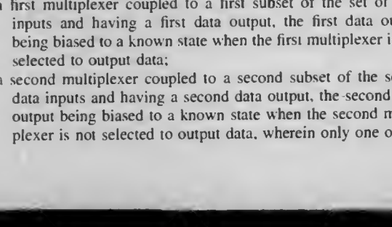
a clock signal adapted for coupling to said two pull-up transistors, and an inverse clock signal adapted for coupling to said two pull-down transistors.

5,646,557

DATA PROCESSING SYSTEM AND METHOD FOR IMPROVING PERFORMANCE OF DOMINO-TYPE LOGIC USING MULTIPHASE CLOCKS

Stephen Larry Runyon, Pflugerville, and Eric Bernard Schorn, Austin, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 31, 1995, Ser. No. 509,310
Int. Cl.[6] H03K *19/096;19/00*
U.S. Cl. 326—97 **4 Claims**



4. A logic circuit for use in a data processing system, comprising:

an evaluation circuit for evaluating logic inputs to said logic circuit;

a passgate circuit for controlling transmission of an output from said evaluation circuit to an output circuit; and

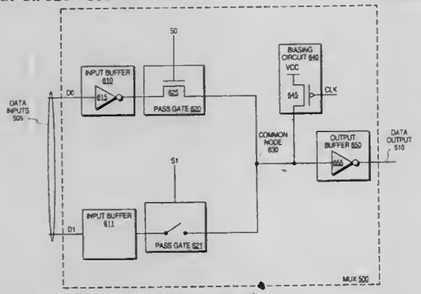
a feedback latch output circuit having a clock signal input for holding said output of said evaluation circuit for a predetermined portion of a clock cycle.

5,646,558

PLURALITY OF DISTINCT MULTIPLEXERS THAT OPERATE AS A SINGLE MULTIPLEXER

Shahram Jamshidi, Santa Clara, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Sep. 27, 1995, Ser. No. 534,598
Int. Cl.[6] H03K *19/084;19/094*
U.S. Cl. 326—106 **11 Claims**



5. A multiplexing arrangement comprising:

a set of data inputs for coupling to receive data signals;

a first multiplexer coupled to a first subset of the set of data inputs and having a first data output, the first data output being biased to a known state when the first multiplexer is not selected to output data;

a second multiplexer coupled to a second subset of the set of data inputs and having a second data output, the second data output being biased to a known state when the second multiplexer is not selected to output data, wherein only one of the first and second multiplexers is selected to pass one of the set of data inputs at any given time; and

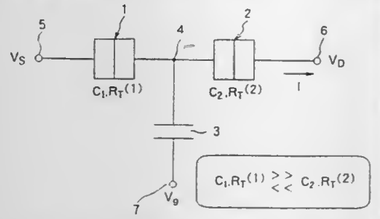
a logic gate coupled to the first and second data outputs, the logic gate synthesizing an output of the multiplexing arrangement in response to values of the first and second data outputs such that the multiplexing arrangement operates as a single multiplexer.

5,646,559

SINGLE-ELECTRON TUNNELLING LOGIC DEVICE

Hitoshi Higurashi, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 15, 1995, Ser. No. 403,444
Claims priority, application Japan, Mar. 15, 1994, 6-044334
Int. Cl.[6] H01L *29/06;39/22*
U.S. Cl. 326—136 **7 Claims**



1. A single-electron tunnelling logic device, comprising:

a double-tunnel junction portion formed by connecting first and second single-electron tunnel junctions in series, a bias voltage being applied to both ends thereof; and

a signal input portion connected to a common junction portion between said first and second single-electron tunnel junction portions via a capacitance element,

wherein charge accumulated at the common junction portion is quantized approximately in integer-time unit of a prime charge according to the bias voltage;

wherein in said double-tunnel junction portion, a tunnel resistance $R_T^{(i)}$ and a junction capacitance C_i of the i-th (i=1, 2) single-electron tunnel junction are so determined that any one of the following conditions can be satisfied:

$$R_T^{(1)} > R_T^{(2)}, C_1 \geq C_2, \quad \text{(i)}$$

$$R_T^{(2)} > R_T^{(1)}, C_2 \geq C_1 \quad \text{(ii)}.$$

5,646,560

INTEGRATED LOW-POWER DRIVER FOR A HIGH-CURRENT LASER DIODE

Thai Minh Nguyen, Santa Clara, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Sep. 30, 1994, Ser. No. 315,652
Int. Cl.[6] H03K *3/00*
U.S. Cl. 327—109 **8 Claims**

1. A driver circuit for a laser diode comprising:

a reference current source;

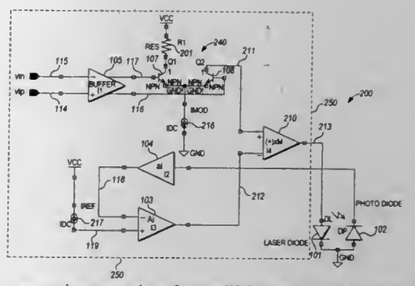
a first amplifier, said first amplifier providing a prebiasing current derived from said reference current source;

a second amplifier receiving an input signal and amplifying said input signal to provide a modulated current signal; and

a third amplifier receiving said prebiasing current and said modulated signal for summing said prebiasing current with said modulated signal to provide an output current to flow to said laser diode;

wherein said third amplifier comprises:

a first current mirror for amplifying said prebiasing current; and



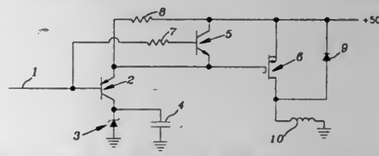
a second current mirror for amplifying said modulated signal.

5,646,561

HIGH PERFORMANCE CURRENT SWITCH FOR BOREHOLE LOGGING TOOLS

Otto N. Fanini, Stafford, and Stanislav Forgang, Houston, both of Tex., assignors to Western Atlas International, Inc., Houston, Tex.

Filed Dec. 20, 1995, Ser. No. 575,626
Int. Cl.[6] H03K *17/64;17/56*
U.S. Cl. 327—110 **28 Claims**



8. A low power current switch responsive to a digital control signal received from a signal source for providing a high frequency current to a load in a borehole logging tool operating at a high temperature, which comprises:

a power supply for providing a positive voltage source and having a first ground reference in electrical communication with said load;

a p-channel MOSFET power transistor for applying said high frequency current to said load in a first direction and having a source electrode electrically connected to said positive voltage source, a drain electrode electrically connected to said load and a gate electrode;

an NPN bi-polar transistor having a first collector electrode electrically connected to said source electrode, a first emitter electrode electrically connected to said gate electrode and a first base electrode, for holding said p-channel MOSFET power transistor off until said gate electrode is charged before allowing said p-channel MOSFET power transistor to turn on, and for limiting a discharge time for said gate electrode to turn said p-channel MOSFET power transistor off;

a PNP bi-polar transistor having a second base electrode for receiving said digital control signal, a second emitter electrode electrically connected to said first emitter electrode and said gate electrode, and a second collector electrode;

a first resistor providing an electrical path from said second base electrode and said first base electrode;

a second-resistor providing an electrical path from said second emitter electrode to said positive voltage source and to said first collector electrode for limiting a charge time of said gate electrode; and

voltage bias means including a zener diode connected in parallel with a capacitor electrically connected to said first ground reference and said second collector electrode for limiting a voltage magnitude of said gate electrode.

5,646,562
PHASE SYNCHRONIZATION CIRCUIT, ONE-SHOT PULSE GENERATING CIRCUIT AND SIGNAL PROCESSING SYSTEM

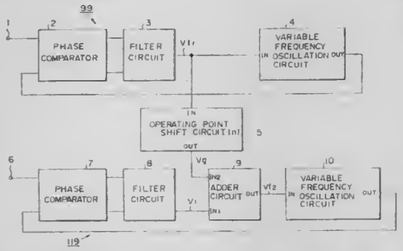
Akira Abe, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Jul. 19, 1994, Ser. No. 276,991

Claims priority, application Japan, Jul. 21, 1993, 5-180391; Aug. 3, 1993, 5-192544

Int. Cl.[6] H03L *7/093;7/087;7/099*

U.S. Cl. 327—156 **16 Claims**



1. A phase synchronization circuit comprising first phase synchronization means synchronized with a reference frequency signal, second phase synchronization means synchronized with an input signal and an operating point shift means,

said first phase synchronization means including first phase comparing means for performing the phase comparison for synchronization with said reference frequency signal, first filter means connected to the first phase comparing means for generating a first oscillation control signal, and first variable frequency oscillation means responsive to a current or voltage set by said first oscillation control signal for controlling the oscillation frequency thereof,

said operating point shift means being responsive to said first oscillation control signal to generate an operating point shift signal,

said second phase synchronization means including second phase comparing means for performing the phase comparison for synchronization with said input signal, second filter means connected to said second phase comparing means, adder means including first and second addition input terminals into which said operating point shift signal and the output of said second filter means are respectively inputted to generate a second oscillation control signal under the current or voltage addition and a second variable frequency oscillation means responsive to a current or voltage set by said second oscillation control signal, wherein the operating point shift signal causes the oscillation frequency of the second variable frequency oscillation means to be n times the oscillation frequency of the first variable frequency oscillation means.

5,646,563
CHARGE PUMP WITH NEAR ZERO OFFSET CURRENT

James R. Kuo, Cupertino, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 275,575, Jul. 15, 1994, abandoned. This application Sep. 30, 1996, Ser. No. 723,698

Int. Cl.[6] H03L *7/06*

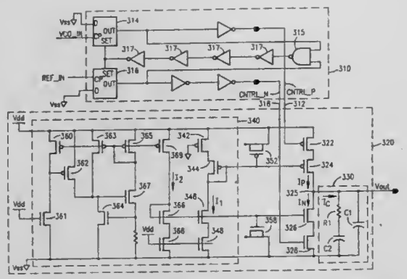
U.S. Cl. 327—157 **17 Claims**

1. A charge pump comprising:

a constant current source;

a P channel transistor having a gate coupled to the constant current source so that a current through the P channel transistor mirrors a current of the constant current source;

an N channel transistor having a gate coupled to the constant current source so that a current through the N channel transistor mirrors the current of the constant current source, wherein the P channel transistor and the N channel transistor



are connected in series between a first voltage terminal and a second voltage terminal;

a first switching transistor connected in series with the P channel transistor, wherein a voltage applied to a gate of the first switching transistor controls whether current through the P channel transistor flows to a capacitive node between the P channel transistor and the N channel transistor; and

a second switching transistor connected in series with the N channel transistor, wherein a voltage applied to a gate of the second switching transistor controls whether current through the N channel transistor flows from the capacitive node, wherein

a difference between a dimension of the P channel transistor and a corresponding dimension of the N channel transistor equalizes transient responses that occur in the current through the P channel transistor and in the current through the N channel transistor when the first and second switching transistors turn on the currents through the P channel transistor and the N channel transistor.

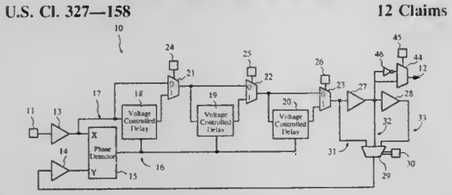
5,646,564
PHASE-LOCKED DELAY LOOP FOR CLOCK CORRECTION

Charles R. Erickson, Fremont; Philip M. Freidin, Sunnyvale, both of Calif., and Kerry M. Pierce, Canby, Oreg., assignors to Xilinx, Inc., San Jose, Calif.

Continuation of Ser. No. 300,608, Sep. 2, 1994, abandoned. This application Apr. 12, 1996, Ser. No. 632,523

Int. Cl.[6] H03L *7/00;* **H03K** *5/00*

U.S. Cl. 327—158 **12 Claims**



1. A phase-locked loop, comprising:

a phase detector including a first terminal connected to receive a reference input clock signal, and a second terminal connected to receive an output feedback signal, said phase detector producing a phase detector output signal indicative of a phase difference between said reference input clock signal and said output feedback signal;

a plurality of voltage controlled delay elements connected to receive said phase detector output signal, each of said voltage controlled delay elements having an input terminal and an output terminal and producing at said output terminal a signal that is delayed from a signal at said input terminal by an amount that is a function of said phase detector output signal; and

means for placing in series into a feedback path between said first and second terminals any combination of said plurality of voltage controlled delay elements to produce said output feedback signal;

further comprising:

selectable phase off-set means for placing into said feedback path a selected number of additional delay elements and producing an output clock signal such that said output clock signal has any of a leading, lagging, and in-phase relationship to said output feedback signal.

5,646,565
PULSE-WIDTH-EXTENSION CIRCUIT AND ELECTRONIC DEVICE INCLUDING THE CIRCUIT

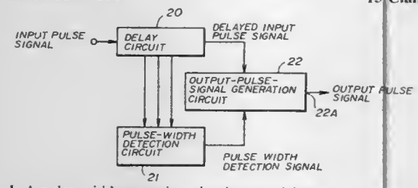
Yoshihiro Tukidate, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 13, 1995, Ser. No. 490,082

Claims priority, application Japan, Jul. 18, 1994, 6-164960

Int. Cl.[6] G11C *13/00;* **H03K** *5/13*

U.S. Cl. 327—174 **13 Claims**



1. A pulse-width-extension circuit comprising:

first means for producing an extended pulse signal having a pulse width greater than that of an input pulse;

second means for detecting whether the pulse width of said input pulse signal is equal to or greater than a predetermined pulse width; and

third means for outputting said extended pulse signal as an output pulse signal when the pulse width of said input pulse signal is greater than the predetermined pulse width, and for preventing the output of said extended pulse signal as said output pulse when the pulse width of said input pulse signal is less than the predetermined pulse width.

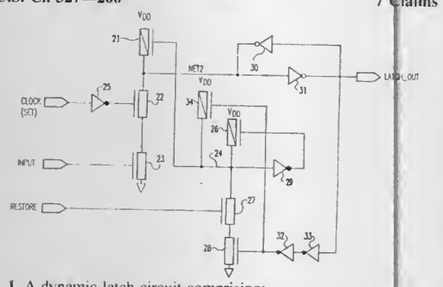
5,646,566
LOW POWER CLOCKED SET/RESET FAST DYNAMIC LATCH

Robert A. Ross, Jr., Essex Junction, and Kevin A. Batson, Williston, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 21, 1996, Ser. No. 667,682

Int. Cl.[6] H03K *3/356*

U.S. Cl. 327—200 **7 Claims**



1. A dynamic latch circuit comprising:

an input line, a set line, a restore line and an output line;

a dynamic internal node connected to an input of a latch, an output of said latch being connected to said output line;

an input and set path connected to said dynamic internal node;

a restore device connected to said dynamic internal node for precharging said dynamic internal node; and

a restore circuit connected to said restore line and controlled by the output of said latch for controlling said restore device to precharge said dynamic internal node in response to a restore signal on said restore line only when said dynamic internal node has been discharged.

5,646,567
SCAN TESTABLE DOUBLE EDGE TRIGGERED SCAN CELL

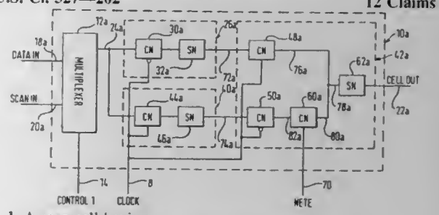
Stephen Felix, Bristol, United Kingdom, assignor to SGS-Thomson Microelectronics Limited, Almondsbury, United Kingdom

Filed Aug. 24, 1995, Ser. No. 518,421

Claims priority, application United Kingdom, Sep. 1, 1994, 9417591

Int. Cl.[6] H03K *3/289;3/356*

U.S. Cl. 327—202 **12 Claims**



1. A scan cell having:

a data input terminal and a data output terminal;

a first latch connected to receive an input signal from the data input terminal and having a first data output path connected to the data output terminal and which is triggered on a positive edge of a clock signal to transfer the input signal to the data output terminal;

a second latch connected to receive said input signal from the data input terminal and having a second data output path connected to the data output terminal and which is triggered on a negative edge of said clock signal to transfer the input signal to the data output terminal;

a first switch connected in the second data output path and responsive to a negative edge trigger disable control signal (NETE) to selectively disconnect said second data output path, whereby with the second data output path connected, the scan cell functions as a double edge triggered latch, and with the second data output path disconnected, the scan cell functions as a positive edge triggered latch, whereby the scan cell can be scan tested.

5,646,568
DELAY CIRCUIT

Yu Sato, Tokyo, Japan, assignor to Ando Electric Co., Ltd., Tokyo, Japan

Filed Feb. 27, 1996, Ser. No. 606,759

Claims priority, application Japan, Feb. 28, 1995, 7-065003; Feb. 28, 1995, 7-065005

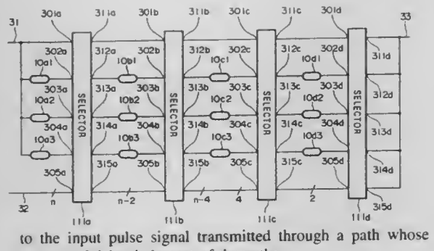
Int. Cl.[6] H03H *11/26*

U.S. Cl. 327—276 **6 Claims**

1. A delay circuit comprising:

at least two paths, each having a different amount of delay, on both of which an input pulse signal is transmitted and delayed; and

at least one selector for selecting one of the paths according to delay data so as to impart a desired amount of delay to the input pulse signal, wherein the delay data are forwarded in synchronization with a trailing edge of a pulse, corresponding



to the input pulse signal transmitted through a path whose amount of delay is largest of the paths.

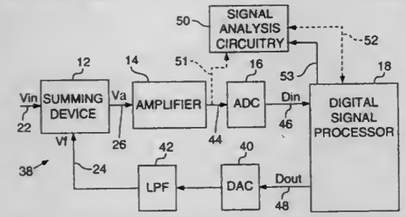
5,646,569

METHOD AND APPARATUS FOR AC COUPLING

Thomas V. Bruhns, Everett; Donald R. Hiller, Lake Stevens; Jan R. Hofland, and James W. Waite, Jr., both of Everett, all of Wash., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 30, 1995, Ser. No. 521,161
Int. Cl.[6] H03K *17/16*

U.S. Cl. 327—307 **17 Claims**



1. In a test/measurement instrument including an input terminal for receiving an input signal, the input terminal being serially coupled to signal analysis circuitry, an improvement comprising AC coupling means, including digital processing hardware, interposed between the input terminal and the signal analysis circuitry for providing to the signal analysis circuitry an output signal substantially free of a DC component, said AC coupling means including means for sensing a DC component of said output signal and to control a corresponding subtraction signal in response thereto, said subtraction signal being subtracted from the input signal to yield the output signal, wherein drift in the DC component of the input signal is automatically tracked and cancelled,

the AC coupling means having a transfer function, and

the digital processing hardware for detecting a first change in the transfer function of the AC coupling means and for synchronously changing the transfer function in response to the first change.

5,646,570

APPARATUS FOR BIASING A FIELD EFFECT TRANSISTOR WITH A SINGLE VOLTAGE SUPPLY

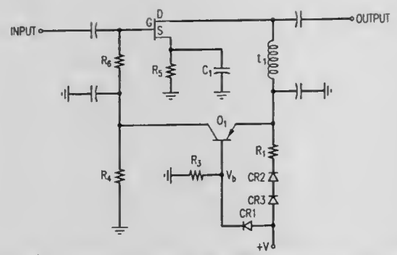
James Russell Blodgett, Derry, N.H., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Continuation-in-part of Ser. No. 311,224, Sep. 23, 1994, Pat. No. 5,483,191. This application Sep. 18, 1995, Ser. No. 529,888
Int. Cl.[6] H03L *5/00*

U.S. Cl. 327—362 **10 Claims**

1. An apparatus for processing an electric signal, said apparatus comprising:

a field effect transistor having a gate lead, a drain lead and a source lead, wherein said gate lead is an input and said drain lead is an output;



a bipolar transistor having a base lead, a collector lead and an emitter lead, said base lead being connected to a voltage source;

a first choke L_1 having a first lead and a second lead, said first lead of said first choke being connected to said drain lead and said second lead of said first choke being connected to said emitter lead;

a first resistor R_1 having a first lead and a second lead, said first lead of said first resistor being connected to said emitter lead and said second lead of said first resistor being connected to said voltage source;

a second resistor R_3 having a first lead and a second lead, said first lead of said second resistor being connected to said base lead and said second lead of said second resistor being connected to ground;

a third resistor R_4 having a first lead and a second lead, said first lead of said third resistor being connected to said collector lead and said second lead of said third resistor being connected to ground;

a fourth resistor R_5 having a first lead and a second lead, said first lead of said fourth resistor being connected to said source lead and said second lead of said fourth resistor being connected to ground; and

a fifth resistor R_6 having a first lead and a second lead, said first lead of said fifth resistor being connected to said gate lead and said second lead of said fifth resistor being connected to said collector lead.

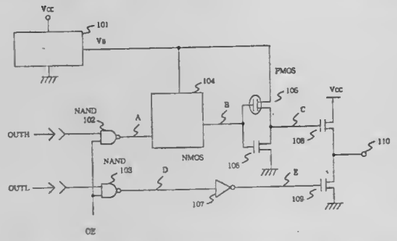
5,646,571

OUTPUT BUFFER CIRCUITS

Masayuki Ohashi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 26, 1995, Ser. No. 533,830
Claims priority, application Japan, Sep. 26, 1994, 6-229308
Int. Cl.[6] H03K *17/16*

U.S. Cl. 327—390 **17 Claims**



1. A driver circuit coupled between an output side of a logic gate and a gate of a first output MOS transistor being paired with a second output MOS transistor for driving said gate of said first output MOS transistor according to logic signals from said logic gate, said first and second output MOS transistors forming an output buffer circuit, said first output MOS transistor being provided between a power supply line supplied with a power supply voltage and an output terminal of said output buffer circuit, said second output MOS transistor being provided between said output terminal and a ground line supplied with a ground potential, said second output MOS transistor being driven according to other logic signals from another logic gate, said driver circuit comprising:

a booster circuit for boosting said power supply voltage up to a predetermined high voltage higher than said power supply voltage, said booster circuit keeping an output at said predetermined high voltage independently from said logic signals from said logic gate;

a complementary MOS circuit comprising a pair of n-channel and p-channel MOS transistors, both of which are connected in series between an output side of said booster circuit and a ground line, said complementary MOS circuit having an output terminal coupled to said gate of said first output MOS transistor; and

a level shifter circuit having a first terminal coupled to said output side of said logic gate for receiving said logic signal from said logic gate, said level shifter circuit having a second terminal coupled to said gates of said n-channel and p-channel MOS transistors of said complementary MOS circuit, said level shifter circuit also having a third terminal coupled to said output side of said booster circuit for receiving said predetermined high voltage from said booster circuit, said level shifter circuit shifting said logic signal of said logic gate up to at least almost the same level as said predetermined high voltage to supply a shifted up signal to said gates of said n-channel and p-channel MOS transistors of said complementary MOS circuit, said level shifter circuit comprising:

a first p-channel MOS transistor having a gate coupled to said second terminal of said level shifter circuit, a drain and a source coupled to said third terminal of said level shifter circuit;

a second p-channel MOS transistor having a gate coupled to said drain of said first p-channel MOS transistor, a drain coupled to said second terminal of said level shifter circuit and a source coupled to said third terminal of said level shifter circuit;

a first n-channel MOS transistor having a gate coupled to said first terminal of said level shifter circuit, a drain coupled to said gate of said second p-channel MOS transistor and a source coupled to a ground line and a drain coupled to said drain of said first p-channel MOS transistor;

a second n-channel MOS transistor having a gate, a drain coupled to said second terminal of said level shifter circuit and a source coupled to a ground line; and

an inverter logic circuit having an input terminal coupled to said third terminal of said level shifter circuit and an output terminal coupled to said gate of said second n-channel MOS transistor.

5,646,572

POWER MANAGEMENT SYSTEM FOR INTEGRATED CIRCUITS

Robert Paul Masleid, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 377,912, Jan. 25, 1995, abandoned. This application Sep. 4, 1996, Ser. No. 708,391
Int. Cl.[6] H02J *1/02*

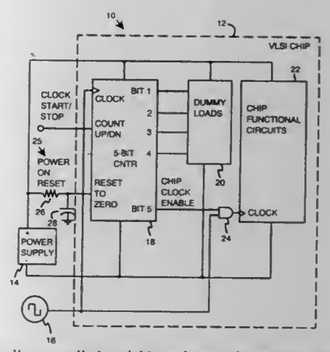
U.S. Cl. 327—545 **11 Claims**

1. A system for controlling the application of power by a power supply to a load circuit in response to a startup event, the system comprising:

a digitally controlled variable resistance coupled to the power supply for drawing power from the power supply;

control circuitry coupled to the digitally controlled variable resistance for controlling the amount of power drawn by the digitally controlled variable resistance from the power supply in response to the startup event; and

enabling circuitry coupled to the control circuitry and to the load circuit, the enabling circuitry responsive to the control circuitry for selectively activating the load circuit wherein the load circuit draws power from the power supply, so that activation of the load circuit in response to the startup event is delayed.



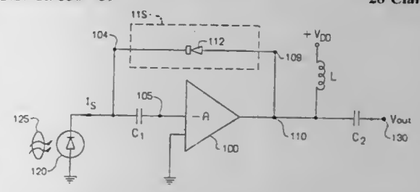
5,646,573

AUTOMATIC GAIN-CONTROL TRANSIMPEDENCE AMPLIFIER

Robert J. Bayruns, Middlesex, and Timothy M. Laverick, Franklin Park, both of N.J., assignors to Anadigics, Inc., Warren, N.J.

Filed Feb. 28, 1995, Ser. No. 395,775
Int. Cl.[6] H03F *1/34;3/08*

U.S. Cl. 330—59 **28 Claims**



1. An automatic gain control transimpedance amplifier comprising:

an operational amplifier having input and output nodes;

a photodiode having one end operatively coupled to the input node of said operational amplifier, said photodiode receiving input optical signal and providing corresponding current signal; and

feedback means operatively coupled between the input and output nodes of said operational amplifier, said feedback means comprising a feedback PIN diode forward biased by a DC supply voltage inductively coupled to said output node of said voltage amplifier,

said feedback means providing a feedback resistance that is substantially linearly dependent on the inverse of a DC component of said current signal,

whereby increasing the amplitude of said optical signal increases said DC component, thereby reducing said feedback resistance.

5,646,574

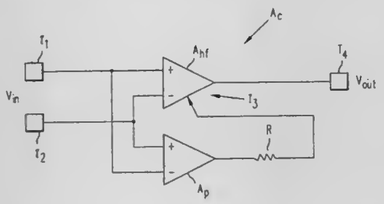
Patent Not Issued For This Number

5,646,575

COMPOSITE PRECISION, HIGH-FREQUENCY RAIL-TO-RAIL AMPLIFIER

Don Roy Sauer, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Sep. 14, 1995, Ser. No. 528,636
Int. Cl.[6] H03F *3/45;3/68*
U.S. Cl. 330—261 12 Claims



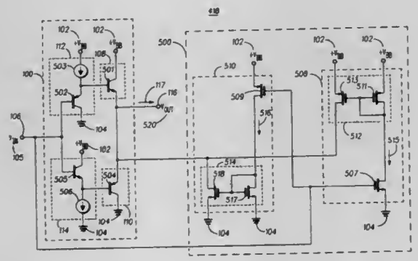
1. A composite amplifier comprising a first amplifier and a second amplifier, said second amplifier having an offset trim port, respective inputs of said first and second amplifiers being connected together and an output of said first amplifier being connected to said offset trim port.

5,646,576

OUTPUT STAGE OF OPERATIONAL AMPLIFIER SUITABLE FOR MOUNTING ON A SUBSTRATE AND METHOD OF AMPLIFYING THEREWITH

Daniel Charles Feldt, Streamwood, Ill., and William David Anderson, Chapel Hill, N.C., assignors to Motorola, Schaumburg, Ill.

Filed Jul. 24, 1995, Ser. No. 506,158
Int. Cl.[6] H03F *3/30*
U.S. Cl. 330—263 24 Claims



1. An output stage of an operational amplifier for use in a low voltage application, the output stage comprising:

a first supply voltage rail and a second supply voltage rail connected to a source of power to feed the output stage, a voltage difference in the first supply voltage rail and the second supply voltage rail defining a maximum voltage range;

an input to receive an input voltage;

a low impedance output to provide an amplified output signal having a voltage level and a current level;

a buffer comprising a transistor circuit coupled between the input and the output to supply a voltage level of the amplified output signal and a current level of the amplified output signal when the input voltage is within a buffer voltage range, the buffer voltage range contained entirely within the maximum voltage range; and

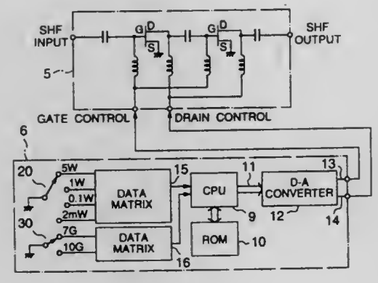
a switchable current booster comprising a transistor circuit coupled between the input and the output to selectively add current to the buffer and enable the buffer to supply a voltage level of the amplified output signal that is outside of the buffer voltage range when the input voltage is outside of the buffer voltage range but within the maximum voltage range thereby providing substantial rail-to-rail swing for the output stage.

5,646,577

SHF OUTPUT POWER AND CHANNEL FREQUENCY SWITCHING APPARATUS IN FPU SYSTEM

Masao Ishikura, Akiruno, Japan, assignor to Hitachi Denshi Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 4, 1995, Ser. No. 538,647
Claims priority, application Japan, Oct. 6, 1994, 6-242453
Int. Cl.[6] H03G *3/30*
U.S. Cl. 330—279 3 Claims



1. A SHF (Super High Frequency) output power switching apparatus in a FPU (Field Pick-Up) system comprising:

(a) SHF power amplifier for amplifying a SHF signal and supplying an amplified SHF output power to a transmitting antenna, said SHF power amplifier including at least one FET device having gate, drain and source terminals; and

(b) bias control means coupled with said SHF power amplifier for controlling an amplification of said SHF power amplifier by applying variable control voltages to at least one of said gate and drain terminals of said FET amplifier in such a manner that said SHF power amplifier is selectable to amplify at a plurality of different power levels to prevent multi-path effect according to a transmission path;

said bias control means comprising:

(1) SHF output power change-over switch means having a plurality of selectable positions corresponding to a plurality of amplification power levels to be switched, for stepwise changing a bias voltage supplied to said SHF power amplifier;

(2) memory means for storing a plurality of bias voltage control data corresponding to different control voltages to be applied to at least one of said gate and drain terminals of said FET device and corresponding to said respective different amplification power levels of said SHF power amplifier for transmission;

(3) reading means coupled with said memory means for reading said bias voltage control data from said memory means; and

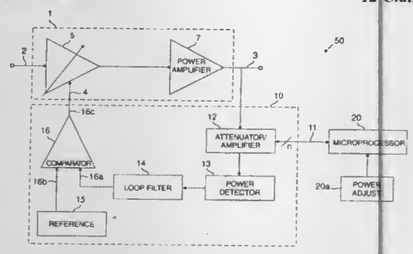
(4) data generating means coupled between said SHF output power change-over switch means and said reading means for controlling said reading means so that said bias voltage control data corresponding to one of said selectable positions of said SHF output power change-over switch means which is selected, are read, whereby said bias control means generates corresponding control voltages to be applied to at least one of said gate and drain terminals of said FET device to set said amplification power level of said SHF output power amplifier to prevent multi-path effect according to said transmission path.

5,646,578

WIDE DYNAMIC RANGE POWER AMPLIFIER

Koon Whye Loh, Mendham, and Yatish Swarup Pathak, Fanwood, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 366,081, Dec. 29, 1994, abandoned. This application Jul. 30, 1996, Ser. No. 688,415
Int. Cl.[6] H03G *3/30*
U.S. Cl. 330—279 12 Claims



1. A wide dynamic range power amplifier comprising:

a power amplification circuit having an input power and an output power;

a first digital step attenuator for attenuating the output power by an amount corresponding to a desired change in the output power;

a second digital step attenuator for attenuating the input power by an amount in opposite polarity to the desired change in output power, said attenuation of the input power occurring simultaneously with the attenuation of the output power;

a power conversion circuit for converting the attenuated output power to a corresponding D.C. voltage;

a reference D.C. voltage corresponding to a reference output power; and

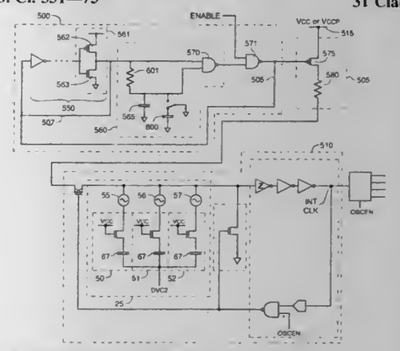
a comparator for comparing the D.C. voltage to the reference D.C. voltage, wherein the comparator changes the output power of the power amplification circuit by an amount corresponding to the difference between the D.C. voltage and the reference D.C. voltage.

5,646,579

TEMPERATURE SENSITIVE OSCILLATOR CIRCUIT

Greg A. Blodgett, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Continuation-in-part of Ser. No. 275,576, Jul. 15, 1994, Pat. No. 5,455,801. This application Jul. 20, 1995, Ser. No. 504,939
Int. Cl.[6] H03B *5/02;* H03K *3/0231*
U.S. Cl. 331—75 31 Claims



1. A current source, comprising:

a) a current supply;

b) an oscillator configured to generate, at an output, a periodic signal having a first pulse of a first polarity and a second pulse of a second polarity;

c) a polarity sensitive delay element in electrical communication with the output of the oscillator, said delay element configured to be at least partially operative in response to said periodic signal to provide a delay signal having an active state and an inactive state; and

d) a switch in electrical communication with said current supply and configured to be operatively responsive to the active state of the delay signal to source current from said current supply.

5,646,580

METHOD AND APPARATUS FOR SWITCHING CRYSTALS IN A CRYSTAL CONTROLLED OSCILLATOR

Geoffrey W. Perkins, Chandler, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 4, 1996, Ser. No. 610,006
Int. Cl.[6] H03B *5/36*
U.S. Cl. 331—116 R 19 Claims

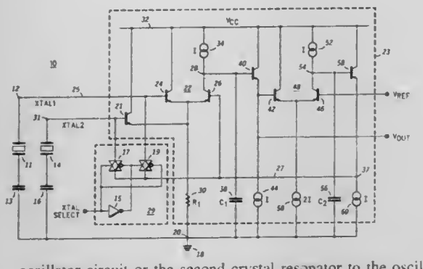
1. A multi-crystal controlled oscillator comprising:

a first crystal resonator;

a second crystal resonator;

an oscillator circuit; and

a switch coupled between the first crystal resonator and the oscillator circuit and between the second crystal resonator and the oscillator circuit, wherein the switch includes an impedance approximately equivalent to a feedback resistance for electrically coupling either the first crystal resonator to the

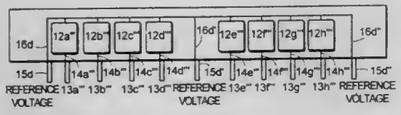


oscillator circuit or the second crystal resonator to the oscillator circuit in response to a crystal select input to the switch.

5,646,581
LOW INDUCTANCE ELECTRICAL RESISTOR TERMINATOR PACKAGE

James O. Pazaris, Concord, and Richard P. Evans, Bolton, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 265,294, Jun. 24, 1994, abandoned. This application Jan. 26, 1996, Ser. No. 599,512
Int. Cl.[6] H03H *5/00*
U.S. Cl. 333—22 R **7 Claims**



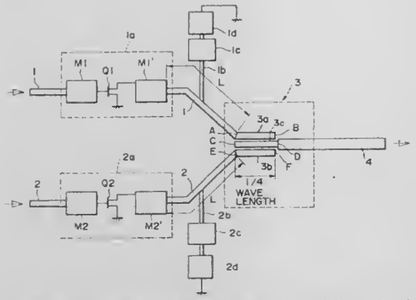
1. A termination device comprising:
a package having a plurality of pins;
a plurality of resistors disposed in said package each having a pair of termini with a first one of said termini of each resistor connected to a corresponding one of said plurality of pins;
a common conductor connected to a second one of said termini of each resistor; and
a reference conductor connected between a mid-portion of said common conductor and another one of said plurality of pins of said package, with said another one of said plurality of pins being connected to said second one of said termini of said plurality of resistors.

5,646,582
TRANSMISSION LINE SWITCH

Kenichi Kawasaki, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 23, 1995, Ser. No. 546,954
Claims priority, application Japan, Nov. 4, 1994, 6-270844
Int. Cl.[6] H01P *1/15*
U.S. Cl. 333—104 **4 Claims**

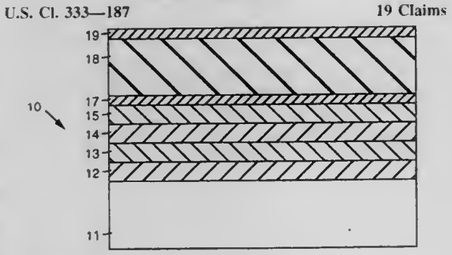
1. A transmission line switch comprising:
first and second input lines on which first and second amplifiers which are selectively switchable to ON and OFF states are respectively located; and
a connection line which connects said first and second input lines with a common output line,
wherein said connection line comprises a first transmission line connected to an end part of said first input line, a second transmission line connected to an end part of said second input line and a third transmission line connected to an end part of said common output line, and
said first to third transmission lines are arranged to be parallel to one another with a DC potential thereof held in a transfer-blocked state, wherein said first input line between said first amplifier and said connection line is connected with a first bias line for supplying a bias to said first amplifier and a first band stop filter and a first termination circuit are connected to said first bias line.



5,646,583
ACOUSTIC ISOLATOR HAVING A HIGH IMPEDANCE LAYER OF HAFNIUM OXIDE

Charles W. Seabury, Agoura; Paul H. Kobrin, Newbury Park, and Jeffrey F. DeNatale, Thousand Oaks, all of Calif., assignors to Rockwell International Corporation, Thousand Oaks, Calif.

Filed Jan. 4, 1996, Ser. No. 582,686
Int. Cl.[6] H03H *9/00*
U.S. Cl. 333—187 **19 Claims**



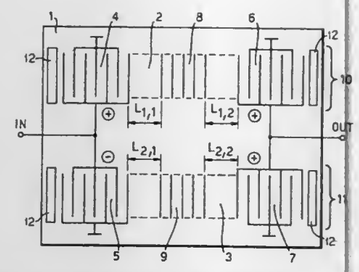
1. A resonant acoustic isolator, comprising:
a substrate;
a pair of layers deposited on said substrate;
said pair of layers comprising a first layer of material having a high acoustic impedance and a second layer of material having a low acoustic impedance; and
said first layer of high acoustic impedance material comprising hafnium oxide.

5,646,584
SAW FILTER INCLUDING ELECTRODES OF OPPOSING POLARITY

Sergei N. Kondratyev, Neuchatel, Switzerland; Victor P. Plessky, Geneveys Sur Coffrane, Switzerland; Clinton S. Hartmann, Dallas, Tex.; Thor Thorvaldsson, Bevaix, Switzerland, and David P. Morgan, Northampton, United Kingdom, assignors to Advanced SAW Products SA, Bevaix, Switzerland

Filed Apr. 24, 1995, Ser. No. 427,344
Claims priority, application United Kingdom, Apr. 25, 1994, 9408181; Apr. 25, 1994, 9408188; Sep. 21, 1994, 9418975
Int. Cl.[6] H03H *9/00*
U.S. Cl. 333—193 **20 Claims**

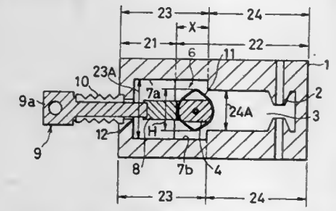
1. A SAW filter comprising an even number N of tracks, each track including an input interdigitated transducer (IDT) spaced apart from an output IDT, a partially reflecting means disposed between the input and output IDTs and reflecting means respectively associated with the input and output IDTs, wherein electrodes of one IDT of a pair of tracks are connectable in opposite polarity relative to electrodes of other IDTs of the pair of tracks, in each pair of tracks the input and output IDTs of respective tracks are separated by substantially the same amount, and surface acoustic waves launched into respective tracks from the input IDTs undergo at least one reflection from the partially reflecting means prior to forming a substantially coherent signal at the output IDTs.



5,646,585
TUNABLE CAVITY RESONATOR FOR A MULTI-CAVITY KLYSTRON

Wako Suzuki, and Shunji Tsuida, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Oct. 5, 1994, Ser. No. 318,085
Claims priority, application Japan, Oct. 6, 1993, 5-249646
Int. Cl.[6] H01P *7/06;* **H01J** *23/20*
U.S. Cl. 333—232 **8 Claims**

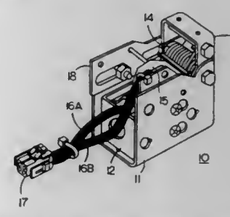


4. In a multi-cavity klystron, a cavity resonator comprising:
a cavity envelope having a first internal surface and a second internal surface opposing the first internal surface, and having a third internal surface and a fourth internal surface opposing the third internal surface; and
a movable tuning element movable in said cavity envelope along an axis of movement and having a first dimension transverse to the axis, wherein:
a spacing between the first internal surface and the second internal surface in a first region of said cavity envelope is equal to the first dimension of said movable tuning element; and
a spacing between the first internal surface and the second internal surface in a second region of said cavity envelope is greater than the first dimension of said movable tuning element.

5,646,586
ELECTRONIC TRIP UNIT CONVERSION KIT FOR HIGH AMPERE-RATED CIRCUIT BREAKERS

Roger N. Castonguay, Terryville, and Jeffrey D. Lord, Unionville, both of Conn., assignors to General Electric Company, New York, N.Y.

Filed Nov. 1, 1995, Ser. No. 551,640
Int. Cl.[6] H01H *67/02*
U.S. Cl. 335—132 **7 Claims**

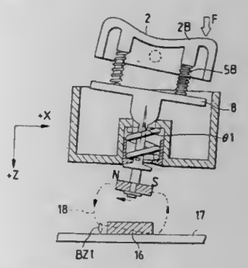


1. A conversion kit for circuit breaker electronic trip units comprising:
a support frame;
a flux shifter unit having an extendible armature and attached to said support frame;
a slide plate movably attached to said support frame and arranged for interacting with said armature;
a first reset lever rotatably mounted on said support frame for returning said armature from an extended position to a retracted position;
a slide plate return spring attached between said slide plate and said support frame for moving said slide plate from an extended to a retracted position;
a second reset lever subjacent said first reset lever, said second reset lever being arranged for connection with a reset arm for manual resetting of said flux shifter unit and
means for electrically connecting said flux shifter unit to a remote electronic trip unit.

5,646,587
MAGNETIC ELEMENT SWITCH

Yasuhiro Miyazawa; Daisuke Takanohashi, and Makoto Uda, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Nov. 9, 1995, Ser. No. 556,082.
Claims priority, application Japan, Nov. 10, 1994, 6-276712; Mar. 2, 1995, 7-043066; Oct. 26, 1995, 7-279324
Int. Cl.[6] H01H *9/00*
U.S. Cl. 335—205 **14 Claims**



1. A switch, comprising:
an operation part which oscillates about a neutral position thereof;
a magnet attached to said operation part to oscillate with said operation part; and

a magnetic element disposed adjacent to said magnet for generating an electromotive voltage proportional to a magnetic flux density from said magnet, said magnetic element positioned so that

(a) a magnetic force line generated by said magnet when said magnet is situated at the neutral position passes through said magnetic element in parallel with an electric field formed within said magnetic element, and

(b) said magnetic force line passes through said magnetic element to have a component perpendicular with said electric field when said magnet is oscillated to reach a first position and a second position on opposite sides of said neutral position, thereby changing said electromotive voltage in accordance with the position of said magnet.

5,646,588

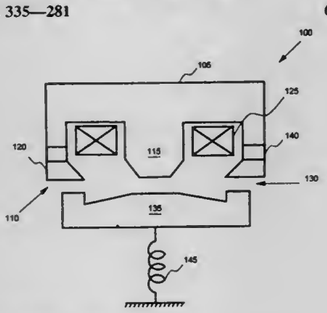
STROKE ELONGATION DEVICE FOR AN ELECTROMAGNETIC ACTUATOR

Howard N. Cannon, Peoria, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Sep. 19, 1994, Ser. No. 308,239

Int. Cl.[6] H01F *3/00*

U.S. Cl. 335—281 **6 Claims**



1. An apparatus, comprising:

an electromagnetic actuator, including:

a core having an inner and outer pole that defines a pole face;

a coil of windings being disposed in the core and adapted to produce a magnetic field; and

an armature being moveable between first and second positions in response to the force produced by the magnetic field, the armature defining an air gap between the armature and the pole face; and

a stroke elongation device being disposed adjacent to the outer pole piece and closely spaced from the armature, wherein the stroke elongation device is adapted to increase the pull-in force of the electromagnetic actuator.

5,646,589

ELECTRONIC DEVICE HAVING SELECTABLE ALERT MODES

Nancy Murray, Morris Township, Morris County, and David Phillip Silverman, Somerville, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

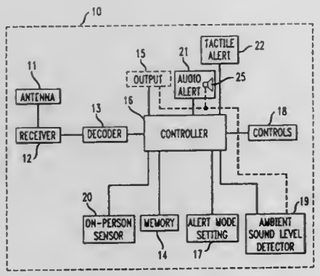
Filed Dec. 19, 1994, Ser. No. 359,109

Int. Cl.[6] G08B *3/00;5/22*

U.S. Cl. 340—384.1 **7 Claims**

1. A pager comprising:

means for setting an audible alert mode for said pager;



means for determining an ambient sound level in the environment of said pager in response to a particular actuation of said pager;

means, responsive to said pager being set to an audible alert mode by said means for setting, for activating said pager to issue a tactile alert for said particular actuation of said pager only if said ambient sound level is greater than a predetermined threshold level at a time of said particular actuation; and

means for sensing whether or not said pager is on the person of a user of said pager, wherein said means for activating is also responsive to said means for sensing so as to activate said pager to issue said tactile alert only if said means for sensing senses that said pager is on the person of a user.

5,646,590

AUDIBLE TURN SIGNAL INDICATOR SYSTEM

Andrew E. Dembicks, 5308 Boca Marina Cir. North, Boca Raton, Fla. 33487

Filed Mar. 13, 1995, Ser. No. 402,612

Int. Cl.[6] B60Q *1/34*

U.S. Cl. 340—475 **18 Claims**

1. An audible turn signal indicator system comprising:

turn signal selection means, responsive to actuation by an operator of a vehicle, for indicating an anticipated change in the direction of travel of the vehicle, said turn signal selection means including means for indicating an anticipated change in travel to a first direction and a second direction; and

audible directional indicator means, responsive to said turn signal selection means, for emitting first and second predetermined audible signals in response to an indication of an anticipated change in travel to the first and second directions, respectively, wherein the first and second signals are audibly

different such that the operator can thereby determine the direction of the anticipated change in travel based upon the audible signals.

5,646,591

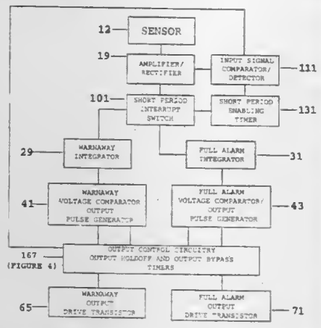
ADVANCED METHOD OF INDICATING INCOMING THREAT LEVEL TO AN ELECTRONICALLY SECURED VEHICLE AND APPARATUS THEREFOR

Darrell Issa, and Jerry Birchfield, both of Vista, Calif., assignors to Directed Electronics, Inc., Vista, Calif.

Continuation-in-part of Ser. No. 945,667, Sep. 16, 1992, Pat. No. 5,534,845, and Ser. No. 433,819, May 4, 1995, abandoned, which is a continuation-in-part of Ser. No. 112,940, Aug. 30, 1993, Pat. No. 5,532,670, which is a continuation-in-part of Ser. No. 886,871, May 22, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 468,703

Int. Cl.[6] G08B *13/22*

U.S. Cl. 340—566 **94 Claims**



1. A method of indicating a degree of incoming threat to an electronically secured area comprising the steps of:

a) sensing via a sensor means a degree of threat delivered to a secured area;

b) generating from the output of said means an electric signal proportional to said degree of threat;

c) analyzing said signal to determine if it represents a low degree of threat or a high degree of threat; and

d) producing either a first pulse representing said low degree of threat or separately producing said first pulse and a second pulse representing a signal having both said low degree of threat and said high degree of threat.

5,646,592

ANTI-THEFT METHOD FOR DETECTING THE UNAUTHORIZED OPENING OF CONTAINERS AND BAGGAGE

John R. Tuttle, Corrales, N. Mex., assignor to Micron Communications, Inc., Boise, Id.

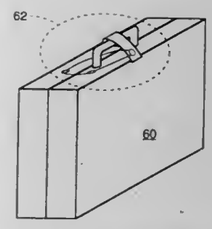
Continuation of Ser. No. 151,599, Nov. 12, 1993, Pat. No. 5,406,263, which is a continuation-in-part of Ser. No. 921,037, Jul. 27, 1992, abandoned. This application Apr. 11, 1995, Ser. No. 421,571

Int. Cl.[6] G08B *13/08*

U.S. Cl. 340—572 **15 Claims**

1. For an apparatus having an aperture which is selectably closed and opened by moving first and second members together and apart respectively, an improved security device for detecting whether the aperture is opened, comprising:

(a) an elongated electrical conductor having first and second ends, the conductor extending between the two closure members and being attached to both the first closure member and the second closure member so that the two closure members



cannot be moved apart a substantial amount to open the aperture without breaking the conductor; and

(b) an RFID transceiver, connected to the two ends of the conductor, including an electrical circuit for detecting when electrical continuity between the two ends of the conductor is broken and subsequently transmitting an alarm signal, wherein the circuit of the RFID transceiver further includes:

(i) an alarm flagging circuit which indicates either a "see" condition or a "reset" condition according to whether the electrical continuity between the two ends of the conductor has or has not been broken;

(ii) a receiver circuit for receiving interrogation signals from an interrogator outside the RFID transceiver; and

(iii) a transmitter circuit for transmitting an alarm signal to the interrogator if the receiver receives an alarm data interrogation signal from the interrogator while the alarm flagging circuit indicates the "see" condition.

5,646,593

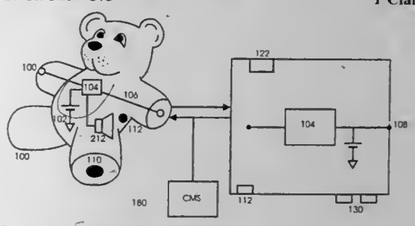
CHILD PROXIMITY DETECTOR

Michael Hughes, Wolverhampton; Ian Clarke, Walsall, both of United Kingdom, and William E. Hewlett, Pasadena, Calif., assignors to Hewlett Electronics, Pasadena, Calif.

Continuation of Ser. No. 382,692, Feb. 2, 1995, abandoned. This application Apr. 26, 1995, Ser. No. 429,142

Int. Cl.[6] G08B *23/00*

U.S. Cl. 340—573 **1 Claim**



1. A proximity detector comprising:

a first transceiver unit, configured to have a parent identification number; and

a second transceiver unit configured to have a child identification number;

said first transceiver unit including a message producing structure which produces a polling message which includes identification numbers therein to the second transceiver unit, and which monitors responses from said second transceiver unit to determine if said second transducer unit is further than a predetermined distance therefrom to produce an alarm;

said second transceiver unit including a processor which investigates said polling message to determine if said polling message includes a parent identification number and a child identification number which each match a predetermined criteria, and transmitting a response only if so, and wherein said second transceiver unit also includes an element for detecting

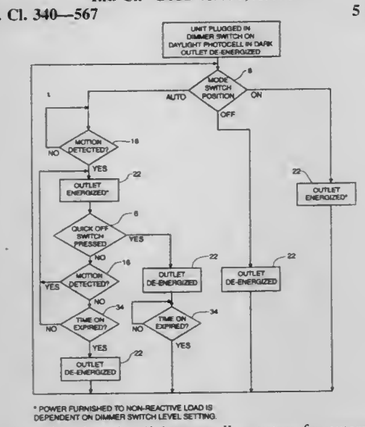
that said first transceiver unit is more than a second predetermined distance therefrom, and producing an alarm based on said detecting.

5,646,594

DECORATIVE REMOTE LIGHTING APPARATUS

Carl L. Barben, Jr., and Grace C. Barben, both of 3301 W. 121st Ter., Shawnee Mission, Kans. 66209

Filed Oct. 25, 1995, Ser. No. 547,865
Int. Cl.[6] G08B *13/191;13/193*
U.S. Cl. 340—567 **5 Claims**



1. A motion detection light controller system for automatically turning on and off a standard external appliance, wherein said controller system comprises:

a. at least one infrared pyroelectric sensor, said sensor capable of converting infrared energy into a first electronic signal;

b. a Fresnel lens mounted and affixed to said infrared pyroelectric sensor such as to gather infrared energy and focus said infrared energy onto said infrared pyroelectric sensor;

c. an adjustable time-on timer for adjustably setting a desired shutoff delay duration;

d. a power cord for providing a standard supply of 120 volt, alternating current electrical energy;

e. a power outlet for providing a connection source of electrical power for powering an external appliance;

f. a power relay for controlling the flow of electricity from said power cord to said power outlet;

g. a relay driver logic circuit for controlling said power relay;

h. a detector timer assembly for comparing said first electronic signal generated from said infrared pyroelectric sensor to a reference signal and for actuating said adjustable time-on timer when said first electronic signal exceeds said reference signal to thereby deliver an energizing signal to said power relay until the expiration of said shutoff delay duration;

i. a power supply for providing isolated, low voltage power to said infrared pyroelectric sensor, said detector timer assembly, said power relay and said relay driver logic circuit;

j. a manual quick-off override means for de-energizing said power relay and permitting said power relay to re-energize under control of said relay driver logic circuit; and

k. a portable housing for storing and containing at least said time-on timer, said power outlet, said power relay, said relay driver logic circuit, said power supply, said detector timer assembly, and said quick-off override means.

5,646,595

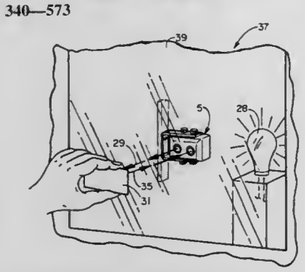
Patent Not Issued For This Number

5,646,596

INTERACTIVE WINDOW DISPLAY

Darryl M. Gumm, Kohler, Wis., assignor to IDC, Inc., Kohler, Wis.

Filed Sep. 15, 1995, Ser. No. 529,082
Int. Cl.[6] G08B *23/00*
U.S. Cl. 340—573 **10 Claims**



1. An interactive window display comprising:

a. sensor means for emitting a light beam and for producing an electrical signal in response to sensing the light beam;

b. reflector means fro selectively reflecting the light beam emitted by the sensor means back to the sensor means to be sensed thereby;

c. clear pane means interposed between the sensor means and the reflector means at a predetermined accurately controlled angle relative to the light beam for guiding the reflector means to accurately reflect the light beam back to the sensor means; and

d. window display electrical device means disposed on the same side as the sensor means relative to the clear pane means for activating in response to the sensor means sensing the light beam,

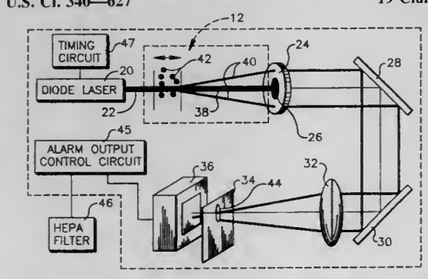
so that guiding the reflector means by the pane means in the path of the light beam remitted by the sensor means activates the window display electrical device means, and the light beam emitted by the sensor means and reflected by the reflector means back to the sensor means passes through the pane means.

5,646,597

ALLERGEN DETECTOR SYSTEM AND METHOD

Robert N. Hamburger, 9485 La Jolla Shores Dr., La Jolla, Calif. 92037; Ruibo Wang, and Jien-Ping Jiang, both of Tucson, Ariz., assignors to Robert N. Hamburger, La Jolla, Calif.

Filed Jul. 11, 1996, Ser. No. 679,706
Int. Cl.[6] G08B *21/00*
U.S. Cl. 340—627 **19 Claims**



1. An allergen detecting apparatus for detecting the presence of allergen particles in environmental air, comprising:

an outer housing having a passageway for air flow through the housing;

a light source on one side of the passageway for directing a light beam through the air passing through the passageway;

a beam blocking device on the other side of the passageway facing the light source for blocking any portion of the light beam transmitted directly across the passageway without scattering and transmitting any portion of the light beam scattered by impact with particles in the light path;

a light passageway in the housing extending from the beam blocking device for directing light transmitted through the beam blocking device along a light path;

a discriminating device positioned in the light path for transmitting light traveling in a predetermined scattering angle range and blocking transmission of light scattered outside said scattering angle range;

a detector positioned in the light path after the discriminating device for detecting light transmitted through the discriminating device and producing an output signal proportional to the amount of light transmitted; and

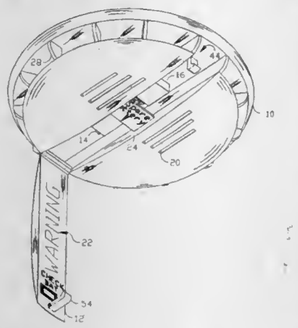
a control circuit connected to the detector output for generating an alarm output signal if the detector output is above a predetermined level.

5,646,598

SMOKE DETECTOR WITH ADVANCED SAFETY FEATURES

Aaron Michael Nickles, 154 Columbus Ave. #2N, New York, N.Y. 10023; Daniel Robert Nickles, 11 Cheyenneue Rd., Lafayette, N.J. 07848, and Al Saferstein, 748 Virginia Dare Dr., Virginia Beach, Va. 23451

Filed May 2, 1995, Ser. No. 432,831
Int. Cl.[6] G08B *17/10*
U.S. Cl. 340—628 **10 Claims**



1. A room-mountable battery operated detector device comprising:

a base plate to house detector's components,

a cover that encloses and seals said detector's components in which said cover is attached to said base plate by fastener means, and

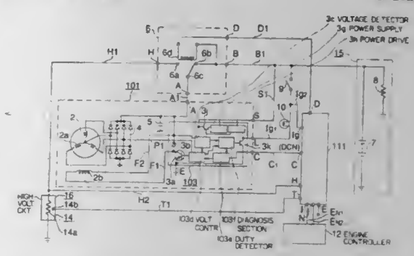
an arm that is pivotally attached at one end to said cover by means of a pin connection in which said arm is normally stored in a position such that said arm is flush with said cover and in which said device comprises latching means for releasing said arm in response to the detection of a battery that is low or dead such that said arm is swung down in an angular motion from the normally flush stowed position to a position such as to create an angular distance between said cover and said arm and in which said arm provides means of warning of the dangerous battery condition.

5,646,599

FAILURE WARNING SYSTEM OF ELECTRIC POWER UNIT IN VEHICLE

Katsumi Adachi, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 3, 1995, Ser. No. 510,869
Claims priority, application Japan, Mar. 9, 1995, 7-049898
Int. Cl.[6] G08B *21/00*
U.S. Cl. 340—648 **8 Claims**



1. A failure warning system of an electric power unit in a vehicle, comprising:

field current control means for controlling a field current of a generator;

a switching means for switching a supply of a generator output between a normal voltage circuit including a battery and a high-voltage circuit including a high-voltage load which requires a higher voltage than the normal voltage;

high-voltage load control means for outputting a switch control signal to operate the switching means, and for outputting a control signal which is a periodical pulse signal transmitted to the field current control means to place the generator in a normal voltage mode or a high voltage mode via the field current control means in response to a duty ratio of the control signal, said control signal including the detection result at a predetermined duty ratio upon detection of a failure in the high-voltage circuit;

generation error detection means being disposed in the field current control means for detecting a power generation error in the generator;

reception means being disposed in the field current control means for receiving the failure detection result in the high-voltage circuit based on the duty ratio of the control signal, and

failure warning means for warning an operator of the detection result of the generation error detection means and the high-voltage circuit failure detection result received by the reception means;

wherein control over a power generation mode of the generator and control of the failure warning means are both carried out in response to said duty ratio of said control signal.

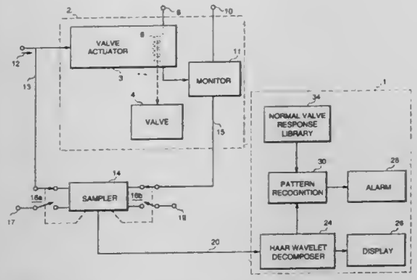
5,646,600

INSTRUMENT FOR DETECTING POTENTIAL FUTURE FAILURES OF VALVES IN CRITICAL CONTROL SYSTEMS

Aiman Albert Abdel-Malek, Schenectady; John Eri Hershey, Ballston Lake, both of N.Y., and Amer Aref Hassan, Cary, N.C., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 12, 1995, Ser. No. 371,716
Int. Cl.[6] G08B *21/00*
U.S. Cl. 340—679 **16 Claims**

1. Apparatus for monitoring the health and response of critical control valves by comparing an actual valve response signal with that of a normal valve response signal comprising:



a valve;

a valve actuator to actuate said valve in response to a valve control signal;

a monitor to monitor the response of said valve upon actuation of said valve to provide a valve response signal; and

means to compare said valve response signal and a normal valve response signal including

wavelet decomposition means to provide enhanced evaluation signals representing time variations in a time warped valve response signal; and

means to indicate differences between said enhanced evaluation signals and said normal valve response signal to evaluate the response and health of said valve.

5,646,601

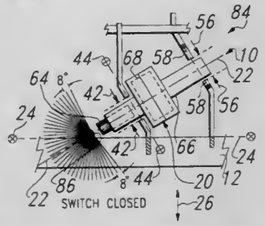
MAGNETIC APPARATUS FOR ACTUATING A REED SWITCH AND ASSOCIATED SYSTEM

Richard H. Wallace, Plano, and Robert W. Pospick, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 864,840, Apr. 7, 1992, abandoned. This application May 16, 1994, Ser. No. 243,060

Int. Cl.[6] G08B *21/00*

U.S. Cl. 340—686 **25 Claims**



1. A magnetic apparatus for activating a switch, the magnetic apparatus comprising:

a bottom plate presenting a gravity reference plane;

a first magnet guide supported by the bottom plate in an upright position with respect to the gravity reference plane, the first magnet guide having a first aperture presenting a first aperture plane defining an oblique angle with respect to the gravity reference plane;

a second magnet guide supported by the bottom plate in an upright position with respect to the gravity reference plane, the second magnet guide having a second aperture presenting a second aperture plane defining an oblique angle with respect to the gravity reference plane; and

a magnet member including a magnet, the magnet member supported by the first magnet guide and the second magnet guide, the magnet member presenting a slide axis running through the first aperture and the second aperture, the magnet member including a first end and a second end, the first end received in the first aperture, the second end received in the second aperture.

5,646,602

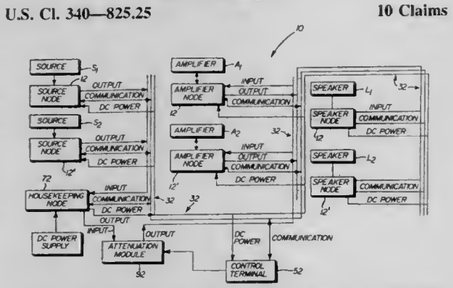
SWITCHING NETWORK FOR SELECTIVE PRODUCT DEMONSTRATION

Jonathan Gertz, and James M. Tuomy, both of Lexington, Ky., assignors to Audio Authority Corporation, Lexington, Ky.

Continuation of Ser. No. 176,152, Dec. 30, 1993, abandoned, which is a continuation-in-part of Ser. No. 783,849, Oct. 29, 1991, abandoned. This application Jun. 29, 1995, Ser. No. 496,903

Int. Cl.[6] H04Q *1/00*

U.S. Cl. 340—825.25 **10 Claims**



1. A switching network for interconnecting selected products of different electronic product groups on display, comprising:

a plurality of nodes, each product on display being operatively connected to one node;

control means for supervising all network functions, said control means including a micro-controller for each node;

bus means for operatively connecting said microcontrollers for two-way intercommunication between said microcontrollers and said products on display for interconnection and active demonstration; and

a product selector switch for each node for selectively activating an adjacent product connected to said node whereby interconnection and active demonstration of selected products is possible.

5,646,603

REMOTE CONTROL APPARATUS FOR RECORDING/PLAYBACK EQUIPMENT

Atsushi Nagata; Haruo Iwasaki; Kazuhiko Shimizu, all of Kanagawa; Yoshinori Tanba, Tokyo; Takafumi Abe, Kanagawa; Tatsuo Imai, Kanagawa; Akihiro Kikuchi, Kanagawa, and Teruyuki Miyakawa, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 219,919, Mar. 30, 1994, abandoned. This application Nov. 30, 1995, Ser. No. 565,274

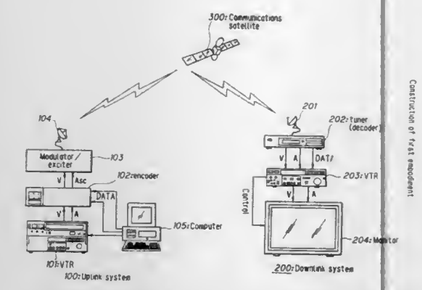
Claims priority, application Japan, Apr. 2, 1993, 5-077256

Int. Cl.[6] H04Q *1/00*

U.S. Cl. 340—825.25 **9 Claims**

1. Apparatus for controlling recording/playback equipment, comprising:

data outputting means for outputting control data for controlling the operating mode of selected ones of a plurality of recording/playback devices, said control data including operation data pertaining to a recording operation or a playback operation of selected recording/playback devices, time data indicating at least a start time of the recording and/or playback operation, and position data indicating a position on a



recording medium at which the recording and/or playback operation is to take place;

data transmitting means for transmitting said control data outputted from said data outputting means;

data receiving means for receiving said control data transmitted by said data transmitting means;

storage means for storing said control data received by said data receiving means in said selected recording/playback devices as indicated in said control data; and

control means for controlling the operations of the selected recording/playback devices in accordance with said control data stored in said storage means.

5,646,604

MOBILE UNIT AND A METHOD FOR ENABLING A DIAL LOCK IN THE MOBILE UNIT

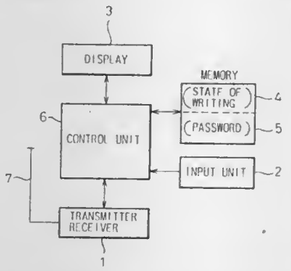
Minoru Maruyama, and Shuuji Fujiwara, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Jan. 26, 1995, Ser. No. 378,397

Claims priority, application Japan, Jun. 30, 1994, 6-149110

Int. Cl.[6] H04M *1/66*

U.S. Cl. 340—825.31 **10 Claims**



1. A mobile unit for achieving radio transmission and reception relative to a base station, comprising:

means for transmitting and receiving signals to and from said base station by radio telephony;

user input means for use by a user in entering information and in entering a dial lock signal;

display means;

a first memory in which "unwritten" or "written" is stored as a state of a password set for dial lock prevention of unauthorized use of said mobile unit;

a second memory in which a password from said dial lock signal and set for dial lock preventing unauthorized use of said mobile unit, is stored; and

control means for controlling said transmitter and receiver means and said display means, for determining whether said dial lock signal is supplied from said input means, and when it is determined that said dial lock signal is supplied, for writing a password entered by said user at said input means into said second memory, and for changing the state of a password in said first memory from "unwritten" to "written".

5,646,605

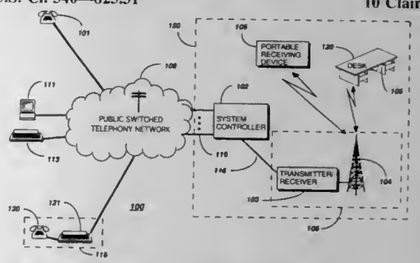
METHOD AND APPARATUS FOR REMOTE CONTROL OF LOCKS

Patricia Leonaggeo, Boynton Beach, and James A. Lamb, Coral Springs, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 270,569, Jul. 5, 1994, abandoned. This application Dec. 18, 1995, Ser. No. 573,762

Int. Cl.[6] H04Q *1/00*

U.S. Cl. 340—825.31 **10 Claims**



1. A remote controlled lock system, comprising:

a computer, comprising:

a security utility for generating a change of a user access condition of the computer in response to one of a user password input and an event, and for generating a corresponding output signal which indicates the change of the user access condition, wherein the user access condition either allows or prevents user access to at least one program or file in the computer; and

a command generator, coupled to said security utility, for generating at least one digital lock command in response to the output signal, wherein the at least one digital lock command includes one of a lock instruction and an unlock instruction;

a paging system controller, coupled to said computer, for receiving the at least one digital lock command and generating at least one selective call receiver address corresponding to a selective call receiver identity and generating one of a digital lock code and a digital unlock code;

a transmitter, coupled to said paging system controller, for transmitting a radio frequency signal including the at least one selective call receiver address and the one of the digital lock code and digital unlock code;

at least one remote controlled lock device, comprising:

a selective call receiver for receiving the radio frequency signal and for generating one of a lock signal and an unlock signal when the at least one selective call receiver address matches a predetermined address stored in the selective call receiver and the one of the digital lock code and the digital unlock code matches a predetermined respective lock code and unlock code stored in said selective call receiver; and

an electromechanical lock having a locking member, wherein the locking member is switched to one of a mechanically stable lock position and a mechanically stable unlock position, respectively, in response to the one of the lock signal and unlock signal.

5,646,606

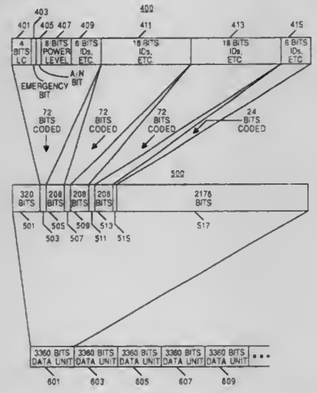
TRANSMISSION OF TRANSMITTER PARAMETERS IN A DIGITAL COMMUNICATION SYSTEM

Alan L. Wilson, 3720 Alder Dr., Hoffman Estates, Ill. 60195; David L. Muri, 2355 NW. 110 Ter., Sunrise, Fla. 33322; James M. O'Connor, 6248 Glenview Dr. Apt. 250, North Richland Hills, Tex. 76180, and Jeffrey W. Klingberg, 3709 Greenstone Dr., Ft. Worth, Tex. 76137

Continuation of Ser. No. 707,523, May 30, 1991, abandoned. This application Mar. 30, 1993, Ser. No. 41,132

Int. Cl.[6] G08B *5/22*

U.S. Cl. 340—825.37 **13 Claims**



1. A method of transmitting, by a transmitter, transmitter operating parameter information in a communication message, comprising the steps of:

transmitting message information; and

transmitting, repeatedly, but not continuously, interleaved with said message information, additional information regarding at least one transmitter operating parameter of the transmitter, wherein said at least one transmitter operating parameter comprises transmitter power of the transmitter.

5,646,607

TRANSPONDER/INTERROGATOR PROTOCOL IN A MULTI-INTERROGATOR FIELD

Josef H. Schürmann, and Herbert Meier, both of Moosburg, Germany, assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 855,126, Mar. 18, 1992, abandoned, which is a continuation of Ser. No. 538,798, Jun. 15, 1990, abandoned. This application Sep. 14, 1995, Ser. No. 528,453

Int. Cl.[6] H04Q *9/00*

U.S. Cl. 340—825.54 **10 Claims**



2. A method of sequentially transmitting interrogation pulses of predetermined carrier frequency and predetermined duration from an interrogator device and receiving transponder messages of predetermined message duration from a transponder in an interrogation region where there is more than one interrogation device transmitting in the same area, comprising the steps of:

monitoring for an interrogation pulse being transmitted by another interrogation device into said area;

waiting for a selected period for a transponder message of predetermined message duration while simultaneously monitoring for the start of another interrogation pulse;

transmitting an interrogation pulse of a predetermined duration into said area at the termination of said waiting period if said start of another interrogation pulse was not detected during said monitoring or said waiting, or transmitting an interrogation pulse of predetermined duration simultaneously with said start of another interrogation pulse if said start of another interrogation pulse is detected during said waiting, and;

receiving a transponder message of predetermined message duration.

5,646,608

APPARATUS AND METHOD FOR AN ELECTRONIC DEVICE CONTROL SYSTEM

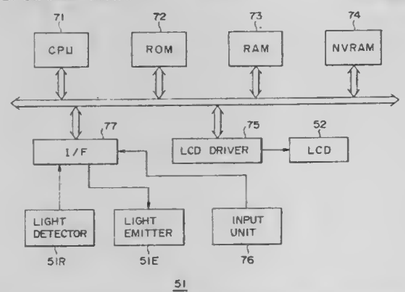
Peter Shintani, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 22, 1994, Ser. No. 362,056

Claims priority, application Japan, Dec. 27, 1993, 5-329382

Int. Cl.[6] H04Q *9/02*

U.S. Cl. 340—825.52 **10 Claims**



1. An electronic device remote control system comprising:

an electronic device placed in a room; and

a remote control unit for controlling said electronic device;

said electronic device comprising:

device identification storing means for storing an assigned identification of the electronic device;

device identification signal output means for outputting an identification signal representing said assigned identification for reception by said remote control unit; and

control signal detecting means for detecting a control signal outputted from said remote control unit;

said remote control unit comprising:

control signal output means for outputting the control signal to said electronic device;

identification signal detecting means for detecting the identification signal outputted from said electronic device; and

display means for displaying a menu required to operate said electronic device corresponding to said identification signal when said identification signal detecting means detects the identification signal in said room.

5,646,609

CIRCUIT AND METHOD FOR SELECTING A CIRCUIT MODULE

Gary J. O'Brien, Pheonix, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 3, 1995, Ser. No. 367,601

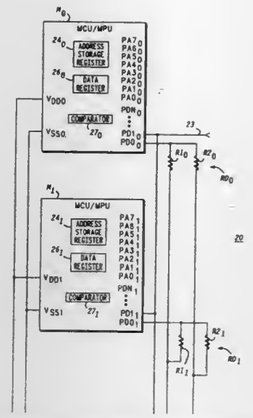
Int. Cl.[6] H04Q *1/00*

U.S. Cl. 340—825.78 **15 Claims**

1. A method for selecting at least one circuit module from a plurality of circuit modules, comprising the steps of:

coupling the plurality of circuit modules to at least one conductor;

initializing at least two of the plurality of circuit modules, wherein an address unique to each circuit module is stored in



an address storage location of a corresponding circuit module of the at least two circuit modules, the address being an encoded voltage level;

converting an analog voltage level on the at least one conductor into an N-bit digital electrical signal;

storing the N-bit digital electrical signal in a data register of each circuit module of the at least two circuit modules;

comparing the N-bit digital electrical signal with the address unique to each circuit module;

generating a circuit module selection signal in accordance with a result of comparing the electrical signal present in the at least one conductor with the address unique to each circuit module; and

selecting the circuit module in response to the circuit module selection signal.

5,646,610

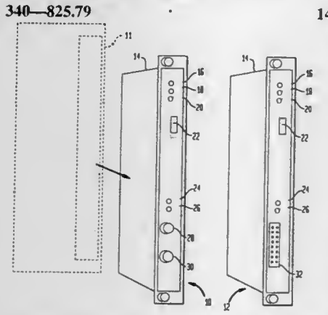
ELECTRIC POWER CONTROL APPARATUS HAVING CHARGEABLE PROTOCOL COMMUNICATIONS MODULE

John J. Trainor, Wake Forest, and Carl J. LaPlace, Raleigh, both of N.C., assignors to Siemens Energy & Automation, Inc., Alpharetta, Ga.

Filed Mar. 31, 1995, Ser. No. 414,067

Int. Cl.[6] G06F *13/00*

U.S. Cl. 340—825.79 **14 Claims**



1. A reconfigurable communication module for facilitating communication to or among electric power control apparatus comprising:

a reconfigurable communication module adaptable to communicate over a communication medium, said reconfigurable communication module connectable to and collocated with the electric power control apparatus;

module communication means contained in said communication module for communicating with the electric power control apparatus and for also communicating with a module transceiver, said module communication means having permanently contained therein a plurality of selectively enabled link layer protocol schemes;

means for the electric power control apparatus to selectively enable at least one of said plurality of link layer protocol schemes; and

module transceiver means contained in said communication module for communicating with said module communication means and for facilitating external communication over a predetermined communications medium by use of one of said plurality of selectively enabled link layer protocol schemes.

5,646,611

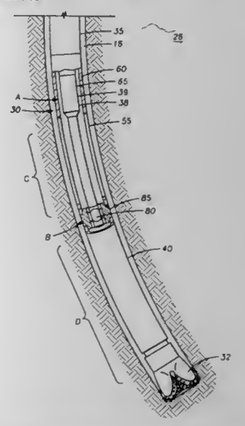
SYSTEM AND METHOD FOR INDIRECTLY DETERMINING INCLINATION AT THE BIT

Patrick E. Dailey, Lomita, Calif., and Charles Dwain Barron, Kingwood, Tex., assignors to Halliburton Company, Dallas, Tex.

Filed Feb. 24, 1995, Ser. No. 393,842

Int. Cl.[6] G01V *3/00*

U.S. Cl. 340—853.6 **46 Claims**



1. A downhole directional measurement system to determine an inclination angle θ of a wellbore, comprising:

a first inclinometer for measuring an inclination angle α of the wellbore at a first location in said downhole directional measurement system, and producing an output signal indicative thereof;

a second inclinometer for measuring an inclination angle β of the wellbore at a second location in said downhole directional measurement system, and producing an output signal indicative thereof;

wherein said system is capable of determining the inclination angle θ of the wellbore at a point in the definable vicinity of the wellbore bottom by extrapolation based upon said inclination angle α and said inclination angle β.

5,646,612

METHOD FOR AVOIDING COLLISION OF VEHICLE AND APPARATUS FOR PERFORMING THE SAME

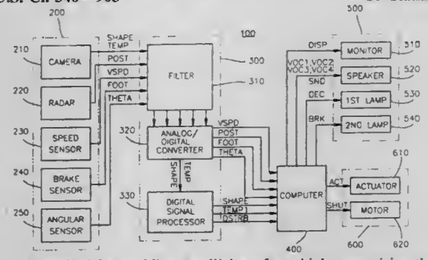
Sung-Kwang Byon, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 29, 1995, Ser. No. 580,584

Claims priority, application Rep. of Korea, Feb. 9, 1995, 95-2319

Int. Cl.[6] G08G *1/16*

U.S. Cl. 340—903 16 Claims



1. A method for avoiding a collision of a vehicle comprising the steps of:

A) detecting a shape and a temperature distribution of an object ahead of and/or aside of the vehicle, and a position of the object, a speed of the vehicle, an operational status of a brake and an opening angle of a throttle valve so as to generate a shape signal, a temperature distribution signal, a position signal, a speed signal, a pedal footing signal and an angle signal;

B) filtering and converting the shape signal, temperature distribution signal, position signal, speed signal, pedal footing signal and angle signal into digital signals, processing the shape signal and the temperature distribution signal by means of digital signal processing technique and generating a body temperature signal and a temperature distribution display signal by calculating a temperature distributing area of the shape of the object;

C) determining a kind of the object by receiving the body temperature signal, estimating a predicted collision time, a predicted braking time, a predicted decelerating time and a braking start tme by receiving the position signal and speed signal, determining one of cases of braking, decelerating and braking with decelerating the vehicle by using the predicted collision time, the predicted braking time, the predicted decelerating time and the braking start time, and generating an alarm signal and a control signal by receiving the shape signal, the temperature distribution display signal and the angular signal,

wherein by comparing the body signal and a preset value a first comparison signal is generated when the object is determined to be a human, a second comparison signal is generated when the object is determined as an animal and a third comparison signal is generated when the object is determined to be an inanimate object;

the predicted collision time, the predicted braking time, the predicted decelerating time and the braking start time are estimated by using the position signal, the speed signal and prestored data when the first, second and third comparison signals are received;

a first decision signal is generated when the predicted collision time is greater than the predicted decelerating time, a second decision signal is generated when i) the predicted collision time is greater than the predicted braking time, ii) the predicted collision time reaches the braking start time and iii) the pedal footing signal is received, and a third decision signal is generated when the pedal footing signal is not received, and a fourth decision signal is generated when the predicted collision time is less than the predicted braking time; and

a first voice signal, a closing signal based on the angle signal for closing the throttle valve and an object display signal are generated when the first comparison signal is received, a second voice signal and the object display signal are generated when the second comparison signal is received, a third voice signal is generated when the third comparison signal is received, the closing signal based on the angle signal for closing the throttle valve, a deceleration alarm signal and a sound signal are generated when the first decision signal is received, a braking signal and the sound signal are generated when the second decision signal is received, the braking signal, braking alarm signal and the sound signal are generated when the third decision signal is received, and a fourth voice signal, the closing signal, the braking signal, deceleration alarm signal, the braking alarm signal and the sound signal are generated when the fourth decision signal is received;

D) alarming a driver of decelerating and braking statuses of the vehicle according to an appearance of the object according to the alarm signal; and

E) decelerating and braking the vehicle according to the control signal.

5,646,613

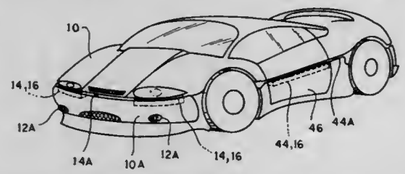
SYSTEM FOR MINIMIZING AUTOMOBILE COLLISION DAMAGE

Myungeun Cho, 13404 Tossa La., Austin, Tex. 78729

Filed May 20, 1996, Ser. No. 650,869

Int. Cl.[6] G08G *1/16*

U.S. Cl. 340—903 20 Claims



1. A collision damage minimizing system for a roadway vehicle comprising:

means for generating instantaneous speed signals of the roadway vehicle;

at least one radiant energy detection unit mounted on the roadway vehicle, each said at least one radiant energy detection unit including transmitter means for transmitting signals of radiant energy, and highly directional receiver means for receiving signals of radiant energy reflected by a potential obstacle and generating an electronic signal in response thereto;

a computer processing unit (CPU) for receiving said speed signals and said electronic signals from said radiant detection unit, said CPU continuously processing information derived from said electronic and speed signals, said CPU calculating changes in distance, speed and direction of the potential obstacle with respect to the roadway vehicle, said CPU generating a control signal upon calculation that a collision is imminent based on said calculated changes; and

at least one energy absorbing inflation device responsive to said control signal, said energy absorbing inflation device including means for producing inflation gas, an electronically controlled valve for releasing said inflation gas, and an air bag coupled to said valve for inflation upon receiving said inflation gas, said air bag being deflated, folded and positioned internally of the roadway vehicle prior to inflation, and said air bag being positioned externally of the roadway vehicle upon inflation; whereby

said air bag upon inflation absorbs kinetic, momentum and inertial energies at collision thereby minimizing damage to the roadway vehicle.

5,646,614

SYSTEM FOR MONITORING THE FRONT OR REAR PARKING SPACE OF A MOTOR VEHICLE

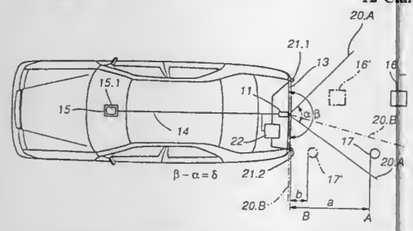
Guenter Abersfelder; Helmut Grantz, and Wolfgang Odebrecht, all of Sindelfingen, Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany

Filed Oct. 25, 1994, Ser. No. 328,671

Claims priority, application Germany, Oct. 25, 1993, 43 36 288.5

Int. Cl.[6] B60Q *1/48*

U.S. Cl. 340—932.2 12 Claims



1. A system for monitoring a space in front of or in a rear of a motor vehicle which is being parked, the system comprising:

a video camera built into either the front or rear of the vehicle;

a viewing and monitoring device, having a display screen, operatively coupled to said video camera, said viewing and monitoring device being located so as to be in a field of view of a driver of said vehicle;

means for pivoting said video camera as a function of electric drive signals, said video camera having object-referenced image sharpness control of its optics, said sharpness control being effective over a whole image angle detected by said video camera such that a corresponding sharpness measuring field is able to follow an object over the entire display screen once it is detected;

an image processing unit which subdivides an image picked up by said video camera into at least one of fields, quadrants, and an edge region arranged outside and a central region arranged inside an auxiliary frame as reference fields for discriminating the object subjected to said sharpness control across the display screen, said image processing unit discerning an instantaneous position of said sharpness measuring field with reference to said at least one of the fields, quadrants and edge and central regions of the auxiliary frame;

said image processing unit generating said electric drive signals for said pivoting means to pivot the video camera such that the sharpness measuring field at least one of does not leave an original field or quadrant, reaches a predetermined field or predetermined quadrants, and does not cross from the central region over the auxiliary frame into the edge region of the image field, so as to one of counteract, neutralize and eliminate a sampling pivoting of the video camera from being triggered.

5,646,615

TREADLE AND ROADWAY TREADLE ASSEMBLY

Curtis W. Moore, 976 Plouvier Rd., Hodgenville, Ky. 42748

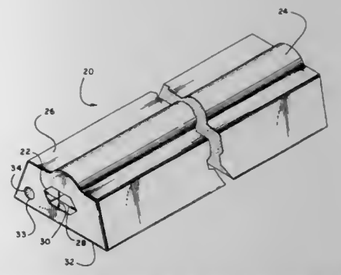
Filed Oct. 26, 1994, Ser. No. 329,437

Int. Cl.[6] G08G *1/02*

U.S. Cl. 340—940 29 Claims

1. An optical treadle adapted for disposition in a surface portion of a roadway comprising:

an elongated body of deformable material, said elongated body being of unitary construction; and



a hollow passageway opening at opposite ends of said elongated body, wherein said passageway defines a polygon in cross-section, said polygon having a vertical axis normal to a base of said elongated body and a horizontal axis parallel to said base,

the interior surfaces of said hollow passageway intersecting to define creases at the corners of said polygon that lie on said horizontal axis to facilitate closure of said passageway upon deformation of said elongated body caused by a vehicle tire passing thereover.

5,646,616

PICKING SYSTEM

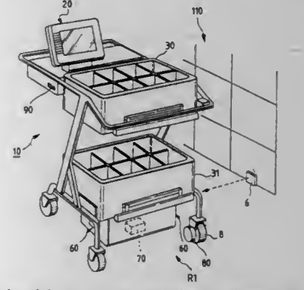
Yukio Komatsu, Kani, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Jun. 26, 1995, Ser. No. 494,983

Claims priority, application Japan, Jul. 1, 1994, 6-171618

Int. Cl.[6] G08G *1/123*

U.S. Cl. 340—988 3 Claims



1. An article pick-up system including a display device for displaying article pick-up information as to a current position of a cart having wheels, comprising:

a first means for indexing predetermined positions, said first means being disposed at a predetermined position;

a second means for detecting position information of said first means;

a third means for detecting a number and a direction of rotations of at least one of said wheels; and

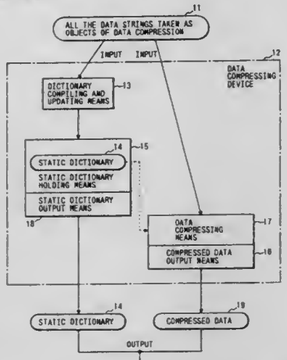
a fourth means for detecting a travel distance of said cart based on said number and said direction of rotation of said at least one of said wheels received from said third means and based on an outer diameter of said wheel, and for recognizing said current position of said cart in accordance with said position information resulting from said second means and said travel distance, wherein said second, third and fourth means are provided on said cart.

5,646,617

DATA COMPRESSING METHOD, DATA RESTORING METHOD, AND INFORMATION PROCESSING APPARATUS

Ryuji Ohmoto, and Hikonosuke Uwai, both of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Dec. 22, 1994, Ser. No. 362,019
Claims priority, application Japan, Jun. 16, 1994, 6-158099
Int. Cl.[6] H03M *7/30*
U.S. Cl. 341—51 **11 Claims**



1. A data compressing method for performing a data compression by using a dictionary capable of registering a registered data string as correlated with a registration number and by replacing a combination of two or more data strings with the registration number just defined;

wherein the data compressing method is characterized by:

comprising the processes defined hereinbelow and repeating the process (B) and the process (C) defined below until all the data strings which are to be taken up as the objects of the data compression are stored in the work area to be defined below:

(A) a process for taking a predetermined number of data strings out of the data strings which are taken as the objects of the data compression and then storing the data strings thus taken out in the predetermined number in a work area having a predetermined number of buffers;

(B) a process for performing an analysis for determining whether or not the combination of the data strings stored in any adjacent buffers in the work area defined above is registered in the dictionary, replacing the particular combination of data strings with the above-defined registration number in the dictionary and also making a shift of the data strings within the work area so as to fill up the empty buffer appearing as the result of the replacement, in the event that the particular combination of data strings is registered in the dictionary, then taking the subsequent data strings into the empty buffer which has appeared at the end portion of the work area as the result of such a shift of the data strings in the manner defined above, and then performing an analysis again for determining whether or not the specific combination of data strings stored in any adjacent buffers in the work area is registered in the dictionary; and

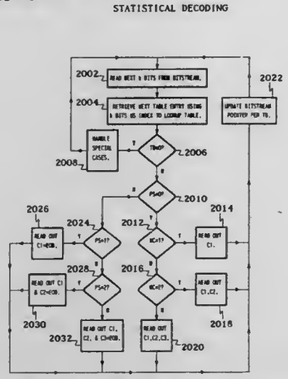
(C) a process for registering in the dictionary the combinations of data strings stored in a first buffer and a second buffer as counted from the top portion of the work area and also deleting the data strings stored in the first buffer and then making a shift of the data strings in the work area in such a manner as to fill up the empty buffer appearing as the result of the deletion, and taking the subsequent data strings into the empty buffer which has appeared at the end portion of the work area as the result of the shift of the data strings in the manner as defined above, in the event that it has been determined by the analyses defined in respect of the process (B) defined above that none of the combinations of the data strings stored in any adjacent buffers in the work area are registered in the dictionary.

5,646,618

DECODING ONE OR MORE VARIABLE-LENGTH ENCODED SIGNALS USING A SINGLE TABLE LOOKUP

Thomas E. Walsh, Portland, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Nov. 13, 1995, Ser. No. 558,258
Int. Cl.[6] H03M *7/40*
U.S. Cl. 341—67 **39 Claims**



1. A computer-implemented process for decoding variable-length encoded (VLE) signals of an encoded bitstream, comprising the steps of:

(a) selecting a k-bit signal from the encoded bitstream;

(b) retrieving a table entry from a lookup table using the k-bit signal as an index into the lookup table;

(c) interpreting the table entry to determine how many complete VLE signals are to be decoded from the k-bit signal; and

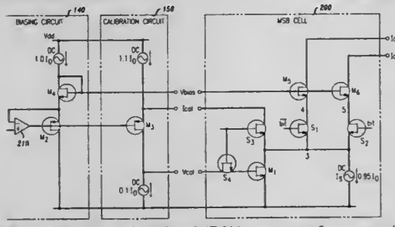
(d) retrieving from the table entry at least two decoded signals, if the k-bit signal comprises at least two complete VLE signals to be decoded.

5,646,619

SELF-CALIBRATING HIGH SPEED D/A CONVERTER

Steven J. Daubert, Lincroft, and Reza S. Shariatdoust, Califon, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Apr. 26, 1995, Ser. No. 427,927
Int. Cl.[6] H03M *1/06*
U.S. Cl. 341—118 **20 Claims**



10. A digital-to-analog signal (D/A) converter for converting a multi-bit digital data signal to an analog signal output, comprising:

a data array having a plurality of data cells, each representing a weighted portion of said digital data signal;

calibration means for providing a calibrating voltage output and a calibrating current output to each of said data cells;

biasing means including a reference voltage device for providing a fixed voltage reference; and

each of said data cells further including:

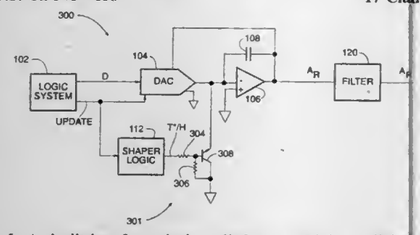
first and second data selection switches for receiving complementary input data and switching in accordance with the input data, said switches being commonly connected to current sourcing means and calibrating means to form a cell reference node, wherein during calibration mode, said calibrating voltage and calibrating current outputs from said calibration means are applied to said calibrating means for calibrating said current sourcing means, said calibrating means further includes means for affixing said cell reference node at a node voltage having a fixed relation to said fixed voltage reference of said biasing circuit during said calibration mode and operation.

5,646,620

METHOD AND APPARATUS FOR DEGLITCHING DAC SIGNALS

Christopher G. Regier, Cedar Park, Tex., assignor to National Instruments Corporation, Austin, Tex.

Filed Jun. 2, 1995, Ser. No. 460,074
Int. Cl.[6] H03M *1/06*
U.S. Cl. 341—118 **17 Claims**



1. A deglitcher for reducing glitches caused by a digital to analog converter (DAC) system including a DAC providing an analog output to an amplifier, the DAC system further asserting a hold signal during transitions of the DAC analog output, comprising:

a bias circuit for receiving said hold signal; and

a single transistor coupled to said bias circuit for grounding the analog output of the DAC when the hold signal is asserted;

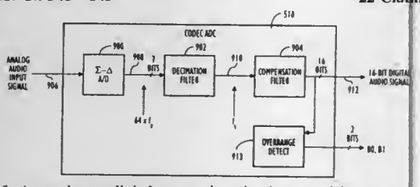
wherein the deglitcher includes only one transistor for reducing glitches caused by the digital to analog converter.

5,646,621

DELTA-SIGMA ADC WITH MULTI-STAGE DECIMATION FILTER AND GAIN COMPENSATION FILTER

Carlin Dru Cabler, and Alfredo R. Linz, both of Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Nov. 2, 1994, Ser. No. 333,535
Int. Cl.[6] H03M *3/00*
U.S. Cl. 341—143 **22 Claims**



1. An analog-to-digital conversion circuit, comprising:

an oversampling sigma-delta modulator, having a non-unity gain, an input and an output which outputs a multi-bit digital output signal, wherein said input is connected to an analog input signal;

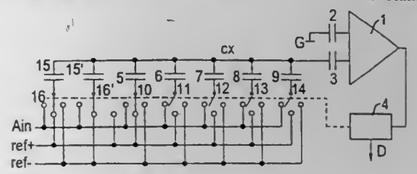
a multi-stage digital decimation filter, having an input and an output, wherein said multi-stage digital decimation filter input is connected to said output of said sigma-delta modulator, said multi-stage decimation filter having a first stage comprising a sinc[6] integrator-comb filter which decimates by a factor of 16, a second stage comprising a half-band linear phase FIR filter which decimates by a factor of 2, and having a third stage comprising a symmetric, linear phase, FIR low-pass filter which decimates by a factor of 2; and a digital compensation filter, said compensation filter having an input and an output, wherein said compensation filter input is connected to said output of said multi-stage digital decimation filter and said output of said compensation filter provides a multi-bit digital output signal, wherein said compensation filter provides attenuation compensation which is the reciprocal of the value of said gain of said sigma-delta modulator.

5,646,622

ANALOG/DIGITAL CONVERTER

Franz Kuttner, Ulrich, Austria, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Apr. 11, 1996, Ser. No. 631,804
Claims priority, application Germany, Apr. 11, 1995, 195 13 796.5
Int. Cl.[6] H03M *1/12*
U.S. Cl. 341—172 **6 Claims**



1. An analog/digital converter, comprising:

a node point;

a comparator with two inputs and one output;

one capacitor connected between a reference potential and one of the inputs of said comparator;

a coupling element connected between said node point and the other of the inputs of said comparator;

n further capacitors each having two terminals;

one terminal of each of said further capacitors being connected to said node point;

n individually controllable reversing switches each connecting the other terminal of a respective one of said further capacitors to one of an input potential, a first reference potential and a second reference potential; and

a control device connected to the output of said comparator and to said reversing switches to control said reversing switches for connecting at least some of said further capacitors to the input potential and for connecting each of a remainder of said further capacitors to one of the two reference potentials, during a transfer phase; and

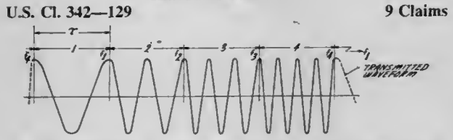
said reversing switches including at least some reversing switches having switch positions alternating continuously among one another between the reference potentials until an appearance of a signal change at the output of said comparator, and remaining reversing switches each connecting a respective one of said capacitors to a respective one of the two reference potentials, during a conversion phase.

5,646,623

COHERENT, FREQUENCY MULTIPLEXED RADAR

Glenn A. Walters, 917 Seph Way, Escondido, Calif. 92606, and Lance M. Teschmacher, 12935 Long Boat Way, Del Mar, Calif. 92014

Continuation-in-part of Ser. No. 155,592, Jun. 2, 1980, abandoned, which is a continuation-in-part of Ser. No. 906,049, May 15, 1978, abandoned. This application Nov. 24, 1981, Ser. No. 324,677
Int. Cl.[6] G01S *13/536*
U.S. Cl. 342—129 9 Claims



1. A continuous wave, frequency-multiplexed radar system, comprising:

transmitter means for transmitting, against a target, a continuous output signal having successive cycles, each of said cycles including N mutually coherent, contiguous segments, wherein said output signal has a respective predetermined frequency during each of said segments;

receiver means for receiving a return signal produced by reflection of said output signal from said target, while said output signal is being transmitted;

separation means connected to said receiver means for, during each cycle, separating said return signal into N respective frequency components corresponding to said predetermined frequencies;

means for successively obtaining quadrature samples from said separated frequency components for each of the segments of a return signal cycle, said samples being obtained in a predetermined order during each of a plurality of range times following transmission of said signal cycle in said output signal; and

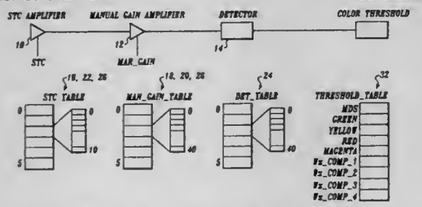
matched filter processing means for combining quadrature samples obtained from a succession of return signal cycles during a respective one of said range times to produce indications of the range and velocity of a target having a range corresponding to said range time.

5,646,624

PERFORMANCE MATCHING OF WEATHER AVOIDANCE RADAR

Warren Bruce Cope, Olathe, and Mark G. Roos, Shawnee, both of Kans., assignors to AlliedSignal, Inc., Morristown, N.J.

Filed Apr. 25, 1995, Ser. No. 428,741
Int. Cl.[6] G01S *7/40*
U.S. Cl. 342—174 18 Claims



1. A performance matched radar comprising:

a circuit for providing a radar output;

a digital map, coupled to said circuit, for storing calibration data useful for automatically compensating an output of said circuit to accommodate a combination of a variation in elements of said circuit and a variation in an operating condition of said circuit; and

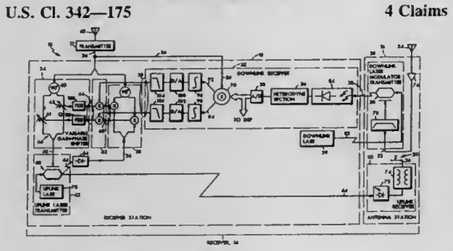
wherein the radar presents a substantially uniform output display.

5,646,625

RADAR SYSTEM

Richard W. Burrier, Groton, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Dec. 15, 1995, Ser. No. 572,782
Int. Cl.[6] G01S *13/02*
U.S. Cl. 342—175 4 Claims



1. A radar system, comprising:

a radar transmitter for producing a transmitted signal;

a radar receiver, comprising:

a receiver station and a remotely located antenna station; and

a feedthrough nulling system, comprising:

a "remote" combiner, disposed at the antenna station, for providing a feedthrough null residual signal representative of the difference in power between a signal received by the antenna station and a feedthrough nulling signal;

a "remote" downlink modulator, disposed at the antenna station, for producing an optical signal representative of the feedthrough null residual signal;

a downlink optical detector, disposed remotely from the antenna station, for detecting the optical signal representative of the feedthrough null residual signal;

an variable attenuator-phase shifter, fed by a portion of the transmitted signal and the detected optical signal representative of the feedthrough null residual signal, for changing the gain and phase shift of the signal from the transmitter in accordance with the detected optical signal to produce a replica of the transmitted signal with proper gain and phase shift to null feedthrough signals received at the antenna station;

a "local" uplink laser modulator, for producing an optical signal representative of the replica of the transmitted signal with proper gain and phase shift to null feedthrough signals received at the antenna station such fed signal;

an uplink detector, disposed at the antenna station, for detecting the optical signal produced by the uplink laser modulator, for producing the feedthrough nulling signal.

5,646,626

METHOD AND APPARATUS FOR DIGITAL CORRELATION IN PSEUDORANDOM NOISE CODED SYSTEMS

Carl M. Willis, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 30, 1996, Ser. No. 593,103
Int. Cl.[6] G01S *7/28*
U.S. Cl. 342—189 31 Claims

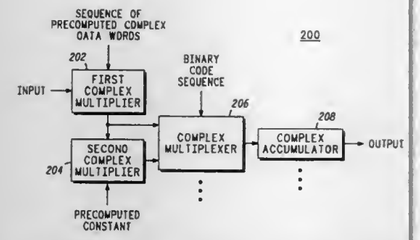
1. A digital correlator for a pseudorandom noise coded system comprising:

a first complex multiplier for receiving a sequence of sampled data words and a sequence of precomputed complex data words and for producing a sequence of first complex product words as a product therefrom;

a second complex multiplier coupled to the first complex multiplier, the second complex multiplier for receiving the sequence of first complex product words and a precomputed constant word and for producing a sequence of second complex product words as a product therefrom;

a complex multiplexer coupled to the first complex multiplier and to the second complex multiplier, the complex multiplexer for receiving a sequence of binary code states, the sequence of first complex product words, and the sequence of second complex product words and for producing a sequence of complex multiplexer output words formed as a replica of either the first complex product words or the second complex product words, depending on a particular binary code state; and

a complex accumulator coupled to the complex multiplexer, the complex accumulator for receiving the sequence of complex multiplexer output words and for produring a complex accumulated sum word formed as a complex sum of the complex multiplexer output words.

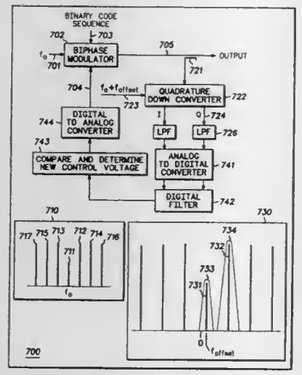


5,646,627

METHOD AND APPARATUS FOR CONTROLLING A BIPHASE MODULATION TO IMPROVE AUTOCORRELATION IN PSEUDORANDOM NOISE CODED SYSTEMS

Carl Myron Willis, Mesa, and Thomas Frederick Koehler, Scottsdale, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 30, 1996, Ser. No. 593,962
Int. Cl.[6] G01S *7/28*
U.S. Cl. 342—189 19 Claims



1. A method for improving autocorrelation and enhancing out of range rejection (ORR) in a pseudorandom noise (PN) coded system that uses biphase modulation by controlling a parameter associated with a biphase modulator, comprising the steps of:

phase modulating a carrier signal with a binary PN code sequence thereby generating a biphase modulated signal;

obtaining a measure of power of a center spectral component of said biphase modulated signal;

comparing said power measured in said center spectral component with a reference power;

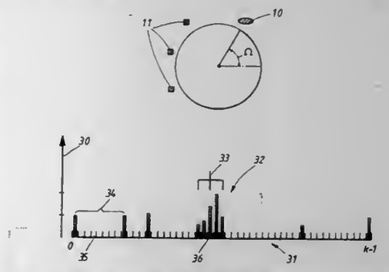
generating a control signal in response to said comparison for use in adjusting a parameter of said biphase modulator thereby achieving a desired power spectrum for said biphase modulated signal for improving autocorrelation of the PN coded system.

5,646,628

METHOD OF TREATING PERIODIC SIGNALS

Olle Anders Gustav Hedman, Alingsås, and Bo Gustaf Granstam, Kållered, both of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Dec. 8, 1995, Ser. No. 569,597
Claims priority, application Sweden, Dec. 9, 1994, 9404278
Int. Cl.[6] G01S *7/28*
U.S. Cl. 342—195 14 Claims



1. A method for determining a time position of a periodic signal comprising the following steps:

combining values that are related to a signal strength of the periodic signal during a plurality of periods in a buffer;

detecting an area with the lowest combined values in said buffer;

determining a zero position in said detected area in said buffer;

determining a median position in said buffer with the combined values starting from said determined zero position in said buffer; and

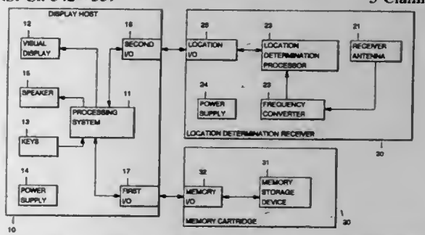
determining the time position of the periodic signal using said determined median position.

5,646,629

MEMORY CARTRIDGE FOR A HANDHELD ELECTRONIC VIDEO GAME

Peter Van Wyck Loomis, Sunnyvale, and Dominic G. Farmer, Milpitas, both of Calif., assignors to Trimble Navigation Limited, Sunnyvale, Calif.

Filed May 16, 1994, Ser. No. 243,211
Int. Cl.[6] H04B *7/185*; G01S *5/02*
U.S. Cl. 342—357 3 Claims



1. A handheld game playing apparatus which receives removable game cartridges and operates only with removable game cartridges having predetermined security keys comprising:

a display;

a global positioning satellite receiver;

a removable game cartridge having a predetermined security key and operating instructions;

a game port for receiving the removable game cartridge;

a port for receiving information from the global positioning satellite receiver; and

a processing system including:

(1) means for controlling the display;

(2) means for operating in accordance with the operating instructions from the removable game cartridge, the operating instructions including instructions for receiving information from the global positioning satellite receiver and displaying a representation of a location on the display based on the information; and

(3) means for verifying the predetermined security key and for activating the means for operating only if the predetermined security key has been verified.

5,646,630

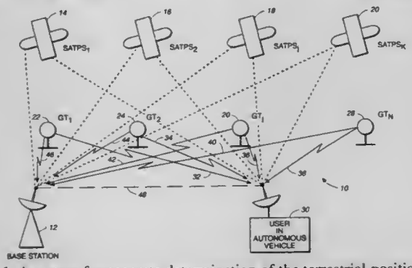
NETWORK OF EQUIVALENT GROUND TRANSMITTERS

Leonid Sheynblat, Belmont, Calif., and Harold Lewis Longaker, Houston, Tex., assignors to Trimble Navigation Limited, Sunnyvale, Calif.

Filed May 20, 1996, Ser. No. 650,731

Int. Cl.[6] H04B *7/185*; G01S *5/02*

U.S. Cl. 342—357 **55 Claims**



1. A system for accurate determination of the terrestrial position, timing coordinate, and velocity of an autonomous vehicle in real-time by transmitting signals from well-known locations, said system comprising:

a K-number of $SATPS_j$ satellites, K being an integer, j being an integer less or equal to K, for generating satellite signals $L(SATPS_j)$ for providing ranging, timing, and velocity information at the user's location;

an N-number of ground transmitters (GT_i), N being an integer, i being an integer less or equal to N, for generating $L(GT_i)$ signals for providing ranging, timing, and velocity information at the user's location;

a base station (BS) for receiving said $L(SATPS_j)$ signals from each said $SATPS_j$ satellite, for receiving said $L(GT_i)$ signals from each said GT_i, for calculating the differential correction data signal L(BS), and for transmitting the differential correction data signal L(BS) to said user's location;

a 2N-number of ground transmitter communication links $CLGT_i$ between each said GT_i and said user, and between each said GT_i and said base station (BS); and

a communication link CLB between said base station and said user;

wherein said user receives the $L(SATPS_j)$ signals from each said satellite $SATPS_j$; and

wherein said user receives the $L(GT_i)$ signals from each said GT_i; and

wherein said user receives said differential correction data signal L(BS) from said base station; and

wherein the location coordinates of each said GT_i and said base station are precisely known; and

wherein each said satellite $SATPS_j$ includes a satellite clock with a known clock bias CB_{SATPSj} and a known clock drift CD_{SATPSj}; and

wherein each said GT_i includes a GT_i clock with an unknown clock bias CB_{GTi} and an unknown clock drift CD_{GTi}; and

wherein said base station includes a base station clock with an unknown clock bias CB_{BS} and an unknown clock drift CD_{BS}.

5,646,631

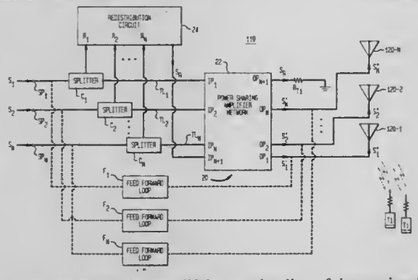
PEAK POWER REDUCTION IN POWER SHARING AMPLIFIER NETWORKS

Bernard James Arntz, Morristown, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 15, 1995, Ser. No. 573,619

Int. Cl.[6] H01Q *3/22*; *3/24*

U.S. Cl. 342—373 **21 Claims**



1. An apparatus for amplifying a plurality of input signals, comprising:

a first distributing network for splitting each one of said plurality of input signals among a plurality of first output ports, to thereby provide a set of first signals;

a redistribution circuit for providing a redistribution signal derived from said input signals, said redistribution signal being applied to said first distributing network and having signal characteristics selected to provide reduction in peak envelope power within at least one signal of said set of first signals;

a plurality of amplifiers for amplifying said set of first signals in a power-sharing arrangement to provide a set of amplified signals; and

a second distributing network for receiving said set of amplified signals and generating therefrom a plurality of reconstructed output signals, each indicative of a corresponding one of said input signals.

5,646,632

METHOD AND APPARATUS FOR A PORTABLE COMMUNICATION DEVICE TO IDENTIFY ITS OWN LOCATION

Muzibul H. Khan, Marlboro, N.J., and Joseph Boccuzzi, Brooklyn, N.Y., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Nov. 14, 1994, Ser. No. 338,911

Int. Cl.[6] H01Q *3/22*

U.S. Cl. 342—375 **22 Claims**

1. A portable communication device comprising:

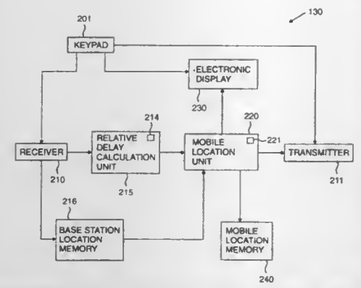
a receiver;

a transmitter;

a relative delay calculation unit, coupled to said receiver, for computing delays between the arrival time of a pilot signal transmitted from a primary base station and the arrival times of pilot signals transmitted from at least two other base stations;

a memory unit, coupled to said receiver, for storing information indicative of the location of said primary base station and said at least two other base stations; and

a processor, coupled to said relative delay calculation unit and said memory unit, where said processor is programmed to identify the geographic location of said portable communication device.



5,646,633

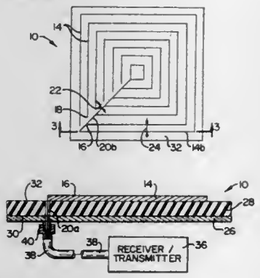
MICROSTRIP ANTENNA HAVING A PLURALITY OF BROKEN LOOPS

Scott E. Dahlberg, St. Charles County, Mo., assignor to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Apr. 5, 1995, Ser. No. 417,663

Int. Cl.[6] H01Q *1/38*

U.S. Cl. 343—700 MS **16 Claims**



1. A microstrip antenna comprising:

a ground plane of conductive material, said ground plane having opposed first and second sides and defining at least one aperture extending therethrough;

a feedline conductor having a first portion which extends through the aperture defined in said ground plane, said feedline conductor also having a second portion, connected to the first portion, which extends parallel to said ground plane on the second side thereof; and

a plurality of mutually parallel broken loops disposed on the second side of said ground plane, each of said broken loops being comprised of a conductive material and extending from a first end to an opposed second end, wherein the respective first ends of each of said loops are connected to the second portion of said feedline conductor such that each of said broken loops is commonly fed by said feedline conductor, and wherein each broken loop extends about an angular region of less than 360° such that each second end is spaced apart from a respective first end.

5,646,634

MINIATURIZED ANTENNA FOR CONVERTING AN ALTERNATING VOLTAGE INTO A MICROWAVE AND VICE VERSA, NOTABLY FOR HOROLOGICAL APPLICATIONS

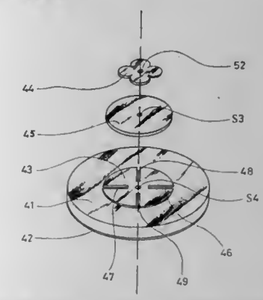
Syed A. Bokhari, Ottawa, Canada; Jean-François Zürcher, Tavel/Clarens, Switzerland; Juan Ramon Mosig, Renens, Switzerland, and Freddy Gardiol, Pully, Switzerland, assignors to Asulab S.A., Bienne, Switzerland

Filed Oct. 19, 1995, Ser. No. 545,072

Claims priority, application France, Oct. 19, 1994, 94 12480

Int. Cl.[6] H01Q *1/38*

U.S. Cl. 343—700 MS **19 Claims**



1. Antenna intended to convert an alternating voltage from an antenna circuit into a linearly polarized microwave and vice versa, comprising:

a first dielectric substrate including two opposing sides;

a conductive element fixed on a first side of said first dielectric substrate and being delimited at its periphery by an edge which confer to this element a double planar symmetry along two perpendicular axes; and

an earth plane fixed to the second side of said first dielectric substrate;

said conductive element including an excitation point by which it is connected to said antenna circuit, said antenna circuit providing said alternating voltage between the excitation point and said earth plane; said excitation point being located on a first of said axes;

wherein said conductive element includes:

a first pair of slots which extends, along the second of said axes, from the periphery towards the center of said conductive element over substantially the entire distance separating the periphery from the center of said conductive element, said antenna further comprising:

a first frequency adjustment plate, the distance between the periphery and the center of said plate along said second axis varying as a function of the angle of rotation of the plate about an axis perpendicular to the plane of the plate and passing through its center with respect to said conductive element so that, upon rotation, said first frequency adjustment plate acts to modify the effective length of said slots.

5,646,635

PCMCIA ANTENNA FOR WIRELESS COMMUNICATIONS

Mark G. Cockson, Roca; Stephen L. Prochaska, and Kenneth D. Simmons, both of Lincoln, all of Nebr., assignors to Centurion International, Inc., Lincoln, Nebr.

Filed Aug. 17, 1995, Ser. No. 516,400

Int. Cl.[6] H01Q *1/24*

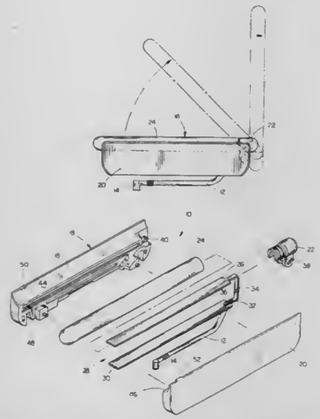
U.S. Cl. 343—702 **9 Claims**

1. An antenna for use with a PCMCIA card, comprising:

a coaxial connector for electrical connection to the PCMCIA card;

an elongated coaxial cable electrically connected at one end to said coaxial connector;

said coaxial cable including a center wire and a metal braid;



an elongated housing having first and second ends and upper and lower portions;
a first printed circuit board in said housing which creates a lower radiator assembly;
a second printed circuit board positioned outwardly of said housing which creates an upper radiator assembly;
said first printed circuit board including at least one trace thereon;
said second printed circuit board including at least one trace thereon;
a transitionary member electrically connecting the trace on said first printed circuit board with the trace on said second printed circuit board;
said center wire of said coaxial cable being electrically connected to said transitionary member;
said metal braid of said coaxial cable being electrically connected to the trace on said first printed circuit board;
an electrically insulated sheath enclosing said second printed circuit board;
a joint member pivotally secured to said housing which at least partially encloses said transitionary member whereby said upper radiator assembly which is enclosed in said sheath may be pivotally moved with respect to said housing, between stowed and deployed positions.

5,646,636

ANTENNA MOUNTING ON WINDOWS

Ulf Saldell, Österskär; Håkan Bergquist, and Gunnar Engblom, botb of Åkersberga, all of Sweden, assignors to Allgon AB, Akersberga, Sweden

PCT No. PCT/SE93/00719, § 371 Date Mar. 3, 1995, § 102(e) Date Mar. 3, 1995, PCT Pub. No. WO94/06169, PCT Pub. Date Mar. 17, 1994
PCT Filed Sep. 3, 1993, Ser. No. 392,919
Claims priority, application Sweden, Sep. 4, 1992, 9202551
Int. Cl.[6] H01Q *1/32;1/12*
U.S. Cl. 343—713 **3 Claims**

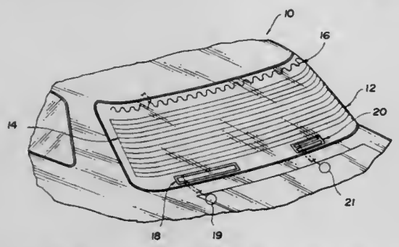
1. A mounting for fitting an antenna pole including an antenna wire to a window glass, comprising an antenna mounting plate having a plane side which is intended to be fitted to an outer surface of said window glass, an inner plate which is intended to be fitted to an inner surface of said window glass and which includes antenna coupling means and means for connecting a coaxial cable to a receiver/transmitter, said mounting plate and said inner plate having corresponding outer contours and a connecting piece carrying the antenna pole, said mounting plate being made of an electrically non-conductive material and having integral therewith an attachment means for receiving the connecting piece with a sliding connection, said antenna wire having a curved end portion located in said connecting piece so as to extend parallel with said plane side of said mounting plate and form a capacitive coupling means with a coupling plane on said inner plate when the connecting piece is connected to the mounting plate by said sliding connection.

5,646,637

SLOT ANTENNA WITH REDUCED GROUND PLANE

Alan Wayne Miller, Britton, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuatioo of Ser. No. 375,073, Jan. 17, 1995, abandoned, which is a continuation of Ser. No. 118,856, Sep. 10, 1993, abandoned. This application Sep. 5, 1996, Ser. No. 711,402
Int. Cl.[6] H01Q *1/32*
U.S. Cl. 343—713 **17 Claims**



1. A slot antenna having a slot in a reduced ground plane for a motor vehicle insulating panel comprising:
a conductive, narrow in relation to the width of the slot, strip formed in a loop on the insulating panel, said loop forming the slot having a length corresponding to a fraction of a predetermined wavelength, said reduced ground plane consisting of said strip formed in a loop peripherally defining the slot, wherein said fraction is smaller than the half wavelength of an expanded ground plane slot antenna, and
wherein non-common conductor terminals are aligned across the slot on its length sides, and wherein said loop is rectiform.

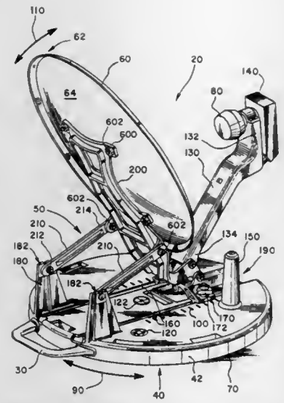
5,646,638

PORTABLE DIGITAL SATELLITE SYSTEM

John Randall Winegard, and Randy Lee Sperry, both of Burlington, Iowa, assignors to Winegard Company, Burlington, Iowa

Filed May 30, 1995, Ser. No. 453,909
Int. Cl.[6] H01Q *3/02*
U.S. Cl. 343—882 **7 Claims**

1. A portable satellite dish antenna for carrying by a user to a remote location, said portable satellite dish antenna comprising:



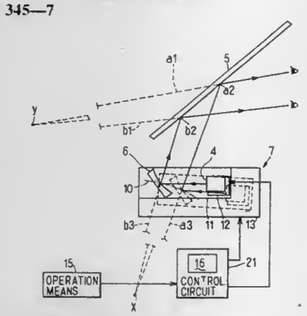
a mount, said mount having a peripheral edge, said mount having a formed region through a portion of said peripheral edge,
a dish,
a feed arm having first and second ends,
a feed horn connected to said first end of said feed arm,
a pivoting mechanism connected to said dish and to said mount, said pivoting mechanism manually activated by said user to entirely move said dish between a carrying position and a deployed position,
said dish held in a substantially parallel position to said mount when in said carrying position, said feed horn and said feed arm located in said formed region between said dish and said mount in said carrying position, and
said second end of said feed arm pivotally connected to said pivoting mechanism for automatically moving said feed horn to a focal area when said dish is moved to said deployed position.

5,646,639

DISPLAY DEVICE FOR VEHICLES

Kazutoshi Koie, Tokoname, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 6, 1995, Ser. No. 468,978
Claims priority, application Japan, Jun. 13, 1994, 6-130544; Jun. 13, 1994, 6-130545
Int. Cl.[6] G09G *5/00*
U.S. Cl. 345—7 **7 Claims**



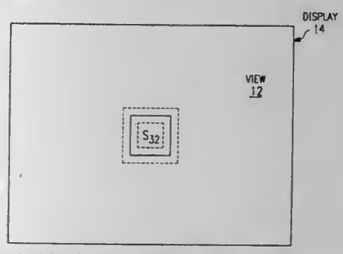
1. A display device for vehicles comprising:
a display projecting a display image;
optical path changing device directing said display image projected by said display to be formed on a transparent screen;
distance adjusting device adjusting a distance between said display and said optical path changing device;
position adjusting device adjusting a position of said optical path changing device; and
control device controlling said distance adjusting device and said position adjusting device so that adjusting operations of said adjusting device are interrelated;
wherein said control device moves said two adjusting device along an arcuate path so that said display image indicates the same outside position ahead of a windshield, irrespective of a height of eyes of a driver.

5,646,640

METHOD FOR SIMULATING VIEWS OF A SCENE USING EXPANDED PIXEL DATA TO REDUCE THE AMOUNT OF PIXEL DATA RECALCULATIONS

Robert J. Gove, Los Gatos, Calif., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 31, 1995, Ser. No. 382,274
Int. Cl.[6] H04N *7/18;* **G09B** *9/08*
U.S. Cl. 345—8 **11 Claims**



1. A method for simulating one or more views based on a user's perspective, comprising the steps of:
storing scene data in a scene memory;
determining a first view based on view direction and orientation;
calculating pixel data from a portion of said scene data corresponding to said first view and a first border surrounding said first view, wherein said pixel data comprises first view pixel data and first border pixel data;
storing said pixel data in a pixel memory;
displaying a first image using said first view pixel data from said pixel memory on a display;
determining a second view;
displaying a second image using a second view pixel data corresponding to said second view from said pixel memory without recalculating said pixel data, wherein said second view pixel data comprises portions of said first view pixel data and said first border pixel data;
after displaying said second view pixel data, determining a second border surrounding said second view and calculating portions of a second border pixel data not found in said first view pixel data or first border pixel data from said scene data; and
storing said portions of said second border pixel data in said pixel memory.

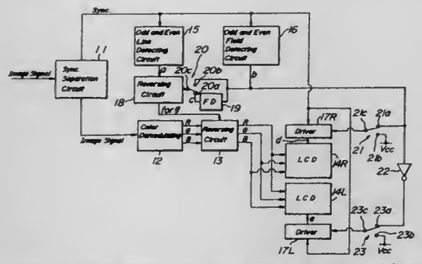
5,646,641

IMAGE DISPLAY APPARATUS

Toshiro Okamura, Hino, and Naoto Shimada, Hachioji, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 267,908, Jul. 6, 1994, abandoned. This application Apr. 19, 1996, Ser. No. 633,700
Claims priority, application Japan, Jul. 6, 1993, 5-166709
Int. Cl.[6] G09G *5/00;3/36*
U.S. Cl. 345—8 **8 Claims**

1. An image display apparatus comprising:
a right-eye image display device for displaying a first image which is exclusively seen by a right-eye of a user;



a left-eye image display device for displaying a second image which is exclusively seen by a left-eye of the user;

a means for reversing polarities of image signals supplied to said right-eye and left-eye image display devices at suitable timings such that respective pixels of the first and second images displayed on said right-eye and left-eye display devices are driven in an alternating current mode, wherein said means for reversing the polarity of the image signals comprises first means for reversing the polarity of the image signal on the same line for successive fields and second means for reversing the polarity of the image signal on the same line for every other field; and

a switch means for switching between operation of the first and second means.

5,646,642

CIRCUIT FOR CONVERTING LEVEL OF LOW-AMPLITUDE INPUT

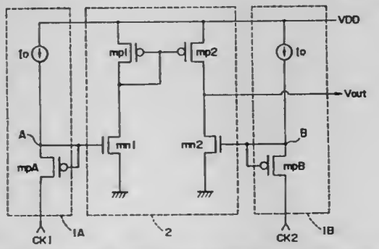
Toshikazu Maekawa, and Yuji Hayashi, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Division of Ser. No. 156,838, Nov. 24, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 477,094

Claims priority, application Japan, Nov. 25, 1992, 4-338123; Jun. 25, 1993, 5-180788

Int. Cl.[6] G09G *3/36*

U.S. Cl. 345—99 **20 Claims**



1. An active-matrix liquid crystal display device comprising:

a display region comprising a plurality of pixels, each pixel being associated with a thin-film transistor;

a peripheral driving circuit comprising a horizontal shift register for controlling transmission of video signals to the thin-film transistors and a vertical shift register;

an interface means for providing clock signals to the horizontal and vertical registers, said interface means comprising a level converting means for converting a digital input signal having at least a first phase of a relatively low first amplitude to a digital output signal having a relatively high amplitude, with respect to the digital input signal, said level converting means having a first input transistor which has a threshold voltage and further comprising a detecting/offsetting means for detecting the threshold voltage of said first input transistor, and adding an offset voltage based on the detected threshold voltage to the first phase of the digital input signal to create an offset digital input signal and applying the offset input digital signal to said first transistor of the level converting means.

5,646,643

LIQUID CRYSTAL DISPLAY DEVICE

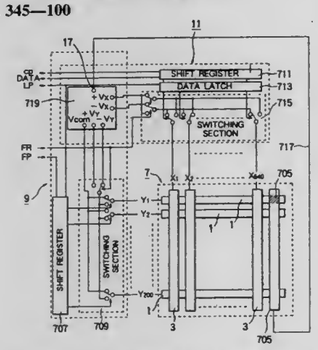
Hoko Hirai, and Susumu Kondo, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Division of Ser. No. 60,554, May 13, 1993, Pat. No. 5,434,599. This application Dec. 1, 1994, Ser. No. 352,167

Claims priority, application Japan, May 21, 1992, 4-128554; May 14, 1992, 4-121574; Oct. 12, 1992, 4-272733

Int. Cl.[6] G09G *3/36*

U.S. Cl. 345—100 **3 Claims**



2. In a liquid crystal display device, comprising a scanning electrode substrate formed of a plurality of scanning electrodes, a data electrode substrate formed thereon with a plurality of signal electrodes arranged opposing to and intersecting with a plurality of the scanning electrodes maintaining gaps therebetween, a liquid crystal display panel having a liquid crystal layer sealed and held between the scanning electrode and the signal electrode, a scanning driver circuit for applying a scanning signal and a data driver circuit for applying a data signal,

a liquid crystal display device characterized by comprising;

a wiring connected of its one end to at least a part of each of a plurality of the signal electrodes so as to directly detect a voltage from a plurality of the signal electrodes;

an operational amplifier connected to the other end of the wiring in which a voltage detected from each of a plurality of the signal electrodes through the wiring is received and a difference between the detected voltage and the data signal is computed to be applied to the signal electrode whereby voltages of a plurality of the signal electrodes are executed of a negative feedback control.

5,646,644

LIQUID CRYSTAL DISPLAY DEVICE

Tsutomu Furuhashi; Hiroyuki Mano; Terumi Takashi, all of Yokohama; Kiyokazu Nishioka, Odawara, and Toshio Futami, Nobara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

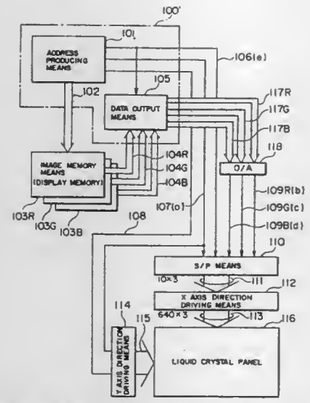
Continuation of Ser. No. 299,671, Sep. 2, 1994, Pat. No. 5,552,801, which is a continuation of Ser. No. 966,563, Oct. 26, 1992, abandoned, which is a continuation of Ser. No. 556,364, Jul. 24, 1990, abandoned. This application May 8, 1996, Ser. No. 646,843

Claims priority, application Japan, Jul. 28, 1989, 1-194094

Int. Cl.[6] G09G *3/36*

U.S. Cl. 345—100 **6 Claims**

1. An information processor for displaying images, said information processor comprising:



(a) a display data memory circuit for storing display information for over one display image as digital data;

(b) a readout circuit for successively reading out digital display image data from said display data memory circuit and for producing a timing signal synchronized with the read display data;

(c) an analog display data producing circuit, including a converting circuit for successively converting the read out digital display image data to analog display data and outputting said analog display data;

(d) an analog display data driving circuit including,

a first holding circuit for successively receiving and holding the analog display data,

a first output circuit for outputting the analog display data held by said first holding circuit,

a second holding circuit for successively receiving and holding the analog display data outputted by said first output circuit, and

a second output circuit for outputting the analog display data held by said second holding circuit;

(e) a Y axis direction driving circuit for outputting a selection voltage to successively select horizontal display lines in accordance with the timing signal produced by said readout circuit; and

(f) a liquid crystal panel including an X axis direction driving electrode for transmitting the analog display data outputted by said analog display data driving circuit, a Y axis direction driving electrode for transmitting the selection voltage outputted by said Y axis direction driving circuit, a pixel part constituted by switching elements, pixel electrodes and liquid crystal at a location at which the X axis direction driving electrode is crossed by the Y axis direction driving electrode in a matrix state.

5,646,645

FLASHING LCD DISPLAY SYSTEM

Takashi Saegusa, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan

Division of Ser. No. 361,540, Dec. 22, 1994, Pat. No. 5,546,100. This application Jan. 16, 1996, Ser. No. 585,688

Claims priority, application Japan, Dec. 22, 1993, 5-345578

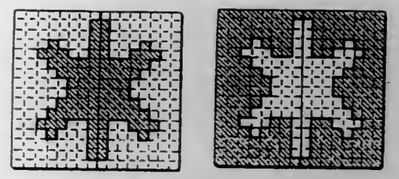
Int. Cl.[6] G09G *3/36*

U.S. Cl. 345—101 **4 Claims**

1. A dot matrix display system comprising:

an LCD display unit;

a temperature detection circuit which detects an ambient temperature; and



a drive unit adapted to cause said LCD unit to create a rapid flashing effect by alternately presenting a normal pattern and a reverse pattern, each pattern being displayed for a period of time based on the ambient temperature detected by said temperature detection circuit.

5,646,646

DATA PROCESSING SYSTEM AND APPARATUS PROCESSING SCROLL DISPLAY DATA AND CURSOR DISPLAY DATA

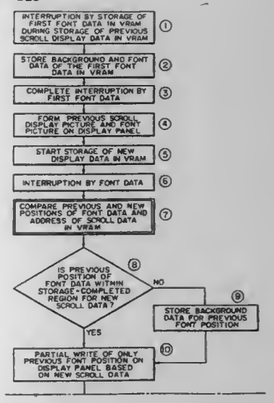
Hiroshi Inoue, Yokohama; Atsushi Mizutome, Fujisawa, and Aiko Enomoto, Zama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 267,366, Jun. 29, 1994, Pat. No. 5,543,817, which is a division of Ser. No. 11,241, Jan. 29, 1993, Pat. No. 5,359,344, which is a division of Ser. No. 410,731, Sep. 21, 1989, abandoned. This application Mar. 9, 1995, Ser. No. 401,455

Claims priority, application Japan, Sep. 29, 1988, 63-246089; Sep. 30, 1988, 63-246307; Sep. 30, 1988, 63-246308; Oct. 6, 1988, 63-252992; Oct. 11, 1988, 63-256324; Oct. 12, 1988, 63-258185

Int. Cl.[6] G09G *3/36;5/34*

U.S. Cl. 345—123 **13 Claims**



1. A data processing apparatus, comprising:

an image data storage memory for storing image data including scroll display data and cursor display data for displaying a cursor at a position according to information from a pointing device; and

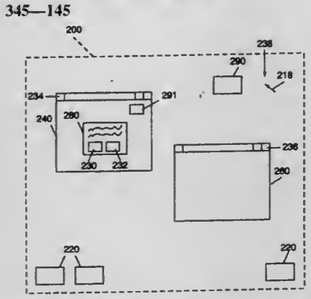
means for judging a position of the cursor display data when, during storage of the scroll display data in said memory, a demand occurs for interrupting the storage of the scroll display data to store the the cursor display data, as to whether or not the position displaying the cursor at the time of the interruption is within a region in said image data storage memory where the storage of the scroll display data has been completed.

5,646,647

AUTOMATIC PARKING OF CURSOR IN A GRAPHICAL ENVIRONMENT

Chunghen Chow, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 14, 1994, Ser. No. 337,711
Int. Cl.[6] G06F *3/033*
U.S. Cl. 345—145 **12 Claims**



12. A system for parking a mouse pointer in a predetermined location on a display screen coupled to a data processing system, said system comprising:

means for measuring a time period of mouse inactivity; and

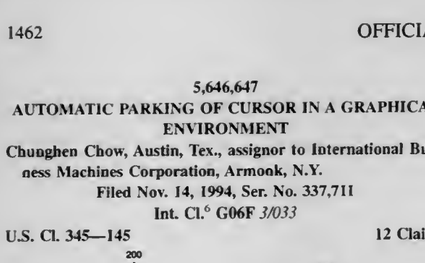
means for parking said mouse pointer in said predetermined location when said time period of mouse inactivity exceeds a predetermined time limit.

5,646,648

MUSICALLY ENHANCED COMPUTER KEYBOARD AND METHOD FOR ENTERING MUSICAL AND TEXTUAL INFORMATION INTO COMPUTER SYSTEMS

Randal Lee Bertram, Raleigh, N.C., assigoor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 5, 1994, Ser. No. 349,667
Int. Cl.[6] G10C *3/12*
U.S. Cl. 345—168 **19 Claims**



4. A computer system for the input of musical and textual information having a CPU, keyboard controller, and a keyboard wherein,

(a) said CPU is in circuit communication with said keyboard controller,

(b) said keyboard controller is in circuit communication with said keyboard, and configured to assert certain signals to the CPU responsive to at least one closure event of the keys of said keyboard,

(c) said keyboard comprising:

(1) a plurality of alpha-numeric keys comprised of a top row of number keys having a shape corresponding to a piano style keyboard's white keys;

(2) a plurality of function keys positioned adjacent to and offset with respect to said top row of number keys and spaced in intervals with relationship to said number keys to positionally correspond to a piano style keyboard's black keys; and

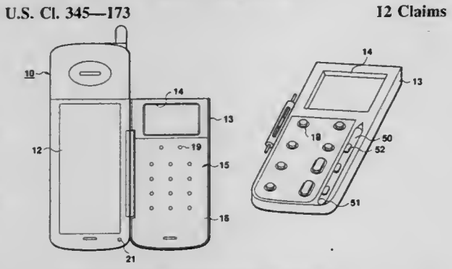
(3) code generation circuitry configured to assert particular codes responsive to at least one closure event of (1) said function keys, (2) said number keys and (3) a plurality of keys not positioned in said number keys to produce (i) musical tone information corresponding to a piano style keyboard's black keys, (ii) musical tone information corresponding to a piano style keyboard's white keys, and (iii) concurrently with producing either of said musical tone information, produce textual information respectively.

5,646,649

PORTABLE INFORMATION TERMINAL

Yuji Iwata; Jiro Nakasu, and Makoto Takemoto, all of Kamakura, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 16, 1995, Ser. No. 515,955
Claims priority, application Japan, Aug. 23, 1994, 6-198601
Int. Cl.[6] G09G *5/00*
U.S. Cl. 345—173 **12 Claims**



1. A portable information terminal comprising:

a unit body including a display and a pressure-sensitive input device overlying said display, said display and said pressure-sensitive input device being assembled in said unit body;

said pressure-sensitive input device having a pressure-sensitive surface;

a cover pivotally attached to said unit body for covering said pressure-sensitive device;

an operating button device provided in the cover, an operating surface of the operating button device being exposed from a surface of the cover when the cover is in a closed position, the operating button device exerting a pressing force applied to said operating surface onto the pressure-sensitive surface;

a detection switch provided between said unit body and said cover for detecting a closed state of said cover; and

a CPU provided in the terminal for changing entry modes of said pressure-sensitive input device when the detection switch detects the closed state, wherein

closing operation of said cover causes a change-over of operations for the terminal, wherein:

the cover has a pen receptacle formed therein;

the terminal further includes an input pen having a protrusion thereon, and

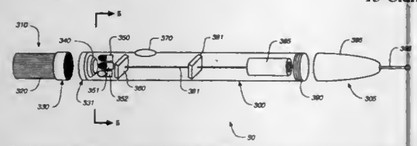
said input pen being received in said pen receptacle, whereby when said cover is in the closed position, the protrusion is brought into contact with the pressure-sensitive surface.

5,646,650

ELECTRONIC PAINTBRUSH AND COLOR PALETTE

Robert F. Miller, 3925 Mesrob Ct., Modesto, Calif. 95356, and Steven M. Blonstein, 941 Newell Rd., Palo Alto, Calif. 94303

Continuation of Ser. No. 224,088, Apr. 6, 1994, Pat. No. 5,420,607, which is a continuation of Ser. No. 939,109, Sep. 2, 1992, abandoned. This application Feb. 9, 1995, Ser. No. 386,475
Int. Cl.[6] G09G *5/00*
U.S. Cl. 345—179 **13 Claims**



1. An apparatus with which a user generates an image displayed on an electronic image-display screen, comprising:

(a) an elongated handle, said handle having a brush end, a back end, and a longitudinal axis extending through said brush end and said back end;

(b) a first brush head attached at said brush end of said handle;

(c) a number of nonrigid optic fiber bristles protruding from said first brush head in a direction away from said handle, said optic fiber bristles having a handle end proximal said handle, said handle end of said optic fiber bristles being secured to said brush end of said handle such that said handle end of said optic fiber bristles are relatively immovable relative to said handle in a direction transverse said longitudinal axis, and said optic fiber bristles having a working end opposite said handle end, said working end of said optic fiber bristles not being secured to said handle such that said working end of said optic fiber bristles are relatively bendable in said direction transverse said longitudinal axis when a force is applied to said working end of said bristles, said optic fiber bristles channeling light from said working end to said handle end;

(d) means for transforming said channeled light into an electrical signal; and

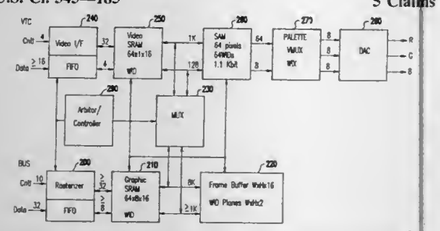
(e) means for processing said electrical signal to determine a location of said optic fiber bristles on said screen when said optic fiber bristles are in contact with a contact area of said screen.

5,646,651

BLOCK MODE, MULTIPLE ACCESS MULTI-MEDIA/GRAPHICS MEMORY

John Spannaus, 9402 Scenic Bluff Dr., Austin, Tex. 78733, and Alexander G. MacInnis, 121 Windsor Dr., San Carlos, Calif. 94070

Filed Dec. 14, 1994, Ser. No. 355,875
Int. Cl.[6] G09G *5/00*
U.S. Cl. 345—185 **5 Claims**



1. A multi-media/graphics random access memory module integrated on a single chip comprising:

a video interface connected to input pins for receiving data from a video transfer channel;

a video static random access memory connected to said video interface to store data received from the video transfer channel;

a rasterizer connected to input pins for receiving data from a processor bus;

a graphic static random access memory connected to said rasterizer to store data received from the processor bus, said video and graphic static random access memories allowing for concurrent updating of both video and graphics;

a frame buffer for storing data to be displayed;

a palette providing a table lookup function for generating multi-bit color outputs;

a serial access memory to serialize data from the frame buffer to the palette;

a wide bus interface between the frame buffer and serial access memory and the video and graphic static random access memories; and

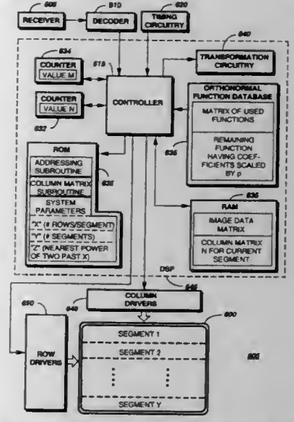
a multiplexer connected to the video and graphic static random access memories for providing a multiplexing function to match a data width of the video static random access memory to the serial access memory and a data width of the graphic static random access memory to the frame buffer allowing multi-media sharing of the internal bandwidth of the module.

5,646,652

METHOD AND APPARATUS FOR REDUCING MEMORY REQUIREMENTS IN A REDUCED LINE ACTIVE ADDRESSING DISPLAY SYSTEM

Ali Saidi, Boynton Beach, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 320,771, Oct. 11, 1994, abandoned, which is a continuation of Ser. No. 103,660, Aug. 9, 1993, abandoned. This application Apr. 1, 1996, Ser. No. 627,235
Int. Cl.[6] G09G *5/00*
U.S. Cl. 345—208 **22 Claims**



1. A method for driving a display, rows of which are divided into at least first and second segments, the method comprising the steps of:

driving a first plurality of rows included in the first segment with first voltages associated with a first subset of functions included in a complete set of orthonormal functions; and

driving a second plurality of rows included in the second segment with second voltages associated with a remaining function included in the complete set of orthonormal functions, wherein the remaining function is not included in the first subset of functions, and wherein the remaining function is not constant,

wherein, together at a same first time, the first plurality of rows is driven with the first voltages when the second plurality of rows is driven with the second voltages.

5,646,653

INK JET PRINTER

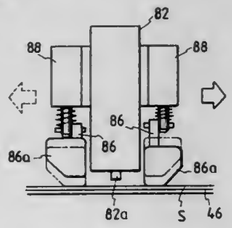
Satoshi Fujioka; Hiromu Hirabayashi; Nobuhisa Takabayashi; Atsushi Nishizawa, and Kiyoto Komuro, all of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Division of Ser. No. 308,936, Sep. 20, 1994, Pat. No. 5,530,466, which is a division of Ser. No. 908,737, Jul. 6, 1992, Pat. No. 5,373,312, which is a continuation of Ser. No. 599,577, Oct. 18, 1990, abandoned. This application Jun. 1, 1995, Ser. No. 456,320

Claims priority, application Japan, Oct. 19, 1989, 1-273273; Dec. 1, 1989, 1-313175; Jun. 5, 1990, 2-146771; Sep. 4, 1990, 2-233807

Int. Cl.[6] B41J *2/01;25/308*

U.S. Cl. 347—8 3 Claims



1. An ink jet printer comprising: recording means including a printer head for jetting ink droplets while moving in a direction perpendicular to the direction of conveyance of a recording medium in the form of a sheet, to form a dot image on said recording medium according to an input time, further comprising a pair of sheet retaining means respectively arranged before and behind in the direction of travel of said recording means, said pair of sheet retaining means being operated in such a manner that the one of said pair of sheet retaining means arranged before in the direction of travel is displaced to push against said recording medium in order to form a predetermined clearance between said printer head and said recording medium, while the other is displaced to leave from said recording medium.

5,646,654

INK-JET PRINTING SYSTEM HAVING ACOUSTIC TRANSDUCER FOR DETERMINING OPTIMUM OPERATING ENERGY

John A. Widder, Camas, Wash., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 9, 1995, Ser. No. 401,393

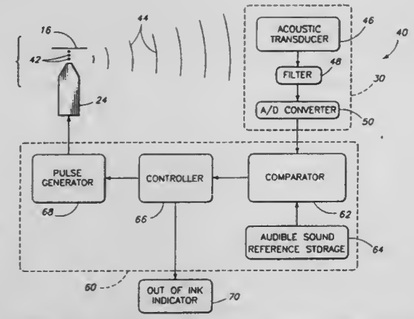
Int. Cl.[6] B41J *29/38;29/393*

U.S. Cl. 347—14 17 Claims

1. An ink-jet printing system comprising:

an ink-jet print head having multiple nozzles for ejecting drops of ink onto the recording media to form printed images, the ink-jet print head emitting an audible sound during the ejection of an ink droplet;

an acoustic detector to detect the audible sound emitted by the ink-jet print head during ejection of the ink droplet; and



an energy control subsystem coupled to supply pulses of operating energy to the print head to cause ejection of the ink droplets, the energy control subsystem being operatively coupled to receive feed back information from the acoustic detector, the energy control subsystem adjusting the operating energy pulses that are supplied to the print head in response to the feed back information from the acoustic detector.

5,646,655

RECORDING APPARATUS AND TEMPERATURE DETECTING METHOD THEREFOR

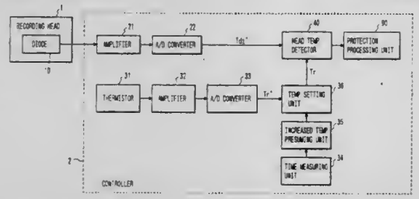
Osamu Iwasaki, Tokyo; Naoji Otsuka, Yokohama; Atsushi Arai, Kawasaki; Kentaro Yano, Yokohama; Kiichiro Takahashi, Kawasaki, and Daigoro Kanematsu, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 29, 1994, Ser. No. 296,184

Claims priority, application Japan, Aug. 31, 1993, 5-215755; Aug. 31, 1993, 5-215834; Jan. 25, 1994, 6-006668

Int. Cl.[6] B41J *29/38*

U.S. Cl. 347—17 19 Claims



1. A recording apparatus for executing recording control according to a temperature of a recording head, comprising:

first detection means for detecting the temperature of said recording head;

second detection means for detecting a surrounding temperature which is a temperature around said recording head;

setting means for setting an offset value for correcting the temperature detected by said first detection means, based on the temperature of said recording head and said surrounding temperature, at a predetermined timing;

correction means for effecting a correction based on said offset value of the temperature detected by said first detection means, thereby obtaining a head temperature which is the temperature of said recording head; and

renewal means for renewing said offset value, based on said head temperature and said surrounding temperature, during repetition of detection of said head temperature.

5,646,656

INK-JET PRINTING DEVICE AND METHOD

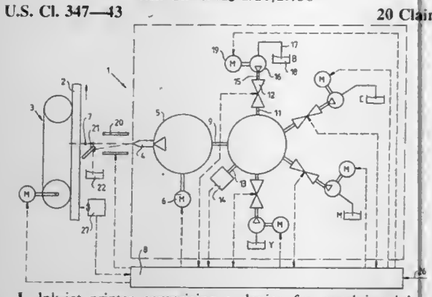
Holger Leonhardt, Bammental; Tobias Müller, Hirschberg, and Roland Pudimat, Eberbach, all of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Filed Feb. 13, 1995, Ser. No. 387,598

Claims priority, application Germany, Feb. 12, 1994, 44 04 557.3

Int. Cl.[6] B41J *2/21;29/38*

U.S. Cl. 347—43 20 Claims



1. Ink-jet printer comprising a device for supplying ink, an ink-jet generating device connected thereto, said ink-jet generating device having at least one nozzle for selectively applying ink to a recording carrier or a print transferring material and being positionable relative to the recording carrier or the print transferring material, and control means to which said ink-jet generating device is connected, said ink-supplying device having at least one mixing chamber for inks of different colors, said mixing chamber having ink inlet channels thereto forged with respective inlet openings, and respective metering devices for said inlet openings disposed in said ink inlet channels, said metering devices being connected to said control means and being actuatable thereby, and a device for monitoring ink color of said mixing chamber, said monitoring device being connected to said control means.

5,646,657

LASER WORKABLE NOZZLE PLATE OF INK JET APPARATUS AND METHOD FOR FORMING THE LASER WORKABLE NOZZLE PLATE

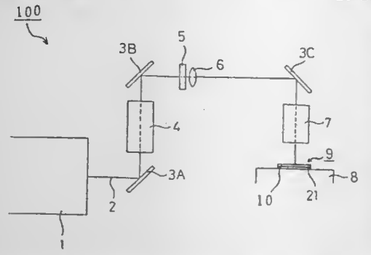
Hikoharu Aoki, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nogoya, Japan

Filed Feb. 23, 1995, Ser. No. 392,510

Claims priority, application Japan, May 16, 1994, 6-100835

Int. Cl.[6] B41J *2/135;2/16*

U.S. Cl. 347—45 20 Claims



15. A method for forming nozzles in a nozzle plate, comprising:

mixing an ultraviolet ray absorbent agent which absorbs an excimer laser beam and a water and oil repellant material which does not absorb the excimer laser beam to form a mixture;

providing a repellant film of the mixture over a surface of a substrate formed of a material which absorbs the excimer laser beam to form the nozzle plate; and

exposing the nozzle plate to the excimer laser beam to form the nozzles.

5,646,658

MODULAR INK JET PRINTER HEAD

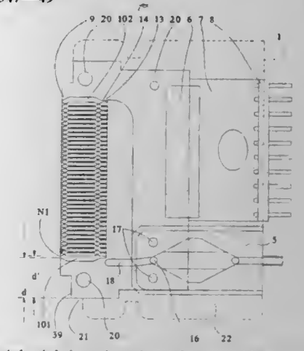
Wolfgang Thiel, and Klaus Dietrich, both of Berlin, Germany, assignors to Francotyp-Postalia AG & Co., Birkenwerder, Germany

Filed Feb. 15, 1994, Ser. No. 196,545

Claims priority, application Germany, Mar. 16, 1993, 43 09 255.1

Int. Cl.[6] B41J *2/03*

U.S. Cl. 347—49 22 Claims



1. A modular ink jet printer head for use with an ink reservoir, said printer head comprising:

a plurality of modules, each module having a plurality of nozzles terminating in a front face of the module and said modules forming, in combination, means for drawing ink from said reservoir and for ejecting said ink from said nozzles in a selected pattern, each of said modules having an internal reference plane and a thickness, subject to tolerance variations from module to module, in a direction perpendicular to said internal reference plane;

a module holder having an opening for accepting said plurality of modules in a stack of successively adjacent modules;

means for detachably fastening said modules in said module holder with the respective front faces of said modules disposed in said opening; and

a plurality of spacers carried by each of said modules, each spacer having a detent therein and a base end fastened perpendicularly on the internal reference plane of the module carrying the spacer, each spacer of at least one of said modules having a free end, opposite said base end, releasably engaging the detent in a spacer of another of said modules and each spacer having a length between said base end and said free end and a diameter which is non-uniform along said length for stacking said modules with a predetermined spacing between the respective pluralities of nozzles in adjacent modules independently of said tolerance variations.

5,646,659

INK JET RECORDING APPARATUS, AND METHOD WITH CONTROL OF INK DROPS AND INK MIST

Jiro Moriyama; Yutaka Koizumi, both of Yokohama; Hisashi Fukushima, Kawasaki; Toshiaki Hirosawa, Hiratsuka; Torachika Osada; Haruhiko Moriguchi, both of Yokohama; Hidemi Kubota, Komae, and Masami Izumizaki, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

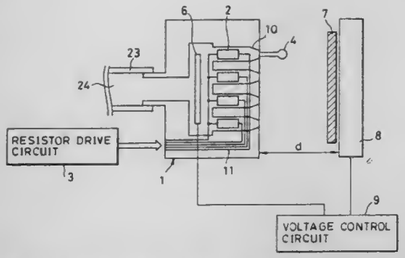
Filed Oct. 28, 1992, Ser. No. 967,973

Claims priority, application Japan, Oct. 31, 1991, 3-286564

Int. Cl.[6] B41J *2/01;2/06*

U.S. Cl. 347—55 35 Claims

1. An ink jet recording apparatus using an ink jet recording head having an orifice from which an ink fluid is ejected as an ink drop, said ejected ink drop being charged to separate into a main droplet and a small droplet, due to polarization of the ink drop, after



having been ejected from the orifice in a space defined between the orifice and a facing surface, said small droplet having a polarity which is opposite to a polarity of said main droplet, the apparatus comprising:

a first electrode for providing an electrical charge to said ink drop ejected from the orifice;

a second electrode spaced from the first electrode for attracting the main droplet to said facing surface; and

a voltage control means for generating a first electric field in the space between said first electrode and said second electrode, said first electric field attracting the charged ink drop to the facing surface, and followed by generating a second electric field attracting the small droplet to the facing surface, said second electric field being generated in accordance with the separation of the charged ink drop into the main droplet and the small droplet, during a period of time between the ejection of the charged ink drop and arrival of the main droplet of the charged ink droplet at the facing surface.

5,646,660

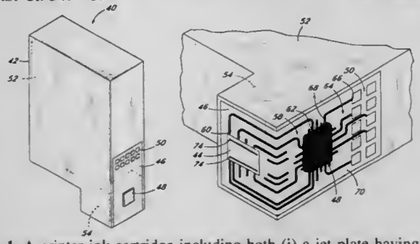
PRINTER INK CARTRIDGE WITH DRIVE LOGIC INTEGRATED CIRCUIT

Richard A. Murray, San Diego, Calif., assignor to Encad, Inc., San Diego, Calif.

Filed Aug. 9, 1994, Ser. No. 287,650

Int. Cl.[6] B41J *2/01*

U.S. Cl. 347—59 **14 Claims**



1. A printer ink cartridge including both (i) a jet plate having a plurality of heating elements therein and (ii) a control and a plurality of driver circuits attached to the cartridge, wherein:

(a) said cartridge contains ink;

(b) said cartridge includes a plurality of ink orifices located on a first surface of said cartridge;

(c) each of said heating elements is located proximate to an associated one of said orifices for heating a portion of ink and expelling said ink from said associated orifice;

(d) said control and driver circuit is attached to a flexible connector affixed to the cartridge at a location on a second surface of said cartridge, spaced apart from the jet plate, wherein each of said driver circuits is connected to one of said heating elements and said control circuit is connected to said plurality of driver circuits to control when the one of said heating elements is energized to heat said portion of ink; and

(e) said cartridge includes a plurality of electrical conductors affixed to said flexible connector connecting said jet plate to said control and driver circuit, wherein said first and second surfaces intersect to form a corner of said cartridge, and wherein said electrical conductors extend from said control and driver circuit, around said corner, and to said jet plate.

5,646,661

INK EJECTING DEVICE HAVING ALTERNATING EJECTING CHANNELS AND NON-EJECTING CHANNELS

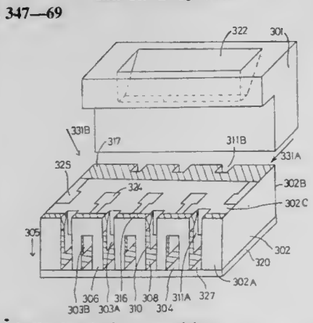
Hiroki Asai, Aichi-ken, Japan; Qiming Zhang, Westford, Mass., and Hiroto Sugahara, Aichi-ken, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Oct. 18, 1994, Ser. No. 323,721

Claims priority, application Japan, Nov. 11, 1993, 5-282369; Jan. 26, 1994, 6-007104

Int. Cl.[6] B41J *2/045*

U.S. Cl. 347—69 **23 Claims**



1. An ink ejecting device, comprising:

a plurality of ejecting regions through which ink is ejected;

a plurality of non-ejecting regions each of which is provided between said ejecting regions alternately and which receive no ink;

a plurality of partition walls which are formed of a polarized piezoelectric ceramic material, a partition wall provided between one of said plurality of ejecting regions and one of said plurality of non-ejecting regions; and

an electrode formed on a side of each partition wall of said plurality of partition walls facing an ejection region of said plurality of ejecting regions is grounded and an electrode formed on a side of each partition wall of said plurality of partition walls facing a non-ejecting region of said plurality of non-ejecting regions is supplied with a voltage from a voltage source when ink is to be ejected, wherein two partition walls of said plurality of partition walls bound each ejecting region, each said electrode formed on the side of each partition wall facing into one of said plurality of ejecting regions electrically connected to each other electrode formed on the side of each partition wall facing into one of said plurality of ejecting regions and grounded, and at least one pair of two partition walls of said plurality of partition walls having said electrode formed on each partition wall of said plurality of partition walls facing into said plurality of non-ejecting regions bound sides of one ejecting region, each said electrode on each partition wall of said pair of two partition walls are electrically connected to each other and supplied with the voltage.

5,646,662

RECORDING HEAD OF AN INK-JET TYPE

Tsuyoshi Kitahara, Nagano, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

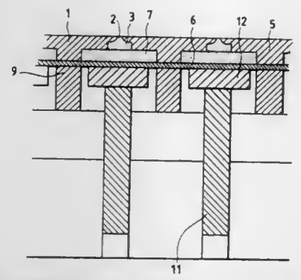
Filed Jun. 3, 1992, Ser. No. 892,981

Claims priority, application Japan, Jun. 4, 1991, 3-132895; May 28, 1992, 4-161972

Int. Cl.[6] B41J *2/045;2/14*

U.S. Cl. 347—70 **15 Claims**

1. An ink jet type recording head for emitting ink droplets against a recording sheet, comprising: a nozzle plate having a



plurality of pressure chambers defined in a rear surface thereof, said pressure chambers being in fluid communication with one another, a nozzle orifice being formed through said nozzle plate for each of said pressure chambers, and a concave portion being formed at a rear end of each of said nozzle orifices communicating said nozzle orifices with a respective one of said pressure chambers, said concave portions having a diameter at least several times larger than a diameter of said nozzle orifices and being sufficiently large to suppress crosstalk between adjacent ones of said pressure chambers; a pressure plate covering one side of said pressure chambers; and a plurality of pressure transducers, one of said pressure transducers being provided for each of said pressure chambers for applying pressure to ink contained in a respective one of said pressure chambers through said pressure plate for expelling ink droplets through a respective one of said nozzle orifices.

5,646,663

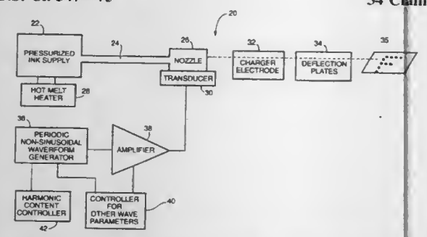
METHOD AND APPARATUS FOR CONTINUOUS INK JET PRINTING WITH A NON-SINUSOIDAL DRIVING WAVEFORM

James E. Clark, Naperville; Mairi C. MacLean, South Elgin, and Jianming Tsai, Schaumburg, all of Ill., assignors to Videojet Systems International, Inc., Wood Dale, Ill.

Filed Sep. 16, 1994, Ser. No. 307,193

Int. Cl.[6] B41J *2/02;2/07*

U.S. Cl. 347—75 **34 Claims**



1. In a continuous ink jet printer having a pressurized supply of ink in fluid communication with a discharge nozzle, an apparatus for perturbing the ink into primary drops and satellite drops providing a stream of ink drops having a quantity of fast satellites associated therewith, comprising, a transducer coupled to the discharge nozzle for imparting mechanical vibration thereto, signal generating means for driving the transducer with a periodic non-sinusoidal waveform including a harmonic content, and an adjustable harmonic controller for adjusting the harmonic content of the periodic non-sinusoidal waveform thereby adjusting the quantity and direction of motion of the satellite drops.

5,646,664

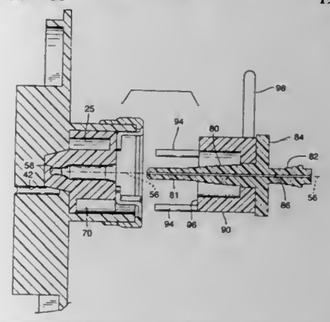
INK CONTAINER VALVING

Norman E. Pawlowski, Jr., Corvallis, Oreg., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 18, 1995, Ser. No. 374,363

Int. Cl.[6] B41J *2/175*

U.S. Cl. 347—86 **19 Claims**



1. An apparatus for valving the flow of ink from an ink container, comprising:

a container for containing ink;

a valve body attached to the container and having a port defined therein for conducting flow of ink from the container through the valve body;

a valve mounted to the body and rotatable between an open position and a closed position, the valve also having a conduit formed therein for conducting ink therethrough;

a receptacle configured to mate with the conduit, thereby to receive within the receptacle ink that flows through the conduit;

a rotatable valve actuator mounted adjacent to the receptacle, a selected one of the rotatable valve actuator and the valve having a key that protrudes therefrom to engage a mating keyway provided on the other of the selected valve actuator and valve, respectively, so that rotation of the actuator rotates the valve.

5,646,665

SIDE BIASED DATUM SCHEME FOR INKJET CARTRIDGE AND CARRIAGE

David W. Swanson, Escondido; Jeffrey A. Thoman, San Diego; W. Wistar Rhoads, and Jaren D. Marler, both of Escondido, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 30, 1993, Ser. No. 57,241

Int. Cl.[6] B41J *2/175*

U.S. Cl. 347—87 **12 Claims**

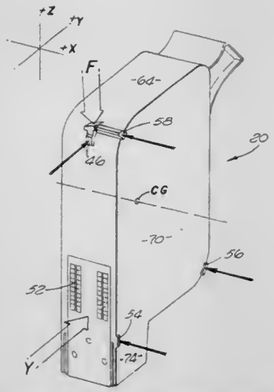
1. In an inkjet printer comprising:

a movable carriage supported above an ink-receiving medium by a rail defining a transverse printer axis;

a cartridge holder mounted on the cartridge and having a plurality of cartridge compartments each spaced a predetermined transverse spacing from an adjacent one of the cartridge compartments, each cartridge compartment being separated from an adjacent compartment by a lateral compartment wall perpendicular to the transverse printer axis;

a plurality of thermal ink jet printer cartridges each having a downwardly facing nozzle plate, and a lateral cartridge wall perpendicular to the nozzle plate, and

means for orienting the nozzle plate of each cartridge in a predetermined orientation relative to the nozzle plates of the other cartridges, including a predetermined vertical position, a predetermined side-to-side position, a predetermined front-to-back position, a predetermined pitch angle about a side-to-side axis, a predetermined yaw angle about a vertical axis, and a predetermined roll angle about a front-to back axis, wherein



the nozzle plates are parallel to the print medium and spaced therefrom by a predetermined vertical spacing, the side-to-side axes of the cartridges are co-linear and parallel to the transverse axis of the printer, and the front-to back axes of the cartridges are spaced apart from each other by the predetermined transverse spacing;

the improvement wherein:

co-planar first, second, and third datum surfaces are defined on the same lateral cartridge wall of each cartridge in predetermined positions above and to one side of the nozzle plate to thereby form three vertices of a triangle, with the first and second datum surfaces being disposed on a lower portion of the cartridge below a predetermined center of gravity, the first datum surface being disposed in front of the nozzle plate, the second datum surface being disposed behind the nozzle plate, and the third datum surface being disposed on an upper portion of the cartridge above the center of gravity,

three co-planar supporting surfaces corresponding to the three co-planar datum surfaces are defined on the same lateral compartment wall of each compartment, with the corresponding datum surfaces in adjacent compartments being transversely aligned and separated by the predetermined transverse spacing, and

a lateral force is exerted on each cartridge to hold the three co-planar datum surfaces against the three respective supporting surfaces,

whereby the three co-planar supporting surfaces cooperate with the three co-planar datum surfaces to maintain the side-to-side axes parallel to the transverse axis of the printer and the front-to back axes spaced apart from each other by the predetermined transverse spacing.

5,646,666

BACK PRESSURE CONTROL IN INK-JET PRINTING

Bruce Cowger; Robert R. Beeson, both of Corvallis, Oreg.; Christopher A. Schantz, Foster City, and William J. West, Los Altos, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 873,918, Apr. 24, 1992, abandoned. This application Jan. 26, 1994, Ser. No. 187,367

Int. Cl.[6] B41J *2/175*

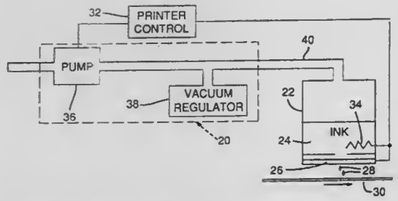
U.S. Cl. 347—87 **10 Claims**

1. A back pressure control system for a reservoir that contains a supply of ink and a volume of working fluid, comprising:

a print head mounted to the reservoir, the print head including means for expelling ink drops from the reservoir;

a pump connected to the reservoir and operable for pumping working fluid from the reservoir, thereby to establish and maintain within the reservoir a back pressure; and

a regulator for limiting to a predetermined level the back pressure established by the pump, the regulator including a valve connected to the reservoir to be responsive to changes in back



pressure within the reservoir by delivering ambient air to the reservoir, the pump and regulator maintaining the back pressure in the reservoir as ink drops are expelled by the print head.

5,646,667

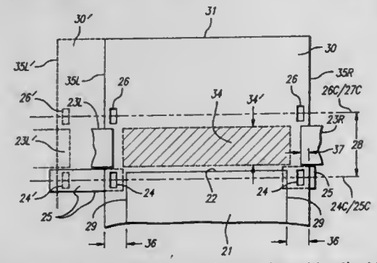
COMBINED CENTRAL AND LATERAL HOLD-DOWN PLATES, AND END-OF-PAGE ADVANCE-DISTANCE DECREASE, IN LIQUID-INK PRINTERS

Damon W. Broder; William C. Hilliard, both of San Diego; Aneesa Rahman Scandalis, Escondido; Gerold G. Firl, Poway; Robert R. Giles, Escondido, and Joseph P. Milkovits, San Diego, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 57,364, Apr. 30, 1993, abandoned. This application Apr. 4, 1995, Ser. No. 417,510

Int. Cl.[6] B41J *2/01;13/14*

U.S. Cl. 347—104 **14 Claims**



1. Apparatus for printing images, by marking with a liquid-base ink, on a web-form printing medium that has a longitudinal direction and two lateral edges; said apparatus comprising:

means for supporting such medium;

a marking head disposed for marking on such medium;

means for engaging such medium and for advancing such medium longitudinally past the marking head;

first guide means for restraining such medium, over an area that is:

upstream, longitudinally, from the marking head, and

extended laterally across substantially a full width of such medium except in one or more regions that are laterally aligned with, or laterally immediately adjacent to, the engagement of the engaging-and-advancing means with such medium;

wherein the first guide means do not engage such medium in any region that is laterally aligned with, or laterally immediately adjacent to, the engagement of the engaging-and-advancing means with such medium; and

second guide means for contacting and restraining such medium, over an area that is:

disposed laterally from the marking head, and

extended laterally across such medium only in one or more regions that are laterally aligned with, or laterally immediately adjacent to, the engagement of the engaging-and-advancing means with such medium.

5,646,668

INK JET PRINTER

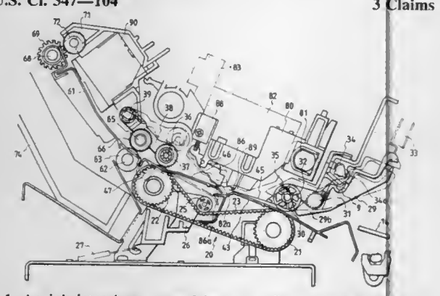
Satoshi Fujioka; Hiromu Hirabayashi; Nobuhisa Takabayashi; Atsushi Nishizawa, and Kiyoto Komuro, all of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Division of Ser. No. 308,936, Sep. 20, 1994, Pat. No. 5,530,466, which is a division of Ser. No. 908,737, Jul. 6, 1992, Pat. No. 5,373,312, which is a continuation of Ser. No. 599,577, Oct. 18, 1990, abandoned. This application Jun. 1, 1995, Ser. No. 456,318

Claims priority, application Japan, Oct. 19, 1989, 1-273273; Dec. 1, 1989, 1-313175; Jun. 5, 1990, 2-146771; Sep. 4, 1990, 2-233807

Int. Cl.[6] B41J *2/01;13/03*

U.S. Cl. 347—104 **3 Claims**



1. An ink jet printer comprising: recording means including a printer head for jetting ink droplets while moving in a direction perpendicular to the direction of conveyance of a recording medium having a dot image forming surface and a rear edge, thereby to form a dot image on said recording medium according to an input time; further comprising a conveying mechanism, including a gate roller that performs an intermittent feed operation at a speed corresponding to a pixel density of a character or pattern recorded on the recording medium; and a roller provided downstream of said recording means, said roller being operated after the rear edge of said recording medium passes through said conveying mechanism located upstream of said recording means, to convey said recording medium while in contact with the dot image forming surface of said recording medium, said roller being movable into and out of engagement with said recording medium.

5,646,669

CORROSION RESISTANT ELECTROSTATIC RECORDING HEAD WITH MULTIPLE LAYERS

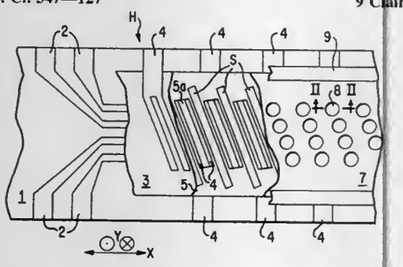
Tetsuo Yamada; Toshihide Tanaka; Satoru Hirosaki; Koji Udagawa, and Yumiko Komori, all of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 15, 1993, Ser. No. 136,762

Claims priority, application Japan, Oct. 22, 1992, 4-284493

Int. Cl.[6] B41J *2/415;2/41;* **G11B** *3/00*

U.S. Cl. 347—127 **9 Claims**



1. An electrostatic recording head which comprises, an insulating substrate having a multi-layered structure thereon, the multi-layered structure comprising, in the following order:

a plurality of first electrode strips having portions which are arranged in parallel to and separated from one another;

a first insulating layer;

a plurality of second electrode strips each extending to intersect with the first electrode strips thus creating individual intersected portions;

a second insulating layer in contact with said second electrode strips having a plurality of openings to form part of each of a plurality of ion generating space regions at individual intersected portions of said second electrode strips and said first electrode strips; and

a screen electrode which is provided to complete each of said ion generating space regions in association with the second insulating layer and has a plurality of individual openings through which ions are passed, each said individual opening corresponding to one of the ion generating space regions, the individual openings defined by first and second segments of the screen electrode, wherein said first and second segments are perpendicular to a surface of the screen electrode facing said second electrodes,

said screen electrode being made of a conductive or semiconductive core member and a surface layer formed at least on an entire surface of said core member which is facing the second electrodes and is exposed to charged particles and on the first and second segments of the screen electrode defining the individual openings, the surface layer being made of a material having a good oxidation resistance.

5,646,670

COLOR IMAGE FORMING APPARATUS WHICH REDUCES TONER CONSUMPTION DURING IMAGE FORMATION

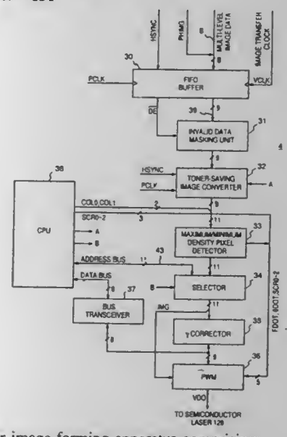
Kaoru Seto, Chigasaki, and Takashi Kawana, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 30, 1994, Ser. No. 297,834

Claims priority, application Japan, Aug. 31, 1993, 5-215372; Aug. 31, 1993, 5-215373

Int. Cl.[6] B41J *2/415*

U.S. Cl. 347—131 **15 Claims**



1. A color image forming apparatus comprising:

conversion means for producing a density-converted color image signal by converting an input color image signal so as to lower a density of the input color image signal;

mode selection means for selecting whether to perform conversion by said conversion means;

image formation means for forming a color image based on the density-converted color image signal produced by said conversion means or based on the input color image signal, the image formation means forming the color image in accordance with a selection made by said mode selection means; and

output means for outputting a toner image based on the color image formed by said image formation means;

wherein said conversion means produces the density-converted color image signal by thinning out the input color image signal so that an overall tonality of a color image represented by the input color image signal is maintained and an amount of toner in the toner image output by said output means is reduced.

5,646,671

THERMAL TRANSFER RECORDING APPARATUS AND METHOD FOR REGULARLY ASSIGNING BLANK DOTS

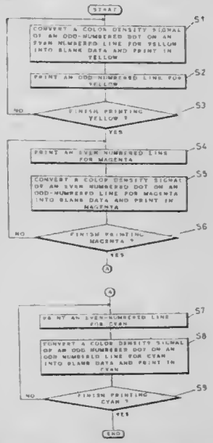
Akihiro Sadaki, Tokyo, Japan, assignor to Seiko Instruments Inc., Japan

Filed Sep. 8, 1994, Ser. No. 302,502

Claims priority, application Japan, Sep. 10, 1993, 5-226097

Int. Cl.[6] B41J *2/325*

U.S. Cl. 347—172 **25 Claims**



1. A thermal transfer recording apparatus for transferring an inked part on an ink sheet corresponding to a desired image and character onto a sheet of recording paper, the thermal transfer recording apparatus comprising: a thermal head including a plurality of heat generating resistive members; a platen for pressing a recording paper and an ink sheet against the thermal head; a mechanism for carrying the recording paper; a conversion means for receiving a color density signal, a line display signal indicating to which line the color density signal corresponds, and an identification signal for each of a plurality of colors, and for outputting a print signal for each color; and a driving circuit for selectively energizing the heat generating resistive members in accordance with the print signal; wherein the conversion means converts the color density signal into the print signal so that the print signal has a dot not to be printed for each color and different dots are assigned not to be printed depending on color.

5,646,672

THERMAL HEAD APPARATUS

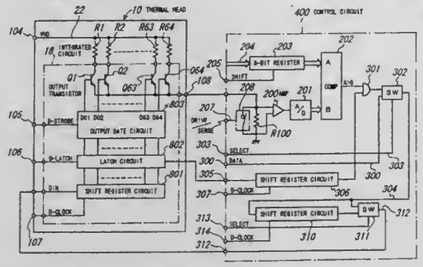
Itaru Fukushima, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 14, 1995, Ser. No. 572,106

Claims priority, application Japan, Dec. 16, 1994, 6-313563

Int. Cl.[6] B41J *2/355;2/365*

U.S. Cl. 347—211 **3 Claims**



2. A thermal head apparatus, comprising:

a heat generation member including a plurality of resistance elements each serving as a unit heat generation element and having an electric resistance whose value varies depending upon a temperature thereof; and

a heat generation driving and temperature detection circuit for first driving said unit heat generation elements of said heat generation member in accordance with a bit train data portion of print data to generate heat and then successively detecting voltages across said unit heat generation elements to detect temperatures of said unit heat generation elements; and

a control circuit for comparing the temperatures detected by said heat generation driving and temperature detection circuit with a density information data portion of the print data and controlling the heat generation driving function of said heat generation driving and temperature detection circuit based on results of the comparison.

5,646,673

EXPOSURE DEVICE

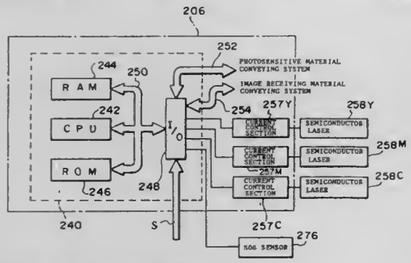
Kenichi Kodama, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 6, 1995, Ser. No. 398,793

Claims priority, application Japan, Mar. 15, 1994, 6-044363

Int. Cl.[6] B41J *2/47*

U.S. Cl. 347—251 **14 Claims**



1. An exposure device comprising:

a light source which emits a light beam;

main scanning means for main scanning the light beam emitted from said light source by deflecting the light beam in a main scanning direction, said main scanning means vibrating at a frequency f_p;

imaging means for imaging, on a photosensitive material, the light beam deflected by said main scanning means;

subscanning means for moving the light beam and the photosensitive material relative to one another to subscan the light beam such that a subscanning interval is L;

signal outputting means for outputting a predetermined signal when a light beam, which is deflected by said main scanning means and which corresponds to a point outside of an image region on the photosensitive material, is incident on said signal outputting means, a natural frequency of said signal outputting means being f_m; and

light source control means for controlling said light source on the basis of said signal such that the light beam is main-scanned from a start-of-main-scan point,

wherein at least one of said frequency f_p, said natural frequency f_m, and said subscanning interval L is set such that one of the following first condition and second condition is satisfied:

first condition:

$n'f_p-C1<f_m<n'f_p+C1$

second condition:

$n'f_p+C2<f_m$ when $f_m \geq n'f_p$

$n'f_p-C2>f_m$ when $f_m<n'f_p$

wherein $\alpha 1$ is a minimum value of spatial frequencies in a region in which image light-to-dark contrast is visible, the image light-to-dark contrast being generated on the photosensitive material by vibration of said main scanning means and natural vibration of said signal outputting means, the region in which the image light-to-dark contrast is visible being obtained from a visibility curve which expresses a relation between spatial frequencies of the image light-to-dark contrast and density differences of the image light-to-dark contrast; $\alpha 2$ is a maximum value of the spatial frequencies in the region in which the image light-to-dark contrast is visible; C1 is a value determined by said minimum value $\alpha 1$, said frequency f_p, and said subscanning interval L; C2 is a value determined by said maximum value $\alpha 2$, said frequency f_p, and said subscanning interval L; and n is an integer.

5,646,674

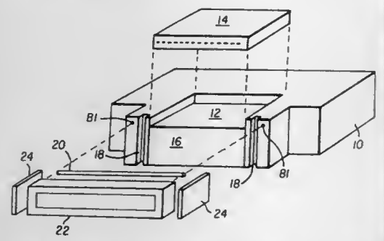
OPTICAL PRINT HEAD WITH FLEXURE MOUNTED OPTICAL DEVICE

Wesley H. Bacon; Kenneth L. Baker, both of Rochester; John R. Debesis, Penfield; Jeffrey P. Serbicki, Holley, and James S. Newkirk, LeRoy, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 29, 1994, Ser. No. 235,627

Int. Cl.[6] G01D *15/14;* **G02B** *27/00*

U.S. Cl. 347—257 **9 Claims**



1. An optical print head comprising: a heat sink; a laser source coupled to the heat sink; and a primary lens element coupled to the heat sink by flexures; wherein the primary lens element is optically aligned with the laser source; and wherein the flexures are bonded to the heat sink with an adhesive.

5,646,675

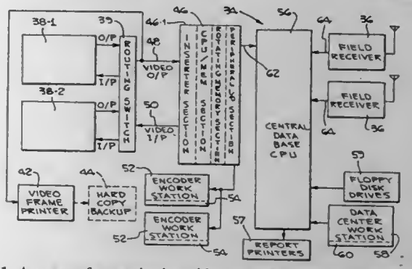
SYSTEM AND METHOD FOR MONITORING VIDEO PROGRAM MATERIAL

Robert C. Copriviza, Tarzana; Arnold M. Dubin, Calabasas; Edward B. Ackerman, Encino; Jackson B. Wood, Tarzana; Jeffrey S. Eakins, Claremont, and David D. Harmon, Torrance, all of Calif., assignors to Airtrax

Division of Ser. No. 370,399, Jun. 22, 1989, Pat. No. 5,319,453. This application Jun. 6, 1994, Ser. No. 255,222

Int. Cl.[6] H04N *7/00*

U.S. Cl. 348—1 **19 Claims**



1. A system for monitoring video program material including a source recorder/player for recording a source video program signal stream as a sequence of frames, each of the frames including a plurality of scan lines, said system comprising:

an encoder that generates a monitoring code and applies the monitoring code to each frame of the source video signal stream, said monitoring code having a program-identifying code portion common to all frames and a frame-identifying code portion unique to each frame;

a decoder that detects said monitoring code included on each frame of the source video signal stream; and

a receiver that monitors a broadcast program signal corresponding to the source video signal stream, determines reception information, and associates said reception information with specified ones of the frames using said monitoring code;

wherein said encoder includes interface memory providing storage for code information, and a processor coupled to said interface memory for converting the code information to said monitoring code.

5,646,676

SCALABLE INTERACTIVE MULTIMEDIA SERVER SYSTEM FOR PROVIDING ON DEMAND DATA

Thomas J. Dewkett, Staatsburg, and William Todd Boyd, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 30, 1995, Ser. No. 452,920

Int. Cl.[6] H04N *7/173*

U.S. Cl. 348—7 **16 Claims**

1. A hierarchical multimedia (MM) distribution system for supporting "on demand" control of graphical data files being received by viewing-control devices connected to a network, comprising:

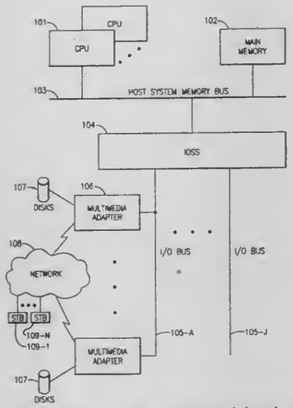
a host computer system for monitoring the MM distribution system,

the MM distribution system comprised of a plurality of MM adapters connected to the host computer system,

each MM adapter containing one or more MM controllers, each MM controller containing a controller bus connected to an MM processor,

one or more MM pairs connected to the controller bus,

each MM pair including a disk adapter and a network adapter, the disk adapter connected to one or more disk drives for receiving data blocks read from selected disk drives, graphical data files being stored on the disks, and data blocks in a requested data file being read directly from each selected disk to the disk adapter,



a pair bus in each MM pair for directly receiving the data blocks received by the disk adapter and for directly transmitting the data blocks to the network adapter,

the network adapter in each MM pair directly distributing the data blocks from the pair bus to the network, each data block being addressed to any viewing-control device requesting a data file containing the data block, and

means in each viewing-control device for issuing interactive commands through the network to the network adapter to control characteristics of data reception of the requested data file being transmitted to each viewing-control device.

5,646,677

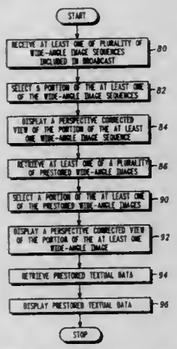
METHOD AND APPARATUS FOR INTERACTIVELY VIEWING WIDE-ANGLE IMAGES FROM TERRESTRIAL, SPACE, AND UNDERWATER VIEWPOINTS

William Louis Reber, Schaumburg, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 23, 1995, Ser. No. 392,705

Int. Cl.[6] H04N *7/173*

U.S. Cl. 348—13 **35 Claims**



1. A method of interactively viewing a broadcast program, the broadcast program including a plurality of wide-angle image sequences contemporaneously captured from a plurality of viewpoints, the plurality of viewpoints selected from the group consisting of a space viewpoint, a terrestrial viewpoint, and an undersea viewpoint, the plurality of wide-angle image sequences providing a plurality of different views of a region, the method comprising the steps of:

selecting at least one desired viewpoint from which the region is to be viewed;

receiving at least one of the plurality of wide-angle image sequences included in the broadcast program to provide the at least one desired viewpoint from which the region is to be viewed;

selecting a portion of the at least one of the plurality of wide-angle image sequences; and

displaying a perspective corrected view of the portion of the at least one of the plurality of wide-angle image sequences.

5,646,678

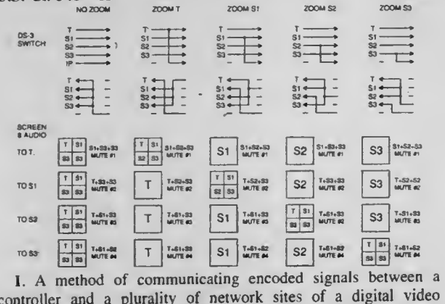
DIGITAL VIDEO NETWORK WITH CONTINUOUS AUDIO PRESENCE AT NETWORK SITES

Mario Bonja, Boisbriand; Simon John Peter Phillip Worrall, Pointe Claire, and Richard Romagnino, Montreal, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Mar. 30, 1995, Ser. No. 413,556

Int. Cl.[6] H04N *7/14;7/15;9/74;9/76*

U.S. Cl. 348—15 **19 Claims**



1. A method of communicating encoded signals between a controller and a plurality of network sites of a digital video network via respective communications paths, comprising the steps of:

in the controller, decoding an encoded signal received from each network site to produce a video signal and an audio signal, producing at least one composite picture video signal from a plurality of the video signals, and coding selected ones of the video signals and the composite picture video signal each with a plurality of the audio signals and a control signal to produce an encoded signal for supply to each network site; and

in each network site, producing a local video signal and a local audio signal in the network site, encoding the local video signal and the local audio signal to produce an encoded signal for supply to the controller, decoding an encoded signal received from the controller to produce a video signal and a plurality of audio signals, mixing the plurality of audio signals in a predetermined manner in accordance with the control signal in the received encoded signal, thereby to produce a mixed audio signal comprising audio signals from the respective other network sites without the respective local audio signal, and reproducing the video signal and the mixed audio signal.

5,646,679

IMAGE COMBINING METHOD AND APPARATUS

Kotaro Yano, Yokohama, and Katsumi Iijima, Hachioji, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

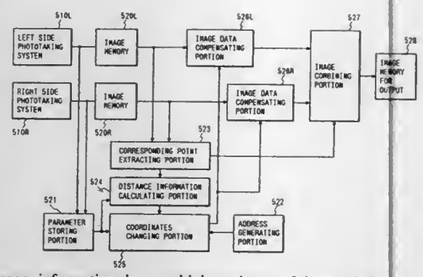
Filed Jun. 28, 1995, Ser. No. 500,341

Claims priority, application Japan, Jun. 30, 1994, 6-148879

Int. Cl.[6] H04N *7/18*

U.S. Cl. 348—47 **6 Claims**

1. An image combining method for image-taking an object by using a plurality of image taking systems, and forming combined image information by combining pieces of image information obtained by said image taking systems, comprising the steps of:



extracting corresponding point information between the pieces of image information;

calculating distance information by using optical information in each of said image taking systems and the corresponding point information;

sequentially generating two-dimensional coordinates of a display image based on the combined image information;

changing the two-dimensional coordinates to two-dimensional coordinates of each piece of image information by using the optical information and the distance information;

performing compensation processing for each piece of image information on the basis of the changed two-dimensional coordinates for each piece of image information;

determining an occlusion portion in which a far-distance portion of the object is concealed by a near-distance portion, of an overlapping region of images on the basis of the corresponding point information; and

selecting one of pieces of compensated image information with respect to the occlusion portion in forming combined image information by combining the pieces of compensated image information.

5,646,680

ENDOSCOPE SYSTEM HAVING A SWITCH FORCIBLY SET TO DISPLAY VIDEO SIGNALS NOT PASSED THROUGH OUTER PERIPHERAL APPARATUS

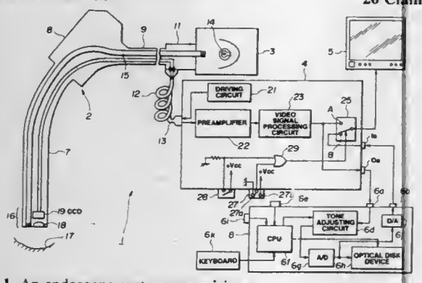
Manabu Yajima, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 12, 1995, Ser. No. 527,082

Claims priority, application Japan, Oct. 20, 1994, 6-255770

Int. Cl.[6] A61B *1/04;* **H04N** *7/18*

U.S. Cl. 348—74 **26 Claims**



1. An endoscope system comprising:

an endoscope comprising an elongate insertable section, an illuminating light projecting means projecting an illuminating light out of the distal end of said insertable section, an objective optical system formed at the distal end of said insertable section to observe an object illuminated by said illuminating light and an imaging means photoelectrically converting an image based on said objective optical system;

a signal processing means processing signals for said imaging means and producing a first video signal;

an outer peripheral means provided outside said signal processing means and processing/controlling a second video signal electrically different from said first video signal;

a selecting means selecting either of said first video signal and said second video signal;

a displaying means displaying either of said first and second video signals selected by said selecting means; and

a regulating means regulating the selection of said selecting means to forcibly output said first video signal to said displaying means.

5,646,681

ELECTRONIC PARTS DATA RECORDER AND A MOUNTER EMPLOYING THE RECORDER

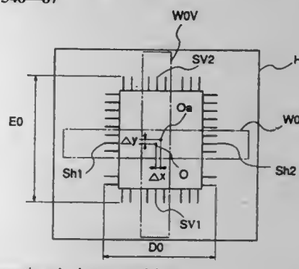
Shinichi Okazaki, Shizuoka, Japan, assignor to Tenryu Technics Co., Ltd., Shizuoka, Japan

Filed Oct. 19, 1994, Ser. No. 326,081

Claims priority, application Japan, Oct. 21, 1993, 5-263529

Int. Cl.[6] H04N *7/18*

U.S. Cl. 348—87 **8 Claims**



1. A mounting device comprising:

a transfer head for transporting mounting an electronic component having a molded portion on a printed circuit board automatically, having a vacuum nozzle adapted for holding the electronic component;

a recording means for taking a picture of the electronic component held by the vacuum nozzle by using a camera before the electronic component is mounted on the printed circuit board;

a data computing means for measuring the size of each part of the electronic component to obtain parts data, which is necessary for specifying the kind of electronic component, based on the picture of the electronic component obtained by said recording means,

said data computing means also computes the approximate outer circumference position and the temporary center position of the electronic component based on the picture of the electronic component to compute the approximate width, the approximate length and the temporary value of the center position of the electronic component, and detects the positions of lead edges and the position of the molded portion of the electronic component by using the approximate outer circumference position and the temporary center position to compute the width and the length of the molded portion and the same of the whole of the electronic component, and further computes the data as to the lead in accordance with the width and the length of the molded portion and the same of the whole of the electronic component,

and said data computing means also reads a long window, from the picture of the electronic component, the length of which is close to the width of the picture and computes an edge position of the outer circumference in the width direction in conformity with detection of the edge in the window, and reads a long window the length of which is close to the length of the picture of the electronic component and computes an edge position of the outer circumference in the length direction in conformity with detection of the edge in the window,

whereby it computes the approximate width, length and the temporary value of the center position of the electronic component,

a data storing means for storing obtained parts data of the electronic component;

whereby all the kinds of parts data of electronic components to be mounted on the printed circuit board are obtained by the recording means and the data computing means and are stored in the data storing means, and whereby parts data of an electronic component held by the nozzle are compared with the pre-stored parts data, thereby parts held by the nozzle are judged to be accurate or not.

5,646,682

TRACK WIDTH ERROR INSPECTOR APPARATUS

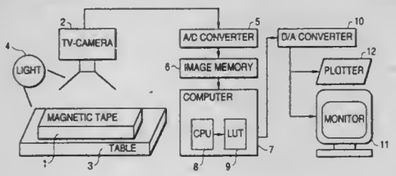
Yasushi Sogabe, Osaka, and Shigeki Murata, Nara, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

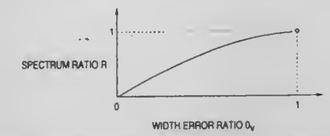
Continuation of Ser. No. 135,529, Oct. 13, 1993, abandoned. This application Jan. 29, 1996, Ser. No. 593,018

Claims priority, application Japan, Oct. 13, 1992, 4-274005

Int. Cl.[6] H04N *7/18*

U.S. Cl. 348—135 **3 Claims**





1. A track width error inspector apparatus for examining a track width error of recording tracks of a magnetic tape, in which a signal of a given frequency range is recorded on alternate tracks with a plurality of magnetic heads, an amount of magnetic powder is applied to the magnetic tape, light is radiated on the magnetic tape, and a reflection of the light from the magnetic tape is detected, the track width error being a difference between the width of the recording tracks and a predetermined track width;

said track width error inspector apparatus comprising:

a movable table on which the magnetic tape to be inspection is disposed;

an image pick-up, said image pick-up producing an enlarged two-dimensional image of the recording tracks in a given surface area of the magnetic tape;

a memory, said memory storing an image data produced by the image pick-up;

a frequency spectrum detector, said detector detecting odd-numbered and even-numbered order frequency components of a frequency spectrum produced by a Fourier transformation of the image data;

a ratio calculator, said calculator calculating a ratio between one odd-numbered order frequency component and one even-numbered order frequency component; and

a track width error calculator, said track width error calculator calculating the track width error ratio of the recording tracks from the calculated ratio between the two frequency components wherein the ratio of the track width error increases as the ratio of the frequency components increases.

5,646,683

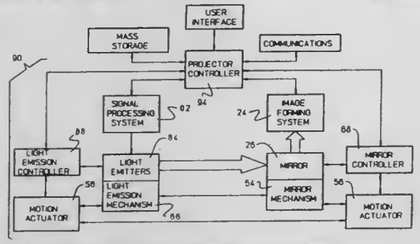
IMAGING SYSTEMS

Ricardo J. Motta, Mountain View, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 236,781, Apr. 29, 1994, Pat. No. 5,481,300. This application Sep. 27, 1995, Ser. No. 534,779

Int. Cl.[6] H04N *1/04;3/08*

U.S. Cl. 348—203 **10 Claims**



1. A system for projecting an image, comprising

a. a light emitter means, for producing bundles of light corresponding to portions of the image to be projected;

b. an image formation system for focusing the bundles of light to form the image at a distant point;

c. a mirror located to deflect the image to the plane of the image formation system;

d. a mirror mechanism, attached to the mirror, the mirror mechanism moves the mirror;

e. a light emission mechanism, attached to the light emitter means, the light emission mechanism rotates the light emitter means synchronously with the movement of the mirror; and

f. a mirror trajectory having a continuum of mirror positions, at each mirror position, the plane of the mirror approximately bisects at approximately 90° a plurality of imaginary lines between cells of the light emitter means and their corresponding focal points on an image plane, the mirror mechanism moves the mirror along the mirror trajectory and the light emission mechanism rotates the light emitter means synchronously with the movement of the mirror along the mirror trajectory so the image focuses at the plane of the image formation system when the image scans across the image formation system.

5,646,684

ULTRA SMALL VIDEO CAMERA AND A VIDEO CAMERA SYSTEM

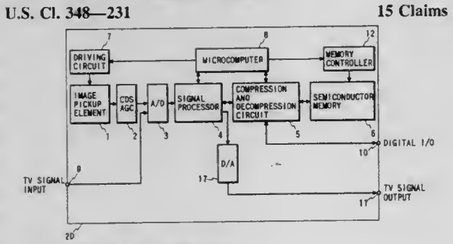
Akihito Nishizawa, Yokosuka; Takuya Imaide, Fujisawa; Toshiro Kinugasa, Hiratsuka; Takuya Iguchi, Yokohama, and Kazuhiro Koshio, Chigasaki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 8, 1995, Ser. No. 512,625

Claims priority, application Japan, Aug. 22, 1994, 6-196447; Aug. 22, 1994, 6-196805

Int. Cl.[6] H04N *5/76*

U.S. Cl. 348—231 **15 Claims**



1. A video camera comprising:

image pickup elements for photoelectrically converting an optical image;

a driving circuit for driving the image pickup elements;

a signal processing circuit for forming predetermined dynamic image data by performing a predetermined signal processing on an output signal of the image pickup elements;

a compression circuit for forming compressed image data by performing a predetermined data compression processing on the dynamic image data;

a memory for storing the compressed image data;

a digital signal outputting means for outputting the compressed image data read from the memory to the outside of a main body of the video camera;

a television signal inputting means for inputting television signals from the outside and a television signal processing circuit for converting the television signals inputted from the television signal inputting means into dynamic image data; and

wherein the compression circuit performs a data compression processing on the dynamic image data converted by the television signal processing circuit to thereby form compressed image data.

5,646,685

MOVING IMAGE PROCESSING METHOD AND APPARATUS

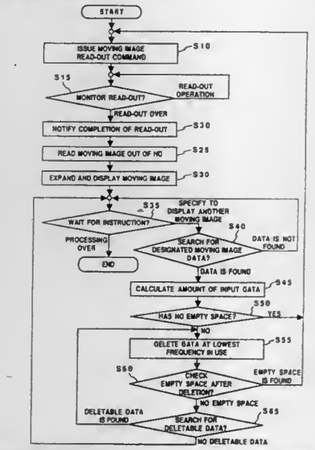
Miyuki Enokida, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 448,192, May 23, 1995, Pat. No. 5,489,941, which is a division of Ser. No. 277,106, Jul. 20, 1994, Pat. No. 5,428,393, which is a division of Ser. No. 885,870, May 20, 1992, Pat. No. 5,359,365. This application Jan. 22, 1996, Ser. No. 589,474

Claims priority, application Japan, May 24, 1991, 3-119760; May 24, 1991, 3-119761

Int. Cl.[6] H04N *7/50*

U.S. Cl. 348—390 **1 Claim**



1. A moving image processing method for expanding compressed moving image data and displaying the expanded data, comprising the steps of:

a first transfer step of transferring the compressed moving image data stored in a first storage medium having a large capacity and a relatively slow access speed to a second storage medium having a small capacity and a fast access speed;

a second transfer step for reading the compressed moving image data out of the second storage medium and transferring the compressed moving image data to an image expanding unit adjusting the transfer speed to a predetermined display speed of the moving image; and

a display step for displaying the moving image data expanded by the image expansion unit, wherein the transfer path for the compressed moving image data in said second transfer step is only for the compressed moving image data.

5,646,686

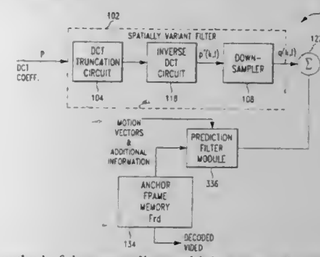
METHODS AND APPARATUS FOR REDUCING DRIFT IN VIDEO DECODERS

Larry A. Pearlstein, Newtown, Pa., assignor to Hitachi America, Ltd., Tarrytown, N.Y.

Continuation-in-part of Ser. No. 320,481, Oct. 11, 1994. This application Sep. 27, 1996, Ser. No. 724,019

Int. Cl.[6] H04N *7/36;7/50*

U.S. Cl. 348—392 **19 Claims**



1. A method of downsampling multiple groups of complete pixel values in at least a first dimension by a factor of N, where N is a positive number, comprising the steps of:

downsampling a first group of complete pixel values by N to generate a first partial pixel value;

downsampling at least a second group of full pixel values by N to generate a second partial pixel value; and

combining at least the first and second partial pixel values to form a complete pixel value.

5,646,687

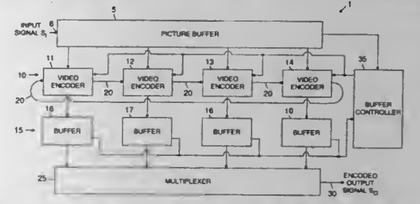
TEMPORALLY-PIPELINED PREDICTIVE ENCODER/DECODER CIRCUIT AND METHOD

Nelson Botsford, III, Somerville; George John Kustka, Marlboro, and John Norman Mailhot, Somerville, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 29, 1994, Ser. No. 366,272

Int. Cl.[6] H04N *7/18*

U.S. Cl. 348—402 **23 Claims**



1. An encoding circuit for processing a digital input signal containing a sequence of data frames at a particular frame rate and frame data rate into an encoded output signal having a substantially equal frame rate comprising:

an input buffer having an input and a plurality of N outputs, the input operable to receive the digital input signal;

a plurality of N predictive encoders arranged in a sequence, each encoder having a signal input, a predictive signal input, an encoded signal output and a digitized frame information output, the signal inputs of the encoders being connected to a respective one of the input buffer outputs, the digitized frame information output being connected to the digitized frame information input of a next encoder in the sequence, wherein

the digitized frame information output of a last encoder in the sequence is connected to the digitized frame information input of a first encoder in the sequence;

a plurality of N frame buffers, each frame buffer having an input and an output, each frame buffer input being connected to a corresponding encoded signal output of an encoder; and

a multiplexer having an output and a plurality of N inputs, each input being connected to a corresponding frame buffer output, wherein the input buffer supplies each received information frame of the input signal in a temporally pipelined manner to a corresponding one of the encoders at a rate of 1/N the frame data rate and wherein each encoder encodes the entire information frame at the 1/N data rate as such information is received, and provides corresponding predictive information for a next frame to the digitized frame information input of the next encoder in the sequence.

5,646,688

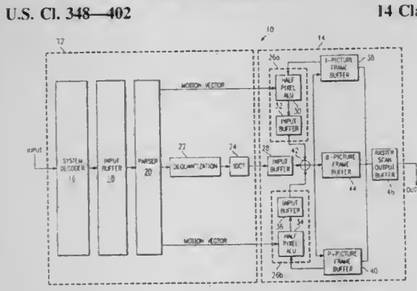
VIDEO DECODER ARCHITECTURE USING SEPARATE SEMICONDUCTOR SUBSTRATES

Masashi Hashimoto, Ibaraki, Japan, and Frank L. Laczko, Sr., Allen, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 107,098, Aug. 13, 1993. This application Jun. 7, 1995, Ser. No. 487,258

Int. Cl.[6] H04N *7/32*

U.S. Cl. 348—402 **14 Claims**



1. A video data processing system for processing an encoded data stream, comprising:

a parser circuit formed on a first semiconductor substrate and operable to parse at least a portion of the data stream and to output encoded image data and motion vector data;

a transformation circuit formed on said first semiconductor substrate coupled to said parser circuit and operable to process said encoded image data;

a motion compensation circuit coupled to said parser circuit and operable to process said motion vector data, said motion compensation circuit formed on a second semiconductor substrate;

an image memory circuit formed on said second semiconductor substrate and operable to store data representative of at least one complete frame of video image data, wherein said image memory circuit comprises:

an I-picture memory operable to store decoded image data representative of a video image of an I-picture retrieved from the encoded data stream, wherein said I-picture is an interframe picture;

a P-picture memory operable to store decoded image data representative of a video image of a P-picture retrieved from the encoded data stream, wherein said P-picture is a predictive picture; and

a B-picture memory operable to store decoded image data representative of a video image of an B-picture retrieved from the encoded data stream, wherein said I-picture is a bi-directional picture;

wherein said motion compensation circuit comprises a first half pixel arithmetic logic unit coupled to said I-picture memory and operable to retrieve video image data from said I-picture memory; and

wherein said motion compensation circuit comprises a second half pixel arithmetic logic unit coupled to said P-picture memory and operable to retrieve video image data from said P-picture memory in parallel with said retrieval by said first half pixel arithmetic logic unit to said I-picture memory.

5,646,689

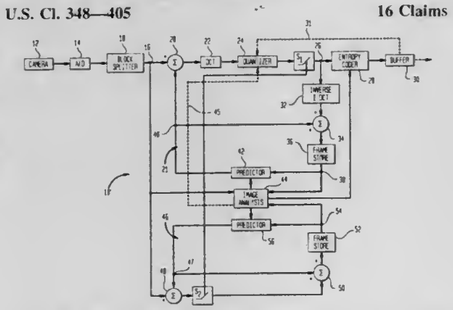
VIDEO ENCODER WITH FEEDBACK CONTROL

Joern Ostermann, Red Bank, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Oct. 23, 1995, Ser. No. 546,853

Int. Cl.[6] H04N *7/36*

U.S. Cl. 348—405 **16 Claims**



1. A feedback encoder for image analysis of an object represented by a video signal defined by a continuous stream of successive-in-time video frames, said device comprising:

a first image predictor for estimating, for each said video frame, a first predicted image of an object of the frame, the first predicted image for each said frame being derived from a measurement of displacement of the object and a representation of a frame preceding the said each frame;

means for generating an error signal derived from a difference between a current video frame and the first predicted image of the current video frame;

a quantizer in communication with said error generating means for quantizing, at an adjustable step size, the error signal to define a quantized error signal;

for each said frame, said representation being formed of at least one of (1) the first predicted image of the preceding frame and the quantized error signal of the preceding frame, and (2) the first predicted image of the preceding frame;

an entropy coder for coding the quantized error signal;

a second image predictor for estimating, for each said frame, a second predicted image of the object of the said each frame, the second predicted image for each said frame being derived from the measurement of displacement of the object and a signal input to said second image predictor, said input signal being formed of at least one of (1) the preceding video frame, and (2) a predicted image of the preceding video frame; and

image analysis means for determining, for each said frame, the measurement of displacement of the object, said measurement being provided to said entropy coder and being derived from the representation of the preceding frame, the input signal, and the current frame.

5,646,690

APPARATUS FOR PARALLEL DECODING OF DIGITAL VIDEO SIGNALS

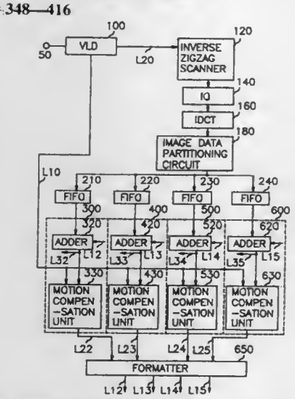
Jae-Soo Yoon, Seoul, Rep. of Korea, assignor to Dacwoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Jun. 14, 1995, Ser. No. 490,411

Claims priority, application Rep. of Korea, Jun. 14, 1994, 94-13293

Int. Cl.[6] H04N *7/50*

U.S. Cl. 348—416 **2 Claims**



1. An apparatus for decoding an encoded digital video signal for the reproduction of an original video image signal wherein the encoded digital video signal includes encoded frame difference signals between the pixels in a current frame and those in a previous frame and encoded motion vectors, each of the current and the previous frames having a number of macro block and each of the motion vectors representing a spatial displacement between a macro block in the current frame and a corresponding matching point in the previous frame, which comprises:

means for dividing a previous macro block included in the previous frame into four equal-sized previous subblocks;

four memory means for storing the divided previous subblock data;

means for decoding the encoded frame difference signals to thereby provide difference pixel values on the basis of a current macro block;

means for dividing the difference pixel values for the current macro block into four equal-sized current subblocks;

four first-in first-out(FIFO) buffers for storing the divided current subblock data;

means for addressing said four memory means to derive predicted current macro block data therefrom in response to the motion vector for said current macro block; and

means for providing the reconstructed current macro block signal by combining the predicted current macro block data and the difference pixel data from the FIFO buffers.

5,646,691

SYSTEM AND METHOD FOR INTER-FRAME PREDICTION OF PICTURE BY VECTOR-INTERPOLATORY MOTION-COMPENSATION BASED ON MOTION VECTORS DETERMINED AT REPRESENTATIVE POINTS CORRECTABLE IN POSITION FOR ADAPTATION TO IMAGE CONTOURS

Yutaka Yokoyama, Tokyo, Japan, assignor to NEC Corporation, Japan

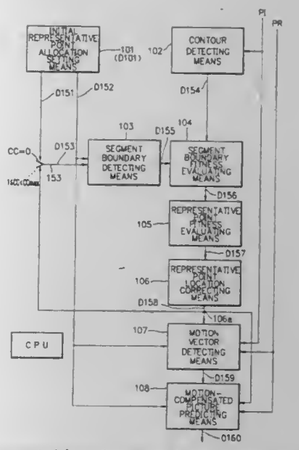
Filed Jan. 24, 1996, Ser. No. 590,490

Claims priority, application Japan, Jan. 24, 1995, 7-008792

Int. Cl.[6] H04N *7/36*

U.S. Cl. 348—416 **9 Claims**

1. A system for processing in a picture frame an input picture representing a current picture and a reference picture representative of a previous picture relative to the current picture to generate a motion-compensated inter-frame prediction picture for coding of the input picture, the system comprising:



a first means for providing a set of location data representing present locations of a number of representative points in the picture frame and a set of connection data representing relationships for connecting the representative points to define boundary lines of a total number of segment regions having vertices thereof on the representative points;

a second means for detecting a contour of a moved image in the input picture to provide a set of position data representing a position of the contour;

a third means responsive to the set of location data, the set of connection data and the set of position data for correcting the present locations of the representative points to adapted locations thereof so that a number of associated segment regions have associated boundary lines thereof substantially fitted to the contour;

a fourth means for detecting first motion vectors between the input picture and the reference picture at the adapted locations of the representative points; and

a fifth means for responding to the first motion vectors to interpolate therefrom second motion vectors between the input picture and the reference picture at pixels on each of the total number of the segment regions having the vertices thereof at the adapted locations of the representative points and for responding to the second motion vectors for motion-compensating the reference picture to generate the prediction picture.

5,646,692

DEVICE FOR TRANSMITTING A HIGH DEFINITION DIGITAL PICTURE SIGNAL FOR USE BY A LOWER DEFINITION PICTURE SIGNAL RECEIVER

Wilhelmus H. A. Brüls, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

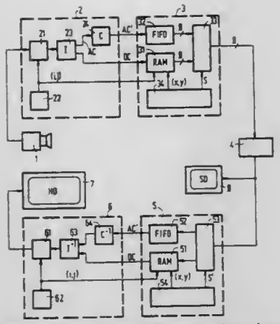
Continuation of Ser. No. 276,004, Jul. 15, 1994, abandoned. This application May 2, 1996, Ser. No. 641,706

Claims priority, application Belgium, Jul. 16, 1993, 09300746

Int. Cl.[6] H04N *7/26*

U.S. Cl. 348—438 **20 Claims**

1. A device for transmitting a high-definition digital picture signal in the form of a single channel bit stream, comprising encoding means for forming a first component including a mean value and a second component including a series of other data words for successive picture blocks, wherein the encoding means compresses said high definition digital picture signal channel bit stream into a single channel bit stream with said first component substantially representing an uncompressed channel bit stream for a picture signal having lower definition, and formatting means for



accommodating the mean value for successive picture blocks at positions of the channel bit stream which form a sub-picture in a picture signal having a lower definition.

5,646,693

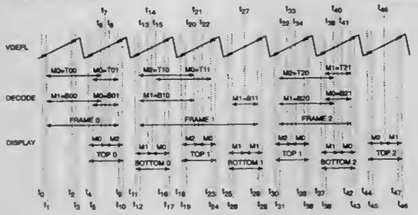
MEMORY UTILIZATION FOR VIDEO DECODING AND DISPLAY WITH 3:2 PULL-DOWN

Sorin Cismas, 1644 Belleville Way, Sunnyvale, Calif. 94087

Filed Nov. 4, 1994, Ser. No. 334,646

Int. Cl.[6] H04N *7/01;11/02;9/64*

U.S. Cl. 348—44 **24 Claims**



1. A method for decoding and displaying a frame to be displayed using 3:2 pull-down, comprising the steps of:

decoding said frame to obtain decoded image information and writing part of the decoded image information of said frame to a frame buffer of size less than a size sufficient to store decoded image information of the entire frame, including writing a first portion of said part of the decoded image information to a first set of memory locations of said frame buffer; and

decoding a portion of said frame for a second time and writing a second portion of decoded image information to memory locations from said first set which contain image information that has been displayed at least once.

5,646,694

MOVING PICTURE DECODING APPARATUS HAVING THREE LINE BUFFERS CONTROLLED TO STORE AND PROVIDE PICTURE DATA OF DIFFERENT RESOLUTIONS

Kojiro Horita, Higashimurayama; Junichi Kimura, Hachioji, both of Japan; Hirotaka Hara, Pasadena, Calif., and Yutaka Okunoki, Kawaguchi, Japan, assignors to Hitachi, Ltd., and Sega Enterprises, Ltd., both of Tokyo, Japan

Filed Nov. 13, 1995, Ser. No. 554,966

Claims priority, application Japan, Nov. 17, 1994, 6-283837

Int. Cl.[6] H04N *7/01*

U.S. Cl. 348—448 **7 Claims**

1. In a picture decoding apparatus for decoding a first coded picture of a first resolution of n pixels/line and a second coded picture of a second resolution of 2n pixels/line, the picture decoding apparatus comprising a decoder for decoding coded picture data; a memory for storing decoded picture data; three line buffers, each capable of storing data for n pixels, for temporarily storing picture data read from said memory; and a line buffer controller for controlling writing and reading operations of each of said line buffers, a method for outputting, through said line buffers, decoded picture data of said second resolution stored in said memory, comprising the steps of:

sequentially and cyclically selecting two out of said three line buffers and sequentially storing decoded picture data for one line, read from said memory, in said two line buffers;

sequentially reading data for one line from said two line buffers selected sequentially and cyclically;

while reading picture data for the former half of one line from an earlier-selected line buffer of the two line buffers selected sequentially and cyclically, storing picture data of the former half of a subsequent one line into the remaining line buffer;

while reading picture data for the latter half of said one line from a later-selected line buffer of the two line buffers selected sequentially and cyclically, storing picture data for the latter half of said subsequent line into the earlier-selected line buffer of the two line buffers selected sequentially and cyclically.

5,646,695

VIDEO SIGNAL PROCESSING METHOD AND APPARATUS FOR USE WITH PLURAL TELEVISION SYSTEMS

Yuji Fujiwara, Nishinomiya; Shouichi Nishino, Kashiwara; Sigeru Awamoto, Osaka, and Toyohiko Matsuda, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 215,688, Mar. 22, 1994. This application Feb. 5, 1996, Ser. No. 597,322

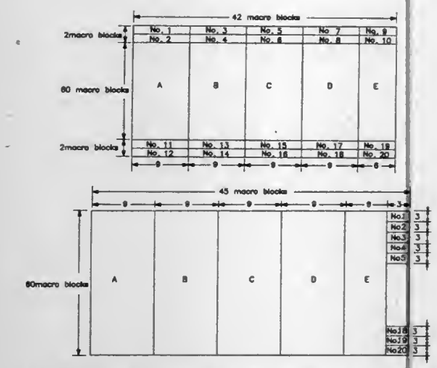
Claims priority, application Japan, Mar. 22, 1993, 5-061629

Int. Cl.[6] H04N *5/46*

U.S. Cl. 348—448 **12 Claims**

1. A video signal processing apparatus for receiving a digital video signal from one of plural television systems differing in the number of effective pixels, each of the digital video signals arranged in a respective block, and the video signal processing apparatus for changing the arrangement of pixel data in the digital video signal, comprising:

judging means for producing judgement information determining a television system of an input digital signal, said input digital signal having image data and an input image region,



a shuffling memory having a shuffling range in the horizontal and vertical directions for accumulating the image data of the input digital signal, said shuffling range including a screen region, and

control means for controlling the writing action into and reading action from the shuffling memory, depending on the judgement information from the judging means,

wherein the control means achieves correspondence between the input image region of the input digital signal and the shuffling range of the shuffling memory with a specific offset value, when writing into the shuffling memory of the input signal, where at least one of the subblocks units of the input digital signal is written into a position corresponding to the screen of the shuffling memory, and the subblock units out of the screen region of the shuffling memory are written into a vacant region of the shuffling memory in an integer multiple of the subblock units.

5,646,696

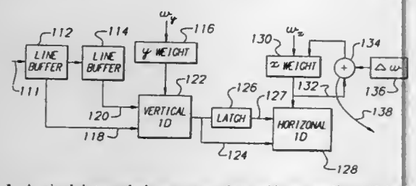
CONTINUOUSLY CHANGING IMAGE SCALING PERFORMED BY INCREMENTED PIXEL INTERPOLATION

David L. Sprague, Trenton, N.J., assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 461,547, Jun. 5, 1995, abandoned, which is a continuation of Ser. No. 267,846, Jun. 29, 1994, abandoned, which is a continuation of Ser. No. 995,288, Dec. 23, 1992, abandoned. This application May 28, 1996, Ser. No. 654,020

Int. Cl.[6] H04N *9/74*

U.S. Cl. 348—458 **18 Claims**



1. A pixel interpolation system for uniform scaling of images having a plurality of input pixels and pixel positions, the pixel interpolation system comprising:

(a) first and second line buffer means for receiving an input pixel stream and for providing a plurality of pixel pairs that are delayed by one scan line, wherein each pixel pair of the plurality of pixel pairs comprises vertically adjacent pixels, wherein the first line buffer means is coupled at its input to the input pixel stream and the second line buffer means is coupled at its input to an output of the first line buffer means;

(b) means for providing a first sequence of interpolation weights;

(c) vertical one-dimensional interpolation means for receiving the plurality of pixel pairs and the first sequence of interpolation weights to provide a plurality of vertically-interpolated pixels comprising a plurality of sequential weighted sums of the pixel pairs at a first plurality of the pixel positions in accordance with the first sequence of interpolation weights;

(d) delay latch means for delaying one pixel of two consecutive vertically-interpolated pixels to provide a plurality of pairs of horizontally adjacent, vertically-interpolated pixels;

(e) means for providing a second sequence of interpolation weights; and

(f) horizontal one-dimensional interpolation means for receiving the plurality of pairs of vertically-interpolated pixels and the second sequence of interpolation weights to provide a plurality of sequential weighted sums of the pairs of vertically-interpolated pixels at a second plurality of the pixel positions in accordance with the second sequence of interpolation weights; wherein the delay latch means is coupled at its input to the output of the vertical one-dimensional interpolator and to a first input of the horizontal one-dimensional interpolator and at its output to a second input of the horizontal one-dimensional interpolator.

5,646,697

SPECIAL EFFECTS VIDEO PROCESSOR

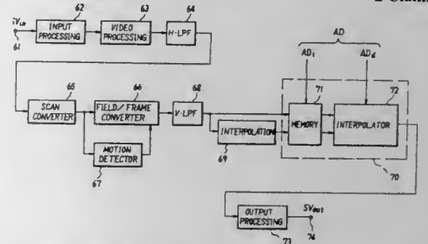
Masafumi Kurashige, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jan. 17, 1995, Ser. No. 372,957

Claims priority, application Japan, Jan. 19, 1994, 6-004098

Int. Cl.[6] H04N *7/01*

U.S. Cl. 348—459 **2 Claims**



1. A video special effect apparatus comprising:

first low-pass filtering means for band-limiting, in a horizontal direction, the bandwidth of an input video signal of a video picture comprised of an odd field signal of odd field pixels and an even field signal of even field pixels;

field/frame converting means for converting the band-limited odd and even field signals band limited by said first low-pass filtering means into a frame signal for one video frame by combining an odd field pixel or an even field pixel with at least a pixel of the odd or even field signals;

second low-pass filtering means for band-limiting, in a direction corresponding to a vertical direction of said input video signal, the bandwidth of said frame signal generated by said field/frame converting means;

mapping processing means having memory means for temporarily storing said frame signal generated by said second low-pass filtering means;

first interpolating means for interpolating data in said frame signal stored in said memory means;

scan converter means coupled between said first low-pass filtering means and said field/frame converting means for reading the band-limited signal from said first low-pass filtering means in a horizontal scanning direction and writing the band-limited signal to said field/frame converting means in a vertical direction; and

second interpolating means for interpolating in a direction corresponding to the vertical direction of said input video signal, the band-limited signal generated by said second low-pass filtering means.

5,646,698

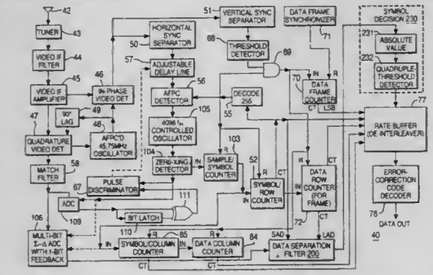
PRE-FRAME-COMB AS WELL AS "PRE-LINE-COMB" PARTIAL-RESPONSE FILTERING OF BPSK BURIED IN A TV SIGNAL

Jian Yang, Bensalem, Pa., and Allen LeRoy Limberg, Ringoes, N.J., assignors to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Division of Ser. No. 179,618, Jan. 5, 1994, Pat. No. 5,563,664. This application Sep. 6, 1996, Ser. No. 708,957

Int. Cl.[6] H04N *7/08*

U.S. Cl. 348—475 **8 Claims**



1. A digital signal receiver for receiving a radio-frequency wave, said radio-frequency wave being modulated in accordance with a start pattern of digital signal during selected intervals of duration each equal to a prescribed period, said radio-frequency wave otherwise being modulated in accordance with the response of a partial-response filter, which said partial-response filter adds modulo-N an N-level first digital signal offered for transmission and that said first digital signal as delayed by said prescribed period, thereby to generate an N-level second digital signal as said response of a partial-response filter, N being a positive integer more than one, said digital signal receiver comprising:

a detector for detecting the modulated radio-frequency wave for supplying a detected signal comprising an N-level third digital signal substantially corresponding to said second digital signal, which said detected signal at least at times further comprises an interfering signal;

a comb filter for subtractively combining said detected signal with said detected signal as delayed by said prescribed period, thereby to generate a comb filter response including a fourth digital signal of more than N levels formed in response to said third digital signal, in said comb filter response said interfering signal is at least partially suppressed;

symbol decision circuitry receptive of said comb filter response and responding to said fourth digital signal therein to generate an N-level fifth digital signal substantially corresponding to said first digital signal except during said selected intervals when said radio-frequency is modulated in accordance with said start pattern of digital signal; and

means for detecting said selected intervals when said radio-frequency is being modulated in accordance with said start pattern of digital signal, said means comprising:

a digital delay line for delaying said fifth digital signal for said prescribed period, thereby to generate an N-level sixth digital signal;

a modulo-N adder for summing said fifth and sixth digital signals, thereby to generate an N-level seventh digital signal in which said start pattern of digital signal is substantially duplicated during said selected intervals when said radio-frequency is being modulated in accordance with said start pattern of digital signal; and

means for correlating said seventh digital signal with said start pattern of digital signal as known a priori at said digital receiver, for generating an indication that said radio-frequency is being modulated in accordance with said start pattern of digital signal when substantial correlation is found during each of said selected intervals.

5,646,699

CDP-INCORPORATED TELEVISION RECEIVER WHICH SELECTS A SIGNAL BASED ON A TYPE OF COMPACT DISK DETECTED

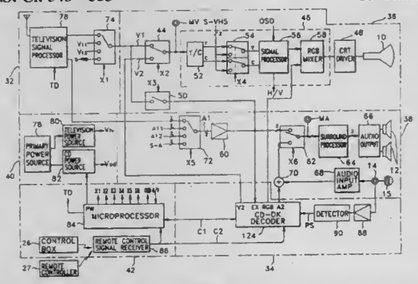
Ji-byoung Oh, Suwon; Moon-hwan Suh, Seoul, and Jang-earn Leim, Suwon, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Jun. 7, 1995, Ser. No. 481,078

Claims priority, application Rep. of Korea, Oct. 20, 1994, 94-26861

Int. Cl.[6] H04N *5/44*

U.S. Cl. 348—553 **13 Claims**



1. A compact disk player (CDP)-incorporated television receiver comprising:

a television signal receiver for receiving a television (TV) signal, detecting audio and video signals from the received signal and outputting detected TV audio and TV video signals;

a compact disk player, having a song accompaniment function, for generating a first control signal, receiving a second control signal input via an instruction input unit, reading data from at least one type of compact disk (CD) if the second control signal indicates a CD mode, and outputting CD audio and CD video signals, wherein said first control signal indicates the type of CD read;

a video signal processor for generating a video processed signal and displaying the processed signal on a display, wherein the video processed signal is generated by receiving and selectively signal-processing the TV video signal and the CD video signal;

an audio signal processor for generating and outputting an audio processed signal via a sound converter, wherein the audio processed signal is generated by receiving and selectively signal-processing the TV audio signal and the CD audio signal;

a power source for receiving power from an external source and generating a power signal for said television signal receiver and a power signal for said compact disk player; and

a television controller for setting said power source in one of a television mode and the compact disk mode selected in response to said second control signal input via the instruction input unit, controlling said video signal processor to select one of the TV video signal and the CD video signal and said audio signal processor to select one of the TV audio signal and the CD audio signal based on the first control signal, and supplying said first control signal to said compact disk player.

5,646,700

SIMULTANEOUS WRITE/READ CONTROL APPARATUS FOR FIRST-IN-FIRST-OUT MEMORY

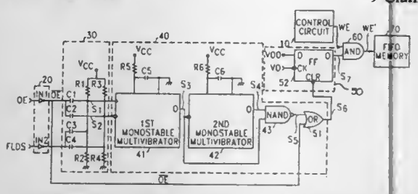
Gi-bok Park, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Feb. 17, 1995, Ser. No. 390,475

Claims priority, application Rep. of Korea, Feb. 17, 1994, 94-2793

Int. Cl.[6] H04N *9/64*

U.S. Cl. 348—718 **9 Claims**



1. A simultaneous write and read control apparatus comprising:

a first-in-first-out (FIFO) memory, having a one-field video data storage capacity, to control a simultaneous write and read operation of video data constituting a single video frame with an odd field and an even field;

control means for controlling write and read operations of said FIFO memory and generating a first write enable signal, using write/read-related control information of the video data having a field flag signal for controlling a write system, a field flag signal for controlling a read system and a vertical sync signal for controlling the write system;

means for receiving the field flag signal for controlling the write system, the field flag signal for controlling the read system and the vertical sync signal for controlling the write system and generating an unwritten interval signal for preventing said FIFO memory from storing the video data; and

means for receiving the first write enable signal and the unwritten interval signal, and generating a second write enable signal to then apply the generated second write enable signal to said FIFO memory, wherein the input video data is not written in said FIFO memory during an unwritten interval designated by the unwritten interval signal and the input video data is written in the FIFO memory during other intervals.

5,646,701

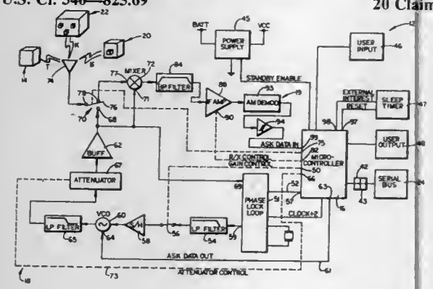
TRAINABLE TRANSMITTER WITH TRANSMIT/RECEIVE SWITCH

Paul C. Duckworth; Kurt A. Dykema, and Mark L. Zeinstra, all of Holland, Mich., assignors to Prince Corporation, Holland, Mich.

Division of Ser. No. 209,947, Mar. 11, 1994, and a continuation-in-part of Ser. No. 567,390, Aug. 14, 1990. This application Apr. 21, 1995, Ser. No. 426,052

Int. Cl.[6] G08C *19/00;* **H04B** *1/06*

U.S. Cl. 340—825.69 **20 Claims**



1. A trainable transceiver system for a vehicle, comprising:

an antenna;

a transceiver operable in one of a plurality of operating modes including a training mode and a signal transmission mode, said transceiver having an input circuit and an output circuit, said input circuit having an input and an output, said input circuit selectively receiving RF signals at said input and responsive thereto for outputting data signals at said output when said transceiver is in the training mode, and said output circuit selectively generating RF signals for actuating a controlled device when said transceiver is in the signal transmission mode, said output circuit having an output at which RF signals are output;

a switch coupled between said output of said output circuit and said antenna, said switch having a control input at which a control signal is input which controls a state of said switch; and

control means coupled to said input circuit, said output circuit and to said switch, for learning the RF carrier frequency and code of signals received from an RF remote control transmitter, storing data representing the learned RF carrier frequency and code, and controlling said switch to disconnect said output of said output circuit from said antenna when said transceiver is operating in the training mode, and for providing the learned RF carrier frequency and code to said output circuit for transmission of an RF signal having the learned RF carrier frequency and code when said transceiver is in said signal transmission mode.

5,646,702

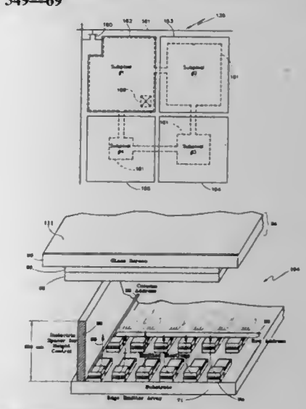
FIELD EMITTER LIQUID CRYSTAL DISPLAY

Akintunde Ibitayo (Tayo) Akinwande, Bloomington, Minn., and Kalluri R. Sarma, Mesa, Ariz., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 31, 1994, Ser. No. 331,771

Int. Cl.[6] G02F *1/1335;1/343*

U.S. Cl. 349—69 **21 Claims**



14. A flat panel display comprising:

a plurality of field emitter arrays;

a plurality of gray-scale liquid crystal pixels on a substrate, each gray-scale liquid crystal pixel being proximate to at least one of said field emitter arrays and wherein said field emitter arrays function as substantially continuous backlights for said gray-scale liquid crystal pixels when said gray-scale liquid crystal pixels are activated; and

a plurality of address lines connected to said plurality of gray-scale liquid crystals.

5,646,703

LIQUID CRYSTAL DISPLAY

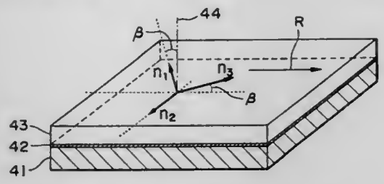
Koh Kamada; Hiroko Kozono; Jun Watanabe, and Kohei Arakawa, all of Kanagawa, Japan, assignors to Fuji Pboto Film Co., Ltd., Minami-ashigara, Japan

Filed Sep. 22, 1994, Ser. No. 310,101

Claims priority, application Japan, Sep. 22, 1993, 5-236539; Apr. 20, 1994, 6-081781; May 31, 1994, 6-118963

Int. Cl.[6] G02F *1/1335;1/1347*

U.S. Cl. 349—118 **21 Claims**



1. A liquid crystal display comprising a liquid crystal cell which comprises a pair of substrates each of which is provided with a transparent electrode and twist-oriented nematic liquid crystal sealed therebetween, a polarizing sheet arranged on each side of the liquid crystal cell, and an optical compensatory sheet provided between at least one side of the liquid crystal cell and the polarizing sheet;

wherein the optical compensatory sheet comprises a transparent support having a negative uniaxial property and a layer provided thereon which is prepared from a discotic liquid crystal of a low molecular weight.

5,646,704

CHIRAL SMECTIC LIQUID CRYSTAL DEVICE HAVING PREDETERMINED PRE-TILT ANGLE AND INTERSECTION ANGLE

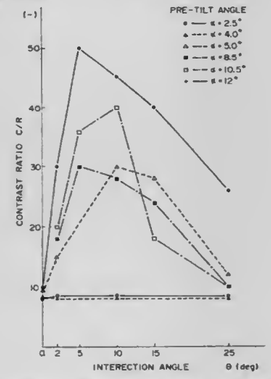
Yasuto Kodera, Fujisawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 42,526, Apr. 5, 1993, abandoned, which is a continuation-in-part of Ser. No. 7,005, Jan. 21, 1993, abandoned, which is a continuation of Ser. No. 603,376, Oct. 26, 1990, abandoned. This application Jan. 17, 1995, Ser. No. 373,539

Claims priority, application Japan, Oct. 26, 1989, 1-277028

Int. Cl.[6] G02F *1/1337;1/141*

U.S. Cl. 349—134 **6 Claims**



1. A chiral smectic liquid crystal device, comprising:

a pair of substrates and a chiral smectic liquid crystal disposed between said substrates, each substrate having thereon (i) a group of electrodes for driving said chiral smectic liquid crystal and (ii) a rubbed organic alignment film forming a liquid crystal aligning surface of the substrate and provided with a uniaxial alignment axis which intersect each other at an intersection angle of 2–25 degrees;

said chiral smectic liquid crystal forming a plurality of smectic layers each composed of plural liquid crystal molecules, each smectic layer being inclined to form angles with respect to the normal of the respective adjacent substrates so as to be bent between the substrates, wherein molecules of said liquid crystal are aligned to provide a director forming a pre-tilt angle of 5–35 degrees with the liquid crystal aligning surfaces of said substrates, and the molecules being placed in a uniform alignment state characterized by symmetrical cone bottom-projected director positions for a first and a second orientation state thereof on both substrates.

5,646,705

ELECTRODE STRUCTURE OF LIQUID CRYSTAL DISPLAY DEVICE AND METHOD OF MANUFACTURING THE LIQUID CRYSTAL DISPLAY DEVICE

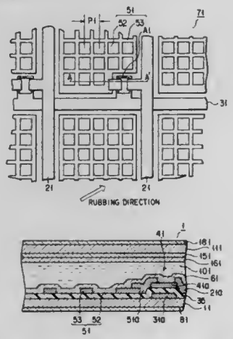
Toyoki Higuchi; Hideo Kawano, both of Yokohama, and Makoto Shibusawa, Odawara, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 950,719, Sep. 25, 1992, abandoned. This application Oct. 31, 1995, Ser. No. 555,223

Claims priority, application Japan, Sep. 26, 1991, 3-246390

Int. Cl.[6] G02F *1/136;1/1343*

U.S. Cl. 349—143 **27 Claims**



1. A liquid crystal display device having a plurality of pixel elements which are arranged in an array for controlling light rays, respectively, comprising:

a first substrate;

a first electrode structure formed on the first substrate, the first substrate having first surface regions arranged in the array;

a second substrate positioned opposing the first substrate with a gap interposed therebetween;

a second electrode structure having second surface regions which are arranged in the array and which oppose the first surface regions, one of the first and second electrode structures being fabricated from a material for preventing the light rays from passing through corresponding surface regions, and having an opening structure with a plurality of openings corresponding to each pixel element for passing the light rays therethrough, the openings having a pitch being in the range from 5 μm to 40 μm; and

a liquid crystal composition filled in the gap between the first and second substrates, the pixel elements being defined by the

liquid crystal composition, the first and the second surface regions.

5,646,706

SPECTACLE LENS HOLDING STRUCTURE

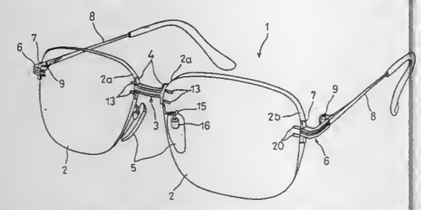
Yukihiro Izumitani, Akiruno, Japan, assignor to Hoya Corporation, Tokyo, Japan

Filed Dec. 7, 1995, Ser. No. 568,514

Claims priority, application Japan, Dec. 21, 1994, 6-318636

Int. Cl.[6] G02C *1/02;5/14;3/00*

U.S. Cl. 351—110 **16 Claims**



1. A spectacle lens holding structure for use in rimless spectacles, comprising:

a lens holding member for holding a spectacle lens, said lens holding member having a surface which is disposed in contact with the spectacle lens and on which a projection is formed, the projection being inserted and fixed in a blind hold formed in an edge surface of the spectacle lens.

5,646,707

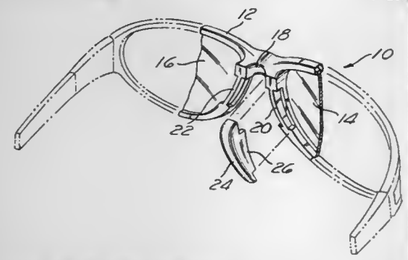
REMOVABLE NOSE PIECE

Gregory F. Arnette, South Laguna Beach, Calif., assignor to Arnette Optic Illusions, Inc., San Clemente, Calif.

Filed Mar. 25, 1996, Ser. No. 622,463

Int. Cl.[6] G02C *5/12*

U.S. Cl. 351—138 **7 Claims**



1. An eyeglass frame comprising:

a) a frame member having a nose accommodation space formed by a left wall thereof and an opposing right wall thereof, with at least a portion of each of said walls configured as an I-beam extending proximally; and

b) a left nose piece and a right nose piece each having a distal channel within which a respective I-beam can be releasably secured to thereby fasten the nose pieces to the left wall and right wall, respectively, of the frame member, with each nose piece having a generally smooth shape and contour generally complimentary to a shape and contour of a nose of a wearer of the eyeglass frame such that the left nose piece rests against a left side of the nose and the right nose piece rests against a right side of said nose.

5,646,708

COUPLING SYSTEM FOR ASSEMBLING A SPECTACLE FRAME AND THE SIDE-PIECES

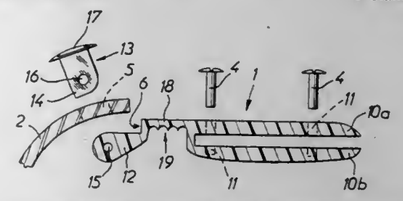
Maurice Bollé, Oyonnax, France, assignor to Establissements Bolle, Oyonnax, France

Filed Sep. 6, 1995, Ser. No. 523,960

Claims priority, application France, Sep. 8, 1994, 94 10571

Int. Cl.[6] G02C *5/22;5/14*

U.S. Cl. 351—153 **8 Claims**



1. A coupling for assembling a spectacle frame and spectacle frame side-pieces, said coupling comprising an elongated piece, shaped on one side to form a claw (**10**) for attaching it to a side-piece (**3**) said elongated piece including a double knuckle (**12**) on a side thereof opposite to the claw, a tenon (**13**) mounted on the spectacle frame forming a pivot connection with the double knuckle on said elongated piece, said elongated piece including a reduced thickness central portion between the claw and the double knuckle, said elongated piece and reduced thickness central portion being constructed of elastic material to enable the claw to pivot in relation to the double knuckle.

5,646,709

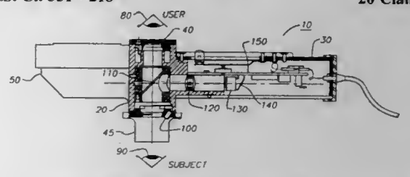
PORTABLE HAND-HELD PUPILLOMETER WITH DYNAMIC ELECTRONIC IMAGE CENTERING AID AND METHOD OF USE THEREOF

Elbert P. Carter, Wilmington, Del., assignor to Fairville Medical Optics, Inc., Mendenhall, Pa.

Filed Apr. 18, 1995, Ser. No. 424,679

Int. Cl.[6] A61B *3/10*

U.S. Cl. 351—218 **20 Claims**



1. A portable, hand-held pupillometer for characterizing a subject's pupil and which is operated by a user comprising:

a hand-held optical unit for dynamically imaging the subject's pupil; and

an electronic centering unit interfaced to the optical unit and operated by the user for centering the subject's pupil on the optical unit in preparation for imaging the subject's pupil.

5,646,710

OPHTHALMOLOGICAL SELF-TEST UNIT FOR EVALUATING MACULAR DEGENERATION

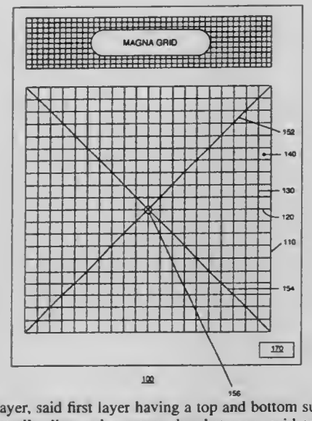
Patrick Caskey, 5111 Foothill Ranch Rd., Santa Rosa, Calif. 95404

Filed Jan. 3, 1996, Ser. No. 582,610

Int. Cl.[6] A61B *3/02;3/00*

U.S. Cl. 351—223 **14 Claims**

1. An ophthalmological self test apparatus for assisting in the daily evaluation of the human eye, the apparatus comprising:



a first layer, said first layer having a top and bottom surface and a centrally disposed aperture therebetween, said top surface having a grid pattern disposed thereon;

focusing means, said focusing means including a light source disposed in said aperture for allowing light to be emitted from said aperture at said top surface, and switching means coupled to said light source for activating said light source; and

a magnetic second layer fixedly attached to said first layer for maintaining said self test apparatus upon attachment to a magnetically permeable surface.

5,646,711

MOTOR-DRIVEN CAMERA

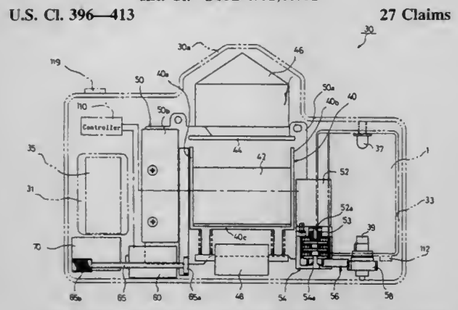
Toshiyuki Kitazawa, and Tomoaki Itabashi, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 5, 1996, Ser. No. 677,379

Claims priority, application Japan, Jul. 6, 1995, 7-171060; Jul. 6, 1995, 7-171061; Jul. 6, 1995, 7-171062

Int. Cl.[6] G03B *1/12;19/12*

U.S. Cl. 396—413 **27 Claims**



1. An SLR camera which uses a film cartridge having a spool, comprising:

a first motor which performs a film advancing operation, in which said first motor rotates said spool to advance a film wound on said spool from said film cartridge, and a film rewinding operation, in which said first motor rotates said spool so as to rewind said film into said film cartridge; and

a second motor which performs a film winding operation, in which said second motor rotates a film take-up spool provided in said SLR camera to wind said film around said film take-up spool, a shutter charging operation, in which a shutter charge is performed, a mirror up operation, in which a quick-return mirror provided in said SLR camera is moved up after a shutter release, and a mirror down operation, in which said quick-return mirror is moved down after said mirror up operation is completed.

5,646,712

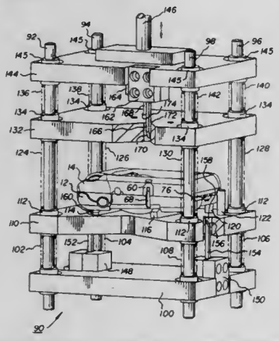
METHOD AND APPARATUS FOR OPENING A CAMERA

Jeffrey Alan Solomon, Spencerport, and Alan James Tubbs, Avon, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 22, 1995, Ser. No. 577,286

Int. Cl.[6] G03B *17/02*

U.S. Cl. 396—535 **20 Claims**



1. A method of opening a camera of a type including a housing for internal camera components, the housing including a cover part and another part, each of said cover part and said other part having a top wall and a bottom wall and first and second opposite end walls; a first cooperating fastener pair extending between said top walls; a second cooperating fastener pair extending between said bottom walls; a third cooperating fastener pair extending between said first end walls; and a fourth cooperating fastener pair extending between said second end walls, said method comprising steps of:

securing said camera in a fixture;

engaging said fastener pairs with tools for releasing said fastener pairs, at least a portion of said tools being cutting chisels and at least a portion of said tools being prying tools;

moving said tools to cause said fastener pairs to release, said cutting chisels moving from back to front of said camera and causing at least a portion of said fastener pairs to be cut open, and said prying tools moving from front to back of said camera and causing at least a portion of said fastener pairs to be prized open; and

separating said cover part and said other part from said camera to permit removal of reusable internal camera components.

5,646,713

APPARATUS AND METHOD FOR EXPOSING DATA CHARACTERS ONTO A STRIP REGION OF MOVING PHOTOSENSITIVE MEDIA

Thomas Foster Powers, Webster; Kenneth Charles Gottschalk, and Charles Robert Gordon, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

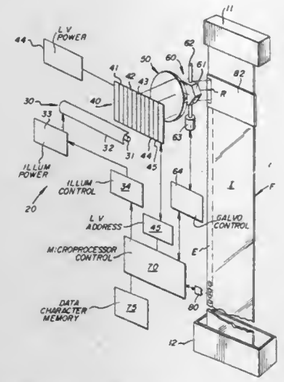
Filed Feb. 16, 1996, Ser. No. 602,435

Int. Cl.[6] G03B *27/52;27/54;27/72*

U.S. Cl. 355—40 **10 Claims**

1. In a photographic film packaging system having means for feeding film strip material along a transport path, an improved system for writing data characters on the edge of such film strip material comprising:

(a) illumination means for directing pulses of flood illumination along an exposure path;



(b) light valve means comprising an x-y pixel matrix which can be addressed to form a plurality of discrete line segment modulator portions located in parallel relation with their ends aligned along a normal to the line segment direction;

(c) means for imaging said modulation portions at an image plane extending across a linear edge strip segment of said film transport path;

(d) means for scanning images of different ones of said modulator portions in succession onto an imaging region located at said linear edge strip segment of said image plane; and

(e) control means for (i) actuating the different modulator portions to selectively pass light for printing a predetermined line segment (ii) driving said scanning means to direct the image of different modulator portions successively onto said imaging region and (iii) triggering said illuminating means to provide a light pulse in synchronism with the drive of said scanning means, whereby successive line segments of character data are exposed in longitudinally stitched relation along the edge of a film moving along said transport path.

5,646,714

LENS SUPPORTING ASSEMBLY

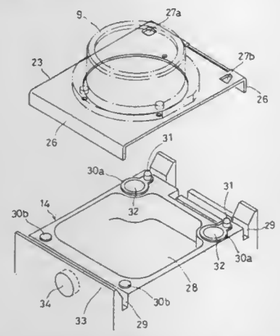
Keiji Morimoto, and Mitsuhiko Itojima, both of Wakayama, Japan, assignors to Noritsu Koki Co., Ltd., Wakayama, Japan

Filed Sep. 13, 1995, Ser. No. 527,804

Claims priority, application Japan, Sep. 13, 1994, 6-218844

Int. Cl.[6] G03B *27/40*

U.S. Cl. 355—55 **1 Claim**



1. A lens supporting assembly for use in a photoprinting machine, said assembly comprising a lens support table having a window for exposure and arranged to extend across an optical axis of exposure light, and a lens plate carrying a printing lens and detachably mounted on said lens support table, said lens plate having bent portions along both side edges thereof and a plurality of positioning holes, said lens support table having a plurality of positioning pins adapted to be inserted in said positioning holes, said lens support table further having a first magnet for attracting the bottom of said lens plate and a second magnet for attracting one of said bent portions.

5,646,715

ILLUMINATING ARRANGEMENT FOR AN OPTICAL SYSTEM HAVING A RETICLE MASKING UNIT

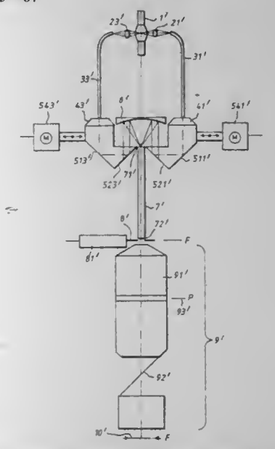
Johannes Wangler, Königsbronn, Germany, assignor to Carl-Zeiss-Stiftung, Heidenheim, Germany

Filed Dec. 8, 1994, Ser. No. 355,157

Claims priority, application Germany, Jun. 17, 1993, 9409744 U; Dec. 13, 1993, 43 42 424.4

Int. Cl.[6] G03F *7/20;* **G02B** *19/00*

U.S. Cl. 355—67 **21 Claims**



1. An illuminating arrangement for an optical system such as for a microlithographic projection apparatus, the illuminating arrangement comprising:

light source means for providing light;

a glass rod for receiving and integrating said light;

said glass rod defining an optical axis and having an exit face; and,

a reticle masking unit mounted at said exit face.

5,646,716

IMAGE RECORDING APPARATUS FOR RECORDING IMAGES FROM A TRANSMISSION-TYPE ORIGINAL

Kanji Nagashima, Kanagawa, Japan, assignor to Fuji Photo Film Co. Ltd., Kanagawa, Japan

Filed Feb. 24, 1995, Ser. No. 394,247

Claims priority, application Japan, Feb. 25, 1994, 6-027843

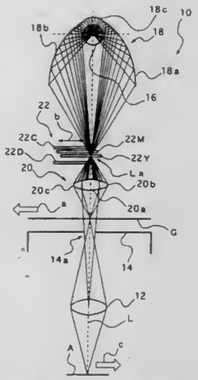
Int. Cl.[6] G03B *27/54*

U.S. Cl. 355—67 **30 Claims**

1. An image recording apparatus for recording an image from a transmission-type original onto a light-receiving material via an imaging lens, comprising:

a light source which emits light to scan said transmission-type original;

a lens that performs one of a converging operation and a collimating operation of said light from said light source onto said transmission-type original; and



a multifocal element, having more than one focus, arranged in an optical path between said lens and said transmission-type original, one foci of said multifocal element being on said transmission-type original.

5,646,717

IMAGE FORMING APPARATUS HAVING CHARGING MEMBER

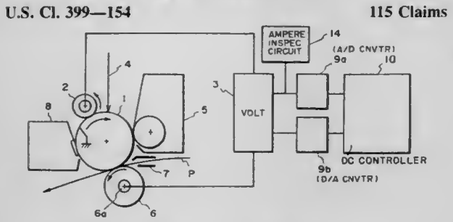
Koichi Hiroshima, Kawasaki; Masahiro Goto, Yokohama; Yoji Serizawa, Kawasaki; Makoto Takeuchi, Tokyo, and Tatsunori Ishiyama, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 140,627, Oct. 25, 1993, abandoned, which is a continuation of Ser. No. 905,117, Jun. 26, 1992, abandoned. This application Feb. 14, 1995, Ser. No. 388,889

Claims priority, application Japan, Jun. 28, 1991, 3-158480; Jun. 28, 1991, 3-185328; Jun. 28, 1991, 3-185330

Int. Cl.[6] G03G *15/16*

U.S. Cl. 399—154 **115 Claims**



1. An image forming apparatus, comprising:

image forming means for forming an image on a recording material, said image forming means including an image bearing member, a charging member and a voltage source for supplying electric power to said charging member; and

determining means for determining a substantial intersection between an actual voltage-current characteristic curve between said charging member and said image bearing member and a predetermined voltage-current line predetermined for said charging member and said image bearing member, and for determining a bias to be applied to said charging member during image forming operation on the basis of the intersection, wherein said predetermined voltage-current line gives a different voltage if a current is different.

5,646,718

CLEANING BLADE FOR USE IN ELECTROPHOTOGRAPHY, PROCESS CARTRIDGE AND IMAGE FORMING APPARATUS

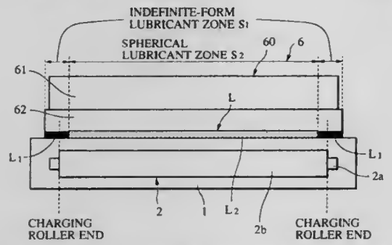
Koichi Suwa, Ushiku; Junichi Kato; Tadashi Onimura, both of Toride; Satoru Inami, Kashiwa; Jun Suzuki, Numazu; Atsutoshi Ando, Kashiwa, and Hiroyasu Seita, Shiga-ken, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 2, 1996, Ser. No. 677,445

Claims priority, application Japan, Jul. 7, 1995, 7-172553

Int. Cl.[6] G03G *15/00*

U.S. Cl. 399—350 **17 Claims**



1. A cleaning device for an electrophotographic apparatus including an image carrier comprising:

a cleaning blade having an edge slidably contactable with said image carrier to remove residual toner and foreign matter remaining on a surface of said image carrier, thereby cleaning said surface;

wherein a lubricant including indefinite-form lubricant particles has been applied to zones on the edge of said cleaning blade, the zones being near both longitudinal ends of said cleaning blade, and a lubricant including spherical lubricant particles has been applied to a zone on the edge of said cleaning blade between the zones to which said lubricant including indefinite-form lubricant particles has been applied.

5,646,719

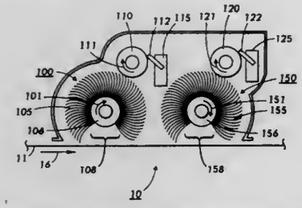
CLEANER-BRUSH HAVING A FIBERLESS SEGMENT

Timothy J. Stephany, Williamson, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 10, 1995, Ser. No. 541,362

Int. Cl.[6] G03G *21/00*

U.S. Cl. 399—287 **9 Claims**



1. A method for cleaning particles from a surface using a cleaner brush capable of motion having a home position, the home position of the cleaner brush preventing cleaning contact between the cleaner brush and the imaging surface, comprising:

positioning the cleaner brush in the home position to prevent contact between the cleaner brush and the imaging surface during developing without retracting the cleaner brush away from the imaging surface;

developing a multi-layered image on the surface;

transferring the multi-layered image from the surface to a media; and

restarting movement of the cleaner brush to remove residual particles from the surface.

5,646,720

LASER PRINTER HAVING A PAPER FEEDING AND TRANSFER DEVICE

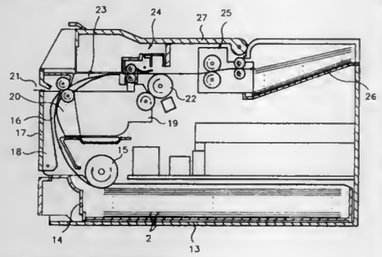
Hyon Myong Song, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Continuation of Ser. No. 263,235, Jun. 21, 1994, abandoned. This application Jul. 11, 1995, Ser. No. 501,151

Claims priority, application Rep. of Korea, Jun. 21, 1993, 10965/1993

Int. Cl.[6] G03G *21/00;* **B65H** *3/44*

U.S. Cl. 399—361 **2 Claims**



1. A laser printer comprising:

a body;

a cassette located in a lower part of the body for loading paper;

a first paper feed roller for drawing paper from the cassette;

a first transfer path along which paper drawn from the cassette is guidingly transported;

an open/close door located at a front side of the body, wherein the door, when opened, exposes the first transfer path;

a first guide part located on an inside surface of the door, wherein the first guide part forms a portion of the first transfer path and guides the paper;

a piece sheet feed opening located at the front side of the body and leading to the first transfer path;

a second transfer path adjacent to the first transfer path;

a drum located below the second transfer path;

a second paper feed roller for transferring paper from the piece sheet feed opening and paper drawn from the cassette, wherein the second paper feed roller is located inside the body opposite the piece sheet feed opening and between the first and second transfer paths;

a print-through part for printing toner on the paper, wherein the print-through part is located above the second transfer path;

a settler for settling the toner printed on the paper, wherein the settler is located next to the print-through part in an upper part of the body; and

a discharge paper tray located in the upper part of the body and opened to the settler.

5,646,721

IMAGE FORMING APPARATUS FOR SUPPLYING POWER TO MEMBERS OF A ROTARY DEVELOPING DEVICE

Kazuyuki Sugihara; Tomoji Ishikawa, both of Yokohama, and Katsuhiro Kosuge, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed May 31, 1995, Ser. No. 455,622

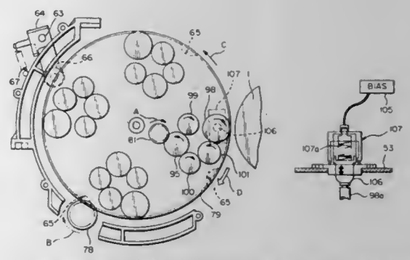
Claims priority, application Japan, Jun. 1, 1994, 6-143817

Int. Cl.[6] G03G *15/00;15/01*

U.S. Cl. 355—326 R **1 Claim**

1. An image forming apparatus having a rotary developing device having a plurality of developing sections arranged around an axis of rotation and rotatable to bring any one of said plurality of developing sections to a developing position where an image carrier is located, said apparatus comprising:

a power input terminal located at a predetermined position on one end of said rotary developing device in an axial direction of said rotary developing device; and



a power output terminal located at a predetermined position on a body of said apparatus which faces a path on which said power input terminal moves during rotation of said rotary developing device;

wherein one of said power input terminal and said power output terminal comprises a hemispherical tip constantly biased toward and retractable from the other terminal, and wherein power is supplied from said body to said developing unit when said hemispherical tip contacts said other terminal by rotation of said rotary developing device.

5,646,722

APPARATUS FOR CANDLING EGGS FOR THE PRESENCE OF BLOOD

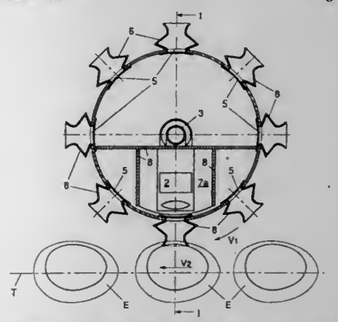
Jelle van der Schoot, Aalten, Netherlands, assignor to FPS Food Processing Systems B.V., Netherlands

Filed Nov. 28, 1995, Ser. No. 556,543

Claims priority, application Netherlands, Nov. 29, 1994, 9402001

Int. Cl.[6] G01N *33/08*

U.S. Cl. 356—53 **8 Claims**



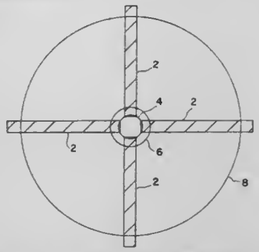
1. An apparatus for candling eggs travelling along a path for the presence of blood, comprising:

at least one light source for shining on an egg being inspected,

detection means for determining the amount of light falling through the egg;

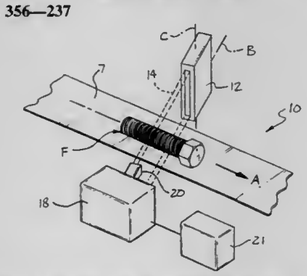
a lightproof drum rotatable around a fixed shaft, the detection means being housed in the drum, the drum having a number of light transmission openings in its surface, each of said openings having a bellows comprising a lightproof material, the drum in operation having a rotational speed such that ends of the bellows remote from the drum have a speed corresponding to speed of travel of the eggs being inspected, the bellows being positioned relative to a path along which the eggs travel such that in operation the bellows connect in a lightproof manner to an egg to be inspected during part of the eggs' travel, the detection means being positioned in the drum so as to only receive light that falls into the drum via the egg which is being inspected and to which the bellows connects, and via the light transmission opening associated with said bellows.

5,646,723
COMBINED EARTH SENSOR
James J. Fallon, Bronxville, N.Y., assignor to Space Sciences Corporation, White Plains, N.Y.
Filed Mar. 13, 1995, Ser. No. 404,181
Int. Cl.[6] G01B *11/26;* **B64G** *1/36;* **G01J** *5/02*
U.S. Cl. 356—139.01 **20 Claims**



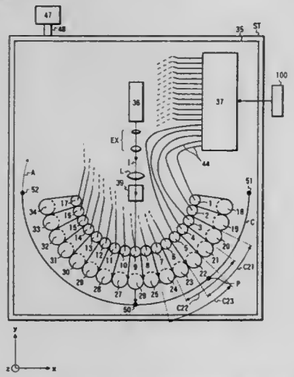
1. An earth horizon sensor for spacecraft orbiting the earth, said sensor comprising:
first visible wavelength sensing means,
second non-visible wavelength sensing means operatively associated with said first visible wavelength sensing means, and
means for selectively controlling the respective operating states of said first and second sensing means such that the attitude of said spacecraft is controlled by said first visible wavelength sensing means during portions of the orbit during which the earth is sun illuminated and the attitude of said spacecraft is controlled by said second non-visible wavelength sensing means during portions of the orbit during which the earth is not sun illuminated.

5,646,724
THREADED PARTS INSPECTION DEVICE
Bruce A. Hershline, Shelby Townership, Mich., assignor to Candid Logic, Inc., Madison Heights, Mich.
Filed Aug. 18, 1995, Ser. No. 521,086
Int. Cl.[6] G01N *21/00*
U.S. Cl. 356—237 **11 Claims**



1. A device for inspecting an elongated threaded fastener, said fastener having a longitudinal axis defined as being central to the fastener and parallel to its length, the inspection of said fastener taking place as it is moved along a path by a carrier means, said device comprising:
a sensor disposed on a first side of said path, said sensor being rotatable about a first axis extending normally to said longitudinal axis;
a source of collimated light disposed on a second, opposing side of said path for producing a light beam defining a thin plane, said light source being rotatable about said first axis to align said light beam with selected features of said threaded fastener a such that a constant quantity of light is cast on to said sensor as said carrier means moves said threaded fastener along said path;
said sensor generating a signal indicative of said constant quantity of light; and
computational means for receiving said signal and determining, on the basis of departures from said constant quantity of light as indicated by said signal, unacceptable deviations in said selected features of said threaded fastener.

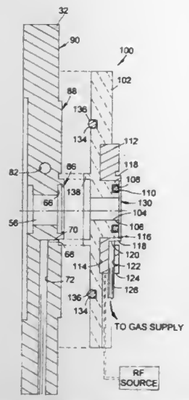
5,646,725
FOREIGN MATTER INSPECTION APPARATUS FOR LARGE-SCALE SUBSTRATE
Tsuneyuki Hagiwara, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan
Filed Dec. 19, 1995, Ser. No. 574,685
Claims priority, application Japan, Dec. 21, 1994, 6-335534
Int. Cl.[6] G01N *21/00*
U.S. Cl. 356—237 **12 Claims**



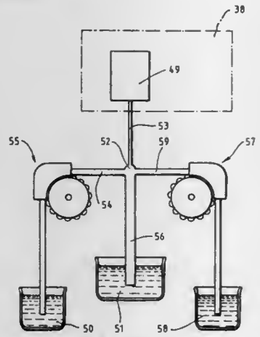
1. A foreign matter inspection apparatus for optically inspecting foreign matter attached to a surface of a substrate on which a pattern is formed, comprising:
an optical scan device for forming an arcuated optical scan line by scanning illumination light on the surface of the substrate;
a moving device for moving the substrate relative to the optical scan line in a predetermined direction;
a light-receiving device for receiving scattered light from the foreign matter attached to the surface of the substrate, and outputting an electrical signal corresponding to an intensity of the scattered light; and
a signal processing device for detecting the foreign matter based on the electrical signal from said light-receiving device,
wherein said light-receiving device comprises a plurality of light-receiving elements which are arranged in an arcuated pattern at positions where said light-receiving elements look into the arcuated optical scan line, and independently output electrical signals corresponding to light intensities of the scattered light, and
each of said plurality of light-receiving elements comprises an optical fiber, an incident end face of which faces the surface of the substrate.

5,646,726
ATMOSPHERIC SEAL FOR GLOW DISCHARGE ANALYTICAL INSTRUMENT
Joel C. Mitchell, Bridgman, and Kim A. Marshall, St. Joseph, both of Mich., assignors to Leco Corporation, St. Joseph, Mich.
Filed Feb. 24, 1995, Ser. No. 394,697
Int. Cl.[6] G01J *31/443;* **G01N** *21/66*
U.S. Cl. 356—311 **18 Claims**

1. An apparatus for preventing atmospheric gases from passing between a glow discharge lamp assembly and a sample placed against the glow discharge lamp assembly, comprising in combination at least one passage defined in a face of the glow discharge lamp assembly receiving the sample for dispensing a predetermined gas about the sample.

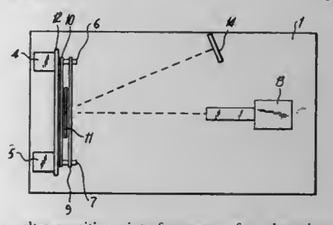


5,646,727
PERISTALTIC PUMP
Michael Ron Hammer, Sassafras; Christopher John Park, Mulgrave; Brian Lawrence Allen, Berwick, and Thomas Robert Turney, Olinda, all of Australia, assignors to Varian Associates, Inc., Palo Alto, Calif.
Filed Jan. 24, 1995, Ser. No. 378,028
Int. Cl.[6] G01J *3/30*
U.S. Cl. 356—315 **5 Claims**



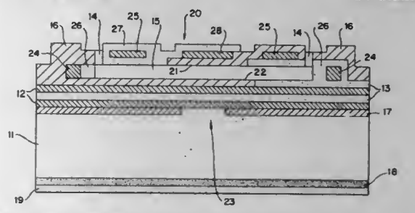
1. A system for delivering a sample for analysis to spectroscopic apparatus, comprising a peristaltic pump for supplying a stream of sample solution at a selectable flow rate to a first inlet port of a fluid stream combiner, said combiner having a second inlet port communicating through a feed passage of relatively large cross-sectional area with a source of diluent, the outlet of said fluid combiner communicating through a feed passage of relatively small cross sectional area with a nebulizer of said spectroscopic apparatus wherein substantially all of the pressure drop in the system occurs across the feed passage of relatively small cross sectional area and a substantially constant flow rate therethrough is determined by the natural aspiration of said nebulizer, and whereby upon variation of said flow rate of sample, the stream of said diluent varies to maintain said constant flow rate through said outlet feed passage to said nebulizer.

5,646,728
ULTRASENSITIVE INTERFEROMETER SUITABLE FOR DETECTING GRAVITATIONAL WAVES
Constantin Coutsomitros, Ranco, Italy, assignor to European Economic Community (EEC), Luxembourg, Luxembourg
PCT No. PCT/EP94/00050, § 371 Date Jul. 17, 1995, § 102(e) Date Jul. 17, 1995, PCT Pub. No. WO94/16296, PCT Pub. Date Jul. 21, 1994
PCT Filed Jan. 10, 1994, Ser. No. 495,605
Claims priority, application Luxembourg, Jan. 15, 1993, 88211
Int. Cl.[6] G01B *9/02*
U.S. Cl. 356—352 **5 Claims**



1. An ultra-sensitive interferometer for detecting micro-vibrations in a body comprising:
(a) an assembly of two three-dimensional interferometric networks and a glass plate positioned between the two networks and protruding therefrom, a thin layer of air being entrapped at the interfaces between the glass plate and said networks, the region of overlap between the two networks and the glass plate defining an optical cavity, the portion of said glass plate protruding from the optical cavity contacting said body and the two interferometric networks resting by gravity on supports integral with said body;
(b) a coherent light source illuminating the optical cavity through one of the two interferometric networks so that interference patterns will be generated by the effect of vibrations in said body on the entrapped layers of air; and
(c) a device to display the interference patterns contained within the coherent light reflected from the optical cavity.

5,646,729
SINGLE-CHANNEL GAS CONCENTRATION MEASUREMENT METHOD AND APPARATUS USING A SHORT-RESONATOR FABRY-PEROT INTERFEROMETER
Yrjö Koskinen; Ari Lehto, both of Helsinki, Finland; Simo Tammela, Espoo; Martti Blomberg, Vantaa; Markku Orpana, Espoo, and Altti Torkkeli, Espoo, all of Finland, assignors to Vaisala Oy, Helsinki, Finland
Continuation of Ser. No. 177,404, Jan. 5, 1994, abandoned. This application Dec. 18, 1995, Ser. No. 573,759
Claims priority, application Finland, Jan. 13, 1993, 930127
Int. Cl.[6] G01B *9/02;* **G02B** *27/00*
U.S. Cl. 356—352 **14 Claims**



6. A single-channel infrared gas concentration measurement apparatus, comprising:
a measuring
a radiant source for generating a measuring signal;

a measurement object containing a gas mixture to be measured and through which said measuring signal is sent;

a variable bandpass filter for bandpass filtering of the measuring signal on at least two passband wavelengths, said bandpass filter being implemented by means of a single electrostatically tunable, short-resonator Fabry-Perot interferometer fabricated by surface micromachining techniques and having upper and lower resonator mirrors with a distance between said mirrors being equal to n $\lambda/2$ where n is from 1 to 3, said interferometer further having an aperture integrally provided in an interferometer structure and located adjacent to a side of said lower mirror which is opposite said upper mirror, said aperture being filled with silicon substrate; and

a detector suited for detecting said filtered measuring signals.

5,646,730

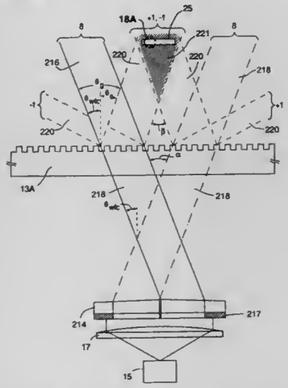
RELATIVE MOVEMENT DETECTING APPARATUS USING A DETECTOR POSITIONED IN A REGION OF NATURAL INTERFERENCE

Donald K. Mitchell, Newton, and William G. Thorburn, Whitinsville, both of Mass., assignors to MicroE, Inc., Needham Heights, Mass.

Continuation of Ser. No. 394,224, Feb. 24, 1995, Pat. No. 5,486,923, which is a continuation of Ser. No. 250,666, May 27, 1994, abandoned, which is a continuation-in-part of Ser. No. 878,494, May 5, 1992, abandoned. This application Jan. 23, 1996, Ser. No. 590,203

Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—356 **17 Claims**



1. An apparatus for detecting relative movement comprising

a diffraction grating relatively movable with respect to a source and having a period P and a characteristic which diffracts light at a preselected wavelength λ into positive and negative diffraction orders which interfere with one another in a region of natural interference adjacent the diffraction grating;

means for illuminating with first and second beams of light of wavelength λ a region of said diffraction grating;

a periodic detector having a sensing plane positioned within the region of natural interference of the diffraction grating between positive and negative diffraction orders from the first and second beams of light;

wherein the periodic detector has a period which is a function of the preselected wavelength λ and the period P of the diffraction grating, wherein the periodic detector provides an output signal in response to light incident thereon, whereby the periodic detector responds principally to interference at said sensing plane between the positive and negative diffraction orders diffracted from said diffraction grating.

5,646,731

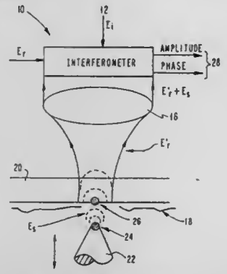
INTERFEROMETRIC DETECTING/IMAGING METHOD BASED ON MULTI-POLE SENSING

Hemantha Kumar Wickramasinghe, Chappaqua; Frederic Zenhausern, Mohegan Lake; Yves Martin, Ossining, and Martin Patrick O'Boyle, Peekskill, all of N.Y., assignors to International Business Machines Corportion, Armonk, N.Y.

Filed Aug. 4, 1995, Ser. No. 511,166

Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—357 **12 Claims**



1. A method for detecting the presence of a workpiece, the method comprising the steps of:

1) sampling an electromagnetic wave packet representative of workpiece properties and comprising encoded wave information derivable from a multi-pole interactive coupling between a probe and the workpiece;

2) decoding said electromagnetic wave packet by interrogating at least one of its phase and amplitude information using an interference reference wave; and,

3) using said decoding information as a means for detecting the presence of said workpiece.

5,646,732

COORDINATE MEASURING SYSTEM

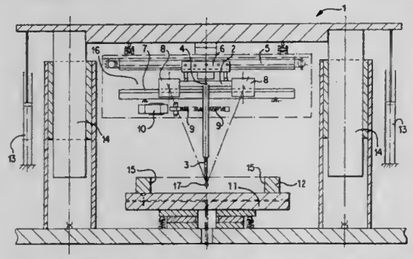
Dieter Gerlach, An den Teichen 11a, D.-31177 Harsum, Germany

Filed Apr. 22, 1996, Ser. No. 639,103

Claims priority, application Germany, Apr. 21, 1995, 195 14 815.0

Int. Cl.[6] G01B *11/03;21/04*

U.S. Cl. 356—373 **5 Claims**



1. A coordinate measuring system comprising a pair of pickup heads on a carriage which is movable on a guide unit along a scale associated with the pickup heads, and a scanner for measuring a workpiece, said scanner being mounted on a rotatable body which is arranged to be pivotable about an axis on the carriage, wherein the pickup heads are mounted on the rotating body on both sides of the axis and are spaced a distance from the scale and from the axis; and said pickup heads comprise cameras for determining the longitudinal movement of the carriage and the rotation of the rotating body, in which cameras specific markings on the scale are projected by an optical system onto a focal plane formed by a CCD cell; the position and height of the projection center of the pickup heads being determined by means of a computer from measurement signals from the cameras, such that during the measurement procedure the rotating body is displaced parallel to the scale, whereby for rough positioning one coordinate is detected and evaluated as the dimension lengthwise of the scale; and after the scanner is placed in contact with a surface of the workpiece, the rotating body pivots about the axis, and in order to achieve fine positioning a coordinate is detected and evaluated as a measure of the distance between the pickup heads and the scale.

5,646,733

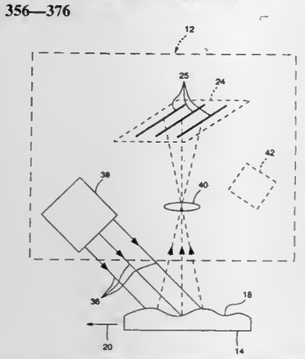
SCANNING PHASE MEASURING METHOD AND SYSTEM FOR AN OBJECT AT A VISION STATION

Leonard H. Bieman, Farmington Hills, Mich., assignor to Medar, Inc., Farmington Hills, Mich.

Filed Jan. 29, 1996, Ser. No. 593,095

Int. Cl.[6] G01B *11/24*

U.S. Cl. 356—376 **27 Claims**



1. A method for high speed, scanning phase measuring of an object at a vision station to develop physical information associated with the object, the method comprising the steps of:

projecting a pattern of imagable electromagnetic radiation with at least one projector;

moving the object relative to the at least one projector at a substantially constant velocity at the vision station so as to scan the projected pattern of electromagnetic radiation across a surface of the object to generate an imagable electromagnetic radiation signal;

receiving the imagable electromagnetic radiation signal from the surface of the object with a detector having a plurality of separate detector elements which are substantially uniformly spaced;

maintaining the at least one projector and the detector in a substantially fixed relation to each other;

measuring an amount of radiant energy in the received electromagnetic radiation signal with the detector wherein each of the detector elements produce an image having a different phase of the same scanned surface based on the measurement; and

computing phase values and amplitude values for the different phases from the multiple images.

5,646,734

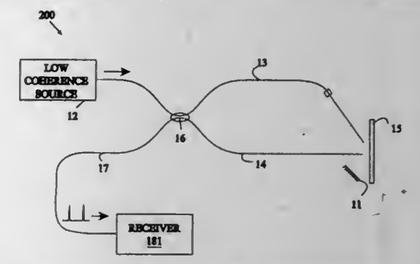
METHOD AND APPARATUS FOR INDEPENDENTLY MEASURING THE THICKNESS AND INDEX OF REFRACTION OF FILMS USING LOW COHERENCE REFLECTOMETRY

Shalini Venkatesh, Santa Clara, and Wayne V. Sorin, Mountain View, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 28, 1995, Ser. No. 520,200

Int. Cl.[6] G01B *9/02;11/06*

U.S. Cl. 356—382 **8 Claims**



1. An apparatus for measuring the thickness of a transparent film having top and bottom surfaces, said apparatus comprising:

means for generating a first probe light signal and a second probe light signal from a low coherence light source;

first directing means for directing said first probe light signal toward said top surface of said film at a first angle of incidence and for collecting light leaving said top surface of said film;

second directing means for directing said second probe light signal toward said top surface of said film at a second angle of incidence different from said first angle of incidence and for collecting light leaving said top surface of said film;

means for combining said light collected by said first directing means and said second directing means to form a collected light signal; and

a receiver for receiving said collected light signal and for determining the time delay between light reflected from said top and bottom surfaces of said film from said collected light signal.

5,646,735

HAND-HELD INSTRUMENT FOR REFLECTION MEASURING OF OPTICAL DENSITY AND COLOR ON PRINTED SHEETS

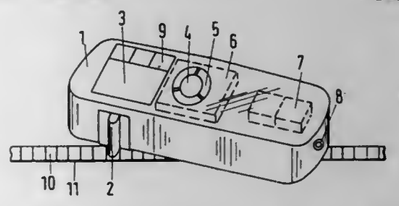
Harald Krzyminski, Wiesbadener Strasse 27, D-61462 Konigstein, Germany

Filed Oct. 4, 1995, Ser. No. 539,174

Claims priority, application Germany, Oct. 7, 1994, 44 35 893.8

Int. Cl.[6] G01J *3/46*

U.S. Cl. 356—402 **7 Claims**



1. A hand-held instrument for reflection measuring of optical density and colour on a printed sheet, comprising:

an instrument housing;

a measuring head and an electronic control unit provided in the housing for converting the values measured in the measuring plane of the printed sheet;

an electronic computer input system connected to the electronic control unit in the housing, said computer input system including at least one click knob operable externally on the housing, and a control element for the inputs to the computer input system; and

a junction box for an interface for transmission of the measured data converted into signals in the electronic control unit to a computer.

5,646,736

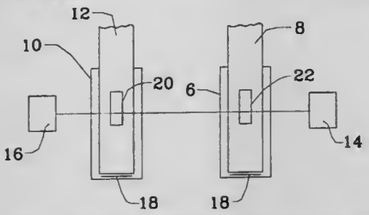
ANALYTICAL APPARATUS WITH CODED ELEMENTS

Gordon A. Rampy, Warrenton, Va.; Rame Bull, Schaumburg, Ill.; Henry Castañeda, Woodbridge, Va.; Teresa A. Neale, Bealeton, Va.; G. Neil Spokes, Marshall, Va., and Edgar Watson, Jr., Grayslake, Ill., assignors to CHEMetrics, Inc., Calverton, Va.

Filed Dec. 19, 1995, Ser. No. 574,515

Int. Cl.[6] G01N *21/25*

U.S. Cl. 356—419 **12 Claims**



1. A filter assembly for use in automatic chemical analysis comprising:

optical filter means for passing only selected frequencies of light appropriate for a selected chemical analysis and adapted to be received by a photometric instrument for conducting said selected chemical analysis, and

readable code means affixed to said optical filter means and having thereon a code readable by said instrument, said code corresponding to said selected chemical analysis to be performed, for selecting said selected chemical analysis to be made on the basis of said code.

5,646,737

DEVICE AND METHOD FOR OPTIMIZING A GIVEN PARAMETER IN A PROCESS OF COATING A SUPPORT WITH A LIQUID COMPOSITION

Christophe Georges Claude Levarlet, Saint Germain du Plain, France; Douglas Scott Finnicum, Webster, and Robert Richard Quiel, Penfield, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 13, 1996, Ser. No. 645,466

Claims priority, application France, Jul. 7, 1995, 95 08575

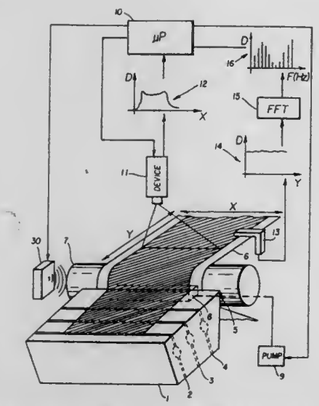
Int. Cl.[6] G01N *21/84*

U.S. Cl. 356—429 **25 Claims**

1. Device for optimizing a given parameter of a process of coating, with a liquid composition, a support driven along its longitudinal axis, the device comprising:

a) means for varying the said parameter according to a predetermined profile;

b) first detection means for producing a first density profile for the support across the width of the said support, after the liquid composition has been deposited and as the parameter varies;



c) second detection means for producing a second density profile for the support parallel to the said longitudinal axis, after the liquid composition has been deposited and as the parameter varies; and

d) means for analyzing said first and second density profiles and determining a range of values for said parameter for which said first and second profiles are satisfactory.

5,646,738

SYSTEM FOR DETERMINING DAMPENING WATER FOR AN OFFSET PRESS USING CONVENTIONAL CATOPTRIC LIGHT INTENSITY

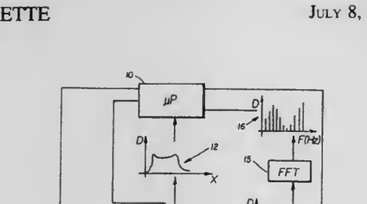
Yoshinori Honkawa, and Takashi Sakaguchi, both of Fuchu, Japan, assignors to Ryobi, Ltd., Japan

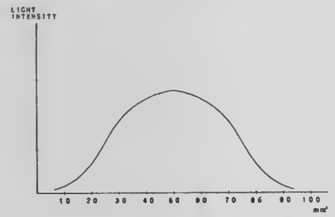
Continuation of Ser. No. 360,009, Dec. 20, 1994, abandoned. This application Aug. 29, 1996, Ser. No. 705,069

Claims priority, application Japan, Dec. 20, 1993, 5-320044

Int. Cl.[6] G01N *21/55;21/85*

U.S. Cl. 356—445 **15 Claims**





1. A dampening volume sensing device for an offset press comprising:

means for radiating light on a plate held on a plate cylinder upon receiving a radiation start signal, so as to form an irradiated area on said plate;

means for sensing substantially only conventional catoptric light reflected from said irradiated area and for generating a sensed signal representing a conventional catoptric light intensity; and

calculating means for computing a dampening volume based on said sensed signal from said sensing means and for generating a dampening volume signal, not based on unconventional catoptric light, said radiating means being positioned with the device so that an incident angle of said radiating light respect to a surface of said irradiated area is made predetermined angle sufficient for changing said conventional catoptric light intensity sensed by said sensing means in accordance with said dampening volume signal, the irradiated area having a size from 10 mm^2 to 90 mm^2 that is selected so that the conventional catoptric light can be sensed by the means for sensing irrespective of a grainy form of the plate.

5,646,739

PRINT DEVICE HAVING A RECORDING MATRIX SWITCHING DEVICE

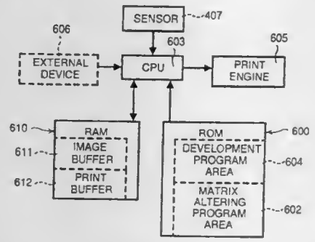
Sunao Kawai, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Feb. 22, 1995, Ser. No. 392,113

Claims priority, application Japan, Mar. 2, 1994, 6-032124

Int. Cl.[6] H04N *1/04;1/40*

U.S. Cl. 358—296 **19 Claims**



1. A printing device for image printing in which output dots are suitably arranged within a recording matrix, the recording matrix corresponding to a picture element of an image to be printed, and image data is converted to binary data, the printing device comprising:

identifying means for identifying a sheet printing direction; and

threshold value altering means for altering threshold values of the prescribed recording matrix based on the sheet printing direction identified by said identifying means.

5,646,740

PARTIAL OR UNTIMED PRODUCTION TREES TO SPECIFY DIAGNOSTICS OPERATIONS REQUIRING MULTIPLE MODULE COOPERATION

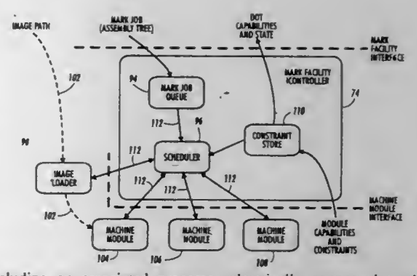
Marc W. Webster, Rochester; David W. Covert, Ontario, and Douglas T. Rabjohns, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 6, 1995, Ser. No. 567,822

Int. Cl.[6] G06K *15/00*

U.S. Cl. 358—296 **23 Claims**

1. In an electronic image processing apparatus comprising a controller and a plurality of machine modules, each of the modules including an associated processor electrically connected to the controller, each of the processors storing data related to operational capabilities of the associated module, a method of operation of the image processing apparatus in a diagnostic mode comprising the steps of:



receiving in the controller a diagnostic requirement having a module independent element and a module specific element,

interrogating the machine modules to determine the interconnection and capabilities of each of the machine modules,

setting up the modules identified by the module specific element,

converting the module independent element into a selection of modules to support the modules identified by the module specific element, and

coordinating the machine modules to complete the diagnostic requirement.

5,646,741

IMAGE PROCESSING APPARATUS AND METHOD CAPABLE OF SMOOTHING IMAGE DATA IN ACCORDANCE WITH AN IMAGE ENLARGEMENT/ REDUCTION RATIO

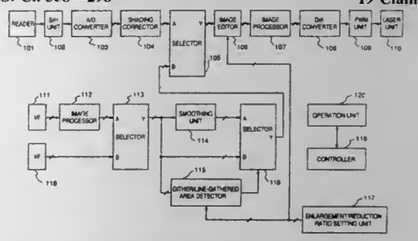
Izuru Horiuchi, Machida, and Kazuyoshi Suzuki, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 22, 1995, Ser. No. 394,164

Claims priority, application Japan, Feb. 25, 1994, 6-028063

Int. Cl.[6] H04N *1/40;* **G06K** *9/42*

U.S. Cl. 358—298 **19 Claims**



1. An image processing apparatus comprising:

smoothing means for smoothing input image data;

judgment means for judging whether or not smoothing is to be performed on each pixel of the image data, in accordance with a pattern of a predetermined area of the image data and an image enlargement/reduction ratio; and

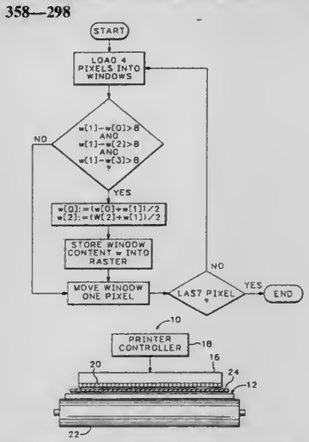
output means for selecting a pixel smoothed by said smoothing means or a pixel not smoothed, in accordance with the result from judgment by said judgment means, and outputting the selected image data.

5,646,742

SYSTEM FOR ADJUSTING COLOR INTENSITY OF NEIGHBORING PIXELS

Jeffery J. Clark, Tigard; Brian G. Crosby, Tualatin; Bo Lewendal, Beaverton, and Gregory P. Thornton, Tigard, all of Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

Continuation of Ser. No. 919,864, Jul. 27, 1992, abandoned.
This application Apr. 24, 1995, Ser. No. 428,396
Int. Cl.[6] H04N *1/40;1/409;1/46;* G01D *15/10*
U.S. Cl. 358—298 21 Claims



1. A system for printing an image comprising a plurality of pixels onto a substrate, comprising:

a print head which selectively deposits a colorant onto said substrate in response to print commands: and

a programmable print controller which determines a first difference in color intensity between a second pixel and a first pixel in said image, determines a second difference in color intensity between the second pixel and a third pixel in said image, determines a third difference in color intensity between the second pixel and a fourth pixel in said image, adjusts the color intensity of the first pixel and the color intensity of the third pixel if said first, second and third differences in color intensity each exceeds a predetermined threshold value, and sends a print command to said print head instructing said print head to deposit the colorant onto said first pixel on the substrate according to said adjusted color intensity of said first pixel and to deposit the colorant onto said third pixel on the substrate according to said adjusted color intensity of said third pixel so as to enhance the appearance of the image on the substrate.

5,646,743

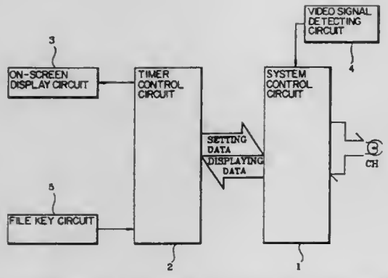
METHOD FOR FORMATTING A VIDEOTAPE AND RECORDING/REPRODUCING TO/FROM THE FORMATTED VIDEOTAPE

Kwang Kook Kim, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Feb. 6, 1992, Ser. No. 831,962
Claims priority, application Rep. of Korea, Feb. 6, 1991, 91-2032
Int. Cl.[6] H04N *5/782*
U.S. Cl. 386—57 5 Claims

1. A method of formatting a videotape and recording/reproducing to/from the formatted tape, including steps of:

(a) recognizing a formatting mode, under which a blank tape is formatted, when a formatting key is received;



(b) carrying out a formatting operation, after said formatting mode is recognized in said step (a), by recording index signals at the beginning of each of a plurality of equal length areas of the tape, said plurality being determined by a user-input number;

(c) recognizing a recording/reproducing mode, under which a formatted videotape is either recorded to or reproduced from at a user-chosen location, when a file key is received;

(d) carrying out a recording operation at said user-chosen location when a record command is received, after said recording/reproducing mode is recognized in said step (c), by receiving a user-input number corresponding to said user-chosen location on the tape; and

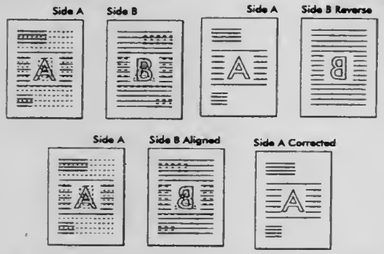
(e) carrying out a reproducing operation at said user-chosen location when a reproduction command is received, after said recording/reproducing mode is recognized in said step (c), by receiving a user-input number corresponding to said user-chosen location on the tape.

5,646,744

SHOW-THROUGH CORRECTION FOR TWO-SIDED DOCUMENTS

Keith T. Knox, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 11, 1996, Ser. No. 584,792
Int. Cl.[6] H04N *1/23;1/38;1/387*
U.S. Cl. 358—401 22 Claims



1. An image processing method for mitigating the effects of show-through in scanning a duplexed document in a duplex scanning system, including:

deriving a scanned first side image P from a first side image A of a duplexed document and a scanned second side image Q from a second side image B of the duplexed document, at least the first side image P including a component thereof attributable to show-through from the second side of the document, and storing images P and Q;

from second side image Q, generating a representation thereof corresponding to the show-through contribution to first side image P;

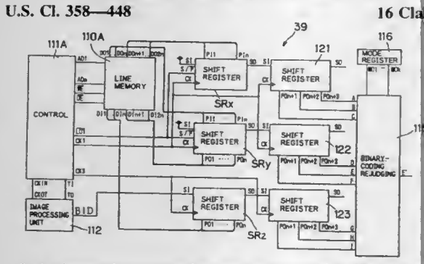
processing image P to remove show-through as a function of the representation Q, thereby deriving correct image A.

5,646,745

IMAGE DATA PROCESSING APPARATUS HAVING LINE MEMORY

Tetsuji Kajitani; Ariyoshi Hikosaka, both of Osaka; Hideo Azumai, Toyonaka, and Satoshi Iwatsubo, Osaka, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Jul. 12, 1993, Ser. No. 89,327
Claims priority, application Japan, Jul. 13, 1992, 4-209650; Jul. 13, 1992, 4-209674; Jul. 13, 1992, 4-209675
Int. Cl.[6] H04N *1/40;* H01J *1/00;* G06F *12/00*
U.S. Cl. 358—448 16 Claims



2. An image data processing apparatus to which data pixels on each of a plurality of scanning lines, are sequentially supplied, said apparatus performing predetermined processing with data corresponding to three lines and representative of nine pixels that constitute a 3×3 pixel matrix, the three line corresponding data including data corresponding to a present line to which pixels represented by the supplied data belong, data corresponding to a line scanned one line ahead of the present line, and data corresponding to a line scanned two lines ahead of the present line, said 3×3 pixel matrix being centered with respect to a target pixel belonging to said line scanned one line ahead of the present line, said apparatus comprising:

storing means, having a data capacity corresponding to two lines, for storing data representative of pixels corresponding to the line scanned one line ahead of the present line and the line scanned two lines ahead of the present line;

reading means for sequentially reading out, from the storing means, data representative of pixels belonging to the lines scanned one line and two lines ahead of the present line to provide read data, the reading out means reading out data representative of a pixel belonging to the line scanned one line ahead of the present line in parallel with data representative of a pixel belonging to the line scanned two lines ahead of the present line;

processing means, to which said read data representative of the pixels belonging to the lines scanned one line and two lines ahead of the present line and the data representative of the pixels belonging to the present line are applied, for subjecting data representative of the target pixel to the predetermined processing based upon predetermined data from among the data representative of the nine pixels constituting said 3×3 pixel matrix; and

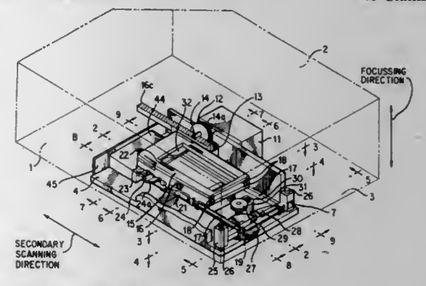
writing means for writing the supplied data representative of the pixels belonging to the present line to storage locations from which data representative of the pixels belonging to the line scanned two lines ahead of the present line have been read out from said storing means before the reading means reads out, from the storing means, all data representative of pixels belonging to the line scanned two lines ahead of the present line.

5,646,746

IMAGE INPUT DEVICE HAVING CARRIAGE THAT INCLUDES A MOVABLE ORIGIN DETECTOR

Masashi Tazawa, Kanagawa-ken; Toru Ochiai, Chiba-ken; Toshiya Aikawa, Kanagawa-ken; Eisaku Maeda, and Maki Suzuki, both of Chiba-ken, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Oct. 19, 1994, Ser. No. 325,572
Claims priority, application Japan, Oct. 27, 1993, 5-291376; Nov. 24, 1993, 5-317415
Int. Cl.[6] H04N *1/04*
U.S. Cl. 358—471 40 Claims



1. An image input device comprising:

an illumination source that generates an area of light extending in a primary scanning direction and travelling along an optical axis;

a carriage that is movable in a secondary scanning direction that intersects to said primary scanning direction, said carriage intersecting said optical axis so that said area of light is transmitted to said carriage;

an image reading device that receives light transmitted to the carriage and outputs a signal based on said received light; and

an origin detection element movably attached to said carriage, said origin detection element being movable between a first position when no document is located in said carriage and a second position when the document is inserted in said carriage, said first position being located in a document insertion path of the carriage, said second position being outside of said insertion path, said carriage being movable to a position where said origin detection element intersects said optical axis when no document is inserted in said carriage.

5,646,747

FILM IMAGE INPUT APPARATUS HAVING CURVED FILM GUIDE MEMBER

Shoji Watanabe; Makoto Nakazawa, and Sueo Itoh, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 19, 1995, Ser. No. 424,197
Claims priority, application Japan, Apr. 25, 1994, 6-086520
Int. Cl.[6] H04N *1/04*
U.S. Cl. 358—487 8 Claims

1. A film image input apparatus comprising:

film feed means which feeds a developed still photographic film in a continuous form in a longitudinal direction;

curved guide means for contacting said photographic film being fed and straightening said photographic film curling in a cross direction by curving said photographic film in a longitudinal direction;

a light source for illuminating an image of said photographic film which has been straightened by said guide means; and,

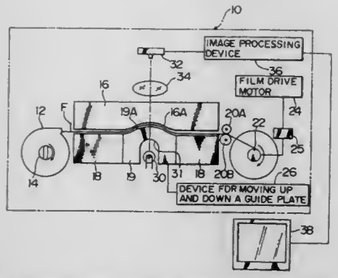


image pickup means provided opposite to said light source across said fed photographic film, for reading out the image of said photographic film through a taking lens.

5,646,748

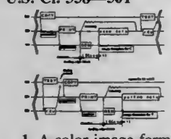
Patent Not Issued For This Number

5,646,749

COLOR IMAGE FORMING APPARATUS

Kyoji Omi, Kawasaki, and Yasumori Nagahara, Fujisawa, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Mar. 19, 1996, Ser. No. 618,152
Claims priority, application Japan, Mar. 20, 1995, 7-060266
Int. Cl.[6] H04N *1/50*
U.S. Cl. 358—501 **11 Claims**



1. A color image forming apparatus, comprising:

an image data input device receiving color image data for one page in a form divided into a plurality of data for each of a corresponding plurality of colors;

an image forming device converting image data for each of the plurality of colors to a visible image; and

a printer controller receiving image data for each of the plurality of colors at an irregular interval and driving the image forming device, upon receiving the image data for one color, to form an image of the one color whose data has been received, and after completing image formation for all of the plurality of colors, forming a final image and outputting the final image on a recording media as a visible image.

5,646,750

METHOD AND APPARATUS FOR COMPRESSING VIDEO IN A MANNER CHARACTERISTIC OF PHOTOGRAPHIC FILM

David C. Collier, Gilroy, Calif., assignor to Sony Corporation, Tokyo, Japan, and Sony Electronics, Inc., Park Ridge, N.J.

Continuation-in-part of Ser. No. 710,704, Jun. 5, 1991, Pat. No. 5,255,083. This application Oct. 12, 1993, Ser. No. 135,269
Int. Cl.[6] H04N *1/46*
U.S. Cl. 358—518 **20 Claims**

1. A method for performing film-like compression on a video signal, including the steps of:

(a) supplying the video signal to a compression means; and

(b) performing film-like compression on the video signal in the compression means in accordance with a film-like compression function, thereby generating a compressed video signal from the video signal, wherein the video signal comprises pixels having relative scene luminance values L, the compressed video signal comprises modified pixels having video levels V, and the film-like compression function is the inverse of:

$$L = \left[\frac{1}{1 - \left(\frac{V + V_s}{V_{max}} \right)^{\beta}} \right]^{m} V^n$$

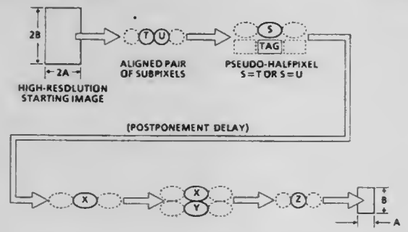
where "m" is a parameter, "V_s" is an offset parameter "V_{max}" is a maximum video level parameter, "n" is a parameter equal to the inverse of a gamma parameter, and "β" is a shoulder curvature parameter.

5,646,751

ENCODING METHOD FOR DEFERRED ANTI-ALIASING

Margaret Motamed, Redondo Beach, and Jeffrey N. Kellman, Hawthorne, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed May 25, 1995, Ser. No. 452,625
Int. Cl.[6] G03F *3/08;* **H04N** *1/46*
U.S. Cl. 358—518 **2 Claims**



1. A method of scanning a picture, the pixels of said picture being in a plurality of input color spaces and a plurality of input pixel densities, to produce a scanline of pixels comprising previous, current and next pixels, and displaying said scanline in a single output color space and a single output pixel density, the processing of each current pixel comprising the steps of:

scanning said picture to generate said scanline of pixels in said plurality of color spaces and said plurality of pixel densities,

replicating and then resampling said pixels to generate a scanline of aligned pairs of subpixels in said single output pixel density,

converting each said aligned pair of subpixels into a pseudo-halfpixel by deleting one subpixel and adding a tag which identifies either the previous, the current, or the next pseudo-halfpixel,

converting said pseudo-halfpixel into the said single output color space,

averaging the converted pseudo-halfpixel with the pseudo-halfpixel identified by said tag to produce a halfpixel, and

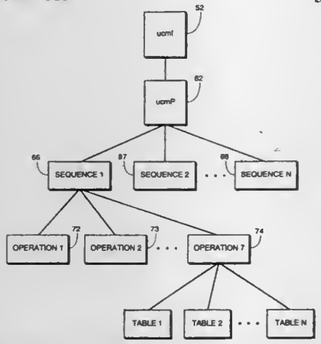
displaying said halfpixel.

5,646,752

COLOR IMAGE PROCESSING APPARATUS WHICH USES PRIVATE TAGS TO ALTER A PREDEFINED COLOR TRANSFORMATION SEQUENCE OF A DEVICE PROFILE

Timothy L. Kohler, Mountain View, and Jonathan Y. Hui, Fremont, both of Calif., assignors to Canon Information Systems, Inc., Costa Mesa, Calif.

Filed Sep. 15, 1995, Ser. No. 529,111
Int. Cl.[6] H04N *1/40*
U.S. Cl. 358—520 **34 Claims**



34. Computer-executable process steps stored in a computer-readable storage medium, said process steps (1) to add private tags to a predefined device profile which includes proprietary header information and (2) to transform color image data between different color spaces using the modified color transformation sequence, said process steps comprising:

an inputting step to input the color image data, override information, tag element data, and references to other tags in the device profile, the tag element data including predefined data used in color transformation operations;

a storing step to store the override information in a first private tag in the device profile, and to store the tag element data and references to other tags in the device profile in a second private tag in the device profile; and

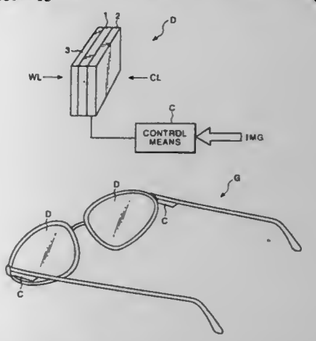
a processing step to (1) determine whether to access the first private tag based on the proprietary header information in the device profile, (2) read, in the case that the first private tag is to be accessed, the override information in the first private tag and determine whether to access the second private tag based on the override information, (3) read, in the case that the second private tag is to be accessed, the tag element data and references to other tags in the second private tag and determine whether and in what order to access public and other private tags in the device profile based on the references to other tags in the second private tag, and (4) transform the input color image data from one color space to another color space using the tag element data and the references to other tags read from the second private tag.

5,646,753

DISPLAY SYSTEM

Sunao Takatori, and Makoto Yamamoto, both of Tokyo, Japan, assignors to Yozan Inc., Tokyo, Japan

Continuation of Ser. No. 174,001, Dec. 28, 1993, abandoned. This application Oct. 6, 1995, Ser. No. 540,151
Claims priority, application Japan, Dec. 28, 1992, 4-361697
Int. Cl.[6] G02B *5/32;* **G03H** *1/26;* **G02F** *1/1335*
U.S. Cl. 359—15 **6 Claims**



1. A system for displaying an image by generating a virtual image, comprising:

i) a hologram carrier for generating a hologram of a two-dimensional pixel image;

ii) a light source for supplying an incident light of a predetermined wavelength to said hologram carrier;

iii) a liquid crystal shutter for selectively releasing and cutting-off an area of each pixel in said pixel image in response to an image control signal to generate said virtual image; and

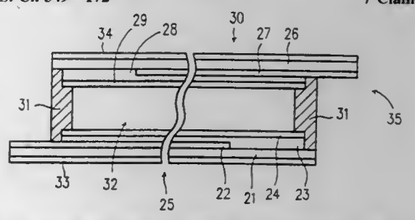
iv) means for supporting said hologram carrier and said liquid crystal shutter such that said hologram carrier and said liquid crystal shutter are mounted on a user at a position relative to said user that is closer than a focus point of said user's eyes during normal operation of said system.

5,646,754

FERROELECTRIC LIQUID CRYSTAL DISPLAY DEVICE INCLUDING A FERROELECTRIC LIQUID CRYSTAL MATERIAL CAPABLE OF EXHIBITING THE SMECTIC A PHASE AND THE CHIRAL SMECTIC C PHASE

Hitoshi Takeda; Masami Kido; Takashi Kaneko, and Mitsuhiro Koden, all of Kashiwa, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 29, 1995, Ser. No. 536,145
Claims priority, application Japan, Sep. 30, 1994, 6-237851
Int. Cl.[6] G02F *1/1343*
U.S. Cl. 349—172 **7 Claims**



1. A ferroelectric liquid crystal device comprising: a pair of insulating substrates having alignment films and electrodes thereon; and a liquid crystal layer interposed between the pair of insulating substrates, the liquid crystal layer including a ferroelectric liquid crystal material being capable of exhibiting at least the smectic A phase and the chiral smectic C phase in its phase

sequence, and the ferroelectric liquid crystal device being driven by switching an optic axis of the liquid crystal layer by selectively applying a driving voltage to at least one of the electrodes,

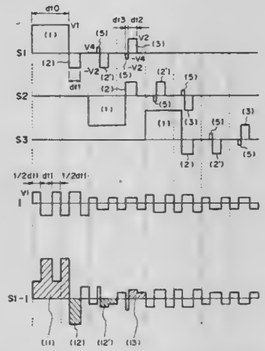
wherein ferroelectric liquid crystal molecules of the liquid crystal layer have a tilt angle of 8° or less at a (Tc−1)°C. where Tc°C. is an uppermost temperature limit of the chiral smectic C phase of the ferroelectric liquid crystal material.

5,646,755

METHOD AND APPARATUS FOR FERROELECTRIC LIQUID CRYSTAL DISPLAY HAVING GRADATIONAL DISPLAY

Shinjiro Okada, Isehara; Yutaka Inaba, Kawaguchi, and Kazunori Katakura, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 171,429, Dec. 22, 1993, abandoned.
This application Jul. 29, 1996, Ser. No. 688,221
Claims priority, application Japan, Dec. 28, 1992, 4-358846
Int. Cl.[6] G02F *1/133;1/141;* **G09G** *3/36*
U.S. Cl. 345—97 **6 Claims**



1. A driving method for a liquid crystal device of the type comprising a group of scanning electrodes, a group of data electrodes intersecting the scanning electrodes so as to form an electrode matrix, a liquid crystal disposed to form a pixel at each intersection of the scanning electrodes and the data electrodes, each pixel comprising the liquid crystal disposed between a pair of opposing electrodes and defining a pixel area in which there is formed a distribution of applied voltage threshold for causing inversion of orientation state of the liquid crystal, the driving method comprising:

a first step of resetting the liquid crystal in a prescribed pixel uniformly into a first orientation state by applying a reset signal to an associated scanning electrode;

a second step of applying a first writing signal to the associated scanning electrode and a data electrode associated with the prescribed pixel to partially switch the liquid crystal in the prescribed pixel into a second orientation state different from the first orientation state;

a third step of applying first and second selection signals to the associated scanning electrode and first and second data signals to the associated data electrode to provide combined signals which are applied to the prescribed pixel, so as to switch a portion of the liquid crystal in the prescribed pixel that was partially switched into the second orientation state back into the first orientation state, said combined signals forming a bipolar signal including a positive pulse and a negative pulse of identical shape; and

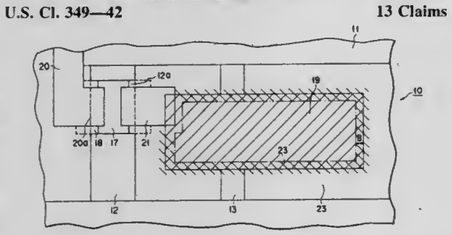
a fourth step of applying a non-selection signal to the associated scanning electrode to retain a resultant display state of the prescribed pixel.

5,646,756

LIQUID CRYSTAL DISPLAY DEVICE WITH A PROTECTING FILM THAT PARTIALLY OVERLAPS A DISPLAY PIXEL ELECTRODE

Masayuki Dohjo, Yokohama; Akira Kubo, Himeji; Yasuharu Tanaka, Yokohama, and Katsuhiko Inada, Himeji, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 14, 1995, Ser. No. 527,938
Claims priority, application Japan, Sep. 16, 1994, 6-222284
Int. Cl.[6] G02F *1/1343*
U.S. Cl. 349—42 **13 Claims**



1. A liquid crystal display device comprising:

an array substrate including:

an insulating transparent substrate that has a pixel region and a non-pixel region,

a plurality of thin film transistors disposed in a matrix pattern on a display screen, each thin film transistor having a gate insulating film that is produced by an atmosphere pressure chemical vapor deposition,

a plurality of display pixel electrodes formed on said pixel region of said insulating transparent substrate, each display pixel electrode being connected to each of said thin film transistors, and

a protecting film formed on said non-pixel region of said insulating transparent substrate, said protecting film extends from said non-pixel region and overlaps a peripheral portion of each of said display pixel electrodes that are disposed in a portion of said display screen by a width of 2 μm to 7 μm;

a counter substrate disposed apart from and facing said array substrate;

a sealant layer disposed at peripheries of said array substrate and said counter substrate to seal a space between said array substrate and said counter substrate and having a liquid crystal-inlet port;

a liquid crystal layer filling in a space between said array substrate and said counter substrate, said liquid crystal layer being injected in said space from said liquid crystal-inlet port; and

a closing layer for closing said liquid crystal-inlet port.

5,646,757

ELECTRO-OPTICAL DISPLAY DEVICE HAVING A PARTICULAR DIELECTRIC SHEET

Masatake Hayashi, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 25, 1995, Ser. No. 428,418
Claims priority, application Japan, Apr. 27, 1994, 6-089926
Int. Cl.[6] G02F *1/1333*
U.S. Cl. 349—122 **19 Claims**

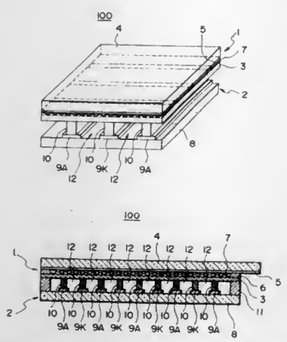
1. An electro-optical display device comprising:

an electro-optical display cell having an electro-optical material layer;

a dielectric sheet layered onto said electro-optical material layer; and

means for rewriting a data voltage applied to said electro-optical material layer according to the following relationship:

$$fD>1/(CLC\times RLC/2\rho)$$



where fD is a rewriting frequency for said data voltage which is applied to said electro-optical material layer, wherein,

said electro-optical display cell and said dielectric sheet constructed according to the following relationship:

$$RLC/(RLC+RG)<CG/(CLC+CG)$$

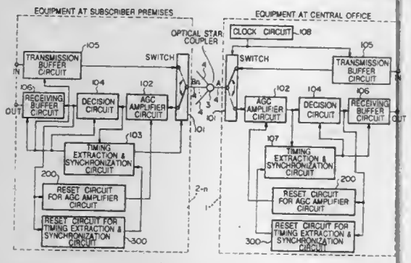
where RLC and CLC are, respectively, the resistance and capacitance of said electro-optical material layer of said electro-optical display cell per each pixel of the display cell, and where RG and CG are, respectively, resistance and capacitance of said dielectric sheet per each pixel of the display cell.

5,646,758

OPTICAL TIME COMPRESSION MULTIPLEXING TRANSMISSION SYSTEM

Noriki Miki, Yokosuka, and Kiyomi Kumozaki, Zushi, both of Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Aug. 10, 1995, Ser. No. 513,516
Claims priority, application Japan, Aug. 12, 1994, 6-190743; Nov. 4, 1994, 6-271481
Int. Cl.[6] H04J *14/08*
U.S. Cl. 359—137 **15 Claims**



1. A time division multiplexing point-to-multi-point optical time compression multiplexing transmission system providing time division multiplexing bidirectional 1:n transmission, n being a natural number, between equipment at a central office and n sets of equipment at subscriber premises over single optical fibers, the system, located at either or both of the central office and subscriber premises, comprising:

receiving means for receiving an optical signal and outputting a corresponding receiving signal;

decision means for determining whether said receiving signal from said receiving means is a regular signal; and

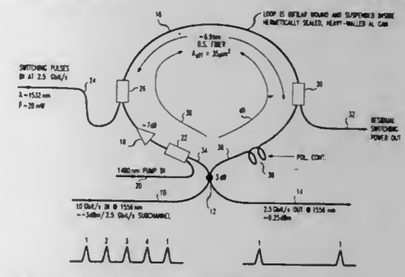
initialization means for initializing an operation condition of said receiving means when the receiving signal is determined not to be a regular signal by said decision means.

5,646,759

FIBER LOOP MIRROR FOR TIME DIVISION DEMULTIPLEXING

Eyal Lichtman, Woodbridge, and Linn Frederick Mollenauer, Colts Neck, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 94,278, Jul. 21, 1993, abandoned.
This application Nov. 8, 1995, Ser. No. 555,345
Int. Cl.[6] H04J *14/08*
U.S. Cl. 359—138 **6 Claims**



1. A demultiplexing apparatus, comprising:

an input for receiving a plurality of multiplexed communications channels comprising a stream of electromagnetic energy pulses of arbitrary polarization;

an output for transmitting selected ones of the electromagnetic energy pulses; and

a fiber loop mirror between the input and the output for carrying first and second streams of electromagnetic energy pulses, wherein said first streams travel clockwise and said second streams travel counterclockwise between the input and the output;

means for coupling switching pulses of electromagnetic energy that travel clockwise to the loop mirror; and

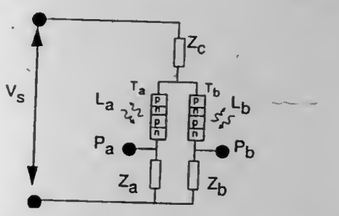
means for providing differential intensity for the first and second streams of pulses carried around the fiber loop mirror to cancel a phase shift induced by said switching pulses in said second streams to achieve a polarization independent null at the output for non-selected ones of the electromagnetic energy pulses.

5,646,760

DIFFERENTIAL PAIR OF OPTICAL THYRISTORS USED AS AN OPTOELECTRONIC TRANSCEIVER

Maarten Kuijk, Antwerp; Paul Heremans, Leuven; Roger Vounckx, Schaarbeek, and Gustaaf Borghs, Kessel-Lo, all of Belgium, assignors to Interuniversitair Micro-Elektronica Centrum vzw, Leuven, Belgium

Filed Apr. 12, 1995, Ser. No. 420,608
Int. Cl.[6] H04B *10/00*
U.S. Cl. 359—152 **23 Claims**



1. An optoelectronic transceiver comprising:

a first device containing a first structure with a first S-shaped current-voltage characteristics, connected in series with a first probing impedance, forming together a first branch having a

first probing point at a first point of connection between said first device and said first probing impedance;

a second device containing a second structure with a second S-shaped current-voltage characteristics connected in series with a second probing impedance, forming together a second branch having a second probing point at a second point of connection between said second device and said second probing impedance, said first branch and said second branch being connected in parallel; and

a common impedance having a first terminal and a second terminal, wherein said first terminal forms a first supply connection point and said second terminal is operatively connected to a first end of said parallel connection of said first and second branches, and a second end of said parallel connection forms a second supply connection point.

5,646,761

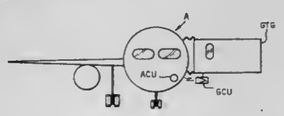
WIRELESS COMMUNICATION SYSTEM

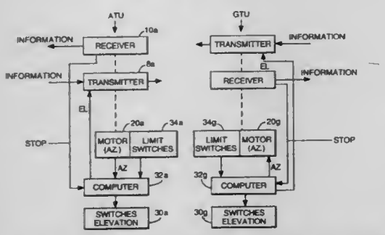
David Medved; Hillel Bar Lev, and Leonid Davidovich, all of Jerusalem, Israel, assignors to Jolt. Ltd., Israel

Continuation of Ser. No. 126,800, Sep. 24, 1993. This application Sep. 5, 1995, Ser. No. 522,526

Int. Cl.[6] H04B *10/00*

U.S. Cl. 359—172 **16 Claims**





1. A wireless data communication system for communicating between an airplane and a ground loading terminal, comprising:

a. a ground communication unit coupled to a ground terminal and mounted on a loading gateway adapted to approach and engage a parked airplane to enable loading and unloading of the airplane, said ground communication unit including a ground communication infrared transmitter transmitting a fan shaped infrared beam with a pattern which is narrower in the horizontal direction and wider in the vertical direction and comprising a plurality of infrared devices oriented to transmit said fan shaped infrared beam, an elevation scanning means comprising switching means for selectively energizing said plurality of infrared devices, azimuth scanning means driven by a stepping motor for scanning in a substantially horizontal direction with respect to the ground, a ground communication receiver comprising an infrared detector for detecting an infrared beam and having a field of view which is narrower in the horizontal direction and wider in the vertical direction, and a controller for controlling the operation of said ground communication unit elevation and azimuth scanning means;

b. an airplane communication unit including an airplane communication infrared transmitter transmitting a fan shaped infrared beam with a pattern which is a narrower in the horizontal direction and wider in the vertical direction and comprising a plurality of infrared devices oriented to transmit said fan shaped infrared beam, an elevation scanning means comprising switching means for a selectively energizing said plurality of infrared devices, azimuth scanning means driven by a stepping motor for scanning in a substantially horizontal direction with respect to the ground, an airplane communication receiver comprising an infrared detector for detecting an infrared beam and having a field of view which is narrower in the horizontal direction and wider in the vertical direction, and a control means for controlling the operation of the airplane communication unit elevation and azimuth scanning means;

c. wherein the infrared transmitter of the airplane communication unit and the infrared transmitter of the ground communication unit are fixed a predetermined distance from the receiver of that same unit, which distance is substantially the same for both the airplane communication unit and the ground communication unit, such that when the receiver of the airplane communication unit is aligned with the transmitter of the ground communication unit, the transmitter of the airplane communication unit is also aligned with the receiver of the ground communication unit;

d. said controller of the ground communication unit terminates scanning of said ground communication unit elevation and azimuth scanning means when the receiver of said ground communication unit receives the infrared beam transmitted from the transmitter of said airplane communication unit;

e. said control means of the airplane communication unit terminates operation of its elevation and azimuth scanning means when its receiver becomes aligned with the transmitter of the ground communication unit, and maintains the operation terminated even when its receiver becomes misaligned with the transmitter of the ground communication unit by the operation of the scanning means of the ground communication unit, but restarts operation of its elevation and azimuth scanning means when its receiver fails to become realigned with the transmitter of the ground communication unit after a predetermined time interval.

5,646,762

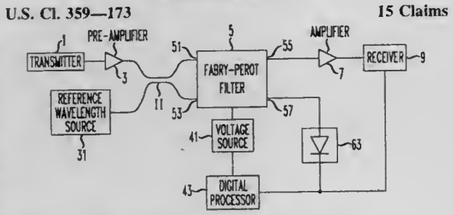
OPTICAL COMMUNICATION SYSTEM USING TANDEM FABRY-PEROT ETALON FOR WAVELENGTH SELECTION

Jean-Marc Pierre Delavaux, Wescosville, and Paul David Yeates, Longswamp Township, Berks County, both of Pa., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Nov. 7, 1995, Ser. No. 553,128

Int. Cl.[6] H04B *10/12*

U.S. Cl. 359—173 **15 Claims**



9. An optical communications system comprising:

a transmitter;

a receiver:

a preamplifier, said preamplifier having an input and an output;

an amplifier, said amplifier having an input and an output;

first and second optical fibers optically connecting said transmitter and said preamplifier and said amplifier and said receiver, respectively;

a tunable Fabry-Perot etalon having first and second inputs and first and second outputs, said first and second fibers being optically coupled to said first input and to said first output; a source of a reference wavelength, said source being connected to said second input;

a photodetector, said photodetector being connected to said second output;

a voltage source, said voltage source being connected to said tunable Fabry-Perot etalon; and

a digital processor, said digital processor being connected to said photodetector and to said voltage source.

5,646,763

OPTICAL TRANSMITTER AND LASER DIODE MODULE FOR USE IN THE OPTICAL TRANSMITTER

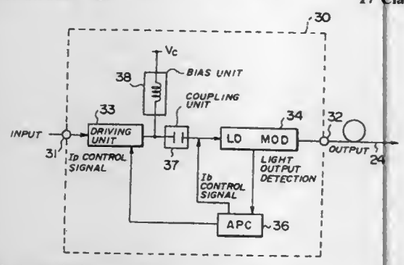
Setsuo Misaizu; Sunao Itou, both of Oyama, and Takashi Tsuda, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Sep. 14, 1995, Ser. No. 528,321

Claims priority, application Japan, Dec. 20, 1994, 6-317121

Int. Cl.[6] H04B *10/04*

U.S. Cl. 359—187 **17 Claims**



1. An optical transmitter comprising:

a laser diode module including a laser diode which outputs a light signal to an optical transmission line;

a driving unit for driving said laser diode so that a pulsed current depending on an input signal indicative of data to be transmitted is made to flow in the laser diode;

a bias unit which includes an inductor and supplies a bias current, via the inductor, to the output of the driving unit to enable a switching of a transistor of an output portion of the driving unit; and

a coupling unit for connecting an output of the driving unit to an input of the laser diode module, said coupling unit allowing an alternating current to flow in the laser diode and inhibiting the output of the driving unit from being subjected to a direct current from the laser diode module,

said coupling unit including a capacitor provided between said laser diode module and said driving unit.

5,646,764

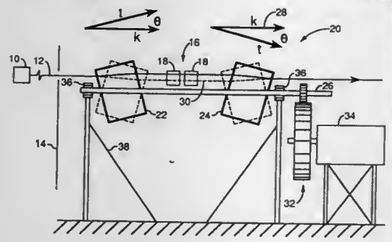
OPTICAL BEAM SCANNER WITH ROTATING TRANSMISSIVE OPTICS

Gerald T. Moore; Karl W. Koch, both of Albuquerque, N. Mex., and Eric C. Cheung, Redondo Beach, Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 17, 1995, Ser. No. 443,297

Int. Cl.[6] G02B *26/08;* **H01S** *3/10;3/08*

U.S. Cl. 359—201 **4 Claims**



1. An optical beam scanner, said optical beam scanner comprising:

means for scanning a light beam through a defined area perpendicular to said beam direction, said optical beam scanner being able to receive at least one input light beam with a given direction and position, said optical beam scanner being able to output at least one output beam being coincident with said at least one input light beam, wherein said scanning means comprises:

a support structure;

a motor attached to said support structure;

gearing means, said gearing means attached to said motor;

an axle, said axle means attached to said gearing means for rotating said axle at a predetermined rotational speed;

bearings said axle attached to said bearings, said bearings attached to said support structure; and

transmissive optical means comprising two transmissive optical plates said transmissive optical means attached to said axle;

whereby said optical beam scanner may be inserted into an optical train having optical components therein about a particular optical component without modification to the existing optical train components.

5,646,765

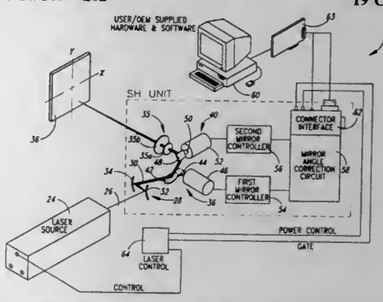
LASER SCANNER

Peter Laakmann, Bothell; Yong Fang Zhang, Kirkland, and Keith L. Hayes, Newport Hills, all of Wash., assignors to Synrad, Inc., Mukilteo, Wash.

Continuation-in-part of Ser. No. 318,065, Oct. 5, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 485,045

Int. Cl.[6] G02B *26/08*

U.S. Cl. 359—202 **19 Claims**



1. A laser scanner for directing an output laser beam in an output direction in response to first and second uncorrected control signals, the output direction being at a first field angle γ with respect to a first plane and at a second field angle ϵ with respect to a second plane orthogonal to the first plane, comprising:

a laser source producing an input laser beam heading along a first direction;

a first scanning mirror rotatable about a first axis parallel to the first plane, positioned to deflect the input laser beam, and angled at an angle α with respect to the second plane;

a second scanning mirror rotatable about a second axis parallel to the second plane and positioned to deflect the deflected input laser beam to produce the output laser beam, the second scanning mirror being angled at an angle β with respect to the first plane;

a first scanning mirror controller coupled to the first scanning mirror and structured to adjustably control the angle α of the first scanning mirror in response to a first corrected control signal;

a second scanning mirror controller coupled to the second scanning mirror and structured to adjustably control the angle β of the second scanning mirror in response to a second corrected control signal; and

a digital correction circuit coupled to each of the first and second scanning mirror controllers, the correction circuit producing the first and second corrected control signals based on the first and second uncorrected control signals, sending the first corrected control signal to the first scanning mirror controller, and sending the second corrected control signal to the second scanning mirror controller, the digital correction circuit including:

a first memory unit storing correction values in a first correction value table; and

a first programmable logic device that accesses a correction value in the first correction value table based on the first and second uncorrected control signals and adjusts the first uncorrected control signal with the correction value accessed from the first correction value table to obtain the first corrected control signal.

5,646,766

LASER BEAM SCANNING APPARATUS AND METHOD

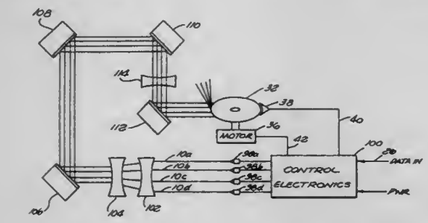
Donald C. Conemac, Moorpark, Calif., assignor to Advanced Laser Technologies, Inc., Carpinteria, Calif.

PCT No. PCT/US92/04734, § 371 Date Feb. 2, 1994, § 102(e) Date Feb. 2, 1994, PCT Pub. No. WO92/22109, PCT Pub. Date Dec. 10, 1992

Continuation-in-part of Ser. No. 711,757, Jun. 7, 1991, Pat. No. 5,166,944. This PCT application Jun. 5, 1992, Ser. No. 162,043

Int. Cl.[6] G02B *26/08;* **H01S** *3/10*

U.S. Cl. 359—204 **9 Claims**



1. A laser beam scanning apparatus for scanning one or more laser beams across an arcuate range in a first direction, comprising:

a reflector having a plurality of reflective facets configured at different angles;

means for providing a plurality of laser beams along optical paths to the reflector, the laser beam diameters being substantially equal to or smaller than the width of a single reflective facet, said means for providing comprising a plurality of semiconductor lasers for providing a plurality of parallel laser beams;

means for moving said reflector at a predetermined angular speed;

means for directing the plurality of laser beams to plural facets of said reflector during an angular movement of the reflector through a portion of the arcuate range, said means for directing comprising a plurality of optical elements configured so as to direct the plural laser beams to separate facets and means for activating said plural semiconductor lasers; and

means for synchronizing said means for moving the reflector and said means for directing the laser beams so as to scan the reflected laser beams in the first direction.

5,646,767

SCANNING OPTICAL SYSTEM

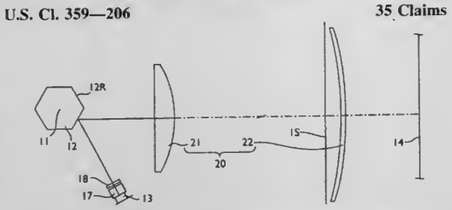
Mitsunori Iima, and Takashi Iizuka, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 22, 1994, Ser. No. 361,954

Claims priority, application Japan, Dec. 22, 1993, 5-325353; Apr. 19, 1994, 6-080744; Sep. 21, 1994, 6-226563

Int. Cl.[6] G02B *26/08*

U.S. Cl. 359—206 **35 Claims**



22. A scanning optical system wherein light beams deflected by an optical deflector are scanned on a scanning surface in a main scanning direction through said scanning optical system, comprising:

an image forming lens system having a refracting power in at least a direction of said main scanning direction, said image forming lens system comprising an optical member having a plurality of surfaces, wherein at least one of said surfaces of said optical member is arranged to be deviated such that said light beams causing ghosting light are reflected away from a main scanning surface, and at least another surface of said optical member being deviated to eliminate a bow of said scanned light beams caused by a deviation of said at least one of said surfaces; and

a light interrupting member for interrupting ghosting light, said light interrupting member being disposed between said image forming lens system and said scanning surface to prevent said ghosting light from being incident on said scanning surface.

5,646,768

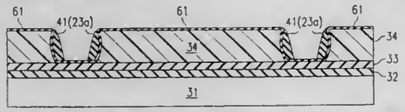
SUPPORT POSTS FOR MICRO-MECHANICAL DEVICES

Toshiyuki Kaeriyama, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 283,486, Jul. 29, 1994, Pat. No. 5,485,304. This application Jun. 7, 1995, Ser. No. 476,959

Int. Cl.[6] G02B *26/08;26/00;5/08*

U.S. Cl. 359—224 **3 Claims**



1. An improved micro-mechanical device of a type having support posts for mechanical elements, wherein the improvement comprises a support post having:

a support post stem, said stem made by depositing two layers of a stem material into a via in a spacer layer that is subsequently removed; and

a sidewall ring between said two layers, said sidewall ring made by depositing an oxide layer over said spacer layer and a first of said two layers and into said vias prior to the deposition of a second of said two layers of said stem material and etching back said oxide layer.

5,646,769

LIGHT-QUANTITY CONTROL DEVICE

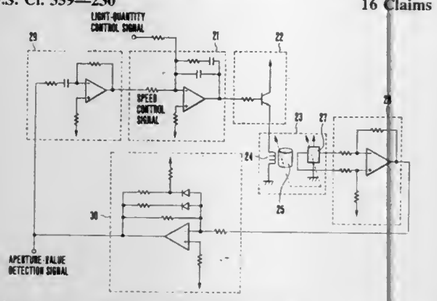
Osamu Sato, and Koichi Shimada, both of Saitama-ken, Japan, assignors to Canon Denshi Kabushiki Kaisha, Saitama-ken, Japan

Continuation of Ser. No. 238,579, May 5, 1994, abandoned, which is a continuation of Ser. No. 811,794, Dec. 20, 1991, abandoned. This application Mar. 24, 1995, Ser. No. 409,541

Claims priority, application Japan, Dec. 25, 1990, 2-419082; May 27, 1991, 3-121323; May 27, 1991, 3-121324; May 27, 1991, 3-121325

Int. Cl.[6] G02B *26/02*

U.S. Cl. 359—230 **16 Claims**



9. A light-quantity control device comprising:

a) a drive source;

b) a light-quantity control member arranged to be moved by said drive source, said light-quantity control member having an aperture with an amount of opening area which is varied according to the movement of said light-quantity control member;

c) detecting means for detecting a moving amount of said light-quantity control member; and

d) speed control means for controlling a driving speed of said drive source using said moving amount of said light-quantity control member detected by said detecting means, said speed control means being arranged to control the driving speed of said drive source in proportion to a rate of change per unit time of the area of said aperture of said light-quantity control member.

5,646,770

LIGHT-QUANTITY CONTROL DEVICE

Osamu Sato, and Koichi Shimada, both of Saitama-ken, Japan, assignors to Canon Denshi Kabushiki Kaisha, Saitama-ken, Japan

Division of Ser. No. 409,541, Mar. 24, 1995, which is a continuation of Ser. No. 238,579, May 5, 1994, abandoned, which is a continuation of Ser. No. 811,794, Dec. 20, 1991, abandoned. This application Apr. 6, 1995, Ser. No. 417,826

Claims priority, application Japan, Dec. 25, 1990, 2-419082; May 27, 1991, 3-121323; May 27, 1991, 3-121324; May 27, 1991, 3-121325

Int. Cl.[6] G02B *26/02*

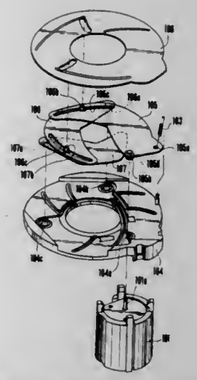
U.S. Cl. 359—230 **11 Claims**

1. A light-quantity control device comprising:

a) a drive source;

b) a first light-quantity control member, which is swung by said drive source; and

c) a second light-quantity control member, which is swung only in association with the swing of said first light-quantity control member, wherein said first light-quantity control member and said second light-quantity control member change an opening amount of an aperture by swinging.



5,646,771

SETTING OPERATION POINT IN OPTICAL MODULATION APPARATUS

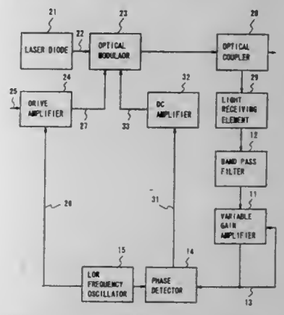
Aribide Noda, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Mar. 18, 1996, Ser. No. 617,331

Claims priority, application Japan, Mar. 17, 1995, 7-058565

Int. Cl.[6] G02F *01/03*

U.S. Cl. 359—245 **25 Claims**



1. An optical modulation apparatus comprising:

optical modulation means for optically modulating a light with an operation point set by a bias voltage in accordance with an electric modulation signal to produce an optical signal, the electric modulation signal being obtained by superposing a data signal on an electric carrier signal;

operation point detecting means for comparing the electric carrier signal and an amplified electric signal to detect a phase difference between the electric carrier signal and an amplified electric signal;

bias voltage supply means for supplying to said optical modulation means the bias voltage determined based on the detected phase difference;

electric signal extracting means for extracting an electric signal corresponding to the electric carrier signal from the optical signal outputted from said optical modulation means; and

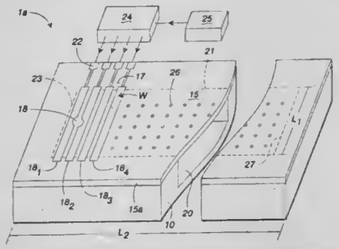
amplifying means for amplifying the extracted electric signal with a gain such that the amplified signal has an amplitude corresponding to that of the electric carrier signal and for supplying the amplified electric signal to said operation point detecting means.

5,646,772

METHODS AND APPARATUS FOR A MULTI-ELECTRODE MICROMECHANICAL OPTICAL MODULATOR

Bernard Yurke, Plainfield, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed May 10, 1996, Ser. No. 644,350
Int. Cl.[6] G02B *26/00*
U.S. Cl. 359—290 **44 Claims**



1. A micromechanical optical modulator for modulating an optical signal received by the modulator at an optical window, comprising:

two spaced-apart layers, one of the layers being movable, the movable layer capable of propagating a pulse to the optical window defined therein, the optical window having a first position relative to the other layer in the absence of a voltage signal; and

at least a first and a second electrode, the first electrode disposed on a first region of the movable layer and the second electrode disposed on a second region of the movable layer, wherein the electrodes are electrically insulated from each other; wherein,

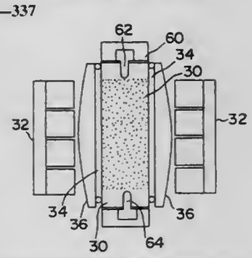
when a first voltage is applied to the first electrode, the first region of the movable layer moves toward the other layer creating a first pulse, and when a second voltage is applied to the second electrode, the second region of the movable layer moves toward the other layer creating a second pulse, wherein the first and second pulses propagate to the optical window via the movable layer causing a pulse at the optical window about equal to the sum of the first and the second pulse, and wherein the optical window moves from its first postion to a second position towards the other layer as a result of the pulse, the change in position of the optical window resulting in a change in modulator reflectivity.

5,646,773

SOLID-STATE ZIG-ZAG SLAB OPTICAL AMPLIFIER

Hagop Injeyan, Glendale; Randall J. St. Pierre, Santa Monica; Rodger C. Hilyard, Canyon Country; George M. Harpole, San Pedro, and Carolyn S. Hoefer, Malibu, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Division of Ser. No. 148,758, Nov. 5, 1993, Pat. No. 5,555,254.
This application Oct. 10, 1995, Ser. No. 541,540
Int. Cl.[6] H01S *3/09;3/06*
U.S. Cl. 359—337 **6 Claims**



1. A solid-state zig-zag slab optical amplifier, comprising:

a slab of solid-state laser material, the slab having two opposing sidewalls from which a light beam is repeatedly reflected as it progresses longitudinally through the amplifier, and two opposing vertical end walls, oriented at a non-perpendicular angle to the sidewalls, to receive input of the light beam at an angle approximately normal to the end walls, whereby input of light at a near normal angle of incidence minimizes polarization by reflection from the end walls;

at least one diode array positioned adjacent to at least one of the sidewalls, to provide power to the amplifier; and

means for cooling the sidewalls by flowing a liquid in contact with the sidewalls;

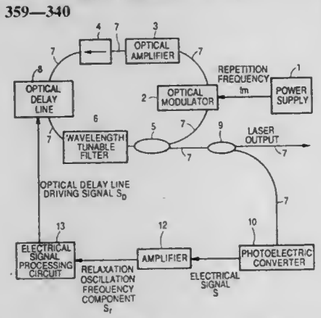
and wherein the slab further includes antireflective coatings on its end walls and on sidewall portions on which the input light beam first impinges on entering the amplifier, and on which the light beam last impinges before leaving the amplifier, whereby parasitic light rays approximately parallel with the longitudinal direction are suppressed by the antireflective coatings.

5,646,774

MODE-LOCKED LASER STABILIZING METHOD AND APPARATUS

Hidehiko Takara, Yokosuka; Satoki Kawanishi, Zushi, and Masatoshi Saruwatari, Yokosuka, all of Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Jan. 16, 1996, Ser. No. 585,566
Claims priority, application Japan, Jan. 17, 1995, 7-005288
Int. Cl.[6] H01S *3/00;3/098*
U.S. Cl. 359—340 **8 Claims**



1. A method of stabilizing an output of a mode-locked laser comprising the steps of:

extracting at least one component from among a relaxation oscillation frequency component and harmonic components thereof in the output of the mode-locked laser;

using the extracted at least one component as an error signal; and

adjusting an optical path length of a laser cavity to reduce the error signal below a predetermined level.

5,646,775

COMPACT-SIZE OPTICAL AMPLIFIER HAVING SEPARATE FUNCTIONS

Giovanni Delrosso, Caltignaga; Stefano Vanoli, Verdellino, and Massimo Armiraglio, Bottanuco, all of Italy, assignors to Pirelli Cavi S.p.A., Milan, Italy

Continuation of Ser. No. 144,820, Oct. 28, 1993, Pat. No. 5,515,200. This application Apr. 19, 1996, Ser. No. 635,376
Claims priority, application Italy, Oct. 30, 1992, MI92A2500
Int. Cl.[6] G02B *6/40*
U.S. Cl. 359—341 **16 Claims**

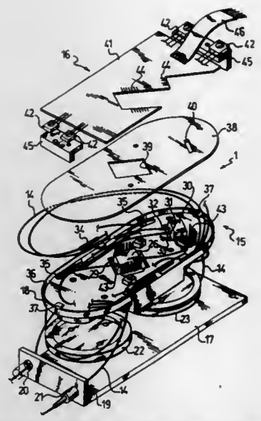
1. An optical amplifier comprising:

an electronic unit disposed at one side of a plane and comprising a plurality of electrically operable electronic components for supplying power to and controlling optical components, said electronic components being mounted on a support, said electronic unit being without optical components;

an optical unit disposed at the opposite side of said plane and comprising a plurality of optical amplifying components including at least one active optical amplifying fiber doped with an amplifying substance, a laser pump for supplying pumping power to said fiber, optical coupling means coupling said pump to said fiber and light guide sections interconnecting the optical components, all said optical components being mounted on an organizer frame, said organizer frame having two sides, a first side facing said electronic unit and a second side which is oppositely facing, said active optical amplifying fiber being mounted on said second side of said organizer frame, said laser pump and optical coupling means being mounted on said first side of said organizer frame between said organizer frame and said electronic unit and said light guide sections having at least portions thereof at said first side of said organizer frame; and

electrical conductors extending from optical components on said organizer frame to electronic components on said support

whereby the electronic components can be assembled on said support independently of the assembly of said optical components on said organizer frame and the amplifier can be assembled by bringing the optical unit and the electronic unit adjacent each other and providing electrical connections of said electrical conductors to the respective components.



5,646,776

COMPACT SPECIMEN INSPECTION STATION

Paul E. Bacchi, Novato, and Paul S. Filipski, Greenbrae, both of Calif., assignors to Kensington Laboratories, Inc., Richmond, Calif.

Division of Ser. No. 405,343, Sep. 11, 1989, Pat. No. 5,331,458.
This application Jul. 18, 1994, Ser. No. 277,194
Int. Cl.[6] G02B *21/26*
U.S. Cl. 359—393 **15 Claims**

1. A specimen processing station, comprising:

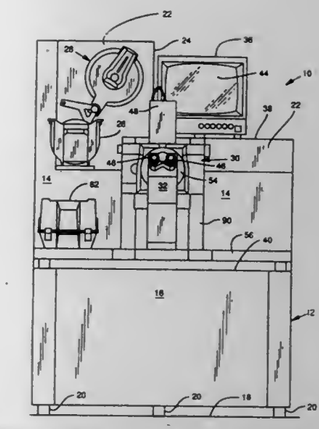
a stage for supporting a specimen;

an automated specimen transporter including a movable paddle having a vacuum chuck for controllably attaching the specimen to the paddle;

a vacuum pressure source communicating with the paddle vacuum chuck to secure the specimen to the paddle;

a vacuum pressure level sensor for detecting a decrease in vacuum pressure to be delivered to the paddle vacuum chuck; and

the specimen transporter being responsive to a detection of a vacuum pressure decrease by contacting the paddle vacuum chuck against the specimen and moving the paddle to retrieve the specimen from the stage and deliver the specimen to storage to prevent damage to it.

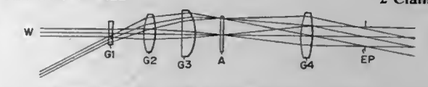


5,646,777

KEPLERIAN ZOOM FINDER OPTICAL SYSTEM

Koichi Ohshita, Tokyo, Japan, assignor to Nikon Corporation, Tokyo, Japan

Division of Ser. No. 44,600, Apr. 9, 1993, Pat. No. 5,381,265.
This application Oct. 26, 1994, Ser. No. 329,320
Claims priority, application Japan, Apr. 16, 1992, 4-96642
Int. Cl.[6] G02B *23/14;* **G03B** *13/08*
U.S. Cl. 359—422 **2 Claims**



1. A Keplerjan finder optical system having an objective lens unit comprising optical elements including, in succession from the object side, a first lens unit of negative refractive power, a second lens unit of positive refractive power and a third lens unit of positive refractive power and having positive refractive power as a whole, a plane parallel plate made of glass with a field frame disposed thereon, and an eyepiece unit, air gaps extending from opposite sides of said plane parallel plate, optical elements disposed at said opposite sides of said plane parallel plate being made of plastic, each of said air gaps being wide as compared with thickness of said plane parallel plate so as to prevent scratches on the surfaces of and dust in said optical elements from being observed through said eyepiece unit.

5,646,778

OPTICAL BEAMSPLITTER

Curtis A. Shuman, Colorado Springs, Colo., assignor to Discovision Associates, Irvine, Calif.

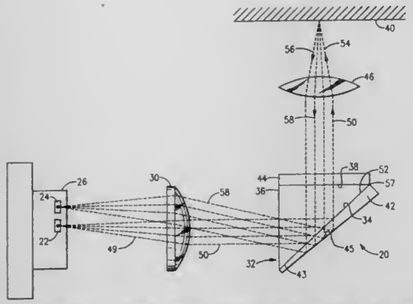
Continuation of Ser. No. 705,780, May 28, 1991, abandoned.
This application May 22, 1995, Ser. No. 445,493
Int. Cl.[6] G02B *5/30;* **G11B** *7/00*
U.S. Cl. 359—495 **10 Claims**

1. An miniature optical beam splitting assembly for use in an optical system, said assembly comprising:

a light source for producing an incident light beam;

a photodetector positioned adjacent said light source;

a reflective medium for reflecting said incident light beam as a reflected light beam;



an optical beamsplitter having a right angle prism including a first leg with a first length and a second leg with a second length, said first and second legs joined by a hypotenuse, said first length and said second length each being approximately equal to each other;

a thin optical element having a predetermined length, said optical element being positioned adjacent said hypotenuse and having a front surface and a rear surface that is non-parallel thereto along the entire length of said thin optical element, the surfaces defining an angle therebetween and a maximum thickness which is less than said first and second lengths of said first and second legs of said prism, said thin optical element being in the form of a wedge plate extending substantially along said hypotenuse wherein said maximum thickness is within the range of 0.5 mm to 2 mm; and

an optically selective coating positioned intermediate said hypotenuse and said front surface of said optical element to form a first beam splitting interface so that when said incident light beam from said light source is directed to pass through said first leg to said first beam splitting interface, it is reflected at said first beam splitting interface, passes through said second leg to said reflective medium and is reflected at said reflective medium to form said reflected light beam, said reflected light beam passing through said second leg and through said optically selective coating to said rear surface of said optical element, said reflected light beam reflected from said rear surface and passing through said first leg toward said photodetector so that said maximum thickness and said angle cause said reflected light beam to converge on said photodetector to allow said light source and said photodetector to be located in close proximity to each other in a compact package.

5,646,779

OPTICAL SYSTEM CAPABLE OF CORRECTING IMAGE POSITION

Susumu Sato, Chiba, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Mar. 10, 1995, Ser. No. 401,792

Claims priority, application Japan, Mar. 15, 1994, 6-070034; Mar. 29, 1994, 6-082454

Int. Cl.[6] G02B *27/64;9/06*

U.S. Cl. 359—557 **3 Claims**

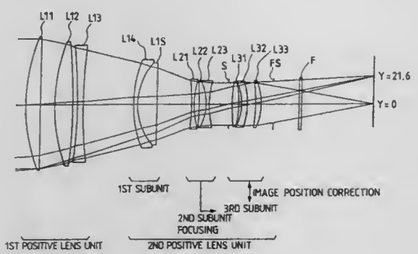
1. An objective lens system comprising, in the following order from the object side:

a first positive lens unit; and

a second positive lens unit,

wherein said second positive lens unit comprises, in the following order from the object side, a first subunit having a positive refractive power, a second subunit having a negative refractive power, and a third subunit having a positive refractive power,

wherein said second-subunit is movable along a direction of an optical axis, and



said objective lens system satisfies:

$$-0.2 \leqq \phi 23 \leqq 0.002$$

where $\phi 23$ is the synthesized refractive power of said second and third subunits.

5,646,780

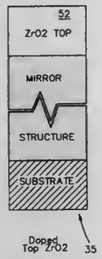
OVERCOAT METHOD AND APPARATUS FOR ZRO_2 MIRROR STACKS

Thomas M. Crook, New Brighton, and Randy J. Ramberg, Roseville, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 295,328, Aug. 24, 1994, abandoned. This application Jun. 3, 1996, Ser. No. 655,663

Int. Cl.[6] G02B *1/10;5/28*

U.S. Cl. 359—584 **14 Claims**



1. A ring laser gyro mirror comprising:

a) a plurality of alternating optical coatings of SiO_2, and of ZrO_2, and of admixtures of one another, wherein the plurality of alternating optical coatings are comprised of thicknesses suitable for reflecting a laser beam in a ring laser gyro;

b) the plurality of alternating optical regions comprising a top material of ZrO_2 having a top surface; and

c) an overcoat region of SiO_2 deposited on the top surface of ZrO_2 wherein the overcoat region of SiO_2 has a thickness of about 10 angstroms but less than about 25 angstroms.

5,646,781

OPTICAL FILTERS FOR FORMING ENHANCED IMAGES

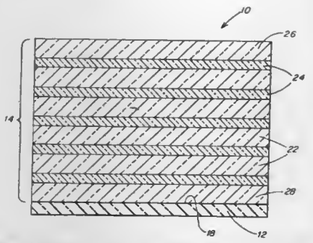
Robert L. Johnson, Jr., West Brattleboro, Vt., assignor to Omega Optical, Inc., Brattleboro, Vt.

Filed May 15, 1995, Ser. No. 441,624

Int. Cl.[6] G02B *5/28;5/22*

U.S. Cl. 359—589 **21 Claims**

1. An optical filter, comprising:



a substrate including a substantially transparent material, the substrate having a first surface; and

a multilayer coating disposed on the first surface of the substrate, the multilayer coating including first layers of a first transmissive material having a high index of refraction and second layers of a second transmissive material having a low index of refraction, wherein the first layers have an optical thickness greater than the optical thickness of the second layers, said optical filter blocking passbands substantially centered at 490 nm and 590 nm.

5,646,782

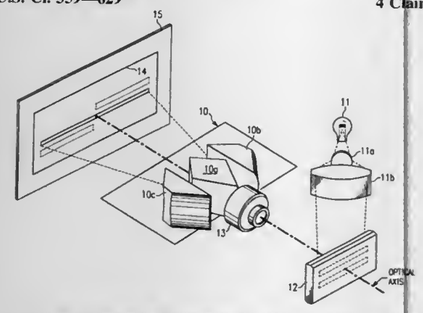
OPTICAL GUIDE FOR INCREASING PRINTER IMAGE WIDTH

Charles H. Anderson, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 346,711, Nov. 30, 1994, Pat. No. 5,581,413. This application Jul. 3, 1996, Ser. No. 676,880

Int. Cl.[6] G02B *27/14*

U.S. Cl. 359—629 **4 Claims**



1. An optical guide for aligning two stacked images generated by at least one spatial light modulator (SLM), on an image plane, comprising:

an entry reflective surface for receiving said images from said SLM;

a beam splitter for reflecting said images to a first path and for transmitting said images along a second path;

a first reflective surface disposed along said first path for directing said images on said first path towards said axis;

a second reflective surface disposed along said second path for directing the other of said images toward said axis;

wherein said entry reflective surface and said first and said second aligning reflective surfaces are optically powered reflective surfaces for anamorphically adjusting the width or height of said images.

5,646,783

HELMET-MOUNTED OPTICAL SYSTEMS

John R. Banbury, Fleet, United Kingdom, assignor to The Secretary of State for Defence In Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, Farnborough, United Kingdom

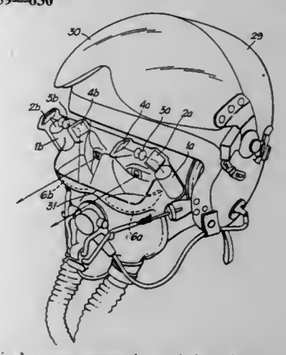
PCT No. PCT/GB93/01434, § 371 Date Jan. 26, 1995, § 102(e) Date Jan. 26, 1995, PCT Pub. No. WO94/01798, PCT Pub. Date Jan. 20, 1994

PCT Filed Jul. 8, 1993, Ser. No. 374,711

Claims priority, application United Kingdom, Jul. 14, 1992, 9214909

Int. Cl.[6] G02B *27/14*

U.S. Cl. 359—630 **20 Claims**



1. An optical system mounted on a helmet for superimposing a collimated image of a display object on an external view of the helmet's wearer, said system comprising:

display object means mounted on the helmet for generating a display;

a collimator having the function of a concave mirror for collimating light from said display;

an optical relay unit located in the forehead region of said helmet for generating an intermediate image of said display in the focal plane of the collimator;

a reflecting surface for reflecting display light from the relay unit towards the collimator; and

an inclined combiner, essentially transparent to incoming display light and to the wearer's external view, for reflecting display light reflected from the collimator towards the viewer's eye, the collimator being located outside the wearer's external view through the combiner and being located on the opposite side of said external view with respect to the optical relay unit said system including two substantially identical but relatively reversed systems, one for each eye, and employing a common, planar, diffractive combiner.

5,646,784

HELMET DISPLAY SYSTEM

Gerald Hugh Wilson, Edinburgh, United Kingdom, assignor to GEC Marconi Limited, Middlesex, England

Filed May 25, 1994, Ser. No. 249,128

Claims priority, application United Kingdom, Jun. 4, 1993, 9311528

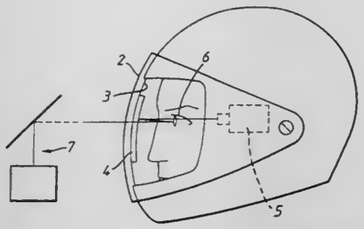
Int. Cl.[6] G02B *27/14*

U.S. Cl. 359—632 **7 Claims**

1. A helmet display system comprising:

a display visor carried by said helmet and including a combiner reflective to radiation within a predetermined waveband of the visible spectrum; means carried by said helmet for projecting an image within the predetermined waveband to an eye of a wearer of the helmet by reflection from the combiner;

and an anti-glare visor carried by said helmet and being transmissive to light in said predetermined waveband of the visible spectrum and comparatively less transmissive to light in the



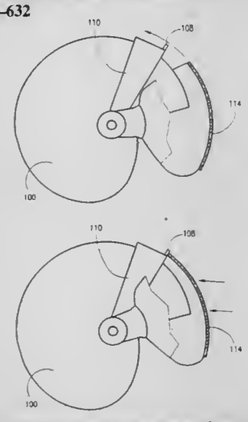
visible spectrum outside of said predetermined waveband, the display visor and anti-glare visor being arranged such that in use the helmet wearer may view a scene through both visors simultaneously.

5,646,785

HELMET WITH WIND RESISTANT VISOR

Pinbas Gilboa, Haifa; Tal Maoz, Nofit; Shimon Levy, Kiryat Motzkin, and David Sendowski, Kiryat Haim, all of Israel, assignors to Elbit Ltd., Haifa, Israel

Filed Nov. 3, 1994, Ser. No. 335,382
Claims priority, application Israel, Nov. 4, 1993, 107502
Int. Cl.[6] G02B *27/14;* **A42B** *3/18;3/22*
U.S. Cl. 359—632 **16 Claims**



1. A helmet system having a visor attached to a support bracket mounted on a helmet wherein the support bracket is formed with an extension operative to block the visor from lifting upwards when the visor is pushed toward the helmet by wind pressure while not obstructing the normal circumferential movement of said visor in the absence of wind pressure.

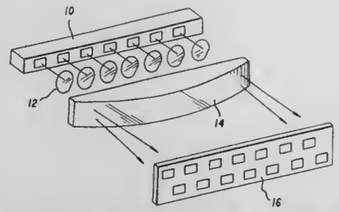
5,646,786

BEAMSPLITTER FOR LASER MULTI-BEAM PRINTERS AND RECORDERS

Andrew F. Kurtz, Rochester; John R. Debesis, Penfield, and Sanwal P. Sarraf, Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 24, 1995, Ser. No. 427,523
Int. Cl.[6] G02B *27/14*
U.S. Cl. 359—637 **9 Claims**

1. For use with (1) a multi-element spatial light modulator having plural rows of staggered elements and (2) an illumination system which provides a narrow line of laser light, a beamsplitter/staggerer adapted to split the narrow line of laser light into plural parallel lines of light, and to split each of the parallel lines of light



into regions such that substantially all of the light from the illumination system falls onto the elements of the plural rows without impinging between the rows of elements or between the elements in the rows, said beamsplitter/staggerer comprising:

an alternating grating of reflective bars patterned onto a plate with spaces between the bars, the bars being tilted relative to the incident angle of the light such that light reflected by the tilted bars is displaced relative to the light passing through the spaces between the bars; and

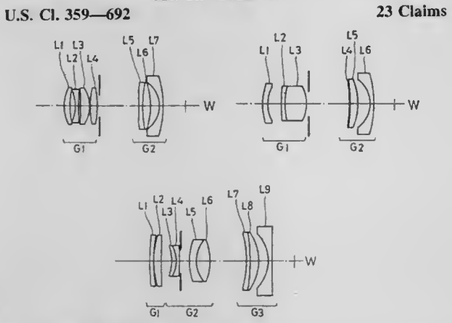
a mirror surface in the path of light reflected by the tilted bars, the mirror surface (1) being positioned to reflect light toward the modulator and (2) comprising a mirror bar pattern with its bars out of phase with the tilted bars.

5,646,787

ZOOM LENS SYSTEM

Yuji Kamo, Hino, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 14, 1995, Ser. No. 388,605
Claims priority, application Japan, Feb. 15, 1994, 6-039252
Iot. Cl.[6] G02B *15/14*
U.S. Cl. 359—692 **23 Claims**



1. A zoom lens system comprising:

a plurality of lens units;

wherein a lens unit which is disposed on an image side among said plurality of lens units has a negative refractive power, said lens unit which has the negative refractive power consists of a first subunit having a positive refractive power and a second subunit having a negative refractive power,

wherein said first subunit comprises a cemented lens component consisting of a negative lens element disposed on an object side and a positive lens element disposed on said image side,

wherein said second subunit has a negative lens component,

wherein said lens unit disposed on the image side comprises at least one aspherical surface, and

wherein said zoom lens system satisfies the following condition (1):

$$-0.6<f_{GR}/f_{GF}<-0.17 \quad (1)$$

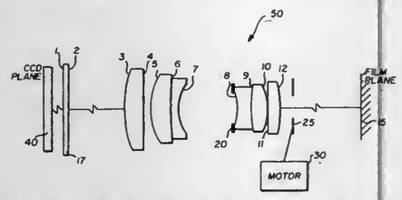
wherein the reference symbol f_{GF} represents a focal length of said first subunit and the reference symbol f_{GR} designates a focal length of said second subunit.

5,646,788

DUAL APERTURE LENS

Joseph R. Bietry, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 6, 1995, Ser. No. 417,166
Int. Cl.[6] G02B *9/00*
U.S. Cl. 359—740 **6 Claims**



1. A variable aperture lens system having a variable effective aperture and a plurality of components, said lens system comprising:

a fixed aperture stop located inside the lens system,

a variable aperture stop variable between at least wide and narrow positions and located outside the lens system,

the lens system is being generally of the double Gauss type and including a central air space with first and second negative doublets, concave to the central air space; and

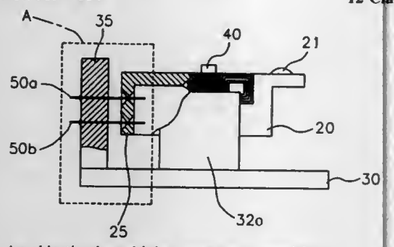
the powers and spacings of the components with respect to the aperture stops being such that the effective aperture of the lens system is defined by the fixed aperture stop for a first wide effective aperture when the variable aperture stop is in its wide position and the effective aperture of the lens system is defined by the variable aperture stop when the variable aperture stop is in its narrow position.

5,646,789

OBJECTIVE LENS DRIVING APPARATUS

Kwang-Suk Lee, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Oct. 30, 1995, Ser. No. 550,353
Claims priority, application Rep. of Korea, Oct. 31, 1994, 94-28298
Int. Cl.[6] G02B *7/02*
U.S. Cl. 359—814 **12 Claims**



1. An objective lens driving apparatus comprising:

a base provided with a plurality of permanent magnets and a supporting post mounted on an upper surface thereof;

a supporting shaft mounted on the upper surface of the base;

a lens holder for holding an objective lens at an extension thereof, the lens holder being rotatably and slidably fitted onto the supporting shaft at a position of the center of gravity of the lens holder and being provided with focusing coils and tracking coils, the lens holder being provided with at least one through hole being disposed at a side wall thereof;

at least one elastic member for elastically supporting the lens holder, the elastic member being positioned in a plane formed with a line connecting the supporting shaft and the objective lens and an axial line of the supporting shaft; and

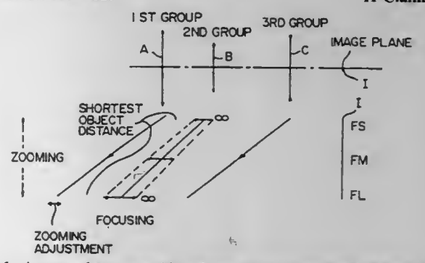
at last one damping member for keeping a vibration of the lens holder from being transmitted to the at least one elastic member, the at least one damping member being inserted between the at least one through hole and the elastic member, respectively.

5,646,790

ZOOM LENS BARREL

Shinsuke Kohmoto, and Tomoaki Kobayashi, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 26,192, Feb. 26, 1993, Pat. No. 5,450,242, which is a continuation of Ser. No. 500,011, Mar. 27, 1990, abandoned. This application Mar. 13, 1995, Ser. No. 403,100
Claims priority, application Japan, Mar. 31, 1989, 1-37878; Mar. 31, 1989, 1-81255; Mar. 31, 1989, 1-81256
Int. Cl.[6] G02B *7/02*
U.S. Cl. 359—823 **11 Claims**



1. A zoom lens assembly adapted to be positioned within a camera, said assembly comprising:

a barrel containing at least three lens groups movable along an optical axis, said at least three lens groups including a front lens group and a rear lens group;

a rotatable driving ring for guiding movement of said lens groups, between an accommodation position in which the lens groups are retracted into the camera and in which photographs cannot be taken by said camera and a zooming range in which photographs can be taken by said camera, and for guiding movement of said lens groups within said zooming range;

said driving ring engaging said lens groups such that rotation of said driving ring will move said lens groups along said optical axis, wherein at least two of said lens groups are engaged by said driving ring such that a distance between said at least two lens groups will remain constant as they are moved within said zooming range, one of said at least two lens groups comprising said front lens group, said front lens group moving over a distance different than a distance that any other of said lens groups move when said lens groups are moved by said driving ring from said zooming range to said accommodation position.

5,646,791

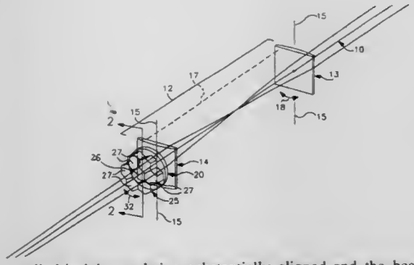
METHOD AND APPARATUS FOR TEMPORAL AND SPATIAL BEAM INTEGRATION

Herrmann J. Glockler, Cupertino, Calif., assignor to Visx Incorporated, Santa Clara, Calif.

Filed Jan. 4, 1995, Ser. No. 368,799
Int. Cl.[6] G02B *5/04;27/10;26/00;26/08*
U.S. Cl. 359—831 **21 Claims**

1. In a laser system having a collimated laser beam with an axis, a laser beam delivery apparatus for temporally and spatially integrating the laser beam, said apparatus comprising:

a temporal beam integrator for rotating said beam about the axis thereof, said temporal beam integrator comprising a pair of cylindrical lenses arranged in spaced relationship along the axis of the collimated laser beam, the cylindrical axes of said



cylindrical lenses being substantially aligned and the beam emerging from the lenses along a path, and first means for rotating said cylindrical lenses about the beam axis in unison so that a beam passing through said pair of cylindrical lenses is rotated about the beam axis;

a spatial beam integrator positioned in the path of the beam emerging from said pair of cylindrical lenses; and

means for providing relative rotation between said spatial beam integrator and said beam.

5,646,792

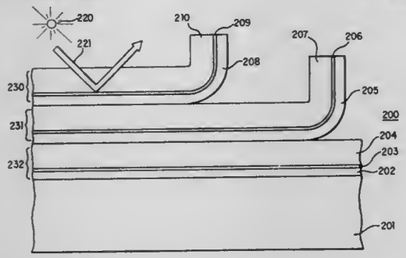
LONG-LIFE SELF-RENEWING SOLAR REFLECTOR STACK

Barry Lynn Butler, Solana Beach, Calif., assignor to Science Applications International Corporation, San Diego, Calif.

Filed Feb. 24, 1995, Ser. No. 393,472

Int. Cl.[6] B32B *7/06*

U.S. Cl. 359—883 **14 Claims**



1. A solar reflector, comprising:

a solar collector substrate;

a base layer bonded to said solar collector substrate, said base layer including a first reflective layer and a first transparent layer covering said first reflective layer; and

a first upper layer removably bonded to said first transparent layer of said base layer, said first upper layer including a second reflective layer and a second transparent layer covering said second reflective layer, wherein said upper layer may be removed from said base layer to expose said base layer.

5,646,793

LASER BEAM DEVICE FOR MOTOR VEHICLES

Karl Naab, Woerth, and Wolfgang Hahn, Schwabhausen, both of Germany, assignors to Bayerische Motoren Werke AG, Munich, Germany

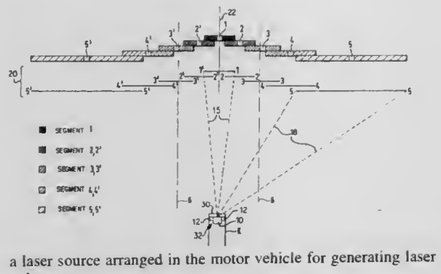
Filed Dec. 19, 1994, Ser. No. 359,466

Claims priority, application Germany, Dec. 17, 1993, 43 43 092.9

Int. Cl.[6] B60Q *1/00;* **G08G** *1/16;* **G01C** *21/02*

U.S. Cl. 359—896 **3 Claims**

1. Laser beam device for motor vehicles, comprising:



a laser source arranged in the motor vehicle for generating laser beams;

a resolving lens system coupled with the laser beams for dividing an area in front of the motor vehicle into several explored areas, each of said explored areas being irradiated by different ones of said laser beams having beam angles; and

at least one receiver arranged in the motor vehicle for receiving reflected radiation;

wherein marginal areas of the several explored areas adjoin a central area of the several explored areas on both sides thereof, said marginal areas overlapping the central area; and

wherein outer areas of the several explored areas, having a larger field of view than that of the marginal areas, said larger field of view created by larger beam angles, adjoin said marginal areas, said outer areas being explored only at low speeds of the motor vehicle.

5,646,794

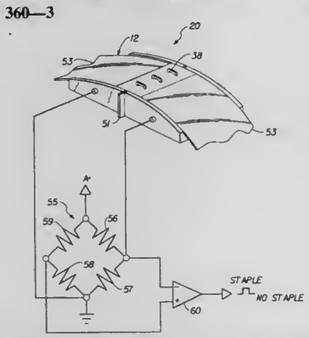
METAL DETECTION APPARATUS FOR DETECTING METAL OBJECTS IN A WEB OF PHOTOGRAPHIC MATERIAL

Kenneth Alan Lindsay, Jr., Brockport, and Joseph Stanley Jastrzembski, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 1, 1995, Ser. No. 566,326

Int. Cl.[6] G08B *21/00*

U.S. Cl. 360—3 **16 Claims**



1. A photofinishing apparatus for reading and/or writing magnetic information on a web of photographic film, said web comprising a plurality of individual strips of film secured together end to end; said apparatus comprising:

a film track for receiving the web;

means for moving the film web through the film track;

a magnetic reader and/or writer for reading and/or writing magnetic data on the web; and

a detection device for detecting metal objects in said web, said detection device being located at a point in the film track prior to said magnetic reader and/or writer, said detection device comprising means for monitoring the change in voltage across two space points on said film track for determining when the metal object is in said web, means for producing a signal when a change in voltage is detected, and means responsive to said signal for stopping said means for moving the film web along the film track.

5,646,795

SIGNAL RECORDING APPARATUS AND SIGNAL REPRODUCING APPARATUS

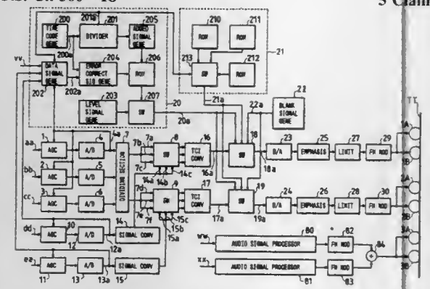
Koji Suzuki, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Sep. 21, 1994, Ser. No. 309,822

Claims priority, application Japan, Sep. 30, 1993, 5-268306

Int. Cl.[6] G11B *5/02*

U.S. Cl. 360—18 **5 Claims**



1. An apparatus for dividing a video signal into a plurality of partial signals and recording the partial signals on a recording medium, comprising:

means for generating a time code signal incremented every field or frame of the video signal;

means for sequentially selecting one of predetermined different corrective signals in response to the time code signal;

means for interposing the time code signal and the selected corrective signal in segments of the partial signals which relate to a given line of the field or frame to convert the partial signals into composite signals; and

means for recording the composite signals on the recording medium.

5,646,796

APPARATUS AND METHOD FOR RECORDING AND REPRODUCING TOPIC DATA WITH DIGITAL VIDEO AND AUDIO DATA

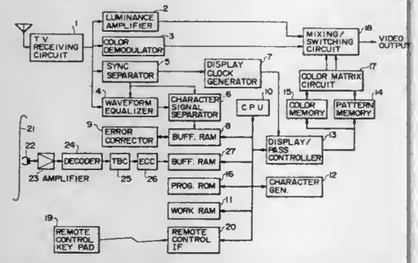
Masanori Kimura, Aichi, and Masaki Oguro, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 3, 1994, Ser. No. 237,161

Claims priority, application Japan, May 10, 1993, 5-108564

Int. Cl.[6] G11B *15/087*

U.S. Cl. 360—72.2 **39 Claims**



1. Apparatus for recording digital video and digital audio data on a record medium, comprising:

means for receiving digital video and digital audio data and topic data having identifying topics to be recorded, each of said topic data corresponding to the received digital video and digital audio data;

means for generating menu data in accordance with said identifying topics, said menu data representing a menu of said identifying topics;

means for arranging said digital video and digital audio data, said topic data and said menu data in a predetermined format for recording, said format including video, audio and subcode areas in which video data, audio data and menu data, respectively, are provided, said video and audio areas having respective auxiliary areas in which topic data is provided; and

means for recording successive tracks on said record medium, each track containing said digital video data, said digital audio data, said topic data and said menu data in said predetermined format.

5,646,797

DIGITAL SERVO CONTROL SYSTEM FOR USE IN DISK DRIVES

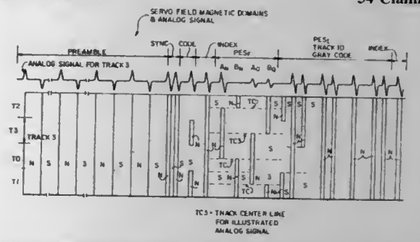
Ronald James Kadlec, Colorado Springs, Colo.; Thomas James Frederick, Coconut Creek, Fla.; Paul Henry Kelley, Boca Raton, Fla., and Philip Saxton Weilbacher, Coconut Creek, Fla., assignors to Rodime PLC, Wayzata, Minn.

PCT No. PCT/US91/06602, § 371 Date Jul. 7, 1992, § 102(e) Date Jul. 7, 1992, PCT Pub. No. WO92/05543, PCT Pub. Date Apr. 2, 1992

Continuation-in-part of Ser. No. 583,972, Sep. 18, 1990, abandoned. This PCT application Sep. 17, 1991, Ser. No. 856,954

Int. Cl.[6] G11B *5/596*

U.S. Cl. 360—75 **34 Claims**



1. In an information storage device having a recording medium and a reading device for reading information from the recording medium, an arrangement for controlling the reading device's position relative to the recording medium by processing position samples encountered in respective sample periods and for providing an effort signal before a subsequent sample period to control the position of the reading device relative to the recording medium, the arrangement comprising:

a) at least one position information area embedded between information in the recording medium, the position information area including a fractional positional information area which the reading device encounters only once per sample period and which includes at least one dibit pair allowing determination of the reading device's position with a precision substantially smaller than a width of information tracks in the recording medium; and

b) a position control device, responsive to only one dibit measurement per sample period from only one dibit pair per sample period from the reading device, the position control device including:

1) means for pre-processing the dibit measurement to compensate for non-ideal characteristics of the dibit measurement, and for generating a pre-processed signal for each dibit measurement, wherein the means for pre-processing includes:

i) means for compensating for gain of the reading device as a function of its position relative to the recording

medium, in response to the only one dibit measurement per sample period; and

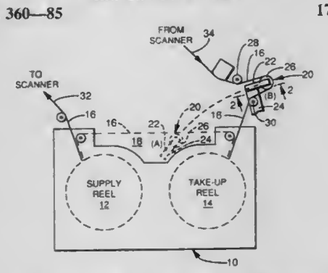
2) means, responsive to the pre-processed signal, for generating the effort signal.

5,646,798

MOVEABLE CAPSTAN ASSEMBLY FOR SELECTIVELY CONTACTING A MEDIA, WHICH ASSEMBLY INCLUDES A TACHOMETER SENSOR

Dennis M. Ryan, Redwood City, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Feb. 14, 1996, Ser. No. 601,202
Int. Cl.[6] G11B *5/027*
U.S. Cl. 360—85 17 Claims



1. A capstan assembly for driving a flexible web in response to a motor and/or for rotation with the flexible web; comprising:

a capstan for engaging the web;

support means rotatably supporting the capstan for moving the capstan from a first position removed from said motor to approach a second position adjacent the motor which provides the engagement with the web;

tachometer means mounted in the support means for rotation with and movement with the capstan; and

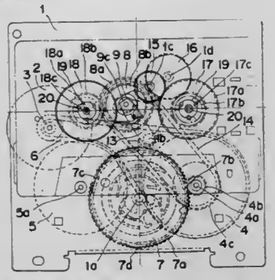
said tachometer means being continuously rotated with movement of the web when the capstan and tachometer means are in the second position.

5,646,799

CASSETTE LOADING APPARATUS

Tadashi Kuroda, Kobe, and Takashi Torii, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Filed Jun. 3, 1996, Ser. No. 662,481
Claims priority, application Japan, Jun. 2, 1995, 7-136463
Int. Cl.[6] G11B *15/675;5/54*
U.S. Cl. 360—96.6 4 Claims



1. A cassette loading apparatus for a cassette tape recorder of a type including a head carrier carrying a magnetic recording and/or reproducing head and movable between stop and reproducing positions in a direction confronting a front face of the magnetic recording and/or reproducing head, which apparatus comprises:

a drive motor for driving the cassette tape recorder;

a gear means drivingly coupled with said drive motor;

a rotary gear engageable with said gear means to rotate to thereby control the stop and reproducing positions of the head carrier through a rotary-to-linear motion translator, said rotary gear having defined therein a direction of rotation thereof a plurality of position regulating portions corresponding to the stop and reproducing positions and a toothless portion disengageable from the gear means, said rotary gear also having a cam portion defined therein at a location between the stop and reproducing positions and being biased so as to rotate;

an operating solenoid unit;

a first actuating lever having an engagement means detachably engageable with said position regulating portions to permit the gear means to be aligned with the toothless portion, said engagement means being biased in a stopping direction, said first actuating lever being operatively associated with the solenoid unit to rotate to thereby cause the engagement means to disengage from the position regulating means;

a second actuating lever operatively coupled with the solenoid unit through the first actuating lever, said second actuating lever having an engagement means engageable with the cam portion when pivoted in driving association with the solenoid unit through the first actuating lever, said engagement means of the second actuating lever being angularly moved in a direction conforming to the direction of rotation of the rotary gear after having been pressed to the cam portion by the rotation of the rotary gear;

a cassette holder for supporting a cassette and movable between a play position, in which the cassette confronts the magnetic recording and/or reproducing head, and an eject position in which the cassette is spaced from the play position; and

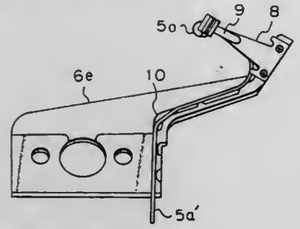
a holding member detachably engageable with the cassette holder when the latter is in the play position and drivingly associated with a pivot motion of the second actuating lever caused by said cam portion to release the cassette holder.

5,646,800

MAGNETIC DISC DEVICE HAVING A LEAD WIRE RETAINING GROOVE IN THE ACTUATOR ARM

Takahisa Mihara, Sagamihara; Shoji Samma, Yokohama, and Sigeo Saito, Sagamihara, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 197,541, Feb. 17, 1994, Pat. No. 5,418,666, which is a continuation of Ser. No. 68,610, May 27, 1993, abandoned, which is a continuation of Ser. No. 748,504, Aug. 22, 1991, abandoned, which is a division of Ser. No. 463,838, Jan. 11, 1990, Pat. No. 5,060,100, which is a continuation of Ser. No. 58,148, Jun. 4, 1987, abandoned. This application Jan. 4, 1995, Ser. No. 368,640
Claims priority, application Japan, Jun. 4, 1986, 61-085144; Jul. 18, 1986, 61-109459; Jul. 19, 1986, 61-110030
Int. Cl.[6] G11B *5/012;5/48*
U.S. Cl. 360—97.01 33 Claims



1. A magnetic disc device comprising:

a housing;

a magnetic disc having a periphery and disposed in said housing;

a magnetic head facing a corresponding surface of the disc and comprising a slider having a slider surface parallel to the corresponding surface of the respective disk and a thickness defined by a height dimension of the head in a first direction perpendicular to the slider surface;

a head arm having a first end rotatably connected to a pivot and a second, free end and being rotatable about the pivot;

a drive mechanism selectively driving said head arm in rotating motion about the pivot and in seeking motion relative to the corresponding surface of the disc, a portion of said head arm including the second free end thereof moving over the corresponding surface of said magnetic disc during operation of the disc device, the head arm portion having first and second substantially planar main surfaces, parallel to each other and to the corresponding surface of said respective magnetic disc and defining a substantially uniform thickness therebetween throughout at least the head arm portion and including the second, free end thereof, and a further surface perpendicular to the first and second main surfaces;

a spring member supporting said magnetic head on said head arm, the spring member comprising a substantially planar component extending between and connecting said magnetic head to the second, free end of said head arm and having spaced, lateral edges with respective, integral lateral flanges extending from the lateral edges in the first direction, away from the respective disk, and defining a thickness of the spring member;

a lead wire having a first portion extending along a surface of the planar component of the spring member remote from the respective magnetic disk and within the thickness of the spring member and a second portion extending along the further surface of the head arm portion and disposed within the thickness of the head arm portion at least until the lead wire extends to outside the corresponding periphery of the magnetic disc; and

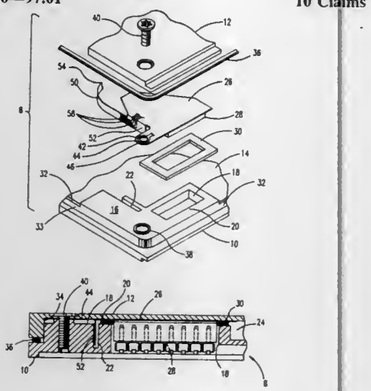
said head arm portion further comprising means, displaced from said further surface, for holding the second portion of the lead wire by press fitting and further comprising projections spaced from the further surface and defining a groove in which the second portion of the lead wire is received and held fast by press fitting therein.

5,646,801

DIRECT ACCESS STORAGE DEVICE WITH IMPROVED RELIABILITY FLEX CABLE MOUNTING

Jeffrey Fred Boigenzahn, Pine Island; Randy Joseph Bornhorst, Rochester; Dale Ernest Goodman, Oronoco, and Richard Edward Lagergren, Rochester, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 298,526, Aug. 30, 1994, abandoned. This application Sep. 13, 1995, Ser. No. 527,589
Int. Cl.[6] G11B *33/12*
U.S. Cl. 360—97.01 10 Claims



1. A direct access storage device comprising:

a base member for supporting components of said device;

a cover member having a generally planar interior surface;

a data storage disk mounted for rotation within a chamber defined by said cover member and said base member;

an actuator mounted for movement relative to said disk and contained within said chamber;

a flexible electrical circuit disposed in a plane adjacent said planar surface of said cover member;

an elongated flexible cable having a proximal end and a distal end;

a span of conductive traces interconnecting said flexible electrical circuit and said flexible cable;

said cable and said span Joined at a side edge of said cable;

said base member defining a slot extending orthogonally to said cover interior surface; and

said proximal end of said cable deflected from said plane of said flexible electrical circuit toward said base member and confined by and disposed within and oriented by said slot confronting opposite sides of said cable with said distal end extending from said slot, said distal end connected to said actuator,

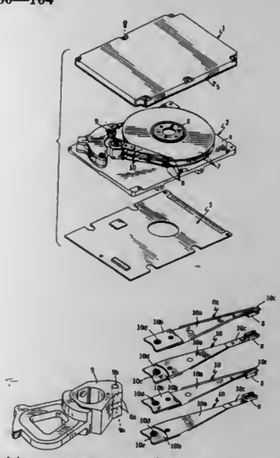
whereby said flexible cable is maintained in an orientation suitable for repeated flexing by movement of said actuator.

5,646,802

DISK DRIVE WITH HEAD SUSPENSIONS MOUNTED TO ACTUATOR ARM OPPOSITE SIDES TO FACE RESPECTIVE UPPER AND LOWER SURFACES OF DISK

Hiroyuki Akiyama, Kawasaki; Akihiko Aoyagi; Kazuhiko Takada, both of Yamato, and Hitoshi Tsujino, Tokyo-to, all of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 393,598, Feb. 23, 1995, Pat. No. 5,508,860, which is a continuation of Ser. No. 215,876, Mar. 21, 1994, abandoned, which is a continuation of Ser. No. 802,385, Dec. 4, 1991, abandoned. This application May 22, 1995, Ser. No. 421,112
Claims priority, application Japan, Sep. 12, 1991, 3-260498; Sep. 12, 1991, 3-260499; Sep. 12, 1991, 3-260500; Sep. 12, 1991, 3-260501
Int. Cl.[6] G11B *21/16;25/04;21/08*
U.S. Cl. 360—104 2 Claims



1. A disk drive apparatus, comprising:

at least one hard disk having an upper surface and a lower surface;

a spin motor for rotating said hard disk;

a first transducer head for communicating information with said upper surface of said disk and a second transducer head for communicating information with said lower surface of said disk;

an actuator including at least one actuator arm in which an actuator arm through hole is provided;

a first rigid mount plate and a second rigid mount plate each including a planar surface having a first end and a second end, said actuator arm is attached to said planar surface of each of said mount plates at each said first end, and each said second end extends away from said actuator arm;

a first load beam attached to said planar surface of said first mount plate at said second end thereof on a face of said first mount plate facing towards said disk, said first transducer head mounted away from said first mount plate on a face of said first load beam facing towards said disk, said first load beam being resilient in a vertical direction to allow said first transducer head to follow the topography on said upper surface of said hard disk, and

at said first end of said first mount plate, a first mount plate through hole and a first mount plate boss protruding from the circumference of said first mount plate through hole on said face of said first mount plate facing towards said disk are provided, said first mount plate boss being attached to said actuator arm at one end of said actuator arm through hole; and

a second load beam attached to said planar surface of said second mount plate at said second end thereof on a face of said second mount plate facing towards said disk, said second transducer head mounted away from said second mount plate on a face of said second load beam facing towards said disk, said second load beam being resilient in a vertical direction to allow said second transducer head to follow the topography on said lower surface of said hard disk, and

at said first end of said second mount plate, a second mount plate through hole and a second mount plate boss protruding from the circumference of said second mount plate through hole on said face of said second mount plate facing towards said disk are provided, said second mount plate boss being attached to said actuator arm at the other end of said actuator arm through hole.

5,646,803

ROTARY MAGNETIC HEAD DEVICE WITH HEAD BASE AND TRANSDUCER HAVING LINEAR EXPANSION COEFFICIENTS IN A SIMILAR RANGE

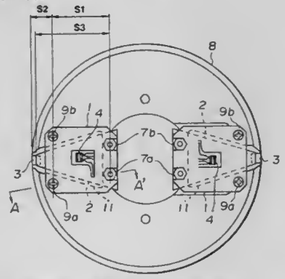
Kazunari Kawabata; and Hisayoshi Chino, both of Kanagawa, Japan, assignors to Sony Corporation, Japan

Filed Dec. 16, 1994, Ser. No. 357,921

Claims priority, application Japan, Dec. 22, 1993, 5-324508

Int. Cl.[6] G11B *5/592*

U.S. Cl. 360—109 **16 Claims**



1. A rotary magnetic head device comprising

an electromechanical transducer element having a proximal end secured to a raised portion of a head base within a rotary drum,

a magnetic head provided at a distal end of the electromechanical transducer element which protrudes above an outer surface of said rotary drum, wherein said electromechanical transducer element displaces the magnetic head in response to a driving electrical voltage applied to said electromechanical transducer element, and

a sensor provided between the proximal end and the distal end of the electromechanical transducer element for detecting the amount of displacement of the magnetic head,

wherein the head base, the rotary drum and the electromechanical transducer element are formed of materials wherein each material has a linear expansion coefficient such that the protrusion of the magnetic head above the outer surface of the rotary drum does not change by more than 0.004 μm for every change in temperature of one degree Celsius.

5,646,804

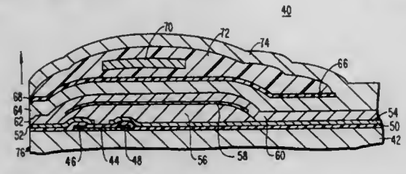
THIN FILM MAGNETIC HEAD HAVING POLYMER ON BROKEN FLUX GUIDE SECTIONS, METHOD OF PRODUCING AND INTEGRATED STRUCTURE INCORPORATING SAME

Todd Backer, Apple Valley; Arthur Calderon, Minnetonka, both of Minn.; Wei Cheng Hsie, Worchester, Mass.; William P. Wood, Edina, Minn., and Terry Mitchell, Goleta, Calif., assignors to Philips Electronics North American Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 703,539, May 21, 1991, abandoned. This application Dec. 20, 1991, Ser. No. 811,556

Int. Cl.[6] G11B *5/39;5/31*

U.S. Cl. 360—113 **10 Claims**



1. A thin film magnetic head having: a nonmagnetic substrate; a head face normal to the plane of the substrate; a magnetoresistive sensing element located on the substrate inwardly from the head face; a flux guide broken into two sections, a first section extending inwardly from the head face to overlie a peripheral edge portion of the magnetoresistive element, and a second section spaced apart from the first section and overlying an opposite peripheral edge portion of the magnetoresistive element, an electrically insulating layer separating the magnetoresistive element from the flux guide sections; characterized in that a polymer layer having a smooth upper surface overlies the magnetoresistive element and is located on the broken flux guide sections and the exposed portion of the insulating layer in the space between these sections, and in that a test/bias conductor is located on the polymer layer.

5,646,805

MAGNETORESISTIVE READ TRANSDUCER WITH PARTIALLY ABUTTED JUNCTIONS

Yong Shen, Milpitas, and Steven Clark Rudy, San Jose, both of Calif., assignors to Read-Rite Corporation, Milpitas, Calif.

Continuation of Ser. No. 399,424, Mar. 6, 1995, abandoned. This application Sep. 3, 1996, Ser. No. 711,301

Int. Cl.[6] G11B *5/127;5/33*

U.S. Cl. 360—113 **7 Claims**

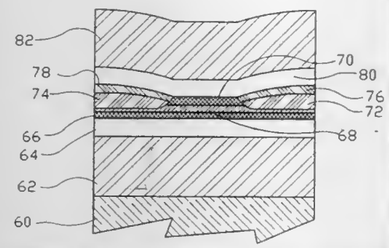
1. A magnetoresistive transducer comprising:

a substrate;

a magnetic shield disposed on said substrate;

a first insulating layer disposed over said magnetic shield for providing a first read gap;

a trilayer structure including a continuous soft adjacent magnetic layer formed over said first insulating layer and coextensive therewith;



a continuous spacer layer having a central region and end regions and formed over said soft adjacent magnetic layer and coextensive therewith;

a magnetoresistive sensor element disposed only over said central region of said spacer layer and having ends;

hard permanent magnetic films formed entirely on said end regions of said spacer layer and formed adjacent to said ends of said magnetoresistive sensor element and abutting said ends to form junctions therewith, said hard permanent magnetic films being separated from said soft adjacent magnetic layer by said end regions of said spacer layer for providing magnetic coupling and a longitudinal bias field;

conductive leads deposited over said hard permanent magnetic films and abutting said ends of said magnetoresistive sensor element magnetic films; and

a second insulating layer formed over said magnetoresistive element and over said conductor leads for providing a second read gap.

5,646,806

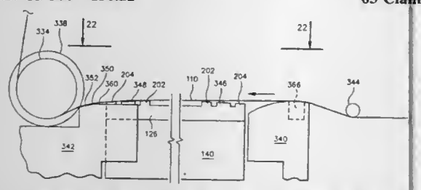
EDGE TENSIONING SLOPING TAPE GUIDE FOR ARCUATELY SCANNING TAPE DRIVE

Neil J. Griffith; James U. Lemke, both of San Diego, and James Crosby, Santa Fe, all of Calif., assignors to Minnesota Mining And Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 341,670, Nov. 17, 1994, abandoned, which is a continuation-in-part of Ser. No. 193,179, Feb. 9, 1994, abandoned. This application May 8, 1996, Ser. No. 646,842

Int. Cl.[6] G11B *15/60*

U.S. Cl. 360—130.22 **63 Claims**



1. A sloping tape guide for an arcuately scanning tape drive, the arcuately scanning tape drive having a head assembly, the head assembly including a plurality of magnetic heads which are carried by a rotatable substantially circular disk, and the magnetic heads having gaps which are exposed at a front face of the disk for transducing contact with a magnetic tape, the tape guide comprising:

a sloping plate which has a front sloping flat surface, the front sloping flat surface being bounded by first and second longitudinal edges and first and second side edges;

the first side edge being closer to a periphery of the disk than the second side edge;

the front sloping flat surface sloping rearwardly from its first side edge to its second side edge away from the periphery of the circular disk; and

said second side edge being curved concavely so that the area of the sloping flat surface progressively increases from its center towards its first and second longitudinal edges,

whereby first and second longitudinal edge portions of the magnetic tape will have a longer path length than the path length at the center of the tape so as to equalize or enhance tension across the tape.

5,646,807

MAGNETIC DISK CARTRIDGE AND SHUTTER OPENING-CLOSING MECHANISM FOR THE SAME

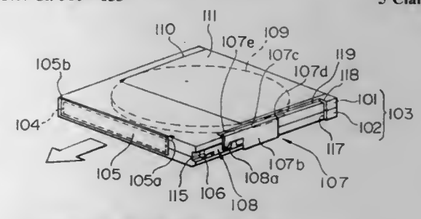
Takeshi Ohnuki, Ibaraki-ken; Minoru Fujita, Toride; Osamu Ishizaki, and Kazuyoshi Adachi, both of Ibaraki-ken, all of Japan, assignors to Hitachi Maxell, Inc., Osaka, Japan

Filed Sep. 4, 1996, Ser. No. 707,420

Claims priority, application Japan, Sep. 8, 1995, 7-231605

Int. Cl.[6] G11B *23/03*

U.S. Cl. 360—133 **5 Claims**



1. A magnetic disk cartridge comprising:

a cartridge casing having a head insertion opening formed in a front face thereof, and having a spindle insertion opening formed in a reverse or rear face thereof;

a magnetic disk rotatably housed in the cartridge casing;

a head shutter mounted on the cartridge casing to openably cover the head insertion opening;

a spindle shutter mounted on the cartridge casing to openably cover the spindle insertion opening; and

a shutter operating member mounted on the cartridge casing, said shutter operating member being operable from an outside of the cartridge casing;

wherein when the head insertion opening and the spindle insertion opening are closed by the head shutter and the spindle shutter, respectively, the shutter operating member is engaged with the head shutter and the spindle shutter to hold them against movement, and when the head insertion opening and the spindle insertion opening are to be opened, the shutter operating member is disengaged from the spindle shutter, and is adapted to act on the head shutter to open the head shutter.

5,646,808

ELECTROSTATIC BREAKDOWN PROTECTION CIRCUIT FOR A SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

Osamu Nakayama, Haga-gun, Japan, assignor to Kawasaki Steel Corporation, Kobe, Japan

Continuation-in-part of Ser. No. 509,943, Aug. 1, 1995, abandoned. This application Aug. 7, 1995, Ser. No. 511,894

Claims priority, application Japan, Aug. 5, 1994, 6-184327

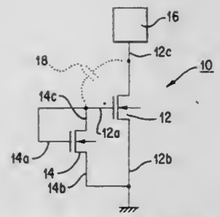
Int. Cl.[6] H02H *9/04*

U.S. Cl. 361—56 **29 Claims**

1. An electrostatic discharge protection circuit, comprising:

a primary transistor, comprising:

a drain connected to a circuit element of a circuit to be protected, an electrostatic discharge being applied through the circuit element,



a source connected to one of ground and a power supply, and

a gate, wherein a parasitic capacitance exists between the drain and the gate; and

a gate voltage controlling circuit having at least a first terminal and a second terminal, the first terminal connected to one of ground and the power supply and the second terminal connected to the gate of the primary transistor, the gate voltage controlling circuit controlling a gate voltage of the primary transistor to maintain the gate voltage such that a drain-to-source breakdown voltage when an electrostatic discharge is applied to the circuit element is lower than a drain-to-source breakdown voltage when the gate voltage is substantially identical to a source voltage of the primary transistor.

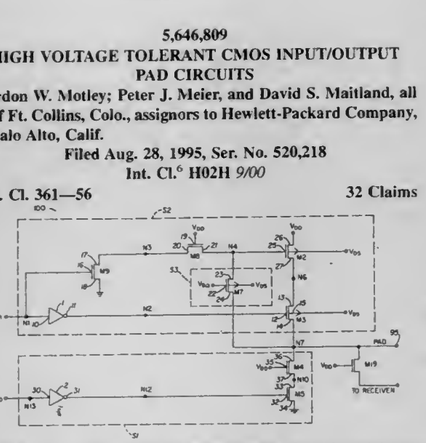
5,646,809

HIGH VOLTAGE TOLERANT CMOS INPUT/OUTPUT PAD CIRCUITS

Gordon W. Motley; Peter J. Meier, and David S. Maitland, all of Ft. Collins, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 28, 1995, Ser. No. 520,218
Int. Cl.[6] H02H *9/00*

U.S. Cl. 361—56 **32 Claims**



29. A high voltage tolerant CMOS pull-up circuit for driving to a logic level high an output pad node of an integrated circuit comprising:

an inverter coupled to receive an input enabling signal and to produce an inverted signal; a first P-channel FET device having a gate coupled to receive the inverted signal, a drain coupled to the output pad node, a source, and a backgate coupled to a higher power supply, the higher power supply producing a voltage level higher than the chip power supply; a first N-channel FET device having a gate coupled to receive the input enabling signal, a source coupled to the chip ground, and a drain; a second N-channel FET device having a source coupled to the drain of the first N-channel FET device, a gate coupled to the chip power supply, and a drain; a second P-channel FET device having a gate coupled to the drain of the second N-channel FET device, a backgate coupled to the higher power supply, a source coupled to the chip power supply, and a drain coupled to the source of the first P-channel FET device; and a third P-channel FET device having a source coupled to the output pad node, a gate coupled to the chip power supply, a backgate coupled to the higher power supply, and a drain coupled to the drain of the second N-channel FET device and to the gate of the second P-channel FET device.

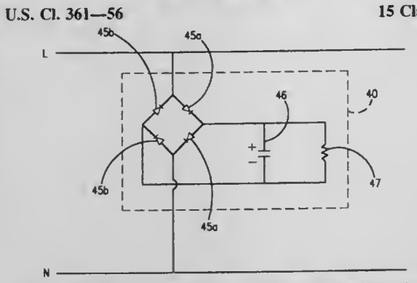
5,646,810

TRANSIENT VOLTAGE SURGE SUPPRESSION AND ELECTRICAL NOISE ATTENUATION CIRCUIT

James Funke, 148 Queensland Road, Calgary, Alberta, Canada

Filed Oct. 3, 1995, Ser. No. 538,226
Int. Cl.[6] H02H *9/00*

U.S. Cl. 361—56 **15 Claims**



1. A parallel circuit to protect electrical and electronic equipment from transients from an electrical system comprising:

(a) first uni-directional diodes directly attached to line, neutral and/or ground connection of the electrical system;

(b) a DC capacitor with a positive pole being fed by said first uni-directional diodes;

(c) second uni-directional diodes directly attached and feeding back to line, neutral and/or ground connection, and being fed from a negative pole of the DC capacitor; and

(d) a discharge resistor in parallel with said DC capacitor.

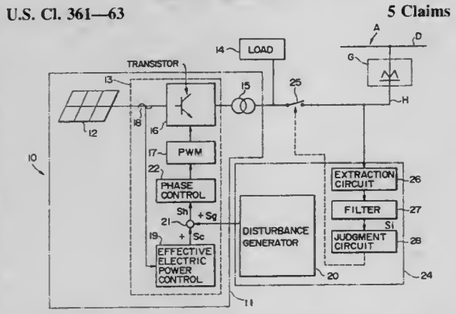
5,646,811

REVERSE-CHARGE PREVENTION APPARATUS

Hiromasa Higasa, and Fumihiko Ishikawa, both of Takamatsu, Japan, assignors to Kabushiki Kaisha Shikoku Sogo Kenkyujo, Kagawa, Japan

PCT No. PCT/JP92/01012, § 371 Date Aug. 3, 1994, § 102(e) Date Aug. 3, 1994, PCT Pub. No. WO94/03957, PCT Pub. Date Feb. 17, 1994
PCT Filed Aug. 7, 1992, Ser. No. 211,546
Int. Cl.[6] H02H *3/00*

U.S. Cl. 361—63 **5 Claims**



1. A reverse-charge prevention apparatus comprising a first breaker for connecting an electric power system to and disconnecting the electric power system from a distributed electric power apparatus, wherein said first breaker is switched off when said distributed electric power apparatus is disconnected from said electric power system by switching off a second breaker disposed in said electric power system so that reverse-charge from said distributed electric power apparatus to said electric power system is prevented, said reverse-charge prevention apparatus further comprising:

slight variation providing means for providing a slight variation with a given period to electric power outputted by said distributed electric power apparatus at regular intervals;

extracting means for extracting a slight variation having a period which is the same as the given period, the slight variation extracted by said extracting means existing in a period of an alternating-current voltage outputted by said distributed electric power apparatus; and

judging means for judging when the slight variation extracted by said extracting means has been extracted at regular intervals and switching off said first breaker when said judging means judges that the slight variation extracted by said extracting means has been extracted at regular intervals.

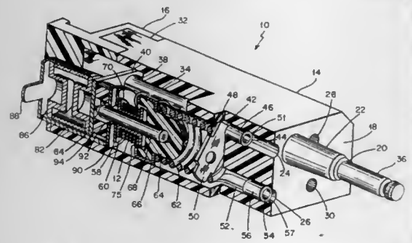
5,646,812

TELEPHONE LINE SURGE PROTECTOR MODULE WITH FAST-ACTING, HIGH RESISTANCE HEAT COIL ASSEMBLY

William Hernandez, Jr., Central Islip, N.Y., assignor to Porta Systems Corp., Syosset, N.Y.

Filed Aug. 28, 1995, Ser. No. 510,897
Int. Cl.[6] H02H *1/04*

U.S. Cl. 361—124 **9 Claims**



1. A fast-acting, high resistance heat coil assembly for a telephone line surge protector module which trips in a predetermined time at a predetermined current value, said coil assembly comprising:

an elastically biased contact member;

a bobbin, said bobbin being secured to said contact member in a first temperature range to prevent relative motion between said bobbin and said contact member, said bobbin and said contact member being movable with respect to one another in a second temperature range; and

a length of resistive heating wire having a conductive core, a heat-resisting insulative coating for said core, and a relatively high tensile-strength serving for resisting manufacturing stresses, said serving being operatively disposed about said core, a plurality of turns of said resistive heating wire being wound about at least one of said bobbin and said contact member, said resistive heating wire generating heat at a sufficient rate when carrying a current at least as great as said predetermined current value to substantially transition said contact member and said bobbin between said first and second temperature ranges, in a time interval no greater than said predetermined time, for tripping of said assembly by relative motion between said bobbin and said contact member.

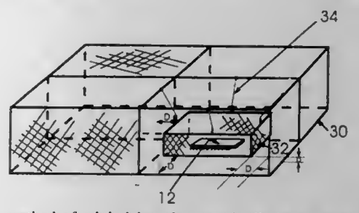
5,646,813

METHOD AND APPARATUS FOR REDUCING ESD DURING THERMAL SHOCK TESTING

Min-Chung Jon, Princeton Junction; Douglas Charles Smith, Rumson, both of N.J., and Joseph Charles Veshinfsky, Catasauqua, Pa., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Mar. 3, 1995, Ser. No. 398,244
Int. Cl.[6] H05F *3/02*; **G01N** *25/18*

U.S. Cl. 361—220 **12 Claims**



1. A method of minimizing electrostatic discharge during thermal shock testing of an electronic device, the method characterized in the steps of:

disposing said electronic device within the interior of a first electrically conductive enclosure;

disposing said first electrically conductive enclosure within the interior of a second electrically conductive enclosure; and

immersing said first and second electrically conductive enclosures in a liquid on which electrostatic charge may build up on the surface of said liquid, said first and second electrically conductive enclosures being such that the first electrically conductive enclosure acts as a Faraday cage for said device, whereby at least a substantial portion of any electrostatic charge that may be on the surface of said liquid will be precluded from passing to said device.

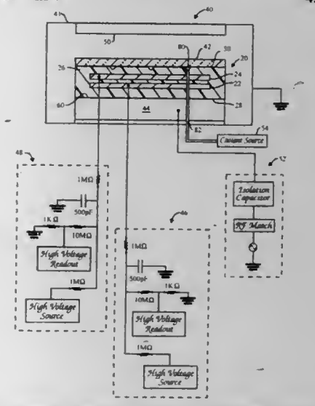
5,646,814

MULTI-ELECTRODE ELECTROSTATIC CHUCK

Shamouil Shamouilian, San Jose; Samuel Broydo, Los Altos Hills, and Manoocher Birang, Los Gatos, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Filed Jul. 15, 1994, Ser. No. 276,010
Int. Cl.[6] H02N *13/00*

U.S. Cl. 361—234 **45 Claims**



1. An electrostatic chuck for holding a substrate on a support in a process chamber, the chuck comprising:

(a) first and second electrodes;

(b) a continuous insulator having (i) a lower portion below the first electrode, the lower portion having a bottom surface

suitable for resting on the support of the process chamber, (ii) a middle portion between the first and second electrodes, the middle portion being formed of a dielectric material, having a sufficiently elevated dielectric breakdown strength to substantially prevent the flow of electrons between the first and second electrodes, and (iii) an upper portion on the second electrode, the upper portion having a top surface suitable for holding a substrate thereon.

wherein, when the chuck is placed on a support in a process chamber, and a first voltage is applied to the first electrode, a first electrostatic force holds the chuck onto the support, and

wherein, when a substrate is placed on the top surface of the chuck, and a second voltage is applied to the second electrode, a second electrostatic force holds the substrate to the chuck.

5,646,815

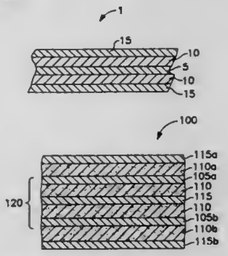
ELECTROCHEMICAL CAPACITOR WITH ELECTRODE AND ELECTROLYTE LAYERS HAVING THE SAME POLYMER AND SOLVENT

Boone B. Owens, Minneapolis, and James M. Speckien, Vadnais Heights, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Division of Ser. No. 984,133, Dec. 1, 1992. This application Jun. 2, 1995, Ser. No. 459,918

Int. Cl.[6] H01G 9/00

U.S. Cl. 361—502 **11 Claims**



1. An electrochemical capacitor, comprising:

a. an electrode layer having electrically conductive carbon, a soluble salt, a non-aqueous aprotic liquid solvent, and a polymer; and

b. an ionically conductive electrolyte layer in contact with the electrode layer, the electrolyte layer comprising an alkali metal salt, the polymer, and the non-aqueous aprotic liquid solvent;

the polymer and the solvent being the same in each of the electrode layer and the electrolyte layer.

5,646,816

IDENTIFICATION ICON INDICIA FOR PLUG-IN UNITS OF A POWER DISTRIBUTION SYSTEM

Tor Andrew Alden, Bernardsville, N.J.; Edward Clark Fontana, and Sonja K. Somdahl, both of Rockwall, Tex., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Mar. 18, 1994, Ser. No. 210,212

Int. Cl.[6] H02B 1/26

U.S. Cl. 361—622 **13 Claims**

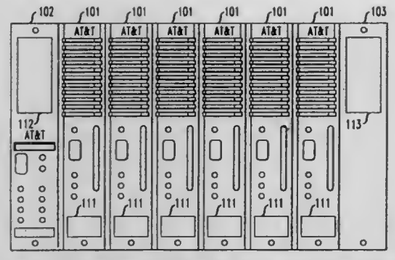
1. A power plant, comprising:

a supporting infrastructure including a shelf for accepting a plurality of modular power processing circuits;

an input distribution unit;

an output distribution unit;

a plurality of intermediate power processing units arranged in a linear series and electrically connected intermediate the input distribution unit and the output distribution unit in order to



process power supplied from the input distribution unit and deliver power to the output distribution unit;

the input distribution unit including means for accepting power from a power source and further including a first identification indicia providing an indication of an output voltage supplied to the plurality of intermediate power processing units by a label having a first radiant energy frequency visually displaying a first color in a first specific matrix position;

the output distribution unit including means for distributing power to a load and further including a second identification indicia providing an indication of an appropriate input voltage to be supplied to it by the plurality of intermediate power processing units by a label having a second radiant energy frequency visually displaying a second color in a second specific matrix position;

identification indicia associated with each of the intermediate power processing units, including;

a third identification indicia providing an indication of an acceptable input voltage accepted from the input distribution unit by including the first radiant energy frequency visually displaying the first color in the first specific matrix position, wherein a match between the voltage from the input distribution unit and the acceptable input voltage is indicated by an identity of the radiant energy frequency displayed; and

the third identification indicia providing an indication of an output voltage of the intermediate power processing unit supplied to the output distribution unit by including the second radiant energy frequency visually displaying the second color in the second specific matrix position, wherein a match between the output voltage of the intermediate distribution unit and a voltage acceptable to the output distribution unit is indicated by an identity of the radiant energy frequency.

5,646,817

ADJUSTABLE KEYBOARD

Brian E. Manser, Salem, Wis.; Peter A. Ojeda, IV; Anton R. Poole, both of St. Joseph, Mich., and Guoming Frank Wu, Arlington Heights, Ill., assignors to Zenith Data Systems Corporation, Sacramento, Calif.

Continuation of Ser. No. 218,625, Mar. 28, 1994. This application Mar. 13, 1996, Ser. No. 614,481

Int. Cl.[6] G06F 1/16

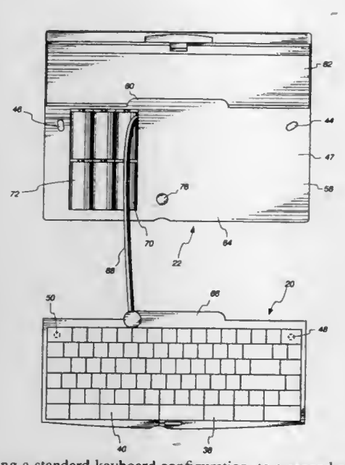
U.S. Cl. 361—680 **21 Claims**

1. A keyboard assembly for a personal computer, the keyboard assembly adapted to being carried by a support in a first configuration and operable when separated from said support in a second configuration, the keyboard assembly comprising:

a keyboard split at a predetermined breakline, defining two keyboard sections, said keyboard sections each having a complementary notch formed on a bottom surface;

means for electrically connecting said keyboard sections to said personal computer;

means for rotatably coupling said keyboard sections together about a predetermined pivot axis adjacent one end of said breakline to enable said keyboard sections to be rotated relative to one another from a first position, wherein said keyboard sections are adjacent one another, said first position



being a standard keyboard configuration, to a second position wherein said keyboard sections are split apart;

means for enabling said keyboard sections to be removed from said support; and

a latch located on said support, said latch including a pin with an enlarged head in a fixed position on said support, said enlarged head adapted to engage each of said notches on the underside of said keyboard when said keyboard is located on said support in said first position to prevent movement of said keyboard in a direction perpendicular to the plane of said support.

5,646,818

ELECTRONIC APPLIANCE WITH LATERAL SUPPORT FOR DISPLAY UNIT AND KEYBOARD

Karl-Heinz Hahn, Eggenstein-Leopoldshafen, Germany, assignor to Siemens Aktiengesellschaft, Germany

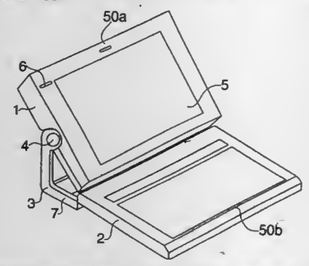
PCT No. PCT/DE94/00916, § 371 Date Feb. 13, 1996, § 102(e) Date Feb. 13, 1996, PCT Pub. No. WO95/05631, PCT Pub. Date Feb. 23, 1995

PCT Filed Aug. 8, 1994, Ser. No. 596,308

Claims priority, application Germany, Aug. 19, 1993, 9312455 U

Int. Cl.[6] G06F 1/16; H05K 5/00

U.S. Cl. 361—681 **9 Claims**



1. An electronic appliance with a display unit and a keyboard, comprising:

two laterally arranged lateral supports, the display unit being pivotable on the two lateral supports, each of the two lateral supports including:

a base part for providing a secure footing, each base part including a support mount in a front portion of the base part, and

a side member extending upward from a rear portion of the base part, each side member including a pivot bearing,

wherein the display unit is pivotally supported approximately about its center of gravity by the pivot bearings of the side members and a rear portion of the keyboard is received by the support mounts of the base parts.

5,646,819

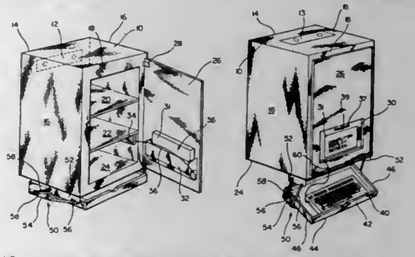
KITCHEN CABINET WITH A COMPUTER WORK STATION

Ralph S. Hill, III, 20637 Hartsbourne Way, Germantown, Md. 20874

Filed Jul. 19, 1995, Ser. No. 504,237

Int. Cl.[6] G06F 1/16

U.S. Cl. 361—683 **10 Claims**



10. A computer center for use in the kitchen comprising:

(a) a kitchen cabinet, said kitchen cabinet having a vertically extending door and a bottom portion, said door having front and back surfaces;

(b) a note-type computer screen;

(c) first mounting means on said door of a size and shape for mounting said computer screen on said vertically extending door;

(d) electronic means for inputting instructions to said computer screen;

(e) second mounting means on said kitchen cabinet for mounting said electronic means on said kitchen cabinet;

(f) said door including a generally rectangular hole, and said first mounting means removably mounting said computer screen on said back surface of said door so as to be viewable through said hole.

5,646,820

PORTABLE COMPUTER HAVING A CASE WHICH CONTAINS A SPEAKER IN A FRONT WALL AND A KEYBOARD IN AN UPPER WALL

Masami Honda, and Kazuaki Kawabata, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 239,255, May 6, 1994, Pat. No. 5,590,024. This application Aug. 8, 1996, Ser. No. 689,376

Claims priority, application Japan, Jun. 21, 1993, 5-149544

Int. Cl.[6] G06F 1/16; H05K 7/02; 9/00

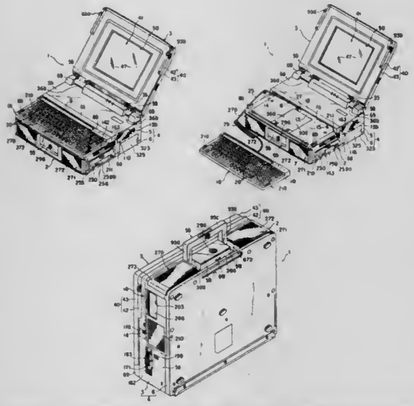
U.S. Cl. 361—683 **12 Claims**

1. A portable computer comprising:

a box-like case having a front wall and an upper wall continuous to the front wall;

a keyboard situated on the upper wall of said case;

a display unit supported by said case to be rotatable between a first position wherein the display unit covers said keyboard and a second position wherein the display unit exposes said keyboard; and



a speaker situated on the front wall of said case and being visible from the outside of said case when said display unit is in said first position and in said second position.

5,646,821

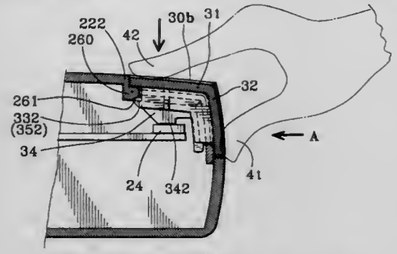
PORTABLE COMPUTER WITH TRACKBALL KEYS MOUNTED ON AN EDGE OF A COMPUTER HOUSING

Chen-Ming Sun, Taipei, Taiwan, assignor to Mitac International Corp., Hsinchu, Taiwan

Filed Sep. 4, 1996, Ser. No. 707,504

Int. Cl.[6] H05K *5/02;* **G06F** *1/16*

U.S. Cl. 361—683 **5 Claims**



1. A portable computer comprising:

a computer housing having a top wall and a front wall;

a pointing device mounted on said top wall adjacent to said front wall;

a concavity formed adjacent to said pointing device and open at said top wall and said front wall; and

a press button mounted resiliently in said concavity, said press button having a top press plate exposed from said top wall and a front press plate extending forwardly and downwardly of said top press plate and exposed from said front wall, said press button being operated by exerting pressure on either said top press plate or said front press plate.

5,646,822

HEAT PIPE EXCHANGER SYSTEM FOR COOLING A HINGED COMPUTING DEVICE

Rakesh Bhatia, Sunnyvale, and Kevin Haley, San Jose, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

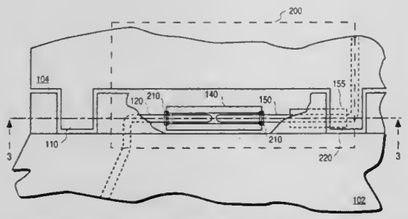
Filed Aug. 30, 1995, Ser. No. 521,315

Int. Cl.[6] G06F *1/20;* **H05K** *7/20;* **F28D** *15/02*

U.S. Cl. 361—687 **7 Claims**

7. A hinged computing device comprising:

a first hinged member having a first edge;



a second hinged member having a second edge rotatably attached to the first edge of the first hinged member;

a first heat pipe coupled to the first hinged member, the first heat pipe having a first closed end;

a second heat pipe coupled to the second hinged member, the second heat pipe having a second closed end; and

heat exchange linkage means for thermally coupling the first closed end of the first heat pipe to the second closed end of the second heat pipe and allowing hinging motion between the first and second hinged members.

5,646,823

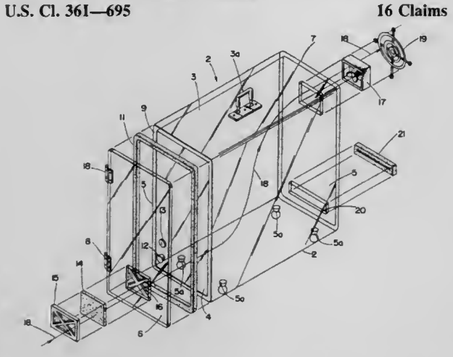
COMPUTER AND INSTRUMENT ENCLOSURE

Michael D. Amori, 10055 W. Carmody La., Lakewood, Colo. 80227

Continuation-in-part of Ser. No. 213,546, Mar. 16, 1994, abandoned. This application Mar. 30, 1995, Ser. No. 413,488

Int. Cl.[6] H05K *7/20*

U.S. Cl. 361—695 **16 Claims**



1. A rigid enclosure for the protection of electronic equipment, comprising:

(a) a structural enclosure defining a component receiving cavity, which enclosure comprises upper and lower panels, two opposed side panels and a rearward panel, said panels fixably attached to each other, and an access panel that is movably attached to said enclosure, so as to form said cavity, wherein said access panel can be opened and closed with respect to said enclosure to enable a user thereof to gain access to said receiving cavity, and wherein at least one of said panels defines a ventilation means air passage; at least one of said panels defines a filter means air passage and at least one of said panels defines a connecting wire passage, and said enclosure is capable of transporting a component residing within said cavity;

(b) ventilation means fixably attached adjacent a portion of said panel that defines said ventilation means air passage, comprising means for drawing air from said enclosure cavity through said ventilation means air passage and exhausting such air outside of said enclosure cavity;

(c) filter means comprising filter media removably attached to at least one of said panels adjacent said filter means air passage, through which air from outside of said enclosure is drawn by the action of said ventilation means when said access panel is closed; and

(d) sealing means comprising suitable sealing media that is fixably installed at said connecting wire passage and at interfaces between said access panel and all panels juxtaposed said access panel such that when said access panel is closed with respect to said enclosure and said ventilation means is operating, then a substantially sole flow of air from outside of said enclosure is forced through said filter media, into said cavity, and then out from said cavity through said ventilation means air passage.

5,646,824

ELECTRONIC EQUIPMENT AND LAP-TOP TYPE ELECTRONIC EQUIPMENT

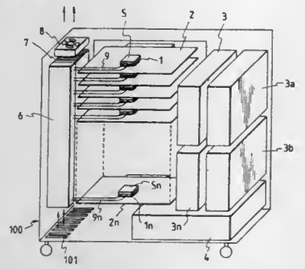
Shigeo Ohashi; Toshio Hatada, both of Tsuchiura; Takeo Tanaka, Minori-machi, and Susumu Iwai, Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 214,102, Mar. 17, 1994, abandoned. This application Jun. 12, 1995, Ser. No. 489,623

Claims priority, application Japan, Mar. 17, 1993, 5-056804

Int. Cl.[6] H05K *7/20*

U.S. Cl. 361—699 **14 Claims**



1. An electronic equipment comprising a body of equipment containing at least one electronic circuit board mounting a plurality of semiconductor elements thereon, at least one flat shaped header having a heat receiving side with an inside flow passage capable of flowing cooling liquid and thermally connected to at least one of said semiconductor elements, and a heat exchanging radiator having an inside flow passage capable of flowing cooling liquid, wherein said at least one header having the heat receiving side is thermally connected to said heat exchanging radiator by at least one flexible tube, and further comprising a liquid transmitting mechanism to reciprocally transmit cooling liquid between said at least one header having the heat receiving side and said heat exchanging radiator, said liquid transmitting mechanism being provided in said heat radiating side, said heat exchanging radiator being positioned in isolated relationship with the at least one semiconductor element to which said at least one header having the heat receiving side is thermally connected.

5,646,825

COOLING DEVICE FOR COOLING ELECTRIC AND ELECTRONIC COMPONENTS AND BATTERIES IN A SWITCH CABINET

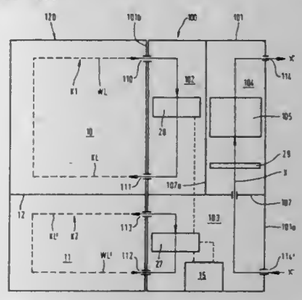
Werner Hüttenlocher, Calw-Stammheim, and Harald Knoblauch, Hamburg, both of Germany, assignors to Otto Pfannenberg Electro-Spezialgeratebau GmbH, Hamburg, Germany

Filed Aug. 30, 1995, Ser. No. 521,309

Claims priority, application Germany, Jan. 23, 1995, 295 00 901.2; Jun. 23, 1995, 295 09 930.5

Int. Cl.[6] H05K *7/20*

U.S. Cl. 361—699 **26 Claims**



1. A cooling device for cooling electric and electronic components and batteries in a switch cabinet, the cooling device comprising a housing having a first chamber, a second chamber below the first chamber and a third chamber separate from the first and second chambers, a first heat exchanger mounted in the first chamber of the housing, the first chamber having a top intake for warm air drawn by suction from a first chamber of the switch cabinet and passed through the first heat exchanger, and an outlet for cold air conducted from the first heat exchanger, a second heat exchanger mounted in the second chamber of the housing, the second chamber having a bottom intake for warm air drawn by suction from a second chamber of the switch cabinet and passed through the second heat exchanger, and an outlet for cold air conducted from the second heat exchanger, the outlet for cold air conducted from the first heat exchanger being located adjacent the outlet for cold air conducted from the second heat exchanger, and a condenser and a ventilator mounted in the third chamber of the housing, the third chamber of the housing having a lower intake for supplying condensed air and an upper outlet for condenser exhaust air, further comprising a compressor for feeding both the first and the second heat exchangers.

5,646,826

PRINTED CIRCUIT BOARD AND HEAT SINK ARRANGEMENT

Roman Katchmar, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada

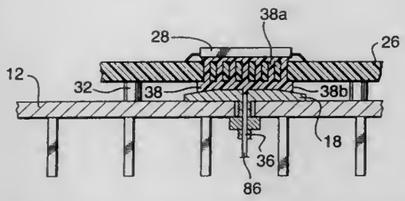
Continuation-in-part of Ser. No. 579,989, Dec. 28, 1995, abandoned, which is a continuation-in-part of Ser. No. 516,271, Aug. 17, 1995, abandoned, which is a continuation-in-part of Ser. No. 378,336, Jan. 26, 1995, abandoned. This application Feb. 15, 1996, Ser. No. 601,671

Int. Cl.[6] H05K *7/20*

U.S. Cl. 361—704 **25 Claims**

11. A printed circuit board and heat sink structure assembly comprising:

a structure of a printed circuit board and an electronic component mounted upon a first side of the printed circuit board;



a heat sink structure with a hole defined through the heat sink structure;

the two structures disposed face-to-face and spaced apart with the hole extending in a direction generally towards the electronic component;

and thermally conductive material that has flowed through the hole to be disposed between the two structures and occupy a spatial region extending across the hole and in heat conductive contact with both structures and in alignment with the electronic component.

5,646,827

ELECTRONIC DEVICE HAVING A PLURALITY OF CIRCUIT BOARDS ARRANGED THEREIN

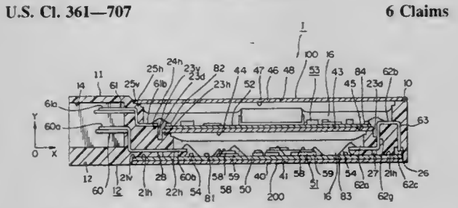
Yasunobu Hirao, Toyokawa; Takashi Nagasaka, Anjo; Yuji Motoyama, Okazaki, and Yukihiro Maeda, Kasugai, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Continuation-in-part of Ser. No. 118,785, Sep. 10, 1993, Pat. No. 5,408,383, which is a continuation of Ser. No. 889,701, May 29, 1992, abandoned. This application Mar. 6, 1995, Ser. No. 400,241

Claims priority, application Japan, May 31, 1991, 3-157678

Int. Cl.[6] H05K *7/20*

U.S. Cl. 361—707 **6 Claims**



1. An electronic device comprising:

a casing including a frame having a stepped portion;

circuit boards with electronic circuits mounted thereon, said circuit boards arranged in parallel and spaced from each other within said casing, said stepped portion defining a horizontal plane that supports a peripheral edge portion of at least one of said circuit boards and a vertical plane extending from said horizontal plane, said circuit boards including:

a first circuit board mounted and engaged with said frame so as to and

a second circuit board mounted and arranged inside said frame such that a space exists between said first circuit board and said second circuit board said second circuit board including at least one wire-bonded portion; and

a reinforcing plate disposed on a side of said second circuit board facing said space, said reinforcing plate having a stiffness necessary to enable a predetermined amount of wire-bonding energy to be completely applied to a portion thereof adjacent to said wire-bonded portion of said second circuit board.

5,646,828

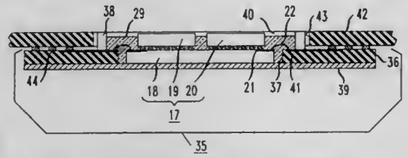
THIN PACKAGING OF MULTI-CHIP MODULES WITH ENHANCED THERMAL/POWER MANAGEMENT

Yinon Degani, Highland Park; Thomas Dixon Dudderar, Chatham; Byung Joon Han, Scotch Plains, and Alan Michael Lyons, New Providence, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Division of Ser. No. 392,640, Feb. 24, 1995, abandoned. This application Aug. 20, 1996, Ser. No. 697,121

Int. Cl.[6] H05K *7/20*

U.S. Cl. 361—715 **5 Claims**



1. A multi-chip module (MCM) package comprising:

a. a first printed wiring board (PWB) provided with at least one aperture extending from the top surface of said first PWB through the thickness of said first PWB to the bottom surface of said first PWB,

b. a structural member attached to the bottom surface of said first PWB and covering said at least one aperture,

c. a pattern of electrical conductors on the top surface of said first PWB,

d. a multi-chip module tile positioned within said aperture with part of the multi-chip module tile contained within the aperture and part of the multi-chip module tile extending above the top surface of the first PWB, said multi-chip module further being attached to said structural member, said multi-chip module tile comprising a substrate with electrical conductors thereon, at least one silicon chip mounted on the substrate and electrically interconnected to electrical conductors on the substrate, with electrical conductors on the substrate interconnected to said pattern of electrical conductors on said first PWB,

e. a plurality of solder or conductive adhesive bonding means on the top surface of said first PWB, said bonding means interconnected to said pattern of electrical conductors on the top surface of the said first PWB,

f. a second PWB having at least one aperture extending from the top surface of said second PWB through the thickness of said second PWB to the bottom surface of said second PWB, said second PWB being bonded to said first PWB by said bonding means, and positioned so that the portion of said multi-chip module tile fits at least partially within the aperture in the second PWB,

g. encapsulation means comprising an encapsulating material encompassing the multi-chip module tile, and the electrical conductors interconnecting the silicon chip to the substrate and the substrate to the first PWB.

5,646,829

RESIN SEALING TYPE SEMICONDUCTOR DEVICE HAVING FIXED INNER LEADS

Yoshiki Sota, Tenri, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 31, 1995, Ser. No. 455,626

Claims priority, application Japan, Nov. 25, 1994, 6-290259

Int. Cl.[6] H05K *5/02;* **H01L** *23/495;23/498*

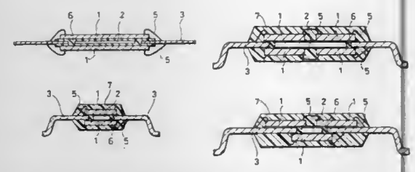
U.S. Cl. 361—813 **19 Claims**

1. A resin sealing type semiconductor device, comprising:

a die pad;

inner leads;

an insulating fixing member for securing leading end portions on a die pad side of the inner leads to said die pad in a flat state and coating both surfaces of said die pad;



semiconductor chips directly die-bonded to said fixing member; and

bonding wires for electrically connecting said semiconductor chips to said inner leads,

wherein the leading end portions of said inner leads are extended so as to be inserted between a bottom surface of said semiconductor chip mounted on one surface of said die pad and a bottom surface of the semiconductor chip mounted on the other surface of said die pad.

5,646,830

SEMICONDUCTOR DEVICE HAVING AN INTERCONNECTING CIRCUIT BOARD

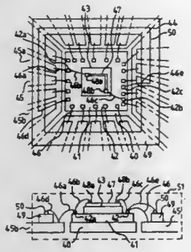
Junya Nagano, Kanagawa-ken, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Division of Ser. No. 253,589, Jun. 3, 1994, Pat. No. 5,473,514, which is a continuation of Ser. No. 808,848, Dec. 17, 1991, abandoned. This application Jun. 2, 1995, Ser. No. 460,792

Claims priority, application Japan, Dec. 20, 1990, 2-404429; Dec. 10, 1991, 3-326148

Int. Cl.[6] H05K *5/02;* **H01L** *23/12*

U.S. Cl. 361—813 **6 Claims**



1. A semiconductor device, comprising:

an island formed in a predetermined plane;

a semiconductor chip having a plurality of electrically connecting electrode pads, the chip being disposed on the island;

a plurality of inner leads disposed around the island and the semiconductor chip;

a first interconnecting circuit board having a first electrically conductive pattern, the first interconnecting circuit board being disposed on the semiconductor chip;

a first electrically connecting means for connecting the first electrically conductive pattern an a first one of the inner leads;

a second electrically connecting means for connecting the first electrically conductive pattern and a first one of the electrically connecting electrode pads distant from the first one of the inner leads;

a second interconnecting circuit board having a second electrically conductive pattern, the second interconnecting circuit board being disposed on the plurality of the inner leads;

a third electrically connecting means for connecting the second electrically conductive pattern and a second one of the electrically connecting electrode pads; and

a fourth electrically connecting means for connecting the second electrically conductive pattern and a second one of the inner leads distant from the second one of the electrically connecting electrode pads,

5,646,831

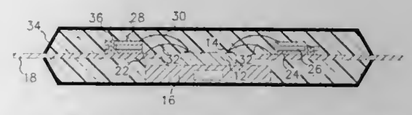
ELECTRICALLY ENHANCED POWER QUAD FLAT PACK ARRANGEMENT

Kamran Manteghi, Manteca, Calif., assignor to VLSI Technology, Inc., San Jose, Calif.

Filed Dec. 28, 1995, Ser. No. 581,294

Int. Cl.[6] H05K *7/20*

U.S. Cl. 361—813 **7 Claims**



1. A quad flat pack arrangement which provides for an electrically enhanced integrated-circuit package structure, comprising:

a thermally-conductive, electrically-insulated substrate having a top surface;

an integrated-circuit die with bonding pads being centrally attached to the top surface of said thermally-conductive, electrically insulated substrate;

a lead frame having a plurality of inwardly-extending bonding fingers and a centrally-located open portion;

said lead frame having the bottom side of said bonding fingers attached to the top surface of said thermally-conductive, electrically-insulated substrate by a non-conductive adhesive so that the open portion thereof overlies said integrated-circuit die, said plurality of bonding fingers being disposed peripherally surrounding said integrated-circuit die;

a first conductive layer being disposed over and bonded to the top surface of said lead frame so as to peripherally surround said integrated-circuit die;

a double-sided printed circuit board having its bottom surface disposed over and bonded to the top surface of said first conductive layer so as to peripherally surround said integrated-circuit die;

a second conductive layer being disposed over and bonded to the top surface of said printed circuit board so as to peripherally surround said integrated-circuit die, said printed circuit board being sandwiched between said first and second conductive layers;

bonding wires interconnected between said bonding pads formed on said integrated-circuit die and said first and second conductive layers and between said bonding pads and said bonding fingers; and

a plastic material being molded around said thermally-conductive, electrically-insulated substrate, said integrated-circuit die, said lead frame, said printed circuit board and said conductive layers.

5,646,832

POWER FACTOR CORRECTED SWITCHING POWER SUPPLY

William R. Pulhamus, Jr., Bloomfield, and Rajiv K. Baphna, Rochester, both of N.Y., assignors to Harris Corporation, Melbourne, Fla.

Filed Jun. 28, 1994, Ser. No. 266,692

Int. Cl.[6] H02M *3/335*

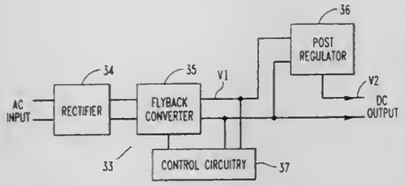
U.S. Cl. 363—24 **20 Claims**

1. A DC power supply for converting an AC input voltage to a desired DC output voltage comprising:

rectifier means for providing a rectified AC voltage;

a flyback converter comprising:

a transformer with primary and secondary windings for providing the intermediate DC voltage across a secondary winding of the transformer; and



first and second semiconductor switches connected to said primary winding for selectively providing the rectified AC voltage to the primary winding, said first switch having a breakdown voltage less than a peak rectified AC voltage, and said second switch having a breakdown voltage greater than the peak rectified AC voltage for providing an intermediate DC voltage less than or greater than the desired DC output voltage;

a post regulator for boosting the intermediate DC voltage from said flyback converter to the desired DC output voltage; and

means for controlling said converter.

5,646,833

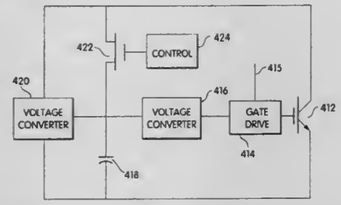
APPARATUS AND METHOD FOR DERIVING POWER FOR SWITCHING A SWITCH FROM VOLTAGE ACROSS THE SWITCH

Marcel P. J. Gaudreau, Lexington, Mass., and Jean-Paul Dionne, Lapocatiere, Canada, assignors to Diversified Technologies, Inc., Bedford, Mass.

Division of Ser. No. 141,485, Oct. 22, 1993, Pat. No. 5,444,610. This application Mar. 16, 1995, Ser. No. 405,370

Int. Cl.[6] H02H *7/125*

U.S. Cl. 363—54 **8 Claims**



1. Apparatus for deriving control voltages for a gate drive from voltage across a power switch, the gate drive for opening and closing the power switch in response to a control signal, the apparatus comprising:

(A) a first voltage converter, connected in parallel with the power switch, for converting a high input voltage which appears across the power switch when the power switch is open to a low output voltage; and

(B) a series combination, connected in parallel with the power switch, including

a second voltage converter for receiving the low output voltage from the first voltage converter and converting it to a first control voltage for the gate drive, and

a high-voltage switch, connected in series with the second voltage converter, for opening and closing when the power switch is opened and closed by the gate drive in response to the control signal, the high-voltage switch providing to the second voltage converter a low input voltage which appears across the power switch when the power switch is closed, the second voltage converter for converting the low input voltage to a second control voltage for the gate drive.

5,646,834

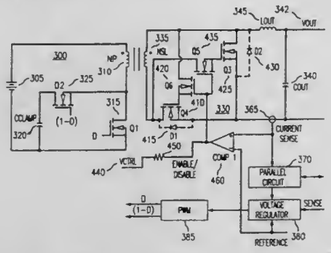
CIRCUIT AND METHOD FOR CONTROLLING A SYNCHRONOUS RECTIFIER CONVERTER

Allen Frank Rozman, Richardson, Tex., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed May 4, 1995, Ser. No. 434,712

Int. Cl.[6] H02M *5/42;7/04;* **G05F** *1/10;1/40*

U.S. Cl. 363—89 **31 Claims**



1. A rectifier having an input and an output, said rectifier comprising:

switching circuitry coupled between said input and said output, said switching circuitry adapted to operate in selected one of (a) an active bidirectional mode of operation and (b) an inactive unidirectional mode of operation to rectify substantially alternating current at said input to produce substantially direct current at said output; and

control circuitry coupled between said rectifier output and a control input of said switching circuitry, said control circuitry capable of sensing an output level of said rectifier and transitioning said switching circuitry between said active bidirectional mode and said inactive unidirectional mode as a function of said output level thereby to prevent substantial reverse power flow through said rectifier.

5,646,835

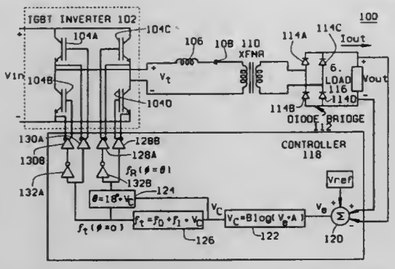
SERIES RESONANT CONVERTER

Jason Stuart Katcha, Shorewood, Wis., assignor to General Electric Company, Milwaukee, Wis.

Filed Nov. 20, 1995, Ser. No. 559,676

Int. Cl.[6] H02M *7/5387*

U.S. Cl. 363—98 **23 Claims**



1. A series resonant power converter for supplying power in a magnetic resonance imaging machine, said converter comprising:

an inverter;

an inductor coupled to the output of said inverter;

a capacitor coupled in a series with said inductor;

a transformer having a primary side and a secondary side, said capacitor coupled to said primary side of said transformer;

a diode bridge coupled to said secondary side of said transformer, an output of said diode bridge coupled to at least one amplifier for coupling to a gradient coil of the magnetic resonance imaging machine; and

a controller coupled to the output of said diode bridge and configured for controlling, substantially simultaneously, both the frequency and phase delay of said inverter.

5,646,836

SWITCH MODE POWER SUPPLY USING A SATURABLE INDUCTOR TO PROVIDE A PULSED CURRENT SOURCE

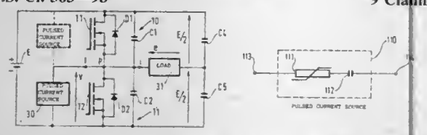
Daniel Sadarnac, and Sylvain D'Almeida, both of Gif sur Yvette, France, assignors to Alcatel Converters, Paris, France

Filed Apr. 10, 1996, Ser. No. 630,585

Claims priority, application France, Apr. 11, 1995, 95 04327

Int. Cl.[6] H02M *7/44*

U.S. Cl. 363—98 **9 Claims**



1. A switch mode power supply comprising at least one bridge arm comprising two switching cells in series receiving a direct current voltage to be switched, each switching cell comprising switching means in parallel with a capacitor and a protection diode, said switching means being alternately closed and opened to supply an alternating current voltage at a switching frequency applied to a load one terminal of which is connected to a common point of said switching cells, a pulsed current source comprising a saturable inductor being connected to said common point,

wherein said saturable inductor is provided by a device comprising a primary circuit with two windings and a secondary circuit with a single winding to which a direct current source is connected, all of said windings being wound on a magnetic core and said windings of said primary circuit being connected in parallel and wound in opposite directions,

and a capacitor is connected in series with said saturable inductor.

5,646,837

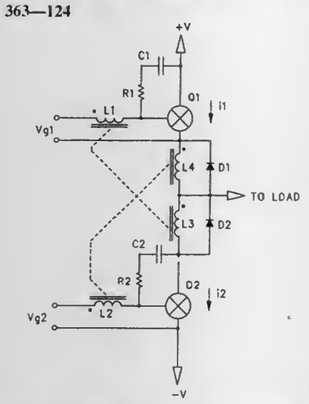
PULSE-WIDTH MODULATED CIRCUIT WITH IMPROVED LINEARITY

Craig R. Weggel, Willow Grove, Pa., assignor to Performance Controls, Inc., Horsham, Pa.

Filed Dec. 19, 1995, Ser. No. 575,063

Int. Cl.[6] H02H *7/122*

U.S. Cl. 363—124 **13 Claims**



1. A pulse-width modulated (PWM) circuit for applying current to a load, the PWM circuit including at least one pair of switches, the switches being connected in series, both switches having source, gate, and drain terminals, the switches being connected to a power supply and to the load, the switches being controlled by control pulses applied to the gate terminals,

the circuit further comprising a first inductor connected in series with one of said first and second switches, and a second inductor connected to the gate terminal of another of said first and second switches, wherein said first and second inductors are magnetically coupled.

5,646,838

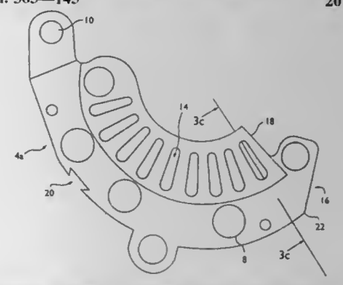
BRIDGE RECTIFIER FOR DIODE-RECTIFIED ALTERNATING CURRENT GENERATOR

Zvi Keidar, Neveh-Monosson, Israel; Eugen Popa, and Sorin Dubrinescu, both of Romania, Romania, assignors to Integral Automotive S.A., Luxembourg

Filed Dec. 13, 1995, Ser. No. 571,373

Int. Cl.[6] H02K *11/00;* **H02M** *1/00*

U.S. Cl. 363—145 **20 Claims**



1. A bridge rectifier for an alternating current generator, comprising:

a first heat sink having a first diode;

an insulating layer disposed on said first heat sink;

a second heat sink disposed on said insulating layer, said second heat sink including

a base section including first and second areas;

a second diode;

diode receiving holes in said base section and receiving said second diode therein;

a plateau section disposed on the first area of said base section; and

air passages disposed in and extending through said base and plateau sections;

connectors, connecting said first heat sink and said second heat sink together with said insulating layer disposed therebetween;

a cover connected to said base section and covering the second area of said base section; and

a capacitor connected to said cover and to said second heat sink,

wherein said second heat sink includes at least one of:

said air passages include external air passage slots opening an external portion of said air passages in said plateau section for enhanced cooling of said second heat sink;

said air passages include internal air passage slots opening an internal portion of said air passages in said plateau section for enhanced cooling of said second heat sink;

said air passages are repositioned to maximize exposure of said air passages to receive air from the alternating current generator;

said air passages include bottom channels formed in said second heat sink for receiving air from the bottom of said second heat sink for enhanced cooling of said second heat sink;

said diode receiving holes are separated by a substantially same distance between each other for balancing thermal stress resulting in uniform heat conduction by said second heat sink; and

said second area of said second heat sink includes ridges to increase a surface area of said second area for enhanced cooling of said second heat sink.

5,646,839

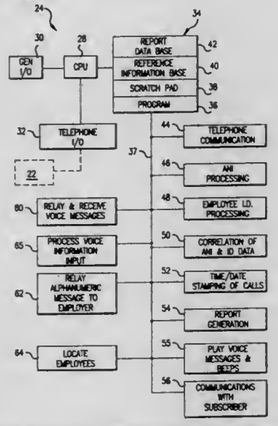
TELEPHONE-BASED PERSONNEL TRACKING SYSTEM

Penina Katz, Flushing, N.Y., assignor to MCIC Communications Corporation, Washington, D.C.

Continuation-in-part of Ser. No. 91,758, Jul. 14, 1993, abandoned, which is a division of Ser. No. 529,894, May 29, 1990, Pat. No. 5,255,183. This application Sep. 14, 1994, Ser. No. 306,301

Int. Cl.[6] G06F *17/60*

U.S. Cl. 379—93.01 **24 Claims**



1. A method for tracking employees and generating employee reports, the method comprising:

receiving telephone calls by a computer system from calling telephones located at various work sites;

detecting calling number identification (Caller ID) data which precedes the telephone calls, said Caller ID data operating in a manner of ANI information for the identifying telephones;

receiving from each of the calling telephones calling employee identification data which identifies a calling employee;

providing an employee identification data base containing valid employee identification data;

verifying the calling employee identification data against the data stored in the employee identification data base;

creating telephone call records of incoming calls and stamping each telephone call record with a time and date mark; and

generating a report containing information which defines for each telephone call record the location from which the telephone call was received based on said Caller ID data, the time and date of the telephone call and the identity of the employee.

5,646,840

LANGUAGE CONVERSION SYSTEM AND TEXT CREATING SYSTEM USING SUCH

Satoshi Yamauchi; Phyllis Anwyl; Masayuki Kameda; Takashi Katooka; Masumi Narita, all of Yokohama; Hideo Ito, Tokyo; Yoshihisa Ohguro, Yokohama; Taisen Hayashi, Tokyo; Hiroko Yamagata, Sagamihara; Sakiko Honma, Kawasaki, and Ayako Oono, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

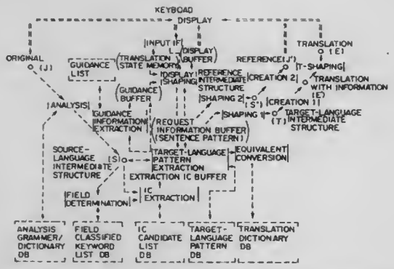
Division of Ser. No. 149,661, Nov. 9, 1993. This application May 26, 1995, Ser. No. 451,569

Claims priority, application Japan, Nov. 9, 1992, 4-323634; Nov. 13, 1992, 4-328848; Nov. 25, 1992, 4-339844; Dec. 4, 1992, 4-350763; Dec. 22, 1992, 4-356646; Feb. 10, 1993, 5-45919; Apr. 14, 1993, 5-112124; May 21, 1993, 5-142729; May 28, 1993, 5-151527

Int. Cl.[6] G06F *17/28*

U.S. Cl. 395—752 **12 Claims**

1. A text creating system comprising:



original text analyzing means for detecting text elements in an original text;

text element database for storing text elements forming texts;

text structure database for storing a plurality of text structures of target texts each of which structures is a set of text elements;

sentence pattern database for storing information used to create a sentence corresponding to each of the text element;

target-text structure deciding means for deciding a text structure adaptive to a set of the text elements of the original text from said text structure database;

text creating means for creating a target text based on the text structure decided by said target-text structure deciding means using the information of said sentence pattern database; and

editing means for editing the target text created by said text creating means,

wherein said text structure database stores degree of importance information of each of the text elements.

5,646,841

DETERMINATION OF FULL STOP IN AN ELECTRONICALLY-CONTROLLED AUTOMATIC TRANSMISSION

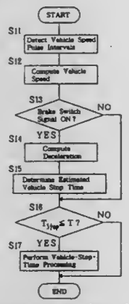
Hiroshi Suzuki, Gamagori; Shinichi Matsui, Nagoya, and Takahiro Yamashita, Nishio, all of Japan, assignors to Aisin AW Co., Ltd., Japan

Filed Nov. 7, 1994, Ser. No. 336,685

Claims priority, application Japan, Nov. 17, 1993, 5-287920

Int. Cl.[6] G06G *7/70*

U.S. Cl. 364—424.098 **9 Claims**



1. A control system for determination of a full stop of a vehicle, equipped with an electronically-controlled automatic transmission, the control system comprising:

means for computing vehicle speed on the basis of a signal from a vehicle speed sensor;

brake detection means for determining depression of a brake pedal and for generation of a brake signal;

deceleration detecting means for computing, responsive to a brake signal, rate of deceleration between a first predetermined vehicle speed and a second predetermined vehicle speed significantly lower than said first predetermined vehicle speed; and

estimated vehicle stop time setting means for determining an estimated vehicle stop time, from detection of said second vehicle speed to full stop of the vehicle, said estimated vehicle stop time corresponding to said deceleration rate determined by said deceleration detecting means, for decreasing said estimated vehicle stop time as said deceleration rate increases and for increasing said estimated vehicle stop time as said deceleration rate decreases.

5,646,842

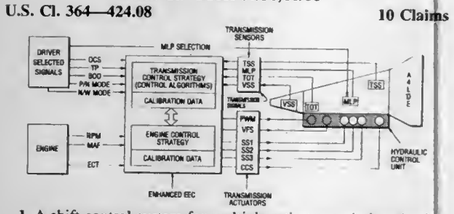
SHIFT CONTROL SYSTEM FOR A MULTIPLE RATIO AUTOMATIC TRANSMISSION

Winfried Franz-Xaver Schulz, Pulheim, and Johann Kirchhofer, Cologne, both of Germany, assignors to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 323,464, Oct. 14, 1994, abandoned. This application Jul. 31, 1995, Ser. No. 509,571

Int. Cl.[6] F16H *61/30;61/08*

U.S. Cl. 364—424.08 **10 Claims**



1. A shift control system for multiple ratio transmissions having gearing defining plural torque flow paths from a driving shaft to a driven shaft, said gearing having a low speed ratio, a high speed ratio and at least one speed ratio intermediate said high speed ratio and said low speed ratio and selectively engageable clutch means and brake means for effecting changes between said speed ratios;

a forward drive clutch connecting said driving shaft to a torque input element of said gearing during operation in said low speed ratio, in said intermediate speed ratio and in said high speed ratio;

said brake means including an intermediate speed ratio reaction brake and an intermediate speed ratio brake servo for actuating said intermediate speed ratio brake, said brake servo having a servo cylinder and a double acting piston in said servo cylinder defining a brake apply pressure chamber and a brake release pressure chamber;

a pressure source and a main pressure regulator valve means communicating with said pressure source for developing a line pressure;

a control valve circuit connecting said pressure source selectively to said clutch means and said brake means including a first shift valve having a first position corresponding to a low speed ratio and a second position corresponding to intermediate speed ratio, a second shift valve having a first position corresponding to intermediate speed ratio and a second position corresponding to high speed ratio;

said control valve circuit including further a multiple-position manual valve connecting said pressure source to said shift valves;

a modulator valve means in fluid communication with said main regulator valve means for modulating said line pressure and developing a modulated servo pressure;

separate shift solenoid valve means for actuating said first and second shift valves;

an electronic microprocessor control means for activating said shift solenoid valve means in response to operating variables;

said first and second shift valves, in response to commands of said microprocessor control means, establishing and disestablishing a connection between said brake apply pressure chamber and said modulator valve means and between said brake release pressure chamber and exhaust, whereby said modulated servo pressure develops an intermediate speed ratio brake force independently of said line pressure whereby brake application rate is controlled by said microprocessor while said brake release chamber is exhausted during a low speed ratio to intermediate ratio upshift.

5,646,843

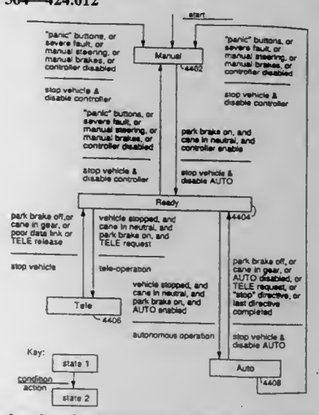
APPARATUS AND METHOD FOR SURFACE BASED VEHICLE CONTROL SYSTEM

Adam J. Gudat, Elelstein; Karl W. Kleimenhagen; Dana A. Christensen, both of Peoria; Carl A. Kemner, Peoria Heights; Walter J. Bradbury, Peoria; Craig L. Koehrsen, Peoria; Christos T. Kyrtsos, Peoria; Norman K. Lay, Peoria; Joel L. Peterson, Peoria; Larry E. Schmidt, Peoria; Darrell E. Stafford, Dunlap, and Louis J. Weinbeck, Peoria, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Division of Ser. No. 487,980, Feb. 5, 1990, Pat. No. 5,610,815. This application May 1, 1995, Ser. No. 432,041

Int. Cl.[6] G06G *7/70*

U.S. Cl. 364—424.012 **2 Claims**



1. A surface based vehicle control system comprising:

(1) means for providing for manual operation of a vehicle, wherein an operator directly manipulates vehicle controls on the vehicle;

(2) means for providing for tele-operation of said vehicle, wherein the operator directly controls operation of said vehicle, including speed and steering, from a position remote from said vehicle;

(3) means for providing for autonomous operation of said vehicle; and

(4) means for providing for an orderly transition between manual operation, tele-operation, and autonomous operation of said vehicle.

5,646,844

METHOD AND APPARATUS FOR REAL-TIME MONITORING AND COORDINATION OF MULTIPLE GEOGRAPHY ALTERING MACHINES ON A WORK SITE

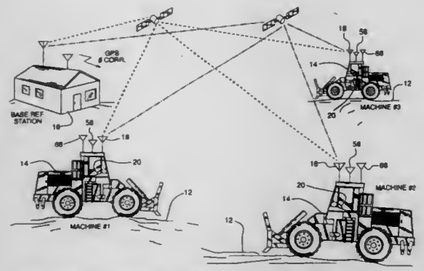
Adam J. Gudat, Edelstein, and Daniel E. Henderson, Washington, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Continuation of Ser. No. 228,837, Apr. 18, 1994, abandoned. This application May 11, 1995, Ser. No. 439,539

Int. Cl.[6] E02D *7/26*

U.S. Cl. 364—449.2 **31 Claims**

1. Apparatus for monitoring and coordinating the operations of multiple mobile geography-altering machines on a work site, comprising:



site database means for storing a site model representing the geography of the site;

means for generating digital position signals representing in real time the instantaneous three-dimensional site coordinate position of a first machine and a second machine as they traverse and alter the site;

means for receiving said position signals and for updating the site model in accordance with the position signals from the first and second machines to create a common site database comprising the real time updated geography of the site as it has been altered by the machines and the real time position of the machines with respect to the real time, updated geography of the site; and

means for directing the operation of the first machine relative to the second machine in real time in accordance with the real time updated geography of the common site database as the machines traverse the site.

5,646,845

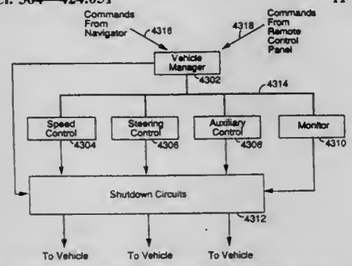
SYSTEM AND METHOD FOR CONTROLLING AN AUTONOMOUSLY NAVIGATED VEHICLE

Adam J. Gudat, Edelstein, Ill.; William L. Whittaker, Pittsburgh, Pa.; Karl W. Kleimenhagen; Dana A. Christensen, both of Peoria, Ill.; Carl A. Kemner, Peoria Heights, Ill.; Walter J. Bradbury, Peoria, Ill.; Craig L. Koehrsen, Peoria, Ill.; Christos T. Kyrtsos, Peoria, Ill.; Joel L. Peterson, Peoria, Ill.; Larry E. Schmidt, Peoria, Ill.; Darrell E. Stafford, Dunlap, Ill., and Louis J. Weinbeck, Peoria, Ill., assignors to Caterpillar Inc., Peoria, Ill.

Division of Ser. No. 487,980, Feb. 5, 1990. This application May 1, 1995, Ser. No. 432,561

Int. Cl.[6] G06F *19/00*

U.S. Cl. 364—424.051 **11 Claims**



1. In an autonomously navigated surface based vehicle, a system for controlling the vehicle comprising:

(1) first means for managing the sytem for controlling the vehicle, responsive to commands from either a vehicle navigation system or a remote control panel;

(2) second means for controlling speed of the vehicle in response to commands from said first means;

(3) third means for controlling steering of the vehicle in response to commands from said first means;

(4) fourth means for controlling auxiliary functions of the vehicle in response to commands from said first means:

(5) fifth means for monitoring the vehicle's status and operation of the first through fourth means in respone to commands from said first means;

(6) first bus means for interconnecting said first through fifth means; and

(7) shutdown means, connected to said first through fifth means, for shutting down the vehicle in repsone to an error condition in any of said first through fifth means.

5,646,846

GLOBAL POSITIONING PLANTER SYSTEM

Douglas M. Bruce, Cedar Rapids, and Allan L. Lorenc, Oelwein, both of Iowa, assignors to Rawson Control Systems, Oelwein, Iowa

Filed May 10, 1994, Ser. No. 240,332

Int. Cl.[6] G06F *7/70*

U.S. Cl. 364—424.07 **3 Claims**

1. A system for planting seeds comprising:

a. a tractor;

b. a radar and a GPS means on said tractor;

c. a seeder connected to said tractor having means for dispensing varying numbers of seeds per acre;

d. a servo drive and a seed planter connected to said servo drive;

e. a mapping computer connected to said GPS means;

f. means connected to said mapping computer for storing digitalized maps containing information on numbers of seeds per acre for multiple mapped areas;

g. a processor means connected to said means for storing digitalized maps; and,

h. means connected to the processor means for indicating the number of seeds per acre to be planted for each mapped area, said means connected to said servo drive.

5,646,847

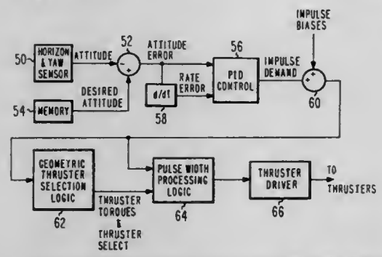
UNIVERSAL THRUSTER SELECTION LOGIC FOR SPACECRAFT ATTITUDE CONTROL

Santosh Ratan, Lawrenceville, and Neil Evan Goodzeit, Princeton, both of N.J., assignors to Martin Marietta Corp., East Windsor, N.J.

Filed Aug. 25, 1995, Ser. No. 519,442

Int. Cl.[6] B64G *1/26*

U.S. Cl. 364—424.013 **4 Claims**



1. A method for attitude control of a spacecraft, said spacecraft having at least five attitude control thrusters located in a manner such that a first set of at least three primary ones of said thrusters have their torque vector directions lying approximately in a primary plane, and the remaining attitude control thrusters, constituting a set of secondary thrusters, have their torque vector directions lying approximately in a second plane which is nonparallel with said primary plane, said method comprising the steps of:

sensing the current attitude of said spacecraft, to produce attitude-representative signals;

generating desired attitude signals representing the desired attitude of said spacecraft;

taking the difference between said attitude-representative and said desired attitude signals, to produce attitude error signals;

applying said attitude error signals to a controller having at least a proportional characteristic, for generating impulse demand signals representing impulse demand along each of three mutually orthogonal principal axes;

transforming the components of said impulse demand along said three principal axes into an impulse demand along a set of three mutually orthogonal auxiliary axes, two of which lie in said primary plane, and a third of which is normal to said primary plane;

selecting one of said thrusters of said set of secondary thrusters which has, along said third auxiliary axis, a torque component with the same sign as said transformed impulse demand along said third auxiliary axis;

calculating augmented impulse demand in said primary plane by

$$\begin{bmatrix} I_1 \\ I_2 \end{bmatrix}_{aug} = \begin{bmatrix} I_1 \\ I_2 \end{bmatrix} - \begin{bmatrix} T_{t1} \\ T_{t2} \end{bmatrix} \frac{I_3}{T_{t3}}$$

where:

I_1 is the component of the transformed impulse demand along the first auxiliary axis;

I_2 is the component of the transformed impulse demand along the second auxiliary axis;

I_3 is the component of the transformed impulse demand along the third auxiliary axis;

T_{t1} is the torque along the first auxiliary axis of the selected secondary thruster;

T_{t2} is the torque along the second auxiliary axis of the selected secondary thruster; and

T_{t3} is the torque along the third auxiliary axis of the selected secondary thruster; and the subscript "aug" identifies the augmented impulse demand matrix;

selecting first and second adjacent primary thrusters of said set of primary thrusters, said selected adjacent primary thrusters being those whose torque vectors in said primary plane most closely bound said augmented impulse demand in said primary plane;

calculating the pulse widths required for said first and second adjacent primary thrusters and said selected secondary thrusters to produce said impulse demand, according to

$$\begin{bmatrix} PW_f \\ PW_s \\ PW_t \end{bmatrix} = M^{-1} \begin{bmatrix} I_1 \\ I_2 \\ I_3 \end{bmatrix}$$

where;

PW_f is the pulse width of the selected first adjacent primary thruster;

PW_s is the pulse width of the selected second adjacent primary thruster;

PW_t is the pulse width of the selected secondary thruster;

M^{-1} is the inverse of matrix M, and matrix M is given by

$$M = \begin{bmatrix} T_{f1} & T_{s1} & T_{t1} \\ T_{f2} & T_{s2} & T_{t2} \\ T_{f3} & T_{s3} & T_{t3} \end{bmatrix}$$

where the first column of matrix M is the torque vector of the selected first primary adjacent thruster along the first, second and third auxiliary axes, the second column matrix M is the torque vector of the selected second adjacent primary thruster along the first, second and third auxiliary axes, and the third column of matrix M is the torque vector of the selected secondary thruster along the first, second and third auxiliary axes; and

applying the calculated pulse widths to said selected first and second primary thrusters and to said selected secondary thruster for torquing said spacecraft for attitude control.

5,646,848

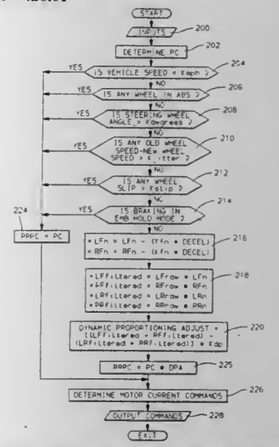
METHOD FOR PROPORTIONALLY CONTROLLING THE BRAKES OF A VEHICLE BASED ON TIRE DEFORMATION

Allen John Walenty, Macomb; Kevin Gerard Leppek, Rochester Hills, and David Alan Thatcher, Troy, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 9, 1995, Ser. No. 513,192

Int. Cl.[6] B60T *13/74*

U.S. Cl. 364—426.01 **5 Claims**



1. A method of brake control, comprising the steps of:

determining vehicle deceleration;

multiplying the vehicle deceleration by a front tire deformation constant to determine a front tire deformation increment;

multiplying the vehicle deceleration by a rear tire deformation constant to determine a rear tire deformation increment;

determining an updated front tire normalization value by subtracting the front tire deformation increment from a previous front tire normalization value;

determining an updated rear tire normalization value by adding the rear tire deformation increment to a previous rear tire normalization value;

measuring at least one front wheel speed and at least one rear wheel speed;

determining an adjusted front wheel speed by multiplying the measured front wheel speed by the updated front tire normalization value;

determining an adjusted rear wheel speed by multiplying the measured rear wheel speed by the updated rear tire normalization value;

determining a dynamic proportioning adjustment responsive to the adjusted front and rear wheel speeds; and

controlling brakes for the front and rear wheels responsive to the dynamic proportioning adjustment.

5,646,849

METHOD FOR PROPORTIONALLY CONTROLLING THE BRAKES OF A VEHICLE BASED ON FRONT AND REAR WHEEL SPEEDS

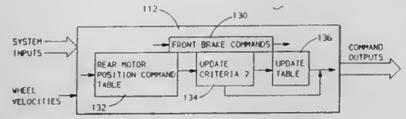
Allen John Walenty, Macomb; Kevin Gerard Leppek, Rochester Hills, and Alexander Kade, Grosse Pointe Woods, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 9, 1995, Ser. No. 513,191

Int. Cl.[6] B60T *13/74*

U.S. Cl. 364—426.01 **10 Claims**

1. An adaptive brake control method for use in a motor vehicle comprising the steps of:



storing a brake position command table in memory;

receiving an operator brake input from a brake pedal;

responsive to the brake pedal and the command table, determining a brake position command;

outputting the brake position command to a vehicle rear brake of a rear vehicle wheel;

measuring a first wheel speed of a front vehicle wheel;

measuring a second wheel speed of the rear vehicle wheel;

comparing the first and second wheel speeds;

determining a modification to the brake position command responsive to the comparison; and

storing the modification of the brake position command in the brake position command table in memory, wherein the brake position command table is adaptively updated and a front to rear brake proportioning of the vehicle is adaptively controlled.

5,646,850

AUTO-DRIVE CONTROL APPARATUS FOR USE IN VEHICLE APPARATUS

Akira Ishida, Sakai; Masahiro Takada, Hirakata; Kazushige Narazaki, Katano, and Osamu Ito, Kadoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

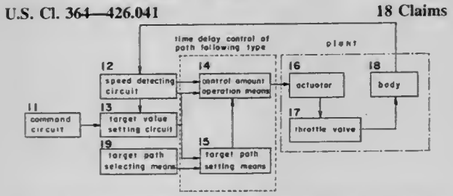
Continuation of Ser. No. 733,208, Jul. 19, 1991, abandoned.

This application Apr. 28, 1994, Ser. No. 234,601

Claims priority, application Japan, Jun. 13, 1990, 2-154742; Jul. 19, 1990, 2-191390; Nov. 15, 1990, 2-310773; Mar. 19, 1991, 3-054500; Jun. 21, 1991, 3-150039

Int. Cl.[6] B60K *31/00*

U.S. Cl. 364—426.041 **18 Claims**



1. An auto-drive control apparatus for use in a vehicle, comprising:

a speed detecting circuit for detecting an actual speed V(t) of the vehicle at a time (t),

an actuator for adjusting the speed of the vehicle through a throttle valve of an engine,

a target value set circuit for setting a target speed Vset,

a control amount operation means for calculating a control amount to be inputted into the actuator for adjusting the speed of the vehicle, and,

a target path set means for setting a target path Vd(t) denoting a time rate function of the speed of the vehicle as a function of time (t) at which the vehicle is to reach the target speed Vset from the actual speed V(t),

wherein the control amount operation means calculates the control amount to be inputted into the actuator to effect a control process in which the actual speed V(t) detected by the speed detecting circuit becomes the target speed Vset in accordance with the target path Vd(t).

5,646,851

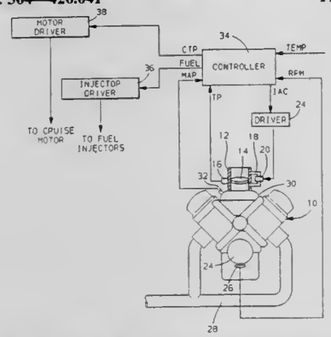
INTEGRATED ENGINE CONTROL

Glenn Patrick O'Connell, Troy, and Larry Theodore Nitz, Rochester, both of Mich., assignors to Saturn Corporation, Troy, Mich.

Filed Jun. 30, 1995, Ser. No. 496,993

Int. Cl.[6] B60K *31/04*

U.S. Cl. 364—426.041 **17 Claims**



1. In an automotive vehicle internal combustion engine receiving intake air through an intake air bore in which is disposed an intake air valve and through a bypass passage in which is disposed a bypass valve, the engine having a cruise control actuator mechanically linked to the intake air valve so that movement of the cruise control actuator results in proportionate movement of the intake air valve when the engine is operating within a predetermined operating region, a cruise control method for varying engine output torque to control vehicle speed, comprising the steps of:

establishing a cruise set speed;

sensing actual vehicle speed;

calculating speed error as the difference between the cruise set speed and the actual vehicle speed;

generating a desired torque change as a predetermined function of the calculated speed error as the amount of change in engine output torque needed to substantially reduce the speed error;

determining whether the engine is currently operating within the predetermined operating region; and when the engine is not determined to be operating within the predetermined operating region, then (a) calculating a cruise control actuator position change command as a predetermined function of the desired torque change, (b) calculating a bypass valve position change command as a predetermined function of the desired torque change, (c) varying the position of the cruise control actuator in accord with the calculated cruise control actuator position change command and varying the position of the bypass valve in accord with the calculated bypass valve position change command to provide the desired torque change.

5,646,852

METHOD AND DEVICE FOR VEHICLE FUEL CELL DYNAMIC POWER CONTROL

Helmut Lorenz, Unterensingen; Karl-Ernst Noreikat, Esslingen; Thomas Klaiber, Weinstadt; Wolfram Fleck, Erbach; Josef Sonntag, Illertissen; Gerald Hornburg, Elchingen, and Andreas Gaulhofer, Salem, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany

Continuation of Ser. No. 272,198, Jul. 8, 1994, abandoned.

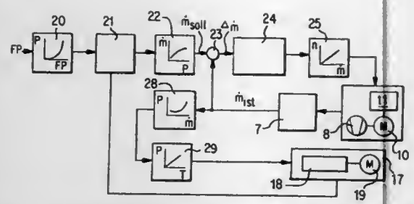
This application Sep. 3, 1996, Ser. No. 706,973

Claims priority, application Germany, Jul. 8, 1993, 43 22 765.1

Int. Cl.[6] H01M *8/18*

U.S. Cl. 364—431.051 **12 Claims**

1. A method for dynamic power control of a vehicle electric drive unit, comprising the steps of, setting power produced by the fuel cell by continuously controlling oxidant flow rate to the fuel cell, and feeding all generated current made available by the fuel cell to the electrical drive unit, except for current required for accessories, so as to supply the electrical power via only the fuel cell.



5,646,853

TRAFFIC CONTROL SYSTEM

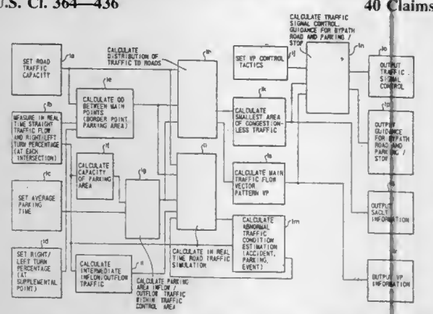
Kazunori Takahashi, Hitachi; Nobuhiro Hamada, Hitachiota; Masao Takatoo, Katsuta; Tohru Nagai, Ibaraki-ken, and Toshiko Suzuki, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 16, 1992, Ser. No. 913,902

Claims priority, application Japan, Jul. 19, 1991, 3-179539

Int. Cl.[6] G06F *163/00;* **G08G** *1/08;1/081;1/0962*

U.S. Cl. 364—436 **40 Claims**



1. A vehicle guidance system for guiding a vehicle on a road to a bypath road, comprising:

target traffic setting means for setting target traffic of the bypath road;

real-time traffic measuring means for measuring traffic of said bypath road in real-time;

instruction means for supplying an instruction to the vehicle to avoid traffic congestion of said road; and

guidance control means for controlling said instruction means so as to reduce a difference between said target traffic and said real-time traffic.

5,646,854

LATERAL GUIDANCE TRANSITION CONTROL APPARATUS FOR AIRCRAFT AREA NAVIGATION SYSTEMS

Erik Thane Bevan, Glendale, Ariz., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 14, 1989, Ser. No. 436,501

Int. Cl.[6] G01C *21/00*

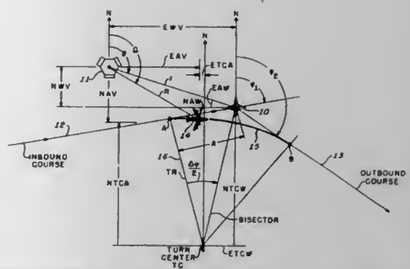
U.S. Cl. 364—448 **15 Claims**

1. Apparatus for transitioning an aircraft from an inbound course to an outbound course through a plurality of waypoints and including curved path means for computing a circular path from said inbound course to said outbound course tangentially thereto and having a plurality of arcuate segments, each such segment having a predetermined turn radius, said means for computing comprising:

path direction means responsive to a source of waypoint data for generating a control signal representative of a change in direction of said outbound course with respect to said inbound course,

first path generation means responsive to a first state of said control signal corresponding to a change in the same direction of said inbound and outbound courses, for generating a further turn radius for said circular path, a turn center coordinate for said circular path, and a distance representative of the length from the point of tangency of said inbound course to a first waypoint, such that said circular path is tangential to said inbound and outbound courses irrespective of the distance between said first waypoint and a second waypoint, and

second path generation means responsive to a second state of said control signal corresponding to a change in an opposite direction of said inbound and said outbound courses for generating at least first and second turn center coordinate signals such that said circular path is tangential to said inbound and outbound courses irrespective of said distance between said first and second waypoints.



5,646,855

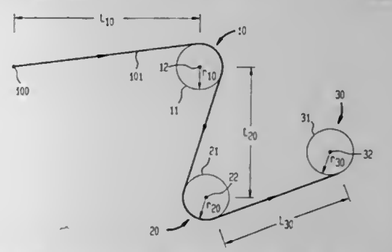
WAYPOINT NAVIGATION USING EXCLUSION ZONES

Gregory B. Jones, Tiverton; Christopher Shaw, Portsmouth, and Stacy J. Hills, Tiverton, all of R.I., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 19, 1995, Ser. No. 504,374

Int. Cl.[6] G05D *1/00*

U.S. Cl. 364—448 **8 Claims**



1. A method of navigating a vehicle, comprising the steps of:

providing a plurality of waypoint exclusion zones, each of said plurality of waypoint exclusion zones defined as a circle having a center and a radius, each said center being a known-position waypoint;

providing a predetermined travel plan for the vehicle that identifies an ordered sequence of travel amongst said plurality of waypoint exclusion zones;

determining a turn direction about each of said plurality of waypoint exclusion zones based on said ordered sequence of travel and relative positions between centers of said plurality of waypoint exclusion zones;

steering the vehicle along a path that is tangential to an i-th waypoint exclusion zone of said ordered sequence of travel, said path that is tangential to said i-th waypoint exclusion zone being a path calculated to one of two possible tangents points of said i-th waypoint exclusion zone based on a turn direction determined for said i-th waypoint exclusion zone;

maintaining said path that is tangential to said i-th waypoint exclusion zone until said vehicle is at least at said calculated tangent point of said i-th waypoint exclusion zone, wherein the vehicle is located along said circle of said i-th waypoint exclusion zone; and

advancing the vehicle along said circle of said i-th waypoint exclusion zone until a heading of the vehicle matches a heading of a path that is tangential to an (i+1)-th waypoint exclusion zone in said ordered sequence of travel, said path being tangential to one of two possible tangent points on said (i+1)-th waypoint exclusion zone based on a turn direction calculated for said (i+1)-th waypoint exclusion zone wherein, when said heading of the vehicle matches said heading of said path that is tangential to said (i+1)-th waypoint exclusion zone, said (i+1)-th waypoint exclusion zone becomes said i-th waypoint exclusion zone for carrying out said steps of steering, maintaining and advancing.

5,646,856

VEHICLE NAVIGATION SYSTEM

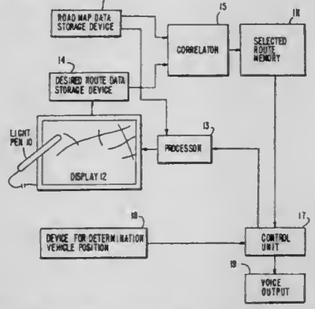
Juergen Kaesser, Ahornweg 5, D-3201 Diekholzen 2, Germany

PCT No. PCT/EP89/00646, § 371 Date Sep. 26, 1991, § 102(e) Date Sep. 26, 1991, PCT Pub. No. WO90/15307, PCT Pub. Date Dec. 13, 1990

PCT Filed Jun. 8, 1989, Ser. No. 761,846

Int. Cl.[6] **G06G** *7/78*

U.S. Cl. 364—449.4 **6 Claims**



1. Vehicle navigation system for a vehicle operable by an operator, comprising:

means for storing data representing a road map including roads and junctions of said roads over which said vehicle can travel and a plurality of available routes over said roads;

means for processing and at least partly displaying said data representing said road map, said means for processing and displaying being connected to said means for storing;

manually operable means for following said data displayed on said means for processing and displaying so as to select a desired route for travel of said vehicle, wherein said desired route is not necessarily one of said available routes;

input means for storing said desired route selected by operation of said manually operable means;

correlation means for comparing said desired route stored in said input means with said available routes in said means for storing data to find a selected route of said available routes closest to said desired route;

memory means for storing said selected route connected to said correlation means; and

control means connected to said memory means for displaying said selected route.

5,646,857

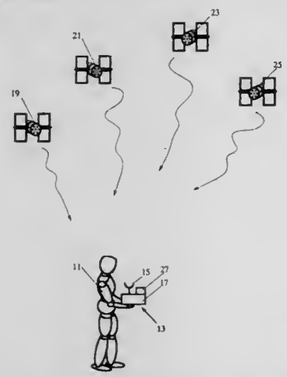
USE OF AN ALTITUDE SENSOR TO AUGMENT AVAILABILITY OF GPS LOCATION FIXES

Paul McBurney, Palo Alto, and Paul Braisted, San Jose, both of Calif., assignors to Trimble Navigation Limited, Sunnyvale, Calif.

Filed Mar. 31, 1995, Ser. No. 414,443

Int. Cl.[6] **G05D** *1/00*

U.S. Cl. 364—449.7 **23 Claims**



1. A method for determination of location coordinates of a selected three-dimensional location of a user on or adjacent to the Earth's surface, the method comprising the steps of:

receiving Global Positioning System (GPS) signals from at least three GPS satellites, numbered i=1, 2, . . . , and measuring the pseudoranges ρ_i from satellite number i to a selected user location;

representing the pseudorange ρ_i at a selected measurement time $t=t_k$ as a sum

$$\rho_i(t_k)=r_i(t_k)+b+e_i,$$

$$r_i=r_i(t_k)=\{(x_i(t_k)-x(t_k))^2+(y_i(t_k)-y(t_k))^2+(z_i(t_k)-z(t_k))^2\}^{1/2},$$

where (x_i,y_i,z_i) are the known, time varying location coordinates of the ith satellite in a selected first coordinate system, (x,y,z) are the true location coordinates of the user, to be determined, in the selected first coordinate system, b is an unknown user clock bias, and e_i represents other unknown measurement errors for satellite i, at the measurement time $t=t_k$;

providing a nominal location solution set (x_n,y_n,z_n) of known location coordinates in the selected first coordinate system that provide a nominal estimate of location solutions for the pseudorange equations for the three satellites, and defining

$$r_{i,n}(t_k)=\{(x_i(t_k)-x_n)^2+(y_i(t_k)-y_n)^2+(z_i(t_k)-z_n)^2\}^{1/2},$$

$$\rho_{i,n}(t_k)=r_{i,n}(t_k)+e_i' \quad (i=1,2,3)$$

where e_i' is an estimate of the variable e_i;

computing pseudorange increments $\delta\rho_{i,n}=\rho_i-\rho_{i,n}$, for the three satellites numbered i=1, 2, 3;

selecting a triple of location coordinates $(x_4, y_4, z_4)=(0,0,0)$ for a fictitious fourth satellite, numbered i=4, in the selected first coordinate system, where the distance from the fourth satellite location to the nominal solution location (x_n,y_n,z_n) is

$$r_{4,n}=r_n=\{(x_n)^2+(y_n)^2+(z_n)^2\}^{1/2};$$

providing a selected mean sea level surface S_{msl} that represents the average mean sea level of the Earth;

providing a selected ellipsoidal surface S_{ell} that approximates the surface of the Earth;

representing the scalar length

$$r=\{(x'^2+y'^2+z'^2\}^{1/2}$$

of a vector r extending from the fourth satellite location to a location with coordinates (x',y',z'), where an extension of the vector r intersects the surface S_{ell} and thereby defines a vector $r_{ell}(x',y',z')$ from the fourth satellite to this intersection point, as a sum of the length $r_s(x',y',z')$ of the vector r_{ell} plus the signed altitude A_{ell} of the user with respect to the selected ellipsoidal surface,

$$r=r_s+A_{ell};$$

providing an altitude sensor having an altimeter reading $z_{alt}(t)$ as an estimate of an elevation coordinate $A_{msl}(t)$ of the user above the mean sea level surface at a selected time t, where $z_{alt}(t)$ is a sum of terms including the elevation coordinate $A_{msl}(t)$, plus a bias term B(t) arising from altitude sensor measurement error, plus a sensor noise error term Q(t) that has approximately zero mean;

providing a reference elevation coordinate $z_{ref}(t)$ as a sum including the elevation coordinate $A_{msl}(t)$ plus an error term G(t) that has approximately zero mean in the reference elevation coordinate at a selected calibration time $t=t_{cal}$, where $z_{ref}(t_{cal})$ is determined using at least one of (i) the altitude A_{msl} obtained from a GPS location solution, computed using at least four satellites with no altitude constraints at one or more selected times $t=t_{cal}$, and (ii) an independently determined, accurate value of $A_{msl}(t_{cal})$;

computing an estimated altitude $A_{est}(t)$ of the elevation coordinate $A_{msl}(t)$, from which the sensor bias has been removed, for a selected interval of times $t>t_{cal}$ as a difference $A_{est}(t)=z_{alt}(t)-C(t_{cal})$, where $C(t_{cal})=z_{alt}(t_{cal})-z_{ref}(t_{cal})$;

providing a selected second coordinate system that is expressed in latitude, longitude and altitude coordinates, (lat,lon,alt), where the altitude coordinate is A_{ell};

determining the latitude, longitude and altitude coordinates (lat_n, lon_n, alt_n) that correspond to the nominal solution location coordinate values (x_n,y_n,z_n) in the selected second coordinate system;

determining a signed distance $\Delta MSL(lat_n,lon_n)=A_{msl}-A_{ell}$ of the selected ellipsoidal surface above the mean sea level surface at a location whose latitude and longitude coordinates in the selected second coordinate system are (lat_n, lon_n), from a look-up table that provides the signed difference between the height of the selected ellipsoid surface and the mean sea level surface at a location with latitude and longitude coordinates (lat,lon) and arbitrary altitude in the selected second coordinate system for a location with selected location coordinates in the selected first coordinate system;

expressing the length $r_s(x_n,y_n,z_n)$ of the vector $r_{ell}(x_n,y_n,z_n)$ as a sum

$$\begin{aligned} r_s(x_n,y_n,z_n) &= r_{4,n}-A_{ell} \\ &= r_{4,n}-(A_{msl}-\Delta MSL(lat_n,lon_n)); \end{aligned}$$

calculating a distance r_4 from the fourth satellite to a location at the altitude A_{est} by the relation $r_4=r_s(x_n,y_n,z_n)+(A_{est}-\Delta MSL(x_n,y_n,z_n))$, using the estimated altitude A_{est}, and forming a difference

$$\delta\rho_{4,n}=r_4-r_{4,n};$$

forming a 4×4 matrix H having entries H_{ik} (i=1, 2, 3, 4; k=1, 2, 3, 4) defined by $H_{i1}=(x_n-x_i)/r_{i,n}$, $H_{i2}=(y_n-y_i)/r_{i,n}$, $H_{i3}=(z_n-z_i)/r_{i,n}$ for i=1, 2, 3, $H_{41}=(x_n)/r_{4,n}$, $H_{42}=(y_n)/r_{4,n}$, $H_{43}=(z_n)/r_{4,n}$, $H_{14}=H_{24}=H_{34}=1$, and $H_{44}=0$, and computing an inverse matrix $H^{-1}=G$ with entries G_{jk};

computing estimated location coordinate values (x_p,y_p,z_p) for the unknown location coordinates (x,y,z), defined by

$$x_p=x_n+\sum_{k=1}^{4} G_{1k}\delta\rho_{k,n},$$

$$y_p=y_n+\sum_{k=1}^{4} G_{2k}\delta\rho_{k,n},$$

-continued

$$z_p=z_n+\sum_{k=1}^{4} G_{3k}\delta\rho_{k,n};\ \text{and}$$

using the estimated location coordinate values (x_p,y_p,z_p) to determine and display, by visually perceptible means or audibly perceptible means, an estimated present location of the user.

5,646,858

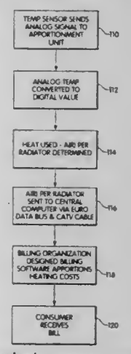
HEAT APPORTIONMENT SYSTEM

Clifford B. Schrock, Portland, Oreg., and Herbert E. Engel, Burlington, Mass., assignors to Analytical Systems Engineering Corp., Burlington, Mass., and Cablebus Systems Corporation, Portland, Oreg.

Continuation of Ser. No. 209,648, Mar. 10, 1994, abandoned. This application Sep. 29, 1994, Ser. No. 315,285

Int. Cl.[6] **G06F** *17/60*

U.S. Cl. 364—464.22 **64 Claims**



1. A method for apportioning energy costs among a plurality of units, comprising:

sensing a heat exchange for at least one heat exchanger in each unit;

determining, in response to the heat exchange sensed in the step of sensing, a respective value corresponding to an amount of heat provided by the heat exchanger in each unit;

transmitting each respective value from the unit to a central location in the absence of a fault condition;

upon detection of the fault condition, ceasing the step of transmitting and initiating a step of locally storing each respective value at the unit,

processing, at the central location, each respective value to apportion energy cost for each unit as a function of the respective value and an energy cost for the plurality of units.

5,646,859

METHOD AND APPARATUS FOR DEFINING A TEMPLATE FOR ASSEMBLING A STRUCTURE

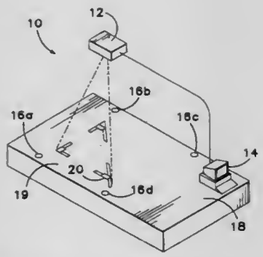
Gabriel Petta, 334 Firglen Ridge, Woodbridge, Ontario, Canada, and Kurt D. Rueb, 244 Stoke Drive, Kitchener, Ontario, Canada

Continuation of Ser. No. 422,080, Apr. 18, 1995, abandoned, which is a continuation of Ser. No. 197,951, Feb. 17, 1994, abandoned, which is a division of Ser. No. 959,245, Oct. 9, 1992, Pat. No. 5,388,318. This application Nov. 8, 1995, Ser. No. 555,481

Int. Cl.[6] **G06F** *19/00*

U.S. Cl. 364—468.01 **59 Claims**

1. Apparatus for generating a template for use in assembling a truss from a plurality of truss components, said apparatus comprising:



means for generating data representative of the size and assembled locations of each of the truss components in an assembled truss;

a processor for receiving at least a portion of such data, said processor including means for generating a control signal;

means for projecting a scanning laser image of at least a portion of the assembled truss responsive to said control signal, said projecting means comprising a plurality of projectors; and

said processor communicating with said plurality of projectors to project a separate scanning laser image from each of said projectors on a work surface representative of at least a portion of said assembled locations of said truss components.

5,646,860

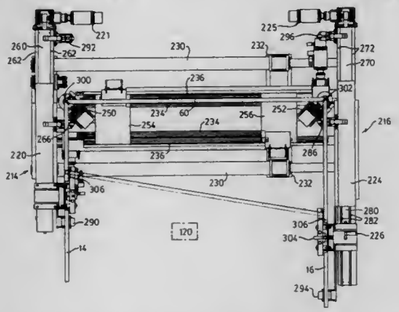
METHOD AND APPARATUS TO CONSTRUCT BUILDING COMPONENTS

Wally H. Greiner, Waterdown; Harold Ujc, Toronto, and Frank Lacrosse, 22 Silver Court, Waterdown Ontario, all of Canada, assignors to Frank Lacrosse, Waterdown, Canada

Continuation-in-part of Ser. No. 372,322, Jan. 13, 1995. This application May 5, 1995, Ser. No. 435,457

Int. Cl.[6] G06F *19/00*

U.S. Cl. 364—468.24 **11 Claims**



1. A device to assist in manufacturing a building structure having first and second metallic channel-shaped framing members and a plurality of metallic studs extending between said framing members, said device comprising:

a support table having a support surface for supporting said first and second framing members;

translating means to move said first and second framing members along said support surface;

controller means for controlling said translating means for locating said first and second framing members at predetermined locations on said support surface;

locating means to locate a stud between said framing members;

first and second assembly means for permanently fastening said stud to said first and second framing members in a permanent configuration;

said control means adapted to receive information determining the location of a plurality of studs in said building structure.

5,646,861

METHOD AND APPARATUS FOR INPUTTING EMBROIDERY LINES

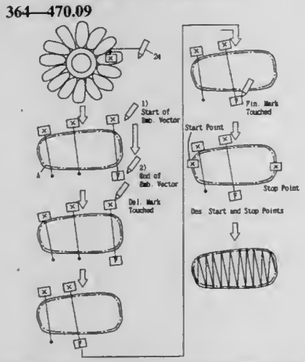
Kenji Kotaki, Kishiwada, Japan, assignor to Shima Seiki Manufacturing Ltd., Wakayama, Japan

Filed May 18, 1995, Ser. No. 443,458

Claims priority, application Japan, May 24, 1994, 6-135055

Int. Cl.[6] G06F *19/00*

U.S. Cl. 364—470.09 **7 Claims**



1. A method of inputting embroidery lines by designating an embroidery vector on a screen using a CAD system, the method comprising the steps of:

displaying a delete mark in the vicinity of one end of the designated embroidery vector on the screen, wherein an embroidery vector designates a direction of an embroidery line;

displaying a finish mark in the vicinity of the other end of the designated embroidery vector on the screen;

deleting the embroidery vector when the delete mark corresponding to the embroidery vector is designated on the screen; and

completing processing of the embroidery vector when the finish mark is designated on the screen.

5,646,862

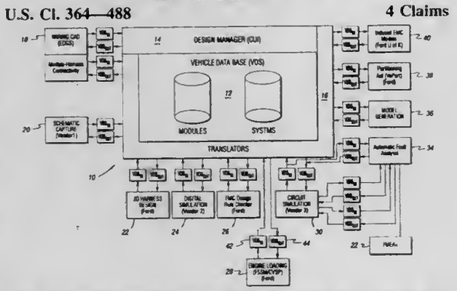
VENDOR-NEUTRAL INTEGRATED VEHICLE ELECTRICAL DESIGN AND ANALYSIS SYSTEM AND METHOD

Jennifer Anne Jones Jolliffe, Franklin; Manu Vedapudi, Canton; Shaun Stephen Devlin, Bloomfield Hills, and Robert Jay Louch, Walled Lake, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Sep. 29, 1994, Ser. No. 315,163

Int. Cl.[6] B60R *16/00*

U.S. Cl. 364—488 **4 Claims**



1. A vendor-neutral integrated vehicle electrical design and analysis system adapted to accommodate data interchange between multiple vendor-independent Computer Aided Engineering (CAE) tools which have different internal data structures to provide a user

using one of the CAE tools with a current version of selected design data translated into the internal data structure of the one of the CAE tools, comprising:

a Vehicle Database (VDB) operative as a central repository to store all design, analysis, and library information;

an interface for accessing the VDB and exchanging data with all of the CAE tools;

for each tool, an outbound translator operative to translate the tools internal data structures into a standard interchange format;

an inbound VDB translator operative to load data structures from each of the CAE tools into the VDB;

an outbound VDB translator operative to extract selected design data from the VDB and translate it into the standard interchange format or a tool specific interchange format;

for each tool, an inbound translator operative to translate the standard or tool specific interchange format into the tool's internal data structures;

a design manager for assisting a user in accessing the VDB, launching selected CAE tools and initiating VDB translations to enable the user to perform vehicle design and analysis with the CAE tools; and

an integration mechanism operative to invoke and control data flow to and from selected CAE tools so that all of the CAE tools appear to the user as a seamless part of an entire system.

5,646,863

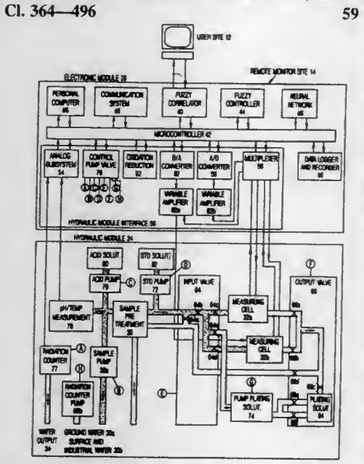
METHOD AND APPARATUS FOR DETECTING AND CLASSIFYING CONTAMINANTS IN WATER

Stephen G. Morton, 13717 9th Ave. W., Everett, Wash. 98204

Continuation of Ser. No. 216,643, Mar. 22, 1994, abandoned. This application Oct. 10, 1995, Ser. No. 541,952

Int. Cl.[6] G01N *27/00;* **C02F** *1/42;* **G06F** *19/00;* **G08C** *19/00*

U.S. Cl. 364—496 **59 Claims**



1. Apparatus for detecting and measuring water contaminants and quality parameters comprising:

a user site and at least one remote monitor site;

said remote monitor site comprising a hydraulic module and an electronic module;

said electronic module comprising a microcontroller responding to data input from said hydraulic module and selectively controlling said hydraulic module, means for correlating historically recorded sensor data with present data input from said hydraulic module and providing said microcontroller with information to produce control signals selectively altering the operation of said hydraulic module, and a communication system for communicating measured data between said user site and said remote site;

said hydraulic module comprising water sample input and output means, means for selectively oxidizing or reducing said sample, and means for measuring selected parameters of said water sample; and

wherein said remote monitor site detects and measures contaminants and water quality parameters in said water sample.

5,646,864

EVENT CORRELATION IN TELECOMMUNICATIONS NETWORKS

Christopher Whitney, Bath, United Kingdom, assignor to British Telecommunications public limited company, London, England

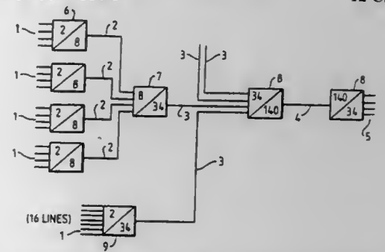
PCT No. PCT/GB93/02502, § 371 Date Nov. 16, 1995, § 102(e) Date Nov. 16, 1995, PCT Pub. No. WO94/19887, PCT Pub. Date Sep. 1, 1994

PCT Filed Dec. 7, 1993, Ser. No. 507,255

Claims priority, application United Kingdom, Feb. 23, 1993, 9303640

Int. Cl.[6] G06F *17/00*

U.S. Cl. 364—514 B **12 Claims**



1. A method of correlating events occurring in a telecommunications network formed from individual network elements, at least some of the network elements being represented in a computer by individual program modules, each program module having a set of data relating to the network elements which it represents and, in the case of at least some of said program modules, the data set of the module including

a) a list of network elements having incoming associations with the network element represented by the module in respect to event correlation,

b) a list of network elements having outgoing associations with the network element represented by the module with respect to event correlation, and

c) a parameter indicating the state of activation of the program module at a point at which events can be correlated,

said method comprising the steps of increasing the value of the activation parameter of a program module when an event occurs in the network element represented by the program module, varying the value of the activation parameter of the modules in accordance with the lists of associations between the network elements in a predetermined manner, and producing a positive correlation report in respect of an individual program module when the level of its activation parameter exceeds a predetermined threshold.

5,646,865

AUTOMOTIVE DIAGNOSTIC COMMUNICATIONS

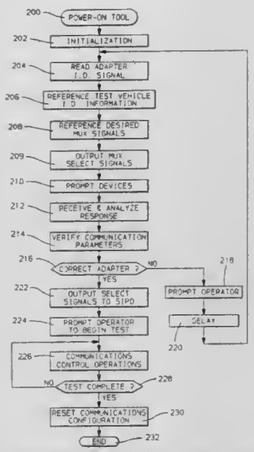
Enrique Jose Alfaro, West Bloomfield; Jean Marie Meister-Westermann, Wixon, and John Joseph Cicala, Livonia, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 27, 1994, Ser. No. 330,124

Int. Cl.[6] G01M *17/00;15/00;* **G05B** *19/00*

U.S. Cl. 364—514 R **12 Claims**

1. A method of diagnosing automotive vehicle electronic devices in which a diagnostic tool supports diagnostic communications



under a predetermined plurality of diagnostic communication protocols, comprising the steps of:

interfacing the diagnostic tool with an automotive vehicle having a plurality of electronic devices;

indicating when diagnostic communications with at least one of the plurality of electronic devices is to be provided;

determining the communication protocols under which at least one of the plurality of electronic devices communicates; and

providing diagnostic communications with at least one of the plurality of electronic devices under the determined communication protocols.

5,646,866

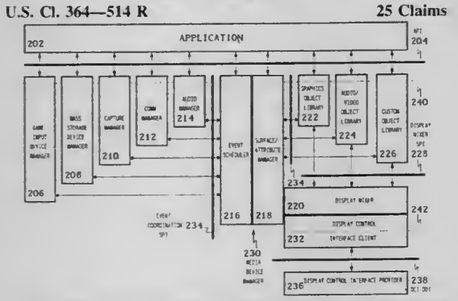
PRELOADING FILES FOR SUBSEQUENT PROCESSING

Rohan Coelho; Alan Packer, both of Portland, and Gary Baldes, Hillsboro, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Feb. 15, 1995, Ser. No. 388,699

Int. Cl.[6] G06K *15/00*

U.S. Cl. 364—514 R **25 Claims**



1. A computer-implemented process for processing video signals in a video processing system, comprising the steps of:

(a) exporting, by a file-processing subsystem, functionality to an application to select optional preloading of a file by the file-processing subsystem;

(b) optionally selecting, by the application, preloading of the file; and

(c) preloading the file, by the file-processing subsystem, in accordance with the optional selection by the application.

5,646,867

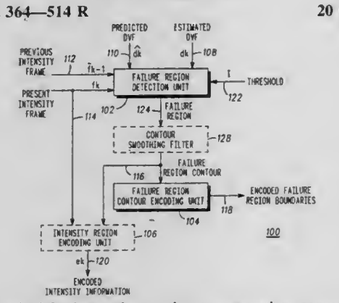
METHOD AND SYSTEM FOR IMPROVED MOTION COMPENSATION

Taner Ozcelik, San Jose, Calif.; James C. Brailean, Park Ridge, Ill.; Aggelos K. Katsaggelos, Chicago, Ill., and Stephen N. Levine, Itasca, Ill., assignors to Motorola Inc., Schaumburg, Ill.

Filed Jul. 24, 1995, Ser. No. 506,147

Int. Cl.[6] G06F *17/00*

U.S. Cl. 364—514 R **20 Claims**



1. A method for improving motion compensation, comprising:

detecting failure regions, using a failure region detection unit, based on a previous intensity frame, a present intensity frame, a predicted differential vector field, a predicted DVF, an estimated differential vector field, an estimated DVF, and a threshold; and

encoding boundaries of the failure regions, using a failure region contour encoding unit.

5,646,868

PHYSICAL QUANTITY ANALYZING METHOD AND APPARATUS THEREOF

Tomoaki Ueda, and Masayuki Sagane, both of Kusatsu, Japan, assignors to Daikin Industries, Ltd., Osaka, Japan

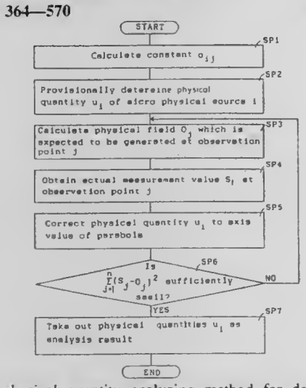
PCT No. PCT/JP94/00901, § 371 Date May 4, 1995, § 102(e) Date May 4, 1995, PCT Pub. No. WO94/29806, PCT Pub. Date Dec. 22, 1994

PCT Filed Jun. 3, 1994, Ser. No. 381,823

Claims priority, application Japan, Jun. 3, 1993, 5-133707; Dec. 6, 1993, 5-305571

Int. Cl.[6] G01N *27/00*

U.S. Cl. 364—570 **34 Claims**



1. A physical quantity analyzing method for determining a physical quantity for an unknown physical source in a physical system, which physical quantity u_i has a relationship with an expected physical O_j at an arbitrary observation position j based on a constant α_{ij} given by the equation:

$$O_j = \sum_{i=1}^{m} \alpha_{ij} \cdot u_i \qquad (1)$$

for the method comprising the steps of:

determining a provisional physical quantity value u_i for each of a plurality of individual physical sources i in a physical system,

calculating an expected physical quantity value O_j based on a constant α_{ij} and carrying out equation (1) for each provisional physical quantity value,

measuring a known physical quantity value S_j for each arbitrary observation point j,

determining determined physical quantity values which minimize a sum of a square of a difference between the expected physical quantity value O_j and corresponding known physical quantity value S_j, both O_j and S_j are for an arbitrary observation point j,

repeating calculation of the difference and determination of the determined physical quantity values for each physical source based on the difference and a previously determined physical quantity values,

iteratively repeating the calculation of the difference and the determination of the determined physical quantity value for each physical source until a sum of the square of the difference becomes smaller than a predetermined threshold value, and

employing the determined physical quantity values which are finally obtained as the physical quantity value u_i for each physical source.

5,646,869

NUMERICAL SIMULATION SYSTEM FOR A PHYSICAL SYSTEM SUFFERING RANDOM DISTURBANCE

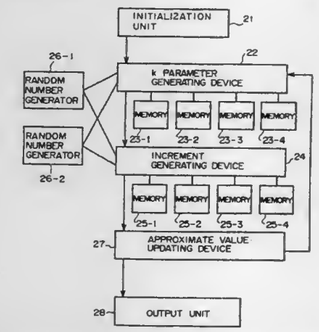
Junji Kaneko, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 28, 1994, Ser. No. 331,102

Claims priority, application Japan, Nov. 10, 1993, 5-281524

Int. Cl.[6] G06F *17/50*

U.S. Cl. 364—578 **24 Claims**



24. A computerized simulator which describes variations in a state quantity in a physical system over time and obtains approximate data representing approximate state quantity variations, comprising:

initialization means for inputting a function describing the physical system and an initial data representing the state quantity;

memory means for storing at least one predetermined parameter;

increment generating means for generating an increment of the state quantity from the initial data by use of the predetermined parameter, a first random number, a second random number, a timing step size, and the function without obtaining a derivative of the function, the first and second random numbers being generated at random;

approximate data updating means for updating the approximate data by use of the time increment; and

output means for outputting, at each timing step determined by the timing step size, a simulation result signal representing the approximate data.

5,646,870

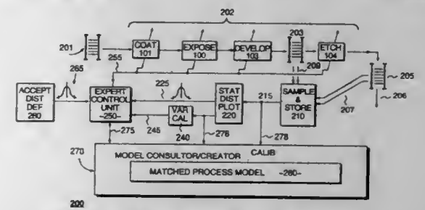
METHOD FOR SETTING AND ADJUSTING PROCESS PARAMETERS TO MAINTAIN ACCEPTABLE CRITICAL DIMENSIONS ACORSS EACH DIE OF MASS-PRODUCED SEMICONDUCTOR WAFERS

Zoran Krivokapic, Santa Clara; William D. Heavlin, San Francisco, and David F. Kyser, San Jose, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Feb. 13, 1995, Ser. No. 388,016

Int. Cl.[6] G06F *17/10;17/50*

U.S. Cl. 364—578 **41 Claims**



1. A method for partially avoiding process time of a slow-to-evaluate simulator comprising the steps of:

(a) providing drive means for driving the slow-to-evaluate simulator through a regular gridwork of process parameter permutations;

(b) storing the results of the driven simulations in memory;

(c) generating a surface model of the stored results; and

(d) using the surface model in place of the slow-to-evaluate simulator for generating simulation results for afterwards-supplied process parameter inputs that are substantially near or within the region of the regular gridwork defined by the drive means.

5,646,871

PROCESS FOR SYSTEMS ANALYSIS

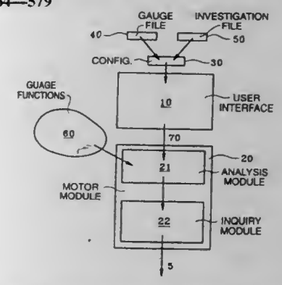
Michel Cadot, Saint-Maur, France, assignor to Bull, S.A., Louveclennes, France

Filed Mar. 10, 1995, Ser. No. 401,697

Claims priority, application France, Mar. 10, 1994, 94 02789

Int. Cl.[6] G06F *11/30;11/32;* **G05B** *23/02*

U.S. Cl. 364—579 **32 Claims**



1. A process for analyzing a state of a system to advise a user of the system on said state, the process comprising:.

using a set of gauges, each gauge relating to a piece of information on said state of the system and being associated with at

least one gauge function, each gauge function relating to a measurement to be performed on the system to have said piece of information;

using a first data file for designating said gauge functions;

making from said first data file a second data file controllable by the user to contain the designation of the gauge functions to be applied to the system;

analyzing said second data file and applying said gauge functions to the system for performing said measurements of system to have corresponding values dependent on said state of the system;

defining recommendations for use of the system in accordance with conditions on said values;

analyzing said values with respect to said conditions to have those of said recommendations which are appropriate to said values; and

displaying said appropriate recommendations for the system on a screen or storing them in a file.

5,646,872

INFORMATION PROCESSING APPARATUS

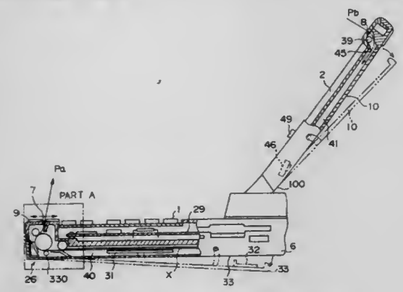
Hitoshi Yonenaga, and Shigeru Matsuoka, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 25, 1994, Ser. No. 186,708

Claims priority, application Japan, Jan. 25, 1993, 5-010269

Int. Cl.[6] G06F *3/00;13/00;1/16*

U.S. Cl. 364—710.13 **14 Claims**



1. An information processing apparatus, comprising:

input means for entering data;

processing means for processing the data entered through said input means;

print means for printing the data processed by said processing means;

a casing in which at least said input means and said print means are accommodated; and

paper feed means for feeding said print means with a sheet of paper,

wherein at least part of said print means is arranged on a front portion of said input means facing a user.

5,646,873

BARREL SHIFTER DEVICE AND VARIABLE-LENGTH DECODER

Takayoshi Shimazawa, Yokohama; Katsuhiro Seta, Inagi, both of Japan, and Masataka Matsui, Menlo Park, Calif., assignors to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed Sep. 29, 1994, Ser. No. 314,735

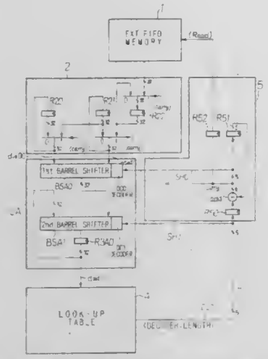
Claims priority, application Japan, Sep. 30, 1993, 5-245380

Int. Cl.[6] G06F *7/00*

U.S. Cl. 364—715.08 **45 Claims**

1. A barrel shifter device for barrel-shifting plural-bit input data by a predetermined number of bits, the barrel shifter device comprising:

a first barrel shifter having a plurality of first switching elements in a matrix pattern in a first area corresponding to roughly a half area of an element forming area, a first end of each of the first switching elements being arranged obliquely and coupled to a first data input line, the first input data input line being arranged obliquely in correspondence to the obliquely-arranged first switching elements, an obliquely upward end of each of the first data input lines being a data input end so that data is transmitted from an obliquely upward end to an obliquely downward end, a second end of each of the first switching elements being arranged in column direction and coupled to a first data line arranged in column direction in correspondence to the column-arranged first switching elements, each of the first switching elements arranged in row direction having a control terminal coupled to a first select line arranged in row direction in correspondence to the row-arranged first switching elements; and



a second barrel shifter having a plurality of second switching elements in a matrix pattern in a second area corresponding to a remaining half area of the element forming area a first end of each of the second switching elements being arranged obliquely and coupled to a second data input line, the second input line being arranged obliquely in correspondence to the obliquely-arranged second switching elements, a second end of each of the second switching elements being arranged in column direction and coupled to a second data line arranged in column direction in correspondence to the column-arranged second switching elements, an obliquely downward end of each of the second data input lines being a data input end so that data is transmitted from an obliquely downward end to an obliquely upward end, each of the second switching elements arranged in row direction having a control terminal coupled to a second select line arranged in row direction in correspondence to the row-arranged second switching elements, wherein

a part of the first data input lines coupled to the switching elements formed in the first area is extended to the first area through the second area;

a part of the second data input lines coupled to the switching elements formed in the second area is extended to the second area through the first area;

the first and second data input lines are arranged alternately and roughly in parallel to each other; and

an output end of each of the first data lines is coupled directly to an input end of each of the corresponding second data input lines, respectively independent of any intervening register.

5,646,874

MULTIPLICATION/MULTIPLICATION-ACCUMULATION METHOD AND COMPUTING DEVICE

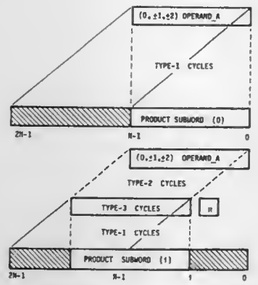
Steffen Beyme, Munich, Germany, assignor to VLSI Technology, Inc., San Jose, Calif.

Filed Dec. 21, 1994, Ser. No. 363,064

Int. Cl.[6] G06F *7/38;7/52*

U.S. Cl. 364—736.02 **6 Claims**

1. Method for the multiplication/multiplication-accumulation of signed numbers respectively of N bits and N−1 bits, generating a



subword of N bits selectable from the result of 2N−1 bits, using a multiplier/multiplier-accumulator comprising a register file connected to an arithmetic and logic unit by means of a first bus and a second bus via a barrel shifter, said arithmetic and logic unit having its output connected to said register by means of a third bus, a Booth FSM being connected to the first bus, said process wherein a partial product is realigned with respect to an operand A in accordance with the following relation:

product:=*ASR* (product, align)±operand_*A*

in which ASR is an arithmetic alignment to the right, i.e. with sign extension, wherein said cycles of a second type are repeated until the partial product has been shifted by a number of bits corresponding to the desired subword position and wherein cycles of a first type are performed, so as to obtain the relation

product:=product±*LSL* (operand_*A*, align),

in which LSL signifies Logical Shift Left, the alignment quantity and the arithmetic operation being determined by the control FSM in accordance with the Booth decoding of an operand B.

5,646,875

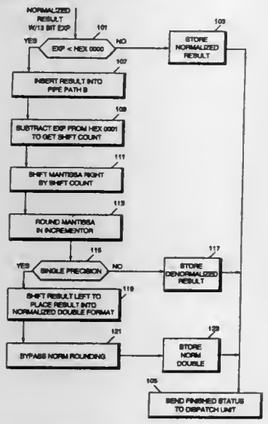
DENORMALIZATION SYSTEM AND METHOD OF OPERATION

Michael Preston Taborn; Steven Michael Burchfiel, and David Terrence Matheny, all of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 27, 1995, Ser. No. 394,854

Int. Cl.[6] G06F *7/38*

U.S. Cl. 364—748.14 **2 Claims**



1. Method of denormalizing a result comprising the steps of:

identifying in a pipelined unit, a normalized result having a biased exponent less than zero;

inserting said identified result into said pipelined unit without indicating to an instruction flow control that execution of an executing instruction is finished;

shifting a mantissa of said result in said pipelined unit an amount so that a denormalized number formed from said shifted mantissa combined with a biased exponent of zero represents a value substantially equal to said result;

identifying said denormalized number as single precision;

shifting said denormalized number left to place said denormalized number on a double word boundary;

bypassing rounding circuits of said pipelined unit that would otherwise round said shifted denormalized number; and

indicating to an instruction flow control that execution of said executing instruction is finished.

5,646,876

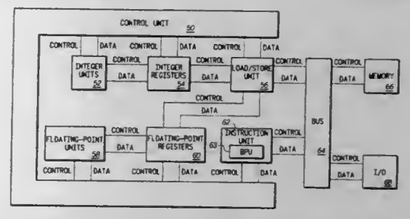
METHOD AND APPARATUS FOR REDUCING ROUNDING ERROR WHEN EVALUATING BINARY FLOATING POINT POLYNOMIALS

Roger A. Smith, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 18, 1995, Ser. No. 424,032

Int. Cl.[6] G06F *7/38*

U.S. Cl. 364—748 **21 Claims**



1. A method for maintaining accuracy with computer representations of a plurality of floating point numbers when utilizing the floating point numbers to evaluate a polynomial expansion of a function, wherein:

said function ("f(x)") has a polynomial expansion:

$$f(x)=C_0+C_1*V+C_2*V^2+\ldots C_n*V^n;$$

said function has a Zeroth Order Coefficient ("C_0"), a First Order Coefficient ("C_1"), and a plurality of Higher Order Coefficients ("C_j,j=2 . . . n");

said function has a Zeroth Order Term ("C_0"), a First Order Term ("C_1*V"), and a plurality of Higher Order Terms ("C_j*V^j,j=2 . . . n");

said function has a Variable Term ("V") which is a Linear Function of an Independent Argument ("x");

said floating point numbers are represented as binary numbers each having a Sign Portion G, an Exponent Portion E, and a Fraction Portion F;

said method comprises the steps of:

a) issuing control signals to a Floating Point Unit to compute the Linear Function, leaving the resulting Variable Term (V) stored in a First Floating Point Register;

b) issuing control signals to the Floating Point Unit to perform one or more floating point additions and a plurality of floating point multiplications utilizing integral powers (V^j,j=2 . . . n) of the Variable Term (V) stored in said First Floating Point Register multiplied by said Higher Order Coefficients (C_j,j=2 . . . n) to form a sum of products of the Higher Order Terms (C_j*V^j,j=2 . . . n), leaving said sum of products ($C_2*V^2+\ldots C_n*V^n$) stored in a Second Floating Point Register;

c) issuing control signals to the Floating Point Unit to calculate with one or more floating point operations a Big Part and a Small Part of the sum of the Zeroth order term (C_0) added to the First Order Term (C_1*V), wherein after the one or more floating point operations:

a sum of the Big Part and the Small Part utilizing real numbers is equal or approximately equal utilizing real numbers to a sum of the Zeroth Order Term (C_0) added to a product of the First Order Coefficient (C_1) multiplied by the Variable Term (V) previously stored in the First Floating Point Register,

said Big Part is left stored in a Third Floating Point Register, and said Small Part is left stored in a Fourth Floating Point Register;

d) issuing control signals to the Floating Point Unit to perform a floating point addition to add the sum of products (C_2*V^2+. . C_n*V^n) previously stored in the Second Floating Point Register to the Small Part previously stored in the Fourth Floating Point Register leaving a resulting Intermediate Term stored in a Fifth Floating Point Register; and

e) issuing control signals to the Floating Point Unit to perform floating point additions to add the Big Part previously stored in the Third Floating Point Register to the Intermediate Term previously stored in the Fifth Floating Point Register to form the function value (f(x)), left stored in a Sixth Floating Point Register.

5,646,877

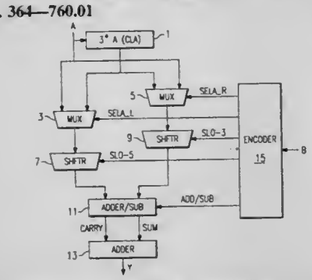
HIGH RADIX MULTIPLIER ARCHITECTURE

Shivaling Mahant-Shetti, Dallas, and Carl E. Lemonds, Garland, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 25, 1995, Ser. No. 451,091

Int. Cl.[6] G06F *7/52*

U.S. Cl. 364—760.01 **24 Claims**



13. A multiplier for multiplying a multiplicand by a multiplier comprising:

(a) means for receiving a multiplicand of predetermined radix and a predetermined multiple of said multiplicand of said predetermined radix;

(b) first and second paths, each path including:

(i) means to select one of said multiplicand or said multiple of said multiplicand in said first path responsive to the value of said multiplier;

(ii) means to select one of said multiplicand or said multiple of said multiplicand in said second path responsive to the value of said multiplier;

(iii) means for left shifting said selected multiplicand or multiple of said multiplicand in said first path a number of shifts determined by the value of said multiplier;

(iv) means for left shifting said selected multiplicand or multiple of said multiplicand in said second path a number of shifts determined by the value of said multiplier; and

(c) means for adding the results of (iii) and (iv).

5,646,878

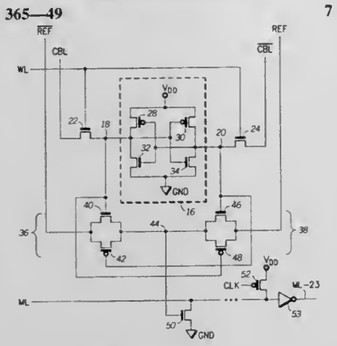
CONTENT ADDRESSABLE MEMORY SYSTEM

Nicholas G. Samra, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 2, 1995, Ser. No. 460,353

Int. Cl.[6] G11C *15/00*

U.S. Cl. 365—49 **7 Claims**



14

1. A content addressable memory system comprising:

a first plurality of content addressable memory (CAM) sets, each one of the first plurality of CAM sets comprising a CAM bit cell, each one of the first plurality of CAM sets generating a differing one of a first plurality of matchline signals;

a first plurality of memory sets, each one of the first plurality of memory sets generating a differing one of a first plurality of data bits, each one of the first plurality of memory sets associated with a differing one of the first plurality of CAM sets;

a first-first stage circuit, the first-first stage circuit receiving the first plurality of data bits and the first plurality of matchline signals, the first-first stage circuit outputting a first logic value if none of the first plurality of matchline signals is representative of a CAM match, the first-first stage circuit outputting a second logic value representative of one of the first plurality of data bits if one of the first plurality of matchline signals is representative of a CAM match;

a second plurality of content addressable memory (CAM) sets, each one of the second plurality of CAM sets comprising a CAM bit cell, each one of the second plurality of CAM sets generating a differing one of a second plurality of matchline signals;

a second plurality of memory sets, each one of the second plurality of memory sets generating a differing one of a second plurality of data bits, each one of the second plurality of memory sets associated with a differing one of the second plurality of CAM sets;

a second-first stage circuit, the second-first stage circuit receiving the second plurality of data bits and the second plurality of matchline signals, the second-first stage circuit outputting the first logic value if none of the second plurality of matchline signals is representative of a CAM match, the second first stage circuit outputting a third logic value representative of one of the second plurality of data bits if one of the second plurality of matchline signals is representative of a CAM match; and

a second stage circuit coupled to the first- and second-first stage circuits, the second stage circuit outputting a fourth logic state if both the first and second-first stage circuits output the first logic state, otherwise, the second stage circuit outputting one of either the first plurality of data bits or the second plurality of data bits.

5,646,879

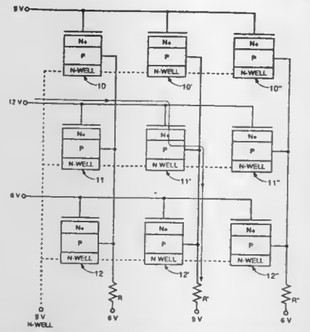
ZENER PROGRAMMABLE READ ONLY MEMORY

Steven T. Harshfield, Emmett, Id., assignor to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 110,026, Aug. 20, 1993, Pat. No. 5,379,250. This application Dec. 1, 1994, Ser. No. 348,647

Int. Cl.[6] G11C *17/06*

U.S. Cl. 365—105 **18 Claims**



1. An integrated circuit comprising a diode array, the diode array comprising:

a. a diode for conducting a reverse current when reverse biased and for conducting a forward current when forward biased; and

b. an antifuse coupled in series with the diode, the antifuse being programmed by the reverse current.

5,646,880

SEMICONDUCTOR MEMORY DEVICE FOR REDUCING OPERATING POWER CONSUMPTION AMOUNT

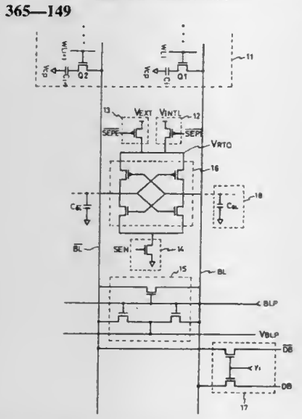
Jong Hak Yuh, Kyoungki-do, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Kyoungki-do, Rep. of Korea

Filed Dec. 26, 1995, Ser. No. 579,580

Claims priority, application Rep. of Korea, Dec. 30, 1994, 94-39222

Int. Cl.[6] G11C *11/24*

U.S. Cl. 365—149 **4 Claims**



1. A semiconductor memory device comprising:

a memory cell array connected to true and complementary bit lines, said memory cell array including a plurality of memory cells, each of said memory cells having a capacitor for storing charge therein and a MOS transistor for transferring the charge from said capacitor to said true bit line or said complementary bit line;

bit line sense amplification means for sensing and amplifying a small voltage difference between said true and complementary bit lines;

control signal generation means for generating first and second control signals;

first pull-up drive means for applying an external supply voltage to said bit line sense amplification means in response to the first control signal from said control signal generation means;

second pull-up drive means for applying an internal supply voltage to said bit line sense amplification means in response to the second control signal from said control signal generation means;

pull-down drive means for discharging a voltage from said bit line sense amplification means;

bit line precharge means for precharging said true and complementary bit lines;

switching means for transferring data on said true and complementary bit lines to true and complementary data bus lines in response to an output signal from a column decoder, respectively; and

internal supply voltage generation means for generating the internal supply voltage and applying the generated internal supply voltage to said second pull-up drive means, said internal supply voltage generation means includes

first internal supply voltage generation means for generating a first internal supply voltage in response to a first reference voltage, and

second internal supply voltage generation means for generating a second internal supply voltage in response to a second reference voltage and applying the generated second internal supply voltage as the internal supply voltage to said second pull-up drive means.

5,646,881

SEMICONDUCTOR MEMORY CELL WITH INCREASED REFRESH TIME

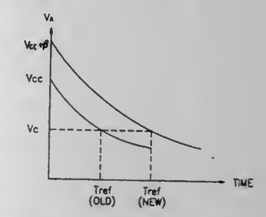
Yi Hwan Park, Choongchungbook-Do; Hyun Soo Shin, Daejon, and Yong-Bok Lee, Seoul, all of Rep. of Korea, assignors to LG Semicon Co., Ltd., Choongchungbook-Do, Rep. of Korea

Filed Jan. 18, 1996, Ser. No. 588,242

Claims priority, application Rep. of Korea, Nov. 27, 1995, 43864/1995

Int. Cl.[6] G11C *11/24*

U.S. Cl. 365—149 **17 Claims**



1. A semiconductor memory comprising:

a plurality of MOS transistors;

a plurality of word lines, each of the word lines being connected to a gate of a corresponding one of the MOS transistors; and

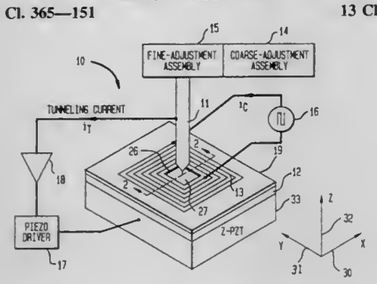
a plurality of bit lines connected to the MOS transistors, the bit lines receiving a voltage higher than a power supply voltage of the semiconductor memory, such that a refresh time of the semiconductor memory can be increased.

5,646,882

HIGH DENSITY RECORDING AND PLAYBACK DEVICE

Osaaki Watanuki, Kawasaki; Satoshi Tsuji, Ayase, and Yoshihiro Ikeda, Nagatahigashi, all of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 15, 1995, Ser. No. 389,834
Claims priority, application Japan, Feb. 15, 1994, 6-018401
Int. Cl.[6] G11C *11/06*
U.S. Cl. 365—151 **13 Claims**



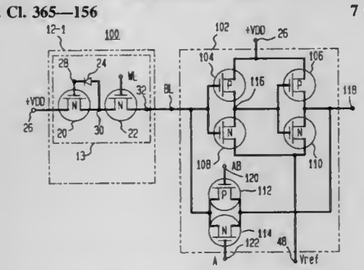
13. A high-density recording device comprising:
a tip comprising a nonmagnetic core and a high permeable magnetic coating,
a conductive magnetic recording medium,
a coil positioned above said conductive magnetic recording medium to apply a magnetic field to said tip,
a current generator for providing an electric current signal to said coil,
wherein data corresponding to the magnetic field caused from said electric current signal is written into said conductive magnetic recording medium.

5,646,883

SIGNAL SENSING CIRCUITS FOR MEMORY SYSTEM USING DYNAMIC GAIN MEMORY

Wolfgang Krautschneider, Burlington, and Klaus J. Lau, Essex Junction, both of Vt., assignors to Siemens Aktiengesellschaft, Munich, Germany

Continuation of Ser. No. 295,366, Aug. 24, 1994, abandoned, which is a continuation of Ser. No. 994,736, Dec. 22, 1992, abandoned. This application Sep. 5, 1996, Ser. No. 708,913
Int. Cl.[6] G11C *11/00*
U.S. Cl. 365—156 **7 Claims**



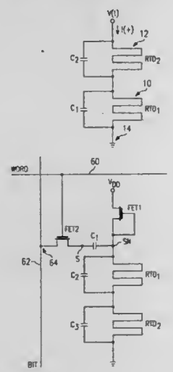
1. A memory system comprising:
a gain memory cell comprising first and second serially coupled field effect transistors each having first and second output terminals and a gate terminal, and means for coupling the first output terminal of the first transistor to the gate terminal thereof, the first output terminals of the first and second transistors being coupled together;
a sense amplifier comprising first, second, and third field effect transistors of a first conductivity type and first, second and third field effect transistors of an opposite conductivity, each of the transistors of the sense amplifier having first and second output terminals and a gate terminal, each of the first transistors being modified with one of a predetermined channel doping and a predetermined omission of channel counterdoping for achieving a greater difference in absolute threshold voltages between the first transistors;
the second output terminal of the second transistor of the gain memory cell being coupled to an input terminal of the sense amplifier;
the gate terminals of the first field effect transistors of the sense amplifier and the first output terminals of the second transistors of the sense amplifier being coupled to the input terminal of the sense amplifier;
in the sense amplifier, the first output terminals of the first transistors being coupled to the gates of the third transistors;
the gates of the second transistors being adapted to be coupled to complementary signals; and,
in the sense amplifier, an output terminal of the sense amplifier being coupled to the first output terminals of the third transistors, and to the second output terminals of the second transistors.

5,646,884

ELECTRICAL DATA STORAGE DEVICE

Jan Paul Antoni van der Wagt, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 26, 1996, Ser. No. 672,467
Int. Cl.[6] G11C *5/06*
U.S. Cl. 365—175 **25 Claims**



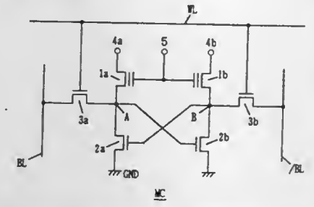
1. An electrical data storage device comprising:
a first negative impedance device having a first peak current whereat said first negative impedance device switches from one stable state to another stable state;
a second negative impedance device connected in series with said first negative impedance device, said second negative impedance device having a second peak current whereat said second negative impedance switches from one stable state to another stable state, said second peak current being greater than said first peak current;
a first capacitance coupled across said first negative impedance device;
a second capacitance coupled across said second negative impedance device, the magnitude of said second capacitance being smaller than the magnitude of said first capacitance; and
a power source coupled across said first and second negative impedance devices for producing a ramp voltage with one of two different slopes for the leading edge of said ramp voltage, the first slope being operative to switch said first negative impedance device and the second slope being operative to switch said second negative impedance device.

5,646,885

FAST ACCESSIBLE NON-VOLATILE SEMICONDUCTOR MEMORY DEVICE

Ryuichi Matsuo, and Makoto Yamamoto, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 27, 1995, Ser. No. 395,249
Claims priority, application Japan, Apr. 1, 1994, 6-064793
Int. Cl.[6] G11C *11/24*
U.S. Cl. 365—185.05 **27 Claims**



1. A non-volatile memory device comprising:
a plurality of memory cells arranged in a matrix of rows and columns, each of said plurality of memory cells including a pair of cross-coupled transistors connected such that said paired transistors latch signal potentials of first and second nodes receiving logically complementary data signals, and first and second floating gate type transistors connected between said first node and a third node and between said second node and a fourth node, respectively, and each of said first and second floating gate transistors having a control gate connected to a fifth node; and
potential setting means for setting potentials of said third and fourth nodes to a first potential and setting a potential of said fifth node to a second potential higher than said first potential in a first operation mode, setting potentials of said third and fourth nodes to a third potential and setting a potential of said fifth node to a fourth potential lower than said first and third potentials in a second operation mode, and setting potentials of said third, fourth and fifth nodes to a potential intermediate said third and fourth potentials in a third operation mode.

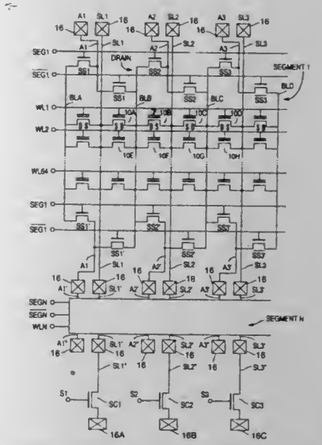
5,646,886

FLASH MEMORY HAVING SEGMENTED ARRAY FOR IMPROVED OPERATION

Dhaval J. Brahmbhatt, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed May 24, 1995, Ser. No. 449,564
Int. Cl.[6] G11C *11/40*
U.S. Cl. 365—185.16 **20 Claims**

1. A flash memory system comprising:
a plurality of memory segments, each memory segment comprising:
a plurality of source bit lines;
a plurality of drain bit lines arranged so that one drain bit line is formed between each adjacent pair of source bit lines;
a plurality of flash memory cells arranged in rows and columns so that in each row of memory cells one cell is formed between each adjacent pair of source and drain bit lines, each of the cells having a source connected to one of the source bit lines, a drain connected to one of the drain bit lines, a channel disposed intermediate the source and drain so as to create a source-channel junction and a drain-channel junction, a floating gate disposed over and insulated from the channel and a control gate disposed over and insulated from the floating gate, the control gate being connected to one of a plurality of word lines;
a plurality of intermediate drain bit lines electrically isolated from the source bit lines;
a plurality of select transistors formed in a pair of rows so that, in each row of select transistors, one select transistor corresponds with every other column of memory cells, and so that, in the pair of rows, one select transistor corresponds with each column of memory cells, each of the select transistors having a first terminal connected to one of the drain bit lines, a second terminal connected to one of the intermediate drain bit lines, and a gate connected to one of a plurality of word lines; and
control means for programming, reading and erasing the memory cells, the control means including
program means for programming a selected memory cell by electron injection predominately near a first one of the source-channel junctions and drain-channel junctions,
erase means for erasing the memory cells by cold electron injection predominately near a second one of the source-channel junctions and drain-channel junctions, and
read means for reading a selected cell by application of a first voltage to the drain of the selected cell, the voltage being positive with respect to a voltage on the source of the selected cell.

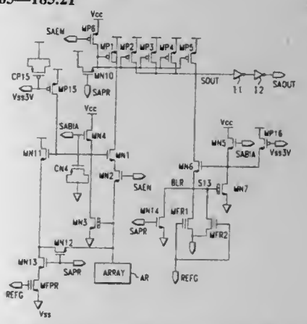


5,646,887

SENSE AMPLIFIER WITH PRE-CHARGE CIRCUIT AND LOW-VOLTAGE OPERATION MODE

Phat C. Truong, Houston, and Tim M. Coffman, Sugar Land, both of Tex., assignors to Texas Instruments Incorporated

Filed Nov. 20, 1995, Ser. No. 559,126
Int. Cl.[6] G11C *11/34*
U.S. Cl. 365—185.21 **6 Claims**



1. Low voltage correcting bias circuitry for use in a sense amplifier, said sense amplifier having an input terminal connected

to the source-drain path of at least one nonvolatile memory cell, said bias circuitry comprising:

a first N-channel transistor having a gate and a source-drain path, one end of said source-drain path of said first N-channel transistor coupled to said input terminal of said sense amplifier, the other end of said first N-channel transistor coupled to current mirror;

a second N-channel transistor having a gate and a source-drain path, said gate of said second transistor coupled to said input terminal of said sense amplifier, one end of said source-drain path of said second transistor coupled to a reference terminal, the other end of said source-drain path of said second transistor coupled to said gate of said first transistor;

a third N-channel transistor having a gate and a source-drain path, said gate of said third transistor coupled to first reference voltage, one end of said source-drain path of said third transistor coupled to said gate of said first transistor, the other end of said source-drain path of said third transistor coupled to a supply voltage; and

a P-channel transistor having a gate and a source-drain path, said gate of said P-channel transistor coupled to a low-voltage signal terminal, one end of said source-drain path of said P-channel transistor coupled to said supply voltage, the other end of said source-drain path of said P-channel transistor coupled to said gate of said first transistor.

5,646,888

SEMICONDUCTOR DEVICE HAVING ISOLATING REGIONS

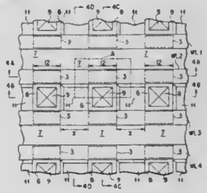
Seiichi Mori, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

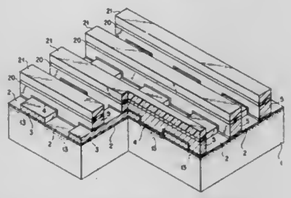
Filed Feb. 25, 1994, Ser. No. 202,174

Claims priority, application Japan, Feb. 26, 1993, 5-037757

Int. Cl.[6] G11C *11/34*

U.S. Cl. 365—185.33 **53 Claims**





1. A semiconductor memory device comprising:

a semiconductor substrate of a first conductivity type;

a plurality of memory cell transistors arranged in a matrix on said semiconductor substrate and each including an insulated gate field effect transistor having a charge accumulation layer for variably adjusting a threshold value;

semiconductor layers of a second conductivity type formed in said semiconductor substrate and serving as current terminals of said memory cell transistors;

trenches, formed in said semiconductor substrate substantially not in contact with channel regions of said memory cell transistors, for isolating said semiconductor layers from one another; and

isolation region, other than trenches, formed in that portion of said semiconductor substrate which lies between said channel regions of said memory cell transistors.

5,646,889

Patent Not Issued For This Number

5,646,890

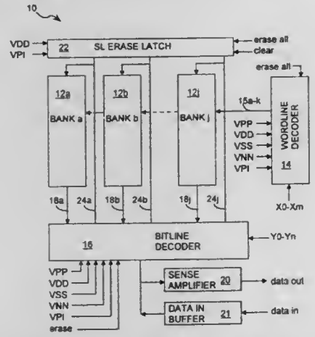
FLEXIBLE BYTE-ERASE FLASH MEMORY AND DECODER

Peter W. Lee, Saratoga, Calif.; Hsing-Ya Tsao, and Fu-Chang Hsu, both of Taipei , Taiwan, assignors to Aplus Integrated Circuits, Inc., Saratoga, Calif.

Filed Mar. 29, 1996, Ser. No. 624,322

Int. Cl.[6] G11C *16/00*

U.S. Cl. 365—185.11 **23 Claims**



1. A flexible word-erase flash memory comprising:

a first bank of flash transistors forming a plurality of rows and a plurality of columns, each transistor having a gate, drain and source, where the gates of transistors in each row are coupled to common wordlines, the drains of transistors in each column are coupled to common bitlines and the sources of the transistors in the first bank are all coupled to a first sourceline;

a second bank of flash transistors forming a plurality of rows and a plurality of columns, each transistor having a gate, drain and source, where the gates of transistors in each row are coupled to common wordlines, the drains of transistors in each column are coupled to common bitlines and the sources of the transistors in the second bank are all coupled to a second sourceline;

a wordline decoder coupled to said wordlines and configured to receive a wordline address signal and to decode said wordline address signal to select a wordline;

a bitline decoder coupled to said bitlines and configured to receive a bitline address signal and to decode said bitline address signal to select a predetermined plurality of bitlines; and

a sourceline latch coupled to said first sourceline and said second sourceline and configured to latch a selected sourceline to selectively provide a sourceline erase voltage on said selected sourceline.

5,646,891

ELECTRICALLY ERASABLE AND PROGRAMMABLE READ ONLY MEMORY DEVICE WITH ERASE VERIFY CIRCUIT FOR EXACTLY VERIFYING ERASED STATE OF MEMORY CELLS

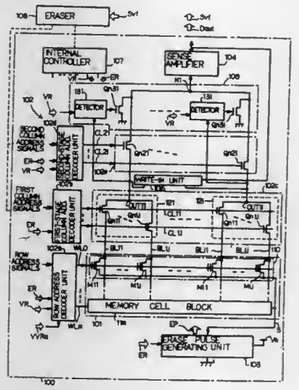
Toshiharu Okamoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 21, 1996, Ser. No. 604,619

Claims priority, application Japan, Feb. 21, 1995, 7-032227

Int. Cl.[6] G11C *16/00*

U.S. Cl. 365—185.22 **13 Claims**



13. A non-volatile semiconductor memory device comprising:

a sense amplifier unit,

an erase verify circuit configured for performing an erase and verify operation on a plurality of memory cells concurrently selected by a word line, said erase verify circuit connected to individual bit lines respectively coupled to said plurality of memory cells concurrently selected by said word line,

a plurality of bit lines divided into bit line groups, each of said individual bit lines being selected from one of said bit line groups,

a first bit line selecting circuit for selecting said individual bit lines from said bit line groups, and

a second bit line selecting circuit for selecting a predetermined number of bit lines from said individual bit lines in a read-out operation, said second bit line selecting circuit being prevented from selecting those individual bit lines upon which said erase verify circuit is performing said erase and verify operation so as to allow said erase verify circuit to carry out said erase and verify operation.

5,646,892

DATA READING CIRCUIT

Shinichi Masuda, and Hiroshi Segawa, both of Hyogo, Japan, assignors to Mitsubishi Electric Engineering Co., Ltd., and Mitsubishi Denki Kabushiki Kaisha, both of Tokyo, Japan

Filed Jun. 5, 1995, Ser. No. 462,433

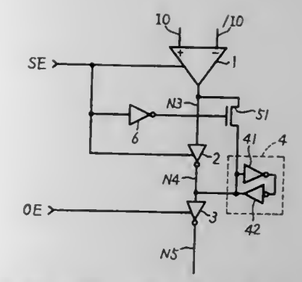
Claims priority, application Japan, Sep. 13, 1994, 6-218838

Int. Cl.[6] G11C *11/34*

U.S. Cl. 365—189.05 **2 Claims**

1. A data reading circuit which operates in response to provision of supply voltage defined by first and second potentials for reading data conducted from a memory cell to an input/output line pair, comprising:

a sense amplifier which receives a first control signal, is activated in response to this first control signal, senses and amplifies a potential difference produced at said input/output line pair corresponding to data conducted from said memory cell to output a signal at a level corresponding to this potential difference;



a first tri-state inverter activated when said sense amplifier is activated for inverting, amplifying and then outputting the signal output from said sense amplifier;

a latching means for latching the signal output from said first tri-state inverter;

a second tri-state inverter which receives a second control signal, is activated in response to this second control signal, inverts and outputs the signal latched by said latching means; and

an MOS transistor connected between an output node of said sense amplifier and an output node of said first tri-state inverter which is rendered conductive when said sense amplifier is not activated.

5,646,893

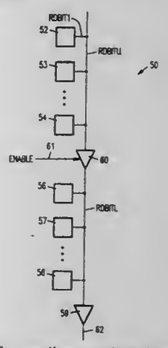
SEGMENTED READ LINE CIRCUIT PARTICULARLY USEFUL FOR MULTI-PORT STORAGE ARRAYS

Brian D. McMinn, Buda, and R. Tod Calvin, Austin, both of Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Sep. 7, 1995, Ser. No. 525,431

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—189.05 **20 Claims**



1. An apparatus for reading a selected memory cell from a column of memory cells within a memory array of an integrated circuit, and for conveying information read therefrom to a column read output node, comprising:

a first read line segment having coupled thereto a first plurality of memory cells;

a second read line segment having coupled thereto a second plurality of memory cells;

a first read buffer having an input coupled to the first read line segment and having an output coupled to the second read line segment, said read buffer having an enable input which, when active, enables the output and which, when inactive, disables the output by causing the output to adopt a high impedance state; and

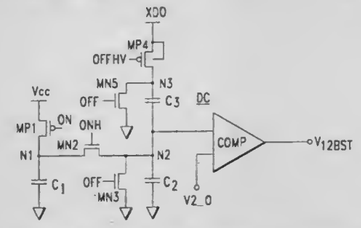
a second read buffer having an input coupled to the second read line segment and having an output coupled to the column read output node.

5,646,894

SMART BOOST CIRCUIT FOR LOW VOLTAGE FLASH EPROM

Sung-Wei Lin, Houston; Tim M. Coffman, and Ronald J. Syzdek, both of Sugar Land, all of Tex., assignors to Texas Instruments Incorporated

Filed Nov. 21, 1995, Ser. No. 560,771
Int. Cl.[6] G11C *11/40*
U.S. Cl. 365—189.09 **16 Claims**



1. A circuit for boosting the voltage at a wordline voltage terminal of a nonvolatile memory, said nonvolatile memory having a supply voltage terminal for connection to an external supply voltage, said circuit comprising:

a boost capacitor having a first terminal coupled to said wordline voltage terminal and having a second terminal;

a detector circuit having an input connected to said wordline voltage terminal and having a detector output, said detector output providing a signal at an approximate point in time when said wordline voltage reaches the difference between a final value and the value of said supply voltage; and

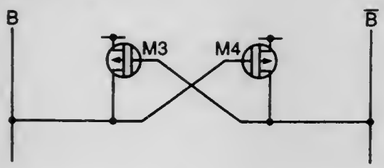
a logic circuit having an input coupled to said detector output and having a logic output connected to said second terminal of said boost capacitor, said logic circuit boosting the voltage at said second terminal of said boost capacitor by about said value of said supply voltage upon receiving said signal from said detector circuit.

5,646,895

SEMICONDUCTOR MEMORY DEVICE WITH BIT LINE POTENTIAL COMPENSATION CIRCUITS

Kazuhiko Abe, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 26, 1995, Ser. No. 587,792
Claims priority, application Japan, Dec. 28, 1994, 6-327216
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—189.11 **6 Claims**



1. A semiconductor memory device as a static RAM comprising:

a plurality of memory cells using thin film transistors as regular memory cells and forming a memory cell array;

a plurality of bit line load circuits connected to said memory cell array; and

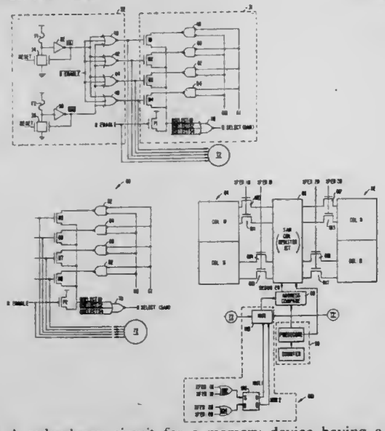
a plurality of bit line potential compensation circuits using thin film transistors as pseudo memory cells, each of said bit line potential compensation circuits disposed between said memory cell array and said bit line load circuits and said pseudo memory cells having element arrangements equivalent to those of said regular memory cells.

5,646,896

MEMORY DEVICE WITH REDUCED NUMBER OF FUSES

Ray Pinkham, San Jose, Calif., assignor to Hyundai Electronics America, San Jose, Calif.

Filed Oct. 31, 1995, Ser. No. 550,587
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—200 **15 Claims**



1. A redundancy circuit for a memory device having a first memory and a second memory, the redundancy circuit comprising:

a shared fuse programming circuit, shared between said first and second memories, for programming a first redundant address;

a first address compare circuit, coupled to said shared fuse programming circuit, for comparing a received address for said first memory with said first redundant address, said first address compare circuit generating a redundant address selection signal when said received address is the same as said first redundant address; and

a second address compare circuit, coupled to said shared fuse programming circuit, for comparing a second received address for said second memory with said first redundant address, said second address compare circuit generating a redundant address selection signal when said received address is the same as said first redundant address.

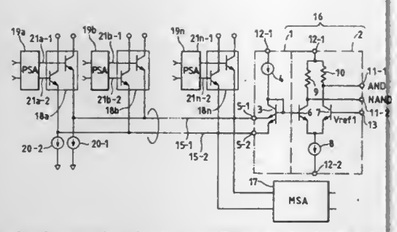
5,646,897

LOGIC GATE CIRCUIT AND PARALLEL BIT TEST CIRCUIT FOR SEMICONDUCTOR MEMORY DEVICES, CAPABLE OF OPERATION AT LOW POWER SOURCE LEVELS

Seigou Yukutake, Kodaira; Masahiro Iwamura, Hitachi; Kinya Mitsumoto, Tamamura-machi; Takashi Akioka, Akishima, and Noboru Akiyama, Hitachinaka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 21, 1995, Ser. No. 426,384
Claims priority, application Japan, Apr. 27, 1994, 6-089902; Jun. 3, 1994, 6-122520
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—205 **19 Claims**

1. A logic gate circuit, comprising: a plurality of bus lines to each of which a plurality of logic signals are input, a level shift circuit including a diode device having a plurality of inputs and one output and a pull-up current source connected to said output;



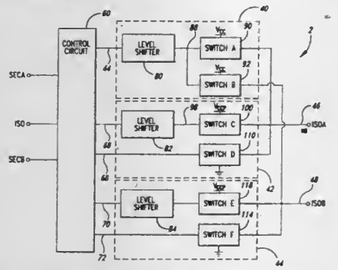
and a level comparing circuit of a differential circuit including two inputs, to one of which a reference voltage is fed; wherein said plurality of inputs of said diode device of said level shift circuit are connected to at least two of said plurality of bus lines, wherein said level shift circuit operates to raise the level of one of the logic signals having the lowest voltage level of said plurality of logic signals, wherein said other input of said differential circuit of said level comparing circuit is connected to said output of said diode device, and wherein AND logic of said logic signals input to at least two of said plurality of bus lines is operated and led out to said output of said differential circuit.

5,646,898

TWO STAGE DRIVER CIRCUIT

Troy A. Manning, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Dec. 13, 1995, Ser. No. 572,157
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—205 **37 Claims**



1. A driver circuit for first and second transistors used for selectively isolating and connecting first and second bit lines from a sense amplifier in a dynamic random access memory powered by a power supply voltage, the driver circuit comprising:

a first switch circuit having an input receiving a first voltage in excess of the power supply voltage, the first switch circuit applying the first voltage to the gate of the first transistor responsive to a first control signal and to the gate of the second transistor responsive to a second control signal;

a second switch circuit having an input receiving a second voltage that is less than the power supply voltage, the second switch circuit applying the second voltage to the gate of the first transistor responsive to a third control signal and to the gate of the second transistor responsive to a fourth control signal; and

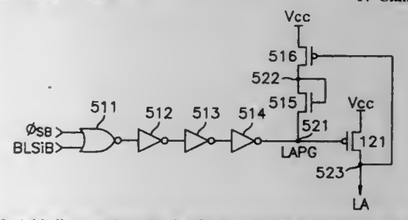
a third switch circuit having an input receiving the power supply voltage, the third switch circuit applying the power supply voltage to the gate of the first transistor during at least part of the time that neither the first control signal nor the third control signal is being applied to the first and second switch circuits, respectively, the third switch circuit applying the power supply voltage to the gate of the second transistor during at least part of the time that neither the second control signal nor the fourth control signal is being applied to the first and second switch circuits, respectively.

5,646,899

BIT LINE SENSING CIRCUIT OF A SEMICONDUCTOR MEMORY DEVICE

Hyun-Soon Jang, Seoul, and Seung-Hun Lee, Suwon, both of Rep. of Korea, assignors to Samsung Electronics Co., LTD., Suwon, Rep. of Korea

Filed Dec. 20, 1995, Ser. No. 575,714
Claims priority, application Rep. of Korea, Dec. 20, 1994, 35328/1994
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—205 **17 Claims**



1. A bit line sensing circuit of a semiconductor memory device having a pair of bit lines comprising;

a first sense amplifying circuit connected between said pair of bit lines for amplifying one of said bit lines in said bit line pair which has a first logic level to a pull-up power level;

a second sense amplifying circuit connected between said pair of bit lines for amplifying the other of said bit line pair which has a second logic level to a pull-down power level;

a first voltage generator having a power detecting circuit which generates a pull-up control signal, said pull-up control signal maintaining in an initial state a gradually decreasing voltage level and then in a subsequent state a rapidly decreasing voltage level;

a first driving circuit connected between said first voltage generator and said first sense amplifying circuit which receives said pull-up control signal at a first control terminal and generates a pull-up voltage which slowly increases upon receipt of said pull-up control signal in said initial state and rapidly increases said pull-up voltage upon receipt of said pull-up control signal in said subsequent state;

a second voltage generator having a power detecting circuit which generates a pull-down control signal; and

a second driving circuit connected between said second voltage generator and said second sense amplifying circuit which receives said pull-down control signal at a second control terminal and generates a pull-down voltage upon receipt of said pull-down control signal.

5,646,900

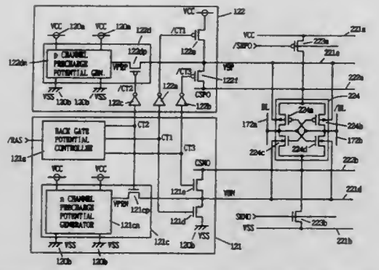
SENSE AMPLIFIER INCLUDING MOS TRANSISTORS HAVING THRESHOLD VOLTAGES CONTROLLED DYNAMICALLY IN A SEMICONDUCTOR MEMORY DEVICE

Masaki Tsukude, and Kazutami Arimoto, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 11, 1996, Ser. No. 583,893
Claims priority, application Japan, Jan. 12, 1995, 7-003248
Int. Cl.[6] G11C *11/419*
U.S. Cl. 365—205 **31 Claims**

1. A sense amplifier circuit for differentially amplifying potentials on a first bit line and a second bit line paired with said first bit line, said first and second bit lines precharged at an intermediate potential between a first power potential and a second power potential different from said first power potential, said sense amplifier circuit comprising:

a first activation transistor coupled between a first power node receiving said first power potential and a first node precharged to said intermediate potential and responsive to a first sense



amplifier enable signal being active for electrically coupling said first power node and said first node;

a first sense transistor connected between said first node and said first bit line and having a gate coupled to said second bit line and having a backgate receiving a first backgate potential precharged to a first precharge potential prior to activation of said first sense amplifier enable signal and changing with a potential at said first node during activation of said first sense amplifier enable signal, a difference in absolute value between said first precharge potential and said first power potential being greater than that between said intermediate potential and said first power potential; and

a second sense transistor connected between said first node and said second bit line and having a gate coupled to said first bit line and a backgate receiving said first backgate potential.

5,646,901

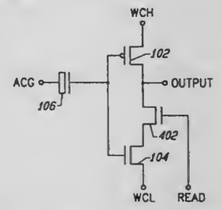
CMOS MEMORY CELL WITH TUNNELING DURING PROGRAM AND ERASE THROUGH THE NMOS AND PMOS TRANSISTORS AND A PASS GATE SEPARATING THE NMOS AND PMOS TRANSISTORS

Bradley A. Sharpe-Geisler, San Jose; Jonathan Lin, Milpitas, and Radu Barsan, Cupertino, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Mar. 26, 1996, Ser. No. 625,403

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—218 **13 Claims**



1. A CMOS memory cell comprising:

a common floating gate;

a capacitor having a first terminal forming a control gate and a second terminal coupled to the common floating gate;

an output node;

an NMOS transistor having a drain, a channel formed between its source and drain, and a tunneling oxide region and the common floating gate overlying its channel;

a PMOS transistor having a channel formed between its source and drain, and a tunneling oxide region and the common floating gate overlying its channel; and

a pass gate having a source to drain path coupling the drain of the NMOS transistor to the output node of the CMOS memory cell.

5,646,902

STATIC RANDOM ACCESS MEMORY DEVICE WITH LOW POWER DISSIPATION

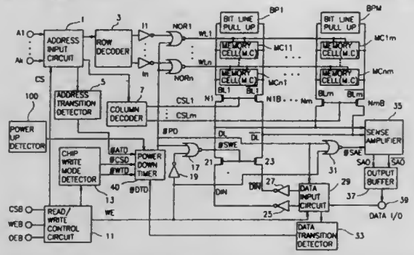
Jong Hoon Park, Kyungki-Do, Rep. of Korea, assignor to Goldstar Electron Co., Ltd., Cheongju, Rep. of Korea

Continuation of Ser. No. 362,298, Dec. 22, 1994, abandoned. This application Jul. 3, 1996, Ser. No. 675,511

Claims priority, application Rep. of Korea, Oct. 20, 1994, 26835/1994

Int. Cl.[6] G11C *13/00*

U.S. Cl. 365—227 **14 Claims**



1. A static random access memory device having a power-down timer for generating a power-down signal in response to a plurality of address transition detecting signals from an address transition detector, data input detecting signals from a data transition detector, and a chip selection detecting signal and a write mode detecting signal from a write mode detector, said device including:

a power-up detector coupled for receiving a power supply voltage and a ground voltage such that said power-up detector generates a power-up detecting signal of a predetermined potential for a predetermined period of time in response to a change in voltage potential of the power supply voltage, wherein

the power-down timer and said power-up detector are coupled to each other such that the power-down signal of the power-down timer is triggered in response to said power-up detecting signal of said predetermined potential from said power-up detector.

5,646,903

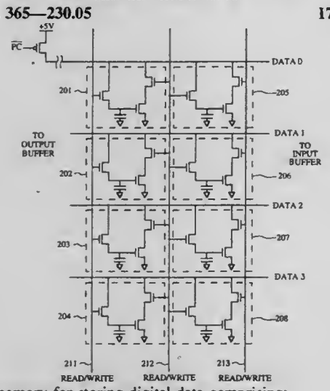
MEMORY CELL HAVING A SHARED READ/WRITE LINE

R. Anders Johnson, San Jose, Calif., assignor to Xilinx, Inc., San Jose, Calif.

Filed Mar. 6, 1996, Ser. No. 611,895

Int. Cl.[6] G11C *11/40*

U.S. Cl. 365—230.05 **17 Claims**



1. A memory for storing digital data comprising:

a first memory cell for storing a first bit of information;

a second memory cell for storing a second bit of information;

a data line coupled to the first memory cell and the second memory cell for conducting the first bit of information and the second bit of information, wherein said data line transfers said first bit of information into said second memory cell; and

a control line coupled to the first memory cell and the second memory cell, wherein activating the control line causes a read operation to be performed on the first memory cell and a write operation to be performed on the second memory cell.

5,646,904

SEMICODUCTOR MEMORY WITH A TIMING CONTROLLED FOR RECEIVING DATA AT A SEMICONDUCTOR MEMORY MODULE TO BE ACCESSED

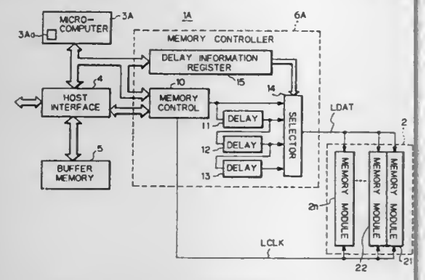
Yasuhiro Ohno, and Manabu Miyata, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Oct. 18, 1995, Ser. No. 544,540

Claims priority, application Japan, Oct. 25, 1994, 6-260449

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—233 **9 Claims**



1. A semiconductor memory comprising:

a plurality of semiconductor memory modules;

a common clock signal line;

at least one other common signal line; and

an accessing circuit, connected through said common clock signal line and said at least one other common signal line to said plurality of semiconductor memory modules, for accessing said plurality of semiconductor memory modules,

said accessing circuit comprising:

a timing information storage unit for storing predetermined access timing information associated with each of said semiconductor memory modules; and

a timing varying unit for varying a data receiving timing for an accessed one of said plurality of semiconductor memory modules, according to the access timing information stored in said timing information storage unit.

5,646,905

SELF-CLOCKING SENSE AMPLIFIER OPTIMIZED FOR INPUT SIGNALS CLOSE TO VDD

Yuri L. Pogrebnoy, Moscow, Russian Federation, assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Apr. 30, 1996, Ser. No. 640,007

Int. Cl.[6] G11C *13/00*

U.S. Cl. 365—233 **3 Claims**

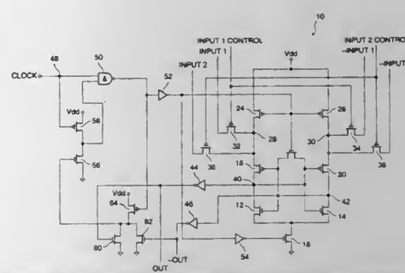
1. A self-clocking sense amplifier comprising:

first and second complementary input nodes;

first and second complementary output nodes;

a clock input node;

a first N-Channel transistor having a drain connected to said first output node, a gate connected to said second output node, and a source;



a second N-Channel transistor having a drain connected to said second output node, a gate connected to said first output node, and a source;

an N-Channel pulldown transistor having a source connected to a first supply voltage potential, a drain connected to said sources of said first and second N-Channel transistors, and a gate connected to a pulldown node;

a first P-Channel transistor having a source connected to said first input node, a drain connected to said first output node, and a gate connected to said second output node;

a second P-Channel transistor having a source connected to said second input node, a drain connected to said second output node, and a gate connected to said first output node;

a first P-Channel pullup transistor having a source connected to a second supply voltage potential, a drain connected to said first input node, and a gate connected to a pullup node;

a second P-Channel pullup transistor having a source connected to said second supply voltage potential, a drain connected to said second input node, and a gate connected to said pullup node;

an N-Channel equalizing transistor having a first drain/source terminal connected to said first output node, a second drain/source terminal connected to said second output node, and a gate connected to said pullup node;

at least one pair of switches, a first switch in said at least one pair connected between a first input port and said first input node, a second switch in said at least one pair connected between a first complementary input port and said second input node;

switching circuitry having a first stable state and a second metastable state, said switching circuitry existing in said first state wherein said pullup node is held at a logic low state and said pulldown node is held at a logic high state, and responsive to a initial edge of a clock pulse on said clock input node to place it in said second state wherein said pullup node is held at a logic high state and said pulldown node is held at a logic low state until the voltages at said first and second output nodes reach a set value, said switching circuitry responsive to said set value to return to said first state.

5,646,906

METHOD & APPARATUS FOR REAL-TIME PROCESSING OF MOVING PICTURE SIGNALS USING FLASH MEMORIES

Seung-ho Lee, Suwon, Japan, assignor to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

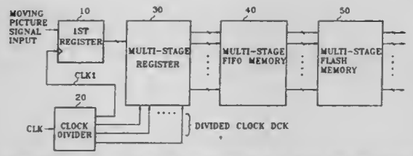
Filed Mar. 7, 1996, Ser. No. 612,415

Claims priority, application Rep. of Korea, Mar. 8, 1995, 95-4705

Int. Cl.[6] G11C *7/00;8/00*

U.S. Cl. 365—240 **10 Claims**

1. A method for processing a moving picture signal on a real-time basis using flash memories, comprising the steps of:



(a) applying the moving picture signal to a first register portion in synchronization with a data input clock to produce a synchronized signal, said data input clock having a frequency appropriate for processing the moving picture signal on a real-time basis;

(b) dividing the data input clock to generate a divided clock;

(c) applying the synchronized signal output from said first register portion to one of a plurality of registers of a multi-stage register portion in synchronization with the divided clock;

(d) storing the output of each register in said multi-stage register portion in one of a plurality of stages of FIFO memories of a multi-stage FIFO memory portion;

(e) applying the output of each stage of FIFO memories in said multi-stage FIFO memory portion to one of a plurality of flash memories in a multi-stage flash memory portion; and

(f) reading and combining the output of each flash memory in said multi-stage flash memory portion as a processed moving picture signal.

5,646,907

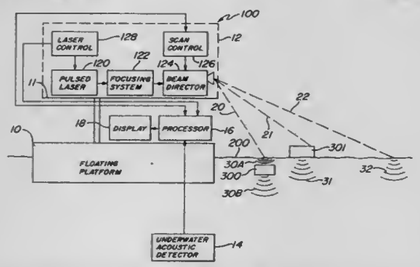
METHOD AND SYSTEM FOR DETECTING OBJECTS AT OR BELOW THE WATER'S SURFACE

Bruce S. Maccabee, Sabillasville, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 9, 1995, Ser. No. 514,464

Int. Cl.[6] G01S *15/00*

U.S. Cl. 367—93 **24 Claims**



1. A method for detecting an object below a surface of a body of water, comprising the steps of:

radiating a beam of amplitude varying electromagnetic radiation through the air towards said surface, said electromagnetic radiation being of a wavelength absorbed by the water near said surface wherein said beam is converted from said electromagnetic radiation into acoustic energy; and

monitoring, from under said surface, said acoustic energy and an acoustic return generated in the water as a result of said acoustic energy being reflected from an object beneath said surface, wherein the presence of said acoustic return is indicative of the presence of said object and wherein differences between said acoustic energy and said acoustic return are used to characterize said object.

5,646,908

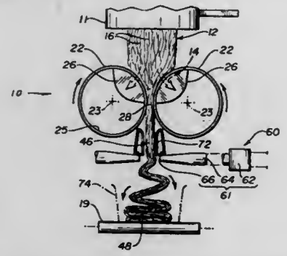
WEB LAPPING DEVICE USING LOW FREQUENCY SOUND

David P. Aschenbeck, and Michael T. Pellegrin, both of Newark, Ohio, assignors to Owens-Corning Fiberglas Technology, Inc., Summit, Ill.

Division of Ser. No. 236,067, May 2, 1994. This application Jun. 5, 1995, Ser. No. 462,098

Int. Cl.[6] H04B *1/02*

U.S. Cl. 367—137 **6 Claims**



1. A lapping device for lateral movement of a generally continuous web of fibers traveling in a generally downward direction defining an initial path of travel, said lapping device comprising at least one sound generator including at least one resonator tube having an open end from which sound may be emitted, wherein said resonator tube is shaped for emission of low frequency sound having a frequency of less than about 30 cycles per second to a portion of the web.

5,646,909

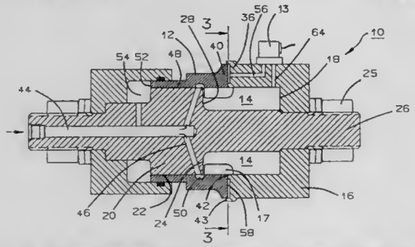
PNEUMATIC GUN FOR RAPID REPETITIVE ACOUSTIC FIRING

John V. Bouyoucos, Pittsford, N.Y., assignor to Hyroacoustics Inc., Rochester, N.Y.

Filed Jul. 14, 1995, Ser. No. 502,704

Int. Cl.[6] H04R *23/00*

U.S. Cl. 367—144 **19 Claims**



1. A gas gun for use with a source of pressurized gas and operative to generate acoustic pulses in an underwater environment, said gun comprising:

a) a housing containing a charge chamber for storing an amount of said pressurized gas and an inlet port and an exhaust port in communication with said charge chamber for flow of said gas, said housing having a first mating face adjacent to said exhaust port;

b) a first valve having a second mating face, being matable with said first mating face in a first position thereby forming a lip seal closing said exhaust port, said first valve being slidably movable with respect to the housing along an axis normal to said mating faces to a second position opening said exhaust port while closing said inlet port, said first valve having a third face disposed in a plane perpendicular to said axis to which said third face pressurized gas is continually applied to urge said first valve toward said first mating face with a closing force F_c, said first and second mating faces being relieved over a portion of their mating surfaces to provide an activating chamber therebetween;

c) a second valve for selectively connecting said source of pressurized gas via a passageway to said activating chamber to create therein an opening force F_o greater than said closing force F_c to cause said first valve to move from said first position to break said lip seal and permit explosive discharge of said amount of pressurized gas from said charge chamber.

5,646,910

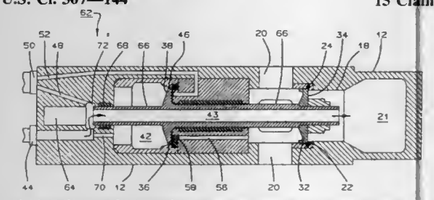
PNEUMATIC GUN FOR RAPID REPETITIVE FIRING

John V. Bouyoucos, Pittsford, N.Y., assignor to Hyro Acoustics Inc., Rochester, N.Y.

Continuation-in-part of Ser. No. 502,704, Jul. 14, 1995. This application Dec. 12, 1995, Ser. No. 571,002

Int. Cl.[6] H04R *23/00*

U.S. Cl. 367—144 **15 Claims**



1. An air gun for creating acoustic pulses by sudden release of pressurized gas, comprising:

a) a housing containing a charge chamber for storing an amount of said pressurized gas and being connectable to a source of pressurized gas, said housing having an intake port and an exhaust port communicable with said charge chamber for flow of said gas, said housing having an axial bore, said housing having a first matable face adjacent to said exhaust port;

b) a first valve within said housing having

i) an axis coaxial with said axial bore along which said valve is slidably reciprocable within said housing to either of two alternate positions, said valve being guided solely by said axial bore,

ii) a first flange having a second face disposed in a first plane perpendicular to said axis, being matable with said first face in said first valve position to form a lip seal for closing said exhaust port, and being removable in said second valve position from said first face to open said exhaust port,

iii) a second flange having a third face disposed in a second plane perpendicular to said axis to which face pressurized gas is applied to urge said first valve toward said first mating face with a closing force F_c, and a fourth face disposed in a third plane perpendicular to said axis and opposing said third face, and

iv) a hollow member containing said axis and open at both ends for passage of pressurized gas from a source into said charge chamber, said hollow member supporting said first and second flanges in spaced-apart relationship and being axially slidable therewith;

c) a second valve selectively providing pressurized gas via a passageway in said housing to at least one of said first, second, and fourth faces to create thereupon an opening force F_o greater than said closing force F_c on said third face to cause said first valve to move from said first position to close said intake port and to break said lip seal and permit explosive discharge of said amount of pressurized gas from said charge chamber through said exhaust port.

5,646,911

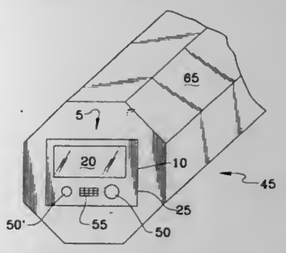
TENNIS PACER

Douglas Jones Davis, 5235 90th St., Lubbock, Tex. 79424

Filed Jun. 7, 1995, Ser. No. 481,748

Int. Cl.[6] G04B *47/00;* **A63B** *49/08*

U.S. Cl. 368—10 **14 Claims**



1. A pacer for a tennis player; said pacer comprising:

a housing within which at least a portion of said pacer is enclosed, said housing being suitable for incorporation into a tennis racket;

a read-out located at an exterior of said housing for displaying information;

a timer positioned within said housing and in communication with said read-out for displaying information generated by said timer; and

at least one input device through which a player can program said timer to track an elapsed period of time.

5,646,912

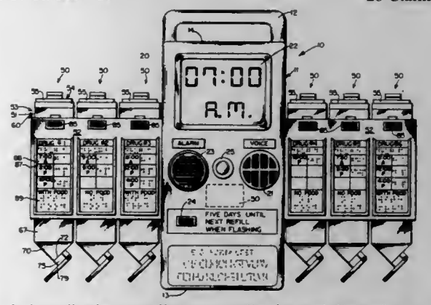
MEDICATION COMPLIANCE, CO-ORDINATION AND DISPENSING SYSTEM

Damon S. Cousin, 2401 Houma Blvd., Metairie, La. 70001

Filed Jan. 25, 1996, Ser. No. 591,711

Int. Cl.[6] G04B *47/00;* **B65D** *83/04*

U.S. Cl. 368—10 **26 Claims**



1. A medication compliance, co-ordination and dispensing system for dispensing a plurality of medications in a medication regimen according to a defined prescription schedule, comprising:

an upright, centrally located main housing containing a plurality of electronic devices, a power supply, a main front panel for attaching a plurality of output devices, and a control element, wherein

said control element is in communication with said plurality of electronic devices, each said device being actuable by said control element and in communication with said plurality of output devices, each device actuable by said control element, said control element including memory means for storing programs and data and a microprocessing means for processing a program for generating a prescription schedule containing administration times for each medication in the medication regimen;

clock means associated with said control element for indicating real time;

a plurality of secondary housing means positioned in two rows on opposite sides of the main housing, each said secondary housing means engageable with adjacent secondary housing means and/or the main housing;

storage means located inside each secondary housing means and dedicated to storing a medication with defined administration times in accordance with the program generated prescription schedule;

dispensing means located inside each secondary housing means and associated with said storage means for dispensing said medication, wherein said dispensing means is actuable by the control element when the clock means indicates real time matching said defined administration times;

receiving means dedicated to each dispensing means and capable of receiving medications delivered by the dispensing means;

compartment means dedicated to each receiver means and capable of containing medication received by said receiver means until said medication is removed by the patient; and

a plurality of first indicator means positioned on the outside of each secondary housing means, said indicator means actuable by the control element when real time equals said defined medication administration time for the said medication.

5,646,913

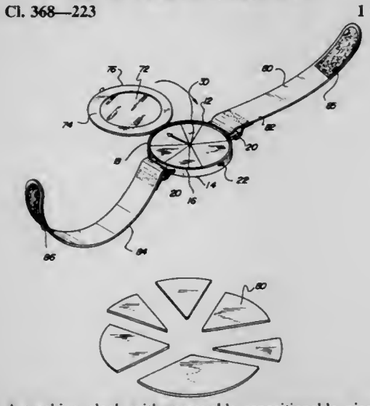
TEACHING CLOCK WITH REMOVABLE REPOSITIONABLE PIECES FOR REPRESENTING DIFFERENT PERIODS OF TIME

Lyndale W. Quesenberry, 260 Spaulding Dr., Apt. 103, Kent, Ohio 44240

Filed Nov. 24, 1995, Ser. No. 443,593

Int. Cl.[6] G09B *19/12;* **G04B** *19/06*

U.S. Cl. 368—223 **1 Claim**



1. A teaching clock with removable repositionable pieces for representing different periods of time and for providing an indication to a child when a particular activity is to be performed comprising, in combination:

a rigid housing having a circular planar base plate with a rim extended peripherally upwards therefrom to define a hollow interior and a central circular opening for allowing access to the interior and with the wall further having a pair of diametrically positioned clasps each with a generally U-shaped configuration coupled thereto and extended outwards therefrom and an elongated groove formed thereon at a midpoint location between the clasps;

timing means disposed within the interior of the housing for keeping track of a current hour of a day, wherein the timing means includes conventional mechanical clockwork that is capable of being wound and set using a knob extended from the wall of the housing;

a dial face plate circular and generally flat in structure extended over the timing means and across the opening of the housing and with the dial face plate having a recessed area with a circumferential border positioned in axial alignment with the housing;

an hour hand coupled to the timing means and disposed over the dial face plate and with the hour hand rotatable about a centrally disposed axis relative to the dial face plate for indicating the current hour;

a plurality of different-sized and generally pie-shaped pieces attachably fastened within the recessed area of the dial plate below the hour hand, each piece subtending a sectoral region on the dial face plate in relation to the hour hand for representing a period of time when a certain activity is to be performed, each piece bearing different pictorial designs or motifs or colors representing the activity to be performed when the hour hand is positioned over the piece;

a generally circular face plate cover hingably coupled to the housing, the face plate cover having a generally transparent circular viewing port, an annular border secured about the viewing port, and a latch extended outwards from the border and with the latch removably positioned within the groove of the housing for securing the face plate cover over the opening of the housing and thereby precluding access to the pieces; and

a wrist band formed of a first strap coupled to one of the clasps and a second strap coupled to the other clasp, the first strap having a strip of pile-type fastener coupled thereto and the second strap having a complimentary strip of pile-type fastener coupled thereto and with the pile-type fasteners securable in a closed loop configuration about a wrist of a wearer.

5,646,914

WRISTWATCH WITH SCREW-IN WINDER

Daniel Blunschi, Kerzers, and Fredy Streuli, Kusnacht, both of Switzerland, assignors to UTC Service AG, Basel, Switzerland

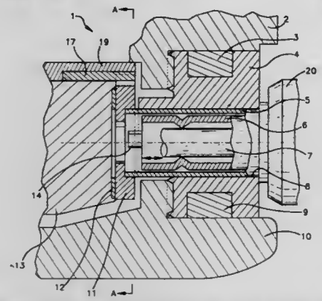
PCT No. PCT/CH95/00210, § 371 Date Oct. 4, 1996, § 102(e) Date Oct. 4, 1996, PCT Pub. No. WO96/09572, PCT Pub. Date Mar. 28, 1996

PCT Filed Sep. 21, 1995, Ser. No. 640,882

Claims priority, application Switzerland, Sep. 22, 1994, 2888/94

Int. Cl.[6] G04B *37/00;29/00*

U.S. Cl. 368—308 **10 Claims**



1. Wristwatch (**1**) with a clockwork (**3**), which is surrounded by a case (**4**) and which is operable by means of a winder (**20**) fitted in rotary manner to the outside of the case (**4**) by a spindle (**7**) guided through said case (**4**), the winder (**20**) being constructed so that it can be screwed in in sealed manner, characterized in that indicating means are provided, which are in operative connection with the winder (**20**) and indicate whether or not the said winder (**20**) is in the screwed in state.

5,646,915

INFORMATION RECORDING/REPRODUCING APPARATUS IN WHICH A CONTROL VALUE FOR CONTROLLING A RECORDING/REPRODUCING HEAD IS GENERATED ON THE BASIS OF A CORRECTED CURRENT MOVING VELOCITY AND A TARGET MOVING VELOCITY

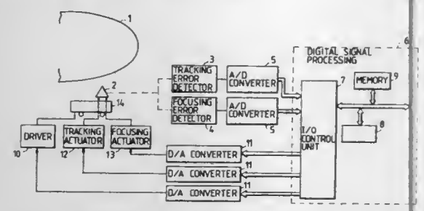
Tsukasa Ogino, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 886,849, May 22, 1992, abandoned. This application Nov. 29, 1994, Ser. No. 350,155

Claims priority, application Japan, May 29, 1991, 3-152247

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—32 **7 Claims**



1. An information recording and/or reproducing apparatus for effecting at least one of recording information on and reproducing information from a recording medium having a plurality of tracks, using a recording/reproducing head, said apparatus comprising:

a head for recording information on and/or reproducing information from the recording medium;

moving means for moving said head to a desired track on the recording medium;

detecting means for detecting an average velocity of said head at a discrete timing;

generating means for generating a target moving velocity of said head;

control value generating means for generating control values for controlling said head at discrete timings, on the basis of the detected average velocity and the target moving velocity;

means for correcting the detected average velocity using a control value generated at a most recent prior timing, for producing an estimated velocity on the basis of an equation, $V'_n=V_n+\alpha_{n-1}\cdot\Delta t_n/2$, where V'_n is an estimated velocity, V_n is the detected average velocity, α_{n-1} is a value corresponding to a control value applied at a prior timing and Δt_n is a time period during which a previous control value was applied, and for sending the estimated velocity to said control value generating means,

wherein said control value generating means generates an updated control value on the basis of the estimated velocity and the target moving velocity; and

driving means for driving said head on the basis of a most recently generated control value.

5,646,916

TRACK-LEAD-IN CONTROL DEVICE FOR OPTICAL HEAD

Hajime Kobayashi, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Sep. 19, 1995, Ser. No. 531,223

Claims priority, application Japan, Sep. 21, 1994, 6-226400

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—32 **4 Claims**

1. An optical head tracking control device comprising:

a switch for turning on and off a tracking servo loop in accordance with a tracking start signal;

a photosensor provided in an optical head, for receiving laser light reflected from tracks of an optical disk;

speed detecting means for detecting, based on a photodetection output signal of the photosensor, a speed at which the laser light traverses the tracks and for generating a speed detection pulse having a preset pulse width;

track edge detecting means for detecting, based on the photodetection output signal of the photosensor, a time point when the laser light is located at a track edge and for generating a track edge detection pulse having a predetermined pulse width; and

tracking start signal generating means for generating the tracking start signal based on the speed detection pulse and the track edge detection pulse.

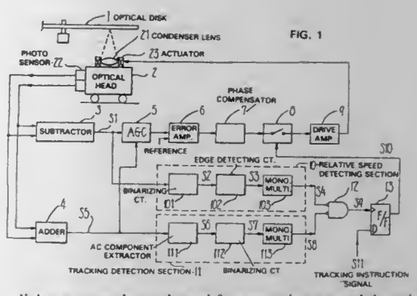


FIG. 1

5,646,917

CARRIER SYSTEM FOR CARRYING MEDIUMS

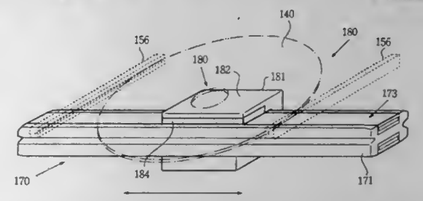
Sokichi Miyoshi; Mikio Kanai; Akira Yamaguchi, and Masaya Ogawa, all of Saitama-ken, Japan, assignors'to Pioneer Electronic Corporation, Tokyo, Japan

Filed Nov. 7, 1995, Ser. No. 554,823

Claims priority, application Japan, Nov. 8, 1994, 6-298806

Int. Cl.[6] G11B *17/22;17/04*

U.S. Cl. 369—34 **4 Claims**



1. A system for carrying a medium between a first box and a second box adjacent to the first box, comprising:

each of the first and second boxes having an opening on a side wall so as to oppose to an opening formed on a side wall of the adjacent box;

a horizontal guide rail device comprising a plurality of guide rails, and provided in each of the first and second boxes, extending to the opening thereof;

a horizontal carrier having a plurality of rollers so as to be moved along the guide rails of the first and second boxes passing through the openings;

each of the guide rails having a slant on a surface at an end on which the guide roller is mounted, the slant being located to correspond to a slant of the guide rail of the adjacent box;

a plurality of coils mounted on each of the guide rail devices, arranged in a moving direction of the horizontal carrier;

a first magnet provided on the horizontal carrier to form a magnetic field passing through some of the coils;

detector means for detecting a position of the horizontal carrier and for producing a position signal;

exciting means for sequentially exciting the coils in the moving direction;

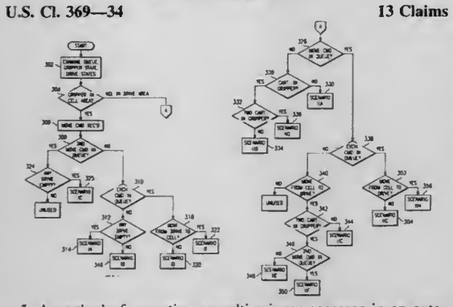
control means responsive to the position signal for controlling the exciting means for moving the horizontal carrier in the moving direction.

5,646,918

OPERATING A MULTI-GRIPPER ACCESSOR IN AN AUTOMATED STORAGE SYSTEM

Kamal Emile Dimitri; John Edward Kulakowski, and Rodney Jerome Means, all of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 8, 1995, Ser. No. 569,386
Int. Cl.[6] G11B *17/22*
U.S. Cl. 369—34 **13 Claims**



1. A method of operating a multi-gripper accessor in an automated storage and retrieval library housing a plurality of removable data cartridges in an array of storage cells, the library having at least one drive unit for reading information from the cartridges and a library controller for directing the activities of the accessor and the drive units, the library controller having a queue for storing accessor activity commands, the method comprising the steps of:

A) receiving a first command in the queue;

B) determining if the accessor is in a drive area of the library or in a cell area of the library;

C) if the accessor is in the cell area of the library:

C1) determining if the first command is a command to move a cartridge or to exchange cartridges;

C1a) if the first command received is a command to exchange cartridges at a drive unit, determining if a second command in the queue is a command to move a cartridge from a drive unit to a storage cell or to move a cartridge from a storage cell to a drive unit;

C1ai) if the second command is a command to move a cartridge from a drive unit to a storage cell:

getting a first cartridge from a first storage cell;

transporting the first cartridge to a first drive unit in the drive area;

exchanging the first cartridge for a second cartridge in the drive unit;

getting a third cartridge from a second drive unit;

transporting the second and third cartridges to the cell area;

putting the second cartridge into a second cell; and

putting the third cartridge into a third cell; and

C1aii) if the second command is a command to move a cartridge from a storage cell to a drive unit:

getting a first cartridge from a first storage cell;

getting a second cartridge from a second storage cell;

transporting the first and second cartridges to the drive area;

putting the first cartridge in a first drive unit;

exchanging the second cartridge for a third cartridge in a second drive unit;

transporting the third cartridge to the cell area; and

putting the third cartridge in a third storage cell; and

D) if the accessor is in the drive area of the library:

D1) if the first command is a command to move at least one cartridge, determining if a second command in the queue is a command to exchange cartridges at a storage cell;

D1a) if the second command in the queue is a command to exchange cartridges at a storage cell, determining if the first command is a command to move a cartridge from a drive unit to a storage cell;

D1ai) if the first command is a command to move a cartridge from a drive unit to a storage cell:

getting a first cartridge from a first drive unit;

getting a second cartridge from a second drive unit;

transporting the first and second cartridges to the cell area;

putting the second cartridge in a second cell; and

exchanging the first cartridge for a third cartridge in a first cell; and

D1aii) if the first command is a command to move a cartridge from a storage cell to a drive unit:

getting a first cartridge from a first drive unit;

transporting the first cartridge to the cell area;

exchanging the first cartridge for a second cartridge in a first storage cell;

getting a third cartridge from a second storage cell;

transporting the third cartridge to the drive area; and

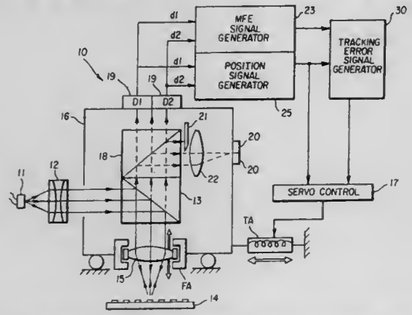
putting the third cartridge in a second drive unit.

5,646,919

DYNAMIC TRACKING CONTROL IN AN OPTICAL RECORDING SYSTEM BY SENSING MARK FORMATION

Clarke K. Eastman, Rochester, and Roger A. Hajjar, Fairport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 16, 1996, Ser. No. 584,933
Int. Cl.[6] G11B *7/09*
U.S. Cl. 369—44.26 **28 Claims**



1. An apparatus for use in an optical recording system in which an incident beam records data on a medium in the form of marks, and in which a return beam, corresponding to a reflection of the incident beam from the medium, is detected in an optical detector, the apparatus comprising:

a mark formation signal generator connected to receive a reflected write signal generated from the return beam by the detector and operative to generate from the reflected write signal a mark formation signal derived from at least one reflected write pulse of the reflected write signal, such that the mark formation signal is indicative of a characteristic of the marks formed on said medium by said incident beam;

a position signal generator operative to generate a position signal indicative of a cross-track position of said incident beam on said medium relative to a tracking structure on said medium; and

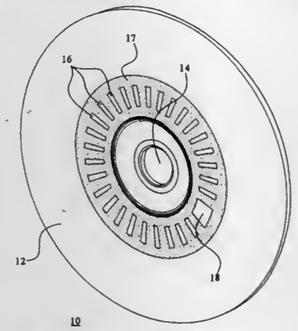
a tracking error signal generator coupled to said mark formation and position signal generators and operative to correlate variations in said mark formation signal with variations in said position signal to thereby provide a tracking error signal.

5,646,920

DIGITAL OPTICAL COMPACT DISC AND COMPACT DISC PLAYER

Walter Raczynski, 1601 Lexington Dr., Arlington Heights, Ill. 60004

Continuation of Ser. No. 367,709, Jan. 3, 1995, abandoned. This application Apr. 2, 1996, Ser. No. 626,674
Int. Cl.[6] G11B *5/09*
U.S. Cl. 369—47 **27 Claims**



1. A digital optical compact disc comprising:

first and second sides and a center; and

a plurality of defined regions containing information which is simultaneously both human and machine readable, said information being in a format which is manually alterable and located on the first side of the disk;

wherein said information is used to selectively access digitally encoded data stored on the disc; and

at least one further defined region containing synchronization information, said synchronization defined region being located substantially at a same radial distance from a center of the disc as the plurality of defined regions.

5,646,921

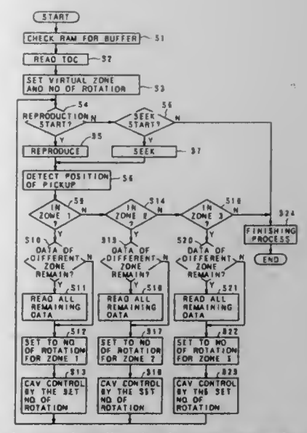
METHOD AND APPARATUS FOR REPRODUCING INFORMATION RECORDED ON CLV DISC TYPE RECORD MEDIUM

Hiroshi Yokota; Ryuichi Naito; Hiroyuki Hirano; Katsumi Ishii; Shinichi Naohara; Yoshifumi Tsukada, all of Tokorozawa, and Kanya Matsumoto, Tokyo-to, all of Japan, assignors to Pioneer Electronic Corporation, Tokyo-to, Japan

Filed Oct. 11, 1995, Ser. No. 540,979
Claims priority, application Japan, Oct. 14, 1994, 6-249874
Int. Cl.[6] G11B *7/00*
U.S. Cl. 369—50 **26 Claims**

1. A method of reproducing information from a record medium of disc type, which is recorded by a constant linear velocity, by a reproducing apparatus, which rotates the record medium, reads the information from the rotated record medium into a buffer memory by a transmission rate corresponding to the number of rotation of the record medium and outputs the read information from the buffer memory to an external apparatus by a predetermined output rate, said method comprising the steps of:

setting radial ranges of a plurality of virtual zones on the record medium, each of which is in a ring shape and in each of which the information is to be read while rotating the record medium by a constant angular velocity, and the number of rotation for each of the virtual zones, on the basis of upper and lower limit values of the transmission rate, which are predetermined to be higher than the predetermined output rate, a radius of the most inner circumference of an area where the information is recorded on the record medium, and a memory capacity of the buffer memory;



rotating the record medium by the constant angular velocity in each of the set virtual zones by the set number of rotation corresponding to said each of the set virtual zones; and

reading the information from the rotated record medium by the transmission rate corresponding to the set number of rotation in said each of the set virtual zones.

5,646,922

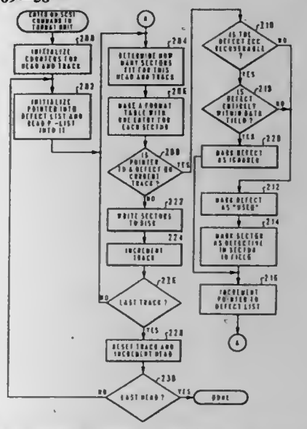
Patent Not Issued For This Number

5,646,923

SYSTEM AND METHOD FOR HIDING P-LIST ENTRIES FOR A DISK FROM AN INITIATOR USING A SMALL COMPUTER SYSTEM INTERFACE

Michael John Shea, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 17, 1993, Ser. No. 153,452
Int. Cl.[6] G11B *5/09*
U.S. Cl. 369—58 **4 Claims**



1. A data processing system, comprising:

a data storage device having a recording surface mounted for rotation and means for reading data from and writing data to said recording surface;

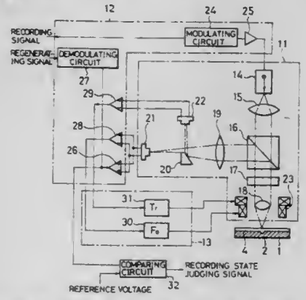
a defect list for said recording surface itemizing selected areas of said recording surface by location and size and graded in at least three categories, including:
suitable for all use;
suitable for use with redundant data backup;
unsuitable for any use; and
means utilizing the defect list for designating selected ones of said areas of the recording surface to receive differing types of written data according to differing error tolerance and designating other ones of said areas of the recording surface as defective so as to receive no written data.

5,646,924

RECORDING AND SIMULTANEOUS VERIFYING METHOD OF PHASE-CHANGING TYPE OF INFORMATION RECORDING MEDIUM

Osamu Nonoyama, Yokohama; Yukio Ide, Mishima; Makoto Harigaya, Hiratsuka; Yoshiyuki Kageyama; Hiroshi Deguchi, both of Yokohama; Katsuyuki Yamada, Mishima; Masaetsu Takahashi, Yokohama, and Hiroko Iwasaki, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jun. 2, 1994, Ser. No. 252,732
Claims priority, application Japan, Jun. 7, 1993, 5-135539
Int. Cl.[6] G11B *7/00*
U.S. Cl. 369—58 **12 Claims**



1. A recording and simultaneous verifying method of a phase-changing type of information recording medium comprising the steps of:
irradiating a portion of a phase-changing type information recording medium with a beam of light to record information on said phase-changing type of information recording medium, said phase-changing type information recording medium having a recording layer composed of Ag, In, Sb and Te, a protective layer and a reflective heat-radiating layer which are formed on a substrate, wherein a main composition and chemical structure of said recording layer in a stable state thereof is represented by:

$$(Ag\ Sb\ Te_{(2+\sigma/\Delta)})_x\ (In\ Sb_z)_{1-x}$$

where
$0.4 \leqq x \leqq 0.55$
$0.5 \leqq z \leqq 2.5$
$-0.15 \leqq \sigma \leqq 0.1$
$\Delta=(1-\sigma)x/\{1+3x+z(1-x)\}$,
and wherein said phase-changing type information recording medium is changeable between a crystalline phase and a non-crystalline phase, and said beam of light includes at least one recording pulse representing the information to be recorded;
simultaneously measuring light reflected from said irradiated portion of said phase-changing type information recording medium; and
confirming that said information is recorded on said phase-changing type recording medium by comparing an intensity level of said measured light to a preset intensity level.

5,646,925

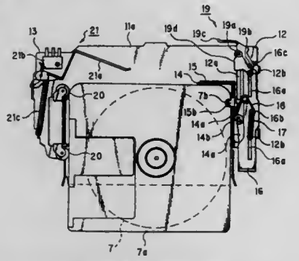
Patent Not Issued For This Number

5,646,926

CARTRIDGE CARRIER ASSEMBLY FOR LOADING AND EJECTING CARTRIDGES

Hiroto Handa; Hidenori Muramatsu; Nobuhiro Satoh; Satoshi Kanno, and Osamu Sakurai, all of Tokyo, Japan, assignors to Clarion Co., Ltd., Saitame-ken, Japan

Filed Oct. 12, 1994, Ser. No. 321,985
Claims priority, application Japan, Oct. 12, 1993, 5-254572; Oct. 12, 1993, 5-254592; Oct. 12, 1993, 5-254595; Dec. 28, 1993, 5-338408
Int. Cl.[6] G11B *33/02*
U.S. Cl. 369—77.2 **5 Claims**



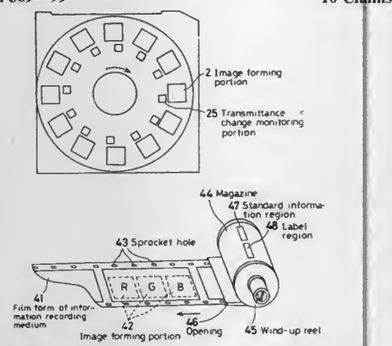
1. A data processing apparatus comprising:
an insertion slot for inserting data recording disks;
a carrier for holding disks mounted to the rear of said insertion slot;
a storage section for storing disks held by said carrier;
a disk transport means for transporting said disks between said insertion slot and said carrier and between said carrier and said storage section;
a drive motor for supplying a drive force to said disk transport means;
a disk-pushing member for pushing said carrier disks stored in said storage section, mounted in said storage section;
a drive force transmission means including a transmission gear which is driven upon receiving the drive force from said drive motor;
a drive gear which turns upon receiving the drive force from said drive force transmission means when said disk transport means operates so as to draw a disk from said storage section to said carrier, the drive gear having both a toothed part and a tooth-missing part;
a push operation member which performs a sliding operation due to the mining force of the drive gear and which operates said disk-pushing member due to this operation;
a disk detection means which detects the presence of a disk in said carrier;
a drive force interruption means including a planetary gear which is able to mesh with the toothed part of the drive gear, a gear arm having a regulated pin, for supporting the planetary gear which is coaxially mounted with the transmission gear, and a regulating arm, having a regulating portion, for regulating a sliding operation of the push operation member in case the regulating portion thereof engages with the regulated pin of the gear arm which impedes the transmission of the drive force from said drive force transmission means to said drive gear, as a result of both an engagement between the regulating portion and the regulated portion and a disengagement between the toothed part of the drive gear and the transmission gear through a positive detection of the disk by means of the disk detection means.

5,646,927

PACKAGED PHOTOGRAPHIC FILM WITH A PLURALITY OF LIQUID CRYSTAL RECORDING REGIONS

Osamu Shimizu; Minoru Utsumi; Yuudai Yamashita; Hironori Kamiyama; Shinichi Sakano, and Masato Okabe, all of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Tokyo, Japan

Filed Oct. 13, 1995, Ser. No. 542,954
Claims priority, application Japan, Oct. 14, 1994, 6-274233; Oct. 14, 1994, 6-274234; Oct. 14, 1994, 6-274235
Int. Cl.[6] H04N *9/82*; G11B *7/00*
U.S. Cl. 369—99 **10 Claims**



1. A packaged type of integrated information recording system characterized by including a plurality of rectangular, integrated information recording media radially arranged on a disk substrate, the substrate being centrally provided with a hole, wherein each of said information recording media comprises:
a liquid crystal recording medium including a liquid crystal-polymer composite layer, with polymer balls filled in a liquid crystal phase, stacked on a first electrode layer, and
a photoelectric sensor including a second electrode layer and a photoconductive layer formed on the substrate,
said liquid crystal recording medium and said photoelectric sensor being stacked directly, or through an interlayer, on each other while said liquid crystal recording layer and said photoconductive layer are opposed to each other, and
said disk substrate being rotatably received in a packaging case having a window portion openable and closable by a shutter of the packaging case.

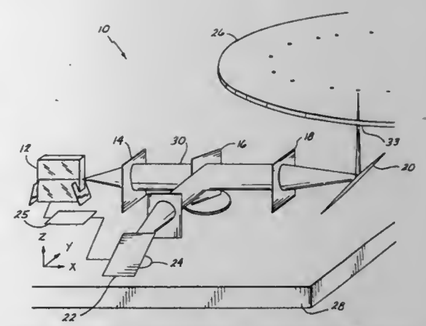
5,646,928

FREE-SPACE INTEGRATED MICRO-PICKUP HEAD FOR OPTICAL DATA STORAGE AND A MICRO-OPTICAL BENCH

Ming C. Wu, Pacific Palisades, and Lih-Yuan Lin, Los Angeles, both of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Jun. 22, 1995, Ser. No. 493,240
Int. Cl.[6] G11B *7/00*; G02B *6/12*
U.S. Cl. 369—112 **21 Claims**

11. A micro-optical bench comprising:
a semiconductor substrate;
a plurality of surface-micromachined optical elements fabricated from said substrate and extending vertically thereabove defining in combination a free-space optical path above said substrate; and
means for aligning at least one of said plurality of surface-micromachined optical elements to said free-space optical path,
whereby said micro-optical bench is economically fabricated.

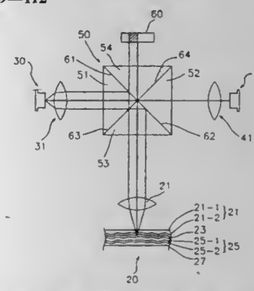


5,646,929

OPTICAL PICKUP DEVICE

Yang-Oh Choi, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Sep. 7, 1995, Ser. No. 528,644
Claims priority, application Rep. of Korea, Oct. 26, 1994, 94-27372
Int. Cl.[6] G11B *7/135*
U.S. Cl. 369—112 **8 Claims**



1. An optical pickup device comprising:
first and second laser beam sources for generating first and second laser beams having different wavelengths from each other for recording/reproducing information on/from an optical disc;
beam splitter means arranged along an optical path of said beams from said first and second laser beam sources for selectively transmitting or reflecting said first and second laser beams based upon the positions of said beams to focus said laser beams on said optical disc, and selectively focusing said beams reflected from said optical disc onto light-receiving means, said beam splitter means being a cubic prism having a first axis, a second axis and a third axis respectively piercing through respective centers of optional two facing planes of the cube, said first axis being arranged to intersect said optical disc at the right angle at the center of said optical disc, said second axis along which said first and second laser beam sources are arranged to oppose each other by interposing said beam splitter means; and, under the state that said cubic prism is divided into four triangular bar-shaped prisms by two symmetrical diagonal planes perpendicular to a plane formed by said first and second axes to be formed of a first triangular bar prism toward said first laser beam source, a second triangular bar prism toward said second laser beam source, a third triangular bar prism toward said optical disc and a fourth triangular bar prism symmetrical to said third prism, a contacting plane of said first and fourth prisms is formed of a first coating layer, a contacting plane of said second and third

prisms is a second coating layer, a contacting plane of said third and first prisms is a third coating layer and a contacting plane of said fourth and second prisms is a fourth coating layer, wherein the coating layers are formed to be totally transmitted, partially transmitted or totally reflected that the first and second laser beams are focused in a state that a half section of the beams are cut through the coating layers, so that tracking and focusing servos can be carried out based upon conditions of the focused half beam spot;

an objective lens for focusing said laser beams onto said optical disc when said first and second laser beams proceed toward said optical disc via said splitter means; and

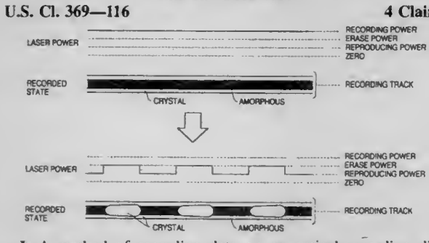
a light-receiving means for receiving said laser beams reflected from said optical disc to control a focusing and a tracking of said laser beam.

5,646,930

RECORDING METHOD AND DISK INCLUDING INITIALIZATION OF RECORDING TRACKS TO AMORPHOUS PHASE WITH A CONSTANT POWER LASER POWER BEAM

Shigeru Furumiya, Himeji, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 17, 1995, Ser. No. 560,483
Claims priority, application Japan, Nov. 17, 1994, 6-283409
Int. Cl.[6] G11B *7/00*
U.S. Cl. 369—116 **4 Claims**



1. A method of recording data on an optical recording disk which has a recording layer on which a recording track having a specific width is formed, said recording layer being changeable in a physical state by an application of a laser beam, said method comprising the steps of:

irradiating the recording track with a first laser beam having a constant power so as to form a record band which extends continuously along the recording track and which has a width narrower than the width of the recording track; and

irradiating the recording track with a second laser beam which is modulated by said data to have a multi-value power so as to form on the record band discontinuous erased areas each having a width which is wider than the width of the record band whereby said data are recorded as record marks in a form of the remaining area of the record band other than the discontinuous erased areas.

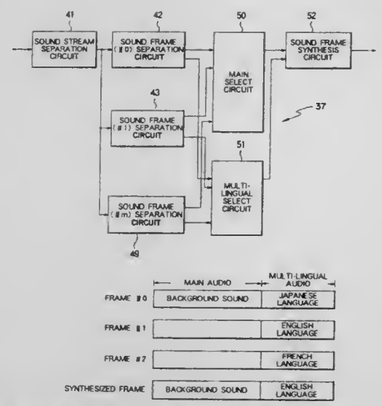
5,646,931

RECORDING MEDIUM REPRODUCTION APPARATUS AND RECORDING MEDIUM REPRODUCTION METHOD FOR SELECTING, MIXING AND OUTPUTTING ARBITRARY TWO STREAMS FROM MEDIUM INCLUDING A PLURALITY OF HIGH EFFIENCY-ENCODED SOUND STREAMS RECORDED THEREON

Setsuo Terasaki, Kamakura, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 5, 1995, Ser. No. 417,254
Claims priority, application Japan, Apr. 8, 1994, 6-070899
Int. Cl.[6] G11B *7/00*
U.S. Cl. 369—124 **18 Claims**

11. A method of reproducing sound data comprising the steps of:



providing first sound data and second sound data on one sound frame among a plurality of sound frames and providing second sound data on another sound frame among said plurality of sound frames, said second sound data being different in type thereof for each sound frame;

separating said first sound data from said sound frame on which said first sound data and said second sound data are provided and further separating said second sound data from one sound frame among said sound frames on which said first sound data and said second sound data are provided and one sound frame among a plurality of sound frames on which said second sound data is granted; and

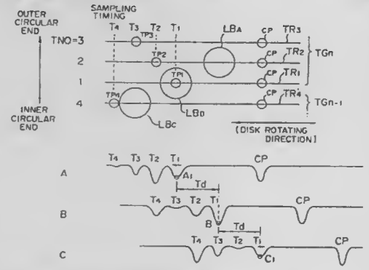
synthesizing said separated first sound data and second sound data.

5,646,932

OPTICAL DISK, TRACKING ERROR SIGNAL GENERATING APPARATUS, AND TRACKING CONTROL APPARATUS

Hiroki Kuribayashi, and Fumihiko Yokogawa, both of Tsurugashima, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Division of Ser. No. 87,853, Jul. 9, 1993, Pat. No. 5,434,836.
This application Jan. 11, 1995, Ser. No. 371,119
Claims priority, application Japan, Jul. 17, 1992, 4-191057
Int. Cl.[6] G11B *7/24*
U.S. Cl. 369—275.3 **2 Claims**



1. An optical disk comprising:

a plurality of recording tracks, each of the recording tracks having a data area for storing data, and a servo control information area for storing servo information; and

tracking pits respectively formed on n neighboring recording tracks, which are adjacent to each other in a radial direction of the optical disk, where n is an integer not less than 3,

said tracking pits being located in the servo control information area of each of said n neighboring recording tracks and being spaced apart from each other by a distance not less than a radius of a beam spot for reading data from the optical disk,

said tracking pits of said n neighboring recording tracks being located on different radial lines of the optical disk,

said tracking pits of said n neighboring recording tracks being arranged in one line in a direction different from the radial direction of the optical disk,

each of said tracking pits being disposed on a track center of the recording track;

and said disk being free of tracking pits disposed off-center of a recording track.

5,646,933

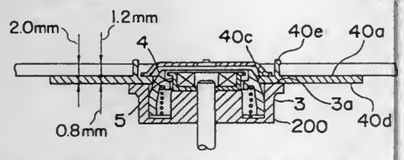
Patent Not Issued For This Number

5,646,934

ADAPTER AND ADAPTER SYSTEM FOR PLAYBACK OF A COMPACT DISC AND A MINI DISC IN AN OPTICAL DISC APPARATUS

Osamu Mizuno, Osaka; Tohru Nakamura, Katano; Hideki Aikoh, Higashiosaka; Hironori Tomita, Katano, and Masanari Mohri, Kobe, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Division of Ser. No. 149,724, Nov. 10, 1993. This application May 30, 1995, Ser. No. 454,509
Claims priority, application Japan, Nov. 12, 1992, 4-301958
Int. Cl.[6] G11B *7/00*
U.S. Cl. 369—290 **18 Claims**



1. An adapter for use in adapting a first optical disc, having a first thickness and a central hole of a first diameter, at least for playback with an optical disc turntable which is adapted for playback of a second optical disc having a second thickness greater than the first thickness and a central hole of a second diameter smaller than the first diameter, the turntable including a disc receiving section with a disc receiving surface for contacting a bottom surface of the second optical disc and a taper cone section vertically movably mounted in a recess of the disc receiving section for contacting a peripheral edge of the central hole of the second optical disc, said adapter comprising:

an adapter disc having a central hole, a top surface for mounting against a bottom surface of the first optical disc and a bottom surface for mounting against the disc receiving surface of the disc receiving section of the optical disc turntable;

securing members fixed to said adapter disc for securing said adapter disc to said first optical disc such that said top surface of the adapter disc is contacted against the bottom surface of the first optical disc and said central hole of said adapter disc is coaxial with the central hole of the first optical disc;

wherein a peripheral edge of said central hole of said adapter disc constitutes a means for contacting against the taper cone section of the optical disc turntable when said bottom surface of said adapter disc is contacted against the disc receiving surface of the disc receiving section of the optical disc turntable; and

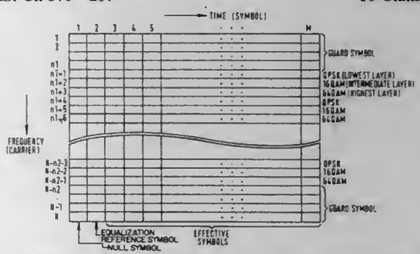
wherein said adapter disc is of a thickness so as to constitute a means for causing a top surface of the first optical disc to be vertically spaced from the disc receiving surface of the disc receiving section of the optical disc turntable by a distance equal to the second thickness of the second optical disc, when said top surface of said adapter disc is contacted against the bottom surface of the first optical disc and said bottom surface of said adapter disc is contacted against the disc receiving surface of the disc receiving section of the optical disc turntable.

5,646,935

HIERARCHICAL QUADRATURE FREQUENCY MULTIPLEX SIGNAL FORMAT AND APPARATUS FOR TRANSMISSION AND RECEPTION THEREOF

Tatsuya Ishikawa, and Takashi Seki, both of Kanagawa-ken, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 15, 1995, Ser. No. 405,625
Claims priority, application Japan, Mar. 15, 1994, 6-043579
Int. Cl.[6] H04J *15/00*
U.S. Cl. 370—207 **16 Claims**



1. A hierarchical quadrature frequency multiplex signal format including:

multiple layers of hierarchical information data that have been modulated using a plurality of hierarchically graded modulation forms that require C/N ratios that are different from each other, wherein:

the multiple layers of hierarchical information data are formed into a frame,

each layer of the multiple layers of hierarchical information data includes a plurality of symbols of the hierarchical information data,

the symbols within the layers of the multiple layers of hierarchical information data that have been obtained by using a selected one of the plurality of hierarchically graded modulation forms are interleaved in both a time axis and a frequency axis, and

each of the plurality of hierarchically graded modulation forms are associated with a corresponding predetermined carrier.

5,646,936

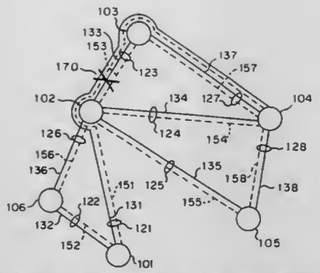
KNOWLEDGE BASED PATH SET UP AND SPARE CAPACITY ASSIGNMENT FOR DISTRIBUTED NETWORK RESTORATION

Jasvantrai C. Shah, Richardson, and Sridhar S. Nathan, Plano, both of Tex., assignors to MCI Corporation, Washington, D.C.

Filed Jun. 22, 1995, Ser. No. 493,747
Int. Cl.[6] H04J *3/14*
U.S. Cl. 370—228 **30 Claims**

5. In a telecommunications network having a plurality of nodes having respective node identifiers interconnected by a plurality of working channels and spare channels, a system for establishing at least one alternate route for rerouting traffic disrupted by at least one malfunctioned working channel bracketed by a leader node and a follower node, comprising:

a manifest being provided in each of the nodes of said network, each manifest having at least one identifier representative of a



location in the network bracketed by two adjacent nodes to which a fault may occur and at least one spare channel associated with said at least one identifier to be used to establish an alternate path in response to said fault for rerouting the disrupted traffic;

means at said leader node for accessing the manifest of said leader node to select a path identifier representative of the path between said leader and follower nodes and sending a restoration message including said path identifier onto any available spare channel associated with said path identifier, said path identifier including respective identifiers for said leader node and said follower node and a malfunctioned working channel identifier for identifying said one malfunctioned working channel; and

decision means at each of said nodes other than said leader node, in receipt of said restoration message, for extracting at least said follower node identifier from said restoration message, said each node decision means either reserving the spare channel from which said restoration message was received for said alternate path if the node identifier of said each node is not the same as the follower node identifier extracted from said restoration message or forwarding an acknowledge message onto said spare channel from which said restoration message was received if said each node identifier is the same as said follower node identifier, said acknowledge message being propagated to said leader node;

said decision means at said leader node, upon receipt of said acknowledge message from the spare channel to which it had sent its restoration message, deciding that an alternate path has been established for rerouting said disrupted traffic.

5,646,937

CODE DIVISION MULTIPLE ACCESS COMMUNICATION SYSTEM

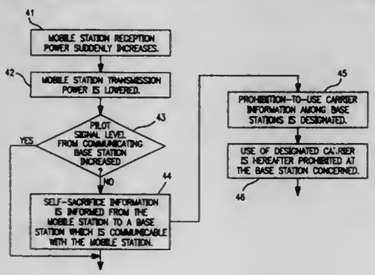
Takayuki Nakano, Kanazawa; Osamu Kato, and Nobuo Asano, both of Yokohama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 18, 1995, Ser. No. 516,741

Claims priority, application Japan, Aug. 18, 1994, 6-193460

Int. Cl.[6] H04J *13/04*

U.S. Cl. 370—252 **11 Claims**



11. A communication method in a code division multiple access communication system comprising:

reducing the power of a transmission signal of a mobile station, when the reception power at said mobile station suddenly increases;

detecting whether the reception data quality of said mobile station has improved;

providing self-sacrifice information to a base station, indicating that said mobile station is in a self-sacrifice state, when the reception data to quality has not improved;

designating a carrier which said base station is prohibited or restricted from using according to said self-sacrifice information; and

prohibiting or restricting a base station from using the designated carrier.

5,646,938

DEVICE FOR THE SERIAL EXCHANGE OF DATA BETWEEN TWO STATIONS

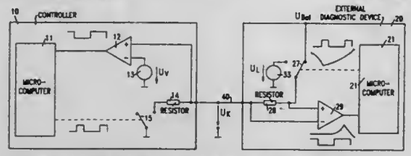
Martin Wagener, Ditzingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Nov. 21, 1995, Ser. No. 560,262

Claims priority, application Germany, Mar. 27, 1995, 195 11 140.0

Int. Cl.[6] H04B *1/56*

U.S. Cl. 370—276 **18 Claims**



1. A device for a serial exchange of data comprising:

a first station including a first serial interface coupled to a common data transmission line, the first station further including first means for identifying, while data is being received, first and second bit states when first and second voltage levels, respectively, are present on the data transmission line; and

a second station including a second serial interface coupled to the common data transmission line, the second station further including second means for identifying, while data is being received, the first and second bit states dependent upon whether or not a predetermined current flow is present on the data transmission line,

wherein the first means for identifying includes a receiving comparator for comparing a voltage level on the data transmission line with a preselected reference potential.

5,646,939

METHOD AND APPARATUS FOR ADDRESS TO PORT MAPPING IN A TOKEN RING NETWORK

Carl Lindeborg, Shrewsbury; Edward Carroll, Wrentham; James Moran, Methuen; David Bartolini, Charlton, all of Mass.; John Griesing, Santa Clara, Calif.; Liz Lindell, Sutton, Mass.; Anthony Dean Walker, Rougemont, and Bradley S. Trubey, Cary, both of N.C., assignors to International Business Machines Coporation, Armonk, N.Y., and 3Com Corporation, Santa Clara, Calif.

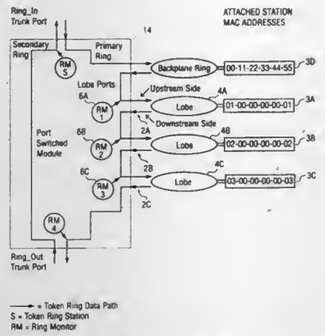
Filed Aug. 8, 1995, Ser. No. 512,719

Int. Cl.[6] H04L *12/26;12/433*

U.S. Cl. 370—258 **19 Claims**

1. A method for address to port mapping in a ring network, the method comprising the steps of:

performing neighbor notification where each station on the network sequentially transmits its own neighbor notification frame onto the ring indicating an address of a respective



station, a receiving station modifying a received neighbor notification frame if said receiving station is a first station to receive said neighbor notification frame;

upstream monitoring of an upstream side of a port on the network to determine when an immediately upstream station transmits its neighbor notification frame onto the ring;

downstream monitoring of a downstream side of said port and recording all addresses in frames after said immediately upstream station transmits its neighbor notification frame onto the ring until said downstream monitoring determines an address of a station immediately upstream of said downstream side;

mapping all of said addresses recorded and determined from said downstream side to said port.

5,646,940

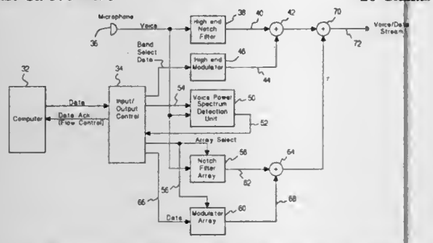
SYSTEM FOR SIMULTANEOUS ANALOG AND DIGITAL COMMUNICATIONS OVER AN ANALOG CHANNEL

Robert Hotto, La Jolla, Calif., assignor to Novi International, Inc., Santee, Calif.

Continuation of Ser. No. 427,003, Apr. 24, 1995, abandoned, which is a continuation-in-part of Ser. No. 881,747, May 4, 1992, Pat. No. 5,410,541. This application Dec. 26, 1995, Ser. No. 578,382

Int. Cl.[6] H04J *1/14*

U.S. Cl. 370—496 **20 Claims**



1. In an analog channel having a predetermined plurality of subchannels for transmitting digital signals, a system for simultaneously communicating an analog signal and a digital signal via the channel comprising:

(a) means, at a transmitter, for periodically searching within the analog signal for a frequency band in which the power of the analog signal is below a predetermined threshold and which band encompasses a subchannel;

(b) means for removing from the analog signal those frequency components comprising the encompassed subchannel resulting in a first interim signal;

(c) means, at the transmitter, for producing a second interim signal comprising a combining of the first interim signal and the digital signal constructed of one or more predetermined frequency components comprising the encompassed subchannel;

(d) means, at the transmitter, for transmitting the second interim signal;

(e) means, at a receiver, for receiving the second interim signal; and

(f) means, at the receiver, for removing from the second interim signal those frequency components used to construct the digital signal.

5,646,941

DIGITAL DATA TRANSMISSION SYSTEM INCLUDING A DEVICE FOR DATA BLOCK, HEADER AND PACKET GENERATION

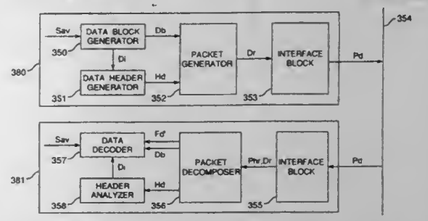
Takuya Nishimura; Hiroyuki Iitsuka, both of Katano; Hidetoshi Takeda, Neyagawa, and Yasunori Kawakami, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Filed May 26, 1995, Ser. No. 451,423

Claims priority, application Japan, May 31, 1994, 6-118356; Apr. 21, 1995, 7-096380

Int. Cl.[6] H04J *3/24*

U.S. Cl. 370—389 **15 Claims**



1. A data transmission system for transmitting a data packet having a packet header region for storing a packet header and a data region for storing a data block, comprising:

data block generation means for producing said data block and a discrimination data indicative of the contents and size of said data block based on said data;

header generation means for generating a data header that includes a header end flag indicating whether additional header components exist, based on said discrimination data; and

packet generation means for generating said data packet based on said data block and said data header.

5,646,942

SIMULCAST TRANSMISSION OF DIGITAL PROGRAMS TO SHARED ANTENNA RECEIVING SYSTEMS

Brian D. Oliver, Oakton, Va.; Bruce Kostreski, Wheaton, Md.; W. Tim Campbell, Alexandria, and Kamran Sistanizadeh, Arlington, both of Va., assignors to Bell Atlantic Network Services, Inc., Arlington, Va.

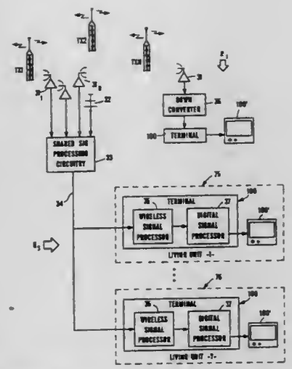
Continuation-in-part of Ser. No. 405,558, Mar. 16, 1995. This application Mar. 24, 1995, Ser. No. 409,574

Int. Cl.[6] H04B *7/02*

U.S. Cl. 370—112 **46 Claims**

28. A shared receiving system serving a plurality of living units, said shared receiving system comprising:

at least two directional receiving antennae, each directional receiving antenna being directed to receive a signal including multiplexed channels from a different one of a plurality of spaced apart transmitters which provide overlapping simultaneous broadcasts of the signal including multiplexed channels;



signal processing circuitry receiving a signal from each of the receiving antennae and in response thereto outputting a single representation of said signal including multiplexed channels;

a distribution system for broadcasting the single representation of said signal; and

terminals located in a plurality of the living units, each terminal receiving the single representation of said signal including the multiplexed channels via the distribution system and processing a selected one of the multiplexed channels of the single representation of said signal to present program information from the selected channel.

5,646,943

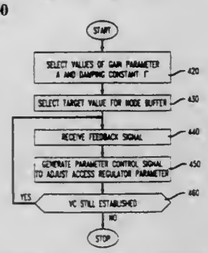
METHOD FOR INTEGRATED CONGESTION CONTROL IN NETWORKS

Anwar Elwalid, Murray Hill, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 366,516, Dec. 30, 1994, abandoned. This application Nov. 12, 1996, Ser. No. 747,984

Int. Cl.[6] H04J *3/14*

U.S. Cl. 370—230 **7 Claims**



1. A method of setting a value r for a token rate parameter of an access regulator, wherein said access regulator controls admission of information from a communication device to a network and wherein said network comprises a node, the method comprising the steps of:

receiving a signal at said access regulator from said node, said node comprising a buffer characterized by a buffer content level, said signal indicating the buffer content level of said node relative to a target level $\tilde{x}$, and

setting said value r for said token rate parameter at a time (t+Δ) based on a difference of a first value based on the rate r(t) at time t and a second values based on said signal indicating the relative buffer content, respectively, wherein said first value corresponds to the rate r at time t scaled by the complement of damping parameter γ as scaled by time difference Δ and said second value corresponds to said relative buffer content scaled by gain parameter a and the time difference Δ, wherein the damping and gain parameters γ and a substantially satisfy the expression

$$\frac{\sin\omega}{\omega} < \frac{\gamma}{a\tau},$$

where $\gamma=\omega\tan\omega$ and τ is a propagation delay between said node and said access regulator.

5,646,944

Patent Not Issued For This Number

5,646,945

TELECOMMUNICATIONS SYSTEM AND TELECOMMUNICATIONS TERMINAL EQUIPMENT

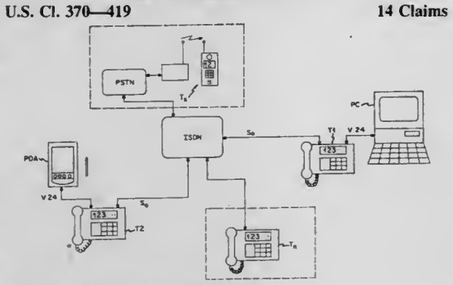
Frank Bergler, Niefern, Germany, assignor to Alcatel N.V., Rijskwijk, Netherlands

Filed Mar. 15, 1995, Ser. No. 404,412

Claims priority, application Germany, Mar. 15, 1994, 44 08 598

Int. Cl.[6] H04M *11/00;3/42*

U.S. Cl. 370—419 **14 Claims**



1. A telecommunications system comprising:

a first telephone terminal (T1);

a data processing terminal (PC) Connected to the first telephone terminal (T1);

second telephone terminal (T2) connected to the first telephone terminal (T1) through a telecommunications network (ISDN);

digital communications installation having handwriting recognition means (PDA) connected to the second telephone terminal (T2);

wherein the first telephone terminal (T1) receives and provides an incoming call having data to the data processing terminal (PC); and

wherein the data processing terminal (PC) stores and evaluates the data to determine whether the data fulfills a predetermined criteria and sends a message to the second telephone terminal (T2) if the predetermined criteria are fulfilled.

5,646,946

APPARATUS AND METHOD FOR SELECTIVELY COMPANDING DATA ON A SLOT-BY-SLOT BASIS

John E. VanderMeer, Austin, Tex.; Duncan M. Fisher, Mission Viejo, Calif., and Tan Nhat Dao, Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

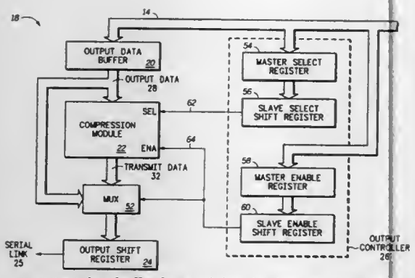
Filed Oct. 30, 1995, Ser. No. 550,036

Int. Cl.[6] H04J *3/02*

U.S. Cl. 370—442 **31 Claims**

1. A data processing system, comprising:

an output serial interface for selectively compressing data and for transmitting the compressed data onto a serial link, wherein the output serial interface comprises:



an output data buffer for receiving the data, the data organized in blocks with each block corresponding to a slot of data within a frame of data;

a compression module operably coupled to the output data buffer for receiving the data from the output data buffer and, on a slot-by-slot basis, based upon a compression signal, selectively compressing the data to produce transmit data, the transmit data organized in blocks with each block corresponding to the slot of data within the frame of data;

an output shift register operably coupled to the compression module and the serial link for receiving the transmit data from the compression module and selectively transmitting the transmit data on the serial link; and

an output controller operably coupled to the compression module for receiving the compression signal and selectively issuing the compression signal to the compression module to thereby cause the selective compression of the data from the output data buffer.

5,646,947

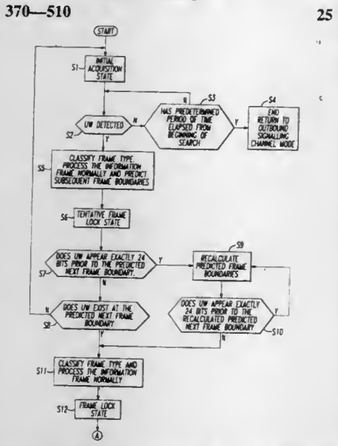
MOBILE TELEPHONE SINGLE CHANNEL PER CARRIER SUPERFRAME LOCK SUBSYSTEM

Raymond R. Cooper, Baltimore, and Joseph B. Bronder, Elkridge, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 27, 1995, Ser. No. 411,048

Int. Cl.[6] H04J *3/06*

U.S. Cl. 370—510 **25 Claims**



1. A method of frame synchronization for a superframe lock subsystem comprising:

a) searching for and detecting a unique word in received data, the received data consisting of superframes including a plurality of frames having frame information therein, a unique word in the received data being indicative of a frame boundary;

b) predicting the location of frame boundaries in the received data based upon the unique word detected during said step a);

c) searching for and detecting if a unique word exists in the received data at the predicted frame boundary immediately following the frame boundary corresponding to the unique word detected during said step a);

d) searching for and detecting if a carrier wave sequence exists in the received data at the predicted frame boundary immediately following the frame boundary corresponding to the unique word detected during said step c), a carrier wave sequence in the received data being indicative of a superframe boundary;

e) searching for and detecting if a unique word exists in the received data immediately following the carrier wave sequence detected during said step d); and

f) maintaining frame synchronization of the received data based upon unique words detected subsequent the unique word detected during said step e).

5,646,948

APPARATUS FOR CONCURRENTLY TESTING A PLURALITY OF SEMICONDUCTOR MEMORIES IN PARALLEL

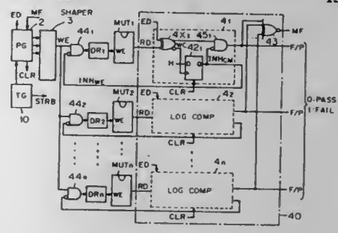
Shinichi Kobayashi, Kounosu; Toshimi Ohsawa, Gyoda; Tadashi Okazaki, Kazo; Kazumi Kita, Gyoda; Junichi Kanai, Kazo, and Tadahiko Baba, Gyoda, all of Japan, assignors to Advantest Corporation, Tokyo, Japan

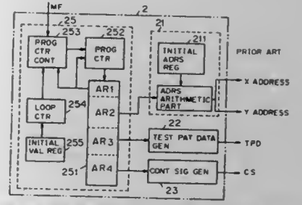
Filed Aug. 31, 1994, Ser. No. 297,924

Claims priority, application Japan, Sep. 3, 1993, 5-219746; Sep. 13, 1993, 5-227148; Sep. 13, 1993, 5-227172; Oct. 21, 1993, 5-061404 U; Dec. 27, 1993, 5-331471

Int. Cl.[6] G01R *31/28;* **G06F** *7/38;11/00;* **G11C** *7/00*

U.S. Cl. 371—21.2 **15 Claims**





1. An apparatus for testing semiconductor memories, comprising:

pattern generating means for generating an address pattern of address signals each specifying an address of a memory under test, a test data pattern of test data signals to be written into addresses of said memory under test specified by said address signals, expected data to be compared with test data signals read out of specified addresses of said memory under test, and a control signal for controlling the operation of said memory under test, in accordance with a program for determining a sequence of pattern generation, and for applying said test data pattern, said address pattern, and said control signal to said

memory under test, said control signal including an operation status control signal for controlling a write/read operation of data into/from said memory under test;

comparing means, receiving data read out of said memory under test and said expected data, for comparing said data from said memory under test with said expected data and outputting a signal that represents a pass obtained as a result of the comparison therein when said data from said memory under test matches said expected data or outputting a signal that represents a fail obtained as a result of the comparison therein when said data from said memory under test does not match said expected data;

inhibit signal holding means, connected to the output side of said comparing means, for holding said signal that represents a pass outputted from said comparing means and outputting the pass signal as an inhibit signal;

inhibit gate means, receiving said inhibit signal from said inhibit signal holding means and responsive thereto, for inhibiting said operation status control signal from being supplied to said memory under test thereby preventing said test data pattern from being written into said memory under test;

inhibit means, connected to the output side of said comparing means, for inhibiting said signal that represents a pass or fail from said comparing means from being outputted when said inhibit signal is supplied to said inhibit means.

15. An apparatus for testing semiconductor memories, comprising:

pattern generator means for generating a test pattern including at least test data to be supplied to a memory under test and expected data to be compared with test data read out of said memory under test; and

logical comparator means, receiving data read out of said memory under test and expected data generated from said pattern generating means, for comparing said data from said memory under test with said expected data and outputting a fail signal when said data from said memory under test does not match said expected data or outputting a match flag signal when said data from said memory under test matches said expected data, said panern generator means comprising an address generating part, said address generating part including:

a base arithmetic part;

a destination arithmetic part;

an address descramble arithmetic part connected in cascade with said base arithmetic part and said destination arithmetic part; and

a multiplexer having first and second inputs and one output and adapted for outputting a result of an address arithmetic operation,

an output of said address descramble arithmetic part connected to said first input of said multiplexer and an output of said base arithmetic part connected to said second input of said multiplexer so that the output of said base arithmetic part is selectively outputted in a skip mode.

5,646,949

METHOD AND APPARATUS FOR GENERATING INSTRUCTIONS FOR USE IN TESTING A MICROPROCESSOR

William C. Bruce, Jr.; Wai-On Law, both of Austin, Tex.; Elizabeth Marie Rudnick, Urbana, Ill., and Judith Elizabeth Laurens, Cedar Park, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 4, 1996, Ser. No. 658,185

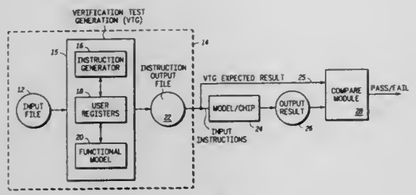
Int. Cl.[6] G06F *11/00*

U.S. Cl. 371—27 **31 Claims**

1. A method for selecting instructions for use in a process for generating dynamically-biased pseudo-random test patterns, the method comprising:

providing an instruction list having a list identifier, an instruction set having at least one instruction, a pick value, and an instruction selection discipline value;

selecting an instruction from the instruction set based on the selection discipline value, wherein the discipline value specifies a manner of selecting; and



repeating the step of selecting based on the pick value.

5,646,950

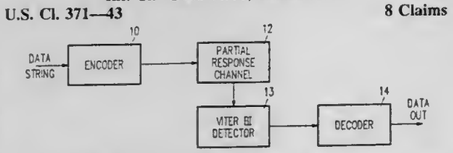
MATCHED SPECTRAL NULL CODES FOR PARTIAL RESPONSE CHANNELS

Chandra C. Varanasi, Simi Valley, and Nersi Nazari, Scotts Valley, both of Calif., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Nov. 18, 1994, Ser. No. 342,229

Int. Cl.[6] G06F *11/10;* **H03M** *13/12*

U.S. Cl. 371—43 **8 Claims**



8. A system for encoding and decoding an input string of data for a partial response channel having a transfer function of the form $(1-D)(1+D)^n$ to provide an output having a preselected code rate, said system comprising:

finite storage means for storing an encoding table for translating a succession of input data words of selected uniform length to a succession of output code words of selected uniform length greater than said selected data word length, wherein each unique data word translates to a unique code word;

said encoding table being generated from canonical state diagrams (G) and (G′) for binary sequences having spectral nulls at Nyquist frequency, wherein the power (p) of the diagram (G′) is a function of code word length, and further wherein a selected code word that forms a loop in the diagrams (G) and (G′) corresponds with a loop that is non-quasicatastrophic in the diagram (G); and

decoder means for decoding each unique code word and the complement thereof to the unique data word associated therewith.

5,646,951

METHOD AND APPARATUS FOR LINEWIDTH NARROWING AND SINGLE MODE OPERATION IN LASERS BY INTRA-CAVITY NONLINEAR WAVE MIXING

Baruch Fischer, Haifa; Ron Daisy, Tiberias, and Moshe Horowitz, Haifa, all of Israel, assignors to Technion Research & Development Foundation Ltd., Haifa, Israel

Filed Mar. 21, 1995, Ser. No. 408,152

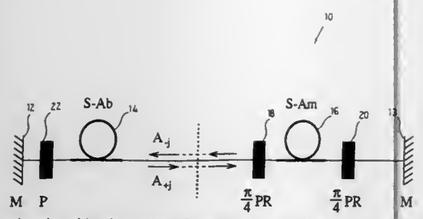
Claims priority, application Israel, Mar. 24, 1994, 109102

Int. Cl.[6] H01S *3/098*

U.S. Cl. 372—19 **15 Claims**

9. An apparatus for single frequency non-mode locked, continuous operation and linewidth narrowing of a laser, said apparatus comprising:

a laser cavity defining a round trip time, said cavity having a gain medium, and a distributed saturable absorber, said absorber having a response time greater than said cavity round trip time, said absorber having a length several orders of magnitude greater than a laser wavelength corresponding to the single frequency,



wherein said gain medium Is pumped to provide oscillation of at least one pair of counterpropagating light beams in said saturable absorber, said counterpropagating light beams interfering with each other in said saturable absorber,

said interference in said saturable absorber developing nonlinear wave-mixing of said at least one pair of counter-propagating light beams and producing the single frequency non-mode locked operation and linewidth narrowing of the laser.

5,646,952

LASER

Stewart Trevor Whittley, South Queensland, Great Britain, assignor to GEC-Marconi Avionics (Holdings) Limited, Stanmore, England

PCT No. PCT/GB94/00554, § 371 Date Dec. 1, 1995, § 102(e) Date Dec. 1, 1995, PCT Pub. No. WO94/22189, PCT Pub. Date Sep. 29, 1994

PCT Filed Mar. 18, 1994, Ser. No. 513,921

Claims priority, application United Kingdom, Mar. 20, 1993, 9305854

Int. Cl.[6] H01S *3/13*

U.S. Cl. 372—32 **20 Claims**



1. A laser comprising:

a laser medium;

a resonator;

a Q-switch for controlling the level of oscillation within the resonator;

Q-switch control means;

means for applying a pump beam to the resonator in an end pumped geometry such that the laser operates in either a single longitudinal mode or in two neighboring longitudinal modes; and

means for detecting the presence of two longitudinal modes characterized in further comprising path length control means responsive to the detection of the presence of two longitudinal modes for controlling means for varying the optical path length of the resonator by a discrete length substantially equal to an odd integral multiple of one quarter of the wavelength at which the laser is operating.

5,646,953

SEMICONDUCTOR LASER DEVICE

Hiroki Naito, Osaka, and Masahiro Kume, Siga, both of Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Filed Apr. 5, 1995, Ser. No. 417,396

Claims priority, application Japan, Apr. 6, 1994, 6-068545; Jul. 14, 1994, 5-161998

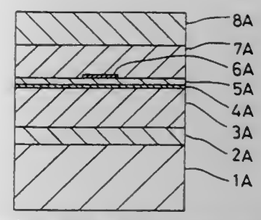
Int. Cl.[6] H01S *3/19*

U.S. Cl. 372—46 **38 Claims**

1. A semiconductor laser device, comprising:

an active layer having a refractive index of n_X;

a first semiconductor layer of one conductivity type having a refractive index of n_{Y1} formed on said active layer;



a second semiconductor layer of one conductivity type having a refractive index of n_{Y2} formed in stripe on said first semiconductor layer; and

a third semiconductor layer of one conductivity type having a refractive index of n_{Y3} formed on said first semiconductor layer and said second semiconductor layer; wherein

the interface resistance between said first semiconductor layer and said third semiconductor layer is larger than both the interface resistance between said first semiconductor layer and said second semiconductor layer, and the interface resistance between said second semiconductor layer and said third semiconductor layer;

the refractive index n_X of said active layer is larger than the refractive index n_{Y1} of said first semiconductor layer; and

the refractive index n_{Y2} of said second semiconductor layer is larger than the refractive index n_{Y3} of said third semiconductor layer.

5,646,954

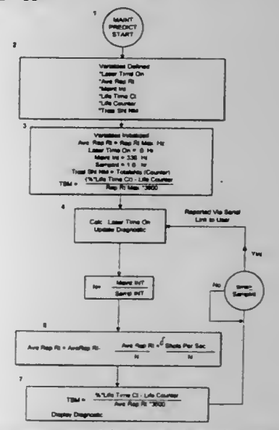
MAINTENANCE STRATEGY CONTROL SYSTEM AND MONITORING METHOD FOR GAS DISCHARGE LASERS

Palash P. Das, Vista, and Gary R. Stephenson, San Diego, both of Calif., assignors to Cymer, Inc., San Diego, Calif.

Filed Feb. 12, 1996, Ser. No. 599,744

Int. Cl.[6] H01S *3/22*

U.S. Cl. 372—55 **12 Claims**



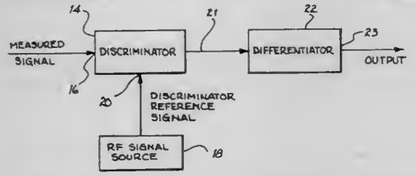
1. A laser system comprising a set of service life-limited sub-components operating in combination to generate an output laser beam, and a control system operatively coupled and in communication with each sub-component to monitor and control each sub-component's operation and collectively monitor and control the output of the laser system, said monitoring function further including a generation of a predictive end-of-life signal to produce a readout to the operator of a time remaining under current laser system operation for each service life-limited sub-component.

5,646,955

APPARATUS FOR MEASURING CYCLE TO CYCLE JITTER OF A DIGITAL SIGNAL AND METHOD THEREFOR

Orban Tozun, Monte Sereno, and Earl William McCune, Jr., Santa Clara, both of Calif., assignors to International Microcircuits, Inc., Milpitas, Calif.

Filed May 31, 1994, Ser. No. 251,104
Int. Cl.[6] H04B 3/46;17/00; H04A 1/20
U.S. Cl. 375—224 10 Claims



1. Apparatus for measuring cycle to cycle jitter of a measured signal comprising, in combination:

source means for providing said measured signal;

reference signal source means for providing a reference signal;

discriminator means having an input coupled to said source means and an input coupled to said reference signal source means for providing a discriminator voltage having an amplitude proportional to a difference between a frequency of said reference signal and a frequency of said measured signal; and

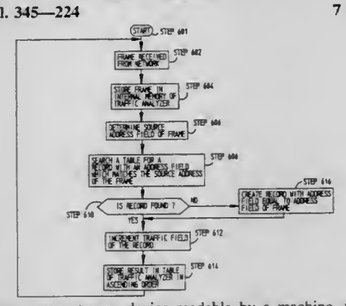
differentiator means coupled to an output of said discriminator means for providing a voltage substantially proportional to a derivative of an amplitude of said discriminator voltage with respect to time.

5,646,956

SYSTEM AND METHOD FOR ESTIMATING TOP CONTRIBUTORS

Robert W. Pinna, Colorado Springs, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 791,713, Nov. 14, 1991, abandoned.
This application Feb. 9, 1996, Ser. No. 599,196
Int. Cl.[6] H04B 3/46
U.S. Cl. 345—224 7 Claims



4. A program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform method steps for estimating the top N contributors of traffic on a communications network, wherein N is an integer greater than zero, the method steps comprising:

(a) monitoring the communications network;

(b) capturing a frame on the communication network;

(c) forwarding said frame to a traffic analyzer block, said traffic analyzer block having a table of records, each of said records having a location in use field, a station address field, and a traffic count field;

(d) incrementing a traffic count field entry of one of said records which has a station address field entry that matches a source address of said frame;

(e) creating new record, when no station address field entry matches said source address and marking said location in use field of said new record as in use;

(f) sorting said table in ascending order according to traffic count field entries;

(g) repeating steps (a) through (f) until all of said records are marked as in use and no station address field entry matches a new source address; and

(h) marking a plurality of said records as not in use, wherein each of said plurality of said records has a traffic count field entry less than a traffic count field entry of a Nth highest contributor; and

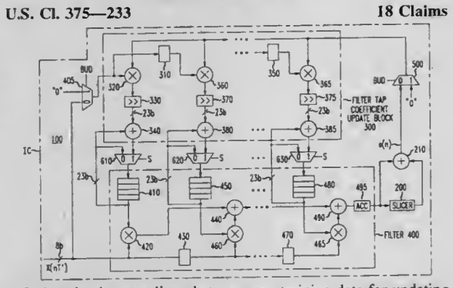
(j) repeating steps (a) though (h).

5,646,957

BURST UPDATE FOR AN ADAPTIVE EQUALIZER

Gi-Hong Im, Middletown; Naresh Ramnath Shanbhag, Scotch Plains, and Jean-Jacques Werner, Holmdel, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jul. 28, 1995, Ser. No. 508,945
Int. Cl.[6] H03H 7/40
U.S. Cl. 375—233 18 Claims



1. An adaptive equalizer that uses non-training data for updating filter tap coefficients, comprising:

a digital signal filter including the filter tap coefficients;

a slicer; and

a filter tap coefficient update block;

said filter, said slicer and said filter tap coefficient update block being configured so as to perform at least one burst update of said filter tap coefficients during symbol periods, wherein update of the filter tap coefficients is disabled when the at least one burst update is not occurring.

5,646,958

DECISION FEEDBACK EQUALIZER FOR CANCELING SHORT-AND LONG-MULTIPATH COMPONENTS USING CORRESPONDINGLY DELAYED DECISION SYMBOLS

Ichiro Tsujimoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

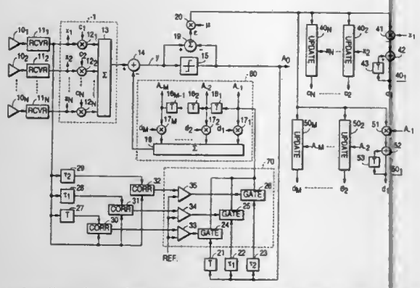
Filed Dec. 26, 1995, Ser. No. 577,009
Claims priority, application Japan, Dec. 26, 1994, 6-322641
Int. Cl.[6] H03H 7/30;7/40
U.S. Cl. 375—233 7 Claims

1. A decision feedback equalizer comprising:

sensor means for receiving transmitted signals and recovering baseband symbols from the received signals;

forward filter means for weighting the recovered baseband symbols with first coefficients so that precursor multipath components of a transmitted symbol are canceled and combining the weighted baseband symbols to produce an output signal;

a plurality of first delay means for providing delays to one of said baseband symbols of the sensor means to produce a short-delayed baseband symbol and a long-delayed baseband symbol;



a plurality of correlator means for detecting correlations between said one of the baseband symbols and said short- and long-delayed baseband symbols;

a plurality of second delay means for providing delays to a decision symbol to produce a short-delayed decision symbol and a long-delayed symbol;

selector means responsive to a correlation detected by one of said correlator means for selecting one of the short- and long-delayed decision symbols of the second delay means;

feedback filter means for shifting the delayed decision symbol selected by the selector means along a tapped-delay line to produce successively shifted decision symbols, weighting the successively shifted decision symbols with second coefficients and combining the weighted decision symbols to produce an output signal that cancels postcursor multipath components of said transmitted symbol;

means for combining the output signals of said forward filter means and said feedback filter means to produce a predecision symbol; and

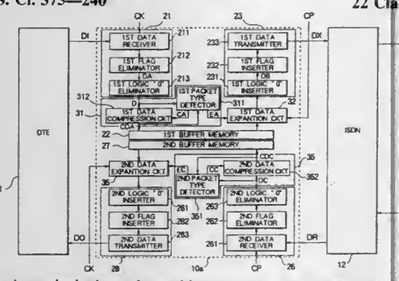
decision means for producing a decision output from the predecision symbol and applying the decision output to said plurality of second delay means as said decision symbol.

5,646,959

TERMINAL ADAPTER CAPABLE OF REDUCING A MEMORY CAPACITY OF A BUFFER MEMORY

Yoshiyuki Kamishima, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Sep. 8, 1994, Ser. No. 302,544
Claims priority, application Japan, Sep. 9, 1993, 5-224325
Int. Cl.[6] H04B 1/66;14/06; H04L 23/00
U.S. Cl. 375—240 22 Claims



1. A terminal adapter located between a data terminal equipment unit and a data communication network, said terminal adapter being operable to receive a sequence of first data Signals at a first transmission rate from said data terminal equipment unit to transmit a sequence of first network data Signals to said data communication network at a second transmission rate greater than said first transmission rate, said terminal adapter comprising:

a preprocessing circuit supplied with said first data Signal sequence for preprocessing said first data signal sequence into a sequence of first preprocessed signals;

signal compression means for compressing said first preprocessing signal sequence into a sequence of compressed signals in accordance with a predetermined compression algorithm;

a buffer memory for memorizing said compressed signal sequence;

controllable signal expansion means coupled to said buffer memory for expanding said compressed signal sequence read out of said buffer memory to produce a sequence of expanded signals at said second transmission rate; and

a post-processing circuit supplied with said expanded signal sequence for post-processing said expanded signal sequence to produce a sequence of first post-processed signals as said first network data signal sequence;

said signal compression means including:

a detecting circuit supplied with said first preprocessed signal sequence for detecting whether or not said first preprocessed signal sequence is subjected to compression and expansion, to produce a compression indication signal and an expansion indication signal when said first preprocessed signal sequence is to be compressed and expanded, respectively; and

a signal compression circuit supplied with said first preprocessed signal sequence and said compression indication signal for compressing said first preprocessed signal sequence in accordance with said predetermined compression algorithm to produce said compressed signal sequence when the compression indication signal is given from said detection circuit to said signal compression circuit;

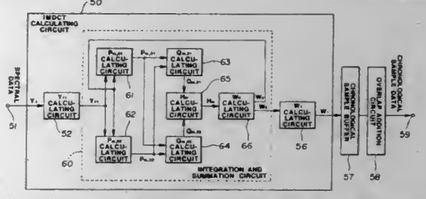
said signal expansion means being supplied with said expansion indication signal and the readout compressed signal sequence to produce said expanded signal sequence in response to said expansion indication signal.

5,646,960

INVERSE MODIFIED DISCRETE COSINE TRANSFORM SIGNAL TRANSFORMING SYSTEM

Mito Sonohara, and Kyoya Tsutsui, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 458,338, Jun. 2, 1995, abandoned, which is a division of Ser. No. 119,003, Sep. 9, 1993, abandoned. This application Oct. 17, 1996, Ser. No. 731,645
Claims priority, application Japan, Sep. 28, 1992, 4-282440
Int. Cl.[6] H04B 14/00
U.S. Cl. 375—340 16 Claims



1. An inverse modified discrete cosine transform signal transforming device for processing a N/2 number of input signals where N is a natural number, comprising:

a linear inverse transforming unit for linear inverse transform of input signals, said linear inverse transforming unit comprising a pre-processing section for pre-processing the input signals, an integration and summation processing section for executing integration and summation processing operations on output signals of said pre-processing section, the output signals of said pre-processing section represented solely by real number data, and a post-processing unit for post-processing output signals of said integration and summation processing section, said integration and summation processing section executing the integration and summation operations on the N/2 number of input signals supplied from said pre-processing section by grouping the input signal by a K number of terms, and

executing the operations iteratively by N/(2*K) number of times for outputting a sum total of a N/2 number of signals; and

an inverse transforming window unit for multiplying, by an inverse transforming window output, signals of said linear inverse transforming unit.

5,646,961

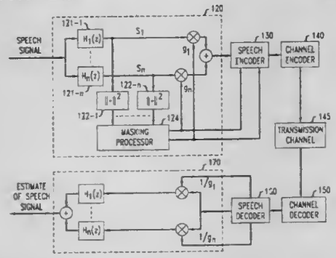
METHOD FOR NOISE WEIGHTING FILTERING

Yair Shoham, Watchung, N.J., and Casimir Wierzynski, New York, N.Y., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 30, 1994, Ser. No. 367,526

Int. Cl.[6] H04B *14/04;15/00;* **H04L** *25/49;* **G10L** *9/00*

U.S. Cl. 375—243 **16 Claims**



1. A method comprising the steps of:

separating an input signal into a set of n subband signal components, and

generating a set of gain signals based on the power in each subband signal component and on a masking matrix, wherein each gain signal in said set of gain signals multiplies a respective subband signal component in said set of subband signal components.

5,646,962

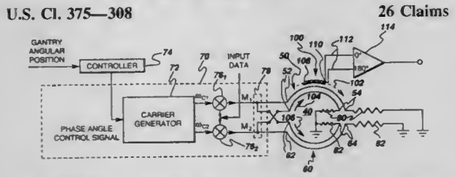
APPARATUS FOR REDUCING ELECTROMAGNETIC RADIATION FROM A DIFFERENTIALLY DRIVEN TRANSMISSION LINE USED FOR HIGH DATA RATE COMMUNICATION IN A COMPUTERIZED TOMOGRAPHY SYSTEM

Daniel David Harrison, Delanson, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 5, 1994, Ser. No. 349,220

Int. Cl.[6] H04L *27/20*

U.S. Cl. 375—308 **26 Claims**



1. Apparatus for reducing electromagnetic leakage from a differentially driven transmission line for providing high data rate communication in a computerized tomography system comprising:

a carrier generator to generate first and second carrier signals having an adjustable phase angle difference between said respective carrier signals in response to a control signal applied thereto;

a first and a second modulator respectively coupled to said carrier generator for receiving said first and second carrier signals and for receiving an externally-derived data signal to produce a first and a second modulated output signal having said adjustable phase angle difference therebetween;

a transmission line comprising a first and a second signal conductor coupled respectively to said first and said second modulator to receive said first and said second modulated output signals, said transmission line adapted to transmit electromagnetic radiation in correspondence with said first and said second modulated output signals;

a coupler for receiving said electromagnetic radiation transmitted by said transmission line; and

a controller coupled to said carrier generator for generating said control signal so as to control said adjustable phase angle difference between said first carrier signal and said second carrier signal, wherein said phase angle difference is selected to minimize electromagnetic leakage between said coupler and said transmission line.

5,646,963

FAST AUTOMATIC GAIN CONTROL

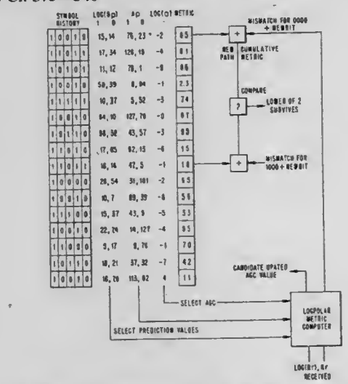
Paul W. Dent, Stehags, Sweden, assignor to Ericsson Inc., Research Triangle Park, N.C.

Division of Ser. No. 305,651, Sep. 14, 1994, Pat. No. 5,568,518.

This application Jul. 25, 1996, Ser. No. 686,028

Int. Cl.[6] H04L *25/03;* **H03G** *3/20*

U.S. Cl. 375—340 **3 Claims**



1. A method for demodulating or decoding a digital data modulated signal, comprising the steps of:

converting a signal proportional to the logarithm of an instantaneous amplitude of said data modulated signal to obtain logamplitude samples and simultaneously determining numerical values related to an instantaneous phase of said data modulated signal to produce phase-related samples;

associating said logamplitude samples with said phase-related samples to obtain logpolar samples;

collecting a number of said logpolar samples in a digital memory to obtain a logpolar block for processing;

determining which sample in said block has a largest logamplitude and subtracting said largest logamplitude from all the logamplitude values in said logpolar block to obtain a block of scaled logpolar values; and

comparing said scaled logpolar values with values expected for each of a number of possible symbol sequences using scaling factors associated with each of said symbol sequences in

order to determine the sequence that best matches said data modulated signal.

5,646,964

DS/CDMA RECEIVER FOR HIGH-SPEED FADING ENVIRONMENT

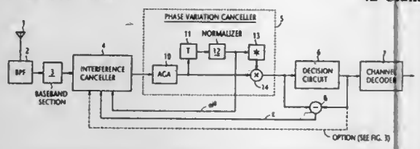
Akihisa Ushirokawa, and Shosei Yoshida, both of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed Jul. 8, 1994, Ser. No. 272,689

Claims priority, application Japan, Jul. 8, 1993, 5-169092

Int. Cl.[6] H03D *1/04*

U.S. Cl. 375—346 **42 Claims**



1. A receiver for a direct-sequence code division multiple access (DS/CDMA) communication system wherein a plurality of signal sources transmit DS/CDMA signals on a radio frequency carrier, each of the DS/CDMA signals being produced by spreading a symbol with a unique spread code at predetermined chip intervals, comprising:

receiver means having a spectral bandwidth for receiving said DS/CDMA signals;

an interference canceller for cancelling signals from desired sources introduced to a signal received by the receiver means from a desired source by using a feedback signal;

a phase variation canceller for cancelling a fading-related phase variation that occurs between successive symbols of the signal from the desired source;

decision means for comparing an input signal with a decision threshold and producing an output signal representing one of two discrete values depending on whether the input signal is higher or lower than the threshold, the interference canceller and the phase variation canceller being connected in series between said receiver means and said decision means for producing an interference- and phase-variation-cancelled signal, and

correction signal generator means for deriving a correction signal from said interference- and phase-variation cancelled signal and applying the correction signal to said interference canceller as said feedback signal,

wherein the interference canceller is a linear equalizer including:

a tapped-delay line having delay-line tap intervals equal to or smaller than said predetermined chip intervals;

a plurality of multipliers connected to successive taps of the delay line for multiplying tap signals on said successive taps with respective tap weight vectors;

an adder for summing outputs of the multipliers to produce a signal as an output signal of the interference canceller; and

a tap-weight controller for deriving said tap weight vectors respectively from correlations between said tap signals and said feedback signal, whereby the tap weight vectors are orthogonally oriented to the signals from the undesired sources.

5,646,965

Patent Not Issued For This Number

5,646,966

METHOD AND APPARATUS FOR DETECTING SYNCHRONIZING SIGNALS BY LATCHING SUCCESSIVED COUNT VALUES THAT REPRESENT TIME BETWEEN RECEIVED SYNC PULSES FOR COMPARISON TO A PREDETERMINED SYNC PATTERN OF COUNT VALUES

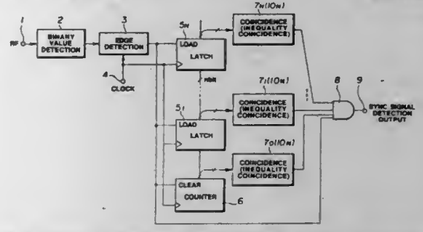
Yasuyuki Chaki, and Hiroyuki Ino, both of Chiba, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 29, 1993, Ser. No. 84,860

Claims priority, application Japan, Jun. 30, 1992, 4-194578

Int. Cl.[6] H04L *7/00*

U.S. Cl. 375—368 **10 Claims**



8. A method for detecting synchronization signals comprising:

receiving a signal representing a binary-valued signal,

counting clocks generated by an external source between each edge in the received signal and producing successive counted values,

holding the successive counted values,

comparing a pattern of values corresponding to a predetermined synchronization signal with the successive counted values, and

outputting a found signal if the pattern of values in the predetermined synchronization signal coincides with the successive counted values.

5,646,967

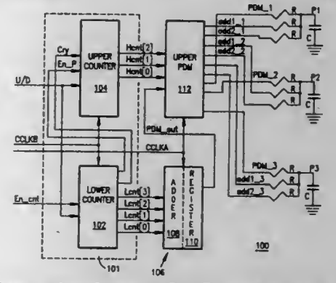
MULTI-PHASE TRIANGULAR WAVE SYNTHESIZER FOR PHASE-TO-FREQUENCY CONVERTER

Wong Hee, San Jose, and Gabriel Li, San Francisco, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed May 9, 1996, Ser. No. 644,035

Int. Cl.[6] H04L *7/00*

U.S. Cl. 375—373 **4 Claims**



1. A phase-to-phase frequency (P-to-F) converter that converts a digital phase error signal that indicates positive and negative phase errors into a plurality of phase-separated triangular waveforms, the P-to-F converter comprising:

an up/down counter that counts the positive and negative phase errors and generates a multibit, parallel digital counter output signal that indicates a cumulative current value of the phase errors, the counter output signal including a least significant bit (LSB) portion and a most significant bit (MSB) portion;

a pulse density modulator (PDM) that converts the LSB portion of the counter output signal to a corresponding serial, digital PDM signal; and

a multi-phase triangular wave synthesizer that combines the MSB portion of the counter output signal and the PDM signal to provide a plurality of DC-modulated, phase-separated triangular waveforms, the multi-phase triangular wave synthesizer being driven by periodic counts of a clock signal and responding to the MSB portion of the counter output signal and the PDM signal to provide, for each of a plurality of phase-separated output signals of the wave synthesizer, (i) a PDM output waveform with polarity information, (ii) a first switching signal for modulating the PDM output waveform on first specified counts of the clock signal, and (iii) a second switching signal for modulating the PDM output waveform on second specified counts of the clock signal, and

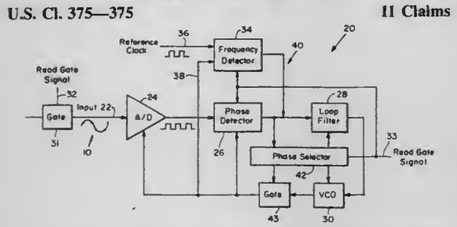
for each phase-separated output signal of the wave synthesizer, output filter circuitry that responds to the PDM output waveform and the first and second switching waveforms of said phase-separated output by providing a corresponding analog output signal.

5,646,968

DYNAMIC PHASE SELECTOR PHASE LOCKED LOOP CIRCUIT

Janos Kovacs, Andover; Ronald Kroesen, Harvard, and Kevin McCall, Leominster, all of Mass., assignors to Analog Devices, Inc., Norwood, Mass.

Filed Nov. 17, 1995, Ser. No. 560,013
Int. Cl.[6] H03D *3/24*
U.S. Cl. 375—375 **11 Claims**



1. A dynamic phase selector phase locked loop circuit comprising:

an A/D converter for receiving an input to be sampled;

a phase detection circuit for determining the phase error between the sampled input signal and a clock signal;

a clock circuit, responsive to said phase detection circuit, for providing said clock signal to said A/D converter for timing the sampling of the input signal; said clock circuit including a delay circuit having a number of delay taps; and

a phase selector circuit, responsive to said phase detection circuit, for initially gating the clock signals to said A/D converter from said clock circuit, and enabling one of said delay taps to dynamically adjust the phase of the clock signal and reduce the initial phase error.

5,646,969

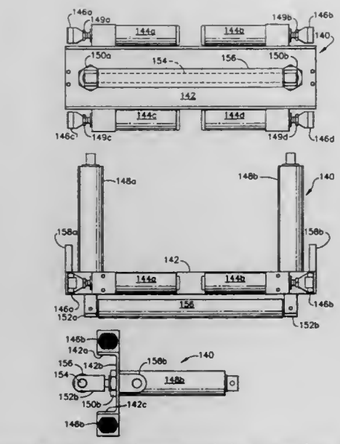
APPARATUS FOR INSTALLING TIE ROD ASSEMBLY IN SPACE BETWEEN JET PUMP ASSEMBLIES WITH LIMITED VERTICAL ACCESS

Grant Clark Jensen, Morgan Hill, Calif., assignor to General Electric Company, San Jose, Calif.

Filed Sep. 22, 1995, Ser. No. 532,184
Int. Cl.[6] G21C *19/00*
U.S. Cl. 376—260 **19 Claims**

9. A stop tool comprising:

a support frame having an axis;



a first fluid-actuated clamping cylinder mounted on said support frame and having a first piston which is translatable in a first direction in response to actuation of said first fluid-actuated clamping cylinder;

a first gripper mounted on a distal end of said first piston;

a second fluid-actuated clamping cylinder mounted on said support frame and having a second piston which is translatable in said first direction in response to actuation of said second fluid-actuated clamping cylinder;

a second gripper mounted on a distal end of said second piston;

a third gripper mounted on an end of said first fluid-actuated clamping cylinder which is remote from said distal end of said first piston;

a fourth gripper mounted on an end of said second fluid-actuated clamping cylinder which is remote from said distal end of said second piston;

a roller support structure mounted on said support frame; and

a roller rotatably mounted on said roller support structure, said roller having an axis of rotation which is generally parallel to said first direction,

wherein each of said first through fourth grippers has a non-smooth gripping surface, said non-smooth gripping surfaces of said first and second grippers being aligned at a first axial position when said first and second pistons are extended by the same distance and facing in said first direction, and said non-smooth gripping surfaces of said third and fourth grippers being aligned at a second axial position and facing in a second direction opposite to said first direction, said first and second axial positions being separated by a distance which is greater than a length of said roller and greater than a length of said support frame.

5,646,970

CORE PLATE REPAIR USING CONTROL ROD GUIDE TUBE LOAD TRANSFER COLLAR

Jeffrey Lee Thompson, San Jose, Calif., assignor to General Electric Company, San Jose, Calif.

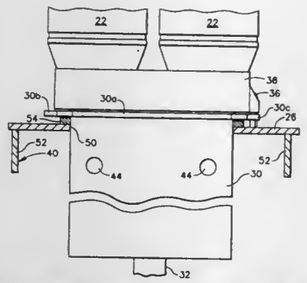
Filed Jun. 18, 1996, Ser. No. 664,605
Int. Cl.[6] G21C *13/00*
U.S. Cl. 376—260 **18 Claims**

7. In a boiling water reactor comprising:

a reactor pressure vessel having a lower head;

a vertically disposed control rod drive which penetrates said lower head of said reactor pressure vessel;

a vertically disposed housing for said control rod drive, said control rod drive housing being vertically supported by said lower head of said reactor pressure vessel;



a vertically disposed control rod coupled to said control rod drive;

a vertically disposed guide tube for said control rod, said guide tube being vertically supported by said control rod drive housing and having a flange at a top end thereof; a nuclear fuel core arranged inside said reactor pressure vessel, said fuel core comprising a vertically disposed fuel bundle assembly;

a shroud arranged inside and generally concentric to said reactor pressure vessel;

a top guide supported by said shroud at a first elevation, said top guide providing lateral support to said fuel bundle assembly;

a core plate supported by said shroud at a second elevation below said first elevation, said core plate providing lateral support to said guide tube; and

a fuel support casting vertically supported by said top end of said guide tube, said fuel bundle assembly being vertically supported on said fuel support casting,

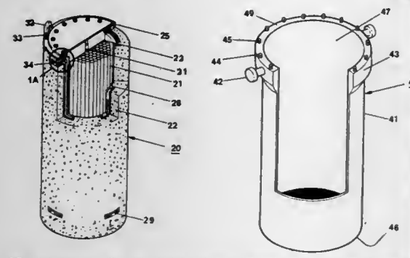
the improvement comprising a mechanical structure interposed between said core plate and said guide tube flange, wherein said mechanical structure blocks said core plate from getting closer than a predetermined distance to said guide tube flange during upward deflection of said core plate.

5,646,971

METHOD AND APPARATUS FOR THE UNDERWATER LOADING OF NUCLEAR MATERIALS INTO CONCRETE CONTAINERS EMPLOYING HEAT REMOVAL SYSTEMS

William F. Howe, Toronto, Canada, assignor to Hi-Temp Containers Inc., Toronto, Canada

Filed Nov. 16, 1994, Ser. No. 341,980
Int. Cl.[6] G21C *19/06*
U.S. Cl. 376—272 **19 Claims**



18. Apparatus for the underwater loading of nuclear materials, comprising:

(a) a concrete container having a concrete outer surface, an open central cavity shaped to receive the materials, an inner steel liner lining the interior of the cavity, the liner including a top surface covering the top of the container, a shielded cavity lid dimensioned to cover the cavity, and fastening and sealing means for fastening and sealing the lid to the top surface;

(b) holding means for holding the concrete container during underwater loading, comprising a metal bottom, and a metal outside wall having a top surface, wherein the bottom and wall define an upwardly open cavity dimensioned to accommodate the concrete container, while leaving a gap between the container and the outside wall;

(c) cover means for covering the gap between the outside wall of the holding means and the concrete outer surface of the container while allowing access to the central open cavity of the container;

(d) fastening means for fastening the cover means to the top surface of the container, and for removably fastening the cover means to the top surface of the holding means; and

(e) sealing means for sealing the cover means to the container and to the holding means.

5,646,972

PROCESS FOR THE TREATMENT OF NATURAL APATITES WITH A VIEW TO THE USE THEREOF FOR STORING IRRADIATED FUEL ELEMENTS

Joëlle Carpena, Jouques, and Jean-Louis Lacout, Toulouse, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Division of Ser. No. 260,013, Jun. 15, 1994, Pat. No. 5,597,542. This application Aug. 26, 1996, Ser. No. 703,365
Claims priority, application France, Jun. 16, 1993, 93 07265
Int. Cl.[6] G21F *5/008*
U.S. Cl. 376—272 **6 Claims**

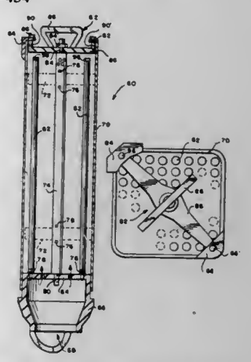
1. A storage container for irradiated nuclear fuel elements including a filling material surrounding said elements, said filling material comprising an apatite powder obtained by contacting a natural apatite powder with an acid aqueous solution with a pH above 1 for between a few seconds and 10 minutes to modify the natural apatite surface to better fix cationic and anionic groups contacted therewith.

5,646,973

BWR FUEL ASSEMBLY WITHOUT UPPER TIE PLATE

Richard A. Proebstle, San Jose, Calif.; Christian D. Frederickson, Wilmington, N.C.; Thomas G. Dunlap, Wilmington, N.C., and Edward A. Croteau, Wilmington, N.C., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 12, 1995, Ser. No. 542,254
Int. Cl.[6] G21C *3/32*
U.S. Cl. 376—434 **23 Claims**



1. In a fuel bundle assembly for a nuclear reactor comprising:

a lower tie plate;

a plurality of fuel rods comprising all of the fuel rods in the fuel bundle assembly and at least one water rod seated on said lower tie plate and extending in substantially parallel relationship toward an upper end of the fuel bundle assembly;

a plurality of spacers axially spaced along said fuel bundle assembly and including means for laterally supporting each of said fuel rods and said at least one water rod; an improvement wherein no upper tie plate is utilized to support said plurality

of fuel rods at upper ends thereof; and further wherein a fuel bundle assembly lifting load is carried by load beating members including certain of said fuel rods or by said at least one water rod;

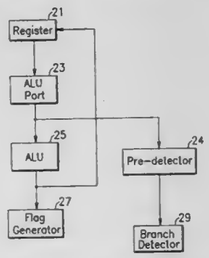
a handle bar assembly at the upper end of said fuel bundle assembly connected to said load bearing members such that with the exception of said load bearing members, all remaining fuel rods of said plurality of fuel rods and said at least one water rod are supported only by said lower tie plate and said plurality of spacers, said handle bar assembly configured so as to permit at least some of said fuel rods to be removed from said bundle assembly without removal of the handle bar assembly.

5,646,974

HIGH SPEED APPARATUS FOR BRANCH DETECTION OF A LOOP INSTRUCTION

Wen-Yi Wu, Hsinchu Hsien, and Ya Nan Mou, Taipei, both of Taiwan, assignors to United Microelectronics Corporation, Hsinchu, Taiwan

Filed Feb. 8, 1996, Ser. No. 597,386
Int. Cl.[6] G07C *3/00*
U.S. Cl. 377—15 **6 Claims**



1. An apparatus for branch detection of a loop instruction, comprising

a register for storing a loop count value;

an ALU port connecting said register;

a predetector for predetecting said loop count value from said register through said ALU port;

an ALU for modifying said loop count value and updating a new loop count value into said register; and

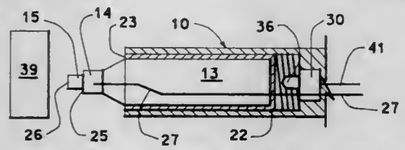
a branch detector for detecting said loop count value to determine whether said loop operation has to be terminated.

5,646,975

COUNTING AND MARKING DEVICE

John W. Homer, 108 Forest La., Cheshire, Conn. 06410

Continuation-in-part of Ser. No. 494,805, Jun. 26, 1995, Pat. No. 5,506,876. This application Apr. 1, 1996, Ser. No. 625,869
Int. Cl.[6] G07C *3/00*
U.S. Cl. 377—15 **8 Claims**



1. A device for counting and marking objects, said device comprising:

a) a housing elongated upon a center axis and having forward and rearward extremities,

b) a reservoir container for the confinement of a marking fluid, said container being disposed within said housing and having a closed rear extremity and a front extremity located adjacent the forward extremity of said housing,

c) delivery means associated with the front extremity of said container for releasing marking fluid from said container controllably by way of an electrical pulse,

d) axially moveable hollow spacer means forwardly associated with said delivery means and through which said marking fluid is accurately directed onto said object,

e) a restoring spring which serves to urge said spacer means forwardly,

f) electronic means located within said housing for counting, and controlling said delivery means, and,

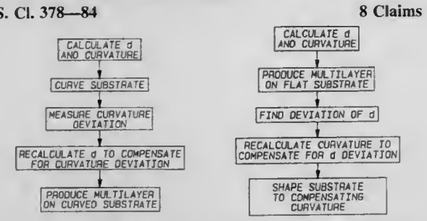
g) switch means for activating said electronic means, said switch means being in an off condition while said spacer means is at a forward-most position under the urging of said restoring spring, and is in an on condition when said spacer means is forced rearwardly against the urging of said restoring spring, whereby the on condition of said switch causes: 1) an electrical pulse to be routed to said delivery means to release a controlled amount of marking fluid which is directed by said spacer means onto an object which said spacer means is pressed against, and 2) said electronic means to register a count.

5,646,976

OPTICAL ELEMENT OF MULTILAYERED THIN FILM FOR X-RAYS AND NEUTRONS

George Gutman, Birmingham, Mich., assignor to Osmic, Inc., Troy, Mich.

Continuation-in-part of Ser. No. 283,610, Aug. 1, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 487,936
Int. Cl.[6] G21K *1/06*
U.S. Cl. 378—84 **8 Claims**



1. A method for producing a figured optical element with multilayers in order to diffract x-rays comprising the steps of:

a. theoretically calculating workable d space gradings of multilayer coatings and substrate curvature for contemplated use by using the Bragg equation;

b. shaping the substrate to the calculated curvature;

c. measuring the deviation of the substrate curvature from the calculated curvature;

d. using the Bragg equation to calculate new d spacings for the multilayers which would compensate for the error in the substrate curvature; and

e. producing multilayers on the curved substrate with the compensating d spacing.

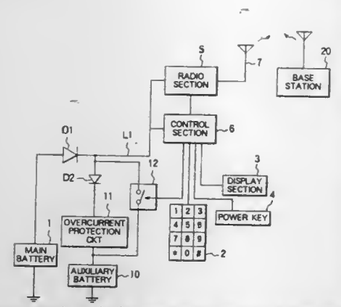
5,646,977

MOBILE TELEPHONE DEVICE SYSTEM HAVING STEAL PREVENTION FUNCTION

Fumiaki Koizumi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 29, 1995, Ser. No. 563,943
Claims priority, application Japan, Nov. 29, 1994, 6-295003
Int. Cl.[6] H04Q *7/20;7/32*
U.S. Cl. 455—411 **8 Claims**

1. A mobile telephone device having a preassigned call number and comprising:



a power supply unit for supplying electric power through a power supply line and removably attached to a body of said mobile telephone device;

a keyboard section;

a display section;

a power key for instructing power supply from said power supply unit; and

a control section connected to said keyboard section, said display section, and said power key for controlling operation of said keyboard section, said display section, and said power key;

said mobile telephone device transmitting, on position registration operation for registering said preassigned call number to said base station, a position registration signal including said preassigned call number to said base station and receiving an information signal from said base station as a result of said position registration operation, said information signal being for representing whether or not said preassigned call number coincides with that of a stolen mobile telephone device;

said control section invalidating the operation of said keyboard and said power key and stopping display of said display section and then transmitting an alarm signal to said base station on reception of said information signal representing the fact that said preassigned call number coincides with that of said stolen mobile telephone device.

5,646,978

METHOD AND APPARATUS FOR PROVIDING INTERSWITCH HANDOVER IN PERSONAL COMMUNICATION SERVICES SYSTEMS

Russell D. Klem, Naperville, and Kimberly Sue Tomasko-Dean, LaGrange, both of Ill., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Apr. 27, 1995, Ser. No. 429,984
Int. Cl.[6] H04Q *7/22;7/38*
U.S. Cl. 455—436 **14 Claims**

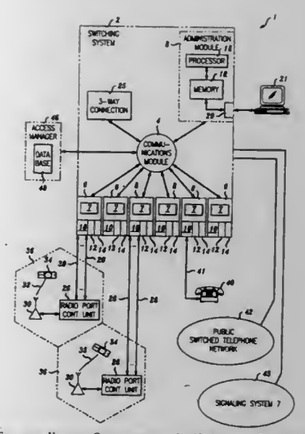
10. An apparatus for providing interswitch handover of calls in a wireless telecommunications system having a plurality of switching systems in communication with one another, selected ones of said switching systems each hosting a means for communicating over an air interface with a mobile station, comprising the steps of:

a first means for communicating hosted by a first of said plurality of switching systems for serving a call to or from a mobile station located in a first geographic area served by the first means;

means for transferring the call to a second means for communicating hosted by a second of said plurality of switching systems when said mobile station relocates to a second geographic area served by the second means;

means for identifying a third means for communicating for serving the call when said mobile station moves into a third geographic area served by the third means, said third means for communicating being hosted by a third of said plurality of switching systems;

means for sending a call set up request from the third means for communicating to said third switching system;



means for sending a first automatic link transfer (ALT) request to the second switching system;

means for transmitting the identity of the first switching system to the third switching system in response to the first ALT request;

means for transmitting a second ALT request to the first of said plurality switching system; and

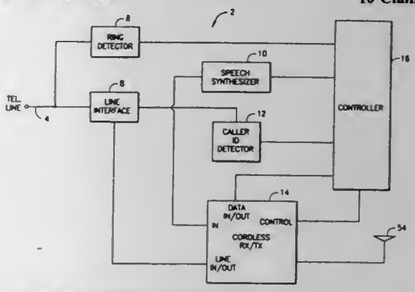
means for routing the call from the first switching system to the third switching system without routing through the second switching system.

5,646,979

CORDLESS TELEPHONE WITH VOICE ANNOUNCED CALLING PARTY IDENTIFICATION

Stephen B. Knuth, Mission Viejo, Calif., assignor to Casio PhoneMate, Inc., Torrance, Calif.

Filed Dec. 20, 1995, Ser. No. 575,893
Int. Cl.[6] H04Q *7/20*
U.S. Cl. 455—563 **10 Claims**



1. A cordless telephone comprising:

a handset including a receiver and a speaker device, said speaker device including a loudspeaker and an earpiece;

a base unit including:

a ring detector which detects ringing signals on a telephone line of an incoming telephone call from a central telephone office;

a line interface which detects the presence of caller information in said incoming telephone call, said caller information including at least a caller's telephone number;

a caller identification detector, coupled to said line interface, which detects said caller information responsive to said ring detector detecting said ringing signals, and which

converts said caller information in said incoming telephone call to an identification signal;

a speech synthesizer which converts said identification signal to a synthesized speech signal and which transmits said synthesized speech to said speaker device;

a first controller which controls said ring detector, said line interface, said caller identification detector and said speech synthesizer such that at least the caller's telephone number is announced over said speaker device in real time at the time of reception of said telephone call when a caller ID/ring mode is set;

a first radio frequency transmitter/receiver in said base unit which transmits said synthesized speech signal to said handset; and

said handset further includes:

a second controller which controls said loudspeaker;

a second radio frequency transmitter/receiver which receives said transmitted synthesized speech signal and which supplies said transmitted synthesized speech signal to said second controller;

an output switch unit which selectively connects an audio output of said second radio frequency transmitter/receiver to one of (a) said earpiece and (b) said loudspeaker.

5,646,980

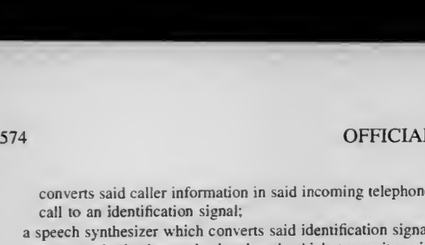
SYSTEM FOR PROVIDING AUTOMATIC VOICE MESSAGING IN A DIGITAL NETWORK ENVIRONMENT

Howard E. Carter, Denton; Byron C. Pierce, Garland, and Joel A. Pugh, Dallas, all of Tex., assignors to MessagerPartners, Dallas, Tex.

Continuation of Ser. No. 54,853, Apr. 28, 1993, Pat. No. 5,381,465, which is a continuation of Ser. No. 702,057, May 17, 1991, abandoned, which is a continuation of Ser. No. 478,674, Feb. 12, 1990, Pat. No. 5,036,533, which is a continuation-in-part of Ser. No. 342,480, Apr. 24, 1989, Pat. No. 4,901,341, which is a continuation-in-part of Ser. No. 209,891, Jun. 22, 1988, Pat. No. 4,825,460. This application Jan. 9, 1995, Ser. No. 370,055

Int. Cl.[6] H04M *3/50*

U.S. Cl. 379—67 **9 Claims**



1. A method for storing and delivering voice messages in a telecommunication circuit including at least one central office, a calling station, a called station associated with said calling station so that a call initiated at said calling station causes a ringing or busy tone to be generated by said central office, indicating a noncompleted call at said called station, the method comprising the steps of:

providing an interface unit for delivering voice message service prompts;

providing a voice message system for receiving voice messages from said calling station and delivering said voice messages to said called station, said voice message system being remotely located from said interface unit and accessed by said interface unit via said central office;

monitoring with said interface unit for an indication from said calling station of acceptance of voice message services at the caller's expense, wherein the caller can monitor voice message service prompts of said interface unit simultaneously with the caller's monitoring of the progress of the call;

disassociating said calling station from said called station in response to said indication, and then connecting said calling station to said voice message system to enable a message to be transferred from said calling station to said voice message system for delivery to said called station.

5,646,981

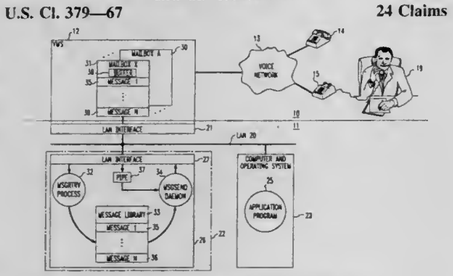
ARRANGEMENT FOR AUTOMATED DELIVERY OF VOICE-MAIL MESSAGES FOR SOFTWARE PROCESSES

Robert Michael Klein, Golden, Colo., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jan. 10, 1995, Ser. No. 370,925

Int. Cl.[6] H04M *1/64*

U.S. Cl. 379—67 **24 Claims**



1. A telecommunications apparatus comprising:

a messaging apparatus for delivering messages to persons;

a computer separate from but connected to the messaging apparatus and executing an operating system;

a plurality of application programs executing on the computer and interacting with the operating system; and

a program-implemented arrangement executing on the computer independently of the application programs, including a database of a plurality of messages and responsive to an interaction, of any application program of the application programs with the operating system, that indicates, to the program-implemented arrangement, a first one of the plurality of messages to be sent to a first one of a plurality of persons, for retrieving the first message from the database and delivering the first message to the messaging apparatus and causing the messaging apparatus to deliver the first message to the first person, without involvement of the application programs.

5,646,982

SYSTEM AND METHOD FOR MESSAGE DELIVERY

Steven J. Hogan; Kristi T. Feltz; Douglas R. Murdock, all of Cedar Rapids; Roy A. Rhodes, Marion; Keith E. Smith, and Todd A. Goodman, both of Cedar Rapids, all of Iowa, assignors to LinkUSA Corporation, Cedar Rapids, Iowa

Filed Dec. 30, 1994, Ser. No. 366,559

Int. Cl.[6] H04M *1/64;3/42*

U.S. Cl. 379—89 **20 Claims**

1. A method for recording and storing a message from a user for delivery to a recipient, comprising the steps of:

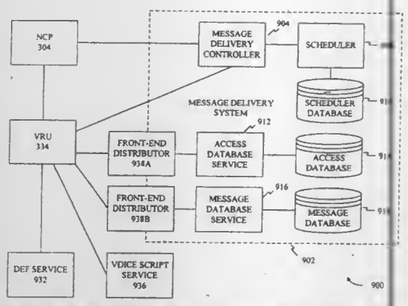
(1) receiving and storing the message in a message database;

(2) storing an access record corresponding to said stored message, wherein said access record comprises message delivery information;

(3) sending a schedule event request to a message delivery system, said schedule event request including said message delivery information;

(4) said message delivery system using said message delivery information to determine a time to initiate delivery of the message;

(5) said message delivery system assigning a scheduler ID to uniquely identify said message delivery information for the message;



(6) updating said access record to include said scheduler ID; and

(7) storing a schedule event in a scheduler database, the schedule event indicating that the delivery of the message is to be initiated at said determined time.

5,646,983

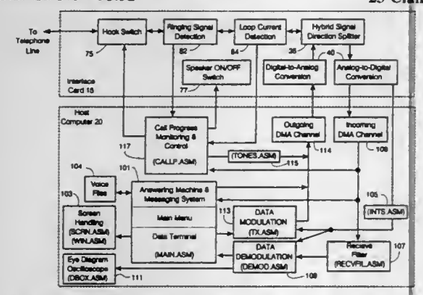
HOST COMPUTER DIGITAL SIGNAL PROCESSING SYSTEM FOR COMMUNICATING OVER VOICE-GRADE TELEPHONE CHANNELS

Robert C. Suffern, Chicago, Ill., and Andrew L. Norrell, Nevada City, Calif., assignors to U.S. Robotics Access Corp., Skokie, Ill.

Filed Mar. 25, 1993, Ser. No. 37,075

Int. Cl.[6] H04M *11/00*

U.S. Cl. 379—93.32 **23 Claims**



2. In combination with a computer of the class comprising, in combination, a microprocessor, a random access memory, expansion socket, and a system bus interconnecting said microprocessor, memory, and expansion socket, an arrangement for communicating between said computer and a remote device via a voice-band telephone circuit connecting to a telephone switching office, said arrangement comprising, in combination:

an auxiliary circuit card having an edge connector to engage said expansion socket, said auxiliary circuit card further comprising, in combination:

a telephone line adapter circuit connected to said telephone circuit, said line adapter circuit including a hook switch for selectively connecting and disconnecting said telephone circuit and said auxiliary circuit card in response to a first control signal, a loop-current detector for generating a second control signal indicating when an active connection has been established with said switching office, a ringing-signal detector for generating a third control signal indicating when ringing signals are being received over said telephone circuit from said switching office, and circuit means for transmitting said first, second, and third control signals between said auxiliary circuit card and said system bus,

a hybrid circuit, interconnected to said line adapter circuit and having a bi-directional line port, for communicating signals to and from said line adapter circuit along said bi-directional line port, and

signal conversion means connected between said bi-directional line port and said edge connector for translating an incoming analog signal from said hybrid circuit into incoming digitally-expressed values representative of the amplitude of samples of said incoming analog signal, for supplying said values to said bus via said edge connector, and for translating outgoing digital sample values received from said bus via said edge connector into a voice band analog signal for transmission to said hybrid circuit and over said telephone circuit, and

call progress control means for supervising the connection between said computer and said telephone circuit via said auxiliary circuit card, said call progress control means comprising, in combination:

means including a first set of instructions stored in said memory and executed by said microprocessor for applying a sequence of outgoing digital sample values to said bus which are representative of a sequence of dual dial-tone signals suitable for establishing a dial-up connection via said switching office to said remote device, and

means including a second set of instructions stored in said memory and executed by said microprocessor for processing said incoming digitally-expressed sample values to detect the presence of an answer tone received over said telephone circuit from said switching office.

5,646,984

PAYER-VARIABLE EXCHANGE SYSTEM

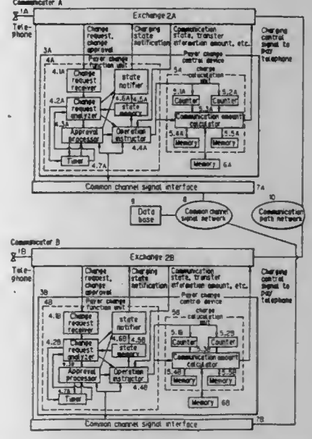
Toshikane Oda, Fujimi, Japan, assignor to Kokusai Denshin Denwa Co., Ltd., Tokyo, Japan

Filed Mar. 28, 1995, Ser. No. 411,873

Claims priority, application Japan, Mar. 28, 1994, 6-056878

Int. Cl.[6] H04M *15/00*

U.S. Cl. 379—114 **11 Claims**



1. A payer-variable exchange system wherein a caller and a receiver are connected by a communication line through an exchange according to a receiver select number instructed by the caller from a communication terminal and a communication fee is charged to the caller or the receiver according to tariffs common or specific to the caller and the receiver, said system comprising:

payer change function units and charge calculation units provided individually at a caller side and a receiver side;

wherein each of said payer change function units analyzes contents of a payer change request to transmit and receive signals from the other of said payer change function units and controls said system so that a communication amount is counted by a communication fee calculator of a communicator instructed to be the payer;

wherein each of said charge calculation units includes count means for counting the communication amount where itself is the payer, calculates the communication fee using a charging rule common or specific to a count value, and stores the communication fees in individual memories;

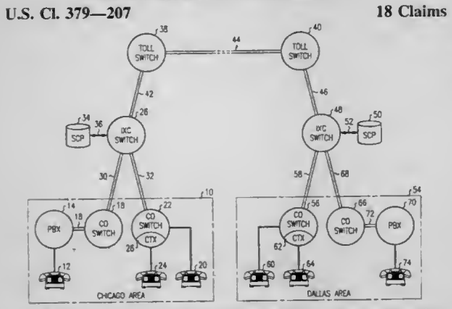
said payer-variable exchange system having payer change function units and charge calculation units individually at the caller side and the receiver side and having a data base previously registered with contents of a timing of payer change and information of a communication terminal, whereby payer change control is performed based on the change request registered in the data base read prior to communication.

5,646,985

HIERARCHICAL SWITCH SUPPORT OF SERVICES FOR SUBSCRIBERS OF INDEPENDENT PRIVATE BRANCH EXCHANGES

Donald Lee Andruska, Glen Ellyn, and Liane Toy Tsai, Wheaton, both of Ill., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Nov. 16, 1995, Ser. No. 556,327
Int. Cl.[6] H04M *3/42;7/00;* **H04J** *3/12*
U.S. Cl. 379—207 **18 Claims**



1. In a telecommunication network having a first independent private branch exchange (PBX) supported by a first telecommunication switch, first subscribers are connected to the first PBX, a method for handling call requests made by first subscribers comprising the steps of:

receiving a first signal from the first switch at a second telecommunication switch disposed at a hierarchical level above the first switch, the first signal indicating to the second switch that call origination services are to be provided directly by the second switch for one of the first subscribers;

receiving a second signal at the second switch from the first PBX indicative of the identification of the one first subscriber;

locating a record in a database coupled to the second switch in response to receiving the second signal, the location of the record being based on the identification of the one first subscriber as defined by the second signal;

identifying a group affiliation parameter stored in said record, the group affiliation parameter defining one organization of which the one first subscriber is a member;

receiving third signals at the second switch generated by the one first subscriber, the third signals conveying a call destination number of a second subscriber not served by the first PBX;

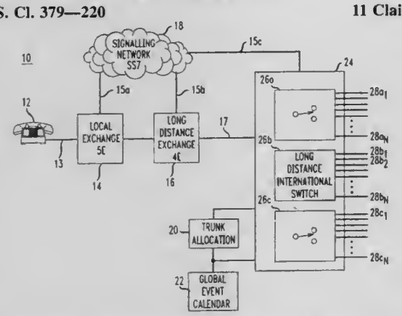
the second switch transmitting a call setup message to a third switch associated with the second subscriber, the call setup message based on the group affiliation parameter so that the first subscriber's membership in the one organization can be used in further call processing.

5,646,986

NETWORK COMMUNICATION SYSTEM WITH GLOBAL EVENT CALENDAR INFORMATION AND TRUNK ALLOCATION

Paramdeep Singh Sahni, Marlboro, and Andrew A. Soong, Colts Neck, both of N.J., assignors to AT&T, Middletown, N.J.

Filed Dec. 29, 1995, Ser. No. 586,009
Int. Cl.[6] H04M *7/00*
U.S. Cl. 379—220 **11 Claims**



1. A network communication system providing improved trunk allocation for facilitating an increased call completion rate among a plurality of network customer services, said system comprising:

a switching network having a plurality of trunks for accommodating network traffic, said plurality of trunks connecting transactions between originating terminal devices having originating addresses and destination terminal devices having destination addresses and sharing a common region, each said transaction being associated with one of said plurality of network customer services;

a trunk allocation database connected to said switching network and having memory for storing data representative of a history of transactions between originating terminal devices and destination terminal devices, said history being representative of the network traffic carried by said switching network, said switching network using said history data stored in said memory to allocate said plurality of trunks for accommodating said transactions for said plurality of network customer services in accordance with said history;

a global event calendar database connected to said switching network and having memory for storing data parameters representative of events occurring on particular calendar dates and associated with said common region, said data parameters including event allocation data for use by said switching network for allocating said plurality of trunks for accommodating said transactions for said plurality of network services on an occurrence of each said event; and

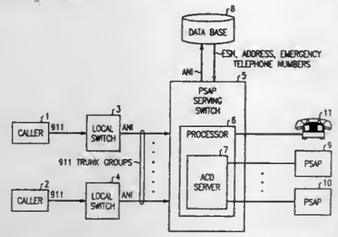
means for conveying, from said global event calendar database to said switching network, said stored data parameters representative of an event associated with the common region on the particular calendar date associated with the event for dynamically re-configuring the trunk allocation from the allocation in accordance with the history in the trunk allocation database to a revised allocation in accordance with the event allocation data stored in said global event calendar database for accommodating anticipated changes in network traffic through the switching network due to the occurrence of the event on a particular calendar date.

5,646,987

DYNAMIC REALLOCATION OF CALLS TO AGENT GROUPS

Eugene Gerber, Bolingbrook; Francis Joseph Pope, III, Naperville, and Joseph John Wiktor, Schaumburg, all of Ill., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 22, 1994, Ser. No. 361,629
Int. Cl.[6] H04M *3/54*
U.S. Cl. 379—265 **9 Claims**



1. A method of routing telephone calls from a switching system to agent positions, comprising the steps of:

receiving a call from a caller at the switching system including an automatic number identification (ANI) number associated with said caller;

providing said switching system with a service number based on said ANI number and determining a routing number for said service number;

determining if said routing number requires normal routing or special routing;

if the routing number requires normal routing, translating said service number to a default telephone number and routing the call using said default telephone number;

if the routing number requires special routing, routing said call to a predetermined agent position based on specified routing data, said specified data being obtained by logging in said predetermined agent position and translating the routing number into an identification of the predetermined agent position; and

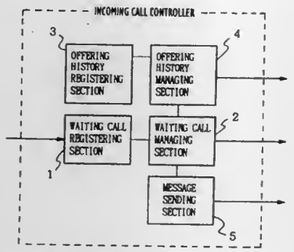
altering said routing data based upon expected calling conditions.

5,646,988

INCOMING CALL CONTROLLER FOR PREFERENTIALLY CONNECTING A WAITING CALL BASED ON NUMBER OF PREVIOUS UNSUCCESSFUL CALL ATTEMPTS

Kenichi Hikawa, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Continuation of Ser. No. 323,862, Oct. 17, 1994, abandoned. This application Oct. 17, 1996, Ser. No. 730,806
Claims priority, application Japan, Mar. 18, 1994, 6-049470
Int. Cl.[6] H04Q *3/64*
U.S. Cl. 379—266 **16 Claims**



1. An incoming call controller comprising:

waiting call registering means for registering a plurality of calls from calling subscribers waiting to be connected to a called subscriber; and

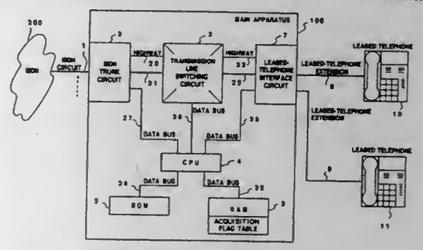
waiting call managing means, coupled to said call registering means, for determining from said plurality of calls registered in said waiting call registering means, a waiting call from a calling subscriber who previously made the greatest number of unsuccessful call attempts to be connected with said called subscriber and for connecting said waiting call with said called subscriber.

5,646,989

TELEPHONE APPARATUS

Shinji Tsuchida, Zama, Japan, assignor to Canon Kabushiki Kaisha, Japan

Division of Ser. No. 669,579, Mar. 14, 1991, Pat. No. 5,420,918. This application Dec. 19, 1994, Ser. No. 358,388
Claims priority, application Japan, Mar. 20, 1990, 2-68223; Mar. 20, 1990, 2-68224; May 10, 1990, 2-118703
Int. Cl.[6] H04M *1/27*
U.S. Cl. 379—352 **16 Claims**



1. A communication apparatus comprising:

acquiring means for acquiring a line for an outgoing call;

detecting means for detecting an incoming call; and

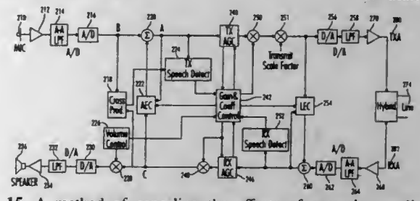
informing means for informing a user of the communication apparatus of a cancellation of the acquisition by said acquiring means in accordance with a detection by said detecting means while the line is acquired by said acquiring means.

5,646,990

EFFICIENT SPEAKERPHONE ANTI-HOWLING SYSTEM

Xu Li, Cerritos, Calif., assignor to Rockwell International Corporation, Newport Beach, Calif.

Filed Sep. 21, 1995, Ser. No. 531,993
Int. Cl.[6] H04M *9/08;* **H04B** *3/23*
U.S. Cl. 379—390 **19 Claims**



15. A method of canceling the effects of acoustic coupling during telephone communications between a local user and a remote user, wherein transmit signals are input by the local user and receive signals are input by the remote user, the method comprising the steps of:

receiving the transmit signals and transmitting the transmit signals to the remote user;

receiving and broadcasting the receive signals, wherein acoustic coupling having associated echo is generated when transmit signals and receive signals are received simultaneously;

identifying representative transmit samples and receive samples among the transmit and receive signals, respectively;

receiving the transmit samples at a first node and the receive samples at a second node;

determining a delay including the time from when the receive samples are received at the second node to when the receive samples are broadcast, and the time from when the transmit samples are input to when the transmit samples are received at the first node;

estimating transmit and receive signal energies;

correlating the transmit samples received at the first node and the receive samples received at the second node to provide correlation information; and

processing the correlation information with a processor, such that if the correlation information indicates that the correlation is high between the transmit samples and the receive samples, the transmit samples are determined to be similar to the receive samples and thus represent echo, and if the correlation is low, the processor concludes that the transmit samples represent input transmit signals from the local user.

5,646,991

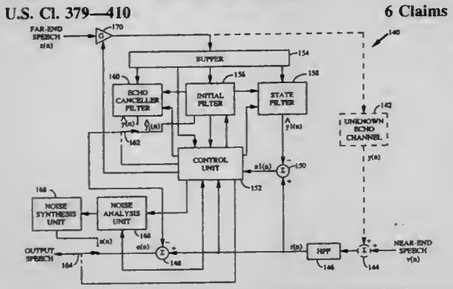
NOISE REPLACEMENT SYSTEM AND METHOD IN AN ECHO CANCELLER

Gilbert C. Sih, San Diego, Calif., assignor to Qualcomm Incorporated, San Diego, Calif.

Division of Ser. No. 202,520, Feb. 28, 1994, Pat. No. 5,559,881, which is a continuation of Ser. No. 951,074, Sep. 25, 1992, Pat. No. 5,307,405. This application Feb. 23, 1996, Ser. No. 607,402

Int. Cl.[6] H04B *3/20*

U.S. Cl. 379—410 **6 Claims**



1. A noise replacement system for providing a synthesized noise replacement signal to an output speech channel, said system comprising:

near end speech monitor means for monitoring the presence of near end speech and providing a near end speech absent signal when near end speech is absent;

far end speech monitor means for monitoring the presence of far end speech and providing a far end speech present signal when far end speech is present and providing a far end speech absent signal when far end speech is absent;

spectral response means, responsive to said far end speech absent signal and said near end speech absent signal, for receiving a noise signal from said output speech channel and for determining in accordance with a predefined spectral response format a spectral response characteristic; and

noise generator means responsive to said near end speech absent signal and to said far end speech present signal for generating said synthesized noise replacement signal in accordance with said spectral response characteristic and for switchably impressing said synthesized noise replacement signal upon said output speech channel.

5,646,992

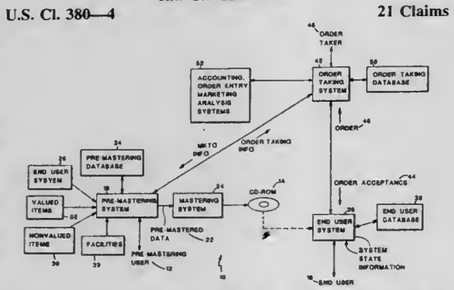
ASSEMBLY, DISTRIBUTION, AND USE OF DIGITAL INFORMATION

Ronald J. Subler, Charlestown, and Thomas Mark Hastings, Lexington, both of Mass., assignors to Digital Delivery, Inc., Bedford, Mass.

Filed Sep. 23, 1993, Ser. No. 126,217

Int. Cl.[6] H04L *9/00*

U.S. Cl. 380—4 **21 Claims**



11. Apparatus for controlling access to a subset of items arbitrarily selected from among a larger set of items of digital information, comprising

an encryption mechanism for encrypting said items belonging to said set using encryption keys, each of said items belonging to said set being encrypted using an encryption key which is unique among said items belonging to said set, and

a decryption key provider for providing a decryption key permitting decryption of said items belonging to said arbitrarily selected subset of items.

5,646,993

INFORMATION REPRODUCING METHOD AND APPARATUS HAVING PROTECT FUNCTION AND RECORDING MEDIUM USED IN APPARATUS

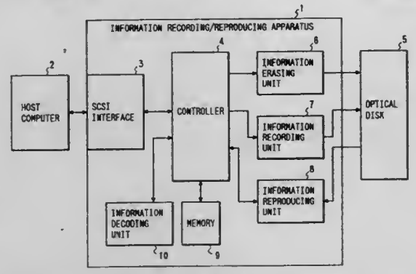
Takayuki Aizawa, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 7, 1995, Ser. No. 384,874

Claims priority, application Japan, Feb. 10, 1994, 6-016442

Int. Cl.[6] H04L *9/00*

U.S. Cl. 380—4 **4 Claims**



2. An information reproducing apparatus comprising:

means for reproducing encrypted information, an encryption key, and a deciphering program from an information recording medium on which the encrypted information is recorded, and the encryption key and the deciphering program, which are used to decode the information, are recorded as well;

means for deciphering the information in accordance with the reproduced encryption key and deciphering program; and

means for erasing designated information from the information recording medium,

wherein, when the information is to be reproduced, an instruction to erase at least one of the encryption key and the deciphering program from the information recording medium is output to the information erasing means after the deciphering program is reproduced, and when erasure is confirmed, activation of the deciphering program is terminated.

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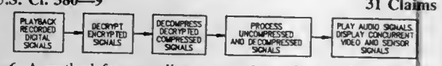
METHOD AND APPARATUS FOR RECORDING SENSOR DATA

Brian R. Hill, Los Angeles, Calif., assignor to Prime Facie, Inc., King of Prussia, Pa.

Division of Ser. No. 229,602, Apr. 19, 1994, Pat. No. 5,497,419. This application Mar. 4, 1996, Ser. No. 606,493

Int. Cl.[6] H04L *9/00*

U.S. Cl. 380—9 **31 Claims**



6. A method for recording sensor data with a video signal to protect the sensor data, the sensor data being contained in signals from one or more sensors, the method comprising the steps of:

a) determining which of the signals from the one or more sensors are analog sensor signals and which of the signals from the one or more sensors are digital sensor signals;

b) converting the data in the analog sensor signals to one or more first digital signals;

c) encrypting the digital sensor signals and the one or more first digital signals to produce second digital signals;

d) converting the second digital signals to first analog signals; and

e) recording the video signal and the first analog signals on a recording medium.

5,646,995

VEHICLE SECURITY DEVICE ELECTRONIC USE AUTHORIZATION CODING

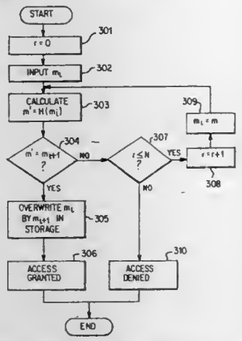
Horst Brinkmeyer, Waiblingen; Michael Daiss, Filderstadt; Günter Schwegler, Weinstadt, and Bertolt Krüger, Bonn, all of Germany, assignors to Mercedes-Benz AG, Germany

Filed Apr. 3, 1995, Ser. No. 415,376

Claims priority, application Germany, Apr. 1, 1994, 44 11 451.6

Int. Cl.[6] H04L *9/16*

U.S. Cl. 380—21 **12 Claims**



1. Vehicle security device having an electronic use-authorization coding arrangement comprising:

a user-end key unit for successively transmitting items of user code information, which items differ from one another;

a vehicle-end device for receiving the transmitted items of user code information, and generating as a function thereof an item of actual authorization information; and

means for comparing said item of actual authorization information with an item of desired authorization information present at the vehicle unit, and for generating an item of use-enabling information based on a result of said comparing; wherein:

said user-end key unit includes a signature generating component which utilizes a digital signature algorithm, and which signal generating component has stored therein an item of secret encryption information, for encrypting and transmitting user code information or synchronization information, said user code information or synchronization information containing an item of new desired authorization information, together with a signature generated by said digital signature algorithm; and

said vehicle end device includes a verification component which utilizes said digital signature algorithm, and which verification component contains an item of nonsecret decryption information, for receiving and decrypting said user code information or synchronization information.

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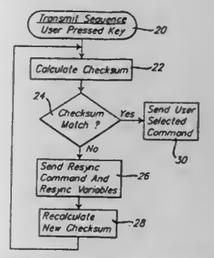
AUTOMATIC RESYNCHRONIZATION OF TRANSMITTER IN THE EVENT OF CORRUPTED MEMORY

David Stanley Latka, Dearborn, Mich., assignor to United Technologies Automotive, Inc., Dearborn, Mich.

Continuation of Ser. No. 148,668, Nov. 5, 1993, abandoned. This application Sep. 5, 1995, Ser. No. 523,846

Int. Cl.[6] H04L *9/00*

U.S. Cl. 380—21 **20 Claims**



1. A method of synchronizing a transmitter and a receiver in a keyless entry system of the type in which the transmitter comprises a plurality of coded states, comprising:

calculating and storing a first error check code indicative of the state of the transmitter at a first time;

initiating a communication sequence between the transmitter and receiver;

calculating a second error check code indicative of the state of the transmitter at a second time in response to initiating a communication sequence;

comparing the first and second error check codes; and automatically initiating a resynchronization sequence between said transmitter and receiver if said first error check code differs from said second error check code.

5,646,997

METHOD AND APPARATUS FOR EMBEDDING AUTHENTICATION INFORMATION WITHIN DIGITAL DATA

James M. Barton, 101 Sund Ave., Los Gatos, Calif. 95032

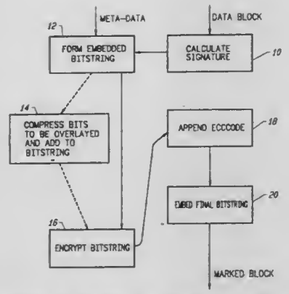
Filed Dec. 14, 1994, Ser. No. 357,713

Int. Cl.[6] H04L *9/00*

U.S. Cl. 380—23 **20 Claims**

15. A method for embedding information into a digital data block comprising a digital representation of an object, comprising the steps of:

adding information to said digital data block by embedding said information into said data block and thereby deliberately introducing errors in said modified digital data block, wherein



the information includes an authentication stamp or any sequence of bits that encrypt information for a receiver of said data block, and wherein when said digital data block is converted into a non-digital form said embedded errors are not exhibited; and

detecting any additional errors introduced into the digital data block after the information embedding step is completed.

5,646,998

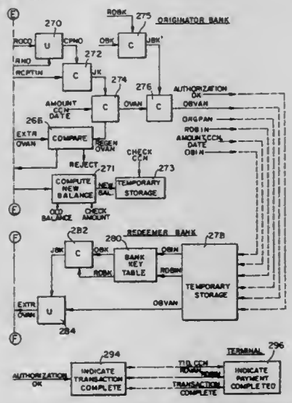
SECURE TRANSACTION SYSTEM AND METHOD UTILIZED THEREIN

Leon Stambler, 7803 Boulder La., Parkland, Fla. 33067

Division of Ser. No. 122,071, Sep. 14, 1993, Pat. No. 5,524,073, which is a division of Ser. No. 977,385, Nov. 17, 1992, Pat. No. 5,267,314. This application May 22, 1995, Ser. No. 445,477

Int. Cl.[6] H04L *9/00*

U.S. Cl. 380—25 **23 Claims**



1. In a system wherein a party has a personal identification number from which first coded authentication information is generated, the first coded authentication information being derivable from a predetermined secret number and a predetermined non-secret number which have been previously stored in a storage means, a method for authenticating the party comprising the steps of:

receiving the personal identification number from the party, the personal identification number being unrecoverable in the system;

generating second coded authentication information by using the received personal identification number, the step of generating the second coded authentication information comprises the steps of coding the received personal identification number to generate a coded personal identification number and coding an arbitrary number using the coded personal identification number to generate a first coded arbitrary number;

retrieving the secret and non-secret numbers from the storage means;

generating third coded authentication information by using the retrieved secret and non-secret numbers;

comparing the second coded authentication information and the third coded authentication information;

authenticating the party if the second coded authentication information corresponds to the third coded authentication information; and

generating at a first site an anti-duplication variable authentication number (ADVAN) by coding at least a transmission date and time with the first coded authentication information, and further including the step of transmitting the ADVAN, the first coded arbitrary number and the arbitrary number from a first site to a second site over an unsecured communication medium.

5,646,999

DATA COYPRIGHT MANAGEMENT METHOD

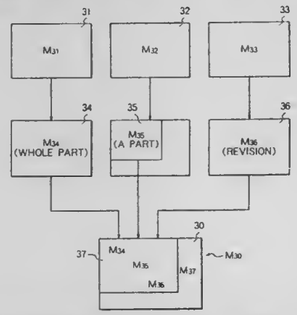
Makoto Saito, Tokyo, Japan, assignor to Mitsubishi Corporation, Tokyo, Japan

Filed Oct. 27, 1995, Ser. No. 549,271

Claims priority, application Japan, Oct. 27, 1994, 6-264201

Int. Cl.[6] H04K *1/00;* **H04L** *9/08;9/14*

U.S. Cl. 380—25 **24 Claims**



1. A data copyright management method used for producing new data by editing original data, the method comprising the steps of:

a database supplies a plurality of original data encrypted respectively by using each first secret-key thereof, to a primary user;

said primary user makes a request for use to a copyright management center by presenting a public-key of said primary user;

said copyright management center sends said first secret-key of each of said original data and a second secret-key of each said original data to said primary user;

said primary user decrypts said plurality of original data encrypted, by using said first secret-key of each said original data;

said primary user produces new data which is produced from a plurality of edited data by editing said plurality of original data using an edit program;

said primary user encrypts said plurality of edited data respectively by said second secret-key of each said original data and performs a digital signature on editing process data of said edit program by using a private-key of said primary user, and supplies both said plurality of edited data and said editing process data with said digital signature to a secondary user;

said secondary user requests use of said new data by presenting said editing process data with said digital signature to said copyright management center;

said copyright management center confirms an editor as said primary user from said digital signature using said public-key of said primary user, and provides said secondary user with said second secret-key of each said original data; and

said secondary user decrypts said plurality of edited data which have been encrypted, respectively by using said second secret-key of each said original data, and obtains said new data using said edit program and said editing process data.

5,647,000

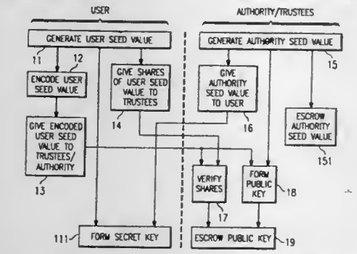
FAILSAFE KEY ESCROW SYSTEM

Frank Thomsen Leighton, 15 Charlesden Park, Newtonville, Mass. 02160

Continuation of Ser. No. 289,510, Aug. 12, 1994, abandoned. This application Sep. 3, 1996, Ser. No. 706,975

Int. Cl.[6] H04L *9/30*

U.S. Cl. 380—30 **10 Claims**



1. A method of generating cryptographic keys for use in securing communications among users in a cryptosystem having an authority and a plurality of trustees, where trustees must cooperate in a predetermined manner to reveal a secret key, comprising the steps of:

for each user, verifiably secret sharing a first seed value with the plurality of trustees, the first seed value alone being insufficient to reveal a secret key even if the trustees cooperate; and

for each user, generating a secret key by computing a given function of the first seed value associated with that user and a second seed value generated by the authority, wherein neither the user nor the authority can derive the given function from just their respective seed values.

5,647,001

NONLINEAR DYNAMIC SUBSTITUTION DEVICES AND METHODS FOR BLOCK SUBSTITUTIONS EMPLOYING COSET DECOMPOSISTIONS AND DIRECT GEOMETRIC GENERATION

Lothrop Mittenthal, Thousand Oaks, Calif., assignor to Litton Systems, Inc., Woodland Hills, Calif.

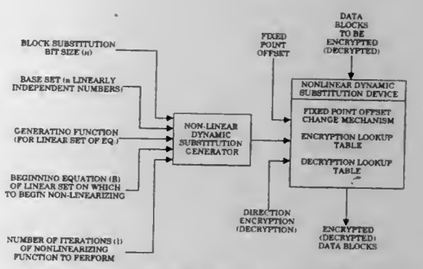
Continuation of Ser. No. 251,751, May 31, 1994, abandoned, which is a continuation-in-part of Ser. No. 68,910, May 25, 1993, Pat. No. 5,317,639, which is a continuation-in-part of Ser. No. 741,097, Aug. 5, 1991, Pat. No. 5,214,704, which is a continuation-in-part of Ser. No. 416,953, Oct. 4, 1989, Pat. No. 5,038,376. This application Jan. 23, 1996, Ser. No. 601,267

Int. Cl.[6] H04L *9/06;9/28*

U.S. Cl. 380—37 **8 Claims**

1. A method of encryption to be performed by a computer, by substituting for any one of the 2^n unique clear text blocks of n bit binary numbers an associated unique encrypted block of n bit binary numbers comprising the steps of:

(a) finding a first set G^n of 2^n equations, representing a linear orthomorphism, each equation representing the modulo **2** additions of one of the 2^n clear text blocks in a left column of the first set G^n of 2^n equations, with a unique one of 2^n n-bit blocks in a middle column of the first set G^n of 2^n equations, to provide an associated unique n-bit block in a right column of the first set G^n of 2^n equations, all of the equations in the first set of 2^n equations being characterized by the vector sum modulo **2** of any number of the equations also being one of the equations in the first set of equations, the equations including the identity equations $\Theta\oplus\Theta=\Theta$ and the remaining 2^n-1 equations being orderable as follows:



Equation #

1	x_m	$\oplus$	x_1	=	x_{1-p}
2	x_1	$\oplus$	x_2	=	x_{2-p}
.	.	.	.	.	.
.	.	.	.	.	.
.	.	.	.	.	.
j	x_{j-1}	$\oplus$	x_j	=	x_{j-p}
.	.	.	.	.	.
.	.	.	.	.	.
.	.	.	.	.	.
m	x_{m-1}	$\oplus$	x_m	=	x_{m-p}

where $m=2^n$, L_n, M_n and R_n are the left, middle and right columns respectively, and $G^n=L_n\times M_n\times R_n$ represents the set of equations;

(b) modifying a plurality of the non-zero 2^n-1 equations in the first set of 2^n equations to provide a second set of 2^n equations, representing nonlinear orthomorphisms, the plurality of equations being modified so that the resulting set of equations collectively map the clear text blocks in the left column to encrypted n-bit blocks in the right column, but in a nonlinear manner so that each of the equations in the resulting set is not generally the sum modulo **2** of any number of the equations in the resulting set, wherein said modification of said plurality of the non-zero 2^n-1, equations is achieved by

(1) decomposing G^n into a table of corruptible cosets of order 4, said table being generally represented by

$$\begin{array}{cccc} G^2_{a,0} & G^2_{a+1,0} & \cdots & G^2_{i,0} \cdots \\ G^2_{a,3} & G^2_{a+1,3} & \cdots & G^2_{i,3} \cdots \\ . & . & & . \\ . & . & & . \\ . & . & & . \\ G^2_{a,j} & G^2_{a+1,j} & \cdots & G^2_{i,j} \cdots \\ . & . & & . \\ . & . & & . \\ . & . & & . \end{array}$$

where each column represents a coset decomposition of the linear orthomorphism based on a different corruptible subgroup of G^n, and a, i and j are arbitrary integer indices;

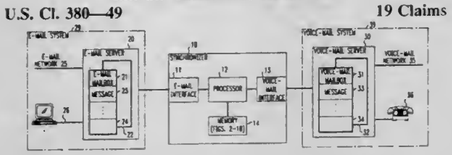
(2) selecting a set of non-overlapping cosets from said table of cosets, with selected cosets in different columns each having a unique mixing transform associated therewith; and

(3) applying said unique mixing transforms to said group of non-overlapping cosets to yield the second set of 2^n equations; and

(c) for each clear text block in the left column to be encrypted, adding modulo **2** to that block, the unique one of the 2^n n bit blocks associated therewith in the middle column, in accor-

dance with the associated equation of the second set of 2ⁿequations, to obtain the encrypted block in the right column.

5,647,002
SYNCHRONIZATION OF MAILBOXES OF DIFFERENT TYPES
Gordon Richards Brunson, Broomfield, Colo., assignor to Lucent Technologies Inc., Murray Hill, N.J.
Filed Sep. 1, 1995, Ser. No. 522,823
Int. Cl.[6] H04L *9/00*; H04M *1/64*
U.S. Cl. 380—49 **19 Claims**



16. An apparatus comprising:

a first electronic messaging system for handling first messages and defining at least one first mailbox for storing the first messages, each first message having a first data structure containing information expressed in a first medium and having a first format, and each stored first message having one of a plurality of states;

a second electronic messaging system for handling second messages and defining at least one second mailbox for storing the second messages, each second message having a second data structure containing information expressed in a second medium and having a second format, at least one of the second data structure, the second medium, and the second format being different respectively from the first data structure, the first medium, and the first format, and each stored second message having one of the plurality of states; and

means for indicating in one of a first mailbox of the first messaging system and a second mailbox of the second messaging system a content and a state of a message stored in another of the first mailbox and the second mailbox, including

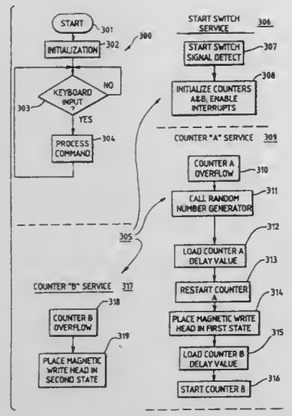
first means, cooperative with the first mailbox and the second mailbox and responsive to storing of a second message in the second mailbox, for retrieving at least some of the information from the second message, generating a corresponding first message forming a message pair with the second message and containing at least some of the information retrieved from the second message, storing the first message in the first mailbox, and also raising a partial-copy indication for the first message if the first message does not contain all of the information contained in the second message of the message pair,

second means, cooperative with the first mailbox and the second mailbox and responsive to a change in state of one of the stored messages of the message pair, for effecting a same said change in state of other of the stored messages of the message pair, and

third means, cooperative with the first mailbox and the second mailbox and responsive to deletion of one of the stored messages of the message pair from one of the mailboxes, for deleting other of the stored messages of the message pair from other of the mailboxes.

5,647,003
METHOD AND APPARATUS FOR ALTERING A MAGNETIC CHARACTERISTIC OF A MEDIUM
Kevin J. Pease, Mt. Juliet, Tenn., assignor to DocuSystems, Inc., Skokie, Ill.
Filed Jun. 21, 1995, Ser. No. 492,782
Int. Cl.[6] H04L *9/00*
U.S. Cl. 380—59 **47 Claims**

1. A method for altering a magnetic characteristic of a magnetic medium, the method comprising the steps of:



(a) providing a magnetic write head adjacent to a document having a support surface bearing a fluid magnetic slurry;

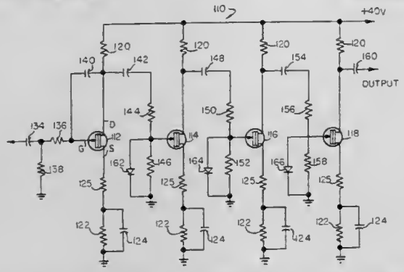
(b) providing a sequence of randomly arranged information signals;

(c) transmitting the sequence of randomly arranged information signals to a magnetic write head controller;

(d) operating the magnetic write head in response to the controller to provide sequential representations of the randomly arranged information signals at predetermined amplitude levels in the fluid magnetic slurry by altering a magnetically discernible characteristic of the slurry; and

(e) curing the fluid magnetic slurry to permanently fix said sequential representations.

5,647,004
MULTI-STAGE SOLID STATE AMPLIFIER THAT EMULATES TUBE DISTORTION
Jack C. Sondermeyer, and James W. Brown, Sr., both of Meridian, Miss., assignors to Peavey Electronics Corporation, Meridian, Miss.
Filed Jan. 10, 1994, Ser. No. 179,546
Int. Cl.[6] H03G *3/00*
U.S. Cl. 381—61 **16 Claims**

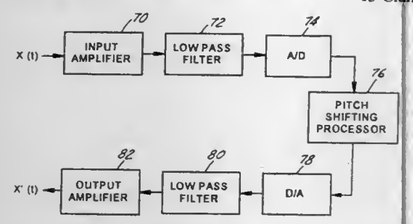


1. A solid state amplifier for emulating the distortion associated with a flow of current in the grid of an overdriven multi-stage tube amplifier at high input signal levels resulting in an input clipping characteristic comprising:

a plurality of series connected solid state amplifier stages for amplifying a signal each including an input circuit and an output circuit having an output signal capability, each amplifier stage located downstream of a first one of said amplifier stages having its input circuit coupled to the output circuit of one of said amplifier stages located immediately upstream thereof; and

clipping means connected in the input circuit of each amplifier stage downstream of the first one of said amplifier stages for establishing a clipping level in one direction between such amplifier stages, duplicating in such solid state amplifier the input clipping characteristic of a tube amplifier wherein the output signal capability and the clipping level are in a ratio similar to tube circuits.

5,647,005
PITCH AND RATE MODIFICATIONS OF AUDIO SIGNALS UTILIZING DIFFERENTIAL MEAN ABSOLUTE ERROR
Yen-Hui Wang, and Der-Chwan Wu, both of Hsinchu, Taiwan, assignors to Electronics Research & Service Organization, Hsinchu, Taiwan
Filed Jun. 23, 1995, Ser. No. 494,277
Int. Cl.[6] H03G *3/00*
U.S. Cl. 381—62 **13 Claims**



13. An apparatus for modifying parameters of audio signals, comprising an input amplifier and an output amplifier, a first and a second low pass filters, an analog-to-digital converter, a digital-to-analog converter, and a pitch shifting processor,

said pitch shifting processor comprising an input unit connected with an input buffer, an output unit connected with an output buffer, a cross fading data memory for storing portions of audio signals that require cross fading, an address unit connected with said input and said output buffers and said cross fading data memory, a register file unit, a digital processing unit for calculating mean absolute error and cross fading value, and a control unit, said input buffer, said cross fading data memory, said register file unit, said digital processing unit, said control unit, and said output buffer being operatively connected to each other through a bus system,

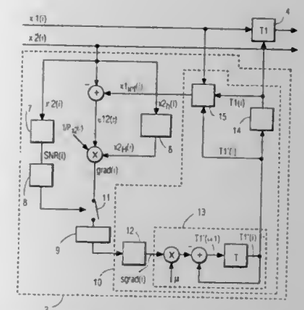
said input amplifier, said first low pass filter, and said analog-to-digital converter being connected in series with said input unit of said pitch shifting processor, and

said digital-to-analog converter, said second low pass filter, and said output amplifier being connected in series with said output unit of said pitch shifting processor.

5,647,006
MOBILE RADIO TERMINAL COMPRISING A SPEECH
Rainer Martin, Aachen, Germany, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jun. 22, 1995, Ser. No. 493,401
Claims priority, application Germany, Jun. 22, 1994, 44 21 853
Int. Cl.[6] H04B *3/20;15/00*
U.S. Cl. 381—66 **8 Claims**

1. Mobile radio terminal comprising a speech processor provided for processing a first and at least a further speech signal consisting of noise and speech signal components and available as sample values, comprising delay means for delaying the sampled further speech signal, comprising control means

for forming gradient estimates by multiplying error values for two speech signals by the output values of a digital filter,



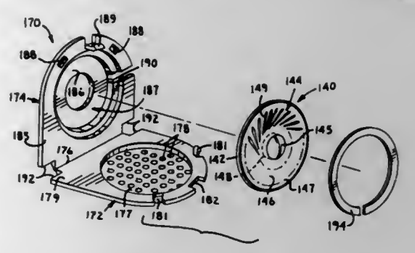
which filter causes a 90° phase shift to occur and is used for filtering one of the two speech signals,

for recursively determining delay estimates from the gradient estimates, while the delay values used for setting the delay means are formed from the delay estimates via a rounding operation, and

for forming at least one respective error value for a specific sampling instant from the difference between a speech signal estimate which estimate is used for estimating the further speech signal at an instant shifted in time by the delay estimate relative to the specific sampling instant, and is formed by interpolating sample values of the further speech signal and the sample value of another one of the speech signals to be processed at the specific sampling instant,

and in that an adder device is provided for adding together the mutually time-shifted speech signals.

5,647,007
OPTIMIZED SOUND COMPONENTS FOR HAIR DRYER STEREO SYSTEM
Blaise M. Wooderson; Lewis A. Mendelson, both of Industrial Airport, Kans., and Yi Hsiung Chung, Taipei Shien, Taiwan, assignors to Helen of Troy Limited, Barbados
Continuation-in-part of Ser. No. 395,712, Feb. 28, 1995, which is a continuation-in-part of Ser. No. 361,734, Dec. 22, 1994. This application Jun. 7, 1995, Ser. No. 482,614
Int. Cl.[6] H04R *1/02*
U.S. Cl. 381—90 **27 Claims**



1. A bonnet style hair dryer comprising:

(a) a dryer bonnet sized and shaped to accommodate the head of a user, hair dryer bonnet including a substantially rigid inner liner;

(b) a hair dryer mechanism selectively communicating heated air to said bonnet;

(c) a first audio speaker and speaker holder mounted within said bonnet in such a position and orientation that audio information can be selectively conveyed to the user during drying of the user's hair;

(d) a speaker aperture formed through said liner at a position to align with an ear of the user;

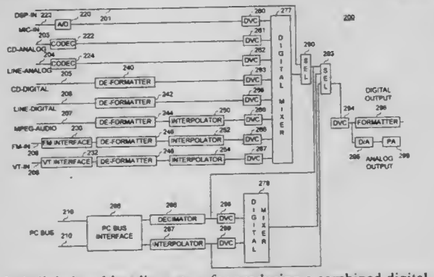
(e) a speaker mounting lug formed on said liner;
(f) a speaker mounting pawl formed on said speaker holder; and
(g) said speaker holder is engageable with said lug and said pawl is engageable with said aperture to toollessly mount said holder and speaker on said bonnet.

5,647,008

METHOD AND APPARATUS FOR DIGITAL MIXING OF AUDIO SIGNALS IN MULTIMEDIA PLATFORMS

Hassan Farhangi, and Nookala Satya Krishna Mohan, both of Singapore, Singapore, assignors to Aztech Systems Ltd., Aztech Building, Singapore

Filed Feb. 22, 1995, Ser. No. 392,142
Int. Cl.[6] H04B *1/00*
U.S. Cl. 381—119 **22 Claims**



1. A digital multimedia system for producing a combined digital output signal from multiple signal sources, comprising:
a first input, for receiving a first digital input signal having a first sampling rate;
a second input, for receiving a second digital input signal having a second sampling rate that differs from the first sampling rate;
a pre-processing circuit, having a plurality of inputs and outputs, a first pre-processing circuit input receiving the first digital input signal, a second pre-processing circuit input receiving the second digital input signal, a first pre-processing circuit output providing the first digital input signal at the first sampling rate, the preprocessing circuit including a sampling rate modification circuit for receiving the second digital input signal at the second sampling rate, converting the sampling rate of the second digital input signal from the second sampling rate to the first sampling rate, and outputting the second digital input signal at the first sampling rate to a second pre-processing circuit output; and,
a mixer circuit, having a plurality of inputs and an output, a first mixer circuit input receiving, from the first pre-processing circuit output, the first digital signal at the first sampling rate, a second mixer circuit input receiving, from the second pre-processing circuit output, the second digital signal at the first sampling rate, the mixer circuit digitally mixing the first and second digital signals to provide a combined digital output signal.

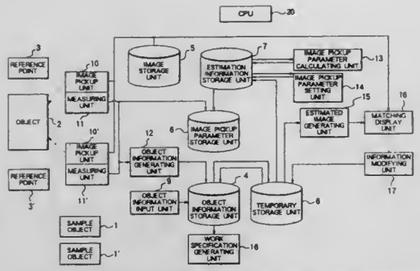
5,647,009

COMPUTER AIDED WORK SUPPORT SYSTEM AND METHOD

Toshiyuki Aoki; Kohji Kamejima, both of Ibaraki-ken, and Tomoyuki Hamada, Abiko, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 19, 1993, Ser. No. 137,973
Claims priority, application Japan, Oct. 20, 1992, 4-281315
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—100 **15 Claims**

1. A computer aided work support system comprising:
measuring means for measuring position and orientation of said measuring means in a coordinate system defined with respect



to a reference point which is used to determine position and orientation of a second object to be measured and a position of a point on a reference first object which is used to estimate part of image pickup parameters;
image pickup means for picking up images of said first object and said second object, said image pickup means and said measuring means having a fixed spatial relationship therebetween;
storage means for storing information of form, position, and orientation of one of said first and second objects, and image pickup parameters such as position and orientation of said measuring means, relative position and orientation of said image pickup means to said measuring means, a plurality of image magnification factors, and a position of an optical axis of said image pickup means on a screen of display means;
input means for inputting the form, position, and orientation of one of said first and second objects into said storage means;
calculation means for calculating position and orientation of said measuring means, relative position and orientation of said image pickup means to said measuring means, and position of the optical axis of said image pickup means on the screen of said display means, respectively for each of said plurality of image magnification factors, in accordance with the relative position of said image pickup means to said measuring means;
means for generating an estimated image of one of said first and second objects in accordance with calculation results by said calculation means and said information stored in said storage means;
said display means for displaying an image picked up by said image pickup means and said estimated image in a superposed manner at the same time on the screen of said display means; and
means for detecting a displacement amount of said estimated image from said picked-up image displayed on said display means, converting said displacement amount into a change amount of the position and orientation of one of said second object and said image pickup means, and adding said change amount to data of the position and orientation of one of said second object and said image pickup means stored in said storage means.

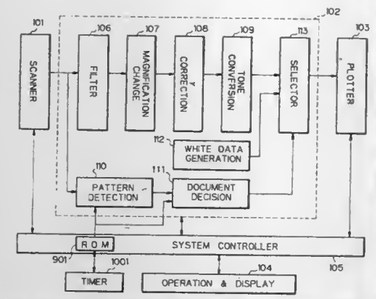
5,647,010

IMAGE FORMING APPARATUS WITH SECURITY FEATURE WHICH PREVENTS COPYING OF SPECIFIC TYPES OF DOCUMENTS

Hiromi Okubo, Yokohama, and Mutsuo Shimomae, Yokosuka, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 14, 1994, Ser. No. 305,886
Claims priority, application Japan, Sep. 14, 1993, 5-252407; Mar. 30, 1994, 6-085657
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—100 **3 Claims**

1. An image processing device for executing various kinds of image processing, including filtering, magnification change and gamma correction, with input image data, said device comprising:
pattern detecting means for determining, pixel data by pixel data, whether or not pixel data constituting the input image



data are part of a predetermine inhibition pattern, said pattern detecting means having variable detection accuracy;
document deciding means for determining, based on a number of pixel data determined to be part of said predetermined inhibition pattern by said pattern detecting means, whether or not the input image data are representative of an inhibited document inhibited from being copied, said document deciding means having variable decision accuracy; and
changing means for changing the detection accuracy of said pattern detecting means and the decision accuracy of said document deciding means;
wherein the inhibited document comprises a sheet on which said inhibition pattern is printed or copied over an entire area thereof,
wherein said changing means comprises timer means and automatically changes the detection accuracy of said pattern detecting means and the decision accuracy of said document deciding means according to a period of time preset for said timer means,
wherein the changing means comprises:
a memory for storing different parameters utilized by the pattern detecting means and the document deciding means,
wherein the image processing device further comprises a controller which loads different parameters from the memory to the pattern detecting means and the document deciding means, depending on the period of time preset for said timer means.

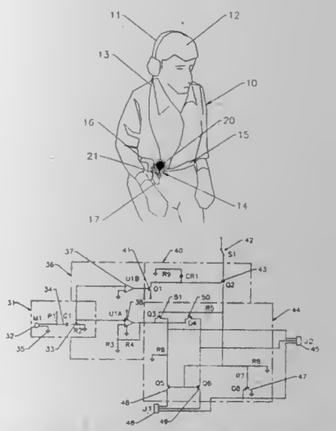
5,647,011

HEADPHONE SOUND SYSTEM

Andrew W. Garvis, 310 Sabal Park Pl. #100, Longwood, Fla. 32779

Filed Mar. 24, 1995, Ser. No. 409,594
Int. Cl.[6] H02B *1/00*
U.S. Cl. 381—123 **3 Claims**

1. A headphone sound system comprising
headphones;
a sound system comprising a standard portable CD player or cassette player having an output line for said headphones for producing audio signals for said headphones;
a sound recognition and interrupt system having the sound system output coupled therethrough to said headphones, said sound recognition system having:
a housing having a belt attachment for attaching to a person's belt;
a microphone mounted inside said housing for picking up sounds extraneous to said sound system; and
switching circuit located in said housing and connected to be actuated by said microphone to switch said switching circuit between on and off positions responsive to signals of a predetermined level being generated by said microphone, said switching circuit being connected between said sound system and said headphones for reducing the audio signals from said sound system to said headphones responsive to predetermined levels of extraneous sounds being received by said microphone, and said switching circuit having a transistor shutoff switch for shutting off said sound system



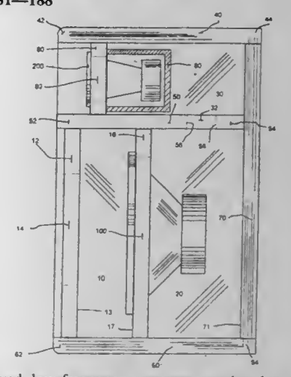
and an SCR latching circuit, said switching circuit also having a manual actuated level control for controlling the input signal of extraneous sound from said microphone; whereby a person wearing said headphones has the sound system turned down to thereby hear extraneous sounds exceeding a predetermined level;
a manual reset switch attached to said housing and connected to said switching circuit for reconnecting said sound system to said microphones; and
said housing having a sound system input jack and headphone output jack mounted thereto for removably attaching said sound system and said headphones through said switching circuit.

5,647,012

TRI-CHAMBER SPEAKER BOX

Sang Wu Han, 18533 Rio Seco Dr. #C, Rowland Heights, Calif. 91748

Filed Jun. 10, 1996, Ser. No. 661,019
Int. Cl.[6] H04R *25/00*
U.S. Cl. 381—188 **1 Claim**



1. Improved low-frequency response speaker box having an upper chamber, lower front chamber, and lower rear chamber, specifically comprising:
a. a horizontal upper baffle;
b. a horizontal lower baffle;
c. a vertical rear baffle;
d. the rear edge of said horizontal upper baffle being connected to the upper edge of said vertical rear baffle and the rear edge

of said horizontal lower baffle being connected to the lower edge of said vertical rear baffle;

e. a horizontal middle baffle parallel to said horizontal upper baffle and said horizontal lower baffle and extending perpendicularly from the front surface of said vertical rear baffle;

f. a vertical front baffle parallel to said vertical rear baffle, the upper edge of said vertical middle baffle contacting the lower surface of said horizontal middle baffle and the lower edge of said vertical middle baffle contacting the upper surface of said horizontal lower baffle;

g. said vertical front baffle being slightly recessed from the plane formed by the front edges of the horizontal upper baffle, horizontal middle baffle, and horizontal lower baffle;

h. a vertical middle baffle parallel to said vertical front baffle and said vertical rear baffle, the upper edge of said vertical middle baffle contacting the lower surface of said horizontal middle baffle and the lower edge of said vertical middle baffle contacting the upper surface of said horizontal lower baffle;

i. said vertical middle baffle being positioned between said vertical front baffle and said vertical rear baffle such the distance from the rear surface of said vertical front baffle to the front surface of said vertical middle baffle is ⅔ the distance from the rear surface of said vertical front baffle to the front surface of said vertical rear baffle;

j. said vertical middle baffle being positioned between said vertical front baffle and said vertical rear baffle such that the distance from the front surface of said vertical middle baffle to the front surface of said vertical rear baffle is ⅓ the distance from the rear surface of said vertical front baffle to the front surface of said vertical rear baffle;

k. said vertical middle baffle having a centrally positioned hole therethrough for mounting of a low frequency speaker;

l. said vertical front baffle having a centrally positioned hole therethrough with a diameter ¾ the diameter of the low frequency speaker installed in said vertical middle baffle;

m. said horizontal middle baffle having a rectangular hole therethrough;

n. said rectangular hole being positioned such that the distance from the front of said rectangular hole to the front surface of said vertical rear baffle is ¼ the distance from the front edge of said horizontal middle baffle to the front surface of said vertical rear baffle;

o. said rectangular hole being positioned such that the distance from the rear of said rectangular hole to the front surface of said vertical rear baffle is ⅙ the distance from the front edge of said horizontal middle baffle to the front surface of said vertical rear baffle;

p. an upper vertical front baffle having a centrally positioned opening therethrough for mounting a horn tweeter therein;

q. said upper vertical front baffle having a centrally positioned opening therethrough for mounting a midrange speaker therein;

r. said upper vertical from baffle having centrally positioned openings therethrough for mounting both a tweeter and midrange speaker therein;

s. said upper vertical front baffle having ports on either side of said opening.

5,647,013

ELECTROACOSTIC TRANSDUCER

Richard James Salvage, Burgess Hill, and Steven John Harrington, Steyning, both of United Kingdom, assignors to Knowles Electronics Co., West Sussex, United Kingdom

PCT No. PCT/GB93/02140, § 371 Date Jun. 2, 1995, § 102(e) Date Jun. 2, 1995, PCT Pub. No. WO94/10817, PCT Pub. Date May 11, 1994

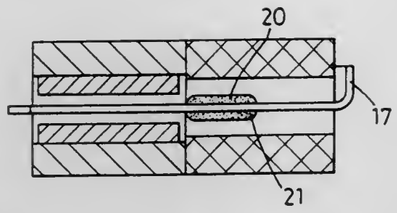
PCT Filed Oct. 15, 1993, Ser. No. 416,887

Claims priority, application United Kingdom, Oct. 29, 1992, 9222677

Int. Cl.[6] H04R *25/00*

U.S. Cl. 381—192 **16 Claims**

1. An electroacoustic transducer including a pair of spaced permanent magnets, a coil having a tunnel therethrough and a reed armature having a central portion which extends through the coil and a tip portion which lies at least partially between the magnets,



the reed being mounted for deflection towards or away from the respective magnets, wherein the central portion of the reed directly includes a formation on opposite sides thereof for limiting the available deflection of the reed.

5,647,014

VOICE COIL SUPPORT FOR LOUDSPEAKER

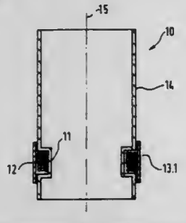
Stefan Geisenberger, Straubing, Germany, assignor to Nokia Technology GmbH, Pforzheim, Germany

Filed May 23, 1995, Ser. No. 448,256

Claims priority, application Germany, Jun. 1, 1994, 44 19 250.9

Int. Cl.[6] H04R *25/00*

U.S. Cl. 381—194 **11 Claims**



1. A voice coil arrangement for loudspeakers, having a voice coil support (**10**) and a voice coil (**12**), which is wound around the outside jacket (**14**) of the voice coil support (**10**), characterized in that

a holding element (**13.3**) is provided, which is connected to the voice coil support (**10**), and which at least partially touches sides of the voice coil (**12**) that are not in direct contact with the voice coil support (**10**);

the holding element (**13.3**) and the voice coil support (**10**) are a one-piece construction;

the holding element (**13.3**) is bracket-shaped; and

at least one free end (**17**) of the holding element (**13.3**) penetrates through an opening (**19**) in the voice coil support (**10**), to hold the voice coil (**12**) to the voice coil support (**10**), said at least one free end having a bent end on an inside (**18**) of the voice coil support (**10**).

5,647,015

METHOD OF INFERRING SENSOR ATTITUDE THROUGH MULTI-FEATURE TRACKING

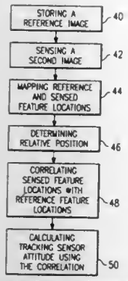
William Clay Choate, Dallas, and Rajendra K. Talluri, Austin, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 808,252, Dec. 11, 1991. This application Jun. 7, 1995, Ser. No. 487,204

Int. Cl.[6] G06K *9/20*

U.S. Cl. 382—103 **5 Claims**

1. A method of determining attitude of a tracking sensor, said tracking sensor including a memory, comprising the steps of:



storing at a first time a reference image in said memory of said tracking sensor, said reference image including a plurality of reference feature locations;

sensing at a second time first image using said tracking sensor, said first image including a plurality of sensed feature locations;

mapping said reference feature locations and said sensed feature locations from a world coordinate system to a canonical coordinate system using a 3-by-3 rotational matrix, S, said world coordinate system having a center of focus, p, in accordance with the equation:

$$x' = S(x - p)$$

where x' is a 3-vector in said world coordinate system, x is a 3-vector in said canonical coordinate system;

determining relative position of said tracking sensor between said second time and said first time;

correlating each of said sensed feature locations with each of said reference feature locations in said canonical coordinate system as a function of said relative position; and

calculating said tracking sensor attitude as a function of said correlation to provide signals representing said tracking sensor attitude.

5,647,016

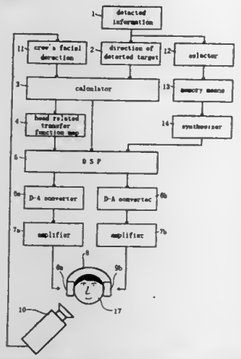
MAN-MACHINE INTERFACE IN AEROSPACE CRAFT THAT PRODUCES A LOCALIZED SOUND IN RESPONSE TO THE DIRECTION OF A TARGET RELATIVE TO THE FACIAL DIRECTION OF A CREW

Motonari Takeyama, 12, Sumida-machi, 2-chome, Gifu-shi, Gifu 500, Japan

Filed Aug. 7, 1995, Ser. No. 511,994

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—103 **31 Claims**



1. A man-machine interface in an aerospace craft for conveying a direction of a detected target to a crew of the aerospace craft by a localized sound comprising the steps of:

(a) obtaining the direction of the detected target;

(b) detecting a crew's facial direction;

(c) calculating a direction of the detected target with respect to the crew's facial direction from the direction of the detected target and the crew's facial direction;

(d) producing the localized sound by localizing a sound used as a sound source in the direction of the detected target with respect to the crew's facial direction; and

(e) outputting the localized sound binaurally to the crew by a sound-output device.

5,647,017

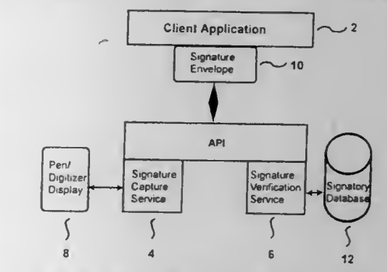
METHOD AND SYSTEM FOR THE VERIFICATION OF HANDWRITTEN SIGNATURES

Christopher Paul Kenneth Smithies, Corfe Mullen, Wimborne, and Jeremy Mark Newman, Frome, Somerset, both of England, assignors to Peripheral Vision Ltd., Somerset, United Kingdom

Continuation of Ser. No. 298,991, Aug. 31, 1994, Pat. No. 5,544,255. This application May 9, 1996, Ser. No. 644,084

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—119 **29 Claims**



1. A computer-based method for verification of a handwritten signature that relates to a document, comprising the steps of:

at the first computer processor, signing a document by electronically capturing a handwritten signature of a signatory;

at the first computer processor, storing in a signature envelope a set of measurements relating to the handwritten signature;

at the first computer processor, creating a checksum of the document;

at the first computer processor, storing the checksum in the signature envelope;

at the first computer processor, storing in the signature envelope a claimed identity of the signatory;

at the first computer processor, encrypting the signature envelope to create an encrypted signature envelope; and

providing the encrypted signature envelope to a second computer processor.

5,647,018

METHOD AND APPARATUS FOR GENERATING IMAGES

Ralph Benjamin, Bristol, England, assignor to Imperial College of Science, Technology and Medicine, London, England

PCT No. PCT/GB92/01969, § 371 Date Jul. 18, 1994, § 102(e) Date Jul. 18, 1994, PCT Pub. No. WO93/09512, PCT Pub. Date May 13, 1993

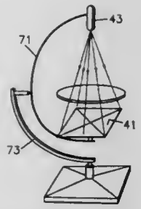
PCT Filed Oct. 27, 1992, Ser. No. 232,129

Claims priority, application United Kingdom, Oct. 28, 1991, 9122843

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—128 **38 Claims**

1. A method of generating images of a specimen containing at least two regions of different opacity to a transmission of radiation therethrough, said method comprising steps of:



irradiating said specimen with radiation from radiation source means;

detecting said radiation with radiation detector means sensitive to said radiation, said detector means producing a plurality of signals indicative of an amplitude of said radiation passing through said specimen in a corresponding plurality of different directions;

deriving further signals, from said plurality of signals, indicative of contours of maximum local discontinuities in at least one of opacity and texture, said further signals providing an indication of a position of a three-dimensional boundary surface between said at least two regions of different opacity.

5,647,019

METHOD OF IDENTIFYING A POSITION OF OBJECT IN CAMERA IMAGE

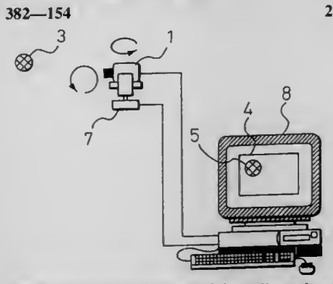
Mitsutoshi Iino, and Shiro Nakatao, both of Tokyo, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, and Fuji Facom Corporation, Tokyo, both of Japan

Filed May 28, 1993, Ser. No. 69,004

Claims priority, application Japan, May 29, 1992, 4-163837

Int. Cl.[6] G06T *3/00*

U.S. Cl. 382—154 **2 Claims**



1. A method of identifying images of three-dimensional objects displayed by a camera as a two-dimensional camera image, comprising the steps of:

mapping coordinates of vertexes and a center point of a cursor window, including at least one of said objects from the camera image, the cursor window and the center point being mapped from two-dimensional coordinates into spherical polar coordinates with a position of said camera as an origin for the spherical polar coordinates;

pointing to a point in said camera image, said pointed-to point being mapped from said camera image to spherical polar coordinates with the position of said camera as the origin, the spherical polar coordinates of said pointed-to point being adjusted in accordance with at least one of an elevation angle, horizontal angle, and view angle of said camera; and

comparing said mapped pointed-to point with said mapped cursor window vertexes to identify an object included in the cursor window corresponding to said pointed-to point.

5,647,020

RECORDING APPARATUS

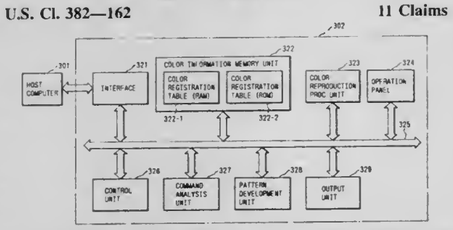
Shunya Mitsuhashi, Tokyo, and Shuichi Kumada, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 101,591, Dec. 23, 1992, abandoned, which is a continuation of Ser. No. 602,697, Oct. 24, 1990, abandoned. This application Mar. 23, 1995, Ser. No. 409,951

Claims priority, application Japan, Oct. 24, 1989, 1-274831; Mar. 5, 1990, 2-51650; Apr. 12, 1990, 2-98347

Int. Cl.[6] G06K *9/46*

U.S. Cl. 382—162 **11 Claims**



1. A color processing method for forming a color image on a medium, said method comprising the steps of:

entering color processing information that relates a color information code with a plurality of color component signals, the color processing information being used for coloring a monochromatic image with the plurality of color component signals;

comparing the color processing information entered in said entering step with color processing information previously stored in a memory;

storing the entered color processing information in the memory, without cancelling the color processing information previously stored in the memory, if the entered color processing information does not correspond to the previously stored color processing information; and

forming the color image that is colored by using the color processing information stored in the memory after said storing step.

5,647,021

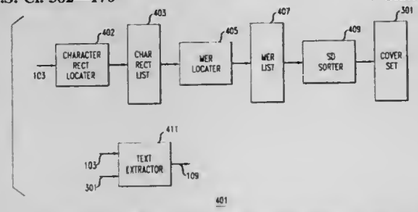
IMAGE SEGMENTING APPARATUS AND METHODS

Henry Spalding Baird, Maplewood; Steven Jonathan Fortune, New Providence, both of N.J., and Susan Elizabeth Jones, Germantown, Md., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Division of Ser. No. 870,740, Apr. 17, 1992, Pat. No. 5,430,808,. This application Jun. 12, 1995, Ser. No. 489,399

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—176 **7 Claims**



1. A method for locating a set of maximum empty rectangles in an image which has x and y coordinates and which contains one or more other rectangles, each maximum empty rectangle being such that the maximum empty rectangle does not contain any part of any of the other rectangles and each of the maximum empty

rectangle's four sides is bounded by a side of one of the other rectangles or a bound of the image, the method comprising the steps of:

providing representations of the vertical sides of the other rectangles in order of increasing x coordinate of the vertical side;

initializing a first list for receiving representations of the maximum empty rectangles;

sweeping the x coordinates by sequentially setting a present x coordinate to the x coordinate of each of the provided representations of vertical sides;

making an active rectangle representation representing all active rectangles, each of the active rectangles being a rectangle whose right-hand side is unbounded at the present x coordinate and those whose left-hand sides have a x coordinate less than the present x coordinate and are bounded by a right-hand side of one of the other rectangles or the left-hand bound of the image, which do not contain any part of any of the other rectangles, and whose right-hand sides are not bounded by any left-hand side of any other rectangle whose x coordinate is less than the present x coordinate;

determining at each setting of the present x coordinate from the representation of all active rectangles which, if any, of the active rectangles become maximum empty rectangles at the present x coordinate;

adding representations of any such maximum empty rectangles to the first list; and

rearranging the representation of all active rectangles to represent the active rectangles whose x coordinates are less than the next sequential setting of the present x coordinate.

5,647,022

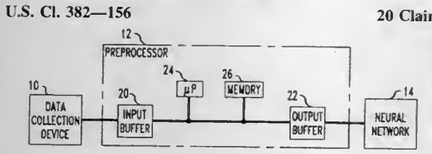
METHOD AND APPARATUS FOR SYMBOL RECOGNITION USING MULTIDIMENSIONAL PREPROCESSING AND SYMBOL SORTING

Yann Andre LeCun, and Quen-Zong Wu, both of Lincroft, N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Oct. 13, 1992, Ser. No. 959,874

Int. Cl.[6] G06K *9/62*

U.S. Cl. 382—156 **20 Claims**



1. An apparatus for recognizing symbols, comprising:

means for collecting data that describes a symbol comprising a plurality of micro-segments;

means for sorting said symbol based on an evaluation of said data to produce a switch control output;

means for associating a micro-segment with at least one cell in a plurality of cells that quantize micro-segment features, where each of said cells has an associated feature label;

means for assigning a cell value to a cell, using a micro-segment value that is related to how well a feature of said micro-segment associated with said cell corresponds to said cell's feature label;

a plurality of classifiers that receive said cell values assigned to said plurality of cells for recognizing said symbol; and

switching means for communicating said cell values to at least one of said plurality of classifiers in response to said switch control output.

5,647,023

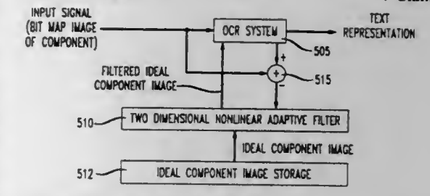
METHOD OF NONLINEAR FILTERING OF DEGRADED DOCUMENT IMAGES

Oscar Ernesto Agazzi, Florham Park, and Kenneth Ward Church, Chatham, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jul. 28, 1994, Ser. No. 281,955

Int. Cl.[6] G06K *9/62*

U.S. Cl. 382—209 **7 Claims**



1. A method comprising the steps of:

receiving an input bit mapped image of a component;

comparing said input bit mapped image of said component to a filtered version of each ideal component image in a set of filtered versions of ideal component images and identifying as said component the ideal component whose filtered version image best matches said input bit mapped image of said component,

wherein said set of filtered versions of ideal component images is generated by the step of:

for said each ideal component image in said set of ideal component images, filtering said each ideal component image to form a respective filtered version of said each component image in said set of filtered versions of ideal component images;

forming an error signal by subtracting from said input bit mapped image of said component the filtered version of the image of said identified component; and

outputting a text representation of the identified component,

wherein said step of filtering is adaptive to said error signal.

5,647,024

MULTI DIMENSIONAL IMAGE COMPRESSION AND DECOMPRESSION METHOD USING FEATURE POINTS ON A LUMINANCE CONTOUR LINE

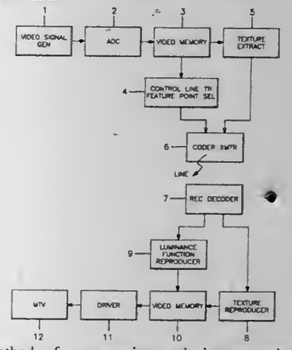
Masayo Kawauchi, Kamakura; Yoshiko Hozumi, Zushi, and Kyoichi Shimizu, Yokohama, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Mar. 10, 1995, Ser. No. 403,249

Claims priority, application Japan, Mar. 12, 1994, 6-067882

Int. Cl.[6] G06K *9/36;9/46*

U.S. Cl. 382—232 **11 Claims**



1. A method of compressing and decompressing a multi-dimensional image, wherein video data including luminance data

distributed at least in two dimensions is compressed to become codes, the codes being decompressed to reproduce analog video data, the method comprising the steps of:

extracting, on the basis of luminance contour lines in the luminance data, a specific number of representative pixels from a plurality of pixels which constitute a digital signal representing the video data;

extracting texture data from the digital signal;

coding the representative pixels and texture data;

decoding the coded representative pixels and the texture data; and

reproducing the video data using the decoded representative pixels and the texture data, wherein luminance data of pixels other than the representative pixels comprises video data reproduced on the basis of an interpolation plane defined by the decoded representative pixels, wherein the pixel extracting step includes the steps of:

tracing the luminance contour lines in a luminance distribution function of the luminance data;

obtaining curvature values indicative of curvature of the luminance contour lines;

comparing curvature values with a reference value; and

choosing at least a pixel corresponding to one of the curvature values as one of said representative pixels when the curvature value associated therewith is greater than the reference value.

5,647,025

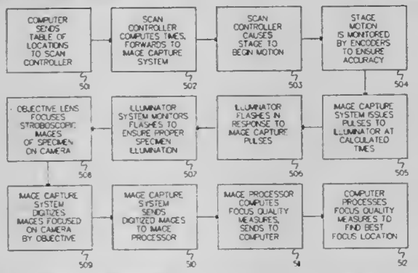
AUTOMATIC FOCUSING OF BIOMEDICAL SPECIMENS APPARATUS

Keith L. Frost, Seattle; Jon W. Hayenga, Kent; James A. Stephanick, Seattle, and Robert C. Schmidt, Redmond, all of Wash., assignors to NeoPath, Inc., Redmond, Wash.

Filed Sep. 20, 1994, Ser. No. 309,405

Int. Cl.[6] G06T *5/20*

U.S. Cl. 382—255 **30 Claims**



1. A method for automatically focusing on a slide comprising the steps of:

(a) locating a coverslip having a bottom surface;

(b) acquiring a plurality of images from a plurality of predetermined focal depths relative to the slide, starting at an initial focal depth proximate the bottom surface of the coverslip;

(c) measuring a set of predetermined characteristics within each of the plurality of images to generate at least one image measurement for each of the plurality of images;

(d) computing a focus measure for each of the plurality of images, where each focus measure is a function of at least one image measurement, wherein the focus measure is derived from morphological operations, computational operations, and logical operations on the at least one image measurement; and

(e) determining a best focus location relative to a focal depth where an acquired image has a highest focus measure.

5,647,026

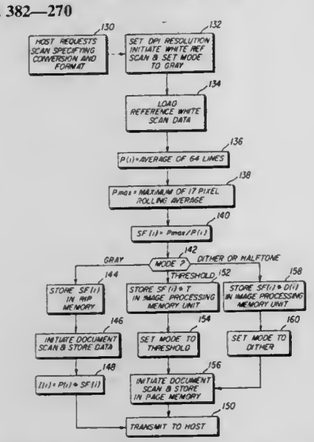
UNIFORMITY CORRECTION AND THRESHOLD OR HALFTONING CONVERSION UNIT AND METHOD

Brian J. Kwarta, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 29, 1991, Ser. No. 784,488

Int. Cl.[6] G06K *9/38*

U.S. Cl. 382—270 **2 Claims**



1. A method of performing image data format conversion for pixels from a pixel sensor, comprising the steps of:

(a) scanning a reference document and creating a scale factor for each pixel from the reference document scan;

(b) creating, when a mode is threshold, a scaled threshold value for each pixel using a combined threshold and the scale factor for each pixel;

(c) creating, when the mode is dither, a scaled dither matrix for each pixel using a combined dither matrix and the scale factor for each pixel;

(d) scanning an actual document producing actual image data; and

(e) comparing the actual image data to one of the scaled thresholds or the scaled dither matrix responsive to the mode and outputting format converted image data responsive to the comparison.

5,647,027

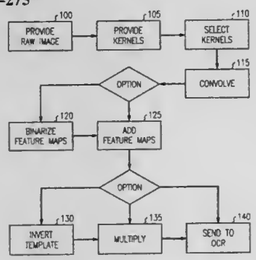
METHOD OF IMAGE ENHANCEMENT USING CONVOLUTION KERNELS

Christopher John Burges, Freehold; Eric Cosatto, Highlands, and Hans Peter Graf, Lincroft, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Oct. 28, 1994, Ser. No. 330,885

Int. Cl.[6] G06K *9/40;9/00;9/56*

U.S. Cl. 382—275 **21 Claims**



1. A method of image enhancement, comprising:

a) providing a raw image comprising an array of pixels;

b) providing a library of kernels, each kernel comprising an array of pixels adapted to cause, in a suitable convolution operation, a selective response to a particular primitive feature that may be present in the raw image;

c) selecting at least a first and a second kernel from the kernel library, such that each of said first and second kernels represents a line segment having a distinct orientation and a length and thickness known to occur, at least approximately, in portions of the raw image that are to be enhanced;

d) separately convolving the raw image with each of the selected kernels, each convolution operation leading to a respective feature map as the product of that convolution operation followed by a thresholding procedure; wherein: said thresholding procedure assigns to each pixel of the feature map a non-zero value only if the product of the convolution operation has a corresponding pixel value exceeding a threshold Θ, and Θ is chosen such that undesired portions of the raw image are suppressed relative to desired portions of the raw image; and

e) adding together at least two of the feature maps, leading to a template as the product of the addition operation.

5,647,028

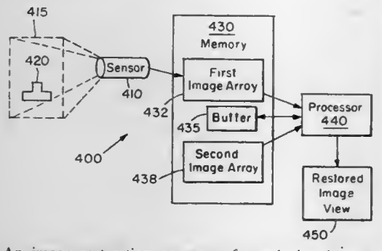
MASSIVELY PARALLEL IMAGE RESTORATION WITH PRESERVATION OF SHARP BOUNDARIES

Murali M. Menon, Watertown, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 679,186, Apr. 2, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 487,709

Int. Cl.[6] G06K *9/40*

U.S. Cl. 382—275 **20 Claims**



1. An image restoration apparatus for reducing image noise while preserving naturally occurring boundaries within a measurement field image of an object, the apparatus comprising:

a first memory having stored therein a first plurality of data values measured by a sensor which views an object of interest, the data values being representative of a measurement field image of the object;

a second memory for storing a second plurality of data values representative of a restoration field image transformed from the first plurality of data values;

a processor coupled to the first memory and the second memory, the processor relating the restoration field image with the measurement field image through a dynamical system equation derived from an energy function, the energy function being a function of both the restoration field image and the measurement field image and includes a surround term E, which represents local interactions within the restoration field image, the local interactions characterized by sigmoid-like functions, the processor receiving the first plurality of data values for the measurement field image from the first memory and iteratively solving the dynamical system equation to transform the first plurality of data values into the second plurality of data values of the restoration field image, the second plurality of data values representing a noise-reduced version of the measurement field image.

5,647,029

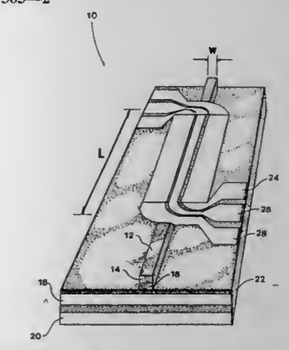
TRAVELING WAVE QUANTUM WELL WAVEGUIDE MODULATORS USING VELOCITY MATCHING FOR IMPROVED FREQUENCY PERFORMANCE

Margarita M. Mihailidi, New York, N.Y., and Jane Elisa Zucker, Aberdeen, N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Nov. 27, 1995, Ser. No. 563,189

Int. Cl.[6] G02F *1/035*

U.S. Cl. 385—2 **31 Claims**



1. An optoelectronic modulator for modulating an optical signal in response to an electromagnetic signal, the optoelectronic modulator comprising:

a waveguide for receiving the optical signal, wherein the waveguide has an associated width and includes:

an optical index of refraction with respect to the optical signal; and

a microwave index of refraction with respect to the electromagnetic signal;

wherein the waveguide is fabricated with the microwave index of refraction substantially matching the optical index of refraction for velocity-matching the optical signal and the electromagnetic signal through the waveguide and for providing a frequency bandwidth in excess of about 40 GHz.

5,647,030

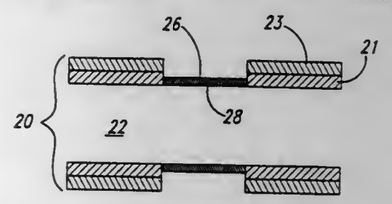
FIBER OPTIC SENSOR AND METHODS AND APPARATUS RELATING THERETO

Ralph C. Jorgenson, Mercer Island, and Sinclair S. Yee, Seattle, both of Wash., assignors to University of Washington, Seattle, Wash.

Continuation of Ser. No. 307,185, Sep. 16, 1994, abandoned, which is a continuation of Ser. No. 3,224, Jan. 11, 1993, Pat. No. 5,359,681. This application Jan. 11, 1996, Ser. No. 584,960

Int. Cl.[6] G02B *6/02;* **G01J** *3/42;* **H01J** *5/16*

U.S. Cl. 385—12 **54 Claims**



1. A fiber optic surface plasmon resonance sensing apparatus, comprising:

a fiber optic surface plasmon resonance sensor, comprising an optical fiber having a core waveguide and a cladding or cladding/buffer layer surrounding the core waveguide, wherein the optical fiber has a first end and a second end and

has at least one sensing area located between the first end and the second end or at the second end, wherein the sensing area is defined by a surface plasmon resonance supporting metal layer selected from gold and silver in contact with at least a portion of a surface of the optical fiber core waveguide free from the surrounding cladding or cladding/buffer layer;

a source of electromagnetic radiation of multiple wavelengths whose output is applied to the first end of the optical fiber core waveguide such that the radiation propagates from the first end towards the second end by total internal reflections and exits the optical fiber; and

a detection device for monitoring the radiation exiting the optical fiber.

6. A method for detecting a sample, comprising:

contacting the sample with an optical fiber surface plasmon resonance sensor, wherein the sensor comprises an optical fiber having a core waveguide and a cladding or cladding/buffer layer surrounding the core waveguide, wherein the optical fiber has a first end and a second end and has at least one sensing area located between the first end and the second end or at the second end, wherein the sensing area is defined by a surface plasmon resonance supporting metal layer selected from gold and silver in contact with at least a portion of a surface of the optical fiber core waveguide free from the surrounding cladding or cladding/buffer layer, and wherein the sensing area of the sensor is in contact with the sample;

directing a source of electromagnetic radiation of multiple wavelengths into the first end of the optical fiber core waveguide such that the radiation propagates from the first end towards the second end by total internal reflections and exits the optical fiber, and wherein the propagating radiation interacts with the sensing area of the sensor which is in contact with the sample; and

detecting the radiation exiting the optical fiber core waveguide.

5,647,031

DEVICE FOR CHECKING THE POSITION AND/OR THE FOCUSING OF A FOCUSED LIGHT BEAM

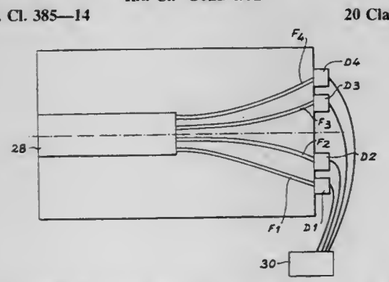
Valérie Lapras, Chevalon de Voreppe; Pierre Gidon, Echirolles, and Patrick Pouteau, Chevalon de Voreppe, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Apr. 24, 1995, Ser. No. 427,564

Claims priority, application France, Apr. 28, 1994, 94 05167

Int. Cl.[6] G02B *6/12*

U.S. Cl. 385—14 **20 Claims**



1. An integrated optics device for checking at least one of the position and the focusing of a light beam having an integrated optics guidance structure comprising:

at least one multimode waveguide or an array of monomode guides, having an input and an output, for exchanging and transforming the intensity distribution of said light beam such that said light beam comprises a single maxima at the input and N maxima at the output, wherein N is at least two, and said multimode waveguide or said monomode guides are integrated into the guidance structure,

detection means for measuring the intensity distribution at N collinearly aligned measuring points located at the output of said multimode waveguide or said array of monomode guides, and

analysis means for analyzing the intensity distribution, wherein said analysis means is connected to said detection means.

5,647,032

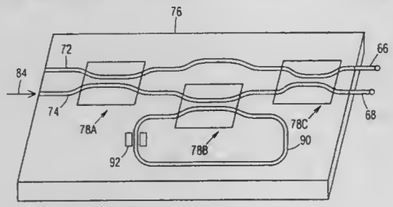
INTERFEROMETERS FOR MEASURING COHERENCE LENGTH AND HIGH-SPEED SWITCHING OF LASER LIGHT

Suganda Jutamulia, Fremont, Calif., assignor to Kowa Company, Ltd., Tokyo, Japan

Filed Aug. 24, 1995, Ser. No. 519,143

Int. Cl.[6] G02B *6/12; G01B 9/02*

U.S. Cl. 385—14 **22 Claims**



1. An interferometer comprising:

a beam dividing and combining means for dividing an incident beam supplied thereto into two beams, whereby only one of said two beams forms a closed loop and the other one of said two beams leaves said closed loop, and

an optical path that forms said closed loop by returning said one of said two beams to said beam dividing and combining means so that part of said one of said two beams is combined with said other one of said two beams to leave said closed loop, and part of said one of said two beams is combined with itself in said optical path to cycle around said closed loop, whereby only one beam cycles around said closed loop and one beam leaves said closed loop.

19. An interferometer for switching laser comprising:

a first beam dividing and combining means for dividing an incident beams supplied thereto into two beams, whereby said two beams never from any closed loop and thus never share the same loop and only a single delay between said two beams is needed for switching laser light,

two different optical paths positioned to carry said two beams so that said two optical paths generate said single delay between said two beams,

a second beams dividing and combining mean for combining said two beams into two output beams so that one of said output beams produces destructive interference and the other one of said two output beams produces constructive interference, whereby switching is caused by a transient phenomenon in said output beam which produces destructive interference, and

a shutter for blocking said output beams which produces destructive interference.

5,647,033

APPARATUS FOR SWITCHING OPTICAL SIGNALS AND METHOD OF OPERATION

Richard H. Laughlin, 1906 Campbell Trail, Richardson, Tex. 75082

Division of Ser. No. 251,837, May 27, 1994, Pat. No. 5,444,801. This application May 18, 1995, Ser. No. 443,785

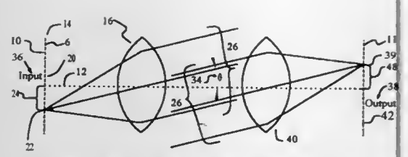
Int. Cl.[6] G02B *6/26;6/42*

U.S. Cl. 385—16 **35 Claims**

1. An apparatus for switching an input optical signal to one of a plurality of output optical locations, the apparatus comprising:

a collimating lens for collimating the input optical signal into a collimated beam;

a reflector for reflecting the collimated beam, the reflector having a plurality of positions for changing the angle of the



collimated beam by a selected amount to direct the collimated beam to a selected one of the output optical locations; and

a decollimating lens separate from the collimating lens and the reflector for decollimating and focusing the collimated beam to the selected output optical location.

5,647,034

OPERATION DISPLAYING SEMICONDUCTOR SWITCH

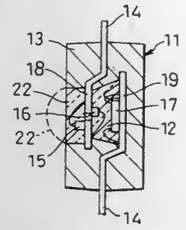
Ohki Matsuda, and Yasunori Miyamoto, both of Kadoma, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Sep. 29, 1995, Ser. No. 537,231

Claims priority, application Japan, Oct. 3, 1994, 6-229274; Oct. 3, 1994, 6-239273; Jul. 14, 1995, 7-178928

Int. Cl.[6] G02B *6/35*

U.S. Cl. 385—16 **15 Claims**



5. An operation displaying semiconductor switch comprising:

light emitting side pattern conductors respectively made of an electrically conducting plate and disposed on one of mutually opposing two planes;

light receiving side pattern conductors respectively made of the electrically conducting plate and disposed on the other one of the mutually opposing two planes;

a light emitting means mounted on the light emitting side pattern conductors;

a light receiving means mounted on the light receiving side pattern conductors;

a package accommodating the light emitting side and light receiving side pattern conductors with the light emitting and light receiving means optically coupled to each other in a mode of being mutually opposed; and

means for turning ON and OFF the light receiving means in response to lighting ON and OFF of the light emitting means;

the package including an inner molded body made of a light transmitting synthetic resin with the light emitting side and light receiving side pattern conductors embedded therein for the optical coupling between the light emitting means and the light receiving means, and an outer molded body made of a non-light transmitting synthetic resin and enclosing the inner molded body for blocking any incidence of external light onto the inner molded body, and

the outer molded body having a recess made in an outer side surface to expose in the bottom another portion of the light emitting side pattern conductors in the inner molded body other than the mounting portion of the light emitting means, and operation displaying lamp comprising a bare chip and disposed in the recess as electrically connected to the exposed portion of the light emitting side pattern conductors at the bottom of the recess for providing an output of visible light upon being lighted ON, and an optical guide of the light transmitting synthetic resin filled in the recess to be optically coupled to the operation displaying lamp for leading the output light of the lamp to the exterior of the outer molded body.

5,647,035

RING NETWORK COMMUNICATION STRUCTURE ON AN OPTICAL CARRIER AND RECONFIGURABLE NODE FOR SAID STRUCTURE

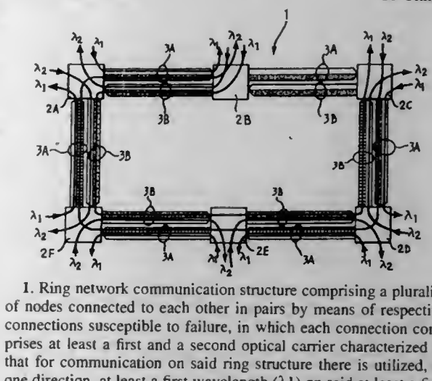
Roberto Cadeddu, Collegno; Riccardo Calvani, Pino Torinese; Giuseppe Ferraris, Pinerolo; Roberto Lano, Casellette, and Emilio Vezzoni, Torino, all of Italy, assignors to CSELT-Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed Sep. 21, 1995, Ser. No. 531,851

Claims priority, application Italy, Dec. 9, 1994, TO94A1008

Int. Cl.[6] G02B *6/293*

U.S. Cl. 385—24 **10 Claims**



1. Ring network communication structure comprising a plurality of nodes connected to each other in pairs by means of respective connections susceptible to failure, in which each connection comprises at least a first and a second optical carrier characterized in that for communication on said ring structure there is utilized, in one direction, at least a first wavelength ($\lambda 1$) on said at least a first optical carrier and, for communication in the opposite direction, at least a second wavelength ($\lambda 2$) on said at least second optical carrier, and in that, in the presence of a failure on one of said connections, the nodes adjacent to the failed connection are so reconfigured as to utilize, to communicate with each other, said at least a first wavelength ($\lambda 1$) on said at least a second optical carrier in addition to and in the same direction as said at least a second wavelength ($\lambda 2$) and said at least a second wavelength ($\lambda 2$) on said at least a first optical carrier in addition to and in the same direction as said at least a first wavelength ($\lambda 1$).

5,647,036

PROJECTION DISPLAY WITH ELECTRICALLY-CONTROLLED WAVEGUIDE ROUTING

David A. G. Deacon, Los Altos; William K. Bischel, Menlo Park; Michael J. Brinkman, Redwood City; Edward J. DeWath, Cupertino; Mark J. Dryer, San Jose, and Simon J. Field, Menlo Park, all of Calif., assignurs to Deacon Research, Palo Alto, Calif.

Filed Sep. 9, 1994, Ser. No. 303,848

Int. Cl.[6] G02B *6/26*

U.S. Cl. 385—27 **49 Claims**

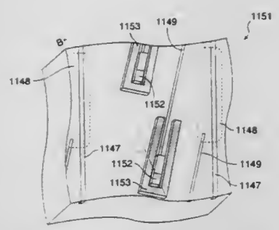
1. An optical beam directing element comprising:

a solid material for conveying optical energy;

at least a first electrically-conductive material forming a first electrode, said first electrode confronting said solid material;

a pixel waveguide segment traversing said solid material along a plane of said solid material;

a plurality of output waveguide segments traversing said solid material along said plane, at least one of said output waveguide segments being transverse to said pixel waveguide segment in a first intersection region;



an active optical energy redirector being disposed adjacent said first intersection region, said active optical energy redirector to deflect optical energy from said pixel waveguide segment into said output waveguide segments upon selective application of an electrical field from said first electrode;

optical reflector means disposed at selected locations on said plane in line with said output waveguide segments for projecting optical energy out of said plane; and

an optical collection element coupled to receive optical energy projected out of said plane for focusing said optical energy at a remote projection surface.

5,647,037

OPTICAL FILTERING

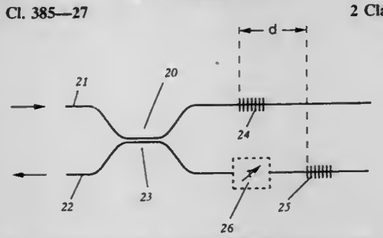
Kevin Christopher Byron, Bishop's Stortford, United Kingdom, assignor to Northern Telecom Limited, Montreal, Canada

Filed Jan. 31, 1996, Ser. No. 594,471

Claims priority, application United Kingdom, Feb. 1, 1995, 9501973

Int. Cl.[6] G02B *6/26*

U.S. Cl. 385—27 **2 Claims**



1. An optical waveguide transmission filter having a 3 dB single mode optical waveguide coupler provided, on one side of its coupling region, with a spectrally matched pair of retro-reflecting optical waveguide Bragg grating reflectors, one on each of the two limbs of the 3 dB coupler, wherein the difference in optical path distance from the coupling region of the 3 dB coupler to each of the two Bragg reflectors is greater than half the coherence length of a signal having a spectral width matched with that of the Bragg reflectors.

5,647,038

NARROW BANDWIDTH BRAGG GRATING REFLECTOR FOR USE IN AN OPTICAL WAVEGUIDE

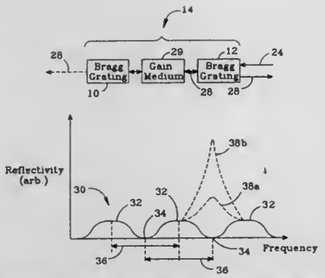
Monica L. Minden, and Hans Bruesselbach, both of Calabasas, Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Aug. 30, 1995, Ser. No. 521,481

Int. Cl.[6] G02B *6/34*

U.S. Cl. 385—37 **13 Claims**

6. A reflector for reflecting incident light that falls within a narrow frequency band, comprising:



an optical fiber with a fiber core that is doped to provide optical gain for at least one predetermined optical frequency, and

at least two individual Bragg reflection gratings with generally equal frequency bands in said fiber core, said gratings forming a reflective etalon for incident light with said etalon having a reflection frequency spectrum that exhibits a plurality of primary peaks and nulls with respective bandwidths,

said gratings spaced from each other so that said predetermined frequency falls within the bandwidth of at least one of said nulls, and so that a portion of said fiber core that is between said gratings provides optical gain for portions of said incident light that include said predetermined frequency, thereby establishing a secondary reflection peak in said etalon that is centered on said predetermined frequency has a bandwidth that is narrower than those of the primary reflection peaks and individual Bragg gratings, and has an amplitude that is greater than those of the primary reflection peaks, wherein the amount of optical gain provided by said fiber core portion is less than an amount needed to achieve optical lasing within said fiber core portion at said at least one predetermined frequency.

5,647,039

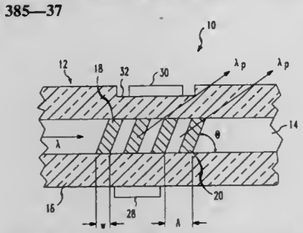
OPTICAL SWITCHING SYSTEM AND DEVICES USING A LONG PERIOD GRATING

Justin Boyd Judkins, Berkeley Heights; Andrew John Stentz, Scotch Plains, and Ashish Madhukar Vengsarkar, Berkeley Heights, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 14, 1995, Ser. No. 572,588

Int. Cl.[6] G02B *6/26*

U.S. Cl. 385—37 **24 Claims**



1. For use with an optical fiber having a core of a first prescribed refractive index n_1 and a cladding of a second prescribed refractive index n_2 and configured to carry an optical signal, an optical switching system for directing said optical signal, comprising:

an optical switch coupled to said optical fiber and including a grating having a third prescribed refractive index n_2 within said core, said optical switch having a structure that allows said optical switch to operate in selectable non-diverting and forward-diverting modes, wherein said optical switch alters at least one of said first prescribed refractive index n_1, said second prescribed refractive index n_3 or said third prescribed refractive index n_3, said switch operable:

to render said grating substantially transparent to said optical signal as said optical switch operates in said non-diverting mode or, alternatively,

to allow said grating to divert at least a portion of said optical signal forward and into said cladding as said optical switch operates in said forward-diverting mode, said grating having a periodicity thereby substantially increasing a sensitivity of said grating to changes in at least one of said prescribed refractive index n_1 or said prescribed refractive indices of n_2.

5,647,040

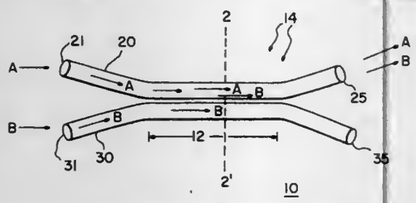
TUNABLE OPTICAL COUPLER USING PHOTOSENSITIVE GLASS

Robert Adam Modavis, Painted Post, and Thomas A. Cook, Corning, both of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Dec. 14, 1995, Ser. No. 572,016

Int. Cl.[6] G02B *6/18*

U.S. Cl. 385—42 **10 Claims**



1. A wavelength tunable optical waveguide coupler comprising:

at least two optical fibers, each optical fiber having a core and a cladding, the two optical fibers proximate to each other for a selected distance so that light of at least one coupling wave length in one fiber is coupled into the other fiber; and

at least a portion of the cladding of one optical fiber doped with a sufficient amount of photosensitive glass and exposed to a sufficient amount of activating radiation for changing the index of refraction through said cladding of said one fiber and tuning the coupler to the coupling wavelength of light.

5,647,041

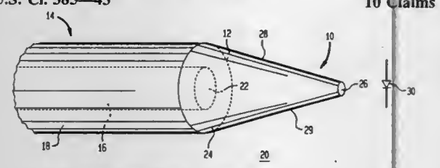
MULTIMODE FIBER BEAM COMPRESSOR

Herman M. Presby, Highland Park, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Apr. 17, 1996, Ser. No. 633,333

Int. Cl.[6] G02B *6/26*

U.S. Cl. 385—43 **10 Claims**



1. A fiber beam compressor comprising:

a light transparent material having a substantially tapered shape between first and second ends;

said first end capable of coupling to an optical fiber end, wherein said first end has a cross-sectional area that is at least the size of a cross-sectional area of a core of said fiber, said material having a substantially uniform index of refraction that is at least equal to an index of refraction of said fiber core and at least 5% greater than an index of refraction of a surrounding environment; and

said second end having a cross-sectional area smaller than said first end and being spaced from said first end such that a substantial portion of light entering said first end is transmitted to said second end by total internal reflection within said material.

5,647,042

OPTICAL LINK MODULE CONNECTION SYSTEM

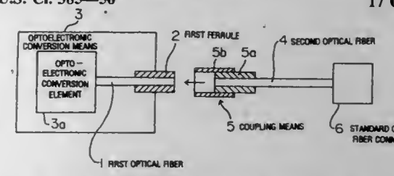
Ryoichi Ochiai; Kazunori Miura; Seimi Sasaki, and Goji Nakagawa, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Mar. 8, 1996, Ser. No. 613,001

Claims priority, application Japan, Jul. 5, 1995, 7-169832

Int. Cl.[6] G02B *6/38*

U.S. Cl. 385—56 **17 Claims**



1. An optical link module connection system for connecting an optical fiber to an optical link module which performs conversion between an optical signal and an electrical signal, comprising:

optoelectronic conversion means for performing an optoelectronic conversion, having a first ferrule with a first optical fiber packaged therein;

coupling means, located at one end of a second optical fiber and having a second ferrule to package the second optical fiber therein, for optically coupling said second optical fiber with said first optical fiber by locating an endface of said second ferrule opposite to an endface of said first ferrule; and

a standard optical fiber connector assembled at the other end of said second optical fiber.

5,647,043

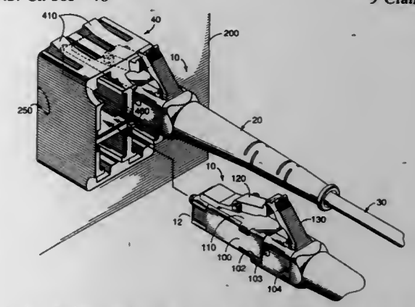
UNIPARTITE JACK RECEPTACLE

Jerry Max Anderson, Austell; Ray R. Cammons, Woodstock; Elizabeth J. Driscoll, Atlanta, and Norman Roger Lampert, Norcross, all of Ga., assignors to Lucent Technologies, Inc., Murray Hill, N.J.

Filed Oct. 12, 1995, Ser. No. 545,042

Int. Cl.[6] G02B *6/00;6/36*

U.S. Cl. 385—78 **9 Claims**



1. A one-piece, molded jack receptacle including front and back ends, top- and bottom-side surfaces, and a pair of cavities; each cavity having (i) a rectangular opening into the front end of the receptacle, (ii) a circular opening into the back end of the receptacle, and (iii) a U-shaped opening into the top-side surface, said U-shaped opening forming a cantilever whose free-end portion deflects into the cavity; each cavity further having a non-movable

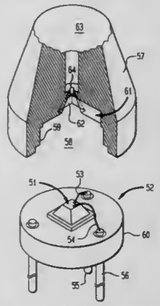
retaining surface for holding an optical connector within the cavity, said retaining surface being located directly beneath the U-shaped opening.

5,647,044

FIBER WAVEGUIDE PACKAGE WITH IMPROVED ALIGNMENT MEANS

Nagesh Ramamoorthy Basavanhally, Trenton; George John Shevchuk, Old Bridge, and James Albert Walker, Howell, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 22, 1995, Ser. No. 578,001
Int. Cl.[6] G02B *6/42*
U.S. Cl. 385—92 **7 Claims**



1. Packaged optoelectronic device comprising:
a. an optoelectronic device formed on a silicon substrate, said substrate having a pyramid shape,
b. a molded plastic cover overlying said pyramid-shaped optoelectronic device, said cover having a pyramid-shaped recess located in the center of the inside of the cover, the pyramid-shaped recess mating with the pyramid-shaped optoelectronic device, a bore-shaped opening with a length extending through said cover from the outside of the cover to said pyramid-shaped recess, and an optical fiber mounted in said bore and extending from a position adjacent the active surface of the optoelectronic device through said length of the cover.

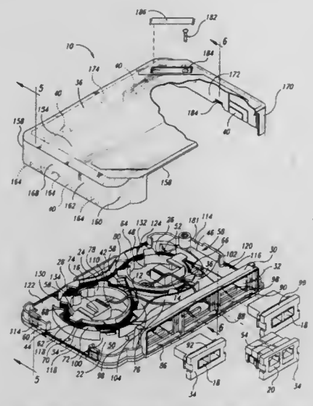
5,647,045

MULTI-MEDIA CONNECTION HOUSING

Scott T. Robinson, Redmond; Peter H. Newman, Marysville; Jack K. Merrow, and DeWayne J. Anderson, both of Kirkland, all of Wash., assignors to Leviton Manufacturing Co., Inc., Littleneck, N.Y.

Filed Feb. 23, 1996, Ser. No. 606,521
Int. Cl.[6] G02B *6/10*
U.S. Cl. 385—135 **26 Claims**

1. A housing of the type for receiving optical fibers therein, the optical fibers being connectable to connectors, the connectors being terminated at adapters, the optical fibers having a minimum bend radius to avoid signal degeneration in the optical fibers, comprising:
a base having a side edge portion adapted to support the connectors and adapters therealong;
a first fiber-storage guide attached to the base and projecting away from the base, the first fiber-storage guide having a substantially cylindrical first outer guide surface with a radius that is greater than the minimum bend radius, the first outer guide surface being sized to receive the optical fibers therearound to prevent the optical fibers from bending with a bend radius that is smaller than the minimum bend radius;
a second fiber-storage guide attached to the base and projecting away from the base, the second fiber-storage guide having a substantially cylindrical second outer guide surface with a radius that is greater than the minimum bend radius, the second outer guide surface being sized to receive the optical



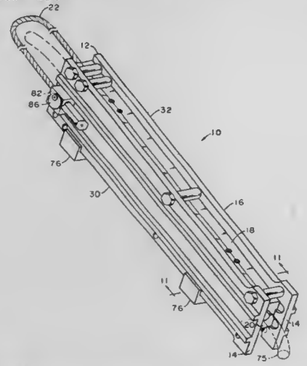
fibers therearound to prevent the optical fibers from bending with a bend radius that is smaller than the minimum bend radius, the first and second fiber-storage guides being spaced apart from each other with a cross-over junction therebetween, the first and second fiber-storage guides being positioned to allow the optical fibers to selectively wrap around portions of the first and second outer guide surfaces, to pass through the cross-over junction, to extend between the first and second fiber-storage guides, and to terminate at the side edge portion without bending in a radius that is smaller than the minimum bend radius; and
outer guides selectively spaced about the first and second fiber-storage guides and spaced away from the cross-over junction, the outer guides having spaces therebetween to receive the optical fibers so the optical fibers pass therethrough.

5,647,046

WEDGE DEADEND TO SUPPORT AERIAL CABLES

Calvin Cowen, West Union; Wayne L. Quesnel, Moore, both of S.C.; William N. Parrott, Birmingham, Ala., and Michael G. Jones, Spartanburg, S.C., assignors to Alcoa Fujikura Limited, Brentwood, Tenn.

Filed May 20, 1996, Ser. No. 650,360
Int. Cl.[6] G02B *6/00*
U.S. Cl. 385—136 **25 Claims**



1. An apparatus for securing fiber optic transmission lines or cables comprising:
a frame having a pair of parallel plates with each plate having an inwardly facing surface and an outwardly facing surface, said inwardly facing surfaces having longitudinal upper and lower

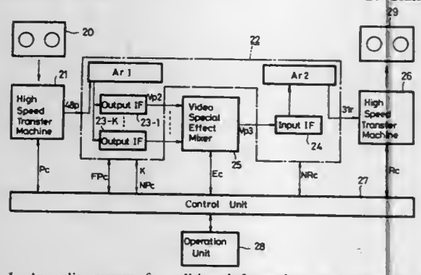
non-parallel tapered slots extending from a first end of the frame toward a second end of the frame; and
opposed, upper and lower wedges having longitudinal tapered edges, the slots of said frame sized to receive the tapered edges of said wedges with the upper wedge interlocking with said upper slots and said lower wedge interlocking with the lower slots;
said wedges each having an inner face with a longitudinal groove such that when the wedges are located in-said frame, a longitudinal opening is created by said grooves for seating a cable.

5,647,047

SYSTEM FOR EDITING VIDEO REPRODUCED FROM A PLURALITY OF RECORDING MEDIA AT HIGH SPEED

Fumihiro Nagasawa, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 13, 1994, Ser. No. 355,037
Claims priority, application Japan, Dec. 13, 1993, 5-312142
Int. Cl.[6] H04N *5/783*
U.S. Cl. 386—52 **27 Claims**



1. An edit system for editing information on a plurality of recording media previously recorded at a first normal rate, comprising:
means for reproducing said information from said plurality of recording media at a second rate, which is n times higher than the first normal rate to provide edit information and wherein n is an integral number greater than 1;
means for storing the edit information at the second rate to provide stored edit information;
means for reading the stored edit information at the first normal rate to provide read information;
processing means for processing the stored edit information read from said means for storing to generate processed information and wherein said means for storing is operable to store the processed information at the first normal rate;
means for operating said means for reading to read the processed information at the second rate from said means for storing; and
means for transferring the processed information read by said means for reading to a destination at the second rate.

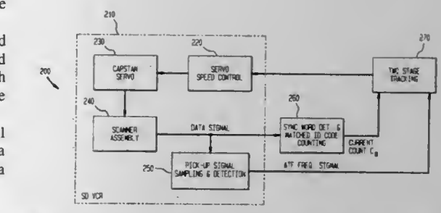
5,647,048

TRICK MODE VTR TRACKING FOR COMPRESSED VIDEO

Hou-Chun Ting, Lu Kang Town; Hsueh-Ming Hang, Hsin-Chu; Jang-Zern Tsai, Ma Dou Town, and Chien-Chen Liang, Taichung, all of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Jun. 7, 1995, Ser. No. 485,207
Int. Cl.[6] H04N *5/91;* **G11B** *21/04;21/02*
U.S. Cl. 386—68 **20 Claims**

1. A method for tracking trick mode data areas of a tape during trick mode playback, the trick mode data areas including video



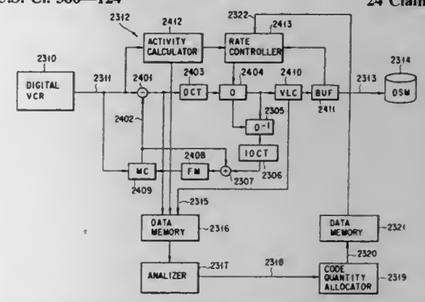
data to be reproduced during trick mode playback, the method comprising the steps of:
initially, accelerating a relative tape transport-drum rotation to an approximate speed that is appropriate for a particular trick mode,
reproducing identification codes from said trick mode data areas of said tape, wherein certain of the identification codes correspond to the particular trick mode and thereby identify trick mode data areas which include video data to be reproduced during the particular trick mode,
comparing a count of identification codes corresponding to the particular trick mode which are reproduced during a current interval to another count of identification codes corresponding to the particular trick mode which are reproduced during a previous interval, and
depending on said comparison, adjusting said relative tape transport-drum rotation speed.

5,647,049

VIDEO RECORDING/REPRODUCING APPARATUS WHICH USES A DIFFERENTIAL MOTION VECTOR DETERMINED USING TWO OTHER MOTION VECTORS

Toshinori Odaka, Yokohama; Yoshiharu Uetani, Kawasaki; Tadaaki Masuda, Tokyo; Tomoo Yamakage, Kawasaki; Hideyuki Ueno, Tokyo; Noboru Yamaguchi, Yashio; Yoshihiro Kikuchi, Yokohama, and Tadahiro Oku, Urayasu, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation-in-part of Ser. No. 156,709, Nov. 24, 1993, Pat. No. 5,424,779, which is a continuation of Ser. No. 890,705, May 29, 1992, Pat. No. 5,317,397. This application Apr. 28, 1995, Ser. No. 430,366
Claims priority, application Japan, May 31, 1991, 3-130012; Oct. 17, 1991, 3-298316; Oct. 17, 1991, 3-298317; Oct. 31, 1991, 3-286855; Feb. 18, 1992, 4-030923
Int. Cl.[6] H04N *5/92*
U.S. Cl. 386—124 **24 Claims**



1. A video recording/reproducing apparatus having an encoder for encoding a video signal, and a recording unit for recording

encoded information from said encoder on a digital recording medium, said encoder comprising:

memory means for storing at least first and second reference pictures;

prediction signal forming means for forming a prediction signal for an input signal, using a first reference signal from the first reference picture stored in said memory means as designated by a first motion vector, and a second reference signal from the second reference picture stored in said memory means as designated by a second motion vector;

first determining means for determining a third motion vector from a point of intersection of the first motion vector and the second motion vector to a point in the second reference picture where said first motion vector intersects the second reference picture;

second determining means for determining a differential motion vector by subtracting the third motion vector from the second motion vector;

first encoding means for encoding the first motion vector and the differential motion vector to obtain encoded first motion vector data and encoded differential motion vector data; and

second encoding means for encoding a difference signal between said prediction signal and said input signal to obtain encoded difference data.

5,647,050

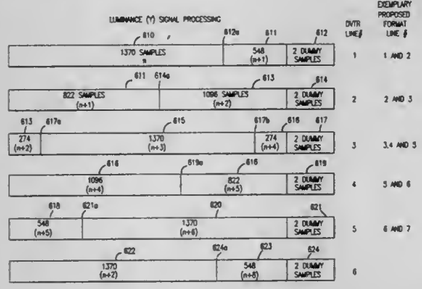
FORMAT SIGNAL CONVERTER USING DUMMY SAMPLES

Charles W. Rhodes, Edgewater, Md., assignor to Advanced Television Test Center, Alexandria, Va.

Continuation of Ser. No. 156,832, Nov. 24, 1993, which is a division of Ser. No. 404,190, Sep. 7, 1989, Pat. No. 5,280,397. This application Jan. 30, 1995, Ser. No. 380,629

Int. Cl.[6] H04N *5/76*

U.S. Cl. 386—131 **19 Claims**



1. A method of converting a signal having a specified format to a pre-existing television signal format, both the specified and preexisting formats being orthogonal in structure and having lines arranged vertically; the steps comprising:

determining a number of dummy samples to be stored with active luminance samples of the specified television signal format such that the number of dummy samples and the number of active luminance samples stored coincide with the number of samples per active line;

deriving a frequency of an oscillator for controlling the storage of the dummy samples and the active luminance samples of the specified television format in a memory; and

storing the dummy samples and the active luminance samples of the specified television format in memory.

5,647,051

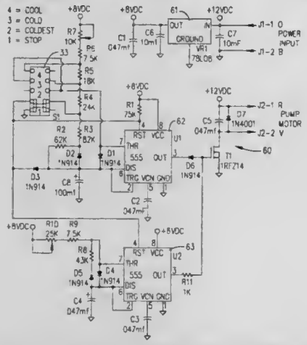
COLD THERAPY SYSTEM WITH INTERMITTENT FLUID PUMPING FOR TEMPERATURE CONTROL

Charles S. Neer, Milford, Ohio, assignor to Seabrook Medical Systems, Inc., Cincinnati, Ohio

Filed Feb. 22, 1995, Ser. No. 392,036

Int. Cl.[6] H02P *5/17*

U.S. Cl. 388—811 **18 Claims**



1. A control system for the electric motor of a fluid pump, said control system comprising an electric DC motor, a source of DC current, a first astable multivibrator having a continuous first output signal at a fixed duty cycle, a second astable multivibrator operating at a frequency lower than said first astable multivibrator and at a fixed period and having a second output signal at a selectable duty cycle, an output transistor having an input in communication with each of said first and second output signals, said output transistor providing a third output signal to drive said motor when both said first and second output signals are simultaneously in a state to turn on said transistor, said fixed duty cycle determining the speed at which said motor runs and said selectable duty cycle determining the amount of time said motor runs per period of said selectable duty cycle.

5,647,052

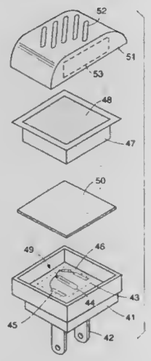
VOLATILE SUBSTANCE DISPENSER AND METHOD OF DISPENSING A VOLATILE SUBSTANCE WITH DISSIPATION INDICATION

Manhar K. Patel, Saddle Brook, and John M. Paulovich, Hewitt, both of N.J., assignors to Reckitt & Colman Inc., Wayne, N.J.

Filed Apr. 28, 1995, Ser. No. 431,103

Int. Cl.[6] A61M *16/00*

U.S. Cl. 392—390 **19 Claims**



16. A volatile substance dispenser, comprising:

a. a base portion for connecting to an electrical outlet;

b. a quantity of volatile substance;

c. holding means for holding said quantity of volatile substance on said base portion; and

d. a light bulb having an expected lifetime, said light bulb heating said volatile substance and causing said volatile substance to disseminate into the atmosphere in the form of vapor and said lifetime of said light bulb corresponding approximately to the quantity of volatile substance so that dissipation of said quantity of volatile substance is indicated when said light bulb burns out.

5,647,053

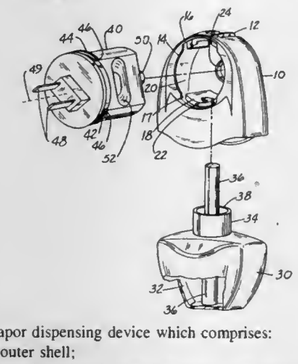
VAPOR DIPENSING DEVICE

John A. Schroeder, Mt. Pleasant; Armin L. Clobes, Wind Point; Mark E. Wefler, Mt. Pleasant, all of Wis.; Terry L. Hygema, and Kevin W. Smith, both of North Webster, Ind., assignors to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Oct. 11, 1995, Ser. No. 541,050

Int. Cl.[6] F24F *6/00;6/08*

U.S. Cl. 392—390 **4 Claims**



1. A vapor dispensing device which comprises:

(a) an outer shell;

(b) a one piece electric plug heater block having attached electric plug pins, the block being rotatably attached to the outer shell such that the block can rotate through predefined range of rotation around an axis parallel to the plug pins; and

(c) a wick in fluid communication with a material to be dispensed and extending into an opening through the block;

wherein the opening has a shape defined by rotating a solid geometric shape transverse to the axis through an angle at least equal to the predefined range of rotation of the block and wherein the block has an electric heating element in close proximity to the opening.

5,647,054

SMOKE GENERATOR TUBE

Gary Wayne Jones, Joplin, Mo., assignor to Pitsco, Inc., Pittsburg, Kans.

Continuation of Ser. No. 352,924, Dec. 9, 1994. This application Feb. 5, 1996, Ser. No. 595,749

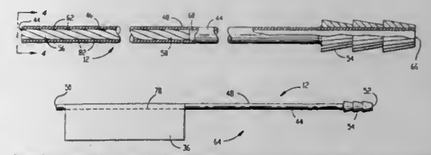
Int. Cl.[6] F22B *29/06;* **F24H** *1/10;* **F28D** *7/12;* **B05B** *1/00*

U.S. Cl. 392—397 **9 Claims**

1. A smoke generator assembly comprising:

a smoke tube assembly including walls defining a tube having an inlet opening, an outlet opening and a passage therebetween, said walls being composed of heat conducting material;

delivery means for delivering a smoke generating liquid to said inlet, the liquid becoming a vapor among sufficient heating; and



heating means coupled with the exterior of said tube for heating said walls and thereby any smoke generating liquid in said passage to a temperature sufficient for the liquid to become a vapor,

said passage presenting a plurality of tube sections between said inlet and outlet openings,

said assembly including wire packing positioned in one of said tube sections between said inlet and outlet openings to present a wire packing section and in contact with the tube walls of said wire packing section for increasing the surface area over which the smoke generating liquid flows for increasing the heat transfer rate between said heating means and the smoke generator liquid, said wire packing including a plurality of strands of wire.

5,647,055

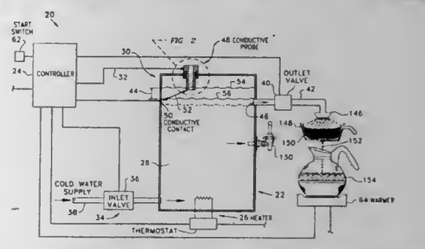
METHOD FOR CYCLICALLY DISPENSING WATER FROM A HEATED WATER APPARATUS

John T. Knepler, Chatham, Ill., assignor to Bunn-O-Matic Corporation, Springfield, Ill.

Division of Ser. No. 533,637, Sep. 25, 1995. This application Apr. 4, 1996, Ser. No. 628,019

Int. Cl.[6] F24H *1/20;* **H05B** *3/78*

U.S. Cl. 392—451 **5 Claims**



1. A method of controllably dispensing water from a heated water apparatus having a reservoir for retaining a quantity of water, a controller for controlling said heated water apparatus, a controllable heater coupled to said controller and to said reservoir for controllably heating said water retained in said reservoir, a water sensor coupled to said reservoir and to said controller for at least detecting the presence and absence of a desired quantity of water in said reservoir and providing a signal to said controller, an inlet valve coupled to said controller for controlling the flow of water from a water source to said reservoir, and a controllable outlet valve communicating with said reservoir and coupled to said controller for controllably dispensing water from said reservoir, said method comprising the steps of:

activating said heated water apparatus to dispense water from said reservoir;

sensing the presence or absence of water in the reservoir;

controlling said controllable outlet valve to dispense water from said reservoir upon sensing the presence of the water in said reservoir at a predetermined level;

periodically sensing the level of water in said reservoir;

controllably operating said inlet valve for adding water to such reservoir;

closing said controllable outlet valve upon detecting the absence of water at a predetermined level in said reservoir;

controllably cycling said controllable outlet valve to dispense a quantity of water therefrom;

periodically sensing the presence of water in said reservoir at a predetermined level; and

said controller controllably operating said inlet valve and said controllable outlet valve to control the flow of water through said controllable outlet valve in response to the presence and absence of water in said reservoir as detected by said water sensor.

5,647,056

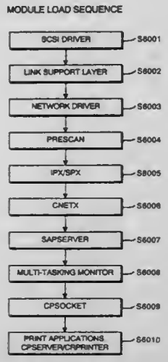
METHOD AND APPARATUS FOR MANAGING ACCESS TO A NETWORKED PERIPHERAL

Lorraine F. Barrett, Yorba Linda; William C. Russell, Laguna Hills; Andrew J. Kraslavsky, Rancho Santa Margarita; Robert D. Wadsworth, and George A. Kalwitz, both of Costa Mesa, all of Calif., assignors to Canon Information Systems, Inc., Costa Mesa, Calif.

Filed Nov. 18, 1992, Ser. No. 978,516

Int. Cl.[6] G06F *13/12*

U.S. Cl. 395—200.1 **40 Claims**



1. A method for managing access to a peripheral over a local area network with an interactive network board connectable to the peripheral via a bi-directional peripheral interface and connectable to the local area network via a local area network interface, the method comprising the steps of:

executing an access management program, which includes a socket server program, on the interactive network board, said socket server program including process steps to monitor a proprietary socket number for network communication to the proprietary socket, as well as process steps to issue commands to change operational and configuration status of the peripheral and to issue requests for current operational and configuration status of the peripheral;

monitoring, with said socket server program, the proprietary socket number to detect network communications directed by a client to the proprietary socket;

establishing direct communication via the proprietary socket between the socket server and the client so as to receive network communications;

commanding, with said socket server program via the bi-directional interface and in response to first ones of received network communications, the peripheral to change its operational and configuration status;

commanding, with said socket server program via the bi-directional interface and in response to second ones of received network communications, the peripheral to transmit its current operational and configuration status;

monitoring, with said socket server program, the bi-directional peripheral interface to detect and store current operational and configuration status transmitted from the peripheral; and

outputting, with said socket server program, the current operational and configuration status transmitted from the peripheral onto the local area network in response to the second ones of the received network communications.

5,647,057

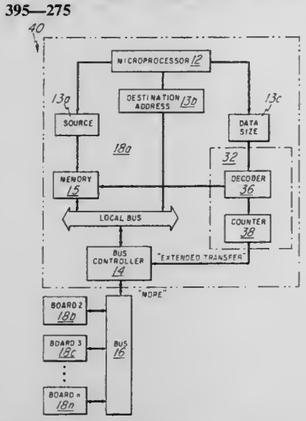
MULTIPLE BLOCK TRANSFER MECHANISM

Philip A. Roden, Plano, and Brian T. Deng, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 934,606, Aug. 24, 1992, abandoned. This application Sep. 9, 1994, Ser. No. 303,549

Int. Cl.[6] G06F *13/38*

U.S. Cl. 395—275 **6 Claims**



1. A data transfer system, comprising:

a bus, wherein the bus carries data back and forth to a plurality of circuit boards connected to the bus and conforms to a Futurebus+ architecture standard;

a microprocessor on a circuit board, the circuit board being coupled to the bus, and wherein the microprocessor outputs a source address, a destination address, and a data size to indicate the present data location, size, and desired future data location;

a programmable array logic device coupled to the microprocessor, wherein the programmable array logic device receives the data size information from the microprocessor and enables an "EXTENDED TRANSFER" signal to bus controller for block data transfer in the event the data size exceeds a predetermined amount and disables the "EXTENDED TRANSFER" signal to bus controller after completion of block data transfer and wherein the programmable logic device comprises:

a decoder coupled to outputs of the microprocessor, wherein the decoder receives data size information from the microprocessor and maps the data size to a predetermined binary value to be used in enabling and disabling the bus controller for block data transfer initiation and termination; and

a counter coupled to the decoder and to the bus, wherein the counter receives the binary value from the decoder, enables the bus controller for block data transfer, overrides the bus architecture protocol, and begins counting to the binary value, at which time, when the binary value has been reached, the counter disables the bus controller and the block data transfer is terminated; and

the bus controller, on a circuit board, connected to the bus, the bus controller being enabled by the "EXTENDED TRANSFER" signal of the programmable array logic device for block data transfer between the plurality of circuit boards asserts a "MORE" signal to the bus to transfer block data greater in size than allowed by the Futurebus+ architecture protocol standard, and disabling the "MORE" signal after the block data transfer has been completed thereby overriding the Futurebus+ architecture protocol standard of the bus and eliminating protocol overhead timing associated with multiple block transfers.

5,647,058

METHOD FOR HIGH-DIMENSIONALITY INDEXING IN A MULTI-MEDIA DATABASE

Rakesh Agrawal, San Jose; William Robinson Equitz, Palo Alto, both of Calif.; Christos Faloutsos, Silver Spring, Md.; Myron Dale Flickner, and Arun Narasimha Swami, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 66,759, May 24, 1993, abandoned. This application Feb. 28, 1996, Ser. No. 607,922

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—601 **12 Claims**

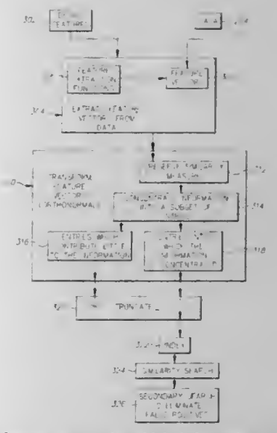
1. A method for indexing in a database of stored objects, the method comprising the steps of:

a) applying a set of feature extraction functions to extract a set of feature vectors from the stored objects in the database, the set of feature extraction functions having a similarity measure applicable to the stored objects;

b) transforming the set of extracted feature vectors using an orthonormal transform such that the similarity measure ispreserved, and such that the information of the set of extracted feature vectors is segregated into (i) a subset of the transformed feature vectors in which information of the set of extracted feature vectors is concentrated, and (ii) entries which contribute little to the information of the transformed vectors;

c) truncating the transformed feature vectors such that the entries which contribute little to the information of the transformed vectors are removed; and

d) indexing the truncated feature vectors using a non-sequential point-access-method (PAM).



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DESIGN

GRANTED July 8, 1997

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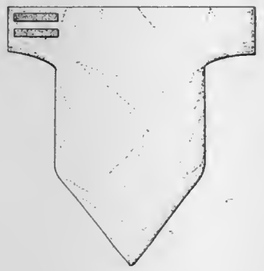
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D008–382	D380,585

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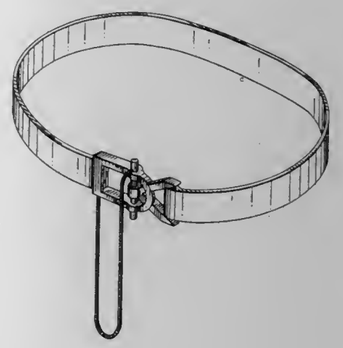
380,585
CORD RETAINER
Brian Olson, 1201 Enterprise #518, League City, Tex. 77573
Filed Oct. 11, 1995, Ser. No. 45,156
Term of patent 14 years
LOC (6) Cl. 08 - *08*
U.S. Cl. D8—382



380,586
ASCOT
Rember O. Burthey, III, 10418 Mountain Quail Rd., Silver Spring, Md. 20901
Filed Nov. 30, 1994, Ser. No. 31,631
Term of patent 14 years
LOC (6) Cl. 02 - *05*
U.S. Cl. D2—605



380,587
COMBINED BELT BUCKLE AND BELT
Kelly Ryan, and Alain Bao, both of New York, N.Y., assignors to The Donna Karan Beauty Company, New York, N.Y.
Division of Ser. No. 30,622, Nov. 3, 1994, Pat. No. Des. 371,525. This application Jan. 19, 1996, Ser. No. 51,321
Term of patent 14 years
LOC (6) Cl. 02 - *07*
U.S. Cl. D2—627



380,588
WAIST TRIMMER
George Chen, Tao Yuan, Taiwan, assignor to Keys Fitness Products, Inc., Dallas, Tex.
Filed Mar. 11, 1996, Ser. No. 51,447
Term of patent 14 years
LOC (6) Cl. 02 - *01*
U.S. Cl. D2—702



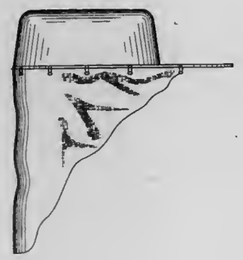
380,589
CHILD'S ONE-PIECE OUTER GARMENT
Dyan Ripple Westman, 5212 Abbott Ave. South, Minneapolis, Minn. 55410
Filed Dec. 9, 1994, Ser. No. 31,961
Term of patent 14 years
LOC (6) Cl. 02 - *01*
U.S. Cl. D2—719



380,590
BAG-LIKE GARMENT
Richard W. St. Laurent, 85 Constitution La., Danvers, Mass. 01923
Filed Feb. 24, 1995, Ser. No. 35,340
Term of patent 14 years
LOC (6) Cl. 02 - *02*
U.S. Cl. D2—743



380,591
PROTECTIVE HEAD GEAR
Leroy F. Kessel, Box 821, Belfield, N. Dak. 58622, and Alan Kessel, P.O. Box 1423, Washington Grove, Md. 20880-1423
Filed Feb. 13, 1995, Ser. No. 34,766
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—866



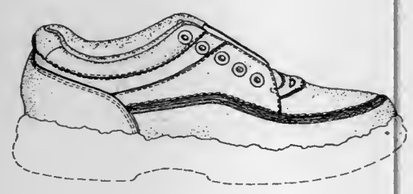
380,592
BOOT
Glenn Whittington, P.O. Box 70, Interlachen, Fla. 32148
Filed May 28, 1996, Ser. No. 55,018
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—910



380,593
FOOTWEAR
Richard Lauzon, 350, route 220, Bonsecours (Québec), Canada
Filed Dec. 1, 1994, Ser. No. 31,917
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—920



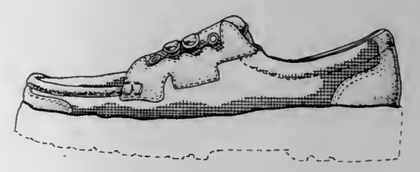
380,594
SHOE UPPER
Peter von Conta, Newton, Mass., assignor to The Rockport Company, Inc., Marlboro, Mass.
Filed Mar. 11, 1996, Ser. No. 51,474
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—969



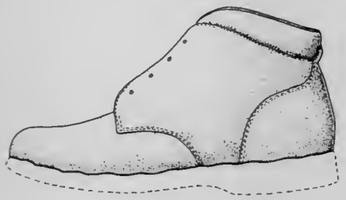
380,595
SHOE UPPER
Diana M. S. Puris, Westford, Mass., assignor to The Rockport Company, Inc., Marlboro, Mass.
Filed Mar. 27, 1996, Ser. No. 52,288
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—969



380,596
SHOE UPPER
Mike Brooks, Nelsonville; Edgar H. Simpson; Theodore A. Kastner, both of Lancaster, and Diana A. Wurfbain, Athens, all of Ohio, assignors to Rocky Shoes & Boots, Inc., Nelsonville, Ohio
Filed May 21, 1996, Ser. No. 54,741
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—969



380,597
SHOE UPPER
Mike Brooks, Nelsonville; Edgar H. Simpson; Theodore A. Kastner, both of Lancaster, and Diana A. Wurfbain, Athens, all of Ohio, assignors to Rocky Shoes & Boots, Inc., Nelsonville, Ohio
Filed May 21, 1996, Ser. No. 54,740
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—970



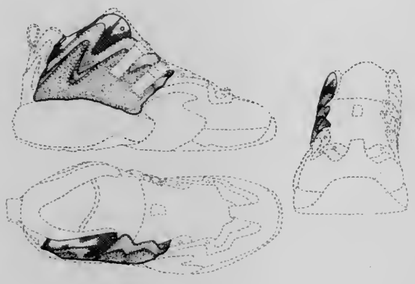
380,598
SHOE UPPER
Mike Brooks, Nelsonville; Edgar H. Simpson; Theodore A. Kastner, both of Lancaster, and Diana A. Wurfbain, Athens, all of Ohio, assignors to Rocky Shoes & Boots, Inc., Nelsonville, Ohio
Filed May 21, 1996, Ser. No. 54,742
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—970



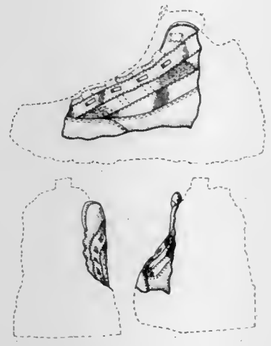
380,599
SHOE UPPER
Mike Brooks, Nelsonville; Edgar H. Simpson; Theodore A. Kastner, both of Lancaster, and Diana A. Wurfbain, Athens, all of Ohio, assignors to Rocky Shoes & Boots, Inc., Nelsonville, Ohio
Filed May 21, 1996, Ser. No. 54,748
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—970



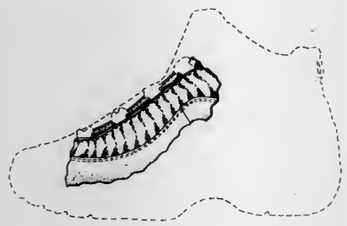
380,600
SIDE ELEMENT OF A SHOE UPPER
Aaron Alexander Cooper, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed May 31, 1996, Ser. No. 55,182
Term of patent 14 years
LOC (6) Cl. 02 - *99*
U.S. Cl. D2—972



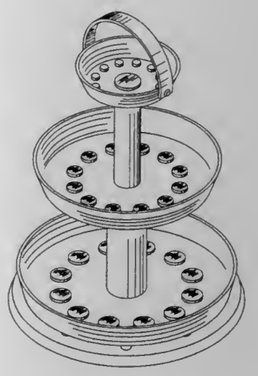
380,601
SIDE ELEMENT OF A SHOE UPPER
Marni L. Gerber, West Linn, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed May 31, 1996, Ser. No. 55,184
Term of patent 14 years
LOC (6) Cl. 02 - *99*
U.S. Cl. D2—972



380,602
ELEMENT OF A SHOE UPPER
Sergio G. Lozano, Beaverton, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Jun. 5, 1996, Ser. No. 55,450
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—972



380,603
CONTAINER FOR SEWING ACCESSORIES
George Shackelford, 24520 A Windsor Dr., Valencia, Calif. 91355
Filed May 9, 1994, Ser. No. 22,861
Term of patent 14 years
LOC (6) Cl. 03 - *99*
U.S. Cl. D3—25



380,604
BODY WORN CONTAINER
James E. Mobley, Medford, Oreg., assignor to Century Products, Inc., Medford, Oreg.
Filed Jan. 11, 1996, Ser. No. 48,664
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—215



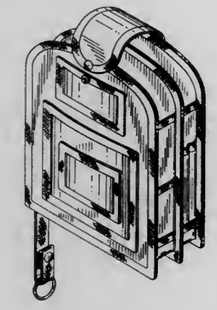
380,605
BEEPER PURSE
Elizabeth Ramos, and Hector R. Aguirre, both of 7004 Franklin Ave., Los Angeles, Calif. 90028
Filed Nov. 17, 1995, Ser. No. 46,523
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—218



380,606
BIFOLD NECK WALLET
Juliet Chen, 2235 E. 7th St., Los Angeles, Calif. 90035
Filed Dec. 21, 1995, Ser. No. 48,134
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—226



380,607
COMPARTMENTALIZED CONTAINER FOR HANDBAGS
Lesley Leben, New York, N.Y., assignor to Lesley Anne Designs, Inc., New York, N.Y.
Filed Aug. 3, 1995, Ser. No. 42,197
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—243



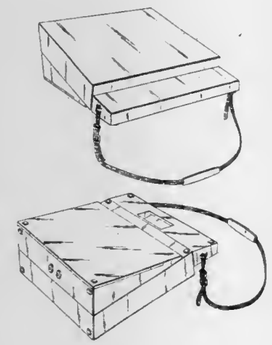
380,608
BINGO TOTE BAG
Celeste Marie Gardner, 29 Madera Rd., Debary, Fla. 32713
Filed Nov. 16, 1995, Ser. No. 46,492
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—244



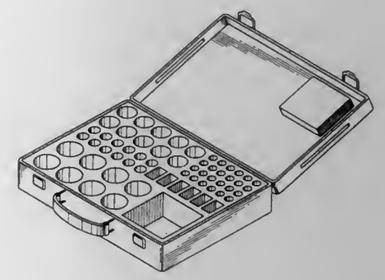
380,609
PURSE
Katherine Formby, New York, N.Y., assignor to Sara Lee Corporation, Winston-Salem, N.C.
Filed Feb. 20, 1996, Ser. No. 50,450
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—244



380,610
SECURITY CASE FOR PORTABLE COMPUTER
Daniel W. Corrales, P.O. Box 3765, Torrance, Calif. 90510
Filed Oct. 4, 1995, Ser. No. 44,949
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—276



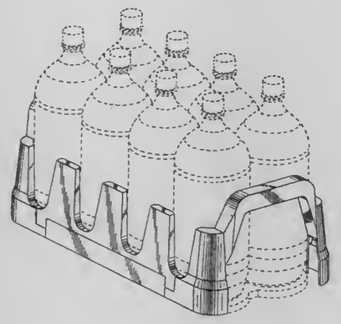
380,611
BATTERY HOLDER
Diane S. Mancusi, 226 Corona Ave., Staten Island, N.Y. 10306
Filed Mar. 4, 1996, Ser. No. 51,120
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—284



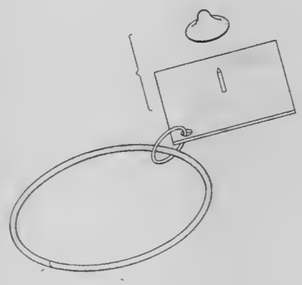
380,612
COMPUTER CARRYING CASE
Sarah Kelley, San Francisco, Calif., and Claire Cross, Boulder, Colo., assignors to Kensington Microware Limited, San Mateo, Calif.
Filed Mar. 20, 1995, Ser. No. 36,458
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—289



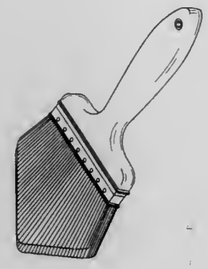
380,613
WALL STRUCTURE FOR A NESTABLE CRATE
William P. Apps, Anaheim, Calif., and Gerald R. Koefelda, Atlanta, Ga., assignors to Rehrig Pacific Company, Inc., Los Angeles, Calif.
Continuation-in-part of Ser. No. 18,317, Feb. 3, 1994, Pat. No. Des. 361,431. This application Apr. 18, 1995, Ser. No. 37,635
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—307



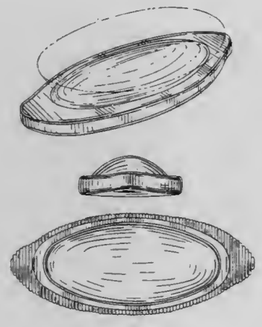
380,614
CLASP FOR SHOULDER STRAP
Marlene Faye Wright, 2015-47 Street SE, Calgary, Alberta, Canada
Filed Dec. 26, 1995, Ser. No. 48,313
Term of patent 14 years
LOC (6) Cl. 03 - *99*
U.S. Cl. D3—327



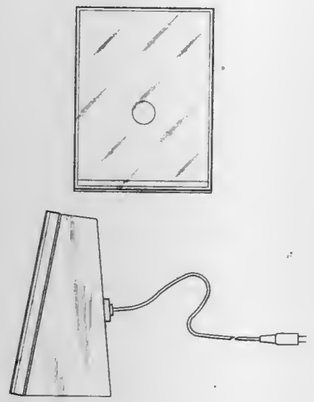
380,615
PAINTBRUSH
David J. Roberts, 47 Marlorville Rd., Wappigers Falls, N.Y. 12590
Filed Feb. 24, 1995, Ser. No. 35,324
Term of patent 14 years
LOC (6) Cl. 04 - *04*
U.S. Cl. D4—135



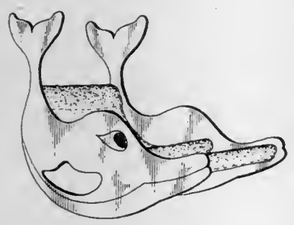
380,616
OVAL PALM BRUSH HANDLE
Stuart M. Leslie, Brooklyn; Agostinho Martins, Jr., Astoria, and Guy A. Williams, New York, all of N.Y., assignors to Goody Products, Inc., Peach Tree City, Ga.
Filed Apr. 1, 1996, Ser. No. 52,505
Term of patent 14 years
LOC (6) Cl. 04 - *02*
U.S. Cl. D4—138



380,617
ILLUMINATED PHOTO DISPLAY
Greg Long, 1116A NW. Sugar Valley, Sugar Valley, Ga. 30746
Filed Sep. 5, 1995, Ser. No. 43,462
Term of patent 14 years
LOC (6) Cl. 06 - *07*
U.S. Cl. D6—308



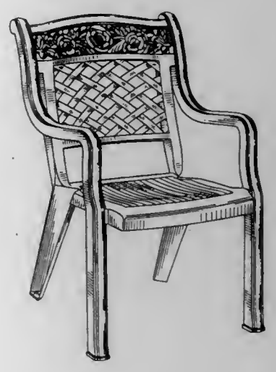
380,618
CHILD'S ROCKING CHAIR
Matthew O'Dwyer Collins, P.O. Box 93, Road Town, Tortola, Virgin Islands (Br.)
Filed Mar. 15, 1996, Ser. No. 51,708
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—345



380,619
PORTABLE BICYLE PADDED SEAT COVER
Gloria A. McCoy, 10160 B King Arthur Dr., Indianapolis, Ind. 46229
Filed Mar. 28, 1996, Ser. No. 52,345
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—354



380,620
CHAIR
Leo P. Niemiec, Northfield, Ill., assignor to Lawnware Products, Inc., Morton Grove, Ill.
Filed Oct. 30, 1995, Ser. No. 46,819
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—358

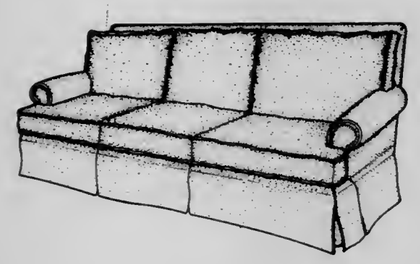


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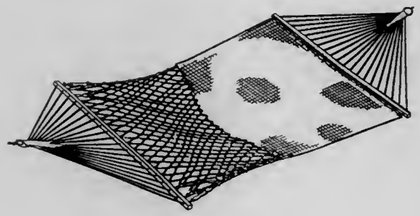
380,621
CHILD'S SEAT-O-SAURUS -REX DINOSAUR CHAIR
Matthew J. Denten, 1342 S. Country Glen Way, Anaheim Hills, Calif. 92808
Filed Mar. 19, 1996, Ser. No. 51,829
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—359



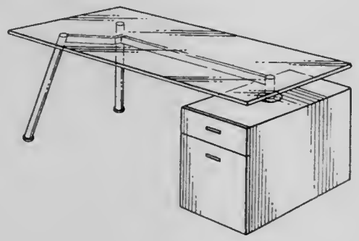
380,622
SOFA
David Paul Chandler, Jamestown, N.C., assignor to Henredon Furniture Industries, Inc., Morganton, N.C.
Filed Jan. 22, 1996, Ser. No. 49,294
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—381



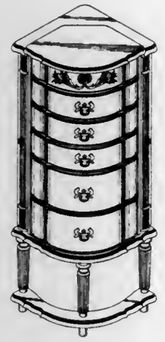
380,623
BED FOR A HAMMOCK
Richard L. McCain, Mequon, Wis., assignor to Gleason Corporation, Milwaukee, Wis.
Filed Nov. 1, 1994, Ser. No. 30,517
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—387



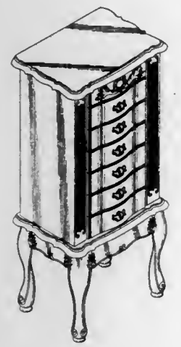
380,624
DESK
Wolfgang C. R. Mezger, Eislingen, Germany, assignor to Wilhelm Renz GmbH & Co., Germany
Division of Ser. No. 36,675, Mar. 24, 1995. This application May 6, 1996, Ser. No. 54,035
Claims priority, application Germany, Sep. 28, 1994, M9407813.0
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—422



380,625
JEWELRY CASE
Don-Fong Yeh, Taipei, Taiwan, assignor to Pan-Ocean Forest Development Co., Ltd., Taipei, Taiwan
Filed Apr. 25, 1996, Ser. No. 53,567
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—441



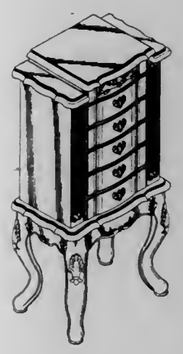
380,626
JEWELRY CASE
Don-Fong Yeh, Taipei, Taiwan, assignor to Pan-Ocean Forest Development Co., Ltd., Taipei, Taiwan
Filed Apr. 25, 1996, Ser. No. 53,556
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—445



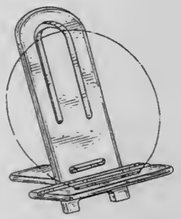
380,627
JEWELRY CASE
Don-Fong Yeh, Taipei, Taiwan, assignor to Pan-Ocean Forest Development Co., Ltd., Taipei, Taiwan
Filed Apr. 25, 1996, Ser. No. 53,566
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—445



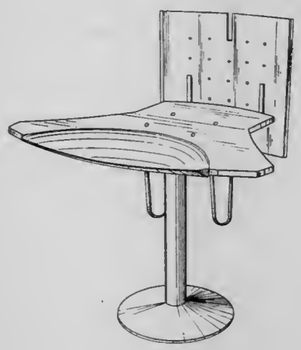
380,628
JEWELRY CASE
Don-Fong Yeh, Taipei, Taiwan, assignor to Pan-Ocean Forest Development Co., Ltd., Taipei, Taiwan
Filed Apr. 25, 1996, Ser. No. 53,574
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—445



380,629
STAND FOR EXHIBITING ARTICLES
Kunihiko Shinno, Okayama, Japan, assignor to Chugoku Gazai Kabushiki Kaisha, Okayama, Japan
Filed Feb. 22, 1995, Ser. No. 35,212
Term of patent 14 years
LOC (6) Cl. 20 - *02*
U.S. Cl. D6—449



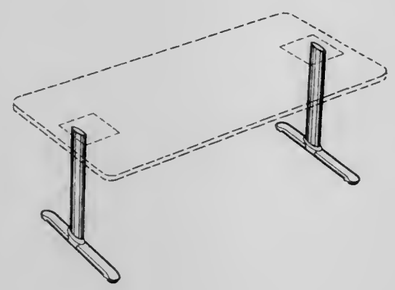
380,630
COMPUTER TABLE
Fernando Gutierrez Ahrensburg, Tabasco No. 88, Colonia Roma, 06700, Mexico City, Mexico
Filed Jun. 10, 1995, Ser. No. 41,225
Term of patent 14 years
LOC (6) Cl. 06 - *03*
U.S. Cl. D6—486



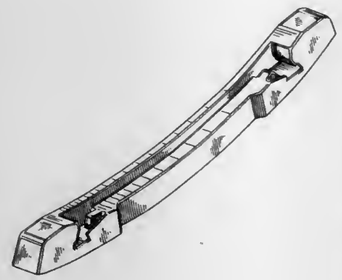
380,631
FURNITURE TRIM
William A. James, Newport Beach, Calif., assignor to Universal Furniture Industries, Inc., High Point, N.C.
Filed Apr. 4, 1995, Ser. No. 37,103
Term of patent 14 years
LOC (6) Cl. 06 - *06*
U.S. Cl. D6—491



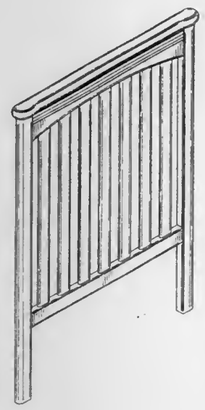
380,632
PAIR OF LEGS FOR A TABLE
William F. Schacht, Grand Rapids, Mich., assignor to Haworth, Inc., Holland, Mich.
Filed Jun. 9, 1995, Ser. No. 40,112
Term of patent 14 years
LOC (6) Cl. 06 - *06*
U.S. Cl. D6—495



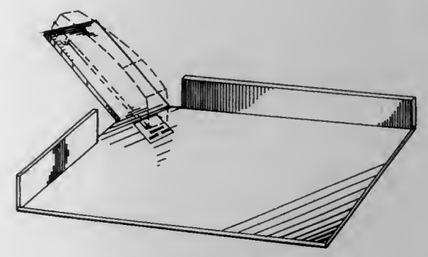
380,633
ROCKER ATTACHMENT
Donald Shaw, 170 Commander Blvd., Agincourt, Ontario, Canada
Filed Mar. 14, 1996, Ser. No. 51,585
Term of patent 14 years
LOC (6) Cl. 06 - *06*
U.S. Cl. D6—495



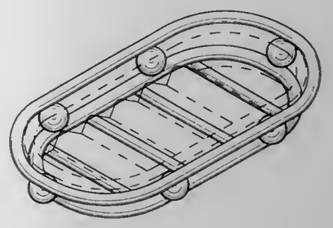
380,634
CRIB ENDBOARD
Merlin A. Brunner, Appleton, and Harvey J. Draheim, Weyauwega, both of Wis., assignors to Simmons Juvenile Products Company, Inc., New London, Wis.
Filed May 17, 1996, Ser. No. 54,604
Term of patent 14 years
LOC (6) Cl. 06 - *06*
U.S. Cl. D6—508



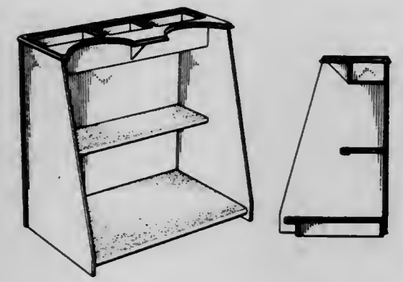
380,635
STAPLING TABLE
Gregory R. Brotz, P.O. Box 1322, Sheboygan, Wis. 53081
Filed Jun. 14, 1995, Ser. No. 40,292
Term of patent 14 years
LOC (6) Cl. 06 - *03*
U.S. Cl. D6—511



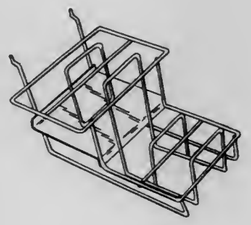
380,636
SOAP DISH
Sheldon H. Goodman, 30905 Stratford, Solon, Ohio 44139, and Harold A. Goodman, Orange Village, Ohio, assignors to Sheldon H. Goodman, Solon, Ohio
Filed Mar. 6, 1996, Ser. No. 51,243
Term of patent 14 years
LOC (6) Cl. 07 - *07*
U.S. Cl. D6—536



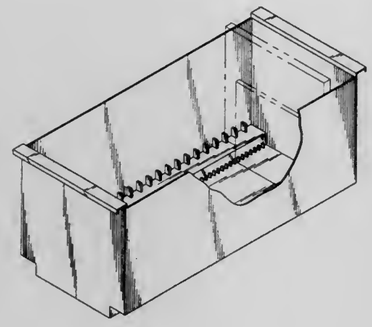
380,637
ORGANIZER FOR GOLF EQUIPMENT
Edward W. Funk, 6364 Breckenridge Run, Rex, Ga. 30281
Filed Feb. 15, 1996, Ser. No. 50,348
Term of patent 14 years
LOC (6) Cl. 08 - *08*
U.S. Cl. D6—552



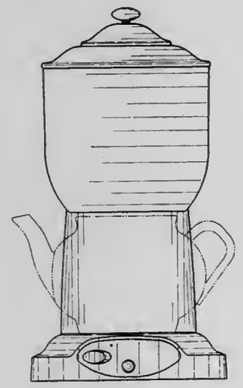
380,638
DISPLAY RACK FOR BURNER DRIP PANS, BURNER TRIM RINGS AND THE LIKE
Milton L. Cohen, Hewlett Bay Park, and Jeff Siegel, Great Neck, both of N.Y., assignors to Lifetime Hoan Corporation, Westbury, N.Y.
Filed Aug. 21, 1995, Ser. No. 42,935
Term of patent 14 years
LOC (6) Cl. 07 - *02*
U.S. Cl. D6—566



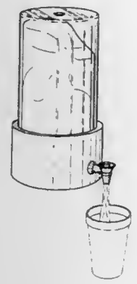
380,639
MEDIA BIN
Peter M. Tisbo, Barrington, Ill., assignor to Custom Plastics, Inc., Elk Grove Village, Ill.
Filed Mar. 11, 1996, Ser. No. 51,481
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—629



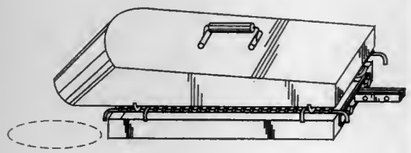
380,640
TEA BREWING DEVICE
Spencer L. Mackay, Agoura Hills, Calif., assignor to Healthometer, Inc., Bedford Heights, Ohio
Filed Apr. 28, 1995, Ser. No. 38,112
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—310



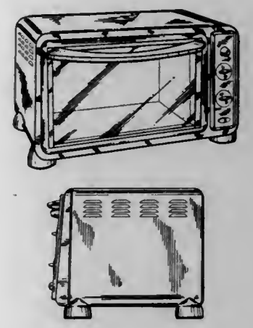
380,641
BEVERAGE DISPENSER
Johnny Randle, 11330 Amanda La., Dallas, Tex. 75238
Filed Apr. 3, 1996, Ser. No. 52,538
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—313



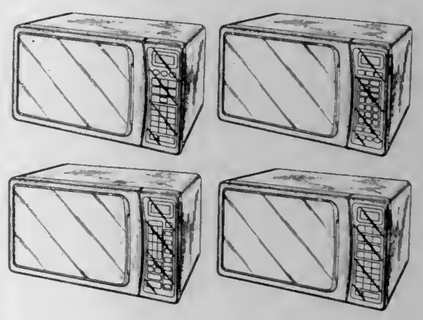
380,642
COOKING GRILL
Mircea Dorel Negru, #414-550 Cottonwood Avenue, Coquitlam, BC, Canada
Filed Sep. 19, 1994, Ser. No. 28,655
Term of patent 14 years
LOC (6) Cl. 07 - *02*
U.S. Cl. D7—323



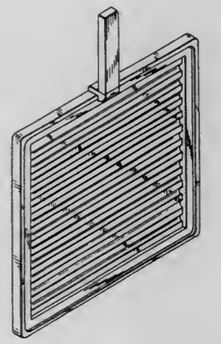
380,643
ELECTRIC OVEN
Philippe Piret, Ifs, France, assignor to Moulinex S.A., Paris, France
Filed May 1, 1996, Ser. No. 53,860
Claims priority, application France, Nov. 3, 1995, 95/6020
Term of patent 14 years
LOC (6) Cl. 07 - *02*
U.S. Cl. D7—350



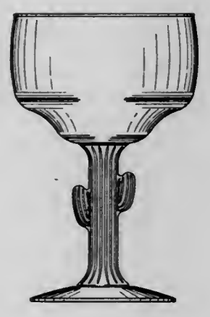
380,644
MICROWAVE OVEN
Yukihiro Tsuda; Akio Mikami; Hisayoshi Matoba, and Norikazu Ozaki, all of Nara, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed May 10, 1996, Ser. No. 54,247
Claims priority, application Japan, Nov. 17, 1995, 7-34878
Term of patent 14 years
LOC (6) Cl. 01 - *02*
U.S. Cl. D7—351



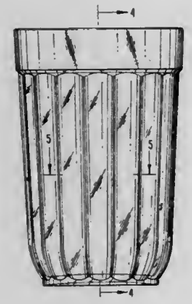
380,645
GRIDDLE
Nazareno Perlini, 1130 S. Hwy. 17-92, Longwood, Fla. 32750
Filed Nov. 7, 1995, Ser. No. 46,114
Term of patent 14 years
LOC (6) Cl. 07 - *02*
U.S. Cl. D7—359



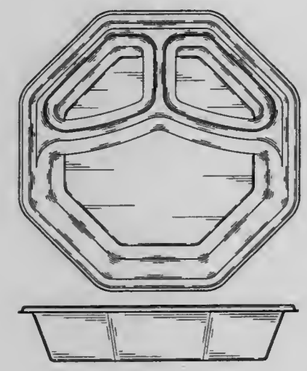
380,646
GOBLET
Lorelei K. Wilson, Toledo, Ohio, assignor to Libbey Glass Inc., Toledo, Ohio
Filed Jul. 28, 1995, Ser. No. 41,991
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—527



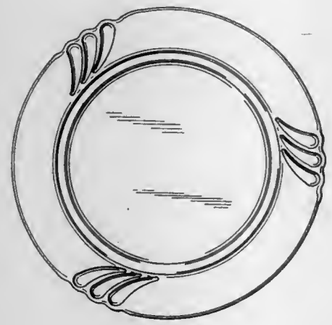
380,647
GLASS
Jean-Jacques Durand, Arques, France, assignor to Verrerie Cristallerie D'Arques, J.G. Durand Et Cie, Arques, France
Filed Oct. 10, 1995, Ser. No. 45,092
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—531



380,648
FOOD DISH
Edward W. Rider, Jr., Slate Hill, N.Y., and Glenn Josef White, Louisville, Ky., assignors to Genpak Corporation, Glens Falls, N.Y.
Filed May 17, 1996, Ser. No. 54,616
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—555



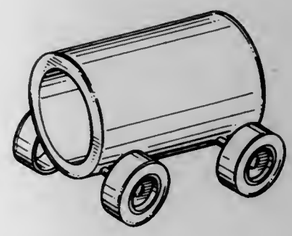
380,649
PLATE
William H. Grannis, Jericho, N.Y., assignor to THC Systems, Inc., Melville, N.Y.
Filed May 14, 1996, Ser. No. 54,394
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—585



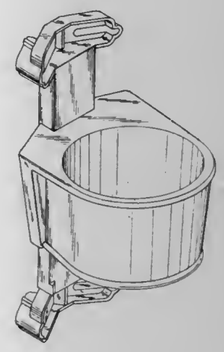
380,650
CARRIER FOR SUPPORTING A LARGE DRINK CUP IN AN AUTOMOTIVE CUP HOLDER
Daniel A. Norris, 608 Old Towne La., Alabaster, Ala. 35077
Filed Mar. 6, 1996, Ser. No. 51,350
Term of patent 14 years
LOC (6) Cl. 07 - *06*
U.S. Cl. D7—619



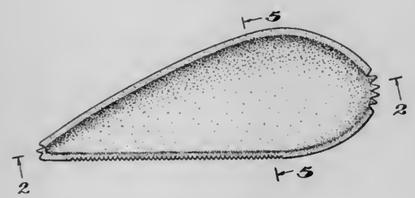
380,651
BEVERAGE CAN HOLDER
Frederick F. Herrera, 9414 Brenham Ct., Houston, Tex. 77064-7430
Filed Mar. 18, 1996, Ser. No. 51,795
Term of patent 14 years
LOC (6) Cl. 07 - *06*
U.S. Cl. D7—619



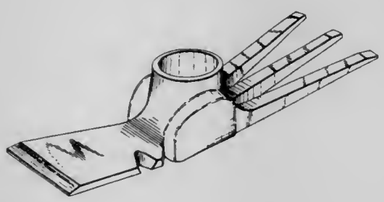
380,652
CUPHOLDER AND SUPPORT FOR ATTACHMENT TO FURNITURE
John Ayotte, Eagan, and Peter W. A. Bergin, Hopkins, both of Minn., assignors to MTS Northwest Sound, Inc., Minneapolis, Minn.
Division of Ser. No. 26,729, Aug. 4, 1994, Pat. No. Des. 367,997, which is a continuation-in-part of Ser. No. 55,318, Feb. 26, 1993, abandoned. This application Dec. 29, 1995, Ser. No. 48,490
Term of patent 14 years
U.S. Cl. D7—620



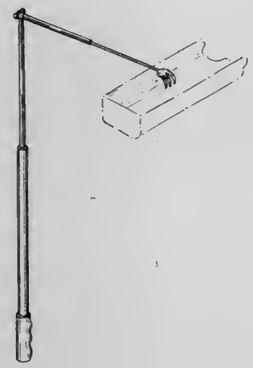
380,653
COMBINED CUTTER AND SCOOP FOR FRUIT AND VEGETABLES
Lance C. Ayon, 14900 San Jose St., Mission Hills, Calif. 91345
Filed Mar. 28, 1996, Ser. No. 52,348
Term of patent 14 years
LOC (6) Cl. 07 - *06*
U.S. Cl. D7—696



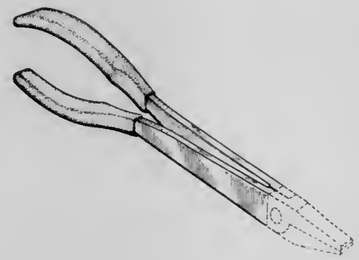
380,654
COMBINATION CULTIVATING AND TRENCHING TOOL HEAD
John Chen, No. 14, Alley 6, Lane 17, Sec. 3, Chung Yang Rd., Lung Ching Hsiang, Taichung Hsien, Taiwan
Filed May 1, 1996, Ser. No. 53,859
Term of patent 14 years
LOC (6) Cl. 08 - *01*
U.S. Cl. D8—11



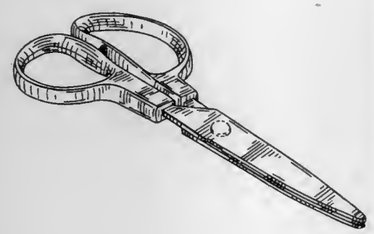
380,655
ADJUSTABLE, ARTICULATED GUTTER RAKE
Beverly Dillon, 10632 Two Mile Rd., Evart, Mich. 49631
Filed May 9, 1996, Ser. No. 54,338
Term of patent 14 years
LOC (6) Cl. 08 - *01*
U.S. Cl. D8—13



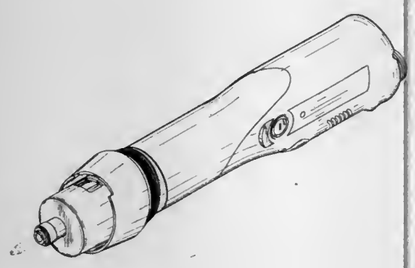
380,656
HANDLE ASSEMBLY FOR HAND TOOL
Daniel M. Eggert, Kenosha, and Christopher D. Thompson, Milwaukee, both of Wis., assignors to Snap-on Technologies, Inc., Crystal Lake, Ill.
Filed Oct. 19, 1995, Ser. No. 45,435
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—52



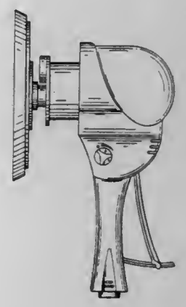
380,657
SCISSORS
Robert W. Cornell, Schofield, Wis., assignor to Fiskars Inc., Madison, Wis.
Filed Nov. 27, 1995, Ser. No. 47,040
Term of patent 14 years
LOC (6) Cl. 08 - *03*
U.S. Cl. D8—57



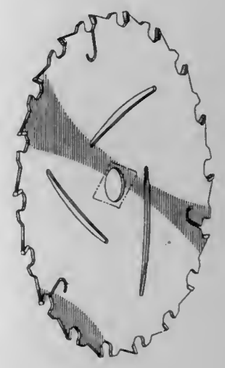
380,658
SCREWDRIVER POWER TOOL
Robert H. Bruno, Avon, Conn.; Mutsuo Ujiie, Chiba, Japan, and Mont L. Wilkes, Taylor, Tex., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.
Filed Apr. 17, 1995, Ser. No. 37,587
Term of patent 14 years
LOC (6) Cl. 08 - *01*
U.S. Cl. D8—61



380,659
SANDER
Eric Sung, Taiwan, Taiwan, assignor to K.K. U. Limited, Tokyo, Japan
Filed Mar. 27, 1996, Ser. No. 52,263
Term of patent 14 years
LOC (6) Cl. 08 - *01*
U.S. Cl. D8—62



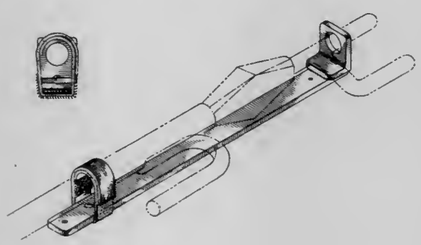
380,660
SAW BLADE
Ved P. Gakhar; Donald C. Pennington, Jr.; David H. Byrley; Alexander Grishin; Richard A. Dossett, and Manfred W. Schmidt, all of Louisville, Ky., assignors to Credo Tool Company, Woodburn, Oreg.
Filed Mar. 29, 1995, Ser. No. 36,994
Term of patent 14 years
LOC (6) Cl. 08 - *03*
U.S. Cl. D8—70



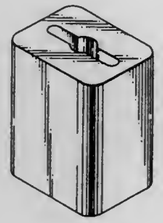
380,661
COMBINATION PUTTY KNIFE AND SCREWDRIVER
James Lehmann, Colebrook, Conn., assignor to ICC Corporation, Torrington, Conn.
Filed Jun. 24, 1994, Ser. No. 24,990
Term of patent 14 years
LOC (6) Cl. 08 - *04*
U.S. Cl. D8—87



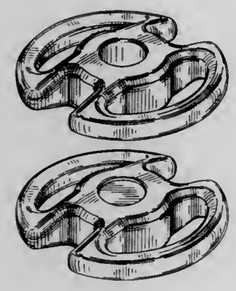
380,662
HOLDER FOR AN AUTOMOBILE ANTI-THEFT DEVICE
Robert Sage, 2105 N. Frederic St., Burbank, Calif. 91504
Filed Apr. 4, 1996, Ser. No. 52,756
Term of patent 14 years
LOC (6) Cl. 08 - *07*
U.S. Cl. D8—343



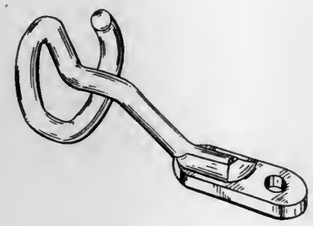
380,663
SPACER
Toshinobu Nakamura, Tokyo, Japan, assignor to Shinagawa Shoko Co., Ltd., Tokyo, Japan
Filed Nov. 7, 1995, Ser. No. 46,138
Claims priority, application Japan, May 23, 1995, 7-14225
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—354



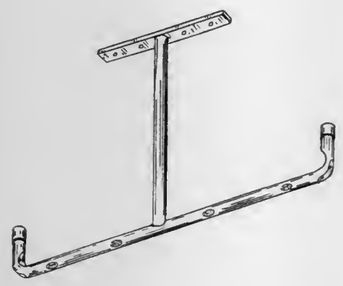
380,664
BUOYANT SUPPORT
Jon David Currier, and Kenton Sterling Jopling, both of Tulsa, Okla., assignors to Lowrance Electronics, Inc., Tulsa, Okla.
Filed Apr. 18, 1996, Ser. No. 53,258
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—356



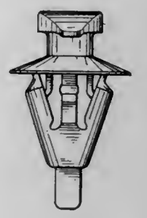
380,665
SAFETY HOOK
Svein Berg, Isfjorden, and Fred Husøy, Andalsnes, both of Norway, assignors to S.B. Produksjon AS, Isfjorden, and AAK AS, Andalsnes, both of Norway
Filed Apr. 16, 1996, Ser. No. 53,099
Claims priority, application Norway, Oct. 18, 1995, D950791
Term of patent 14 years
LOC (6) Cl. 08 - *08*
U.S. Cl. D8—367



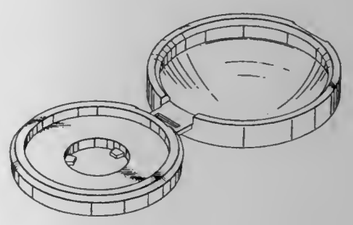
380,666
OVERHEAD STORAGE HOOK
Steven J. Sheftel, Marstons Mills, Mass., assignor to American Manufacturing Company, Inc., Allentown, Pa.
Filed Mar. 25, 1996, Ser. No. 52,165
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—372



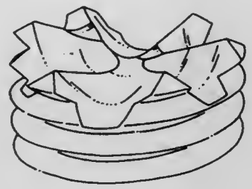
380,667
CLIP FOR ATTACHING A MATERIAL TO A PANEL
Yoshihiko Kanamori, Toyota, and Hideya Miura, Toyoake, both of Japan, assignors to Nifco Inc., Yokohama, Japan
Filed Sep. 8, 1995, Ser. No. 43,655
Term of patent 14 years
LOC (6) Cl. 08 - *08*
U.S. Cl. D8—382



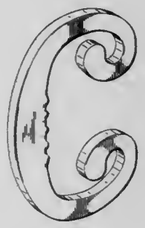
380,668
SCREW COVER
Toshinobu Nakamura, Tokyo, Japan, assignor to Shinagawa Shoko Co., Ltd., Tokyo, Japan
Filed Nov. 8, 1995, Ser. No. 46,175
Term of patent 14 years
LOC (6) Cl. 08 - *08*
U.S. Cl. D8—387



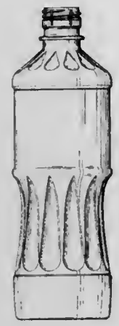
380,669
ADJUSTING SCREW FOR STRING INSTRUMENTS
Hans Dahlin, Ingels väg 145, Falun, Sweden
Filed Dec. 14, 1995, Ser. No. 47,906
Claims priority, application Sweden, Jun. 20, 1995, 95-1263
Term of patent 14 years
LOC (6) Cl. 08 - *08*
U.S. Cl. D8—387



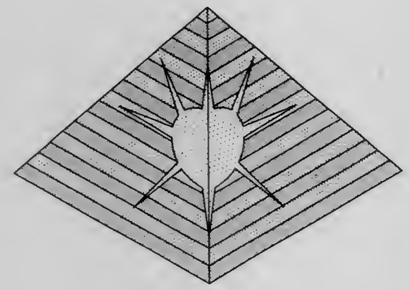
380,670
GROCERY BAG CARRIER
James S. Blocker, 443 East Division, Cadillac, Mich. 49601
Filed Sep. 8, 1995, Ser. No. 43,646
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—434



380,671
BOTTLE
William C. Young, Superior Township, Washtenaw County, Mich., assignor to Plastipak Packaging, Inc., Plymouth, Mich.
Filed Mar. 22, 1996, Ser. No. 52,091
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—538



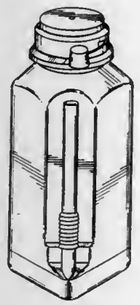
380,672
BOTTLE
Steven M. Rowe, 9030 W. Sahara Ave., Ste. 888, Las Vegas, Nev. 89117
Filed Jan. 16, 1996, Ser. No. 48,910
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—331



380,673
ROSE-SHAPED JEWELRY CASE
Siri Siripreedabhakd; Somboon Siripreedapuk, both of 16 Soi Chokchai Ruammitr 18, Vibhavadi Rungsit Road, Samsennok, Huaykwang, Bangkok 10310 THX, and Mayuree Vacharapong, 234 Moo 3, Soi Chokchai Ruammitr 18, Vibhavadi Rungsit Road Samsennok Huaykwang, Bangkok 10310 THX
Filed Mar. 31, 1994, Ser. No. 20,699
The portion of the term of this patent subsequent to May 27, 2011, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 09 - *99*
U.S. Cl. D9—336



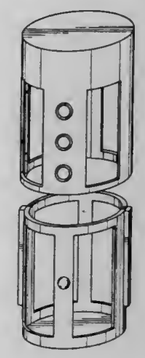
380,674
BOTTLE WITH AN INTEGRAL STRAW
Willem J. Smith, 132 Constantia Street, Welkom, South Africa
Division of Ser. No. 300,534, Sep. 6, 1994. This application Apr. 14, 1995, Ser. No. 37,506
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—337



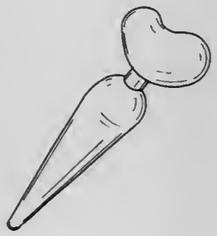
380,675
PACKAGE OF DISPOSABLE PROTECTIVE COVERINGS
Pierre Daniei, 10, rue de la Friche, F-27000 Evreux, France
Filed Dec. 14, 1995, Ser. No. 47,890
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—432



380,676
SECURITY HOUSING FOR CONTAINERS
Douglas Holland, 6551 Petit Ave., Van Nuys, Calif. 91406
Filed Mar. 22, 1996, Ser. No. 52,069
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—434



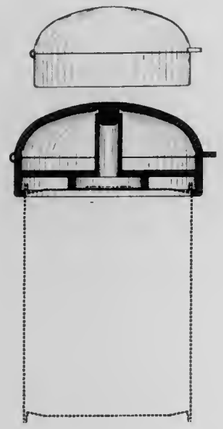
380,677
STOPPER
Carsten Joergensen, Kriens, Switzerland, assignor to PI-Design AG, Triengen, Switzerland
Filed Mar. 21, 1996, Ser. No. 52,034
Claims priority, application Germany, Sep. 22, 1995, 894/95
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—439



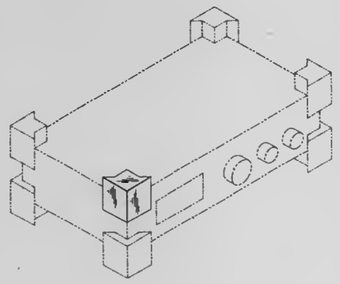
380,678
POURING SPOUT ATTACHMENT FOR A PAINT CAN
Eric Borgstede, and Robert Love, both of 1580 Harbor Dr., Apt. 318, Slidell, La. 70458
Filed Apr. 5, 1996, Ser. No. 52,549
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—440



380,679
BEVERAGE CAN LID
Bernadette M. Schreiber, 3460 53rd Ave. #3, Columbus, Nebr. 68601
Filed Jul. 17, 1995, Ser. No. 41,509
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—447



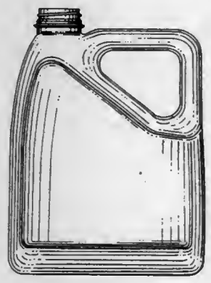
380,680
PROTECTIVE DEVICE FOR PACKED GOODS
Moon-Soo Sun, 110-904, Lucky Apartment, Yeoksam-dong, Kangnam-ku, Seoul, Rep. of Korea
Filed Dec. 28, 1994, Ser. No. 32,780
Term of patent 14 years
LOC (6) Cl. 09 - *99*
U.S. Cl. D9—456



380,681
BOTTLE
Eric I. De Souza, Etobicoke; Ronald M. Grunig, Bolton, both of Canada, and Hemang D. Mehta, Lake Bluff, Ill., assignors to Monarch Plastics Inc., Kenosha, Wis.
Filed Jun. 7, 1996, Ser. No. 55,554
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—523



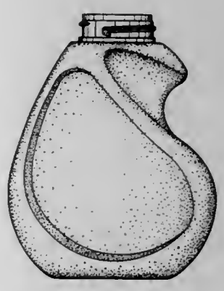
380,682
PLASTIC CONTAINER
Gerald R. Robinson, Perrysburg, Ohio, assignor to Owens-Brockway Plastic Products Inc., Toledo, Ohio
Filed Sep. 29, 1995, Ser. No. 44,788
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—528



380,683
BOTTLE
Robert B. Rothschild, III, 3143 E. Rte. 36, Urbana, Ohio 43078
Filed Jan. 17, 1996, Ser. No. 49,005
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—535



380,684
BOTTLE
Laurent Del Bianco, Deuil La Barre, France, assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Aug. 11, 1995, Ser. No. 42,565
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—543



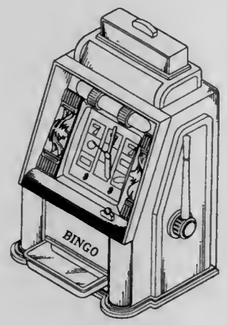
380,685
UPPER PORTION OF A BOTTLE
Richard J. Steih, Britton, Mich., assignor to Hoover Universal, Inc., Plymouth, Mich.
Filed Mar. 7, 1996, Ser. No. 51,271
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—549



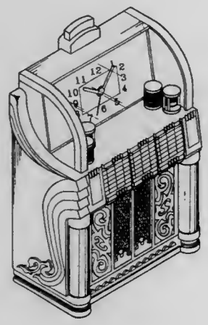
380,686
CONTAINER
Michael Ernest Allen, Elden, England, assignor to Castrol Limited, Swindon, England
Filed Jun. 14, 1994, Ser. No. 24,406
Claims priority, application United Kingdom, Dec. 15, 1993, 2035840
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—575



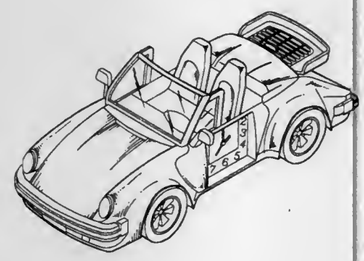
380,687
CLOCK
Hsi-Pin Hsu, No. 30, San Ning St., Sanchung City, Taipei Hsien, Taiwan
Filed Mar. 18, 1996, Ser. No. 51,775
Term of patent 14 years
LOC (6) Cl. 10 - *01*
U.S. Cl. D10—6



380,688
CLOCK
Hsi-Pin Hsu, No. 30, San Ning St., Sanchung City, Taipei Hsien, Taiwan
Filed Apr. 1, 1996, Ser. No. 52,606
Term of patent 14 years
LOC (6) Cl. 10 - *01*
U.S. Cl. D10—6



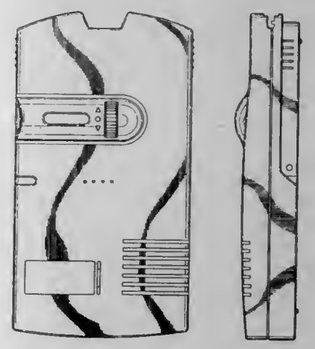
380,689
CLOCK
Hsi-Pin Hsu, No. 30, San Ning St., Sanchung City, Taipei Hsien, Taiwan
Filed Mar. 18, 1996, Ser. No. 51,752
Term of patent 14 years
LOC (6) Cl. 10 - *01*
U.S. Cl. D10—12



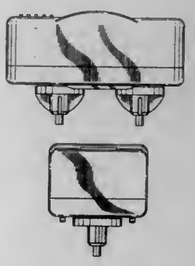
380,690
CASE FOR A WATCH
Judith Reichel Riley, Goshen, Conn., assignor to Timex Corporation, Middlebury, Conn.
Filed Mar. 26, 1996, Ser. No. 52,236
Term of patent 14 years
LOC (6) Cl. 10 - *02*
U.S. Cl. D10—30



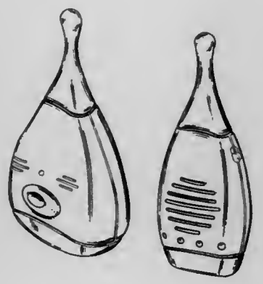
380,691
REMOTE CONTROL TRANSMITTER FOR A DOG FENCE
Ping Hay Heun, Kowloon, Hong Kong, assignor to GSL Engineering, Ltd., Kowloon, Hong Kong
Filed Apr. 7, 1995, Ser. No. 37,256
Term of patent 14 years
LOC (6) Cl. 10 - *05*
U.S. Cl. D10—104



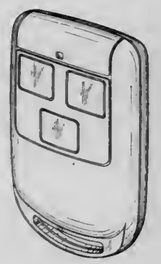
380,692
RECEIVER OF AN ELECTRONIC DOG COLLAR
Ping Hay Heun, Kowloon, Hong Kong, assignor to GSL Rechargeable Products, Ltd., Kowloon, Hong Kong
Filed Apr. 7, 1995, Ser. No. 37,257
Term of patent 14 years
LOC (6) Cl. 10 - *05*
U.S. Cl. D10—104



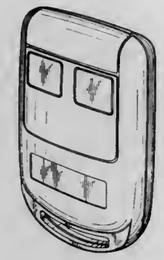
380,693
COMBINED TRANSMITTER AND RECEIVER FOR MONITORING BABIES
Gerald Serres-Vives, Bellegarde, France, assignor to Tefal S.A., Rumilly, France
Filed May 2, 1995, Ser. No. 38,465
Claims priority, application France, Nov. 2, 1994, 94 6007
Term of patent 14 years
LOC (6) Cl. 10 - *05*
U.S. Cl. D10—104



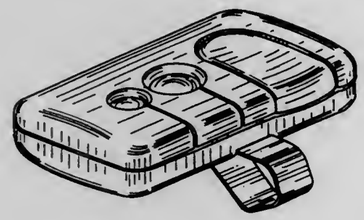
380,694
REMOTE CONTROLLER FOR GARAGE SHUTTER
Noboru Seki, Furukawa, and Shigenori Abe, Miyagi-ken, both of Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan
Filed Dec. 8, 1995, Ser. No. 47,631
Claims priority, application Japan, Jun. 9, 1995, 7-16537
Term of patent 14 years
LOC (6) Cl. 10 - *05*
U.S. Cl. D10—104



380,695
REMOTE CONTROLLER FOR AUTOMOBILE
Noboru Seki, and Shigenori Abe, both of Miyagi-ken, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan
Filed Dec. 8, 1995, Ser. No. 47,633
Claims priority, application Japan, Jun. 9, 1995, 7-16536
Term of patent 14 years
LOC (6) Cl. 10 - *05*
U.S. Cl. D10—104



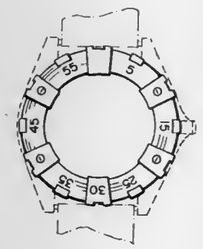
380,696
TRANSMITTER FOR GARAGE DOOR OPENER
Loren E. Doppelt, Palatine; Jeff Condon, Chicago; Gary Prokop, Wheaton; Marianne Grisdale, and Mark D. Dziersk, both of Chicago, all of Ill., assignors to The Chamberlain Group, Inc., Elmhurst, Ill.
Filed Jan. 11, 1996, Ser. No. 48,974
Term of patent 14 years
LOC (6) Cl. 10 - *05*
U.S. Cl. D10—104



380,697
HOLIDAY DOOR CHIME
Gerald W. Cummings, Marlton, N.J., assignor to M.H. Segan Limited Partnership, Great Barrington, Mass.
Filed Apr. 3, 1996, Ser. No. 52,562
Term of patent 14 years
LOC (6) Cl. 10 - *05*
U.S. Cl. D10—118



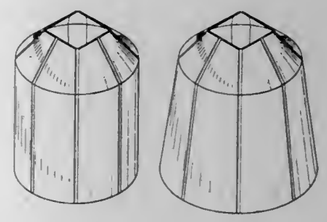
380,698
BEZEL RING FOR ANALOG WRISTWATCH
Edgardo B. Paredes, Lapu Lapu, Philippines, assignor to Timex Corporation, Middlebury, Conn.
Filed Sep. 25, 1995, Ser. No. 44,431
Term of patent 14 years
LOC (6) Cl. 10 - *02*
U.S. Cl. D10—128



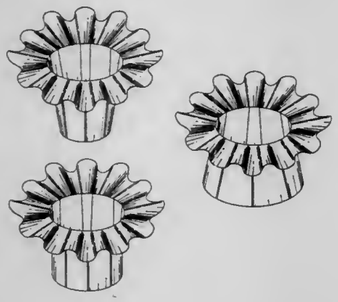
380,699
BRACELET
Christopher P. Kaufmann, 316 Seabreeze Ave., Palm Beach, Fla. 33480
Filed Nov. 22, 1995, Ser. No. 46,954
Term of patent 14 years
LOC (6) Cl. 11 - *01*
U.S. Cl. D11—4



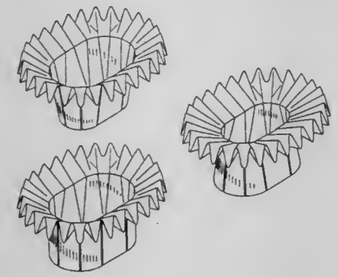
380,700
FLOWER POT COVER
Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Southpac Trust International, Inc., Oklahoma City, Okla.
Continuation-in-part of Ser. No. 808,557, Dec. 16, 1991, Pat. No. Des. 363,448, which is a continuation-in-part of Ser. No. 710,272, Jun. 4, 1991, Pat. No. Des. 365,302, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, Ser. No. 411,249, Sep. 22, 1989, Pat. No. Des. 358,113, Ser. No. 411,247, Sep. 22, 1989, abandoned, and Ser. No. 411,245, Sep. 22, 1989, abandoned. This application Dec. 1, 1992, Ser. No. 2,050
The portion of the term of this patent subsequent to Oct. 3, 2009, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 11 - *02*
U.S. Cl. D11—164



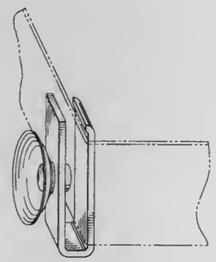
380,701
FLOWER POT COVER
Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Southpac Trust International, Inc., Oklahoma City, Okla.
Division of Ser. No. 4,959, Jan. 5, 1993, Pat. No. Des. 365,307, which is a continuation-in-part of Ser. No. 808,551, Dec. 16, 1991, Pat. No. Des. 362,824, which is a continuation-in-part of Ser. No. 710,272, Jun. 4, 1991, Pat. No. Des. 365,302, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, and a continuation-in-part of Ser. No. 411,249, Sep. 22, 1989, Pat. No. Des. 358,113, and a continuation-in-part of Ser. No. 411,247, Sep. 22, 1989, abandoned, and a continuation-in-part of Ser. No. 411,245, Sep. 22, 1989, abandoned. This application Oct. 18, 1995, Ser. No. 45,383
Term of patent 14 years
LOC (6) Cl. 11 - *02*
U.S. Cl. D11—164



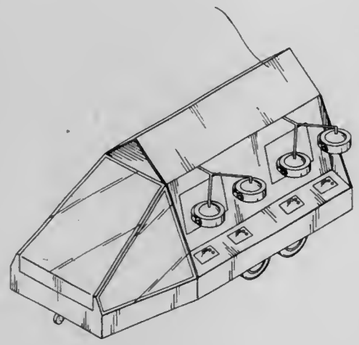
380,702
FLOWER POT COVER
Donald E. Weder, Highland, Ill., and Jon S. Sbryock, Bethany, Okla., assignors to Southpac Trust International, Inc., Oklahoma City, Okla.
Division of Ser. No. 9,490, Jun. 14, 1993, Pat. No. Des. 364,589, which is a continuation-in-part of Ser. No. 710,272, Jun. 4, 1991, Pat. No. Des. 365,302, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, and a continuation-in-part of Ser. No. 411,249, Sep. 22, 1989, Pat. No. Des. 358,113, and a continuation-in-part of Ser. No. 411,247, Sep. 22, 1989, abandoned, and a continuation-in-part of Ser. No. 411,245, Sep. 22, 1989, abandoned. This application Nov. 7, 1995, Ser. No. 46,112
Term of patent 14 years
LOC (6) Cl. 11 - *02*
U.S. Cl. D11—164



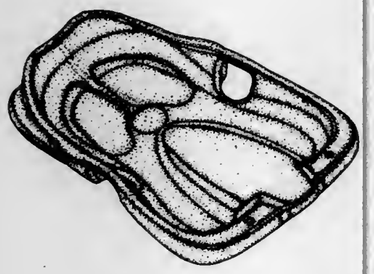
380,703
SHOULDER BELT RETAINER
Linda Sue Hoffer, and William Arthur Hoffer, both of 841 Diane Dr., Cincinnati, Ohio 45245
Continuation-in-part of Ser. No. 110,610, Aug. 24, 1993, abandoned. This application Dec. 15, 1994, Ser. No. 32,318
Term of patent 14 years
LOC (6) Cl. 33 - *02*
U.S. Cl. D11—218



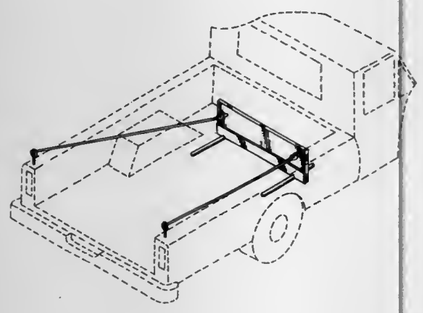
380,704
MOBILE AMUSEMENT TRAILER
Mark Murray Cairney, 259 Muritai Road, Eastbourne, Wellington, New Zealand
Filed Feb. 17, 1995, Ser. No. 35,101
Claims priority, application New Zealand, Aug. 19, 1994, 26117
Term of patent 14 years
LOC (6) Cl. 12 - *14*
U.S. Cl. D12—1



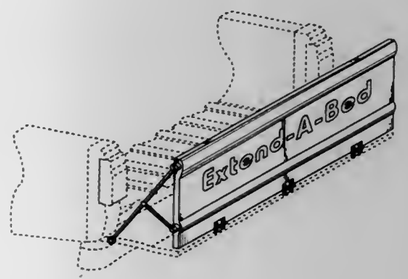
380,705
SLED
Timm J. Fenton, New Canaan, Conn., and Sergio Photiadis, Athens, Greece, assignors to Rubbermaid Specialty Products Inc., Wooster, Ohio
Filed Sep. 20, 1995, Ser. No. 44,205
Term of patent 14 years
LOC (6) Cl. 12 - *14*
U.S. Cl. D12—11



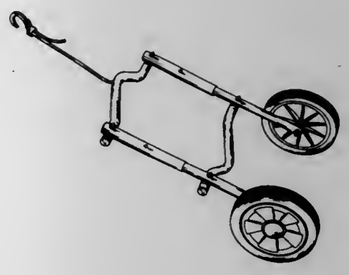
380,706
TRUCK BED INSERT PERMITTING RETRIEVAL OF GOODS WITHIN TRUCK BED
Richard T. Gardner, 204 N. Charleston Rd., Darlington, S.C. 29540
Filed Nov. 7, 1995, Ser. No. 46,083
Term of patent 14 years
LOC (6) Cl. 12 - *08*
U.S. Cl. D12—98



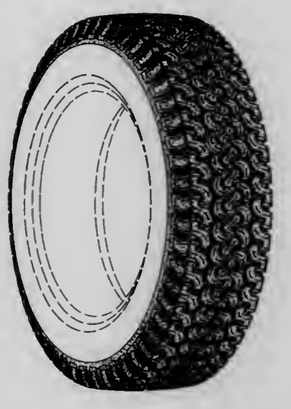
380,707
TRUCK BED EXTENSION
Norbert A. Gallegus, 31349 Braeburn Ave., Hayward, Calif. 94544
Filed Mar. 22, 1996, Ser. No. 52,070
Term of patent 14 years
LOC (6) Cl. 12 - *08*
U.S. Cl. D12—98



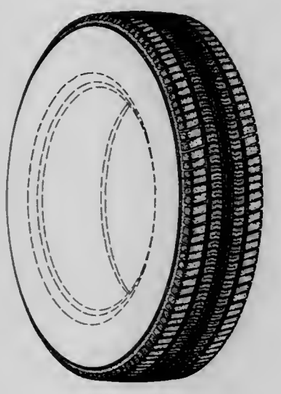
380,708
CANOE/KAYAK CARRIER
Brian G. Witt, 1407 Park Ave., Winona Lake, Ind. 46590
Filed Mar. 4, 1996, Ser. No. 51,151
Term of patent 14 years
LOC (6) Cl. 12 - *10*
U.S. Cl. D12—101



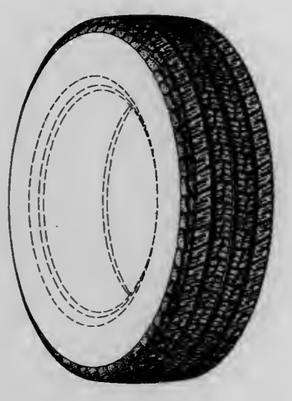
380,709
TIRE TREAD
Jason Christian Morgan, Simpsonville, S.C., assignor to Michelin Recherche et Technique S.A., Granges-Paccot, Switzerland
Filed Jul. 3, 1995, Ser. No. 41,045
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—146



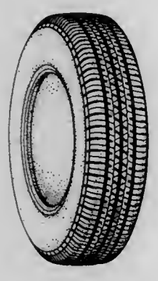
380,710
TIRE TREAD
Eileen Ann McKisson, Richfield, Ohio, assignor to Michelin Recherche et Technique S.A., Granges-Paccot, Switzerland
Filed May 15, 1995, Ser. No. 38,823
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147



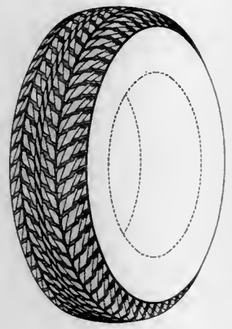
380,711
TIRE TREAD
Eileen Ann McKisson, Richfield, Ohio, assignor to Michelin Recherche et Technique S.A., Granges-Paccot, Switzerland
Filed May 15, 1995, Ser. No. 38,824
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147



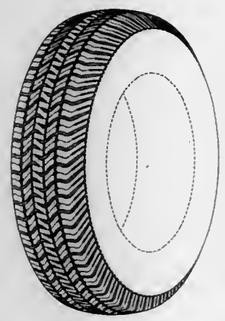
380,712
AUTOMOBILE TIRE
Naoya Ochi, and Yoshimoto Masuko, both of Tokyo, Japan, assignors to Bridgestone Corporation, Tokyo, Japan
Filed Nov. 22, 1995, Ser. No. 46,971
Claims priority, application Japan, May 25, 1995, 7-14448
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147



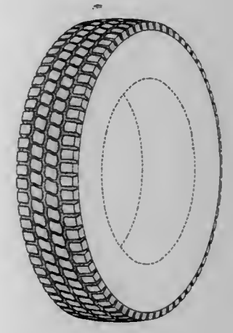
380,713
TIRE TREAD
John Steven Attinello, Hartville, Ohio, and Kevin Alan Reid, Asheville, N.C., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Feb. 29, 1996, Ser. No. 50,899
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147



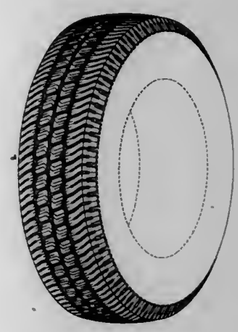
380,714
TIRE TREAD
John Steven Attinello, Hartville, Ohio, and Kevin Alan Reid, Asheville, N.C., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Feb. 29, 1996, Ser. No. 50,900
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147



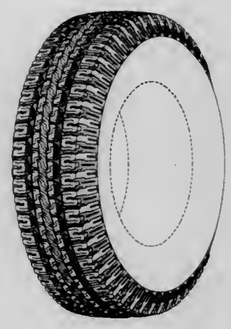
380,715
TIRE TREAD
Ronald Thomas Harris, Greenspring, W. Va.; Robert Bruce Rollings, Akron; Daniel Edward Schuster, North Royalton, both of Ohio; Daniel Scheuren, Bastogne, Belgium, and Richard Winfield Harden, Jr., Tallmadge, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Mar. 20, 1996, Ser. No. 51,970
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147



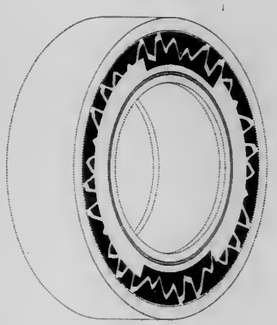
380,716
TIRE TREAD
Stephanie Carol Brown, Akron; Efimia Ellen Rohweder, Uniontown; Michael Alois Kolowski, Mogadore, and Frederick William Miller, Akron, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Apr. 10, 1996, Ser. No. 53,033
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147



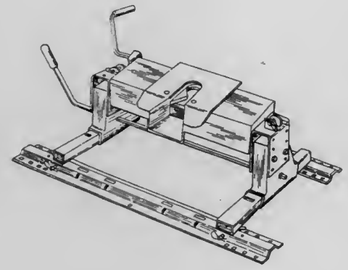
380,717
TIRE TREAD
Efimia Ellen Rohweder, Uniontown; Frederick William Miller, Akron; Michael Alois Kolowski, Mogadore, and Stephanie Carol Brown, Akron, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Nov. 30, 1995, Ser. No. 47,311
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—148



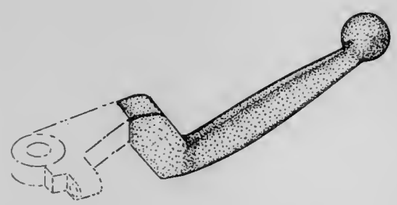
380,718
DECORATIVE BAND FOR A TIRE SIDEWALL
Bill Joe Ratliff, Jr., Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Mar. 11, 1996, Ser. No. 51,429
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—152



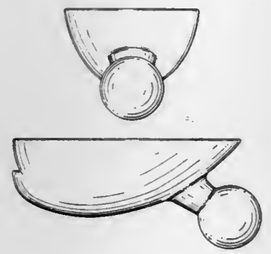
380,719
ADJUSTABLE FIFTH WHEEL HITCH
Thomas W. Lindenman, South Bend, and Richard McCoy, Granger, both of Ind., assignors to Reese Products, Inc., Elkhart, Ind.
Filed Sep. 25, 1995, Ser. No. 44,442
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—162



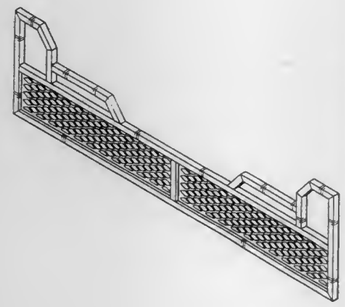
380,720
HAND LEVER FOR MOTORCYCLES
Steven W. Anderson, 8550 Saloma Ave., Panorama City, Calif. 91402
Filed Mar. 4, 1996, Ser. No. 51,145
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—179



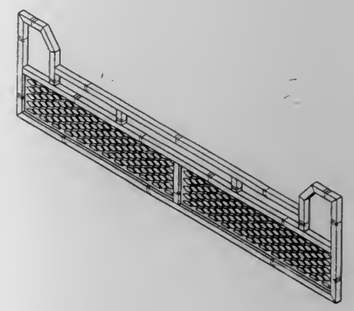
380,721
SUPPORT FOR A VEHICULAR INTERNAL REARVIEW MIRROR
Ricardo Poveda Moreno, São Bernardo do Campo, Brazil, assignor to Metagal Industria e Comercio Ltda., Sao Paulo, Brazil
Filed Feb. 17, 1995, Ser. No. 35,025
Claims priority, application Brazil, Aug. 25, 1994, 5400834-4
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—187



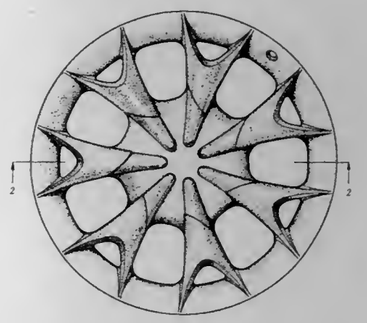
380,722
TRUCK TAILGATE
Bruce O. Burton, 3519 E. 17th Ave., Spokane, Wash. 99223, and Robert P. Sargent, 11113 E. 38th Ave., Spokane, Wash. 99206
Filed Mar. 14, 1996, Ser. No. 51,613
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—196



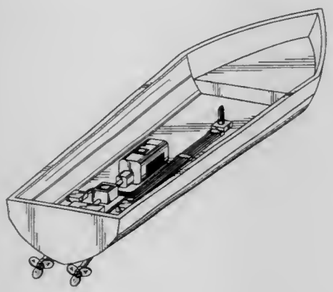
380,723
TRUCK TAILGATE
Bruce O. Burton, 3519 E. 17th Ave., Spokane, Wash. 99223, and Robert P. Sargent, 11113 E. 38th Ave., Spokane, Wash. 99206
Filed Mar. 14, 1996, Ser. No. 51,614
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—196



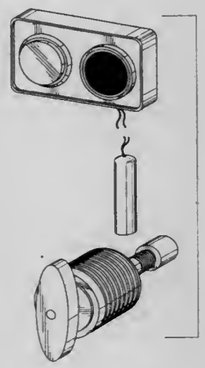
380,724
CUSTOM WHEEL
Larry P. Brown, 274 Los Flores Dr., Altadena, Calif. 91001, and Frederick D. Brown, 3732 S. Dalton Ave., Los Angeles, Calif. 90018
Filed Mar. 4, 1996, Ser. No. 51,854
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—209



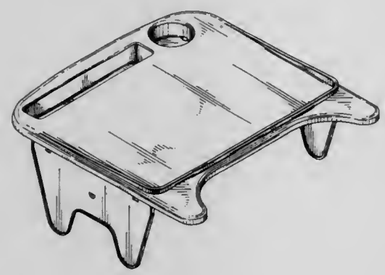
380,725
MOTORIZED BOAT
Arthur C. Edmon, 4810 SE. 10 Ter., Gresham, Oreg. 97080
Filed Mar. 1, 1996, Ser. No. 51,064
Term of patent 14 years
LOC (6) Cl. 12 - *06*
U.S. Cl. D12—300



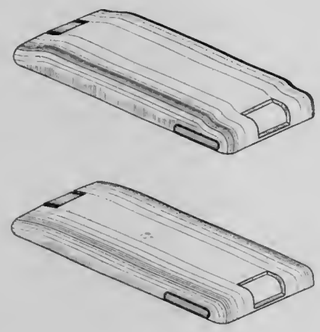
380,726
ELECTRONIC BOAT DRAIN PLUG UNIT
Joe B. Coulter, Rte. 1, Box. 232E, Lockesburg, Ark. 71846
Filed Feb. 20, 1996, Ser. No. 50,430
Term of patent 14 years
LOC (6) Cl. 12 - *06*
U.S. Cl. D12—317



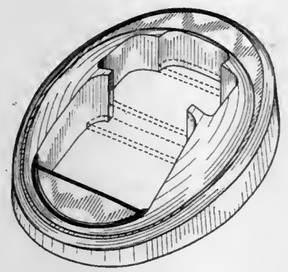
380,727
CHILD'S VEHICLE TRAY
Mark A. Gilstrap, 21428 Woods Creek Rd., Monroe, Wash. 98272
Filed Apr. 17, 1996, Ser. No. 53,231
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—425



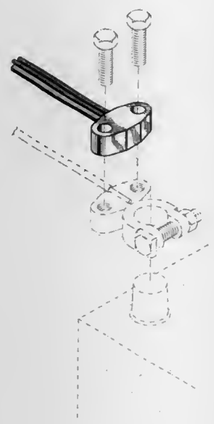
380,728
BATTERY HOUSING FOR A PORTABLE COMMUNICATION DEVICE
Scott H. Richards, Plantation, Fla.; Barbara Ruth, Cummings, Ga.; Wille Kottke, Miami, Fla., and Aaron Clark, Buford, Ga., assignors to Motorola, Inc., Schaumburg, Ill.
Continuation-in-part of Ser. No. 35,407, Feb. 27, 1995, abandoned. This application Apr. 9, 1996, Ser. No. 52,720
Term of patent 14 years
LOC (6) Cl. 13 - *02*
U.S. Cl. D13—103



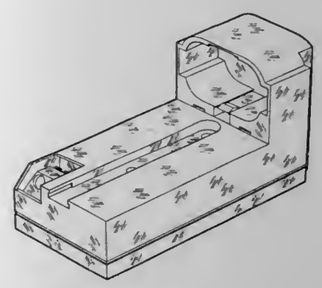
380,729
TOP COVER FOR A BATTERY CHARGER
Scott H. Richards, Plantation, Fla., and Hector R. Quinonez, Buford, Ga., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Feb. 12, 1996, Ser. No. 50,223
Term of patent 14 years
LOC (6) Cl. 13 - *02*
U.S. Cl. D13—108



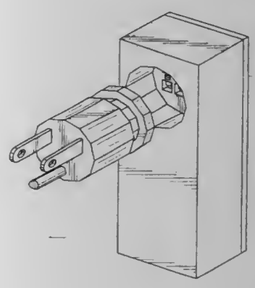
380,730
MULTIPLE WIRE CONNECTOR-ADAPTER FOR USE WITH A BATTERY TERMINAL CONNECTOR
Charles L. Green, Rt. 3, Box 43, New Boston, Tex. 75370
Continuation-in-part of Ser. No. 80,211, Jun. 17, 1993, abandoned. This application Feb. 9, 1995, Ser. No. 34,672
Term of patent 14 years
LOC (6) Cl. 13 - *02*
U.S. Cl. D13—120



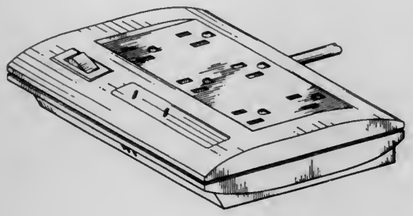
380,731
COMBINATION SOCKET FOR A FLUORESCENT LAMP AND ACCESSORY CIRCUIT, OR BALLAST THEREFOR
Klaus Schadhauser, Munich, Germany, assignor to Osram GmbH, Munich, Germany
Filed Oct. 18, 1995, Ser. No. 45,399
Claims priority, application Germany, May 12, 1995, M 95 04 122.2
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—134



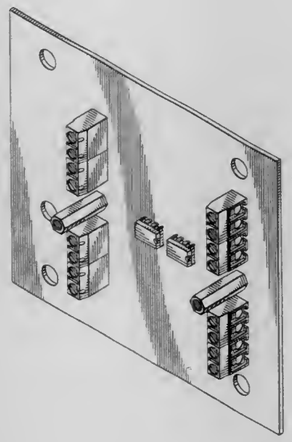
380,732
ELECTRIC OUTLET ADAPTOR
Walter Saunders, 1409 High St., Leavenworth, Kans. 66048
Filed Aug. 4, 1995, Ser. No. 42,247
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—139



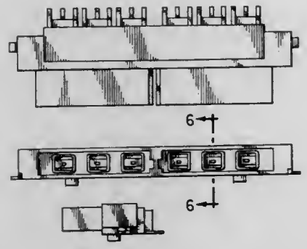
380,733
POWER BLOCK
David A. Parshad, Markham, Canada, assignor to Noma Inc., Scarborough, Canada
Filed Jul. 7, 1995, Ser. No. 41,133
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—142



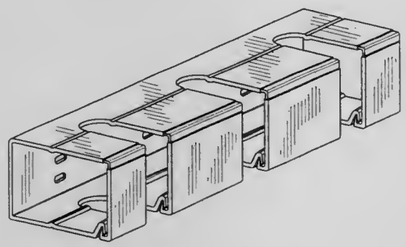
380,734
SWITCH ASSEMBLY UNIT
Marc S. Schroeder, 2530 Altura Apt. #1, Cincinnati, Ohio 45202
Filed Aug. 30, 1995, Ser. No. 43,269
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—146



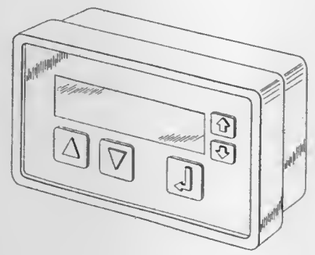
380,735
ELECTRICAL CONNECTOR
Ikujiro Mitani; Kazuhiko Ikeda, and Takeshi Nobe, all of Tokyo, Japan, assignors to Hirose Electric Co., Ltd., Tokyo, Japan
Filed Aug. 7, 1995, Ser. No. 42,319
Claims priority, application Japan, Apr. 18, 1995, 7-10578
The portion of the term of this patent subsequent to Feb. 20, 2018, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—147



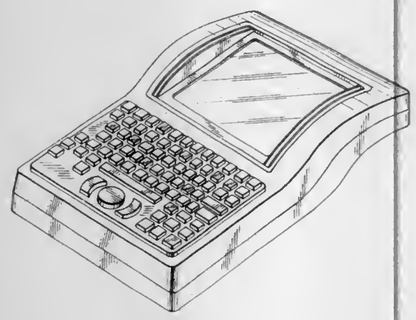
380,736
CABLE ROUTING DUCT
John W. Theis, Cottage Grove, and Harry C. Sweere, Minneapolis, both of Minn., assignors to Ergotron, Inc., St. Paul, Minn.
Filed Apr. 16, 1996, Ser. No. 53,100
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—155



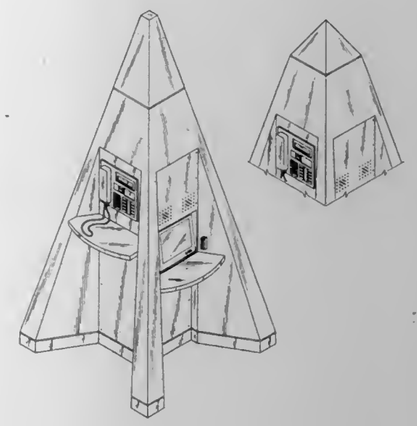
380,737
ELECTRONIC CONTROL MODULE DISPLAY
Michael Paul Weir, 6 Evergreen Terr., Ballston Lake, N.Y. 12019; Matthew Douglas Marple, 925 Oronoke Rd. #11G, Waterbury, Conn. 06708; Jung Yoon Park, 200 Blakeslee St. #28, Bristol, Conn. 06010; Nataniel Barbosa Vicente, 2536 N. Main St., Bridgeport, Conn. 06606, and Laurie Satsue Hiyakumoto, 5904 Tattersall Dr. #21, Durham, N.C. 27713
Filed Sep. 25, 1995, Ser. No. 44,485
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—162



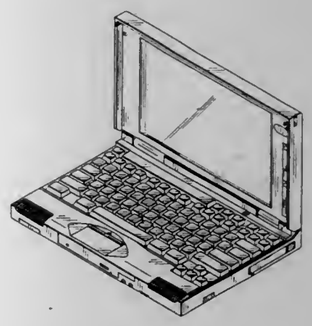
380,738
MOBILE TERMINAL
Robert McConnell, 170 Dunvegan St., Winnipeg, Manitoba, R2K 2H1; Keith Constable, 1297 Jordan St., Coquitlam, B.C. V3B 6P1; Dale Urban, 3448 Sefton St., Port Coquitlam, B.C. V3B 3R2, and Henry Eng, 718-1330 Burrard St., Vancouver, B.C. V6Z 2B8, all of Canada
Filed Mar. 27, 1996, Ser. No. 52,276
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—100



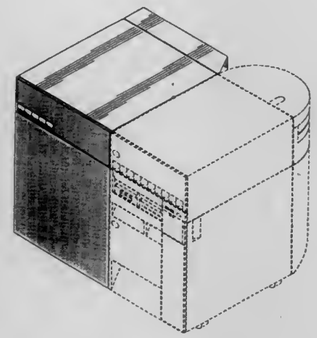
380,739
FREE STANDING COMPUTER AND PHONE STATION
Neil R. Senturia, La Jolla; James P. Nicholas, and Dennis T. Rogers, both of San Diego, all of Calif., assignors to Senturia Investments, Inc., San Diego, Calif.
Filed May 15, 1996, Ser. No. 54,572
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—103



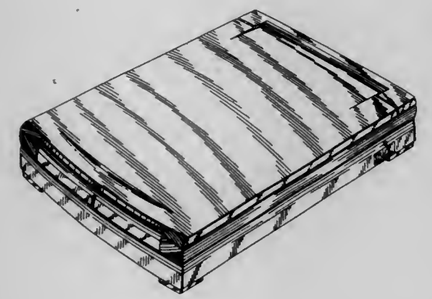
380,740
PERSONAL COMPUTER
Nariaki Mieki, Yokohama, and Kazuhiko Yamazaki, Hiratuka, both of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Sep. 5, 1995, Ser. No. 43,572
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—106



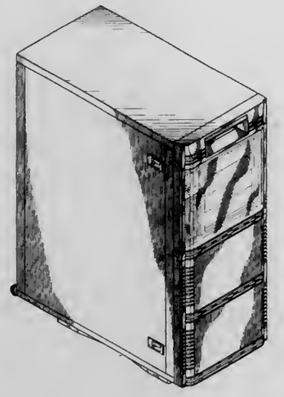
380,741
SIDECAR UNIT FOR A DATA PROCESSING SYSTEM
David Wayne Hill, and Tim Kerry Murphy, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed May 1, 1995, Ser. No. 38,241
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—107



380,742
DOCUMENT SCANNER
Marc J. van de Loo, San Francisco, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.
Filed Feb. 9, 1996, Ser. No. 50,140
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—107



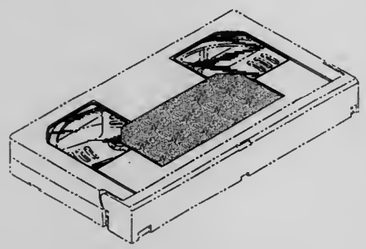
380,743
FILE SERVER
Peggy Susan Howard Avalos, Georgetown, Tex., and Charles L. Jenkins, Maryland Heights, Mo., assignors to IPC Technologies, Inc., Austin, Tex.
Filed Apr. 8, 1996, Ser. No. 52,834
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—107



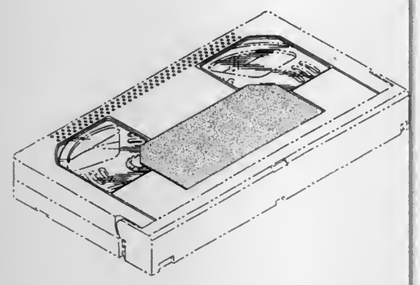
380,744

Patent Not Issued For This Number

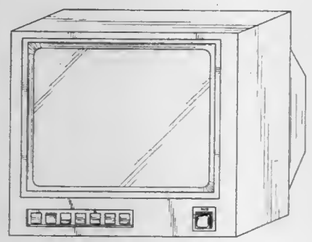
380,745
WINDOW AND LABEL AREA OF A TOP SURFACE FOR A VIDEOCASSETTE
John A. Bailey, Woodbury; Glenn A. Bloomer, Maplewood, both of Minn., and Nicholas A. Brawne, Columbus, Ohio, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Apr. 5, 1994, Ser. No. 20,915
Term of patent 14 years
LOC (6) Cl. 14 - *99*
U.S. Cl. D14—121



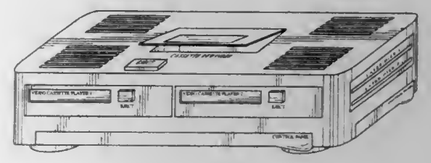
380,746
WINDOW, LABEL AND REAR AREA OF A TOP SURFACE FOR A VIDEOCASSETTE
John A. Bailey, Woodbury; Glenn A. Bloomer, Maplewood; Gregory H. Johnson, Oakdale, all of Minn.; Nicholas A. Brawne, Columbus, and Mark J. Ciesko, Hilliard, both of Ohio, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Apr. 5, 1994, Ser. No. 20,918
Term of patent 14 years
LOC (6) Cl. 14 - *99*
U.S. Cl. D14—121



380,747
TELEVISION SET WITH BUILT-IN REMOTE CONTROL LOCATER
Josh Carley, Room #37, 2715 SW. Pick Ford, Corvallis, Oreg. 97333
Filed Dec. 22, 1994, Ser. No. 32,664
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—126



380,748
COMBINED VIDEO CASSETTE REWINDER, RECORDER AND LASER DISC PLAYER
Charles Malosky, 1008 Cold Stream Ct., Tarpon Springs, Fla. 34689
Filed Feb. 24, 1995, Ser. No. 35,325
Term of patent 14 years
LOC (6) Cl. 14 - *01*
U.S. Cl. D14—135



380,749
FRONT SECTION OF A PORTABLE RADIO COMMUNICATION DEVICE
Scott H. Richards, Plantation; Frank M. Tyneski, Fort Lauderdale; Robert M. Fuerstenberg, Jr., Lauderdale by the Sea, and David H. Karl, Fort Lauderdale, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Sep. 5, 1995, Ser. No. 43,457
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—137



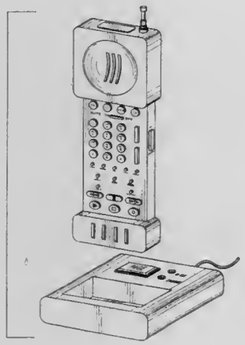
380,750
PORTABLE WIRELESS TELEPHONE
Takeshi Sato; Akira Teto, both of Hamura; Tatsuo Kuwayama, Sagamihara, and Osamu Utsunomiya, Hino, all of Japan, assignors to Kokusai Electric Co., Ltd., Japan
Filed Nov. 10, 1993, Ser. No. 15,235
Claims priority, application Japan, May 11, 1993, 13609/1993
Term of patent 14 years
LOC (6) Cl. 14 - *01*
U.S. Cl. D14—138



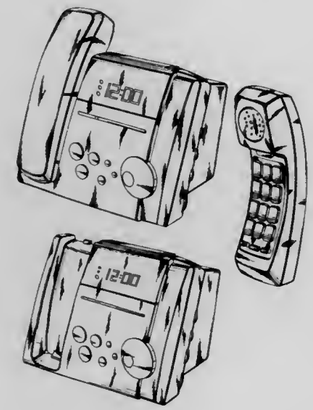
380,751
PORTABLE TELEPHONE
Daniel L. Williams, Vernon Hills, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Mar. 13, 1996, Ser. No. 51,580
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—138



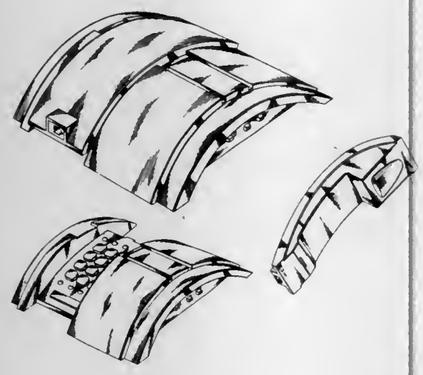
380,752
COMBINED TELEPHONE AND REMOTE CONTROL
Bruce D. Hanson, 9175 55th Ave., NW, Kenmare, N. Dak. 58746
Filed May 28, 1996, Ser. No. 55,014
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—144



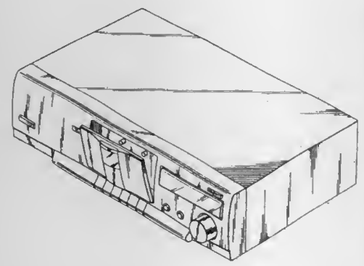
380,753
TELEPHONE-CLOCK RADIO
Richard Constantine, Niantic, and Anthony Solomita, Norwalk, both of Conn., assignors to Conair Corporation, Stamford, Conn.
Filed Jun. 21, 1996, Ser. No. 56,063
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—144



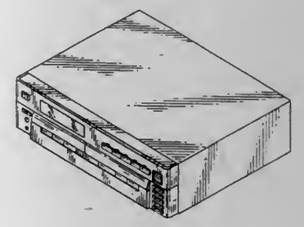
380,754
ARCH TELEPHONE
Richard Constantine, Niantic, and Anthony Solomita, Norwalk, both of Conn., assignors to Conair Corporation, Stamford, Conn.
Filed Jun. 24, 1996, Ser. No. 56,127
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—150



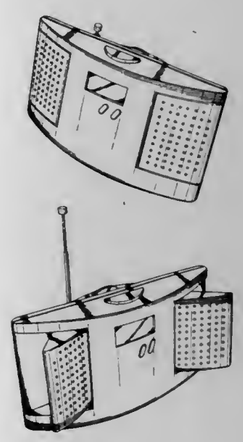
380,755
TAPE RECORDER
Masafumi Ito; Minoru Sube; Hiroyuki Watanabe, and Yukio Iikura, all of Musashino, Japan, assignors to TEAC Corporation
Filed Apr. 10, 1996, Ser. No. 52,953
Claims priority, application Japan, Oct. 25, 1995, 7-32082
Term of patent 14 years
LOC (6) Cl. 14 - *01*
U.S. Cl. D14—164



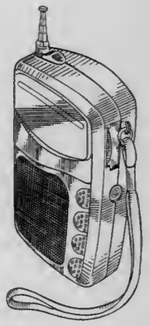
380,756
COMBINED DIGITAL AUDIO DISK PLAYER, TUNER AND TAPE RECORDER
Haruo Ohba, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Oct. 17, 1995, Ser. No. 45,331
Term of patent 14 years
LOC (6) Cl. 14 - *01*
U.S. Cl. D14—168



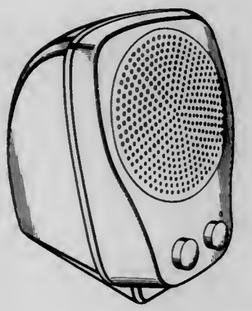
380,757
CLOCK RADIO
Ronnie Chi Wah Mak, Kowloon, Hong Kong, assignor to Sanny Electronics Limited, Hung Hom, Hong Kong
Filed May 14, 1996, Ser. No. 54,453
Term of patent 14 years
LOC (6) Cl. 14 - *01*
U.S. Cl. D14—171



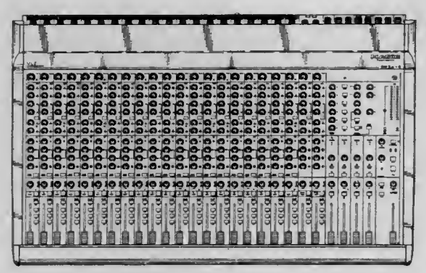
380,758
RADIO
Josh Zeitman, Brooklyn, N.Y., assignor to Lenoxx Electronics Corp., Brooklyn, N.Y.
Filed Oct. 17, 1995, Ser. No. 45,330
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—194



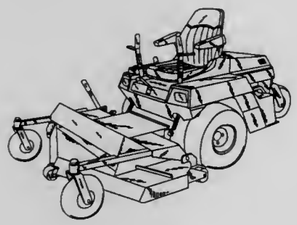
380,759
COMPUTER SPEAKER
Chun-Sung Lin, 1st Floor, No. 156 Chung Hua Road, Shu Lin Town, Taipei County, Taiwan
Filed May 23, 1995, Ser. No. 39,310
Term of patent 14 years
LOC (6) Cl. 14 - *01*
U.S. Cl. D14—215



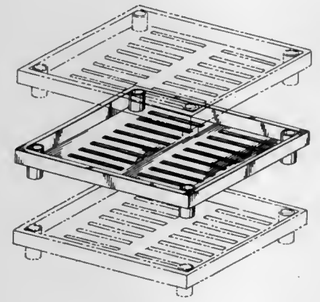
380,760
MIXER
Greg C. Mackie, Kirkland; Charles T. Jensen, Monroe, and Alan Llave, Seattle, all of Wash., assignors to Mackie Designs Inc., Woodinville, Wash.
Filed May 30, 1995, Ser. No. 39,520
Term of patent 14 years
LOC (6) Cl. 14 - *99*
U.S. Cl. D14—217



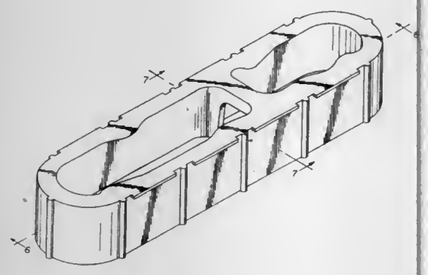
380,761
MOWER
Franklin D. Saylor, R.D. 2, Box 147, Hollsopple, Pa. 15935
Filed Nov. 7, 1995, Ser. No. 46,097
Term of patent 14 years
LOC (6) Cl. 15 - *03*
U.S. Cl. D15—15



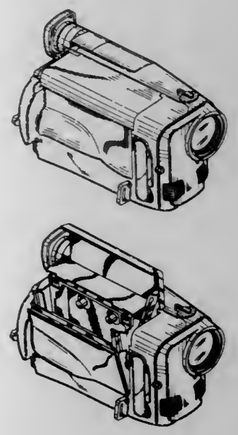
380,762
MULTIPURPOSE FREEZER TRAY
Kaye J. Sammut, 17 Ireland Way, Bassendean, West Australia 6054, Australia
Filed Jul. 27, 1995, Ser. No. 41,942
Term of patent 14 years
LOC (6) Cl. 15 - *07*
U.S. Cl. D15—89



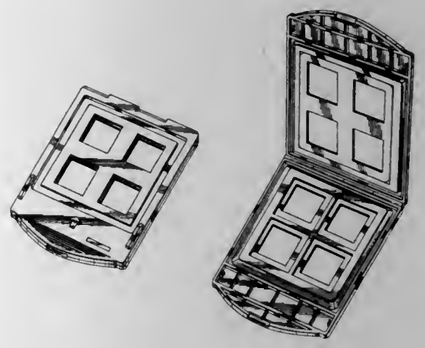
380,763
MOLD FOR FORMING CONCRETE BORDER STONES
Jack T. Hupp, P.O. Box 1206, Richmond, Tex. 77469
Filed Mar. 14, 1996, Ser. No. 51,591
Term of patent 14 years
LOC (6) Cl. 15 - *09*
U.S. Cl. D15—136



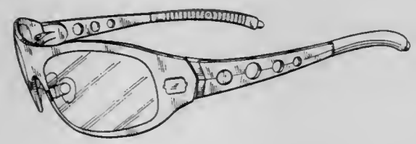
380,764
COMBINED VIDEO TAPE RECORDER AND CAMERA
Daisuke Ishii, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Mar. 16, 1995, Ser. No. 36,343
Term of patent 14 years
LOC (6) Cl. 16 - *01*
U.S. Cl. D16—202



380,765
MULTIPLE SLIDE HOLDER FOR USE IN A PHOTOGRAPHIC SCANNER
Colin M. Kernan, Hingham, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Apr. 8, 1996, Ser. No. 52,828
Term of patent 14 years
LOC (6) Cl. 16 - *02*
U.S. Cl. D16—236



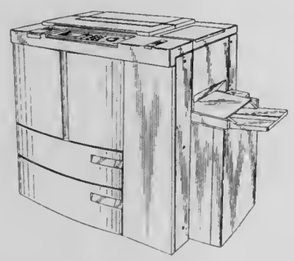
380,766
SUNGLASSES
Luciano Simioni, Montebelluna, Italy, assignor to Killer Loop S.p.A., Pederobba, Italy
Filed Oct. 23, 1995, Ser. No. 45,546
Claims priority, application Italy, Apr. 28, 1995, TV9500021
Term of patent 14 years
LOC (6) Cl. 16 - *06*
U.S. Cl. D16—321



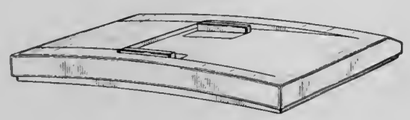
380,767
TYPE FONT
Martinus Franciscus Clemens Majoor, Arnhem, Netherlands, assignor to Koninklijke PTT Nederland N.V., Groningen, Netherlands
Filed Oct. 27, 1994, Ser. No. 30,353
Claims priority, application Benelux TM/Des. Off., Apr. 27, 1994, 69603-07; Apr. 27, 1994, 69693-02; Apr. 27, 1994, 69693-03; Apr. 27, 1994, 69693-04; Apr. 27, 1994, 69693-05; Apr. 27, 1994, 69693-06; Apr. 27, 1994, 69693-01
Term of patent 14 years
LOC (6) Cl. 18 - *03*
U.S. Cl. D18—24



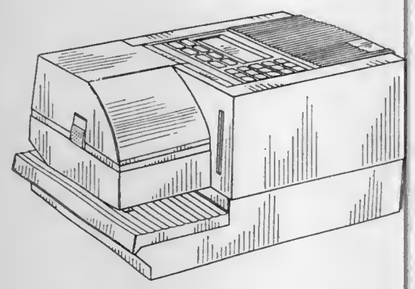
380,768
PHOTOCOPIER
Nobuyuki Agata, Soka, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 26, 1996, Ser. No. 52,218
Claims priority, application Japan, Sep. 27, 1995, 7-28871
Term of patent 14 years
LOC (6) Cl. 16 - *03*
U.S. Cl. D18—38



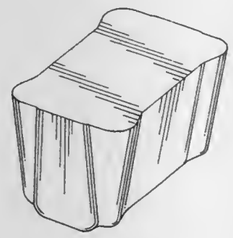
380,769
ORIGINAL FEEDER FOR PHOTOCOPIER
Hiroshi Komatsu, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 11, 1995, Ser. No. 47,679
Claims priority, application Japan, Jun. 12, 1995, 7-16688
Term of patent 14 years
LOC (6) Cl. 18 - *99*
U.S. Cl. D18—49



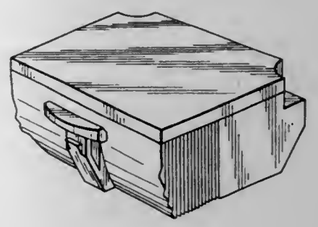
380,770
POSTAGE METER
Ernest Muchenberger, Zug; Christian Gillicron, Fraubrunnen, and Kurt Nast, Bern, all of Switzerland, assignors to Ascom Hasler Mailing Systems, AG, Bern, Switzerland
Continuation of Ser. No. 29,062, Sep. 28, 1994, abandoned.
This application Sep. 6, 1995, Ser. No. 43,520
Term of patent 14 years
LOC (6) Cl. 18 - *02*
U.S. Cl. D18—51



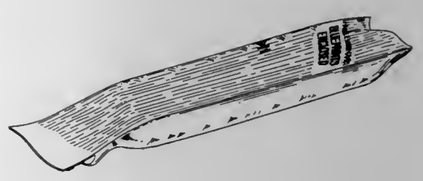
380,771
SOLID INK STICK FOR A COLOR PRINTER
Brent R. Jones, Tualatin, Oreg., assignor to Tektronix, Inc., Wilsonville, Oreg.
Filed Jan. 20, 1995, Ser. No. 33,834
The portion of the term of this patent subsequent to Jul. 16, 2010, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 18 - *02*
U.S. Cl. D18—56



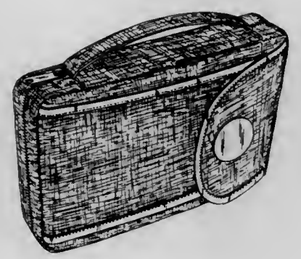
380,772
INK CARTRIDGE FOR PRINTER
Naoki Tashiro, Kawasaki; Akihiro Yamanaka, Yokohama, and Keiichiro Tsukuda, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 4, 1995, Ser. No. 42,269
Claims priority, application Japan, Feb. 6, 1995, 7-2786
The portion of the term of this patent subsequent to Dec. 10, 2010, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 18 - *02*
U.S. Cl. D18—56



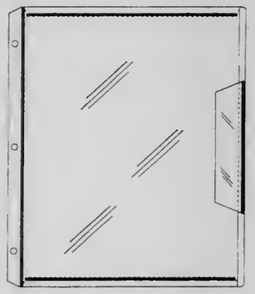
380,773
SHIPMENT POUCH
Colleen Spinarski, 14 Leon La. West, Prospect Heights, Ill. 60070
Continuation-in-part of Ser. No. 22,938, May 16, 1994, Pat. No. Des. 371,575. This application Mar. 11, 1996, Ser. No. 51,704
Term of patent 14 years
LOC (6) Cl. 19 - *01*
U.S. Cl. D19—3



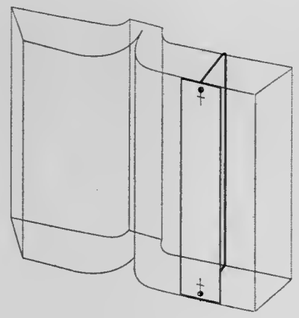
380,774
BOOK COVER
Gregg L. Gray, 800 Madera Pl., Fullerton, Calif. 92635
Filed Mar. 19, 1996, Ser. No. 51,908
Term of patent 14 years
LOC (6) Cl. 19 - *04*
U.S. Cl. D19—26



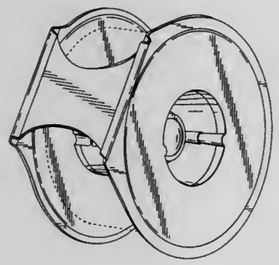
380,775
FRONT PANEL FOR A STORAGE POCKET
Fei-Chen Lee, 4th Floor, No. 51, Sec. 2, Chung-Ching South Road, Taipei, Taiwan
Filed Sep. 16, 1994, Ser. No. 28,520
The portion of the term of this patent subsequent to May 20, 2011, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 19 - *04*
U.S. Cl. D19—33



380,776
BOOKMARK
Ronald M. Boshart, 308 Rimmington Drive, Oakville, Ontario, Canada
Filed Sep. 15, 1995, Ser. No. 44,012
Claims priority, application Canada, Mar. 15, 1995, 1995-0577
Term of patent 14 years
LOC (6) Cl. 19 - *99*
U.S. Cl. D19—34



380,777
PROTECTOR FOR A ROLL OF TAPE
Joy A. Packard, Somerset, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Jan. 2, 1996, Ser. No. 48,518
Term of patent 14 years
LOC (6) Cl. 19 - *02*
U.S. Cl. D19—69

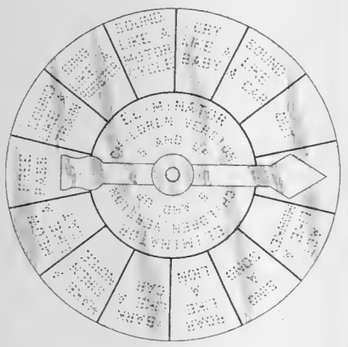


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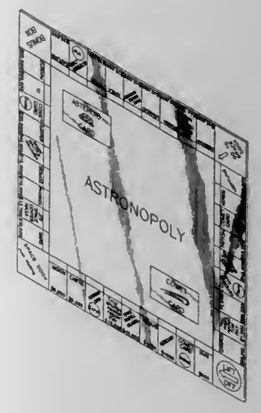
380,779
SIMULATION GAME MACHINE
Yasunobu Shinzato, Tokyo, Japan, assignor to Sega Enterprises, Ltd., Tokyo, Japan
Filed Dec. 15, 1995, Ser. No. 47,938
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—13



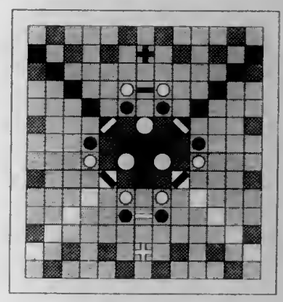
380,780
COMBINED CHILD'S ACTION AND ELIMINATION GAME
Rolando I. Capote, 544 Market St., #2D, Newark, N.J. 07105
Filed Sep. 29, 1995, Ser. No. 44,758
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—22



380,781
GAME BOARD
James Michael Arnold, 2854 Harris Pl., Norwood, Ohio 45212
Filed Jun. 7, 1995, Ser. No. 39,953
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—25

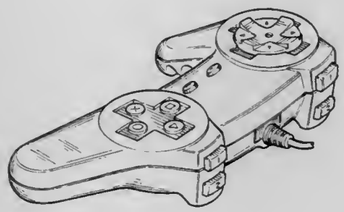


380,782
GAME BOARD
HervéManigat, 144-33 Weller La., Rosedale, N.Y. 11422
Filed Mar. 5, 1996, Ser. No. 51,216
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—36

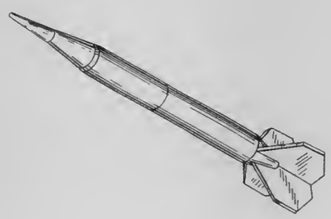


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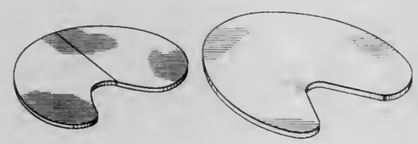
380,783
CONTROL PAD
Kelly D. Tyler, Box 841, Jamul, Calif. 91935
Filed Oct. 3, 1995, Ser. No. 44,907
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—48



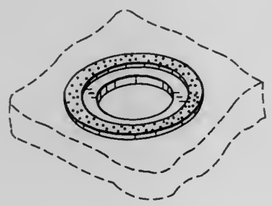
380,784
DART
William A. Smith, Greenfield, Wis., assignor to Great Lakes Dart Distributors, Inc., Muskego, Wis.
Filed May 29, 1996, Ser. No. 55,096
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—49



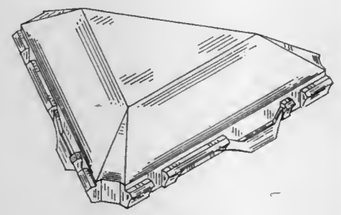
380,785
BINGO IDENTIFIER
Garry R. Francis, 2131 King Street East, Apt #3, Hamilton, Ontario, Canada
Filed Apr. 19, 1996, Ser. No. 53,297
Claims priority, application Canada, Oct. 27, 1995, 1995-2418
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—51



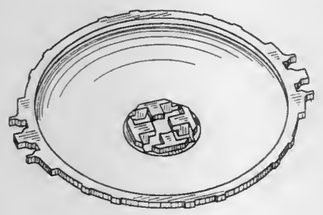
380,786
COMBINED HOLE, EMBOSSMENT AND SLOT FOR A CONSTRUCTION TOY ELEMENT
Jacques Guegan, L'Hay les Roses; Francis Lecocq, Hames-Boucres, and Jean-Pierre Moussaud, Les Attaques, all of France, assignors to Meccano, S.A., Calais, France
Filed Jul. 6, 1994, Ser. No. 25,820
Claims priority, application WIPO, Jan. 6, 1994, DM/028335
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—108



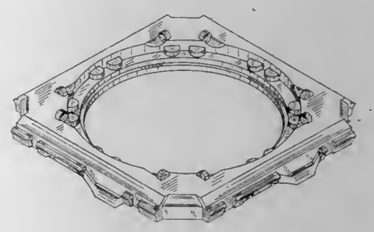
380,787
RAISED EQUILATERAL TRIANGULAR PANEL FOR BALL AND ROD TOY CONSTRUCTION SET
Richard Gabriel, Portland, Oreg., assignor to Matrix Toys, Ltd., Portland, Oreg.
Filed Jan. 11, 1996, Ser. No. 48,709
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—108



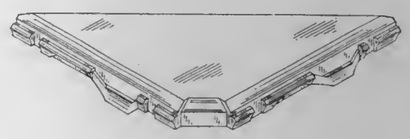
380,788
SHALLOW DOME FOR BALL AND ROD TOY CONSTRUCTION SET
Richard Gabriel, Portland, Oreg., assignor to Matrix Toys, Ltd.. Portland, Oreg.
Filed Jan. 11, 1996, Ser. No. 48,861
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—108



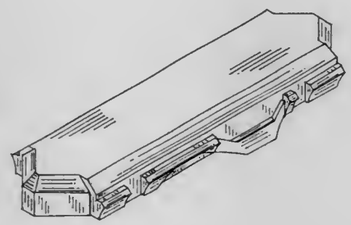
380,789
RECTANGULAR SUPPORT PANEL FOR BALL AND ROD TOY CONSTRUCTION
Richard Gabriel, Portland, Oreg., assignor to Matrix Toys, Ltd., Portland, Oreg.
Filed Jan. 11, 1996, Ser. No. 49,623
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—108



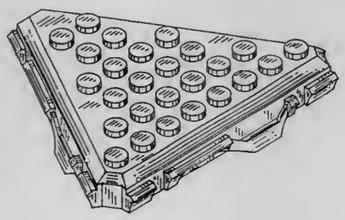
380,790
ISOSCELES TRIANGULAR PANEL FOR BALL AND ROD TOY CONSTRUCTION SET
Richard Gabriel, Portland, Oreg., assignor to Matrix Toys, Ltd., Portland, Oreg.
Filed Jan. 11, 1996, Ser. No. 49,624
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—108



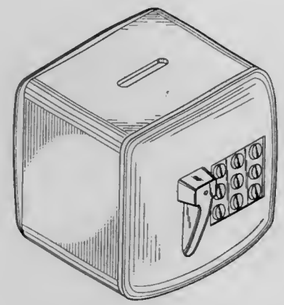
380,791
RECTANGULAR PANEL FOR BALL AND ROD TOY CONSTRUCTION SET
Richard Gabriel, Portland, Oreg., assignor to Matrix Toys, Ltd., Portland, Oreg.
Filed Jan. 11, 1996, Ser. No. 49,626
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—108



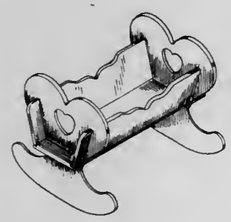
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EQUILATERAL TRIANGULAR PANEL FOR BALL AND ROD TOY CONSTRUCTION SET WITH MALE STUD INTERFACE
Richard Gabriel, Portland, Oreg., assignor to Matrix Toys, Ltd., Portland, Oreg.
Filed Jan. 11, 1996, Ser. No. 49,627
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—108



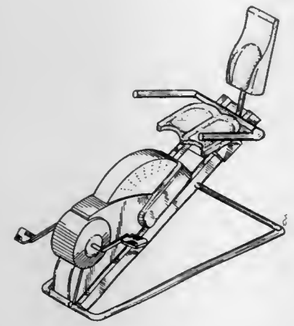
380,793
TOY SAFE
Thomas E. Conwell, Highland Park, Ill., assignor to Confectionery and Novelty Design Intl., Deerfield, Ill.
Filed Jul. 27, 1995, Ser. No. 41,960
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—109



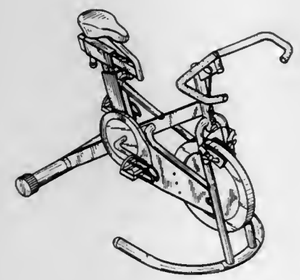
380,794
DOLL CRADLE
Jeannine Poisson, 2784 Skaha Lake Road, Penticton, British Columbia, Canada
Filed May 3, 1996, Ser. No. 53,983
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—123



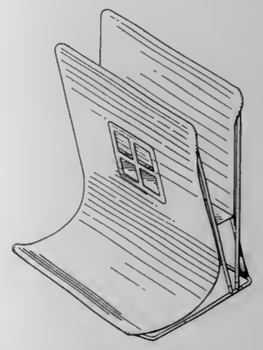
380,795
EXERCISE BIKE
Leao Wang; Peter Wu, both of Taichung Hsien, Taiwan; Mark Pacini, and Jeff Smith, both of Sunrise, Fla., assignors to Greenmaster Industrial Corp., Taichung Hsien, Taiwan
Filed Nov. 21, 1995, Ser. No. 46,942
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—194



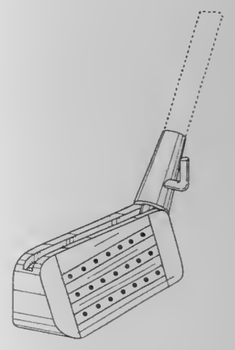
380,796
EXERCISE BIKE
Leao Wang, and Peter Wu, both of Taichung Hsien, Taiwan, assignors to Greenmaster Industrial Corp., Taichung Hsien, Taiwan
Continuation-in-part of Ser. No. 41,822, Jul. 25, 1995, Pat. No. Des. 372,284. This application Nov. 13, 1995, Ser. No. 47,814
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—194



380,797
BASEBALL PITCHING APPARATUS
Fred W. Schwan, 738 Merrimac St., Cary, Ill. 60013, and William C. Francis, 1818 Oakleaf Dr., McHenry, Ill. 60050
Filed Jul. 24, 1995, Ser. No. 41,730
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—199



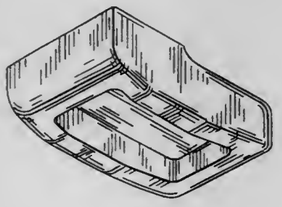
380,798
GOLF PUTTER HEAD
Mario Novelli, 220 Middlefield St., Chester, Mass. 01011
Filed Feb. 6, 1996, Ser. No. 50,017
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—217



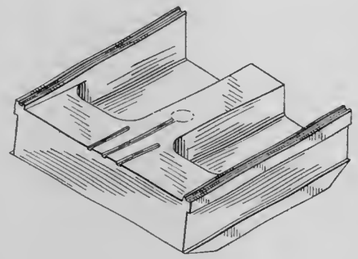
380,799
GOLF PUTTER
Danny L. Arnold, P.O. Box 1439, New Port Richey, Fla. 34656
Filed Feb. 16, 1996, Ser. No. 50,608
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—217



380,800
GOLF PUTTER HEAD
Masayoshi Matsuoka, 2, 15, 19 Kami-Isshiki, Edogawa-ku, Tokyo 133, Japan
Filed Feb. 26, 1996, Ser. No. 50,953
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—217



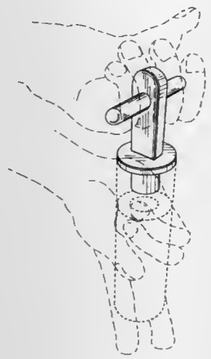
380,801
GOLF PUTTER HEAD
Jack F. Steele, 929 N. Astor St., Unit 1201, Milwaukee, Wis. 53202
Continuation-in-part of Ser. No. 36,118, Mar. 13, 1995. This application Jun. 12, 1995, Ser. No. 40,138
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—219



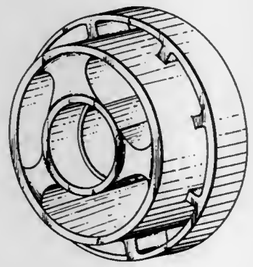
380,802
FLUTED GOLF PUTTER SHAFT
Randy L. Franks, 141 N. State St., #129, Lake Oswego, Oreg. 97034
Filed Jul. 12, 1995, Ser. No. 43,211
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—221



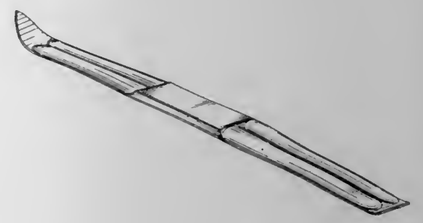
380,803
HANDLE FOR A GOLF CLUB SHAFT
Stephen F. Plaza, Sr., P.O. Box 1525, Dudley, Mass. 01571
Filed Mar. 4, 1996, Ser. No. 51,132
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—222



380,804
SKATE WHEEL HUB
Jonathan David Logan Gulla, and Tyler K. Hutchison, both of 410 West Coast Hwy., Newport Beach, Calif. 92663
Filed Oct. 31, 1995, Ser. No. 45,865
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—226



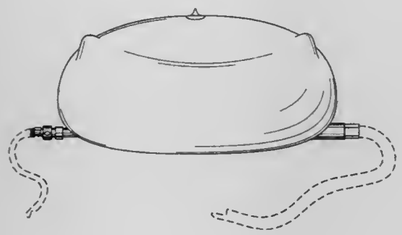
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SKI
Uwe Emig, Gartenstrasse 29, D-69429 Waldbrunn, and Markus Gramlich, Schillerstrasse 2, D-64372 Ober-Ramstadt, both of Germany
Filed Aug. 15, 1995, Ser. No. 43,239
Claims priority, application Germany, Feb. 22, 1995, 95 01 700.3
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—229



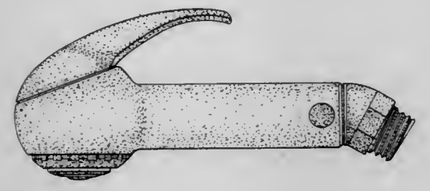
380,806
FISHING ROD WITH LIGHTED TIP
Curtis A. Ostrander, 8127 Grimchester, Converse, Tex. 78109
Filed Sep. 1, 1995, Ser. No. 43,340
Term of patent 14 years
LOC (6) Cl. 22 - *05*
U.S. Cl. D22—139



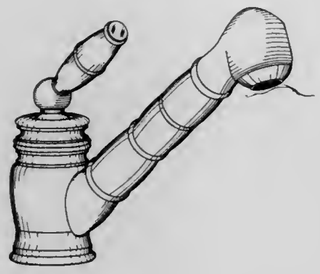
380,807
SWIMMING POOL BACKWASHING DEVICE
Mitchel Dorset-Turner, 7 Two Bays Road, Mount Eliza, Victoria 3930, Australia
Filed Nov. 18, 1994, Ser. No. 31,131
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—209



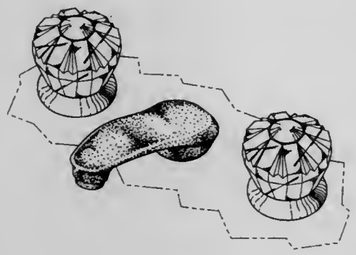
380,808
SHOWERHEAD FOR A KITCHEN SINK
Bertrand Barre, Lyon-Limonest, France, assignor to Sanitaire Accessoires Services S.A., Saint-Laurent de Mure, France
Filed Apr. 12, 1996, Ser. No. 52,973
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—226



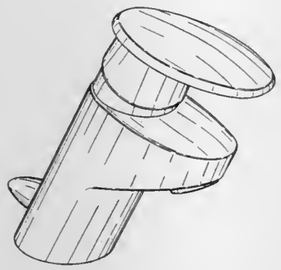
380,809
SPRAY FAUCET
Jerome Warshawsky, Hewlett Harbor, N.Y., assignor to I. W. Industries, Inc., Melville, N.Y.
Filed Jun. 27, 1996, Ser. No. 56,356
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—238



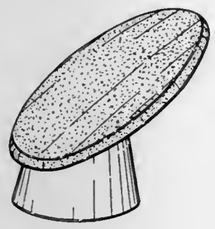
380,810
FAUCET
Frederic C. Doughty, 842 Oneonta Dr., S. Pasadena, Calif. 91030, and Darren M. Mark, 29109 Eveningside Dr., Castaic, Calif. 91384
Filed Sep. 22, 1995, Ser. No. 44,338
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—242



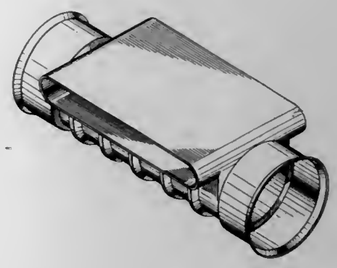
380,811
WASHING TABLE FAUCET
Adolf Gottwald, Iserlohn, Germany, assignor to Friedrich Grohe Aktiengesellschaft, Hemer, Germany
Filed Aug. 25, 1995, Ser. No. 43,365
Claims priority, application Germany, Feb. 27, 1995, 95 01 629.5
The portion of the term of this patent subsequent to Jan. 28, 2011, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—243



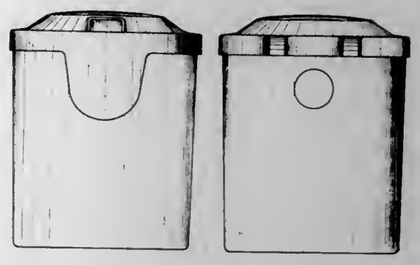
380,812
FAUCET HANDLE
Adolf Gottwald, Iserlohn, Germany, assignor to Friedrich Grohe Aktiengesellschaft, Hemer, Germany
Filed Aug. 25, 1995, Ser. No. 43,370
Claims priority, application Germany, Feb. 27, 1995, M 95 01 629.5
The portion of the term of this patent subsequent to Jun. 3, 2011, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—252



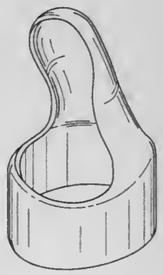
380,813
PIPE CONNECTOR
Joseph E. Motz; Mark A. Heinlein, both of Cincinnati; James B. Goddard, Powell, and Carl Tyner, Hamilton, all of Ohio, assignors to The Motz Group, Cinti, and Advanced Drainage Systems, Inc., Cincinnati, both of Ohio
Filed Aug. 29, 1995, Ser. No. 43,388
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—265



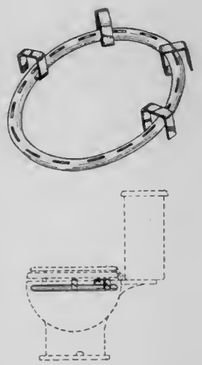
380,814
CONTAINER FOR AN OIL AND WASTE LINE CONNECTION
Jack G. Brewer, 99 Maple La., Chickasha, Okla. 73018
Filed Dec. 18, 1995, Ser. No. 48,028
Term of patent 14 years
LOC (6) Cl. 15 - *99*
U.S. Cl. D23—270



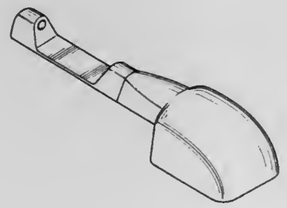
380,815
TOILET
Sumiyo Kanai, 935-12 Midori-cho, Hachioji-shi, Tokyo, Japan
Filed Nov. 29, 1994, Ser. No. 31,591
Claims priority, application Rep. of Korea, Jun. 8, 1994, 94-12368
Term of patent 14 years
LOC (6) Cl. 23 - *02*
U.S. Cl. D23—302



380,816
COMMODE CLEANING DEVICE
Dorothy P. Westmoreland, 4799 U.S. Hwy. 601-N, Mocksville, N.C. 27028-3656
Filed Dec. 8, 1995, Ser. No. 47,642
Term of patent 14 years
LOC (6) Cl. 23 - *02*
U.S. Cl. D23—309



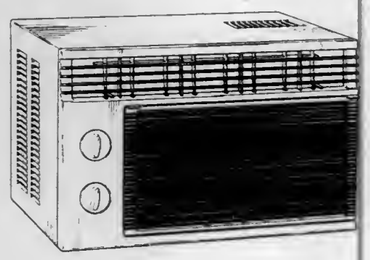
380,817
HOUSING FOR A MOTOR OF AN AUTOMATIC TOILET SEAT DEVICE
Bennie N. Veal, 6621 Park Valley Dr., Clarkston, Mich. 48348
Filed Jan. 26, 1996, Ser. No. 49,528
Term of patent 14 years
LOC (6) Cl. 23 - *02*
U.S. Cl. D23—309



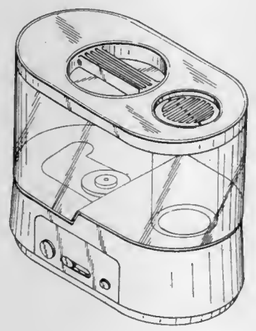
380,818
RETRACTABLE CORD REEL DRYER
Brenda P. K. Yue, Kowloon, Hong Kong, assignor to Conair Corporation, Stamford, Conn.
Filed Apr. 18, 1996, Ser. No. 53,255
Term of patent 14 years
LOC (6) Cl. 23 - *03*
U.S. Cl. D23—335



380,819
AIR CONDITIONER
Dong Sin Choi, Seoul, Rep. of Korea, assignor to LG Electronics Inc., Seoul, Rep. of Korea
Filed Sep. 29, 1995, Ser. No. 44,706
Claims priority, application Rep. of Korea, Apr. 3, 1995, 95-6065
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—353



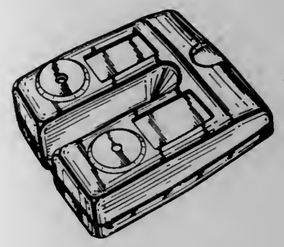
380,820
HUMIDIFIER
Lawrence Levine, Fairfield, Conn.; Leo Gross, New York, and Paul Siller, East Moriches, both of N.Y., assignors to Slant/Fin Corporation, Greenvale, N.Y.
Filed Nov. 3, 1995, Ser. No. 45,943
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—356



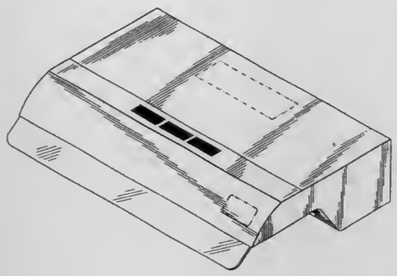
380,821
BOX FOR AROMATICS
Wen Jye Chen, No. 19 Lane 753, Kang Ning St., Shih Jyy, Taipei Hsien, Taiwan
Filed Oct. 17, 1995, Ser. No. 45,328
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—367



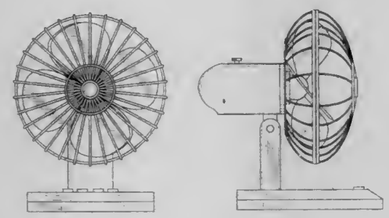
380,822
AIR FRESHENER CARTRIDGE
James D. Decker, Apple Valley, and Scott R. Olson, Eagan, both of Minn., assignors to Ecolab Inc., St. Paul, Minn.
Filed Apr. 17, 1996, Ser. No. 53,226
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—366



380,823
RANGE HOOD
Ralph M. LaZar, Skokie, Ill., assignor to Broan Mfg. Co., Inc., Hartford, Wis.
Filed Jan. 16, 1996, Ser. No. 48,990
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—372



380,824
PORTABLE FAN WITH BUILT-IN BATTERY RECHARGER IN THE BASE
Margarita A. Flor, and Jorge R. Flor, both of 11501 SW 145 Ave., Miami, Fla. 33186
Filed May 16, 1996, Ser. No. 54,541
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—382



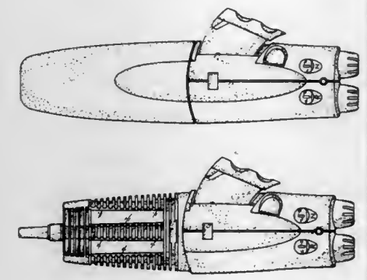
380,825
PHARMACEUTICAL TABLET
Kenneth A. Kramer, Green Lane, and Ashok Katdare, Norristown, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.
Filed Oct. 31, 1994, Ser. No. 30,494
Term of patent 14 years
LOC (6) Cl. 28 - *01*
U.S. Cl. D24—101



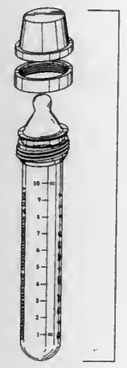
380,826
CAPSULE
Ghislaine Lucienne Sybilensky, Paris, France, assignor to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.
Filed Feb. 29, 1996, Ser. No. 50,881
Claims priority, application United Kingdom, Sep. 4, 1995, 2050121
Term of patent 14 years
LOC (6) Cl. 28 - *01*
U.S. Cl. D24—104



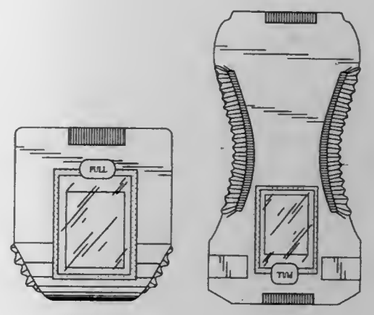
380,827
MULTI-CARTRIDGE MEDICATION INJECTOR
Christopher J. Stringer, San Francisco, Calif.; Gerhard E. F. Pawelka, Lexington, Mass.; Matthew Marsh, San Francisco, Calif.; David L. Karshmer, Menlo Park, Calif.; Christopher O. Lada, Palo Alto, Calif., and Stephen J. Schoenberg, Redwood City, Calif., assignors to Eli Lilly and Company, Indianapolis, Ind.
Continuation-in-part of Ser. No. 424,660, Apr. 19, 1995, which is a continuation-in-part of Ser. No. 333,207, Nov. 2, 1994, Pat. No. 5,478,323, and a continuation-in-part of Ser. No. 335,674, Nov. 8, 1994, abandoned, which is a continuation of Ser. No. 41,758, Apr. 2, 1993, abandoned. This application Dec. 13, 1995, Ser. No. 49,076
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—112



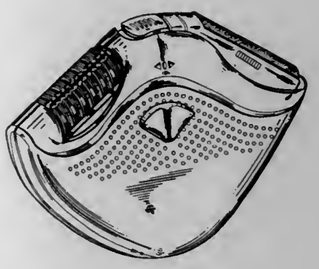
380,828
INFANT MEDICINE DISPENSER
Julie Franchi, 55 Wheelock St., Canajoharie, N.Y. 13317
Filed Mar. 1, 1996, Ser. No. 51,069
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D24—117



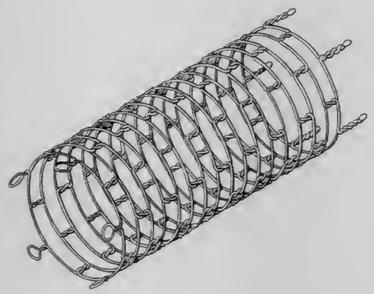
380,829
COMBINATION DISPOSABLE DIAPER AND PACKAGED WIPER
Terese Breault, 2266 Wasatch Dr., Salt Lake City, Utah 84109
Filed Dec. 1, 1994, Ser. No. 31,637
Term of patent 14 years
LOC (6) Cl. 24 - *04*
U.S. Cl. D24—126



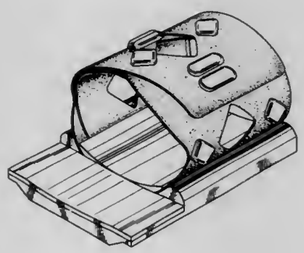
380,830
DEPILATOR
Jacques Gudefin, Saint-Priest, France, assignor to Calor S.A., Lyons, France
Continuation-in-part of Ser. No. 25,807, Jul. 12, 1994, abandoned. This application Apr. 24, 1996, Ser. No. 53,712
Claims priority, application France, Dec. 1, 1994, 94 0134
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—133



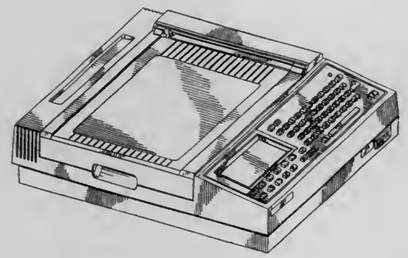
380,831
IMPLANTABLE SELF-EXPANDING STENT
Zaza A. Kavteladze; Aleksandr P. Korshok; Andrej A. Kadnikov, all of Moscow, Russian Federation; Palle Hansen, Roskilde, Denmark, and Beth Ann Kirts, Bloomington, Ind., assignors to William Cook Europe A/S, Denmark
Continuation-in-part of Ser. No. 379,582, Feb. 1, 1995. This application Feb. 2, 1995, Ser. No. 34,346
Claims priority, application U.S.S.R., Aug. 6, 1992, 5057852
Term of patent 14 years
LOC (6) Cl. 24 - *03*
U.S. Cl. D24—155



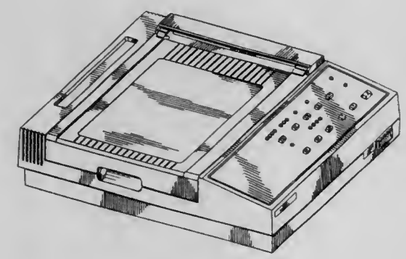
380,832
RADIO FREQUENCY COIL FOR MAGNETIC RESONANCE IMAGING APPARATUS
Masao Isshiki, Yokohama, and Yutaka Kato, Tochigi-ken, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagama-ken, Japan
Filed Aug. 4, 1994, Ser. No. 25,993
Claims priority, application Japan, Feb. 28, 1994, 6-5011
Term of patent 14 years
LOC (6) Cl. 24 - *99*
U.S. Cl. D24—158



380,833
ELECTROCARDIOGRAPH
Steven A. Mahoney, McMinnville, Oreg., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Sep. 22, 1994, Ser. No. 28,817
Term of patent 14 years
LOC (6) Cl. 24 - *01*
U.S. Cl. D24—167



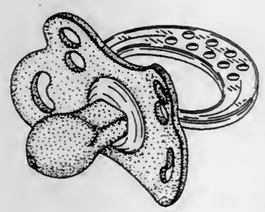
380,834
ELECTROCARDIOGRAPH
Steven A. Mahoney, McMinnville, Oreg., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Sep. 22, 1994, Ser. No. 28,818
Term of patent 14 years
LOC (6) Cl. 24 - *01*
U.S. Cl. D24—167



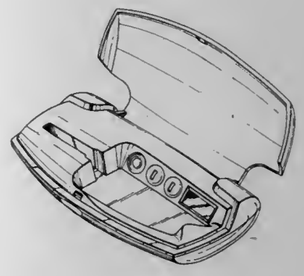
380,835
ORTHOPEDIC PILLOW FOR USE IN AN AUTOMOBILE
Roy Peddy, 5656 Sandalwood Ave., Rialto, Calif. 92376
Filed Jan. 25, 1995, Ser. No. 34,007
Term of patent 14 years
LOC (6) Cl. 06 - *09*
U.S. Cl. D24—183



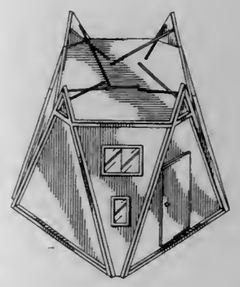
380,836
PACIFIER
William E. Fitzpatrick, Wyckoff, N.J., and Aidan J. Petrie, Providence, R.I., assignors to Playtex Products, Inc., Westport, Conn.
Filed Jan. 18, 1996, Ser. No. 49,123
Term of patent 14 years
LOC (6) Cl. 24 - *04*
U.S. Cl. D24—194



380,837
PREGNANCY TEST RESULT READER
Michael Thomas Pearson, and Kishen Gohil, both of Surrey, Great Britain, assignors to Unipath Limited, Hampshire, United Kingdom
Filed Mar. 22, 1995, Ser. No. 36,578
Claims priority, application United Kingdom, Sep. 23, 1994, 2042112
Term of patent 14 years
LOC (6) Cl. 24 - *01*
U.S. Cl. D24—223



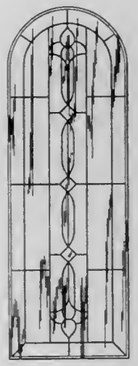
380,838
TRUNCATED ANTI-SEISMIC HOUSING DESIGN
Ally O. Hing, P.O. Box A, Superior, Ariz. 85273
Filed Apr. 22, 1996, Ser. No. 53,442
Term of patent 14 years
LOC (6) Cl. 25 - *03*
U.S. Cl. D25—23



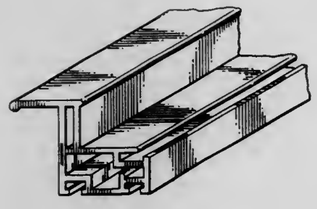
380,839
DOORWAY SIDELITE
Jeffery D. Lint, Columbus; David L. Williams, Orient, and Stephen J. Sparer, Loveland, all of Ohio, assignors to American Architectural Products, Inc., Salem, Ohio
Filed Sep. 14, 1995, Ser. No. 43,953
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—103



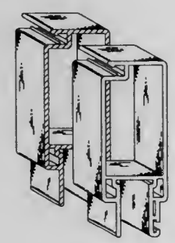
380,840
DOORLITE
Jeffery D. Lint, Columbus; David L. Williams, Orient, and Stephen J. Sparer, Loveland, all of Ohio, assignors to American Architectural Products, Inc., Salem, Ohio
Filed Sep. 14, 1995, Ser. No. 43,955
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—103



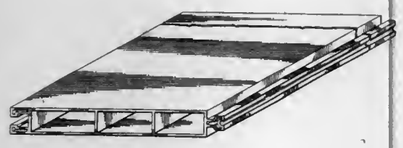
380,841
WINDOW SASH LIFT RAIL
Tony DiGiorgio, Woodbridge, Canada, assignor to Dominion Plastics Inc., Woodbridge, Canada
Filed Oct. 19, 1995, Ser. No. 45,420
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—124



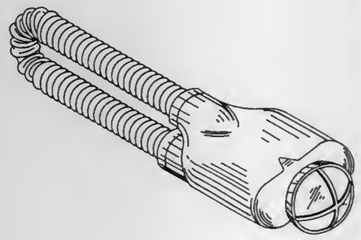
380,842
WINDOW COMPONENT EXTRUSION
Kevin P. Tyra, Puyallup, Wash., assignor to Mikron Industries, Inc., Kent, Wash.
Filed Dec. 1, 1995, Ser. No. 47,381
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—124



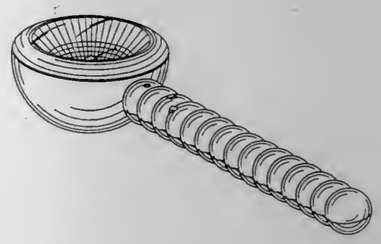
380,843
WALL COMPONENT
Keith Hart, Newmarket, Canada, assignor to Majestic Plastics Ltd., Weston, Canada
Filed Jan. 3, 1996, Ser. No. 48,536
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—138



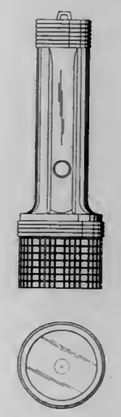
380,844
FLEXIBLE FLASHLIGHT
David W. Kaiser, North Haven, Conn., assignor to Black & Decker, Inc., Newark, Del.
Filed Mar. 13, 1995, Ser. No. 36,049
Term of patent 14 years
LOC (6) Cl. 26 - *02*
U.S. Cl. D26—43



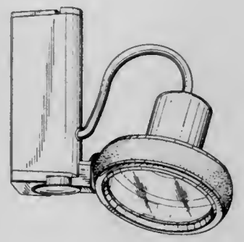
380,845
LAMP
Kam-Hoi Chan, Kowloon Bay, Hong Kong, assignor to Go-Gro Industries Ltd., Kowloon Bay, Hong Kong
Filed Jan. 30, 1996, Ser. No. 49,766
Claims priority, application Hong Kong, Aug. 4, 1994, 95-3-08069.2
Term of patent 14 years
LOC (6) Cl. 26 - *02*
U.S. Cl. D26—43



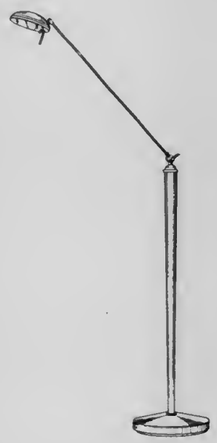
380,846
FLASHLIGHT
Kenneth Kung, 728-730 Nathan Road, 11/F, Kowloon, Hong Kong
Filed Jun. 7, 1995, Ser. No. 39,912
Term of patent 14 years
LOC (6) Cl. 26 - *02*
U.S. Cl. D26—49



380,847
TRACK LIGHT
Alejandro Mier-Langner, Providence, R.I.; Anthony Donato, Wellesley, and Horst Bernhart, Fairhaven, both of Mass., assignors to The Genlyte Group Incorporated, Union, N.J.
Filed Dec. 19, 1995, Ser. No. 48,057
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—63



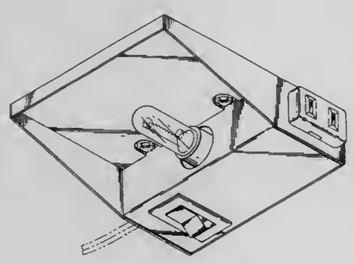
380,848
TAPERED STEM ADJUSTABLE LAMP
Dennis K. Swanson, Woodland Hills, Calif., assignor to Lamps Plus, Inc., Chatsworth, Calif.
Filed Dec. 29, 1995, Ser. No. 48,486
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—63



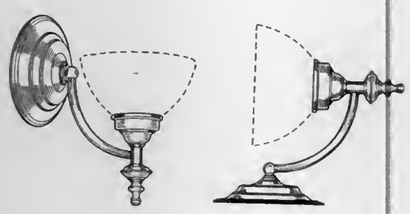
380,849
COMBINATION KNOB AND DOUBLE PAN TORCHIERE LAMP, READING LIGHTS AND TABLE
Dennis K. Swanson, Woodland Hills, Calif., assignor to Lamps Plus, Inc., Chatsworth, Calif.
Filed Jan. 31, 1996, Ser. No. 49,784
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—63



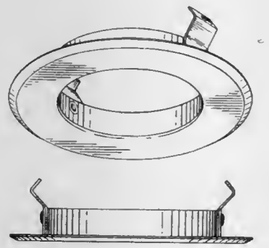
380,850
LIGHTING FIXTURE
Douglas R. Bray, Medford, N.J., assignor to Sea Gull Lighting Products, Inc., Riverside, N.J.
Filed Dec. 14, 1995, Ser. No. 47,925
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—87



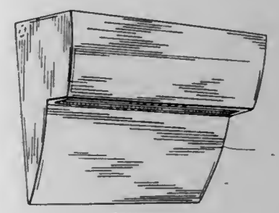
380,851
WALL MOUNTED LIGHT FIXTURE
Patrick S. Dolan, 1901 NW. Upshur, Portland, Oreg. 97209
Filed Jan. 11, 1996, Ser. No. 48,877
Term of patent 14 years
LOC (6) Cl. 26 - *02*
U.S. Cl. D26—92



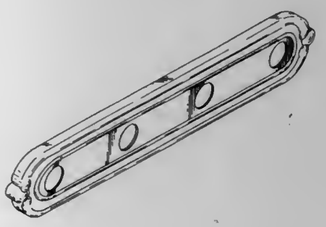
380,852
TRIM FOR EMBEDDED LIGHT FIXTURE
Michel Lecluze, 1009, rue du Parc Industriel, St-Jean-Chrysostome, Québec, Canada
Filed May 10, 1996, Ser. No. 54,225
Term of patent 14 years
LOC (6) Cl. 26 - *99*
U.S. Cl. D26—118



380,853
WALL MOUNTABLE LIGHT SHADE
Dennis E. Johnson, Grafton, Wis., assignor to SPI Lighting, Inc., Mequon, Wis.
Filed Oct. 4, 1995, Ser. No. 44,954
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—128

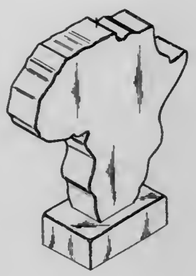


380,854
LIGHTING ASSEMBLY COVER
Douglas R. Bray, Medford, N.J., assignor to Sea Gull Lighting Products, Inc., Riverside, N.J.
Filed Dec. 14, 1995, Ser. No. 47,923
Term of patent 14 years
LOC (6) Cl. 26 - *99*
U.S. Cl. D26—142



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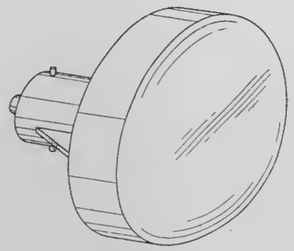
380,855
CONTINENT CANDLE
Kausiwa Arshad, 296 Edgewood St., Floor 3, Hartford, Conn. 06112
Filed May 28, 1996, Ser. No. 55,021
Term of patent 14 years
LOC (6) Cl. 26 - *04*
U.S. Cl. D26—7



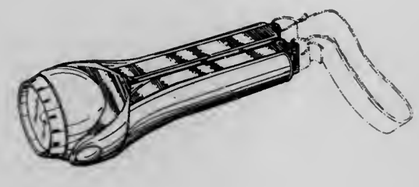
380,856
OIL LAMP
David R. Perkins, Manchester, Mass., assignor to Glass Dimensions, Inc., Essex, Mass.
Continuation-in-part of Ser. No. 38,314, May 3, 1995. This application Apr. 10, 1996, Ser. No. 55,969
Term of patent 14 years
LOC (6) Cl. 26 - *01*
U.S. Cl. D26—11



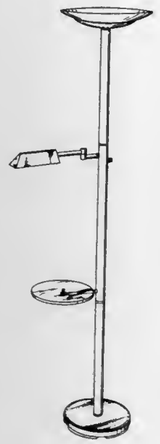
380,857
AUTOMOTIVE LIGHT BULB
Elias Faris, 808 Glenmore St., Pasadena, Tex. 77503
Filed Apr. 16, 1996, Ser. No. 53,067
Term of patent 14 years
LOC (6) Cl. 26 - *06*
U.S. Cl. D26—28



380,858
FLASHLIGHT
Raymond Sharrah, Collegeville; Duncan Copeland, and Velissa VanScoyoc, both of Newtown, all of Pa., assignors to Streamlight, Inc., Norristown, Pa.
Filed Oct. 16, 1995, Ser. No. 45,334
Term of patent 14 years
LOC (6) Cl. 26 - *02*
U.S. Cl. D26—49



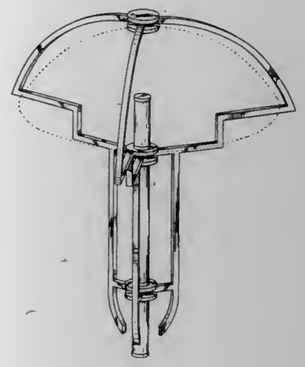
380,859
COMBINED TORCHIERE LAMP, READING LIGHT, AND TABLE
Thomas M. Huang, 5649 N. Peck Rd., Arcadia, Calif. 91006
Filed Jan. 26, 1996, Ser. No. 49,550
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—63



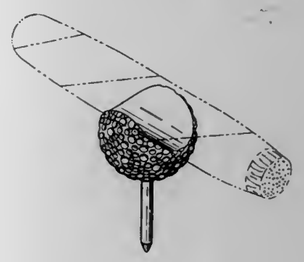
380,860
TABLE LAMP
Simon Benghozi, 406 Champagneur, Outremont, Que., Canada
Filed Aug. 7, 1995, Ser. No. 42,311
Term of patent 14 years
LOC (6) Cl. 26 - *03*
U.S. Cl. D26—111



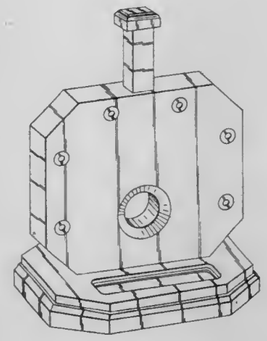
380,861
TABLE LAMP BASE
Kevin Von Kluck, Hudson, Ohio, assignor to The L.D. Kichler Co., Cleveland, Ohio
Filed Apr. 9, 1996, Ser. No. 52,791
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—111



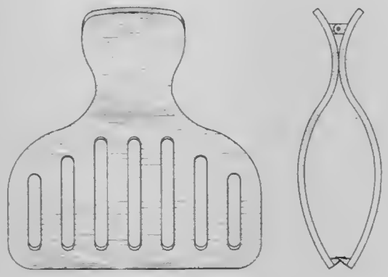
380,862
CIGAR CADDY
Charles W. Hasselgren, South Plainfield, and Ray Siberine, Basking Ridge, both of N.J., assignors to Hasselgren Golf Associates, L.L.C., South Plainfield, N.J.
Filed May 7, 1996, Ser. No. 54,187
Term of patent 14 years
LOC (6) Cl. 27 - *06*
U.S. Cl. D27—192



380,863
CIGAR CUTTER
William R. Mikler, 29550 Pike Dr., Orange, Ohio 44022
Filed Feb. 9, 1996, Ser. No. 50,131
Term of patent 14 years
LOC (6) Cl. 27 - *99*
U.S. Cl. D27—195



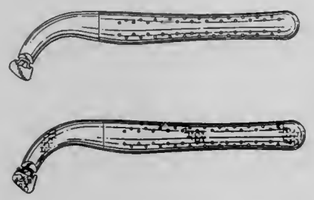
380,864
SPRING LOADED HAIR WAVING CLIP
Keith Deakin, and Lynn Deakin, both of 15 Barnsdale Lane, St. Catherine's, Ontario, Canada
Filed Apr. 23, 1996, Ser. No. 53,467
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—40



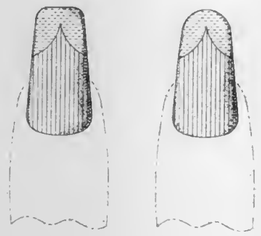
380,865
HAIR CLASP
Yeh Shia Shing, No.25-3, Chung-Chih Ts'un, Wu-Lai Hsiang, Taipei Hsien, Taiwan
Filed Sep. 4, 1994, Ser. No. 28,192
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—41



380,866
RAZOR
Jeff W. Wonderley, Ft. Defiance, Va., assignor to American Safety Razor Company, Verona, Va.
Filed May 25, 1994, Ser. No. 23,446
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—46



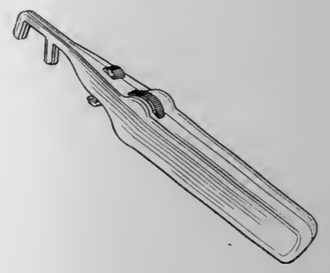
380,867
DECORATIVE NAIL COVERING
Alexander Agee, II; Timothy K. Hawkins, and Edith D. Hawkins, all of Indianapolis, Ind., assignors to Nina International, Inc., Indianapolis, Ind.
Filed Oct. 18, 1995, Ser. No. 45,352
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—56



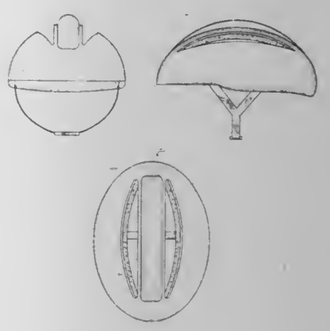
380,868
COMBINED BACK SCRUBBER AND APPLICATOR
Anthony Santore, 346 Third Ave., Pelham, N.Y. 10803
Filed Jan. 30, 1996, Ser. No. 49,754
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—63



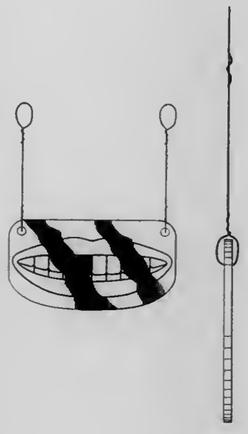
380,869
FLOSSING DEVICE
Mark C. Bergman, 13545 Treasure Way, Chino Hills, Calif. 91709
Filed Mar. 5, 1996, Ser. No. 51,204
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—64



380,870
BICYCLE HELMET
Paul Szabados, 1005 Sulphur Springs La., Las Vegas, Nev. 89128
Filed Nov. 24, 1995, Ser. No. 47,012
Term of patent 14 years
LOC (6) Cl. 09 - *03*
U.S. Cl. D29—102



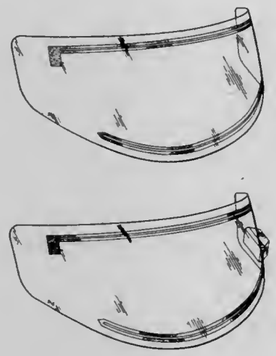
380,871
LIP PROTECTOR
William J. Guyette, Jr., 2624 Christopher, Galveston, Tex. 77551
Continuation of Ser. No. 20,764, Apr. 1, 1994, which is a continuation of Ser. No. 754,423, Sep. 3, 1991, abandoned. This application Jan. 17, 1995, Ser. No. 33,538
Term of patent 14 years
LOC (6) Cl. 29 - *02*
U.S. Cl. D29—108



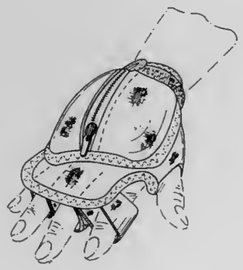
380,872
WIND DEFLECTING EYE GUARD
Terry J. Wickland, 23652 Pond View Pl., Golden, Colo. 80401
Continuation-in-part of Ser. No. 269,695, Jul. 1, 1994. This application Feb. 7, 1995, Ser. No. 34,521
Term of patent 14 years
LOC (6) Cl. 29 - *02*
U.S. Cl. D29—109



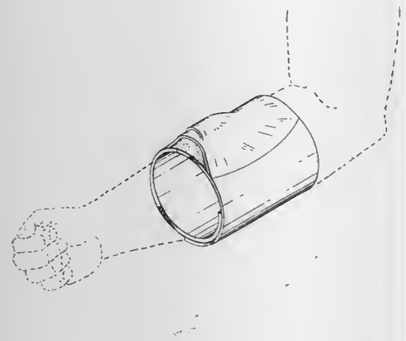
380,873
HELMET FACE SHIELD
Douglas A. Reuber, Lindsay, Canada, assignor to Douglas Alvin Reuber, Lindsay, Canada
Filed Jan. 11, 1995, Ser. No. 33,361
Term of patent 14 years
LOC (6) Cl. 29 - *02*
U.S. Cl. D29—110



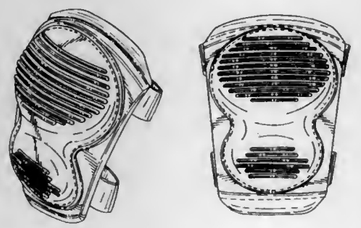
380,874
AEROBIC GLOVE
Charles A. Caswell, Altus, Okla., assignor to Okl Manufacturing Company, Altus, Okla.
Filed Jan. 26, 1996, Ser. No. 49,469
Term of patent 14 years
LOC (6) Cl. 29 - *02*
U.S. Cl. D29—113



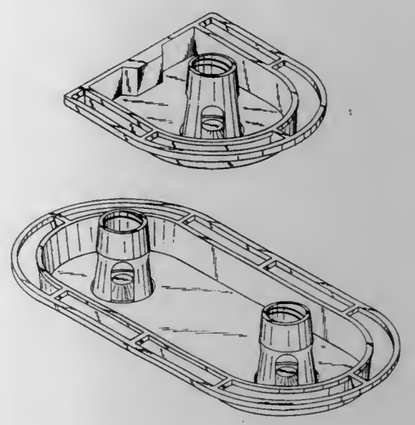
380,875
SELF DEFENSE MOUNTING STRAP
Mario A. Gallo, 3881 Casa Colorado, Las Vegas, Nev. 89121-4604
Filed Sep. 20, 1995, Ser. No. 44,195
Term of patent 14 years
LOC (6) Cl. 29 - *02*
U.S. Cl. D29—120



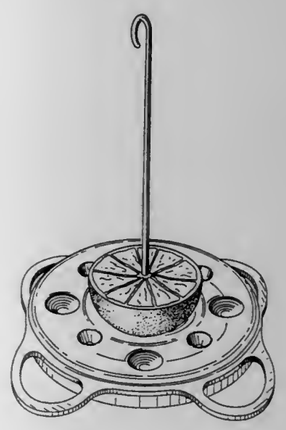
380,876
KNEE PAD
Tom Campbell, Alta Dena, Calif., assignor to McGuire-Nicholas Company, Inc., City of Commerce, Calif.
Filed Nov. 10, 1994, Ser. No. 30,856
Term of patent 14 years
LOC (6) Cl. 29 - *02*
U.S. Cl. D29—121



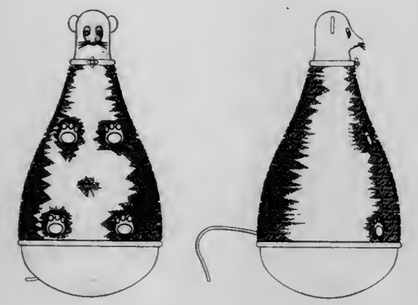
380,877
BIRD FEEDER BASE
Patrick McNaughton, Plymouth, Minn., assignor to McNaughton Incorporated, Minneapolis, Minn.
Filed Dec. 6, 1995, Ser. No. 50,526
Term of patent 14 years
LOC (6) Cl. 30 - *07*
U.S. Cl. D30—124



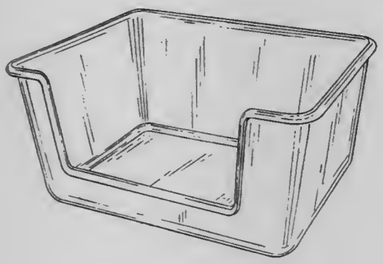
380,878
BIRD FEEDER
Arthur C. Brown, P.O. Box 277, West Kingston, R.I. 02892
Filed Apr. 16, 1996, Ser. No. 53,114
Term of patent 14 years
LOC (6) Cl. 30 - *07*
U.S. Cl. D30—121



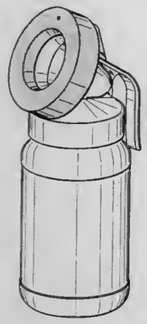
380,879
WEIGHTED CAT TOY FIGURINE WITH CATNIP-FILLED HEAD
Jerson Hernandez, 2225 Holland, Apt. 4J, Bronx, N.Y. 10467
Filed Jan. 29, 1996, Ser. No. 49,540
Term of patent 14 years
LOC (6) Cl. 30 - *99*
U.S. Cl. D30—160



380,880
FERRET LITTER PAN
Peter H. Reid, Webster, N.Y., assignor to Marshall Pet Products, Inc., Wolcott, N.Y.
Filed Mar. 29, 1996, Ser. No. 52,396
Term of patent 14 years
LOC (6) Cl. 30 - *99*
U.S. Cl. D30—161



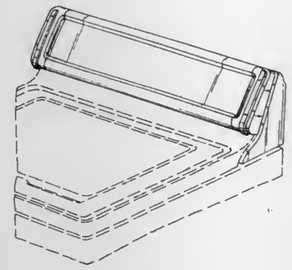
380,881
SQUEEZE BOTTLE BOVINE TEAT SANITIZER
Ronald A. Boudreau, 3421 Dragoo Park Dr., Modesto, Calif. 95350
Filed Nov. 17, 1994, Ser. No. 31,073
Term of patent 14 years
LOC (6) Cl. 30 - *99*
U.S. Cl. D30—199



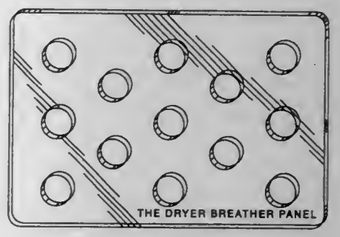
380,882
VACUUM CLEANER
Anthony Brooks Rorke, Guilford, and Robert Osit, Shelton, both of Conn., assignors to Black & Decker Inc., Newark, Det.
Filed Oct. 30, 1995, Ser. No. 45,756
Term of patent 14 years
LOC (6) Cl. 15 - *05*
U.S. Cl. D32—22



380,883
APPLIANCE CABINET BACKSPLASH
Jonathan Mark Katz, Louisville, and Kevin Scott Laundroche, Anchorage, both of Ky., assignors to General Electric Company, Louisville, Ky.
Filed Oct. 7, 1994, Ser. No. 29,530
Term of patent 14 years
LOC (6) Cl. 15 - *05*
U.S. Cl. D32—25



380,884
CLOTHES DRYER DOOR PANEL
Gary E. Gormly, 5660 Tichy Blvd., Commerce City, Colo. 80022
Filed Jan. 20, 1995, Ser. No. 33,795
Term of patent 14 years
LOC (6) Cl. 15 - *05*
U.S. Cl. D32—25



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LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 8th DAY OF JULY, 1997

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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Steele, Raymond George; Grace, Stephen John; Robinson, John Frederick; Haussrer, Andreas Karl; Brown, Eric John; Kane, Michael John; MacFarlane, Allan Paul; and Allerby, Ian Murray, 5,644,900, Cl. 53-449.000.
Allgon AB: *See*—
Saldell, Ulf; Bergquist, Håkan; and Engblom, Gunnar, 5,646,636, Cl. 343-713.000.
AlliedSignal, Inc.: *See*—
Cope, Warren Bruce; and Roos, Mark G., 5,646,624, Cl. 342-174.000.
Allison, Gregory, to Lear Corporation. Seat back support connection. 5,645,318, Cl. 297-383.000.
Allman, Derryl D. J., to Symbios Logic Inc. Method for polishing a wafer. 5,645,736, Cl. 216-89.000.
Almansa, Carmen: *See*—
Bartroli, Javier; Turmo, Enric; Anguita, Manuel; Carceller, Elena; and Almansa, Carmen, 5,646,294, Cl. 548-267.200.
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Iwane, Yasuhiko; and Mori, Masahiko, 5,645,360, Cl. 400-613.000.
Alt, Charles A.; Merritt, Leander; Rhodes, Gary A.; Robey, Roger L.; Van Meter, Eldon E.; Ward, John S.; and Mitch, Charles H., to Eli Lilly and Company. Heterocyclic compounds and their preparation and use. 5,646,289, Cl. 548-110.000.
Alt, Helmut G.: *See*—
Frey, Krisztina; von Massow, Gabriele; Alt, Helmut G.; and Welch, M. Bruce, 5,646,323, Cl. 556-21.000.
Althin Medical, Inc.: *See*—
Radovich, John M.; Rothberg, Melvin; and Washington, George, 5,645,778, Cl. 264-41.000.
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Easley, Michael A., 5,645,810, Cl. 423-600.000.
Alvarez, Henry S.: *See*—
Armenta, Vincent; Cruz, Louis J.; and Alvarez, Henry S., 5,644,799, Cl. 2-209.130.
Ambady, Raman; Nutter, Dale E., Jr.; and Barnes, Dewey W., to Champion International Corporation. Process for manufacturing bleached pulp with reduced chloride production. 5,645,687, Cl. 162-65.000.
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Coon, Hayden G.; Ambesi-Impiombato, Francesco Saverio; and Curcio, Francesco, 5,646,035, Cl. 435-378.000.
Ambrosio, Luigi: *See*—
Nicolais, Luigi; Ambrosio, Luigi; Netti, Paolo Antonio; and Callegaro, Lanfranco, 5,645,592, Cl. 623-16.000.
AMBU International A/S: *See*—
Lurie, Keith G.; and Cohen, Todd J., 5,645,522, Cl. 601-43.000.
Amemiya, Yoshiya: *See*—
Yanagisawa, Hiroaki; Amemiya, Yoshiya; Shimoji, Yasuo; Kanazaki, Takuro; Koike, Hiroyuki; and Sada, Toshio, 5,646,171, Cl. 514-381.000.
American Cyanamid Company: *See*—
Cannelongo, Joseph Fredrick, 5,645,843, Cl. 424-405.000.
Firch, Joseph Augustus; Kuhn, David George; and Hunt, David Allen, 5,646,278, Cl. 544-224.000.
American Home Products Corporation: *See*—
Morris, Randall Ellis; and Gregory, Clare Robert, 5,646,160, Cl. 514-291.000.
American Institute of Taxidermy, Inc.: *See*—
Rinehart, John R., 5,645,780, Cl. 264-46.400.
American Metal Ware Co.: *See*—
Dahmen, William A.; Lojacono, Christopher Paul; and Malec, Zbigniew, 5,644,972, Cl. 99-280.000.
American Standard Inc.: *See*—
Cuman, Giorgio; and Rovere, Delfino, 5,645,863, Cl. 425-84.000.
Hartfield, Jon P.; and Sanborn, Duane F., 5,645,124, Cl. 165-117.000.
American Tectrade Enterprises: *See*—
Wang, Zhengge, 5,645,414, Cl. 431-153.000.
American Tool Companies, Inc.: *See*—
Fuller, Anthony B.; Beckmann, Toby J.; Sorensen, Joseph A.; and Chervenak, Thomas M., 5,644,852, Cl. 33-414.000.
Amgen Inc.: *See*—
Richards, Rodney M., 5,645,987, Cl. 435-6.000.
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Amirana, Omar: *See*—
Littmann, Laszlo; Lau, Liming; and Amirana, Omar, 5,645,064, Cl. 128-642.000.
Amoco Corporation: *See*—
Cattron, Wendell W.; and Schiavone, Robert J., 5,646,208, Cl. 524-128.000.
Amoco/Enron Solar: *See*—
Li, Yaun-Min; Bennett, Murray S.; and Yang, Liyou, 5,646,050, Cl. 437-4.000.
Amori, Michael D. Computer and instrument enclosure. 5,646,823, Cl. 361-695.000.
Ampex Corporation: *See*—
Ryan, Dennis M., 5,646,798, Cl. 360-85.000.
Amsler, Thomas J.: *See*—
Caputo, Ross A.; Amsler, Thomas J.; Du, Kangyan; Jones, Jeffery; Moulton, Kern A.; Campbell, Bryant A., deceased, 5,645,796, Cl. 422-22.000.
Amway Corporation: *See*—
Haley, Kalliopi S., 5,645,751, Cl. 252-8.910.
Anadigics, Inc.: *See*—
Bayruns, Robert J.; and Laverick, Timothy M., 5,646,573, Cl. 330-59.000.
Analog Devices, Inc.: *See*—
Kovacs, Janos; Kroesen, Ronald; and McCall, Kevin, 5,646,968, Cl. 375-375.000.
Analytical Systems Engineering Corp.: *See*—
Schrock, Clifford B.; and Engel, Herbert E., 5,646,858, Cl. 364-464.220.
Analyticon Gesellschaft fur Chemische Analytik und Consulting GmbH: *See*—
Müller-Kuhrt, Lutz; and Immelmann, Andreas, 5,646,179, Cl. 514-460.000.
Anand, Subhash Chander: *See*—
Horrocks, Arthur Richard; Anand, Subhash Chander; and Hill, Barry Jakeman, 5,645,926, Cl. 442-234.000.
Andersen, John L.: *See*—
Moss, William R.; and Andersen, John L., 5,645,482, Cl. 454-339.000.
Andersen, Raymond J.; Allen, Theresa M.; and Burgoyne, David L., to University of British Columbia; and University of Alberta. Contignasterol compounds and pharmaceutical compositions comprising the same. 5,646,138, Cl. 514-172.000.
Anderson, Charles H., to Texas Instruments Incorporated. Optical guide for increasing printer image width. 5,646,782, Cl. 359-629.000.
Anderson, DeWayne: *See*—
Sahlberg, Douglas; and Anderson, DeWayne, 5,645,444, Cl. 439-392.000.
Anderson, DeWayne J.: *See*—
Robinson, Scott T.; Newman, Peter H.; Merrow, Jack K.; and Anderson, DeWayne J., 5,647,045, Cl. 385-135.000.
Anderson, Jerry Max; Cammons, Ray R.; Driscoll, Elizabeth J.; and Lampert, Norman Roger, to Lucent Technologies, Inc. Unipartite jack receptacle. 5,647,043, Cl. 385-78.000.
Anderson, John McCune; McAdams, Eric Thomas; McCafferty, Dermot Frances; McLaughlin, James Andrew; and Woolfson, Aaron David. Biomedical electrode device. 5,645,062, Cl. 128-640.000.
Anderson, Katherine H.: *See*—
Olson, Kenneth F.; Gilman, Byron L.; and Anderson, Katherine H., 5,645,571, Cl. 607-5.000.
Anderson, Kevin. Selectable target putting trainer. 5,645,492, Cl. 473-185.000.
Anderson, Paul B.: *See*—
Kesterman, James E.; Anderson, Paul B.; Wood, Chester W.; Dalhart, Mark D.; and Larson, David K., 5,645,115, Cl. 141-206.000.
Anderson, Roger N.: *See*—
Beinglass, Israel; Venkatesan, Mahalingam; and Anderson, Roger N., 5,645,646, Cl. 118-730.000.
Anderson, William David: *See*—
Feldt, Daniel Charles; and Anderson, William David, 5,646,576, Cl. 330-263.000.
Ando, Atsutoshi: *See*—
Suwa, Koichi; Kato, Junichi; Oninura, Tadashi; Inami, Satoru; Suzuki, Jun; Ando, Atsutoshi; and Seita, Hiroyasu, 5,646,718, Cl. 399-350.000.
Ando Electric Co., Ltd.: *See*—
Sato, Yu, 5,646,568, Cl. 327-276.000.
Ando, Jitsuhiko: *See*—
Oshima, Katsuyuki; Ando, Jitsuhiko; and Torii, Masanori, 5,646,089, Cl. 503-227.000.
Ando, Michael E.: *See*—
Meyer, Thomas A.; and Ando, Michael E., 5,645,822, Cl. 424-59.000.
Andra, Jurgen. Process and device for surface-modification by physico-chemical reactions of gases or vapors on surfaces, using highly-charged ions. 5,645,897, Cl. 427-526.000.
Andrean, Hervé; Junino, Alex; Lezoray, Louis; Cotteret, Jean; Audousset, Marie Pascale; and Maubru, Mireille, to L'Oreal. Compositions which contain and processes which use an insoluble pigment obtained by the oxidative polymerization of indole derivatives for the temporary dyeing of keratinous fibers. 5,645,609, Cl. 8-405.000.
Andreas Stihl: *See*—
Schlessmann, Helmut, 5,645,026, Cl. 123-184.460.
Andritz Sprout-Bauer, Inc.: *See*—
Ward, Stephen Daniel, 5,644,971, Cl. 99-278.000.
Andruska, Donald Lee; and Tsai, Liane Toy, to Lucent Technologies Inc. Hierarchical switch support of services for subscribers of independent private branch exchanges. 5,646,985, Cl. 379-207.000.

Ang, Jit F., to Protein Technologies International. Cellulose in food matrix quantification. 5,646,045, Cl. 436-20.000.

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Kroll, Mark W.; and Perttu, Joseph S., 5,645,572, Cl. 607-5.000.
Kroll, Mark W.; and Smith, Charles U., 5,645,573, Cl. 607-7.000.

Angell, Michael S.: *See—*
Schwarz, Eckhard C. A.; Brown, Douglas B.; and Angell, Michael S., 5,645,790, Cl. 264-555.000.

Angelopoulos, Marie; Gelorme, Jeffrey Donald; and Kuczynski, Joseph Paul, to International Business Machines Corporation. Electrically conductive pressure sensitive adhesives. 5,645,764, Cl. 252-500.000.

Anglian Water Services, Ltd.: *See—*
Lo, Sin-Man, 5,645,797, Cl. 422-28.000.

Anguita, Manuel: *See—*
Bartroli, Javier; Turmo, Enric; Anguita, Manuel; Carceller, Elena; and Almansa, Carmen, 5,646,294, Cl. 548-267.200.

Angus, Todd James, to United Technologies Corporation. Gas turbine engine case coated with thermal barrier coating to control axial airfoil clearance. 5,645,399, Cl. 415-178.000.

Anjur, Sriram Padmanabhan; Shah, Ketan Narendra; and Wisneski, Anthony John, to Kimberly-Clark Worldwide, Inc. Elastomeric absorbent structure. 5,645,542, Cl. 604-368.000.

Ansari, Naseem A.; and Ansari, Omar R. Apparatus and method for molding grinding wheels. 5,645,783, Cl. 264-112.000.

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Ansari, Naseem A.; and Ansari, Omar R., 5,645,783, Cl. 264-112.000.

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Yamauchi, Satoshi; Anwyl, Phyllis; Kameda, Masayuki; Katooka, Takashi; Narita, Masumi; Ito, Hideo; Ohguro, Yoshihisa; Hayashi, Taisen; Yamagata, Hiroko; Honma, Sakiko; and Oono, Ayako, 5,646,840, Cl. 395-752.000.

Aoki, Hidemi: *See—*
Okada, Haruo; Aoki, Hidemi; Takeuchi, Yasuhiko; and Yuhara, Kunio, 5,645,786, Cl. 264-255.000.

Aoki, Hikoharu, to Brother Kogyo Kabushiki Kaisha. Laser workable nozzle plate of ink jet apparatus and method for forming the laser workable nozzle plate. 5,646,657, Cl. 347-45.000.

Aoki, Kazutaka: *See—*
Kitazawa, Katsunori; and Aoki, Kazutaka, 5,645,629, Cl. 106-31.110.

Aoki, Naofumi: *See—*
Nakata, Naotarou; Aoki, Naofumi; and Yamazaki, Kazutoshi, 5,645,739, Cl. 219-121.640.

Aoki, Toshiyuki; Kamejima, Kohji; and Hamada, Tomoyuki, to Hitachi, Ltd. Computer aided work support system and method. 5,647,009, Cl. 382-100.000.

Aoyagi, Akihiko: *See—*
Akiyama, Hiroyuki; Aoyagi, Akihiko; Takada, Kazuhiko; and Tsujino, Hitoshi, 5,646,802, Cl. 360-104.000.

Aoyama, Shuichi: *See—*
Yamamoto, Kenji; Osada, Mototsuga; Aoyama, Shuichi; and Ishii, Koji, 5,645,793, Cl. 266-287.000.

Aoyama, Toshimi: *See—*
Ohta, Katsuyuki; Takagi, Toshiya; and Aoyama, Toshimi, 5,645,974, Cl. 430-306.000.

Aplus Integrated Circuits, Inc.: *See—*
Lee, Peter W.; Tsao, Hsing-Ya; and Hsu, Fu-Chang, 5,646,890, Cl. 365-185.110.

Apple Computer, Inc.: *See—*
Young, Steven J., 5,645,949, Cl. 429-7.000.

Applied Materials, Inc.: *See—*
Beinglass, Israel; Venkatesan, Mahalingam; and Anderson, Roger N., 5,645,646, Cl. 118-730.000.
Nishizato, Hiroshi; Sivaramakrishnan, Visweswaren; and Zhao, Jun, 5,645,642, Cl. 118-692.000.
Shamouilian, Shamouil; Broydo, Samuel; and Birang, Manoocher, 5,646,814, Cl. 361-234.000.

Aprica Kassai Kabushikikaisha: *See—*
Onishi, Ichiro; and Kassai, Kenzou, 5,645,317, Cl. 297-250.100.

APV Crepaco, Inc.: *See—*
Kress, John E., 5,644,926, Cl. 62-342.000.

APV Rosista GmbH: *See—*
Bräckelmann, Wolfgang; Schramm, Norbert; and Baumbach, Frank, 5,645,102, Cl. 137-238.000.

Aquino, Christopher Joseph: *See—*
Sugg, Elizabeth Ellen; Aquino, Christopher Joseph; Szewczyk, Jerzy Ryszard; Finch, Harry; and Carr, Robin Arthur Ellis, 5,646,140, Cl. 517-221.000.

Aquion Partners Limited Partnership: *See—*
Grayson, John R., 5,645,105, Cl. 137-430.000.

Arab Company For Drug Industries And Medical Applicances (ACDIMA), The: *See—*
Badwan, Adnan; Abumalooh, Abdullah; Haddadin, Muwaffak; and Ibrahim, Hussein, 5,646,131, Cl. 514-58.000.

Arai, Atsushi: *See—*
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Arakawa, Kohei: *See—*
Kamada, Koh; Kozono, Hiroko; Watanabe, Jun; and Arakawa, Kohei, 5,646,703, Cl. 349-118.000.

Araki, Takayuki; Tsuda, Nobuhiko; and Yonei, Yasushi, to Daikin Industries, Ltd. Aqueous dispersion of fluorine-containing copolymer. 5,646,201, Cl. 523-201.000.

Araki, Toshiyuki; Tokieda, Takemi; Yabushita, Shin-ichi; Ueda, Yasuyoshi; and Tsukise, Bunzi, to Sumitomo Chemical Company, Limited. Phthalocyanine monoazo compounds and a process for producing the same. 5,646,274, Cl. 540-126.000.

ARCO Chemical Technology, L.P.: *See—*
Crocco, Guy L.; and Zajacek, John G., 5,646,314, Cl. 549-531.000.
Guo, Shao-Hua, 5,646,213, Cl. 524-562.000.
Guo, Shao-Hua, 5,646,225, Cl. 526-318.500.
Tancibok, Krystyna U.; and Sekula, Bernard C., 5,645,881, Cl. 426-531.000.

Ardco Incorporated: *See—*
Artwohl, Paul J.; Kaspar, Melvin; and Mamelson, Richard A., 5,645,330, Cl. 312-116.000.

Ardecky, Robert J.: *See—*
Abelman, Matthew M.; Ardecky, Robert J.; and Nutt, Ruth F., 5,646,165, Cl. 514-315.000.

Arens, Christopher: *See—*
Mariol, John V.; and Arens, Christopher, 5,644,806, Cl. 5-99.100.

Argenta, Louis C.; and Morykwas, Michael J., to Wake Forest University. Method of treating tissue damage and apparatus for same. 5,645,081, Cl. 128-897.000.

Arimitsu, Eizaburo: *See—*
Tsuyuguchi, Koji; Kimura, Haruyoshi; Kawabe, Hideaki; and Arimitsu, Eizaburo, 5,645,120, Cl. 164-437.000.

Arimoto, Kazutami: *See—*
Tsukude, Masaki; and Arimoto, Kazutami, 5,646,900, Cl. 365-205.000.

Arizona Board of Regents acting on behalf of Arizona State University: *See—*
Pettit, George R.; and Xu, Junping, 5,646,246, Cl. 530-321.000.

Armament Systems and Procedures, Inc.: *See—*
Parsons, Kevin L., 5,645,276, Cl. 463-47.700.

Armando, Cedro: *See—*
Lanzarotti, Ennio; Mantovani, Marisa; Prino, Giuseppe; Porta, Roberto; Armando, Cedro; and Moltrasio, Danilo, 5,646,127, Cl. 514-44.000.

Armenta, Vincent; Cruz, Louis J.; and Alvarez, Henry S. Headgear accessory. 5,644,799, Cl. 2-209.130.

Armiraglio, Massimo: *See—*
Delrosso, Giovanni; Vanoli, Stefano; and Armiraglio, Massimo, 5,646,775, Cl. 359-341.000.

Armstrong, William: *See—*
Rizkalla, Nabil; and Armstrong, William, 5,646,087, Cl. 502-347.000.

Armstrong, William D.; and Lin, Joe. Stilt system. 5,645,515, Cl. 482-75.000.

Arnette, Gregory F., to Arnette Optic Illusions, Inc. Removable nose piece. 5,646,707, Cl. 351-138.000.

Arnette Optic Illusions, Inc.: *See—*
Arnette, Gregory F., 5,646,707, Cl. 351-138.000.

Arnold, Peter-Franz: *See—*
Chehab, Firdausia; Fietkau, Stefan; Arnold, Peter-Franz; Juschus, Thomas; and Schmick, Clemens, 5,645,087, Cl. 131-88.000.

Arntz, Bernard James, to Lucent Technologies Inc. Peak power reduction in power sharing amplifier networks. 5,646,631, Cl. 342-373.000.

Arsenault, Raoul; Trottier, Michel; Chornet, Esteban; and Jollez, Paul, to Florasynth, Inc. Process of aqueous extraction of maltol. 5,646,312, Cl. 549-418.000.

Arts, Henricus J.: *See—*
van Beek, Johannus A. M.; de Vries, Johannes G.; Arts, Henricus J.; Persad, Radjindrakumar; and van Doremaele, Gerardus H. J., 5,646,322, Cl. 556-11.000.

Artwohl, Paul J.; Kaspar, Melvin; and Mamelson, Richard A., to Ardco Incorporated. Refrigerated display cabinets with improved mullion assembly. 5,645,330, Cl. 312-116.000.

Asabe, Mitsuo: *See—*
Suzuki, Shigeo; Shintaku, Hidenobu; Watanabe, Taku; Asabe, Mitsuo; Takahashi, Kazuo; Abe, Yoshiro; Kono, Hiroki; and Hirao, Kazunori, 5,646,482, Cl. 313-582.000.

Asacker, Thomas E.: *See—*
Cotner, Ronald L.; Parise, Gerald J.; Asacker, Thomas E.; Sadrnoori, Bijan; and Muller, Robert A., 5,645,054, Cl. 128-204.230.

Asada, Eiichi; and Tanaka, Tetsuya, to Shoei Chemical Inc. Lead-free conductive paste. 5,645,765, Cl. 252-518.000.

Asada, Masaaki: *See—*
Kajitani, Koji; Takeuchi, Hiroshi; Fukatani, Yasunobu; Teramae, Hiroshi; and Asada, Masaaki, 5,645,150, Cl. 192-70.160.

Asahi Glass Company Ltd.: *See—*
Maekawa, Takashige; Osawa, Ryoko; Kamata, Satoshi; and Kumai, Seisaku, 5,646,222, Cl. 526-243.000.
Yoneda, Takashige; Wakabayashi, Tsuneo; and Takano, Yukiko, 5,645,939, Cl. 428-429.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
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Iima, Mitsunori; and Iizuka, Takashi, 5,646,767, Cl. 359-206.000.
Kim, Phyo; and Suzuki, Masao, 5,645,596, Cl. 623-17.000.
Kitazawa, Toshiyuki; and Itabashi, Tomoaki, 5,646,711, Cl. 396-413.000.
Kohmoto, Shinsuke; and Kobayashi, Tomoaki, 5,646,790, Cl. 359-823.000.
Nishiyama, Masataka, 5,645,920, Cl. 428-195.000.
Sensui, Takayuki, 5,646,393, Cl. 250-201.800.

Tejima, Yasuyuki; Minefuji, Nobutaka; and Iwanaga, Masakuni, 5,645,334, Cl. 353-101.000.

Asai, Hiroki; Zhang, Qiming; and Sugahara, Hiroto, to Brother Kogyo Kabushiki Kaisha. Ink ejecting device having alternating ejecting channels and non-ejecting channels. 5,646,661, Cl. 347-69.000.

Asai, Masahiro: *See—*
Ishibashi, Yoici; and Asai, Masahiro, 5,645,018, Cl. 123-73.0PP.

Asano, Nobuo: *See—*
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Asano, Takayasu: *See—*
Nishio, Osamu; Tanaka, Norio; Asano, Takayasu; and Godwin, Eddie M., 5,644,961, Cl. 82-127.000.

Asante Technologies, Inc.: *See—*
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Asao, Hiroyuki: *See—*
Taruno, Tomohiro; Kanai, Shinichi; Asao, Hiroyuki; Kimura, Syoichi; and Toyoda, Yoshio, 5,645,787, Cl. 264-272.170.

Åsberg, Bengt, to Sandvik AB. Drill bit having springless check valve and method of blocking backflow during drilling. 5,645,132, Cl. 175-318.000.

Ascension Orthopedics, Inc.: *See—*
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Aschenbeck, David P.; and Pellegrin, Michael T., to Owens-Corning Fiberglas Technology, Inc. Web lapping device using low frequency sound. 5,646,908, Cl. 367-137.000.

Asea Brown Boveri AB: *See—*
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Asea Brown Boveri AG: *See—*
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Ashby, Gordon R.: *See—*
Bird, Frederick John; Dominelli, Nicola; and Ashby, Gordon R., 5,646,047, Cl. 436-128.000.

Ashland Inc.: *See—*
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Asmussen, Jes: *See—*
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Asten, Inc.: *See—*
Lee, Henry J., 5,645,112, Cl. 139-383.00A.

Asten, Rocky Van: *See—*
Winkler, Bruce; and Asten, Rocky Van, 5,645,011, Cl. 116-264.000.

Aston, Graeme, to Electric Propulsion Laboratory, Inc. Channel ion source. 5,646,476, Cl. 313-359.100.

Astra AB: *See—*
Wong, W. K. Raymond; and Sutherland, Margaret L., 5,646,015, Cl. 435-69.400.

Astra Aktiebolag: *See—*
Albrektsson, Björn; Carlsson, Lars Valter; Jacobsson, Carl Magnus Gösta; Röstlund, Tord Valter; and Wennberg, Stig Gösta, 5,645,602, Cl. 623-20.000.
Hammarberg, Eva Maria; Johansson, Lars George; Larsson, Lars-Gunnar; Norén, Rolf; Renyi, Lucy Anna; Ross, Svante Bertil; Sohn, Daniel Dungan; Svensson, Björn Eric; and Thorberg, Seth-Olov, 5,646,309, Cl. 549-404.000.

Asulab S.A.: *See—*
Bokhari, Syed A.; Zürcher, Jean-François; Mosig, Juan Ramon; and Gardiol, Freddy, 5,646,634, Cl. 343-700.0MS.

AT&T: *See—*
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Athalye, Atul M.: *See—*
Sethna, Rustam H.; Athalye, Atul M.; and Sahm, Michael K., 5,645,771, Cl. 261-123.000.

Atkinson, Mark A.; and Maclaren, Noel K., to University of Florida Research Foundation. Methods and compositions for the early detection and treatment of insulin dependent diabetes mellitus. 5,645,998, Cl. 435-7.400.

Atlas Copco Tools AB: *See—*
Schoeps, Knut Christian, 5,645,130, Cl. 173-93.500.

Atlas Electric Devices Co.: *See—*
Tikhtman, Jacob; and Patel, Bhakti S., 5,646,358, Cl. 73-865.600.

Atlas Energy Systems, Inc.: *See—*
Bowyer, Richard N.; and West, Geoffrey, 5,646,458, Cl. 307-67.000.

Atsuki, Tsutomu: *See—*
Ogi, Katumi; Yonezawa, Tadashi; Atsuki, Tsutomu; and Endo, Keiko, 5,645,634, Cl. 106-287.190.

Attie, Kenneth; Carlsson, Lena Mariana Susann; Gesundheit, Neil; and Goddard, Audrey, to Genentech, Inc. Treatment of partial growth hormone insensitivity syndrome. 5,646,113, Cl. 514-12.000.

Attinello, John Steven; and Landers, Samuel Patrick, to Goodyear Tire & Rubber Company, The. Design patterns for a tire sidewall. 5,645,660, Cl. 152-523.000.

Audi AG: *See—*
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Audio Authority Corporation: *See—*
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Augsburger, Samuel F. Osteotomy frame. 5,645,548, Cl. 606-87.000.

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Azuma, Masamichi, to Matsushita Electronics Corporation. Capacitor apparatus and method of manufacture of same. 5,645,976, Cl. 430-313.000.

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Bacic, Antony: *See—*
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Baker, Anna L.; and Garrigus, Darryl F., to Boeing Company, The. Cryogenic cold storage device. 5,644,919, Cl. 62-45.100.

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Berbers, Wilhelmus Antonius; Biessels, Petrus Theodorus Maria; Bleeker, Willem Karel; and Bakker, Joachim Cornelis, 5,646,252, Cl. 530-385.000.

Baldes, Gary: *See*—
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Ball, Anthony A.; Müller, Heinz; and Thierron, Wolfgang, to Rieter Ingolstadt Spinnereimaschinenbau AG. Open-end spinning rotor with smooth non-impacted surfaces. 5,644,910, Cl. 57-416.000.

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Behforouz, Mohammad; and Merriman, Ronald L., 5,646,150, Cl. 514-254.000.

Balt, Inc.: *See*—
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Balzer, Wolfgang R.; Frank, Anke; and Weinges, Alexa. Substituted 2-alkylamino-4-amino-1-alkylbenzene compounds and oxidation hair dye compositions based on said compounds. 5,645,610, Cl. 8-411.000.

Ban, Hyoung-oh, to Hyundai Motor Company. Alloy composition for a transmission gear of an automible. 5,645,795, Cl. 420-109.000.

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Strand, William L.; and Banks, Anthony F., 5,645,714, Cl. 208-391.000.

Banno, Yoshikazu; Nomura, Ichiro; Suzuki, Hidetoshi; Noma, Takashi; and Ueno, Rie, to Canon Kabushiki Kaisha. Electron-emitting device, and electron beam-generating apparatus and image-forming apparatus employing the device. 5,645,462, Cl. 445-51.000.

Baphna, Rajiv K.: *See*—
Pulhamus, William R., Jr.; and Baphna, Rajiv K., 5,646,832, Cl. 363-24.000.

Baran Advanced Materials 94 Ltd.: *See*—
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Barat, Eric; Bourgerette, Alain; and Trama, Jean-Christophe, to Commissariat a l'Energie Atomique. System and method for validating the detection signal of a measuring chain with a wide band of nuclear radiations. 5,646,410, Cl. 250-395.000.

Barben, Carl L., Jr.; and Barben, Grace C. Decorative remote lighting apparatus. 5,646,594, Cl. 340-567.000.

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Barbeni, Masimo: *See*—
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Barbere, Michael D.: *See*—
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Barda, Andrew: *See*—
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Barenkamp, Stephen J.: *See*—
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Barnea, Eytan R.; and Coulam, Carolyn B. Preimplantation factor. 5,646,003, Cl. 435-7.240.

Barner, Richard; Huber, Walter; Hübscher, Josef; Hurst, Jürg; and Schlatter, Daniel, to Roche Diagnostic Systems, Inc. Heterotrifunctional compounds for photoaffinity labelling. 5,646,302, Cl. 548-542.000.

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Middleton, David Leslie Phillip; Telfer, David Brian; and Barnes, Clive, 5,645,697, Cl. 204-155.000.

Barnes, Dewey W.: *See*—
Ambady, Raman; Nutter, Dale E., Jr.; and Barnes, Dewey W., 5,645,687, Cl. 162-65.000.

Barnes, George: *See*—
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Barnes, Thomas, to National Steel Corporation. Method of continuous casting using sealed tundish and improved tundish seal. 5,645,121, Cl. 164-475.000.

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Sumner-Smith, Martin; Barnett, Richard W.; Reid, Lorne S.; and Sonenberg, Nahum, 5,646,120, Cl. 514-14.000.

Barnett, William Colin: *See*—
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Barnhardt, Thomas L.: *See*—
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Barr, Roger W.: *See*—
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Barrett, Lorraine F.; Russell, William C.; Kraslavsky, Andrew J.; Wadsworth, Robert D.; and Kalwitz, George A., to Canon Information Systems, Inc. Method and apparatus for managing access to a networked peripheral. 5,647,056, Cl. 395-200.100.

Barron, Charles Dwain: *See*—
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Sharpe-Geisler, Bradley A.; Lin, Jonathan; and Barsan, Radu, 5,646,901, Cl. 365-218.000.

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Bartlett, Stephen Charles: *See*—
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Bartolini, David: *See*—
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Bartroli, Javier; Turmo, Enric; Anguita, Manuel; Carceller, Elena; and Almansa, Carmen, to J. Uriach & Cia. S.A. Orally active azole derivatives. 5,646,294, Cl. 548-267.200.

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Basavanhally, Nagesh Ramamoorthy; Shevchuk, George John; and Walker, James Albert, to Lucent Technologies Inc. Fiber waveguide package with improved alignment means. 5,647,044, Cl. 385-92.000.

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Bass, Ronald Marshall: *See*—
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Bates, Timothy L.: *See*—
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Liu, Jun; Kim, Anthony Y.; and Virden, Jud W., 5,645,891, Cl. 427-376.200.

Battistella, Dawn A. Beach towel with detachable pillow and carrying case having pockets. 5,644,807, Cl. 5-419.000.

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Eckardt, Helmut; Holzschuh, Johann; Ehritt, Jürgen; Renger, Michael; and Schwesinger, Rolf, 5,645,866, Cl. 425-130.000.

Batz, Hans-Georg: *See*—

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Baudry, Jean-Claude: *See*—
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Baumgartner, A. C. Line evacuation device. 5,645,104, Cl. 137-318.000.

Bausch & Lomb Incorporated: *See*—
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Woo, Lecon; Lo, Ying; Ling, Michael T. K.; Laurin, Dean; Gleason, Byron; Buan, Lillian A.; and Johnston, William D., 5,645,904, Cl. 428-35.700.

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Dummersdorf, Hans-Ulrich; Herbst, Günther; Erken, Manfred; Menge, Franz-Josef; and Kreusing, Helmut, 5,645,614, Cl. 44-596.000.
Häbich, Dieter; Schulze, Thomas-J.; Reefschläger, Jürgen; Hansen, Jutta; Neumann, Rainer; Streissle, Gert; and Paessens, Arnold, 5,646,121, Cl. 514-18.000.
Hassenrück, Karin; Reinhardt, Karl-Heinz; Wild, Peter; and Wunderlich, Klaus, 5,646,257, Cl. 534-689.000.
Lorenz, Manfred; and Wanken, Klaus Wilfried, 5,646,290, Cl. 548-159.000.
Lui, Norbert; Marhold, Albrecht; and Böhm, Stefan, 5,646,329, Cl. 560-27.000.
Müller, Ulrich; Connell, Richard; Goldmann, Siegfried; Mohrs, Klaus-Helmut; Raddatz, Siegfried; Matzke, Michael; Grützmann, Rudi; Beuck, Martin; Wohlfeil, Stefan; Bischoff, Hilmar; and Denzer, Dirk, 5,646,162, Cl. 514-311.000.
Neumann, Hermann; and Kalder, Dietmar, 5,645,845, Cl. 424-405.000.
Nielinger, Werner; Schulte, Helmut; Schulte, Bernhard; and Ostlinning, Edgar, 5,645,945, Cl. 428-476.300.
Sommerfeld, Claus-Dieter; Lamberts, Wilhelm; Bielefeldt, Dietmar; Marhold, Albrecht; and Negele, Michael, 5,646,196, Cl. 521-131.000.
Urbahns, Klaus; Heine, Hans-Georg; Glaser, Thomas; Wittka, Reilinde; De Vry, Jean-Marie-Viktor; and Sommermeyer, Henning, 5,646,166, Cl. 514-355.000.
ter Meulen, Volker; and Rethwilm, Axel, 5,646,032, Cl. 435-325.000.

Bayer Corporation: *See*—
Pantone, Richard S.; Rosthauser, James W.; and Haider, Karl W., 5,646,230, Cl. 528-64.000.
Slack, William E.; Squiller, Edward P.; and Yeske, Philip E., 5,646,227, Cl. 528-28.000.

Bayer, Thomas; Greschner, Johann; Nonnenmacher, Martin, deceased (by Regine Nonnenmacher, heiress), to International Business Machines Corporation. Force microscope and method for measuring atomic forces in multiple directions. 5,646,339, Cl. 73-105.000.

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Naab, Karl; and Hahn, Wolfgang, 5,646,793, Cl. 359-896.000.

Baylor College of Medicine: *See*—
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Bayruns, Robert J.; and Laverick, Timothy M., to Anadigics, Inc. Automatic gain-control transimpedence amplifier. 5,646,573, Cl. 330-59.000.

Beach, David Bruce, to International Business Machines Corporation. Supersaturated rare earth doped semiconductor layers by chemical vapor deposition. 5,646,425, Cl. 257-102.000.

Beach, Wayne H., to Kennametal Inc. Concave cutter bit with sacrificial constraint. 5,645,323, Cl. 299-111.000.

Beaton, Michael Steve: *See*—
Blackman, Mark Philip; Bird, Jay Stuart; and Beaton, Michael Steve, 5,644,956, Cl. 76-108.200.

Beatty, James A.: *See*—
Erdman, David M.; and Beatty, James A., 5,646,491, Cl. 318-254.000.

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Bechtold, Richard E.: *See*—
Harlow, Albett L., Jr.; Bechtold, Richard E.; Parker, David; Merat, Francis L.; Podany, Mark; and Laning, Raymond C., 5,645,884, Cl. 427-8.000.

Beck, Jon E., to IOMED, Inc. Hydration assembly for hydrating a bioelectrode element. 5,645,527, Cl. 604-20.000.

Beckmann, Toby J.: *See*—
Fuller, Anthony B.; Beckmann, Toby J.; Sorensen, Joseph A.; and Chervenak, Thomas M., 5,644,852, Cl. 33-414.000.

Beckwith, Robert W. Multifunction adaptive controls for tapswitches and capacitors. 5,646,512, Cl. 323-257.000.

Becton Dickinson and Company: *See*—
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Flower, Ronald J., 5,645,526, Cl. 604-20.000.
Shackelford, William; Readio, Josephine; Moore, Samuel L.; and Rutner, Herman, 5,646,256, Cl. 530-391.100.

Bedford, James P.; Fortuna, Gary R.; Hollingshead, Wayne S.; Schwerzler, David S.; and Willis, Thomas J., to Cleveland Range, Inc. Gas cooking apparatus. 5,644,975, Cl. 99-407.000.

Bednar, Bohumil; Egbertson, Melissa; Gould, Robert J.; Hartman, George D.; and Shafer, Jules A., to Merck & Co., Inc. Compounds and methods for identifying activated platelets. 5,646,000, Cl. 435-7.210.

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Hindley, Richard Mark; and Cawthorne, Michael Antony, 5,646,169, Cl. 514-369.000.

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Cowger, Bruce; Beeson, Robert R.; Schantz, Christopher A.; and West, William J., 5,646,666, Cl. 347-87.000.

Beguinot, Jean; Chenou, Frédéric; and Primon, Gilbert, to Creusot Loire Inudstrie. Low alloy steel for the manufacture of molds for plastics and for rubber. 5,645,794, Cl. 420-106.000.

Behforouz, Mohammad; and Merriman, Ronald L., to Ball State University. Methods of using lavendamycin analogs. 5,646,150, Cl. 514-254.000.

Behl, Sanjay; Nemeh, Saad; Willis, Mitchell J.; and Berberich, Joseph P., to Engelhard Corporation. Delaminated kaolin pigments, their preparation and use in paper filling applications. 5,645,635, Cl. 106-416.000.

Behr GmbH & Co.: *See*—
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Martin, Hans; and Blass, Uwe, 5,645,401, Cl. 416-169.00A.

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Beinglass, Israel; Venkatesan, Mahalingam; and Anderson, Roger N., to Applied Materials, Inc. Susceptor for deposition apparatus. 5,645,646, Cl. 118-730.000.

Bek, Fritz: *See*—
Witt, Klaus E.; Kaltenbach, Patrick; Bek, Fritz; Swedberg, Sally A.; and Mittelstadt, Laurie S., 5,645,702, Cl. 204-501.000.

Bekele, Solomon, to W.R. Grace & Co.-Conn. Making highly oriented multilayer film. 5,645,788, Cl. 264-469.000.

Belcher, James F.: *See*—
Frank, Steven N.; Belcher, James F.; Stanford, Charles E.; Owen, Robert A.; and Kyle, Robert J. S., 5,646,066, Cl. 437-180.000.

Bell Atlantic Network Services, Inc.: *See*—
Oliver, Brian D.; Kostreski, Bruce; Campbell, W. Tim; and Sistanizadeh, Kamran, 5,646,942, Cl. 370-112.000.

Bell, Stanley R.: *See*—
Rickerby, David S.; White, Daniel K.; and Bell, Stanley R., 5,645,893, Cl. 427-405.000.

Belot, Didier; and Bernard, Patrick, to SGS-Thomson Microelectronics S.A. Voltage regulator for coupled-mode logic circuits. 5,646,517, Cl. 323-313.000.

Belshaw, Thomas E.; Ebelle, Frank W.; and Bowers, Christopher L. Dough and batter dispenser. 5,645,195, Cl. 222-153.090.

Belter, Jerome G., to Dana Corporation. Multi-purpose grommet. 5,645,282, Cl. 277-11.000.

Bemis, Jon L., to L.A. Gear, Inc. Inertially responsive footwear lights. 5,644,858, Cl. 36-137.000.

Benazzi, Eric; Joly, Jean-François; and Marcilly, Christian, to Institut Francais Du Petrole. Alkylation catalyst for C_4-C_5 isoparaffins using at least one C_7-C_6 olefin. 5,646,086, Cl. 502-202.000.

Bend Research, Inc.: *See*—
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Bhatia, Rakesh; and Haley, Kevin, to Intel Corporation. Heat pipe exchanger system for cooling a hinged computing device. 5,646,822, Cl. 361-687.000.
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Bird, Frederick John; Dominelli, Nicola; and Ashby, Gordon R., to Powertech Labs Inc. Method and reagent kit for determining paper degredation in transformers. 5,646,047, Cl. 436-128.000.
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Blackwell, Gordon; Huang, Chin-Teh; and Jefferies, Steven, to Dentsply Research & Development Corp. Method for adhering to tooth structure. 5,645,429, Cl. 433-217.100.
Blaeser, David; Burmeister, Janita; Keith, Peter; and Ressemann, Thomas, to SciMed Life Systems, Inc. Apparatus and method for performing an intravascular procedure and exchanging an intravascular device. 5,645,533, Cl. 604-164.000.
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Blank, Rodney K.; Gahan, Richard J.; Haselhuhn, Howard J., Jr.; Schierbeek, Kenneth L.; and Schofield, Kenneth. Compensation system for electronic compass. 5,644,851, Cl. 33-361.000.
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Bogage, Gerald I. Metal contoured blade with rolled edges at impact surfaces. 5,645,403, Cl. 416-235.000.
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Byron, Kevin Christopher, to Northern Telecom Limited. Optical filtering. 5,647,037, Cl. 385-27.000.

Byun, Jeong Soo, to LG Semicon Co., Ltd. Method for forming platinum silicide plugs. 5,645,887, Cl. 427-248.100.

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Harrison, Michael A.; and Farris, Mark S., 5,644,865, Cl. 43-53.500.

C & D Charter Power Systems, Inc.: *See—*
Misra, Sudhan S.; and Wagner, Franz, 5,645,957, Cl. 429-163.000.

C. R. Bard, Inc.: *See—*
Fagan, John R.; Kling, Jeffrey M.; and Barbere, Michael D., 5,645,529, Cl. 604-101.000.

Cabella, Paolo: *See—*
Villa, Mario; Fuganti, Claudio; Zucchi, Gioia; Allegrone, Gianna; Barbeni, Masimo; and Cabella, Paolo, 5,646,022, Cl. 435-124.000.

Cablebus Systems Corporation: *See—*
Schrock, Clifford B.; and Engel, Herbert E., 5,646,858, Cl. 364-464.220.

Cabler, Carlin Dru; and Linz, Alfredo R., to Advanced Micro Devices, Inc. Delta-sigma ADC with multi-stage decimation filter and gain compensation filter. 5,646,621, Cl. 341-143.000.

Cadeddu, Roberto; Calvani, Riccardo; Ferraris, Giuseppe; Lano, Roberto; and Vezzoni, Emilio, to CSELT- Centro Studi e Laboratori Telecomunicazioni S.p.A. Ring network communication structure on an optical carrier and reconfigurable node for said structure. 5,647,035, Cl. 385-24.000.

Cadot, Michel, to Bull, S.A. Process for systems analysis. 5,646,871, Cl. 364-579.000.

Cahuzac, Georges Jean Joseph; Jollivet, Bernard André; Baudry, Jean-Claude; Dubeam, Bruno; and Sabary, Laurent, to Societe Anonyme dite Aerospatiale Societe Nationale Industrielle. Machine for the simultaneous laying down and winding of a plurality of individual fiber rovings. 5,645,677, Cl. 156-361.000.

Cairns, James L., to Ocean Design, Inc. Underwater-mateable connector for high pressure application. 5,645,438, Cl. 439-139.000.

Cairns, James L., to Ocean Design, Inc. Sealed, Fluid-filled electrical connector. 5,645,442, Cl. 439-201.000.

Cakmaz, Aydogan: *See—*
Joerg, Wolfgang; Bordovsky, Jaromir; Cakmaz, Aydogan; Heck, Hubert; Roehringer, Arno; Gall, Claus; Abt, Reinhold; Strauss, Rainer; and Koehler, Karl-Hans, 5,644,967, Cl. 91-457.000.

Calderon, Arthur: *See—*
Backer, Todd; Calderon, Arthur; Hsie, Wei Cheng; Wood, William P.; and Mitchell, Terry, 5,646,804, Cl. 360-113.000.

California Institute of Technology: *See—*
McCaldin, James O.; Wang, Michael W. C.; and McGill, Thomas C., 5,646,419, Cl. 257-13.000.

Callahan, Janet B.: *See—*
Fischer, Timothy J.; Callahan, Janet B.; Braun, Paul Joseph; Givens, Thomas Beecher; Hoffman, Julie F.; Hulette, William Chester; Link, John Glenn; and Swope, Charles Hermas, 5,646,046, Cl. 436-49.000.

Callegaro, Lanfranco; and Romeo, Aurelio, to Fidia S.p.A. Method of using low molecular weight hyaluronic acid for stimulating bone formation. 5,646,129, Cl. 514-54.000.

Callegaro, Lanfranco: *See—*
Nicolais, Luigi; Ambrosio, Luigi; Netti, Paolo Antonio; and Callegaro, Lanfranco, 5,645,592, Cl. 623-16.000.

Calne, Lars E., to Nu-Logic Dental Mfg., Inc. Disposable dental articulator. 5,645,425, Cl. 433-54.000.

Callstrom, Matthew R.; and McCreery, Richard L., to Ohio State University. Method of producing glassy carbon containing metal particles. 5,645,809, Cl. 423-445.00R.

Calvani, Riccardo: *See—*
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Calvin, R. Tod: *See—*
McMinn, Brian D.; and Calvin, R. Tod, 5,646,893, Cl. 365-189.050.

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Anderson, Jerry Max; Cammons, Ray R.; Driscoll, Elizabeth J.; and Lampert, Norman Roger, 5,647,043, Cl. 385-78.000.

Campbell, Bryant A., deceased (by Louise A. Campbell, legal representative): *See—*
Caputo, Ross A.; Amsler, Thomas J.; Du, Kangyan; Jones, Jeffery; Moulton, Kern A.; Campbell, Bryant A., deceased, 5,645,796, Cl. 422-22.000.

Campbell, J. Scott. Lighter than air sphere or spheroid having an aperture and pathway. 5,645,248, Cl. 244-30.000.

Campbell, Jules D., Jr.; Delgado, Rene M.; and Lim, Steve, to Motorola, Inc. High reliability output buffer for multiple voltage system. 5,646,550, Cl. 326-81.000.

Campbell, Louise A., legal representative: *See—*
Caputo, Ross A.; Amsler, Thomas J.; Du, Kangyan; Jones, Jeffery; Moulton, Kern A.; Campbell, Bryant A., deceased, 5,645,796, Cl. 422-22.000.

Campbell, Randolph L.: *See—*
Masterson, Brian K.; Campbell, Randolph L.; and Daniel, Craig M., 5,645,800, Cl. 422-65.000.

Campbell, W. Tim: *See—*
Oliver, Brian D.; Kostreski, Bruce; Campbell, W. Tim; and Sistanizadeh, Kamran, 5,646,942, Cl. 370-112.000.

Canada, Ronald G.: *See—*
Robinson, James C.; and Canada, Ronald G., 5,646,350, Cl. 73-602.000.

Canaris, Nicholas M.: *See—*
Payton, James H.; and Canaris, Nicholas M., 5,645,688, Cl. 162-76.000.

Candid Logic, Inc.: *See—*
Hershline, Bruce A., 5,646,724, Cl. 356-237.000.

Cannelongo, Joseph Fredrick, to American Cyanamid Company. Safened pesticidal resin compositions for controlling soil borne pests and process for the preparation thereof. 5,645,843, Cl. 424-405.000.

Cannelongo, Joseph Fredrick. Safened pesticidal resin composition for controlling soil pests and process for the preparation thereof. 5,645,847, Cl. 424-408.000.

Cannon, Howard N., to Caterpillar Inc. Stroke elongation device for an electromagnetic actuator. 5,646,588, Cl. 335-281.000.

Canon Denshi Kabushiki Kaisha: *See—*
Sato, Osamu; and Shimada, Koichi, 5,646,769, Cl. 359-230.000.
Sato, Osamu; and Shimada, Koichi, 5,646,770, Cl. 359-230.000.

Canon Information Systems, Inc.: *See—*
Barrett, Lorraine F.; Russell, William C.; Kraslavsky, Andrew J.; Wadsworth, Robert D.; and Kalwitz, George A., 5,647,056, Cl. 395-200.100.
Kohler, Timothy L.; and Hui, Jonathan Y., 5,646,752, Cl. 358-520.000.

Canon Kabushiki Kaisha: *See—*
Aizawa, Takayuki, 5,646,993, Cl. 380-4.000.
Banno, Yoshikazu; Nomura, Ichiro; Suzuki, Hidetoshi; Noma, Takashi; and Ueno, Rie, 5,645,462, Cl. 445-51.000.
Enokida, Miyuki, 5,646,685, Cl. 348-390.000.
Hirooka, Masaaki; Ogawa, Kyosuke; Ishihara, Shunichi; and Shimizu, Isamu, 5,645,947, Cl. 428-688.000.
Hiroshima, Koichi; Goto, Masahiro; Serizawa, Yoji; Takeuchi, Makoto; and Ishiyama, Tatsunori, 5,646,717, Cl. 399-154.000.
Horiuchi, Izuru; and Suzuki, Kazuyoshi, 5,646,741, Cl. 358-298.000.
Inoue, Hiroshi; Mizutome, Atsushi; and Enomoto, Aiko, 5,646,646, Cl. 345-123.000.
Iwasaki, Osamu; Otsuka, Naoji; Arai, Atsushi; Yano, Kentaro; Takahashi, Kiichiro; and Kanematsu, Daigoro, 5,646,655, Cl. 347-17.000.
Kodera, Yasuto, 5,646,704, Cl. 349-134.000.
Koike, Shoji; and Yamamoto, Tomoya, 5,645,631, Cl. 106-31.360.
Kumagai, Kiyoshi, 5,645,243, Cl. 242-356.500.
Mitsuhashi, Shunya; and Kumada, Shuichi, 5,647,020, Cl. 382-162.000.
Moriyama, Jiro; Koizumi, Yutaka; Fukushima, Hisashi; Hirosawa, Toshiaki; Osada, Torachika; Moriguchi, Haruhiko; Kubota, Hidemi; and Izumizaki, Masami, 5,646,659, Cl. 347-55.000.
Nakagawa, Tomohito; Hiroi, Masakazu; Sato, Chikara; Isobe, Yoshinori; and Yoshida, Akimaro, 5,645,273, Cl. 271-10.100.
Ogino, Tsukasa, 5,646,915, Cl. 369-32.000.
Okada, Shinjiro; Inaba, Yutaka; and Katakura, Kazunori, 5,646,755, Cl. 345-97.000.
Seto, Kaoru; and Kawana, Takashi, 5,646,670, Cl. 347-131.000.
Suwa, Koichi; Kato, Junichi; Onimura, Tadashi; Inami, Satoru; Suzuki, Jun; Ando, Atsutoshi; and Seita, Hiroyasu, 5,646,718, Cl. 399-350.000.
Tsuchida, Shinji, 5,646,989, Cl. 379-352.000.
Tsukimoto, Takayuki; Koreeda, Shinichi; Kojima, Nobuyuki; and Nishimura, Mitsuo, 5,646,469, Cl. 310-323.000.
Ubayashi, Shinsuke; Yoshida, Yasumi; and Kominato, Ryusei, 5,645,274, Cl. 271-94.000.
Yano, Kotaro; and Iijima, Katsumi, 5,646,679, Cl. 348-47.000.

Cantrell, William R.: *See—*
Shieh, Wen-Chung; Cantrell, William R.; and Carlson, John Alan, 5,646,330, Cl. 560-43.000.

Canuti, Anna Maria; and Coraluppi, Enzo, to Imation Corp. Process for preparation of 2-equivalent 4-arylthio-5-pyrazolone magenta couplers. 5,646,297, Cl. 548-366.400.

Capetan, Thomas G.: *See—*
Boukhny, Mikhail; and Capetan, Thomas G., 5,645,530, Cl. 604-22.000.

Caputo, Ross A.; Amsler, Thomas J.; Du, Kangyan; Jones, Jeffery; Moulton, Kern A.; Campbell, Bryant A., deceased (by Louise A. Campbell, legal representative), to Abtox, Inc. Process for plasma sterilizing with pulsed antimicrobial agent treatment. 5,645,796, Cl. 422-22.000.

Carau, Frank P., Sr.: *See—*
Khovaylo, Modest; and Carau, Frank P., Sr., 5,646,402, Cl. 250-234.000.

Carberry, Richard A.: *See—*
Trimberger, Stephen M.; Carberry, Richard A.; Johnson, Robert Anders; and Wong, Jennifer, 5,646,545, Cl. 326-38.000.

Carbone, Philip C.: *See—*
Benedek, Karen R.; Carbone, Philip C.; He, Bo-Xiong; Loftus, Peter J.; and Benson, Charles E., 5,645,413, Cl. 431-116.000.

Carceller, Elena: *See—*
Bartroli, Javier; Turmo, Enric; Anguita, Manuel; Carceller, Elena; and Almansa, Carmen, 5,646,294, Cl. 548-267.200.

Cardima, Inc.: *See—*
Littmann, Laszlo; Lau, Liming; and Amirana, Omar, 5,645,064, Cl. 128-642.000.
Sung, Rucy; and Samson, Gene, 5,645,082, Cl. 128-897.000.

Cardiovascular Dynamics, Inc.: *See—*
Crocker, Michael; Shimada, Lynn M.; and Elicker, Robert J., 5,645,560, Cl. 606-192.000.

Cargill Detroit Corporation: *See—*
Homanick, George; and Early, Edward J., 5,645,382, Cl. 409-131.000.

Carl Freudenberg: *See—*
Drucktenhengst, Rolf; and Vogt, Rolf, 5,645,283, Cl. 277-153.000.

Carl Kurt Walther GmbH & Co. KG: *See—*
Ricken, Norbert, 5,645,106, Cl. 137-614.040.

Carl-Zeiss-Stiftung: *See—*
Wangler, Johannes, 5,646,715, Cl. 355-67.000.

Carlson, J. David: *See—*
Weiss, Keith D.; Nixon, Donald A.; Carlson, J. David; and Margida, Anthony J., 5,645,752, Cl. 252-62.540.

Carlson, John Alan: *See—*
Shieh, Wen-Chung; Cantrell, William R.; and Carlson, John Alan, 5,646,330, Cl. 560-43.000.

Carlsson, Lars Valter: *See—*
Albrektsson, Björn; Carlsson, Lars Valter; Jacobsson, Carl Magnus Gösta; Röstlund, Tord Valter; and Wennberg, Stig Gösta, 5,645,602, Cl. 623-20.000.

Carlsson, Lena Mariana Susann: *See—*
Attie, Kenneth; Carlsson, Lena Mariana Susann; Gesundheit, Neil; and Goddard, Audrey, 5,646,113, Cl. 514-12.000.

Carminati, Stefano; and Burrafato, Giovanni, to Agip S.p.A.; and Eniricerche S.p.A. Pretreated clays, their preparation and use in formulation drilling muds not aggressive to layer clays. 5,646,092, Cl. 507-107.000.

Carpena, Joëlle; and Lacout, Jean-Louis, to Commissariat a l'Energie Atomique. Process for the treatment of natural apatites with a view to the use thereof for storing irradiated fuel elements. 5,646,972, Cl. 376-272.000.

Carr, Douglas E.; and Sandborg, Thomas R., to Caterpillar Inc. Vehicle engine control for operator compartment temperature maintenance. 5,644,924, Cl. 62-133.000.

Carr, Francis Joseph: *See—*
Wallace, Thomas Paul; Harris, William Joseph; Carr, Francis Joseph; Rettig, Wolfgang J.; Garin-Chesa, Pilar; and Old, Lloyd J., 5,646,253, Cl. 530-387.300.

Carr, Robin Arthur Ellis: *See—*
Sugg, Elizabeth Ellen; Aquino, Christopher Joseph; Szewczyk, Jerzy Ryszard; Finch, Harry; and Carr, Robin Arthur Ellis, 5,646,140, Cl. 517-221.000.

Carrillo, Zack J.: *See—*
Hull, Harold L.; and Carrillo, Zack J., 5,645,223, Cl. 239-428.500.

Carroll, Edward: *See—*
Lindeborg, Carl; Carroll, Edward; Moran, James; Bartolini, David; Griesing, John; Lindell, Liz; Walker, Anthony Dean; and Trubey, Bradley S., 5,646,939, Cl. 370-258.000.

Carroll, John D., Jr., to Hydrokinetics, Inc. Filter for laundry system having toridal shared filter elements. 5,645,721, Cl. 210-315.000.

Carroll, Roger; Eschrich, Timothy; and Tanski, William, to Northrop Grumman Corporation. Metal assist structure for an electroluminescent display. 5,646,480, Cl. 313-503.000.

Carroll, Walter R. Seed furrow closing apparatus for agricultural planters. 5,645,000, Cl. 111-195.000.

Carson, Steven R.; and Floyd, Robert Anthony, to Genlyte Group Incorporated, The. Phase independent signaling for multiple channel, multiple scene dimming system. 5,646,490, Cl. 315-317.000.

Carter, Elbert P., to Fairville Medical Optics, Inc. Portable hand-held pupillometer with dynamic electronic image centering aid and method of use thereof. 5,646,709, Cl. 351-218.000.

Carter, Howard E.; Pierce, Byron C.; and Pugh, Joel A., to MessagerPartners. System for providing automatic voice messaging in a digital network environment. 5,646,980, Cl. 379-67.000.

Carter, Jerry A., Jr., to Cincinnati Milacron Inc. Electromechanical drive assembly for an accumulator head. 5,645,873, Cl. 425-532.000.

Carter, John: *See—*
Crank, Doug; and Carter, John, 5,645,867, Cl. 425-144.000.

Cartwright, Mark A.: *See—*
Dies, Gary L.; Cartwright, Mark A.; and Lewis, Jonathan A., 5,645,299, Cl. 280-779.000.

Caruso Engineering CC: *See—*
Caruso, Tony, 5,645,119, Cl. 160-370.230.

Caruso, Robert J.: *See—*
Haydocy, Christopher J.; Eberhart, H. Dwight; and Caruso, Robert J., 5,645,513, Cl. 482-57.000.

Caruso, Tony, to Caruso Engineering CC. Vehicle sunshield. 5,645,119, Cl. 160-370.230.

Casio Computer Co., Ltd.: *See—*
Tejima, Yasuyuki; Minefuji, Nobutaka; and Iwanaga, Masakuni, 5,645,334, Cl. 353-101.000.

Casio PhoneMate, Inc.: *See—*
Knuth, Stephen B., 5,646,979, Cl. 455-563.000.

Caskey, Patrick. Ophthalmological self-test unit for evaluating macular degeneration. 5,646,710, Cl. 351-223.000.

Cassady, Timothy John; Milstein, Norman; and Crews, Richard P., to Henkel Corporation. Process for making isethionate ester salts. 5,646,320, Cl. 554-149.000.

Cassidy, Stephen A.: *See*—
Reeve, Michael H.; and Cassidy, Stephen A., 5,645,267, Cl. 254-134.400.

Cassina, Virginio, to Futisplast S.p.A. Crate for pallets. 5,645,185, Cl. 220-1.500.

Castañeda, Henry: *See*—
Rampy, Gordon A.; Bull, Rame; Castañeda, Henry; Neale, Teresa A.; Spokes, G. Neil; and Watson, Edgar, Jr., 5,646,736, Cl. 356-419.000.

Castellino, Angelo J.: *See*—
Firestein, Gary S.; Ugarkar, Bheemarao G.; Miller, Leonard P.; Gruber, Harry E.; Bullough, David A.; Erion, Mark D.; Castellino, Angelo J.; and Browne, Clinton E., 5,646,128, Cl. 514-46.000.

Castlebar Industries Corp.: *See*—
Wiesenfeld, Arnold; and Barbour, James K., 5,645,755, Cl. 252-70.000.

Castonguay, Roger N.; and Lord, Jeffrey D., to General Electric Company. Electronic trip unit conversion kit for high ampere-rated circuit breakers. 5,646,586, Cl. 335-132.000.

Caterpillar Inc.: *See*—
Aardema, James A., 5,645,263, Cl. 251-30.020.
Baldwin, Arden E.; and Kalman, Peter, 5,644,945, Cl. 72-402.000.
Cannon, Howard N., 5,646,588, Cl. 335-281.000.
Carr, Douglas E.; and Sandborg, Thomas R., 5,644,924, Cl. 62-133.000.
Codina, George; Ramamoorthy, Chandrasekar; and Murr, Donna J., 5,646,539, Cl. 324-678.000.
Collins, Larry C.; Cook, James G.; and Hoffman, John P., 5,646,373, Cl. 172-252.000.
Frankel, David B.; Jeffers, Scott E.; and Myslik, John E., 5,645,134, Cl. 180-69.240.
Gudat, Adam J.; Kleimenhagen, Karl W.; Christensen, Dana A.; Kemner, Carl A.; Bradbury, Walter J.; Koehrsen, Craig L.; Kyrtsos, Christos T.; Lay, Norman K.; Peterson, Joel L.; Schmidt, Larry E.; Stafford, Darrell E.; and Weinbeck, Louis J., 5,646,843, Cl. 364-424.012.
Gudat, Adam J.; and Henderson, Daniel E., 5,646,844, Cl. 364-449.200.
Gudat, Adam J.; Whittaker, William L.; Kleimenhagen, Karl W.; Christensen, Dana A.; Kemner, Carl A.; Bradbury, Walter J.; Koehrsen, Craig L.; Kyrtsos, Christos T.; Peterson, Joel L.; Schmidt, Larry E.; Stafford, Darrell E.; and Weinbeck, Louis J., 5,646,845, Cl. 364-424.051.
Koch, Roger D., 5,645,224, Cl. 239-533.400.
Schricker, David R.; and Scholl, Rolland D., 5,646,341, Cl. 73-117.300.

Cattron, Wendell W.; and Schiavone, Robert J., to Amoco Corporation. Transesterification-inhibited polyester melt blend compositions having modified thermal properties. 5,646,208, Cl. 524-128.000.

Catunao, Delfin M.: *See*—
Gandini, Rebecca L.; Catunao, Delfin M.; Quistgaard, Jens Ulrich; and Butler, Lisa M., 5,645,066, Cl. 128-660.070.

Cavazos, Frank G. Mattress having access to materials sandwiched between mattress cover and inner cushioning assembly. 5,644,811, Cl. 5-738.000.

Cawthorne, Michael Antony: *See*—
Hindley, Richard Mark; and Cawthorne, Michael Antony, 5,646,169, Cl. 514-369.000.

Caya, Donald M.; and Barnhardt, Thomas L., to Briggs & Stratton Corporation. Internal combustion engine. 5,645,025, Cl. 123-90.420.

Cecil, Dimitrios G. Apparatus and method for resistance welding tubular parts. 5,645,738, Cl. 219-110.000.

Cedro, Armando: *See*—
Lanzarotti, Ennio; Mantovani, Marisa; Prino, Giuseppe; Porta, Roberto; Cedro, Armando; and Moltrasio, Danilo, 5,646,268, Cl. 536-25.400.

CEKA Elektrowerkzeuge AG & Co. KG: *See*—
Dürr, Paul; and Breitenmoser, Armin, 5,644,846, Cl. 30-393.000.

CEKA Elektrowerkzeuge AG + Co. KG: *See*—
Dürr, Paul; and Breitenmoser, Armin, 5,644,845, Cl. 30-376.000.

Cell Med, Inc.: *See*—
Kline, Ellis L.; and Zimmerman, Daniel H., 5,645,997, Cl. 435-7.100.

Centre National de la Recherche Scientifique - C.N.R.S.: *See*—
Broughton, William John; Denarie, Jean Louis Claude; Maillet, Fabienne Chantal Marie; Price, Neil Philip John; Prome, Danielle Jean Claudine; Prome, Jean-Claude Adrien Paul; Relic, Biserka; and Talmont, Franck Jean Bernard, 5,646,018, Cl. 435-84.000.

Centurion International, Inc.: *See*—
Cockson, Mark G.; Prochaska, Stephen L.; and Simmons, Kenneth D., 5,646,635, Cl. 343-702.000.

Cetnar, James F.: *See*—
Böhm, Georg G. A.; and Cetnar, James F., 5,645,674, Cl. 156-273.500.

Chaillout, Jean-Jacques: *See*—
Locatelli, Marcel; Chaillout, Jean-Jacques; and Brochier, Michel, 5,646,533, Cl. 324-339.000.

Chaki, Yasuyuki; and Ino, Hiroyuki, to Sony Corporation. Method and apparatus for detecting synchronizing signals by latching successived count values that represent time between received sync pulses for comparison to a predetermined sync pattern of count values. 5,646,966, Cl. 375-368.000.

Champion International Corporation: *See*—
Ambady, Raman; Nutter, Dale E., Jr.; and Barnes, Dewey W., 5,645,687, Cl. 162-65.000.

Chance, Phillip F.; Alderson, Mary Kathryn; Odelberg, Shannon J.; and Lensch, M. William, to University of Utah. Deletion in chromosome 17p11.2-12 which causes the disorder hereditary neuropathy with liability to pressure palsies. 5,645,993, Cl. 435-6.000.

Chanda, Jyotirmay; and Kuribayashi, Ryosei. Prevention of calcification and degeneration of biological tissue grafts for implantation in humans. 5,645,587, Cl. 623-11.000.

Chang, An-Chih: *See*—
Kruse, Lawrence I.; Kumar, Virendra; Chang, An-Chih; DeHaven-Hudkins, Diane L.; Farrar, John J.; and Maycock, Alan L., 5,646,151, Cl. 514-255.000.

Chang, Chin Chen. Decorative Christmas tree illumination assembly. 5,645,342, Cl. 362-252.000.

Chang, Jeffrey C., to Minnesota Mining and Manufacturing Company. Method for making color filter elements using laminable colored photosensitive materials. 5,645,963, Cl. 430-7.000.

Chang, Ko-Min; Shum, Danny Pak-Chum; and Chang, Kuo-Tung, to Motorola, Inc. Method for making an EEPROM cell with isolation transistor. 5,646,060, Cl. 437-43.000.

Chang, Kuo-Tung: *See*—
Chang, Ko-Min; Shum, Danny Pak-Chum; and Chang, Kuo-Tung, 5,646,060, Cl. 437-43.000.

Chanoch, Lawrence H., to Becton Dickinson and Company. Time of last injection indicator for medication delivery pen. 5,645,534, Cl. 604-189.000.

Chanock, Robert M.: *See*—
Potash, Louis; Chanock, Robert M.; Purcell, Robert H.; and Kapikian, Albert Z., 5,646,033, Cl. 435-364.000.

Charles Stark Draper Laboratory, Inc., The: *See*—
Greiff, Paul; and Sohn, Jerome B., 5,646,348, Cl. 73-514.360.

Charles, Stephen Alexander: *See*—
Russell, Jeremy Colin; Freeman, Richard Neil Templar; and Charles, Stephen Alexander, 5,645,883, Cl. 427-2.250.

Chase, Charles: *See*—
Getselis, Arkady; Tufano, Anthony; Chase, Charles; and DeVincentis, Anthony, 5,645,446, Cl. 439-419.000.

Chastain, Donald Lee: *See*—
McClung, Kevin R.; and Chastain, Donald Lee, 5,646,364, Cl. 102-406.000.

Chaturvedi, Pravin Ramsewak, to Vertex Pharmaceuticals Incorporated. Treatment of the CNS effects of HIV. 5,646,180, Cl. 514-471.000.

Chaudhuri, Ratan K.; Biss, Russell B.; and Merianos, John J., to ISP Investments Inc. Process for producing an alpha or beta-hydroxy acid-vinylpyrrolidone polymer, copolymer or graft polymer complex in the form of free-flowing powders having a high acid loading. 5,645,859, Cl. 424-501.000.

Chaves, Manuel J. Air conditioning system condensing trap. 5,644,925, Cl. 62-289.000.

Cheesman, Donald C.: *See*—
Spencer, Mark W.; and Cheesman, Donald C., 5,645,229, Cl. 241-20.000.

Chehab, Firdausia; Fietkau, Stefan; Arnold, Peter-Franz; Juschus, Thomas; and Schmick, Clemens, to Hauni Maschinenbau AG. Method of and apparatus for decontaminating the exposed surfaces of filter mouthpieces in smokers' products. 5,645,087, Cl. 131-88.000.

Cheil Synthetics, Inc.: *See*—
Kim, Jung Hoi; Heo, Young Jae; and Nam, Tae Young, 5,645,907, Cl. 428-64.100.

CHEMetrics, Inc.: *See*—
Rampy, Gordon A.; Bull, Rame; Castañeda, Henry; Neale, Teresa A.; Spokes, G. Neil; and Watson, Edgar, Jr., 5,646,736, Cl. 356-419.000.

Chen, Chao-Guang; Mau, Shaio-Lim; Du, He; Gane, Alison M.; Bacic, Antony; and Clarke, Adrienne E., to Cooperative Research Centre for Industrial Plant Biopolymers. Plant arabinogalactan protein (AGP) genes. 5,646,029, Cl. 435-325.000.

Chen, Chin Hsin: *See*—
Shi, Jianmin; Tang, Ching Wan; and Chen, Chin Hsin, 5,645,948, Cl. 428-690.000.

Chen, Grant K.: *See*—
Evans, Alfred J.; Chen, Grant K.; May, Dennis J.; and Brinson, Edward P., 5,644,896, Cl. 53-138.400.

Chen, Guan-Zhon. Adjustable volume dosing dispenser for fish food. 5,645,197, Cl. 222-305.000.

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Fuller, Anthony B.; Beckmann, Toby J.; Sorensen, Joseph A.; and Chervenak, Thomas M., 5,644,852, Cl. 33-414.000.

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Chin, Sing W.: *See*—
Mayes, Michael K.; and Chin, Sing W., 5,646,515, Cl. 323-313.000.

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Ramsey, James Michael; Chinnock, Paul S.; and Ryan, Maria E., 5,646,447, Cl. 257-727.000.

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Hohla, Kristian, 5,645,550, Cl. 606-108.000.

Chiron-Werke GmbH & Co. KG: *See*—
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Arsenault, Raoul; Trottier, Michel; Chornet, Esteban; and Jollez, Paul, 5,646,312, Cl. 549-418.000.

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Rickerby, David S.; White, Daniel K.; and Bell, Stanley R., 5,645,893, Cl. 427-405.000.

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Bender, Frederick F.; and Giorio, Robert F., 5,644,817, Cl. 16-382.000.
Hartwick, Larry R.; Lee, Anson; Pyko, Jan S.; and Teague, Bruce H., 5,645,745, Cl. 219-497.000.
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Chu, Mike Ssu-Hai; Bultitude, John; Rand, Michael; Nimmo, Kay Louise; Thompson, Ian; and Hood, Christopher, to Tam Ceramics, Inc. Dielectric stable at high temperature. 5,646,080, Cl. 501-137.000.

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Wang, Chi-Jung, 5,644,804, Cl. 5-12.100.

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Lajoie, M. Stephen; and Winston, Anthony E., 5,645,840, Cl. 424-400.000.

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Northrup, Milton A.; Ciarlo, Dino R.; Lee, Abraham P.; and Krulevitch, Peter A., 5,645,564, Cl. 606-205.000.

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Dull, Lawrence Clifford; and Simmons, Larry Arnold, 5,645,169, Cl. 206-589.000.
Flückiger, Claude; Rindlisbacher, Alfred; Senn, Robert; and Uk, Solang, 5,646,145, Cl. 514-242.000.
Göschke, Richard; Maibaum, Jürgen Klaus; Schilling, Walter; Stutz, Stefan; Rigollier, Pascal; Yamaguchi, Yasuchika; Cohen, Nissim Claude; and Herold, Peter, 5,646,143, Cl. 514-233.800.
Hao, Zhimin; Iqbal, Abul; and Herren, Fritz, 5,646,299, Cl. 548-453.000.
Hofmann, Manfred; Klingert, Bernd; Hunziker, Max; Wiesendanger, Rolf; Schulthess, Adrian; and Bernhard, Paul, 5,645,973, Cl. 430-269.000.
MacPherson, Lawrence J.; and Parker, David T., 5,646,167, Cl. 514-357.000.
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Schilling, Walter; Ofner, Silvio; and Veenstra, Siem J., 5,646,144, Cl. 514-241.000.
Shieh, Wen-Chung; Cantrell, William R.; and Carlson, John Alan, 5,646,330, Cl. 560-43.000.
Siegrist, Urs; and Szczepanski, Henry, 5,646,288, Cl. 546-315.000.
Stehlin, Albert; Huber, Klaus; and Maier, Thomas, 5,646,271, Cl. 536-123.100.

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Dressing, Paul A.; and Valvano, Dean M., 5,644,915, Cl. 60-426.000.

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Carter, Jerry A., Jr., 5,645,873, Cl. 425-532.000.
Reinhart, William A., 5,645,868, Cl. 425-145.000.

Cismas, Sorin. Memory utilization for video decoding and display with 3:2 pull-down. 5,646,693, Cl. 348-44.000.

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Clark, Jeffery J.; Crosby, Brian G.; Lewendal, Bo; and Thornton, Gregory P., to Tektronix, Inc. System for adjusting color intensity of neighboring pixels. 5,646,742, Cl. 358-298.000.

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Brown, David E.; Colman, Mark A.; and Kett, Michael J., 5,645,336, Cl. 362-26.000.

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Clarke, Ian: *See*—
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Bedford, James P.; Fortuna, Gary R.; Hollingshead, Wayne S.; Schwerzler, David S.; and Willis, Thomas J., 5,644,975, Cl. 99-407.000.

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Clowes, Ernest J., to Metal Container Corporation. Container end having annular panel with non-uniform radius of curvature. 5,645,189, Cl. 220-623.000.

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Allen, Timothy R.; and Tompkins, Matthew A., 5,645,024, Cl. 123-90.380.

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Kuzma, Janusz A., 5,645,585, Cl. 623-10.000.

Cockrum, Charles A.; and Schulte, Eric F., to Santa Barbara Research Center. Contact metal diffusion barrier for semiconductor devices. 5,646,426, Cl. 257-188.000.

Cockrum, Richard H., to Immuno-Dynamics, Inc. Method and product for treating failure of passive transfer and improving milk production in bovine species. 5,645,834, Cl. 424-130.100.

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Lin, Sung-Wei; Coffman, Tim M.; and Syzdek, Ronald J., 5,646,894, Cl. 365-189.090.
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Navarrini, Walter; Tortelli, Vito; Colaianna, Pasqua; and Abusleme, Julio A., 5,646,223, Cl. 526-247.000.

Cole, Howard W., Jr. Method and controlling foam formation for proportioning the flow of foaming and defoaming agents. 5,645,649, Cl. 134-18.000.

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Erilli, Rita; and Thomas, Barbara, 5,646,104, Cl. 510-365.000.
Haugk, Peter D.; Pavlak, Teresa; and Briceno, Laura, 5,646,100, Cl. 510-131.000.

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Collier, David C., to Sony Corporation; and Sony Electronics, Inc. Method and apparatus for compressing video in a manner characteristic of photographic film. 5,646,750, Cl. 358-518.000.

Collier, Robert J., Jr.: *See*—
Hellberg, Mark R.; Barnes, George; and Collier, Robert J., Jr., 5,646,149, Cl. 514-253.000.

Collier, William E. Bullet identification. 5,646,365, Cl. 102-501.000.

Collins Entertainment Systems, Inc.: *See*—
Collins, Michael Alan, 5,645,488, Cl. 472-77.000.

Collins, John A., Jr. Mandibular advancement appliance. 5,645,423, Cl. 433-21.000.

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Colman, Mark A.: *See*—
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Colton, Orren L. Flashlight replacement for vehicle ashtray. 5,645,340, Cl. 362-80.000.

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Jones, David L., 5,645,708, Cl. 205-580.000.

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Dobija, Michael J., 5,644,884, Cl. 52-506.010.

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Barat, Eric; Bourgerette, Alain; and Trama, Jean-Christophe, 5,646,410, Cl. 250-395.000.
Carpena, Joëlle; and Lacout, Jean-Louis, 5,646,972, Cl. 376-272.000.
Lapras, Valérie; Gidon, Pierre; and Pouteau, Patrick, 5,647,031, Cl. 385-14.000.
Locatelli, Marcel; Chaillout, Jean-Jacques; and Brochier, Michel, 5,646,533, Cl. 324-339.000.

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Computational Systems Inc.: *See*—
Robinson, James C.; and Canada, Ronald G., 5,646,350, Cl. 73-602.000.

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Dubin, Leonard; Epperly, W. Robert; Sprague, Barry Normand; and von Harpe, Thure, to Nalco Fuel Tech. Hardness suppression in urea solutions. 5,645,756, Cl. 252-181.000.

Dubrinescu, Sorin: *See—*
Keidar, Zvi; Popa, Eugen; and Dubrinescu, Sorin, 5,646,838, Cl. 363-145.000.

Ducci, Andreas: *See—*
Brand, Peter; Ducci, Andreas; and Steiniger, Wolfgang, 5,645,086, Cl. 131-84.300.

Ducheyne, Paul: *See—*
Marcolongo, Michele S.; and Ducheyne, Paul, 5,645,934, Cl. 428-357.000.

Duckworth, Paul C.; Dykema, Kurt A.; and Zeinstra, Mark L., to Prince Corporation. Trainable transmitter with transmit/receive switch. 5,646,701, Cl. 340-825.690.

Dudderar, Thomas Dixon: *See—*
Degani, Yinon; Dudderar, Thomas Dixon; Han, Byung Joon; and Lyons, Alan Michael, 5,646,828, Cl. 361-715.000.

Duff, James M.; Allen, Charles G.; Hor, Ah-Mee; and Hamer, Gordon K., to Xerox Corporation. Symmetrical perylene dimers. 5,645,965, Cl. 430-59.000.

Dufresne, Jean L.; and Dufresne, Robert P. Capping board with pultruded filling bars. 5,645,701, Cl. 204-279.000.

Dufresne, Robert P.: *See—*
Dufresne, Jean L.; and Dufresne, Robert P., 5,645,701, Cl. 204-279.000.

Duhamel, Lucette: *See—*
Danvy, Denis; Monteil, Thierry; Lusson, Christophe; Schwartz, Jean-Charles; Gros, Claude; Noel, Nadine; LeComte, Jeanne-Marie; Duhamel, Pierre; and Duhamel, Lucette, 5,646,313, Cl. 549-441.000.

Duhamel, Pierre: *See—*
Danvy, Denis; Monteil, Thierry; Lusson, Christophe; Schwartz, Jean-Charles; Gros, Claude; Noel, Nadine; LeComte, Jeanne-Marie; Duhamel, Pierre; and Duhamel, Lucette, 5,646,313, Cl. 549-441.000.

Duke University: *See—*
Petrow, Vladimir; and Proia, Alan D., 5,646,136, Cl. 514-167.000.

Dull, Lawrence Clifford; and Simmons, Larry Arnold, to Ciba-Geigy Corporation. Package for use in the transport of water-soluble bags of agricultural chemicals in gel or liquid form. 5,645,169, Cl. 206-589.000.

Dummersdorf, Hans-Ulrich; Herbst, Günther; Erken, Manfred; Menge, Franz-Josef; and Kreusing, Helmut, to Bayer Aktiengesellschaft; and Rheinbraun Aktiengesellschaft. Process for the utilization of sewage sludges. 5,645,614, Cl. 44-596.000.

Dunbobbin, Brian Roy; Bennett, Douglas Leslie; and Pillarella, Mark Robert, to Air Products and Chemicals, Inc. Use of structured packing in a multi-sectioned air seperation unit. 5,644,932, Cl. 62-640.000.

Duncan, Robert Hume, to Tioxide Specialties Limited. Compositions containing zirconium compounds. 5,646,200, Cl. 523-160.000.

Dunlap, Thomas G.: *See—*
Proebstle, Richard A.; Frederickson, Christian D.; Dunlap, Thomas G.; and Croteau, Edward A., 5,646,973, Cl. 376-434.000.

Dur-O-Wal, Inc.: *See—*
Getz, Stephen H., 5,644,889, Cl. 52-713.000.

Dura Pharmaceuticals, Inc.: *See—*
Schultz, Robert K.; and Eisele, Robert F., 5,645,051, Cl. 128-203.150.

Duracell, Inc.: *See—*
van Phuoc, Duong; Wieczorek, Rudi; Zeising, Elmar; Hruska, Louis W.; Taylor, Alwyn H.; Friel, Daniel D.; and Hull, Matthew P., 5,646,508, Cl. 320-30.000.

Durham, Dana L.: *See—*
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Dürkopp Adler AG: *See—*
Sieksmeier, Dirk; and Blattner, Thomas, 5,646,398, Cl. 250-223.00R.

Duro Dyne Corporation: *See—*
Lyons, John, 5,644,819, Cl. 24-20.00R.

Dürr, Paul; and Breitenmoser, Armin, to CEKA Elektrowerkzeuge AG + Co. KG. Device for the pivotable fastening of a saw base to a jig saw. 5,644,845, Cl. 30-376.000.

Dürr, Paul; and Breitenmoser, Armin, to CEKA Elektrowerkzeuge AG & Co. KG. Reciprocating stroke drive mechanism for jigsaws. 5,644,846, Cl. 30-393.000.

Durschlag, Mark S.: *See—*
Liles, Barry J.; Durschlag, Mark S.; and Oakes, James G., 5,646,450, Cl. 257-776.000.

Dykema, Kurt A.: *See—*
Duckworth, Paul C.; Dykema, Kurt A.; and Zeinstra, Mark L., 5,646,701, Cl. 340-825.690.

Dynamotive Corporation: *See—*
Oehr, Klaus Heinrich; Simons, Girard A.; and Zhou, Jiahua, 5,645,805, Cl. 423-239.100.

Dynasplint Systems, Inc.: *See—*
Hepburn, George R.; and Vedeloff, Russell, 5,645,521, Cl. 601-33.000.

Dyncorp: *See—*
Potash, Louis; Chanock, Robert M.; Purcell, Robert H.; and Kapikian, Albert Z., 5,646,033, Cl. 435-364.000.

Dzus Fastener Europe Limited: *See—*
Wright, Andrew Charles Walden; and Bond, Derrin John, 5,645,384, Cl. 411-174.000.

E & M Lamort: *See—*
Lamort, Jean Pierre, 5,645,724, Cl. 210-415.000.

E.I. Du Pont de Nemours and Company: *See—*
Knoff, Warren Francis; McAllister, Robert William; Popper, Peter; Shibata, Steven Kikuo; Taylor, Robert Edward; and Yngve, Paul Wesley, 5,644,909, Cl. 57-293.000.

E.R.C. Co., Ltd.: *See—*
Ichikawa, Yasuaki, 5,645,773, Cl. 264-31.000.

Eakins, Jeffrey S.: *See—*
Copriviza, Robert C.; Dubin, Arnold M.; Ackerman, Edward B.; Wood, Jackson B.; Eakins, Jeffrey S.; and Harmon, David D., 5,646,675, Cl. 348-1.000.

Early, Edward J.: *See—*
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Easley, Michael A., to Aluminum Company of America. High surface area meixnerite from hydrotalcites. 5,645,810, Cl. 423-600.000.

Eastland Technology Australia Pty Ltd.: *See—*
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Eastman Chemical Company: *See—*
George, Scott Ellery; Lefler, Edgar William, IV; and Spain, James Marshall, Jr., 5,646,237, Cl. 528-295.000.

Eastman, Clarke K.; and Hajjar, Roger A., to Eastman Kodak Company. Dynamic tracking control in an optical recording system by sensing mark formation. 5,646,919, Cl. 369-44.260.

Eastman, Jay M.: *See—*
Forbes, Gregory William; Quinn, Anna M.; and Eastman, Jay M., 5,646,391, Cl. 235-462.000.

Eastman Kodak Company: *See—*
Bacon, Wesley H.; Baker, Kenneth L.; Debesis, John R.; Serbicki, Jeffrey P.; and Newkirk, James S., 5,646,674, Cl. 347-257.000.
Bietry, Joseph R., 5,646,788, Cl. 359-740.000.
Bryan, Philip Steven; Bringley, Joseph F.; and Partch, Richard E., 5,646,412, Cl. 250-483.100.
Burns, Elizabeth Gertrude; Goswami, Ramanuj; and Kovacs, Csaba Andras, 5,645,910, Cl. 428-64.100.
Burns, Elizabeth Gertrude; McGarry, Lynda Woody; Proehl, Gary Stephen; and Latimer, Lee Hamilton, 5,646,327, Cl. 558-452.000.
Eastman, Clarke K.; and Hajjar, Roger A., 5,646,919, Cl. 369-44.260.
Filiberti, Richard J.; Salsburg, Fredric; and Roberts, William E., 5,645,390, Cl. 414-390.000.
Kurtz, Andrew F.; Debesis, John R.; and Sarraf, Sanwal P., 5,646,786, Cl. 359-637.000.
Kwarta, Brian J., 5,647,026, Cl. 382-270.000.
Levarlet, Christophe Georges Claude; Finnicum, Douglas Scott; and Quiel, Robert Richard, 5,646,737, Cl. 356-429.000.
Lindsay, Kenneth Alan, Jr.; and Jastrzembski, Joseph Stanley, 5,646,794, Cl. 360-3.000.
Long, Michael; and White, James A., 5,645,385, Cl. 411-354.000.
McGuckin, Hugh Gerald; Badger, John Stuart; Gogle, Ronald Anthony; Riesenberger, Paul Joseph; and Orem, Michael William, 5,645,980, Cl. 430-372.000.
Powers, Thomas Foster; Gottschalk, Kenneth Charles; and Gordon, Charles Robert, 5,646,713, Cl. 355-40.000.
Romanet, Robert Fogg; Bowne, Arlyce Tolman; and Normandin, Sharon Eileen, 5,645,981, Cl. 430-558.000.
Shi, Jianmin; Tang, Ching Wan; and Chen, Chin Hsin, 5,645,948, Cl. 428-690.000.
Solomon, Jeffrey Alan; and Tubbs, Alan James, 5,646,712, Cl. 396-535.000.

Eaton Corporation: *See—*
Lipo, Thomas A.; and Zhong, Er-Kuan, 5,646,498, Cl. 318-800.000.

Eaton, Dean L.; and Steele, Michael L., to Eaton, Dean L.; and Steele, Michael. Sewer relief valve. 5,645,099, Cl. 137-15.000.

Ebara Corporation: *See—*
Togawa, Tetsuji; and Nishi, Toyomi, 5,645,473, Cl. 451-287.000.

Ebelle, Frank W.: *See—*
Belshaw, Thomas E.; Ebelle, Frank W.; and Bowers, Christopher L., 5,645,195, Cl. 222-153.090.

Eberhart, H. Dwight: *See—*
Haydocy, Christopher J.; Eberhart, H. Dwight; and Caruso, Robert J., 5,645,513, Cl. 482-57.000.

Eberle, Arthur C.: *See—*
Stulen, Foster B.; Brown, Susan T.; Holderbaum, Glenda S.; Philips, David B.; and Eberle, Arthur C., 5,645,348, Cl. 374-45.000.

Ebert, Baldur: *See—*
Wiltzer, Karl-Heinz; Lausmann, Peter; and Ebert, Baldur, 5,646,191, Cl. 521-49.800.

Ebert Composites Corporation: *See—*

Johnson, David W., 5,644,888, Cl. 52-651.010.

Eberth, Jürgen: *See—*
Berst, Marc; Eberth, Jürgen; Jäger, Herbert M; Kämmerling, Hans; Lieder, Rainer M.; and Renftle, Walter, 5,646,407, Cl. 250-370.150.

Eccher, Joe A.: *See—*
Steinle, Michael J.; and Eccher, Joe A., 5,646,394, Cl. 250-208.100.

Echt, Elliott: *See—*
Burdick, Charles Lee; and Echt, Elliott, 5,645,731, Cl. 210-728.000.

Eckardt, Helmut; Holzschuh, Johann; Ehritt, Jürgen; Renger, Michael; and Schwesinger, Rolf, to Battlefeld GmbH. Pressure controlling and/or regulating device for a fluid medium, in particular air or gas. 5,645,866, Cl. 425-130.000.

Eckstein, Wilfried, to Veitsch-Radex Aktiengesellschaft Fur Feuerfeste Erzeugnisse. Refractory ceramic mass and its use. 5,646,079, Cl. 501-100.000.

Eckstein, Wilfried: *See—*
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Eckstrom, William B.: *See—*
Cusumano, Joseph V.; Dankworth, David C.; Diana, William D.; Eckstrom, William B.; Emert, Jacob I.; and Gorda, Keith R., 5,646,332, Cl. 560-204.000.

Eddy, John W.; Needham, Kelley S.; and Harlan, Jeffrey L., to Kel-Jac Engineering and Plastic Sales, Inc. Lower front for water coolers, and apparatus and method for renovating water coolers. 5,645,331, Cl. 312-205.000.

Edgerley, David A.: *See—*
Le Roux, Philippe A.; and Edgerley, David A., 5,645,511, Cl. 482-52.000.

Edlund, David J.; Newbold, David D.; and Frost, Chester B., to Bend Research, Inc. Composite hydrogen separation element and module. 5,645,626, Cl. 95-56.000.

Edmaiston, Fred M. Material elevator filter apparatus. 5,645,478, Cl. 454-49.000.

Edwards, M. Larry; and Watson, W. Joe. Fail-safe uninterruptible lighting system. 5,646,486, Cl. 315-86.000.

Edwards, Russell James; Kitagawa, Hirokazu; Imai, Kiyoshi; Funo, Masao; Holley, William Edward; Hood, Charles R.; and Abrams, Richard Wayne, to Johnson & Johnson Vision Products, Inc. Packaging arrangement. 5,644,895, Cl. 53-55.000.

EG&G Pressure Science, Inc.: *See—*
Warehime, Kevin S.; Munley, Daniel T.; Oh, Thomas S.; and Swensen, Jeffrey E., 5,645,303, Cl. 285-409.000.

Egbertson, Melissa: *See—*
Bednar, Bohumil; Egbertson, Melissa; Gould, Robert J.; Hartman, George D.; and Shafer, Jules A., 5,646,000, Cl. 435-7.210.

Egger, Franz; and Plattner, Josef, to Tyrolit Schleifmittelwerke Swarovski K.G. Wire connecting device for diamond wire saws. 5,645,039, Cl. 125-21.000.

Eggink, Hendrik J.; and Friederichs, Winand H. A. M., to U.S. Philips Corporation. Electric reflector lamp. 5,646,473, Cl. 313-113.000.

Eguchi, Katsuhiko; and Kira, Naoki, to Aisin Seiki Kabushiki Kaisha. Valve timing adjusting mechanism for internal combustion engine. 5,645,021, Cl. 123-90.170.

Ehle, Joachim: *See—*
Fuchs, Gerhard; Ehle, Joachim; and von Ploetz, Klaus, 5,645,791, Cl. 266-175.000.

Ehritt, Jürgen: *See—*
Eckardt, Helmut; Holzschuh, Johann; Ehritt, Jürgen; Renger, Michael; and Schwesinger, Rolf, 5,645,866, Cl. 425-130.000.

Eidelloth, Walter; and Gallagher, William Joseph, to International Business Machines Corporation. Selective insulation etching for fabricating superconductor microcircuits. 5,646,095, Cl. 505-330.000.

Eikmeier, Heino: *See—*
Schreiber, Joerg; Schmid, Wilfried; Kuhr, Hans-Juergen; Eikmeier, Heino; and Sacherer, Klaus-Dieter, 5,645,798, Cl. 422-58.000.

Eimer, John: *See—*
Gentile, James; and Eimer, John, 5,645,193, Cl. 222-137.000.

Eischeid, Karl. Mounting for facing panels. 5,644,885, Cl. 52-513.000.

Eisele, Robert F.: *See—*
Schultz, Robert K.; and Eisele, Robert F., 5,645,051, Cl. 128-203.150.

Ejiri, Kiyomi; Inaba, Hiroo; Saito, Shinji; and Hayakawa, Satoru, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 5,645,917, Cl. 428-141.000.

Ekenberg, Steven J.; Brisco, Paula R. G.; and Oaklander, Anne Louise, to Promega Corporation; and Johns Hopkins University, The. High efficiency method for isolating target substances using a multisample separation device. 5,646,263, Cl. 536-25.400.

Ekern, Ronald J.; and Messing, Terry G., to Rayovac Corporation. Method of making reduced environmental hazard LeClanche cell having improved performance. 5,645,611, Cl. 29-623.200.

Ekmark, Ellert; and Salomonsson, Erik, to Ekmark, Ellert. Roofing. 5,644,886, Cl. 52-518.000.

Ela Medical S.A.: *See—*
Bouhour, Anne; and Legay, Thierry, 5,645,574, Cl. 607-17.000.
Limousin, Marcel; Bonnet, Jean-Luc; and Bouhour, Anne, 5,645,576, Cl. 607-19.000.

Elbit Ltd.: *See—*
Gilboa, Pinhas, 5,646,524, Cl. 324-207.170.
Gilboa, Pinhas, 5,646,525, Cl. 324-207.170.
Gilboa, Pinhas; Maoz, Tal; Levy, Shimon; and Sendowski, David, 5,646,785, Cl. 359-632.000.

Electric Propulsion Laboratory, Inc.: *See—*
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Electronics Research & Service Organization: *See—*
Wang, Yen-Hui; and Wu, Der-Chwan, 5,647,005, Cl. 381-62.000.

Elf Aquitaine Production: *See—*
Gourlia, Jean-Paul; Lasserve, Jacques Tournier; Bihn-Cirlot, Georges; and Vandermeersch, Jean, 5,645,692, Cl. 196-46.000.

Eli Lilly and Company: *See—*
Alt, Charles A.; Merritt, Leander; Rhodes, Gary A.; Robey, Roger L.; Van Meter, Eldon E.; Ward, John S.; and Mitch, Charles H., 5,646,289, Cl. 548-110.000.
Baker, Jeffrey C.; Chen, Victor J.; Hanquier, Jose M.; Kriauciunas, Aidas; Moser, Brian A.; and Shuman, Robert T., 5,646,242, Cl. 530-303.000.
Black, Larry J.; and Cullinan, George J., 5,646,137, Cl. 514-171.000.
Borromeo, Peter S.; Jamison, James A.; Rodriguez, Michael J.; Turner, William W.; and Vasudevan, Venkatraghaven, 5,646,111, Cl. 514-11.000.
Gardner, John P.; and Jackson, Billy G., 5,646,275, Cl. 540-364.000.

Elicker, Robert J.: *See—*
Crocker, Michael; Shimada, Lynn M.; and Elicker, Robert J., 5,645,560, Cl. 606-192.000.

Elliott, Franklin E., to Maxwell Products, Inc. Adjustable bed and method of adjusting same. 5,644,808, Cl. 5-618.000.

Ellis, Richard: *See—*
Stoner, David J.; Lang, Steven L.; Sulman, Paul E.; Lawrence, David C.; Ellis, Richard; and Lopez, Fernando, 5,645,379, Cl. 406-67.000.

Elonex Ip Hudings, Ltd.: *See—*
Dornier, Pascal, 5,646,535, Cl. 324-556.000.

Elsasser, A. Frederick, Jr., to Henkel Corporation. Process for controlled depolymerization of feed material to produce a product with lower molecular weight. 5,646,306, Cl. 549-267.000.

Elsner, Bernhard: *See—*
Weiblen, Kurt; Offenberg, Michael; and Elsner, Bernhard, 5,646,347, Cl. 73-514.320.

Elson, Clive M.: *See—*
Henderson, Susan Elizabeth; Curran, Dennis Thomas; and Elson, Clive M., 5,645,844, Cl. 424-405.000.

Eltgen, Jean-Jacques, to Nipson. Process and apparatus for printing using a magnetic toner which is electrostatically charged. 5,644,987, Cl. 101-478.000.

Eltron Research, Inc.: *See—*
White, James H.; Schwartz, Michael; and Sammells, Anthony F., 5,645,700, Cl. 204-252.000.

Elwalid, Anwar, to Lucent Technologies Inc. Method for integrated congestion control in networks. 5,646,943, Cl. 370-230.000.

Embleton, Jonathan Kenneth: *See—*
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Emerson, Stephen G.; Clarke, Michael F.; and Palsson, Bernhard O., to University of Michigan, Regents of the. Methods for the ex vivo replication of human stem cells and/or expansion of human progenitor cells. 5,646,043, Cl. 435-373.000.

Emert, Jacob I.: *See—*
Cusumano, Joseph V.; Dankworth, David C.; Diana, William D.; Eckstrom, William B.; Emert, Jacob I.; and Gorda, Keith R., 5,646,332, Cl. 560-204.000.

Emery, Jean-Yves: *See—*
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Emery, William Derek; Metcalfe, Kenneth; and Tollington, Peter James, to Lever Brothers Company, Division of Conopco, Inc. Production of anionic surfactant granules. 5,646,107, Cl. 510-457.000.

Emhart Inc.: *See—*
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Emhart Inc.: *See—*
Williams, Graham Frank Harry, 5,645,383, Cl. 411-43.000.

Emmer, Ludwig; Koch, Michael; and Greiner, Ferdinand, to Mercedes-Benz AG. Sun and wind screen arrangement for open motor vehicles. 5,645,311, Cl. 296-180.500.

Enamelon Inc.: *See—*
Winston, Anthony E.; and Usen, Norman, 5,645,853, Cl. 424-440.000.

Enami, Hiromichi: *See—*
Kakehi, Yutaka; Kawasaki, Yoshinao; Suzuki, Keizo; Nojiri, Kazuo; Enami, Hiromichi; Kaji, Tetsunori; Watanabe, Seiichi; and Ogawa, Yoshifumi, 5,646,489, Cl. 315-111.210.

Encad, Inc.: *See—*
Murray, Richard A., 5,646,660, Cl. 347-59.000.

Enderle, Heinrich; and Ottenstein, Achim, to MTU Motoren-Und Turbinen-Union Muenchen GmbH. Coolant supply arrangement for jet engine turbine walls. 5,645,127, Cl. 165-176.000.

Endo, Keiko: *See—*
Ogi, Katumi; Yonezawa, Tadashi; Atsuki, Tsutomu; and Endo, Keiko, 5,645,634, Cl. 106-287.190.

Endo, Masayuki; Kawaguchi, Akemi; Nishio, Mikio; and Hashimoto, Shin, to Matsushita Electric Industrial Co., Ltd. Electroless plating bath used for forming a wiring of a semiconductor device, and method of forming a wiring of a semiconductor device. 5,645,628, Cl. 106-1.230.

Endo, Seiichiro; and Horiuchi, Kuniyasu, to Sumitomo Rubber Industries, Ltd. Two-piece golf ball. 5,645,496, Cl. 473-372.000.

Endres, George W. R.: *See—*

Thrall, Karla D.; Kenny, Donald V.; Endres, George W. R.; and Sisk, Daniel R., 5,645,072, Cl. 128-719.000.

Endress & Hauser GmbH & Co.: *See*—
Leisinger, Ulrich; and Neuhaus, Joachim, 5,646,409, Cl. 250-395.000.

Endress + Hauser Flowtec AG: *See*—
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Enersafe Corporation: *See*—
Shannon, John K.; and Shannon, James M., 5,645,612, Cl. 29-623.200.

Engblom, Gunnar: *See*—
Saldell, Ulf; Bergquist, Håkan; and Engblom, Gunnar, 5,646,636, Cl. 343-713.000.

Engel, Herbert E.: *See*—
Schrock, Clifford B.; and Engel, Herbert E., 5,646,858, Cl. 364-464.220.

Engelhard Corporation: *See*—
Behl, Sanjay; Nemeh, Saad; Willis, Mitchell J.; and Berberich, Joseph P., 5,645,635, Cl. 106-416.000.

Engleman, Edgar G.: *See*—
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Enircerche S.p.A.: *See*—
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Enning, Norbert; and Timm, Heinrich, to Audi AG. Supporting structure of a body of a passenger car. 5,645,312, Cl. 296-203.000.

Enokida, Miyuki, to Canon Kabushiki Kaisha. Moving image processing method and apparatus. 5,646,685, Cl. 348-390.000.

Enomoto, Aiko: *See*—
Inoue, Hiroshi; Mizutome, Atsushi; and Enomoto, Aiko, 5,646,646, Cl. 345-123.000.

Enomoto, Masayasu; and Nishimura, Haruhiko, to Nippon Shoji Kaisha Ltd. Method for determination of antithrombin III activity and reagent kit therefor. 5,646,007, Cl. 435-13.000.

Entenmann, Robert; Unland, Stefan; Torno, Oskar; Haeming, Werner; Rothaar, Ulrich; Surjadi, Iwan; Hilbert, Wolfgang; Sloboda, Robert; Baeuerle, Michael; and Schenk, Klaus, to Robert Bosch GmbH. Method for the adaptive knock control of an internal combustion engine. 5,645,034, Cl. 123-425.000.

Envirocorp Services & Technology, Inc.: *See*—
Malachosky, Edward; and Gordon, Ronnie D., 5,645,730, Cl. 210-665.000.

Environment, Canada, Her Majesty the Queen in right of, as represented by the Minister of the: *See*—
Lesage, Suzanne; Brown, Susan Jean; and Millar, Kelly Rose, 5,645,374, Cl. 405-128.000.

Environmental Spout Company: *See*—
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Epoch Pharmaceuticals: *See*—
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Epperly, W. Robert: *See*—
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Equitz, William Robinson: *See*—
Agrawal, Rakesh; Equitz, William Robinson; Faloutsos, Christos; Flickner, Myron Dale; and Swami, Arun Narasimha, 5,647,058, Cl. 395-601.000.

Erb, Darrell: *See*—
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Erdman, David M.; and Beatty, James A., to General Electric Company. Electrical motor with a differential phase back EMF sensing circuit for sensing rotor position. 5,646,491, Cl. 318-254.000.

Erickson, Charles R.; Freidin, Philip M.; and Pierce, Kerry M., to Xilinx, Inc. Phase-locked delay loop for clock correction. 5,646,564, Cl. 327-158.000.

Erickson, Dwight D.; Monroe, Larry D.; Wood, Thomas E.; and Wilson, David M., to Minnesota Mining and Manufacturing Company. Method of making alpha alumina-based abrasive grain containing silica and iron oxide. 5,645,619, Cl. 51-309.000.

Erickson, Thomas A.: *See*—
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Ericsson Inc.: *See*—
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Erilli, Rita; and Thomas, Barbara, to Colgate-Palmolive Company. Microemulsion light duty liquid cleaning compositions. 5,646,104, Cl. 510-365.000.

Erion, Mark D.: *See*—
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Erken, Manfred: *See*—
Dummersdorf, Hans-Ulrich; Herbst, Günther; Erken, Manfred; Menge, Franz-Josef; and Kreusing, Helmut, 5,645,614, Cl. 44-596.000.

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Hara, Ryuichi; and Kanno, Ichiro, 5,646,493, Cl. 318-568.170.
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Schultz, Rose Ann; and Fenelli, Steven P., 5,646,315, Cl. 549-554.000.

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Reczek, Steven T.; Rozin, Alexander; and Pomponio, Thomas F., 5,645,774, Cl. 264-40.100.

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Ruf, Wolfgang; Fey, Frank; Dietz, Thomas; Pirnskern, Klaus; and Wernlein, Gerhard, 5,645,689, Cl. 162-258.000.

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Fichtel & Sachs AG: *See*—
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Field, Simon J.: *See*—
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Finley, Daniel: *See*—
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Levarlet, Christophe Georges Claude; Finnicum, Douglas Scott; and Quiel, Robert Richard, 5,646,737, Cl. 356-429.000.

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Fischer, Timothy J.; Callahan, Janet B.; Braun, Paul Joseph; Givens, Thomas Beecher; Hoffman, Julie F.; Hulette, William Chester; Link, John Glenn; and Swope, Charles Hermas, to AKZO Nobel N.V. Method and instrument for automatically performing analysis relating to thrombosis and hemostasis. 5,646,046, Cl. 436-49.000.

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Coffin, David R.; and Fishman, Marshall L., 5,646,206, Cl. 524-27.000.

Fitting, Paul E., to Burndy Corporation. Electrical connector with female contact section having dual contact areas and stationary housing mounts. 5,645,459, Cl. 439-857.000.

Fitton, Andrew, to Flexitallic Limited. Gasket. 5,645,284, Cl. 277-204.000.

Fixano: *See*—
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Flamel Technologies: *See*—
Constancis, Alain; and Soula, Gérard, 5,646,239, Cl. 528-373.000.

Flanagan, Denise M.: *See*—

Kosley, Raymond W., Jr.; Flanagan, Denise M.; Martin, Lawrence L.; and Nemoto, Peter A., 5,646,300, Cl. 548-475.000.

Fleck, Wolfram: *See—*
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Lorenz, Helmut; Noreikat, Karl-Ernst; Klaiber, Thomas; Fleck, Wolfram; Sonntag, Josef; Hornburg, Gerald; and Gaulhofer, Andreas, 5,646,852, Cl. 364-431.051.

Fleer, Reinhard; Fournier, Alain; Mayaux, Jean-Francois; and Yeh, Patrice, to Rhone-Poulenc Rorer S.A. Yeast promoter and use thereof. 5,646,012, Cl. 435-69.100.

Flexitallic Limited: *See—*
Fitton, Andrew, 5,645,284, Cl. 277-204.000.

Flickner, Myron Dale: *See—*
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Floor Seal Technology, Inc.: *See—*
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Florasynth, Inc.: *See—*
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Flückiger, Claude; Rindlisbacher, Alfred; Senn, Robert; and Uk, Solang, to Ciba-Geigy Corporation. Method of controlling insects. 5,646,145, Cl. 514-242.000.

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Focke, Heinz; and Gosebruch, Harald, 5,645,213, Cl. 229-160.200.

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Foley, Martin P.; and Morton, Robert, to Trudell Medical Limited. Exhalation valve for face mask with spacer chamber connection. 5,645,049, Cl. 128-203.290.

Foley, Thomas: *See—*
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Folmer, Neil. Adjustable gun resting system. 5,644,862, Cl. 42-94.000.

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Fong, Jon: *See—*
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Fontana, Edward Clark: *See—*
Alden, Tor Andrew; Fontana, Edward Clark; and Somdahl, Sonja K., 5,646,816, Cl. 361-622.000.

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Forbes, Gregory William; Quinn, Anna M.; and Eastman, Jay M., to PSC, Inc. Optical assembly for controlling beam size in bar code scanners. 5,646,391, Cl. 235-462.000.

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Miller, Alan Wayne, 5,646,637, Cl. 343-713.000.
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Forgang, Stanislav: *See—*
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Forry, Mark Edwin: *See—*
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Forsythe, Russell C.: *See—*
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Forte, Gary L.; Vinson, David B.; and Connors, Thomas, to AJF, Inc. Slag control shape release apparatus for molten metal vessels. 5,645,792, Cl. 266-230.000.

Fortney, Phillip Mark: *See—*
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Fortuna, Gary R.: *See—*
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Fortune, Steven Jonathan: *See—*
Baird, Henry Spalding; Fortune, Steven Jonathan; and Jones, Susan Elizabeth, 5,647,021, Cl. 382-176.000.

Foster, Betty J. Therapeutic lower extremity exerciser and foot rest. 5,645,516, Cl. 482-79.000.

Foster, Donald D., to Contico International, Inc. Trigger sprayer having air vent sleeve with integral check valve. 5,645,221, Cl. 239-333.000.

Foster Wheeler Development Corp.: *See—*
Shenker, Jack David, 5,645,620, Cl. 55-267.000.

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Fournier, Alain: *See—*
Fleer, Reinhard; Fournier, Alain; Mayaux, Jean-Francois; and Yeh, Patrice, 5,646,012, Cl. 435-69.100.

Fowler, Frank: *See—*
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Foxlin, Eric M., to Massachusetts Institute of Technology. Inertial orientation tracker apparatus having automatic drift compensation for tracking human head and other similarly sized body. 5,645,077, Cl. 128-774.000.

FPS Food Processing Systems B.V.: *See—*
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Fraden, Jacob, to Thermoscan Inc. Noncontact active temperature sensor. 5,645,349, Cl. 374-120.000

Franberg, Per: *See—*
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Francese, Jose L.: *See—*
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Francotyp-Postalia AG & Co.: *See—*
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Frank, Anke: *See—*
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Frank, Glenn R.; Hunter, Shirley Wu; and Wallenfels, Lynda, to Heska Corporation. Ectoparasite saliva proteins and apparatus to collect such proteins. 5,646,115, Cl. 514-12.000.

Frank, Klaus: *See—*
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Frank, Steven N.; Belcher, James F.; Stanford, Charles E.; Owen, Robert A.; and Kyle, Robert J. S., to Texas Instruments Incorporated. Method for forming electrical contact to the optical coating of an infrared detector from the backside of the detector. 5,646,066, Cl. 437-180.000.

Franke Inc.: *See—*
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Frankel, David B.; Jeffers, Scott E.; and Myslik, John E., to Caterpillar Inc. Engine enclosure assembly. 5,645,134, Cl. 180-69.240.

Frankfort, Hans Rudolf Edward; Knox, Benjamin Hughes; and Pai, Girish Anant, to Du Pont de Nemours, E. I., and Company. Continuous filaments, yarns, and tows. 5,645,936, Cl. 428-395.000.

Fraterrigo, John: *See—*
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Frazier, Gary A.; and Luscombe, James H., to Texas Instruments Incorporated. Quantum effect switching device. 5,646,418, Cl. 257-4.000.

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Frederick, Thomas James: *See—*
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Frederickson, Christian D.: *See—*
Procbstle, Richard A.; Frederickson, Christian D.; Dunlap, Thomas G.; and Croteau, Edward A., 5,646,973, Cl. 376-434.000.

Freeman, Richard Neil Templar: *See—*
Russell, Jeremy Colin; Freeman, Richard Neil Templar; and Charles, Stephen Alexander, 5,645,883, Cl. 427-2.250.

Freidin, Philip M.: *See—*
Erickson, Charles R.; Freidin, Philip M.; and Pierce, Kerry M., 5,646,564, Cl. 327-158.000.

Frerichs, Heinz-Peter, to Deutsche ITT Industries GmbH. Programmable semiconductor memory. 5,646,438, Cl. 257-530.000.

Frew, Dean L.: *See—*
Wilson, Arthur M.; Kressley, Mark A.; Frew, Dean L.; Miller, Juanita G.; Hanicak, John E.; Hecker, Philip E.; and Drumm, James M., 5,646,068, Cl. 437-183.000.

Frew, Gordon, to Net/Werk/USA, Inc. Strap buckle. 5,644,822, Cl. 24-196.000.

Frey, Krisztina; von Massow, Gabriele; Alt, Helmut G.; and Welch, M. Bruce, to Phillips Petroleum Company. Process for preparing metallocene compounds. 5,646,323, Cl. 556-21.000.

Freyman, Ronald Lamar; Garen, Craig Joseph; Holder, Clinton Hays, Jr.; Kershaw, Robert Nelson; and Morgan, Edward Clayton, to Lucent Technologies Inc. Multifunctional chip wire bonds. 5,646,451, Cl. 257-784.000.

Friederichs, Winand H. A. M.: *See—*
Eggink, Hendrik J.; and Friederichs, Winand H. A. M., 5,646,473, Cl. 313-113.000.

Friedrich, Thomas: *See—*
Braatz, Reinhard; Kurth, Roland; Menkel-Conen, Elke; Rettenmaier, Hansjoerg; Friedrich, Thomas; and Subkowski, Thomas, 5,645,832, Cl. 424-94.600.

Friel, Daniel D.: *See—*
van Phuoc, Duong; Wieczorek, Rudi; Zeising, Elmar; Hruska, Louis W.; Taylor, Alwyn H.; Friel, Daniel D.; and Hull, Matthew P., 5,646,508, Cl. 320-30.000.

Friese, Carsten: *See—*
Hachmann, Klaus; and Friese, Carsten, 5,646,105, Cl. 510-382.000.

Frinak, Steven L.: *See—*
Nicewarner, Earl R., Jr.; and Frinak, Steven L., 5,646,446, Cl. 257-723.000.

Frings, Albert: *See—*
Monkiewicz, Jaroslaw; Frings, Albert; Horn, Michael; Jenkner, Peter; Koetzsch, Hans-Joachim; Kropfgans, Frank; Seiler, Claus-Dietrich; Srebny, Hans-Guenther; and Standke, Burkhard, 5,646,325, Cl. 556-440.000.

Fröberg, Paul; Fränberg, Per; Högnelid, Kurt; Killander, Fredrik; Magnusson, Peter; and Nyman, Per, to Pacesetter AB. Connection indicator for medical device. 5,645,577, Cl. 607-37.000.

Froehler, Brian; Wagner, Rick; Matteucci, Mark; Jones, Robert J.; Gutierrez, Arnold J.; and Pudlo, Jeff, to Gilead Sciences, Inc. Enhanced triple-helix and double-helix formation with oligomers containing modified pyrimidines. 5,645,985, Cl. 435-6.000.

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Edlund, David J.; Newbold, David D.; and Frost, Chester B., 5,645,626, Cl. 95-56.000.

Frost, Keith L.; Hayenga, Jon W.; Stephanick, James A.; and Schmidt, Robert C., to NeoPath, Inc. Automatic focusing of biomedical specimens apparatus. 5,647,025, Cl. 382-255.000.

Frushour, Robert H. Composite polycrystalline diamond compact with improved impact and thermal stability. 5,645,617, Cl. 51-309.000.

Fuchs, Eberhard; and Witzel, Tom, to BASF Aktiengellschaft. Preparation of caoprolactam. 5,646,277, Cl. 540-539.000.

Fuchs, Gerhard; Ehle, Joachim; and von Ploetz, Klaus, to Fuchs Systemtechnik GmbH. Charge preheater. 5,645,791, Cl. 266-175.000.

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Fuchs, Gerhard; Ehle, Joachim; and von Ploetz, Klaus, 5,645,791, Cl. 266-175.000.

Fuganti, Claudio: *See—*
Villa, Mario; Fuganti, Claudio; Zucchi, Gioia; Allegrone, Gianna; Barbeni, Masimo; and Cabella, Paolo, 5,646,022, Cl. 435-124.000.

Fuji Electric Co., Ltd.: *See—*
Iino, Mitsutoshi; and Nakatao, Shiro, 5,647,019, Cl. 382-154.000.

Fuji Facom Corporation: *See—*
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Fuji Jukogyo Kabushiki Kaisha: *See—*
Hodozuka, Yasuo; Iida, Tadashi; Yamaga, Yoshikazu; Ueda, Satoshi; and Imaizumi, Yasuo, 5,645,364, Cl. 403-270.000.
Kubota, Yosuke, 5,646,461, Cl. 307-116.000.

Fuji Photo Film Co., Ltd.: *See—*
Ejiri, Kiyomi; Inaba, Hiroo; Saito, Shinji; and Hayakawa, Satoru, 5,645,917, Cl. 428-141.000.
Kamada, Koh; Kozono, Hiroko; Watanabe, Jun; and Arakawa, Kohei, 5,646,703, Cl. 349-118.000.
Kodama, Kenichi, 5,646,673, Cl. 347-251.000.
Nagashima, Kanji, 5,646,716, Cl. 355-67.000.
Watanabe, Shoji; Nakazawa, Makoto; and Itoh, Sueo, 5,646,747, Cl. 358-487.000.

Fuji Xerox Co., Ltd.: *See—*
Kobayashi, Hideo; Ueno, Osamu; and Gotoh, Hironori, 5,645,909, Cl. 428-64.100.
Nishimoto, Keiichi, 5,645,885, Cl. 427-126.300.
Yamada, Tetsuo; Tanaka, Toshihide; Hirosaki, Satoru; Udagawa, Koji; and Komori, Yumiko, 5,646,669, Cl. 347-127.000.

Fujii, Noboru; and Kadota, Genichi, to Sopy, Kabushikigaisha; Luth, Frederick L.; King, James J.; and Johnson, Leo C. Acidic polysaccharide. 5,646,270, Cl. 536-119.000.

Fujii, Satoshi: *See—*
Nakahata, Hideaki; Higaki, Kenjiro; Fujii, Satoshi; Hachigo, Akihiro; and Shikata, Shin-ichi, 5,646,468, Cl. 310-313.00A.

Fujimura, Setsuo; Matsuura, Yutaka; and Sagawa, Masato, to Sumitomo Special Metals Co., Ltd. Magnetic materials and permanent magnets. 5,645,651, Cl. 148-302.000.

Fujio, Katsuharu; Sano, Kiyoshi; Hase, Syouzou; Morimoto, Takashi; and Yamamoto, Shuichi, to Matsushita Electric Industrial Co., Ltd. Scroll compressor having optimized oil passages. 5,645,408, Cl. 418-55.000.

Fujio, Noboru: *See—*
Ohno, Kinichiro; Fujio, Noboru; and Ohkawara, Tamaki, 5,644,981, Cl. 101-147.000.

Fujioka, Satoshi; Hirabayashi, Hiromu; Takabayashi, Nobuhisa; Nishizawa, Atsushi; and Komuro, Kiyoto, to Seiko Epson Corporation. Ink jet printer. 5,646,653, Cl. 347-8.000.

Fujioka, Satoshi; Hirabayashi, Hiromu; Takabayashi, Nobuhisa; Nishizawa, Atsushi; and Komuro, Kiyoto, to Seiko Epson Corporation. Ink jet printer. 5,646,668, Cl. 347-104.000.

Fujisawa Pharmaceutical Co., Ltd.: *See—*
Nishiyama, Hitoshi; Ohgaki, Masaru; Yamanishi, Ryo; and Hara, Toshihiko, 5,646,244, Cl. 530-317.000.

Fujishiro, Masatoshi; Togashi, Akio; Tani, Youichiro; and Ishii, Takamaro, to Tomy Seiko Co., Ltd. Process and apparatus for the extraction and purification of DNA. 5,645,723, Cl. 210-321.750.

Fujita, Minoru: *See—*
Ohnuki, Takeshi; Fujita, Minoru; Ishizaki, Osamu; and Adachi, Kazuyoshi, 5,646,807, Cl. 360-133.000.

Fujitsu Limited: *See—*
Fukushima, Nobuhiro; and Onaka, Hiroshi, 5,646,399, Cl. 250-226.000.
Hikawa, Kenichi, 5,646,988, Cl. 379-266.000.
Kaneko, Junji, 5,646,869, Cl. 364-578.000.
Maruyama, Minoru; and Fujiwara, Shuuji, 5,646,604, Cl. 340-825.310.
Mihara, Takahisa; Samma, Shoji; and Saito, Sigeo, 5,646,800, Cl. 360-97.010.
Misaizu, Setsuo; Itou, Sunao; and Tsuda, Takashi, 5,646,763, Cl. 359-187.000.
Ochiai, Ryoichi; Miura, Kazunori; Sasaki, Seimi; and Nakagawa, Goji, 5,647,042, Cl. 385-56.000.
Sato, Kenji; Okamoto, Iwao; and Okuyama, Chiaki, 5,645,898, Cl. 427-539.000.
Shimizu, Manabu; and Miyazawa, Hideo, 5,645,436, Cl. 439-108.000.
Tukidate, Yoshihiro, 5,646,565, Cl. 327-174.000.
Yamamoto, Keijiro, 5,646,549, Cl. 326-81.000.

Fujiwara, Norio: *See—*
Irie, Kenji; Ueda, Yutaka; and Fujiwara, Norio, 5,646,154, Cl. 514-260.000.

Fujiwara, Shuuji: *See—*
Maruyama, Minoru; and Fujiwara, Shuuji, 5,646,604, Cl. 340-825.310.

Fujiwara, Yuji; Nishino, Shouichi; Awamoto, Sigeru; and Matsuda, Toyohiko, to Matsushita Electric Industrial Co., Ltd. Video signal processing method and apparatus for use with plural television systems. 5,646,695, Cl. 348-448.000.

Fukatami, Fumikazu: *See—*
Sugiura, Yoshitsugu; and Fukatami, Fumikazu, 5,645,236, Cl. 241-266.000.

Fukatani, Yasunobu: *See—*
Kajitani, Koji; Takeuchi, Hiroshi; Fukatani, Yasunobu; Teramae, Hiroshi; and Asada, Masaaki, 5,645,150, Cl. 192-70.160.

Fukazawa, Kazuhiko: *See—*
Mori, Futoshi; Fukazawa, Kazuhiko; Hirose, Hiroshi; and Kohama, Yoshiaki, 5,646,403, Cl. 250-310.000.

Fukuchi, Shunsei; Iwamoto, Makoto; Kitabatake, Akihiro; Tanimoto, Masahiro; Maekawa, Masaki; and Shimoyama, Naoki, to Sharp Kabushiki Kaisha; Sanyo Vacuum Industries Co., Ltd.; and Toray Industries, Inc. Electrode substrate for liquid crystal display device and liquid crystal display device. 5,645,901, Cl. 428-1.000.

Fukuda, Minoru: *See—*
Sawada, Ritsuko; Lowe, John B.; and Fukuda, Minoru, 5,646,248, Cl. 530-350.000.

Fukuda, Yasuhiro: *See—*
Nakamura, Makiko; Fukuda, Yasuhiro; Tatara, Yasuyuki; Harada, Yusuke; and Onoda, Hiroshi, 5,646,449, Cl. 257-761.000.

Fukui, Akio: *See—*
Usuki, Arimitsu; Takeuchi, Hisato; Tatsuda, Narihito; Okada, Akane; Kurauchi, Toshio; Tanaka, Hiromitsu; Okayama, Shinobu; Tojima, Kazuo; Fukui, Akio; and Okamoto, Toshiro, 5,646,284, Cl. 546-88.000.

Fukuoka, Shuichi; Kamigaki, Kousei; Uchi, Kazutaka; and Onitsuka, Katsuhiko, to Kyocera Corporation. Piezo-electric ceramic composition. 5,645,753, Cl. 252-62.9PZ.

Fukushima, Hisashi: *See—*
Moriyama, Jiro; Koizumi, Yutaka; Fukushima, Hisashi; Hirosawa, Toshiaki; Osada, Torachika; Moriguchi, Haruhiko; Kubota, Hidemi; and Izumizaki, Masami, 5,646,659, Cl. 347-55.000.

Fukushima, Itaru, to NEC Corporation. Thermal head apparatus. 5,646,672, Cl. 347-211.000.

Fukushima, Nobuhiro; and Onaka, Hiroshi, to Fujitsu Limited. Tunable optical filter having beam splitter and movable film filter. 5,646,399, Cl. 250-226.000.

Fukushima, Shigeaki; and Kawase, Tatsuo, to NTN Corporation. Torque - responsive rotation control device. 5,646,355, Cl. 73-862.195.

Fuller, Anthony B.; Beckmann, Toby J.; Sorensen, Joseph A.; and Chervenak, Thomas M., to American Tool Companies, Inc. Chalk line reel. 5,644,852, Cl. 33-414.000.

Fuller, Christine Marie: *See—*
Bertolet, Allan Robert; Clinton, Kim P. N.; Fuller, Christine Marie; Gould, Scott Whitney; Hartman, Steven Paul; Iadanza, Joseph Andrew; Keyser, Frank Ray; Millham, Eric Ernest; Reny, Timothy Shawn; Worth, Brian A.; Yasar, Gulson; and Zittritsch, Terrance John, 5,646,546, Cl. 326-39.000.

Fuller, William D.: *See—*
Kurtz, Robert J.; and Fuller, William D., 5,646,122, Cl. 514-19.000.

Funada, Hitoshi: *See—*
Yoshida, Akira; Kiuchi, Kazuhiko; Kyochika, Naoki; Mamba, Akio; and Funada, Hitoshi, 5,646,199, Cl. 123-139.000.

Funahashi, Noritaka, to Mitsutoyo Kiko, Co., Ltd. Apparatus for processing food into tubular shape. 5,645,872, Cl. 425-380.000.

Funakosi, Hirosi: *See—*
Udoh, Hiroshi; and Funakosi, Hirosi, 5,646,456, Cl. 307-10.500.

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Fung, Ho-Leung; and Bauer, John Anthony, to Research Foundation of State University of New York. Method and compositions for treating impotence. 5,646,181, Cl. 514-506.000.

Funke, James. Transient voltage surge suppression and electrical noise attenuation circuit. 5,646,810, Cl. 361-56.000.

Funo, Masao: *See*—
Edwards, Russell James; Kitagawa, Hirokazu; Imai, Kiyoshi; Funo, Masao; Holley, William Edward; Hood, Charles R.; and Abrams, Richard Wayne, 5,644,895, Cl. 53-55.000.

Furch, Joseph Augustus; Kuhn, David George; and Hunt, David Allen, to American Cyanamid Company. Amidrazones and their use as insecticidal and agents. 5,646,278, Cl. 544-224.000.

Furhman, Thomas C. Venetian blinds. 5,645,685, Cl. 160-168.100.

Furon Company: *See*—
Kingsford, Kenji A.; and Martinez, David R., 5,645,301, Cl. 285-14.000.

Furuhashi, Tsutomu; Mano, Hiroyuki; Takashi, Terumi; Nishioka, Kiyokazu; and Futami, Toshio, to Hitachi, Ltd. Liquid crystal display device. 5,646,644, Cl. 345-100.000.

Furumiya, Shigeru, to Matsushita Electric Industrial Co., Ltd. Recording method and disk including initialization of recording tracks to amorphous phase with a constant power laser power beam. 5,646,930, Cl. 369-116.000.

Furuse, Minoru: *See*—
Tamura, Yoshihiko; Saito, Hitoshi; Furuse, Minoru; Yamauchi, Mineo; and Horii, Takumi, 5,646,090, Cl. 503-227.000.

Furuta, Motonobu; and Yamaguchi, Takanari, to Sumitomo Chemical Company, Limited. Thermoplastic resin composition comprising liquid crystalline polyester, aromatic polycarbonate and glass fiber. 5,646,209, Cl. 524-252.000.

Furuyama, Masataka: *See*—
Sumiya, Satoshi; Makino, Seiji; Yoshida, Kiyohide; Takahashi, Yoshikazu; Furuyama, Masataka; Abe, Akira; Matsumura, Nobuyuki; and Muramatsu, Gyo, 5,645,804, Cl. 423-239.100.

Futami, Toshio: *See*—
Furuhashi, Tsutomu; Mano, Hiroyuki; Takashi, Terumi; Nishioka, Kiyokazu; and Futami, Toshio, 5,646,644, Cl. 345-100.000.

Futisplast S.p.A.: *See*—
Cassina, Virginio, 5,645,185, Cl. 220-1.500.

G. D. Searle & Co.: *See*—
Abood, Norman Anthony; Manning, Robert Everett; and Miyano, Masateru, 5,646,183, Cl. 514-538.000.

G.D Societa' Per Azioni: *See*—
Mengoli, Fausto; and Draghetti, Fiorenzo, 5,645,085, Cl. 131-67.000.

G.S. S.r.l.: *See*—
Spaggiari, Rino, 5,645,101, Cl. 137-225.000.

Gabler, Douglas G.: *See*—
Jacobson, Alan R.; Gabler, Douglas G.; and Oleksyszyn, Jozef, 5,646,316, Cl. 552-554.000.

Gaddis-Walker Electric, Inc.: *See*—
Walker, James A., 5,644,876, Cl. 52-220.700.

Gaffney, Edward J.; and Wargin, Thomas R., to Ortho-Kinetics, Inc. Stackable stroller. 5,645,290, Cl. 280-33.998.

Gagné, Robert R.: *See*—
Marrocco, Matthew Louis, III; Gagné, Robert R.; and Trimmer, Mark Steven, 5,646,231, Cl. 528-125.000.
Marrocco, Matthew Louis, III; Gagné , Robert R.; and Trimmer, Mark Steven, 5,646,232, Cl. 528-126.000.

Gahan, Richard E.: *See*—
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Gahan, Richard J.: *See*—
Blank, Rodney K.; Gahan, Richard J.; Haselhuhn, Howard J., Jr.; Schierbeek, Kenneth L.; and Schofield, Kenneth, 5,644,851, Cl. 33-361.000.

Gaier, Walter, to Nestec S.A. Fermented food product and preparation thereof. 5,645,877, Cl. 426-56.000.

Galinski, Mary R.: *See*—
Barnwell, John W.; and Galinski, Mary R., 5,646,247, Cl. 530-350.000.

Gall, Claus: *See*—
Joerg, Wolfgang; Bordovsky, Jaromir; Cakmaz, Aydogan; Heck, Hubert; Roehringer, Arno; Gall, Claus; Abt, Reinhold; Strauss, Rainer; and Koehler, Karl-Hans, 5,644,967, Cl. 91-457.000.

Gallagher, William Joseph: *See*—
Eidelloth, Walter; and Gallagher, William Joseph, 5,646,095, Cl. 505-330.000.

Galyon, Stanley D.: *See*—
Palmere, Vincent R.; Dietrich, Allan H.; and Galyon, Stanley D., 5,645,828, Cl. 424-78.080.

Gamo, Mika: *See*—
Matsuo, Ryukichi; Yoshihara, Toshiaki; Miyamoto, Takashi; and Gamo, Mika, 5,645,923, Cl. 428-216.000.

Ganbuehler, George Michael John: *See*—
Park, George Barry; Lowe, Frank James; Ganbuehler, George Michael John; Hutt, Norman; Webb, Stephen Alan; and Graulus, Hendrick, 5,645,906, Cl. 428-36.300.

Gandini, Rebecca L.; Catunao, Delfin M.; Quistgaard, Jens Ulrich; and Butler, Lisa M., to Advanced Technology Laboratories, Inc. Medical ultrasonic diagnostic imaging system with scanning guide for three dimensional imaging. 5,645,066, Cl. 128-660.070.

Gane, Alison M.: *See*—
Chen, Chao-Guang; Mau, Shaio-Lim; Du, He; Gane, Alison M.; Bacic, Antony; and Clarke, Adrienne E., 5,646,029, Cl. 435-325.000.

Garard, Richard S.: *See*—
Fathi, Zakaryae; Garard, Richard S.; and Wei, Jianghua, 5,644,837, Cl. 29-832.000.

Garcia, Gustavo. Pendulum putter. 5,645,493, Cl. 473-203.000.

Gardiol, Freddy: *See*—
Bokhari, Syed A.; Zürcher, Jean-François; Mosig, Juan Ramon; and Gardiol, Freddy, 5,646,634, Cl. 343-700.0MS.

Gardner, John P.; and Jackson, Billy G., to Eli Lilly and Company. Azetidinone intermediates to carbacephalosporins and process. 5,646,275, Cl. 540-364.000.

Garen, Craig Joseph: *See*—
Freyman, Ronald Lamar; Garen, Craig Joseph; Holder, Clinton Hays, Jr.; Kershaw, Robert Nelson; and Morgan, Edward Clayton, 5,646,451, Cl. 257-784.000.

Garin-Chesa, Pilar: *See*—
Wallace, Thomas Paul; Harris, William Joseph; Carr, Francis Joseph; Rettig, Wolfgang J.; Garin-Chesa, Pilar; and Old, Lloyd J., 5,646,253, Cl. 530-387.300.

Garrick, Richard M.: *See*—
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Garrigus, Darryl F.: *See*—
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Gartstein, Vladimir: *See*—
Hillebrand, Greg George; and Gartstein, Vladimir, 5,645,825, Cl. 424-73.000.

Garvis, Andrew W. Headphone sound system. 5,647,011, Cl. 381-123.000.

Gas Research Institute: *See*—
Benedek, Karen R.; Carbone, Philip C.; He, Bo-Xiong; Loftus, Peter J.; and Benson, Charles E., 5,645,413, Cl. 431-116.000.
Ni, Li; Borgeson, Robert A.; Kules, Nick M.; and Schmidt, John, 5,645,409, Cl. 431-8.000.

Gates Corporation, The: *See*—
Westhoff, William L., 5,645,504, Cl. 474-250.000.

Gaudiano, Giorgio: *See*—
Koch, Tad H.; and Gaudiano, Giorgio, 5,646,177, Cl. 514-452.000.

Gaudreau, Marcel P. J.; and Dionne, Jean-Paul, to Diversified Technologies, Inc. Apparatus and method for deriving power for switching a switch from voltage across the switch. 5,646,833, Cl. 363-54.000.

Gaul, Stephen Joseph, to Harris Corporation. Method of bonding wafers having vias including conductive material. 5,646,067, Cl. 437-180.000.

Gaulhofer, Andreas: *See*—
Lorenz, Helmut; Noreikat, Karl-Ernst; Klaiber, Thomas; Fleck, Wolfram; Sonntag, Josef; Hornburg, Gerald; and Gaulhofer, Andreas, 5,646,852, Cl. 364-431.051.

Gaumont-Goarin, Elisabeth; Labourie, Christine; and Emery, Jean-Yves, to Alcatel N.V. Method of fabricating a segmented monocrystalline chip. 5,646,064, Cl. 437-133.000.

Gay, G. Thomas. Planter box. 5,644,867, Cl. 47-71.000.

Gayle, Margit Ann: *See*—
Fell, Henry Perry, Jr.; and Gayle, Margit Ann, 5,645,835, Cl. 424-134.100.

Gazzaniga, Annibale: *See*—
Stroppolo, Federico; Bonadeo, Daniele; Fornasini, Gian Franco; and Gazzaniga, Annibale, 5,645,857, Cl. 424-464.000.

GEC Alsthom Transport SA: *See*—
Blanchier, Patrick; and Harguindeguy, Patrick, 5,644,989, Cl. 105-340.000.

GEC-Marconi Avionics (Holdings) Limited: *See*—
Whittley, Stewart Trevor, 5,646,952, Cl. 372-32.000.

GEC Marconi Limited: *See*—
Wilson, Gerald Hugh, 5,646,784, Cl. 359-632.000.

Gee, Bernard; Hoede, Christiaan; Hotchkiss, Alastair J.; Jones, Barbara L.; and Smith, Paul, to Sun Electric U.K. Limited. Analytical tachometers. 5,646,340, Cl. 73-116.000.

Geiger, Peter. Plate-shaped paving stone, in particular made of concrete. 5,645,369, Cl. 404-34.000.

Geisenberger, Stefan, to Nokia Technology GmbH. Voice coil support for loudspeaker. 5,647,014, Cl. 381-194.000.

Geisler, Joseph P.: *See*—
Longwell, Michael L.; and Geisler, Joseph P., 5,646,556, Cl. 326-93.000.

Gelorme, Jeffrey Donald: *See*—
Angelopoulos, Marie; Gelorme, Jeffrey Donald; and Kuczynski, Joseph Paul, 5,645,764, Cl. 252-500.000.

Gema Volstatic AG: *See*—
Rutz, Guido, 5,645,380, Cl. 406-153.000.

Gen Trak, Inc.: *See*—
Love, Jack D., 5,645,990, Cl. 435-6.000.

Genentech, Inc.: *See*—
Attie, Kenneth; Carlsson, Lena Mariana Susann; Gesundheit, Neil; and Goddard, Audrey, 5,646,113, Cl. 514-12.000.
Schwall, Ralph H.; and Tabor, Kelly Helen, 5,646,036, Cl. 435-252.300.

General Electric Company: *See*—
Abdel-Malek, Aiman Albert; Hershey, John Eri; and Hassan, Amer Aref, 5,646,600, Cl. 340-679.000.
Castonguay, Roger N.; and Lord, Jeffrey D., 5,646,586, Cl. 335-132.000.
Erdman, David M.; and Beatty, James A., 5,646,491, Cl. 318-254.000.
Gulati, Anil; Dean, Anthony John; Holmes, David Graham; and Voorhees, Eayre Bruce, 5,644,918, Cl. 60-725.000.
Harrison, Daniel David, 5,646,962, Cl. 375-308.000.

Jensen, Grant Clark, 5,646,969, Cl. 376-260.000.
Katcha, Jason Stuart, 5,646,835, Cl. 363-98.000.
Kumar, Ajith Kuttannair, 5,646,510, Cl. 322-16.000.
Proebstle, Richard A.; Frederickson, Christian D.; Dunlap, Thomas G.; and Croteau, Edward A., 5,646,973, Cl. 376-434.000.
Sakashita, Takeshi; Shimoda, Tomoaki; and Nagai, Takashi, 5,646,233, Cl. 528-176.000.
Thompson, Jeffrey Lee, 5,646,970, Cl. 376-260.000.
Tkaczyk, John Eric; Lay, Kenneth Wilbur; and He, Qing, 5,646,097, Cl. 505-470.000.

General Motors Corporation: *See*—
Alfaro, Enrique Jose; Meister-Westermann, Jean Marie; and Cicala, John Joseph, 5,646,865, Cl. 364-514.00R.
Kroetsch, Karl Paul; and Corser, Don Clair, 5,645,125, Cl. 165-137.000.
Simon, John David; Dreon, Michael Joseph; Small, William Lee; Abboud, Pierre Youssef; and Pasha, Brian Douglas, 5,646,485, Cl. 315-82.000.
Troxell, John Richard, 5,646,479, Cl. 313-495.000..
Walenty, Allen John; Leppek, Kevin Gerard; and Thatcher, David Alan, 5,646,848, Cl. 364-426.010.
Walenty, Allen John; Leppek, Kevin Gerard; and Kade, Alexander, 5,646,849, Cl. 364-426.010.

General Products Company, Inc.: *See*—
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Genetics Institute, Inc.: *See*—
McCoy, John; DiBlasio-Smith, Elizabeth; Grant, Kathleen; and LaVallie, Edward R., 5,646,016, Cl. 435-69.700.

Genie Industries: *See*—
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Genlyte Group Incorporated, The: *See*—
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Getz, Stephen H., to Dur-O-Wal, Inc. Remedial wall anchor system. 5,644,889, Cl. 52-713.000.

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Gulati, Anil; Dean, Anthony John; Holmes, David Graham; and Voorhees, Eayre Bruce, to General Electric Company. Dynamics free low emissions gas turbine combustor. 5,644,918, Cl. 60-725.000.

Gumm, Darryl M., to IDC, Inc. Interactive window display. 5,646,596, Cl. 340-573.000.

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Gunter, Charles E., to ABT, Inc. Drainage system having an embedded conduit connector. 5,645,367, Cl. 404-3.000.

Guo, Shao-Hua, to ARCO Chemical Technology, L.P. High-solids and powder coatings from hydroxy-functional acrylic resins. 5,646,213, Cl. 524-562.000.

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Klein, Richard K.; Erb, Darrell; Avanzino, Steven; Cheung, Robin; Luning, Scott; Tracy, Bryan; Gupta, Subhash; and Lin, Ming-Ren, 5,646,448, Cl. 257-751.000.

Gurwell, Hugh David; and Gurwell, Nancy C. Rapidly assembled and disassembled portable table, work bench, or the like. 5,644,995, Cl. 108-188.000.

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Gustafson, Eric T.; and Hoff, Jeffrey H., to Snap-on Technologies, Inc. Adjustable wrench with worm locking mechanism. 5,644,957, Cl. 81-165.000.

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Gutierrez, Arnold J.: *See—*
Froehler, Brian; Wagner, Rick; Matteucci, Mark; Jones, Robert J.; Gutierrez, Arnold J.; and Pudlo, Jeff, 5,645,985, Cl. 435-6.000.

Gutman, George, to Osmic, Inc. Optical element of multilayered thin film for X-rays and neutrons. 5,646,976, Cl. 378-84.000.

Gutsche, Bernhard: *See—*
Hunt, Tracy K.; Jeromin, Lutz; Johannishauer, Wilhelm; Gutsche, Bernhard; Jordon, Volkmar; and Wogatzki, Herbert, 5,646,311, Cl. 549-413.000.

Guzek, Donald B.; Hausman, Russell J.; and Shah, Bharat K., to Pfizer Inc. Modified polydextrose and process therefor. 5,645,647, Cl. 127-30.000.

Gybin, Alexander S.; Johnson, Kyle K.; Komatsu, Toshifumi; and Vaniseghem, Lawrence C., to Chromaline Corporation, The. Screen printing stencil composition with improved water resistance. 5,645,975, Cl. 430-308.000.

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Jaenson, Howard W.; and Actis, Bradley P., 5,644,978, Cl. 100-8.000.

Ha, Dong-Kyu; and Lee, Duk-Hee, to Samsung Electronics Co., Ltd. Filter clamping device for water purifiers. 5,645,719, Cl. 210-232.000.

Haan, Marcel Gerhard; and Ligtenberg, Hendrikus Cornelis Geen, to Cordis Corporation. Balloon catheter with light conductor. 5,645,562, Cl. 606-194.000.

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Hachmann, Klaus; and Friese, Carsten, to Henkel Ecolab GmbH & Co. Cleaning disinfectant. 5,646,105, Cl. 510-382.000.

Hachtman, Steven W.; Johnson, Liann M.; Johnson, Scott T.; Laptewicz, Joseph E., Jr.; Thompson, Paul J.; Ahmad, Amjad; Scholl, John A.; and Thompson, Richard J., to Schneider (USA) Inc. Multiple layer stent. 5,645,559, Cl. 606-198.000.
Hada, Kunihiko; Mori, Yasutomo; Orihara, Motoi; and Miyamoto, Shuji, to Ricoh Co., Ltd. Thermosensitive recording material and production process thereof. 5,646,088, Cl. 503-209.000.
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Hagenes, Odd Bjarte, to Schlumberger Technology Corporation. Method of Locating Hydrocarbon reserves. 5,646,342, Cl. 73-152.020.
Hagiwara, Tsuneyuki, to Nikon Corporation. Foreign matter inspection apparatus for large-scale substrate. 5,646,725, Cl. 356-237.000.
Hahn, Karl-Heinz, to Siemens Aktiengesellschaft. Electronic appliance with lateral support for display unit and keyboard. 5,646,818, Cl. 361-681.000.
Hahn, Raymond F. Form for construction of a catch basin. 5,645,372, Cl. 405-52.000.
Hahn, Soonkap; and Merritt, John, to Novatrix, Inc. Child-birth assisting system. 5,645,563, Cl. 606-202.000.
Hahn, Wolfgang: *See*—
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Haider, Karl W.: *See*—
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Hajjar, Roger A.: *See*—
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Hale, Nathan S.: *See*—
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Haley, Kalliopi S., to Amway Corporation. Fabric finishing stiffening composition. 5,645,751, Cl. 252-8.910.
Haley, Kevin: *See*—
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Hall, Kenneth B.: *See*—
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Halliburton Company: *See*—
Dailey, Patrick E.; and Barron, Charles Dwain, 5,646,611, Cl. 340-853.600.
Halloran, John W.: *See*—
Popovic' , Dragan; Halloran, John W.; Hilmas, Gregory E.; Brady, Guy Allen; Somers, Scott; Barda, Andrew; and Zywicki, Gregory, 5,645,781, Cl. 264-639.000.
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Leonardi, Peter F., 5,644,800, Cl. 2-431.000.
Hamada, Minoru, to Sanyo Electric Co., Ltd. Output circuit provided with source follower circuit having depletion type MOS transistor. 5,646,428, Cl. 257-239.000.
Hamada, Nobuhiro: *See*—
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Hamada, Shinichiro: *See*—
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Hamaji, Yukio: *See*—
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Hamamatsu Photonics K.K.: *See*—
Ikedo, Tomoyuki; Ito, Yoshinobu; and Matui, Ryotaro, 5,646,487, Cl. 315-94.000.
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Hamel, Gilles. Child-proof gas lighters and pens therewith. 5,645,415, Cl. 431-153.000.
Hamelin, Bruno: *See*—
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Hamer, Gordon K.: *See*—
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Hamilton, Cathy Jane, to Du Pont de Nemours, E. I., and Company. Elastic woven fabric. 5,645,924, Cl. 442-184.000.
Hamilton, Michael M.; Merriss, Morley M.; and Zampetti, George P., to Symmetricom, Inc. Digital phase detector employing a digitally controllable delay line. 5,646,519, Cl. 324-76.820.
Hamlin, Matthew Glen. Portable CD mount for off road vehicles. 5,645,262, Cl. 248-581.000.
Hammarberg, Eva Maria; Johansson, Lars George; Larsson, Lars-Gunnar; Noréen, Rolf; Renyi, Lucy Anna; Ross, Svante Bertil; Sohn, Daniel Dungan; Svensson, Björn Eric; and Thorberg, Seth-Olov, to Astra Aktiebolag. Intermediates in the synthesis of chroman derivatives. 5,646,309, Cl. 549-404.000.
Hammer, Michael Ron; Park, Christopher John; Allen, Brian Lawrence; and Turney, Thomas Robert, to Varian Associates, Inc. Peristaltic pump. 5,646,727, Cl. 356-315.000.
Hammond, Timothy, to Zeneca Limited. Polymer composition containing polyhydroxyalkanoate and metal compound. 5,646,217, Cl. 525-450.000.
Hampel, Arnold E.: *See*—
DeYoung, Mary Beth; Siwkowski, Andrew M.; and Hampel, Arnold E., 5,646,031, Cl. 435-325.000.
Han, Byung Joon: *See*—
Degani, Yinon; Dudderar, Thomas Dixon; Han, Byung Joon; and Lyons, Alan Michael, 5,646,828, Cl. 361-715.000.
Han, Sang Wu. Tri-chamber speaker box. 5,647,012, Cl. 381-188.000.
Han, Suk-Jin, to Samsung Electronics Co., Ltd. Charge induction apparatus of robot cleaner and method thereof. 5,646,494, Cl. 318-587.000.
Hancuff, Charles O. liquid drink carton holder. 5,645,196, Cl. 222-183.000.
Handa, Hiroto; Muramatsu, Hidenori; Satoh, Nobuhiro; Kanno, Satoshi; and Sakurai, Osamu, to Clarion Co., Ltd. Cartridge carrier assembly for loading and ejecting cartridges. 5,646,926, Cl. 369-77.200.
Hang, Hsueh-Ming: *See*—
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Hanicak, John E.: *See*—
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Hanley, Peter, to Oxford Instruments (UK) Ltd. Magnet assembly. 5,646,528, Cl. 324-303.000.
Hanna, H. Rizk: *See*—
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Hannelore Binsmaier Nee Gallin-Ast: *See*—
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Hanquier, Jose M.: *See*—
Baker, Jeffrey C.; Chen, Victor J.; Hanquier, Jose M.; Kriauciunas, Aidas; Moser, Brian A.; and Shuman, Robert T., 5,646,242, Cl. 530-303.000.
Hans, Jeremy: *See*—
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Hansch, Egon, to Ferag AG. Apparatus for feeding sheet-like products to a processing device for printed products. 5,645,679, Cl. 156-566.000.
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Hansen, Karl A., deceased (by John J. deJong, executor): *See*—
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Hanson, Charlotta: *See*—
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Hao, Zhimin; Iqbal, Abul; and Herren, Fritz, to Ciba-Geigy Corporation. Two new crystal modifications of a diketopyrrolopyrrole pigment. 5,646,299, Cl. 548-453.000.
Haque, Wasimul: *See*—
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Hara, Seiichi, to Agriculture, Forestry and Fisheries Technical Information Society. Peptide, antibacterial agent, peptide gene, recombinant DNA and method for preparing the peptide. 5,646,014, Cl. 435-69.100.
Hara, Toshihiko: *See*—
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Harada, Yusuke: *See*—
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Hardin, William C., Jr.: *See*—
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Hardison, Steven D.; and Stone, Walter H., to Parker Hannifin Corporation. Reversible filter element. 5,645,718, Cl. 210-232.000.

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Harguindeguy, Patrick: *See*—
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Harigaya, Makoto: *See*—
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Harlow, Albert L., Jr.; Bechtold, Richard E.; Parker, David; Merat, Francis L.; Podany, Mark; and Laning, Raymond C., to Advanced Robotic Technologies, Inc. Automated three-dimensional precision effector method. 5,645,884, Cl. 427-8.000.
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Harmon, Stanley B. Cylinder sled. 5,645,289, Cl. 280-28.120.
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Harpole, George M.: *See*—
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Gaul, Stephen Joseph, 5,646,067, Cl. 437-180.000.
Pulhamus, William R., Jr.; and Baphna, Rajiv K., 5,646,832, Cl. 363-24.000.
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Harris, Martin: *See*—
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Harrison, Anthony R.: *See*—
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Harrison, Daniel David, to General Electric Company. Apparatus for reducing electromagnetic radiation from a differentially driven transmission line used for high data rate communication in a computerized tomography system. 5,646,962, Cl. 375-308.000.
Harrison, Michael A.; and Farris, Mark S., to C-1 Design Group L.L.C. Fish hook remover. 5,644,865, Cl. 43-53.500.
Harshfield, Steven T., to Micron Technology, Inc. Zener programmable read only memory. 5,646,879, Cl. 365-105.000.
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Hatate, Andrew K.; and Makan, Franklin F., to Lucent Technologies Inc. Integrated maintenance bypass switch and method of operation thereof. 5,646,459, Cl. 307-85.000.
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Haugh, Gary R.: *See*—
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Laakmann, Peter; Zhang, Yong Fang; and Hayes, Keith L., 5,646,765, Cl. 359-202.000.
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Hellberg, Mark R.; Barnes, George; and Collier, Robert J., Jr., to Alcon Laboratories, Inc. Compounds having both potent calcium antagonist and antioxidant activity and use thereof as cytoprotective agents. 5,646,149, Cl. 514-253.000.
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Cook, Anthony B.; Palmer, John J.; and Rodriguez, Jose M., 5,645,762, Cl. 252-321.000.
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Henkelmann, Jochem; Heider, Marc; and Rühl, Thomas, to BASF Aktiengesellschaft. Preparation of N-alkenylazoles. 5,646,293, Cl. 548-262.200.
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Heren, Lawrence P.; Hayes, Jerry R.; and Kruer, Thomas R., to L. R. Nelson Corporation. Unitized sprinkler assembly with adjustable water control mechanism. 5,645,218, Cl. 239-242.000.
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Hernandez, William, Jr., to Porta Systems Corp. Telephone line surge protector module with fast-acting, high resistance heat coil assembly. 5,646,812, Cl. 361-124.000.
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Herrero, José Mallen; and Feret, Jany, to Coflexip; and Institut Francais du Petrole. Flexible tubular pipe comprising an interlocked armoring web and process for producing it. 5,645,109, Cl. 138-134.000.
Herrmann, Bernd; and Kusch, Hans-Jürgen, to Heidelberger Druckmaschinen Aktiengesellschaft. Coupling arrangement for coupling printing stands to one another in a printing press and method for coupling printing stands to one another in a printing press. 5,644,983, Cl. 101-218.000.
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Hess, Klaus; Spahl, Roland; Horn, Hans Christoph; Dorn, Ingo H.; Dinkhauser, Günter; and Joschek, Hans-Ingo, to BASF Aktiengesellschaft. Decomposition of organohalogen compounds in dust-laden-waste gases. 5,645,806, Cl. 423-240.00S.
Hesse, Michael A.; and Oliver, Vincent A., to Helix Information Services, Inc. Method of playing a card game. 5,645,281, Cl. 273-292.000.
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Cowger, Bruce; Beeson, Robert R.; Schantz, Christopher A.; and West, William J., 5,646,666, Cl. 347-87.000.
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Motta, Ricardo J., 5,646,683, Cl. 348-203.000.
Ninomiya, Kazuhiko, 5,646,541, Cl. 324-727.000.
Pawlowski, Norman E., Jr., 5,646,664, Cl. 347-86.000.
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Steinle, Michael J.; and Eccher, Joe A., 5,646,394, Cl. 250-208.100.
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Templin, Catherine Keely; and McManigill, Douglass, 5,646,048, Cl. 436-180.000.
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Howe, William F., 5,646,971, Cl. 376-272.000.
Hibbert, Peter Glynn, to ICI Americas Inc. Polyalkylene glycol anhydroxy carboxylic acid dispersant. 5,646,212, Cl. 524-400.000.
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Nakahata, Hideaki; Higaki, Kenjiro; Fujii, Satoshi; Hachigo, Akihiro; and Shikata, Shin-ichi, 5,646,468, Cl. 310-313.00A.
Higasa, Hiromasa; and Ishikawa, Fumihiko, to Kabushiki Kaisha Shikoku Sogo Kenkyujo. Reverse-charge prevention apparatus. 5,646,811, Cl. 361-63.000.
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Higashi, Kazumi: *See*—
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Higuchi, Noriaki, to Mitsubishi Denki Kabushiki Kaisha. Resin encapsulating molding die for manufacturing a semiconductor device. 5,645,864, Cl. 425-116.000.
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Higurashi, Hisano: *See*—
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Higurashi, Hitoshi, to Kabushiki Kaisha Toshiba. Single-electron tunnelling logic device. 5,646,559, Cl. 326-136.000.
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Hill, Brian R., to Prime Facie, Inc. Method and apparatus for recording sensor data. 5,646,994, Cl. 380-9.000.
Hill, Ira D.; Walters, Peter P.; and Brown, Dale G., to WhiteHill Oral Technologies, Inc. Ultramulsion based oral care rinse compositions. 5,645,841, Cl. 424-401.000.
Hill, Mark George, to Yazaki Corporation. Battery connecting module with fuse mounting. 5,645,448, Cl. 439-522.000.
Hill, Ralph S., III. Kitchen cabinet with a computer work station. 5,646,819, Cl. 361-683.000.
Hill, Walt, to Moore Business Forms, Inc. Vegetable label wrapper. 5,645,300, Cl. 283-81.000.
Hillebrand, Greg George; and Gartstein, Vladimir, to Procter & Gamble Company, The. Depilatory compositions comprising sulfhydryl compounds. 5,645,825, Cl. 424-73.000.
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Hirao, Yasunobu; Nagasaka, Takashi; Motoyama, Yuji; and Maeda, Yukihiro, to Nippondenso Co., Ltd. Electronic device having a plurality of circuit boards arranged therein. 5,646,827, Cl. 361-707.000.

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Hirayama, Yasuo; Sato, Hidetoshi; Ushiyama, Keiji; and Miyakoshi, Koji, to Yazaki Corporation. Screw tightening structure. 5,645,457, Cl. 439-801.000.

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Hirooka, Masaaki; Ogawa, Kyosuke; Ishihara, Shunichi; and Shimizu, Isamu, to Canon Kabushiki Kaisha. Silicon-containing deposited film. 5,645,947, Cl. 428-688.000.

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Hiroshima, Koichi; Goto, Masahiro; Serizawa, Yoji; Takeuchi, Makoto; and Ishiyama, Tatsunori, to Canon Kabushiki Kaisha. Image forming apparatus having charging member. 5,646,717, Cl. 399-154.000.

Hirotaka Engineering Co., Ltd.: *See*—
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Pearlstein, Larry A., 5,646,686, Cl. 348-392.000.

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Takeda, Eriko; and Nishino, Toshikazu, 5,646,526, Cl. 324-248.000.
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Yonenaga, Hitoshi; and Matsuoka, Shigeru, 5,646,872, Cl. 364-710.130.
Yukutake, Seigou; Iwamura, Masahiro; Mitsumoto, Kinya; Akioka, Takashi; and Akiyama, Noboru, 5,646,897, Cl. 365-205.000.

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Zierenberg, Bernd; and Hochrainer, Dieter, 5,645,050, Cl. 128-203.150.

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Sato, Sinichi; Suzuki, Nobuo; Yamaga, Hiroyoshi; and Hosaka, Sigeo, 5,645,967, Cl. 430-110.000.

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Brekner, Michael-Joachim; Osan, Frank; and Rohrmann, Jürgen, 5,646,220, Cl. 526-160.000.
Kramer, Werner; and Wess, Günther, 5,646,272, Cl. 540-5.000.
Kuhn, Birgit; Salbeck, Gerhard, deceased; Döller, Uwe; Schnatterer, Stefan; Schubert, Hans-Herbert; Knauf, Werner; Waltersdorfer, Anna; and Kern, Manfred, 5,646,147, Cl. 514-252.000.
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Schleicher, Andreas; Piesold, Jan-Peter; and Kohlhepp, Klaus, 5,646,202, Cl. 523-212.000.
Schneider, Manfred; Schunck, Rainer; Schnaitmann, Dieter; and Brost, Udo, 5,645,636, Cl. 106-493.000.
Uhlmann, Eugen; Peyman, Anuschirwan; O'Malley, Gerard; Helsberg, Matthias; and Winkler, Irvin, 5,646,261, Cl. 536-24.300.

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Bothe, Lothar; Dallmann, Hermann; Dinter, Peter; and Gribbin, John Derek, 5,645,919, Cl. 428-143.000.

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Kosley, Raymond W., Jr.; Cherill, Robert Joseph; and O'Malley, Gerard, 5,646,175, Cl. 514-422.000.
Kosley, Raymond W., Jr.; Flanagan, Denise M.; Martin, Lawrence L.; and Nemoto, Peter A., 5,646,300, Cl. 548-475.000.

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Kemper, Wilbert; and Neuert, Richard, 5,645,935, Cl. 428-370.000.

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Klein, Johann; Daute, Peter; Gruetzmacher, Roland; and Hoefer, Rainer, 5,645,763, Cl. 252-364.000.

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Gustafson, Eric T.; and Hoff, Jeffrey H., 5,644,957, Cl. 81-165.000.

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Collins, Larry C.; Cook, James G.; and Hoffman, John P., 5,646,373, Cl. 172-252.000.

Hoffman, Julie F.: *See*—
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Bruhns, Thomas V.; Hiller, Donald R.; Hofland, Jan R.; and Waite, James W., Jr., 5,646,569, Cl. 327-307.000.

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Mueller, Klaus; Heugle, Bernhard; Herzog, Kurt; Oehler, Martin; Hohl, Günther; and Herderich, Hans-Jürgen, 5,645,325, Cl. 303-119.200.

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Holder, Clinton Hays, Jr.: *See*—
Freyman, Ronald Lamar; Garen, Craig Joseph; Holder, Clinton Hays, Jr.; Kershaw, Robert Nelson; and Morgan, Edward Clayton, 5,646,451, Cl. 257-784.000.

Holder, James B.: *See*—
Breslin, James C.; Perdon, Alicia A.; Holder, James B.; Kalchik, Stephen J.; and Longman, Jerald L., 5,645,878, Cl. 426-103.000.

Holderbaum, Glenda S.: *See*—
Stulen, Foster B.; Brown, Susan T.; Holderbaum, Glenda S.; Philips, David B.; and Eberle, Arthur C., 5,645,348, Cl. 374-45.000.

Holland, Herbert W. Marine vessel fuel spill prevention device. 5,645,004, Cl. 114-211.000.

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Edwards, Russell James; Kitagawa, Hirokazu; Imai, Kiyoshi; Funo, Masao; Holley, William Edward; Hood, Charles R.; and Abrams, Richard Wayne, 5,644,895, Cl. 53-55.000.

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Bedford, James P.; Fortuna, Gary R.; Hollingshead, Wayne S.; Schwerzler, David S.; and Willis, Thomas J., 5,644,975, Cl. 99-407.000.

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Gulati, Anil; Dean, Anthony John; Holmes, David Graham; and Voorhees, Eayre Bruce, 5,644,918, Cl. 60-725.000.

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Stern, Donald J.; and Tryon, James A., 5,645,198, Cl. 222-402.100.

Homer, John W. Counting and marking device. 5,646,975, Cl. 377-15.000.

Homma, Naoki: *See*—
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Ishibashi, Yoici; and Asai, Masahiro, 5,645,018, Cl. 123-73.0PP.
Matsumoto, Hideki; Muramatsu, Naritoshi; Mihara, Hiroaki; Uchiyama, Masahiko; Ikuma, Kouichi; and Suzuki, Takenori, 5,645,036, Cl. 123-519.000.
Murayama, Junichi; Toyama, Niichi; Matsuo, Kazuhide; Takashima, Hideki; Sadamitsu, Katsushi; Sugino, Kiichi; and Iiyama, Kazuto, 5,645,895, Cl. 427-424.000.
Yamamoto, Toshio; Tsukui, Takaaki; Ichimura, Takashi; and Okano, Noriaki, 5,645,022, Cl. 123-90.170.

Honda, Masami; and Kawabata, Kazuaki, to Kabushiki Kaisha Toshiba. Portable computer having a case which contains a speaker in a front wall and a keyboard in an upper wall. 5,646,820, Cl. 361-683.000.

Honda, Takumi; and Naito, Kazuhisa, to Henkel Corporation. Autodeposition coating composition. 5,646,211, Cl. 524-466.000.

Honeywell Inc.: *See*—
Akinwande, Akintunde Ibitayo (Tayo); and Sarma, Kalluri R., 5,646,702, Cl. 349-69.000.
Bevan, Erik Thane, 5,646,854, Cl. 364-448.000.
Crook, Thomas M.; and Ramberg, Randy J., 5,646,780, Cl. 359-584.000.

Hong, Gary; Hsue, Chen-Chiu; and Chung, Chen-Hui, to United Microelectronics Corporation. Read only memory (ROM) device produced by self-aligned implantation. 5,646,436, Cl. 257-390.000.

Hong, Gary: *See*—
Lin, Chih-Hung; Chen, Hwi-Huang; and Hong, Gary, 5,646,056, Cl. 437-40.000.
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Meguro, Satoshi; Uchibori, Kiyofumi; Suzuki, Norio; Motoyoshi, Makoto; Koike, Atsuyoshi; Yamanaka, Toshiaki; Sakai, Yoshio; Kaga, Toru; Hashimoto, Naotaka; Hashimoto, Takashi; Honjou, Shigeru; and Minato, Osamu, 5,646,423, Cl. 257-51.000.

Honkawa, Bryan K., to Teleflora LLC. Combined floral display and keepsake. 5,645,168, Cl. 206-423.000.

Honkawa, Yoshinori; and Sakaguchi, Takashi, to Ryobi, Ltd. System for determining dampening water for an offset press using conventional catoptric light intensity. 5,646,738, Cl. 356-445.000.

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Noda, Shoji; Uchida, Kiyoshi; Itoh, Akio; Higuchi, Kazuo; Niimi, Mikio; Murasaki, Shun-ichi; and Honkura, Yoshinobu, 5,645,937, Cl. 428-408.000.

Honma, Sakiko: *See*—
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Hood, Christopher: *See*—
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Hooper, Frederick D. J.: *See*—
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Houver Company, The: *See*—
Bosyj, Nick M.; Bowers, Donald R.; Koukourakis, Nicholas; Vincent, Conway; and Wareham, Richard A., 5,644,815, Cl. 15-328.000.

Hoppe, Joseph Paul: *See*—
Menko, Frederick Leo; and Hoppe, Joseph Paul, 5,645,676, Cl. 156-359.000.

Hor, Ah-Mee: *See*—
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Horcher GmbH: *See*—
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Horcher, Stefan, to Horcher GmbH. Lifting device for handicapped persons, with height adjustable knee rest. 5,644,805, Cl. 5-86.100.

Horgan, Donna, to Sil-Med Corporation. Radiopaque cuff peritoneal dialysis catheter. 5,645,532, Cl. 604-117.000.

Hori, Kimihiko: *See*—
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Horii, Takumi: *See*—
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Horikoshi, Souichirou, to Iwasaki Electric Co., Ltd. Metal halide lamp. 5,646,472, Cl. 313-112.000.

Horimoto, Akira, to Sakura Rubber Co., Ltd. Coupling apparatus. 5,645,302, Cl. 285-70.000.

Horita, Kojiro; Kimura, Junichi; Hara, Hirotaka; and Okunoki, Yutaka, to Hitachi, Ltd.; and Sega Enterprises, Ltd. Moving picture decoding apparatus having three line buffers controlled to store and provide picture data of different resolutions. 5,646,694, Cl. 348-448.000.

Horinchi, Izuru; and Suzuki, Kazuyoshi, to Canon Kabushiki Kaisha. Image processing apparatus and method capable of smoothing image data in accordance with an image enlargement/reduction ratio. 5,646,741, Cl. 358-298.000.

Horiuchi, Kuniyasu: *See*—
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Horn, Diane: *See*—
Linsley, Peter S.; Ochs, Vincent; Horn, Diane; and Brown, Joseph P., 5,646,002, Cl. 435-7.230.

Horn, Hans Christoph: *See*—
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Horn, Michael: *See*—
Monkiewicz, Jaroslaw; Frings, Albert; Horn, Michael; Jenkner, Peter; Koetzsch, Hans-Joachim; Kropfgans, Frank; Seiler, Claus-Dietrich; Srebny, Hans-Guenther; and Standke, Burkhard, 5,646,325, Cl. 556-440.000.

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Hornung, Craig W., to Whitaker Corporation, The. Tape packaging system for electrical terminals. 5,645,170, Cl. 206-714.000.

Horowitz, Allan J. Anti-fatigue mat. 5,645,914, Cl. 428-81.000.

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Horrocks, Arthur Richard; Anand, Subhash Chander; and Hill, Barry Jakeman, to British Technology Group Limited. Fire and heat resistant materials. 5,645,926, Cl. 442-234.000.

Horton, Joseph A., to Medical University of South Carolina. Anatomically shaped vasoocclusive device and method of making the same. 5,645,558, Cl. 606-191.000.

Horvath, Raymond F.: *See*—
Thurkauf, Andrew; Horvath, Raymond F.; Yuan, Jun; and Peterson, John M., 5,646,281, Cl. 544-295.000.

Hosaka, Sigeo: *See*—
Sato, Sinichi; Suzuki, Nobuo; Yamaga, Hiroyoshi; and Hosaka, Sigeo, 5,645,967, Cl. 430-110.000.

Hoshi, Hajime; Sunagawa, Kazuhiko; and Watanabe, Takeo, to Kureha Chemical Industry Co., Ltd. Process for the manufacture of 2-phenyl-4,5-oxazoledione 4-phenylhydrazone derivatives. 5,646,291, Cl. 548-228.000.
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Hoshizaki Denki Kabushiki Kaisha: *See*—
Tatematsu, Susumu; Tsukiyama, Yasumitsu; Watanabe, Noboru; and Ikari, Hideyuki, 5,644,927, Cl. 62-354.000.
Hosokawa, Yasuhiko: *See*—
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Hotchkiss, Alastair J.: *See*—
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Hotea, Gheorghe, to Whitaker Corporation, The. Electrical receptacle terminal. 5,645,458, Cl. 439-852.000.
Hotto, Robert, to Novi International, Inc. System for simultaneous analog and digital communications over an analog channel. 5,646,940, Cl. 370-496.000.
Houghten, Richard A.: *See*—
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Houghton, Harry, to Automotion, Inc. Conveyor noise isolation and wear prevention system. 5,645,155, Cl. 193-35.00R.
Howard, Herman S., to Media Group. Universal socket wrench. 5,644,959, Cl. 81-185.000.
Howard, Stephen A.: *See*—
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Howe, William F., to Hi-Temp Containers Inc. Method and apparatus for the underwater loading of nuclear materials into concrete containers employing heat removal systems. 5,646,971, Cl. 376-272.000.
Howell, James Milton; Tung, Wae-Hai; and Werny, Frank, to Du Pont de Nemours, E. I., and Company. Process for making poly(trimethylene terephthalate) bulked continuous filaments. 5,645,782, Cl. 264-103.000.
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Snoke, Steven R.; Silvis, Gary; and Howland, Thomas E., 5,645,332, Cl. 312-257.100.
Hoya Corporation: *See*—
Izumitani, Yukihiro, 5,646,706, Cl. 351-110.000.
Hozumi, Yoshiko: *See*—
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Hraban, Thomas L.; Seyler, Paul E.; and Dixon, Todd W., to Conoco Inc. Process for upgrading the flash zone gas oil stream from a delayed coker. 5,645,711, Cl. 208-131.000.
Hruska, Louis W.: *See*—
van Phuoc, Duong; Wieczorek, Rudi; Zeising, Elmar; Hruska, Louis W.; Taylor, Alwyn H.; Friel, Daniel D.; and Hull, Matthew P., 5,646,508, Cl. 320-30.000.
Hsiau, Jar-Sian: *See*—
Wu, Tung-Chuan; Hsiau, Jar-Sian; Chou, Min-Chieh; Lu, Jiing-Song; and Liang, Mu-Tien, 5,645,977, Cl. 430-320.000.
Hsie, Wei Cheng: *See*—
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Hsieh, Jang-Cheng: *See*—
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Cheng, Hua-Chi; Tseng, Chao H.; and Hsieh, Pao-Ju, 5,645,970, Cl. 430-192.000.
Hsu, Charles Ching-Hsiang; and Liang, Mong-Song, to Taiwan Semiconductor Manufacturing Company, Ltd. Method for fabricating CMOS field effect transistors having sub-quarter micrometer channel lengths with improved short channel effect characteristics. 5,646,435, Cl. 257-382.000.
Hsu, Ching-Hsiang; and Kuo, Da-Chi, to United Microelectronics Corporation. Surface breakdown reduction by counter-doped island in power mosfet. 5,646,431, Cl. 257-342.000.
Hsu, Chuar-Jian; Johnson, David L.; Kostek, Sergio; and Ounadjela, Abderrhamane, to Schlumberger Technology Corporation. Attentuator for borehole acoustic waves. 5,646,379, Cl. 181-101.000.
Hsu, Fu-Chang: *See*—
Lee, Peter W.; Tsao, Hsing-Ya; and Hsu, Fu-Chang, 5,646,890, Cl. 365-185.110.
Hsu, Jessica. Billboard. 5,644,859, Cl. 40-545.000.
Hsu, Kenneth; Hsu, Peter; and Dickson, Frank W., to Tarim Associates for Scientific Mineral & Oil Exploration. In-situ chemical reactor for recovery of metals and salts. 5,645,322, Cl. 299-5.000.
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Hong, Gary; Hsue, Chen-Chiu; and Chung, Chen-Hui, 5,646,436, Cl. 257-390.000.
Huang, Ben. Grip construction. 5,645,501, Cl. 473-549.000.
Huang, Chin-Teh: *See*—
Blackwell, Gordon; Huang, Chin-Teh; and Jefferies, Steven, 5,645,429, Cl. 433-217.100.
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Sandor, John L., 5,645,447, Cl. 439-467.000.
Hubbell, Joel M.; and Sisson, James B., to Lockheed Idaho Technologies Company. Tensiometer and method of determining soil moisture potential in below-grade earthen soil. 5,644,947, Cl. 73-73.000.
Huber, David John, to Westinghouse Electric Corporation. Hydrogen-fueled semi-closed steam turbine power plant. 5,644,911, Cl. 60-39.050.
Huber, Klaus: *See*—
Stehlin, Albert; Huber, Klaus; and Maier, Thomas, 5,646,271, Cl. 536-123.100.
Huber, Walter: *See*—
Barner, Richard; Huber, Walter; Hübscher, Josef; Hurst, Jürg; and Schlatter, Daniel, 5,646,302, Cl. 548-542.000.
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Hudson, Joseph E., to PPG Industries, Inc. Multi-sheet glazing unit and method of making same. 5,644,894, Cl. 52-786.130.
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Gras, Rainer; and Brandt, Siegfried, 5,646,228, Cl. 528-45.000.
Gruetzke, Juergen; and Schmidt, Stefan, 5,646,038, Cl. 435-264.000.
Monkiewicz, Jaroslaw; Frings, Albert; Horn, Michael; Jenkner, Peter; Koetzsch, Hans-Joachim; Kropfgans, Frank; Seiler, Claus-Dietrich; Srebny, Hans-Guenther; and Standke, Burkhard, 5,646,325, Cl. 556-440.000.
Schuler, Joachim, 5,646,326, Cl. 556-474.000.
Thiel, Ralf; and Auschner, Reinhard, 5,646,331, Cl. 560-78.000.
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Hugh, Donald C. Trephinator for treating subungual hematomas. 5,645,554, Cl. 606-180.000.
Hughes Aircraft Company: *See*—
Jelloian, Linda; Matloubian, Mehran; Nguyen, Loi D.; and Schmitz, Adele, 5,646,069, Cl. 437-184.000.
Minden, Monica L.; and Bruesselbach, Hans, 5,647,038, Cl. 385-37.000.
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Etemadpour, Alan; Haugh, Gary R.; Lotka, Charles J.; and Pizzica, Stephen, 5,646,522, Cl. 324-158.100.
Hughes, Michael; Clarke, Ian; and Hewlett, William E., to Hewlett Electronics. Child proximity detector. 5,646,593, Cl. 340-573.000.
Hui, Jonathan Y.: *See*—
Kohler, Timothy L.; and Hui, Jonathan Y., 5,646,752, Cl. 358-520.000.
Hulette, William Chester: *See*—
Fischer, Timothy J.; Callahan, Janet B.; Braun, Paul Joseph; Givens, Thomas Beecher; Hoffman, Julie F.; Hulette, William Chester; Link, John Glenn; and Swope, Charles Hermas, 5,646,046, Cl. 436-49.000.
Hull, Harold L.; and Harris, Martin. Garment for securing binoculars/camera thereto. 5,644,794, Cl. 2-102.000.
Hull, Harold L.; and Carrillo, Zack J. Liquid/foam/mixing/aeration adapter apparatus. 5,645,223, Cl. 239-428.500.
Hull, Matthew P.: *See*—
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Hulse, David Kenneth; and Barnett, William Colin, to Royal Doulton (UK) Limited. Dispensing apparatus. 5,645,777, Cl. 264-40.400.
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Coon, Hayden G.; Ambesi-Impiombato, Francesco Saverio; and Curcio, Francesco, 5,646,035, Cl. 435-378.000.
Humm, Siegfried; Palosi, Gabor; and Weidner, Bernd, to Adolf Wurth GmbH & Co. KG. Refillable distributing container, filling device and process for filling the distributing container. 5,645,113, Cl. 141-3.000.
Hunt, David Allen: *See*—
Furch, Joseph Augustus; Kuhn, David George; and Hunt, David Allen, 5,646,278, Cl. 544-224.000.
Hunt, Tracy K.; Jeromin, Lutz; Johannisbauer, Wilhelm; Gutsche, Bernhard; Jordon, Volkmar; and Wogatzki, Herbert, to Henkel Corporation. Recovery of tocopherols. 5,646,311, Cl. 549-413.000.
Hunter, David H.; and Scherer, Karl B., to Sikorsky Aircraft Corporation. Composite cuff structure for helicopter rotors. 5,645,400, Cl. 416-134.00A.
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Frank, Glenn R.; Hunter, Shirley Wu; and Wallenfels, Lynda, 5,646,115, Cl. 514-12.000.
Huntsman Petrochemical Corporation: *See*—

Zimmerman, Robert LeRoy; Crawford, Wheeler Conrad; and Lloyd, Rodney Frederick, 5,646,235, Cl. 528-266.000.
Hunziker, Max: *See*—
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Hupe, Donald John: *See*—
Ye, Qi-Zhuang; Johnson, Linda Lea; and Hupe, Donald John, 5,646,027, Cl. 435-219.000.
Hurst, Jürg: *See*—
Barner, Richard; Huber, Walter; Hübscher, Josef; Hurst, Jürg; and Schlatter, Daniel, 5,646,302, Cl. 548-542.000.
Husky Injection Molding Systems Ltd.: *See*—
Glaesener, Pierre; and Kestle, Martin Richard, 5,645,875, Cl. 425-589.000.
Schad, Robert D.; and Young, William C., 5,645,865, Cl. 425-126.100.
Hutchinson Technology Incorporated: *See*—
Bennin, Jeffry S.; Boucher, Todd; Green, Jeffrey W.; Gustafson, Gary E.; Jurgenson, Ryan; and Lien, Brent D., 5,645,735, Cl. 216-22.000.
Hutchinson, Ted F.: *See*—
Cronk, Bryon J.; Hutchinson, Ted F.; Lutz, Dale R.; MacDougall, Trevor W.; and Onstott, James R., 5,645,622, Cl. 65-378.000.
Hutchison, Alan: *See*—
Thurkauf, Andrew; and Hutchison, Alan, 5,646,279, Cl. 544-295.000.
Thurkauf, Andrew; and Hutchison, Alan, 5,646,280, Cl. 544-295.000.
Hutt, Norman: *See*—
Park, George Barry; Lowe, Frank James; Ganbuehler, George Michael John; Hutt, Norman; Webb, Stephen Alan; and Graulus, Hendrick, 5,645,906, Cl. 428-36.300.
Huttenlocher, Werner; and Knoblauch, Harald, to Otto Pfannenberg Electro-Spezialgeratebau GmbH. Cooling device for cooling electric and electronic components and batteries in a switch cabinet. 5,646,825, Cl. 361-699.000.
Huyser, Richard F.: *See*—
Henniges, Bruce D.; Kuipers, Kurt J.; and Huyser, Richard F., 5,645,540, Cl. 604-320.000.
Hwa Shin Musical Instrument Co., Ltd.: *See*—
Liao, Tsun-Chi, 5,646,360, Cl. 84-422.100.
Hybridon, Inc.: *See*—
Goodchild, John; and Leonard, Thomas E., 5,646,021, Cl. 435-91.310.
Hydril Company: *See*—
Morrill, Charles D., 5,645,098, Cl. 137-15.000.
Hydrokinetics, Inc.: *See*—
Carroll, John D., Jr., 5,645,721, Cl. 210-315.000.
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Bieri jun., Hans, 5,645,040, Cl. 125-21.000.
Hygema, Terry L.: *See*—
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Hyro Acoustics Inc.: *See*—
Bouyoucos, John V., 5,646,910, Cl. 367-144.000.
Hyroacoustics Inc.: *See*—
Bouyoucos, John V., 5,646,909, Cl. 367-144.000.
Hyundai Electronics America: *See*—
Pinkham, Ray, 5,646,896, Cl. 365-200.000.
Hyundai Electronics Industries Co., Ltd.: *See*—
Yuh, Jong Hak, 5,646,880, Cl. 365-149.000.
Hyundai Motor Company: *See*—
Ban, Hyoung-oh, 5,645,795, Cl. 420-109.000.
Kim, Han-il, 5,645,508, Cl. 74-336.00R.
Hyundai Motor Company, Ltd.: *See*—
Kim, Young-Woo; Lee, Sung-Keun; Lee, Jai-Young; Lee, Jon-Ha; and Lee, Han-Ho, 5,645,953, Cl. 429-48.000.
Iadanza, Joseph Andrew, to International Business Machines Corporation. System and method for dynamically reconfiguring a programmable gate array. 5,646,544, Cl. 326-38.000.
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Bertolet, Allan Robert; Clinton, Kim P. N.; Fuller, Christine Marie; Gould, Scott Whitney; Hartman, Steven Paul; Iadanza, Joseph Andrew; Keyser, Frank Ray; Millham, Eric Ernest; Reny, Timothy Shawn; Worth, Brian A.; Yasar, Gulson; and Zittritsch, Terrance John, 5,646,546, Cl. 326-39.000.
Ibrahim, Hussein: *See*—
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Ichiba, Akinori; and Tsutsumi, Yukio, to Kato Works Co., Ltd. Method for detecting a crane hook lifting distance. 5,645,181, Cl. 212-281.000.
Ichikawa, Yasuaki, to E.R.C. Co., Ltd. Method for placing concrete for construction of a master concrete structure. 5,645,773, Cl. 264-31.000.
Ichimura, Takashi: *See*—
Yamamoto, Toshio; Tsukui, Takaaki; Ichimura, Takashi; and Okano, Noriaki, 5,645,022, Cl. 123-90.170.
ICI Americas Inc.: *See*—
Hibbert, Peter Glynn, 5,646,212, Cl. 524-400.000.
Icon Health & Fitness, Inc.: *See*—
Brewer, Dane P.; and Bingham, Curt G., 5,645,509, Cl. 482-4.000.
IDC, Inc.: *See*—
Gumm, Darryl M., 5,646,596, Cl. 340-573.000.
Ide, Yukio: *See*—
Nonoyama, Osamu; Ide, Yukio; Harigaya, Makoto; Kageyama, Yoshiyuki; Deguchi, Hiroshi; Yamada, Katsuyuki; Takahashi, Masaetsu; and Iwasaki, Hiroko, 5,646,924, Cl. 369-58.000.
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Glynn, Kenneth P., 5,645,261, Cl. 248-551.000.
Idemitsu Petrochemical Co., Ltd.: *See*—
Takubo, Toyokazu; and Tanaka, Ken-ichi, 5,645,905, Cl. 428-35.700.
Ido, Yoichi; Kohno, Yasushi; and Nakatsukasa, Kazushi, to Yazaki Corp. Product collecting device for use in apparatus coating seed with gel. 5,645,093, Cl. 134-104.300.
Iguchi, Takuya: *See*—
Nishizawa, Akihito; Imaide, Takuya; Kinugasa, Toshiro; Iguchi, Takuya; and Koshio, Kazuhiro, 5,646,684, Cl. 348-231.000.
Iida, Tadashi: *See*—
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Iijima, Katsumi: *See*—
Yano, Kotaro; and Iijima, Katsumi, 5,646,679, Cl. 348-47.000.
Iima, Mitsunori; and Iizuka, Takashi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Scanning optical system. 5,646,767, Cl. 359-206.000.
Iino, Mitsutoshi; and Nakatao, Shiro, to Fuji Electric Co., Ltd.; and Fuji Facom Corporation. Method of identifying a position of object in camera image. 5,647,019, Cl. 382-154.000.
Iitsuka, Hiroyuki: *See*—
Nishimura, Takuya; Iitsuka, Hiroyuki; Takeda, Hidetoshi; and Kawakami, Yasunori, 5,646,941, Cl. 370-389.000.
Iiyama, Kazuto: *See*—
Murayama, Junichi, Toyama, Niichi; Matsuo, Kazuhide; Takashima, Hideki; Sadamitsu, Katsushi; Sugino, Kiichi; and Iiyama, Kazuto, 5,645,895, Cl. 427-424.000.
Iiyama, Mitchimoto: *See*—
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Iizuka, Takashi: *See*—
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Ikchikawa Co., Ltd.: *See*—
Oda, Hiroyuki; Takeuchi, Tetsuo; and Shimizu, Kazuyuki, 5,645,927, Cl. 442-388.000.
Ikeda, Hayato: *See*—
Michiyuki, Hiromi; Yokoi, Masanobu; Ueda, Yasunori; and Ikeda, Hayato, 5,644,970, Cl. 92-71.000.
Ikeda, Kan; Obuchi, Shoji; and Ohta, Masahiro, to Mitsui Toatsu Chemicals, Inc. Preparation process of polyhydroxycarboxylic acid. 5,646,238, Cl. 528-361.000.
Ikeda, Masahiro, to Jidosha Kiki Co., Ltd. Brake booster. 5,645,145, Cl. 188-356.000.
Ikeda, Yoshihiro: *See*—
Watanuki, Osaaki; Tsuji, Satoshi; and Ikeda, Yoshihiro, 5,646,882, Cl. 365-151.000.
Ikedo, Tomoyuki; Ito, Yoshinobu; and Matui, Ryotaro, to Hamamatsu Photonics K.K. Lighting device for gas discharge tube with insulated discharge shielding member. 5,646,487, Cl. 315-94.000.
Ikuma, Kouichi: *See*—
Matsumoto, Hideki; Muramatsu, Naritoshi; Mihara, Hiroaki; Uchiyama, Masahiko; Ikuma, Kouichi; and Suzuki, Takenori, 5,645,036, Cl. 123-519.000.
Illinois Tool Works Inc.: *See*—
Zook, Jon C., 5,645,743, Cl. 219-422.000.
Illinois Water Treatment, Inc.: *See*—
Bhave, Ramesh R.; and Filson, James L., 5,645,727, Cl. 210-651.000.
Im, Gi-Hong; Shanbhag, Naresh Ramnath; and Werner, Jean-Jacques, to Lucent Technologies Inc. Burst update for an adaptive equalizer. 5,646,957, Cl. 375-233.000.
Imai, Kiyoshi: *See*—
Edwards, Russell James; Kitagawa, Hirokazu; Imai, Kiyoshi; Funo, Masao; Holley, William Edward; Hood, Charles R.; and Abrams, Richard Wayne, 5,644,895, Cl. 53-55.000.
Imai, Tatsuo: *See*—
Nagata, Atsushi; Iwasaki, Haruo; Shimizu, Kazuhiko; Tanba, Yoshinori; Abe, Takafumi; Imai, Tatsuo; Kikuchi, Akihiro; and Miyakawa, Teruyuki, 5,646,603, Cl. 340-825.250.
Imaide, Takuya: *See*—
Nishizawa, Akihito; Imaide, Takuya; Kinugasa, Toshiro; Iguchi, Takuya; and Koshio, Kazuhiro, 5,646,684, Cl. 348-231.000.
Imaizumi, Yasuo: *See*—
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ImaRx Pharmaceutical Corp.: *See*—
Unger, Evan C., 5,645,816, Cl. 424-9.340.
Imation Corp.: *See*—
Canuti, Anna Maria; and Coraluppi, Enzo, 5,646,297, Cl. 548-366.400.
Immelmann, Andreas: *See*—
Müller-Kuhrt, Lutz; and Immelmann, Andreas, 5,646,179, Cl. 514-460.000.
Immunivest Corporation: *See*—
Terstappen, Leon W. M. M.; Rao, Galla C.; Gohel, Dhanesh I.; Feeley, Brian P.; Gross, Steven; Church, Ellen S.; and Liberti, Paul A., 5,646,001, Cl. 435-7.210.
Immuno-Dynamics, Inc.: *See*—
Cockrum, Richard H., 5,645,834, Cl. 424-130.100.
Imperial College of Science, Technology and Medicine: *See*—

Benjamin, Ralph, 5,647,018, Cl. 382-128.000.
Imran, Mir A.: *See*—
Powles, Trevor J.; and Imran, Mir A., 5,645,537, Cl. 604-240.000.
Inaba, Hiroo: *See*—
Ejiri, Kiyomi; Inaba, Hiroo; Saito, Shinji; and Hayakawa, Satoru, 5,645,917, Cl. 428-141.000.
Inaba, Hitoshi: *See*—
Ohmi, Tadahiro; and Inaba, Hitoshi, 5,645,943, Cl. 428-457.000.
Inaba, Yutaka: *See*—
Okada, Shinjiro; Inaba, Yutaka; and Katakura, Kazunori, 5,646,755, Cl. 345-97.000.
Inada, Hiroshi; Nakamura, Takao; and Iiyama, Mitchimoto, to Sumitomo Electric Industries, Ltd. Process for fabrication superconducting wiring lines. 5,646,096, Cl. 505-430.000.
Inada, Katsuhiko: *See*—
Dohjo, Masayuki; Kubo, Akira; Tanaka, Yasuharu; and Inada, Katsuhiko, 5,646,756, Cl. 349-42.000.
Inagi, Toshio; and Kanebako, Makoto, to Kowa Co., Ltd. Adhesive base material. 5,646,221, Cl. 526-238.230.
Inami, Satoru: *See*—
Suwa, Koichi; Kato, Junichi; Onimura, Tadashi; Inami, Satoru; Suzuki, Jun; Ando, Atsutoshi; and Seita, Hiroyasu, 5,646,718, Cl. 399-350.000.
Ince, Rob William: *See*—
Rowse, David Paul; Sewell, Debra Anne; Booth, Jan Anthony; and Ince, Rob William, 5,645,184, Cl. 220-1.500.
InControl, Inc.: *See*—
Ayers, Gregory M., 5,645,569, Cl. 607-4.000.
Industrial Technology Research Institute: *See*—
Cheng, Hua-Chi; Tseng, Chao H.; and Hsieh, Pao-Ju, 5,645,970, Cl. 430-192.000.
Lin, Chin-I; Wu, Chung-Lin; Liu, Rong-Shian; and Chu, Gou-Don, 5,645,668, Cl. 156-175.000.
Ting, Hou-Chun; Hang, Hsueh-Ming; Tsai, Jang-Zern; and Liang, Chien-Chen, 5,647,048, Cl. 386-68.000.
Wu, Tung-Chuan; Hsiau, Jar-Sian; Chou, Min-Chieh; Lu, Jiing-Song; and Liang, Mu-Tien, 5,645,977, Cl. 430-320.000.
Industrias Gaser, S.L.: *See*—
Riubrugent, Narcis Garganta, 5,645,869, Cl. 425-149.000.
Injeyan, Hagop; St. Pierre, Randall J.; Hilyard, Rodger C.; Harpole, George M.; and Hoefer, Carolyn S., to TRW Inc. Solid-state zig-zag slab optical amplifier. 5,646,773, Cl. 359-337.000.
Inn, Bruce Lee: *See*—
Frank, Richard; Inn, Bruce Lee; and Szepesi, Tamas, 5,646,520, Cl. 324-158.100.
Innocare One, Ltd.: *See*—
Solomon, Lewis S.; and Dieterich, Peter D., Jr., 5,645,539, Cl. 604-283.000.
Ino, Hiroyuki: *See*—
Chaki, Yasuyuki; and Ino, Hiroyuki, 5,646,966, Cl. 375-368.000.
Inoue, Hiroshi; Mizutome, Atsushi; and Enomoto, Aiko, to Canon Kabushiki Kaisha. Data processing system and apparatus processing scroll display data and cursor display data. 5,646,646, Cl. 345-123.000.
Inoue, Masatoshi: *See*—
Shibayama, Takayuki; and Inoue, Masatoshi, 5,645,356, Cl. 384-138.000.
Institut Francais Du Petrole: *See*—
Benazzi, Eric; Joly, Jean-François; and Marcilly, Christian, 5,646,086, Cl. 502-202.000.
Herrero, José Mallen; and Feret, Jany, 5,645,109, Cl. 138-134.000.
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Institut National de la Recherche Agronomique - I.N.R.A.: *See*—
Broughton, William John; Denarie, Jean Louis Claude; Maillet, Fabienne Chantal Marie; Price, Neil Philip John; Prome, Danielle Jean Claudine; Prome, Jean-Claude Adrien Paul; Relic, Biserka; and Talmont, Franck Jean Bernard, 5,646,018, Cl. 435-84.000.
Integral Automotive S.A.: *See*—
Keidar, Zvi; Popa, Eugen; and Duhrinescu, Sorin, 5,646,838, Cl. 363-145.000.
Intel Corporation: *See*—
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Coelho, Rohan; Packer, Alan; and Baldes, Gary, 5,646,866, Cl. 364-514.00R.
Hasan, Altaf; Wilson, J. D.; and Kalleberg, Tor, 5,646,441, Cl. 257-666.000.
Jamshidi, Shahram, 5,646,558, Cl. 326-106.000.
Sprague, David L., 5,646,696, Cl. 348-458.000.
Walsh, Thomas E., 5,646,618, Cl. 341-67.000.
Intercomp Company: *See*—
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Interlego AG: *See*—
Olsen, Flemming Højberg, 5,645,463, Cl. 446-104.000.
International Business Machines Coporation: *See*—
Lindeborg, Carl; Carroll, Edward; Moran, James; Bartolini, David; Griesing, John; Lindell, Liz; Walker, Anthony Dean; and Trubey, Bradley S., 5,646,939, Cl. 370-258.000.
International Business Machines Corporation: *See*—
Agrawal, Rakesh; Equitz, William Robinson; Faloutsos, Christos; Flickner, Myron Dale; and Swami, Arun Narasimha, 5,647,058, Cl. 395-601.000.
Akiyama, Hiroyuki; Aoyagi, Akihiko; Takada, Kazuhiko; and Tsujino, Hitoshi, 5,646,802, Cl. 360-104.000.
Angelopoulos, Marie; Gelorme, Jeffrey Donald; and Kuczynski, Joseph Paul, 5,645,764, Cl. 252-500.000.
Bayer, Thomas; Greschner, Johann; Nonnenmacher, Martin, deceased, 5,646,339, Cl. 73-105.000.
Beach, David Bruce, 5,646,425, Cl. 257-102.000.
Berglund, Neil C.; Rosedahl, Todd J.; and Steele, Steven W., 5,646,509, Cl. 320-48.000.
Bertolet, Allan Robert; Clinton, Kim P. N.; Fuller, Christine Marie; Gould, Scott Whitney; Hartman, Steven Paul; Iadanza, Joseph Andrew; Keyser, Frank Ray; Millham, Eric Ernest; Reny, Timothy Shawn; Worth, Brian A.; Yasar, Gulson; and Zittritsch, Terrance John, 5,646,546, Cl. 326-39.000.
Bertram, Randal Lee, 5,646,648, Cl. 345-168.000.
Boigenzahn, Jeffrey Fred; Bornhorst, Randy Joseph; Goodman, Dale Ernest; and Lagergren, Richard Edward, 5,646,801, Cl. 360-97.010.
Chow, Chunglien, 5,646,647, Cl. 345-145.000.
Dewkett, Thomas J.; and Boyd, William Todd, 5,646,676, Cl. 348-7.000.
Dimitri, Kamal Emile; Kulakowski, John Edward; and Means, Rodney Jerome, 5,646,918, Cl. 369-34.000.
Eidelloth, Walter; and Gallagher, William Joseph, 5,646,095, Cl. 505-330.000.
Fasano, Benjamin Vito; LaPlante, Mark J.; Long, David Clifford; O'Neil, Keith Colin; Peterson, Brenda Lee; Pomerantz, Glenn A.; and Popp, Timothy Titus, 5,645,673, Cl. 156-89.000.
Iadanza, Joseph Andrew, 5,646,544, Cl. 326-38.000.
Masleid, Robert Paul, 5,646,572, Cl. 327-545.000.
Muyshondt, Jorge Enrique; Parker, Gary; and Wilkie, Bruce James, 5,646,368, Cl. 174-33.000.
Riggio, Salvatore R., Jr., 5,646,513, Cl. 323-285.000.
Ross, Robert A., Jr.; and Batson, Kevin A., 5,646,566, Cl. 327-200.000.
Runyon, Stephen Larry; and Schorn, Eric Bernard, 5,646,557, Cl. 326-97.000.
Schepis, Dominic Joseph; and Shepard, Joseph Francis, 5,646,053, Cl. 437-10.000.
Shea, Michael John, 5,646,923, Cl. 369-58.000.
Taborn, Michael Preston; Burchfiel, Steven Michael; and Matheny, David Terrence, 5,646,875, Cl. 364-748.140.
Taur, Yuan; and Wong, Hon-Sum Philip, 5,646,058, Cl. 437-40.00R.
Watanuki, Osuaki; Tsuji, Satoshi; and Ikeda, Yoshihiro, 5,646,882, Cl. 365-151.000.
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Wickramasinghe, Hemantha Kumar; Zenhausern, Frederic; Martin, Yves; and O'Boyle, Martin Patrick, 5,646,731, Cl. 356-357.000.
International Microcircuits, Inc.: *See*—
Tozun, Orhan; and McCune, Earl William, Jr., 5,646,955, Cl. 375-224.000.
Interstate Electronics Corporation: *See*—
Gleckman, Philip, 5,645,337, Cl. 362-29.000.
Interuniversitair Micro-Elektronic Centrum VZW: *See*—
Stals, Lambert Mathias Maria; De Schepper, Luc Irena Franciscus; De Ceuninck, Ward Aimè Stefan; and Roggen, Jean Joseph Marie, 5,646,540, Cl. 324-691.000.
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Kuijk, Maarten; Heremans, Paul; Vounckx, Roger; and Borghs, Gustaaf, 5,646,760, Cl. 359-152.000.
Inui, Tetsuya; Takahashi, Akira; and Ohta, Kenji, to Sharp Kabushiki Kaisha. Method for manufacturing optical disk. 5,645,978, Cl. 430-321.000.
IOMED, Inc.: *See*—
Beck, Jon E., 5,645,527, Cl. 604-20.000.
Ippisch, Kevin. Automated dental floss dispensing apparatus. 5,645,206, Cl. 225-10.000.
Ippoliti, J. Thomas; Mabbott, Gary A.; Hans, Jeremy; and Stohlmeyer, Michelle, to Research Corporation Technologies, Inc. Metal ion binding monomer and polymer. 5,646,296, Cl. 548-314.400.
Ippolito, Robert M.; Haque, Wasimul; Jiang, Cong; Hanna, H. Rizk; Venot, Andre P.; Nikrad, Pandurang V.; Kashem, Mohammed A.; Smith, Richard; and Srivastava, Om P., to Alberta Research Council. Time dependent administration of oligosaccharide glycosides related to blood group determinants having a type I or type II core structure in reducing inflammation in a sensitized mammal arising form exposure to an antigen. 5,646,123, Cl. 514-25.000.
Iqbal, Abul: *See*—
Hao, Zhimin; Iqbal, Abul; and Herren, Fritz, 5,646,299, Cl. 548-453.000.
Irie, Kenji; Ueda, Yutaka; and Fujiwara, Norio, to Sumitomo Pharmaceuticals Co., Ltd. Pharmaceutical compositions for inhibiting the formation of tumor necrosis factor. 5,646,154, Cl. 514-260.000.
Isella, Thomas: *See*—
Steinke, Leo; Czinczel, Armin; and Isella, Thomas, 5,645,327, Cl. 303-157.000.
Isfeld, Mark S.: *See*—
Mitchell, Bruce W.; and Isfeld, Mark S., 5,646,553, Cl. 326-86.000.
Ishibashi, Toshio; Kondou, Sinichi; Moriya, Mitsuyasu; and Watanabe, Yoshiyuki, to Unisia Jecs Corporation. Shaft coupling structure of drive shaft. 5,645,366, Cl. 403-359.000.
Ishibashi, Yoici; and Asai, Masahiro, to Honda Giken Kogyo Kabushiki Kaisha. Two cycle internal combustion engine. 5,645,018, Cl. 123-73.0PP.
Ishida, Akira; Takada, Masahiro; Narazaki, Kazushige; and Ito, Osamu, to Matsushita Electric Industrial Co., Ltd. Auto-drive control apparatus for use in vehicle apparatus. 5,646,850, Cl. 364-426.041.

Ishihara, Atsushi, to Hewlett-Packard Company. Method for calibrating circuit network measurement devices. 5,646,536, Cl. 324-601.000.
Ishihara, Shunichi: *See*—
Hirooka, Masaaki; Ogawa, Kyosuke; Ishihara, Shunichi; and Shimizu, Isamu, 5,645,947, Cl. 428-688.000.
Ishii, Hideyuki: *See*—
Kubo, Naoto; Shigeta, Yoshitane; and Ishii, Hideyuki, 5,645,474, Cl. 451-287.000.
Ishii, Katsumi: *See*—
Yokota, Hiroshi; Naito, Ryuichi; Hirano, Hiroyuki; Ishii, Katsumi; Naohara, Shinichi; Tsukada, Yoshifumi; and Matsumoto, Kanya, 5,646,921, Cl. 369-50.000.
Ishii, Koji: *See*—
Yamamoto, Kenji; Osada, Mototsuga; Aoyama, Shuichi; and Ishii, Koji, 5,645,793, Cl. 266-287.000.
Ishii, Michie: *See*—
Mochizuki, Amane; Ishii, Michie; Maeda, Masako; and Higashi, Kazumi, 5,645,979, Cl. 430-325.000.
Ishii, Mitoshi, to Ishii Tool & Engineering Corporation. IC stocker, IC unloading and positioning apparatus, and IC feed system. 5,645,393, Cl. 414-417.000.
Ishii, Takamaro: *See*—
Fujishiro, Masatoshi; Togashi, Akio; Tani, Youichiro; and Ishii, Takamaro, 5,645,723, Cl. 210-321.750.
Ishii Tool & Engineering Corporation: *See*—
Ishii, Mitoshi, 5,645,393, Cl. 414-417.000.
Ishikawa, Fumihiko: *See*—
Higasa, Hiromasa; and Ishikawa, Fumihiko, 5,646,811, Cl. 361-63.000.
Ishikawa, Tatsuya; and Seki, Takashi, to Kabushiki Kaisha Toshiba. Hierarchical quadrature frequency multiplex signal format and apparatus for transmission and reception thereof. 5,646,935, Cl. 370-207.000.
Ishikawa, Tomoji: *See*—
Sugihara, Kazuyuki; Ishikawa, Tomoji; and Kosuge, Katsuhiro, 5,646,721, Cl. 355-326.00R.
Ishikura, Masao, to Hitachi Denshi Kabushiki Kaisha. SHF output power and channel frequency switching apparatus in FPU system. 5,646,577, Cl. 330-279.000.
Ishimaru, Noriki: *See*—
Sugioka, Takami; and Ishimaru, Noriki, 5,645,246, Cl. 242-573.700.
Ishiyama, Tatsunori: *See*—
Hiroshima, Koichi; Goto, Masahiro; Serizawa, Yoji; Takeuchi, Makoto; and Ishiyama, Tatsunori, 5,646,717, Cl. 399-154.000.
Ishizaki, Osamu: *See*—
Ohnuki, Takeshi; Fujita, Minoru; Ishizaki, Osamu; and Adachi, Kazuyoshi, 5,646,807, Cl. 360-133.000.
Ishizaki, Sadao; Nishida, Masahiko; and Sato, Yokichi, to Henkel Corporation. Composition and process for treating magnesium-containing metals and product therefrom. 5,645,650, Cl. 148-260.000.
Ishizawa, Takenori: *See*—
Koga, Hiroshi; Sato, Haruhiko; and Ishizawa, Takenori, 5,646,310, Cl. 549-405.000.
Isis Pharmceuticals, Inc.: *See*—
McGee, Daniel Peter Claude, 5,646,265, Cl. 536-25.340.
Isobe, Yoshinori: *See*—
Nakagawa, Tomohito; Hiroi, Masakazu; Sato, Chikara; Isobe, Yoshinori; and Yoshida, Akimaro, 5,645,273, Cl. 271-10.100.
ISP Investments Inc.: *See*—
Chaudhuri, Ratan K.; Biss, Russell B.; and Merianos, John J., 5,645,859, Cl. 424-501.000.
Issa, Darrell; and Birchfield, Jerry, to Directed Electronics, Inc. Advanced method of indicating incoming threat level to an electronically secured vehicle and apparatus therefor. 5,646,591, Cl. 340-566.000.
Isuzu Motors Limited: *See*—
Matsuoka, Hiroshi; and Kawamura, Hideo, 5,645,028, Cl. 123-276.000.
Itabashi, Tomoaki: *See*—
Kitazawa, Toshiyuki; and Itabashi, Tomoaki, 5,646,711, Cl. 396-413.000.
Ito, Hideo: *See*—
Yamauchi, Satoshi; Anwyl, Phyllis; Kameda, Masayuki; Katooka, Takashi; Narita, Masumi; Ito, Hideo; Ohguro, Yoshihisa; Hayashi, Taisen; Yamagata, Hiroko; Honma, Sakiko; and Oono, Ayako, 5,646,840, Cl. 395-752.000.
Ito, Nobuaki; Tsukuda, Akimitsu; and Yoneyama, Kazumasa, to Toray Industries, Inc. Magnetic recording medium having an aromatic polyamide substrate. 5,645,918, Cl. 428-141.000.
Ito, Osamu: *See*—
Ishida, Akira; Takada, Masahiro; Narazaki, Kazushige; and Ito, Osamu, 5,646,850, Cl. 364-426.041.
Ito, Yoshinobu: *See*—
Ikedo, Tomoyuki; Ito, Yoshinobu; and Matui, Ryotaro, 5,646,487, Cl. 315-94.000.
Ito, Yoshiteru: *See*—
Doyama, Yoshiaki; Matsui, Keizo; Ito, Yoshiteru; Yoshioka, Kaneharu; Ogata, Hideo; Yoshida, Izumi; and Watakabe, Shusaku, 5,646,499, Cl. 318-801.000.
Itoh, Akio: *See*—
Noda, Shoji; Uchida, Kiyoshi; Itoh, Akio; Higuchi, Kazuo; Niimi, Mikio; Murasaki, Shun-ichi; and Honkura, Yoshinobu, 5,645,937, Cl. 428-408.000.
Itoh, Hisato: *See*—
Oguchi, Takahisa; Umehara, Hideki; Sugimoto, Kenichi; Oi, Ryu; and Itoh, Hisato, 5,646,273, Cl. 540-122.000.
Itoh, Sueo: *See*—
Watanabe, Shoji; Nakazawa, Makoto; and Itoh, Sueo, 5,646,747, Cl. 358-487.000.
Itojima, Mitsuhiko: *See*—
Morimoto, Keiji; and Itojima, Mitsuhiko, 5,646,714, Cl. 355-55.000.
Itou, Sunao: *See*—
Misaizu, Setsuo; Itou, Sunao; and Tsuda, Takashi, 5,646,763, Cl. 359-187.000.
ITT Automotive Electrical Systems, Inc.: *See*—
Buchanan, Harry C., Jr., 5,644,869, Cl. 49-362.000.
ITT Corporation: *See*—
Kosmala, Michael Lawrence, 5,645,454, Cl. 439-675.000.
Ivan, Vadnjal. Tire add-on traction apparatus. 5,645,659, Cl. 152-216.000.
IVAX Industries, Inc.: *See*—
Whitley, David Anderson; and Wolhar, Carl Lewis, 5,645,892, Cl. 427-393.400.
Iwai, Hiroyuki: *See*—
Ohsawa, Tetsu; Iwai, Hiroyuki; Kikuchi, Hisashi; Watanabe, Shingo; Takano, Keiji, Haraoka, Tsutomu; and Nakao, Ken, 5,645,419, Cl. 432-241.000.
Iwai, Nobuo; Hayashi, Seiji; and Akai, Motoaki, to Ministry of International Trade and Industry, Agency of Industrial Science and Technology. Heating system for catalytic converter. 5,644,913, Cl. 60-284.000.
Iwai, Susumu: *See*—
Ohashi, Shigeo; Hatada, Toshio; Tanaka, Takeo; and Iwai, Susumu, 5,646,824, Cl. 361-699.000.
Iwaki, Tadao; Yamazaki, Tsuneo; Matsushita, Katsuki; Senbonmatsu, Shigeru; and Takano, Ryuichi, to Seiko Instruments Inc. Semiconductor thin film formed on a supporting substrate. 5,646,432, Cl. 257-347.000.
Iwamoto, Makoto: *See*—
Fukuchi, Shunsei; Iwamoto, Makoto; Kitabatake, Akihiro; Tanimoto, Masahiro; Maekawa, Masaki; and Shimoyama, Naoki, 5,645,901, Cl. 428-1.000.
Iwamura, Masahiro: *See*—
Yukutake, Seigou; Iwamura, Masahiro; Mitsumoto, Kinya; Akioka, Takashi; and Akiyama, Noboru, 5,646,897, Cl. 365-205.000.
Iwanaga, Masakuni: *See*—
Tejima, Yasuyuki; Minefuji, Nobutaka; and Iwanaga, Masakuni, 5,645,334, Cl. 353-101.000.
Iwane, Yasuhiko; and Mori, Masahiko, to Alps Electric Co., Ltd. Tape cassette used in tape printing apparatus. 5,645,360, Cl. 400-613.000.
Iwasaki Electric Co., Ltd.: *See*—
Horikoshi, Souichirou, 5,646,472, Cl. 313-112.000.
Iwasaki, Haruo: *See*—
Nagata, Atsushi; Iwasaki, Haruo; Shimizu, Kazuhiko; Tanba, Yoshinori; Abe, Takafumi; Imai, Tatsuo; Kikuchi, Akihiro; and Miyakawa, Teruyuki, 5,646,603, Cl. 340-825.250.
Iwasaki, Hiroko: *See*—
Nonoyama, Osamu; Ide, Yukio; Harigaya, Makoto; Kageyama, Yoshiyuki; Deguchi, Hiroshi; Yamada, Katsuyuki; Takahashi, Masatsu; and Iwasaki, Hiroko, 5,646,924, Cl. 369-58.000.
Iwasaki, Naoaki, to Sumitomo Rubber Industries, Ltd. Pneumatic tire including central part. 5,645,657, Cl. 152-209.00A.
Iwasaki, Osamu; Otsuka, Naoji; Arai, Atsushi; Yano, Kentaro; Takahashi, Kiichiro; and Kanematsu, Daigoro, to Canon Kabushiki Kaisha. Recording apparatus and temperature detecting method therefor. 5,646,655, Cl. 347-17.000.
Iwasaki, Yasuo, to Mitsubishi Denki Kabushiki Kaisha. Method of manufacturing projection cathode ray tube with uniform optical multiple interference film. 5,645,461, Cl. 445-11.000.
Iwata, Kaoru: *See*—
Shiro, Takashi; Iwata, Kaoru; Nitta, Hideaki; Sasaki, Takeshi; and Yonemura, Utami, 5,645,766, Cl. 252-582.000.
Iwata, Yuji; Nakasu, Jiro; and Takemoto, Makoto, to Mitsubishi Denki Kabushiki Kaisha. Portable information terminal. 5,646,649, Cl. 345-173.000.
Iwatsubo, Satoshi: *See*—
Kajitani, Tetsuji; Hikosaka, Ariyoshi; Azumai, Hideo; and Iwatsubo, Satoshi, 5,646,745, Cl. 358-448.000.
Izaguirre-Franco, Juan Pablo: *See*—
Izaguirre-Martinez, Jose Antonio; and Izaguirre-Franco, Juan Pablo, 5,645,716, Cl. 210-97.000.
Izaguirre-Martinez, Jose Antonio; and Izaguirre-Franco, Juan Pablo. Electropurifier and softener system of continuous flow for water and liquids for human, agricultural and industrial consumption. 5,645,716, Cl. 210-97.000.
Izumi, Akihide: *See*—
Nakagawa, Yoshiteru; Nittono, Shinji; Yasumura, Takaaki; Murata, Chihiro; Matsui, Kazuo; Nishida, Kuniyoshi; Murakoshi, Mitsuo; and Izumi, Akihide, 5,645,961, Cl. 429-229.000.
Izumitani, Yukihiro, to Hoya Corporation. Spectacle lens holding structure. 5,646,706, Cl. 351-110.000.
Izumizaki, Masami: *See*—
Moriyama, Jiro; Koizumi, Yutaka; Fukushima, Hisashi; Hirosawa, Toshiaki; Osada, Torachika; Moriguchi, Haruhiko; Kubota, Hidemi; and Izumizaki, Masami, 5,646,659, Cl. 347-55.000.
J.R. Simplot Company: *See*—
Secor, Gary A.; Borovkov, Alexander Y.; McClean, Phillip E.; and Sowokinos, Joseph R., 5,646,023, Cl. 435-172.300.

J. Uriach & Cia. S.A.: *See*—
Bartroli, Javier; Turmo, Enric; Anguita, Manuel; Carceller, Elena; and Almansa, Carmen. 5,646,294, Cl. 548-267.200.
Jackels, Susan C.; and Meyer, Dominique, to Guerbet S.A.; and Wake Forest University. Diagnostic compositions comprising a complex formed by a nitrogenous macrocyclic ligand with metal ions. 5,645,818, Cl. 424-9.363.
Jäckle, Holger: *See*—
Schmid, Mechtilde; Jäckle, Holger; and Koch, Siegfried, 5,646,387, Cl. 235-30.00R.
Jackman, Robert William: *See*—
Shockley, Ty Robert; Jackman, Robert William; and Nagy, Janice Ann, 5,645,829, Cl. 424-93.210.
Jackson, Billy G.: *See*—
Gardner, John P.; and Jackson, Billy G., 5,646,275, Cl. 540-364.000.
Jackwerth, Siegfried: *See*—
Maurer, Ruprecht; Timtner, Karlheinz; and Jackwerth, Siegfried, 5,645,149, Cl. 192-45.100.
Jacobson, Alan R.; Gabler, Douglas G.; and Oleksyszyn, Jozef, to OsteoArthritis Sciences, Inc. Bile acid inhibitors of metalloproteinase enzymes. 5,646,316, Cl. 552-554.000.
Jacobson, Marlene A.; Johnson, Robert G.; and Salvatore, Christopher A., to Merck & Co., Inc. Inhibition of eosinophil activation through A3 adenosine receptor antagonism. 5,646,156, Cl. 514-263.000.
Jacobsson, Carl Magnus Gösta: *See*—
Albrektsson, Björn; Carlsson, Lars Valter; Jacobsson, Carl Magnus Gösta; Röstlund, Tord Valter; and Wennberg, Stig Gösta, 5,645,602, Cl. 623-20.000.
Jacquot, Roland; and Mercier, Claude, to Rhone-Poulenc Chimie. Material based on tungsten carbide(s), catalyst and process useful for the hydrogenation of an aromatic nitro or nitroso derivative employing this catalyst. 5,646,085, Cl. 502-177.000.
Jaeger, C. Wayne: *See*—
Titterington, Donald R.; Bui, Loc V.; Hirschy, Linda M.; and Jaeger, C. Wayne, 5,645,888, Cl. 427-256.000.
Jaenson, Howard W.; and Actis, Bradley P., to H.W.J. Designs for Agribusiness. Wire tying apparatus for down-packer cotton press. 5,644,978, Cl. 100-8.000.
Jäger, Herbert M: *See*—
Berst, Marc; Eberth, Jürgen; Jäger, Herbert M; Kämmerling, Hans; Lieder, Rainer M.; and Renftle, Walter, 5,646,407, Cl. 250-370.150.
Jakobsen, Palle: *See*—
Faarup, Peter; Jakobsen, Palle; Jørgensen, Anker Steen; and Klitgaard, Henrik, 5,646,146, Cl. 514-250.000.
James River Corporation of Virginia: *See*—
Moody, John R., 5,645,244, Cl. 242-422.500.
Jameson, Bradford A.; Choksi, Swati; and Korngold, Robert, to Thomas Jefferson University. Peptides that inhibit T cell activation and methods of using the same. 5,645,837, Cl. 424-185.100.
Jamiolkowski, Dennis D.: *See*—
Bezwada, Rao S.; and Jamiolkowski, Dennis D., 5,645,850, Cl. 424-426.000.
Jamison, James A.: *See*—
Borromeo, Peter S.; Jamison, James A.; Rodriguez, Michael J.; Turner, William W.; and Vasudevan, Venkatraghaven, 5,646,111, Cl. 514-11.000.
Jamshidi, Shahram, to Intel Corporation. Plurality of distinct multiplexers that operate as a single multiplexer. 5,646,558, Cl. 326-106.000.
Jang, Chen-Chang. Hygienic protecting device for an electronic thermometer. 5,645,350, Cl. 374-158.000.
Jang, Hyun-Soon; and Lee, Seung-Hun, to Samsung Electronics Co., LTD. Bit line sensing circuit of a semiconductor memory device. 5,646,899, Cl. 365-205.000.
Janssen, Jeffrey R.; Joseph, Eugene G.; and Winslow, Louis E., to Minnesota Mining and Manufacturing Co. Protective adhesive article. 5,645,946, Cl. 428-521.000.
Japan Synthetic Rubber Co., Ltd.: *See*—
Kawata, Takashi; Tsuji, Shoei; and Mori, Yoji, 5,646,224, Cl. 526-282.000.
Jarvis, Thale: *See*—
Stinchcomb, Dan T.; Draper, Kenneth; McSwiggen, James; and Jarvis, Thale, 5,646,042, Cl. 435-366.000.
Jastrzembski, Joseph Stanley: *See*—
Lindsay, Kenneth Alan, Jr.; and Jastrzembski, Joseph Stanley, 5,646,794, Cl. 360-3.000.
Jay, Richard, to Display Technologies, Inc. Display rack with channel front member. 5,645,176, Cl. 211-59.200.
Jeffer, Peter H., to New-View Windshield Wiper L.P. Articulated windshield wiper blade assembly. 5,644,814, Cl. 15-250.361.
Jefferies, Steven: *See*—
Blackwell, Gordon; Huang, Chin-Teh; and Jefferies, Steven, 5,645,429, Cl. 433-217.100.
Jeffers, Scott E.: *See*—
Frankel, David B.; Jeffers, Scott E.; and Myslik, John E., 5,645,134, Cl. 180-69.240.
Jegal, Jong Geon: *See*—
Lee, Kew Ho; Kim, Jung Hoon; and Jegal, Jong Geon, 5,646,205, Cl. 524-27.000.
Jelloian, Linda; Matloubian, Mehran; Nguyen, Loi D.; and Schmitz, Adele, to Hughes Aircraft Company. Fabrication process for $Al_xIn_{1-x}As/Ga_yIn_{1-y}As$ power HFET ohmic contacts. 5,646,069, Cl. 437-184.000.
Jenkins, David C.: *See*—
Fein, Michael E.; Jenkins, David C.; Bernstein, Michael J.; Venkatachalam, K. L.; Merchant, Adnan I.; and Bowden, Charles H., 5,645,059, Cl. 128-633.000.
Jenkins, John T., to Maca/Orsi, L.L.C. Flood control barrier system and method. 5,645,373, Cl. 405-91.000.
Jenkner, Peter: *See*—
Monkiewicz, Jaroslaw; Frings, Albert; Horn, Michael; Jenkner, Peter; Koetzsch, Hans-Joachim; Kropfgans, Frank; Seiler, Claus-Dietrich; Srebny, Hans-Guenther; and Standke, Burkhard, 5,646,325, Cl. 556-440.000.
Jensen, Georg Wilhelm: *See*—
Breinholt, Jens; Nielsen, Ruby Ione; and Jensen, Georg Wilhelm, 5,646,110, Cl. 514-9.000.
Jensen, Grant Clark, to General Electric Company. Apparatus for installing tie rod assembly in space between jet pump assemblies with limited vertical access. 5,646,969, Cl. 376-260.000.
Jerath, Vijay; Price, David J.; and Martin, Ian W., to British Steel plc. Rails. 5,645,653, Cl. 148-320.000.
Jeromin, Lutz: *See*—
Hunt, Tracy K.; Jeromin, Lutz; Johannisbauer, Wilhelm; Gutsche, Bernhard; Jordon, Volkmar; and Wogatzki, Herbert, 5,646,311, Cl. 549-413.000.
Jessop, Richard Vernon. Toy or educational device. 5,645,432, Cl. 434-322.000.
Jiang, Cong: *See*—
Ippolito, Robert M.; Haque, Wasimul; Jiang, Cong; Hanna, H. Rizk; Venot, Andre P.; Nikrad, Pandurang V.; Kashem, Mohammed A.; Smith, Richard; and Srivastava, Om P., 5,646,123, Cl. 514-25.000.
Jiang, Jien-Ping: *See*—
Hamburger, Robert N.; Wang, Ruibo; and Jiang, Jien-Ping, 5,646,597, Cl. 340-627.000.
Jidosha Kiki Co., Ltd.: *See*—
Ikeda, Masahiro, 5,645,145, Cl. 188-356.000.
Jimenez, Jean, to SGS Thomson Microelectronics S.A. Pad protection diode structure. 5,646,433, Cl. 257-355.000.
JLB, Inc.: *See*—
Walker, Edward B.; Mickelsen, Richard A., Jr.; and Mickelsen, Jennifer N., 5,646,178, Cl. 514-456.000.
Joerg, Wolfgang; Bordovsky, Jaromir; Cakmaz, Aydogan; Heck, Hubert; Roehringer, Arno; Gall, Claus; Abt, Reinhold; Strauss, Rainer; and Koehler, Karl-Hans, to Mercedes-Benz AG. Servo valve arrangement. 5,644,967, Cl. 91-457.000.
Joeris, Herbert: *See*—
Cornils, Gerd; Joeris, Herbert; Kotte, Rolf; and Scholl, Heinz, 5,645,785, Cl. 264-252.000.
Johannisbauer, Wilhelm: *See*—
Hunt, Tracy K.; Jeromin, Lutz; Johannisbauer, Wilhelm; Gutsche, Bernhard; Jordon, Volkmar; and Wogatzki, Herbert, 5,646,311, Cl. 549-413.000.
Johansson, Lars George: *See*—
Hammarberg, Eva Maria; Johansson, Lars George; Larsson, Lars-Gunnar; Noréen, Rolf; Renyi, Lucy Anna; Ross, Svante Bertil; Sohn, Daniel Dungan; Svensson, Björn Eric; and Thorberg, Seth-Olov, 5,646,309, Cl. 549-404.000.
Johns Hopkins University, The: *See*—
Ekenberg, Steven J.; Brisco, Paula R. G.; and Oaklander, Anne Louise, 5,646,263, Cl. 536-25.400.
Johnson & Johnson Consumer Products, Inc.: *See*—
Wang, Jonas C. T.; and Wisniewski, Stephen J., 5,646,186, Cl. 514-557.000.
Johnson & Johnson Vision Products, Inc.: *See*—
Edwards, Russell James; Kitagawa, Hirokazu; Imai, Kiyoshi; Funo, Masao; Holley, William Edward; Hood, Charles R.; and Abrams, Richard Wayne, 5,644,895, Cl. 53-55.000.
Johnson, Bernard W.; and Luckevich, Mark, to Kelsey-Hayes Company. Early activation recovery control method and system for vehicle anti-lock brake system. 5,645,328, Cl. 303-158.000.
Johnson, Carroll L. Retractable fin assembly. 5,645,460, Cl. 441-61.000.
Johnson, David A., to JohnsTech International Corporation. Contacting system for electrical devices. 5,645,433, Cl. 439-66.000.
Johnson, David L.: *See*—
Hsu, Chuar-Jian; Johnson, David L.; Kostek, Sergio; and Ounadjela, Abderrhamane, 5,646,379, Cl. 181-101.000.
Johnson, David W., to Ebert Composites Corporation. Heavy construction system using composite members. 5,644,888, Cl. 52-651.010.
Johnson, Dennis W.: *See*—
McIlroy, Robert A.; Kuchner, Robert A.; Monacelli, John E.; and Johnson, Dennis W., 5,645,616, Cl. 48-202.000.
Johnson, James C., to NSI Enterprises, Inc. Emergency lighting circuit for shunt-regulated battery charging and lamp operation. 5,646,502, Cl. 320-5.000.
Johnson, Kyle K.: *See*—
Gybin, Alexander S.; Johnson, Kyle K.; Komatsu, Toshifumi; and Vaniseghem, Lawrence C., 5,645,975, Cl. 430-308.000.
Johnson, Leo C.: *See*—
Fujii, Noboru; and Kadota, Genichi, 5,646,270, Cl. 536-119.000.
Johnson, Liann M.: *See*—
Hachtman, Steven W.; Johnson, Liann M.; Johnson, Scott T.; Laptewicz, Joseph E., Jr.; Thompson, Paul J.; Ahmad, Amjad; Scholl, John A.; and Thompson, Richard J., 5,645,559, Cl. 606-198.000.
Johnson, Linda Lea: *See*—
Ye, Qi-Zhuang; Johnson, Linda Lea; and Hupe, Donald John, 5,646,027, Cl. 435-219.000.
Johnson, Lorin K.; and Longenecker, John P., to Scios Nova Inc. Antibodies for human phospholipase inhibitory protein (hPIP). 5,646,254, Cl. 530-388.850.
Johnson, R. Anders, to Xilinx, Inc. Memory cell having a shared read/write line. 5,646,903, Cl. 365-230.050.
Johnson, Robert Anders: *See*—
Trimberger, Stephen M.; Carberry, Richard A.; Johnson, Robert Anders; and Wong, Jennifer, 5,646,545, Cl. 326-38.000.
Johnson, Robert G.: *See*—
Jacobson, Marlene A.; Johnson, Robert G.; and Salvatore, Christopher A., 5,646,156, Cl. 514-263.000.
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Kadlec, Ronald James; Frederick, Thomas James; Kelley, Paul Henry; and Weilbacher, Philip Saxton, to Rodime PLC. Digital servo control system for use in disk drives. 5,646,797, Cl. 360-75.000.
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Kafarowski, Zygmunt Grant. Mortar plow for use in the manufacture of brick wall panels. 5,644,891, Cl. 52-745.050.
Kaga, Toru: *See*—
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Kah, Carl L. C., Jr. Tilted seat diaphragm valve. 5,645,264, Cl. 251-30.020.
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Kakehi, Yutaka; Kawasaki, Yoshinao; Suzuki, Keizo; Nojiri, Kazuo; Enami, Hiromichi; Kaji, Tetsunori; Watanabe, Seiichi; and Ogawa, Yoshifumi, to Hitachi, Ltd. Plasma generator with mode restricting means. 5,646,489, Cl. 315-111.210.
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Kamishima, Yoshiyuki, to NEC Corporation. Terminal adapter capable of reducing a memory capacity of a buffer memory. 5,646,959, Cl. 375-240.000.
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Kang, Tae Ho; and Yun, Dae-ryong, to Kwangju Electronics Co., Ltd. Device for brewing the roasted and ground beans of the coffee in a vending machine. 5,644,973, Cl. 99-289.00R.
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Sakaguchi, Akira; Kitahara, Takashi; Koizumi, Keiko; Sato, Noriko; Hori, Kimihiko; and Shinta, Hiroyuki, 5,646,184, Cl. 514-543.000.
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Marmer, Keith S.; Key, Glenda L.; and Brown, Richard, 5,645,078, Cl. 128-782.000.

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Hofmann, Manfred; Klingert, Bernd; Hunziker, Max; Wiesendanger, Rolf; Schulthess, Adrian; and Bernhard, Paul, 5,645,973, Cl. 430-269.000.

Klitgaard, Henrik: *See*—
Faarup, Peter; Jakobsen, Palle; Jørgensen, Anker Steen; and Klitgaard, Henrik, 5,646,146, Cl. 514-250.000.

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Zaguroli, James, Jr., 5,644,821, Cl. 24-114.500.
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Salvage, Richard James; and Harrington, Steven John, 5,647,013, Cl. 381-192.000.

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Knox, Keith T., to Xerox Corporation. Show-through correction for two-sided documents. 5,646,744, Cl. 358-401.000.

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Yuan, Lee Chung; and Ko, Joe, 5,646,062, Cl. 437-60.000.

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Kobayashi, Hajime, to NEC Corporation. Track-lead-in control device for optical head. 5,646,916, Cl. 369-32.000.

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Kohmoto, Shinsuke; and Kobayashi, Tomoaki, 5,646,790, Cl. 359-823.000.

Kobayashi, Tomoyuki; Miyazaki, Kenji; and Nakamura, Masanori, to Sekisui Chemical Co., Ltd. Plastic foam material composed of thermoplastic resin and silane-modified thermoplastic resin and method for making same. 5,646,194, Cl. 521-79.000.

Kobrin, Paul H.: *See*—
Seabury, Charles W.; Kobrin, Paul H.; and DeNatale, Jeffrey F., 5,646,583, Cl. 333-187.000.

Koch Engineering Company, Inc.: *See*—
McNulty, Kenneth J.; and Yeoman, Neil, 5,645,770, Cl. 261-97.000.

Koch, Karl W.: *See*—
Moore, Gerald T.; Koch, Karl W.; and Cheung, Eric C., 5,646,764, Cl. 359-201.000.

Koch, Michael: *See*—
Emmer, Ludwig; Koch, Michael; and Greiner, Ferdinand, 5,645,311, Cl. 296-180.500.

Koch, Roger D., to Caterpillar Inc. Modulating flow diverter for a fuel injector. 5,645,224, Cl. 239-533.400.

Koch, Siegfried: *See*—
Schmid, Mechtilde; Jäckle, Holger; and Koch, Siegfried, 5,646,387, Cl. 235-30.00R.

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Kodama, Kenichi, to Fuji Photo Film Co., Ltd. Exposure device. 5,646,673, Cl. 347-251.000.

Kodama, Shinji, to Yazaki Corporation. Connector housing. 5,645,452, Cl. 439-595.000.

Koden, Mitsuhiro: *See*—
Takeda, Hitoshi; Kido, Masami; Kaneko, Takashi; and Koden, Mitsuhiro, 5,646,754, Cl. 349-172.000.

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Koehler, Karl-Hans: *See*—
Joerg, Wolfgang; Bordovsky, Jaromir; Cakmaz, Aydogan; Heck, Hubert; Roehringer, Arno; Gall, Claus; Abt, Reinhold; Strauss, Rainer; and Koehler, Karl-Hans, 5,644,967, Cl. 91-457.000.

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Willis, Carl Myron; and Koehler, Thomas Frederick, 5,646,627, Cl. 342-189.000.

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Gudat, Adam J.; Kleimenhagen, Karl W.; Christensen, Dana A.; Kemner, Carl A.; Bradbury, Walter J.; Koehrsen, Craig L.; Kyrtsos, Christos T.; Lay, Norman K.; Peterson, Joel L.; Schmidt, Larry E.; Stafford, Darrell E.; and Weinbeck, Louis J., 5,646,843, Cl. 364-424.012.
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Puschnerat, Helmut; Ruckmann, Wolfgang Günter; and Schröder, Peter, 5,644,984, Cl. 101-409.000.

Koetzsch, Hans-Joachim: *See*—
Monkiewicz, Jaroslaw; Frings, Albert; Horn, Michael; Jenkner, Peter; Koetzsch, Hans-Joachim; Kropfgans, Frank; Seiler, Claus-Dietrich; Srebny, Hans-Guenther; and Standke, Burkhard, 5,646,325, Cl. 556-440.000.

Koff, Andrew C.: *See*—
Roberts, James M.; Ohtsubo, Motoaki; Koff, Andrew C.; and Cross, Frederick, 5,645,999, Cl. 435-7.400.

Koga, Hirohisa; Hanjo, Manabu; and Kurahara, Takayuki, to Sony Corporation. Device for winding magnetic tape of tape cassette in good order. 5,645,241, Cl. 242-336.000.

Koga, Hiroshi; and Nabata, Hiroyuki, to Chugai Seiyaku Kabushiki Kaisha. Benzopyran derivatives. 5,646,308, Cl. 549-404.000.

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Koga, Yoshiro, to Seiko Epson Corporation. Image forming method. 5,645,966, Cl. 430-101.000.

Koganei Corporation: *See*—
Doi, Takashi; Homma, Naoki; and Hamada, Shinichiro, 5,645,108, Cl. 137-625.640.

Kohama, Yoshiaki: *See*—
Mori, Futoshi; Fukazawa, Kazuhiko; Hirose, Hiroshi; and Kohama, Yoshiaki, 5,646,403, Cl. 250-310.000.

Kohashi, Masao: *See*—
Hisamori, Youichi; Kurachi, Mitunori; Taniguchi, Masaaki; Noma, Tutomu; Kohashi, Masao; and Sumida, Yoshihiro, 5,644,840, Cl. 29-890.043.

Kohler, Timothy L.; and Hui, Jonathan Y., to Canon Information Systems, Inc. Color image processing apparatus which uses private tags to alter a predefined color transformation sequence of a device profile. 5,646,752, Cl. 358-520.000.

Kohlhepp, Klaus: *See*—
Schleicher, Andreas; Piesold, Jan-Peter; and Kohlhepp, Klaus, 5,646,202, Cl. 523-212.000.

Kohmoto, Shinsuke; and Kobayashi, Tomoaki, to Asahi Kogaku Kogyo Kabushiki Kaisha. Zoom lens barrel. 5,646,790, Cl. 359-823.000.

Kohno, Yasushi: *See*—
Ido, Yoichi; Kohno, Yasushi; and Nakatsukasa, Kazushi, 5,645,093, Cl. 134-104.300.

Koie, Kazutoshi, to Nippondenso Co., Ltd. Display device for vehicles. 5,646,639, Cl. 345-7.000.

Koike, Atsuyoshi: *See*—
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Koike, Hiroyuki: *See*—
Yanagisawa, Hiroaki; Amemiya, Yoshiya; Shimoji, Yasuo; Kanazaki, Takuro; Koike, Hiroyuki; and Sada, Toshio, 5,646,171, Cl. 514-381.000.

Koike, Shoji; and Yamamoto, Tomoya, to Canon Kabushiki Kaisha. Cloth suitable for ink-jet textile printing and ink-jet textile printing method. 5,645,631, Cl. 106-31.360.

Koiko Manufacturing Co., Ltd.: *See*—
Tatsukawa, Masashi, 5,645,339, Cl. 362-61.000.

Koito Manufacturing Co., Ltd.: *See*—
Kobayashi, Shoji, 5,645,338, Cl. 362-61.000.

Koizumi, Fumiaki, to NEC Corporation. Mobile telephone device system having steal prevention function. 5,646,977, Cl. 455-411.000.

Koizumi, Keiko: *See*—
Sakaguchi, Akira; Kitahara, Takashi; Koizumi, Keiko; Sato, Noriko; Hori, Kimihiko; and Shinta, Hiroyuki, 5,646,184, Cl. 514-543.000.

Koizumi, Yutaka: *See*—
Moriyama, Jiro; Koizumi, Yutaka; Fukushima, Hisashi; Hirosawa, Toshiaki; Osada, Torachika; Moriguchi, Haruhiko; Kubota, Hidemi; and Izumizaki, Masami, 5,646,659, Cl. 347-55.000.

Kojima, Nobuyuki: *See*—
Tsukimoto, Takayuki; Koreeda, Shinichi; Kojima, Nobuyuki; and Nishimura, Mitsuo, 5,646,469, Cl. 310-323.000.

Kokusai Denshin Denwa Co., Ltd.: *See*—
Oda, Toshikane, 5,646,984, Cl. 379-114.000.

Kolesa, Michael S.; Mastri, Dominick L.; Young, Wayne P.; and Bolanos, Henry, to United States Surgical Corporation. Suture clip applier. 5,645,553, Cl. 606-157.000.

Kollmorgen Corporation: *See*—
Floresta, John G.; and Bobelis, Darius T., 5,646,467, Cl. 310-268.000.

Kolmes, Nathaniel H.; and Plemmons, Harold F. Cut resistant yarn and protective garment made therefrom. 5,644,907, Cl. 57-230.000.

Komachi, Kyoichi: *See*—
Mabuchi, Hiroshi; Yoshiki, Takahiro; Komachi, Kyoichi; and Miyamura, Tadashi, 5,645,644, Cl. 118-723.0MW.

Komatsu, Toshifumi: *See*—
Gybin, Alexander S.; Johnson, Kyle K.; Komatsu, Toshifumi; and Vaniseghem, Lawrence C., 5,645,975, Cl. 430-308.000.

Komatsu, Yukio, to Murata Kikai Kabushiki Kaisha. Picking system. 5,646,616, Cl. 340-988.000.

Komatsubara, Yoshiaki: *See*—
Yanagioka, Hiroshi; Ogawa, Yoshio; Komatsubara, Yoshiaki; and Kobayashi, Kenji, 5,645,802, Cl. 422-170.000.

Kominato, Ryusei: *See*—
Ubayashi, Shinsuke; Yoshida, Yasumi; and Kominato, Ryusei, 5,645,274, Cl. 271-94.000.

Komori, Yumiko: *See*—
Yamada, Tetsuo; Tanaka, Toshihide; Hirosaki, Satoru; Udagawa, Koji; and Komori, Yumiko, 5,646,669, Cl. 347-127.000.

Komowski, Michael, to Behr GmbH & Co. Air inlet for a heating or air conditioning system. 5,645,479, Cl. 454-139.000.

Komuro, Kiyoto: *See*—
Fujioka, Satoshi; Hirabayashi, Hiromu; Takabayashi, Nobuhisa; Nishizawa, Atsushi; and Komuro, Kiyoto, 5,646,653, Cl. 347-8.000.

Fujioka, Satoshi; Hirabayashi, Hiromu; Takabayashi, Nobuhisa; Nishizawa, Atsushi; and Komuro, Kiyoto, 5,646,668, Cl. 347-104.000.

Komuro, Ryoichi: *See*—
Ohsuga, Minoru; Shiraishi, Takuya; Yamaguchi, Junichi; Komuro, Ryoichi; and Momono, Masakichi, 5,645,029, Cl. 123-306.000.

Konaka, Masami: *See*—
Tanaka, Hisashi; Shirota, Yuichi; Sugi, Hikaru; Konaka, Masami; Yamamoto, Kazushi; Miwa, Seiji; and Miyata, Manabu, 5,644,929, Cl. 62-406.000.

Konath, Kannan: *See*—
Rosenthal, Daniel; Konath, Kannan; Whyte, Robert; Norton, Eric; and Pearce, Stuart Robert, 5,646,521, Cl. 324-158.100.

Kondo, Susumu: *See*—
Hirai, Hoko; and Kondo, Susumu, 5,646,643, Cl. 345-100.000.

Kondou, Sinichi: *See*—
Ishibashi, Toshio; Kondou, Sinichi; Moriya, Mitsuyasu; and Watanabe, Yoshiyuki, 5,645,366, Cl. 403-359.000.

Kondratyev, Sergei N.; Plessky, Victor P.; Hartmann, Clinton S.; Thorvaldsson, Thor; and Morgan, David P., to Advanced SAW Products SA. Saw filter including electrodes of opposing polarity. 5,646,584, Cl. 333-193.000.

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Matsuo, Fumiyuki; Kanazawa, Daisuke; Sasaki, Mitsuru; Matsubara, Shinichi; Higashino, Katsuhiko; and Yokoo, Toshiaki, 5,645,969, Cl. 430-165.000.

Konno, Kenichi. Laying and transporting apparatus. 5,645,268, Cl. 254-134.400.

Kono, Hiroki: *See*—
Suzuki, Shigeo; Shintaku, Hidenobu; Watanabe, Taku; Asabe, Mitsuo; Takahashi, Kazuo; Abe, Yoshiro; Kono, Hiroki; and Hirao, Kazunori, 5,646,482, Cl. 313-582.000.

Konzelmann, Uwe, to Robert Bosch GmbH. Device for determining a pulsating air mass flow in an internal combustion engine. 5,646,344, Cl. 73-204.180.

Koo, Han-Mo: *See*—
Vande Woude, George F.; Koo, Han-Mo; and Monks, Anne, 5,645,988, Cl. 435-6.000.

Koo, Min-Se, to Dae Nung Industrial Co., Ltd.; and Dae Nung Construction Co., Ltd. Method to construct the prestressed composite beam structure and the prestressed composite beam for a continuous beam thereof. 5,644,890, Cl. 52-742.140.

Koong, Albert C.: *See*—
Giaccia, Amato J.; and Koong, Albert C., 5,646,185, Cl. 514-548.000.

Kopera, John J. C., to Chrysler Corporation. Battery monitor for electric vehicles. 5,646,534, Cl. 324-434.000.

Koponen, Ismo; Rintasalo, Ilmari; Vainio, Jari; and Kaihovirta, Juha, to Valmet Corporation. Dryer section of a paper or board machine including an arrangement for cutting a leader of the web. 5,644,962, Cl. 83-177.000.

Korba, Brent E.; and Gerin, John L., to Georgetown University. Antisense oligonucleotides against hepatitis B viral replication. 5,646,262, Cl. 536-24.500.

Korea Research Institute of Chemical Technology: *See*—
Lee, Kew Ho; Kim, Jung Hoon; and Jegal, Jong Geon, 5,646,205, Cl. 524-27.000.

Koreeda, Shinichi: *See*—
Tsukimoto, Takayuki; Koreeda, Shinichi; Kojima, Nobuyuki; and Nishimura, Mitsuo, 5,646,469, Cl. 310-323.000.

Korngold, Robert: *See*—
Jameson, Bradford A.; Choksi, Swati; and Korngold, Robert, 5,645,837, Cl. 424-185.100.

Kose Corporation: *See*—
Tanaka, Yoichiro; and Suzuki, Kazuo, 5,645,903, Cl. 428-34.100.

Koshio, Kazuhiro: *See*—
Nishizawa, Akihito; Imaide, Takuya; Kinugasa, Toshiro; Iguchi, Takuya; and Koshio, Kazuhiro, 5,646,684, Cl. 348-231.000.

Koskinen, Yrjö; Lehto, Ari; Tammela, Simo; Blomberg, Martti; Orpana, Markku; and Torkkeli, Altti, to Vaisala Oy. Single-channel gas concentration measurement method and apparatus using a short-resonator Fabry-Perot interferometer. 5,646,729, Cl. 356-352.000.

Kosley, Raymond W., Jr.; Cherill, Robert Joseph; and O'Malley, Gerard, to Hoechst Marion Roussel, Inc. Carbamoyloxylabdane compounds. 5,646,175, Cl. 514-422.000.

Kosley, Raymond W., Jr.; Flanagan, Denise M.; Martin, Lawrence L.; and Nemoto, Peter A., to Hoechst Marion Roussel, Inc. (1H-indol-1-yl)-2-(amino)acetamides and related (1H-indol-1-yl)-(aminoalkyl)amides, pharmaceutical composition and use. 5,646,300, Cl. 548-475.000.

Kosmala, Michael Lawrence, to ITT Corporation. Right angle coaxial connector and method of assembling same. 5,645,454, Cl. 439-675.000.

Kostek, Sergio: *See*—
Hsu, Chuar-Jian; Johnson, David L.; Kostek, Sergio; and Ounadjela, Abderrhamane, 5,646,379, Cl. 181-101.000.

Kosteniuk, Steve. Bag handle. 5,645,306, Cl. 294-137.000.

Kostreski, Bruce: *See*—
Oliver, Brian D.; Kostreski, Bruce; Campbell, W. Tim; and Sistanizadeh, Kamran, 5,646,942, Cl. 370-112.000.

Kosuge, Katsuhiro: *See*—
Sugihara, Kazuyuki; Ishikawa, Tomoji; and Kosuge, Katsuhiro, 5,646,721, Cl. 355-326.00R.

Kotaki, Kenji, to Shima Seiki Manufacturing Ltd. Method and apparatus for inputting embroidery lines. 5,646,861, Cl. 364-470.090.

Kotte, Rolf: *See*—
Cornils, Gerd; Joeris, Herbert; Kotte, Rolf; and Scholl, Heinz, 5,645,785, Cl. 264-252.000.

Kottwitz, Beatrix; Poethkow, Joerg; Krings, Peter; and Upadek, Horst, to Henkel Kommanditgesellschaft auf Aktien. Builder for detergents or cleaning compositions. 5,646,103, Cl. 510-361.000.

Kotwal, Pramod M.; and Howard, Stephen A., to Ortho Pharmaceutical Corporation. Multilayered controlled release pharmaceutical dosage form. 5,645,858, Cl. 424-495.000.

Koukourakis, Nicholas: *See*—
Bosyj, Nick M.; Bowers, Donald R.; Koukourakis, Nicholas; Vincent, Conway; and Wareham, Richard A., 5,644,815, Cl. 15-328.000.

Koura, Kazuyuki; Tanaka, Jiro; and Tsugawa, Takuji, to Mitsubishi Jukogyo Kabushiki Kaisha. Printing press. 5,644,982, Cl. 101-216.000.

Kovacik, James D.; and Blanch, Paul S., to Alert Lite Safety Products Co. Inc. Automatically switched trouble light and retracting cord reel apparatus. 5,645,147, Cl. 191-12.20R.

Kovacs, Csaba Andras: *See*—
Burns, Elizabeth Gertrude; Goswami, Ramanuj; and Kovacs, Csaba Andras, 5,645,910, Cl. 428-64.100.

Kovacs, Janos; Kroesen, Ronald; and McCall, Kevin, to Analog Devices, Inc. Dynamic phase selector phase locked loop circuit. 5,646,968, Cl. 375-375.000.

Kovalsky, David A.: *See*—
Reinfelder, William C.; Kovalsky, David A.; and Jones, Corey D., 5,645,670, Cl. 156-212.000.

Kowa Co., Ltd.: *See*—
Inagi, Toshio; and Kanebako, Makoto, 5,646,221, Cl. 526-238.230.
Jutamulia, Suganda, 5,647,032, Cl. 385-14.000.

Koyama, Kenichi: *See*—
Yorita, Mitsumasa; Toya, Hideaki; Hasegawa, Hiroshi; and Koyama, Kenichi, 5,646,386, Cl. 218-129.000.

Koyama, Masahiro; Sone, Takuro; and Higashi, Iwao, to Yamaha Corporation. Sound parameter editing device for an electronic musical instrument. 5,646,362, Cl. 84-615.000.

Koyo Seiko Co., Ltd.: *See*—
Kobayashi, Masanori; Saito, Yoshiyuki; Ohata, Takashi; Ono, Fumiyoshi; and Minamoto, Noboru, 5,645,107, Cl. 137-625.230.

Kozaki, Shuichi: *See*—
Yamada, Nobuaki; Kozaki, Shuichi; Mizobe, Hoyo; Yoshida, Masahiko; and Suzuki, Kenji, 5,645,760, Cl. 252-299.660.

Kozono, Hiroko: *See*—
Kamada, Koh; Kozono, Hiroko; Watanabe, Jun; and Arakawa, Kohei, 5,646,703, Cl. 349-118.000.

Kraemer, Matthew G.; Curtin, Richard M.; and Smith, Paul K., to Genie Industries. Wedge braking system for multi-stage lifts. 5,645,142, Cl. 187-372.000.

Kralick, James; and Vitale, Nicholas, to Mechanical Technology Inc. Balanced single stage linear diaphragm compressor. 5,645,407, Cl. 417-383.000.

Kramer, Werner; and Wess, Günther, to Hoechst Aktiengesellschaft. Bile acid conjugates of proline hydroxylase inhibitors. 5,646,272, Cl. 540-5.000.

Kranzler, Thane L.; and Moseley, Jon P., to W. L. Gore & Associates, Inc. High strength porous PTFE sheet material. 5,645,915, Cl. 428-105.000.

Krapiva, Pavel I. Disc replacement method and apparatus. 5,645,597, Cl. 623-17.000.

Kraslavsky, Andrew J.: *See*—
Barrett, Lorraine F.; Russell, William C.; Kraslavsky, Andrew J.; Wadsworth, Robert D.; and Kalwitz, George A., 5,647,056, Cl. 395-200.100.

Krause, Karl Robert, to Du Pont de Nemours, E. I., and Company. Catalytic oxidation of volatile carbon compounds. 5,645,808, Cl. 423-245.300.

Krautschneider, Wolfgang; and Lau, Klaus J., to Siemens Aktiengesellschaft. Signal sensing circuits for memory system using dynamic gain memory. 5,646,883, Cl. 365-156.000.

Kremar, Djuro. Center wind assist driving wheel mechanism. 5,645,245, Cl. 242-541.100.

Kress, John E., to APV Crepaco, Inc. Two-piece scraping blade construction. 5,644,926, Cl. 62-342.000.

Kresse, Heiko: *See*—
Karte, Thomas; Kresse, Heiko; Kleist, Alexander; and Backe, Wolfgang, 5,644,948, Cl. 73-168.000.

Kressley, Mark A.: *See*—
Wilson, Arthur M.; Kressley, Mark A.; Frew, Dean L.; Miller, Juanita G.; Hanicak, John E.; Hecker, Philip E.; and Drumm, James M., 5,646,068, Cl. 437-183.000.

Kreusing, Helmut: *See*—
Dummersdorf, Hans-Ulrich; Herbst, Günther; Erken, Manfred; Menge, Franz-Josef; and Kreusing, Helmut, 5,645,614, Cl. 44-596.000.

Kriauciunas, Aidas: *See*—
Baker, Jeffrey C.; Chen, Victor J.; Hanquier, Jose M.; Kriauciunas, Aidas; Moser, Brian A.; and Shuman, Robert T., 5,646,242, Cl. 530-303.000.

Krings, Peter: *See*—
Kottwitz, Beatrix; Poethkow, Joerg; Krings, Peter; and Upadek, Horst, 5,646,103, Cl. 510-361.000.

Krivokapic, Zoran; Heavlin, William D.; and Kyser, David F., to Advanced Micro Devices, Inc. Method for setting and adjusting process parameters to maintain acceptable critical dimensions acorss each die of mass-produced semiconductor wafers. 5,646,870, Cl. 364-578.000.

Krivosha, Ronald S., to Brown Medical Industries. Heel stabilizing device and method for treating heel pain. 5,645,525, Cl. 602-62.000.

Kroesen, Ronald: *See*—
Kovacs, Janos; Kroesen, Ronald; and McCall, Kevin, 5,646,968, Cl. 375-375.000.
Kroetsch, Karl Paul; and Corser, Don Clair, to General Motors Corporation. Vehicle radiator for use with or without oil cooler. 5,645,125, Cl. 165-137.000.
Krolick, Edward. All purpose mulch system. 5,644,998, Cl. 111-102.000.
Kroll, Mark W.; and Perttu, Joseph S., to Angeion Corporation. Implantable cardioverter defibrillator with slew rate limiting. 5,645,572, Cl. 607-5.000.
Kroll, Mark W.; and Smith, Charles U., to Angeion Corporation. Optimal pulse defibrillator. 5,645,573, Cl. 607-7.000.
Kroll, William; Browne, Mark; Bartsch, Tom; and Evenson, Randie, to Intercomp Company. Aircraft weighing scale with improved base, platform and load cell mounting assembly. 5,646,376, Cl. 177-211.000.
Kropfgans, Frank: *See*—
Monkiewicz, Jaroslaw; Frings, Albert; Horn, Michael; Jenkner, Peter; Koetzsch, Hans-Joachim; Kropfgans, Frank; Seiler, Claus-Dietrich; Srebny, Hans-Guenther; and Standke, Burkhard, 5,646,325, Cl. 556-440.000.
Krosaki Corporation: *See*—
Tsuyuguchi, Koji; Kimura, Haruyoshi; Kawabe, Hideaki; and Arimitsu, Eizaburo, 5,645,120, Cl. 164-437.000.
Kroscher, Todd: *See*—
Muchin, Jay Z.; and Kroscher, Todd, 5,644,976, Cl. 99-422.000.
Kruer, Thomas R.: *See*—
Heren, Lawrence P.; Hayes, Jerry R.; and Kruer, Thomas R., 5,645,218, Cl. 239-242.000.
Krüger, Bertolt: *See*—
Brinkmeyer, Horst; Daiss, Michael; Schwegler, Günter; and Krüger, Bertolt, 5,646,995, Cl. 380-21.000.
Krulevitch, Peter A.: *See*—
Northrup, Milton A.; Ciarlo, Dino R.; Lee, Abraham P.; and Krulevitch, Peter A., 5,645,564, Cl. 606-205.000.
Kruse, Lawrence I.; Kumar, Virendra; Chang, An-Chih; DeHaven-Hudkins, Diane L.; Farrar, John J.; and Maycock, Alan L., to Adolor Corporation. Kappa agonist compounds and pharmaceutical formulations thereof. 5,646,151, Cl. 514-255.000.
Kruss, Sergey: *See*—
Litzkow, Carl A.; Shuman, Dennis; Kruss, Sergey; and Coffelt, James A., 5,646,404, Cl. 250-338.100.
Krzyminski, Harald. Hand-held instrument for reflection measuring of optical density and color on printed sheets. 5,646,735, Cl. 356-402.000.
Kubbies, Manfred: *See*—
Gompper, Rudolf; Kubbies, Manfred; Schmidt, Axel; and Virnekas, Bernhard, 5,646,295, Cl. 548-311.700.
Kuberasampath, Thangavel; and Tarrant, Lawrence Berlowitz, to Stryker Corporation. Synthetic bone matrix. 5,645,591, Cl. 623-16.000.
Kubo, Akira: *See*—
Dohjo, Masayuki; Kubo, Akira; Tanaka, Yasuharu; and Inada, Katsuhiko, 5,646,756, Cl. 349-42.000.
Kubo, Naoto; Shigeta, Yoshitane; and Ishii, Hideyuki, to Rodel Nitta Company. Workpiece retaining device and method for producing the same. 5,645,474, Cl. 451-287.000.
Kubota, Hidemi: *See*—
Moriyama, Jiro; Koizumi, Yutaka; Fukushima, Hisashi; Hirosawa, Toshiaki; Osada, Torachika; Moriguchi, Haruhiko; Kubota, Hidemi; and Izumizaki, Masami, 5,646,659, Cl. 347-55.000.
Kubota, Yosuke, to Fuji Jukogyo Kabushiki Kaisha. Stop switch apparatus for an engine. 5,646,461, Cl. 307-116.000.
Kuchner, Robert A.: *See*—
McIlroy, Robert A.; Kuchner, Robert A.; Monacelli, John E.; and Johnson, Dennis W., 5,645,616, Cl. 48-202.000.
Kuczynski, Joseph Paul: *See*—
Angelopoulos, Marie; Gelorme, Jeffrey Donald; and Kuczynski, Joseph Paul, 5,645,764, Cl. 252-500.000.
Kudo, Kazuho, to Sekisui Kagaku Kogyo Kabushiki Kaisha. Compositions for moisture curing hot melt adhesives. 5,646,229, Cl. 528-53.000.
Kudsk, Kenneth A. Use of an IL-6 assay for predicting the development of post-trauma complications. 5,646,005, Cl. 435-7.320.
Kudu Industries Inc.: *See*—
Mills, Robert A.R., 5,645,896, Cl. 427-450.000.
Kuhm, Peter; Salz, Rainer; and Blasey, Gerhard, to Henkel Kommanditgesellschaft auf Aktien. Process for the production of very fine-particle zeolitic alkali metal aluminum silicates. 5,645,811, Cl. 423-700.000.
Kuhn, Birgit; Salbeck, Gerhard, deceased (by Gisela Salbeck, heiress); Döller, Uwe; Schnatterer, Stefan; Schubert, Hans-Herbert; Knauf, Werner; Waltersdorfer, Anna; and Kern, Manfred, to Hoechst Aktiengesellschaft. Acaricidal, insecticidal and nematicidal substituted (hetero)arylalkyl ketone oxime O-ethers, processes for their preparation, agents containing them, and their use as pesticides. 5,646,147, Cl. 514-252.000.
Kuhn, David George: *See*—
Furch, Joseph Augustus; Kuhn, David George; and Hunt, David Allen, 5,646,276, Cl. 544-224.000.
Kuhn, Walter: *See*—
Rowe, Gerald; Kuhn, Walter; Zippel, Christof; and Reichenmiller, Michael, 5,645,406, Cl. 417-273.000.
Kuhr, Hans-Juergen: *See*—
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Kuijk, Maarten; Heremans, Paul; Vounckx, Roger; and Borghs, Gustaaf, to Interuniversitair Micro-Elektronica Centrum vzw. Differential pair of optical thyristors used as an optoelectronic transceiver. 5,646,760, Cl. 359-152.000.
Kuipers, Kurt J.: *See*—
Henniges, Bruce D.; Kuipers, Kurt J.; and Huyser, Richard F., 5,645,540, Cl. 604-320.000.
Kulakowski, John Edward: *See*—
Dimitri, Kamal Emile; Kulakowski, John Edward; and Means, Rodney Jerome, 5,646,918, Cl. 369-34.000.
Kules, Nick M.: *See*—
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Kulicke and Soffa Investments, Inc.: *See*—
Toner, Eugene Michael; and Guez, Avner, 5,645,210, Cl. 228-102.000.
Kumada, Shuichi: *See*—
Mitsuhashi, Shunya; and Kumada, Shuichi, 5,647,020, Cl. 382-162.000.
Kumagai, Hiroshi; and Toyoda, Kouichi, to Rikagaku Kenkyusho. Method and apparatus for preparing crystalline thin-films for solid-state lasers. 5,645,638, Cl. 117-89.000.
Kumagai, Kiyoshi, to Canon Kabushiki Kaisha. Recording and/or reproducing apparatus having clutch mechanism. 5,645,243, Cl. 242-356.500.
Kumai, Seisaku: *See*—
Maekawa, Takashige; Osawa, Ryoko; Kamata, Satoshi; and Kumai, Seisaku, 5,646,222, Cl. 526-243.000.
Kumar, Ajith Kuttannair, to General Electric Company. AC locomotive operation with DC bus current sensor failure. 5,646,510, Cl. 322-16.000.
Kumar, Virendra: *See*—
Kruse, Lawrence I.; Kumar, Virendra; Chang, An-Chih; DeHaven-Hudkins, Diane L.; Farrar, John J.; and Maycock, Alan L., 5,646,151, Cl. 514-255.000.
Kume, Masahiro: *See*—
Naito, Hiroki; and Kume, Masahiro, 5,646,953, Cl. 372-46.000.
Kumozaki, Kiyomi: *See*—
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Kuo, Da-Chi: *See*—
Hsu, Ching-Hsiang; and Kuo, Da-Chi, 5,646,431, Cl. 257-342.000.
Kuo, James R., to National Semiconductor Corporation. Charge pump with near zero offset current. 5,646,563, Cl. 327-157.000.
Kurachi, Mitunori: *See*—
Hisamori, Youichi; Kurachi, Mitunori; Taniguchi, Masaaki; Noma, Tutomu; Kohashi, Masao; and Sumida, Yoshihiro, 5,644,840, Cl. 29-890.043.
Kurahara, Takayuki: *See*—
Koga, Hirohisa; Hanjo, Manabu; and Kurahara, Takayuki, 5,645,241, Cl. 242-336.000.
Kurashige, Masafumi, to Sony Corporation. Special effects video processor. 5,646,697, Cl. 348-459.000.
Kurauchi, Toshio: *See*—
Usuki, Arimitsu; Takeuchi, Hisato; Tatsuda, Narihito; Okada, Akane; Kurauchi, Toshio; Tanaka, Hiromitsu; Okayama, Shinobu; Tojima, Kazuo; Fukui, Akio; and Okamoto, Toshiro, 5,646,284, Cl. 546-88.000.
Kureha Chemical Industry Co., Ltd.: *See*—
Hoshi, Hajime; Sunagawa, Kazuhiko; and Watanabe, Takeo, 5,646,291, Cl. 548-228.000.
Kuribayashi, Hiroki; and Yokogawa, Fumihiko, to Pioneer Electronic Corporation. Optical disk, tracking error signal generating apparatus, and tracking control apparatus. 5,646,932, Cl. 369-275.300.
Kuribayashi, Ryosei: *See*—
Chanda, Jyotirmay; and Kuribayashi, Ryosei, 5,645,587, Cl. 623-11.000.
Kuroda, Tadashi; and Torii, Takashi, to Matsushita Electric Industrial Co., Ltd. Cassette loading apparatus. 5,646,799, Cl. 360-96.600.
Kurth, Roland: *See*—
Braatz, Reinhard; Kurth, Roland; Menkel-Conen, Elke; Rettenmaier, Hansjoerg; Friedrich, Thomas; and Subkowski, Thomas, 5,645,832, Cl. 424-94.600.
Kurtz, Andrew F.; Debesis, John R.; and Sarraf, Sanwal P., to Eastman Kodak Company. Beamsplitter for laser multi-beam printers and recorders. 5,646,786, Cl. 359-637.000.
Kurtz, Robert J.; and Fuller, William D., to Bioresearch, Inc. Specific eatable taste modifiers. 5,646,122, Cl. 514-19.000.
Kusch, Hans-Jürgen; Ruf, Bernd; and Stellberger, Rudi, to Heidelberger Druck maschinen AG. Numbering box. 5,644,980, Cl. 101-72.000.
Kusch, Hans-Jürgen: *See*—
Herrmann, Bernd; and Kusch, Hans-Jürgen, 5,644,983, Cl. 101-218.000.
Kusen, Michael, to Mercedes-Benz AG. Method for applying a viscous material edge strip to a corner area surface. 5,645,667, Cl. 156-108.000.
Kussmaul Electronics Company, Inc.: *See*—
Nugent, Thomas H., Jr.; and Kussmaul, Ernest A., 5,645,439, Cl. 439-159.000.
Kussmaul, Ernest A.: *See*—
Nugent, Thomas H., Jr.; and Kussmaul, Ernest A., 5,645,439, Cl. 439-159.000.
Kustka, George John: *See*—
Botsford, Nelson, III; Kustka, George John; and Mailhot, John Norman, 5,646,687, Cl. 348-402.000.
Kusumi, Yuki: *See*—
Yasutake, Kouichi; Haruna, Syusuke; Kusumi, Yuki; Sekiguchi, Takuya; and Hishida, Toshihiro, 5,644,936, Cl. 68-12.020.

Kuttner, Franz, to Siemens Aktiengesellschaft. Analog/digital converter. 5,646,622, Cl. 341-172.000.
Kuzma, Janusz A., to Cochlear Ltd. Cochlear electrode implant assembly with positioning system therefor. 5,645,585, Cl. 623-10.000.
Kvaerner Pulping Technologies AB: *See*—
Wimby, Martin; and Hanson, Charlotta, 5,644,996, Cl. 110-245.000.
KVP Systems, Inc.: *See*—
Palmaer, Karl V.; and Palmaer, Eric K., 5,645,160, Cl. 198-853.000.
Kwangju Electronics Co., Ltd.: *See*—
Kang, Tae Ho; and Yun, Dae-ryong, 5,644,973, Cl. 99-289.00R.
Kwarta, Brian J., to Eastman Kodak Company. Uniformity correction and threshold or halftoning conversion unit and method. 5,647,026, Cl. 382-270.000.
Kyle, Robert J. S.: *See*—
Frank, Steven N.; Belcher, James F.; Stanford, Charles E.; Owen, Robert A.; and Kyle, Robert J. S., 5,646,066, Cl. 437-180.000.
Kyocera Corporation: *See*—
Fukuoka, Shuichi; Kamigaki, Kousei; Uchi, Kazutaka; and Omitsuka, Katsuhiko, 5,645,753, Cl. 252-62.9PZ.
Kyochika, Naoki: *See*—
Yoshida, Akira; Kiuchi, Kazuhiko; Kyochika, Naoki; Mamba, Akio; and Funada, Hitoshi, 5,646,199, Cl. 123-139.000.
Kyowa Hakko Kogyo Co., Ltd.: *See*—
Suzuki, Fumio; Nakasato, Yoshisuke; Tsumuki, Hiroshi; Sato, Soichiro; Tamura, Tadafumi; and Nakajima, Hiroshi, 5,646,283, Cl. 546-61.000.
Kyrtsos, Christos T.: *See*—
Gudat, Adam J.; Kleimenhagen, Karl W.; Christensen, Dana A.; Kemner, Carl A.; Bradbury, Walter J.; Koehrsen, Craig L.; Kyrtsos, Christos T.; Lay, Norman K.; Peterson, Joel L.; Schmidt, Larry E.; Stafford, Darrell E.; and Weinbeck, Louis J., 5,646,843, Cl. 364-424.012.
Gudat, Adam J.; Whittaker, William L.; Kleimenhagen, Karl W.; Christensen, Dana A.; Kemner, Carl A.; Bradbury, Walter J.; Koehrsen, Craig L.; Kyrtsos, Christos T.; Peterson, Joel L.; Schmidt, Larry E.; Stafford, Darrell E.; and Weinbeck, Louis J., 5,646,845, Cl. 364-424.051.
Kyser, David F.: *See*—
Krivokapic, Zoran; Heavlin, William D.; and Kyser, David F., 5,646,870, Cl. 364-578.000.
L.A. Gear, Inc.: *See*—
Bemis, Jon L., 5,644,858, Cl. 36-137.000.
L. R. Nelson Corporation: *See*—
Heren, Lawrence P.; Hayes, Jerry R.; and Kruer, Thomas R., 5,645,218, Cl. 239-242.000.
La Jolla Cancer Research Foundation: *See*—
Sawada, Ritsuko; Lowe, John B.; and Fukuda, Minoru, 5,646,248, Cl. 530-350.000.
Laakmann, Peter; Zhang, Yong Fang; and Hayes, Keith L., to Synrad, Inc. Laser scanner. 5,646,765, Cl. 359-202.000.
Label-Aire, Inc.: *See*—
Crankshaw, Michael; and Akerboom, William F., 5,645,669, Cl. 156-212.000.
Labourie, Christine: *See*—
Gaumont-Goarin, Elisabeth; Labourie, Christine; and Emery, Jean-Yves, 5,646,064, Cl. 437-133.000.
Labroo, Virender M.: *See*—
Baindur, Nand; and Labroo, Virender M., 5,646,285, Cl. 546-298.000.
Lacasse, Maurice. Cantilever lift assembly for stationary small aircraft. 5,645,388, Cl. 414-227.000.
Lacout, Jean-Louis: *See*—
Carpena, Joëlle; and Lacout, Jean-Louis, 5,646,972, Cl. 376-272.000.
Lacrosse, Frank: *See*—
Greiner, Wally H.; Ujc, Harold; and Lacrosse, Frank, 5,646,860, Cl. 364-468.240.
Lacy, Jonathan Ernest; and Embleton, Jonathan Kenneth, to R. P. Scherer Corporation. Delivery systems for hydrophobic drugs. 5,645,856, Cl. 424-455.000.
Laczko, Frank L., Sr.: *See*—
Hashimoto, Masashi; and Laczko, Frank L., Sr., 5,646,688, Cl. 348-402.000.
Ladouceur, Harold A.; and Muller, Rudolf R. M., to Multifastener Corporation. Method of forming electrical connection. 5,644,830, Cl. 29-432.200.
Lagarde, Eric, to SOMFY. Device for winding the suspension cord of blinds. 5,645,118, Cl. 160-170.000.
Lagergren, Richard Edward: *See*—
Boigenzahn, Jeffrey Fred; Bomhorst, Randy Joseph; Goodman, Dale Ernest; and Lagergren, Richard Edward, 5,646,801, Cl. 360-97.010.
Lahaussois, Pierre; and Strohl, Margaret T., to Strohl, Dale. Dispensible, disposable reversible forearm protector. 5,644,793, Cl. 2-59.000.
Laiche, Eric; Wheat, Chris; and Ruggles, Roy L., to Roadmaster Corporation. Hobby horse with protective sheath. 5,645,489, Cl. 472-103.000.
Lajoie, M. Stephen; and Winston, Anthony E., to Church & Dwight Co., Inc. Ultrafine sodium bicarbonate powder. 5,645,840, Cl. 424-400.000.
Lak, Tibor I.; Petrilla, Steve P.; and Lozano, Martin E., to Rockwell International Corporation. Liquid propellant densification. 5,644,920, Cl. 62-47.100.
Lake, Philip: *See*—
Harfeldt, Elisabeth; Lake, Philip; Nottage, Barbara; and Ostberg, Lars G., 5,646,041, Cl. 435-339.100.
Lakshmikumar, Kadaba R.; Nagaraj, Krishnaswamy; Rich, David Arthur; and Tham, Khong-Meng, to Lucent Technologies Inc. PTAT current source. 5,646,518, Cl. 323-316.000.
Lamb, James A.: *See*—
Leonaggeo, Patricia; and Lamb, James A., 5,646,605, Cl. 340-825.310.
Lambda Technologies, Inc.: *See*—
Fathi, Zakaryae; Garard, Richard S.; and Wei, Jianghua, 5,644,837, Cl. 29-832.000.
Lambert, Lewis H., Jr., to XOMA Corporation. Anti-protozoan methods. 5,646,114, Cl. 514-12.000.
Lamberts, Wilhelm: *See*—
Sommerfeld, Claus-Dieter; Lamberts, Wilhelm; Bielefeldt, Dietmar; Marhold, Albrecht; and Negele, Michael, 5,646,196, Cl. 521-131.000.
Lamminen, Jaakko: *See*—
Lampinen, Markku; Viitanen, Minna; Lamminen, Jaakko; and Fomino, Marina, 5,645,952, Cl. 429-25.000.
Lamort, Jean Pierre, to E & M Lamort. Rotor-equipped cylindrical screens. 5,645,724, Cl. 210-415.000.
Lampert, Norman Roger: *See*—
Anderson, Jerry Max; Cammons, Ray R.; Driscoll, Elizabeth J.; and Lampert, Norman Roger, 5,647,043, Cl. 385-78.000.
Lampinen, Markku; Viitanen, Minna; Lamminen, Jaakko; and Fomino, Marina, to Lampinen, Markku. Method and apparatus for charging and discharging electric energy. 5,645,952, Cl. 429-25.000.
Lamson, Arthur: *See*—
Naiman, Charles S.; and Lamson, Arthur, 5,645,740, Cl. 219-121.680.
Landers, Samuel Patrick: *See*—
Attinello, John Steven; and Landers, Samuel Patrick, 5,645,660, Cl. 152-523.000.
Landis, George; and Courtney, Phil. Golf glove. 5,644,795, Cl. 2-161.300.
Lang, Steven L.: *See*—
Stoner, David J.; Lang, Steven L.; Sulman, Paul E.; Lawrence, David C.; Ellis, Richard; and Lopez, Fernando, 5,645,379, Cl. 406-67.000.
Laning, Raymond C.: *See*—
Harlow, Albert L., Jr.; Bechtold, Richard E.; Parker, David; Merat, Francis L.; Podany, Mark; and Laning, Raymond C., 5,645,884, Cl. 427-8.000.
Lano, Roberto: *See*—
Cadeddu, Roberto; Calvani, Riccardo; Ferraris, Giuseppe; Lano, Roberto; and Vezzoni, Emilio, 5,647,035, Cl. 385-24.000.
Lanz, Melchior, to Franke Inc. Method for forming a seamless stainless steel sink bowl with a grid ledge and product. 5,644,943, Cl. 72-348.000.
Lanzarotti, Ennio; Mantovani, Marisa; Prino, Giuseppe; Porta, Roberto; Armando, Cedro; and Moltrasio, Danilo, to Crinos Industria Farmacobiologica S.p.A. Treatment of cardiac ischemia by administration of a fraction of partially hydrolyzed DNA. 5,646,127, Cl. 514-44.000.
Lanzarotti, Ennio; Mantovani, Marisa; Prino, Giuseppe; Porta, Roberto; Cedro, Armando; and Moltrasio, Danilo, to Crinos Industria Farmacobiologica S.p.A. Process producing lower molecular weight range oligodeoxyribonucleotides. 5,646,268, Cl. 536-25.400.
LaPlace, Carl J.: *See*—
Trainor, John J.; and LaPlace, Carl J., 5,646,610, Cl. 340-825.790.
LaPlante, Mark J.: *See*—
Fasano, Benjamin Vito; LaPlante, Mark J.; Long, David Clifford; O'Neil, Keith Colin; Peterson, Brenda Lee; Pomerantz, Glenn A.; and Popp, Timothy Titus, 5,645,673, Cl. 156-89.000.
Lapras, Valérie; Gidon, Pierre; and Pouteau, Patrick, to Commissariat a l'Energie Atomique. Device for checking the position and/or the focusing of a focused light beam. 5,647,031, Cl. 385-14.000.
Laptewicz, Joseph E., Jr.: *See*—
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Lark, George: *See*—
Young, William O., Jr.; Surka, Ebun; and Lark, George, 5,645,207, Cl. 226-1.000.
Larsen, W. Bruce, to Owens-Brockway Plastic Products Inc. Blow molding apparatus having a cylindrical hub. 5,645,870, Cl. 425-182.000.
Larson, David K.: *See*—
Kesterman, James E.; Anderson, Paul B.; Wood, Chester W.; Dalhart, Mark D.; and Larson, David K., 5,645,115, Cl. 141-206.000.
Larsson, Lars-Gunnar: *See*—
Hammarberg, Eva Maria; Johansson, Lars George; Larsson, Lars-Gunnar; Norén, Rolf; Renyi, Lucy Anna; Ross, Svante Bertil; Sohn, Daniel Dungan; Svensson, Björn Eric; and Thorberg, Seth-Olov, 5,646,309, Cl. 549-404.000.
Lasker, Brent: *See*—
Lott, Timothy J.; Morrison, Christine J.; Reiss, Errol; Lasker, Brent; and Zakroff, Sandra, 5,645,992, Cl. 435-6.000.
Lasserve, Jacques Tournier: *See*—
Gourlia, Jean-Paul; Lasserve, Jacques Tournier; Bihn-Cirlot, Georges; and Vandermeersch, Jean, 5,645,692, Cl. 196-46.000.
Latimer, Lee Hamilton: *See*—
Burns, Elizabeth Gertrude; McGarry, Lynda Woody; Proehl, Gary Stephen; and Latimer, Lee Hamilton, 5,646,327, Cl. 558-452.000.
Latka, David Stanley, to United Technologies Automotive, Inc. Automatic resynchronization of transmitter in the event of corrupted memory. 5,646,996, Cl. 380-21.000.
Lau, Klaus J.: *See*—
Krautschneider, Wolfgang; and Lau, Klaus J., 5,646,883, Cl. 365-156.000.

Lau, Liming: *See*—
Littmann, Laszlo; Lau, Liming; and Amirana, Omar, 5,645,064, Cl. 128-642.000.

LAU Technologies: *See*—
D'Entremont, William; Mesher, Mark; O'Dea, Michael; and Waite, Myron, 5,646,388, Cl. 235-380.000.

Lauener Engineering, Ltd.: *See*—
Luginbühl, Erich; Witschi, Marcel; and Zürcher, Ernst, 5,645,122, Cl. 164-479.000.
Luginbühl, Erich; Meyer, Michel; Roder, Rudolf; Witschi, Marcel; and Zürcher, Ernst, 5,645,159, Cl. 198-838.000.

Laughlin, George Eric. Workglove rake. 5,644,796, Cl. 2-161.600.

Laughlin, Richard H. Apparatus for switching optical signals and method of operation. 5,647,033, Cl. 385-16.000.

Laule, Michael: *See*—
Stangl, Karl; Laule, Michael; and Heinze, Roland, 5,645,575, Cl. 607-17.000.

Laurens, Judith Elizabeth: *See*—
Bruce, William C., Jr.; Law, Wai-On; Rudnick, Elizabeth Marie; and Laurens, Judith Elizabeth, 5,646,949, Cl. 371-27.000.

Laurenti, Susan V.: *See*—
Matsen, Marc R.; Montgomery, Donald M.; and Laurenti, Susan V., 5,645,747, Cl. 219-645.000.

Laurin, Dean: *See*—
Woo, Lecon; Lo, Ying; Ling, Michael T. K.; Laurin, Dean; Gleason, Byron; Buan, Lillian A.; and Johnston, William D., 5,645,904, Cl. 428-35.700.

Laus, Reiner: *See*—
Ruegg, Curtis L.; Rivas, Alberto; Laus, Reiner; and Engleman, Edgar G., 5,646,251, Cl. 530-350.000.

Lausmann, Peter: *See*—
Wiltzer, Karl-Heinz; Lausmann, Peter; and Ebert, Baldur, 5,646,191, Cl. 521-49.800.

Laut, Bernhard; Mesters, Peter; and Rixen, Robert, to Karl Löffler GmbH & Company KG. Process for cleaning and disinfecting devices in the brewing industry. 5,645,648, Cl. 134-2.000.

LaVallie, Edward R.: *See*—
McCoy, John; DiBlasio-Smith, Elizabeth; Grant, Kathleen; and LaVallie, Edward R., 5,646,016, Cl. 435-69.700.

Laverick, Timothy M.: *See*—
Bayruns, Robert J.; and Laverick, Timothy M., 5,646,573, Cl. 330-59.000.

Law, Wai-On: *See*—
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Matsunaga, Tadao; Matsushita, Takaya; and Hattori, Kei, to Tomoegawa Paper Co., Ltd.; and Kabushiki Kaisha Toshiba. Electrostatic chucking device. 5,645,921, Cl. 428-209.000.
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Fujio, Katsuharu; Sano, Kiyoshi; Hase, Syouzou; Morimoto, Takashi; and Yamamoto, Shuichi, 5,645,408, Cl. 418-55.400.
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Matties, Bernhard; Nitschke, Werner; Schumacher, Hartmut; Oswald, Klaus; Crispin, Norbert; and Weber, Werner, to Robert Bosch GmbH. Electronic safety device for vehicle occupants including a memory device for storing fault conditions and associated control commands. 5,646,454, Cl. 307-10.100.
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Maudie, Theresa; and Monk, David J., to Motorola, Inc. Electronic sensor assembly having metal interconnections isolated from adverse media. 5,646,072, Cl. 437-228.000.
Maurer, Ruprecht; Timtner, Karlheinz; and Jackwerth, Siegfried, to Ringspann GmbH. Freewheel-retainer ring with centrifugal force takeoff. 5,645,149, Cl. 192-45.100.
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Mayo, Michael A., to PPG Industries, Inc. Coating composition containing polyester polymers with terminal carbamate groups and polymeric polyol derived from ethylenically unsaturated monomers. 5,646,214, Cl. 525-10.000.
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Chang, Jeffrey C., 5,645,963, Cl. 430-7.000.
Crandall, Michael D., 5,645,938, Cl. 428-411.100.
Cronk, Bryon J.; Hutchinson, Ted F.; Lutz, Dale R.; MacDougall, Trevor W.; and Onstott, James R., 5,645,622, Cl. 65-378.000.
Debe, Mark K., 5,645,929, Cl. 428-323.000.
Erickson, Dwight D.; Monroe, Larry D.; Wood, Thomas E.; and Wilson, David M., 5,645,619, Cl. 51-309.000.
Gopalakrishna, Haregoppa S.; and Nayar, Satinder K., 5,645,681, Cl. 156-580.200.
Griffith, Neil J.; Lemke, James U.; and Crosby, James, 5,646,806, Cl. 360-130.220.
Janssen, Jeffrey R.; Joseph, Eugene G.; and Winslow, Louis E., 5,645,946, Cl. 428-521.000.
Monroe, Larry D.; and Wood, Thomas E., 5,645,618, Cl. 51-309.000.
Perkins, Douglas S., 5,646,370, Cl. 174-51.000.
Strecker, Darlene N., 5,645,471, Cl. 451-59.000.

Minns, H. Gordon: *See—*
Kenley, Rodney S.; Matthews, Dawn; Treu, Dennis M.; Peter, Frederick H., Jr.; Feldsein, Thomas M.; and Minns, H. Gordon, 5,645,734, Cl. 210-805.000.

Minor, Barbara Haviland; and Shealy, Glenn Scott, to Du Pont de Nemours, E. I., and Company. Compositions including a hexafluoroprpoane and dimethyl ether for heat transfer. 5,645,754, Cl. 252-67.000.

Misaizu, Setsuo; Itou, Sunao; and Tsuda, Takashi, to Fujitsu Limited. Optical transmitter and laser diode module for use in the optical transmitter. 5,646,763, Cl. 359-187.000.

Miska, Stanley R.; Courtney, Daniel T.; and Hermann, Kenneth W., to Schlegel Corporation. Segmented shielding structure for connector panels. 5,646,369, Cl. 174-35.0GC.

Misra, Sudhan S.; and Wagner, Franz, to C & D Charter Power Systems, Inc. Lead-acid battery having a cover extending beyond a jar. 5,645,957, Cl. 429-163.000.

Mita Industrial Co., Ltd.: *See—*
Kajitani, Tetsuji; Hikosaka, Ariyoshi; Azumai, Hideo; and Iwatsubo, Satoshi, 5,646,745, Cl. 358-448.000.

Mitac International Corp.: *See—*
Sun, Chen-Ming, 5,646,821, Cl. 361-683.000.

Mitch, Charles H.: *See—*
Alt, Charles A.; Merritt, Leander; Rhodes, Gary A.; Robey, Roger L.; Van Meter, Eldon E.; Ward, John S.; and Mitch, Charles H., 5,646,289, Cl. 548-110.000.

Mitchell, Bruce W.; and Isfeld, Mark S., to 3COM Corporation. Driver for tri-state bus. 5,646,553, Cl. 326-86.000.

Mitchell, Donald K.; and Thorburn, William G., to MicroE, Inc. Relative movement detecting apparatus using a detector positioned in a region of natural interference. 5,646,730, Cl. 356-356.000.

Mitchell, Joel C.; and Marshall, Kim A., to Leco Corporation. Atmospheric seal for glow discharge analytical instrument. 5,646,726, Cl. 356-311.000.
Mitchell, Paul L.: *See*—
Stewart, Robert T.; and Mitchell, Paul L., 5,644,841, Cl. 29-890.046.
Mitchell, Robert E.: *See*—
MacLennan, Charles D.; Palfy, Nick; Savard, Laurier; and Mitchell, Robert E., 5,644,965, Cl. 83-842.000.
Mitchell, Roger E.: *See*—
Daffer, Steven J.; Mitchell, Roger E.; and Rouzegar, Mirsaeed, 5,645,578, Cl. 607-91.000.
Mitchell, Terry: *See*—
Backer, Todd; Calderon, Arthur; Hsie, Wei Cheng; Wood, William P.; and Mitchell, Terry, 5,646,804, Cl. 360-113.000.
Mitsubishi Chemical Corporation: *See*—
Matsuo, Fumiyuki; Kanazawa, Daisuke; Sasaki, Mitsuru; Matsubara, Shinichi; Higashino, Katsuhiko; and Yokoo, Toshiaki, 5,645,969, Cl. 430-165.000.
Mitsubishi Corporation: *See*—
Saito, Makoto, 5,646,999, Cl. 380-25.000.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Adachi, Katsumi, 5,646,599, Cl. 340-648.000.
Aizawa, Jyun-ichi; Nakagawa, Kunihiko; Nakao, Hiroshi; Ezaki, Hitoshi; and Sunaga, Kouhei, 5,645,362, Cl. 400-642.000.
Akamatsu, Masahiko; Murakami, Shotaro; and Hosokawa, Yasuhiko, 5,646,511, Cl. 323-207.000.
Hashizume, Takeshi, 5,646,422, Cl. 257-48.000.
Higuchi, Noriaki, 5,645,864, Cl. 425-116.000.
Hisamori, Youichi; Kurachi, Mitunori; Taniguchi, Masaaki; Noma, Tutomu; Kohashi, Masao; and Sumida, Yoshihiro, 5,644,840, Cl. 29-890.043.
Iwasaki, Yasuo, 5,645,461, Cl. 445-11.000.
Iwata, Yuji; Nakasu, Jiro; and Takemoto, Makoto, 5,646,649, Cl. 345-173.000.
Masuda, Shinichi; and Segawa, Hiroshi, 5,646,892, Cl. 365-189.050.
Masumoto, Toshikazu; and Takahama, Shinobu, 5,646,445, Cl. 257-723.000.
Matsuo, Ryuichi; and Yamamoto, Makoto, 5,646,885, Cl. 365-185.050.
Morinaka, Hiroyuki, 5,646,555, Cl. 326-93.000.
Nagano, Tetsuaki; and Tsutsumi, Seisuke, 5,646,492, Cl. 318-432.000.
Narimatsu, Koichiro, 5,646,452, Cl. 257-797.000.
Tobita, Yoichi, 5,646,516, Cl. 323-313.000.
Tsukude, Masaki; and Arimoto, Kazutami, 5,646,900, Cl. 365-205.000.
Yorita, Mitsumasa; Toya, Hideaki; Hasegawa, Hiroshi; and Koyama, Kenichi, 5,646,386, Cl. 218-129.000.
Mitsubishi Electric Engineering Co., Ltd.: *See*—
Masuda, Shinichi; and Segawa, Hiroshi, 5,646,892, Cl. 365-189.050.
Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See*—
Sano, Yoshiaki, 5,645,326, Cl. 303-146.000.
Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Koura, Kazuyuki; Tanaka, Jiro; and Tsugawa, Takuji, 5,644,982, Cl. 101-216.000.
Mitsubishi Materials Corporation: *See*—
Ogi, Katumi; Yonezawa, Tadashi; Atsuki, Tsutomu; and Endo, Keiko, 5,645,634, Cl. 106-287.190.
Mitsubishi Pencil Kabushiki Kaisha: *See*—
Kitazawa, Katsunori; and Aoki, Kazutaka, 5,645,629, Cl. 106-31.110.
Mitsuboshi Belting Ltd.: *See*—
Kitano, Kimikazu; Kanda, Takao; Henmi, Takao; Makino, Futoshi; and Sato, Junji, 5,645,157, Cl. 198-811.000.
Mitsuhashi, Kenichiro: *See*—
Ueno, Koichi; and Mitsuhashi, Kenichiro, 5,644,931, Cl. 62-612.000.
Mitsuhashi, Shunya; and Kumada, Shuichi, to Canon Kabushiki Kaisha. Recording apparatus. 5,647,020, Cl. 382-162.000.
Mitsui Toatsu Chemicals, Inc.: *See*—
Ikeda, Kan; Obuchi, Shoji; and Ohta, Masahiro, 5,646,238, Cl. 528-361.000.
Oguchi, Takahisa; Umehara, Hideki; Sugimoto, Kenichi; Oi, Ryu; and Itoh, Hisato, 5,646,273, Cl. 540-122.000.
Oishi, Tetsuya; Suzuki, Jin; Ohkawa, Kouhei; and Ono, Hiroshi, 5,646,240, Cl. 528-403.000.
Mitsumoto, Kinya: *See*—
Yukutake, Seigou; Iwamura, Masahiro; Mitsumoto, Kinya; Akioka, Takashi; and Akiyama, Noboru, 5,646,897, Cl. 365-205.000.
Mitsushima, Susumu; Sugiyama, Hayami; Nakagawa, Hitoshi; Ogita, Hiromitsu; Yamakuni, Minoru; Kawahara, Kenichi; Kawamura, Shigeyuki; and Tsuji, Kazuhiro, to Shinko Electric Co., Ltd. Thermal-transfer-type color printer having a feed roller with micro projections. 5,645,361, Cl. 400-636.000.
Mitsutoyo Kiko, Co., Ltd.: *See*—
Funahashi, Noritaka, 5,645,872, Cl. 425-380.000.
Mittelstadt, Laurie S.: *See*—
Witt, Klaus E.; Kaltenbach, Patrick; Bek, Fritz; Swedberg, Sally A.; and Mittelstadt, Laurie S., 5,645,702, Cl. 204-501.000.
Mittenthal, Lothrop, to Litton Systems, Inc. Nonlinear dynamic substitution devices and methods for block substitutions employing coset decompositions and direct geometric generation. 5,647,001, Cl. 380-37.000.
Miura, Kazunori: *See*—
Ochiai, Ryoichi; Miura, Kazunori; Sasaki, Seimi; and Nakagawa, Goji, 5,647,042, Cl. 385-56.000.
Miwa, Seiji: *See*—
Tanaka, Hisashi; Shirota, Yuichi; Sugi, Hikaru; Konaka, Masami; Yamamoto, Kazushi; Miwa, Seiji; and Miyata, Manabu, 5,644,929, Cl. 62-406.000.
Miyai, Takeshi: *See*—
Mohri, Masahide; Tanaka, Shinichiro; and Miyai, Takeshi, 5,646,078, Cl. 501-98.000.
Miyakawa, Teruyuki: *See*—
Nagata, Atsushi; Iwasaki, Haruo; Shimizu, Kazuhiko; Tanba, Yoshinori; Abe, Takafumi; Imai, Tatsuo; Kikuchi, Akihiro; and Miyakawa, Teruyuki, 5,646,603, Cl. 340-825.250.
Miyakoshi, Koji: *See*—
Hirayama, Yasuo; Sato, Hidetoshi; Ushiyama, Keiji; and Miyakoshi, Koji, 5,645,457, Cl. 439-801.000.
Miyamoto, Hidenobu, to NEC Corporation. Etching method for etching a semiconductor substrate having a silicide layer and a polysilicon layer. 5,645,683, Cl. 156-643.100.
Miyamoto, Shuji: *See*—
Hada, Kunihiko; Mori, Yasutomo; Orihara, Motoi; and Miyamoto, Shuji, 5,646,088, Cl. 503-209.000.
Miyamoto, Takashi: *See*—
Matsuo, Ryukichi; Yoshihara, Toshiaki; Miyamoto, Takashi; and Gamo, Mika, 5,645,923, Cl. 428-216.000.
Miyamoto, Takeshi: *See*—
Hasegawa, Toshiyuki; Nozaki, Shinya; and Miyamoto, Takeshi, 5,645,225, Cl. 239-533.120.
Miyamoto, Tsutomu: *See*—
Sakazume, Suehiro; Miyamoto, Tsutomu; and Shimizu, Hiroshi, 5,645,933, Cl. 442-290.000.
Miyamoto, Yasunori: *See*—
Matsuda, Ohki; and Miyamoto, Yasunori, 5,647,034, Cl. 385-16.000.
Miyamura, Tadashi: *See*—
Mabuchi, Hiroshi; Yoshiki, Takahiro; Komachi, Kyoichi; and Miyamura, Tadashi, 5,645,644, Cl. 118-723.0MW.
Miyano, Masateru: *See*—
Abood, Norman Anthony; Manning, Robert Everett; and Miyano, Masateru, 5,646,183, Cl. 514-538.000.
Miyasaka, Motohiro: *See*—
Tokushima, Hidekazu; Miyasaka, Motohiro; Aizawa, Michihiro; Shikata, Hideo; and Nii, Katsutoshi, 5,645,355, Cl. 384-133.000.
Miyata, Manabu: *See*—
Ohno, Yasuhiro; and Miyata, Manabu, 5,646,904, Cl. 365-233.000.
Tanaka, Hisashi; Shirota, Yuichi; Sugi, Hikaru; Konaka, Masami; Yamamoto, Kazushi; Miwa, Seiji; and Miyata, Manabu, 5,644,929, Cl. 62-406.000.
Miyazaki, Kenji: *See*—
Kobayashi, Tomoyuki; Miyazaki, Kenji; and Nakamura, Masanori, 5,646,194, Cl. 521-79.000.
Miyazawa, Hideo: *See*—
Shimizu, Manabu; and Miyazawa, Hideo, 5,645,436, Cl. 439-108.000.
Miyazawa, Yasuhiro; Takanohashi, Daisuke; and Uda, Makoto, to Yazaki Corporation. Magnetic element switch. 5,646,587, Cl. 335-205.000.
Miyoshi, Sokichi; Kanai, Mikio; Yamaguchi, Akira; and Ogawa, Masaya, to Pioneer Electronic Corporation. Carrier system for carrying mediums. 5,646,917, Cl. 369-34.000.
Mizobe, Hoyo: *See*—
Yamada, Nobuaki; Kozaki, Shuichi; Mizobe, Hoyo; Yoshida, Masahiko; and Suzuki, Kenji, 5,645,760, Cl. 252-299.660.
Mizuno, Osamu; Nakamura, Tohru; Aikoh, Hideki; Tomita, Hironori; and Mohri, Masanari, to Matsushita Electric Industrial Co., Ltd. Adapter and adapter system for playback of a compact disc and a mini disc in an optical disc apparatus. 5,646,934, Cl. 369-290.000.
Mizutome, Atsushi: *See*—
Inoue, Hiroshi; Mizutome, Atsushi; and Enomoto, Aiko, 5,646,646, Cl. 345-123.000.
Mleczko, Alexander E. Variable drive transmission. 5,645,506, Cl. 475-257.000.
Moaddeb, Shawn; and Helland, John R., to Pacesetter, Inc. Implantable medical device lead assembly having high efficiency, flexible electrode head. 5,645,580, Cl. 607-122.000.
Mobil Oil Corporation: *See*—
Yan, Tsoung Y., 5,645,713, Cl. 208-308.000.
Mobley, Larry Wayne, to Dow Chemical Company, The. Catalyst for polyurethane carpet backings and carpets prepared therewith. 5,646,195, Cl. 521-121.000.
Mochizuki, Amane; Ishii, Michie; Maeda, Masako; and Higashi, Kazumi, to Nitto Denko Corporation. Heat-resistant photoresist composition and negative-type pattern formation method. 5,645,979, Cl. 430-325.000.
Modavis, Robert Adam; and Cook, Thomas A., to Corning Incorporated. Tunable optical coupler using photosensitive glass. 5,647,040, Cl. 385-42.000.
Modern Muzzleloading, Inc.: *See*—
Knight, William A., 5,644,861, Cl. 42-51.000.
Moeltner, Hermann; and Staat, Karlhans. Method of and roll stand for diagonal rolling of tubes. 5,644,938, Cl. 72-96.000.
Mohan, Nookala Satya Krishna: *See*—
Farhangi, Hassan; and Mohan, Nookala Satya Krishna, 5,647,008, Cl. 381-119.000.
Mohar, Donald A. Multiple implement equipment boom. 5,645,179, Cl. 212-180.000.
Mohr, Andreas: *See*—

Damm, Klaus; Mages, Walter; and Mohr, Andreas, 5,645,186, Cl. 411-412.000.
Mohr, Kurt; and Seuser, Ulrich, to Lucas Industries public limited company. Electronically controllable braking system for ground vehicles and method for operating same. 5,645,143, Cl. 188-72.100.
Mohri, Masahide; Tanaka, Shinichiro; and Miyai, Takeshi, to Sumitomo Chemical Company, Limited. Aluminum nitride powder. 5,646,078, Cl. 501-98.000.
Mohri, Masanari: *See*—
Mizuno, Osamu; Nakamura, Tohru; Aikoh, Hideki; Tomita, Hironori; and Mohri, Masanari, 5,646,934, Cl. 369-290.000.
Mohrs, Klaus-Helmut: *See*—
Müller, Ulrich; Connell, Richard; Goldmann, Siegfried; Mohrs, Klaus-Helmut; Raddatz, Siegfried; Matzke, Michael; Grützmann, Rudi; Beuck, Martin; Wohlfeil, Stefan; Bischoff, Hilmar; and Denner, Dirk, 5,646,162, Cl. 514-311.000.
Mold-Masters Limited: *See*—
Villringer, Egan, 5,644,835, Cl. 29-611.000.
Molecular Dynamics, Inc.: *See*—
Kain, Robert C.; and Alexay, Christopher C., 5,646,411, Cl. 250-458.100.
Molecular Rx, Inc.: *See*—
Kline, Ellis L.; and Zimmerman, Daniel H., 5,645,997, Cl. 435-7.100.
Mollenauer, Linn Frederick: *See*—
Lichtman, Eyal; and Mollenauer, Linn Frederick, 5,646,759, Cl. 359-138.000.
Moltrasio, Danilo: *See*—
Lanzarotti, Ennio; Mantovani, Marisa; Prino, Giuseppe; Porta, Roberto; Armando, Cedro; and Moltrasio, Danilo, 5,646,127, Cl. 514-44.000.
Lanzarotti, Ennio; Mantovani, Marisa; Prino, Giuseppe; Porta, Roberto; Cedro, Armando; and Moltrasio, Danilo, 5,646,268, Cl. 536-25.400.
Momono, Masakichi: *See*—
Ohsuga, Minoru; Shiraishi, Takuya; Yamaguchi, Junichi; Komuro, Ryoichi; and Momono, Masakichi, 5,645,029, Cl. 123-306.000.
Monacelli, John E.: *See*—
McIlroy, Robert A.; Kuchner, Robert A.; Monacelli, John E.; and Johnson, Dennis W., 5,645,616, Cl. 48-202.000.
Monbaliu, Marcel: *See*—
Van Rompuy, Ludo; De Keyzer, René; Dewanckele, Jean-Marie; Monbaliu, Marcel; and Vaes, Jos, 5,645,971, Cl. 430-204.000.
Monk, David J.: *See*—
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Monkiewicz, Jaroslaw; Frings, Albert; Horn, Michael; Jenkner, Peter; Koetzsch, Hans-Joachim; Kropfgans, Frank; Seiler, Claus-Dietrich; Srebny, Hans-Guenther; and Standke, Burkhard, to Huels Aktiengesellschaft. Process for the preparation of 3-acryloyloxypropylalkoxysilanes. 5,646,325, Cl. 556-440.000.
Monks, Anne: *See*—
Vande Woude, George F.; Koo, Han-Mo; and Monks, Anne, 5,645,988, Cl. 435-6.000.
Monroe, Larry D.; and Wood, Thomas E., to Minnesota Mining and Manufacturing Company. Method for making an abrasive article. 5,645,618, Cl. 51-309.000.
Monroe, Larry D.: *See*—
Erickson, Dwight D.; Monroe, Larry D.; Wood, Thomas E.; and Wilson, David M., 5,645,619, Cl. 51-309.000.
Montaquila, Robert A. Earring clip. 5,644,823, Cl. 24-499.000.
Monteil, Thierry: *See*—
Danvy, Denis; Monteil, Thierry; Lusson, Christophe; Schwartz, Jean-Charles; Gros, Claude; Noel, Nadine; LeComte, Jeanne-Marie; Duhamel, Pierre; and Duhamel, Lucette, 5,646,313, Cl. 549-441.000.
Montgomery, Donald M.: *See*—
Matsen, Marc R.; Montgomery, Donald M.; and Laurenti, Susan V., 5,645,747, Cl. 219-645.000.
Moody, John R., to James River Corporation of Virginia. Dispenser apparatus for dispensing paper sheet material. 5,645,244, Cl. 242-422.500.
Moody, Paul E., to United States of America, Navy. Bladder assembly for retaining fluid under pressure. 5,645,006, Cl. 114-238.000.
Moon, C. Robert: *See*—
Roberts, Peter M.; and Moon, C. Robert, 5,644,958, Cl. 81-177.800.
Moore Business Forms, Inc.: *See*—
Hill, Walt, 5,645,300, Cl. 283-81.000.
Moore, Curtis W. Treadle and roadway treadle assembly. 5,646,615, Cl. 340-940.000.
Moore, Eugene R. Product for alleviating the symptons of arthritis in mammals. 5,645,851, Cl. 424-439.000.
Moore, Gerald T.; Koch, Karl W.; and Cheung, Eric C., to United States of America, Air Force. Optical beam scanner with rotating transmissive optics. 5,646,764, Cl. 359-201.000.
Moore, Karen J.: *See*—
Kleyn, Patrick W.; and Moore, Karen J., 5,646,040, Cl. 435-325.000.
Moore, Richard W.: *See*—
Watson, Sherman L.; Jones, Jimmie J.; and Moore, Richard W., 5,646,216, Cl. 252-309.000.
Moore, Samuel L.: *See*—
Shackelford, William; Readio, Josephine; Moore, Samuel L.; and Rutner, Herman, 5,646,256, Cl. 530-391.100.
Moran, James: *See*—
Lindeborg, Carl; Carroll, Edward; Moran, James; Bartolini, David; Griesing, John; Lindell, Liz; Walker, Anthony Dean; and Trubey, Bradley S., 5,646,939, Cl. 370-258.000.
Morell, Antoinette; and Goumard, Nathalie, to Thomson-CSF. Phosphor material based on manganese-doped zinc silicate and method for obtaining such a material. 5,645,761, Cl. 252-301.60F.
Mores, Maryanne: *See*—
Brownscombe, Thomas Fairchild; Bass, Ronald Marshall; Wong, Pui Kwan; Blytas, George Constantine; Gergen, William Peter; and Mores, Maryanne, 5,646,193, Cl. 521-63.000.
Morgan, Alice E. R.: *See*—
Walsh, Terence A.; Hey, Timothy D.; and Morgan, Alice E. R., 5,646,026, Cl. 435-199.000.
Morgan, David P.: *See*—
Kondratyev, Sergei N.; Plessky, Victor P.; Hartmann, Clinton S.; Thorvaldsson, Thor; and Morgan, David P., 5,646,584, Cl. 333-193.000.
Morgan, Edward Clayton: *See*—
Freyman, Ronald Lamar; Garen, Craig Joseph; Holder, Clinton Hays, Jr.; Kershaw, Robert Nelson; and Morgan, Edward Clayton, 5,646,451, Cl. 257-784.000.
Mori, Futoshi; Fukazawa, Kazuhiko; Hirose, Hiroshi; and Kohama, Yoshiaki, to Nikon Corporation. Scanning electron microscope. 5,646,403, Cl. 250-310.000.
Mori, Kazuhiro: *See*—
Kitayama, Yoshifumi; Mori, Kazuhiro; Saeki, Keiji; and Akiguchi, Takashi, 5,646,439, Cl. 257-632.000.
Mori, Masahiko: *See*—
Iwane, Yasuhiko; and Mori, Masahiko, 5,645,360, Cl. 400-613.000.
Mori, Seiichi, to Kabushiki Kaisha Toshiba. Semiconductor device having isolating regions. 5,646,888, Cl. 365-185.330.
Mori, Yasutomo: *See*—
Hada, Kunihiko; Mori, Yasutomo; Orihara, Motoi; and Miyamoto, Shuji, 5,646,088, Cl. 503-209.000.
Mori, Yoji: *See*—
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Moriguchi, Haruhiko: *See*—
Moriyama, Jiro; Koizumi, Yutaka; Fukushima, Hisashi; Hirosawa, Toshiaki; Osada, Torachika; Moriguchi, Haruhiko; Kubota, Hidemi; and Izumizaki, Masami, 5,646,659, Cl. 347-55.000.
Morimoto, Keiji; and Itojima, Mitsuhiko, to Noritsu Koki Co., Ltd. Lens supporting assembly. 5,646,714, Cl. 355-55.000.
Morimoto, Kiyotake: *See*—
Matsumoto, Morihiro; Yoshida, Noboru; Morimoto, Kiyotake; and Nakamura, Satoshi, 5,645,928, Cl. 428-304.400.
Morimoto, Takashi: *See*—
Akiba, Masatsugu; Shiomi, Yutaka; Takebe, Kazuo; Saito, Noriaki; and Morimoto, Takashi, 5,646,204, Cl. 523-443.000.
Fujio, Katsuharu; Sano, Kiyoshi; Hase, Syouzou; Morimoto, Takashi; and Yamamoto, Shuichi, 5,645,408, Cl. 418-55.400.
Morinaka, Hiroyuki, to Mitsubishi Denki Kabushiki Kaisha. Pipeline structure using positive edge and negative edge flip-flops to decrease the size of a logic block. 5,646,555, Cl. 326-93.000.
Morishige, Koji: *See*—
Wakabayashi, Shozo; Tomimura, Yukio; Morishige, Koji; Umeda, Hiroshi; Serk, Park Woo; and Boshart, Mark Alan, 5,645,502, Cl. 474-85.000.
Moriya, Mitsuyasu: *See*—
Ishibashi, Toshio; Kondou, Sinichi; Moriya, Mitsuyasu; and Watanabe, Yoshiyuki, 5,645,366, Cl. 403-359.000.
Moriya, Toshio, to Kasuga Denki Kabushiki Kaisha. Multiple push button switch assembly with multistage actuator interlock. 5,646,382, Cl. 200-50.330.
Moriyama, Jiro; Koizumi, Yutaka; Fukushima, Hisashi; Hirosawa, Toshiaki; Osada, Torachika; Moriguchi, Haruhiko; Kubota, Hidemi; and Izumizaki, Masami, to Canon Kabushiki Kaisha. Ink jet recording apparatus, and method with control of ink drops and ink mist. 5,646,659, Cl. 347-55.000.
Moro-Franco, Eusebio. System for filtering residual contaminant particles for smoke and gas through atomized ultrafreezing. 5,644,923, Cl. 62-55.500.
Morrill, Charles D., to Hydril Company. Low profile and lightweight high pressure blowout preventer. 5,645,098, Cl. 137-15.000.
Morris, Bobby D.: *See*—
Stewart, James M.; and Morris, Bobby D., 5,645,694, Cl. 203-22.000.
Morris, Nicholas Andrew: *See*—
Birch, Brian Jeffrey; Morris, Nicholas Andrew; and Bonnafoux, Vincent, 5,645,709, Cl. 205-775.000.
Morris, Randall Ellis; and Gregory, Clare Robert, to American Home Products Corporation. Method of treating hyperproliferative vascular disease with rapamycin and mycophenolic acid. 5,646,160, Cl. 514-291.000.
Morrison, Christine J.: *See*—
Lott, Timothy J.; Morrison, Christine J.; Reiss, Errol; Lasker, Brent; and Zakroff, Sandra, 5,645,992, Cl. 435-6.000.
Morrow, Michael. Laser emitting visual display for a music system. 5,646,361, Cl. 84-464.00R.
Morton International, Inc.: *See*—
Rose, Larry D.; Kidd, Paul D.; and Ralston, Joseph L., 5,645,297, Cl. 280-739.000.
Morton, Robert: *See*—
Foley, Martin P.; and Morton, Robert, 5,645,049, Cl. 128-203.290.
Morton, Stephen G. Method and apparatus for detecting and classifying contaminants in water. 5,646,863, Cl. 364-496.000.
Morykwas, Michael J.: *See*—
Argenta, Louis C.; and Morykwas, Michael J., 5,645,081, Cl. 128-897.000.

Mosel Vitelic, Inc.: *See*—
Chen, Rickey; and Chen, Rex, 5,646,074, Cl. 437-239.000.
Moseley, Jon P.: *See*—
Kranzler, Thane L.; and Moseley, Jon P., 5,645,915, Cl. 428-105.000.
Moser, Brian A.: *See*—
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Sauer, Don Roy, 5,646,575, Cl. 330-261.000.
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Schultz, Rose Ann; and Fenelli, Steven P., 5,646,315, Cl. 549-554.000.
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Shapiro, Alan R.; and Kay, Donald A., 5,645,065, Cl. 128-653.100.
Navius Corporation: *See*—
Roucher, Leo R., Jr., 5,645,789, Cl. 264-529.000.
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Varanasi, Chandra C.; and Nazari, Nersi, 5,646,950, Cl. 371-43.000.
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Harnoncourt, Karl; Patzold, Dieter; Guggenbuhl, Walter; and Buess, Christian, 5,645,071, Cl. 128-719.000.
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Kamishima, Yoshiyuki, 5,646,959, Cl. 375-240.000.
Kobayashi, Hajime, 5,646,916, Cl. 369-32.000.
Koizumi, Fumiaki, 5,646,977, Cl. 455-411.000.
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Noda, Arihide, 5,646,771, Cl. 359-245.000.
Ohashi, Masayuki, 5,646,571, Cl. 327-390.000.
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Takahashi, Takehiko, 5,646,443, Cl. 257-704.000.
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Solin, Stuart A., 5,646,051, Cl. 437-7.000.
Needham, Kelley S.: *See*—
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Sommerfeld, Claus-Dieter; Lamberts, Wilhelm; Bielefeldt, Dietmar; Marhold, Albrecht; and Negele, Michael, 5,646,196, Cl. 521-131.000.
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Scalet, Frank; Berger, Joseph P.; Harting, Hal B.; Majewski, Anthony J.; Neibert, Khrystal L.; Tucker, Lois C.; Walters, Judy E.; and Weaver, Steven D., 5,645,387, Cl. 412-1.000.
Neighbours, Gregory John. Method and apparatus for constructing multi-storey buildings. 5,644,893, Cl. 52-745.190.
Neilly, Albert J., to ODL, Incorporated. Window frame with integral connectors. 5,644,881, Cl. 52-455.000.
Nellcor Incorporated: *See*—
Fein, Michael E.; Jenkins, David C.; Bernstein, Michael J.; Venkatachalam, K. L.; Merchant, Adnan I.; and Bowden, Charles H., 5,645,059, Cl. 128-633.000.
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Nellemann, Peter: *See*—
Goldberg, Edward M.; Wellnitz, Donald R.; and Nellemann, Peter, 5,646,408, Cl. 250-363.070.
Nelson, John Robert; and Donald-Hill, Richard Forbes. Anti-skid staircase treads. 5,645,912, Cl. 428-67.000.
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Behl, Sanjay; Nemeh, Saad; Willis, Mitchell J.; and Berberich, Joseph P., 5,645,635, Cl. 106-416.000.
Nemoto & Co., Ltd.: *See*—
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Nemoto, Peter A.: *See*—
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Sullivan, Michael J.; and Nesbitt, R. Dennis, 5,645,497, Cl. 473-377.000.
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Gaier, Walter, 5,645,877, Cl. 426-56.000.
Net/Werk/USA, Inc.: *See*—
Frew, Gordon, 5,644,822, Cl. 24-196.000.
Netti, Paolo Antonio: *See*—
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Neuman, Eli, to Tedea-Huntleigh International Ltd. Symmetrical load cells for use in conjuction with rotary machines. 5,646,375, Cl. 177-54.000.
Neumann, Hermann; and Kalder, Dietmar, to Bayer Aktiengesellschaft. Insecticide-comprising gel formulations for vapor-producing systems. 5,645,845, Cl. 424-405.000.
Neumann, Rainer: *See*—
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Thurkauf, Andrew; and Hutchison, Alan, 5,646,279, Cl. 544-295.000.
Thurkauf, Andrew; and Hutchison, Alan, 5,646,280, Cl. 544-295.000.
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Nevel, Avishai; and Gordon, Kendall W., Jr., to Lawson-Hemphill, Inc. Method of detecting contaminants in cotton fibers. 5,646,405, Cl. 250-341.600.
Neville, Lillian. Disposable safety cup. 5,645,191, Cl. 220-717.000.
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Jeffer, Peter H., 5,644,814, Cl. 15-250.361.
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Barnwell, John W.; and Galinski, Mary R., 5,646,247, Cl. 530-350.000.
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Edlund, David J.; Newbold, David D.; and Frost, Chester B., 5,645,626, Cl. 95-56.000.

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Newkirk, James S.: *See*—
Bacon, Wesley H.; Baker, Kenneth L.; Debesis, John R.; Serbicki, Jeffrey P.; and Newkirk, James S., 5,646,674, Cl. 347-257.000.
Newman, Jeremy Mark: *See*—
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Newmark, Harold L., to Sloan-Kettering Institute for Cancer Research. Butyric ester cyto-differtiating agents. 5,645,852, Cl. 424-439.000.
Newton, Robert R.: *See*—
Thomas, H. Ronald; Babacz, Robert J.; and Newton, Robert R., 5,645,643, Cl. 118-723.0MP.
Ng, Samuel; Parshad, David A.; and Fennessy, Charles W., to Noma, Inc. Seasonal decoration mounting arrangement. 5,645,254, Cl. 248-206.200.
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Nguyen, Thai Minh, to National Semiconductor Corporation. Integrated low-power driver for a high-current laser diode. 5,646,560, Cl. 327-109.000.
Ni, Li; Borgeson, Robert A.; Kules, Nick M.; and Schmidt, John, to Gas Research Institute. Slotted burner for gas fireplace. 5,645,409, Cl. 431-8.000.
Nicewarner, Earl R., Jr.; and Frinak, Steven L., to Fairchild Space and Defense Corporation. Three-dimensional flexible assembly of integrated circuits. 5,646,446, Cl. 257-723.000.
Nickles, Aaron Michael; Nickles, Daniel Robert; and Saferstein, Al. Smoke detector with advanced safety features. 5,646,598, Cl. 340-628.000.
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Nickles, Aaron Michael; Nickles, Daniel Robert; and Saferstein, Al, 5,646,598, Cl. 340-628.000.
Nicolais, Luigi; Ambrosio, Luigi; Netti, Paolo Antonio; and Callegaro, Lanfranco, to M.U.R.S.T. Italian Ministry for Universities and Scientific and Technological Research. Use of hydrogels to fix bone replacements. 5,645,592, Cl. 623-16.000.
Nielinger, Werner; Schulte, Helmut; Schulte, Bernhard; and Ostlinning, Edgar, to Bayer Aktiengesellschaft. Multi-layer films made from copolyamides. 5,645,945, Cl. 428-476.300.
Nielsen, Elgård Schandorff, to V. Kann Rasmussen Industri A/S. Sealing arrangement for a glass-carrying window frame. 5,644,875, Cl. 52-204.591.
Nielsen, Ruby Ione: *See*—
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Nikai, Isao: *See*—
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Nikolayev, Anatoliy G.: *See*—
Melnikov, Izot F.; and Nikolayev, Anatoliy G., 5,646,505, Cl. 320-21.000.
Nikon Corporation: *See*—
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Mori, Futoshi; Fukazawa, Kazuhiko; Hirose, Hiroshi; and Kohama, Yoshiaki, 5,646,403, Cl. 250-310.000.
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Nikutta, Wolfgang: *See*—
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Ninomiya, Kazuhiko, to Hewlett-Packard Company. Apparatus and method for measuring circuit network. 5,646,541, Cl. 324-727.000.
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Nakata, Toshihiko; Hirasawa, Shigeki; Saito, Yoko; Ninomiya, Takanori; and Nomoto, Mineo, 5,645,351, Cl. 374-161.000.
Nippon Koki Co., Ltd.: *See*—
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Nippon Mining & Metals Co., Ltd.: *See*—
Nishikawa, Kiyoaki; Ozeki, Yoshihiro; and Ono, Toshiyuki, 5,645,654, Cl. 148-327.000.
Nippon Paint Co., Ltd.: *See*—
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Nippon Petrochemicals Company, Limited: *See*—
Sakazume, Suehiro; Miyamoto, Tsutomu; and Shimizu, Hiroshi, 5,645,933, Cl. 442-290.000.
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Nippon Telegraph and Telephone Corporation: *See*—
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Tanaka, Hisashi; Shirota, Yuichi; Sugi, Hikaru; Konaka, Masami; Yamamoto, Kazushi; Miwa, Seiji; and Miyata, Manabu, 5,644,929, Cl. 62-406.000.
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Nishi, Kenji, to Nikon Corporation. Exposure apparatus and method which synchronously moves the mask and the substrate to measure displacement. 5,646,413, Cl. 250-548.000.
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Nishida, Kuniyoshi: *See*—
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Nishikawa, Kiyoaki; Ozeki, Yoshihiro; and Ono, Toshiyuki, to Nippon Mining & Metals Co., Ltd. Nonmagnetic stainless steel for high burring and method of manufacturing the same. 5,645,654, Cl. 148-327.000.
Nishimoto, Keiichi, to Fuji Xerox Co., Ltd. Process for producing a multi-layered thin ferroelectric film. 5,645,885, Cl. 427-126.300.
Nishimura, Haruhiko: *See*—
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Nishimura, Mitsuo: *See*—
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Nishimura, Takuya; Iitsuka, Hiroyuki; Takeda, Hidetoshi; and Kawakami, Yasunori, to Matsushita Electric Industrial Co., Ltd. Digital data transmission system including a device for data block, header and packet generation. 5,646,941, Cl. 370-389.000.
Nishino, Atsushi: *See*—
Oka, Hiroaki; Tomioka, Toshikazu; Tomita, Katsumi; Hoshino, Kenji; Nishino, Atsushi; and Ueda, Shigeharu, 5,645,846, Cl. 424-405.000.
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Nishio, Osamu; Tanaka, Norio; Asano, Takayasn; and Godwin, Eddie M., to Okuma America Corporation. Machine tool with cantilevered chuck movable along the X and Z axes. 5,644,961, Cl. 82-127.000.
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Nishishita, Kunihiko; and Sugita, Takashi, to Zexel Corporation. Laminated heat exchanger. 5,645,126, Cl. 165-153.000.
Nishiyama, Hitoshi; Ohgaki, Masaru; Yamanishi, Ryo; and Hara, Toshihiko, to Fujisawa Pharmaceutical Co., Ltd. Cyclodepsipeptide compound. 5,646,244, Cl. 530-317.000.

Nishiyama, Masataka, to Asahi Kogaku Kogyo Kabushiki Kaisha. Recording paper and recording apparatus using same. 5,645,920, Cl. 428-195.000.
Nishiyama, Toshiki; and Hamaji, Yukio, to Murata Manufacturing Co., Ltd. Non-reduced dielectric ceramic compositions. 5,646,081, Cl. 501-138.000.
Nishizato, Hiroshi; Sivaramakrishnan, Visweswaren; and Zhao, Jun, to Applied Materials, Inc. Method for in-situ liquid flow rate estimation and verification. 5,645,642, Cl. 118-692.000.
Nishizawa, Akihito; Imaide, Takuya; Kinugasa, Toshiro; Iguchi, Takuya; and Koshio, Kazuhiro, to Hitachi, Ltd. Ultra small video camera and a video camera system. 5,646,684, Cl. 348-231.000.
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Fujioka, Satoshi; Hirabayashi, Hiromu; Takabayashi, Nobuhisa; Nishizawa, Atsushi; and Komuro, Kiyoto, 5,646,668, Cl. 347-104.000.
Nissan Motor Co., Ltd.: *See*—
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Nitta, Hideaki: *See*—
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Nitto Denko Corporation: *See*—
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Nixon, Donald A.: *See*—
Weiss, Keith D.; Nixon, Donald A.; Carlson, J. David; and Margida, Anthony J., 5,645,752, Cl. 252-62.540.
Nobileau, Philippe. Flexible high pressure pipe. 5,645,110, Cl. 138-134.000.
Noda, Arihide, to NEC Corporation. Setting operation point in optical modulation apparatus. 5,646,771, Cl. 359-245.000.
Noda, Shoji; Uchida, Kiyoshi; Itoh, Akio; Higuchi, Kazuo; Niimi, Mikio; Murasaki, Shun-ichi; and Honkura, Yoshinobu, to Kabushiki Kaisha Toyota Chuo Kenkyusho; and Aichi Steel Works, Ltd. Thin film layered member. 5,645,937, Cl. 428-408.000.
Noel, Judith Ann: *See*—
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Danvy, Denis; Monteil, Thierry; Lusson, Christophe; Schwartz, Jean-Charles; Gros, Claude; Noel, Nadine; LeComte, Jeanne-Marie; Duhamel, Pierre; and Duhamel, Lucette, 5,646,313, Cl. 549-441.000.
Nohr, Ronald Sinclair; and MacDonald, John Gavin, to Kimberly-Clark Corporation. Digital information recording media and method of using same. 5,645,964, Cl. 430-21.000.
Noji, Takayoshi; and Narusawa, Sadayoshi, to Tamron Co., Ltd.; and Nihon Mini Motor Co., Ltd. Actuating apparatus and actuator. 5,646,466, Cl. 310-112.000.
Nojiri, Kazuo: *See*—
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Nokia Technology GmbH: *See*—
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Nomura, Hironori; Ohnishi, Hirofumi; Matsura, Yoshinori; and Sasaki, Tohru, to Uni-Charm Corporation. Disposable garments. 5,645,543, Cl. 604-385.200.
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Banno, Yoshikazu; Nomura, Ichiro; Suzuki, Hidetoshi; Noma, Takashi; and Ueno, Rie, 5,645,462, Cl. 445-51.000.
Nonnenmacher, Martin, deceased (by Regine Nonnenmacher, heiress): *See*—
Bayer, Thomas; Greschner, Johann; Nonnenmacher, Martin, deceased, 5,646,339, Cl. 73-105.000.
Nonnenmacher, Regine, heiress: *See*—
Bayer, Thomas; Greschner, Johann; Nonnenmacher, Martin, deceased, 5,646,339, Cl. 73-105.000.
Nonoyama, Osamu; Ide, Yukio; Harigaya, Makoto; Kageyama, Yoshiyuki; Deguchi, Hiroshi; Yamada, Katsuyuki; Takahashi, Masaetsu; and Iwasaki, Hiroko, to Ricoh Company, Ltd. Recording and simultaneous verifying method of phase-changing type of information recording medium. 5,646,924, Cl. 369-58.000.
Norco, Inc.: *See*—
Parsons, John D., 5,644,950, Cl. 74-57.000.
Nordmeyer, Michael: *See*—
Smith, Daniel; Willis, Bernard M.; Marschke, Kenneth P., Jr.; Littlewood, Barry; Schoen, Vulgens; Gucker, Carl; Nordmeyer, Michael; and Miklewicz, Thaddeus, 5,644,834, Cl. 29-557.000.
Nordson Corporation: *See*—
Doesburg, Eric John; and Zirkle, Marc L., 5,645,639, Cl. 118-60.000.
Norén, Rolf: *See*—
Hammarberg, Eva Maria; Johansson, Lars George; Larsson, Lars-Gunnar; Norén, Rolf; Renyi, Lucy Anna; Ross, Svante Bertil; Sohn, Daniel Dungan; Svensson, Björn Eric; and Thorberg, Seth-Olov, 5,646,309, Cl. 549-404.000.
Noreikat, Karl-Ernst: *See*—
Lorenz, Helmut; Noreikat, Karl-Ernst; Klaiber, Thomas; Fleck, Wolfram; Sonntag, Josef; Hornburg, Gerald; and Gaulhofer, Andreas, 5,646,852, Cl. 364-431.051.
Noritsu Koki Co., Ltd.: *See*—
Morimoto, Keiji; and Itojima, Mitsuhiko, 5,646,714, Cl. 355-55.000.
Normandin, Sharon Eileen: *See*—
Romanet, Robert Fogg; Bowne, Arlyce Tolman; and Normandin, Sharon Eileen, 5,645,981, Cl. 430-558.000.
Noro, Yoshimi; and Doke, Harumi, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Turn signal cancel device. 5,646,384, Cl. 200-61.300.
Norrell, Andrew L.: *See*—
Suffern, Robert C.; and Norrell, Andrew L., 5,646,983, Cl. 379-93.320.
North Dakota State University of Agriculture and Applied Sciences: *See*—
Secor, Gary A.; Borovkov, Alexander Y.; McClean, Phillip E.; and Sowokinos, Joseph R., 5,646,023, Cl. 435-172.300.
North Shore Dental Porcelains Laboratories, Inc.: *See*—
Peterson, Thomas S.; and Schwichtenberg, Dirk, 5,645,427, Cl. 433-173.000.
Northern Illinois University: *See*—
DeYoung, Mary Beth; Siwkowski, Andrew M.; and Hampel, Arnold E., 5,646,031, Cl. 435-325.000.
Northern Telecom Limited: *See*—
Bonja, Mario; Worrall, Simon John Peter Phillip; and Romagnino, Richard, 5,646,678, Cl. 348-15.000.
Byron, Kevin Christopher, 5,647,037, Cl. 385-27.000.
Katchmar, Roman, 5,646,826, Cl. 361-704.000.
Northrop Grumman Corporation: *See*—
Carroll, Roger; Eschrich, Timothy; and Tanski, William, 5,646,480, Cl. 313-503.000.
Northrup, M. Allen; and White, Richard M., to University of California, The Regents of the. Microfabricated reactor. 5,646,039, Cl. 435-287.200.
Northrup, Milton A.; Ciarlo, Dino R.; Lee, Abraham P.; and Krulevitch, Peter A., to University of California, Regents of the. Microfabricated therapeutic actuator mechanisms. 5,645,564, Cl. 606-205.000.
Norton, Eric: *See*—
Rosenthal, Daniel; Konath, Kannan; Whyte, Robert; Norton, Eric; and Pearce, Stuart Robert, 5,646,521, Cl. 324-158.100.
Nosker, Richard William; and Michalchuk, Joey John, to Thomson Multimedia, S. A. Uniaxial tension focus mask for a color CRT with electrical connection means. 5,646,478, Cl. 313-402.000.
Nottage, Barbara: *See*—
Harfeldt, Elisabeth; Lake, Philip; Nottage, Barbara; and Ostberg, Lars G., 5,646,041, Cl. 435-339.100.
Novartis Corporation: *See*—
Hohl, Kaspar J., 5,646,157, Cl. 514-272.000.
Novatrix, Inc.: *See*—
Hahn, Soonkap; and Merritt, John, 5,645,563, Cl. 606-202.000.
Novellus Systems, Inc.: *See*—
van Schravendijk, Bart J.; Burkhart, Christopher W.; Santiago, Tito H.; Pomeroy, Charles E.; and Lind, Jeffrey W., 5,645,625, Cl. 95-46.000.
Novi International, Inc.: *See*—
Hotto, Robert, 5,646,940, Cl. 370-496.000.
Novo Nordisk A/S: *See*—
Breinholt, Jens; Nielsen, Ruby Ione; and Jensen, Georg Wilhelm, 5,646,110, Cl. 514-9.000.
Faarup, Peter; Jakobsen, Palle; Jørgensen, Anker Steen; and Klitgaard, Henrik, 5,646,146, Cl. 514-250.000.
Moyer, Donna, 5,646,025, Cl. 435-192.000.
Nozaki, Shinya: *See*—
Hasegawa, Toshiyuki; Nozaki, Shinya; and Miyamoto, Takeshi, 5,645,225, Cl. 239-533.120.
NSI Enterprises, Inc.: *See*—
Johnson, James C., 5,646,502, Cl. 320-5.000.

NTN Corporation: *See*—
Fukushima, Shigeaki; and Kawase, Tatsuo, 5,646,355, Cl. 73-862.195.
Katoh, Toshiharu, 5,645,286, Cl. 277-212.0FB.
Nu-Logic Dental Mfg., Inc.: *See*—
Calline, Lars E., 5,645,425, Cl. 433-54.000.
Nuding, Erich: *See*—
Benenowski, Sebastian; Demmig, Albrecht; Dietze, Hans-Ulrich; Kais, Alfred; and Nuding, Erich, 5,645,216, Cl. 238-283.000.
Nugent, Thomas H., Jr.; and Kussmaul, Ernest A., to Kussmaul Electronics Company, Inc. Automatic power line disconnect apparatus. 5,645,439, Cl. 439-159.000.
Nuñez, Gabriel: *See*—
Thompson, Craig B.; Boise, Lawrence H.; and Nuñez, Gabriel, 5,646,008, Cl. 435-69.100.
Nunez, Marcos D. Metal fence post with adjustable rail mounting. 5,645,271, Cl. 256-67.000.
Nutt, Ruth F.: *See*—
Abelman, Matthew M.; Ardecky, Robert J.; and Nutt, Ruth F., 5,646,165, Cl. 514-315.000.
Nutter, Dale E., Jr.: *See*—
Ambady, Raman; Nutter, Dale E., Jr.; and Barnes, Dewey W., 5,645,687, Cl. 162-65.000.
Nyman, Per: *See*—
Fröberg, Paul; Frånberg, Per; Högnelid, Kurt; Killander, Fredrik; Magnusson, Peter; and Nyman, Per, 5,645,577, Cl. 607-37.000.
Oakes, James G.: *See*—
Liles, Barry J.; Durschlag, Mark S.; and Oakes, James G., 5,646,450, Cl. 257-776.000.
Oaklander, Anne Louise: *See*—
Ekenberg, Steven J.; Brisco, Paula R. G.; and Oaklander, Anne Louise, 5,646,263, Cl. 536-25.400.
Oathout, James Marshall, to Du Pont de Nemours, E. I., and Company. Patterned spunlaced fabrics containing woodpulp or abaca fibers. 5,645,916, Cl. 428-131.000.
Öberg, Tommy: *See*—
Kadefors, Roland; Sandsjö , Leif; and Öberg, Tommy, 5,645,073, Cl. 128-733.000.
O'Boyle, Martin Patrick: *See*—
Wickramasinghe, Hemantha Kumar; Zenhausern, Frederic; Martin, Yves; and O'Boyle, Martin Patrick, 5,646,731, Cl. 356-357.000.
O'Brien, Gary J., to Motorola, Inc. Circuit and method for selecting a circuit module. 5,646,609, Cl. 340-825.780.
O'Brien, Patrick Michael: *See*—
Lee, Helen Tsenwhei; O'Brien, Patrick Michael; Picard, Joseph Armand; Purchase, Claude Forsey, Jr.; Roth, Bruce David; Sliskovic, Drago Robert; and White, Andrew David, 5,646,170, Cl. 514-381.000.
O'Brien, William P., to O'Brien, William P. Adjustable locking wrench. 5,644,960, Cl. 81-363.000.
Obuchi, Shoji: *See*—
Ikeda, Kan; Obuchi, Shoji; and Ohta, Masahiro, 5,646,238, Cl. 528-361.000.
Ocean Design, Inc.: *See*—
Cairns, James L., 5,645,438, Cl. 439-139.000.
Cairns, James L., 5,645,442, Cl. 439-201.000.
Ocean University of Qingdao: *See*—
Shi, Guan Hua, 5,646,130, Cl. 514-54.000.
Ochiai, Ryoichi; Miura, Kazunori; Sasaki, Seimi; and Nakagawa, Goji, to Fujitsu Limited. Optical link module connection system. 5,647,042, Cl. 385-56.000.
Ochiai, Toru: *See*—
Tazawa, Masashi; Ochiai, Toru; Aikawa, Toshiya; Maeda, Eisaku; and Suzuki, Maki, 5,646,746, Cl. 358-471.000.
Ochs, Vincent: *See*—
Linsley, Peter S.; Ochs, Vincent; Horn, Diane; and Brown, Joseph P., 5,646,002, Cl. 435-7.230.
Ockovic, Richard Carl: *See*—
McDermott, Wayne Thomas; Ockovic, Richard Carl; and Wimmer, Robert William, II, 5,644,855, Cl. 34-516.000.
O'Connell, Glenn Patrick; and Nitz, Larry Theodore, to Saturn Corporation. Integrated engine control. 5,646,851, Cl. 364-426.041.
O'Connell, Thomas A., to United States of America, Navy. Underwater defense system. 5,646,366, Cl. 114-21.200.
O'Connor, James M.: *See*—
Wilson, Alan L.; Muri, David L.; O'Connor, James M.; and Klingberg, Jeffrey W., 5,646,606, Cl. 340-825.370.
Oda, Akira: *See*—
Goto, Koji; and Oda, Akira, 5,645,359, Cl. 400-323.000.
Oda, Hiroyuki; Takeuchi, Tetsuo; and Shimizu, Kazuyuki, to Ikchikawa Co., Ltd. Heat-resisting cushion material and method for producing the same. 5,645,927, Cl. 442-388.000.
Oda, Toshikane, to Kokusai Denshin Denwa Co., Ltd. Payer-variable exchange system. 5,646,984, Cl. 379-114.000.
Oda, Yasuo. Point detecting device and method of same. 5,646,377, Cl. 178-18.000.
Odaka, Toshinori; Uetani, Yoshiharu; Masuda, Tadaaki; Yamakage, Tomoo; Ueno, Hideyuki; Yamaguchi, Noboru; Kikuchi, Yoshihiro; and Oku, Tadahiro, to Kabushiki Kaisha Toshiba. Video recording/reproducing apparatus which uses a differential motion vector determined using two other motion vectors. 5,647,049, Cl. 386-124.000.
O'Dea, Michael: *See*—
D'Entremont, William; Mesher, Mark; O'Dea, Michael; and Waite, Myron, 5,646,388, Cl. 235-380.000.
Odebrecht, Wolfgang: *See*—
Abersfelder, Guenter; Grantz, Helmut; and Odebrecht, Wolfgang, 5,646,614, Cl. 340-932.200.
Odelberg, Shannon J.: *See*—
Chance, Phillip F.; Alderson, Mary Kathryn; Odelberg, Shannon J.; and Lensch, M. William, 5,645,993, Cl. 435-6.000.
Odendahl, Alfred; Di Nicolantonio, Aldo; and Ruepp, Urs, to Scintilla AG. Compass saw. 5,644,847, Cl. 30-394.000.
ODL, Incorporated: *See*—
Neilly, Albert J., 5,644,881, Cl. 52-455.000.
Odom, Donald M. Cap with support for medical tubing. 5,645,058, Cl. 128-207.180.
Oehler, Martin: *See*—
Mueller, Klaus; Heugle, Bernhard; Herzog, Kurt; Oehler, Martin; Hohl, Günther; and Herderich, Hans-Jürgen, 5,645,325, Cl. 303-119.200.
Oehr, Klaus Heinrich; Simons, Girard A.; and Zhou, Jiahua, to Dynamotive Corporation. Reduction of acid rain and ozone depletion precursors. 5,645,805, Cl. 423-239.100.
Oehy, Jürg; Bider, Kurt; and Schoch, Martin, to Sulzer Medizinaltechnik AG. Outer shell for an at least two-shell joint socket of a hip joint prosthesis. 5,645,606, Cl. 623-22.000.
Offenberg, Michael: *See*—
Weiblen, Kurt; Offenberg, Michael; and Elsner, Bernhard, 5,646,347, Cl. 73-514.320.
Ofner, Silvio: *See*—
Schilling, Walter; Ofner, Silvio; and Veenstra, Siem J., 5,646,144, Cl. 514-241.000.
Ogata, Hideo: *See*—
Doyama, Yoshiaki; Matsui, Keizo; Ito, Yoshiteru; Yoshioka, Kaneharu; Ogata, Hideo; Yoshida, Izumi; and Watakabe, Shusaku, 5,646,499, Cl. 318-801.000.
Ogawa, Hideki: *See*—
Nakagawa, Satoshi; Ogawa, Hideki; Tanaka, Hiroaki; and Onishi, Atsuhiro, 5,646,292, Cl. 548-251.000.
Ogawa, Kazufumi, to Matsushita Electric Industrial Co., Ltd. Finishing agents and method of manufacturing the same. 5,645,633, Cl. 106-287.140.
Ogawa, Kyosuke: *See*—
Hirooka, Masaaki; Ogawa, Kyosuke; Ishihara, Shunichi; and Shimizu, Isamu, 5,645,947, Cl. 428-688.000.
Ogawa, Masaya: *See*—
Miyoshi, Sokichi; Kanai, Mikio; Yamaguchi, Akira; and Ogawa, Masaya, 5,646,917, Cl. 369-34.000.
Ogawa, Yoshifumi: *See*—
Kakehi, Yutaka; Kawasaki, Yoshinao; Suzuki, Keizo; Nojiri, Kazuo; Enami, Hiromichi; Kaji, Tetsunori; Watanabe, Seiichi; and Ogawa, Yoshifumi, 5,646,489, Cl. 315-111.210.
Ogawa, Yoshio: *See*—
Yanagioka, Hiroshi; Ogawa, Yoshio; Komatsubara, Yoshiaki; and Kobayashi, Kenji, 5,645,802, Cl. 422-170.000.
Ogden, Michael Wayne; and Heavner, David Lynn, to R. J. Reynolds Tobacco Company. Air sampling system and flow calibration system for same. 5,646,357, Cl. 73-863.310.
Ogi, Katumi; Yonezawa, Tadashi; Atsuki, Tsutomu; and Endo, Keiko, to Mitsubishi Materials Corporation. Composition and method for forming $Ba_{1-x}Sr_xTi_2O_3$ thin films. 5,645,634, Cl. 106-287.190.
Ogino, Tsukasa, to Canon Kabushiki Kaisha. Information recording/reproducing apparatus in which a control value for controlling a recording/reproducing head is generated on the basis of a corrected current moving velocity and a target moving velocity. 5,646,915, Cl. 369-32.000.
Ogita, Hiromitsu: *See*—
Mitsushima, Susumu; Sugiyama, Hayami; Nakagawa, Hitoshi; Ogita, Hiromitsu; Yamakuni, Minoru; Kawahara, Kenichi; Kawamura, Shigeyuki; and Tsuji, Kazuhiro, 5,645,361, Cl. 400-636.000.
Oguchi, Katsuaki, to Sankyo Seiki Mfg. Co., Ltd. Card reader. 5,646,392, Cl. 235-475.000.
Oguchi, Takahisa; Umehara, Hideki; Sugimoto, Kenichi; Oi, Ryu; and Itoh, Hisato, to Mitsui Toatsu Chemicals, Inc.; and Yamamoto Chemicals, Inc. Phthalocyanine compound and optical recording medium containing it. 5,646,273, Cl. 540-122.000.
Oguro, Masaki: *See*—
Kimura, Masanori; and Oguro, Masaki, 5,646,796, Cl. 360-72.200.
Oh, Ji-byoung; Suh, Moon-bwan; and Leim, Jang-earn, to Samsung Electronics Co., Ltd. CDP-incorporated television receiver which selects a signal based on a type of compact disk detected. 5,646,699, Cl. 348-553.000.
Oh, Thomas S.: *See*—
Warehime, Kevin S.; Munley, Daniel T.; Oh, Thomas S.; and Swensen, Jeffrey E., 5,645,303, Cl. 285-409.000.
Ohashi, Masayuki, to NEC Corporation. Output buffer circuits. 5,646,571, Cl. 327-390.000.
Ohashi, Shigeo; Hatada, Toshio; Tanaka, Takeo; and Iwai, Susumu, to Hitachi, Ltd. Electronic equipment and lap-top type electronic equipment. 5,646,824, Cl. 361-699.000.
Ohata, Takashi: *See*—
Kobayashi, Masanori; Saito, Yoshiyuki; Ohata, Takashi; Ono, Fumiyoshi; and Minamoto, Noboru, 5,645,107, Cl. 137-625.230.
Ohgaki, Masaru: *See*—
Nishiyama, Hitoshi; Ohgaki, Masaru; Yamanishi, Ryo; and Hara, Toshihiko, 5,646,244, Cl. 530-317.000.

Ohguro, Yoshihisa: *See*—
Yamauchi, Satoshi; Anwyl, Phyllis; Kameda, Masayuki; Katooka, Takashi; Narita, Masumi; Ito, Hideo; Ohguro, Yoshihisa; Hayashi, Taisen; Yamagata, Hiroko; Honma, Sakiko; and Oono, Ayako, 5,646,840, Cl. 395-752.000.

Ohi, Mitsuru: *See*—
Tan-no, Masaki; Harima, Seiichi; Tsujii, Mitsugu; and Ohi, Mitsuru, 5,646,082, Cl. 502-65.000.

Ohio State University: *See*—
Callstrom, Matthew R.; and McCreery, Richard L., 5,645,809, Cl. 423-445.00R.

Ohio Steel Industries, Inc.: *See*—
Hays, William A., 5,645,394, Cl. 414-537.000.

Ohkawa, Kouhei: *See*—
Oishi, Tetsuya; Suzuki, Jin; Ohkawa, Kouhei; and Ono, Hiroshi, 5,646,240, Cl. 528-403.000.

Ohkawara, Tamaki: *See*—
Ohno, Kinichiro; Fujio, Noboru; and Ohkawara, Tamaki, 5,644,981, Cl. 101-147.000.

Ohmi, Tadahiro; and Inaba, Hitoshi, to Takasago Netsugaku Kogyo Kabushiki Kaisha. Electrified object contact component. 5,645,943, Cl. 428-457.000.

Ohmoto, Ryuji; and Uwai, Hikonosuke, to Seiko Epson Corporation. Data compressing method, data restoring method, and information processing apparatus. 5,646,617, Cl. 341-51.000.

Ohnishi, Hirofumi: *See*—
Nomura, Hironori; Ohnishi, Hirofumi; Matsura, Yoshinori; and Sasaki, Tohru, 5,645,543, Cl. 604-385.200.

Ohno, Kinichiro; Fujio, Noboru; and Ohkawara, Tamaki, to Tokyo Kikai Seisakusho, Ltd. Abnormality detector for nozzle type dampening systems. 5,644,981, Cl. 101-147.000.

Ohno, Yasuhiro; and Miyata, Manabu, to Oki Electric Industry Co., Ltd. Semiconductor memory with a timing controlled for receiving data at a semiconductor memory module to be accessed. 5,646,904, Cl. 365-233.000.

Ohnuki, Takeshi; Fujita, Minoru; Ishizaki, Osamu; and Adachi, Kazuyoshi, to Hitachi Maxell, Inc. Magnetic disk cartridge and shutter opening-closing mechanism for the same. 5,646,807, Cl. 360-133.000.

Ohsato, Kazumi: *See*—
Satoh, Naoto; and Ohsato, Kazumi, 5,645,477, Cl. 453-40.000.

Ohsawa, Tetsu; Iwai, Hiroyuki; Kikuchi, Hisashi; Watanabe, Shingo; Takano, Keiji; Haraoka, Tsutomu; and Nakao, Ken, to Tokyo Electron Kabushiki Kaisha; and Tokyo Electron Tohoku Kabushiki Kaisha. Heat treatment method and device. 5,645,419, Cl. 432-241.000.

Ohsawa, Tetu; and Tateyama, Kiyohisa, to Tokyo Electron Limited; and Tokyo Electron Tohoku Limited. Substrate transfer apparatus, and method of transferring substrates. 5,645,391, Cl. 414-416.000.

Ohsawa, Toshimi: *See*—
Kobayashi, Shinichi; Ohsawa, Toshimi; Okazaki, Tadashi; Kita, Kazumi; Kanai, Junichi; and Baba, Tadahiko, 5,646,948, Cl. 371-21.200.

Ohshita, Koichi, to Nikon Corporation. Keplerian zoom finder optical system. 5,646,777, Cl. 359-422.000.

Ohsuga, Minoru; Shiraishi, Takuya; Yamaguchi, Junichi; Komuro, Ryoichi; and Momono, Masakichi, to Hitachi, Ltd. Intake system for internal combustion engine. 5,645,029, Cl. 123-306.000.

Ohsumi, Hideki; and Tomita, Yoshinori, to Yazaki Corporation. Waterproof tap for a connector. 5,645,451, Cl. 439-587.000.

Ohta, Katsuyuki; Takagi, Toshiya; and Aoyama, Toshimi, to Tokyo Ohka Kogyo, K.K.; and Ciba-Geigy Corporation. Process for the production of printing plates. 5,645,974, Cl. 430-306.000.

Ohta, Kenji: *See*—
Inui, Tetsuya; Takahashi, Akira; and Ohta, Kenji, 5,645,978, Cl. 430-321.000.

Ohta, Masahiro: *See*—
Ikeda, Kan; Obuchi, Shoji; and Ohta, Masahiro, 5,646,238, Cl. 528-361.000.

Ohtsubo, Motoaki: *See*—
Roberts, James M.; Ohtsubo, Motoaki; Koff, Andrew C.; and Cross, Frederick, 5,645,999, Cl. 435-7.400.

Oi, Ryu: *See*—
Oguchi, Takahisa; Umehara, Hideki; Sugimoto, Kenichi; Oi, Ryu; and Itoh, Hisato, 5,646,273, Cl. 540-122.000.

Oishi, Tetsuya; Suzuki, Jin; Ohkawa, Kouhei; and Ono, Hiroshi, to Mitsui Toatsu Chemicals, Inc. Diguanamines and preparation process, derivatives and use thereof. 5,646,240, Cl. 528-403.000.

Ojeda, Peter A., IV: *See*—
Manser, Brian E.; Ojeda, Peter A., IV; Poole, Anton R.; and Wu, Guoming Frank, 5,646,817, Cl. 361-680.000.

Oka, Hiroaki; Tomioka, Toshikazu; Tomita, Katsumi; Hoshino, Kenji; Nishino, Atsushi; and Ueda, Shigeharu, to Matsushita Electric Industrial Co., Ltd. Method of disinfecting an object and antiviral disinfection liquid therefor. 5,645,846, Cl. 424-405.000.

Okabe, Masato: *See*—
Shimizu, Osamu; Utsumi, Minoru; Yamashita, Yuudai; Kamiyama, Hironori; Sakano, Shinichi; and Okabe, Masato, 5,646,927, Cl. 369-99.000.

Okada, Akane: *See*—
Kawasumi, Masaya; Takeuchi, Hisato; Usuki, Arimitsu; and Okada, Akane, 5,645,758, Cl. 252-299.010.

Usuki, Arimitsu; Takeuchi, Hisato; Tatsuda, Narihito; Okada, Akane; Kurauchi, Toshio; Tanaka, Hiromitsu; Okayama, Shinobu; Tojima, Kazuo; Fukui, Akio; and Okamoto, Toshiro, 5,646,284, Cl. 546-88.000.

Okada, Haruo; Aoki, Hidemi; Takeuchi, Yasuhiko; and Yuhara, Kunio, to Nissei Plastic Industrial Co., Ltd. Method of manufacturing a multilayer molding. 5,645,786, Cl. 264-255.000.

Okada, Kazuhiro. Multi-axial angular velocity sensor. 5,646,346, Cl. 73-504.040.

Okada, Shinjiro; Inaba, Yutaka; and Katakura, Kazunori, to Canon Kabushiki Kaisha. Method and apparatus for ferroelectric liquid crystal display having gradational display. 5,646,755, Cl. 345-97.000.

Okada, Takeshi; Sioda, Michio; and Minamizawa, Takasi, to Nippon Koki Co., Ltd. Air bag inflation gas generator. 5,645,296, Cl. 280-736.000.

Okamoto, Iwao: *See*—
Sato, Kenji; Okamoto, Iwao; and Okuyama, Chiaki, 5,645,898, Cl. 427-539.000.

Okamoto, Toshiharu, to NEC Corporation. Electrically erasable and programmable read only memory device with erase verify circuit for exactly verifying erased state of memory cells. 5,646,891, Cl. 365-185.220.

Okamoto, Toshiro: *See*—
Usuki, Arimitsu; Takeuchi, Hisato; Tatsuda, Narihito; Okada, Akane; Kurauchi, Toshio; Tanaka, Hiromitsu; Okayama, Shinobu; Tojima, Kazuo; Fukui, Akio; and Okamoto, Toshiro, 5,646,284, Cl. 546-88.000.

Okamura, Toshiro; and Shimada, Naoto, to Olympus Optical Co., Ltd. Image display apparatus. 5,646,641, Cl. 345-8.000.

Okano, Manabu, to Advanced Energy Industries, Inc. Topographically precise thin film coating system. 5,645,698, Cl. 204-192.120.

Okano, Noriaki: *See*—
Yamamoto, Toshio; Tsukui, Takaaki; Ichimura, Takashi; and Okano, Noriaki, 5,645,022, Cl. 123-90.170.

Okayama, Shinobu: *See*—
Usuki, Arimitsu; Takeuchi, Hisato; Tatsuda, Narihito; Okada, Akane; Kurauchi, Toshio; Tanaka, Hiromitsu; Okayama, Shinobu; Tojima, Kazuo; Fukui, Akio; and Okamoto, Toshiro, 5,646,284, Cl. 546-88.000.

Okazaki, Shinichi, to Tenryu Technics Co., Ltd. Electronic parts data recorder and a mounter employing the recorder. 5,646,681, Cl. 348-87.000.

Okazaki, Tadashi: *See*—
Kobayashi, Shinichi; Ohsawa, Toshimi; Okazaki, Tadashi; Kita, Kazumi; Kanai, Junichi; and Baba, Tadahiko, 5,646,948, Cl. 371-21.200.

Oki Electric Industry Co., Ltd.: *See*—
Nakamura, Makiko; Fukuda, Yasuhiro; Tatara, Yasuyuki; Harada, Yusuke; and Onoda, Hiroshi, 5,646,449, Cl. 257-761.000.
Ohno, Yasuhiro; and Miyata, Manabu, 5,646,904, Cl. 365-233.000.

Oki Semiconductor, Inc.: *See*—
Yao, Chingchi; and Wang, Poucheng, 5,646,548, Cl. 326-80.000.

Okinaka, Kenji; and Ota, Yasutaka, to Toda Kogyo Corporation. Spindle-shaped magnetic iron-based alloy particles containing cobalt and iron as the main ingredients and process for producing the same. 5,645,652, Cl. 148-307.000.

Okonite Company, The: *See*—
Faust, Howard C.; Adams, Nicholas; and Kegerise, Wesley R., 5,645,266, Cl. 254-134.30R.

Oku, Tadahiro: *See*—
Odaka, Toshinori; Uetani, Yoshiharu; Masuda, Tadaaki; Yamakage, Tomoo; Ueno, Hideyuki; Yamaguchi, Noboru; Kikuchi, Yoshihiro; and Oku, Tadahiro, 5,647,049, Cl. 386-124.000.

Okubo, Hiromi; and Shimomae, Mutsuo, to Ricoh Company, Ltd. Image forming apparatus with security feature which prevents copying of specific types of documents. 5,647,010, Cl. 382-100.000.

Okuda, Tomonori; and Skurka, John C., to Borg-Warner Automotive, K.K.; and Borg-Warner Automotive, Inc. Power transmission chain having a spring link. 5,645,503, Cl. 474-214.000.

Okuhara, Takeshi; Matsumoto, Tsuyoshi; and Sakamaki, Takashi, to Niles Parts Co., Ltd. Rotary connector device. 5,645,441, Cl. 439-164.000.

Okuma America Corporation: *See*—
Nishio, Osamu; Tanaka, Norio; Asano, Takayasu; and Godwin, Eddie M., 5,644,961, Cl. 82-127.000.

Okunoki, Yutaka: *See*—
Horita, Kojiro; Kimura, Junichi; Hara, Hirotaka; and Okunoki, Yutaka, 5,646,694, Cl. 348-448.000.

Okuyama, Chiaki: *See*—
Sato, Kenji; Okamoto, Iwao; and Okuyama, Chiaki, 5,645,898, Cl. 427-539.000.

Old, Lloyd J.: *See*—
Wallace, Thomas Paul; Harris, William Joseph; Carr, Francis Joseph; Rettig, Wolfgang J.; Garin-Chesa, Pilar; and Old, Lloyd J., 5,646,253, Cl. 530-387.300.

Oleksyszyn, Jozef: *See*—
Jacobson, Alan R.; Gabler, Douglas G.; and Oleksyszyn, Jozef, 5,646,316, Cl. 552-554.000.

O'Lenick, Anthony J., Jr., to Siltech Inc. Guerbet meadowfoam esters. 5,646,321, Cl. 554-224.000.

Olin, Henry, to Evac AB. Vacuum sewer arrangement. 5,644,802, Cl. 4-431.000.

Olinger, Harvey, to Harvey and Anne Olinger Trust. Sickle apparatus. 5,644,904, Cl. 56-292.000.

Oliver, Brian D.; Kostreski, Bruce; Campbell, W. Tim; and Sistanizadeh, Kamran, to Bell Atlantic Network Services, Inc. Simulcast transmission of digital programs to shared antenna receiving systems. 5,646,942, Cl. 370-112.000.

Oliver, Vincent A.: *See*—
Hesse, Michael A.; and Oliver, Vincent A., 5,645,281, Cl. 273-292.000.

Olovson, Gudmar. Device for treating smoke addiction. 5,645,088, Cl. 131-270.000.

Olsen, Flemming Højberg, to Interlego AG. Toy building set. 5,645,463, Cl. 446-104.000.

Olsen, Harry O.: *See*—
Brodsky, David L.; and Olsen, Harry O., 5,645,048, Cl. 128-202.270.

Olson, Kenneth F.; Gilman, Byron L.; and Anderson, Katherine H., to SurvivaLink Corporation. Automated external defibrillator with lid activated self-test system. 5,645,571, Cl. 607-5.000.

Olson, Michael J. Cervical pillow. 5,644,809, Cl. 5-636.000.

Olympus Optical Co., Ltd.: *See*—
Kamo, Yuji, 5,646,787, Cl. 359-692.000.
Okamura, Toshiro; and Shimada, Naoto, 5,646,641, Cl. 345-8.000.
Yajima, Manabu, 5,646,680, Cl. 348-74.000.

O'Malley, Gerard: *See*—
Kosley, Raymond W., Jr.; Cherill, Robert Joseph; and O'Malley, Gerard, 5,646,175, Cl. 514-422.000.
Uhlmann, Eugen; Peyman, Anuschirwan; O'Malley, Gerard; Helsberg, Matthias; and Winkler, Irvin, 5,646,261, Cl. 536-24.300.

Omega Optical, Inc.: *See*—
Johnson, Robert L., Jr., 5,646,781, Cl. 359-589.000.

Omi, Kyoji; and Nagahara, Yasumori, to Ricoh Company, Ltd. Color image forming apparatus. 5,646,749, Cl. 358-501.000.

Omoto, Masatoshi, to Sharp Kabushiki Kaisha. Bonding method for chip-type electronic parts. 5,645,707, Cl. 205-114.000.

Onaka, Hiroshi: *See*—
Fukushima, Nobuhiro; and Onaka, Hiroshi, 5,646,399, Cl. 250-226.000.

Oncogen: *See*—
Fell, Henry Perry, Jr.; and Gayle, Margit Ann, 5,645,835, Cl. 424-134.100.

Oncogen Limited Partnership: *See*—
Linsley, Peter S.; Ochs, Vincent; Horn, Diane; and Brown, Joseph P., 5,646,002, Cl. 435-7.230.

O'Neil, Keith Colin: *See*—
Fasano, Benjamin Vito; LaPlante, Mark J.; Long, David Clifford; O'Neil, Keith Colin; Peterson, Brenda Lee; Pomerantz, Glenn A.; and Popp, Timothy Titus, 5,645,673, Cl. 156-89.000.

O'Neill, Oliver; and Foley, Thomas, to Salford Engineering Limited. Apparatus for mixing fibrous type material. 5,645,345, Cl. 366-186.000.

Ong, Beng S.: *See*—
Sacripante, Guerino G.; Kedian, Maureen M.; Patel, Raj D.; Mychajlowskij, Walter; and Ong, Beng S., 5,645,968, Cl. 430-137.000.

Ong, Tiong P.; and Shing, Yuh-han, to United States of America, National Aeronautics and Space Administration. Diamond composite films for protective coatings on metals and method of formation. 5,645,900, Cl. 427-571.000.

Onimura, Tadashi: *See*—
Suwa, Koichi; Kato, Junichi; Onimura, Tadashi; Inami, Satoru; Suzuki, Jun; Ando, Atsutoshi; and Seita, Hiroyasu, 5,646,718, Cl. 399-350.000.

Onishi, Atsuhiro: *See*—
Nakagawa, Satoshi; Ogawa, Hideki; Tanaka, Hiroaki; and Onishi, Atsuhiro, 5,646,292, Cl. 548-251.000.

Onishi, Ichiro; and Kassai, Kenzou, to Aprica Kassai Kabushikikaisha. Child seat apparatus. 5,645,317, Cl. 297-250.100.

Onitsuka, Katsuhiko: *See*—
Fukuoka, Shuichi; Kamigaki, Kousei; Uchi, Kazutaka; and Onitsuka, Katsuhiko, 5,645,753, Cl. 252-62.9PZ.

Ono, Fumiyoshi: *See*—
Kobayashi, Masanori; Saito, Yoshiyuki; Ohata, Takashi; Ono, Fumiyoshi; and Minamoto, Noboru, 5,645,107, Cl. 137-625.230.

Ono, Hiroshi: *See*—
Oishi, Tetsuya; Suzuki, Jin; Ohkawa, Kouhei; and Ono, Hiroshi, 5,646,240, Cl. 528-403.000.

Ono, Toshiyuki: *See*—
Nishikawa, Kiyoaki; Ozeki, Yoshihiro; and Ono, Toshiyuki, 5,645,654, Cl. 148-327.000.

Onoda, Hiroshi: *See*—
Nakamura, Makiko; Fukuda, Yasuhiro; Tatara, Yasuyuki; Harada, Yusuke; and Onoda, Hiroshi, 5,646,449, Cl. 257-761.000.

Onstott, James R.: *See*—
Cronk, Bryon J.; Hutchinson, Ted F.; Lutz, Dale R.; MacDougall, Trevor W.; and Onstott, James R., 5,645,622, Cl. 65-378.000.

OnTrak Systems, Inc.: *See*—
Volodarsky, Konstantin; and Weldon, David E., 5,645,475, Cl. 451-288.000.

Oono, Ayako: *See*—
Yamauchi, Satoshi; Anwyl, Phyllis; Kameda, Masayuki; Katooka, Takashi; Narita, Masumi; Ito, Hideo; Ohguro, Yoshihisa; Hayashi, Taisen; Yamagata, Hiroko; Honma, Sakiko; and Oono, Ayako, 5,646,840, Cl. 395-752.000.

Oppenheim, Frank G.; Xu, Tao; and Spacciapoli, Peter, to Periodontix, Inc.; and Trustees of Boston University, The. D-amino acid histatin-based peptides as anti-fungal and anti-bacterial agents. 5,646,119, Cl. 514-12.000.

Optische Werke G. Rodenstock: *See*—
Melzig, Manfred; and Zinner, Herbert, 5,645,768, Cl. 252-586.000.

Orem, Michael William: *See*—
McGuckin, Hugh Gerald; Badger, John Stuart; Gogle, Ronald Anthony; Riesenberger, Paul Joseph; and Orem, Michael William, 5,645,980, Cl. 430-372.000.

Organic Resource Management Inc.: *See*—
Voroney, R. Paul, 5,645,623, Cl. 71-9.000.

Orihara, Motoi: *See*—
Hada, Kunihiko; Mori, Yasutomo; Orihara, Motoi; and Miyamoto, Shuji, 5,646,088, Cl. 503-209.000.

Orlandi Inc.: *See*—
Whitaker, Douglas; and Dobler, Sven, 5,645,161, Cl. 206-0.500.

Orpana, Markku: *See*—
Koskinen, Yrjö; Lehto, Ari; Tammela, Simo; Blomberg, Martti; Orpana, Markku; and Torkkeli, Altti, 5,646,729, Cl. 356-352.000.

Ortho-Kinetics, Inc.: *See*—
Gaffney, Edward J.; and Wargin, Thomas R., 5,645,290, Cl. 280-33.998.

Ortho Pharmaceutical Corporation: *See*—
Kotwal, Pramod M.; and Howard, Stephen A., 5,645,858, Cl. 424-495.000.

Ortho-Tain, Inc.: *See*—
Bergersen, Earl O., 5,645,420, Cl. 433-6.000.

Osada, Mototsuga: *See*—
Yamamoto, Kenji; Osada, Mototsuga; Aoyama, Shuichi; and Ishii, Koji, 5,645,793, Cl. 266-287.000.

Osada, Torachika: *See*—
Moriyama, Jiro; Koizumi, Yutaka; Fukushima, Hisashi; Hirosawa, Toshiaki; Osada, Torachika; Moriguchi, Haruhiko; Kubota, Hidemi; and Izumizaki, Masami, 5,646,659, Cl. 347-55.000.

Osan, Frank: *See*—
Brekner, Michael-Joachim; Osan, Frank; and Rohrmann, Jürgen, 5,646,220, Cl. 526-160.000.

Osawa, Ryoko: *See*—
Maekawa, Takashige; Osawa, Ryoko; Kamata, Satoshi; and Kumai, Seisaku, 5,646,222, Cl. 526-243.000.

Oshima, Katsuyuki; Ando, Jitsuhiko; and Torii, Masanori, to Dai Nippon Insatsu Kabushiki Kaisha. Heat transfer cover films. 5,646,089, Cl. 503-227.000.

Osmic, Inc.: *See*—
Gutman, George, 5,646,976, Cl. 378-84.000.

Ostberg, Lars G.: *See*—
Harfeldt, Elisabeth; Lake, Philip; Nonage, Barbara; and Ostberg, Lars G., 5,646,041, Cl. 435-339.100.

OsteoArthritis Sciences, Inc.: *See*—
Jacobson, Alan R.; Gabler, Douglas G.; and Oleksyszyn, Jozef, 5,646,316, Cl. 552-554.000.

Ostermann, Joern, to Lucent Technologies Inc. Video encoder with feedback control. 5,646,689, Cl. 348-405.000.

Ostlind, Dan A.: *See*—
Tamas, Tamas; and Ostlind, Dan A., 5,646,135, Cl. 514-152.000.

Ostlinning, Edgar: *See*—
Nielinger, Werner; Schulte, Helmut; Schulte, Bernhard; and Ostlinning, Edgar, 5,645,945, Cl. 428-476.300.

Osuna-Diaz, Jesus' M. Multiple gate injection nozzle. 5,645,874, Cl. 425-549.000.

Oswald, Klaus: *See*—
Mattes, Bernhard; Nitschke, Werner; Schumacher, Hartmut; Oswald, Klaus; Crispin, Norbert; and Weber, Werner, 5,646,454, Cl. 307-10.100.

Ota, Masaki; Kobayashi, Hisakazu; Hihino, Soukichi; Nakamura, Masaya; and Kato, Yuichi, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Reciprocating type compressor with muffling chambers. 5,645,405, Cl. 417-269.000.

Ota, Shuichi, to Ricoh Company, Ltd. Data transmission device used together with system interface having improved data transmission performance. 5,646,552, Cl. 326-86.000.

Ota, Yasutaka: *See*—
Okinaka, Kenji; and Ota, Yasutaka, 5,645,652, Cl. 148-307.000.

Otis Elevator Company: *See*—
Zaharia, Vlad; and Cho, Denis, 5,645,156, Cl. 198-323.000.

Otsuka, Naoji: *See*—
Iwasaki, Osamu; Otsuka, Naoji; Arai, Atsushi; Yano, Kentaro; Takahashi, Kiichiro; and Kanematsu, Daigoro, 5,646,655, Cl. 347-17.000.

Ottenstein, Achim: *See*—
Enderle, Heinrich; and Ottenstein, Achim, 5,645,127, Cl. 165-176.000.

Otterson, Gregory A.: *See*—
Kaye, Frederic J.; and Otterson, Gregory A., 5,646,249, Cl. 530-350.000.

Otto Pfannenberg Electro-Spezialgeratebau GmbH: *See*—
Huttenlocher, Werner; and Knoblauch, Harald, 5,646,825, Cl. 361-699.000.

Otto Rock Orthopadische Industrie Besitz-und Verwaltungs-Kommanditgesesllschaft: *See*—
van de Veen, Paul Gerad, 5,645,590, Cl. 623-44.000.

Ouellette, Ryan R.; Rice, James M.; and Gomez, Dan. Golf shoes with interchangeable soles. 5,644,857, Cl. 36-15.000.

Ounadjela, Abderrhamane: *See*—

Hsu, Chuar-Jian; Johnson, David L.; Kostek, Sergio; and Ounadjela, Abderrhamane, 5,646,379, Cl. 181-101.000.

Owen, Albert J.; and Yiv, Seang H., to LDS Technologies, Inc. Convertible microemulsion formulations. 5,646,109, Cl. 514-2.000.

Owen, Robert A.: *See*—
Frank, Steven N.; Belcher, James F.; Stanford, Charles E.; Owen, Robert A.; and Kyle, Robert J. S., 5,646,066, Cl. 437-180.000.

Owens, Boone B.; and Speckien, James M., to Medtronic, Inc. Electrochemical capacitor with electrode and electrolyte layers having the same polymer and solvent. 5,646,815, Cl. 361-502.000.

Owens-Brockway Plastic Products Inc.: *See*—
Larsen, W. Bruce, 5,645,870, Cl. 425-182.000.

Owens-Corning Fiberglas Technology, Inc.: *See*—
Aschenbeck, David P.; and Pellegrin, Michael T., 5,646,908, Cl. 367-137.000.

Owyang, Jon S.: *See*—
Grider, Douglas T.; and Owyang, Jon S., 5,646,073, Cl. 437-233.000.

Oxford Instruments (UK) Ltd.: *See*—
Hanley, Peter, 5,646,528, Cl. 324-303.000.

Ozcelik, Taner; Brailean, James C.; Katsaggelos, Aggelos K.; and Levine, Stephen N., to Motorola Inc. Method and system for improved motion compensation. 5,646,867, Cl. 364-514.00R.

Ozeki, Yoshihiro: *See*—
Nishikawa, Kiyoaki; Ozeki, Yoshihiro; and Ono, Toshiyuki, 5,645,654, Cl. 148-327.000.

Pacesetter AB: *See*—
Fröberg, Paul; Fränberg, Per; Högnelid, Kurt; Killander, Fredrik; Magnusson, Peter; and Nyman, Per, 5,645,577, Cl. 607-37.000.

Pacesetter, Inc.: *See*—
Moaddeb, Shawn; and Helland, John R., 5,645,580, Cl. 607-122.000.

Pacesetter AB: *See*—
Stangl, Karl; Laule, Michael; and Heinze, Roland, 5,645,575, Cl. 607-17.000.

Pacholok, David R. Compact, portable, vehicle disabling device and method. 5,645,137, Cl. 180-287.000.

Pacific Marine Supply Co., Ltd.: *See*—
Loui, Steven, 5,645,008, Cl. 114-274.000.

Packaging Resources, Inc.: *See*—
Potter, Jerry L., 5,645,212, Cl. 229-101.000.

Packer, Alan: *See*—
Coelho, Rohan; Packer, Alan; and Baldes, Gary, 5,646,866, Cl. 364-514.00R.

Paessens, Arnold: *See*—
Häbich, Dieter; Schulze, Thomas-J.; Reefschläger, Jürgen; Hansen, Jutta; Neumann, Rainer; Streissle, Gert; and Paessens, Arnold, 5,646,121, Cl. 514-18.000.

Pai, Balakrishna S.: *See*—
Cheng, Yung-chi; Lukhtanov, Eugeny A.; Meyer, Rich B., Jr.; Pai, Balakrishna S.; Reed, Michael W.; and Zhou, James H., 5,646,126, Cl. 514-44.000.

Pai, Girish Anant: *See*—
Frankfort, Hans Rudolf Edward; Knox, Benjamin Hughes; and Pai, Girish Anant, 5,645,936, Cl. 428-395.000.

Palfy, Nick: *See*—
MacLennan, Charles D.; Palfy, Nick; Savard, Laurier; and Mitchell, Robert E., 5,644,965, Cl. 83-842.000.

Pall Corporation: *See*—
Degen, Peter John; Lee, Joseph Yuen; and Sipsas, Ioannis P., 5,645,956, Cl. 429-142.000.

Palmaer, Eric K.: *See*—
Palmaer, Karl V.; and Palmaer, Eric K., 5,645,160, Cl. 198-853.000.

Palmaer, Karl V.; and Palmaer, Eric K., to KVP Systems, Inc. Connecting rod retention in a plastic conveyor belt. 5,645,160, Cl. 198-853.000.

Palmer, John J.: *See*—
Cook, Anthony B.; Palmer, John J.; and Rodriguez, Jose M., 5,645,762, Cl. 252-321.000.

Palmer, Matthew A.; Slater, Charles R.; Tutturro, Vincent A.; Solar, Matthew S.; Gottlieb, Saul; Francese, Jose L.; and Damarati, John Jairo, to Symbiosis Corporation. Jaw assembly for an endoscopic instrument. 5,645,075, Cl. 128-749.000.

Palmer, Mitchell J.: *See*—
Green, David T.; Palmer, Mitchell J.; Milliman, Keith L.; Savage, Robert C.; McClure, Richard C.; and Heaton, Lisa W., 5,645,209, Cl. 227-175.200.

Palmere, Vincent R.; Dietrich, Allan H.; and Galyon, Stanley D., to Nisus Corporation. Methods and compositions for retarding and eradicating infestation in trees and tree derived products. 5,645,828, Cl. 424-78.080.

Palosi, Gabor: *See*—
Humm, Siegfried; Palosi, Gabor; and Weidner, Bernd, 5,645,113, Cl. 141-3.000.

Palsson, Bernhard O.: *See*—
Emerson, Stephen G.; Clarke, Michael F.; and Palsson, Bernhard O., 5,646,043, Cl. 435-373.000.

Pan, Alfred A.: *See*—
Winkler, Martin A.; and Pan, Alfred A., 5,645,838, Cl. 424-269.100.

Pantone, Richard S.; Rosthauser, James W.; and Haider, Karl W., to Bayer Corporation. Isocyanate-terminated prepolymers, a process of producing polyurethane/polyurea elastomers therefrom, and the resultant elastomers. 5,646,230, Cl. 528-64.000.

Parduhn, Stephen P., to Pelco Products, Inc. Articulating clamp assembly for traffic control device. 5,645,255, Cl. 248-214.000.

Parel, Jean-Marie A.: *See*—
Villain, Franck L.; Parel, Jean-Marie A.; Lee, William Gerald; and Simon, Gabriel, 5,645,583, Cl. 623-5.000.

Parise, Gerald J.: *See*—
Cotner, Ronald L.; Parise, Gerald J.; Asacker, Thomas E.; Sadrnoori, Bijan; and Muller, Robert A., 5,645,054, Cl. 128-204.230.

Park, Christopher John: *See*—
Hammer, Michael Ron; Park, Christopher John; Allen, Brian Lawrence; and Turney, Thomas Robert, 5,646,727, Cl. 356-315.000.

Park, George Barry; Lowe, Frank James; Ganbuehler, George Michael John; Hutt, Norman; Webb, Stephen Alan; and Graulus, Hendrick, to Raychem Limited. Radially-recoverable sleeve of composite. 5,645,906, Cl. 428-36.300.

Park, Gi-bok, to Samsung Electronics Co., Ltd. Simultaneous write/read control apparatus for first-in-first-out memory. 5,646,700, Cl. 348-718.000.

Park, Jong Hoon, to Goldstar Electron Co., Ltd. Static random access memory device with low power dissipation. 5,646,902, Cl. 365-227.000.

Park, Kwang Ho: *See*—
Woo, Boo Gon; Park, Kwang Ho; Joo, Hwa Myung; and Lee, Han Sun, 5,645,696, Cl. 203-60.000.

Park, Yi Hwan; Shin, Hyun Soo; and Lee, Yong-Bok, to LG Semicon Co., Ltd. Semiconductor memory cell with increased refresh time. 5,646,881, Cl. 365-149.000.

Parker, David: *See*—
Harlow, Albert L., Jr.; Bechtold, Richard E.; Parker, David; Merat, Francis L.; Podany, Mark; and Laning, Raymond C., 5,645,884, Cl. 427-8.000.

Parker, David T.: *See*—
MacPherson, Lawrence J.; and Parker, David T., 5,646,167, Cl. 514-357.000.

Parker, Gary: *See*—
Muyshondt, Jorge Enrique; Parker, Gary; and Wilkie, Bruce James, 5,646,368, Cl. 174-33.000.

Parker Hannifin Corporation: *See*—
Hardison, Steven D.; and Stone, Walter H., 5,645,718, Cl. 210-232.000.

Parks, Robert R., Jr. Passenger's pillow. 5,645,319, Cl. 297-391.000.

Parrott, William N.: *See*—
Cowen, Calvin; Quesnel, Wayne L.; Parrott, William N.; and Jones, Michael G., 5,647,046, Cl. 385-136.000.

Parshad, David A.: *See*—
Ng, Samuel; Parshad, David A.; and Fennessy, Charles W., 5,645,254, Cl. 248-206.200.

Parsons, John D., to Norco, Inc. Heavy-duty mechanical oscillator. 5,644,950, Cl. 74-57.000.

Parsons, Kevin L., to Armament Systems and Procedures, Inc. Formed grip for expandable batons. 5,645,276, Cl. 463-47.700.

Partch, Richard E.: *See*—
Bryan, Philip Steven; Bringley, Joseph F.; and Partch, Richard E., 5,646,412, Cl. 250-483.100.

Pasha, Brian Douglas: *See*—
Simon, John David; Dreon, Michael Joseph; Small, William Lee; Abboud, Pierre Youssef; and Pasha, Brian Douglas, 5,646,485, Cl. 315-82.000.

Patel, Bhakti S.: *See*—
Tikhtman, Jacob; and Patel, Bhakti S., 5,646,358, Cl. 73-865.600.

Patel, Manhar K.; and Paulovich, John M., to Reckitt & Colman Inc. Volatile substance dispenser and method of dispensing a volatile substance with dissipation indication. 5,647,052, Cl. 392-390.000.

Patel, Raj D.: *See*—
Sacripante, Guerino G.; Kedian, Maureen M.; Patel, Raj D.; Mychajlowskij, Walter; and Ong, Beng S., 5,645,968, Cl. 430-137.000.

Pathak, Yatish Swarup: *See*—
Loh, Koon Whye; and Pathak, Yatish Swarup, 5,646,578, Cl. 330-279.000.

Patton, Jasson Todd; Devore, David D.; Timmers, Franis J.; Soto, Jorge; Schmidt, Gregory F.; and Wilson, David R., to Dow Chemical Company, The. Polymerization process using diene containing catalysts. 5,646,084, Cl. 502-152.000.

Patzold, Dieter: *See*—
Harnoncourt, Karl; Patzold, Dieter; Guggenbuhl, Walter; and Buess, Christian, 5,645,071, Cl. 128-719.000.

Paul Flum Ideas, Inc.: *See*—
Miller, Donald J., Jr.; and Harbour, Keith, 5,645,182, Cl. 211-134.000.

Paulovich, John M.: *See*—
Patel, Manhar K.; and Paulovich, John M., 5,647,052, Cl. 392-390.000.

Pavlak, Teresa: *See*—
Haugk, Peter D.; Pavlak, Teresa; and Briceno, Laura, 5,646,100, Cl. 510-131.000.

Pavlin, Mark S., to Union Camp Corporation. Diesters of polymerized fatty acids useful in formulating hot-melt inks. 5,645,632, Cl. 106-31.290.

Paweletz, Anton, to SKF Textilmaschien-Komponenten GmbH. Drive for a shaftless spinning rotor of an open-end spinning kmachine. 5,646,465, Cl. 310-90.500.

Pawlowski, Norman E., Jr., to Hewlett-Packard Company. Ink container valving. 5,646,664, Cl. 347-86.000.

Paxall Group, Inc., The: *See*—
Stapp, Richard E.; and Crowson, David R., 5,646,374, Cl. 177-25.180.

Payton, James H.; and Canaris, Nicholas M., to Vinings Industries, Inc. Bleaching compositions and processes employing sulfamates and polyaminocarboxylic acids. 5,645,688, Cl. 162-76.000.

Pazaris, James O.; and Evans, Richard P., to Digital Equipment Corporation. Low inductance electrical resistor terminator package. 5,646,581, Cl. 333-22.00R.

PCD Inc.: *See*—
Ramsey, James Michael; Chinnock, Paul S.; and Ryan, Maria E., 5,646,447, Cl. 257-727.000.

PDQ Food Stores, Inc.: *See*—
Winkler, Bruce; and Asten, Rocky Van, 5,645,011, Cl. 116-264.000.

Pearce, Stuart Robert: *See*—
Rosenthal, Daniel; Konath, Kannan; Whyte, Robert; Norton, Eric; and Pearce, Stuart Robert, 5,646,521, Cl. 324-158.100.

Pearlstein, Larry A., to Hitachi America, Ltd. Methods and apparatus for reducing drift in video decoders. 5,646,686, Cl. 348-392.000.

Pease, Kevin J., to DocuSystems, Inc. Method and apparatus for altering a magnetic characteristic of a medium. 5,647,003, Cl. 380-59.000.

Peavey Electronics Corporation: *See*—
Sondermeyer, Jack C.; and Brown, James W., Sr., 5,647,004, Cl. 381-61.000.

Pelco Products, Inc.: *See*—
Parduhn, Stephen P., 5,645,255, Cl. 248-214.000.

Pellegrin, Michael T.: *See*—
Aschenbeck, David P.; and Pellegrin, Michael T., 5,646,908, Cl. 367-137.000.

Percebois, Alain; Auproux, Daniel; and Renard, Philippe, to Pont-A-Mousson S.A. Electrically insulating locking insert for a seal, corresponding seal, and method of manufacturing such inserts. 5,645,285, Cl. 277-207.00A.

Perdon, Alicia A.: *See*—
Breslin, James C.; Perdon, Alicia A.; Holder, James B.; Kalchik, Stephen J.; and Longman, Jerald L., 5,645,878, Cl. 426-103.000.

Perdue, Jay. Sound absorbing panel. 5,644,872, Cl. 52-144.000.

Perez, Ignacio M.; and Agarwala, Vinod S., to United States of America, Navy. Corrosion detecting and monitoring method and apparatus. 5,646,400, Cl. 250-227.180.

Perez-Paya, Enrique: *See*—
Blondelle, Sylvie; Houghten, Richard A.; and Perez-Paya, Enrique, 5,645,996, Cl. 435-7.100.

Performance Controls, Inc.: *See*—
Weggel, Craig R., 5,646,837, Cl. 363-124.000.

Periodontix, Inc.: *See*—
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Peterson, John A., to Wireline Technologies. Sheave cable guarding and guiding device. 5,645,269, Cl. 254-398.000.

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Pinkham, Ray, to Hyundai Electronics America. Memory device with reduced number of fuses. 5,646,896, Cl. 365-200.000.

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Polish Academy of Sciences: *See*—
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Potash, Louis; Chanock, Robert M.; Purcell, Robert H.; and Kapikian, Albert Z., to Dyncorp; and National Institutes of Health. African green monkey kidney cell lines useful for maintaining viruses and for preparation of viral vaccines. 5,646,033, Cl. 435-364.000.
Potosky, Milton J.; and Scheer, Robert J., to Congoleum Corporation. Decorative surface coverings and methods for making. 5,645,889, Cl. 427-256.000.
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Powertech Labs Inc.: *See*—
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Prakash, Nellikunja J.; and Bowlin, Terry L., to Merrell Pharmaceuticals Inc. Method of treating cancer by conjunctive therapy with N,N'-bis[3-(ethylamino)propyl]-1,7-heptanediamine and a cytotoxic agent. 5,646,124, Cl. 514-34.000.
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Protek AG: *See*—
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Thompson, Thomas C.; Abbott, Martyn; and Jones, Kenneth A., 5,645,531, Cl. 604-67.000.
Quick-Stick Inc.: *See*—
Weschler, Bradley R., 5,644,946, Cl. 72-457.000.
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Schiffmann, Robert Frank; and Held, Jeffery Scott, 5,645,748, Cl. 219-710.000.
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Levarlet, Christophe Georges Claude; Finnicum, Douglas Scott; and Quiel, Robert Richard, 5,646,737, Cl. 356-429.000.
Quinn, Anna M.: *See*—
Forbes, Gregory William; Quinn, Anna M.; and Eastman, Jay M., 5,646,391, Cl. 235-462.000.
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Straka, Lawrence J., Jr., 5,645,063, Cl. 128-641.000.
Quistgaard, Jens Ulrich: *See*—
Gandini, Rebecca L.; Catunao, Delfin M.; Quistgaard, Jens Ulrich; and Butler, Lisa M., 5,645,066, Cl. 128-660.070.
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Godines, David L., 5,645,720, Cl. 210-282.000.
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Bray, Walter T., Jr., 5,644,856, Cl. 36-11.500.
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Mani, Ramesh G.; and von Klitzing, Klaus, 5,646,527, Cl. 324-251.000.
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Lacy, Jonathan Ernest; and Embleton, Jonathan Kenneth, 5,645,856, Cl. 424-455.000.
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Scalet, Frank; Berger, Joseph P.; Harting, Hal B.; Majewski, Anthony J.; Neibert, Khrystal L.; Tucker, Lois C.; Walters, Judy E.; and Weaver, Steven D., 5,645,387, Cl. 412-1.000.
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Crook, Thomas M.; and Ramberg, Randy J., 5,646,780, Cl. 359-584.000.
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Park, George Barry; Lowe, Frank James; Ganbuehler, George Michael John; Hutt, Norman; Webb, Stephen Alan; and Graulus, Hendrick, 5,645,906, Cl. 428-36.300.
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Burrier, Richard W., 5,646,625, Cl. 342-175.000.
Liles, Barry J.; Durschlag, Mark S.; and Oakes, James G., 5,646,450, Cl. 257-776.000.
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Shen, Yong; and Rudy, Steven Clark, 5,646,805, Cl. 360-113.000.
Readio, Josephine: *See*—
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Regier, Christopher G., to National Instruments Corporation. Method and apparatus for deglitching DAC signals. 5,646,620, Cl. 341-118.000.
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Reiala, Mauno Sakari, to Sunin Ltd. Solar thermal cell. 5,645,044, Cl. 126-655.000.
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Reinfelder, William C.; Kovalsky, David A.; and Jones, Corey D., to Sikorsky Aircraft Corp. Method for applying a skin layer to an airfoil structure. 5,645,670, Cl. 156-212.000.
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Reinhart, William A., to Cincinnati Milacron Inc. Drive apparatus for an injection unit. 5,645,868, Cl. 425-145.000.
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Remmers, John Edward; and Feroah, Thomas Richard, to University Technologies International, Inc. Auto CPAP system and method for preventing patient disturbance using airflow profile information. 5,645,053, Cl. 128-204.230.
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Renna, Edward M. Fire extinguisher dispenser. 5,645,129, Cl. 169-51.000.
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Ippoliti, J. Thomas; Mabbott, Gary A.; Hans, Jeremy; and Stohlmeyer, Michelle, 5,646,296, Cl. 548-314.400.
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Research Development Foundation: *See*—
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Fung, Ho-Leung; and Bauer, John Anthony, 5,646,181, Cl. 514-506.000.
Kim, Seokjin; and Sridhar, Ramalingam, 5,646,554, Cl. 326-93.000.
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ter Meulen, Volker; and Rethwilm, Axel, 5,646,032, Cl. 435-325.000.
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Rhone-Poulenc Inc.: *See*—
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Rhone-Poulenc Rorer Pharmaceuticals Inc.: *See*—
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Rhone-Poulenc Rorer S.A.: *See*—
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Rhone-Poulenc Specialty Chemicals Asia Pacific PTE LTD: *See*—
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Rickerby, David S.; White, Daniel K.; and Bell, Stanley R., to Rolls-Royce plc; and Chromalloy United Kingdom Limited. Thermal barrier coating for a superalloy article and method of application. 5,645,893, Cl. 427-405.000.
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Ota, Shuichi, 5,646,552, Cl. 326-86.000.
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Mueller, Klaus; Heugle, Bernhard; Herzog, Kurt; Oehler, Martin; Hohl, Günther; and Herderich, Hans-Jürgen, 5,645,325, Cl. 303-119.200.
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Wagener, Martin, 5,646,938, Cl. 370-276.000.
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Roberts, Peter M.; and Moon, C. Robert, 5,644,958, Cl. 81-177.800.

Roberts, William E.: *See*—
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Robey, Roger L.: *See*—
Alt, Charles A.; Merritt, Leander; Rhodes, Gary A.; Robey, Roger L.; Van Meter, Eldon E.; Ward, John S.; and Mitch, Charles H., 5,646,289, Cl. 548-110.000.

Robinson, James C.; and Canada, Ronald G., to Computational Systems Inc. Monitoring slow speed machinery using integrator and selective correction of frequency spectrum. 5,646,350, Cl. 73-602.000.

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Steele, Raymond George; Grace, Stephen John; Robinson, John Frederick; Haussrer, Andreas Karl; Brown, Eric John; Kane, Michael John; MacFarlane, Allan Paul; and Allerby, Ian Murray, 5,644,900, Cl. 53-449.000.

Robinson, Karl M.; and Walker, Michael A., to Micron Technology, Inc. Wet clean for a surface having an exposed silicon/silica interface. 5,645,737, Cl. 216-99.000.

Robinson, Keith D.; and Erickson, Thomas A., to Blender Products, Inc. Static air mixing apparatus. 5,645,481, Cl. 454-261.000.

Robinson, Scott T.; Newman, Peter H.; Merrow, Jack K.; and Anderson, DeWayne J., to Leviton Manufacturing Co., Inc. Multi-media connection housing. 5,647,045, Cl. 385-135.000.

Robl, Jeffrey A., to Bristol-Myers Squibb Co. Diazepine containing dual action inhibitors. 5,646,276, Cl. 540-500.000.

Roche Diagnostic Systems, Inc.: *See*—
Barner, Richard; Huber, Walter; Hübscher, Josef; Hurst, Jürg; and Schlatter, Daniel, 5,646,302, Cl. 548-542.000.

Rockwell International Corporation: *See*—
Lak, Tibor I.; Petrilla, Steve P.; and Lozano, Martin E., 5,644,920, Cl. 62-47.100.
Li, Xu, 5,646,990, Cl. 379-390.000.
Seabury, Charles W.; Kobrin, Paul H.; and DeNatale, Jeffrey F., 5,646,583, Cl. 333-187.000.

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Bromley, Peter; and Voellmy, Richard, 5,646,010, Cl. 435-69.100.

Rodel Nitta Company: *See*—
Kubo, Naoto; Shigeta, Yoshitane; and Ishii, Hideyuki, 5,645,474, Cl. 451-287.000.

Roden, Philip A.; and Deng, Brian T., to Texas Instruments Incorporated. Multiple block transfer mechanism. 5,647,057, Cl. 395-275.000.

Roder, Rudolf: *See*—
Luginbühl, Erich; Meyer, Michel; Roder, Rudolf; Witschi, Marcel; and Zürcher, Ernst, 5,645,159, Cl. 198-838.000.

Rodgers, Jack G.: *See*—
Petrovich, Paul A.; Rodgers, Jack G.; and Schmitz, John J., 5,644,952, Cl. 74-480.00R.

Rodime PLC: *See*—
Kadlec, Ronald James; Frederick, Thomas James; Kelley, Paul Henry; and Weilbacher, Philip Saxton, 5,646,797, Cl. 360-75.000.

Rodriguez, Henry. Drum cooler. 5,644,977, Cl. 99-517.000.

Rodriguez, Jose M.: *See*—
Cook, Anthony B.; Palmer, John J.; and Rodriguez, Jose M., 5,645,762, Cl. 252-321.000.

Rodriguez, Michael J.: *See*—
Borromeo, Peter S.; Jamison, James A.; Rodriguez, Michael J.; Turner, William W.; and Vasudevan, Venkatraghaven, 5,646,111, Cl. 514-11.000.

Roehringer, Arno: *See*—
Joerg, Wolfgang; Bordovsky, Jaromir; Cakmaz, Aydogan; Heck, Hubert; Roehringer, Arno; Gall, Claus; Abt, Reinhold; Strauss, Rainer; and Koehler, Karl-Hans, 5,644,967, Cl. 91-457.000.

Rogers, Kent Lee, to W. R. Grace & Co.-Conn. Film and pouch with patch of high elongation. 5,645,913, Cl. 428-77.000.

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Stals, Lambert Mathias Maria; De Schepper, Luc Irena Franciscus; De Ceuninck, Ward Aimè Stefan; and Roggen, Jean Joseph Marie, 5,646,540, Cl. 324-691.000.

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Nakata, Naotarou; Aoki, Naofumi; and Yamazaki, Kazutoshi, 5,645,739, Cl. 219-121.640.

Rohrmann, Jürgen: *See*—
Brekner, Michael-Joachim; Osan, Frank; and Rohrmann, Jürgen, 5,646,220, Cl. 526-160.000.

Rollin S.A.: *See*—
Serain, Hugues; and Hertzog, Denis, 5,644,985, Cl. 101-415.100.

Rollinger, Wolfgang: *See*—
Klein, Christian; Hübner-Parajsz, Christa; Batz, Hans-Georg; Rollinger, Wolfgang; Essig, Ulrich; and Kerscher, Lorenz, 5,646,255, Cl. 530-389.600.

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Rickerby, David S.; White, Daniel K.; and Bell, Stanley R., 5,645,893, Cl. 427-405.000.

Romagnino, Richard: *See*—
Bonja, Mario; Worrall, Simon John Peter Phillip; and Romagnino, Richard, 5,646,678, Cl. 348-15.000.

Romanet, Robert Fogg; Bowne, Arlyce Tolman; and Normandin, Sharon Eileen, to Eastman Kodak Company. Photographic silver halide materials and process comprising a pyrazolotriazole coupler. 5,645,981, Cl. 430-558.000.

Romanowski, Robert F., to Xerox Corporation. Printer mailbox sets access and removal system. 5,645,396, Cl. 414-789.900.

Romeo, Aurelio: *See*—
Callegaro, Lanfranco; and Romeo, Aurelio, 5,646,129, Cl. 514-54.000.

Romines, William H.: *See*—
Varney, Michael D.; and Romines, William H., 5,646,141, Cl. 514-222.800.

Roos, Mark G.: *See*—
Cope, Warren Bruce; and Roos, Mark G., 5,646,624, Cl. 342-174.000.

Roosen, Raymond: *See*—
Vanmaele, Luc; Tahon, Jean-Pierre; and Roosen, Raymond, 5,645,962, Cl. 430-7.000.

Rose, Larry D.; Kidd, Paul D.; and Ralston, Joseph L., to Morton International, Inc. Regulation of pressure in an automotive airbag module. 5,645,297, Cl. 280-739.000.

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Berglund, Neil C.; Rosedahl, Todd J.; and Steele, Steven W., 5,646,509, Cl. 320-48.000.

Rosenberg, Thomas D.: *See*—
Graf, Ben K.; Rosenberg, Thomas D.; Sklar, Joseph H.; and Ferragamo, Michael C., 5,645,588, Cl. 623-13.000.

Rosenthal, Daniel; Konath, Kannan; Whyte, Robert; Norton, Eric; and Pearce, Stuart Robert, to Schlumberger Technologies, Inc. Analog channel for mixed-signal-VLSI tester. 5,646,521, Cl. 324-158.100.

Ross, Robert A., Jr.; and Batson, Kevin A., to International Business Machines Corporation. Low power clocked set/reset fast dynamic latch. 5,646,566, Cl. 327-200.000.

Ross, Svante Bertil: *See*—
Hammarberg, Eva Maria; Johansson, Lars George; Larsson, Lars-Gunnar; Noréen, Rolf; Renyi, Lucy Anna; Ross, Svante Bertil; Sohn, Daniel Dungan; Svensson, Björn Eric; and Thorberg, Seth-Olov, 5,646,309, Cl. 549-404.000.

Rossetto, Leopoldo: *See*—
Bocchiola, Cesare; Tenti, Paolo; Rossetto, Leopoldo; and Spiazzi, Giorgio, 5,646,460, Cl. 307-169.000.

Rost, Frank: *See*—
Rieger, Uwe; Wick, Henning; Schwenk, Hans-Martin; and Rost, Frank, 5,645,174, Cl. 211-26.000.

Rosthauser, James W.: *See*—
Pantone, Richard S.; Rosthauser, James W.; and Haider, Karl W., 5,646,230, Cl. 528-64.000.

Röstlund, Tord Valter: *See*—
Albrektsson, Björn; Carlsson, Lars Valter; Jacobsson, Carl Magnus Gösta; Röstlund, Tord Valter; and Wennberg, Stig Gösta, 5,645,602, Cl. 623-20.000.

Roth, Bruce David: *See*—
Lee, Helen Tsenwhei; O'Brien, Patrick Michael; Picard, Joseph Armand; Purchase, Claude Forsey, Jr.; Roth, Bruce David; Sliskovic, Drago Robert; and White, Andrew David, 5,646,170, Cl. 514-381.000.

Roth, Jim R., to Conoco Inc. Method for increasing yield of liquid products in a delayed coking process. 5,645,712, Cl. 208-131.000.

Rothberg, Melvin: *See*—
Radovich, John M.; Rothberg, Melvin; and Washington, George, 5,645,778, Cl. 264-41.000.

Rothhaar, Ulrich: *See*—
Entenmann, Robert; Unland, Stefan; Torno, Oskar; Haeming, Werner; Rothhaar, Ulrich; Surjadi, Iwan; Hilbert, Wolfgang; Sloboda, Robert; Baeuerle, Michael; and Schenk, Klaus, 5,645,034, Cl. 123-425.000.

Rötsch, Helmut: *See*—
Zürbes, Arno; and Rötsch, Helmut, 5,645,370, Cl. 404-133.100.

Roucher, Leo R., Jr., to Navius Corporation. Distensible pet balloon and method of manufacture. 5,645,789, Cl. 264-529.000.

Roulet, Tobias: *See*—
Person, Martin; Streib, Martin; Mössner, Thomas; and Roulet, Tobias, 5,645,033, Cl. 123-399.000.

Roussel Uclaf: *See*—
Claussner, Andre; Goubet, Francois; and Teutsch, Jean-Georges, 5,646,172, Cl. 514-391.000.

Rouzegar, Mirsaeed: *See*—
Daffer, Steven J.; Mitchell, Roger E.; and Rouzegar, Mirsaeed, 5,645,578, Cl. 607-91.000.

Rovere, Delfino: *See*—
Cuman, Giorgio; and Rovere, Delfino, 5,645,863, Cl. 425-84.000.

Rowe, Gerald; Kuhn, Walter; Zippel, Christof; and Reichenmiller, Michael, to ZF Friedrichschafen AG. Transmission assembly with positive-displacement pump with suction throttle driven by a hydrodynamic converter. 5,645,406, Cl. 417-273.000.

Rowlette, John J., to Bipolar Power Corporation. Battery plates with self-passivating iron cores and mixed acid electrolyte. 5,645,959, Cl. 429-210.000.

Rowse, David Paul; Sewell, Debra Anne; Booth, Jan Anthony; and Ince, Rob William, to Royal Ordnance Public Limited Company. Aircraft cargo container. 5,645,184, Cl. 220-1.500.

Royal Doulton (UK) Limited: *See*—
Hulse, David Kenneth; and Barnett, William Colin, 5,645,777, Cl. 264-40.400.

Royal Ordnance Public Limited Company: *See*—
Rowse, David Paul; Sewell, Debra Anne; Booth, Jan Anthony; and Ince, Rob William, 5,645,184, Cl. 220-1.500.

Rozin, Alexander: *See*—
Reczek, Steven T.; Rozin, Alexander; and Pomponio, Thomas F., 5,645,774, Cl. 264-40.100.

Rozman, Allen Frank, to Lucent Technologies Inc. Circuit and method for controlling a synchronous rectifier converter. 5,646,834, Cl. 363-89.000.

Rubianes, Jose Manuel, to Sollac. Method of manufacturing a steel having good formability and good resistance to indentation. 5,645,656, Cl. 148-651.000.

Ruckmann, Wolfgang Günter: *See*—
Puschnerat, Helmut; Ruckmann, Wolfgang Günter; and Schröder, Peter, 5,644,984, Cl. 101-409.000.

Rudd, Gregory I.: *See*—
Scheppers, Karl H.; and Rudd, Gregory I., 5,646,334, Cl. 73-1.060.

Rudd, Ray G.; Sedgwick, Douglas E.; and Schlosser, Sandra L., to Ethicon Endo-Surgery, Inc. Surgical plug. 5,645,565, Cl. 606-213.000.

Rudnick, Elizabeth Marie: *See*—
Bruce, William C., Jr.; Law, Wai-On; Rudnick, Elizabeth Marie; and Laurens, Judith Elizabeth, 5,646,949, Cl. 371-27.000.

Rudy, Steven Clark: *See*—
Shen, Yong; and Rudy, Steven Clark, 5,646,805, Cl. 360-113.000.

Rueb, Kurt D.: *See*—
Petta, Gabriel; and Rueb, Kurt D., 5,646,859, Cl. 364-468.010.

Ruegg, Curtis L.; Rivas, Alberto; Laus, Reiner; and Engleman, Edgar G., to Board of Trustees of Leeland Stanford Jr. Univ., The. Alloreaction-associated antigen (ARAG): a novel member of the immunoglobulin gene superfamily. 5,646,251, Cl. 530-350.000.

Ruepp, Urs: *See*—
Odendahl, Alfred; Di Nicolantonio, Aldo; and Ruepp, Urs, 5,644,847, Cl. 30-394.000.

Ruf, Bernd: *See*—
Kusch, Hans-Jürgen; Ruf, Bernd; and Stellberger, Rudi, 5,644,980, Cl. 101-72.000.

Ruf, Wolfgang; Fey, Frank; Dietz, Thomas; Pimiskern, Klaus; and Wernlein, Gerhard, to Voith Sulzer Papiermachinen GmbH. Multilayer headbox. 5,645,689, Cl. 162-258.000.

Ruggles, Roy L.: *See*—
Laiche, Eric; Wheat, Chris; and Ruggles, Roy L., 5,645,489, Cl. 472-103.000.

Rühl, Thomas: *See*—
Henkelmann, Jochem; Heider, Marc; and Rühl, Thomas, 5,646,293, Cl. 548-262.200.

Runyon, Stephen Larry; and Schorn, Eric Bernard, to International Business Machines Corporation. Data processing system and method for improving performance of domino-type logic using multiphase clocks. 5,646,557, Cl. 326-97.000.

Ruschkowski, Johannes: *See*—
Sailer, Colin; Harmathy, Paul; Tusché , Eckhard; Weissbacher, Thomas; Schoder, Heinrich; Bachmeir, Xaver; and Ruschkowski, Johannes, 5,644,828, Cl. 29-402.060.

Russell, Jeremy Colin; Freeman, Richard Neil Templar; and Charles, Stephen Alexander, to Biocompatibles Limited. Zwitterionic materials. 5,645,883, Cl. 427-2.250.

Russell, William C.: *See*—
Barrett, Lorraine F.; Russell, William C.; Kraslavsky, Andrew J.; Wadsworth, Robert D.; and Kalwitz, George A., 5,647,056, Cl. 395-200.100.

Rutner, Herman: *See*—
Shackelford, William; Readio, Josephine; Moore, Samuel L.; and Rutner, Herman, 5,646,256, Cl. 530-391.100.

Rutz, Guido, to Gema Volstatic AG. Injector device for feeding coating powder. 5,645,380, Cl. 406-153.000.

Ryan, Dennis M., to Ampex Corporation. Moveable capstan assembly for selectively contacting a media, which assembly includes a tachometer sensor. 5,646,798, Cl. 360-85.000.

Ryan, Maria E.: *See*—
Ramsey, James Michael; Chinnock, Paul S.; and Ryan, Maria E., 5,646,447, Cl. 257-727.000.

Ryan, M. Dominic: *See*—
Christensen, Siegfried B., IV; Karpinski, Joseph M.; Ryan, M. Dominic; and Bender, Paul E., 5,646,158, Cl. 514-277.000.

Ryder International Corporation: *See*—
Davis, Richard Micheal; Lisak, Stephen P.; and Kanner, Rowland W., 5,645,555, Cl. 606-182.000.

Ryobi, Ltd.: *See*—
Honkawa, Yoshinori; and Sakaguchi, Takashi, 5,646,738, Cl. 356-445.000.

S & S Slides, Inc.: *See*—
Polka, Alan R.; Szalankiewicz, James J.; and Walter, Scott A., 5,645,158, Cl. 198-812.000.

S. C. Johnson & Son, Inc.: *See*—
Schroeder, John A.; Clobes, Armin L.; Wefler, Mark E.; Hygema, Terry L.; and Smith, Kevin W., 5,647,053, Cl. 392-390.000.

Sabary, Laurent: *See*—
Cahuzac, Georges Jean Joseph; Jollivet, Bernard André; Baudry, Jean-Claude; Dubearn, Bruno; and Sabary, Laurent, 5,645,677, Cl. 156-361.000.

Sable, Lewis E.; and Wenzel, Richard A., to Tenneco Plastics Company. Apparatus for the thermal densification of thermoplastic articles. 5,645,862, Cl. 425-73.000.

Sabo, James Michael, to Whitaker Corporation, The. Low profile mixed media information outlet. 5,645,449, Cl. 439-540.100.

Sacherer, Klaus-Dieter: *See*—
Schreiber, Joerg; Schmid, Wilfried; Kuhr, Hans-Juergen; Eikmeier, Heino; and Sacherer, Klaus-Dieter, 5,645,798, Cl. 422-58.000.

Sachinala, Navzer D.; and Litt, Morton H., to Hawaii Agriculture Research Center. Epoxy monomers from sucrose. 5,646,226, Cl. 527-306.000.

Sacripante, Guerino G.; Kedian, Maureen M.; Patel, Raj D.; Mychajlowskij, Walter; and Ong, Beng S., to Xerox Corporation. Cationic Toner processes. 5,645,968, Cl. 430-137.000.

Sada, Toshio: *See*—
Yanagisawa, Hiroaki; Amemiya, Yoshiya; Shimoji, Yasuo; Kanazaki, Takuro; Koike, Hiroyuki; and Sada, Toshio, 5,646,171, Cl. 514-381.000.

Sadaki, Akihiro, to Seiko Instruments Inc. Thermal transfer recording apparatus and method for regularly assigning blank dots. 5,646,671, Cl. 347-172.000.

Sadamitsu, Katsushi: *See*—
Murayama, Junichi; Toyama, Niichi; Matsuo, Kazuhide; Takashima, Hideki; Sadamitsu, Katsushi; Sugino, Kiichi; and Iiyama, Kazuto, 5,645,895, Cl. 427-424.000.

Sadarnac, Daniel; and D'Almeida, Sylvain, to Alcatel Converters. Switch mode power supply using a saturable inductor to provide a pulsed current source. 5,646,836, Cl. 363-98.000.

Sadrnoori, Bijan: *See*—
Cotner, Ronald L.; Parise, Gerald J.; Asacker, Thomas E.; Sadrnoori, Bijan; and Muller, Robert A., 5,645,054, Cl. 128-204.230.

Saegusa, Takashi, to Nikon Corporation. Flashing LCD display system. 5,646,645, Cl. 345-101.000.

Saeki, Keiji: *See*—
Kitayama, Yoshifumi; Mori, Kazuhiro; Saeki, Keiji; and Akiguchi, Takashi, 5,646,439, Cl. 257-632.000.

Saferstein, Al: *See*—
Nickles, Aaron Michael; Nickles, Daniel Robert; and Saferstein, Al, 5,646,598, Cl. 340-628.000.

Sagane, Masayuki: *See*—
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Sagawa, Masato: *See*—
Fujimura, Setsuo; Matsuura, Yutaka; and Sagawa, Masato, 5,645,651, Cl. 148-302.000.

Sahlberg, Douglas; and Anderson, DeWayne, to Leviton Manufacturing Co., Inc. Electrical conductor connecting system incorporating cutting ledge. 5,645,444, Cl. 439-392.000.

Sahm, Michael K.: *See*—
Sethna, Rustam H.; Athalye, Arul M.; and Sahm, Michael K., 5,645,771, Cl. 261-123.000.

Sahni, Paramdeep Singh; and Soong, Andrew A., to AT&T. Network communication system with global event calendar information and trunk allocation. 5,646,986, Cl. 379-220.000.

Saidi, Ali, to Motorola, Inc. Method and apparatus for reducing memory requirements in a reduced line active addressing display system. 5,646,652, Cl. 345-208.000.

Sailer, Colin; Harmathy, Paul; Tusché , Eckhard; Weissbacher, Thomas; Schoder, Heinrich; Bachmeir, Xaver; and Ruschkowski, Johannes, to MAN Roland Druckmaschinen AG. Device for in situ repairing of a cylinder in a printing machine. 5,644,828, Cl. 29-402.060.

Saint Gobain Vitrage: *See*—
Cornils, Gerd; Joeris, Herbert; Kotte, Rolf; and Scholl, Heinz, 5,645,785, Cl. 264-252.000.

Saito, Hitoshi: *See*—
Tamura, Yoshihiko; Saito, Hitoshi; Furuse, Minoru; Yamauchi, Mineo; and Horii, Takumi, 5,646,090, Cl. 503-227.000.

Saito, Makoto, to Mitsubishi Corporation. Data coypright management method. 5,646,999, Cl. 380-25.000.

Saito, Noriaki: *See*—
Akiba, Masatsugu; Shiomi, Yutaka; Takebe, Kazuo; Saito, Noriaki; and Morimoto, Takashi, 5,646,204, Cl. 523-443.000.

Saito, Shinji: *See*—
Ejiri, Kiyomi; Inaba, Hiroo; Saito, Shinji; and Hayakawa, Satoru, 5,645,917, Cl. 428-141.000.

Saito, Shinya: *See*—
Murakami, Kazuo; Awamura, Kazuo; and Saito, Shinya, 5,644,949, Cl. 74-56.000.

Saito, Sigeo: *See*—
Mihara, Takahisa; Samma, Shoji; and Saito, Sigeo, 5,646,800, Cl. 360-97.010.

Saito, Yoko: *See*—
Nakata, Toshihiko; Hirasawa, Shigeki; Saito, Yoko; Ninomiya, Takanori; and Nomoto, Mineo, 5,645,351, Cl. 374-161.000.

Saito, Yoshiyuki: *See*—

Kobayashi, Masanori; Saito, Yoshiyuki; Ohata, Takashi; Ono, Fumiyoshi; and Minamoto, Noboru, 5,645,107, Cl. 137-625.230.

Saitta, George N., Jr. Fishing reel. 5,645,238, Cl. 242-264.000.

Sakaguchi, Akira; Kitahara, Takashi; Koizumi, Keiko; Sato, Noriko; Hori, Kimihiko; and Shinta, Hiroyuki, to Kao Corporation. Preparation for external application to the skin and novel benzoic acid derivatives. 5,646,184, Cl. 514-543.000.

Sakaguchi, Takashi: *See*—
Honkawa, Yoshinori; and Sakaguchi, Takashi, 5,646,738, Cl. 356-445.000.

Sakai, Yoshio: *See*—
Meguro, Satoshi; Uchibori, Kiyofumi; Suzuki, Norio; Motoyoshi, Makoto; Koike, Atsuyoshi; Yamanaka, Toshiaki; Sakai, Yoshio; Kaga, Toru; Hashimoto, Naotaka; Hashimoto, Takashi; Honjou, Shigeru; and Minato, Osamu, 5,646,423, Cl. 257-51.000.

Sakamaki, Takashi: *See*—
Okuhara, Takeshi; Matsumoto, Tsuyoshi; and Sakamaki, Takashi, 5,645,441, Cl. 439-164.000.

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Shimizu, Osamu; Utsumi, Minoru; Yamashita, Yuudai; Kamiyama, Hironori; Sakano, Shinichi; and Okabe, Masato, 5,646,927, Cl. 369-99.000.

Sakashita, Takeshi; Shimoda, Tomoaki; and Nagai, Takashi, to General Electric Company. Polycarbonate copolycarbonate resin compositions and preparing method thereof. 5,646,233, Cl. 528-176.000.

Sakazume, Suehiro; Miyamoto, Tsutomu; and Shimizu, Hiroshi, to Nippon Petrochemicals Company, Limited. Polypropylene monoaxially oriented material, woven or non-woven fabric, laminated product and preparation method. 5,645,933, Cl. 442-290.000.

Sakura Rubber Co., Ltd.: *See*—
Horimoto, Akira, 5,645,302, Cl. 285-70.000.

Sakurai, Masanori, to Sugatsune Industrial Co., Ltd. Overhead door. 5,645,333, Cl. 312-322.000.

Sakurai, Osamu: *See*—
Handa, Hiroto; Muramatsu, Hidenori; Satoh, Nobuhiro; Kanno, Satoshi; and Sakurai, Osamu, 5,646,926, Cl. 369-77.200.

Salazar, Mike A.; and Foreman, Larry R., to University of California Office of Technology Transfer, The Regents of the. Intraocular lens fabrication. 5,645,665, Cl. 156-73.100.

Salbeck, Gerhard, deceased (by Gisela Salbeck, heiress): *See*—
Kuhn, Birgit; Salbeck, Gerhard, deceased; Döller, Uwe; Schnatterer, Stefan; Schubert, Hans-Herbert; Knauf, Werner; Waltersdorfer, Anna; and Kern, Manfred, 5,646,147, Cl. 514-252.000.

Salbeck, Gisela, heiress: *See*—
Kuhn, Birgit; Salbeck, Gerhard, deceased; Döller, Uwe; Schnatterer, Stefan; Schubert, Hans-Herbert; Knauf, Werner; Waltersdorfer, Anna; and Kern, Manfred, 5,646,147, Cl. 514-252.000.

Saldell, Ulf; Bergquist, Håkan; and Engblom, Gunnar, to Allgon AB. Antenna mounting on windows. 5,646,636, Cl. 343-713.000.

Salford Engineering Limited: *See*—
O'Neill, Oliver; and Foley, Thomas, 5,645,345, Cl. 366-186.000.

Salomonsson, Erik: *See*—
Ekmark, Ellert; and Salomonsson, Erik, 5,644,886, Cl. 52-518.000.

Salpekar, Anil M.: *See*—
De, Nimai C.; and Salpekar, Anil M., 5,645,848, Cl. 424-408.000.

Salsburg, Fredric: *See*—
Filiberti, Richard J.; Salsburg, Fredric; and Roberts, William E., 5,645,390, Cl. 414-390.000.

Salvage, Richard James; and Harrington, Steven John, to Knowles Electronics Co. Electroacostic transducer. 5,647,013, Cl. 381-192.000.

Salvatore, Christopher A.: *See*—
Jacobson, Marlene A.; Johnson, Robert G.; and Salvatore, Christopher A., 5,646,156, Cl. 514-263.000.

Salz, Rainer: *See*—
Kuhm, Peter; Salz, Rainer; and Blasey, Gerhard, 5,645,811, Cl. 423-700.000.

Samani, Jacques, to Fixano. Interspinal vertebral implant. 5,645,599, Cl. 623-17.000.

Samma, Shoji: *See*—
Mihara, Takahisa; Samma, Shoji; and Saito, Sigeo, 5,646,800, Cl. 360-97.010.

Sammells, Anthony F.: *See*—
White, James H.; Schwartz, Michael; and Sammells, Anthony F., 5,645,700, Cl. 204-252.000.

Samole, Sidney: *See*—
Hazinski, Daniel P.; and Samole, Sidney, 5,645,096, Cl. 135-126.000.

Samra, Nicholas G., to Motorola, Inc. Content addressable memory system. 5,646,878, Cl. 365-49.000.

Samson, Gene: *See*—
Sung, Ruey; and Samson, Gene, 5,645,082, Cl. 128-897.000.

Samsung Electronics Co., Ltd.: *See*—
Ha, Dong-Kyu; and Lee, Duk-Hee, 5,645,719, Cl. 210-232.000.
Han, Suk-Jin, 5,646,494, Cl. 318-587.000.
Jang, Hyun-Soon; and Lee, Seung-Hun, 5,646,899, Cl. 365-205.000.
Kim, Kwang Kook, 5,646,743, Cl. 386-57.000.
Lee, Seung-ho, 5,646,906, Cl. 365-240.000.
Oh, Ji-byoung; Suh, Moon-hwan; and Leim, Jang-earn, 5,646,699, Cl. 348-553.000.
Park, Gi-bok, 5,646,700, Cl. 348-718.000.
Rhee, Tae-pok, 5,646,054, Cl. 437-30.000.
Shin, Se-kyoon, 5,645,908, Cl. 428-64.100.
Yang, Jian; and Limberg, Allen LeRoy, 5,646,698, Cl. 348-475.000.

Sanborn, Duane F.: *See*—
Hartfield, Jon P.; and Sanborn, Duane F., 5,645,124, Cl. 165-117.000.

Sandberg, Lars Göran: *See*—
Kihlberg, Reinhold; Lindgren, Svante Bengt; and Sandberg, Lars Göran, 5,646,118, Cl. 514-12.000.

Sandborg, Thomas R.: *See*—
Carr, Douglas E.; and Sandborg, Thomas R., 5,644,924, Cl. 62-133.000.

Sanden Corporation: *See*—
Satoh, Naoto; and Ohsato, Kazumi, 5,645,477, Cl. 453-40.000.

Sanders, J. Larry, to Donlar Corporation. Polyaspartic acid and its analogues in combination with insecticides. 5,646,133, Cl. 514-86.000.

Sandler, Eugene: *See*—
Axtman, Gerald J., 5,645,704, Cl. 204-665.000.

Sandor, John L., to Hubbell Incorporated. Electrical connector with funnel cap. 5,645,447, Cl. 439-467.000.

Sandsjö , Leif: *See*—
Kadefors, Roland; Sandsjö , Leif; and Öberg, Tommy, 5,645,073, Cl. 128-733.000.

Sandvik AB: *See*—
Åsberg, Bengt, 5,645,132, Cl. 175-318.000.

Sanger, Jay L.: *See*—
Wirth, John, Jr.; Sanger, Jay L.; and Tompkins, Mark P., 5,645,117, Cl. 144-28.000.

Sankyo Company, Limited: *See*—
Yanagisawa, Hiroaki; Amemiya, Yoshiya; Shimoji, Yasuo; Kanazaki, Takuro; Koike, Hiroyuki; and Sada, Toshio, 5,646,171, Cl. 514-381.000.

Sankyo Seiki Mfg. Co., Ltd.: *See*—
Oguchi, Katsuaki, 5,646,392, Cl. 235-475.000.

Sano, Kiyoshi: *See*—
Fujio, Katsuharu; Sano, Kiyoshi; Hase, Syouzou; Morimoto, Takashi; and Yamamoto, Shuichi, 5,645,408, Cl. 418-55.400.

Sano, Yoshiaki, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Turn control apparatus for a vehicle. 5,645,326, Cl. 303-146.000.

Sanorell Pharma GmbH & Co. KG: *See*—
Nader, Werner, 5,645,984, Cl. 435-5.000.

Sanshin Kogyo Kabushiki Kaisha: *See*—
Motose, Hitoshi, 5,645,032, Cl. 123-339.160.

Santa Barbara Research Center: *See*—
Cockrum, Charles A.; and Schulte, Eric F., 5,646,426, Cl. 257-188.000.
Kasai, Ichiro; and Toman, John R., 5,646,437, Cl. 257-437.000.

Santiago, Tito H.: *See*—
van Schravendijk, Bart J.; Burkhart, Christopher W.; Santiago, Tito H.; Pomeroy, Charles E.; and Lind, Jeffrey W., 5,645,625, Cl. 95-46.000.

Sanyo Electric Co., Ltd.: *See*—
Hamada, Minoru, 5,646,428, Cl. 257-239.000.

Sanyo Vacuum Industries Co., Ltd.: *See*—
Fukuchi, Shunsei; Iwamoto, Makoto; Kitabatake, Akihiro; Tanimoto, Masahiro; Maekawa, Masaki; and Shimoyama, Naoki, 5,645,901, Cl. 428-1.000.

Sarma, Kalluri R.: *See*—
Akinwande, Akintunde Ibitayo (Tayo); and Sarma, Kalluri R., 5,646,702, Cl. 349-69.000.

Sarraf, Sanwal P.: *See*—
Kurtz, Andrew F.; Debesis, John R.; and Sarraf, Sanwal P., 5,646,786, Cl. 359-637.000.

Saruwatari, Masatoshi: *See*—
Takara, Hidehiko; Kawanishi, Satoki; and Saruwatari, Masatoshi, 5,646,774, Cl. 359-340.000.

Sasaki, Mitsuru: *See*—
Matsuo, Fumiyuki; Kanazawa, Daisuke; Sasaki, Mitsuru; Matsubara, Shinichi; Higashino, Katsuhiko; and Yokoo, Toshiaki, 5,645,969, Cl. 430-165.000.

Sasaki, Seimi: *See*—
Ochiai, Ryoichi; Miura, Kazunori; Sasaki, Seimi; and Nakagawa, Goji, 5,647,042, Cl. 385-56.000.

Sasaki, Takashi; Nishidate, Ayumi; Nagayama, Kenji; and Sato, Yoshinobu, to Hitachi Cable Ltd. Metal tube and electric cable using the same. 5,646,372, Cl. 174-126.200.

Sasaki, Takeshi: *See*—
Shiro, Takashi; Iwata, Kaoru; Nitta, Hideaki; Sasaki, Takeshi; and Yonemura, Utami, 5,645,766, Cl. 252-582.000.

Sasaki, Tohru: *See*—
Nomura, Hironori; Ohnishi, Hirofumi; Matsura, Yoshinori; and Sasaki, Tohru, 5,645,543, Cl. 604-385.200.

Saso, Mitsuhiro, to Himeji Lodge Hakuba Co., Ltd. Golf club. 5,645,495, Cl. 473-345.000.

Sato, Chikara: *See*—
Nakagawa, Tomohito; Hiroi, Masakazu; Sato, Chikara; Isobe, Yoshinori; and Yoshida, Akimaro, 5,645,273, Cl. 271-10.100.

Sato, Haruhiko: *See*—
Koga, Hiroshi; Sato, Haruhiko; and Ishizawa, Takenori, 5,646,310, Cl. 549-405.000.

Sato, Hidetoshi: *See*—
Hirayama, Yasuo; Sato, Hidetoshi; Ushiyama, Keiji; and Miyakoshi, Koji, 5,645,457, Cl. 439-801.000.

Sato, Junji: *See*—
Kitano, Kimikazu; Kanda, Takao; Henmi, Takao; Makino, Futoshi; and Sato, Junji, 5,645,157, Cl. 198-811.000.

Sato, Kenji; Okamoto, Iwao; and Okuyama, Chiaki, to Fujitsu Limited. Method for manufacturing a magnetic recording member. 5,645,899, Cl. 427-539.000.

Sato, Noriko: *See*—
Sakaguchi, Akira; Kitahara, Takashi; Koizumi, Keiko; Sato, Noriko; Hori, Kimihiko; and Shinta, Hiroyuki, 5,646,184, Cl. 514-543.000.

Sato, Osamu; and Shimada, Koichi, to Canon Denshi Kabushiki Kaisha. Light-quantity control device. 5,646,769, Cl. 359-230.000.

Sato, Osamu; and Shimada, Koichi, to Canon Denshi Kabushiki Kaisha. Light-quantity control device. 5,646,770, Cl. 359-230.000.

Sato, Sinichi; Suzuki, Nobuo; Yamaga, Hiroyoshi; and Hosaka, Sigeo, to Hodogaya Chemical Company Limited. Charge controlling agent composition and toner containing said composition. 5,645,967, Cl. 430-110.000.

Sato, Soichiro: *See*—
Suzuki, Fumio; Nakasato, Yoshisuke; Tsumuki, Hiroshi; Sato, Soichiro; Tamura, Tadafumi; and Nakajima, Hiroshi, 5,646,283, Cl. 546-61.000.

Sato, Susumu, to Nikon Corporation. Optical system capable of correcting image position. 5,646,779, Cl. 359-557.000.

Sato, Yokichi: *See*—
Ishizaki, Sadao; Nishida, Masahiko; and Sato, Yokichi, 5,645,650, Cl. 148-260.000.

Sato, Yoshinobu: *See*—
Sasaki, Takashi; Nishidate, Ayumi; Nagayama, Kenji; and Sato, Yoshinobu, 5,646,372, Cl. 174-126.200.

Sato, Yu, to Ando Electric Co., Ltd. Delay circuit. 5,646,568, Cl. 327-276.000.

Satoh, Naoto; and Ohsato, Kazumi, to Sanden Corporation. Change returning device of coin mechanism. 5,645,477, Cl. 453-40.000.

Satoh, Nobuhiro: *See*—
Handa, Hiroto; Muramatsu, Hidenori; Satoh, Nobuhiro; Kanno, Satoshi; and Sakurai, Osamu, 5,646,926, Cl. 369-77.200.

Saturn Corporation: *See*—
O'Connell, Glenn Patrick; and Nitz, Larry Theodore, 5,646,851, Cl. 364-426.041.

Sauer, Don Roy, to National Semiconductor Corporation. Composite precision, high-frequency rail-to-rail amplifier. 5,646,575, Cl. 330-261.000.

Saurin, Claudio; and Rizzo, Giampietro, to ZF Padova S.p.A. Transmission with built-in brake, particularly for vehicles. 5,645,148, Cl. 192-4.00A.

Savage, Robert C.: *See*—
Green, David T.; Palmer, Mitchell J.; Milliman, Keith L.; Savage, Robert C.; McClure, Richard C.; and Heaton, Lisa W., 5,645,209, Cl. 227-175.200.

Savard, Laurier: *See*—
MacLennan, Charles D.; Palfy, Nick; Savard, Laurier; and Mitchell, Robert E., 5,644,965, Cl. 83-842.000.

Sawada, Ritsuko; Lowe, John B.; and Fukuda, Minoru, to La Jolla Cancer Research Foundation. E-selection binding soluble lamp-1 polypeptide. 5,646,248, Cl. 530-350.000.

Sawada, Shinichi: *See*—
Tomi, Yoshitaka; Nakagawa, Etsuo; and Sawada, Shinichi, 5,645,759, Cl. 252-299.630.

Sawgrass Systems, Inc.: *See*—
Xu, Ming; and Hale, Nathan S., 5,644,988, Cl. 101-488.000.

Scalet, Frank; Berger, Joseph P.; Harting, Hal B.; Majewski, Anthony J.; Neibert, Khrystal L.; Tucker, Lois C.; Walters, Judy E.; and Weaver, Steven D., to R. R. Donnelley & Sons Company. Method and apparatus for affixing inserts within books on a binding line. 5,645,387, Cl. 412-1.000.

Scambia Industrial Developments Aktiengesellschaft: *See*—
Steenackers, Pieter D.; and Alexnat, J. W. Jörg, 5,645,803, Cl. 422-177.000.

Scandalis, Aneesa Rahman: *See*—
Broder, Damon W.; Hilliard, William C.; Scandalis, Aneesa Rahman; Firl, Gerold G.; Giles, Robert R.; and Milkovits, Joseph P., 5,646,967, Cl. 347-104.000.

Scanlon, Lawrence G., Jr.: *See*—
Scrosati, Bruno; Marsh, Richard A.; and Scanlon, Lawrence G., Jr., 5,645,960, Cl. 429-219.000.

Schad, Robert D.; and Young, William C., to Husky Injection Molding Systems Ltd. Insert molding system. 5,645,865, Cl. 425-126.100.

Schaefers, Andrew G.; and Austin, George K., Jr., to A-Dec, Inc. Control mechanism for sliding panel. 5,645,144, Cl. 188-170.000.

Schafheutle, Markus A.; Voelker, Achim; Wehner, Susanne; Walz, Gerd; and Zoeller, Joachim, to Hoechst Aktiengesellschaft. Polyesters and their use as additives in coating compositions. 5,646,236, Cl. 528-288.000.

Schaller, Thomas, to Delphi Automotive Systems Deutschland GmbH. Potential distributor especially for fuse boxes of motor vehicles. 5,645,443, Cl. 439-212.000.

Schantz, Christopher A.: *See*—
Cowger, Bruce; Beeson, Robert R.; Schantz, Christopher A.; and West, William J., 5,646,666, Cl. 347-87.000.

Schaupert, Kurt; and Kahlke, Michael, to Schott Glaswerke. Radiation gas burner with safety device. 5,645,411, Cl. 431-77.000.

Scheer, Robert J.: *See*—
Potosky, Milton J.; and Scheer, Robert J., 5,645,889, Cl. 427-256.000.

Scheimann, David W.: *See*—
Shah, Jitendra T.; Sivakumar, Ananthasubramanian; and Scheimann, David W., 5,645,799, Cl. 422-62.000.

Schell, Philip L., to PPG Industries, Inc. Aqueous sizing compositions for glass fibers providing improved whiteness in glass fiber reinforced plastics. 5,646,207, Cl. 524-47.000.

Schenk, Klaus: *See*—
Entenmann, Robert; Unland, Stefan; Torno, Oskar; Haeming, Werner; Rothhaar, Ulrich; Surjadi, Iwan; Hilbert, Wolfgang; Sloboda, Robert; Baeuerle, Michael; and Schenk, Klaus, 5,645,034, Cl. 123-425.000.

Schepis, Dominic Joseph; and Shepard, Joseph Francis, to International Business Machines Corporation. Method and structure for front-side gettering of silicon-on-insulator substrates. 5,646,053, Cl. 437-10.000.

Scheppers, Karl H.; and Rudd, Gregory I., to Seagate Technology, Inc. Multisample dynamic headspace sampler. 5,646,334, Cl. 73-1.060.

Scherer, Karl B.: *See*—
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Schering-Plough HealthCare Products, Inc.: *See*—
Meyer, Thomas A.; and Ando, Michael E., 5,645,822, Cl. 424-59.000.

Schiavone, Robert J.: *See*—
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Schick, Jean-François, to Goro S.A. Device for belt connectors. 5,644,836, Cl. 29-798.000.

Schiel, Christian: *See*—
Zuefle, Thomas; Schiel, Christian; and Steiner, Karl, 5,645,691, Cl. 162-358.300.

Schierbeek, Kenneth L.: *See*—
Blank, Rodney K.; Gahan, Richard J.; Haselhuhn, Howard J., Jr.; Schierbeek, Kenneth L.; and Schofield, Kenneth, 5,644,851, Cl. 33-361.000.

Schierling, Bernhard: *See*—
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Schiffmann, Robert Frank; and Held, Jeffery Scott, to Quiclave, L.L.C. System for simultaneous microwave sterilization of multiple medical instruments. 5,645,748, Cl. 219-710.000.

Schilling, Walter; Ofner, Silvio; and Veenstra, Siem J., to Ciba-Geigy Corporation. 1-acylpiperidine compounds. 5,646,144, Cl. 514-241.000.

Schilling, Walter: *See*—
Göschke, Richard; Maibaum, Jürgen Klaus; Schilling, Walter; Stutz, Stefan; Rigollier, Pascal; Yamaguchi, Yasuchika; Cohen, Nissim Claude; and Herold, Peter, 5,646,143, Cl. 514-233.800.

Schippers, Heinz; Dammann, Peter; Bauer, Karl; and Hanisch, Michael, to Barmag AG. Yarn false twist crimping apparatus. 5,644,908, Cl. 57-290.000.

Schlatter, Daniel: *See*—
Barner, Richard; Huber, Walter; Hübscher, Josef; Hurst, Jürg; and Schlatter, Daniel, 5,646,302, Cl. 548-542.000.

Schlegel Corporation: *See*—
Miska, Stanley R.; Courtney, Daniel T.; and Hermann, Kenneth W., 5,646,369, Cl. 174-35.0GC.

Schleicher, Andreas; Piesold, Jan-Peter; and Kohlhepp, Klaus, to Hoechst Aktiengesellschaft. Polyarylene sulfide molding composition. 5,646,202, Cl. 523-212.000.

Schlessmann, Helmut, to Andreas Stihl. Internal combustion engine for a portable handheld work apparatus. 5,645,026, Cl. 123-184.460.

Schlosser, Sandra L.: *See*—
Rudd, Ray G.; Sedgwick, Douglas E.; and Schlosser, Sandra L., 5,645,565, Cl. 606-213.000.

Schlumberger Technologies, Inc.: *See*—
Rosenthal, Daniel; Konath, Kannan; Whyte, Robert; Norton, Eric; and Pearce, Stuart Robert, 5,646,521, Cl. 324-158.100.

Schlumberger Technology Corporation: *See*—
Hagenes, Odd Bjarte, 5,646,342, Cl. 73-152.020.
Hsu, Chuar-Jian; Johnson, David L.; Kostek, Sergio; and Ounadjela, Abderrhamane, 5,646,379, Cl. 181-101.000.

Schmick, Clemens: *See*—
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Schmid, Keith C.: *See*—
Cortes, Timothy M.; Kakalec, Robert John; and Schmid, Keith C., 5,646,462, Cl. 307-127.000.

Schmid, Mechtilde; Jäckle, Holger; and Koch, Siegfried, to Mannesmann Kienzle. Taximeter. 5,646,387, Cl. 235-30.00R.

Schmid, Wilfried: *See*—
Schreiber, Joerg; Schmid, Wilfried; Kuhr, Hans-Juergen; Eikmeier, Heino; and Sacherer, Klaus-Dieter, 5,645,798, Cl. 422-58.000.

Schmidt, Alfred T.: *See*—
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Schmidt, Axel: *See*—
Gompper, Rudolf; Kubbies, Manfred; Schmidt, Axel; and Virnekas, Bernhard, 5,646,295, Cl. 548-311.700.

Schmidt, Franklin T.: *See*—
Long, Norris R.; Schulte, Clyde R.; Looslie, Rick L.; and Schmidt, Franklin T., 5,645,043, Cl. 126-92.0AC.

Schmidt, Gabriele; Schmidt, Karl-Heinz; and Delesky, Hans, to Beru Rupprecht GmbH & Co. KG. Glow plug with zirconium dioxide coating and nicraly adhesive layer. 5,645,742, Cl. 219-270.000.

Schmidt, Gregory F.: *See*—
Patton, Jasson Todd; Devore, David D.; Timmers, Franis J.; Soto, Jorge; Schmidt, Gregory F.; and Wilson, David R., 5,646,084, Cl. 502-152.000.

Schmidt, John: *See*—
Ni, Li; Borgeson, Robert A.; Kules, Nick M.; and Schmidt, John, 5,645,409, Cl. 431-8.000.

Schmidt, Karl-Heinz: *See*—

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Schmidt, Larry E.: *See*—
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Gudat, Adam J.; Whittaker, William L.; Kleimenhagen, Karl W.; Christensen, Dana A.; Kemner, Carl A.; Bradbury, Walter J.; Koehrsen, Craig L.; Kyrtsos, Christos T.; Peterson, Joel L.; Schmidt, Larry E.; Stafford, Darrell E.; and Weinbeck, Louis J., 5,646,845, Cl. 364-424.051.
Schmidt, Robert C.: *See*—
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Schmidt, Ronald M.: *See*—
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Schmidt, Stefan: *See*—
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Schmitz, Adele: *See*—
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Schmitz, John J.: *See*—
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Schnaitmann, Dieter: *See*—
Schneider, Manfred; Schunck, Rainer; Schnaitmann, Dieter; and Brost, Udo, 5,645,636, Cl. 106-493.000.
Schnatterer, Stefan: *See*—
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Schneider (USA) Inc: *See*—
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Schneider, Manfred; Schunck, Rainer; Schnaitmann, Dieter; and Brost, Udo, to Hoechst Aktiengesellschaft. Pasty pigment preparations, preparation thereof and use thereof. 5,645,636, Cl. 106-493.000.
Schneider, Markus; and Moser, Walter, to Sulzer Medizinaltechnik AG; and Protek AG. Tibia platform for a knee joint prosthesis. 5,645,604, Cl. 623-20.000.
Schnitzler, Paul J. Foam gun tip assembly. 5,645,199, Cl. 222-567.000.
Schoch, Martin: *See*—
Oehy, Jürg; Bider, Kurt; and Schoch, Martin, 5,645,606, Cl. 623-22.000.
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Schoeps, Knut Christian, to Atlas Copco Tools AB. Hydraulic torque impulse mechanism. 5,645,130, Cl. 173-93.500.
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Scholl, Heinz: *See*—
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Schorn, Eric Bernard: *See*—
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Schott Glaswerke: *See*—
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Schramm, Norbert: *See*—
Bräckelmann, Wolfgang; Schramm, Norbert; and Baumbach, Frank, 5,645,102, Cl. 137-238.000.
Schreiber, Joerg; Schmid, Wilfried; Kuhr, Hans-Juergen; Eikmeier, Heino; and Sacherer, Klaus-Dieter, to Boehringer Mannheim GmbH. Test elements in sealed chambers for analyzing compounds contained in liquid samples. 5,645,798, Cl. 422-58.000.
Schricker, David R.; and Scholl, Rolland D., to Caterpillar Inc. Apparatus and method for diagnosing an engine using an oil pressure model. 5,646,341, Cl. 73-117.300.
Schriefer, Herbert, to Gleason Works, The. Method for the precision machining of gear-wheels. 5,645,467, Cl. 451-8.000.
Schrock, Clifford B.; and Engel, Herbert E., to Analytical Systems Engineering Corp.; and Cablebus Systems Corporation. Heat apportionment system. 5,646,858, Cl. 364-464.220.
Schröder, Peter: *See*—
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Schroeder, John A.; Clobes, Armin L.; Wefler, Mark E.; Hygema, Terry L.; and Smith, Kevin W., to S. C. Johnson & Son, Inc. Vapor dipensing device. 5,647,053, Cl. 392-390.000.
Schroff GmbH: *See*—
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Schueler, John T., II; and Ramirez, Stanley L., to Lockheed Fort Worth Company. Method and system for sealing a radiofrequency signal absorbing coating. 5,645,886, Cl. 427-140.000.
Schuessler, Mark A.: *See*—
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Schuler, Joachim, to Huels Aktiengesellschaft. Alkylhydrogenchlorosilanes, process for their preparation and their use. 5,646,326, Cl. 556-474.000.
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Schulte, Eric F.: *See*—
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Schulte, Helmut: *See*—
Nielinger, Werner; Schulte, Helmut; Schulte, Bernhard; and Ostlinning, Edgar, 5,645,945, Cl. 428-476.300.
Schulthess, Adrian: *See*—
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Schultz, Ruse Ann; and Fenelli, Steven P., to National Starch and Chemical Investment Holding Corporation. Polyglydicylphenyl ethers of alkyloxy chains for use in microelectronics adhesives. 5,646,315, Cl. 549-554.000.
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Schwall, Charles F. Fire safety grease seal. 5,645,128, Cl. 169-42.000.
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Danvy, Denis; Monteil, Thierry; Lusson, Christophe; Schwartz, Jean-Charles; Gros, Claude; Noel, Nadine; LeComte, Jeanne-Marie; Duhamel, Pierre; and Duhamel, Lucette, 5,646,313, Cl. 549-441.000.
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White, James H.; Schwartz, Michael; and Sammells, Anthony F., 5,645,700, Cl. 204-252.000.
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Leichtfried, Gerhard Dipl-Ing; and Martinz, Hans-Peter, 5,645,944, Cl. 428-469.000.
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Brinkmeyer, Horst; Daiss, Michael; Schwegler, Günter; and Krüger, Bertolt, 5,646,995, Cl. 380-21.000.
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Rieger, Uwe; Wick, Henning; Schwenk, Hans-Martin; and Rost, Frank, 5,645,174, Cl. 211-26.000.
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Bedford, James P.; Fortuna, Gary R.; Hollingshead, Wayne S.; Schwerzler, David S.; and Willis, Thomas J., 5,644,975, Cl. 99-407.000.
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Eckardt, Helmut; Holzschuh, Johann; Ehritt, Jürgen; Renger, Michael; and Schwesinger, Rolf, 5,645,866, Cl. 425-130.000.
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Peterson, Thomas S.; and Schwichtenberg, Dirk, 5,645,427, Cl. 433-173.000.
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Butler, Barry Lynn, 5,646,792, Cl. 359-883.000.
Scientific Design Company, Inc.: *See*—
Rizkalla, Nabil; and Armstrong, William, 5,646,087, Cl. 502-347.000.
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Blaeser, David; Burmeister, Janita; Keith, Peter; and Ressemann, Thomas, 5,645,533, Cl. 604-164.000.
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Odendahl, Alfred; Di Nicolantonio, Aldo; and Ruepp, Urs, 5,644,847, Cl. 30-394.000.
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Johnson, Lorin K.; and Longenecker, John P., 5,646,254, Cl. 530-388.850.
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Wallace, Thomas Paul; Harris, William Joseph; Carr, Francis Joseph; Rettig, Wolfgang J.; Garin-Chesa, Pilar; and Old, Lloyd J., 5,646,253, Cl. 530-387.300.
Scribner, Archie Gene: *See*—
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Neer, Charles S., 5,647,051, Cl. 388-811.000.
Seabury, Charles W.; Kobrin, Paul H.; and DeNatale, Jeffrey F., to Rockwell International Corporation. Acoustic isolator having a high impedance layer of hafnium oxide. 5,646,583, Cl. 333-187.000.
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Varanasi, Chandra C.; and Nazari, Nersi, 5,646,950, Cl. 371-43.000.
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Fountas, Thomas A., 5,644,963, Cl. 83-454.000.
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Barone, Piero; and Sebastiani, Giovanni, 5,646,529, Cl. 324-309.000.
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Sega Enterprises, Ltd.: *See*—
Horita, Kojiro; Kimura, Junichi; Hara, Hirotaka; and Okunoki, Yutaka, 5,646,694, Cl. 348-448.000.
Nagao, Yuji; and Yano, Keiji, 5,645,486, Cl. 463-27.000.
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Seiko Epson Corporation: *See*—
Abe, Akira, 5,646,562, Cl. 327-156.000.
Fujioka, Satoshi; Hirabayashi, Hiromu; Takabayashi, Nobuhisa; Nishizawa, Atsushi; and Komuro, Kiyoto, 5,646,653, Cl. 347-8.000.
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Ohmoto, Ryuji; and Uwai, Hikonosuke, 5,646,617, Cl. 341-51.000.
Seiko Instruments Inc.: *See*—
Iwaki, Tadao; Yamazaki, Tsuneo; Matsushita, Katsuki; Senbonmatsu, Shigeru; and Takano, Ryuichi, 5,646,432, Cl. 257-347.000.
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Seiler, Claus-Dietrich: *See*—
Monkiewicz, Jaroslaw; Frings, Albert; Horn, Michael; Jenkner, Peter; Koetzsch, Hans-Joachim; Kropfgans, Frank; Seiler, Claus-Dietrich; Srebny, Hans-Guenther; and Standke, Burkhard, 5,646,325, Cl. 556-440.000.
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Suwa, Koichi; Kato, Junichi; Onimura, Tadashi; Inami, Satoru; Suzuki, Jun; Ando, Atsutoshi; and Seita, Hiroyasu, 5,646,718, Cl. 399-350.000.
Seitz, Robert F., to Dev-Mark, Inc. Railroad car hatch cover. 5,644,990, Cl. 105-377.070.
Seki, Takashi: *See*—
Ishikawa, Tatsuya; and Seki, Takashi, 5,646,935, Cl. 370-207.000.
Seki, Yoshinobu, to Yazaki Corporation. Joint connector. 5,645,455, Cl. 439-723.000.
Sekiguchi, Takuya: *See*—
Yasutake, Kouichi; Haruna, Syusuke; Kusumi, Yuki; Sekiguchi, Takuya; and Hishida, Toshihiro, 5,644,936, Cl. 68-12.020.
Sekisui Chemical Co., Ltd.: *See*—
Kobayashi, Tomoyuki; Miyazaki, Kenji; and Nakamura, Masanori, 5,646,194, Cl. 521-79.000.
Sekisui Kagaku Kogyo Kabushiki Kaisha: *See*—
Kudo, Kazubo, 5,646,229, Cl. 528-53.000.
Sekula, Bernard C.: *See*—
Tancibok, Krystyna U.; and Sekula, Bernard C., 5,645,881, Cl. 426-531.000.
Semiconductor Energy Laboratory Co., Ltd.: *See*—
Zhang, Hongyong; Takayama, Toru; and Takemura, Yasuhiko, 5,646,424, Cl. 257-66.000.
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Senn, Robert: *See*—
Flückiger, Claude; Rindlisbacher, Alfred; Senn, Robert; and Uk, Solang, 5,646,145, Cl. 514-242.000.
Sensui, Takayuki, to Asahi Kogaku Kogyo Kabushiki Kaisha. Focus detecting apparatus including ray orientation changes. 5,646,393, Cl. 250-201.800.
Serain, Hugues; and Hertzog, Denis, to Rollin S.A. Printing blanket and printing cylinder fitted with this blanket. 5,644,985, Cl. 101-415.100.
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Bacon, Wesley H.; Baker, Kenneth L.; Debesis, John R.; Serbicki, Jeffrey P.; and Newkirk, James S., 5,646,674, Cl. 347-257.000.
Serizawa, Yoji: *See*—
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Serk, Park Woo: *See*—
Wakabayashi, Shozo; Tomimura, Yukio; Morishige, Koji; Umeda, Hiroshi; Serk, Park Woo; and Boshart, Mark Alan, 5,645,502, Cl. 474-85.000.
Seroldi, Giuseppe. Plane for the seat of armchairs, divans, chairs or similar, with devices for the fixing of the belts that take advantage of the tension of themselves in order to constrain them to the support framework. 5,645,321, Cl. 297-452.630.
Seta, Katsuhiro: *See*—
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Sethna, Rustam H.; Athalye, Atul M.; and Sahm, Michael K., to BOC Group, Inc., The. Gas injection apparatus and method having application to gold leaching. 5,645,771, Cl. 261-123.000.
Seto, Kaoru; and Kawana, Takashi, to Canon Kabushiki Kaisha. Color image forming apparatus which reduces toner consumption during image formation. 5,646,670, Cl. 347-131.000.
Seuser, Ulrich: *See*—
Mohr, Kurt; and Seuser, Ulrich, 5,645,143, Cl. 188-72.100.
Sew Simple Systems, Inc.: *See*—
Brocklehurst, Charles E., 5,645,002, Cl. 112-470.070.
Sewell, Debra Anne: *See*—
Rowse, David Paul; Sewell, Debra Anne; Booth, Jan Anthony; and Ince, Rob William, 5,645,184, Cl. 220-1.500.
Seyler, Paul E.: *See*—
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SGS-Thomson Microelectronics Limited: *See*—
Felix, Stephen, 5,646,567, Cl. 327-202.000.
SGS-Thomson Microelectronics S.A.: *See*—
Belot, Didier; and Bernard, Patrick, 5,646,517, Cl. 323-313.000.
Jimenez, Jean, 5,646,433, Cl. 257-355.000.
Shackelford, William; Readio, Josephine; Moore, Samuel L.; and Rutner, Herman, to Becton, Dickinson and Company. Sata and other thiol precursors. 5,646,256, Cl. 530-391.100.
Shafer, Jules A.: *See*—
Bednar, Bohumil; Egbertson, Melissa; Gould, Robert J.; Hartman, George D.; and Shafer, Jules A., 5,646,000, Cl. 435-7.210.
Shah, Bharat K.: *See*—
Guzek, Donald B.; Hausman, Russell J.; and Shah, Bharat K., 5,645,647, Cl. 127-30.000.
Shah, Jasvantrai C.; and Nathan, Sridhar S., to MCI Corporation. Knowledge based path set up and spare capacity assignment for distributed network restoration. 5,646,936, Cl. 370-228.000.
Shah, Jitendra T.; Sivakumar, Ananthasubramanian; and Scheimann, David W., to Nalco Chemical Company. Apparatus for a continuous polymer dosage optimization and waste water analysis system. 5,645,799, Cl. 422-62.000.
Shah, Ketan Narendra: *See*—
Anjur, Sriram Padmanabhan; Shah, Ketan Narendra; and Wisneski, Anthony John, 5,645,542, Cl. 604-368.000.
Shah, Tilak M., to Polygenex International, Inc. Polyurethane glove of welded polyurethane film. 5,644,798, Cl. 2-167.000.
Shain, Eric B.: *See*—
Bouma, Stanley R.; Coules, Ronald A.; Gordon, Julian; Shain, Eric B.; Solomon, Natalie A.; and Zaun, Peter, 5,645,801, Cl. 422-68.100.
Shamouilian, Shamouil; Broydo, Samuel; and Birang, Manoocher, to Applied Materials, Inc. Multi-electrode electrostatic chuck. 5,646,814, Cl. 361-234.000.
Shanbhag, Naresh Ramnath: *See*—
Im, Gi-Hong; Shanbhag, Naresh Ramnath; and Werner, Jean-Jacques, 5,646,957, Cl. 375-233.000.

Shanks, Robert B.; Lopata, Frances G.; and Graves, Kevin N., to Remington Arms Company, Inc. Conductive primer mix. 5,646,367, Cl. 149-24.000.
Shannon, James M.: *See—*
Shannon, John K.; and Shannon, James M., 5,645,612, Cl. 29-623.200.
Shannon, John K.; and Shannon, James M., to Enersafe Corporation. Welding and cover sealing machine apparatus for battery assembly and an improved method of manufacturing storage batteries. 5,645,612, Cl. 29-623.200.
Shantzis, Mark D. Separated waste collection control for multistory building. 5,645,172, Cl. 209-703.000.
Shapiro, Alan R.; and Kay, Donald A., to Navion Biomedical Corporation. Catheter depth, position and orientation location system. 5,645,065, Cl. 128-653.100.
Shariatdoust, Reza S.: *See—*
Daubert, Steven J.; and Shariatdoust, Reza S., 5,646,619, Cl. 341-118.000.
Sharma, Madan; Schmidt, Ronald M.; and Schmidt, Alfred T., to Litebeams, Inc. High reliability incandescent portable illumination system. 5,646,484, Cl. 315-74.000.
Sharp Kabushiki Kaisha: *See—*
Fukuchi, Shunsei; Iwamoto, Makoto; Kitabatake, Akihiro; Tanimoto, Masahiro; Maekawa, Masaki; and Shimoyama, Naoki, 5,645,901, Cl. 428-1.000.
Inui, Tetsuya; Takahashi, Akira; and Ohta, Kenji, 5,645,978, Cl. 430-321.000.
Omoto, Masatoshi, 5,645,707, Cl. 205-114.000.
Sota, Yoshiki, 5,646,829, Cl. 361-813.000.
Takeda, Hitoshi; Kido, Masami; Kaneko, Takashi; and Koden, Mitsuhiro, 5,646,754, Cl. 349-172.000.
Yamada, Nobuaki; Kozaki, Shuichi; Mizobe, Hoyo; Yoshida, Masahiko; and Suzuki, Kenji, 5,645,760, Cl. 252-299.660.
Sharpe-Geisler, Bradley A.; Lin, Jonathan; and Barsan, Radu, to Advanced Micro Devices, Inc. CMOS memory cell with tunneling during program and erase through the NMOS and PMOS transistors and a pass gate separating the NMOS and PMOS transistors. 5,646,901, Cl. 365-218.000.
Sharper Image Corporation, The: *See—*
Taylor, Charles E.; and Smith, Blaine M., 5,645,173, Cl. 211-1.560.
Shary, Kenneth L.: *See—*
Malish, Terrance J.; Shary, Kenneth L.; and Blazek, John D., 5,645,365, Cl. 403-348.000.
Shaw, Christopher: *See—*
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Shay, Jerry: *See—*
West, Michael D.; Harley, Calvin B.; Strahl, Catherine M.; McEachern, Michael J.; Shay, Jerry; Wright, Woodring E.; Blackburn, Elizabeth H.; and Vaziri, Homayoun, 5,645,986, Cl. 435-6.000.
Shea, Michael John, to International Business Machines Corporation. System and method for hiding P-list entries for a disk from an initiator using a small computer system interface. 5,646,923, Cl. 369-58.000.
Shealy, Glenn Scott: *See—*
Minor, Barbara Haviland; and Shealy, Glenn Scott, 5,645,754, Cl. 252-67.000.
Sheldrake, Peter William; Powling, Laurence Charles; and Bickle, Peter William, to SmithKline Beecham plc. Palladium catalyzed vinylic substitution reactions with 2-substituted-pyridines. 5,646,286, Cl. 546-301.000.
Shell Oil Company: *See—*
Brownscombe, Thomas Fairchild; Bass, Ronald Marshall; Wong, Pui Kwan; Blytas, George Constantine; Gergen, William Peter; and Mores, Maryanne, 5,646,193, Cl. 521-63.000.
Shellabarger, Richard E.: *See—*
White, Michael J., Jr.; and Shellabarger, Richard E., 5,645,295, Cl. 280-730.200.
Shen, Yong; and Rudy, Steven Clark, to Read-Rite Corporation. Magnetoresistive read transducer with partially abutted junctions. 5,646,805, Cl. 360-113.000.
Shenker, Jack David, to Foster Wheeler Development Corp. System for separating particulates and condensable species from a gas stream. 5,645,620, Cl. 55-267.000.
Shennib, Adnan; and Urso, Richard, to Decibel Instruments, Inc. Intracanal prosthesis for hearing evaluation. 5,645,074, Cl. 128-746.000.
Shepard, Joseph Francis: *See—*
Schepis, Dominic Joseph; and Shepard, Joseph Francis, 5,646,053, Cl. 437-10.000.
Shepherd, Stuart Craig; and Zito, Thomas Carl, to FANUC Robotics North America, Inc. Glass packaging system and method. 5,644,898, Cl. 53-445.000.
Sheppard, Clyde H.; and Lubowitz, Hyman R., to Boeing Company. Advanced composite blends. 5,645,925, Cl. 442-128.000.
Sheppard, Douglas Bruce: *See—*
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Sherman, Michael C.: *See—*
Tai, Joseph; and Sherman, Michael C., 5,645,544, Cl. 606-61.000.
Sherts, Charles R., to United States Surgical Corporation. Surgical apparatus for suturing body tissue. 5,645,552, Cl. 606-145.000.
Sheu, Yau-Kae; and Hong, Gary, to United Microelectronics Corporation. Process for fabricating non-volatile memory cells having improved voltage coupling ratio by utilizing liquid phase. 5,646,059, Cl. 437-43.000.
Shevchuk, George John: *See—*
Basavanhally, Nagesh Ramamoorthy; Shevchuk, George John; and Walker, James Albert, 5,647,044, Cl. 385-92.000.
Sheynblat, Leonid; and Longaker, Harold Lewis, to Trimble Navigation Limited. Network of equivalent ground transmitters. 5,646,630, Cl. 342-357.000.
Shi, Guan Hua, to Ocean University of Qingdao. Low molecular weight sulfated polysaccharides and uses thereof. 5,646,130, Cl. 514-54.000.
Shi, Jianmin; Tang, Ching Wan; and Chen, Chin Hsin, to Eastman Kodak Company. Blue organic electroluminescent devices. 5,645,948, Cl. 428-690.000.
Shibata, Steven Kikuo: *See—*
Knoff, Warren Francis; McAllister, Robert William; Popper, Peter; Shibata, Steven Kikuo; Taylor, Robert Edward; and Yngve, Paul Wesley, 5,644,909, Cl. 57-293.000.
Shibayama, Takayuki; and Inoue, Masatoshi, to Daido Metal Company Ltd. Bush and integral seal. 5,645,356, Cl. 384-138.000.
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Shieh, Paul, to Biomedix, Inc. Glucose sensor and assay method. 5,645,710, Cl. 205-778.000.
Shieh, Wen-Chung; Cantrell, William R.; and Carlson, John Alan, to Ciba-Geigy Corporation. Production of enantiomerically enriched ortho-substituted α,α-diaromatic methanols. 5,646,330, Cl. 560-43.000.
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Kubo, Naoto; Shigeta, Yoshitane; and Ishii, Hideyuki, 5,645,474, Cl. 451-287.000.
Shigley, John K.: *See—*
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Shikata, Hideo: *See—*
Tokushima, Hidekazu; Miyasaka, Motohiro; Aizawa, Michihiro; Shikata, Hideo; and Nii, Katsutoshi, 5,645,355, Cl. 384-133.000.
Shikata, Shin-ichi: *See—*
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Shiley, Robert J., II: *See—*
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Shima Seiki Manufacturing Ltd.: *See—*
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Shimada, Koichi: *See—*
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Sato, Osamu; and Shimada, Koichi, 5,646,770, Cl. 359-230.000.
Shimada, Lynn M.: *See—*
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Shimada, Toshiyuki, to Victor Company of Japan, Ltd. Easily removable packaging film. 5,645,211, Cl. 229-87.050.
Shimazawa, Takayoshi; Seta, Katsuhiro; and Matsui, Masataka, to Kabushiki Kaisha Toshiba. Barrel shifter device and variable-length decoder. 5,646,873, Cl. 364-715.080.
Shimizu, Hiroshi: *See—*
Sakazume, Suehiro; Miyamoto, Tsutomu; and Shimizu, Hiroshi, 5,645,933, Cl. 442-290.000.
Shimizu, Isamu: *See—*
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Shimizu, Kazuyuki: *See—*
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Shimizu, Kyoichi: *See—*
Kawauchi, Masayo; Hozumi, Yoshiko; and Shimizu, Kyoichi, 5,647,024, Cl. 382-232.000.
Shimizu, Manabu; and Miyazawa, Hideo, to Fujitsu Limited. Impedance matching type electrical connector. 5,645,436, Cl. 439-108.000.
Shimizu, Osamu; Utsumi, Minoru; Yamashita, Yuudai; Kamiyama, Hironori; Sakano, Shinichi; and Okabe, Masato, to Dai Nippon Printing Co., Ltd. Packaged photographic film with a plurality of liquid crystal recording regions. 5,646,927, Cl. 369-99.000.
Shimoda, Tomoaki: *See—*
Sakashita, Takeshi; Shimoda, Tomoaki; and Nagai, Takashi, 5,646,233, Cl. 528-176.000.
Shimoji, Yasuo: *See—*
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Shimomae, Mutsuo: *See—*
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Shin-Etsu Chemical Co., Ltd.: *See—*
Meguriya, Noriyuki; and Yoshida, Takeo, 5,645,941, Cl. 428-447.000.
Shin, Hyun Soo: *See—*
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Shin, Se-kyoon, to Samsung Electronics Co., Ltd. Multi-layer optical recording device. 5,645,908, Cl. 428-64.100.
Shinagawa Refractories Co., Ltd.: *See—*
Yamamoto, Kenji; Osada, Mototsuga; Aoyama, Shuichi; and Ishii, Koji, 5,645,793, Cl. 266-287.000.
Shing, Yuh-ban: *See—*
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Shuman, Curtis A., to Discovision Associates. Optical beamsplitter. 5,646,778, Cl. 359-495.000.
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Krautschneider, Wolfgang; and Lau, Klaus J., 5,646,883, Cl. 365-156.000.
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Menten, Frank, 5,645,352, Cl. 374-183.000.
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Simmons, Kenneth D.: *See—*
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Simmons, Larry Arnold: *See—*
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Skaling, Percy E.: *See—*
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Paweletz, Anton, 5,646,465, Cl. 310-90.500.
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Skrovan, John, to Micron Technology, Inc. Apparatus and method for conditioning a planarizing substrate used in chemical-mechanical planarization of semiconductor wafers. 5,645,682, Cl. 156-636.100.
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Slack, William E.; Squiller, Edward P.; and Yeske, Philip E., to Bayer Corporation. Low surface energy polyisocyanates and their use in one- or two-component coating compositions. 5,646,227, Cl. 528-28.000.
Slat, William A.; and Darr, Richard C., to Plastipak Packaging, Inc. Multilayer containers. 5,645,183, Cl. 215-12.200.
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Slates, Scott O., to Toxonigs Manufacturing, Inc. Bow sight mount for absorbing the forces of shear. 5,644,849, Cl. 33-265.000.

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Entenmann, Robert; Unland, Stefan; Torno, Oskar; Haeming, Werner; Rothhaar, Ulrich; Surjadi, Iwan; Hilbert, Wolfgang; Sloboda, Robert; Baeuerle, Michael; and Schenk, Klaus, 5,645,034, Cl. 123-425.000.

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Smith, Daniel; Willis, Bernard M.; Marschke, Kenneth P., Jr.; Littlewood, Barry; Schoen, Vulgens; Gucker, Carl; Nordmeyer, Michael; and Miklewicz, Thaddeus, to Ethicon, Inc. Process for manufacturing taper point surgical needles. 5,644,834, Cl. 29-557.000.

Smith, Douglas Charles: *See*—
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Smith, John, to Xerxes Corporation. Glass choppers. 5,645,231, Cl. 241-36.000.

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Smith, Keith W., to Micron Technology, Inc. Dimpled thermal processing furnace tube. 5,645,417, Cl. 432-152.000.

Smith, Kevin W.: *See*—
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Smith, Roger A., to Motorola, Inc. Method and apparatus for reducing rounding error when evaluating binary floating point polynomials. 5,646,876, Cl. 364-748.000.

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Smithies, Christopher Paul Kenneth; and Newman, Jeremy Mark, to Peripheral Vision Ltd. Method and system for the verification of handwritten signatures. 5,647,017, Cl. 382-119.000.

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Benoist, Josette; Martyez, Paul; and Taillant, Jean-Claude Christian, 5,645,398, Cl. 415-134.000.

Soechting, Friedrich O.; Plank, William L.; and Hall, Kenneth B., to United Technologies Corporation. Turbine vane assembly with multiple passage cooled vanes. 5,645,397, Cl. 415-115.000.

Sogabe, Yasushi; and Murata, Shigeki, to Matsushita Electric Industrial Co., Ltd. Track width error inspector apparatus. 5,646,682, Cl. 348-135.000.

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Hammarberg, Eva Maria; Johansson, Lars George; Larsson, Lars-Gunnar; Noréen, Rolf; Renyi, Lucy Anna; Ross, Svante Bertil; Sohn, Daniel Dungan; Svensson, Björn Eric; and Thorberg, Seth-Olov, 5,646,309, Cl. 549-404.000.

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Beaumont, Laurent, 5,645,092, Cl. 134-102.200.

Solin, Stuart A., to NEC Research Institute, Inc. Process for forming a magnetoresistive sensor for a reading head. 5,646,051, Cl. 437-7.000.

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Rubianes, Jose Manuel, 5,645,656, Cl. 148-651.000.

Solomon, Jeffrey Alan; and Tubbs, Alan James, to Eastman Kodak Company. Method and apparatus for opening a camera. 5,646,712, Cl. 396-535.000.

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Somers, Scott: *See*—
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Sommerfeld, Claus-Dieter; Lamberts, Wilhelm; Bielefeldt, Dietmar; Marhold, Albrecht; and Negele, Michael, to Bayer Aktiengesellschaft. C_3 to C_5 polyfluorcalkanes propellants. 5,646,196, Cl. 521-131.000.

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Song, Hyon Myong, to Goldstar Co., Ltd. Laser printer having a paper feeding and transfer device. 5,646,720, Cl. 399-361.000.

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Collier, David C., 5,646,750, Cl. 358-518.000.
Hasegawa, Toshiaki, 5,646,440, Cl. 257-635.000.
Hayashi, Masatake, 5,646,757, Cl. 349-122.000.
Kawabata, Kazunari; and Chino, Hisayoshi, 5,646,803, Cl. 360-109.000.
Kawasaki, Kenichi, 5,646,582, Cl. 333-104.000.
Kikuchi, Shuichi; and Higuchi, Shintaro, 5,645,242, Cl. 242-347.000.
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Koga, Hirohisa; Hanjo, Manabu; and Kurahara, Takayuki, 5,645,241, Cl. 242-336.000.
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Maekawa, Toshikazu; and Hayashi, Yuji, 5,646,642, Cl. 345-99.000.
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Nagata, Atsushi; Iwasaki, Haruo; Shimizu, Kazuhiko; Tanba, Yoshinori; Abe, Takafumi; Imai, Tatsuo; Kikuchi, Akihiro; and Miyakawa, Teruyuki, 5,646,603, Cl. 340-825.250.
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Sorin, Wayne V.: *See*—
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Sota, Yoshiki, to Sharp Kabushiki Kaisha. Resin sealing type semiconductor device having fixed inner leads. 5,646,829, Cl. 361-813.000.

Soto, Jorge: *See*—
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Winegard, John Randall; and Sperry, Randy Lee, 5,646,638, Cl. 343-882.000.

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Kim, Seokjin; and Sridhar, Ramalingam, 5,646,554, Cl. 326-93.000.

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Ippolito, Robert M.; Haque, Wasimul; Jiang, Cong; Hanna, H. Rizk; Venot, Andre P.; Nikrad, Pandurang V.; Kashem, Mohammed A.; Smith, Richard; and Srivastava, Om P., 5,646,123, Cl. 514-25.000.

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Berbers, Wilhelmus Antonius; Biessels, Petrus Theodorus Maria; Bleeker, Willem Karel; and Bakker, Joachim Cornelis, 5,646,252, Cl. 530-385.000.

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Moeltner, Hermann; and Staat, Karlhans, 5,644,938, Cl. 72-96.000.

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Timmons, John B.; Boden, David P.; and Stahl, Larry D., 5,646,507, Cl. 320-21.000.

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Steele, Raymond George; Grace, Stephen John; Robinson, John Frederick; Haussrer, Andreas Karl; Brown, Eric John; Kane, Michael John; MacFarlane, Allan Paul; and Allerby, Ian Murray, to Stone Container Corporation. Multiwall bag. 5,644,900, Cl. 53-449.000.

Steele, Steven W.: *See—*
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Brand, Peter; Ducci, Andreas; and Steiniger, Wolfgang, 5,645,086, Cl. 131-84.300.

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Judkins, Justin Boyd; Stentz, Andrew John; and Vengsarkar, Ashish Madhukar, 5,647,039, Cl. 385-37.000.

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Frost, Keith L.; Hayenga, Jon W.; Stephanick, James A.; and Schmidt, Robert C., 5,647,025, Cl. 382-255.000.

Stephany, Timothy J., to Xerox Corporation. Cleaner-brush having a fiberless segment. 5,646,719, Cl. 399-287.000.

Stephens, Patrick J. Method and apparatus for grouting of tunnel liners. 5,645,375, Cl. 405-146.000.

Stephenson, Gary R.: *See—*
Das, Palash P.; and Stephenson, Gary R., 5,646,954, Cl. 372-55.000.

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Gilad, Gad; Gilad, Varda; Sterling, Jeffrey; Herzig, Yaacov; Lerner, David; Veinberg, Alex; Milman, Isaac; and Finkelstein, Nina, 5,646,188, Cl. 514-634.000.

Stern, Donald J.; and Tryon, James A., to Homax Products, Inc. Spray texturing apparatus and method. 5,645,198, Cl. 222-402.100.

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Matkin, David A.; Renshaw, Dennis C.; and Harrison, Anthony R., 5,646,324, Cl. 556-130.000.

Stinchcomb, Dan T.; Draper, Kenneth; McSwiggen, James; and Jarvis, Thale, to Ribozyme Pharmaceuticals, Inc. C-myb targeted ribozymes. 5,646,042, Cl. 435-366.000.

Stockstad, Troy L., to Motorola, Inc. Method for balancing power sources and structure therefor. 5,646,503, Cl. 320-13.000.

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Ippoliti, J. Thomas; Mabbott, Gary A.; Hans, Jeremy; and Stohlmeyer, Michelle, 5,646,296, Cl. 548-314.400.

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Stone, William M., to Xetel Corporation. Surface mountable substrate edge terminal. 5,644,839, Cl. 29-842.000.

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Strecker, Darlene N., to Minnesota Mining and Manufacturing Company. Method of texturing a substrate using an abrasive article having multiple abrasive natures. 5,645,471, Cl. 451-59.000.

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Häbich, Dieter; Schulze, Thomas-J.; Reefschläger, Jürgen; Hansen, Jutta; Neumann, Rainer; Streissle, Gert; and Paessens, Arnold, 5,646,121, Cl. 514-18.000.

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Fonteyne, Alfons Frans, 5,646,337, Cl. 73-61.630.

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Su, Po-Tang. Locating block of a golf bag. 5,645,166, Cl. 206-315.600.

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Braatz, Reinhard; Kurth, Roland; Menkel-Conen, Elke; Rettenmaier, Hansjoerg; Friedrich, Thomas; and Subkowski, Thomas, 5,645,832, Cl. 424-94.600.

Subler, Ronald J.; and Hastings, Thomas Mark, to Digital Delivery, Inc. Assembly, distribution, and use of digital information. 5,646,992, Cl. 380-4.000.

Subramaniam, Persis Jebakumari; Jones, Sylvia Anna; and Mutter Dea, Iain Cunningham, to CPC International Inc. Dehydrated vegetables and method for their preparation. 5,645,876, Cl. 426-50.000.

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Sugatsune Industrial Co., Ltd.: *See—*
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Sugg, Elizabeth Ellen; Aquino, Christopher Joseph; Szewczyk, Jerzy Ryszard; Finch, Harry; and Carr, Robin Arthur Ellis, to Glaxo Wellcome Inc. 1,5-benzodiazepine derivatives having CCK antagonistic or agonistic activity. 5,646,140, Cl. 517-221.000.

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Sugihara, Kazuyuki; Ishikawa, Tomoji; and Kosuge, Katsuhiro, to Ricoh Company, Ltd. Image forming apparatus for supplying power to members of a rotary developing device. 5,646,721, Cl. 355-326.00R.

Sugimoto, Kenichi: *See—*
Oguchi, Takahisa; Umehara, Hideki; Sugimoto, Kenichi; Oi, Ryu; and Itoh, Hisato, 5,646,273, Cl. 540-122.000.

Sugino, Kiichi: *See—*
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Sugita, Takashi: *See—*
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Sugiura, Yoshitsugu; and Fukatami, Fumikazu, to Teisaku Corporation. Crushing equipment. 5,645,236, Cl. 241-266.000.

Sugiyama, Hayami: *See—*
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Suh, Moon-hwan: *See—*
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Sullivan, Michael J.; and Nesbitt, R. Dennis, to Lisco, Inc. Golf ball. 5,645,497, Cl. 473-377.000.

Sulman, Paul E.: *See—*
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Schneider, Markus; and Moser, Walter, 5,645,604, Cl. 623-20.000.

Sumida, Yoshihiro: *See—*
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Sumitomo Chemical Company, Limited: *See—*
Akiba, Masatsugu; Shiomi, Yutaka; Takebe, Kazuo; Saito, Noriaki; and Morimoto, Takashi, 5,646,204, Cl. 523-443.000.
Araki, Toshiyuki; Tokieda, Takemi; Yabushita, Shin-ichi; Ueda, Yasuyoshi; and Tsukise, Bunzi, 5,646,274, Cl. 540-126.000.
Furuta, Motonobu; and Yamaguchi, Takanari, 5,646,209, Cl. 524-252.000.
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Sumitomo Electric Industries, Ltd.: *See—*
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Nakahata, Hideaki; Higaki, Kenjiro; Fujii, Satoshi; Hachigo, Akihiro; and Shikata, Shin-ichi, 5,646,468, Cl. 310-313.00A.

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Irie, Kenji; Ueda, Yutaka; and Fujiwara, Norio, 5,646,154, Cl. 514-260.000.

Sumitomo Rubber Industries, Ltd.: *See—*
Endo, Seiichiro; and Horiuchi, Kuniyasu, 5,645,496, Cl. 473-372.000.
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Sumitomo Special Metals Co., Ltd.: *See—*
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Sumitomo Wiring Systems, Ltd.: *See—*
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Sumiya, Satoshi; Makino, Seiji; Yoshida, Kiyohide; Takahashi, Yoshikazu; Furuyama, Masataka; Abe, Akira; Matsumura, Nobuyuki; and Muramatsu, Gyo, to Kabushiki Kaisha Riken. Method for cleaning exhaust gas containing nitrogen oxides. 5,645,804, Cl. 423-239.100.

Sumner-Smith, Martin; Barnett, Richard W.; Reid, Lorne S.; and Sonenberg, Nahum, to Allelix Biopharmaceuticals, Inc. Peptide-based inhibitors of HIV replication. 5,646,120, Cl. 514-14.000.

Sun, Chen-Ming, to Mitac International Corp. Portable computer with trackball keys mounted on an edge of a computer housing. 5,646,821, Cl. 361-683.000.

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Gee, Bernard; Hoede, Christiaan; Hotchkiss, Alastair J.; Jones, Barbara L.; and Smith, Paul, 5,646,340, Cl. 73-116.000.

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Sun Microsystems, Inc.: *See—*
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Sunaga, Kouhei: *See—*
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Sunagawa, Kazuhiko: *See—*
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Sung, Ruey; and Samson, Gene, to Cardima, Inc. Intravascular method and system for treating arrhythmia. 5,645,082, Cl. 128-897.000.

Sunin Ltd.: *See—*
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Survival Resources, Inc.: *See—*
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Olson, Kenneth F.; Gilman, Byron L.; and Anderson, Katherine H., 5,645,571, Cl. 607-5.000.

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Wong, W. K. Raymond; and Sutherland, Margaret L., 5,646,015, Cl. 435-69.400.

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Suwa, Koichi; Kato, Junichi; Onimura, Tadashi; Inami, Satoru; Suzuki, Jun; Ando, Atsutoshi; and Seita, Hiroyasu, to Canon Kabushiki Kaisha. Cleaning blade for use in electrophotography, process cartridge and image forming apparatus. 5,646,718, Cl. 399-350.000.

Suyak, James E.: *See—*
Chubb, Arthur B.; Break, Douglas G.; Chubb, Douglas J.; and Suyak, James E., 5,644,940, Cl. 72-197.000.

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Suyama, Takayuki, 5,645,584, Cl. 623-10.000.

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Banno, Yoshikazu; Nomura, Ichiro; Suzuki, Hidetoshi; Noma, Takashi; and Ueno, Rie, 5,645,462, Cl. 445-51.000.

Suzuki, Hiroshi; Matsui, Shinichi; and Yamashita, Takahiro, to Aisin AW Co., Ltd. Determination of full stop in an electronically-controlled automatic transmission. 5,646,841, Cl. 364-424.098.

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Oishi, Tetsuya; Suzuki, Jin; Ohkawa, Kouhei; and Ono, Hiroshi, 5,646,240, Cl. 528-403.000.

Suzuki, Jun: *See—*
Suwa, Koichi; Kato, Junichi; Onimura, Tadashi; Inami, Satoru; Suzuki, Jun; Ando, Atsutoshi; and Seita, Hiroyasu, 5,646,718, Cl. 399-350.000.

Suzuki, Kazuo: *See—*
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Suzuki, Keizo: *See—*
Kakehi, Yutaka; Kawasaki, Yoshinao; Suzuki, Keizo; Nojiri, Kazuo; Enami, Hiromichi; Kaji, Tetsunori; Watanabe, Seiichi; and Ogawa, Yoshifumi, 5,646,489, Cl. 315-111.210.

Suzuki, Kenji: *See—*
Yamada, Nobuaki; Kozaki, Shuichi; Mizobe, Hoyo; Yoshida, Masahiko; and Suzuki, Kenji, 5,645,760, Cl. 252-299.660.

Suzuki, Koji, to Victor Company of Japan, Ltd. Signal recording apparatus and signal reproducing apparatus. 5,646,795, Cl. 360-18.000.

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Tazawa, Masashi; Ochiai, Toru; Aikawa, Toshiya; Maeda, Eisaku; and Suzuki, Maki, 5,646,746, Cl. 358-471.000.

Suzuki, Masao: *See—*
Kim, Phyo; and Suzuki, Masao, 5,645,596, Cl. 623-17.000.

Suzuki, Nobuo: *See—*
Sato, Sinichi; Suzuki, Nobuo; Yamaga, Hiroyoshi; and Hosaka, Sigeo, 5,645,967, Cl. 430-110.000.

Suzuki, Norio: *See—*
Meguro, Satoshi; Uchibori, Kiyofumi; Suzuki, Norio; Motoyoshi, Makoto; Koike, Atsuyoshi; Yamanaka, Toshiaki; Sakai, Yoshio; Kaga, Toru; Hashimoto, Naotaka; Hashimoto, Takashi; Honjou, Shigeru; and Minato, Osamu, 5,646,423, Cl. 257-51.000.

Suzuki, Shigeo; Shintaku, Hidenobu; Watanabe, Taku; Asabe, Mitsuo; Takahashi, Kazuo; Abe, Yoshiro; Kono, Hiroki; and Hirao, Kazunori, to Matsushita Electric Industrial Co., Ltd. ADC gas discharge image display device having cathode material dimensional constraints. 5,646,482, Cl. 313-582.000.

Suzuki, Shintaro, to Doheny Eye Institute. Cadherin polypeptides. 5,646,250, Cl. 530-350.000.

Suzuki, Takenori: *See*—
Matsumoto, Hideki; Muramatsu, Naritoshi; Mihara, Hiroaki; Uchiyama, Masahiko; Ikuma, Kouichi; and Suzuki, Takenori, 5,645,036, Cl. 123-519.000.

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Takahashi, Kazunori; Hamada, Nobuhiro; Takatoo, Masao; Nagai, Tohru; and Suzuki, Toshiko, 5,646,853, Cl. 364-436.000.

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Svanberg, Gunnar K. Dental curet and sharpening machine system. 5,645,468, Cl. 451-11.000.

Svensson, Björn Eric: *See*—
Hammarberg, Eva Maria; Johansson, Lars George; Larsson, Lars-Gunnar; Norėen, Rolf; Renyi, Lucy Anna; Ross, Svante Bertil; Sohn, Daniel Dungan; Svensson, Björn Eric; and Thorberg, Seth-Olov, 5,646,309, Cl. 549-404.000.

Swami, Arun Narasimha: *See*—
Agrawal, Rakesh; Equitz, William Robinson; Faloutsos, Christos; Flickner, Myron Dale; and Swami, Arun Narasimha, 5,647,058, Cl. 395-601.000.

Swanson, David W.; Thoman, Jeffrey A.; Rhoads, W. Wistar; and Marler, Jaren D., to Hewlett-Packard Company. Side biased datum scheme for inkjet cartridge and carriage. 5,646,665, Cl. 347-87.000.

Swedberg, Sally A.: *See*—
Witt, Klaus E.; Kaltenbach, Patrick; Bek, Fritz; Swedberg, Sally A.; and Mittelstadt, Laurie S., 5,645,702, Cl. 204-501.000.

Swensen, Jeffrey E.: *See*—
Warehime, Kevin S.; Munley, Daniel T.; Oh, Thomas S.; and Swensen, Jeffrey E., 5,645,303, Cl. 285-409.000.

Swiggen, James A.; and Mamone, J. Anthony, to Ribozyme Pharmaceuticals, Inc. Hammerhead ribozymes for preferred targets. 5,646,020, Cl. 435-91.310.

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Fischer, Timothy J.; Callahan, Janet B.; Braun, Paul Joseph; Givens, Thomas Beecher; Hoffman, Julie F.; Hulette, William Chester; Link, John Glenn; and Swope, Charles Hermas, 5,646,046, Cl. 436-49.000.

Sybaritic, Inc.: *See*—
Daffer, Steven J.; Mitchell, Roger E.; and Rouzegar, Mirsaeed, 5,645,578, Cl. 607-91.000.

Sykes, David, to Pilkington Glass Limited. Apparatus for and method of bending glass sheets. 5,645,621, Cl. 65-107.000.

Symbios Logic Inc.: *See*—
Allman, Derryl D. J., 5,645,736, Cl. 216-89.000.

Symbiosis Corporation: *See*—
Palmer, Matthew A.; Slater, Charles R.; Turturro, Vincent A.; Solar, Matthew S.; Gottlieb, Saul; Francese, Jose L.; and Damarati, John Jairo, 5,645,075, Cl. 128-749.000.

Symbol Technologies, Inc.: *See*—
Brayman, Richard; Wang, Ynjiun P.; and Toedt, D. C., III, 5,646,389, Cl. 235-385.000.

Symmetricom, Inc.: *See*—
Hamilton, Michael M.; Merriss, Morley M.; and Zampetti, George P., 5,646,519, Cl. 324-76.820.

Synectics Medical AB: *See*—
Kadefors, Roland; Sandsjö , Leif; and Öberg, Tommy, 5,645,073, Cl. 128-733.000.

Synrad, Inc.: *See*—
Laakmann, Peter; Zhang, Yong Fang; and Hayes, Keith L., 5,646,765, Cl. 359-202.000.

Systel International S.p.A.: *See*—
Signoretto, Roberto, 5,645,240, Cl. 242-332.400.

Systematic Packaging Controls Corporation: *See*—
Rietheimer, William, 5,645,680, Cl. 156-567.000.

SyStemix, Inc.: *See*—
Bonyhadi, Mark L.; McCune, Joseph M.; and Kaneshima, Hideto, 5,645,982, Cl. 435-5.000.

Syzdek, Ronald J.: *See*—
Lin, Sung-Wei; Coffman, Tim M.; and Syzdek, Ronald J., 5,646,894, Cl. 365-189.090.

Szalankiewicz, James J.: *See*—
Polka, Alan R.; Szalankiewicz, James J.; and Walter, Scott A., 5,645,158, Cl. 198-812.000.

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Szepesi, Tamas: *See*—
Frank, Richard; Inn, Bruce Lee; and Szepesi, Tamas, 5,646,520, Cl. 324-158.100.

Szewczyk, Jerzy Ryszard: *See*—
Sugg, Elizabeth Ellen; Aquino, Christopher Joseph; Szewczyk, Jerzy Ryszard; Finch, Harry; and Carr, Robin Arthur Ellis, 5,646,140, Cl. 517-221.000.

T I Corporate Services Limited: *See*—
Mason, Murray R.; and Klages, Gerrald A., 5,644,829, Cl. 29-421.100.

Tabarelli, Werner: *See*—
Brunner, Alex; and Porsche, Ferdinand, 5,645,335, Cl. 353-122.000.

Tabor, Kelly Helen: *See*—
Schwall, Ralph H.; and Tabor, Kelly Helen, 5,646,036, Cl. 435-252.300.

Taborn, Michael Preston; Burchfiel, Steven Michael; and Matheny, David Terrence, to International Business Machines Corporation. Denormalization system and method of operation. 5,646,875, Cl. 364-748.140.

Taganas, Celina M. Combination envelope and greeting card. 5,645,214, Cl. 229-313.000.

Tahon, Jean-Pierre: *See*—
Vanmaele, Luc; Tahon, Jean-Pierre; and Roosen, Raymond, 5,645,962, Cl. 430-7.000.

Tai, Joseph; and Sherman, Michael C., to Danek Medical, Inc. Variable angle extension rod. 5,645,544, Cl. 606-61.000.

Tai, Seiji: *See*—
Tanaka, Hiroyuki; Tai, Seiji; Kamijima, Koichi; Wada, Yumiko; Mamiya, Tsutomu; Murakami, Makoto; and Yoshida, Teruo, 5,646,198, Cl. 523-122.000.

Taillant, Jean-Claude Christian: *See*—
Benoist, Josette; Martyez, Paul; and Taillant, Jean-Claude Christian, 5,645,398, Cl. 415-134.000.

Taiwan Semiconductor Manufacturing Company: *See*—
Liu, Chwen-Ming; Huang, Jenn-Ming; Chin, Hsien-Wei; You, Huan-Chung; and Hsieh, Jang-Cheng, 5,646,057, Cl. 437-40.00R.

Taiwan Semiconductor Manufacturing Company, Ltd.: *See*—
Hsu, Charles Ching-Hsiang; and Liang, Mong-Song, 5,646,435, Cl. 257-382.000.
Lin, Ting-Hwang; Wang, Shih-Ming; and Chen, Li-Chum, 5,646,071, Cl. 437-228.000.
Wang, Chen-Jong; and Liang, Mong-Song, 5,646,061, Cl. 437-52.000.

Tajima, Hitoshi; and Maeno, Takashi, to Toyoda Gosei Co., Ltd. Dilatant fluid-sealed vibration-insulating device. 5,645,138, Cl. 180-300.000.

Takabayashi, Nobuhisa: *See*—
Fujioka, Satoshi; Hirabayashi, Hiromu; Takabayashi, Nobuhisa; Nishizawa, Atsushi; and Komuro, Kiyoto, 5,646,653, Cl. 347-8.000.
Fujioka, Satoshi; Hirabayashi, Hiromu; Takabayashi, Nobuhisa; Nishizawa, Atsushi; and Komuro, Kiyoto, 5,646,668, Cl. 347-104.000.

Takada, Kazuhiko: *See*—
Akiyama, Hiroyuki; Aoyagi, Akihiko; Takada, Kazuhiko; and Tsujino, Hitoshi, 5,646,802, Cl. 360-104.000.

Takada, Masahiro: *See*—
Ishida, Akira; Takada, Masahiro; Narazaki, Kazushige; and Ito, Osamu, 5,646,850, Cl. 364-426.041.

Takagi, Toshiya: *See*—
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Takahama, Shinobu: *See*—
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Takahashi, Akira: *See*—
Inui, Tetsuya; Takahashi, Akira; and Ohta, Kenji, 5,645,978, Cl. 430-321.000.

Takahashi, Kazunori; Hamada, Nobuhiro; Takatoo, Masao; Nagai, Tohru; and Suzuki, Toshiko, to Hitachi, Ltd. Traffic control system. 5,646,853, Cl. 364-436.000.

Takahashi, Kazuo: *See*—
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Takahashi, Kiichiro: *See*—
Iwasaki, Osamu; Otsuka, Naoji; Arai, Atsushi; Yano, Kentaro; Takahashi, Kiichiro; and Kanematsu, Daigoro, 5,646,655, Cl. 347-17.000.

Takahashi, Masaetsu: *See*—
Nonoyama, Osamu; Ide, Yukio; Harigaya, Makoto; Kageyama, Yoshiyuki; Deguchi, Hiroshi; Yamada, Katsuyuki; Takahashi, Masaetsu; and Iwasaki, Hiroko, 5,646,924, Cl. 369-58.000.

Takahashi, Takehiko, to NEC Corporation. Semiconductor package. 5,646,443, Cl. 257-704.000.

Takahashi, Yoshikazu: *See*—
Sumiya, Satoshi; Makino, Seiji; Yoshida, Kiyohide; Takahashi, Yoshikazu; Furuyama, Masataka; Abe, Akira; Matsumura, Nobuyuki; and Muramatsu, Gyo, 5,645,804, Cl. 423-239.100.

Takahashi, Yoshishige: *See*—
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Takano, Keiji: *See*—
Ohsawa, Tetsu; Iwai, Hiroyuki; Kikuchi, Hisashi; Watanabe, Shingo; Takano, Keiji; Haraoka, Tsutomu; and Nakao, Ken, 5,645,419, Cl. 432-241.000.

Takano, Ryuichi: *See*—
Iwaki, Tadao; Yamazaki, Tsuneo; Matsushita, Katsuki; Senbonmatsu, Shigeru; and Takano, Ryuichi, 5,646,432, Cl. 257-347.000.

Takano, Toshiya; and Ko, Minoru S.H., to Daiichi Seiyaku Co., Ltd. Method of producing foreign gene products. 5,646,013, Cl. 435-69.100.

Takano, Yukiko: *See*—
Yoneda, Takashige; Wakabayashi, Tsuneo; and Takano, Yukiko, 5,645,939, Cl. 428-429.000.

Takanohashi, Daisuke: *See*—
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Takara, Hidehiko; Kawanishi, Satoki; and Saruwatari, Masatoshi, to Nippon Telegraph and Telephone Corporation. Mode-locked laser stabilizing method and apparatus. 5,646,774, Cl. 359-340.000.

Takasago Netsugaku Kogyo Kabushiki Kaisha: *See*—

Ohmi, Tadahiro; and Inaba, Hitoshi, 5,645,943, Cl. 428-457.000.

Takase, Shunsuke: *See*—
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Takashi, Terumi: *See*—
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Takashima, Hideki: *See*—
Murayama, Junichi; Toyama, Niichi; Matsuo, Kazuhide; Takashima, Hideki; Sadamitsu, Katsushi; Sugino, Kiichi; and Iiyama, Kazuto, 5,645,895, Cl. 427-424.000.

Takatoo, Masao: *See*—
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Takatori, Sunao; and Yamamoto, Makoto, to Yozan Inc. Display system. 5,646,753, Cl. 359-15.000.

Takayama, Toru: *See*—
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Takebe, Kazuo: *See*—
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Takeda, Eriko; and Nishino, Toshikazu, to Hitachi, Ltd. Josephson signal detector, measurement device using the same, and method of use. 5,646,526, Cl. 324-248.000.

Takeda, Hidetoshi: *See*—
Nishimura, Takuya; Iitsuka, Hiroyuki; Takeda, Hidetoshi; and Kawakami, Yasunori, 5,646,941, Cl. 370-389.000.

Takeda, Hitoshi; Kido, Masami; Kaneko, Takashi; and Koden, Mitsuhiro, to Sharp Kabushiki Kaisha. Ferroelectric liquid crystal display device including a ferroelectric liquid crystal material capable of exhibiting the smectic A phase and the chiral smectic C phase. 5,646,754, Cl. 349-172.000.

Takemoto, Makoto: *See*—
Iwata, Yuji; Nakasu, Jiro; and Takemoto, Makoto, 5,646,649, Cl. 345-173.000.

Takemura, Yasuhiko: *See*—
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Takeuchi, Hiroshi: *See*—
Kajitani, Koji; Takeuchi, Hiroshi; Fukatani, Yasunobu; Teramae, Hiroshi; and Asada, Masaaki, 5,645,150, Cl. 192-70.160.

Takeuchi, Hisato: *See*—
Kawasumi, Masaya; Takeuchi, Hisato; Usuki, Arimitsu; and Okada, Akane, 5,645,758, Cl. 252-299.010.
Usuki, Arimitsu; Takeuchi, Hisato; Tatsuda, Narihito; Okada, Akane; Kurauchi, Toshio; Tanaka, Hiromitsu; Okayama, Shinobu; Tojima, Kazuo; Fukui, Akio; and Okamoto, Toshiro, 5,646,284, Cl. 546-88.000.

Takeuchi, Makoto: *See*—
Hiroshima, Koichi; Goto, Masahiro; Serizawa, Yoji; Takeuchi, Makoto; and Ishiyama, Tatsunori, 5,646,717, Cl. 399-154.000.

Takeuchi, Tetsuo: *See*—
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Takeuchi, Yasuhiko: *See*—
Okada, Haruo; Aoki, Hidemi; Takeuchi, Yasuhiko; and Yuhara, Kunio, 5,645,786, Cl. 264-255.000.

Takeyama, Motonari. Man-machine interface in aerospace craft that produces a localized sound in response to the direction of a target relative to the facial direction of a crew. 5,647,016, Cl. 382-103.000.

Taki, Osamu. Soil solidification apparatus with a shear blade of adjustable length and rotation speed for creating a ribbed soil-cement pile. 5,645,376, Cl. 405-241.000.

Takubo, Toyokazu; and Tanaka, Ken-ichi, to Idemitsu Petrochemical Co., Ltd. Snap zipper. 5,645,905, Cl. 428-35.700.

Tallon, Jeffrey Lewis; and Presland, Murray Robert. Rare earth substituted thallium-based superconductors. 5,646,094, Cl. 505-120.000.

Talluri, Rajendra K.: *See*—
Choate, William Clay; and Talluri, Rajendra K., 5,647,015, Cl. 382-103.000.

Talmont, Franck Jean Bernard: *See*—
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Tam Ceramics, Inc.: *See*—
Chu, Mike Ssu-Hai; Bultitude, John; Rand, Michael; Nimmo, Kay Louise; Thompson, Ian; and Hood, Christopher, 5,646,080, Cl. 501-137.000.

Tamaru, Makoto; Nakagawa, Kazuhiko; and Yamaguchi, Shouichi, to Nippondenso Co., Ltd. Humidified cool wind system for vehicles. 5,645,769, Cl. 261-30.000.

Tamaru, Toshiyuki, to NEC Corporation. Battery holder capable of readily attaching or detaching dry battery. 5,645,954, Cl. 429-100.000.

Tamas, Tamas; and Ostlind, Dan A., to Merck & Co., Inc. Method for controlling coccidiosis. 5,646,135, Cl. 514-152.000.

Tamhankar, Satish S.: *See*—
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Tammela, Simo: *See*—
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Tamron Co., Ltd.: *See*—
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Tamura, Tadafumi: *See*—
Suzuki, Fumio; Nakasato, Yoshisuke; Tsumuki, Hiroshi; Sato, Soichiro; Tamura, Tadafumi; and Nakajima, Hiroshi, 5,646,283, Cl. 546-61.000.

Tamura, Yoshihiko; Saito, Hitoshi; Furuse, Minoru; Yamauchi, Mineo; and Horii, Takumi, to Dai Nippon Printing Co., Ltd. Thermal transfer image-receiving sheet. 5,646,090, Cl. 503-227.000.

Tanaka, Hiroaki: *See*—
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Tanaka, Hiromitsu: *See*—
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Tanaka, Hiroyuki; Tai, Seiji; Kamijima, Koichi; Wada, Yumiko; Mamiya, Tsutomu; Murakami, Makoto; and Yoshida, Teruo, to Hitachi Chemical Company, Ltd. Coating composition and antifouling paint. 5,646,198, Cl. 523-122.000.

Tanaka, Hisashi; Shirota, Yuichi; Sugi, Hikaru; Konaka, Masami; Yamamoto, Kazushi; Miwa, Seiji; and Miyata, Manabu, to Nippondenso Co., Ltd. Heat regenerating type cooling apparatus. 5,644,929, Cl. 62-406.000.

Tanaka, Jiro: *See*—
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Tanaka, Ken-ichi: *See*—
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Tanaka, Norio: *See*—
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Tanaka, Shinichiro: *See*—
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Tanaka, Takeo: *See*—
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Tanaka, Tetsuya: *See*—
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Tanaka, Toshihide: *See*—
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Tanaka, Yasuharu: *See*—
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Tanaka, Yoichiro; and Suzuki, Kazuo, to Kose Corporation. Solid o/w-type cosmetic composition. 5,645,903, Cl. 428-34.100.

Tanba, Yoshinori: *See*—
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Tancibok, Krystyna U.; and Sekula, Bernard C., to CPC International Inc.; and ARCO Chemical Technology, L.P. Reduced calorie ice cream-type frozen dessert and butter fat mimetics therefor. 5,645,881, Cl. 426-531.000.

Tang, Ching Wan: *See*—
Shi, Jianmin; Tang, Ching Wan; and Chen, Chin Hsin, 5,645,948, Cl. 428-690.000.

Tang, Maria R.: *See*—
Wilson, Charles R.; Tang, Maria R.; Berger, Harald; Christianson, Teresa M.; and Hansen, Dieter, 5,646,044, Cl. 435-252.310.

Tani, Youichiro: *See*—
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Taniguchi, Masaaki: *See*—
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Tanimoto, Masahiro: *See*—
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Thompson, John Lee; Goebert, Barry Joseph; Hayes, Eugene Gary; and Teal, Richard Donald, 5,645,133, Cl. 180-69.210.

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Fischer, Baruch; Daisy, Ron; and Horowitz, Moshe, 5,646,951, Cl. 372-19.000.

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Neuman, Eli, 5,646,375, Cl. 177-54.000.

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Sugioka, Takami; and Ishimaru, Noriki, 5,645,246, Cl. 242-573.700.

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Clark, Jeffery J.; Crosby, Brian G.; Lewendal, Bo; and Thornton, Gregory P., 5,646,742, Cl. 358-298 000.
Titterington, Donald R.; Bui, Loc V.; Hirschy, Linda M.; and Jaeger, C. Wayne, 5,645,888, Cl. 427-256.000.

Teleflora LLC: *See*—
Honkawa, Bryan K., 5,645,168, Cl. 206-423.000.

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Hedman, Olle Anders Gustav; and Granstam, Bo Gustaf, 5,646,628, Cl. 342-195.000.

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Middleton, David Leslie Phillip; Telfer, David Brian; and Barnes, Clive, 5,645,697, Cl. 204-155.000.

Templin, Catherine Keely; and McManigill, Douglass, to Hewlett-Packard Company. Microcolumnar analytical apparatus with microcolumnar flow gating interface and method of using the apparatus. 5,646,048, Cl. 436-180.000.

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Sable, Lewis E.; and Wenzel, Richard A., 5,645,862, Cl. 425-73.000.

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Okazaki, Shinichi, 5,646,681, Cl. 348-87.000.

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Teodorczyk, Zygmunt, to Masonite Corporation. Method of preparing binder system and product thereof. 5,646,219, Cl. 525-524.000.

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Terasaki, Setsuo, to Kabushiki Kaisha Toshiba. Recording medium reproduction apparatus and recording medium reproduction method for selecting, mixing and outputting arbitrary two streams from medium including a plurality of high effiency-encoded sound streams recorded thereon. 5,646,931, Cl. 369-124.000.

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Terstappen, Leon W. M. M.; Rao, Galla C.; Gohel, Dhanesh I.; Feeley, Brian P.; Gross, Steven; Church, Ellen S.; and Liberti, Paul A., to Immunivest Corporation. Affinity-binding separation and release of one or more selected subset of biological entities from a mixed population thereof. 5,646,001, Cl. 435-7.210.

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Walters, Glenn A.; and Teschmacher, Lance M., 5,646,623, Cl. 342-129.000.

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Claussner, Andre; Goubet, Francois; and Teutsch, Jean-Georges, 5,646,172, Cl. 514-391.000.

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Gilad, Gad; Gilad, Varda; Sterling, Jeffrey; Herzig, Yaacov; Lerner, David; Veinberg, Alex; Milman, Isaac; and Finkelstein, Nina, 5,646,188, Cl. 514-634.000.

Texas Instruments Incorporated: *See*—
Anderson, Charles H., 5,646,782, Cl. 359-629.000.
Beratan, Howard R., 5,644,838, Cl. 29-840.000.
Choate, William Clay; and Talluri, Rajendra K., 5,647,015, Cl. 382-103.000.
Frank, Steven N.; Belcher, James F.; Stanford, Charles E.; Owen, Robert A.; and Kyle, Robert J. S., 5,646,066, Cl. 437-180.000.
Frazier, Gary A.; and Luscombe, James H., 5,646,418, Cl. 257-4.000.
Gove, Robert J., 5,646,640, Cl. 345-8.000.
Hashimoto, Masashi; and Laczko, Frank L., Sr., 5,646,688, Cl. 348-402.000.
Kaeriyama, Toshiyuki, 5,646,768, Cl. 359-224.000.
Kaya, Cetin; and Liu, David, 5,646,430, Cl. 257-322.000.
Lin, Sung-Wei; Coffman, Tim M.; and Syzdek, Ronald J., 5,646,894, Cl. 365-189.090.
Mahant-Shetti, Shivaling; and Lemonds, Carl E., 5,646,877, Cl. 364-760.010.
Roden, Philip A.; and Deng, Brian T., 5,647,057, Cl. 395-275.000.
Schürmann, Josef H.; and Meier, Herbert, 5,646,607, Cl. 340-825.540.
Truong, Phat C.; and Coffman, Tim M., 5,646,887, Cl. 365-185.210.
Wallace, Richard H.; and Pospick, Robert W., 5,646,601, Cl. 340-686.000.
Wilson, Arthur M.; Kressley, Mark A.; Frew, Dean L.; Miller, Juanita G.; Hanicak, John E.; Hecker, Philip E.; and Drumm, James M., 5,646,068, Cl. 437-183.000.
van der Wagt, Jan Paul Antoni, 5,646,884, Cl. 365-175.000.

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Lindblom, Bo, 5,645,111, Cl. 139-55.100.

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Grüning, Burghard; and Weitemeyer, Christian, 5,645,842, Cl. 424-401.000.

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Thatcher, David Alan: *See*—
Walenty, Allen John; Leppek, Kevin Gerard; and Thatcher, David Alan, 5,646,848, Cl. 364-426.010.

Thermoscan Inc.: *See*—
Fraden, Jacob, 5,645,349, Cl. 374-120.000.

Thiel, Ralf; and Auschner, Reinhard, to Huels Aktiengesellschaft. Process for working up residues from the raw ester distillation in the preparation of dimethyl terephthalate(DMT). 5,646,331, Cl. 560-78.000.

Thiel, Wolfgang; and Dietrich, Klaus, to Francotyp-Postalia AG & Co. Modular ink jet printer head. 5,646,658, Cl. 347-49.000.

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Ball, Anthony A.; Müller, Heinz; and Thierron, Wolfgang, 5,644,910, Cl. 57-416.000.

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Miks, Michael W.; and Shigley, John K., 5,645,219, Cl. 239-265.110.

Thisse, Thor Robert: *See*—
Threlkeld, James O.; and Thisse, Thor Robert, 5,644,825, Cl. 28-240.000.

Thoene, Jess G. Prevention of HIV infection. 5,646,189, Cl. 514-665.000.

Thoman, Jeffrey A.: *See*—
Swanson, David W.; Thoman, Jeffrey A.; Rhoads, W. Wistar; and Marler, Jaren D., 5,646,665, Cl. 347-87.000.

Thomas & Betts Corporation: *See*—
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Thomas, Barbara: *See*—
Erilli, Rita; and Thomas, Barbara, 5,646,104, Cl. 510-365.000.

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Woods, John Stephen; Cooper, Derek Redvers; and Thomas, Caradoc John Morgan, 5,645,593, Cl. 623-16.000.

Thomas, H. Ronald; Babacz, Robert J.; and Newton, Robert R., to Polar Materials, Inc. Methods and apparatus for depositing barrier coatings. 5,645,643, Cl. 118-723.0MP.

Thomas Industries Inc.: *See*—
Leu, Shawn A.; and Schuessler, Mark A., 5,644,969, Cl. 92-60.500.

Thomas Jefferson University: *See*—
Jameson, Bradford A.; Choksi, Swati; and Korngold, Robert, 5,645,837, Cl. 424-185.100.

Thomas, John E., to Tippins Incorporated. Pusher furnace drop-out conveyor. 5,645,418, Cl. 432-239.000.

Thomas, Richard G., II. Mountable latching clamp for instrument stands. 5,645,256, Cl. 248-222.110.

Thome, Scott P., to Urologix, Inc. Unitary tip and balloon for transurethral catheter. 5,645,528, Cl. 604-96.000.

Thompson, Charles: *See*—
Leemans, Jan; Botterman, Johan; De Block, Marc; Thompson, Charles; and Mouva, Rao, 5,646,024, Cl. 435-172.300.

Thompson, Craig B.; Boise, Lawrence H.; and Nuñez, Gabriel, to University of Michigan, The Regent of the. Vertebrate apoptosis gene: compositions and methods. 5,646,008, Cl. 435-69.100.

Thompson, Cyril V.; and Wise, Marcus B., to Lockheed Martin Energy Systems, Inc. Atomizing, continuous, water monitoring module. 5,646,336, Cl. 73-61.430.

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Chu, Mike Ssu-Hai; Bultitude, John; Rand, Michael; Nimmo, Kay Louise; Thompson, Ian; and Hood, Christopher, 5,646,080, Cl. 501-137.000.

Thompson, Jeffrey Lee, to General Electric Company. Core plate repair using control rod guide tube load transfer collar. 5,646,970, Cl. 376-260.000.

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Thompson, Paul J.: *See*—
Hachtman, Steven W.; Johnson, Liann M.; Johnson, Scott T.; Laptewicz, Joseph E., Jr.; Thompson, Paul J.; Ahmad, Amjad; Scholl, John A.; and Thompson, Richard J., 5,645,559, Cl. 606-198.000.

Thompson, Richard J.: *See*—
Hachtman, Steven W.; Johnson, Liann M.; Johnson, Scott T.; Laptewicz, Joseph E., Jr.; Thompson, Paul J.; Ahmad, Amjad; Scholl, John A.; and Thompson, Richard J., 5,645,559, Cl. 606-198.000.

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Morell, Antoinette; and Goumard, Nathalie, 5,645,761, Cl. 252-301.60F.

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Nosker, Richard William; and Michalchuk, Joey John, 5,646,478, Cl. 313-402.000.

Thorberg, Seth-Olov: *See*—
Hammarberg, Eva Maria; Johansson, Lars George; Larsson, Lars-Gunnar; Norén, Rolf; Renyi, Lucy Anna; Ross, Svante Bertil; Sohn, Daniel Dungan; Svensson, Björn Eric; and Thorberg, Seth-Olov, 5,646,309, Cl. 549-404.000.

Thorburn, William G.: *See*—
Mitchell, Donald K.; and Thorburn, William G., 5,646,730, Cl. 356-356.000.

Thornton, Gregory P.: *See*—
Clark, Jeffery J.; Crosby, Brian G.; Lewendal, Bo; and Thornton, Gregory P., 5,646,742, Cl. 358-298.000.

Thorvaldsson, Thor: *See*—
Kondratyev, Sergei N.; Plessky, Victor P.; Hartmann, Clinton S.; Thorvaldsson, Thor; and Morgan, David P., 5,646,584, Cl. 333-193.000.

Thottathil, John K.: *See*—
Golik, Jerzy; Vyas, Dolatrai; Wright, John J.; Wong, Henry; Kadow, John F.; Thottathil, John K.; Li, Wen-Sen; Kaplan, Murray A.; Perrone, Robert K.; and Wittman, Mark D., 5,646,176, Cl. 514-444.000.

Thrall, Bernice Eileen; and Noel, Judith Ann. Keratinous tissue conditioner. 5,645,823, Cl. 424-61.000.

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Threlkeld, James O.; and Thisse, Thor Robert. Method and apparatus for increasing the yield of rubber yarn. 5,644,825, Cl. 28-240.000.

Thuna, Michael C., to 24th & Dean, Inc. Food preparation blender with a rotating and vertically oscillating mixing blade. 5,645,346, Cl. 366-205.000.

Thurkauf, Andrew; and Hutchison, Alan, to Neurogen Corporation. Substituted 4-piperazinylmethyl 2-phenylimidazoles; dopamine receptor subtype specific ligands. 5,646,279, Cl. 544-295.000.

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Spahr, David K.; and Tibbitts, Dennis C., 5,645,775, Cl. 264-40.500.

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Schöller, Klaus; and Tiesler-Wittig, Helmut, 5,646,471, Cl. 313-25.000.

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Tillinghast, Ted, to Smith & Nephew DonJoy Inc. Method for manufacturing composite pads. 5,645,671, Cl. 156-222.000.

Timm, Heinrich: *See*—
Enning, Norbert; and Timm, Heinrich, 5,645,312, Cl. 296-203.000.

Timmerman, Daniel; De Clercq, Ronny; Defieuw, Geert; Podszun, Wolfgang; and Brandt, Rainer, to AGFA-Gevaert, N.V. Method for the preparation of polymeric spacing particles. 5,646,210, Cl. 525-288.000.

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Patton, Jasson Todd; Devore, David D.; Timmers, Franis J.; Soto, Jorge; Schmidt, Gregory F.; and Wilson, David R., 5,646,084, Cl. 502-152.000.

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Maurer, Ruprecht; Timtner, Karlheinz; and Jackwerth, Siegfried, 5,645,149, Cl. 192-45.100.

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Ting, Tah-Kang Joseph, to Etron Technology Inc. Mixed mode output buffer circuit for CMOSIC. 5,646,551, Cl. 326-83.000.

Tioxide Specialties Limited: *See*—
Duncan, Robert Hume, 5,646,200, Cl. 523-160.000.

Tippins Incorporated: *See*—
Thomas, John E., 5,645,418, Cl. 432-239.000.

Tishler, Dror; and Kimchi, Nitzan, to Kata Professional L.T.D. Load-bearing, personally worn system for security and combat units. 5,644,792, Cl. 2-2.500.

Titterington, Donald R.; Bui, Loc V.; Hirschy, Linda M.; and Jaeger, C. Wayne, to Tektronix, Inc. Reactive ink compositions and systems. 5,645,888, Cl. 427-256.000.

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Balkovec, James M.; Bouffard, Frances A.; Dropinski, James F.; Adefarati, Akinlolu A.; and Tkacz, Jan S., 5,646,245, Cl. 530-317.000.

Tkaczyk, John Eric; Lay, Kenneth Wilbur; and He, Qing, to General Electric Company. Method of fabricating a (1223) Tl-Ba-Ca-Co-O superconductor. 5,646,097, Cl. 505-470.000.

TNS Mills, Inc.: *See*—
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Toastmaster, Inc.: *See*—
Slavin, Timothy J., 5,644,974, Cl. 99-328.000.

Tobita, Yoichi, to Mitsubishi Denki Kabushiki Kaisha. Reference voltage generating circuit. 5,646,516, Cl. 323-313.000.

Tobler, David R.; Gerhardt, Thomas J.; Mason, Eugene E.; and Mills, Mike A., to Masimo Corporation. Patient cable connector. 5,645,440, Cl. 439-160.000.

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Okinaka, Kenji; and Ota, Yasutaka, 5,645,652, Cl. 148-307.000.

Toedt, D. C., III: *See*—
Bravman, Richard; Wang, Ynjiun P.; and Toedt, D. C., III, 5,646,389, Cl. 235-385.000.

Togashi, Akio: *See*—
Fujishiro, Masatoshi; Togashi, Akio; Tani, Youichiro; and Ishii, Takamaro, 5,645,723, Cl. 210-321.750.

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Tojima, Kazuo: *See*—
Usuki, Arimitsu; Takeuchi, Hisato; Tatsuda, Narihito; Okada, Akane; Kurauchi, Toshio; Tanaka, Hiromitsu; Okayama, Shinobu; Tojima, Kazuo; Fukui, Akio; and Okamoto, Toshiro, 5,646,284, Cl. 546-88.000.

Tokieda, Takemi: *See*—
Araki, Toshiyuki; Tokieda, Takemi; Yabushita, Shin-ichi; Ueda, Yasuyoshi; and Tsukise, Bunzi, 5,646,274, Cl. 540-126.000.

Tokushima, Hidekazu; Miyasaka, Motohiro; Aizawa, Michihiro; Shikata, Hideo; and Nii, Katsutoshi, to Hitachi, Ltd.; and Hitachi Powdered Metals Co., Ltd. Bearing unit. 5,645,355, Cl. 384-133.000.

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Ohsawa, Tetsu; Iwai, Hiroyuki; Kikuchi, Hisashi; Watanabe, Shingo; Takano, Keiji; Haraoka, Tsutomu; and Nakao, Ken, 5,645,419, Cl. 432-241.000.

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Ohno, Kinichiro; Fujio, Noboru; and Ohkawara, Tamaki, 5,644,981, Cl. 101-147.000.

Tokyo Ohka Kogyo, K.K.: *See*—
Ohta, Katsuyuki; Takagi, Toshiya; and Aoyama, Toshimi, 5,645,974, Cl. 430-306.000.

Tollington, Peter James: *See*—
Emery, William Derek; Metcalfe, Kenneth; and Tollington, Peter James, 5,646,107, Cl. 510-457.000.

Toman, John R.: *See*—
Kasai, Ichiro; and Toman, John R., 5,646,437, Cl. 257-437.000.

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Klem, Russell D.; and Tomasko-Dean, Kimberly Sue, 5,646,978, Cl. 455-436.000.

Tomi, Yoshitaka; Nakagawa, Etsuo; and Sawada, Shinichi, to Chisso Corporation. Liquid crystal composition and a liquid crystal display element using the same. 5,645,759, Cl. 252-299.630.

Tomimura, Yukio: *See*—
Wakabayashi, Shozo; Tomimura, Yukio; Morishige, Koji; Umeda, Hiroshi; Serk, Park Woo; and Boshart, Mark Alan, 5,645,502, Cl. 474-85.000.

Tomioka, Toshikazu: *See*—
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Mizuno, Osamu; Nakamura, Tohru; Aikoh, Hideki; Tomita, Hironori; and Mohri, Masanari, 5,646,934, Cl. 369-290.000.

Tomita, Katsumi: *See*—
Oka, Hiroaki; Tomioka, Toshikazu; Tomita, Katsumi; Hoshino, Kenji; Nishino, Atsushi; and Ueda, Shigeharu, 5,645,846, Cl. 424-405.000.

Tomita, Yoshinori: *See*—
Ohsumi, Hideki; and Tomita, Yoshinori, 5,645,451, Cl. 439-587.000.

Tomoegawa Paper Co., Ltd.: *See*—
Matsunaga, Tadao; Matsushita, Takaya; and Hattori, Kei, 5,645,921, Cl. 428-209.000.

Tompkins, Allen Coles, Jr. Gas grill afterburner. 5,645,042, Cl. 126-41.00R.

Tompkins, Mark P.: *See*—
Wirth, John, Jr.; Sanger, Jay L.; and Tompkins, Mark P., 5,645,117, Cl. 144-28.000.

Tompkins, Matthew A.: *See*—
Allen, Timothy R.; and Tompkins, Matthew A., 5,645,024, Cl. 123-90.380.

Tomy Seiko Co., Ltd.: *See*—
Fujishiro, Masatoshi; Togashi, Akio; Tani, Yoniichiro; and Ishii, Takamaro, 5,645,723, Cl. 210-321.750.

Toner, Eugene Michael; and Guez, Avner, to Kulicke and Soffa Investments, Inc. High speed bonding tool contact detector. 5,645,210, Cl. 228-102.000.

Toney, Allyson T.: *See*—
Cooper, Theodore R.; Toney, Allyson T.; and McParlane, John B., 5,645,608, Cl. 8-137.000.

Top Game & Company Ltd.: *See*—
Cheng, Chou, 5,645,277, Cl. 273-148.00B.

Top Source Technologies: *See*—
Boyte, James M., Jr., 5,646,381, Cl. 181-141.000.

Toppan Moore Co., Ltd.: *See*—
Etoh, Kei; Hirasawa, Akira; Higurashi, Hisano; and Kawanura, Makoto, 5,646,203, Cl. 523-218.000.

Toppan Printing Co., Ltd.: *See*—
Matsuo, Ryukichi; Yoshihara, Toshiaki; Miyamoto, Takashi; and Gamo, Mika, 5,645,923, Cl. 428-216.000.

Toray Industries, Inc.: *See*—
Fukuchi, Shunsei; Iwamoto, Makoto; Kitabatake, Akihiro; Tanimoto, Masahiro; Maekawa, Masaki; and Shimoyama, Naoki, 5,645,901, Cl. 428-1.000.
Ito, Nobuaki; Tsukuda, Akimitsu; and Yoneyama, Kazumasa, 5,645,918, Cl. 428-141.000.
Matsushima, Kouji; and Naruto, Masanobu, 5,646,117, Cl. 514-12.000.

Torii, Masanori: *See*—
Oshima, Katsuyuki; Ando, Jitsuhiko; and Torii, Masanori, 5,646,089, Cl. 503-227.000.

Torii, Takashi: *See*—
Kuroda, Tadashi; and Torii, Takashi, 5,646,799, Cl. 360-96.600.

Torkkeli, Altti: *See*—
Koskinen, Yrjö; Lehto, Ari; Tammela, Simo; Blomberg, Martti; Orpana, Markku; and Torkkeli, Altti, 5,646,729, Cl. 356-352.000.

Torno, Oskar: *See*—
Entenmann, Robert; Unland, Stefan; Torno, Oskar; Haeming, Werner; Rothhaar, Ulrich; Surjadi, Iwan; Hilbert, Wolfgang; Sloboda, Robert; Baeuerle, Michael; and Schenk, Klaus, 5,645,034, Cl. 123-425.000.

Toro Company, The: *See*—
Pink, Anthony N., 5,644,844, Cl. 30-276.000.

Torrey Pines Institute for Molecular Studies: *See*—
Blondelle, Sylvie; Houghten, Richard A.; and Perez-Paya, Enrique, 5,645,996, Cl. 435-7.100.

Torrington Company, The: *See*—
Acampora, Salvatore, Jr., 5,645,358, Cl. 384-477.000.

Tortelli, Vito: *See*—
Navarrini, Walter; Tortelli, Vito; Colaianna, Pasqua; and Abusleme, Julio A., 5,646,223, Cl. 526-247.000.

Toso, Victor. Waist supported carrying case including a back support. 5,645,080, Cl. 128-876.000.

Totten, Roger W. Folding safety can opener and method for opening cans. 5,644,848, Cl. 30-450.000.

Townsend, Leroy B.; and Drach, John C., to University of Michigan, The Regents of the. Polysubstituted benzimidazoles as antiviral agents. 5,646,125, Cl. 514-43.000.

Toxonigs Manufacturing, Inc.: *See*—
Slates, Scott O., 5,644,849, Cl. 33-265.000.

Toya, Hideaki: *See*—
Yorita, Mitsumasa; Toya, Hideaki; Hasegawa, Hiroshi; and Koyama, Kenichi, 5,646,386, Cl. 218-129.000.

Toyama, Niichi: *See*—
Murayama, Junichi; Toyama, Niichi; Matsuo, Kazuhide; Takashima, Hideki; Sadamitsu, Katsushi; Sugino, Kiichi; and Iiyama, Kazuto, 5,645,895, Cl. 427-424.000.

Toyo Kasei Kogyo Company Limited: *See*—
Nakagawa, Satoshi; Ogawa, Hideki; Tanaka, Hiroaki; and Onishi, Atsuhiro, 5,646,292, Cl. 548-251.000.

Toyo Roki Seizo Kabushiki Kaisha: *See*—
Matsumoto, Hideki; Muramatsu, Naritoshi; Mihara, Hiroaki; Uchiyama, Masahiko; Ikuma, Kouichi; and Suzuki, Takenori, 5,645,036, Cl. 123-519.000.

Toyoda Gosei Co., Ltd.: *See*—
Tajima, Hitoshi; and Maeno, Takashi, 5,645,138, Cl. 180-300.000.

Toyoda, Kouichi: *See*—
Kumagai, Hiroshi; and Toyoda, Kouichi, 5,645,638, Cl. 117-89.000.

Toyoda, Yoshio: *See*—
Taruno, Tomohiro; Kanai, Shinichi; Asao, Hiroyuki; Kimura, Syoichi; and Toyoda, Yoshio, 5,645,787, Cl. 264-272.170.

Toyota Jidosha Kabushiki Kaisha: *See*—
Usuki, Arimitsu; Takeuchi, Hisato; Tatsuda, Narihito; Okada, Akane; Kurauchi, Toshio; Tanaka, Hiromitsu; Okayama, Shinobu; Tojima, Kazuo; Fukui, Akio; and Okamoto, Toshiro, 5,646,284, Cl. 546-88.000.

Toyozawa, Yukio; Maeda, Kazuomi; and Sonoda, Naoto, to Fanuc, Ltd. Tandem control method based on a digital servomechanism. 5,646,495, Cl. 318-625.000.

Tozun, Orhan; and McCune, Earl William, Jr., to International Microcircuits, Inc. Apparatus for measuring cycle to cycle jitter of a digital signal and method therefor. 5,646,955, Cl. 375-224.000.

Trächtler, Ansgar: *See*—
Mesch, Franz; and Trächtler, Ansgar, 5,646,353, Cl. 73-861.160.

Tracy, Bryan: *See*—
Klein, Richard K.; Erb, Darrell; Avanzino, Steven; Cheung, Robin; Luning, Scott; Tracy, Bryan; Gupta, Subhash; and Lin, Ming-Ren, 5,646,448, Cl. 257-751.000.

Trainor, John J.; and LaPlace, Carl J., to Siemens Energy & Automation, Inc. Electric power control apparatus having chargeable protocol communications module. 5,646,610, Cl. 340-825.790.

Trama, Jean-Christophe: *See*—
Barat, Eric; Bourgerette, Alain; and Trama, Jean-Christophe, 5,646,410, Cl. 250-395.000.

Trankiem, Hoang Mai, to Gillette Company, The. Method of treating razor blade cutting edges. 5,645,894, Cl. 427-421.000.

Tranquilla, Michael N., to Unisys Corporation. Damped pinch-roll for document feed. 5,645,275, Cl. 271-274.000.

Transitions Optical, Inc.: *See*—
Van Gemert, Barry, 5,645,767, Cl. 252-586.000.

Treu, Dennis M.: *See*—
Kenley, Rodney S.; Matthews, Dawn; Treu, Dennis M.; Peter, Frederick H., Jr.; Feldsein, Thomas M.; and Minns, H. Gordon, 5,645,734, Cl. 210-805.000.

Trevisani, Davide, to Soilmec S.p.a. Device for joining threaded rods and tubular casing elements forming a string of a drilling rig. 5,645,131, Cl. 175-171.000.

Trimberger, Stephen M.; Carberry, Richard A.; Johnson, Robert Anders; and Wong, Jennifer, to Xilinx, Inc. Time multiplexed programmable logic device. 5,646,545, Cl. 326-38.000.

Trimble Navigation Limited: *See*—
Loomis, Peter Van Wyck; and Farmer, Dominic G., 5,646,629, Cl. 342-357.000.
McBurney, Paul; and Braisted, Paul, 5,646,857, Cl. 364-449.700.
Sheynblat, Leonid; and Longaker, Harold Lewis, 5,646,630, Cl. 342-357.000.

Trimmer, Mark Steven: *See*—
Marrocco, Matthew Louis, III; Gagné, Robert R.; and Trimmer, Mark Steven, 5,646,231, Cl. 528-125.000.

Marrocco, Matthew Louis, III; Gagné, Robert R.; and Trimmer, Mark Steven, 5,646,232, Cl. 528-126.000.

Trottier, Michel: *See*—
Arsenault, Raoul; Trottier, Michel; Chornet, Esteban; and Jollez, Paul, 5,646,312, Cl. 549-418.000.

Troughton, Nicholas A.; Desprez, François; Devenyns, Johan; Ledoux, Pierre; and Detroz, René, to Solvay Interox (Société Anonyme). Process for bleaching a pulp in a sequence including an enzyme stage. 5,645,686, Cl. 162-65.000.

Troxell, John Richard, to General Motors Corporation. Emissive display including field emitters on a transparent substrate. 5,646,479, Cl. 313-495.000.

Trubey, Bradley S.: *See*—
Lindeborg, Carl; Carroll, Edward; Moran, James; Bartolini, David; Griesing, John; Lindell, Liz; Walker, Anthony Dean; and Trubey, Bradley S., 5,646,939, Cl. 370-258.000.

Trudell Medical Limited: *See*—
Foley, Martin P.; and Morton, Robert, 5,645,049, Cl. 128-203.290.

Truesdale, Robert, to Motorola, Inc. Method for packaging semiconductor components for shipment. 5,644,899, Cl. 53-447.000.

Truong, Phat C.; and Coffman, Tim M., to Texas Instruments Incorporated. Sense amplifier with pre-charge circuit and low-voltage operation mode. 5,646,887, Cl. 365-185.210.

Trustees of Boston University: *See*—
Chobanian, Aram; and Brecher, Peter, 5,645,839, Cl. 424-400.000.
Oppenheim, Frank G.; Xu, Tao; and Spacciapoli, Peter, 5,646,119, Cl. 514-12.000.

Trustees Of The University Of Pennsylvania: *See*—
Marcolongo, Michele S.; and Ducheyne, Paul, 5,645,934, Cl. 428-357.000.

TRW Inc.: *See*—
Dies, Gary L.; Cartwright, Mark A.; and Lewis, Jonathan A., 5,645,299, Cl. 280-779.000.
Guidetti, Robert Henry; and Sheppard, Douglas Bruce, 5,645,381, Cl. 406-156.000.
Injeyan, Hagop; St. Pierre, Randall J.; Hilyard, Rodger C.; Harpole, George M.; and Hoefer, Carolyn S., 5,646,773, Cl. 359-337.000.

TRW Inc./TRW Vehicle Safety Systems, Inc.: *See*—
Stevens, Bruce A.; and Riley, Michael C., 5,645,298, Cl. 280-741.000.

TRW Vehicle Safety Systems Inc.: *See*—
White, Michael J., Jr.; and Shellabarger, Richard E., 5,645,295, Cl. 280-730.200.

Tryon, James A.: *See*—
Stern, Donald J.; and Tryon, James A., 5,645,198, Cl. 222-402.100.

Tsai, Jang-Zern: *See*—
Ting, Hou-Chun; Hang, Hsuch-Ming; Tsai, Jang-Zern; and Liang, Chien-Chen, 5,647,048, Cl. 386-68.000.

Tsai, Jianming: *See*—
Clark, James E.; MacLean, Mairi C.; and Tsai, Jianming, 5,646,663, Cl. 347-75.000.

Tsai, Liane Toy: *See*—
Andruska, Donald Lee; and Tsai, Liane Toy, 5,646,985, Cl. 379-207.000.

Tsai, Shih-Perng, to University of Chicago. Electrodialysis-based separation process for salt recovery and recycling from waste water. 5,645,703, Cl. 204-538.000.

Tsao, Hsing-Ya: *See*—
Lee, Peter W.; Tsao, Hsing-Ya; and Hsu, Fu-Chang, 5,646,890, Cl. 365-185.110.

Tseng, Chao H.: *See*—
Cheng, Hua-Chi; Tseng, Chao H.; and Hsieh, Pao-Ju, 5,645,970, Cl. 430-192.000.

Tseng, Shiaw C.: *See*—
College, John W.; Tseng, Shiaw C.; and Forsythe, Russell C., 5,645,807, Cl. 423-243.100.

Tseng, Shou Tang. Hoist for roll material surface treatment. 5,645,141, Cl. 187-269.000.

Tsoi, Hak-Yam, to Motorola, Inc. Method for making bipolar transistor. 5,646,055, Cl. 437-31.000.

Tsou, Yu-Min, to Dow Chemical Company, The. Durable electrode coatings. 5,645,930, Cl. 428-328.000.

Tsuchida, Shinji, to Canon Kabushiki Kaisha. Telephone apparatus. 5,646,989, Cl. 379-352.000.

Tsuda, Nobuhiko: *See*—
Araki, Takayuki; Tsuda, Nobuhiko; and Yonei, Yasushi, 5,646,201, Cl. 523-201.000.

Tsuda, Takashi: *See*—
Misaizu, Setsuo; Itou, Sunao; and Tsuda, Takashi, 5,646,763, Cl. 359-187.000.

Tsugawa, Takuji: *See*—
Koura, Kazuyuki; Tanaka, Jiro; and Tsugawa, Takuji, 5,644,982, Cl. 101-216.000.

Tsuida, Shunji: *See*—
Suzuki, Wako; and Tsuida, Shunji, 5,646,585, Cl. 333-232.000.

Tsuji, Kazuhiro: *See*—
Mitsushima, Susumu; Sugiyama, Hayami; Nakagawa, Hitoshi; Ogita, Hiromitsu; Yamakuni, Minoru; Kawahara, Kenichi; Kawamura, Shigeyuki; and Tsuji, Kazuhiro, 5,645,361, Cl. 400-636.000.

Tsuji, Satoshi: *See*—
Watanuki, Osaaki; Tsuji, Satoshi; and Ikeda, Yoshihiro, 5,646,882, Cl. 365-151.000.

Tsuji, Shoei: *See*—
Kawata, Takashi; Tsuji, Shoei; and Mori, Yoji, 5,646,224, Cl. 526-282.000.

Tsujii, Mitsugu: *See*—
Tan-no, Masaki; Harima, Seiichi; Tsujii, Mitsugu; and Ohi, Mitsuru, 5,646,082, Cl. 502-65.000.

Tsujimoto, Ichiro, to NEC Corporation. Decision feedback equalizer for canceling short-and long-multipath components using correspondingly delayed decision symbols. 5,646,958, Cl. 375-233.000.

Tsujino, Hitoshi: *See*—
Akiyama, Hiroyuki; Aoyagi, Akihiko; Takada, Kazuhiko; and Tsujino, Hitoshi, 5,646,802, Cl. 360-104.000.

Tsukada, Yoshifumi: *See*—
Yokota, Hiroshi; Naito, Ryuichi; Hirano, Hiroyuki; Ishii, Katsumi; Naohara, Shinichi; Tsukada, Yoshifumi; and Matsumoto, Kanya, 5,646,921, Cl. 369-50.000.

Tsukimoto, Takayuki; Koreeda, Shinichi; Kojima, Nobuyuki; and Nishimura, Mitsuo, to Canon Kabushiki Kaisha. Vibration driven motor including a vibration member having an elastic contact portion and a contact member having an elastic contact portion. 5,646,469, Cl. 310-323.000.

Tsukise, Bunzi: *See*—
Araki, Toshiyuki; Tokieda, Takemi; Yabushita, Shin-ichi; Ueda, Yasuyoshi; and Tsukise, Bunzi, 5,646,274, Cl. 540-126.000.

Tsukiyama, Yasumitsu: *See*—
Tatematsu, Susumu; Tsukiyama, Yasumitsu; Watanabe, Noboru; and Ikari, Hideyuki, 5,644,927, Cl. 62-354.000.

Tsukuda, Akimitsu: *See*—
Ito, Nobuaki; Tsukuda, Akimitsu; and Yoneyama, Kazumasa, 5,645,918, Cl. 428-141.000.

Tsukude, Masaki; and Arimoto, Kazutami, to Mitsubishi Denki Kabushiki Kaisha. Sense amplifier including MOS transistors having threshold voltages controlled dynamically in a semiconductor memory device. 5,646,900, Cl. 365-205.000.

Tsukui, Takaaki: *See*—
Yamamoto, Toshio; Tsukui, Takaaki; Ichimura, Takashi; and Okano, Noriaki, 5,645,022, Cl. 123-90.170.

Tsumuki, Hiroshi: *See*—
Suzuki, Fumio; Nakasato, Yoshisuke; Tsumuki, Hiroshi; Sato, Soichiro; Tamura, Tadafumi; and Nakajima, Hiroshi, 5,646,283, Cl. 546-61.000.

Tsunetsugu, Yukio, to Kabushiki Kaisha Toshiba. AC/DC converter using a non-latch type switching device. 5,646,514, Cl. 323-288.000.

Tsutsui, Koichi; and Rhue, Samuel A., to Nippon Paint Co., Ltd. Supplying method of powder paints to coaters and powder coating machine capable of pulverizing powder paint pellets into a sprayable powder. 5,645,227, Cl. 239-654.000.

Tsutsui, Kyoya: *See*—
Sonohara, Mito; and Tsutsui, Kyoya, 5,646,960, Cl. 375-340.000.

Tsutsumi, Seisuke: *See*—
Nagano, Tetsuaki; and Tsutsumi, Seisuke, 5,646,492, Cl. 318-432.000.

Tsutsumi, Yukio: *See*—
Ichiba, Akinori; and Tsutsumi, Yukio, 5,645,181, Cl. 212-281.000.

Tsuyuguchi, Koji; Kimura, Haruyoshi; Kawabe, Hideaki; and Arimitsu, Eizaburo, to Krosaki Corporation. Joint structure for casting nozzle. 5,645,120, Cl. 164-437.000.

Tsuzuki, Kiyohiro, to TNS Mills, Inc. Yarn spool apparatus and method. 5,644,901, Cl. 53-459.000.

Tu, Chih-Yun Johnny: *See*—
Sun, Jung-Hui; and Tu, Chih-Yun Johnny, 5,646,303, Cl. 548-567.000.

Tubbs, Alan James: *See*—
Solomon, Jeffrey Alan; and Tubbs, Alan James, 5,646,712, Cl. 396-535.000.

Tubular Textile LLC: *See*—
Price, Ellie E.; and Hardin, William C., Jr., 5,644,818, Cl. 19-159.00R.

Tucker, Lois C.: *See*—
Scalet, Frank; Berger, Joseph P.; Harting, Hal B.; Majewski, Anthony J.; Neibert, Khrystal L.; Tucker, Lois C.; Walters, Judy E.; and Weaver, Steven D., 5,645,387, Cl. 412-1.000.

Tufano, Anthony: *See*—
Getselis, Arkady; Tufano, Anthony; Chase, Charles; and DeVincentis, Anthony, 5,645,446, Cl. 439-419.000.

Tufco Corp.: *See*—
Green, Jerry; Shipley, Michael E.; and Prichard, Richard J., 5,645,001, Cl. 112-80.550.

Tukidate, Yoshihiro, to Fujitsu Limited. Pulse-width-extension circuit and electronic device including the circuit. 5,646,565, Cl. 327-174.000.

Tung, Wae-Hai: *See*—
Howell, James Milton; Tung, Wae-Hai; and Werny, Frank, 5,645,782, Cl. 264-103.000.

Tuomy, James M.: *See*—
Gertz, Jonathan; and Tuomy, James M., 5,646,602, Cl. 340-825.250.

Turcott, Robert, to Ventritex, Inc. Method and apparatus for determining the origins of cardiac arrhythmias morphology dynamics. 5,645,070, Cl. 128-702.000.

Turmo, Enric: *See*—
Bartroli, Javier; Turmo, Enric; Anguita, Manuel; Carceller, Elena; and Almansa, Carmen, 5,646,294, Cl. 548-267.200.

Turner, William W.: *See*—
Borromeo, Peter S.; Jamison, James A.; Rodriguez, Michael J.; Turner, William W.; and Vasudevan, Venkatraghaven, 5,646,111, Cl. 514-11.000.

Turney, Thomas Robert: *See*—

Hammer, Michael Ron; Park, Christopher John; Allen, Brian Lawrence; and Turney, Thomas Robert, 5,646,727, Cl. 356-315.000.

Turturro, Vincent A.: *See*—
Palmer, Matthew A.; Slater, Charles R.; Turturro, Vincent A.; Solar, Matthew S.; Gottlieb, Saul; Francese, Jose L.; and Damarati, John Jairo, 5,645,075, Cl. 128-749.000.

Tusché , Eckhard: *See*—
Sailer, Colin; Harmathy, Paul; Tusché , Eckhard; Weissbacher, Thomas; Schoder, Heinrich; Bachmeir, Xaver; and Ruschkowski, Johannes, 5,644,828, Cl. 29-402.060.

Tuttle, John R., to Micron Communications, Inc. Anti-theft method for detecting the unauthorized opening of containers and baggage. 5,646,592, Cl. 340-572.000.

Twigg, Robert David; and Spengler, Jeffrey Curtin, to Plan B Enterprises, Inc. Floating mass accelerometer. 5,646,349, Cl. 73-514.380.

Tyner, Clifford A., to U.S. Medical, Inc. System for filling medical nutrition containers. 5,645,194, Cl. 222-147.000.

Tyrolit Schleifmittelwerke Swarovski K.G.: *See*—
Egger, Franz; and Plattner, Josef, 5,645,039, Cl. 125-21.000.

Tzeng, Cherng-Chyi; Chen, Yeh-Long; Wang, Tai-Chi; and Teng, Che-Ming, to National Science Council. α-methylene-γ-butyrolactones: new inhibitors of platelet aggregation. 5,646,164, Cl. 514-314.000.

Ubayashi, Shinsuke; Yoshida, Yasumi; and Kominato, Ryusei, to Canon Kabushiki Kaisha. Sheet supply apparatus. 5,645,274, Cl. 271-94.000.

Uchi, Kazutaka: *See*—
Fukuoka, Shuichi; Kamigaki, Kousei; Uchi, Kazutaka; and Onitsuka, Katsuhiko, 5,645,753, Cl. 252-62.9PZ.

Uchibori, Kiyofumi: *See*—
Meguro, Satoshi; Uchibori, Kiyofumi; Suzuki, Norio; Motoyoshi, Makoto; Koike, Atsuyoshi; Yamanaka, Toshiaki; Sakai, Yoshio; Kaga, Toru; Hashimoto, Naotaka; Hashimoto, Takashi; Honjou, Shigeru; and Minato, Osamu, 5,646,423, Cl. 257-51.000.

Uchibori, Shinya, to Kabushiki Kaisha Miyake. Circuit-like metallic foil sheet and the like and process for producing them. 5,645,932, Cl. 428-347.000.

Uchida, Kiyoshi: *See*—
Noda, Shoji; Uchida, Kiyoshi; Itoh, Akio; Higuchi, Kazuo; Niimi, Mikio; Murasaki, Shun-ichi; and Honkura, Yoshinobu, 5,645,937, Cl. 428-408.000.

Uchiyama, Masahiko: *See*—
Matsumoto, Hideki; Muramatsu, Naritoshi; Mihara, Hiroaki; Uchiyama, Masahiko; Ikuma, Kouichi; and Suzuki, Takenori, 5,645,036, Cl. 123-519.000.

Uda, Makoto: *See*—
Miyazawa, Yasuhiro; Takanohashi, Daisuke; and Uda, Makoto, 5,646,587, Cl. 335-205.000.

Uda, Motohisa; Nikai, Isao; and Matsuda, Junji, to Kajima Corporation. Air refrigerant ice forming equipment. 5,644,928, Cl. 62-402.000.

Udagawa, Koji: *See*—
Yamada, Tetsuo; Tanaka, Toshihide; Hirosaki, Satoru; Udagawa, Koji; and Komori, Yumiko, 5,646,669, Cl. 347-127.000.

Udd, Eric. Fiber optic grating and etalon sensor systems. 5,646,401, Cl. 250-227.180.

Udden, Per Johan: *See*—
Chrintz-Gath, Per-Anders; and Udden, Per Johan, 5,645,037, Cl. 123-601.000.

Udoh, Hiroshi; and Funakosi, Hirosi, to Nissan Motor Co., Ltd. Anti-theft car protection system. 5,646,456, Cl. 307-10.500.

Ueda, Satoshi: *See*—
Hodozuka, Yasuo; Iida, Tadashi; Yamaga, Yoshikazu; Ueda, Satoshi; and Imaizumi, Yasuo, 5,645,364, Cl. 403-270.000.

Ueda, Shigeharu: *See*—
Oka, Hiroaki; Tomioka, Toshikazu; Tomita, Katsumi; Hoshino, Kenji; Nishino, Atsushi; and Ueda, Shigeharu, 5,645,846, Cl. 424-405.000.

Ueda, Tomoaki; and Sagane, Masayuki, to Daikin Industries, Ltd. Physical quantity analyzing method and apparatus thereof. 5,646,868, Cl. 364-570.000.

Ueda, Yasunori: *See*—
Michiyuki, Hiromi; Yokoi, Masanobu; Ueda, Yasunori; and Ikeda, Hayato, 5,644,970, Cl. 92-71.000.

Ueda, Yasuyoshi: *See*—
Araki, Toshiyuki; Tokieda, Takemi; Yabushita, Shin-ichi; Ueda, Yasuyoshi; and Tsukise, Bunzi, 5,646,274, Cl. 540-126.000.

Ueda, Yutaka: *See*—
Irie, Kenji; Ueda, Yutaka; and Fujiwara, Norio, 5,646,154, Cl. 514-260.000.

Ueno, Hideyuki: *See*—
Odaka, Toshinori; Uetani, Yoshiharu; Masuda, Tadaaki; Yamakage, Tomoo; Ueno, Hideyuki; Yamaguchi, Noboru; Kikuchi, Yoshihiro; and Oku, Tadahiro, 5,647,049, Cl. 386-124.000.

Ueno, Koichi; and Mitsuhashi, Kenichiro, to Kabushiki Kaisha Kobe Seiko Sho. Gas liquefying method and heat exchanger used in gas liquefying method. 5,644,931, Cl. 62-612.000.

Ueno, Osamu: *See*—
Kobayashi, Hideo; Ueno, Osamu; and Gotoh, Hironori, 5,645,909, Cl. 428-64.100.

Ueno, Rie: *See*—
Banno, Yoshikazu; Nomura, Ichiro; Suzuki, Hidetoshi; Noma, Takashi; and Ueno, Rie, 5,645,462, Cl. 445-51.000.

Uetani, Yoshiharu: *See*—
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Abe, Shunji; and Uratsuji, Kazumi, 5,646,442, Cl. 257-697.000.
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Yaniv, Itzhak, to Baran Advanced Materials 94 Ltd. Foamed magnesite cement and articles made therewith. 5,645,637, Cl. 106-677.000.
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Hill, Mark George, 5,645,448, Cl. 439-522.000.
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Ido, Yoichi; Kohno, Yasushi; and Nakatsukasa, Kazushi, 5,645,093, Cl. 134-104.300.
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Yeh, Patrice: *See*—
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Young, Mark Douglas; Erspamer, John Paul; Forry, Mark Edwin; and Berg, Charles John, Jr., to Procter & Gamble Company, The. Dispensing package for discrete stage compressed tissues, compressed tissues therefor, and method of dispensing such tissues. 5,644,897, Cl. 53-438.000.
Young, Monte. Easily loaded utility knife. 5,644,843, Cl. 30-124.000.
Young, Steven J., to Apple Computer, Inc. Battery cell having an internal circuit for controlling its operation. 5,645,949, Cl. 429-7.000.
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Green, David T.; Bolanos, Henry; Young, Wayne P.; McGarry, Richard A.; Heaton, Lisa W.; and Ratcliff, Keith, 5,645,551, Cl. 606-143.000.
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Yu, Hui-Nan. Step exercising machine. 5,645,512, Cl. 482-53.000.
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Yu, Norman Y. C. Barbecue cooker. 5,645,041, Cl. 126-25.00R.
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Yuh, Jong Hak, to Hyundai Electronics Industries Co., Ltd. Semiconductor memory device for reducing operating power consumption amount. 5,646,880, Cl. 365-149.000.
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Yurke, Bernard, to Lucent Technologies Inc. Methods and apparatus for a multi-electrode micromechanical optical modulator. 5,646,772, Cl. 359-290.000.
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Zelenak, John M., 5,645,404, Cl. 417-1.000.
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Crocco, Guy L.; and Zajacek, John G., 5,646,314, Cl. 549-531.000.
Zakroff, Sandra: *See*—
Lott, Timothy J.; Morrison, Christine J.; Reiss, Errol; Lasker, Brent; and Zakroff, Sandra, 5,645,992, Cl. 435-6.000.
Zambon Group S.p.A.: *See*—
Stroppolo, Federico; Bonadeo, Daniele; Fornasini, Gian Franco; and Gazzaniga, Annibale, 5,645,857, Cl. 424-464.000.
Zamborelli, Thomas J.; and Steen, Michael J., to Hewlett-Packard Co. Probing adapter for testing IC packages. 5,646,542, Cl. 324-755.000.
Zampetti, George P.: *See*—
Hamilton, Michael M.; Merriss, Morley M.; and Zampetti, George P., 5,646,519, Cl. 324-76.820.
Zaun, Peter: *See*—
Bouma, Stanley R.; Coules, Ronald A.; Gordon, Julian; Shain, Eric B.; Solomon, Natalie A.; and Zaun, Peter, 5,645,801, Cl. 422-68.100.
Zebco Division of Brunswick Corporation: *See*—
Zwayer, Kent; and Erxleben, Nyle C., 5,645,239, Cl. 242-300.000.
Zechmann, Jürgen; Doden, Berend-Wilhelm; Wolf, Michael; and Wiss, Helmut, to Robert Bosch GmbH. Control circuit for a solenoid valve. 5,645,097, Cl. 137-1.000.

Zeinstra, Mark L.: *See*—
Duckworth, Paul C.; Dykema, Kurt A.; and Zeinstra, Mark L., 5,646,701, Cl. 340-825.690.
Zeising, Elmar: *See*—
van Phuoc, Duong; Wieczorek, Rudi; Zeising, Elmar; Hruska, Louis W.; Taylor, Alwyn H.; Friel, Daniel D.; and Hull, Matthew P., 5,646,508, Cl. 320-30.000.
Zelenak, John M., to Z Industry, Inc. Personal fluid dispensing device. 5,645,404, Cl. 417-1.000.
Zelmer, Loren. Educational board game for amusement and vocabulary building. 5,645,280, Cl. 273-256.000.
Zeneca Limited: *See*—
Hammond, Timothy, 5,646,217, Cl. 525-450.000.
Zenhausern, Frederic: *See*—
Wickramasinghe, Hemantha Kumar; Zenhausern, Frederic; Martin, Yves; and O'Boyle, Martin Patrick, 5,646,731, Cl. 356-357.000.
Zenith Data Systems Corporation: *See*—
Manser, Brian E.; Ojeda, Peter A., IV; Poole, Anton R.; and Wu, Guoming Frank, 5,646,817, Cl. 361-680.000.
Zexel Corporation: *See*—
Hasegawa, Toshiyuki; Nozaki, Shinya; and Miyamoto, Takeshi, 5,645,225, Cl. 239-533.120.
Nishishita, Kunihiko; and Sugita, Takashi, 5,645,126, Cl. 165-153.000.
ZF Friedrichschafen AG: *See*—
Rowe, Gerald; Kuhn, Walter; Zippel, Christof; and Reichenmiller, Michael, 5,645,406, Cl. 417-273.000.
ZF Padova S.p.A.: *See*—
Saurin, Claudio; and Rizzo, Giampietro, 5,645,148, Cl. 192-4.00A.
Zhang, Hongyong; Takayama, Toru; and Takemura, Yasuhiko, to Semiconductor Energy Laboratory Co., Ltd. Transistor device employing crystallization catalyst. 5,646,424, Cl. 257-66.000.
Zhang, Jiancun: *See*—
Matteucci, Mark D.; and Zhang, Jiancun, 5,646,269, Cl. 536-26.700.
Zhang, Jie; and Asmussen, Jes, to Board of Trustees operating Michigan State University. Method and apparatus for plasma treatment of a surface. 5,645,645, Cl. 118-723.0MW.
Zhang, Jinshan; and Venugopal, Ganesh, to Motorola, Inc. Superabsorbent polymer electrolytes for electrochemical cells and electrochemical cells using same. 5,645,958, Cl. 429-192.000.
Zhang, Qiming: *See*—
Asai, Hiroki; Zhang, Qiming; and Sugahara, Hiroto, 5,646,661, Cl. 347-69.000.
Zhang, Yong Fang: *See*—
Laakmann, Peter; Zhang, Yong Fang; and Hayes, Keith L., 5,646,765, Cl. 359-202.000.
Zhang, Zhengfeng: *See*—
Grüning, Burghard; Peter, Siegfried; Recksik, Manfred; Weidner, Eckhard; and Zhang, Zhengfeng, 5,646,258, Cl. 536-18.600.
Zhao, Gang: *See*—
Zhao, Shurun; and Zhao, Gang, 5,644,801, Cl. 4-300.300.
Zhao, Jun: *See*—
Nishizato, Hiroshi; Sivaramakrishnan, Visweswaren; and Zhao, Jun, 5,645,642, Cl. 118-692.000.
Zhao, Shurun; and Zhao, Gang. Splash-reduced toilet system. 5,644,801, Cl. 4-300.300.
Zhong, Er-Kuan: *See*—
Lipo, Thomas A.; and Zhong, Er-Kuan, 5,646,498, Cl. 318-800.000.
Zhou, James H.: *See*—
Cheng, Yung-chi; Lukhtanov, Eugeny A.; Meyer, Rich B., Jr.; Pai, Balakrishna S.; Reed, Michael W.; and Zhou, James H., 5,646,126, Cl. 514-44.000.
Zhou, Jiahua: *See*—
Oehr, Klaus Heinrich; Simons, Girard A.; and Zhou, Jiahua, 5,645,805, Cl. 423-239.100.
Zierenberg, Bernd; and Hochrainer, Dieter, to Boehringer Ingelheim KG. Powder inhaler with powder carrier consisting of regular microstructures. 5,645,050, Cl. 128-203.150.
Zierhut, Clarence: *See*—
Juhl, Kathryn A.; Christian, S. Rozan; Christian, Max L.; and Zierhut, Clarence, 5,645,090, Cl. 132-285.000.
Zimmer, Inc.: *See*—
Bryant, Mark A., 5,645,545, Cl. 606-62.000.
Devanathan, Thirumalai; and King, Richard S., 5,645,594, Cl. 623-16.000.
Hickey, Paul Francis, 5,645,607, Cl. 623-23.000.
Zimmerman, Daniel H.: *See*—
Kline, Ellis L.; and Zimmerman, Daniel H., 5,645,997, Cl. 435-7.100.
Zimmerman, Robert LeRoy; Crawford, Wheeler Conrad; and Lloyd, Rodney Frederick, to Huntsman Petrochemical Corporation. Reductive alkylation of polyamines. 5,646,235, Cl. 528-266.000.
Zinner, Herbert: *See*—
Melzig, Manfred; and Zinner, Herbert, 5,645,768, Cl. 252-586.000.
Zippel, Christof: *See*—
Rowe, Gerald; Kuhn, Walter; Zippel, Christof; and Reichenmiller, Michael, 5,645,406, Cl. 417-273.000.
Zirkle, Marc L.: *See*—
Doesburg, Eric John; and Zirkle, Marc L., 5,645,639, Cl. 118-60.000.
Zito, Thomas Carl: *See*—
Shepherd, Stuart Craig; and Zito, Thomas Carl, 5,644,898, Cl. 53-445.000.
Zittritsch, Terrance John: *See*—
Bertolet, Allan Robert; Clinton, Kim P. N.; Fuller, Christine Marie; Gould, Scott Whitney; Hartman, Steven Paul; Iadanza, Joseph Andrew; Keyser, Frank Ray; Millham, Eric Ernest; Reny, Timothy Shawn; Worth, Brian A.; Yasar, Gulson; and Zittritsch, Terrance John, 5,646,546, Cl. 326-39.000.
Zitzelsberger, Dorit; Ahne, Gerd; Winter, Josef; and Bleicher, Karl, to Protec Partner Fuer Umwelttechnik GmbH. Process and device for the biological treatment of organically polluted waste water and organic waste. 5,645,725, Cl. 210-605.000.
Zoeller, Joachim: *See*—
Schafheutle, Markus A.; Voelker, Achim; Wehner, Susanne; Walz, Gerd; and Zoeller, Joachim, 5,646,236, Cl. 528-288.000.
Zook, Jon C., to Illinois Tool Works Inc. Multiple heat source grid assembly. 5,645,743, Cl. 219-422.000.
Zovko, Charles I. El lamp with color matching or hidden graphic. 5,646,481, Cl. 313-510.000.
Zucchi, Gioia: *See*—
Villa, Mario; Fuganti, Claudio; Zucchi, Gioia; Allegrone, Gianna; Barbeni, Masimo; and Cabella, Paolo, 5,646,022, Cl. 435-124.000.
Zucker, Jane Elisa: *See*—
Mihailidi, Margarita M.; and Zucker, Jane Elisa, 5,647,029, Cl. 385-2.000.
Zuefle, Thomas; Schiel, Christian; and Steiner, Karl, to Voith Sulzer Papiermaschinen. Extended nip press roll for a papermaking machine. 5,645,691, Cl. 162-358.300.
Zürbes, Arno; and Rötsch, Helmut, to Bomag GmbH. Vibration tamper. 5,645,370, Cl. 404-133.100.
Zurbrügg, Heinz Robert. Vascular prosthesis. 5,645,581, Cl. 623-1.000.
Zürcher, Ernst: *See*—
Luginbühl, Erich; Witschi, Marcel; and Zürcher, Ernst, 5,645,122, Cl. 164-479.000.
Luginbühl, Erich; Meyer, Michel; Roder, Rudolf; Witschi, Marcel; and Zürcher, Ernst, 5,645,159, Cl. 198-838.000.
Zürcher, Jean-François: *See*—
Bokhari, Syed A.; Zürcher, Jean-François; Mosig, Juan Ramon; and Gardiol, Freddy, 5,646,634, Cl. 343-700.0MS.
Zwart, Herman N.: *See*—
Zwart, Richard K., 5,645,228, Cl. 239-687.000.
Zwart, Richard K., to Zwart, Herman N. Safety shield for spreader. 5,645,228, Cl. 239-687.000.
Zwayer, Kent; and Erxleben, Nyle C., to Zebco Division of Brunswick Corporation. Fishing reel anti-reverse system with dual-purpose actuator switch. 5,645,239, Cl. 242-300.000.
Zylla, Peter: *See*—
Gross, Gerhard; and Zylla, Peter, 5,645,655, Cl. 148-634.000.
ZymoGenetics, Inc.: *See*—
Baindur, Nand; and Labroo, Virender M., 5,646,285, Cl. 546-298.000.
Zywicki, Gregory: *See*—
Popovic' , Dragan; Halloran, John W.; Hilmas, Gregory E.; Brady, Guy Allen; Somers, Scott; Barda, Andrew; and Zywicki, Gregory, 5,645,781, Cl. 264-639.000.
24th & Dean, Inc.: *See*—
Thuna, Michael C., 5,645,346, Cl. 366-205.000.
3Com Corporation: *See*—
Lindeborg, Carl; Carroll, Edward; Moran, James; Bartolini, David; Griesing, John; Lindell, Liz; Walker, Anthony Dean; and Trubey, Bradley S., 5,646,939, Cl. 370-258.000.
Mitchell, Bruce W.; and Isfeld, Mark S., 5,646,553, Cl. 326-86.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 8th DAY OF JULY, 1997

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Academy of Sciences of the Czech Republic, Institute of Organic Chemistry and Biochemistry of the: *See*—
Alexander, Petr; Holy, Antonin; and Dvorakova, Hana, Re. 35,558, Cl. 544-244.000.
AE Borgo SPA: *See*—
Bruni, Ludovico, Re. 35,551, Cl. 92-158.000.
Alexander, Petr; Holy, Antonin; and Dvorakova, Hana, to Academy of Sciences of the Czech Republic, Institute of Organic Chemistry and Biochemistry of the. (2R)-2-[di(2-propyl)phosphonyylmethoxy]-3-P-toluenesulfonyloxy-1-trimethylacetoxypropane, its preparation and use. Re. 35,558, Cl. 544-244.000.
Bruni, Ludovico, to AE Borgo SPA. Piston for alternative endothermic engines creating oil cushion lubrication. Re. 35,551, Cl. 92-158.000.
Burke, Michael W.: *See*—
Pompei, Francesco; and Burke, Michael W., Re. 35,554, Cl. 374-121.000.
Cote, Kevin: *See*—
Sjogren, Christer A.; and Cote, Kevin, Re. 35,555, Cl. 414-331.000.
DeMeringo, Alain: *See*—
Thelohan, Sylvie; DeMeringo, Alain; Furtak, Hans; and Holstein, Wolfgang, Re. 35,557, Cl. 501-11.000.
Dvorakova, Hana: *See*—
Alexander, Petr; Holy, Antonin; and Dvorakova, Hana, Re. 35,558, Cl. 544-244.000.
Exergen Corporation: *See*—
Pompei, Francesco; and Burke, Michael W., Re. 35,554, Cl. 374-121.000.
Furtak, Hans: *See*—
Thelohan, Sylvie; DeMeringo, Alain; Furtak, Hans; and Holstein, Wolfgang, Re. 35,557, Cl. 501-11.000.
Holstein, Wolfgang: *See*—
Thelohan, Sylvie; DeMeringo, Alain; Furtak, Hans; and Holstein, Wolfgang, Re. 35,557, Cl. 501-11.000.
Holy, Antonin: *See*—
Alexander, Petr; Holy, Antonin; and Dvorakova, Hana, Re. 35,558, Cl. 544-244.000.
Inventures, Inc.: *See*—
Weinreich, Stephen, Re. 35,556, Cl. 446-130.000.
Isover-Saint Gobain: *See*—
Thelohan, Sylvie; DeMeringo, Alain; Furtak, Hans; and Holstein, Wolfgang, Re. 35,557, Cl. 501-11.000.
Lankinen, Tapio, to Leiras Oy. Device intended for measuring a dose of powered medicament for inhalation. Re. 35,552, Cl. 128-203.120.
Leiras Oy: *See*—
Lankinen, Tapio, Re. 35,552, Cl. 128-203.120.
Li, Ming-Chiang. Optical RF stereo. Re. 35,553, Cl. 342-13.000.
Pompei, Francesco; and Burke, Michael W., to Exergen Corporation. Radiation detector with temperature display. Re. 35,554, Cl. 374-121.000.
Quipp Systems, Inc.: *See*—
Sjogren, Christer A.; and Cote, Kevin, Re. 35,555, Cl. 414-331.000.
Sjogren, Christer A.; and Cote, Kevin, to Quipp Systems, Inc. Automatic bundle loading apparatus and method. Re. 35,555, Cl. 414-331.000.
Thelohan, Sylvie; DeMeringo, Alain; Furtak, Hans; and Holstein, Wolfgang, to Isover-Saint Gobain. Mineral fibers decomposable in a physiological medium. Re. 35,557, Cl. 501-11.000.
Weinreich, Stephen, to Inventures, Inc. Teleporter. Re. 35,556, Cl. 446-130.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Blasberg, Peter: *See*—
Böcker, Dirk; Haar, Hans-Peter; Blasberg, Peter; and Kotulla, Reinhard, B1 5,507,288, Cl. 128-633.000.
Böcker, Dirk; Haar, Hans-Peter; Blasberg, Peter; and Kotulla, Reinhard, to Boehringer Mannheim GmbH. Analytical system for monitoring a substance to be analyzed in patient-blood. B1 5,507,288, Cl. 128-633.000.
Boehringer Mannheim GmbH: *See*—
Böcker, Dirk; Haar, Hans-Peter; Blasberg, Peter; and Kotulla, Reinhard, B1 5,507,288, Cl. 128-633.000.
Cartogena, Nicolas M.: *See*—
Roman, John J.; and Cartogena, Nicolas M., B1 5,219,396, Cl. 119-174.000.
Chronology Corp.: *See*—
Lewis, Lawrence E.; and Meredith, Michael S., B1 5,381,524, Cl. 395-346.000.
Durfee, William K.: *See*—
Symonds, Alan P.; and Durfee, William K., B1 4,095,139, Cl. 315-153.000.
Fujii, Koichi: *See*—
Takata, Akira; and Fujii, Koichi, B1 4,763,020, Cl. 365-185.170.
Haar, Hans-Peter: *See*—
Böcker, Dirk; Haar, Hans-Peter; Blasberg, Peter; and Kotulla, Reinhard, B1 5,507,288, Cl. 128-633.000.
Hara, Akitoshi, to Seiko Epson Corporation. Method of encapsulating a semiconductor element using a resin mold having upper and lower mold half resin inflow openings. B1 5,077,237, Cl. 437-214.000.
Harari, Eliyahou: *See*—
Mehrotra, Sanjay; Harari, Eliyahou; and Lee, Winston, B1 5,172,338, Cl. 365-185.030.
Kemp, Richard A.: *See*—
Wilson, Stanley E.; and Kemp, Richard A., B1 5,411,926, Cl. 502-117.000.
Kennedy, James C.; Pottier, Roy H.; and Reid, Robert L., to Queen's University at Kingston. Method of detection of malignant and non-malignant lesions by photochemotherapy of photoporphyrin IX precursors. B1 5,211,938, Cl. 424-9.610.
Kotulla, Reinhard: *See*—
Böcker, Dirk; Haar, Hans-Peter; Blasberg, Peter; and Kotulla, Reinhard, B1 5,507,288, Cl. 128-633.000.
Lee, Winston: *See*—
Mehrotra, Sanjay; Harari, Eliyahou; and Lee, Winston, B1 5,172,338, Cl. 365-185.030.
Lewis, Lawrence E.; and Meredith, Michael S., to Chronology Corp. Automated development of timing diagrams for electrical circuits. B1 5,381,524, Cl. 395-346.000.
Lovatt, Carol J., to University of California, The Regents of the. Formulation of phosphorus fertilizer for plants. B1 5,514,200, Cl. 71-11.000.
Mehrotra, Sanjay; Harari, Eliyahou; and Lee, Winston, to Sandisk Corporation. Multi-state EEPROM read and write circuits and techniques. B1 5,172,338, Cl. 365-185.030.
Meredith, Michael S.: *See*—
Lewis, Lawrence E.; and Meredith, Michael S., B1 5,381,524, Cl. 395-346.000.
Nu-Pipe, Inc.: *See*—
Steketee, Campbell H., Jr., B1 4,867,921, Cl. 264-36.000.
Posti-Fort, Inc.: *See*—
Roman, John J.; and Cartogena, Nicolas M., B1 5,219,396, Cl. 119-174.000.
Pottier, Roy H.: *See*—
Kennedy, James C.; Pottier, Roy H.; and Reid, Robert L., B1 5,211,938, Cl. 424-9.610.
Queen's University at Kingston: *See*—
Kennedy, James C.; Pottier, Roy H.; and Reid, Robert L., B1 5,211,938, Cl. 424-9.610.
Reid, Robert L.: *See*—
Kennedy, James C.; Pottier, Roy H.; and Reid, Robert L., B1 5,211,938, Cl. 424-9.610.
Ricoh Company, Ltd.: *See*—
Takata, Akira; and Fujii, Koichi, B1 4,763,020, Cl. 365-185.170.
Roman, John J.; and Cartogena, Nicolas M., to Posti-Fort, Inc. Artificial spur for cockfighting. B1 5,219,396, Cl. 119-174.000.
Sandisk Corporation: *See*—
Mehrotra, Sanjay; Harari, Eliyahou; and Lee, Winston, B1 5,172,338, Cl. 365-185.030.
Seiko Epson Corporation: *See*—
Hara, Akitoshi, B1 5,077,237, Cl. 437-214.000.
Shell Polypropylene Company: *See*—

Wilson, Stanley E.; and Kemp, Richard A., B1 5,411,926, Cl. 502-117.000.

Steketee, Campbell H., Jr., to Nu-Pipe, Inc. Process for installing a new pipe inside an existing pipeline. B1 4,867,921, Cl. 264-36.000.

Symonds, Alan P.; and Durfee, William K., to Vari-Lite, Inc. Light control system. B1 4,095,139, Cl. 315-153.000.

Takata, Akira; and Fujii, Koichi, to Ricoh Company, Ltd. Programmable logic device having plural programmable function cells. B1 4,763,020, Cl. 365-185.170.

University of California, The Regents of the: *See*—
Lovatt, Carol J., B1 5,514,200, Cl. 71-11.000.

Vari-Lite, Inc.: *See*—
Symonds, Alan P.; and Durfee, William K., B1 4,095,139, Cl. 315-153.000.

Wilson, Stanley E.; and Kemp, Richard A., to Shell Polypropylene Company. Olefin polymerization catalyst. B1 5,411,926, Cl. 502-117.000.

LIST OF DESIGN PATENTEES

AAK AS: *See*—
Berg, Svein; and Husøy, Fred, 380,665, Cl. D8-367.000.

Abe, Shigenori: *See*—
Seki, Noboru; and Abe, Shigenori, 380,694, Cl. D10-104.000.
Seki, Noboru; and Abe, Shigenori, 380,695, Cl. D10-104.000.

Advanced Drainage Systems, Inc.: *See*—
Motz, Joseph E.; Heinlein, Mark A.; Goddard, James B.; and Tyner, Carl, 380,813, Cl. D23-265.000.

Agata, Nobuyuki, to Canon Kabushiki Kaisha. Photocopier. 380,768, Cl. D18-38.000.

Agee, Alexander, II; Hawkins, Timothy K.; and Hawkins, Edith D., to Nina International, Inc. Decorative nail covering. 380,867, Cl. D28-56.000.

Aguirre, Hector R.: *See*—
Ramos, Elizabeth; and Aguirre, Hector R., 380,605, Cl. D3-218.000.

Ahrensburg, Fernando Gutierrez. Computer table. 380,630, Cl. D6-486.000.

Allen, Michael Ernest, to Castrol Limited. Container. 380,686, Cl. D9-575.000.

Alps Electric Co., Ltd.: *See*—
Seki, Noboru; and Abe, Shigenori, 380,694, Cl. D10-104.000.
Seki, Noboru; and Abe, Shigenori, 380,695, Cl. D10-104.000.

American Architectural Products, Inc.: *See*—
Lint, Jeffery D.; Williams, David L.; and Sparer, Stephen J., 380,839, Cl. D25-103.000.
Lint, Jeffery D.; Williams, David L.; and Sparer, Stephen J., 380,840, Cl. D25-103.000.

American Manufacturing Company, Inc.: *See*—
Sheftel, Steven J., 380,666, Cl. D8-372.000.

American Safety Razor Company: *See*—
Wonderley, Jeff W., 380,866, Cl. D28-46.000.

Anderson, Steven W. Hand lever for motorcycles. 380,720, Cl. D12-179.000.

Apple Computer, Inc.: *See*—
van de Loo, Marc J., 380,742, Cl. D14-107.000.

Apps, William P.; and Koefelda, Gerald R., to Rehrig Pacific Company, Inc. Wall structure for a nestable crate. 380,613, Cl. D3-307.000.

Arnold, Danny L. Golf putter. 380,799, Cl. D21-217.000.

Arnold, James Michael. Game board. 380,781, Cl. D21-25.000.

Arshad, Kausiwa. Continent candle. 380,855, Cl. D26-7.000.

Ascom Hasler Mailing Systems, AG: *See*—
Muchenberger, Ernest; Gillieron, Christian; and Nast, Kurt, 380,770, Cl. D18-51.000.

Attinello, John Steven; and Reid, Kevin Alan, to Goodyear Tire & Rubber Company, The. Tire tread. 380,713, Cl. D12-147.000.

Attinello, John Steven; and Reid, Kevin Alan, to Goodyear Tire & Rubber Company, The. Tire tread. 380,714, Cl. D12-147.000.

Avalos, Peggy Susan Howard; and Jenkins, Charles L., to IPC Technologies, Inc. File server. 380,743, Cl. D14-107.000.

Ayon, Lance C. Combined cutter and scoop for fruit and vegetables. 380,653, Cl. D7-696.000.

Ayotte, John; and Bergin, Peter W. A., to MTS Northwest Sound, Inc. Cupholder and support for attachment to furniture. 380,652, Cl. D7-620.000.

Bailey, John A.; Bloomer, Glenn A.; and Brawne, Nicholas A., to Minnesota Mining and Manufacturing Company. Window and label area of a top surface for a videocassette. 380,745, Cl. D14-121.000.

Bailey, John A.; Bloomer, Glenn A.; Johnson, Gregory H.; Brawne, Nicholas A.; and Ciesko, Mark J., to Minnesota Mining and Manufacturing Company. Window, label and rear area of a top surface for a videocassette. 380,746, Cl. D14-121.000.

Bao, Alain: *See*—
Ryan, Kelly; and Bao, Alain, 380,587, Cl. D2-627.000.

Barre, Bertrand, to Sanitaire Accessoires Services S.A. Showerhead for a kitchen sink. 380,808, Cl. D23-226.000.

Benghozi, Simon. Table lamp. 380,860, Cl. D26-111.000.

Berg, Svein; and Husøy, Fred, to S.B. Produksjon AS; and AAK AS. Safety hook. 380,665, Cl. D8-367.000.

Bergin, Peter W. A.: *See*—
Ayotte, John; and Bergin, Peter W. A., 380,652, Cl. D7-620.000.

Bergman, Mark C. Flossing device. 380,869, Cl. D28-64.000.

Bernhart, Horst: *See*—
Mier-Langner, Alejandro; Donato, Anthony; and Bernhart, Horst, 380,847, Cl. D26-63.000.

Black & Decker, Inc.: *See*—
Kaiser, David W., 380,844, Cl. D26-43.000.
Rorke, Anthony Brooks; and Osit, Robert, 380,882, Cl. D32-22.000.

Blocker, James S. Grocery bag carrier. 380,670, Cl. D9-434.000.

Bloomer, Glenn A.: *See*—
Bailey, John A.; Bloomer, Glenn A.; and Brawne, Nicholas A., 380,745, Cl. D14-121.000.
Bailey, John A.; Bloomer, Glenn A.; Johnson, Gregory H.; Brawne, Nicholas A.; and Ciesko, Mark J., 380,746, Cl. D14-121.000.

Borgstede, Eric; and Love, Robert. Pouring spout attachment for a paint can. 380,678, Cl. D9-440.000.

Boshart, Ronald M. Bookmark. 380,776, Cl. D19-34.000.

Boudreau, Ronald A. Squeeze bottle bovine teat sanitizer. 380,881, Cl. D30-199.000.

Brawne, Nicholas A.: *See*—
Bailey, John A.; Bloomer, Glenn A.; and Brawne, Nicholas A., 380,745, Cl. D14-121.000.
Bailey, John A.; Bloomer, Glenn A.; Johnson, Gregory H.; Brawne, Nicholas A.; and Ciesko, Mark J., 380,746, Cl. D14-121.000.

Bray, Douglas R., to Sea Gull Lighting Products, Inc. Lighting fixture. 380,850, Cl. D26-87.000.

Bray, Douglas R., to Sea Gull Lighting Products, Inc. Lighting assembly cover. 380,854, Cl. D26-142.000.

Breault, Terese. Combination disposable diaper and packaged wiper. 380,829, Cl. D24-126.000.

Brewer, Jack G. Container for an oil and waste line connection. 380,814, Cl. D23-270.000.

Bridgestone Corporation: *See*—
Ochi, Naoya; and Masuko, Yoshimoto, 380,712, Cl. D12-147.000.

Broan Mfg. Co., Inc.: *See*—
LaZar, Ralph M., 380,823, Cl. D23-372.000.

Brooks, Mike; Simpson, Edgar H.; Kastner, Theodore A.; and Wurfbain, Diana A., to Rocky Shoes & Boots, Inc. Shoe upper. 380,596, Cl. D2-969.000.

Brooks, Mike; Simpson, Edgar H.; Kastner, Theodore A.; and Wurfbain, Diana A., to Rocky Shoes & Boots, Inc. Shoe upper. 380,597, Cl. D2-970.000.

Brooks, Mike; Simpson, Edgar H.; Kastner, Theodore A.; and Wurfbain, Diana A., to Rocky Shoes & Boots, Inc. Shoe upper. 380,598, Cl. D2-970.000.

Brooks, Mike; Simpson, Edgar H.; Kastner, Theodore A.; and Wurfbain, Diana A., to Rocky Shoes & Boots, Inc. Shoe upper. 380,599, Cl. D2-970.000.

Brotz, Gregory R. Stapling table. 380,635, Cl. D6-511.000.

Brown, Arthur C. Bird feeder. 380,878, Cl. D30-121.000.

Brown, Frederick D.: *See*—
Brown, Larry P.; and Brown, Frederick D., 380,724, Cl. D12-209.000.

Brown, Larry P.; and Brown, Frederick D. Custom wheel. 380,724, Cl. D12-209.000.

Brown, Stephanie Carol; Rohweder, Efimia Ellen; Kolowski, Michael Alois; and Miller, Frederick William, to Goodyear Tire & Rubber Company, The. Tire tread. 380,716, Cl. D12-147.000.

Brown, Stephanie Carol: *See*—
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Brunner, Merlin A.; and Draheim, Harvey J., to Simmons Juvenile Products Company, Inc. Crib endboard. 380,634, Cl. D6-508.000.

Bruno, Robert H.; Ujiie, Mutsuo; and Wilkes, Mont L., to Ingersoll-Rand Company. Screwdriver power tool. 380,658, Cl. D8-61.000.

Burthey, Rember O., III. Ascot. 380,586, Cl. D2-605.000.

Burton, Bruce O.; and Sargent, Robert P. Truck tailgate. 380,722, Cl. D12-196.000.

Burton, Bruce O.; and Sargent, Robert P. Truck tailgate. 380,723, Cl. D12-196.000.

Byrley, David H.: *See*—
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Cairney, Mark Murray. Mobile amusement trailer. 380,704, Cl. D12-1.000.

Calor S.A.: *See*—
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Campbell, Tom, to McGuire-Nicholas Company, Inc. Knee pad. 380,876, Cl. D29-121.000.

Canon Kabushiki Kaisha: *See*—
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Komatsu, Hiroshi, 380,769, Cl. D18-49.000.

Tashiro, Naoki; Yamanaka, Akihiro; and Tsukuda, Keiichiro, 380,772, Cl. D18-56.000.

Capote, Rolando I. Combined child's action and elimination game. 380,780, Cl. D21-22.000.

Carley, Josh. Television set with built-in remote control locater. 380,747, Cl. D14-126.000.

Castrol Limited: *See*—
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Caswell, Charles A., to Okl Manufacturing Company. Aerobic glove. 380,874, Cl. D29-113.000.

Century Products, Inc.: *See*—
Mobley, James E., 380,604, Cl. D3-215.000.

Chamberlain Group, Inc., The: *See*—
Doppelt, Loren E.; Condon, Jeff; Prokop, Gary; Grisdale, Marianne; and Dziersk, Mark D., 380,696, Cl. D10-104.000.

Chan, Kam-Hoi, to Go-Gro Industries Ltd. Lamp. 380,845, Cl. D26-43.000.

Chandler, David Paul, to Henredon Furniture Industries, Inc. Sofa. 380,622, Cl. D6-381.000.

Chen, George, to Keys Fitness Products, Inc. Waist trimmer. 380,588, Cl. D2-702.000.

Chen, John. Combination cultivating and trenching tool head. 380,654, Cl. D8-11.000.

Chen, Juliet. Bifold neck wallet. 380,606, Cl. D3-226.000.

Chen, Wen Jye. Box for aromatics. 380,821, Cl. D23-367.000.

Chesebrough-Pond's USA Co., Division of Conopco, Inc.: *See*—
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Chugoku Gazai Kabushiki Kaisha: *See*—
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Ciesko, Mark J.: *See*—
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Clark, Aaron: *See*—
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Cohen, Milton L.; and Siegel, Jeff, to Lifetime Hoan Corporation. Display rack for burner drip pans, burner trim rings and the like. 380,638, Cl. D6-566.000.

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Collins, Matthew O'Dwyer. Child's rocking chair. 380,618, Cl. D6-345.000.

Conair Corporation: *See*—
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Constable, Keith: *See*—
McConnell, Robert; Constable, Keith; Urban, Dale; and Eng, Henry, 380,738, Cl. D14-100.000.

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Constantine, Richard; and Solomita, Anthony, to Conair Corporation. Arch telephone. 380,754, Cl. D14-150.000.

Conwell, Thomas E., to Confectionery and Novelty Design Intl. Toy safe. 380,793, Cl. D21-109.000.

Cooper, Aaron Alexander, to Nike, Inc. Side element of a shoe upper. 380,600, Cl. D2-972.000.

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Sharrah, Raymond; Copeland, Duncan; and VanScoyoc, Velissa, 380,858, Cl. D26-49.000.

Cornell, Robert W., to Fiskars Inc. Scissors. 380,657, Cl. D8-57.000.

Corrales, Daniel W. Security ease for portable computer. 380,610, Cl. D3-276.000.

Coulter, Joe B. Electronic boat drain plug unit. 380,726, Cl. D12-317.000.

Credo Tool Company: *See*—
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Kelley, Sarah; and Cross, Claire, 380,612, Cl. D3-289.000.

Cummings, Gerald W., to M.H. Segan Limited Partnership. Holiday door chime. 380,697, Cl. D10-118.000.

Currier, Jon David; and Jopling, Kenton Sterling, to Lowrance Electronics, Inc. Buoyant support. 380,664, Cl. D8-356.000.

Custom Plastics, Inc.: *See*—
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Dahlin, Hans. Adjusting screw for string instruments. 380,669, Cl. D8-387.000.

Daniel, Pierre. Package of disposable protective coverings. 380,675, Cl. D9-432.000.

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Deakin, Keith; and Deakin, Lynn, 380,864, Cl. D28-40.000.

Decker, James D.; and Olson, Scott R., to Ecolab Inc. Air freshener cartridge. 380,822, Cl. D23-366.000.

Del Bianco, Laurent, to Colgate-Palmolive Company. Bottle. 380,684, Cl. D9-543.000.

Denten, Matthew J. Child's seat-o-saurus -Rex dinosaur chair. 380,621, Cl. D6-359.000.

De Souza, Eric I.; Grunig, Ronald M.; and Mehta, Hemang D., to Monarch Plastics Inc. Bottle. 380,681, Cl. D9-523.000.

DiGiorgio, Tony, to Dominion Plastics Inc. Window sash lift rail. 380,841, Cl. D25-124.000.

Dillon, Beverly. Adjustable, articulated gutter rake. 380,655, Cl. D8-13.000.

Dolan, Patrick S. Wall mounted light fixture. 380,851, Cl. D26-92.000.

Dominion Plastics Inc.: *See*—
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Doppelt, Loren E.; Condon, Jeff; Prokop, Gary; Grisdale, Marianne; and Dziersk, Mark D., to Chamberlain Group, Inc., The. Transmitter for garage door opener. 380,696, Cl. D10-104.000.

Dorset-Turner, Mitchel. Swimming pool backwashing device. 380,807, Cl. D23-209.000.

Dossett, Richard A.: *See*—
Gakhar, Ved P.; Pennington, Donald C., Jr.; Byrley, David H.; Grishin, Alexander; Dossett, Richard A.; and Schmidt, Manfred W., 380,660, Cl. D8-70.000.

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Draheim, Harvey J.: *See*—
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Edmon, Arthur C. Motorized boat. 380,725, Cl. D12-300.000.

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Emig, Uwe; and Gramlich, Markus. Ski. 380,805, Cl. D21-229.000.

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Flor, Margarita A.; and Flor, Jorge R. Portable fan with built-in battery recharger in the base. 380,824, Cl. D23-382.000.

Formby, Katherine, to Sara Lee Corporation. Purse. 380,609, Cl. D3-244.000.

Franchi, Julie. Infant medicine dispenser. 380,828, Cl. D24-117.000.

Francis, Garry R. Bingo identifier. 380,785, Cl. D21-51.000.

Francis, William C.: *See*—
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Gabriel, Richard, to Matrix Toys, Ltd. Raised equilateral triangular panel for ball and rod toy construction set. 380,787, Cl. D21-108.000.

Gabriel, Richard, to Matrix Toys, Ltd. Shallow dome for ball and rod toy construction set. 380,788, Cl. D21-108.000.

Gabriel, Richard, to Matrix Toys, Ltd. Rectangular support panel for ball and rod toy construction. 380,789, Cl. D21-108.000.

Gabriel, Richard, to Matrix Toys, Ltd. Isosceles triangular panel for ball and rod toy construction set. 380,790, Cl. D21-108.000.

Gabriel, Richard, to Matrix Toys, Ltd. Rectangular panel for ball and rod toy construction set. 380,791, Cl. D21-108.000.

Gabriel, Richard, to Matrix Toys, Ltd. Equilateral triangular panel for ball and rod toy construction set with male stud interface. 380,792, Cl. D21-108.000.

Gakhar, Ved P.; Pennington, Donald C., Jr.; Byrley, David H.; Grishin, Alexander; Dossett, Richard A.; and Schmidt, Manfred W., to Credo Tool Company. Saw blade. 380,660, Cl. D8-70.000.
Gallegus, Norbert A. Truck bed extension. 380,707, Cl. D12-98.000.
Gallo, Mario A. Self defense mounting strap. 380,875, Cl. D29-120.000.
Gardner, Celeste Marie. Bingo tote bag. 380,608, Cl. D3-244.000.
Gardner, Richard T. Truck bed insert permitting retrieval of goods within truck bed. 380,706, Cl. D12-98.000.
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Attinello, John Steven; and Reid, Kevin Alan, 380,714, Cl. D12-147.000.
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Gottwald, Adolf, to Friedrich Grohe Aktiengesellschaft. Washing table faucet. 380,811, Cl. D23-243.000.
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Heun, Ping Hay, to GSL Rechargeable Products, Ltd. Receiver of an electronic dog collar. 380,692, Cl. D10-104.000.
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Mahoney, Steven A., 380,834, Cl. D24-167.000.
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Hsu, Hsi-Pin. Clock. 380,688, Cl. D10-6.000.
Hsu, Hsi-Pin. Clock. 380,689, Cl. D10-12.000.
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137 5,645,608
405 5,645,609
411 5,645,610

CLASS 14
71.3 5,644,812

CLASS 15
227 5,644,813
250.361 5,644,814
328 5,644,815

CLASS 16
115 5,644,816
382 5,644,817

CLASS 19
159 R 5,644,818

CLASS 24
20 R 5,644,819
92 5,644,820
114.5 5,644,821
196 5,644,822
499 5,644,823

CLASS 26
33 5,644,824

CLASS 28
240 5,644,825

CLASS 29
243.5 5,644,826
270 5,644,827
402.06 5,644,828
421.1 5,644,829
432.2 5,644,830
455.1 5,644,831
458 5,644,832
527.2 5,644,833
557 5,644,834
611 5,644,835
623.2 5,645,611
5,645,612
798 5,644,836
832 5,644,837
840 5,644,838
842 5,644,839
890.043 5,644,840
890.046 5,644,841
890.053 5,644,842

CLASS 30
124 5,644,843
276 5,644,844
376 5,644,845
393 5,644,846
394 5,644,847
450 5,644,848

CLASS 33
265 5,644,849
282 5,644,850
361 5,644,851
414 5,644,852
506 5,644,853
608 5,644,854

CLASS 34
516 5,644,855

CLASS 36
11.5 5,644,856
15 5,644,857
137 5,644,858

CLASS 40
545 5,644,859
579 5,644,860

CLASS 42
51 5,644,861
94 5,644,862

CLASS 43
9.6 5,644,863
17.5 5,644,864
53.5 5,644,865
129 5,644,866

CLASS 44
452 5,645,613
596 5,645,614

CLASS 47
71 5,644,867
81 5,644,868

CLASS 48
92 5,645,615
202 5,645,616

CLASS 49
362 5,644,869
501 5,644,870

CLASS 51
309 5,645,617
5,645,618
5,645,619

CLASS 52
125.1 5,644,871
144 5,644,872
182 5,644,873
202 5,644,874
204.591 5,644,875
220.7 5,644,876
241 5,644,877
287.1 5,644,878
393 5,644,879
408 5,644,880
455 5,644,881
462 5,644,882
489.1 5,644,883
506.01 5,644,884
513 5,644,885
518 5,644,886
606 5,644,887
651.01 5,644,888
713 5,644,889
742.14 5,644,890
745.05 5,644,891
5,644,892
745.19 5,644,893
786.13 5,644,894

CLASS 53
55 5,644,895
138.4 5,644,896
438 5,644,897
445 5,644,898
447 5,644,899
449 5,644,900
459 5,644,901

CLASS 54
37.1 5,644,902

CLASS 55
267 5,645,620

CLASS 56
10.8 5,644,903
292 5,644,904

CLASS 57
17 5,644,905
208 5,644,906
230 5,644,907
290 5,644,908
293 5,644,909
416 5,644,910

CLASS 60
39.05 5,644,911
276 5,644,912
284 5,644,913
310 5,644,914
426 5,644,915
436 5,644,916
517 5,644,917
725 5,644,918

CLASS 62
45.1 5,644,919
47.1 5,644,920
48.1 5,644,921
51.1 5,644,922
55.5 5,644,923
133 5,644,924
289 5,644,925
342 5,644,926
354 5,644,927
402 5,644,928
406 5,644,929
475 5,644,930
612 5,644,931
640 5,644,932
646 5,644,933
647 5,644,934

CLASS 63
4 5,644,935

CLASS 65
107 5,645,621
378 5,645,622

CLASS 68
12.02 5,644,936

CLASS 70
261 5,644,937

CLASS 71
9 5,645,623
11 B1 5,514,200
64.07 5,645,624

CLASS 72
96 5,644,938
164 5,644,939
197 5,644,940
201 5,644,941
238 5,644,942
348 5,644,943
400 5,644,944
402 5,644,945
457 5,644,946

CLASS 73
1.06 5,646,334
38 5,646,335
61.43 5,646,336
61.63 5,646,337
73 5,644,947
86 5,646,338
105 5,646,339
116 5,646,340
117.3 5,646,341
152.02 5,646,342
168 5,644,948
170.08 5,646,343
204.18 5,646,344
492 5,646,345
504.04 5,646,346
514.32 5,646,347
514.36 5,646,348
514.38 5,646,349
602 5,646,350
622 5,646,351
756 5,646,352
861.16 5,646,353
861.95 5,646,354
862.195 5,646,355
862.335 5,646,356
863.31 5,646,357
865.6 5,646,358

CLASS 74
56 5,644,949
57 5,644,950
89.15 5,644,951
336 R 5,645,508
480 R 5,644,952
594.2 5,644,953
606 R 5,644,954
607 5,644,955

CLASS 76
108.2 5,644,956

CLASS 81
165 5,644,957
177.8 5,644,958
185 5,644,959
363 5,644,960

CLASS 82
127 5,644,961

CLASS 83
177 5,644,962
454 5,644,963
459 5,644,964
842 5,644,965

CLASS 84
216 5,646,359
422.1 5,646,360
464 R 5,646,361
615 5,646,362

CLASS 89
7 5,646,363

CLASS 91
1 5,644,966
457 5,644,967

CLASS 92
12.2 5,644,968
60.5 5,644,969
71 5,644,970
158 Re.35,551

CLASS 95
46 5,645,625
56 5,645,626

CLASS 96
15 5,645,627

CLASS 99
278 5,644,971
280 5,644,972
289 R 5,644,973
328 5,644,974
407 5,644,975
422 5,644,976
517 5,644,977

CLASS 100
8 5,644,978
35 5,644,979

CLASS 101
72 5,644,980
147 5,644,981
216 5,644,982
218 5,644,983
409 5,644,984
415.1 5,644,985
424 5,644,986
478 5,644,987
488 5,644,988

CLASS 102
406 5,646,364
501 5,646,365

CLASS 105
340 5,644,989
377.07 5,644,990

CLASS 106
1.23 5,645,628
31.11 5,645,629
31.29 5,645,632
31.32 5,645,630
31.36 5,645,631
287.14 5,645,633
287.19 5,645,634
416 5,645,635
493 5,645,636
677 5,645,637

CLASS 108
54.1 5,644,991
55.1 5,644,992
108 5,644,993
116 5,644,994
188 5,644,995

CLASS 110
245 5,644,996
246 5,644,997

CLASS 111
102 5,644,998
105 5,644,999
195 5,645,000

CLASS 112
80.55 5,645,001
470.07 5,645,002

CLASS 114
21.2 5,646,366
125 5,645,003
211 5,645,004
230 5,645,005
238 5,645,006
263 5,645,007
274 5,645,008
5,645,009
352 5,645,010

CLASS 116
264 5,645,011

CLASS 117
89 5,645,638

CLASS 118
60 5,645,639
306 5,645,641
692 5,645,642
723 MP 5,645,643
723 MW 5,645,644
5,645,645
730 5,645,646

CLASS 119
14.14 5,645,012
170 5,645,013
174 B1 5,219,396
498 5,645,014
741 5,645,015
752 5,645,016

CLASS 123
41.15 5,645,017
73 PP 5,645,018
90.11 5,645,019
90.17 5,645,020
5,645,021
5,645,022
90.27 5,645,023
90.38 5,645,024
90.42 5,645,025
139 5,646,199
184.46 5,645,026
245 5,645,027
276 5,645,028
306 5,645,029
321 5,645,030
322 5,645,031
339.16 5,645,032
399 5,645,033
425 5,645,034
435 5,645,035
519 5,645,036
601 5,645,037

CLASS 124
67 5,645,038

CLASS 125
21 5,645,039
5,645,040

CLASS 126
25 R 5,645,041
41 R 5,645,042
92 AC 5,645,043
655 5,645,044
669 5,645,045

CLASS 127
30 5,645,647

CLASS 128
201.18 5,645,046
201.28 5,645,047
202.27 5,645,048
203.12 Re.35,552
203.15 5,645,050
5,645,051
203.26 5,645,052
203.29 5,645,049
204.23 5,645,053
5,645,054
204.25 5,645,055
205.13 5,645,056
206.12 5,645,057
207.18 5,645,058
633 5,645,059
5,645,060
B1 5,507,288
634 5,645,061
640 5,645,062
641 5,645,063
642 5,645,064
653.1 5,645,065
660.07 5,645,066
670 5,645,068
702 5,645,069
5,645,070
719 5,645,071
5,645,072
733 5,645,073
746 5,645,074
749 5,645,075
754 5,645,076
774 5,645,077
782 5,645,078
846 5,645,079
876 5,645,080
897 5,645,081
5,645,082
898 5,645,083
5,645,084

CLASS 131
67 5,645,085
84.3 5,645,086
88 5,645,087
270 5,645,088
365 5,645,089

CLASS 132
285 5,645,090

CLASS 134
2 5,645,648
18 5,645,649
84 5,645,091
102.2 5,645,092
104.3 5,645,093

CLASS 135
24 5,645,094
68 5,645,095
126 5,645,096

CLASS 137
1 5,645,097
15 5,645,098
5,645,099
223 5,645,100
225 5,645,101
238 5,645,102
312 5,645,103
318 5,645,104
430 5,645,105
614.04 5,645,106
625.23 5,645,107
625.64 5,645,108

CLASS 138
134 5,645,109
5,645,110

CLASS 139
55.1 5,645,111
383 A 5,645,112

CLASS 141
3 5,645,113
145 5,645,114
206 5,645,115
208 5,645,116

CLASS 144
28 5,645,117

CLASS 148
260 5,645,650
302 5,645,651
307 5,645,652
320 5,645,653
327 5,645,654
634 5,645,655
651 5,645,656

CLASS 149
24 5,646,367

CLASS 152
209 A 5,645,657
209 WT 5,645,658
216 5,645,659
523 5,645,660
5,645,661
532 5,645,662

CLASS 156
67 5,645,663
71 5,645,664
73.1 5,645,665
5,645,666
89 5,645,673
108 5,645,667
175 5,645,668
212 5,645,669
5,645,670
222 5,645,671
244.18 5,645,672
273.5 5,645,674
345 5,645,675
359 5,645,676
361 5,645,677
382 5,645,678
566 5,645,679
567 5,645,680
580.2 5,645,681
636.1 5,645,682
643.1 5,645,683
5,645,684

CLASS 160
168.1 5,645,685
170 5,645,118
370.23 5,645,119

CLASS 162
65 5,645,686
5,645,687
76 5,645,688
258 5,645,689
261 5,645,690
358.3 5,645,691

CLASS 164
437 5,645,120
475 5,645,121
479 5,645,122

CLASS 165
48.1 5,645,123
117 5,645,124
137 5,645,125
153 5,645,126
176 5,645,127

CLASS 169
42 5,645,128
51 5,645,129

CLASS 172
252 5,646,373

CLASS 173
93.5 5,645,130

CLASS 174
33 5,646,368
35 GC 5,646,369
51 5,646,370
58 5,646,371
126.2 5,646,372

CLASS 175
171 5,645,131
318 5,645,132

CLASS 177
25.18 5,646,374
54 5,646,375
211 5,646,376

CLASS 178
18 5,646,377

CLASS 180
69.21 5,645,133
69.24 5,645,134
272 5,645,135
274 5,645,136
287 5,645,137
300 5,645,138

CLASS 181
30 5,646,378
101 5,646,379
110 5,646,380
141 5,646,381

CLASS 182
44 5,645,139
195 5,645,140

CLASS 187
269 5,645,141
372 5,645,142

CLASS 188
72.1 5,645,143
170 5,645,144
356 5,645,145

CLASS 190
18 A 5,645,146

CLASS 191
12.2 R 5,645,147

CLASS 192
4 A 5,645,148
45.1 5,645,149
70.16 5,645,150
70.17 5,645,151
70.25 5,645,152
5,645,153
5,645,154

CLASS 193
35 R 5,645,155

CLASS 196
46 5,645,692

CLASS 198
323 5,645,156
811 5,645,157
812 5,645,158
838 5,645,159
853 5,645,160

CLASS 200
50.33 5,646,382
52 R 5,646,383
61.27 5,646,385
61.3 5,646,384

CLASS 202
173 5,645,693

CLASS 203
22 5,645,694
57 5,645,695
60 5,645,696

CLASS 204
155 5,645,697
192.12 5,645,698
5,645,699
252 5,645,700
279 5,645,701
501 5,645,702
538 5,645,703
665 5,645,704

CLASS 205
82 5,645,706
114 5,645,707
580 5,645,708
775 5,645,709
778 5,645,710

CLASS 206
0.5 5,645,161
175 5,645,162
192 5,645,163
209 5,645,164
308.1 5,645,165
315.6 5,645,166
361 5,645,167
423 5,645,168
589 5,645,169
714 5,645,170

CLASS 208
131 5,645,711
308 5,645,712
309 5,645,713
391 5,645,714

CLASS 209
139.1 5,645,171
703 5,645,172

CLASS 210
94 5,645,715
97 5,645,716
198.2 5,645,717
232 5,645,718
5,645,719
282 5,645,720
315 5,645,721
321.75 5,645,723
415 5,645,724
605 5,645,725
626 5,645,726
651 5,645,727
656 5,645,728
659 5,645,729
665 5,645,730
728 5,645,731
747 5,645,732
776 5,645,733
805 5,645,734

CLASS 211
1.56 5,645,173
26 5,645,174
57.1 5,645,175
59.2 5,645,176
70.6 5,645,177
87.01 5,645,178
134 5,645,182

CLASS 212
180 5,645,179
253 5,645,180
281 5,645,181

CLASS 215
12.2 5,645,183

CLASS 216
22 5,645,735
89 5,645,736
99 5,645,737

CLASS 218
129 5,646,386

CLASS 219
110 5,645,738
121.64 5,645,739
121.68 5,645,740
130.4 5,645,741
270 5,645,742
422 5,645,743
497 5,645,745
505 5,645,746
634 5,645,744
645 5,645,747
710 5,645,748
759 5,645,749

CLASS 220
1.5 5,645,184
5,645,185
404 5,645,186
409 5,645,187
501 5,645,188
623 5,645,189
674 5,645,190
717 5,645,191

CLASS 222
1 5,645,192
137 5,645,193
147 5,645,194
153.09 5,645,195
183 5,645,196
305 5,645,197
402.1 5,645,198
567 5,645,199

CLASS 223
89 5,645,200

CLASS 224
314 5,645,202
482 5,645,203
547 5,645,204
676 5,645,205

CLASS 225
10 5,645,206

CLASS 226
1 5,645,207

CLASS 227
8 5,645,208
175.2 5,645,209

CLASS 228
102 5,645,210

CLASS 229
87.05 5,645,211
101 5,645,212
160.2 5,645,213
313 5,645,214

CLASS 232
17 5,645,215

CLASS 235
30 R 5,646,387
380 5,646,388
385 5,646,389
454 5,646,390
462 5,646,391
475 5,646,392

CLASS 238
283 5,645,216

CLASS 239
75 5,645,217
242 5,645,218
265.11 5,645,219
401 5,645,220
333 5,645,221
394 5,645,222
428.5 5,645,223
533.12 5,645,225
533.4 5,645,224
585.1 5,645,226
654 5,645,227
687 5,645,228

CLASS 241
20 5,645,229
27 5,645,230
36 5,645,231
60 5,645,232
65 5,645,233
101.741 5,645,235
101.76 5,645,234
266 5,645,236

CLASS 242
224 5,645,237
264 5,645,238
300 5,645,239
332.4 5,645,240
336 5,645,241
347 5,645,242
356.5 5,645,243
422.5 5,645,244
541.1 5,645,245
573.7 5,645,246
597.3 5,645,247

CLASS 244
30 5,645,248
49 5,645,249
101 5,645,250

CLASS 248
74.2 5,645,252
181.1 5,645,253
206.2 5,645,254
214 5,645,255
222.11 5,645,256
248 5,645,257
298.1 5,645,258
436 5,645,259
550 5,645,260
551 5,645,261
581 5,645,262

CLASS 250
201.8 5,646,393
208.1 5,646,394
214 LS 5,646,395
216 5,646,396
5,646,397
223 R 5,646,398
226 5,646,399
227.18 5,646,400
5,646,401
234 5,646,402
310 5,646,403
338.1 5,646,404
341.6 5,646,405
342 5,646,406
363.07 5,646,408
370.15 5,646,407
395 5,646,409
5,646,410
458.1 5,646,411
483.1 5,646,412
548 5,646,413
559.45 5,646,414
5,646,415
584 5,646,416
5,646,417

CLASS 251
30.02 5,645,263
5,645,264

CLASS 252
8.91 5,645,751
62.54 5,645,752
62.9 PZ 5,645,753
67 5,645,754
70 5,645,755
181 5,645,756
182.17 5,645,757
299.01 5,645,758
299.63 5,645,759
299.66 5,645,760
301.6 F 5,645,761
309 5,646,216
321 5,645,762
364 5,645,763
500 5,645,764
518 5,645,765
582 5,645,766
586 5,645,767
5,645,768

CLASS 254
134.3 FT 5,645,265
134.3 R 5,645,266
134.4 5,645,267
5,645,268
398 5,645,269

CLASS 256
66 5,645,270
67 5,645,271

CLASS 257
4 5,646,418
13 5,646,419
17 5,646,420
21 5,646,421
48 5,646,422
51 5,646,423
66 5,646,424
102 5,646,425
188 5,646,426
232 5,646,427
239 5,646,428
316 5,646,429
322 5,646,430
342 5,646,431
347 5,646,432
355 5,646,433
5,646,434
382 5,646,435
390 5,646,436
437 5,646,437
530 5,646,438
632 5,646,439
635 5,646,440
666 5,646,441
697 5,646,442
704 5,646,443
706 5,646,444
723 5,646,445
5,646,446
727 5,646,447
751 5,646,448
761 5,646,449
776 5,646,450
784 5,646,451
797 5,646,452

CLASS 261
30 5,645,769
97 5,645,770
123 5,645,771

CLASS 264
37.37 5,645,324

CLASS 303
119.2 5,645,325
146 5,645,326
157 5,645,327
158 5,645,328

CLASS 307
10.1 5,646,453
5,646,454
5,646,455
10.5 5,646,456
10.6 5,646,457
67 5,646,458
85 5,646,459
109 5,646,460
116 5,646,461
127 5,646,462
555 5,645,790
639 5,645,781

CLASS 266
175 5,645,791
230 5,645,792
287 5,645,793

CLASS 269
68 5,645,272

CLASS 271
10.1 5,645,273
94 5,645,274
274 5,645,275

CLASS 273
148 B 5,645,277
153 S 5,645,278
249 5,645,279
256 5,645,280
292 5,645,281

CLASS 277
11 5,645,282
153 5,645,283
204 5,645,284
207 A 5,645,285
212 FB 5,645,286

CLASS 280
11.2 5,645,287
11.26 5,645,288
28.12 5,645,289
33.998 5,645,290
87.042 5,645,291
494 5,645,292
642 5,645,293
661 5,645,294
730.2 5,645,295
736 5,645,296
739 5,645,297
741 5,645,298
779 5,645,299

CLASS 283
81 5,645,300

CLASS 285
14 5,645,301
70 5,645,302
409 5,645,303

CLASS 292
1 5,645,304

CLASS 294
58 5,645,305
137 5,645,306
157 5,645,307

CLASS 296
97.9 5,645,308
121 5,645,309
180.5 5,645,310
5,645,311
203 5,645,312

CLASS 297
68 5,645,313
180.14 5,645,314
215.1 5,645,315
216.13 5,645,316
250.1 5,645,317
383 5,645,318
391 5,645,319
410 5,645,320
452.63 5,645,321

CLASS 299
5 5,645,322
111 5,645,323

CLASS 301
37.37 5,645,324

CLASS 303
119.2 5,645,325
146 5,645,326
157 5,645,327
158 5,645,328

CLASS 307
10.1 5,646,453
5,646,454
5,646,455
10.5 5,646,456
10.6 5,646,457
67 5,646,458
85 5,646,459
109 5,646,460
116 5,646,461
127 5,646,462

5,646,463

CLASS 310
40 MM 5,646,464
90.5 5,646,465
112 5,646,466
268 5,646,467
313 A 5,646,468
323 5,646,469
337 5,646,470

CLASS 312
9.63 5,645,329
116 5,645,330
205 5,645,331
257.1 5,645,332
322 5,645,333

CLASS 313
25 5,646,471
112 5,646,472
113 5,646,473
310 5,646,474
359.1 5,646,476
365 5,646,477
402 5,646,478
495 5,646,479
503 5,646,480
510 5,646,481
582 5,646,482
595 5,646,483

CLASS 315
74 5,646,484
82 5,646,485
86 5,646,486
94 5,646,487
111.21 5,646,489
111.81 5,646,488
153 B1 4,095,139
317 5,646,490

CLASS 318
254 5,646,491
432 5,646,492
568.17 5,646,493
587 5,646,494
625 5,646,495
632 5,646,496
799 5,646,497
800 5,646,498
801 5,646,499

CLASS 320
2 5,646,500
5,646,501
5 5,646,502
13 5,646,503
17 5,646,504
21 5,646,505
5,646,506
5,646,507
30 5,646,508
48 5,646,509

CLASS 322
16 5,646,510

CLASS 323
207 5,646,511
257 5,646,512
285 5,646,513
288 5,646,514
313 5,646,515
5,646,516
5,646,517
316 5,646,518

CLASS 324
76.82 5,646,519
158.1 5,646,520
5,646,521
5,646,522
207.17 5,646,524
5,646,525
207.2 5,646,523
248 5,646,526
251 5,646,527
303 5,646,528
309 5,646,529
318 5,646,530
5,646,531
321 5,646,532
339 5,646,533
434 5,646,534
556 5,646,535
601 5,646,536
643 5,646,537
662 5,646,538
678 5,646,539
691 5,646,540
727 5,646,541
755 5,646,542

CLASS 326
26 5,646,543
38 5,646,544
5,646,545
39 5,646,546
46 5,646,547
80 5,646,548
81 5,646,549
5,646,550
5,646,551
83 5,646,552
86 5,646,553
5,646,554
93 5,646,555
5,646,556
97 5,646,557
106 5,646,558
136 5,646,559

CLASS 327
109 5,646,560
110 5,646,561
156 5,646,562
157 5,646,563
158 5,646,564
174 5,646,565
200 5,646,566
202 5,646,567
276 5,646,568
307 5,646,569
362 5,646,570
390 5,646,571
545 5,646,572

CLASS 330
59 5,646,573
261 5,646,575
263 5,646,576
279 5,646,577
5,646,578

CLASS 331
75 5,646,579
116 R 5,646,580

CLASS 333
22 R 5,646,581
104 5,646,582
187 5,646,583
193 5,646,584
232 5,646,585

CLASS 335
132 5,646,586
205 5,646,587
281 5,646,588

CLASS 340
384.1 5,646,589
475 5,646,590
566 5,646,591
567 5,646,594
572 5,646,592
573 5,646,593
5,646,596
627 5,646,597
628 5,646,598
648 5,646,599
679 5,646,600
686 5,646,601
825.25 5,646,602
5,646,603
825.31 5,646,604
5,646,605
825.37 5,646,606
825.52 5,646,608
825.54 5,646,607
825.69 5,646,701
825.78 5,646,609
825.79 5,646,610
853.6 5,646,611
903 5,646,612
5,646,613
932.2 5,646,614
940 5,646,615
988 5,646,616

CLASS 341
51 5,646,617
67 5,646,618
118 5,646,619
5,646,620
143 5,646,621
172 5,646,622

CLASS 342
13 Re.35,553
129 5,646,623
174 5,646,624
175 5,646,625
189 5,646,626
5,646,627
195 5,646,628
357 5,646,629
5,646,630
373 5,646,631
375 5,646,632

CLASS 343
700 MS 5,646,633
5,646,634
5,646,635
713 5,646,636
5,646,637
882 5,646,638

CLASS 345
7 5,646,639
8 5,646,640
5,646,641
97 5,646,755
99 5,646,642
100 5,646,643
5,646,644
101 5,646,645
123 5,646,646
145 5,646,647
168 5,646,648
173 5,646,649
179 5,646,650
185 5,646,651
208 5,646,652
224 5,646,956

CLASS 347
8 5,646,653
14 5,646,654
17 5,646,655
43 5,646,656
45 5,646,657
49 5,646,658
55 5,646,659
59 5,646,660
69 5,646,561
70 5,646,662
75 5,646,663
86 5,646,664
87 5,646,665
5,646,666
104 5,646,667
5,646,668
127 5,646,669
131 5,646,670
172 5,646,671
211 5,646,672
251 5,646,673
257 5,646,674

CLASS 348
1 5,646,675
7 5,646,676
13 5,646,677
15 5,646,678
44 5,646,693
47 5,646,679
74 5,646,680
87 5,646,681
135 5,646,682
203 5,646,683
231 5,646,684
390 5,646,685
392 5,646,686
402 5,646,687
5,646,688
405 5,646,689
416 5,646,690
5,646,691
438 5,646,692
448 5,646,694
5,646,695
458 5,646,696
459 5,646,697
475 5,646,698
553 5,646,699
718 5,646,700

CLASS 349
42 5,646,756
69 5,646,702
118 5,646,703
122 5,646,757
134 5,646,704
143 5,646,705
172 5,646,754

CLASS 351
110 5,646,706
138 5,646,707
153 5,646,708
218 5,646,709
223 5,646,710

CLASS 353
101 5,645,334
122 5,645,335

CLASS 355
40 5,646,713
55 5,646,714
67 5,646,715
5,646,716
326 R 5,646,721

CLASS 356
53 5,646,722
139.01 5,646,723
237 5,646,724
5,646,725
311 5,646,726
315 5,646,727
352 5,646,728
5,646,729
356 5,646,730
357 5,646,731
373 5,646,732
376 5,646,733
382 5,646,734
402 5,646,735
419 5,646,736
429 5,646,737
445 5,646,738

CLASS 358
296 5,646,739
5,646,740
298 5,646,741
5,646,742
401 5,646,744
448 5,646,745
471 5,646,746
487 5,646,747
501 5,646,749
518 5,646,750
5,646,751
520 5,646,752

CLASS 359
15 5,646,753
137 5,646,758
138 5,646,759
152 5,646,760
172 5,646,761
173 5,646,762
187 5,646,763
201 5,646,764
202 5,646,765
204 5,646,766
206 5,646,767
224 5,646,768
230 5,646,769
5,646,770
245 5,646,771
290 5,646,772
337 5,646,773
340 5,646,774
341 5,646,775
393 5,646,776
422 5,646,777
495 5,646,778
557 5,646,779
584 5,646,780
589 5,646,781
629 5,646,782
630 5,646,783
632 5,646,784
5,646,785
637 5,646,786
692 5,646,787
740 5,646,788
814 5,646,789
823 5,646,790
831 5,646,791
883 5,646,792
896 5,646,793

CLASS 360
3 5,646,794
18 5,646,795
72.2 5,646,796
75 5,646,797
85 5,646,798
96.6 5,646,799
97.01 5,646,800
5,646,801
104 5,646,802
109 5,646,803
113 5,646,804
5,646,805
130.22 5,646,806
133 5,646,807

CLASS 361
56 5,646,808
5,646,809
5,646,810
63 5,646,811
124 5,646,812
220 5,646,813
234 5,646,814
502 5,646,815
622 5,646,816
680 5,646,817
681 5,646,818
683 5,646,819
5,646,820
5,646,821
687 5,646,822
695 5,646,823
699 5,646,824
5,646,825
704 5,646,826
707 5,646,827
715 5,646,828
813 5,646,829
5,646,830
5,646,831

CLASS 362
26 5,645,336
29 5,645,337
61 5,645,338
5,645,339
80 5,645,340
183 5,645,341
252 5,645,342
5,645,343
346 5,645,344

CLASS 363
24 5,646,832
54 5,646,833
89 5,646,834
98 5,646,835
5,646,836
124 5,646,837
145 5,646,838

CLASS 364
424.012 5,646,843
424.013 5,646,847
424.051 5,646,845
424.07 5,646,846
424.08 5,646,842
424.098 5,646,841
426.01 5,646,848
5,646,849
426.041 5,646,850
5,646,851
431.051 5,646,852
436 5,646,853
448 5,646,854
5,646,855
449.2 5,646,844
449.4 5,646,856
449.7 5,646,857
464.22 5,646,858
468.01 5,646,859
468.24 5,646,860
470.09 5,646,861
488 5,646,862
496 5,646,863
514 B 5,646,864
514 R 5,646,865
5,646,866
5,646,867
570 5,646,868
578 5,646,869
5,646,870
579 5,646,871
710.13 5,646,872
715.08 5,646,873
736.02 5,646,874
748 5,646,876
748.14 5,646,875
760.01 5,646,877

CLASS 365
49 5,646,878
105 5,646,879
149 5,646,880
5,646,881
5,646,882
151 5,646,883
156 5,646,884
175 5,646,885
185.03 B1 5,172,338
185.05 5,646,886
185.11 5,646,890
185.16 5,646,886
185.17 B1 4,763,020
185.21 5,646,887
185.22 5,646,891
185.33 5,646,888
189.05 5,646,892
5,646,893
189.09 5,646,894
189.11 5,646,895
200 5,646,896
205 5,646,897
5,646,898
5,646,899
5,646,900
218 5,646,901
227 5,646,902
230.05 5,646,903
233 5,646,904
5,646,905
240 5,646,906

CLASS 366
186 5,645,345
205 5,645,346
242 5,645,347

CLASS 367
93 5,646,907
137 5,646,908
144 5,646,909
5,646,910

CLASS 368
10 5,646,911
5,646,912
223 5,646,913
308 5,646,914

CLASS 369
32 5,646,915
5,646,916
34 5,646,917
5,646,918
44.26 5,646,919
47 5,646,920
50 5,646,921
58 5,646,923
5,646,924
77.2 5,646,926
99 5,646,927
112 5,646,928
5,646,929
116 5,646,930
124 5,646,931
275.3 5,646,932
290 5,646,934

CLASS 370
112 5,646,942
207 5,646,935
228 5,646,936
230 5,646,943
252 5,646,937
258 5,646,939
276 5,646,938
389 5,646,941
419 5,646,945
442 5,646,946
496 5,646,940
510 5,646,947

CLASS 371
21.2 5,646,948
27 5,646,949
43 5,646,950

CLASS 372
19 5,646,951
32 5,646,952
46 5,646,953
55 5,646,954

CLASS 374
45 5,645,348
120 5,645,349
121 Re.35,554
158 5,645,350
161 5,645,351
183 5,645,352

CLASS 375
224 5,646,955
233 5,646,957
5,646,958
240 5,646,959
243 5,646,961
308 5,646,962
340 5,646,960
5,646,963
346 5,646,964
368 5,646,966
373 5,646,967
375 5,646,968

CLASS 376
260 5,646,969
5,646,970
272 5,646,971
5,646,972
434 5,646,973

CLASS 377
15 5,646,974
5,646,975

CLASS 378
84 5,646,976

CLASS 379

67 5,646,980
5,646,981
89 5,646,982
93.01 5,646,839
93.32 5,646,983
114 5,646,984
207 5,646,985
220 5,646,986
265 5,646,987
266 5,646,988
352 5,646,989
390 5,646,990
410 5,646,991

CLASS 380

4 5,646,992
5,646,993
9 5,646,994
21 5,646,995
5,646,996
23 5,646,997
25 5,646,998
5,646,999
30 5,647,000
37 5,647,001
49 5,647,002
59 5,647,003

CLASS 381

61 5,647,004
62 5,647,005
66 5,647,006
90 5,647,007
119 5,647,008
123 5,647,011
188 5,647,012
192 5,647,013
194 5,647,014

CLASS 382

100 5,647,009
5,647,010
103 5,647,015
5,647,016
119 5,647,017
128 5,647,018
154 5,647,019
156 5,647,022
162 5,647,020
176 5,647,021
209 5,647,023
232 5,647,024
255 5,647,025
270 5,647,026
275 5,647,027
5,647,028

CLASS 383

22 5,645,353

CLASS 384

100 5,645,354
133 5,645,355
138 5,645,356
397 5,645,357
477 5,645,358

CLASS 385

2 5,647,029
12 5,647,030
14 5,647,031
5,647,032
16 5,647,033
5,647,034
24 5,647,035
27 5,647,036
5,647,037
37 5,647,038
5,647,039
42 5,647,040
43 5,647,041
56 5,647,042
78 5,647,043
92 5,647,044
135 5,647,045
136 5,647,046

CLASS 386

52 5,647,047
57 5,646,743
68 5,647,048
124 5,647,049
131 5,647,050

CLASS 388

811 5,647,051

CLASS 392

390 5,647,052
5,647,053
397 5,647,054
451 5,647,055

CLASS 395

200.1 5,647,056
275 5,647,057
346 B2 5,381,524
601 5,647,058
752 5,646,840

CLASS 396

413 5,646,711
535 5,646,712

CLASS 399

154 5,646,717
287 5,646,719
350 5,646,718
361 5,646,720

CLASS 400

323 5,645,359
613 5,645,360
636 5,645,361
642 5,645,362

CLASS 403

3 5,645,363
270 5,645,364
348 5,645,365
359 5,645,366

CLASS 404

3 5,645,367
6 5,645,368
34 5,645,369
133.1 5,645,370

CLASS 405

33 5,645,371
52 5,645,372
91 5,645,373
128 5,645,374
146 5,645,375
241 5,645,376
269 5,645,377
270 5,645,378

CLASS 406

67 5,645,379
153 5,645,380
156 5,645,381

CLASS 409

131 5,645,382

CLASS 411

43 5,645,383
174 5,645,384
354 5,645,385
412 5,645,386

CLASS 412

1 5,645,387

CLASS 414

227 5,645,388
331 Re.35,555
343 5,645,389
390 5,645,390
416 5,645,391
5,645,392
417 5,645,393
537 5,645,394
560 5,645,395
789.9 5,645,396

CLASS 415

115 5,645,397
134 5,645,398
178 5,645,399

CLASS 416

134 A 5,645,400
169 A 5,645,401
190 5,645,402
235 5,645,403

CLASS 417

1 5,645,404
269 5,645,405
273 5,645,406
383 5,645,407

CLASS 418

55.4 5,645,408

CLASS 420

106 5,645,794
109 5,645,795

CLASS 422

22 5,645,796
28 5,645,797
58 5,645,798
62 5,645,799
65 5,645,800
68.1 5,645,801
170 5,645,802
177 5,645,803

CLASS 423

239.1 5,645,804
5,645,805
240 S 5,645,806
243.1 5,645,807
245.3 5,645,808
445 R 5,645,809
600 5,645,810
700 5,645,811
706 5,645,812

CLASS 424

1.65 5,645,814
1.69 5,645,815
9.34 5,645,816
9.341 5,645,817
9.363 5,645,818
9.61 B1 5,211,938
41 5,645,820
45 5,645,819
49 5,645,821
59 5,645,822
61 5,645,823
70.1 5,645,824
73 5,645,825
78.02 5,645,826
78.04 5,645,827
78.08 5,645,828
93.21 5,645,829
93.45 5,645,830
93.461 5,645,831
94.6 5,645,832
94.64 5,645,833
130.1 5,645,834
134.1 5,645,835
181.1 5,645,836
185.1 5,645,837
269.1 5,645,838
400 5,645,839
5,645,840
401 5,645,841
5,645,842
405 5,645,843
5,645,844
5,645,845
5,645,846
408 5,645,847
5,645,848
426 5,645,849
5,645,850
439 5,645,851
5,645,852
440 5,645,853
449 5,645,854
5,645,855
455 5,645,856
464 5,645,857
495 5,645,858
501 5,645,859
551 5,645,860

CLASS 425

71 5,645,861
73 5,645,862
84 5,645,863
116 5,645,864
126.1 5,645,865
130 5,645,866
144 5,645,867
145 5,645,868
149 5,645,869
182 5,645,870
326.1 5,645,871
380 5,645,872
532 5,645,873
549 5,645,874
589 5,645,875

CLASS 426

50 5,645,876
56 5,645,877
103 5,645,878
321 5,645,879
327 5,645,880
531 5,645,881

CLASS 427

2.24 5,645,882
2.25 5,645,883
8 5,645,884
126.3 5,645,885
140 5,645,886
248.1 5,645,887
256 5,645,888
5,645,889
302 5,645,890
376.2 5,645,891
393.4 5,645,892
405 5,645,893
421 5,645,894
424 5,645,895
450 5,645,896
526 5,645,897
539 5,645,898
558 5,645,899
571 5,645,900

CLASS 428

1 5,645,901
5 5,645,902
34.1 5,645,903
35.7 5,645,904
5,645,905
36.3 5,645,906
64.1 5,645,907
5,645,908
5,645,909
5,645,910
64.3 5,645,911
67 5,645,912
77 5,645,913
81 5,645,914
105 5,645,915
131 5,645,916
141 5,645,917
5,645,918
143 5,645,919
195 5,645,920
209 5,645,921
216 5,645,923
226 5,645,922
304.4 5,645,928
323 5,645,929
328 5,645,930
334 5,645,931
347 5,645,932
357 5,645,934
370 5,645,935
395 5,645,936
408 5,645,937
411.1 5,645,938
429 5,645,939
430 5,645,940
447 5,645,941
5,645,942
457 5,645,943
469 5,645,944
476.3 5,645,945
521 5,645,946
688 5,645,947
690 5,645,948

CLASS 429

7 5,645,949
13 5,645,950
16 5,645,951
25 5,645,952
48 5,645,953
100 5,645,954
129 5,645,955
142 5,645,956
163 5,645,957
192 5,645,958
210 5,645,959
219 5,645,960
229 5,645,961

CLASS 430

7 5,645,962
5,645,963
21 5,645,964
59 5,645,965
101 5,645,966
110 5,645,967
137 5,645,968
165 5,645,969
192 5,645,970
204 5,645,971
231 5,645,972
269 5,645,973
306 5,645,974
308 5,645,975
313 5,645,976
320 5,645,977
321 5,645,978
325 5,645,979
372 5,645,980
558 5,645,981

CLASS 431

8 5,645,409
10 5,645,410
77 5,645,411
115 5,645,412
116 5,645,413
153 5,645,414
5,645,415

CLASS 432

152 5,645,417
239 5,645,418
241 5,645,419

CLASS 433

6 5,645,420
5,645,421
7 5,645,422
21 5,645,423
5,645,424
54 5,645,425
125 5,645,426
173 5,645,427
215 5,645,428
217.1 5,645,429

CLASS 434

195 5,645,431
322 5,645,432

CLASS 435

5 5,645,982
5,645,983
5,645,984
6 5,645,985
5,645,986
5,645,987
5,645,988
5,645,990
5,645,991
5,645,992
5,645,993
5,645,994
5,645,995
7.1 5,645,996
5,645,997
7.21 5,646,000
5,646,001
7.23 5,646,002
7.24 5,646,003
7.25 5,646,004
7.32 5,646,005
7.4 5,645,998
5,645,999
13 5,646,007
69.1 5,646,008
5,646,009
5,646,010
5,646,011
5,646,012
5,646,013
5,646,014
69.4 5,646,015
69.7 5,646,016
5,646,017
84 5,646,018
91.31 5,646,020
5,646,021
91.5 5,646,019
124 5,646,022
172.3 5,646,023
5,646,024
5,646,030
192 5,646,025
199 5,646,026
219 5,646,027
220 5,646,028
252.3 5,646,036
252.31 5,646,044
252.33 5,646,037
264 5,646,038
287.2 5,646,039
325 5,646,029
5,646,031
5,646,032
5,646,034
5,646,040
339.1 5,646,041
364 5,646,033
366 5,646,042
373 5,646,043
378 5,646,035

CLASS 436

20 5,646,045
49 5,646,046
128 5,646,047
180 5,646,048
518 5,646,049

CLASS 437

4 5,646,050
7 5,646,051
10 5,646,053
30 5,646,054
31 5,646,055
40 5,646,056
40 R 5,646,058
43 5,646,059
5,646,060
52 5,646,061
60 5,646,062
67 5,646,052
5,646,063
133 5,646,064
180 5,646,066
5,646,067
183 5,646,068
184 5,646,069
200 5,646,070
214 B1 5,077,237
228 5,646,071
5,646,072
233 5,646,073
239 5,646,074
247 5,646,075

CLASS 439

66 5,645,433
74 5,645,434
92 5,645,435
108 5,645,436
110 5,645,437
139 5,645,438
159 5,645,439
160 5,645,440
164 5,645,441
201 5,645,442
212 5,645,443
392 5,645,444
395 5,645,445
419 5,645,446
467 5,645,447
522 5,645,448
540.1 5,645,449
585 5,645,450
587 5,645,451
595 5,645,452
5,645,453
675 5,645,454
723 5,645,455
724 5,645,456
801 5,645,457
852 5,645,458
857 5,645,459

CLASS 441

61 5,645,460

CLASS 442

128 5,645,925
136 5,646,076
184 5,645,924
234 5,645,926
290 5,645,933
388 5,645,927
415 5,646,077

CLASS 445

11 5,645,461
51 5,645,462

CLASS 446

104 5,645,463
120 5,645,464
130 Re.35,556

CLASS 451

5 5,645,465
5,645,466
8 5,645,467
11 5,645,468
41 5,645,469
45 5,645,470
59 5,645,471
261 5,645,472
287 5,645,473
5,645,474
288 5,645,475
544 5,645,476

CLASS 453

40 5,645,477

CLASS 454

49 5,645,478
139 5,645,479
187 5,645,480
261 5,645,481
339 5,645,482
353 5,645,483

CLASS 455

411 5,646,977
436 5,646,978
563 5,646,979

CLASS 460

62 5,645,484

CLASS 463

17 5,645,485
27 5,645,486
47.7 5,645,276

CLASS 464

111 5,645,487

CLASS 472

77 5,645,488
103 5,645,489

CLASS 473

42 5,645,490
135 5,645,491
185 5,645,492
203 5,645,493
278 5,645,494
345 5,645,495
372 5,645,496
377 5,645,497
386 5,645,498
407 5,645,499
408 5,645,500
549 5,645,501

CLASS 474

85 5,645,502
214 5,645,503
250 5,645,504

CLASS 475

257 5,645,506

CLASS 476

47 5,645,507

CLASS 482

4 5,645,509
27 5,645,510
52 5,645,511
53 5,645,512
57 5,645,513
72 5,645,514
75 5,645,515
79 5,645,516

CLASS 492

7 5,645,517

CLASS 501

11 Re.35,557
98 5,646,078
100 5,646,079
137 5,646,080
138 5,646,081

CLASS 502

65 5,646,082
104 5,646,083
117 B1 5,411,926
152 5,646,084
177 5,646,085
202 5,646,086
347 5,646,087

CLASS 503

209 5,646,088
227 5,646,089
5,646,090

CLASS 504

108 5,646,091

CLASS 505

120 5,646,094
330 5,646,095
430 5,646,096
470 5,646,097

CLASS 507

107 5,646,092
209 5,646,093

CLASS 508

189 5,646,098
232 5,646,099

CLASS 510

131 5,646,100
220 5,646,101
361 5,646,103
365 5,646,104
382 5,646,105
416 5,646,106
457 5,646,107

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2 5,646,109
9 5,646,110
11 5,646,111
12 5,646,113
5,646,114
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14 5,646,120
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19 5,646,122
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46 5,646,128
54 5,646,129
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86 5,646,133
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152 5,646,135
167 5,646,136
171 5,646,137
172 5,646,138
210 5,646,139
222.8 5,646,141
226.5 5,646,142
233.8 5,646,143
241 5,646,144
242 5,646,145
250 5,646,146
253 5,646,148
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254 5,646,150
255 5,646,151
258 5,646,152
259 5,646,153
260 5,646,154
261 5,646,155
263 5,646,156
272 5,646,157
277 5,646,158
279 5,646,159
291 5,646,160
307 5,646,161
311 5,646,162
312 5,646,163
314 5,646,164
315 5,646,165
355 5,646,166
357 5,646,167
364 5,646,168
369 5,646,169
381 5,646,171
391 5,646,172
411 5,646,173
413 5,646,174
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452 5,646,177
456 5,646,178
460 5,646,179
471 5,646,180
506 5,646,181
532 5,646,182
538 5,646,183
543 5,646,184
548 5,646,185
557 5,646,186
5,646,187
634 5,646,188
665 5,646,189
724 5,646,190

CLASS 517

221 5,646,140

CLASS 521

49.8 5,646,191
56 5,646,192
63 5,646,193
79 5,646,194
121 5,646,195
131 5,646,196

CLASS 523

118 5,646,197
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160 5,646,200
201 5,646,201
212 5,646,202
218 5,646,203
443 5,646,204

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27 5,646,205
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47 5,646,207
128 5,646,208
252 5,646,209
400 5,646,212
406 5,646,211
562 5,646,213

CLASS 525

10 5,646,214
285 5,646,215
288 5,646,210
450 5,646,217
501 5,646,218
524 5,646,219

CLASS 526

160 5,646,220
238.23 5,646,221
243 5,646,222
247 5,646,223
282 5,646,224
318.5 5,646,225

CLASS 527

306 5,646,226

CLASS 528

28 5,646,227
45 5,646,228
53 5,646,229
64 5,646,230
125 5,646,231
126 5,646,232
176 5,646,233
184 5,646,234
266 5,646,235
288 5,646,236
295 5,646,237
361 5,646,238
373 5,646,239
403 5,646,240
422 5,646,241

CLASS 530

303 5,646,242
317 5,646,244
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321 5,646,246
350 5,646,247
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385 5,646,252
387.3 5,646,253
388.85 5,646,254
389.6 5,646,255
391.1 5,646,256

CLASS 534

689 5,646,257

CLASS 536

18.6 5,646,258
23.1 5,646,259
5,646,260
24.3 5,646,261
24.5 5,646,262
25.32 5,646,264
25.33 5,646,267
25.34 5,646,265
25.4 5,646,263
5,646,268
26.7 5,646,269
119 5,646,270
123.1 5,646,271

CLASS 540

5 5,646,272
122 5,646,273
126 5,646,274
364 5,646,275
500 5,646,276
539 5,646,277

CLASS 544

224 5,646,278
244 Re.35,558
295 5,646,279
5,646,280
5,646,281

CLASS 546

61 5,646,283
88 5,646,284
298 5,646,285
301 5,646,286
312 5,646,287
315 5,646,288

CLASS 548

110 5,646,289
159 5,646,290
228 5,646,291
251 5,646,292
262.2 5,646,293
267.2 5,646,294
311.7 5,646,295
314.4 5,646,296
366.4 5,646,297
427 5,646,298
453 5,646,299
475 5,646,300
496 5,646,301
542 5,646,302
567 5,646,303

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259 5,646,304
5,646,305
267 5,646,306
295 5,646,307
404 5,646,308
5,646,309
405 5,646,310
413 5,646,311
418 5,646,312
441 5,646,313
531 5,646,314
554 5,646,315

CLASS 552

554 5,646,316

CLASS 554

69 5,646,317
5,646,318
5,646,319
149 5,646,320
224 5,646,321

CLASS 556

11 5,646,322
21 5,646,323
130 5,646,324
440 5,646,325
474 5,646,326

CLASS 558

452 5,646,327

CLASS 560

25 5,646,328
27 5,646,329
43 5,646,330
78 5,646,331
204 5,646,332

CLASS 588

33 5,645,521
43 5,645,522

CLASS 600

252 5,645,518

CLASS 601

114 5,645,519
151 5,645,520

CLASS 602

16 5,645,524
62 5,645,525

CLASS 604

20 5,645,526
5,645,527
22 5,645,530
67 5,645,531
96 5,645,528
101 5,645,529
117 5,645,532
164 5,645,533
189 5,645,534
195 5,645,535
200 5,645,536
240 5,645,537
256 5,645,538
283 5,645,539
320 5,645,540
353 5,645,541
538 5,645,542
567 5,646,303
385.2 5,645,543

CLASS 606

61 5,645,544
62 5,645,545
72 5,645,546
73 5,645,547
87 5,645,548
96 5,645,549
108 5,645,550
143 5,645,551
145 5,645,552
157 5,645,553
180 5,645,554
182 5,645,555
185 5,645,556
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192 5,645,560
193 5,645,561
194 5,645,562
198 5,645,559
202 5,645,563
205 5,645,564
213 5,645,565
5,645,566
219 5,645,567
228 5,645,568

CLASS 607

4 5,645,569
5 5,645,570
5,645,571
5,645,572
7 5,645,573
17 5,645,574
5,645,575
19 5,645,576
37 5,645,577
91 5,645,578
122 5,645,580

CLASS 623

1 5,645,581
5 5,645,582
5,645,583
10 5,645,584
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18 5,645,600
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20 5,645,602
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21 5,645,605
22 5,645,606
23 5,645,607
44 5,645,590

CLASS 800

205 5,646,333

CLASSIFICATION OF DESIGNS

D2— 605 380,586
627 380,587
702 380,588
719 380,589
743 380,590
866 380,591
910 380,592
920 380,593
969 380,594
380,595
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970 380,597
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972 380,600
380,601
380,602

D3— 25 380,603
215 380,604
218 380,605
226 380,606
243 380,607
244 380,608
380,609
276 380,610
284 380,611
289 380,612
307 380,613
327 380,614

D4— 135 380,615
138 380,616

D6— 308 380,617
345 380,618
354 380,619
358 380,620
359 380,621
381 380,622
387 380,623
422 380,624
441 380,625
445 380,626
380,627
380,628
449 380,629
486 380,630
491 380,631
495 380,632
380,633
508 380,634
511 380,635
536 380,636

D7— 310 380,640
313 380,641
323 380,642
350 380,643
351 380,644
359 380,645
527 380,646
531 380,647
555 380,648
585 380,649
619 380,650
380,651
620 380,652
696 380,653
552 380,637
566 380,638
629 380,639

D8— 11 380,654
13 380,655
52 380,656
57 380,657
61 380,658
62 380,659
70 380,660
87 380,661
343 380,662
354 380,663
356 380,664
367 380,665
372 380,666
382 380,585
380,667
387 380,668
380,669

D9— 331 380,672
336 380,673
337 380,674
432 380,675
434 380,670
380,676
439 380,677
440 380,678
447 380,679
456 380,680
523 380,681
528 380,682
535 380,683
538 380,671
543 380,684
549 380,685
575 380,686

D10—	6	380,687		196	380,722		194	380,758		123	380,794		126	380,829	D28—	40	380,864
		380,688			380,723		215	380,759		194	380,795		133	380,830		41	380,865
	12	380,689		209	380,724		217	380,760			380,796		155	380,831		46	380,866
	30	380,690		300	380,725	D15—	15	380,761		199	380,797		158	380,832		56	380,867
	104	380,691		317	380,726		89	380,762		217	380,798		167	380,833		63	380,868
		380,692		425	380,727		136	380,763			380,799			380,834		64	380,869
		380,693	D13—	103	380,728	D16—	202	380,764			380,800		183	380,835	D29—	102	380,870
		380,694		108	380,729		236	380,765		219	380,801		194	380,836		108	380,871
		380,695		120	380,730		321	380,766		221	380,802		223	380,837		109	380,872
		380,696		134	380,731	D18—	24	380,767		222	380,803	D25—	23	380,838		110	380,873
	118	380,697		139	380,732		38	380,768		226	380,804		103	380,839		113	380,874
	128	380,698		142	380,733		49	380,769		229	380,805			380,840		120	380,875
D11—	4	380,699		146	380,734		51	380,770	D22—	139	380,806		124	380,841		121	380,876
	164	380,700		147	380,735		56	380,771	D23—	209	380,807			380,842	D30—	121	380,878
		380,701		155	380,736			380,772		226	380,808		138	380,843		124	380,877
		380,702		162	380,737	D19—	3	380,773		238	380,809	D26—	7	380,855		160	380,879
	218	380,703	D14—	100	380,738		26	380,774		242	380,810		11	380,856		161	380,880
D12—	1	380,704		103	380,739		33	380,775		243	380,811		28	380,857		199	380,881
	11	380,705		106	380,740		34	380,776		252	380,812		43	380,844	D32—	22	380,882
	98	380,706		107	380,741		69	380,777		265	380,813			380,845		25	380,883
		380,707			380,742	D21—	13	380,779		270	380,814		49	380,846			380,884
	101	380,708			380,743		22	380,780		302	380,815			380,858			
	146	380,709		121	380,745		25	380,781		309	380,816		63	380,847			
	147	380,710			380,746		36	380,782			380,817			380,848			
		380,711		126	380,747		48	380,783		335	380,818			380,849			
		380,712		135	380,748		49	380,784		353	380,819			380,859			
		380,713		137	380,749		51	380,785		356	380,820		87	380,850			
		380,714		138	380,750		108	380,786		366	380,822		92	380,851			
		380,715			380,751			380,787		367	380,821		111	380,860			
		380,716		144	380,752			380,788		372	380,823			380,861			
	148	380,717			380,753			380,789		382	380,824		118	380,852			
	152	380,718		150	380,754			380,790	D24—	101	380,825		128	380,853			
	162	380,719		164	380,755			380,791		104	380,826		142	380,854			
	179	380,720		168	380,756			380,792		112	380,827	D27—	192	380,862			
	187	380,721		171	380,757		109	380,793		117	380,828		195	380,863			

CLASSIFICATION OF PLANTS

P—	54.1	9,946	74.1	9,949		9,952	88.1	9,955		9,958	
	70.4	9,947		9,950	87.4	9,953		9,956			
	70.5	9,948	86.4	9,951		9,954		9,957			

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PATENTS

01 :	5,645,428	5,645,060	5,645,560	5,646,123	5,646,575	5,646,967		
	5,645,555	5,645,068	5,645,563	5,646,128	5,646,583	5,646,969		
04 :	5,644,917	5,645,070	5,645,564	5,646,141	5,646,591	5,646,970		
	5,644,935	5,645,074	5,645,566	5,646,160	5,646,593	5,646,973		
	5,644,977	5,645,079	5,645,580	5,646,165	5,646,597	5,646,979		
	5,645,007	5,645,082	5,645,582	5,646,185	5,646,611	5,646,990		
	5,645,045	5,645,160	5,645,586	5,646,231	5,646,623	5,646,991		
	5,645,099	5,645,164	5,645,600	5,646,232	5,646,629	5,646,994		
	5,645,104	5,645,168	5,645,625	5,646,241	5,646,630	5,646,997		
	5,645,249	5,645,171	5,645,642	5,646,248	5,646,640	5,647,001		
	5,645,298	5,645,173	5,645,646	5,646,250	5,646,650	5,647,012		
	5,645,343	5,645,194	5,645,664	5,646,251	5,646,660	5,647,032		
	5,645,781	5,645,196	5,645,669	5,646,254	5,646,665	5,647,036		
	5,645,816	5,645,200	5,645,671	5,646,264	5,646,667	5,647,038		
	5,645,915	5,645,206	5,645,675	5,646,269	5,646,675	5,647,056		
	5,646,055	5,645,214	5,645,684	5,646,298	5,646,683	5,647,058		
	5,646,072	5,645,238	5,645,699	5,646,334	5,646,693	5,172,338		
	5,646,246	5,645,244	5,645,702	5,646,365	5,646,694	5,514,200		
	5,646,364	5,645,256	5,645,710	5,646,374	5,646,707	08 : 5,644,848		
	5,646,441	5,645,260	5,645,718	5,646,378	5,646,710	5,644,902		
	5,646,481	5,645,271	5,645,720	5,646,396	5,646,734	5,645,042		
	5,646,503	5,645,278	5,645,746	5,646,406	5,646,750	5,645,163		
	5,646,580	5,645,280	5,645,789	5,646,408	5,646,751	5,645,199		
	5,646,609	5,645,281	5,645,800	5,646,411	5,646,752	5,645,270		
	5,646,626	5,645,291	5,645,812	5,646,419	5,646,766	5,645,389		
	5,646,627	5,645,300	5,645,819	5,646,426	5,646,773	5,645,440		
	5,646,854	5,645,301	5,645,831	5,646,429	5,646,776	5,645,460		
	5,646,918	5,645,305	5,645,949	5,646,437	5,646,791	5,645,480		
05 :	5,645,024	5,645,310	5,645,955	5,646,448	5,646,792	5,645,481		
	5,645,215	5,645,331	5,645,959	5,646,458	5,646,798	5,645,504		
	5,646,367	5,645,340	5,645,982	5,646,484	5,646,805	5,645,585		
06 :	Re.35,558	5,645,349	5,645,985	5,646,488	5,646,806	5,645,613		
	5,644,799	5,645,376	5,645,986	5,646,500	5,646,814	5,645,700		
	5,644,808	5,645,379	5,645,996	5,646,515	5,646,822	5,645,736		
	5,644,827	5,645,381	5,646,004	5,646,519	5,646,831	5,645,823		
	5,644,857	5,645,402	5,646,019	5,646,520	5,646,857	5,645,976		
	5,644,858	5,645,425	5,646,025	5,646,521	5,646,867	5,645,987		
	5,644,860	5,645,434	5,646,028	5,646,522	5,646,870	5,646,042		
	5,644,884	5,645,454	5,646,034	5,646,535	5,646,873	5,646,115		
	5,644,888	5,645,475	5,646,036	5,646,537	5,646,886	5,646,177		
	5,644,904	5,645,485	5,646,039	5,646,539	5,646,890	5,646,265		
	5,644,920	5,645,493	5,646,044	5,646,545	5,646,896	5,646,361		
	5,644,978	5,645,494	5,646,048	5,646,547	5,646,901	5,646,394		
	5,645,009	5,645,501	5,646,063	5,646,548	5,646,903	5,646,402		
	5,645,014	5,645,530	5,646,069	5,646,553	5,646,928	5,646,476		
	5,645,051	5,645,537	5,646,070	5,646,558	5,646,940	5,646,542		
	5,645,055	5,645,539	5,646,073	5,646,560	5,646,950	5,646,778		
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42 :	380,761		380,709		380,763	53 :	380,722	55 :	380,623		380,784
	380,825	48 :	380,585		380,806		380,723		380,634		380,801
	380,858		380,641		380,857		380,727		380,635		380,853
44 :	380,847		380,651		380,871		380,760		380,656		
	380,878		380,730	49 :	380,829		380,842		380,657		

PLANT PATENTS

06 :	9,947		9,949		9,952		9,956		9,954
	9,948		9,951	12 :	9,955	41 :	9,953		

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PATENTS

July 15, 1997



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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1194 O.G. 618, on January 21, 1997.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on September 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective May 1, 1997, due to a change in the exchange rate of the U.S. dollar with regard to the German mark, and was announced in the *Official Gazette* at 1197 O.G. 69, on April 22, 1997.

International fees were changed, effective on May 1, 1997, due to a change in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1197 O.G. 69, on April 22, 1997.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective October 1, 1996, and were announced in the *Official Gazette* at 1189 O.G. 62, on August 20, 1996.

The schedule of PCT fees (in U.S. dollars), effective May 1, 1997, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	230.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
— No corresponding prior U.S. national application filed	680.00
— Corresponding prior U.S. national application filed	440.00
— Supplemental search fee, per additional invention (payable only upon invitation)	200.00
European Patent Office as ISA	1425.00
International fees	
Basic fee	530.00
Basic supplemental fee (for each page over 30)	10.00
Designation fee per country or region	
— For the first 11 national or regional offices designated	128.00
— For each designation in excess of 11 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
— Designation fee	128.00
— Confirmation fee	64.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
— USPTO was ISA in PCT Chapter I	480.00
— Additional examination fee, per additional invention (payable only upon invitation)	140.00
— USPTO was not ISA in PCT Chapter I	730.00
— Additional examination fee, per additional invention (payable only upon invitation)	260.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
— All claims presented satisfied provisions of PCT Article 33(2) to (4)	48.00	96.00
— All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	350.00	700.00
USPTO was ISA but not IPEA	385.00	770.00
USPTO was neither ISA nor IPEA		
— Search report has not been prepared by the European Patent Office or the Japanese Patent Office	520.00	1040.00
— Search report has been prepared by the European Patent Office or the Japanese Patent Office	455.00	910.00
Other National fees		
— For each independent claim in excess of 3	40.00	80.00
— For each claim in excess of 20	11.00	22.00
— For each application containing a multiple dependent claim	130.00	260.00
— Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(l)	65.00	130.00
— Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(l)	130.00	130.00

March 31, 1997

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on July 12, 1994 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,327,585 through 5,329,635
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on July 10, 1990 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,939,794 through 4,941,208
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on July 8, 1986 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,598,427 through 4,599,745
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1996, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $510.00
By other than a small entity $1,020.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,025.00
By other than a small entity $2,050.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on applications filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,540.00
By other than a small entity $3,080.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:
(1) unavoidable $680.00
(2) unintentional $1,600.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED May 7, 1997
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 32,701	07/036,103	06/21/88
(4,516,075)	(06/455,596)	(05/07/85)
Re. 32,740	07/042,900	08/30/88
(4,515,421)	(06/548,978)	(05/07/85)
Re. 33,666	06/837,174	08/20/91
(4,515,223)	(06/524,901)	(05/07/85)
Re. 33,701	07/530,118	09/24/91
(4,826,466)	(07/198,601)	(05/02/89)
Re. 33,756	07/563,319	12/03/91
(4,825,547)	(07/033,468)	(05/02/89)
Re. 33,951	07/573,813	06/09/92
(4,825,730)	(07/102,914)	(05/02/89)
4,514,872	06/489,834	05/07/85
4,514,883	06/569,009	05/07/85
4,514,888	06/481,001	05/07/85
4,514,889	06/548,548	05/07/85
4,514,898	06/468,016	05/07/85
4,514,900	06/323,539	05/07/85
4,514,922	06/462,958	05/07/85
4,514,937	06/339,504	05/07/85
4,514,938	06/473,034	05/07/85
4,514,943	06/453,349	05/07/85
4,514,951	06/511,668	05/07/85
4,514,965	06/483,108	05/07/85
4,514,969	06/592,648	05/07/85
4,514,980	06/455,243	05/07/85
4,514,983	06/433,179	05/07/85
4,514,985	06/661,261	05/07/85
4,514,999	06/540,485	05/07/85
4,515,014	06/602,567	05/07/85
4,515,029	06/440,121	05/07/85
4,515,038	06/360,881	05/07/85
4,515,052	06/423,234	05/07/85
4,515,058	06/574,440	05/07/85
4,515,066	06/314,036	05/07/85
4,515,071	06/422,068	05/07/85
4,515,078	06/500,272	05/07/85
4,515,081	06/442,155	05/07/85
4,515,086	06/370,467	05/07/85
4,515,088	06/515,048	05/07/85
4,515,093	06/354,564	05/07/85
4,515,096	06/540,365	05/07/85
4,515,102	06/555,635	05/07/85
4,515,111	06/601,961	05/07/85
4,515,117	06/600,866	05/07/85
4,515,122	06/486,943	05/07/85
4,515,132	06/564,280	05/07/85
4,515,141	06/571,096	05/07/85
4,515,145	06/538,582	05/07/85
4,515,146	06/543,626	05/07/85
4,515,153	06/520,083	05/07/85
4,515,158	06/329,986	05/07/85
4,515,160	06/371,335	05/07/85
4,515,162	06/301,861	05/07/85
4,515,177	06/488,650	05/07/85
4,515,185	06/510,833	05/07/85
4,515,196	06/461,852	05/07/85
4,515,199	06/620,346	05/07/85

Patent Number	Serial Number	Issue Date
4,515,204	06/449,650	05/07/85
4,515,215	06/581,922	05/07/85
4,515,217	06/565,361	05/07/85
4,515,218	06/584,194	05/07/85
4,515,235	06/381,884	05/07/85
4,515,239	06/531,946	05/07/85
4,515,248	06/431,085	05/07/85
4,515,249	06/512,826	05/07/85
4,515,254	06/552,180	05/07/85
4,515,261	06/456,822	05/07/85
4,515,286	06/563,070	05/07/85
4,515,291	06/428,097	05/07/85
4,515,293	06/464,502	05/07/85
4,515,302	06/332,824	05/07/85
4,515,303	06/503,176	05/07/85
4,515,305	06/445,709	05/07/85
4,515,315	06/502,275	05/07/85
4,515,316	06/487,467	05/07/85
4,515,322	06/530,356	05/07/85
4,515,327	06/593,675	05/07/85
4,515,331	06/316,072	05/07/85
4,515,344	06/341,829	05/07/85
4,515,350	06/534,579	05/07/85
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4,515,375	06/587,671	05/07/85
4,515,387	06/478,649	05/07/85
4,515,394	06/428,384	05/07/85
4,515,397	06/481,237	05/07/85
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4,515,424	06/501,394	05/07/85
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4,515,427	06/454,408	05/07/85
4,515,433	06/596,153	05/07/85
4,515,442	06/344,658	05/07/85
4,515,445	06/460,036	05/07/85
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4,515,734	06/461,847	05/07/85
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4,515,774	06/621,454	05/07/85
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4,516,015	06/388,984	05/07/85
4,516,018	06/328,183	05/07/85
4,516,034	06/555,877	05/07/85

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4,516,144	06/421,942	05/07/85
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5,208,402	07/756,216	05/04/93
5,208,405	07/845,128	05/04/93
5,208,408	07/786,038	05/04/93
5,208,412	07/740,958	05/04/93
5,208,422	07/904,630	05/04/93
5,208,430	07/907,266	05/04/93
5,208,439	07/474,033	05/04/93
5,208,453	07/761,668	05/04/93
5,208,461	07/770,604	05/04/93
5,208,462	07/810,583	05/04/93
5,208,467	07/640,560	05/04/93
5,208,495	07/814,492	05/04/93
5,208,499	07/821,995	05/04/93
5,208,508	07/760,296	05/04/93
5,208,514	07/874,973	05/04/93
5,208,515	07/805,485	05/04/93
5,208,524	07/425,168	05/04/93
5,208,525	07/776,853	05/04/93
5,208,540	07/843,187	05/04/93
5,208,541	07/718,349	05/04/93
5,208,543	07/703,675	05/04/93
5,208,548	07/880,740	05/04/93
5,208,554	07/825,194	05/04/93
5,208,562	07/772,223	05/04/93
5,208,572	07/923,181	05/04/93
5,208,576	07/694,118	05/04/93
5,208,577	07/897,297	05/04/93
5,208,585	07/822,725	05/04/93
5,208,586	07/655,770	05/04/93
5,208,589	07/554,794	05/04/93
5,208,599	07/751,419	05/04/93
5,208,601	07/556,606	05/04/93
5,208,609	07/729,944	05/04/93
5,208,618	07/654,836	05/04/93
5,208,622	07/731,280	05/04/93
5,208,638	07/656,400	05/04/93
5,208,649	07/839,469	05/04/93
5,208,663	07/918,136	05/04/93
5,208,670	07/629,554	05/04/93
5,208,679	07/725,128	05/04/93
5,208,680	07/420,155	05/04/93
5,208,683	07/383,544	05/04/93
5,208,720	07/734,683	05/04/93
5,208,723	07/570,073	05/04/93
5,208,729	07/836,672	05/04/93
5,208,731	07/822,432	05/04/93
5,208,739	07/817,600	05/04/93
5,208,745	07/532,596	05/04/93
5,208,747	07/673,164	05/04/93
5,208,751	07/728,326	05/04/93
5,208,753	07/676,525	05/04/93
5,208,825	07/681,924	05/04/93
5,208,826	07/817,391	05/04/93
5,208,828	07/775,823	05/04/93
5,208,830	07/611,103	05/04/93
5,208,836	07/740,688	05/04/93
5,208,851	07/684,412	05/04/93
5,208,874	07/767,378	05/04/93
5,208,879	07/779,428	05/04/93
5,208,880	07/876,274	05/04/93
5,208,884	07/672,948	05/04/93
5,208,894	07/552,699	05/04/93
5,208,896	07/576,611	05/04/93

Patents Reinstated Due to the Acceptance of a Late Maintenance Fee From 5/09/97

Patent Number	Serial Number	Filing Date	Issue Date	Granted Date
4,398,228	06/258,402	04/28/81	08/09/83	05/13/97
4,619,486	06/618,492	06/08/84	10/28/86	05/09/97
4,623,795	06/613,860	05/24/84	11/18/86	05/13/97
4,651,893	06/898,806	08/21/86	03/24/87	05/13/97
4,723,373	06/923,676	10/27/86	02/09/88	05/12/97
4,732,062	07/003,861	01/16/87	03/22/88	05/15/97
4,763,544	06/609,235	05/11/84	08/16/88	05/14/97
4,802,390	07/028,188	03/19/87	02/07/89	05/15/97
4,962,560	07/202,235	06/03/88	10/16/90	05/13/97
4,998,711	07/484,174	02/23/90	03/12/91	05/12/97
5,003,547	07/459,211	12/29/89	03/26/91	05/13/97
5,004,801	07/274,216	11/21/88	04/02/91	05/13/97
5,031,205	07/513,097	04/23/90	07/09/91	05/14/97
5,036,533	07/478,674	02/12/90	07/30/91	05/15/97
5,048,301	07/539,330	06/13/90	09/17/91	05/13/97
5,070,560	07/601,314	10/22/90	12/10/91	05/13/97
5,102,138	07/702,394	05/20/91	04/07/92	05/15/97
5,111,574	07/279,777	12/05/88	05/12/92	05/14/97
5,113,334	07/477,978	06/14/90	05/12/92	05/12/97
5,121,716	07/715,812	06/17/91	06/16/92	05/13/97
5,131,685	07/782,629	10/25/91	07/21/92	05/14/97
5,143,378	07/641,203	01/15/91	09/01/92	05/13/97
5,155,901	07/814,502	12/30/91	10/20/92	05/13/97

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5,167,801	07/718,594	06/21/91	12/01/92	15/15/97
5,173,376	07/783,005	10/28/91	12/22/92	05/13/97
5,173,377	07/783,006	10/28/91	12/22/92	05/13/97
5,174,343	07/639,576	01/09/91	12/29/92	05/12/97
5,176,411	07/628,610	12/17/90	01/05/93	05/15/97
5,180,263	07/843,217	02/28/92	01/19/93	05/13/97
5,182,533	07/775,286	10/11/91	01/26/93	05/12/97

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

4,626,688, Re. S.N. 08/811,787, March 4, 1997, Cl. 250/361R, SPLIT ENERGY LEVEL RADIATION DETECTION, Gary T. Barnes, Owner of Record: *UAB Research Foundation, Birmaham, Ala.*, Attorney or Agent: Keith D. Lindenbaum, Ex. Gp.: 2506

4,905,003, Re. S.N. 08/816,205, April 11, 1997, Cl. 341, ANALOG/DIGITAL DATA STORAGE SYSTEM, Richard J. Helferich, Owner of Record: *Motorola, Inc., Schaumburg, Ill.*, Attorney or Agent: Martin U. Zoltick, Ex. Gp.: 2104

4,972,130, Re. S.N. 08/512,904, Sept. 9, 1995, Cl. 318/293, MULTIPURPOSE, INTERNALLY CONFIGURABLE INTEGRATED CIRCUIT FOR DRIVING A SWITCHING MODE EXTERNAL INDUCTIVE LOADS ACCORDING TO A SELECTABLE CONNECTION SCHEME, Domenico Rossi, et. al., Owner of Record: *SGS-Thomson Microelectronics SRL, Milano, Italy*, Attorney or Agent: Lisa K. Jorgenson, Ex. Gp.: 2107

4,997,732, Re. S.N. 08/719,715, Sept. 25, 1997, Cl. 429/153, BATTERY IN A VACUUM ENVELOPING MATERIAL AND A PROCESS FOR MAKING THE SAME, Robert A. Austin, et. al., Owner of Record: *MHB Joint Venture, Dayton, Ohio*, Attorney or Agent: Bradley A. Perkins, Ex. Gp.: 1111

5,191,369, Re. S.N. 08/763,347, Dec. 11, 1996, Cl. 353/62, PHOTOGRAPHING LIGHT QUANTITY CONTROLLER FOR ENDOSCOPE , Katsuhiko Furuya, et. al., Owner of Record: *Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan*, Attorney or Agent: Bruce H. Bernstein, Ex. Gp.: 2101

5,217,590, Re. S.N. 08/487,130, June 7, 1995, Cl. 204/180.1, METHOD AND APPARATUS FOR THE INTRODUCTION OF A VOLUME OF AT LEAST ONE FLUID IN A TUBE IN PARTICULAR SUITABLE FOR CAPILLARY ELECTROPHORESIS SYSTEMS AND METHOD AND APPARATUS FOR SEPERATING AND/OR ANALYZING A FLUID MATERIAL, Hermanus H. Laver, et. al., Owner of Record: *Laver Labs B.V., Emmen, The Netherlands*, Attorney or Agent: Harry C. Jones, III, Ex. Gp.: 1102

5,278,432, Re. S.N. 08/839,603, April 17, 1997, Cl. 257, APPARATUS FOR PROVIDING RADIANT ENERGY, Ronald W. Ignatius, et. al., Owner of Record: *Inventors*, Attorney or Agent: Casimir F. Laska, Ex. Gp.: 2508

5,335,222, Re. S.N. 08/691,675, Aug. 2, 1996, Cl. 370/60, TRAFFIC CONTROL SYSTEM FOR ASYNCHRONOUS TRANSFER MODE EXCHANGE, Jyoei Kamoi, Owner of Record: Fujitsu Limited, Kawasaki-Shi, Japan, Attorney or Agent: H. J. Stass, Ex. Gp.: 2603

5,352,775, Re. S.N. 08/726,870, Oct. 4, 1996, Cl. 536/23.1, APC GENE AND NUCLEIC ACID PROBES DERIVED THEREFROM, Hans Albertsen, et. al., Owner of Record: *Zeneca Limited, London, England*, Attorney or Agent: Sarah A. Kagan, Ex. Gp.: 1812

5,361,010, Re. S.N. 08/744,726, Nov. 1, 1996, Cl. 318/156, TACHOGENERATOR FOR SPEED CONTROL OF ELECTRIC MOTORS, Rolf Mueller, Owner of Record: *Papst-Licensing Gmbh, Spaichingen, Federal Republic of Germany*, Attorney or Agent: Jeffrey W. Salmon, Ex. Gp.: 2102

5,380,473, Re. S.N. 08/823,022, March 21, 1997, Cl. 264/11, PROCESS FOR MAKING SHEARFORM MATRIX, Arlie B. Boque, et. al., Owner of Record: *Fuisz Technologies Ltd., Chantilly, Va.*, Attorney or Agent: Livia Bajadjian, Ex. Gp.: 1306

5,382,652, Re. S.N. 08/782,429, Jan. 15, 1997, Cl. 528/308.6, POLYESTER RESIN, COMPOSITIONS THEREOF AND SEALANT MADE THEREFROM, Kouji Fukuda, et. al., Owner of Record: *Toyo Boseki Kabushiki Kaisha, Osaka, Japan*, Attorney or Agent: Jeffrey B. Burgan, Ex. Gp.: 1503

5,384,296, Re. S.N. 08/788,059, Jan. 23, 1997, Cl. 502/66, THERMALLY STABLE NOBLE METAL-CONTAINING ZEOLITE CATALYSTS, Ying-Yen P. Tsao, Owner of Record: *Mobile Oil Corp., Fairfax, Va.*, Attorney or Agent: Blossom E. Loo, Ex. Gp.: 1106

5,388,385, Re. S.N. 08/804,330, Feb. 14, 1997, Cl. 053/247, FOOD ARTICLE FILLING HEAD, James M. Phelps, et. al., Owner of Record: *John G. Schenk, Cincinnati, Ohio*, Attorney or Agent: Theodore D. Lienesch, Ex. Gp.: 3201

5,390,113, Re. S.N. 08/801,839, Feb. 14, 1997, Cl. 395/230, METHOD AND ELECTRONIC APPARATUS FOR PERFORMING BOOKKEEPING, Wesley C. Sampson, Owner of Record: *Inventor*, Attorney or Agent: Kent A. Herink, Ex. Gp.: 2311

5,391,874, Re. S.N. 08/806,495, Feb. 20, 1997, Cl. 250/336.1, FLEXIBLE LEAD ASSEMBLEY FOR MICRO-CHANNEL PLATE-BASED DETECTOR, Glenn Ellis, Owner of Record: *Galileo Electro-Optics Corp., Sturbridge, Mass.*, Attorney or Agent: John P. Deluca, Ex. Gp.: 2506

5,394,437, Re. S.N. 08/805,831, Feb. 26, 1997, Cl. 375/222, HIGH-SPEED MODEM SYNCHRONIZED TO A REMOTE CODER, Ender Ayanoglu, et. al., Owner of Record: *American Telephone and Telegraph Co., New York, N.Y.*, Attorney or Agent: James H. Fox, Ex. Gp.: 2614

5,394,522, Re. S.N. 08/806,227, Feb. 24, 1997, Cl. 395/159, SELECTING AND LOCATING GRAPHICAL ICON OBJECTS TO DEFINE AND CONFIGURE THE WORKSTATIONS IN DATA PROCESSING NETWORKS, Alejandra Sanchez-Frank, et. al., Owner of Record: *International Business Machines Corp., Armonk, N.Y.*, Attorney or Agent: Casimer K. Salys, Ex. Gp.: 2412

5,396,731, Re. S.N. 08/816,697, March 13, 1997, Cl. 047/25, MULCH PADS AND METHODS, Steven E. Byrne, Owner of Record: *Waste Tire Management, Lawrenceville, Ga.*, Attorney or Agent: Richard A. Clegg, Ex. Gp.: 3501

5,435,242, Re. S.N. 08/815,153, March 11, 1997, Cl. 101/142, PLATE CYLINDER FOR A PRINTING PRESS HAVING PLATE MATERIAL IN A CARTRIDGE IN THE PLATE CYLINDER, Hans-Jurgen Kusch et. al., Owner of Record: *Heidelberger Druckmaschin, Aktiengesellschaft, Heidelberg*, Attorney or Agent: Kimberly S. Merichko, Ex. Gp.: 3307

5,589,542, Re. S.N. 08/805,599, Feb. 26, 1997, Cl. 525/98, MULTIBLOCK HYDROGENATED POLYMERS FOR ADHESIVES, Glenn R. Himes, Owner of Record: *Shell Oil Co., Houston, Tex.*, Attorney or Agent: Donald F. Haas, Ex. Gp.: 1511

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

D. 313,826, Reexam. No. 90/004,653, June 2, 1997, Cl. D21/194, EXERCISE TREADMILL, James S. Birrell, et. al., Owner of Record: *Precor Inc., Bothell, Wash.*, Attorney or Agent: James R. Uhlir, Christensen, O'Connor, Johnson & Kindness, Seattle, Wash., Ex. Gp.: 2902, Requester: Life Fitness; c/o Michael B. McMurray, Chicago, Ill.

4,879,715, Reexam. No. 90/004,649, May 22, 1997, Cl. 370/475,TERMINAL EQUIPMENT IDENTIFIER CONTROLLING CIRCUIT, Takeo Nakabayashi, et. al., Owner of Record: *Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan*, Attorney or Agent: Kevin T. LeMond, Townsend and Townsend and Crew, San Francisco, Calif., Ex. Gp.: 2603, Requester: Owner

5,054,902, Reexam. No. 90/004,651, June 2, 1997, Cl. 351/044, LIGHT CONTROL WITH COLOR ENHANCEMENT, William J. King, Owner of Record: *William J. King, Reading, Mass.*, Attorney or Agent: W. Hugo Liepman, Lahive & Cockfield, Boston, Mass., Ex. Gp.: 2515, Requester: Oakley, Inc.; c/o Knobbe Martens Olson & Bear, Newport Beach, Calif.

5,293,659, Reexam. No. 90/004,654, June 2, 1997, Cl. 015/01.7, AUTOMATIC SWIMMING POOL CLEANER, Dieter J. Rief, et. al., Owner of Record: *Dieter J. Rief, Rohnert Pk., Calif.; Herman E. Frentzel, Sausalito, Calif.; Jerauld G. Wright, Ottawa, Ont., Canada; Paul (Pavel) Sebor, Johannesburg, South Africa*, Attorney or Agent: Jansson & Shupe, Racine, Wis., Ex. Gp.: 3405, Requester: Jerold I. Schneider, Dorsey & Whitney, Washington, D.C.

5,593,271, Reexam. No. 90/004,650, May 27, 1997, Cl. 414/490, CONVERTIBLE BARROW FOR GROUND LEVEL LOADING, John R. Hall, Owner of Record: *John R. Hall, New Hartford, Conn.*, Attorney or Agent: William C. Crutcher, Gager & Peterson, Waterbury, Conn., Ex. Gp.: 3107, Requester: Owner

5,633,352, Reexam. No. 90/004,652, May 29, 1997, Cl. 530/399, BIOSYNTHETIC HUMAN GROWTH HORMONE, Henrik Dalboge, et. al., Owner of Record: *Novo Nordisk, Bagsvaerd, Denmark*, Attorney or Agent: Graham & James, New York, N.Y., Ex. Gp.: 1801, Requester: Owner

Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED
April 14, 1997
DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date
336,413	71/375,241	07/07/1936
336,433	71/375,680	07/07/1936
336,436	71/375,632	07/07/1936
336,437	71/375,631	07/07/1936
336,452	71/374,563	07/07/1936
336,457	71/374,494	07/07/1936
336,482	71/374,726	07/07/1936
336,484	71/374,732	07/07/1936
336,489	71/374,429	07/07/1936
336,490	71/374,419	07/07/1936
336,494	71/374,352	07/07/1936
336,516	71/373,952	07/07/1936
336,523	71/374,832	07/07/1936
336,539	71/373,700	07/07/1936
336,556	71/373,853	07/07/1936
336,566	71/375,871	07/07/1936
630,221	71/688,691	07/10/1956
630,223	71/692,558	07/10/1956
630,238	71/674,277	07/10/1956
630,240	71/684,440	07/10/1956
630,243	71/690,835	07/10/1956
630,247	71/698,373	07/10/1956
630,253	71/699,475	07/10/1956
630,255	71/697,644	07/10/1956
630,260	71/691,761	07/10/1956
630,263	71/699,845	07/10/1956
630,269	71/700,328	07/10/1956
630,273	71/700,773	07/10/1956
630,275	71/684,167	07/10/1956
630,276	71/684,314	07/10/1956
630,279	71/688,091	07/10/1956
630,286	71/696,095	07/10/1956
630,290	71/698,308	07/10/1956
630,291	71/688,537	07/10/1956
630,294	71/694,156	07/10/1956
630,295	72/001,658	07/10/1956
630,297	71/671,888	07/10/1956
630,332	71/688,092	07/10/1956
630,342	72/000,020	07/10/1956
630,347	71/659,502	07/10/1956
630,350	71/690,421	07/10/1956
630,361	71/667,300	07/10/1956
630,368	71/692,172	07/10/1956
630,377	71/700,218	07/10/1956
630,379	71/700,337	07/10/1956
630,380	71/700,537	07/10/1956
630,394	72/001,156	07/10/1956
630,395	72/001,199	07/10/1956
630,398	71/682,676	07/10/1956
630,402	71/693,179	07/10/1956
630,407	71/699,233	07/10/1956
630,409	71/699,531	07/10/1956
630,411	71/699,635	07/10/1956
630,418	71/699,312	07/10/1956
630,420	71/700,375	07/10/1956
630,432	71/693,697	07/10/1956
630,441	71/691,217	07/10/1956
630,444	71/693,855	07/10/1956
630,445	71/699,216	07/10/1956
630,452	71/692,329	07/10/1956
630,453	71/695,641	07/10/1956
630,454	71/698,871	07/10/1956
630,455	71/699,428	07/10/1956
630,456	71/699,621	07/10/1956
630,462	71/671,295	07/10/1956
630,476	71/698,980	07/10/1956
630,477	71/680,933	07/10/1956
630,478	71/682,194	07/10/1956
630,481	71/688,240	07/10/1956
630,482	71/692,015	07/10/1956
630,490	71/695,484	07/10/1956
630,494	71/695,612	07/10/1956
630,497	71/696,240	07/10/1956

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630,502	71/696,538	07/10/1956
630,504	71/696,610	07/10/1956
630,508	71/697,250	07/10/1956
630,513	71/700,607	07/10/1956
630,515	71/697,660	07/10/1956
630,534	71/695,690	07/10/1956
630,536	71/699,226	07/10/1956
630,549	71/699,874	07/10/1956
630,553	71/700,250	07/10/1956
630,567	71/691,154	07/10/1956
630,568	71/691,333	07/10/1956
630,573	71/695,544	07/10/1956
630,580	71/683,425	07/10/1956
630,581	71/669,382	07/10/1956
630,591	71/682,572	07/10/1956
630,602	71/671,049	07/10/1956
630,605	71/681,007	07/10/1956
630,612	71/683,628	07/10/1956
630,614	71/690,248	07/10/1956
630,620	71/693,302	07/10/1956
630,622	71/695,842	07/10/1956
630,633	71/678,305	07/10/1956
630,646	71/680,402	07/10/1956
630,647	72/001,639	07/10/1956
630,650	71/649,157	07/10/1956
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1,038,674	73/055,430	05/04/1976
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1,042,603	73/028,018	07/06/1976
1,042,605	73/042,718	07/06/1976
1,042,607	73/056,091	07/06/1976
1,042,611	73/062,188	07/06/1976
1,042,614	73/064,630	07/06/1976
1,042,619	73/059,911	07/06/1976
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1,042,631	73/058,005	07/06/1976
1,042,632	73/061,713	07/06/1976
1,042,634	73/064,806	07/06/1976
1,042,635	73/064,861	07/06/1976
1,042,637	73/068,141	07/06/1976
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1,042,653	73/011,584	07/06/1976
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1,042,663	73/050,291	07/06/1976
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1,042,684	73/028,019	07/06/1976
1,042,695	73/048,802	07/06/1976
1,042,698	73/049,811	07/06/1976
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1,042,703	73/051,770	07/06/1976
1,042,705	73/053,611	07/06/1976
1,042,706	73/055,284	07/06/1976
1,042,707	73/057,877	07/06/1976
1,042,708	73/059,547	07/06/1976
1,042,709	73/061,606	07/06/1976
1,042,710	73/061,853	07/06/1976
1,042,712	73/063,875	07/06/1976
1,042,719	73/066,905	07/06/1976
1,042,720	73/067,186	07/06/1976
1,042,726	73/065,207	07/06/1976
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1,042,733	73/016,118	07/06/1976
1,042,735	73/021,348	07/06/1976
1,042,737	73/032,342	07/06/1976
1,042,742	73/041,553	07/06/1976
1,042,745	73/042,849	07/06/1976
1,042,746	73/043,933	07/06/1976
1,042,749	73/047,770	07/06/1976
1,042,751	73/048,536	07/06/1976
1,042,756	73/056,365	07/06/1976
1,042,757	73/058,259	07/06/1976
1,042,760	73/059,923	07/06/1976
1,042,763	73/062,664	07/06/1976
1,042,765	73/064,162	07/06/1976
1,042,767	73/064,286	07/06/1976
1,042,769	73/066,575	07/06/1976
1,042,773	73/067,105	07/06/1976
1,042,774	73/067,831	07/06/1976
1,042,778	73/072,463	07/06/1976
1,042,784	73/052,647	07/06/1976
1,042,787	73/057,364	07/06/1976
1,042,790	73/061,284	07/06/1976
1,042,791	73/061,317	07/06/1976
1,042,792	73/061,318	07/06/1976
1,042,798	73/066,661	07/06/1976
1,042,800	73/072,744	07/06/1976
1,042,801	73/072,872	07/06/1976
1,042,808	73/059,029	07/06/1976
1,042,814	73/070,228	07/06/1976
1,042,817	73/019,425	07/06/1976
1,042,819	73/040,353	07/06/1976
1,042,820	73/048,497	07/06/1976
1,042,823	73/053,804	07/06/1976
1,042,825	73/056,874	07/06/1976
1,042,826	73/056,963	07/06/1976
1,042,828	73/061,005	07/06/1976
1,042,829	73/061,592	07/06/1976
1,042,830	73/061,597	07/06/1976
1,042,831	73/066,652	07/06/1976
1,042,834	73/069,622	07/06/1976
1,042,839	73/060,297	07/06/1976
1,042,847	73/031,269	07/06/1976
1,042,860	73/055,188	07/06/1976
1,042,861	73/056,295	07/06/1976
1,042,862	73/056,317	07/06/1976
1,042,864	73/056,770	07/06/1976
1,042,867	73/057,261	07/06/1976
1,042,868	73/057,467	07/06/1976
1,042,872	73/058,754	07/06/1976
1,042,875	73/059,364	07/06/1976
1,042,879	73/060,092	07/06/1976
1,042,884	73/060,722	07/06/1976
1,042,887	73/061,761	07/06/1976
1,042,889	73/064,177	07/06/1976
1,042,891	73/050,807	07/06/1976
1,042,893	73/057,676	07/06/1976
1,042,896	73/065,287	07/06/1976
1,042,897	73/065,288	07/06/1976
1,042,899	73/020,614	07/06/1976
1,042,901	73/037,723	07/06/1976
1,042,902	73/038,769	07/06/1976
1,042,913	73/068,582	07/06/1976
1,042,914	73/069,885	07/06/1976
1,042,915	73/069,986	07/06/1976
1,042,916	73/018,498	07/06/1976
1,042,920	73/052,150	07/06/1976
1,042,921	73/055,066	07/06/1976
1,042,923	73/064,253	07/06/1976
1,042,927	73/067,280	07/06/1976
1,042,929	73/028,022	07/06/1976
1,042,932	73/044,973	07/06/1976
1,042,936	73/068,551	07/06/1976
1,042,938	73/064,878	07/06/1976
1,042,940	73/065,370	07/06/1976
1,042,941	73/055,192	07/06/1976
1,042,944	73/057,069	07/06/1976
1,042,945	73/057,213	07/06/1976
1,042,947	73/059,499	07/06/1976
1,042,948	73/059,782	07/06/1976
1,042,949	73/060,590	07/06/1976
1,042,951	73/062,161	07/06/1976
1,042,952	73/036,406	07/06/1976

Reg. Number	Serial Number	Reg. Date
1,042,958	73/047,467	07/06/1976
1,042,959	73/052,010	07/06/1976
1,042,969	73/057,201	07/06/1976
1,042,971	73/057,504	07/06/1976
1,042,978	73/059,169	07/06/1976
1,042,979	73/059,370	07/06/1976
1,042,986	73/059,805	07/06/1976
1,042,988	73/060,046	07/06/1976
1,042,993	73/060,573	07/06/1976
1,042,995	73/046,860	07/06/1976
1,042,999	73/040,451	07/06/1976
1,043,000	73/047,559	07/06/1976
1,043,001	73/054,739	07/06/1976
1,043,003	73/061,353	07/06/1976
1,043,009	73/065,611	07/06/1976
1,043,011	73/006,442	07/06/1976
1,043,012	73/028,248	07/06/1976
1,043,017	73/045,463	07/06/1976
1,043,019	73/046,695	07/06/1976
1,043,020	73/047,156	07/06/1976
1,043,025	73/053,796	07/06/1976
1,043,039	73/066,630	07/06/1976
1,043,050	73/071,624	07/06/1976
1,043,053	73/071,848	07/06/1976
1,043,054	73/071,849	07/06/1976
1,043,057	73/049,879	07/06/1976
1,043,061	73/065,638	07/06/1976
1,043,063	73/067,799	07/06/1976
1,043,067	73/004,714	07/06/1976
1,043,069	73/056,720	07/06/1976
1,043,070	73/060,333	07/06/1976
1,043,071	73/063,240	07/06/1976
1,043,074	73/066,299	07/06/1976
1,043,079	73/032,331	07/06/1976
1,043,082	73/054,209	07/06/1976
1,043,086	73/069,924	07/06/1976
1,043,090	73/017,845	07/06/1976
1,043,092	73/033,206	07/06/1976
1,043,094	73/048,526	07/06/1976
1,043,098	73/062,485	07/06/1976
1,043,099	73/066,067	07/06/1976
1,043,100	73/068,365	07/06/1976
1,043,102	73/028,330	07/06/1976
1,043,103	73/028,331	07/06/1976
1,043,106	73/065,391	07/06/1976
1,043,107	73/052,184	07/06/1976
1,043,108	73/056,536	07/06/1976
1,043,112	73/061,557	07/06/1976
1,043,116	73/035,430	07/06/1976
1,043,117	73/045,964	07/06/1976
1,043,118	73/066,056	07/06/1976
1,043,119	73/064,944	07/06/1976
1,043,121	73/042,037	07/06/1976
1,043,123	73/054,059	07/06/1976
1,043,132	73/022,111	07/06/1976
1,043,133	73/029,694	07/06/1976
1,043,144	73/056,535	07/06/1976
1,043,145	73/057,309	07/06/1976
1,043,147	73/062,580	07/06/1976
1,043,149	72/416,494	07/06/1976
1,043,154	72/460,864	07/06/1976
1,043,156	72/391,621	07/06/1976
1,043,158	72/445,164	07/06/1976
1,043,160	72/445,165	07/06/1976
1,043,164	72/441,987	07/06/1976
1,043,168	72/438,332	07/06/1976
1,043,170	73/065,266	07/06/1976
1,043,173	73/035,288	07/06/1976
1,045,638	73/068,699	08/03/1976

Service by Publication

A petition to cancel the registrations identified below having been filed, and the notice of such proceeding sent by certified mail to registrants at their last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days of this publication, the cancellation will proceed as in the case of default.

RJV Marketing Corp., New York, N.Y., Reg. No. 1,772,496, for the mark "DAFNE", Canc. No. 25,724.

El-Max Shoe Corp., Old Bethpage, N.Y., Reg. No. 1,234,718, for the mark "PAOLO FERRACINI (STYLIZED)", Canc. No. 25,340.

The Gourmet Group, Ltd., Philadelphia, Pa., Reg. No. 1,353,116, for the mark "PERFECT ENDINGS AND DESIGN", Canc. No. 26,211.

JEAN BROWN
Technical Program Manager
Trademark Trial
and Appeal Board, for
ROBERT M. ANDERSON
Deputy Assistant Commissioner
for Trademarks

Errata

"All reference to Patent No. 5,637,857 to Paul Dvorkis, et al of New York, for SLIM SCAN MODULE WITH INTERCHANGEABLE X-Y SCAN ELEMENT appearing in the Official Gazette of June 10, 1997, should be deleted since no patent was granted."

"All reference to Patent No. 5,641,693 to Jeffrey W. Honeycutt, et al. of Idaho, for SEMICONDUCTOR PROCESSING METHODS OF FORMING COMPLEMENTARY METAL OXIDE SEMICONDUCTOR MEMORY AND OTHER CIRCUITRY appearing in the Official Gazette of June 24, 1997, should be deleted since no patent was granted."

Certificates of Correction
For the Week of July 15, 1997

D. 372,217	5,428,125	5,508,305	5,552,431
D. 373,784	5,429,128	5,510,824	5,552,826
D. 374,686	5,433,309	5,511,568	5,553,515
Re. 33,769	5,436,249	5,513,156	5,554,587
Re. 35,346	5,442,310	5,513,521	5,555,287
Re. 35,469	5,444,298	5,515,050	5,555,918
4,853,230	5,446,271	5,515,627	5,557,074
4,933,360	5,446,408	5,516,905	5,557,568
5,068,384	5,447,162	5,519,034	5,559,233
5,086,386	5,447,307	5,519,831	5,559,269
5,184,219	5,448,711	5,522,266	5,559,522
5,240,571	5,453,264	5,523,399	5,559,977
5,263,314	5,457,316	5,526,187	5,560,582
5,270,320	5,460,751	5,526,735	5,561,047
5,290,749	5,462,208	5,529,865	5,561,783
5,314,886	5,462,942	5,530,845	5,562,610
5,358,500	5,463,757	5,532,310	5,562,888
5,363,202	5,465,230	5,532,977	5,563,274
5,364,442	5,467,460	5,533,189	5,563,949
5,367,660	5,470,772	5,533,611	5,565,027
5,384,059	5,473,753	5,535,347	5,565,414
5,405,227	5,475,118	5,539,075	5,565,569
5,405,862	5,479,222	5,539,320	5,565,782
5,406,192	5,482,446	5,541,316	5,566,101
5,409,939	5,483,165	5,543,963	5,566,253
5,410,707	5,483,817	5,546,221	5,567,841
5,411,787	5,484,936	5,547,927	5,568,202
5,416,195	5,485,179	5,547,981	5,568,492
5,423,432	5,488,728	5,548,270	5,570,230
5,423,902	5,494,599	5,548,322	5,570,235
5,426,076	5,500,755	5,549,928	5,570,378
5,427,150	5,505,671	5,550,072	5,570,671

5,571,651	5,582,694	5,591,985	5,598,150	5,603,445	5,609,009	5,613,071	5,619,625
5,571,659	5,582,785	5,592,074	5,598,349	5,603,861	5,609,045	5,613,257	5,619,660
5,572,264	5,583,296	5,592,228	5,598,672	5,603,906	5,609,130	5,613,272	5,619,668
5,573,373	5,583,699	5,592,277	5,598,683	5,603,984	5,609,262	5,613,786	5,620,784
5,574,039	5,583,926	5,592,641	5,598,821	5,604,111	5,609,279	5,613,912	5,620,857
5,574,415	5,584,322	5,593,594	5,598,833	5,604,636	5,609,553	5,614,171	5,620,941
5,575,115	5,585,201	5,593,790	5,599,307	5,604,686	5,609,889	5,614,295	5,620,965
5,575,435	5,585,559	5,594,291	5,599,426	5,604,748	5,610,122	5,614,493	5,621,047
5,576,377	5,585,666	5,594,304	5,599,686	5,604,805	5,610,156	5,614,940	5,621,105
5,576,979	5,585,686	5,594,414	5,599,908	5,604,873	5,610,161	5,614,971	5,621,210
5,577,486	5,585,814	5,594,883	5,599,951	5,605,341	5,610,394	5,615,275	5,621,336
5,577,681	5,587,587	5,595,448	5,600,481	5,605,385	5,610,777	5,615,553	5,621,420
5,577,852	5,587,693	5,595,757	5,600,613	5,605,389	5,611,036	5,615,774	5,622,427
5,577,876	5,588,755	5,595,908	5,600,808	5,605,902	5,611,077	5,616,404	5,622,478
5,578,333	5,588,757	5,596,240	5,600,854	5,606,211	5,611,190	5,616,720	5,624,171
5,578,418	5,588,830	5,596,384	5,601,202	5,606,355	5,611,312	5,616,722	5,624,419
5,578,589	5,589,199	5,596,388	5,602,137	5,606,755	5,611,420	5,617,230	5,625,274
5,578,875	5,589,356	5,596,392	5,602,300	5,606,764	5,612,025	5,617,357	5,626,151
5,580,889	5,589,543	5,596,638	5,602,574	5,606,977	5,612,250	5,617,534	5,628,182
5,581,076	5,590,265	5,596,651	5,602,825	5,607,039	5,612,534	5,617,893	5,628,333
5,581,119	5,590,623	5,597,338	5,603,022	5,607,669	5,612,762	5,617,982	5,629,299
5,581,301	5,590,944	5,597,865	5,603,359	5,608,763	5,612,828	5,618,113	5,629,713
5,581,923	5,591,980	5,597,979	5,603,392	5,608,853	5,612,991	5,618,679	5,632,465

Summary of Final Decisions
Issued by the
Trademark Trial and Appeal Board
May 26-30, 1997

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
5-27	EX EX EX EX	74/534,897 74/535,875 74/535,192 74/532,342 74/532,527	Bacardi & Co.	2(e)(3) [primarily geographically deceptively misdescriptive]	Refusal Affirmed (in all five cases)		"HAVANA SELECT," "HABANA CLASICO," "OLD HAVANA," "HAVANA PRIMO," and "HAVANA CLIPPER" [all five marks applied to rum]		Yes
5-27	EX	74/404,325	Caterpillar, Inc.	de jure functionality (of product configuration); whether matter asserted for registration has acquired distinctiveness under Sec. 2(f)	Refusal Affirmed (on both grounds)		configuration of a continuous crawler track with an elevated drive sprocket and idler wheels therefor [tractors for earth moving, earth conditioning and material handling; and undercarriage for such tractors]		Yes
5-27	EX	74/301,061	Rio Grande Product, Inc.	2(d)	Refusal Affirmed		"RIO GRANDE" (and design) [dried beans, refried beans, sour cream, sausages, jams, jellies and mango pickles]	"HARRY'S RIO GRANDE" [corn and tortilla chips, taco shells, tortillas, and salsa]	No

(1) EX = EX PARTE APPEAL; OPP = OPPOSITION; CANC = CANCELLATION; CU = CONCURRENT USE; (SJ) = SUMMARY JUDGMENT; (R) = REQ. FOR RECONSIDERATION

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
5-28	EX	74/166,013	Historical Research Center, Inc.	Disclaimer requirement under Sec. 6(a) (of words "THE HISTORICAL RESEARCH CENTER")	Refusal Affirmed (the Board finding the words "THE HISTORICAL RESEARCH CENTER" merely descriptive but not generic)		"THE HISTORICAL RESEARCH CENTER" (and design) [family etymology research services]		No
5-29	EX	74/429,940	Enrich Int'l.	2(d)	Refusal Affirmed		"AEON" (and design) [skin lotions and creams, etc. sold directly to home purchasers and through independent home distributors]	"E'ON 5" (and design) [skin care lotions and creams, etc.]	No
5-30	EX	74/555,396	Schwartz	2(d)	Refusal Affirmed		"OVER THE HILL GANG" [t-shirts, golf shirts, and caps]	"OVER THE HILL GANG" [social club services]	No
5-30	OPP	97,325	Campbell v. Casino Magic Corp.	2(d)	Opposition Dismissed	"MONEY MAGIC" [instructional television series featuring information on personal finances]	"MAGIC MONEY" [entertainment services in the nature of casino services for members through which members accrue points redeemable for prizes]		No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
5-30	OPP	90,706	Talbot Street Pier, Inc. v. Sibiski	2(d); whether, at the time applicants filed their application, they had a bona fide intent to use their mark on all the goods for which they sees to register their mark; abandonment (through improper licensing)	Opposition Dismissed	"M.R. DUCKS" and "M.R. DUCKLINGS" [t-shirts, sweatshirts, hats, caps, shorts, shirts, etc.]	"A.R. FISH" [t-shirts, sweatshirts, hats, caps, shorts, and shirts]		No
5-30	CANC	20,282	Bloch v. Alabama Space Science Exhibit Commission	2(a) (deceptive) [as to "UNITED STATES SPACE CAMP" mark]; genericness [as to "SPACE CAMP" mark]	Petition to Cancel Denied		"UNITED STATES SPACE CAMP" (in stylized letters) [educational and entertainment services, namely operating a camp for boys and girls concerned with science and technology related to space exploration]; "SPACE CAMP" (in stylized letters) [educational services, namely, providing instruction and training relating to science and technology]		No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION

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Box Comments Patents	Public comments regarding patent related regulations and procedures.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or materials related to the Disclosure Document Program.
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Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62).
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Box Missing Parts	Response to the Notice to File Missing Parts of Application and associated papers and fees.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box PATENT APPLICATION	New patent applications and associated papers and fees.
Box Patent Ext.	Applications for patent term extension and any communications relating thereto.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Provisional Patent Application	The filing of all provisional patent applications and any communications relating thereto.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return post card or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

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Box 6	Mail for the Office of Procurement.
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Box 10	Orders for certified copies of PTO documents.
Box 11	Electronic Ordering Service (EOS).
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 16	Deposit Account Replenishment Checks.
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box Assignment	All assignment documents except those filed with new applications.
Box EEO	Mail for the Office of Civil Rights.
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Box M Fee	Correspondence regarding patent maintenance fees and related matter.
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Reference Collections of U.S. Patents and Trademarks Available for Public Use in Patent and Trademark Depository Libraries

The following libraries, designated as Patent and Trademark Depository Libraries (PTDLs), receive patent and trademark information in various formats from the U.S. Patent and Trademark Office. Many PTDLs have on file all full-text patents issued since 1790, trademarks published since 1872, and select collections of foreign patents. All PTDLs have both the patent and trademark sections of the *Official Gazette of the U.S. Patent and Trademark Office*. The full-text utility and design patents are distributed numerically on 16 mm microfilm, and plant patents on color microfiche. Patent and trademark search systems on CD-ROM (Compact Disc-Read Only) format are available at all PTDLs to increase utilization of and enhance access to the information found in patents and trademarks. It is through the CD-ROM systems that preliminary patent and trademark searches can be conducted through the numerically arranged collections.

All information is available for use by the public free of charge.

In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

Since there are variations in the scope of patent and trademark collections among the PTDLs, and their hours of service to the public vary, anyone contemplating use of these collections at a particular library is urged to contact that library in advance about its collections, services, and hours in order to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(334) 844-1747
	Birmingham Public Library	(205) 226-3620
Alaska	Anchorage: Z.J. Loussac Public Library	(907) 562-7323
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7010
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	(415) 557-4500
	Sunnyvale Center for Innovation, Invention and Ideas	(408) 730-7290
Colorado	Denver Public Library	(303) 640-6220
Delaware	Newark: University of Delaware Library	(302) 831-2965
Dist. of Columbia	Washington: Howard University Libraries	(202) 806-7252
Florida	Fort Lauderdale: Broward County Main Library	(954) 357-7444
	Miami-Dade Public Library	(305) 375-2665
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	Tampa Campus Library, University of South Florida	(813) 974-2726
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Hawaii	Honolulu: Hawaii State Public Library System	(808) 586-3477
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 747-4450
	Springfield: Illinois State Library	(217) 782-5659
Indiana	Indianapolis-Marion County Public Library	(317) 269-1741
	West Lafayette Siegesmund Engineering Library, Purdue University	(317) 494-2872
Iowa	Des Moines: State Library of Iowa	(515) 281-4118
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Maine	Orono: Raymond H. Fogler Library, University of Maine	(207) 581-1678
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 405-9157
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Media Union Library, University of Michigan	(313) 647-5735
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Minnesota	Minneapolis Public Library and Information Center	(612) 372-6570
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North Dakota	Grand Forks: Chester Fritz Library, University of North Dakota	(701) 777-4888
Ohio	Akron - Summit County Public Library	(330) 643-9075
	Cincinnati and Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Portland: Paul L. Boley Law Library, Lewis & Clark College	(503) 768-6786
Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Puerto Rico	Mayaquez General Library, University of Puerto Rico	(787) 832-4040 Ext. 3459
Rhode Island	Providence Public Library	(401) 455-8027
South Carolina	Clemson University Libraries	(803) 656-3024
South Dakota	Rapid City: Devereaux Library, South Dakota School of Mines and Technology	(605) 394-1275
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8877
	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2717
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
	Lubbock: Texas Tech University	(806) 742-2282
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Vermont	Burlington: Bailey/Howe Library, University of Vermont	Not Yet Operational
Virginia	Richmond: James Branch Cabell Library, Virginia Commonwealth University	(804) 828-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
West Virginia	Morgantown: Evansdale Library, West Virginia University	(304) 293-2510 Ext. 113
Wisconsin	Madison: Kurt F. Wendt Library, University of Wisconsin Madison	(608) 262-6845
	Milwaukee Public Library	(414) 286-3051
Wyoming	Casper: Natrona County Public Library	(307) 237-4935

PATENT EXAMINING CORPS

BRUCE A. LEHMAN, Commissioner
LAWRENCE J. GOFFNEY Jr., Assistant Commissioner for Patents
EDWARD R. KAZENSKE, Deputy Assistant Commissioner for Patents
STEPHEN G. KUNIN, Deputy Assistant Commissioner for Patent Policy

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, ENGINEERING AND DESIGNS, GROUP 1100—THEODORE MORRIS, Director	308-0661	12/17/95
ORGANIC CHEMISTRY, DRUG, BIO-AFFECTING AND BODY TREATING COMPOSITION, GROUP 1200/2900—JOHN E. KITTLE, Director	308-1235	09/21/95
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—RICHARD V. FISHER, Director	308-0651	10/11/95
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—MARY LEE, Acting Director	308-2351	11/08/95
BIOTECHNOLOGY, GROUP 1800—JOHN J. DOLL, Director	308-0196	03/24/95
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—STEWART LEVY, Director	308-1782	05/05/95
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	04/30/95
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—JOSEPH J. ROLLA, Director	305-3900	07/10/95
SPECIAL COMPUTER APPLICATIONS: COMPUTER GRAPHICS, BUSINESS PRACTICES, & DIAGNOSTIC TESTING, GROUP 2400—GERALD GOLDBERG, Director	305-3900	07/20/95
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	07/08/95
TELECOMMUNICATIONS, GROUP 2600—NICHOLAS P. GODICI, Director	305-3900	05/14/95
DESIGN, GROUP 2900—JOHN E. KITTLE, Director	308-0661	05/03/95
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—JOHN F. TERAPANE, JR., Director	308-1113	09/13/95
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—ETHEL CROSS, Director	308-1148	08/20/95
MEDICAL INSTRUMENTS, DIAGNOSTIC EQUIPMENT AND TREATMENT DEVICES; SURGERY AND SURGICAL SUPPLIES; AMUSEMENT AND EXERCISING DEVICES; ANIMAL HUSBANDRY; SPORTING GOODS; TOBACCO PRODUCTS AND MANUFACTURING EQUIPMENT; AND PRINTING, GROUP 3300—J.J. LOVE, Director	308-0858	10/13/95
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	08/15/95
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-2168	11/20/95

*A communication from the examiner should have been received in most applications filed prior to this date.

Patents will Expire as Follows:
(1) The term of any utility or plant patent that is in force on or results from an application filed before June 8, 1995 is the greater of the 20 year term provided in 35 U.S.C. 154(a)(2) or 17 years from grant subject to any terminal disclaimers. 35 U.S.C. 154(c)(1).
(2) All utility and plant patents granted on applications having an actual United States filing date on or after June 8, 1995 are granted for a term which begins on the date on which the patent is granted and ends 20 years from the date on which the application was filed in the United States. If the application contains a specific reference to an earlier application under 35 U.S.C. 120, 121 or 365(c), the patent term ends twenty years from that date on which the earliest application was filed. 35 U.S.C. 154(a)(2).
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However, the term of any patent may have been curtailed by disclaimer under the provisions of 35 U.S.C. 153, have lapsed due to failure to pay maintenance fees, or have been extended under the provisions of 35 U.S.C. 154, 155, or 156. Thus, if more reliable information is needed with respect to a particular patent, then the specific patent file should be reviewed to determine the actual date of patent expiration.

TRADEMARK OPERATION

Bruce A. Lehman, Commissioner
Philip G. Hampton, II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Office
Condition of Trademark Applications as of June 1, 1997

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 101—Ron Williams, Managing Attorney, (703) 308–9101—4th Floor Foods, Beverages, Wines & Spirits—Int. Classes 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/09/96	03/06/97
Law Office 102—Myra Kurzbard, Managing Attorney, (703) 308–9102—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/25/96	03/03/97
Law Office 103—Michael A. Szoke, Acting Managing Attorney, (703) 308–9103—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/31/96	05/15/97
Law Office 104—Sidney Moskowitz, Managing Attorney, (703) 308–9104—6th Floor Unwrought metals, Industrial Equipment, Tools, Installation, Vehicles, Firearms, Musical Instruments, Building Materials & Floor Coverings—Int. Classes 6, 7, 8, 11, 12, 13, 15, 19, 27 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/15/96	03/05/97
Law Office 105—Thomas Howell, Managing Attorney, (703) 308–9105—6th Floor Chemicals, Paints, Lubricants, Pharmaceuticals, Medical Apparatus & Tobacco—Int. Classes 1, 2, 4, 5, 10, 34 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/14/96	04/07/97
Law Office 106—Mary Sparrow, Managing Attorney, (703) 308–9106—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/01/96	01/30/97
Law Office 107—Thomas Lamone, Managing Attorney, (703) 308–9107—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/06/97	03/27/97
Law Office 108—David Shallant, Managing Attorney, (703) 308–9108—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/08/96	02/20/97
Law Office 109—Deborah Cohn, Managing Attorney, (703) 308–9109—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/13/97	04/17/97
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Terron Simms, Director, (703) 308-9100 Trademark Assistance Center—(703) 308-9000 Pre-Examination—Alan Lambert, Supervisor, (703) 308-9401 ext. 188 Intent-To-Use—(ITU)—(703) 308-9500 Post Registration Section—Mary Bowman, Supervisor, (703) 308-9500 ext. 126		
Affidavits Under Sections 8 & 15 (All Classes)	05/06/97	—0—
Renewals (All Classes)	05/05/97	—0—
Section 12(c) Publications (All Classes)	03/13/97	—0—

1. ** Assigned to all Law Office

2. Applicants with inquiries concerning the status of their applications and a touch telephone should call (703) 305–8747 from 6:30 a.m. to Midnight EST, Monday through Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquiries concerning the status of their applications. See SECTION 411 of the TRADEMARK MANUAL OF EXAMINING PROCEDURE.

3. * These dates identify the oldest unassigned new case in each Law Office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examining attorney.

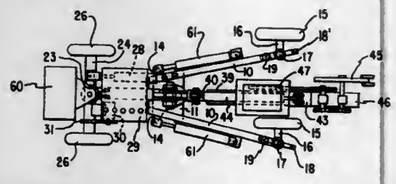
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REEXAMINATIONS

JULY 15, 1997

Matter enclosed in heavy brackets **[ ]** appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,690,183 (3263rd)
SELF-PROPELLED STUMP CUTTER
Donald M. Eilertson, 1109 Trinidad La., Garland, Tex. 75040
Reexamination Request No. 90/003,622, Nov. 4, 1994.
Reexamination Certificate for Patent 4,690,183, issued Sep. 1, 1987, Ser. No. 791,734, Oct. 28, 1985.
Int. Cl.[6] A01G *23/06*
U.S. Cl. 144—24.12



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **2**, **4–11** and **13–16** is confirmed.

Claims **1**, **3** and **12** are cancelled.

PG,3

14. A cutting wheel for a stump cutter comprising:

a disk;

a first set of cutting teeth mounted to each side of the cutting disk in opposing pairs, wherein each one of said first set of cutting teeth is positioned parallel to the plane of the cutting wheel; and

a second set of cutting teeth mounted between each side of the cutting disk in opposing pairs, wherein each one of said second set of cutting teeth is positioned in the same plane as the cutting wheel and embedded in the cutting wheel, and further wherein each opposing pair of said second set provides a cutting surface substantially the width of the cutting wheel, such that said first set and said second second set provide a continuous cutting surface across the width of the cutting wheel.

B1 4,933,188 (3264th)
CHEWING GUM COMPOSITION WITH IMPROVED PHYSICAL STABILITY
Subraman R. Cherukuri, Towaco, N.J.; Lucy L. Wong, Jackson Heights; Daniel A. Orlandi, Flushing, both of N.Y., and Steven M. Faust, Stanhope, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.
Reexamination Request No. 90/003,879, Jul. 14, 1995,
Reexamination Certificate for Patent 4,933,188, issued Jun. 12, 1990, Ser. No. 139,998, Dec. 31, 1987.
Int. Cl.[6] A23G *3/30*
U.S. Cl. 426—3

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

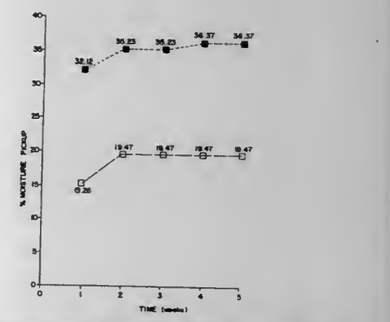
The patentability of claims **1–6** is confirmed.

Claim **7** is determined to be patentable as amended.

1. A sugarless, substantially anhydrous chewing gum composition comprising in weight percent:

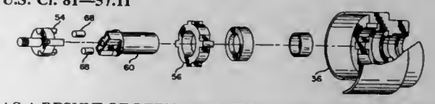
(a) a gum base in an amount of from about 10% to about 75%; and

(b) a low-moisture pick-up, texturizing sweetening/bulking agent consisting essentially of maltitol in an amount from about 28% to about 58% by weight;



(c) wherein said maltitol provides to the gum composition textural integrity, a soft chew characteristic over a period of time, and reduced moisture pick-up, and maintains the gum composition in its substantially anhydrous state.

B1 5,016,501 (3265th)
AUTOMATIC SHAFT LOCK
Michael Holzer, Jr., Chicago, Ill., assignor to S-B Power Tool Company, Chicago, Ill.
Reexamination Request No. 90/003,651, Dec. 1, 1994.
Reexamination Certificate for Patent 5,016,501, issued May 21, 1991, Ser. No. 226,366, Jul. 29, 1988.
Int. Cl.[6] B25B *17/00*
U.S. Cl. 81—57.11



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–10** are cancelled.

PG,3

[1. An automatic shaft lock for a power tool having a housing and a motor disposed within the housing to rotate an implement, the automatic shaft lock preventing rotation of the implement with respect to the housing when torque is applied to the implement or to the housing, the automatic shaft lock comprising:

a locking ring fixed to the housing and defining an annular space;

a spindle shaft at least partially contained in the housing and rotatably supported in the housing, the spindle shaft having an end projecting into the annular space of the locking ring, the spindle end having at least one flat side partially bisecting the annular space;

a single wedging pin located between each flat side of the spindle end and the locking ring such that slight rotational movement of one of the spindle end and the locking ring causes the wedging pin to be wedged between the flat side and the locking ring;

an output shaft at least partially contained in the housing and rotatably supported in the housing, the output shaft having at least one pair of elements projecting into the annular space, the output shaft being slightly rotatably movable relative to the spindle end such that when the output shaft is driven in either direction one element of the pair drives the spindle end at one of the flat sides while the other element of each pair

traps the wedging pin in a position in which it will not wedge between the flat side of the spindle end and the locking ring.]

B2 5,091,171 (3266th)

AMPHOTERIC COMPOSITIONS AND POLYMERIC FORMS OF ALPHA HYDROXYACIDS, AND THEIR THERAPEUTIC USE

Ruey J. Yu, Ambler, and Eugene J. Van Scott, Abington, both of Pa., assignors to Tristrata Technology, Inc., Wilmington, Del.

Reexamination Request No. 90/004,430, Oct. 28, 1996.
Reexamination Certificate for Patent 5,091,171, issued Feb. 25, 1992, Ser. No. 393,749, Aug. 15, 1989.
Reexamination Certificate B1 5,091,171, issued Sep. 26, 1996.
Continuation-in-part of Ser. No. 945,680, Dec. 23, 1986, abandoned, and a continuation of Ser. No. 469,738, Jan. 19, 1990.
Int. Cl.[6] A61K *31/66;31/70;31/19*
U.S. Cl. 424—642

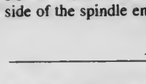
AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–7, 9–11** and **13–27** is confirmed.

Claims **8** and **12** were previously cancelled.

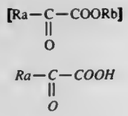
1. A composition consisting essentially of an amphoteric or pseudoamphoteric agent and an alpha hydroxyacid, an alpha ketoacid or a related compound present in a therapeutically effective amount in a topically acceptable vehicle for topical treatment of cosmetic conditions or dermatologic disorders, said amphoteric or pseudoamphoteric agent being at least one member selected from the group consisting of dipeptides, creatine, aminoaldonic acid, lauryl aminopropylglycine, aminoaldaric acids, neuraminic acid, disulfated heparin, deacetylated hyaluronic acid, hyalobiuronic acid, chondrosine, deacetylated chondroitin, creatinine, cocoamphoglycine, cocoamphopropionate, cocoamphopropylsulfonate, phosphatidyl ethanolamine, glycine, alanine, valine, leucine, isoleucine, serine, threonine, cysteine, cystine, methionine, asparagine, glutamine, arginine, lysine, 5-hydroxylysine, histidine, phenylalanine, tyrosine, tryptophan, 3-hydroxyproline, 4-hydroxypropoline, proline, homocysteine, homocystine, homoserine,ornithine, citrulline, phosphatidylserine and sphingomyelin, said amphoteric or pseudoamphoteric agent being present in a concentration effective to form an amphoteric or pseudoamphoteric system with said alpha hydroxyacid, alpha ketoacid or related compound;

said alpha hydroxyacid being at least one member selected from the group consisting of alkyl alpha hydroxyacid, aralkyl and aryl alpha hydroxyacid, polyhydroxy alpha hydroxyacid and polycarboxylic alpha hydroxyacid having the following chemical structure:



wherein Ra and Rb independently are H, F, Cl, Br, alkyl, aralkyl or aryl group of saturated or unsaturated, isometric or non-isomeric, straight or branched chain, having 1 to 25 carbon atoms, or cyclic form having 5 or 6 ring members, and in addition Ra and Rb may carry OH, CHO, COOH and alkoxy group having 1 to 9 carbon atoms, said alpha hydroxyacid existing as a free acid or lactone form, or in salt form with an organic base or an inorganic alkali, and as stereoisomers as D, L, and DL forms when Ra and Rb are not identical;

said alpha ketacid being at least one member selected from a group of compounds represented by the following chemical structure:



wherein Ra is H, alkyl, aralkyl or aryl group of saturated or unsaturated, isomeric or non-isomeric, straight or branched chain, having 1 to 25 carbon atoms, or cyclic form having 5 to 6 ring members, and in addition Ra may carry F, Cl, Br, I, OH, CHO, COOH and alkoxy group having 1 to 9 carbon atoms, said alpha ketoacid existing as a free acid or in a salt form with an organic base or an inorganic alkali; and

said related compound being at least-one member selected from the group consisting of ascorbic acid, quinic acid, isocitric acid, tropic acid, trethocanic acid, 3-chlorolactic acid, aleuritic acid and pantoic acid.

B1 5,293,825 (3267th)

TV TABLE

Ford B. Cauffiel, 4126 Nantucket Dr., Toledo, Ohio 43623

Reexamination Request No. 90/003,886, Jul. 3, 1995.
Reexamination Certificate for Patent 5,293,825, issued Mar. 15, 1994, Ser. No. 950,142, Sep. 24, 1992.
Int. Cl.[6] A47B *23/00*
U.S. Cl. 108—49



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **8**, **9** and **10** is confirmed.

Claims **1**, **2**, **3**, **4**, **5** and **7** are cancelled.

Claim **6** is determined to be patentable as amended.

New claims **11–14** are added and determined to be patentable.

6. In combination, a table assembly and a chair, said *table* assembly comprising stablizing means defined by *a an elongate* base plate having a bottom surface defining a floor engaging means for contacting a floor under the chair, *said elongate base plate being of uniform thickness throughout its width and length, said base plate having a narrow rear portion and a wide forward portion,* an upright post, first means *located toward an outer edge of said wide portion away from the chair for* extending upwardly from said *elongate* base plate to support a lower end of said *upright* post on said *elongate base* plate, said *upright* post being pivotal on a vertical axis relative to said first means and said *elongate base* plate, a table having an upper flat surface and being elongate in shape and of ample size to hold food, second means extending downwardly from an end portion of said table to support said table on an upper end of said *upright* post so that said table is pivotable in a horizontal plane relative to said *elongate* base plate, and means associated with said *upright* post to adjust the height of said table relative to said *elongate* base plate.

B1 5,360,489 (3268th)

METHOD OF REMOVING CAULK

Kimberley A. Gaul, St. Paul, and Judith M. Jensen, White Bear Lake, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Reexamination Request No. 90/004,468, Nov. 26, 1996.
Reexamination Certificate for Patent 5,360,489, issued Nov. 1, 1994, Ser. No. 951,159, Sep. 25, 1992.
Int. Cl.[6] B08B *7/00*
U.S. Cl. 134—42

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **9** is determined to be patentable as amended.

The patentability of claims **1–8**, **10** and **11** is confirmed.

1. A method of removing a caulk from a substrate comprising the following steps:

a. providing a water-based composition comprising

i.) a sufficient amount of an organic solvent or a mixture of two or more organic solvents, said solvent or, in the case of a mixture of organic solvents, said mixture having a ϵ_T of at least about 8.4, a ϵ_P greater than about 3 and a ϵ_H greater than about 2, the open cup flash point of each organic solvent contained in said composition being greater than 100° F. (37.7° C.);

ii.) and water wherein said organic solvent or said mixture of organic solvents being present in an amount sufficient for said composition to be effective in removing caulk;

b. applying said composition to said substrate and allowing it to remain in contact therewith for a time sufficient to soften or dissolve said caulk; and

c. removing said caulk from said substrate.

B1 5,385,938 (3269th)

METHOD OF USING GLYCOLIC ACID FOR TREATING WRINKLES

Ruey J. Yu, Ambler, and Eugene J. Van Scott, Abington, both of Pa., assignors to Tristrata Incorporated, Princeton, N.J.

Reexamination Request No. 90/004,431, Oct. 28, 1996.
Reexamination Certificate for Patent 5,385,938, issued Jan. 31, 1995, Ser. No. 925,877, Aug. 7, 1992.
Continuation of Ser. No. 840,149, Feb. 24, 1992, abandoned, which is a division of Ser. No. 393,749, Aug. 15, 1989, Pat. No. 5,091,171, which is a continuation-in-part of Ser. No. 945,680, Dec. 23, 1986, abandoned.
Int. Cl.[6] A61K *31/19;7/48*
U.S. Cl. 514—557

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–15** is confirmed.

1. Method of visibly reducing a human skin wrinkle comprising topically applying to said wrinkle a composition comprising 2-hydroxyethanoic acid (glycolic acid), or a topically effective salt thereof, in an amount and for a period of time sufficient to visibly reduce said wrinkle, wherein said wrinkle is a facial wrinkle.

B1 5,389,677 (3270th)

METHOD OF TREATING WRINKLES USING GLYCALIC ACID

Ruey J. Yu, Ambler, and Eugene J. Van Scott, Abington, both of Pa., assignors to Tristrata, Incorporated, Princeton, N.J.

Reexamination Request No. 90/004,432, Oct. 28, 1996.
Reexamination Certificate for Patent 5,389,677, issued Feb. 14, 1995, Ser. No. 89,101, Jul. 12, 1993.
Division of Ser. No. 8,223, Jan. 22, 1993, which is a continuation of Ser. No. 812,858, Dec. 23, 1991, abandoned, which is a continuation of Ser. No. 469,738, Jan. 19, 1990, abandoned, which is a continuation of Ser. No. 945,680, Dec. 23, 1986, abandoned.
The portion of the term of this patent subsequent to Feb. 25, 2009, has been disclaimed.
Int. Cl.[6] A61K *31/19;7/48*
U.S. Cl. 514—557

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–10** is confirmed.

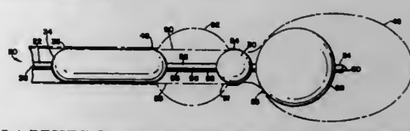
1. Method of visibly reducing a human skin wrinkle comprising topically applying to said wrinkle a composition comprising 2-hydroxyethanoic acid (glycolic acid), or a topically effective salt thereof, in an amount and for a period of time sufficient to visibly reduce said wrinkle.

B1 5,419,763 (3271st)

PROSTATIC DRUG-DELIVERY CATHETER

Keith R. Hildebrand, Houlton, Wis., assignor to CorTrak Medical, Inc., Roseville, Minn.

Reexamination Request No. 90/003,994, Oct. 6, 1995.
Reexamination Certificate for Patent 5,419,763, issued May 30, 1995, Ser. No. 177,332, Jan. 4, 1994.
Int. Cl.[6] A61M *31/00*
U.S. Cl. 604—54



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **5–9** are cancelled.

Claim **1** is determined to be patentable as amended.

Claims **2–4**, dependent on an amended claim, are determined to be patentable.

New claims **10–16** are added and determined to be patentable.

1. A method of delivering fluid to a prostate gland of a patient, the method comprising the steps of:

a) positioning a portion of a catheter within the prostatic urethra; the portion of the catheter within the prostatic urethra having a diameter less than the diameter of the prostatic urethra;

b) isolating the prostatic urethra from the membranous urethra and the urinary bladder;

c) delivering fluid through the catheter to the prostatic urethra *after the prostatic urethra is isolated*, wherein most of the fluid is retained within the prostatic urethra; and

d) pressurizing the fluid in the prostatic urethra to transport the fluid into the prostate gland.

B1 5,422,370 (3272nd)

METHOD OF USING 2-HYDROXYPROPANOIC ACID (LACTIC ACID) FOR THE TREATMENT OF WRINKLES

Ruey J. Yu, Ambler, and Eugene J. Van Scott, Abington, both of Pa., assignors to Tristrata Technology, Inc., Wilmington, Del.

Reexamination Request No. 90/004,434, Oct. 28, 1996.
Reexamination Certificate for Patent 5,422,370, issued Jun. 6, 1995, Ser. No. 179,189, Jan. 10, 1994.
Continuation of Ser. No. 89,101, Jul. 12, 1993, which is a division of Ser. No. 8,223, Jan. 22, 1993, which is a continuation of Ser. No. 812,858, Dec. 23, 1991, abandoned, which is a continuation of Ser. No. 469,738, Jan. 19, 1990, abandoned, which is a continuation of Ser. No. 945,680, Dec. 23, 1986, abandoned.
The portion of the term of this patent subsequent to Feb. 25, 2009, has been disclaimed.
Int. Cl.[6] A61K *31/19;7/48*
U.S. Cl. 514—557

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–11** is confirmed.

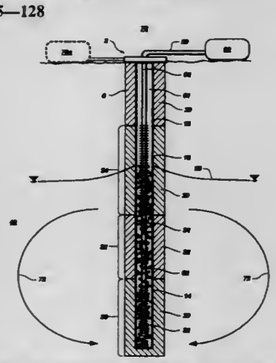
1. Method of visibly reducing a human skin wrinkle comprising topically applying to said wrinkle 2-hydroxypropanoic acid (lactic acid), or a topically effective salt thereof, in an amount and for a period of time sufficient to visibly reduce said wrinkle.

B1 5,425,598 (3273rd)

SYSTEM FOR SPARGING GROUND WATER CONTAMINANTS

Leslie H. Pennington, 852 E. Windsor La., Bountiful, Utah 84010

Reexamination Request No. 90/004,290, Jun. 28, 1996.
Reexamination Certificate for Patent 5,425,598, issued Jun. 20, 1995, Ser. No. 105,756, Aug. 12, 1993.
Int. Cl.[6] B09B *1/00*
U.S. Cl. 405—128



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–8** is confirmed.

New claims **9–22** are added and determined to be patentable.

1. A system for sparging ground water utilizing a borehole which extends from the ground surface downwardly below a water table surface, comprising

well means disposed in the borehole, and including a liquid permeable lower sidewall disposed at a first location below the water table surface, a liquid impermeable central sidewall disposed at a second location above the first location, but below the water table surface, and a liquid permeable upper sidewall disposed at a third location above the second location and at least a portion of which is located below the water table surface, and

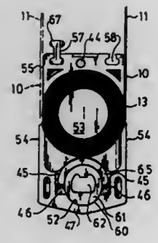
an injection tube disposed to extend downwardly in the well means to a lower end termination located adjacent the lower sidewall of the well means, for injecting gas under pressure out a lower end of the tube to thereby produce frothing in water in the well means which draws in more water through the lower sidewall, carries it upwardly and out the upper sidewall.

B1 5,463,793 (3274th)

SASH SHOE SYSTEM FOR CURL SPRING WINDOW BALANCE

Norman R. Westfall, Rochester, N.Y., assignor to Caldwell Manufacturing Company, Rochester, N.Y.

Reexamination Request No. 90/004,310, Jul. 17, 1996.
Reexamination Certificate for Patent 5,463,793, issued Nov. 7, 1995, Ser. No. 280,491, Jul. 26, 1994.
Division of Ser. No. 40,457, Apr. 1, 1993, Pat. No. 5,353,548.
Int. Cl.[6] E05F *1/08;* E05D *13/00*
U.S. Cl. 16—197



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–7**, and **13–38** is confirmed.

Claims **10** and **43** are cancelled.

Claims **8**, **39** and **40** are determined to be patentable as amended.

Claims **9**, **11**, **12**, **41**, and **42**, dependent on an amended claim, are determined to be patentable.

8. A sash shoe for engaging a sash and moving with the sash so that the shoe transmits to **[**thee**]** *the* sash an upwardly biased counterbalance lifting force; the sash shoe comprising:

a. the shoe holding a sash **[**connection**]** *pin receiver* and curled convolutions of a curl spring arranged so that an uncurled length of the curl spring can extend upward from the shoe;

b. a companion carrier retaining a companion curl spring arranged so that an uncurled length of the companion curl spring can extend upward from the companion carrier; **[**and**]**

c. the curl spring and the companion curl spring being fastened above the companion carrier so that the curling tendencies of the springs tending to curl up any uncurled lengths of the spring are combined to provide the lifting force for the shoe**[**.**]***; and*

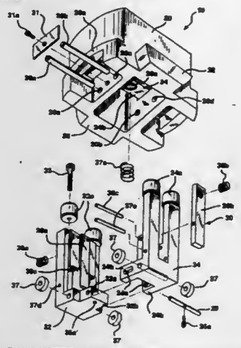
d. *the sash pin receiver being arranged below the curl spring.*

B1 5,479,762 (3275th)

CARRIER PUCK

Gary S. Bliss, Beavercreek, Ohio, assignor to Dowbrands L.P., Indianapolis, Ind.

Reexamination Request No. 90/004,304, Jul. 22, 1996.
Reexamination Certificate for Patent 5,479,762, issued Jan. 2, 1996, Ser. No. 239,018, May 6, 1994.
Int. Cl.[6] B65B *7/28*
U.S. Cl. 53—490



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–16** is confirmed.

Claim **17** is cancelled.

PG,3

1. A puck for releasably gripping a closure element to be moved along a predetermined path and mated to a container in combination with drive apparatus, said puck comprising:

a main body adapted to be moved by a transport device along said predetermined path; and

a gripper assembly associated with said main body for releasably gripping said closure element prior to and during mating with said container, said gripper assembly including at least one support arm having at least one gripper member rotatably mounted thereon for engaging said closure element and being rotatable independently of said support arm and driven by the drive apparatus relative to said support arm so as to effect rotation of said closure element to permit said closure element to mate with said container.

B1 5,498,676 (3276th)

PROCESS FOR OLEFIN POLYMERIZATION

Stanley E. Wilson, Houston, and Richard A. Kemp, Stafford, both of Tex., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Reexamination Request No. 90/004,341, Aug. 21, 1996.
Reexamination Certificate for Patent 5,498,676, issued Mar. 12, 1996, Ser. No. 367,651, Jan. 3, 1995.
Division of Ser. No. 193,302, Feb. 8, 1994, Pat. No. 5,411,926, which is a continuation of Ser. No. 969,652, Oct. 30, 1992, abandoned.
Int. Cl.[6] C08F *4/44;* B01J *31/38*
U.S. Cl. 526—122

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1** and **3** are determined to be patentable as amended.

Claims **2** and **4–10**, dependent on an amended claim, are determined to be patentable.

New claims **11–14** are added and determined to be patentable.

PG,3

1. A process of polymerizing one or more α-olefins by contacting the one or more α-olefins under polymerization conditions with a catalyst produced by contacting:

(a) an olefin polymerization procatalyst obtained by contacting

(i) a procatalyst precursor wherein the procatalyst is formed by contacting at an elevated temperature from about 40° C. to about 150° C., a carbonated magnesium alkoxide of the general formula

$$Mg(OC(=O)-OR)_x(OR)_{2-x}$$

wherein R is a hydrocarbyl group having up to 12 carbon atoms and x is a number from about 0.1 to about 2; and at least one halogenating compound selected from the group consisting of non-transition metal halogenated compounds which are aluminum trichloride, diethylaluminum chloride, and tin tetrachloride, and non-metallic halogenated compounds which are thionyl chloride, hydrogen chloride, **[**oxayl**]** *oxalyl* chloride, carbonyl chloride, boron trichloride, *and* phosphorous oxychloride **[**and carbon tetrachloride**]**;

(ii) a tetravalent titanium halide, and

(iii) an electron donor;

(b) organoaluminum cocatalyst; and

(c) a selectivity control agent.

B1 5,547,988 (3277th)

ALLEVIATING SIGNS OF DERMATOLOGICAL AGING WITH GLYCOLIC ACID, LACTIC ACID OR CITRIC ACID

Ruey J. Yu, Ambler, and Eugene J. Van Scott, Abington, both of Pa., assignors to Tristrata Technology, Inc., Wilmington, Del.

Reexamination Request No. 90/004,435, Oct. 28, 1996.
Reexamination Certificate for Patent 5,547,988, issued Aug. 20, 1996, Ser. No. 359,939, Dec. 20, 1994.
Continuation of Ser. No. 117,559, Sep. 7, 1993, abandoned, which is a continuation of Ser. No. 936,863, Aug. 27, 1992, abandoned, which is a continuation of Ser. No. 683,437, Apr. 10, 1991, abandoned, which is a continuation-in-part of Ser. No. 469,738, Jan. 19, 1990, abandoned, which is a continuation of Ser. No. 945,680, Dec. 23, 1986, abandoned, and a continuation-in-part of Ser. No. 393,749, Aug. 15, 1989, Pat. No. 5,091,171.
Int. Cl.[6] A61K *7/48;31/19*
U.S. Cl. 514—557

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–14** is confirmed.

1. A method for reducing the appearance of skin changes associated with intrinsic and/or extrinsic aging, said skin changes associated with aging resulting from natural or innate aging or exposure to actinic radiation,

whereby said skin changes associated with aging are selected from the group consisting of wrinkles, thinning of the skin, deepening of skin lines, yellowish skin, loss of elasticity, loss of recoilability, and loss of collagen,

said method comprising topically applying to an area of skin exhibiting said change a composition comprising a compound selected from the group consisting of glycolic acid, lactic acid, citric acid, or a topically effective salt thereof, in an amount and for a period of time sufficient to reduce the appearance of said skin changes associated with aging.

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 35,559

BAG FILTERING UNIT FOR THE DEHYDRATION OF SLUDGES WITH A SUPPORTED VIBRATING DEVICE

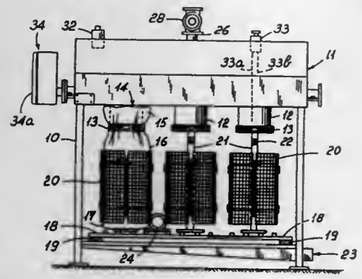
Graziano Lagreca, Via Mantegna, 62/a, I-20096 Pioltello (Province of Milan), Italy

Original No. 5,158,672, dated Oct. 27, 1992, Ser. No. 736,883, Jul. 29, 1991. Application for reissue Oct. 5, 1994, Ser. No. 318,268

Claims priority, application Italy, Feb. 21, 1991, MI91A0458

Int. Cl.[6] B01D *29/13;35/20*

U.S. Cl. 210—232 **10 Claims**



8. A unit constructed and arranged for dehydration of sludges comprising:

a support structure (10),

a collection reservoir (11) for said sludges located above said support structure (10) and having at least one discharge outlet (12) below,

at least one bag-shaped filtering container (14) having a tubular wall (16), an opening engageable to said discharge outlet (12) and a closed bottom (17) opposite to said opening,

a support grid (18) supporting said closed bottom (17) supported by said support structure (10),

for each said filtering container, there being an openable cage (20) substantially surrounding and circumferentially supporting said tubular wall (16) of said filtering container (14) and having hinged sections which are swingable laterally to open said cage (20),

feeding means (25) for feeding said sludges into said collection reservoir (11); and

collection means (23) for collecting filtered liquids from said at least one filtering container (14) and positioned underneath of said support grid (18).

Re. 35,560

FLUID STRAINER AND METHOD OF CONVERTING THE SAME BETWEEN MOTORIZED AND MANUAL MODES WITH PRESSURE-SENSITIVE SWITCH

James K. Simonelli, Maysville, Ky., and Alan J. Kuntz, Valleyview, Ohio, assignors to Vesper Corporation, Newtown Square, Pa.

Original No. 5,194,160, dated Mar. 16, 1993, Ser. No. 745,875, Aug. 16, 1991. Application for reissue Mar. 15, 1995, Ser. No. 404,705

Int. Cl.[6] B01D *46/46;* **B23P** *6/00;* **F16H** *1/16*

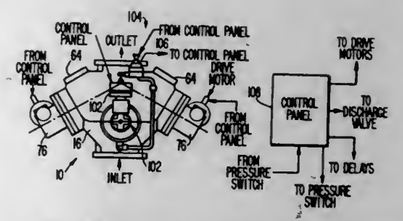
U.S. Cl. 210—741 **12 Claims**

10. A method of converting a fluid strainer form manual operation to motorized operation comprising the steps of:

providing a fluid strainer apparatus adapted to be coupled to a fluid line for removing solid debris suspended in the fluid, wherein the strainer comprises a housing assembly defining a fluid inlet means and at least an outlet means for discharging the fluid, a fluid straining means which includes a cylindrical screen rotatably mounted in the housing assembly, a rotatable drive shaft journalled in the housing assembly and coupled to the screen so as to rotate the screen in response to rotation of the drive shaft, and a handwheel attached to an end of the drive shaft protruding from the housing assembly;

removing the handwheel from the shaft; and

attaching a motor means to the housing assembly wherein the motor means includes a motorized gear unit including a driving gear rotatably driven by a motor and being in meshing engagement with a driven gear, said driven gear including a passage for coaxially receiving a portion of the drive shaft protruding from the housing assembly, said driven gear being coupled to and rotatable with the drive shaft and with an additional housing assembly enclosing the drive gear, the driven gear, and the portion of the drive shaft protruding from the housing assembly and coaxially received by the passage of the driven gear.



Re. 35,561

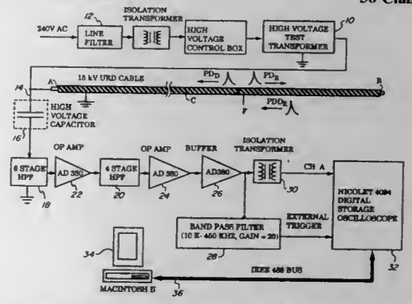
METHOD AND APPARATUS FOR THE DETECTION AND LOCATION OF FAULTS AND PARTIAL DISCHARGES IN SHIELDED CABLES

Matthew S. Mashikian, Storrs; Robert B. Northrop, Chaplin; Rajeev Bansal, Willington, all of Conn., and Francesco Palmieri, Capua, Italy, assignors to The University of Connecticut, Storrs, Conn.

Original No. 5,272,439, dated Dec. 21, 1993, Ser. No. 839,914, Feb. 21, 1992. Application for reissue Mar. 6, 1995, Ser. No. 399,190

Int. Cl.[6] G01R *31/11*

U.S. Cl. 324—520 **36 Claims**



1. In a method for locating an incipient fault at a point along the length of an insulated power line, the steps comprising:

(a) applying an excitation voltage at an open end of said power line to produce a partial discharge signal pulse at a fault in the power line;

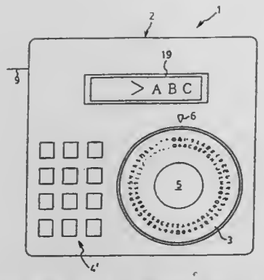
(b) passing said partial discharge signal pulse transmitted along said power line to [an] *said* open end of the line through a high pass filter to remove the portion of said signal pulse which is at a frequency below the excitation voltage and its harmonics;
(c) amplifying the filtered signal pulse to produce an amplified signal pulse;
(d) passing the amplified signal pulse through a band pass filter to remove a high frequency portion of the signal containing a large proportion of noise relative to the partial discharge signal pulse occupying the same frequency band and to [provide] *produce* a doubly filtered signal pulse;
(e) passing the doubly filtered signal pulse from the band pass filter to a digital storage device triggered by a doubly filtered signal pulse of a predetermined amplitude;
(f) triggering said digital storage device by a doubly filtered signal pulse of at least said predetermined amplitude, said device when triggered receiving said amplified signal pulse directly from said amplification step and storing digital data concerning amplitude and time of said peaks of the amplified signal pulse for a predetermined period of time; and
(g) processing the stored digital data to identify the peaks reflecting the point of partial discharge in said power line.

Re. 35,562

TAPE PRINTER HAVING SPACING FUNCTION

Kazuhisa Hirono, Nagoya; Yasuyo Ooshio, and Takashi Ito, both of Nogoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Original No. 5,230,572, dated Jul. 27, 1993, Ser. No. 831,996, Feb. 6, 1992. Application for reissue Jul. 25, 1995, Ser. No. 506,648
Claims priority, application Japan, Mar. 28, 1991, 3-91491
Int. Cl.[6] B41J *19/14*
U.S. Cl. 400—3 **54 Claims**



1. A tape printer for printing characters onto a print medium tape in accordance with input data comprising

a continuous supply of print medium tape; input means for inputting character code data and command code data;
an input data buffer for storing the input code data;
a printing head for printing characters onto the print medium tape;
driving means for driving the printing head by successively receiving the code data from the input data buffer;,
printing length setting means for [inputting one of a plurality of measurements of] *setting* a desired line length across which the input characters are to be printed onto the print medium tape;
character spacing determining means for receiving the code data from the input data buffer and line length measurement set by the printing length setting means, and for determining a character spacing value so that the input characters are evenly spaced across an entire printable length of the line length measurement; and
spacing controlling means for receiving the character spacing value determined by the character spacing determining means and controlling the driving means in order to provide the determined character spacing value between characters when the characters are printed by the printing head.

PLANT PATENTS

GRANTED JULY 15, 1997

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

9,959

NECTARINE TREE "RUBY PEARL"

Lowell Glen Bradford, 12439 E. Savana Rd., and Norman G. Bradford, 11875 E. Savana Rd., both of Le Grand, Calif. 95333

Filed Apr. 29, 1996, Ser. No. 638,834
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—40.1 **1 Claim**

1. A new and distinct variety of nectarine tree, substantially as illustrated and described, that is most similar to its pollen parent, the June Pearl (U.S. Plant Pat. No. 9,360), by producing white flesh clingstone nectarines that are subacidic in flavor, medium in size, full red in skin color and virtually free from red texture bleeding, but is distinguished therefrom and an improvement thereon by producing fruit that ripens about two weeks later, that is firmer in texture, that is sweeter in flavor, and that is less prone to a protruding tip at the apex.

9,960

NECTARINE TREE 'GRAND PEARL'

Lowell Glen Bradford, 12439 E. Savana Rd., and Norman G. Bradford, 11875 E. Savana Rd., both of Le Grand, Calif. 95333

Filed May 6, 1996, Ser. No. 642,892
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—40.1 **1 Claim**

1. A new and distinct variety of nectarine tree, substantially as illustrated and described, that is most similar to its pollen parent, the June Pearl (U.S. Plant Pat. No. 9,360), by producing white flesh clingstone nectarines that are subacidic in flavor, medium in size, full red in skin color and almost free of red texture bleeding, but is distinguished therefrom and an improvement thereon by producing fruit that ripens about four weeks later, that is firmer in texture, that is sweeter in flavor, and that is less prone to protruding at the apex.

9,961

NECTARINE TREE 'FIRE SWEET'

Lowell Glen Bradford, 12439 E. Savana Rd., and Norman G. Bradford, 11875 E. Savana Rd., both of Le Grand, Calif. 95333

Filed May 9, 1996, Ser. No. 647,104
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—41.1 **1 Claim**

1. A new and distinct variety of nectarine tree, substantially as illustrated and described, which is most similar to its seed parent, the Summer Fire (U.S. Plant Pat. No. 7,506), by producing yellow flesh clingstone nectarines that are nearly full red in skin color and very firm in texture, but is distinguished therefrom and an improvement thereon by producing fruit that is subacidic rather than acidic in flavor, that ripens about 6 days later, that is more globose in shape, and that has a bitter kernel instead of sweet.

9,962

NECTARINE TREE 'SPRING SWEET'

Lowell Glen Bradford, 12439 E. Savana Rd., and Norman G. Bradford, 11875 E. Savana Rd., both of Le Grand, Calif. 95333

Filed May 28, 1996, Ser. No. 654,082
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—41.1 **1 Claim**

1. A new and distinct variety of nectarine tree, substantially as illustrated and described, which is most similar to its seed parent, the Kay Diamond (U.S. Plant Pat. No. 8,923) nectarine by producing fruit that is yellow in flesh color, very firm in texture, and full red in skin color, but is distinguished therefrom and an improvement thereon by producing fruit that is clingstone instead of freestone, that is subacidic in flavor instead of acidic, that has a bitter kernel instead of sweet, and that matures about 5 days later.

9,963

NECTARINE TREE "RUBY SWEET"

Lowell Glen Bradford, 12439 E. Savana Rd., and Norman G. Bradford, 11875 E. Savana Rd., both of Le Grand, Calif. 95333

Filed May 28, 1996, Ser. No. 654,090
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—41.1 **1 Claim**

1. A new and distinct variety of nectarine tree, substantially as illustrated and described, which is most similar to its seed parent, the Spring Bright Nectarine (U.S. Plant Pat. No. 7,507) by producing fruit that is large in size, very firm in texture, and full red in skin color, but is distinguished therefrom and an improvement thereon by blooming 1 week later, by having reniform glands instead of globose, by having a bitter kernel instead of sweet, and by producing fruit that matures 7 days later and is subacidic in flavor instead of acidic.

9,964

PEACH TREE 'SWEET SEPTEMBER'

Chris Floyd Zaiger, 929 Grimes Ave.; Gary Nell Zaiger, 1907 Elm Ave.; Leith Marie Gardner, 1207 Grimes Ave., and Grant Gene Zaiger, 4005 California Ave., all of Modesto, Calif. 95358

Filed Apr. 25, 1996, Ser. No. 637,348
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—43.2 **1 Claim**

1. A new and distinct variety of peach tree, substantially as illustrated and described, characterized by its large size, vigorous, upright growth, and being a productive and regular bearer of large, firm, yellow flesh, freestone fruit with a sweet, mild, sub-acid flavor with excellent eating quality; the fruit is further characterized by being relatively uniform throughout the tree, having good handling and shipping quality; and maturing in the late season, approximately 5 weeks after O'Henry Peach (U.S. Plant Pat. No. 2,964).

9,965
CHAMELAUCIUM (WAXFLOWER) PLANT NAMED 'ROSIE'
Brian Jack, and Victoria Syme, both of Coorow, Australia, assignors to New World Plants USA, Escondido, Calif.
Filed Feb. 20, 1996, Ser. No. 602,177
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—54.1 1 Claim

1. A new and distinct Chamelaucium interspecific hybrid plant named Rosie, as illustrated and described.

9,966
CHAMELAUCIUM (WAXFLOWER) PLANT NAMED BLONDIE
Brian Jack, and Victoria Syme, both of Coorow, Australia, assignors to New World Plants USA, Escondido, Calif.
Filed Feb. 20, 1996, Ser. No. 603,731
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—54.1 1 Claim

1. A new and distinct Chamelaucium interspecific hybrid plant named Blondie, as illustrated and described.

9,967
CHAMELAUCIUM (WAXFLOWER) PLANT NAMED MADONNA
Brian Jack, and Victoria Syme, both of Coorow, Australia, assignors to New World Plants USA, Escondido, Calif.
Filed Feb. 20, 1996, Ser. No. 604,156
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—54.1 1 Claim

1. A new and distinct Chamelaucium interspecific hybrid plant named Madonna, as illustrated and described.

9,968
CARNATION PLANT VARIETY NAMED 'CFPC RURI'
Walter H. Jessel, Jr., Gonzales, and Richard Shido, Salinas, both of Calif., assignors to California Florida Plant Co., L.P., Salinas, Calif.
Filed Apr. 4, 1996, Ser. No. 627,375
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—73.2 1 Claim

1. A new and distinct variety of carnation plant substantially as shown ad described.

9,969
IMPATIENS PLANT NAMED 'ORANGE ICE'
Douglas S. Cole, Loudon, N.H., assignor to D.S. Cole Growers, Inc., Loudon, N.H.
Filed Feb. 20, 1996, Ser. No. 602,565
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—87.6 1 Claim

1. A new and distinct cultivar of *Impatiens sultani* plant named Orange Ice, as illustrated and described.

9,970
VARIETY OF GERANIUM NAMED 'PENVE'
Christa Hofmann, Grossdittmannsdorf, Germany, assignor to Elsner Pac Jungpflanzen, Germany
Filed Sep. 29, 1995, Ser. No. 536,658
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—87.12 1 Claim

1. A new and distinct variety of geranium plant substantially as shown and described.

9,971
VARIETY OF GERANIUM NAMED 'NORTH STAR'
Christa Hofmann, Grossdittmannsdorf, Germany, assignor to Elsner Pac Jungpflanzen, Germany
Filed Sep. 29, 1995, Ser. No. 536,703
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—87.12 1 Claim

1. A new and distinct variety of geranium plant substantially as shown and described.

DESIGN

GRANTED July 15, 1997

ERRATA

For CLASS	See PATENT NO.
D21–133	D380,992

PATENTS

GRANTED July 15, 1997

ERRATA

For CLASS	See PATENT NO.
030–454	5,647,138
037–231	5,647,153
473–601	5,647,590
128–653	5,647,663
216–022	5,648,015
442–199	5,648,152
526–116	5,648,428
396–128	5,648,834
396–429	5,648,835
396–086	5,648,836
399–119	5,648,838
399–271	5,648,839
399–262	5,648,840
399–134	5,648,841
399–350	5,648,842
399–364	5,648,843
386–080	5,648,855
349–057	5,648,858
349–009	5,648,859
349–010	5,648,860
349–116	5,648,861
395–205	5,648,900
455–412	5,648,999
455–436	5,649,000
399–327	5,649,130
370–312	5,649,287
370–332	5,649,290
370–332	5,649,291
370–313	5,649,301
370–334	5,649,308

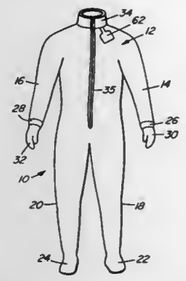
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PATENTS

GRANTED JULY 15, 1997

GENERAL AND MECHANICAL

5,647,059
INFLATABLE NECK SEAL
Wendell Vaughn Uglene, Burnaby, and Donald Mah, Richmond, both of Canada, assignors to M.E.T.A. Research Inc., Richmond, Canada
Filed Jun. 8, 1994, Ser. No. 257,241
Int. Cl.[6] B63C *11/04*; A41D *13/00*
U.S. Cl. 2—2.15 **20 Claims**



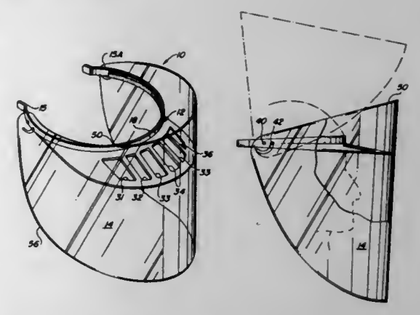
1. An encircling seal forming cuff structure for an immersion suit comprising a band of compressible material shaped with an outer circumferential surface and an inner circumferential surface, said inner circumferential surface being shaped to in a compressed condition form a seal with a portion of a wearer encircled by said cuff, an inflatable band substantially encircling said band of compressible material, said inflatable band having an outer circumferential wall member limiting outward expansion of said inflatable band and an inner circumferentially extending wall member, said inner and outer circumferential wall members forming there between an inflatable chamber extending along said outer circumferential surface, an intermediate wall member formed of flexible material defining a partition along the circumferential length of said chamber, a first securing means for securing said intermediate wall member to said inner circumferential wall member with a first set of first discreet securing strips spaced circumferentially of said cuff and a second securing means securing said intermediate wall member to said outer circumferential wall member with a second set of second discreet securing strips spaced circumferentially of said cuff, strips of said first and said second sets of discrete securing strips extending transverse to said circumferential length of said chamber and alternating circumferentially around said cuff and means for inflating said chamber.

5,647,060
PROTECTIVE REPLACEABLE FACE SHIELD ASSEMBLY
Janet W. Lee, 9043 N. 87th Way, Scottsdale, Ariz. 85258
Filed Nov. 22, 1995, Ser. No. 562,111
Int. Cl.[6] A61F *9/04*
U.S. Cl. 2—9 **11 Claims**

10. A protective face shield assembly for medical, industrial and dental personnel comprising:

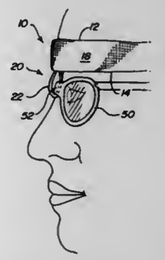
(a) a visor having a head-engaging band, said band having opposite resilient temple band sections connected by a forward bridge, said head band having an integrally formed forwardly-extending bill defining a plurality of apertures therein which occupy a substantial portion of the visor bill area;

(b) a transparent shield having an upper edge and lower and side edges, said shield defining an aperture and an arcuate slot oppositely located along each of the side edges thereby defining a pair of apertures and slots;



(c) said head band having a pair of studs located on each of the temple bands engageable in said apertures and slots to detachably secure said shield to said visor in a first use-position with the shield extending about the face area of the wearer and substantially above the visor bill and whereby said shield is pivotal at said studs to a non-use position disposed above the face of the wearer and whereby said shield may be removed from said visor by disengaging said studs from said apertures.

5,647,061
HEADBAND HAVING EYEGLASS SECURING MEANS
John J. Marcus, R.D. #2 Rte. 353, Cattaraugus, N.Y. 14719
Filed Apr. 26, 1996, Ser. No. 638,192
Int. Cl.[6] G02C *3/02*
U.S. Cl. 2—11 **1 Claim**

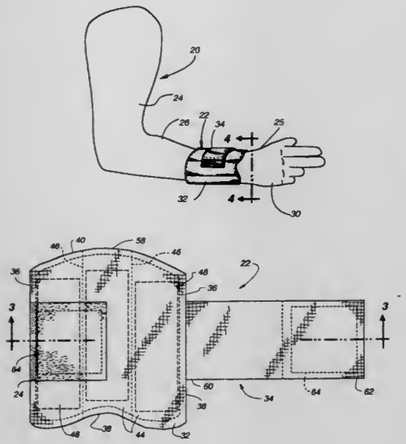


1. An improved headband comprising:

a continuous band of elastic material having an inner surface intended for circumferential fitting engagement with the head of a wearer and an outer surface opposite said inner surface, said inner and outer surfaces being defined by top and bottom edges; and

eyeglass securing means for selectively attaching a pair of eyeglasses worn by said wearer to said band, said eyeglass securing means comprising an elongated strip of flexible material having a first end fixed to said band, and a second end releasably attachable to said band, said strip having a length sufficient to form a loop about a nose bridge of said eyeglasses when said second end is attached to said band, said strip including a hook and catch fastener portion at said second end, and said inner surface of said band including a hook and catch fastener receiving portion aligned above said first end for releasable attachment of said second end thereto.

5,647,062
LIMB PROTECTOR
Mark R. Nigbur, 808 Cresta, Colorado Springs, Colo. 80906
Filed Jun. 30, 1995, Ser. No. 497,034
Int. Cl.[6] A41D *13/08*
U.S. Cl. 2—16 **4 Claims**



1. A limb protector attachable to a human limb, said protector comprising:

a. a main body member having a top surface, a bottom surface, a front, rear and opposing side edges along each of which the top and bottom surfaces are attached together, said edges defining a length and width of said main body member;

b. said main body member having a plurality of protective compartments oriented parallel to said opposing edges, said protective compartments extending the length of said main body member, each of said protective compartments defining an interior cavity, said plurality of protective compartments being adjacent to one another on said main body member, and being delineated from adjacent protective compartments by a line of connection;

c. said top and bottom surfaces being attached together along said line of connection between said adjacent protective compartments;

d. a living hinge formed along said line of connection between adjacent protective compartments, said living hinge allowing said protective compartments to pivot independently about said living hinge;

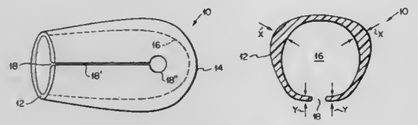
e. an elongated attachment strap having opposing ends, each of said opposing ends attached to one of said opposing edges for securely fastening said main body member to the limb;

f. an insert member positioned in each of said interior cavities;

g. padding material positioned in said interior cavity of each of said plurality of protective compartments and;

b. each of said compartments and interiorly positioned inserts being longitudinally offset from adjacent compartments, resulting in said front edge of said main body member having an arcuate concave shape when said main body member is laid flat.

5,647,063
CARPENTER'S FINGER SPLINTER GUARD
Jeffrey S. Bates, 41 Trout Cir., Freeport, Fla. 32439
Filed Mar. 5, 1996, Ser. No. 610,927
Int. Cl.[6] A41D *13/00;13/08*
U.S. Cl. 2—21 **1 Claim**



1. A compressibly resilient carpenter's finger guard which is friction fitted upon the extension of a carpenter's finger between the intermediate joint thereof and the fingertip comprising:

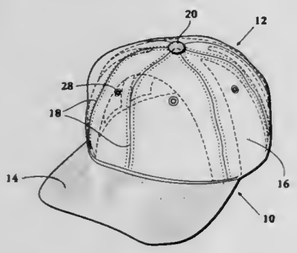
a) an elongated tubular finger guard (**10**) of armor-like substance which is declinedly open at its proximal end (**12**) and tapered to closure at its distal end (**14**), the proximal end (**12**) being immediately adjacent the intermediate finger joint, conforming in side elevation to the crease of the finger when flexed at its intermediate joint; said open proximal end (**12**) of the guard (**10**) thus defining a reverse angle from the vertical, which is between 315° to less than 360° .

b) the interior (**16**) of the guard, adjacent the distal end (**14**) conforming in cross-section to the tapered configuration of the finger, between its intermediate joint and the fingertip;

c) a lowermost expandable-compressible slot (**18**) extending from the proximal end (**18'**) of the guard to closure at its distal end, the slot closure defining a circular opening (**18"**) which is spaced from the distal end of the guard;

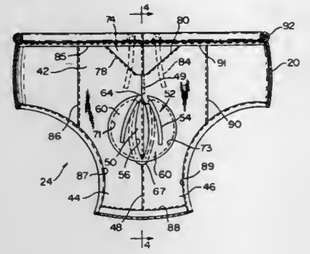
d) laterally opposed segments of the guard which are transversely adjacent its top, being of graduated maximum thickness X in vertical cross-section, and laterally opposed segments which are at its bottom being of minimum thickness Y.

5,647,064
BASEBALL CAP HAVING A SHAPE RETAINER AND SUPPORT ASSEMBLY
Byron J. Whittaker, 3107 S. Linwood Dr., Sand Springs, Okla. 74063-4131
Filed Jul. 2, 1996, Ser. No. 674,403
Int. Cl.[6] A42B *1/00*
U.S. Cl. 2—195.5 **6 Claims**



1. A baseball cap comprising a crown portion and a bill, said crown portion being constructed from a plurality of wedge shaped panels sewn together at a number of seams and converging at the top most part of said crown portion at a button, a circumferential sweatband being sewn around the interior of said crown portion at the bottom edge of said panels, and a shape retainer affixed to the interior of said crown portion, said shape retainer comprising a flexible body having a spine and plurality of arms projecting outwardly from said spine, said arms being flexed and positioned between an inner surface of said crown portion and said sweatband along said seams, said flexible body being affixed to said crown portion by said button.

5,647,065
MALE GENITAL SUPPORTING APPARATUS AND METHOD
Michael B. Richerson, 2214 N. 28th, Tacoma, Wash. 98403
Filed Apr. 17, 1996, Ser. No. 633,908
Int. Cl.[6] A41B *9/02*
U.S. Cl. 2—403 **7 Claims**



1. In a garment having a front interior surface, a support means is disposed within the garment, adjacent the front interior surface, for receiving and supporting male genitalia including the penis and scrotum, the support means comprising:

a support panel constructed of flexible material for attachment to the front interior surface of a garment adjacent the region where the wearer's genitalia would naturally lie, the attachment thereof forming a pocket between the support panel and the garment, wherein a portion of the support panel defines an aperture for receiving male genitalia, and positioning the same in the pocket formed between the garment and the support panel, the aperture being adjustable in size from a first maximum circumference configuration for receiving male genitalia, to a second reduced circumference configuration to support and lift male genitalia so received;

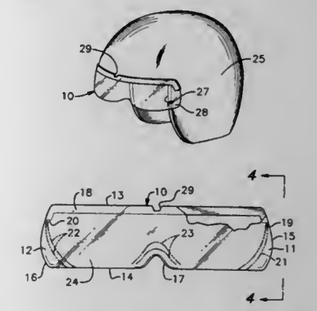
means for adjusting the circumference of the aperture from the first configuration to the second configuration, said adjusting means comprising a cinching cord disposed substantially about the perimeter of the aperture for adjusting the circumference of the aperture from the first configuration to the second configuration, the cinching cord being slidingly received by the support panel, wherein gathering of the cinching cord adjusts the aperture to the second reduced circumference configuration;

said support panel further comprising a guide conduit disposed about the perimeter of the aperture, wherein the guide conduit includes an opening through which the cinching cord is slidingly received to encompass the aperture's perimeter;

said support panel further comprising a left section, and an attached, corresponding right section, wherein each section further comprises a folding tab that is folded and disposed to form a portion of the guide conduit; and

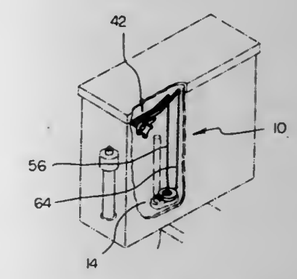
wherein the support panel defines an access opening disposed above the aperture, through which the wearer can reach to adjust his genitalia.

5,647,066
SAFETY HELMET VISOR
Edward G. Joslin, 1407 7th Ave., Neptune, N.J. 07753, and James Selzer, 201 Larine Ave., Apt. 501, Bradley Beach, N.J. 07754
Filed May 22, 1995, Ser. No. 445,689
Int. Cl.[6] A42B *3/22*
U.S. Cl. 2—424 **3 Claims**



1. In combination, a safety visor having spaced parallel upper and lower edges and a safety helmet having selective rigid engagement portions, said safety visor comprising; a flat sheet of flexible translucent material of a length greater than its width, said sheet having contoured oppositely disposed ends with selectively removable portions, a band of hook and loop material secured to the safety visor along its upper edge thereof and extending from said upper edge along remaining portions of said opposing contoured ends, an adjustable notch in said lower edge midway between said ends, a band of hook and loop material secured to said selective rigid engagement portions of said safety helmet registerable with said band of hook and loop material on said safety visor, said adjustable notch in said lower edge has selectively removable portions defined by multiple spaced guidelines thereon.

5,647,067
APPARATUS FOR SELECTIVELY FLUSHING A TOILET WITH EITHER A FULL OR PARTIAL TANK OF WATER
Patrick E. Boyle, 179 Rugby La., Gahanna, Ohio 43230
Filed May 13, 1996, Ser. No. 645,298
Int. Cl.[6] E03D *1/14*
U.S. Cl. 4—325 **1 Claim**



1. An apparatus for selectively flushing a toilet bowl with either a full or partial amount of water from a toilet tank associated with the toilet bowl, comprising:

a toilet tank with an associated pipe;

a flush valve pivotally positioned in the toilet tank to be seated at an upper end of the associated pipe when in a closed position and adapted to be raised to an elevated orientation for allowing the water of the entire toilet tank to be dispensed, the flush

valve having a circular opening in an upper extent thereof with one side of the flush valve pivotally secured to a fixed portion of the toilet tank and constituting a pivot point and with the opposite end of the flush valve being provided with an aperture;

a short flush plug being positionable in the opening of the flush valve and having a central extent which is reciprocably vertically mounted therein, the short flush valve having an upper collar which when lowered, will seat on the opening of the upper extent of the flush valve for effecting the closure thereof, the short flush plug liftable to an elevated orientation to allow the flow of water into and through the flush valve and into the toilet for a flush with a quantity of water less than a full tank, the flush plug having a lower end and an upper end, the lower end of the flush plug being provided with a shoulder to preclude excess motion thereof which would tend to unseat the flush plug, the upper end of the flush plug being provided with an aperture; and

control mechanisms rotatably secured to a front of the toilet tank for operation and control by a user, the control mechanisms including a first short flush handle adapted for rotation about a horizontal axis and a second normal long flush handle adapted for rotation independent of the rotation of the short flush handle and about a same axis of rotation, the control mechanisms including a rod in an upper extent of the toilet tank coupled at an inboard end thereof to the short flush handle with a first chain coupled between a remote end of the rod and the aperture of the flush plug for raising the flush plug upon the rotation of the short flush handle and a long rod secured for rotational movement with respect to the normal long flush handle and with an exterior end having an aperture for coupling with a second chain, the second chain having an upper end being secured between the exterior end of the normal long flush handle and the aperture of the flush valve whereby the user may rotate the short handle for a less than full flush and rotate the normal long flush handle for an entire flush of the water in the toilet tank.

5,647,068

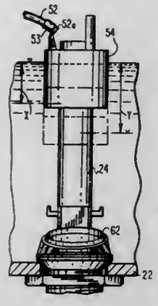
TOILET FLUSHING DEVICE WITH WATER SAVING FEATURES

Robert M. Jensen, East Brunswick, N.J., assignor to American Standard Inc., Piscataway, N.J.

Filed Apr. 21, 1995, Ser. No. 426,774

Int. Cl.[6] E03D *1/38*

U.S. Cl. 4—415 **9 Claims**



1. A trapway reseal device for a toilet tank, said toilet tank including an overflow tube having a retaining pin across a top thereof and a splash guard on a side of the top of said tube, and a water control, comprising an annular float adapted to be slidably supported around said overflow tube to move with the changing level of water in said tank as said tank is flushed and refilled, said float movable upward to a point on said tube whereat said retaining pin is positioned, and a reseal hose receiving water from said water control and having a free end directly coupled to said float, said reseal hose selectively directing water into at least one of said tank and said overflow tube dependent upon the position of said float as determined by the level of water in said tank, said annular float being in the shape of a doughnut having an opening therethrough, said overflow tube extending through said opening.

5,647,069

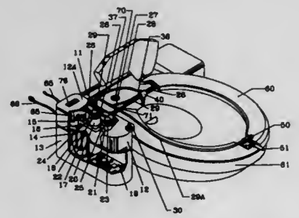
ADJUSTABLE PERSONAL HYGIENE SYSTEM

Steven Han, 1224 Correia Pl., Manteca, Calif. 95337, and Kwi Soup Chong, 450-40 Chunhodong, Kangdong Ku, Seoul, Rep. of Korea

Filed Apr. 20, 1995, Ser. No. 425,378

Int. Cl.[6] E03D *9/08*

U.S. Cl. 4—420.2 **11 Claims**



1. A bidet apparatus adapted to be fitted to a conventional toilet which includes a bowl having an upper horizontal rim surface and a toilet seat, comprising:

a base plate attachable to said upper horizontal rim surface;

a rear nozzle block pivotally mounted to said base plate and locatable under said toilet seat, said rear nozzle block having two separate water inlets connected to two separate nozzles, each nozzle having a plurality of holes to spray water at an angle at the posterior and genital areas, respectively, of a user, the position of said rear nozzle block being swingable via said pivotal mount, wherein one of said nozzles includes a lower nozzle shaft forming a water flow path connected to a respective one of said separate water inlets;

two valves mounted to said base plate, each of said valves having one inlet connectable to a pressurized water source and one outlet, each of said valve outlets being connected to a respective one of said separate water inlets, said valves being operative to control the rate of water flow for directing the spray of water at the genital and posterior areas;

conduit means for connecting said separate water inlets to said valve outlets;

position handle means mounted to said base plate and including a handle shaft moveable in back and forth motion for adjusting the position of said rear nozzle block; and

link means connected between said rear nozzle block and said position handle means for moving said rear nozzle block to an in-use position in response to movement of said handle shaft.

5,647,070

RINSING APPARATUS

Sheng-Chung Yu, 2F., No. 1, Lane 151, Hsin Sheng S. Rd., Sec. 1, Taipei, Taiwan

Filed Dec. 13, 1995, Ser. No. 571,464

Int. Cl.[6] E03D *9/08*

U.S. Cl. 4—420.4 **3 Claims**

1. A rinsing apparatus for use with a toilet including a bowl and a seat, comprising:

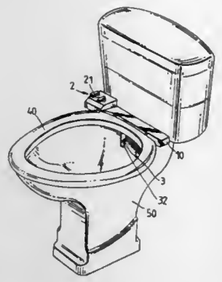
a housing securable to the toilet bowl adjacent to the toilet seat and defining a receiving chamber;

a water input/output unit mounted within the receiving chamber of said housing, said water input/output unit comprising a barrel having a water inlet, a water outlet, a water pressure adjusting hole adjacent to said water inlet, a water pressure adjusting screw threaded into said water pressure adjusting bole and turned to regulate water flowrate passing from said water inlet to said water outlet;

a control valve fastened to the water outlet of said water input/output unit to control the passage water from said water outlet, said control valve comprising a three-way casing, a stopper, a stem, a spring, a cap, a stop plate, and a lever, said three-way casing having an internally threaded bottom end threaded onto an outer thread on the water outlet of said water input/output unit, an externally threaded top end connected to said cap, and a side outlet connected to a water outlet pipe, said cap being fastened to the top end of said three-way casing and having a center through hole, said stop plate being supported above said cap to limit the vertical turning angle of said lever and having a center through hole aligned with the center through hole of said cap, said stem being inserted through the center through hole of said stop plate and the center through hole of said cap and having a bottom end fastened to said stopper inside said three-way casing and a top end made with a pivot hole and disposed outside said cap, said spring being mounted around said stem and stopped between said stopper and said cap; said lever having two downward lugs disposed at one end in a parallel relation and bilaterally connected to the pivot hole of said stem by a pivot;

a nozzle mount securable to the toilet seat of said toilet at a bottom side; and

a nozzle mounted in said nozzle mount, said nozzle having a water inlet tube connected to the water outlet pipe of said control valve, at least one jet facing the center opening of the toilet seat of said toilet, and two opposite projecting rods fastened to said nozzle mount.



1. A door-equipped bathing apparatus comprising:

a wheel chair provided with a chair base having caster rollers, a support rod fixedly erected on said chair base, and a seat section firmly supported on a free end of said support rod; and

a bath tub provided with a bottom section having a bottom sealing device for allowing said support rod to pass through said bottom section and providing water-tight sealing around said support rod which passes through said bottom section of said bath tub;

wherein an opening section formed on a vertical section of said bath tub provides entry of said wheel chair through said opening section thereinto,

such that said support rod passes through said bottom section of said bath tub while said seat section is inside said tub and said caster rollers are located externally of said tub.

5,647,072

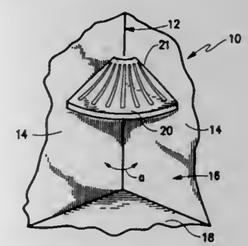
FOOT SUPPORT DEVICE FOR SHOWER AREAS

Pauline S. Shaffer, and Curt A. Shaffer, both of 28 Viking Dr., Englewood, Colo. 80110

Filed Aug. 16, 1995, Ser. No. 516,001

Int. Cl.[6] A47K *3/024*

U.S. Cl. 4—574.1 **25 Claims**



1. A foot support device adapted to mount in a corner of a shower area that is formed by a base upon which a bather stands during a shower event and by at least two upright walls that are oriented at a corner angle with respect to one another thereby to form a corner for the shower area, said foot support operative to support a foot and leg of the bather such that the foot is elevated relative to said base to facilitate shaving of the leg, comprising:

(a) a shelf panel defining a surface on which the foot may be placed;

(b) a mounting structure connected to said shelf panel, said mounting structure including a pair of mounting panels oriented at the corner angle with respect to one another such that said mounting panels are respectively positionable against said upright walls with said shelf panel disposed at an oblique angle with respect to said base, said mounting panels and said shelf panel formed as an integral piece of plastic material, said mounting panels each being hinged relative to said shelf panel; and

(c) fasteners operative to secure said mounting panels respectively to said upright walls so that said shelf panel is supported in a mounted state on said upright walls as a shelf-like ledge.

5,647,071

BATHING APPARATUS

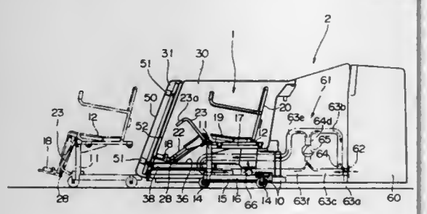
Hajime Suzuki, Kamagaya, and Yasuo Sekiguchi, Matsudo, both of Japan, assignors to Sakai Medical Co., Ltd., Tokyo, Japan

Filed Apr. 4, 1995, Ser. No. 416,305

Claims priority, application Japan, Apr. 6, 1994, 6-068821; Nov. 11, 1994, 6-278161

Int. Cl.[6] A47K *3/12;3/022*

U.S. Cl. 4—555 **14 Claims**



5,647,073

PADDING SYSTEM ADAPTED FOR A SINK

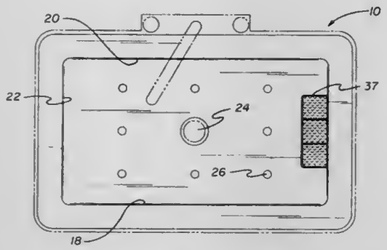
Steven C. Dorber, Sr., P.O. Box 4043, Princeton, Fla. 33092

Filed Jan. 29, 1996, Ser. No. 592,973

Int. Cl.[6] E03C *1/186*

U.S. Cl. 4—657 **3 Claims**

1. A padding system adapted for a sink for providing a padded surface within a sink to safely bathe a baby comprising, in combination:



a sink insert having a generally rectangular configuration, the sink insert having an open upper end, a closed lower end, a front wall, a rear wall, and two side walls, the sink insert dimensioned for receipt within a sink, the closed lower end having a drainage aperture formed therethrough in a central portion thereof, the drainage aperture adapted to be disposed over an existing drain of a sink, the closed lower end having a plurality of circular indentations formed therein in an equally spaced apart relationship, the open upper end having a peripheral flange extending outwardly therefrom;

a mesh pocket having an open upper end, a closed lower end, a front wall, a rear wall, and two side walls, the rear wall of the mesh pocket secured to one of the two side walls of the sink insert, the mesh pocket having a pair of divider walls therein thereby separating the mesh pocket into three compartments.

5,647,074

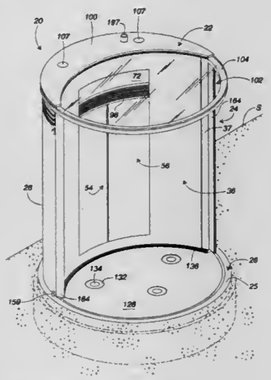
PUBLIC TOILET FACILITY

John N. White, Jr., and Cynthia R. Sours, both of 64 W. Belle Isle Rd., NE., Atlanta, Ga. 30342

Continuation of Ser. No. 254,983, Jun. 7, 1994, abandoned. This application Feb. 5, 1996, Ser. No. 596,627

Int. Cl.[6] A47K *4/00*; E03C *1/01*

U.S. Cl. 4—664 **13 Claims**



1. A public toilet facility, comprising:

a base portion having an uppermost peripheral horizontal surface, said base portion set within a suitable anchor, said anchor having a horizontal top surface, said uppermost peripheral horizontal surface and said horizontal top surface being coplanar, said base portion including a water supply line and waste disposal pipe;

a floor slab mounted in said base portion such that an upper surface thereof is coplanar with said uppermost peripheral horizontal surface and said horizontal top surface;

an equipment and machinery compartment, the compartment removably attached to the base portion and including:

a detachable water line for attaching to the water supply line; and

a detachable waster disposal line for attaching to the waste disposal pipe;

a toilet attached to the equipment and machinery compartment along a first side of the compartment, the toilet connected to the detachable water supply line and the detachable waste disposal line; and

a movable door operatively associated with the equipment and machinery compartment, the door operative from a first position where the first side of the equipment and machinery compartment is exposed to a second position to form an enclosure with the equipment and machinery compartment, the first side being contained within the enclosure and the toilet being accessible within the enclosure, the door being configured such that the door may be removed along with the equipment and machinery compartment.

5,647,075

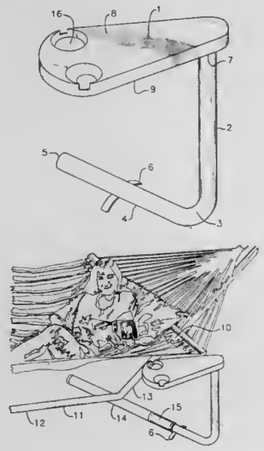
TABLE FOR HAMMOCK STAND

Julian Perkins, Greenville, N.C., assignor to Hatteras Hammocks, Inc., Greenville, N.C.

Filed Feb. 23, 1996, Ser. No. 606,207

Int. Cl.[6] A45F *3/24*

U.S. Cl. 5—127 **3 Claims**



1. A combination table and hammock stand comprising a stand for suspending a hammock horizontally above the ground comprising an elongated, horizontal base member which terminates at each of its two ends in an upward extending elongated member adapted to receive at its upward extremity one end of a hammock, said horizontal base member having one or more horizonal elongated cross braces which engage it at right angles; a table attached to one of said cross braces comprising a flat planar table top having opposed top and bottom surfaces, said bottom surface having attached thereto at one of its ends an elongated, downwardly extending vertical support member which is bent at right angles to extend horizontally and parallel to said table top; said horizontal extension engaging at its distal end with one of said cross braces.

5,647,076

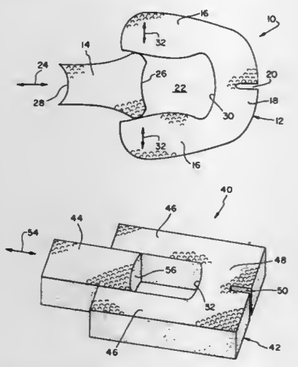
MATERNITY SUPPORT CUSHION

Susan K. Gearhart, 6805 E. Waco Dr., Syracuse, Ind. 46567

Filed May 7, 1996, Ser. No. 646,132

Int. Cl.[6] A47C *27/00*; *20/02*

U.S. Cl. 5—631 **14 Claims**



1. A maternity support cushion for supporting a pregnant woman in a prone position, comprising:

a generally U-shaped support cushion for supporting an upper body of the woman, said U-shaped support cushion including two extending legs and a center connecting portion, said extending legs, including distal ends; and

a pelvic support cushion for supporting the pelvic area of the woman, said pelvic support cushion including a wide end and a narrow end, each of said wide end and said narrow end being configured to be received between said two extending legs of said U-shaped support cushion; and

wherein said extending legs of said U-shaped support cushion are deflectable in directions toward and away from each other, said extending legs disposed in a first position when said narrow end of said pelvic support cushion is received therebetween and said extending legs disposed in a second, deflected position when said wide end of said pelvic support cushion is received therebetween, said wide end being selectively positionable between said extending legs at a plurality of locations ranging between said center connecting portion and said distal ends.

5,647,077

WATER MATTRESS APPARATUS AND A WATER BAG USED FOR THE WATER MATTRESS APPARATUS

Takeo Abe, Akigawa, and Shoji Kawamura, Oume, both of Japan, assignors to France Bed Co., Ltd., Tokyo, Japan

PCT No. PCT/JP94/01713, § 371 Date Jun. 12, 1995, § 102(e) Date Jun. 12, 1995, PCT Pub. No. WO95/10210, PCT Pub. Date Apr. 20, 1995

PCT Filed Oct. 13, 1994, Ser. No. 454,242

Claims priority, application Japan, Oct. 15, 1993, 6-055822 U; Apr. 8, 1994, 6-070805; Apr. 8, 1994, 6-070806; Apr. 26, 1994, 6-088569

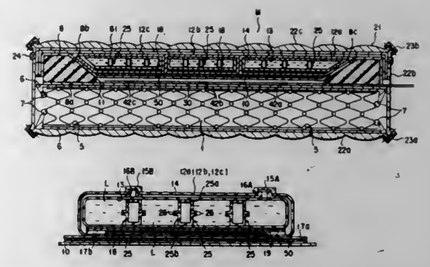
Int. Cl.[6] A47C *27/10*

U.S. Cl. 5—685 **14 Claims**

1. A water mattress apparatus comprising:

a cushion unit which is subjected to elastic compressive deformation on application of a load thereon; a case having an upper surface and lower surface with a receiving section having an opening at the upper surface of the case, said case being joined at the lower surface thereof to an upper surface of the cushion unit in stacked relation;

a water bag formed from a flexible water-proof sheet and held in the receiving section with a liquid contained in the water bag;



said water bag having a double-layered structure including an inner bag with the liquid contained therein, an outer bag over the inner bag, band-like partition members connecting together inner upper and inner lower surfaces of the inner bag, and a liquid absorbing member provided between the inner bag and the outer bag to absorb liquid leaking out of the inner bag;

said band-like partition members each having an upper sheet fixed at one end to the inner upper surface of the bag, and a lower sheet fixed at one end to the inner lower surface of the bag, and the other end of the lower sheet being fixed to the other end of the upper sheet, and wherein a strength of fixing of said band-like partition members is so set to be lower at said other end sides of the upper and lower sheets thereof than at said one end sides of the upper and lower sheets thereof; and

an outer layer unit covering the stacked cushion and case.

5,647,078

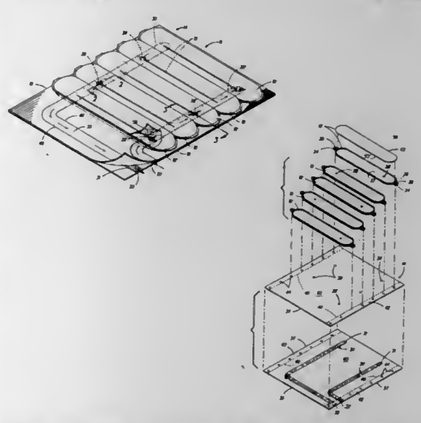
CONTROL PANEL FOR AN INFLATABLE STRUCTURE

Robert W. Pekar, Florence, Mass., assignor to Dielectrics Industries, Chicopee, Mass.

Filed May 23, 1995, Ser. No. 449,898

Int. Cl.[6] A47C *27/08*; *27/10*

U.S. Cl. 5—706 **16 Claims**



2. The combination comprising an inflatable structure having a plurality of inflatable chambers, a fluid flow control panel sealed in coplanar orientation to said inflatable structure and having at least three layers sealed together at predetermined locations for defining at least two fluid distribution tiers, at least some of said chambers including at least one fluid orifice for selective inflation and deflation thereof, each tier providing at least one fluid flow conduit to thereby enable conduits in different tiers to traverse without communicating therebetween, said fluid flow conduits adapted for

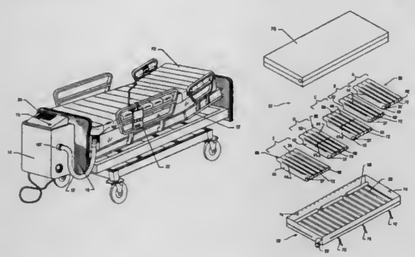
connection to a variable fluid pressure source, at least one layer of said panel being provided with a predetermined pattern of apertures therethrough, each of said apertures communicating with at least one of said conduits, said fluid orifices being disposed in registered relation with said apertures, said panel having a release material selectively disposed on an interior surface thereof to enable coplanar sealing of said chambers onto said panel.

5,647,079

INFLATABLE PATIENT SUPPORT SURFACE SYSTEM

Reza Hakamiun; Craig D. Ellis, both of Charleston; Benjamin Salvatini, Summerville; John A. Brenner, Ladson; David N. Asbcraft, Mt. Pleasant; Kenith W. Chambers, and Stephen E. Glover, both of Charleston, all of S.C., assignors to Hill-Rom, Inc., Ind.

Filed Mar. 20, 1996, Ser. No. 618,757
Int. Cl.[6] A61C *7/04*
U.S. Cl. 5—713 **12 Claims**



1. A patient air mattress replacement system for use with a support bed frame comprising:
an air source;
an air mattress replacement assembly for mounting on the bed frame and having a first air support layer and a second air support layer;
a controller assembly connected to the air source for selectively directing air to the first support layer and the second support layer;
a hose assembly system for connection to the air source for communicating air from the air source to the mattress assembly, the hose assembly having a first layer supply tube for providing air to the first layer and a second layer supply tube for providing air to the second layer;
an interface connection assembly connecting the mattress assembly to the hose assembly, the connection assembly communicating air from the first layer support tube to the first support layer and air from the second layer support tube to the second support layer, said connection assembly further having a first valve fitting for preventing escape of air through the interface connection assembly from the first air support layer when the hose assembly is disconnected from the interface connection assembly.

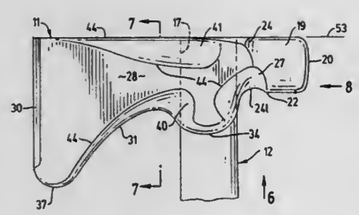
5,647,080

AX HAMMER

John Martin, 7308 Corbin Ave. Apt E, Reseda, Calif. 91335

Filed Aug. 31, 1995, Ser. No. 521,743
Int. Cl.[6] A47G *27/04*
U.S. Cl. 7—103 **28 Claims**

1. In an ax hammer having a head with exterior walls, said head having a hammering surface at its one extremity the hammering surface mounted on a base, the head having a taper in one or both of its exterior walls that extends towards its other extremity at which a blade is mounted, the head having a bottom including an underside and a top, and a body formation between the one



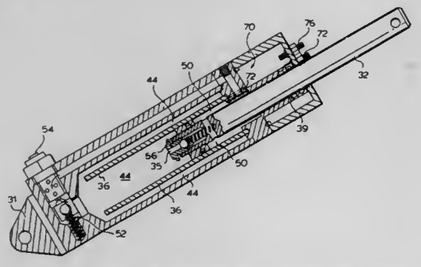
extremity and the other extremity forming a bore for securely mounting a tang of a handle therein, the improvement comprising
the exterior walls in said head and between its top and bottom tapering from a location proximate to said body formation and towards the other extremity,
the base for the hammering surface disposed between the hammering surface and the bore,
one or more arcuate hollows disposed between the base and the bore at the top of the head and a lowermost arcuate hollow disposed at the bottom of the head between the base and the bore, said lowermost hollow being of a deeper cut than the one or more arcuate hollows at the top of the head and of a size and circumferential length extending along the underside of the head for providing insertion of a portion of a hand of the user of the ax hammer,
a first set of sunken pockets in said head and adjoining said lowermost arcuate hollow,
an elongated hollow disposed along the bottom of the head and between said body formation and the other extremity,
a second set of sunken pockets in said head and adjoining said elongated hollow,
an inverted curved configuration along the bottom of the head and disposed adjacent the other extremity, said elongated hollow terminating at said configuration,
said elongated hollow extending to below said body formation at the bottom of the head so as to provide a deeper body in the head for its blade, and
a third set of sunken pockets disposed along the top of the head and extending between said body formation and the other extremity of the head.

5,647,081

MANUAL HYDRAULIC DOCK BOARD HOLD DOWN ARRANGEMENT

Arnold Harvey Marler, 345 Silverstone Dr., Rexdale, Ontario, Canada, and Stanley Allen Marler, 39 Goodfellow Crescent, Bolton, Ontario, Canada

Continuation-in-part of Ser. No. 161,253, Dec. 3, 1993, Pat. No. 5,551,113. This application Oct. 4, 1995, Ser. No. 539,064
Claims priority, application Canada, Oct. 6, 1994, 2133775
Int. Cl.[6] E01D *1/00*
U.S. Cl. 14—71.7 **20 Claims**



1. Hydraulic locking arrangement for a loading dock having a pivotally mounted dock plate, said hydraulic locking arrangement

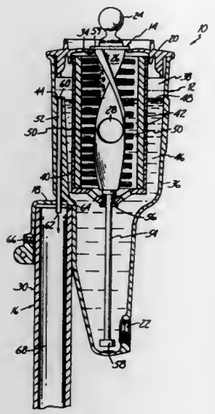
controlling movement of said dock plate from a raised position to a lower trailer loading or unloading position, said hydraulic locking arrangement locking said dock plate against upward movement unless a predetermined pressure is exceeded, said hydraulic locking arrangement comprising
a cylinder, a piston moveable within said cylinder, a closable hydraulic fluid circuit acting on one side of said piston, said closable hydraulic fluid circuit when closed opposing any forces urging movement of said piston in a direction to raise said dock plate and results in an increase of the hydraulic fluid pressure of said closable hydraulic fluid circuit, a hydraulic fluid reservoir, a high pressure check valve arrangement connecting said hydraulic fluid circuit with said reservoir, a low pressure check valve for accommodating retraction of said piston and supply of hydraulic fluid from said reservoir into said fluid circuit, and release means for opening said fluid circuit and accommodating movement of said piston as said dock platform is moved to the raised position;
said high pressure check valve arrangement opening to said reservoir when a predetermined pressure is exceeded in said hydraulic fluid circuit caused by said dock board being forced upwardly and automatically closing when the pressure is within acceptable operating pressure range and wherein said reservoir includes an air valve arrangement which regulates and limits the exchange of air between the reservoir and atmosphere.

5,647,082

GOLF BALL WASHING DEVICE WITH INTERNAL OVERFLOW

Stephen J. Garske, St. Paul, and Thomas H. Illies, Blaine, both of Minn., assignors to Par Aide Products Co., St. Paul, Minn.

Filed Dec. 14, 1995, Ser. No. 572,065
Int. Cl.[6] A46B *11/00*
U.S. Cl. 15—21.2 **20 Claims**



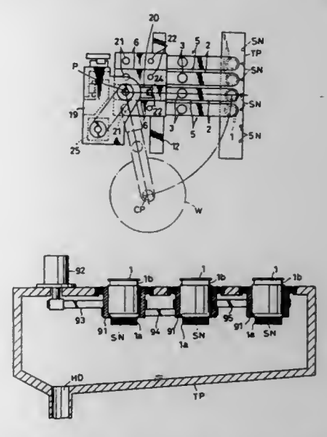
1. A golf ball washing device comprising:
a shell having a cavity for holding liquid;
an overflow passage having a first end connected to the cavity for receiving liquid from the cavity and having a second end extending therefrom;
a stand having a hollow portion attached to the shell, wherein the second end of the overflow passage delivers liquid into the hollow portion; and
an agitator mechanism movable with respect to the shell for maneuvering a golf ball within the cavity.

5,647,083

APPARATUS FOR CLEANING SUBSTRATES AND METHODS FOR ATTACHING/DETACHING AND CLEANING BRUSHES OF SUCH APPARATUS

Kenji Sugimoto; Nobuyasu Hiraoka; Mitsuhiro Fujita, and Masami Ohtani, all of Kyoto, Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Japan

Filed Jun. 28, 1995, Ser. No. 495,216
Claims priority, application Japan, Jun. 30, 1994, 6-173298; Jul. 4, 1994, 6-176084
Int. Cl.[6] A46B *13/02*
U.S. Cl. 15—77 **12 Claims**



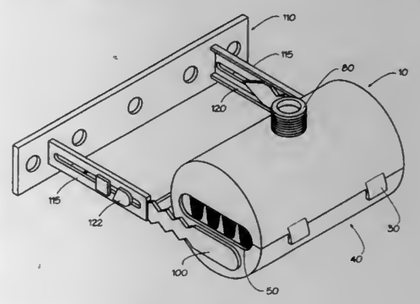
1. A cleaning apparatus for cleaning a surface of a substrate with a brush while spinning the substrate, said apparatus comprising:
a plurality of brushes standing by in a standby position outside an outer edge of said substrate; and
moving means for selecting one of said brushes, and moving said one of said brushes between said standby position and said surface of said substrate.

5,647,084

APPARATUS FOR CLEANING EXTERIOR OR HOSES, PIPES, ETC.

Ed Still, #3, 1023 Northmount Dr. NW., Calgary, AB T2L 0B6, and David McRae, 145, 954-16 Ave. NE., Calgary, AB T2E 1L1, both of Canada

Filed Jan. 18, 1996, Ser. No. 588,575
Int. Cl.[6] B08B *9/02;1/00;3/00*
U.S. Cl. 15—104.92 **6 Claims**



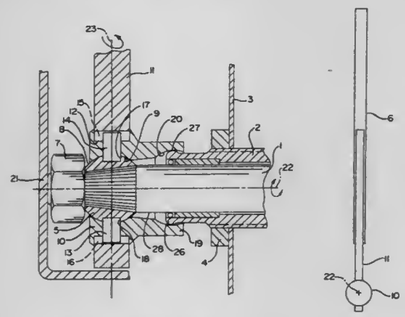
1. A cleaning device consisting of:

a pair of integrally molded, opposing, hingably-joined, housing walls enclosing a space therein, the walls including a pair of opposing apertures for introducing an article into the space and for extracting the article from the space;
and integrally molded with the housing walls, a pair of interior planar surfaces, each of the surfaces providing a set of commonly aligned brushes extending therefrom to a common height,
and integrally molded with the housing walls, a means for retention of the opposed walls when said walls are placed in a closed position, thereby positioning the pair of interior surfaces in a spaced apart and mutually parallel orientation, the sets of brushes laying in alternate staggered positions;
and a means for introducing water into the space; and
means for draining water from the space, said draining means being generally positioned below the introducing means.

5,647,085
WIPER ARRANGEMENT WITH A ROTATABLE WIPER ARM IN ADDITION TO THE RECIPROCATING MOVEMENT

Reinhard Edele, Bietigheim-Bissingen, and Eckhardt Schmid, Brackenheim, both of Germany, assignors to ITT Automotive Europe GmbH, Germany

PCT No. PCT/EP94/00720, § 371 Date Sep. 26, 1995, § 102(e) Date Sep. 26, 1995, PCT Pub. No. WO94/22696, PCT Pub. Date Oct. 13, 1994
PCT Filed Mar. 9, 1994, Ser. No. 525,770
Claims priority, application Germany, Mar. 27, 1993, 43 10 041.4
Int. Cl.[6] B60S *1/34*
U.S. Cl. 15—250.21 **5 Claims**

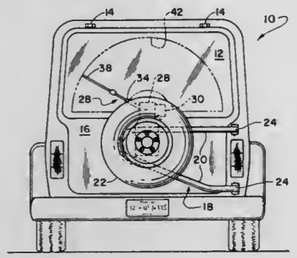


1. A wiper system comprising:
a wiper arm rotatably fixed to a wiper spindle for reciprocating rotary movement therewith about a spindle axis of the wiper spindle and the wiper arm having a longitudinal axis,
a control sleeve radially disposed between the wiper spindle and the wiper arm and is rotatably fixed to the wiper arm for unitary rotation therewith,
a spherical ring fixed to the wiper spindle having a spherical face which is embraced by a concave inner surface of the control sleeve and the control sleeve being pivotable along with the wiper arm about the longitudinal axis of the wiper arm, with the control sleeve being supported on a control edge of a stationary member fixed to a chassis plate by a force applied in a direction transverse to the spindle axis (A) and transverse to the longitudinal axis of the wiper arm, and
a wiper blade connected to the wiper arm
wherein the control sleeve is pivoted about the longitudinal axis as a function of its rotative position relative to the control edge, thereby causing the wiper arm to pivot therewith about the longitudinal axis as a function of rotary movement of the wiper arm about the spindle axis.

5,647,086
SPARE WHEEL CARRIER-MOUNTED REAR WINDOW WIPER

Peter Gold, 465 N. Wood Rd., Rockville Centre, N.Y. 11570

Filed Oct. 22, 1996, Ser. No. 735,008
Int. Cl.[6] B60S *1/58;1/04*
U.S. Cl. 15—250.31 **1 Claim**

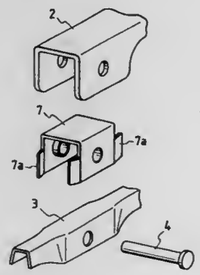


1. In a van which includes a van rear closure mounted thereto, a rear spare wheel carder pivotally mounted thereto, a battery, and a rear window wiping means powered by said battery, said wiping means including a wiper blade adapted for pivotal oscillation, said rear closure having a tailgate and a rear window, said rear spare wheel carder mounted adjacent an end of said tailgate and movable between a closed position against said tailgate and clearance positions spaced from said tailgate, said spare wheel carrier extending along and adjacent to the rear window in the closed position, the improvement comprising;
said rear window wiping means including mounting means adjustably mounting said wiping means to said rear spare wheel carrier at a central location along a lower edge of said rear window, said blade of said rear window wiping means engaging a surface of said window when the carrier is in the closed position.

5,647,087
JOINT SPACER FOR THE YOKE OF A WINDSHIELD WIPER

Masaru Arai, Kazo, Japan, assignor to Nippon Wiperblade Co., Ltd., Saitama-ken, Japan

Filed Jan. 25, 1996, Ser. No. 591,769
Int. Cl.[6] B60S *1/38*
U.S. Cl. 15—250.46 **3 Claims**



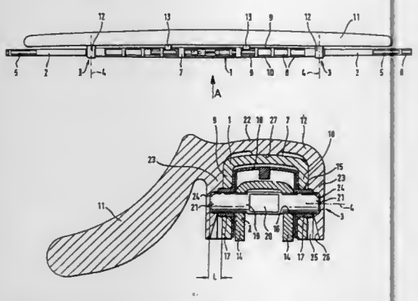
1. In a windshield wiper assembly including a first yoke for pivotal connection to a wiper arm, a second yoke pivotally coupled at a pivot connection to the first yoke by a pivot pin and supporting a blade rubber, said first yoke saddling said second yoke to define a clearance space therebetween, and a spacer member provided in said clearance space between the first and second yokes at said pivot connection, the improvement comprising:

said spacer member defined by first and second spaced side walls with a connecting wall extending therebetween such that said spacer member forms a U-shaped portion, said U-shaped portion extends between first and second longitudinal ends, each of said first and second side walls includes a central section and means for absorbing the clearance space between the yokes, said means comprising a pair of resilient sections, wherein said pair of resilient sections extend, respectively, from said first and second longitudinal ends of an associated central section, said resilient sections are resiliently biased about said longitudinal ends, respectively, to contact outer surfaces of the second yoke and are biased thereagainst to absorb the clearance space between the first and second yokes.

5,647,088
WIPER WITH A WIND GUIDE DEVICE

Juergen Bommer, Tamm; Eduard Schill, Wiernsheim, and Siegfried Waible, Flein, all of Germany, assignors to ITT Automotive Europe GmbH, Germany

Filed Nov. 1, 1995, Ser. No. 551,682
Claims priority, application Germany, Nov. 2, 1994, 44 39 109.9
Int. Cl.[6] B60S *1/38*
U.S. Cl. 15—250.201 **8 Claims**

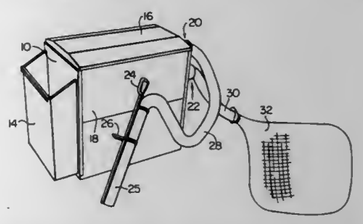


1. A windshield wiper assembly, said assembly comprising:
an elongated primary bracket for supporting a wiper strip, said primary bracket has opposed ends and is generally U-shaped in transverse cross-section to define a pair of side walls connected by a back wall, said sides walls define inner and outer surfaces, said primary bracket includes a pair of openings at each end;
a subordinate bracket pivotally attached to each end of the primary bracket wherein the primary bracket extends over at least a portion of each subordinate bracket, each subordinate bracket has a pair of openings therein;
a pair of joint pins pivotally couple, respectively, the subordinate brackets to the ends of the primary bracket by extending through the openings in the subordinate and primary brackets, each said pin is axially secured with respect to the brackets and has opposite ends which project outwardly from said outer surface of the primary bracket to define stop bars;
a wind guide device for imparting a wind force to the primary bracket, said wind guide device having support means for engaging the primary bracket, said support means includes at least one mounting bracket, said at least one mounting bracket is flexible and U-shaped in cross-section to define a pair of side walls connected by a back wall, said side walls and back wall of said at least one mounting bracket include inner and outer surfaces, each said inner surface of said side walls of said at least one mounting bracket includes a blind hole therein which defines a recess;
said at least one mounting bracket of said wind guide device is mounted on said primary bracket such that said blind holes receive opposite ends of one of said pins to thereby releasably hold the wind guide device to the primary bracket, the depth of the blind holes is such that the inside surface of the side walls of the mounting bracket abut the outside surface of the side walls of the primary bracket.

5,647,089
APPARATUS FOR WASHING AND SORTING PLASTIC BALLS

J. Richard Hollrock, South Deerfield, Mass., assignor to Hollrock Engineering, Inc., Hadley, Mass.

Filed Jun. 9, 1995, Ser. No. 489,079
Int. Cl.[6] A47L *5/38*
U.S. Cl. 15—302 **17 Claims**

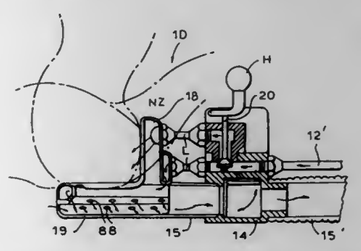


1. A ball washing and sorting system comprising in combination:
a ball sorting station,
a ball washing station,
pneumatic means including a pickup conduit having a ball pickup end for sucking balls into said pickup end for transporting balls into said sorting station,
said sorting station including an inlet for receiving the balls, a reject device for culling balls that are deformed from a desired spherical shape, and an outlet for the balls not culled,
means for transporting balls from said sorting station outlet to said ball washing station,
said ball washing station having an inlet for receiving balls, a rotary brush, and means defining a path for the balls whereby the rotating brush moves the balls along a path from said washer inlet to a washer outlet.

5,647,090
CLEANING APPARATUS WITH SPRAY AND SUCTION CAPABILITY

Sung Hwa Yang, 49-12 Shingal-Li Chunwon-Chutaek #20, Kiheung-Eup, Yongin-Kun, Kyungki-Do, Rep. of Korea

Filed Sep. 26, 1994, Ser. No. 312,105
Int. Cl.[6] A47K *7/00*
U.S. Cl. 15—322 **3 Claims**



1. A comprehensive nonleaking cleaning apparatus for cleaning humans comprising:
a cleaning portion that sprays water and cleaning fluid while receiving waste products of the sprayed fluid;

a waste discharge device that temporarily stores and discharges waste collected from said blow out and in take device; and

a high pressure hose that is attached to said blow out and in take device for spraying fluid therein and that is attached to a blow out motor pump,

wherein a toilet seat portion forming part of said cleaning portion, for a human to sit thereon and discharge waste therein, receives water and cleaning fluid sprayed from a hose of the cleaning portion onto the human to clean the human, and whereby said toilet seat portion receives water and cleaning fluid that circulates under a toilet seat of said toilet seat portion, cleans the human's buttocks and anus, smashes into and thereby breaks the bodily waste discharged by the human and transmits the bodily waste to a waste intake path that connects to said waste discharge device.

5,647,091

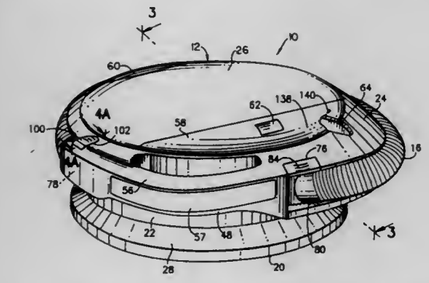
ANIMAL GROOMING VACUUM CLEANER

Bryan P. deBlois, Guilford, and Bernard L. Bensussen, Seymour, both of Conn., assignors to Black & Decker Inc., Newark, Del.

Filed Dec. 13, 1995, Ser. No. 571,480

Int. Cl.[6] A47L *5/00*

U.S. Cl. 15—323 **7 Claims**



7. In a vacuum apparatus having a housing, a motor, an impeller and a vacuum hose, the improvement comprising:

the housing having a hose receiving area around a majority of a side perimeter of the housing in which the hose is located, the hose extending partially out of the hose receiving area along substantially the entire length of said receiving area to form a bumper for the housing, opposite ends of the hose are removably connected to the housing, said housing having a handle located between the opposite ends of the hose when the opposite ends of the hose are connected to the housing.

5,647,092

RECIRCULATING TYPE CLEANER

Hirohide Miwa, Kawasaki, Japan, assignor to Miwa Science Laboratory Inc., Kanagawa, Japan

Continuation-in-part of Ser. No. 139,714, Oct. 22, 1993, Pat. No. 5,457,848. This application Jun. 28, 1995, Ser. No. 495,996

Claims priority, application Japan, Oct. 26, 1992, 4-287278; Dec. 24, 1992, 4-344307

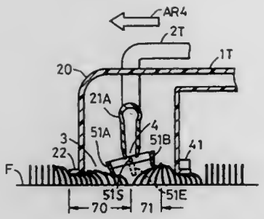
Int. Cl.[6] A47L *5/14*

U.S. Cl. 15—346 **6 Claims**

1. A recirculating type cleaner comprising:

a housing defining a dust collecting chamber therein;

a dust collecting head having dust collecting port means in the bottom thereof, said dust collecting head being movable in a fore and back sweeping direction relative to the piles of a carpet being cleaned;



nozzle means provided in said dust collecting head and having an elongated air outlet at the lower end of said nozzle means for issuing air downwardly, said air outlet being oriented longitudinally in a direction perpendicular to said sweeping direction;

a fan for discharging the air out of said dust collecting chamber;

a suction tube for passing the air drawn from within said dust collecting head into said dust collecting chamber;

a recirculating tube passing at least a fraction of the after-flow air of said fan to said nozzle means for discharge from said dust collecting head through said elongated air outlet; and

pile bending means provided in said dust collecting head for contacting carpet piles being cleaned within at least a portion of the region of said dust collecting port means to bend the piles down to the sweeping direction of said head to thereby open a gorge in the piles, said pile bending means including an elongated first beam-like contact member extending along said elongated air outlet on one side of the nozzle means, and support means for pivotally supporting said beam-like member;

said nozzle means being oriented so that the air discharged through said elongated air outlet is directed to the bottom of said gorge.

5,647,093

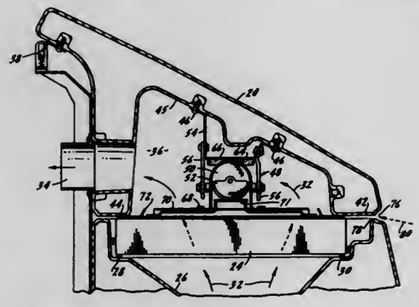
SWEEPER WITH DUAL SEAL FILTER

Gregory J. Engel, Plymouth; Robert D. Hennessey, Eden Prairie; Timothy G. LaRocque, and Terence A. Peterson, both of Plymouth, all of Minn., assignors to Tennant Company, Minneapolis, Minn.

Filed Jun. 18, 1996, Ser. No. 664,616

Int. Cl.[6] B01D *46/04*

U.S. Cl. 15—352 **13 Claims**



1. A sweeping machine including a sweeping brush, a hopper having an inlet for receiving debris from said brush, an opening in said hopper, vacuum means for creating an air flow path from said hopper inlet and through said opening, a filter positioned in said opening, a peripheral flexible seal between an inlet side of said filter and said opening, vibratory cleaning means positioned adjacent an outlet side of said filter to impart vibration thereto, closure means enclosing said filter and cleaning means, a peripheral flexible seal between an outlet side of said filter and said closure means, said filter floating between said peripheral flexible seals whereby vibratory cleaning force applied to said filter from said vibratory cleaning means causes vibration of said filter.

5,647,094

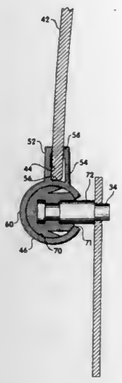
SLIDING MEMBER FOR REGULATOR ASSEMBLY

James Gregory Mariel, Mishawaka, Ind., assignor to Excel Industries, Elkhart, Ind.

Filed Aug. 30, 1995, Ser. No. 521,271

Int. Cl.[6] A47H *15/00*; **E05D** *15/00*

U.S. Cl. 16—93 R **7 Claims**



1. A sliding member for a regulator assembly, comprising a slide body having a substantially spherical working contact surface and an attachment stud having a head portion embedded in the slide body,

wherein the slide body is substantially mushroom-shaped, having a cap portion and a hub portion, the cap portion forming the substantially spherical working contact surface and including a substantially curvo-annular flange coaxially surrounding the hub portion, the hub portion being unitary at its forward end with the cap portion and spaced from the curvo-annular flange of the cap portion by a substantially annular recess in the slide body.

5,647,095

FOLDING HANDLE ASSEMBLY

Kazuhide Takimoto, Tokyo, Japan, assignor to Takigen Manufacturing Co. Ltd., Tokyo, Japan

Continuation of Ser. No. 492,770, Jun. 21, 1995, abandoned, which is a continuation of Ser. No. 197,065, Feb. 16, 1994, abandoned. This application Jun. 18, 1996, Ser. No. 665,530

Claims priority, application Japan, Apr. 13, 1993, 5-110003

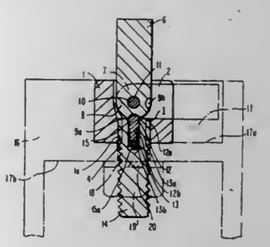
Int. Cl.[6] E05B *7/00*

U.S. Cl. 16—112 **1 Claim**

1. A folding handle assembly fixedly mounted on an article for being carried, comprising:

two support elements (**1**) each being generally rectangular-shaped and provided with a recess (**2**) in an upper portion of the support element, each said support element (**1**) being further provided with a threaded through-hole (**4**) extending from a bottom surface (**3**) of said recess (**2**) to a rear surface (**1***a*) of said support element (**1**);

a bolt (**14**) having its front-end threaded portion fixedly mounted in said threaded through-hole (**4**) of each said support element (**1**) in an insertion manner, said bolt (**14**) being provided with a small axial bore (**15**) in its front-end portion, said small bore (**15**) opening in a front-end surface of said bolt (**14**);



a coil spring (**13**) engaging with an elongated engaging piece (**12**) to form a sub-assembly (**12,13**), said sub-assembly (**12,13**) being mounted in said small bore (**15**) of said bolt (**14**) in an insertion manner;

a folding u-shaped handle (**6**) having a rectangular cross-sectional shape and also having a base-end portion (**7**) located at each end of the handle, each said base end portion (**7**) being received in said recess (**2**) of each said support element (**1**), said handle (**6**) and each said base end portion (**7**) having a thickness dimension only slightly less than the width of said recess (**2**) and being provided with at least two concave portions (**9***a*, **9***b*) in an outer peripheral surface (**8**) of each said base-end portion (**7**), said concave portions (**9***a*, **9***b*) being spaced apart from each other at an angular interval of about 90°;

a cross pivot (**11**) passing through both a through-hole (**5**) of a side surface (**1***b*) of each said support element (**1**) and through a through-hole (**10**) of said base-end portion (**7**) of said handle (**6**) to have said handle (**6**) pivoted to each said support element (**1**) in said recess (**2**);

said sub-assembly (**12**, **13**) having a front-end portion (**12***a*) of its engaging piece (**12**) slidably engaged with said concave portions (**9***a*, **9***b*) of said handle (**6**) under the influence of a resilient force exerted by the spring (**13**), said engaging piece (**12**) having an elongated pin shape with a smaller-diameter portion (**12***b*) inserted into one end (**13***a*) of the coil spring (**13**); and

an article (**16**) on which each said threaded bolt (**14**) is fixedly mounted by a nut (**19**) threadably engaged with the bolt (**14**), said article (**16**) having a concave recess portion (**17**) sized for receiving said two support elements (**1**) and the handle (**6**) in a folded position in the recess.

5,647,096

RETRACTABLE HANDLE CONTROL MECHANISM

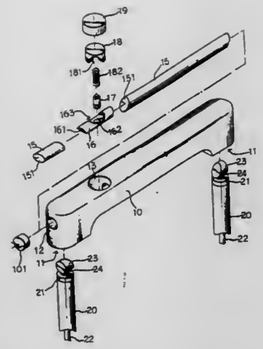
Chi-bin Chang, P.O. Box 82-144, Taipei, Taiwan

Filed Oct. 24, 1995, Ser. No. 547,287

Int. Cl.[6] B25G *1/04*

U.S. Cl. 16—115 **6 Claims**

1. A retractable handle control mechanism for release control of a retractable handle consisting of a transverse handgrip having two downward plug holes at two opposite ends, two sleeves, and two inner tubes fixedly secured to the downward plug holes of said transverse handgrip and movable in said sleeves between retracted position and extended position, a longitudinal hole made on said transverse handgrip in communication with said downward plug holes, a top hole made on said transverse handgrip and perpendicularly connected to said longitudinal hole between said downward plug holes, two links mounted in said longitudinal holes, each link having a first bevel edge and a second bevel edge at two opposite ends, a locating rod vertically mounted inside said longitudinal hole and aligned with said top hole, a movable control block disposed inside said longitudinal hole and stopped between said links and moved vertically along said locating rod between an upper limit position and a lower limit position inside said longitudinal hole, said movable control block having two bevel edges at



two opposite ends respectively matched with the first bevel edges of said links, a control knob fixed to said movable control block and extended out of said top hole, a first spring means connected between said control knob and said locating rod to force said control knob upwards for permitting said movable control knob to be retained in said upper limit position, two release control rods respectively movable in said inner tubes and controlled to force a respective latch from said sleeves for permitting said inner tubes to be moved between said retracted position and said extended position, each release control rod having a top end extended out of the respective inner tube and fixedly mounted with a bevel guide block, which matches with the second bevel edge of one link, and two second spring means respectively mounted around the release control rods of said inner tubes and stopped between said inner tubes and the bevel guide blocks of said release control rods, whereby when said control knob is depressed to lower said movable control block from said upper limit position to said lower limit position, said links are moved outwards in reversed directions to force the bevel guide blocks of said release control rods of said inner tubes downwards, causing said release control rods to release the respective latches from said sleeves for permitting said inner tubes to be moved between said retracted position and said extended position.

5,647,097

PROCESS AND DEVICE TO SEVER THE FIBER SLIVER ON A TEXTILE MACHINE DELIVERING A FIBER SLIVER

Albert Kriegler, Rottenegg, and Bernhard Mohr, Titting, both of Germany, assignors to Rieter Ingolstadt Spinnereimaschinenbau AG, Ingolstadt, Germany

Filed May 5, 1995, Ser. No. 437,141

Claims priority, application Germany, May 13, 1994, 44 16 947.7; May 13, 1994, 44 16 911.6

Int. Cl.[6] B65H *54/71*

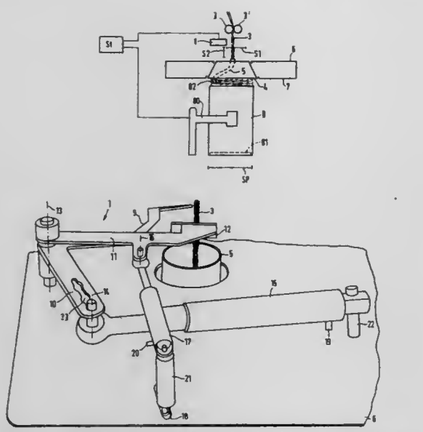
U.S. Cl. 19—159 A **18 Claims**

1. A process for severing a fiber sliver on a textile machine which delivers a fiber sliver by a pair of calendar rollers through a sliver guiding channel defined in a rotary plate into a sliver can disposed below the rotary plate, said process comprising the steps of:

conveying the fiber sliver by the pair of calendar rollers into the sliver guiding channel defined in the rotary plate and into the sliver can disposed below the rotary plate;

stopping said conveying of the fiber sliver by the calendar rollers;

clamping the fiber sliver with a clamping device between the calendar rollers and the rotary plate so that the fiber sliver is clamped between the calendar rollers and the clamping device;



defining a drafted severing point in the fiber sliver between the calendar rollers and clamping device by displacing the clamping device relative to the calendar rollers; and

severing the fiber sliver at the drafted severing point.

5,647,098

APPARATUS FOR TRANSPORTING A COILER CAN BETWEEN A SLIVER-PRODUCING AND A SLIVER-CONSUMING TEXTILE MACHINE

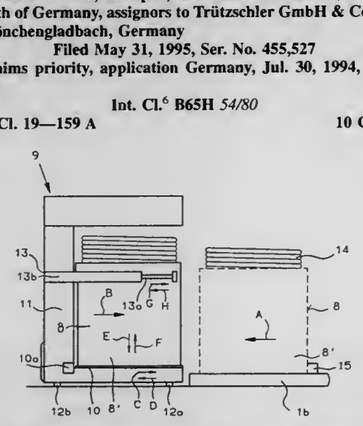
Ferdinand Leifeld, Kempen, and Stefan Schlichter, Viersen, both of Germany, assignors to Trützschler GmbH & Co. KG, Mönchengladbach, Germany

Filed May 31, 1995, Ser. No. 455,527

Claims priority, application Germany, Jul. 30, 1994, 44 27 123.9

Int. Cl.[6] B65H *54/80*

U.S. Cl. 19—159 A **10 Claims**



1. A system for transporting sliver between a sliver-producing textile machine and a silver-consuming textile machine, comprising

(a) a coiler can containing the sliver; said coiler can having a can bottom and a center of gravity;

(b) a can emplacement;

(c) a carriage for transporting the coiler can; and

(d) can-handling means mounted on said carriage for pushing said coiler can horizontally and, at the same time, preventing a horizontal motion thereof at a location below said center of gravity to effect tilting of said coiler can, for reaching underneath said can bottom in a tilted state of the coiler can to tilt back said coiler can, for moving the coiler can onto and off the carriage, and for vertically moving said coiler can in an untilted position.

5,647,099

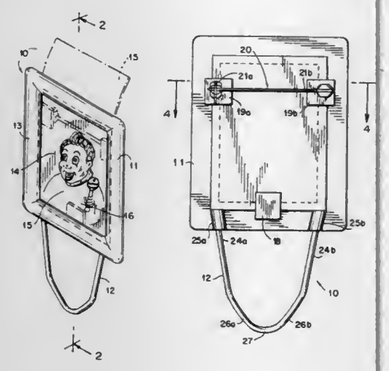
GARMENT PIN

Eric S. Cohen, 11111 Biscayne Blvd., Apt. 615, Miami, Fla. 33161

Filed Oct. 5, 1995, Ser. No. 538,969

Int. Cl.[6] A44B *21/00;* **A44C** *3/00*

U.S. Cl. 24—3.3 **10 Claims**



1. A garment pin for supporting a pair of eyeglasses at a predetermined location of an outer garment of a user, comprising:

a) a holding member;

b) means for detachably securing said holding member to the outer garment at the predetermined location thereof and having an upper and a lower region as considered in a use position of said holding member; and

c) means for supporting the eyeglasses in a suspended position thereof on said holding member, including a loop-shaped support member secured to said holding member at said lower region thereof and extending in a downward direction therefrom away from said upper region as considered in said use position along a course including a pair of substantially straight end sections diverging from one another in an upward direction opposite to said downward direction, and an intermediate section integrally merging with said diverging end sections and including a substantially centrally situated arcuate connecting section of a radius of curvature large enough for the eyeglasses, which extend through and embrace said loop-shaped support member in said suspended position thereof, to be able to slide along said connecting section until reaching a respective one of a pair of transition sections of said support member that flank said connecting section and at which said radius of curvature changes to an appreciable extent.

5,647,100

CLOSURE MEMBER FOR A RECLOSABLE THERMOPLASTIC BAG

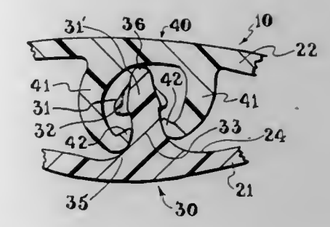
Jose Porchia, Midland, and Brian C. Dais, Sanford, both of Mich., assignors to Dowbrands L.P., Indianapolis, Ind.

Continuation-in-part of Ser. No. 403,993, Mar. 14, 1995. This application Aug. 29, 1995, Ser. No. 521,149

Int. Cl.[6] A44B *17/00*

U.S. Cl. 24—30.5 R **13 Claims**

7. A closure member for a reclosable thermoplastic bag, comprising: two opposing longitudinally extending interlockable profile elements, at least one of the profile elements having alternating deformed segments and undeformed segments along the length of the profile element, the deformed segments being narrower and taller than the undeformed segments, the deformed segments and



the undeformed segments forming about right angles where they meet.

5,647,101

WEIGHT REDUCED MAGNETIC FASTENER

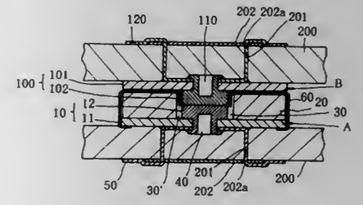
Tamao Morita, Tokyo, Japan, assignor to Tarmo Co., Ltd., Tokyo, Japan

Filed Sep. 1, 1995, Ser. No. 522,952

Claims priority, application Japan, Sep. 2, 1994, 6-232501

Int. Cl.[6] A44B *21/00*

U.S. Cl. 24—303 **10 Claims**



1. A magnetic fastener comprising:

a fastening element having a permanent magnet with a hole substantially parallel to a direction of the magnetic poles, said fastening element having a first ferromagnetic plate having a first thickness and being disposed on a first side of said magnet facing said hole;

an attracted element having a second ferromagnetic plate, said second plate having a second thickness and being adapted for connecting to a second side of said magnet opposite said first side of said magnet facing said hole; and

a ferromagnetic rod having a distal end that extends from one side of at least one of said first and second ferromagnetic plates and is insertable into said magnet hole, said ferromagnetic rod defining a blind hole extending from said at least one of said plates into said distal end,

wherein a cross-sectional area of said blind hole is at least 2.2% but no more than 88.9% of a cross-sectional area of said distal end, and wherein a cross-sectional wall thickness of said distal end is greater than the thickness of said at least one of said plates.

5,647,102

QUICK RELEASE CLAMP

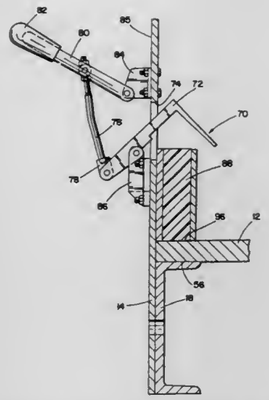
John E. Sterling, Jr., Lumberport, W. Va., assignor to Guyan Machinery Co., Barboursville, W. Va.

Filed Nov. 7, 1995, Ser. No. 553,150

Int. Cl.[6] B25B *5/04*

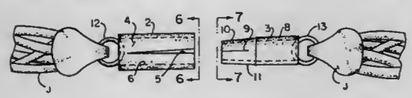
U.S. Cl. 24—494 **11 Claims**

1. A clamping device for securing a screen to a frame member having an aperture therein, said clamping device comprising an actuating arm operatively connectable to a first side of said frame



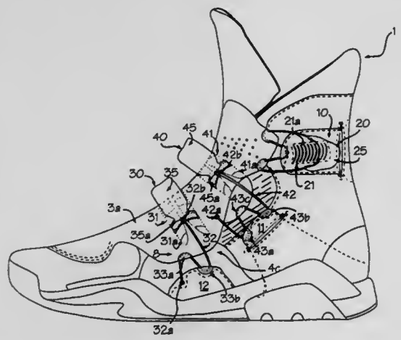
member, a clamping member receivable through said aperture in said frame member and operatively connectable to said first side of said frame member, a connecting arm interconnecting said actuating arm and said clamping member, said clamping member being comprised of a first portion positionable within said aperture in said frame member and a second portion connected to said first portion and oriented substantially perpendicularly with respect to said first portion, said second portion of said clamping member being positionable adjacent to a second side of said frame member, said second side of said frame member being substantially parallel to said first side of said frame member, and a clamp bar having a first surface contectable the screen to be secured and a second surface positionable adjacent to said second side of said frame member, rotation of said actuating arm in a first direction causing rotation of said clamping member in a first direction resulting in said clamping member compressible said clamp bar against said second side of said frame member and the screen to be secured, said first direction of rotation of said actuating arm and said first direction of rotation of said clamping member being substantially the same.

5,647,103
BEVELED CLASP
Robert A. Foster, 5545 Lehigh, Imperial, Mo. 63052
Filed Jan. 16, 1996, Ser. No. 586,606
Int. Cl.[6] A44B *17/00*
U.S. Cl. 24—618 **2 Claims**



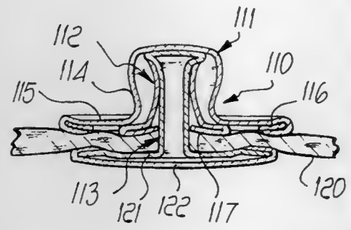
1. A clasp formed of beveled members capable of facilely securing together with a minimum of effort, sustaining their hold following their slide interfitting together, and capable of separating through the exertion of a slight twist and pulling force to cause their separation, comprising, a male member, a female member, each said male and female members having a back edge, and each member having a slight bevel provided at least partially along their length, and extending to their front edges, said female member having an interior surface along a part of its length, said male member having an exterior surface provided along a part of its length, said male member interfitting within said female member, and securing therein only through the creation of capillary and frictional forces generated between the said surfaces of the male and female members, gripping and connecting members provided at the back ends of each of said male and female members, said gripping members provided for facilitating the insertion and separation of the clasp during usage, said male and female members being formed of cylindrical shape, at least said female member having at least one longitudinal slot formed through its cylindrical shape and along a part of its length, and said slot being compressed closed to provide a bevel along the length of the female member, and which is pressured slightly opened upon insertion of the male member therein during creation of a grip, said male member having at least one slot formed along a part of its length, and said male member being compressed to close said slot and thereby form a slight decreasing tapered bevel along its length, said male member capable of interfitting within the female member to form their interconnection only through the generation of the capillary and frictional forces between said male member as interfitting within said female member.

5,647,104
CABLE FASTENER
Laurence H. James, 166 Byram Shore Rd., Greenwich, Conn. 06830, assignor to Laurence H. James, Greenwich, Conn.
Filed Dec. 1, 1995, Ser. No. 566,180
Int. Cl.[6] A43B *11/00*
U.S. Cl. 24—68 S **32 Claims**



31. An adjustable fastening system, comprising:
opposing first and second cinching members that are adapted to be cinched together along a cinching direction, said first cinching member including first and second spaced apart guide members, and said second cinching member including an opposing guide member that opposes the first and second guide members;
an effective closed-loop cable assembly connecting the first and second cinching members together, said cable assembly including a cable sequentially routing through said first guide member, said opposing guide member and said second guide member; and
anchor means including an anchoring member for anchoring the cable assembly in a tensioned state thereby cinching said first and second cinching members together along said cinching direction along which the first and second cinching members approach each other, said anchoring member forming plurality of juxtaposed grooves for receiving the cable assembly, the grooves being spaced apart from each other along the cinching direction.

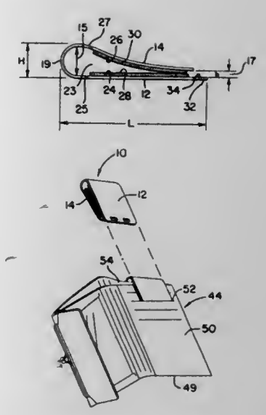
5,647,105
MALE COMPONENT OF PRESS-STUD PARTICULARLY FOR ITEMS OF CLOTHING
Riccardo Candotti, Via Roma 83, 35100 Padova, Italy
Filed Mar. 21, 1996, Ser. No. 619,399
Claims priority, application Italy, Mar. 24, 1995, PD95A0062
Int. Cl.[6] A44B *17/00; 1/34*
U.S. Cl. 24—691 **10 Claims**



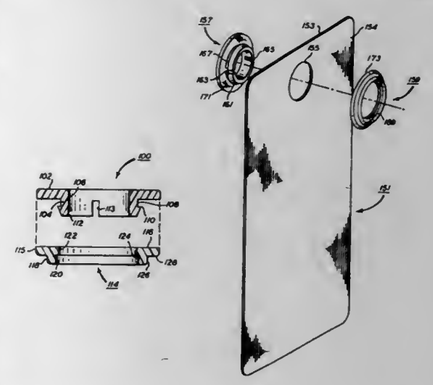
1. Male component of a press-stud, particularly for items of clothing, comprising:
a dome that extends, so as to form an undercut region, from a first base that is formed by blanking and plastic deformation from a metal plate;
an intermediate tubular element, which is also formed by blanking and plastic deformation from a metal plate, to be inserted axially in said dome, affecting part of an internal extension of said dome, and extends from a second base to be seamed to the first base by folding a perimetric edge of the first base;
a stem that protrudes from a third base and has such a cross-section and length as to be able to pass through the intermediate tubular element, perforating a fabric to which the male component of the press-stud is fixed, and to deform against said dome, interposing a wider region between said dome and a free end of said intermediate tubular element;
wherein at least two opposite radial wings are formed in said second base by blanking and folding in opposition to the free end of said intermediate tubular element, free edges of said wings facing each other and being in at least partial contact, during insertion, with a shank of said stem to prevent the curling of the fabric, on which said wings rest when said fabric is crossed by said stem.

5,647,106
ANTI-THEFT SYSTEM AND METHOD
Dennis L. Hogan, Lighthouse Point, Fla., assignor to Sensormatic Electronics Corporation, Boca Raton, Fla.
Filed Jul. 6, 1994, Ser. No. 271,127
Int. Cl.[6] A44B *21/00*
U.S. Cl. 24—704.1 **12 Claims**

1. A device for deterring theft of an object comprising: first and second arms for clamping the object when said device is attached to the object, said first arm having an end portion that extends beyond said second arm and a tooth located on said end portion and said first arm has a terminal edge; means for providing a clamping force to cause said first and second arms to grip the object firmly such that when said device is attached to the object, said device cannot readily be removed without use of a special tool; padding disposed between said first and second arms and the object such that said end portion between said tooth and said terminal edge is free of padding, said padding providing enhanced frictional force between the object and said first and second arms and preventing said tooth from cutting into a surface of the object when said device is attached to the object unless said second arm is moved relative to said first arm and said device moves relative to the object.

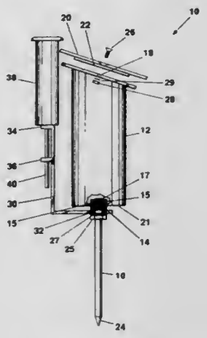


5,647,107
SNAP GROMMET
Blair Meloy Brewster, Brooklyn Heights, N.Y., assignor to Permar Systems, Inc., Wolcott, N.Y.
Division of Ser. No. 275,135, Jul. 14, 1994, Pat. No. 5,573,825.
This application Jun. 5, 1995, Ser. No. 462,832
Int. Cl.[6] A43C *5/00*
U.S. Cl. 24—713.6 **11 Claims**



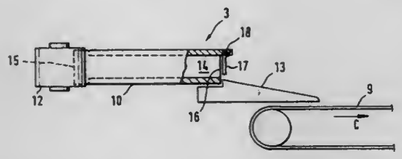
1. A snap-grommet comprising:
a male part having a tubular body, a flange extending from a proximal end of the tubular body, and a locking element extending from a distal end of the tubular body;
a female part having a disk-shaped engaging ring having an aperture for receiving the tubular body, an annular ridge adjacent the aperture for engaging the locking element, and an annular wall attached to the engaging ring for surrounding and limiting access to the locking element.

5,647,108
RECEPTACLE FOR ASHES OF DECEASED
Robert Sydney Crook, Frenchs Forest, Australia, assignor to Taghulk Pty Limited, Hornsby Heights, Australia
Continuation of Ser. No. 211,155, Mar. 21, 1994, abandoned. This application Mar. 4, 1996, Ser. No. 610,516
Claims priority, application Australia, Sep. 19, 1991, PK8481
Int. Cl.[6] A61G *17/00*
U.S. Cl. 27—1 **24 Claims**



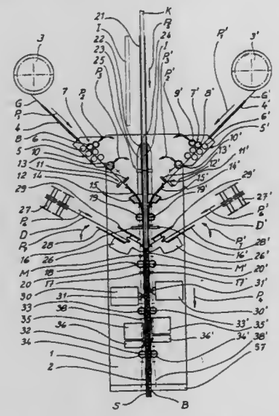
1. A deceased's ash and cremated remains receptacle adapted to contain ashes and cremated remains and intended to be at least partially embedded in earth, the receptacle comprising:
a watertight cremated remains compartment configured for enclosing ashes and cremated remains, the compartment having a sealable aperture adapted to receive ashes and cremated remains therethrough;
tamper resistant closure means for permanently sealing the aperture so as to be watertight;
means for identification of the ashes and cremated remains of the deceased placed within said cremated remains compartment, said means for identification being adapted for displaying symbols identifying the ashes and cremated remains of the deceased placed within said cremated remains compartment, said means for identification being incorporated in said closure means; and
support means capable of supporting the receptacle in a vertical position in the earth, whereby the receptacle is adapted to contain ashes and cremated remains of a deceased and to function as a memorial.

5,647,109
YARN TEXTURING DEVICE INCLUDING A STUFFER BOX CHANNEL WITH CIRCUMFERETIALLY CLOSED CROSS SECTION
Erwin Steiner, Clover, N.C., and Rolf Mischker, Fort Mill, S.C., assignors to American Suessen Corporation, Charlotte, N.C.
Filed Sep. 26, 1995, Ser. No. 534,221
Int. Cl.[6] D02G *1/12*
U.S. Cl. 28—263 **22 Claims**



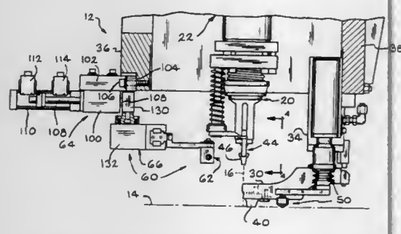
1. A texturizing device for a yarn conditioning plant, comprising:
a pair of feed rollers for feeding at least one yarn to be crimped,
a stuffer box that crimps the yarn, the stuffer box having a stuffer box channel, a channel inlet opening, and a channel outlet opening,
and a conveyor for transporting the crimped yarn to a heat setting chamber,
wherein the stuffer box channel has a curved circumferentially closed cross section free from any parting lines.

5,647,110
SYSTEM FOR THE CONTINUOUS PRODUCTION OF BUILDING ELEMENTS
Klaus Ritter; Gerhard Ritter, and Gerhard Schmidt, all of Graz, Austria, assignors to EVG Entwicklungs- u. Verwertungs- Gesellschaft mbH, Raaba, Austria
PCT No. PCT/AT95/00032, § 371 Date Mar. 14, 1996, § 102(e) Date Mar. 14, 1996, PCT Pub. No. WO96/03234, PCT Pub. Date Feb. 8, 1996
PCT Filed Feb. 13, 1995, Ser. No. 617,857
Claims priority, application Austria, Jul. 28, 1994, 1495/94
Int. Cl.[6] B23P *21/00;* **B23K** *11/11;* **B21F** *27/10;15/08*
U.S. Cl. 29—33 K **31 Claims**



1. Plant for the continuous production of building elements which consist of two parallel flat grid meshes made from intersecting longitudinal and transverse wires welded to one another at the intersection points, of straight web wires holding the grid meshes at a predetermined mutual spacing and of an insulating body which is arranged between the grid meshes and through which the web wires penetrate, with a production channel, with two supply reels, arranged on both sides of the production channel, and downstream straightening devices, each for a grid sheet, with two curved lead devices opening tangentially on opposite longitudinal sides of the production channel, with an insulating-body guide device arranged between the two lead devices, with at least one group, arranged laterally of the production channel, of web-wire supply reels and web-wire feeding and cutting devices, with web-wire welding devices which are arranged on both sides of the production channel and which have a transformer and flexible electrical leads from the secondary outputs of the transformer to jaws of welding tongs pivotable into the grid-mesh planes, and with web-wire trimming devices, each for severing a projecting length of web wire, characterized in that a push-in device (**7**, **7'**) for drawing off in steps an endless grid sheet (G, G'; G1, G1'; G2, G2') standing on edge from at least one supply reel (**3**, **3'**; **91**, **91'**; **92**, **92'**) and for introducing the grid sheet into the lead devices (**14**, **14'**) is arranged on each of the two sides of the production channel (**2**), in that two cutting devices (**11**, **11'**) for severing grid meshes (M, M') of predetermined length from the endless grid sheets (G, G'; G1, G1'; G2, G2') are provided upstream of the lead devices (**14**, **14'**), the grid meshes (M, M') being capable of being advanced in steps in the lead devices (**14**, **14'**) and in the production channel (**2**) by means of a grid-mesh conveying device (**18**), in that an insulating-body conveying device (**24**) extending over the insulating-body guide device (**22**) and the production channel (**2**) is provided for advancing in steps, synchronously with the grid meshes (M, M'), at least partially dimensionally stable insulating bodies (I) intended for fixing the web wires (S), in that the feeding and cutting devices (**36**, **36'**) for equipping the insulating body (**I**) with web wires (S) and downstream welding devices (**29**, **29'**) for the simultaneous welding of the two ends of all the web wires (S) to corresponding longitudinal wires (L, L') of the grid meshes (M, M') are provided in the effective range of the grid-mesh conveying device (**18**), in that, by means of a building-element conveying device (**32**), the building elements (B) can in steps and successively be fed to the web-wire trimming devices (**35**, **35'**) and be conveyed out of the production channel (**2**), and in that the push-in devices (**7**, **7'**) and all the conveying devices (**18**, **24**, **32**), coupled to one another, can be driven jointly by means of drive shafts (**38**, **38'**).

5,647,111
AUTOMATIC SEALANT APPLICATION APPARATUS AND METHOD
John W. Zienkiewicz, North Tonawanda, and Bradley M. Roberts, Williamsville, both of N.Y., assignors to Gemcor Engineering Corp., Buffalo, N.Y.
Filed Feb. 9, 1995, Ser. No. 386,117
Int. Cl.[6] B23P *23/04;11/00;* **B05C** *7/00*
U.S. Cl. 29—34 B **19 Claims**

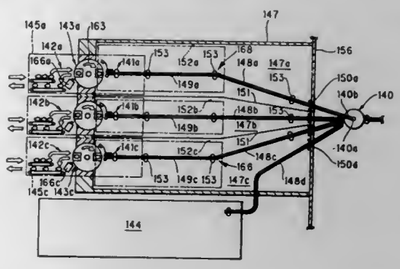


1. In an automatic fastening machine for installing fasteners in a workpiece wherein a work axis is disposed substantially normal to a plane containing said workpiece and said axis is substantially centered at a location of fastener installation and wherein a transfer means carries at least one tool along a transfer path for movement into and out of registry with said work axis for performing a fastener installation operation on said workpiece:
a) sealant applicator means carried by said machine and movable into and out of association with said transfer path for applying sealant to a fastener prior to installation in said workpiece and while said fastener is held at a location on said transfer path; and
b) means for moving said sealant applicator means into and out of association with said transfer path and into and out of operative association with said fastener for applying sealant to said fastener.

5,647,112
UNIVERSAL PRESS PIN REMOVER
Jesus Arvizu, 8600 Robby SW., Albuquerque, N. Mex. 87121
Filed Aug. 4, 1995, Ser. No. 511,134
Int. Cl.[6] B23P *19/04*
U.S. Cl. 29—268 **16 Claims**

1. An apparatus for universally dislodging press pins fitted into a latch, the apparatus comprising:
(a) a rotatable tip having an extended axial thrust portion integrally formed with a cylindrical tip head;
(b) a first member including a handle portion at one end, and at an other end, a head portion, the first member head portion having a flat inner face and a flat outer face, the first member head portion further including an aperture bored into and completely through the flat inner face and flat outer face for receiving the press pins;
(c) a second member having a handle portion at one end, and at an opposite end, a head portion, the second member head portion further having:
(i) a flat face having a U-shaped hole formed therein;
(ii) a first side face having a hole bore shaped to linearly receive the cylindrical tip head and a segment of the adjacent axial thrust portion therein when the tip's axial thrust portion is linearly parallel to the length of the second member;
(iii) a second side face having an internal surface opposite the second side face, the internal surface preventing further advancement of the rotatable tip when the rotatable tip is inserted in the first side face; and
(iv) an end face, wherein the rotatable tip is capable of rotation about an axis perpendicular to the length of the second member head portion between the end face and a top portion of the U-shaped hole, the rotatable tip further adapted to engage and provide axial thrust on a press pin lodged into a latch; and
(d) means for connecting the first member to the second member in secure rotatable relationship to allow the second member flat inner face to be in facing relationship with the first member head portion's flat inner face.

5,647,113
METHOD FOR ASSEMBLING PHOTO FILM CASSETTE
Akihiko Hase; Akira Wakabayashi; Takayuki Kambara; Makoto Shimizu, and Haruo Ichikawa, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed May 23, 1995, Ser. No. 447,605
Claims priority, application Japan, May 30, 1994, 6-117221; May 24, 1994, 6-109719
Int. Cl.[6] B23Q *17/00*
U.S. Cl. 29—407.05 **5 Claims**



1. A method of loading a cassette with a photo film strip, said cassette having a photo film passageway through which a leader of said photo film strip is drawn out of a cassette shell, and a spool on

which a trailer of said photo film strip is retained, said loading method comprising steps of:

providing a light-tight dark compartment adapted to loading of said photo film strip;

providing a rotary barrel device partially fitted in an opening formed in a downstream wall of said dark compartment;

disposing a plurality of cassette holders on said barrel device in respective positions that oppose each other with reference to a rotational axis of said barrel device, for holding said cassettes removably, said barrel device being rotatable to move said cassette holders into and out of said dark compartment;

supplying a cassette to one of said cassette holders located outside said dark compartment;

rotating said rotary barrel device to place said cassette inside said dark compartment;

passing said trailer of said photo film strip into said photo film passageway in said cassette in one of said cassette holders located inside said dark compartment;

retaining said trailer on said spool passed into said photo film passageway; and

rotating said spool of said cassette in said dark compartment after retaining said trailer, for winding said photo film strip on said spool, to include said photo film strip into said cassette.

5,647,114

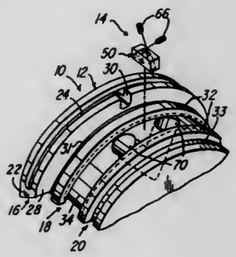
METHOD OF PROVIDING A BARRIER TO SUBSTANTIALLY BLOCK THE FLOW OF LIQUID IN A MOLD INSERT

Ronald E. Pleasant, 13191 Township Rd. 184, Kenton, Ohio 43326

Division of Ser. No. 296,096, Aug. 25, 1994, abandoned, which is a continuation of Ser. No. 966,813, Oct. 26, 1992, abandoned. This application Feb. 13, 1995, Ser. No. 387,250

Int. Cl.[6] B23P *11/00*

U.S. Cl. 29—525.11 **22 Claims**



1. A method of providing a barrier to substantially block the to flow of liquid in a circumferentially-extending, outwardly-open liquid conduit groove of a mold insert comprising a solid metal body, said groove having a base and a pair of mutually confronting sidewalls, comprising the steps of:

undercutting the sidewalls of said liquid conduit groove to form undercuts in said insert having imperforate, inwardly-facing surfaces;

providing a liquid barrier dam member having a size and shape to fit entirely within said groove and substantially block the flow of liquid therepast;

and thereafter clamping said dam member to said insert inside said groove by advancing locking members located within said dam member forcibly into engagement with said imperforate, inwardly-facing surfaces of said undercuts.

5,647,115

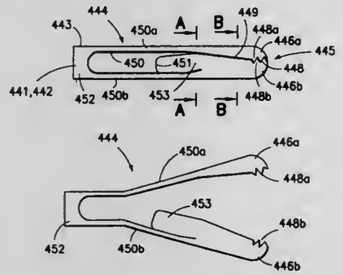
METHOD FOR FORMING A JAW ASSEMBLY FOR AN ENDOSCOPIC BIOPTOME

Charles R. Slater, Fort Lauderdale; Matthew A. Palmer, Miami; Jurgen Andrew Kortenbach, Miami Springs; Michael Sean McBrayer, and Saul Gottlieb, both of Miami, all of Fla., assignors to Symbiosis Corporation, Miami, Fla.

Continuation of Ser. No. 189,937, Feb. 1, 1994, Pat. No. 5,542,432, which is a continuation-in-part of Ser. No. 837,046, Feb. 18, 1992, Pat. No. 5,507,296. This application Jun. 2, 1995, Ser. No. 459,479

Int. Cl.[6] B23P *15/00*

U.S. Cl. 29—557 **4 Claims**



1. A method for forming a jaw assembly for an endoscopic bioptome, comprising:

a) obtaining a cylinder of spring metal having a substantially hemispherical end, a middle portion and an open second end;

b) cutting said substantially hemispherical end with electrical discharge machining equipment or laser machining equipment to provide opposed jaw cups;

c) cutting out metal from said middle portion of said cylinder with electrical discharge machining equipment or laser machining equipment to form two tapered arms which taper from a larger circumference at said opposed jaw cups to a smaller circumference away from said opposed jaw cups, at least one of said two tapered arms having a portion which extends less than 80 degrees around a periphery of said cylinder, said two tapered arms terminating at a cylindrical portion of said open second end; and

d) bending at least one of said two tapered arms away from the other of said two tapered arms.

5,647,116

METHOD FOR STRIPPING NON-SUPERCONDUCTIVE AG-BASED SHEATH FORMED ON A WIRE

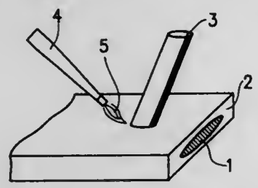
Chin-Hai Kao, Hsinchu Hsien, and Horng-Yi Tang, Feng Yuan, both of Taiwan, assignors to National Science Council, Taipei, Taiwan

Filed Sep. 7, 1995, Ser. No. 524,899

Int. Cl.[6] H01L *39/24*

U.S. Cl. 29—599 **12 Claims**

1. A method of stripping non-superconductive Ag-based sheath



formed surrounding a superconducting tape, comprising the following steps:

(a) placing a Bi- or Pb-based metal material on the Ag-based sheath to be removed;

(b) heating the Bi- or pb-based metal material to 250°–450° C. to dissolve the Ag-based sheath; and

(c) removing the dissolved Ag-based sheath.

5,647,117

METHOD FOR SEALING CONNECTED PORTIONS OF LEAD WIRES OF A SWITCH DEVICE

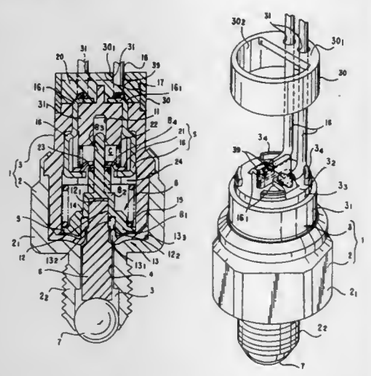
Tsutomu Kurita, Miyazaki, Japan, assignor to Kabushiki Kaisha Honda Lock, Miyazaki, Japan

Division of Ser. No. 343,895, Nov. 17, 1994. This application Sep. 28, 1995, Ser. No. 535,614

Claims priority, application Japan, Nov. 24, 1993, 5-062850; Dec. 24, 1993, 5-328564

Int. Cl.[6] H01H *11/00*

U.S. Cl. 29—622 **3 Claims**



1. A method for sealing connected portions of lead wires with connection terminals of a switch device, comprising the steps of:

preparing a sealing cap having a first hole portion for holding said lead wires and a second hole portion;

connecting said lead wires to said connection terminals which are exposed on one end face of a casing;

securing said sealing cap to said casing with said lead wires passing through said first hole portion of the sealing cap therein to define a recess in said sealing cap around said connected portions of the lead wires with the connection terminals; and

filling potting material into said recess through said second hole portion of the sealing cap.

5,647,118

APPARATUS FOR AUTOMATICALLY ATTACHING ITEMS TO HANG STRIP

Robert E. Laperriere, Watertown, Conn.; Michel Louis Armand G. Lequeux, Wellin, Belgium, and Richard W. Price, Avon, Conn., assignors to North American Plastic Manufacturing Company, Middlebury, Conn.

Filed Aug. 17, 1995, Ser. No. 516,427

Int. Cl.[6] B23P *21/00*

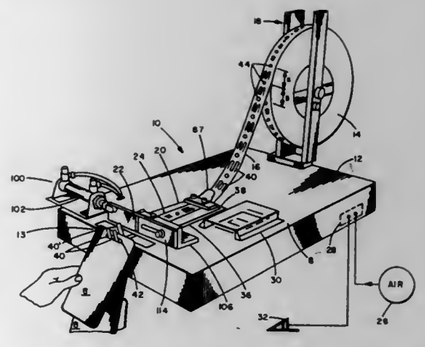
U.S. Cl. 29—715 **19 Claims**

1. An apparatus for releasably attaching items to a hang strip comprising:

(a) a base;

(b) an article attaching station located on said base;

(c) a means for providing a supply of hang strip material for advancement relative to said base from said supply of hang strip material to said article attaching station;



(d) an indexing station provided on said base for advancing a hang strip in discreet incremental sections from said means for providing a supply of hang strip material to said article attaching station;

(e) said indexing station including an indexing means having means for engaging formed cut shapes in a hang strip and advancing a hang strip through engagement with an involved one of the formed cut shapes to a location generally adjacent said article attaching station;

(f) means associated with said article attaching station for causing selected ones of said formed cut shapes which are otherwise closed to be opened;

(g) means for cutting a hang strip transversely of its length and disposed on said base; and

(h) said indexing means includes at least one drive member which is driven between first and second positions disposed relative to said base, and the distance separating said first and second positions corresponding to the distance between consecutively ordered formed cut shapes taken along the length of the hang strip;

(i) and control means associated with each of said indexing means and said cutting means for causing actuation of said indexing means and actuation of said cutting means to effect indexing and cutting of a hang strip.

5,647,119

CABLE TERMINATING TOOL

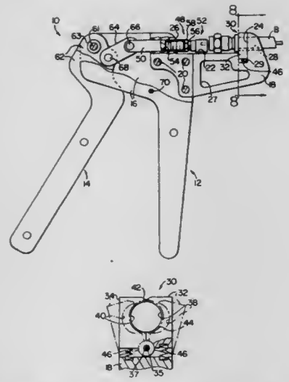
Roger R. Bourbeau, Glastonbury, and David L. Morrow, Chester, both of Conn., assignors to Ben Hughes Communication Products Company, Chester, Conn.

Filed Jul. 25, 1995, Ser. No. 506,660

Int. Cl.[6] H01R *43/042*

U.S. Cl. 29—751 **27 Claims**

1. A cable terminating tool for applying an electrical connector to an end portion of a cable and comprising a tool holder, cable retaining means for positioning and retaining a cable to be terminated and including a pair of cable retaining members having opposing arcuate jaws supported for movement away from each other and to a cable receiving position to receive therebetween an associated portion of a cable to be terminated and toward each other and to a cable retaining position to restrain the associated portion of the cable to be terminated, said cable retaining members in said cable retaining position encircling the associated portion of the cable and defining an annular bearing surface for engaging a connector received on the end portion of the cable to be terminated, a plunger assembly including an axially elongated plunger supported on said tool holder for axial movement toward and away from said bearing surface, and manual operating means connected to said plunger assembly for moving said plunger relative to said



tool holder and in a direction toward and away from said bearing surface.

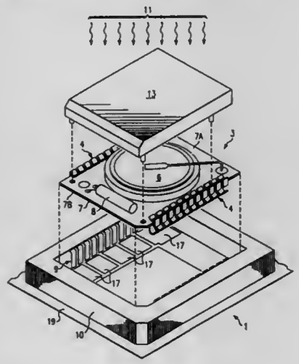
5,647,120

Patent Not Issued For This Number

5,647,121
METHOD OF ASSEMBLING ELECTRONIC COMPONENT

Neil McLellan, Garland; Mike Strittmatter, Carrollton; Joseph Patrick Hundt, Corinth; Christopher M. Sells, and Francis A. Scherpenberg, both of Carrollton, all of Tex., assignors to Dallas Semiconductor Corporation, Dallas, Tex.

Division of Ser. No. 92,631, Jul. 16, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 487,821
Int. Cl.[6] H05K *3/34*
U.S. Cl. 29—840 **11 Claims**

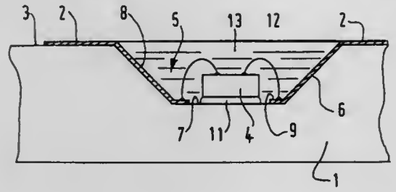


1. A process, comprising the steps of:
providing a printed circuit board;
mounting a socket on said printed circuit board;
placing said printed circuit board with said socket mounted on it in a surface mount reflow oven and heating said printed circuit board and said socket to bond said socket to said printed circuit board; and
inserting an electrical module in said socket, wherein said electrical module is a clock module, which comprises a second printed circuit board having a first and second surface, a lithium battery, a crystal, and an integrated circuit, wherein said lithium battery and said crystal are mounted on a first surface of said second printed circuit board and said integrated circuit is mounted on a second surface of said second printed circuit board.

5,647,122
MANUFACTURING METHOD FOR AN INTEGRATED CIRCUIT CARD

François Launay, Caen, and Jacques Venambre, Ifs Plaine, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 14, 1995, Ser. No. 490,482
Claims priority, application France, Jun. 15, 1994, 94 07308
Int. Cl.[6] H05K *3/34*
U.S. Cl. 29—840 **9 Claims**

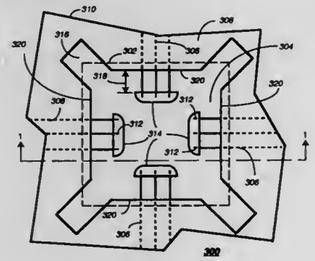


1. A method of manufacturing an electronic card having an electrically insulating card support provided with a cavity for accommodating an integrated circuit and, on one surface of said support, metal contact pads electrically connected to contacts of said integrated circuit, said method comprising the steps of:
(i) the application of electrical conductor tracks, all provided against the bottom and the lateral walls of said cavity and each connected to one of said metal contact pads arranged on the surface of the support which comprises said cavity,
(ii) the realisation of electrical connections interconnecting the contacts of the integrated circuit positioned in the cavity and said conductor tracks at the bottom of the cavity, and
(iii) filling up of said cavity with a protective resin which is subsequently polymerized.

5,647,123
METHOD FOR IMPROVING DISTRIBUTION OF UNDERFILL BETWEEN A FLIP CHIP DIE AND A CIRCUIT BOARD

Jonathon G. Greenwood, Boynton Beach; James G. Lance, Jr., Lake Worth, and Robert Kenneth Doot, Boynton Beach, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 16, 1995, Ser. No. 543,543
Int. Cl.[6] H05K *3/34*
U.S. Cl. 29—840 **6 Claims**

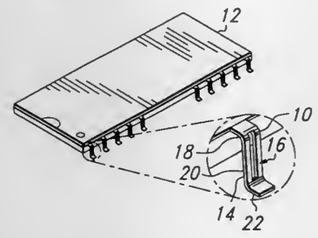


1. A method for improving a distribution of an underfill material applied between a flip chip die and a circuit board at a flip chip site having a solder mask, the method comprising the steps of:
forming an aperture in the solder mask by removing a predetermined majority of the solder mask from the circuit board within the flip chip site before mounting the flip chip die;
mounting the flip chip die to the flip chip site; and
thereafter applying the underfill material such that the underfill material flows into the aperture, thereby improving the distribution of the underfill material;
wherein the flip chip die is of a rectangular shape comprising four edges which meet at four corners, and
wherein the applying step comprises the steps of:
disposing the underfill material between the circuit board and the flip chip die by applying the underfill material along a first edge of the flip chip die followed by a second edge of the flip chip die, the second edge adjacent to the first edge;
thereafter waiting for a predetermined time; and
subsequently continuing to dispose the underfill material between the circuit board and the flip chip die by applying the underfill material along a third edge of the flip chip die followed by a fourth edge of the flip chip die.

5,647,124
METHOD OF ATTACHMENT OF A SEMICONDUCTOR SLOTTED LEAD TO A SUBSTRATE

Min Yu Chan, and Jing Sua Goh, both of Singapore, Singapore, assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 232,975, Apr. 25, 1994, abandoned. This application Nov. 30, 1995, Ser. No. 565,224
Int. Cl.[6] H05K *3/34*
U.S. Cl. 29—840 **6 Claims**

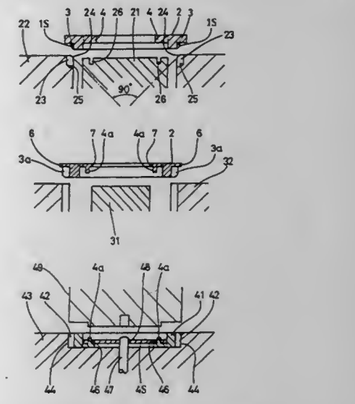


1. A method of providing an electrical contact for connecting a semiconductor device to a surface comprising the steps of;
extending at least one lead from a semiconductor device, said lead comprising a first substantially horizontal portion connected to said semiconductor device, a substantially vertical portion connected to said first substantially horizontal portion, and a second substantially horizontal portion connected to said substantially vertical portion;
forming a slot in at least said substantially vertical portion, said slot dividing said vertical portion into at least two substantially parallel leg segments that are connected at slot ends formed in the lead, one of said slot ends terminating in said first lead portion at a location along said lead intermediate of the semiconductor device and the vertical lead portion, said second substantially horizontal portion being connected to said substantially parallel leg segments at one of said slot ends; and
bonding the second substantially horizontal portion at said slot end to a bond pad.

5,647,125
PROCESS FOR MANUFACTURING A DRIVE PLATE

Michihiro Yokoyama, Aichi-ken, Japan, assignor to Ohashi Technica, Inc., Tokyo, and Kabusiki Kaisha IPC, Anjo, both of Japan

PCT No. PCT/JP94/00364, § 371 Date Oct. 5, 1995, § 102(e) Date Oct. 5, 1995, PCT Pub. No. WO94/20239, PCT Pub. Date Sep. 15, 1994
PCT Filed Mar. 7, 1994, Ser. No. 501,089
Claims priority, application Japan, Mar. 5, 1993, 5/073028
Int. Cl.[6] B21D *28/00*
U.S. Cl. 29—893.34 **3 Claims**



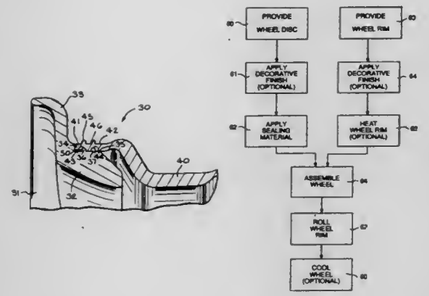
1. A process for manufacturing a drive plate, said process comprising:
subjecting an annular workpiece to a die forging using a female die to form tooth profiles on an outer circumference of the annular workpiece and projections on an inner circumference thereof, the female die having a 20°–150° conical chamfer and a fine polished surface for sliding on the annular workpiece;
trimming the annular workpiece;
inserting the projections into holes on a disc plate so that the disc plate is securely provided on an inner circumference of the annular workpiece; and
thereafter pressing the projections with a punch, whereby the disc plate is securely fixed to the annular workpiece.

5,647,126
METHOD FOR FABRICATION OF A TWO PIECE VEHICLE WHEEL HAVING A ROLLED CONNECTION BETWEEN SECTIONS

Daniel C. Wei, Ann Arbor, Mich., assignor to Hayes Wheels International, Inc., Romulus, Mich.

Filed Dec. 8, 1995, Ser. No. 569,622
Int. Cl.[6] B23P *19/00*
U.S. Cl. 29—894.322 **19 Claims**

1. A process for fabricating a vehicle wheel comprising the steps of:
(a) providing an annular wheel rim, the wheel rim having an outboard end which defines a cylindrical inner surface, and a circular wheel disc, the wheel disc having a central hub connected by a plurality of wheel spokes to an annular-shaped sidewall, the sidewall including a cylindrical outer surface, the cylindrical outer surface having one of at least one bead and at least one groove formed thereon;
(b) positioning the wheel rim on the wheel disc with a portion of the wheel rim outboard end extending axially over a portion of the wheel disc sidewall and with the cylindrical inner surface of the wheel rim adjacent to the cylindrical outer



surface of the wheel disc sidewall, the wheel rim and wheel disc forming a wheel assembly; and

(c) rolling the wheel assembly with mechanical rollers to force the portion of the wheel rim extending over the portion of the wheel disc sidewall onto the cylindrical outer surface of the wheel disc sidewall and to form the other of the groove and bead on the cylindrical inner surface of the wheel rim, the groove receiving the corresponding bead to mechanically secure the wheel rim to the wheel disc.

5,647,127

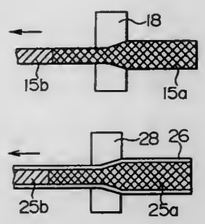
MANUFACTURING PROCESS OF COIL

Naohiko Miyata, Nagoya; Masashi Momota, Ohmiya, and Kazuyuki Shimada, Seto, all of Japan, assignors to Asahi Intell Co. Ltd., Japan

Division of Ser. No. 164,221, Dec. 7, 1993, Pat. No. 5,520,194. This application Jun. 16, 1995, Ser. No. 491,429

Int. Cl.[6] B21F *35/00*

U.S. Cl. 29—896.9 **2 Claims**



1. A method of producing a coil for a guide wire used for medical purposes, comprising steps of:

contacting and fixing an axial end of a piece of wire made of radiopaque material to an axial end of a piece of wire made of radiotransparent material by means of welding;

passing the connected pieces of wire through a die to form a composite wire having a smaller diameter; and

winding the composite wire into a coil.

2. A method of producing a coil for a guide wire used for medical purposes, comprising the steps of:

inserting a piece of wire made of radiopaque material into a first end of a tubular sleeve made of radiotransparent material;

inserting a piece of wire made of radiotransparent material into a second end of the tubular sleeve;

passing the pieces of wire and tube assembly through a die to form a composite wire having a smaller diameter; and

winding the composite wire into a coil.

5,647,128

METHOD OF MANUFACTURING PAPER MAKING SCREEN PLATE

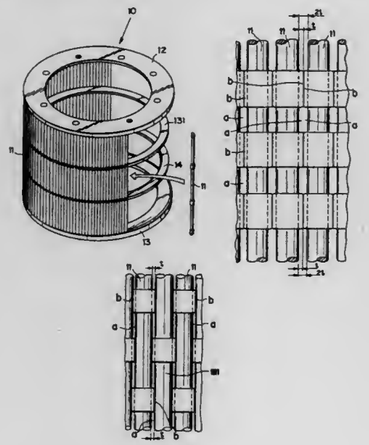
Yoshihiko Aikawa, Shizuoka, Japan, assignor to Aikawa Iron Works Co., Ltd., Shizuoka, Japan

Filed Jun. 12, 1995, Ser. No. 488,896

Claims priority, application Japan, Dec. 28, 1994, 6-328815

Int. Cl.[6] B23P *15/16*

U.S. Cl. 29—896.62 **9 Claims**



1. A method of manufacturing a paper making screen plate, comprising:

preparing a plurality of first longitudinal members, each first longitudinal member having a plurality of first cylindrical projections and at least one first cylindrical recess situated between the first cylindrical projections so that each of the first longitudinal members has a circular shape in cross section perpendicular to a longitudinal direction thereof throughout a substantially entire length thereof,

preparing a plurality of second longitudinal members having a circular shape in cross section perpendicular to a longitudinal direction thereof throughout a substantially entire length thereof,

preparing first and second support members,

disposing both ends of the respective first and second longitudinal members on the first and second support members, said first and second longitudinal members being arranged alternately and parallel to each other so that the cylindrical projections of the first longitudinal members abut against the second longitudinal members and the first cylindrical recess forms a slit relative to the second longitudinal member facing thereto, each slit having wide outer portions and a narrow middle portion between the wide outer portions and being defined by smooth curved surfaces of first and second longitudinal members situated adjacent to each other, and

fixing the first and second longitudinal members on the first and second support members.

5,647,129

FOLDING KNIFE

James D. Stamper, P.O. Box 62, Grantham, N.H. 03753

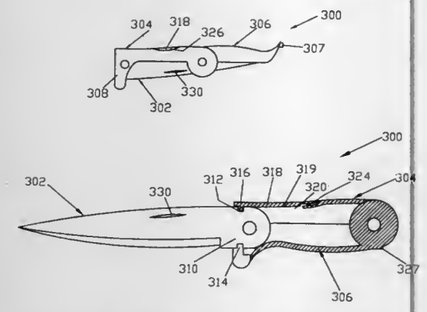
Continuation of Ser. No. 172,831, Dec. 23, 1993, abandoned. This application May 17, 1996, Ser. No. 650,022

Int. Cl.[6] B26B *1/10*

U.S. Cl. 30—139 **13 Claims**

1. Tri-fold knife comprising:

a blade having a tang and a cutting edge;



a main handle terminating in a forward end and butt end, said main handle having a main handle bearing surface having a width W and a main handle slot disposed in said main handle bearing surface and having main handle slot sides initiating at said main handle bearing surface and terminating in a main handle slot back, said main handle slot extending from said forward end through said butt end, and said tang residing in said main handle slot and being pivotably mounted in said forward end;

a tail handle terminating in a forward engaging end and a butt end coupling which pivotably engages said butt end of the main handle, said tail handle having a tail handle bearing surface having said width W, and a tail handle slot disposed in said tail handle bearing surface and having tail handle slot sides initiating at said tail handle bearing surface and terminating in a tail handle slot back, said tail handle slot extending from said forward engaging end through said butt end coupling and connecting with said main handle slot, said tail handle rotating from a closed position where said tail handle bearing surface abuts said main handle bearing surface to an open position where said main handle and said tail handle are substantially collinear; and

a butt stop, which is attached to one of said butt end of said main handle and said butt end coupling of said tail handle, limiting the pivotal motion between said main handle and said tail handle when in said open position such that when said pivotal motion is limited in said open position, said main handle slot back and said tail handle slot back are substantially co-planar at their junction such that said cutting edge will engage said main handle slot and said tail handle slot when said blade is pivoted into said main handle slot and said tail handle slot.

5,647,130

KNIFE AND SHEATH WITH TWIST RELEASE MECHANISM

Walter W. Collins, P.O. Box 100 4651 Savannah Hwy., North, S.C. 29112

Filed Jan. 11, 1996, Ser. No. 582,370

Int. Cl.[6] B26B *29/02*

U.S. Cl. 30—151 **15 Claims**

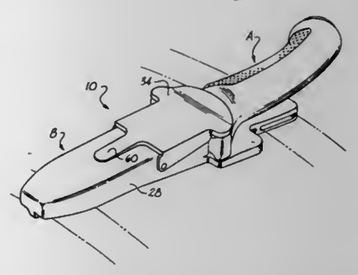
1. A knife and sheath combination, comprising:

a knife having a blade with a handle, said handle having a blade guard adjacent said blade; said blade guard having at least one transversely extending lifting member extending outwardly from said handle;

a sheath having a body portion defining a blade receptacle for receiving said blade and a back portion adjacent said blade receptacle; and said sheath including a lateral engagement portion;

said knife handle including a first locking portion laterally spaced from said transversely extending lifting member, and said sheath including a second locking portion laterally spaced from said lateral engagement portion for cooperating with said first locking portion of said knife handle upon receipt of said blade in said blade receptacle for locking said knife to said sheath; and

said second locking portion being connected to said body member of said sheath for movement between a locking position, wherein said second locking portion engages said first locking portion, and an unlocking position, wherein said second locking portion is disengaged from said first locking portion for allowing release of said knife from said sheath, said second locking portion being moved from said locking position to said unlocking position through contact of said transversely extending lifting member of said knife with said lateral engagement portion of said sheath.



5,647,131

DEBURRING AND SCRAPING TOOL

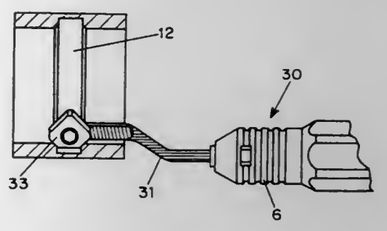
Naftali Hirsch, Nahariya, Israel, assignor to Noga Engineering Ltd., Israel

Continuation-in-part of Ser. No. 209,418, Mar. 9, 1994, Pat. No. 5,454,166. This application Oct. 3, 1995, Ser. No. 538,596

Claims priority, application Israel, Mar. 12, 1993, 105041

Int. Cl.[6] B23D *79/08*

U.S. Cl. 30—317 **13 Claims**

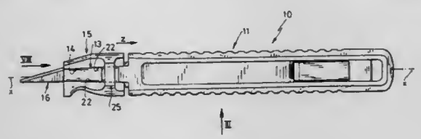


1. A scraping blade for a scraping and cleaning tool, the tool for scraping and cleaning the exposed surfaces of an internal groove comprising:

a cylindrical shank having three sections, a first section having means for being inserted into a handle of the tool, a second section inclined to the first section, and a third section extending from the second section and substantially parallel to the first section; and

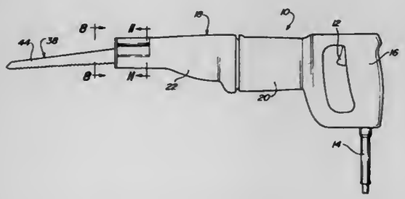
a cutting blade extending from the third section, the cutting blade, having two or more cutting edges for simultaneously scraping and cleaning the exposed surface of the groove, each scraping and cleaning edge having a linear extent along a line, said lines forming a V, said V having an inside portion of less than 180 degrees wherein lies the blade, and an outside portion of greater than 180 degrees where the cutting edges are exposed for use, said scraping and cleaning edges substantially conforming to the cross-sectional shape of the groove.

5,647,132
DEBURRING KNIFE WITH REPLACEABLE BLADE
Harald Berns, Wuppertal, Germany, assignor to Martor-Argentax E.H. Beermann KG, Solingen, Germany
Filed Oct. 5, 1995, Ser. No. 539,766
Claims priority, application Germany, Oct. 7, 1994, 44 35 807.5
Int. Cl.[6] B26B *5/00*
U.S. Cl. 30—337 **15 Claims**



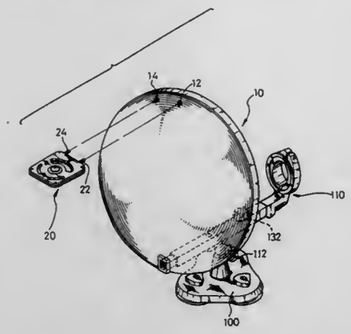
1. A knife comprising:
an elongated body having a front end formed with a forwardly projecting trapezoidal-section tongue having a pair of side surfaces and a base surface bridging the side surfaces;
a holder formed with a complementary trapezoidal section slot having a pair of side surfaces extending parallel to and longitudinally slidable on the body side surfaces and a base surface bridging the holder side surfaces, extending parallel to the body base surface, spacedly confronting the body base surface, and forming therewith a blade seat, the tongue and groove having widths measured parallel to the base surfaces and transversely of the elongated body that decrease uniformly forward, whereby the side surfaces converge forward; and
a blade gripped between the base surfaces and projecting forward from the body and holder.

5,647,133
SAW BLADE CLAMPING ARRANGEMENT FOR A POWER TOOL
Stephen C. Dassoulas, Baltimore, Md., assignor to Black & Decker Inc., Newark, Del.
Filed Jun. 9, 1995, Ser. No. 504,050
Int. Cl.[6] B27B *19/09*
U.S. Cl. 30—392 **18 Claims**



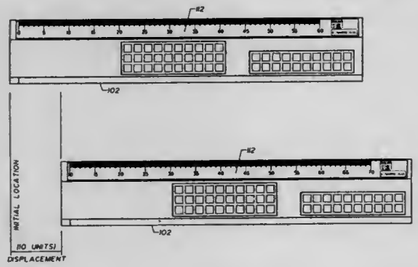
1. A saw blade clamping arrangement for a power tool of the type including a housing, a drive shaft mounted for reciprocating motion relative to the housing, and a saw blade releasably interconnected with the drive shaft for reciprocating motion along a longitudinal axis, the saw bade clamping arrangement comprising:
a clamp support interconnected with the drive shaft;
a biasing member for exerting a biasing force to create an operative connection between the saw blade and the drive shaft, said biasing member being a spring clamp member having a first end constrained with respect to said clamp support; and
an actuation member attached to the power tool, said actuation member moveable between a first position in which the saw blade is retained against the drive shaft and a second position in which the saw blade may be displaced from the drive shaft.

5,647,134
COMPASS FOR MOBILE SATELLITE ANTENNAS
Shiau-fong Chou, 7th Fl., No. 14, Lane 370, Sec. 2, Shihpai Rd., Peitou Dist., Taipei, Taiwan
Filed Jun. 30, 1995, Ser. No. 496,890
Int. Cl.[6] G01C *17/08;23/00*
U.S. Cl. 33—355 R **1 Claim**



1. A compass for a mobile parabolic antenna comprising:
a compass sphere having a transparent shell with an elevation dial and a magnetic core encapsulated by the transparent shell with fluid filled therebetween with a bubble enclosed within the transparent shell and a directional mark pointing to a fixed direction on the magnetic core;
an annular plate having a location dial and a satellite name dial provided on edges of the plate;
a cover plate having a central hole and a plurality of arcuated openings; and
a base plate having a circular depression, a plurality of arcuated recesses corresponding to the openings on the cover plate defined in the depression, and a central bore corresponding to the central hole on the cover plate so that the compass sphere can be secured within the central hole and the central bore and the annular plate can be rotatably received by the circular depression when the cover plate couples with the base plate.

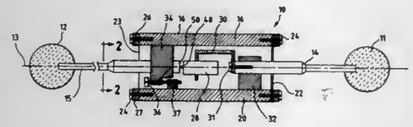
5,647,135
DRAFTING INSTRUMENT WITH ELECTRONICALLY CONTROLLABLE SCALE
Alejandro Fuentes, 610 Valencia, Apt. 303, Coral Gables, Fla. 33134, and Arturo Gomez, 11360 SW. 47 Ter., Miami, Fla. 33165
Filed Aug. 3, 1995, Ser. No. 510,966
Int. Cl.[6] B43L *7/04*
U.S. Cl. 33—494 **40 Claims**



1. A drafting instrument adapted for rapid measurement by a user of diagrams or drawings on a surface comprising:

a body having an edge and a cavity;
means for detecting movement of said body on the surface and for generating a signal representing detected movement, said detection means located adjacent to said body;
electronics processing means operatively connected to said detection means and located in said cavity for receiving and processing said signal from said detecting means to generate a display output signal;
display means operatively connected to said electronics processing means and located adjacent to said edge for displaying an image including a scale, said display means receiving said output signal from said processing means so that said scale electronically scrolls.

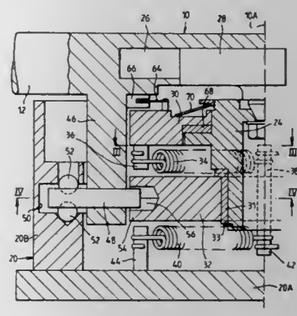
5,647,136
AUTOMATIC BALL BAR FOR A COORDINATE MEASURING MACHINE
Hans Jostlein, Naperville, Ill., assignor to Universities Research Association, Inc., Washington, D.C.
Filed Jul. 10, 1995, Ser. No. 500,336
Int. Cl.[6] G01B *7/004;* **G01C** *25/00*
U.S. Cl. 33—502 **10 Claims**



1. An apparatus for determining the accuracy of a coordinate measuring machine having at least one servo drive, the apparatus comprising:
(a) a first gauge ball;
(b) a second gauge ball;
(c) a telescoping switch assembly positioned between the first gauge ball and the second gauge ball, the switch assembly including a switch and upper and lower housings movably secured to one another, said upper and lower housing being secured to said first and second gauge balls, respectively, at least one of said upper and lower housings being movably secured to said switch to activated said switch when moved radially relative to said switch;
(d) a first magnetic socket assembly for securing the first gauge ball such that the center of the first gauge ball is maintained at a fixed location with respect to a coordinate measuring machine; and
(e) a second magnetic socket assembly for securing the second gauge ball such that the center of the second gauge ball is directed by the coordinate measuring machine to move radially inward from a point beyond the radial distance between the center of the first gauge ball and the center of the second gauge ball until the switch is activated;
whereby a position of the coordinate measuring machine is determined upon activation of the switch and compared to the radial distance between the center of the first gauge ball and the center of the second gauge ball such that the accuracy of the coordinate measuring machine is determined.

174–433 O.G.–97–3: QL3

5,647,137
PROBE ARM FOR MACHINE TOOL
David R. McMurtry, Wotton-Under-Edge; Andrew J. Harding, Bristol; Stephen E. Lummes, Stroud; Martin P. Spivey, Tetbury, and Jonathan S. Sullivan, Wotton-Under-Edge, all of United Kingdom, assignors to Renishaw plc, Gloucestershire, United Kingdom
Continuation-in-part of Ser. No. 231,294, Apr. 22, 1994, Pat. No. 5,446,970. This application Aug. 31, 1995, Ser. No. 521,814
Claims priority, application United Kingdom, Apr. 22, 1993, 9308364; Jun. 12, 1995, 9511856
Int. Cl.[6] G01B *5/012;* **F16D** *71/04*
U.S. Cl. 33—572 **12 Claims**



1. A probe arm for a machine tool, comprising:
a fixed base member for attachment to the machine tool;
a movable arm member for carrying a probe;
a stop between the fixed and movable members, which defines an operative position in the movement of the movable member and prevents further movement thereof past the operative position;
means for biasing the movable arm member into engagement with the fixed member at said stop when the movable arm member is in the operative position;
wherein said stop comprises elements on the movable arm member and on the fixed member which are urged together by the biasing means;
said elements cooperating with each other to constrain the degrees of freedom of the movable arm member kinematically, thereby precisely defining the operative position of the movable arm member;
and wherein said biasing means provides a repeatable biasing force when the movable arm member is in the operative position.

5,647,138
CAP SHARPENER FOR CLUTCH-TYPE PENCIL
Hung Ming Tang, No. 411, Hsin-Wen, Pu Tai Chen, Chia-I Hsien, and Plato Chen, 8th Fl., No. 5, Lane 200, Sung-Te Rd., Taipei, both of Taiwan
Filed Aug. 8, 1996, Ser. No. 694,302
Int. Cl.[6] B43L *23/08*
U.S. Cl. 30—454 **3 Claims**

1. A cap sharpener for clutch-type pencil being designd to form a lead sharpener with a pencil cap integrally, and the improvements comprising:
said cap having a blind end at top portion and a cylinder on top of said blind end, said blind end having a through-hole corresponding to said cylinder, at least one resilient trip on the inner wall thereof and a granular projection extending inwardly from said resilient trip; said cylinder comprising a blade being held in a slanting angle with respect to the axle of



said cap; wherein said through-hole of said blind end permits the lead extending therethrough to reach said blade in said cylinder.

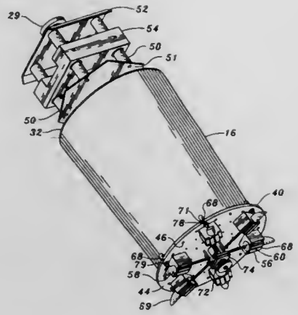
5,647,139
UNIVERSAL VEHICLE GAUGES
John T. Richardson, 1230 NW. 45th Ct., Pompano, Fla. 33064
Filed May 31, 1995, Ser. No. 454,704
Int. Cl.[6] G01B *5/14*
U.S. Cl. 33—608 **22 Claims**



1. A gauging apparatus for performing measurements with respect to a vehicle comprising:
first and second elongated measuring arms;
means for mounting said first and second arms to move synchronously along parallel linear paths toward and away from one another, said means including respective first and second gear tracks in said first and second arms, gear means for riding between said first and second gear tracks, and means for slidably mounting said arms with respect to one another while maintaining said gear means meshed between said first and second gear tracks; and
single measurement means for simultaneously measuring a first distance along the first elongated measuring arm from a distal end of the first elongated measuring arm to a point in the mounting means and a second distance along the second elongated measuring arm from a distal end of the second elongated measuring arm to the same point in the mounting means, thereby producing a measurement of distance between the two distal ends.

5,647,140
PRODUCE CENTRIFUGAL SPIN DRYING APPARATUS
Emmit Hudspeth, 1185 Commercail Pkwy., Castroville, Calif. 95012
Filed Feb. 23, 1996, Ser. No. 606,094
Int. Cl.[6] F26B *17/24*
U.S. Cl. 34—58 **13 Claims**

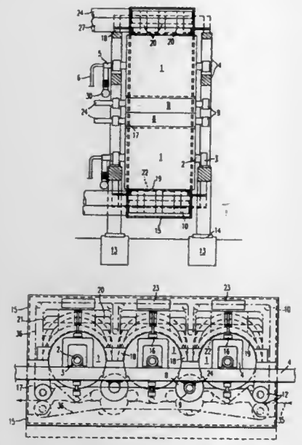
1. A centrifugal spin drying apparatus, for drying vegetables, fruits, and other produce, comprising:



a support including a base and at least two upstanding posts;
a housing element with entrance and exit doors is operably secured to said support; said doors being operably controlled by actuator means for opening and closing said doors; transfer means for transferring a container from outside of said housing element to a position within the housing element and for transferring said container from within the housing element to outside of the housing element;
hold-down means for securing and positioning said container within the housing element;
plate means for rotating said container, said plate means being operably mounted within the housing element, said plate means including a plurality of spaced centrifugal pins being operably positioned so as to secure the container on said plate means; said plate means including centrifugal pin activation means for activating and positioning said plurality of spaced centrifugal pins; and
means for rotating the plate means, said means of rotating said plate means being operably linked to the plate means by a plate shaft drive linkage.

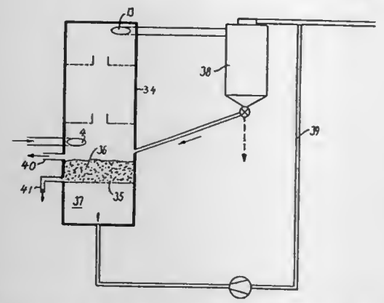
5,647,141
PROCESS AND APPARATUS FOR DRYING SHEET MATERIALS
Morimasa Hanaya, Mishima, Japan, assignor to Tokushu Paper Mfg. Co., Ltd., Shizuoka-ken, Japan
Division of Ser. No. 340,383, Nov. 15, 1994, Pat. No. 5,553,392. This application May 2, 1996, Ser. No. 643,016
Claims priority, application Japan, Nov. 15, 1993, 5-309774; Jun. 6, 1994, 6-147059; Jun. 6, 1994, 6-147060; Oct. 17, 1994, 6-278508; Oct. 18, 1994, 6-278473; Oct. 27, 1994, 6-287469
Int. Cl.[6] F26B *11/02*
U.S. Cl. 34—115 **21 Claims**

1. An apparatus for drying a wet sheet material comprising:
a dryer frame assembly;
bearing devices mounted on said dryer frame assembly;
a plurality of dryer cylinders heating the sheet material, each of said dryer cylinders including a cylinder body having an outer peripheral surface and opposite end faces thereof and a pair of shaft portions formed at said opposite end faces, each dryer cylinder being rotatably arranged on said dryer frame assembly with said shaft portions being supported by said bearing devices;
an endless gas-permeable fabric belt associated with said dryer cylinders and cooperating with said dryer cylinders and transferring said sheet material, said fabric belt being looped around a respective dryer cylinder and pressing the sheet material towards the outer peripheral surface of said dryer cylinder to restrain the sheet material;
a transferring device associated with said dryer cylinders, said transferring device transferring the sheet material from a respective dryer cylinder to the dryer cylinder adjacent thereto while keeping the sheet material restrained;



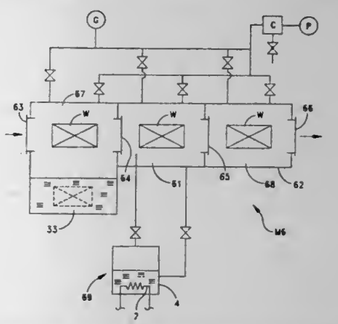
a heat-insulated hood assembly arranged adjacent to said dryer cylinders and substantially surrounding said outer peripheral surfaces of said dryer cylinders, with said bearing devices being located outside and defining a narrow sealed dryer chamber, said heat-insulating hood assembly being at least partly movable between a closed position where the dryer chamber is substantially closed and an opened position where the dryer chamber is opened; and
a drying medium-circulating device attached to said heat-insulated hood assembly, said medium-circulating device supplying into said hood assembly a drying medium producing a drying atmosphere in said dryer chamber and removing the steam evaporated from said sheet material through said gas permeable fabric belt to recover the steam for reuse, said drying medium being selected from the group consisting of a superheated steam of no less than 100° C. and a heated moist air of dew point of no less than 80° C.

5,647,142
APPARATUS AND PROCESS FOR DRYING A MOIST MATERIAL DISPERSED OR DISPERSIBLE IN A STREAM OF DRYING GAS
Poul Rasmus Andersen, Kvistgård, and Ove Emil Hansen, Allerød, both of Denmark, assignors to Niro A/S, Soborg, Denmark
Filed May 13, 1996, Ser. No. 648,517
Int. Cl.[6] F26B *3/08*
U.S. Cl. 34—373 **36 Claims**



18. A process for drying a moist material comprising; feeding a supplying means in a lower part of a housing with drying gas and material to be dried; conducting a stream of drying gas entraining material having reduced moisture content from an outlet means in an upper part of the housing to a particle collector device; conducting recovered particles from said particle collector device to a means for introducing particulate material above the gas distribution plate; conducting a partial stream of drying gas freed from particulate material from said particle collector device to the means for introducing fluidizing gas below the gas distribution plate, thereby forming a fluidized layer using the spent drying gas as fluidizing gas for further utilization of the drying capacity thereof; and recovering of a dried particulate material from said fluidized layer.

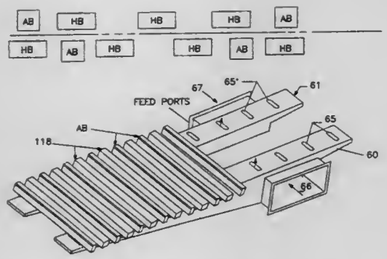
5,647,143
VACUUM-DEGREASING CLEANING METHOD
Ken Kubota, Nagoya; Kunihiko Ishikawa, Anjo, and Noboru Hiramoto, Inuyama, all of Japan, assignors to Japan Hayes Ltd., Aichi, Japan
Continuation of Ser. No. 128,213, Sep. 29, 1993, abandoned. This application Jan. 5, 1996, Ser. No. 583,463
Claims priority, application Japan, Oct. 30, 1992, 4-293478
Int. Cl.[6] B08B *3/08*
U.S. Cl. 34—410 **17 Claims**



1. A method for degreasing and cleaning a workpiece comprising the steps of:
(a) placing the workpiece in a chamber of a degreasing and cleaning apparatus;
(b) reducing the pressure in the chamber;
(c) introducing vapor of a petroleum solvent into the chamber with a flashpoint higher than 70 degrees Celsius for cleaning the workpiece;
(d) dipping the workpiece in a bath of petroleum solvent;
(e) controlling the pressure in the chamber so that the amount of oxygen in the chamber is reduced thereby preventing the unwanted ignition of the vaporized petroleum solvent; and
(f) drying the workpiece under reduced pressure.

5,647,144
COMBINATION AIR BAR AND HOLE BAR FLOTATION DRYER
Michael P. Bria, and Jeffrey D. Quass, both of Green Bay, Wis., assignors to W.R. Grace & Co.-Conn., New York, N.Y.
Division of Ser. No. 412,428, Mar. 29, 1995, Pat. No. 5,590,480, which is a continuation-in-part of Ser. No. 350,355, Dec. 6, 1994, abandoned. This application Nov. 13, 1995, Ser. No. 557,769
Int. Cl.[6] F26B *3/00*
U.S. Cl. 34—414 **16 Claims**

1. A method of floatingly drying a running web, comprising providing a web dryer enclosure, said enclosure having a web inlet slot and a web outlet slot;



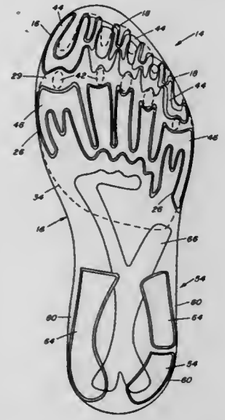
floating guiding said running web through said dryer with first and second opposed arrays of nozzles for floatingly supporting and drying a web running in said dryer enclosure, each array comprising a plurality of direct impingement nozzles and a plurality of air flotation nozzles, said direct impingement nozzles comprising a top surface having a plurality of apertures, said top surface having a crown shape.

5,647,145

SCULPTURED ATHLETIC FOOTWEAR SOLE CONSTRUCTION

Brian Russell, 7869 S. Independence Way, Littleton, Colo. 80123, and Danny Abshire, 633D S. Broadway, Boulder, Colo. 80303

Filed Jun. 5, 1995, Ser. No. 461,132
Int. Cl.[6] A43B *13/18;13/00;13/14*
U.S. Cl. 36—28 **25 Claims**



1. A sculptured sole for use in construction of a shoe, said sole comprising:

(a) a base of resiliently compressible material having opposite top and bottom sides and opposite forward and rearward edges;

(b) a plurality of support pads defined on said bottom side of said base so as to extend downwardly from said bottom side thereof and rearwardly from said forward edge thereof, each of said support pads underlying a respective one of a plurality of toes of a foot wearing a shoe incorporating said sole and being disposed above said sole;

(c) said base having a plurality of slots formed in said bottom side of said base, each slot being formed centrally of one of said support pads so as to extend generally in alignment with the respective one toe said one support pad underlies such that a force applied to said one support pad by the respective one of the toes is directed toward said respective slot centrally formed therein:

(d) said base further having a plurality of grooves formed in said bottom side of said base, said grooves being formed between and spacing apart adjacent ones of said support pads and extending generally in alignment with respective gaps between the toes of the foot and isolating said support pads from one another such that each said support pad undergoes compression and rebound substantially in response to the force applied thereto and lifted therefrom only by the respective one of the toes of the foot; and

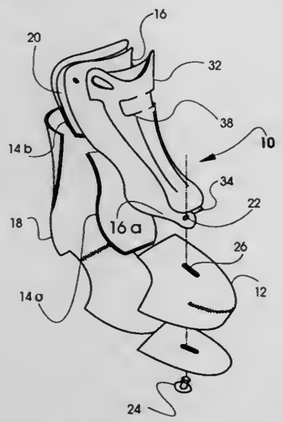
(e) a layer of resiliently elastic material attached to one of said top and bottom sides of said base, said layer having a main portion, a plurality of edge portions extending from said main portion, each of said edge portions being generally coextensive and aligned with one of said support pads of said base and aligned with said slot formed centrally of said one support pad, and means defining a plurality of openings through said main portion extending generally in alignment with said grooves in said base and between and spacing apart adjacent ones of said edge portions of said layer such that each of said edge portions of said layer is isolated from one another so as to stretch and store energy as said aligned one support pad undergoes compression and to contract and release energy as said one support pad undergoes rebound substantially in response to the force applied thereto and lifted therefrom only by the respective one of the toes of the foot.

5,647,146

TONGUE FOR INTERNAL SHOES OF SKI BOOTS

Andrea Gabrielli, Predazzo, and Antonello Marega, Volpago, both of Italy, assignors to TECNICA Spa, Treviso, Italy

Filed Jul. 20, 1995, Ser. No. 504,576
Claims priority, application Italy, Aug. 4, 1994, TV940048 U
Int. Cl.[6] A43B *23/26;3/10;5/04*
U.S. Cl. 36—54 **10 Claims**



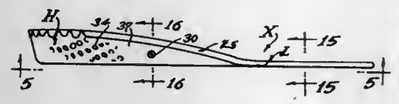
1. In a tongue for internal shoes of ski boots comprising an intermediate padding (**14**), a lining (**18**) and a rigid external layer (**16**), the improvement wherein the padding (**14**) is divided into a lower padding portion (**14***a*) which is integral with the rigid external layer (**16**) and an upper padding portion (**14***b*) which is integral with a sliding insert (**20**) interposed between the upper padding portion and the rigid external layer (**16**), said lining (**18**) being stretchable, and means for defining for the insert (**20**) and the upper padding portion (**14***b*), a lower limit position, in which the insert (**20**) is completely lowered and both said padding portions (**14***a*, **14***b*) are adjacent each other and an upper limit position in which the insert (**20**) is completely raised and the said padding portions (**14***a*, **14***b*) are at a distance from each other and the lining (**18**) is stretched.

5,647,147

PROSTHESIS SHOE INSERT FOR PROPULSIVE CONDITIONING

Sven Coomer, 1136 Terminal Way Suite 208B, Reno, Nev. 89502

Continuation-in-part of Ser. No. 22,323, Feb. 26, 1993, abandoned. This application May 31, 1994, Ser. No. 251,616
Int. Cl.[6] A43B *7/14;* **A61F** *5/14*
U.S. Cl. 36—93 **19 Claims**



1. A prosthesis foot support for insertion over an interior surface of a shoe for dorsiflexed conditioning of the foot support plantar engagement with a wearer's foot, the support comprising:

a non-porous body member of flexible material for overlying the sole of the shoe, the body member having a periphery defining a front plane to underlie the metatarsal processes of the foot and a rear plane to underlie the talar heel processes of the foot,

a padding member of non-porous soft material coextensive with and contiguously disposed over and separated from said non-porous body member,

a liner member of supple barrier material laminated over the padding member for supportive engagement with the plantar portion of the person's foot, and having an extended marginal portion engaged over the periphery of the non-porous body member and defining an envelope between said body member and said padding member,

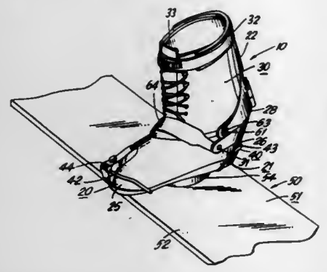
and means for injection in situ of liquid displacement material for solidification into a dosiflexed condition with said front and rear planes angularly related.

5,647,148

BOOT FOR SNOWBOARDING AND THE LIKE

Jamie Meiselman, 2515 Camino Del Mar, #6, Del Mar, Calif. 92014

Continuation of Ser. No. 437,356, May 9, 1995, which is a continuation of Ser. No. 264,427, Jun. 23, 1994, Pat. No. 5,435,080, which is a continuation of Ser. No. 993,238, Dec. 17, 1992, abandoned. This application May 3, 1996, Ser. No. 642,311
Int. Cl.[6] A43B *5/04*
U.S. Cl. 36—115 **2 Claims**



1. An improved boot in combination with a snowboard having plate bindings, the boot comprising:

a rigid lower boot portion and a one piece resilient upper boot portion for providing lateral and medial flexing of a user's ankle, the lower boot portion extending substantially upwardly from a sole and over a foot, and ending proximate to the tarsal bone of the lower ankle,

a calf support member mounted to the lower boot portion and extending from a heel portion towards a top portion of the boot,

a support seat member mounted to the lower boot portion and supporting the calf support member,

an adjustable ankle strap mounted to the support seat member, the strap extending over and across the forefoot, for holding the user's foot and heel within the boot, and

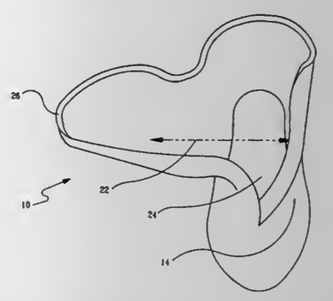
a means comprising a member for adjusting forward lean of the calf support member.

5,647,149

SPORT BOOT INNER LINER

Melvin W. Daleboot, Salt Lake City, Utah, assignor to Daleboot USA, Salt Lake City, Utah

Filed Feb. 25, 1994, Ser. No. 201,779
Int. Cl.[6] A43B *3/10;23/07;5/04*
U.S. Cl. 36—117.1 **21 Claims**



1. A sport boot system comprising:

a pliable inner liner within a rigid outer shell:

said pliable inner liner being constructed of foam material and being configured as a tongueless boot having leg and ankle areas, each having inner side, outer side, front, and back portions;

said outer shell including tightening and fastening means; and

said inner liner including a single bifurcation at said outer side of said leg and ankle areas, said bifurcation being constructed and arranged to permit said inner liner to be adjusted selectively to open and closed positions, respectively, and comprising first and second edges, said edges being approximately juxtaposed when said inner liner is placed into said closed position, whereby to form a substantially ridge free seam.

5,647,150

METHOD FOR MANUFACTURING FOOTWEAR BY INJECTION-MOLDING, AND FOOTWEAR OBTAINED WITH SAID METHOD

Mariarosa Romanato, Stra, and Riccardo Perotto, Volpago del Montello, both of Italy, assignors to Nordica S.p.A., Treviso, Italy

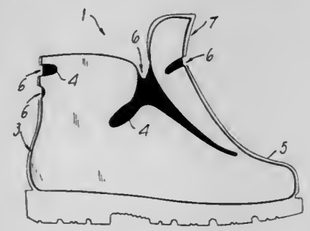
PCT No. PCT/EP95/00854, § 371 Date Nov. 2, 1995, § 102(e) Date Nov. 2, 1995, PCT Pub. No. WO95/24305, PCT Pub. Date Sep. 14, 1995.

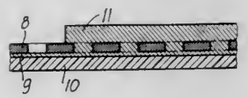
PCT Filed Mar. 8, 1995, Ser. No. 545,719

Claims priority, application Italy, Mar. 9, 1994, TV94A0028

Int. Cl.[6] A43B *23/00;5/04;* **A43D** *9/00*

U.S. Cl. 36—117.1 **12 Claims**





1. A method of manufacturing footwear, comprising the steps of:

positioning a sock portion over a mold element in which said sock portion comprises a fabric layer and a thermoplastic film layer connected to the fabric layer, such that the thermoplastic film layer is positioned between the mould element and the fabric layer; and

injection-molding a thermoplastic material to said sock portion positioned over the mold element such that heated thermoplastic material flows through the fabric layer and coheres with the thermoplastic film layer and such that the thermoplastic material at least partially covers the fabric layer for forming a portion of an item of footwear.

5,647,151

MULTI-PURPOSE IMAGE DISPLAY SYSTEMS

Stephen D. Fantone, Lynnfield, Mass.; Anthony L. Gelardi, Cape Porpoise, Me.; John A. Gelardi, Kennebunkport, Me., and William T. Fitzsimmons, South Portland, Me., assignors to Insight, Inc., Lynnfield, Mass.

Continuation-in-part of Ser. No. 222,632, Apr. 1, 1994, Pat. No. 5,603,407, and a continuation-in-part of Ser. No. 338,246, Nov. 14, 1994, Pat. No. 5,588,526. This application Dec. 30, 1994, Ser. No. 367,091

Int. Cl.[6] G03B *25/02*

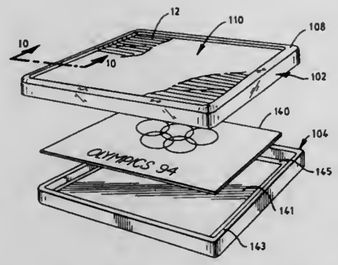
U.S. Cl. 40—454 **18 Claims**

1. An image display system for presenting multiple images to an observer, said display system comprising:

a flat cover including at least one transparent lenticulated section, said transparent lenticulated section having formed therein a plurality of lenticules;

a printed insert bearing at least two preprinted interlaced images, said preprinted interlaced images being located in a plane substantially parallel to and in substantial physical contact with said transparent lenticulated section so that said preprinted interlaced images are in optical registration with said lenticules of said transparent lenticulated section of said flat cover, said printed insert and said transparent lenticulated section of said flat cover being structured and arranged with respect to one another to provide different images to an observer looking at said transparent lenticulated section from different angular perspectives; and

a base for releasably mating with said flat cover to provide a protective enclosure for said printed insert and to hold it in place with respect to said lenticules, said printed insert comprising a flat image carrying substrate and said flat cover and said base being structured and arranged with respect to one another to snap together and trap said image carrying substrate between them in optical registration with said lenticules of said transparent lenticulated section.



5,647,152

DISPLAYING APPARATUS WITH LIGHT-SHIELDING GRATING

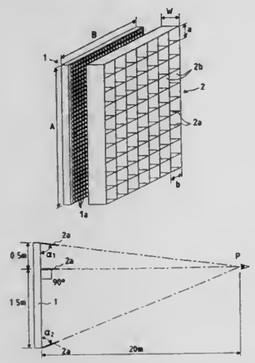
Masanobu Miura, Osaka, Japan, assignor to Takiron Co., Ltd., Osaka, Japan

Filed Mar. 17, 1995, Ser. No. 405,896

Claims priority, application Japan, Mar. 18, 1994, 6-074258; Apr. 21, 1994, 6-107967

Int. Cl.[6] F21V *29/00*

U.S. Cl. 40—541 **13 Claims**



1. A displaying apparatus comprising:

a display screen for displaying images thereon; and

a light-shielding grating member including a plurality of light-shielding plates which are assembled in a matrix form in vertical and horizontal directions, so as to define a plurality of vertical light-shielding plates spaced apart at a preset interval and a plurality of horizontal light shielding plates spaced apart at a preset interval, said light-shielding grating member being disposed in a front of said display screen;

wherein selected ones of said light-shielding plates in the vertical and horizontal directions are inclined in directions to pass a predetermined visual point range when said selected ones of said light-shielding plates are virtually extended frontward.

5,647,153

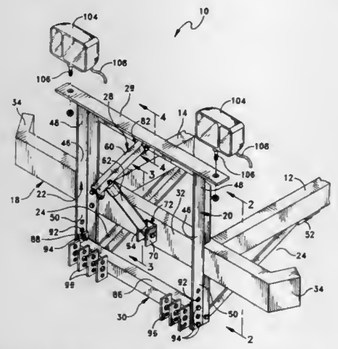
UNIVERSAL SNOW PLOW MOUNTING FRAME ASSEMBLY

Steve Gervais, 78 Baptist St., Swansea, Mass. 02777

Filed Dec. 29, 1995, Ser. No. 581,066

Int. Cl.[6] E01H *5/04*

U.S. Cl. 37—231 **8 Claims**



1. A universal snow plow frame assembly comprising:

a horizontally disposed bumper member affixed to a chassis of a vehicle;

a pair of spaced-apart, substantially vertically disposed support members affixed to the bumper member, each support member having an upper portion extending above the bumper member and a lower portions extending below the bumper member;

lateral support means attached between the lower portion of each support member and the chassis for supporting said support members relative to said chassis;

a horizontally disposed cross support member affixed between the upper portions of said support members;

a horizontally disposed snow plow blade mounting bar having first and second ends, said first and second ends each including at least three spaced receiving plates each having a plurality of vertically aligned openings formed therein, said receiving plates being spaced at predetermined distances to provide a plurality of mounting width configurations for accepting a plurality of different snow plow blades, said mounting bar being slidably received between the lower portions of said support members for sliding vertical movement relative to the support members;

means for releasably mounting the first and second ends of said mounting bar to said support members at a plurality of different elevations;

a lift bar having a first end pivotally attached to said cross support;

a piston having a first end pivotally attached adjacent a second end of said lift bar;

a piston mounting bracket pivotally attached to a second end of said piston for mounting said second end of said piston to said bumper member; and

means for releasably mounting said mounting bracket to said bumper at a plurality of different elevations.

5,647,154

DECORATIVE WINDOW WELL SHIELD

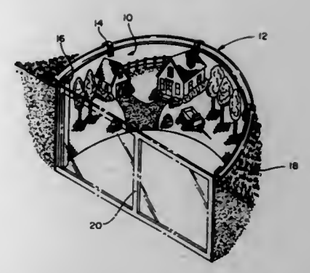
Bryan H. Groves, 9258 Jasmine Way, Fox River Grove, Ill. 60021

Filed Oct. 13, 1995, Ser. No. 542,781

Int. Cl.[6] G09F *7/02*

U.S. Cl. 40—584 **11 Claims**

1. In combination, a decorative window well shield and a window well, said window well including an upright wall structure set into ground opposite a window on an outer side of a building, said decorative window well shield being attached in an upright position in abutting engagement against an inner wall of said upright wall structure, said decorative window well shield comprising a semi-flexible wall panel, said wall panel being sized to substantially cover the inner wall of the upright wall structure, and decorative indicia carried on an exterior surface of the wall panel facing the window, thereby providing a decorative visual display to a person viewing from a position inside the building through the window.



5,647,155

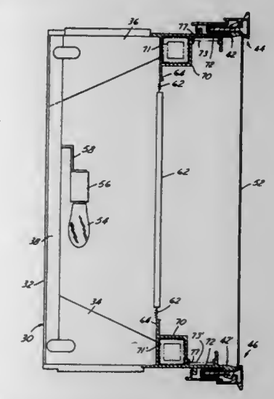
SHEET TENSIONING SYSTEM

David U. Hillstrom, Novi, Mich., assignor to Marketing Displays, Inc., Farmington Hills, Mich.

Filed Nov. 22, 1995, Ser. No. 562,073

Int. Cl.[6] G09F *17/00*

U.S. Cl. 40—603 **7 Claims**



1. A device for securing flexible sheet materials to a frame member, said frame member having a first elongated hook member, said device comprising:

a first clip member, said first clip member being elongated and having a first elongated rib member thereon and an elongated recess means therein;

a second clip member, said second clip member having a channel for entry of said first clip member therein, a second elongated rib member positioned to mate with said first rib member, and a second elongated hook member for mating with said first elongated hook member;

an end cap trim member;

wherein said first and second clip members are adapted to be interlocked together by means of said first and second elongated rib members and to securely hold an edge of a flexible sheet material therebetween, and said second clip member is

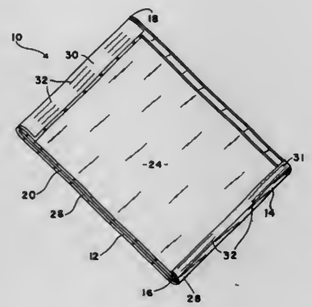
adapted to matingly interlock with said frame members by means of said first and second elongated hook members; and wherein said frame member has a third elongated hook member thereon and said end cap trim member is adapted to be secured to said third elongated hook member and said recess means.

5,647,156

NAVIGATOR DISPLAY PLOTTER AND METHOD OF USE

Harold L. Hull, 401 Canyon Way #43, Sparks, Nev. 89434, and William G. Burnett, 1826 Quail Run Rd., Reno, Nev. 89523

Filed Jun. 8, 1995, Ser. No. 488,605
Int. Cl.[6] G09F *3/18*
U.S. Cl. 40—661 **1 Claim**



1. A method of plotting a navigational course comprising the steps of;

providing a display apparatus having an elongated flexible transparent integrally formed plastic member having first and second ends;

folding said plastic member in order to form an upper cover member and a lower member, a space being formed between the cover member and the lower member, the cover member and lower member having exposed writing and erasable surfaces, the first end being formed into a lip which removably retains the cover member in a first position;

placing indicia on the display apparatus;

flexing the cover member in order to release the cover member from the lip;

positioning a document within the space; de-flecting the cover member in order to place the cover member under the lip to retain the cover member in the first position;

drawing a navigational course on one of the writing surfaces;

entering data on the cover member pertinent to the indicia on the display apparatus;

initiating a navigational course;

completing the navigational course;

flexing the cover member in order to release the cover member from the lip;

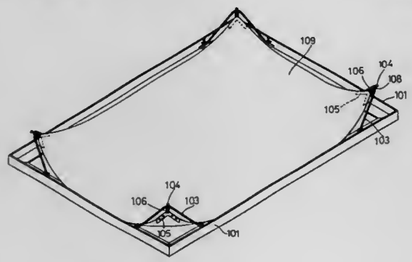
removing the document from within the space; and de-flexing the cover member into the first position.

5,647,157

TENSION PANEL

Keiji Kasahara, Kakegawa, Japan, assignor to Abisare Co., Ltd., Shizuoka, Japan

Filed Apr. 20, 1995, Ser. No. 425,470
Claims priority, application Japan, Apr. 22, 1994, 6-85052; May 27, 1994, 6-115620; Sep. 13, 1994, 6-219115
Int. Cl.[6] G09F *1/12*
U.S. Cl. 40—79.2 **7 Claims**



1. A tension panel, comprising:

a frame;

a retaining device affixable to respective corners of a display sheet; and

a stretching and fixing assembly, including:

an L-shaped bar formed by two legs joined together to define a bent region of said bar, said legs each having a free end pivotably attached to said frame, said bar being movable from a raised position, through an intermediate position, and to a lowered position in which said bar lies essentially flush with said frame; and

a resilient member having one end attached to the bent region of said bar, and another end attached to said retaining device, said member exerting a tensile force on said retaining device when said bar is in the lowered position, the tensile force being directed in a direction along an imaginary line that divides an interior angle of the respective corner into two angles, so as to stretch and fix the display sheet on said frame, whereby

when said bar is in the raised position, the tensile force is not exerted; when said bar is in the intermediate position, said bar exhibits an unstable condition; and when said bar is in a position that is between the intermediate position and the lowered position, a component of the tensile force urges said bar into the lowered position.

5,647,158

GUN TRIGGER LOCK

Conrad W. Eskelinen, 33682 Jefferson Ct., Farmington Hills, Mich. 48335, and Ivan M. Bucko, 571 Renaud St., Gross Point Woods, Mich. 48236

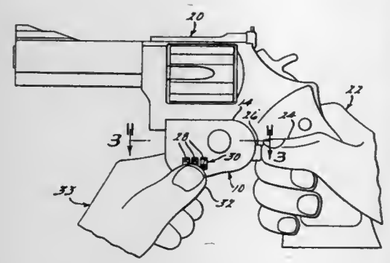
Filed Sep. 11, 1995, Ser. No. 526,823
Int. Cl.[6] F41A *17/00*
U.S. Cl. 42—70.07 **4 Claims**

1. A trigger lock for a gun having a handle, a trigger and a trigger guard, said lock comprising:

a first housing overlying the trigger and trigger guard of said gun on one side and having a connector shaft with a plurality of teeth thereon extending through the trigger guard of the gun forwardly of the trigger thereof;

a second housing complementary to said first housing and overlying the trigger guard and trigger on the opposite side thereof from said first housing;

a latch plate carried by said second housing having a plurality of teeth thereon complimentary to and engageable with the teeth on the connector shaft on said first housing to effect locking of said housings to one another about the trigger guard on said gun;



a pair of elastomeric pads in said housings, respectively, compressible about the trigger guard and trigger of said gun when said housings are locked to one another thereby to preclude movement of the trigger of said gun; and

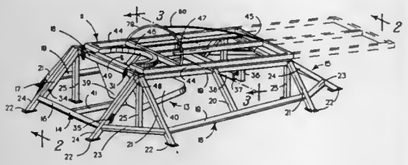
a release button on said second housing facing the handle of the gun so as to be operable by the thumb of a users hand that is holding the gun for disengaging the teeth on said latch plate from the teeth on the connector shaft of said first housing to permit disassociation of said housings from one another and from said gun.

5,647,159

PORTABLE HUNTING BLIND WITH SLIDABLY OPENING TOP

Ronald D. Latschaw, P.O. Box 146, Murphy, Oreg. 97533

Filed Dec. 30, 1994, Ser. No. 367,462
Int. Cl.[6] A01M *31/00*
U.S. Cl. 43—1 **11 Claims**



1. A portable hunting blind, comprising in combination:

a frame having similar opposed sides interconnected by forward and rearward ends, said frame having upwardly and inwardly extending, substantially planar surfaces and defining a top opening to support an openable top structure;

a top structure having elongate top support elements defining channels in one side carried in parallel array by the opposed sides of the frame with the channels facing each other, each top support element supporting a top having

similar parallel side elements interconnected by at least forward and rearward crosspieces, with an elongate medial support extending parallel to the side elements between the forward and rearward crosspieces, and said rearward cross piece defining the periphery of at least one forwardly extending head hole,

at least one roller carried by the rearward portion of each side element of the top to extend laterally therefrom for rollable support in the channel of each opposed top support element, and

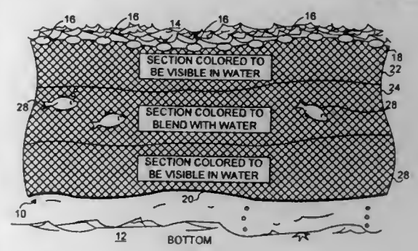
two laterally spaced, upwardly extending rollers carried by the frame to receive the elongate medial support of the top therebetween to guide motion of the top from a covering to a substantially non-covering position in the top opening; and covering supported by the outer surface of the frame and top, forwardly of the at least one head hole defined in the top, to conceal a hunter positioned within the blind.

5,647,160

NETTING COLORED TO INDUCE FISH TO SWIM INTO NET

Ronald A. Anderson, Seattle, Wash., assignor to Northwest International Development Corporation, Seattle, Wash.

Filed Oct. 12, 1995, Ser. No. 542,049
Int. Cl.[6] A01K *71/00*
U.S. Cl. 43—10 **20 Claims**



1. A net comprising:

(a) a first colored portion; and

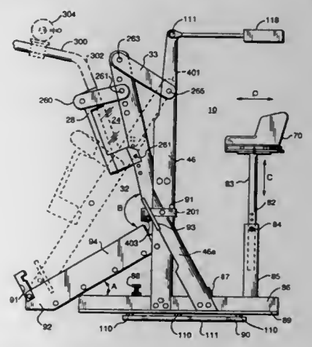
(b) a second colored portion, said second colored portion differing substantially in color from said first colored portion and having a color selected to blend with water in which the second colored portion is disposed, said first colored portion having a color selected to contrast with that of water in which the first colored portion is disposed, and thus to be substantially more visible to fish than said second colored portion, so that the fish are induced to swim away from the first colored portion and toward the second colored portion, and thereby to become entrapped in the second colored portion.

5,647,161

FISH FIGHTING APPARATUS

Daniel Corrigan Miller, Sr., Franklin, N.H., assignor to Futur-Vision - Machine & Designs, Inc., Bow, N.H.

Continuation-in-part of Ser. No. 399,425, Mar. 7, 1995, abandoned. This application Aug. 1, 1995, Ser. No. 509,980
Int. Cl.[6] A01K *97/10;* **B63B** *29/04*
U.S. Cl. 43—21.2 **14 Claims**



1. A fish fighting apparatus for assisting an angler in pulling a hooked fish into a boat using a fishing rod having a butt and a reel, said apparatus comprising:

a base having a top surface and a bottom surface which attaches said apparatus to the deck of the boat;

a chassis having a top surface and a bottom surface that is rotatably connected to the top surface of said base, wherein said chassis can be rotated substantially independent of the pull on the fishing rod;

vertical support member rigidly fastened to said chassis;

an inclined ramp having an upper position and a lower position, said ramp rigidly fastened to said vertical support member;

a lever, having a pivotal end and a ramp end, with the pivotal end of said lever being pivotally attached to said vertical member;

a pedal assembly attached to the ramp end of said lever with said pedal assembly slidably attached to said inclined ramp;

rod holder adjustably attached to said lever, said rod holder releasably holding the butt of the rod so that the angle between the fishing rod and the boat can be set to a predetermined position and so that the fishing rod can be set at a predetermined distance relative to said vertical member; wherein force applied to said pedal assembly causes said pedal assembly to slide down from the upper position of said ramp to the lower position of said ramp, such that a mechanical advantage is achieved, thus, enabling the angler to pull the hooked fish toward the boat using the mechanical advantage provided by said lever.

5,647,162

FISHING ROD WITH INSERTED FISHLINE

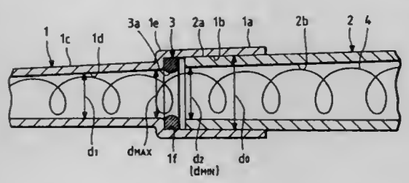
Masaru Akiba; Masayuki Nakagawa; Tomoyoshi Tsurufuji, all of Saitama; Shunji Sunaga, and Koichi Ito, both of Tokyo, all of Japan, assignors to Daiwa Seiko, Inc., Tokyo, Japan

Filed Aug. 18, 1994, Ser. No. 291,995

Claims priority, application Japan, Aug. 24, 1993, 5-050476 0 U; Sep. 1, 1993, 5-240441; Dec. 24, 1993, 5-073958 0 U; Jul. 20, 1994, 6-189872

Int. Cl.[6] A01K *87/00*

U.S. Cl. 43—24 **9 Claims**



1. A fishing rod in which a fishline is at least partially passed through the inside of said fishing rod, said fishing rod comprising:

at least two first and second rod pipes adapted to jointed together, wherein:

said first rod pipe includes a non-connecting portion defining a tapered inner periphery having a first maximum diameter, and a connecting portion defining an inner periphery larger in diameter than said tapered inner periphery of said non-connecting portion;

said inner periphery of said connecting portion is removably fitted on an outer periphery of said second rod pipe;

said second rod pipe defines an inner periphery having a second diameter substantially equal to or smaller than said first maximum diameter of said non-connecting portion; and

a fishline guide member is provided between said tapered inner periphery of said non-connecting portion of said first rod pipe and said inner periphery of said second rod pipe such that said fishline guide member is projected radially inwardly beyond both said tapered inner periphery of said first rod pipe and said inner periphery of said second rod pipe.

5,647,163

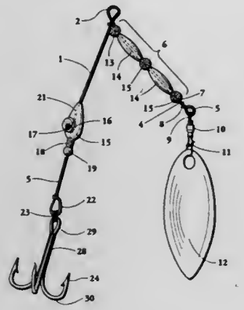
SWITCHABLE BLADE SPINNER FISHING LURE FOR MUSKELLUNGE AND NORTHERN PIKE

William D. Gorney, 406 Wilder Ave., Helena, Mont. 59601

Filed Apr. 21, 1995, Ser. No. 426,270

Int. Cl.[6] A01K *85/00*

U.S. Cl. 43—42.13 **9 Claims**



1. A spinner fishing lure comprising:

an elongate wire main shaft having a first and second end;

a jig head disposed on the main shaft intermediate the first and second end, wherein the jig head is disposed on the main shaft in closer proximity to the midpoint of the main shaft than to the second end of the main shaft; and,

wherein the jig head includes two round eye platforms facing down approximately 30 degrees from a horizontal plane; and,

an eye including a moveable pupil attached to each eye platform;

a multiple hook having a shank attached to the second end of the main shaft;

at least one living rubber skin disposed on the main shaft between the jig head and the second end, wherein the main shaft between the jig head and the second end of the main shaft, as well as the multiple hook, are substantially concealed by the at least one living rubber skin;

a spinner arm having a first and second end, the first end attached to the main shaft;

a spinner blade attached to the second end of the spinner arm.

5,647,164

INSECT TRAP

William Yates, 40 Farewell Cres. Box 351, Smithville, Ontario, Canada

Filed Aug. 9, 1995, Ser. No. 513,120

Int. Cl.[6] A01M *1/08*

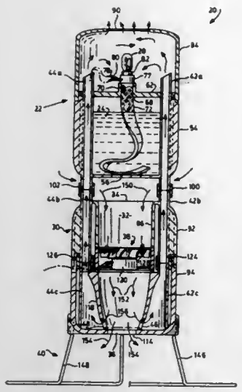
U.S. Cl. 43—139 **9 Claims**

1. Insect trap comprising a shaft having a first end and a second end, and an inlet opening defined at said first end and an outlet opening defined at said second end;

a motorized fan disposed inside the shaft and spaced from said second end of the shaft, the fan being adapted to aspire inlet air and insects entrained in said inlet air into the inlet opening of the shaft and to exhaust outlet air and insect debris entrained in said outlet air into said second end; and

a bait receptacle for containing bait and having a vent for discharging outlet air, the bait receptacle being spaced upstream from the inlet opening of the shaft and adapted to allow inlet air to be aspired by the fan between the bait receptacle and the shaft; and

at least one conduit having an inlet disposed in said second end of the shaft and spaced from said fan, and an outlet disposed in said bait receptacle, said at least one conduit being adapted to divert at least a portion of the outlet air over the bait so as to disperse the bait into a surrounding atmosphere and attract insects toward the insect trap.



5,647,165

SELECTIVE INVERTED DRAIN

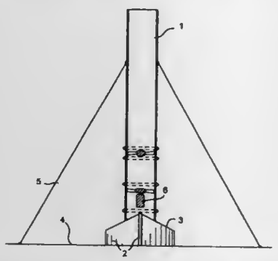
Rafael Guarga Ferro, P.O. Box 6124, Montevideo 11000, Uruguay

Filed Jun. 24, 1992, Ser. No. 903,601

Claims priority, application Uruguay, Jun. 25, 1991, 23246

Int. Cl.[6] A01G *13/00*

U.S. Cl. 47—2 **7 Claims**



1. A selective inverted drain for preventing damage to a crop from a frost-producing thermal stratification of atmosphere wherein the crop is exposed to at least one stratum of air at a critical temperature sufficiently cold to damage the crop, said stratum being present in the thermal stratification below warmer strata containing air at non-critical temperatures not sufficiently cold to damage the crop, said drain comprising:

a vertical duct said vertical duct comprising rim means, including a rim at a lowermost part of the duct, for defining an opening in the bottom of the duct for entry of air such that air drawn into the duct by dynamizing means in the duct passes below the rim and enters the duct through the opening;

support means on the lower end of the duct for supporting the duct upright on the ground with the lowermost rim of the duct spaced above the ground a distance sufficient to allow selective drainage of the air stratum at the critical temperature for the crop whereby the selective drainage of said stratum will cause descent of the warmer air strata without breaking up the thermal stratification of the atmosphere; and

atmospheric fluid regulating means consisting of dynamizing means in a lower portion of the upright duct solely for drawing the said stratum of air upwards through the duct, towards the higher and warmer strata.

5,647,166

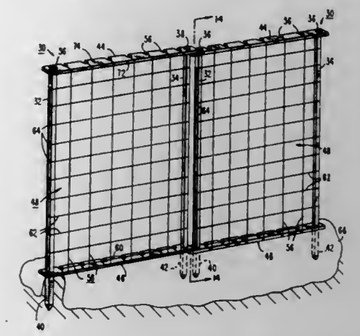
TRELLIS

Gregor N. Neff, 85 Myrtle Ave., Dobbs Ferry, N.Y. 10522

Filed Jun. 17, 1994, Ser. No. 261,431

Int. Cl.[6] A01G *17/06*

U.S. Cl. 47—45 **19 Claims**



1. A trellis kit comprising, in combination, a pair of poles, at least one crossbar having openings of polygonal shape for receiving said poles, each of said poles having at least a portion with a cross-sectional shape matching that of said openings with dimensions smaller than those of said openings so that said crossbar forms a slip fit onto said poles to join said poles together in spaced apart relationship to form a frame, and a lattice made of flexible netting and shaped to span the space between said poles when attached to said poles, whereby said crossbar can be slipped onto said poles in forming a trellis, and can be slipped off of said poles to disassemble said trellis, and said openings will hold each of said poles in a selected one of a plurality of different rotational positions so as to permit adjustment of the tension of said netting when attached between said poles.

5,647,167

Patent Not Issued For This Number

5,647,168

FLAT TRAPEZOIDAL CONTAINER OF BRIGHTLY PRINTED THERMALLY SEALABLE FILM

Scott Robert Gilbert, Hinckley, Ohio, assignor to Professional Package Company, Strongsville, Ohio

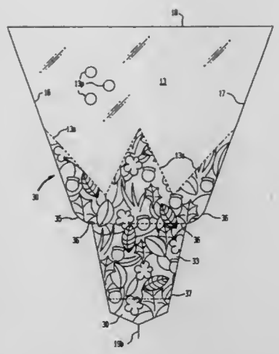
Continuation-in-part of Ser. No. 375,786, Jan. 20, 1995, Pat. No. 5,496,252, which is a division of Ser. No. 248,391, May 23, 1994, Pat. No. 5,388,695. This application Mar. 4, 1996, Ser. No. 610,365

Int. Cl.[6] A01G *9/02*

U.S. Cl. 47—72 **3 Claims**

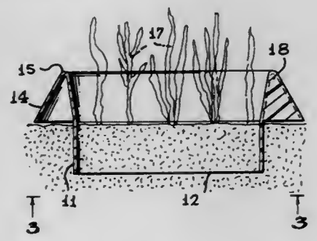
1. A fastener-free, non-closable container for a potted plant, said container comprising,

a pair of decorative flexible self-supporting laminar panels having substantially the same size and shape, one congruently disposed relative to the other and joined at their sides with water-impervious joints, said sides being equally angulated but oppositely directed so as to form a generally trapezium shape; each said panel being a portion of a web of thermally sealable synthetic resinous film divided by a generally lateral line defining therebeneath, a lower portion having an exterior surface upon which essentially no unprinted portion remains, said lower portion including (i) a base on which the bottom of a pot rests, and (ii) a frustoconical portion which snugly jackets the pot, and thereabove, an essentially transparent



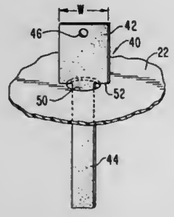
upper ("see-through") portion, said lateral line being located in a region in the range from about one-half to about two-thirds vertically above said container's bottom; said base including a hexagonal gusset formed by an inward fold of said lower portion inserted for a predetermined distance related to said pot, and sealed at equal but oppositely directed acute angles, each sealing line angled outwardly from the vertical central axis to form an acute angle with the horizontal in the range from 30° to 60°, said gusset providing opposed triangular portions which lie conformingly on said pot's lower surface.

5,647,169
PLANTER COLLAR
Dennis M. Bui, 6901 Spinel Ave., Alta Loma, Calif. 91701
Filed May 15, 1995, Ser. No. 441,242
Int. Cl.[6] A01G *1/08*
U.S. Cl. 47—78 **1 Claim**



1. A protective collar for a plant comprising:
a continuous sidewall defining an open-ended cavity between a top end and a bottom end;
said top end adapted to receive manual pressure applied to said sidewall for imparting a load force to said bottom end for forcible insertion into soil;
said bottom end having an unobstructed edge engageable with the soil;
said bottom end resides in the soil beneath the surface thereof;
said top end resides exposed above the soil;
an outwardly cantilevered and flared flange carried on said top end projecting from said sidewall in a diverging, sloping, tapered relationship with respect to said sidewall;
a joint integrally connecting said top end with said flared flange and said flared flange having a terminating edge in fixed spaced-apart relationship with respect to said sidewall;
said joint is selected from:
a. rounded joint
b. flat joint;
said flared flange downwardly depends from said joint;
a plurality of ribs integrally interconnecting said flared flange with said sidewall to reinforce and rigidize said top end; and
said flared flange and said joint constitute a handle device for inserting said bottom end into soil and for manually removing said bottom end from said soil.

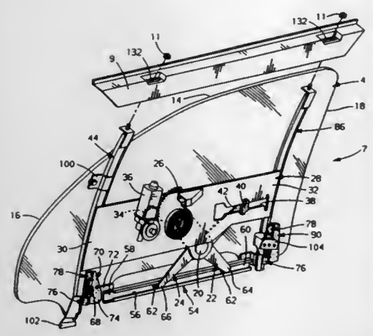
5,647,170
WATERING WICK FOR POTTED PLANT
Reinhold Holtkamp, Jr., Nashville, Tenn., assignor to International Plant Breeding AG, Bern, Switzerland
Filed Nov. 21, 1995, Ser. No. 561,433
Int. Cl.[6] A01G *31/02*
U.S. Cl. 47—81 **5 Claims**



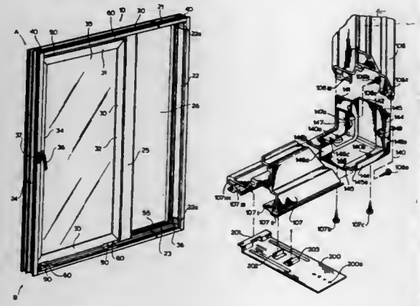
1. A watering wick made of flexible hydrophilic material for transmitting liquid by capillary action from a liquid reservoir defined by a container to growing media in a pot containing at least one opening in its bottom wall and being supported in the container, said wick comprising:
an upper enlarged part having a width greater than the dimension of a bottom wall opening through which the upper part is inserted so that said upper part is compressed in width during insertion through such opening, said upper part thereafter assuming a width larger than the size of such opening so as to prevent unintentional withdrawal of the wick downwardly through such opening, and
a lower tail part formed integrally with said upper part, said tail part having a width less than the dimension of such opening and a length such that the tail part extends substantially below such opening into a liquid reservoir, and wherein
the thickness of said wick, and the length and width of said upper part and said lower tail part are such that an amount of liquid appropriate for watering a plant is transmitted by said lower tail part of said wick to said upper part thereof.

5,647,171
HARD-TOP VEHICLE WINDOW REGULATOR SYSTEM
Timothy Alan Wirsing, Saginaw, and Alex Newton Draper, Clio, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Dec. 26, 1995, Ser. No. 578,415
Int. Cl.[6] B60J *5/04*
U.S. Cl. 49—502 **6 Claims**

1. A window regulator system for selectively translating a window in and out of an automotive door cavity, the regulator system comprising:
at least a first channel for extending generally vertically in the door cavity for guiding the window;
a blade connected to the channel, the blade extending in the fore and aft direction;
a guide block fixed with respect to the window, the guide block having a transverse alignment bearing with two generally noncompliant bearing lobes juxtaposed with the blade on opposite sides of the blade for aligning the window in a direction transverse to the window, said lobes are initially spaced from the blade by a small amount of clearance; and
a spring button connected to the guide block and being of a generally hard polymeric material having a generally conical shape with an apex contacting the blade and a base compressed against the guide block for exerting a spring force between the blade and the guide block to take up the clearance.

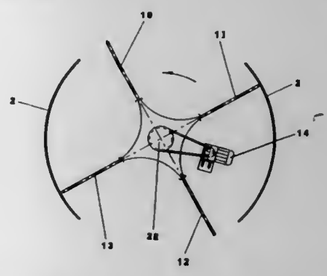


5,647,172
PULTRUDED FIBERGLASS FRAMING SECTIONS
Stanley Rokicki, 112 Lakepromenade, Toronto, Ontario, Canada
Continuation of Ser. No. 455,190, Dec. 22, 1989, abandoned. This application Apr. 19, 1993, Ser. No. 48,590
Int. Cl.[6] E06B *1/04*
U.S. Cl. 49—504 **61 Claims**



1. A closure assembly having framing sections and assembled at predetermined points with fastening means and having hardware fastened to the closure assembly at predetermined points with fastening means, said closure assembly comprising a thin walled fiberglass pultrusion having a predetermined cross section including three surfaces and having two ends and providing the framing sections for forming the closure assembly and including discrete reinforcing means fastened and positioned at discrete locations at the ends of the pultrusions or where hardware is fastened with the pultrusion, each reinforcing means having complementary pultrusion butting and engaging portions disposed therewith which engage with complementary reinforcing means butting and engaging portions of the pultrusion to allow for the joining by said fastening means of; the framing section in the closure assembly, the hardware associated with the assembly to the assembly, and adjacent pultrusions to one another while reinforcing the framing sections in use from cracking or breaking proximate at least three surfaces of said cross section of said pultrusion in at least three planes as the fastening means are fastened to the discrete reinforcing means distributing any fastening stresses tending to locally crack or break the pultrusion adjacent the point of fastening to the reinforcing means and to a substantially greater cross sectional area than the immediate surrounding surface of the pultrusion proximate the point of fastening, wherein the pultrusion is of a thickness of substantially in the range of between twenty five and ninety thousandths of an inch.

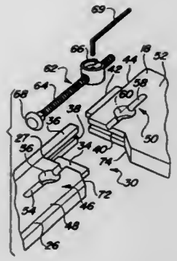
5,647,173
OPERATING METHOD FOR THE OPERATION OF A REVOLVING DOOR
Jürgen Stark, Hattingen, and Steffen Strunk, Essen, both of Germany, assignors to Dorma GmbH + Co. KG, Ennepetal, Germany
Filed Oct. 2, 1995, Ser. No. 538,156
Claims priority, application Germany, Feb. 2, 1994, 44 02 899.7; Feb. 7, 1994, 44 03 565.9
Int. Cl.[6] E06B *3/00*
U.S. Cl. 49—506 **20 Claims**



1. A method for driving a rotation of a revolving door about a central axis of the revolving door in response to the entry of a user thereinto, the revolving door including the central axis, a plurality of door panels extending radially outward from the central axis, a drive motor for supplying a rotational torque to the revolving door, and a control circuit for controlling the rotational torque supplied to the revolving door by the drive motor, said method comprising the steps of:
sensing a magnitude of at least one of:
a user applied force applied by the user to at least one of said plurality of door panels; and
a user imparted rotational velocity imparted by the user to said revolving door;
to produce a sensed magnitude of at least one of a user applied force and a user imparted rotational velocity; and
operating said control circuit to cause said drive motor to supply a rotational torque to said revolving door that corresponds to said sensed magnitude of said at least one of said user applied force and said user imparted rotational velocity.

5,647,174
COLLAPSIBLE MANTEL ASSEMBLY
Anthony Mattarelli, 7207 E. McNichols Rd., Detroit, Mich. 48212
Filed Aug. 29, 1994, Ser. No. 298,227
Int. Cl.[6] E04F *19/00*; **F24B** *1/198*
U.S. Cl. 52—36.3 **3 Claims**

1. A collapsible mantel assembly for surrounding a fireplace opening, comprising:
a horizontally extending member having a front face, a rear face, a first end, a second end, a planar top surface and a bottom surface;



a first vertically extending support member and a second vertically extending support member, each of said first and second vertical support members being constructed of an elongated body having a front face, a rear face, a predetermined thickness and including a top end and a bottom end;

an elongated first tongue portion extending axially from said top end of each of said first and second support members;

an elongated first grooved portion being recessed within said bottom surface of said horizontally extending member proximate each of said first and second ends, said first tongue portions corresponding in shape with said first grooved portions and being received within said first grooved portions;

an elongated second tongue portion extending axially from each end of each of said horizontally extending member;

an elongated second grooved portion being recessed within said end of each of said support members, said second tongue portions corresponding in shape with said second grooved portions and being received within said second grooved portions;

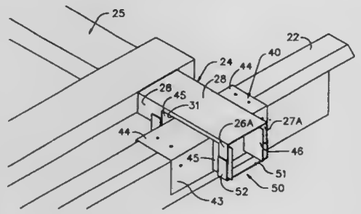
whereby said tongue and groove portions provide means for positioning said first vertically extending member at said first end of said horizontally extending member and said second vertically extending support member at said second end of said horizontally extending member;

fastener means comprising a first counterbore portion formed within said rear face of each of said first and second support members proximate said top ends and a second counterbore portion formed within said rear face of said horizontally extending member at each of said first and second ends, said first and second counterbore portions each further including an interconnecting and slot shaped elongated portion and an enlarged recessed circular end; and

said fastener means further comprising a pair of spin nut assemblies, each spin nut assembly having a first end inserted within each of said circular ends of said first counterbored portions, a second end inserted within each of said second ends of said second counterbored portions and an interconnecting stem portion inserted within said interconnecting slot shaped elongated portion;

said fastener means being located in proximity to and cooperating with said positioning means so that, upon positioning of said first and second vertical support members relative to said horizontal member, said spin nut assemblies are inserted within said recessed portions on said rear face of said horizontal member and each of said first and second support members, said spin nut assemblies being tightened to fasten said first vertically extending support member at said first end and said second vertically extending support member at said second end of said horizontally extending member to quickly and conveniently assemble said collapsible mantel assembly for placement against a boundary wall of the fireplace opening.

5,647,175
FLOATING SUB-FRAME FOR ROOF CURBS AND METHOD OF INSTALLATION
James G. Smyth, 9709 Barkridge Rd., Charlotte, N.C. 28227
Filed Nov. 27, 1995, Ser. No. 565,297
Int. Cl.[6] E04B *1/343;7/16*
U.S. Cl. 52—58 **9 Claims**



1. A floating sub-frame for a roof curb to be installed as support for roof equipment at a selected location on a standing seam roof of a pre-engineered metal building having purlins and a stationary frame supporting metal roof panels and the roof curb having dimensions to conform with the dimensions and spacing of the purlins, said sub-frame comprising:

(a) a pair of span channels for installation between two spaced purlins at the selected location of the roof curb, each of said span channels having cut-out portions being spaced from each other a distance for corresponding to the spacing of said purlins;

(b) a pair of cross channels extending between the span channels at the selected location of the roof curb;

(c) means enabling movement of the sub-frame, roof curb and roof equipment with thermal movement of the metal roof panels, said means enabling movement of the sub-frame being coupled to said span channels and said cross channels;

(d) means resisting uplift of the metal roof panels by any negative pressure created above the roof by the passage of high winds, said means resisting uplift of the metal roof panels being located on said span channels; and

(e) means preventing ponding of water at the juncture of said channels the metal roof panels with the roof curb.

5,647,176
CONSTRUCTION ASSEMBLY FOR CLOSURE STRUCTURE
Les Milliken, 101 S. McCall Rd., and K. Blair Milliken, 305 Gladstone Blvd., both of Englewood, Fla. 34223
Continuation of Ser. No. 301,714, Sep. 7, 1994, abandoned, which is a continuation of Ser. No. 2,073, Jan. 8, 1993, abandoned, which is a continuation of Ser. No. 852,929, Mar. 13, 1992, abandoned, which is a continuation of Ser. No. 521,593, May 10, 1990, abandoned, which is a continuation-in-part of Ser. No. 191,419, May 9, 1988, Pat. No. 4,926,605. This application Jul. 28, 1995, Ser. No. 508,543
Int. Cl.[6] E04H *15/18*
U.S. Cl. 52—63 **6 Claims**

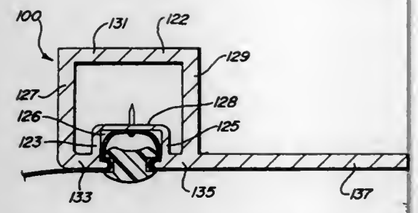
1. A construction assembly, comprising:

a plurality of substantially elongated framing members, said framing members each having defined therein at least one longitudinal channel, said channel being defined by a first channel wall, a second channel wall, and a channel base disposed therebetween and connected with said channel walls;

a covering material;

means for anchoring said covering material into said channels of said framing members, said means comprising a plurality of staples;

a plurality of flexible elongated trim pads having at least two coplanar slots defined therein, said elongated trim pads



adapted to be fixed into said channels thereby substantially locking said covering material therein and forming a tight seal thereby;

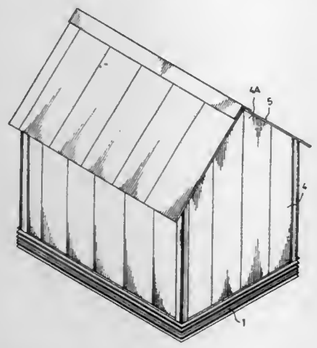
each of said framing members being hollow and having an outer periphery which is substantially square shaped in cross-section;

at least one flange extending from each of said framing members, said flange extending substantially parallel to said channel base;

said substantial square shape being defined by a first side member, a second side member and a base member joining the side members together in parallel relationship along an edge of each of said side members to define a framing member having a pair of spaced elongated parallel extending side members joined together by a substantially perpendicularly extending elongated base member to thereby form an elongated slot;

said first channel wall, said second channel wall and said channel base being formed within said framing member slot with said channel base spaced inwardly from and extending substantially parallel to said base member.

5,647,177
MODULAR HOUSE
Jong-Liang Hwang, Kaohsiung, Taiwan, assignor to Tu Ling Aluminum Engineering Co., Ltd., Kaohsiung, Taiwan
Filed Dec. 26, 1995, Ser. No. 578,279
Int. Cl.[6] E04B *1/343*
U.S. Cl. 52—79.5 **9 Claims**



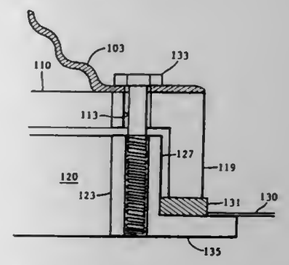
1. A modular house comprising:

a floor assembly including an annular frame unit adapted to be received fittingly within a rectangular cavity in ground, and a floor unit fitted within said annular frame unit, said annular frame unit including two generally U-shaped frames which abut against each other and define a floor space therebetween, a top surface formed with an annular groove, and an inner peripheral surface formed with an annular floor slot unit, each of said U-shaped frames having two parallel and straight side bar portions and a connecting bar portion interconnecting said side bar portions at one end thereof to form said U-shaped frame, each of said side bar portions and said connecting bar portions of said frames having a generally U-shaped cross-section and having two parallel vertical side walls defining said annular groove therebetween, a horizontal bottom wall interconnecting lower ends of said side walls, and an open-ended horizontal floor slot formed in one of said vertical side walls along total length of said two side bar portions and said connecting bar portion of each U-shaped frame so that said floor slots together constitute said floor slot unit, said floor unit including two floor halves which have outer peripheries respectively and slidably engaged within said floor slots of said frames and which abut against each other side by side;

a peripheral wall assembly including four rectangularly arranged vertical corner pillars defining four wall spaces each of which is located between an adjacent pair of said corner pillars, four pillar retainer units respectively and removably mounting lower end portions of said corner pillars in said annular groove of said annular frame unit, four horizontal rail units disposed in said wall spaces respectively, four rail retainer units respectively and removably mounting said rail units on said corner pillars, four spaced sets of removably interconnected outer wall sections, four outer corner posts respectively and removably connected to said corner pillars so that said outer wall sections and said outer corner posts together constitute an annular outer wall unit which surrounds said corner pillars and said rail units, four spaced sets of removably interconnected inner wall sections, and four inner corner posts respectively and removably connected to said corner pillars so that said inner wall sections and said inner corner posts together constitute an annular inner wall unit, in such a manner that said corner pillars and said rail units are located between said inner and outer wall units, said outer wall unit having two opposite side walls each of which has a tapered top end portion; and

an inverted V-shaped roof assembly mounted removably on said wall assembly.

5,647,178
THROUGH-ROOF FITTINGS
Roger M. Cline, P.O. Box 370, Purceville, Va. 22132, assignor to Roger M. Cline, Bluemont, Va.
Filed Sep. 28, 1995, Ser. No. 535,381
Int. Cl.[6] E04D *13/14*
U.S. Cl. 52—219 **17 Claims**



1. A through-roof fitting for surrounding and sealing a pipe or stack where it extends through a roof, comprising a base plate having a generally oval laterally extended base flange and a generally oval base body extending upward from the base flange for extending the body through a complementary general oval opening in a roofing sheet, and positioning the base flange under the roof around the opening, first fasteners secured in the base body and accessible generally perpendicular to the flange, a clamp plate having a generally oval clamp flange for cooperating with the base flange and having a generally oval clamp body for overlying the base plate body, openings in the clamp body aligned with the first fasteners in the base plate body for receiving fasteners, a molded boot having a boot base for overlying and surrounding the clamp

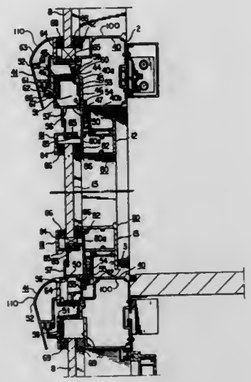
body, the boot base having openings aligned with the openings in the clamp body for receiving fasteners, an integrally formed generally oval boot sleeve connected to an inward edge of the boot base, the sleeve having a relatively long sloping wall at one end of the oval boot base, and a relatively short sloping wall at the other end of the oval boot base, and having a sloping circular boss connected to a top of the boot sleeve, and a large circular opening in the boss for receiving a pipe or stack, a plurality of second complementary fasteners for connecting to the first fasteners, a sealing gasket provided between the clamp flange and the roofing sheet for compressing against the roofing sheet when the first fasteners and second fasteners are joined and tightened, for sealing and preventing leakage around the roofing sheet opening.

5,647,179

ALUMINUM FRAME MEMBER

Shinji Hayashi, and Hiroshi Omae, both of Toyama-ken, Japan, assignors to YKK Architectural Products Inc., Tokyo, Japan

Continuation of Ser. No. 205,510, Mar. 4, 1994, abandoned. This application Dec. 20, 1995, Ser. No. 575,468
Claims priority, application Japan, Mar. 12, 1993, 5-051869
Int. Cl.[6] E04B *2/96;* **E04F** *19/06*
U.S. Cl. 52—235 **10 Claims**



1. A curtain wall, comprising:

an interior member having a surface, an interior side, an exterior side, and a hollow portion of substantially rectangular cross section, the exterior side of said interior member having a vertically extending engaging groove and a first panel support portion integrally formed in the form of vertical plate, the surface of said interior member having a first coating with a first weather-proof capacity; and

a separate exterior member having a surface, an interior side, an exterior side, a vertically extending engaging piece and a second panel support portion in the form of a vertical plate integrally formed with and perpendicularly extending from said engaging piece, the surface of said exterior member having a second coating with a second weather-proof capacity which is higher than the first weather-proof capacity of said first coating of said interior member;

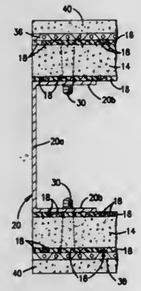
said exterior member being fixed to the exterior side of said interior member with said engaging piece being engaged in said engaging groove, wherein a panel is bonded to said first panel support portion and said second panel support portion by means of a bonding seal material so that said interior member is sealed from exposure to an environment external to said panel by said exterior member, said panel, and said bonding seal material.

5,647,180

FIRE RESISTANT BUILDING PANEL

Patricia Billings, Leawood, Kans., and Susan Michalski, Lee's Summit, Mo., assignors to Earth Products Limited, Leawood, Kans.

Filed Sep. 5, 1995, Ser. No. 523,651
Int. Cl.[6] E04B *2/30*
U.S. Cl. 52—268 **3 Claims**



1. A fire resistant building panel comprising:

a core having the configuration of a flat panel and presenting opposite side surfaces, said core having a composition comprising a dry mixture mixed with water and a catalyst which includes polyvinyl acetate;

a surface coating substantially covering each of said opposite side surfaces of the core, each coating having a composition substantially identical to said core; and

a glass fiber mesh embedded in each coating;

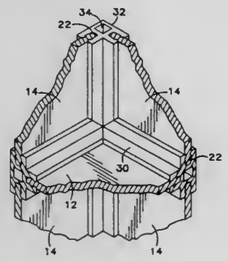
said dry mixture comprising gypsum present therein in the amount of about 26.25% by weight, cement present therein in the amount of about 29.25% by weight, expanded perlite aggregate present therein in the amount of about 40% by weight, and perlite powder present therein in the amount of about 4.5% by weight.

5,647,181

CONSTRUCTION SYSTEM AND METHOD FOR CONNECTING RIGID SHEET-LIKE PANELS TOGETHER INTO DOLL HOUSES, PLAY HOUSES, UTILITY SHEDS AND OTHER STRUCTURES

Larry David Hunts, 1111 Netherlands Rd., Trail, Oreg. 97541

Filed Oct. 11, 1994, Ser. No. 321,190
Int. Cl.[6] E04B *1/38*
U.S. Cl. 52—282.1 **7 Claims**



1. A panel connector system for connecting a plurality of panels together in positive, snap fit, locking engagement in desired angular relationship relative to each other for the construction of various structurally rigid structures in which the connected panels

themselves provide the weight-bearing structural integrity and strength of the resulting structure, the panel connector system comprising:

a) a first connector component associated with each of at least two peripheral edges of each of a plurality of panels to be connected together, each said first connector component defined by a longitudinally extending confronting panel edge and an associated locking groove in at least one face of the panel spaced inwardly of and extending parallel to said confronting panel edge and defining therebetween a connector tongue having a specific, predetermined surface configuration, and

b) a second connector component configured to receive and engage at least two of said first connector components in locking, snap-fit engagement, said second connector component comprising a plurality of elongated panel connector members each having a longitudinally elongated base configured with a common, uniform cross section, at least two pairs of locking members coextensive with and extending from said base at different angles, each locking member comprising a pair of arms spaced apart and defining a space therebetween configured to correspondingly receive a connector tongue of a panel, a locking detent on at least one of said pair of arms projecting toward the other arm of said pair, the locking detent being configured to engage the corresponding locking groove in an associated panel in a snap fit connection, the pair of arms and the space defined therebetween configured to matingly correspond to the specific surface configuration of a connector tongue to be received therebetween in a rigid, full contact, locked engagement in which relative movement between the first and second connector components is prevented,

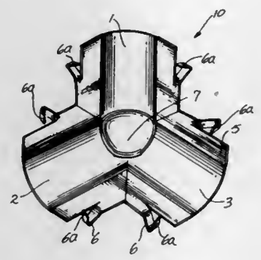
c) whereby panels thus connected together are retained against movement relative to each other and thus form a rigid, essentially unitary member in which the joined panels provide the weight bearing structural strength and integrity of an assembled structure.

5,647,182

CORNER CAP WITH UNITARY PRONGS

Barry Rutherford, Chatsworth, Calif., assignor to Flannery, Inc., San Fernando, Calif.

Filed Nov. 29, 1995, Ser. No. 564,732
Int. Cl.[6] E04B *2/00*
U.S. Cl. 52—287.1 **12 Claims**



1. A corner piece for use in drywall construction to hold a corner formed between three wall surfaces together, comprising:

a central member for covering an exterior surface of a drywall corner formed by three adjacent walls;

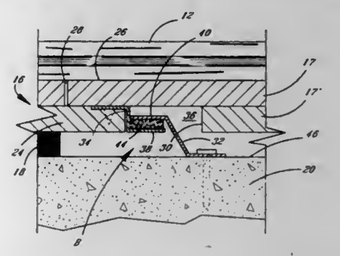
three legs extending in mutually transverse directions from the central member, each leg having an arcuate region adapted to cover an exterior junction formed between two adjacent walls, wherein each leg is flanked by a pair of laterally extending flanges for contacting an exterior surface of two adjacent walls of the three walls, wherein the arcuate rehion has a raised ridge adhacent the central member, and each flange has a prong with a tapered end formed unitarily in the flange and extending transverse to the flange for entering through an exterior surface of one of the walls.

5,647,183

RESILIENT FLOORING

James Counihan, 50 Griffin Mill Rd., Piedmont, S.C. 29673

Filed Aug. 9, 1996, Ser. No. 693,661
Int. Cl.[6] E04F *15/22*
U.S. Cl. 52—403.1 **20 Claims**



1. A resilient flooring system for assembly on a base surface to provide a resilient floor comprising:

a plurality of subfloor panels having upper and lower surfaces, said panels being arranged to generally co-extend over said base surface in side-by-side relationship;

a plurality of resilient members arranged over said base surface, said resilient members supporting said panel members;

ends of said panels include upper and lower edges each forming a ledge, said ledges being formed on opposite ends of said upper and lower surfaces of said panels;

said panels being arranged end to end with said ledges overlaying one another to form a substantially continuous upper surface, the end of the ledge appearing on said lower surface of said panel being spaced from said adjacent panel end sufficiently to form a channel opening onto said base surface;

a limit member located within said channel and connected with said panels and said base surface, said limit member functioning to allow limited vertical movement of said flooring system; and

exterior flooring secured with said upper surface of said subflooring panels.

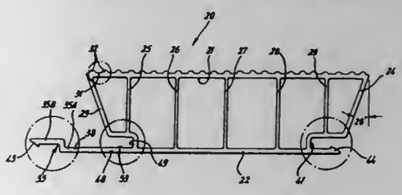
5,647,184

MODULAR DECKING PLANK, AND DECKING STRUCTURE

Harry H. Davis, Mooresville, N.C., assignor to L. B. Plastics Limited, Belper, England

Filed Jan. 22, 1996, Ser. No. 589,728
Int. Cl.[6] E04C *3/00;* **E04B** *5/00*
U.S. Cl. 52—592.1 **21 Claims**

1. An elongate modular decking plank for being assembled on a



supporting subfloor together with a plurality of like planks to form a decking structure, said decking plank comprising:

(a) a top wall spaced-apart from a bottom wall, and opposing laterally spaced side walls interconnecting said top and bottom walls to define a void therein, the side walls converging in a direction towards the bottom wall such that the bottom wall is narrower in width than the top wall; and

(b) an integrally-formed fastening flange extending outwardly from one of first and second sides of the decking plank, said flange including a fastening portion adapted for receiving fasteners therethrough to the supporting subfloor to mount the decking plank on the supporting subfloor.

5,647,185

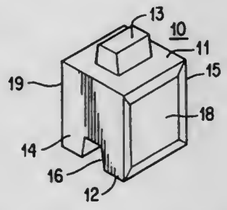
STRUCTURAL BLOCKS AND ASSEMBLIES THEREOF

Emidio J. Forlini, 120 Edmonds Ave., Havertown, Pa. 19083

Continuation of Ser. No. 504,057, Jul. 18, 1995, abandoned, which is a continuation of Ser. No. 154,943, Nov. 19, 1993, abandoned. This application May 14, 1996, Ser. No. 645,931

Int. Cl.[6] A63H *33/04; E04C 1/00*

U.S. Cl. 52—604 **18 Claims**



1. A generally rectangular structural block having a top and a bottom face, and having:

a substantially rectangular ridge which extends with uniform height above said top face, which is substantially centered within said top face and which is substantially narrower and shorter than said top face of the block;

a pair of grooves which are formed with uniform depth in said bottom face, one of said grooves being aligned with and the other of said grooves being at right angles to said ridge, and said grooves intersecting substantially in the center of said bottom face, each groove being dimensioned in width and depth substantially as the female mate to said ridge; and

said ridge having a length which is sufficiently greater than its width so that said block is able to slide along the aligned groove, but is kept by said ridge from sliding at right angles to the long dimension of said ridge when the block is stacked together with another block of the same construction.

5,647,186

STEEL FRAMING SYSTEM FOR WALLS

Ronald Arthur Donaldson, 54 Yeovill Drive, Bomaderry, New South Wales, 2541, Australia

Filed Jan. 11, 1996, Ser. No. 585,182

Claims priority, application Australia, Jan. 11, 1995, PN0515; May 12, 1995, PN2927; Nov. 8, 1995, 36696/95

Int. Cl.[6] E04H *12/00*

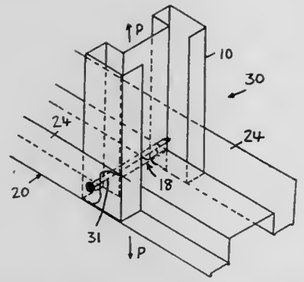
U.S. Cl. 52—653.1 **14 Claims**

1. A wall frame system, comprising:

at least two elongate stud members and at least two elongate plate members, said stud members and plate members comprising:

a web portion having a central channel and two base portions on either side of said central channel; and,

two side-edge flange portions, each extending substantially perpendicularly and in a similar direction from outer-side edges of said base portions, said central channel in said web portion projecting in a similar direction as the two side-edge flange portions,



wherein, at least one end of each of said stud members has part of its said central channel notched therefrom and at least one end of each said plate members has part of both said base portions notched therefrom, said stud members being joined at their ends abutting said plate members, wherein said part of said central channel of said stud member notched therefrom corresponds to said central channel of said plate member, said plate members being joined at their ends to perpendicularly abut said stud members, whereby said part of said two base portions of said plate member notched therefrom corresponds with said base portions of said stud members.

5,647,187

Patent Not Issued For This Number

5,647,188

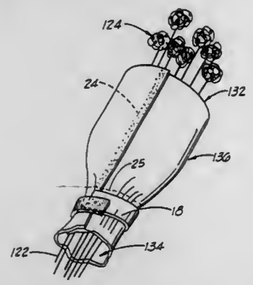
METHOD FOR WRAPPING A FLORAL GROUPING

Donald E. Weder, Highland, and William F. Straeter, Breese, both of Ill., assignors to Southpac Trust International, Inc., Oklahoma City, Okla.

Division of Ser. No. 218,952, Mar. 25, 1994, which is a continuation-in-part of Ser. No. 95,331, Jul. 21, 1993, Pat. No. 5,428,939, which is a continuation-in-part of Ser. No. 963,882, Oct. 20, 1992, Pat. No. 5,408,803, which is a continuation-in-part of Ser. No. 649,379, Jan. 31, 1991, Pat. No. 5,111,638, which is a continuation of Ser. No. 249,761, Sep. 26, 1988, abandoned. This application May 30, 1995, Ser. No. 452,763

Int. Cl.[6] B65B *13/02;61/00*

U.S. Cl. 53—397 **30 Claims**



1. A method for wrapping a floral grouping, comprising:

providing a floral grouping having an upper end and a stem portion;

providing a first sheet of material having:

an upper surface,

a lower surface,

a sheet connecting means comprising an adhesive or cohesive bonding material disposed on at least a portion of the first sheet of material for connecting portions of the first sheet to another portion of the first sheet of material during the wrapping step,

a crimp connecting means comprising a bonding material, the crimp connecting means for holding overlapping portions of the first sheet of material in a crimped position adjacent the stem portion of the floral grouping, and

detaching means for detaching a portion of the first sheet of material after the first sheet of material has been wrapped about the floral grouping;

providing a second sheet of material disposed upon the first sheet of material;

placing the floral grouping on the second sheet of material;

wrapping the first and second sheets of material about the floral grouping causing portions of the first sheet of material to overlap other portions of the first sheet of material and bonding the overlapping portions of the first sheet of material by contacting the sheet connecting means with adjacent overlapping portions of the first sheet of material whereby the overlapped portion of the first sheet of material is bonded to other overlapping portions of the first sheet of material thereby forming a connected portion with the first sheet of material substantially encompassing and surrounding a substantial portion of the stem portion of the floral grouping forming a wrapper about the floral grouping and wherein the detaching means is disposed in a position adjacent a portion of the floral grouping; and

forming a crimped portion in the wrapper by crimping portions of the wrapper together with the crimp connecting means wherein the crimped portion is formed in a position at least partially surrounding and adjacent the stem portion of the floral grouping thereby binding the wrapper in a position about the floral grouping and wherein the crimped portion is at least partially independent of the connected portion.

5,647,189

DECORATIVE ASSEMBLY FOR A FLORAL GROUPING

Donald E. Weder, Highland, and William F. Straeter, Breese, both of Ill., assignors to Southpac Trust International, Inc., Oklahoma City, Okla.

Continuation of Ser. No. 427,014, Apr. 24, 1995, Pat. No. 5,501,059, which is a continuation of Ser. No. 941,992, Sep. 8, 1992, Pat. No. 5,410,856, which is a continuation-in-part of Ser. No. 893,586, Jun. 2, 1992, Pat. No. 5,181,364, which is a continuation of Ser. No. 707,417, May 28, 1991, abandoned, which is a continuation of Ser. No. 502,358, Mar. 29, 1990, abandoned, which is a continuation-in-part of Ser. No. 249,761, Sep. 26, 1988, abandoned, said Ser. No. 941,992is a continuation-in-part of Ser. No. 934,932, Aug. 24, 1992, Pat. No. 5,426,914, which is a continuation-in-part of Ser. No. 819,311, Jan. 9, 1992, abandoned, which is a continuation of Ser. No. 765,416, Sep. 26, 1991, Pat. No. 5,105,599, which is a continuation of Ser. No. 530,491, May 29, 1990, abandoned, said Ser. No. 941,992is a continuation-in-part of Ser. No. 940,930, Sep. 4, 1992, Pat. No. 5,361,482, which is a continuation-in-part of Ser. No. 926,098, Aug. 5, 1992, which is a continuation-in-part of Ser. No. 803,318, Dec. 4, 1991, Pat. No. 5,344,016, which is a continuation-in-part of Ser. No. 702,417, May 28, 1991, abandoned. This application Jun. 6, 1995, Ser. No. 468,178

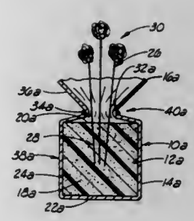
Int. Cl.[6] B65B *25/02*

U.S. Cl. 53—399 **10 Claims**

1. A method for providing a decorative covering comprising:

providing a floral grouping having a bloom end and a stem end;

providing a floral holding material having an upper end, a lower end and an outer peripheral surface, the floral holding material being constructed of a material capable of receiving a portion of the floral grouping and supporting the floral grouping without any pot means;



providing a sheet of material having an upper surface, a lower surface and an outer periphery;

disposing the stem end of the floral grouping in the floral holding material;

disposing the upper surface of the sheet of material near the outer peripheral surface of the floral holding material and extending the sheet of material about at least a portion of the outer peripheral surface of the floral holding material while leaving at least a portion of the upper end of the floral holding material uncovered, the upper surface of the sheet of material being disposed adjacent the outer peripheral surface of the floral holding material;

bondingly engaging a portion of the sheet of material to the outer peripheral surface of the floral holding material via an adhesive or cohesive material for cooperating to hold the sheet of material in position extended about a portion of the outer peripheral surface of the floral holding material to form a decorative covering about the floral holding material; and

disposing a band about the sheet of material in a position for holding the sheet about the floral holding material.

5,647,190

METHOD AND MACHINE FOR PRODUCING TWIN PACKETS OF CIGARETTES

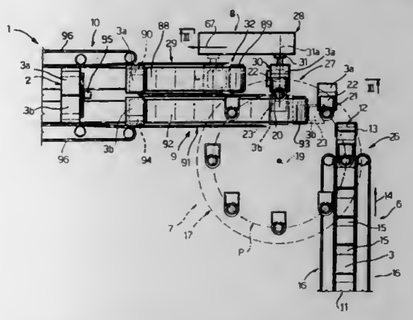
Alessandro Minarelli, Bazzano, and Roberto Osti, Zola Predosa, both of Italy, assignors to G.D Societa' Per Azioni, Bologna, Italy

Filed Nov. 15, 1994, Ser. No. 339,955

Claims priority, application Italy, Nov. 29, 1993, BO93A0476

Int. Cl.[6] B65B *35/56*

U.S. Cl. 53—446 **12 Claims**



1. A method of producing twin packets (2) of cigarettes, each twin packet (2) including a pair of adjacent single packets (3*a*, 3*b*) comprising two single packets (3), each single packet having a respective lid opening end (15), an opposite closed end (5) and a longitudinal axis (4) through said ends, said single packets initially disposed in equioriented alignment with respective longitudinal axes (4) coaxially aligned with each other and equioriented

wherein the closed end (**5**) of a first packet (**3**) is adjacent the lid opening end (**15**) of a second packet (**3**), the method comprising the steps of:

feeding the equioriented and aligned single packets (**3**) in an orderly succession and in a first direction (**14**) parallel to the longitudinal axes (**4**) of the single packets (**3**);

transferring two single packets (**3**) in each said pair of adjacent single packets (**3**) in said succession to respective feed devices (**8**, **9**);

imparting to one of the single packets (**3**) in each pair a first 180° rotation about a second axis (**24**) perpendicular to the respective longitudinal axis (**4**);

feeding said two single packets (**3**) along the respective feed devices (**8**, **9**), and in a second direction (**67**) perpendicular to the respective longitudinal axes (**4**) and to an assembly position (**10**) with the longitudinal axes (**4**) of the two single packets (**3**) coaxial with each other; and

while feeding said two single packets (**3**) in said second direction (**67**),

imparting to one of the single packets (**3**) in each said pair a second 180° rotation about the respective longitudinal axis (**4**) so that, in said assembly position (**10**), said twin packet (**2**) is formed wherein the two single packets (**3***a*, **3***b*):

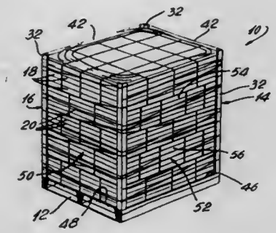
(a) have their respective longitudinal axes coaxially aligned to present a common longitudinal axis (**4***a*); (b) are oppositely oriented in relation to each other along the common longitudinal axis (**4***a*) with the respective closed ends (**5**) adjacent each other; and (c) are rotated 180° in relation to each other about the common longitudinal axis (**4***a*) with the respective lid opening end (**15**) of one single packet (**3***a*) being on one twin packet (**2**) side of the common longitudinal axis (**4***a*) and the lid opening end (**15**) of the other single packet (**3***b*) being on the opposite twin packet side of the common longitudinal axis.

5,647,191

ASSEMBLY OF PACKAGED REAMS AND METHOD THEREFOR

Alain Villemure, St. Lambert, Canada, assignor to Domtar Inc., Canada

Filed Dec. 21, 1995, Ser. No. 576,786
Int. Cl.[6] **B65B** *35/50*
U.S. Cl. 53—447 **16 Claims**



1. A method of producing an assembly of reams of paper sheets for point of distribution display of the reams and ease of access to individual reams comprising:

i) packaging a multiplicity of paper sheets in paper wrapping to form a plurality of paper wrapped, packaged reams,

ii) feeding the packaged reams onto a support in aligned contacting relationship to form stacked layers on said support, each layer comprising packaged reams in side-by-side relationship,

iii) applying an adhesive film to a horizontal outer surface of at least some of said packaged reams, said adhesive having a high strength component in a first lateral direction of said film effective to hinder relative horizontal movement of contacting upper and lower packaged reams having a said adhesive film therebetween, and a low strength component in a second direction perpendicular to said lateral direction such that the contacting upper and lower packaged reams are readily separated by a displacing force in said second direction, said stacked layers forming a tower of the packaged reams comprising a plurality of first stack units of reams and a plurality of second stack units of reams, said first and second stack units being in alternating relationship, said packaged reams of said second stack units being displaced laterally at 90° to said first stack units, and said tower defining a generally rectangular prism, and

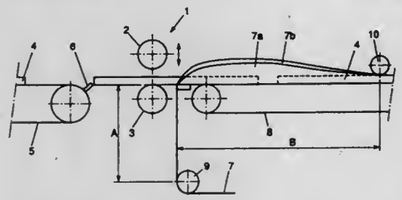
iv) wrapping a flexible protective sheet about the tower of stacked layers.

5,647,192

FOLDING ELEMENT SUITABLE FOR USE IN A PACKAGING APPARATUS, PACKAGING APPARATUS COMPRISING SUCH FOLDING ELEMENT, AND METHOD FOR THE USE THEREOF

Petrus Franciscus Kivits, Schiedam, and Roberto Tuyn, Zaandam, both of Netherlands, assignors to Buhrs-Zaandam B.V., Zaandam, Netherlands

Filed Jun. 6, 1995, Ser. No. 466,190
Claims priority, application Netherlands, Jun. 6, 1994, 9400915
Int. Cl.[6] **B65B** *9/06*
U.S. Cl. 53—450 **16 Claims**



16. In a method for folding into a shell a continuous strip of packaging material comprising guiding the packaging material from an underside in a feeding direction over a folding element so as to form a shell from the material strip, guiding the shell from the folding element in a product conveying direction, and placing products to be packaged on the material strip between folded sides of the material strip, the improvement wherein the folding element (**1**) comprises a front face (**12**) extending in the feeding direction and a top face (**17**) extending in the product conveying direction, the top face (**17**) of the folding element (**1**) lying in a plane parallel to a product conveying plane, the front face (**12**) extending perpendicularly to the product conveying direction, and the front face (**12**) being bounded on opposite sides by a fold forming edge (**13**) which intersects an intersecting line between the front and top faces (**12**, **17**) in a folding point where folds are formed in the material strip (**7**).

5,647,193

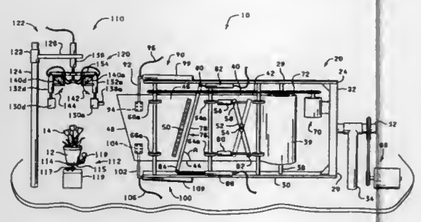
POT WRAPPING APPARATUS AND METHOD

Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Southpac Trust International, Inc., Oklahoma City, Okla.

Filed Mar. 13, 1995, Ser. No. 402,687
Int. Cl.[6] **B65B** *11/04;25/02*
U.S. Cl. 53—465 **46 Claims**

1. A method of wrapping a sheet of material about a pot having an outer peripheral surface and a bottom surface and the sheet having a leading edge, a trailing edge, a lower edge and an upper edge, the method comprising the steps of:

disposing the pot upon a rotatable support surface;



automatically advancing the leading edge of the sheet of material toward the pot until a portion of the sheet of material is engaged by holding means positioned above the pot for holding a portion of the upper end of the sheet in a vertical or semi-vertical wrapping position near the pot while the sheet is drawn about the pot; and

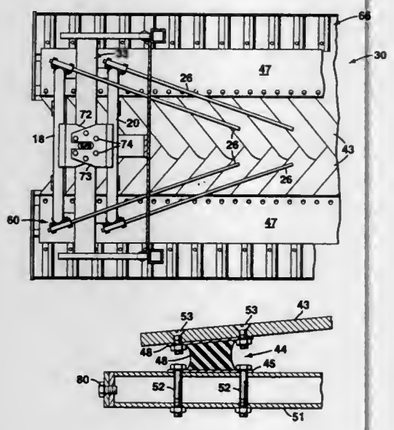
rotating the rotatable support surface and the pot thereon and drawing the sheet of material about the outer peripheral surface of the pot until the leading edge of the sheet engages a bonding material on another portion of the sheet of material thereby connecting the leading edge to the other portion of the sheet wherein the sheet of material circumferentially encompasses at least a portion of the outer peripheral surface of the pot and wherein the means positioned above the pot is rotated synchronously with the rotatable support surface.

5,647,194

ELASTOMER CLOSURE SPRING

Phillip Ray Scott, and Marty Dean Youman, both of Madera, Calif., assignors to FMC Corporation, Chicago, Ill.

Filed Oct. 25, 1995, Ser. No. 547,855
Int. Cl.[6] **A01D** *46/00*
U.S. Cl. 56—328.1 **18 Claims**



1. An apparatus for harvesting fruits from plants, comprising:

a frame;

means for removing fruits from the plants supported by the frame;

a first plurality of mounting plates mechanically connected to the frame;

a second plurality of mounting plates;

a plurality of elastomer blocks bonded between a mounting plate of the first plurality of mounting plates and a mounting plate of the second plurality of mounting plates; and

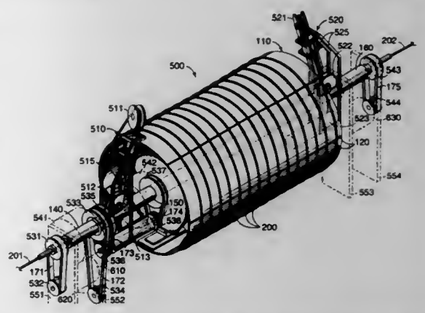
a plurality of closure wings, wherein each closure wing of the plurality of closure wings is mechanically connected to a mounting plate of the second plurality of mounting plates.

5,647,195

METHOD FOR TWISTING A PAIR OF MOVING STRANDS

Peter Larry Josoff, Omaha, Nebr., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jun. 29, 1995, Ser. No. 496,555
Int. Cl.[6] **D01H** *1/04;5/00*
U.S. Cl. 57—67 **12 Claims**



1. A method for twisting a pair of moving strands comprising the steps of:

moving the strand pair along a path of travel through a winder assembly;

rotating the winder assembly around a central axis to impart one twist for each 360 degrees of rotation onto the strand pair;

depositing convolutions of the twisted strand pair onto an input end of a storage structure having a movable exterior surface;

vibrating the exterior surface to advance convolutions of the twisted strand pair in a longitudinal direction parallel to the central axis;

rotating the storage structure around the central axis; and

moving the twisted strand pair from an output end of the storage structure to a take-up apparatus.

5,647,196

OPEN-END SPINNING FRAME

Heinz-Georg Wassenhoven, Mönchengladbach, Germany, assignor to W. Schlafhorst AG & Co., Moenchengladbach, Germany

Filed Dec. 11, 1995, Ser. No. 570,709
Claims priority, application Germany, Dec. 16, 1994, 44 44 851.1
Int. Cl.[6] **D01H** *11/00*
U.S. Cl. 57—301 **9 Claims**

1. An open-end spinning frame comprising a plurality of aligned spinning stations and a common debris disposal conduit extending along the spinning stations, each spinning station having:

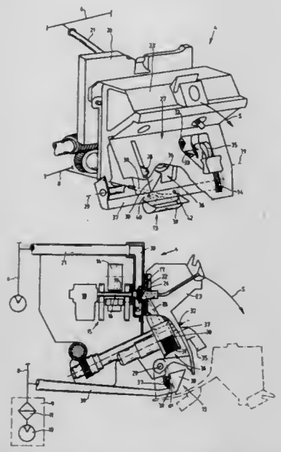
a spinning rotor drivenly rotated within a rotor housing,

a sliver opening device having an opening cylinder rotating in an opening cylinder housing formed with a debris outlet opening,

a pivotable cover having a fiber conduit plate movable with the cover in a path between a closed position in covering relation to the rotor housing and an open position out of covering relation to the rotor housing,

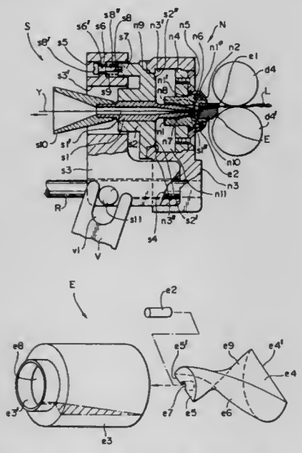
a support rail, and

a debris disposal means mounted to the support rail in a fixed disposition out of the path of movement of the pivotable cover so as not to interfere with movement of the pivotable cover



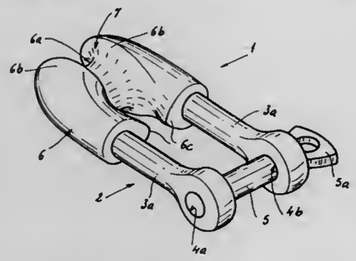
between the open and closed position, the debris disposal means having a debris pickup funnel disposed at a spacing from the debris outlet opening of the opening cylinder housing for receiving debris therefrom and having a connector conduit connecting the debris pickup funnel to the common debris disposal conduit, the opening cylinder housing and the pickup funnel defining a freely accessible space therebetween.

5,647,197
FIBER SPINNING METHOD AND APPARATUS UTILIZING A TWISTING GUIDE
Yuji Imamura, Kyoto, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan
Filed Dec. 5, 1995, Ser. No. 567,327
Claims priority, application Japan, Feb. 10, 1995, 7-046257
Int. Cl.[6] D01H *5/00;5/28*
U.S. Cl. 57—328 **13 Claims**



1. A method of spinning fibers into yarn by the action of a rotating air current in a spinning unit having a fiber converging unit, comprising the steps of:
establishing a rotating air current in said spinning unit,
conducting fibers to be spun to said fiber converging unit by an air flow induced by rotating air current,
within said fiber converging unit, first, directing said fibers along a convergent spiralling path to form a fiber construct having a twisted configuration, and, thereafter, drawing said converged and twisted fiber construct across a surface in a divergent spiralling path to impart a tensile stress therein before discharging said fiber construct from said fiber converging unit.

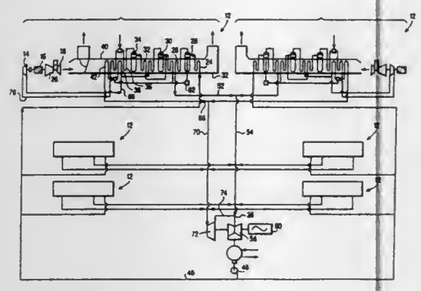
5,647,198
RIGGING COMPONENT OF "THIMBLE-SHACKLE" TYPE
Pierre Mibailovic, Manson, France, assignor to Wichard, Thiers, France
Filed Jun. 6, 1996, Ser. No. 659,349
Claims priority, application France, Jun. 12, 1995, 95 07170
Int. Cl.[6] F16G *15/04*
U.S. Cl. 59—86 **14 Claims**



1. A thimble-shackle type rigging component, comprising:
a U-shaped body comprising a rounded end portion and two arms, a base of each of the arms being adjacent the rounded end portion; and
an insert that surrounds an exterior of the rounded end portion and an exterior of the base of each of the arms of the U-shaped body, wherein the insert includes side bulges surrounding the bases of the arms and a central portion located between the side bulges, the central portion being concentric with the rounded end portion and having a substantially circular cross-sectional shape with a diameter that is greater than a diameter of the U-shaped body, and wherein the side bulges and the central portion form a groove for receiving a rope.

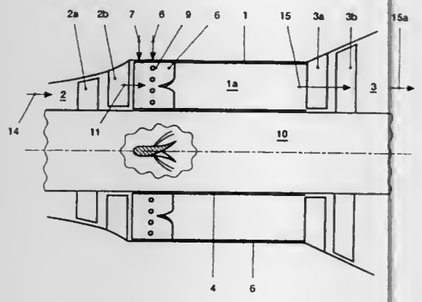
5,647,199
COMBINED-CYCLE WITH MULTI-PRESSURE REHEAT SYSTEM
Raub Warfield Smith, Clifton Park, N.Y., assignor to General Electric Co., Schenectady, N.Y.
Filed Sep. 12, 1995, Ser. No. 526,729
Int. Cl.[6] F02C *6/18*
U.S. Cl. 60—39.02 **20 Claims**

1. A combined-cycle system comprising:
a plurality of power generating units each including an electrical generator, a gas turbine, a high-pressure steam turbine and a multiple-pressure heat recovery steam generator in heat transfer relation with the hot exhaust gas of said gas turbine and having a reheat section, said high-pressure steam turbine and said gas turbine being coupled together to drive said electrical generator, means for supplying steam from a high-pressure section of said heat recovery steam generator to said high-pressure steam turbine, and means for supplying steam exhausted from said high-pressure turbine to said reheat section for reheating steam exhausted from said high-pressure steam turbine and to provide hot reheat steam;



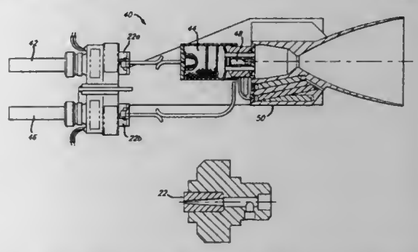
a steam turbine operable at a lower pressure than said high-pressure steam turbine; and
means for supplying hot reheat steam from each of said reheat sections of said power generating units to said lower-pressure steam turbine.

5,647,200
HEAT GENERATOR
Rolf Althaus, Flawil, Switzerland, assignor to Asea Brown Boveri AG, Baden, Switzerland
Filed Apr. 8, 1994, Ser. No. 225,396
Claims priority, application Switzerland, Apr. 8, 1993, 01 081/93
Int. Cl.[6] F02C *3/14*
U.S. Cl. 60—39.17 **6 Claims**



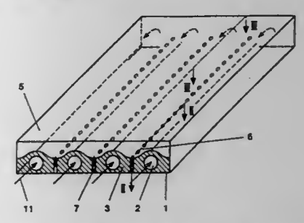
1. A heat generator for generating heated combustion gas which is placed downstream of a fluid flow engine and upstream of a turbine, comprising:
an annular chamber defined by an exterior wall and an interior wall;
a plurality of radially extending supports connected to the exterior wall and the interior wall;
at least one supply conduit for a fuel provided in each support;
a plurality of fuel nozzles arranged in each support to inject fuel into the chamber from the supply conduit; and
each support being divided at a downstream end by at least one notch, the support diverging at the notch in opposite directions to form at least two oppositely directed vortex-generating underpressure surfaces.

5,647,201
CAVITATING VENTURI FOR LOW REYNOLDS NUMBER FLOWS
Dale L. Hook; Hermann W. Behrens, both of Rancho Palos Verdes, and Kiran R. Magiawala, Hawthorne, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.
Filed Aug. 2, 1995, Ser. No. 510,223
Int. Cl.[6] F02K *9/52*
U.S. Cl. 60—258 **19 Claims**



14. A bipropellant rocket thruster for operating in a bipropellant mode or in a monopropellant mode, said thruster comprising:
a first inlet line for receiving a first liquid at a first upstream pressure;
a first cavitating venturi for receiving said first liquid at said first upstream pressure, said first cavitating venturi having a converging portion having a length L_C and a throat portion having a length L_T and a diameter D_T, said length L_C divided by said diameter D_T being less than about (0.25) and said length L_T divided by said diameter D_T being less than about (0.20); and
a decomposition chamber for receiving said first liquid discharged from said first cavitating venturi at a first downstream pressure, wherein said first cavitating venturi provides a substantially stable liquid flow rate of said first liquid independent of said first downstream pressure up to a first downstream pressure at least as high as 80% of said first upstream pressure at Reynolds number of about 60,000 or less.

5,647,202
COOLED WALL PART
Rolf Althaus, Kobe, Japan, assignor to Asea Brown Boveri AG, Baden, Switzerland
Filed Sep. 19, 1995, Ser. No. 530,092
Claims priority, application Japan, Dec. 9, 1994, 44 43 864.8
Int. Cl.[6] F02K *11/00*
U.S. Cl. 60—266 **4 Claims**



1. A cooled wall part having an inner wall on a heat exposed side and an outer wall, and comprising:
a plurality of individual longitudinally directed cooling ducts disposed in a first plane parallel to and proximate the inner wall to guide a cooling medium along the inner wall from a first end to a second end of the wall part,
a plurality of longitudinally extending ribs, each rib positioned between adjacent longitudinal cooling ducts,
at least one backflow cooling duct disposed proximate the outer wall and in a second plane parallel to said first plane, and

a deflecting device positioned at the second end of the longitudinal cooling ducts to direct cooling medium from the longitudinal cooling ducts into the at least one backflow cooling duct,

wherein each of said plurality of ribs includes a plurality of tubelets extending from the backflow cooling duct through the inner wall to guide cooling medium from the backflow duct through the inner wall.

5,647,203

EXHAUST GAS PURIFICATION SYSTEM AND EXHAUST GAS PURIFICATION METHOD

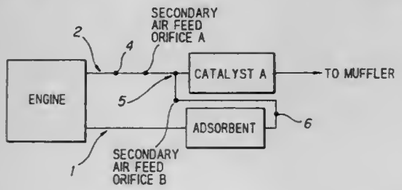
Fumio Abe, Handa; Shigeharu Hashimoto, Okazaki, and Masato Ogawa, Komaki, all of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Aug. 11, 1994, Ser. No. 289,268

Claims priority, application Japan, Aug. 20, 1993, 5-206534

Int. Cl.[6] F01N *3/20*

U.S. Cl. 60—274 **28 Claims**



1. An exhaust gas purification system for purifying exhaust gas flowing therethrough from an internal combustion engine, comprising:

separate exhaust manifold outlet sections extending from the internal combustion engine that respectively separately receive exhaust gas from the internal combustion engine, the separate exhaust manifold outlet sections respectively forming an adsorbent flow path and a catalyst flow path, the catalyst flow path including at least one catalyst for treating harmful components in the exhaust gas, and the adsorbent flow path including an outlet and an adsorbent for adsorbing harmful components in the exhaust gas, wherein the outlet of the adsorbent flow path is connected to the catalyst flow path at a position upstream of the catalyst, thereby forming a joint portion; and

means for maintaining separate flow of the exhaust gas such that the exhaust gas flows through both the catalyst flow path and the adsorbent flow path at a predetermined ratio of flow rates, whereby harmful components in the exhaust gas are adsorbed by the adsorbent in the adsorbent flow path during cold-start of the engine, and the catalyst of the catalyst flow path is activated when harmful components adsorbed by the adsorbent are desorbed with a rise in temperature of the adsorbent.

5,647,204

METHOD FOR MONITORING THE EFFECTIVENESS OF A HEATED CATALYTIC CONVERTER FOR TREATING THE EXHAUST GASES OF AN INTERNAL COMBUSTION ENGINE

Alain Antranik Atanasyan, Tournefeuille, France, assignor to Siemens Automotive S.A., Toulouse, France

PCT No. PCT/EP94/00594, § 371 Date Sep. 12, 1995, § 102(e) Date Sep. 12, 1995, PCT Pub. No. WO94/20737, PCT Pub. Date Sep. 15, 1994

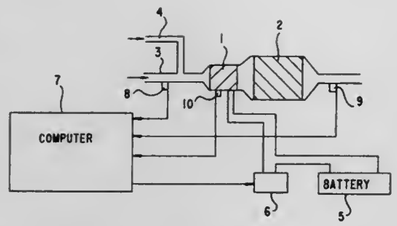
PCT Filed Mar. 1, 1994, Ser. No. 525,671

Claims priority, application France, Mar. 12, 1993, 93 02871

Int. Cl.[6] F01N *3/20*

U.S. Cl. 60—274 **3 Claims**

1. A method for monitoring the effectiveness of a catalytic converter system with a heated converter and a non-heated three-way converter, wherein the catalytic converter system is disposed in an exhaust gas system of an internal combustion engine, and the catalytic converter system is associated with:



(a) regulating means for closed-loop regulation of an air/fuel mixture supplied to the engine via at least one fuel injector, where an open time of the fuel injector is controlled by the regulating means, the regulating means including an oxygen probe disposed upstream of the catalytic converter system, as seen in a flow direction of the exhaust gas, and

(b) monitoring means for monitoring an effectiveness of the catalytic converter system, the monitoring means comprising an oxygen probe disposed downstream of the converter system, as seen in the flow direction of the exhaust gas, the oxygen probe issuing an output signal which switches between two levels, the monitoring means controlling a forced temporal variation in the open time of the fuel injector as a function of a change in an oxygen- storage capability of the catalytic converter system in order to deduce insufficient effectiveness of the converter from a fluctuation in the output signal of the oxygen probe, the method which comprises:

during engine start from cold with open-loop regulation of the air/fuel mixture, activating the regulating means for the closed-loop regulation of the air/fuel mixture when a temperature of the heated converter exceeds a predetermined temperature, and deducing insufficient effectiveness of the heated converter from a fluctuation in the output signal of the oxygen probe.

5,647,205

PROCESS FOR CHECKING THE CONVERSION CAPABILITY OF A CATALYST

Manfred Wier, Wenzenbach; Stefan Treinies, and Alexander Ketterer, both of Regensburg, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

PCT No. PCT/DE94/00219, § 371 Date Sep. 19, 1995, § 102(e) Date Sep. 19, 1995, PCT Pub. No. WO94/21901, PCT Pub. Date Sep. 29, 1994

PCT Filed Mar. 1, 1994, Ser. No. 530,209

Claims priority, application Germany, Mar. 19, 1993, 43 08 894.5

Int. Cl.[6] F01N *3/00*

U.S. Cl. 60—274 **7 Claims**

1. A method for checking a conversion of a catalytic converter of a motor vehicle, which comprises:

providing an internal combustion engine;

providing an exhaust system having a catalytic converter, the exhaust system being connected to the internal combustion engine;

overrunning the internal combustion engine;

subsequently idling the internal combustion engine for a sufficiently long period;

performing the following verification steps:

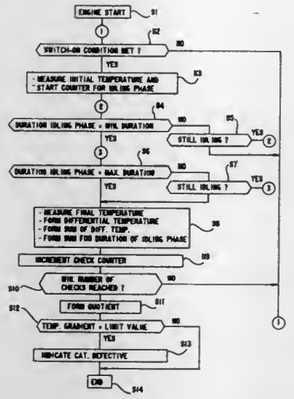
a) measuring a temperature upstream of the catalytic converter in exhaust gas flow direction, measuring a temperature downstream from the catalytic converter, determining a difference between the upstream temperature and the downstream temperature, and verifying that the difference is greater than a predetermined reference value;

b) monitoring the temperature downstream of the catalytic converter and verifying that it remains within a predetermined range beginning with a measurement following a beginning of the monitoring step and during the entire monitoring step;

c) verifying that a magnitude of a gradient of the temperature downstream of the catalytic converter is smaller than a magnitude of a gradient of the temperature upstream of the catalytic converter; and

d) verifying that the magnitude of the gradient of the temperature downstream of the catalytic converter lies below a predetermined threshold value (S2); and

determining the catalytic converter to be operative upon one of the verification steps being satisfied.



5,647,206

EXHAUST EMISSION PURIFICATION APPARATUS

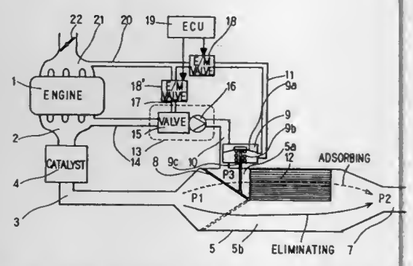
Takahiko Yamamoto, Nagoya; Hiroshi Mori, Ichinomiya; Masakazu Tanaka, Okazaki; Makoto Saito, Nishio, and Mamoru Mabuchi, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 22, 1995, Ser. No. 493,505

Claims priority, application Japan, Jun. 27, 1994, 6-144510

Int. Cl.[6] F01N *3/28*

U.S. Cl. 60—297 **18 Claims**



1. An exhaust purification apparatus for an engine having an intake manifold at an upstream side thereof and an exhaust manifold at a downstream side thereof comprising:

a catalytic converter having an upstream side adapted to be connected to said exhaust manifold;

an adsorption device, including an adsorbent structure body adsorbing exhaust gas components and a bypass passage, having an upstream side connected to a downstream side of said catalytic converter;

a switching valve disposed only at an upstream of said adsorbent structure body and an upstream end of said bypass passage, for selectively directing exhaust gas from said catalytic converter to one of said adsorbent structure body and said bypass passage;

a recirculation passage adapted to be connected to one of said manifolds and a point between said switching valve and an upstream side of said adsorbent body;

a recirculation valve which opens said recirculation passage when said switching valve directs said exhaust gas to said bypass passage, to thereby establish a path for recirculating said components from said adsorbent structure body to said one of said manifolds through a downstream side of said adsorbent structure body, said upstream side of said adsorbent structure body, said point and said recirculation passage, in sequence; and

control means for controlling said switching valve and said recirculation valve.

5,647,207

INTERNAL-COMBUSTION ENGINE INCLUDING A CYLINDER SHUT-OFF AND EXHAUST GAS CATALYSTS

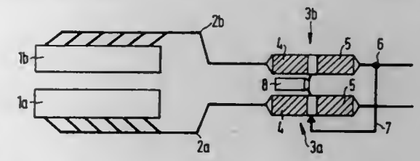
Ulrich Grotjahn, Karlsfeld; Stephan Knips, Munich; Guenter Koch, Augsburg; Stephan Missy, Scheyern; Bernd Plodek, Pfaffenhofen, and Rainer Zimmer, Neuried, all of Germany, assignors to Bayerische Motoren Werke AG, Munich, Germany

Filed Jun. 19, 1995, Ser. No. 492,144

Claims priority, application Germany, Jun. 17, 1994, 44 21 257.7

Int. Cl.[6] F01N *3/28*

U.S. Cl. 60—300 **8 Claims**



1. An internal-combustion engine having at least two cylinder groups or cylinders to each of which one separate exhaust gas pipe respectively is assigned which has a catalytic emission control system forming a component of an exhaust gas system, as well as having a device for shutting off one of said at least two cylinder groups by preventing a supply of fuel to said one cylinder group while maintaining a charge cycle through the one cylinder group, wherein said exhaust gas system is constructed such that gases emitted by said one shut-off cylinder group are heated by exhaust gases of a continuously fired one of said at least two cylinder groups; and

wherein exhaust gas of the continuously fired cylinder group is supplied to the catalytic emission control system of the shut-off cylinder group.

5,647,208

HYDRAULIC PUMPING UNIT

Joachim Kurt Friedrich Spitzbarth, Rio de Janeiro, Brazil, assignor to Erry P. Oudang, Jakarta, Indonesia

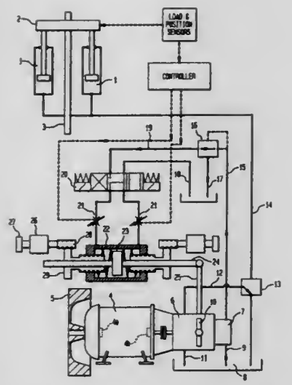
Filed Jan. 25, 1996, Ser. No. 591,764

Int. Cl.[6] F16D *31/02*

U.S. Cl. 60—371 **5 Claims**

1. An hydraulic pumping unit for actuating a rod string, comprising:

a high-slip electric motor; a flywheel coupled to one side of the electric motor; and a reversible hydraulic pump coupled to another side of the electric motor for the balancing and recuperation of the energy produced by downward movement of the rod string, the reversible hydraulic pump acting as an



hydraulic motor during the downward movement of the rod string and accelerating the flywheel for storing the energy of the downward movement of the rod string as kinetic energy.

4. An hydraulic pumping unit for actuating a rod string, comprising: speed regulating hydraulic valves for adjusting upward and downward speed of the rod string, the valves being adjustable by hand or by step motors which function as actuators for actuating the valves upon receiving commands from a computer based upon data from load and position sensors so as to adjust the speed in accordance with changing conditions in an associated well.

5,647,209

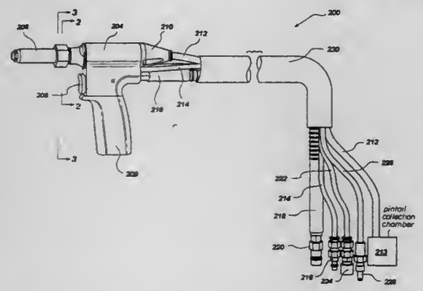
FASTENER INSTALLATION TOOL WITH POSITIVE PRESSURE PINTAIL REMOVAL SYSTEM

Robert B. Wilcox, Woodstock, N.Y., assignor to Huck International, Inc., Kingston, N.Y.

Continuation-in-part of Ser. No. 427,599, Apr. 24, 1995, abandoned. This application Jun. 16, 1995, Ser. No. 490,697

Int. Cl.[6] F16D *31/02;* **B21D** *9/05*

U.S. Cl. 60—413 **16 Claims**



1. A tool for use in installing fasteners in workpieces, each fastener including a detachable pintail and being capable of being installed by application to the fastener of an installation force which detaches the pintail, comprising:

a nose assembly configured to engage the pintail of the fastener and apply the installation force to the fastener, the nose assembly configured with a nose assembly passage extending longitudinally through the nose assembly;

a piston cylinder;

a piston slidably disposed within the piston cylinder, the piston having a nose end which is connectable to the nose assembly and having a piston passage extending longitudinally through the piston;

a pintail bore extending longitudinally through the tool, the pintail bore comprising the nose assembly passage and the piston passage;

an air channel which meets the pintail bore at an air orifice;

a supply of pressurized air connected in fluid communication with the air channel such that air may flow through the air channel and into the pintail bore;

a pintail collection chamber in fluid communication with the tail end of the pintail bore, the pintail collection chamber being vented to ambient pressure;

an air restriction mechanism configured to substantially block the flow of air from the air channel

through the portion of the pintail bore extending toward the nose of the tool; and

a pintail retaining device configured to prevent detached pintails from exiting out the nose end of the nose assembly passage.

5,647,210

DRIVING DEVICE

Leif Gustafsson, Snapphanevägen 6, Holmsjö , Sweden

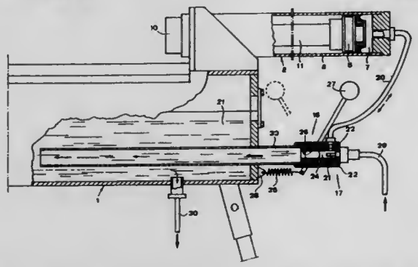
PCT No. PCT/SE94/00041, § 371 Date Jul. 25, 1995, § 102(e) Date Jul. 25, 1995, PCT Pub. No. WO94/17311, PCT Pub. Date Aug. 4, 1994

PCT Filed Jan. 21, 1994, Ser. No. 500,965

Claims priority, application Sweden, Jan. 28, 1993, 9300253

Int. Cl.[6] F16D *31/02;* **F15B** *13/02*

U.S. Cl. 60—477 **21 Claims**



1. A driving device comprising a source (**14**) of hydraulic fluid under pressure, a working arrangement (**6**) having a working chamber (**7**) intended for receiving hydraulic fluid and a working member (**8**) adapted to be put into motion on respective fluid supply to and fluid evacuation from the working chamber, at least one conduit for respective supply to and evacuation from the working chamber of hydraulic fluid, a valve (**16**) adapted to, in a first state, direct fluid to the working chamber and, in a second state, allow evacuation of fluid from the working chamber, and means (**17**) for returning the working chamber to a starting position, characterized in that the returning means (**17**) comprises an ejector arrangement adapted to generate a negative pressure in the working chamber (**7**) for evacuating the same as a consequence of flow of fluid through the ejector arrangement and there are resilient means (**25**) for actuating the valve to a normal position, which is constituted by the second state.

5,647,211

FLUID CONTROL VALVE

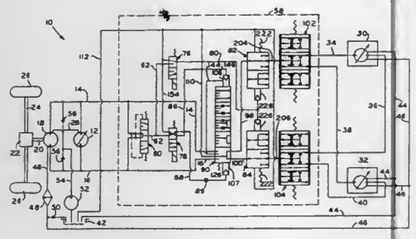
Neil Harber, Columbia City, and Brad Meyerholtz, West Lafayette, both of Ind., assignors to Fluidrive, Inc., Brookston, Ind.

Filed Mar. 6, 1996, Ser. No. 611,638

Int. Cl.[6] F16D *31/02;* **F15B** *11/00*

U.S. Cl. 60—484 **27 Claims**

1. A valve for controlling the flow of hydraulic fluid between a hydraulic fluid pump and two hydraulic motors, said valve comprising:



a first flow divider having a first fluid passage communicating with a pump, a second fluid passage communicating with a first hydraulic motor and a third fluid passage communicating with a second hydraulic motor;

a second flow divider having a first fluid passage communicating with said pump, a second fluid passage communicating with the first hydraulic motor and a third fluid passage communicating with the second hydraulic motor;

said first flow divider including a first spool and a first poppet between its first fluid passage and its second fluid passage and a second spool and a second poppet between its first fluid passage and its third fluid passage, said first flow divider first and second spools and said first and second poppets being longitudinally arranged and movable with respect to one another;

said second flow divider including a first spool and a first poppet between its first fluid passage and its second fluid passage and a second spool and second poppet between its first fluid passage and its third fluid passage, said second flow divider first and second spools and first and second poppets being longitudinally arranged and movable with respect to one another; and,

wherein said first flow divider spools and poppets or said second flow divider spools and poppets are longitudinally movable for equalizing the pressure of the hydraulic fluid being delivered to each of the motors.

5,647,212

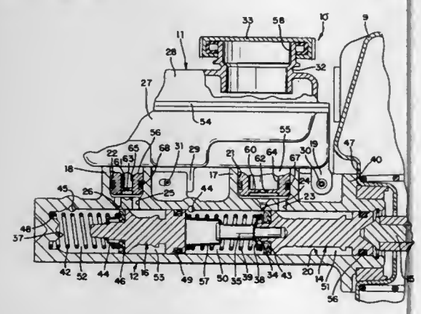
MASTER CYLINDER RESERVOIR ASSEMBLY

John Russell Coleman, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 24, 1996, Ser. No. 672,001

Int. Cl.[6] B60T *11/20*

U.S. Cl. 60—562 **6 Claims**



1. A master cylinder reservoir assembly comprising:

a first bayonet having a first main outlet opening and a first disk extending across the first main outlet opening with a first orifice formed in the first disk the first orifice being relatively small in diameter as compared to the first main opening; and

a second bayonet having a second main outlet opening and a second disk extending across the second main outlet opening with a second orifice formed in the second disk the second orifice being relatively small in diameter as compared to the second main opening wherein the first orifice is larger in diameter than the second orifice.

5,647,213

MASTER CYLINDER WITH QUICKFILL STAGE

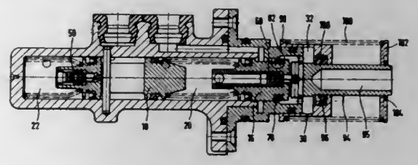
Manfred Kaub, Rhens; Hans-Christoph Lange, Mülheim-Kärlich, and Peter Schlüter, Kammerforst, all of Germany, assignors to Lucas Industries public limited company, United Kingdom

Filed Jun. 23, 1995, Ser. No. 494,234

Claims priority, application Germany, Jul. 5, 1994, 44 23 562.3

Int. Cl.[6] B60T *11/224*

U.S. Cl. 60—578 **12 Claims**



1. A master cylinder (**10**) for a hydraulic braking system comprising:

a housing (**12**) extending essentially along an axis (A) and including at least one pressure chamber (**14**) formed therein which is provided with an opening on an actuation side of the master cylinder (**10**),

a quickfill stage (**28**) comprising a quickfill piston being guided coaxially with the axis and sealing the pressure chamber (**14**) and a quickfill chamber, and which in the initial phase of an actuation of the master cylinder (**10**) rapidly fills the brake system with hydraulic fluid upon a relatively short actuation travel,

a cup shaped component (**30**) telescopically and sealingly guided on the actuation end of the master cylinder housing (**12**), the cup shaped component forming the quickfill piston and the quickfill chamber (**32**), and further being mechanically connected with a pressure piston (**16**) of the master cylinder (**10**), whereby operation of the quickfill stage (**28**) is controlled as a function of the actuation travel, sealing of the quickfill chamber being accomplished via an O-ring seal in contact with both an inner surface of the cup shaped component and an outer surface of the master cylinder housing.

5,647,214

Patent Not Issued For This Number

5,647,215

GAS TURBINE COMBUSTOR WITH TURBULENCE ENHANCED MIXING FUEL INJECTORS

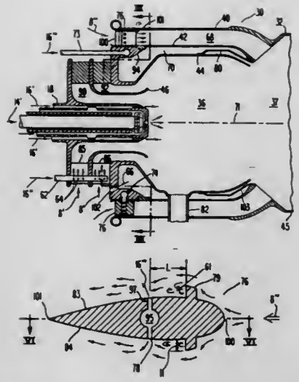
Mehran Sharifi, Winter Springs; Mitchell O. Stokes, Orlando, both of Fla., and David T. Foss, Austin, Tex., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 7, 1995, Ser. No. 554,684

Int. Cl.[6] F02C *1/00*

U.S. Cl. 60—737 **17 Claims**

1. A combustor comprising: a) an inlet for receiving compressed air; b) a combustion zone; and c) fuel pre-mixing means for pre-mixing a fuel into at least a first portion of said compressed air so as to form a fuel/air mixture and for subsequently introducing



said fuel/air mixture into said combustion zone, said fuel premixing means including:

(i) an annular passage in flow communication with said inlet and said combustion zone, whereby said first portion of said compressed air flows through said passage, and

(ii) a plurality of members projecting substantially radially into said passage by a radial height, each of said members having (A) first and second opposing sides, (B) a first mixing fin having a downstream face projecting substantially perpendicularly from said first side of said member by a first distance and extending substantially radially along at least a portion of said radial height of said member, said mixing fin comprising a means for causing at least a portion of said compressed air to undergo turbulent recirculation, (C) a plurality of first fuel discharge ports spaced along and formed in said first side of said member, said first fuel discharge ports displaced from said first mixing fin in the downstream direction with respect to the flow of said first portion of said compressed air through said passage by a second distance.

5,647,216

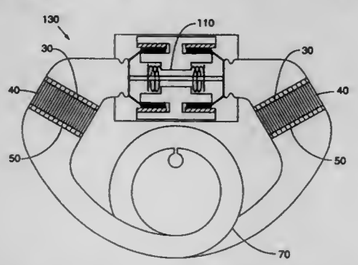
HIGH-POWER THERMOACOUSTIC REFRIGERATOR

Steven L. Garrett, State College, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 31, 1995, Ser. No. 520,974

Int. Cl.[6] F25B *9/00*

U.S. Cl. 62—6 **6 Claims**



1. A high-power thermoacoustic refrigerator comprising:

a half-wave length resonator;

at least two housings mounted at first and second ends of said resonator, said housings having a driver disposed therein;

a plurality of heat exchangers disposed in said resonator, in close proximity to said drivers;

at least two stacks disposed within said heat exchangers;

a compressible fluid disposed within said resonator, said fluid being tuned to the half-wave length resonance of said resonator;

at least two high acoustical impedance ends of said resonator of non-uniform cross-section mounted proximate to said drivers for containing said compressible fluid;

a plurality of transport fluids disposed in said heat exchangers for transferring heat;

a plurality of voice coils wired with a 180 degrees phase difference disposed in said divers; and

a plurality of pusher cones disposed in said drivers, said cones having a bellows and springs proximate to said voice coils for compressing said compressible fluid to an oscillating standing half-wave length in the resonator, whereby the oscillating fluid efficiently pumps heat during operation.

5,647,217

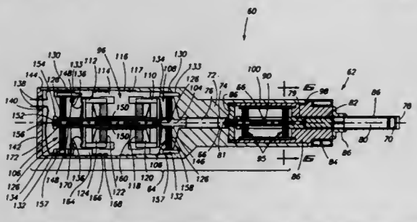
STIRLING CYCLE CRYOGENIC COOLER

Laurence B. Penswick, Richland, Wash., and Ronald E. Neely, Aloha, Oreg., assignors to Stirling Technology Company, Kennewick, Wash.

Filed Jan. 11, 1996, Ser. No. 585,038

Int. Cl.[6] F25B *9/00*

U.S. Cl. 62—6 **39 Claims**



1. A displacer assembly configured to be movably supported within a chamber in a housing of a thermal regenerative machine, comprising:

a body at least in part providing a displacer, the body configured to be movably supported within the chamber, the body having a displacer rod formed by the body, a drive surface formed by an end of the displacer rod, and an expansion surface formed by the body;

at least one flexure bearing assembly constructed and arranged to carry the displacer for reciprocation within a chamber in a housing of a thermal regenerative machine; and

a fluid flow path provided by the displacer rod extending between the drive surface and the expansion surface and being configured to shuttle working fluid between a compression chamber and an expansion chamber when assembled in the housing, the fluid flow path extending in part along a central portion of the rod and in part along an outer peripheral surface of the rod adjacent a heat exchanger region of the housing.

5,647,218

COOLING SYSTEM HAVING PLURAL COOLING STAGES IN WHICH REFRIGERATE-FILLED CHAMBER TYPE REFRIGERATORS ARE USED

Toru Kuriyama; Yasumi Ohtani; Rohana Chandratilleke, all of Yokohama; Tatsuya Yoshino, Tokyo, and Takayuki Kobayashi, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 14, 1996, Ser. No. 645,715

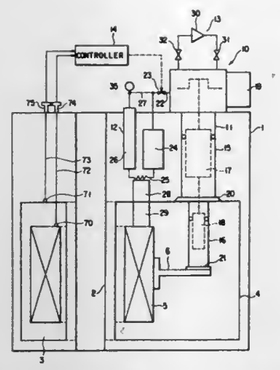
Claims priority, application Japan, May 16, 1995, 7-117561

Int. Cl.[6] F25B *9/00*

U.S. Cl. 62—6 **24 Claims**

1. A cooling apparatus comprising:

a first refrigerator supplied with a refrigerant;



a second refrigerator connected parallel to the first refrigerator for receiving a flow of the refrigerant from the first refrigerator; and

a controller for regulating the flow of the refrigerant from the first refrigerator to the second refrigerator in accordance with a selected condition.

5,647,219

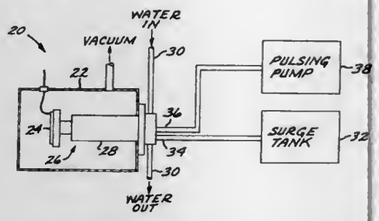
COOLING SYSTEM USING A PULSE-TUBE EXPANDER

Alan A. Rattray, Alta Loma; Carl S. Kirkconnell, Huntington Beach; Steven C. Soloski, Manhattan Beach; Kenneth D. Price, Long Beach, and Samuel C. Russo, Arcadia, all of Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Filed Jun. 24, 1996, Ser. No. 669,657

Int. Cl.[6] F25B *9/00*

U.S. Cl. 62—6 **15 Claims**



1. A cooling system, comprising:

a hollow pulse tube having a cold end, a warm end, and a pulse tube axis, the pulse tube comprising

a cold end heat exchanger and flow straightener, and

a warm end heat exchanger and flow straightener;

a gas outlet tube in gas pressure communication with the warm end heat exchanger and flow straightener of the pulse tube;

at least two hollow regenerator tubes, each regenerator tube having a cold end, a warm end, and a regenerator tube axis, each regenerator tube axis being parallel to and laterally displaced from the pulse tube axis, each regenerator tube comprising

a porous regenerator medium packed within the regenerator tube, and

a warm end heat exchanger;

a gas inlet tube in gas pressure communication with the warm end heat exchanger of each regenerator tube;

a cold end flow channel communicating between the cold end of each regenerator tube and the cold end heat exchanger and flow straightener of the pulse tube; and

a heat sink in thermal communication with the warm end heat exchanger and flow straightener of the pulse tube and with the warm end heat exchanger of each regenerator tube.

5,647,220

METHOD OF CONTROLLING COOLING IN A VENDING MACHINE AND DEVICE THEREFOR

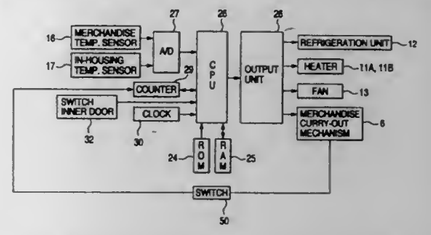
Yoshihiro Kawaguchi; Masayuki Ohno; Yutaka Nishioka, all of Tokyo; Michinobu In, Kawasaki; Hiroyuki Kakiuchi, Kawasaki, and Shozo Iwamoto, Kawasaki, all of Japan, assignors to Tokyo Electric Power, Co. Inc., Tokyo, and The Fuji Electric Co., Ltd, Kanagawa, both of Japan

Filed Feb. 22, 1996, Ser. No. 605,592

Claims priority, application Japan, Feb. 23, 1995, 7-059819

Int. Cl.[6] G05D *15/00*; F25B *41/00*

U.S. Cl. 62—89 **10 Claims**



1. A method of controlling the cooling of merchandise in a vending machine wherein merchandise is cooled by circulating air cooled by a cooling mechanism which is on-off controlled by temperature sensors through a merchandise housing; the merchandise is cooled by shifting the on-off temperature of the cooling mechanism to a level lower than a normal operation level for a predetermined pre-peak mode prior to a peak time zone of power demand under control of a timer as a peak shift operation; and the cooling mechanism is forced to stop for a predetermined time in the peak time zone as a peak cut operation, said method comprising the steps of:

providing two kinds of temperature sensors including a merchandise temperature sensor for immediately detecting the merchandizing temperature and an in-housing temperature sensor for detecting the air temperature within a merchandise housing; and

controlling the cooling mechanism with the merchandise temperature sensor during the peak cut or peak shift operation and controlling the cooling mechanism with the in-housing temperature sensor during the normal operation.

5,647,221

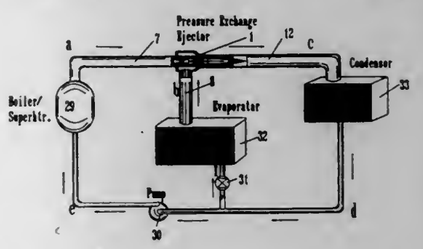
PRESSURE EXCHANGING EJECTOR AND REFRIGERATION APPARATUS AND METHOD

Charles A. Garris, Jr., Vienna, Va., assignor to The George Washington University, Washington, D.C.

Filed Oct. 10, 1995, Ser. No. 541,653

Int. Cl.[6] F25B *1/00*; F25D *17/00*

U.S. Cl. 62—116 **21 Claims**



1. An ejector compressor for transporting a compressible secondary fluid from a lower stagnation pressure supply to an ejector discharge of higher stagnation pressure, said ejector compressor

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utilizing pressure-exchange to affect energy transfer from an energetic primary compressible fluid to said secondary fluid, said ejector compressor comprising:

(a) an ejector housing preventing communication of the primary and secondary fluids with the environment;

(b) a primary fluid inlet duct;

(c) a plurality of supersonic nozzles of converging-diverging cross-section in the direction of flow whose inlets are in communication with said primary fluid inlet duct and which are integrated into a rotor such that the axis of discharge of one or more nozzles is located at a radial distance from the rotor's axis of rotation, said nozzles accelerate the primary fluid to supersonic speeds in such a manner as to produce compression and expansion waves in the region of the nozzle exit;

(d) said rotor being rotatably mounted in said ejector housing and provided with sealing means to minimize the communication of primary and secondary flows through flow paths other than the nozzles;

(e) rotation means so that the ratio of the peripheral speed of the nozzle to the speed of the primary fluid immediately after the compression waves is greater than 0.1.

(f) a secondary fluid inlet conduit;

(g) aerodynamic flow control surfaces interior to said housing and in the conduit of the secondary fluid placed upstream and in the vicinity of the nozzles to increase the speed of the secondary flow and to bring it into direct contact with the primary fluid in the vicinity of the nozzle exits;

(h) a pressure exchange zone in the interior of said housing and bounded by aerodynamic surfaces which may include the rotor, the housing, a center-body, or an after-body to insure the direct action of the rotating pressure wave structure on the secondary fluid;

(i) a discharge duct for the combined flow.

5,647,222

METHOD AND DEVICE FOR DIAGNOSIS OF THE REFRIGERANT QUANTITY IN AN AIR CONDITIONING SYSTEM

Georgios Sarakinis, Hisings Backa, Sweden, assignor to AB Volvo, Sweden

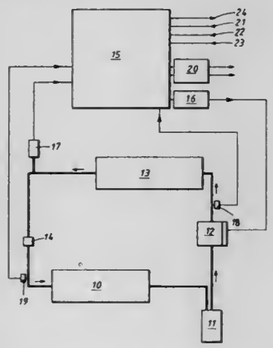
PCT No. PCT/SE93/00848, § 371 Date Apr. 13, 1995, § 102(e) Date Apr. 13, 1995, PCT Pub. No. WO94/08809, PCT Pub. Date Apr. 28, 1994

PCT Filed Oct. 18, 1993, Ser. No. 416,802

Claims priority, application Sweden, Oct. 16, 1992, 9203039

Int. Cl.[6] B60H *1/32*

U.S. Cl. 62—129 **4 Claims**



1. A method for determining the quantity of refrigerant in an air conditioning system comprising a closed circuit for circulating said refrigerant sequentially through an evaporator, a liquid-separating accumulator, a compressor, a condenser, and shut-off means, said method including measuring the pressure of said refrigerant between said condenser and said shut-off means, measuring the temperature of said refrigerant downstream of said compressor, measuring the temperature of said refrigerant upstream of said evaporator, and comparing said measured values of said pressure and temperature of said refrigerant with predetermined values therefor in order to determine whether said quantity of said refrigerant falls within a predetermined reference interval.

5,647,223

CONTROL DEVICE FOR AIR CONDITIONER

Kunihide Wada, and Koichiro Tamakoshi, both of Osaka, Japan, assignors to Daikin Industries, Ltd., Osaka, Japan

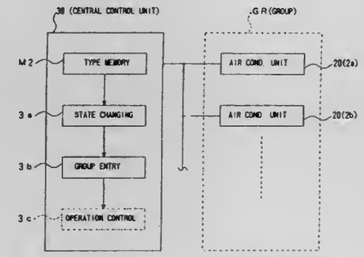
PCT No. PCT/JP95/00756, § 371 Date Dec. 15, 1995, § 102(e) Date Dec. 15, 1995, PCT Pub. No. WO95/28607, PCT Pub. Date Oct. 26, 1995

PCT Filed Apr. 18, 1995, Ser. No. 564,128

Claims priority, application Japan, Apr. 18, 1994, 6-078305

Int. Cl.[6] F25B *7/00;* **G05D** *23/00*

U.S. Cl. 62—175 **2 Claims**



1. A control device for air conditioner comprising:

a plurality of air conditioning units (**20**, **20**, . . .) which are formed of a plurality of groups (GR) and are designated as a single master unit (*2a*) and at least one slave unit (*2b*) operating in association with said master unit (*2a*) in said each group (GR); and

a central control unit (**30**) which is connected to all the air conditioning units (**20**, **20**, . . .) and communicates various kinds of control signals including state signals representing states of said air conditioning units (**20**, **20**, . . .) with said each air conditioning unit (**20**, **20**, . . .),

said central control unit (**30**) comprising:

type memory means (**M2**) for receiving from said each air conditioning unit (**20**, **20**, . . .) type data for discriminating between the master unit (*2a*) and the slave unit (*2b*) to store the type data in every air conditioning unit (**20**, **20**, . . .);

state changing means (*3a*) for responding to a process signal for identifying the group to which said each air conditioning unit (**20**) belongs to transmit, based on the type data of said type memory means (**M2**), a change signal for changing a state of said each air conditioning unit (**20**) to said air conditioning unit (**20**) as a master unit (*2a*) in the stop modes of all the air conditioning units (**20**, **20**, . . .); and

group entry means (*3b*) for receiving a state signal from said each air conditioning units (**20**, **20**, . . .) to determine that said air conditioning units (**20**, **20**, . . .) having changed their states in response to the change signal form one of said groups (GR) and executing an entry of the determination result.

5,647,224

AIR CONDITIONER AND HEAT EXCHANGER THEREFOR

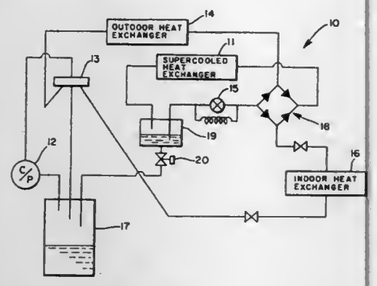
Yoshimi Kushiro, Toyota, and Hiroki Aoshima, Kariya, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Dec. 29, 1995, Ser. No. 580,600

Claims priority, application Japan, Jan. 19, 1995, 7-023264; Mar. 1, 1995, 7-065226

Int. Cl.[6] F25B *41/00;1/00*

U.S. Cl. 62—197 **2 Claims**



1. An air conditioner comprising:

a compressor;

a four-way valve;

an outdoor heat exchanger;

an expansion valve;

an indoor heat exchanger;

an accumulator;

a circuit interconnecting said compressor, said four-way valve, said outdoor heat exchanger, said expansion valve, said indoor heat exchanger and said accumulator; and

a supercooled heat exchanger and a liquid-gas tank arranged between said outdoor heat exchanger and said expansion valve, said liquid-gas tank being connected to said accumulator via a valve;

a mixed medium of R-32, R-125 and R-134a being sealed within said circuit.

5,647,225

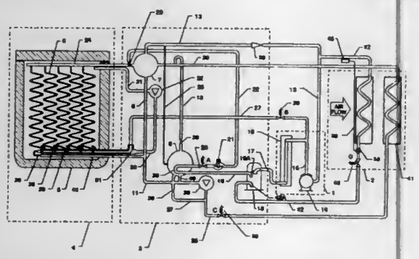
MULTI-MODE HIGH EFFICIENCY AIR CONDITIONING SYSTEM

Harry C. Fischer, P.O. Box 338, St. Michaels, Md. 21663; James L. Denkmann, 534 W. Stratford Pl., Chicago, Ill. 60657, and Michael W. McRell, 9084 Olentangy River Rd., Powell, Ohio 43065

Filed Jun. 14, 1995, Ser. No. 490,224

Int. Cl.[6] F25D *17/02;* **F25B** *39/02*

U.S. Cl. 62—434 **15 Claims**



1. A multi-mode high efficiency air conditioning system comprising:

a) a condensing unit;

b) a refrigerant distribution system connected to said condensing unit;

c) an insulated tank filled with water and containing coils therein, said coils being connected to the refrigerant distribution system; and

d) a dual-mode cooling coil assembly comprising a cool upstream and a cold downstream coil attached to the refrigerant distribution system.

5,647,226

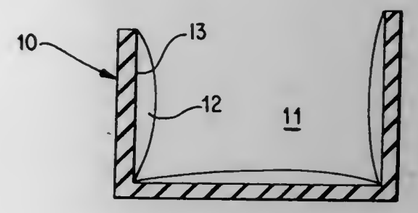
PHASE CHANGE APPARATUS FOR ANIMAL PARTS, HUMAN BODY PARTS, BODY FLUIDS AND CULTURE

Robert P. Scaringe, Rockledge, and Lawrence R. Grzyll, Merritt Island, both of Fla., assignors to Mainstream Engineering Corporation, Rockledge, Fla.

Continuation of Ser. No. 350,490, Dec. 7, 1994. This application Jun. 11, 1996, Ser. No. 661,929

Int. Cl.[6] F25D *3/08*

U.S. Cl. 62—457.2 **7 Claims**



1. A use of a phase-change material for maintaining in a container an at least one temperature sensitive item at a preselected temperature as close as possible to ambient temperature to minimize heat transfer with respect to the ambient temperature without causing any temperature-related damage to the at least one item.

5,647,227

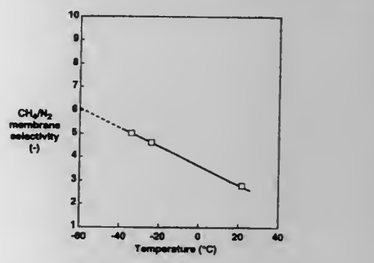
MEMBRANE-AUGMENTED CRYOGENIC METHANE/NITROGEN SEPARATION

Kaaeid Lokhandwala, Menlo Park, Calif., assignor to Membrane Technology and Research, Inc., Menlo Park, Calif.

Filed Feb. 29, 1996, Ser. No. 608,707

Int. Cl.[6] F25J *1/00*

U.S. Cl. 62—624 **63 Claims**



1. A process for treating a gas stream comprising methane, nitrogen and at least one other component, said process comprising the following steps:

(a) providing a membrane having a feed side and a permeate side and being selective for both methane and said other component over nitrogen;

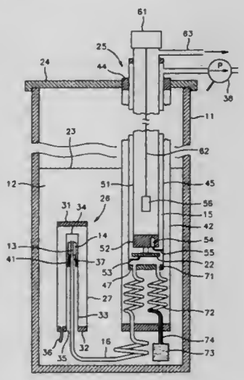
(b) passing said gas stream across said feed side of said membrane at a temperature at which said membrane exhibits a selectivity for methane over nitrogen of at least about 5;
(c) withdrawing from said feed side a residue stream depleted in both methane and said other component and enriched in nitrogen compared with said gas stream;
(d) withdrawing from said permeate side a permeate stream enriched in both methane and said other component and depleted in nitrogen compared with said gas stream;
(e) subjecting said residue stream to cryogenic separation of nitrogen from methane.

5,647,228

APPARATUS AND METHOD FOR REGULATING TEMPERATURE IN A CRYOGENIC TEST CHAMBER

Ronald E. Sager, Carlsbad, and Stefano Spagna, La Jolla, both of Calif., assignors to Quantum Design, Inc., San Diego, Calif.

Filed Jul. 12, 1996, Ser. No. 679,553
Int. Cl.[6] F25J *1/00*
U.S. Cl. 62—656 **16 Claims**



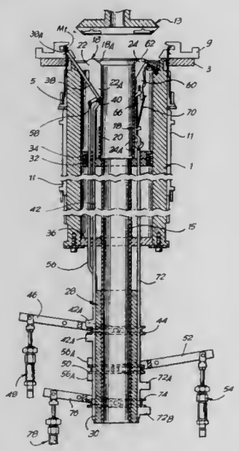
1. Apparatus for regulating temperature in a cryogenic test chamber, said apparatus comprising:
a cryogenic vessel adapted to contain a reservoir of fluid in liquid phase at a cryogenic temperature;
means defining a test chamber in the cryogenic vessel;
first fluid flow means defining a fluid flow path between the cryogenic fluid in the interior of said cryogenic vessel and said test chamber, said fluid flow means having an inlet end and an outlet end, the outlet end being in fluid communication with the interior of said test chamber;
a first capillary tube located in said cryogenic vessel and connected between said inlet end of said first fluid flow means and the cryogenic fluid in said cryogenic vessel, said first capillary tube having a first impedance to fluid flow;
capillary heater means in thermal communication with said first capillary tube;
test chamber heater means in thermal communication with said test chamber;
second fluid flow means connected between the cryogenic fluid in the interior of said cryogenic vessel and said test chamber, said second fluid flow means comprising in part a second capillary tube, said second capillary tube being generally isolated from the interior of said cryogenic vessel and having a second flow impedance much higher than said first flow impedance; and
evacuation means operative to partially evacuate said test chamber to draw fluid from said cryogenic vessel selectively through said first fluid flow means and said second fluid flow means into said test chamber;
whereby, when said apparatus is in operation, the cryogenic liquid in said cryogenic vessel is maintained at a level whereby said test chamber extends into and is maintained within the cryogenic fluid and said first and second fluid flow means are maintained within the cryogenic fluid in said cryogenic vessel below the surface of the cryogenic fluid.

5,647,229

DEVICE FOR CLOSING THE INITIAL END OF A KNITTED ARTICLE SUCH AS A SOCK OR OTHER

Paolo Conti, Florence, Italy, assignor to Golden Lady S.p.A., Ancona, Italy

PCT No. PCT/IT95/00072, § 371 Date Jan. 16, 1996, § 102(e) Date Jan. 16, 1996, PCT Pub. No. WO95/31595, PCT Pub. Date Nov. 23, 1995
PCT Filed May 12, 1995, Ser. No. 583,087
Claims priority, application Italy, May 17, 1994, FI94A0088
Int. Cl.[6] D04B *9/56*
U.S. Cl. 66—58 **6 Claims**



1. A device for closing the initial end of a knitted article directly on one of a circular knitting and a circular stocking machine with a needle cylinder which can form a portion of fabric in the form of a pocket with narrowing sections and widening sections along an arc of working needles of approximately 180°, the device comprising:
a push rod with a pick-up hook at the end;
a push rod movement mechanism adjacent to the internal wall of the needle cylinder, to move said push rod in an axial plane of symmetry to engage, by means of the pick-up hook in an intermediate portion, courses of an initial partial fabric which has been released by the needles and to bring the initial fabric progressively to a side opposite said arc of working needles with the progressive formation of the fabric of the pocket;
a body in the form of a shaped annular ring, integral with the interior of the needle cylinder, and having a radial slot for said push rod and radial slots in the area opposite said arc of needles;
movable hooks in said radial slots, said movable hooks having pin-shaped appendages which can be moved from a concealed position in the annular ring shaped body to a raised position to make the pin-shaped appendages penetrate into the fabric along the initial partial fabric when the initial partial fabric has been brought by said push rod to a side opposite the arc of working needles, and subsequently to move said initial fabric progressively up to vacant needles which are raised and inserted into said initial fabric to engage the fabric by means

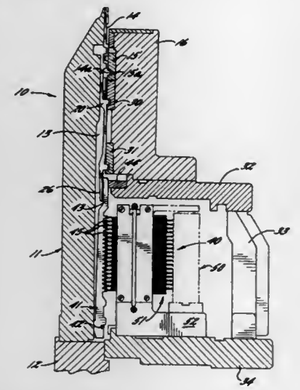
of the yarn subsequently picked up by the needles for the formation of the fabric; and
means for moving said hooks upward and centrifugally, and subsequently in reverse direction.

5,647,230

NEEDLE SELECTION MECHANISM FOR CIRCULAR KNITTING MACHINE

Hidetoshi So, and Shinji Hashihiro, both of Hyogo, Japan, assignors to Precision Fukuhara Works, Ltd., Japan

Filed Jan. 11, 1996, Ser. No. 587,100
Claims priority, application Japan, Jan. 13, 1995, 7-020998
Int. Cl.[6] D04B *15/66;15/82*
U.S. Cl. 66—224 **1 Claim**



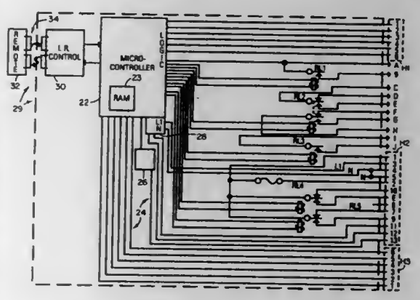
1. A circular knitting machine for knitting fabric having patterns therein and comprising
a needle cylinder rotatable about a vertical axis and having a multiplicity of grooves in the outer periphery parallel to said axis,
a knitting needle slidably mounted in each of said grooves in said needle cylinder, said needles being adapted for movement between knitting, tucking and welting positions,
control cam means operatively associated with said knitting needles for moving selected needles between the knitting, tucking and welting positions as said needle cylinder rotates,
a spring jack slidably mounted in each of said grooves in said needle cylinder below said knitting needle and adapted to contact said knitting needle to raise said needle upwardly upon upward movement of said spring jacks, said spring jacks being resilient and having a lower portion mounted for flexure movement inwardly to an inactive position and outwardly to an active position normally occupied by said spring jack, each of said spring jacks having a butt thereon,
spring jack cam means operatively associated with said spring jacks for raising and lowering said spring jacks occupying said active position, said spring jack cam means comprising a spring jack actuating cam having a first race for raising said spring jacks and a second race for maintaining said spring jacks in said lower position, said second cam race having an angled portion at an entry end thereof for smoothly and gently guiding said spring jack butt into said second race upon return of said spring jacks to the active position, and
needle selection means for selecting and moving individual spring jacks from the active position to the inactive position to cause said needles to knit, tuck and welt selectively to knit a fabric having a predetermined pattern therein, said needle selection means including means for selecting individual spring jacks in accordance with a predetermined pattern and means for deflecting said lower portions of said spring jacks from said active position to said inactive position to disengage said spring jacks from said actuating cam means and to control said spring jacks return to said active position in a gentle manner so that impact shock between said spring jacks and said actuating cam means is prevented, said selecting means and said deflecting means comprising a selector jack mounted in each of said grooves in said needle cylinder below said spring jack for limited inward and outward movement and having an upper end portion engageable with the lower portion of said spring jack for deflecting said lower portion of said spring jack from said active position to said inactive position, pusher means engageable with selected ones of said selector jacks for moving said selected selector jacks inwardly to deflect said lower portions of said spring jacks from said active position to said inactive position, said pusher means comprising a stack of selector slides mounted for individual horizontal movement between innermost, active positions and outermost, inactive positions and having inner ends aligned with and disposed in the path of said selector jacks when said selector slides are in said active position, said inner end of said selector slide having an inwardly angled portion for moving said selector jack inwardly, a horizontal portion for maintaining said selector jack in the innermost position for a predetermined time interval, and an outwardly angled portion for controlling the movement of said selector jack to the outermost position.

5,647,231

APPLIANCE ELECTRONIC CONTROL SYSTEM WITH PROGRAMMABLE PARAMETERS INCLUDING PROGRAMMABLE AND RECONFIGURABLE FUZZY LOGIC CONTROLLER

Thomas Roy Payne; Steven Andrew Rice, and William Waters Wead, all of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Division of Ser. No. 421,037, Apr. 12, 1995, which is a continuation of Ser. No. 969,139, Oct. 30, 1992, abandoned. This application Sep. 25, 1995, Ser. No. 534,002
Int. Cl.[6] D06F *33/02*
U.S. Cl. 68—12.01 **11 Claims**



1. An appliance electronic control system for controlling at least one appliance, said electronic control system comprising:
a controller including output lines for activating the functional elements within the appliance; memory elements for storing a plurality of parameters selected from the group consisting of washer soak time, washer time, washer spin time, washer spray rinse delay, washer spray rinse time, washer rinse time, washer final spin time, dryer total dry time, dryer standard cool time, and dryer extra cool time; and control elements for effecting an appliance operational cycle comprising a sequence of operational modes, the durations of at least some of the operational modes being determined based on parameters stored in said memory elements; and
a communication link connected to said controller for inputting parameters to be stored in said memory elements.

5,647,232

AUTOMATICALLY CONTROLLED WASHING MACHINE

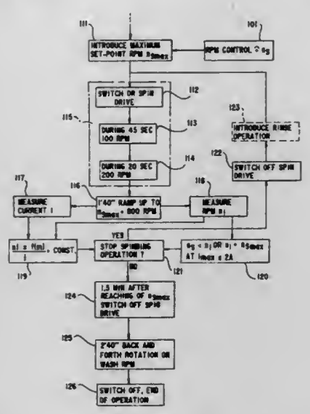
Frank Böldt; Ingo Schulze, both of Berlin; Harald Moschütz, Grossbeeren, and Marianne Röbl, Berlin, all of Germany, assignors to Bosch-Siemens Hausgeraete GmbH, Munich, Germany

Continuation-in-part of Ser. No. 353,614, Dec. 12, 1994, abandoned. This application Apr. 8, 1996, Ser. No. 629,218

Claims priority, application Germany, Dec. 10, 1993, 43 42 274.8

Int. Cl.[6] D06F *33/02*

U.S. Cl. 68—12.02 **10 Claims**



1. In an automatically controlled washing machine including:

a laundry drum;

a drive motor for driving the laundry drum with a plurality of different speeds for washing, rinsing and spinning;

an rpm control circuit for adjusting an rpm of the drive motor; and

means for determining the rpm of the drive motor in accordance with set-point and actual rpm values; the improvement comprising:

a control circuit receiving a signal during a spin cycle, the signal being a measure for an undesired braking of the drum and being determined by a mutual ratio of the following operating parameters of the drive motor:

a) the set-point rpm,

b) the actual rpm, and

c) a load-dependent electrical variable;

and said control circuit controlling a spinning operation of the washing machine in dependence on the signal.

5,647,233

DOOR LOCKING MECHANISM

Kuan-Chin Chung, No. 91, Chu Shan Rd., Ho Hsin Tsun, Nei Pu Hsiang, Ping Tung Hsien, Taiwan

Filed Sep. 25, 1995, Ser. No. 533,258

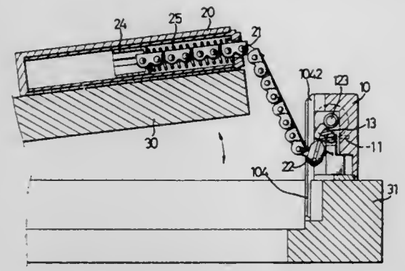
Int. Cl.[6] E05B *65/00*

U.S. Cl. 70—93 **4 Claims**

1. A door locking mechanism comprising:

a housing including an upper portion having a vertical hole formed therein and including a lower portion having a lateral hole formed therein and including a puncture communicating said vertical hole with said lateral hole, said housing including a side portion having a slot formed therein and communicating with said lateral hole, said slot including an open end,

a stop rotatably engaged in said housing and engaged in said lateral hole, said stop being rotatable in a first direction and rotatable in a reverse direction,



a chain means including a first end for securing a door panel and including a second end having a head secured thereto, said head being engaged in said slot via said open end of said slot and movable over said stop when said stop rotates in said first direction,

a casing secured to the door panel and including a block slidably received therein for securing to said first end of said chain means, and means for biasing said block inwards of said casing so as to receive said chain means in said casing,

a latch means slidably engaged in said puncture and extendible inward of said lateral hole for engaging with said stop and for preventing said stop from rotating in said reverse direction so as to retain said head of said chain means in said slot,

a lock means slidable engaged in said vertical hole and being secured to said latch means to move therewith,

means for biasing said lock means away from said puncture and for disengaging said latch means from said stop, and

said head being movable over said stop into said slot when said latch means is engaged with said stop, and said head being prevented from moving over said stop so as to be prevented from disengaging from said slot, and said head being allowed to move over said stop and allowed to be disengaged from said slot when said latch means is disengaged from said stop.

5,647,234

VEHICLE LOCKING SYSTEM

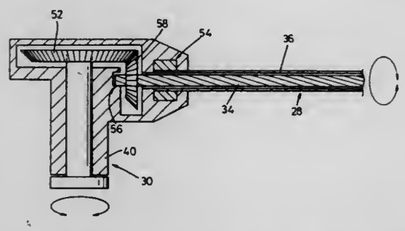
Edward de Ferry Foster, Faringdon, England, assignor to Rover Group Limited, Birmingham, England

Filed Jun. 19, 1995, Ser. No. 492,392

Claims priority, application United Kingdom, Jul. 2, 1994, 9413388

Int. Cl.[6] B60R *25/00*

U.S. Cl. 70—256 **12 Claims**



1. A securing system for a vehicle door, the system comprising a rotatable drive member adapted to be rotated by a user of the vehicle, a cable link comprising a cable outer and a cable inner having a longitudinal central axis, and first and second securing mechanisms for securing a door of the vehicle, wherein the cable inner is rotatable about said axis within the outer by movement of the rotatable drive member to operate the first securing mechanism and movable along said axis within the cable outer to operate said second mechanism.

5,647,235

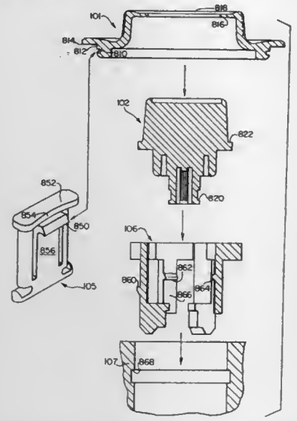
TAMPER-EVIDENT ELECTRONIC COMBINATION LOCK HAVING INTEGRAL BEARING/RETAINING MEMBER

Michael R. Clark, Lexington, and Gregory C. Lainhart, Nicholasville, both of Ky., assignors to Sargent & Greenleaf, Inc., Nicholasville, Ky.

Division of Ser. No. 143,223, Oct. 29, 1993, abandoned. This application Apr. 27, 1995, Ser. No. 429,561

Int. Cl.[6] E05B *49/00*

U.S. Cl. 70—278 **26 Claims**



1. An arrangement for bearing and retaining at least one externally accessible dial on a combination lock in a manner rendering the combination lock tamper-evident, the arrangement comprising:

a support structure;

the dial;

integral beating/retaining member means, affixed to a first one of the support structure or dial, for physically bearing the dial during normal operation of the lock, for retaining the dial during normal operation of the lock, and for preventing the dial from being removed from the lock without causing visible damage; and

clip means, extending between the bearing/retaining member means and a second one of the support structure or dial, for matingly engaging a slot and for preventing the clip means from being removed from mating engagement with the slot without causing visible damage.

5,647,236

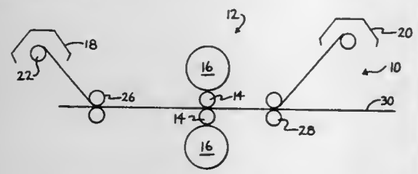
METHOD OF ROLLING LIGHT GAUGE HOT MILL BAND ON A HOT REVERSING MILL

George W. Tippins, Pittsburgh, Pa., assignor to Tippins Incorporated, Pittsburgh, Pa.

Filed Jan. 11, 1995, Ser. No. 371,137

Int. Cl.[6] B21B *1/34*

U.S. Cl. 72—8.8 **20 Claims**



1. In a method of rolling light gauge hot mill band of a given thickness from a slab on a hot reversing mill having a coiler furnace and drum on each side thereof by passing said slab back and forth through said mill to an intermediate product having a thickness capable of being coiled and thereafter through said mill between said drums, the improvement comprising stopping during a penultimate pass a trailing end of the intermediate product before it reaches said mill and thereafter final passing said intermediate product through said mill and discarding said trailing end to form said hot mill band.

5,647,237

PROCESS FOR SUPPRESSING THE INFLUENCE OF ROLL ECCENTRICITIES

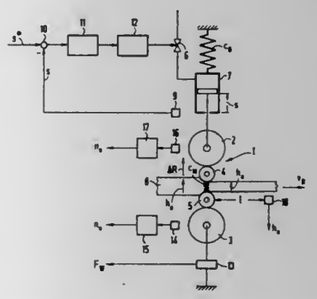
Clemens Jungkunz, Erlangen; Siegbert Steidl, Herzogenaurach; Dietrich Wohld, Grossenseebach; Andre Berghs, Neunkirchen, and Hans-Peter Troendle, Forchheim, all of Germany, assignors to Siemens Aktiengesellschaft, München, Germany

Filed Jul. 28, 1995, Ser. No. 508,641

Claims priority, application Germany, Jul. 28, 1994, 44 26 637.5

Int. Cl.[6] B21B *37/18*

U.S. Cl. 72—9.2 **18 Claims**



1. A method for suppressing the influence of roll eccentricities on the exit thickness of a rolled material in a roll stand, said method comprising:

simulating the roll eccentricities as an output signal of a first oscillator coupled in a feedback loop;

supplying the output signal of said first oscillator to a position control for the roll stand, where the frequency of said output signal is set according to a measured rotation speed of rolls in said roll stand, and an amplitude and phase of said output signal are set such that the exit thickness of the rolled material is measured after its exit from the roll stand with a measurement delay in relation to a thickness reduction in the roll stand;

generating a signal corresponding to a roll screw-down value which is delayed by at least approximately the amount of said measurement delay;

generating a difference signal from the delayed roll screw-down signal and a sum of the measured thickness signal multiplied by the sum of one and the quotient of a rigidity of the rolled material and a rigidity of the roll stand;

correcting the amplitude and phase of the output signal of said first oscillator in dependence on a difference between the output signal of said first oscillator and said difference signal to minimize said difference; and

phase shifting the output signal of said first oscillator by an amount corresponding to the measurement delay for a forward slip.

5,647,238

METHOD FOR SUPPRESSING THE INFLUENCE OF ROLL ECCENTRICITIES ON A CONTROL FOR A ROLLING-STOCK THICKNESS IN A ROLL STAND

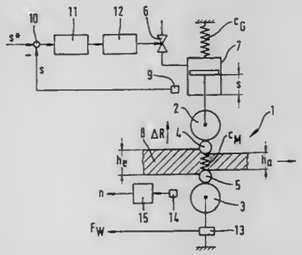
Siegbert Steidl, Herzogenaurach; Clemens Jungkunz, Erlangen, and Klaus Berger, Höchstadt, all of Germany, assignors to Siemens Aktiengesellschaft, München, Germany

Filed Mar. 27, 1995, Ser. No. 411,119

Claims priority, application Germany, Mar. 29, 1994, 44 10 962.8

Int. Cl.[6] B21B *37/00*

U.S. Cl. 72—10.1 **11 Claims**



1. A method for suppressing the influence of roll eccentricities on a feedback control for a rolling-stock thickness in a roll stand comprising the steps of:

providing a controller for controlling the rolling-stock thickness in the roll stand:

providing measurement signals to a band-pass filter;

generating filtered signals using the band-pass filter; and

providing the filtered and measurement signals to an insensitive dead zone having a zone width in the thickness control accounting for signal fluctuations caused by the roll eccentricities,

the signal fluctuations being filtered with a band-pass filter for controlling the zone width as a function of the filtered signals, the band-pass filter having a mid-frequency which corresponds to a fundamental frequency of the roll eccentricities.

5,647,239

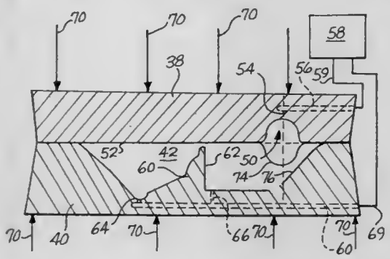
DIE FOR SUPERPLASTIC FORMING

John Robert Fischer, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Division of Ser. No. 224,212, Apr. 7, 1994. This application Jun. 6, 1995, Ser. No. 469,154

Int. Cl.[6] B21D *26/02*

U.S. Cl. 72—60 **6 Claims**



1. A die for superplastically forming a blank of superplastic material to form a part comprising:

(a) a die base enclosing a cavity having a topography shaped like said part;

(b) a die lid shaped and sized to fit over said die base and to engage with a fluid seal a peripheral surface of said die base around said cavity, said die lid having an underside communicating with said die cavity and a localized recess for forming a prethinned bulge in the blank opening in said underside positioned in said die lid to overlie an area on said die cavity at which said blank otherwise would experience thinning during superplastic forming of said blank, the die lid otherwise constraining the blank portions outside the recess to leave the sheet in the constrained region substantially as thick as the original uniform thickness;

(c) gas vents in said base and said lid for first delivering forming gas under pressure into said cavity to preform said blank into said lid recess to form the prethinned bulge, and thereafter to vent said cavity gas pressure and to deliver forming gas under pressure to said lid to reverse the bulge and to form said blank into said cavity in said die base;

whereby said blank is prethinned in said recess and delivers areas of said blank unthinned to areas of said cavity which otherwise would experience excessive thinning.

5,647,240

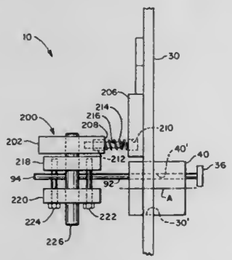
PITCH TOOL HOLDER

John D. Jacobson, Southington, Conn., assignor to Newcomb Spring Corporation, Southington, Conn.

Filed Jul. 28, 1995, Ser. No. 508,830

Int. Cl.[6] B21F *3/02;* **B21D** *37/04*

U.S. Cl. 72—135 **10 Claims**



1. In a spring coiling machine having

a front panel defining an outside and an inside of the machine,

a chuck supported perpendicularly through the panel,

a pitch tool having a tool axis passing substantially coaxially through a bore in the chuck and including an active end situated outside the machine and a held end situated inside the machine, and

a pitch tool holder situated inside the machine for holding said held end of the pitch tool,

wherein the improvement comprises said pitch tool holder having two active plates spaced apart transversely to said tool axis, each plate bearing against the held end of the pitch tool, and means for selectively moving the active plates toward and away from each other.

5,647,241

ROTARY UPPER ROLL SELECTOR

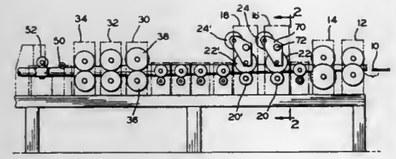
Lewis H. Ruple, Perrysburg, and Susan J. Taber, Gibsonburg, both of Ohio, assignors to Abbey Etna Machine Company, Perrysburg, Ohio

Filed Sep. 22, 1995, Ser. No. 532,301

Int. Cl.[6] B21D *5/12*

U.S. Cl. 72—178 **3 Claims**

1. A tube forming machine for the manufacture of metal tubing of varying outside diameters including means for gradually forming sheet material having an outer surface and an inner surface and



having longitudinal edges into a substantially tubular shape by deflecting the edges towards one another and at least one breakdown roll assembly, the forming means and breakdown roll assembly being arranged to form the tubular shape along a path, said roll assembly including:

stand means;

a lower forming roll member journalled for rotation in said stand means, said lower forming roll member having a forming surface for contacting the outer surface of the metal of the tubing being formed;

a first upper forming roll member and a second upper forming roll member, said upper forming roll members each having a forming surface for contacting the inner surface of the metal of the tubing being formed;

a beam member;

journal means for rotatingly mounting said first and second upper forming roll members in spaced relation on said beam member;

means for rotatingly mounting said beam member to said stand means transversely to said path, said means including at least two radially extending circumferentially spaced arms, each of said arm provided with pad members;

indexing means for moving said beam to selectively position said first roll member or said second roll member in cooperative relation to said lower forming roll member, said indexing means including a stop block fixedly mounted to said stand means and having spaced apart oppositely facing ends, the ends adapted to be selectively engageable with the pad members of the arms of said means for rotatingly mounting said beam member to said stand member, and

additional shaping means, separate from said lower forming roll member, arranged on opposite sides of the selected first or second upper forming roll members for deflecting the edges of the sheet material towards one another.

5,647,242

FABRICATING ONE-PIECE CAN BODIES WITH CONTROLLED SIDE WALL ELONGATION

William T. Saunders, Weirton, W. Va., assignor to Weirton Steel Corporation, Weirton, W. Va.

Division of Ser. No. 596,854, Oct. 12, 1990, Pat. No. 5,343,729, which is a continuation-in-part of Ser. No. 831,624, Feb. 21, 1986, Pat. No. 5,014,536, which is a continuation-in-part of Ser. No. 712,238, Mar. 15, 1985, abandoned, and a continuation-in-part of Ser. No. 573,548, Aug. 27, 1990, Pat. No. 5,119,657. This application Jul. 1, 1994, Ser. No. 269,687

The portion of the term of this patent subsequent to May 14, 2008, has been disclaimed.

Int. Cl.[6] B21D *22/21*

U.S. Cl. 72—349 **11 Claims**

1. Apparatus for fabricating, free of side wall ironing, precoated work-hardened flat-rolled steel into a one-piece thinned side wall can body comprising, in combination,

source means for can stock providing a planar blank of predetermined peripheral cut-edge diameter,

such can stock consisting essentially of work-hardened flat-rolled steel substrate of preselected starting gage which has been prepared for and precoated on both surfaces with organic polymeric coating and organic draw processing lubricant;

a plurality of press means for carrying out sequential diameter-reduction operations by draw forming a one-piece cup-shaped work product and redrawing such work product into such thinned side wall can body,

such press means including

a cupping press for forming such planar blank into a cup-shaped work product which presents a cylindrical configuration side wall, of preselected diameter, and an open end flange,

such cupping press decreasing the cut-edge diameter of such planar blank about 35% to form such cylindrical configuration cup side wall, and

a sequential side wall diameter-reduction redraw press means for decreasing the side wall diameter of such cupping press work product about 25%,

such cup-shaped work product including

a closed endwall,

a cylindrical configuration side wall,

a central longitudinal axis which is perpendicular to the geometric center of such endwall, with such side wall being symmetrically disposed with respect to such central longitudinal axis and defining an open end for such cup-shaped work product, a unitary juncture between the closed endwall and the cylindrical configuration side wall,

the unitary juncture having a curved configuration as viewed in cross section in a plane which includes such central longitudinal axis, and

a flange located at such open end of the cup-shaped work product,

such flange being radially outwardly in transverse relationship to such central axis, as part of forming the cup-shaped work product, so as to provide a uniform side wall height for such cup-shaped work product;

substrate of such closed endwall having a thickness gage, substantially equal to such starting gage, over a major portion of its area extending from its geometric center toward its periphery contiguous to such side wall; with

substrate of such side wall:

being substantially free of increase in gage above such preselected starting gage along side wall height, and

being decreased in thickness relatively uniformly over a major portion of side wall height from contiquous to such unitary juncture to a location contiguous to such open end flange.

5,647,243

DEVICE FOR HEMMING ELEMENTS OF PRESSED SHEET METAL

Antonio Zampini, Collegno, Italy, assignor to Comau S.p.A., Grugliasco, Italy

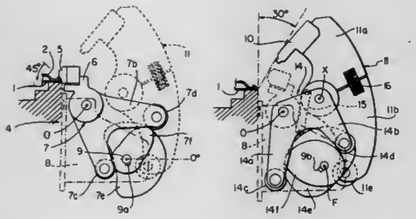
Filed Feb. 1, 1996, Ser. No. 595,207

Claims priority, application Italy, Feb. 2, 1995, T095A0061

Int. Cl.[6] B21D *5/01;* **B21J** *9/18*

U.S. Cl. 72—452.6 **4 Claims**

1. Device for hemming elements of pressed sheet metal, comprising:



a fixed supporting structure, having a surface for supporting the sheet metal elements to be hemmed,

a first hemming took, to carry out a first bending of a peripheral edge of one of said sheet metal elements, said first hemming tool being rotatably supported by said fixed supporting structure around a first axis, and being movable between a rest position and a work position,

a second hemming tool, to carry out a second bending of said peripheral edge following said first bending, in order to complete the hemming of said sheet metal elements, said second hemming tool being also supported by said fixed supporting structure so as to be movable between a rest position and a work position, and

means for driving a cyclic movement of the first and second hemming tools between respective rest positions and respective work positions,

wherein said control means includes:

a rotating driving shaft rotatably mounted on said fixed supporting structure around a second axis which is parallel to and spaced apart from said first axis,

first cam means mounted on said driving shaft and cooperating with first cam-following means associated with said first hemming took, to drive the movement of the first hemming tool from said rest position to said work position and then again to said rest position during a first part of each round of rotation of the driving shaft, and to keep the first hemming tool in said rest position during a second part of each round of rotation of the driving shaft,

second cam means mounted on said driving shaft, to drive the movement of said second hemming tool from said rest position to said work position and then again to said rest position, during said second part of each round of rotation of the driving shaft, and to keep the second hemming tool in said rest position during said first part of each round of rotation of the driving shaft,

second cam-following means cooperating with said second cam means,

an auxiliary supporting member carrying said cam-following means, rotatably mounted on said fixed supporting structure around said first axis,

a supporting member of the second hemming tool, pivotally mounted on said auxiliary supporting member around a third axis parallel to said first and second axes and being further connected to the fixed supporting structure by a further articulated linkage member,

third cam means carried by said driving shaft and cooperating with third cam-following means carried by said supporting member of the second hemming tool, to further push the second hemming tool to said work position each time that it is brought to said work position by said second cam means.

5,647,244

ELECTROMAGNETIC ACTUATOR FOR DOOR UNITS AND THE LIKE

Giuseppe Girotto, Fagaré , and Giovanni Serafin, Treviso, both of Italy, assignors to Peitro Girotto, Italy

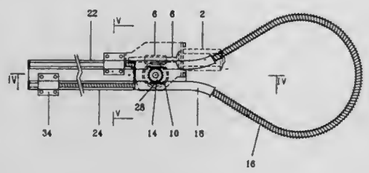
PCT No. PCT/EP93/03423, § 371 Date Jun. 29, 1995, § 102(e) Date Jun. 29, 1995, PCT Pub. No. WO94/13917, PCT Pub. Date Jun. 23, 1994

PCT Filed Dec. 6, 1993, Ser. No. 464,818

Claims priority, application Italy, Dec. 10, 1992, TS92A0018; Sep. 1, 1993, TS93A0005

Int. Cl.[6] F16H *27/02*

U.S. Cl. 74—89.17 **13 Claims**



1. An electromechanical actuator for door units comprising:

a tubular guide comprising at least two parallel side-by-side rectilinear portions,

a flexible rack including a metal wire spirally wound about a flexible core and two rectilinear parts housed within said at least two rectilinear portions of said tubular guide and a connecting loop disposed therebetween, free from said tubular guide,

a geared motor unit actuating a gearwheel having its axis orthogonal to a plane defined by said rectilinear portions of said tubular guide, said gearwheel being placed between said rectilinear portions and simultaneously engaging, through corresponding apertures in said rectilinear portions, both said parts of said flexible rack,

at least one hanger fixed to said flexible rack and emerging via an appendix through a continuous longitudinal slot provided in at least one of said two rectilinear portions of said tubular guide, and

members for mechanically connecting said appendix to an element to be moved.

5,647,245

DRIVE APPARATUS HAVING A BALL SCREW USING ULTRASONIC MOTORS CONCENTRIC WITH ITS NUTS

Seiji Takei, Kanagawa, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan

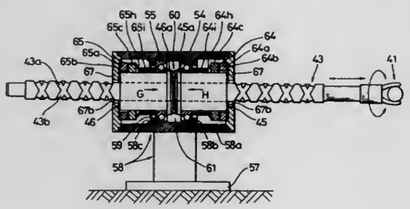
Filed Apr. 18, 1995, Ser. No. 423,853

Claims priority, application Japan, Apr. 18, 1994, 6-104806

Int. Cl.[6] F16H *25/12;* **H01L** *41/08*

U.S. Cl. 74—424.8 B **11 Claims**

9. A drive apparatus comprising:



a screw shaft wherein left and right screw grooves are formed so as to mutually intersect;

a plurality of nuts fit loosely onto said screw shaft and provided with ball circulating paths corresponding to each of said screw grooves, respectively, each of said nuts having a first end and a second end; said nuts being arranged in pairs, said first ends of both said nuts of each pair of said nuts being joined together so as to rotate freely relative to each other;

a plurality of balls arranged and contained within said ball circulating paths that circulate accompanying relative rotation of said screw shaft and said nuts;

supporting mechanisms that support each of said nuts so as to be able to rotate freely; and

driving devices able to individually rotate and drive each of said nuts;

wherein each said driving device comprises an ultrasonic motor that includes a vibrator provided concentrically with said nuts on said supporting mechanism, a piezoelectric element coupled to said vibrator that vibrates said vibrator, and a moving body provided on said nut so as to contact said vibrator, and wherein

said ultrasonic motors are provided on said second ends of said nuts.

5,647,246

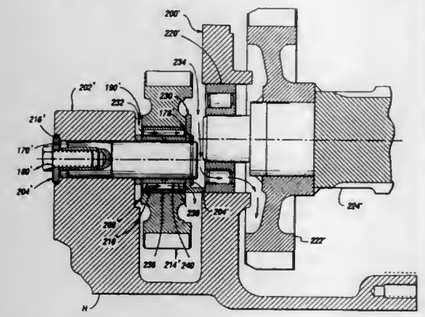
REVERSE IDLER SHAFT AND WASHER ASSEMBLY

Robert B. Craft, Ceresco; William R. Chene, Kalamazoo; Robert J. Bailey, Portage, all of Mich., and Ivars Lilienstein, Shelby, N.C., assignors to Eaton Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 157,488, Nov. 23, 1993, Pat. No. 5,505,102. This application May 17, 1995, Ser. No. 443,349

Int. Cl.[6] F16H *57/04;3/08*

U.S. Cl. 74—467 **11 Claims**



1. A compound transmission for transferring torque from an input shaft to an output shaft, the transmission having a main section connected in series with an auxiliary section, the main section including a housing for containing a mainshaft generally coaxial with the input shaft and at least one countershaft generally parallel to the mainshaft and the input shaft, the mainshaft having a plurality of gears including a reverse gear mounted for selective engagement thereto, each of the at least one countershaft having a corresponding plurality of gears mounted for rotation therewith including a reverse countershaft gear, the transmission comprising:

a reverse idler shaft mounted to a portion of the main-section housing;

a bearing having an inner race and a plurality of elements facilitating rotation of a component in contact therewith, the inner race being mounted on the reverse idler shaft;

a reverse idler gear mounted on the plurality of elements, the reverse idler gear being in constant meshing engagement with the reverse gear and the at least one reverse countershaft gear; and

a washer interposed between the bearing and the portion of the housing, the washer having at least one notch for directing lubricating oil to the plurality of elements facilitating rotation.

5,647,247

SINGLE HANDLE CONTROL MECHANISM

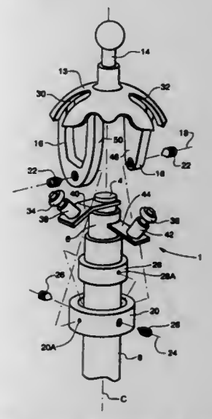
Sergio Magrini, Modena, Italy, assignor to New Holland North America, Inc., New Holland, Pa.

Filed Sep. 14, 1995, Ser. No. 527,963

Claims priority, application Italy, Sep. 16, 1994, TO9400722

Int. Cl.[6] G05G *9/047*

U.S. Cl. 74—471 XY **13 Claims**



1. A single handle control mechanism for selectively operating two independently operable mechanisms either individually or in combination comprising:

first and second coaxially disposed shafts, said first shaft being positioned within said second shaft, said first and second shafts being connected respectively to said two mechanisms and being individually rotatable about a common longitudinal axis of rotation; and

a handle member mounted for rotation about two orthogonal axes which are oriented perpendicularly to said axis of rotation of said first and second shafts.

5,647,248

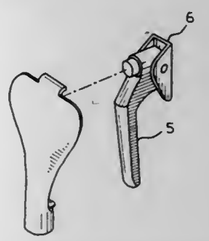
DOOR HANDLE PROTECTIVE DEVICE

Winfield F. Silshy, Jr., 472 Pringle St., Pringle, Pa. 18714

Filed Jun. 5, 1996, Ser. No. 611,768

Int. Cl.[6] G05G *1/06*

U.S. Cl. 74—558.5 **3 Claims**



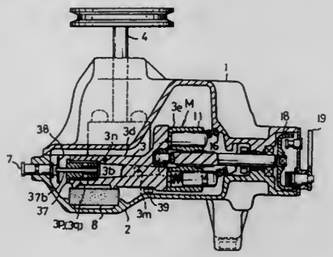
1. A handle cover covering an exterior door handle with a base and a lever comprising:

a. a main stretchable body wider than the door handle and stretchable to a length longer than the lever;
b. an insert tab defined on an upper end of the body and protruding therefrom;
c. a receptacle defined in a lower end of the body; and
d. a cup accommodatingly larger than an end of the lever and inserted into the receptacle wherein the tab is inserted under the base of the door handle in a fixed position; the body is stretched to a length longer than the lever; the cup is engaged over the end of the lever and held by the elasticity of the body; and the body covers the door handle lever.

5,647,249
AXLE DRIVING APPARATUS
Hideaki Okada, Takarazuka, and Shusuke Nemoto, Yao, both of Japan, assignors to Kanzaki Kokyukoki Mfg. Co. Ltd., Japan
Continuation of Ser. No. 193,577, Feb. 7, 1994, Pat. No. 5,473,964, which is a continuation of Ser. No. 100,352, Jun. 21, 1993, abandoned, which is a continuation of Ser. No. 518,720, May 4, 1990, abandoned, which is a continuation of Ser. No. 304,581, Feb. 1, 1989, Pat. No. 4,932,209. This application May 24, 1995, Ser. No. 449,796

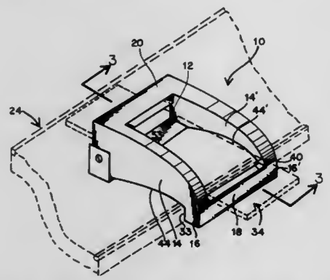
Claims priority, application Japan, Feb. 3, 1988, 63-24193; Mar. 9, 1988, 63-55828; Mar. 18, 1988, 63-67005; Jun. 16, 1988, 63-79665 U

Int. Cl.[6] F16H *57/02*
U.S. Cl. 74—606 R **11 Claims**



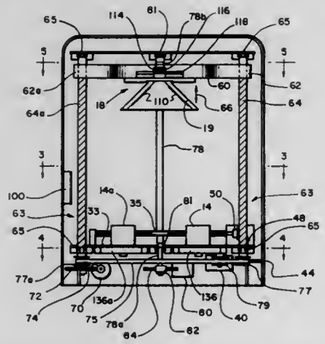
1. A hydraulic transaxle, comprising:
a casing formed of a first casing section and a second casing section joined along a horizontal junction surface, said junction surface defining a plane;
an axle rotatably supported within said casing, said axle having a longitudinal axis parallel to said junction surface;
a hydrostatic transmission disposed within said casing for driving said axle including a hydraulic pump and a hydraulic motor, said hydraulic motor including output means having a longitudinal axis, wherein said casing is configured to receive oil that is used as operating oil for said hydrostatic transmission;
a center section disposed within said casing, said center section including a passage for hydraulically connecting said hydraulic pump and said hydraulic motor;
a suction port for feeding operating oil from said casing to said passage;
transmitting means disposed within said casing, said transmitting means connected to said output means for transmitting power from said hydraulic motor;
a differential gear unit disposed within said casing and connecting said transmitting means and said axle; and
input means for transmitting power to said hydraulic pump.

5,647,250
TOOL GUIDE FOR SKI EDGE TUNING
Scott R. Holmer, 255 SW. Century Dr., Bend, Oreg. 97702
Filed Oct. 10, 1995, Ser. No. 540,820
Int. Cl.[6] B23D *64/02*; **A63C** *11/06*
U.S. Cl. 76—83 **11 Claims**



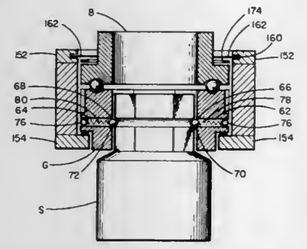
1. A guide for holding a tool having a front end and a back end and for placement on a ski having a base surface with a central region, a side surface, and an edge to be sharpened at a junction of the base and side surfaces, the guide comprising:
a generally horizontal elevation member having a bottom surface for placement on the central region of the ski base surface and having a top surface for supporting the tool back end in an elevated position above the ski base surface,
a generally vertical foot for extending down along and contacting the ski side surface near the ski edge to be sharpened, and
a spacing member connecting the foot to the elevation member so that the foot and elevation member are at a distance from each other, wherein the spacing member has a contact point for resting on the ski base surface, and
wherein a space is located between the said foot and the elevation member for allowing the tool front end to rest on the said ski edge.

5,647,251
JAR OPENER
Herbert S. Hardman, Box 227, River Way East, Milford, N.H. 03055
Filed Nov. 3, 1995, Ser. No. 552,750
Int. Cl.[6] B67B *7/00*
U.S. Cl. 81—3.2 **20 Claims**



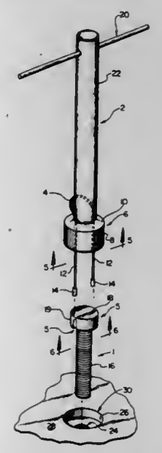
1. A fully automatic jar opener for loosening a threaded jar cap on a jar including side walls and a base, comprising:
a bottom jar retainer including substantially horizontal clamps, said clamps being automatically movable along a horizontal plane between an open position and a jar clamping position, said bottom jar retainer including a means for establishing a predetermined holding force on said sidewalls in said clamping position sufficient to hold the jar substantially without slippage when the jar cap is subjected to a twisting force,
a top jar retainer for holding the jar cap substantially without slippage when said twisting force is applied to the jar cap, said twisting force being applied to the jar cap via said top jar retainer,
a vertical drive for automatically adjusting a relative vertical position between said bottom jar retainer and said top jar retainer, said relative vertical position determining a holding force of said top jar retainer on said jar cap,
one or more motors for applying said twisting force to said top jar retainer, for moving said clamps along the horizontal plane to said clamping position for achieving said side wall holding force, and for adjusting the relative vertical position between said bottom jar retainer and said top jar retainer,
a controller for automatically controlling said one or more motors, said controller enabling loosening of the jar cap of jar placed between said clamps in said open position with one single, discrete user command, and
a user input device for inputting said single, discrete user command.

5,647,252
REVERSIBLE RATCHETS
Montie H. Miner, 2205 Robert, Granite City, Ill. 62040
Filed Sep. 8, 1994, Ser. No. 302,219
Int. Cl.[6] B25B *13/46*
U.S. Cl. 81—62 **5 Claims**



1. A reversible hand ratchet comprising a handle, a yoke secured at one end to said handle, a reverse button and a drive gear,
said handle comprising a pair of ears in spaced parallel relation at the end of an elongated shaft, each ear being provided with an annular aperture which is coaxial with the aperture on the complimentary ear, said handle also including a centrally located post which is located between and extends parallel with the ears, the aperture in the first ear being diametrically larger than the aperture in the second ear,
said yoke being disposed on the post between the first and second ears and having a large bore sized substantially the same size as the larger ear aperture and coaxial therewith, said yoke also including first and second pawls pivotally mounted in first and second spaced chambers which have access to the large bore, each pawl being sized for extension into the large bore during pivotal movement,
said drive gear comprising a shell including first and second cylindrical members of different diameters separated by an annular shoulder and also including a central aperture shaped for receiving a socket having a plurality of flat exterior faces, said drive gear also being provided with a band of spaced teeth in axial registration about the periphery of the larger cylindrical member and socket retaining means for removably securing a socket in the central aperture during rotation of the drive gear, said socket retaining means comprising an annular notch in the periphery of the larger member, a clip disposed in said notch, first and second bores on opposing sides of the central aperture extending from the notch toward the central aperture, a ball disposed in each of said bores, and spring means disposed between the clip and each of said balls for urging said balls toward the central aperture, said first and second bores each being diametrically reduced at the central aperture to retain the balls in said bores while said balls are urged into the central aperture by the spring means, said second member being diametrically sized for free moving disposition in the ear having the aperture with the smaller diameter whereby the drive gear may be rotatably retained in the bore of the yoke by the first ear at the annular shoulder,
said reverse button including a cylindrical shell comprising third and fourth cylindrical members and a central annular bore, said third member being diametrically sized slightly smaller than the bore in the yoke and the fourth member being sized substantially smaller in diameter than the third member, said reverse button also including selector means for selectively allowing the first pawl to extend into the bore of the yoke while simultaneously blocking the second pawl from extending into said bore when the reverse button is in one position, and for conversely allowing the second pawl to extend into the bore of the yoke while simultaneously blocking the first pawl from extending into said bore when the reverse button is in a second position, said selector means including a flat area on the periphery of the third member,
bearing means disposed between the reverse button and the drive gear for allowing the drive gear to be rotatably driven in either direction while the reverse button remains stationary, and
releasable retaining means for holding the yoke between the ears of the handle and the drive gear, bearing means and reverse button snugly together in the bore of the yoke during operation of the hand ratchet.

5,647,253
METHOD AND APPARATUS FOR A THEFT RESISTANT FASTENER
Juraj Pozek, 11092 Bell Road, Lemont, Ill. 60439
Filed Apr. 21, 1995, Ser. No. 426,081
Int. Cl.[6] B25B *13/06*
U.S. Cl. 81—125 **23 Claims**



1. An apparatus for a theft resistant fastener comprising a screw having a shank and a generally cylindrical head disposed concentrically on an end of said shank,
said generally cylindrical head has a top surface with a circular peripheral edge, a bottom surface with a peripheral edge, said bottom surface is disposed proximate to the shank, and a generally smooth outer side wall with an upper edge and a

lower edge, the top surface having its peripheral edge connected to the upper edge of the outer side wall and the bottom surface having its peripheral edge connected to the lower edge of the outer side wall, and

said outer side wall has at least one recess extending longitudinally from its lower edge to a spaced distance from its upper edge.

4. An apparatus for a theft resistant fastener comprising a wrench having a socket for fastening a screw,

said socket being defined by an upper surface having a peripheral edge and a generally smooth inner wall having an upper edge connected to the peripheral edge of the upper surface,

said inner wall has at least one recess disposed longitudinally; and

said wrench further comprises a movable plug suitably sized and shaped to engage one of the recesses disposed longitudinally along the inner wall, said movable plug being movable in a direction substantially parallel to the rotatable axis of the socket,

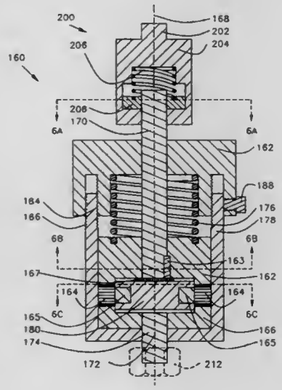
whereby, the movable plug engaged in said one recess comprises a means to drive a screw having a complementary recess.

5,647,254

BEVEL GEAR DRIVER AND METHOD HAVING TORQUE LIMIT SELECTION

Joseph S. Cook, Jr., Webster, Tex., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 10, 1994, Ser. No. 288,102
Int. Cl.[6] B25B *23/157*
U.S. Cl. 81—475 **9 Claims**



1. A driver for applying torque to a fastener, comprising:

a driver housing;

a first shaft supported by said driver housing and having a first shaft axis extending longitudinally therethrough;

a first gear carried by said first shaft for rotation about said first shaft axis, said first gear having first gear teeth mounted around a circumferential portion thereof;

a second gear disposed within said driver housing for displacement with respect to said first gear in a direction having a component substantially parallel to said first shaft axis between an engaged position and a disengaged position, said second gear having second gear teeth mounted around a circumferential portion thereof, at least one of said first and second gear teeth defining a tooth profile that is angled to produce a separating force in response to torque transfer between said first gear and second gear for moving said second gear with respect to said first gear to said disengaged position to thereby limit torque transferred between said first and second gears and to said fastener;

a variable bias assembly disposed substantially within said driver housing to bias at least one of said first and second gears toward said engaged position, said variable bias assembly including an external adjustment member extending outward of said drive housing for varying said bias; and

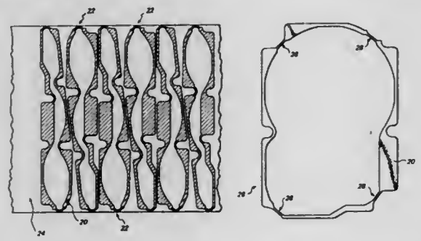
a bevel gear assembly including a plurality of bevel gears disposed between said first and second gears, each of said plurality of bevel gears being supported on a respective bevel gear shaft, each of said bevel gear shafts having a longitudinal axis substantially transverse with respect to said first shaft axis.

5,647,255

EXPANDABLE GASKET FOR A HEAD DISK ASSEMBLY OF A DISK DRIVE

Thomas R. Stone, San Francisco, Calif., assignor to Quantum Corporation, Milpitas, Calif.

Filed Sep. 27, 1995, Ser. No. 534,428
Int. Cl.[6] B26D *1/18*
U.S. Cl. 83—19 **11 Claims**



1. A method of expanding a gasket from a first gasket geometry to a second gasket geometry, wherein the second gasket geometry is dimensioned to be disposed between a disk drive's base and top cover, comprising the steps of:

forming a series of first predetermined gasket geometries on the surface area of a sheet of gasket material, wherein the first geometry is dimensioned and positioned on the sheet to minimize material waste, the first geometry having several complimentary pairs of curved pivot regions disposed along the periphery of the first geometry;

separating the first predetermined gasket geometries from the remainder of the sheet; and

bending each of the pivot regions of the complimentary pairs with equal force in opposing directions, thereby forming the second gasket geometry, wherein the pivot regions of the first gasket geometry are curved and wherein the step of bending each of the pivot regions effectively straightens each pivot region at the second geometry.

5,647,256

PUNCH UNIT INCLUDING AN ADJUSTABLE PUNCH

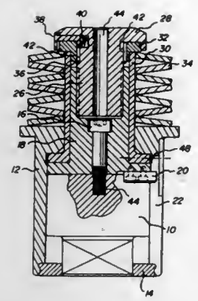
Albrecht Schneider, Oberursel, Germany, assignor to Mate Precision Tooling Inc., Ramsey, Minn.

Filed Jun. 6, 1995, Ser. No. 471,189
Claims priority, application Germany, Feb. 20, 1995, 195 05 754.6
Int. Cl.[6] B26D *7/26*; B26F *1/14*
U.S. Cl. 83—140 **7 Claims**

1. A punch unit comprising:

a punch driver having front and rear ends, said rear end having a base thereon;

a punch connected to said front end of said punch driver by means of an axial fastening screw;



a guide bushing slidably receiving said punch and guiding axial displacement of said punch, said guide bushing including means for preventing rotation of said punch relative to said guide bushing during a stroke of said punch;

a sliding bushing having front and rear ends and receiving said punch driver, said front end of the sliding bushing being axially displaceably guided in said guide bushing;

a compression spring maintained under pre-load between said base and said guide bushing, said compression spring being compressible between said base and said guide bushing during a stroke of said punch;

a spring seat positioned between said rear end of said sliding bushing and said base and fastened to said sliding bushing, said compression spring being supported on said spring seat; and

at least one releasable securing member movably mounted on at least one of said punch driver and said spring seat such that it is engageable with the other of said punch driver and said spring seat, said releasable securing member being movable between a locked position, wherein said securing member engages the other of said punch driver and said spring seat to prevent relative rotation of at least part of said punch driver and said sliding bushing during a stroke of said punch, and an unlocked position for allowing relative rotation of said punch driver and said sliding bushing.

5,647,257

METHOD AND PROCESS FOR MANUFACTURING EXPANDABLE PACKING MATERIAL

Richard C. Maida, Staten Island, and Joseph Sferlazza, West Hempstead, both of N.Y., assignors to Prompac Industries, Inc., Staten Island, N.Y.

Continuation of Ser. No. 213,993, Mar. 15, 1994, Pat. No. 5,365,819, which is a continuation of Ser. No. 994,708, Dec. 22, 1992, abandoned. This application Oct. 6, 1994, Ser. No. 319,507
Int. Cl.[6] B26D *1/22*
U.S. Cl. 83—332 **5 Claims**

1. A die press for forming a multitude of spaced apart slits in a flat, thin paper material, comprising:

a lower die member including an upper portion for supporting the paper material, and having a hardness less than 200 Brinell;

an upper die member disposed above the lower die member; and

a multitude of cutting blades secured to the upper die member and having a hardness greater than C53 on the Rockwell scale;

wherein the cutting blades are arranged in a series of parallel rows, and in each of said rows, the cutting blades are spaced apart along the row;

wherein the cutting blades form the multitude of spaced apart slits in the paper material and form a multitude of spaced apart recesses in the upper portion of the lower die member, said recesses are aligned with and receive said cutting blades to facilitate movement of the cutting blades completely through the paper material; and

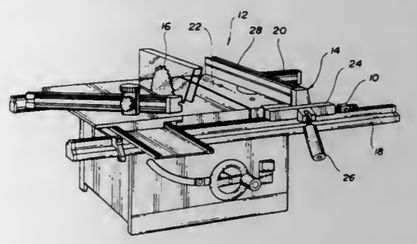
whereby the cutting blades cut completely through the thin paper material over substantially the entire length of each slit and the formed slits facilitate expanding the paper material from the flat, thin shape into a honeycomb shape.

5,647,258

FENCE ADJUSTMENT MECHANISM

Kenneth M. Brazell, Phoenix, and Robert G. Everts, Chandler, both of Ariz., assignors to Ryobi Outdoor Products, Chandler, Ariz.

Filed Mar. 30, 1994, Ser. No. 219,775
Int. Cl.[6] B23Q *3/02*
U.S. Cl. 83—438 **11 Claims**



1. A fence adjustment mechanism for a bench top woodworking tool having a fence assembly releasably shiftable linearly along a guide rail at various positions relative to a cutting tool, said adjustment mechanism comprising:

a body member having a guide way portion for retaining the body member to the guide rail while permitting sliding movement along a linear path, said body member having formed therein a bore aligned along an axis spaced from and parallel to said linear path;

an attachment member cooperating with said fence assembly forming a stop to limit the movement of the fence assembly;

an elongated barrel aligned along said axis and having a cylindrical section rotatably cooperating with said bore of said body member, said barrel having a helical threaded region extending about said axis, said threaded region threadingly cooperating with at least one of said body member bore and attachment member to cause the attachment member to linearly move along the guide rail relative to the body member as a result of the rotation of the barrel relative to the body member; and

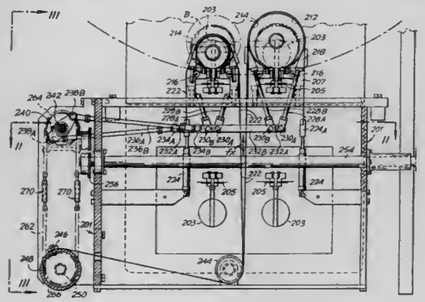
a locking mechanism for releasably securing said body member to said guide rail at various positions.

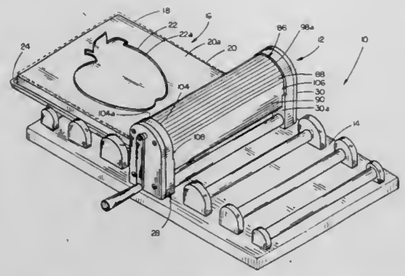
5,647,259

CLAMP FOR HOLDING LOGS DURING THE PRODUCTION OF TOILET PAPER ROLLS OR THE LIKE

Guglielmo Biagiotti, Via di Vorno No.105, 55012 Capannori, Lucca, Italy

Filed Feb. 9, 1994, Ser. No. 193,948
Claims priority, application Italy, Feb. 15, 1993, FI93A0024
The portion of the term of this patent subsequent to Nov. 10, 2013, has been disclaimed.
Int. Cl.[6] B26D *7/02;3/16*
U.S. Cl. 83—458 **6 Claims**





1. A log-cutting machine comprising a cutting blade operating in a cutting plane, a clamping device for the retention of a log such that the log extends in a log-advancing path through to the cutting plane, and a control means connected to the clamping device, the clamping device being quickly adaptable to logs of different diameters while the cutting machine is operating, said clamping device including on each side of the cutting plane (T—T):

a pair of clamps (**212**A, **214**A),and a pair of yielding arcuate strips (**212**, **214**) each having a first end fixed to a respective one of said clamps (**212**A, **214**A) and a respective second free end;

a strap (**222**) anchored at one end to a retention holder (**224**A) and at the other end to an adjustment holder (**246**) and surrounding said strips (**212**, **214**) to change the geometry thereof to accommodate the diameter of the log (B) being processed, whereby said strap (**222**) extends around approximately half the circumference of the log to be cut;

a pair of support means (**207**, **209**) for supporting a respective one of said clamps (**212**A, **214**A), and two opposite oscillating cradles (**218**), each cradle being located adjacent to a respective one of the clamps (**212**A, **214**A) and being pivotally supported by a respective one of said support means (**207**, **209**); and

a pair of rods (**228**A, **228**B), one connected to one of the oscillating cradles (**218**) and the other connected to the other oscillating cradle **218**,

characterized in that said control means is connected to the adjustment holder and to the rods to provide simultaneously adjustment of the effective length of the strap and the angular position of the cradles to match the diameter of the log to be processed.

5,647,260

ROLLER CUTTING MACHINE

Stephen W. Nabity, P.O. Box 1053, Fremont, Nebr. 68025

Filed Sep. 29, 1995, Ser. No. 536,801
Int. Cl.[6] B26D *7/27;5/14*
U.S. Cl. 83—522.12 **5 Claims**

1. A roller die cutting machine, comprising:

a base having forward and rearward ends, opposing first and second side edges and upper and lower surfaces;

a drive roller assembly having an operable pressure roller, mounted on the upper surface of the base extending from the forward to the rearward ends thereof generally midway between the side edges, said drive roller assembly operable to rotate the pressure roller and draw a die assembly through the roller assembly to cut stock located on the die assembly;

said drive roller assembly including:

a pressure roller rotatably mounted between forward and rearward stanchions for rotation on a longitudinal axis; and

a cover removably mounted between said stanchions and having first and second opposed vertical panels extending downwardly between said stanchions in generally vertical parallel planes, each of said first and second vertical panels having a generally horizontal lower edge extending between said stanchions a predetermined distance above said base upper surface;

a first table for supporting a die assembly, located between the drive roller assembly and the first side edge;

a second table for supporting a die assembly, located between the drive roller assembly and the second side edge;

drive means connected to the roller assembly for rotating the pressure roller to cut stock; and

means on the drive roller assembly for producing an audible signal upon the approach of a human hand a predetermined distance from the pressure roller;

said means for producing an audible signal including:

said pressure roller having a cylindrical outer surface of a resilient compressible material;

a lip projecting from a lower vertical edge of the first vertical panel towards said pressure roller and spaced a predetermined distance from said roller outer surface;

a lip projecting from a lower vertical edge of the second vertical panel towards said pressure roller;

said first and second vertical panel lips having an inwardly projecting edge parallel to the outer surface of said pressure roller;

said cover vertical panels being formed of a resilient flexible material permitting bending of the vertical panels upon contact of a human hand with an exterior surface of the panel and permitting vibration of the lips upon contact with the pressure roller, such that the inward edge of each vertical panel lip frictionally contacts the outer surface of the pressure roller to produce said audible signal upon rotation of the pressure roller;

said pressure roller outer surface being formed with a material which vibrates the panel lips upon contact therewith to produce said audible signal.

5,647,261

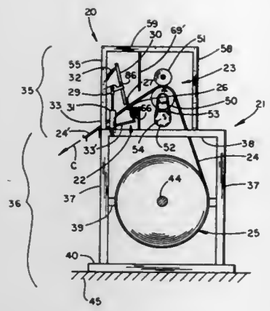
SHEET CUTTING DEVICE

Marc K. Wierenga, Grand Rapids, Mich., assignor to Bulman Products, Inc., Grand Rapids, Mich.

Filed Jan. 25, 1995, Ser. No. 378,195
Int. Cl.[6] B26D *7/00*
U.S. Cl. 83—649 **16 Claims**

10. A sheet cutting device for cutting sections from a supply of sheet material, comprising:

a housing defining an output aperture for outputting a section of sheet material;



a fixed blade supported in said housing;

a second blade;

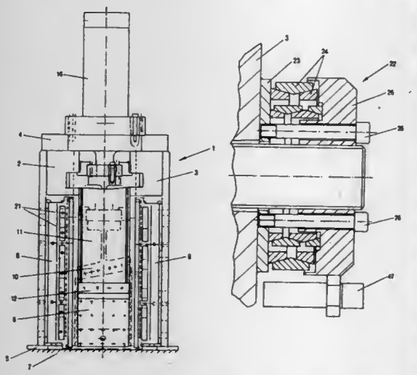
a blade-supporting mechanism for movably supporting said second blade in said housing for non-planar movement past said fixed blade, said fixed and second blades comprising non-parallel bars, said blade-supporting mechanism including means for holding said second blade at an angle relative to said fixed blade and including means for moving said second blade with a curvilinear sweeping motion so that said second blade continuously engages said fixed blade at a continuously shifting shear point as said second blade is moved along a cutting stroke from a cut-initiating position to a cut-terminating position, said second blade, when proximate said cut-terminating position, moving in a direction at least partially toward said output aperture so that said second blade kicks each newly cut section away from said fixed blade toward said output aperture.

5,647,262

CUTTING DEVICE FOR CUTTING SCRAP METAL

Achim Webel, Niestetal, Germany, assignor to Thyssen Industrie AG, Essen, Germany

Continuation of Ser. No. 19,604, Feb. 18, 1993, abandoned. This application Feb. 28, 1995, Ser. No. 396,338
Claims priority, application Germany, Feb. 18, 1992, 42 04 841.9
Int. Cl.[6] B26D *1/08*
U.S. Cl. 83—823 **10 Claims**



1. A cutting device for cutting scrap metal, said cutting device comprising:

a support frame;

slide guides connected to said support frame;

a blade slide slidably connected to said slide guides so as to be vertically slidable on said slide guides along a travel path;

a first blade connected to said blade slide;

a second blade fixedly connected to said support frame and cooperating with said first blade to perform a shearing action; and

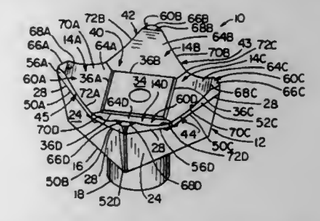
elastic elements for elastically connecting at least one of said slide guides to said support frame such that said blade slide is moved essentially perpendicular to a plane of said shearing action against a prestress of a predetermined value of said elastic elements to thereby widen a gap between said first and said second blades, when a shearing force component acting in a horizontal direction surpasses the predetermined prestress value of said elastic elements.

5,647,263

SAW TOOTH ATTACK FACE AND EDGE STRUCTURE

Allan J. Wildey, Paris, Canada, assignor to Timberjack, Inc., Ontario, Canada

Continuation-in-part of Ser. No. 219,149, Mar. 29, 1994. This application Mar. 31, 1995, Ser. No. 415,109
Int. Cl.[6] B27B *33/08*
U.S. Cl. 83—835 **18 Claims**



1. A woodcutting saw tooth of the type having multiple lateral sides and an attack face at one end of said tooth, the intersection of said attack face with each side forming a cutting edge, wherein the intersection of said attack face with any two adjacent sides forms a corner, the improvement wherein a plateau having a flat surface is formed on said attack face at each said corner, the cutting edges adjacent to each said plateau extending axially rearwardly from said plateau, each said plateau being bounded on two sides by first and second cutting edges and each said plateau being bounded on a third side by a third edge which extends between said first and second cutting edges.

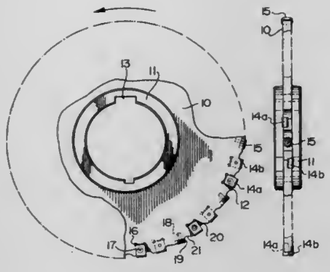
5,647,264

INDEXABLE CUT-OFF SAW

Sylvester Eugene Proulx, Windsor, Canada, assignor to Advanced Cutting Tool Systems Inc., Windsor, Canada

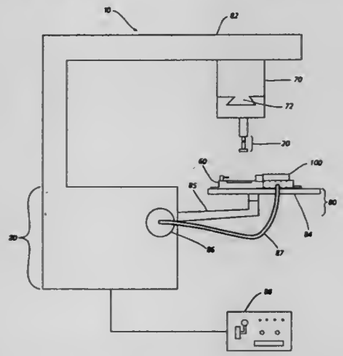
Continuation of Ser. No. 254,768, Jun. 6, 1994, abandoned. This application May 4, 1995, Ser. No. 434,857
Int. Cl.[6] B23D *61/02;* **B27B** *33/08*
U.S. Cl. 83—840 **7 Claims**

1. A circular cut-off saw for cutting metal comprising a circular tool body for mounting on an arbour, said tool body having flat axially opposed side faces and a narrow outer periphery, and a plurality of circumferentially equally spaced cutting inserts mounted at the outer periphery of the tool body, said cutting inserts being arranged in cooperating groups of three such that the total width of the saw cut is divided between the actions of the three cooperating cutting inserts, each group of three cooperating cutting inserts comprising a central insert mounted centrally on the outer periphery of the tool body and left and right side inserts, each side insert presenting a straight cutting edge mounted in pockets extending into said axially opposed side faces of the tool body, each said central insert comprising a cylindrical cutter disc having



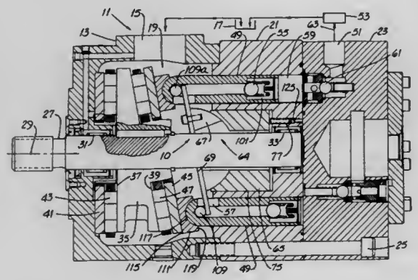
a pair of axially opposed flat circular side faces joined by an outer peripheral wall, and an arcuate cutting edge being provided between a said circular side face thereof and the outer peripheral wall, each said cylindrical cutter disc being mounted on the outer periphery of the tool body while resting on a said circular side face thereof with the central axis of the cutter disc being within about 1°–15° of coincidence with a corresponding radius of the tool body, said central cylindrical insert of each group being adapted to remove a central portion of a total saw cut and said left and right inserts with straight cutting edges being adapted tc remove the balance of the total saw cut.

5,647,265
TOOL AND SYSTEM FOR MACHINING A ROUND STRAND
James T. Johnson, King George, Va., and Frank E. Kolstrom, Indian Head, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Jun. 30, 1993, Ser. No. 84,057
Int. Cl.[6] B26D *3/00*; G01N *1/04*
U.S. Cl. 83—861 **10 Claims**



1. In a system having a milling machine for cutting a cylindrical strand from a rubber-based material, the improvement comprising:
a tube having an outer circumferential surface and a sharp leading edge;
a blade having a top end and a bottom end and being fixedly attached to the outer circumferential surface of said tube at the bottom end of said blade, said blade also having a wedge-shaped leading edge and a circular-shaped arc on the bottom end for receiving said tube;
a handle connected to the top end of said blade;
an arbor support arm connecting said handle to the milling machine which has a moveable table and a vacuum chuck plate attached to said moveable table on which the rubber-based material is carried.

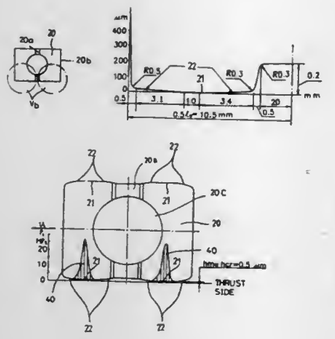
5,647,266
HOLD-DOWN MECHANISM FOR HYDRAULIC PUMP
Anthony M. Claas, Waukesha, Wis., assignor to Dynex/Rivett, Inc., Pewaukee, Wis.
Continuation-in-part of Ser. No. 317,213, Oct. 3, 1994, Pat. No. 5,490,444. This application Dec. 7, 1995, Ser. No. 568,565
Int. Cl.[6] F01B *3/00*
U.S. Cl. 92—71 **12 Claims**



1. In a pump having (a) a wobble plate, (b) a barrel, (c) a pair of piston assemblies reciprocated in the barrel by the wobble plate, and (c) a mechanism retaining the piston assemblies in contact with the wobble plate, and wherein the barrel has a central axis, the improvement wherein the mechanism comprises:
a yoke member contacting the piston assemblies; and
a support member mounted with respect to the barrel and coacting with the yoke member for permitting oscillation of such yoke member in a plane substantially coincident with the central axis;
and wherein:.
the support member has a concave surface;
the yoke member has a convex surface contacting the concave surface;
the concave surface is in a groove; and
the yoke member is received in the groove.

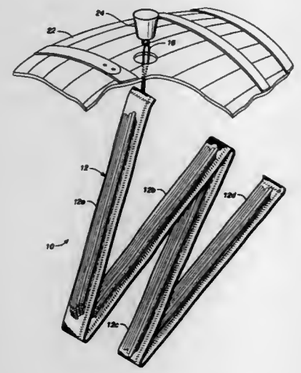
5,647,267
SLIDER OF HERMETIC COMPRESSOR
Dhong-Hyeon Kim, Seoul, Rep. of Korea, assignor to LG Electronics Inc., Rep. of Korea
Filed Jan. 11, 1996, Ser. No. 585,108
Claims priority, application Rep. of Korea, Jun. 13, 1995, 15618/1995
Int. Cl.[6] F01B *9/00*
U.S. Cl. 92—140 **2 Claims**

1. A slider of a hermetic compressor comprising:
a rotation shaft vertically penetrating a central portion of a rotor and assembled to said rotor by shrink fit, rotator up and down and integrally united with the rotator as said rotation shaft having a plurality of oil grooves formed on an outside circumferential surface thereof;
a counter balance weight attached to an upper portion of said rotation shaft;
an eccentric crank pin fixed at a predetermined portion of an upper portion of said counter balance weight;
a slider associated with said crank pin and having a central groove formed along an outside circumference of a central portion thereof;



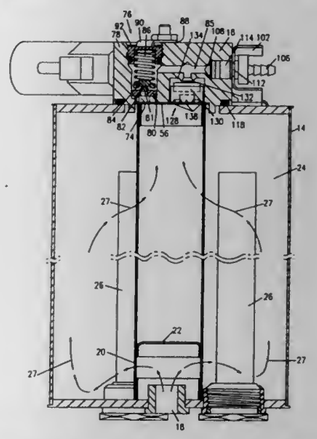
a slider shell enclosing said slider;
a cylinder installed at one side of said slider shell; and
a piston connecting a predetermined portion of said slider shell with said cylinder and linearly reciprocating inside said cylinder,
wherein a circular arc is formed at both ends of an outside circumferential surface of said slider contacting an inside circumferential surface of said slider shell.

5,647,268
INFUSION SLEEVE FOR WINE BARRELS
Stephen T. Sullivan, P.O. Box 1693, Sausalito, Calif. 94966
Filed Apr. 2, 1996, Ser. No. 626,534
Int. Cl.[6] C12G *3/07*
U.S. Cl. 99—277.1 **3 Claims**



1. An infusion sleeve for wine barrels having a bung hole and a barrel bung, said infusion sleeve comprising:
a permeable sleeve member comprising a plurality of connected, articulating sleeve sections, each sleeve section containing a plurality of oak staves, said sleeve member terminating in a fastener for attachment to the wine barrel bung.

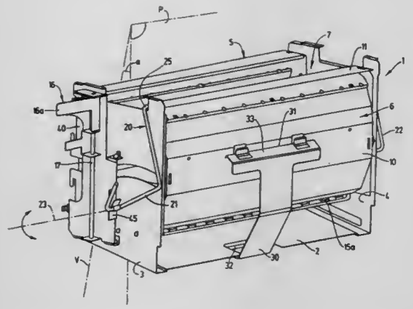
5,647,269
BEVERAGE WATER HEATING APPARATUS FOR AIRPLANES
Paul E. Miller, and Steve D. Lowrie, both of Fullerton, Calif., assignors to Weber Aircraft, Fullerton, Calif.
Filed Oct. 19, 1994, Ser. No. 325,982
Int. Cl.[6] A47J *31/00*
U.S. Cl. 99—279 **37 Claims**



16. A manifold assembly for an in flight water heating tank comprising a manifold body and a plurality of components mounted on said manifold body and in communication with said tank through said manifold body including an adjustable pressure relief valve, a brewer water pickup having a pressure compensating flow control, a low level hot water pickup, an automatic vent valve, a hot water outlet, a brewer water outlet, and an over pressure automatic vent outlet port, said brewer water pickup connected to said brewer water outlet by said manifold body and said low level hot water pickup connected to said hot water outlet by said manifold body.

5,647,270
ELECTRIC TOASTER COMPRISING A DOUBLE-RELEASE CONTROL RACK
Alain Rousseau, Le Syndicat, and Dominique Marx, Epinal, both of France, assignors to SEB S.A., Selongey, France
PCT No. PCT/FR94/01510, § 371 Date Aug. 15, 1996, § 102(e) Date Aug. 15, 1996, PCT Pub. No. WO95/17122, PCT Pub. Date Jun. 29, 1995
PCT Filed Dec. 21, 1994, Ser. No. 666,344
Claims priority, application France, Dec. 21, 1993, 93 15668
Int. Cl.[6] A47J *37/08*; H05B *1/02*
U.S. Cl. 99—327 **10 Claims**

1. Electric toaster comprising a housing **1** with heating elements (**12**) disposed to one side and the other of a toasting slot (**7**) delimited by two pressing grills (**13**) displaceable relative to one another to adapt to the thickness of the article to be toasted, a movable bread rack (**15**) mounted to be axially displaceable in the toasting slot (**7**) between a raised position for receiving the article to be toasted and a lowered toasting position, a control carriage (**40**) for control of the displacement of the movable bread rack (**15**), associated with a means (**16**) for control of the displacement and, an elastic restoring organ (**46**) adapted for restoring the bread rack (**15**) to its raised position, wherein
the control carriage (**40**) is mounted to be axially and elastically movable with respect to the movable bread rack (**15**) between a lowered abutment position and a raised elastic restoring position and comprises an element (**19**) for actuating a ramp (**45**) for driving in displacement at least one pressing grill



(13), said organ (19) acting in the lowered abutment position on the ramp (45) to cause the grills (13) to remain applied against the article to be toasted and acting, during passage to the raised position, on the ramp (45) to assure a pre-disengagement of at least one grill (13) before raising of the movable bread rack (15).

5,647,271

KITCHENWARE WITH THERMAL CONDUCTING SYSTEM

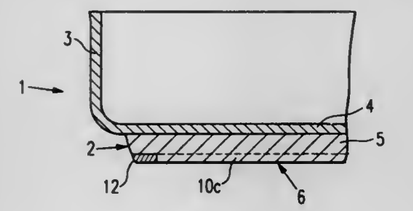
Jean-Claude Capelle, Arc Sur Tille, and Jean-Jacques Ligny, Velars Sur Duche, both of France, assignors to SEB, Selongey, France

Continuation of Ser. No. 204,204, Mar. 7, 1994, abandoned. This application Dec. 8, 1995, Ser. No. 569,860

Claims priority, application France, Jul. 6, 1992, 92 08346

Int. Cl.[6] A47J *37/10*

U.S. Cl. 99—422 **15 Claims**



1. A cooking utensil comprising a receptacle with a thermal conducting bottom (2) intended to be heated especially by induction, where the bottom (2) has an upper surface and a lower surface and comprises, from the upper surface to the lower surface, at least one good heat conducting metal plate (5) and at least one metal sheet (6), said sheet being provided with perforations (10) and being embedded in the plate (5) so that the perforations (10) are filled with the metal of the plate, characterized in that the perforations (10) present a cumulative surface of 5 to 20 percent of the total surface of the sheet, and said perforations comprise a plurality of slots spaced apart from one another and a plurality of circular openings located between said slots.

5,647,272

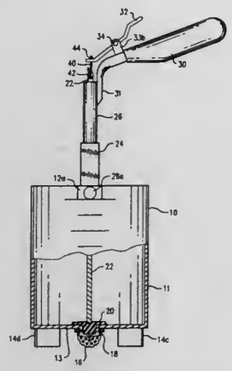
BUCKET EXTRACTOR DEVICE

Sam Paramest, 17407 3rd Ave. SE., Bothell, Wash. 98012

Filed Sep. 26, 1995, Ser. No. 533,723

Int. Cl.[6] A47J *43/28*

U.S. Cl. 99—495 **7 Claims**



1. An extractor device for extracting, filtering, measuring, and containing a subsurface portion of liquid soup, from a soup pot in a single dipping application; comprising:

(a) a rigid, container body, which having a horizontal bottom wall and at least one, vertical, enclosure side wall connected together, for containing said liquid;

(b) said side wall having at least one set of measurement scales marked on its exterior side for measuring said liquid soup;

(c) said bottom wall of said container further having a bottom hole opening;

(d) a detachable, perforated filter connected to an under side of said bottom wall to cover said bottom hole for filtering;

(e) a handle member;

(f) a rigid, support structure member connected between said handle and said container;

(g) plugging means interconnected to said support structure to be constantly engaged for closing said bottom hole of said container;

(h) at least one lever post connected to an upper part of said handle member;

(i) a rigid, elongated lever bar which having a front end, a middle part and a thumb handle end, wherein said middle part of said lever is connected pivotally to said lever post;

(j) a cable connected between said front end of said lever and said plugging means;

(k) whereby said container can be dipped vertically into said soup pot to set said bottom hole of said container to be below said surface of said liquid soup, and said thumb handle of said lever can be pressed by a thumb for pulling said cable to disengage said plugging means, and a line of said measurement scales can be set to be leveled with said surface of said liquid soup in said soup pot for said liquid soup to fill into said container through said bottom hole up to said line of said scales, then said thumb handle of said lever can be released for said plugging means to be reengaged in closing said bottom hole for said container to contain the extracted portion of said liquid soup.

5,647,273

STAMP CARTRIDGE FOR USE IN A STAMP UNIT

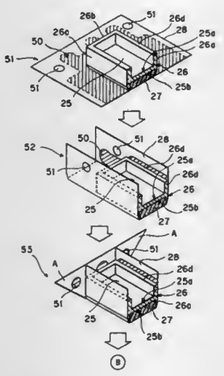
Teruo Imamaki, Ksugai, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Dec. 5, 1995, Ser. No. 567,430

Claims priority, application Japan, Dec. 28, 1994, 6-339905

Int. Cl.[6] B41N *1/24*

U.S. Cl. 101—125 **10 Claims**



1. A stamp cartridge, comprising:

a frame having a plate and a peripheral wall together defining a first recess to a first side of the plate and a second recess to a second side of the plate;

an ink-permeated body disposed in the second recess so that a surface of the ink-permeated body is framed by the peripheral wall;

a heat-sensitive stencil sheet covering the framed surface of the ink-permeated body and an outer periphery of the peripheral wall, a portion of said heat-sensitive stencil sheet folding into the first recess; and

an adhesive layer coated to a selected region of said heat-sensitive stencil sheet, said heat-sensitive stencil sheet having a through hole formed therein at a position outside of and adjacent to the selected region which can be folded so that an adhesive portion of said adhesive layer on said heat-sensitive stencil sheet is exposed through the through hole, and wherein the exposed adhesive portion adheres a flap portion of said heat-sensitive stencil sheet to said heat-sensitive stencil sheet in contact with the peripheral wall.

5,647,274

PRESSURE PRINTING APPARATUS

Akira Yasuda; Hideaki Takayama, and Masaharu Ogata, all of Tokyo, Japan, assignors to Riso Kagaku Corporation, Tokyo, Japan

Filed Feb. 7, 1996, Ser. No. 597,804

Claims priority, application Japan, Feb. 10, 1995, 7-022948

Int. Cl.[6] B05C *17/06;* **B41F** *1/28*

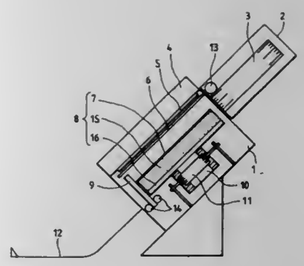
U.S. Cl. 101—126 **10 Claims**

1. A pressure printing apparatus in which a printing sheet is pressed against a stencil sheet, said pressure printing apparatus comprising:

a printing sheet table having a printing sheet holding surface inclined vertically;

sheet slidable means provided on said printing sheet holding surface of said printing sheet table, for sliding the printing sheet down from said printing sheet table;

holding means for selectively holding the printing sheet fed onto said printing sheet holding surface of said printing sheet table on said printing sheet holding surface;



a stencil sheet support portion disposed above and in opposition to said printing sheet table, for supporting stencil sheet;

pressing means for pressing said printing sheet table against said stencil sheet support portion; and

releasing means provided between the printing sheet beld by said printing sheet table and the stencil sheet supported by said stencil sheet support portion, for releasing the printing sheet stuck to the stencil sheet from the stencil sheet.

5,647,275

REMOVABLE CYLINDER COUPLING

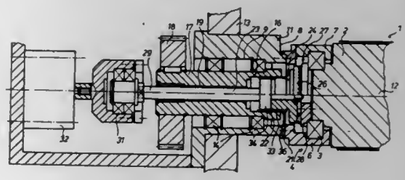
Jürgen Lupa, Ludwigsbafen, and Rolf Müller, Grossniedesheim, both of Germany, assignors to Koenig & Bauer-Albert Aktiengesellschaft, Wurzburg, Germany

Filed Nov. 28, 1995, Ser. No. 563,790

Claims priority, application Germany, Nov. 30, 1994, 44 42 575.9

Int. Cl.[6] B41F *13/26;13/44*

U.S. Cl. 101—216 **5 Claims**



1. A coupling for a removable cylinder in a rotary printing press comprising:

a cylinder having cylinder end journals with cylinder bearings supported on said cylinder end journals;

a separable bearing receptacle which receives said cylinder end bearings;

a bearing bushing supported in a frame of said press and having a first end face, said bearing receptacle being attached to said first end face of said bearing bushing, said bearing bushing further having a central axial bore;

a hollow shaft supported in said bearing bushing bore for rotational movement with respect to said bearing bushing, said hollow shaft having an end remote from said cylinder, said hollow shaft further having a central, axially extending bore;

a cylinder drive wheel attached to said remote end of said hollow shaft;

a control shaft supported in said hollow shaft bore for axial movement with respect to said hollow shaft;

an interlocking coupling connecting said control shaft and said hollow shaft for relative axial movement therebetween; and

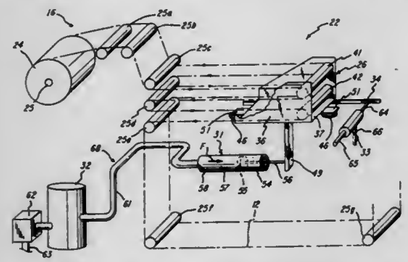
a switchable coupling connecting said cylinder journals and said control shaft.

5,647,276

WEB TENSION REGULATOR FOR PRINTING MACHINE

Danny Eugene Tilton, Sr., 31 Glenwood St., Dayton, Ohio 45405

Continuation of Ser. No. 316,522, Sep. 30, 1994, Pat. No. 5,517,914. This application Jan. 17, 1996, Ser. No. 587,658
Int. Cl.[6] B41F *5/04*
U.S. Cl. 101—219 **19 Claims**



1. An apparatus for use with a printing press comprising a tension regulator for maintaining a substantially constant tension level on a web of printing medium passing through the printing press;

wherein the printing press includes at least one dancer roller, and said tension regulator includes an actuator associated with said at least one dancer toller for maintaining a substantially constant biasing force on said at least one dancer roller;

wherein said actuator includes a hollow cylindrical body and a piston slidably retained within said cylinder body, said piston having a first side coupled to said at least one dancer roller and a second side cooperating with said cylinder body to define a chamber having a variable volume, said piston being functional within said cylinder body as a function of a web tension level applied to said at least one dancer roller;

wherein said tension regulator further includes a reservoir which communicates with said actuator;

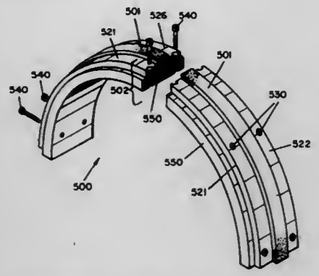
wherein said reservoir is a sealed tank having a capacity of about 80 gallons.

5,647,277

SKIP-SCORER, SKIP-PERFORATOR APPARATUS FOR USE WITH PRINTING PRESS SYSTEMS

Anthony J. DeVito, 19251 Brookhurst, Space 91, Huntington Beach, Calif. 92646

Filed Jan. 16, 1996, Ser. No. 585,910
Int. Cl.[6] B41F *13/26*
U.S. Cl. 101—226 **20 Claims**



1. A scorer/perforator apparatus for use with printing press equipment including support members therein,

first and second arcuate support means adapted to be mounted to the support members,

first bolt means for securing said first and second arcuate support means bolted to said support members by passing axially through each of said first and second support means to engage said support members,

arcuate blade means,

said first arcuate support means adapted to secure and support said arcuate blade means,

second bolt means for securing said arcuate blade to said first arcuate means by passing through said arcuate blade means and threadedly engaging said first arcuate support means,

anvil means,

said second arcuate support means including a plurality of separable components adapted to secure and support said anvil means independently of said blade means,

said second arcuate support means includes a base support means and at least one holder strip selectively mounted to said base support means to secure said anvil means to said second arcuate support means by said first bolt means,

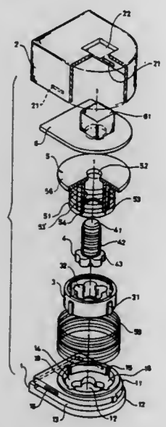
said first and second arcuate support means defining an arc of less than 360°.

5,647,278

FIGURES PRINTING/CUTTING DEVICE

Ke-Teng Wu, No. 3 Sec. 3 An-Chung Road, Hsi-Hsin Ll, An-Nan District, Tainan City, Taiwan

Filed May 14, 1996, Ser. No. 645,876
Int. Cl.[6] B41L *47/02*
U.S. Cl. 101—368 **3 Claims**



1. A printing/cutting device comprising:

a base member including a lower plate and an upper plate, a receiving compartment being defined between the upper plate and the lower plate for receiving a sheet of paper, the upper plate including a peripheral wall and a bottom wall which together define a receiving hole therebetween, the bottom wall of the upper plate including a first through hole which extends through the lower plate;

a retaining member slidably received in the receiving hole and including a second through hole defined therein which is in alignment with the first through hole;

a printing unit including a printing block with a desired figure formed thereon, a stub extending upwardly from an upper side of the printing block and including a first elastic member therearound;

a cutting unit including a disc having a bore defined therein and a cylindrical hollow cutter extending downwardly from an underside thereof and including a third through hole extending therethrough and having a diameter greater than that of the bore, the cylindrical hollow cutter including a cutting edge at a bottom edge thereof and having a contour corresponding to that of the printing block, a length of the cylindrical hollow cutter being shorter than that of an overall length of the printing unit, a second elastic member being mounted around the cylindrical hollow cutter and having a first end attached to the disc and a second end attached to the retaining member for returning the retaining member to its initial position above the upper plate of the base member, the first elastic member having a first end attached to the printing block and a second end attached to the disc of the cutting unit for returning the printing unit to its initial position above the upper plate of the base member;

an actuator member having a pressing block projecting upward therefrom and mounted on top of the disc of the cutting unit;

a housing releasably mounted to the base member for housing the retaining member, the printing unit, and the cutting unit therein, the housing including an opening defined in an upper wall thereof through which the pressing block of the actuator member extends for manual pressing so as to urge the cutting unit to move downwardly, which, in turn, causes downward movement of the retaining member for retaining the sheet of paper in position and causes downward movement of the printing unit for printing a figure on the sheet of paper, and further downward pressing of the pressing block causes the cutting unit to move downwardly to cut the printed figure from the sheet of paper; and

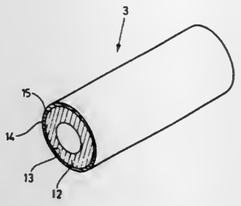
a third elastic member mounted around the second elastic member and having a first end attached to the disc and a second end attached to the upper plate for returning the actuator member to its initial position.

5,647,279

PRINTING MACHINE ROLLER AND METHOD OF PRODUCTION THEREOF

Gerhard Johner, Gelnhausen; Stefan Hasenzahl, Darmstadt, and Juergen Kern, Mauer, all of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Continuation-in-part of Ser. No. 117,601, Sep. 7, 1993, abandoned. This application Jul. 10, 1995, Ser. No. 500,044
Claims priority, application Germany, Sep. 5, 1992, 42 29 700.1
Int. Cl.[6] B41C *1/02*
U.S. Cl. 101—401.1 **22 Claims**



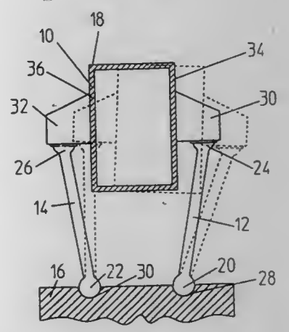
1. A printing-machine roller, comprising a cylindrical body formed with an outer cylindrical surface having a coating applied thereto, said coating containing at least 45% by weight pure silicon, having a thickness of between 0.2 and 2 mm, and having a surface roughness $R_z \leqq 5$ μm.

5,647,280

RAIL LINE, IN PARTICULAR FOR A HIGH-SPEED MAGNETIC TRAIN

Hubertus Höhne, Burzbach; Albrecht Demmig, Kirchmöser, and Erich Nuding, Aalen, all of Germany, assignors to BWG Butzbacher Weichenbau GmbH, Butzbach, Germany

Filed May 16, 1995, Ser. No. 442,418
Claims priority, application Germany, May 16, 1994, 44 17 071.8
Int. Cl.[6] E01B *25/00*
U.S. Cl. 104—124 **5 Claims**



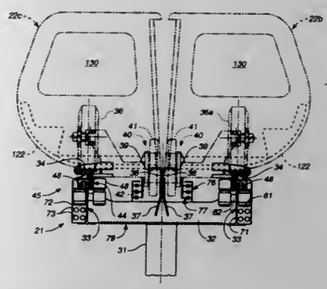
1. A rail line for a magnetic train, comprising: a support extending along a linear axis, said support constituting a portion of a rail line, a pair of girders arranged on opposite sides of the support for holding the support at a position above ground, the girders having upper and lower ends, the lower ends positioned at a predetermined spaced-apart distance at the ground, which spaced-apart distance is less than a spaced-apart distance at the upper ends, the girders being arranged to allow girder movements in a plane extending vertically to the linear axis of the rail line so that the movements of the girders causes the rail line to move with respect to a horizontal plane.

5,647,281

SEMI-RIGID, FIN-BASED TRANSPORTATION SYSTEM

Jan K. Kunczynski, Glenbrook, Nev., assignor to Yantrak, LLC, Carson City, Nev.

Filed Sep. 6, 1995, Ser. No. 524,063
Int. Cl.[6] B61B *13/00*
U.S. Cl. 104—168 **62 Claims**



1. A transportation system comprising:

a vehicle support structure extending along a transit path;

a vehicle supported on said support structure for movement along said support structure, said vehicle having a vehicle length dimension along said support structure;

an elongated semi-rigid fin attached to said vehicle for transmission of driving forces along said support structure to said vehicle, said fin being sufficiently rigid and yet sufficiently continuously flexible about a vertical axis to assume a smooth continuous horizontal curvature along a horizontally curved portion of the transit path and said fin having a fin length dimension along said support structure greater than said vehicle length and less than the length of said support structure, and said fin extending from at least one of a forward end and a rearward end of said vehicle;

a plurality of drive assemblies positioned along said support structure to engage opposite sides of said fin, said drive assemblies applying compression forces to said fin in a direction along said support structure to effect at least one of propulsion and braking of said vehicle; and

said fin being sufficiently rigid for braking and propulsion of said vehicle by said compression forces applied by said drive assemblies without lateral buckling of said fin under compression loading.

5,647,282

FLEXIBLE SHEATING FOR CONNECTING CORRIDORS

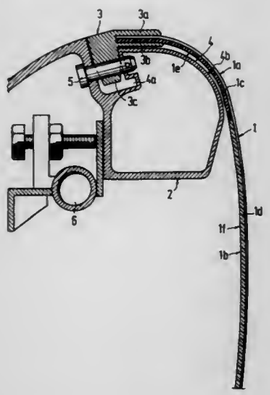
André Goebels, Kassel, Germany, assignor to Hubner Gummi- und Kunststoff GmbH, Kassel, Germany

Filed Jan. 18, 1996, Ser. No. 588,252

Claims priority, application Germany, Jan. 19, 1995, 295 00 695.1

Int. Cl.[6] B61D *17/20*

U.S. Cl. 105—18 **5 Claims**



1. Flexible sheeting for connecting corridors, comprising

a cover connecting successive sections of a train of vehicles together, where the cover comprises a continuous outer harder layer, and a second layer which is parallel to the first harder layer and is more flexible in the area of cover edge portions, which more flexible second layer is comprised of an insert portion attached to a central portion of the second layer, such that the central portion of the cover is less flexible than the edge portions where it is adapted to connect to the vehicles.

5,647,283

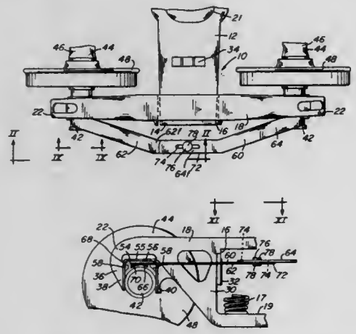
RAILWAY TRUCK AND STEERING APPARATUS THEREFOR

Aubra D. McKisic, Coraopolis, Pa., assignor to Hansen Inc., Pittsburgh, Pa.

Filed Feb. 9, 1996, Ser. No. 599,376

Int. Cl.[6] B61F *5/00*

U.S. Cl. 105—167 **21 Claims**



1. In a railway truck including a pair of wheelsets which are adapted to engage a railway track at longitudinally spaced locations thereon, which wheelsets support a pair of laterally spaced side frames and a bolster that extends laterally intermediate the side frames, and wherein the wheelsets are movable with respect to each other and with respect to the side frames in longitudinal translation and in horizontal yaw, a steering apparatus for controlling relative wheelset movement comprising:

a pair of rigid, elongated steering members each having a mounting portion and an engagement portion spaced longitudinally from said mounting portion;

means cooperating with said mounting portions, respectively, for rigidly affixing said steering members with respect to respective wheelset axle ends at one lateral side of the truck in a manner that each said steering member is rigidly constrained to move in unison with the wheelset axle end to which it is affixed, respectively in longitudinal translation and horizontal yaw;

said steering members having said engagement portions extending adjacent to each other; and

connection means cooperable with said engagement portions to connect said pair of steering members in a manner that relative movement of one wheelset in horizontal yaw with respect to the truck side frames imparts a laterally directed impetus tending to move the other wheelset in the opposed yaw direction while the wheelsets remain movable independently of each other in longitudinal translation throughout at least a given range of horizontal yaw movement.

5,647,284

METHOD AND APPARATUS FOR SHIPPING KNOBBED GLASS COOKWARE COVERS

Eric T. Frysinger, Groveport, and Joe Pirello, Reynoldsburg, both of Ohio, assignors to Newell Operating Company, Freeport, Ill.

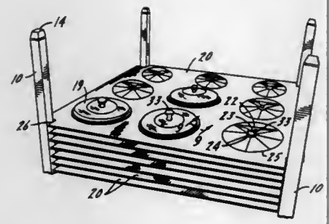
Filed May 9, 1995, Ser. No. 438,223

Int. Cl.[6] B65D *19/44*

U.S. Cl. 108—55.1 **13 Claims**

1. An apparatus for stacking knobbed glass cookware covers, the apparatus comprising:

(a) a pallet, said pallet including a frame structure having a plurality of corners, said pallet receiving a pallet top, said pallet also including vertical frame supports, each vertical frame support being securely attached to one of said corners



of said frame structure, said pallet further including detachable vertical posts, each post being vertically insertable into an upper end of an associated frame support and vertically removable from said upper end; and

(b) a plurality of partitions for separating layers of goods stacked upon said pallet wherein each of said goods is generally flat yet has an upright projection, the partition having a size and shape approximately equal to that of said pallet and whereupon a layer of goods may be placed, the partition further including a plurality of integrally-formed flaps, each flap assuming an upwardly-angled position as one of said projections from a layer of goods stacked immediately underneath the partition projects upward through an opening in the partition formed by said flap,

wherein said detachable vertical posts have a height which is approximately equal to a horizontal width of said frame structure and may be laid upon said pallet top for storage purposes, wherein said frame supports extend a vertical distance upward above the plane in which said pallet top resides such that multiple pallets may be stacked one upon the other by nesting a lower end of one said frame support within an upper end of an adjacent frame support positioned immediately underneath, a dividing space created between frame structures of adjacently stacked pallets being of sufficient height to accommodate the width of said detachable vertical posts as they are laid horizontally upon said pallet top, wherein said partition is specifically designed for use with knobbed glass cookware covers and further including on its top side an array of indentations, each indentation substantially corresponding to the size and shape of a lower rim of each glass cover and serving as a guide by which accurate placement of said glass cover may be achieved, within each indentation is one of said flaps which is substantially formed from a small circular cut in the center and two radial cuts extending outward therefrom, said flap including a circular tip which remains in contact with a top side of a knob projecting through said opening to prevent said knob from touching a glass cover placed immediately above it on said top side of the partition, the partition further including a plurality of radial cuts extending from said indentation to said opening to allow the portion of the partition within said indentation to conform to an upper surface of said glass cover located directly underneath.

5,647,285

FOLDING ARTICLE OF FURNITURE

Ronald L. Steward, 8284 174th Ave. North, Ramsey, Minn. 55303

Filed Jan. 11, 1996, Ser. No. 585,156

Int. Cl.[6] A47B *3/02*

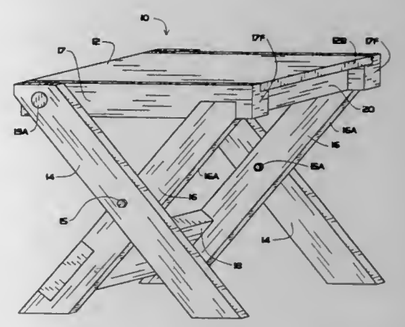
U.S. Cl. 108—119 **3 Claims**

1. An article of furniture comprising:

a. a panel portion;

b. at least two side pieces attached to said panel portion, each of said side pieces containing a side piece notch and a side piece aperture;

c. at least two outer legs each of which containing an outer leg aperture and an outer leg bolt aperture;



d. at least two inner legs each of which containing an inner leg notch and an inner leg aperture;

e. connecting means for rotatably connecting said outer leg to said inner leg, said connecting means disposed within said outer leg bolt aperture and said inner leg aperture;

f. a crossmember attached to each of said side pieces and said panel portion;

g. a joining piece attached within each of said inner leg notches of said inner legs;

h. a dowel disposed within each said outer leg aperture and each said side piece aperture so that said article of furniture can be moved from an upright position to a folded position;

i. each of said inner legs having an inner leg top width edge opposite and parallel to an inner leg bottom width edge, and an inner leg bevel perpendicular to said inner leg top width edge;

j. each of said outer legs having an outer leg top width edge opposite and parallel to an outer leg bottom width edge, and an outer leg bevel perpendicular to said outer leg top width edge; and

k. said side piece notch configured to conformingly receive said inner leg top width edge and said inner leg bevel therein when said article of furniture is in said upright position.

5,647,286

EXTENSION FOR FURNITURE LEGS

Gary Dunn, 2368 Podocarpus Way, Clearwater, Fla. 34619

Filed Apr. 26, 1995, Ser. No. 429,151

Int. Cl.[6] A47B *9/00*

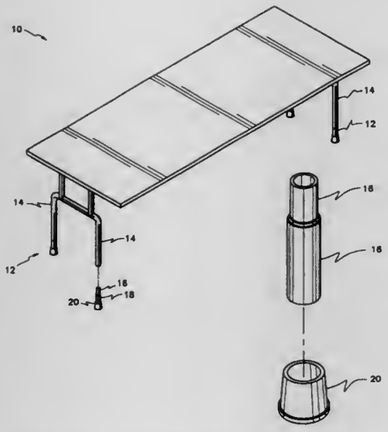
U.S. Cl. 108—144 **5 Claims**

1. An item of furniture having:

at least one tubular leg having a first outer diameter and an internal diameter, said leg projecting below every other part of said item of furniture, said leg having bottom end portion which is surrounded by and frictionally fitted with a protective cap; and

an extension removable from said leg, said extension having an upper section of hollow tubular configuration and having a second outer diameter of magnitude less than that of said internal diameter of said tubular leg, and a lower section joined to said upper section, said lower section being of hollow tubular configuration and having a third outer diameter of magnitude substantially equal to that of said first outer diameter; whereby

upon removal of said protective cap from said leg, said upper section penetrates into said tubular leg, and said lower section serves as a stop arresting penetration of said extension into said tubular leg by interference with said tubular leg and further maintains a single outer diameter when said extension is assembled to said leg so that a lower portion of said lower



section of said extension may be surrounded by and frictionally fitted with said protective cap.

5,647,287

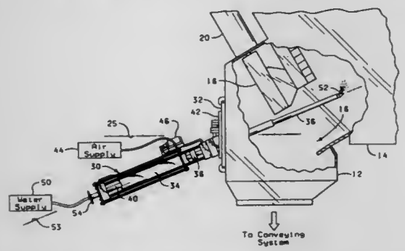
ASH CLINKER RAMMING APPARATUS

Larry E. Kuennen, Cleveland; Ronald G. Madron, Pawnee, and Gary M. Crisp, Ponca City, all of Okla., assignors to Oklahoma Gas and Electric Company, Oklahoma City, Okla.

Continuation of Ser. No. 422,405, Apr. 14, 1995, Pat. No. 5,564,347. This application Mar. 27, 1996, Ser. No. 623,263

Int. Cl.[6] F23J *1/02*

U.S. Cl. 110—170 **37 Claims**



1. An apparatus for dislodging ash pluggages across an ash discharge opening in an ash hopper to maintain passage of ash from the ash hopper, the apparatus comprising:

a plate adapted to be rotatably and sealingly connected to a portion of the ash hopper, the plate having a first side, a second side and a rod receiving passageway extending angularly therethrough from the first side of the plate to the second side thereof;

a cylinder connected to the second side of the plate, the cylinder having a piston slidably disposed within the cylinder;

a rod having a first end connected to the piston and a second end extending from the cylinder, the rod slidably extended through the rod receiving passageway of the plate such that the rod is angularly disposed through the plate, the rod being directed at a selected area of the discharge opening of the ash hopper by rotational movement of the plate; and

actuating means for selectively actuating the piston so that the rod is movable from a retracted position to an extended position whereby the rod is extendable into the selected area of the ash discharge opening of the ash hopper to dislodge ash pluggages disposed across the ash discharge opening.

5,647,288

SCRAP CONVEYOR HAVING IMPROVED SCRAP PREHEATING CONSTRUCTION

Hiroshige Matsumoto; Makoto Takahashi, and Hitoshi Kuroda, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

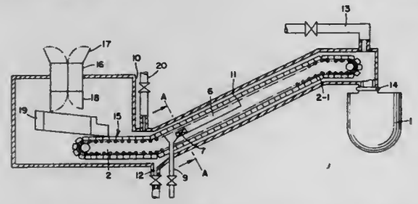
PCT No. PCT/JP93/01457, § 371 Date Mar. 8, 1995, § 102(e) Date Mar. 8, 1995, PCT Pub. No. WO94/09332, PCT Pub. Date Apr. 28, 1994

PCT Filed Oct. 8, 1993, Ser. No. 397,081

Claims priority, application Japan, Oct. 16, 1992, 4-072287; Mar. 11, 1993, 5-016325; May 20, 1993, 5-031257

Int. Cl.[6] D06F *75/00*

U.S. Cl. 110—228 **16 Claims**



1. A conveyor for feeding scrap to a processing furnace while preheating said scrap by exhaust gas from said processing furnace, said conveyor comprising:

a scrap charging portion;

a scrap reception hopper disposed above said scrap charging portion, said scrap reception hopper having upper and lower covers, each cover selectively movable to an open and a closed position;

a scrap conveying portion disposed between said scrap charging portion and said processing furnace;

a tapping device disposed below said scrap reception hopper for feeding scrap to said scrap conveying portion;

a gas seal cover disposed above said scrap conveying portion and said tapping device, said gas seal cover and said scrap conveying portion cooperating to define a flue above said scrap conveying portion, said flue connected in fluid communication with a processing furnace exhausting gas discharge;

exhaust gas passages provided in said scrap conveying portion;

an exhaust gas suction chamber disposed below a selected area of said scrap conveying portion, said exhaust gas suction chamber being in fluid communication with said exhaust gas passages of said scrap conveying portion in said selected area;

an exhaust gas suction duct connected in fluid communication with said exhaust gas suction chamber;

whereby processing furnace exhaust gas in said flue flows from said flue though said exhaust gas passages of said scrap conveying portion in said selected area into said exhaust gas suction chamber and then into said exhaust gas suction duct for heating scrap located in said scrap conveying portion in said selected area.

5,647,289

PERIMETER SEWING SYSTEM

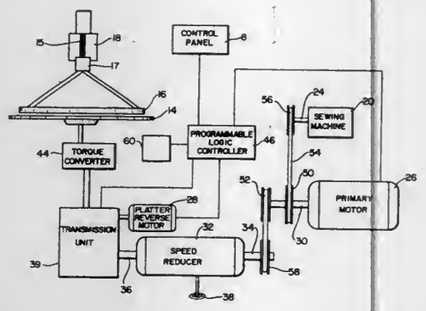
James R. Young, Gainesville, Ga., and Randy Messer, Wellford, S.C., assignors to The Needle Doctor, Inc., Wellford, S.C.

Filed May 6, 1996, Ser. No. 643,183

Int. Cl.[6] D05B *13/00;21/00;27/10*

U.S. Cl. 112—10 **12 Claims**

1. A perimeter sewing system for manufacture of a self-inflating vehicle air bag said system comprising:



a base structure having a table surface;

a programmable logic controller and an operator control panel;

a rotatable lower platter mounted in said base structure;

a rotatable upper platter mounted to a support arm attached to said base structure, said lower platter and said upper platter having a common axis of rotation;

a primary motor and a platter reverse motor;

a sewing machine having a main drive shaft, said sewing machine positioned along a peripheral portion of said lower platter for perimeter sewing fabric positioned on said lower platter;

a primary motor output shaft rotatably connected to said sewing machine main drive shaft and mechanically synchronized therewith;

a continuously variable mechanically operated motor speed reducer, said motor speed reducer having a speed reducer input shaft rotatably connected to said primary motor output shaft, a speed reducer output shaft, and a control knob for allowing an operator to mechanically vary the rotational speed of the speed reducer output shaft relative to the speed reducer input shaft;

said speed reducer output shaft mechanically synchronized with said primary motor output shaft;

a platter transmission unit, said speed reducer output shaft rotatably connected to a platter transmission unit input shaft, a platter transmission unit output shaft rotatably connected to said lower platter through a torque converter, said lower platter mechanically synchronized with said primary motor output shaft;

a sensor for detecting a home position of said lower platter;

said programmable logic controller receiving inputs from said control panel and said sensor for controlling said primary motor, said platter reverse motor and said platter transmission unit.

5,647,290

THREAD-CUTTING MECHANISM FOR EYELET-BUTTON HOLE SEWING MACHINE

Eberhard Kastrup; Thomas Nöltge, both of Bielefeld, Germany, and Giorgio Meacci, Arezzo, Italy, assignors to Dürkopp Adler AG, Bielefeld, Germany

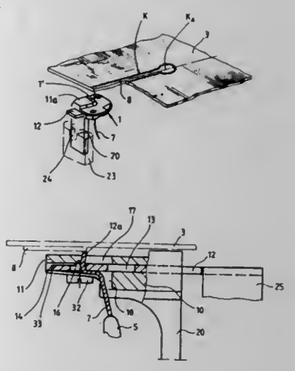
Filed Oct. 12, 1995, Ser. No. 542,050

Claims priority, application Germany, Oct. 13, 1994, 44 36 613.2; Aug. 29, 1995, 195 31 727.0

Int. Cl.[6] D05B *65/00*

U.S. Cl. 112—66 **18 Claims**

1. A thread-cutting mechanism for an eyelet-buttonhole sewing machine comprising a moving blade and a stationary blade; a plate with an aperture for the needle to pass through while producing a stitch, said plate having a groove, said moving blade traveling back and forth in said groove for cutting a thread; said plate having at least a top and a bottom; said moving blade being entirely located within said plate between said top and said bottom of said plate; said stationary blade being part of said top; the thread being cutable directly at a workpiece for leaving only substantially short ends of the thread at the finished workpiece; said thread being in a specific position for being directly cut when the thread passes through said aperture; a thread clamping member located within said plate for clamping and wiping said thread, said thread being pushed below said clamping member by said moving blade while said thread is being cut, when sewing a new buttonhole, said thread clamped below said clamping member being itself pulled out at the beginning of sewing a subsequent buttonhole; said clamped thread being in a specific position in relation to a sewing direction to achieve a sewing in of a thread end slipping by itself out of said clamping member and achieving thereby an oversewing.



5,647,291

CATCH THREAD DEVICE FOR SEWING MACHINES

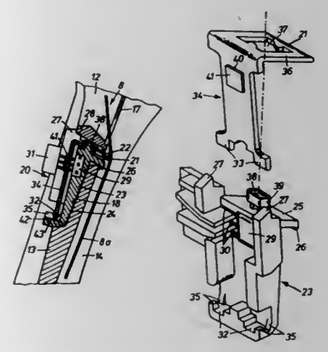
Helfried Hanus, Karlsruhe; Uwe Winkler, Ettlingen, and Dieter Grossman, Karlsbad, all of Germany, assignors to G.M. Pfaff Aktiengesellschaft, Kaiserslautern, Germany

Filed Mar. 21, 1996, Ser. No. 620,012

Claims priority, application Germany, Mar. 22, 1995, 29508368 U

Int. Cl.[6] D05B *69/36*

U.S. Cl. 112—278 **6 Claims**



3. A catch thread device for a sewing machine with a sewing machine housing, a needle with needle eye and a thread lever, a thread associated with the sewing machine extending between the thread lever and the needle eye, the catch thread device comprising:

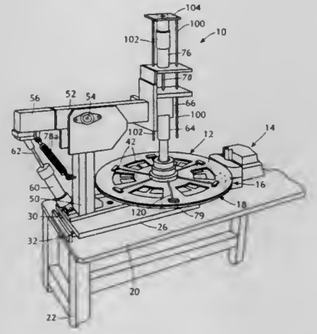
a support adapted to be fastened to said housing;
a pivotable switching lever which is pretensioned and mounted in said support;
a scanning element connected to said switching lever and adapted to extend into a course of said upper thread, between said eye of said needle and said thread lever;
a magnet connected to said scanning element;
Hall IC means disposed adjacent to said magnet for generating a signal based on a position of said magnet relative to said Hall IC means; and
a control circuit, said Hall IC means being connected via lines to said control circuit, said control circuit for evaluating said signals whereby said scanning element moves rhythmically due to movement of said upper thread resulting in movement of said magnet relative to said Hall IC means for generating said signal, said support forming a mount for said switching lever including support points arranged at laterally spaced locations from one another and by obliquely upwardly directed limitations of said support, said switching lever including two pillow blocks supported by said obliquely upwardly directed limitations.

5,647,292

SEWING APPARATUS WITH TURNTABLE FOR HOLDING FABRIC

Lazar A. Morgulis, Norcross, and Charles Zimmerman, Suwanee, both of Ga., assignors to Juki American, Inc., Suwanee, Ga.

Filed Mar. 2, 1995, Ser. No. 397,492
Int. Cl.[6] D05B *3/04*
U.S. Cl. 112—470.17 **33 Claims**



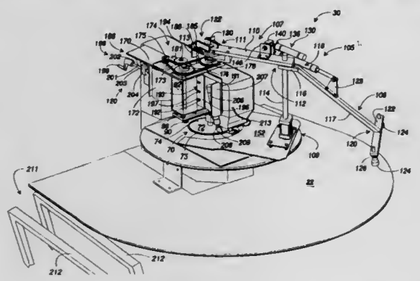
1. An apparatus for sewing comprising
a sewing head having a stitching station at which stitching occurs on material fed therethrough, and
a turntable for holding material to be stitched and positioned adjacent said sewing head, said turntable having upper and lower platens and having an outer perimeter with a portion of said outer perimeter extending through said stitching station, and including magnetic means along the perimeter of said turntable for holding material to be stitched, and means for rotating said turntable so that during stitching said turntable rotates and feeds material into said stitching station of said sewing head.

5,647,293

LOCKER PATCH ATTACHMENT SYSTEM

Elvin C. Price, Dacula; Preston B. Dasher, Buford, and Erie G. Huddleston, Lawrenceville, all of Ga., assignors to Atlanta Attachment Co., Lawrenceville, Ga.

Filed Nov. 30, 1995, Ser. No. 566,115
Int. Cl.[6] D05B *21/00*
U.S. Cl. 112—470.17 **40 Claims**



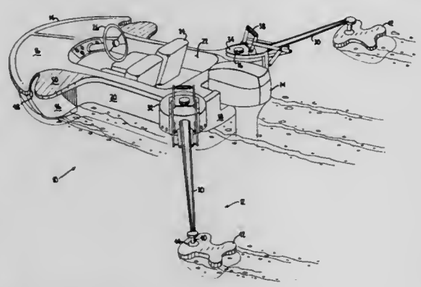
1. A system for attaching a locker patch having an arcuate edge to a garment by sewing about said arcuate edge of said locker patch, comprising:
a sewing machine having a presser foot and at least one sewing needle for forming stitches in the locker patch and garment;
locker patch pivot means mounted adjacent said sewing machine for securing the locker patch and the garment together in a fixed, overlaid relationship and for pivoting the locker patch and garment about an axis displaced from the needle so that an edge of the locker patch is passed adjacent and is engaged and sewn by the sewing needle as the locker patch and garment are moved along a substantially arcuate sewing path; and
garment pivot means positioned adjacent said sewing machine and displaced from said locker patch pivot means for gripping and moving the garment in conjunction with the movement of the locker patch by said locker patch pivot means as the locker patch and garment are moved along said sewing path by said locker patch pivot means and the locker patch is sewn to the garment by the sewing machine.

5,647,294

BOAT WITH ADJUSTABLE OUTRIGGERS

John Finley, 2941 Greenwood Dr., Joplin, Mo. 64804

Filed Mar. 5, 1996, Ser. No. 611,389
Int. Cl.[6] B63B *43/14*
U.S. Cl. 114—123 **14 Claims**



1. A boat having:
a hull having a bow and a stern and opposite side beams,

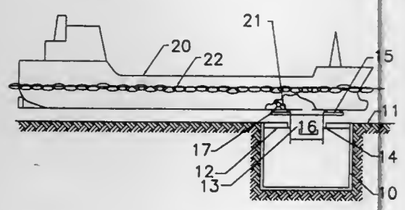
a pair of floats,
outrigger spars for supporting the floats on each side of the hull,
wherein each float is given a size and shape substantially smaller than the boat hull and, each float includes an inboard and an outboard side extending between a bow and a stern of the float, the inboard sides of the floats being the sides that are relatively nearer the boat hull than the respective outboard sides,
the outrigger spars being relatively elongated and being adjustably mounted on the hull proximate the opposite rear corners of the hull so that the floats can be adjustably placed in a given range of positions that lie generally between extremes of substantially spaced away outboard and substantially spaced away aft of the side beam and stern, respectively, of the boat hull, which given range of positions thereby substantially comprises various tripod arrangements of the hull and floats in which, under forward transit, the hull relatively leads the relatively trailing floats such that, the bows of the floats are spaced substantially behind a plane containing the stern of the boat hull, and, the inboard sides of the floats are spaced substantially outboard from the nearer side beam of the boat hull, whereby a user can choose from the given range of positions to stabilize the fore-to-aft inclination or pitching of the boat hull in accordance with boat speed and wave conditions.

5,647,295

APPARATUS FOR MOORING A VESSEL TO A SUBMERGED MOORING ELEMENT

Jens Korsgaard, 318 N. Post Rd., Princeton Junction, N.J. 08550

Filed Sep. 25, 1995, Ser. No. 533,127
Int. Cl.[6] B63B *21/00*
U.S. Cl. 114—230 **14 Claims**



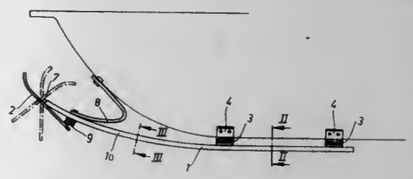
1. An ocean mooring system comprising:
a vessel comprising a hull and an annular mooring area in a bottom of said hull;
a buoyant mooring element having an upper part that is engageable with said mooring area;
an anchoring structure vertically slidably engaged with a lower part of said mooring element and which is structurally fixed to a sea bed;
means for lowering a hydrostatic pressure in said mooring area, thereby forcing said mooring element onto said mooring area; and
means for regulating a buoyancy of said mooring element, to raise said mooring element into contact with said hull and to lower said mooring element away from contact with said hull.

5,647,296

SHOCK DAMPER FOR A BOAT

Pertti Pasanen, Ilmalankatu 2, FIN-00240 Helsinki, Finland

PCT No. PCT/FI94/00471, § 371 Date Apr. 22, 1996, § 102(e) Date Apr. 22, 1996, PCT Pub. No. WO95/11157, PCT Pub. Date Apr. 27, 1995
PCT Filed Oct. 20, 1994, Ser. No. 632,433
Claims priority, application Finland, Oct. 22, 1993, 934663; Sep. 5, 1994, 944063
Int. Cl.[6] B63B *1/24*
U.S. Cl. 114—279 **11 Claims**



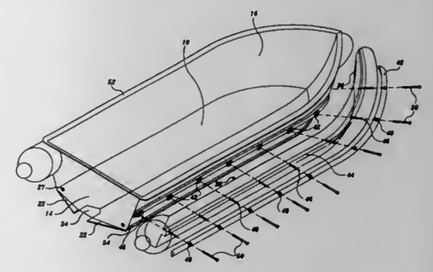
1. A shock damper for a boat, said boat having a bow and a central longitudinal axis, said shock damper comprising:
an impact plate flexibly mounted to the bow of the boat and extending longitudinally along the central axis of the boat,
said impact plate having a leading edge and a trailing edge, said leading edge located in front of the bow and above the surface of the water when the boat is moving forward in calm water, said trailing edge located along the longitudinal axis of the boat beneath the surface of the water,
said impact plate angularly disposed with the leading edge directed obliquely upwards, said leading edge displaced from the bow a greater distance than said trailing edge, and
said impact plate including a front portion located proximal to the leading edge and a second portion located proximal to the trailing edge, said front portion flexibly fastened to the center of the bow by a first spring means and said second portion flexibly fastened to the bow of the boat along the central longitudinal axis by a second spring means.

5,647,297

FOAM STABILIZED WATERCRAFT

William M. Hansen, Port Orchard, Wash., assignor to Norseman Marine Products, Inc., Port Orchard, Wash.

Continuation of Ser. No. 188,474, Jan. 28, 1994, abandoned, which is a continuation of Ser. No. 821,979, Jan. 15, 1992, Pat. No. 5,282,436. This application Aug. 1, 1994, Ser. No. 283,582
The portion of the term of this patent subsequent to Feb. 1, 2011, has been disclaimed.
Int. Cl.[6] B63B *1/20*
U.S. Cl. 114—283 **13 Claims**



1. A high-performance foam stabilized watercraft for use on a body of water, the watercraft comprising:

(a) a rigid planing hull having a transom, a bottom and a pair of curved sides extending forwardly from the transom to form the bow of the hull; and

(b) pliable foam stabilizing means for stabilizing the watercraft, mounted on the sides of the hull and extending substantially from the transom to the bow, the stabilizing means extending outwardly from said sides such that the stabilizing means contact the surface of the water and displace an increasing volume of water in response to an increasing list of the watercraft, stabilizing the watercraft by increasing its righting moment, the stabilizing means being formed of a pliable foam having a memory, the stabilizing means including a mating surface adapted to be mounted to an exterior surface of the sides of the hull, a curved surface extending outward and upward from the sides of the hull to establish a lower surface of the stabilizing and a pliable protective material coveting the exterior surface of the stabilizing means.

5,647,298
ANIMAL FEEDER CHIME
William Yancy, 4639 Rivers Ave., North Charleston, S.C. 29405
Filed Jun. 21, 1995, Ser. No. 493,363
Int. Cl.[6] A01K *39/014*
U.S. Cl. 119—57.8 **3 Claims**



1. An animal feeder chime, comprising:

a. a stake;

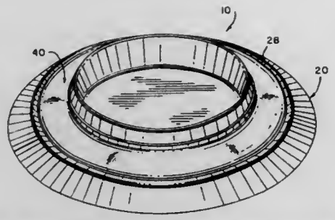
b. a plurality of chimes which is suspended from above an upper portion of said stake and which is spaced apart and arranged to allow movement of said chimes; and

c. a striker, wherein said stake extends through said striker, and said plurality of chimes surrounds said striker.

5,647,299
PET FOOD BOWL
Susana Pearson-Falcon, 2501 SW. 2 Ave., Miami, Fla. 33129
Filed Apr. 28, 1995, Ser. No. 430,565
Int. Cl.[6] A01K *5/01*
U.S. Cl. 119—61 **6 Claims**

1. A pet food bowl, comprising:

A) a container assembly having a lower peripheral wall that extends outwardly at an angle with respect to the resting plane of said bowl, said lower peripheral wall defining a first rim at its upper end, and an annular channel formed inwardly and adjacent to said rim, said channel further including an upwardly extending and inwardly inclined upper peripheral



wall defining a second rim, and said container assembly further including a central cavity defined within said second rim;

B) protective annular cover means removably mounted over said container assembly and having an inner wall with an inclination angle that is substantially similar to the inclination angle of said inclined upper peripheral wall, and said inner wall being mounted exteriorly of and in removable abutting engagement with said inclined upper peripheral wall, and said cover means being cooperatively receiving said upper peripheral wall; and

C) a liquid body deposited in said annular channel to prevent small insects from reaching the food contained in said bowl.

5,647,300
COMPACTED BENTONITE-BASED ABSORBENTS
Edward B. Tucker, Romeoville, Ill., assignor to First Brands Corporation, Danbury, Conn.
Filed Oct. 31, 1995, Ser. No. 551,190
Int. Cl.[6] A01K *1/015*
U.S. Cl. 119—173 **92 Claims**

1. An animal litter comprising at least 5% by weight of a water-swellable bentonite-containing material containing a compacted bentonite formed by compacting bentonite-containing particles having an effective amount of said particles smaller than 100 U.S. mesh, said particles having a moisture content between about 5% by weight and about 15% by weight, based on the total weight of water and bentonite, said particles compacted under effective compacting pressure to form compacted masses of said bentonite particles and forming said compacted masses into particles having an appropriate size for use as an animal litter.

5,647,301
METHOD FOR PLANTING FISH EGGS AND A PLANTING TUBE FOR CARRYING OUT THE METHOD
Lars Härdig, Fjärde Tvärgatan 47, Gävle S-802 82, and Lars Norman, Mästargatan 3 B, Sandviken S-811 61, both of Sweden
PCT No. PCT/SE93/00316, § 371 Date Aug. 21, 1995, § 102(e) Date Aug. 21, 1995, PCT Pub. No. WO94/23568, PCT Pub. Date Oct. 27, 1994
PCT Filed Apr. 13, 1993, Ser. No. 507,271
Int. Cl.[6] A01K *61/00*
U.S. Cl. 119—217 **15 Claims**

1. A method for planting fish eggs in watercourses or seas comprising the steps of:

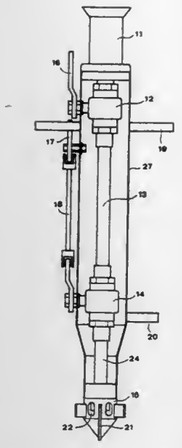
(a) providing a planting tube having a point (**15**), an intermediate part forming a container (**13**) between an upper valve (**12**) and a lower valve (**14**), a part (**11**) located above the upper valve (**12**), and at least one orifice hole (**22**) formed in the tube;

(b) pressing the planting tube down with the point (**15**) into the bottom material of the watercourse or the sea,

(c) filling the container (**13**) with water;

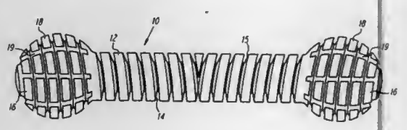
(d) filling the part (**11**) of the tube with fish eggs;

(e) opening the upper valve (**12**) to mix the fish eggs with the water in the container (**13**) of the tube; and



(f) opening the lower valve (**14**) allowing the fish eggs to flow out through at least one orifice hole (**22**) in the point (**15**).

5,647,302
ANIMAL DENTAL HYGIENE DEVICE
Anthony D. Shipp, 351 N. Foothill Rd., Beverly Hills, Calif. 90210
Filed Aug. 17, 1995, Ser. No. 516,408
Int. Cl.[6] A01K *29/00*
U.S. Cl. 119—709 **8 Claims**



1. A dental hygiene device for animals with gums and upper and lower teeth, the device comprising a body made of a tough, flexible rubber-like material, and two sets of opposing spiral grooves.

5,647,303
CONSTRICTIVE COLLAR
David B. Deioma, 35 Greentree Rd., Chagrin Falls, Ohio 44022
Filed Jun. 6, 1996, Ser. No. 656,946
Int. Cl.[6] A01K *27/00*
U.S. Cl. 119—864 **20 Claims**

1. An easily attachable and detachable, flexible constrictive collar comprising:

a flexible member capable of fitting around an animal's neck;

first and second ends on the flexible member;

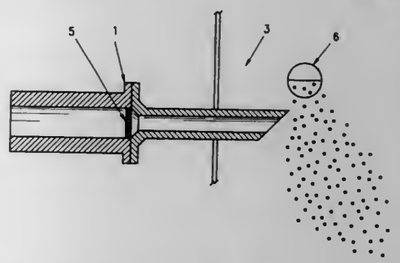
a constrictive loop operatively engaging the first end of the flexible member;

a swivel operatively attached to the constrictive loop and the flexible member to reduce twisting of them, a fastener for readily connecting and disconnecting the constrictive loop and the flexible member so that the flexible member can be placed around an animal's neck and attached, the constrictive loop slidable relative to at least one of the first and second



ends of the flexible member, whereby the first flexible member can be tightened by pulling on the constrictive loop.

5,647,304
METHOD AND A DEVICE FOR IMPROVING COMBUSTION PROCESSES
Leif Nyberg; Peter Nyberg, both of Klokergränd 8, 954 34 Gammelstad, Sweden, and Bengt-Olov Robertsson, Rodervägen 11, 940 28 Rosvick, Sweden
PCT No. PCT/SE94/00481, § 371 Date Nov. 22, 1995, § 102(e) Date Nov. 22, 1995, PCT Pub. No. WO94/28291, PCT Pub. Date Dec. 8, 1994
PCT Filed May 24, 1994, Ser. No. 553,414
Claims priority, application Sweden, May 22, 1993, 9301754-9
Int. Cl.[6] F02B *75/12*
U.S. Cl. 123—1 A **5 Claims**



1. A method for simultaneously supplying an oxidizer and an air/fuel mixture to a combustion chamber defining a combustion zone whereat combustion of the oxidizer and the air/fuel mixture takes place to form exhaust gases which are conducted to the ambient via an exhaust channel, the method comprising the steps of:

supplying the air/fuel mixture via first nozzle means to an inlet channel leading to said combustion zone;

providing second nozzle means and supplying said oxidizer to said second nozzle means;

converting said oxidizer to a gaseous form comprising at least one molecule of H_2O_2 in a concentration by volume of 5 to 99% in water and causing said oxidizer to flow from said second nozzle means into said inlet channel in said gaseous form;

positioning said second nozzle means relative to said first nozzle means so as to cause said oxidizer to converge and intersperse in said gaseous form directly with said air/fuel mixture to form a composite mix for combustion in said combustion zone; and,

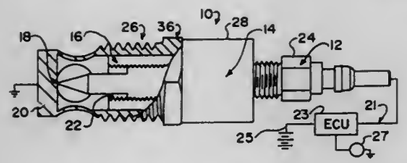
combusting said composite mix in said combustion zone to form exhaust gases including a predetermined product of combustion which deposits on the walls of said combustion chamber

and said exhaust channel to form a quasi-permanent catalytic and cracking layer for trapping noxious components of said exhaust gases thereby cleaning the exhaust gases emitted to the ambient via said exhaust channel.

5,647,305
RESETTABLE COOLANT ADDITIVE MAINTENANCE SENSOR

Brian W. Mulshine, Carol Stream; Edward H. Howell, III, Wheaton, and Alan P. Haag, Western Springs, all of Ill., assignors to Navistar International Transportation Corp., Chicago, Ill.

Filed Apr. 12, 1996, Ser. No. 631,400
Int. Cl.[6] F01P *5/14*
U.S. Cl. 123—41.15 **15 Claims**

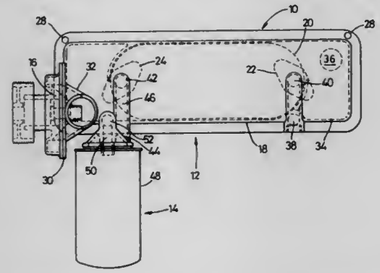


1. A sensor for indicating when coolant additives are needed in an engine cooling system, the sensor comprising a hollow sleeve of conductive metal within which a nonconductive threaded insert is seated and further within which a threaded conductive metal pin is engaged within and to the insert, the pin and sleeve coming in contact with each other at a single point, with such point of contact being placed within the coolant stream of the engine cooling system, said point of contact creating an electrical contact between the pin and the sleeve which may be broken upon corrosion of the contact point occurring as coolant additives become depleted.

5,647,306
ASSEMBLY OF AUXILIARY APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

Richard Pateman, Peterborough, United Kingdom, assignor to Perkins Limited, Peterborough, United Kingdom

PCT No. PCT/GB95/02321, § 371 Date Jun. 14, 1996, § 102(e) Date Jun. 14, 1996, PCT Pub. No. WO96/12093, PCT Pub. Date Apr. 25, 1996
PCT Filed Sep. 29, 1995, Ser. No. 656,359
Claims priority, application United Kingdom, Oct. 14, 1994, 9420821
Int. Cl.[6] F01P *11/08*
U.S. Cl. 123—41.33 **18 Claims**

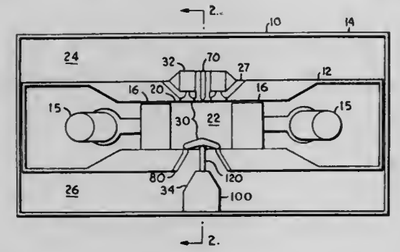


1. An auxiliary assembly for an internal combustion engine, said auxiliary assembly comprising: a coolant pump, an oil cooler device and an oil filter unit combined and interconnected as a single unitary unit for mounting on the internal combustion engine, wherein said oil cooler device comprises a housing having an oil pathway and a coolant pathway formed therein, wherein said housing has a mounting surface for attachment to the internal combustion engine, and wherein the oil pathway and the coolant pathway each extend beyond the mounting surface.

5,647,307
VALVING FOR DUAL COMPRESSION/EXPANSION ENGINE AND METHOD OF ASSEMBLING THE SAME

John M. Clarke, Chillicothe, and David E. Hackett, Washington, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Feb. 8, 1996, Ser. No. 598,719
Int. Cl.[6] F02B *59/00*
U.S. Cl. 123—42 **33 Claims**



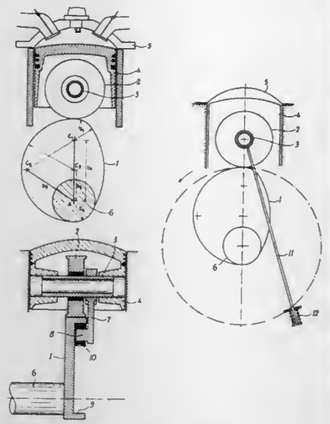
1. A valve assembly for a dual compression/dual expansion internal combustion engine having an internal housing defining a combustion chamber and operating in a void defined in an external housing, said valve assembly comprised of:
- a plurality of relatively smaller intake valve subassemblies disposed in a plurality of intake port surfaces in said internal housing to selectively communicate flow to said combustion chamber;
- a relatively larger exhaust valve subassembly disposed in an exhaust port surface in said internal housing to selectively communicate flow from said combustion chamber, said exhaust valve subassembly having a volumetric flow substantially equal to the volumetric flow of the plurality of intake valve subassemblies.

5,647,308
CRANK MECHANISM SYSTEM FOR THE TRANSFORMATION OF RECIPROCATING LINEAR MOTION INTO ROTARY MOTION, PARTICULARLY SUITABLE FOR RECIPROCATING ENDOTHERMIC ENGINES

Livio Biagini, Bologna, Italy, assignor to Pomezia S.R.L., Bologna, Italy

Filed Sep. 7, 1995, Ser. No. 528,646
Claims priority, application Italy, Sep. 13, 1994, RM94A0580
Int. Cl.[6] F02B *75/22*
U.S. Cl. 123—56.2 **20 Claims**

1. A crank system for the transformation of reciprocating linear motion into rotary motion, particularly suitable for reciprocating endothermic engines, characterized in that it comprises a wheel, a cam, and an output shaft, said wheel idly provided on an engine piston pin, said wheel being in direct contact with said cam, said cam having a select profile and being mounted on said shaft where the wheel rolls along a profile concentric with respect to rotation axis of the output shaft, said cam having a perimetric profile made up of at least two segments for the optimization of the engine cycle strokes, said cam providing means for maintaining constant volume combustion where said segments are cam arches and said cam provides further arches to optimize constant volume combustion in

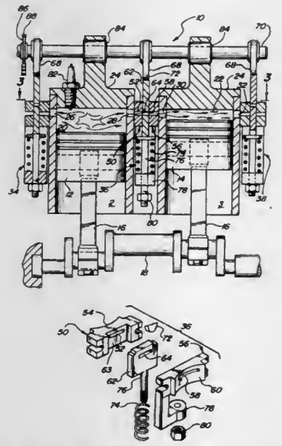


correspondence with the Top Dead Center (TDC), and the optimization of the expansion stroke, in correspondence with the Bottom Dead Center (BDC), said wheel rotating along the profile of said cam with a minimum friction.

5,647,309
INTERNAL COMBUSTION ENGINE FIRING SYSTEM

Alfred J. Avery, G-4121 Grandview Dr., Flushing, Mich. 48433

Continuation of Ser. No. 347,726, Dec. 1, 1994, abandoned. This application Jun. 11, 1996, Ser. No. 661,862
Int. Cl.[6] F02B *75/20*
U.S. Cl. 123—58.8 **7 Claims**



1. A firing system for a multi-cylinder internal combustion engine comprising:
- inlet and exit ports adjacent the top of each cylinder;
- passages interconnecting the inlet port of one cylinder with the exit port of another cylinder;
- a valve in each of said passages; and
- means for sequentially opening and closing said valves, said means comprising a cam shaft positioned above a cylinder block of the engine and timing means interconnection said cam shaft with an engine crankshaft positioned below said cylinder block;

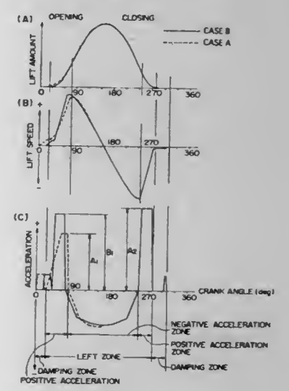
whereby combustion in a first cylinder commences combustion in a second cylinder by the combustion passing from the exit port of the first cylinder through one of said interconnecting passages and valves and through the inlet port of the second cylinder, said engine firing order proceeds sequentially and in a linear fashion from said first cylinder to a last of said cylinders and said system further including a passage and a valve extending between said last cylinder to an inlet port of said first cylinder thus sequentially firing all the cylinders; and

wherein each of said valves comprises:
- a removable first body portion having a side contiguous with said first cylinder and having an entry port in-line with said inlet port;
- a second body portion having a side contiguous with said second cylinder and having an outlet port in-line with said exit port; and
- a valve plate arranged to slide in a seat recess formed by said first and second body portions, said plate having a valve port in-line with said entry and outlet ports when said valve is in its open position.

5,647,310
ENGINE EXHAUST VALVE MECHANISM

Satoshi Kimura, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed May 31, 1995, Ser. No. 454,724
Claims priority, application Japan, Jun. 9, 1994, 6-127569
Int. Cl.[6] F01L *1/08*
U.S. Cl. 123—90.6 **6 Claims**



1. An exhaust valve mechanism of an engine comprising;
- a crankshaft rotating in accordance with an operation of said engine,
- a cam that rotates in synchronism with said crankshaft, and
- a valve body of an exhaust valve that is opened and closed by said cam,
- wherein said cam has a shape such that the maximum value of the valve body opening acceleration is less than the maximum value of the valve body closing acceleration, and such that the valve body follows the profile of said cam at all operational speeds of said engine.

4. An exhaust valve mechanism of an engine comprising;
- a crankshaft rotating in accordance with an operation of said engine,
- a cam that rotates in synchronism with a crankshaft, and
- a valve body of an exhaust valve that is opened and closed by said cam, opening and closing acceleration of said valve body having mechanical operating limits,

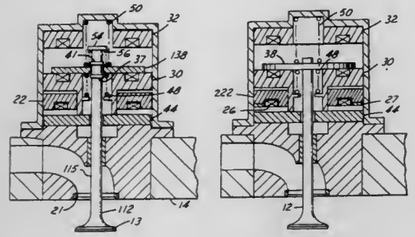
wherein said cam has a shape such that the maximum value of the valve body opening acceleration is less than a value determined by said operating limits such that the valve body opens gradually so as to reduce exhaust pulsation noise and such that the valve body follows the profile of said cam at all operational speeds of said engine.

5,647,311

ELECTROMECHANICALLY ACTUATED VALVE WITH MULTIPLE LIFTS AND SOFT LANDING

Feng Liang, Canton, and Craig Hammann Stephan, Ann Arbor, both of Mich., assignors to Ford Global Technologies, Inc., Dearborn, Mich.

Filed Nov. 12, 1996, Ser. No. 746,590
Int. Cl.[6] F01L *9/04*
U.S. Cl. 123—90.11 **18 Claims**



13. An internal combustion engine for use in a vehicle comprising:

a cylinder head;

an engine valve having a head portion and a stem portion, slidably mounted within the cylinder head;

an actuator housing mounted to the engine and surrounding a portion of the valve stem;

a first electromagnet, fixedly mounted relative to the actuator housing and encircling a portion of the valve stem;

a second electromagnet, slidably mounted relative to the actuator housing and encircling a portion of the valve stem farther from the head of the engine valve than the first electromagnet, with the second electromagnet including an extension portion extending toward the valve head radially inward from the first electromagnet;

a third electromagnet, fixedly mounted relative to the actuator housing and encircling a portion of the valve stem farther from the head of the engine valve than the second electromagnet and spaced from the second electromagnet to form a gap;

a first disk operatively engaging the engine valve stem and located between the second and third electromagnet;

a second disk slidably mounted to the engine valve stem and located nearer to the head of the engine valve than the first electromagnet and in contact with the extension portion;

a spring mounted between the first disk and the second electromagnet for biasing the first disk away from the second electromagnet; and

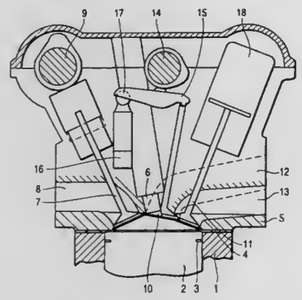
an opposed spring mounted between the first disk and the actuator housing for biasing the first disk away from the third electromagnet.

5,647,312

FOUR-STROKE OTTO ENGINE HAVING HYBRID CONTROL

Wolfgang Salber; Thomas Esch, and Michael Schebitz, all of Aachen, Germany, assignors to FEV Motorentechnik GmbH & Co. Kommanditgesellschaft, Aachen, Germany

PCT No. PCT/EP94/02542, § 371 Date May 8, 1995, § 102(e) Date May 8, 1995, PCT Pub. No. WO95/04210, PCT Pub. Date Feb. 9, 1995
PCT Filed Jul. 30, 1994, Ser. No. 411,732
Claims priority, application Germany, Aug. 3, 1993, 43 25 994.4; Dec. 9, 1993, 43 41 945.3
Int. Cl.[6] F01L *1/34*
U.S. Cl. 123—90.16 **8 Claims**



1. A four-stroke Otto engine comprising:

a cylinder having an interior;

at least one intake conduit disposed to be in flow communication with the interior of the cylinder for supplying at least one of air and an air-fuel mixture thereto;

at least two intake valves being disposed to open and close the at least one intake conduit, each of the intake valves having an open position and a closed position, the intake valves further including:

at least one main intake valve; and

at least one additional intake valve;

at least one outlet conduit disposed to be in flow communication with the interior of the cylinder for allowing exhaust gases to be exhausted therefrom;

at least one outlet valve disposed to open and close the at least one outlet conduit;

at least one outlet control device operatively connected to the outlet valve for positively controlling an actuation thereof for opening and closing the outlet conduit;

main intake valve actuation means operatively connected to the main intake valve and including:

a camshaft operatively connected to the main intake valve for moving the main intake valve into one of its open position and its closed position; and

a transmission element connected between the camshaft and the main intake valve for transmitting an actuation of the camshaft to the main intake valve for moving the main intake valve into one of its open position and its closed position, the transmission element including a cutoff apparatus actuatable independently of the camshaft and operatively connected thereto for cutting off a transmission of the actuation of the camshaft to the main intake valve for keeping the main intake valve in its closed position in a lower partial load and rpm range of the engine;

an operating apparatus connected to the additional intake valve for actuating the additional intake valve independently of the main intake valve actuation means for moving the additional intake valve into its open position in the lower partial load and rpm range of the engine and into its closed position in an upper partial load and rpm range of the engine, the operating apparatus further being adapted to adjust at least one of a valve stroke of the additional intake valve, a valve opening time of the additional intake valve and a valve closing time of the additional intake valve as a function of engine load;

an intake control device operatively connected to the intake valves and including:

a cutoff control means connected to the cutoff apparatus of the transmission element for effecting an actuation the cutoff apparatus for keeping the main intake valve in its closed position in the lower partial load and rpm of the engine; and

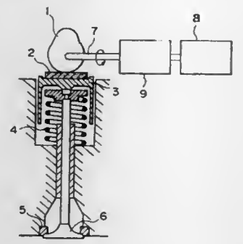
an operating apparatus control means connected to the operating apparatus for moving the additional intake valve into its open position in the lower partial load and rpm of the engine and into its closed position in the upper partial load and rpm of the engine and for adjusting at least one of the valve stroke of the additional intake valve, the valve opening time of the additional intake valve and the valve closing time of the additional intake valve as a function of load conditions of the engine.

5,647,313

COMBINATION OF ADJUSTING SHIM AND CAM

Hiromu Izumida; Kaoru Murabe; Takao Nishioka; Akira Yamakawa, and Kenji Matsunuma, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Japan

Filed Oct. 21, 1994, Ser. No. 327,313
Claims priority, application Japan, Oct. 29, 1993, 5-294571
Int. Cl.[6] F01L *1/16;* **F16H** *53/06*
U.S. Cl. 123—90.51 **8 Claims**



1. In a combination of an adjusting shim and a cam used in a valve train in an internal combustion engine for automobiles, an improvement characterized in that said adjusting shim consists of a ceramic material which sets a sliding surface of said adjusting shim with respect to said cam to a ten-point mean roughness Rz of not more than 0.1 μm, and which contains not less than 60 vol. % of silicon nitride or sialon, said cam consisting of cast iron a surface of which is chill hardened and then provided with a phosphate film thereon, the hardness of the sliding surface of the cam being lower than the surface of the shim.

5,647,314

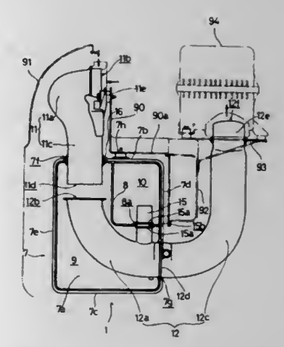
SUCTION SILENCER APPARATUS

Yasuo Matsumura; Kazuo Hashiba, and Seijiro Sone, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki-kaisha, Tokyo, Japan

Filed Nov. 28, 1995, Ser. No. 563,389
Claims priority, application Japan, Dec. 1, 1994, 6-321159
Int. Cl.[6] F02M *35/12*
U.S. Cl. 123—184.57 **20 Claims**

1. A suction silencer apparatus of an engine having a plurality of silencer chambers on a suction passage, comprising:

a first silencer chamber surrounding a bent portion of said suction passage and communicating with said suction passage;



a second silencer chamber arranged integrally with said first silencer chamber at an inner side of said bent portion of the suction passage; and

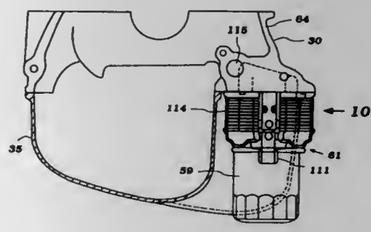
connecting means arranged at said inner side of said bent portion of the suction passage for connecting said first silencer chamber with said second silencer chamber.

5,647,315

LUBRICATING ARRANGEMENT FOR ENGINE

Tetsushi Saito, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Oct. 4, 1995, Ser. No. 539,124
Claims priority, application Japan, Oct. 7, 1994, 6-270620
Int. Cl.[6] F01M *5/00*
U.S. Cl. 123—196 AB **19 Claims**

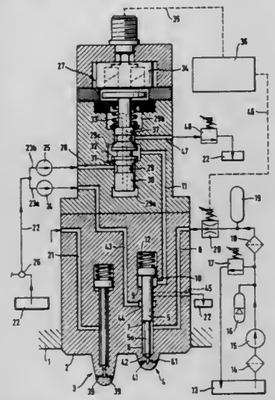


1. An internal combustion engine having a cylinder block forming at least one cylinder bore therein, a crankcase member affixed to the underside of said cylinder block and forming a crankcase chamber at the lower end of said cylinder bore, an oil cooler mounted on the lower end of said cylinder block in a recess formed by said crankcase member, an oil filter detachably connected to said oil cooler for receiving oil that has passed through said oil cooler for filtration and returning to said engine for its lubrication, means for delivering coolant for said engine to said oil cooler and returning said coolant to said engine, and means for delivering lubricant from a lubricant pump to said oil filter through said oil cooler and for returning lubricant to said engine for its lubrication.

5,647,316
INJECTION ARRANGEMENT FOR AN INTERNAL COMBUSTION ENGINE

Göran Hellén, Vaasa, and Dave Jay, Vähäkyrö, both of Finland, assignors to Wartsila Diesel International Ltd Oy, Helsinki, Finland

Filed Nov. 14, 1995, Ser. No. 557,448
Claims priority, application Finland, Dec. 23, 1994, 946051
Int. Cl.[6] F02B *3/00;47/02;* **F02M** *43/04*
U.S. Cl. 123—299 **19 Claims**



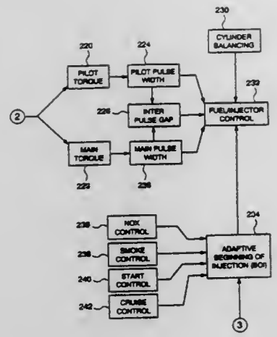
1. An injection arrangement for an internal combustion engine, especially a diesel engine, for injecting different pressure mediums directly into a cylinder of the engine, which arrangement includes a first valve (3), which is arranged to inject fuel, and a second (4) valve, which is arranged to inject an additional medium, by means of which the content of noxious substances resulting from burning of the fuel can be decreased, said second valve (4) comprising an elongated valve member (5) movable within a valve body (2) against the force of a spring (12) and in association with a part of which located on the cylinder side there is arranged a chamber (6), which encircles the valve member (5) and into which said additional medium is arranged to be fed continuously under pressure, said chamber (6) being limited at its end away from the cylinder to a step made in the valve member (5) and serving as a piston surface (7) and being so dimensioned that the mere pressure of the additional medium fed into the chamber (6) is not sufficient as such in order to open the valve (4) for effecting injection, and the arrangement further comprising a control valve (27) controlled by an electric signal (35) and which, under the influence of the control signal (35), is arranged to effect, together with the pressure of the additional medium acting on the said piston surface (7) in the valve member (5), movement of the valve member (5) into a position opening the valve (4) for injection of the additional medium into the cylinder.

5,647,317
METHOD FOR ENGINE CONTROL

S. Miller Weisman, II, 34650 Valley Forge, Farmington Hills, Mich. 48018; Dennis M. Letang, 768 Sorel Dr., Canton, Mich. 48188, and Douglas J. Babcock, 22176 Brookfield, South Lyon, Mich. 48178

Division of Ser. No. 535,617, Sep. 28, 1995, Pat. No. 5,615,654, which is a division of Ser. No. 113,424, Aug. 27, 1993, Pat. No. 5,445,128. This application Jun. 27, 1996, Ser. No. 673,199
Int. Cl.[6] F02B *3/12;* **F02M** *45/04*
U.S. Cl. 123—299 **16 Claims**

1. A method of controlling a compression-ignition internal combustion engine including an electronic control unit with memory



for controlling the engine, a plurality of combustion cylinders each having an integral fuel pump-injector apparatus for delivering fuel to the cylinders, and a plurality of sensors for sensing engine operating parameters, the method comprising:

sensing a plurality of engine operating parameters to obtain associated operating signals;

determining a desired engine output torque based on the operating signals;

identifying a pilot output torque based on the operating signals and a main output torque based on the pilot output torque and the desired output torque according to:

$$Tq_1=\min(Tq_{des},Tq_{pilot})$$

and

$$Tq_2=Tq_{des}-Tq_1$$

wherein Tq_1 represents the pilot output torque, Tq_2 represents the main output torque, "min()" represents the lesser of the parenthetical values, Tq_{des} represents the desired output torque, and Tq_{pilot} represents a desired value for the pilot output torque for the cylinder being fired;

determining first and second quantities of fuel to produce the pilot output torque and the main output torque, respectively;

calculating a period to pause between delivery of the first and second quantities of fuel based on the operating signals;

determining a starting time for delivery of the first quantity of fuel based on the operating signals; and

consecutively controlling each of the integral fuel pump-injector apparatus so as to deliver the first quantity of fuel to the associated combustion cylinder, pause for the calculated period, and deliver the second quantity of fuel to the associated combustion cylinder.

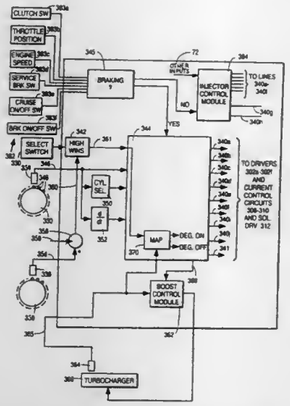
5,647,318
ENGINE COMPRESSION BRAKING APPARATUS AND METHOD

Dennis D. Feucht; Scott G. Sinn, both of Morton, and James J. Faletti, Spring Valley, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Division of Ser. No. 468,937, Jun. 6, 1995, Pat. No. 5,540,201, which is a continuation of Ser. No. 282,573, Jul. 29, 1994, abandoned. This application Aug. 11, 1995, Ser. No. 514,357
Int. Cl.[6] F02D *13/04*
U.S. Cl. 123—322 **38 Claims**

1. A braking control for an engine having a combustion chamber and an exhaust valve movable between open and closed positions wherein the engine is operable to undergo engine events each of which occurs at a timing point, comprising:

electrohydraulic means for engaging the exhaust valve; and

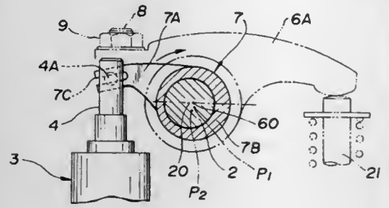


control means for timing movement of the exhaust valve to the open position selectably independent of the timing points to thereby permit selection of an adjustable braking magnitude including means for storing actuation points and means for selecting actuation points from the storing means.

5,647,319
DECOMPRESSION BRAKING APPARATUS FOR DIESEL ENGINE

Hirokazu Uehara; Noboru Egashira, and Seiji Tsuruta, all of Atsugi, Japan, assignors to Unisia Jecs Corporation, Atsugi, Japan

Filed Jun. 14, 1996, Ser. No. 663,702
Claims priority, application Japan, Jun. 15, 1995, 7-148855
Int. Cl.[6] F01L *13/06;* **F02D** *13/04*
U.S. Cl. 123—322 **10 Claims**



1. A decompression braking apparatus for a Diesel engine, each cylinder of said Diesel engine having a valve train comprising a rocker arm swingably supported by a rocker shaft so as to open and close an exhaust valve with a swing center of said rocker arm as a center, the swing center of said rocker arm being normally aligned with an axial center of said rocker shaft, said decompression braking apparatus comprising:

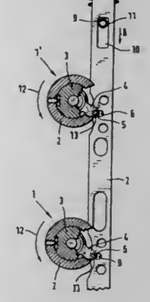
a) an eccentric bushing member having one end pivotally interposed between an inner periphery of a hole of said rocker arm and an outer periphery of said rocker shaft fitted into said hole so as to be enabled to displace the swing center of said rocker arm in a downward direction aligned with an opening direction of the exhaust valve; and

b) an actuator having a plunger engaged with the other end of said eccentric bushing member and which is so constructed and arranged as to actuate said eccentric bushing member to be pivoted via said plunger, thus said swing center of said rocker arm being displaced in the downward direction to a first position aligned with the opening direction of said exhaust valve so that a degree of openings of the exhaust valve during a closure stroke thereof is relatively small and as to actuate said eccentric bushing member to be pivoted via said plunger, thus said swing center of said rocker arm being displaced in the downward direction to a second position aligned with the opening direction of the valve stem of said exhaust valve so that the degree of the openings of the exhaust valve during the closure stroke is relatively large, said second position being lower than the first position.

5,647,320
METHOD AND DEVICE FOR ASSEMBLING AN INJECTION PUMP ELEMENT

Rolf Preuss, Pulheim, and Josef Vonnahme, Cologne, both of Germany, assignors to Klöckner-Humboldt-Deutz AG, Cologne, Germany

Filed Jun. 13, 1995, Ser. No. 489,820
Claims priority, application Germany, Jun. 16, 1994, 44 21 087.6
Int. Cl.[6] F02D *31/00*
U.S. Cl. 123—372 **5 Claims**



1. A method for assembling an injection pump element of an internal combustion engine, of the type including a rotatably shiftable base body and a plunger having a control arm with an adjusting pin for the setting of the fuel delivery quantity, which is insertable in a recess of a control rod when said control rod is shifted longitudinally to a basic fuel delivery position, said method comprising the steps of:

providing an elastically complaint control rod stop (**11**),

assembling said injection pump element (**1**,**1'**) including pressing said control rod (**7**) in an assembly motion direction (**8**) against said elastically compliant control rod stop (**11**), whereby said elastically complaint control rod stop (**11**) is elastically deformed and said control rod (**7**) is shifted longitudinally beyond said basic fuel delivery position,

rotating said control arm (**4**) against a stop (**13**) on said base body (**2**),

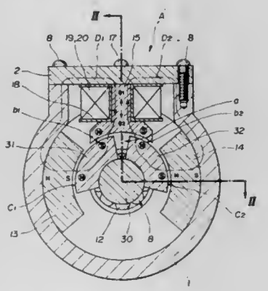
inserting said adjusting pin (**5**) in said recess (**6**) of said control rod (**7**) and

securing said base body (**2**) against rotation.

5,647,321
ACTUATING APPARATUS APPLICABLE TO ACTUATION OF VALVE USED FOR CONTROLLING ENGINE IDLING REVOLUTION

Toshiro Ichikawa, Hiratsuka; Yoshiyuki Kobayashi, and Hideaki Nakamura, both of Atsugi, all of Japan, assignors to Unisia Jecs Corporation, Atsugi, Japan

Filed Feb. 23, 1996, Ser. No. 606,281
Claims priority, application Japan, Feb. 24, 1995, 7-37076; Feb. 24, 1995, 7-37087; Feb. 27, 1995, 7-38078
Int. Cl.[6] F02D *7/00;* **H02K** *21/26*
U.S. Cl. 123—399 **26 Claims**



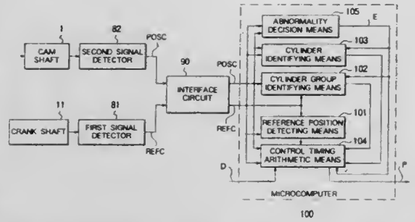
1. An actuating apparatus comprising:
a) a stationary member;
b) a driven member;
c) first magnetic circuit forming means for forming a first magnetic circuit with said stationary member and with a part of said driven member;
d) second magnetic circuit forming means for forming a second magnetic circuit with said stationary member and with another part of said driven member so as to be branched from a magnetic flux flowing in said first magnetic circuit on said driven member, a strength of a magnetic flux flowing in said second magnetic circuit being the same as that flowing in said first magnetic circuit and a direction of the magnetic flux flowing in said second magnetic circuit being opposite to that flowing in said first magnetic circuit so that said driven member is held at a position at which both of the stengths of the magnetic fluxes flowing through said first and second magnetic circuits are mutually balanced; and
e) new magnetic flux generating means for generating at least one new magnetic flux whose direction is such that the magnetic flux flowing in either of the first or second magnetic circuit is strengthened and the magnetic flux flowing in the other of said first or second magnetic circuit is weakened so that the driven member is displaced at another position at which both of the strengths of the magnetic fluxes in both of the first and second magnetic circuits become again balanced.

5,647,322
INTERNAL COMBUSTION ENGINE CONTROL APPARATUS

Wataru Fukui, and Yasukazu Koezuka, both of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 21, 1996, Ser. No. 604,240
Claims priority, application Japan, Apr. 21, 1995, 7-96807
Int. Cl.[6] F02D *41/22;41/26;* **F02P** *5/15;7/067*
U.S. Cl. 123—414 **16 Claims**

1. A control apparatus for an internal combustion engine, comprising:
first signal detector means for generating a first signal series in synchronism with rotation of a crank shaft of said internal combustion engine;



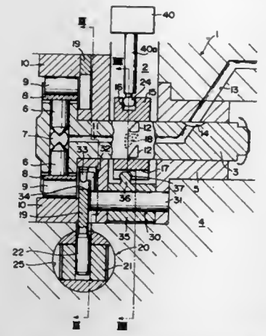
second signal detector means for generating a second signal series in synchronism with rotation of a cam shaft driven with a speed reduction ratio of "½" relative to said crank shaft; and
control means for controlling parameter involved in operation of said internal combustion engine on the basis of at least one of said first and second signal series;
said first signal series including a reference position signal generated at every first predetermined angular position of said crank shaft in correspondence to reference positions of engine cylinders, respectively;
said reference position signal including pulses corresponding to said cylinders, respectively, one of said pulses corresponding to a given one of cylinder groups having a shape differing from the shape of the other pulse corresponding to the other cylinder group;
said second signal series including an angular position signal generated at every second predetermined angular position of said cam shaft and a cylinder identifying signal corresponding to a given one of said engine cylinders;
said control means including:
reference position detecting means for detecting said reference position on the basis of at least said first signal series;
cylinder group identifying means for identifying said cylinder groups, respectively, on the basis of at least said first signal series;
cylinder identifying means for identifying said cylinders, respectively, on the basis of at least said second signal series; and
control timing arithmetic means for arithmetically determining a timing for controlling said parameter on the basis of result of identification obtained from at least one of said cylinder group identifying means and said cylinder identifying means.

5,647,323
FUEL INJECTION SYSTEM

Ken-ichi Kubo; Jun Matsubara, and Hiroshi Ishiwata, all of Higashimatsuyama, Japan, assignors to Zexel Corporation, Tokyo, Japan

Filed May 9, 1996, Ser. No. 646,908
Claims priority, application Japan, May 18, 1995, 7-144013
Int. Cl.[6] F02M *41/00*
U.S. Cl. 123—450 **14 Claims**

1. A fuel injection control mechanism in a distributor type fuel injection system, comprising:
a pump housing having a chamber formed therein;
a support member in said pump housing having fuel delivery distribution passages therein;
a fuel distribution member supported inside said pump housing in such a manner that said distribution member can rotate upon receiving a drive torque, said fuel distribution member being supported by said support member and having a longitudinal axis;
a compression mechanism for compressing fuel upon rotation of said distribution member;
a first through hole extending from said chamber formed inside said pump housing and fluidly communicating with said compression mechanism and a second through hole formed in said distribution member that cyclically fluidly communicates said



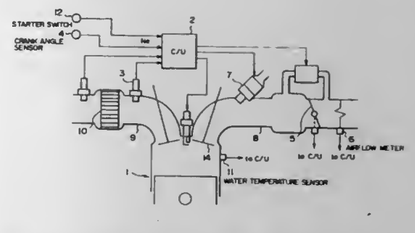
distribution passages with said compression mechanism upon rotation of said distribution member;
a cam member mounted for rotation relative to said pump housing around the longitudinal axis of said distribution member, said cam member having cam surfaces engaging said compression mechanism;
a first actuator connected with said cam member such that said cam surfaces of said cam member can be shifted in a circumferential direction relative to said pump housing to adjust an advance angle state of said compression mechanism;
a control sleeve externally fitted on said distribution member, said control sleeve being freely slidable in an axial direction and a circumferential direction relative to said distribution member, and said control sleeve comprising a hole that can communicate with said first through hole in synchronization with rotation of said distribution member;
a second actuator connected with and capable of displacing said control sleeve in the axial direction of said distribution member; and
a pre-stroke control mechanism comprising:
a first link member rotatable around said axis of said distribution member concurrently with movement of said first actuator,
a second link member having a first arm portion connected with said first link member so as to be rotated, concurrently with rotation of said first link member, around a position between said distribution member and said first actuator, and
a third link member secured to said second link member and having a second arm portion connected with said control sleeve such that said third link member can rotate concurrently and concentrically with said second link member around the same center and cause said control sleeve to rotate concurrently with said second link member,
wherein said second arm portion has a radius of rotation larger than a radius of rotation of said first arm portion.

5,647,324
ENGINE AIR-FUEL RATIO CONTROLLER

Yuki Nakajima, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed May 17, 1996, Ser. No. 648,969
Claims priority, application Japan, May 18, 1995, 7-120026
Int. Cl.[6] F02D *41/06;41/10;41/12*
U.S. Cl. 123—491 **11 Claims**

1. A fuel injection controller for an engine in which fuel is injected towards a fuel adhering part from a fuel injector, comprising:
means for computing a basic fuel injection a mount,
means for detecting an engine cooling water temperature,
means for computing an equilibrium mount of said injected fuel adhering to said fuel adhering part based on a cooling water temperature in an equilibrium state,

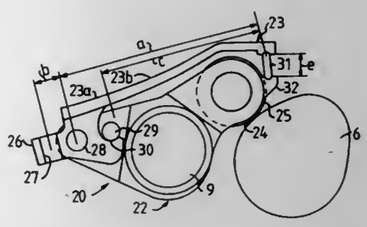


means for computing a quantity proportion based on said cooling water temperature in said equilibrium state,
means for predicting an amount of injected fuel that will adhere to said fuel adhering part at a present time,
means for estimating a temperature of said fuel adhering part,
means for computing a temperature difference between said cooling water temperature and the temperature of said fuel adhering part,
means for computing an adhesion rate based on said equilibrium adhesion amount, said predicted adhesion mount, said quantity proportion and said temperature difference,
means for correcting said basic injection mount and computing a fuel injection mount based on said adhesion rate, and
means for supplying said fuel injection mount to said fuel injector.

5,647,325
FUEL INJECTION DEVICE FOR INTERNAL COMBUSTION ENGINES

Göran Axbrink, Björketorp, and Nils-Olof Håkansson, Stenkullen, both of Sweden, assignors to AB Volvo, Gothenburg, Sweden

PCT No. PCT/SE94/00230, § 371 Date Sep. 18, 1995, § 102(e) Date Sep. 18, 1995, PCT Pub. No. WO94/21912, PCT Pub. Date Sep. 29, 1994
PCT Filed Mar. 16, 1994, Ser. No. 532,728
Claims priority, application Sweden, Mar. 17, 1993, 9300882
Int. Cl.[6] F02M *37/04*
U.S. Cl. 123—496 **12 Claims**



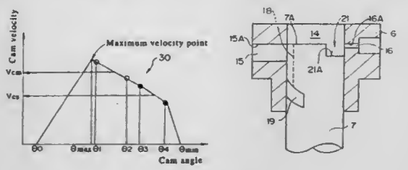
1. In a fuel injection device for internal combustion engines, comprising a unit injector extending into each cylinder chamber and containing a pump piston as well as means driving said pump piston, comprising a rocker arm cooperating with the pump piston and mounted on a rocker arm shaft and a cam shaft with a cam for each rocker arm, said cam providing, via the rocker arm, pump strokes in the pump piston upon rotation of the cam shaft; the improvement wherein the drive means are so arranged that they limit, by elastic deformation of at least one element thereof at a predetermined force, the speed of the pump piston stroke, whereby the injection pressure can be kept at least essentially constant during a final phase of the fuel injection.

5,647,326

FUEL INJECTION PUMP

Hiroaki Kato; Hidekatsu Yashiro, and Tsuyoshi Kodama, all of Saitama Prefecture, Japan, assignors to Zexel Corporation, Japan

Filed Sep. 18, 1995, Ser. No. 529,764
Claims priority, application Japan, Sep. 21, 1994, 6-251614
Int. Cl.[6] F02M *37/04;59/20*
U.S. Cl. 123—500 20 Claims



1. A fuel injection pump comprising
a pump housing formed with a fuel reservoir,
a cam attached to a cam shaft rotated by an engine,
a plunger barrel mounted in the pump housing and formed with a fuel feed hole which communicates with the fuel reservoir,
a plunger accommodated in the plunger barrel to be capable of sliding reciprocation and rotation therein and being formed with an inclined lead groove at a position for communication with the feed hole, and
a fuel chamber formed between the plunger and the plunger barrel,
reciprocation of the plunger by the cam causing fuel to be sucked into the fuel chamber from the fuel reservoir and delivered under pressure to a fuel injection nozzle,
the fuel injection pump being characterized in that delivery of pressurized fuel by the plunger in a high engine speed region starts at an angle of the cam which precedes the angle thereof at which delivery of pressurized fuel by the plunger in a low engine speed region starts and that at least a pressurized fuel delivery region of the plunger in the low engine speed region is provided from at or after a maximum velocity point of the cam.

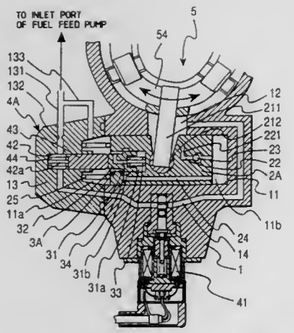
5,647,327

INJECTION TIMING CONTROL DEVICE FOR FUEL INJECTION PUMP

Shigeiku Enomoto, Aichi-ken, and Moriyasu Gotoh, Toyohashi, both of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Apr. 5, 1996, Ser. No. 628,450
Claims priority, application Japan, Apr. 7, 1995, 7-107933; Dec. 11, 1995, 7-346431
Int. Cl.[6] F02M *37/04*
U.S. Cl. 123—502 22 Claims

1. An injection timing control device for a fuel injection pump, comprising:
a piston slidably received in a cylinder and having an end surface for receiving thereon a pressurized fuel in a first pressure chamber communicating with an outlet side of a fuel feed pump, said piston including a slide hole communicating with a second pressure chamber located opposite to said first pressure chamber with respect to said piston;
a servo valve having a spool slidably received in said slide hole of the piston, said servo valve opening and closing a communication passage, which communicates with said first pressure chamber and opens into said slide hole, by movement of said spool in said slide hole so as to control a fuel pressure in said first pressure chamber to move said piston;
spool operating means for operating said spool; and
fuel injection means, mechanically connected to said piston, for changing a fuel injection timing depending on a moved distance of said piston;



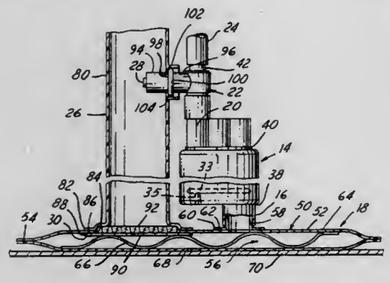
wherein, when said piston moves due to a torque reaction force applied thereto while the fuel is injected through said fuel injection means, said communication passage is held closed to prevent movement of the fuel from said pressure chamber.

5,647,328

IN-TANK FUEL PUMP AND RESERVOIR

Kirk D. Fournier; Wayne T. Lipinski, both of Essexville, and Charles H. Tuckey, Cass City, all of Mich., assignors to Walbro Corporation, Cass City, Micb.

Continuation-in-part of Ser. No. 587,852, Jan. 11, 1996, abandoned, which is a continuation-in-part of Ser. No. 496,950, Jun. 30, 1995, abandoned. This application Feb. 15, 1996, Ser. No. 602,087
Int. Cl.[6] F02M *37/04*
U.S. Cl. 123—509 39 Claims



1. An in-tank fuel pump and reservoir canister module assembly comprising, an electric fuel pump having an inlet and an outlet and constructed to be mounted in a fuel tank, a primary fuel filter of a material having a plurality of openings through which fuel can flow from the tank to an interior main filter chamber having an outlet connected with the pump inlet for supplying fuel from the filter chamber to the pump inlet, said primary filter being constructed and arranged to be received immediately adjacent the bottom of the fuel tank, a fuel reservoir canister extending with its major dimension generally vertically in the tank and having adjacent its upper end an opening constructed to communicate canister overflow with the interior of the fuel tank, a closed lower end, and immediately adjacent the lower end a flow controlling outlet means for communicating the lower end of the reservoir canister with the interior of the filter chamber for the flow of fuel from the reservoir through the interior of the filter chamber to the inlet of the pump, said fuel pump being mounted in said module assembly outside of said reservoir canister adjacent thereto with its axis extending generally vertically and its inlet generally at the elevation of the lower end of said canister, and a bypass passageway connected

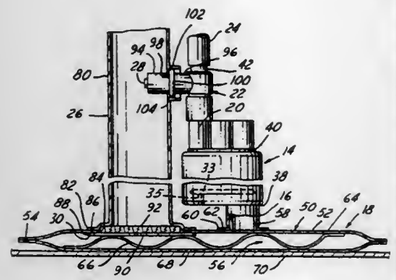
with the outlet of the pump and the interior of the reservoir canister for bypassing some of the fuel from the outlet of the pump into the reservoir canister, whereby when the supply of fuel from the tank to the primary filter is momentarily interrupted reserve fuel from the reservoir canister will flow through said flow controlling means and the interior of the filter chamber and its outlet into the inlet of the fuel pump, said flow controlling means being constructed and arranged to cause a variable flow rate varying directly with the head differential between the level of bypass reserve fuel in said canister above the level of fuel in the tank so that bypass reserve fuel can be returned to the pump inlet whenever tank fuel level drops below reserve fuel level in the canister during operation of said fuel pump to thereby maximize reserve fuel head height in said canister and return of bypass fuel to the pump inlet while minimizing reserve fuel overflow to the tank.

5,647,329

IN-TANK FUEL PUMP AND RESERVOIR

George H. Bucci, South Windsor, Conn.; Kirk D. Fournier, Essexville, Mich.; Daniel A. Gilmour, West Hartford, Conn.; Wayne T. Lipinski, Essexville, Mich.; David E. Mroczka, Cromwell, Conn., and Charles H. Tuckey, Cass City, Mich., assignors to Walbro Corporation, Cass City, Mich.

Continuation-in-part of Ser. No. 602,087, Feb. 15, 1996, which is a continuation-in-part of Ser. No. 587,852, Jan. 11, 1996, abandoned, which is a continuation-in-part of Ser. No. 496,950, Jun. 30, 1995, abandoned. This application May 6, 1996, Ser. No. 643,634
Int. Cl.[6] F02M *37/04*
U.S. Cl. 123—509 120 Claims



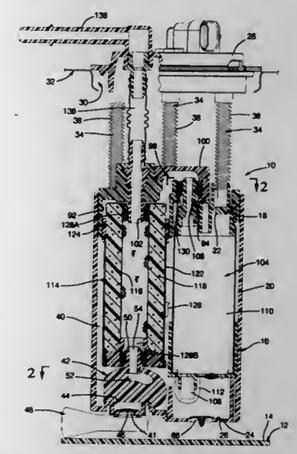
1. An in-tank fuel pump and reservoir canister module assembly comprising, an electric fuel pump having an inlet and an outlet and constructed to be mounted in a fuel tank, a primary fuel filter of a material having a plurality of openings through which fuel can flow from the tank to an interior main filter chamber having an outlet connected with the pump inlet for supplying fuel from the filter chamber to the pump inlet, said primary filter being constructed and arranged to be received immediately adjacent the bottom of the fuel tank, a fuel reservoir canister extending with its major dimension generally vertically in the tank and having adjacent its upper end an opening constructed to communicate canister overflow with the interior of the fuel tank, a closed lower end, and immediately adjacent the lower end a flow controlling outlet means for communicating the lower and of the reservoir canister with the interior of the filter chamber for the flow of fuel from the reservoir through the interior of the filter chamber to the inlet of the pump, said fuel pump being mounted in said module assembly outside of said reservoir canister adjacent thereto with its axis extending generally vertically and its inlet generally at the elevation of the lower end of said canister, and a bypass passageway connected with the outlet of the pump and the interior of the reservoir canister for passing some of the fuel from the outlet of the pump into the reservoir canister, whereby when the supply of fuel from the tank to the filter is momentarily interrupted fuel from the reservoir canister will flow through said flow controlling means and the interior of the filter chamber and its outlet into the inlet of the fuel pump.

5,647,330

FUEL SENDER FOR MOTOR VEHICLE

Ulf Sawert, Grand Blanc; Grady Donald Jones, Sr., Burton; Dale Richard Jones, Flushing; Bruce Albert Kuehnemund, Flushing, and Randall Lee Dockery, Flushing, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jul. 25, 1996, Ser. No. 672,851
Int. Cl.[6] F02M *37/04*
U.S. Cl. 123—509 3 Claims



1. A fuel sender in a fuel tank of a motor vehicle comprising:
a container having a first end wall and a second end wall each rigidly attached to a continuous side wall of said container and cooperating therewith in defining an interior volume of said container,
a filter socket in said first end wall of said container,
a first passage means on said first end wall from said filter socket to a fuel pump aperture in said first end wall,
a first tubular boss in the center of said filter socket parallel to a longitudinal centerline of said container,
a second tubular boss on said second end wall of said container parallel to said longitudinal centerline of said container aligned with said first tubular boss,
a second passage means on said second end wall from a tip of said second tubular boss to said interior volume of said container,
a regulator socket on said second end wall of said container intersecting said second passage means,
a pressure regulator means in said regulator socket operative to block said second passage means when fluid pressure in said second passage means upstream of said regulator socket is below a predetermined pressure and to progressively more fully open said second passage means when fluid pressure in said second passage means upstream of said regulator socket is above said predetermined pressure,
a venturi throat means on said second end wall downstream of said regulator socket responsive to fluid flow in said second passage to aspirate fuel from said fuel tank into said interior volume of said container,
a filter assembly including a center tube around each of said first and said second tubular bosses and a filter element around said center tube and an end plate in said filter socket and a shell around said filter element,

a pair of vibration isolating seals means between said center tube and each of said first and said second tubular bosses operative to prevent fuel leakage from said center tube into said interior volume of said container while substantially preventing transmission of vibrations and pressure pulses to said first and said second tubular bosses,

a seal means between said filter socket and said filter assembly operative to confine fuel flow from said first passage to flow through said filter element into said center tube of said filter assembly,

a fuel pump assembly in said container having an inlet boss in communication with said interior volume of said container and a discharge boss in said fuel pump aperture in said first end plate, and

a third vibration isolating seal means between said discharge boss on said fuel pump assembly and said first end wall of said container operative to prevent fuel leakage from said first passage into said interior volume of said container while substantially preventing transmission of vibrations and pressure pulses to said first end wall.

5,647,331

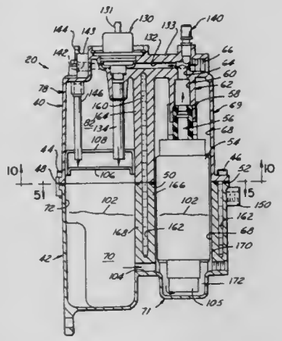
LIQUID COOLED FUEL PUMP AND VAPOR SEPARATOR

Mark S. Swanson, Cass City, Mich., assignor to Walbro Corporation, Cass City, Mich.

Filed Aug. 19, 1996, Ser. No. 699,790

Int. Cl.[6] F02M *37/04*

U.S. Cl. 123—516 **13 Claims**



1. A liquid cooled fuel pump and vapor separator module for supplying liquid fuel to an internal combustion engine comprising a heat conductive metal casing having

(1) first casing cavity means containing an electric motor and pump unit and having a fuel pump inlet and a fuel pump outlet adapted to be connected to an engine fuel delivery system;

(2) second casing cavity means containing a fuel collecting sump having an outlet communicating with the pump inlet, said casing having fuel inlet means communicating with said sump and vapor chamber and adapted to be connected to an external source of liquid engine fuel;

(3) third casing cavity means containing a vapor collecting chamber disposed above the fuel level in the sump and communicating therewith, and vapor venting means for venting vapor collected in said vapor collecting chamber to the exterior of said casing; and

(4) liquid coolant conducting passageway means in said casing constructed and arranged in generally surrounding heat exchange relationship with at least said first cavity means and adapted to be circulation connected with a liquid coolant external supply source.

5,647,332

FUEL-VAPOR EMISSION-CONTROL SYSTEM FOR CONTROLLING THE AMOUNT OF FLOW THROUGH A CHARCOAL CANISTER

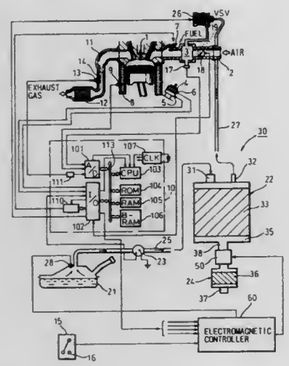
Yoshihiko Hyodo, and Hiroki Matsuoka, both of Susono, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Feb. 14, 1996, Ser. No. 601,391

Claims priority, application Japan, Feb. 21, 1995, 7-032479

Int. Cl.[6] F02M *25/08*

U.S. Cl. 123—519 **6 Claims**



1. A canister amount of flow control device in a fuel-vapor emission control system for an internal combustion engine, having a canister which is provided to prevent, by adsorption, the release into the atmosphere of fuel-vapor generated in a fuel tank, and which purges fuel-vapor which has been adsorbed within said canister to an intake manifold at a prescribed running time, said canister amount flow control device comprising:

an atmospheric release port surface area control valve which is provided in an atmospheric port of said canister which leads to the atmosphere, wherein the atmospheric release port surface area control valve is capable of changing the surface area of said atmospheric release port;

an internal combustion engine operating condition judgment means which detects the conditions of fuel supply, purge execution, running and parking of the vehicle to judge the operating condition of the vehicle;

a canister flow amount storage means for storing, for each operating condition of said internal combustion engine, a vapor flow amount which is measured beforehand;

a canister flow amount calculation means for calculating for each operating condition of the internal combustion engine, an amount of vapor flowing through said canister from the values stored in said canister flow amount storage means for the operating condition of said internal combustion engine which has been determined;

a degree of opening calculation means for calculating the degree of opening of said atmospheric release port surface area control valve based on the amount of fuel vapor flow calculated by said canister flow amount calculation means; and

a degree of opening control means for controlling the degree of opening of said atmospheric release port surface area control valve, in accordance with said calculated degree of opening.

5,647,333

EVAPORATIVE FUEL CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

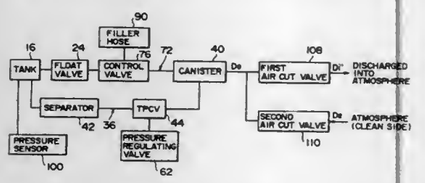
Takeshi Mukai, Hamamatsu, Japan, assignor to Suzuki Motor Corporation, Hamamatsu, Japan

Filed Feb. 15, 1996, Ser. No. 601,691

Claims priority, application Japan, Feb. 22, 1995, 7-058137

Int. Cl.[6] F02M *33/04*

U.S. Cl. 123—519 **10 Claims**



1. An evaporative fuel control system for an internal combustion engine comprising:

a canister, installed between an evaporation line communicating with a fuel tank and a purge line communicating with an intake passage of the intake system of said internal combustion engine, said canister and evaporation line defining an evaporative fuel delivery path for introducing evaporative fuel into said canister for absorbing evaporative fuel generated in the fuel tank during stoppage of said internal combustion engine, and said canister and said purge line defining a purge delivery path for purging absorbed evaporative fuel by the introduction of air to deliver the evaporative fuel to said intake passage through said purge line during operation of said internal combustion engine;

a purge valve, installed at the intermediate position of said purge line, for controlling the amount of evaporative fuel supplied to said intake passage in accordance with the operation state of said internal combustion engine;

an atmosphere communication line in communication with said canister and the atmosphere;

a plurality of air cut valves are installed in series in said atmosphere communication line, wherein said plurality of air cut valves comprises a first air cut valve and a second air cut valve, said first air cut valve first disposed along said atmosphere communication line after said canister defining an open position and a closed position, said open position corresponding to an open communication path between said canister and the atmosphere allowing communication between said canister and the atmosphere along said atmosphere communication path, said closed position corresponding to a closed communication path preventing communication between the atmosphere and said canister along said atmosphere communication path, said second air cut valve defining a first position and a second position, said first position directing air from the atmosphere into said atmosphere communication line, said second position directing air from the communication path out of said atmosphere communication line; and

control means is provided to control the operation of said first air cut valve so as to open and close said atmosphere communication line and to control the operation of said second air cut valve separated from said canister so as to discharge air from said canister into the atmosphere and introduce air into said canister.

5,647,334

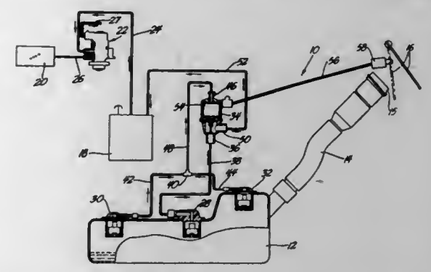
FUEL VAPOR RECOVERY SYSTEM CONTROL VALVE

Terry L. Miller, Sterling, Ill., assignor to Borg-Warner Automotive, Inc., Sterling Heights, Mich.

Filed Nov. 8, 1995, Ser. No. 555,090

Int. Cl.[6] F02M *37/04*

U.S. Cl. 123—520 **12 Claims**



1. A solenoid operated control valve for a vapor recovery system for an automotive fuel tank having a refueling valve and a vent valve that is located above the refueling valve,

the control valve comprising a valve body having a chamber,

a first inlet for connecting the chamber to the refueling valve,

a second inlet for connecting the chamber to the vent valve, and

an outlet for connecting the chamber to a vapor storage canister,

the control valve further comprising a valve that is moved by an armature of the solenoid to block the second inlet for refueling the fuel tank so that the flow out of the fuel tank is controlled exclusively by the refueling valve during the refueling process,

the control valve further comprising a second valve that is moved by the armature of the solenoid to block the first inlet after the refueling process is completed, and

the first and second valves being at opposite ends of the armature.

5,647,335

MOTOR VEHICLE FUEL SUPPLY SYSTEM WITH FUEL TANK DEVENTILATING DEVICE

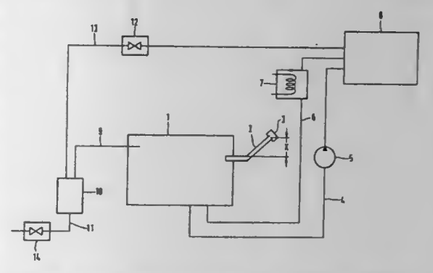
Dieter Scheurenbrand, Wolfschlugen; Hartmut Kolb, Ludwigsburg, and Manfred Weil, Schorndorf, all of Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany

Filed Nov. 30, 1995, Ser. No. 565,163

Claims priority, application Germany, Nov. 30, 1994, 44 42 544.9

Int. Cl.[6] F02M *33/02;* **B60K** *15/035*

U.S. Cl. 123—520 **4 Claims**



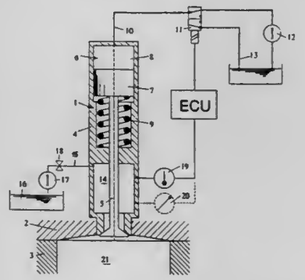
1. A fuel supply system for a motor vehicle engine comprising:

a fuel tank,

a fuel tank filler pipe which opens into said fuel tank at a vertical level below a top of an interior fuel holding space of the fuel

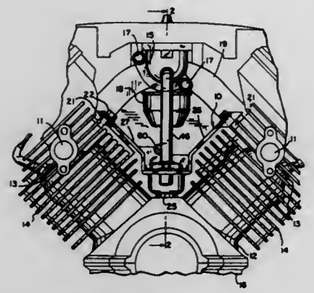
tank, said filler pipe having a fuel inlet opening disposed above said vertical level,
a fuel supply and return circuit connected with the fuel tank to provide a closed pressurized engine fuel supply when said filler pipe is closed,
a filter chamber,
a regenerable filter medium in said filter chamber which is communicated with the fuel tank at a location above fuel level in the fuel tank,
an outwardly gas-tight deventilating conduit between the filter chamber and the engine,
a filter chamber venting conduit for supplying fresh air to said filter medium to regenerate the filter medium during engine operating conditions,
a regenerating valve in said deventilating conduit for selectively controlling flow in said deventilating conduit such that said regenerating valve is open during certain engine operations so that engine operating vacuum pressure acts to draw fresh air through said filter chamber ventilating conduit and filter chamber to regenerate the filter medium,
and a control valve assembly in said venting conduit operable to open said ventilating conduit only when
(i) there is underpressure in the filter chamber in relation to atmospheric pressure, and
(ii) there is overpressure above a threshold value in the filter chamber in relation to atmospheric pressure, said threshold pressure being predetermined to be slightly above that pressure generated by a fuel column in said filler pipe during fuel filling operation.

5,647,336
DEVICE FOR INTRODUCING FUEL INTO A COMBUSTION CHAMBER OF AN INTERNAL COMBUSTION ENGINE
Walter Piock; Martin Wirth, both of Hitzendorf, and Günter Karl Fraidl, Pirka, all of Austria, assignors to AVL Gesellschaft Für Verbrennungskraftmaschinen Und Messtechnik m.b.H. Prof.Dr.Dr.b.c. Hans List, Graz, Austria
Filed Feb. 26, 1996, Ser. No. 606,917
Claims priority, application Austria, Feb. 27, 1995, 353/95
Int. Cl.[6] F02M *67/04*
U.S. Cl. 123—532 **2 Claims**



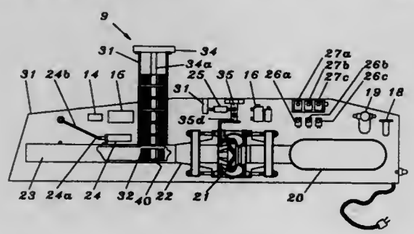
1. A device for introducing fuel into a combustion chamber of an internal combustion engine, comprising a unit for fuel delivery, and an injection valve for withdrawing compressed gas from a cylinder and injecting said gas together with said delivered fuel into said cylinder, with a mixing space in a front part of said valve for the purpose of gas storage, said injection valve being provided with a valve for control of the gas exchange between said combustion chamber and said mixing space in said front part of said valve, wherein said mixing space is connected to at least one sensor element for measuring at least one of pressure and temperature of said mixing space, and wherein the closing of said valve is made dependent at least on the physical quantity measured by said at least one sensor element.

5,647,337
ENGINE BREATHER DEVICE WITH COOLING BAFFLE
Richard D. Johnson, Sheboygan, and Jerry R. Reineking, Cleveland, both of Wis., assignors to Kohler Co., Kohler, Wis.
Filed Feb. 21, 1996, Ser. No. 604,557
Int. Cl.[6] F02M *25/06*
U.S. Cl. 123—572 **8 Claims**



1. A combined engine breather device with cooling baffles comprising:
a base member adapted to fit in the vee of a vee-type engine;
a cover member connected to the base member and having an opening therein;
baffle elements projecting outwardly from the base member and constructed in a one-piece manner therewith, said baffle elements adapted to extend over cooling fins of the vee-type engine;
a conduit member extending from a floor of the base member for communication with a passage in an engine crankcase; and
fastening means adapted to connect the breather device to the engine.

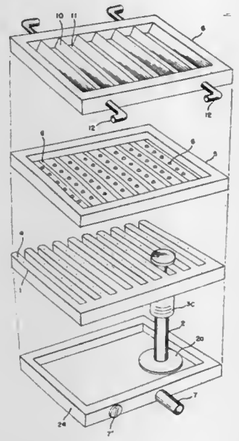
5,647,338
SPORTS OBJECT LAUNCHER
Robert Martin, 3638 Challanger Ct., Palmdale, Calif. 93550
Continuation-in-part of Ser. No. 299,955, Sep. 2, 1994, abandoned. This application Sep. 22, 1995, Ser. No. 532,437
Int. Cl.[6] A63B *69/40*; **F41B** *11/32*
U.S. Cl. 124—75 **5 Claims**



1. A gas launching apparatus for launching objects comprising:
a fluid control valve attached to a pressure vessel at an inlet side and attached to an aiming channel at an outlet side;
a pressure control system for fluid control of the fluid control valve attached to the fluid control valve comprising a pilot valve line having a pilot control valve and a gas supply line having a gas regulator wherein the pilot valve line and gas supply line are connected through a coalescent gas filter to a gas compressor;
an aiming control system attached to the gas compressor and the coalescent filter comprising,

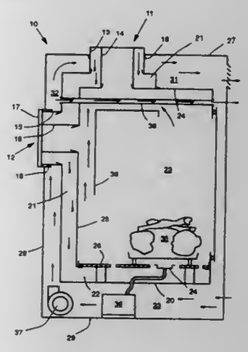
an up/down flow control valve attached to an up/down gas cylinder which is attached to the aiming channel and an up/down gas cylinder piston attached to a main frame by a hoist cable,
a left flow control valve attached to a dual digital cylinder and a right flow control valve attached to the dual digital cylinder wherein the dual digital cylinder is attached to the fluid control valve by a pivot assembly and is attached to the main frame; and
a master control unit to operate the aiming control system and the pressure control system.

5,647,339
GRILLING DEVICE
Shalom Ezra, Beit Shamai 39, Ramat Hasharon, Israel
Continuation-in-part of Ser. No. 239,530, May 9, 1994, abandoned. This application Sep. 28, 1995, Ser. No. 535,467
Claims priority, application Israel, Jul. 28, 1993, 106515
Int. Cl.[6] A47J *37/00*
U.S. Cl. 126—41 R **6 Claims**



1. A grilling device comprising:
a gas supply source;
a bottom frame including a plurality of openings formed therein, each of said plurality of openings being spaced apart from each other;
connecting means connecting said gas supply source to said bottom frame thereby distributing a gas supply to the plurality of openings;
a middle frame mounted on said bottom frame, said middle frame including a plate;
a plurality of gas jets formed in rows on said middle frame through which the gas emanating from said plurality of openings may flow and be ignited, said plurality of jets being located within said plate positioned over said openings;
an upper frame mounted on said middle frame;
a plurality of slatted grills formed on said upper frame, said slatted grills being spaced apart from each other by a distance corresponding to a distance between the rows of gas jets; and
a cover mounted on said upper frame of said grilling device, a chimney formed in said cover, and a filter formed in the chimney,
wherein each of said frames is superposed one upon another to form said grilling device.

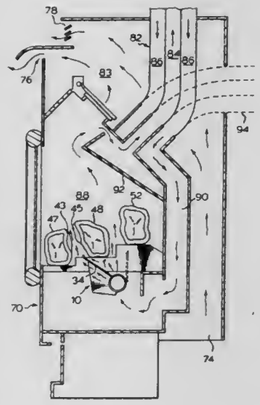
5,647,340
CONVERTIBLE DUAL DIRECT-VENTED FIREPLACE
Ronald John Shimek, Prior Lake, and Daniel Curtis Shimek, Apple Valley, both of Minn., assignors to Heat-n-Glow, Savage, Minn.
Filed Jan. 19, 1996, Ser. No. 588,867
Int. Cl.[6] F24C *3/00*
U.S. Cl. 126—85 B **13 Claims**



12. A dual direct vented fireplace, comprising:
a central combustion chamber having a pair of alternative selectable exhaust outlets,
a fireplace enclosure surrounding at least three sides of said central combustion chamber and forming a heat exchanger around the outside of said combustion chamber,
means forming a fresh air plenum mounted on the top and back of said combustion chamber having a pair of alternative selectable air inlets located over said exhaust outlets,
coaxial pipe means connected to each of said pair of alternative exhaust outlets and said air inlets, and
closure means coupled to one of said pair of alternative exhaust outlets and said air inlets for converting a dual direct-vented fireplace into a single direct-vented fireplace.

5,647,341
GAS BURNER AND FIREPLACE AND METHOD OF COMBUSTION
David A. Langman, Nottawa; Eldon R. Hawton, North Bay; Bradley W. Good, and Gerald W. Carson, both of Collingwood, all of Canada, assignors to Heritage Energy Systems, Collingwood, Canada
Filed Mar. 4, 1994, Ser. No. 205,930
Int. Cl.[6] F24C *3/00*
U.S. Cl. 126—512 **9 Claims**

1. A gas burner for a fireplace comprising: an elongated tubular pipe having opposite ends, said elongated tubular pipe closed at one end and means for communication with a gaseous fuel supply at the opposite end, a plurality of spaced apart primary orifices formed along the elongated tubular pipe facing upwardly for substantially vertical upward discharge of gaseous fuel, a plurality of spaced apart secondary orifices formed along a side of the elongated tubular pipe facing substantially horizontally, and an elongated deflector affixed in its elongated direction to the elongated tubular pipe above said secondary orifices to encompass the



secondary orifices and extending upwardly away from the elongated tubular pipe for lateral upward discharge or gaseous fuel from the secondary orifices.

5,647,342

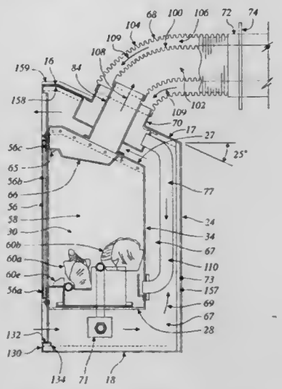
GAS OPERATED FIREPLACE ASSEMBLY

Donald R. Jamieson, Oakville; Peter G. VanderPlaat, Mississauga; Jimmy R. Poe, Oakville; Richard T. Holman, Mississauga, and Claudia M. Ramos, Etobicoke, all of Canada, assignors to Lennox Industries Inc., Dallas, Tex.

Filed Apr. 21, 1994, Ser. No. 230,607

Int. Cl.[6] F24C *3/00*

U.S. Cl. 126—512 **7 Claims**



1. A gas operated fireplace assembly, comprising:

a casing having an open front, said casing being positionable in an enclosure adjacent a room with said open front facing the room;

a firebox having a sealed combustion chamber therein;

mounting means for removably mounting said firebox within said casing such that said firebox is suspended from said casing in spaced relationship therewith to define an air wipe between said firebox and said casing;

a burner module located within said firebox, said burner module being connectible to a combustible gas source for burning combustible gas in said combustion chamber, said air wipe being adapted to allow room air to circulate around said firebox, whereby room air is heated;

a combustion air-intake module in fluid communication between a combustion air source external to the room and said firebox for introducing combustion air into said firebox;

exhaust means for exhausting products of combustion from said combustion chamber;

said casing including a first bottom panel, a first back panel, first and second side panels and a first top panel, said firebox including a second bottom panel, a second back panel, third and fourth side panels and a second top panel, said mounting means including first and second mounting flanges extending inwardly from the respective first and second side panels and third and fourth mounting flanges extending outwardly from the respective third and fourth side panels, said firebox being positioned within said casing with said third mounting flange in facing contact with said first mounting flange and said fourth mounting flange in facing contact with said second mounting flange, said first and third mounting flanges defining a first mounting interface and said second and fourth mounting flanges defining a second mounting interface, said mounting means further including a first fastener removably fastening said third mounting flange to said first mounting flange and a second fastener removably fastening said fourth mounting flange to said second mounting flange, whereby said firebox is suspended from said casing at said first and second mounting interfaces, said mounting means further including means removably fastening one end of said air-intake module to an inner surface of said first top panel, whereby said air-intake module is suspended from said first top panel at a third mounting interface within said air wipe, said mounting means further including means removably fastening an opposite end of said air-intake module to an outer surface of said second back panel at a fourth mounting interface, whereby said firebox is suspended from said air-intake module at said fourth mounting interface.

5,647,343

LATENT STORE

Huschang Sabet, Maybachstrasse 16, D-70469 Stuttgart, Germany

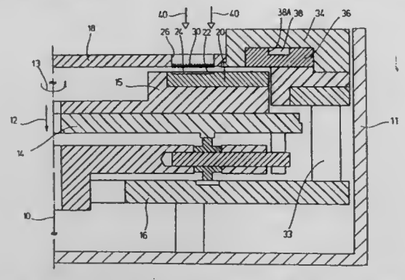
PCT No. PCT/EP93/02502, § 371 Date Apr. 19, 1995, § 102(e) Date Apr. 19, 1995, PCT Pub. No. WO94/09081, PCT Pub. Date Apr. 28, 1994

PCT Filed Sep. 16, 1993, Ser. No. 428,173

Claims priority, application Germany, Oct. 19, 1992, 42 35 159.6

Int. Cl.[6] F24J *2/34*

U.S. Cl. 126—619 **16 Claims**



1. A method for storing and liberating energy in a storage substance, comprising the steps of providing an organic storage substance having at least two stable stereoisomeric configurations, liberating energy from a first, photosensitive configuration of the storage substance by photoisomerization, and storing energy in the first configuration by contact with a solar radiation absorbing stereoselective regeneration medium.

8. A latent store for storing and liberating energy, comprising: a plurality of carriers; a stereoisomeric storage substance and a regeneration medium are each positioned on a respective one of said plurality of carriers; a motion means for moving the carriers with respect to each other so as to contact the storage substance and the regeneration medium against each other, and the photosensitive regeneration medium is continuously or intermittently subjectable to solar radiation; a means for screening the storage substance from solar radiation during the contact with the regeneration medium; and a means for intermittently subjecting the storage substance to solar radiation outside the contact with the regeneration medium so as to liberate the energy stored therein.

5,647,344

HEAT AND MOISTURE EXCHANGERS

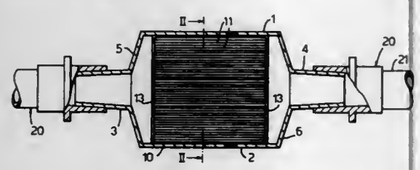
Christopher Stratton Turnbull, Hythe, England, assignor to Smiths Industries PLC, London, England

Filed Jun. 13, 1996, Ser. No. 662,316

Claims priority, application United Kingdom, Jul. 15, 1995, 9514527

Int. Cl.[6] A61M *15/00*

U.S. Cl. 128—201.13 **11 Claims**



1. An HME comprising: an outer casing; two inlets on the casing spaced from one another; and an exchange element within said casing, said element being located between said inlets such that gas flows through the exchange element in opposite directions when flow of gas to the HME is reversed, wherein said exchange element is provided by a bundle of hollow fibres arranged parallel to one another, and wherein said fibres are arranged such that gas flows through said bundle in both directions both along the bores of said fibres and along spaces between the fibres.

5,647,345

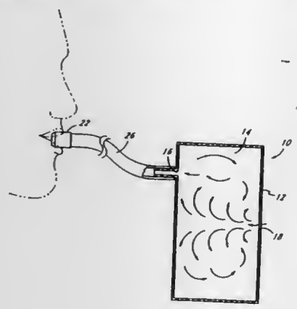
RESPIRATORY STIMULATOR & METHODS OF USE

Gilbert D. Saul, 27405 Puerta Real #130, Mission Viejo, Calif. 92691

Continuation-in-part of Ser. No. 182,677, Jan. 14, 1994, abandoned, which is a continuation of Ser. No. 882,076, May 12, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 473,141

Int. Cl.[6] A61M *16/00*

U.S. Cl. 128—201.23 **10 Claims**



1. A respiratory stimulator, including

a rigid mixing chamber where the contents of the chamber include exhaled air and fresh air which are mixed together by the breathing of a user, said chamber not varying substantially in volume in response to exhalation and inhalation of the user,

a breathing port in the chamber which provides communication between the user and the mixing chamber, upon exhalation of the user, exhaled air entering the chamber as a jet stream to create turbulence within the chamber and being entrapped in the chamber and mixed with the contents of the chamber, and, upon inhalation of the user, a portion of the contents of the chamber being drawn through the breathing port, and

a vent opening structure in the chamber for providing communication between the mixing chamber and the atmosphere, upon exhalation of the user, a portion the contents of the chamber substantially equal to the volume of air exhaled by the user being exhausted to the atmosphere through the vent opening structure, and upon inhalation of the user, fresh air as a jet stream substantially equal to the volume of air inhaled by the user being introduced into the chamber through the vent opening structure,

said vent opening structure having a sufficiently large cross-sectional area to allow that portion of the contents of the chamber being exhausted to flow freely out of the chamber as the user exhales into the chamber without substantially increasing the pressure within the chamber yet being sufficiently restrictive to promote turbulent mixing in the chamber of the contents of the chamber and fresh air drawn into the chamber upon inhalation.

5,647,346

MEDICAL APPARATUS HAVING A METERING DEVICE

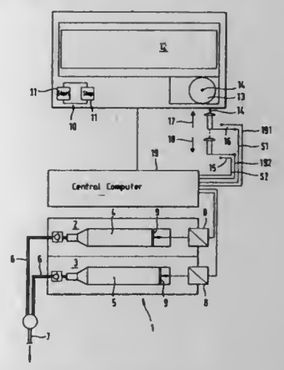
Uvo Hölscher, Stockelsdorf, Germany, assignor to Drägerwerk AG, Lubeck, Germany

Filed Oct. 6, 1995, Ser. No. 539,959

Claims priority, application Germany, Oct. 8, 1994, 44 36 014.2

Int. Cl.[6] A62B *7/00*

U.S. Cl. 128—202.22 **4 Claims**



1. A medical apparatus comprising:

a first metering device for metering a first fluid medium;

a second metering device for metering a second fluid medium;

a display device having a display screen for displaying a first menu structure including a first plurality of input quantities and a second menu structure including a second plurality of input quantities;

a computer unit for controlling said metering devices in accordance with individual ones of the input quantities from said menu structures;

a single rotary knob for selecting one of said input quantities of said first menu structure;

a pressure-actuated acknowledgment switch operatively connected to said single rotary knob so as to be actuable by said single rotary knob to issue an assuming signal (S2) for assuming the selected input quantity as a setting value for one of said metering devices;

a pull or slide switch operatively connected to said single rotary knob so as to be actuable by said single rotary knob to issue a cancelling signal (S1) for cancelling the assumption of said selected input quantity as said setting value; and,

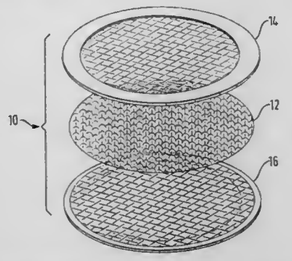
circuit means for transmitting said cancelling signal (S1) to at least one of said computer unit and said metering devices.

5,647,347

MEDICAMENT CARRIER FOR DRY POWDER INHALATOR

Michiel M. Van Oort, Durham, N.C., assignor to Glaxo Wellcome Inc., Research Triangle Park, N.C.

Filed Oct. 21, 1994, Ser. No. 328,578
Int. Cl.[6] A61M *15/00*
U.S. Cl. 128—203.15 **10 Claims**



1. A medicament carrier for use in a dry powder inhalator device comprising a carrier having at least one carrier screen portion defining a plurality of interstices therein and loaded with at least one dose of powdered medicament particles of predetermined particulate size, wherein the powdered medicament particles are loaded onto the carrier screen portion surface from a suspension of the medicament particles and suspending agent and the suspending agent is evaporated such that the interstices of the carrier screen portion surface are at least partially open and free of the powdered medicament particles.

5,647,348

Patent Not Issued For This Number

5,647,349

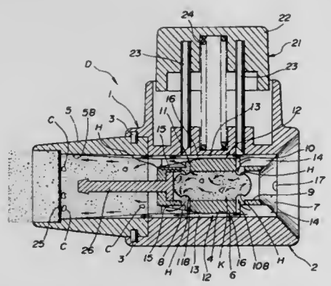
MEDICINE ADMINISTERING INHALING DEVICE

Hisatomo Ohki; Shigemi Nakamura, both of Isesaki; Kazunori Ishizeki, Fujimi, and Akira Yanagawa, Yokohama, all of Japan, assignors to Unisia Jecs Corporation, Atsugi, and Dott Limited Company, Yokohama, both of Japan

Filed May 31, 1996, Ser. No. 655,866
Claims priority, application Japan, Jun. 1, 1995, 7-158499
Int. Cl.[6] A61M *16/00*
U.S. Cl. 128—203.15 **7 Claims**

1. A medicine administering device comprising:

a generally cylindrical inhaling piece including a hold accommodating section located at a first side of said inhaling piece, and an inhaling mouth located at a second side of said inhaling piece, the second side being axially opposite to said first side;



a generally cylindrical capsule holder disposed in said holder accommodating section and formed with a capsule accommodating hole which opens at a first end of said capsule holder, said capsule accommodating hole adapted for receipt of a capsule,

means defining first and second pin insertion holes which are formed in said capsule holder and said inhaling piece and respectively located to be connected with axially opposite sections of said capsule accommodating hole, each pin insertion hole extending generally in a diametrical direction of said inhaling piece and said capsule holder;

means defining an air flow passage which is axially formed at at least one of an inner peripheral surface of said inhaling piece and an outer peripheral surface of said capsule holder, said first and second pin insertion holes being communicated with each other through said air flow passage; and

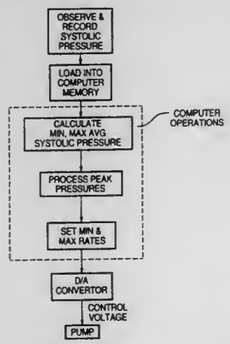
a perforator having first and second pins which are to be inserted respectively into said first and second pin insertion holes to form holes in the capsule which holes are in communication with said air flow passage.

5,647,350

CONTROL OF LIFE SUPPORT SYSTEMS

William Alan C. Mutch, and Gerald Robin Lefevre, both of Winnipeg, Canada, assignors to University Of Manitoba, Winnipeg, Canada

Filed Mar. 15, 1995, Ser. No. 404,464
Claims priority, application United Kingdom, Mar. 15, 1994, 9405002
Int. Cl.[6] A61M *16/00*
U.S. Cl. 128—204.21 **3 Claims**



1. A method of controlling flow of a biological fluid to an organ during controlled life support conditions, said biological fluid being the primary source of fluid to sustain life support to an organ, wherein said method which comprises:

establishing a predetermined pattern of variations over time of instantaneous changes in flow of a biological fluid to an independently-functioning normal organ of a mammalian species,

generating a variable control parameter for regulation of flow of said biological fluid to an organ during controlled life support conditions in accordance with said predetermined pattern, and

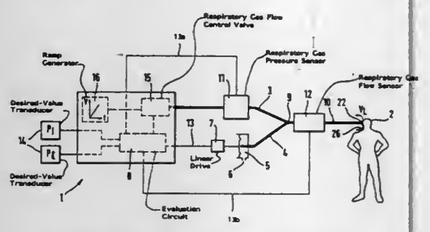
controlling said flow of said biological fluid to said organ during controlled life support conditions in accordance with said variable control parameter to provide a variable flow of said biological fluid to the organ during controlled life support conditions which mimics the normal flow of said biological fluid to a normal organ.

5,647,351

VENTILATING SYSTEM FOR SUPPLYING A PATIENT WITH RESPIRATORY GAS AND METHOD FOR TRIGGERING THE RESPIRATORY PHASES IN SAID SYSTEM

Dieter Weismann, Gross Grönau, Germany; Gregory-Alan Colla, North Sydney, Australia, and Dirk Fiebelkron, Lübeck, Germany, assignors to Dragerwerk AG, Lü beck, Germany

Filed Sep. 7, 1995, Ser. No. 524,535
Claims priority, application Germany, Sep. 10, 1994, 44 32 219.4
Int. Cl.[6] A61M *16/00*
U.S. Cl. 128—204.21 **4 Claims**



1. A ventilating system for supplying a patient with respiratory gas during inspiratory and expiratory phases of breathing, the ventilating system comprising:

a source of compressed respiratory gas;

valve means connected to said source of compressed respiratory gas and being provided for metering a flow of said respiratory gas to the patient thereby adjusting predetermined pressures of said respiratory gas during said inspiratory phases and expiratory phases of the patient;

a pressure measuring device for measuring the pressure of the respiratory gas supplied to the patient during inspiration and expiration and for providing measured pressure values defining a first curve representing respiratory gas pressure;

a flow measuring device for measuring respiratory gas flow during inspiration and expiration and for providing measured flow values defining a second curve representing respiratory gas flow and said second curve having an amplitude;

an evaluation circuit for processing said curves and for controlling said valve means to switch over between said inspiratory and expiratory phases of the patient upon predetermined values of the amplitude of said second curve, said predetermined values being trigger thresholds T_{IL} and T_{EL} of said second curve; and,

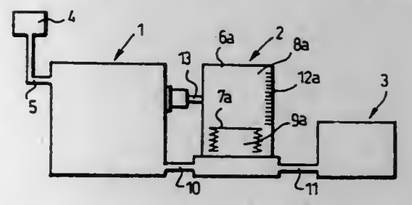
said evaluation circuit including means for executing a logic operation pursuant to a predetermined function between said first and second curves during said inspiratory phases and expiratory phases of the patient to form an inspiratory ancillary trigger threshold Z_I and an expiratory ancillary trigger threshold Z_E and to add said ancillary trigger thresholds (Z_I and Z_E) to said inspiratory and expiratory thresholds (T_{IL} and T_{EL}), respectively, to form composite trigger thresholds ($T_{IL}+Z_I$) and ($T_{EL}+Z_E$) for controlling the switchover between said phases.

5,647,352

ARRANGEMENT IN CONNECTION WITH A VENTILATOR

Hannes Niemi, and Markku Hyvönen, both of Espoo, Finland, assignors to Instrumentarium Oy, Finland

Filed Jun. 13, 1995, Ser. No. 489,848
Claims priority, application Finland, Jun. 21, 1994, 942990
Int. Cl.[6] A61M *16/00*
U.S. Cl. 128—204.28 **8 Claims**



1. Ventilator apparatus for ventilating patients having differing pulmonary characteristics, said apparatus comprising:

a patient circuit for providing a ventilating gas flow connection to a patient;

a selected one of a plurality of interchangeable, different bellows units coupled to said patient circuit, each of said bellows units having different ventilating gas controlling properties, the bellows unit coupled to said patient circuit being selected in accordance with the pulmonary characteristics of the patient undergoing ventilation;

control means for controlling the operation of said patient circuit and said selected one of said different bellows units; and

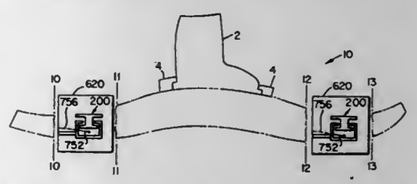
identification means coupled to said control means for detecting which one of said plurality of different bellows units is coupled to said patient circuit and for providing an indication in accordance therewith.

5,647,353

SKI DEVICE

Paul Robert Juhasz, Union City, N.J., assignor to Ski-Shocks, Inc., Houston, Tex.

Continuation of Ser. No. 251,023, May 31, 1994, Pat. No. 5,499,836, which is a continuation of Ser. No. 30,848, Mar. 15, 1993, Pat. No. 5,332,254, which is a continuation of Ser. No. 950,929, Sep. 24, 1992, Pat. No. 5,213,355, which is a continuation of Ser. No. 385,729, Jul. 26, 1989, Pat. No. 5,156,413.
This application Mar. 18, 1996, Ser. No. 618,010
Int. Cl.[6] A63C *5/07*
U.S. Cl. 280—602 **45 Claims**



1. A ski and a boot and binding assembly comprising: a ski having a front end portion, a tail end portion, and a middle portion, and having a top and a bottom surface, an area along said top

surface of said middle portion of said ski providing a surface for mounting a boot and binding assembly; said ski having a force transducer means mounted thereon for generating an electrical signal, in response to changes in forces imparted upon said ski, in order to modify the performance of the ski;

a boot and binding assembly, said assembly being attached to said ski along said boot and binding mounting surface area of said transducer means provided ski;

said transducer means being located in areas other than said boot and binding assembly, said transducer means further being located in areas other than along said boot and binding mounting top surface area of said ski.

5,647,354

ARTIFICIAL RESPIRATION BAG

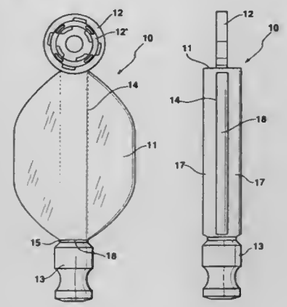
Mukund Lakhani, Beilstein; Jörg Brokelmann, Heilbronn-Biberach, and Armin Singvogel, Remseck, all of Germany, assignors to Willy Rüsch AG, Kernen-Rommelsbausen, Germany

Filed May 15, 1996, Ser. No. 647,521

Claims priority, application Germany, May 16, 1995, 195 17 857.235

Int. Cl.[6] A62B *9/04*

U.S. Cl. 128—205.13 **4 Claims**



1. An artificial respiration device comprising:

a holding element consisting essentially of at least one of silicone and a thermoplastic elastomer;

a holding ring integrally vulcanized in said holding element;

a reservoir consisting essentially of at least one of silicone and a thermoplastic elastomer and integral with said holding element at a first end of said reservoir, said reservoir having side folds for inflation;

a support consisting essentially of at least one of silicone and a thermoplastic elastomer and forming a lumen at a second end of said reservoir, said support having a peripheral enlargement; and

a cuff consisting essentially of at least one of silicone and a thermoplastic elastomer, said cuff having a shoulder engaging and permanently attached to said peripheral enlargement.

5,647,355

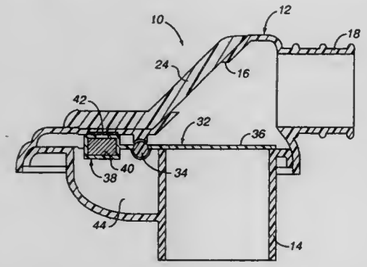
AUTOMATIC SAFETY VALVE FOR RESPIRATORY EQUIPMENT WHICH IS COUNTER-BALANCED AND SELF-ADJUSTING

John R. Starr, Leechburg; Eric W. Starr, Pittsburgh; William J. Kaigler, N. Huntington; John Raymond Pujol, Pittsburgh; Patrick DeVinney, Pittsburgh, and Andrew Serowski, Pittsburgh, all of Pa., assignors to Respironics, Inc., Murrysville, Pa.

Continuation-in-part of Ser. No. 129,950, Sep. 30, 1993, Pat. No. 5,438,981. This application May 30, 1995, Ser. No. 453,642

Int. Cl.[6] A62B *9/02;18/10;18/02*

U.S. Cl. 128—205.24 **4 Claims**



1. Apparatus for delivering pressurized gas to the airway of a patient, said apparatus comprising:

gas flow generator means for providing a flow of said pressurized gas;

conduit means for delivering said gas flow to the airway of said patient;

a means for interfacing with a patient having an inlet; and

a self-regulating valve device comprising:

a housing including a primary inlet adapted for connection to said conduit means, a secondary inlet in communication with an ambient atmosphere, and an outlet adapted for connection to said patient interface means inlet; and

a substantially rigid valve element and means for pivotally mounting said valve element within said housing, said valve element being operable to open said primary inlet and close said secondary inlet in the presence of a flow of pressurized gas from said gas flow generator means and to open said secondary inlet and close said primary inlet in the absence of said flow of pressurized gas, said valve element comprising a closure portion dimensioned to cover said primary and secondary inlets and means for counterbalancing said closure portion with respect to said pivotally mounting means.

5,647,356

RESPIRATOR CARTRIDGE WITH SEALING FIT TEST STRUCTURE AND METHOD OF USE

Richard J. Osendorf, West St. Paul, and David W. Lee, Apple Valley, both of Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.

Filed Jul. 28, 1993, Ser. No. 98,792

Int. Cl.[6] A62B *9/04;7/10;19/00;23/02*

U.S. Cl. 128—206.17 **25 Claims**

1. A respirator cartridge comprising:

a first cartridge housing construction defining a passageway for air;

a first filter arrangement disposed in the first cartridge housing construction for filtering air passing through the passageway of the first cartridge housing construction;

a seal member including:

a central portion comprising a resilient compressible material;



a first field of adhesive adhering the central portion to the first cartridge housing construction; and

a second field of adhesive on the central portion which is not adhering the central portion to the first cartridge housing construction;

the first cartridge housing construction including a planar platform wherein the first field of adhesive adheres the central portion of the seal member to the planar platform;

the first cartridge housing construction further including a lip surrounding the planar platform.

5,647,357

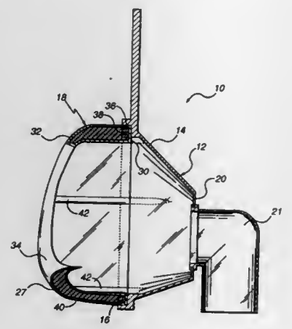
RESPIRATORY MASK FACIAL SEAL

Shari S. Barnett, Pittsburgh; Patrick M. Handke, Monroeville; Kristine K. Sabo, New Kensington, and Eugene N. Scarberry, Trafford, all of Pa., assignors to Respironics, Inc., Murrysville, Pa.

Filed Sep. 8, 1995, Ser. No. 525,404

Int. Cl.[6] A62B *18/08*

U.S. Cl. 128—206.24 **24 Claims**



1. A flexible, resilient respiratory mask facial seal for sealing engagement with the face of a human user to form a sealed interface encompassing a predetermined portion of such user's face, said facial seal being operatively connectable to a source of breathing gas, said facial seal comprising a peripheral wall portion having an inner end and an outer end opposite said inner end, said inner end being attachable to a body of a respiratory mask and said outer end including a seal portion having a contoured sealing surface for sealing engagement with a user's face, at least said seal portion being formed from a gel substance having a resiliency substantially corresponding to that of human fat tissue, said gel substance including the property of recoiling back to substantially its original shape when not stressed.

5,647,358

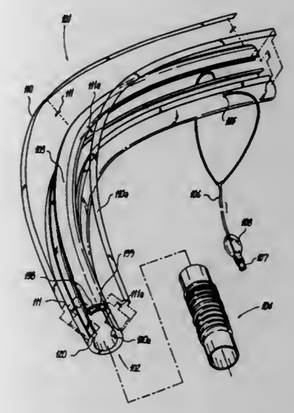
EXPANDABLE INTER VIVOS TUBE

Joseph Vilasi, S. Shores Condo Unit 704 5635 A1A South, Melbourne Beach, Fla. 32951

Filed Mar. 20, 1996, Ser. No. 618,577

Int. Cl.[6] A61M *16/04*

U.S. Cl. 128—207.14 **23 Claims**



1. A flexible expandable inter vivos tube, for insertion into a body cavity of a person or other mammal, comprising:

a flexible longitudinally extending tube interrupted by a cavity extending longitudinally along an exterior edge thereof,

said flexible longitudinally extending tube having a pair of free ends extending longitudinally along each side of said longitudinally extending cavity, and

a longitudinally extending positioning mechanism, said longitudinally extending positioning mechanism circumferentially joining said free ends of said flexible longitudinally extending tube therein to form a closed tube,

wherein said pair of free ends are slidably movably within said positioning mechanism, said pair of free ends are capable of being expanded and when expanded, cooperate with said positioning mechanism to expand the diameter of said inter vivos tube for reversibly anchoring said flexible expandable inter vivos tube within a body cavity without obstruction.

5,647,359

MEASURING APPARATUS

Hiromasa Kohno, and Masaru Kurio, both of Nakai-machi, Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 31, 1994, Ser. No. 221,234

Claims priority, application Japan, Apr. 1, 1993, 5-075542; May 17, 1993, 5-114657

Int. Cl.[6] A61B *5/00*

U.S. Cl. 128—634 **17 Claims**

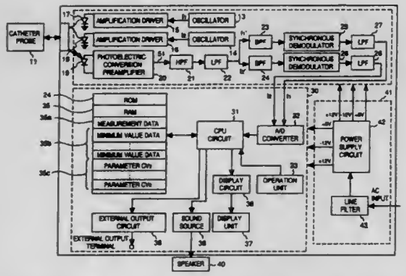
1. A measuring apparatus comprising:

radiating means for radiating light having first and second wavelengths different from each other in blood;

detecting means for detecting reflected light intensities from the blood upon radiation of the light having the first and second wavelengths;

minimum value detecting means for detecting a minimum value of the reflected light intensity of one of the light having the first and second wavelengths detected by said detecting means within a predetermined period of time; and

calculating means for calculating an oxygen saturation on the basis of the minimum value detected by said minimum value detecting means and a minimum value of the reflected light



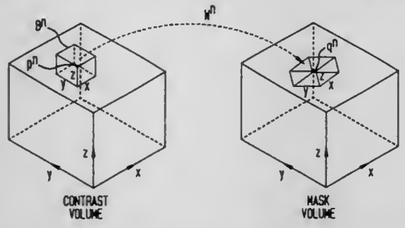
intensity of the other light corresponding to the minimum value detected by said minimum value detecting means.

5,647,360

DIGITAL SUBTRACTION ANGIOGRAPHY FOR 3D DIAGNOSTIC IMAGING

Ali Reza Bani-Hashemi, Belle Mead; Sumitro Samaddar, Plainsboro, and Dietmar Hentschel, Little Silver, all of N.J., assignors to Siemens Corporate Research, Inc., Princeton, N.J.

Filed Jun. 30, 1995, Ser. No. 491,326
Int. Cl.[6] G06F *15/42*
U.S. Cl. 128—653.1 **16 Claims**



1. A digital subtraction angiography method useful for three dimensional (3D) imaging of a selected volume of a body, comprising the following steps:

acquiring first and second data sets of 3D data representative of an image of substantially the same selected volume in said body, said first and second data sets being acquired at different times corresponding to a pre- and a post, respectively, application of a process to said body to differentially affect imaging characteristics of at least a given portion of said selected volume;

determining common reference points for spatially corresponding subvolumes in said first and second data sets;

comparing in a 3D spatial manner data in subvolumes of said second data set with data in corresponding subvolumes in said first data set in order to determine a new reference point in each of said subvolumes of said first data set which results in a best match of the spatial similarity of the data in said corresponding subvolumes of said second data set;

spatially interpolating new data for the subvolumes of said first data set using said new reference points determined above and the originally acquired data of said first data set, thereby generating a new first data set for said volume;

subtracting said new first data set from said second data set, for generating a subtraction data set representative of a 3D image of said selected volume in which said given portion is accentuated; and

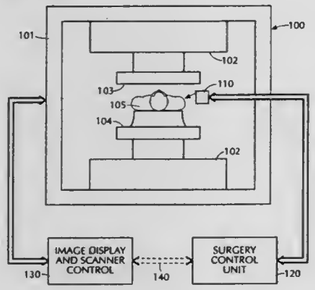
applying said subtracted data set to a display device for displaying an image on said display device of said selected volume wherein said given portion is accentuated.

5,647,361

MAGNETIC RESONANCE IMAGING METHOD AND APPARATUS FOR GUIDING INVASIVE THERAPY

Raymond V. Damadian, Woodbury, N.Y., assignor to Fonar Corporation, Melville, N.Y.

Continuation-in-part of Ser. No. 993,072, Dec. 18, 1992, which is a continuation-in-part of Ser. No. 952,810, Sep. 28, 1992. This application Mar. 1, 1993, Ser. No. 24,324
Int. Cl.[6] A61B *5/055*
U.S. Cl. 128—683.2 **54 Claims**



1. A method for guiding invasive therapy in a patient comprising:

positioning at least a region of patient anatomy containing a tissue upon which said therapy is to be performed within a magnetic resonance imaging apparatus;

introducing an instrument into said patient and guiding said instrument to said tissue by reference to at least one magnetic resonance image of said instrument within said region of patient anatomy acquired during the course of said guiding and to a previously prepared representation of the path to be followed by said instrument during the course of said guiding; and

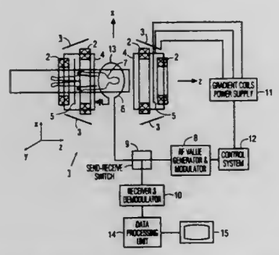
carrying out said therapy on said tissue by positioning said instrument to perform said therapy.

5,647,362

CORRECTION OF READ-GRADIENT POLARITY IN EPI AND GRASE MRI

Miha Fuderer, and Johannes P. Groen, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 14, 1994, Ser. No. 306,095
Claims priority, application European Pat. Off., Sep. 16, 1993, 93202678
Int. Cl.[6] A61B *5/055*
U.S. Cl. 128—653.2 **15 Claims**



1. Method for magnetic resonance imaging of a body placed in a stationary and substantially homogeneous main magnetic field, the method comprising:

applying an excitation radio-frequency pulse (RF-pulse) for excitation of nuclear dipole moments in at least a portion of the body, followed by

switching a plurality of magnetic field read gradient pulses having alternate positive and negative polarity, for generating a plurality of magnetic resonance signals in the excited portion, and simultaneously measuring a first set of signal samples of said magnetic resonance signals,

such that said signal samples from said first set are located on lines running to and fro in k-space, the lines having a mutual distance in a direction substantially perpendicular to the direction of the lines,

measuring a second set of signal samples with both polarities of the read gradient and determining from said second set a set of phase errors, and

forming, by transforming and correcting for phase errors, an image from the first set of signal samples,

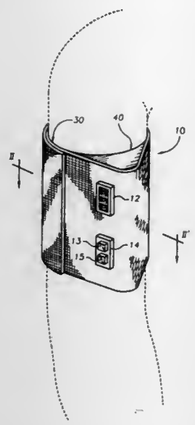
wherein the signal samples of the second set are located on spaced apart lines in, at least, a two-dimensional sub-region in k-space, the same lines in k-space being measured with both polarities of the read gradient or pairs of said lines which are closely adjacent in relation to said mutual distance in said first set being measured with respective different polarities of the read gradient such that the signal samples measured in said sub-region with a given polarity of the magnetic field read gradient are located on lines being spaced apart at a distance being substantially equal to or less than said mutual distance in the first set.

5,647,363

AMBULATORY CLEARANCE FUNCTION MONITOR

Carlos A. Rabito, Medford, and Richard H. Moore, Concord, both of Mass., assignors to The General Hospital Corporation, Boston, Mass.

Continuation-in-part of Ser. No. 793,781, Nov. 18, 1991, Pat. No. 5,301,673. This application Apr. 11, 1994, Ser. No. 225,646
Int. Cl.[6] A61B *6/00*
U.S. Cl. 128—659 **38 Claims**



1. A device for measuring depletion of a detectable substance from a subject, comprising:

a detector having means for responding to a signal generated from a substance equilibrated within a subject's extracellular fluid;

at least one barrier enclosing the detector and at least a portion of a body part of the subject, the barrier defining a constant volume of extracellular fluid within which the signal is detected, said at least one barrier adapted to prevent a signal external to the constant volume portion from reaching the detector; and

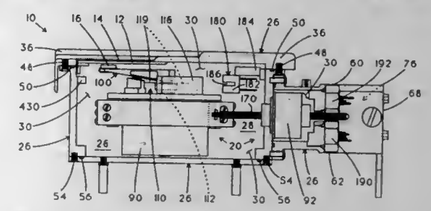
signal processing means for determining a clearance rate of the detectable substance, the signal processing means capable of measuring depletion of a quantity of said detectable substance within the defined constant volume of extracellular fluid.

5,647,364

ULTRASONIC BIOMETRIC IMAGING AND IDENTITY VERIFICATION SYSTEM

John K. Schneider, Snyder, N.Y.; Gerald F Marshall, Morgan Hill, Calif., and Andrew D. Vassallo, Williamsville, N.Y., assignors to Ultra-Scan Corporation, Amherst, N.Y.

Filed Feb. 15, 1995, Ser. No. 389,104
Int. Cl.[6] A61B *8/00*
U.S. Cl. 128—660.09 **29 Claims**



1. A probe for an ultrasonic imaging system for providing an output ultrasonic beam to scan human or animal tissue having a surface, said probe comprising:

a) means for defining said surface in a manner supporting said human or animal tissue for imaging the same;

b) transducer means for providing an output ultrasonic beam;

c) electrically-operated motive means operatively coupled to said transducer means for moving said transducer means in a manner such that said output ultrasonic beam is directed in a path along said surface;

d) fluid-tight housing means extending from said surface defining means and having an interior region containing said transducer means and said motive means; and

e) a fluid filling said interior region of said housing means, said fluid having an acoustic impedance substantially equal to that of water and having a viscosity sufficiently low so as not to impede the movement of said transducer means and being electrically non-conductive; and

f) arm means for directly coupling said motive means to said transducer means, said arm means having sufficient rigidity so as not to bend or flex during movement of said motive means and said arm means having a structure which minimizes drag as said arm means moves through said fluid.

5,647,365

APODIZATION PARAMETER GENERATOR FOR ULTRASOUND MEDICAL IMAGING SYSTEM

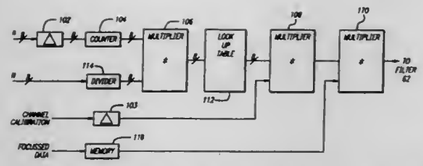
William J. Abboud, Issaquah, Wash., assignor to Siemens Medical Systems, Inc., Iselin, N.J.

Filed Nov. 13, 1995, Ser. No. 556,729
Int. Cl.[6] A61B *8/00*
U.S. Cl. 128—661.01 **19 Claims**

8. A medical diagnostic ultrasound beam-forming apparatus having resident apodization parameter generation, comprising:

a transducer array comprising a plurality of transducer elements defining an aperture of interest;

a beam-former circuit that receives an electronic signal corresponding to an ultrasound signal detected at a predetermined transducer element of the plurality of transducer elements and transforms the received electronic signal based upon at least a



focus parameter and an apodization parameter, said beamformer circuit comprising;

a look-up table memory that stores a number of apodization parameter entries;

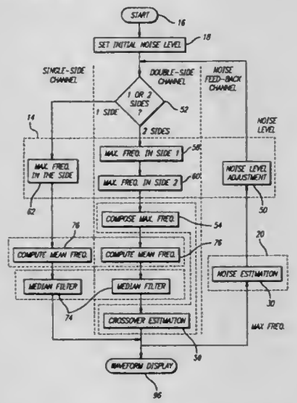
a pointer signal generating means having a first input for receiving a first signal indicating size of the aperture of interest in transducer element units, a second input for receiving a second signal indicating relative location of said predetermined transducer element within the aperture, and a third input for receiving a third signal identifying the number of apodization parameter entries stored in the look-up table memory, said generating means having means for generating a pointer output signal to the memory for accessing an apodization parameter associated with said predetermined transducer element of said array, said memory thereby outputting the accessed apodization parameter.

5,647,366

METHOD AND SYSTEM FOR AUTOMATIC MEASUREMENTS OF DOPPLER WAVEFORMS

Lee Weng, Issaquah, Wash., assignor to Siemens Medical Systems, Inc., Iselin, N.J.

Filed Sep. 17, 1996, Ser. No. 718,060
Int. Cl.[6] A61B *8/00*
U.S. Cl. 128—661.09 **19 Claims**



1. A method of processing Doppler data comprising steps of:

forming a plurality of first Doppler signals in response to receiving energy from an object of interest, said received energy having a range of frequency components, each first Doppler signal being indicative of intensities of frequency components;

forming a second Doppler signal from said first Doppler signals such that said second Doppler signal is indicative of values of a time-varying parameter of interest, said second Doppler signal having a succession of first peaks; and

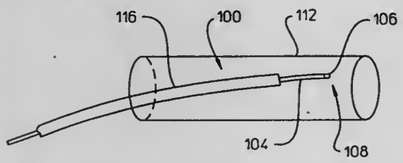
determining a noise component within said second Doppler signal, including limiting implementation of said determination to time periods corresponding to regions between said first peaks of said second Doppler signal and including basing said determination upon first portions of said first Doppler signals independent of second portions upon which said values of said time-varying parameter are based.

5,647,367

SCANNING ULTRASONIC PROBE WITH LOCALLY-DRIVEN SWEEPING ULTRASONIC SOURCE

Paul Lum, Los Altos, and Edward Verdonk, San Jose, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 31, 1996, Ser. No. 657,742
Int. Cl.[6] A61B *8/00*
U.S. Cl. 128—662.06 **24 Claims**



1. Ultrasonic probe for imaging tissues from inside a patient's body cavity having a wall, the ultrasonic probe being elongated and having a distal end suitable for inserting inside the body cavity and a proximal end opposite the distal end, comprising:

(a) housing having a portion that is substantially transparent to ultrasound, the housing being proximate to the distal end of the ultrasonic probe;

(b) ultrasonic beam transmitting means for transmitting an ultrasonic beam, the means having a pivot able member which directs the ultrasonic beam to a selected direction, the pivot able member being supported by support arm operatively connected in the housing, said support arm by torsion or flexion allowing back and forth pivotal motion of said pivotable member for scanning the ultrasonic beam in the body cavity for imaging; and

(c) driver for driving the pivotal motion of the pivot able member, the driver being located proximate to the transducer such that all driving motions occur proximate to the distal end of the ultrasonic probe.

5,647,368

IMAGING SYSTEM FOR DETECTING DISEASED TISSUE USING NATIVE FLUORSECENCE IN THE GASTROINTESTINAL AND RESPIRATORY TRACT

Haishan Zeng; Richard W. Cline; Calum E. MacAulay, and Bruno W. Jaggi, all of Vancouver, Canada, assignors to Xillix Technologies Corp., Richmond, Canada

Filed Feb. 28, 1996, Ser. No. 608,185
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—665 **13 Claims**

1. A system for examining tissue to detect the presence of cancerous or precancerous tissue, comprising:

an endoscope;

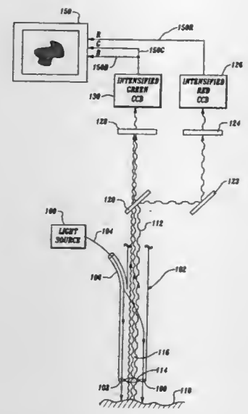
a substantially monochromatic light source for producing excitation light at an excitation wavelength that will cause the tissue under examination to produce autofluorescence light, the light source including:

a) a lamp that produces excitation light;

b) a collecting mirror positioned about the lamp for collecting the excitation light produced by the lamp and directing the excitation light outwardly of the collecting mirror,

c) a first dichroic mirror positioned to receive the excitation light collected by the collecting mirror and to filter the excitation light;

d) a first lens positioned to receive the filtered excitation light reflected from the first dichroic mirror in order to produce a substantially parallel beam of excitation light;



e) a color filter positioned to receive the parallel beam of excitation light, the color filter operating to filter light having wavelengths not at the excitation wavelength from the parallel beam of excitation light; and

f) a second lens positioned to receive the filtered beam of excitation light that has passed through the color filter, the second lens focusing the excitation light into the endoscope in order to excite the tissue under examination;

collecting means for gathering reflected excitation light and autofluorescence light produced by the tissue under examination;

a second dichroic mirror positioned to receive the gathered, reflected excitation light and the autofluorescence light, the second dichroic mirror dividing the autofluorescence light into a first beam having wavelengths where an intensity of the autofluorescence light for abnormal tissue is substantially different from normal tissue and a second beam where an intensity of the autofluorescence light for abnormal tissue is substantially the same as normal tissue;

a first and second camera for producing a first and second autofluorescence image signal of the tissue under examination; the first camera receiving the first beam of autofluorescence light and the second camera receiving the second beam of autofluorescence light; and

a color monitor having color video inputs, wherein the first autofluorescence image signal is coupled to a first color video input and the second autofluorescence image signal is coupled to another of the color video inputs, the color monitor producing a false color display whereby normal tissue and abnormal tissue appear as contrasting colors on the color monitor.

5,647,369

APPARATUS AND METHODS FOR THE NONINVASIVE MEASURMENT OF CARDIOVASCULAR SYSTEM PARAMETERS

Steven P. Petrucelli, Cranbury; Walter Welkowitz, Metuchen; Lisa K. Liss, Dunellen; Alan M. Smith, East Brunswick, and Stephen A. Orbine, III, Bernardsville, all of N.J., assignors to Rutgers University, New Brunswick, N.J.

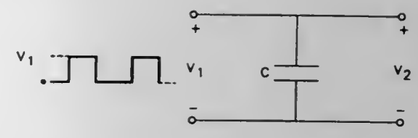
Division of Ser. No. 317,927, Oct. 4, 1994, Pat. No. 5,535,753.
This application Apr. 19, 1996, Ser. No. 634,974
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—672 **19 Claims**

1. A method of noninvasively measuring cardiac output of a living subject, comprising the steps of:

measuring systolic minus diastolic pulse pressure of the subject;

measuring the heart rate of the subject;

computing the cardiac output of the patient from the following equation:



$$CO = HR * PP * C * 0.133$$

where CO is cardiac output in liters/minute; HR is the measured heart rate in beats/minutes; PP is the measured systolic minus diastolic pulse pressure in mmHg; 0.133 is a conversion factor; and C is a capacitance value representative of arterial compliance, wherein C has a magnitude of about

$$C = X * 10^{-6} \text{ Farads},$$

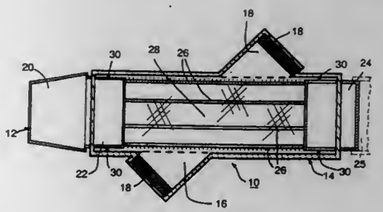
and X is a function of one or more of pulse pressure, age in years, height in centimeters, and weight in kilograms.

5,647,370

ULTRASONIC SPIROMETER

Karl Harnoncourt, Graz, Austria, assignor to NDD Medizintechnik GmbH, Würzburg, Germany

Filed Jun. 7, 1995, Ser. No. 479,435
Claims priority, application Germany, Jul. 1, 1994, 9410661 U
Int. Cl.[6] A61B *8/00*
U.S. Cl. 128—725 **15 Claims**



1. An ultrasonic spirometer comprising:

a graduated tube extending along a graduated tube axis,

a transmitter/receiver cell pair positioned in a graduated portion of said graduated tube disposed at an angle to the graduated tube axis,

an easily replaceable breathing tube insertable into the graduated tube, the breathing tube including one material which is permeable for ultrasonic waves but substantially impermeable to germs and contaminants,

the material being positioned in an area in which the graduated portion of said graduated tube intersects the graduated tube and over an entire circumference of the breathing tube.

5,647,371

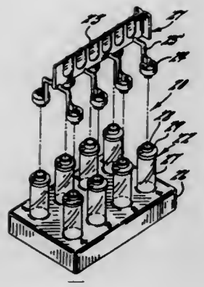
SKIN TESTING DEVICE LOADING METHOD

William White, Jr.; Robert E. Esch, both of Lenoir, and John A. Richardson, Charlotte, all of N.C., assignors to Greer Laboratories, Inc., Lenoir, N.C.

Filed Apr. 12, 1995, Ser. No. 421,617
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—743 **9 Claims**

1. A method for performing skin tests for biologic response which comprises the steps of:

providing an applicator having at least one pick, said pick having at least one skin piercing epidermal point and being capable of carrying a load of testing substance;



providing a source of test substances for each pick, each of said sources being carried in a container having an opening for each source and arranged in said container so as to accommodate each pick of said applicator;

placing said applicator in sealing relationship over each of said openings to form a single unit of the combined applicator and source;

inverting said single unit so as to load each pick with an effective amount of said testing substance to perform a skin test; and

reinverting said unit to its upright position, and

removing said applicator in loaded condition ready for performing skin tests.

5,647,372

SPECIMEN RETRIEVAL POUCH AND METHOD FOR USE

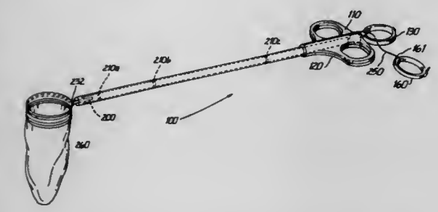
H. Jonathan Tovey, Milford; Vinod Nagori, Danbury, and Marina Korishch, Stamford, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 906,794, Jun. 30, 1992, abandoned. This application Sep. 16, 1994, Ser. No. 307,551

The portion of the term of this patent subsequent to Oct. 7, 2013, has been disclaimed.

Int. Cl.[6] A61B *10/00*

U.S. Cl. 128—749 **69 Claims**



69. An apparatus for removing body tissue from an interior portion of a body in a minimally invasive surgical procedure, which comprises:

a) an endoscopic portion configured and dimensioned to be at least partially insertable through a cannula, and having a distal end and a proximal end;

b) a pouch removably attached to the distal end of said endoscopic portion, said pouch having a first end which is movable between an open configuration and a closed configuration, and a closed second end;

c) detaching means operatively associated with said pouch for detaching said pouch from said endoscopic portion; and

d) a knife located proximally to said endoscopic portion.

5,647,373

ARTICULATED NEEDLE GUIDE FOR ULTRASOUND IMAGING AND METHOD OF USING SAME

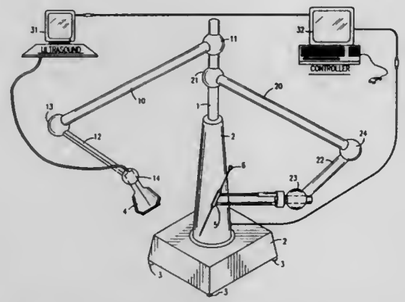
Yoav Paltieli, Haifa, Israel, assignor to Ultra-Guide Ltd., Haifa, Israel

Filed Nov. 3, 1994, Ser. No. 333,800

Claims priority, application Israel, Nov. 7, 1993, 107523

Int. Cl.[6] A61B *10/00*

U.S. Cl. 128—749 **16 Claims**



1. Apparatus for performing needle biopsy or aspiration by automatically controlling the direction of a medical needle towards a target as indicated by an ultrasound imaging device, the apparatus comprising:

at least one post provided with means for firmly positioning the at least one post on a horizontal surface near a patient, said at least one post being provided with a vertical, cylindrical portion,

a first arm for permitting manual positioning of an ultrasound transducer on any portion of a patient's body, said arm including:

a first horizontal link movable along and around said vertical portion of said at least one post,

a first allaround movable link,

first universal joint means for attaching one end of said first allaround movable link to said first horizontal link,

an ultrasound transducer, and

second universal joint means for attaching said ultrasound transducer to an opposite end of said first allaround movable link,

a second arm for permitting manual positioning of a medical needle held by a needle guide on any portion of a patient's skin, said second arm including:

a second horizontal link movable along and around said vertical post portion independently of said first horizontal link,

a second allaround movable link,

third universal joint means for attaching one end of said second allaround movable link to said second horizontal link,

a needle guide for holding said medical needle, and

fourth universal joint means for attaching said needle guide to an opposite end of said second allaround movable link,

a rotatable shaft for carrying said needle guide, said shaft being rotatably mounted in said fourth universal joint means,

first servo motor means for rotating said shaft and said needle guide,

two links connecting said needle guide to one end of said shaft and movable in a common plane defined by an angular position of said shaft,

second servo motor means for changing an angle of said needle guide in said plane,

an ultrasound generating and imaging apparatus connected to said ultrasound transducer,

an electronic processor including computing, image processing and controlling means for computing:

a relative position of said transducer and of said needle guide,

a position of the target in the patient's body from signals received from said ultrasound generating and imaging device, and

a direction of said needle guide towards the target by signals issued to both of said servo motor means, and

means for transmitting signals defining the position of said ultrasound transducer and of said needle guide to said electronic processor, by one of (i) a conductor and (ii) wireless means.

5,647,374

NEEDLE FOR IMAGING AND SAMPLING

L. Michael Cutrer, Chatsworth, Calif., assignor to North American Scientific, North Hollywood, Calif.

Filed Dec. 30, 1994, Ser. No. 366,494

Int. Cl.[6] A61B *10/00*

U.S. Cl. 128—749 **18 Claims**



1. A device comprising:

a hollow cylindrical needle having a distal end and a proximate end, said distal end being sharpened;

a stylus comprising:

a hollow cylindrical tube having a distal end and a proximate end, at least the distal end of the tube being sealed; and

a point source radioactive material disposed within the distal end of the tube;

said stylus located within the needle, the distal end of the stylus being in substantial alignment with the distal end of the needle; and

means for securing the stylus within said needle.

5,647,375

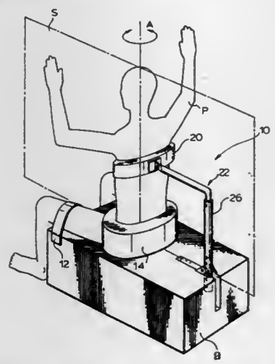
METHOD AND APPARATUS FOR ASSESSING THE LUMBAR SPINE

Henry F. Farfan de los Godos, Beebe, Canada, assignor to Aurelie F. Farfan, Beebe, Canada

Filed Feb. 15, 1995, Ser. No. 388,849

Int. Cl.[6] A61B *5/103*

U.S. Cl. 128—781 **24 Claims**



1. An apparatus for assessing the condition of the lumbar spine of a patient comprising:

a pelvis restraining means for holding the patient's pelvis fixed;

a harness adapted to be secured in a fixed orientation to the patient above the lumbar spine, said harness being connected to said pelvis restraining means and movable relative thereto and said harness being spring biased to a neutral position and rotatable therefrom in a first or second rotational direction against said spring biasing whereby force applied by said spring biasing increases with annular displacement from the neutral position; and,

torque measuring means associated with said harness for measuring torque generated by a patient who twists his back in the first rotational direction and in the second rotational direction against said spring biasing.

5,647,376

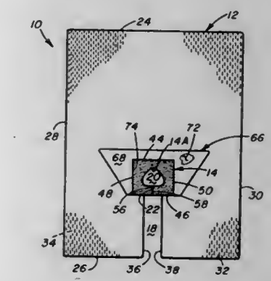
SURGICAL DRAPE WITH ELASTICIZED CUFF HAVING FENESTRATION AND SLIT

Joseph F. Thompson, Oshkosh, Wis., assignor to Allegiance Corporation, McGaw Park, Ill.

Filed Jun. 7, 1995, Ser. No. 482,372

Int. Cl.[6] A61B *19/08*

U.S. Cl. 128—853 **20 Claims**



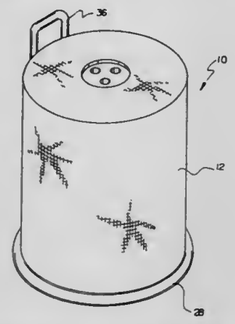
1. A surgical drape for receiving a limb of a patient, said drape comprising:

(a) a base sheet having interior side edges defining an opening and a passageway extending between said opening and an outer edge of said base sheet, said passageway being defined by a pair of spaced apart interior longitudinal edges in said base sheet, said interior side edges defining said opening of said base sheet being spaced apart at a distance greater than the distance between said interior longitudinal edges defining said passageway of said base sheet;

(b) an elasticized cuff having an internal edge defining a central fenestration in said cuff, said cuff being attached to said base sheet about said opening and extending across said opening in said base sheet such that said internal edge of said cuff is spaced inwardly from said interior side edges of said base sheet and said fenestration of said cuff is smaller in size than and contained within said opening of said base sheet, said cuff being made of an elastic material adapted to seal around and conform the fenestration to the size of a limb of a patient extending through said fenestration of said cuff and opening of said base sheet; and

(c) means defining a separation in said cuff extending between said central fenestration and an outer edge of said cuff, said separation being longitudinally aligned with said passageway of said base sheet for permitting wrapping of said drape around a limb to isolate and form a seal around at least a portion of the limb extending through said central fenestration of said cuff, said separation defined by a pair of opposite side edges which are spaced apart from one another by a distance less than that spacing apart said interior longitudinal edges in said base sheet.

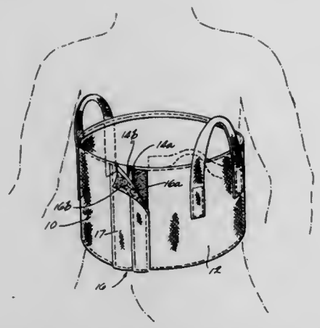
5,647,377
NOISE SUPPRESSOR APPARATUS
Joe E. Shinabarger, P.O. Box 252, Carson City, Mich. 48811
Filed Mar. 19, 1996, Ser. No. 617,572
Int. Cl.[6] A61F *11/00*
U.S. Cl. 128—864 **7 Claims**



1. A noise suppressor apparatus for reducing audible level of coughs, sneezes, or the like comprising, in combination:
a cylindrical member having an open upper end, a closed lower end, a cylindrical side wall therebetween, and a hollow interior, the closed lower end having an aperture formed therethrough, the cylindrical side wall being comprised of a rigid interior layer and a soft foam outer layer, the closed lower end being comprised of a soft foam layer;
a circular mouth member having an annular recess formed in a lower surface thereof, the annular recess secured to the open upper end of the cylindrical member, the circular mouth member having an opening therethrough;
a handle portion having a generally U-shaped configuration, free ends of the handle portion secured to the cylindrical side wall of the cylindrical member upwardly of the closed lower end thereof;
a noise suppressing portion comprised of a planar member having a plurality of apertures formed therethrough, the planar member having a short lower end and a long upper end, the planar member having a straight side edge and an angular lower edge whereby a width of the planar member gradually increases from the short lower end to the long upper end, the short lower end having a disk member secured thereto, the disk member having a plurality of apertures therethrough, the noise suppressing portion dimensioned for placement within the hollow interior of the cylindrical member with the planar member in a spiraled configuration whereby the disk member positioned within the aperture in the closed lower end of the cylindrical member.

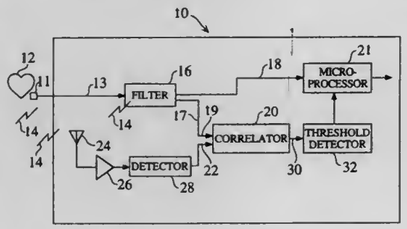
5,647,378
INVALID SUPPORT BELT
Randal J. Farnum, 930 W. Eula Ct., Glendale, Wis. 53209
Filed Apr. 23, 1996, Ser. No. 636,661
Int. Cl.[6] A61F *5/37*
U.S. Cl. 128—876 **9 Claims**

1. An invalid support belt including, a belt portion having an inner surface for engaging a patient and an outer surface,
said belt portion comprising an elongate member having a length sufficient to encircle the upper body of a patient and having a width sufficient to extend from the waist area to the breast area and beneath the arms of the patient,
said belt portion being composed of a stretchable, elastic and flexible material so that it will readily conform to the body of patient without discomfort,
fastening means at the opposite ends of the belt portion for securing the support belt around a patient, and



a plurality of handles having opposite ends fixedly attached in a spaced apart relation on the outer surface of the belt portion, said handles being positioned such that when the belt is in use at least one handle is positioned at each side of the patient and beneath the patient's arms so that a patient wearing the belt can be lifted and assisted.

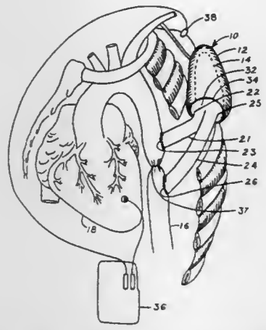
5,647,379
CORRELATOR BASED ELECTROMAGNETIC INTERFERENCE RESPONSIVE CONTROL SYSTEM USEFUL IN MEDICAL DEVICES
Mark J. Meltzer, San Francisco, Calif., assignor to Ventritex, Inc., Sunnyvale, Calif.
Filed Nov. 22, 1994, Ser. No. 343,294
Int. Cl.[6] A61N *1/00*
U.S. Cl. 128—897 **27 Claims**



1. An implantable medical device, which comprises:
a sensor for sensing a biomedical signal that may include an EMI component;
a detector for receiving an EMI signal and substantially excluding said biomedical signal; and
a correlator for receiving said biomedical signal and said EMI signal, said correlator producing a correlation function that is indicative of said EMI component.

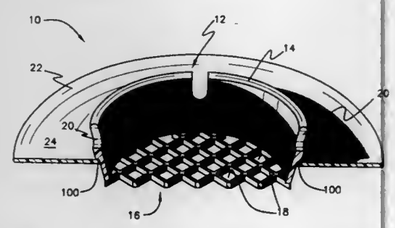
5,647,380
METHOD OF MAKING A LEFT VENTRICULAR ASSIST DEVICE
Michael L. Campbell; John R. Daugherty, and Pete L. Villalpando, all of Flagstaff, Ariz., assignors to W. L. Gore & Associates, Inc., Newark, Del.
Filed Jun. 7, 1995, Ser. No. 484,254
Int. Cl.[6] A61B *19/00*
U.S. Cl. 128—98 **36 Claims**

1. A method of forming a left ventricular assist device in a living patient comprising:



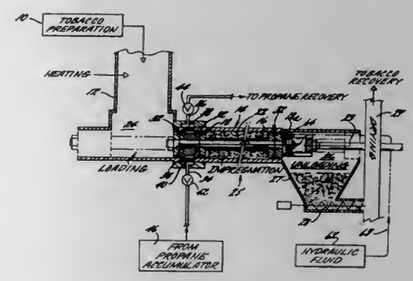
a) wrapping a strip of muscle around a mandrel and sewing the strip of muscle to form a muscle pouch having a first open end with an edge;
b) removing the mandrel from the muscle pouch;
c) attaching a first end of at least one vascular graft having first and second ends to the edge of the first open end of the muscle pouch thereby forming a suture line;
d) inserting at least one balloon into the muscle pouch and inflating said at least one balloon;
e) allowing a period of time for healing of the suture line and stimulation of the muscle pouch; and
f) deflating and removing the at least one balloon.

5,647,381
BEACH ASH TRAY
Edward S. Rainer, 1098 Indian Hill Rd., Toms River, N.J. 08753
Filed Jun. 14, 1996, Ser. No. 663,662
Int. Cl.[6] A24F *19/00*
U.S. Cl. 131—235.1 **5 Claims**



1. An ash tray for use in a sandy environment comprising:
a receptacle portion having a generally upright peripheral wall and a generally horizontal floor;
a plurality of openings disposed in said generally horizontal floor;
an outwardly projecting flange dimensioned and configured to engage with and completely circumscribe said generally upright peripheral wall of said receptacle portion;
travel stop means disposed on said generally upright peripheral wall such that when said outwardly projecting flange is engaged with said generally upright peripheral wall and said travel stop means, said outwardly projecting flange extends outward therefrom, and is substantially parallel to said generally horizontal floor, whereby:
said flange is engaged with said generally upright wall and said ash tray thus may be inserted partially into the sand with said receptacle thus being partially filled with sand by virtue of said openings disposed in said horizontal floor, and when said ash tray is removed from the sand after use, any large waste particles are retained within the receptacle while allowing ash and sand to escape.

5,647,382
COMPONENT SPOOL AND SHELL PRESSURE VESSEL WITH HYDRAULIC FLUID ACTUATED PRESSURE SEALS
James Edward Lovette; Lucas Jones Conrad; John Edward Crook; Robert Eugene Grubbs, all of Winston-Salem, and Wayne David Detwiler, King, all of N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.
Filed Jul. 1, 1996, Ser. No. 673,985
Int. Cl.[6] A24B *3/18*
U.S. Cl. 131—291 **19 Claims**



1. A spool and shell assembly for use in tobacco expansion comprising:
a pressure vessel defined by a tubular shell and a spool assembly moveable between at least a first position outside the shell and a treating position within the shell;
said spool assembly comprising first and second cylindrical end members and a connecting rod extending therebetween;
at least one sealing assembly carried by each of said first and second end members for sealing said pressure vessel when said spool is in the treating position;
each of said sealing assemblies comprising at least one elastically deformable annular sealing member associated with the circumferential exterior of said end member for sealing said spool in the treating position;
a pressure applying member operatively associated with each of said sealing members for releasably imparting axial pressure on said sealing members when said spool assembly is in said treating position to cause radial expansion thereof; and
a hydraulic fluid port in each of said spool end members, said hydraulic fluid port being fluidly connected to said pressure applying member to cause hydraulic fluid to apply fluid pressure axially to said pressure applying member.

5,647,383
PHOTODEGRADABLE CELLULOSE ESTER TOW
Terry A. Brodof, Charlotte, and John B. Hopkins, Jr., Pineville, both of N.C., assignors to Hoechst Celanese Corporation, Somerville, N.J.
Division of Ser. No. 404,477, Mar. 14, 1995, Pat. No. 5,491,024. This application Nov. 15, 1995, Ser. No. 559,393
Int. Cl.[6] A24D *3/10*
U.S. Cl. 131—331 **5 Claims**

1. A cigarette comprising:
a tobacco column; and
a filter comprising a man-made fiber comprising a mixture of a cellulose ester, and about 0.05 to 5.0% by weight of titanium dioxide having an average particle size of less than 100 nanometers.

5,647,384

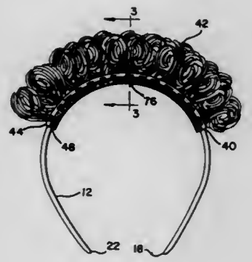
HAIR PIECES AND MOUNTING FOR HAIR PIECES

Judith A. Haber, 2942 W. 60th Dr., Merrillville, Ind. 46410; Sharon A. Haber, 610 Franciscan Dr., and Greta S. Lambert, 1031 E. Summit, both of Crown Point, Ind. 46307

Continuation-in-part of Ser. No. 827,160, Jan. 28, 1992, Pat. No. 5,337,763. This application Aug. 15, 1994, Ser. No. 290,208

Int. Cl.[6] A41G *5/00*

U.S. Cl. 132—105 **33 Claims**



1. A hair piece comprising:

a flexible base having top and bottom sides, a width and an edge;

hair strands extending outwardly from the top side of the base;

an elongate piece of material having two ends, the elongate piece of material being attached to the base to define an elongate conduit providing an open path across a width of the base, the conduit having two open ends, the open path having a width between about one-half inch and about one-inch, the elongate piece of material having a length sufficient to extend substantially across a width of the base;

wherein the base is a two piece base comprising an inner portion of an elastic material and an outer portion of a different material, the two portions being connected.

5,647,385

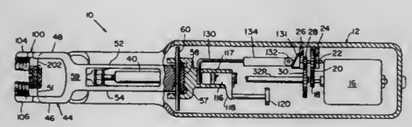
AUTOMATED DENTAL CLEANER

William H. Zebuhr, Nashua, N.H., assignor to DynaProducts Inc., Nashua, N.H.

Filed Apr. 7, 1995, Ser. No. 418,837

Int. Cl.[6] A61C *15/00*

U.S. Cl. 132—322 **23 Claims**



1. A dental cleaner comprising:

a housing;

a flossing fork supported on the housing, the fork having a pair of flossing tines spaced for receiving teeth to be cleaned therebetween, the tines supporting a floss span between the tines;

a bracing fork having a pair of bracing tines for straddling a tooth and bracing the cleaner on the tooth; and

a drive for reciprocating the floss span.

5,647,386

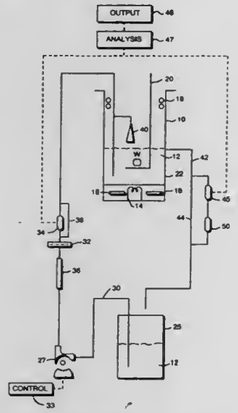
AUTOMATIC PRECISION CLEANING APPARATUS WITH CONTINUOUS ON-LINE MONITORING AND FEEDBACK

Robert Kaiser, Winchester, Mass., assignor to Entropic Systems, Inc., Winchester, Mass.

Filed Oct. 4, 1994, Ser. No. 317,382

Int. Cl.[6] B08B *13/00*

U.S. Cl. 134—113 **17 Claims**



1. An immersion cleaning apparatus suitable for removing small particles from an artic'e, the apparatus comprising:

a. a housing comprising an immersion sump for receiving an article to be cleaned;

b. inflow means for conducting fluid into the housing;

c. outflow means for conducting fluid from the immersion sump out of the housing;

d. first particle-detection means, coupled to the inflow means, for detecting, in a fluid flowing through the inflow means, a concentration of particles larger than a predetermined minimum size;

e. second particle-detection means, coupled to the outflow means, for detecting, in a fluid flowing through the outflow means, a concentration of particles larger than the predetermined size; and

f. reporting means for displaying the particle concentrations detected by the first and second particle-detection means.

5,647,387

APPARATUS AND METHOD FOR CONTROLLING DUTY SOLENOID VALVES

Teiji Tsutsui, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 16, 1995, Ser. No. 491,594

Claims priority, application Japan, Dec. 13, 1994, 6-308800

Int. Cl.[6] F16K *31/06;* **H01H** *47/04*

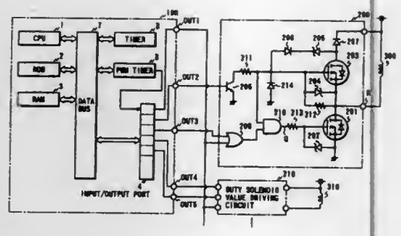
U.S. Cl. 137—1 **4 Claims**

4. In a duty solenoid valve control apparatus comprising a duty solenoid valve for controlling a pressure or flow rate of a fluid on the basis of a time ratio of a current conduction of a solenoid coil to a current non-conduction of said solenoid coil, a control means for controlling said duty solenoid valve, and a driving means responsive to signals from said control means for driving said solenoid coil, a method of controlling a duty solenoid valve comprising the steps of:

generating a duty signal corresponding to said time ratio;

generating an overexcitation signal to overexcite said solenoid coil;

generating a holding signal to hold said duty solenoid valve;



synthesizing said duty signal, said overexcitation signal and said holding signal into a drive signal for driving said solenoid coil by calculating the logical sum of said overexcitation signal and said holding signal and calculating the logical product of said logical sum and said duty signal; and

driving said solenoid coil on the basis of said drive signal.

5,647,388

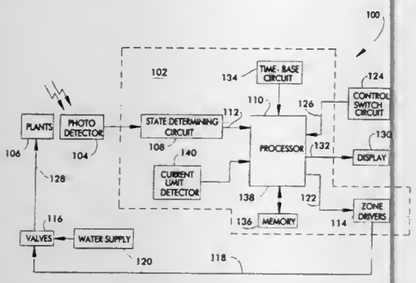
MISTING AND WATERING SYSTEM CONTROLLER WITH LIGHT SENSISTIVE DETECTOR

James R. Butler, Jr.; Cynthia M. Butler, both of St. Peters, and Robert E. Cobb, St. Charles, all of Mo., assignors to Phytotronics, Inc., Earth City, Mo.

Filed Nov. 13, 1995, Ser. No. 556,270

Int. Cl.[6] A01G *25/16*

U.S. Cl. 137—1 **20 Claims**



1. A method of supplying water to plants comprising the steps of:

detecting light adjacent the plants, said detected light having at least two levels of illumination corresponding to different states;

generating a first signal representative of a first state when the level of illumination of the detected light is less than a threshold level;

generating a second signal representative of a second state when the level of illumination of the detected light is greater than the threshold level;

anticipating in response to the first and second signals approximately when the detected light will next change from the first state to the second state and approximately when the detected light will next change from the second state to the first state;

generating an initiate signal and a terminate signal, said initiate signal being generated a first period of time before or after the anticipated change from the first state to the second state and said terminate signal being generated a second period of time before or after the anticipated change from the second state to the first state; and

supplying water to the plants in a sequence of at least one on period and at least one off responsive to the initiate signal to begin the sequence and responsive to the terminate signal to end the sequence.

5,647,389

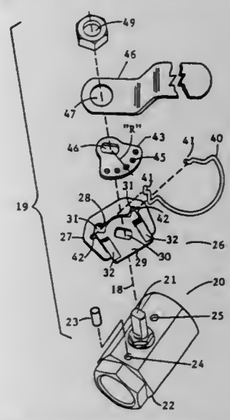
INDEXABLE LATCHING HANDLE ASSEMBLY FOR QUARTER-TURN ROTARY VALVES

David G. Holloway, Deerfield, N.H., assignor to Parker & Harper Companies, Inc., Raymond, N.H.

Filed Feb. 2, 1995, Ser. No. 382,574

Int. Cl.[6] F16K *35/02;31/60;35/06*

U.S. Cl. 137—15 **20 Claims**



17. A method of assembling a fluid control valve with an indexable latching handle assembly comprising a quarter-turn valve having a valve body and a valve stem defining an axis, said valve stem being rotatable by a handle through an arc of operation, said arc of operation being bound within a quadrant of a cartesian coordinate system originating at said valve stem axis, an indexing means being non-rotatably engaged with said valve stem for rotation therewith and including means for selectively positioning said arc of operation of a plurality of orientations about said valve stem axis, said method comprising the steps of:

a) providing a handle to rotate said valve stem by way of said indexing means;

b) selecting said quadrant in which said handle is to operate; and,

c) providing a latching means for latching said handle in at least one of a clockwise and counterclockwise latched position thereby preventing rotation of said valve stem and for manually releasing said handle thereby permitting rotation of said handle away from said latched position.

5,647,390

THERMAL RELIEF VALVE WITH IMPROVED BAYONET

Lloyd G. Wass, 1640 Blackhawk Cove, Eagan, Minn. 55122

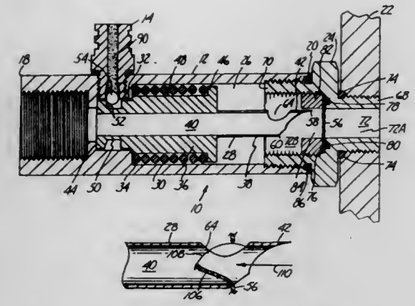
Filed Mar. 28, 1995, Ser. No. 411,945

Int. Cl.[6] F16K *17/40*

U.S. Cl. 137—68.12 **4 Claims**

1. In a thermally activated relief valve having a valve housing which has an inlet end for connection to a pressure source, an outlet end and a passageway extending therebetween; a metal disc seal within the passageway adjacent to the inlet end; a movable hollow bayonet within the passageway adjacent to the seal; bias means for biasing the bayonet towards the seal; and a thermally activated restraining member operably connected to the bayonet to hold the bayonet in a first position with the bayonet spaced relative to the seal when ambient temperature is below a predetermined threshold and to release the bayonet when ambient temperature reaches the predetermined temperature threshold to allow the bayonet to puncture the seal and thereby expose a flow path, the improvement comprising:

a hollow bayonet tube having a tubular wall, a cutting end comprising a leading edge and a trailing edge, an opposite end



and the flow path therebetween, the tubular wall being configured to define an opening adjacent to the leading edge, wherein the opening is generally vertically aligned with the trailing edge, the cutting end of the bayonet tube being sized relative to the passageway adjacent to the inlet end such that, upon puncture of the seal, the bayonet tube takes in substantially all of the seal in the flow path past the opening.

5,647,391

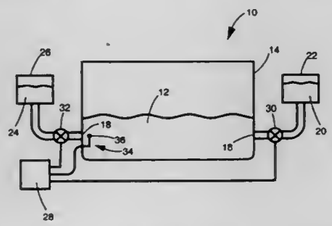
SENSING ARRANGEMENT FOR SENSING THE ADDITION OF REACTANTS TO A SOLUTION

Cedric Chan, and James Livingston, both of Santa Cruz, Calif., assignors to Diversey Corporation, Ontario, Canada

Filed Apr. 11, 1996, Ser. No. 630,503

Int. Cl.[6] G05D *11/00*

U.S. Cl. 137—93 **18 Claims**



11. A method for controlling the mixing of a solution, the method comprising the steps of:

a) providing a tank including a first and a second inlet, the first inlet being configured to supply a first reactant to the tank, and the second inlet being configured to supply a second reactant to the tank;

b) providing a reactant supply controller for controlling the addition of the first and second reactants into the tank through the first and second inlets;

c) providing a detector having a probe for measuring the ionic concentration of the reactants in the solution within the tank, the probe being positioned in the tank substantially adjacent the second inlet,

d) using the detector, measuring the concentration of the solution while the first reactant is added to and allowed to mix with the solution such that the detector substantially detects the ionic concentration of the mixed solution, and

e) using the detector, detecting the addition of the second reactant in a portion of the solution substantially adjacent the second inlet as the second reactant is being added to the solution thereby substantially immediately detecting the influx of the second reactant as it is introduced into the tank thereby permitting the verification of the influx of the second reactant in real time without having to wait for mixing to occur.

5,647,392

AIR REGULATION SYSTEM FOR HYDROPNEUMATIC RESERVOIR

Emile Roche, Bourg-en-Bresse, France, assignor to Charlatte, Migennes, France

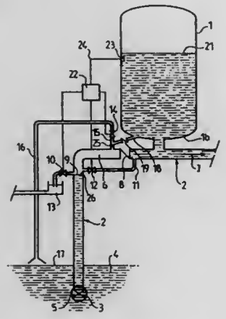
PCT No. PCT/FR94/00317, § 371 Date Nov. 2, 1995, § 102(e) Date Nov. 2, 1995, PCT Pub. No. WO94/21957, PCT Pub. Date Sep. 29, 1994

PCT Filed Mar. 23, 1994, Ser. No. 535,138

Claims priority, application European Pat. Off., Mar. 25, 1993, 93400771

Int. Cl.[6] F17D *1/20*

U.S. Cl. 137—207 **27 Claims**



1. Air regulation system for a hydropneumatic reservoir (**1**) of a water pipe (**2**), comprising a chamber (**6**), a means (**11**, **12**; **3**; **11**, **27***a*) for filling the chamber with water, a means (**10**, **13**; **27***b*, **28**) for draining the chamber of water, a means (**14**, **15**, **16**) for automatically introducing air into the chamber during drainage, a means (**18**, **19**; **8**) for automatically injecting air from the chamber toward the reservoir during filling, and said air regulation system further comprises a control means (**22**) connected to at least one detector (**23**; **23***a*, **23***b*) which detects that a threshold level for the water contained in the reservoir has been exceeded, and to the means for filling and draining the chamber, and that if, for a given state, the detector indicates that the volume of air contained in the reservoir is insufficient for this state, the control means initiates chamber filling/draining cycles until the detector indicates that the volume of air in the reservoir has become sufficient.

5,647,393

SINGLE-POINT ARMATURE

Werner Egli, Huntwangen, Switzerland, assignor to Armaturenfabrik Wallisellen AG, Wallisellen, Switzerland

Continuation of Ser. No. 420,764, Apr. 12, 1995, abandoned. This application Aug. 19, 1996, Ser. No. 699,197

Claims priority, application Switzerland, Apr. 18, 1994, 01158/94

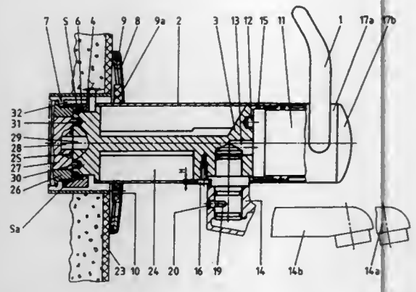
Int. Cl.[6] F16K *21/00*

U.S. Cl. 137—360 **15 Claims**

1. A single-point armature assembly adapted to be mounted on an armature connection unit in a building wall and trimmed by a surrounding escutcheon plate, and carrying at least one mixing valve manipulable by at least one operating element comprising:

an inner body of the armature assembly having channels for cold and hot water;

a casing enclosing the inner body; and



a quick coupling means inserted into the inner body and removably connected to the inner body, for removably connecting a discharge means to the inner body.

5,647,394

CONTROL VALVE

Anders Valbjørn, Nordborg; Erik Plauborg, Sønderborg, both of Denmark, and Siegfried Zenker, Kirchseeon, Germany, assignors to Danfoss A/S, Nordborg, Denmark

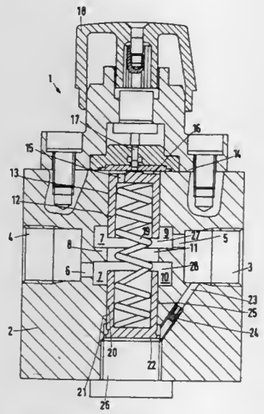
PCT No. PCT/DK94/00449, § 371 Date Jul. 29, 1996, § 102(e) Date Jul. 29, 1996, PCT Pub. No. WO95/16158, PCT Pub. Date Jun. 15, 1995

PCT Filed Dec. 1, 1994, Ser. No. 656,190

Claims priority, application Germany, Dec. 8, 1993, 43 41 848.1

Int. Cl.[6] F16K *31/12*

U.S. Cl. 137—501 **6 Claims**



1. A control valve having a housing which has an input port and an output port that are connected to one another by a flow path in which a throttling device is arranged, the throttling device comprising a series connection of a first throttle having a passage externally adjustable, and a second throttle having a passage which is adjustable in dependence on fluid pressure;

the first throttle comprises a throttling element which is in the form of a piston having a lateral face which co-operates with a valve seat;

the position of the throttling element is alterable by an externally operated setting element, against which the throttling element lies under the influence of a spring;

the second throttle comprises an adjusting element which is urged in an opening direction by an opening pressure dependent on output pressure and by the spring, and which is urged in a closing direction by a closing pressure dependent on input pressure;

the spring is arranged between the adjusting element and the throttling element;

the valve seat is located in a separating wall which divides a chamber, the throttling element and the adjusting element being movable into the chamber from opposing sides;

the chamber is connected by way of a first fixed throttle to the input port and is connected by way of a second fixed throttle to the output port;

the adjusting element is arranged in the housing with a freedom of movement which allows a throttled through-flow of hydraulic fluid from the input port past the adjusting element to the output port;

the adjusting element comprises a piston having a lateral face which co-operates with a substantially hollow cylindrical valve seat;

the adjusting element passes through a section in the housing that forms an auxiliary throttle, the section diminishes as the passage of the second throttle increases for providing a decrease in throttle resistance of the auxiliary throttle; and the adjusting element further forms a wall of a pressure chamber which is connected to the input port by way of a duct in which a third throttle means is arranged for providing damping to oscillation of adjusting element; whereby the third throttle means and the auxiliary throttle form a pressure divider.

5,647,395

VALVED DISCHARGE MECHANISM OF A FLUID DISPLACEMENT APPARATUS

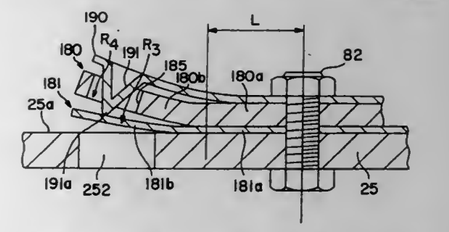
Kenji Hashimoto, Yamada-gun, and Atsushi Mabe, Isesaki, both of Japan, assignors to Sanden Corporation, Gunma, Japan

Filed Jan. 11, 1996, Ser. No. 584,362

Claims priority, application Japan, Jan. 13, 1995, 7-021345

Int. Cl.[6] F16K *17/24;* **F04B** *1/16*

U.S. Cl. 137—517 **2 Claims**



1. A discharge valve assembly for use in a fluid displacement apparatus having a suction chamber and a discharge chamber on one side of a valve plate, a compression chamber on the other side of said valve plate, and a passage formed in said valve plate extending between said compression chamber and said discharge chamber, said passage having an open end through which discharge fluid flows, said assembly comprising:

a valve limiting means secured to said valve plate for limiting bending movement of a valve member; wherein

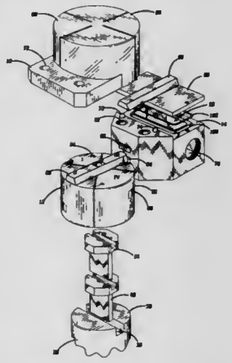
said valve member is disposed on said valve plate and has a spring constant causing said passage to remain blocked until pressure in said compression chamber reaches a predetermined value, said valve member bent away from said valve plate;

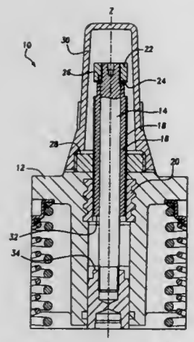
wherein said valve limiting means includes a valve retainer member bent away from said valve plate and means disposed on said valve retainer member for controlling movement of said valve member;

wherein said valve retainer member includes an opening therein, said controlling means comprises an elastic plate member having a projection protruding through said opening of said

valve retainer member, said projection contacting said valve member when said valve member is in an open state.

5,647,396
MODULAR VALVE POSITION INDICATOR
Wallace F. Stommes, Fergus Falls; Ross S. Kunz, Callaway; Bryan A. Beckman, Wendell, and Christopher J. Kunz, Callaway, all of Minn., assignors to StoneL Corporation, Fergus Falls, Minn.
Continuation-in-part of Ser. No. 529,693, Sep. 18, 1995, Pat. No. 5,623,963. This application May 28, 1996, Ser. No. 654,268
Int. Cl.[6] E03B *7/07*
U.S. Cl. 137—554 **17 Claims**



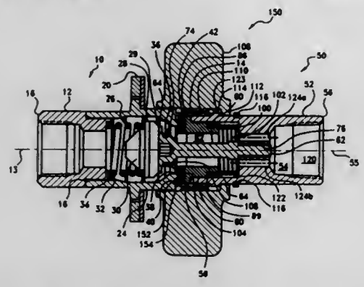


1. A valve position indicator for attachment to a valve body, the valve body including a shaft projecting outwardly from a planar surface and rotatable between a first position when the valve is in a fluid blocking condition and a second position when the valve is in a fully open, fluid passing condition, the valve position indicator comprising:
(a) a visual indicator drum having an external cylindrical surface partitioned into four quadrants with the first and third quadrants of a first color and the second and fourth quadrants of a second color distinctive from the first color, said drum including a plurality of position indicative target members attached to said cylindrical surface, wherein said drum is secured to said shaft and rotatable therewith;
(b) first and second window defining members attached to said planar surface of the valve body at locations diametrically opposite one another relative to the drum, wherein opaque portions of the first and second window defining members partially surround the drum such that the first color of the drum is exposed to view when the shaft is in its first position and the second color of the drum is exposed to view when the shaft is in its second position.

5,647,397
DIAPHRAGM VALVE
Martin Heiniger, Schaffhausen, Switzerland, and Walter Bannwarth, Lauchringen, Germany, assignors to Georg Fischer Management AG, Switzerland
Filed Jun. 19, 1995, Ser. No. 492,395
Claims priority, application Switzerland, Jun. 20, 1994, 01944/94
Int. Cl.[6] F16K *37/00*
U.S. Cl. 137—559 **8 Claims**

1. A valve actuator comprising a housing, a cover mounted to said housing, and a coupling rod axially movably mounted in said housing, said coupling rod being axially movable in a first axial opening direction to a first, valve open position, and axially movable in a first axial opening direction to a first, valve open position, and axially movable in a second closing direction opposite said first direction to a second, valve closed position, said movement of said coupling rod defining the stroke of the coupling rod, and means for adjustably setting the axial distance between said first position and said second position to adjustably regulate the stroke of said coupling rod, said means comprising a sleeve axially adjustably mounted ins aid housing, said coupling rod being axially movable within said sleeve and having a first limit member engaging with said sleeve and said cover to limit movement of said coupling rod in said first axial opening direction and a second limit member engaging with said sleeve to limit movement of said coupling rod in said second axial closing direction and means for adjustably positioning said sleeve in said housing to thereby vary the points in the axial positions of said coupling rod at which said limit members engage said sleeve.

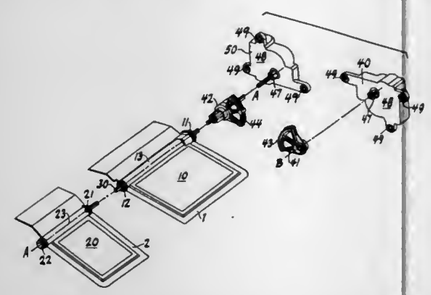
5,647,398
FLUID COUPLER FOR USE IN THE TRANSFER OF LIQUEFIED GASES
Dennis C. Giesler, Maple Grove, Minn., assignor to Parker-Hannifin Corporation, Cleveland, Ohio
Filed Aug. 9, 1996, Ser. No. 695,259
Int. Cl.[6] F16L *37/28*
U.S. Cl. 137—614.03 **20 Claims**



11. A coupling assembly for a fluid conduit comprising:
a fitting member extending from an externally-threaded forward coupling end to a rearward port end defining a first fluid port of said coupling assembly, and having an internal poppet valve assembly movable from a forward, closed position normally biased against a generally annular valve seat to a rearward, open position spaced apart from said valve seat, said valve seat having a forward interface surface with a generally annular land; and

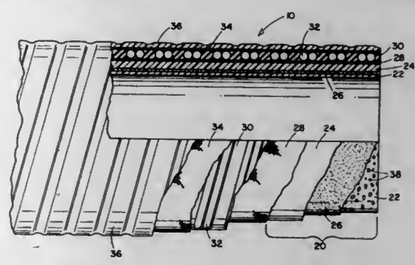
a coupler member connectable with said firing member and comprising:
a body having an internal fluid passageway formed therethrough and extending axially along a longitudinal axis from a forward end opening into said passageway to define a second fluid port of said coupling assembly, to a rearward end couplable with said coupling end of said fitting member and opening into said passageway;
a valve stem internally received within said body to extend from a forward proximal end to a rearward distal end, said distal end having a forward surface configured to define a seating portion, and a rearward surface abuttingly engageable with the poppet valve of the fitting;
a generally tubular valve sleeve received coaxially over said valve stem to define a fluid flow path therebetween through said passageway and extending between a forward first end and a rearward second end, said second end defining an outer periphery and an inner periphery configured to be received within said seating portion of said valve stem and having a rearward confrontation surface with a generally annular mounting groove of a select inner and outer diameter integrally-formed therein, and said valve sleeve being movable from a rearward first position wherein said second end thereof is received within said seating portion closing said fluid flow path, to a forward second position wherein said second end is spaced apart from said seating portion opening said fluid flow path;
a resilient, generally-annular first seal member freely-rotatably received within said mounting groove;
a biasing member interposed between the first end of said valve sleeve and the forward end of said body for normally biasing said the valve sleeve in said first position; and
a coupling nut rotatably mounted over the rearward end of said body, said coupling nut member being removably threadably engageable with said coupling end of said fitting member to firstly draw said first seal member into an abutting, fluid-tight adjacency with the land portion of said fitting member moving said valve sleeve from said first to said second position and to secondly draw said rearward surface of said valve stem into an abutting engagement with said poppet valve of said fitting urging said poppet valve from its forward, closed position to its rearward, open position to thereby establish fluid communication between said fitting and coupler members.

5,647,399
FLOW CONTROL DEVICE
Goeran Peter Andersen, Troy, Mich., assignor to Valeo Climate Control Inc., Rochester Hills, Mich.
Filed Aug. 3, 1995, Ser. No. 510,781
Int. Cl.[6] F16K *11/20;31/04;31/53*
U.S. Cl. 137—637.3 **18 Claims**



1. A flow control device comprising first and second flow control members, first and second actuators, and first and second transmission devices, both flow control members being adapted for rotation about a common axis, the first flow control member having a wall portion defining an aperture aligned with said common axis, the second transmission device comprising a shaft member passing through the aperture for rotation therein, a first end of the shaft member being coupled to the second actuator and a second end of the shaft member being coupled to the second flow control member, the first transmission device having a first rotary body coupled to the first flow control member and rotatable about said common axis and a second rotary body coupled to the first actuator and rotatable about a second rotation axis offset from said common axis, said first and said second rotary bodies being mutually engageable by an engagement mechanism extending therebetween such that a rotation of the second rotary body causes a rotation of the first rotary body, wherein the second actuator selectively rotates the shaft member freely within the aperture of the first control member thereby rotating the second flow control member about said common axis and wherein the first actuator selectively rotates the second and first rotary bodies thereby rotating the first flow control member freely about said shaft member and said common axis.

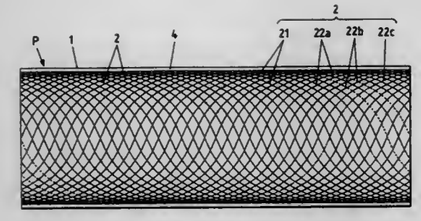
5,647,400
POLYFLUOROCARBON/ELASTOMER LAMINATES
Bhargav Jani, Highlands Ranch; Frederick Chipps, Englewood, and Joe Haney, Littleton, all of Colo., assignors to The Gates Corporation, Denver, Colo.
Filed May 5, 1995, Ser. No. 435,694
Int. Cl.[6] F16L *11/08*
U.S. Cl. 138—126 **16 Claims**



1. A polyfluorocarbon/elastomer laminate comprising:
a) a first layer of a veneer formed from a polyfluorocarbon thermoplastic material, one surface of which is etched;
b) a second layer formed from a substantially non-polar material chosen from the group consisting of carbon-based elastomers and carbon-based thermoplastic elastomers, said second layer having a bonding surface juxtaposed said etched surface of the first layer; and
c) an adhesive elastomeric composition disposed between said etched surface of the first layer and said bonding surface of the second layer bonding the first and second layers together to form the laminate, said adhesive elastomeric composition comprising an unsaturated polymeric dicarboxylic acid or derivative adduct of ethylene propylene diene terpolymer, said second layer and said adhesive elastomeric composition being vulcanized.

5,647,401
REINFORCING-THREAD-BURIED RESIN PIPE
Masakatsu Nobori, Osaka, Japan, assignor to Totaku Industries, Inc., Osaka, Japan
Filed Dec. 15, 1995, Ser. No. 573,130
Claims priority, application Japan, Dec. 20, 1994, 6-335502
Int. Cl.[6] F16L *11/08;55/00*
U.S. Cl. 138—126 **20 Claims**

1. A reinforcing-thread-buried resin pipe, comprising:



a pipe wall comprising a resin material baving a plurality of layers; and

a plurality of reinforcing threads positioned between said layers;

wherein said reinforcing threads include first reinforcing threads having a first color and at least one second reinforcing thread having at least one second color, said second color being different than said first color,

wherein said second color indicates a characteristic of said pipe.

5,647,402

ENCLOSED SUPPORT BEAM AND LUBRICATION SYSTEM FOR LOOM DRAWING APPARATUS

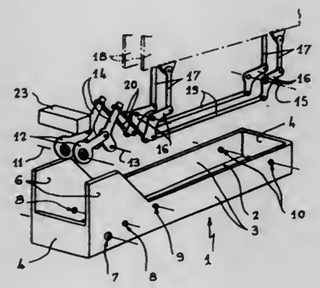
Joseph Palau, Duingt, and Jean-Paul Froment, Doussard, both of France, assignors to Staubli Faverges, Faverges, France

Filed May 1, 1996, Ser. No. 641,648

Claims priority, application France, May 12, 1995, 95.05882

Int. Cl.[6] D03C *1/14;1/16;* **D03D** *49/02*

U.S. Cl. 139—1 R **12 Claims**



1. In a weaving system for forming a shed in a weaving machine wherein the weaving system includes heddle frames connected by way of return levers and transmission rods to oscillating members driven by a drive shaft, the improvement comprising:

a support beam having a bottom wall, opposing side walls and opposite end walls which are close in fluid-tight relationship with respect to one another so as to permit a lubricating oil to be contained within said support beam, each of said opposing side walls including a cheek extending upwardly therefrom adjacent one end of said support beam, said opposing side walls being adapted to support the drive shaft adjacent said one end of said support beam, first pin means adapted to support the oscillating members mounted to said opposing side walls in spaced relationship from the drive shaft and adjacent one end of said support beam and second pin means spaced from said first pin means towards an opposite end of said support beam adapted to support the return levers,

and a lubricating system mounted to said support beam for circulating lubricating oil within said support beam.

5,647,403

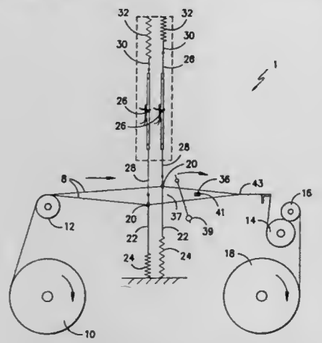
JACQUARD LOOM LATCH CONTROL MECHANISM

Charles Everage Willbanks, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Apr. 4, 1995, Ser. No. 416,068

Int. Cl.[6] D03C *3/20*

U.S. Cl. 139—59 **36 Claims**



1. A jacquard loom latch mechanism comprising of a:

(a) a base member having a longitudinal axis and a guide;

(b) an elongate, flexible member that can be selectively moved up and down in a direction parallel to said longitudinal axis of said base member within said guide for raising and lowering operatively attached rod eyes; and

(c) a mechanism for selectively latching said elongate, flexible member in a fixed position in relation to said base member that includes a means for applying a vacuum to said guide, whereby said latching mechanism is operatively attached to said base member.

5,647,404

YARN FEEDER WITH ADJUSTABLE BRAKING DEVICE

Bruno Maina, Vigliano Biellese, and Roberto Bertolone, Ponzone Biellese, both of Italy, assignors to Nuova Roj Electrotex S.r.l., Biella, Italy

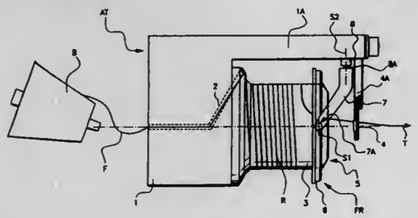
PCT No. PCT/EP94/01968, § 371 Date Dec. 18, 1995, § 102(e) Date Dec. 18, 1995, PCT Pub. No. WO95/00431, PCT Pub. Date Jan. 5, 1995

PCT Filed Jun. 16, 1994, Ser. No. 564,185

Claims priority, application Italy, Jun. 17, 1993, MI93A1313

Int. Cl.[6] B65H *51/22;* **D03D** *47/34*

U.S. Cl. 139—452 **2 Claims**



1. Device for feeding weft yarn to gripper or projectile looms, comprising a drum for storing a weft yarn reserve wound on the drum, said drum having an axis and an outlet end, said weft yarn being unwound from said weft yarn reserve onto said outlet end where a first yard deviation takes place, a yarn brake device acting on said outlet end, said yarn brake device being positioned upstream of an outlet yarn guide where a second yarn deviation takes place, said yarn brake device being centered on the drum axis and adjustable along said axis, said yarn brake device comprising a frustoconical braking element having a major circumference and a minor circumference, and a continuous surface of varying elasticity, said braking element being fixed to a stiff ring support close to said major circumference, and said stiff ring support being mounted so as to oscillate about two axes, which are perpendicular one in respect of the other, and both in respect of the axis of the drum.

5,647,405

DEVICE FOR WINDING COILS FOR ELECTRICAL MACHINES

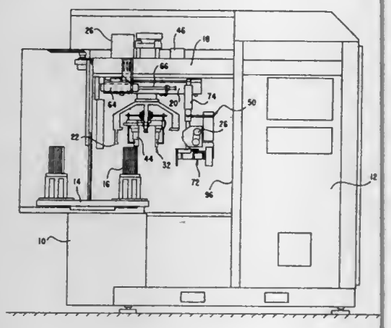
Karl Heinz Fichtner, Hanau, and Joachim Nasterlack, Bad Nauheim, both of Germany, assignors to STATOMAT Spezialmaschinen GmbH, Germany

Filed Sep. 20, 1995, Ser. No. 531,317

Claims priority, application Germany, Sep. 20, 1994, 44 33 424.9; Mar. 24, 1995, 195 10 829.9

Int. Cl.[6] B21F *3/04*

U.S. Cl. 140—92.1 **19 Claims**



1. A device for winding coils for electrical machines, comprising:

a machine frame;

a spindle box mounted on the machine frame;

a motor by which said spindle box is displaceable along a linear guide on the machine frame;

a multi-part template comprising first and second template parts and a central shaft positioned therebetween said multi-part template being held on said machine frame and fixed against relative rotation, said first template part being axially alignable with a coil receiver and fixable in place at a defined position on the machine frame, a width of said multi-part template being adjustable by an essentially uniform change in distance between each of said first and second template parts and the central shaft;

a wire guide seated in the spindle box and rotatable around the central shaft of the template; and

a measuring system mounted on the machine frame or spindle box for measuring distance between a point on one of said first and second template parts and a point on the spindle box and measuring distance between a point on the spindle box and a fixed point on the machine frame, whereby actual width of said multi-part template and position relative to the coil receiver is determinable.

5,647,406

PROCESS FOR THE MANUFACTURING OF A GRID

Manfred Pucher, Triesterstrasse 382, 8055 Graz, Austria

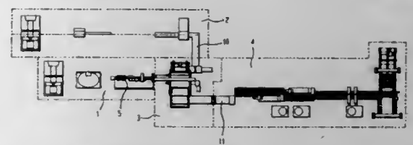
PCT No. PCT/AT94/00019, § 371 Date Feb. 14, 1995, § 102(e) Date Feb. 14, 1995, PCT Pub. No. WO94/20233, PCT Pub. Date Sep. 15, 1994

PCT Filed Feb. 23, 1994, Ser. No. 387,837

Claims priority, application Austria, Feb. 24, 1993, 357/93

Int. Cl.[6] B21F *27/00*

U.S. Cl. 140—112 **23 Claims**



1. Device for manufacturing a grid of a type including a plurality of carrying bars and filling bars insertable into the carrying bars, in particular for making a pressed grid, said device comprising a pressing station receiving the carrying bars and the filling bars via a supply unit, said pressing station including a holding beam for supporting the carrying bars, an actuating device for receiving the filling bars and press-fitting the filling bars in the carrying bars, wherein following the press-fitting step the holding beam is advanced by a freely selectable distance and the actuating device is moved in such a manner that a next filling bar is moved from a supply position to a working position, said actuating device being rotatable at least between one supply position and at least one working position relative to the holding beam, said device further including a transport assembly for conveying the filling bars and the carrying bars during processing in the pressing station.

5,647,407

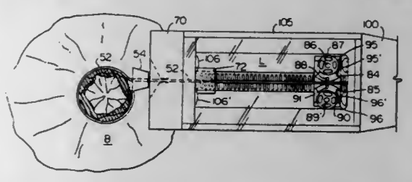
ELECTRONIC SYSTEM FOR CONTROLLING A TENSIONING APPARATUS

Ernest D. Scott, Delray Beach, Fla.; Donald L. Tedder, Carrollton, Ga.; Gregory W. Scott, Jacksonville Beach, Fla.; John Kohls, and Richard Kohls, both of Pinellas Park, Fla., assignors to Edge Technology Corporation, Delray Beach, Fla.

Division of Ser. No. 400,289, Mar. 3, 1995, which is a continuation-in-part of Ser. No. 66,945, May 25, 1993, abandoned, which is a continuation-in-part of Ser. No. 621,215, Nov. 30, 1990, Pat. No. 5,212,928, which is a continuation-in-part of Ser. No. 626,426, Dec. 17, 1990, Pat. No. 5,031,943, which is a continuation-in-part of Ser. No. 503,281, Apr. 2, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 471,824

Int. Cl.[6] B21F *9/02*

U.S. Cl. 140—123.5 **6 Claims**



1. An electronic system for controlling a motorized apparatus for securing a closure strap used in flexible containers comprising:

means for processing input commands from an external communications port and producing a drive signal therefrom; and

means for driving an electric motor which receives said drive signal and produces an actuation signal;

said input commands include torque limits of said motor, motor direction, and operational duration and time out of said means

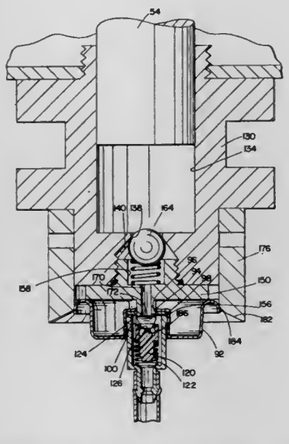
for driving, wherein said actuation signal is used to control the motorized apparatus for securing a closure strap.

5,647,408

AEROSOL CAN FILLING HEAD

Marijan F. Erste, South Eclid, and Robert S. Beres, Rittman, both of Ohio, assignors to The Sherwin-Williams Company, Cleveland, Ohio

Filed Mar. 12, 1996, Ser. No. 615,560
Int. Cl.[6] B65B *1/04*
U.S. Cl. 141—20 **8 Claims**



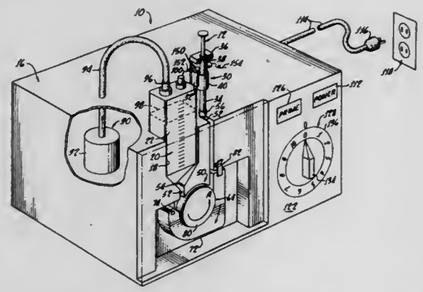
1. An adapter for an apparatus for filling aerosol cans utilizing a "female" type discharge valve, said female type discharge valve being in a normally closed condition and having a bore therein to receive a valve member, said adapter comprising a body member having a blind bore therein terminating in a fluid passageway; a one-way check valve in fluidic communication with said blind bore; a valve engaging member attached to said body member; said check valve being interposed between said valve engaging member and said fluid passageway from said blind bore in said body member; said valve engaging member having a male tip portion protruding therefrom for engagement with said valve member within said female type discharge valve, engagement of said male tip portion of said valve engaging member with said valve member within said female type discharge valve causing said female type discharge valve to open permitting material to pass through said adapter into said aerosol can as a piston is advanced within said body member of said adapter.

5,647,409

ON-SITE SYRINGE FILLING APPARATUS FOR VISCOELASTIC MATERIALS, AND CORRESPONDING METHOD FOR ON-SITE SYRINGE FILLING

F. Richard Christ, Laguna Beach; Erick F. Fischer, Long Beach, and Kenneth E. Kadziauskas, Laguna Niguel, all of Calif., assignors to Allergan, Waco, Tex.

Filed Apr. 4, 1995, Ser. No. 416,101
Int. Cl.[6] B65B *1/04*
U.S. Cl. 141—27 **29 Claims**



1. A syringe filling apparatus for filling syringes with a viscoelastic material, said apparatus comprising:

a. reservoir receiving means for removably receiving an outlet end region of a supply reservoir of viscoelastic material;

b. a syringe retainer configured for receiving and releasably retaining a conventional medical syringe to be filled with viscoelastic material from a received viscoelastic supply reservoir; and

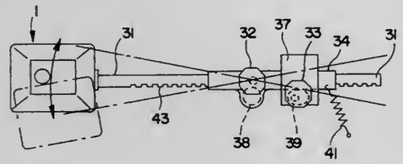
c. viscoelastic material transfer means connected for transferring viscoelastic material from the outlet end region of a viscoelastic supply reservoir received in said reservoir receiving means to the discharge end region of a syringe received in said syringe retainer and from there into said syringe, said transfer means including a fluid conduit, comprising a flexible plastic tubing, configured for interconnecting the outlet end region of a viscoelastic supply reservoir installed in said reservoir retaining means with the discharge end region of a syringe installed in said syringe retainer, said viscoelastic material transfer means comprising a peristaltic pump having a rotatable pump head with a plurality of spaced apart pumping rollers mounted thereto for pumping viscoelastic material through said plastic tubing.

5,647,410

POWDER MOLDING MACHINE AND METHOD FOR FILLING MOLDING MATERIALS INTO A DIE CAVITY THEREOF

Takeo Nakagawa, Kawasaki; Hideaki Tsuru, Ichikawa; Yoshiharu Inaba, Kawasaki; Takayuki Taira, Hachioji, and Masaki Muranaka, Tokyo, all of Japan, assignors to Fanuc, Ltd., Yamanashi, Japan

PCT No. PCT/JP93/00994, § 371 Date Mar. 14, 1994, § 102(e) Date Mar. 14, 1994, PCT Pub. No. WO94/02307, PCT Pub. Date Feb. 3, 1994
PCT Filed Jul. 16, 1993, Ser. No. 211,001
Claims priority, application Japan, Jul. 17, 1992, 4-212267
Int. Cl.[6] B65B *1/04*
U.S. Cl. 141—67 **7 Claims**



1. A powder molding machine, comprising:

a frame;

a plate mounted on said frame and having a top surface;

a die having a top surface flush with the top surface of said plate, said die having a molding cavity defined therein;

a feed shoe slidable along the top surface of said plate and having a space therein for holding molding materials, said molding materials dropping into said molding cavity when said feed shoe passes over said molding cavity;

linear driving means for moving said feed shoe in a linear direction from a retracted position to a position over said molding cavity and for retracting said feed shoe back to said retracted position;

swing driving means for driving said feed shoe in a non-circular motion by swinging said feed shoe in directions traverse to said linear direction and cooperating with said linear driving means for swinging said feed shoe during retraction to said retracted position; and

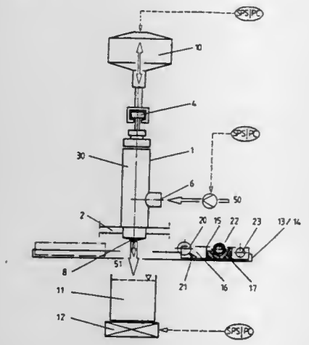
control means for causing simultaneous operation of said linear driving means and said swing driving means while said shoe overlaps any part of said molding cavity and is being retracted to said retracted position to create a combination of retracting said linear and swinging transverse motions of said shoe to uniformly distribute said molding materials throughout said molding space.

5,647,411

METERING METHOD AND DEVICE

Klaus-Dieter Koppe, and Michael Krapalis, both of Norderstadt, Germany, assignors to Fluid Management, Inc., Wheeling, Ill.

PCT No. PCT/EP94/03042, § 371 Date Mar. 8, 1996, § 102(e) Date Mar. 8, 1996, PCT Pub. No. WO95/08098, PCT Pub. Date Mar. 23, 1995
PCT Filed Sep. 13, 1994, Ser. No. 605,092
Claims priority, application Germany, Sep. 15, 1993, 43 31 924.6
Int. Cl.[6] B65B *1/04*
U.S. Cl. 141—83 **11 Claims**



1. A method of cleaning a metering valve having an outlet side, so as to remove material suspended at the outlet side of the metering valve, comprising:

providing a roller for cleaning;

disposing the roller just below and to one side of the metering valve;

mounting the roller for rotation about a substantially horizontal longitudinal axis; and

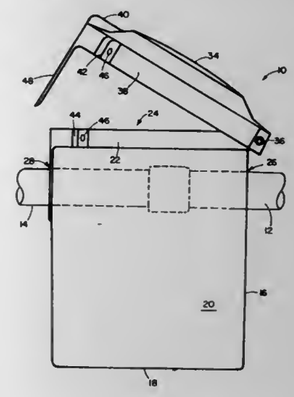
rotating the roller so as to bring a peripheral region of the roller undergoing a component of motion in a generally upward direction into contact with the suspended material.

5,647,412

APPARATUS FOR CONTAINING OIL AND WASTE SPILLAGE AT A LINE CONNECTION

Jack G. Brewer, 99 Maple La., Chickasha, Okla. 73018

Filed Mar. 8, 1996, Ser. No. 612,375
Int. Cl.[6] B65B *1/04;3/04;* B67C *3/02*
U.S. Cl. 141—86 **20 Claims**



1. An apparatus for containing spillage at a line connection, the apparatus comprising:

a container having a bottom and an upstanding sidewall whereby the spillage is retained in said container as it is spilled, said container having an open top end;

wherein the apparatus includes a first means for receiving a loading line;

wherein said upstanding sidewall includes a second means for receiving an unloading line;

a lid for closing said open top end of said container when the unloading line is removed from the apparatus; and

means for closing said second means when the unloading line is removed from the apparatus, said means for closing is attached to said lid.

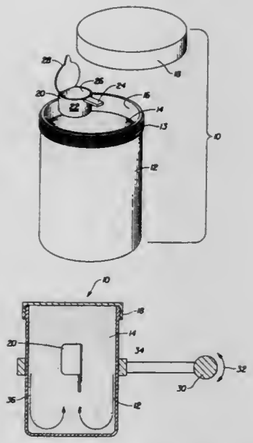
5,647,413

SCOOP ASSEMBLY FOR GRANULAR MATERIALS AND METHOD OF USE

Robin S. Horrell, Wyoming, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

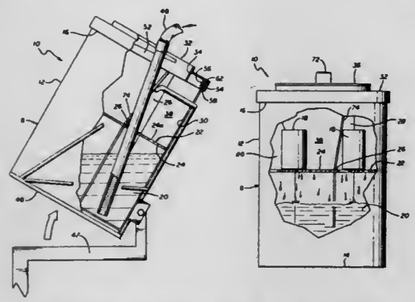
Filed Feb. 13, 1996, Ser. No. 600,906
Int. Cl.[6] B65D *79/00*
U.S. Cl. 141—108 **7 Claims**

1. A scoop assembly capable of being lifted through a granular material to a headspace of an upright container from a location in said container below said headspace when said granular material is fluidized by shaking said container along a substantially vertical axis, said scoop assembly comprising a measuring portion having a cavity substantially void of granular material, said cavity being covered by a removable cover which prevents granular material entering said cavity before said scoop assembly is lifted to said headspace, said scoop assembly also having a handle portion connected to said measuring portion such that said handle portion



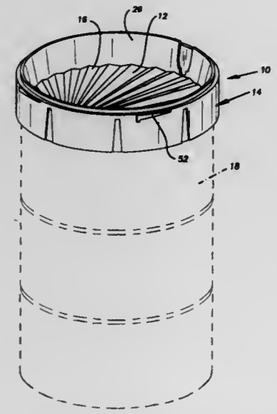
is slidable by a user in and out of said cavity between a storage position and a use position.

5,647,414
CURBSIDE OIL AND OIL FILTER RECYCLE AND COLLECTION APPARATUS AND METHOD
Charles Brittain, 8414 San Fernando Rd., Sun Valley, Calif. 91352, and Gilbert B. Ross, 17640 Vincennes St., Northridge, Calif. 91325
Filed Mar. 23, 1995, Ser. No. 409,377
Int. Cl.[6] B65B *3/00*
U.S. Cl. 141—231 **19 Claims**



1. An apparatus for motor oil and oil filter collection, said apparatus comprising a bucket having a one-piece unitary generally cylindrical wall extended along a central vertical axis to a height greater than its diameter, said bucket having a closed end bottom centered on said vertical axis and a single opening into said bucket at the other end of said bucket, a rim flange surrounding said bucket single opening, and a closure for closing said bucket single opening comprising a removable lid adapted to engage said rim flange, said single opening being selectively openable by separation of said lid and sized to receive and contain at least one oil filter and the oil of one oil change, an oil filter support within said bucket comprising an opening-defining plate supported within and surrounded by said bucket cylindrical wall parallel to said bucket bottom and said bucket single opening and located therebetween centered on said vertical axis, said plate being below said removable lid to remain in place when said lid is removed and at a height sufficient to permit disposition of an oil filter within said bucket on said plate in spaced relation to said bucket bottom for oil filter draining into said bucket bottom; said bucket openable end being the sole means to allow oil filter and oil addition to and removal from said bucket in its open condition.

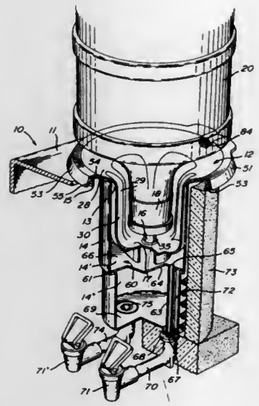
5,647,415
FUNNEL FOR A DRUM
James P. Onders, Independence, and Darel Taylor, Chardon, both of Ohio, assignors to ENPAC Corporation, Chardon, Ohio
Filed Oct. 11, 1995, Ser. No. 540,842
Int. Cl.[6] B65B *1/04*
U.S. Cl. 141—331 **5 Claims**



1. A funnel, adapted for use in combination with drums having differently sized upper rims, said funnel comprising:
an upper face having a sloping drain surface having an outer perimeter and an opening located within the interior of said perimeter, said drain surface sloping downwardly from said perimeter to said opening;
a substantially vertical rim having a retaining wall extending upwardly from said perimeter of said drain surface, said wall defining an upwardly opening pocket for receiving a cup shaped closure cap for said drum, said pocket comprising a vertically extending gap in said retaining wall laterally defined by face-to-face gap edges, an upper pair of said edges being spaced apart a distance corresponding to the outside diameter of said closure cap.

5,647,416
BOTTLED WATER DISPENSER SYSTEM
AndréDesrosiers, and Dirk Stewart Zijlstra, both of Monrteal, Canada, assignors to Les Produits Addico Inc., Pointe-Claire, Canada
Filed Mar. 15, 1996, Ser. No. 619,453
Int. Cl.[6] B65B *1/04*
U.S. Cl. 141—351 **10 Claims**

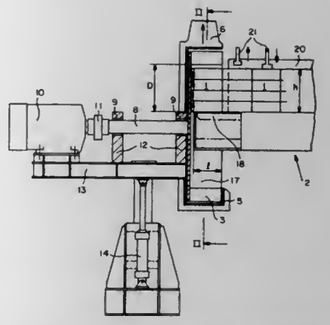
1. A liquid container support housing having a removable container support dispenser seated at an open top end of a removable liquid holding reservoir provided in said support housing, said container support dispenser having a central upwardly projecting feed probe on a bottom wall thereof, said probe being dimensioned to enter a cap secured over an opening of a neck end of a liquid container supported in an inverted position on said container support dispenser, said feed probe having a plug engaging end adapted to disconnect a sealing plug connected at an internal end



of said cap, when said probe enters a central sealing sleeve of said cap in close sealing fit therein, and for engaging said plug spaced from said internal end of said sleeve when disconnected therefrom, said feed probe having liquid conduit means therein to channel liquid from said liquid container into said liquid dispensing reservoir of said support housing, said feed probe being further provided with air conduit means having a small opening in a top part of said probe below said plug engaging end and dimensioned to admit air into said liquid container from said open top end of said liquid holding reservoir when liquid is dispensed through said liquid conduit means and to substantially prevent liquid flow therethrough from said liquid container to said reservoir, said open top end of said liquid holding reservoir being in contact with outside air to admit air into said air conduit means, said feed probe being comprised by a hollow cylindrical upstanding body formed integral with said bottom wall of said container support dispenser, said liquid conduit means being constituted by at least one conduit disposed axially in said cylindrical body and having a lower open discharge end and an upper intake end, said upper intake end being spaced below said top part of said probe, therebeing division walls extending longitudinally in said hollow cylindrical upstanding body, at least two conduit sections defined between adjacent division walls, said hollow cylindrical upstanding body having an open said wall portion in said top part of said probe adjacent said at least two conduit sections and constituting said upper intake end.

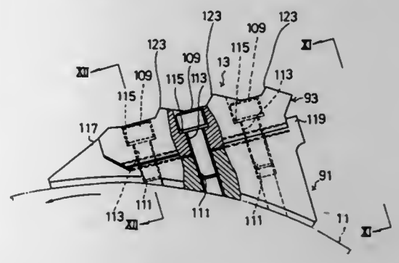
5,647,417
LONG-TIMBER CHIPPING MACHINE
Karl Schaefer, Lechbruck, Germany, and Gerd Schaefer, St. Nom-la-Breteche, France, assignors to Inter-Wood-Maschinen GmbH & Co., KG, Lechbruck am See, Germany
Filed Jan. 16, 1996, Ser. No. 585,605
Claims priority, application Germany, Jan. 14, 1995, 195 00 960.6
Int. Cl.[6] B27C *1/00*; **B27L** *11/00*
U.S. Cl. 144—172 **18 Claims**

1. A long-timber chipping machine comprising:
a timber feed channel having a convexly curved base for receiving timbers to be chipped, which timbers are adapted to be advanced with a timber-advancing device;
a vertically displaceable chipping device positioned adjacent a downstream end of the timber feed channel, the chipping device including a rotatable cutter ring having chipping cutters on its cylindrical inner wall, wherein the cylindrical inner wall defines a chipping chamber into which the timbers are adapted to be introduced, wherein the chipping chamber is aligned with the downstream end of the timber feed channel; and



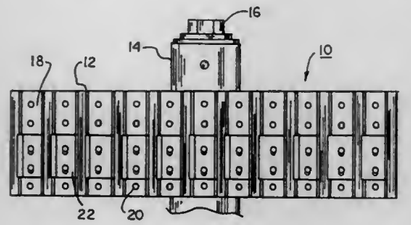
a convexly curved timber-receiving plate fixedly positioned relative to the feed channel and spanning from the timber feed channel into the chipping chamber, wherein the plate is convexly curved to match the curvature of an upper cylindrical inner wall of the cutter ring and remains aligned with the convexly curved base of the feed channel during chipping, wherein the chipping device is lowered relative to the timber receiving plate to chip the timbers.

5,647,418
DEBARKING TOOTH OF A DEBARKING MACHINE
Seiya Ishizawa, Shizuoka, Japan, assignor to Fuji Kogyo Co., Ltd., Shizuoka, Japan
Filed Jun. 26, 1996, Ser. No. 670,659
Claims priority, application Japan, Jul. 21, 1995, 7-207424
Int. Cl.[6] B27C *9/00*
U.S. Cl. 144—208.9 **20 Claims**



1. A debarking tooth of a debarking machine for use with a container, comprising:
a platform secured to an outer surface of a rotary member rotatably arranged in the container;
a blade tip plate detachably attached to said platform;
at least one engagement projection formed on one of said platform and said blade tip plate, said at least one engagement projection having a tapered shape so that a horizontal area of said at least one engagement projection becomes gradually smaller in a first direction;
at least one engagement recess formed on the other one of said platform and said blade tip plate, said at least one engagement recess having a tapered shape so that a horizontal area of said at least one engagement recess becomes gradually smaller in a second direction, said at least one engagement recess being engageable with said at least one engagement projection; and
a fixing screw member for connecting said platform and said blade tip plate such that said at least one engagement projection engages said at least one engagement recess, thereby securely attaching said blade tip plate to said platform.

5,647,419
CUTTERHEAD INSERTS FOR AN INDUSTRIAL WOODWORKING MACHINE
John S. Stewart, 6921 Charnel La., Climax, N.C. 27233
Filed Jan. 18, 1996, Ser. No. 588,461
Int. Cl.[6] B27C *1/00;* **B27G** *13/10*
U.S. Cl. 144—230 **28 Claims**

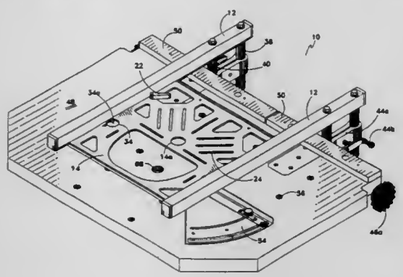


1. A removable cutting insert for use in a cutterhead for an industrial woodworkng machine, said cutterhead including a generally cylindrical body having an outer surface, an insert-receiving groove extending into said cutterhead body from the outer surface, and means for removably securing said cutting insert in said groove, said cutting insert comprising:

(a) a blade holder having a front blade attachment wall; and

(b) at least one detachable blade secured into said holder adjacent said front blade attachment wall, said blade having a cutting edge projecting above said holder and said front blade attachment wall, wherein said blade holder is comprised of an insert body and at least one blade attachment gib, said blade being secured between said body and said gib.

5,647,420
CANTILEVERED LINEAR HAND-HELD POWER TOOL ATTACHMENT APPARATUS
Steven Michell, Box 488, Canoe, B. C., Canada
Filed Oct. 5, 1995, Ser. No. 542,471
Int. Cl.[6] B26D *5/08;* **B25H** *1/04*
U.S. Cl. 144—286.1 **31 Claims**



1. A cantilevered hand-held power tool attachment device for releasably mounting hand-held power tools in an elevated upright position over a base comprising:

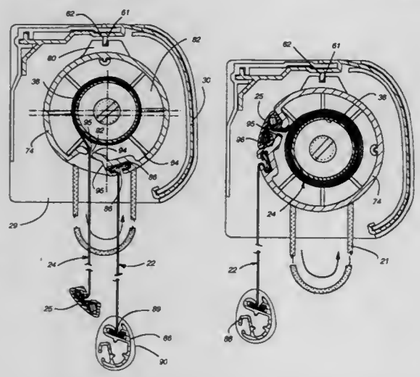
a base;

mounted to said base, means for selectively adjustably elevating and lowering a pair of laterally opposed cantilevered support arms extending longitudinally over said base;

a power tool carriage slidably mounted between said pair of laterally opposed cantilevered support arms and selectively slidably lockably positionable in a longitudinal direction along said pair of laterally opposed cantilever support arms, said power tool carriage adapted to releasably lockably mate a hand-held power tool in releasably mountable vertical engagement thereon,

wherein said means for selectively adjustably elevating and lowering said pair of laterally opposed cantilevered support arms comprises first and second laterally opposed pairs of vertical members, said first and second laterally opposed pairs of vertical members spaced apart in said longitudinal direction at a first end of said pair of laterally opposed cantilevered support arms and rigidly mounted to and extending downwards from said pair of laterally opposed cantilevered support arms, said first and second laterally opposed pairs of vertical members journalled in corresponding first and second pairs of laterally opposed apertures in said base at a first side of said base whereby said pair of laterally opposed cantilevered support arms are cantilevered over said base, said first laterally opposed pair of vertical members having means for selectively adjustable incremental raising and lowering of said pair of laterally opposed cantilevered support arms co-operating between said first laterally opposed pair of vertical members and said base.

5,647,421
DUAL SHAPE ASSEMBLY
Brian M. Hoffmann, Louisville; Gerald W. Huntley, Monument, and Joseph E. Kovach, Thornton, all of Colo., assignors to Hunter Douglas Inc., Upper Saddle River, N.J.
Filed Jun. 6, 1995, Ser. No. 466,099
Int. Cl.[6] A47H *1/00*
U.S. Cl. 160—120 **9 Claims**

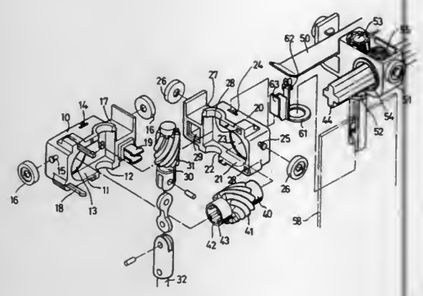


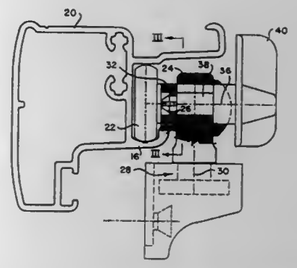
1. A double panel shade comprising an elongated outer roller having a central longitudinal axis and an elongated inner roller mounted within said outer roller having a central longitudinal axis different from said central longitudinal axis of said outer roller, a mounting system supporting said inner and outer rollers for rotative movement about said central longitudinal axis of said inner roller, an outer panel secured to and adapted to be wrapped around said outer roller and an inner panel secured to said inner roller.

5,647,422
VERTICAL BLIND ASSEMBLY
Ming Lu Weng, P.O. Box 63-99, Taichung, Taiwan
Filed Jun. 18, 1996, Ser. No. 666,612
Int. Cl.[6] E06B *9/26*
U.S. Cl. 160—176.1 **4 Claims**

1. A vertical blind assembly comprising:

a first housing and a second housing secured together so as to form a carrier frame, said first and said second housings each including a room formed therein and each including a vertical opening formed therein and each including a lateral opening





formed therein, said first and said second housings each including a vertical slot formed therein and each including at least one wheel rotatably secured thereto,

a rod rotatably received in said vertical openings of said first and said second housings and including a first worm gear formed thereon and rotatably received in said rooms of said first and said second housings,

a shaft rotatably received in said lateral openings of said first and said second housings and including a second worm gear formed thereon and rotatably received in said rooms of said first and said second housings for engaging with said first worm gear, said shaft including an engaging channel formed therein,

a post coupled to said rod for rotating said rod and said first and said second worm gears,

a beam engaged in said engaging channel of said shaft and arranged for allowing said shaft to be slidably engaged on said beam and for allowing said shaft and said beam to be rotated in concert with each other,

a plurality of casings each including a pole rotatably supported therein for engaging with and for supporting a vertically oriented slat, said pole including a third gear provided on top thereof and rotatably received in said casing,

a plurality of barrels each being laterally and rotatably supported in said casing and each including an outer peripheral portion having a fourth gear provided thereon for engaging with said third gear and for rotating said pole, said barrel being slidably engaged on said beam and rotated in concert with said beam, and

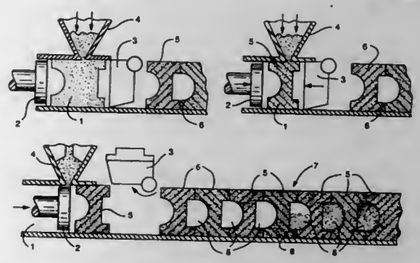
a plurality of couplers each including a lower portion having a ring provided thereon for engaging with said pole and each including an upper portion having a catch provided thereon for engaging with said casing so as to secure said coupler to said casing, said couplers each including an engaging member for engaging with said slot of said first and said second housings so as to couple said casing to said first and said second housings,

said first worm gear being rotated by said post in order to rotate said second worm gear and said beam and said fourth gear and said third gear, so as to rotate said pole and said slat.

5,647,423
BIFOLD DOOR
Uwe Harms, 2 Cotswold Dr., Milnerton, 7441, Cape Town, South Africa
PCT No. PCT/EP94/00686, § 371 Date Jan. 3, 1995, § 102(e) Date Jan. 3, 1995, PCT Pub. No. WO94/20715, PCT Pub. Date Sep. 15, 1994
PCT Filed Mar. 8, 1994, Ser. No. 335,767
Claims priority, application South Africa, Mar. 8, 1993, 93/1639
Int. Cl.[6] E05D *15/06*
U.S. Cl. 160—206 **8 Claims**

1. A bifold door which comprises a pair of door panels joined to one another along a centre hinge having a vertical hinge axis, each door panel being, at the end thereof remote from the centre hinge, pivotal about a pivot axis parallel to the hinge axis, and each of the door panels being supported, at the end thereof remote from the centre hinge, by an upper runner assembly on an upper track and by a lower runner assembly on a lower track, each runner assembly being provided with an element which in a first operative position restrains the runner assembly against movement along the track and in a second inoperative position permits the runner assembly to move along the track, the relationship between each element and its track being such that a force exerted on a door panel and tending to move the door panel along the track can displace the elements from their first positions to their second positions thereby overcoming the restraining action exerted by said elements on the door panel and permit the runner assemblies supporting that panel to move along the tracks.

5,647,424
METHOD OF BILATERAL PRESSING OF MOULDS IN A MOULD-STRING SYSTEM
Jens Peter Larsen, Albertslund, and Ole Oksby Hansen, Ballerup, both of Denmark, assignors to Dansk Industri Syndikat A/S, Herlev, Denmark
Filed Oct. 26, 1995, Ser. No. 548,553
Claims priority, application Denmark, Nov. 1, 1994, 1266/94
Int. Cl.[6] B22C *11/10;15/02*
U.S. Cl. 164—18 **10 Claims**



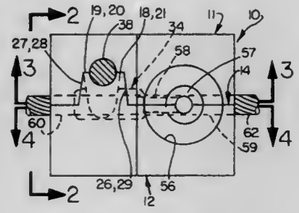
1. A method of bilateral pressing of moulds from a compressible particulate mould material in a string-moulding system comprising a means for pressing a mould in a mould chamber between a squeeze plate having at least one pattern and a pivoted squeeze plate having at least one pattern, wherein said squeeze plate and said pivoted squeeze plate are movable towards each other, said method comprising:

a) imparting a unilateral pre-compression to the mould material by moving either only said squeeze plate toward said pivoted squeeze plate or only said pivoted squeeze plate toward said squeeze plate, wherein the amount of said pre-compression is adjustable;

b) moving said squeeze plate and said pivoted squeeze plate simultaneously towards each other to achieve bilateral pressing of the mould material;

c) pivoting said pivoted squeeze plate to allow the mould to be pushed beyond said pivoted squeeze plate;
d) moving said squeeze plate past said pivoted squeeze plate to push the mould beyond said pivoted squeeze plate.

5,647,425
APPARATUS AND METHOD FOR FORMING ELECTRICAL CONNECTIONS
George W. Foutz, Rocky River, and Richard E. Singer, Beachwood, both of Ohio, assignors to Erico International Corporation, Solon, Ohio
Filed Sep. 28, 1995, Ser. No. 535,925
Int. Cl.[6] B23K *23/00*
U.S. Cl. 164—54 **16 Claims**

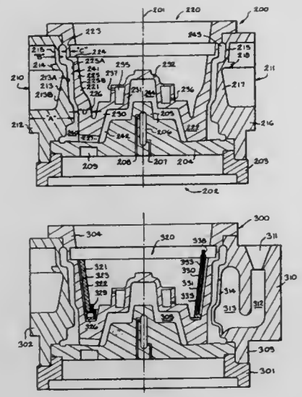


1. A mold assembly for lap welding a conductor to a vertical bar or rod comprising two vertically split mold parts, each comprising a major clamping planar surface, each when clamped together forming a crucible chamber, a vertical sleeving passage for said rod or bar, and a tap hole leading from the crucible chamber to a weld chamber, a transverse conductor sleeving passage for the conductor in one or both molds, said weld chamber opening into both such passages, said vertical sleeving passage being formed in a tongue in one of said parts and a mating groove in the other of said parts wherein said vertical passage is offset from the major clamping planar surface.

5,647,426
METHOD AND APPARATUS FOR CONTROLLED DIRECTIONAL SOLIDIFICATION OF A WHEEL CASTING
Romulo A. Prieto, Northville; Daniel C. Wei, and Bor-Liang Chen, both of Ann Arbor, all of Mich., assignors to Hayes Wheels International, Inc., Romulus, Mich.
Continuation-in-part of Ser. No. 133,476, Oct. 7, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 486,662
Int. Cl.[6] B22D *27/04*
U.S. Cl. 164—348 **17 Claims**

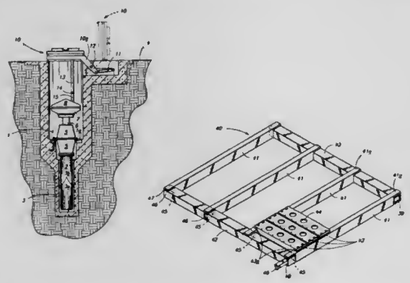
1. A mold for casting a vehicle wheel comprising:
a base member;
a top member; and
a plurality of arcuate-shaped side members, said base, top and side members cooperating to define a mold cavity for casting a vehicle wheel and at least one of said side and top members including a tapered wall portion such that molten metal adjacent to the wider portion of said tapered wall solidifies before molten metal adjacent to the narrower portion of said tapered wall.

13. A mold for casting a vehicle wheel comprising:
a base member;
a top member;
a plurality of arcuate-shaped side members, said base, top and side members cooperating to define a mold cavity for casting a vehicle wheel; and
a cooling apparatus which includes an arcuate-shaped wall mounted inside said top member, said wall extending parallel to a portion of an inside surface of said top member and



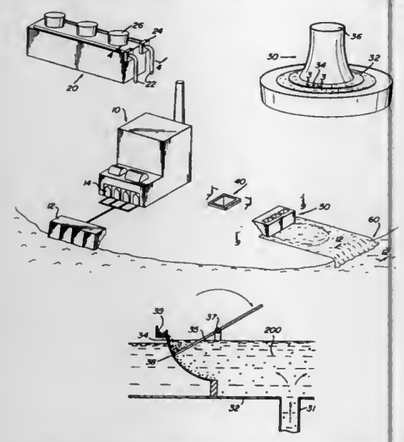
spaced apart therefrom to define a cooling chamber which extends axially along substantially the entire axial length of said inside surface of said top member, said cooling apparatus adapted to receive a cooling medium at a first axial end of said cooling chamber and discharge said cooling medium from a second axial end of said cooling chamber, said second axial end being opposite from said first axial end, said wall cooperating with said inside surface of said top member to direct said cooling medium to flow in a generally axial direction across substantially the entire axial length of said inside surface of said top member to establish an axially directed temperature gradient thereacross.

5,647,427
NON-FERROUS METAL CASTING MOLD TABLE SYSTEM
Richard J. Collins, and Loren Keith Bodeau, both of Spokane, Wash., assignors to Wagstaff, Inc., Spokane, Wash.
Filed Aug. 15, 1995, Ser. No. 515,699
Int. Cl.[6] B22D *11/00;11/124*
U.S. Cl. 164—459 **19 Claims**



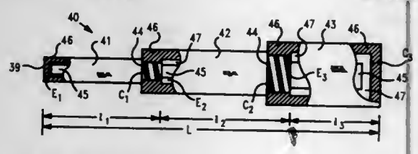
1. A modular non-ferrous metal casting mold table comprising:
a. a frame, which is comprised of
i. a plurality of longitudinal headers, at least one of which has a coolant passageway; and
ii. at least one transverse header connected to the longitudinal headers; and
b. a plurality of self-contained, one piece mold modules
i. having a first end and a second end, the first end and the second end being attached to longitudinal headers, and
ii. having at least one mold cavity.

5,647,428
RECOVERY OF TUBE CLEANERS
James F. Echols, Bellaire, Tex., assignor to BetzDearborn Inc., Trevose, Pa.
Continuation-in-part of Ser. No. 262,855, Jun. 21, 1994, Pat. No. 5,473,787. This application Jun. 28, 1995, Ser. No. 496,142
Int. Cl.[6] F28G *1/12*
U.S. Cl. 165—95 **2 Claims**



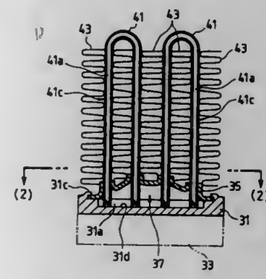
1. Apparatus for removing tube cleaners from cooling water downstream from a heat exchanger, comprising:
a flume for distribution of cooling water around a cooling tower;
screening means for screening the tube cleaners, the screening means having a screen, the screen having an opening size, the screen being placed such that cooling water which enters and leaves the flume pass through the screen; and
means for removing the cleaners from the screen.

5,647,429
COUPLED, FLUX TRANSFORMER HEAT PIPES
Sevgin Oktay, 097 Fox Run, Poughkeepsie, N.Y. 12603, and George Paul Peterson, 6623 Westbury Oaks Ct., West Springfield, Va. 22152
Continuation of Ser. No. 260,534, Jun. 16, 1994, abandoned. This application Jan. 24, 1996, Ser. No. 590,869
Int. Cl.[6] F28D *15/00*
U.S. Cl. 165—104.26 **20 Claims**



1. A heat pipe including:
a heat input end including an evaporator,
a hollow adiabatic section, and
an output end including a condenser,
said evaporator and said condenser being joined by said hollow adiabatic section containing a wicking material and a coolant,
said heat pipe having a larger inner cross-sectional area at said condenser than at said evaporator,
said heat pipe including a plurality of individual, flexible heat pipe stages connected in cascade with the condenser of the preceding stage secured directly by a joint to the corresponding evaporator of a succeeding stage leading from a proximal input end of a first one of said stages to a distal, output end of a last one of said stages, with the condenser of the preceding stage integral with the evaporator of the succeed stage, and each of said stages having a larger inner cross-sectional area at the condenser thereof than at the evaporator thereof.

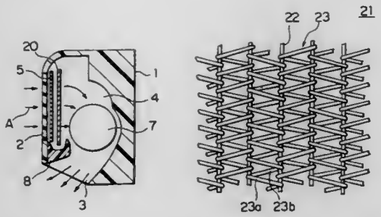
5,647,430
ELECTRONIC COMPONENT COOLING UNIT
Makoto Tajima, Tokyo, Japan, assignor to Calsonic Corporation, Tokyo, Japan
Filed Mar. 19, 1996, Ser. No. 618,151
Claims priority, application Japan, Mar. 20, 1995, 7-061307
Int. Cl.[6] F28D *15/00*
U.S. Cl. 165—104.33 **5 Claims**

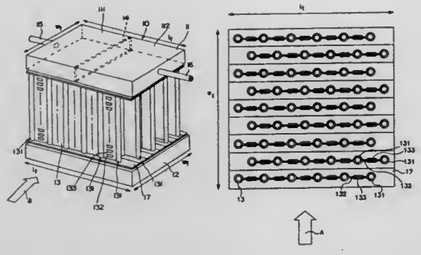


1. An electronic component cooling unit, comprising:
a cold plate having one surface and another surface, an electronic component being mounted on said one surface of said cold plate;
a cover member covering said other surface of said cold plate, said cold plate and said cover member forming a tank section which accommodates a refrigerant; and
a pipe member mounted to said cover member and comprising a multi-flow-path container with a flattened cross-section, having opposite open ends, and which is bent so that said opposite open ends of said pipe member are communicated with said tank section;
wherein said tank section and said pipe member are evacuated, and said refrigerant is sealed in said pipe member and said tank section.

5,647,431
AIR CONDITIONER AND HEAT EXCHANGER USED THEREFOR
Michimasa Takeshita; Takayuki Yoshida; Yoshiaki Tanimura; Hitoshi Iijima, all of Shizuoka; Takashi Gotoh, and Tsuneo Yumikura, both of Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed May 23, 1995, Ser. No. 448,307
Claims priority, application Japan, Mar. 30, 1995, 7-074097
Int. Cl.[6] F28F *1/22;1/32;1/36*
U.S. Cl. 165—119 **17 Claims**

1. An air conditioner comprising:
a housing having air suction port disposed on at least one of a fore surface and an upper surface, an air blow-off port disposed on a lower part and an air passage formed so as to communicate said air suction port with said air blow-off port;
a filter disposed at a rear stage of said air suction port and disposed across said air passage;
a heat exchanger arranged at the rear stage of said filter and disposed across said air passage; and
a blower disposed at the rear stage of said heat exchanger in said air passage;





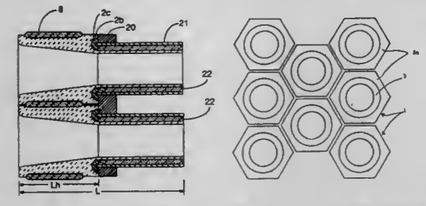
wherein said heat exchanger has at least one row of heat conduction pipe groups which are disposed across said air passage, each said heat conduction pipe group comprises at least three heat conduction pipes which are arranged in parallel with each other with a predetermined distance between adjacent ones and fine wires each made of a metallic material having excellent heat conductivity spirally wound around each adjacent pair of heat conduction pipes.

5,647,432

CERAMIC FERRULE AND CERAMIC FERRULE REFRACTORY WALL FOR SHIELDING TUBE SHEET/ BOILER TUBE ASSEMBLY OF HEAT EXCHANGER

Donald G. Rexford, Pettersonville, and Jeffrey J. Bolebruch, Gloversville, both of N.Y., assignors to Blasch Precision Ceramics, Inc., Albany, N.Y.

Filed Apr. 10, 1996, Ser. No. 630,473
Int. Cl.[6] F28F *19/00;9/02*
U.S. Cl. 165—134.1 **29 Claims**



1. A ceramic ferrule for shielding a tube, sheet/boiler tube assembly of a heat exchanger comprising:

a head portion having a first end defining an inlet of the ferrule, a second end opposed to said first end, an inner surface defining a passageway extending from said first end to said second end, and an outer peripheral surface extending from said inlet first end to said second end, said outer peripheral surface having (i) an outer shape that allows mating of a plurality of said ferrules to form cooperatively a substantially gas-tight refractory barrier wall, and (ii) a groove formed therein which extends around the circumference thereof; and

a tube portion having a first end joined to said head portion, a second end defining the outlet of the ferrule, and an inner surface defining a passageway extending from said first end to said outlet second end and merging with the passageway of said head portion.

5,647,433

HEAT EXCHANGER

Kenichi Sasaki, Isesaki, Japan, assignor to Sanden Corporation, Gunma, Japan

Filed Dec. 1, 1994, Ser. No. 352,808
Claims priority, application Japan, Dec. 9, 1993, 5-341660
Int. Cl.[6] F28D *1/03*
U.S. Cl. 165—148 **12 Claims**

1. A heat exchanger comprising:

a first tank and a second tank space vertically from said first tank, and at least one connecting member which extends between said first tank and said second tank;

said at least one connecting member comprising a plurality of pipe portions, each having a longitudinal axis, which place said first tank and said second tank in fluid communication, and a plurality of plane portions, one of which is fixedly disposed between each pair of adjacent pipe portions, wherein said plane portions are co-planar with said longitudinal axes of said pipe portions;

a plurality of openings formed in said plane portions and extending along a longitudinal axis of said at least one connecting member; and

a plurality of louvers formed at said openings, respectively, so that said louvers are parallel to a plane, which is perpendicular to the longitudinal axes of said pipe portions;

wherein said at least one connecting member is oriented, so that said plane portions are perpendicular to a flow direction of air which passes through said heat exchanger.

5. A method of manufacturing a heat exchanger; said heat exchanger including,

a first tank and a second tank spaced vertically from said first tank, and at least one connecting member which extends between said first tank and said second tank;

said at least one connecting member comprising a plurality of pipe portions, each having a longitudinal axis, which place said first tank and said second tank in fluid communication, and a plurality of plane portions, one of which is fixedly disposed between each pair of adjacent pipe portions, wherein said plane portions are co-planar with said longitudinal axes of said pipe portions;

comprising the steps of:

forming a plurality of slits in said plane portions along the longitudinal axis of said at least one connecting member, so that said slits are perpendicular to the longitudinal axes of said pipe portions, thereby defining a plurality of plane belt regions between and adjacent slits; and

twisting each of said plane belt regions, so that said plane belt regions are parallel with a plane perpendicular to the longitudinal axes of said pipe portions.

5,647,434

FLOATING APPARATUS FOR WELL CASING

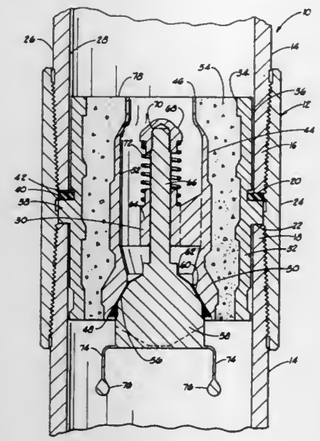
Bobby L. Sullaway; Henry E. Rogers, both of Duncan, and Dick A. Murray, Okmulgee, all of Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Mar. 21, 1996, Ser. No. 620,056
Int. Cl.[6] E21B *33/14;34/08*
U.S. Cl. 166—242.8 **21 Claims**

1. A floating apparatus for use in a well casing having upper and lower casing string sections coupled with a casing coupling, the apparatus comprising:

a sleeve which is receivable within the well casing;

a flange for holding said sleeve in the well casing, said flange extends outwardly from said sleeve such that said flange is interposed between the casing string sections when the sections are coupled;



a valve disposed in said sleeve; and

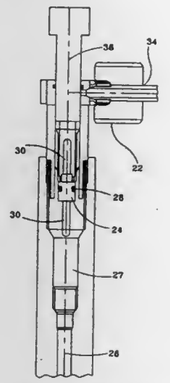
means for attaching said valve to said sleeve.

5,647,435

CONTAINMENT OF DOWNHOLE ELECTRONIC SYSTEMS

Steve Owens, The Woodlands; Brett Bouldin, Pearland, and Gary Elliott, Magnolia, all of Tex., assignors to PES, Inc., The Woodlands, Tex.

Filed Sep. 25, 1995, Ser. No. 533,282
Int. Cl.[6] E21B *47/00*
U.S. Cl. 166—250.01 **12 Claims**



11. A method for containing electronic components in a well tool, comprising the steps of:

positioning the electronic components in a cavity within the tool;

closing the cavity to isolate the cavity from the downhole well environment;

positioning the well tool downhole in a well;

positioning a pressure sensor in contact with said cavity for detecting the pressure within said cavity and for generating signals indicating such pressure;

transmitting the signals generated by said pressure sensor to a controller at the well surface; and

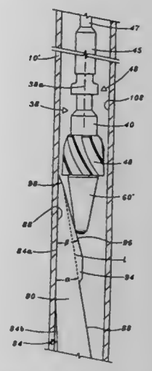
operating said controller to display information indicating the pressure within said cavity.

5,647,436

WHIPSTOCK AND STARTER MILL

Britt O. Braddick, Houston, Tex., assignor to TIW Corporation, Houston, Tex.

Continuation of Ser. No. 409,879, Mar. 24, 1995, Pat. No. 5,551,509. This application Feb. 20, 1996, Ser. No. 602,202
Int. Cl.[6] E21B *7/08*
U.S. Cl. 166—298 **20 Claims**



1. A method of forming a window in a downhole tubular, comprising:

securing a whipstock within the tubular at a location where the window is to be formed;

lowering a rotatable starter mill through the tubular, the starter mill having a lower nose portion spaced above cutters on the starter mill;

engaging the rotating starter mill with the whipstock to divert the starter mill into cutting engagement with the tubular;

lowering the rotating starter mill to cut a portion of the window in the tubular until the nose portion becomes wedged between the whipstock and the tubular to inhibit further lowering of the starter mill;

sensing a reduction in torque of the rotating starter mill once the nose portion becomes wedged between the whipstock and the tubular;

retrieving the starter mill in response to the sensed reduction in torque;

lowering a rotating window mill into engagement with a lower surface of the cut portion of the window; and

thereafter further lowering the rotating window mill to complete the window in the tubular.

5,647,437

THRU TUBING TOOL AND METHOD

Britt O. Braddick, and Allen Kent Rives, both of Houston, Tex., assignors to TIW Corporation, Houston, Tex.

Division of Ser. No. 223,704, Apr. 6, 1994, Pat. No. 5,566,762. This application Aug. 2, 1996, Ser. No. 691,348
Int. Cl.[6] E21B *7/08;23/00*
U.S. Cl. 166—382 **19 Claims**

9. A method of setting an expandable anchor within a large diameter lower tubular after moving the expandable anchor through a small diameter upper tubular having an external diameter less than an internal diameter of the lower tubular, comprising:

releasably connecting a mandrel on the expandable anchor with a setting tool;



supporting a top expander on the mandrel, the top expander having a plurality of circumferentially spaced inclined external uniform curved surfaces that each have a continuous curvature;
supporting a plurality of movable upper members on the top expander;
supporting a bottom expander on the mandrel, the bottom expander having a plurality of circumferentially spaced inclined external uniform curved surfaces that each have a continuous curvature;
supporting a plurality of movable lower members on the bottom expander;
supporting a plurality of slips extending between and supported on the plurality of upper and lower movable members for engaging the lower tubular to secure the expandable anchor therein; and
lowering the expandable anchor through the small diameter upper tubular and thereafter setting the expandable anchor within the large diameter lower tubular at a position below the upper tubular.

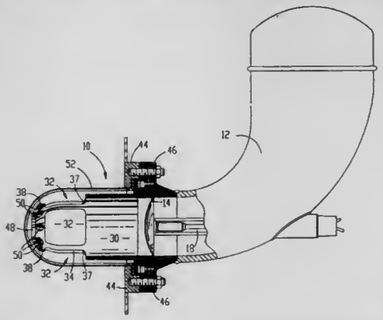
5,647,438

EXPLOSION SUPPRESSANT DISPERSION NOZZLE

Srikrishna Chatrathi, Lee's Summit; William A. Staggs, Kansas City, and Anthony J. Lombardo, Independence, all of Mo., assignors to Fike Corporation, Blue Springs, Mo.

Filed Apr. 25, 1996, Ser. No. 638,972
Int. Cl.[6] A62C *35/08*
U.S. Cl. 169—58 **20 Claims**

11. An explosion protection apparatus for discharging a suppressant material into a zone for preventing and extinguishing explosions in the zone, the apparatus comprising:



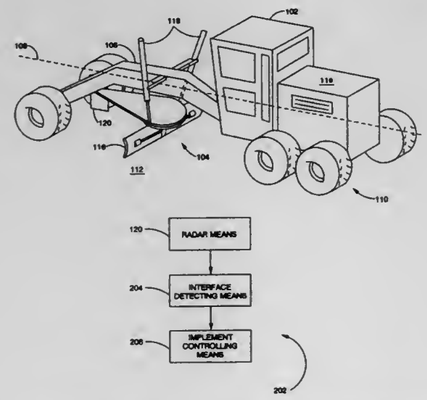
a storage vessel for storing a supply of pressurized suppressant material;
a rupture disc for sealing the pressurized suppressant material in the storage vessel;
sensor means for sensing the presence of an incipient explosion in the protected zone;
rupturing means responsive to the sensor means for rupturing the rupture disc in response to the sensing of the explosion for allowing the suppressant material to escape the storage vessel; and
a nozzle coupled with the storage vessel for dispersing the suppressant material throughout, the nozzle including
a cylindrical body section presenting axially spaced inlet and discharge ends, the body section including a plurality of circumferentially spaced windows for dispersing the suppressant material laterally from the nozzle, each of the windows presenting a first open area, and
a cap section attached to the discharge end, the cap section including
a central orifice aligned with the longitudinal axis of the nozzle for dispersing the suppressant material axially from the nozzle, the central orifice presenting a second open area, and
a plurality of circumferentially spaced holes spaced radially from the central orifice for dispersing the suppressant material radially from the passageway, each of the holes presenting a third open area,
the second open area being greater than each of the third open areas.

5,647,439

IMPLEMENT CONTROL SYSTEM FOR LOCATING A SURFACE INTERFACE AND REMOVING A LAYER OF MATERIAL

J. Scott Burdick, Pekin; Paul T. Corcoran, Washington; Adam J. Gudat, Edelstein; Robert A. Herold, and John F. Szentes, both of Peoria, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Dec. 14, 1995, Ser. No. 572,136
Int. Cl.[6] E02F *3/76*
U.S. Cl. 172—4.5 **11 Claims**



1. An apparatus coupled to a work machine to assist the work machine in removing a first layer of material from a second layer of material, the work machine having a frame, comprising:
a work implement having a cutting portion and being elevationally movably connected to the work machine, said cutting portion extending in a direction transverse to a longitudinal axis of the work machine;

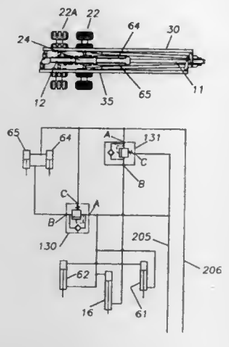
electromagnetic means, mounted to the work machine, for delivering electromagnetic radiation to penetrate the first layer of material, receiving a reflection of said delivered electromagnetic radiation from said second layer of material, and generating a responsive first signal;
interface detecting means for receiving said first signal, determining the distance between said electromagnetic means and the second layer of material and responsively producing a distance signal; and
implement control means for receiving said distance signal and responsively controlling the position of said work implement relative to said frame.

5,647,440

FORWARD-FOLDING, WINGED, IMPLEMENT FRAME

Alan F. Barry, Fairfax, and Harry C. Deckler, Williamsburg, both of Iowa, assignors to Kinze Manufacturing, Inc., Williamsburg, Iowa

Continuation-in-part of Ser. No. 270,053, Jul. 1, 1994, Pat. No. 5,488,996. This application Jan. 23, 1996, Ser. No. 589,925
Int. Cl.[6] A01B *49/00;63/32*
U.S. Cl. 172—311 **6 Claims**



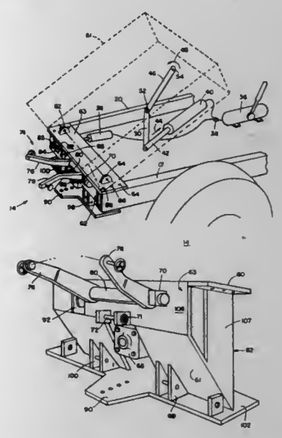
1. An agricultural implement comprising:
a main frame including a forward frame member adapted to connect to a hitch of a draft vehicle and a rear frame member mounted to said forward frame member for relative longitudinal motion between an extended and a retracted position;
a main wheel set comprising a wheel axle and ground support wheels mounted on said main frame for sliding motion therealong between a rear and a forward position;
first and second wing sections pivotally mounted at their respective inboard ends to said main frame for swinging movement between a field use position in which said wing sections are aligned in a direction transverse of the direction of travel, and a folded position in which said wing sections are generally parallel to each other and extend in the direction of travel;
first and second folding links, each having a forward end connected to said forward frame member and a rear end connected to said first and second wing sections, respectively, whereby as said main frame is extended, said wing sections pivot forwardly to said folded position and as said main frame is retracted, said wing sections are rotated to said field use position; and
power means including at least a first linear power actuator connected to said main wheel set for moving said main wheel set between said rear position when said implement is unfolded for field use, and a forward position when said implement is folded for transport, thereby to distribute the weight of said wing sections more evenly between said wheel set and said tractor hitch during transport.

5,647,441

COMBINED TRACTOR AND DUMP TRUCK VEHICLE

Robert A. Gibbons, Marion, Mass., assignor to Tructor Incorporated, Marion, Mass.

Filed May 23, 1995, Ser. No. 448,190
Int. Cl.[6] A01B *59/043*
U.S. Cl. 172—439 **4 Claims**



1. A self contained, modular three-point hitch comprising:
a three-point hitch fixture including:
a power take off drive bearing,
a pair of lifting arm mounts,
a fixed third point hitch, and
a channel housing a lifting arm drive device;
a lifting arm subassembly mounted in said lifting arm mounts, said lifting arm subassembly comprising:
a pair of lifting arms mounted to an outer tube, and
a lifting arm drive bar extending within said outer tube, said drive bar including a lifting arm drive member connected to said lifting arm drive device; and
means for adjusting the maximum lifting height of said lifting arms including:
a plurality of offset orifices through the surface of said outer tube,
a complementary plurality of offset orifices through said drive bar, and
a pair of fasteners extendable through said orifices.

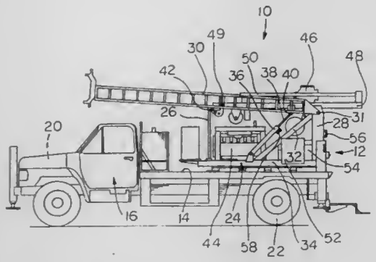
5,647,442

DRILL RIG WITH CARRIER/MAST SAFETY INTERLOCK

James E. Lange, P.O. Box 1670, LaPorte, Ind. 46350

Filed Jul. 18, 1995, Ser. No. 503,711
Int. Cl.[6] E21C *11/02*
U.S. Cl. 173—28 **19 Claims**

1. Drill rig comprising a carrier having a carrier engine for moving the carrier, a support frame mounted on said carrier, a drilling support mechanism mounted on said support frame and movable between an operative position for effecting a drilling operation and a lowered position for transport by said carrier, a drilling spindle rotatable relative to said drilling support mechanism, a power means for effecting rotation of said drilling spindle, and safety interlock means for disabling said carrier after the



drilling support mechanism has been moved to said operative position until the drilling support mechanism is returned to the lowered position.

5,647,443

METHOD AND DEVICE FOR DRILLING FOR OIL OR GAS

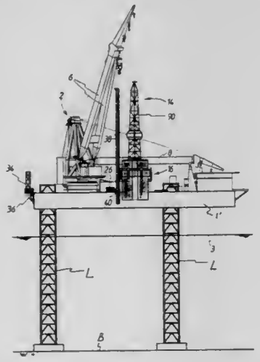
René Broeder, Culemborg, Netherlands, assignor to Heerema Group Services B.V., Leiden, Netherlands

Filed Jul. 19, 1995, Ser. No. 504,352

Claims priority, application Netherlands, Jul. 22, 1994, 9401208

Int. Cl.[6] E21B *19/00*

U.S. Cl. 175—5 **24 Claims**



1. A method for drilling for oil or gas in an underwater bed by means of a drilling rig disposed on a floating drilling platform or on the underwater bed and having at least one drilling derrick, the method comprising the following steps:

a. assembling a drill string and drilling a borehole in the underwater bed with the drill string by means of the drilling derrick;

b. removing the drill string from the borehole;

c. assembling and placing a casing string in the borehole;

d. repeating steps a., b. and c. at least once for boreholes and casing strings of ever decreasing diameter;

e. assembling a riser string, and placing a riser string after placing of one of the casing strings;

the method further comprising the step of, prior to the placing of a casing string, the placing of a riser string or the drilling of a hole, pre-assembling one or more parts of the casing string, the riser string or the drill string on the drilling rig at one or more pre-assembly points which are in a position which is different from the position of the at least one drilling derrick; and conveying to the drilling derrick each part of the casing string, riser string or drill string from the pre-assembly points to means for assembling the casing string, riser string or drill string and placing the casing string in the borehole, placing the riser string in the borehole or drilling a borehole.

5,647,444

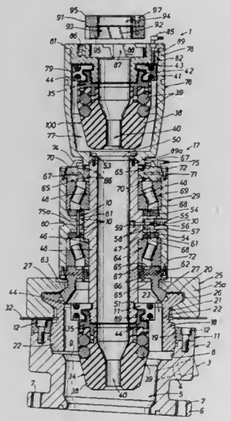
ROTATING BLOWOUT PREVENTOR

John R. Williams, 3816 Spring Mountain Rd., Fort Smith, Ark. 72901

Continuation of Ser. No. 565,129, Nov. 30, 1995, abandoned, which is a continuation of Ser. No. 460,672, Jun. 2, 1995, abandoned, which is a continuation of Ser. No. 343,835, Nov. 22, 1994, which is a continuation of Ser. No. 248,467, May 24, 1994, abandoned, which is a continuation of Ser. No. 948,137, Sep. 18, 1992, abandoned. This application Aug. 23, 1996, Ser. No. 697,427

Int. Cl.[6] E21B *33/06*

U.S. Cl. 175—209 **9 Claims**



1. A rotating blowout preventor adapted to seal against a rotatable drill string or other rotatable tubular member extending downhole in a well, comprising:

a first stationary housing section having a bore therethrough, said bore having a generally concave portion;

a bowl member having a convex exterior portion and a bore therethrough adapted to receive said drill string, said bowl member being mounted in said first stationary housing bore in tiltable engagement with said generally concave portion of said stationary housing;

a second generally cylindrical stationary housing section having a bore therethrough;

a generally cylindrical rotatable shaft member having a bore therethrough adapted to receive said drill string, and having upper and lower end portions, and bearing means mounted with said second housing section and said rotatable shaft member for mounting said rotatable shaft member for rotation with respect to said first and second stationary housing sections;

upper and lower rotatable seal members attached to said upper and lower end portions of said rotatable shaft, respectively, and adapted to receive and seal against said rotatable drill string, said rotatable shaft member and first and second seal members being tiltable with said bowl member for accommodating non-vertical positioning of a drill string.

5,647,445

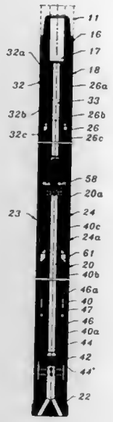
DOUBLE PISTON IN-THE-HOLE HYDRAULIC HAMMER DRILL

Ryszard J. Puchala, Gloucester, Canada, assignor to National Research Council of Canada, Ottawa, Canada

Filed Nov. 22, 1995, Ser. No. 561,819

Int. Cl.[6] E21B *4/14*

U.S. Cl. 175—296 **11 Claims**



1. An in-the-hole hydraulic hammer drill of the type having an inlet passageway for fluid and connectible to a drill string providing a source of pressurized fluid, and having piston means capable of providing downwardly directed impacts onto anvil means solidly connectible to a drill bit, and having valve means operated automatically by movement of the piston means and/or by fluid pressure to provide a continuous cycle of operation including a continuous series of said impacts, characterized in that:

said piston means includes an upper piston and a lower piston, each capable of impacting respective upper and lower anvil means solid with said drill bit,

and in that said valve means includes an inlet valve situated at the junction of the lower end of the upper piston and the upper end of the lower piston and closable by the coming together of the upper and lower pistons, and an outlet valve at the lower end of the lower piston and having a valve member operated by the lower piston to open the outlet valve when the lower piston approaches its upper position and closing the valve when the lower piston approaches a lowermost position;

said valves and pistons being arranged so that when the outlet valve is closed and the inlet valve is open fluid pressure is applied to the lower ends of both pistons and causes these both to rise, and so that when the inlet valve is closed and the outlet valve is open pressure on the bottom of the pistons is relieved and both pistons descend together, and so that the pistons when approaching the tops of their strokes open the outlet valve and close the inlet valve, whereupon the pistons descend together until the upper piston is halted in its movement by impacting the upper anvil means, while the lower piston continues to descend until impacting the lower anvil means, the final stage of downward movement of the lower piston closing the outlet valve and opening the inlet valve to repeat the cycle.

5,647,446

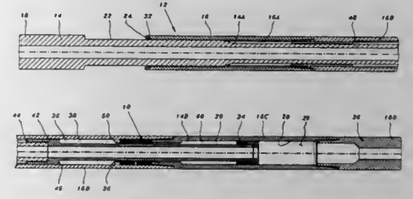
TWO WAY HYDRAULIC DRILLING JAR

Kenneth Hugo Wenzel, Edmonton, Canada, assignor to Vector Oil Tool Ltd., Edmonton, Canada

Filed Oct. 19, 1995, Ser. No. 546,097

Int. Cl.[6] E21B *31/113*

U.S. Cl. 175—297 **9 Claims**



1. A two way hydraulic drilling jar, comprising:

a tubular housing having a first end, a second end and an interior surface defining an interior bore;

a mandrel having a first end, a second end and an exterior surface, the mandrel being telescopically received within the interior bore of the tubular housing, the exterior surface of the mandrel having an enlarged diameter portion;

first sealing means disposed between the interior surface of the housing and the exterior surface of the mandrel at the first end of the housing;

second sealing means disposed between the interior surface of the housing and the exterior surface of the mandrel at the second end of the housing;

an annular fluid chamber formed between the exterior surface of the mandrel and the interior surface of the housing having a first end defined by the first sealing means and a second end defined by the second sealing means;

an annular valve member having an annular sidewall, a first end, a second end, an exterior surface, and an interior surface defining an interior bore, the annular valve member being disposed within the fluid chamber with the mandrel extending through the interior bore, the valve member being confined with capability of limited axial movement between two shoulders projecting from the interior surface of the housing, the interior bore of the annular valve member receiving the enlarged diameter portion of the mandrel in close fitting relation;

at least one hammer on one of the mandrel and the housing;

a first anvil on the other of the mandrel and the housing that engages the at least one hammer in a jarring impact upon relative telescopic movement of the mandrel and the housing in a first direction as the enlarged portion of the mandrel exits the interior bore of the valve member;

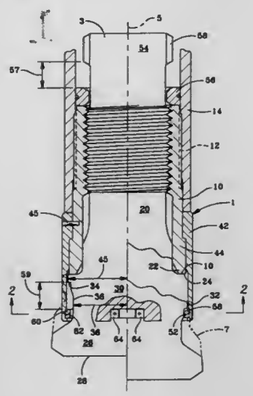
a second anvil on the other of the mandrel and the housing that engages the at least one hammer in a jarring impact upon relative telescopic movement of the mandrel and the housing in a second direction as the enlarged portion of the mandrel exits the interior bore of the valve member; and

at least one fluid bypass channel disposed in one of the valve member and the enlarged diameter portion of the exterior surface of the mandrel, the fluid bypass channel extending longitudinally between the first end and the second end of the annular valve member such that when the enlarged diameter portion of the mandrel is positioned in close fitting relation within the interior bore of the valve member, fluid can slowly bleed past to create a time delay before the enlarged diameter portion mandrel exits the interior bore of the valve member resulting in the hammer and the anvil engaging in a violent jarring impact.

5,647,447
BIT RETENTION DEVICE FOR A BIT AND CHUCK ASSEMBLY OF A DOWN-THE-HOLE PERCUSSIVE DRILL

William Leslie Jones, Moneta, Va., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Jun. 10, 1996, Ser. No. 662,725
Int. Cl.[6] E21B *4/06;4/14*
U.S. Cl. 175—300 6 Claims



1. A bit retention device for a bit and chuck assembly of a down-the-hole, percussive drill, for retaining a head section of a bit should the head section separate from a shank of the bit comprising:

(a) a cylindrical chuck adapted for threadable connection to a drill casing, said chuck terminating in a radially extending lower end face surface;

(b) bit retaining shoulder means in said assembly for forming a radially extending bit retaining shoulder;

(c) a drill bit comprising:

(i) an axially extending shank in driving engagement with said chuck, said shank terminating in a radially extending driving shoulder, said driving shoulder having an upper surface facing said end face surface of said chuck;

(ii) a bit head having a working bit face; and

(iii) an upper bit head portion adjacent to said retaining shoulder, said upper bit head portion extending axially along said bit head, said upper bit head portion having a radial diameter that is smaller than a radial diameter of said retaining shoulder;

(d) a wear collar of hollow cylindrical form concentric about a lower portion of said chuck and said upper bit head portion;

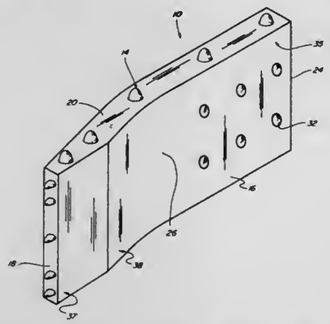
(e) a flexible retaining member removably connected to said assembly, said retaining member positioned within said wear collar, said retaining member positioned axially between said chuck end face surface and said bit working face, said retaining member extending radially between said wear collar and said upper bit head portion a sufficient distance to contact said retaining shoulder should said bit drop axially downwardly, whereby said drill bit is movable axially within said chuck, but retained within said chuck by said retaining shoulder and said retaining member; and

(f) aperture means in said wear collar for permitting access to said retaining member by an adjustment tool.

5,647,448
DRILL BIT HAVING A PLURALITY OF TEETH

Roger Dean Skaggs, 323 Church St., Bonne Terre, Mo. 63664

Filed Jan. 11, 1996, Ser. No. 585,025
Int. Cl.[6] E21B *10/42;* E02F *3/00*
U.S. Cl. 175—421 13 Claims

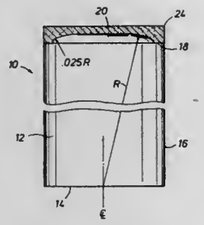


1. A drill bit for use on a trenchless drill device that allows for drilling through earthen material said drill bit including a metal body having opposed face portions, opposed side edges, a front end edge, and a back end edge opposite said front end edge, said body having means adjacent said back end edge for attachment to the trenchless drill device, said body being elongated between said front end edge and said back end edge, said portion of said body adjacent to said front end edge being angularly related to said portion adjacent to said back end edge, each of said front and said side edges having a plurality of spaced holes formed therein, and a corresponding number of teeth positioned respectively in each of said holes forming an interference fit between each of said holes and said tooth positioned therein, said teeth being made from a material that is harder and more wear resistant than said body.

5,647,449
CROWNED SURFACE WITH PDC LAYER

Mahlon Dennis, 3726 Rocky Woods, Kingwood, Tex. 77339

Filed Jan. 26, 1996, Ser. No. 592,217
Int. Cl.[6] E21B *10/56*
U.S. Cl. 175—434 20 Claims

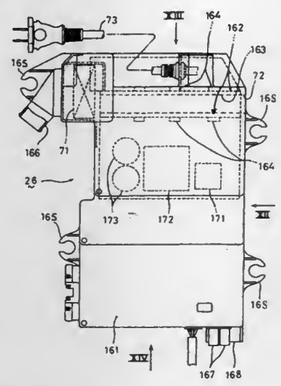


8. A drill bit insert for connection to a drill bit body having a hole therein to receive the insert wherein the insert comprises an elongate cylindrical insert body formed of a carbide material and having an enlargement on the end thereof, and further wherein said insert body incorporates an upstanding portion to support said enlargement at a spaced location from said bit body, a PDC crown over the end of said insert surrounding said enlargement wherein said crown and said enlargement have a bonded interface and wherein said PDC crown is formed of molded polycrystalline diamond compact material and said enlargement is circular and centered on said body; and said enlargement is a closed geometric pattern on the end of said insert and is constructed with a rounded peripheral edge to thereby avoid sharp corners in said crown, and wherein said enlargement edge is devoid of sharp edges and has a radius of curvature of 0.025 R where R is the radius of curvature of the end face of said enlargement.

5,647,450
COOLING SYSTEM INCLUDED IN A BATTERY CHARGER FOR AN ELECTRIC VEHICLE

Masao Ogawa; Hiroyuki Sako; Kenji Kawaguchi, and Masayuki Toriyama, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 19, 1994, Ser. No. 325,947
Claims priority, application Japan, Oct. 19, 1993, 5-261426
Int. Cl.[6] B60K *1/04;11/06;* B62M *7/00*
U.S. Cl. 180—220 21 Claims



1. A battery charger cooling system mounted on an electric vehicle, said cooling system comprising:

a battery charger case having an air inlet and an air outlet;

a heatsink provided with an air passage and located adjacent to said air inlet;

a battery charger cooling fan for producing an air current through the air passage of the heatsink to cool the heatsink; and

a discharge hose connected to said air outlet of said battery charger case and extending therefrom for receiving air discharged from the battery charger case by the battery charger cooling fan.

5,647,451
PORTABLE ROOF GUARD RAIL SUPPORT DEVICE

Mark W. Reichel, 2320 Larch La. North, Plymouth, Minn. 55441

Filed Nov. 3, 1995, Ser. No. 552,827
Int. Cl.[6] E04H *17/14*
U.S. Cl. 182—45 16 Claims

1. A portable, collapsible roof guard rail support device adapted for fastening directly to a pitched roof and adapted for adjustment to the pitch of the roof for protecting workers from falling off the roof, the device comprising:

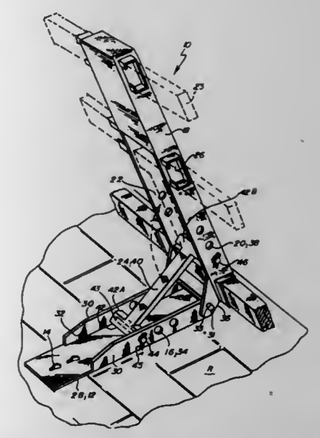
a roof attachment plate for attaching said roof guard rail support device directly to the roof, said roof attachment plate having a first adjustment point,

a support beam pivotally connected to said roof attachment plate, said support beam having a support beam channel lengthwise therein and a second adjustment point,

an angle adjustment brace removably connected to said roof attachment plate at said first adjustment point and rotatably connected to said support beam at said second adjustment point, for varying the angle at which said support beam is pivotally connected to said roof attachment plate, and

a plurality of cross bar channels through said support beam normal to said support beam channel,

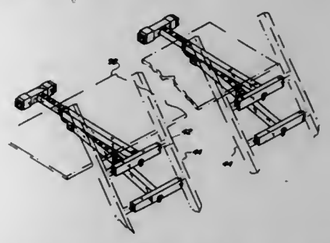
said angle adjustment brace being storable within said support beam channel for transportation.



5,647,452
SCAFFORD JIG

Gilbert E. Gauthier, Box 567, Gravelbourg, Saskatchewan, Canada

Filed Sep. 15, 1995, Ser. No. 529,079
Int. Cl.[6] E06C *1/04*
U.S. Cl. 182—117 1 Claim



1. A new and improved scaffold jig that utilizes two ladders in the creation of scaffolding comprising in combination:

a ladder having a plurality of steps;

a first T-bar having a first horizontal bar with a first side bar extending ninety degrees therefrom, the first horizontal bar having a pair of bar ends and a pair of rubber pads, the rubber pads being positioned on the first horizontal bar with one pad spaced from one of each bar ends, the first side bar having a plurality of adjustment holes therethrough;

a second T-bar having a first horizontal U-iron with a second side bar extending ninety degrees therefrom and rigidly attached thereto, the first U-iron having a distal side, a proximal side and an opening passing from the distal side through to the proximal side, the first U-iron being sized for positioning over one of the plurality of steps of the ladder and covering three sides of the one step for reducing excess movement of the first U-iron, the opening of the first U-iron receiving therein a locking pin with a chain extending therefrom, the chain having a hairpin clasp attached thereto, the

locking pin of the first U-iron being positionable through the opening when the first U-iron being positioned over the step and the chain of the locking pin extending across and under the step for positioning of the hairpin clasp through the locking pin, the locking pin securing the first U-iron onto the step and allowing the first U-iron to remain on the step when weight being placed onto the second side bar, the hairpin clasp being positioned through the locking pin to ensure the pin remains in position when weight is placed on the second side bar;

the second side bar having a proximal end with a first proximal opening spaced therefrom and passing through the second side bar, the second side bar having a bracket projecting downwardly therefrom, the bracket having a bracket opening passing therethrough, the second side bar being capable of slidable receipt of the first side bar therein to form a support bar when the first proximal opening being aligned with one of each of the adjustment holes of the first side bar, the first proximal opening receiving therein a locking pin with a chain extending therefrom, the chain having a hairpin clasp attached thereto, the locking pin of the second side bar being capable of passing through the first proximal opening into one of each of the adjustment holes of the first side bar for locking of the first side bar into the second side bar, when the U-iron being positioned on the step;

a third T-bar having a second horizontal U-iron with a third side bar extending ninety degrees therefrom and rigidly attached thereto, the first and second U-irons being adjustably separated from each other to allow folding of the third T-bar relative to the second T-bar, the second U-iron having a distal side, a proximal side and an opening passing from the distal side through to the proximal side, the second U-iron being sized for positioning over another of the plurality of steps of the ladder and cover three sides of the other step reducing excess movement of the second U-iron, the other step of the plurality of steps is below the one step supporting the first U-iron, the opening of the second U-iron receiving therein a locking pin with a chain extending therefrom, the chain having a hairpin clasp attached thereto, the locking pin of the second U-iron being positionable through the opening when the second U-iron being positioned over the other step, the chain of the locking pin extending across and under the step for positioning of the hairpin clasp through the locking pin, the third side bar having a proximal end with a second proximal opening spaced therefrom and passing through the third side bar;

a straight bar having a first end and a second end positionable within the third side bar through the proximal end of the third side bar, the straight bar having a plurality of adjustment holes therethrough with one of each of the adjustment holes being capable of aligning with the second proximal opening of the third side bar, the adjustment holes being spaced one from another at a distance of 1½ inches for ensuring that weight placed on the first side bar and the second side bar does not cause structural damage to the straight bar, the first end being positionable between the support bracket of the second side bar and being retained therein with a nut being passed through the bracket opening and passing through the straight bar, the second end of the straight bar capable of being locked within the third side bar by a locking pin and forming a support brace when the locking pin being positioned through the second proximal opening, the support brace being capable of supporting the support bar with a plank positioned thereon for formation of scaffolding; and

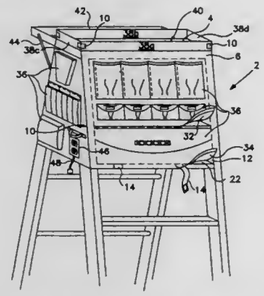
a stake having an upper end and a pointed end for piercing the ground, the stake having a safety link chain attached and spaced from the upper end, the safety chain having an end link with a locking pin attached thereto, the safety chain wrapping around the step of the ladder returning in the direction of the stake with the locking pin being positioned through one of the links of the safety chain, and being locked in position by a clasp, the stake anchoring the ladder when the scaffolding being positioned on the ladder and the safety chain being position around the step of the ladder.

5,647,453

MULTI-PURPOSE LADDER APRON

Kevin J. Cassells, 3716 W. Chester Pike, Newtown Square, Pa. 19073

Filed Jan. 17, 1995, Ser. No. 373,558
Int. Cl.[6] B65D *85/00*
U.S. Cl. 182—129 **6 Claims**



1. A multi-purpose utility apron for use with a step ladder having front legs connected by steps, back legs connected by rungs, and a top platform, the apron comprising:

a) a central panel capable of being positioned over the top platform of the ladder;

b) a front panel connected to said central panel; said central panel adapted to cover at least one step of the ladder;

c) a rear panel connected to said central panel; said rear panel adapted to cover at least one rung of the ladder;

d) a first side panel connected to said central panel; said first side panel adapted to cover at least a portion of one front leg and one back leg of the ladder;

e) a second side panel connected to said central panel; said second panel adapted to cover at least a portion of the other front leg and other back leg of the ladder;

f) a plurality of receptacles attached to each of said front, rear and side panels for the retention of tools and accessories; and

g) a collapsible tray attached to said central panel; said tray comprised of four retaining walls each pivotally attached to a different side of said central panel such that when folded up, said retaining walls form said tray and when folded down, said retaining walls hang freely to permit use of the ladder's platform in the conventional manner.

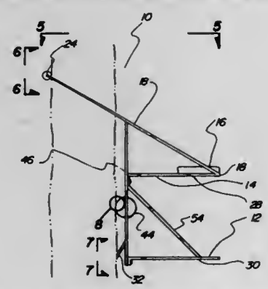
5,647,454

FAST TRACT TREE CLIMBLING APPARATUS

Daniel D. Fehr, Rte. 1, Box 1100, Cross Hill, S.C. 29332

Filed Jun. 19, 1995, Ser. No. 492,208
Int. Cl.[6] A63B *27/00*
U.S. Cl. 182—133 **2 Claims**

1. A new and improved portable tree climbing apparatus for a



hunter for ascending and descending a tree comprising, in combination:

an upper member having a seat adapted for supporting the hunter and an arcuate retaining loop adapted for rolling communication with the tree and keeping the upper member in a horizontal disposition when ascending and descending the tree, the retaining loop having a first end and a second end adapted for releasable engagement with the seat and further including a cylinder disposed in a middle section of the retaining loop for rotatable communication when ascending or descending the tree, the seat further being adapted with means to allow the hunter to face the tree or face away from the tree when the apparatus has reached the desired elevation;

a lower member having a safety blade engageable with a trunk of the tree for keeping the apparatus in stable communication with the trunk when ascending the tree, the lower member further being adapted with a plurality of retaining rods, the plurality of retaining rods further having an upper rod being pivotally coupled with an upper portion of the safety blade and a lower rod being positionable between a lower portion of the safety blade and the tree for maintaining the disengaged status of the safety blade when the hunter descends the tree;

a traction wheel disposed between the upper member and the lower member and having a plurality of teeth and being disposed on an upstanding elongated member, the teeth being in intermittent contact with the trunk for effortlessly ascending and descending the tree, the wheel further including a crank handle and a reduction gear box in tooth communication with traction wheel for reducing the effort required to ascend the tree; and

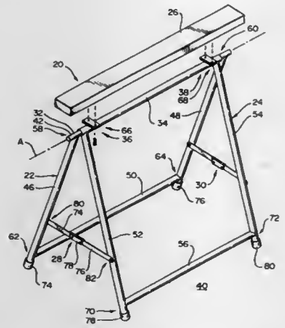
a plurality of cross braces obliquely disposed and being in support communication with the lower member and the upper member for maintaining the relative distance between the two members.

5,647,455

FOLDING SAWHORSE

Douglas L. Russell, 5336 Neilsen Ave., Ferndale, Wash. 98248

Filed Apr. 28, 1995, Ser. No. 430,588
Int. Cl.[6] F16M *11/00*
U.S. Cl. 182—153 **12 Claims**



1. A folding sawhorse having a support surface for supporting a workpiece comprising:

an inner rigid structure comprising an inner hinge member and a first leg structure;

an outer rigid structure comprising an outer hinge member and a second leg structure, where the outer hinge member comprises a hollow metal pipe and the inner hinge member extends through the outer hinge member in a manner that allows the second leg structure to rotate relative to the first leg structure between a folded position and a support position;

a wooden support member on which the support surface is formed;

at least one flat mounting plate welded to the outer hinge member for supporting the support member, where the mounting plate is attached to the outer hinge member such that portions of the mounting plate outwardly extend to either side of the outer hinge member, and the mounting plate is angled with respect to the second leg structure such that, when the wooden support member is supported by the mounting plate, the support surface is in a desired orientation when the second leg structure; is in the support position relative to the first leg structure;

attachment means for rigidly attaching the support member to the mounting plate means, the attachment means comprising fasteners extending through the outwardly extending portions of the mounting plate and only partially into the wooden support member to attach the wooden support member to the mounting plate; and

locking means for selectively locking the second leg structure in the support position relative to the first leg structure; wherein

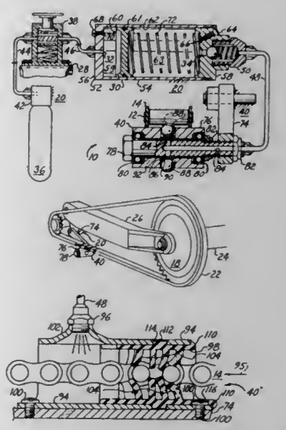
the wooden support member spaces the support surface from the outer hinge member to reduce the likelihood that tools working on the workpiece will engage the outer hinge member.

5,647,456

CHAIN LUBRICATING SYSTEM

Joseph Gelb, 26061 Bridger St., Moreno Valley, Calif. 92555

Filed Apr. 25, 1996, Ser. No. 637,946
Int. Cl.[6] F16N *7/16*
U.S. Cl. 184—15.2 **17 Claims**



1. A lubrication system for a chain drive having a closed loop of chain connecting drive and driven sprockets, the drive sprocket being rotationally supported relative to a base frame, the system comprising:

(a) a source of pressurized gas;

(b) a reservoir for holding a supply of liquidic lubricant, the reservoir having an inlet for receiving pressurized gas, an outlet for the lubricant, and means for receiving the lubricant;

(c) a momentary gas valve fluid connected between the source of pressurized gas and the inlet of the reservoir, the gas valve having first and second closed positions and an intermediate open position, and valve biasing means for moving from the closed positions to the open position;

(d) an applicator for applying the lubricant onto the chain;

(e) a feed conduit fluid connected between the outlet of the reservoir and the applicator; and

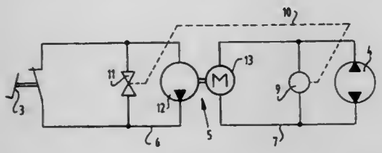
(f) a pressure valve fluid connected between the outlet and the applicator for preventing flow of the lubricant from the outlet absent a predetermined pressure of the lubricant upstream of the pressure valve.

5,647,457

FORK-LIFT TRUCK WITH HYDRAULIC DRIVE

Hendricus Johannes Wegdam, Boekelo, Netherlands, and Klaus Werner Krollmann, Ahaus, Germany, assignors to B.V. Machinefabriek B.O.A., Netherlands

Filed Sep. 7, 1995, Ser. No. 524,550
Int. Cl.[6] B66B *9/02*
U.S. Cl. 187—250 **20 Claims**



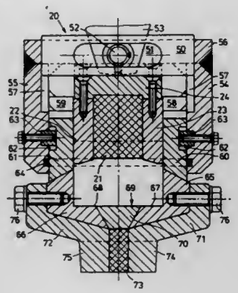
3. A fork-lift truck with a hydraulic drive comprising a hydraulic motor, a power source driving the hydraulic motor, a hydraulic control system driving the power source, a sensor for measuring pressure difference over the hydraulic motor arranged in a coupling of the hydraulic motor to the power source, a valve for short-circuiting the hydraulic control system that is connected to said sensor, and a second valve arranged serially with the valve short-circuiting the hydraulic control system, wherein said second valve opens when a determined threshold value is exceeded.

5,647,458

MAGNETIC RAIL BRAKE DEVICE

Bart van der Sloot, En Weidum, and Hendrikus Johannes van Oostueen, He Maarssen, both of Netherlands, assignors to Transferia Systems B.V., Leeuwarden, Netherlands

Filed Dec. 15, 1995, Ser. No. 573,443
Claims priority, application Netherlands, Dec. 16, 1994, 9402145
Int. Cl.[6] B61H *7/12*
U.S. Cl. 188—41 **2 Claims**





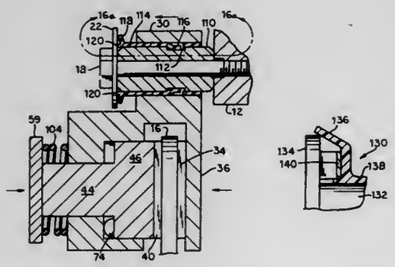
1. A magnetic rail brake device comprising at least two wear pieces manufactured from ferromagnetic material, magnetically insulated from each other by a filling piece and connected to magnet means which, in operation, are capable of providing a magnetic field extending through the wear pieces, whilst, in operation, the wear pieces can be contacted with a rail so as to enable the magnetic field to close through the rail, wherein the wear pieces have contacting portions contactable with the rail, the contacting portions comprising wear strips manufactured from nodular cast iron, and the filling piece has a side facing the rail formed from austenitic cast iron.

5,647,459

PARKING BRAKE

James A. Buckley, Whitefish Bay; Curt H. Blaszczyk, Sturtevant, and James J. Dimsey, Brown Deer, all of Wis., assignors to Hayes Industrial Brake, Inc., Mequon, Wis.

Continuation-in-part of Ser. No. 441,961, May 16, 1995, Pat. No. 5,529,150. This application Jun. 21, 1996, Ser. No. 670,732
Int. Cl.[6] F16D *65/56;65/54*
U.S. Cl. 188—72.9 **10 Claims**



1. A caliper brake assembly adapted to be mounted on a housing in a position to engage a brake disc, said assembly comprising:
- a caliper having an inboard leg and an outboard leg aligned with the brake disc,
- a brake pad mounted on each leg in alignment with each side of the brake disc,
- a rotor **40** mounted on the outboard leg in a position to engage the brake pad,
- a ball/ramp assembly positioned between said outboard leg and said rotor for moving said brake pads into engagement with the brake disc,
- means for supporting said caliper on the housing in a position to bridge the disc,
- said supporting means including a pair of screws, each screw having a bushing and a washer mounted thereon,
- a plastic sleeve mounted on each of the bushings for slidingly supporting the housing on the bushing, and
- a bell spring formed on one end of each of said sleeves and located in a position to engage the washer to bias the sleeve away from the washer whereby said caliper is moved sufficiently to relieve the pressure of the brake pads on the disc.

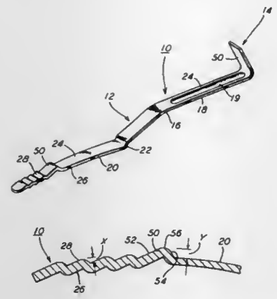
5,647,460

SPRING-TYPE RAILROAD BRAKE SHOE LOCKING KEY

Bruce W. Shute, West End, N.C., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Mar. 18, 1996, Ser. No. 618,249
Int. Cl.[6] F16D *65/04*
U.S. Cl. 188—243 **7 Claims**

1. For connecting a railroad brake shoe to a brake head having a keyway with a recess in which an upraised keybridge of said brake shoe having at least one orifice is received, there is provided a locking key adapted for insertion through said keyway via said at least one orifice to a locking range of positions, said key comprising:
- (a) an elongated shank formed from a unitary strip of spring metal having serrated portion at a bottom end of said key including a plurality of correspondingly sized individual serrations extending laterally the entire width of said shank;



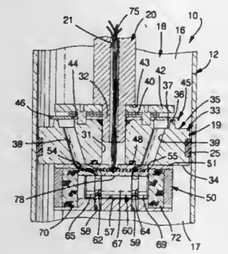
- (b) a retention tab upraised from at least one surface of said shank and extending laterally the entire width thereof, said retention tab further comprising:
  - (i) a first lateral surface having a predetermined angle of inclination with said at least one surface of said shank;
  - (ii) a second lateral surface having an angle of inclination with said at least one surface of said shank greater than said predetermined angle of inclination; and
  - (iii) a crest between said first and second lateral surfaces upraised from said one surface of said shank a greater distance than a distance any one of said plurality of serrations is upraised therefrom, said second lateral surface being engageable with said keybridge at said at least one orifice to provide a first detent therewith whereby said key is prevented from becoming unintentionally dislodged from said keyway and said keybridge when said key is displaced from said locking range of positions.

5,647,461

ADJUSTABLE PISTON VALVE DAMPER

Eric Lee Jensen, Dayton, and William Charles Kruckemeyer, Beaver Creek, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 6, 1995, Ser. No. 554,007
Int. Cl.[6] F16F *9/34*
U.S. Cl. 188—322.15 **2 Claims**



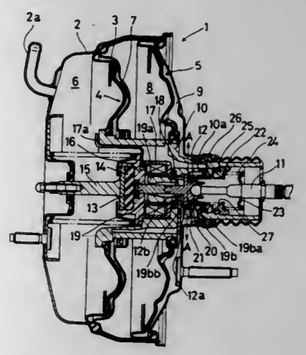
1. An adjustable damper comprising:
- a tube;
- a piston slidably carried within the tube;
- a damping valve carried on the piston;
- a control valve carried on the piston including a slidable valve spool carried in a bore wherein a damping level provided by the piston is adjustable in response to selective sliding of the spool wherein the spool includes a first end and a second end and further comprising a first coil positioned at the bore near the first end and a second coil positioned at the bore near the second end wherein the piston includes a body with a top surface and a bottom surface and wherein the damping valve is a single annular bi-directional valve disc and is carried adjacent the top surface of the piston body and wherein the control valve is carried adjacent the bottom surface of the piston body.

5,647,462

VACUUM SERVO UNIT FOR A VEHICLE BRAKING SYSTEM

Kaoru Tsubouchi, Toyota, and Akihiko Miwa, Anjo, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 6, 1996, Ser. No. 611,685.
Claims priority, application Japan, Mar. 7, 1995, 7-047220
Int. Cl.[6] F15B *9/10*
U.S. Cl. 188—356 **11 Claims**



1. A vacuum servo unit for a vehicle braking system comprising:
- a housing;
- a movable wall disposed in the housing to divide the housing into a constant-pressure chamber in fluid communication with a vacuum source and a variable-pressure chamber;
- a power piston connected to the movable wall for outputting a braking force through axial movement in response to a pressure differential between the constant pressure chamber and the variable pressure chamber;
- an input member accommodated in the power piston for being connected to a braking operation member, the input member being axially movable in response to a force from the braking operation member;
- an axially movable hollow plunger operatively connected to the input member and surrounding the input member;
- a valve member associated with the plunger for controlling the braking force such that when the valve member is in engagement with the plunger the variable pressure chamber is in fluid communication with the constant pressure chamber and when the valve member is out of engagement with the plunger the variable pressure chamber in fluid communication with the atmosphere;
- a solenoid connectable to a source of electric current for moving the plunger away from the valve member; and
- means for inhibiting radial force transmission from the input member to the plunger, said means including a plurality of circumferentially spaced projections projecting outwardly from the input member for transmitting the radial force from the input member to the power piston, and a plurality of slots formed in the plunger that receive the projections.

5,647,463

AXLE FOR TRACK-BOUND ELECTRICAL TOY VEHICLES, PARTICULARLY RAILROAD VEHICLES

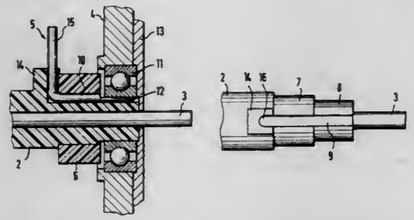
Wolfgang Richter, Nuremberg, Germany, assignor to Ernst Paul Lehmann Patentwerk, Nuremberg, Germany

Filed Aug. 30, 1995, Ser. No. 521,164

Claims priority, application Germany, Sep. 7, 1994, 9414473.7 U

Int. Cl.[6] B60L *5/00*

U.S. Cl. 191—45 R **19 Claims**



1. Axle shaft means for an electric toy vehicle operating on a track, said axle shaft means having a receiving section, a bearing means received on said receiving section, a wheel on said bearing means such that said bearing means rotatably supports said wheel on said axle shaft means, and electrical conducting means carried by said axle shaft means, said conducting means having a contact section in contact with said bearing means, said conducting means having another section extending generally radially from said axle shaft means.

5,647,464

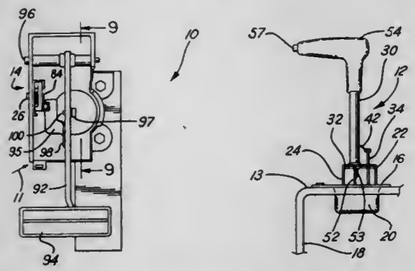
RELEASABLE LOCK MECHANISM FOR GEAR SHIFT LEVER

William M. Snell, Grand Blanc; Thomas S. Kaliszewski, Troy, and Rodney L. Eaton, Clarkston, all of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed Dec. 18, 1995, Ser. No. 573,830

Int. Cl.[6] B60K *41/26;41/28*

U.S. Cl. 192—4 A **7 Claims**



1. Releasable lock mechanism for the gear shift assembly of an automotive vehicle comprising:

a gear shift lever,

means mounting said gear shift lever for movement to a plurality of "Drive" positions and to a "Park" position,

a shift gate,

means mounting said shift gate adjacent to said gear shift lever,

said shift gate having a plurality of "Drive" detents and a "Park" detent corresponding to the "Drive" and "Park" positions of said gear shift lever,

a lever retainer mounted on said gear shift lever for movement toward and away from an advanced position and when in said advanced position being engageable with any one of said detents,

said lever retainer when in said advanced position in engagement with said "Park" detent preventing movement of said gear shift lever,

means urging said lever retainer toward its advanced position,

an operator on said gear shift lever for retracting said lever retainer away from said advanced position to thereby release said gear shift lever when in the "Park" position,

a lock mounted for movement toward and away from a locking position,

said lever retainer having a catch engageable by said lock when said lock is in its locking position and said gear shift lever is in its "Park" position and said lever retainer is in its advanced position engaged in the "Park" detent to prevent retraction of said lever retainer,

a brake arm movable between a brake-release position and a brake-applying position,

a mechanical connection between said brake arm and said lock for retracting said lock away from its locking position when said brake arm is moved toward said brake-applying position to disengage and release said catch and permit said lever retainer to be retracted away from its advanced position by said operator,

said mechanical connection comprising a cable,

means connecting one end of said cable to said lock,

means connected to the other end of said cable for retracting said cable and in turn retracting said lock in response to movement of said brake arm toward said brake-applying position,

said means for retracting said cable comprising a cable retractor connected to said other end of said cable,

means mounting said cable retractor for movement toward and away from a cable retracting position,

said brake arm moving said cable retractor away from said cable retracting position in the brake-release position of said brake arm and releasing said cable retractor in the brake-applying position of said brake arm, and

means for moving said cable retractor to its cable retracting position when said brake arm is moved toward its brake-applying position.

5,647,465

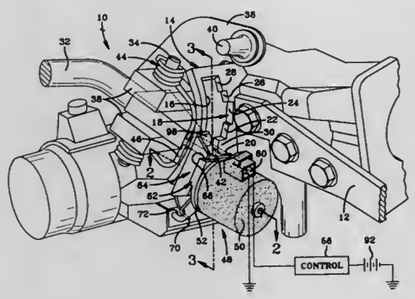
TRANSMISSION SHIFT LEVER AND BRAKE INTERLOCK CONTROL ASSEMBLY

Harley David Burkhard, and Frederick Henry Kleinfeld, both of Saginaw, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 14, 1996, Ser. No. 615,934

Int. Cl.[6] B60K *41/26;20/02*

U.S. Cl. 192—4 A **2 Claims**



1. A transmission shift control assembly comprising:

a pivotally mounted manual shift lever;

a shift gate cooperating with said shift lever to establish a plurality of operating conditions including "Park";

a selectively energizable electromagnetic mechanism including a latch member for selectively engaging a portion of said manual lever to retain said manual lever in "Park" and permitting release of said portion upon actuation by an operator of a vehicle control member; and

a one-way clutch disposed adjacent said latch on said electromagnetic mechanism for permitting manipulation of said latch when said electromagnetic mechanism is energized and said manual lever is moved to the "Park" condition from another condition.

5,647,466

WET MULTIDISK FRICTION CLUTCH AND FABRICATION PROCESS THEREOF

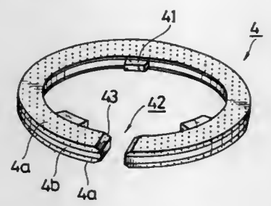
Shigeki Umezawa, Shizuoka-ken, Japan, assignor to NSK-Warner K.K., Japan

Filed Aug. 18, 1995, Ser. No. 516,930

Claims priority, application Japan, Aug. 18, 1994, 6-215229

Int. Cl.[6] F16D *13/54;13/64*

U.S. Cl. 192—70.14 **20 Claims**



1. A wet multidisk friction clutch comprising:

a plurality of driving friction disks connected to an input shaft; and

a plurality of driven friction disks connected to an output shaft and arranged alternately with said driving friction disks, wherein power is selectively transmitted by frictional engagement between said driving friction disks and said driven friction disks, and wherein each of said driving friction disks comprises a metal core and friction linings applied on opposite sides of said metal core, each of said driving friction disks forming a generally annular shape and being completely cut off in a radial direction to define a first end portion and a second end portion, said first end portion being spaced apart from said second end portion in a circumferential direction to define a gap which extends completely through a radial cross-section of said driving friction disk, said first end portion generally facing said second end portion.

5,647,467

CLUTCH ASSEMBLY STRUCTURE FOR MULTIPLE DISK CLUTCH

Yasuhiro Yamauchi, Fuji, Japan, assignor to Jatco Corporation, Japan

Filed Feb. 2, 1996, Ser. No. 595,829

Claims priority, application Japan, Feb. 8, 1995, 7-043436

Int. Cl.[6] F16D *25/063;25/10*

U.S. Cl. 192—87.11 **3 Claims**

1. A clutch assembly structure for a multiple disk clutch, comprising:

a first clutch assembly and a second clutch assembly which are coaxially arranged in parallel with each other, such that the first clutch assembly is located radially outwardly of the second clutch assembly, said second clutch assembly including a second drum, and a second piston slidably received in the second drum, said second piston partially defining a canceling oil chamber for canceling centrifugal oil pressure in a second oil chamber formed between said second drum and said second piston;

a canceling piston provided in said canceling oil chamber, for canceling the centrifugal oil pressure in said second oil chamber; and

a second return spring comprising a wave spring, which is provided between said second piston and said canceling piston.

5,647,468

CLUTCH MECHANISM, NOTABLY FOR A MOTOR VEHICLE

Gino Villata, Buttigliera d'Asti, Italy, and Jean-Pierre Giroire, St. Germain en Laye, France, assignors to Valeo, Paris, France

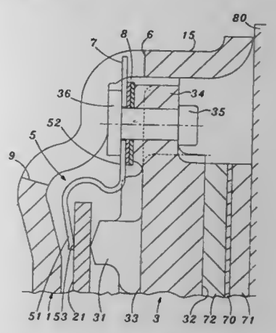
PCT No. PCT/FR95/00389, § 371 Date Nov. 30, 1995, § 102(e) Date Nov. 30, 1995, PCT Pub. No. WO95/27152, PCT Pub. Date Oct. 12, 1995

PCT Filed Mar. 29, 1995, Ser. No. 553,536

Claims priority, application France, Mar. 30, 1994, 94 03747

Int. Cl.[6] F16D *13/71*

U.S. Cl. 192—89.23 **2 Claims**



1. Diaphragm clutch mechanism, having a cover (**1**) suitable for being attached to a reaction plate (**80**) of a clutch, a diaphragm (**2**) mounted on the cover by pivoting means (**4**) pivotally fixing the diaphragm to the cover, a pressure plate (**3**) fixed to the cover (**1**) with respect to rotation whilst being mounted so as to be axially movable with respect to the cover by means of tangential elastic tongues (**8**), return hooks (**5**) for coupling the diaphragm (**2**) to the pressure plate (**3**) by gripping the outer periphery (**21**) of the diaphragm (**2**) between said hooks (**5**) and a support boss (**31**), which the pressure plate (**3**) has for supporting the diaphragm (**2**),

fixing components (**35**) serving to fix the tangential tongues (**8**) and return hooks (**5**) to lugs (**34**) which the pressure plate has radially projecting at its outer periphery, in which the cover (**1**) has a base (**11**), a skirt surrounding the lugs (**34**), and mounting holes (**9**) for mounting return hooks (**5**) and fixing components (**35**), said holes (**9**) formed on the base (**11**) of the cover, and being delimited by a rear edge adjacent to the base of the cover, a front edge (**6**) furthest away axially from said base, and two lateral edges (**60**) connecting together the front (**6**) and rear edges, characterised in that at least some of the return hooks (**5**) are extended outwards in order to form a stop (**7, 70**) suitable for coming into abutment against an associated counter-stop (**6, 60**) formed by the front edge of the mounting hole (**9**) formed on a surface (**15**) on the skirt surrounding the lug of the pressure plate (**3**), said surface (**15**) being offset radially with respect to a main part of the skirt (**12**) and extending to the outer periphery of the cover (**1**), and in that the hook (**5**) is extended radially outwards in order to form the stop (**7**).

5,647,469

COIN SORTING DEVICE

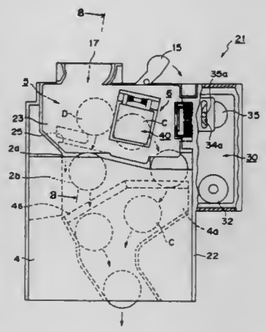
Ryoji Yamagishi, Kawagoe, and Yukio Itou, Sakado, both of Japan, assignors to Kabushiki Kaisha Nippon Conlux, Japan

Filed Sep. 20, 1995, Ser. No. 530,924

Claims priority, application Japan, Sep. 27, 1994, 6-231580; Sep. 27, 1994, 6-231581; Sep. 27, 1994, 6-231582

Int. Cl.[6] G07D *5/08*

U.S. Cl. 194—200 **4 Claims**



1. A coin sorting device comprising a coin passage for guiding coins inserted via a coin insertion opening, and a gate plate for opening and closing this coin passage, characterized by:

a coin jamming detection sensor provided at an intermediate point in the coin passage, for detecting jamming of coins passing through the coin passage; and

gate plate opening means comprising:

driving means comprising a motor which is actuated based on a detection signal of the detection sensor,

an arm member which is driven by the driving means to perform a reciprocating motion in the horizontal direction;

a projection formed on a base end portion of the arm member;

a tapered member formed on a back surface of the gate plate, for opening the gate plate by making sliding contact therewith when the arm member performs a reciprocating motion; and

a projection formed on the tapered member so as to project toward the base end portion of the arm member, for opening the gate plate even further by contacting the projection formed on the base end portion of the arm member when the arm member performs a reciprocating motion.

5,647,470

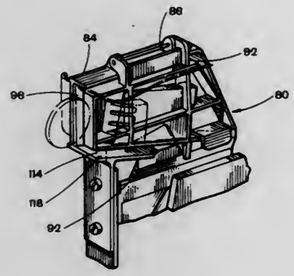
TAMPER RESISTANT COIN RACE

Philemon L. Bruner, and David C. Bugge, both of Houston, Tex., assignors to Imonex Services Inc., Katy, Tex.

Continuation of Ser. No. 437,211, May 8, 1995, abandoned, which is a continuation of Ser. No. 67,687, May 26, 1993, abandoned. This application Feb. 16, 1996, Ser. No. 602,267

Int. Cl.[6] G07F *1/04*

U.S. Cl. 194—347 **1 Claim**



1. A coin receiving apparatus, comprising:

a housing assembly defining a coin race through which a coin will pass to reach a coin exit;

said coin race having a first portion, a second portion laterally offset from said first portion in a first direction, and a third portion laterally offset from said second portion in a second direction;

said housing assembly further including a coin deflection wall conformed to guide said coin from said first portion to said second portion and to said third portion without separating coins of different sizes;

said coin deflection wall including an aperture therethrough providing communication from said coin race to a location removed from said coin race;

a coin collection assembly operatively coupled to said housing assembly to receive a coin therefrom;

a coin return assembly operatively coupled to said coin collection assembly; and

a coin slot blocking element operatively coupled to said coin return assembly, said coin return blocking element operatively coupled to selectively at least partially block passage to inlet end of said coin race.

5,647,471

COIN OPERATED VENDING MACHINE COIN SAFE

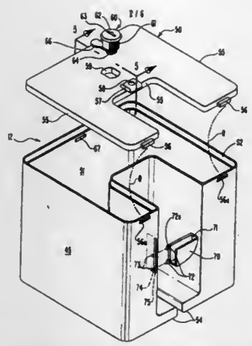
Corky Ra, 1502 River La., Santa Ana, Calif. 92706

Filed May 3, 1996, Ser. No. 642,697

Int. Cl.[6] G07F *9/06*

U.S. Cl. 194—350 **9 Claims**

1. A coin vending machine liner and locking plate as a coin safe comprising, for a coin operated vending machine, a base that mounts across a bottom end of a body whereon a hopper for containing products to be vended is positioned, and including a means for securing said base, body and hopper together; a liner that is closed across its base and is formed to conform to and is to be maintained within said vending machine body; a locking plate for fitting over an open top end of said liner, and including a key operated lock means for mounting in said locking plate to pivot a pivoting bar means into and out of alignment with a slot that is formed in said liner, below a rear top edge thereof, and at least one tab means, that extends from a locking plate forward edge, for fitting into a slot that has been formed in said liner, below a forward top edge thereof, and a security means included with said liner for directing coins from a vending machine coin mechanism into said liner and seals against coins passing out of said liner to travel alongside said vending machine coin mechanism.



5,647,472

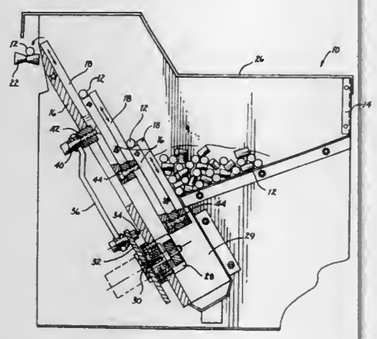
AUTOMATIC PELLET FEEDING APPARATUS FOR USE IN FORMING ENCAPSULATED SEMICONDUCTOR CHIPS AND METHOD THEREFOR

Richard H. J. Fierkens, Keurbeck 15, 6914 AE Herwen, Netherlands

Continuation of Ser. No. 230,306, Apr. 20, 1994, abandoned. This application Jun. 21, 1996, Ser. No. 668,239

Int. Cl.[6] B65G *47/12*

U.S. Cl. 198—443 **14 Claims**



1. An automatic pellet feeding apparatus for delivering plastic pellets to a plastic molding machine for encapsulating semiconductor chips comprising, in combination:

storage means for containing a plurality of said plastic pellets for ultimate delivery to said plastic molding machine, each of said plurality of plastic pellets having a substantially cylindrical shape;

delivery means coupled to said storage means for vertically moving said plurality of plastic pellets several at a time from said storage means; and

linear conveyor means having a linear recessed portion between slanted wall portions coupled to said delivery means for receiving said plurality of plastic pellets of substantially cylindrical shape from said delivery means and for linearly moving said plurality of plastic pellets of substantially cylindrical shape located on said linear recessed portion of said conveyor means to said plastic molding machine;

said delivery means comprising a stair like structure having a plurality of movable and stationary members resembling a plurality of steps of said stair like structure, each of said plurality of movable and stationary members having upper surface means comprising a flat surface having a length and width configuration dimensioned to carry said plurality of plastic pellets of substantially cylindrical shape when said plurality of plastic pellets of substantially cylindrical shape are in a first position relative to said upper surface means, said linear conveyor means being located adjacent a highest position of said stair like structure to transport away several of said plurality of plastic pellets at one time.

5,647,473

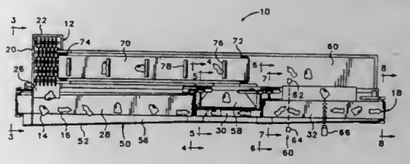
METHOD AND APPARATUS FOR ALIGNING AND SPACING ARTICLES ON A CONVEYOR BELT

Roy R. Miller, and Brian K. Clark, both of Eugene, Oreg., assignors to Bulk Handling Systems, Inc., Eugene, Oreg.

Filed Feb. 10, 1995, Ser. No. 386,959

Int. Cl.[6] B65G *47/31*

U.S. Cl. 198—461.2 **28 Claims**



1. A method for aligning and spacing articles on a conveyor belt comprising the steps of:

dropping the articles onto a first end of a first conveyor belt having a transverse tilt from horizontal;

transferring substantially all of the articles from a second end of said first conveyor belt to a first end of a second conveyor belt having a width capable of supporting only a single article in the transverse direction; and

operating said second conveyer belt at a faster rate of speed than said first conveyor belt.

5,647,474

STRUCTURE FOR PREVENTING POSITION DEVIATION OF A TRUCK LOADED ON A TRAVERSER

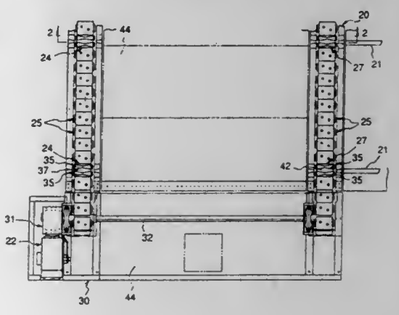
Akira Morikiyo, Tokorozawa; Koichi Mizuguchi, Higashiyamato; Susumu Kawano, Iruma; Kenji Umezawa, Tokorozawa, and Koji Kato, Hanno, all of Japan, assignors to Tsubakimoto Chain Co., Osaka, Japan

Filed Jul. 10, 1995, Ser. No. 500,406

Claims priority, application Japan, Jul. 13, 1994, 6-183082

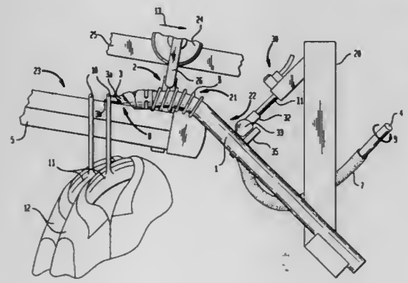
Int. Cl.[6] B65G *37/00*

U.S. Cl. 198—465.1 **1 Claim**



1. The traverser, comprising:
a carry-in rail having first and second ends;
a carry-out rail having first and second ends, wherein said carry-out rail is disposed parallel to said carry-in rail;
a chain mounted between said carry-in rail and said carry-out rail; and
a support member having a substantially flat upper surface and being driven by said chain so as to be movable between said carry-in rail and carry-out rail in order for said support member to transfer a truck from said carry-in rail to said carry-out rail,
wherein said upper surface of said support member includes grooves for receiving respective flanges of a wheel of said truck, each of said grooves having a bottom surface lower than said upper surface of said support member.

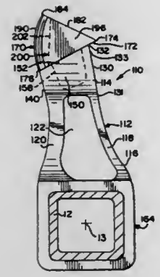
5,647,475
TAKE-OVER APPARATUS
Franz Gaertner, Muehlweg 10, 97656 Oberelsbach, Germany
Filed Jul. 27, 1995, Ser. No. 507,816
Claims priority, application Germany, Jul. 29, 1994, 44 27 027.5
Int. Cl.[6] B65G *29/00*
U.S. Cl. 198—465.4 **9 Claims**



1. A take-over apparatus for goods suspended from hooks and transported with a suspension transporting apparatus, particularly for items of clothing hanging on clothes hangers, in order to take over the hooks, which overlap a carrier rod, from this carrier rod and transport them to a release rod with a descending course, the release rod having an end region, which can be set against the carrier rod and, with its free end, can grasp the hooks from below, and a device for transporting the hooks along the end region of the release rod being provided, characterized in that the free end of the end region of the release rod is constructed as a rotatable threaded worm, which is driven by driving means disposed in the end region, in order to take hold of a hook overlapping the carrier rod.

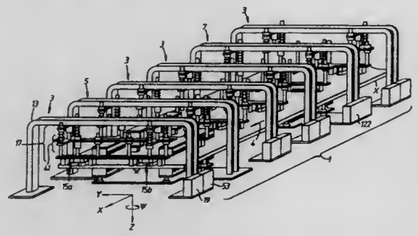
5,647,476
CONVEYOR BELT SCRAPER BLADE
Willem D. Veenhof, El Cajon, Calif., assignor to Martin Engineering Company, Neponset, Ill.
Continuation-in-part of Ser. No. 269,568, Jul. 1, 1994, Pat. No. 5,413,208. This application Apr. 28, 1995, Ser. No. 430,394
Int. Cl.[6] B65G *45/12*
U.S. Cl. 198—497 **18 Claims**

14. A conveyor belt scraper blade adapted for cleaning the surface of a conveyor belt, said scraper blade including:
a scraping member including a front surface extending between a scraping edge and a rear edge and an upper surface extending from said scraping edge;



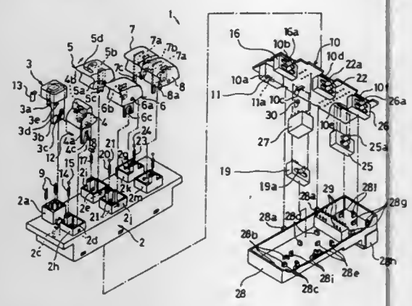
a resilient support member attached to said scraping member adapted to support said scraping member in contact with the conveyor belt, and
a restraining member attached to said front surface of said scraping member at a position located more closely adjacent to said scraping edge than to said rear edge, said restraining member adapted to control vibration of said scraper blade during use.

5,647,477
MAGNETIC NON-CONTACT TRANSPORT SYSTEM
Mimpei Morishita, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Sep. 18, 1995, Ser. No. 529,609
Claims priority, application Japan, Sep. 19, 1994, 6-223788; Mar. 31, 1995, 7-074317; Mar. 31, 1995, 7-074322
Int. Cl.[6] B65G *35/00*
U.S. Cl. 198—619 **28 Claims**



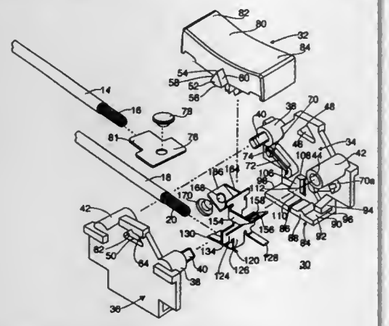
1. A track mounting magnetic levitation transport system in which a track is provided with a magnetic force support system along a transport route of an object to be transported and which supports the object to be transported without contact by controlling a magnetic attraction of the magnetic force support system, comprising:
a track composed of multiple support units arranged along a direction of transport,
each of the support units including:
a track frame;
multiple magnetic support units which include electromagnets which are positioned in the track frame in a direction orthogonal to a direction of transport of the object to be transported via mounting devices which permit movement in the vertical direction; and
an attraction control device which performs levitation control for perpendicular motion of the object to be transported and performs levitation control for rolling of the object to be transported by controlling the electromagnets of each of the magnetic support units when the object to be transported is below the magnetic support units.

5,647,478
SWITCH ASSEMBLY HAVING A SWITCH CONTACT SECTION INSTALLED BETWEEN A SUBSTRATE AND A LOWER CASE
Hideo Hirai, Tokyo, Japan, assignor to Niles Parts Co., Ltd., Japan
Filed Dec. 19, 1995, Ser. No. 575,098
Claims priority, application Japan, Dec. 20, 1994, 6-334838
Int. Cl.[6] H02B *1/26*
U.S. Cl. 200—303 **6 Claims**



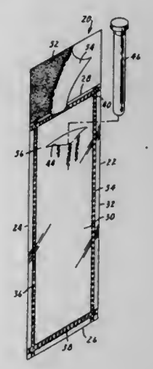
1. A switch assembly, comprising:
an upper case;
a lower case coupled with said upper case;
a knob pivotally supported on said upper case and having an operation rod extending downwardly from said knob; and
a switch contact section having an operation shaft contacted by said operation rod said knob;
wherein said lower case is provided with positioning sections mounted on said lower case for positioning said switch contact section at a predetermined position; and
further comprising a substrate mounted in a horizontal direction within a box formed by said upper case and said lower case, said switch contact section being disposed on a lower surface of said substrate.
a) a housing having a vertical center line about which said housing is symmetrical;
b) a rocker having a generally arcuate outer face extending from a first end to a second end for engagement by a user, said rocker being pivotally supported in said housing at a first pivot point and being pivotally movable with limited angular movement between first and second rest positions;
c) a boss carded by said rocker and extending downwardly therefrom into said housing;
d) a spring member extending from said boss to a support member in said housing, said spring member being aligned with said vertical center line of said housing; said spring member having a first end and a second end and a linear central portion therebetween; a second pivot point intermediate said spring member first end and said spring member second end; a pivotable portion of said central portion between said second pivot point and said first end of said spring member pivotable about said second pivot point; said first end of said spring member engaging said boss and retaining said rocker in pivotal contact with said housing at said first pivot point and in a selected one of said first and second rest positions; a portion of said second end of said spring member resting upon said support member and exerting an upwards force upon said spring member to hold said first end of said spring member in said boss;
e) a fixed contact mounted upon said housing; said fixed contact adapted to be connected to a first line of a first electrical circuit;
f) a movable contact mounted upon a contact arm connected to and transverse to said spring member; said movable contact moved into mechanical and electrical contact with said fixed contact and moved away from mechanical and electrical contact with said fixed contact as said pivotal portion of said spring member central portion pivots about said second pivot point in response to the movement of said rocker between said first and second rest positions; and
g) means to connect said spring member to a line of an electrical circuit to complete a first electrical circuit when said movable and fixed contacts are engaged and interrupt said first electrical circuit when said movable and fixed contacts are not engaged.

5,647,479
ELECTRICAL ROCKER SWITCH
Paul Gernhardt, Northport, and Serge Krzyzanowski, Flushing, both of N.Y., assignors to Leviton Manufacturing Co., Inc., Little Neck, N.Y.
Continuation of Ser. No. 233,581, Apr. 26, 1994, Pat. No. 5,570,778. This application May 9, 1996, Ser. No. 647,092
Int. Cl.[6] H01H *21/24*
U.S. Cl. 200—557 **20 Claims**



1. An electrical rocker switch comprising:

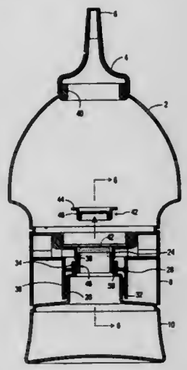
5,647,480
FLEXIBLE PRESSURE VESSELS FOR AND METHOD OF TRANSPORTING HAZARDOUS MATERIALS
Thomas I. Insley, Lake Elmo; Kay M. McCoy, Woodbury, and Cynthia Y. Tamaki, Arden Hills, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Jan. 27, 1995, Ser. No. 378,814
Int. Cl.[6] B65D *81/02;81/26*
U.S. Cl. 206—204 **22 Claims**



1. A flexible pressure vessel that comprises:
(a) a flexible liquid impervious chamber having an interior and being formed from a material having a tensile strength of at least 20 Newtons per centimeter;
(b) an aperture located in the chamber for permitting an article to be inserted into the chamber's interior; and
(c) an aggressive pressure sensitive adhesive disposed on the vessel at a location for sealing the aperture, the adhesive being adapted to close the flexible pressure vessel such that the resultant seal withstands a pressure differential of 75 kilopascals or greater for thirty minutes.

19. A flexible pressure vessel capable of maintaining a pressure differential substantially in excess of atmospheric pressure for use in transporting a container of potentially hazardous material comprising:
a front panel and a back panel, each having opposite side edges, a top edge and a bottom edge, and being connected along the opposite side edges, the top edges and the bottom edges, the panels being formed from a polymeric material(s) that has a tensile strength of at least 20 Newtons per centimeter;
an aperture having two ends and extending through said front panel, said aperture being of a shape and size which permits insertion of a container through the aperture, the aperture being spaced inwardly from the side edges;
a closure member overlapping the aperture when the vessel is closed with portions of the closure member extending above and below the aperture and extending beyond the ends of the aperture; and
a pressure sensitive adhesive disposed on the vessel at a location for sealing the closure member over the aperture, the adhesive forming a bond such that the aperture when closed and the vessel both being able to withstand without significant fluid loss a pressure differential of 75 kilopascals or greater for thirty minutes.

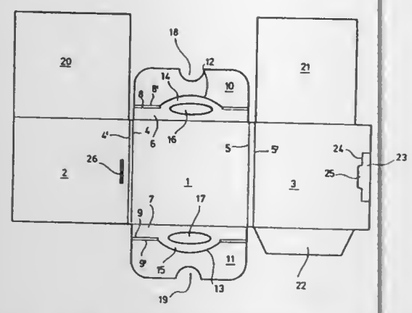
5,647,481
DUAL CONTAINER SYSTEM FOR TWO COMPONENT HAIR DYE
Volker Hundertmark, Raddestorf; Peter Funke, and Diethoif Mehl, both of Duesseldorf, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany
Filed Nov. 15, 1995, Ser. No. 559,343
Claims priority, application WIPO, May 17, 1995, DM/033-033
Int. Cl.[6] B65D *25/08*
U.S. Cl. 206—219 **3 Claims**



1. A dual container and dispensing package system for a liquid product including first and second components which must be mixed together prior to use, said system comprising:
a first container for holding a predetermined amount of said first component;
said first container including:
a top opening;
a dispensing nozzle affixed to said top opening;
a bottom including a hole;
a port means formed about said hole in said bottom for permitting access to the interior of said first container;
a removable plug means for sealing off the hole in said port means from the interior of said first container;
a second container for holding a predetermined amount of said second component, said second container including:
a closed bottom;
a neck formed about a hole in a top surface, an uppermost portion of said neck being configured for a tight frictional fit within the hole of said port means of said first container, thereby permitting this upper neck portion to be forced into said hole of said port means of said first container for dislodging said removable plug therefrom to provide for mixing together of said first and second components, and dispensing of the resultant liquid product from the dispensing nozzle of said first container;
a skirt including:
outer walls configured to the shape of the circumference of the bottom of said first container;
first retention means located in an upper interior portion of said skirt, for attaching said skirt to the bottom of said first container;
an interior hub located below said first retention means, concentric with said outer walls, and interior walls of said interior hub having female threads;
said first container further including second retention means located adjacent said port means of said first container, for receiving said first retention means of said skirt, to secure said skirt and first container together;
said second container further including male threads about a lowermost portion of its said neck, thereby permitting it to be screwed into said hub of said skirt, while forcing the uppermost portion of the neck to force its way into the hole of said port means of said first container to dislodge said plug means therefrom and permit mixing together of said first and second components, said second container being retained in position at said port means via said skirt;
said skirt further including:
a transverse web portion at said upper interior portion of said skirt projecting inward from interior wall portions thereof to said interior hub, thereby retaining said interior hub;
said first retention means consisting of a plurality of opposing and spaced apart upwardly projecting semiflexible locking fingers proximate a circular opening of the top of said hub, said fingers projecting upward from and being attached to said transverse web portion; and
said second retention means of said first container including a mounting ring formed between a pair of opposing standoffs proximate said port means, said mounting ring being configured for permitting said locking fingers of said first retention means to snap onto it for retaining said skirt on the bottom of said first container.

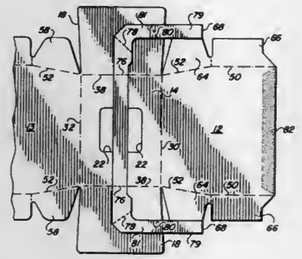
5,647,482
PACKAGING FOR A COMPACT DISC FROM A BLANK OF FOLDABLE SHEET MATERIAL
Wilhelm Kleinfelder, Rosbach-Rodheim, Germany, assignor to Europa Carton Aktiengesellschaft, Hamburg, Germany
PCT No. PCT/EP93/02395, § 371 Date Dec. 6, 1994, § 102(e) Date Dec. 6, 1994, PCT Pub. No. WO94/22742, PCT Pub. Date Oct. 13, 1994
PCT Filed Sep. 4, 1993, Ser. No. 351,272
Claims priority, application Germany, Apr. 7, 1993, 9305332 U
Int. Cl.[6] B65D *85/57*
U.S. Cl. 206—308.1 **19 Claims**

1. A packaging for a CD from a blank of foldable sheet material with at least two walls hinged together at two transverse sides,



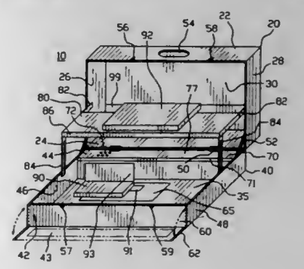
wherein at least one wall has a first longitudinal side, a second opposing longitudinal side, an inner surface and attaching means for attaching a CD at said inner surface toward which an adjacent wall is foldable, said attaching means comprising a first lateral flap having an inner longitudinal side and a second lateral flap having an inner longitudinal side, said lateral flaps respectively being folded at the first and second opposed longitudinal sides against the inner surface of the at least one wall and are attached to said at least one wall for supporting segments of the CD, said attaching means further comprising a first attaching flap and a second attaching flap for segments of a CD positioned above the inner surface, said first and second attaching flaps being respectively hinged at the first inner longitudinal side and the second inner longitudinal side of the first and second lateral flaps, each said attaching flap comprising a lateral cutout extending up to a first hinge line at the longitudinal side of each said lateral flap, whereby the first and second attaching flaps in an attaching position folded along their respective first hinge lines toward each other cover over the CD and receive the segments of the CD in the cutouts and release the CD in a releasing position folded along their hinge line away from each other.

5,647,483
ARTICLE CARRIER WITH REINFORCED HANDLE
Randall L. Harris, Powder Springs, Ga., assignor to Riverwood International Corporation, Atlanta, Ga.
Filed Feb. 23, 1996, Ser. No. 605,386
Int. Cl.[6] B65D *65/00*
U.S. Cl. 206—427 **19 Claims**



1. An article carrier, comprising:
opposite side panels connected to a top panel and a bottom panel, the top panel having an outer face and an inner face;
opposite end panels connected to the top panel and the bottom panel;
each end panel being comprised of an upper end panel flap connected to the top panel and a dust flap connected to each side panel, the upper end panel flaps being adhered to the dust flaps;
the top panel including two handle openings therein, the handle openings being spaced apart transversely of the side panels; and
a reinforcing strap having a first portion adhered to the inner face of the top panel and a second portion extending to a dust flap in at least one of the end panels, the first portion being located between the handle openings and the second portion being integrally connected to said dust flap.

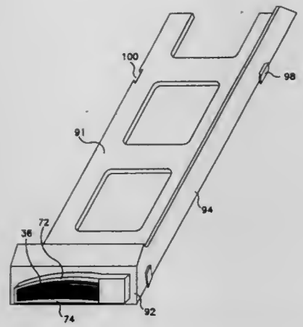
5,647,484
LAPTOP COMPUTER ENCASEMENT DEVICE ADAPTED FOR PRINTER
Daniel J. Fleming, 224 Belvidere Ave., Washington, N.J. 07882
Filed May 31, 1996, Ser. No. 658,854
Int. Cl.[6] B65D *85/38*
U.S. Cl. 206—576 **20 Claims**



1. An encasement device for a portable computer and other associated peripheral devices, comprising:
a) a top box-type structure having a first front, a first back, a cover, a first pair of side walls and a handle attached to said first front;
b) a bottom box-type structure having a second front, a second back, a bottom and second pair of side walls;
c) means for hingeably connecting said top box-type structure to said bottom box-type structure and means for securing said top box-type structure to said bottom box-type structure;
d) means for providing easy access to the laptop;
e) means for removeably attaching the portable computer to said bottom;
f) a containment section having a lid for holding electrical components including connectors, an outlet cord, surge protectors and power conditioners;
g) means for positioning and placing said containment section within said encasement device;
h) a foldable staging area having second means for removeably attaching one of said other associated peripheral devices; and
i) means for hingeably attaching and positioning said foldable staging area within said encasement device, such that when said encasement device is open and is ready to use, said foldable staging area has adequate clearance for said portable computer when it is itself opened and such that said foldable staging area can fit within said top box-type structure when said encasement device is closed.

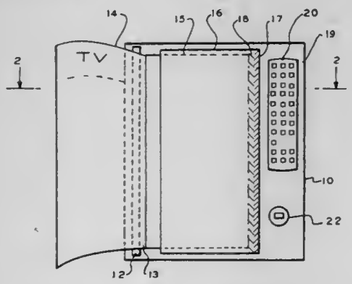
5,647,485
DISPLAY SYSTEM FOR HAIR SWATCHES
Thomas V. Verrangia, Baldwin, N.Y., assignor to L'Oreal S.A., Paris, Cedex, France
Filed Jan. 19, 1996, Ser. No. 588,858
Int. Cl.[6] B65D *85/00;69/00*
U.S. Cl. 206—733 **19 Claims**

1. A device for use with a display for selling coloring product, said device comprising insert means formed to removeably hold and display a swatch, and bezel means for removeably holding said



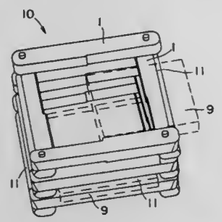
insert means and removeably securing said insert means to said display, wherein said insert means includes at least one flap cover hingedly attached to said insert means for removeable securing the swatch to said insert means, and wherein said insert means further includes at least one retaining tab for each flap cover, each cover including a slot aligned with one of said retaining tabs for frictionally maintaining said flap cover in closed position for removeable securing the swatch to said insert means.

5,647,486
REMOTE PORTABLE ENTERTAINMENT CONTROL AND INFORMATION CENTER
Richard Wilen, 135 Oval Dr., Islandia, N.Y. 11722
Filed Aug. 7, 1995, Ser. No. 512,154
Int. Cl.[6] B42F *17/00*
U.S. Cl. 211—26.1 **8 Claims**



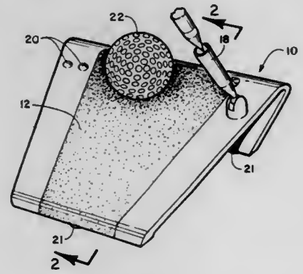
1. An organizer for retaining program information and a remote control means for controlling entertainment equipment in a home environment, said organizer comprising:
- a portable substrate having a substantially rectangular configuration with an upper surface and a lower surface defining a one-piece base for said organizer;
- a clamping strip means coupled to said upper surface along one edge thereof, for receiving a spine of a multi-page magazine, for securing said multi-page magazine to said upper surface of said portable substrate;
- a transparent, flexible sheet means having a generally rectangular configuration, coupled to said upper surface of said organizer substantially along a second edge of said upper surface for covering at least a page of said multi-page magazine for effectively separating said page from other pages of said multi-page magazine; and
- a remote control means for controlling an entertainment equipment means in said home environment, said remote control means coupled to said upper surface of said portable substrate along said second edge thereof.

5,647,487
DEVICE FOR THE STORAGE OF CASSETTES
Alfred Reinhard, Gartenstrasse 10, CH 8800 Thalwil, Switzerland
PCT No. PCT/CH94/00142, § 371 Date Mar. 29, 1995, § 102(e) Date Mar. 29, 1995, PCT Pub. No. WO95/30224, PCT Pub. Date Nov. 9, 1995
PCT Filed Jul. 5, 1994, Ser. No. 406,970
Claims priority, application Switzerland, May 2, 1994, 01 351/94-3
Int. Cl.[6] A47F *7/00*
U.S. Cl. 211—40 **15 Claims**



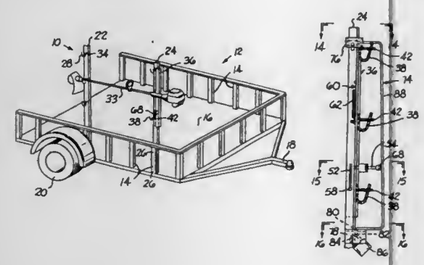
1. A storage device for cassettes which comprises:
- a plurality of bar elements, each bar element defining opposite ends and connection means near each of said opposite ends to interconnect with a connection means of an adjacent bar element, said plurality of bar elements being interconnected by said connection means to provide vertically-spaced, generally rectangular compartments into which said cassettes can be slid for storage.

5,647,488
SUSPENDED SPHERE NOVELTY
Oswald C. Svehaug, 275 Shirley St., Chula Vista, Calif. 91910
Filed Jul. 24, 1996, Ser. No. 685,807
Int. Cl.[6] A47F *7/00*
U.S. Cl. 211—69.5 **11 Claims**



1. A ball novelty comprising:
- (a) a substantially enclosed hollow body defining ball with a substantially spherical outer surface;
- (b) an eccentric mass fixed to said body substantially inside said spherical surface;
- (c) said outer surface being frictional to resist sliding on an underlying surface; and,
- (d) said mass weighing at least one-quarter of the overall weight of the body and mass combined such that said ball will rest stationarily on a sloped surface without rolling, producing what appears to be a visual anomaly and further including a stand wherein said stand defines a platform having a substantially open frictional surface defined at a slope inclined less than the incline required to cause said ball to overcome the stabilizing effect of said mass to roll down said frictional surface.

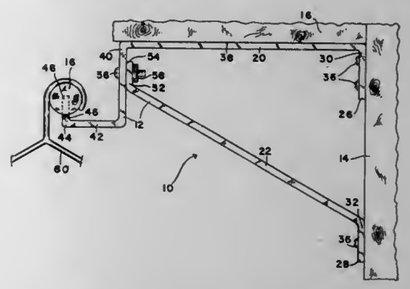
5,647,489
RACK WITH SLIDING MECHANISM FOR RETAINING TUBULAR MEMBERS
William B. Bellis, Jr., Louisville, Ky., assignor to Trimmer Trap, Inc., Louisville, Ky.
Filed Jun. 7, 1995, Ser. No. 485,309
Int. Cl.[6] A47F *5/00*
U.S. Cl. 211—70.6 **11 Claims**



1. A rack for supporting a tubular member, comprising:
first and second upright members;
- a plurality of first support hooks projecting from said first upright member;
- a plurality of second support hooks projecting from said second upright member, opposite said first support hooks, said second support hooks defining a top opening for receiving a tubular member; and
- a latch mechanism on said second upright member, said latch mechanism including a sliding latch member mounted on said second upright member so as to slide up and down relative to said second upright member; a plurality of second retaining members projecting from said sliding latch member and spaced such that, when said sliding member is slid downwardly, said second retaining members close the open tops of said second support hooks so as to retain a tubular member on said support hooks, and, when said sliding member is slid upwardly, said second retaining members are spaced vertically away from their respective second support hooks so as to release tubular members supported on said hooks;

and wherein said latch mechanism further comprises a spring-loaded retaining pin mounted on said sliding latch member; a hole in said sliding latch member aligned with said retaining pin; and a slot in said second upright member which is aligned with said retaining pin when said latch mechanism is closed, such that, in the closed position, said spring-loaded retaining pin automatically projects through said hole and slot, in order to keep the latch mechanism in the closed position and such that, in order to lift up the sliding latch member, said spring-loaded retaining pin can be pulled out of said slot and lifted, permitting one-hand operation of said latch mechanism for releasing said plurality of second retaining members.

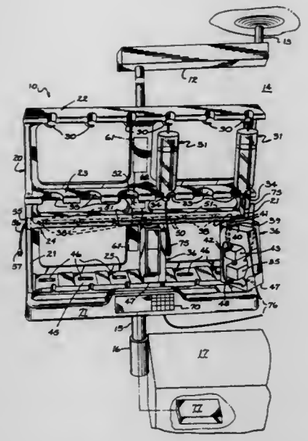
5,647,490
SHELF AND CLOTHES HANGER POLE SUPPORT BRACKET
Harold L. Hull, 451 Canyon Way #43, Sparks, Nev. 89434, and Stanley D. Harmon, 800 Polland Rd. Ste. 4A, Los Gatos, Calif. 95030
Filed Oct. 28, 1994, Ser. No. 330,561
Int. Cl.[6] A47F *5/00*
U.S. Cl. 211—90.01 **7 Claims**



1. A clothes hanger pole and shelf support bracket attachable to a wall comprising; first and second substantially elongated integrally formed members, said members each having first ends, said first ends being bent to form a vertical wall engaging leg, each said leg including means to be removably affixed to said wall, said first member comprising; a shelf supporting surface, a first portion, a second portion and a second end, said surface being of a shape and size to support said shelf, said first portion attached to said surface and being bent to form substantially a 90 degree downwardly facing vertical leg, said second portion being attached to said first portion and bent to form substantially a 90 degree horizontal leg facing outwardly and away from said first end, said second end being attached to said second portion and bent to form substantially a 90 degree upwardly facing vertical extension, said extension having partially cut-away edges therefore forming substantially an elongated protrusion, said protrusion being of a size and shape to be removably inserted into a bore within said hanger pole, said second member having a second end being bent to form substantially a vertical upwardly facing attachment leg and said attachment leg having means to be removably affixed to said first portion of said first member,
- whereby;
- when a hanger is slidably engaged about said hanger pole, said hanger will slide along the entire length of said pole without any obstruction from said bracket.

5,647,491
IV RACK
Leslie Dale Foster, Brookville; Clement J. Koerber, Batesville, and John Walter Ruehl, Shelbyville, all of Ind., assignors to Hill-Rom Company, Inc., Batesville, Ind.
Continuation of Ser. No. 869,475, Apr. 15, 1992, abandoned. This application Feb. 15, 1995, Ser. No. 389,548
Int. Cl.[6] A47F *5/00*
U.S. Cl. 211—113 **16 Claims**

1. Infusion apparatus comprising:
- a support;
- a rectangular frame adapted to receive and support containers of IV fluids and adapted to receive and support pumps for dispensing the IV fluids, said frame removably mountable to said support and being formed with an upper rectangular compartment and a lower rectangular compartment;
- a plurality of accessible electrical contacts and sockets mounted in said lower compartment of said frame and spaced from said support;



said upper compartment being provided with a plurality of hooks extending from a side of the upper compartment and each hook shaded to support a container of IV fluid;

each of said sockets shaped to hold a single pump;

a plurality of passageways interconnecting the upper and lower compartments adjacent said contacts to allow for the passage of tubing between a respective IV container and its associated pump;

a conductor for connecting said contacts to a source of electrical power;

said contacts being adapted to be in close proximity to the pumps when the pumps are received on the frame such that the pumps receive electrical power from the source through said conductor and contacts.

5,647,492

MOVEMENT RESISTANT ANGLED CLOTHES HANGER ROD STRUCTURE

Augustus Fillios, 29 Nova Ct., Brooklyn, N.Y. 11229; Walter Koneke, 15 Buffin La., Blue Point, N.Y. 11715; Hans Koneke, 6701 N. 16th St., Apt. 216, Phoenix, Ariz. 85016, and George Fillios, 2496 Natta Blvd., Bellmore, N.Y. 11710

Continuation of Ser. No. 363,974, Dec. 23, 1994, abandoned, which is a continuation-in-part of Ser. No. 139,519, Oct. 20, 1993, abandoned. This application May 6, 1996, Ser. No. 642,210

Int. Cl.[6] A47F *5/00*

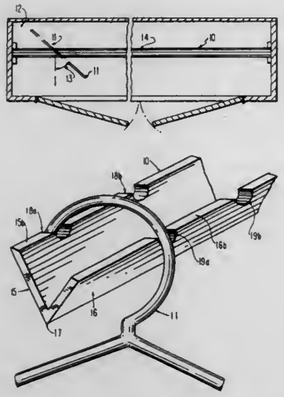
U.S. Cl. 211—123 **1 Claim**

1. A movement resistant, space-saving clothes hanger rod structure for supporting clothes hangers, and clothes hanging thereon, in an optimal angled position within a closet, comprising:

an open top, fixed V-shaped horizontally extending rod supporting hangers comprising a pair of upwardly extending side wall members at a predetermined angle from a base joint;

each of the members having a top straight edge parallel to each other in a horizontal plane with a plurality of spaced channels, said channels being arranged in pairs so that each channel in one member is aligned with a channel in the other member in staggered relationship forming a pair of channels in which an axis joining each pair of channels is at a diagonal angle to the parallel top edges of said members, the inside walls of said channels supporting said hangers being parallel to said axis and continuously curved at right angle to said axis;

each hanger mounted on said rod having a hook, said hook resting on a pair of channels so that said hanger rests at a diagonal angle to the length of said rod permitting a plurality



of hangers carrying clothing to always overlap so that said closet needs less depth to contain the clothing on hangers.

5,647,493

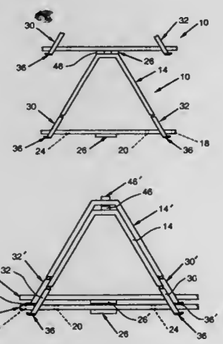
SHIPPING AND STORAGE RACK

David J. Sippel, 10410 Grubbs Rd., Wexford, Pa. 15090

Filed Jun. 6, 1995, Ser. No. 471,407

Int. Cl.[6] A47F *5/00*

U.S. Cl. 211—194 **11 Claims**



1. A material handling apparatus comprising:

a base member;

at least two upstanding side members attached to said base member, wherein at least one upstanding side member is removably attached to said base member in an upright supporting position relative thereto, said upstanding side members configured such that a second like-constructed material handling apparatus having a second base member and second upstanding side members corresponding to said upstanding side members may be selectively stacked on top of said base member in a first unloaded position wherein said second base member is received on said base member and said upstanding side members are nestingly received in said corresponding second upstanding side members when said upstanding side members are in said upright supporting positions; and

support means attached to said upstanding side members such that said second base member of said second like-constructed material handling apparatus may be selectively supported in a second loaded position wherein said second base member is supported in a spaced-apart relationship to said base member.

5,647,494

TEAR-OFF CLOSURE FOR BOTTLE-SHAPED CONTAINERS

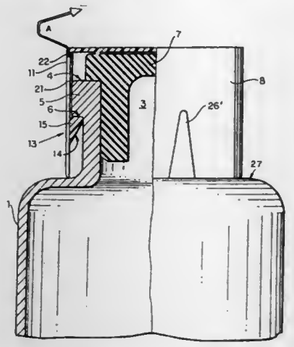
Serge L.G.M.G. de Schaetzen, Hoeselt, and Koen L.E. Van Den Langenbergh, Wilrijk, both of Belgium, assignors to Helvoet Pharma Belgium N.V., Alken, Belgium

Filed Aug. 29, 1995, Ser. No. 521,108

Claims priority, application Germany, Aug. 30, 1994, 44 30 741.1

Int. Cl.[6] B65D *41/62*

U.S. Cl. 215—249 **8 Claims**



1. A tear-off safety closure for ensuring authenticity and for additional sealing of a bottle-shaped container for containing pharmaceuticals which is pre-closed by a sealing element, wherein said container includes a container neck having an outer wall and a rim with an outwardly projecting ridge comprising:

a one-piece closure element produced from thermoplastically deformable plastic in its entirety;

said closure element having a cap surface and a closed flange-shaped jacket for enclosing the sealing element and the rim of the container neck;

said jacket having a plurality of retaining devices arranged on its inner surface at a distance from a lower edge of said jacket;

said retaining devices for engaging under a lower edge of the ridge of the container neck;

said retaining devices being constructed as inner projections which face the outer wall of the container neck and which engage under the lower edge of the ridge;

said closure element having a tear-out part which can be detached from its cap surface;

said tear-out part is constructed as a diametrically extending strip of determined width and is connected with remaining adjoining circular segment-shaped regions of the cap surface by weakened regions formed of thinner plastic material; and

one end of said diametrically extending strip is a grip edge which is formed by a region in said jacket which has a reduced outer diameter.

5,647,495

HEAT-RESISTANT CONSTRUCTION OF A NECK OF A SYNTHETIC RESIN CONTAINER

Hiroyuki Orimoto, and Yoji Okuda, both of Nagano-ken, Japan, assignors to Nissei ASB Machine Co., Ltd., Japan

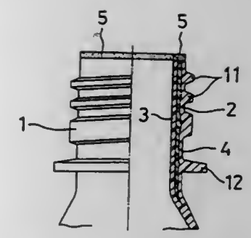
Continuation of Ser. No. 526,676, May 21, 1990, abandoned, which is a continuation of Ser. No. 269,144, Oct. 26, 1988, abandoned. This application Aug. 28, 1991, Ser. No. 750,930

Claims priority, application Japan, Feb. 27, 1987, 62-45434; Sep. 30, 1987, 62-247475; WIPO, Feb. 26, 1988, 88/00215

Int. Cl.[6] B65D *1/42;23/02;23/08;* **B29C** *45/16*

U.S. Cl. 215—42 **17 Claims**

1. A container comprising a main body and a hollow cylindrical neck, the neck extending along a main axis and having a proximate end coupled to the main body and an open distal end, the neck including:



(a) a generally cylindrical inner layer formed of a first thermoplastic material;

(b) a general cylindrical middle layer located radially outward of the inner layer and formed of a second thermoplastic material having a greater heat resistance than the first thermoplastic material;

(c) a generally cylindrical outer layer located radially outward of the middle layer so that the middle layer is at least partially sandwiched between the inner and outer layers, the outer layer being formed of the first thermoplastic material; and

(d) an open end section which extends from and is integral with the middle layer, is formed of the second thermoplastic material, and extends radially along the entire radial extent of the open distal end of the neck so that the entire open distal end of the neck is formed by the open end section.

5,647,496

Patent Not Issued For This Number

5,647,497

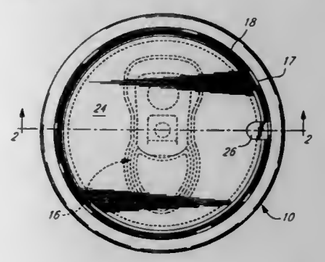
PROTECTIVE REMOVABLE COVER FOR BEVERAGE CONTAINER

André Labbé , 14, rue Granada, Kirkland, Québec, Canada

Filed Feb. 21, 1996, Ser. No. 604,458

Int. Cl.[6] B65D *51/20*

U.S. Cl. 220—257 **10 Claims**

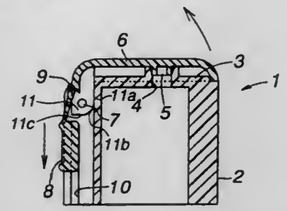


1. A protective, removable cover for a beverage container including a top wall having (a) an opening means, (b) an upwardly extending peripheral lip defining a top annular edge surface, and (c) an outer surface comprising a peripheral annular surface section adjacent to and inside said rod annular edge surface, said protective removable cover comprising:

a piece of sheet material for covering the opening means, the piece of sheet material having an inner surface with a peripheral annular portion contoured to fit on said peripheral annular surface section inside said top annular edge surface; and

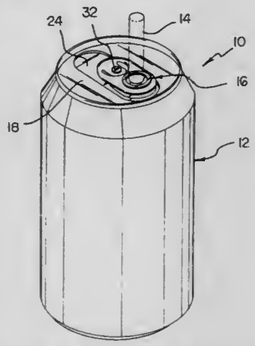
means for removably adhering said peripheral annular portion to said peripheral annular surface section.

5,647,498
HINGED CONTAINER CAP
Yoshio Kaneko, Kanagawa-ken, Japan, assignor to Nifco, Incorporated, Yokohama, Japan
Filed Dec. 12, 1995, Ser. No. 571,315
Claims priority, application Japan, Feb. 10, 1995, 7-046526
Int. Cl.[6] B65D *43/26*
U.S. Cl. 220—263 **4 Claims**



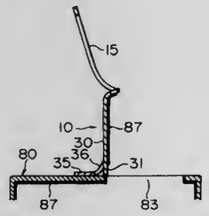
1. A container cap, comprising:
a primary cap provided with an outer surface and an outlet opening in a top wall thereof, said primary cap being adapted to be fitted to a mouth of a container;
a secondary cap having an end hingedly attached to the outer surface of said primary cap, and rotatable about a pivot between a closing position for closing said outlet opening and an opening position for exposing said outlet opening;
a non-rotating slide member slidably engaged to an outer circumferential surface of said primary cap and attached to an outer peripheral point of said secondary cap via a flexible connecting member, wherein an outer surface of said slide member is exposed on said outer circumferential surface of said primary cap; and
wherein the slide member is manually pulled down axially and linearly to open said outlet opening and manually pushed up axially and linearly to close said outlet opening.

5,647,499
BEVERAGE CAN ASSEMBLY WITH STRAW RETENTION MEANS
John Piazza, 629 W. Carroll, Lanark, Ill. 61046
Filed Mar. 19, 1996, Ser. No. 618,169
Int. Cl.[6] B65D *17/34*
U.S. Cl. 220—269 **6 Claims**



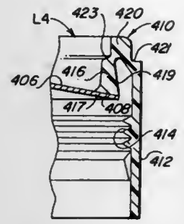
6. A beverage can assembly with straw retention means adapted for use in association with a straw, the apparatus comprising:
a beverage can having an upper lid, a bend down panel being formed within the upper lid; and
a pull tab being pivotally coupled to the upper lid, the pull tab including a straw retainer, the straw retainer being fabricated of plastic in an operative orientation a user lifting the pull tab thereby forcing the bend down panel downward to define an opening in the upper lid, a user then pivoting the pull tab 180 degrees whereby the pull tab covers the opening, a user then positioning a straw through the straw retainer to secure the straw in a fixed orientation.

5,647,500
PULL-TAB FOR LIQUID CONTAINER
Hidetoshi Konno, Yokohama; Masamichi Kaneko, and Junichi Satoyoshi, both of Tokyo, all of Japan, assignors to Tetra Laval Holdings & Finance S.A., Pully, Switzerland
Continuation of Ser. No. 455,495, May 31, 1995, abandoned. This application Jul. 9, 1996, Ser. No. 677,176
Claims priority, application Japan, May 31, 1994, 6-142504
Int. Cl.[6] B65D *17/34*
U.S. Cl. 220—269 **2 Claims**



1. A pull-tab for covering and sealing a pouring mouth of a liquid container having a surface and a periphery, the pull-tab comprising:
a sheet having a first cutting line and a second cutting line, the first cutting line delimiting the pull-tab into first and second portions, the first portion of the pull-tab defining a main sector, the second portion of the pull-tab defining a handle sector,
a third portion of the pull-tab defining a connecting sector positionable adjacent the periphery of the container, the main sector being configured to cover the pouring mouth of the container when the connecting sector is positioned adjacent the periphery of the container, the connecting sector being configured as a support point for the handle sector when the handle sector is pulled away from the surface of the container,
the second cutting line being convexly curved away from the connecting sector and delimiting a fastening sector as a portion of the main sector,
a bonded sector having at least a portion thereof bonded to the surface of the container and located adjacent the fastening sector, the bonded sector having unbonded edge areas configured as a support axis about which the main sector is turnable when the main sector is pulled away from the surface of the container, the fastening sector having at least a portion of an edge configured to contact the surface of the container when the main sector is pulled away from the surface of the container, the support axis being spaced from the pouring mouth so that the main sector is maintainable in a substantially stable position substantially perpendicular to the surface of the container when the main sector is pulled away from the surface of the container.

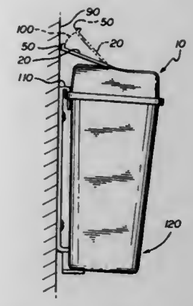
5,647,501
COMPOSITE LID FOR CONTAINER
Charles R. Helms, Malvern, Pa., assignor to Double "H" Plastics, Inc., Warminster, Pa.
Filed Jun. 19, 1995, Ser. No. 492,215
Int. Cl.[6] B65D *43/08*
U.S. Cl. 220—780 **20 Claims**



1. A reclosable, composite, paperboard and plastic lid for a container having a peripheral rim at an upper edge thereof, said lid comprising:
(a) a molded plastic rim including:
(i) a generally cylindrical, vertically extending, outer skirt member;
(ii) a generally cylindrical, vertically extending, inner flange member spaced radially inward from said outer skirt member;
(iii) an annular, generally transversely extending, integral bridge connecting adjacent upper ends of said outer skirt and inner flange members;
(b) a relatively thin, flat, circular, paperboard panel suspended below upper ends of said flange and skirt members by said flange member and being free from attachment to said skirt member;
(c) said paperboard panel having only a marginal portion attached to a lower surface of said rim inner flange member by insert injection molding, so that said paperboard panel will not be distorted by shrinkage of said flange member as it cools;
(d) a relatively thin weakened hinge area located between said bridge and at least one of said flange and skirt members so as to allow relative movement between said panel and said skirt member both during manufacture of said lid and after said lid has been applied to a filled container.

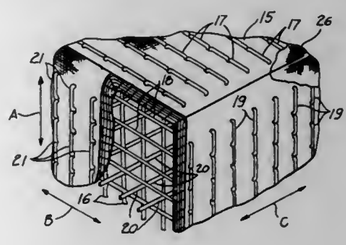
5,647,502
WALL MOUNTED MEDICAL WASTE DISPOSAL CONTAINER WITH PIVOTED TOP CLOSURE LID
Gordon Marsh, West Hills, Calif., assignor to Devon Industries, Inc., Chatsworth, Calif.
Continuation of Ser. No. 62,187, May 17, 1993, Pat. No. 5,494,186. This application Sep. 14, 1995, Ser. No. 527,874
Int. Cl.[6] B65D *25/24*
U.S. Cl. 220—481 **17 Claims**

1. A medical waste disposal device for use with a mounting device adapted to mount the medical waste disposal device on a wall, the medical waste disposal device comprising:
a container defining an open end;
a lid mount associated with the open end of the container, the lid mount defining a top portion, an entrance aperture and a sloping face arranged substantially adjacent to the entrance aperture; and



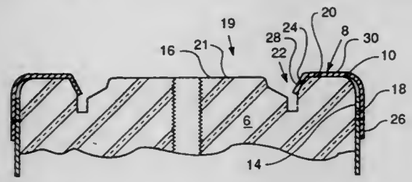
a lid pivotally mounted on the sloping face of the lid mount and located such that a portion of the lid extends to the wall when the lid rests on the sloping face.

5,647,503
TANK FOR STORING PRESSURIZED GAS
Robin S. Steele, Centerville, and Jennifer L. Stenger, Lebanon, both of Ohio, assignors to Spectrum Solutions, Ltd., Cincinnati, Ohio
Continuation-in-part of Ser. No. 297,232, Aug. 29, 1994, abandoned. This application Dec. 6, 1995, Ser. No. 568,197
Int. Cl.[6] B65D *1/48*
U.S. Cl. 220—589 **24 Claims**



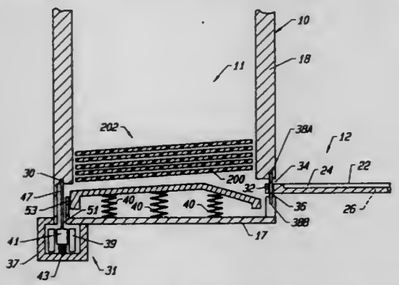
1. A fuel tank for a vehicle powered by a gas to be stored within the fuel tank at high pressure comprising:
a three dimensional tank composite wall structure made of a fibrous material, the tank wall structure having an interior, an exterior surface, and a plurality of pairs of walls;
a plurality of sets of continuous, fibrous bundles, each of the plurality of sets of continuous, fibrous bundles extending in a repetitive pattern
over the exterior surface of the wall structure,
through the fibrous material of one wall of one of the plurality of pairs of walls,
through the interior of the tank,
through the fibrous material of the other wall of the one of the plurality of pairs of walls, and
over the exterior surface of the wall structure; and
a matrix material joining the fibrous material walls and portions of the fibrous bundles extending over the exterior surfaces of the wall structure, the tank composite wall structure comprising the fibrous material and the portions of the fibrous bundles joined by the matrix material.

5,647,504
LASER WELDED FLUID FILTER HOUSING
David F. Gullett, Peoria; Ronald T. Taylor, Morton, and Daniel J. Techtow, Danville, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.
Filed Jul. 26, 1995, Ser. No. 506,734
Int. Cl.[6] B01D *27/08*
U.S. Cl. 220—612 **4 Claims**



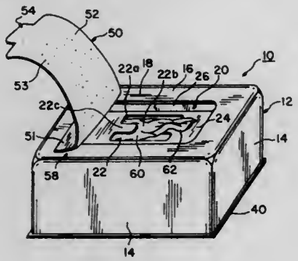
1. A fluid filter housing, comprising:
a cylindrical metal canister having a first end and a first end portion, said first end being open;
a top plate having a first surface, an edge portion, and a first surface portion of ring configuration, said top plate being inserted within said first end portion of said canister;
a sealing ring extending about and covering the first end portion of said canister and the first surface portion of said top plate;
a circular groove extending about the first surface of said top plate and defining an inner edge of the top plate first surface portion; and
said sealing ring having first and second end portions and a middle portion, said first end portion being laser welded to the canister first end portion, said middle portion covering the first surface portion of the top plate, and said second end portion extending into the circular groove of the first surface of the top plate.

5,647,505
VENDING APPARATUS AND SYSTEM FOR AUTOMATED DISPENSING OF DISKS
Ed Scott, Anaheim Hills, Calif., assignor to Sony Corporation, Tokyo, Japan, and Sony Trans Com Inc., Irvine, Calif.
Division of Ser. No. 275,808, Jul. 15, 1994, Pat. No. 5,523,551. This application Oct. 18, 1995, Ser. No. 549,981
Int. Cl.[6] G07F *11/00*
U.S. Cl. 221—2 **3 Claims**



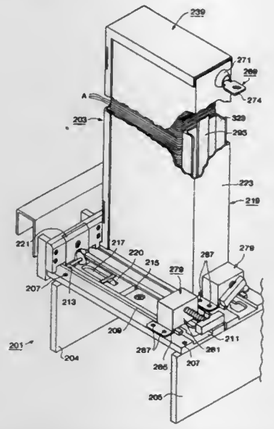
1. An automatic vending apparatus for digital storage disks, comprising:
a body having a chamber sized for storing a plurality of disks stacked in substantially vertical orientation, the body including
a base having a periphery, and
a wall connected to the periphery of the base, the wall having a slot sized to allow passage of a disk through it;
a spring;
a plate having a top side and a bottom side, the bottom side supported above the base and biased away from the base by the spring, the plate moveable between a first position in which the plate is positioned above the slot and a second position in which the plate is positioned below the slot, the plate sized to support the disks on its top side;
a tray having a bottom surface and a top surface having a recessed portion, the tray pivotally mounted for movement between a fully closed position, in which the recessed portion is positioned inside the chamber and in which the bottom surface of the tray maintains the plate in the second position, and a fully open position wherein the recessed portion is positioned outside the chamber and the plate is in the first position, wherein the recessed portion is sized to receive a disk from the stack of disks when the tray is in the fully closed position;
user interface means for receiving a dispensing request from a user and for generating a dispensing command in response to the dispensing request; and
latch means for latching the tray in the fully closed position and for unlatching the tray in response to the dispensing command.

5,647,506
READILY OPENABLE POP-UP DISPENSER FOR MOIST TISSUES
Robert P. Julius, Greenwich, Conn., assignor to Nice-Pak Products, Inc., Orangeburg, N.Y.
Filed May 26, 1995, Ser. No. 450,493
Int. Cl.[6] A47K *10/24*
U.S. Cl. 221—46 **31 Claims**



18. A resealable dispenser for dispensing individual moisture-impregnated articles from a plurality of interleaved said moisture-impregnated articles comprising:
a housing having sufficient rigidity to retain its shape subsequent to its manufacture, said housing including depending side wall means for retaining a supply of said moisture-impregnated articles therein and a top wall comprising a substantially planar outer surface and a recessed portion including an orifice for removal of said individual moisture-impregnated articles from said housing through said orifice, said recessed portion having a size sufficient to accommodate a portion of one of said moisture-impregnated articles projecting from said orifice;
supply means comprising an opening in said housing for supplying a plurality of said moisture-impregnated articles into said housing subsequent to its manufacture;
sealing means for sealing said supply means after said supplying of said plurality of said moisture-impregnated articles into said housing, said sealing means comprising a thin film covering providing a bottom wall for said housing; and
a resealable flexible label attached to said substantially planar outer surface of said top wall of said housing and having a size sufficient to completely cover said recessed portion, whereby said moisture-impregnated articles can be individually removed from said housing and a subsequent one of said plurality of moisture-impregnated articles drawn into the removal position with a portion of said article within said recessed portion, and said resealable label can be resealably sealed to said outer surface of said top wall with said subsequent moisture-impregnated article in said removal position.

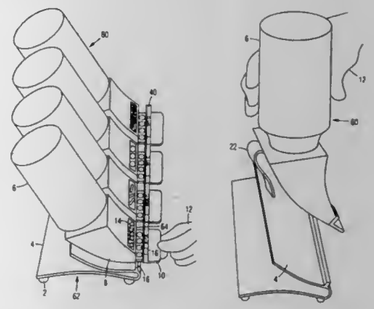
5,647,507
APPARATUS FOR DISPENSING TICKETS, CARDS AND THE LIKE FROM A STACK
Kazmier J. Kasper, Hopkinton, Mass., assignor to Algonquin Industries, Inc., Bellingham, Mass.
Continuation-in-part of Ser. No. 377,182, Jan. 24, 1995. This application Sep. 11, 1995, Ser. No. 526,501
Int. Cl.[6] B65H *3/00*
U.S. Cl. 221—151 **14 Claims**



1. Apparatus for dispensing articles such as tickets, cards and the like comprising:
a. a cabinet having a front and a back, and
b. an article dispensing module inside said cabinet, said article dispensing module including at least one article dispensing assembly and a support plate, each article dispensing assembly comprising:
i. a base,
ii. a removable frame on the base for enclosing a plurality of articles to be dispensed in a stack, the removable frame including an open top through which articles are loaded, a cover for covering the top, a rear wall underneath through which articles exit the frame, and a first locking mechanism for locking the cover in place,
iii. a second locking mechanism for locking the frame in place on the base,
iv. a gate for receiving articles from said frame and allowing only one article at a time to pass through, and
v. a transport mechanism for transporting articles from said frame to said gate.

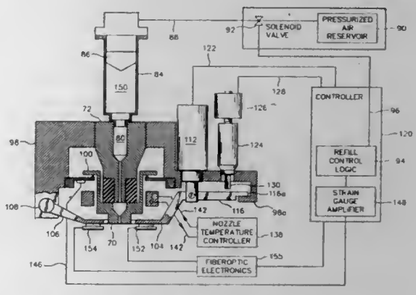
5,647,508
CONTAINER DISPLAY STAND AND CONTAINERS THEREFORE
Michael Ronci, 6317 N. London Ave. #J, Kansas City, Mo. 64151, and Kenneth Tarlow, 94 Birch Ave., Corte Madera, Calif. 94925
Filed Aug. 30, 1995, Ser. No. 520,592
Int. Cl.[6] B67D *5/06*
U.S. Cl. 222—23 **8 Claims**

1. A combination display stand and container comprising:



a stand having a bottom wall, a curved, upwardly slanting front wall connected to said bottom wall;
a ledge located at the leading edge of said upwardly extending front wall;
at least one container adapted to contain a plurality of discrete pellets therein disposed in at least one downwardly angled dispensing chamber consisting of a bottom wall which matches and rests on said curved, upwardly slanting front wall of said display stand, a rear wall connected to said bottom wall having an aperture which accepts the threaded neck of said at least one container, a top wall connected to said rear wall, an open front aperture extending between a left and a fight side wall, a slidable sheet resting on said bottom wall and ending in a right angled front wall, said front wall forming a closure to said front aperture, said slidable sheet extending beyond said front wall and acting as a pulling means to cause said sliding sheet to become exposed when pulled and thereby exposing pellets located on top of said slidable sheet.

5,647,509
METHOD AND APPARATUS FOR RAPID DISPENSING OF MINUTE QUANTITITES OF VISCOUS MATERIALS
Duong La, 18358 Lincolnshire St., San Diego, Calif. 92128; Robert L. Ciardella, 1036 Passiflora Ave., Encinitas, Calif. 92024; Alec J. Babiarz, 1544 Burgundy Rd., Encinitas, Calif. 92024, and Carlos E. Bouras, 407 Village Center Dr., Encinitas, Calif. 92024
Division of Ser. No. 978,783, Nov. 19, 1992, Pat. No. 5,320,250, which is a continuation-in-part of Ser. No. 801,960, Dec. 2, 1991, abandoned. This application Sep. 29, 1993, Ser. No. 128,525
Int. Cl.[6] G01F *11/02*
U.S. Cl. 222—55 **18 Claims**



1. An apparatus for rapidly dispensing minute quantities of a viscous material, comprising:

means including a fluid feed conduit for holding a predetermined volume of a viscous material;

nozzle means reciprocable over an end of the fluid feed conduit of the holding means for metering a predetermined quantity of the viscous material from the holding means;

impact means for applying a predetermined momentum to the nozzle means for causing the predetermined quantity of the viscous material to be rapidly ejected from the nozzle means; and

electrical heater means thermally coupled to the holding means for heating the viscous material and controlling the viscosity of the viscous material dispensed through the nozzle means upon the application of a heat energizing signal thereto.

5,647,510

MULTIPLE COMPONENT METERING AND RELATIVE PROPORTIONING DEVICE WITH COLLAPSIBLE CARTRIDGE

Wilhelm A. Keller, Obstgartenweg 9, 6402 Merlischachen, Switzerland

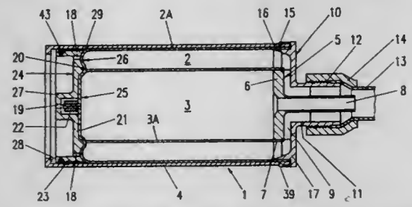
PCT No. PCT/IB94/00254, § 371 Date Apr. 19, 1995, § 102(e) Date Apr. 19, 1995, PCT Pub. No. WO95/05984, PCT Pub. Date Mar. 2, 1995

PCT Filed Aug. 19, 1994, Ser. No. 411,617

Claims priority, application Switzerland, Aug. 20, 1993, 02494/93

Int. Cl.[6] B65D *35/22*

U.S. Cl. 222—94 **25 Claims**



1. A multiple component metering and relative proportioning device, comprising a collapsible cartridge, a first receptacle containing a first component, and a second receptacle containing a second component, wherein the receptacles are package assemblies which are collapsible and located in a housing, each package assembly comprising a package tube and having an individual outlet at an outlet end, all individual outlets being joined in a common cartridge front piece, the package assemblies being sealed at an inlet end where a piston is disposed in the housing for progressively collapsing the package assemblies during a stroke of the piston, the contents of the package assemblies being discharged through the outlets in predetermined relative proportions; and

wherein a sealing means is provided for pressing a front edge of at least one of said package tubes against the housing.

5,647,511

COLLAPSED BAG WITH EVACUATION CHANNEL FORM UNIT

Curtis J. Bond, Worthington, Ohio, assignor to Liqui-Box Corporation, Worthington, Ohio

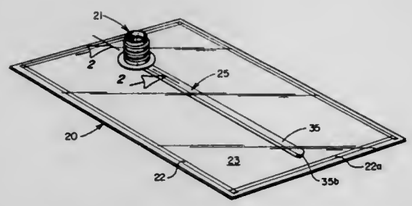
Filed Mar. 29, 1984, Ser. No. 594,761

Int. Cl.[6] B65D *35/08;35/56*

U.S. Cl. 222—105 **27 Claims**

1. A method of producing collapsed bags having spouts with form unit inserts connected therein and about which the bags collapse as they are emptied which comprises, for each bag,

providing a form unit insert connected to a spout, said insert including an elongated form extending outwardly from the periphery of said spout, joining two opposed webs of material



to produce opposed walls of the bag, and before joining the webs applying a spout to one of the webs and the insert to the spout so that the insert will be disposed between said opposed walls of the completed bag.

5,647,512

SODA DISPENSING MACHINE

Carlos Henrique Assis Mascarenhas de Oliveira; Leonardo Bruno; Roberto Padilla Julio; Alberto Maselli, and Ivan Jerônimo Moraes Mesiano, all of São Paulo, Brazil, assignors to Spal Indústria Brasileira de Bebidas S/A, São Paulo, Brazil

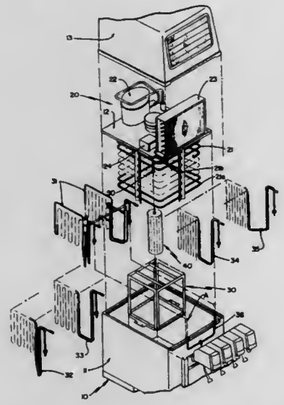
PCT No. PCT/BR95/00015, § 371 Date Feb. 12, 1996, § 102(e) Date Feb. 12, 1996, PCT Pub. No. WO95/23760, PCT Pub. Date Sep. 8, 1995

PCT Filed Mar. 2, 1995, Ser. No. 535,114

Claims priority, application Brazil, Mar. 4, 1994, 7400414-0 U

Int. Cl.[6] B67D *5/56*

U.S. Cl. 222—108 **3 Claims**



1. A soda dispensing machine, of the type comprising a basic body (**10**), including a tank (**11**) containing immersion water (A), in which there are immersed: an evaporator (**21**) of a refrigerating unit (**20**); a coil basket (**30**), disposed inside the evaporator (**21**) and including at least one gasified water coil (**31**); a carbonator (**40**), which is connected with respective sources of carbonic gas and potable water, which are mixed by said carbonator, so as to obtain gasified water, said coil (**31**) being provided with gasified water and air, which is purged through a drain valve (**41**) in fluid communication with said carbonator (**40**), characterized in that the peripheral surface of the evaporator (**21**) is adjacently disposed in relation to the peripheral surface of the tank (**11**), the carbonator (**40**) being disposed inside said evaporator (**21**), the drain valve (**41**) of said carbonator being disposed externally in relation to the basic body (**10**).

5,647,513

PROPORTIONING DEVICE FOR DOUBLE DISPENSER

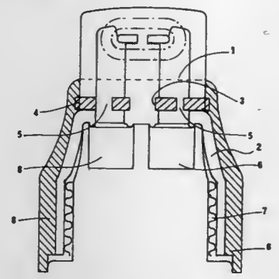
Bernard Favre, Chevilly-Larue, France, assignor to LIR France, Chevilly-Larue, France

Filed Sep. 15, 1995, Ser. No. 528,984

Claims priority, application France, Sep. 15, 1994, 94 11023

Int. Cl.[6] B67D *5/60*

U.S. Cl. 222—134 **1 Claim**



1. Proportioning device for a double dispenser for dispensing two products comprising a double receptacle and a dispensing head (**1**), said device comprising an outlet opening (**6**) for each product, and through openings (**5**) of different or equal diameters, facing said outlet openings, a capsule (**2**) fixed on the dispensing head (**1**), said capsule (**2**) having a constriction (**3**) that holds a disk (**4**) comprising at least one pair of said through openings (**5**), said at least one pair of through openings being diametrically opposed, said capsule (**2**) and said disk (**4**) being covered by a ring (**8**) turning about the capsule (**2**) which drives the disk (**4**) in rotation via teeth (**9**) on an external periphery of the disk (**4**) meshing with teeth on an internal surface of the ring (**8**).

5,647,514

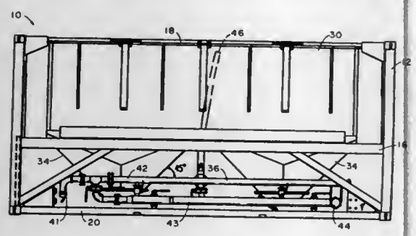
DRY BULK PRESSURE DIFFERENTIAL CONTAINER WITH EXTERNAL FRAME SUPPORT

John J. Toth, Danbury, Conn., and Richard McNealy, McKenney, Tex., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation of Ser. No. 390,763, Feb. 17, 1995, Pat. No. 5,529,222, which is a continuation of Ser. No. 155,721, Nov. 19, 1993, Pat. No. 5,390,827, which is a continuation-in-part of Ser. No. 48,518, Apr. 20, 1993, Pat. No. 5,353,967. This application Apr. 18, 1996, Ser. No. 634,632

Int. Cl.[6] B65D *88/30*

U.S. Cl. 222—181.3 **2 Claims**



1. A container for storing and transporting bulk product, comprising:

a non-cylindrical vessel comprising a plurality of hoppers for holding and storing said product;

an external frame having a box-like shape within which said non-cylindrical vessel is substantially disposed and supported, said external frame comprised of a first end piece positioned adjacent to one of said plurality of hoppers, said first end piece having a top portion, a bottom portion, and means for connecting said top portion to said bottom portion, and a second end piece positioned adjacent to a second of said plurality of hoppers, said second end piece having a top portion, a bottom portion, and means for connecting said top portion to said bottom portion;

side panels interconnecting and secured to the side of each hopper of said plurality of hoppers;

a first skirt ring secured to said first end piece and one of said plurality of hoppers, and a second skirt ring secured to said second end piece and another of said plurality of hoppers; and

a first lower support secured to said frame and cooperating with said first skirt ring and a second lower support secured to said frame and cooperating with said second skirt ring.

5,647,515

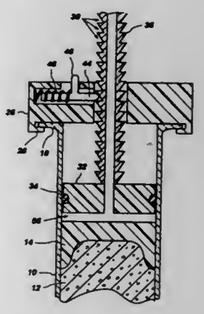
STEPPING PLUNGER FOR AIR-ACTIVATED DISPENSING SYSTEM

Lambertus Herman Zwijnenberg, Steenmatenweg 3, 7636 PM Agelo, Netherlands, and Bernardus Jozef Driessen, Wilgenstraat 22, 7611 AG Aadorp, Netherlands

Filed Sep. 29, 1995, Ser. No. 536,539

Int. Cl.[6] G01F *11/00*

U.S. Cl. 222—389 **1 Claim**



1. A stepping plunger for an air-activated material dispensing system, comprising:

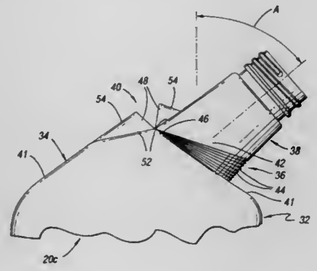
a plunger body having an air passage therethrough for insertion into a syringe containing a material to be dispensed;

a plunger rod having an air passage therethrough attached at one end to said plunger body, said plunger rod having a plurality of equally-spaced detents distributed along at least a portion of the length thereof; and

a detent pin urged into contact with at least one of said detents under spring bias;

wherein said detents are ramped to permit said plunger rod and said plunger body to move axially in one direction while being prevented from moving the opposite direction, and further wherein said plunger body follows the level of material in said syringe while maintaining a substantially zero air buffer in said syringe.

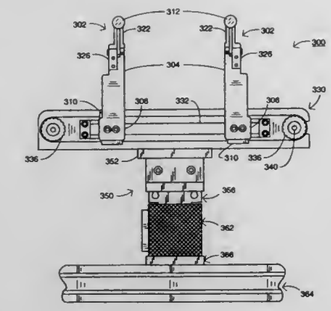
5,647,516
PLASTIC BLOW MOLDED BOTTLE HAVING BELLOWS SUPPORTED DISPENSING SPOUT
William C. Young, Superior Township, Washtenaw County; William A. Slat, Brooklyn, both of Mich., and Richard C. Darr, Seville, Ohio, assignors to Plastipak Packaging, Inc., Plymouth, Mich.
Continuation of Ser. No. 326,123, Oct. 19, 1994, Pat. No. 5,503,308. This application Jul. 27, 1995, Ser. No. 507,858
Int. Cl.[6] B67D *3/00*
U.S. Cl. 222—529 **21 Claims**



20. A plastic blow molded bottle comprising:
a vertically extending body portion having a horizontally elongated shape for holding contents received by the bottle;
a horizontally elongated lower closure end including a lower wall that closes the lower extremity of the body portion; and
a horizontally elongated upper dispensing end including an upper wall that generally closes the upper extremity of the body portion and has opposite ends that are inclined downwardly away from each other in a generally gable shape, a generally wedge-shaped bellows having a lower extremity mounted by one inclined end of the upper wall and having a normal position pointing horizontally transverse to the vertically extending direction of the body portion, a dispensing spout having a lower end that is inclined upwardly in an outward direction with respect to the peak of the gable shape of the upper wall and that is mounted by the upper extremity of the generally wedge-shaped bellows on the upper wall, a frangible connection including a tab that extends between the dispensing spout and the upper wall to position the dispensing spout generally vertical for filling of the bottle, and the tab having a reduced thickness portion that is connected to the dispensing spout and to the upper wall to allow the tab to be broken away from the bottle such that the dispensed spout can be tilted to allow more convenient dispensing of the bottle contents as the generally wedge-shaped bellows contracts and points upwardly from the normal position pointing horizontally.

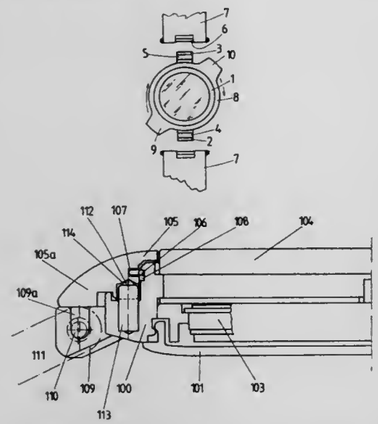
5,647,517
CUFF MAKING APPARATUS
Wayne G. Foster; John R. Everhart, both of Winston-Salem; Joel C. Rosenquist, Kernersville, and Ken J. Thompson, Lexington, all of N.C., assignors to Sara Lee Corporation, Winston Salem, N.C.
Filed Jul. 21, 1995, Ser. No. 505,401
Int. Cl.[6] A41H *43/00*
U.S. Cl. 223—2 **15 Claims**

1. An apparatus for making a cuff from a continuous supply of tubular material, said apparatus comprising:
(a) a material feed for advancing the tubular material;
(b) a cutter disposed adjacent the material feed for severing the tubular material to form a circular band;
(c) a holding fixture for holding the circular band severed from the tubular cuff material; and



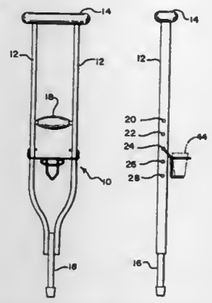
(d) a folding mechanism for folding the circular band on said holding fixture upon itself to form a double-layer cuff.

5,647,518
WATCH CASE
Alain Baumgartner, Sainte-Croix, and Romolo Brancaleoni, Les Hauts-Geneveys, both of Switzerland, assignors to BRATEC, Baumgartner & Brancaleoni, Sainte-Croix, Switzerland
Continuation of Ser. No. 890,569, May 28, 1992, abandoned, which is a continuation of Ser. No. 696,250, May 6, 1991, Pat. No. 5,158,219. This application Jun. 21, 1994, Ser. No. 263,484
Claims priority, application Switzerland, Jun. 7, 1990, 1914/90
The portion of the term of this patent subsequent to Oct. 17, 2009, has been disclaimed.
Int. Cl.[6] A44C *5/00*
U.S. Cl. 224—164 **7 Claims**



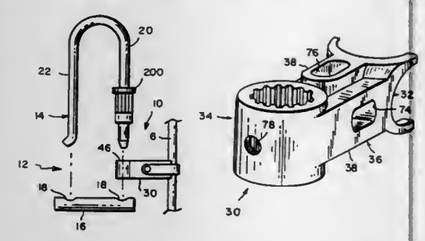
1. A watch case comprising a watch middle housing, a rim member, and spring means arranged between and resiliently acting on said housing and said rim member for rotatably retaining said rim member on said housing, said housing and said rim member each having complementary means for cooperating to receive at least one extremity of a strap and to substantially instantaneously lock said at least one one extremity of the strap to said case upon rotation of said rim member to a predefined position relative to said housing.

5,647,519
CRUTCH BEVERAGE HOLDER
Dennis Brennan, 9865 Country Park Ct., Roseville, Calif. 95661
Filed Mar. 20, 1996, Ser. No. 618,974
Int. Cl.[6] A45B *3/00*
U.S. Cl. 224—407 **5 Claims**



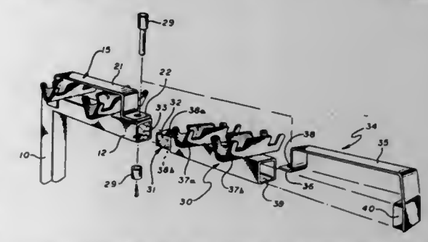
1. A holder for a beverage container for use with a crutch having a pair of bowed sides connected by a bearing portion at their upper ends, a leg portion at their lower ends, a hand grip connected between the sides and a pair of aligned apertures therethrough on an axis generally parallel to the axis of the hand grip, the beverage holder comprising, in combination with the beverage container:
an abutting attachment member spanning the bowed sides parallel to the pair of aligned apertures and wrapping around and adapted to resiliently engage the pair of apertures, respectively, from opposing sides of the crutch;
a hoop extending from the attachment member in a horizontal plane defining a circular receptacle for the beverage container;
a downwardly depending beverage container stop extending from and below the hoop for providing a positive stop for supporting the beverage container within the hoop.

5,647,520
BICYCLE LOCK BRACKET WITH SPLINES
Cornelius McDaid, Dorchester, Mass., assignor to Kryptonite Corporation, Canton, Mass.
Filed Dec. 1, 1995, Ser. No. 565,926
Int. Cl.[6] B62J *11/00*
U.S. Cl. 224—425 **22 Claims**



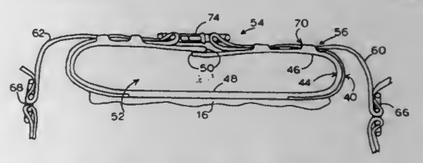
1. A bracket system for securely holding a lock on a strut of a cycle frame, said lock including an elongated portion with an axis and an optionally free end, said bracket system comprising:
(a) at least a spline on said elongated portion, said spline being substantially parallel to said elongated portion axis;
(b) a body having a hub at one end, a seat at the other end, and a medial section therebetween;
(c) said hub having an opening along a hub axis for reception of said elongated portion, said hub having a cross-sectional profile that presents at least a groove parallel to said hub axis for reception of said spline;
(d) said seat being disposed along a seat axis for reception of said strut;
(e) a fastener for securing said seat to said strut; and
(f) a stop for limiting relative motion between said elongated portion and said body.

5,647,521
EXTENSION FOR A CAR CARRIER
Ronald J. Burgess, Dominguez Hills, Calif., assignor to Red Rock Industries, Parawan, Utah
Continuation of Ser. No. 257,911, Jun. 10, 1994, Pat. No. 5,529,231. This application Mar. 18, 1996, Ser. No. 617,334
Int. Cl.[6] B60R *9/10*
U.S. Cl. 224—534 **12 Claims**



1. An extension that provides support for at least one additional article and connects to a carrier, the carrier including a base member, a support column rotatably coupled to the base member, a first holding member connected to the support column, a first securing member coupled to the first holding member and a resistive member coupled between the support column and the base member to resist rotation of the support column from an upright position, the extension comprising:
a second holding member having a top surface, a first end capable of being connected to one end of the first holding member and a second end such that said first and second holding members are substantially co-linear; and
a second securing member including a first end adapted to be removably coupled to one end of the first securing member and a second end adapted to be removably coupled to said second end of said second holding member, said second securing member in combination with said top surface of said second holding member form an enclosed area in order to prevent the at least one additional article from being removed.

5,647,522
LOAD CARRYING SYSTEM WITH FRICTION-ENHANCED LOAD CARRYING EMBRASURE
Thomas R. Routh, Portland, Oreg., assignor to CirqueWorks LLC, Portland, Oreg.
Filed Nov. 15, 1995, Ser. No. 559,465
Int. Cl.[6] A45F *3/14*
U.S. Cl. 224—651 **9 Claims**



1. A user borne load carrying system comprising:
a support structure securable to a user and having laterally spaced sides, and a rear expanse intermediate said sides wherein a load is adapted to be secured adjacent said rear expanse;

a strap mechanism operatively coupled to said support structure, said mechanism comprising a first strap portion having a first end portion connected to said structure at a first location adjacent one of said sides and a second end portion connected to said structure at a location intermediate said first and second sides and laterally spaced from said first location, and a second strap portion having a first end portion connected to said structure at a second location adjacent the other of said sides and a second end portion connected to said structure at a location intermediate said first and second sides and laterally spaced from said second location; and

a fastener mechanism configured to selectively and releasably couple said first strap portion at a location along its length which is between said first and second end portions thereof in a substantially collinear relationship with said second strap portion at a location along its length which is between said first and second end portions thereof, thereby to form a loop extending across said expanse and the load.

5,647,523

TENNIS BALL BELT

Russell Richard, 13355 Northborough #1721, Houston, Tex. 77067

Filed Sep. 27, 1995, Ser. No. 534,986

Int. Cl.[6] A45F *3/00*

U.S. Cl. 224—684 **4 Claims**



1. A tennis ball belt comprising:

an elongated strip of flexible material having an inner surface, an outer surface, opposing first and second ends and an intermediate portion therebetween, a top edge, and a bottom edge;

a plurality of pocket members each formed from a resilient, expandable material, each of the pocket members having an upper support band and at least one lower support band, the upper support band having opposite ends, the at least one lower support band connected between the opposite ends of the upper support band and extending downwardly therefrom to a lower support band end;

each pocket member being positioned adjacent the outer surface of the intermediate portion of the strip, the opposite ends of the upper support band extending over the top edge of the strip and abutting the inner surface of the strip, the lower support band end extending under the bottom edge of the strip and abutting the inner surface of the strip wherein the first end of the strip is folded about a fold section such that the inner surface of the first end of the strip overlies the ends of the upper support band and the end of the lower support band and abuts the inner surface of the intermediate portion of the strip, and means for securing the inner surface of the first end to the inner surface of the intermediate portion along the top and bottom edges thereof, thereby securing each of the pocket members to the strip such that an upper opening is formed between the outer surface of the strip and the upper support band of each pocket member, whereby a tennis ball is adapted to be received by the upper opening and supported by the pocket member; and

cooperating fasteners connected on the outer surface of each of the first and second ends of the strip.

5,647,524

TEARING-OFF ROLLER PAIR

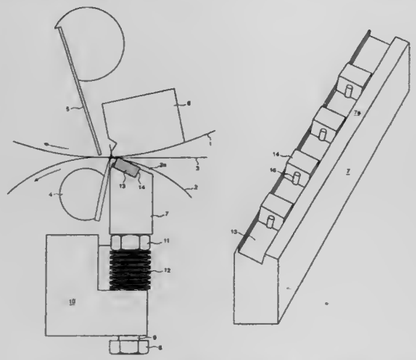
Horst Rautenberg, Lienen, Germany, assignor to Windmöller & Hölscher, Lengerich, Germany

Filed Feb. 7, 1995, Ser. No. 384,896

Claims priority, application Germany, Feb. 14, 1994, 44 04 662.6

Int. Cl.[6] B65H *35/10;* **B65B** *41/10*

U.S. Cl. 225—106 **2 Claims**



1. A tearing-off roller pair for tearing off sections or strips divided by perforations from a material web, comprising a first roller with a substantially smooth steel shell and, applied against said first roller, a second roller with at least one resilient body means set into said second roller for increasing contact pressure between said first and second rollers, which body means in its unstressed state projects radially beyond a peripheral cylindrical surface of the second roller;

wherein said resilient body means comprises several interspaced resilient bodies set into a groove in the peripheral cylindrical surface of the second roller;

wherein said resilient body means is recessed into a bar and said bar is disposed against means for providing a spring force and said bar is arranged in said groove of the second roller and carries the resilient body means at its front face; and wherein said groove accommodating the bar is offset from a diametral plane of the second roller such that the bar extends parallel to and is offset from the diametral plane such that the bar lies substantially behind the diametral plane in a direction of rotation when the diametral plane intersects a line of contact with the first roller.

5,647,525

DRIVER BLADE FOR A PERCUSSION TOOL

Yoshinori Ishizawa, Hitachinaka, Japan, assignor to Hitachi Koki Co., Ltd., Tokyo, Japan

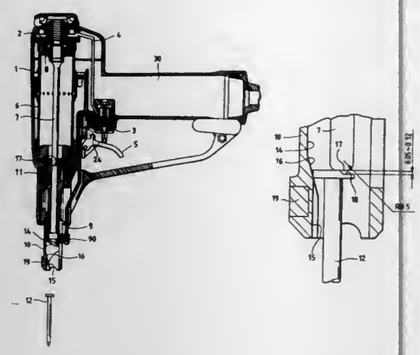
Filed Sep. 15, 1995, Ser. No. 529,214

Claims priority, application Japan, Oct. 14, 1994, 6-249423

Int. Cl.[6] B25C *1/04*

U.S. Cl. 227—113 **11 Claims**

1. A driver blade used for a percussion tool, said percussion tool comprising a cylinder provided in a percussion tool body, a piston accommodated in said cylinder and slidable in an axial direction of said cylinder so as to cause a reciprocative movement when receiving pressurized air, a driver blade driven by said piston for hitting a nail, a nail guide provided at a front end of said percussion tool body and formed into a hollow cylindrical shape capable of loading the nail therein, a retaining region formed on an inner wall of said nail guide, a permanent magnet disposed in said retaining region for magnetically holding a shaft of said nail loaded in said nail guide, a stepdown region formed on said inner wall of said nail guide inward of said retaining region along an axial



direction of said nail guide, so that the loaded nail is aligned parallel with an axial direction of said driver blade, and a slant surface smoothly connecting said stepdown region to said retaining region,

wherein said driver blade has a base end to be connected to said piston and a distal end acting as a hitting face for hitting a head of said nail which includes a round surface having a curvature whose radius is larger than 1.8 times a depth of a recessed portion on the head of a nail and being formed on a periphery of said hitting face, thereby permitting said driver blade to exit said recessed portion, formed on the head of said nail during an initial stage of a hitting operation, without engaging said recessed portion.

5,647,526

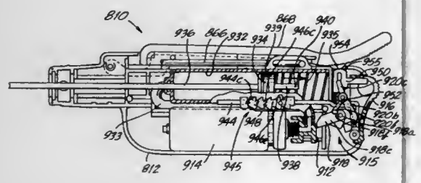
SELF CONTAINED GAS POWERED SURGICAL APPARATUS

David T. Green, Westport; Mitchell J. Palmer, New Milford; Keith L. Milliman, Norwalk; Robert C. Savage, Stratford; Richard C. McClure, Monroe, and Lisa W. Heaton, Norwalk, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 133,549, Oct. 8, 1993, Pat. No. 5,478,003, which is a continuation-in-part of Ser. No. 24,533, Mar. 1, 1993, Pat. No. 5,312,023, which is a continuation-in-part of Ser. No. 949,685, Sep. 23, 1992, Pat. No. 5,326,013, which is a continuation-in-part of Ser. No. 915,425, Jul. 17, 1992, abandoned, which is a continuation-in-part of Ser. No. 781,012, Oct. 18, 1991, abandoned. This application Nov. 15, 1995, Ser. No. 559,493

Int. Cl.[6] A61B *17/068*

U.S. Cl. 227—175.2 **17 Claims**



17. In a surgical apparatus for driving surgical fasteners having a pneumatic actuation system disposed within a frame portion for sequentially ejecting a plurality of surgical fasteners from a cartridge assembly, the improvement comprising a counter mechanism for indicating the number of times the pneumatic actuation system may be operated, including a ratchet assembly having a linearly translating rack member and a reciprocating ratchet shaft.

5,647,527

METHOD OF DETERMINING ORDER OF WIRE-BONDING

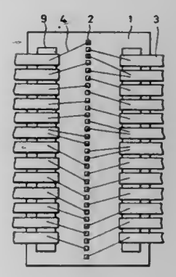
Kenji Oyachi, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Feb. 5, 1996, Ser. No. 597,163

Claims priority, application Japan, Feb. 9, 1995, 7-021459

Int. Cl.[6] H01L *21/60*

U.S. Cl. 228—180.5 **8 Claims**



1. A method of determining an order of wire-bonding between a plurality of leads and a plurality of electrodes, said leads comprising two arrays, said electrodes being disposed intermediate between said two arrays of leads in a line on a semiconductor, said method comprising the steps of:

surveying whether, if a first wire for connecting a first electrode to a first lead is extended beyond said first electrode, said extended first wire would intersect with a second wire for connecting a second electrode to a second lead; and

carrying out wire-bonding for said first wire and then wire-bonding for said second wire if said extended first wire would intersect with said second wire.

5,647,528

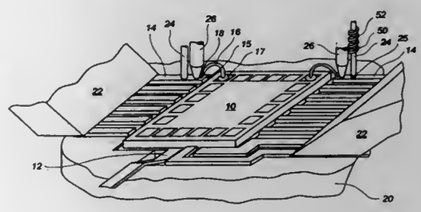
BONDHEAD LEAD CLAMP APPARATUS AND METHOD

Michael B. Ball, and Rich Fogal, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Feb. 6, 1996, Ser. No. 597,616

Int. Cl.[6] H01L *21/60;* **B23K** *37/04*

U.S. Cl. 228—180.5 **57 Claims**



1. Apparatus for bonding a wire to a bond pad located on a semiconductor chip and a lead finger of a lead frame, said apparatus comprising:

bonding apparatus having a portion thereof for the dispensing of said wire to be bonded to said bond pad and said lead finger and bonding said wire to said bond pad or said lead finger;

an independent clamp for engaging another portion of said lead finger before the bonding of said wire thereto, the independent clamp being movable; and

a fixed clamp for engaging a portion of said lead finger.

5,647,529

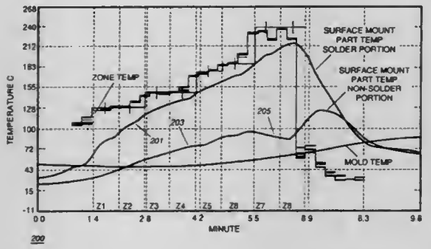
METHOD OF CONTROLLING THE TEMPERATURE OF A PORTION OF AN ELECTRONIC PART DURING SOLDER REFLOW

Henry F. Liebman, Tamarac; Anthony J. Suppelsa, Coral Springs, and Hal R. Canter, Fort Lauderdale, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 10, 1995, Ser. No. 402,294

Int. Cl.[6] H05K *3/34*

U.S. Cl. 228--222 **11 Claims**



1. A method of controlling the temperature of a selective portion of an electronic part during a solder reflow process comprising the steps of:

supplying a predetermined amount of solder material to a printed circuit board;

positioning an electronic part onto a printed circuit board, the electronic part having a solder portion and a non-solder portion;

applying at least one absorbent pad to only the non-solder portion of the electronic part, the at least one absorbent pad containing a fugitive material for cooling the non-solder portion during the solder reflow process; and

subjecting the printed circuit board and electronic part to a temperature capable of melting the solder material where the solder material is melted to join the solder portion of the electronic part to the printed circuit board and further where the non-solder portion applied with the at least one absorbent pad is controlled at a temperature where it is not damaged due to a high temperature.

5,647,530

ANTI-SCALD SANITARY VALVE

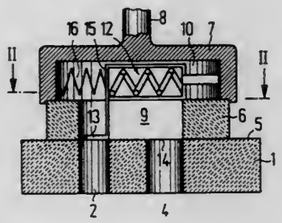
Werner Lorch, Schramberg, Germany, assignor to Hans Grohe GmbH & Co. KG, Germany

Filed Jul. 6, 1995, Ser. No. 498,904

Claims priority, application Germany, Jul. 7, 1994, 44 23 852.5

Int. Cl.[6] G05D *23/13*

U.S. Cl. 236—12.14 **19 Claims**



1. Sanitary valve comprising:

a valve housing, which has a fixed control surface and a hot water intake,

a control element for controlling a water quantity leaving the valve and which is movably arranged with at least one degree of freedom with respect to the housing, and

the control element having a movable control surface cooperating with the fixed control surface, and a valve element cooperating with at least one of the fixed control surface and the movable control surface and is constructed for closing the hot water intake.

5,647,531

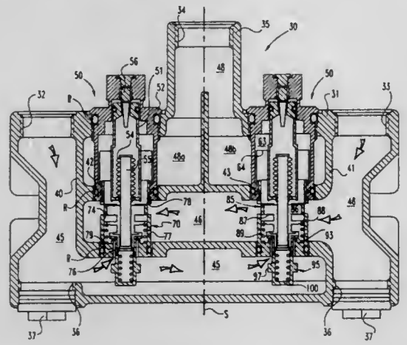
THERMOSTATIC CONTROL VALVE SYSTEM FOR USE IN EMERGENCY SHOWER AND EYEWASH SYSTEMS

Kevin B. Kline, Indianapolis, and Steven Gregory, New Palestine, both of Ind., assignors to Lawler Manufacturing, Indianapolis, Ind.

Filed Jun. 21, 1996, Ser. No. 668,403

Int. Cl.[6] G05D *23/13*

U.S. Cl. 236—12.14 **9 Claims**



1. A thermally responsive mixing valve assembly comprising:

a valve body defining a hot liquid inlet communicating with a hot liquid chamber, a cold liquid inlet communicating with a cold liquid chamber, and a discharge outlet communicating with a liquid mixing chamber;

a plurality of thermally responsive valves supported within said valve body, each in communication with the hot liquid chamber, the cold liquid chamber and the mixing chamber, each of said valves including;

a first opening communicating with said hot liquid chamber;

a second opening communicating with said cold liquid chamber;

a liquid chamber communicating with said first and second openings;

a thermally responsive control member disposed within said liquid chamber; and

a valve component operatively coupled to said control member to control the flow of liquid through at least one of said first and second openings into said liquid chamber, whereby said control member moves said valve component in response to the temperature of liquid within said liquid chamber.

5,647,532

AIR DIFFUSER

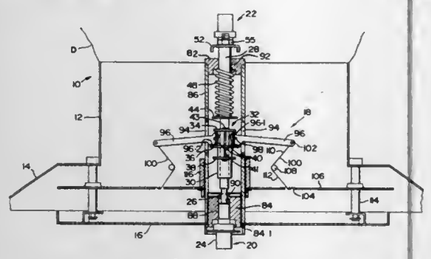
Kobus de Villiers, and Noel de Villiers, both of Cape Town, South Africa, assignors to Brian Rickard (Pty) Ltd., Cape Town, South Africa

Filed Jun. 10, 1996, Ser. No. 661,025

Claims priority, application South Africa, Jun. 8, 1995, 95/4746; Aug. 18, 1995, 95/6919

Int. Cl.[6] F24F *7/00*

U.S. Cl. 236—495 **8 Claims**



1. A diffuser for controlling flow of air in an air conditioning system, the diffuser including an air flow control baffle, a first temperature sensitive element for sensing room temperature and having a part which moves in response to changes in room temperature, first and second operating members connected to said part for movement therewith in response to changes in room temperature, said members serving to move said baffle in opening and closing movements when they are themselves displaced by said part of said element, and a second temperature sensitive element for sensing the temperature in ducting through which heated and cooled air flows and having a part which moves in response to ducting temperature variations, movements of said part of said second element displacing said members between a first position in which one of them is effective to move the baffle in said opening and closing movements when cooled air is supplied to the ducting and a second position in which the other of said members is effective to move said baffle in said opening and closing movements when heated air is supplied to the ducting.

5,647,533

RUN TIME CRITERIA TO CONTROL INDOOR BLOWER SPEED

Don A. Schuster, Martinsville; Larry J. Burkhart; Hongmei Liang, both of Indianapolis, and Frederick J. Keller, Jr., Martinsville, all of Ind., assignors to Carrier Corporation, Syracuse, N.Y.

Filed May 23, 1995, Ser. No. 448,038

Int. Cl.[6] G05D *23/00; F25B 19/00*

U.S. Cl. 237—2 B **20 Claims**

1. A method of selectively varying a speed of an indoor blower of a heat pump in order to reduce cold blow effect of air entering the heat pump, the method comprising the steps of:

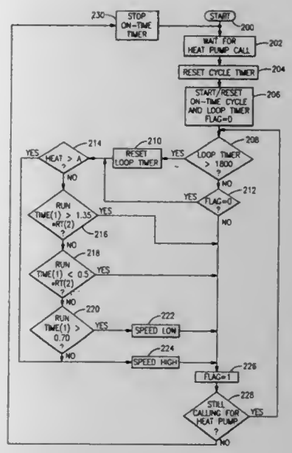
determining primary and secondary run time fractions of primary and secondary heating cycles, respectively, where the primary heating cycle immediately preceeds the secondary heating cycle,

the primary run time fraction being a function of heat pump operating on-time of the primary heating cycle and cycle-time of the primary heating cycle,

the secondary run time fraction being a function of heat pump operating on-time of the secondary heating cycle and cycle-time of the secondary heating cycle,

the primary and secondary heating cycles each being one complete respective cycle of the heat pump operating (on-time) and the heat pump not operating (off-time),

cycle-time of each said respective cycle being the length of time of each complete said respective cycle (on-time plus off-time);



determining a run time fraction ratio that is a function of said primary and secondary run time fractions; and

controlling the speed of the indoor blower dependent on the primary run time fraction and the run time fraction ratio.

5,647,534

DEVICE FOR HEATING AN INTERIOR OF AN ELECTRIC VEHICLE

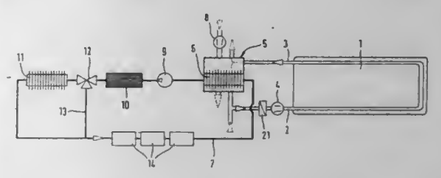
Michael Kelz, Aidlingen, and Wolfgang Odebrecht, Sindelfingen, both of Germany, assignors to Mercedes-Benz AG, Germany

Filed Sep. 22, 1995, Ser. No. 532,460

Claims priority, application Germany, Sep. 22, 1994, 44 33 836.8

Int. Cl.[6] B60H *1/04*

U.S. Cl. 237—12.3 B **6 Claims**



1. Device for heating an interior of an electric vehicle having an air-cooled high-temperature battery, comprising:

a liquid circuit;

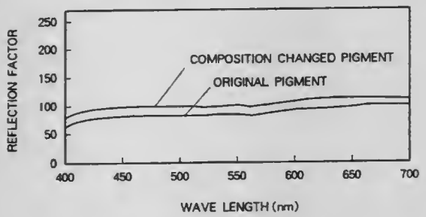
a first heat exchanger coupled in thermal communication with said liquid circuit;

means for controlling a flow of fresh air through said first heat exchanger and for controlling a flow of exhaust air from said battery through said first heat exchanger; and

a second heat exchanger arranged in said liquid circuit for transferring heat to air in an interior of said electric vehicle;

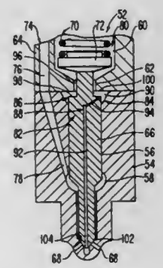
said liquid circuit being coupled in thermal communication with heat generating components of an electric drive system of said electric vehicle to absorb waste heat therefrom, at a point downstream from said second heat exchanger relative to a flow direction of said liquid circuit.

5,647,535
METHOD OF METALLIC PAINTING
Daisuke Nakazono; Shuji Monoura, and Kazuo Nakagawa, all of Saitama-ken, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Saitama, Japan
Filed Oct. 20, 1995, Ser. No. 546,884
Claims priority, application Japan, Oct. 21, 1994, 6-257186
Int. Cl.[6] B05B 7/04; B05D 1/02
U.S. Cl. 239—7 14 Claims



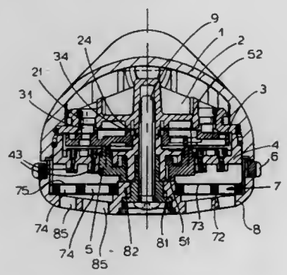
1. A method of metallic painting for matching color shade of metallic painting using an air atomized spray machine with color shade of metallic painting using a spin coating machine, wherein,
a content of the metallic pigment in the metallic paint for said air atomized spray machine and for said spin coating machine is maintained almost the same, and
a ratio of brilliant pigment and color pigment composing said metallic pigment is varied to increase the content of the brilliant pigment in the metallic paint for the spin coating machine compared with the content in the metallic paint for the air atomized spray machine.

5,647,536
INJECTION RATE SHAPING NOZZLE ASSEMBLY FOR A FUEL INJECTOR
B. M. Yen; Lester L. Peters; J. P. Perr; A. S. Gbuman, and Dennis Ashwill, all of Columbus, Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.
Filed Jan. 23, 1995, Ser. No. 376,417
Int. Cl.[6] F02M 47/02
U.S. Cl. 239—90 28 Claims



1. A closed nozzle fuel injector adapted to inject fuel at high pressure into the combustion chamber of an engine, comprising:
an injector body containing an injector cavity and an injector orifice communicating with one end of said injector cavity to discharge fuel into the combustion chamber, said injector body including a fuel transfer circuit for transferring supply fuel to said injector orifice and a low pressure drain circuit for draining fuel from said injector cavity;
a nozzle valve element positioned in one end of said injector cavity adjacent said injector orifice, said nozzle valve element movable between an open position in which fuel may flow from said fuel transfer circuit through said injector orifice into the combustion chamber and a closed position in which fuel flow through said injector orifice is blocked, movement of said nozzle valve element from said closed position to said open position and from said open position to said closed position defining an injection event during which fuel may flow through said injector orifice into the combustion chamber;
a rate shaping control means for producing a predetermined time varying change in the flow rate of fuel injected into the combustion chamber during said injection event to create a low injection flow rate through said injector orifice followed by a high injection flow rate greater than said low injection flow rate during said injection event, said rate shaping control means including an injection spill circuit for spilling a portion of the fuel to be injected from said fuel transfer circuit to said low pressure drain circuit during said injection event, said spill circuit including a spill passage integrally formed in said nozzle valve element.

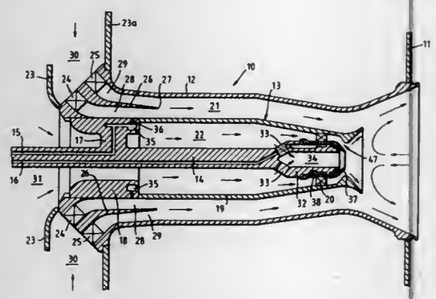
5,647,537
MULTIFUNCTION SHOWER HEAD
Konrad Bergmann, Mosel, Germany, assignor to Ideal-Standard GmbH, Bonn, Germany
PCT No. PCT/EP93/02935, § 371 Date May 2, 1995, § 102(e) Date May 2, 1995, PCT Pub. No. WO94/11112, PCT Pub. Date May 26, 1994
PCT Filed Oct. 23, 1993, Ser. No. 433,357
Claims priority, application Austria, Nov. 9, 1992, 2204/92
Int. Cl.[6] B05B 1/34
U.S. Cl. 239—383 5 Claims



1. A multifunction shower head comprising:
a housing having an inlet and an outlet side having an axis whereby water flows along an axis from said housing;
a nozzle shutter mounted rotatably on said housing at said outlet side to form a bottom thereof and being provided with:
a peripheral surface centered on said axis;
jet means forming water jet outlets, and
a step-like inner annular collar extending axially toward said inlet and equidistantly spaced radially inwardly from said peripheral surface of said nozzle shutter;
a screen disc coaxial with said nozzle shutter and mounted on and extending radially outwardly from said collar;
an adjustment ring mounted on said peripheral surface of said shutter and coaxially therewith upstream from said jet means to prevent relative rotation of the nozzle shutter and screen disc; a perforated nozzle plate mounted rotatably fixed on said shutter and spaced upstream from said screen disc;
a wheel mounted rotatably between said inlet of the housing and nozzle plate and coaxial therewith and formed with:
radially extending and annularly arranged vanes, and
a plurality of apertured and blocking regions;
a perforated guide plate between said inlet and said wheel and coaxial therewith and mounted fixed on said housing; and
a lift ring coaxial with said screen disc and mounted between said screen disc and said nozzle plate, said lift ring being axially displaceable between a lower position and an upper position and being provided with:

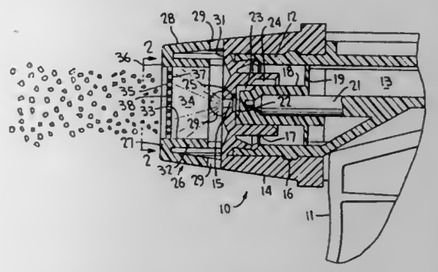
angled projections extending axially toward screen disc to slidably engage said annular collar of said nozzle shutter in the lower axial position of said lift ring, and
a plurality of pins extending axially toward said wheel and pressing thereagainst upon displacing said lift ring in the upper position thereof to arrest rotation of said wheel.

5,647,538
GAS TURBINE ENGINE FUEL INJECTION APPARATUS
John S. Richardson, Nottingham, England, assignor to Rolls Royce plc, London, England
Filed Dec. 19, 1994, Ser. No. 358,700
Claims priority, application United Kingdom, Dec. 23, 1993, 9326367
Int. Cl.[6] B05B 7/00
U.S. Cl. 239—405 14 Claims



1. A fuel injection apparatus for injecting fuel into a combustion apparatus including a combustion chamber having an upstream end, said injection apparatus comprising a generally annular member including two adjacent flow passages divided by a surface member located radially interiorly of one of said flow passages and radially outwardly of the other of said flow passages, said surface member terminating in a downstream direction in a common annular lip, means to direct first and second air flows through said flow passages towards said common annular lip, fuel injection means for directing fuel onto at least said surface member to form a fuel film which flows in a generally downstream direction over said surface member to said common annular lip whereby said fuel is atomized by said first and second air flows upon flowing from said common annular lip, a fuel and air mixing duct extending downstream of said surface member to terminate at the upstream end of the combustion chamber of said combustion apparatus, said mixing duct being of sufficient length to provide thorough mixing of air and said fuel prior to their entry into said combustion chamber for combustion therein, and a generally hollow centerbody located coaxially within said fuel and air mixing duct, the interior of said centerbody having fuel supply outlet means for supplying fuel to said centerbody and air being supplied to said centerbody at an upstream end thereof so as to thoroughly mix said fuel and air supplied thereto and to exhaust said mixture from a downstream end thereof, said centerbody downstream end being positioned in the region of the downstream end of the mixing duct and downstream of said annular lip so that in operation said fuel and air mixture is issued from said centerbody downstream end for combustion in the combustion chamber, said mixing duct having an upstream end at said common annular lip with said fuel injection means being located upstream of said common annular lip and adjacent said upstream end of said mixing duct, said fuel supply outlet means of said centerbody being located adjacent said downstream end of said centerbody.

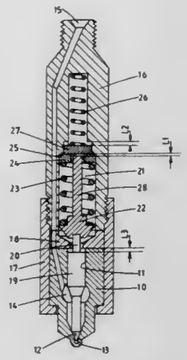
5,647,539
FOAMER NOZZLE ASSEMBLY FOR TRIGGER SPRAYER
Douglas B. Dobbs, Yorba Linda, and Adonis Spathias, Corona, both of Calif., assignors to Calmar Inc., City of Industry, Calif.
Continuation-in-part of Ser. No. 352,805, Dec. 1, 1994, abandoned. This application Feb. 22, 1995, Ser. No. 392,397
Int. Cl.[6] B05B 7/30
U.S. Cl. 239—504 15 Claims



1. A foamer nozzle assembly mounted at a discharge end of a trigger sprayer, comprising, an inner cylinder naving a smooth inner wall defining a turbulence chamber coaxial with a discharge orifice located in an end wall at said discharge end through which a conical spray is discharged in a downstream direction into said chamber for generating foam as spray particles impact against said smooth inner wall to mix with air in said chamber to form foam bubbles, foam enhancement means of molded plastic construction located in said cylinder adjacent the downstream end thereof, said means comprising first and second sets of ribs respectively lying in first and second parallel planes, said ribs of said first set being contiguous to said ribs of said second set, said ribs being mutually spaced apart in each said set to define uniformly sized openings therebetween, said ribs of both said sets having flat surfaces facing upstream and lying perpendicular to a central axis of said cylinder for further generating foam as the foam bubbles impact against said flat surfaces to further mix with the air in said chamber to create foam ejected from said downstream end of said cylinder.

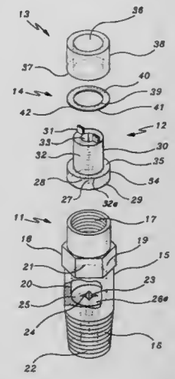
5,647,540
FUEL INJECTION NOZZLE
Paul Buckley, Rainham, Great Britain, assignor to Lucas Industries Public Limited Company, Solihull, England
Filed Aug. 15, 1995, Ser. No. 515,223
Claims priority, application United Kingdom, Aug. 19, 1994, 94 16785
Int. Cl.[6] F02M 45/08
U.S. Cl. 239—533.2 7 Claims

1. A fuel injection nozzle for supplying fuel to a compression ignition engine and comprising a fuel pressure actuated valve member engageable with a seating to prevent flow of fuel through an outlet orifice located downstream of the seating from a fuel inlet, a first coiled compression spring acting on the valve member to bias the valve member into engagement with the seating, a pre lift stop engageable by a surface movable with the valve member after the valve member has moved to a predetermined position away from the seating, a second coiled compression spring acting on the pre lift stop whereby continual movement of the valve member away from the seating takes place against the action of both springs, and supporting means for the pre lift stop movable towards the seating under pressure exerted thereon by the pre lift stop during closing movement of the valve member for enabling inertia of the pre lift stop to assist the closing movement of the



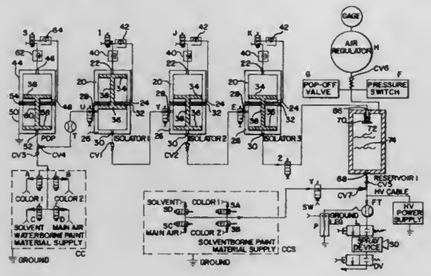
valve member at least in an initial portion of its movement towards the seating from said predetermined position.

5,647,541
WATER FLOW CONTROL DEVICE FOR ROTARY SPRINKLER
Michael C. Nelson, 1876 Del Amo Blvd. Unit A, Torrance, Calif. 90501-1301
Filed Apr. 28, 1995, Ser. No. 431,014
Int. Cl.[6] B05B *3/00*
U.S. Cl. 239—590.5 **11 Claims**



1. A fluid flow regulator readily attachable between a rotary sprinkler and a fluid conduit for regulating the flow and pressure to the sprinkler, comprising:
(a) a body having a streamlined channel leading to a straight through flow orifice having a four point star design, said body being connectable with a respective fluid port member of the sprinkler and the conduit,
(b) a rotatable port piece mounted in said body having a straight through flow port having a four point star design, centered on the axis of rotation and communicating with said straight through flow orifice, leading to a streamlined channel, said rotatable port piece having means for rotationally coupling to the sprinkler,
(c) a retaining sleeve, mounted in said body, having an internal bore diameter to accommodate said rotatable port piece whereby said port piece is allowed to rotate,
(d) a seal means between said rotatable port piece and said retaining sleeve.

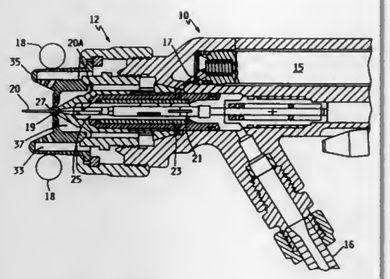
5,647,542
SYSTEM FOR ELECTROSTATIC APPLICATION OF CONDUCTIVE COATING LIQUID
Michael J. Diana, West Dundee, Ill., assignor to Binks Manufacturing Company, Franklin Park, Ill.
Filed Jan. 24, 1995, Ser. No. 377,426
Int. Cl.[6] B05B *5/025*
U.S. Cl. 239—690 **23 Claims**



1. A system for electrostatic application of relatively conductive coating liquid, comprising:
an electrostatic spray device coupled to an interruptable high voltage supply;
reservoir means having an inlet and an outlet coupled to an inlet to said spray device to supply said spray device with coating liquid;
grounded coating liquid supply means;
means for transferring coating liquid from said coating liquid supply means to said reservoir means while maintaining electrical isolation therebetween, said transferring means comprising at least three isolator means, each said isolator means including passage means of electrically insulating material extending between an inlet to an outlet from said passage means, and means for mechanically displacing, without the Use of solvent for the coating liquid, from said passage means and passage means surface and through said passage means outlet coating liquid introduced to said passage means through said passage means inlet, so that each said isolator means is electrically insulating between its inlet and outlet upon mechanical displacement of coating liquid from its passage means and passage means surface, said at least three isolator means being connected with their passage means in series between said coating liquid supply means and said reservoir means to define a flow path for transfer of coating liquid from said coating liquid supply means to said reservoir means; and
means for operating said isolator means mechanical displacing means so that coating liquid is always mechanically displaced from the passage means and passage means surface of at least one of said isolator means at all times when the high voltage is present, whereby electrical isolation is always maintained between said reservoir means and said grounded coating liquid supply means and thereby between the high voltage and said grounded coating liquid supply means.

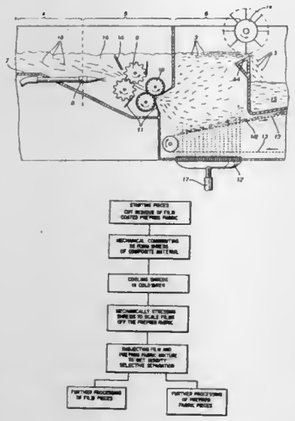
5,647,543
ELECTROSTATIC IONIZING SYSTEM
Yamin Ma, Roseville, Minn., assignor to Graco Inc, Minneapolis, Minn.
Filed Jan. 31, 1995, Ser. No. 380,970
Int. Cl.[6] B05B *5/025*
U.S. Cl. 239—706 **20 Claims**

1. In an electrostatic spray gun having an ionizing needle operable in conjunction with a second electrode, with a voltage differential developed therebetween, for providing an electrostatic field and corona discharge for charging particles emitted through the field by the spray gun, the improvement in an ionizing system comprising;



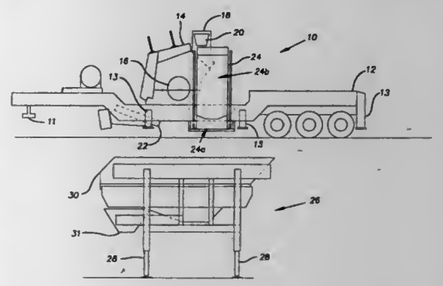
(a) said ionizing needle positioned proximate the pattern of particles emitted from the spray gun, and said ionizing needle having sharpened point with a radius of curvature less than about fifty micrometers (50 um); and
(b) said second electrode positioned outside the pattern of particles emitted from the spray gun and within about 1.5 centimeters from said ionizing needle, said second electrode further comprising at least one metal sphere positioned along an axis passing through and transverse to the axis of said needle.

5,647,544
METHOD AND APPARATUS FOR DIVIDING AND SEPARATING SELF-ADHESIVE COMPOSITE PLASTIC MATERIALS
Ralph Greiner, Leonberg; Michele Melchiorre, Blaustein, and Björn Stückrad, Ulm, all of Germany, assignors to Daimler-Benz AG, Stuttgart, Germany
Filed Mar. 4, 1996, Ser. No. 610,628
Claims priority, application Germany, Mar. 2, 1995, 19507218.9
Int. Cl.[6] B02C *19/12;23/20*
U.S. Cl. 241—17 **36 Claims**



1. Method for the single-type recovery of plastic materials from starting pieces of a multiple composite material, the method comprising the following steps for recovering pieces of prepreg fabric from flexible cutting residues, lined with films at least on one side, of prepreg webs or similar self-adhesive webs as starting pieces:
(i) cutting the starting pieces up into shreds of composite material;
(ii) cooling the shreds of composite material down to temperatures below room temperature and, in a cold state, subjecting the shreds to a mechanical alternating bending stress and/or a shearing stress, the films being scaled off from the pieces of prepreg fabric without damaging either the films or pieces of prepreg fabric; and
(iii) subjecting the mixture of films and pieces of prepreg fabric to a wet, density selective, flotation-like float and sink separation which modifies densities of the films and pieces of prepreg fabric using gas bubbles in a flotative manner and selectively differentiates the films from the pieces of prepreg fabric based on overall densities of combinations of gas bubbles with the films and with the pieces of prepreg fabric, wherein the films float and the pieces of prepreg fabric sink.

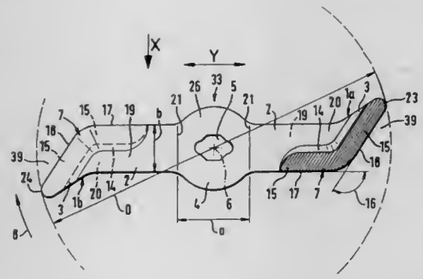
5,647,545
PORTABLE CRUSHER FOR CONCRETE
Edward L. Conner, Strongsville, Ohio, assignor to Ohio Machinery Co., Broadview Hts., Ohio
Filed Oct. 18, 1995, Ser. No. 544,828
Int. Cl.[6] B02C *21/02*
U.S. Cl. 241—79 **6 Claims**



3. A portable crushing apparatus comprising a trailer mounted crusher, a screen unit for classifying material by size, a feed conveyor for carrying crushed material discharged by the crusher to the classifier screen unit, a return conveyor for conveying oversize material from the classifying screen unit back to the crusher for additional crushing, a vibratory hopper for receiving material to be crushed and for transferring the received material to the crusher, the hopper being constructed and arranged to be transported to a work site on a trailer and including support members for supporting the hopper from the ground at locations straddling the trailer on which it is transported, the support members being arranged to support the hopper while the trailer on which it is transported to the work site is removed and while the trailer carrying the crusher is rolled beneath it.

5,647,546
STABMIXER
Rosa Maria Sinovas, Barcelona; Vicente Safont, Montgat; Mariano Peñaranda, Barcelona, all of Spain, and Hans-Jürgen Golob, Friedrichsdorf, Germany, assignors to Braun Aktiengesellschaft, Kronberg, Germany
Filed Sep. 12, 1995, Ser. No. 527,356
Claims priority, application Germany, Feb. 3, 1995, 195 03 491.0
Int. Cl.[6] B02C *15/16*
U.S. Cl. 241—292.1 **12 Claims**

1. A blade for use in an electrically operated handheld blender which during use is attached to a rotatingly driven operating shaft said blade comprising:
first and second blade supporting arms extending radially and diametrically from an axis of the operating shaft, each of said blade supporting arms including



a knife-edge, the knife-edge of a first of said blade supporting arms being directed upwardly and the knife-edge of a second of said blade supporting arms being directed downwardly,

a cutting edge facing in a direction of rotation of said operating shaft,

a chamfered surface extending outwardly to the cutting edge, and

a portion projecting from a surface of the blade supporting arm, the projecting portion having one side confined by the knife-edge and another side confined by the chamfered surface, the knife-edge and the chamfered surface enclosing a chamfer angle.

5,647,547

PAPER SUPPLY ROLL LEADING EDGE SECUREMENT

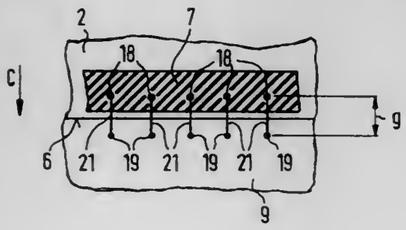
Klaus Walter Röder, and Wolfgang Günter Ruckmann, both of Würzburg, Germany, assignors to Koenig & Bauer Aktiengesellschaft, Wurzburg, Germany

Filed Jul. 14, 1995, Ser. No. 502,771

Claims priority, application Germany, Jul. 14, 1994, 44 24 657.9

Int. Cl.[6] B65H *19/18*

U.S. Cl. 242—160.1 **6 Claims**



1. A paper supply roll leading edge securement usable to attach a leading edge of a first layer of paper of said paper supply roll to a second layer of paper of said paper supply roll, said securement being in the form of a plurality of glue dots positioned on said first layer of paper adjacent said leading edge, and a plurality of glue dots positioned on said second layer of paper, each of said first layer dots being joined to a corresponding one of said second layer dots by a string, said securement including a sensor detectable constituent.

5,647,548

TENSION ARM DRIVING APPARATUS FOR VIDEO CASSETTE TAPE RECORDER

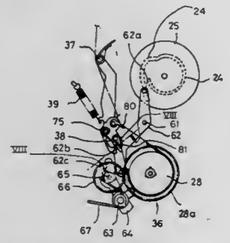
Haksun Hwang; Inki Cheon, both of Seoul; Sang Jig Lee, Kyungki-Do; Pohyoung Koh, Kyungki-Do; Hyeoksoo Park, Kyungki-Do, and Sungwoo Choi, Kyungki-Do, all of Rep. of Korea, assignors to LG Electronics Inc., Seoul, Rep. of Korea

Filed Nov. 15, 1995, Ser. No. 559,483

Claims priority, application Rep. of Korea, Nov. 15, 1994, 29945/1994; Nov. 15, 1994, 30198/1994

Int. Cl.[6] G11B *15/44*

U.S. Cl. 242—338 **13 Claims**



1. A tension arm driving apparatus for a video cassette tape recorder including a reel having a slip mechanism in which the rotation force of an upper gear is transferred to a lower gear through a friction member, and a head drum, the apparatus comprising:

loading means for wrapping a tape around the head drum;

force transferring means for transferring force from said loading means;

high speed winding means, driven by said force transferring means, for rotating said upper and lower gears at the same time, so that the upper and lower gears integrally rotate in a high speed winding mode; and

tension control means, controlled by said force transferring means, for controlling a tension arm and being locked in a predetermined position during the high speed winding mode.

5,647,549

MAGNETIC TAPE CASSETTE APPARATUS WITH DRIVE

Norbert Kunze, Wettenberg; Dieter Müller, Staufenberg, and Marc Gielkens, Braunfels, all of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

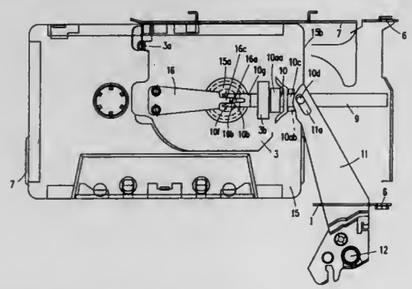
Filed Jul. 21, 1995, Ser. No. 505,413

Claims priority, application Germany, Jul. 27, 1994, 44 26 510.7

Int. Cl.[6] G11B *5/008*

U.S. Cl. 242—338.4 **4 Claims**

1. A magnetic tape cassette apparatus which comprises a loading



mechanism for a magnetic tape cassette, said cassette having an outer wall, and an opening in said outer wall, said loading mechanism comprising:

a spring,

a cassette holder having a hook for operative engagement in said cassette outer wall opening,

said cassette holder assuming a first, second, and third position as said cassette is inserted in said loading mechanism along an insertion direction,

characterized in that the cassette holder can traverse through said first, second, and third positions without deformation, and

said spring being shaped so as to apply an operative force on said holder for engagement with said cassette when said holder is in said first and third position, and so as to apply a passive force on said holder when said holder is in said second position, said passive force being a substantially less than said operative force.

5,647,550

TAPE CARTRIDGE REEL LOCK MECHANISM

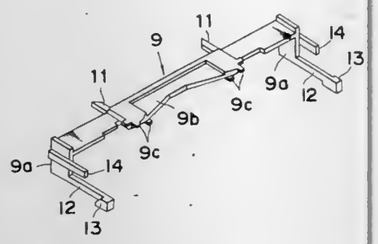
Takashi Sumida, Shiga-ken, and Nobutaka Miyazaki, Otokuni-gun, both of Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

Continuation of Ser. No. 435,139, May 5, 1995, abandoned, which is a division of Ser. No. 68,160, May 28, 1993, Pat. No. 5,451,007. This application Nov. 30, 1995, Ser. No. 565,275

Claims priority, application Japan, Aug. 7, 1992, 4-233022; Dec. 17, 1992, 4-355840

Int. Cl.[6] G11B *23/087*

U.S. Cl. 242—343.2 **14 Claims**



1. A tape cartridge which comprises:

a generally rectangular box-like casing including rectangular top and bottom walls, a pair of side walls and a rear wall, all assembled together to represent a generally rectangular flat boxlike configuration with a tape chamber defined therein, said casing having a front opening opposite to said rear wall;

a front cover hinge supported having a pair of hinged arms pivotally coupled to said respective side walls for pivotal movement between opened and closed positions, said front opening being opened and closed when said front cover is in the opened and closed positions, respectively;

first and second reels rotatably housed within said tape chamber, with opposite ends of a length of magnetic tape being secured to said first and second reels, respectively, each of said reels having a toothed lock wheel rotatable together therewith;

a hub lock mechanism housed within said tape chamber and including a generally elongated lock member movable between locked and unlocked positions in a direction transverse to said front cover, and a spring element for biasing said lock member towards said locked position, said lock member including a bridge plate, lateral side plates, traction arms and lock pawls engageable with said toothed lock wheels to lock said respective reels when said lock member is in said locked position, said traction arms protruding from said lateral side plates of said bridge plate of said lock member in a direction perpendicular to said bridge plate, said traction arms being operatively associated with said hinged arms such that, as said front cover is pivoted from a closed position towards an opened position, said lock member is pulled from a lock position towards an unlocked position against said spring element; and

at least one stopper rod attached to said lock member so as to extend towards said front opening in alignment with a corresponding one of said hinged arms, said stopper rod having a free end spaced a given distance from said corresponding hinged arm when said front cover is in a closed position, such that any movement of said lock member over said given distance while said front cover is in said closed position is prevented from causing the disengagement of said lock member as a result of said free end of said at least one stopper rod engaging said corresponding hinged arm.

5,647,551

TAPE CASSETTE HAVING REDUCED DROP-OUT ERROR BY SELECTED SIZING OF GAPS BETWEEN A CLAMPER AND AN ENGAGEMENT CAVITY IN THE HUB

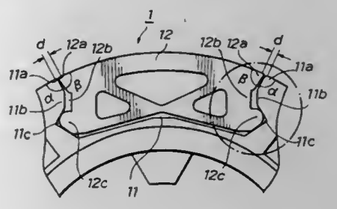
Tatehiko Ikeda; Haruomi Enomoto, and Tomoaki Shimazu, all of Tochigi-ken, Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Oct. 30, 1995, Ser. No. 544,974

Claims priority, application Japan, Nov. 11, 1994, 6-277407

Int. Cl.[6] G11B *23/087*; **B65H** *19/28*

U.S. Cl. 242—345 **3 Claims**



1. A tape cassette comprising a hub, an engagement cavity recessed on the outer periphery of said hub, and a clamper fitted into said engagement cavity, wherein a base end part of a tape is engaged between said engagement cavity and said clamper, and said tape is wound around said outer periphery of said hub, characterized in that

said hub having inner upper edges at opposite sides of said engagement cavity, said inner upper edges having outer curvature changing points at which the respective curvatures change from the curvature of the outer periphery, said clamper having a tape winding surface including opposite side edges, said opposite side edges having opposite second end portions each having an outer curvature changing point at which the curvature changes from the curvature of the winding surface, wherein the outer curvature changing points of said inner upper edges of said hub are separated from respective of said outer curvature changing points of said opposite side edges of said clamper by a gap dimensioned to be about 0.02 mm to about 0.10 mm.

5,647,552

PHOTO FILM CASSETTE

Tetsuya Takatori, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

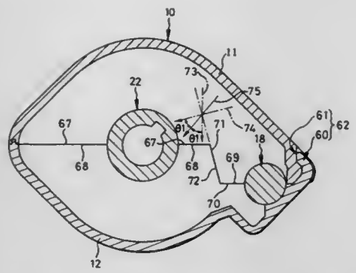
Filed Sep. 8, 1995, Ser. No. 525,179

Claims priority, application Japan, Sep. 21, 1994, 6-226896

Int. Cl.[6] G03B *17/26*

U.S. Cl. 242—348.4 **7 Claims**

1. A photographic film cassette wherein a cassette shell comprises a pair of resin molded shell halves which are joined together



to enclose a roll of photographic filmstrip therein, a film passage slot formed along and axial joint between said shell halves for allowing said photographic filmstrip to advance to an outside of said cassette shell through said film passage slot, and two fastening members disposed on opposite sides of said film passage slot for fastening said axial joint, each of said fastening members comprising a hook formed integrally with one of said shell halves and a retaining portion formed integrally with the other of said shell halves, said hook being resiliently engaged with said retaining portion to put pressure upon said retaining portion in a direction to secure said shell halves to each other, wherein said axial joint comprises a plurality of pairs of straight joint surfaces disposed on end faces of said cassette shell, each of said pairs of joint surfaces having a different angle from other ones of said pairs of joint surfaces, said hooks exert pressure in a direction orthogonal to each of said pairs of joint surfaces wherein at least a first of said pairs of joint surfaces extends in a first direction radially along said cassette shell and at least a second of said pairs of joint surfaces extends transverse to said first direction to define a predetermined angle between said first of said pairs of joint surfaces and said second of said pairs of joint surfaces, said hooks press against said retaining portions in a direction that bisects said predetermined angle.

5,647,553

LIFTING REEL ASSEMBLY WEB CLAMPING RETRACTOR

Alan George Smithson; Brian Edward Aiston; Joseph Patrick Harte, and Kenneth Williamson, all of Cumbria, United Kingdom, assignors to AlliedSignal Ltd., Carlisle, United Kingdom

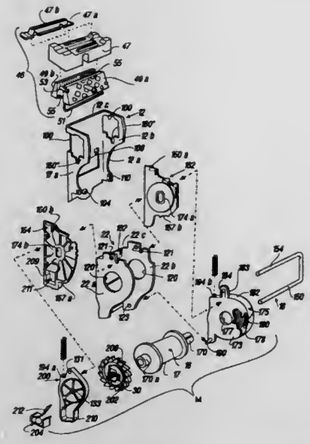
Filed Dec. 28, 1995, Ser. No. 581,026
Int. Cl.[6] B60R *22/42*
U.S. Cl. 242—381.1 **4 Claims**

3. A web clamping retractor comprising:

a frame;

web clamp supported relative to the frame and movable to a clamping position, in clamping engagement with a portion of a seat belt, from a free position in which the seat belt is movable relative to the web clamp; and

a reel assembly having a spool, with the seat belt wound thereabout and a means for pre-blocking the spool, the reel assembly slidingly mounted to the frame via a U-shaped needle member; an upper leg of the U-shaped needle member functions as an activation bar to move the web clamp into clamping engagement about the seat belt after the spool has



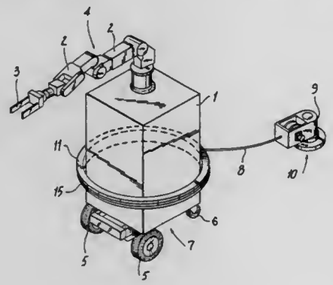
been pre-blocked; a lower leg of the U-shaped needle member serves as a shaft about which the spool rotates.

5,647,554

ELECTRIC WORKING APPARATUS SUPPLIED WITH ELECTRIC POWER THROUGH POWER SUPPLY CORD

Masashi Ikegami; Toshihiko Matsuhashi; Yoshiya Yamaue, all of Osaka-fu; Takashi Tanaka; Katsunori Hayashi, both of Hyogo-ken, and Daizo Takaoka, Osaka-fu, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka-fu, Japan

Continuation of Ser. No. 189,291, Jan. 31, 1994, abandoned, which is a continuation of Ser. No. 50,979, Apr. 21, 1993, abandoned, which is a continuation of Ser. No. 935,123, Aug. 21, 1992, abandoned, which is a continuation of Ser. No. 643,849, Jan. 22, 1991, abandoned. This application Nov. 22, 1994, Ser. No. 343,789
Claims priority, application Japan, Jan. 23, 1990, 2-14210; Jan. 23, 1990, 2-14211; Jan. 23, 1990, 2/14212
Int. Cl.[6] B65H *75/42;* **B25J** *5/00;* **H02G** *11/02*
U.S. Cl. 242—390.9 **6 Claims**



1. An electric working apparatus comprising:

a movable body provided with working means;

a power supply cord connected to said movable body for supplying an electric power to said movable body, a circular rail surrounding said movable body and formed with a groove on the outside thereof, and a cord containing groove formed on one side of said groove for containing said power supply cord therein; and

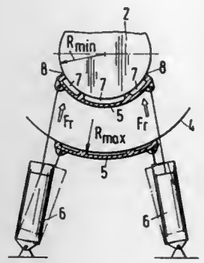
cord reeling means fixedly provided at a predetermined position apart from said movable body for reeling said power supply cord.

5,647,555

WINDING ROLLER SUPPORT DEVICE FOR WEB MATERIAL

Hans-Rolf Conrad, Dormagen, and Dieter Junk, Kreuztal, both of Germany, assignors to Voith Sulzer Finishing GmbH, Krefeld, Germany

Filed Jul. 20, 1995, Ser. No. 504,931
Claims priority, application Germany, Aug. 6, 1994, 44 27 877.2
Int. Cl.[6] B65H *18/26*
U.S. Cl. 242—547 **6 Claims**



1. A winding device for supporting a winding roller (2) for web material (1) that is wound as a winding (4) on the winding roller (2), said winding having an outer contour, said winding device comprising:

a supporting arrangement (5, 6) which supports the winding roller (2) from underneath in opposition to a deflection of the winding roller (2) and which creates a compressed air cushion of compressed air between said supporting arrangement (5, 6) and the winding roller (2), said supporting arrangement (5, 6) comprising:

at least one support plate (5) with an upper side which is substantially matched to the contour of an under side of the winding (4), said at least one support plate (5) is automatically moveable radially in response to the changing winding diameter of the winding (4) on the winding roller (2), thereby adapting said at least one support plate (5) to the winding (4) contour;

at least one compressed air outlet opening (7) in said at least one support plate (5); and

a gap (8) between the winding roller (2) and said at least one support plate (5) through which said compressed air exits.

5,647,556

METHOD FOR PERFORMING A FLYING SPLICE

Zygmunt Madrzak, Heidenheim, Germany, assignor to Voith Sulzer Papiermaschinen GmbH, Heidenheim, Germany

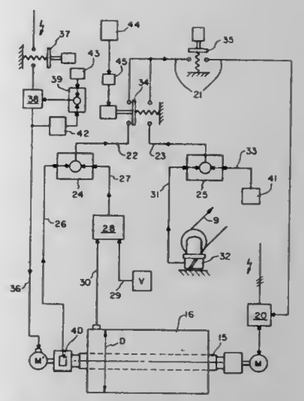
Filed Jul. 5, 1995, Ser. No. 498,094
Int. Cl.[6] B65H *21/00*
U.S. Cl. 242—554.6 **2 Claims**

1. In an unwinding station of a machine for one of making and processing a fiber web, a method of splicing on the fly a web leader of a primary roll to a web end unwinding from a secondary roll, said method comprising the steps of:

rotating the primary roll with a drive unit operable selectively as one of a motor and brake, until a peripheral speed of the primary roll is approximately the same velocity as the web unwinding from the secondary roll;

rotating the primary roll with an additional drive operating as a motor, independent of said drive unit, said additional drive increasing the RPM of the primary roll;

switching said drive unit from said motor operation to said brake operation, said switching step being dependent on said increased RPM; and



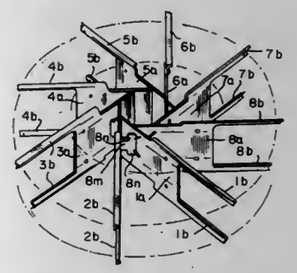
making a flying splice between the web leader of the primary roll and the web end of the secondary roll.

5,647,557

COLLAPSIBLE SPOOL FORMED BY A PLURALITY OF INTERLOCKING PLATES

Arnold T. Faulkner, Berrien Springs, Mich., assignor to Faulkner Fabricators, Inc., Berrien Springs, Mich.

Filed May 18, 1995, Ser. No. 443,401
Int. Cl.[6] B65H *75/24*
U.S. Cl. 242—607.1 **20 Claims**



1. A spool, comprising:

a plurality of plates, each of said plates including a body portion and a pair of spaced apart legs extending from said body portion;

a slot formed in each of said plates; and

a tab extending from each of said plates through said slot of another of said plates so as to join said plurality of plates in a generally circumferential arrangement with said legs extending generally radially therefrom.

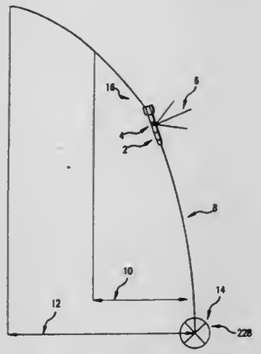
5,647,558

METHOD AND APPARATUS FOR RADIAL THRUST TRAJECTORY CORRECTION OF A BALLISTIC PROJECTILE

James Linick, Naples, Fla., assignor to Bofors AB, Karlskoga, Sweden

Continuation-in-part of Ser. No. 388,039, Feb. 14, 1995, abandoned. This application May 1, 1995, Ser. No. 431,761
Int. Cl.[6] F41G *7/00*
U.S. Cl. 244—3.11 **23 Claims**

1. A system for controlling the placement of an airborne vehicle, comprising:



an airborne vehicle having a ballistic trajectory and a roll rate, roll position and pitch while in said trajectory;

a radial impulse motor, incorporated into said airborne vehicle, for imparting a radial thrust on said airborne vehicle while said airborne vehicle is in said trajectory;

a receiver, incorporated into said airborne vehicle, for receiving targeting information;

means for determining said trajectory;

means for determining said airborne vehicle roll rate, roll position and pitch;

means for determining a vertical reference for said airborne vehicle; and

a computer, linked to said radial impulse motor, said receiver, said means for determining said trajectory, said means for determining said airborne vehicle roll rate, roll position and pitch, and said means for determining a vertical reference, for determining a time during said trajectory of said airborne vehicle and an angle of corrective vector to ignite said radial impulse motor to affect the trajectory of said airborne vehicle to direct said airborne vehicle towards a desired target.

5,647,559

APPARATUS FOR FLIGHT PATH CORRECTION OF FLYING BODIES

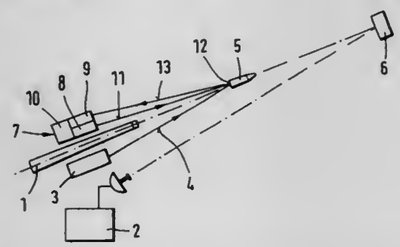
Rudolf Romer, Kaarst; Gerd Wollmann, Oberhausen, and Helmut Misoph, Lauf a.d. Pegnitz, all of Germany, assignors to Rheinmetall Industrie GmbH, Ratigen, and TZN Forschungs und Entwicklungszentrum Unterluss GmbH, Unterluss, both of Germany

Filed Jul. 6, 1995, Ser. No. 498,651

Claims priority, application Germany, Jul. 16, 1994, 44 25 285.4

Int. Cl.[6] F41G *7/26*

U.S. Cl. 244—3.13 **9 Claims**



1. In an apparatus for flight path correction of a projectile with the aid of a laser guide beam, said apparatus including: a laser guide beam producing device associated with a firing apparatus for a projectile; and a measuring apparatus, associated with the firing apparatus and contains an optical receiving detector, which determines the course of the respective projectile from signals received by the optical receiving detector, processes the determined course to obtain an appropriate correction signal, and causes the correction signals to be encoded on the laser guide beam for transmission to a receiving apparatus disposed in a tail portion of the respective projectile; the improvement wherein: for determining the course of the respective projectile, said measuring apparatus has, in addition to the optical receiving detector, an optical light source for producing a light beam directed at the projectile; and a plurality of triple reflector mirror elements, which reflect the incident light beam back in its initial direction to the optical receiving detector independently of the respective angle of incidence, are disposed in a circle on a rear surface of the projectile or at ends of a guiding mechanism of the projectile, with said circle of triple reflector mirror elements being disposed around a receiving optic for the laser guide beam.

5,647,560

STEERING LOOP FOR MISSILES

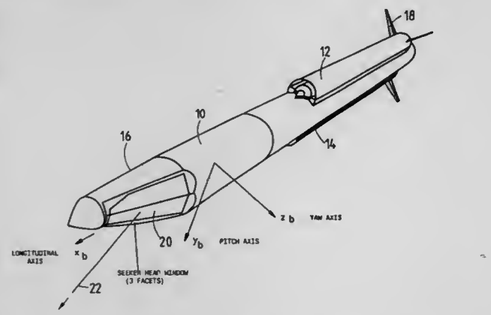
Jürgen Schnatz, Deggenhausertal, and Willi Ruggaber, Owingen, both of Germany, assignors to Bodenseewerk Gerätetechnik GmbH, Überlingen/Bodensee, Germany

Filed Nov. 13, 1995, Ser. No. 557,665

Claims priority, application Germany, Nov. 26, 1994, 44 42 134.6

Int. Cl.[6] F42B *15/01*; F41G *7/00*

U.S. Cl. 244—3.15 **13 Claims**



1. A steering loop for a missile which is guided to a target by means of a seeker head, comprising:

a seeker head having a limited field of view, said seeker head including means for determining a line of sight to a target, said line of sight being defined by look angles about missile-fixed pitch and yaw axes, said seeker head further including means for providing seeker head signals indicative of said look angles,

signal processing means, means for applying said seeker head signals to said processing means, said signal processing means processing said seeker head signals to provide signals determining the motion of the missile, and

steering means for guiding said missile to said target and means for applying said motion determining signals to said steering means,

wherein

said signal processing means include signal influencing means for additionally influencing said motion determining signals so as to maintain the missile within a range of attitudes ensuring that the line of sight is kept always within the field of view of said seeker head.

5,647,561

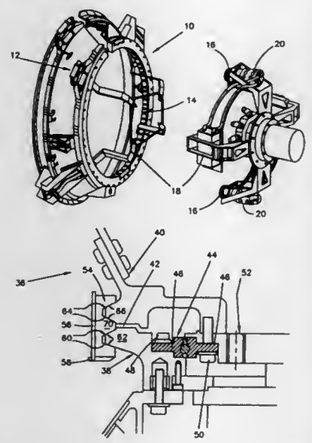
CONTAINMENT ASSEMBLY FOR SPIN TABLE

Wilfred Robinson, and David R. Koehler, both of Glendale, Ariz., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 12, 1993, Ser. No. 105,752

Int. Cl.[6] B64G *1/64*

U.S. Cl. 244—158 R **18 Claims**



1. A system for releasably restraining a first element and a second element in a spaced apart condition, comprising:

a substantially rigid clamp for engaging the first element and the second element in a nonsealing manner, said clamp preventing relative movement between the first element and the second element so as to maintain the first and second elements in the spaced apart condition;

a tensioner for maintaining said clamp in engagement with the first element and with the second element; and

a release for operating said tensioner to remove said clamp from contact with the first element and with the second element.

5,647,562

ELECTRO-PNEUMATIC BRAKE POWER MANAGEMENT SYSTEM

Anthony W. Lumbis, Watertown, and Dale R. Stevens, Adams Center, both of N.Y., assignors to New York Air Brake Corporation, Watertown, N.Y.

Filed Mar. 26, 1996, Ser. No. 621,887

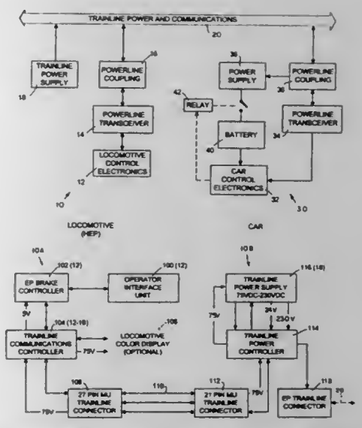
Int. Cl.[6] H02J *7/00*

U.S. Cl. 246—167 R **13 Claims**

1. A train including at least one locomotive and a plurality of cars, each car being serially connected electrically by a trainline to an adjacent car and having a local controller powered by a local battery and controlled by a master controller in said locomotive, wherein:

said local controller monitors the voltage level of its local battery and transmits to said master controller a charging request signal for a battery voltage level below a first value;

said master controller transmits a charging authorization signal to said local controller in response to said request signal; and



said local controller charges said local battery with power from said locomotive upon receipt of said authorization signal.

5,647,563

PIPE CLAMP LOCK

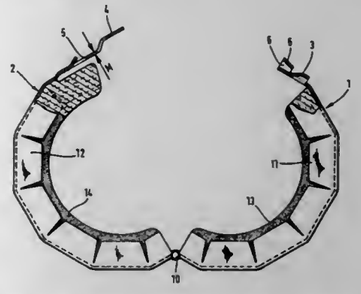
Gebhard Gantner, Nenzing; Franz Dengg, Saarbrücken; Peter Ofner, Feldkirch, all of Austria, and Herbert Münzenberger, Wiesbaden, Germany, assignors to Hilti Aktiengesellschaft, Furstentum, Liechtenstein

Filed Mar. 7, 1995, Ser. No. 399,797

Claims priority, application Germany, Mar. 31, 1994, 44 11 221.1

Int. Cl.[6] F16L *3/08*

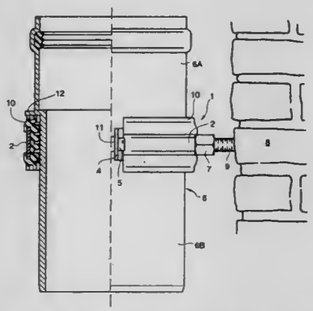
U.S. Cl. 248—74.1 **5 Claims**



1. A pipe clamp having a central axis, a first end region (1) and a second end region (2) each extending in the circumferential direction and each having a free end, an outside surface and an inside surface, said first end region comprises a projecting section (3) extending radially outwardly from the outside surface, said projecting section (3) has a radial dimension from the outside surface decreasing in the circumferential direction towards the free end of said first end region, said second end region comprises a radially flexural circumferentially extending locking strip (4) including a stop face (5) extending generally in the direction of the central axis and facing away from the free end of said second end region, said first and second end regions having an overlapping section extending in the circumferential direction, wherein the improvement comprises that said first end region in said overlapping section has two guides spaced apart in the direction of the central axis (6, 7) preventing radially outward movement of said second end region, wherein each of said guides is formed by a part bent radially outwardly from a side of said first end region and then bent inwardly extending generally parallel with the central axis,

each of said parts having a free end (**8**, **9**) facing one another, said free ends (**8**, **9**) of said parts forming said guides (**6**, **7**) are spaced apart by a dimension (A), said locking strip (**4**) having a width extending generally parallel to the central axis, and the dimension (A) between the free ends (**8**, **9**) of said parts forming said guides (**6**, **7**) is greater than the width of said locking strip (**4**).

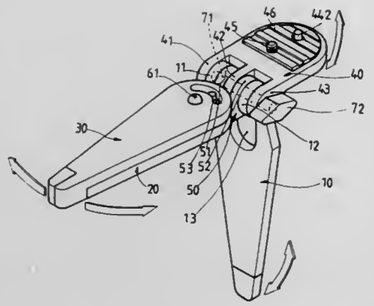
5,647,564
METHOD FOR FASTENING A PIPE IN A VERTICAL POSITION TO A WALL
Jan Van Walraven, Mijdrecht, Netherlands, assignor to J. van Walraven B.V., Mijdrecht, Netherlands
Continuation of Ser. No. 211,517, Jun. 3, 1994, abandoned. This application Jun. 13, 1996, Ser. No. 662,960
Claims priority, application Netherlands, Aug. 5, 1992, 9201410; Mar. 23, 1993, 9300521
Int. Cl.[6] F16L *3/08*
U.S. Cl. 248—74.2 **2 Claims**



2. A pipe clip having a generally circular body for fastening a pipe to a substantially vertically extending wall, said pipe clip comprising a shock absorbing liner of the type comprising a strip of flexible rubber material or similar elastomeric material, having, along at least one of its longitudinal edges, an upstanding edge portion and a flexible portion extending therefrom inwardly to engage around an edge of said circular body of said pipe clip, projections being provided to extend laterally outwardly (=axially when mounted on a pipe clip) from said upstanding edge portion, said laterally outwardly extending projections having a thickness that substantially corresponds to that of said flexible inwardly extending portion and a length (height) which is in the order of twice said thickness, and two spaced projections of the liner are united to form a hollow profile.

5,647,565
TRIPOD
David Wei, 6F, No. 17, Tch Huey St., Taipei, Taiwan
Filed Mar. 7, 1996, Ser. No. 612,334
Int. Cl.[6] F16M *11/38*
U.S. Cl. 248—168 **1 Claim**

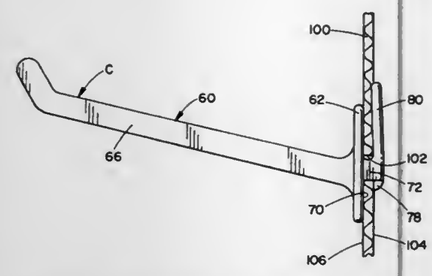
1. A tripod comprising:
a left front leg and a right front leg, both of which are plate-like structures of substantially the same shape and are respectively provided with through holes and curved slots near their upper ends;
a hinge plate consisting of a planar portion and two pivotal portions at one end thereof, each of said pivotal portions having a centrally disposed pivotal hole, one of said pivotal portions having a depression on an outer side thereof, said planar portion of said hinge plate having a through hole matching said through holes of said left and right front legs and a post for passing through said curved slots of said left and right front legs, a screw being passed through said



through holes of said left and right front legs and said hinge plate and locked with a nut to connect the left and right front legs pivotally to the hinge plate;
a rear leg, being a plate-like structure and having a fork in an upper end thereof with two pivotal portions formed at both sides of said fork, each of said pivotal portions being provided with a centrally disposed pivotal hole, one of said pivotal portions having a lug on an inner side thereof for fitting into said depression of said one of said pivotal portions of said hinge plate;
a camera platform, being a plate-like structure and pivotally connected to said rear leg and said hinge plate, said camera platform having two side pivotal portions and a middle pivotal portions formed at a bottom end thereof such that said pivotal portions of said hinge plate and said rear leg may be accommodated in the spaces defined said side pivotal portions and middle portion of said camera platform, said pivotal portions having centrally disposed pivotal holes respectively, one of said side pivotal portions having a polygonal depression formed at an outer side thereof, said camera platform further having a recess formed at an upper side thereof, said recess being provided with a hole and a projection, a support plate made of soft plastics material is fitted onto said recess such that a screw may be used to pass through a first hole in said support plate and said hole of said recess and said projection may project through a second hole in said support plate to lock a photographic apparatus mounted on said support plate of said camera platform;
a pivot rod having a threaded portion for passing through the pivotal holes of said pivotal portions of said camera platform, said rear leg and said hinge plate to join them pivotally together, said pivot rod having a polygonal raised portion behind a head portion thereof for fitting into said polygonal depression on the outer side of said one of said side pivotal portions of said camera platform to prevent said pivot rod from turning; and
a knob having a locking hole in a central portion thereof for receiving an extreme end of said pivot rod so that, after said knob is locked with said pivot rod, said knob and said pivot rod may exert pressure upon both sides of said camera platform to firmly position said camera platform, said rear leg and said hinge plate after their angles have been set.

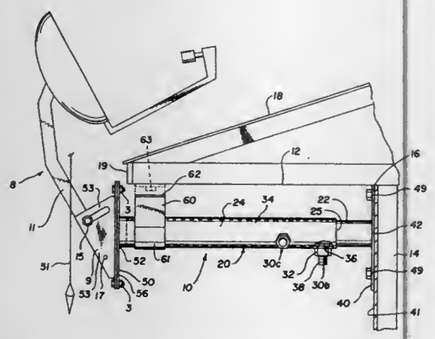
5,647,566
HEAVY DUTY DISPLAY HOOK
Daniel J. Kump, Mentor, Ohio, assignor to Fasteners For Retail, Inc., Cleveland, Ohio
Filed Jan. 20, 1995, Ser. No. 376,110
Int. Cl.[6] A47F *7/00*
U.S. Cl. 248—220.21 **20 Claims**

1. A display hook for insertion into a slot of a panel, comprising:
a front plate which is substantially vertically disposed in use and which has an upper end and a lower end;



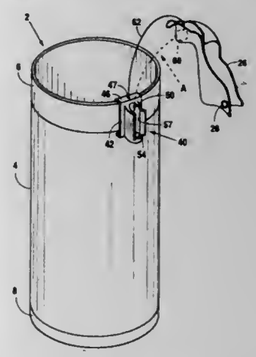
an elongated support member which projects forwardly from and extends upwardly in slightly inclined fashion to said front plate, said support member having a first longitudinal axis;
a bridge extending rearwardly from said plate, said bridge having a second longitudinal axis which is located above said first longitudinal axis of said support, said bridge being adapted to extend through the slot of the panel; and,
a rear plate extending upwardly from said bridge, said rear plate being spaced from and being generally parallel to said front plate wherein said rear plate is thicker than said front plate.

5,647,567
ANTENNA MOUNTING BRACKET
William A. Pugh, Jr., 203 Pamela, and Rocky Longino, 901 Sycamore St., both of Mineola, Tex. 75773-1325
Filed Mar. 7, 1995, Ser. No. 399,837
Int. Cl.[6] H01Q *1/120*
U.S. Cl. 248—237 **19 Claims**



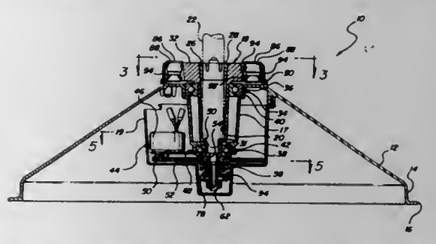
18. Apparatus for mounting a satellite antenna with a base to a building with a sidewall and a roof having an eave, the apparatus comprising:
an adjustable telescoping support with a first end and a second end;
a flangular body portion perpendicular to said telescoping support secured to the first end of said telescoping support for mounting said telescoping support to the sidewall under and adjacent the eave of the building in a generally horizontal position;
an antenna mounting flange secured to the second end of said telescoping support, said antenna mounting flange having means for securing the base of the antenna to the antenna mounting flange;
a brace for attaching said telescoping support to the eave and maintaining said telescoping support in a generally horizontal position adjacent to the eave of the roof; and
a lock mounted on said telescoping support for setting a length of said telescoping support such that the antenna mounting flange extends at least to the outer edge of the eave.

5,647,568
APPARATUS FOR RETAINING PLIABLE MATERIAL
Robert Nettles, Austin, Tex., assignor to Brenco Leisure Products, Austin, Tex.
Filed Nov. 23, 1994, Ser. No. 345,640
Int. Cl.[6] A47G *1/10*
U.S. Cl. 248—316.2 **1 Claim**



1. An apparatus for securing, comprising:
a cylindrical container having a cylindrical internal bore of an inside diameter; and
a partially wrapped ball, of smaller diameter than said inside diameter, wedged into said internal bore;
wherein said container includes a circumferentially disposed expansion slot extending longitudinally along said container; and
wherein said container terminates in a bottom which plugs said internal bore preventing longitudinal passage of said partially wrapped ball entirely through said internal bore of said container.

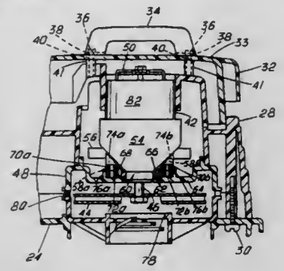
5,647,569
ROTATING CHRISTMAS TREE STAND
Hugh M. Sofy, Troy, Mich., assignor to HMS, Mfg. Co., Troy, Mich.
Filed Dec. 20, 1995, Ser. No. 575,383
Int. Cl.[6] F16M *13/00*
U.S. Cl. 248—522 **27 Claims**



1. A rotating stand assembly (**10**) for a stemmed article such as a Christmas tree (**24**) or a merchandise display rack, said assembly (**10**) comprising:
a base (**12**);
a spindle (**18**) disposed within said base (**12**), said spindle (**18**) including a receptacle (**20**) for receiving and holding a stem in an upright posture;
bearing means (**34**) interconnecting said base (**12**) and said spindle (**18**) for rotatably supporting said spindle (**18**) relative to said base (**12**);
motor means (**44**) for forcibly rotating said spindle (**18**) within said base (**12**);

clutch means (**58**) for automatically disconnecting said motor from said spindle (**18**) in response to a predetermined force applied to said spindle (**18**);
and characterized by said clutch means (**58**) including spring means for establishing said predetermined force required to disconnect said motor means (**44**) from said spindle (**18**).

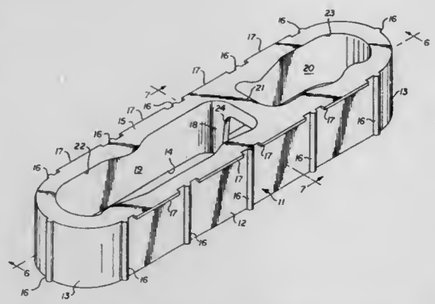
5,647,570
VACUUM CLEANER MOTOR MOUNTING APPARATUS
Robert C. Berfield, Jersey Shore, and Ronald F. Meland, Muncy, both of Pa., assignors to Shop Vac Corporation, Williamsport, Pa.
Division of Ser. No. 230,895, Apr. 21, 1994, abandoned. This application Feb. 9, 1996, Ser. No. 599,117
Int. Cl.[6] A47L *9/00*
U.S. Cl. 248—638 **8 Claims**



1. A vacuum cleaner comprising:
a motor having a drive shaft;
an impeller driven by the motor;
an impeller housing containing the impeller; and
a mounting apparatus for the motor, the mounting apparatus comprising:
a neck surrounding the drive shaft and extending from the motor;
a resilient collar circumferentially surrounding the neck and sized to be received by a cylindrically-shaped raised portion of the impeller housing;
a boss extending from the motor; and
a resilient isolator having an axially extending central bore for receiving the boss and sized to be received by an isolator receiving means;
wherein the resilient isolator provides a sole structural connection between the boss and the isolator receiving means.

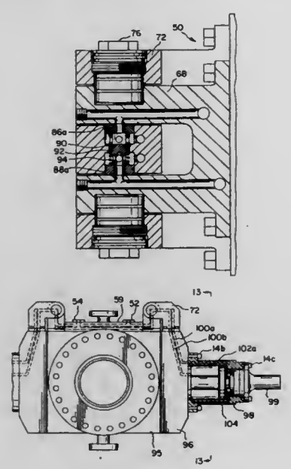
5,647,571
MOLD DEVICE FOR FORMING CONCRETE BORDER STONES
Jack T. Hupp, P.O. Box 1206, Richmond, Tex. 77469
Filed Dec. 29, 1995, Ser. No. 580,642
Int. Cl.[6] B28B *7/24*
U.S. Cl. 249—2 **4 Claims**

1. An apparatus for forming concrete border stones, comprising:
a unitary generally rectangular body having contiguous opposed longitudinal side walls, opposed outwardly curved end walls at each end thereof, an open bottom end, an apertured top wall, and an interior vertical wall extending transversely between said longitudinal side walls disposed closer to one of said opposed end walls than the other and of the same height as said side walls and said end walls, said contiguous walls joined together and concavely rounded at their juncture to form a smooth convex rounded exterior surface on the border stone configuration formed thereby;
said longitudinal side walls, end walls, and interior vertical wall circumscribing a longer generally rectangular cavity and a longitudinally adjacent shorter generally rectangular cavity;



generally rectangular openings in said top wall defining a longer generally rectangular curvilinear opening at an upper end of said longer cavity and a longitudinally adjacent shorter generally rectangular curvilinear opening at an upper end of said shorter cavity; and
an opening through a lower portion of said transversely extending vertical wall, said opening adjoining a lower portion of adjacent ends of said longer generally rectangular cavity and said longitudinally adjacent shorter generally rectangular cavity together.

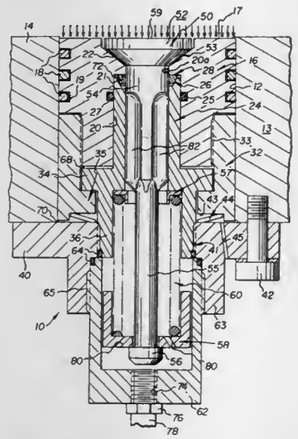
5,647,572
LOW PROFILE AND LIGHTWEIGHT HIGH PRESSURE BLOWOUT PREVENTER
Charles D. Morrill, Humble, Tex., assignor to Hydril Company, Houston, Tex.
Division of Ser. No. 372,397, Jan. 13, 1995. This application Feb. 9, 1996, Ser. No. 599,245
Int. Cl.[6] B21B *33/06*
U.S. Cl. 251—1.3 **4 Claims**



1. A ram-type blowout preventer, comprising
a body with a central vertical opening for allowing the presence of drilling or production tubing therethrough, said body also including opposing guideways transverse to said vertical opening for the operation of hydraulically powered rams to close and open said vertical opening,
two bonnets bolted to said body, each of said bonnets including a guideway extension contiguously in line with a respective one of said guideways of said body for accommodating the driven end of a respective one of said rams,

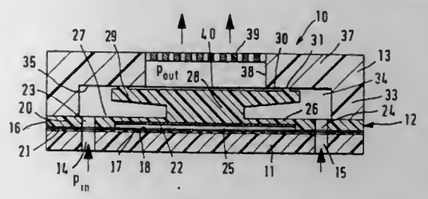
a respective ram operating in each of said guideways of said body and contiguous guideway extensions of one of said bonnets, each of said rams including a motivating piston surrounded by a pressure axis-positionable-and-radially-expansible metallic sealing ring for sealing against pressure leaks through gaps between said body and one of said bonnets,
a hinge plate for supporting at least one of said bonnets on said body to permit said supported bonnet to be unbolted and swung apart from said body,
said hinge plate including a manifold with a positionable control piston for balanced application of closing and opening hydraulic fluid to ports in said bonnets leading to said motivating pistons of said rams,
said hinge plate also including a single spring for applying sealing pressure to first and second seals leading from opposing sides of said manifold to respective passageways in said hinge plate, the application of either closing or opening hydraulic fluid pressure to said manifold applying additional positive sealing pressure to both said first and second seals, and
said hinge plate being replaceable.

5,647,573
HIGH PRESSURE FLUID VALVE ASSEMBLY
Alfred Charles Maynard, Pittsfield, Mass., assignor to Martin Marietta Corporation, Bethesda, Md.
Filed Nov. 13, 1995, Ser. No. 556,674
Int. Cl.[6] F16K *35/00;51/00*
U.S. Cl. 251—94 **7 Claims**



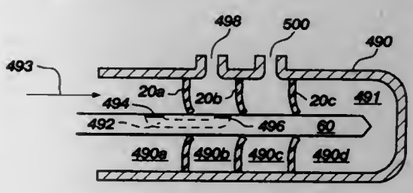
1. A fluid valve assembly comprising:
a valve block for sliding receipt in a through-hole in a wall of a vessel, the valve block including a through-bore terminating in a valve seat facing an interior of the vessel and a face surface surrounding the valve seat;
a valve including a head and a stem extending through the through-bore in the valve block;
a closing spring acting on the valve to bias the valve head to a closed position in seating engagement with the valve seat;
a locking sleeve slidingly received in the through-bore of the valve block in surrounding relation with the valve stem;
a bracket fixedly mounting the locking sleeve to the vessel wall; and
a locking member, positioned between the valve block and the locking sleeve, being compressed into clamping engagement with the valve stem by movement of the valve block in response to a force acting on the valve block face surface produced by high fluid pressure in the vessel.

5,647,574
MULTI-LAYER MICROVALVE HAVING INTEGRAL CLOSURE, MEMBRANE AND PRESSURE COMPENSATING SURFACE FORMING A MIDDLE LAYER
Michael Mettner, Ludwigsburg; Armin Schuelke, Schwieberdingen; Christian Doering, Stuttgart, and Thomas Schittny, Steinheim-Murr, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
PCT No. PCT/DE93/00493, § 371 Date Dec. 16, 1994, § 102(e) Date Dec. 16, 1994, PCT Pub. No. WO94/00696, PCT Pub. Date Jan. 6, 1994
PCT Filed Jun. 8, 1993, Ser. No. 360,652
Claims priority, application Germany, Jun. 26, 1992, 42 21 089.5
Int. Cl.[6] F16K *31/02*
U.S. Cl. 251—129.06 **14 Claims**



1. A microvalve, comprising a plurality of layers arranged one above the other and connected to one another; two pressure medium connections for feeding and discharging a pressure medium; a valve seat arranged between said connections; a closure member cooperating with said valve seat and integrated in one of said layers, said closure member adjoining a space which is acted upon by the pressure medium and having a pressure-compensating surface; and a pressurized membrane arranged so that said pressure compensating surface acts counter to said pressurized membrane, said closure member, said membrane and said pressure compensating surface being formed as a plastic component which is a middle layer, said closure member, said membrane and said pressure compensating surface being formed as an integral plastic component which forms said middle layer.

5,647,575
VOLUMETRIC SHAFT/VALVE
Stephen C. Jacobsen, and Clark C. Davis, both of Salt Lake City, Utah, assignors to Sarcos Group, Salt Lake City, Utah
Division of Ser. No. 157,693, Nov. 23, 1993. This application Jun. 6, 1995, Ser. No. 470,034
Int. Cl.[6] F16K *3/26*
U.S. Cl. 251—325 **3 Claims**



1. A valve comprising:
a generally elongate housing with interior walls defining an interior cavity therein;
a sheet of resilient material, with an aperture formed therein, disposed in the cavity and dividing it into first and second compartments, having a perimeter attached to the interior walls of the cavity, extending inwardly therefrom and being unsupported except where the perimeter is attached to the interior walls to enable volume of the first and the second

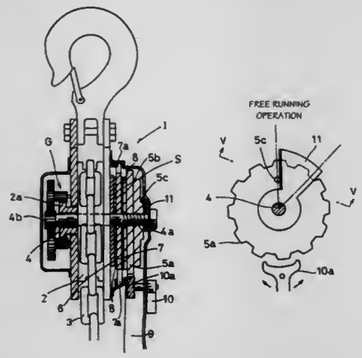
compartments to vary in response to pressure changes within said first and second compartments;
an inlet leading through the housing into the first compartment;
an outlet leading through the housing into the second compartment;
an elongate shaft disposed within and aligned with the cavity and extending through the aperture in the sheet, said shaft being adapted for reciprocating movement within the cavity; and
an elongate interior passage extending lengthwise through the shaft, and including first and second openings which enable communication between the passage and the cavity, the openings being spaced from each other such that when the shaft is positioned so that the first opening is located in the first compartment, the second opening is located in the second compartment, to thereby provide fluid communication between the first and the second compartments.

5,647,576

CHAIN LEVER HOIST

Iwao Kataoka, Hyogo, Japan, assignor to H.H.H. Manufacturing Co., Osaka, Japan

Division of Ser. No. 448,647, May 24, 1995, Pat. No. 5,538,222, which is a continuation of Ser. No. 64,202, May 20, 1993, abandoned. This application Jun. 18, 1996, Ser. No. 665,461
Claims priority, application Japan, Aug. 17, 1992, 4-241191
Int. Cl.[6] B66D *1/14;1/30*
U.S. Cl. 254—352 **4 Claims**



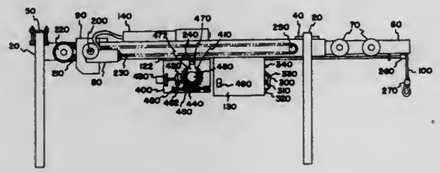
1. A chain lever hoist comprising:
a main framework;
a threaded spindle rotatably mounted to said main framework;
a load sheave fitted to said main framework on said spindle such that said load sheave rotates along with said spindle;
a plurality of reduction gears interconnecting said spindle to said load sheave;
a first, fixed friction plate secured to said spindle;
a hub mechanism adjustably mounted on said spindle and including a switch gear for switching the hub mechanism between a winding and a free running position;
a ratchet gear and a plurality of brake linings fitted onto said spindle;
a pair of diametrically opposed ratchet pawls fitted to said main framework such that they engage said ratchet gear; and
a position locking mechanism;
such that said hub mechanism is in the winding position, when said hub mechanism is displaced on said spindle, in this position said ratchet gear and said brake linings are clamped between said fixed friction plate and said hub and said ratchet gear engages said ratchet pawls such that said spindle turns and the load sheave is rotated; and
said, hub mechanism is in the free running position when said hub mechanism is held in a prescribed lock position relative to said spindle by said locking mechanism engaging said switch gear so that a space is created between said hub mechanism and said fixed friction plate and no contact pressure is applied on said ratchet gear or said brake linings thereby allowing said load sheave to spin freely.

5,647,577

BRAKE APPARATUS FOR AN EXTENDABLE LIFT APPARATUS

Yakov Z. Feldman, 7311 Kester Ave. #3, Van Nuys, Calif. 91405, and Zeylik Y. Feldman, 941 No. Sierra Bonita #2, Los Angeles, Calif. 90046

Continuation-in-part of Ser. No. 271,198, Jul. 4, 1994, Pat. No. 5,486,082. This application Nov. 2, 1995, Ser. No. 552,144
Int. Cl.[6] B66D *1/00*
U.S. Cl. 254—378 **9 Claims**



1. A braking apparatus for a winch, comprising:
gear means, coupled to a motor shaft, the motor shaft rotating to turn a winch for winding and unwinding a cable, wherein the gear means further comprises a sleeve and a sprocket, the sleeve having an outer contact surface, an inner circumference substantially the same as the outer circumference of the motor shaft for receiving the motor shaft therein, and a plurality of channels extending axially along the outer contact surface of the sleeve, the sprocket having teeth spaced apart along the outer circumference thereof and having an inner surface engaging the sleeve, the inner surface of the sprocket having notches, and the notches having a gradual compressing side and an engaging side;
a latch, pivotably coupled to engage the gear means, for arresting the movement of the gear means thereby restraining the rotation of the motor shaft; and
a solenoid, coupled to the latch, for engaging and disengaging the latch to allow the latch to arrest the movement of the gear means;
wherein the gear means allows the rotation of the motor shaft in a first direction for winding the cable when the latch is engaged and opposes the movement of the motor shaft in a second direction for unwinding the cable when the latch is engaged.

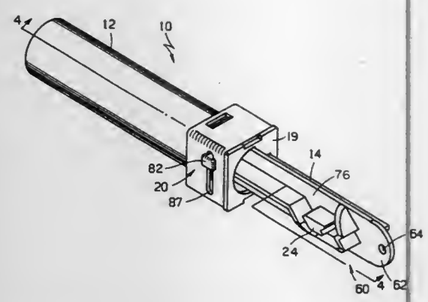
5,647,578

LATCH MECHANISM

Steven L. Bivens, Kankakee, Ill., assignor to Illinois Tool Works Inc., Glenview, Ill.

Division of Ser. No. 368,152, Dec. 29, 1994, Pat. No. 5,518,223. This application Jan. 29, 1996, Ser. No. 593,724
Int. Cl.[6] B60G *11/56;* **F16F** *9/50;* **F05F** *3/00*
U.S. Cl. 267—34 **20 Claims**

1. In combination, a latch mechanism and a piston-housing unit, comprising:
a housing having a closed end and an open end, a substantially longitudinal axis defined between said closed end and said open end, and a substantially linear elongated slot defined within a sidewall portion of said housing and extending in a transverse direction with respect to said longitudinal axis of said housing;



a piston movably disposed in a reciprocal manner within said housing and substantially along said substantially longitudinal axis between a first retracted inward position with respect to said housing and a second extended outward position with respect to said housing, and including at one end thereof a piston rod which projects outwardly from said open end of said housing;
means mounting said piston within said housing such that said piston is biased from said first retracted inward position with respect to said housing toward said second extended outward position with respect to said housing;
first latch means provided upon said piston rod for latching said piston rod at said first retracted inward position with respect to said housing; and
second latch means, having a first portion slidably mounted upon said housing so as to be substantially linearly movable in a reciprocal manner, in said transverse direction with respect to said longitudinal axis of said housing, within said substantially linear elongated slot defined within said sidewall portion of said housing, and a second portion releasably engageable with said first latch means of said piston rod, for releasably latching said piston rod at said first retracted inward position with respect to said housing when said second portion of said second latch means is operatively engaged with said first latch means of said piston rod, and for permitting said piston rod to move from said first retracted inward position with respect to said housing to said second extended outward position with respect to said housing when said second portion of said second latch means is disengaged from said first latch means of said piston rod.

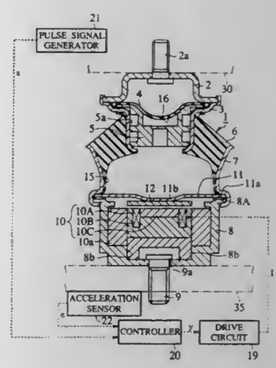
5,647,579

CONTROL TYPE VIBRO-ISOLATING SUPPORT

Shigeki Satoh, Chigasaki, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 27, 1996, Ser. No. 622,414
Claims priority, application Japan, Mar. 31, 1995, 7-076389
Int. Cl.[6] F16F *13/00*
U.S. Cl. 267—140.14 **20 Claims**

1. A control type vibro-isolating support, comprising:
a source of control vibration which is interposed between a vibrator and a support body, and which can generate control vibration;
reference signal generation means for detecting the state of the vibration being generated by said vibrator, and for outputting a reference signal;
residual vibration detection means for detecting residual vibration on said support body side; and for outputting a residual vibration signal;
control means for generating a drive signal for driving said source of control vibration on the basis of said reference signal and said residual vibration signal so as to damp the vibration on said support body side;
state detection means for detecting the state of said vibro-isolating support; and



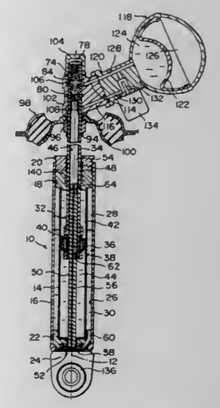
abnormality judgment means for judging if there is abnormality on the basis of the detection result of said state detection means.

5,647,580

SELF-PUMPING TYPE SHOCK ABSORBER WITH MEANS FOR VARIABLY CONTROLLING DAMPING FORCE

Shuuichi Buma, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Nagoya, Japan

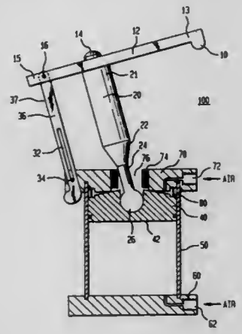
Filed Dec. 26, 1995, Ser. No. 578,238
Claims priority, application Japan, Jan. 31, 1995, 7-34627
Int. Cl.[6] B60G *17/04*
U.S. Cl. 267—64.17 **10 Claims**



1. A self-pumping type shock absorber comprising:
a shock absorbing cylinder-piston assembly having a cylinder having a bore and a piston, said piston including a disk portion and a rod portion and being slidably engaged in said cylinder bore at said disk portion to define first and second chamber spaces for receiving a working fluid therein, said rod portion extending through said second chamber space out of said cylinder bore;
means for providing a first throttle passage for applying a throttling action to the working fluid flowing from said first chamber space to said second chamber space;
means for providing a second throttle passage for applying a throttling action to the working fluid flowing from said second chamber space to said first chamber space;

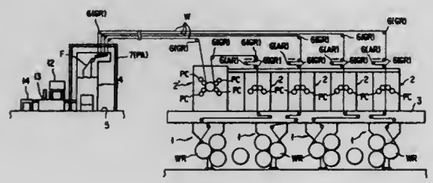
a pumping cylinder-piston assembly having a first cylinder having a bore and a piston slidably engaged in said pumping cylinder bore to define a pumping chamber for the working fluid;
means for mechanically associating said pumping cylinder-piston assembly with said shock absorbing cylinder-piston assembly such that said pumping cylinder and said pumping piston are reciprocated relative to one another to increase and decrease the volume of said pumping chamber in synchronization with a reciprocating relative motion of said shock absorbing cylinder-piston assembly;
a reservoir for storing the working fluid;
means for providing a first connection passage for connecting said pumping chamber with said reservoir, including a first check valve for allowing the working fluid to flow only from said reservoir to said pumping chamber;
means for providing a relief passage for connecting any optional portion of working fluid space on an outlet side of said first check valve with said reservoir when said shock absorbing cylinder-piston assembly expands beyond a predetermined expansion limit so that a part of the working fluid pumped out of said reservoir beyond a predetermined amount is returned to said reservoir;
an accumulator for accumulating a variable volume of the working fluid, said accumulator having means for applying an elevated pressure to the working fluid accumulated therein;
means for providing a second connection passage for connecting said pumping chamber with said accumulator via neither of said first and second chamber spaces, including a second check valve for allowing the working fluid to flow only from said pumping chamber to said accumulator;
means for providing a third connection passage for connecting said accumulator with said first or second chamber space; and
a variable throttle means for variably changing the through rate of said third connection passage.

5,647,581
PNEUMATIC CYLINDER CLAMPING DEVICE
Daryl Richard Corle, Henrico County, Va., assignor to Lucent Technologies Inc., Murray Hill, N.J.
Filed Sep. 12, 1995, Ser. No. 527,239
Int. Cl.[6] B23Q *3/08*
U.S. Cl. 269—32 **13 Claims**



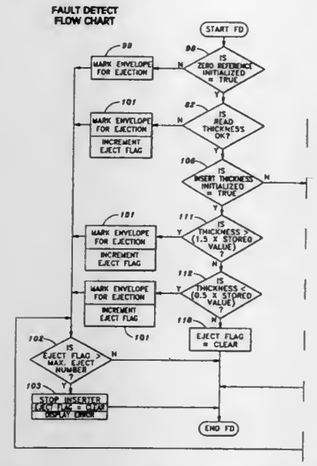
1. A clamping device which provides access to a work area when in an unclamped position, comprising:
a base;
an open cylinder supported by the base;
a housing, defining an aperture, supported by the cylinder;
a piston, adapted to fit within the cylinder, having a connection means;
a shaft, one end of which is adapted to fit within the connection means;
a clamp, having a first end and a second end, supported by the shaft;
a guide, connected to the second end of the clamp;
a slide, defined by the guide, which extends along a portion of the guide;
a pin, supported by the housing, adapted to fit within the slide thereby restraining the motion of the guide;
a compression spring, adapted to fit within the cylinder, being interspersed between the housing and the piston, thereby biasing the piston away from the housing;
an inlet, defined by the base, adapted to direct a compressed gas into the cylinder;
said shaft further including
first section, having a first diameter, being attached to the clamp;
a conical transition section, attached to the first section, having a beginning diameter which is equal to the first diameter of the first section, and a second diameter:
third section, attached to the conical transition section, having a diameter which is equal to the second diameter of the conical transition section: and
an end section, attached to the third section, adapted to be rotatably connected to the connection means of the piston.

5,647,582
ROTARY PRESS WITH A PLURALITY OF ROLLS OF PAPER AND PRINTING METHOD USING SUCH A ROTARY PRESS
Noriyuki Shiba, Tokyo, Japan, assignor to Kabushiki Kaisha Tokyo Kikai Seisakusho, Japan
Filed Oct. 10, 1995, Ser. No. 541,530
Claims priority, application Japan, Aug. 11, 1995, 7-205907
Int. Cl.[6] B41F *13/58*
U.S. Cl. 270—8 **36 Claims**



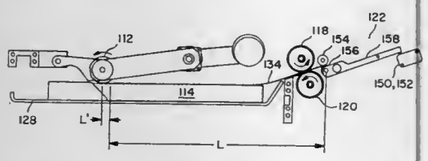
1. A rotary press using a plurality of rolls of paper, comprising:
a plurality of paper feed stations;
a plurality of printing stations that are at least equal in number to said paper feed stations;
a single folding station;
a paper path, in which continuous sheets of paper respectively drawn out of said rolls of paper respectively loaded onto said paper feed stations are guided, as they are overlapped, onto said folding station via said printing stations respectively corresponding to said paper feed stations and are cut in said folding station, and the cut sheets of paper are folded up as prints, the latter being discharged towards an instrument in a downstream stage;
said folding station being physically separated from said printing stations and said paper feed stations and located at a different installation position than an installation position of said printing stations and said paper feed stations;
first drive source means for operating said folding station;
second drive source means provided separately from said first drive source means for operating said printing stations and said paper feed stations; and
a control means for controlling both said first drive source means and said second drive source means so that said folding station and said printing stations may, in a constructional unit of the rotary press, be operated in a matched state.

5,647,583
APPARATUS AND METHOD FOR SINGULATING SHEETS AND INSERTING SAME INTO ENVELOPES
Jonathan D. Emigh; Raymond P. Porter, both of Somerset, and Motaz M. Qutub, Rancho Cordova, all of Calif., assignors to North American Capital L.L.C., San Diego, Calif.
Filed Oct. 6, 1995, Ser. No. 540,384
Int. Cl.[6] B65H *39/00*
U.S. Cl. 270—52.04 **21 Claims**



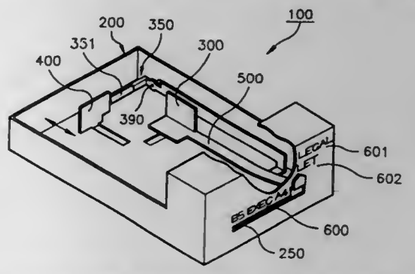
1. An apparatus for gripping an individual piece of sheet material, comprising:
a. an elongated picker arm, having a foot portion extending therefrom;
b. a gripper jaw, said jaw being pivotally mounted to said arm and having a bite portion;
c. drive means attached to said jaw, for moving said jaw alternatively, from an open position with said bite portion remote from said foot, to a closed position with said bite portion adjacent said foot and engaging the sheet material therebetween;
d. a sensor in said foot, said sensor being responsive to a relative proximity between said jaw and said sensor, and producing an electrical output signal proportional to said proximity and corresponding to a thickness of said engaged sheet.

5,647,584
SHEET FEEDER
Cherilyn M. Beaudreau, Satellite Beach; David C. Bailey, Cocoa Beach; Jon E. Holmes, West Melbourne, and Warren H. Miller, Palm Bay, all of Fla., assignors to Harris Corporation, Melbourne, Fla.
Filed Nov. 23, 1994, Ser. No. 346,265
Int. Cl.[6] B65H *3/52;3/56*
U.S. Cl. 271—122 **16 Claims**



1. A sheet feeder for providing a sheet from a stack of sheets into a sheet path, said sheet feeder comprising:
means for compelling sheets from the stack of sheets into the sheet path;
first and second rollers for urging a sheet therebetween along the sheet path, each of said first and second rollers comprising a plurality of annular spaced-apart sheet contact O-rings for contacting a sheet in the sheet path, said sheet contact O-rings on said first roller being aligned with spaces between said sheet contact O-rings on said second roller,
said first roller sheet contact O-rings for providing a coefficient of friction between said first roller sheet contact O-rings and the sheet between said rollers that is less than a coefficient of friction provided by said second roller sheet contact O-rings and a sheet between said rollers; and
means for rotating said first and second rollers in the same direction, whereby in the event two sheets are in the sheet path between said two rollers the coefficients of friction cause only the sheet adjacent said second roller to be urged along the sheet path.

5,647,585
PAPER CASSETTE
Sang-Won Cheong, Seoul, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed Jun. 9, 1995, Ser. No. 488,951
Claims priority, application Rep. of Korea, Jun. 24, 1994, 14658/1994
Int. Cl.[6] B65H *1/00*
U.S. Cl. 271—171 **4 Claims**



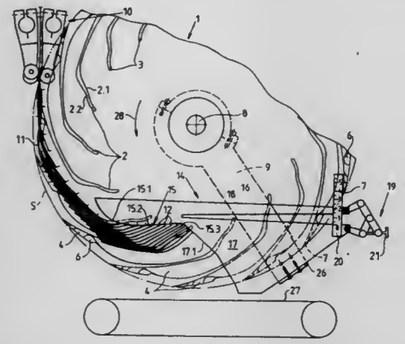
1. A paper cassette for holding papers of different sizes to be fed into an image recording system in a paper feeding direction, said paper cassette comprising:
a cassette body for containing paper of different sizes to be fed into the image recording system, said cassette body having a paper size display panel affixed on an exterior of a front wall to provide a visual display of different sizes of paper being fed into the image recording system, a first slit formed on the front wall extending in a width direction perpendicular to said paper feed direction, and a second slit integrally formed on a distal end of said first slit extending vertically from said first slit;
a width regulation plate movably installed in said cassette body, for regulating placement of paper of different widths in said width direction perpendicular to said paper feed direction;
a length regulation plate movably installed in said cassette body, for regulating placement of paper of different lengths in said paper feed direction;
an indicator extended from said width regulation plate through said first slit formed on the front wall of said cassette body, for indicating the size of paper being fed into the image recording system via said paper size display panel when said width regulation plate and said length regulation plate regulate the paper of different widths and lengths, respectively;
a hinge fixed to an interior of a side wall of said cassette body; and
a lever coupled to said hinge, connected to said length regulation plate and said indicator, for enabling regulation of paper of different lengths in said paper feed direction, for enabling said

indicator to control regulation of said paper of different lengths in said paper feed direction when said indicator extending through said first slit moves vertically in an upward and downward direction through said second slit.

5,647,586
METHOD AND APPARATUS FOR DECELERATING A FLAT PRODUCT

Michael A. Novick, New Durham, and Charles H. Dufour, Durham, both of N.H., assignors to Heidelberg Harris Inc., Dover, N.H., and Heidelberger Druckmaschinen AG, Heidelberg, Germany

Filed Dec. 11, 1995, Ser. No. 570,432
Int. Cl.[6] B65H *29/68;29/20*
U.S. Cl. 271—182 **19 Claims**



9. Device for delivering flat printed products, such as signatures, comprising:

a plurality of fan wheels rotatably mounted on a fan wheel shaft in spaced relation to one another in an axial direction, said fan wheels each having a plurality of fan pockets for receiving signatures emerging from a transporting device; and

at least one adjustably mounted deceleration device having a curvature for diving between said fan wheels and for providing a deceleration of said signatures upon rotation of said fan wheels, said curvature further including a curvature section for decelerating said signatures against a surface of said fan pockets to strip said signatures from said fan pockets.

5,647,587
DOCUMENT SET ACCUMULATOR HAVING GUIDE ELEMENTS WITH COMPRESSIBLE O-RINGS FOR TOOL-LESS ADJUSTMENT

Michael Smart, Easton; Mark Ricker, Tatamy, both of Pa., and Leonard Neifert, Apex, N.C., assignors to Bell & Howell Phillipsburg Company, Allentown, Pa.

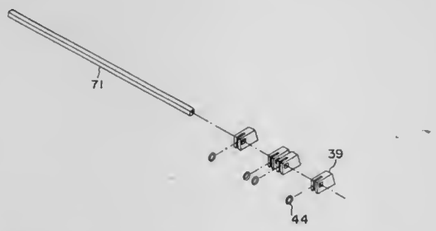
Filed Oct. 18, 1995, Ser. No. 544,806
Int. Cl.[6] B65H *43/04*
U.S. Cl. 271—223 **5 Claims**

1. A document accumulator capable of tool-less adjustment to accommodate a plurality of paper sizes, comprising:

at least one cross-bar means laterally oriented across a paper path through said accumulator;

at least one ramp means mounted to said cross-bar means for contacting and guiding documents transported through the accumulator;

at least one connection means for slidably connecting said ramp means to said cross-bar means, said connection means being operatively connected to said ramp means and having a passageway therethrough for receiving said cross-bar means with



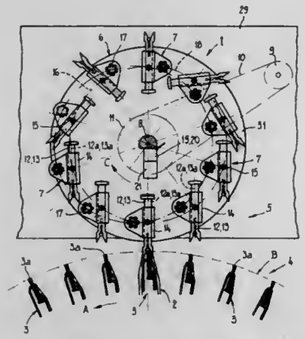
sufficient clearance to enable said connection means to be rocked about said cross-bar means;

at least one compressible O-ring means inserted between said cross-bar means and said connection means for imparting a first amount of friction therebetween when said connection means is in a first position, and for imparting a second, lower amount of friction therebetween when said connection means is rocked into a second position, whereby said ramp means can be translated along said cross-bar means without the use of a tool.

5,647,588
PROCESS AND DEVICE FOR MEASURING THE THICKNESS OF PRINTED PRODUCTS ON MOVING SUPPORTS

Hans-Ulrich Stauber, Grut, and Baptist Gruninger, Russikon, both of Switzerland, assignors to Ferag AG, Hinwil, Switzerland

Filed Oct. 28, 1994, Ser. No. 331,228
Claims priority, application Switzerland, Oct. 29, 1993, 3269/93
Int. Cl.[6] B65H *7/02*
U.S. Cl. 271—259 **18 Claims**



3. A device for measuring the thickness of printed products comprising:

means including a plurality of supports for moving said printed products past a measuring station, with the printed products being individually supported upon respective ones of the supports;

a first and a second fixed sensor mounted at said measuring station;

said first sensor being positioned to detect a first length characteristic of the distance between said first sensor and each support as each support moves past said measuring station, and which serves as a reference point;

said second sensor being positioned to detect a second length characteristic of the distance between said second sensor and an upper side of each printed product as each printed product moves past said measuring station, said upper side being the side facing away from its associated support;

an evaluation unit which evaluates said first and second length characteristics supplied from said first and second sensors and determines a difference between said length characteristics for each printed product which difference corresponds to the thickness of the printed product;

at least one scanning unit comprising a first and second sensing element, said first sensing element being associated with said first sensor and said second sensing element being associated with said second sensor;

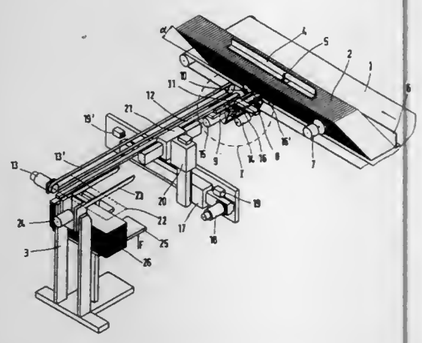
means mounting said one scanning unit so as to move along with at least one of said supports past said measuring station, and such that said first sensing element contacts said at least one support during the measuring of said printed products and said second sensing element contacts the upper side of said printed products; and

said first and second sensing elements each comprising a measuring face which faces respective ones of said first and second sensors as said one scanning unit moves past said measuring station, wherein the distances between said measuring faces and respective associated sensors are measured to calculate the thickness of the printed products.

5,647,589
FULLY AUTOMATIC DEVICE FOR REMOVAL OF SPOT SAMPLES

Fritz Kurandt, Berlin, Germany, assignor to System Kurandt GmbH, Germany

Filed Jan. 22, 1996, Ser. No. 589,340
Claims priority, application Germany, Jan. 20, 1995, 195 02 676.4
Int. Cl.[6] B65H *3/24;3/26*
U.S. Cl. 271—280 **9 Claims**

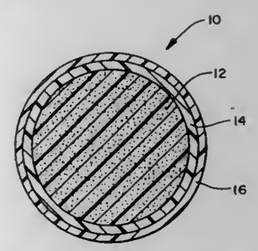


1. A fully automatic apparatus for removing pre-folded cartons and similar flat articles from a moving stack of cartons in a scale-like configuration, comprising a conveyor belt, upon which the endless stack is moved in a scale-like oblique position at varying speeds, a vertically-adjustable hold-down bar defining the stack height, a sensor scanning the stack height, at least one optical measuring apparatus for measuring the position at any moment of the back of a carton, a gripper located on a movable gripper carriage for removal of a spot-check sample, the angular position of the gripper being adjustable with respect to the helix angle of the scale-like configuration of the stack of cartons, wherein the movable gripper carriage for removal of spot samples is moved in dependence on the speed of the conveyor belt transporting the pre-folded cartons, a counter-bar for preventing undesirable deformation of the stack, and a magazine for receiving the removed spot-check sample.

5,647,590
GAME BALL FOR URBAN USE

Alan D. Walker, Somers, Conn., and Ron LaLiberty, Dudley, Mass., assignors to Lisco, Inc., Tampa, Fla.

Filed Nov. 21, 1994, Ser. No. 342,565
Int. Cl.[6] A63B *37/06;37/12*
U.S. Cl. 473—601 **20 Claims**



1. A game ball having sufficient durability to withstand prolonged use on hard pavement, comprising:

a foam core formed from a mixture of a polyol and an isocyanate, the core having a compression of 0.06–0.07 inch when subjected to a force of 10 lbs. and a coefficient of restitution at 88 feet per second of less than 0.45, and

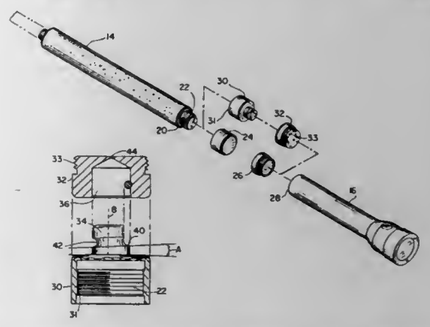
a molded cover formed over the core, said cover including simulated stitching and having an average abrasion weight loss of less than 0.1% when subject to the Laboratory Test Procedure for Abrasion Resistance

the ratio of the coefficient of restitution of the ball to the coefficient of restitution of the core being in the range of 0.90–0.99.

5,647,591
RAPID MOUNT CONNECTING SYSTEM FOR BATON ACCESSORIES

Kevin L. Parsons, Appleton, Wis., assignor to Armament Systems and Procedures, Inc., Appleton, Wis.

Filed Apr. 13, 1995, Ser. No. 421,088
Int. Cl.[6] A63B *15/02;* **F21L** *1/00*
U.S. Cl. 463—47.4 **13 Claims**



1. An accessory connector in combination with a law enforcement baton and an accessory, the accessory connector adapted for mounting an end of the accessory on an end of the law enforcement baton, said connector comprising:

a. a first component adapted to be secured to one of said ends and having a first locking element, wherein said first locking element comprises a socket, said socket having a radial bar disposed therein; and

b. a second component adapted to be secured to the other of said ends and having a second, compatible locking element, wherein said second locking element comprises a pin adapted

to be received in said socket such that together the pin and socket define a locking mechanism, wherein said pin is defined by an axis extending along the length of the pin and said pin has a channel adapted to receive the bar, wherein said channel is on a spiraling incline relative to the axis of the pin, and

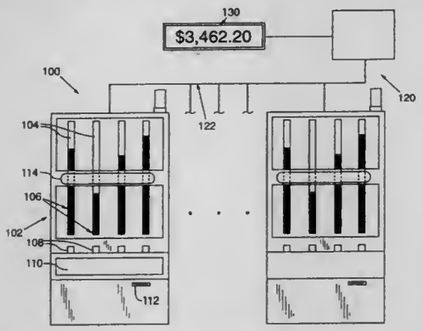
wherein said second locking element may be selectively secured and unsecured in an interlocking relationship with said first locking element to rapidly connect and disconnect baton and the accessory.

5,647,592

METHOD, APPARATUS AND PULL-TAB GAMING SET FOR USE IN A PROGRESSIVE PULL-TAB GAME

Jay E. Gerow, Bothell, Wash., assignor to ZDI Gaming, Everett, Wash.

Filed Aug. 2, 1996, Ser. No. 692,014
Int. Cl.[6] A63F *3/00*
U.S. Cl. 273—139 **25 Claims**



12. A progressive pull-tab card game system comprising:

a pull-tab dispensing unit, configured to dispense pull-tab cards;

a jackpot display; and

a control system operatively connected to the dispensing unit to monitor the quantity of pull-tab cards dispensed and configured to compute a jackpot value dependent on that quantity, the control system further being operatively connected to the jackpot display to cause it to display the computed jackpot value as pull-tabs are dispensed.

5,647,593

EASY CHESS-LIKE GAME

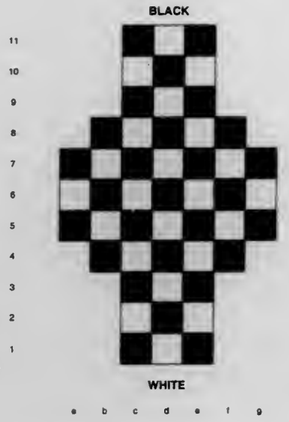
Balkrishna Dattatray Kamat, and Asha Balkrishna Kamat, both of 24 Faulkner St, Blackburn South, Victoria 3130, Australia

PCT No. PCT/AU95/00101, § 371 Date Jul. 15, 1996, § 102(e) Date Jul. 15, 1996, PCT Pub. No. WO95/23635, PCT Pub. Date Sep. 8, 1995
PCT Filed Feb. 27, 1995, Ser. No. 669,535
Claims priority, application Australia, Mar. 4, 1994, PM4211; Nov. 15, 1994, 78831/94
Int. Cl.[6] A63F *3/02*
U.S. Cl. 273—261 **11 Claims**

1. A chess-like game for two players, comprising a game board (**20**) and a plurality of playing pieces,

said game board comprising alternate light and dark squares arranged adjacently in 7 vertical columns and 11 horizontal rows, each of said vertical columns comprising a minimum of 3 and a maximum of 11 squares, each of said horizontal rows comprising a minimum of 3 and a maximum of 7 squares,

said game board comprising two square areas consisting of 9 squares each, designated as Safety zones, at the two ends of



the said game board and an area consisting of 31 squares, located between the said Safety zones, comprising a Waiting zone and a Combat zone having therein a Neutral zone, said Waiting zone comprising squares designated as Night-spots and Bishop-gates,

said playing pieces comprising one set of light colored pieces and a set of dark colored pieces, adapted to be arranged within said Safety zones in the initial position for the game, each set comprising one Queen, one Prince, one Bishop, one Knight and one Rook,

said Prince comprising means for indicating a choice of Rook, Bishop or Knight moves,

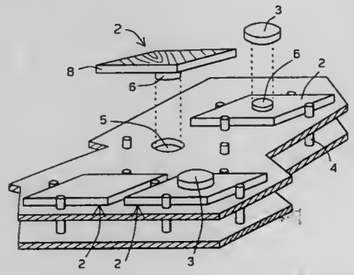
said playing pieces not exceeding in number the number of squares in said Safety zones.

5,647,594

VARIABLE GAME BOARD HAVING REVERSIBLE PAWNS

Jean Pesquié , 15 Rue Michel, 76130 Mont Saint Aignan, France

Filed Mar. 29, 1995, Ser. No. 412,459
Claims priority, application France, Mar. 30, 1994, 94 03764
Int. Cl.[6] A63F *3/00*
U.S. Cl. 273—282.1 **8 Claims**



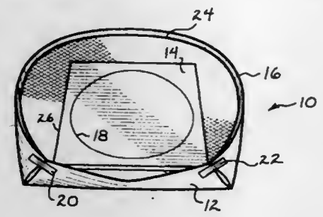
1. A game board comprised of a frame having a plurality of cells each adapted to receive and hold a reversible pawn in either of its reversible positions, wherein is included a plurality of said pawns, each of said pawns having a protrusion which shows in one of said positions and is concealed in the other of said positions, and wherein is included a plurality of caps adapted to cover said protrusions on said pawns when said protrusions are showing and wherein said cells are bounded by spindles.

5,647,595

MARBLE MAT

David F. Knickerbocker, 16202 Buccaneer La. #111, Houston, Tex. 77062

Filed Apr. 1, 1996, Ser. No. 625,195
Int. Cl.[6] A63F *9/00*
U.S. Cl. 273—118 R **12 Claims**



1. An apparatus for playing marbles comprising:

a first layer of foam material, said first layer having a perimeter for retaining marbles therewithin; and

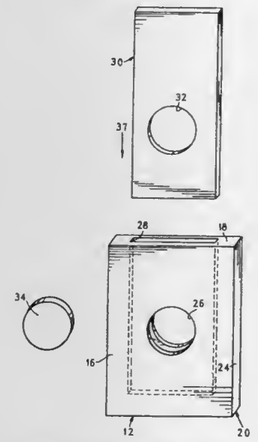
a second layer of foam material affixed to an upper surface of said first layer within said perimeters, said first layer having a lip affixed thereto inwardly of said perimeter and beyond an edge of said second layer, said lip extending transversely outwardly of said upper surface of said first layer, said lip positioned inwardly of said perimeter by approximately one inch, said lip positioned approximately two inches above said second layer, said lip being formed of a strip of said foam material and adhesively affixed to said upper surface of said first layer.

5,647,596

TARGET SYSTEM

Robert R. Rail, 1786 English Dr., Glendale Heights, Ill. 60139

Filed Oct. 4, 1994, Ser. No. 317,488
Int. Cl.[6] F41J *5/00*
U.S. Cl. 273—383 **30 Claims**



1. A target system having means for indicating when it has been accurately hit comprising:

a trigger board having at least one aperture;

a target deck having at least another aperture;

a guide associated with the target deck to allow general alignment of the apertures; and

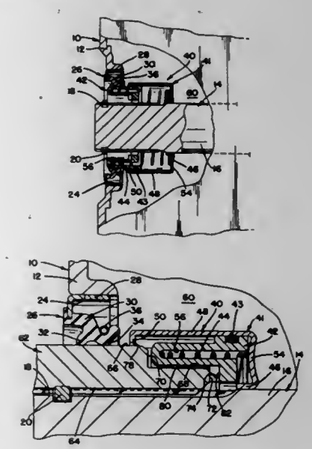
at least one target plate configured to fit within the trigger board and target deck apertures when generally aligned to maintain the trigger board and target deck in a fixed relationship, wherein the at least one target plate is capable of complete displacement from both the trigger board and target deck apertures thereby activating the means for indicating when it has been accurately hit.

5,647,597

RETRACTABLE SEAL FOR OIL-FILLED ROTATING MACHINE

Edwin Thomas Grochowski, Howell, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 22, 1995, Ser. No. 577,395
Int. Cl.[6] F16J *15/32*
U.S. Cl. 277—8 **7 Claims**



1. In a rotating machine having a splined primary shaft rotatably mounted in an opening of an oil filled housing, a primary seal carried by the housing for sealingly engaging with a splined secondary shaft upon insertion of the splined secondary shaft into the opening and into engagement with the splined primary shaft, the improvement comprising:

a retractable member carried by the splined primary shaft for reciprocating axial movement and having sealing engagement with the primary seal to maintain oil within the housing, said retractable member being engaged by the splined secondary shaft upon insertion of the splined secondary shaft through the housing opening and into sealing engagement with the primary seal to forcibly axially retract the retractable member away from sealing engagement with the primary seal.

5,647,598

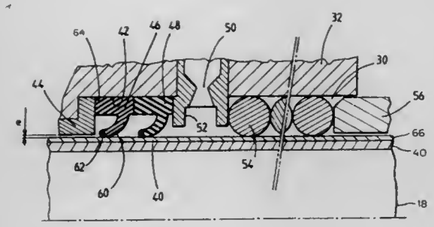
STUFFING BOX SEAL HAVING BRAIDED PACKINGS AND LIP SEAL RINGS IN COMBINATION WITH A SHAFT SLEEVE

Jean-Pierre Vaudolon, Les Bouleries, 72310 La Chapelle Huon, France

Continuation of Ser. No. 448,337, Jul. 19, 1995, abandoned. This application Aug. 21, 1996, Ser. No. 701,070
Int. Cl.[6] F16J *15/18*
U.S. Cl. 277—59 **10 Claims**

1. A sealing device for a shaft rotating relative to a frame surrounding the shaft, said sealing device being disposed between the shaft and the frame, said sealing device, comprising:

a protective sleeve surrounding said shaft and fixedly mounted for rotation with the shaft;



a collar step surrounding said sleeve and fixedly mounted on said frame;

sealing means surrounding said sleeve and non-rotatingly mounted within the frame; said sealing means including:

a lantern ring with an annular recess fixedly mounted to the frame for connection to a source of lubrication liquid;

at least one annular ring having a fixation body and a deformable sealing lip for cooperating with an outer face of said sleeve;

said at least one annular ring being disposed between said collar step and said lantern ring;

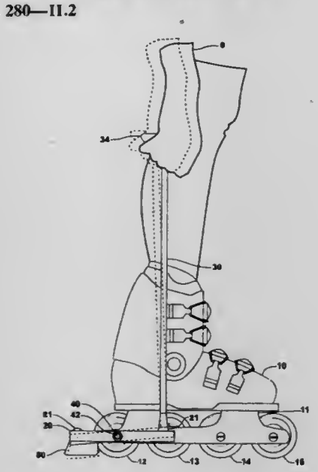
at least one packing braid; and means for compressing said at least one packing braid, said at least one packing braid being disposed between said lantern ring and said means for compressing.

5,647,599

IN-LINE ROLLER SKATE BRAKING MECHANISM

Patrick Visger, 32341 Woody Ave., Fraser, Mich. 48026, and Robert T. Sefton, 1547 Washington St., Birmingham, Mich. 48009

Filed Nov. 20, 1995, Ser. No. 560,571
Int. Cl.[6] A63C *17/14*
U.S. Cl. 280—11.2 **7 Claims**



1. A roller skate brake system in combination with a roller skate operated on a skating surface, the roller skate having a minimum of a front and rear wheel, each rolling wheel having a circumferential surface and being rotatably mounted to a wheel axle, the brake system comprising:

(a) a single rigid lever having a longitudinal pivot axis approximately parallel to the rolling wheel axes, the pivot being rotatably connected to said skate on said rear wheel axle;

(b) a spacing means operably mounted on said rear wheel axle disposed between said lever and said skate;

(c) a rotation constraining means operably connected to said skate for constraining the rotation of said lever such that the section of said lever forward of said pivot axis rotates only above an attitude approximately parallel said skating surface;

(d) a brake pad means removably attached to said lever rearward of said pivot axis;

(e) an upwardly extending semi-rigid shaft removably attached to said lever forward of said pivot axis and;

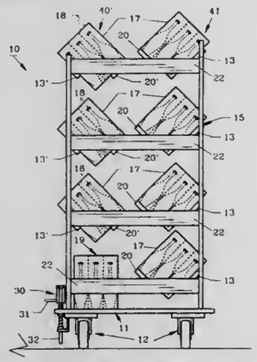
(f) a handle means removably attached to said semi-rigid shaft for drawing said semi-rigid shaft upward causing said lever to rotate from a first position wherein said lever is approximately parallel to said skating surface and said brake pad means is above said skating surface to a second position wherein said brake pad means engages said skating surface, and for driving said semi-rigid shaft downward causing said lever to rotate from said second position to said first position.

5,647,600

CART

Peter T. Booras, Julian, N.C., assignor to American Wholesale Beverage Co., Inc., Greensboro, N.C.

Filed Jan. 9, 1995, Ser. No. 370,404
Int. Cl.[6] B62B *11/00*
U.S. Cl. 280—47.35 **3 Claims**



1. A cart for handling case goods comprising: a rectangular base, a plurality of casters, said casters attached to said base, a first column of shelves, a second column of shelves, said first column of shelves staggered vertically relative to said second column of shelves, said first column of shelves spaced horizontally from said second column of shelves, each of said shelves affixed to said base at a bias whereby case goods placed on said shelves are maintained at a bias to said base.

5,647,601

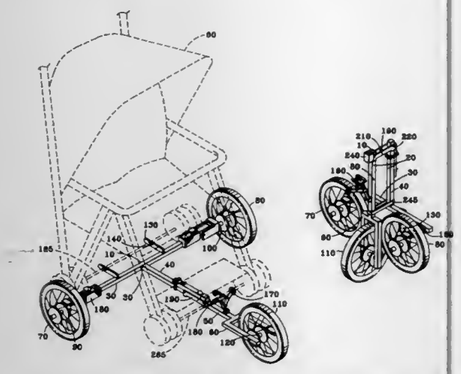
COLLAPSIBLE INFANT STROLLER ADAPTER

Michael D. Potter, P.O. Box 174, E. Shore Rd., Grand Isle, Vt. 05458, and Cherie B. Mathews, Rte. 5, Box 399 D, Big Pine Key, Fla. 33043

Filed Feb. 6, 1995, Ser. No. 383,875
Int. Cl.[6] B60F *5/00*
U.S. Cl. 280—47.38 **9 Claims**

1. A collapsible adapter apparatus for supporting and holding an infant stroller having stroller wheels and for conveying the infant stroller over a ground surface, said adapter apparatus comprising:

a) a frame comprising first, second, and third frame members and a handle, said first frame member being hingedly connected to said handle by a first lockable hinge, said handle being hingedly connected to said second frame member by a second lockable hinge, and said second and third frame members being fixedly interconnected,



b) a first wheel on a first axle rotatably supported by said first frame member,

c) second and third wheels on second and third axles respectively, said second and third axles being hingedly connected to said third frame member by third and fourth lockable hinges respectively,

d) support means connected to said frame for supporting said stroller with said stroller wheels above the ground surface, said support means having forward and rearward ends, and said support means further comprising

means for limiting motion of said stroller toward said forward end of said support means, and

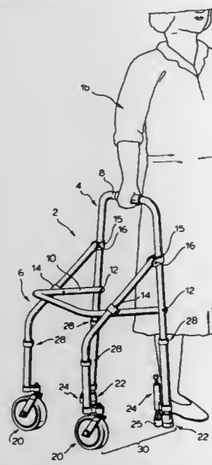
e) clamping means disposed upon said frame to engage and hold said stroller, said clamping means acting in a direction to pull said stroller toward said forward end of said support means.

5,647,602

HEMI-WHEELED WALKER

Monique A. Nevin, 61 Rivercourt Blvd., Toronto, Ontario, Canada

Filed Mar. 3, 1995, Ser. No. 398,293
Int. Cl.[6] B62M *1/00*
U.S. Cl. 280—87.021 **17 Claims**



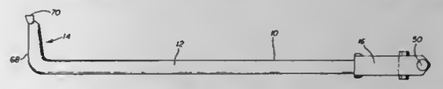
1. A walker suitable for a hemiplegic patient comprising an upright segment having a lower base portion extending parallel to the side of a user with a handle at an upper portion of said base and extending in a fore/aft direction relative to the user, said upright segment being adapted for low force movement across a support surface when no downward load is applied thereto and adapted for gripping engagement with a support surface when a patient applies a downward support load to said handle, and a stabilizing segment to one side of said upright segment having at least one wheel at a point of contact of said stabilizing segment with the support surface, said stabilizing segment maintaining said upright segment in an upright orientation and bracing against pivotting of said upright segment in a direction to the side of the user and towards said stabilizing segment and wherein said lower base portion includes two legs disposed in a fore/aft direction relative to the user.

5,647,603

SPRING BAR WITH INTEGRAL HANGER

John J. Kass, and Richard McCoy, both of Granger, Ind., assignors to Reese Products, Inc., Elkhart, Ind.

Continuation of Ser. No. 546,385, Oct. 20, 1995. This application Dec. 7, 1995, Ser. No. 568,770
Int. Cl.[6] B60D *1/42*
U.S. Cl. 280—406.1 **10 Claims**



1. A spring bar for a weight distributing hitch assembly utilized to tow a trailer behind a towing vehicle, comprising:

an elongated body having a proximal end and a distal end;

means for mounting said spring bar to a ball mount head of said weight distributing hitch assembly, said mounting means being carried on said proximal end of said elongated body;

a lug carried on a distal end of said elongated body and projecting therefrom so as to rest upon a frame member of said trailer, said lug projecting at an included angle of between substantially 45°–135°; and

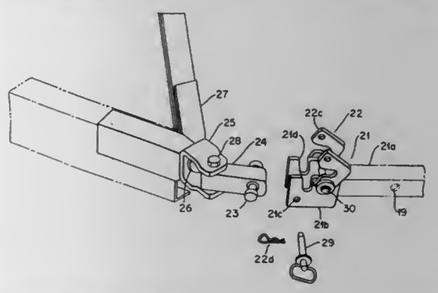
a retaining tab provided adjacent an end of said lug.

5,647,604

TRAILER HITCH

Gregory A. Russell, 9503 Norell Ave. North, Stillwater, Minn. 55082

Filed Jun. 7, 1995, Ser. No. 477,403
Int. Cl.[6] B60D *1/00*
U.S. Cl. 280—492 **24 Claims**



1. A trailer hitch comprising:

(a) a yoke assembly comprising a yoke section and a latch section, said latch section comprising a vertical opening;

(b) a latch assembly comprising a latch pivot bolt, and two latch plates pivotally connected on either side of the yoke section by the latch pivot bolt to the yoke assembly;

(c) a transverse horizontal coupling shaft having extremal ends, wherein the extremal ends of the horizontal coupling shift are

dimensioned to fit into the vertical opening in the latch section, and to be secured by the latch plates;

(d) a connector bar, said transverse coupling shaft passing transversely and horizontally through the connector bar, wherein the transverse horizontal coupling shaft can be securely and pivotally connected to the latch assembly by placing the horizontal transverse coupling shaft in the vertical opening of the latch section, rotating the latch plats down over the horizontal transverse coupling shaft, and securing the latch plates in position with a hitch pin;

(e) a trailer yoke, said connector bar pivotally connected to the trailer yoke by a vertical pivot bolt; and

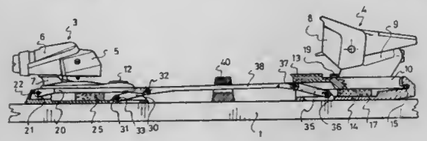
(f) a longitudinal pivot bolt for longitudinally and pivotally connecting the trailer yoke to a trailer.

5,647,605

INTERFACE APPARATUS FOR MODIFYING THE NATURAL DISTRIBUTION PRESSURE OF A SKI SUCH AS IN PARTICULAR AN ALPINE SKI

Joël Arduin, Metz-Tessy, France, assignor to Salomon S.A., Metz-Tessy, France

Filed May 1, 1995, Ser. No. 431,430
Claims priority, application France, May 16, 1994, 94 06145
Int. Cl.[6] A63L *5/06*
U.S. Cl. 280—602 **14 Claims**



I. An interface apparatus adapted to be positioned between a boot and a ski for modifying a natural pressure distribution of a ski on the snow, the ski being adapted to be equipped with a first binding element and a second binding element for retaining a boot upon the ski, said interface apparatus comprising:

a first base adapted to be affixed to the ski in the vicinity of the first binding element;

a second base adapted to be affixed to the ski in the vicinity of the second binding element;

a first sensor adapted to support a first end of a sole of the boot and to sense changes in a downwardly directed support force exerted by the first end of the sole of the boot;

a first means for mounting said first sensor for downward movement in response to exertion of said downwardly directed support force exerted by the first end of the sole of the boot;

a first linking arrangement connecting said first sensor to one of said first base and said second base, said first linking arrangement comprising means for applying a bending moment to the ski tending to force one end of the ski to flex in response to the downwardly directed support force exerted by the boot on said first sensor;

a second sensor adapted to support a second end of the sole of the boot and to sense changes in a downwardly directed support force exerted by the second end of the sole of the boot, said second sensor being longitudinally spaced apart from said first sensor;

a second means for mounting said second sensor for downward movement in response to exertion of said downwardly directed support force exerted by the second end of the sole of the boot;

a second linking arrangement connecting said second sensor to the other of said first base and said second base, said second linking arrangement comprising means for applying a bending moment to the ski tending to force the other end of the ski to flex in response to the downwardly directed support force exerted by the boot on said second sensor; and

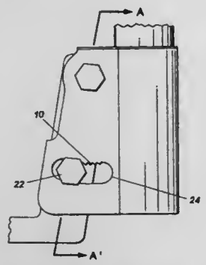
an interconnection between said first linking arrangement and said second linking arrangement.

5,647,606

SUSPENSION ALIGNMENT DEVICE

Mark P. Jordan, 7A Turf Ct., Clifton Park, N.Y. 12065

Filed Aug. 26, 1991, Ser. No. 749,974
Int. Cl.[6] B62D *17/00*
U.S. Cl. 280—661 **5 Claims**



I. A device for adjusting the alignment of independently suspended wheels of a vehicle, said wheels supported on a vehicle frame by a link coupling means and a wheel support means comprising:

means for oscillatably supporting said wheel support means into a substantially round hole in said link coupling means, said link coupling means securedly fixed to said vehicle by a modified bolt means extending through said link coupling means and said wheel support means; and

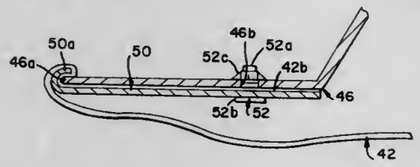
alignment adjustment means comprising a geared adjustment means rotatably adjustable in said link coupling means.

5,647,607

TETHER ATTACHMENT APPARATUS FOR AIR BAG COVER

Donald J. Bolieau, Ogden, Utah, assignor to Morton International, Inc., Chicago, Ill.

Filed Nov. 17, 1995, Ser. No. 559,981
Int. Cl.[6] B60R *21/20*
U.S. Cl. 280—728.2 **20 Claims**



1. Apparatus for positively connecting an end portion of an air bag door tether formed of flexible material to a motor vehicle, comprising:

a fixed element fixedly mounted in a motor vehicle formed with a free end and a fastener receiving aperture spaced apart from said free end;

an attachment bracket having a hook at one end adapted to be hooked over the free end of said fixed element;

a tether formed of flexible material for restraining movement of an air bag door during air bag deployment having an end portion sandwiched between facing surfaces of said bracket and the fixed element; and

a fastener on said bracket remote from said hook having a shank with compressible holding means thereon positioned to be compressed when passed through the aperture from one side

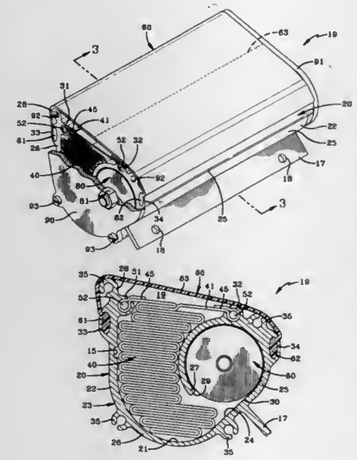
of the fixed element and expandable after passage to engage an opposite side of the fixed element for retaining said hook in position hooked over the free end with said tether sandwiched between facing surfaces of said bracket and the fixed element.

5,647,608

AIR BAG MODULE WITH EXTRUDED HOUSING

Alex Scott Damman, Clayton, Ohio; David James Thomas, Ft. Mitchell, Ky.; Mark Thomas Winters, Troy, Ohio; Daniel Allen Rhule, West Mansfield, Ohio, and Jeffrey Alan Shepherd, Troy, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 28, 1996, Ser. No. 672,596
Int. Cl.[6] B60R *21/20*
U.S. Cl. 280—728.2 **13 Claims**



1. An air bag module for use in a vehicle, the module comprising:

an axially elongated inflator for generating inflator gas;

an air bag for inflation upon the discharge of the inflator gas from the inflator; and

an axially elongated, extruded housing, the housing having a nautilus-shaped extrusion profile with a decreased radius portion for holding the inflator therein and an increased radius portion for holding the air bag therein, the decreased radius portion having a radius of curvature being less than a radius of curvature of the increased radius portion.

5,647,609

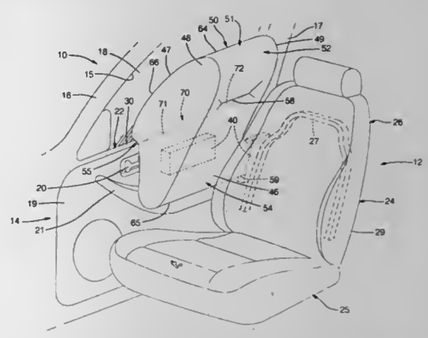
INFLATABLE RESTRAINT CUSHION

Graham Thornton Spencer, Tipp City; Margaret Ann Fisher, Dayton, and James Lloyd Webber, Centerville, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 16, 1996, Ser. No. 689,967
Int. Cl.[6] B60R *21/22*
U.S. Cl. 280—730.2 **20 Claims**

1. An inflatable restraint cushion for restraining a vehicle occupant having a head portion and a torso portion, the cushion for use in a vehicle having a vehicle side structure including a door having a beltline portion defining a lower boundary of a side window opening, the cushion comprising:

an inboard contact face for inflation adjacent the vehicle occupant; and



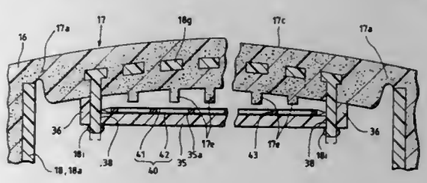
an outboard contact face opposite the inboard contact face, the outboard contact face for inflation adjacent the vehicle door, the outboard contact face including a generally horizontally extending beltline notch portion shaped for matably aligning with and engaging the beltline portion of the door when the cushion is inflated whereby the beltline notch portion of the cushion reacts against and is laterally and vertically supported by the beltline portion of the door to provide lateral stability to the cushion upon engagement by the occupant.

5,647,610

STEERING WHEEL WITH AIR BAG DEVICE

Atsushi Nagata, Aichi, Japan, assignor to Toyoda Gosei Co., Ltd., Aichi, Japan

Filed Feb. 23, 1996, Ser. No. 606,308
Claims priority, application Japan, Apr. 28, 1995, 7-105847; Apr. 28, 1995, 7-105861
Int. Cl.[6] B60R *21/16*
U.S. Cl. 280—731 **19 Claims**



1. An air bag incorporating steering wheel comprising:

an upper member comprising a cover member composed of soft material including an embedded insert and a core structure, said insert being embedded at least in a portion of a central area of said cover member;

a rigid plate secured to a portion of an interior surface of said cover member;

a switch located between said interior surface of said cover member and said rigid plate;

a bottom member connected to said upper member; and

an air bag located and secured between said upper member and bottom members.

5,647,611

VEHICLE SAFETY BELT SYSTEM

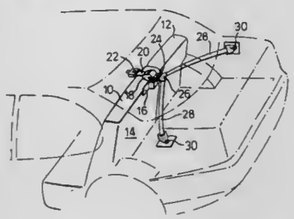
Leslie Samuel Boyd, Antrim, Northern Ireland, and Robert Thomas Kopetzky, Lonsee, Germany, assignors to European Components Co. Limited, Belfast, United Kingdom

Filed Sep. 5, 1995, Ser. No. 524,290

Claims priority, application United Kingdom, Sep. 7, 1994, 9418044; Sep. 28, 1994, 9419541

Int. Cl.[6] B60R *22/26*

U.S. Cl. 280—801.1 **3 Claims**



1. A safety belt system in a vehicle having a body, a seat and a seat back pivotable relative to the seat, said system comprising;
- a seat belt retractor mounted on said seat back adjacent the top thereof,
- a main belt wound onto said retractor and having a free end,
- a main tongue on the free end of said main belt,
- a main buckle secured to the vehicle body and adapted to receive said tongue,
- first locking means in said retractor to prevent said main belt from being withdrawn from the retractor when the retractor is subjected to an acceleration or deceleration in excess of a predetermined value,
- a second buckle connected to said retractor,
- a second tongue engageable in said second buckle,
- non extensible means connecting said second tongue to the vehicle body whereby forward movement of the seat back is precluded when the second tongue is secured in said second buckle, said second tongue being releasable from said second buckle to allow the seat back and retractor to be folded forwardly when desired, and
- second locking means on said retractor for preventing said main belt from being unwound from said retractor unless said second tongue is engaged in said second buckle, said second locking means preventing said second tongue from being released from said second buckle unless said main belt is fully rewound on said retractor.

5,647,612

COUPLING FOR PIPES

Satohisa Yosbida, Anjo; Akihito Namikawa; Kenji Ogura, both of Kariya, and Masayoshi Enomoto, Obu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

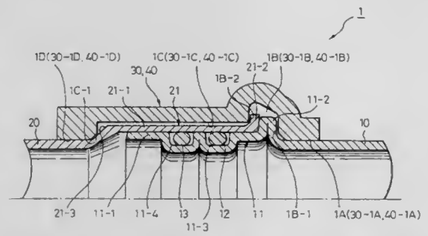
Filed Apr. 3, 1995, Ser. No. 415,921

Claims priority, application Japan, Apr. 4, 1994, 6-065947; Dec. 27, 1994, 6-325197; Feb. 8, 1995, 7-020196; Feb. 9, 1995, 7-021641; Feb. 10, 1995, 7-022661

Int. Cl.[6] F16L *55/00*

U.S. Cl. 285—13 **24 Claims**

1. An apparatus for connecting pipes for passage of a fluid, comprising:
- a male coupling member at an end of one of the pipes;
- a female coupling member at an end of the other pipe, the male coupling being fitted to the female coupling member;
- sealing means arranged between the male and female couplings;
- a first and second fixing member having inner shapes for receiving therein the fitted coupling members for axially fixing their fitted condition to define a fixed condition thereof;
- hinge means on the first and second fixing members for hingedly connecting the first and second fixing members;



- releasable locking means on the first and second fixing members opposite the hinge means for locking the first and second fixing members;
- wherein said female coupling member, to which the male coupling member is fitted, has a diameter larger than that of the pipe, so that an annular shoulder is formed at a location where the female coupling member is connected to said end of the pipe, and having, at an end thereof adjacent the male coupling member, a radially extending flange, the male coupling member having a radially extending projection at a location spaced from an end of the male coupling member disposed adjacent the female coupling member, whereby the male coupling member can be inserted into the female coupling member until said radially extending projection of the male coupling member is in axial contact with the flange of the female coupling member, and
- wherein at least one of the first and second fixing members forms an inner recess which cooperates with the flange of the female coupling member and radially extending projection of the male coupling member for causing the fitted coupling members to be axially engaged with said recess in said at least one of the first and second fixing members, said recess extending axially so as to cooperate also with the annular shoulder portion, thereby providing two axially spaced apart portions of said recess which axially engage with the female coupling member.

5,647,613

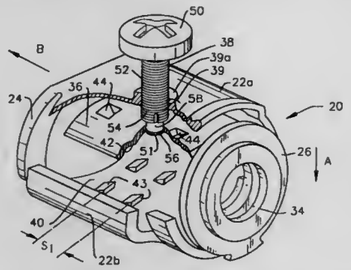
CONNECTOR FOR RETENTIVELY TERMINATING ELECTRICAL CONDUIT

Greg Marik, Germantown; Jessica Henderson, and Larry Cole, both of Memphis, all of Tenn., assignors to Thomas & Betts Corporation, Memphis, Tenn.

Filed Aug. 15, 1995, Ser. No. 515,478

Int. Cl.[6] H05K *5/02;* **F16V** *21/00*

U.S. Cl. 285—195 **7 Claims**



1. A connection device for terminating electrical conduit having plural conductors therein to a knockout opening in an electrical junction box, said device comprising:
- an elongate connector body formed from a single metal stamping and having a conduit receiving end, an opposed conductor egressing end and a central conduit passage therebetween for supporting an end extent of said conduit, said body including upper and lower connector halves relatively movable with respect to one another in clam-shell fashion about said conduit receiving end from a first position which allows said conductor egressing end to be inserted into said knockout opening and a second position which fixedly secures said conductor egressing end in said knockout opening of said electrical junction box;
- opposed conduit engagement surfaces carried by said body which are relatively movable toward one another to engage said conduit end extent supported within said central conduit passage; and
- inwardly directed lances extending from one of said conduit engagement surfaces for engagement with said conduit end extent to frictionally retain said conduit end extent within said central conduit passage.

5,647,614

HOSE FASTENING BAND

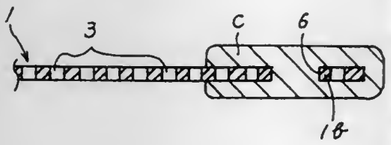
Sachio Asakura, Kurobe, Japan, assignor to Toyox Co., Ltd., Toyama-ken, Japan

Filed Aug. 15, 1995, Ser. No. 515,520

Claims priority, application Japan, Aug. 22, 1994, 6-219535; Jul. 18, 1995, 7-203887

Int. Cl.[6] F16L *33/10*

U.S. Cl. 285—252 **10 Claims**



1. A hose fastening band comprising:
- a housing;
- a band body adapted to be mounted on a hose and having a first end fixed on said housing and a second end opposed to said first end inserted into said housing;
- said band body being formed with threads;
- a screw member arranged in said housing and formed thereon with threads;
- said threads of said screw member being engaged with said threads of said band body;
- said screw member being turnable to forcibly tighten said band to fix the hose to any desired position; and
- a cap arranged on the second end of said band body in a manner to cover the second end of said band body, said cap being formed with an insertion hole into which the second end of said band body is inserted and having projections extending into said insertion hole and fitted in said threads of said band body.

5,647,615

BALLOON TYING APPARATUS

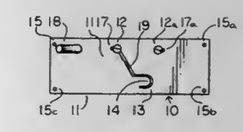
William L. Messier, R.D. #1, Box 272-C, East Montpelier, Vt. 05651

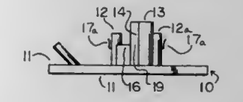
Filed Jul. 10, 1995, Ser. No. 500,264

Int. Cl.[6] B65H *69/04*

U.S. Cl. 289—2 **3 Claims**

1. A balloon tying apparatus, for use by individuals when handling a volume of balloons without the need to use accessory equipment, comprising:
- a main support platform;
- said main support platform having a base section;
- said main support platform having a plurality of upper support members for allowing the user to position a blown up balloon thereon;





- said upper support members comprising dowels extending upward away from said main support platform;
- said upper support members having string- clips connected thereto for permitting the user to integrate string in the knot as it is being formed;
- said main support platform further having a stem extension unit for permitting the user to stretch the stem of said balloon around;
- said stem extension unit comprising an arcuate housing of U shaped design positioned below said upper support members for allowing said user to stretch said stem of said blown up balloon around the exterior of said arcuate housing and then the stem is passed through the interior of said arcuate housing forming a knot in said stem when said balloon is pulled away from said balloon tying apparatus; and
- said arcuate housing having flaring means extending from one end of said U shaped design for restricting the movement of said stretched stem.

5,647,616

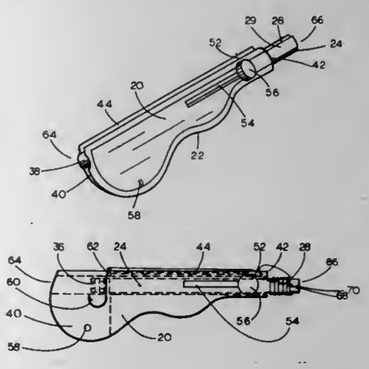
SAFETY FISHHOOK DISPENSER AND TYING DEVICE

Hugh W. Hamilton, 4855 El Verano, Atascadero, Calif. 93422

Filed Sep. 19, 1994, Ser. No. 309,241

Int. Cl.[6] B65H *69/04*

U.S. Cl. 289—17 **11 Claims**



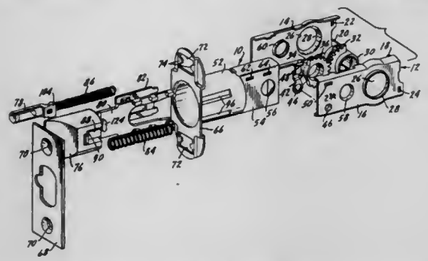
1. A safety hook holder dispenser and tying device comprising an elongated thin, multi-curved implement, said implement has a cylindrical longitudinal bore extended through said implement, said implement being open at either end portion; said implement provides a vertical safety hook chamber open in a first end portion, a vertical channel guide in a second end portion, a helical spring inlaid within a sliding one-piece mandrel; whereby a spring pin holder secures both the helical spring and the sliding one-piece mandrel within the cylindrical longitudinal bore; said implement includes a side position which provides a longitudinal channel and a sliding mandrel lever; said implement further includes a top portion which provides an opening to implement said vertical safety hook chamber and a threading guide channel.

5,647,617

ADJUSTABLE BACKSET SPRING LATCH AND DEADLOCKING LATCH

Pete Kajuch, Brookfield, Wis., assignor to Master Lock Company, Milwaukee, Wis.

Filed Oct. 30, 1995, Ser. No. 520,290
Int. Cl.[6] E05C *1/00*
U.S. Cl. 292—1.5 **14 Claims**



1. An adjustable backset latch including a front case and a rear case telescopically movable relative to the front case, a bolt axially movable within said front case, means limiting telescopic movement between said front case and said rear case to an axial direction and preventing relative rotation between said front case and said rear case, spring means biasing said bolt outwardly from said front case, a swivel rotatable in said rear case, a retractor movable within said front and rear case and in engagement with said bolt, means connecting said swivel and retractor whereby rotation of said swivel moves said retractor and bolt,

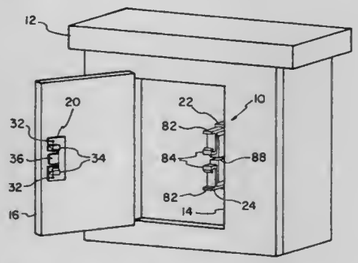
and means for adjusting the backset distance between the axis of rotation of said swivel in said rear case and the front of said front case including a flexible backset latching element mounted on the interior of said rear case and having an outwardly extending projection, an opening for said projection in the rear case, whereby said projection is extendable outwardly through said rear case opening, a pair of longitudinally spaced openings in said front case, each front case opening being movable into alignment with said rear case opening, with said projection extending through said rear case opening and a front case opening when there is alignment to latch said front and rear cases against relative movement and to thereby define a backset distance between the axis of rotation of said swivel and the front of said front case.

5,647,618

INFANT SAFETY LATCH MECHANISM

James E. Lamberth, 7207 Carriage Hill Dr., Laurel, Md. 20707

Filed Oct. 23, 1995, Ser. No. 546,958
Int. Cl.[6] E05C *19/06*
U.S. Cl. 292—19 **12 Claims**



1. An infant safety latch mechanism adapted to be mounted within an enclosure for securing a movable member of the enclosure to a fixed member of the enclosurer, said latch mechanism comprising:

a cleat having a base adapted to be mounted to an interior surface of one of the members of the enclosure, and a pair of first spaced latching elements coupled to said base;

a mounting guide adapted to be coupled to an interior surface of the other member of the enclosure; and

a clip having a body portion movably coupled to said guide for limited movement within a predetermined range of movement, and a pair of second spaced latching elements coupled to said body portion for engaging said first latching elements to releasably couple said cleat and said clip together so that said cleat and said clip can move together relative to said guide when in a latched position,

two of said latching elements being normally biased to said latched position for releasably coupling said first latching elements to said second latching elements,

said second latching elements being movably coupled to said body portion of said clip,

each of said second latching elements having a release arm resiliently coupled to said body portion of said clip for allowing relative movement of said second latching elements,

said guide including a first guide cavity for slidably receiving said body portion of said clip therein, said guide further including a catch for engaging a first slot formed in said clip to prevent accidental separation of said clip from said guide and to at least partially control said predetermined range of movement,

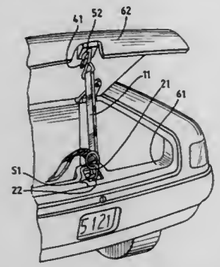
each of said first and second latching elements including a ramping surface for cooperating with each other upon closing the movable member against the fixed member to automatically bias said second latching elements initially inwardly toward each other until said first and second latching elements reach said latched position where said second latching elements spring outwardly to latch said clip to said cleat.

5,647,619

AUTOMOBILE TRUNK LOCK TIE-DOWN

Dennis M. DeLisio, Steger, Ill., assignor to Pyramid Industries Ltd., Steger, Ill.

Filed Jun. 21, 1996, Ser. No. 668,576
Int. Cl.[6] E05C *19/18*
U.S. Cl. 292—288 **1 Claim**



1. The in combination with an automobile trunk, the trunk having a trunk body, a trunk lid, and a trunk lock, the trunk lock having a lock latch and a lock strike, a trunk lock tie-down comprising:

a link, the link being generally in the form of a triangle, the triangle having a first side, a second side, and a vertex connecting the first side to the second side, the triangle first side being a first strike homolog so that the first side is removably attachable to the lock latch in place of the lock strike, the vertex being a second strike homolog so that the vertex is removably attachable to the lock latch in place of the lock strike;

a first cinch ring which encircles the vertex and a second cinch ring which encircles the vertex;

a strap, the strap being adjustably attached to the link around the first cinch ring and through the second cinch ring; and

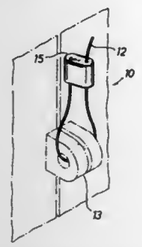
a hook attached to the strap, the hook having a bight which is removably attachable to the lock strike.

5,647,620

CABLE LOCK AND SEAL DEVICE INCORPORATING SELF LOCKING FEATURE

Rainer Kuenzel, 2 Gessner Rd., Houston, Tex. 77024

Continuation-in-part of Ser. No. 362,843, Dec. 22, 1994, abandoned. This application Jan. 23, 1996, Ser. No. 590,188
Int. Cl.[6] B65D *27/30*
U.S. Cl. 292—317 **19 Claims**



1. A cable lock device for closing a cargo container comprising:

(a) a closed housing;

(b) an elongate cable having a free end and a dead end wherein the dead end of the cable is connected to said housing;

(c) an internal passage through said housing to receive said cable free end wherein the passage terminates at an inlet and outlet on said housing;

(d) a face in said housing along said passage adjacent to the free end of said cable when positioned therein;

(e) a jamming movable member within said housing adapted to move toward and away from said cable so that said jamming member is able to jam against said cable and thereby force said cable against said face; and

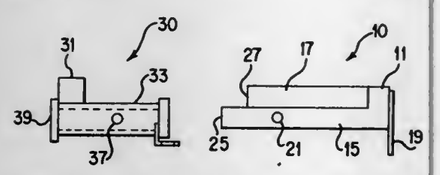
(f) wherein said jamming member prior to jamming against said cable is moved away from jamming by a sacrificial spacer positioned within said internal passage and the cable end on insertion initiates jamming by the jamming member by engaging the spacer.

5,647,621

BACKUP PROTECTION DEVICE

Gordon L. McClellan, 7026 Woodley La., Falls Church, Va. 22042

Filed Feb. 9, 1996, Ser. No. 599,374
Int. Cl.[6] B60R *19/24*
U.S. Cl. 293—117 **8 Claims**



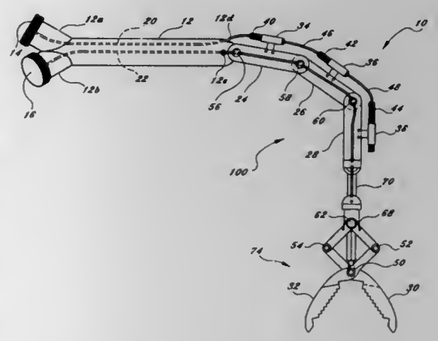
1. A backup protection device for vehicles having a trailer hitch, comprising a coupling having an attaching hole therethrough, a trailer hitch stop plate, and a trailer hitch cross beam, and a tailgate upon which a spare tire is mounted outside of said tailgate, said backup protection device comprising a transverse tube, a central tube that is rigidly and perpendicularly attached at one end and along one side to one side of and in the middle of said transverse tube, and a pair of side tubes that are rigidly and perpendicularly attached at one end thereof to a side of said transverse tube that is perpendicular to said side attached to said central tube and in spaced-apart and straddling relationship to said central tube, said central tube and said side tubes having exactly the lengths needed for simultaneously contacting said trailer hitch stop plate and said trailer hitch cross beam, respectively, and said central tube having a transversely disposed hole that is in exact alignment with said trailer hitch attaching hole, whereby, when said device is attached to said trailer hitch by inserting said central tube into said coupling and by inserting a trailer hitch pin into and through both said holes, said side tubes are higher than said central tube and other end of said central tube and said side tubes contact said trailer hitch cross beam so that said device is firmly supported and unable to swivel.

5,647,622

FLEXIBLE REACH TOOL

Leonard A. Schectman, 3742 Boanza Cir., Lantana, Fla. 33462

Filed Feb. 27, 1995, Ser. No. 394,754
Int. Cl.[6] B25J *1/02*
U.S. Cl. 294—19.1 **10 Claims**



1. A flexible reach tool for positioning and actuating a tool in an inaccessible location, comprising:

a rigid arm having a longitudinal axis, a first end and a second end;

a flexible arm having a first end and a second end, said flexible arm first end pivotally connected to said rigid arm second end;

means connected to said rigid arm and said flexible arm for positioning said flexible arm from a first position, wherein said flexible arm is longitudinally coaxial with the longitudinal axis of said rigid arm, to a plurality of non-axial positions, including a position at least 90 degrees relative to the longitudinal axis of said rigid arm;

said means for positioning including:

a rotatable disk connected to said rigid arm proximate said first end;

at least one externally threaded connector;

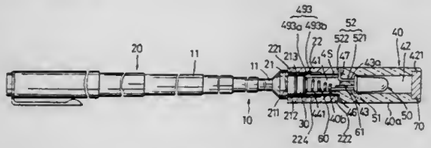
means for connecting said rotatable disk to said at least one externally threaded connector;

at least one internally threaded connector having said at least one externally threaded connector mounted therein, said at least one internally threaded connector mounted on said flexible arm, wherein rotation of said rotatable disk moves said flexible arm from said first position through said plurality of non-axial positions;

a manually-actuated tool mounted to the second end of said flexible arm; and

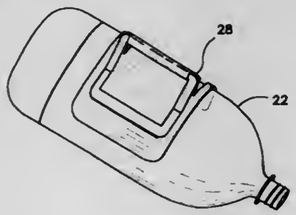
a first means for actuating said tool, connected to said flexible arm and said rigid arm, from a position on said rigid arm, whereby said tool can be selectively actuated in a remote, inaccessible location from said rigid arm.

5,647,623
TELESCOPIC SHAFT MAGNETIC RETRIEVER
Hsuan-Sen Shiao, No. 15-1, Lane 369, Min-Chuan Rd., Taichung City, Taiwan
Filed Aug. 1, 1996, Ser. No. 691,145
Int. Cl.[6] B25J *15/06;* **F21V** *33/00*
U.S. Cl. 294—65.5 **3 Claims**



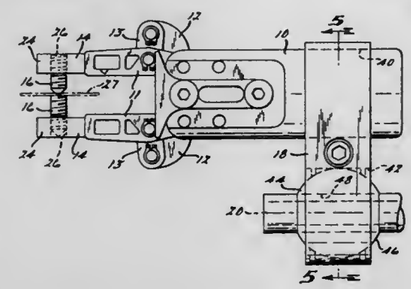
1. A telescopic shaft magnetic retriever comprising:
a telescopic shaft having a conductive battery holder at a tip thereof which is adapted to hold an insulative socket and a battery set within said insulative socket;
an insulative and transparent lamp holder adapted to hold a lamp and a magnet for retrieving screws, nuts, tools and other steel parts from inaccessible places, said lamp having a first contact connected electrically to a pole of said battery set and a second contact, said lamp holder being adapted to allow passage of light emitted from said lamp; and
a conductive tubular sleeve connected threadedly to said conductive battery holder and said lamp holder and having an end surface in electrical contact with said second contact of said lamp,
said battery set, said conductive battery holder, said conductive tubular sleeve, and said lamp constituting an electric circuit, thereby permitting activation of said lamp, said conductive tubular sleeve being rotatable relative to said lamp holder to move away from said lamp holder, so that said second contact of said lamp is electrically disconnected from said conductive sleeve member and that said lamp is deactivated.

5,647,624
ADHESIVE ADD-ON BOTTLE HANDLE
Anthony Beshara, Jr., 1725 Emmons Ave-F1, Brooklyn, N.Y. 11235
Filed Jul. 23, 1996, Ser. No. 686,117
Int. Cl.[6] B65D *23/10*
U.S. Cl. 294—27.1 **11 Claims**



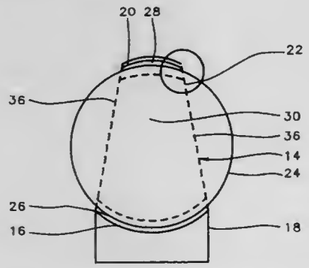
1. A handle for attaching to a bottle, comprising:
a base, the base planar and substantially thin, adhesive present on the base for affixing the base to the bottle;
a pair of grips, each grip having a transverse portion, the grips capable of being in a storage position and an operable position, in the storage position the grips extend in the same plane as the base, in the operable position the grips extend substantially perpendicular to the base with the transverse portions touching each other, the base having outer portions surrounding the grips in the base plane, the adhesive is present on the outer portions; and
a securing mechanism, for securing the transverse portions of the grips to each other when in the operable position.

5,647,625
GRIPPER
Edwin G. Sawdon, St. Clair, Mich., assignor to BTM Corporation, Marysville, Mich.
Continuation of Ser. No. 31,630, Mar. 15, 1993, Pat. No. 5,516,173. This application Sep. 22, 1995, Ser. No. 532,362
Int. Cl.[6] B66C *1/42*
U.S. Cl. 294—86.4 **4 Claims**



1. In combination, an insert disengagably attachable to a powered gripper, said combination comprising:
(a) said insert including:
(i) a body;
(ii) a discontinuity disposed on an outside surface of said body;
(iii) a recess at a first end of said body;
(iv) a wrench-receiving non-circular blind hole disposed in a bottom of said recess;
(b) a mount having generally parallel through-openings, said powered gripper being initially rotatably and axially slidably disposed within one of said openings;
(c) a substantially annular swivel member being disposed in another of said through-openings;
(d) a slot extending between said through-openings; and
(e) a threaded fastener transversely bridging said slot, said fastener selectively causing said mount to tighten about said powered gripper and said swivel member in order to securely affix said powered gripper and said swivel member within said mount.

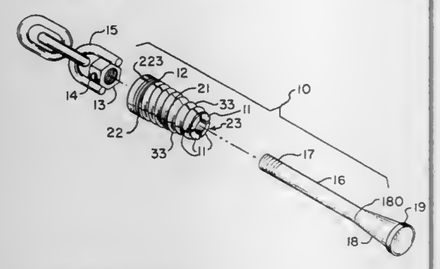
5,647,626
WAFER PICKUP SYSTEM
Chien-Feng Chen, Pei-Twun; Jun-Sheng Hsu, Taipei; Shih-Ming Pan, Ping Jen, and Knight-Tian Ou, Miao-Li, all of Taiwan, assignors to Taiwan Semiconductor Manufacturing Company, Ltd., Hsin-Chu, Taiwan
Filed Dec. 4, 1995, Ser. No. 566,804
Int. Cl.[6] B65G *49/07*
U.S. Cl. 294—87.1 **10 Claims**



1. A semiconductor wafer pickup and transfer fork comprising,

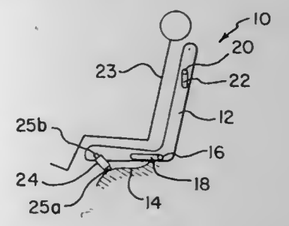
a blade support, a plurality of elongated flat, tapered wafer support blades mounted on said blade support in spaced, parallel relation, said tapered support blades each having tapered side edges, a wide end and a leading narrow end with an arcuate shape, with said wide end mounted in said blade support,
each of said support blades provided with an upwardly curved lower surface on the said leading narrow end,
each of said support blades provided with a wafer holding means on the upper surface adapted to support and hold a circular semiconductor wafer thereon,
said wafer holding means including a first arcuate wafer abutment on said wide end adjacent said blade support, and a second arcuate wafer abutment on said narrow end, said wafer holding means further including a first arcuate narrow wafer edge support surface adjacent said first arcuate wafer abutment and a second arcuate wafer edge support surface adjacent said second arcuate wafer abutment.

5,647,627
PIPE PULLER
David J. Baessler, 1074 S. I-76 Frontage Rd., Wiggins, Colo. 80654
Filed Nov. 9, 1995, Ser. No. 555,619
Int. Cl.[6] B66C *1/56*
U.S. Cl. 294—96 **11 Claims**



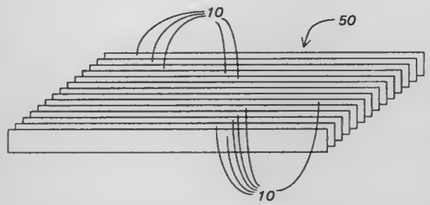
1. A pipe puller comprising:
a shaft having a first end facing a direction of pull and a second end;
said first end of said shaft having a connecting means for receiving a connector from a pulling device;
said second end of said shaft having a tapered outer surface emanating from a point medial to said shaft to a larger diameter at said second end;
an expandable gripping member having a tapered outer surface with a narrow first end and a wide second end;
said narrow first end of said expandable gripping member having an orientation around said shaft toward said second end of said shaft, whereby said expandable gripping member expandingly slides upon said outer surface of said second end of said shaft upon a pull on the first end of said shaft in the direction of pull;
said outer surface of said expandable gripping member further comprises spiraled ridges functioning to grip an inner surface of a pipe under an expansion of said expandable gripping member and functioning to release the pipe after expansion;
a hollow cylinder having an inner surface, said inner surface forming a space between the tapered outer surface and itself functioning to clasp the pipe, said hollow cylinder slidingly mounted to said shaft and having a first end and a second end;
said first end of said hollow cylinder having a diameter greater than the diameter of said second end of said expandable gripping member; and
said second end of said hollow cylinder having a shoulder facing in the direction of pull, said shoulder having an inner surface and further defining a hole, whereby said hollow cylinder is slidably mounted to said shaft.

5,647,628
LINEAR ONE WAY MOVEMENT DEVICE AND PASSENGER SEAT ASSEMBLY USING THE DEVICE
Paul B. Pires, Ben Lomond, and Wayne K. Higashi, Los Gatos, both of Calif., assignors to Epilogics, Inc., Los Gatos, Calif.
Filed May 10, 1995, Ser. No. 438,617
Int. Cl.[6] F16F *9/36;* **B60R** *21/00*
U.S. Cl. 296—68.1 **19 Claims**



1. A linear one way drive device for use in limiting the abrupt movement of an object as a result of and in response to a sudden cessation in the forward movement of the object caused by a head-on collision between means carrying that object and another object, said device comprising:
(a) first and second members including first and second linearly extending planar surfaces, respectively;
(b) means for coupling said first and second members to one another such that said first and second linearly extending planer surfaces are adjacent to and in confronting relationship with one another and such that said members are telescopically movable relative to one another between contracted and extended positions;
(c) first means for attaching the first member to either said object or to an anchoring surface that is on said carrying means and that is fixed relative to the abrupt movement of the object as a result of and in response to a sudden cessation in the normal forward movement of the object and second means for attaching the second member either to said object or to said anchoring surface, which ever the first member is not attached to, so as to allow said first and second members to telescopically move between their extended and retracted positions in response to and as a result of the abrupt movement of said object;
(d) a coupling arrangement including a series of linearly spaced first pockets defining strut engaging first shoulders in the first linearly extending planar surface of said first member, a series of linearly spaced second pockets defining strut engaging second shoulders in the second linearly extending planar surface of said second member, and a plurality of cooperating struts having shoulder engaging edges and carried by the first linearly extending surface of said first member for allowing said first and second members to telescopically move to said extended position from said contracted position in response to and as a result of the abrupt movement of said object but preventing said members from telescopically moving back to said contracted position, said series of first and second pockets and said struts being configured such that, in order to prevent said first and second members from telescopically moving back to said contracted position from said extended position, the shoulder engaging edges of at least one of said struts respectively engage the first and second shoulders of an adjacent pair of first and second pockets in a way which places a compressive load across that strut between its engaging edges.

5,647,629
REFLECTION ELIMINATOR
Richard M. Collins, 5300 NW. 66th Pl., Johnston, Iowa 50131
Filed Feb. 12, 1996, Ser. No. 606,007
Int. Cl.[6] B62D *25/14*
U.S. Cl. 296—97.2 8 Claims

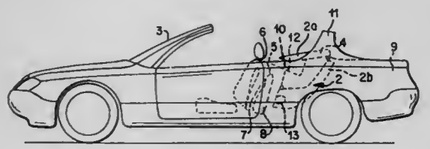


1. A reflection eliminator structure for positioning on substantially horizontal surfaces located at or near the base of windows which are at angles from vertical to eliminate reflected images and reflected light rays;

said structure comprising a plurality of spaced apart vertical members constructed so that side surfaces of each member include the majority of the entire surface area of said each member and the side surfaces extend vertically, and

said plurality of vertical members are spaced at intervals which are less in distance than the height of each member.

5,647,630
MOTOR VEHICLE HAVING AN AT LEAST PARTIALLY RETRACTABLE ROOF
Arno Jambor, Vaihingen/Enz; Dieter Guertler, and Mark Muehlhausen, both of Stuttgart, all of Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany
Filed Jul. 10, 1995, Ser. No. 499,816
Claims priority, application Germany, Jul. 8, 1994, 44 24 189.5; Oct. 26, 1994, 44 38 191.3
Int. Cl.[6] B60J *7/12*
U.S. Cl. 296—108 10 Claims



1. A motor vehicle, comprising:

an at least partially retractable roof for the motor vehicle;

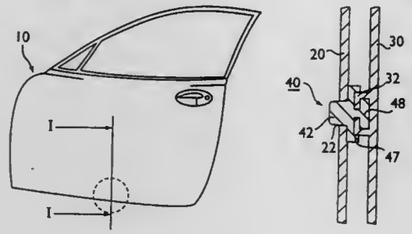
a rear seat area having a seat arrangement, said rear seat area being used as a storage space into which said retractable roof is moved from above said storage space, whereby rear seats of the seat arrangement can only be occupied when the retractable roof is closed;

wherein a portion of said seat arrangement is displaceable from an in-use position which obstructs areas of said storage space of said retractable roof into a not-in-use position which exposes said storage space allowing the lowering of the retractable roof;

wherein a seat backrest part of said seat arrangement is folded down onto a seat cushion part situated in front of the seat backrest part; and

wherein, when the seat backrest part and seat cushion part are folded above one another, said seat arrangement is folded into an upright position behind seat backrests of front seats of the motor vehicle.

5,647,631
VEHICLE DOOR
Young-Woong Lee, Seoul, Rep. of Korea, assignor to Kia Motors Corporation, Seoul, Rep. of Korea
Filed Sep. 5, 1996, Ser. No. 707,786
Int. Cl.[6] B60J *5/04*
U.S. Cl. 296—146.6 6 Claims



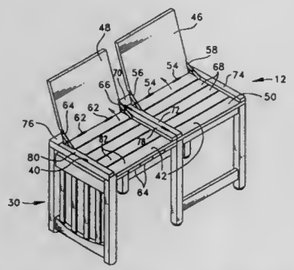
1. A vehicle door comprising:

an inner panel having an opening;

an outer panel having a guide; and

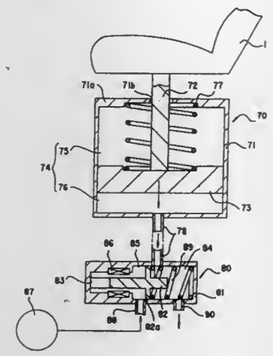
a reinforcement member having an inner protrusion for being inserted to the opening of said inner panel and an outer protrusion for sliding along the guide of said outer panel.

5,647,632
CHAIR CONVERTIBLE TO BENCH OR SETTEE
Barry N. Fireman, 434 Warick Rd., Wynnewood, Pa. 19096
Filed Oct. 16, 1995, Ser. No. 543,637
Int. Cl.[6] A47C *13/00*
U.S. Cl. 297—109 3 Claims



1. A convertible chair comprising a base platform having an upper surface, a first edge portion and a spaced pair of edge portions intersecting said first edge portion; a ground support coupled to said platform; and a seat assembly, said seat assembly comprising a seat member and a seat back member coupled to said seat member, said seat member having respective upper and lower surfaces, said seat assembly being pivotably connected to said base platform for movement between a chair-forming first position in which said lower surface of said seat member overlies and is juxtaposed to said upper surface of said base platform and a second position in which said lower surface of said seat member and said upper surface of said base platform are generally coplanar so as to form a bench surface, said seat back member adapted to contact the ground so as to serve as a ground support when said seat assembly is in said second position; and a pair of foldable back support panels operatively associated with an upper seating surface, said pair of back support panels comprising a first back support panel operatively associated with said upper surface of said base platform and a second back panel operatively associated with said lower surface of said seat member, said first back support panel being pivotable from a first position in which it defines a portion of said upper surface of said base platform to a second, back supporting position, in which it extends upwardly with respect to said bench surface, said second back support panel being pivotable from a first position in which it defines a portion of said lower surface of said seat member to a second, back supporting, position, in which it extends upwardly with respect to said bench surface, said second back support panel being pivotable from a first position in which it defines a portion of said lower surface of said seat member to a second, back supporting, position, in which it extends upwardly with respect to said bench surface, a second recess in said lower surface of said seat member, said first back support panel being received in said first recess when said first back support panel is in its first position, and said second back support panel being received in said second recess when said second back support panel is in its first position.

5,647,633
APPARATUS FOR VIBRATING SEATS
Masahiro Fukuoka, Aichi, Japan, assignor to Fukuoka Kagaku Ltd., Nishikamo-gun, Japan
Continuation of Ser. No. 358,248, Dec. 19, 1994, abandoned, which is a division of Ser. No. 194,356, Feb. 10, 1994, abandoned, which is a continuation-in-part of Ser. No. 987,481, Dec. 4, 1992, Pat. No. 5,348,370. This application Jun. 4, 1996, Ser. No. 657,525
Int. Cl.[6] A47C *7/62*
U.S. Cl. 297—217.7 1 Claim



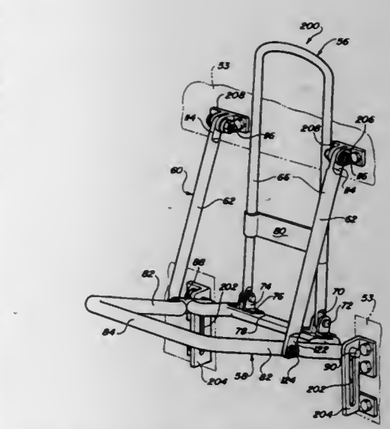
1. An apparatus for vibrating a seat comprising a driver's seat, means for vibrating said driver's seat and means for controlling vibration of said means for vibrating the driver's seat,

wherein said means for vibrating said seat comprises a rod having one end sliding-freely in a cylinder chamber and the other end projected outward from said cylinder chamber and connected to said driver's seat, a piston connected to said one end of said rod and sliding-freely in said cylinder chamber, means for supplying pressure fluid to said cylinder chamber, a channel control valve for supplying and discharging said pressure fluid to said cylinder chamber and means for controlling said valve for repeatedly freely sliding said piston.

5,647,634
CHILD RESTRAINT SEAT
Dwight W. Presser, Royal Oak; Stephen C. Bruck, Fraser, and Lon L. Monsrud, Howell, all of Mich., assignors to Douglas & Lomason Company, Farmington Hills, Mich.
Division of Ser. No. 312,291, Sep. 26, 1994. This application Jun. 7, 1995, Ser. No. 477,850
Int. Cl.[6] B60N *2/30*
U.S. Cl. 297—238 9 Claims

1. A retractable child seat that is moveable between a stowed position and a deployed position, comprising:

a seatback member moveable between an upright storage position and a tilted position;

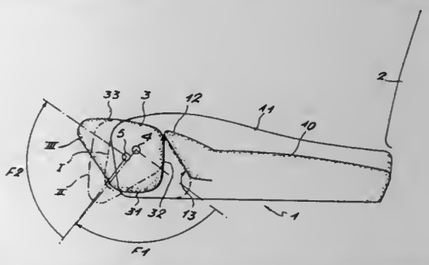


a seat member coupled to said seatback member for movement between a raised storage position and a generally horizontal position;

a headrest member coupled to said seat member for movement between a retracted storage position and an elevated position; and

a movement coordinating mechanism coupled to said seat member and pivotably interconnecting said seatback member and said headrest member to said seat member for automatically moving said seatback member to said tilted position and concurrently moving said headrest member relative to said seatback member upwardly of said storage position to said elevated position in coordination with movement of said seat member to said generally horizontal position for establishing the deployed child seat position, and for automatically moving said seatback member to said upright storage position and concurrently moving said headrest member relative to said seatback member to said retracted storage position in coordination with movement of said seat member to said raised storage position for establishing the stowed child seat position.

5,647,635
CAR SEAT WITH AN ADJUSTABLE SURFACE AREA
Jean-Claude Aumond, Etrechy, and Christophe Aufrere, Marcoussis, both of France, assignors to Bertrand Faure Equipements S.A., Boulogne, France
Filed May 6, 1996, Ser. No. 642,190
Claims priority, application France, May 30, 1995, 95 06666
Int. Cl.[6] A47C *7/14*
U.S. Cl. 297—284.11 9 Claims



1. A car seat having an adjustable front surface area, comprising:

a seat nose located forward of and swiveling with respect to a larger seat cushion, the nose having a generally polygonal cross section;

more than two successive sides of the nose forming surfaces having corresponding increasing lengths;

swiveling of the nose positioning a selected side of the nose upwards, in close proximity to the seat cushion to form a near continuous extension of a top surface of the cushion;

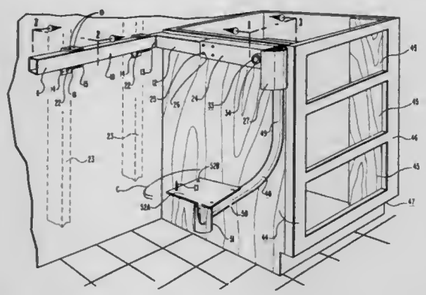
the nose swiveling about a plurality of parallel swivel axes as the nose assumes successive positions.

5,647,636

SUSPENDED SEATING DEVICE

Carling D. Allen, Orem, Utah, assignor to Seating Innovations L.L.C., Orem, Utah

Filed Sep. 12, 1995, Ser. No. 526,836
Int. Cl.[6] A47C *1/02*
U.S. Cl. 297—344.21 **12 Claims**



10. A suspended seating device including, in combination, first elongated means for adjustable securement to a wall; second elongated means extending forwardly in a direction normal to said first elongated means, said second elongated means having a rearward end affixed to said first elongated means and also a forward end; attachment means for affixing said forward end to external cabinet structure; a curved, suspending seating chair support arm having an upper vertical arm portion and also a lower, laterally extending arm portion; seating structure attached to and above said lower arm portion, and journal structure secured to said forward end of said second elongated means and supportingly receiving and journalling said upper arm portion, said journalling structure and upper vertical arm portion each being provided with mutually cooperable respective means for delimiting the extent of arcuate rotation of said support arm, and said seating structure being journaled to said lower arm portion.

5,647,637

SEATING AND BACK SYSTEMS FOR A WHEELCHAIR

Eric C. Jay, Boulder, and John C. Dinsmoor, III, Westminster, both of Colo., assignors to Jay Medical Ltd., Boulder, Colo.

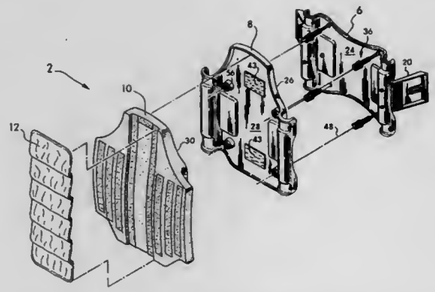
Continuation of Ser. No. 217,366, Mar. 24, 1994, Pat. No. 5,524,971, which is a continuation of Ser. No. 945,733, Sep. 16, 1992, Pat. No. 5,352,023. This application Apr. 16, 1996, Ser. No. 633,158
Int. Cl.[6] A47C *7/42*
U.S. Cl. 297—354.12 **1 Claim**

1. An adjustable back assembly for use with a wheelchair comprising:

a relatively rigid contoured first shell member,

a relatively rigid second shell member contoured to permit mounting of said second shell member in nested relation to said first shell member,

an attaching assembly formed for releasable attachment of said first shell member to a frame of said wheelchair in a fixed position to support a user's back;



a mounting assembly including a plurality of adjustable connector assemblies positioned to movably mounting said second shell member to said first shell member for selective adjustment of the angular position about both a vertical axis and a horizontal axis, as well as the spacing of said second shell member relative to said first shell member through a plurality of positions between a retracted position in which said second shell member is nested with said first shell member and an extended position spaced from said first shell member, and said connector assemblies being mounted in depressions in a back side of said second shell member for nesting of said second shell member with said first shell member in said retracted position; and

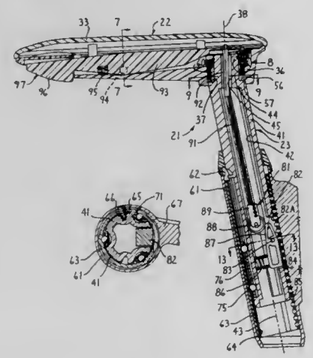
said attaching assembly being formed for removably attaching said first shell member to said wheelchair independently of adjustment of the position of second shell member relative said first shell member by said mounting assembly whereby said first shell member and said second shell member can be removed from said wheelchair as a unit and reattached to said wheelchair as a unit with said first shell member and said second shell member remaining in the same adjusted position relative to each other.

5,647,638

HEIGHT-ADJUSTABLE CHAIR ARM ASSEMBLY

Robert T. Ritt, Holland Township, Ottawa County; Steve J. Nemeth, Jr., Park Township, Ottawa County, and Richard N. Roslund, Jr., Georgetown Township, Ottawa County, all of Mich., assignors to Haworth, Inc., Holland, Mich.

Filed Jun. 7, 1995, Ser. No. 486,613
Int. Cl.[6] A47C *7/54*
U.S. Cl. 297—411.36 **19 Claims**



1. In a chair having a seat assembly, a back projecting upwardly from and adjacent a rear edge of the seat assembly, and a pair of height-adjustable arm assemblies mounted on and disposed adjacent opposite sides of said seat assembly and projecting upwardly

in cantilevered relation therefrom, the improvement wherein said arm assembly comprises:

an arm attachment bracket fixed to said seat assembly and including a vertically elongate support tube disposed adjacent one side of said seat assembly, said support tube defining therein a lengthwise and vertically elongate guide bore which is open at the upper end thereof;

a vertically elongate support column lengthwise movably supported within said bore and projecting upwardly therefrom and terminating at an upper end part which is disposed at an elevation spaced upwardly above said seat assembly;

an armrest mounted on the upper end part of said support column and projecting horizontally therefrom; and

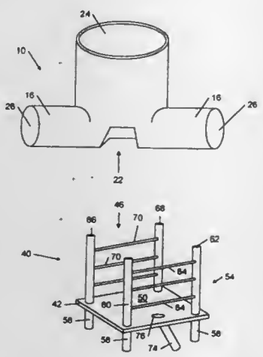
a resilient, linear anti-friction bearing assembly engaged lengthwise between said column and said support tube for permitting linear movement of said column in the lengthwise direction thereof while effectively eliminating transverse looseness between said column and said support tube, said bearing assembly including at least one elongate track which is disposed on one of said guide bore and said support column and extends in a lengthwise direction, a lengthwise extending track member which is disposed in said track, and a bearing unit movably disposed in contacting engagement with said track member and the other of said guide bore and said support column, said bearing unit being linearly movable along said track member and said track member being resiliently engaged with said bearing unit for biasing said bearing unit to eliminate radial looseness or clearance.

5,647,639

ORTHOPEDIC CHAIR FOR SUPPORTING A PERSON WEARING A CAST

Christopher Wiggins, 5207 Clairemont, Midland, Mich. 48624

Continuation of Ser. No. 450,932, May 25, 1995, abandoned. This application Sep. 23, 1996, Ser. No. 710,837
Int. Cl.[6] A47D *13/08*
U.S. Cl. 297—467 **15 Claims**



1. An orthopedic chair in combination with a hip spica cast having a lower body supporting portion with a pair of legs extending outwardly therefrom, said chair for supporting a person in an upright position, comprising:

a seat having a front side, a rear side and opposite lateral sides;

a rear support connected to and extending substantially the length of said rear side of said seat and extending upwardly therefrom;

a front support, spaced from said rear support, connected to and extending substantially the length of said front side of said seat and extending upwardly therefrom, wherein a first distance between said front and rear supports is less than a second distance between said opposite lateral sides of said seat;

seat supporting means, coupled to said seat, for supporting said seat above a surface,

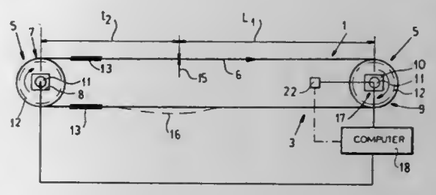
wherein said chair is adapted to support the person in an upright position with one of said legs of said hip spica cast extending between one side of said front support and said rear support and another of said legs of said hip spica cast extending between an opposite side of said front support and said rear support.

5,647,640

CONTINUOUSLY OPERATING MINING MACHINES WITH PLOW AND CONVEYOR CHAINS AND METHOD OF OPERATING SAME

Peter Heintzmann, Bochum, and Kuno Guse, Witten, both of Germany, assignors to Bochumer Eisenhutte Heintzmann GmbH & Co. KG, Bochum, Germany

Filed Feb. 13, 1996, Ser. No. 600,598
Claims priority, application Germany, Feb. 14, 1995, 19 504 779.6
Int. Cl.[6] E21C *35/24*; B65G *43/00*
U.S. Cl. 299—1.6 **11 Claims**



8. A method of operating a mining machine for seam mining which comprises:

means forming a plow trough defining a guide for a mining plow displaceable against a seam to be mined, and a conveyor trough rearwardly of said plow trough;

reversing stations at opposite ends of said troughs and each formed with a respective sprocket wheel;

an endless chain passing around and engaged by said sprocket wheels and having a plow pass extending along said plow trough and a conveyor pass extending along said conveyor trough, said chain being under static tension between said sprocket wheels;

at least one mining plow on said chain for engagement with said seam while said mining plow is displaced along said plow trough by said plow pass for mining material from said seam, and at least one conveyor flight on said chain for entrainment of mined material along said conveyor trough while said conveyor flight is displaced along said conveyor trough;

a plow drive operatively connected to one of said sprocket wheels at a downstream end of said plow pass and a conveyor drive operatively connected to the other of said sprocket wheels at a downstream end of said conveyor pass for continuously displacing said chain, said method comprising the steps of:

(a) advancing said troughs toward said mine seam with said mining plow engageable with material of said mine seam while driving said chain to mine material from said seam into said troughs as said plow is displaced along said plow pass;

(b) conveying mine material along said conveyer trough by displacement of said flight along said conveyer trough;

(c) detecting development of a sag in said chain along said plow pass; and

(d) in response to detection of said sag in said chain along said plow pass, reducing a speed of said conveyor drive to restore tension to said plow pass and permit any developing chain sag to collect only in said conveyer pass.

5,647,641

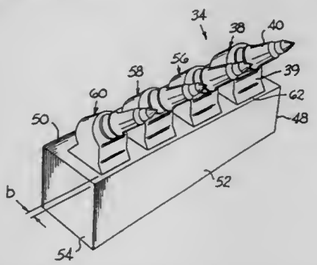
BAR FOR A ROAD MILLING DRUM

William P. Sulosky, Davidsville, and Wayne H. Beach, Roaring Spriog, both of Pa., assignors to Kennametal Inc., Latrobe, and Advanced Cutting Systems Corp., Davidsville, both of Pa.

Continuation of Ser. No. 437,163, May 8, 1995, Pat. No. 5,536,073. This application Jun. 12, 1996, Ser. No. 662,894

Int. Cl.[6] F21C *35/19*

U.S. Cl. 299—39.8 **18 Claims**



1. An elongate bar for attachment to the surface of a generally cylindrical road milling drum wherein the road milling drum has opposite ends with an equator midway therebetween and a longitudinal length along a longitudinal drum axis, the bar comprising:

an elongate body having a longitudinal body axis, the elongate body having a length along the longitudinal body axis being less than one-half the longitudinal length of the road milling drum, the elongate body having a top surface; and

a plurality of blocks being connected to the top surface of the elongate body, each one of the blocks containing a bore with a central bore axis, and each one of the blocks being oriented with respect to the elongate body so that the central bore axis of each one of the blocks is generally perpendicular to the longitudinal body axis.

5,647,642

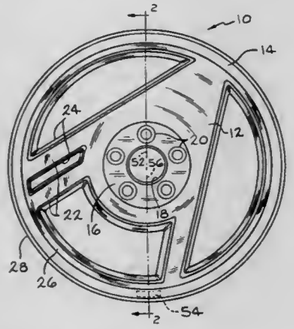
ASYMMETRIC VEHICLE WHEEL WITH INTEGRAL COUNTERBALANCE

James A. Word, Canton, Mich., assignor to Hayes Wheels International, Inc., Romulus, Mich.

Filed Dec. 28, 1994, Ser. No. 366,291

Int. Cl.[6] B60B *3/06*

U.S. Cl. 301—5.21 **9 Claims**



1. A vehicle wheel comprising:

a wheel disk having a sculpted surface with an asymmetric design tending to unbalance said wheel disk;

an annular wheel rim disposed about said wheel disk and fixed thereto, said wheel rim being adapted to carry a pneumatic vehicle tire; and

at least one weight permanently fixed to said wheel rim for counterbalancing said wheel disk to balance said wheel, wherein said weight is fused with said wheel rim whereby said wheel disc and wheel rim are balanced without a pneumatic vehicle tire being carried by said wheel rim.

5,647,643

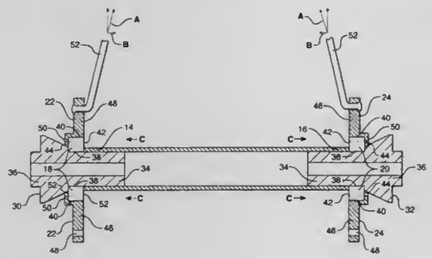
WHEEL HUB

Ryun Bates Noble, 4045 N. Imperial Way, Provo, Utah 84604

Filed Mar. 1, 1995, Ser. No. 397,413

Int. Cl.[6] B60B *21/06*

U.S. Cl. 301—110.5 **26 Claims**



1. A wheel hub for attachment to a wheel rim comprising:

a first and second annular bearing assembly each having an inner annular part and an outer annular part, the inner annular part being capable of independent rotation with respect to the outer annular part, each inner annular part having an inner circumferential surface, and each outer annular part having an outer circumferential surface, and wherein each inner and outer annular part has an inner side surface and an outer side surface;

means for maintaining the annular bearing assemblies in a spaced relationship, said means being in contact with the inner side surface of each inner annular part, such that the outer annular part of the first bearing assembly is capable of independent rotation with respect to the outer annular part of the second bearing assembly;

a first and second annular abutment bracket, each one of the annular abutment brackets disposed about the outer circumferential surface of a respective annular bearing assembly, each one of the annular abutment brackets having a lip extending adjacent to the outer side surface of a respective annular bearing assembly for limiting the movement of each annular abutment bracket toward each other with respect to the annular bearing assembly; and

means to facilitate attachment of the wheel hub to a frame.

5,647,644

SOLENOID VALVE, ESPECIALLY FOR HYDRAULIC BRAKE SYSTEMS WITH SLIP CONTROL

Peter Volz, Darmstadt, and Dalibor Zaviska, Eschborn/Ts, both of Germany, assignors to ITT Automotive Europe GmbH, Frankfurt, Germany

PCT No. PCT/EP94/03622, § 371 Date Dec. 14, 1995, § 102(e) Date Dec. 14, 1995, PCT Pub. No. WO95/13945, PCT Pub. Date May 26, 1995

PCT Filed Nov. 4, 1994, Ser. No. 464,902

Claims priority, application Germany, Nov. 18, 1993, 43 39 305.5

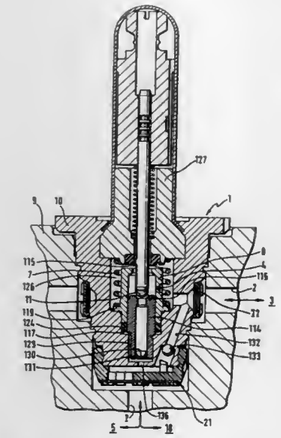
Int. Cl.[6] B60T *8/36;8/50*

U.S. Cl. 303—119.2 **10 Claims**

1. A solenoid valve for hydraulic brake systems with slip control, said valve comprising:

a valve support defining an annular space having first and second hydraulically isolated regions;

a central body held within said valve support and having:



(a) a first opening at a first end which forms a valve seat through which pressurized medium flows from said central body when said valve seat is open, and

(b) a second opening at a second end, opposite from said first end, through which pressurized medium flows into said central body and having a diameter smaller than said first opening of said central body;

a valve-closing member for selectively preventing pressurized medium flow through said valve seat;

an annular piston:

(a) having:

(1) a first opening into said first region of said annular space at a first end of said annular piston and through which pressurized medium flows into said first region of said annular space when said valve seat is open,

(2) a second opening into said first region of said annular space and through which pressurized medium flows into said first region of said annular space when said valve seat is open, and

(3) a second end, opposite from said first end of said annular piston, exposed to pressurized medium flow in said second region of said annular space,

(b) mounted on and movable, relative to said central body, in response to pressurized fluid flow in said second region of said annular space between:

(1) a first position at which pressurized medium flows into said first region of said annular space in parallel through said first and said second openings of said annular piston, and

(2) a second position at which said annular piston is in contact with said valve support to close said first opening of said annular piston and prevent pressurized medium flow through said first opening of said annular piston into said first region of said annular space, while pressurized medium flows through said second opening of said annular piston into said first region of annular space;

a pressurized medium output line for delivering pressurized medium flow from said first region of said annular space to brakes of the brake system; and

a pressurized medium input line for introducing pressurized medium flow:

(a) through said second and said first openings in said central body and said first and said second openings in said annular piston to said first region of said annular space, and

(b) into said second region of said annular space to urge movement of said annular piston to said second position of said annular piston when the pressure of said pressurized medium flow introduced through said pressurized medium input line exceeds the pressure of said pressurized medium flow delivered by said pressurized medium output line by a prescribed amount.

5,647,645

SOLENOID VALVE FOR REGULATING HYDRAULIC PRESSURE AND APPLICATION TO BRAKING CIRCUITS

Philippe Muller, Argenteuil; Philippe Bourlon, Aubervilliers; Jean Pierre Michon, Saint Pathus, and Patrick Audrain, Tremblay-en-France, all of France, assignors to AlliedSignal Europe Services Techniques, Drancy, France

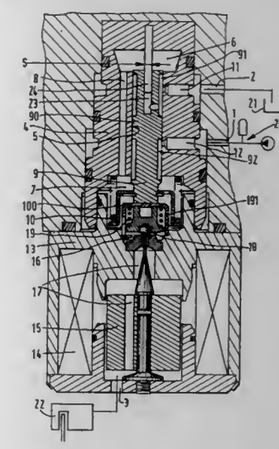
PCT No. PCT/FR95/01205, § 371 Date Oct. 17, 1995, § 102(e) Date Oct. 17, 1995, PCT Pub. No. WO96/11828, PCT Pub. Date Apr. 25, 1996

PCT Filed Sep. 20, 1995, Ser. No. 537,712

Claims priority, application France, Oct. 13, 1994, 94 12185

Int. Cl.[6] B60T *8/32;* **F15B** *13/044*

U.S. Cl. 303—119.2 **4 Claims**



1. A proportional solenoid valve for regulating the pressure of a hydraulic fluid, said valve having a high-pressure inlet, a low-pressure inlet, and an outlet through which fluid can be delivered under a controlled pressure, said solenoid valve comprising:

a body pierced with a bore for connecting a first end chamber with a second end chamber, said body having a duct to permanently connect said first end chamber with said second end chamber;

a regulating slide valve located in said bore and having a cross-section responsive to differential pressure for developing a first force capable of urging said slide value towards said first end chamber;

an elastic means for exerting a second force on said slide valve in opposition said first force;

first and second orifices passing through said body and emerging in the bore respectively close to said first and second chambers, one of said first and second orifices being connected to said high-pressure inlet;

a casing mounted in an extension of said body to close off said second end chamber in hermetic fashion, said housing an electric coil and a magnetic core plunger, said core plunger being capable of sliding in order to exert a third force on said slide valve in the same direction as said first force; and

a control valve for selectively placing said second end chamber in communication with a third orifice located in said casing, said control valve including a shut-off member which can be shifted from a shut-off position by movement of said core plunger against a return force, and which is able, after a non-zero travel, in turn transmits said third force to said slide valve, said slide valve being capable of bringing about a first communication between said high-pressure inlet and said outlet, and a second communication between said low-pressure inlet and said outlet, and functioning toward said second communication over said first communication with increasing values of said third force, characterized in that said outlet permanently communicates with said third orifice and

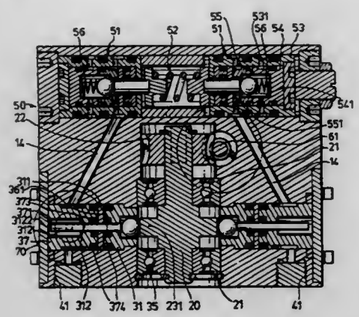
in that said first and second orifices are located inside said bore and isolated from one another by said slide valve, which results in said outlet being isolated from said high-pressure inlet as long as said control valve is not open.

5,647,646

ANTI-LOCK BRAKING CONTROL DEVICE FOR A HYDRAULIC BRAKE SYSTEM OF AN AUTOMOBILE

Chang-Wen Yang, Taipei, Taiwan, assignor to Edward Shih, Taipei, Taiwan

Filed Aug. 29, 1995, Ser. No. 520,824
Int. Cl.[6] B60T *15/58*
U.S. Cl. 303—115.2 **5 Claims**



1. An anti-lock braking control device for a hydraulic brake system of an automobile, said hydraulic brake system including a pair of master cylinders and front and rear brakes of said automobile, said anti-lock braking control device being adapted to be installed between said master cylinders and said front and rear brakes and comprising:

a housing having two inlet ports, each of which is adapted to be connected to a respective one of said master cylinders, and two cutlet ports, each of which is adapted to be connected to a respective one of said front and rear brakes, said housing defining therein a cylindrical first chamber, two cylindrical second chambers which are aligned with one another, each of said second chambers having a first end which is connected perpendicularly to said first chamber and a second end which is opposite to said first end of said second chamber, a cylindrical third chamber which is communicated with said inlet ports, and a pair of oil passages connecting said third chamber to said second ends of said second chambers, each of said outlet ports being formed adjacent to a respective one of said second ends of said second chambers;

a rotor shaft mounted coaxially and rotatably in said first chamber, said rotor shaft having a driving disk fixed coaxially adjacent to said first ends of said second chambers, said driving disk having a periphery which is formed with a plurality of equally spaced lobes and rounded concave portions between said lobes, said rotor shaft having a driven end;

an oil regulator assembly mounted in said third chamber for controlling flow rate of hydraulic oil from said master cylinders into said oil passages and said second ends of said second chambers;

a power-driven motor fixed to said housing and having an output shaft which extends into said first chamber and which is connected to said driven end of said rotor shaft in order to drive said rotor shaft to rotate;

a pair of reciprocating pump assemblies positioned respectively in said second chambers, each of said reciprocating pump assemblies having a first part which blocks a corresponding one of said first ends of said second chambers and which is formed with a ball-receiving cavity that opens to said first chamber, each of said reciprocating pump assemblies further having a second part which is adjacent to a corresponding one of said second ends of said second chambers and which is formed with an oil chamber that is separated from said ball-receiving cavity, a rod member having a first end that extends slidably and sealingly into said ball-receiving cavity and a second end that extends slidably and sealingly into said oil chamber, and a ball member which is received in said ball-receiving cavity, each of said oil chambers being communicated with the respective one of said second chambers which is in turn communicated with a corresponding one of said oil passages and one of said outlet ports so that the hydraulic oil of said hydraulic brake system can fill said oil chambers and exert an oil pressure on said second ends of said rod members in order to push said ball members to abut said periphery of said driving disk of said rotor shaft; and

pressure switch means connected fluidly to one of said second ends of said second chambers and connected electrically to said power-driven motor for actuating said power-driven motor when the oil pressure of said hydraulic oil is greater than a predetermined value;

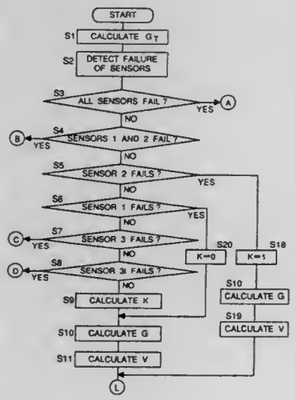
whereby when said power-driven motor is actuated to rotate said rotor shaft, each of said ball members will be driven by said periphery of said driving disk of said rotor shaft to push a respective one of said rod members to move reciprocally, thereby producing pressure waves which are transmitted to said front and rear brakes and providing an intermittent brake effect.

5,647,647

DECELERATION CONTROL DEVICE FOR VEHICLE

Kazuhiro Kato; Yoichi Miyawaki, and Hirohisa Tanaka, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jun. 1, 1995, Ser. No. 456,869
Claims priority, application Japan, Aug. 24, 1994, 6-199460
Int. Cl.[6] B60T *8/28*
U.S. Cl. 303—122.09 **14 Claims**



6. A deceleration control device for a vehicle provided with a speed detection means for detecting a speed of the vehicle, an acceleration or deceleration detection means for detecting an acceleration or deceleration of the vehicle, a brake fluid pressure detection means for detecting an actual brake fluid pressure from at least two brake systems of the vehicle and a brake fluid pressure control means for controlling the brake fluid pressures, the deceleration control device comprising:

a first arithmetic unit for calculating an actual deceleration of the vehicle from a signal from the speed detection means and a signal from the acceleration or deceleration detection means;

a second arithmetic unit for calculating a speed of the vehicle from the signal from the speed detection means;

a third arithmetic unit for calculating a target deceleration of the vehicle; and

a fourth arithmetic unit for calculating a brake fluid pressure control command value such that the actual deceleration coincides with the target deceleration, which is connected to the first to third arithmetic units and the brake fluid pressure control means so as to output to the brake fluid pressure control means a control signal corresponding to the brake fluid pressure control command value;

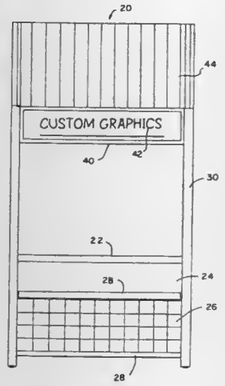
wherein when the brake fluid pressure detection means includes a plurality of fluid pressure sensors and an arbitrary one of the fluid pressure sensors fails, the fourth arithmetic unit calculates the brake fluid pressure control command value by using a calculated brake fluid pressure rather than a brake fluid pressure detected by one of the remaining fluid pressure sensors having a predetermined relation with the arbitrary one of the fluid pressure sensors.

5,647,648

SUPPORT STRUCTURE AND ASSEMBLY METHOD FOR FOOD COURT SYSTEMS

Brad J. Duesler, Middleton, Wis., assignor to Food Concepts, Inc., Madison, Wis.

Filed Oct. 13, 1995, Ser. No. 542,914
Int. Cl.[6] A47B *87/00*
U.S. Cl. 312—108 **12 Claims**



1. A food court system, comprising:

(a) a plurality of spaced apart food court support structures, each support structure including

a horizontal counter support member having a top surface, a bottom surface, a front end, and a back end,

a front vertical support member having a top end, a bottom end, a front face, and a back face, and which is attached at its top end to the counter support member,

a back vertical support member having a top end, a bottom end, a front face, and a back face, and which is attached at its top end to the counter support member,

a horizontal bottom shelt support member having a top surface, a bottom surface, a front end, and a back end, and which is attached at its front end to the front vertical support member and at its back end to the back vertical support member to form, with the horizontal counter support member and the front and back vertical support members, a frame structure which is at least twice as high and long as it is wide, and

at least one leg attached to and extending from the bottom surface of the bottom shelf support member;

(b) at least one food court counter top secured to the top surface of the horizontal counter support member of each support structure to thereby join the support structures together;

(c) a food court front panel secured to the front face of the front vertical support member of each support structure such that a front panel extends between the front faces of the spaced apart support structures and is supported thereby;

(d) a front support post secured to the front face of the front vertical support member of each support structure, supported thereby, and extending in a vertical direction beyond the counter top;

(e) a back support post secured to the back face of the back vertical support member of each support structure, supported thereby, and extending in a vertical direction beyond the counter top;

(f) a decorative awning attached between the front and back vertical support posts and thereby positioned over the counter top; and

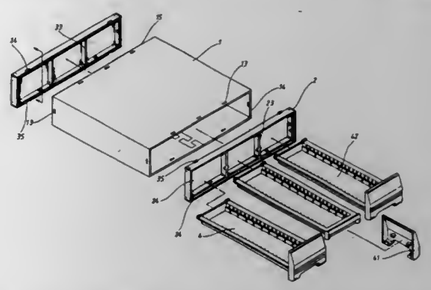
(g) at least one graphics panel secured between two of the front support posts.

5,647,649

EASILY ASSEMBLED AND ENVIRONMENTALLY PROTECTIVE STORAGE CONTAINER

Kuo-Ming Kao, 23F-3, No. 508, Sec. 5, Chung-Hsiao E. Rd., Taipei, Taiwan

Filed Aug. 31, 1995, Ser. No. 522,079
Int. Cl.[6] A47B *43/02;* **B65D** *5/38*
U.S. Cl. 312—261 **4 Claims**



1. A easily assembled storage container comprising a box body having five closed and unopenable sides and one opened side and a plurality of drawers received in said opened side,

said box body made only of three integral parts consisting of a paper board, a front frame body, and a rear frame body; said paper board having a shape of an elongated rectangle with a top edge and a bottom edge, said paper board folded to form box with opposing open front and rear ends by abutting said top and bottom edges, said box defining four of said five closed and unopenable sides of said container, said front and rear ends having a plurality of mortises, said rear frame body received on said rear end and providing one of said five closed and unopenable sides, and said front frame body received on said front end and providing said one opened side,

said top edge having a plurality of projections; each said projection having a top portion, a bottom portion, and a central axis extending in a direction parallel to said front and rear ends of said box; said top portion is wider than said bottom portion along said central axis, said projections have a shape symmetrical about said central axis, said bottom edge having a plurality of recesses with a shape exactly matching said shape of said projections so that said projections are tightly received in said recesses without any overlap of said top and bottom edges,

said front and rear frame bodies both having a peripheral groove respectively opening in a direction toward said front and rear ends of said box and respectively receiving said front and said rear ends of said box, said peripheral grooves including a plurality of inwardly projecting tenons, said tenons received

in said mortises of said front and rear ends of said box for holding said front and rear frame bodies on said front and rear ends of said box, said front frame body including drawer openings, and

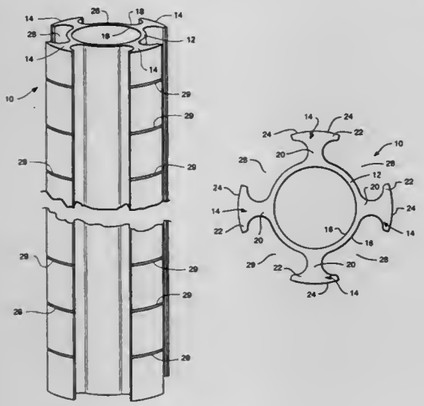
said plurality of drawers corresponding to said drawer openings, said drawers respectively having a front with a face board and a back with several internal receptacles, said backs of said drawers passing through said drawer openings, and said face boards of said drawers not passing through said drawer openings.

5,647,650

MODULAR STORAGE AND SUPPORT ASSEMBLY

Jonathan M. Daugherty, Wilkes-Barre, and Kenneth A. Stevens, Harleysville, both of Pa., assignors to Metro Industries, Inc., Reno, Nev.

Filed Apr. 21, 1995, Ser. No. 426,674
Int. Cl.[6] A47B *47/00*
U.S. Cl. 312—265.1 **27 Claims**



1. A support post, comprising:

an elongated tubular post; and

a plurality of spaced flanges extending radially from said post and running in a longitudinal direction along said post, each said flange having a first portion extending radially from said post and a second portion extending from a terminal end of said first portion, with each pair of adjacent flanges defining a slot therebetween having a continuous arcuate interior surface and shaped to have a convex interior side.

5,647,651

MEDICINE CABINET WITH LOCKABLE STORAGE COMPARTMENT

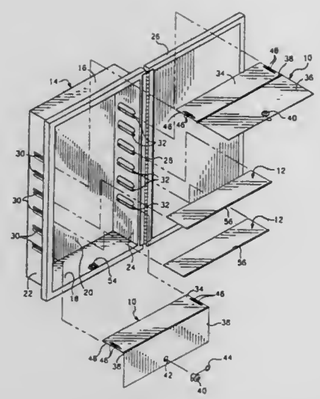
Young R. Kim, Pomona, Calif., assignor to Pacific Precision Metals, Inc., Azusa, Calif.

Filed Apr. 28, 1995, Ser. No. 430,336
Int. Cl.[6] A47B *81/00*
U.S. Cl. 312—291 **9 Claims**

1. A cabinet, comprising:

a housing comprising a first side wall, a second side wall, an upper wall, a lower wall, and a rear wall, said housing having a plurality of vertically spaced mountings for supporting a plurality of shelves, each of said shelves having two end tabs slideably engageable with said mountings;

a storage compartment comprising a fixed panel and a movable panel, said fixed panel hingedly connected to said movable panel, said fixed panel having two end tabs slideably engageable with said mountings; and



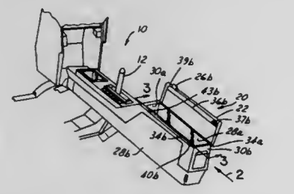
a lock having a first lock portion on said movable panel and a second lock portion interengageable with said first lock portion on said lower wall of said housing.

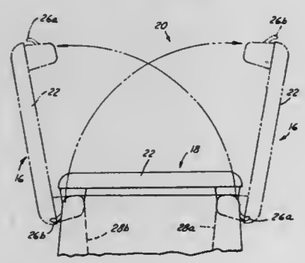
5,647,652

DUAL-HINGED CENTER CONSOLE

Kenneth E. Zalewski, Utica, and Gary D. Guichard, Farmington Hills, both of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed Dec. 20, 1995, Ser. No. 575,306
Int. Cl.[6] A47B *88/00;* **E05D** *15/50*
U.S. Cl. 312—324 **7 Claims**





1. A dual-hinged center console comprising:

a bottom portion, two side walls, a front wall, a back wall, and a lid hingedly attached to each side wall in a closed position and adapted to be opened from either side so that when in an open position, the lid is hingedly attached to only one of the two side walls, the two side walls, the front wall, and the back wall extending upwardly from the bottom portion and being interconnected to form an enclosure for storing articles;

two retention members, each disposed in one of the side walls adjacent to the lid;

two longitudinally extending cam rod retention cavities, each disposed in one of the side walls of the center console adjacent to the lid, each longitudinally extending cam rod retention cavity in axial alignment with one of the retention members;

two cam rods, each rotatably mounted in one side of the lid and received in one of the cam rod retention cavities when the lid is in the closed position, only one cam rod being disposed in one cam rod retention cavity when the lid is in the open position;

two screw cams, each disposed in one of the cam rod extension cavities for moving each cam rod from the cam rod retention cavity when the cam rod is rotated; and

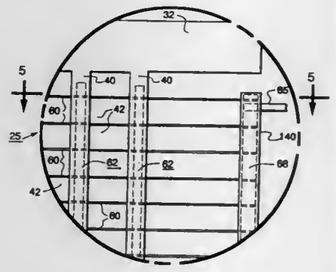
two latch handles, each cam rod having a latch handle attached at one end, one cam rod being retracted from the retention member when the attached latch handle is rotated to permit the lid to be rotated about the other cam rod toward the open position.

5,647,653

UNIAXIAL TENSION FOCUS MASK MATERIALS

Satyam Choudary Cherukuri, Cranbury, N.J., assignor to RCA Thomson Licensing Corp., Princeton, N.J.

Filed Jul. 26, 1995, Ser. No. 509,315
Int. Cl.[6] H01J *29/80*
U.S. Cl. 313—402 **20 Claims**



1. In a color cathode-ray tube comprising an evacuated envelope having therein an electron gun for generating at least one electron beam, a faceplate panel having a luminescent screen with phosphor lines on an interior surface thereof, and a uniaxial tension focus mask having a plurality of spaced-apart first metal strands which are adjacent to an effective picture area of said screen and define a plurality of slots substantially parallel to said phosphor lines, each of said first metal strands across said effective picture area having a substantially continuous insulator on a screen-facing side thereof, said insulator comprising more than one insulator layer, and a plurality of second metal strands oriented substantially perpendicular to said first metal strands, said second metal strands being bonded to said insulator, the improvement wherein said insulator comprises

a first insulator layer having a coefficient of thermal expansion substantially matching, or slightly lower than, the coefficient of thermal expansion of said first metal strands, and

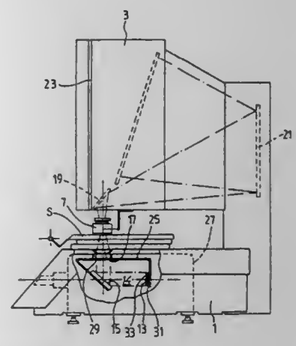
a second insulator layer having a coefficient of thermal expansion substantially equal to the coefficient of thermal expansion of said first insulator layer.

5,647,654

MICROFICHE READER

Alain Krzywdziak, and Maurice Hersant, both of Orleans, France, assignors to F.A.S., France

PCT No. PCT/FR94/01304, § 371 Date May 8, 1996, § 102(e) Date May 8, 1996, PCT Pub. No. WO95/13563, PCT Pub. Date May 18, 1995
PCT Filed Nov. 8, 1994, Ser. No. 640,837
Claims priority, application France, Nov. 9, 1993, 93 13364
Int. Cl.[6] G03B *21/14*
U.S. Cl. 353—27 R **11 Claims**



1. A microfiche reader comprising:

a microfiche holder including two transparent plates for holding a microfiche therebetween, one of the plates being movable relative to the other of the plates to allow a microfiche to be fitted and withdrawn from between the plates;

means movably supporting the microfiche holder;

a projection surface;

a light support surface;

a light source for emitting a light beam, the light source including a set of light-emitting diodes arranged on the light support surface and with high luminosity to generate the light beam; and

an optical system having a plurality of elements for directing the light beam through a selected field of the microfiche and onto the projection surface to form thereon an illuminated image of said selected field;

wherein the light support surface is shaped so that the light beam is focused onto the elements of the optical system.

5,647,655

BACK LIGHTING DEVICE

Keiji Kashima, and Naoki Yoshida, both of Kanagawa, Japan, assignors to Tosoh Corporation, Yamaguchi, Japan

Division of Ser. No. 70,916, Jun. 4, 1993, Pat. No. 5,392,199. This application Aug. 8, 1994, Ser. No. 296,491
Claims priority, application Japan, Jun. 4, 1992, 4-168338
Int. Cl.[6] F21V *7/04*
U.S. Cl. 362—31 **3 Claims**

1. A back lighting device for a panel, comprising:

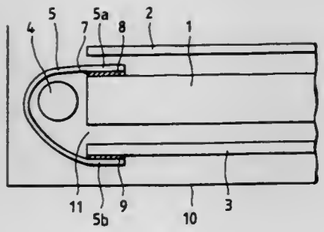
a light conducting plate made of a light-transmissive material, and having a light emerging surface and back surface opposed thereto;

a light diffusing element formed on the back surface of the light conducting plate;

a specular or light diffusing/reflecting plate or film covering the light diffusing element and the back surface of the light conducting plate;

a linear light source disposed in proximity to at least one side face of the light conducting plate;

a light reflecting plate or film covering the linear light source, one end portion of the light reflecting plate or film being



attached to the light emerging surface of the light conducting plate at its end portion in proximity to the linear light source; and

a light absorbing element spaced from said light conducting plate by an air layer, said light absorbing element disposed proximate to the back surface of the light conducting plate in an area corresponding to where the one end portion of the light reflecting plate or film is attached to said light conducting plate.

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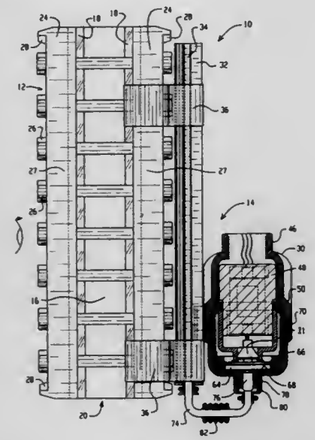
ILLUMINATED FLUID LEVEL INDICATOR

David E. Brown, Strongsville; Mark A. Colman, Brunswick Hills, and Michael J. Kett, Parma Hts., all of Ohio, assignors to Clark- Reliance Corporation, Strongsville, Ohio

Filed May 12, 1995, Ser. No. 440,014

Int. Cl.[6] G01F *23/02*

U.S. Cl. 362—32 **15 Claims**



1. A backlighting assembly for a fluid container provided with front and rear transparent viewing windows for viewing a level of a fluid contained therein, said backlighting assembly comprising:

a substantially flat illumination panel comprised of a plurality of fiber optic fibers and located proximate said rear transparent viewing window;

an attachment mechanism connected to said illumination panel for attaching said substantially flat illumination panel to the fluid container proximate said rear transparent viewing window; and

an illumination source optically coupled to said substantially flat illumination panel.

5,647,657

LIGHT SYSTEM FOR AN INTERIOR OF A MOTOR VEHICLE

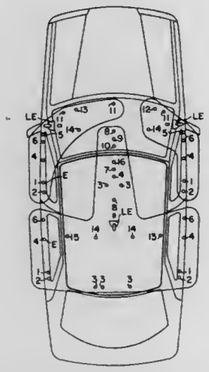
Joachim Damasky; Detlef Decker, both of Lippstadt; Hubert Flottmeyer, Wuennenberg; Willi Fockers; Ulrich Helfmeier, both of Lippstadt; Franz-Gerhard Jost, Arnsberg; Juergen Kabst, Lippstadt; Heinrich Vogt, Borchen, and Burkard Woerdenweber, Lippstadt, all of Germany, assignors to Hella KG Hueck & Co., Lippstadt, Germany

Filed Nov. 2, 1995, Ser. No. 552,061

Claims priority, application Germany, Nov. 5, 1994, 44 39 547.7

Int. Cl.[6] B60Q *3/02*

U.S. Cl. 362—32 **15 Claims**



1. A light system for an interior of a motor vehicle having at least first and second function groups, each function group having at least a first light creation unit which comprises an electrically activated and deactivated light source and a reflector for concentrating light from the light source, and having a first light conductor whose first end is respectively coupled to the first light creation unit for transmitting concentrated light, the first light conductor including a plurality of flexible individual light conductors (EL), with at least a first light emitting element (E) being at a second end of the light conductor for illuminating; wherein

each of the first and second function groups also has at least a second light creation unit (LE) with a second light source, together with a respective second light conductor (LL) and second light emitting element (E);

there is further included means to switch on and off individually the first and second function groups, said means to switch including first and second means for simultaneously electrically switching on and off the first and second light sources (LQ) of the first and second light creation units in each of the respective first and second function groups;

the first and second light creation units of each function groups are spatially separated in the motor vehicle so as to reduce the lengths of the light conductors;

the first means for simultaneously electrically switching on and off the first and second light sources of the spatially-separated first and second light creation units of the first function group operates in response to a changing of a position of an access element for the interior of the motor vehicle;

the second means for simultaneously electrically switching on and off the first and second light sources of the spatially-separated first and second light-creation units of the second function group operates in response to a stand light being switched on and off;

whereby the first function group creates entering and exiting illumination and the second function group creates an orientation illumination.

5,647,658

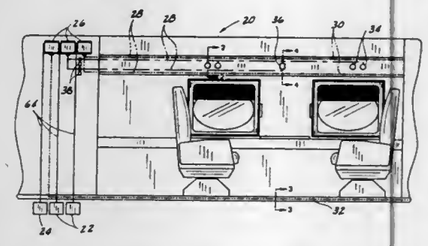
FIBER-OPTIC LIGHTING SYSTEM

Bouchaib Ziadi, 4810 Blackjack Rd., Red Bud, Ill. 62278

Filed May 11, 1995, Ser. No. 439,431

Int. Cl.[6] B60Q *3/00;* **F21V** *8/00*

U.S. Cl. 362—62 **26 Claims**



1. A fiber-optic lighting system for lighting an interior of an aircraft, the interior having a wall, a floor and a ceiling, the lighting system comprising:

a power supply;

a high intensity light source connected to the power supply for generating a light beam and directing the beam along a path;

a first elongate light guide having first and second ends and a length extending between the first and second ends, the first end of the first light guide being positioned adjacent the light source and within the path of the light beam, the first light guide being configured to transmit light between the first and second ends of the first light guide;

a first lamp reflector connected to the second end of the first light guide for directing light transmitted to the second end of the first light guide into the aircraft interior;

a second elongate light guide having first and second ends and a length extending between the first and second ends, the first end of the second light guide being positioned adjacent the light source and within the path of the light beam, the second light guide having a side extending along the second light guide length, the second light guide being configured to emit light from the second light guide side as light is transmitted between the first and second ends of the second light guide; and

an elongate light fixture positioned along the second light guide length for directing light emitted from the side of the second light guide into the aircraft interior.

5,647,659

VEHICULAR HEADLAMP HAVING IMPROVED ORTHOGONAL CONVERSION GEAR MECHANISM

Hideshi Mori, Shizuoka, Japan, assignor to Koito Manufacturing Co., Ltd., Tokyo, Japan

Filed Apr. 21, 1995, Ser. No. 427,101

Claims priority, application Japan, Apr. 27, 1994, 6-089827

Int. Cl.[6] B60Q *1/02*

U.S. Cl. 362—66 **14 Claims**

1. A vehicular headlamp, comprising:

a lamp body having a rear wall;

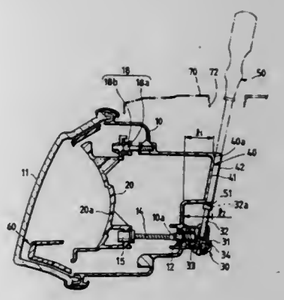
a reflector accommodated in said lamp body;

an aiming mechanism tiltably supporting said reflector with respect to said lamp body, said aiming mechanism comprising:

an upper ball joint support tiltably supporting said reflector to said rear wall of said body;

an aiming screw extending in a front-rear direction of said lamp body, a rear end part of said aiming screw penetrating a rear wall of said lamp body and protruding rearward from said lamp body;

an orthogonal conversion gear mechanism engaging a rear end part of said aiming screw; and



a rotational operating shaft having first and second ends and being linked at said first end with said aiming screw via said gear mechanism for operating the same to rotate, said rotational operating shaft being provided at said second end thereof with an engaging part engageable with an end of a driver; and

an expanding member comprising a protruding portion of said rear wall of said lamp body, disposed below and extending rearward of said upper ball joint support for protectively covering said orthogonal conversion gear mechanism of said aiming mechanism.

5,647,660

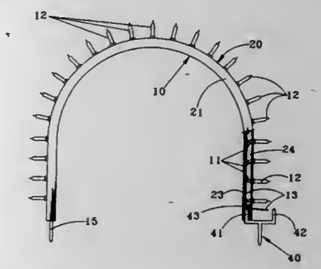
MODULAR LIGHT DISPLAY APPARATUS

Kuo-Hsing Lee, 10139 Duchamp, Houston, Tex. 77036

Continuation-in-part of Ser. No. 247,683, May 23, 1994, Pat. No. 5,442,531. This application Jul. 14, 1995, Ser. No. 502,371

Int. Cl.[6] F21V *21/00*

U.S. Cl. 362—249 **10 Claims**



1. Modular light display apparatus for mounting a string of electric lights which has a plurality of light sockets and corresponding light bulbs connected at spaced intervals to electrically conducting wire, said light display apparatus comprising two or more pre-shaped modular light holders having ends which are removably engageable with corresponding stationarily disposed objects to provide for mounting of said string of electric lights in a display of predetermined configuration, each of said modular light holders comprising an elongated member having a plurality of uniformly spaced holders each one of which is engageable with one of the light sockets of said string of electric lights so that when viewed from at least one side of said modular light holder said light socket is hidden and said light bulb projects upwardly to provide said display of predetermined configuration, said stationarily disposed objects comprising a stake, having upper and lower ends, said lower end of which is insertable into the ground and said upper end of which is provided with one or more socket members, each of which is slidingly and removably engageable by one end of one of said modular light holders.

5,647,661

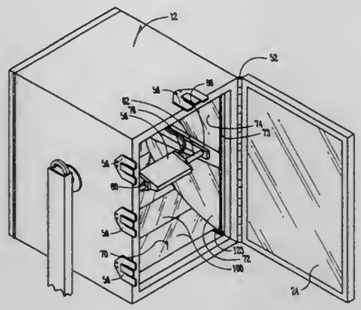
HIGH EFFICIENCY, HIGHLY CONTROLLABLE LIGHTING APPARATUS AND METHOD

Myron K. Gordin, Oskaloosa, Iowa, assignor to Musco Corporation, Oskaloosa, Iowa

Continuation-in-part of Ser. No. 820,486, Jan. 14, 1992, Pat. No. 5,402,327, Ser. No. 242,746, May 13, 1994, Pat. No. 5,595,440, and Ser. No. 242,745, May 13, 1994, Pat. No. 5,519,590. This application Jan. 20, 1995, Ser. No. 375,650

Int. Cl.[6] F21V *7/00*

U.S. Cl. 362—283 **47 Claims**



1. A lighting fixture for lighting a target area of a certain shape and substantial size with a substantial amount of light intensity comprising:

a fixture housing having a substantially transparent front lens;

a high intensity light source positioned in the housing, the light source having a length;

a primary reflector positioned generally along the length of the light source at or near the light source, on the same order of size as the light source, and gathering light from one side of the light source;

a secondary reflector positioned in the housing, of substantially larger size than the primary reflector, spaced from the light source, and extending around an opposite side of the light source from the primary reflector, the secondary reflector including a frame, a plurality of reflector segments of similar size and shape, mounts which position each segment adjacent one another along the frame to form a generally continuous secondary reflector surface, and adjustment components connected between the mounts and the frame allowing adjustable tilting of the segments;

the primary reflector directing its gathered light to the secondary reflector; and

the secondary reflector producing a highly controlled composite light beam made up of reflections of light from each of the segments, the reflections being adjustably positioned relative to one another by tilting of the segments, the beam emanating through the lens of the housing.

5,647,662

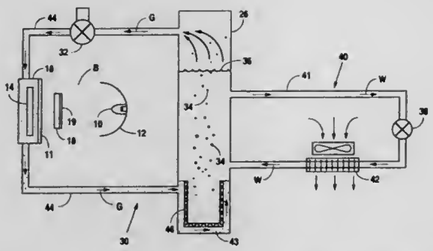
APPARATUS FOR COOLING A LIGHT BEAM

Byron J. Ziegler, 11700 Metric Blvd. #1322, and Richard S. Belliveau, 2209 W. Braker La., both of Austin, Tex. 78758

Filed Oct. 6, 1995, Ser. No. 550,251

Int. Cl.[6] F21V *29/00*

U.S. Cl. 362—294 **6 Claims**



1. Apparatus for cooling a light beam, comprising:

a) a light beam source that projects a light beam and heat;

b) a gas cooling circuit containing a heat conducting gas;

c) a cooling chamber which is integral to the gas cooling circuit and is placed in the light beam;

d) an image projection device mounted in the cooling chamber;

e) a cooling exchange tower integral to the gas cooling circuit;

f) a liquid cooling circuit, of which the cooling exchange tower is an integral part, containing a liquid coolant;

g) a driving device which moves the gas through the tower, whereby the gas, which absorbs heat in the cooling chamber, is cooled in response to being moved through the liquid coolant in the cooling exchange tower; and

h) a pump device urging the liquid coolant to move through the liquid cooling circuit.

5,647,663

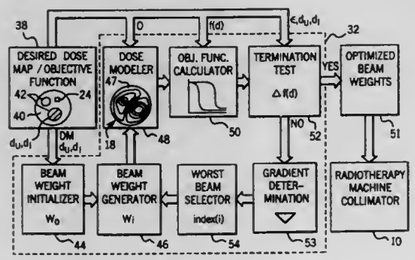
RADIATION TREATMENT PLANNING METHOD AND APPARATUS

Timothy W. Holmes, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Jan. 5, 1996, Ser. No. 583,388

Int. Cl.[6] G06F *15/00*

U.S. Cl. 128—653.1 **12 Claims**



1. A method of planning radiation treatment of a treatment volume of a patient using a radiation therapy machine generating a plurality of radiation beams to be directed through different parts of the volume, the beams having independently controllable intensities, the method comprising the steps of:

operating an electronic computer according to a stored program to:

1) pre-compute a standard dose map for a plurality of volume elements within the treatment volume for each beam, under the assumption that the beams have a predetermined normal beam intensity;

2) receive from a user an objective function indicating a desired distribution of dose the plurality of volume elements within the treatment volume;

3) scale the standard dose map for each beam by a current weight for that beam and sum the scaled standard dose maps together to produced a computed dose map;

4) evaluate the computed dose according to the objective function;

5) adjust the current weight of at least one beam according to the evaluation of step (4) and repeat steps (3) through (5) until the value of the objective has stabilized; and

6) at the conclusion of step (5) output the adjusted current beam weights as a radiation treatment plan.

5,647,664

LIGHTING SYSTEM FOR SPOTLIGHTS AND THE LIKE

Miroslav Hanečka, Tyršova 165, 78375 Dub n. Moravou, Czechoslovakia

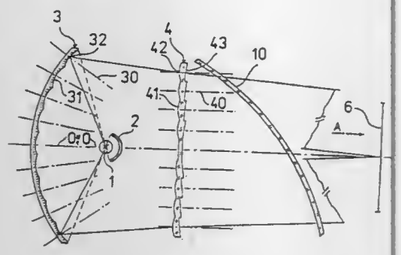
PCT No. PCT/CZ93/00031, § 371 Date Dec. 5, 1994, § 102(e) Date Dec. 5, 1994, PCT Pub. No. WO94/15143, PCT Pub. Date Jul. 7, 1994

PCT Filed Dec. 20, 1993, Ser. No. 347,379

Claims priority, application Czechoslovakia, Dec. 21, 1992, 3780-92

Int. Cl.[6] F21V *7/04*

U.S. Cl. 362—308 **10 Claims**



1. The lighting system for lighting apparatus for providing an intensive and uniform illumination in an area of a given size and at a given distance, comprising:

a light source for emitting light rays and generating a light flux,

an auxiliary mirror having a first optical axis,

a main mirror having a second optical axis, and

a raster lens having a third optical axis with converging optical elements defining a first plurality of vertexes directing the light rays into a selected plane to create a light spot,

wherein a reflecting area of said main mirror is created as a raster of concave spherical mirrors each having an optical axis converging with respect to the second optical axis where the concave spherical mirrors define a second plurality of vertexes having a shape of a rotational conic section with an axis of rotation identical with the second optical axis, the concave spherical mirrors being aligned with the second optical axis, said light source, and the auxiliary mirror, each of the concave spherical mirrors having a particular reflecting area with a focal length and projecting light rays from the light source to the first plurality of vertexes of the converging optical elements for of the raster lens, said converging optical elements for directing the projected light rays into the plane of the light spot.

5,647,665

VERTICAL FEED MIXER WITH FLIGHTING PLOWS

Reggie L. Schuler, Griswold, Iowa, assignor to Schuler Manufacturing & Equipment Co., Inc., Griswold, Iowa

Filed Apr. 18, 1996, Ser. No. 634,351

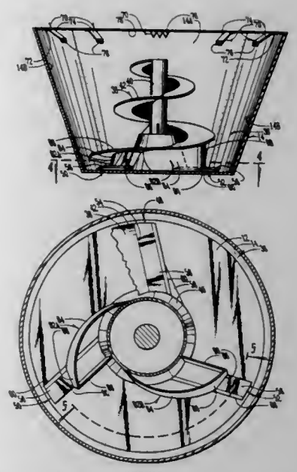
Int. Cl.[6] B01F *7/24;15/02*

U.S. Cl. 366—196 **13 Claims**

6. An improved vertical feed mixer for mixing hay, forage, and other solid feed materials, the mixer having a floor and a sidewall defining a mixing chamber with an open upper end and a discharge opening, and a vertically oriented auger rotatably mounted within the mixing chamber, the auger including a shaft and flighting with inner and outer edges, the improvement comprising:

a plow member mounted to the auger and extending substantially between the flighting and the floor, the plow member including a substantially vertical wall curved outwardly from the auger shaft for directing material outwardly away from the auger shaft to prevent feed material from accumulating between the flighting and the floor, and

a plurality of grader blades extending outwardly from the auger shaft in close proximity to the floor of the mixer wherein the grader blades discharge feed material through the discharge opening of the mixer upon rotation of the auger.



5,647,666

MIXER INSTALLATION DEVICE

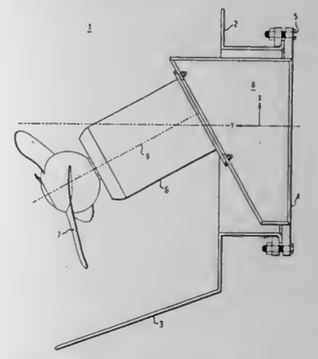
Roland I. G. Narholm, Vaxholm, and Per G. L. Stjerna, Huddinge, both of Sweden, assignors to ITT Flygt AB, Solna, Sweden

Filed Jan. 24, 1996, Ser. No. 590,844

Claims priority, application Sweden, Feb. 13, 1995, 9500495

Int. Cl.[6] B01F *7/00*

U.S. Cl. 366—285 **2 Claims**



1. An installation device for an electrically driven mixer (**6**) having a rotatable shaft (**9**) and a propeller (**7**) mounted thereon, and said mixer (**6**) being mounted to a cover (**4**) in a tank wall (**2**) of a water tank (**1**) for mixing the contents thereof, wherein the improvement comprises:

said mixer (**6**) being a submersible type mixer and, with its electrical motor being mounted to the inner side of said cover (**4**), and said mixer (**6**) having its electrical connection means passing through or adjacent said cover (**4**);

said mixer (**6**) being mounted to said cover (**4**) by means of an oblique intermediate part (**8**) such that said shaft (**9**) forms an angle up to 45 degrees with a normal axis through said tank wall (**2**); and

said cover (**4**), oblique part (**8**) and mixer (**6**) are mountable from outside the tank wall (**2**) and rotatable with respect to the

tank wall (2) so that said angle formed by said shaft (9) and said normal axis of said tank wall (2) is variable.

5,647,667

PROOF TEST FOR CERAMIC PARTS

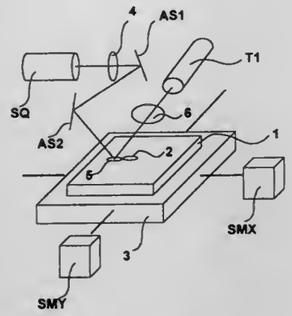
Ulrich Bast; Karl Kempter, both of Munich, and Thomas Schulenberg, Essen, all of Germany, assignors to Siemsns Aktiengesellschaft, Munich, Germany

Filed Jun. 6, 1995, Ser. No. 479,079

Claims priority, application Germany, Jun. 6, 1994, 44 19 750.0

Int. Cl.[6] G01N *3/60;25/00*

U.S. Cl. 374—57 10 Claims



1. A method for testing a structural ceramic part by creating a thermally induced test stress, comprising the steps of:

calculating a desired temperature distribution which induces at least an amount of stress the part must withstand during use;

creating a temperature distribution by heating the part by radiation action in predetermined regions;

measuring the created temperature distribution of the part by topically resolving temperature sensors;

comparing the measured temperature distribution of the part to the calculated, desired temperature distribution;

regulating at least one of duration and location of the radiation action until the desired temperature distribution has been produced in the part; and

detecting a failure of the part by sound emission analysis, and eliminating the part if damaged.

5,647,668

METHOD FOR GENERATING A SIGNAL RELATING TO A TEMPERATURE IN THE EXHAUST SYSTEM OF AN INTERNAL COMBUSTION ENGINE

Eberhard Schnaibel, Hemmingen; Erich Schneider, Kirchheim, and Hong Zhang, Schwieberdingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Jun. 7, 1995, Ser. No. 474,433

Claims priority, application Germany, Sep. 21, 1994, 44 33 631.4

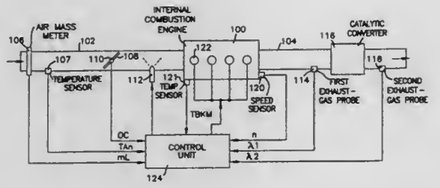
Int. Cl.[6] G01K *13/02*

U.S. Cl. 374—144 9 Claims

1. A method for generating at least one temperature signal indicative of a temperature in an exhaust system of an internal combustion engine, comprising the steps of:

forming a steady state temperature signal indicative of a steady-state exhaust gas temperature, the steady-state signal being determined as a function of at least one operating characteristic of the internal combustion engine;

forming a first correction signal indicative of a correction factor, the first correction signal being determined as a function of at least one of an efficiency signal indicative of an efficiency of



the internal combustion engine and an intake-air signal indicative of an air temperature of air entering the internal combustion engine; and

forming a first temperature signal indicative of the temperature in the exhaust system as a function of at least the steady-state signal and the first correction signal.

9. A device for forming at least one temperature signal of a temperature in an exhaust system of an internal combustion engine, comprising:

first means for forming a steady state temperature signal indicative of a steady-state exhaust gas temperature, the steady state temperature signal being determined as a function of at least one operating characteristic of the internal combustion engine;

second means for forming a correction signal indicative of a correction factor, the correction signal being determined as a function of at least one of an efficiency signal indicative of an efficiency of the internal combustion engine and an intake air temperature signal indicative of an air temperature of air entering the internal combustion engine; and

third means, coupled to the first means and to the second means, for forming a first temperature signal indicative of the temperature in the exhaust system as a function of the steady state temperature signal and the correction signal.

5,647,669

METHOD FOR GENERATING A SIMULATED SIGNAL RELATING TO A TEMPERATURE IN THE EXHAUST SYSTEM OF AN INTERNAL COMBUSTION ENGINE

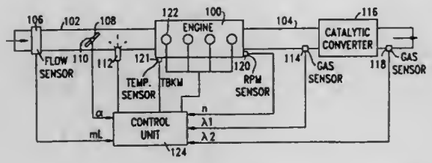
Eberhard Schnaibel, Hemmingen; Erich Junginger, Stuttgart, and Erich Schneider, Kirchheim, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Jun. 7, 1995, Ser. No. 477,037

Claims priority, application Germany, Jul. 14, 1994, 44 24 811.3

Int. Cl.[6] G01K *13/02*

U.S. Cl. 374—144 11 Claims



1. A method for generating a simulated signal representing a temperature in an exhaust system of a motor vehicle internal combustion engine, comprising the steps of:

generating a first signal representing a steady-state exhaust gas temperature;

generating a second signal representing a rapid portion of the first signal;

generating a third signal representing a slow portion of the first signal; and

superimposing the second signal and the third signal to generate a fourth signal representing the temperature in the exhaust system.

11. A device for generating a simulated signal representing a temperature in an exhaust system of a motor vehicle internal combustion engine, comprising:

first means for generating a first signal representing a steady-state exhaust gas temperature;

second means, coupled to the first means, for generating a second signal representing a rapid portion of the first signal;

third means, coupled to the first means, for generating a third signal representing a slow portion of the first signal; and

fourth means, coupled to the second and third means, for superimposing the second signal and the third signal to generate a fourth signal representing the temperature in the exhaust system.

5,647,670

BODY FLUID CONTAINMENT BAG

Angel Iscovich, 642 Via Trepadora, Santa Barbara, Calif. 93110

Filed Apr. 13, 1994, Ser. No. 227,248

Int. Cl.[6] B65D *33/02;33/25*

U.S. Cl. 383—33 2 Claims



1. A collapsible, open form bag for the containment of a body fluid or the like, comprising a tubular member having an open end and a closed end and a flexible outer wall therebetween; said open end further comprising a pair of opposed, flexible, reinforcing strips attached to said flexible outer wall in opposition to one another wherein at least one of said flexible reinforcing strips is arched or bowed to separate said flexible reinforcing strips and create a space therebetween, said space forming an opening in said open end and wherein said open end further comprises fluid-impermeable adhesive means disposed between opposing surfaces of said flexible outer wall, said adhesive means being operable for non-releasably affixing one flexible reinforcing strip to the other.

5,647,671

CLOSURE ARRANGEMENT HAVING A PEELABLE SEAL

Timothy J. May, Greenville, Wis., assignor to Reynolds Consumer Products, Inc., Appleton, Wis.

Continuation-in-part of Ser. No. 499,621, Jul. 7, 1995, abandoned, which is a division of Ser. No. 225,864, Apr. 11, 1994, Pat. No. 5,470,156. This application Feb. 20, 1996, Ser. No. 603,145

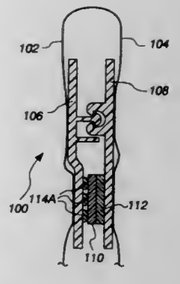
Int. Cl.[6] B65D *33/18*

U.S. Cl. 383—210 15 Claims

1. A closure arrangement for a polymeric bag having first and second opposing films, comprising:

first and second opposing base strips each having an inner and outer surface, said outer surfaces of said first and second base strips being adapted for attachment to the respective first and second films;

at least two sealant ribs composed of low-temperature sealant material and attached to the inner surface of said first base strip; and



a peelable strip wider than said sealant rib and having a pair of opposing surfaces, one of said opposing surfaces being connected to said inner surface of said second base strip and the other of said opposing surfaces being connected to said sealant ribs to form one-time peelable seals.

5,647,672

MEMORY DISK DRIVING APPARATUS

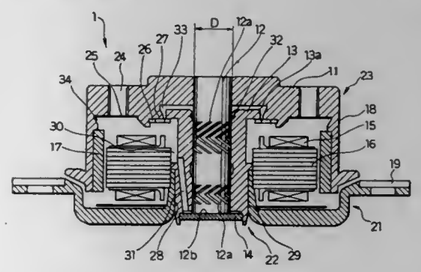
Hideshi Fukutani, Yonago, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 25, 1996, Ser. No. 637,568

Claims priority, application Japan, Jun. 23, 1995, 7-157354

Int. Cl.[6] F16C *32/06*

U.S. Cl. 384—100 4 Claims



1. A memory disk driving apparatus having a spindle motor comprising:

a dynamic pressure fluid bearing having a sleeve for rotatably supporting a motor shaft inserted into said sleeve,

said dynamic pressure fluid bearing having herringbone grooves on either one of said sleeve and said shaft and having lubricant injected into a gap between said shaft and said sleeve,

Wherein

said herringbone grooves are adapted to apply a dynamic pressure to the lubricant by relative rotation between said shaft and said sleeve,

motor shaft has a diameter D of 4 mm or less and

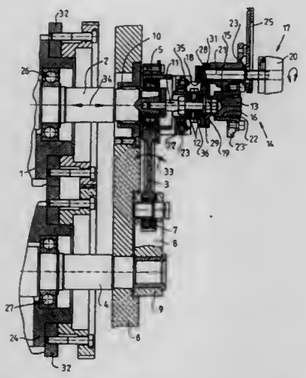
ratio (R/D) of the radial gap R between the shaft and the sleeve to the diameter D of the shaft is between 0.0005 and 0.002, said radial gap R being defined by R=½·(Ds−D) where Ds is the inner diameter of said sleeve.

5,647,673

PLATE-CYLINDER BEARING ARRANGEMENT

Edgar Grundke, Mannheim, and Hans-Jürgen Kusch, Neckargemünd, both of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Filed Oct. 13, 1995, Ser. No. 543,159
Claims priority, application Germany, Oct. 13, 1994, 44 36 584.5
Int. Cl.[6] F16C *23/06*
U.S. Cl. 384—519 **10 Claims**



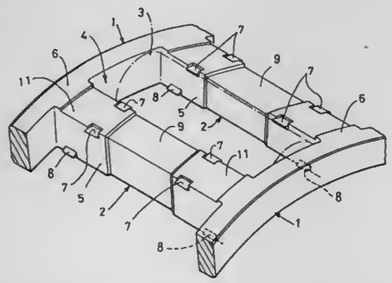
1. Plate-cylinder bearing arrangement for a printing press having a plate cylinder and a rubber-blanket cylinder mounted on respective shafts, the plate cylinder and its shaft being displaceable, and a side-register adjusting device serving for position correction, comprising two bearing levers extending in a direction towards ends of the blanket-cylinder shaft for maintaining the plate-cylinder shaft in its axial position, the plate-cylinder shaft being connected at each of its ends through the intermediary of self-aligning bearings to one of the bearing levers, respectively, and the bearing levers being connected to a printing-press housing, through the intermediary of spherical-cup bearings, so as to be swivellable in axial direction of the plate cylinder.

5,647,674

RETAINER FOR NEEDLE ROLLER BEARING

Izumi Ohashi, and Atsushi Yamashita, both of Fukuroi, Japan, assignors to NTN Corporation, Osaka, Japan

Filed May 3, 1996, Ser. No. 642,618
Claims priority, application Japan, May 16, 1995, 7-117393
Int. Cl.[6] F16C *33/46*
U.S. Cl. 384—580 **2 Claims**



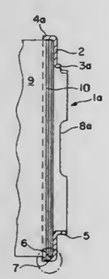
1. An outer-diameter guide type retainer for a roller bearing, said retainer comprising:
a first annular portion defining an outer diameter guide surface;
a second annular portion defining an outer diameter guide surface;
a plurality of crossbars extending between and connecting said first and second annular portions, said plurality of crossbars being equally circumferentially spaced so as to define a plurality of pockets for receiving a plurality of rollers, respectively,
each of said crossbars having opposite faces which serve as roller guide surfaces and stepped outer diameter portions which are slightly recessed radially inwardly from said outer diameter guide surfaces such that a radial thickness of each of said crossbars is substantially the same as a radial thickness of said first and second annular portions;
a pair of outer diameter claws formed on each of said roller guide surfaces at said stepped outer diameter portion; and
a pair of inner diameter claws formed on each of said roller guide surfaces, wherein said pairs of outer diameter claws and said pairs of inner diameter claws are capable of retaining the plurality of rollers in said plurality of pockets.

5,647,675

ANGULAR THRUST DISC

Norbert Metten, Herzogenaurach, and Heinz Pfann, Erlangen, both of Germany, assignors to Ina Walzlager Schaeffler KG, Germany

Continuation-in-part of Ser. No. 262,939, Jun. 21, 1994, abandoned. This application May 23, 1995, Ser. No. 447,405
Claims priority, application Germany, Jul. 17, 1993, 9310708 U
Int. Cl.[6] F16C *33/58;35/06*
U.S. Cl. 384—620 **10 Claims**



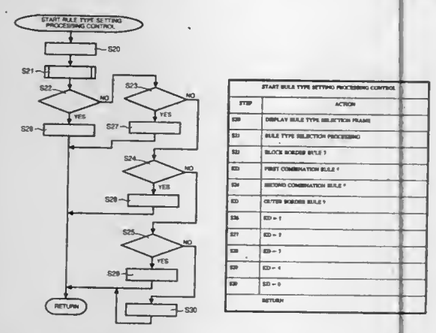
1. An angular thrust disc for a thrust bearing comprising a radial portion which forms a raceway for rolling elements and merges with at least one axial angular portion on whose periphery retaining means are arranged which can assure a guidance of the angular thrust disc in a housing or on a shaft and which serve directly or indirectly to guide the rolling elements, characterized in that the angular thrust disc has a Z-shaped cross-sectional profile whose radially outer angular portion comprises radially inwards directed projections arranged axially spaced from a free end thereof and made by chipless stamping, which projections engage into a peripheral groove of a shaft or a housing in an installed state of the angular thrust disc to assure a fixing with clearance, and a free end of a radially inner angular portion of the angular thrust disc comprises circumferentially spaced and radially outwards directed crimpings and recesses which form an installation safeguard and permit an admission of oil into the thrust bearing.

5,647,676

DOCUMENT PROCESSING DEVICE HAVING RULING FUNCTION

Chitoshi Ito, Kasugai; Kazubisa Hirono; Akihiko Niwa, both of Nagoya, and Sachiko Nakagawa, Kariya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Jul. 13, 1995, Ser. No. 501,793
Claims priority, application Japan, Jul. 20, 1994, 6-191132
Int. Cl.[6] B41J *5/30*
U.S. Cl. 400—65 **22 Claims**



1. A document processing device, comprising:
input means for inputting various data and instructions;
input data storage means for storing input data of characters and symbols;
a print buffer for storing print data;
control means for controlling said input means, said display means and said print means;
block indication means for inputting, from said input means, block indication data which are indicated as a block for each array of plural characters and symbols at a data input time, and storing the block indication data into said input data storage means while being incident to the data of the plural characters and symbols of the block; and
block border rule data preparation means for calculating a block size for every block indicated by the block indication means using the data of said input data storing means, and developing block border rule data for a rectangular block border into said print data buffer.

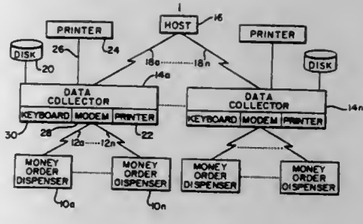
5,647,677

APPARATUS FOR DISPENSING DOCUMENTS HAVING MONETARY VALUE

Lawrence G. Smith, Orlando, Fla., assignor to Travelers Express Company, Inc., Minneapolis, Minn.

Continuation of Ser. No. 466,415, Jun. 6, 1995, Pat. No. 5,570,960, which is a continuation of Ser. No. 404,134, Mar. 13, 1995, Pat. No. 5,492,423, which is a continuation of Ser. No. 151,060, Nov. 12, 1993, abandoned, which is a continuation of Ser. No. 933,869, Aug. 21, 1992, abandoned, which is a continuation of Ser. No. 814,039, Dec. 24, 1991, abandoned, which is a continuation of Ser. No. 494,665, Mar. 16, 1990, abandoned, which is a continuation of Ser. No. 406,979, Sep. 13, 1989, abandoned, which is a continuation of Ser. No. 121,074, Nov. 16, 1987, Pat. No. 4,870,596, which is a continuation of Ser. No. 60,762, Jun. 8, 1987, Pat. No. 4,812,986, which is a division of Ser. No. 877,539, Oct. 31, 1986, Pat. No. 4,699,532, which is a division of Ser. No. 596,291, Apr. 3, 1984, Pat. No. 4,625,275. This application Jul. 22, 1996, Ser. No. 685,976
Int. Cl.[6] B41J *3/00*
U.S. Cl. 400—70 **3 Claims**

1. A system for dispensing documents having monetary value at at least one retail establishment comprising:



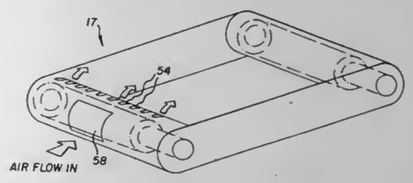
a dispenser for dispensing documents having
a dispenser for dispensing documents having monetary value at a retail establishment;
a digital processor located at the dispenser location for controlling the operation of the dispenser;
a memory associated with the digital processor for storing transaction data and control data;
a printer with a compartment for storing blank document forms and coupled to the dispenser for receiving a blank document form from said compartment and printing alphanumeric indicia thereon; and
means remotely connected to the dispenser for issuing a polling command for transaction information involving multiple vendor/customer transactions stored within the memory of the digital processor associated with the dispenser, and upon issuance of said polling command, for receiving said transaction information.

5,647,678

CARTRIDGE FOR COOLING A THERMAL PRINT HEAD

Donald C. Trombley, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 21, 1996, Ser. No. 604,282
Int. Cl.[6] B41J *35/28*
U.S. Cl. 400—208 **9 Claims**



1. A dye donor cartridge for a thermal printer for maintaining a print head at a uniform temperature, said cartridge comprising:
a supply roll for dispensing a dye donor web;
a take-up roll for receiving said dye donor web;
an enclosure partially surrounding at least said supply roll; vents in said enclosure; and
an opening in said enclosure, said opening and vents cooling the print head by allowing air to be directed to the print head.

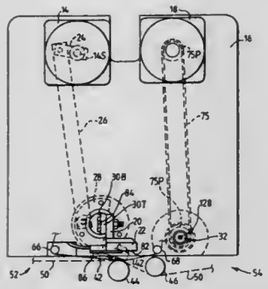
5,647,679

PRINTER FOR PRINTING ON A CONTINUOUS PRINT MEDIUM

Michael Cameron Green, Worth; Anthony James Palmer, Redhill, and Alan Hall, Woking, all of England, assignors to ITW Limited, Windsor, United Kingdom

Filed Apr. 1, 1996, Ser. No. 625,854
Int. Cl.[6] B41J *33/14*
U.S. Cl. 400—232 **25 Claims**

1. A thermal printer for printing information onto a continuous print medium by ink transfer from a thermal print ribbon, comprising:



means for feeding a print medium within said printer so as to define a print medium path extending between inlet and outlet regions of said printer;

a platen extending transversely with respect to said print medium path and upon one side of said print medium;

a thermal print head having energizable print elements and located in an opposing relationship with respect to said platen upon the other side of said print medium path;

means for feeding a print ribbon within said printer so as to define a print ribbon path which, between said print head and said platen, extends in the same direction as and lies adjacent to said print medium path;

printing actuator means for bringing said print head and said platen together during successive printing operations; and

ribbon drive means for driving said ribbon along said ribbon path at variable rates of speed during said printing operations such that the speed of said print ribbon is substantially the same as that of said print medium.

5,647,680

WIPER ARM

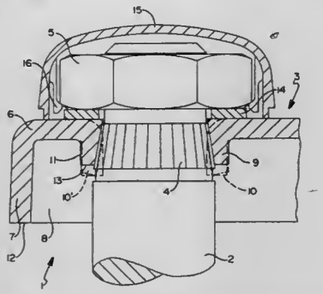
Herbert Bienert, Besigheim; Bruno Egner-Walter, Heilbronn, and Andreas Fink, GroBbottwar, all of Germany, assignors to ITT Automotive Europe GmbH, Germany

Continuation of Ser. No. 403,811, Mar. 16, 1995, abandoned. This application Nov. 15, 1996, Ser. No. 749,866

Claims priority, application Germany, Sep. 16, 1992, 42 30 961.1

Int. Cl.[6] B60S *1/34*

U.S. Cl. 403—263 **7 Claims**



1. A wiper arm assembly for use in cleaning a windscreen or an automotive vehicle, the assembly comprising:

a wiper shaft having a conical portion with a first included angle tapering toward an end of the shaft;

a fastening component formed of sheet metal pressed onto the conical portion and having a back flanked by sidewalls extending therefrom and having a receptacle with a neck extending from the back with the neck receiving the conical portion of the wiper shaft wherein the receptacle and the sidewalls are integrally formed in one piece with the back and wherein the edges of the receptacle and of the sidewalls point away from a back of the arm with the neck having a first length and the neck also having an internal conical shape of a second included angle smaller than the first included angle before the fastening component is pressed onto the wiper shaft and with the neck conforming to the first included angle of the conical portion of the shaft and the neck portion being shorter than the first length with material from the neck portion being displaced toward the back after the fastening component is pressed onto the wiper shaft.

5,647,681

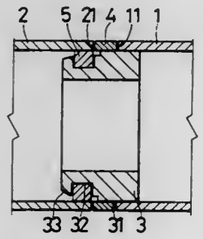
STAIRS RAIL CONNECTOR

Chi-Fu Chen, No.263, Kuang-Hsing Road, Tai-Ping Hsiang, Taichung Hsien, Taiwan

Filed Jun. 18, 1996, Ser. No. 666,597

Int. Cl.[6] B23K *1/00*

U.S. Cl. 403—270 **4 Claims**



1. A stairs rail connector comprising:

a first and a second curved tubes, each of said tubes having an interconnecting end and a small diameter connecting end, an interconnecting seat being secured to the interconnecting end of the first curved tube, an outer periphery of the interconnecting seat contacting with an inner periphery of the interconnecting end of the first curved tube, the interconnecting seat having an extension section axially forward extending by a certain length for a fitting ring to fit therearound, an annular groove being formed on the extension section for two semicircular interconnecting rings to fit therein, an outer diameter of each of said interconnecting rings being equal to an inner diameter of the interconnecting end of the second curved tube and a clearance being defined between an inner diameter of the semicircular interconnecting ring and an outer diameter of the annular groove for relative rotation, the two interconnecting rings being fitted into the interconnecting end of the second curved tube and secured therein, whereby the fitting ring is positioned between the interconnecting ends of the first and second curved tubes and whereby the first and second curved tubes can be relatively rotated about the interconnecting seat and the interconnecting rings, an outer diameter of the connecting ends being equal to the inner diameter of the first and second curved tubes, the first and second curved tubes being first rotatable to a position corresponding to a turning angle between an upper and a lower rails, then the connecting ends being adapted to be inserted into and secured in openings of the upper and lower rails to integrally connect the upper and lower rails at the turning angle.

5,647,682

FRAME WITH AT LEAST TWO HOLLOW BARS EXTENDING AT RIGHT ANGLES TO ONE ANOTHER

Thomas Riehm, Ebnat-Kappel, Switzerland, assignor to Geberit Technik AG, Jona, Switzerland

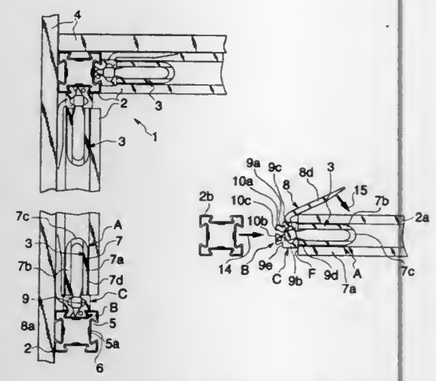
Filed Mar. 8, 1995, Ser. No. 400,618

Claims priority, application Switzerland, Mar. 28, 1994, 927/94

Int. Cl.[6] F16B *7/04*

U.S. Cl. 403—297 **19 Claims**

18. A frame comprising:



a first elongated hollow bar including an outer surface and an outer undercut groove recessed within said outer surface and a second elongated hollow bar having an end surface perpendicular to the longitudinal axis of said second hollow bar and including an outer undercut groove;

connector means for connecting said first hollow bar to said second hollow bar at a right angle with respect to said second hollow bar and with said end surface of said second hollow bar being spaced a connection distance away from said outer surface of said first hollow bar, said connector means including a locking body with a head end connectable with said undercut groove of said first hollow bar and a foot end connectable to a front-side hollow space of said second hollow bar, said foot end including two legs, said connector means further including a single expanding means pivotable about an axis parallel to the longitudinal axis of said first hollow bar for directly expanding said head end to engage said undercut groove of said first hollow bar and for directly expanding said legs at right angles to a longitudinal direction to cause an outer side of said legs to positively lock with an inside of said second hollow bar.

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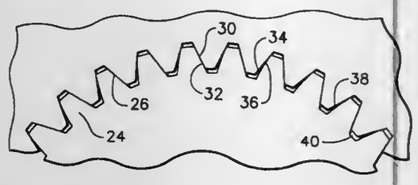
AXLE AND TUBE YOKE ATTACHMENT

Paul D. Easley, Auburn, Ind., assignor to Dana Corporation, Toledo, Ohio

Filed Apr. 5, 1994, Ser. No. 222,885

Int. Cl.[6] F16D *1/068*

U.S. Cl. 403—359 **8 Claims**



1. An axle tube and tube yoke connection assembly as part of a steerable drive axle, comprising:

an axle tube formed of a first material having first and second ends and a longitudinal axis, said first end adapted for securing to an axle gear carrier housing and said second end being connected to a tube yoke formed of a second material, said axle tube having a length of first toothed splines formed on said second end and said tube yoke having a hub portion with a bore having an internal diameter therethrough, said internal diameter of said bore being formed with second toothed splines, wherein at least one of said first or said second splines are formed to extend along a helical path having a predetermined helix angle, with said first and said second splines matingly engaged to form a connection between said axle tube and said tube yoke such that said helix angle of said helical path creates an interference fit between said first and said second splines, whereby said interference fit creates a plurality of void spaces between the matingly engaged first and second splines, with each of said void spaces being formed between each tooth of said first and said second splines by a first side of said each tooth of said first splines engaging a corresponding first side of said each tooth of said second splines along a first engaging surface thereof and a second side of said each tooth of said first splines engaging a corresponding second side of said each tooth of said second splines along a second engaging surface thereof, wherein said first engaging surface is larger than said second engaging surface, and said interference fit having sufficient strength to retain said axle tube in a fixed position relative to said tube yoke and wherein said connection between said axle tube and said tube yoke accommodates torque loads applied through said axle tube to said tube yoke.

5,647,684

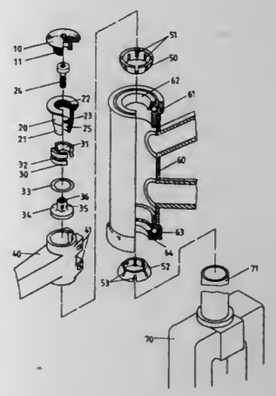
TWO-STEP AND TOOTHLESS BICYCLE HEAD SHAFT BOWL SET

Chia-Ching Chen, 307, Chieh-Shou Villiage, Changhua City, Taiwan

Filed May 16, 1995, Ser. No. 441,748

Int. Cl.[6] F16B *2/14*

U.S. Cl. 403—370 **5 Claims**



1. A two-step and toothless bicycle head tube bowl set comprising:

an upper cover having a bolt at a lower end thereof;

a fastening sleeve located under said upper cover and having an oblique conical portion at a lower end thereof, said fastening sleeve further including a threaded hole and a through hole along a central axis thereof, said threaded hole and said through hole being engageable with said bolt of said upper cover, said fastening sleeve further including a stopping hole at said lower end, said fastening sleeve having a stepped cylindrical construction;

two symmetrical semi-conical keys;

a rubber ring held in annular grooves of said two symmetrical semi-conical keys;

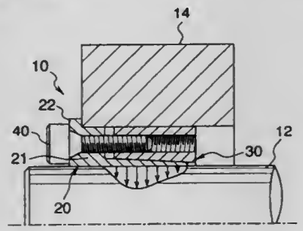
a locking piece located under said rubber ring and having a stopping column at an upper end thereof, said locking piece further including a threaded hole along a central axis thereof;

a bolt insertable through said through hole of said fastening sleeve and engageable with said threaded hole of said locking piece;

a first arcuate restraining ring located between a handlebar sleeve and an upper end of a head tube of a bicycle and

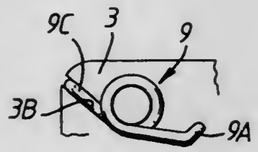
having a plurality of elastic slots having open ends arranged alternatively on top and bottom ends thereof;
two bearing sets located respectively at both ends of said head tube, each having an arcuate recessed surface; and
a second arcuate restraining ring disposed between a lower end of said head tube and a front fork and having a plurality of elastic slots having open ends arranged alternately on top and bottom ends thereof.

5,647,685
FRICTIONAL TYPE CONNECTOR FOR CONNECTING A ROTATOR TO A SHAFT
Toyoakira Fukui, Kyoto, and Yoshio Kurokawa, Yawata, both of Japan, assignors to Tsubakimoto Chain Co., Osaka, Japan
Filed Jun. 7, 1995, Ser. No. 472,316
Claims priority, application Japan, Jun. 13, 1994, 6-153090
Int. Cl.[6] F16D *1/06*
U.S. Cl. 403—370 **4 Claims**



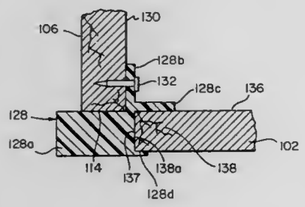
1. A frictional type connector for connecting a rotator to a shaft, said connector comprising:
an inner ring having axial holes and an outer tapered surface extending from a thicker portion to a thinner portion of the inner ring;
an outer ring having axial tapped holes and an inner tapered surface; and
bolts extending through said axial holes and threadedly engaging said axial tapped holes for effecting relative axial movement between said inner ring and said outer ring with the outer tapered surface directly contacting the inner tapered surface, wherein a taper angle of said outer tapered surface is greater than a taper angle of said inner tapered surface to reduce pressure at the outer tapered surface from said thicker portion toward said thinner portion thereof, thereby decreasing elastic deformation at the thinner portion of the inner ring.

5,647,686
SHAFT COUPLING
Michael Thomas Hancock, Warwickshire, and David Thomas Wormall, Leicestershire, both of England, assignors to Nastech Europe Limited, Coventry, England
Filed May 31, 1996, Ser. No. 657,863
Int. Cl.[6] F16B *1/00*
U.S. Cl. 403—373 **6 Claims**



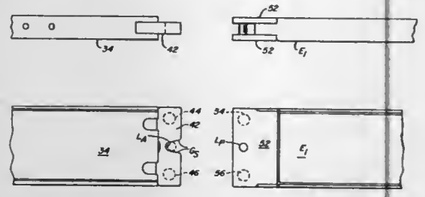
1. A shaft coupling comprising:
a shaft receiving member, the shaft receiving member having a transversely extending aperture therethrough, a shaft receiving bore therein, and a longitudinally extending slot substantially coextensive with said shaft receiving bore;
a shaft having a groove in its circumference, the shaft being inserted into the shaft receiving bore; and
a retention means within said longitudinally extending slot for engaging a transversely extending pin member and for biasingly engaging the shaft groove wherein the retention means comprises a torsion spring having a central coiled portion engaging the pin member and an end portion engaging the groove in the circumference of said shaft.

5,647,687
TOE KICK END CAP FOR CABINETS
Michael V. Robinson, and Thomas W. Alkire, both of Capon Bridge, W. Va., assignors to American Woodmark Corporation, Winchester, Va.
Filed Nov. 6, 1995, Ser. No. 553,983
Int. Cl.[6] F16B *12/44*
U.S. Cl. 403—403 **5 Claims**



1. End cap means for connecting a vertical toe kick plate between two spaced vertical side walls of a kitchen base cabinet, comprising: a pair of end cap connectors (**128**, **228**) associated with the cabinet side walls, respectively, each of said end cap connectors including:
(a) a vertically extending cap body (**128***a*, **228***a*) adapted to abut a vertical front surface on the associated cabinet side wall;
(b) a first flange portion (**128***b*; **228***b*) extending rearwardly from said cap body adjacent an inner surface of the associated side wall;
(c) means connecting said first flange portion with the associated side wall;
(d) a second flange portion (**128***c*; **228***c*) extending from said cap body orthogonally relative to said first flange portion adjacent and parallel with a rear surface of said toe kick plate; and
(e) a retaining portion (**128***d*, **228***d*) laterally spaced from and extending parallel with said second flange portion adjacent the front surface of said toe kick plate, thereby to define a slot (**138**, **238**) for slidably receiving an associated end portion of said toe kick plate;
(f) a surface of said cap body that is adapted to engage said vertical front surface of said cabinet side wall being collinear with a surface of said second flange portion that is adapted to engage the rear surface of the toe kick plate.

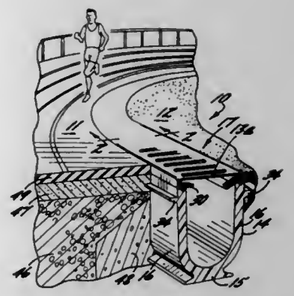
5,647,688
PAVING MACHINE WITH EXTENDED TELESCOPING MEMBERS
Ronald M. Guntert, Stockton, Calif., and William R. Cape, Racine, Wis., assignors to Guntert & Zimmerman Const. Div., Inc., Ripon, Calif.
Continuation-in-part of Ser. No. 504,858, Jul. 20, 1995. This application Dec. 12, 1995, Ser. No. 570,760
Int. Cl.[6] E01C *19/00*
U.S. Cl. 404—101 **1 Claim**



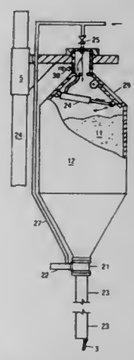
1. A paving machine having a tractor frame for propelling the paving machine along a paving path, said paving machine further including:
a box beam attached to the tractor frame,
a male member telescoping with respect to the box beam,
a crawler affixed to a distal end of the male telescoping member for support of the frame through the male telescoping member,
an extender member to enable enhanced support of the male telescoping member from the box beam,
paired leaf members affixed to one of said extender member and male telescoping member;
a single leaf member affixed to the other of said extender member and male telescoping member;
said paired leaf members and said single leaf member each being cross bored for receiving pins for locking said paired leaf members and said single leaf member in fixed relation one to another;
a locator pin disposed between the paired leaf members;
a locator aperture with gathering surfaces disposed on the single leaf member,
the locator pin and locator aperture with gathering surfaces disposed for mutual alignment upon confrontation relative to the cross bores of the leaf members to effect registration of the cross bores upon alignment of the locator aperture and locator pin.

5,647,689
DRAINAGE CHANNEL GRATES FOR ATHLETIC PLAYING SURFACES AND ASSOCIATED METHODS
Charles E. Gunter, Statesville, N.C., assignor to ABT, Inc., Troutman, N.C.
Filed Dec. 6, 1995, Ser. No. 568,301
Int. Cl.[6] E02B *3/06;5/00*
U.S. Cl. 405—36 **12 Claims**

1. An elongate grate capable of securing an edge portion of an artificial turf surface within a drainage channel having opposed sidewalls which define an open top for receiving runoff from the artificial turf surface, said grate comprising:
an elongate central portion extending between opposed exterior edges and over the open top of the drainage channel, said central portion defining a plurality of openings to permit runoff from the artificial turf surface to flow therethrough and into the drainage channel;
an abutment surface extending inward from at least one exterior edge of said central portion for securing the artificial turf surface to an upper portion of a respective sidewall of the drainage channel; and
a downwardly extending wall portion extending inward from said abutment surface into the drainage channel for applying a downwardly directed engagement force to the edge portion of the artificial turf surface.



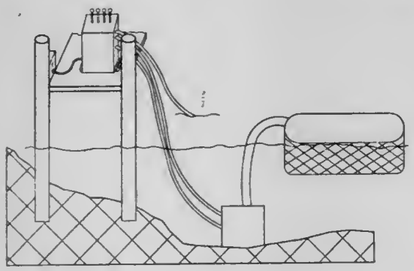
5,647,690
LOW COST INSTALLATION OF COLUMNS OF MATERIAL
Richard Erwin Landau, 768 Springfield Ave. (B-6), Summit, N.J. 07901
Filed Jun. 8, 1995, Ser. No. 488,963
Int. Cl.[6] E02B *11/00*
U.S. Cl. 405—50 **11 Claims**



9. The method of installing a plurality of columns of material in soil by means of a hollow shaft cavity forming apparatus, the soil penetrating end of said hollow shaft having a movable cap with a fluid pressurized closed hopper containing a quantity of material to form at least two columns mounted conjointly at the upper end of said hollow shaft, with a valve means closed to prevent flow of material through the flow path from the hopper through the hollow shaft to avoid loss of pressure and flow of said columnar material, comprising the steps of:
(1) position said apparatus on the surface of soil where a first column cavity is to be formed;
(2) penetrate said soil and subsurface soil to the desired depth with said hollow shaft with said movable cap at the penetration end of said hollow shaft closed to displace said soil and define said first column cavity;
(3) withdraw said shaft from said soil to thereby form said first column cavity in said soil as said shaft withdrawal is progressed;
(4) cause said cap and flow path valve to open to expose said flow path from the hopper through the said hollow shaft into said first column cavity as said shaft withdrawal is progressed;
(5) fill said cavity to form said first column by flowing material from said fluid pressurized hopper into said cavity along said flow path;

(6) at the completion of said first column activate said valve means along said flow path to curtail or otherwise stop the flow of said pressurized fluid and material from said hopper;
(7) relocate the column forming apparatus to a second column location, and repeat the cavity and column forming procedure as described in (2) through (6) to complete at least said second column of material in soil; and
(8) repeat said column forming procedure as many times as desired until said material in said hopper is depleted, and replenishing and repressurizing said hopper as needed to repeat forming a sequence of said columns in said soil.

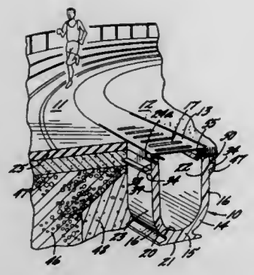
5,647,691
METHOD AND APPARATUS FOR TRANSFERRING MUD AND SILT
John C.J. Wirth, 2837 St. Lucie Blvd., Stuart, Fla. 34997
Continuation of Ser. No. 337,847, Nov. 14, 1994, abandoned. This application Jul. 24, 1996, Ser. No. 686,086
Int. Cl.[6] E02F *3/88*
U.S. Cl. 405—74 **7 Claims**



1. A method for ecologically safely transferring sand, muck, and silt from a waterbottom into filtered containers for disposition on the waterbottom, comprising the steps of:
(a) positioning a body having no moving parts adjacent a waterbottom containing muck, silt, and benthos;
(b) inducing air into a muck and silt removing head;
(c) providing a discharge line from said muck and silt removing head to a surface of a body of water;
(d) collecting the silt, muck, and benthos from the waterbottom in a filtered container floating on the surface of the body of water, whereby the benthos residing in the silt and mud can be safely transferred from the waterbottom to the porous container;
(e) transferring the container filled with muck, silt, and benthos to a desired location.

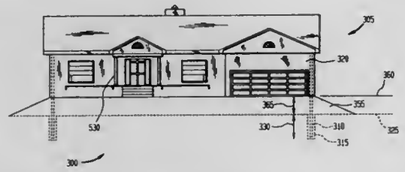
5,647,692
EDGE ADAPTER FOR ATHLETIC PLAYING SURFACE AND ASSOCIATED METHOD
Charles E. Gunter, Statesville, N.C., assignor to ABT, Inc., Troutman, N.C.
Filed Dec. 6, 1995, Ser. No. 568,254
Int. Cl.[6] E01C *11/22;* **E04B** *5/43;* **A63J** *3/00*
U.S. Cl. 405—119 **19 Claims**

1. A resilient edge adapter for defining an edge of a drainable athletic playing surface formed from a moldable material which cures to create an elastically deformable playing surface, said edge adapter comprising;
a base portion for cooperably engaging an upper portion of a drainage channel, said drainage channel being capable of receiving runoff from the drainable athletic playing surface; and



an upstanding portion extending upwardly from said base portion for restraining the moldable material when applied adjacent the drainage channel to thereby define an edge of the athletic playing surface once the moldable material cures, said upstanding portion being formed of a resilient and pliable material such that said upstanding portion of said edge adapter at least partially elastically deforms in an amount comparable to the deformation of the athletic playing surface caused by loading forces applied by an athlete coming into contact with the edge of the playing surface defined by said edge adapter.

5,647,693
FLOTATION SYSTEM FOR BUILDINGS
Herman Carlinsky, 95 Eagle Chase, Woodbury, N.Y. 11797, and Raymond Ackley, P.O. Box 49, Sugar Loaf, N.Y. 10981
Filed Jan. 19, 1995, Ser. No. 374,867
Int. Cl.[6] E02D *27/32*
U.S. Cl. 405—229 **27 Claims**



1. A flotation system for a building comprising:
a watertight basement on which a building structure is mounted, said watertight basement having walls and a floor, said walls and floor comprising a foundation for said building structure, and
a plurality of guide posts which guide a vertical movement of said watertight basement, said foundation and said building structure being caused to float by a rising floodwater.

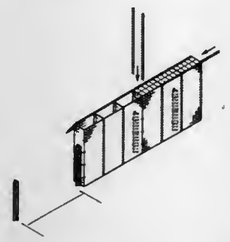
5,647,694
MINE ROOF SUPPORT APPARATUS AND METHOD
Frank M. Locotos, Bridgeville, Pa., assignor to F.M. Locotos Equipment & Design Co., Bridgeville, Pa.
Continuation of Ser. No. 832,008, Feb. 6, 1992, Pat. No. 5,375,946. This application Dec. 22, 1994, Ser. No. 363,401
Int. Cl.[6] E21D *20/02*
U.S. Cl. 405—259.4 **11 Claims**

1. A mining support for supporting rock within a mine comprising:
a cable;
a threaded shaft fixedly attached to a first end of said cable;
a first collar for fixedly attaching the cable to the threaded shaft, said first collar disposed about a portion of the cable and the threaded shaft;



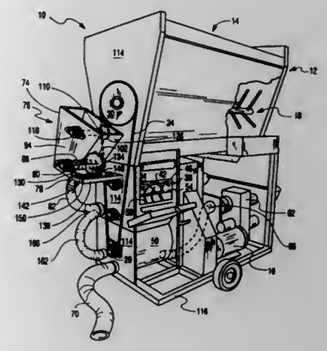
means for mixing resin, said mixing means positioned about a portion of the cable;
an expansion anchor threadingly engaged about said threaded shaft for anchoring in the rock within a bore hole; and
means for bearing against the rock at the opening of the bore hole, said bearing means attached to a second end of the cable, said bearing means includes a second collar fixedly attached to a second end of the cable having a threaded portion on which a hex nut is threadingly engaged, and a contact plate for bearing against the rock, said hex nut disposed between the second end of the cable and the plate.

5,647,695
SOIL FILLED WALL
Harold K. Hilfiker, and William B. Hilfiker, both of Eureka, Calif., assignors to Hilfiker Pipe Company, Eureka, Calif.
Filed Apr. 11, 1995, Ser. No. 420,362
Int. Cl.[6] E02D *29/02*
U.S. Cl. 405—284 **15 Claims**



1. A method of constructing a free standing anti-graffiti sound barrier wall on a situs where the wall is to be located so as to provide a structure capable of accommodating the growth of plant life, said method comprising:
a. mounting posts to the situs in generally vertically disposed horizontally spaced relationship;
b. disposing a pair of welded wire panels at the situs in a location adjacent said posts in face-to-face generally vertically disposed spaced relationship to one another to define a soil receiving cavity therebetween;
c. securing the panels together and to the posts in said spaced relationship; and,
d. progressively filling the cavity between the panels from bottom to top with soil.

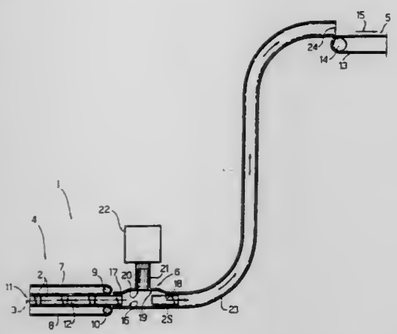
5,647,696
LOOSE MATERIAL COMBINING AND DEPOSITING APPARATUS
Henry Sperber, 8 Red Fox La., Englewood, Colo. 80111
Filed Aug. 18, 1995, Ser. No. 516,656
Int. Cl.[6] B65G *53/48*
U.S. Cl. 406—56 **27 Claims**



7. An apparatus for providing a composite loose material at a work site, said apparatus comprising:
first hopper means located at the work site for containing a first loose material;
first conveying means joined to said first hopper means for conveying the first loose material from said first hopper means;
second hopper means for containing a second loose material;
second conveying means operatively joined to said second hopper means for conveying the second loose material, said first and second conveying means being driven by a single motor joined to said first and second hopper means by means for connecting;
deposition means operatively joined to said first and second conveying means for depositing the composite loose material in a desired work site area, the composite loose material having the first and second loose materials as constituents; and
ratio setting means for setting a desired ratio of the first and second loose materials used in obtaining the composite loose material, said ratio setting means being joined to said second hopper means, said ratio setting means including a shaft connected to said means for connecting and in which said second hopper means is rotatable about said shaft.

5,647,697
METHOD AND DEVICE FOR FEEDING PACKETS OF CIGARETTES PNEUMATICALLY
Antonio Gigante, Bologna, and Antonio Portaro, Milan, both of Italy, assignors to G.D S.p.A., Bologna, Italy
Filed Jul. 26, 1995, Ser. No. 507,191
Claims priority, application Italy, Jul. 27, 1994, BO94A0358
Int. Cl.[6] B65G *51/02*
U.S. Cl. 406—83 **6 Claims**

1. A method of feeding packets of cigarettes pneumatically along a duct, comprising the steps of:
feeding packets singly and in succession along a predetermined direction into a first inlet of a propulsion chamber that also affords an outlet, aligned with the first inlet in the predetermined direction, and a second inlet, disposed between the first inlet and the outlet, through which to supply a pressurized pneumatic fluid;
propelling the packets in succession across the chamber in such a way that each in turn is caused to occupy the outlet;



restraining the packets in succession at the outlet by the application of a predetermined force;

supplying the pressurized fluid to the chamber through the second inlet in such a way that with one packet occupying the outlet and a successive packet simultaneously occupying the first inlet, pressure will rise internally of the chamber to a level sufficient to overcome the restraining force.

5,647,698

TIRE RASP BLADE

Wayne E. Jensen, Olympia Fields, Ill., assignor to B & J Manufacturing Company, Glenwood, Ill.

Continuation of Ser. No. 144,578, Oct. 28, 1993, abandoned, which is a continuation of Ser. No. 657,565, Feb. 19, 1991, Pat. No. 5,283,935, which is a continuation-in-part of Ser. No. 344,920, Apr. 28, 1989, Pat. No. 5,054,177. This application Jun. 7, 1995, Ser. No. 487,500

Int. Cl.[6] B23D *71/00*

U.S. Cl. 407—29.12 **23 Claims**



1. A tire rasp blade for use in a tire buffing machine to remove rubber from a tire, said tire rasp blade comprising:

an elongated body adapted for assembly in a rotating hub of the tire buffing machine;

said body including a working portion comprising a plurality of closely spaced teeth having substantially the same size and configuration and together forming an arcuate working perimeter protruding from the hub;

each of said teeth having a base and a working edge and being separated from neighboring teeth by truncated generally elliptical primary cutouts, the longitudinal axis of each of said cutouts being oriented generally normal to the tangent of said working perimeter, each of said teeth also having leading and trailing edges defined by said cutouts, said leading edge and said working edge forming a leading angle having a leading apex that points in the direction of hub rotation, and said trailing edge and said working edge forming a trailing angle having a trailing apex that points away from the direction of hub rotation, said leading and trailing angles being between about 30° and 40°; and

said teeth being uniformly and closely spaced so that the trailing apex of each tooth and the leading apex of the next following tooth form a spacing angle less than about 0.50°.

5,647,699

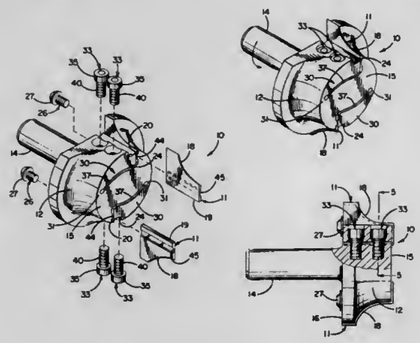
ROTARY CUTTER HEAD

Russ Martin; Ray Martin, and Mike McMahon, all of Peshtigo, Wis., assignors to Great Lakes Carbide Tool Manufacturing, Inc., Peshtigo, Wis.

Filed Jul. 17, 1995, Ser. No. 503,381

Int. Cl.[6] B23D *13/00;* **B23C** *5/22*

U.S. Cl. 407—33 **12 Claims**



1. A rotary cutter head for holding a cutting blade, said cutter head comprising a body having a first opening for receiving the blade, the first opening comprising a slot formed between a fixed surface of the body and a movable surface of a clamp, said clamp being integrally formed with said body and being defined by a second opening intersecting the first opening and defining a resilient hinge joining the clamp to the body, adjustment means for urging the clamp toward the body about the hinge and being adjustable to close the hinge and thereby decrease the size of said first opening when clamped, and to allow the hinge to open said first opening when unclamped, said first opening being sized to slidably receive said blade when said adjustment means is unclamped, said blade being clamped in said first opening when said adjustment means is clamped.

5,647,700

DOUBLE BEVEL CUTTING EDGE ROUTER BIT WITH MULTIPLE GUIDE WHEELS

Fredric A. Velepec, Glendale, N.Y., assignor to Fred M. Velepec Co., Inc., Glendale, N.Y.

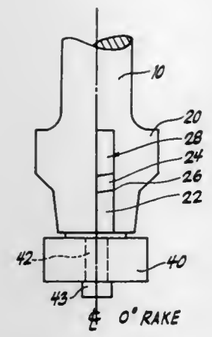
Filed Dec. 6, 1995, Ser. No. 568,220

Int. Cl.[6] B26D *1/12;* **B23C** *5/14*

U.S. Cl. 407—34 **10 Claims**

1. A router bit for trimming the overhanging edge of a plastic laminate which is cemented to a base material, this combination having an apron and a top, and said laminate having a top edge and a side edge, comprising:

a rotatable shaft;



a cutting tool connected to said shaft;

at least one cutting flute connected to said cutting tool;

a ball bearing guide concentric and coaxial with said shaft for riding along said apron of said plastic laminated top and holding said at least one cutting flute in spaced relation to said apron; and

said at least one cutting flute including:

a first straight edge for engaging generally a portion of the side edge of the laminate;

a second straight edge for engaging generally a portion of the side edge and the top edge of the laminate; and

a radial section disposed between said first edge and said second edge for generally engaging the intersection of the lower part of the side edge and the upper part of the side edge.

5,647,701

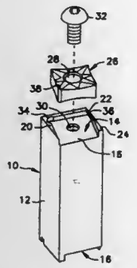
MULTIPLE SPINDLE SCREW MACHINE BOX TOOL INSERT HOLDER

Daryl K. Tempel, 111 Marcia Dr., Freeport, Ill. 61032

Filed Dec. 13, 1995, Ser. No. 571,531

Int. Cl.[6] B23C *5/22*

U.S. Cl. 407—113 **16 Claims**



1. A multiple spindle screw machine box tool insert holder, the box tool insert holder comprising:

a shank member having a generally elongated parallel sided configuration including top and bottom elongated surfaces, and left and fight elongated surfaces, said shank member also having a front end surface; and

an insert receiving pocket, said insert receiving pocket being positioned on the front end surface of the shank member, said insert receiving pocket comprised of a bottom wall substantially perpendicular to a longitudinal central axis through said shank member and three side walls for seating an insert therein, said insert having a central hole located therein, said side walls having a height less than a height of said insert, said insert receiving pocket having a threaded hole formed downwardly through said bottom wall, the threaded hold is non-concentric and substantially parallel to said longitudinal central axis through said box tool insert holder, whereby when said insert is seated in said pocket a threaded pin member having a head on one end is adapted to engage the insert from above while said threaded pin member extends downwardly through said central hole in said insert and into said threaded hole in said bottom wall in threaded engagement, thereby holding said insert securely in place.

5,647,702

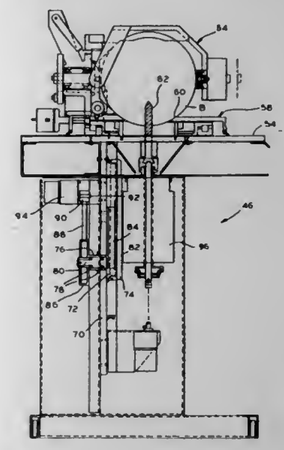
APPARATUS FOR DRILLING VARIABLE SIZE HOLES IN BOWLING BALL

Bill Eugene Towers, Belmont, Mich.; Ladislav Jurik, Brookfield, and Richard Larry Weinbrenner, Lemont, both of Ill., assignors to Brunswick Bowling & Billiards Corporation, Lake Forest, Ill.

Continuation-in-part of Ser. No. 336,143, Nov. 14, 1994. This application Jan. 30, 1995, Ser. No. 380,077

Int. Cl.[6] B23B *41/00*

U.S. Cl. 408—150 **19 Claims**



1. Apparatus for drilling holes of a select variable size in a bowling ball comprising:

a table having an upwardly opening ball supporting pocket for supporting a ball in a select position;

a boring apparatus mounted proximate the table for reciprocation in a generally vertical path intersecting a supported ball;

means for moving said boring apparatus in said path;

said boring apparatus having an output shaft rotational about a fixed axis;

a boring tool;

an adjustable boring head connected to the output shaft for rotation therewith, the boring head receiving the boring tool and being variably adjusted to offset the boring tool relative to the fixed axis so that the boring tool orbits about the fixed axis to produce a variable size hole in the bowling ball dependent on an amount of the offset; and

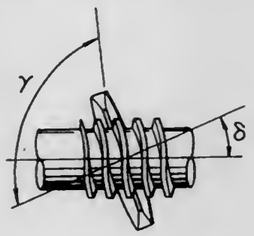
means for automatically adjusting the offset as part of a drilling operation.

5,647,703

GLOBOID WORM GEAR GENERATING METHOD

Akiyo Horiuchi, Obu, Japan, assignor to Sumitomo Heavy Industries, Ltd., Tokyo, Japan

Division of Ser. No. 263,665, Jun. 22, 1994, Pat. No. 5,456,558. This application Jul. 10, 1995, Ser. No. 500,322
Int. Cl.[6] B23F *13/00*; F16H *55/08*
U.S. Cl. 409—48 **2 Claims**



1. Globoid worm gears based on basic member gear theory, produced by use of

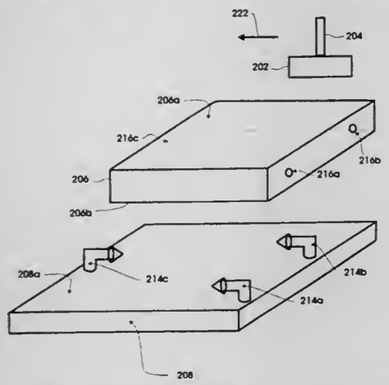
a globoid worm generating tool having a surface defined as tooth surfaces on an intermediate gear wholly by two inverted conical surfaces whose semivertical angles γ are $90°<\gamma<180°$, and major axes as well as bottoms of the two inverted conical surfaces are coincident with each other so that both tooth surfaces of a worm may be simultaneously generated.

5,647,704

MACHINING OPPOSITE SURFACES OF A WORKPIECE TO BE PARALLEL TO ONE ANOTHER

Manuel C. Turchan, 42288 Crestview, Northville, Mich. 48167

Filed Jun. 16, 1994, Ser. No. 260,544
Int. Cl.[6] B23Q *3/06*
U.S. Cl. 409—131 **25 Claims**



1. Method of machining two opposite faces of a workpiece to be parallel to one another, comprising:

establishing, with three edge features disposed around an edge of a workpiece, a plane passing through the workpiece, said plane located between a first surface of the workpiece and a second surface of the workpiece, said second surface being opposite said first surface;

mounting the workpiece by a first set of three fixture points physically engaging the three edge features;

performing a first machining operation on the first surface of the workpiece;

re-mounting the workpiece by a second set of three fixture points physically engaging the three edge features; and

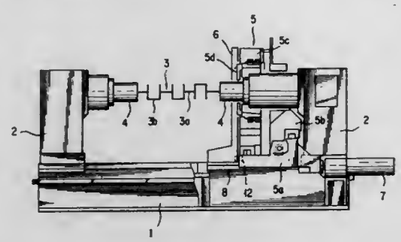
performing a second machining operation on the second surface of the workpiece.

5,647,705

CRANKSHAFT MILLER AND METHOD OF USE THEREOF

Masumi Shimomura, Ishikawa-ken, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

PCT No. PCT/JP94/00598, § 371 Date Oct. 5, 1995, § 102(e) Date Oct. 5, 1995, PCT Pub. No. WO94/23872, PCT Pub. Date Oct. 27, 1994
PCT Filed Apr. 8, 1994, Ser. No. 537,658
Claims priority, application Japan, Apr. 9, 1993, 5-082844
Int. Cl.[6] B23C *3/06*
U.S. Cl. 409—132 **8 Claims**



5. A method of use of a crankshaft miller comprising the steps of:

movably providing a pair of work heads for supporting both ends of a work, a cutter unit for working said work and a work rest for supporting said work during working;

providing said cutter unit and said work rest separately, said cutter unit and said work rest being coupled by a separable link mechanism so that said work rest can be moved together with said cutter unit upon necessity;

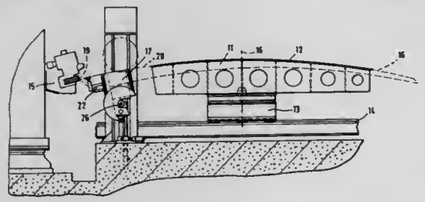
indexing of said work rest being performed by coupling of said cutter unit and said work rest, indexing of said cutter unit being performed by separating said work rest and said cutter unit, and subsequently, working of said work by means of said cutter unit being performed.

5,647,706

DEVICE TO MACHINE WORKPIECE EDGES

Hans-Friedrich Lehmler, Ricarda-Huch-Str. 40, 61350 Bad Homburg V.D.H.; Harald Koller, Felchesgasse 40, 64291 Darmstadt, both of Germany; Jukka Gustafson, Heikinpolku 2, 23100 Mynamaki, and Kalevi Heino, Sukkulakuja 3 B 23, 20110 Turku, both of Finland

Filed Dec. 19, 1994, Ser. No. 358,738
Claims priority, application Germany, Dec. 18, 1993, 43 43 327.8
Int. Cl.[6] B23C *3/12*
U.S. Cl. 409—138 **13 Claims**



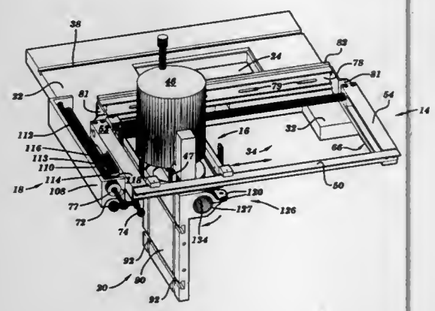
1. A device for machining the workpiece edges of a workpiece having variable dimensions comprising a first clamping bed having a clamping plate for supporting the undersurface of the workpiece with portions of the workpiece along the edges of the workpiece overhanging the clamping plate of the first clamping bed, the first clamping bed including clamping elements for clamping the workpiece against the clamping plate of the first clamping bed, a second clamping bed having a clamping plate for supporting the undersurface of the workpiece adjacent to a workpiece edge overhanging the clamping plate of the first clamping bed, the second clamping bed including clamping elements for clamping the workpiece against the clamping plate of the second clamping bed, the first clamping bed being selectively movable toward and away from the second clamping bed to selectively dispose the workpiece in a first position supported only by the first clamping bed and to dispose the workpiece in a second position supported by both the first clamping bed and the second clamping bed, the first clamping bed being rotatable about a vertical axis to selectively dispose different edges of the workpiece at the second clamping bed, a machining unit located outwardly of the clamping plate of the second clamping bed for contacting the exposed edge of the workpiece at the overhanging portion of the workpiece supported by the second clamping bed, and the machining unit being relatively movable at and along the clamping plate of the second clamping bed to selectively machine each exposed edge of the workpiece at the overhanging portion of the workpiece supported by the clamping plate of the second clamping bed.

5,647,707

MULTIPLE-AXIS MACHINING APPARATUS

Jean-Paul Poulin, Schenectady, N.Y., assignor to Positive Position Inc., Schenectady, N.Y.

Filed Dec. 19, 1994, Ser. No. 359,273
Int. Cl.[6] B23C *1/12*; B27F *5/00*
U.S. Cl. 409—189 **36 Claims**



1. A multiple-axis machining apparatus, comprising:

a first table forming a horizontally disposed upper surface and having an opening for mounting a first tool in an inverted position therein and for projecting a first bit upward through said opening and above said upper surface, wherein said horizontal upper surface has first and second axes intersecting each other in perpendicular relationship and said opening is centered on a vertical third axis, intersecting said first and second axes in perpendicular relationship therewith;

carriage means operatively engaged with said first table for moving said carriage means in a direction parallel to said second axis; and

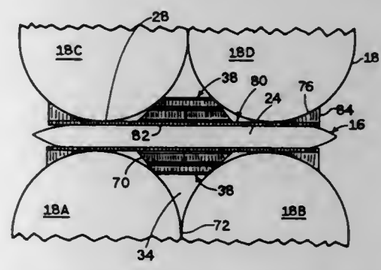
a carriage slidably engaged in said carriage means for slidably moving said carriage in a direction parallel to said first axis, said carriage capable of holding a second tool in an upright position therein and for projecting a second bit in a downward position substantially parallel to said third axis.

5,647,708

SYSTEM FOR PROTECTING GOODS DURING TRANSPORT

James C. Letts, III, Appleton, Wis., assignor to Hayes Manufacturing Group Inc., Neenah, Wis.

Filed Jul. 12, 1995, Ser. No. 501,402
Int. Cl.[6] B61D *45/00*
U.S. Cl. 410—47 **42 Claims**



1. A bracing system for bracing and cushioning the impact of a plurality of movable massive objects in a transport vehicle, the movable massive objects being arranged such that first and second units of the movable massive objects, comprising a first pair, are in proximate but spaced facing relationship to third and fourth units of such movable massive objects, comprising a second pair, the first and second units being disposed against and in contact with each other at first loci of contact along first and second upstanding walls thereof, the third and fourth units being disposed against and in contact with each other at second loci of contact along third and fourth upstanding walls thereof, the first, second, third, and fourth upstanding walls being generally cylindrical and having respective first, second, third, and fourth heights, the first and second units being spaced from and proximate the third and fourth units, a first imaginary plane defined by the combination of the first and second units at third loci of closest approach to the third and fourth units being substantially parallel to a second imaginary plane defined by the combination of the third and fourth units at fourth loci of closest approach to the first and second units, a first cavity, having a first depth defined between the first and second units and the first imaginary plane, a second cavity having a second depth defined between the third and fourth units and the second imaginary plane, said bracing system comprising:

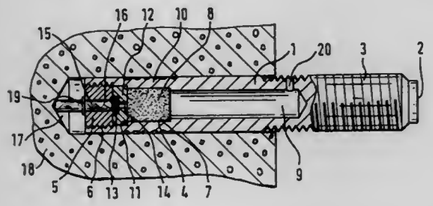
(a) a first wedge means in the first cavity, said first wedge means having a first length comprising at least 50 percent of the smallest one of the first and second heights, a first width, first and second opposing outer surfaces and a first thickness therebetween, first and second edge surfaces extending along the first length and disposed across the first width from each other, the first outer surface being disposed proximate the first imaginary plane, the second opposing outer surface being disposed inwardly in the first cavity from the first outer surface, said first and second edge surfaces engaging respective ones of the first and second units along major portions of the first length of said first wedge means;

(b) a second wedge means in the second cavity, said second wedge means having a second length comprising at least 50 percent of the smallest one of the third and fourth heights, a second width, third and fourth opposing outer surfaces and a second thickness therebetween, third and fourth edge surfaces extending along the second length and disposed across the second width from each other, the third outer surface being disposed proximate the second imaginary plane, the fourth opposing outer surface being disposed inwardly in the second cavity from the third outer surface, said third and fourth edge surfaces engaging respective ones of the third and fourth units along major portions of the second length of said second wedge means; and

(c) an inflatable member for being inflated and thereby having outer surfaces thereof disposed along the first and second imaginary planes between the third and fourth loci of closest

approach, urging the first pair of units and said first wedge means, in combination, away from the second pair of units and said second wedge means, in combination.

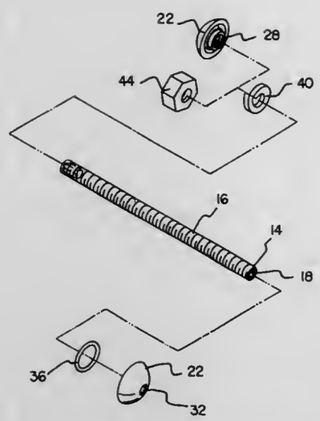
5,647,709
ANCHOR BOLT ANCHORABLE BY EXPLOSIVE CHARGE
Bernd Hein, Freudenstadt; Wilfried Weber, Schopfloch; Rolf Prümmer, Gundelfingen, and Hans Peter Mehlin, Binzen, all of Germany, assignors to Artur Fischer GmbH & Co. KG, Waldachtal, Germany
Filed Dec. 15, 1995, Ser. No. 573,249
Claims priority, application Germany, Dec. 20, 1994, 44 45 422.8
Int. Cl.[6] F16B *19/12;* **E21D** *21/00*
U.S. Cl. 411—20 **14 Claims**



1. An anchor bolt to be explosively anchored in a blind bore in a solid material, comprising an anchor bolt body having a leading end and a rear end and a deformation chamber which is open toward said leading end of said anchor bolt body; an explosive charge contained in said deformation chamber; a stopper closing said leading end of said anchor bolt; a striking pin inserted and guided in said stopper and projecting beyond said leading end of said anchor bolt body; and an ignition capsule arranged between said stopper and said explosive charge so that when said rear end of said anchor bolt body is hit, said striking pin contacts said ignition capsule.

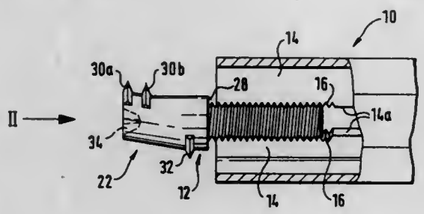
5,647,710
BOLT WITH REMOVABLE HEAD
Paul W. Cushman, General Delivery, Soap Lake, Wash. 98851
Filed May 17, 1995, Ser. No. 443,592
Int. Cl.[6] F16B *35/06*
U.S. Cl. 411—397 **3 Claims**

1. A kit for providing a versatile bolt for use on projects around the home, automobiles, and motorcycles comprising, in combination:
- an elongated threaded bolt having two end portions and an intermediate threaded portion therebetween, the two end portions having Allen wrench drives formed therein;
- a removable cap head having an inner surface and an outer surface, the inner surface having an internally threaded aperture formed therein, the internally threaded aperture being adapted for removable coupling with one of the two end portions of the elongated threaded bolt, the inner surface of the removable cap head having a circular groove formed therein surrounding the internally threaded aperture thereof, the outer surface of the removable cap head having an Allen wrench drive formed therein;
- an O-ring being adapted for removable securement within the circular groove formed in the inner surface of the removable cap head;
- a lock washer being adapted for removable coupling with the intermediate threaded portion of the elongated threaded bolt;



- a nut being adapted for removable securement with an opposing end portion of the elongated threaded bolt for securing the elongated threaded bolt within an object.

5,647,711
FASTENING DEVICE FOR DRAWER RAILINGS
Horst Berger, Bielefeld, Germany, assignor to MEPLA - Werke Lautenschläger GmbH & Co. KG, Germany
Filed May 1, 1996, Ser. No. 641,567
Claims priority, application Germany, May 17, 1995, 29507834
Int. Cl.[6] F16B *23/00;45/00*
U.S. Cl. 411—400 **7 Claims**

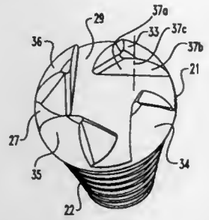


1. A fastening device for fastening a hollow railing of a drawer to a drawer front having a blind bore with an opening at the surface of the drawer front facing the interior of the drawer, comprising;
- a shaft having a threaded end capable of being screwed into an end of the hollow railing which faces the drawer front,
- a fastening head on the end of the shaft opposite the threaded end, said fastening head having a diameter larger than the diameter of the threaded end of the shaft and which is capable of being inserted into the bore on the drawer front, one end of the fastening head having a base surface for contacting the hollow railing when the threaded end of the shaft is completely screwed into the hollow railing, wherein

the fastening head tapers conically from the end for contacting the hollow railing toward an opposite, free end of the fastening head, such that an upper generatrix of a vertical section through the fastening head runs from the hollow railing end of the fastening head over most of its length parallel to an upper generatrix of the hollow railing, and a lower generatrix slopes downward from the free end of the fastening head over most of its length, and

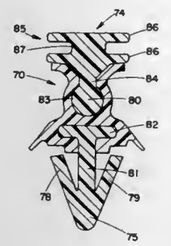
in the area of the free end of the fastening head, at least one radial projection, projecting upwardly and having a knife edge, is provided and wherein the knife edge runs substantially circumferentially.

5,647,712
ONE DIRECTIONAL SOCKET-DRIVEN COMPONENT
A. Caner Demirdogen, and Paul D. Miller, both of Cookeville, Tenn., assignors to Fleetguard, Inc., Nashville, Tenn.
Filed May 9, 1996, Ser. No. 644,045
Int. Cl.[6] F16B *23/00;35/06*
U.S. Cl. 411—404 **37 Claims**



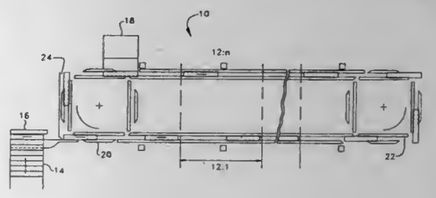
1. A component which is constructed to be turned in one direction by a drive tool, said component comprising:
- a component body; and
- a component drive portion integral with said component body, said component drive portion including a base and four circumferentially-spaced projections, each projection including a substantially flat wall portion, a ramp portion and a relief wall portion, the ramp portion being positioned between the substantially flat wall portion and the relief wall portion, said four flat wall portions being constructed and arranged to define a drive recess which is substantially centered relative to said base, said four flat wall portions providing abutment surfaces for said drive tool to contact for turning of said component in a first direction, said four ramp portions providing cam surfaces which are constructed to direct the drive tool up and out of the drive recess in order to prevent the turning of said component by said drive tool in a second direction which is the reverse of said first direction.

5,647,713
PLASTIC PANEL FASTENER AND METHOD OF FORMING THE SAME
Yao Ge, Clinton Township, and David J. Krysiak, Pleasant Ridge, both of Mich., assignors to TRW Inc., Cleveland, Ohio
Filed May 22, 1996, Ser. No. 651,756
Int. Cl.[6] F16B *19/00;* **B29C** *43/22*
U.S. Cl. 411—509 **13 Claims**



1. A panel fastener for releasably joining a panel to a support comprising:
- a first connecting member formed of a relatively hard rigid plastic and having first and second ends with a male locking shaft forming its first end and adapted to be received in locking relationship in an opening in said support;
- a second connecting member formed of a relatively hard rigid plastic and having first and second ends with a mounting head on its first end, said mounting head adapted to join to a panel; and,
- an intermediate body formed of a relatively resilient and pliable plastic joining the second ends of the first and second connecting members, said intermediate body joined to the second end of one of the first and second connecting members by a releasable ball and socket joint.

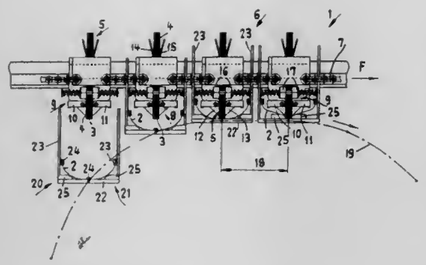
5,647,714
AUTOMATIC REGISTER CUTTING METHOD AND AN AUTOMATIC REGISTER CUTTER FOR CARRYING OUT THE METHOD
Jan Lundberg, Trastgatan 10, S-941 21 Piteå , Sweden
PCT No. PCT/SE93/00559, § 371 Date Mar. 13, 1995, § 102(e) Date Mar. 13, 1995, PCT Pub. No. WO94/02332, PCT Pub. Date Feb. 3, 1994
PCT Filed Jun. 23, 1993, Ser. No. 374,504
Claims priority, application Sweden, Jul. 20, 1992, 9202206
Int. Cl.[6] B42B *9/00*
U.S. Cl. 412—1 **6 Claims**



6. A method for automatically indexing and cutting books utilizing an index cutting machine, the method comprising the steps of:
- a) feeding a book having a spine to a transporter located in the machine;
- b) holding the book by the spine of the book when the book is in the transporter;
- c) folding a cover side by using a vacuum beneath a tongue type element located in the machine;
- d) transporting the book held in the transporter to a first module located in the machine;
- e) counting a predetermined number of pages with counting means located in the machine, the pages corresponding to a specific index indentation of the first module, which is folded down beneath the tongue type element;
- f) transporting the book to cutting means located in the first module for cutting a first index indentation;
- g) transporting the book to a second module located in the machine; and
- h) repeating steps e)–g) a preselected number of times.

5,647,715
METHOD OF ATTACHING A COVER TO THE SPINE OF A BOOK BLOCK FORMED OF BOUND PRINTED SHEETS
Marcel Stolz, Felben, Switzerland, assignor to Grapha-Holding AG, Hergiswil, Switzerland
Filed Mar. 4, 1996, Ser. No. 612,402
Claims priority, application Switzerland, Mar. 16, 1995, 00745/95
Int. Cl.[6] B42C *11/00*
U.S. Cl. 412—1 **14 Claims**

1. A method of attaching a cover sheet by adhesive bonding to a spine of a book block formed of bound printed sheets, wherein



after a binding process a plurality of such book blocks follow one another on a transport path at regular distances, the method comprising steps of:

arranging the book blocks to be in a transverse position on the transport path;

clamping respective cover sheets so that each cover sheet presents a spine portion and preformed cover side portions extending from the spine portion so that the cover side portions are freed of deformation after the spine portion of the cover sheet has been pressed to the spine of the book block;

feeding each book block an inner side of a clamped cover sheet oriented for adhesive bonding, facing the spine of the book block; and

pressing the inner side of the cover sheet to the spine of the book block and to lateral flanks of the spine of the book block.

5,647,716

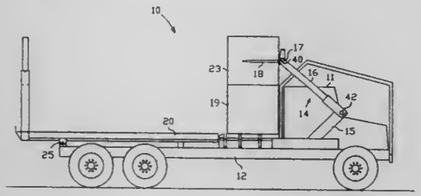
TINED, FRONT-END BIG BALE LOADER

Martin C. Tilley, 4775 N. 1115 E., Buhl, Id. 83316

Filed Dec. 13, 1995, Ser. No. 571,738

Int. Cl.[6] A01D *90/08*

U.S. Cl. 414—111 **7 Claims**



1. A front-end. big bale loader for use with a vehicle, said loader comprising:

a pick-up mechanism pivotally connected to the vehicle near the vehicle's front end, said pick-up mechanism comprising a tine assembly having a tine for piercing a bale, and being adapted to rotate vertically from near the front end of the vehicle towards a back end of the vehicle; and

a bed also pivotally connected to said vehicle near the vehicle's back end, said bed also being adapted to rotate vertically from being near the middle of the vehicle towards the back end; and said bed having disposed thereon both a backward shift mechanism and a forward shift mechanism for moving single bales and multiple-bale stacks upon said bed, the backward shift mechanism comprising a tab extending up from the bed and adapted to push bales longitudinally backward on the bed.

5,647,717

CARTRIDGE CARRYING SYSTEM AND LIBRARY SYSTEM

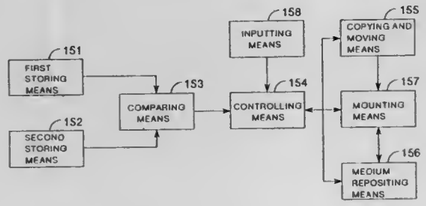
Miyuki Yokogawa; Naoya Yamamura; Hidetomo Kamon; Kiyotaka Tanaka; Yoshiyuki Hashimoto; Katsufumi Ohnaka; Noriaki Matsuzaki, and Takahiro Asahara, all of Hyogo, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 4, 1995, Ser. No. 564,384

Claims priority, application Japan, Dec. 6, 1994, 6-302364

Int. Cl.[6] B65G *1/04*

U.S. Cl. 414—273 **11 Claims**



1. A cartridge carrying system comprising:

cartridge holding means, having two arms which are so placed as to be opposed to each other with a predetermined distance therebetween and turned around respective supporting points, for grabbing a cartridge stored at a first predetermined position at one end of each of the two arms by turning the two arms around the respective supporting points in directions opposed to each other;

arm turning means for turning the arms around the respective supporting points;

carrying means for carrying the cartridge grabbed by the two arms in such a manner that the cartridge is drawn into or from a space between the two arms;

carriage driving means for driving the carrying means;

carriage completion monitoring means for monitoring if the cartridge is carried to a second predetermined position; and

controlling means for controlling the operations of the arm turning means and the carriage driving means in response to information supplied from the carriage completion monitoring means, wherein the controlling means controls so as to continue the operation for carrying the cartridge to the second predetermined position, when the carriage completion monitoring means detects that the cartridge is not carried to the second predetermined position within a given time.

5,647,718

STRAIGHT LINE WAFER TRANSFER SYSTEM

Mordechai Wiesler, Lexington, Mass., and Mitchell Weiss, Haverford, Pa., assignors to PRI Automation, Inc., Billerica, Mass.

Filed May 22, 1996, Ser. No. 651,724

Int. Cl.[6] B65G *1/04*

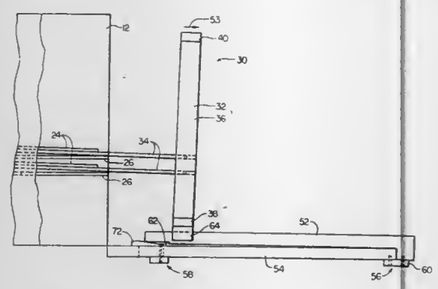
U.S. Cl. 414—416 **16 Claims**

1. A semiconductor wafer transfer system for moving a wafer along a horizontal straight line path into and out of a wafer support device to and from a position in which the wafer is accessible along the straight line path for further processing, the wafer support device having opposed, paired shoulders on interior walls thereof to horizontally support the wafer, the support device further having a vertical opening therein, the wafer transfer system comprising:

a support structure positionable adjacent the opening in the wafer support device, the support structure having support elements defining a wafer clearance opening therebetween and having a horizontal dimension greater than a diameter of the wafer, the wafer clearance opening aligned to allow the wafer to pass horizontally through the wafer clearance opening in a horizontal orientation along the horizontal straight line path;

a finger structure mounted to the support structure to extend generally horizontally toward the opening in the support device and having a finger configuration disposed to support the wafer, the finger configuration fixed with respect to the support structure and sized to fit within the support device to hold the wafer off the shoulders; and

a generally horizontally reciprocal transport mechanism connected to the support structure to move the support structure into and out of the wafer support device along the horizontal straight line path with the finger structure aligned to hold the wafer.



5,647,719

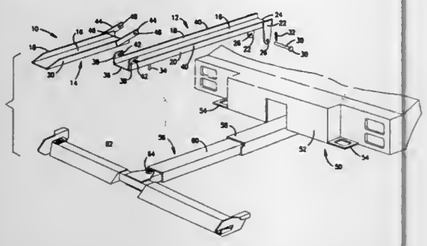
MOTORCYCLE TOWING DEVICE

Donald R. Bowlen, 4712 Appleton, Kansas City, Mo. 64133

Filed Aug. 15, 1995, Ser. No. 515,320

Int. Cl.[6] B60P *9/00*

U.S. Cl. 414—462 **2 Claims**



1. A device for towing a two-wheeled vehicle behind and in combination with a towing vehicle, said towing vehicle having a lift assembly comprising an elongate lifting member extending outwardly from the rear of said vehicle, said towing device comprising:

an elongate support member, positioned on and attached to said lifting member of said towing vehicle, for supporting said two-wheeled vehicle by its said two wheels, wherein said elongate support member comprises a channel having a support area and side walls and means for attaching said elongate support member to said elongate lifting member, said attaching means comprising first and second flanges located proximate a frontal end of said elongate member and extending downwardly from opposite sides of said elongate support member, wherein said elongate lifting member is received between said flanges, wherein a lower end of each said flange extends downwardly past a lower edge of said lifting member, each said flange having an aperture therein proximate said lower end, said apertures in axial alignment with each other and adapted to receive a rod; and

means for holding said two-wheeled vehicle on said support member, wherein said elongate lifting member on said towing vehicle has an aperture proximate an outer end thereof, and wherein said elongate support member of said towing device has a post extending downwardly from an underside surface thereof, said aperture adapted to receive said post to thereby secure said elongate support member on said elongate lifting member.

5,647,720

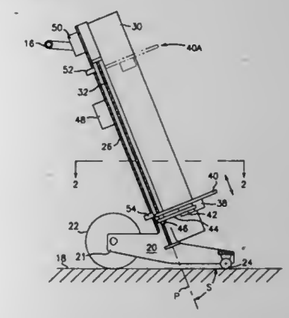
HAND CART FOR TRANSPORTING STACKED ARTICLES

Stefan G. Golicz, Essex, and Roman M. Golicz, Clinton, both of Conn., assignors to Documotion, Inc., Old Saybrook, Conn.

Filed Sep. 5, 1995, Ser. No. 523,221

Int. Cl.[6] B66F *9/00*

U.S. Cl. 414—490 **16 Claims**



1. A device for receiving, transporting and unloading stacked sheets, which comprises:

a base for supporting the device on a horizontal plane, the base having a front end and a rear end;

means for translating the device across the plane to a desired location, attached to the base;

an upright attached to the base and projecting upwardly therefrom, the upright having a length and a vertical centerplane;

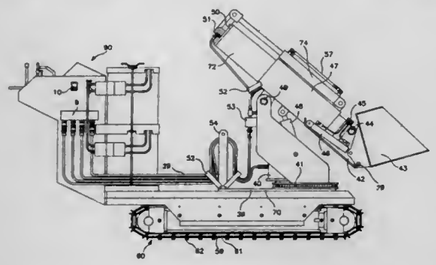
a cantilevered platform projecting in the direction of said vertical centerplane, movably mounted on the upright to travel along a path to different elevations along the length of the upright, the platform having a surface running upwardly from the vicinity of the upright, for receiving and supporting the stacked sheets;

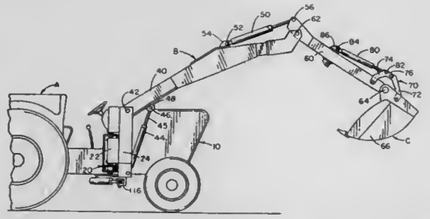
two cantilever wings, attached to the upright and running along the travel path of the platform, one wing disposed on either side of said vertical centerplane, to define a space therebetween;

the platform surface shaped to approximately fit within said space between said two cantilever wings while the platform moves along said path; wherein sheets placed on the platform surface tend to move by gravitational force down the slope of the surface and toward the upright, to contact the wings and thereby be aligned with each other; and

means for automatically moving the platform to a desired elevation along the length of the upright, the means responsive to the height of the top of sheets resting on the platform, so said top is maintained at a constant elevation with respect to the base when the height of sheets on the platform is changed.

5,647,721
MINIATURE, PORTABLE, SELF-CONTAINED POWER MACHINE
David J. Rohrbaugh, Rte. 2 - Box 3555, Oakland, Md. 21550
Continuation-in-part of Ser. No. 951,016, Sep. 25, 1992, Pat. No. 5,423,654. This application Jun. 7, 1995, Ser. No. 478,517
Int. Cl.[6] E02F *3/00*
U.S. Cl. 414—686 **16 Claims**



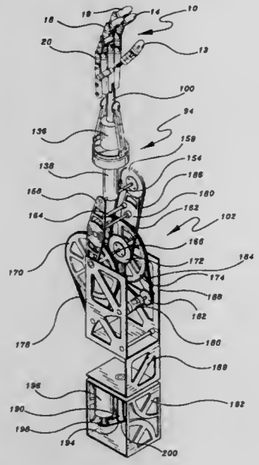


1. A miniature, portable, self-contained power machine for handling materials, comprising:
a rigid frame having an integral platform and providing a base structure for all components of said machine:
electrical power supply means for powering said machine and attached to said rigid frame;
means for regulating the motion of said machine;
roller chains forming a traction system for moving said machine over various terrains and attached to said rigid frame;
a central hydraulic system which is powered by said electrical power means;
a hydraulically powered material handling implement having two differently sized shafts extending from a bottom of said hydraulically powered material handling implement;
means to couple said central hydraulic system to said hydraulically powered material handling implement;
means to control the movement of said hydraulically powered material handling implement;
an assembly socket formed in said integral platform of said rigid frame for receiving one of said differently sized shafts and rigidly securing said hydraulically powered material handling implement to said frame;
a torque arm socket means formed in said integral platform of said rigid frame for receiving another of said two differently sized shafts and rigidly securing said hydraulically powered material handling implement to said frame; and
a retainer cap for fastening to one of said two differently sized shafts from underneath said integral platform for rigidly securing said shaft within said assembly socket and thereby securing said hydraulically powered material handling implement to said machine.

5,647,722
DUAL CYLINDER ACTUATED BOOM ARM
Jack O. Cartner, 1005 N. 8th St., Cambridge, Ohio 43725
Continuation of Ser. No. 206,387, Mar. 4, 1994, abandoned, which is a continuation-in-part of Ser. No. 865,912, Apr. 9, 1992, Pat. No. 5,292,220, which is a continuation of Ser. No. 635,364, Dec. 28, 1990, abandoned. This application Mar. 15, 1996, Ser. No. 616,758
Int. Cl.[6] E02F *9/24*
U.S. Cl. 414—687 **21 Claims**

6. A road maintenance vehicle comprising:
a support housing mounted on the vehicle;
a mast which is rotatably secured to said housing;
a frame fixedly secured to said mast;
a boom member attached at one end to said frame and adapted to hold a road maintenance tool at another end;
a first hydraulic cylinder including a piston and a piston rod and having a piston rod end and a cylinder end, said piston rod end being pivotably secured to a first side of said mast and said cylinder end being secured to a first side of said support housing;
a hydraulic control circuit in fluid communication with said first hydraulic cylinder;
an overload protection circuit in fluid communication with said first hydraulic cylinder; and,
a means for selectively disabling said overload protection circuit, said means for selectively disabling being in communication with said overload protection circuit and comprising said piston and a port located on said first hydraulic cylinder, wherein said port of said means for selectively disabling is so located on said cylinder that said overload protection circuit is only operative when said boom arm is within approximately 20 degrees of a line extending perpendicular to a longitudinal centerline of the vehicle.

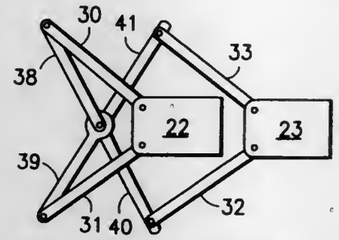
5,647,723
MEMORY WIRE ROBOTIC HAND
Joe A. Rush, 275 R63 Hwy. Lot # 8, Norwalk, Iowa 50211
Filed Nov. 13, 1995, Ser. No. 557,702
Int. Cl.[6] B25J *17/00;18/00*
U.S. Cl. 414—735 **14 Claims**



1. A robotic hand comprising:
at least one finger, said finger having a proximal segment and a distal segment, said distal segments being pivotably attached to said proximal segment;
first and second actuating lines, each of said actuating lines having a first and a second end, each said first end of each said actuating line being anchored to said distal segment;
means for supporting said first and second actuating lines on said distal segment; and

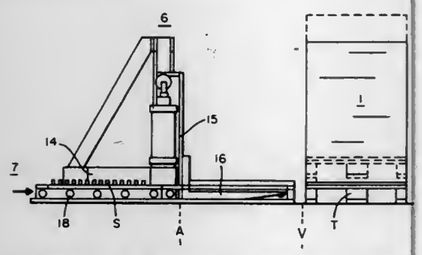
first and second memory wires, each of said memory wires having a first and a second end, each said first end of each memory wire being fixed to said proximal segment, and each said second end of each memory wire being attached to each said second end of each actuating line, whereby electrical activation said first memory wire moves said at least one finger toward is curled configuration and electrical activation of said second memory wire moves said at least one finger toward an extended configuration.

5,647,724
SUBSTRATE TRANSPORT APPARATUS WITH DUAL SUBSTRATE HOLDERS
James C. Davis, Jr., Carlisle, Mass., and Christopher A. Hofmeister, Hampstead, N.H., assignors to Brooks Automation Inc., Chelmsford, Mass.
Filed Oct. 27, 1995, Ser. No. 549,995
Int. Cl.[6] B25J *18/02*
U.S. Cl. 414—744.5 **19 Claims**



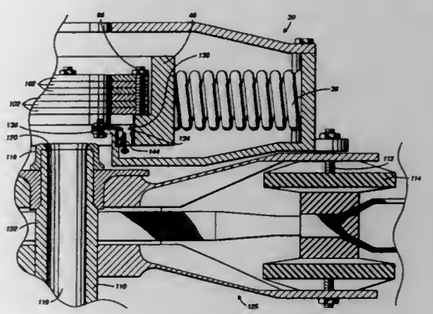
1. A substrate transport apparatus comprising:
a movable arm assembly having a general X-shaped section with proximal arms rotatably connected to each other at a center of the X-shaped section; and
two substrate holders, each of the holders being connected to a different pair of ends of the X-shaped section.

5,647,725
METHOD FOR PREPARING A SHEET STACK FOR PROCESSING IN A SHEET-PROCESSING MACHINE
Hans-Peter Kraus, Donzdorf, and Martin Benz, Treffelhausen, both of Germany, assignors to MAN Roland Druckmaschinen AG, Germany
Filed May 22, 1995, Ser. No. 446,472
Int. Cl.[6] B65G *1/18*
U.S. Cl. 414—799 **11 Claims**



5. An apparatus for preparation of a sheet stack for automated processing in a sheet-processing machine by exchange of a transportation pallet for a system pallet, the apparatus comprising, in combination:
a lifting device for gripping and raising the transportation pallet and sheet stack;
a pallet feeder for conveying system pallets to a position beneath the raised transportation pallet and sheet stack to form a compound stack;
a stack manipulator for gripping the compound stack, the stack manipulator being adapted to move the compound stack to a release position; and to release the compound stack to free the transportation pallet, the stack manipulator including a handling apparatus for removing and transporting the freed transportation pallet from the compound stack; and
a conveying device for conveying the system pallet and sheet stack from the stack manipulator to the sheet-processing machine.

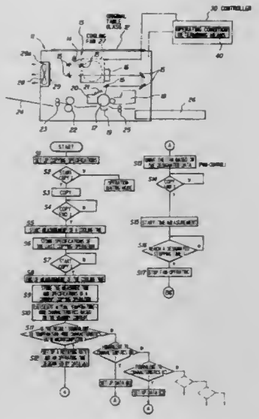
5,647,726
ROTOR SYSTEM VIBRATION ABSORBER
Ajay Sehgal, Bedford; Cecil E. Covington, Hurst; Mithat Yuce, Bedford, and Bryan W. Marshall, Arlington, all of Tex., assignors to Bell Helicopter Textron Inc., Hurst, Tex.
Filed Feb. 15, 1996, Ser. No. 599,562
Int. Cl.[6] B64C *27/06*
U.S. Cl. 416—145 **19 Claims**



1. A vibration absorber comprising:
(a) a base plate having a top and bottom sides with an axis substantially normal thereto;
(b) two or more spring retaining structures extending from said plate upwardly;
(c) a motion limiter extending upwardly from said base plate about said axis;
(d) a mass member having a predetermined shape having a top side, bottom side and out-of-plane sides and having a cylindrical surface extending downwardly therefrom and encircling said motion limiter;
(e) one or more in-plane springs positioned between each of said retaining structures and one of the out-of-plane sides of said mass member and holding said mass member when static spaced apart from said retaining structures; and
wherein said springs are selected such that said mass member during operation runs up against said motion limiter substantially continuously in a rapidly vibrating manner.

5,647,727
IMAGE FORMING APPARATUS WITH FAN COOLING
Akihiko Taniguchi, Yamatokouriyama, and Masashi Toyoda, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed May 11, 1995, Ser. No. 439,376
Claims priority, application Japan, Jun. 22, 1994, 6-140105
Int. Cl.[6] F04B *49/10*
U.S. Cl. 417—32 **8 Claims**

1. An image forming apparatus including a machine body comprising:



a cooling fan for inhibiting the temperature rise inside the machine body; and

a controller for controlling the operation of said fan, said controller including an operating condition determining means for determining operating conditions of said fan based on an amount of heat energy generated in a previous image forming operation, a dropped amount of heat energy from the end of the previous image forming operation to the start of a current image forming operation and an amount of heat energy generated in the current image forming operation.

5,647,728

LIQUID RING MACHINE HAVING PIVOTED OUTER HOUSING

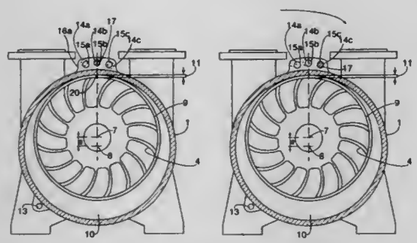
Robert Siebenwurst, Nuremberg; Hans Kuhn, Abenberg, and Bernhard Tews, Altdorf, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed May 7, 1996, Ser. No. 646,167

Claims priority, application Germany, May 8, 1995, 195 16 836.4

Int. Cl.[6] F04C *19/00*

U.S. Cl. 417—68 **25 Claims**



1. A liquid ring machine comprising:

a housing defining a cylindrical liquid working space;

a rotor, said rotor having a circumferential periphery disposed within the housing so that there is a gap between the circumferential periphery of the rotor and the housing;

the housing being movable with respect to the rotor so that the gap can be adjusted; and

means for securing the housing in a fixed position with respect to the rotor.

5,647,729

RADIAL PISTON PUMP

Leendert Willem C. de Jong, Oldenzaal; Arjan Peter van Heiningen, Haaksbergen, and Willem Herman Masseling, Oldenzaal, all of Netherlands, assignors to Applied Power Inc., Butler, Wis.

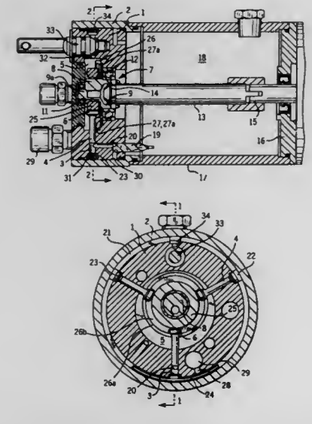
PCT No. PCT/NL94/00141, § 371 Date Feb. 7, 1995, § 102(e) Date Feb. 7, 1995, PCT Pub. No. WO94/29592, PCT Pub. Date Dec. 22, 1994

PCT Filed Jun. 13, 1994, Ser. No. 381,827

Claims priority, application Netherlands, Jun. 11, 1993, 9301010

Int. Cl.[6] F04B *1/04*

U.S. Cl. 417—273 **3 Claims**



1. A radial piston pump of the type in which an eccentric rotor is adapted to cause pistons to perform a reciprocating movement within radial cylinders in a pump body, said cylinders being connected to a liquid reservoir and having their radial outer ends each connected to a circumferentially located pressure passage through a connecting opening that accommodates a pressure valve, said pressure valves being pressed on seats within the respective connecting openings by means of at least one common resilient ring member that is located within said circumferential pressure passage under tangential pre-tension, an annular wall portion surrounding said pump body to overlie and cover said circumferential pressure passage in said pump body, characterized in that said circumferential pressure passage is outwardly sealed by an annular member of plastic material and of a substantially trapezoid-shaped cross-section, a longer parallel side of said cross-section facing radially inwardly and comprising a circumferential groove for receiving said resilient ring member, said annular member being adapted to be inserted radially inwardly into said circumferential pressure passage.

5,647,730

SELF-CONTAINED, CLEARANCE-VOLUME ADJUSTMENT MEANS FOR A GAS COMPRESSOR

Derek Woollatt, Campbell, N.Y., assignor to Dresser-Rand Company, Corning, N.Y.

Filed Apr. 8, 1996, Ser. No. 631,647

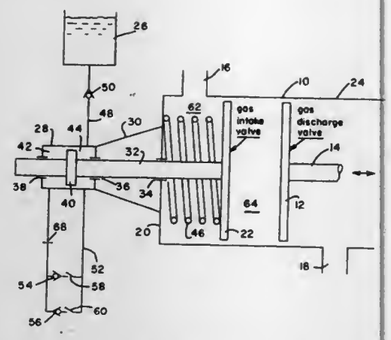
Int. Cl.[6] F04B *49/16*

U.S. Cl. 417—274 **13 Claims**

1. A self-contained, clearance-volume adjustment means, for a gas compressor which has (a) a gas intake port, and (b) a head-end piston displaceable in adjacency to said port, comprising:

a source of hydraulic fluid;

a cylinder;



means for communicating said source with said cylinder for admitting fluid into, and for prohibiting fluid evacuation from, said cylinder;

wall means, confined within said cylinder, and movable therewithin, for subdividing said cylinder into a pair of chambers;

a rod connecting said wall means to said piston for effecting movement of said wall means in common with said piston; and

valving means, cooperative with said communicating means, and coupled to said cylinder, operative in a (a) first mode for evacuating fluid from said cylinder, in response to a displacement of said piston in a first direction, and (b) second mode for admitting fluid into said cylinder, in response to a displacement of said piston in a second direction; wherein

said gas intake port is interposed between said head-end piston and said cylinder.

5,647,731

AIR COMPRESSOR

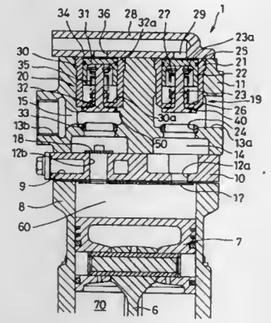
Motoyuki Onozawa, Higashimatsuyama, Japan, assignor to Zexel Corporation, Tokyo, Japan

Filed Apr. 28, 1995, Ser. No. 431,030

Claims priority, application Japan, Apr. 28, 1994, 6-114179

Int. Cl.[6] F04B *49/02*

U.S. Cl. 417—295 **15 Claims**



1. An air compressor comprising:

a cylinder;

a piston slidably mounted in said cylinder;

a cylinder head mounted on said cylinder, said cylinder head defining an air inlet passage and an air outlet passage;

an inlet valve positioned between said cylinder and said air inlet passage to permit air to flow from said air inlet passage into said cylinder in response to movement of said piston in a first direction;

an outlet valve positioned between said cylinder and said air outlet passage to permit air to flow from said cylinder into said outlet passage in response to movement of said piston in a second direction;

an inlet-side unloader valve having a valve body and a valve seat, said inlet-side unloader valve being mounted in said cylinder head and being operable to close said air inlet passage;

an outlet-side unloader valve mounted in said cylinder head; and

an air leak hole having a specific ventilating resistance and being formed in one of said valve body and said valve seat of said inlet-side unloader valve.

5,647,732

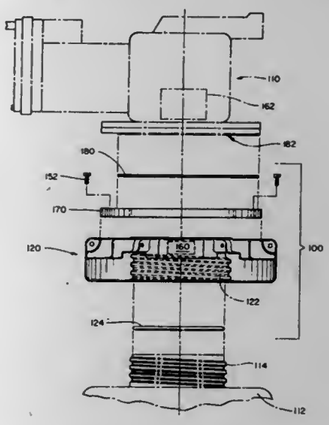
UNIVERSAL THREADED ADAPTER

John J. Cali, Elgin, and Richard L. Raz, Carol Stream, both of Ill., assignors to Bonar Plastics, Inc., West Chicago, Ill.

Filed Mar. 3, 1995, Ser. No. 398,659

Int. Cl.[6] F04B *53/22*

U.S. Cl. 417—360 **17 Claims**



1. In a connecting means for joining an agricultural tank to an agricultural pump, the improvement comprising:

a) the connecting means being a universal threaded adapter;

b) the universal threaded adapter including an adapter body, a tank gasket seal mounted in the adapter body, and a conversion plate securable to the pump;

c) the tank gasket seal mounted therein being oppositely disposed from the conversion plate on the adapter body;

d) the adapter body including a means for tightening the adapter body on the tank;

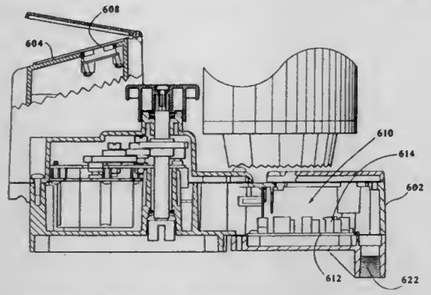
e) the adapter body being a generally flat cylindrical body with a connecting aperture located on a cylindrical axis of the adapter body;

f) a set of female threads being adjacent to the gasket seal in the aperture and suitable for attaching to the tank;

g) the set of female threads terminating within the connecting aperture; and

h) a shoulder within the connecting aperture to receive the tank gasket-seal.

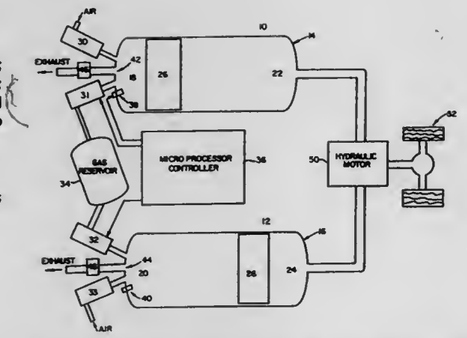
5,647,733
DIAPHRAGM METERING PUMP HAVING MODULAR CONSTRUCTION
Craig L. Augustyn, Spencerport; Richard Giannetti, Fairport; Travis L. James, Warsaw; Stephen B. Muscarella, Geneseo; Philip T. Pascoe, Rochester; Francis J. Snyder, Ontario, and Erik C. VanBork, Honeoye Falls, all of N.Y., assignors to Pulsafeeder Inc., Rochester, N.Y.
Filed Dec. 1, 1995, Ser. No. 565,903
Int. Cl.[6] F04B *9/08*
U.S. Cl. 417—360 **17 Claims**



1. A diaphragm metering pump comprising:
a forward pumping section including a diaphragm member disposed between an opening in a one-way product flow passageway and a hydraulic chamber filled with hydraulic fluid, a piston and cylinder disposed in fluid communication with the hydraulic chamber for varying hydraulic pressure in the hydraulic chamber to cause pumping displacements of the diaphragm member;
a rearward piston mover section including a pump housing having spaced apart rotary bearings, an eccentric shaft rotatably mounted in the rotary bearings, said eccentric shaft including an end having a splined portion extending outside of the pump housing, a crosshead rod having a first end with a cam follower roller positioned to engage a cam surface provided on the eccentric shaft on rotation of the eccentric shaft, the crosshead rod having an opposed end connected to the piston and sealing elements provided in the pump housing to contain hydraulic fluid in the pump housing; and
a removable drive assembly connectable to the eccentric shaft for rotating the eccentric shaft disposed outside the rotary bearings and sealing elements, said removable drive assembly including a gear reducer housing having a front end with an opening, a worm shaft rotatably mounted therein for rotation about a first axis, a worm gear including a pair of hub extensions projecting outwardly from opposed sides thereof and defining a hollow hub portion extending through the worm gear, said hub portion including inwardly directed gear teeth, said worm gear being releasably mounted for rotational movement about a second axis generally perpendicular to said first axis and gearingly engaged with said worm, said gear reducer housing being sealably and releasably mounted to the pump housing so that the splined portion of the eccentric shaft is removably engaged in the hub portion of the worm gear, and a motor for rotating the worm, whereby the removable drive assembly may receive a plurality of interchangeable worm gears having different gearing ratios.

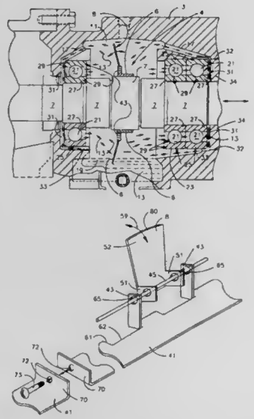
5,647,734
HYDRAULIC COMBUSTION ACCUMULATOR
Norman Milleron, 1203 Spruce St., Berkeley, Calif. 94709
Filed Jun. 7, 1995, Ser. No. 486,201
Int. Cl.[6] F04B *17/05*
U.S. Cl. 417—380 **16 Claims**

1. A propulsion system incorporating first and second hydraulic combustion accumulators comprising:



at least two cylinders connected in a closed system each of said cylinders containing a hydraulic fluid and being divided by a freely reciprocating piston into a combustion chamber and a hydraulic fluid chamber; injection means for injecting a combustion gas into the combustion chamber; ignition means for igniting combustion gas in the combustion chamber thereby applying a pressurizing force to the hydraulic fluid contained in the hydraulic fluid chamber; and control means for controlling the operation of the injection means and the ignition means, wherein the respective hydraulic fluid chambers of each of said at least two cylinders are connected to each other, and the pistons in said at least two cylinders are located such that they are out of phase with each other.

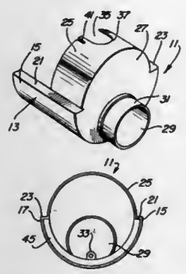
5,647,735
CENTRIFUGAL PUMP HAVING OIL MISTING SYSTEM WITH PIVOTING BLADES
Robert E. Rockwood, Windham, N.H., assignor to Environamics Corporation, Hudson, N.H.
Continuation-in-part of Ser. No. 635,398, Apr. 26, 1996, which is a continuation of Ser. No. 320,692, Oct. 11, 1994, Pat. No. 5,513,964. This application May 14, 1996, Ser. No. 645,906
Int. Cl.[6] F04B *35/04*
U.S. Cl. 417—423.13 **16 Claims**



1. A centrifugal pump for pumping a liquid to be pumped, the pump comprising:
a pump housing;
a rotatable shaft disposed at least partially within said housing;
a lubrication chamber surrounding said shaft, said chamber for housing a lubricating fluid;

shaft support bearings disposed in or adjacent said lubrication chamber, said bearings to be lubricated by the lubricating fluid;
a dispenser including a base support member and a plurality of collapsible dispensing members pivotally attached thereto, said dispenser being attached to said shaft for rotation therewith and for dispensing the lubricating fluid in said chamber in order to lubricate said bearings; and
wherein said collapsible dispensing members are pivotally attached to said support member so that said dispensing members can collapse axially along said shaft when said shaft is not rotating thereby enabling said dispenser to be more easily inserted into said chamber during the manufacture of said pump or during maintenance being performed thereon.

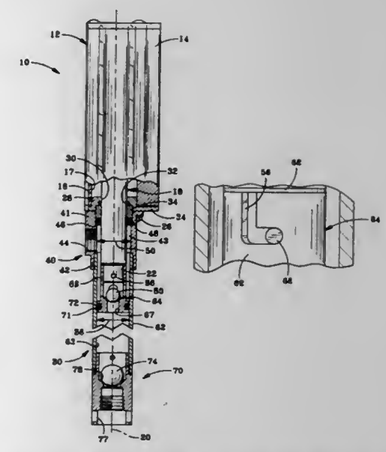
5,647,736
PUMP SHROUD APPARATUS FOR PORTABLE SPAS
Robin A. French, Fallbrook, Calif., assignor to Watkins Manufacturing Corp., Vista, Calif.
Filed Dec. 30, 1994, Ser. No. 366,491
Int. Cl.[6] F04B *17/03*
U.S. Cl. 417—423.14 **12 Claims**



1. A pump shroud for use with an electric motor, the electric motor having an exhaust vent through which heated air is expelled from the electric motor, the pump shroud comprising:
accepting means for accepting the heated air directly from the exhaust vent of the electric motor, said accepting means including contacting means for contacting a portion of the electric motor near the exhaust vent and surrounding said exhaust vent, said contacting means further having a U-shape and fitting flush against a curved portion of the electric motor; and
routing means connected to the accepting means for routing the accepted heated air from the exhaust vent of the electric motor away from the electric motor in order to reduce the temperature of air around the electric motor.

5,647,737
RECIPROCATING PUMP WITH SIMPLIFIED SEAL REPLACEMENT
Richard K. Gardner, Montpelier; Roger D. Wieland, Bryan, and Mark D. Jermeay, Farmer, all of Ohio, assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.
Filed Feb. 20, 1996, Ser. No. 604,148
Int. Cl.[6] F04B *53/22*
U.S. Cl. 417—454 **7 Claims**

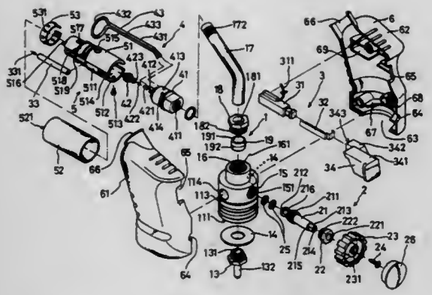
1. A reciprocating pump serviceable in-line, the reciprocating pump comprising:
a) a reciprocating power source having a housing body which includes an open first housing end and a housing body base at the first housing end, said housing body base for substantially closing the first housing end,
b) said reciprocating power source connected to a reciprocating member movable by said reciprocating power source, said



member having a width and, a reciprocating member end, said member being adapted to be movable through a housing body chamber along an axis;
c) a pump outlet body having a first outlet body end, a second outlet body end, a pumped fluid outlet between the outlet body ends, a passageway joining said outlet body ends and adapted to receive the reciprocating member, said passageway having a passageway wall, and a minimum width, and a seat formed in the passageway wall between the outlet body ends, the pump outlet body being connected to the housing body base;
d) first seal means substantially located in the seat, said first seal means for forming a seal with the reciprocating member, said first seal means having an inner periphery located in said passageway in order to sealingly engage the reciprocating member;
e) connecting means for connecting the outlet body to the housing body base;
f) pump means adapted to be flow connected to the second end of the pump outlet body, said pump means having a movable means for displacing the pumped fluid to the pumped fluid outlet, said movable means being operatively connected to said reciprocating member end, said movable means also having a width that is less than the minimum width of the passageway and greater than the width of the reciprocating member, said movable means adapted to engage the inner periphery of the first seal means when the reciprocating member is moved along the axis and removed from the passageway and thereby lifts the first seal means from the seat and out of the passageway, said movable means further including at least one L-shaped opening each adapted to accept a pin member located at the end of said reciprocating member, said pump means further including a wave washer sandwiched between the movable means and reciprocating member to maintain the pin in the openings and thereby prevent the movable means and reciprocating member from disconnecting.

5,647,738
JET TYPE GAS BURNER
Chin-Lin Tsai, 3 F, No. 94, Sec. 4, Chung Hsin Rd., San Chung City, Taipei Hsien, Taiwan
Filed Oct. 19, 1995, Ser. No. 545,515
Int. Cl.[6] F23Q *7/12*
U.S. Cl. 431—255 **14 Claims**

1. A jet type gas burner comprising:
a) a gas supply device including a base member having a first end adapted for connection to a conventional gas container



and a second end connected to an extension tube and having a gas passageway therebetween, and a lateral control bore arranged in said gas supply device and terminating at a necked down portion of said gas passageway,

b) a control device including an adjusting rod received in the lateral control bore of said gas supply device and means for moving said adjusting rod in said control bore, said adjusting rod having valve means associated therewith to control the flow of gas passing through the necked down portion of the gas passageway of said gas supply device in response to the movement of said adjusting rod,

c) an ignition means including a piezo-electric means, a conductive plate and an activating push button,

d) a return device including a relay seat and a return tube, said relay seat having a first gas passageway having first and second ends, and a second gas passageway having first and second ends, the first end of said first gas passageway communicating with said extension tube and the first end of said second gas passageway communicating with a gas nozzle at a gas outlet of said relay seat, said return tube including a first intake tube communicating with a second end of said first gas passageway, a second intake tube communicating with a second end of said second gas passageway, and an annular hollow tube interconnecting said first and second intake tubes,

e) a burning device including a hollow, terraced cylindrical mixing tube defining a mixing chamber into which the gas outlet of the relay seat of said return device extends, said relay seat being secured to said mixing tube, said mixing tube having a plurality of air holes for drawing ambient air into said mixing chamber when gas currents are generated therein by gas exiting from the gas nozzle of the relay seat of said return device so that said air and gas are mixed therein, downstream from said mixing chamber said mixing tube including a flame nozzle and a plurality of auxiliary flame holes whereby a mixture of air and gas may escape through said flame nozzle and auxiliary flame holes so that when said ignition means is activated the mixture of air and gas at said flame nozzle and said auxiliary flame holes is ignited, said annular hollow tube of said return tube being arranged so as to be heated by the ignited mixture of air and gas exiting said auxiliary flame holes, and an outer tube surrounding said mixing tube and defining a clearance between an inner wall thereof and said auxiliary flame holes so as to guide the ignited mixture of air and gas exiting said auxiliary flame holes forwardly, and

f) a housing including a left side and a right side joined together to enclose said gas supply device, control device, ignition means, return device and burning device.

5,647,739

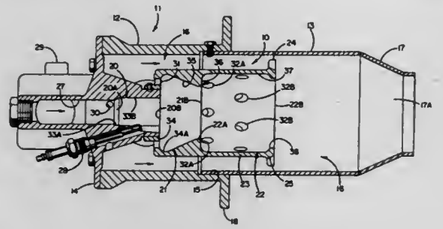
NOZZLE FOR USE IN A BURNER

Douglas B. McDonald, Rockford, Ill., assignor to Eclipse, Inc., Rockford, Ill.

Filed Apr. 10, 1995, Ser. No. 419,406

Int. Cl.[6] F02C *7/00*

U.S. Cl. 431—352 **13 Claims**



1. A high excess air burner comprising a generally tubular body having a downstream end portion and a substantially closed upstream end portion and having an inner surface defining a generally cylindrical air chamber along the major length of said body, said inner surface converging radially inwardly at said downstream end portion to define a converging exit opening, a nozzle located in said air chamber and spaced radially inwardly of said inner surface, said nozzle having an upstream end portion secured to said upstream end portion of said body and having an open downstream end portion located in said air chamber, a fuel inlet adapted to supply a variable volumetric flow rate of fuel to said upstream end of said nozzle, an air inlet adapted to supply air to the air chamber for flow generally axially from said upstream end of said body toward said converging exit opening and axially along said nozzle, first, second and third combustion chambers defined in said nozzle, said first combustion chamber having an inlet opening communicating with said fuel inlet for receiving the variable volumetric flow rate of fuel, the first combustion chamber having a generally cylindrical outer wall having combustion air inlets formed therein communicating with the air chamber so that said fuel is mixed with a first portion of said combustion air to form a first fuel air mixture in the first combustion chamber, said second chamber having a backwall and an exit end and having a sidewall of circular cross-section, said sidewall converging radially inwardly upon progressing toward said exit end, said backwall having an inlet opening communicating with said first combustion chamber for receiving said first mixture and having a plurality of openings communicating with said air chamber for receiving a second portion of said combustion air whereby said second portion of said combustion air is capable of mixing with said first mixture in said second combustion chamber to form a second fuel-air mixture, said third combustion chamber having an inlet opening communicating with said exit end of said second combustion chamber for receiving said second mixture and having a plurality of openings communicating with said air chamber for receiving a third portion of said combustion air wherein said third portion of said combustion air is capable of mixing with said second mixture in said third combustion chamber to form a third fuel-air mixture, each of said combustion chambers being capable of supporting combustion of the respective fuel-air mixtures therein, the combustion flame transitioning between said combustion chambers as the volumetric flow rate of said fuel is varied, the flame generally transitioning from said first combustion chamber through said second combustion chamber and to said third combustion chamber as the volumetric flow rate of the fuel is progressively increased.

5,647,740

LEAD FRAME BAKING OVEN

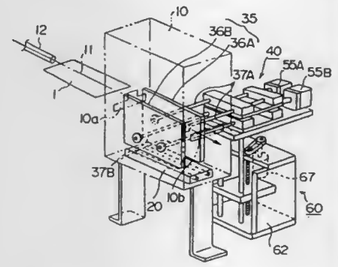
Tetsuya Kobaru, Tokyo, Japan, assignor to Kabushiki Kaisha Shinkawa, Tokyo, Japan

Filed Nov. 7, 1994, Ser. No. 335,045

Claims priority, application Japan, Nov. 8, 1993, 5-300779

Int. Cl.[6] F27B *9/14;9/24*

U.S. Cl. 432—122 **8 Claims**



1. A lead frame baking oven characterized in that said oven comprising:

an oven main body provided with an entrance opening and exit opening for lead frames on a lead frame conveying path;

a heating means for creating a high-temperature atmosphere inside said oven main body;

a lead frame magazine installed inside said oven main body so as to accommodate therein lead frames with said lead frames being stacked at a predetermined space;

a magazine raising and lowering means for raising and lowering said lead frame magazine; and

a magazine width adjustment means for changing a width of said lead frame magazine.

5,647,741

HEAT EXCHANGER FOR COMBUSTION APPARATUS

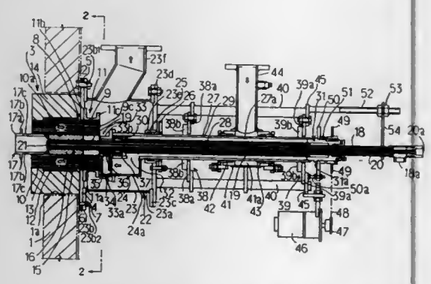
Shunzo Bunya; Hitoshi Kaji, and Yasuo Hirose, all of Kanagawa, Japan, assignors to Chiyoda Corporation, and Furnace Techno Co., Ltd., both of Kanagawa-Ken, Japan

Filed Dec. 6, 1994, Ser. No. 353,988

Claims priority, application Japan, Dec. 7, 1993, 5-306439; Nov. 29, 1994, 6-294761

Int. Cl.[6] F27D *17/00*

U.S. Cl. 432—180 **20 Claims**



1. A heat exchanger for a combustion apparatus, comprising:

a combustion chamber;

suction/exhaust ducts; and

an air-pervious regenerator arranged between said combustion chamber and said suction/exhaust ducts or in said suction/exhaust ducts to permit said combustion chamber and suction/exhaust ducts to communicate with each other therethrough;

said regenerator including a low-temperature section positioned on the side of said suction/exhaust ducts and a high-temperature section positioned on the side of said combustion chamber;

said regenerator being constructed so as to permit said low-temperature section to be increased in pressure loss gradient as compared with said high-temperature section.

5,647,742

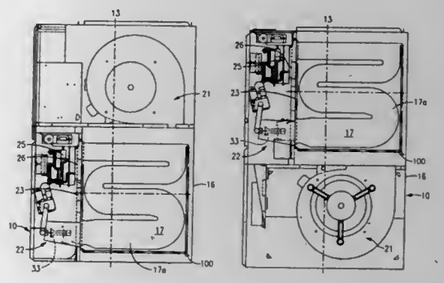
MULTI-PANEL SPACER/SHIPPING BRACKET

Merle D. Sears, Mooresville, and Howard E. Jameson, Indianapolis, both of Ind., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Feb. 7, 1995, Ser. No. 385,109

Int. Cl.[6] F27D *1/00*

U.S. Cl. 432—247 **9 Claims**



1. In conjunction with a furnace, having at least one heat exchange panel, and having a compartment within which the heat exchange panel is located, a multi-panel spacer/shipping bracket for supportively spacing at least one heat exchange panel, the bracket comprising:

a base member;

an attachment member extending from said base member, said attachment member attached to the compartment; and

a retention member extending from said base member, said retention member further comprising:

an insertion member having a slot therein for retaining a panel, said slot defining an approach opening sized to receive the panel into said slot, and

a spring member, said spring member positioned relative to said slot so as to operate to urge the panel against an interior vertical wall of said slot.

5,647,743

DEVICE FOR TREATING JAW FRACTURES OR TOOTH DISPLACEMENTS

Friedrich Schmitt, Katharienenufer 12, D-54290 Trier, Germany

PCT No. PCT/EP94/01528, § 371 Date Jun. 16, 1995, § 102(e) Date Jun. 16, 1995, PCT Pub. No. WO94/26197, PCT Pub. Date Nov. 24, 1994

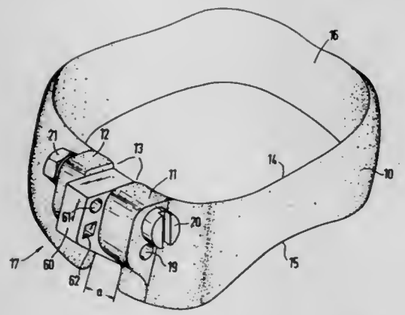
PCT Filed May 11, 1994, Ser. No. 454,280

Claims priority, application Germany, May 11, 1993, 43 15 585.5; May 11, 1993, 9307108 U

Int. Cl.[6] A61C *7/00*

U.S. Cl. 433—23 **20 Claims**

1. In a device for orthopedic treatment of jaw fractures or misaligned teeth, wherein a ring shaped dental band which loops around a tooth is releasably fastened to at least two teeth of a jaw, the improvement comprising:



at least two tensioning blocks (**11, 12**) formed integrally on the dental band (**10**), wherein the tensioning blocks (**11, 12**) are arranged in pairs and are at a distance from each other,

each of the at least two tensioning blocks (**11, 12**) having at least one of aligned bores and aligned threaded receivers,

at least one tensioning screw (**20**) engaged within the at least one of aligned bores and aligned threaded receivers,

a holder (**60**) disposed in a space formed between the two tensioning blocks (**11, 12**),

the holder (**60**) having a holder bore into which the tensioning screw (**20**) is engaged, and

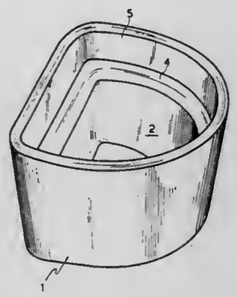
the holder (**60**) having a plurality of receivers (**61, 62**) on a side facing away from the dental band (**10**) for accommodating a strap (**30**).

5,647,744

SET OF CASTING ELEMENTS FOR THE REALIZATION OF GYPSUM MODELS FOR DENTAL PROSTHESIS, AND CASTING SYSTEMS EMPLOYING SAID ELEMENTS

Gaetano Squicciarini, No. 15, Largo dell'Olgiata, Isola 80L1-00123, Rome, Italy

Filed Jul. 25, 1995, Ser. No. 506,694
Claims priority, application Italy, Jul. 27, 1994, RM94A0500
Int. Cl.[6] A61C *19/00*
U.S. Cl. 433—34 **21 Claims**



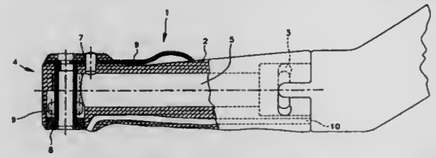
1. A set of casting elements for the realization of gypsum models for dental prothesis, comprising a series of flexible rubber elements each element having an open top and an open bottom defined therein and being perimetrically closed and shaped in such a way to allow inner coupling of a corresponding impression carrier in said open bottom.

5,647,745

HEAD FOR DENTAL CONTRA-ANGLE

Jean-Marie Badoz, Pontarlier, France, assignor to Micro Mega SA, Besancon, France

Continuation of Ser. No. 43,659, Apr. 6, 1993, abandoned.
This application May 30, 1995, Ser. No. 453,435
Claims priority, application France, Apr. 6, 1992, 9204327
Int. Cl.[6] A61C *1/08*
U.S. Cl. 433—126 **22 Claims**



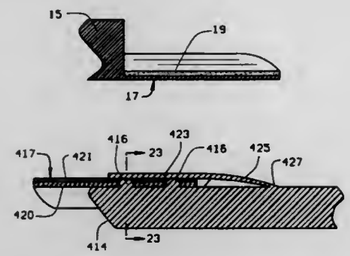
1. A head for detachably engaging a dental contra-angle having an operating shaft, the contra-angle including a drive shaft extending along the operating shaft and terminating with a drive gear, wherein the head comprises means associated with a first end for detachably fastening the head to the operating shaft of the contra-angle, a pinion associated with a second end of the head for engaging the drive gear of the drive shaft of the contra-angle, a tube of a defined length associated with and surrounded by the pinion, wherein the tube includes a hollow cavity which extends fully along the length of the tube for detachably supporting a tool, and means for locking the tool in the head, wherein the hollow cavity of the tube extends to the locking means, and wherein the head is formed principally from a synthetic material so that the head can be detached from the contra-angle and sterilized or disposed of after use.

5,647,746

DENTAL COMPOUND APPLICATOR

D. Keith Chipman, 11039 Kimmel Lake Rd., Ste. Genevieve, Mo. 63670

Filed Feb. 13, 1995, Ser. No. 387,252
Int. Cl.[6] A61C *3/00*
U.S. Cl. 433—226 **33 Claims**



1. A dental applicator for swabbing a curable liquid dental compound onto a surface of a tooth or tooth root of a patient, the applicator comprising:

an elongate body;

a fluid impervious shield at an end of said body, said shield being generally arcuate in transverse cross-section and having an inner concave surface and an outer surface; and

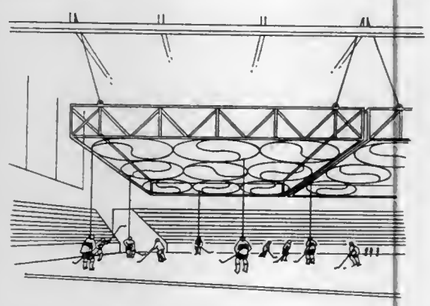
an absorbent pad secured to said shield inner surface, said shield outer surface remaining uncovered and exposed, said pad taking on a cross-sectional shape, when affixed to the shield, corresponding generally to the shape of said shield, such that said absorbent pad is generally arcuate in transverse cross-section, said pad being made of a material which will absorb said dental compound for applying the compound to said tooth and tooth root, without building-up said compound in the patient's gingival margin.

5,647,747

MECHANIZED ROBOTS FOR USE IN INSTRUCTION, TRAINING, AND PRACTICE IN THE SPORT OF ICE AND ROLLER HOCKEY

Vincent J. Macri, 5 Timber Brook La., Durham, N.H. 03824; Robert O. Magaw, Carle Place, and Paul Zilber, Plainview, both of N.Y., assignors to Vincent J. Macri, Durham, N.H.

Filed Jan. 20, 1995, Ser. No. 375,617
Int. Cl.[6] A63B *69/00*
U.S. Cl. 434—247 **10 Claims**



1. An electro-mechanical robot comprising:

an armature comprising a mechanically-resilient material covered by a high impact padding; said armature and said padding in combination resembling a human figure;

suspension means coupled to the armature at a distal end; and

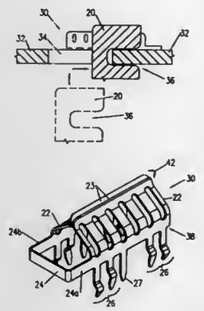
movement means coupled to a proximal end of the suspension means for enabling movement of the armature at variable speeds along an electrified track and above a hockey surface.

5,647,748

PRINTED CIRCUIT BOARD GROUND CLIP

R. Steven Mills; Jerry D. Gandre; Steve L. Sands, and Gita P. Khadem, all of Austin, Tex., assignors to Dell Computer Corporation, Austin, Tex.

Filed Jul. 14, 1995, Ser. No. 502,409
Int. Cl.[6] H01R *9/09*
U.S. Cl. 439—81 **20 Claims**



1. A printed circuit board ground clip, comprising:

an elongated base having two end portions which are bent to extend substantially parallel to each other at a spaced distance from each other;

at least one leg extending from a first side of each said two end portions;

a retainer extending from a second side opposite the first side of each said two end portions, wherein said retainer terminates as a flange; and

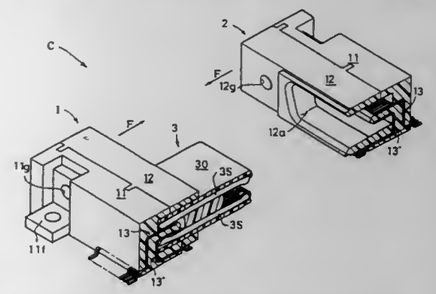
a ground supply bearing hook dimensioned to extend through said ground clip so as to frictionally engage with said flanges of said ground clip, and additionally frictionally engage with a printed circuit board supporting said ground clip by laterally moving said printed circuit board relative to said hook so that a groove in said hook embraces a top and a bottom surface of said printed circuit board.

5,647,749

ELECTRICAL CONNECTOR ASSEMBLY

Kiyoshi Atoh, Tokyo; Etsuro Doi, Saitama; Shoichi Mochizuki, and Mazakazu Koiso, both of Tama, all of Japan, assignors to Kel Corporation, Tokyo, Japan

Filed Sep. 19, 1994, Ser. No. 308,802
Claims priority, application Japan, Sep. 17, 1993, 5-255041
Int. Cl.[6] H01R *9/09*
U.S. Cl. 439—79 **10 Claims**



1. An electrical connector assembly of a right angled header type for mounting on a surface of a circuit board comprising an insulating housing means with a first portion having a board connecting face and a second portion extending forward at right angles from the first portion and having a mating face, remote from the board connecting face, for mating engagement with a complementary mating face of another connector,

a series of contact element means extending through the insulating housing with respective mating portions at the mating face for connection to respective contact elements of said another connector and respective circuit board connecting portions at the board connecting face some of which protrude horizontally rearward therefrom for connection to respective circuit paths on the surface of the circuit board by a reflow solder technique with the first housing portion upstanding from the circuit board and a part of the second housing portion for forming the mating face in adjacent overlying relation to the surface of the circuit board,

the improvement residing in that the contact element means include other circuit board connecting portions at the board connecting face which protrude horizontally forward therefrom and that said part of the second housing portion is formed as a subhousing part and means are provided for attaching the subhousing part to form the mating face and to extend in adjacent overlying relation to both the surface of the circuit board and to the forward protruding board connecting portions after reflow soldering thereof to the printed circuit board, enabling the soldering unimpeded by said subhousing part, the circuit board connecting portions protruding horizontally forward for a distance greater than the mating portions and less than the subhousing part when attached, so that the

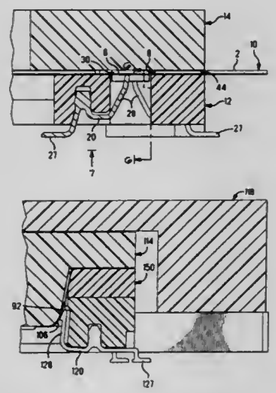
circuit board connecting portions are exposed for direct engagement from vertically above by a soldering tool in an unattached condition of the subhousing part and completely covered by the subhousing part when attached.

5,647,750

SOCKET FOR A TAPE CARRIER PACKAGE

Mai Loan Thi Tran, Harrisburg; Edward John Bright, Middletown, and Attalee Snarr Taylor, Palmyra, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Nov. 30, 1995, Ser. No. 565,350
Int. Cl.[6] H01R *9/09*
U.S. Cl. 439—72 14 Claims



1. A socket for electrically connecting an electronic package which is mounted on a tape carrier to a circuit board, the tape carrier having an aperture along at least one side of the electronic package, and the electronic package having a plurality of leads extending across the aperture and arranged in a spaced-apart array, the socket comprising:

a cover having a tape mounting surface configured for receiving the tape carrier in a controlled position thereagainst, and a plurality of ribs protruding from the tape mounting surface, the ribs being disposed so as to extend through the aperture and being arranged in an array such that adjacent pairs of the ribs straddle respective ones of the leads when the tape carrier is in the controlled position;

a housing mateable with the cover, the housing holding a plurality of contacts corresponding to the plurality of leads, the contacts having respective trace-engaging portions which extend externally of the housing for engagement with respective circuit traces on the circuit board, the contacts having respective lead-engaging portions which extend externally of the housing for engagement with respective ones of the leads, the lead-engaging portions being disposed in an array corresponding to the array of leads for engagement therewith when the cover having the tape carrier in the controlled position is mated with the housing; and,

means for fastening the cover to the housing;

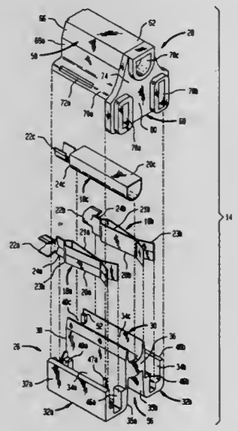
whereby when the cover is mated with the housing, the lead engaging portions are straddled and guided by the adjacent pairs of ribs as the leads are urged into engagement with their respective said lead engaging portions.

5,647,751

FEMALE RECEPTACLE AND PREMOLD THEREFOR

Michael Y. Shulman, 715 Opatut Ct., Toms River, N.J. 08753; Yook K. Chan, 48 Mercury Cir., South Amboy, N.J. 08879; Henry F. Skoczylas, 524 Jessica La.; Suzanne V. Hickey, 1472 Green Grove Rd., both of Brick, N.J. 08724, and Nicholas K. Katzenberger, 540 Seawaneka Ave., Oceanport, N.J. 07757

Continuation-in-part of Ser. No. 497,201, Jun. 30, 1995, abandoned. This application Sep. 22, 1995, Ser. No. 532,934
Int. Cl.[6] H01R *13/504*
U.S. Cl. 439—106 22 Claims



1. In a female receptacle adapted for electrical connection to a male plug and having an overmold, a pair of clothes-pin type metal female contacts and a D-shaped metal female pin, the improvement comprising a premold positioned in said overmold for housing said female contacts and said female pin, said premold including a body, which has first receiving means for receiving one of said pair of female contacts, second receiving means for receiving another of said pair of female contacts and third receiving means for receiving said female pin, and a cover, releasably mounted on said body in a snap-fit manner, for covering said first, second and third receiving means, said first and second receiving means including cooperating means for cooperating with said female contacts to exert a substantially constant gripping force on male pins of a male plug connected to said female receptacle.

5,647,752

LEVER-TYPE CONNECTOR

Naoto Taguchi, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed May 11, 1995, Ser. No. 438,961
Claims priority, application Japan, May 12, 1994, 6-098763
Int. Cl.[6] H01R *13/62*
U.S. Cl. 439—157 12 Claims

1. A lever-type connector comprising:

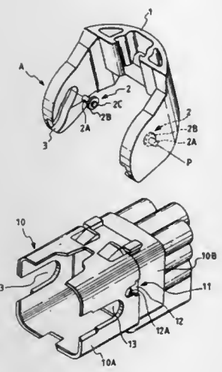
a connector;

a retaining lever pivotally mounted on the connector;

projections formed on opposite sides of a first one of the retaining lever and the connector, wherein each of the projections includes a support shaft, a flange formed on a distal end of the support shaft, and a protuberance extending longitudinally from the flange;

receiving grooves for receiving the projections, wherein each support shaft is received in an associated receiving groove; and

engagement portions spanning a width of the receiving groove for engaging the projections, the receiving grooves and the



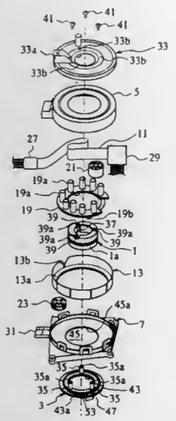
engagement portions formed at opposite sides of a second one of the retaining lever and the connector.

5,647,753

ELECTRICAL CONNECTION DEVICE BETWEEN HANDLE AND STEERING COLUMN

Satoshi Ishikawa; Nobuhiko Suzuki, and Tohru Ikumi, all of Shizuoka-ken, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Aug. 22, 1995, Ser. No. 517,689
Claims priority, application Japan, Aug. 26, 1994, 6-202251
Int. Cl.[6] H01R *35/04*
U.S. Cl. 439—689 6 Claims



1. An electrical connection device for use between a steering wheel and a steering column for a vehicle, said device comprising:

a rotor into which an axle of said steering wheel is fixed,

a housing arranged about said rotor and fixed to said steering column to rotatably support said rotor, said housing defining an annular space therein together with said rotor, and

a flexible flat cable accommodated in said annular space to move following both of rotations of said rotor in reverse-directions, said flexible flat cable having one end connected to said housing and another end connected to said rotor thereby to connect said housing with said rotor electrically,

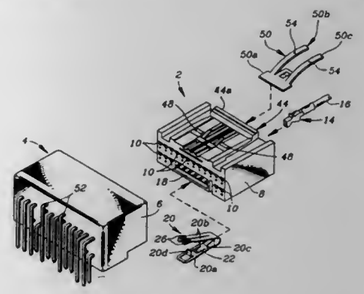
wherein said rotor is provided on an outer periphery thereof facing an inner edge of said housing with a resinous layer whose frictional coefficient is smaller than that of said rotor.

5,647,754

SHORT-CIRCUIT CONNECTOR

Toshiaki Kohno, Yokosuka, Japan, assignor to The Whitaker Corporation, Wilmington, Del.

Filed Jun. 1, 1995, Ser. No. 456,355
Claims priority, application Japan, Aug. 7, 1994, 6-157034
Int. Cl.[6] H01R *13/627*
U.S. Cl. 439—188 20 Claims



1. A short-circuit connector comprising:

a dielectric housing having at least two contact cavities located therein and at least one short-circuit cavity located therein adjacent to said contact cavities;

at least two electrical contacts in said contact cavities; and

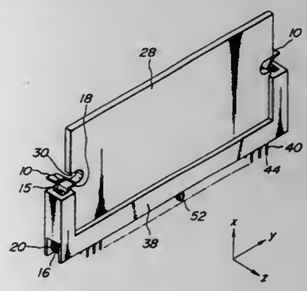
at least one short-circuit contact in said short-circuit cavity including a base, a pair of contact arms extending from said base with free ends extending into said contact cavity making electrical contact with and short-circuiting the electrical contacts, and primary restriction members formed under said pair of short-circuit contact arms for engagement by said contact arms to prevent deformation of said contact arms when said contact arms are moved toward said base.

5,647,755

ELECTRICAL CONNECTOR

Masato Hida, and Sadao Kuboi, both of Tokyo, Japan, assignors to DDK Ltd., Japan

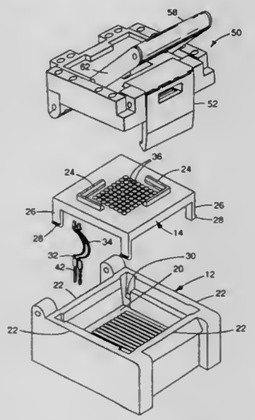
Filed Feb. 16, 1996, Ser. No. 602,954
Claims priority, application Japan, Mar. 1, 1995, 7-066818
Int. Cl.[6] H01R *13/62*
U.S. Cl. 439—328 7 Claims



1. An electrical connector including a plurality of contacts and an insulator for receiving and fixing said contacts and having guides at both ends of its lengthwise direction, said connector comprising push bars inserted in said guides at both the ends of said insulator, respectively, each of said push bars having at its one end an anchor portion for engaging a circuit board or a mating connector, an engaging portion at the other end, and a spring piece between said anchor and engaging portions, and said connector further comprising cams disposed in mounting portions provided at

bottoms of said guides at both the ends of said insulator, respectively, each of said cams having at its one end an anchor portion engageable said engaging portion of said push bar and having a support on the side of the other end for pivotal movement of the cam, said engaging portion of each of the push bars being connected to said anchor portion of one of the cams.

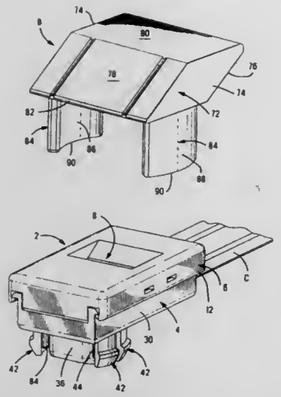
5,647,756
INTEGRATED CIRCUIT TEST SOCKET HAVING TOGGLE CLAMP LID
Richard Dean Twigg, Columbia, and Steven Dale Mitchem, Jefferson City, both of Mo., assignors to Minnesota Mining and Manufacturing, Saint Paul, Minn.
Filed Dec. 19, 1995, Ser. No. 574,770
Int. Cl.[6] H01R *13/62*
U.S. Cl. 439—331 **4 Claims**



1. An improved test socket for integrated circuits of the type including:
a base;
a platform supporting said integrated circuit;
resilient contacts extending at least partially into said platform for electrical connection to said integrated circuit; and
a lid pivotally connected to said base and including a latch for securing said lid relative to said base; the improvement comprising:
a pressure pad forming a portion of said lid, said pressure pad being slidably moveable with respect to said lid;
a lever pivotally attached to said lid and moveable between a closed position and an open position; and
means connecting said lever and said pressure pad for forcing said pressure pad toward said base when said lid is closed and said lever is moved from said open position to said closed position.

5,647,757
ELECTRICAL CONNECTOR WITH TERMINAL POSITION ASSURANCE
Chrysostomos Petros Chrysostomou, Enfield, Great Britain, assignor to The Whitaker Corporation, Wilmington, Del.
Filed Mar. 18, 1996, Ser. No. 617,229
Claims priority, application United Kingdom, Mar. 20, 1995, 9505697; Apr. 28, 1995, 9508743
Int. Cl.[6] H01R *13/627*
U.S. Cl. 439—352 **10 Claims**

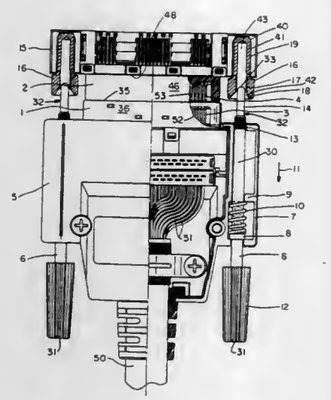
1. An electrical connector matable with a base unit where the base unit has a plurality of contacts disposed within a socket, the



connector comprises; a housing having a body, a plug extending outward from the body that is receivable in the socket, and a deflectable retention member extending outward from the body alongside and spaced from the plug for engaging a retention feature in the base unit to retain the connector therewith; contacts disposed within the housing and accessible through the plug for engaging the contacts of the base unit when the connector is mated therewith; a slide slidably mounted to said housing and movable between a first position and a second position; and a support element responsive to slide movement that includes an extension that in the first position of the slide is disposed clear of the retention member to allow mating and demating of the connector with the base unit and in the second position the extension is disposed between the retention member and the plug thereby preventing deflection of the retention member thereby preventing mating or demating; the connector being characterized in that the extension is displaceable axially along the retention member and plug in response to movement of the slide between the first position and the second position.

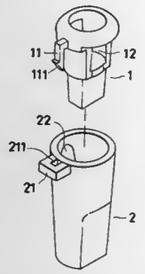
5,647,758
ELECTRICAL CONNECTOR ASSEMBLY WITH BIASED GUIDE MEANS
Shozou Ichikawa, Kawasaki, and Naoya Matsuura, Yokohama, both of Japan, assignors to Molex Incorporated, Lisle, Ill.
Filed Jan. 11, 1996, Ser. No. 584,664
Claims priority, application Japan, Feb. 23, 1995, 5-059897
Int. Cl.[6] H01R *13/627*
U.S. Cl. 439—362 **20 Claims**

1. In an electrical connector assembly of the type having first and second interengaging connector components, the first and second connector components including respective first and second arrays of contact terminals disposed thereon, said first connector component including a pair of engagement screws disposed on opposite sides of said first terminal array, the second connector component including a pair of screw-receiving cavities disposed on opposite sides of the second terminal array which receive said first connector component engagement screws when said first and second connector components are engaged together, the improvement comprising: means for aligning said first and second connector components together in a confronting relationship wherein said first and second terminal arrays are aligned with each other prior to engagement of said first and second connector components, the alignment means including guide portions projecting from said first connector component engagement screws and said alignment means further including entrance openings surrounding said screw-receiving cavities which include tapered portions for guiding said engagement screw guide portions into said screw-receiving cavities and substantially centering said engagement screws therein, the guide portions of said engagement screws protruding past an



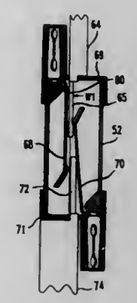
endface of said first connector component such that they extend forwardly of said first connector components and are received within said second connector component screw-receiving cavities prior to said first and second connector components engaging each other when said first and second connector components are brought together to establish an electrical connection therebetween.

5,647,759
CHRISTMAS LAMP BULB FIXING SOCKET
Tzung-Min Lien, Miao Li Hsien, Taiwan, assignor to Chen Yu Enterprise Co., Ltd., Miao Li Hsien, Taiwan
Filed May 14, 1996, Ser. No. 645,813
Int. Cl.[6] H01R *13/627*
U.S. Cl. 439—356 **1 Claim**



1. A Christmas lamp bulb fixing socket comprising:
a connecting socket provided for holding a bulb therein and having a protrusion extending outwardly and downwardly from an outer surface of a circumferential wall thereof and a plurality of openings formed through substantially flat sided wall portions of said circumferential wall, said protrusion having a hook shaped distal end; and,
an outer socket provided for holding the connecting socket and having an affixing unit formed on an outer circumference thereof, said affixing unit having a hole formed therethrough to receive the protrusion of the connecting socket therein, said outer socket having a plurality of convexly shaped protrusions formed on an inner circumference thereof at positions corresponding to the openings in said circumferential wall of said connecting socket to pass through the openings for aiding in a retention of said connecting socket and holding the bulb firmly inside the connecting socket to keep the bulb from turning.

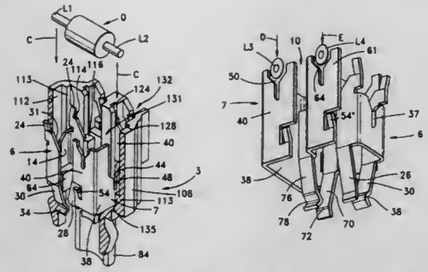
5,647,760
INSULATION DISPLACEMENT CONTACT INCLUDING RETENTION MEANS
Robert George Drach, Omaha, Nebr., and Jeremia Patrick Starace, Nutley, N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.
Filed May 17, 1995, Ser. No. 442,899
Int. Cl.[6] H01R *4/24*
U.S. Cl. 439—395 **24 Claims**



1. A device for making an electrical connection to an insulated wire inserted therein, said insulated wire having a metallic conductor contained within, said device comprising:
at least one terminal element, wherein said at least one terminal element including
an essentially flat electrically conductive material, said terminal element including a solid base region;
first and second arm sections extending upwardly from said base region, said arm sections defining a first centralized slot in said terminal element, said first slot being open at a top region thereof and having a width suitable for electrical engagement of said metallic conductor of said insulated wire, wherein said arm sections include sharpened inside edges adapted to cut through insulation of said wire inserted in said slot to thereby establish an electrical connection;
wherein said arm sections further define a retaining region proximate said top region of said terminal element adjoining said first Slot, said retaining region including a second slot having a width greater than said first slot for retaining said insulated wire prior to insertion in said first slot; and
further including an insulated connector module housing said housing including a base and a plurality of vertical walls extending upward and downward from said base, wherein said vertical wails are separated by a predetermined distance thereby defining a channel between said walls wherein said vertical walls and said base are adapted to securely hold said terminal element therebetween and wherein said housing includes a front and rear surface separated by a central region, wherein said at least one terminal elements is disposed on said front and rear surface of said connector module housing.

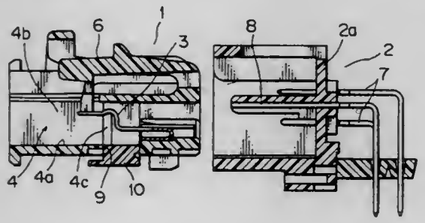
5,647,761
LAMP BULB HOLDER AND A METHOD OF ASSEMBLING A LAMP BULB HOLDER
Christopher Kaminski, North Devon, Great Britain, assignor to The Whitaker Corporation, Wilmington, Del.
Filed Sep. 6, 1995, Ser. No. 523,973
Claims priority, application United Kingdom, Sep. 6, 1994, 9417867
Int. Cl.[6] H01R *4/26*
U.S. Cl. 439—419 **14 Claims**

1. A holder for a lamp bulb, comprising an insulating housing having a terminal receiving part and a socket for receiving the lamp bulb, the terminal receiving part defining first, second and



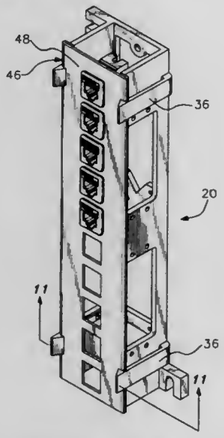
third terminal receiving cavities opening into a terminal receiving end of the housing and receiving first, third and second electrical terminals, respectively, the first and third terminals each having a spring contact beam projecting into the socket for engaging a respective contact of the lamp bulb, the first and second terminals each having a component lead receiving slot securely receiving a respective lead of an electrical component and the second and third terminals each having at least one supply lead receiving slot, all of said component lead receiving slots and supply lead receiving slots opening towards the terminal receiving end of the housing where the electrical component is disposed within the housing.

5,647,762
LOCKING STRUCTURE OF SHORT-CIRCUIT CONTACT FOR CONNECTORS
Eiji Fukuda, Haibara-gun, Japan, assignor to Yazaki Corporation, Tokyo, Japan
Filed Oct. 16, 1995, Ser. No. 543,825
Claims priority, application Japan, Nov. 18, 1994, 6-284976
Int. Cl.[6] H01R *3/00*
U.S. Cl. 439—489 **5 Claims**



1. A locking structure for doubly locking a short-circuit contact which forms a part of a connection sensor of an electrical connector having a pair of electrical connector housings comprising:
said short-circuit contact having elastic contact pieces and a base plate, said base plate primarily locked to one connector housing of said pair of electrical connector housings by locking means;
a pair of connection sensing terminals mounted in the other connector housing of said pair of connector housings engaging with said elastic contact pieces of said short-circuit contact when said pair of electrical connector housings are completely engaged;
said one connector housing of said pair of connector housings further comprising a contact support chamber to receive said short-circuit contact and a wall including a locking piece insertion hole; and
an insert locking piece having a locking protrusion for secondarily locking said short-circuit contact, when said insert locking piece is inserted into said locking piece insertion hole, whereby said base plate of said short-circuit contact is contacted with said locking protrusion of said insert locking piece to lock said short-circuit contact to said contact-support member.

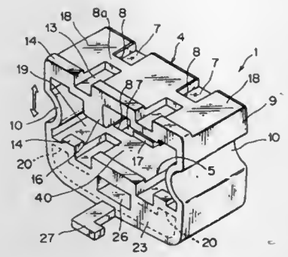
5,647,763
MULTI-MEDIA CROSS CONNECT SYSTEM
Richard W. Arnold, Clermont, Fla., and Richard E. Woodrum, Louisville, Ky., assignors to Superior Modular Products Incorporated, Swannanoa, N.C.
Continuation of Ser. No. 385,905, Feb. 9, 1995, abandoned.
This application Oct. 16, 1996, Ser. No. 732,210
Int. Cl.[6] H01R *13/74*
U.S. Cl. 439—540.1 **14 Claims**



1. Cross-connect apparatus comprising:
a set of snap-in connection devices having retaining members; and
an elongated rectangular panel having a pair of ends, a pair of sides relatively longer than said ends, a pair of mounting regions extending respectively along substantially the entire length of said sides, and an intermediate region between said mounting regions, said panel having a greater thickness in said mounting regions than in said intermediate region;
said intermediate region having a plurality of apertures sized for receiving and retaining corresponding individual ones of said connection devices, said connection devices being received in corresponding ones of the apertures and retained engagement of said retaining members with said panel; and
said panel having a set of rectangular notches in said sides positioned and configured for mating with retaining members of a mounting bracket for removably securing said panel to the mounting bracket.

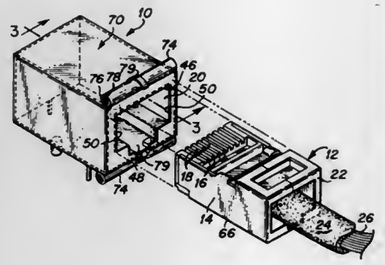
5,647,764
HOLDER-CONTAINING CONNECTOR
Tomobiko Kimura, Shizuoka, Japan, assignor to Yazaki Corporation
Filed Jul. 29, 1996, Ser. No. 688,091
Claims priority, application Japan, Jul. 31, 1995, 7-195416
Int. Cl.[6] H01R *13/40*
U.S. Cl. 439—595 **3 Claims**

1. A holder-containing type connector comprising:
a connector housing having a resilient locking lance for locking a terminal inserted therein, and
a holder having a deflection prohibiting member which can move into a deflection absorbing space for allowing said resilient locking lance to deflect therein, and insertable into said connector housing, wherein
said holder is composed of:
a pair of mutually facing plates each having said deflection prohibiting member, said pair of plates being connected by a pair of resilient sections and urged away from each other, and
said connector housing comprises:



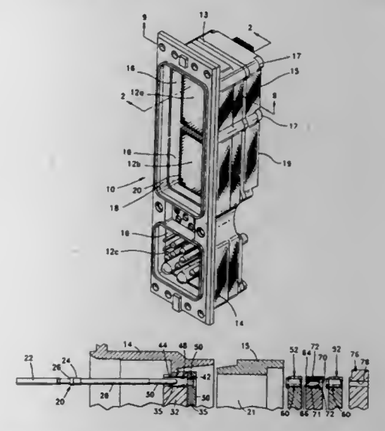
a pair of first and second guide walls each abutting against an external surface of each of said pair of plates, wherein a distance between said pair of plates is made longer than that between said guide walls.

5,647,765
SHIELDED CONNECTOR WITH CONDUCTIVE GASKET INTERFACE
Orville A. Haas, Pocahontas, Ark., and Edward A. Karale, Fremont, Calif., assignors to Regal Electronics, Inc., Santa Clara, Calif.
Filed Sep. 12, 1995, Ser. No. 526,991
Int. Cl.[6] H01R *13/648*
U.S. Cl. 439—609 **15 Claims**



1. A modular jack (**10**) for connection to a printed circuit board and receipt of a modular plug (**12**), comprising:
an outer housing (**30**, **32**) comprised of an electrically insulative material having opposed top wall (**46**), bottom wall (**48**) side walls (**50**), and a back wall segment (**32**) being integrally formed and defining an interior longitudinally extending cavity (**20**) between them, said cavity forming an externally extending opening about a front end of the housing for receipt of a plug having electrical contacts;
a plurality of jack contacts (**34**), each of the jack contacts (**34**) including a pin portion (**36**), a contact portion (**38**) and an interconnecting portion (**40**) interconnecting said pin portion (**36**) and contact portion, said contact portion (**36**) positioned within said cavity (**20**) and said pin portion extending externally to the housing for mounting on a printed circuit board;
an electrically conductive shield member (**70**, **102**) engaged to an exterior surface of the outer housing (**30**, **32**) about said opening;
an electrically conductive compliant member (**74**) comprised of a compliant foam core (**76**) surrounded by a conductive material and extending about an external edge of the shield member and in electrical connection with the shield, such that when the housing is positioned on an electrically conductive panel and said front end is positioned about an opening of said panel, the electrically conductive compliant member makes electrical contact with said panel to create an electrically conductive path between the shield, the compliant member and said panel; and
fastening means (**80**) securing the electrically conductive compliant member (**74**) to the shield member (**70**).

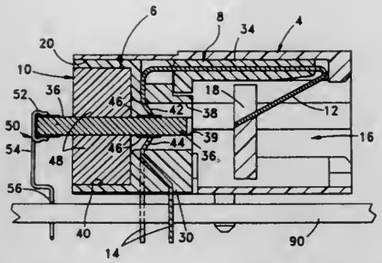
5,647,766
MODULAR CONNECTOR ASSEMBLY HAVING REMOVABLE CONTACTS
Hung Thai Nguyen, Harrisburg, Pa., assignor to The Whitaker Corporation, Wilmington, Del.
Filed May 26, 1995, Ser. No. 451,331
Int. Cl.[6] H01R *13/66*
U.S. Cl. 439—620 **8 Claims**



1. A filtered electrical connector, comprising:
a housing having first contact receiving passages an outer metal shell in which the housing is secured;
first and second capacitor arrays, each capacitor array having a plurality of tube capacitors secured together, each of said tube capacitors having a second contact receiving passage with a signal electrode therein, a resilient member electrically connected to the signal electrode, a continuous ground electrode isolated from the signal electrode and completely surrounding the second contact receiving passage, the ground electrode being electrically connected to said shell;
a second housing having ferrite beads with apertures therein, and
a plurality of removable contacts received by said first capacitor array, said apertures in said ferrite beads and said second capacitor array each said contact in electrical contact with one of said resilient members and retained by a retaining clip.

5,647,767
ELECTRICAL CONNECTOR JACK ASSEMBLY FOR SIGNAL TRANSMISSION
Peter L. Scheer, Camp Hill, Pa.; Venkat A. Raman, Santa Clara, Calif., and Steven E. Minich, Carlisle, Pa., assignors to The Whitaker Corporation, Wilmington, Del.
Continuation-in-part of Ser. No. 550,309, Oct. 30, 1995, abandoned, which is a continuation-in-part of Ser. No. 384,085, Feb. 5, 1995, abandoned. This application Jan. 25, 1996, Ser. No. 591,080
Int. Cl.[6] H01R *13/66*
U.S. Cl. 439—620 **25 Claims**

1. A modular jack electrical connector comprising:
a housing having a front face and a rear face with oppositely facing upper and lower surfaces between the front face and the rear face, a modular plug receiving cavity extending into



the housing from the front face, the rear face having a rearwardly facing open ended channel, the channel communicating with the plug receiving cavity on the interior of the housing;

a plurality of contact terminals positioned in the modular plug receiving cavity to establish an electrical connection with a modular plug inserted into the cavity, the contact terminals also extending from the modular plug receiving cavity into the open ended channel;

a component printed circuit board, at least partially insertable into the open ended channel, the component printed circuit board having at least one signal conditioning component mounted thereon, the contact terminals being in electrical contact with the component printed circuit board and electrically connected to the signal conditioning components; and

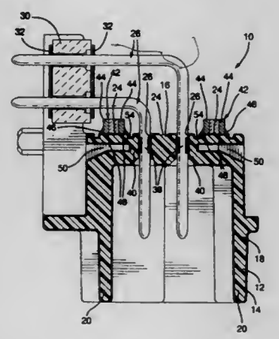
a plurality of leads, at least a portion of the leads being in electrical contact with the component printed circuit board and electrically connected to the signal conditioning components, and extending from the open ended channel for connection to external circuits.

5,647,768

PLATED PLASTIC FILTER HEADER

Dominic Anthony Messuri, Canfield, and Burlyn Dean Nash, Warren, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 11, 1996, Ser. No. 613,862
Int. Cl.[6] H01R *13/66*
U.S. Cl. 439—620 **4 Claims**



1. A filtered electrical header connector comprising:

a connector body comprising a pin retaining portion having a plurality of holes therethrough each for receiving a connector pin, a shelf connected along one side to the pin retainer portion and extending therefrom, and wherein the shelf has a thickness less than the thickness of the pin retainer portion, said connector body having a metal plating overlying selected portions thereof;

a terminal pin extending through each of said holes, a chip capacitor soldered to a pad of metal plating overlying said shelf, said chip capacitor electrically connected to one of said pin terminals and to another portion of the metal plating on said connector;

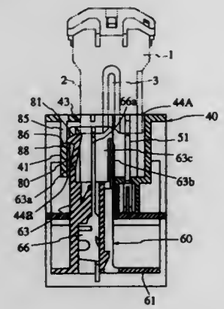
each of said terminal pins having a portion surrounded by a ferrite block, and wherein said shelf and pin retaining portion define a recess underlying said shelf and chip capacitor.

5,647,769

ELECTRICAL CONNECTION BOX

Kinihiko Takeuchi, Shizuoka-ken, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Jan. 24, 1996, Ser. No. 590,882
Claims priority, application Japan, Jan. 25, 1995, 7-009885
Int. Cl.[6] H01R *13/68*
U.S. Cl. 439—621 **12 Claims**



1. An electrical connector comprising:

a first housing having a cylindrical portion formed with a first end opening to allow for passage of a mating connector into the cylindrical portion, said cylindrical portion having a lock portion formed therein; a second housing having a fitting wall capable of being fit in said cylindrical portion via a second opening formed in the cylindrical portion, an Inner surface of the fitting wall forming a recessed portion having an open end, the fitting wall having a flexible locking arm capable of being deflected and deformed in said recessed portion when the fitting wall is moved into the cylindrical portion, the locking arm returning to an original shape and being engaged with said lock portion when the fitting wall is fit in the cylindrical portion; and

a terminal extending in the recessed position so that the terminal can be connected to a terminal of the mating connector,

wherein a projecting portion of the mating connector is fit in said recessed portion when said fitting wall is fit in said cylinder portion.

5,647,770

INSERT FOR A MODULAR JACK USEFUL FOR REDUCING ELECTRICAL CROSSTALK

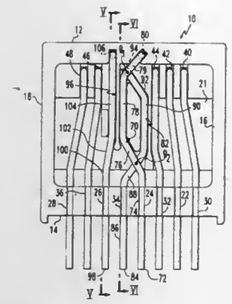
Yakov Belopolsky, Harrisburg, Pa., assignor to Berg Technology, Inc., Reno, Nev.

Filed Dec. 29, 1995, Ser. No. 580,943
Int. Cl.[6] H01R *23/02*
U.S. Cl. 439—676 **8 Claims**

1. An insert for a modular jack assembly comprising:

(a) an insulative member having a top wall and a bottom wall and a front end;

(b) a first conductive means having a vertical leg extending in a first vertical plane from adjacent the bottom wall toward the top wall and then extending diagonally in said first vertical



plane in a diagonal leg to a first upper point from where it extends in a horizontal leg toward the front end; and

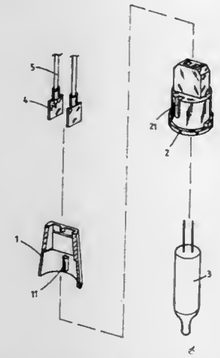
(c) a second conductive means having a vertical leg extending in a second vertical plane from adjacent the bottom wall toward the top wall further than the first upper point and then extending diagonally in a diagonal leg in the second vertical plane to a second upper point from where it extends in a horizontal leg toward the front end.

5,647,771

SOCKET STRUCTURE USED FOR DECORATION LIGHT BULBS

Kuo Fen Shu, 10, Lane 198, Chung Cheng Road, Chinchu, Taiwan

Filed May 2, 1995, Ser. No. 433,216
Int. Cl.[6] H01R *17/00*
U.S. Cl. 439—699.2 **1 Claim**



1. An improved socket structure for decorative light bulbs, comprising:

a socket shell formed by a tubular wall having an inner surface circumscribing an open bore, said tubular wall having a pair of protrusions formed on opposing sides of said inner surface and extending into said open bore;

a bulb seat insertable within said open bore of said socket shell, said bulb seat having a cavity formed by an outer wall for receiving a decorative light bulb therein, said bulb seat having a pair of apertures formed in a bottom portion thereof in open communication with said cavity for passage of a respective pair of wire leads of the light bulb therethrough, said outer wall having a pair of elongated through openings formed on opposing sides of an exterior surface thereof and adapted to respectively tightly receive said protrusions therein when said bulb seat is inserted into said open bore of said socket shell, said protrusions extending through said elongated through openings for securely holding the light bulb within said bulb seat and preventing rotation of said bulb seat relative to said socket shell; and,

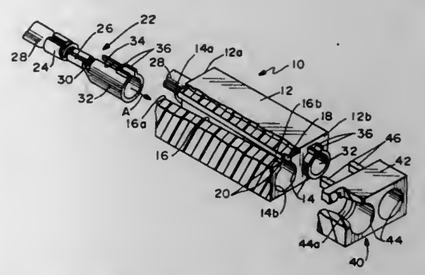
a pair of conductor plates disposed within said open bore of said socket shell for respective electrical contact with the pair of wire leads of the light bulb, each of said conductor plates being electrically coupled to a wire passing through an opening formed in a bottom portion of said socket shell.

5,647,772

TERMINAL POSITION ASSURANCE SYSTEM FOR AN ELECTRICAL CONNECTOR

Roberto Martucci, Montegrotto T. Padova, and Gianni Zuin, Mestrino-Padova, both of Italy, assignors to Molex Incorporated, Lisle, Ill.

Filed Apr. 16, 1996, Ser. No. 633,282
Claims priority, application European Pat. Off., May 31, 1995, 95108287
Int. Cl.[6] H01R *13/428*
U.S. Cl. 439—748 **15 Claims**



1. A terminal position assurance (TPA) system for an electrical connector comprising:

a dielectric housing having a forward mating end a rearward terminating end and at least one terminal-receiving passageway extending between the ends, the passageway including an enlarged latch section formed near the forward mating end of the housing;

a terminal insertable into the passageway from the rearward terminating end of the housing, the terminal having a mating portion adapted to mate with a complementary terminal inserted into the passageway from the forward mating end of the housing, and an outwardly extending primary locking portion adapted to latchingly engage the latch section of the passageway; and

a TPA device engageable with the housing at the forward mating end thereof, the TPA device including a secondary locking portion positionable within said primary locking portion of the terminal to prevent movement of the primary locking portion away from latching engagement with the latch section of the passageway.

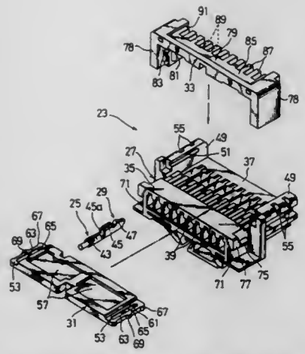
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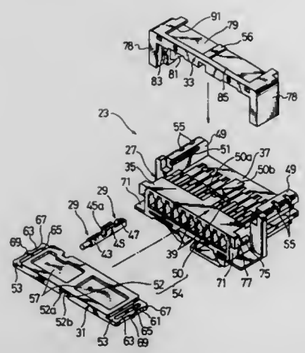
CONNECTOR FOR CONNECTING TERMINALS TO CIRCUIT BOARD

Noboru Yamaguchi, and Masaya Yamamoto, both of Shizuoka-ken, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Aug. 9, 1995, Ser. No. 512,932
Claims priority, application Japan, Aug. 10, 1994, 6-188133; Jul. 6, 1995, 7-170800
Int. Cl.[6] H01R *13/514*
U.S. Cl. 439—752 **9 Claims**

1. A connector for connecting a plurality of metal terminals to a circuit board, which comprises:





a connector housing formed with a plurality of metal terminal accommodate chambers each for accommodating a metal terminal inserted into the connector housing, a part of each metal terminal being exposed outside from the metal terminal accommodate chamber, for connection with the circuit board when engaged with the connector housing in parallel with the metal terminals;

a terminal cover slidably engaged with both ends of the connector housing for movement between a terminal cover position and a terminal uncover position; and

a terminal retainer engaged with the connector housing in a direction perpendicular to an insertion direction of the metal terminals, said terminal retainer capable of engaging with the connector housing in two positions, a temporal engage position, at which the terminal retainer is disengaged from the metal terminals which prevents terminal cover movement to the terminal uncover position and a full engage position, at which the terminal retainer is engaged with the metal terminals for prevention of removal of the metal terminals from the connector housing which allows the terminal cover to move to the terminal uncover position, the terminal retainer including:

a pair of engage side walls engaged with the connector housing;

a detect plate portion formed between the engage side walls and having at least one flexible detect arm extending in a retainer lateral direction from the terminal retainer and in parallel with the metal terminals; and

at least one detect projection formed integrally on a free end of the flexible detect arm the detect projection being prevented from insertion into the terminal accommodate chamber by bend of the flexible detect arm due to contact with an imperfectly-inserted metal terminal at the full engage position of the terminal retainer, but inserted into each of the terminal accommodate chambers at the temporal engage position thereof without contact with a perfectly-inserted metal terminal.

5,647,774

ELECTRICAL CONNECTOR

Masaya Yamamoto, Shizuoka-ken, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Aug. 30, 1995, Ser. No. 521,328

Claims priority, application Japan, Aug. 31, 1994, 6-206854

Int. Cl.[6] H01R *13/514*

U.S. Cl. 439—752 **3 Claims**

1. An electrical connector for connecting a terminal metal having a contact portion to be connected with a terminal section of a board, said connector comprising:

a housing having a plurality of terminal-accommodating chamber formed therein for accommodating and engaging the terminal metal in condition of exposing the contact portion,

a cover attached to said housing so as to slide between a closed position where said cover closes the contact portion and an opened position where said cover opens the contact portion when said terminal metal is connected to the terminal section of the board, said cover having a dovetail groove formed so as to extend in the sliding direction of the cover, and

a retainer having a pair of sidewalls, a flexible detection plate between said sidewalls and a detection projection formed on said detection plate, said retainer being capable of engaging with the terminal metal in the terminal-accommodating chamber by its movement from its temporary engagement position to its formal engagement position thereby to prevent said terminal metal from slipping out of the terminal-accommodating chamber, said retainer also abutting on the terminal metal when it is not inserted into the terminal-accommodating chamber perfectly thereby to obstruct the movement of said cover from the closed position to the opened position, whereby it allows an operator to detect that the terminal metal is not accommodated in the terminal-accommodating chamber perfectly,

wherein said housing is provided with a first rib which slidably engages with said dovetail groove, while said retainer is provided with a second rib which is formed on said flexible detection plate to slidably engage with said dovetail groove when said cover moves to the opened position.

5,647,775

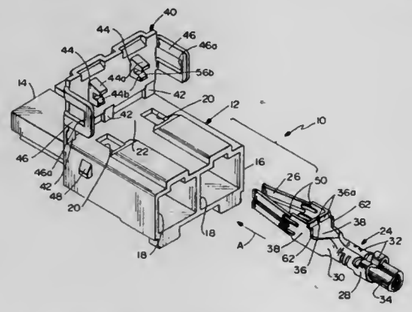
ELECTRICAL CONNECTOR WITH TERMINAL LOCKING MEANS

Gary E. Polgar, Bolingbrook; Randy Joe Kempf, Naperville, and Rupert J. Fry, Des Plaines, all of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Dec. 7, 1995, Ser. No. 568,917

Int. Cl.[6] H01R *13/514*

U.S. Cl. 439—752 **16 Claims**



1. An electrical connector, comprising:

a dielectric housing having a forward mating end, a rearward terminating end, an elongated terminal-receiving cavity extending in an axial direction between the ends, and a window in an outer side wall of the housing communicating with the cavity;

an elongate terminal insertable in said axial direction into a final position and including a forward contact end, a rearward conductor-engaging end and an intermediate body portion between the ends, the body portion having a wall transverse to said axial direction and alignable with said window when the terminal is in said final position; and

a terminal locking member having a two-pronged locking projection adapted to pass through said window into the cavity with the prongs engaging opposite sides of the transverse wall of the terminal thereby preventing axial movement of the terminal relative to the cavity.

5,647,776

ELECTRICAL CONNECTOR

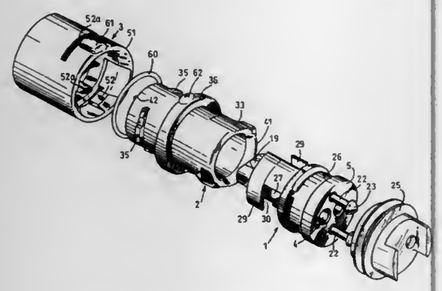
Jean-Louis Duclos, Elancourt, and David Rognerud, Vaux sur Seine, both of France, assignors to Connecteurs Cinch, Montigny le Bretonneux, France

Filed Dec. 21, 1995, Ser. No. 576,016

Claims priority, application France, Jan. 19, 1995, 95 00594

Int. Cl.[6] H01R *13/436*

U.S. Cl. 439—752 **12 Claims**



1. Electrical connector comprising:

a housing member including passages adapted to contain first electrical contact members fixed to ends of electrical conductors;

a complementary member including second electrical contact members adapted to cooperate with the first electrical contact members;

a coupling sleeve including means for receiving said housing member, means for pre-locking said first electrical contact members in said passages, means for locking said first electrical contact members inserted in said passages, and means for fixing said coupling sleeve to said complementary member; and

said housing member, said complementary member and said coupling sleeve being constructed and arranged so that turning of said coupling sleeve relative to said complementary member simultaneously locks said coupling sleeve and said complementary member and positions said means for locking to lock said first electrical contact members in said passages.

5,647,777

CONNECTOR ASSEMBLY FOR A RETAINER, A METHOD FOR PRODUCING THE SAME, AND A MOLDING DIE FOR PRODUCING THE SAME

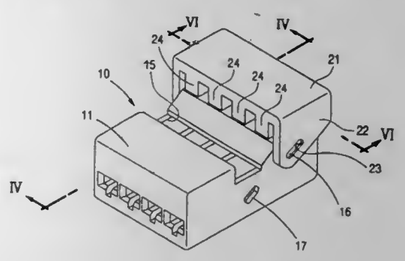
Osamu Sasai; Hajime Kawase; Yasunori Wada, and Shinsuke Tsutsui, all of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Filed Mar. 15, 1996, Ser. No. 616,200

Claims priority, application Japan, Mar. 16, 1995, 7-086152; Mar. 16, 1995, 7-086153; Mar. 16, 1995, 7-086154

Int. Cl.[6] H01R *13/436*

U.S. Cl. 439—752 **19 Claims**



1. A connector assembly comprising:

a connector housing comprising side walls and an outer face; and

a retainer comprising a pair of side pieces that are respectively placed on corresponding ones of the side walls of the connector housing, the retainer being attached to the connector housing and movable between a provisional engagement position and a regular engagement position, the retainer further comprising at least one engagement projection, the at least one engagement projection holding a terminal piece in the connector housing to prevent the terminal piece from slipping out of the connector housing when the retainer reaches a regular engagement position, and the at least one engagement projection being removable from the connector housing to permit the terminal piece to be inserted into and removed from the terminal housing when the retainer is in a provisional engagement position; wherein

the at least one engagement projection, when in the provisional engagement position, is spaced from the outer face of the connector housing so as to define a gap between the at least one engagement projection and the outer face of the connector housing.

5,647,778

ELECTRICAL CONNECTOR

Noboru Yamaguchi, and Masaya Yamamoto, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Apr. 10, 1996, Ser. No. 629,871

Claims priority, application Japan, Apr. 13, 1995, 7-088354

Int. Cl.[6] H01R *13/447*

U.S. Cl. 439—752 **5 Claims**

1. A connector comprising:

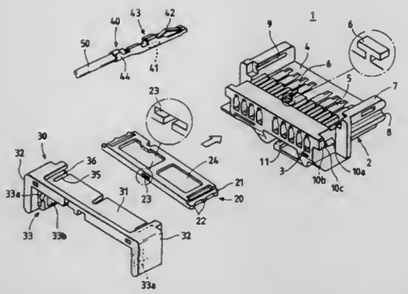
a housing body having at least two side plates and having a rib which is formed on and projects from an upper surface thereof, said rib being located between said two side plates, in said housing body; and

a terminal incorporated in said housing body; and

a cover, having an engagement groove in which the rib is fitted, slidably mounted on said housing body so as to expose said terminal by opening said cover,

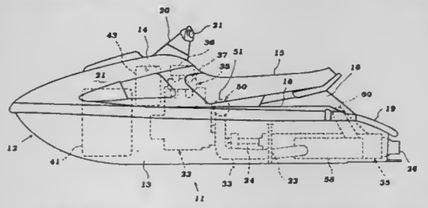
wherein said cover is engaged with said rib to be prevented from being elastically deformed, and disposed so as to be received in a retainer fitted on said housing body;

wherein said rib has a T-shaped cross-section, and said engagement groove, corresponding in shape to said rib, formed in a

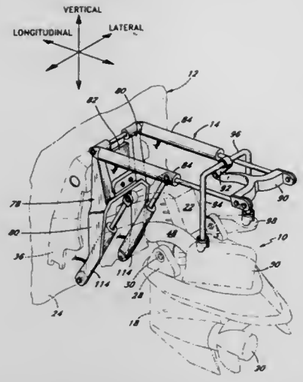


lower surface of said cover of a plate-like configuration so as to extend in a direction of sliding movement of said cover.

5,647,779
MANIFOLD AND WATER TRAP SYSTEM FOR MARINE ENGINE
Masayoshi Nanami, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan
Filed Jul. 19, 1995, Ser. No. 503,992
Int. Cl.[6] B63H *11/00;23/06;21/32*
U.S. Cl. 440—38 **37 Claims**

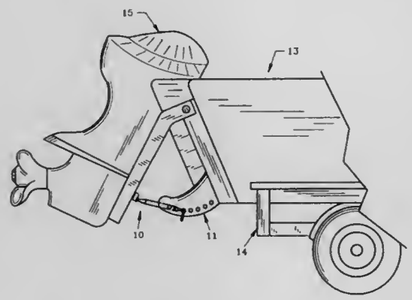


1. A watercraft having a hull, and an internal combustion engine contained in said hull for propelling said watercraft, said engine comprising a crankcase containing a crankshaft rotatable about an axis longitudinally disposed in said watercraft hull, a cylinder bank extending upwardly from said crankcase and inclined to a vertical plane containing said crankshaft axis, at least one exhaust port in said cylinder bank facing in a generally downward direction, an exhaust manifold for collecting exhaust gases from said exhaust port and delivering them in a downward direction and then toward one end of said engine, an expansion chamber device extending transversely across said one end of said engine and to which exhaust gases are delivered by said exhaust manifold, an exhaust pipe having a discharge for discharging exhaust gases from said expansion chamber device to the atmosphere, said expansion chamber device being positioned at least in part vertically above said exhaust port and said exhaust pipe discharge for forming a trap for precluding the likelihood of water entering the engine through the exhaust system.



body of water in which the watercraft is operated, said propulsion device adapted to produce a thrust along a thrust vector which defines a thrust angle relative to the water surface, and a position control mechanism attached to said propulsion device, said position control mechanism adapted to move said propulsion device between a lowered position, in which said propulsion device lies at a first distance from the water surface, to a raised position, in which said propulsion device lies at a second distance from the water surface, without substantially changing the thrust angle between said thrust vector and the water surface.

5,647,781
OUTBOARD MOTOR SUPPORT
Calvin D. Johnson, Sr., 7701 Samet Dr., High Point, N.C. 27265
Filed Sep. 27, 1996, Ser. No. 720,045
Int. Cl.[6] B63H *20/06*
U.S. Cl. 440—53 **8 Claims**

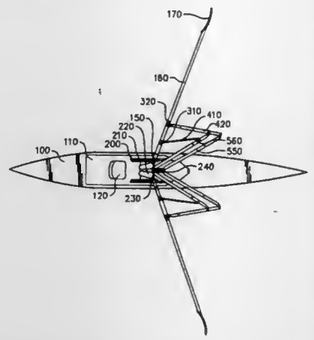


1. A support for an outboard motor positioned on a boat comprising: a longitudinal member, a first means to attach one end of said longitudinal member to the outboard motor, said first attaching means affixed to said longitudinal member, a second means to attach the other end of said longitudinal member to the boat, said second attaching means affixed to said longitudinal member, said second attaching means comprising a sleeve, a locking pin, said locking pin slidably contained within said sleeve, a resilient member, said resilient member contained within said sleeve for biasing said locking pin into an extended position relative to said sleeve.

5,647,780
VERTICALLY ADJUSTABLE STERN DRIVE FOR WATERCRAFT
Yukiharu Hosoi, Cypress, Calif., assignor to Yamaha Hatsudoki Kabushiki Kaisha, Shizuoka, Japan
Filed Jun. 7, 1995, Ser. No. 486,527
Int. Cl.[6] B63H *5/125;20/00*
U.S. Cl. 440—53 **39 Claims**

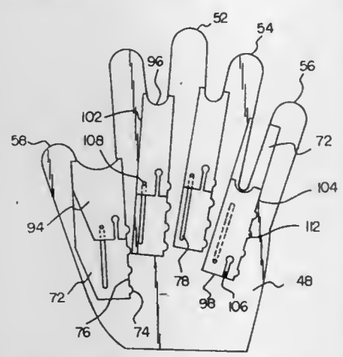
1. An adjustable stern drive for a watercraft comprising a propulsion device arranged to lie at least partially below a surface of a

5,647,782
APPARATUS FOR FORWARD FACING BOAT ROWING
Harold S. Henry, 7511 - 329th SE., Fall City, Wash. 98024-6700
Filed Oct. 4, 1995, Ser. No. 539,167
Int. Cl.[6] B63H *16/04*
U.S. Cl. 440—102 **24 Claims**



1. A boat for forward facing rowing having a bow and having oars mounted ahead of the oarsman, said boat further comprising:
a seat facing said boat bow and fixedly secured in said boat;
inboard support assembly means slidably secured in said boat for longitudinal sliding movement of said inboard support assembly means, said inboard support assembly means in its entirety being longitudinally slidable in said boat; and
outboard support assembly means pivotally connected to said inboard support assembly means for horizontal movement of said outboard support assembly means, said outboard support assembly means connected to said boat oars for pivotal movement of said boat oars with respect to said outboard support assembly means in at least horizontal and vertical planes and for rotational movement of said boat oars with respect to said outboard support assembly means.

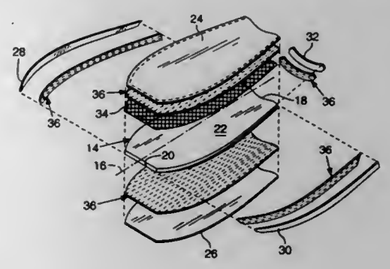
5,647,783
HAND PROPULSION AID FOR SWIMMERS
Edward H. Nessel, 10 Irene Ct., Edison, N.J. 08820
Filed Jul. 3, 1996, Ser. No. 675,041
Int. Cl.[6] A63B *31/04*
U.S. Cl. 441—58 **8 Claims**



1. A new-and improved hand propulsion aid for swimmers comprising, in combination:
a first planar sheet having a first exterior surface and a first interior surface essentially parallel with each other throughout at least the majority of their extent, the first sheet having four fingers and a thumb extending forwardly therefrom with spaces between the fingers and the thumb;
a second planar sheet positionable juxtapose the first planar sheet for coupling therewith in a coextensive manner, the second planar sheet having a second exterior surface and a second interior surface essentially parallel with each other throughout at least the majority of their extent, the second sheet having four fingers and a thumb extending forwardly therefrom with spaces between the fingers and the thumb;
a plurality of generally rectangular placeholders being formed within the second interior surface of the second planar sheet, each placeholder being extended from a center extent thereof to be spaced below an edge of the four fingers and thumb of the second planar sheet, each placeholder having a plurality of receiving grooves along a lateral edge thereof;
a plurality of elongated slots formed within the second planar sheet and proportionally spaced one from another and within one of the placeholders, one of each plurality of slots being below one of the spaces between the fingers and the thumb thereof;
a plurality of long vertical rails formed on the second exterior surface of the second planar sheet and a plurality of short vertical rails formed on the second exterior surface of the second planar sheet, the plurality of long rails and the plurality of short rails of the second planar sheet project from a center extent and the finger and thumbs thereof;
a strap formed of a tubular configuration positioned on the first interior surface and secured with retainers for facilitating attachment to the hand of a swimmer;
a plurality of generally rectangular inserts for forming a web between each space of the second planar sheet, each of the inserts including an upper edge, a lower edge and side edges therebetween, the upper edge of each insert being concave while the lower edge having a key slot extending upwardly therefrom, each insert having a raised bulb adjacent the lower edge for engaging one of the slots of the second sheet for attaching the insert to the second interior surface thereof, each insert having a bump along one of the side edges for engaging one of the receiving grooves of the placeholder, each insert being movable up and down when the first sheet being coupled to the second sheet for shortening or lengthening the spaces between the fingers and between the fingers and the thumb; and
a plurality of generally oblong recesss are on the interior surface of the first planar sheet for accommodating the fingers and thumb of the hand of a user.

5,647,784
COMPOSITE BODYBOARD WITH INCREASED STRENGTH AND BONDING CHARACTERISTICS
Steven M. Moran, Long Beach, Calif., assignor to Mattel, Inc., El Segundo, Calif.
Filed Feb. 8, 1996, Ser. No. 597,409
Int. Cl.[6] B63B *1/00*
U.S. Cl. 441—65 **43 Claims**

1. An improved, multi-layered, composite, bodyboard with increased strength characteristics comprising:
a core dimensioned to support a rider;



an outer covering which is thin in relation to the core, generally enclosing the core; and

a separation-resistant terpolymeric intermediate layer disposed between and adhesively bonding together at least a portion of the core and covering.

5,647,785

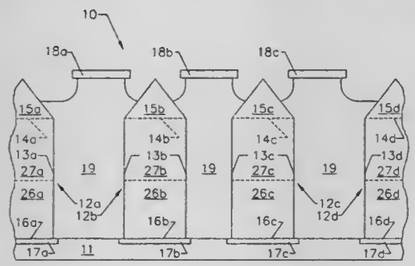
METHODS OF MAKING VERTICAL MICROELECTRONIC FIELD EMISSION DEVICES

Gary Wayne Jones, and Ching-Tzong Sune, both of Raleigh, N.C., assignors to MCNC, Research Triangle Park, N.C.

Division of Ser. No. 298,065, Aug. 30, 1994, Pat. No. 5,475,280, which is a continuation of Ser. No. 846,281, Mar. 4, 1992, Pat. No. 5,371,431. This application Sep. 13, 1995, Ser. No. 527,520

Int. Cl.[6] H01J *1/30;9/02*

U.S. Cl. 445—24 **18 Claims**



1. A method of fabricating a microelectronic field emitter comprising the steps of:

providing a substrate; then

forming electron emission surfaces on a face of said substrate; and then

forming trenches in said substrate around said electron emission surfaces, to form columns in said substrate, with said electron emissions surfaces lying on said columns.

5,647,786

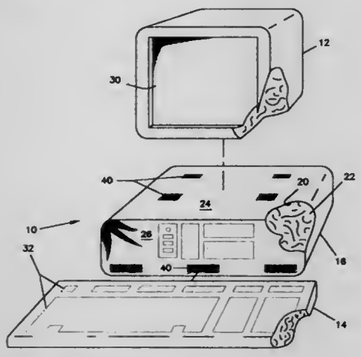
STUFFED PERSONAL COMPUTER TOY

George L. Caspescha, 18 Weston Dr., Mohnton, Pa. 19540

Filed Sep. 29, 1995, Ser. No. 536,092

Int. Cl.[6] A63H *33/10;33/30*

U.S. Cl. 446—85 **5 Claims**



1. A stuffed computer toy, comprising:

a simulated processing unit component, substantially the shape of a rectangular prism, resembling the processing unit of a standard functioning personal computer;

a keyboard component, wedge shaped to resemble a functional computer keyboard, the keyboard component attached to the processing unit component;

a simulated monitor component, substantially cubical in shape to resemble a CRT monitor of a standard personal computer, the monitor component attached to the processing unit component; and

wherein the processing unit component, the monitor component, and the keyboard component are all non-functioning and are each constructed of a soft material so that they may be hugged, kicked, or thrown without becoming damaged or damaging other objects; and

wherein the keyboard is physically attached to the processing unit by detachable fastening means comprising hook and loop fastener components mounted on the processing unit and on the keyboard which allows the keyboard to be selectively attached and detached from the processing unit.

5,647,787

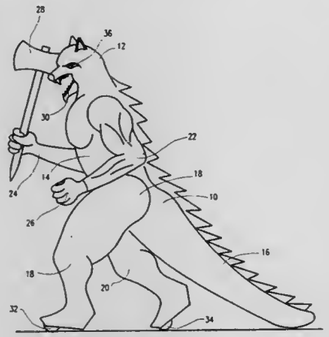
SOUND CONTROLLED TOY

Roni Raviv, 7 Maccabi Street, Ness Ziona, Israel, and Omri Rothschild, 4 Abraham Lev Street, Tel Aviv, Israel

Filed Oct. 13, 1993, Ser. No. 135,439

Int. Cl.[6] A63H *30/00;33/02*

U.S. Cl. 446—175 **20 Claims**



1. A sound programmable sound controlled toy including a programmable toy activity driver assembly having a plurality of selectable activities, an audio receiver and a memory for receiving and storing a user determined and audio communicated sequence of activity commands, and a controller for causing the driver assembly to operate the toy in accordance with the user determined sequence of activity commands, said controller including:

electronic circuitry responsive to a sequential set of audio inputs supplied in a user selected order, said sequential set of audio inputs corresponding to a plurality of activity commands, for causing the driver assembly to operate the toy in the user selected order following receipt of said sequential set of audio inputs.

5,647,788

DRESSING OF GRINDING WHEELS

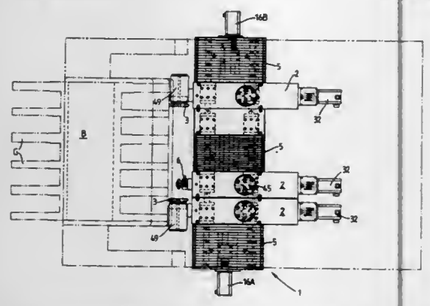
Donald Raymond McHugh, Northville, and James Edward Sanders, West Bloomfield, both of Mich., assignors to Unicorn Abrasives Limited, Stafford, United Kingdom

Filed Aug. 31, 1995, Ser. No. 522,212

Claims priority, application United Kingdom, Sep. 1, 1994, 9417603

Int. Cl.[6] B24B *49/00;51/00*

U.S. Cl. 451—21 **7 Claims**



1. A grinding machine comprising an elongate bed to receive a workpiece; a plurality of grinding wheels mounted on one side of the bed for grinding surfaces of a workpiece received in the bed; and dressing means for dressing the grinding wheels; the dressing means comprising at least one dressing tool, the tool being mounted on a slide arranged for movement towards and away from the grinding surfaces of the grinding wheels; the slide being mounted on a carriage for movement generally parallel to the bed, a platen being present between the carriage and the slide; means arranged to orient the dressing tool according to the disposition of the surfaces of the grinding tool to be dressed; the slide and the carriage being movable by a prime mover under control of microprocessor means.

5,647,789

POLISHING MACHINE AND A METHOD OF POLISHING A WORK

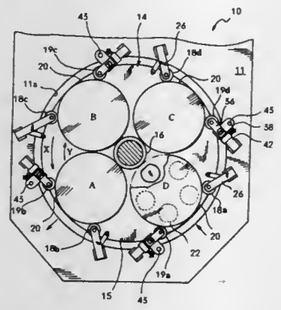
Satoru Kitta, and Masanori Furukawa, both of Nagano, Japan, assignors to Fujikoshi Kakai Kogyo Kabushiki Kaisha, Nagano-ken, Japan

Filed Apr. 12, 1994, Ser. No. 226,522

Claims priority, application Japan, Nov. 1, 1993, 5-273595

Int. Cl.[6] B24B *7/22*

U.S. Cl. 451—41 **21 Claims**



1. A polishing machine comprising:

a rotatable polishing plate for polishing a workpiece pressed thereon, said polishing plate being supported by a means for rotating said polishing plate;

a driving mechanism for driving said means for rotating said polishing plate;

said driving mechanism including means for rotating said polishing plate in one direction and another direction, wherein said rotating means stops the rotation of said polishing plate when rotating in the one direction to rotate the polishing plate in the other direction while polishing the workpiece; and

a means for pressing said workpiece upon said polishing plate.

5,647,790

METHOD FOR GENERATING TOOTH SURFACES OF GLOBOID WORM WHEEL

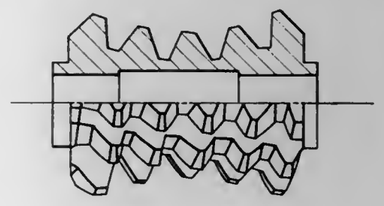
Akiyo Horiutchi, Obu, and Shinya Saitoh, Toyo, both of Japan, assignors to Sumitomo Heavy Industries, LTD., Tokyo, Japan

Filed Sep. 27, 1995, Ser. No. 534,387

Claims priority, application Japan, Dec. 22, 1994, 6-319713

Int. Cl.[6] B24B *7/19*

U.S. Cl. 451—47 **3 Claims**



1. A method for generating tooth surfaces of a globoid worm wheel, comprising: generating tooth surfaces of a copper-alloy globoid worm wheel by grinding a globoid worm wheel blank with an electro-deposition grinding tool initially having the same tooth surfaces as a globoid worm which can engage with the globoid worm wheel, said grinding tool having a cutting surface on which abrasive grains are electrodeposited, said grinding including predetermining a maximum cutting depth of one abrasive grain to be not more than a quarter of an average diameter of the abrasive grains whereby subsequent machining is avoided.

5,647,791

PROCESS FOR GRINDING ROTATING RUBBER ROLLS AND MEANS FOR CARRYING OUT THIS PROCESS

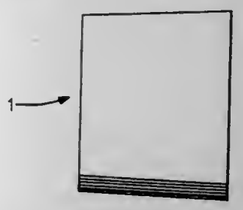
Jurgen Erlenkotter, Ennepetal, Germany, assignor to Felix Bottcher GmbH & Co., Cologne, Germany

Filed Nov. 13, 1995, Ser. No. 558,087

Claims priority, application European Pat. Off., Nov. 12, 1994, 94117909

Int. Cl.[6] B24B *1/00*

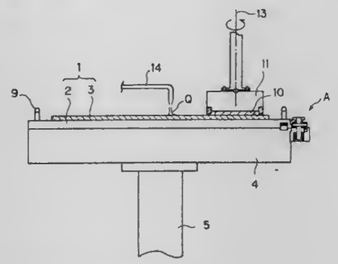
U.S. Cl. 451—49 **11 Claims**



1. In a process for grinding a rubber roll comprising rotating the rubber roll while applying, thereto, a rotating grinding wheel, the improvement comprising applying to the rotating grinding wheel at

least one rotating plugging roll, which has a rubber surface possessing a Shore A Hardness greater than the Shore A Hardness of the rubber roll.

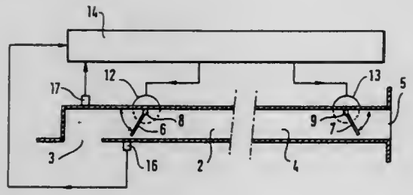
5,647,792
POLISHING APPARATUS
Seiji Katsuoka, Atsugi; Kunihiko Sakurai, Yokohama, and Tetsuji Togawa, Fujisawa, all of Japan, assignors to Ebara Corporation, Tokyo, Japan
Filed Dec. 28, 1995, Ser. No. 580,341
Claims priority, application Japan, Dec. 28, 1994, 6-339168
Int. Cl.[6] B24B *5/00*
U.S. Cl. 451—285 **22 Claims**



1. A polishing apparatus comprising:
a turntable;
a cloth cartridge having a base and an abrasive cloth attached to said base, said cloth cartridge being detachably mounted on said turntable, said cloth cartridge having an engageable surface;
a top ring for holding a workpiece against said abrasive cloth;
rotating means for rotating said turntable and said top ring relative to each other while the workpiece is being held against said abrasive cloth; and
a cartridge tightener mounted on said turntable and capable of occupying at least two positions relative to said turntable, said cartridge tightener being capable of fixing said cloth cartridge to said turntable by engaging with said engageable surface of said cloth cartridge when said cartridge tightener is in a first position of said positions and of releasing said cloth cartridge from said turntable when said cartridge tightener is in a second position of said positions.

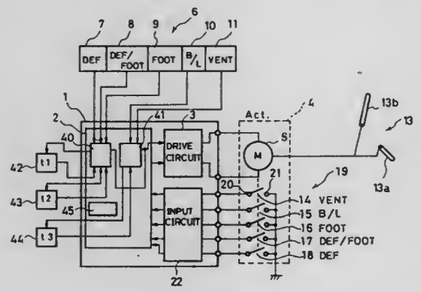
5,647,793
APPARATUS AND METHOD FOR PREVENTING SUDDEN CHANGES OF PRESSURE IN VEHICLES
Gilles Mariaux, Beynac, and Yves Gervais, Poitiers, both of France, assignors to GEC Alsthom Transport SA, Paris, France
PCT No. PCT/FR95/01710, § 371 Date Aug. 8, 1996, § 102(e) Date Aug. 8, 1996, PCT Pub. No. WO96/19371, PCT Pub. Date Jun. 27, 1996
PCT Filed Dec. 21, 1995, Ser. No. 687,603
Claims priority, application France, Dec. 22, 1994, 94 15489
Int. Cl.[6] B61D *27/00*
U.S. Cl. 454—70 **6 Claims**

1. Apparatus for preventing sudden changes of pressure in an air conditioned or ventilated vehicle, the vehicle (1) comprising:
an inlet orifice (3) for outside air and an outlet orifice (5) for inside air, the inlet orifice being connected to an intake duct (2) directing the air taken in to the air conditioning or ventilation system, the outlet orifice being connected to an exhaust duct (4) for exhausting inside air to the outside; and
shutter means (6, 7) for the intake duct (2) and for the exhaust duct (4);



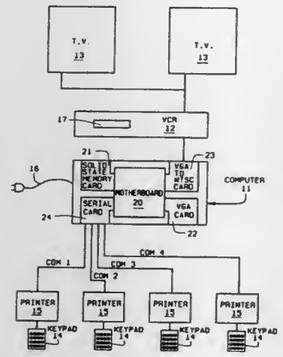
characterized by:
detector means (16, 17) for detecting the pressure outside Po and inside Pi the vehicle, and delivering signals representative of the pressure wave;
a control member (14) receiving the signals from the detector means;
evaluation means for evaluating the amount of change in the outside pressure fheightΔPo based on a first measurement corresponding to measuring the rate of change of outside pressure dPo/dt and a second measurement corresponding to the measured difference Po–Pi between the outside pressure Po and the inside pressure Pi, said evaluation means indicating when the outside pressure change fheightΔPo is greater than a first predetermined level fheightΔPo_{Max} whenever at least one of the two measurements dPo/dt and Po–Pi has a value lying outside a predetermined range of first limit values, respectively $\{(dPo/dt)_{Max}^-, (dPo/dt)_{Max}^+\}$, $\{(Po–Pi)_{Max}^-, (Po–Pi)_{Max}^+\}$ and the change in outside pressure fheightΔPo is less than a second predetermined level fheightΔPo_{Min} whenever the two measurements dPo/dt, Po–Pi give values lying between other predetermined limit values, respectively $\{(dPo/dt)_{Min}^-, (dPo/dt)_{Min}^+\}$ and $\{(Po–Pi)_{Min}^-, (Po–Pi)_{Min}^+\}$.

5,647,794
FAULT COMPENSATION METHOD AND FAULT COMPENSATION APPARATUS FOR AIR CONDITIONER
Masashi Ohkubo, and Hideo Machida, both of Saitama-ken, Japan, assignors to Zexel Corporation, Tokyo-to, Japan
Filed May 20, 1996, Ser. No. 650,181
Claims priority, application Japan, May 25, 1995, 7-126147; Apr. 25, 1996, 8-105745
Int. Cl.[6] B60H *1/00*
U.S. Cl. 454—121 **14 Claims**



1. A fault compensation method for an air conditioner comprising an actuator which drives a mode switch door and which has a setting unit including contacts for setting the mode switch door to any one of at least ventilation mode, bilevel mode, foot mode and defrost mode positions and a control unit which drives the actuator according to the operation of a mode changing switch and stops at a position set by the setting unit, wherein
upon the occurrence of a fault in the setting unit, another mode position can be set by moving the actuator to a ventilation mode position or a defrost mode position and by reversing it for a predetermined time with the moved position as a starting point.

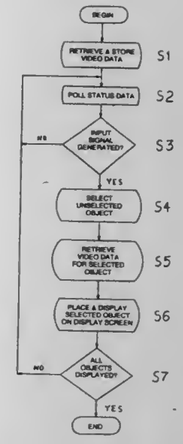
5,647,795
PORTABLE COMPUTERIZED PARI-MUTUEL SPORTS ENTERTAINMENT SYSTEM
Robert P. Stanton, 2633 Bluff Ridge Dr., St. Louis, Mo. 63129
Filed Oct. 11, 1994, Ser. No. 321,137
Int. Cl.[6] A63F *9/24*
U.S. Cl. 463—1 **8 Claims**



1. A portable pari-mutuel system for off-site betting on sports events comprising
a) at least one television monitor,
b) a video cassette recorder operatively connected to said television monitor whereby a video tape of a pre-recorded sporting event run through said video cassette recorder is displayed on said television monitor,
c) at least one receipt printer,
d) at least one keypad operatively connected to said receipt printer for accepting keyed-in bets,
e) a computer operatively connected to the keypad and to said television monitor including a computer program for accepting betting information from the keypads and recalculating the odds or payoffs, displaying the new odds or payoffs on the television monitor, and causing the receipt printer to issue a receipt for the keyed-in bet, and computer-television interface to display computer generated information on said television monitor.

5,647,796
METHOD OF SIMULATING PICTURES FOR INFANTS AND VERY YOUNG CHILDREN
Justin R. Cohen, 10010 Walsham Ct., Richmond, Va. 23233
Division of Ser. No. 495,024, Jun. 27, 1995, Pat. No. 5,556,339. This application Nov. 13, 1995, Ser. No. 556,338
Int. Cl.[6] A63F *9/24*
U.S. Cl. 463—1 **12 Claims**

1. A method of electronically simulating the creation of a predetermined composite picture, utilizing a computer with a display screen and an input device, the progression of the simulation being controlled by activating the input device, the method comprising:
(a) digitally storing video data which corresponds to placing and displaying each of a group of predetermined objects at an associated predetermined location, said objects comprising separate elements of a predetermined composite picture;
(b) detecting input signals which are generated and sent to the computer by the input device when the input device is activated;



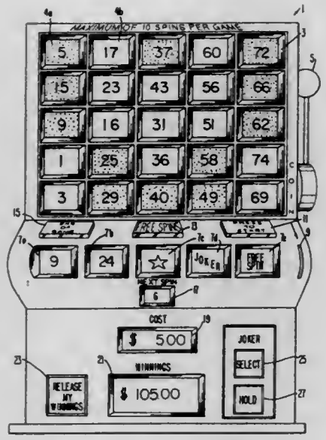
(c) selecting at least one object from said group of predetermined objects when at least one input signal is detected;
(d) retrieving the stored video data associated with the selected objects;
(e) sending the retrieved video data to the display screen whereby video is generated corresponding to placing and displaying the selected objects at their stored associated predetermined locations; and
(f) repeating steps (b), (c), (d), and (e), whereby the simulation of creating a composite picture automatically progresses.

5,647,797

Patent Not Issued For This Number

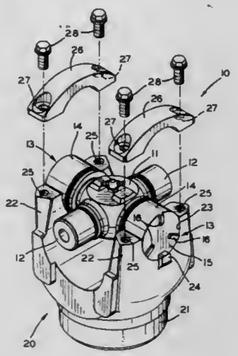
5,647,798
APPARATUS FOR PLAYING BINGO ON A SLOT MACHINE
Sal Falciglia, Ridgewood, N.J., assignor to Slingo, Inc., Ridgewood, N.J.
Continuation of Ser. No. 402,085, Mar. 10, 1995, abandoned. This application Mar. 12, 1996, Ser. No. 614,322
Int. Cl.[6] G07F *17/34;* **A63F** *3/06*
U.S. Cl. 463—19 **9 Claims**

5. A machine for playing a bingo-style game with two players on a single display matrix of rows and columns defining blocks comprising:
a first random number generator for generating sets of random numbers to be displayed in each block of the display matrix, the sets of random numbers are generated such that each set of random numbers has a distinct range from the other sets of random numbers, and each set of random numbers is generated without repetition within the respective set;
a second random number generator for generating and displaying a set of numbers, the size of the number set equal and corresponding to the number of columns within the display matrix;
a first activator for activating the second random number generator for one player;
a second activator for activating the second random number generator for a second player; and
a comparator for comparing the random numbers generated by the second random number generator with the random numbers displayed in the corresponding column of blocks of the display matrix and for causing the display matrix to cover any



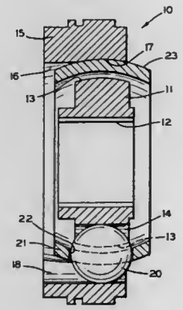
block within the corresponding column having a number matching the corresponding number generated by the second random number generator.

5,647,799
BEARING CAP FOR UNIVERSAL JOINT HAVING ANTI-ROTATION PROTRUSIONS
Ray A. Gall, and Albert Aiken, both of Toledo, Ohio, assignors to Dana Corporation, Toledo, Ohio
Filed Jun. 15, 1995, Ser. No. 490,788
Int. Cl.[6] F16D *3/40*
U.S. Cl. 464—128 **12 Claims**



1. A universal joint assembly comprising:
a yoke including an arm having a recess formed therein;
a cross having an outwardly extending trunnion;
a bearing cap rotatably mounted on said trunnion, said beating cap including an outer circumferential surface and an end surface, a portion of said outer circumferential surface engaging said recess formed in said yoke arm, said end surface having a plurality of separate and circumferentially spaced apart axially extending protrusions provided thereon;
means for retaining said bearing cap within said recess of said yoke arm; and
a nib formed homogeneously with said arm of said yoke and extending radially over a portion of said end surface of said bearing cap between adjacent ones of said plurality of protrusions, said nib adapted to engage said protrusions to prevent rotation of said bearing cap relative to said yoke.

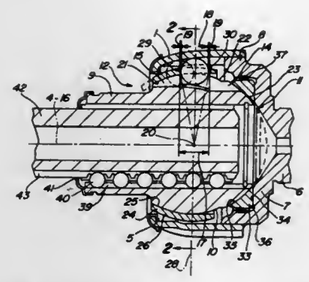
5,647,800
CROSS GROOVE CONSTANT VELOCITY JOINT HAVING FIXED CENTER
James William Warnke, and Steven Lee Ingalsbe, both of Toledo, Ohio, assignors to Dana Corporation, Toledo, Ohio
Continuation of Ser. No. 750,404, Aug. 27, 1991, abandoned. This application Jun. 5, 1995, Ser. No. 465,611
Int. Cl.[6] F16D *3/223*
U.S. Cl. 464—144 **1 Claim**



1. A constant velocity universal joint comprising:
a hollow outer race defining a rotational axis, said outer race including an inner surface which extends along said rotational axis, a plurality of linearly extending grooves formed in said inner surface which are alternately inclined relative to said rotational axis, and a single spherical portion formed in said inner surface which extends only partially along said rotational axis;
an inner race disposed within said outer race, said inner race including an outer surface which extends along said rotational axis and a plurality of linearly extending grooves formed in said outer surface which are alternately inclined relative to said rotational axis, each of said inner race grooves being associated with an outer race groove, said associated inner and outer race grooves being inclined in opposite directions relative to the rotational axis of the joint;
a hollow cage disposed between said outer race and said inner race, said cage including a single outer spherical surface which engages said single spherical portion of said inner surface of said outer race to prevent said cage from moving axially relative to said outer race, said single spherical portion of said inner surface of said outer race and said single outer spherical surface of said hollow cage providing the only point of contact between said outer race and said hollow cage, said hollow cage not engaging said inner race at any point, said hollow cage further including a plurality of openings formed therethrough; and
a ball disposed in each of said plurality of openings formed through said cage, said balls extending into said associated inner and outer race grooves to provide a rotational driving connection between said outer race and said inner race.

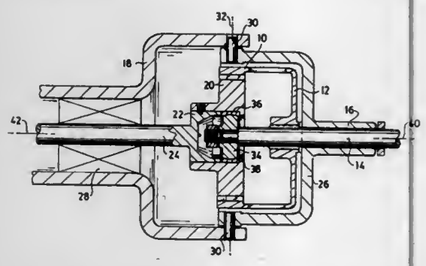
5,647,801
CONSTANT VELOCITY JOINT
Werner Jacob, Frankfurt am Main, Germany, assignor to Lohr & Bromkamp GmbH, Offenbach am Main, Germany
Filed Mar. 14, 1995, Ser. No. 404,058
Claims priority, application Germany, Mar. 25, 1994, 44 10 298.4
Int. Cl.[6] F16D *3/224*
U.S. Cl. 464—145 **15 Claims**

1. A constant velocity joint comprising:
a hollow outer part having an inner face and outer running grooves in meridian planes with reference to a longitudinal axis of the outer part;



an inner part is arranged in an inner chamber of the outer part, inner running grooves are provided in an outer face of the inner part in meridian planes with reference to the longitudinal axis of the inner part;
said inner running grooves positioned opposite the outer running grooves, with the opposed inner running grooves and outer running grooves jointly accommodating torque transmitting balls;
a cage is arranged in an intermediate space between the inner face of the outer part and the outer face of the inner part, said cage includes windows for guiding said torque transmitting balls;
said inner running grooves and said outer running grooves starting from one end of the joint, being undercut-free, said cage, via a hollow spherical partial face being guided on said outer face of the inner part;
said running grooves of at least one of the inner part and the outer part include a limited length and a safety length, the limited length is defined by the travel distance of the balls in the running grooves when the inner joint, during rotation, is articulated at a maximum design angle relative to the outer joint; and
at least at one end of said limited length, said running grooves include a second groove portion whose cross-section is extended relative to the limited length groove portion of the running grooves.

5,647,802
VARIABLE-ANGLE GEARS
Vernon E. Gleasman, Pittsford, and Keith E. Gleasman, Fairport, both of N.Y., assignors to Torvec, Inc., Pittsford, N.Y.
Filed Jun. 2, 1994, Ser. No. 252,743
Int. Cl.[6] F16D *3/18*
U.S. Cl. 464—159 **24 Claims**



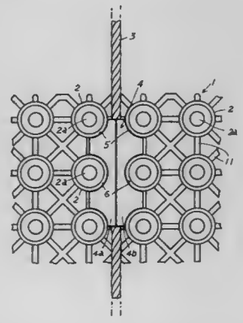
1. A pair of gears with meshing mating teeth for transmitting rotational forces between two elements that are each rotatable about a respective one of two axes intersecting when in one of (a) the same plane and (b) parallel planes projected one upon the other, said gears comprising:
each said gear being fixedly attachable to a respective one of said elements for rotation therewith;
each of said gears having (i) a respective pitch surface in the form of a respective pitch sphere and (ii) a respective pitch circle that is a great circle on said respective pitch sphere;
said two respective pitch spheres and said two respective pitch circles being in one of the positions (a) wherein said two pitch spheres are concentric and have radii which are substantially identical, and said pitch circles effectively intersect with each other at two points separated by 180°, and (b) wherein said two pitch spheres are differently sized and share a single point of tangency, and said pitch circles are respective great circles on said differently-sized spheres so that said pitch circles intersect with each other at only said point of tangency shared by said pitch spheres;
each said mating tooth having two tooth faces formed so that a central portion of a lengthwise surface of each tooth face, when viewed on the respective spherical pitch surface of said mating tooth, is an arc of a circle; and
when said gears are rotating in a driving and driven relationship, said intersecting axes can be varied throughout a continuous range of angles extending from 180° to a predetermined maximum angle differing from 180°.

5,647,803
THREAD CUTTING DEVICE
Lawrence Killer, 406 - 1980 Pandosy Street, Kelowna, British Columbia, Canada
Filed Jun. 6, 1995, Ser. No. 471,415
Claims priority, application Canada, Sep. 9, 1994, 2132357
Int. Cl.[6] B21H *3/02*
U.S. Cl. 470—67 **3 Claims**

1. A device for cutting threads into a shaft member comprising a cutting blade support member releasably mountable in a first plane on a first side of an elongate support frame lying generally in said first plane,
a shaft member support mountable in said first plane on a second side of said elongate support frame in opposed relation to said cutting blade support member,
adjustable clamping means mounted to said elongate support frame and co-operating with said cutting blade support and said shaft member support for relative clamping movement in said first plane of said cutting blade support and said shaft member support so as to clamp said shaft member between said cutting blade support member and said shaft member support and thereby align said shaft member in a second direction generally perpendicular to said first plane, said clamping means adjustably positionable in said first plane between a shaft member clamping position and a shaft member releasing position,
said cutting blade support member comprising at least three sets of cutting blades depending therefrom in radially spaced apart relation, radially spaced apart in said first plane, said radially spaced apart relation of said sets of cutting blades radially spaced around a shaft member centroidal axis in said second direction so as to engage said sets of cutting blades substantially tangentially with a surface of said shaft member when said shaft member is clamped between said sets of cutting blades and said shaft member support when said clamping means is in said clamping position,
said elongate support frame rigidly supporting said cutting blade support member and said shaft member support in opposed relation when said shaft member is clamped therebetween, whereby said shaft member may be rotated about said centroidal axis relative to said elongate support frame to cut thread into said surface of said shaft member,
each of said at least three sets of cutting blades comprising a plurality of blades spaced apart in said second direction by a desired thread spacing and, so spaced apart, forming a spaced array of saw-tooth shaped blades spaced apart in said second direction for cutting said threads at a desired thread depth, said sets of cutting blades aligned in said second direction in relation to one another so as to cut said thread into said

surface of said shaft member when said shaft member is rotated about said centroidal axis relative to said elongate support frame.

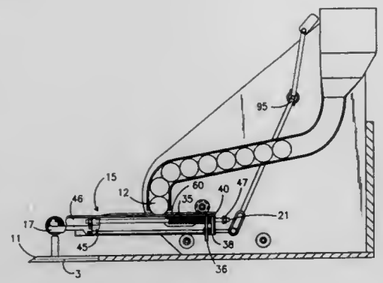
5,647,804
SKIING SLOPE SPECIALIZED FOR ARTIFICIAL SKIS AND METHOD FOR PRODUCING THE SAME
Akira Homma; Susumu Homma; Hiroshi Sato, and Hisao Hiroi, all of Tokamachi, Japan, assignors to Homma Science Co., Ltd., Tokamachi, Japan
Filed May 22, 1996, Ser. No. 652,322
Claims priority, application Japan, Mar. 30, 1996, 8-104450
Int. Cl.[6] A63C *19/10*
U.S. Cl. 472—90 **16 Claims**



1. A skiing slope specialized for artificial skis, which is formed by longitudinally and laterally laying and connecting mats (**1**) each having a predetermined area on a slanted surface (**17**), wherein each of the mats (**1**) has a plurality of retainer projections (**2**) on a rear side thereof, at least one connector member (**4**) having side walls which engage with circumferential surfaces of the retainer projections (**2**) in a convex/concave manner is disposed between the retainer projections (**2**) of the mats (**1**), the connector member (**4**) is coupled with a hard longitudinal member (**3**) provided in the longitudinal direction of the slanted surface (**7**), and the connector member (**4**) is coupled with the mats (**1**) under the condition that the circumferential surfaces of the retainer projections (**2**) and the side walls of the connector member (**4**) are engaged with each other in the convex/concave manner between the retainer projections (**2**) of the mats (**1**).

5,647,805
GOLF TEEING DEVICE
Robert S. Tarbox, Jr., 7732 Isabella Dr., Apt. A, Port Richey, Fla. 34668
Filed Apr. 22, 1996, Ser. No. 635,605
Int. Cl.[6] A63B *69/00*
U.S. Cl. 473—137 **10 Claims**

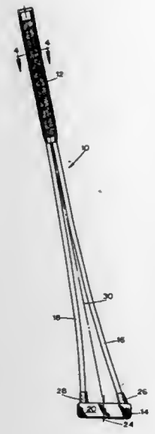
1. A golf ball teeing device, comprising:
a housing coupled to a base;
a hopper, having an open top portion and an opening in a lower portion, said hopper sized to accommodate a plurality of balls, said hopper connected to said housing;
a ball delivery tube, said ball delivery tube having a first end and a second end, wherein said first end of said ball delivery tube is connected to said opening in the lower portion of said hopper, said ball delivery tube being sloped such that the second end of said ball delivery tube is lower than said first end of said ball delivery tube;



an actuating mechanism for moving a ball placement mechanism between a first position and a second position, said actuating mechanism comprising:
(a) a guide element fixed to said housing;
(b) a primary lever having distal end and a proximal end, said proximal end being pivotably mounted to said guide element, said lever capable of pivoting about an axis defined by said guide element between a rest position and an operating position; and
(c) a secondary lever having a distal and a proximal end, said proximal end of said secondary lever connected to said proximal end of said primary lever, said secondary lever being capable of pivoting between a rest position and an operating position, said distal end of said secondary lever having a slot defined therein; and
said a ball placement mechanism comprising:
(a) first and second elongate members oriented parallel to one another, wherein said first elongate member is operatively associated with said secondary lever such that pivoting of said first and second levers between said rest position and said operating position causes said first elongate member to slide between a rest position and an operating position;
(b) stop guides slidably mounted upon and joining said first and second elongate members to maintain the spatial relationship between the first and second elongate members;
(c) a ball receptacle member including a proximal end pivotally hinged to the first elongate member and pivotally hinged to said second elongate member, said pivotal hinges being spatially separated, and a distal end for receiving a golf ball;
(d) a partition fixed to said first elongate member, which partition covers said second opening of said ball dispensing tube to prevent dispensing of golf balls when said lever is not in the rest position and which uncovers said second opening of said ball dispensing tube to permit dispensing of golf balls when said lever is in the rest position;
wherein pivoting said first lever and sliding said first elongate member from said rest position to said operating position causes said partition, said second elongate member, and said ball receptacle member to slide from resting positions to operating positions, and wherein sliding said first elongate member from said operating position to said resting position causes said ball receptacle member to first pivot downwards, then to retract towards said rest position and to cause said second elongate member to return to said rest position.

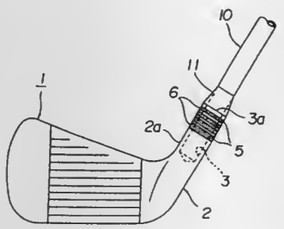
5,647,806
DUAL SHAFT GOLF CLUB
Robert F. McDevitt, 25 Diana Rd. 551, Ogden Dunes, Portage, Ind. 46368
Filed Apr. 22, 1996, Ser. No. 636,030
Int. Cl.[6] A63B *53/02;53/04*
U.S. Cl. 473—252 **14 Claims**

1. A golf club comprising:
a handle;



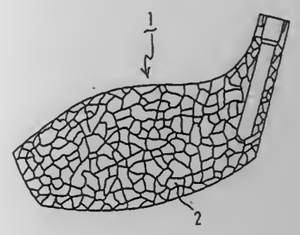
a head having a toe portion and a heel portion and a center of percussion therebetween; and
a dual shaft extending from said handle, comprising a toe shaft and a heel shaft joined respectively to said toe portion and said heel portion of said head,
said toe shaft and said heel shaft diverging at their junction with said handle and extending to said head without interconnection therebetween to mutually independently control the torque applied to said head when a golf ball is impacted off said center of percussion.

5,647,807
GOLF CLUB
Itsushi Nagamoto, Hamamatsu, Japan, assignor to Yamaha Corporation, Shizuoka, Japan
Filed Mar. 15, 1996, Ser. No. 616,703
Claims priority, application Japan, Apr. 3, 1995, 7-099490
Int. Cl.[6] A63B *53/02*
U.S. Cl. 473—305 **15 Claims**



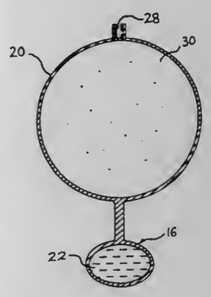
1. A golf club comprising a shaft and a head attached to said shaft and in which a tapered surface that opens outward is chamfered in an inside circumferential surface of an opening end of a shaft insertion hole formed in a hosel portion of said head so that a tip end portion of said shaft is inserted into said shaft insertion hole, said golf club being characterized in that a plurality of separate annular grooves are formed in an outer circumferential surface of a tip end area of said hosel portion and a size of each of said plurality of separate annular grooves varies so that a bending rigidity of said tip end area of said hosel portion can be lowered.

5,647,808
DRIVER HEAD FOR GOLF
Toshihiro Hosokawa, Izumi, Japan, assignor to Kabushiki Kaisha Hosokawaseisakusho, Izumi, Japan
Filed May 13, 1996, Ser. No. 644,945
Int. Cl.[6] A63B *53/04*
U.S. Cl. 473—349 **5 Claims**



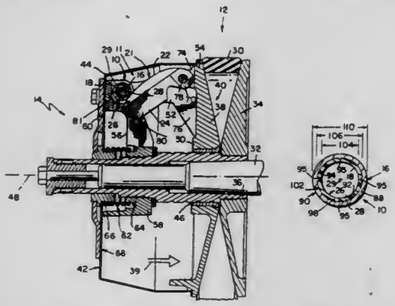
1. A driver head for golf comprising:
a main body as a core member, said core member comprising a required number of small pieces of aluminum plate or small masses of foamed aluminum, said small pieces of aluminum plate or small masses of foamed aluminum compression molded and electric current welded to each other in order to have a specific gravity for said head of about 0.9.

5,647,809
KICKABLE TOY
Philip S. Yip, 6478 Crystal Springs Dr., San Jose, Calif. 95120
Filed Oct. 19, 1995, Ser. No. 545,153
Int. Cl.[6] A63B *65/00*
U.S. Cl. 473—594 **1 Claim**



1. A kickable toy comprising:
a base member having a flexible membrane defining a boundary confining a deformable, semisolid material, to deform according to the surface of a foot when kicked thereby;
a means mounted on the base member for increasing air resistance of the kickable toy to decrease the speed of free fall of the toy in air, the means including a balloon inflated with a gas for increasing the air resistance of the kickable toy to decrease the speed of free fall in air and such that the kickable toy has an overall specific gravity of less than 1, the specific gravity of the means being adjustable to adjust the speed of free fall.

5,647,810
DRIVE ARM-ENGAGING ROLLER FOR CENTRIFUGAL CLUTCH
H. Mike Huddleston, Richmond, Ind., assignor to Hoffco, Inc., Richmond, Ind.
Filed Sep. 8, 1995, Ser. No. 525,381
Int. Cl.[6] F16H *61/00*
U.S. Cl. 474—14 **46 Claims**



1. A centrifugal actuator for a centrifugal clutch having an axially fixed base and an axially movable pulley flange, the actuator acting between the fixed base and the movable pulley flange, the actuator comprising

a drive arm having a camming surface and a bottom that is pivotably attached to the movable pulley flange,

a mounting pin coupled to the fixed base, and

a roller including a cylindrical outer sleeve having a side wall formed to include an outer drive arm-engaging surface engaging the camming surface of the drive arm, the side wall of the outer sleeve defining an interior region, the roller including a cylindrical inner sleeve received by the interior region and including a side wall having an outer surface coupled to the cylindrical outer sleeve and an inner load-bearing surface engaging the mounting pin, the inner sleeve being made from a first material, and the outer sleeve being made from a second material having a higher hardness than the first material.

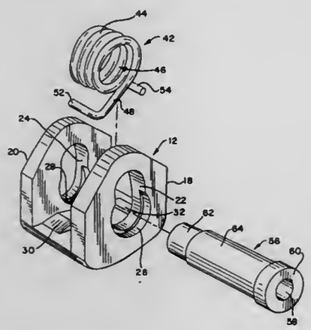
5,647,811
CHAIN TENSIONER WITH INTEGRAL ARM
Philip J. Mott, Dryden, N.Y., assignor to Borg-Warner Automotive, Inc., Sterling Heights, Mich.
Filed Jan. 18, 1996, Ser. No. 588,451
Int. Cl.[6] F16H *57/04;7/08;* **F16N** *7/02*
U.S. Cl. 474—91 **19 Claims**

1. An integral chain tensioner and tensioner arm assembly comprising:

(a) a tensioner arm that includes:
(i) a first side;
(ii) a second side spaced from the first side;
(iii) a first end;
(iv) a second end spaced from the first end;
(v) a fluid reservoir defined by at least a portion of the first and second sides, and the first and second ends;
(vi) a pivot bore disposed in the first end;
(vii) a tensioner bore disposed in the first side; and

(b) a hydraulic tensioner disposed in the tensioner bore and in communication with the fluid reservoir.

5,647,812
COIL SPRING CHAIN TENSIONER
Randy McDonald, Ithaca, N.Y., and Tom Hanlon, Clayton, Ind., assignors to Borg-Warner Automotive, Inc., Sterling Heights, Mich.
Filed Nov. 30, 1995, Ser. No. 565,443
Int. Cl.[6] F16H *7/08*
U.S. Cl. 474—111 **16 Claims**



1. A chain tensioner comprising:

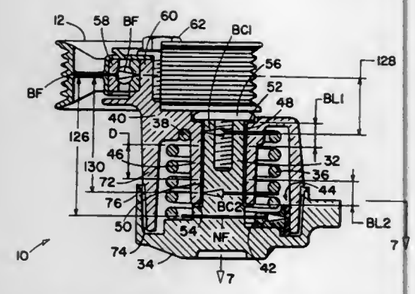
a shoe having a chain wear surface and a spring wear surface;

a coil spring having a coiled section forming a passage, the coil spring also having first and second legs extending away from the coiled section to contact the spring wear surface; and

a bushing disposed through the passage.

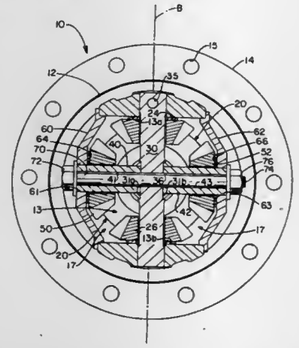
5,647,813
TENSIONER WITH DAMPING MECHANISM AND BELT DRIVE SYSTEM
Alexander Serkh, Windsor, Canada, assignor to The Gates Corporation, Denver, Colo.
Filed Dec. 18, 1995, Ser. No. 574,070
Int. Cl.[6] F16H *7/14*
U.S. Cl. 474—135 **18 Claims**

1. A tensioner for tensioning a power transmission belt and of the type with a base; a pivot-arm attached to an off-set cylindrical member that supports the pivot-arm and rotates about a pivot secured with the base; at least one sleeve-type bushing on the pivot and with a bearing surface that supports the cylindrical member; a pulley attached to the pivot-arm for engaging the belt and receiving a belt load; a torsional spring with one end connected to the pivot-arm and another end interconnecting through the base and generating a spring force operative with a damping means that generates a normal force component acting in generally the same direction as a belt force component transmitted by the pivot-arm to the cylindrical member (hereinafter hub load) whereby the hub load and normal force component are carried by the bearing surface and wherein the improvement comprises:



two axially spaced-apart bearing surfaces that each have an axial length that size each bearing surface for an average pressure contact in response to the hub load and normal force component such that each bearing surface radially wears at substantially the same rate.

5,647,814
FOUR PINION MATE DIFFERENTIAL GEAR ASSEMBLY HAVING A ONE-PIECE DIFFERENTIAL CASE
James A. Krisher, Fort Wayne, Ind., assignor to Dana Corporation, Toledo, Ohio
Filed Jun. 7, 1995, Ser. No. 477,378
Int. Cl.[6] F16H *48/28*
U.S. Cl. 475—230 **19 Claims**



1. A four pinion mate differential gear assembly for transmitting torque from an input shaft to a pair of side gears respectively coupled to rotate with a pair of output shafts about an output axis, said differential gear assembly comprising:

a differential case having a gear chamber formed therein, said differential case supported for rotation about said output axis;

a cross pin having a medial cross bore formed therethrough, said cross pin having first and second ends connected to said differential case such that said cross pin extends through said gear chamber and intersects said output axis;

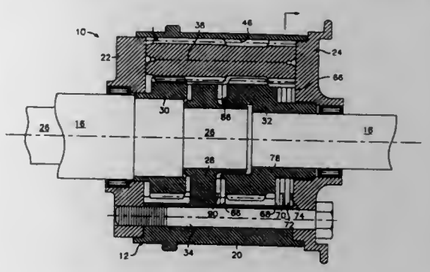
first and second pinion mates respectively rotatably supported in a diametrically opposed relationship on said first and second ends of said cross pin within said gear chamber, each of said first and second pinion mates provided in meshing engagement with said pair of side gears;

first and second hollow pinion support sleeves seated on opposite sides of said cross pin in alignment with said medial cross bore, said first and second pinion support sleeves respectively rotatably supporting third and fourth pinion mates in diametrically opposed relationship such that said third and fourth pinion mates are in meshing engagement with said pair of side gears;

first and second retainer plates, each having an aperture formed therein and respectively engaged with said first and second pinion support sleeves to retain said third and fourth pinion mates on said sleeves, said first and second retainer plates being substantially frusto-conical in configuration and extending outwardly beyond said third and fourth pinion mates, respectively; and

a cross bolt extending through said medial cross bore, said first and second hollow pinion support sleeves, and said apertures formed in said first and second retainer plates to secure said third and fourth pinion mates in meshing engagement with said pair of side gears.

5,647,815
DIFFERENTIAL WITH BIAS CONTROL
Ward E. Bowerman, Rochester, N.Y., and Paolo Sacchettini, Brussels, Belgium, assignors to Zexel Torsen Inc., Rochester, N.Y.
Filed Sep. 5, 1995, Ser. No. 523,649
Int. Cl.[6] F16H *48/22*
U.S. Cl. 475—249 **29 Claims**



1. A differential for varying torque distributions between a pair of output shafts associated with opposite directions of torque transfer between the output shafts comprising:

a housing having a main body and two ends rotatable about a common axis of the pair of output shafts;

said housing having an axial length that extends along the common axis between said two ends;

a pair of side gears positioned in said housing for rotation with the output shafts about the common axis;

at least one pair of planet gears positioned in said housing for rotation about axes parallel to the common axis and interconnecting said side gears for opposite directions of relative rotation;

said planet gears being in meshing engagement with said side gears in a first region along the common axis and said planet gears being in meshing engagement with each other in a second region along the common axis;

said second region within which said planet gears are in meshing engagement with each other being located along the common axis between a first of said side gears and a first of said ends of the housing;

a first friction modifier for varying torque distributions between the output shafts associated with the opposite directions of output shaft torque transfers; and

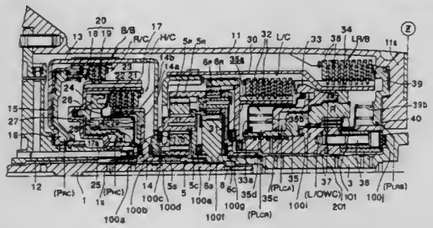
said first friction modifier also being located within said second region between said first side gear and said first end of the housing so that said friction modifier is located in the same position along the common axis as the meshing engagement between planet gears within the second region of the common axis.

5,647,816

AUTOMATIC TRANSMISSION

Hirofumi Michioka, Fujisawa; Masahiro Yamamoto, Atsugi; Koichi Hayasaki, Hiratsuka, and Yoshinori Mikoshiba, Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Division of Ser. No. 10,811, Jan. 29, 1993, Pat. No. 5,439,088.
This application May 8, 1995, Ser. No. 436,615
Claims priority, application Japan, Jan. 30, 1992, 4-15290; Jan. 30, 1992, 4-15291; Jan. 30, 1992, 4-15292; Jan. 30, 1992, 4-15293; Jan. 30, 1992, 4-15294
Int. Cl.[6] F16H *47/08*
U.S. Cl. 475—285 **4 Claims**



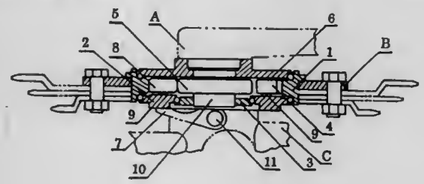
1. An automatic transmission having a gear train Which is provided with a plurality of rotating members, the automatic transmission comprising:
a cylindrical drum connected with one of the rotating members;
a clutch connecting the one rotating member to another one of the rotating members, said clutch being disposed inside of said cylindrical drum;
a brake by which the one rotating member is fixable, said brake being disposed outside of said cylindrical drum;
a clutch piston for engaging said clutch by its pushing operation, said clutch piston being generally coaxial with said brake such that said clutch piston and said brake are in contact with a surface perpendicular to an axis of the automatic transmission;
a cylinder which is disposed between said clutch piston and a fixing shaft rotatably supported around the axis, said cylinder being engaged with said cylindrical drum; and
a low one-way clutch for limiting rotation of the one rotating member into one rotating direction, said low one-way clutch being disposed between the fixing shaft and said cylinder.

5,647,817

TWO DIRECTIONAL MULTI-SPEED SHIFTING GEAR OF MIDDLE AXLE

Dianlin Chang, Shenyang, China, assignor to Steven Siuwai Lam, Hong Kong, Hong Kong

Filed Oct. 26, 1995, Ser. No. 548,735
Claims priority, application China, Nov. 23, 1994, 94112633.1
Int. Cl.[6] F16H *3/44*
U.S. Cl. 475—294 **5 Claims**



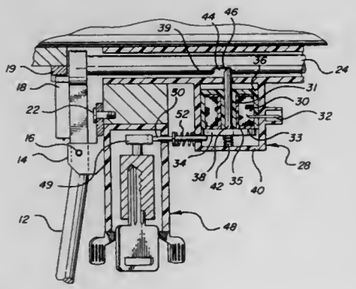
1. A two directional multi-speed shifting mechanism for a cycle, comprising:
a bracket case;
an axle;
a free wheel plate fixedly engaged with said axle;
a free wheel screw cup fixedly engaged with said axle;
a core gear having a plurality of teeth defining an outer periphery thereof, said core gear being fixedly engaged with said axle and positioned between said free wheel plate and said free wheel screw cup;
a bearing ring rotatably engaged with said free wheel screw cup, an outer face of said bearing ring defining a plurality of pawl teeth;
an outer ring rotatably engaging said free wheel plate and said bearing ring, said outer ring having a plurality of teeth defining an inner periphery thereof;
a wheel pivotally coupled to an inner face of said bearing ring, said wheel having a plurality of teeth defining an outer periphery thereof, said teeth defined in said wheel engaging said teeth defined in said core gear and said teeth defined in said outer ring;
an inner pawl pivotally coupled to said inner face of said bearing ring, a tip of said inner pawl engaging said teeth defined in said outer ring such that relative movement therebetween is prevented in one direction; and
an outer pawl pivotally coupled to said bracket, a tip of said outer pawl engaging said pawl teeth defined in said bearing ring such that relative movement therebetween is prevented in one direction,
wherein, said shifting mechanism has a first gearing and a second gearing for rotation of said outer ring in a forward direction, said first gearing is associated with a first speed and is provided by rotating said axle in a first direction and said second gearing is associated with a second speed and is provided by rotating said axle in a direction other than said first direction.

5,647,818

SHIFTER INTERLOCK FOR AN AUTOMATIC TRANSMISSION

John W. Moody, Clarkston, Mich., assignor to Pontiac Coil, Inc., Waterford, Mich.

Filed Mar. 27, 1995, Ser. No. 410,909
Int. Cl.[6] F16H *59/74;63/36*
U.S. Cl. 477—99 **8 Claims**



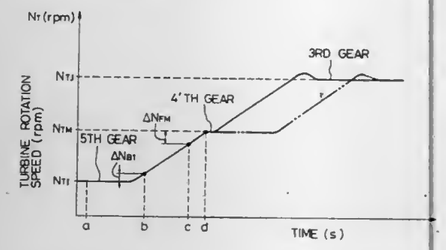
1. A shifter interlock for an automotive vehicle comprising:
a shifter including a shift lever mounted for movement in and out of a PARK position;
electromagnetic means having a moveable armature and a shaft attached to the armature for movement therewith to alternatively inhibit and enable movement of the shift lever out of the PARK position according to the energization state of the electromagnetic means;
an electrical power circuit connecting the electromagnetic means with a vehicle power supply and including at least one switch for selectively energizing and de-energizing the electromagnetic means;
an ignition switch having an OFF and an ON position and serving to move a blocking means between a first position corresponding to the OFF position of the ignition switch and a second position corresponding to the ON position of the ignition switch, the blocking means in its first position being inserted into the electromagnetic means and into motion inhibiting contact with the armature to oppose movement of the shaft away from its shift inhibiting position, and in its second position offering no opposition to movement of the shaft.

5,647,819

SPEED CHANGE CONTROL METHOD FOR AN AUTOMATIC TRANSMISSION

Kenjiro Fujita; Katsutoshi Usuki, and Tetsuya Tashiro, all of Tokyo, Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP94/01871, § 371 Date Aug. 17, 1995, § 102(e) Date Aug. 17, 1995, PCT Pub. No. WO95/12774, PCT Pub. Date May 11, 1995
PCT Filed Nov. 7, 1994, Ser. No. 481,335
Claims priority, application Japan, Nov. 5, 1993, 5-276659; Jan. 31, 1994, 6-009983
Int. Cl.[6] F16H *61/06*
U.S. Cl. 477—140 **11 Claims**



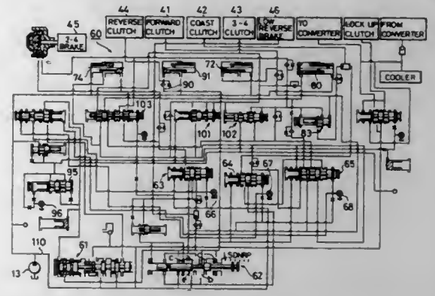
1. A speed change control method for an automatic transmission including a first transmission mechanism for establishing a plurality of gear positions, and a second transmission mechanism for establishing a plurality of gear positions, said first and second transmission mechanisms being connected in series with respect to a power transmission, the automatic transmission establishing an arbitrary one of a plurality of shift positions, including first and second shift positions, by a combination of a speed position established in the first transmission mechanism and a gear position established in the second transmission mechanism, a speed ratio of the second shift position being lower than a speed ratio of the first shift position, comprising:
(a) starting a speed-changing operation of the second transmission mechanism to establish a gear position, corresponding to the second shift position, in the second transmission mechanism when a speed change command for instructing a speed change from the first shift position to the second shift position is output; and
(b) reducing an engagement force of a first friction element provided in said first transmission mechanism to a predetermined value prior to an initiation of a speed-changing operation in the first transmission mechanism to establish a gear position, corresponding to the second shift position, in the first transmission mechanism before said speed-changing operation in step (a) is completed, said first friction element being engaged when establishing, in the first transmission mechanism, a gear position corresponding to the first shift position, and released when establishing, in the first transmission mechanism, the gear position corresponding to the second shift position.

5,647,820

HYDRAULIC CONTROL SYSTEM OF AUTOMATIC TRANSMISSION

Akio Matsumoto; Tatsutoshi Mizobe; Kozo Ishii, and Hiroshi Shinozuka, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Mar. 25, 1994, Ser. No. 217,901
Claims priority, application Japan, Mar. 26, 1993, 5-068766
Int. Cl.[6] F16H *61/04*
U.S. Cl. 477—155 **8 Claims**



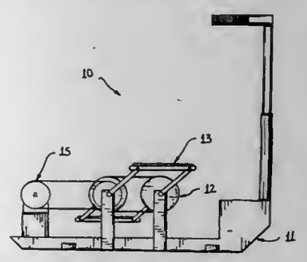
1. A hydraulic control system of an automatic transmission in which a control pressure is controlled during a shift operation to selectively engage and release a plurality of frictional elements to establish a desirable shift stage comprising:
an inertia phase detecting means for detecting a starting point of an inertia phase of the shift operation from one shift stage to another,
control pressure reducing means for gradually reducing the control pressure introduced to a frictional element to be engaged after the inertia phase is detected, and
turbine speed detecting means for detecting a turbine speed of the transmission, the inertia phase detecting means detecting the inertia phase when a turbine speed change is reduced below a predetermined value after the shift operation is initiated.

5,647,821

STATIONARY EXERCISE APPARATUS

Gary Lawrence Johnston, P.O. Box 183, Cowarts, Ala. 36321

Continuation-in-part of Ser. No. 970,168, Nov. 2, 1992, Pat. No. 5,403,255, and Ser. No. 136,102, Oct. 13, 1993, Pat. No. 5,387,167. This application Feb. 8, 1995, Ser. No. 385,646
Int. Cl.[6] A63B *21/00*
U.S. Cl. 482—57 **14 Claims**



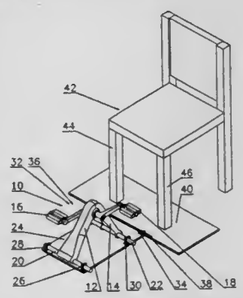
1. A stationary exercise apparatus comprising:
a frame structure;
a rotation assembly mounted on said frame structure, wherein said rotation assembly includes at least two rotatable members, said rotatable members being operatively connected by a connection means such that said rotatable members rotate at generally the same angular velocity and acceleration;

foot engagement means connected to said rotation assembly wherein said foot engagement means includes connection members and two foot engaging members, each of said foot engaging members being connected to one side of each of said rotatable members through said connection members such that both foot engaging members remain in a substantially horizontal position as the rotatable members rotate, said foot engaging members and said connection members being attached along horizontal axes restricting relative movement to rotation about said axes;

wherein each foot engaging member comprises a substantially flat top surface and sleeve openings spaced along the side to receive said connection members, each of said connection members is a substantially L-shaped structure having a first and second leg, said first keg including means for rigid attachment to one of said rotatable members, and said second leg including means for attachment with one degree of freedom to one of said foot engaging members;

whereby a user may perform a cycling routine while in a standing position.

5,647,822
BICYCLE-TYPE EXERCISING DEVICE
Meir Avganim, 156 Moshav, Gealiya, Israel
Filed Aug. 29, 1995, Ser. No. 521,054
Claims priority, application Israel, Sep. 2, 1994, 110843
Int. Cl.[6] A63B *21/22*
U.S. Cl. 482—60 **4 Claims**



1. A kit-form bicycle-type exercising device comprising a friction resistance pedals mechanism supported on front and rear elongated bars, first releasable fastening means for attaching the bars to a first base plate, and second releasable fastening means for attaching the first base plate to a second plate, both plates lying in the same plane.

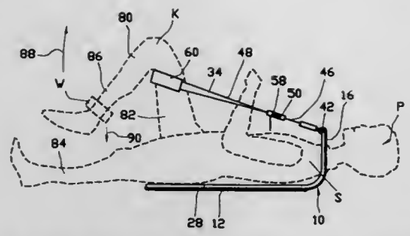
5,647,823
THERAPEUTIC APPARATUS FOR EXERCISING THE HUMAN KNEE
John R. Spence, 2230 Sunrise Blvd., Fort Myers, Fla. 33907
Continuation-in-part of Ser. No. 2,390, Aug. 17, 1995. This application May 16, 1996, Ser. No. 649,019
Int. Cl.[6] A63B *21/068;21/002*
U.S. Cl. 482—91 **12 Claims**

1. An apparatus for exercising a person's knee, said apparatus comprising:

a base member that supports a person in a supine position;

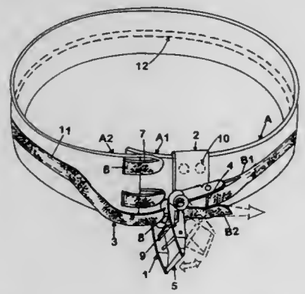
a pair of shoulder braces connected to and extending upwardly from said base member, each said shoulder brace engaging a respective shoulder of the supported person; and

means defining an elongate strap that is interconnected to and extends between said shoulder braces, said strap extending across the back of the supported person's leg to hold the upper section of the leg, located generally above the knee, in



an upright condition extending upwardly from said base member, whereby the lower section of the leg, located generally below the knee, may be selectively lowered and raised relative to the upper section of the leg to exercise the knee.

5,647,824
WEIGHT LIFTER'S BELT INCORPORATING STRAP RATCHET AND NYLON STRAP
Bruce Adam Levenson, PSC 2, Box 10536, APO, AE
Filed Oct. 25, 1995, Ser. No. 547,801
Int. Cl.[6] A61F *5/37*
U.S. Cl. 482—92 **7 Claims**



1. A support belt for weight lifting, other sports and activities comprising:

a belt having a belt loop proximate one end thereof for receiving the other end;

a strap ratchet secured to the belt loop and having a release mechanism;

a strap having one end secured to the strap ratchet, an intermediate portion of the strap being secured to the belt, the other end of the strap being free;

whereby the belt may be donned by placing the belt about the waist with the other end of the belt through the belt loop, engaging the free end of the strap to the strap ratchet and incrementally tightening the strap therewith.

5,647,825
EXERCISE MACHINE
Joseph E. Adkins, and Jeffrey A. Adkins, both of P.O. Box 7758, Huntington, W. Va. 25776
Continuation-in-part of Ser. No. 575,548, Dec. 20, 1995. This application Jan. 31, 1996, Ser. No. 594,896
Int. Cl.[6] A63B *21/00*
U.S. Cl. 482—96 **8 Claims**

1. An exercise machine comprising:

a frame, including an elongated base, and a front vertical member extending upwardly from said base;

a unitary handlebar and footrest assembly having an upper end and a lower end, including a handlebar attached at said upper end and at least one footrest disposed on each side of said



elongated base and attached to said lower end, said handlebar and footrest assembly being operably attached to said front vertical member such that said handlebar and footrest assembly is capable of pivoting at a point between said upper end and said lower end;

a seat assembly, including an elongated seat support member, having a proximate end and a distal end, said proximate end being pivotally attached to said base and said distal end providing an area for support of a user;

a glide assembly for reciprocal motion along said elongated base, said glide assembly dimensioned and configured for slidable engagement with said base;

a frictional means for selective variable resistance during reciprocal motion of said glide assembly, said frictional means attached to said glide assembly and adapted to frictionally engage said base during slidable engagement of said glide assembly with said base;

an electric motor operably attached to said frictional means such that said motor when actuated incrementally adjusts said frictional means to provide a range of frictional engagement of said frictional means with said elongated base;

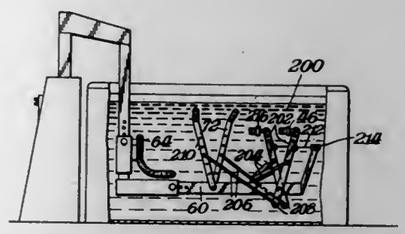
a electronic control and display unit in operable communication with said electric motor, said unit having a memory means and a processor means for programmable processing and communicating signals to actuate said motor by the user;

a seat riser arm, having a first end and a second end, said first end being pivotally attached to said seat support member at a point between said distal end and said proximate end and said second end being pivotally attached to said glide assembly; and,

a linkage bar, having a front end and a rear end, said front end being pivotally attached to said handlebar and footrest assembly at a point between said upper end and said lower end and said rear end being pivotally attached to said seat riser arm at a point between said first end and said second end.

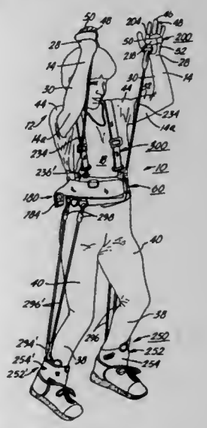
5,647,826
AQUATIC EXERCISE AND REHABILITATION DEVICE
Brian R. Butler, 2727 Hillview Dr., Broomal, Pa. 19008
Filed Oct. 27, 1995, Ser. No. 549,027
Int. Cl.[6] A63B *21/008;22/06*
U.S. Cl. 482—111 **2 Claims**

1. An aquatic exercise and rehabilitation apparatus comprising a vessel for having water therein, a stepper assembly mounted in said vessel, said stepper assembly including a frame, a seat mounted to said frame, a pair of pivoted arms mounted to said frame, a pedal mounted on each of said pivoted arms, resistance members reacting between said frame and said pivoted arms, a pair



of handlebars pivotally mounted to said frame, each of said handlebars being connected by a cable to a respective one of said arms whereby a handlebar and its associated arm moves jointly together, and a lift mechanism for selectively placing said stepper within and outside of said vessel.

5,647,827
AEROBIC EXERCISE DEVICE
Thaddeus Edward Gutkowski, 702 Summit St., Linden, N.J. 07036, and Roland John Olney, 4 Victoria Grove, Ferny Creek, Victoria, Australia
Filed Dec. 5, 1995, Ser. No. 567,531
Int. Cl.[6] A63B *21/02*
U.S. Cl. 482—124 **12 Claims**



1. An exercise device, comprising:

a) a belt assembly to be worn around the torso of the user including a plurality of layers wherein a first layer is formed of plastic for belt rigidity and back support and a second layer is formed of cushioning material;

b) said belt assembly further including upper and lower back support areas extending from the belt assembly, a plurality of attachment means connected to said belt assembly and closure means for removably attaching said belt assembly to the torso of the user;

c) a pair of hand assemblies each including a hand pad for engaging the palm of the user, said hand pad having finger holes formed therein through which the fingers of the user, pass a hand strap for removably attaching each hand assembly to a hand of the user, and an elastic hand resistance member having attachment means thereon for detachably connecting said hand assembly to one of the attachment means on said belt assembly;

d) a pair of anklet assemblies each including an ankle wrap for removably attaching each anklet assembly to an ankle of the user, a foot strap for removably attaching each anklet assembly to a foot of the user, a heel strap for extending around the

bottom of the heel of the user and an elastic foot resistance member having attachment means thereon for detachably connecting said anklet assembly to one of the attachment means on said belt assembly; and

e) a harness assembly having two straps extendable over the shoulders of the user, a first end of each strap detachably connectable to the front of said belt assembly and a second end of each strap detachably connectable to the rear of said belt assembly.

5,647,828

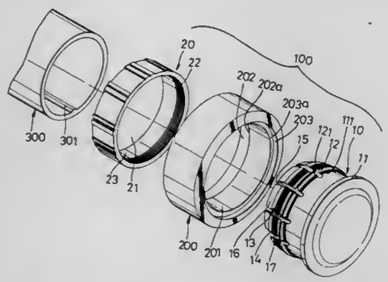
EXERCISER WHEEL ASSEMBLY WITH REPLACEABLE WHEEL RING

Ping Chen, No. 29, Nan-Mei St., Nan-Tun Dist., Taichung City, Taiwan

Filed Jul. 18, 1996, Ser. No. 683,235

Int. Cl.[6] A63B *21/00;* **B60B** *27/00;37/00*

U.S. Cl. 482—132 **7 Claims**



1. A wheel assembly for an exerciser, the exerciser having a horizontal wheel-bearing tube with an open outer end, the wheel-bearing tube being pressed from a metal sheet and being formed with a weld joint, said wheel assembly comprising:

a tubular ring-mounting member having a peripheral wall, an open inner end and a closed outer end which has an end wall that is formed with an axially extending annular flange on an outer peripheral portion of an inner side surface thereof, said annular flange and said peripheral wall defining cooperatively an annular groove therebetween which is adapted to receive the open outer end of the wheel-bearing tube when the wheel-bearing tube is extended into said open inner end of said ring-mounting member, said peripheral wall having an outer outward flange unit adjacent to said closed outer end of said ring-mounting member, and an inner outward flange unit located at an intermediate portion of said ring-mounting member, said inner and outer outward flange units projecting radially and outwardly from said peripheral wall so as to define therebetween a ring-mounting space adjacent to said closed outer end of said ring-mounting member, said peripheral wall further having a plurality of axially extending slots which are formed therethrough and which are open at said open inner end of said ring-mounting member, so as to define a plurality of flexible jaws, each of said jaws being located between an adjacent pair of said axially extending slots, said inner outward flange unit being located on said jaws;

a wheel ring sleeved on said ring-mounting member between said inner and outer outward flange units and having a minimum inner diameter slightly smaller than a maximum outer diameter of said inner outward flange unit of said ring-mounting member so as to prevent removal of said wheel ring from said ring-mounting member, said inner outward flange unit being capable of being compressed due to flexibility of said jaws so as to permit entry of said wheel ring into said ring-mounting space of said ring-mounting member during assembly; and

a retaining ring sleeved fixedly on said jaws of said ring-mounting member so as to be adapted to clamp the wheel-bearing tube within said jaws, thereby securing said ring-mounting member onto the wheel-bearing tube.

5,647,829

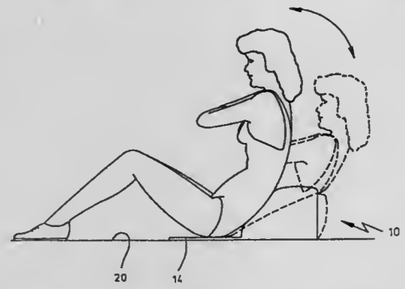
ABDOMINAL EXERCISE APPARATUS AND METHOD

Andrew R. Rivas, 1767 Woodbine Pl., Oceanside, Calif. 92054

Filed Apr. 25, 1995, Ser. No. 428,714

Int. Cl.[6] A63B *21/00*

U.S. Cl. 482—142 **5 Claims**



1. An abdominal exercise cushion for enabling the performance of safe and effective abdominal exercises, said cushion comprising:

an elastic back support device comprising a pillow-like main body portion and an anchoring panel extending from a front of said main body portion, said main body portion having a three dimensional configuration with a generally planar base surface adapted to rest on a horizontal support surface, opposing side surfaces, a back surface and a front surface extending upward to a top surface, said front surface defining a back engaging support surface extending upward from said base surface at said front, said foam block having a length of between nine to fifteen inches and a height of between eight to twelve inches, thereby providing a support surface having a height sufficient to engage a person above the person's pelvis and below about mid back when in about a sixty degree inclined position from the vertical and to support the person's upper body inclined at about a thirty degree position from the horizontal, with a height sufficient for yieldably engaging a lower back of a person and supporting said person in a partially backwardly inclining position, said anchoring panel having top and bottom generally parallel surfaces and formed of a pliable fabric panel secured along an edge of said front of said main body portion between said base surface and said support surface and adapted to be positioned to said front of said main body for sitting on while inclining on said main body portion.

5,647,830

HEALTH EQUIPMENT

Kazubiko Togao, Shizuoka-ken, Japan, assignor to Yugengaisha Hotarl, Shizuoka-ken, Japan

Filed Nov. 14, 1995, Ser. No. 557,449

Claims priority, application Japan, Nov. 15, 1994, 6-014073 U

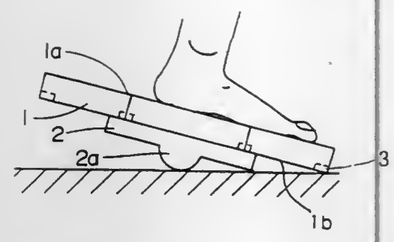
Int. Cl.[6] A63B *22/16*

U.S. Cl. 482—146 **14 Claims**

1. A health equipment comprising:

a flat board section with a top surface thereof being formed as a flat surface for supporting a body of a user;

a fulcrum section which protrudes from a central part of a bottom surface of said flat board section and swingably supports said flat board section with respect to the ground or a floor surface;



a plurality of detection means, which are fixed on a periphery of the bottom surface of said flat board section, for detecting contact of the bottom surface of said flat board section with the ground or a floor surface and generating a detection signal when it detects such contact; and

an output means, which is connected to said detection means, for receiving said detection signal from said detection means and notifying the user of the contact of the bottom surface of said flat board section with the ground or the floor surface.

5,647,831

METAL PART AND PROCESS FOR ITS PRODUCTION

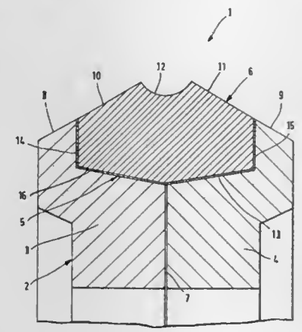
Gunther Schroeder, Sperberstr. 4, D-41564 Kaarst, Germany

Filed Nov. 8, 1994, Ser. No. 337,812

Claims priority, application Germany, Nov. 25, 1993, 43 40 134.1

Int. Cl.[6] B23P *15/00*

U.S. Cl. 492—38 **19 Claims**



1. A forming roll, comprising:

a) a base component formed from a material having a first predetermined coefficient of thermal expansion, an angled surface extending about said base component;

b) a wear ring disposed about said base component, said wear ring formed from a material having a second predetermined coefficient of thermal expansion and said second coefficient being less than said first coefficient and said ring having a base sized and shaped to complement said angled surface; and

c) a solder joint interconnects said base component and said wear ring, said solder joint transmitting radially inwardly directed shrinkage forces to said wear ring, generated by said base component as a result of cooling after heating said base component and said wear ring for producing said solder joint, creating compressive strain in the cross section of said wear ring.

5,647,832

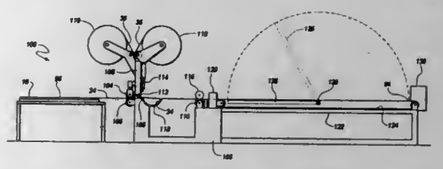
APPARATUS FOR MANUFACTURING BAFFLE LINERS

Craig Alan Nickell; Vincent Edwin Durden, both of Sherman, and Norman C. Derby, Bonham, all of Tex., assignors to Super Sack Mfg. Corp., Dallas, Tex.

Divisionn of Ser. No. 37,072, Mar. 26, 1993, abandoned. This application Feb. 6, 1995, Ser. No. 383,887

Int. Cl.[6] B31B *39/00*

U.S. Cl. 493—217 **4 Claims**



1. An apparatus for manufacturing a liner having baffles therein for use in flexible bulk containers, comprising:

a feed path having an input and an finishing end;

first feed means mounted adjacent the feed path for feeding a sheet of liner material over the feed path at a first speed;

second feed means mounted adjacent the feed path between the first feed means and the finishing end for feeding a length of ribbon material over the feed path adjacent the sheet of liner material at a second speed;

attachment means mounted adjacent the feed path for attaching the fed ribbon material to the fed sheet of liner material at spaced apart intervals;

cutting means mounted adjacent the feed path and between the attachment means and the finishing end for cutting a predetermined length of liner material having first and second ends;

folding means for folding the cut length of liner material in half along a fold line perpendicular to a longitudinal axis of a attached length of ribbon such that the ribbon is inside of the fold; and

seaming means for seaming the first and second ends of the cut length of folded liner material to form a tubular liner with the attached ribbon forming baffles defining substantially triangular shaped corners in the liner.

5,647,833

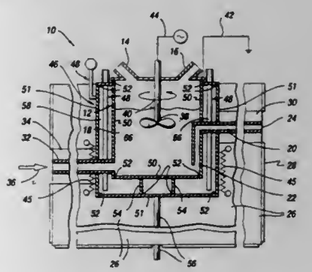
METHOD FOR VITRIFYING HAZARDOUS WASTE

Kenneth H. Wetmore, Perrysburg; Kenneth R. Kormanyos, Sylvania, and Stephen F. Cox, Perrysburg, all of Ohio, assignors to Stir-Melter, Inc., Perrysburg, Ohio

Division of Ser. No. 246,414, May 20, 1994, Pat. No. 5,562,363. This application Jun. 26, 1996, Ser. No. 673,724

Int. Cl.[6] B09B *3/00;* **A62D** *3/00*

U.S. Cl. 588—252 **5 Claims**



1. A method for vitrifying hazardous waste comprising:

introducing the hazardous waste and any other necessary components for forming a glassy material upon heating into a metallic melting vessel;

mixing molten material within the melting vessel by a stirrer while passing an electrical current between the melting vessel and the stirrer;

locating the melting vessel within a metallic containment vessel so as to contain any material that exits the melting vessel upon failure of the melting vessel; and

sensing for a failure of the melting vessel.

5,647,834

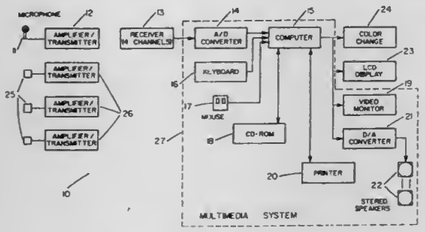
SPEECH-BASED BIOFEEDBACK METHOD AND SYSTEM

Samuel Ron, 1, Sinai Street, Ramat Hasharon 47420, Israel

Filed Jun. 30, 1995, Ser. No. 497,253

Int. Cl.[6] A61B *5/02*; A61F *5/58*

U.S. Cl. 600—23 **39 Claims**



1. A method for effecting biofeedback regulation of at least one physiological variable characteristic of a subject's emotional state, comprising the steps of:

(a) monitoring at least one speech parameter characteristic of the subject's emotional state so as to produce an indication signal representative of the at least one physiological variable,

(b) consciously altering the subject's emotional state so as to induce a desired change in the indication signal;

(c) monitoring at least one non-speech parameter characteristic of the subject's emotional state so as to determine a reference level of said non-speech parameter when the at least one physiological variable is at a required level, and

consciously altering the at least one speech parameter so as to cause said non-speech parameter to assume said reference level.

5,647,835

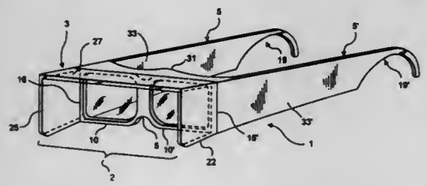
METHOD FOR PREVENTING MOTION SICKNESS

Michael Martineau, 15 Beachhill Rd., West Granville, Mass. 01034

Filed Jun. 22, 1995, Ser. No. 493,667

Int. Cl.[6] A61M *21/00*

U.S. Cl. 600—27 **6 Claims**



1. A method for preventing motion sickness comprising:

confining the vision of a person susceptible to motion sickness to block out any peripheral visual information indicative of motion.

5,647,836

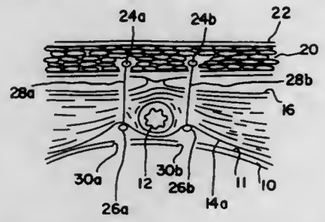
METHOD AND MEANS FOR TREATING FEMALE URINARY INCONTINENCE

Joseph W. Blake, III, 77 Locust Ave., New Canaan, Conn. 06840, and Robert M Spitz, 58 Gallup La., Waterford, Conn. 06385

Filed Sep. 28, 1995, Ser. No. 535,654

Int. Cl.[6] A61F *2/04*

U.S. Cl. 600—30 **10 Claims**



1. A method of treating female urinary stress incontinence comprising the steps of:

a. making at least two incisions in the vaginal wall with one incision on each side of and parallel to the urethra, with each incision exposing endopelvis fascia,

b. assembling at least two anchors with each anchor having an upper stay affixed to a suture and a lower stay having an opening for slidably receiving the suture,

c. loading an anchor into a cannula,

d. inserting the cannula into the vagina to pierce the endopelvic fascia exposed by the incision to the one side of the urethra and continuing on to pierce the rectus muscle and the rectus fascia above the pubis,

e. discharging the upper stay above the rectus fascia,

f. withdrawing the cannula leaving the upper stay in place with the suture extending from the stay through the rectus fascia, rectus muscle, and through the incision in the vaginal wall,

g. drawing the lower stay up on the suture to elevate tissue in the vicinity of the urethra

h. securing the lower stay to the suture when the correct degree of elevation is achieved, and

i. repeating steps c through h through the incision on the other side of the urethra.

5,647,837

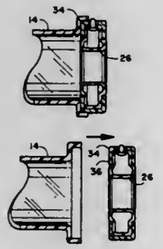
TUMESCENCE SUSTAINING APPLICATOR

Donald L. McCarty, P.O. Box 1558, Julian, Calif. 92036

Filed Mar. 30, 1995, Ser. No. 413,842

Int. Cl.[6] A61F *5/41*

U.S. Cl. 600—38 **7 Claims**



1. A tumescence sustaining applicator for an elongated compressible generally cylindrical two-state member having a hydraulically controlled tumescent state in which it is filled with fluid through internal ducts, and a flaccid state of diameter reduced from that of said tumescent state in which it is substantially drained of fluid, said applicator comprising:

(a) a vacuum cylinder which is gas impervious except at one open end and is connectable to a vacuum source;

(b) said cylinder having an internal annular seal adjacent said open end for establishing a substantially hermetic sliding seal around said elongated generally cylindrical two-state member when said member is inserted therein, said annular seal being substantially fixed against axial deformation and axial motion relative to said cylinder such that said seal moves axially with said cylinder substantially without deformation as said cylinder is moved axially along said member when said member is in said tumescent state, such that said seal can be slidingly adjusted axially relative to said member while sustaining a vacuum on said member to enhance the ability of said member to achieve said tumescent state;

(c) an elastic vasoconstrictor ring releasibly carried by said cylinder and having a constricted diameter adapted to be smaller than that of said elongated member in said tumescent state such that said ring is adapted to be released from said cylinder to engage around and compress said member to restrict the egress of fluid through said ducts and thereby prevent said member from entering said flaccid state when said vacuum is removed therefrom;

(d) wherein said seal and ring are combined as a unitary sealing ring, acting as a seal while drawing a vacuum from said source and becoming a restrictor ring when said vacuum cylinder is removed;

(e) wherein, said vacuum cylinder is freely axially adjustable on said member when in said tumescent state and said ring is releasible from said vacuum cylinder while said cylinder is applying a vacuum, at any axially related position thereon.

5,647,838

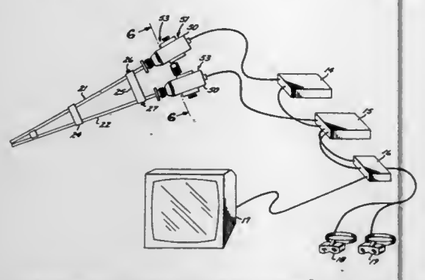
CAMERA FIXTURE FOR STEREOSCOPIC IMAGERY AND METHOD OF USING SAME

William E. Bloomer, 585 Bellefontaine St., Pasadena, Calif. 91105

Continuation-in-part of Ser. No. 239,872, May 10, 1994, Pat. No. 5,474,519. This application Dec. 11, 1995, Ser. No. 570,481

Int. Cl.[6] A61B *1/00*

U.S. Cl. 600—111 **18 Claims**



1. A stereoscopic endoscopic holder apparatus for holding a pair of elongated endoscopes projecting from respective cameras spaced apart a predetermined distance to orient the respective optical axes of said endoscopes focused at a predetermined angle converging inwardly toward one another to view a patient's body cavity and comprising:

an endoscope holder including a frame and a pair of tubular devices formed with respective elongated open ended passages converging distally toward one another and configured for receipt of the respective said endoscopes to hold them in fixed relation to one another arranging said endoscopes with the respective optical axes converging at said predetermined angle and adjusters on the respective said tubular devices for holding the respective said endoscopes in the respective said tubular devices;

a camera fixture including a pair of cradles spaced apart and configured to receive the respective said cameras therein, respective clamps for clamping the respective said cameras in the respective said cradles, an articulating connector connected between the respective said cradles to provide for movement of said cradles relative to one another and a restrictor for restricting articulation of said connector whereby said cameras may be nested in said cradles and said clamps tightened thereon and said articulation connector articulated to provide for articulation of said cradles relative to one another for shifting of the relative position of adjustment of the positioning of said endoscopes relative to one another so that said restrictor will then restrict relative movement of said cameras.

5,647,839

Patent Not Issued For This Number

5,647,840

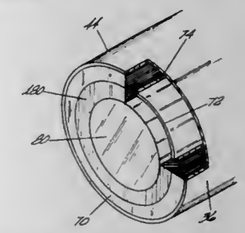
ENDOSCOPE HAVING A DISTALLY HEATED DISTAL LENS

Frank D. D'Amelio, Solvang, Calif.; Carl J. Rebert, Weston, and Kenneth C. Hancock, Essex, both of Conn., assignors to Circon Corporation, Santa Barbara, Calif.

Filed Sep. 14, 1994, Ser. No. 306,268

Int. Cl.[6] A61B *1/07*

U.S. Cl. 600—169 **49 Claims**



1. An instrument terminating in a distal section comprising

a transparent member having a periphery located in the distal section of the instrument;

a fiber optic light carrying bundle formed of a plurality of optical fibers each of which have a distal end, said fiber optic bundle having a proximal end which is adapted to be operatively coupled to a light source producing energy at different wave lengths and a distal end which is located in the distal section of an instrument contiguous to the transparent member, said fiber optic bundle having a selected number of the distal ends of said plurality of optical fibers operatively coupled to a thermally conductive material located around a portion of the periphery of the transparent member to form an energy diverting member for directing infrared energy from a light source onto the periphery of transparent member to increase the temperature thereof.

5,647,841

MOTOR-DRIVEN HAND-HELD MASSAGING DEVICE

Vera Groenewold, Griegstr. 14 A, Berlin DE-14193, and Michael Schmett, Berlin, both of Germany, assignors to Vera Groenewold, Berlin, Germany

Filed Aug. 9, 1995, Ser. No. 512,896

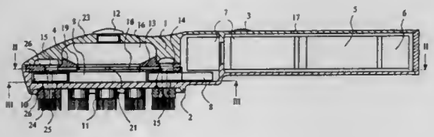
Claims priority, application Germany, Feb. 4, 1995, 195 04 761.3

Int. Cl.[6] A46B *13/04*; A61H *7/00*

U.S. Cl. 601—114 **18 Claims**

1. A massaging device comprising:

a housing;



a storage chamber positioned in said housing and for accommodating fluid;

a plurality of rotating massaging brushes rotatably connected to said housing;

fluid delivery means positioned in said housing and for separately delivering fluid from said storage chamber to each of said plurality of rotating massaging brushes at different times.

5,647,842

CREPE EFFECT BANDAGE

Julia Kininmonth, Nelson, and John Christopher Evans, Nr Rochdale, both of United Kingdom, assignors to Smith & Nephew plc, London, England

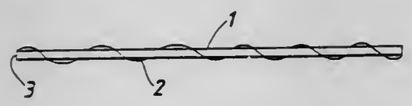
PCT No. PCT/GB94/02427, § 371 Date May 1, 1996, § 102(e) Date May 1, 1996, PCT Pub. No. WO95/13038, PCT Pub. Date May 18, 1995

PCT Filed Nov. 4, 1994, Ser. No. 624,361

Claims priority, application United Kingdom, Nov. 10, 1993, 9323161

Int. Cl.[6] A61L *15/00*

U.S. Cl. 602—76 **21 Claims**



1. A woven bandage which exhibits a crepe effect characterised in that the bandage contains elastomeric yarns and composite warp yarns comprising a staple fibre yarn and a textured filament yarn twisted together.

5,647,843

ANTI-REFLUX URETERAL STENT

Hrair-George O. Mesrobian, Milwaukee, Wis., and Frederick D. Roemer, Bloomington, Ind., assignors to Vance Products Incorporated, Spencer, Ind.

Filed May 24, 1996, Ser. No. 653,409

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—8 **14 Claims**

1. A ureteral stent for implantation between a bladder and a kidney to prevent reflux of urine into the kidney, comprising:

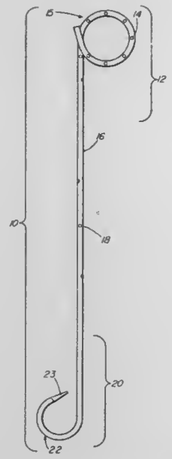
an elongated tubular body having multiple sections including:

a bladder end section defined by that sections of said elongated tubular body in the bladder when said stent is positioned in a patient,

a kidney end section, and

a straight section connecting the bladder end section and the kidney end section,

wherein the bladder end section and the kidney end section each includes retention means at an end thereof, fluid passageways incorporated in the kidney end section and along a length of the straight section, wherein no fluid passageways are incorporated in the bladder end section and along a portion of the straight section connecting the bladder end section, and wherein the bladder end section is closed.



5,647,844

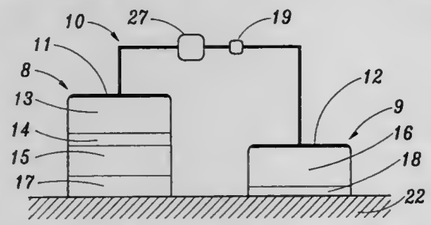
DEVICE AND METHOD OF IONTOPHORETIC DRUG DELIVERY

Ronald P. Haak; J. Richard Gyory, both of San Jose, and Felix Theeuwes, Los Altos Hills, all of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Division of Ser. No. 941,421, Oct. 27, 1992, Pat. No. 5,496,266, which is a continuation-in-part of Ser. No. 252,463, Oct. 3, 1988, Pat. No. 4,927,408. This application Feb. 27, 1996, Ser. No. 607,533

Int. Cl.[6] A61N *1/30*

U.S. Cl. 604—20 **19 Claims**



1. An electrically powered iontophoretic agent delivery device including a donor electrode assembly, a counter electrode assembly and a source of electrical power adapted to be electrically connected to the donor electrode assembly and the counter electrode assembly, the donor electrode assembly comprising:

an agent reservoir containing an agent and adapted to be placed in agent transmitting relation with a body surface, the agent being at least partially dissociated into agent ions and counter ions of opposite charge during use of the device;

a selectively permeable membrane containing a chelating agent, the selectively permeable membrane being positioned within the donor electrode assembly intermediate the donor electrode and the agent reservoir, the chelating agent being one which traps ions having a charge similar to the charge of the agent ions, the membrane being permeable to species having a charge similar to the charge of the counter ions and substantially less permeable to species having a charge similar to the charge of the agent ions.

5,647,845

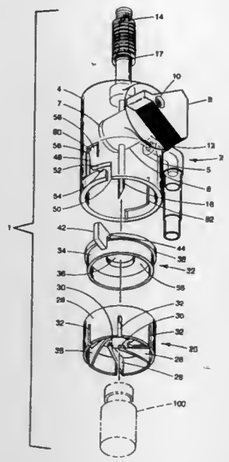
GENERIC INTRAVENOUS INFUSION SYSTEM

Terry M. Haber, El Toro; William H. Smedley, Lake Elsinore, and Clark B. Foster, Laguna Niguel, all of Calif., assignors to Habley Medical Technology Corporation, Lake Forest, Calif.

Filed Feb. 1, 1995, Ser. No. 382,127

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—32 **20 Claims**



1. An intravenous infusion system to be coupled to an IV bag in which a fluid is stored so that a medication stored in a pharmaceutical vial can be mixed with the fluid in the IV bag and the mixture administered to a patient from the IV bag by way of an IV fluid line, said infusion system comprising:

a fluid control valve including a housing and a valve barrel movably positioned within said housing and having a plurality of fluid distribution paths formed therein;

a first fluid channel extending through the housing of said fluid control valve from said valve barrel to be coupled to the IV bag;

a second fluid channel extending through the housing of said fluid control valve from said valve barrel to be coupled to the pharmaceutical vial in which the medication is stored;

a third fluid channel extending through the housing of said fluid control valve from said valve barrel to be coupled to the IV fluid line;

a vial receiving and docking receptacle to accept and carry said pharmaceutical vial;

means by which to move said vial receiving and docking receptacle relative to the housing of said fluid control valve from a first location at which said pharmaceutical vial carried by said vial receptacle is spaced from said second fluid channel to a second location at which said pharmaceutical vial is moved into fluid communication with said second fluid channel; and

means by which to move said valve barrel within the housing of said fluid control valve to either block fluid communication or permit fluid communication via the fluid distribution paths of said valve barrel between the IV bag and one of said IV fluid line and said pharmaceutical vial carried by said vial receiving and docking receptacle depending upon the position to which said valve barrel is moved.

5,647,846

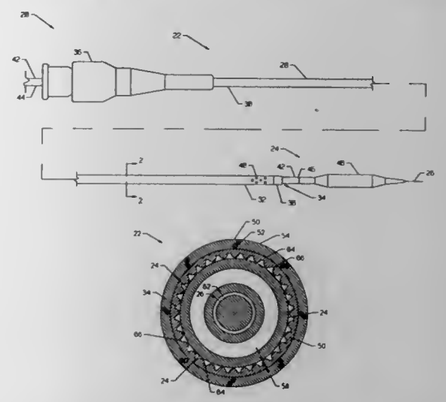
CATHETER HAVING GEOMETRICALLY SHAPED SURFACE AND METHOD OF MANUFACTURE

Todd A. Berg, Lino Lakes; Richard R. Prather, Rogers, and Thomas J. Bachinski, Lakeville, all of Minn., assignors to SciMed Life Systems, Inc., Maple Grove, Minn.

Filed May 17, 1995, Ser. No. 442,815

Int. Cl.[6] A61M *11/00*

U.S. Cl. 604—93 **16 Claims**



1. In a catheter having a generally elongate shaft having a proximal end and a distal end, with a lumen extending longitudinally between the proximal end and the distal end, the improvement comprising the shaft having a tubular shape, including a geometrically configured lumen surface having a plurality of generally longitudinal microchannels spaced radially about the lumen surface, the improvement further including a plurality of openings located proximal the catheter shaft distal end in communication with the longitudinal microchannels.

5,647,847

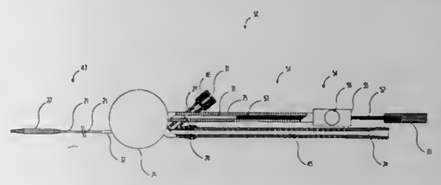
BALLOON CATHETER WITH IMPROVED PRESSURE SOURCE

Daniel M. Lafontaine, Plymouth; Daniel O. Adams, Orono, and John W. Humphrey, Eden Prairie, all of Minn., assignors to SCIMED Life Systems, Inc., Maple Grove, Minn.

Continuation-in-part of Ser. No. 308,025, Sep. 16, 1994, Pat. No. 5,545,133. This application Nov. 4, 1994, Ser. No. 334,831

Int. Cl.[6] A61M *29/00*

U.S. Cl. 604—96 **42 Claims**



1. A balloon catheter insertable into a living body, comprising:

(a) an elongate shaft having a proximal end, a distal end and an inflation lumen extending therethrough;

(b) an inflatable balloon connected to the distal end of the shaft and in fluid communication with the inflation lumen;

(c) a manifold connected to the proximal end of the shaft, the manifold having a barrel containing a plunger movably disposed therein, the barrel being in fluid communication with

the inflation lumen, the barrel having an internal volume less than 5 cc and an internal diameter of less than 0.25 inches; and

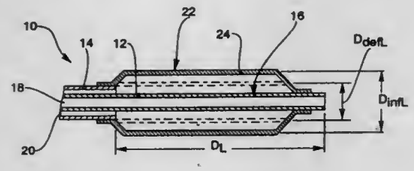
(d) a prep port connected to the catheter and being in fluid communication with the inflation lumen, the prep port being releasably connectable to a fluid source.

5,647,848

HIGH STRENGTH LOW COMPLIANCE COMPOSITE BALLOON FOR BALLOON CATHETERS

Ole Jørgensen, Lyngby, Denmark, assignor to Meadox Medicals, Inc., Oakland, N.J.

Filed Jun. 7, 1995, Ser. No. 487,177
Int. Cl.[6] H61M *29/00*
U.S. Cl. 604—96 **9 Claims**



1. A balloon for securement to a catheter comprising:

a resiliently elastomeric generally hollow pressure expandable body having a wall thickness of and being expandable under an internally applied minimum working pressure P from an unexpanded diameter D_{defL} to an expanded diameter D_{infL} said elastomeric body having a decant modules E_{sec} where

$$E_{sec} = \frac{6(\epsilon_{infl})}{\epsilon_{infl}}$$

where $\sigma(\epsilon_{infL})$ is the nominal uniaxial tension in said body as a function of ϵ_{infL} and

$$\epsilon_{infl} = \frac{D_{infl}}{D_{defl}} \text{ ; and}$$

a substantially non-compliant expandable, constraining structure affixed to said elastomeric body, said constraining structure being formed of fibers having an elongation to break of less than about **10%** and a tensile strength greater than about 1 GPa and being selected from the group consisting of aramide, polyethylene, steel, polyester, glass, carbon, ceramics and liquid crystal polymers, said constraining structure limiting expansion of said body to a maximum diameter of D_{infL} wherein said minimum working pressure P required to expand said body to a diameter no greater than D_{infL} is defined by the question:

$$\frac{P \cdot D_{defl}}{2 \cdot E_{sec} \cdot t} \geqq 1$$

5,647,849

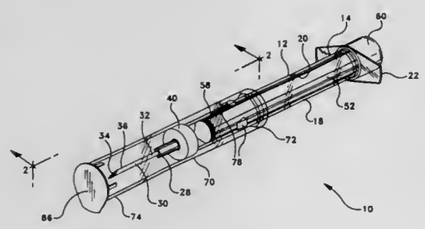
SELF-CONTAINED SAFETY SYRINGE

Gerald James Kalin, Califon, N.J., assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Sep. 27, 1995, Ser. No. 534,752
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—111 **16 Claims**

1. A self-contained syringe comprising:

a syringe barrel having a side wall with an open proximal end, a distal end and a fluid receiving chamber therebetween;



a needle cannula projecting from said distal end of said syringe barrel and communicating with said fluid receiving chamber;

a plunger slidably mounted in said open proximal end of said syringe barrel;

a proximal seal releasably engaging said proximal end of said syringe barrel; and

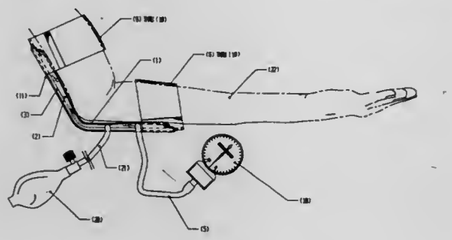
a tubular safety shield having a distal end with a distal seal and an opposed proximal end slidable disposed on said syringe barrel, said safety shield and said barrel including means for releasably retaining said shield at an intermediate position on said syringe barrel such that said safety shield protectively encloses said needle cannula, said safety shield being movable sequentially to a proximal position where said needle cannula is exposed for use and subsequently to a distal position where said safety shield is locked in surrounding relationship to said needle cannula.

5,647,850

METHOD AND APPARATUS FOR VEIN LOCATION

William Ray Allen, 5418 KK Rd., Waterloo, Ill. 62298

Filed Mar. 15, 1995, Ser. No. 353,809
Int. Cl.[6] A61H *1/00*
U.S. Cl. 604—116 **1 Claim**



1. A method of locating a vein comprising:

placing a vein locating device on an arm comprising:

a relatively stiff piece of cardboard;

an inflatable bladder attached to the upper surface of the cardboard, the inflatable bladder in fluid communication with a pumping mechanism and pressure sensing means;

releasable straps attached to front and rear ends of the cardboard piece;

attaching the vein locating device on a portion of a human limb opposite to a side of said limb in which said vein is located;

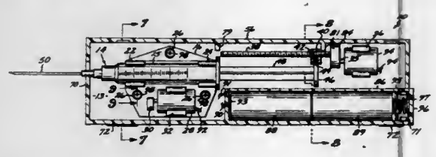
inflating the vein locating device so as to constrict the blood flow in the limb until the vein is visibly viewable.

5,647,851

METHOD AND APPARATUS FOR VIBRATING AN INJECTION DEVICE

Norman M. Pokras, 4448 Village Rd., Long Beach, Calif. 90808

Filed Jun. 12, 1995, Ser. No. 489,353
Int. Cl.[6] A61M *37/00*
U.S. Cl. 604—131 **26 Claims**



1. Vibrating injection apparatus for holding and vibrating an injection needle formed with a sharp tip and comprising:

an elongated housing formed with an interior compartment;

a syringe in said housing including a chamber for receipt of fluid medication and an injection needle having a sharp tip;

a mount assembly mounting said syringe in said housing;

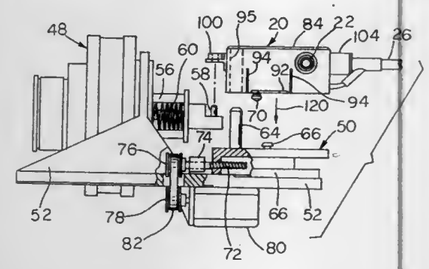
a vibrator mounted in said housing and including a motor for vibrating said needle whereby said needle is mounted from said housing and said motor actuated to vibrate said needle as said needle is manipulated into position to penetrate the skin of a patient.

5,647,852

LAVAGE SYSTEM INCLUDING A CASSETTE ASSEMBLY

Robert W. Atkinson, Dover, Ohio, assignor to Zimmer, Inc., Warsaw, Ind.

Filed Jan. 31, 1995, Ser. No. 382,302
Int. Cl.[6] A61M *1/00*
U.S. Cl. 604—151 **2 Claims**



1. A lavage system comprising:

a frame;

a linear motor mounted to said frame and having a drive member extending outwardly from said motor, said drive member being shiftable between first and second positions in response to said motor,

a cassette platform mounted to said frame and being selectively movable to said motor and said drive member,

a cassette assembly including a cassette housing, said cassette housing being mountable on said cassette platform, said cassette housing further including a pump having a pump shaft and defining an inlet and an outlet, said cassette assembly further including a pressure sensing diaphragm valve fluidly connected to said pump outlet,

said pump shaft being shiftable between first and second positions to force fluid from said inlet to said outlet, said pump shaft being connected to said driver member such that as said driver member shifts toward its first position, said pump shaft shifts toward its first position,

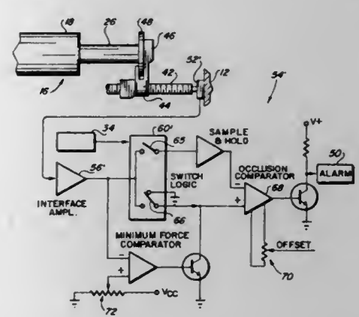
said cassette platform being shiftable between a first and second position, wherein with said platform in its first position and the pump shaft in its first position and the driver member in a position between its first and second positions, the cassette assembly pump shaft can be connected to the driver member and the cassette assembly can be connected to the cassette platform, wherein after said cassette assembly is connected to said cassette platform and said driver member, said cassette platform is shifted into its second position wherein said pump shaft is held in a position between its first and second positions until said motor is activated.

5,647,853

RAPID RESPONSE OCCLUSION DETECTOR FOR A MEDICATION INFUSION PUMP

William G. Feldmann, Los Angeles; Vernon J. Scherbenske, Torrance, and Craig M. Henning, Alhambra, all of Calif., assignors to MiniMed Inc., Sylmar, Calif.

Filed Mar. 3, 1995, Ser. No. 397,797
Int. Cl.[6] A61M *1/00*
U.S. Cl. 604—155 **12 Claims**



1. A rapid response occlusion detector for use with a medication infusion pump having a syringe defining a chamber with medication therein, infusion tubing for connecting the medication chamber to a patient, a piston plunger for advancement into the medication chamber to administer a dose of the medication to the patient, and drive means for controllably advancing the piston plunger into the medication chamber to administer a succession of discrete doses of the medication to the patient, said occlusion detector comprising:

force sensor means for monitoring and for providing output signals representative of the pressure applied to the medication within the medication chamber;

control circuit means connected to said force sensor means for receiving said output signals, said control circuit means including comparator means for comparing the difference between a first output signal corresponding to a first first pressure substantially at a point in time corresponding with advancement of the syringe plunger to administer a medication dose and a second output signal corresponding to a second pressure at a later point in time substantially after said plunger advancement but preceding the next dose; and

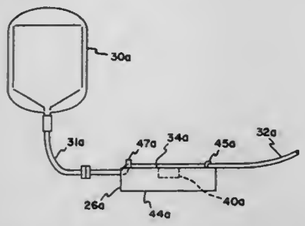
alarm means activated by said control circuit means when the difference between said first and second output signals is less than a predetermined value.

5,647,854

BASE PLATE FOR A DRUG PUMP

James M. Olsen, Plymouth, and Jay Gregory Johnson, Maple Plain, both of Minn., assignors to SIMS Deltec, Inc., St. Paul, Minn.

Continuation of Ser. No. 228,508, Apr. 15, 1994, Pat. No. 5,531,697. This application Mar. 20, 1996, Ser. No. 618,574
Int. Cl.[6] A61M *5/32*
U.S. Cl. 604—174 **3 Claims**



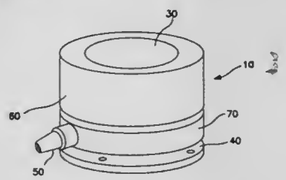
1. A base plate for use with a control module having a projection sensing member comprising:
a body having a main surface facing in a first direction and including first and second longitudinal sides, and first and second transverse ends, the main surface configured to receive a flexible tube in a direction generally parallel to the first and second longitudinal sides;
a pair of hooks extending from the main surface adjacent to the first transverse end;
a loop extending from the main surface adjacent to the second transverse end; and
a projection extending from the main surface positioned to engage the projection sensing member of the control module.

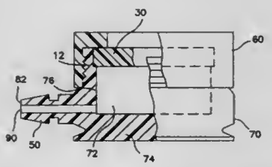
5,647,855

SELF-HEALING DIAPHRAGM IN A SUBCUTANEOUS INFUSION PORT

Stanley Z. Trooskin, 1565 Kearney Dr., No. Brunswick, N.J. 08902

Continuation of Ser. No. 879,758, May 6, 1992, abandoned. This application Jul. 5, 1994, Ser. No. 267,081
Int. Cl.[6] A61M *5/32*
U.S. Cl. 604—175 **9 Claims**





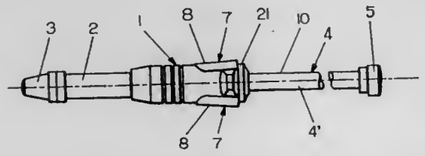
1. A subcutaneous infusion port for peritoneal dialysis, comprising:
(a) a housing forming an inner chamber and including
(i) a vertically extending side wall disposed about the chamber, the side wall having a first and a second axially spaced ends and inside and outside side walls, the side wall forming a generally cylindrical chamber;
(ii) an entry port into the chamber located at the second end of the side wall;
(iii) a bottom solid wall axially disposed at the first end of the side wall;
(iv) an attaching means disposed at the first end of the side wall for fixing the housing to a patient;
(b) a replaceable self-sealing, self-healing, needle penetrable diaphragm axially located near the second end of the sidewall for sealing the entry port and for maintaining the sealed inner chamber, the diaphragm comprising:
(i) a bottom layer constructed of a material having properties of being inert, impermeable to fluid and preventing tissue in-growth and the bottom layer facing the bottom solid wall;
(ii) a layer above the bottom layer and laminated to the bottom layer, the layer above the bottom layer constructed of a material having properties that promote tissue in-growth;
(c) a removable sealing means in contact with both the side wall and the diaphragm in order to securely hold the diaphragm to the housing and to provide a leak resistant seal between the diaphragm and housing;
(d) a conduit for attaching to a standard dialysis catheter, wherein said conduit extends out from the outside side wall and is located near the first end of the side wall, the conduit having a fluid entry port which is in alignment with the conduit and which interconnects with the inner chamber for a fluid flow passage.

5,647,856

SYRINGE FOR THE CONTROLLED DISCHARGE OF VISCOUS MATERIALS

Rudolf Eykmann, Wehrheim; Joachim Fritze, Friedrichsdorf; Birgit Uhrig, Neu-Anspach; Dieter Schödel, Wiesbaden, and Holger Burckhardt, Frankfurt am Main, all of Germany, assignors to Heraeus Kulzer GmbH, Wehrheim/Ts., Germany

Filed Sep. 23, 1994, Ser. No. 311,217
Claims priority, application Germany, Sep. 23, 1993, 43 32 307.3
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—181 **19 Claims**



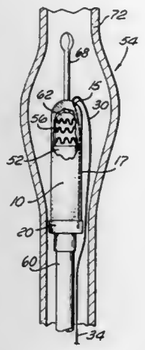
1. A syringe for the controlled discharge of a viscous material, comprising:
a cartridge for holding the material;
an inner stopper in said cartridge;
an adapter part having radially movable bearing parts, with each bearing part having a threaded segment;
at least one expanding part; and
a rotary piston,
with the rotary piston having an inserted end configured to be inserted into one end of the cartridge, with the rotary piston configured substantially in the form of a threaded rod, with the inserted end of the rotary piston configured to press against the inner stopper, with the threaded rod movably held in the adapter part between the bearing parts, with the bearing parts held in a rest position by the at least one expanding part at a distance from one another in a radial direction of the threaded rod and at a distance from the threaded rod such that the threaded segments of the bearing parts are spaced from the threaded rod, and with the bearing parts movable between the rest position in which the threaded segments of the bearing parts are spaced at a distance from the threaded rod and a compressed position in which the threaded segments of the bearing parts directly engage the threads on the threaded rod by external pressure on the bearing parts.

5,647,857

PROTECTIVE INTRALUMINAL SHEATH

Scott C. Anderson, Sunnyvale, and James M. Cannon, Jr., Santa Clara, both of Calif., assignors to Endotex Interventional Systems, Inc., Menlo Park, Calif.

Filed Mar. 16, 1995, Ser. No. 405,511
Int. Cl.[6] A61M *5/00;25/00*
U.S. Cl. 604—264 **20 Claims**



1. A retractable sheath for use with a catheter for delivering treatment to a body lumen of a patient, said sheath comprising:
a tubular sheath body for covering a treatment-delivering portion of the catheter and having an inner surface, an outer surface, a proximal end and a distal end;
a collar radially disposed about and attached to said proximal end of said sheath body;
a strand including a peelable portion having a first end and a free portion having a free end; said peelable portion being embedded in said inner surface of said sheath body and extending axially from said collar to said distal end of said sheath body, said first end of said peelable portion being affixed to said collar and said free portion of said strand extending out of said distal end of said sheath body and resting alongside said outer surface of said sheath body further extending back towards said proximal end of said sheath body;
whereby the proximal application of a tearing force to said free end of said free portion of said strand causes said peelable portion to cut through said sheath body up to said collar, said collar being resistant to the tearing force applied.

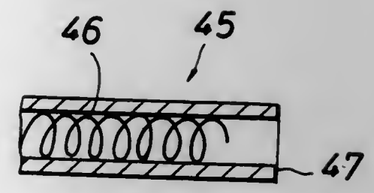
5,647,858

ZIRCONIUM OXIDE AND ZIRCONIUM NITRIDE COATED CATHETERS

James A. Davidson, Germantown, Tenn., assignor to Smith & Nephew, Inc., Memphis, Tenn.

Division of Ser. No. 112,587, Aug. 26, 1993, Pat. No. 5,469,359, which is a continuation-in-part of Ser. No. 919,932, Jul. 27, 1992, Pat. No. 5,282,850, which is a continuation-in-part of Ser. No. 830,720, Feb. 4, 1992, Pat. No. 5,258,022, which is a continuation-in-part of Ser. No. 557,173, Jul. 23, 1990, Pat. No. 5,152,794, which is a continuation-in-part of Ser. No. 385,285, Jul. 25, 1989, Pat. No. 5,037,438. This application Jun. 6, 1995, Ser. No. 469,688
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—264 **13 Claims**

1. A catheter comprising:
an elongate body and a bore extending through the body for insertion of surgical instruments, the body comprising:
(a) an underlying substrate of low elastic modulus metal composition, the substrate having surfaces; and
(b) a corrosion-resistant, biocompatible, hemocompatible, durable, stable coating selected from the group consisting of zirconium oxides, ranging in color from blue to black, and zirconium nitrides, ranging in color from yellow to orange; said coating disposed on the surfaces of the substrate.

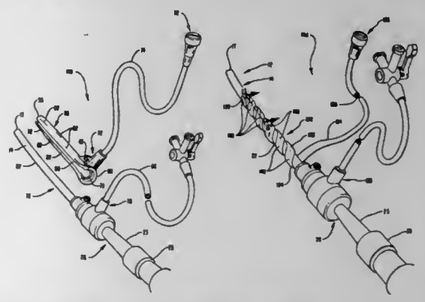


5,647,859

CATHETER APPARATUS WITH MEANS FOR SUBCUTANEOUS DELIVERY OF ANESTHETIC AGENT OR OTHER FLUID MEDICAMENT

Fred P. Lampropoulos, Sandy; Jim Mottola, South Jordan; Arlin Dale Nelson, Midvale; Jerrold L. Foote, Salt Lake City, all of Utah, and Robert Roth, Festus, Mo., assignors to Merit Medical Systems, Inc., South Jordan, Utah

Continuation-in-part of Ser. No. 417,824, Apr. 6, 1995, Pat. No. 5,533,986, which is a continuation-in-part of Ser. No. 198,625, Feb. 18, 1994, Pat. No. 5,405,334. This application Mar. 22, 1996, Ser. No. 620,372
Int. Cl.[6] A61M *25/00*
U.S. Cl. 604—264 **20 Claims**



1. An indwelling catheter apparatus comprising:
catheter means for insertion through subcutaneous tissue, said catheter means comprising an indwelling cannula adapted for insertion through subcutaneous tissue into a patient's body, and having an indwelling distal end and a proximal hub end adapted for securement outside of the body; and
sheath means, surrounding at least a portion of said cannula for placement into but essentially not beyond the subcutaneous tissue after the cannula is inserted, and for delivering fluid medicament to essentially only the subcutaneous tissue surrounding said cannula, said sheath means having a distal end unattached to the cannula so that the sheath means resists passage beyond the subcutaneous tissue, said sheath means further including a plurality of delivery holes, each of said delivery holes providing a fluid communication path between the sheath means and the surrounding subcutaneous tissue for said fluid medicament.

5,647,860

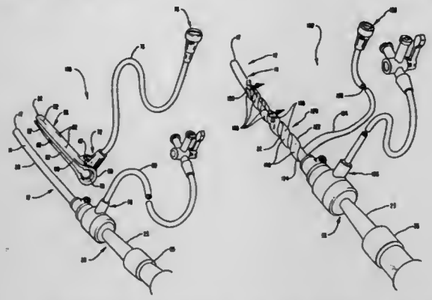
ANESTHETIZING SHEATH APPARATUS WITH MEANS FOR SUBCUTANEOUS DELIVERY OF ANESTHETIC AGENT OR OTHER FLUID MEDICAMENT

Robert Roth, Festus, Mo.; Fred P. Lampropoulos, Sandy, Utah; Jim Mottola, South Jordan, Utah; Arlin Dale Nelson, Midvale, Utah, and Jerrold L. Foote, Salt Lake City, Utah, assignors to Merit Medical Systems, Inc., South Jordan, Utah

Continuation of Ser. No. 417,824, Apr. 6, 1995, Pat. No. 5,533,986, which is a continuation-in-part of Ser. No. 198,625, Feb. 18, 1994, Pat. No. 5,405,334. This application Mar. 22, 1996, Ser. No. 621,083

Int. Cl.[6] A61M *25/00*

U.S. Cl. 604—264 **14 Claims**



1. An apparatus for delivering fluid medicaments, including anesthetizing agents, to surrounding subcataneous tissue of a patient's body, intended for use with an indwelling catheter apparatus having an indwelling cannula adapted for insertion through subcutaneous tissue into the patient's body, and having an indwelling distal end and a proximal hub end adapted for securement outside of the body, the apparatus comprising:

sheath means surrounding at least a portion of said cannula adjacent said proximal hub end, for delivering fluid medicament to essentially only the area of subcutaneous tissue surrounding the cannula, said sheath means extending into but essentially not beyond the subcutaneous tissue when the cannula is inserted, said sheath means including means for providing a fluid communication path for said fluid medicament between the sheath means and the surrounding subcutaneous tissue.

5,647,861

OSTOMY COUPLING

Peter L. Steer, Sussex; Keith G. M. Hollands, Sompting; Graham Emery Steer, London; Ronald A. Plass, West Sussex, and Howard Barratt, Surrey, all of England, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Apr. 12, 1996, Ser. No. 634,158

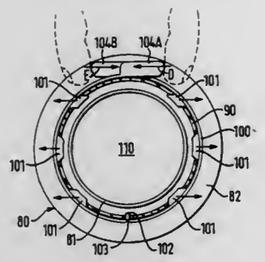
Claims priority, application United Kingdom, Apr. 13, 1995, 9507666

Int. Cl.[6] A61F *5/44*

U.S. Cl. 604—342 **4 Claims**

1. An ostomy coupling comprising:

first and second coupling members capable of being coupled together, each of said members having a central stomal opening, said first coupling member having a flange with a projection-receiving channel, said channel being defined at least in part by a concentric inner wall and outer wall, said inner wall being positioned closer to said stomal opening, said outer wall having a plurality of tab-receiving slots extending therethrough, said second coupling member having a projection receivable in said channel when said first and second members are properly pushed together, said projection being lockable in said channel, and



a resilient, circular, releasably lockable locking ring positionable circumferentially about said outer wall, said locking ring including a plurality of tabs projecting radially inwardly, said tabs being extendable through said slots so as to restrain said projection in said channel when said locking ting is in a latched condition, said tabs being withdrawable from said slots when said locking ring is released into an open condition, said locking ring having two ends that are latched to form said locked condition, and unlatched to form said open condition.

5,647,862

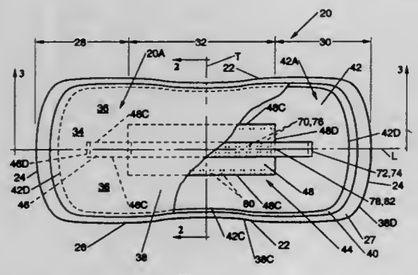
ABSORBENT ARTICLE WITH MEANS FOR DIRECTIONAL FLUID DISTRIBUTION

Thomas Ward Osborn, III, Cincinnati; Deborah Catherine Schmitz, West Chester; James William Cree, and Melisse Noel Elder, both of Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 340,013, Nov. 15, 1994, abandoned, which is a continuation of Ser. No. 83,425, Jun. 28, 1993, abandoned. This application Aug. 10, 1995, Ser. No. 513,600

Int. Cl.[6] A61F *13/15;13/20*

U.S. Cl. 604—378 **33 Claims**



1. A sanitary napkin comprising:

a liquid pervious topsheet;

a liquid impervious backsheet joined to said topsheet;

an absorbent core having a length, a width, and a pair of end edges positioned between said topsheet and said backsheet;

a means for directional liquid distribution positioned between said absorbent core and said topsheet, said means for directional liquid distribution comprising:

a liquid transporting component positioned between said topsheet and said absorbent core, said liquid transporting component having a length, a width, a pair of side edges, and a pair of end edges wherein the length of said liquid transporting component is less than the length of said absorbent core; and

a liquid directing component for directing liquid exudates toward the end edges of said absorbent core by controlling the flow of the liquid exudates being transported by said liquid transporting component into said absorbent core, said liquid directing component being positioned between said liquid transporting component and said absorbent core, and having a length, a width, a pair of side edges, and a pair of end edges, wherein:

at least one of the end edges of said liquid transporting component extends beyond one of the end edges of said liquid directing component so that said liquid transporting component transports liquid exudates beyond the end edges of said liquid directing component.

5,647,863

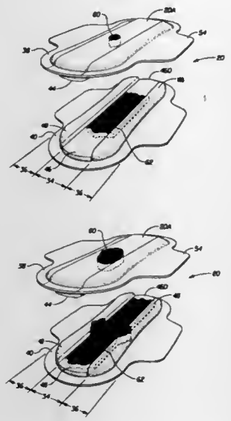
ABSORBENT ARTICLE WITH CLEAN APPEARANCE AND CAPACITY SIGNAL MEANS

John L. Hammons, Hamilton; Shannon J. Hennessy, and Alvin D. Martin, Jr., both of Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Sep. 21, 1995, Ser. No. 531,533

Int. Cl.[6] A61F *13/15;13/20*

U.S. Cl. 604—378 **20 Claims**



1. A sanitary napkin for absorbing bodily fluids having a longitudinal centerline, a transverse centerline, and a main body portion having longitudinally oriented sides, transversely oriented ends, a pair of longitudinally oriented side regions, and a longitudinally oriented middle region therebetween, said sanitary napkin comprising:

a liquid permeable topsheet;

a liquid impermeable backsheet; and

an absorbent core disposed between said topsheet and said backsheet, said absorbent core comprising:

an acquisition member in effective fluid communication with said topsheet and disposed beneath said topsheet in said middle region, wherein said acquisition layer has sufficient hiding power so that said acquisition member at least partially minimizes the visual impact of absorbed bodily fluids,

a storage/distribution member having an absorbent capacity, said storage/distribution member contacting said acquisition member, being in effective fluid communication with said acquisition member, and being disposed beneath said acquisition member along said longitudinal centerline defining said middle region, and

an indicator member in effective fluid communication with said storage/distribution member, at least a portion of said indicator member being disposed between said topsheet and said backsheet in at least one of said side regions,

wherein the ratio of the vertical wicking height of said storage/distribution member to the vertical wicking height of said acquisition member is equal to or greater than about 1.5:1.

5,647,864

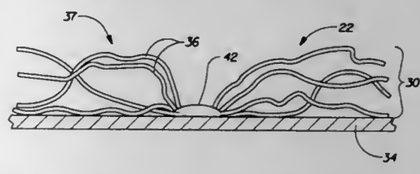
NONWOVEN FEMALE COMPONENT FOR REFASTENABLE FASTENING DEVICE AND METHOD OF MAKING THE SAME

Patrick Jay Allen; Beverly Jean Bross-Kelly, both of Cincinnati; Louis John Viltro, Hamilton; William Robert Vinnage, Jr., and David Michael Weirich, both of Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 254,814, Jun. 6, 1994, abandoned. This application Oct. 25, 1995, Ser. No. 547,847

Int. Cl.[6] A61F *13/15;* **A44B** *1/04*

U.S. Cl. 604—391 **7 Claims**



1. A female component of a refastenable fastening device capable of engaging a complementary hook fastening component, said female component comprising:

an elastomeric adhesive backing having an elongated orientation, a relaxed orientation, and a path of response along which said material contracts from said elongated orientation to said relaxed orientation; and

a nonwoven web in contact with, and thereby secured to, said elastomeric adhesive backing, said nonwoven web being secured to said elastomeric adhesive backing while said backing is in said elongated orientation, said nonwoven web comprising a multiplicity of fibrous elements comprising filaments that are joined together with inter-fiber bonds at spaced, fixed regions along the length of each of said filaments to define between each pair of fixed regions an unsecured catching region, wherein said fibrous elements comprise those filaments that are shirred when said backing contracts to said relaxed orientation.

5,647,865

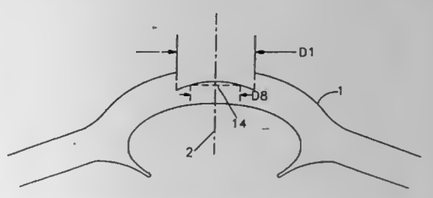
CORNEAL SURGERY USING LASER, DONOR CORNEAL TISSUE AND SYNTHETIC MATERIAL

Casimir A. Swinger, 9 W. 67th St., New York, N.Y. 10023

Filed Nov. 1, 1991, Ser. No. 786,397

Int. Cl.[6] A61N *5/06*

U.S. Cl. 606—5 **8 Claims**



1. A method of optical surgery comprising the steps of:

ablating a patient's cornea by a controlled laser beam, to remove an outer portion, of a constant thickness, and having a diameter, and thereby expose a new surface of said cornea;

ablating a posterior surface of a donor corneal disc, leaving an anterior surface of said donor corneal disc intact, so that the anterior surface of the donor corneal disc is preserved to make the donor corneal disc, of a second diameter and thickness similar to the diameter and the constant thickness of the outer portion removed from the patient's cornea; and

placing the donor corneal disc on the exposed new surface, to replace the removed outer portion of the cornea.

5,647,866

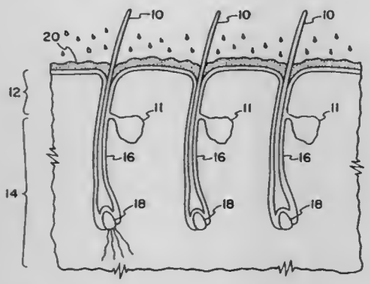
METHOD OF HAIR DEPILATION

Nardo Zaias, 36 Star Island, Miami Beach, Fla. 33139, and Thomas L. Mehl, Sr., 1015 Hwy. 337, Old Bronson Rd., Newberry, Fla. 32669

Continuation-in-part of Ser. No. 417,857, Apr. 7, 1995, abandoned, and Ser. No. 149,502, Nov. 9, 1993, abandoned. This application May 14, 1996, Ser. No. 645,868

Int. Cl.[6] A61W *5/00;* **A61B** *17/00*

U.S. Cl. 606—9 **15 Claims**



1. A method of hair depilation, comprising the steps of:
a) providing an augmentation compound that readily absorbs a selected wavelength of laser light energy;
b) encapsulating the augmentation compound within a liposimal carrier;
c) applying an effective amount of the encapsulated augmentation compound to a region of tissue to be depilated suffficient to cause the compound to accumulate within the dermis surrounding each hair follicle and respective papilla:
d) providing a laser light applicator capable of producing a wavelength of energy matched to the selected wavelength of absorption for the augmentation compound;
e) positioning the laser light applicator above the region of skin treated with the augmentation compound; and
f) applying a pulse of laser energy of the selected wavelength with the laser light applicator to the region of skin treated with the augmentation compound, the pulse of laser energy having a radiant exposure dose of sufficient energy and duration to cause damage to the hair follicle and papilla so that hair regrowth is prevented and surrounding tissue remains undamaged.

5,647,867

LASER ASSISTED DEVICE AND METHOD FOR RESECTOSCOPES

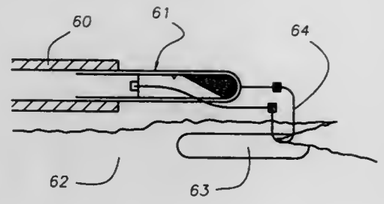
Wolfgang Neuberger, Mönchengladbach, Germany; Walter Cecchetti, Padova, Italy, and Carol Morello, Palmer, Mass., assignors to CeramOptec Industries, Inc., East Longmeadow, Mass.

Filed Apr. 26, 1995, Ser. No. 431,260

Int. Cl.[6] A61B *17/36*

U.S. Cl. 606—15 **4 Claims**

1. A medical device for use with standardly available resectoscopes which have distal and proximal ends and have at least one channel within said resectoscopes and where said resectoscope's distal end may be introduced into a living body and be positioned near an organ on which surgery is to be performed; said medical device comprising:
an elongated shape, having a distal end and a proximal end;
means for tissue removal;



means for laser radiation delivery from said device's proximal end to said device's distal end;
said means for tissue removal and said means for laser radiation delivery concurrently lying within said device's elongated shape and wherein said radiation delivery means and said tissue removal means may operate independently, sequentially or concurrently on said organ undergoing surgery;
said means for laser radiation delivery further comprises; an optical fiber having a proximal and a distal end; said proximal end being optically connected to a laser radiation source; and said distal end comprising a side firing tip to deliver said laser radiation to an area positioned substantially perpendicular to a longitudinal axis of said optical fiber; and
said distal end having an outside diameter in the range of about 1.0 mm to about 2.8 mm, such that said device's distal end can enter and pass freely through a channel within said standardly available resectoscope.

5,647,868

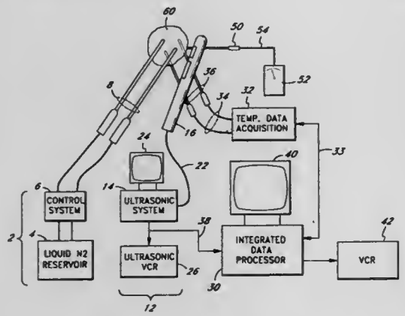
CRYOSURGICAL INTEGRATED CONTROL AND MONITORING SYSTEM AND METHOD

Douglas Owen Chinn, 65 N. 1st Ave., Ste. 101, Arcadia, Calif. 91006

Continuation of Ser. No. 190,264, Feb. 2, 1994, abandoned. This application Apr. 28, 1995, Ser. No. 430,294

Int. Cl.[6] A61B *17/36*

U.S. Cl. 606—21 **21 Claims**



1. A cryosurgical system for treating a defined internal area of a living body, the system including:
means for cryosurgically cooling a defined internal area of a living body;
means for measuring a temperature within the defined internal area of a living body as it is cryosurgically cooled by said cooling means, said temperature measuring means being spaced from said means for cryosurgically cooling;
means for illuminating the defined internal area of the living body as it is cooled by said means for cryosurgically cooling;
means for displaying an image of the living body area illuminated by the illuminating means as the defined internal area is cryosurgically cooled; and

means connected to the temperature measuring means for displaying the temperature of the defined internal area of a living body as it is cryosurgically cooled;
whereby the defined internal area of a living body may be cryosurgically treated.

5,647,869

ELECTROSURGICAL APPARATUS

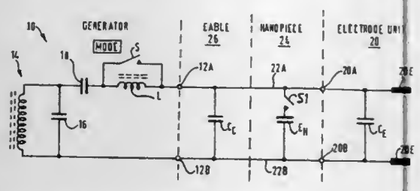
Nigel Mark Goble, Castleton, and Colin Charles Owen Goble, South Glamorgan, both of Wales, assignors to Gyrus Medical Limited, St. Mellons, United Kingdom

Filed Jun. 28, 1995, Ser. No. 496,208

Claims priority, application United Kingdom, Jun. 29, 1994, 9413070

Int. Cl.[6] A61B *17/39*

U.S. Cl. 606—37 **14 Claims**



1. Electrosurgical apparatus comprising:
an electrosurgical generator having a generator output coupled to an electrical load which includes an electrosurgical electrode unit, and
at least one coupling conductor which connects the electrode unit to the generator output,
wherein the generator has a resonant output network determining an operating frequency, and
wherein the resonant output network has an in-line output inductor connected in series with the coupling conductor, and
wherein the load is capacitive, the capacitance of the load and the output inductor together forming a series resonant output circuit having a resonant frequency which is higher than the operating frequency of the generator yet is not higher than twice the said operating frequency.

5,647,870

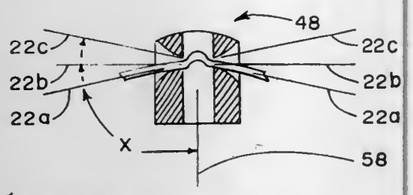
MULTIPLE ELECTRODE SUPPORT STRUCTURES

Thomas F. Kordis; Dorin Panescu, both of Sunnyvale, and James G. Whayne, Saratoga, all of Calif., assignors to EP Technologies, Inc., San Jose, Calif.

Continuation of Ser. No. 206,414, Mar. 4, 1994, abandoned, which is a continuation-in-part of Ser. No. 33,640, Mar. 16, 1993, abandoned. This application Jan. 16, 1996, Ser. No. 587,251

Int. Cl.[6] A61B *5/04*

U.S. Cl. 606—41 **27 Claims**



1. An electrode support structure comprising
a hub having an axis and a side wall located about the axis,
at least two diametrically opposed, generally flexible spline elements connected to the hub, the spline elements radiating outward from the side hub wall at an angle, measured relative to the hub axis, of between 45° and 110°, the spline elements having terminal ends spaced from the hub wherein the hub, includes a curved interior surface that contacts the spline elements when flexed a predetermined distance relative to the hub to establish a minimum bend radius for the spline elements,
a base connected to the terminal ends of the spline elements and being spaced from said hub a distance sufficient to cause said spline elements to flex into a predetermined three dimensional shape, and
an electrode carried by at least one of said spline elements.

5,647,871

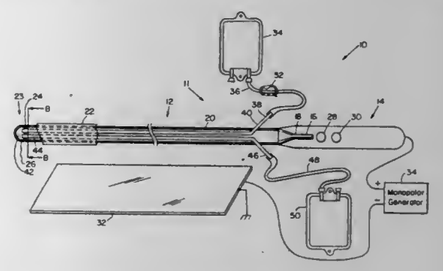
ELECTROSURGERY WITH COOLED ELECTRODES

Andy H. Levine, Newton Centre; John C. Meade, Walpole, and Philip R. Lichtman, Newton, all of Mass., assignors to MicroSurge, Inc., Needham, Mass.

Filed Mar. 10, 1995, Ser. No. 402,881

Int. Cl.[6] A61B *17/39*

U.S. Cl. 606—45 **12 Claims**



1. An electrosurgery system comprising:
an electrosurgical device having an electrode for applying electrical energy to tissue at a surgical site to heat and thus cut or stop bleeding of the tissue;
a cooling medium;
an internal cavity within the electrode for containing the cooling medium therein at the surgical site to cool the electrode; and
a gravity-fed closed circulation system that circulates the cooling medium through the internal cavity, the closed circulation system comprising:
a first container providing the cooling medium by gravity to the internal cavity, and
a second container collecting the cooling medium as it exits the internal cavity.

5,647,872

SPINAL SUPPORT PLATES

Stephen Gilbert, Warsaw, Ind.; Donald Chow, 14 Rideau Shorte Court, Nepean, Ontario, Canada; Robin Black, Calgary, Canada, and Gordon Armstrong, Merrickville, Canada, assignors to Donald Chow, Ottawa, Canada

PCT No. PCT/CA92/00009, § 371 Date Apr. 19, 1995, § 102(e) Date Apr. 19, 1995, PCT Pub. No. WO92/11819, PCT Pub. Date Jul. 23, 1992

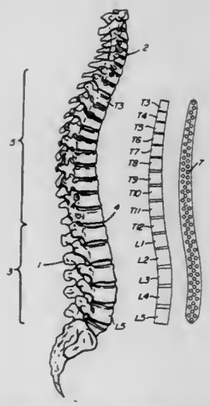
PCT Filed Jan. 10, 1992, Ser. No. 87,751

Claims priority, application Canada, Jan. 14, 1991, 2034126

Int. Cl.[6] A61B *17/56*

U.S. Cl. 606—61 **6 Claims**

1. A preformed spinal plate for fitting to a portion of the human spine, said plate comprising:
(1) an upper surface and a spine-opposing lower surface, said surfaces being bounded by outer side surfaces extending between sand upper and lower surfaces;



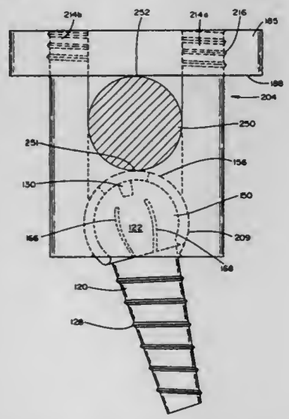
(2) said upper surface defining an imaginary median line extending longitudinally for the length of said plate and terminating at top and bottom end surfaces, said side surfaces being symmetrically disposed on either side of said median line;
(3) said lower surface being transversely concave in curvature about said longitudinal median line; and
(4) said side surfaces being tapered so as to progressively narrow as proceeding in the longitudinal direction defined by said median line towards said upper end surface,
wherein said median line is curved laterally with respect to said side surfaces while lying within a single plane.

5,647,873

BICENTRIC POLYAXIAL LOCKING SCREW AND COUPLING ELEMENT

Joseph P. Errico, Far Hills; Thomas J. Errico, Summit, and James D. Ralph, Oakland, all of N.J., assignors to Fastenetix, L.L.C., Summit, N.J.

Continuation-in-part of Ser. No. 421,087, Apr. 13, 1995, Pat. No. 5,520,690. This application Nov. 13, 1995, Ser. No. 559,197
Int. Cl.[6] A61B *17/70*
U.S. Cl. 606—61 **6 Claims**



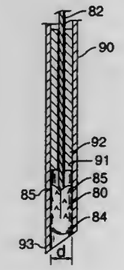
1. A polyaxial screw and coupling element assembly for use with orthopedic rod implantation apparatus, comprising:
a polyaxial screw having a semi-spherical head;
a bicentric locking shell, having at least one axial slot such that said locking collar may be expanded or contracted by the application of radial forces thereon, a curvate exterior surface, and a semi-spherical interior surface defining a semi-spherical volume in which said semi-spherical head may be initially polyaxially disposed so as to rotate and angulate relative thereto through a range of angles including non-perpendicular angles;
a coupling element including,
an axial bore through which said screw may be inserted, said bore having a narrowing curvate tapered bottom portion, said bottom portion forming a socket into which said bicentric locking shell may be initially nested so that both the screw and the shell may remain polyaxially disposed relative to each other and to the coupling element, and said shell further being compression lockable in said socket by the application of a downward force thereon such that the taper of the bore applies a radially inward compression force to close the at least one slot and crush lock said semi-spherical interior surface of the shell onto the semi-spherical head of the screw independent of the relative angulation of the screw or the shell to the coupling element,
a rod receiving channel, oriented transverse to said axial bore, in which the rod may be disposed and seated on a top surface of the shell, and
an upper portion having an exterior threading thereon; and
a top locking nut, mateable with said threading, for locking a rod in said channel and for applying therethrough the downward force necessary to compression lock the shell in the bottom socket portion of the axial bore whereby the screw head is crush locked to the interior surface of the shell.

5,647,874

ANCHORING AND MANIPULATING TISSUE

John O. Hayburst, 14751 SE. Wanda Dr., Milwaukie, Oreg. 97267, assignor to John O. Hayburst, Portland, Oreg.

Continuation of Ser. No. 715,113, Jun. 12, 1991, Pat. No. 5,601,557, which is a division of Ser. No. 192,813, Apr. 20, 1988, abandoned, which is a continuation-in-part of Ser. No. 848,341, Apr. 4, 1986, Pat. No. 4,741,330, which is a continuation of Ser. No. 496,116, May 19, 1983, abandoned, which is a continuation-in-part of Ser. No. 380,043, May 20, 1982, abandoned. This application Jun. 7, 1995, Ser. No. 487,009
Int. Cl.[6] A61B *17/56*
U.S. Cl. 606—72 **7 Claims**



1. A method for anchoring in bone a member and attached suture, comprising the steps of:
forming a hole in the bone;
attaching a suture to a member; and
lodging the member within the hole solely by pressing the member with attached suture into the hole so that the member becomes lodged therein in the absence of any manipulation of the member other than pressing the member with attached suture into the hole.

5,647,875

METHOD FOR PRODUCING A COLOR EFFECT ON TEXTILE MATERIAL

Michael W. Dixon, Dallas, N.C., assignor to Clariant Finance (BVI) Limited, Tortola, Virgin Islands (Br.)

Filed Dec. 2, 1994, Ser. No. 348,638
Int. Cl.[6] D06L *3/02*
U.S. Cl. 8—111 **43 Claims**

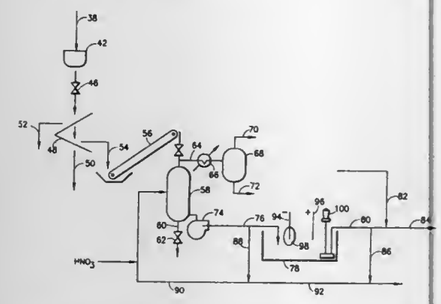
1. A method for producing a textile material having a desired color shade which comprises treating a dyed fibrous textile substrate, which has an initial color shade which is partly due to color caused by the presence of fibers dyed with a vat dye other than a sulfurized vat dye and partly due to color caused by the presence of fibers dyed with a sulfur dye which may be a sulfurized vat dye, with an amount of a chlorine-free decolorizing agent which is effective to change the color shade of said substrate from said initial color shade to said desired color shade by removing a proportion of the color attributable to the sulfur dye from fibers dyed therewith without removing as large a proportion of the color attributable to the vat dye.

5,647,876

METHOD OF REMOVING VOLATILE METALS FROM SLAG USING AN ACID WASH

John Duckett Winter, Yorba Linda; John Saunders Stevenson, San Pedro; Jerrold Samuel Kassman, Long Beach; Harry Clarence Wiese, Whittier; George Neal Richter, San Marino, all of Calif.; Lisa Marie Kocsis, Allen, Tex., and Rinaldo Ibbarola Salvaleon, Ontario, Calif., assignors to Texaco Inc., White Plains, N.Y.

Filed Sep. 26, 1995, Ser. No. 533,703
Int. Cl.[6] C22B *7/04*
U.S. Cl. 48—197 R **16 Claims**



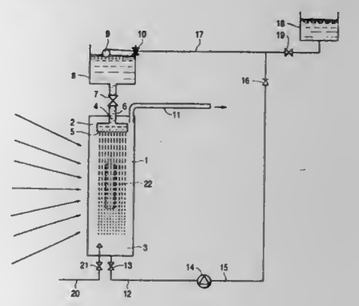
1. A method for the removal and recovery of volatile metals or compounds thereof adsorbed on the surface of slag particles from a gasification reaction, comprising:
(a) recovering slag particles from a gasification reaction, wherein the slag particles contain condensed volatile metals or compounds thereof adsorbed thereon;
(b) contacting the slag particles containing the adsorbed volatile metals with a mineral acid solution to dissolve the adsorbed volatile metals in the acid solution, and form an acid liquor containing dissolved volatile metal salts in the form of volatile metal cations and anions of the mineral acid, and a residue of acid washed slag particles;
(c) separating the acid washed slag particles from the acid liquor containing the dissolved volatile metal salts to form a substantially particle-free acid liquor;
(d) electrolyzing said particle-free acid liquor to reduce the dissolved volatile metal salt cations to their corresponding metal elements which deposit on a cathode immersed in the acid liquor and thereby form a spent acid liquor that is substantially free of the dissolved volatile metals; and
(e) recovering the volatile metals deposited on the cathode from the electrolysis step.

5,647,877

SOLAR ENERGY GASIFICATION OF SOLID CARBONACEOUS MATERIAL IN LIQUID DISPERSION

Michael Epstein, Rishon-LeZion, Israel, assignor to Yeda Research and Development Company Limited, Rehovot, Israel

Continuation-in-part of Ser. No. 270,676, Jun. 22, 1994, abandoned, which is a continuation of Ser. No. 996,170, Dec. 23, 1992, abandoned. This application Apr. 12, 1995, Ser. No. 420,767
Int. Cl.[6] C10J *3/46*
U.S. Cl. 48—210 **14 Claims**



1. A gasification process for the production of synthesis gas using solar energy, comprising:
providing a solar gasifier reactor capable of admitting concentrated solar radiation and having top and bottom regions;
directing concentrated solar radiation into said gasifying reactor to form a focal zone which produces a temperature sufficient for gasification therein;
continuously injecting into said gasifying reactor an aqueous dispersion holding particulate carbonaceous material enclosed within water droplets so that the droplets pass through said focal zone for a time sufficient for the formation of synthesis gas; and
withdrawing product synthesis gas from the reactor.

5,647,878

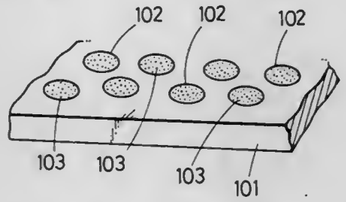
FABRICATION OF BRAZABLE IN AIR DIAMOND TOOL INSERTS AND INSERTS FABRICATED THEREBY

Charles D. Iacovangelo, Schenectady, and Elihu C. Jerabek, Glenmont, both of N.Y., assignors to General Electric Company, Pittsfield, Mass.

Division of Ser. No. 286,076, Aug. 4, 1994, Pat. No. 5,506,248. This application Jan. 5, 1996, Ser. No. 583,360
Int. Cl.[6] B24D *11/02*
U.S. Cl. 51—295 **14 Claims**

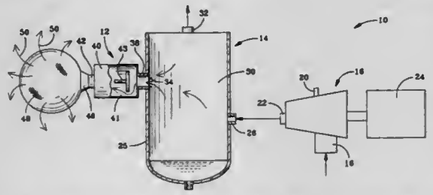
1. A dual coated diamond article which can be brazed in air to a substrate, said diamond article comprising:
a diamond substrate;
a tungsten and titanium metal layer bonded directly to said diamond substrate and forming an interface there between by the chemical reaction of titanium with the diamond to form titanium carbide; and
a substantially non-oxidizable protective layer comprising a braze compatible material dispersed on and adhered to said metal layer.

5,647,879
GRINDING MEDIA AND A PRODUCTION METHOD THEREOF
Kimito Kubo, Kasbihara, Japan, assignor to Kenko Sangyo Co., Ltd., Nara, Japan
Filed Aug. 30, 1994, Ser. No. 298,142
Claims priority, application Japan, Sep. 1, 1993, 5-242021
Int. Cl.[6] C09C *1/00*
U.S. Cl. 51—307 **4 Claims**



1. A grinding medium consisting essentially of a foamed synthetic resin matrix in which coarse powdery abrasives having a particle size larger than #220 and fine powdery abrasives having a particle size smaller than #240 are dispersed, wherein the weight ratio of said synthetic resin to said abrasives is within the range of 40:60 to 10:90 and the weight ratio of said coarse powdery abrasives to said fine powdery abrasives is within the range of 30:70 to 70:30.

5,647,880
PRESSURE RELIEF VALVE WITH FILTER
Jay T. Johnson, Concrod, N.C., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.
Filed Aug. 31, 1995, Ser. No. 522,217
Int. Cl.[6] B01D *46/00*
U.S. Cl. 55—310 **11 Claims**

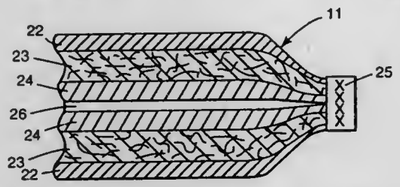


1. A pressure relief valve for both reducing pressure in the chamber of a vessel when the pressure of a mixed media combination comprised of gaseous and nongaseous components contained in the vessel chamber causes the vessel chamber pressure to be at a relief valve actuating pressure, and filtering nongaseous components from said mixed media combination, said pressure relief valve comprising:

a) a housing having an inlet port and a discharge port, said housing inlet port disposed in mixed media combination receiving communication with the vessel chamber, said housing defining a housing chamber and further including a valve member movable in the chamber between an occluding position, relative to the inlet when the vessel chamber pressure is not at the actuating pressure, and a non-occluding position, relative to the inlet, when the vessel chamber pressure is at the actuating pressure; and

b) filter means expandable by said mixed media combination when the vessel chamber pressure is at said actuating pressure, said means disposed in mixed media receiving relation with said discharge port, said filter means for filtering the nongaseous components from the mixed media combination and permitting said gaseous components to flow through said filter means.

5,647,881
SHOCK RESISTANT HIGH EFFICIENCY VACUUM CLEANER FILTER BAG
Zhiqun Zhang, Woodbury, and John C. Winters, Birchwood Village, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation-in-part of Ser. No. 425,292, Apr. 20, 1995, abandoned. This application Sep. 25, 1995, Ser. No. 533,001
Int. Cl.[6] B01D *46/02*
U.S. Cl. 55—382 **23 Claims**



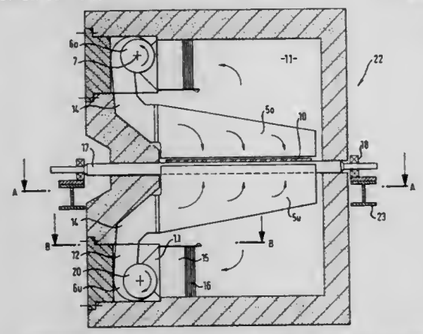
1. A vacuum cleaner filter bag resistant to shock loading comprising a flat filter laminate composite formed into the filter bag having at least one air inlet defining means in said flat filter laminate composite and at least one seam forming said flat filter laminate composite into said filter bag said flat filter laminate composite comprising;

a) an outer support layer of a porous material,

b) at least one charged fibrous filter layer containing electrets, and

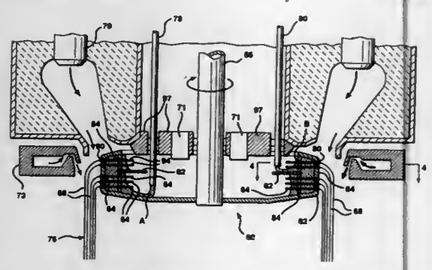
c) an inner diffusion layer which is unbonded to said filter layer except at the at least one seam, the diffusion layer having an air permeability of at least 50 $m^3/min/m^2$, a tensile strength of at least about 0.1 kg/cm, and formed of fibers having an effective fiber diameter of at least about 10 μm.

5,647,882
APPARATUS FOR THE HEATING OR COOLING OF PLATE-LIKE OR SHEET-LIKE FLAT GLASS
Volker Thiessen, Aachen, Germany, assignor to Cattin Machines S.A., Fonds, Switzerland
Filed Oct. 14, 1994, Ser. No. 322,987
Claims priority, application Germany, Oct. 25, 1993, 43 36 364.4
Int. Cl.[6] C03B *27/044*
U.S. Cl. 65—348 **13 Claims**



1. Apparatus for heating or cooling plate-shaped or strip-shaped flat glass having a glass surface in which the glass is blasted on both sides with a treatment gas, comprising at least one treatment zone for the glass surface moved approximately longitudinally in the direction of its plane, ejector ribs (5) arranged on both sides of the glass surface and transversely to the direction of movement of the glass surface for blowing out the treatment gas and several fans (6) for generating a treatment gas flow supplied to the ejector ribs, the treatment zone or a successive arrangement of such zones being formed as a closed treatment space (11), the apparatus further comprising at least two cross-flow fans per treatment zone provided as fans (6) which are arranged near one or both longitudinal edges of the treatment zone and/or near a longitudinal axis (8) of the treatment zone and with a fan axis (7) extending approximately parallel to the direction of movement of the glass surface (10), the cross-flow fans (6) being oriented such that their blowing connecting ducts (12) are inclined substantially toward the glass surface (10) and their suction connecting ducts (13) are substantially perpendicular to the glass surface in the treatment space (11), the fans (6), the blowing connecting ducts (12) and the suction connecting ducts (13) being located within the treatment space (11).

5,647,883
APPARATUS FOR MAKING HOLLOW MULTI-COMPONENT INSULATION FIBERS
Ronald A. Houpt, Newark; Larry J. Huey, Granville, and David C. K. Lin, Worthington, all of Ohio, assignors to Owens Corning Fiberglas Technology Inc., Summit, Ill.
Division of Ser. No. 309,706, Sep. 21, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 473,056
Int. Cl.[6] C03B *37/075;37/04*
U.S. Cl. 65—494 **19 Claims**



1. Apparatus for making multiple component hollow fibers suitable for use as an insulation product, said apparatus comprising:

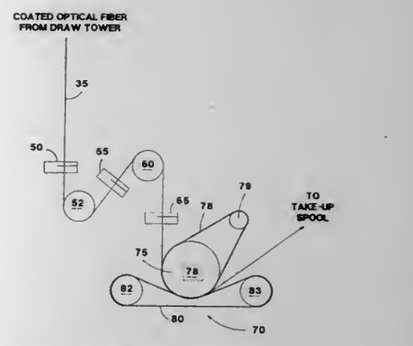
a rotary spinner with a housing having a wall with an interior and exterior and being divided into first and second compartments for receiving respectively first and second thermoplastic materials;

a plurality of nozzles associated with said wall, each nozzle including a first and a second passage through which a first and a second molten thermoplastic material respectively flow to an orifice to form a multiple component fiber, the first and second passages of said nozzle being respectively in fluid communication with said first and second compartments; and

a plurality of gas conduits associated with said wall, each conduit being operatively adapted for ingesting a gas into the molten thermoplastic materials flowing out of one said orifice to thereby form a multiple component hollow fiber.

5,647,884
APPARATUS FOR REDUCING DEFORMATION OF A COATING ON A COATED OPTICAL FIBER
Bob J. Overton, Lenoir, N.C.; Robert L. Roach, Sturbridge, Mass., and Adolphe R. Lopez, Denver, N.C., assignors to Alcatel NA Cable Systems, Inc., Claremont, N.C.
Filed Jan. 19, 1996, Ser. No. 588,974
Int. Cl.[6] C03B *7/01;37/02;* **C03C** *25/02;* **B29C** *47/34;55/00*
U.S. Cl. 65—533 **16 Claims**

1. An apparatus for drawing a coated optical fiber from a drawing tower, the coated optical fiber including a central fiber surrounded by at least one layer of protective coating material, the coating material being at an elevated temperature greater than ambient temperature, said apparatus comprising:



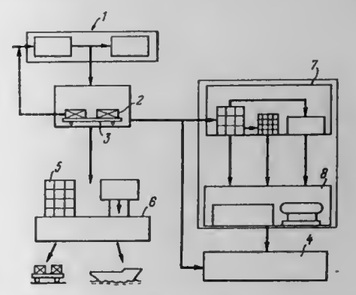
a rotating draw capstan having a cylindrical drawing surface; and

a capstan belt mounted on one or more capstan belt pulleys with a surface of said capstan belt in engagement with said surface of said draw capstan, said capstan belt being driven for rotation on said one or more capstan belt pulleys by rotational movement of said draw capstan;

wherein the coated optical fiber is drawn between said draw capstan and said capstan belt surface, and

wherein at least said surface of said capstan belt is manufactured of a belt material having a lower modulus of elasticity than the coating material on the coated optical fiber when the coating material is at said elevated temperature, such that during contact of said capstan belt surface with the coating material, said capstan belt surface will deform rather than the coating material.

5,647,885
METHOD OF COMPLEX PROVIDING USER WITH MINERAL SALTS AND/OR FERTILIZERS, AND SYSTEM FOR EFFECTING SAME
Alexandr Anatolievich Andreev, and Vyacheslav Evgenievich Bukovsky, both of Odessa, Ukraine, assignors to Nauchno-Inzhenerny Tsentr "Infomir", Odessa, Ukraine
PCT No. PCT/RU92/00256, § 371 Date Oct. 27, 1994, § 102(e) Date Oct. 27, 1994, PCT Pub. No. WO94/06729, PCT Pub. Date Mar. 31, 1994
PCT Filed Dec. 28, 1992, Ser. No. 331,495
Claims priority, application Russian Federation, Sep. 24, 1992, 5057974; Dec. 9, 1992, 92008492
Int. Cl.[6] C05C *9/00;1/00;* **C05D** *1/02*
U.S. Cl. 71—28 **5 Claims**

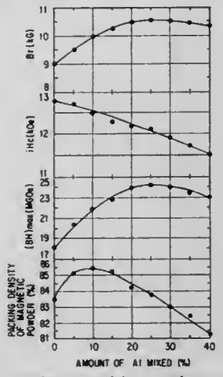


1. A method for providing an end product made from a mineral salt, a fertilizer, or a mixture thereof, comprising the steps of:

producing, by synthesis, an intermediate product starting from said mineral salt, fertilizer, or mixture thereof, said intermediate product being a pulp;

charging said pulp to a container at a temperature corresponding to the crystallization temperature of said intermediate product with formation of hydraulically compacted crystals;
transporting and storing of said hydraulically compacted crystals in said container; and
preparing a solution of said mineral salt, said fertilizer or mixture thereof from said hydraulically compacted crystals immediately prior to a use of said solution.

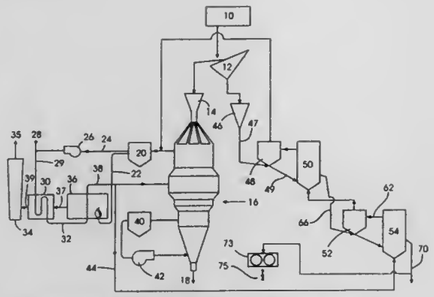
5,647,886
MAGNETIC POWDER, PERMANENT MAGNET PRODUCED THEREFROM AND PROCESS FOR PRODUCING THEM
Atsunori Kitazawa; Toshiyuki Ishibashi, and Koji Akioka, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan
Filed Sep. 8, 1994, Ser. No. 303,233
Claims priority, application Japan, Nov. 11, 1993, 5-282717; May 11, 1994, 6-097682
Int. Cl.[6] B22F *1/00*
U.S. Cl. 75—235 **28 Claims**



1. A magnetic powder comprising a mixture of two or more powders including a magnetic powder A having a residual magnetic flux density BrA and a coercive force HcA and a magnetic powder B having a residual magnetic flux density BrB and a coercive force HcB, wherein said residual magnetic flux densities and said coercive forces have the following relationships: BrA>BrB and HcA<HcB and said coercive forces have the following relationship: HcA=y·HcB wherein 0.1<y<1.

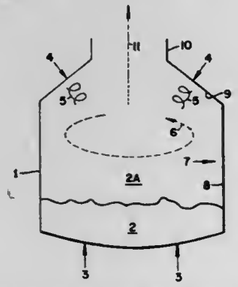
5,647,887
FLUIDIZABLE BED CO-PROCESSING FINES IN A DIRECT REDUCTION SYSTEM
David C. Meissner, Charlotte, N.C., assignor to Midrex International B.V. Rotterdam, Zurich Branch, Zurich, Switzerland
Continuation-in-part of Ser. No. 289,707, Aug. 12, 1994, Pat. No. 5,435,831. This application Apr. 13, 1995, Ser. No. 423,004
Int. Cl.[6] C21B *13/02*; C22B *5/14*
U.S. Cl. 75—436 **9 Claims**

1. A method for reducing iron oxide from a source consisting of iron oxide fines, pellets, lumps, or mixtures thereof, comprising the steps of:
(a) separating the iron oxide fines from pellets and lumps;
(b) conveying the pellets and lumps to a vertical shaft reducing furnace having an upper reducing zone, and a lower product discharge zone;
(c) conveying the separated iron oxide fines to a fluidizing means;



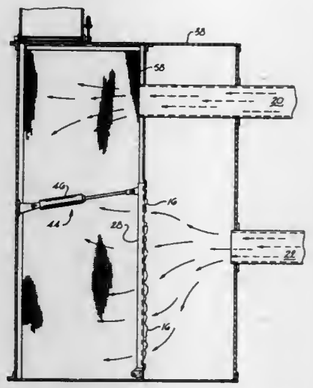
(d) conveying a reducing gas to the fluidizing means;
(e) fluidizing and reducing the iron oxide fines by contact with said reducing gas to form metallized iron fines; and
(f) collecting the reduced metallized iron fines.

5,647,888
PROCESS FOR PRODUCING METALS AND METAL ALLOYS IN A SMELT REDUCTION VESSEL
John Vincent Keogh, Camberwell; Robin John Batterham, Brighton, and Barry Stuart Andrews, Glen Iris, all of Australia, assignors to CRA Services Limited, Melbourne, Australia
Division of Ser. No. 934,460, Nov. 3, 1992, Pat. No. 5,489,325. This application May 2, 1995, Ser. No. 431,670
Claims priority, application Australia, Mar. 13, 1990, PJ9063
The portion of the term of this patent subsequent to Feb. 6, 2013, has been disclaimed.
Int. Cl.[6] C21B *11/00*
U.S. Cl. 75—443 **10 Claims**



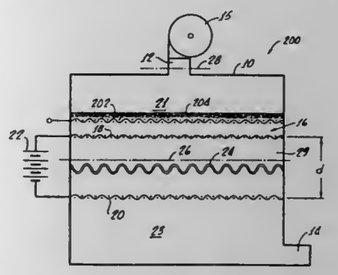
1. A process for producing metals and/or metal alloys by reducing metal oxides and/or ores, including partly prereduced ores and metal oxide-containing slags, in a smelt reduction vessel having a vertical axis, said smelt reduction vessel comprising a wall, said wall having a waste gas outlet, and a molten metal bath, said method comprising the steps of:
(a) supplying metal oxides and/or ores in fine-grained form into said smelt reduction vessel to form metals and/or metal alloys,
(b) supplying a coreactant selected from the group consisting of carbonaceous fuels and oxidizing gases, slag forming agents, and mixtures thereof into the molten metal bath below and/or from above the bath surface,
(c) forming metals and/or metal alloys and a waste gas from said metal oxides and/or ores and coreactants introduced into said molten metal bath said waste gases comprising a material selected from the group consisting of gases, solids, liquids, and mixtures thereof,
(d) imparting rotational motion to the waste gases, oxidizing gases, liquids and solids in a space above the bath surface about said vertical axis of the vessel thereby forcing liquid and solids outwardly toward said vessel wall, said rotational motion imparted by injecting at least a part of said oxidizing gases into said smelt reduction vessel towards said molten bath on an angle which is oblique in relationship to the vertical axis of said vessel,
(e) discharging said waste gases from the vessel through the outlet, wherein the dust loading rate from the molten metal bath through the outlet is reduced.

5,647,889
AIR HANDLING APPARATUS AND METHOD FOR TEXTILE MACHINES
Helmut Stueble, Spartanburg, S.C., assignor to LTG Lufttechnische GmbH, Spartanburg, S.C.
Filed Jun. 28, 1994, Ser. No. 267,570
Int. Cl.[6] B01D *33/01*
U.S. Cl. 95—20 **33 Claims**



1. An air handling apparatus for use with textile machines for separately filtering useable fiber material and waste fiber material without adversely interrupting operation of the textile machine, said apparatus comprising:
a common vacuum system, said common vacuum system configured for drawing first and second independent airstreams from said textile machine, said first airstream conveying generally useful white waste from said textile machine and said second airstream conveying generally trash waste from said textile machine;
a filtering system in pneumatic communication with said common vacuum system, said filtering system comprising filtering devices for separately filtering white waste from said first airstream and trash waste from said second airstream in a first configuration, and for combining said first and second airstreams in a second configuration wherein said second airstream is unfiltered and said first airstream is filtered or unfiltered, said filtering system further comprising:
a first filter device configured for filtering white waste from said first airstream in said first configuration;
a second filter device configured for separately filtering trash waste from said second airstream in said first configuration; and
a third filter device configured for commonly filtering at least trash waste from said combined first and second airstreams in said second configuration;
said trash waste being automatically removed from said second filter device in said second configuration while continuously drawing both of said first airstream and said second airstream; and
said apparatus further comprising a control device configured to automatically shift said filtering system between said first and second configurations.

5,647,890
FILTER APPARATUS WITH INDUCED VOLTAGE ELECTRODE AND METHOD
Yujiro Yamamoto, 1201 Via LaJolla, San Clemente, Calif. 92672
Continuation-in-part of Ser. No. 342,923, Nov. 21, 1994, Pat. No. 5,540,761, which is a continuation-in-part of Ser. No. 230,474, Apr. 20, 1994, Pat. No. 5,368,635, which is a continuation of Ser. No. 17,300, Feb. 12, 1993, abandoned, which is a continuation of Ser. No. 805,066, Dec. 11, 1991, abandoned. This application Jul. 25, 1996, Ser. No. 686,332
Int. Cl.[6] B03C *3/155*
U.S. Cl. 95—69 **19 Claims**



1. Filter apparatus for trapping particles suspended in a gaseous fluid stream, said filter apparatus comprising:
a) filter chamber means for defining an air flow path between an inlet and an outlet;
b) a porous filter positioned in said flow path, said porous filter comprising a material having a pore size substantially larger than the average diameter of the particles to be trapped, said filter having a collection surface thereon substantially larger than a cross-section of the flow path;
c) impelling means for causing said gaseous fluid stream and particles suspended therein to flow along said flow path and through said porous filter; and
d) first and second electrodes disposed with the porous filter therebetween and having means defining openings therein for enabling air flow therethrough;
e) means for applying a selected DC voltage across the first and second electrodes; and
f) a third electrode having means defining openings therein for enabling air flow therethrough; and
g) means for positioning and supporting said third electrode proximate said first and second electrodes in order to electrify, by induction, the third electrode with a voltage in said third electrode and increase trapping of the particles by the filter apparatus.

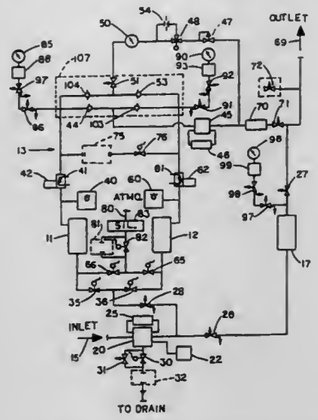
18. A method for trapping particles suspended in a gaseous fluid stream, said method comprising the steps of:
establishing a flow of a gaseous fluid with particles suspended therein;
passing the flow of gaseous fluid through a first, second and third electrode and a porous filter disposed between the first and second electrodes;
applying a voltage across the first and second electrodes in order to cause churning of the particles within the porous filter and trapping of the particles as the gaseous fluid passes through the porous filter; and
arranging the first, second and third electrodes in order to electrify, by induction, the third electrode with a voltage and increase the trapping of particles.

5,647,891

METHOD AND APPARATUS FOR HEATED, PRESSURE-SWING HIGH PRESSURE AIR DEHYDRATION

Ronald H. Blizzard, Annapolis; Cynthia T. Schell, Severna Park; Harry J. Skruch, Baltimore, all of Md., and Robert L. Stallings, Cary, N.C., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 22, 1995, Ser. No. 532,347
Int. Cl.[6] B01D *53/047*
U.S. Cl. 95—99 20 Claims



1. A process for adsorbing water vapor from hydrated gas so as to obtain dehydrated gas, said process comprising:

supplying a short-cycle dehydrator having at least one tower containing a desiccant which is characterized by relative inefficiency of adsorbing said water vapor from said hydrated gas and by relative efficiency of being desorbed of said water vapor, said dehydrator providing for at least one alternation of a desiccant adsorption cycle and a desiccant reactivation cycle, each said alternation not exceeding about one hundred twenty minutes duration;

introducing said hydrated gas into at least one said tower for effecting said desiccant adsorption cycle whereby said hydrated gas flows through each said tower at a relatively high pressure in a substantially upward direction, said water vapor is substantially adsorbed by said desiccant, and said dehydrated gas is discharged from said tower; and

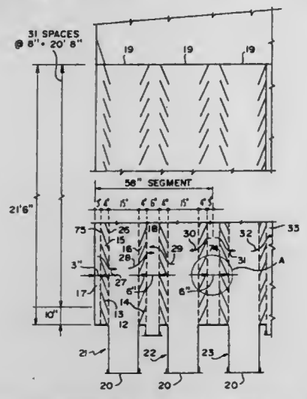
introducing purge fluid into at least one said tower for effecting said desiccant reactivation cycle whereby said purge fluid flows through said tower at a relatively low pressure in a substantially downward direction, said water vapor is substantially desorbed from said desiccant, and said purge fluid accompanied by some said water vapor is discharged from said tower, said introducing purge fluid including effecting a temperature increase of said purge fluid toward the beginning of said desiccant reactivation cycle and effecting a temperature decrease of said purge fluid toward the end of said desiccant reactivation cycle, said temperature decrease cooling said desiccant subsequent to said temperature increase, said temperature increase being to a temperature not exceeding about three hundred degrees Fahrenheit, said temperature increase not exceeding about seventy percent of the duration of said desiccant reactivation cycle, said temperature increase being of sufficiently long duration and to a sufficiently high temperature as to significantly boost desorption of said desiccant and being of sufficiently short duration and to a sufficiently low temperature as to minimally impair the adsorption efficiency of said desiccant.

5,647,892

METHOD FOR ACID GAS EMISSION CONTROL

John D. McKenna, Rocky Mount; Kenneth W. Appell; John C. Mycock, both of Roanoke, and Joseph F. Szalay, Braxburg, all of Va., assignors to ETS International, Inc., Roanoke, Va.

Division of Ser. No. 333,343, Nov. 2, 1994. This application Sep. 6, 1996, Ser. No. 709,158
Int. Cl.[6] B01D *53/02;53/06;53/12*
U.S. Cl. 95—110 12 Claims



1. A method for removing sulphur oxide gas from combustion flue gas which comprises:

a. providing an apparatus for removing sulphur oxide gas from combustion flue gas, said apparatus comprising at least one louvered gravity moving bed reactor having a top and a bottom for containing a moving bed of scrubbing particles which move downward in the bed from the top to the bottom due to the force of gravity and which are capable of reacting with flue gas to produce a solid reaction product; said reactor having a louvered inlet side and a louvered outlet side; said louvered inlet side and said louvered outlet side being spaced apart from each other thereby defining a volume for containing said scrubbing particles between said louvered inlet side and said louvered outlet side; said louvered inlet side having overlapping inlet louvers with spaces between the inlet louvers for the passage of flue gas therethrough into said reactor; said louvered outlet side having overlapping outlet louvers with spaces between the outlet louvers for the passage of said gas therethrough out of said reactor; means for wetting said scrubbing particles so that they are wet while they are in said reactor; means for flowing flue gas through said reactor whereby said flue gas enters the reactor through the louvered inlet side and exits said reactor on the louvered outlet side; said means for flowing flue gas through the reactor being means for flowing said gas through the reactor at a velocity to eject a portion of the scrubbing particles from the louvered outlet side of the reactor and said apparatus further including a chamber for the passage of flue gas therethrough; said chamber being located alongside the louvered outlet side of said reactor for receiving said flue gas which exits said reactor and for receiving scrubbing particles which are ejected from said louvered outlet side of the reactor; said chamber being sized so that the velocity of said gas which enters said chamber is insufficient to entrain at least a portion of the ejected scrubbing particles within the gas flowing through said chamber; said chamber having a bottom portion for collecting said ejected scrubbing particles;

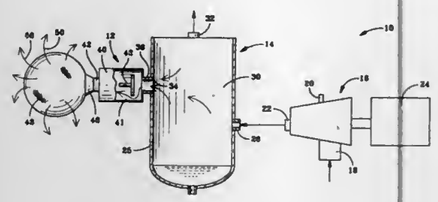
b. flowing said flue gas through a moving bed of wet limestone scrubbing particles which move by gravity downward through said reactor wherein flue gas enters said reactor through said louvered inlet side and exits said reactor through said louvered outlet side; said flue gas being flowed through said scrubbing particles contained in said reactor at a velocity which ejects a portion of the scrubbing particles from the louvered outlet side of the reactor and said flue gas flows through said chamber at a velocity which is insufficient to entrain at least a portion of the ejected scrubbing particles whereby said portion of said ejected particles falls to the bottom of said chamber as the gas flows therethrough.

5,647,893

METHOD FOR FILTERING LUBRICANT FROM A LUBRICANT/COMPRESSED GAS MIXTURE FLOWED THROUGH A PRESSURE RELIEF VALVE IN A COMPRESSOR

Jay T. Johnson, Concrod, N.C., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Division of Ser. No. 522,217, Aug. 31, 1995. This application Aug. 30, 1996, Ser. No. 706,036
Int. Cl.[6] B01D *37/00*
U.S. Cl. 95—284 4 Claims



1. A method of reducing pressure in a vessel chamber containing a mixed media combination comprised of gaseous and nongaseous components and filtering nongaseous components from the mixed media combination, said method comprised of the following steps:

a) flowing the mixed media combination from the vessel chamber when the pressure of the mixed media combination causes the pressure in the chamber to be at an actuating pressure;

b) moving a valve member in a pressure relief valve having an inlet, to a non-occluding position relative to the relief valve inlet, and flowing the mixed media combination through the valve to the filter means; and

c) flowing the mixed media combination into the filter means, thereby expanding the filter means, filtering nongaseous components from the mixed media combination flowed into the filter means and passing gaseous components through the filter means.

5,647,894

GAS SEPARATING COMPOSITE MEMBRANE AND PROCESS FOR PRODUCING THE SAME

Tomomi Ohara; Hisao Hachisuka; Ping Xu; Akira Shimazu, and Kenichi Ikeda, all of Osaka, Japan, assignors to Nitto Denko Corporation, Osaka, Japan

Filed Jun. 7, 1995, Ser. No. 478,519
Claims priority, application Japan, Jun. 8, 1994, 6-126487
Int. Cl.[6] B01D *53/22*
U.S. Cl. 96—13 12 Claims

1. A gas separating composite membrane comprising two types of polyimide resin layers having different molecular structures and each having solubility in an organic solvent different from each other, the two layers being laminated being substantially independent or via a mixed layer, the first polyimide resin layer comprising a porous polyimide supporting membrane having a nitrogen gas permeation flux density at 25° C. of at least 2 $Nm^3/m^2/h/atm$., and the second polyimide resin layer, which contributes to a gas separating performance, comprising a fluorine-containing polyimide thin film containing at least three fluorine atoms in a repeating molecular structure unit which constructs the second polyimide resin layer and having a thickness of 3 μm or less.

5,647,895

REDUCTION OF MICROORGANISMS IN KAOLIN CLAY SLURRIES

Sharon M. Drew; Jeffrey C. Bruns, both of Sandersville, and Jessica Elzea Kogel, Milledgeville, all of Ga., assignors to Thiele Kaolin Company, Sandersville, Ga.

Continuation of Ser. No. 331,323, Oct. 28, 1994, Pat. No. 5,496,398. This application Feb. 20, 1996, Ser. No. 603,058
Int. Cl.[6] A61L *2/02;2/16*
U.S. Cl. 106—15.05 9 Claims

1. A kaolin clay slurry having enhanced microbiological control and produced by a process which comprises the sequential steps of:

a. heating the slurry for at least 15 minutes at a temperature of at least 93° C.;

b. cooling the heated slurry to a temperature no greater than about 35° C.; and

c. adding a microbiocide to the cooled slurry, wherein the amount of microbiocide added is at least 20 ppm, based on the weight of commercial microbiocide product to total slurry weight.

5,647,896

COLOR-DEVELOPING AGENTS AND COLOR-DEVELOPING SHEETS

Takeshi Nishimura; Tomoko Kamashita; Masaru Wada; Teruyuki Nagata, all of Ohmuta; Yoshimitsu Tanabe, Yokohama; Kiyoharu Hasegawa, Yokohama, and Masakatsu Nakatsuka, Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Oct. 30, 1995, Ser. No. 544,986
Claims priority, application Japan, Nov. 8, 1994, 6-273963; Nov. 15, 1994, 6-280404; Nov. 18, 1994, 6-284738; Nov. 25, 1994, 6-290823; Dec. 13, 1994, 6-309153; Feb. 17, 1995, 7-029389; Mar. 23, 1995, 7-064407; Mar. 27, 1995, 7-067307
Int. Cl.[6] C09D *11/02*
U.S. Cl. 106—31.18 19 Claims

1. A color-developing agent comprising a multivalent metal salt of a salicylic acid derivative and a sulfonated phenol and/or a metal salt thereof.

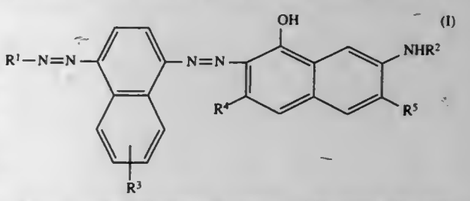
5,647,897

INK COMPOSITION FOR INK JET RECORDING

Yasuhiro Ouki; Miharu Kanaya; Hiroko Hayashi; Kiyohiko Takemoto, and Masaaki Itano, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo-to, Japan

Filed Oct. 31, 1995, Ser. No. 550,686
Claims priority, application Japan, Nov. 7, 1994, 6-272028; Jan. 18, 1995, 7-005857; May 23, 1995, 7-123971
Int. Cl.[6] C09D *11/02*
U.S. Cl. 106—31.49 19 Claims

1. An ink composition for ink jet recording, comprising a dye represented by the following formula (1), glycerin, pyrrolidone, a monohydric lower alcohol, a tri(hydroxyalkyl)amine, and water:



wherein R^1 represents phenyl or naphthyl, said phenyl and naphthyl groups may be substituted by a group selected from the group consisting of hydroxyl, $—NH_2$, $—SO_3M$ and —COOM wherein M represents hydrogen or a cation derived from an alkali metal, ammonia, or an amine,

R^2 represents carboxyalkyl in which the carboxyl group may form a salt with an alkali metal or ammonia; unsubstituted or substituted alkoxyalkyl, unsubstituted or substituted phenyl; or an alkanoyl, and

R^3, R^4 and R^5, which may be the same or different, independently represent hydrogen or $—SO_3M$ wherein M is as defined above,

except for the compound in which R^1 represents a phenyl group substituted by $—SO_3M$ when all of R^3, R^4 and R^5 represent $—SO_3M$; said ink composition further comprising at least one hydroxide of a metal selected from the group consisting of Group Ia and IIa metals of the Periodic Table of the Elements.

5,647,898

COMPOSITION AND PROCESS FOR SIZING PAPER

Patrick Fuertes, Lambersart; Anne Lambin née DelMotte, Lomme, and Jean-Louis Dreux, Estaires, all of France, assignors to Roquette Freres, Lestrem, France

Filed May 9, 1996, Ser. No. 644,844

Claims priority, application France, May 12, 1995, 95 05665

Int. Cl.[6] C09D *103/06;105/00*

U.S. Cl. 106—162.1 **16 Claims**

1. Composition for sizing paper and board, containing a cationic polysaccharide esterified by a dicarboxylic acid anhydride, wherein the said dicarboxylic acid anhydride is substituted with a carbon chain, saturated or unsaturated, of branched structure.

5,647,899

SEALING COMPOSITION FOR CONCRETE

Donald Victor Lightcap, Jr., Woodburn, Ind., assignor to Midwest Biologicals, Inc., Woodburn, Ind.

Filed Nov. 17, 1995, Ser. No. 560,438

Int. Cl.[6] C09D *191/00*

U.S. Cl. 106—244 **8 Claims**

1. Asealing composition effective for sealing a concrete surface to inhibit or prevent the passage of water comprising a non-refined vegetable oil, an emulsifier effective for providing a stable oil-in-water emulsion, and water, wherein said emulsifier comprises alkyl alcohol ethoxylates.

5,647,900

PREPARATION OF HYDROCARBON GELS FROM FERRIC SOURCES, POLYCARBOXYLIC ACID COMPOUNDS, AND OPTIONAL AMINES, IN COMBINATION WITH PHOSPHATE ESTERS

Kevin W. Smith, McMurray, and Leonard J. Persinski, Pittsburgh, both of Pa., assignors to Clearwater, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 592,592, Jan. 26, 1996, Pat. No. 5,614,010, which is a continuation-in-part of Ser. No. 580,171, Dec. 28, 1995, Pat. No. 5,571,315, which is a continuation-in-part of Ser. No. 360,438, Dec. 21, 1994, abandoned, which is a division of Ser. No. 209,266, Mar. 14, 1994, Pat. No. 5,417,287. This application Nov. 1, 1996, Ser. No. 743,007

Int. Cl.[6] C09K *7/06;* **E21B** *43/26*

U.S. Cl. 106—285 **21 Claims**

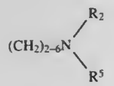
1. Method of fracturing a subterranean formation comprising adding to a hydrocarbon liquid to be used as a fracturing fluid (a) about 0.3% to about 1.5% by weight, based on the hydrocarbon liquid, of an organic phosphate of the formula HPO_4RR' where R is a straight or branch chain alkyl, aryl, alkoxy or alkaryl group having from 6 to about 18 carbon atoms and R' is hydrogen or an aryl, alkaryl, alkoxy or alkyl group having from 1 to about 18 carbon atoms, and (b) a composition comprising (i) ferric iron in an amount sufficient to form a gel with said organic phosphate in said hydrocarbon liquid, and (ii) a polycarboxylic acid or an alkali metal salt thereof, having from 2–12 carbon atoms and up to three amine groups, and fracturing a subterranean formation with said hydrocarbon liquid.

15. A viscous fracturing fluid comprising a hydrocarbon liquid including about 0.3% to 1.5% by weight of an organic phosphate gelling agent, about 0.1 to about 2.5 mole(s) of ferric iron for each mole of phosphate gelling agent, a polycarboxylic acid or alkali metal salt thereof in a weight ratio of 1:10 to 10:1 to the ferric iron, and up to ten times the weight of the ferric iron of an amine of the formula

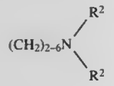


where R' is $(CH_2)_{2-6}R^4$, R^4 is H or OH, R^2 is $(CH_2)_{0-6}H$ or $(CH_2)_{2-4}OH$,

R^3 is R^2 or



and R^5 is R^2 or



5,647,901

HIGH LOADING, LOW-VISCOSITY MEDIUM FOR CERAMIC COATING COMPOSITION

Terry Joseph Brown, Pittsburgh, Pa., assignor to Cerdec Corporation, Washington, Pa.

Filed Dec. 14, 1994, Ser. No. 355,556

Int. Cl.[6] C08K *5/06;5/20;* **C03C** *8/16*

U.S. Cl. 106—311 **4 Claims**

1. In a medium for use in preparing a ceramic coating composition said medium comprising a solvent base of tripropylene glycol methyl ether in an amount of about 50% to 99% by weight, the improvement wherein the medium contains from about 0.1 to 50% by weight pantothenol.

5,647,902

STABILIZED CALCIUM CARBONATE COMPOSITION USING SODIUM CARBONATE AND MIXTURES OF ACIDS AND USES THEREFOR

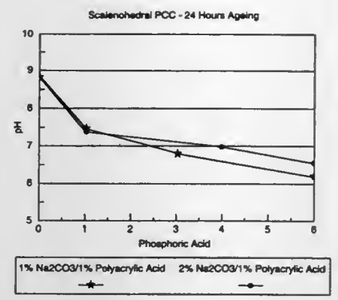
Kuan-Ting Wu, Sandersville, Ga., assignor to ECC International Inc., Roswell, Ga.

Filed Oct. 20, 1995, Ser. No. 546,493

Int. Cl.[6] C09C *1/02;* **D21H** *17/69*

U.S. Cl. 106—464 **11 Claims**

1. An acid resistant calcium carbonate comprising a mixture of about 1 to about 6 percent, based on the dry weight of the calcium carbonate, of sodium carbonate together with at least about 0.1 percent, based on the dry weight of the calcium carbonate, of a



mixture of two or more weak acids, in admixture with the calcium carbonate.

5,647,903

MICROPOROUS HIGH STRUCTURE PRECIPITATED SILICAS AND METHODS

Patrick D. McGill, 610 Snow Goose Ct., Havre de Grace, Md. 21078, and William Fultz, 1114 Telegraph Rd., Rising Sun, Md. 21911

Filed Oct. 3, 1995, Ser. No. 538,486

Int. Cl.[6] C09C *1/28;* **C01B** *33/154*

U.S. Cl. 106—492 **17 Claims**

1. A composition of matter comprising a finely divided silica having an oil absorption value about 50 to 60 cc/100 g, a wet cake moisture value in excess of 85%, a BET surface area of about 600 to 700 m^2/g and a total intruded volume of about 1.2 to 0.8 cc/g, and a median pore radius of about 50 Å to 20 Å as measured by mercury intrusion.

8. A method for producing a unique, high structure silica product having a total intruded volume of about 1.2 to 0.8 cc/g, and a pore median radius of about 50 Å to about 20 Å as measured by mercury intrusion, which comprises:

(a) providing an aqueous reaction medium containing an alkali metal silicate;

(b) adding an acidulating agent to said aqueous reaction medium maintained at a temperature of from about 86° F. to about 98° F. (30° to 37° C.);

(c) continuing to add said acidulating agent to said aqueous reaction medium to form a silica gel slurry having a pH between about 5.5 to about 5.8;

(d) digesting the reaction mixture by heating at the reaction temperature for a residence time of about 40 to 80 minutes; and

(e) collecting and washing the gel reaction product with water to provide the silica gel product.

5,647,904

METHOD FOR MANUFACTURING SUPERCONDUCTING CERAMICS IN A MAGNETIC FIELD

Shunpei Yamazaki, Tokyo, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, Japan

Division of Ser. No. 35,497, Mar. 22, 1993, abandoned, which is a continuation of Ser. No. 541,393, Jun. 21, 1990, abandoned, Division of Ser. No. 246,785, Sep. 20, 1988, Pat. No. 4,956,339. This application May 23, 1995, Ser. No. 447,520

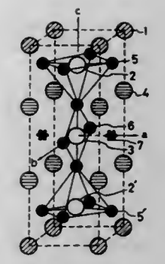
Claims priority, application Japan, Sep. 21, 1987, 63-236961

Int. Cl.[6] C30B *15/14*

U.S. Cl. 117—32 **4 Claims**

1. A method for forming an oxide superconducting material comprising the steps of:

introducing a raw material for forming an oxide superconducting material into a platinum crucible:



heating said raw material to a melting temperature thereof so that the raw material is transformed into a molten state;

placing a seed crystal in said melted raw material;

pulling said seed crystal so that crystals of said oxide material grown thereon; and

supplying oxygen to said crucible to form the oxide superconducting material.

5,647,905

APPARATUS FOR COATING ICE CONFECTIONERY WITH PARTICULATE MATERIAL

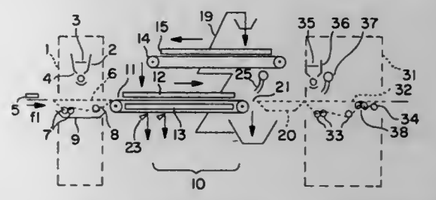
Francis-Victor Bertrand, Laversines, and Christian Mange, Beauvais, both of France, assignors to Nestec S.A., Vevey, Switzerland

Division of Ser. No. 243,816, May 17, 1994. This application May 12, 1995, Ser. No. 440,000

Claims priority, application European Pat. Off., Jun. 11, 1993, 93109364

Int. Cl.[6] A23G *9/24*

U.S. Cl. 118—16 **14 Claims**



1. An apparatus for coating an article of ice confectionery with particulate material comprising:

a coating unit comprising members for transporting articles of ice confectionery and for applying a liquid fatty material onto surfaces of the transported articles;

a conveyor comprising an endless belt which has an upper article transport run and a lower return run spaced apart one from the other and which is positioned for receiving articles from the unit for transporting the articles on the upper run;

a refrigeration table positioned below the belt upper run for cooling the upper run;

means positioned above the belt upper run for delivering a particulate material towards the upper run at a position on the upper run above the refrigeration table for covering upper and side surfaces of articles transported on the upper run with the particulate material for forming a bed of particulate material about the articles for obtaining articles which are coated with particulate material and positioned within the bed;

means positioned for separating the particulate material of the bed from the coated articles to recover excess particulate material; and

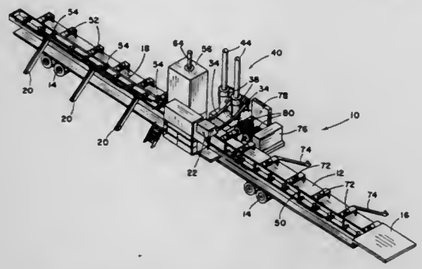
means for recycling the excess particulate material to the particulate material delivery means.

5,647,906

PIPE CLEANING MACHINE

John W. Monday, Dayton; Joseph C. Ottaviani, Kingwood, and Leonard R. Smith, Dayton, all of Tex., assignors to A-Z Terminal Corporation, Tulsa, Okla., and Leonard Smith, Dayton, Tex.

Filed Mar. 11, 1992, Ser. No. 851,688
Int. Cl.[6] B05C *13/00*
U.S. Cl. 118—70 **8 Claims**



1. A pipe cleaning station comprising:
an elongated incoming pipe feeder for receiving a length of pipe thereon to be cleaned and having means for axially advancing lengths of pipe placed thereon;
an environmentally secure cleaning station in axial alignment with said incoming pipe feeder having means for engaging the exterior surface of a length of pipe as it is passed from said incoming pipe feeder to clean the pipe;
an elongated pipe receiving system in axial alignment with said incoming pipe feeder, with said cleaning station therebetween, and having means to axially receive a length of pipe from said cleaning station and to, subsequently rearwardly axially move the length of pipe back through said cleaning station to said incoming pipe feeder, the pipe being thus passed twice through said cleaning station to produce cleaned lengths of pipe;
an elongated secondary pipe feeder system positioned parallel to and adjacent said incoming pipe feeder having means for axially advancing cleaned pipe thereon;
means for laterally transferring cleaned pipe from said incoming pipe feeder to said secondary pipe feeder system;
an environmentally secure coating booth in axial alignment with said secondary pipe feeder system having at least one spray nozzle therein for spraying a coating on the exterior surface of a length of cleaned pipe as it is passed therethrough from said secondary pipe feeder system;
an elongated outgoing pipe receiver system in axial alignment with said secondary pipe feeder system with said coating booth therebetween, the outgoing pipe receiver system being paralleled to and adjacent said pipe receiver system, the outgoing pipe receiver system having means to axially receive a length of pipe from said coating booth, lengths of pipe being laterally removable therefrom in cleaned and coated condition.

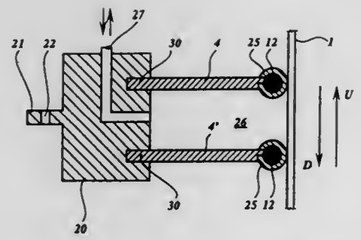
5,647,907

SQUEEGEE ASSEMBLY IN PARTICULAR INTENDED FOR COATING SUBSTANTIALLY CYLINDRICAL OBJECTS WITH A LIQUID OR PASTY MATERIAL

Antonius Maria van der Meulen, Helmond, Netherlands, assignor to Stork Screens B.V., Netherlands

Filed Oct. 20, 1994, Ser. No. 326,708
Claims priority, application Netherlands, Oct. 20, 1993, 9301820
Int. Cl.[6] B05C *1/00*
U.S. Cl. 118—100 **9 Claims**

1. An assembly for coating substantially cylindrical objects with a coating material, said assembly comprising:



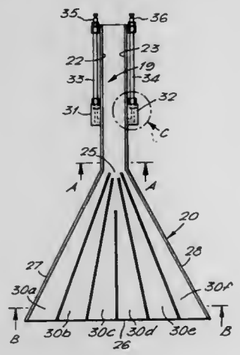
a first annular squeegee having an outer mounting edge and an inner leveling edge, wherein the leveling edge comprises ridges which define grooves, wherein the grooves from channels with a surface of an object being coated by said assembly;
a second annular squeegee having an outer mounting edge and an inner leveling edge; and
a feed means for feeding coating material onto an object being coated by said assembly,
wherein the first and second squeegees are mounted on a mounting block, and wherein the feed means has an opening located between said first and second annular squeegees.

5,647,908

APPLICATOR FOR SURFACE TREATMENT AGENT FOR CONTINUOUS CASTING PROCESS

Henry A. Hausmann, Strongsville; Robert O. Liodstrom, Bay Village, both of Ohio, and Thomas J. Russo, Kingsville, Md., assignors to Foseco International Limited, Birmingham, England

Filed Feb. 15, 1995, Ser. No. 388,687
Int. Cl.[6] B05B *7/00;7/14*
U.S. Cl. 118—308 **21 Claims**



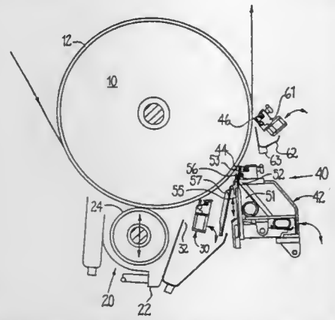
1. Apparatus to supply a particulate treatment agent onto the surface of molten metal of a continuous slab caster, said apparatus comprising an applicator for spreading the particulate treatment agent in particulate form onto said surface of molten metal of said continuous slab caster, agent feed means for supplying the particulate treatment agent to said applicator, gas feed means for supplying pressurized gas adjacent said applicator to enable gas feed in at least two directions so that the particulate treatment agent particles may be blown selectively to create a flow of the particulate treatment agent which flows in one or more direction to control the particulate treatment particles distribution over said molten metal surface, and control means for said gas feed means to enable said gas feed in each said direction to be independently controlled.

5,647,909

APPARATUS FOR APPLYING COATING TO PAPER WEB INCLUDING SUCCESSIVE DOCTORING STEPS

Wayne A. Damrau, Wisconsin Rapid, and Michael A. Mayer, Plover, both of Wis., assignors to Consolidated Papers Inc., Wisconsin Rapids, Wis.

Division of Ser. No. 260,488, Jun. 15, 1994, which is a continuation of Ser. No. 881,677, May 12, 1992, abandoned, which is a continuation-in-part of Ser. No. 648,655, Jan. 31, 1991, Pat. No. 5,112,653, which is a continuation-in-part of Ser. No. 375,241, Jul. 3, 1989, abandoned. This application Jun. 7, 1995, Ser. No. 475,288
Int. Cl.[6] B05C *5/02*
U.S. Cl. 118—416 **28 Claims**



1. Apparatus for coating a high speed moving web of paper comprising
means for supporting the moving web,
means forming a coating liquid receiving chamber extending substantially across and parallel to the supported web, said chamber defining a narrow application zone having front, rear, and side edges and facing toward and extending across the supported web,
means for delivering coating liquid to said chamber and into said application zone for distribution over the supported web,
a first doctor blade located at the rear edge of said application zone for doctoring the coating liquid on the supported web,
means for biasing said first doctor blade against the coated web at a relatively low doctoring pressure to doctor to the web a generally uniform and relatively quiescent layer of coating liquid sufficiently thicker than the wet film thickness of the coating ultimately to be retained on the web to accomodate a subsequent final wet film blading of such thicker layer,
a second doctor blade spaced downstream from the first named doctor blade for engagement with the coated supported web at a location that is physically and hydrodynamically isolated from said application zone, and
means for biasing said second doctor blade against the coated web at a second doctoring pressure to remove excess coating liquid from the web and level and smooth the retained coating to final wet film thickness and smoothness.

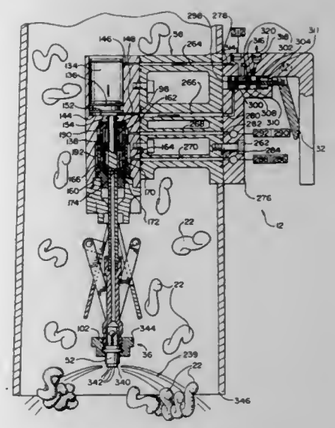
5,647,910

APPARATUS FOR DELIVERING LOOSE FILL PACKAGING MATERIAL AND APPLYING AN ADDITIVE THERETO

Daniel P. Brown, Palos Park, Ill., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 31, 1990, Ser. No. 472,728
Int. Cl.[6] B05C *5/00*
U.S. Cl. 118—710 **21 Claims**

1. An apparatus for controllably delivering discrete loose fill dunnage particles from a supply thereto to a packaging site and for applying an additive to at least a portion of an exposed surface on a plurality of particles to cause abutting particles to adhere to each other, said apparatus comprising:



a conduit having an inside wall surface defining a vertical conveying path for loose fill particles, an inlet end communicating with the loose fill particle supply, and an outlet end for discharging loose fill particles conveyed from said supply through said conduit to the packaging site, said inlet end and outlet end being vertically spaced so that loose fill particles convey by gravity only between the conduit inlet and outlet ends;
means for applying an additive to the loose fill particles as they are conveying between said supply and the packaging site, said additive applying means including a substantially radially centered nozzle means for producing an umbrella-shaped shower pattern of additive through which a plurality of loose fill particles conveying between said supply and the packaging site pass; and
means for delivering an additive under pressure through said nozzle means, said nozzle means having an outlet residing above the conduit outlet end and in relationship to the outlet end of the conduit so that additive is propelled from said nozzle means directly to the packaging site through the outlet end of the conduit, whereby the additive propelled directly to the packaging site does not contact the inside wall surface of the conduit to thereby reduce additive buildup on the inside wall surface of the conduit,
there being an unobstructed radial path between the nozzle means and the inside wall surface of the conduit so that conveying particles can enter the additive delivered by the nozzle means immediately adjacent the nozzle means and at least part of the conveying particles are treated with additive prior to discharging from the outlet end of the conduit.

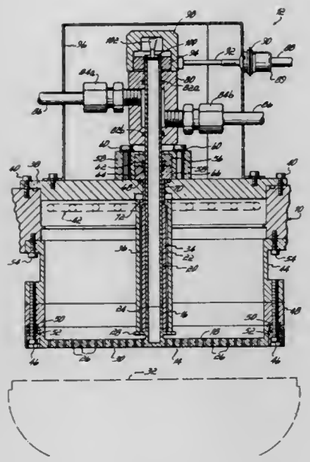
5,647,911

GAS DIFFUSER PLATE ASSEMBLY AND RF ELECTRODE

James Vanell, Tempe, and Al Garcia, Gilbert, both of Ariz., assignors to Sony Corporation, Tokyo, Japan, and Materials Research Corp., Gilbert, Ariz.

Filed Dec. 14, 1993, Ser. No. 166,745
Int. Cl.[6] C23C *16/00;* **F22B** *13/00;* **F28D** *15/00;* **H01B** *7/34*
U.S. Cl. 118—715 **16 Claims**

1. An improved gas diffuser plate assembly, comprising:
a gas diffuser plate for use in chemical vapor deposition (CVD) processing;
a heat pipe mounted to said gas diffuser plate for controlling the temperature of said gas diffuser plate during said CVD processing; and



at least one isolator tube surrounding at least a portion of said heat pipe.

5,647,912

PLASMA PROCESSING APPARATUS

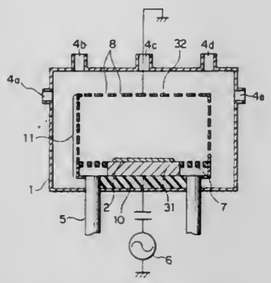
Takahiro Kaminishizono, and Takeshi Akimoto, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Apr. 1, 1996, Ser. No. 617,731

Claims priority, application Japan, Mar. 31, 1995, 7-075105

Int. Cl.[6] C23C *16/00*

U.S. Cl. 118—719 **12 Claims**



1. A plasma processing apparatus comprising:

a first container having a gas intake portion and a gas exhaust portion;

a second container disposed within said first container and having a plurality of holes for permeability, said holes having diameters equal to or less than two times a sheath length of plasma to be produced;

a first electrode constituting a part of said second container, an object to be processed being placed on said first electrode; and

voltage applying means for applying a high-frequency voltage between said first electrode and said second container.

5,647,913

PLASMA REACTORS

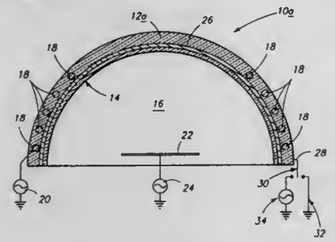
Guy Blalock, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Division of Ser. No. 253,115, Jun. 2, 1994, Pat. No. 5,514,246.

This application May 25, 1995, Ser. No. 450,392

Int. Cl.[6] C23C *16/00*

U.S. Cl. 118—723 I **3 Claims**



1. A plasma reactor comprising:

an electrically insulative shell forming a reactor cavity, the reactor cavity having internal walls;

inductive coupling means positioned externally of the cavity for inductively generating and transmitting electromagnetic radiation into the reactor cavity to ionize gas therein into a plasma state the inductive coupling means comprises conductive coils which are externally positioned relative to the insulative shell;

capacitive shielding means positioned externally of the cavity for shielding the reactor cavity from capacitive electrostatic charge during semiconductor wafer processing;

capacitive cleaning means positioned externally of the cavity for capacitively generating and transmitting electromagnetic radiation into the reactor cavity to ionize gas therein into a plasma state, and for drawing plasma ions in the direction of the capacitive coupling means to impact and clean material adhering to the reactor cavity internal walls, the capacitive coupling means and electrostatic shielding means comprising a dual function conductive plate switchable between a grounded condition in which the capacitive coupling plate shields the reactor cavity from capacitive electrostatic charge and a conductively powered condition in which the capacitive coupling plate ionizes gas into a plasma state and draws plasma ions into the direction of the conductive plate, the conductive plate having openings therethrough, and the conductive plate being externally positioned relative to the reactor shell and intermediate the conductive coils and the insulative shell; and

a switch selectively switching the dual function conductive plate between the grounded condition and the conductively powered condition.

5,647,914

NONAQUEOUS SOLVENT REGENERATING METHOD FOR USE IN CLEANING

Mitsuo Goto, Yokohama; Kunihiko Uzawa, Machida; Masahiro Itakura, Kamiina-gun, and Masamichi Hijino, Hachiohji, all of Japan, assignors to Olympus Optical Co., Ltd., Japan

PCT No. PCT/JP94/01225, § 371 Date May 17, 1995, § 102(e) Date May 17, 1995

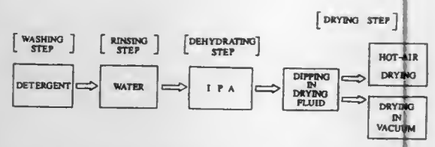
PCT Filed Jul. 26, 1994, Ser. No. 436,233

Int. Cl.[6] B08B *3/08;3/14*

U.S. Cl. 134—10 **8 Claims**

1. A method of cleaning and a method of regenerating a nonaqueous solvent that it is substantially immiscible with water comprising the steps of:

sequentially subjecting a material to be cleaned to washing with an aqueous cleaning agent, rinsing off the aqueous cleaning agent with water, replacing the water adhering to the material with a hydrophilic solvent, replacing the hydrophilic solvent adhering to the material with a nonaqueous solvent and drying, and contacting the nonaqueous solvent with a separation fluid thereby to regenerate the nonaqueous solvent.



5,647,915

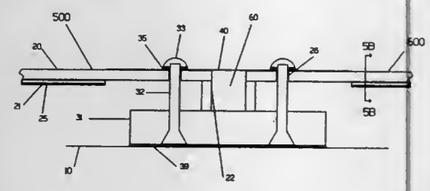
SOLAR ENERGY PANEL

Charles Zukerman, 806 Cypress Grove La., Apt. #102, Pompano Beach, Fla. 33060

Filed Jun. 13, 1996, Ser. No. 663,512

Int. Cl.[6] E04D *13/18;* **H01L** *31/048*

U.S. Cl. 136—251 **9 Claims**



1. A combined solar energy panel and roofing element, adapted to be mounted on a roof of a building, comprising:

(a) a polymeric sheet which is at least partially transparent to light, having top and bottom surfaces and a plurality of edges, wherein electrically interconnected photovoltaic cells are provided at the bottom surface of the sheet;

(b) at least one support element attached to the bottom surface of the sheet and extending downwardly therefrom, said at least one support element attached proximate to and contiguous with the edges of the sheet;

(c) a plurality of anchor blocks adapted to be attached to the roof; and

(d) a plurality of connectors connecting the sheet to the plurality of anchor blocks, such that said at least one support element rests upon at least one block.

5,647,916

HYBRID PHOTOVOLTAIC SOLAR PANELS

Guido E. Guazzoni, Ocean, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 14, 1995, Ser. No. 594,826

Int. Cl.[6] H02N *6/00;* **H01L** *31/045*

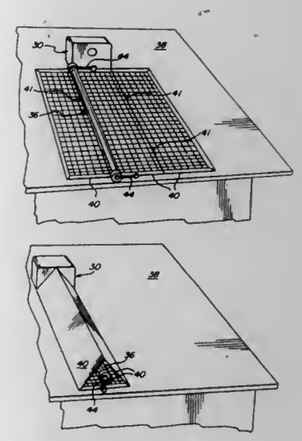
U.S. Cl. 136—253 **16 Claims**

1. An on-demand electricity generating system comprising:

a photovoltaic cell;

a mantle movably mounted with respect to said photovoltaic cell; and

positioning means, attached to said mantle, for positioning said mantle for efficient illumination of said photovoltaic cell, wherein said positioning means includes a movable arm attached to said mantle.



5,647,917

EPITAXY FOR GROWING COMPOUND SEMICONDUCTORS AND AN INP SUBSTRATE FOR EPITAXIAL GROWTH

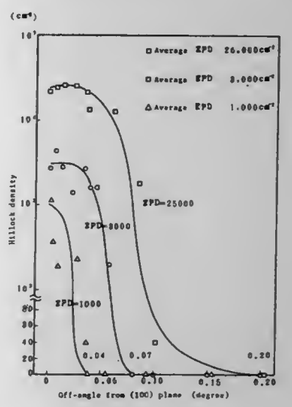
Kazuhiko Oida, and Ryusuke Nakai, both of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Sep. 7, 1995, Ser. No. 525,423

Claims priority, application Japan, Sep. 8, 1994, 6-240680

Int. Cl.[6] H01L *29/12*

U.S. Cl. 148—33.4 **20 Claims**



1. An epitaxy for growing compound semiconductors comprising the steps of:

measuring a defect density D (cm^{-2}) of an InP ingot;

determining an inclination angle Θ in degrees from a (100) plane by using an inequality $\theta \geq 1 \times 10^{-3} D^{1/2}$;

cutting at least one substrate from the InP ingot in such a manner that the at least one substrate satisfies the inequality; and

growing at least one compound semiconductor film on the at least one InP substrate by a vapor phase epitaxial growth method.

5,647,918

BAINITE WIRE ROD AND WIRE FOR DRAWING AND METHODS OF PRODUCING THE SAME

Akifumi Kawana; Hiroshi Oba; Ikuo Ochiai, and Seiki Nishida, all of Chiba, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

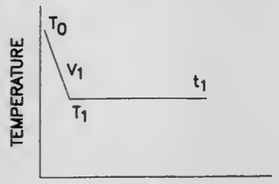
PCT No. PCT/JP94/00575, § 371 Date Oct. 5, 1995, § 102(e) Date Oct. 5, 1995, PCT Pub. No. WO94/23086, PCT Pub. Date Oct. 13, 1994

PCT Filed Apr. 6, 1994, Ser. No. 532,755

Claims priority, application Japan, Apr. 6, 1993, 5-079899

Int. Cl.[6] C21D *8/06*; C22C *38/14*

U.S. Cl. 148—320 **7 Claims**



1. Bainite wire rod or wire for drawing which consists essentially of, in weight percent,

C: 0.70–1.20%,

Mn: 0.30–0.90% and

Si: 0.15–1.00%,

further consisting of, as alloying components, one or both of

Al: 0.006–0.100% and

Ti: 0.01–0.35%,

is limited to

P: not more than 0.02% and

S: not more than 0.01%,

the remainder being Fe and unavoidable impurities, and which has a microstructure of not less than 80% upper bainite texture in terms of area ratio and an Hv of not more than 450, and has tensile strength and reduction of area determined by the following equations (1) and (2),

$$TS \leqq 85\times(C)+60 \quad (1)$$

$$RA \geqq -0.875\times(TS)+158 \quad (2)$$

where

C: carbon content (wt %),

TS: tensile strength (kgf/mm^2), and

RA: reduction of area (%).

5,647,919

HIGH STRENGTH, RAPIDLY SOLIDIFIED ALLOY

Kazuhiko Kita, Uozu, and Hidenobu Nagahama, Kurobe, both of Japan, assignors to YKK Corporation, Tokyo, Japan

Continuation of Ser. No. 7,570, Jan. 22, 1993, abandoned. This application Oct. 5, 1994, Ser. No. 318,531

Claims priority, application Japan, Feb. 14, 1992, 4-028022

Int. Cl.[6] C22C *21/00*

U.S. Cl. 148—437 **4 Claims**

4. A high strength, rapidly solidified alloy of the general formula

$$Al_{100-a-b-c}X_aM_bQ_c$$

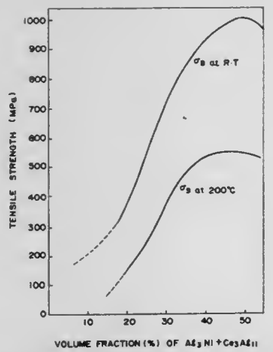
wherein X represents at least one element selected from among La, Ce, Mm, Zr, Ti and Y;

M represents at least one metal selected from Ni and Co;

Q represents at least one element selected from among Mg, Si, Cu and Zn;

a, b and c are each an atomic %, provided that $0.1 \leqq a \leqq 5$, $5 \leqq b \leqq 10$ and $0.1 \leqq c \leqq 2$;

the volume fraction of an Al-X intermetallic compound is 1 to 30%; and



the volume fraction of an Al-M intermetallic compound is 19 to 40%, wherein the mean crystal grain size of the aluminum is from 40 to 1000 nm, the mean particle size of a stable or metastable phase of various intermetallic compounds formed from the aluminum and an additive element and/or various intermetallic compounds formed from additive elements themselves is 10 to 800 nm, and the intermetallic compound particles are distributed in a volume fraction of 20 to 50% in a matrix consisting of the aluminum, the Al-X intermetallic compound comprising at least one of Ce_3Al_{11}, Al_4Ce, Mm_3Al_{11}, Al_3Ti and Al_3Zr and the Al-M intermetallic compound comprising at least one of Al_3Ni and Al_9CO_2, said alloy having a tensile strength at room temperature of at least 658 MPa and an elongation at room temperature of at least 2%.

5,647,920

PROCESS FOR PREPARATION OF CORROSION-RESISTANT AND WEAR-RESISTANT ALLOY

Kyoichi Sasaki, and Masaki Shimada, both of Numazu, Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo-to, Japan

Continuation of Ser. No. 730,810, Jul. 29, 1991, abandoned. This application Nov. 15, 1993, Ser. No. 151,771

Int. Cl.[6] C21D *5/00*

U.S. Cl. 148—512 **6 Claims**



(X 400)

1. A process for producing a surface-modified metal member having improved corrosion resistance and wear resistance, comprising the steps of:

supplying a powdery mixture consisting essentially of a powder of at least one matrix metal selected from the group consisting of Fe-based alloys, Co-based alloys and Ni-based alloys and a vanadium carbide powder to the surface of a base material constituting the metal member, in the case where said matrix metal comprises Fe-based alloys, said vanadium carbide powder being incorporated in an amount of up to 10% by weight, in the case where said matrix metal comprises Co-based alloys or Ni-based alloys, said vanadium carbide powder being incorporated, respectively, in an amount of up to 70% by weight; and

heat treating the powdery mixture by heating it to at least the melting point of said vanadium carbide, thereby forming a built-up alloy layer on the surface of the base material, the heat treating comprising the steps of:

weaving a plasma arc thereby to repeatedly fuse said powdery mixture and the surface of the base material, and

cooling them to form the built-up alloy layer on the surface of the base material and re-fusing the thus formed built-up alloy layer so as to form a phase of uniform and fine vanadium carbide particles recrystallized and redeposited in the matrix metal phase, said cooling being carried out at a cooling speed of at least about 100° C./sec, the particle size of said uniform and fine vanadium carbide particle phase recrystallized and redeposited in the matrix metal phase being smaller than 10 μm and an area ratio of the vanadium carbide particle phase to the entire alloy phase of the built-up alloy layer being at least 10%.

5,647,921

PROCESS FOR PRODUCING AND AMORPHOUS ALLOY RESIN

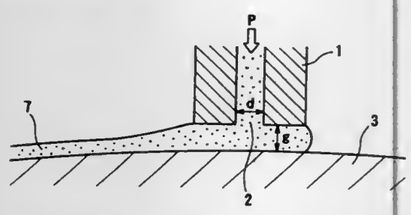
Kenji Odagawa, and Hiroshi Watanabe, both of Sodegaura, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 292,970, Aug. 22, 1994, abandoned. This application Apr. 23, 1996, Ser. No. 636,822

Claims priority, application Japan, Aug. 23, 1993, 5-207677; Mar. 10, 1994, 6-40049

Int. Cl.[6] C22C *45/02*

U.S. Cl. 148—561 **2 Claims**



2. A process for producing an amorphous alloy ribbon by the single roll method, which comprises injecting through a slot disposed at a nozzle tip, a molten alloy having the composition represented by the general formula:

$$Fe_{100-x-y-z-b}Cu_xSi_yB_zM'b$$

wherein M' is at least one element selected from the group consisting of Nb, Mo, W and Ta, ar ł x, y, z and b satisfy the relationship: $0.5 \leqq x \leqq 2$ (atomic %), $5 \leqq y \leqq 20$ (atomic %), $5 \leqq z \leqq 11$ (atomic %), $14 \leqq y+z \leqq 25$ (atomic %) and $2 \leqq b \leqq 5$ (atomic %), provided that the ratio of y to z (y/z) is in the range of $0.5 \leqq y/z \leqq 3$, onto a rotating cooling wheel comprising a Cu alloy containing Be in an amount of 0.05 to 3.0% by weight, and rotating at a surface velocity in the range of from 10 m/see to 40 m/sec; and wherein the injection pressure (P) (gauge) of the molten alloy is in the range of from 0.30 to 0.40 kgf/cm^2.

5,647,922

PROCESS FOR MANUFACTURING HIGH MANGANESE HOT ROLLED STEEL SHEET WITHOUT ANY CRACK

Tai Woung Kim, Pohang; Young Gil Kim, Seoul, and Shin Hwa Park, Pohang, all of Rep. of Korea, assignors to Pohang Iron & Steel Co., Ltd., and Research Institute of Industrial Science & Technology, both of Pohang, Rep. of Korea

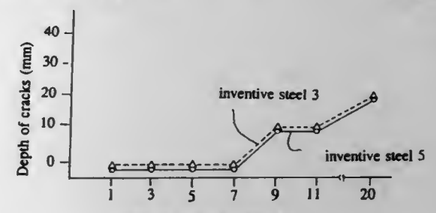
PCT No. PCT/KR95/00027, § 371 Date Nov. 22, 1995, § 102(e) Date Nov. 22, 1995, PCT Pub. No. WO95/26423, PCT Pub. Date Oct. 5, 1995

PCT Filed Mar. 25, 1995, Ser. No. 553,334

Claims priority, application Rep. of Korea, Mar. 25, 1994, 1994/6071

Int. Cl.[6] C21D *7/13*

U.S. Cl. 148—620 **6 Claims**



1. A process for manufacturing a crack-free hot rolled high manganese steel sheet, comprising the steps of:

preparing a steel ingot or a continuous casting slab comprising in weight %: less than 1.5% of C, 15.0–35.0% of Mn, 0.1–6.0% of Al, and balance of Fe and incidental impurities; and further comprising one or more elements selected from a group consisting of 0.0005–0.04% of B, 0.0005–0.050% of Ti, 0.0005–0.050% of Zr, 0.0005–0.040% of La, 0.0005–0.040% of Ce, and 0.0005–0.030% of Ca;

heating the ingot or the continuous casting slabs of the said steel to a temperature range of 1150°–1300° C.;

hot rolling by applying a low reduction ratio below 7% per pass and an average strain rate below 2.0 sec^{-1} per pass, until a total reduction ratio reaches 40%; and

hot rolling by applying a high reduction ratio after reaching said total reduction ratio of 40%.

5,647,923

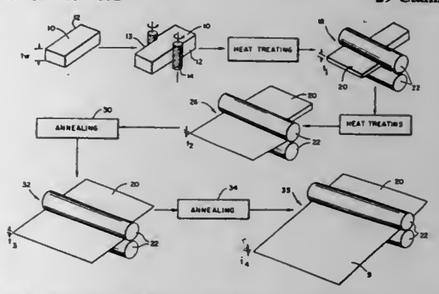
METHOD FOR PRODUCING REFRACTORY METAL FOIL

Conor Buescher, Albany, Oreg., assignor to Teledyne Industries, Inc., Albany, Oreg.

Filed Jul. 13, 1995, Ser. No. 501,926

Int. Cl.[6] C22F *1/18*

U.S. Cl. 148—672 **29 Claims**



1. A method for producing a refractory metal foil from a workpiece fabricated of a refractory metal material, the workpiece having a workpiece thickness of at least 2.5 inches and a pair of oppositely disposed, parallel lateral edges, comprising the steps of:

(a) heat treating the workpiece for a first time period selected from a first time range of approximately 1.2 hours and 1.8 hours at a first temperature selected from a first temperature range of approximately 2,625° Fahrenheit and 2,675° Fahrenheit and subsequently for a second time period selected from a second time range of approximately 1.7 hours and 2.3 hours at a second temperature selected from a second temperature range of approximately 2,175° Fahrenheit and 2,225° Fahrenheit;

(b) forming said heat-treated workpiece into a sheet of refractory metal material having a first sheet thickness of approximately one inch;

(c) heat treating said sheet of refractory metal material for a third time period selected from a third time range of approximately 1.8 hours and 2.2 hours at a third temperature selected from a third temperature range of approximately 2,175° Fahrenheit and 2,225° Fahrenheit;

(d) compressing said sheet of refractory metal material into a second sheet thickness selected from a second sheet thickness range between 0.060 inches and 0.021 inches;

(e) annealing said sheet of refractory metal material for a first annealing time period selected from a first annealing time range of approximately 1.8 and 2.2 hours at a first annealing temperature selected from a first annealing temperature range of approximately 2,175° Fahrenheit and 2,225° Fahrenheit;

(f) compressing said sheet of refractory metal material into a third sheet thickness selected from a third sheet thickness range of approximately 0.006 inches and 0.021 inches;

(g) annealing said sheet of refractory metal material for a second annealing time period selected from a second annealing time range of approximately 2.8 hours add 3.2 hours at a second annealing temperature selected from a second annealing temperature range of approximately 2,075° Fahrenheit and 2,125° Fahrenheit; and

(h) compressing said sheet of refractory metal material into a fourth sheet thickness selected from a fourth sheet thickness range between approximately 0.005 inches and 0.0008 inches thereby forming a foil of refractory metal material.

5,647,924

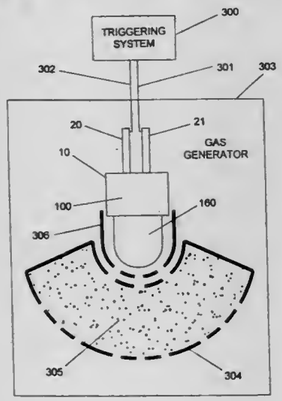
ELECTRICAL INITIATOR

Mark Lucas Avory, Foster City; William David Fahey, Cupertino; Stewart Shannon Fields, Redwood City; Charles Joyce Moore, Jr., Redwood Shores; Charles John Piper, III, Pleasant Hill, and David Whang, San Jose, all of Calif., assignors to Quantic Industries, Inc., San Carlos, Calif.

Continuation of Ser. No. 478,630, Jun. 7, 1995, abandoned, which is a division of Ser. No. 140,650, Oct. 20, 1993. This application Oct. 9, 1996, Ser. No. 728,099

Int. Cl.[6] C06B *41/02*

U.S. Cl. 149—24 **24 Claims**



1. A primer for initiating an ordnance, comprising:

about 3% to 10% by weight of a heat transfer agent;

about 6% to 12% by weight of an inert binder material which desensitizes the primer to mechanical shock; and

about 78% to 91% by weight of a pyrotechnic material;

the primer composition being adapted for ignition by an electrically resistive device other than the primer; wherein the primer is resilient and adapted to protect said electrically resistive device from thermal and mechanical shock.

5,647,925

PNEUMATIC TIRE FOR HEAVY-LOADED VEHICLES, WITH RESISTANCE TO RIVER WEAR

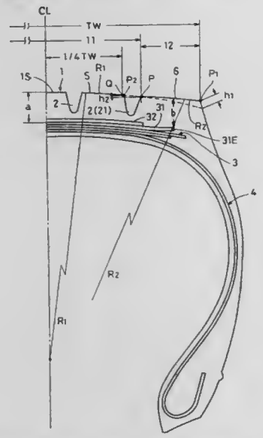
Yoshiro Sumiya, Minoo, and Hiroaki Sugimoto, Higashi osaka, both of Japan, assignors to Toyo Tire & Rubber Co., Ltd., Osaka, Japan

Filed Dec. 7, 1994, Ser. No. 350,957

Claims priority, application Japan, Dec. 17, 1993, 5-343975; Dec. 17, 1993, 5-343976

Int. Cl.[6] B60C *3/00;11/00;11/01*

U.S. Cl. 152—209 R **2 Claims**



1. A pneumatic tire for heavy-loaded vehicles comprising belt plies extending in a circumferential direction and a tread portion which includes a tread surface thereof and a plurality of main grooves opening radially and extending in the circumferential direction of said belt plies, a tread center axis extending radially and centrally through said belt plies and said tread portion, each said main groove defined by an inside wall and an outside wall, said belt plies including a working belt ply composite located directly below said tread portion, said tread portion having a tread profile, when the tire is not inflated, which comprises a first circular arc section forming a tread center area and a pair of second circular arc sections forming shoulder ribs on opposite outer sides of said tread center area, each said shoulder rib having an outer edge and extending inwardly to an inner edge defined by said outside wall of an outermost one of said main grooves,

said first circular arc section and each of said second circular arc sections intersecting at an intersection point on said inner edge of each said shoulder rib which is atop said outside wall of said outermost main groove located most outwardly of said tread center axis,

said first circular arc section having thereon one-fourth tread width points spaced apart a distance of one-fourth of an overall tread width from said tread center axis and located inwardly of said intersection point at which said first and said second circular arc sections intersect,

said first circular arc section and each said second circular arc section being profiled with each said second circular arc section disposed radially outside said first circular arc section

proximate said outer edge so that each of said second circular arc sections has a first divergence between said outer edge of each said shoulder rib and an extended line of said first circular arc section of a value greater than 0 mm and up to 10 mm, and has a radial second divergence, between a top end of said inside wall of said outermost main groove and said intersection point of up to 3 mm,

said first circular arc section having a first radius of curvature centered on said tread center axis and each said second circular arc section having a second radius of curvature equal to or different from said first radius of curvature, said first radius of curvature being between 300 to 2000 mm and said second radius of curvature being equal to or larger than the first radius of curvature and less than 4000 mm.

5,647,926

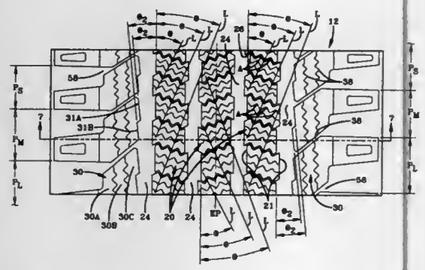
WINTER AUTOMOBILE OR LIGHT TRUCK TIRE

Alex van der Meer, Luxembourg, Luxembourg, and Paul Bryan Maxwell, Munroe Falls, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Dec. 12, 1995, Ser. No. 570,951

Int. Cl.[6] B60C *11/12*

U.S. Cl. 152—209 R **17 Claims**



1. A radial ply pneumatic light truck or automobile tire having a tread, the tread having an axis of rotation, a pair of lateral edges, a tread width (TW) defined as the axial distance between the lateral edges, and an equatorial plane perpendicular to the axis of rotation and spaced equidistant from the lateral edges, the tread comprising:

a tread base;

a plurality of traction elements extending radially outwardly from the tread base;

a plurality of circumferentially continuous wide grooves extending radially from the tread base and dividing the plurality of traction elements into a plurality of rows of traction elements, one shoulder row being adjacent each lateral edge and two or more central rows of traction elements being disposed between the shoulder rows;

a plurality of narrow laterally inclined grooves separating each circumferentially adjacent traction element, the narrow grooves separating the central rows of traction elements being of a wavy pattern having at least three substantially equal peak amplitudes;

a plurality of laterally extending wavy patterned sipes extending across and dividing each traction element within the central rows into at least three zigzag portions, the wavy patterned sipes having two or more substantially equal peak amplitudes, for each traction element within a central row one peak amplitude of each of the sipes in the traction element and each of the narrow grooves which define a respective edge of the traction element being aligned in a linear path (L), the linear path (L) being inclined relative to the equatorial plane at an angle θ, θ being less than 45°, the traction elements of one of the central rows having the linear path (L) oppositely inclined relative to the inclination of the linear path (L) of the traction elements of an axially adjacent central row; and

wherein at least one of the shoulder rows has traction elements having a circumferential length approximately twice that of the circumferential length of the traction elements of the central rows, and each traction elements of the shoulder rows has an end having two straight portions adjacent the circumferential groove, both straight portions being inclined relative to the equatorial plane at an angle θ_2, θ_2 being less than 45° and opposite in inclination of the linear path (L) of the axially adjacent central row.

5,647,927

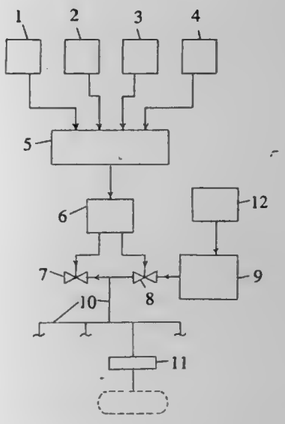
CENTRAL TIRE INFLATION CONTROLLER

George L. Mason, Vicksburg, Miss., assignor to United States Army Corps of Engineers as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 21, 1995, Ser. No. 493,024

Int. Cl.[6] B60C *23/00*

U.S. Cl. 152—415 **8 Claims**



1. An improved apparatus for maintaining optimum air pressure in the tires of a vehicle having a Central Tire Inflation System, which provides compressed air for inflating the tires of the vehicle, comprising

(a) means for determining the speed of a vehicle and transmitting an output signal commensurate therewith to a computer;

(b) means for determining the acceleration of a vehicle and transmitting an output signal commensurate therewith to the computer;

(c) said computer computing an optimum tire pressure for the vehicle from the signals transmitted by (a) and (b), by a set of empirical equations, and generating an output signal commensurate with said optimum tire pressure;

(d) a pressure controller connected to, and responsive to, the optimum tire pressure signal provided by the computer;

(e) an air supply valve actuated by an input from the pressure controller for inflating the tires;

(f) an air bleed valve actuated by a input from the pressure controller for deflating the tires; whereby the air pressure in the vehicle's tires is maintained at the optimum tire pressure computed by the computer.

5,647,928

HEAVY DUTY PNEUMATIC TIRES WITH REDUCED BELT WEIGHT

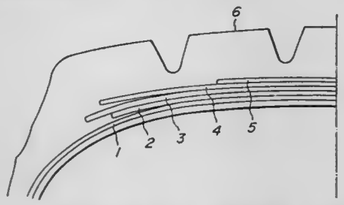
Yujiro Umezawa, Tokyo, Japan, assignor to Bridgestone Corporation, Tokyo, Japan

Division of Ser. No. 350,078, Nov. 29, 1994, Pat. No. 5,520,233. This application Oct. 24, 1995, Ser. No. 547,484

Claims priority, application Japan, Nov. 29, 1993, 5-298007; Jan. 11, 1994, 6-1242; Nov. 7, 1994, 6-272285

Int. Cl.[6] B60C *9/18;9/20*

U.S. Cl. 152—527 **5 Claims**



1. A heavy duty pneumatic tire comprising; a radial carcass toroidally extending between a pair of bead portions and comprised of at least one carcass ply containing cords therein, and a belt disposed outside the carcass in a radial direction of the tire and comprised of at least three belt layers, in which a first radially innermost belt layer contains cords inclined at a large cord angle with respect to an equatorial plane of the tire and a second belt layer contains cords inclined at a small cord angle with respect to the equatorial plane and a third belt layer contains cords inclined at a small cord angle in an opposite direction to the inclination direction of the cords in the second belt layer with respect to the equatorial plane, and wherein only the cords of the first radially innermost belt layer are steel cords having a 1×N structure wherein N is an integer in the range of 2–5.

5,647,929

PNEUMATIC MOTORCYCLE TIRE FOR IMPROVED CORNERING AND STRAIGHT RUNNING STABILITY

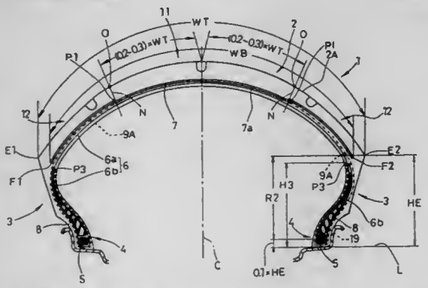
Shigehiko Suzuki, Amagasaki, Japan, assignor to Sumitomo Rubber Industries, Ltd., Hyogo-ken, Japan

Division of Ser. No. 251,970, Jun. 1, 1994, Pat. No. 5,482,102. This application Sep. 25, 1995, Ser. No. 533,622

Claims priority, application Japan, Jun. 7, 1993, 5-164002; Apr. 4, 1994, 6-090594

Int. Cl.[6] B60C *9/09;9/22*

U.S. Cl. 152—530 **3 Claims**



1. A pneumatic motorcycle tire comprising

a tread portion with axial edges, said tread portion curved so that the maximum cross-sectional width of the tire lies between the tread edges,

a pair of axially spaced bead portions,

a pair of sidewall portions extending between the tread edges and the bead portions,

a pair of bead cores, one disposed in each bead portion,

a radial carcass comprising at least one ply of cords having a main portion extending between the bead portions and a pair of turned up portions each turned up around one of said bead cores, the cords of the carcass having an angle of from 70 to 90 degrees with respect to the tire equator,

a belt disposed radially outside the carcass and inside the tread portion, said belt consisting of a single ply formed by spirally winding a ribbon-shaped strip of rubber in which at least one cord is embedded along the longitudinal direction thereof, at an angle to the tire equator,

a pair of axially spaced reinforcing cord layers disposed radially inside of the belt and outside of the carcass,

each reinforcing cord layer extending from a point (PI) in the tread portion on each side of the tire equator towards the sidewall portion beyond the belt edge,

said point (PI) being spaced apart from the tire equator such that, when a straight line is drawn normal to the tread surface through the point, the distance measured along the tread surface from the tire equator to the normal line is in a range of from 0.2 to 0.3 times the tread surface width measured along a tread surface from one tread edge to the other tread edge,

with respect to the tire equator, the cords of one of the reinforcing cord layers are inclined reversely to the cords of the other reinforcing cord layer,

each reinforcing cord layer consisting of a single ply of parallel organic fiber cords inclined at an angle of 20 to 70 degrees to the tire equator to cross the carcass cords,

said ply of each said reinforcing cord layer being rubberized with a topping rubber having a 100% modulus of 25 to 55 kgf/sq.cm,

each reinforcing cord layer being turned up around the bead core from the axially outside to inside of the tire to have an axially outer portion and an axially inner turnup portion extending radially outwardly from a base of the bead portion along the axially inside of the carcass main portion, and

said turnup portion terminated at a height in the range of from 0.1 to 1.0 times the height of a tread edge, each measured from the base of the bead portion.

5,647,930

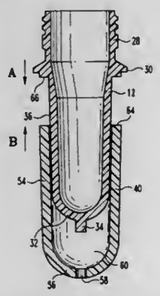
METHOD FOR FORMING A LAYERED PREFORM AND CONTAINER

Stephen A. Bright, Troy, Ohio, assignor to Electra Form, Inc., Vandalia, Ohio

Division of Ser. No. 194,427, Feb. 10, 1994, Pat. No. 5,508,076. This application Jun. 6, 1995, Ser. No. 468,932

Int. Cl.[6] B29C *65/06*

U.S. Cl. 156—73.5 **4 Claims**



2. A method for forming a layered preform for use in the production of a container in a blow-molding operation, the preform forming method comprising the steps of:

molding in a first mold an inner parison comprising a finish portion having a lower margin, a closed bottom portion including a gate vestige, and a barrel portion extending between the finish portion lower margin and the bottom portion,

molding in a second mold an outer parison consisting essentially of a barrel portion having a length similar to the inner parison barrel portion and a bottom portion having an opening therein, the outer parison having an inner surface conformably matching the inner parison outer surface,

mechanically assembling the outer parison telescopically over the inner parison outside the first and second molds, the opening in the outer parison bottom portion receiving the gate vestige on the inner parison, and

retaining the parisons in fixed position relative to each other to form a layered preform including quickly rotating the parisons with respect to each other for a time sufficient to spin-weld an upper margin of the barrel portion of the outer parison to the lower margin of the finish portion of the inner parison.

5,647,931

METHOD AND APPARATUS FOR PRODUCING A THREE-DIMENSIONAL OBJECT

David Retallick, Münsterhausen, and Hans J. Langer, Gräfelfing, both of Germany, assignors to EOS GmbH Electro Optical Systems, Planegg, Germany

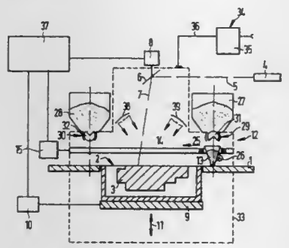
PCT No. PCT/EP94/04214, § 371 Date Aug. 22, 1995, § 102(e) Date Aug. 22, 1995, PCT Pub. No. WO95/18715, PCT Pub. Date Jul. 13, 1995

PCT Filed Dec. 19, 1994, Ser. No. 507,516

Claims priority, application Germany, Jan. 11, 1994, 44 00 523.7

Int. Cl.[6] B32B *31/00*

U.S. Cl. 156—73.6 **34 Claims**



1. A method of producing a three-dimensional object layer by layer on a support using a powdery material which can be solidified by irradiation with electromagnetic radiation, said method comprising carrying out the following steps for each layer:

applying a layer of said material to said support or to a preceding layer;

wiping said layer by moving a wiper member across said support to obtain a predetermined thickness of said material,

vibrating said wiper member while moving it across said support to accelerate the formation of said layer having said predetermined thickness and to enhance surface smoothness and compactness of said layer,

striking said layer with a beam of electromagnetic radiation at those portions of said layer which correspond to said object, thereby fusing said material at said portions of said layer,

whereby said step of applying comprises charging a predetermined amount of said material into a container, said container carrying said wiper member, moving said container across said support and vibrating said container while moving it for simultaneously applying and wiping said material.

5,647,932

METHOD OF PROCESSING A PIEZOELECTRIC DEVICE

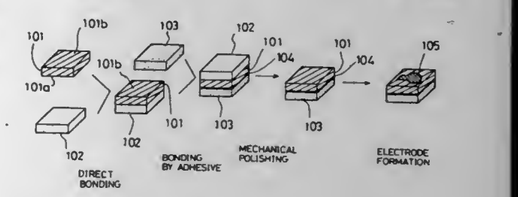
Yutaka Taguchi, Osaka; Kazuo Eda, Nara; Akihiro Kanaboshi, Osaka; Tetsuyoshi Ogura, Osaka, and Yoshihiro Tomita, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 245,157, May 17, 1994, abandoned. This application Feb. 14, 1996, Ser. No. 601,539

Claims priority, application Japan, May 18, 1993, 5-115718

Int. Cl.[6] H01L *21/30;21/304;21/306*

U.S. Cl. 156—154 **24 Claims**



1. A method of processing a piezoelectric device comprising the steps of:

(a) joining a functional member composed of a piezoelectric material and a first substrate together by creating an inter-atom bond such that a strong covalent bond is formed between a first flat surface of said functional member and one surface of said first substrate, said inter-atom bond created by polishing said first flat surface and said one flat surface of said first substrate, subjecting said surfaces to a hydrophiliticization treatment, and heating,

(b) fixing a second substrate to a second flat surface of said functional member, and

(c) removing said first substrate from said first flat surface of said functional member by mechanical polishing or chemical processing, with said functional member and said second substrate being joined together.

5,647,933

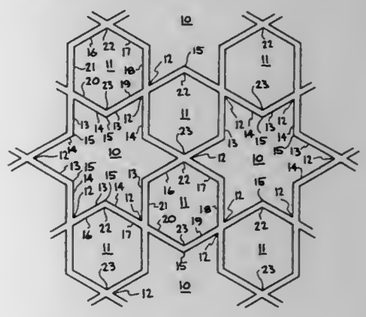
FABRICATION METHOD FOR CORES OF STRUCTURAL SANDWICH MATERIALS INCLUDING STAR SHAPED CORE CELLS

Richard M. Christensen, Danville, Calif., assignor to Regents of the University of California, Oakland, Calif.

Continuation-in-part of Ser. No. 264,261, Jun. 23, 1994, Pat. No. 5,437,903. This application May 24, 1995, Ser. No. 448,749

Int. Cl.[6] B31D *3/02;* **B32B** *31/00;31/04;31/16*

U.S. Cl. 156—197 **13 Claims**



1. A method for fabricating a core for a sandwich structure comprising providing a microstructure for the core composed of cells including star shaped cells surrounded by hexagonal shaped cells.

5,647,934

METHODS OF MAKING WOOD COMPOSITE PRODUCTS

Dennis H. Vaders, Elkin, N.C., and Nian-hua Ou, St. Charles, Ill., assignors to Masonite Corporation, Chicago, Ill.

Division of Ser. No. 901,388, Jun. 19, 1992, Pat. No. 5,397,406. This application Jun. 7, 1994, Ser. No. 255,180
Int. Cl.[6] B44C *1/00*
U.S. Cl. 156—219 12 Claims

1. In a method of forming wood composite products by simultaneously consolidating and embossing at least two different embossing patterns onto raw wood composite material during one press cycle of a single press, the method including the steps of designing at least two decorative embossing patterns on at least one embossing die, designing a backing die corresponding to each said embossing die, each corresponding embossing and backing die forming a die set, each backing die being designed to cooperate with each embossing die to form at least one finished composite panel wherein said composite panel may include panel sections, each section embossed with a different embossing pattern, the improvement comprising the step of:

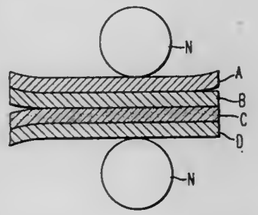
(a) fixing a plurality of caliper control pushes onto at least one backing die for increasing nominal panel thickness of at least one panel section and positioning said pushes on said backing die to result in each panel section of each panel having substantially the same nominal panel thickness wherein nominal panel thickness is defined as panel thickness measured between substantially flat, non-embossed surfaces of a panel section.

5,647,935

METHOD OF PRODUCING INK JET RECORDING MEDIUM

Mitsuhide Hoshino; Yasushi Umeda, and Masahide Takano, all of Higashimatsuyama, Japan, assignors to Nippon Paper Industries Co., Ltd., Tokyo, Japan

Filed Dec. 12, 1995, Ser. No. 571,303
Claims priority, application Japan, Dec. 14, 1994, 6-333019
Int. Cl.[6] B32B *31/12*
U.S. Cl. 156—231 2 Claims



1. A method of producing an ink jet recording medium provided with an ink-receiving layer having a porous inorganic composition as a major component, comprising the steps of applying as a coating the ink-receiving layer having a porous inorganic composition as a major component onto a transferring substrate provided with or without release treatment so as to provide any required gloss, adhering with an adhesive said ink-receiving layer and a recording substrate that will become a final supporter of an ink jet recording medium, and then peeling off the transferring substrate, thereby forming a surface on the ink-receiving layer which replicates the surface shape of said transferring substrate.

5,647,936

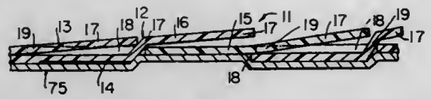
Patent Not Issued For This Number

5,647,937

TEXTILE MANUFACTURING APPARATUS AND METHOD

Anton Ronai, Miami, Fla., assignor to Monica Ronai, Rio de Janeiro, Brazil

Filed Dec. 8, 1994, Ser. No. 352,376
Int. Cl.[6] B32B *3/10;31/00*
U.S. Cl. 156—253 1 Claim



1. A method of manufacturing a sequined, textured fabric including first and a second material films, portions of the lower film protruding through the upper film, said method comprising the steps of:

overlying said first material film atop said second material film so as to form a dual layer sheet,

cutting a plurality of geometrically shaped cuts into said dual layer sheet so as to define a plurality of geometrically shaped members secured to the material film by a flexible lip,

pushing said geometrically shaped members of said dual layer sheet into a raised position above an upper layer of said dual layer material sheet, creating a plurality of geometrically shaped apertures, said geometrically shaped members of said second material film extending through said geometrically shaped apertures of said first material film,

continuously pulling said second material film relative to said first material film so as to stagger said first material film relative to said second material film along an entire length thereof and causing said geometrically shaped members of said second material film to be disposed in spaced apart relation from said geometrically shaped members of said first material film corresponding to said geometrically shaped apertures of said first material film through which said geometrically shaped members of said second material film pass, and

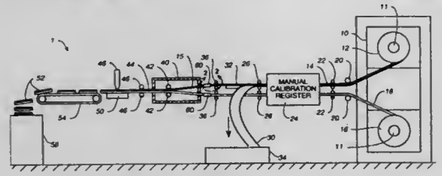
securing a backing layer to said lower surface of said dual layer sheet so as to form a single, elongate multi-layer panel and secure said first and said second material films of said dual layer sheet in said staggered orientation along an entire length of said elongate multi-layer panel, thereby facilitating cutting of said elongate multi-layer panel into segments of varying sizes without said first and said second material films separating from one another or from said staggered orientation.

5,647,938

PHOTO POSTCARD APPARATUS AND METHOD

Aaron Levine, 27837 Thackaray Ave., Hayward, Calif. 94544-5617

Continuation of Ser. No. 179,340, Jan. 10, 1994, abandoned. This application Sep. 1, 1995, Ser. No. 522,537
Int. Cl.[6] B32B *31/18;31/08;35/00*
U.S. Cl. 156—269 20 Claims



1. A method of producing photo postcard pieces including the steps of:

providing a long strip of label stock capable of division into a large plurality of postcard pieces of equal length, the label stock having

a paper layer,

a single adhesive layer affixed to one side of the paper layer, said single adhesive layer becoming the sole adhesive layer of each postcard piece, and

a peel-off backing sheet temporarily affixed to and covering the single adhesive layer;

providing a long strip of undeveloped photo stock capable of division into the large plurality of postcard pieces of equal length;

providing a backing peeler for removing the backing sheet;

providing a laminating press for pressing the photo stock against the single adhesive layer;

providing a cutter for separating the pressed together photo and label stocks into the plurality of postcard pieces of equal length, the cutter having a cutter bed;

printing a plurality of sets of postcard indicia on the other side of the paper layer, each set of indicia being substantially the length of a single postcard piece;

developing a plurality of photos on the photo stock, each photo being the length of a single postcard piece;

providing a manual calibration register for aligning each set of indicia with a photo and for aligning the photos with the cutter;

providing a plurality of free rollers for guiding the strips;

providing a plurality of dual-power rollers for advancing the strips toward the cutter;

advancing the strips past the calibration register;

using the calibration register to manually align each set of indicia with a photo;

advancing the strip of label stock to the backing peeler;

using the backing peeler to peel off the backing;

advancing the strips to the laminating press;

using the laminating press to press the strips together;

advancing the strips thus pressed together to the cutter; and

cutting the pressed-together strips into the plurality of postcard pieces.

5,647,939

METHOD OF BONDING A CURED ELASTOMER TO PLASTIC AND METAL SURFACES

Alan R. Gee, Greenwich; William R. Delaney, Clifton Park, and Paul M. Petrosino, Schoharie, all of N.Y., assignors to Integrated Liner Technologies, Inc., Watervliet, N.Y.

Filed Dec. 5, 1994, Ser. No. 349,270
Int. Cl.[6] B32B *31/00*
U.S. Cl. 156—272.6 24 Claims

1. A method of directly bonding a previously cured elastomer comprised primarily of rubber type material to a plastic, comprising:

ionizing a surface upon said cured elastomer, thereby forming a first activated area;

ionizing a surface upon said plastic, thereby forming a second activated area;

placing said first activated area in contact with said second activated area;

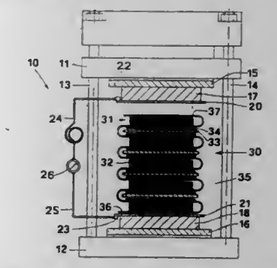
applying pressure to the first and second activated areas in contact thereby forming a bond directly between said elastomer and said plastic without the use of an intervening layer of adhesive or plastic material.

5,647,940

PROCESS FOR AUTOMATICALLY CONNECTING A SOURCE OF ELECTRIC CURRENT AND A PILE OF PACKAGES TO MAKE PLASTIC LAMINATES WITH ENDOTHERMIC HEATING

Bruno Ceraso, Milan, Italy, assignor to Cedal S.R.L., Milan, Italy

PCT No. PCT/IT93/00029, § 371 Date Aug. 4, 1995, § 102(e) Date Aug. 4, 1995, PCT Pub. No. WO94/21459, PCT Pub. Date Sep. 29, 1994
PCT Filed Mar. 31, 1993, Ser. No. 501,073
Claims priority, application Italy, Mar. 18, 1993, MI93A0514
Int. Cl.[6] B32B *31/00*
U.S. Cl. 156—273.9 10 Claims



1. Process for automatic connection, when pressing takes place, between a source of electric current and metal parts, connected in series, of piles of packages to make plastic laminates to permit electric endothermic heating, characterized in that the metal parts, connected in series, have at two opening and closing ends of a pile of packages electric contact areas consisting of a flat and exposed surface of said metal parts substantially orthogonal to an axis of said pile, and in that pressing machines that produce pressure necessary for connection have, at the position of the parts that will come in respective contact with the two ends of the pile, a contact sheet of copper or of another highly conducting material, separated from other parts of the machine by layers or other insulating means, the two contact sheets being connected by wiring to the source of electric energy so that, having put the pile into the machine, one of the two contact sheets comes in contact with one end of the pile, and in that, when pressing is being done, due to closing of the machine, contact is made between the second contact sheet of the machine and the second end of the pile thus causing closure of an electric circuit among the metal parts connected in series in said pile and the source of electric current.

5,647,941

METHOD OF MAKING A LIPSTICK SAMPLER

Anthony J. Gunderman, Phoenix; David Moir, Annapolis, both of Md., and Robert M. O'Connell, Belle Mead, N.J., assignors to Color Prelude, Inc., Baltimore, Md.

Continuation-in-part of Ser. No. 306,394, Feb. 6, 1989, Pat. No. 5,192,386, which is a division of Ser. No. 199,175, May 26, 1988, Pat. No. 4,848,378, which is a division of Ser. No. 875,172, Jun. 17, 1986, Pat. No. 4,751,934. This application Mar. 26, 1992, Ser. No. 857,993
Int. Cl.[6] B32B *31/00*
U.S. Cl. 156—277 7 Claims



1. A method for making a lipstick sampler, comprising the steps of:

heating said lipstick above its melting point;

augmenting said lipstick by adding molten waxes;

mixing the augmented lipstick until it becomes uniform;
cooling said lipstick to return it to a solid state;
grinding said solidified lipstick into a paste;
screen printing said lipstick paste at room temperature in a predetermined pattern onto a base; and
re-melting said screen printed lipstick, then cooling, to provide a glossy, liquified appearance;
screen printing a protective overcoat over said screen printed lipstick for maintaining the integrity of said lipstick and preventing transfer of said lipstick to a protective overlay;
applying an adhesive to said base; and
laminating said protective overlay to said base with said adhesive to prevent offset of said screen printed lipstick prior to use.

5,647,942

WIRE BONDING METHOD

Hiroshi Haji, Chikushino, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 23, 1994, Ser. No. 311,276
Claims priority, application Japan, Sep. 29, 1993, 5-267908
Int. Cl.[6] B32B *31/00*
U.S. Cl. 156—281 **8 Claims**

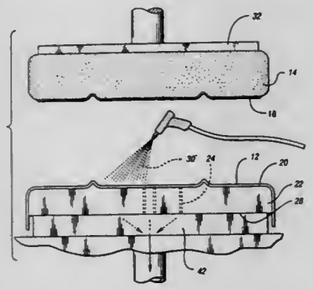
1. A wire bonding method of electrically connecting through an electrically conductive wire an electrode on a substrate to a pad of a semiconductor chip fixed with a bonding agent on the substrate, said electrode comprising a copper layer and a nickel layer formed on the copper layer and coated with gold, comprising the steps of subjecting said electrode to heat treatment, thereby forming a thin superficial layer comprising nickel hydroxide and nickel oxide deposited on said gold, and removing said thin superficial layer from the coated layer of said gold, followed by electrically connecting the electrode to the pad.

5,647,943

METHOD OF BONDING A SEAT TRIM COVER TO A FOAM CUSHION UTILIZING AN ACCELERATED ADHESIVE ACTIVATOR

Eric F. Kozlowski, Rochester, Mich., assignor to Lear Seating Corporation, Southfield, Mich.

Filed Jan. 13, 1995, Ser. No. 372,592
Int. Cl.[6] B32B *7/00*
U.S. Cl. 156—310 **14 Claims**



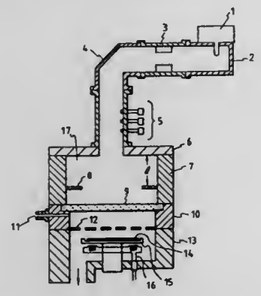
1. A method of fabricating a cushion assembly comprising the steps of:
applying a layer of hot melt thermosetting adhesive to a foam pad;
the method characterized by applying a mist of adhesive activator to a trim layer and compressing the foam pad against the trim layer in a mold with the adhesive adjacent the activator to bond the foam pad to the trim layer.

5,647,944

MICROWAVE PLASMA TREATMENT APPARATUS

Takeshi Tsubaki, Kuga-gun; Katsuya Watanabe, Kudamatsu; Hidenori Takesue, Kudamatsu; Yoshiaki Sato, Kudamatsu; Katsuyoshi Kudo, Kudamatsu, and Makoto Nawata, Kudamatsu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 17, 1994, Ser. No. 214,106
Claims priority, application Japan, Mar. 17, 1993, 5-056809; Nov. 8, 1993, 5-278085
Int. Cl.[6] H85H *1/00*
U.S. Cl. 156—345 **10 Claims**



1. A microwave plasma treatment apparatus which comprises:
a plasma generating chamber to which treatment gas is supplied and pressure of which is kept at a given pressure;
a plasma treatment chamber connected to said plasma generating chamber;
a wave guide tube one end of which is connected to said plasma generating chamber in the opposite side of the plasma treatment chamber and the other end of which is provided with a microwave generating source;
an expanded room having a certain space size at the portion of the plasma generating chamber connected with said wave guide tube; and
a partition board inside said expanded room;
wherein said partition board is provided with a cross-shaped hole.

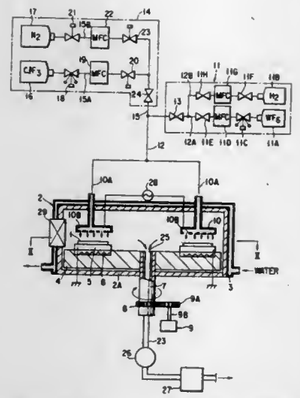
5,647,945

VACUUM PROCESSING APPARATUS

Kimihiro Matsuse, Tokyo; Hideki Lee, Nirasaki; Hatsuo Osada, and Sumi Tanaka, both of Yamanashi-ken, all of Japan, assignors to Tokyo Electron Limited, Tokyo, Japan

Filed Jun. 7, 1994, Ser. No. 255,924
Claims priority, application Japan, Aug. 25, 1993, 5-232340; Sep. 17, 1993, 5-254683; Sep. 17, 1993, 5-254684; Sep. 17, 1993, 5-254685; Sep. 17, 1993, 5-254686; Sep. 20, 1993, 5-256505; Feb. 8, 1994, 6-036425
Int. Cl.[6] H01L *21/3065*
U.S. Cl. 156—345 **2 Claims**

1. A vacuum processing apparatus comprising:
a vacuum processing chamber for processing a target object;
a processing gas supply source for supplying a processing gas by which a process is performed to the target object in said vacuum processing chamber;
a cleaning gas supply source for supplying a cleaning gas containing ClF_3 gas for cleaning the interior of said vacuum processing chamber;
a processing gas supply pipe for supplying the processing gas from said processing gas supply source into said vacuum processing chamber;
a cleaning gas supply pipe for supplying said cleaning gas from said cleaning gas supply source to said vacuum processing chamber; and



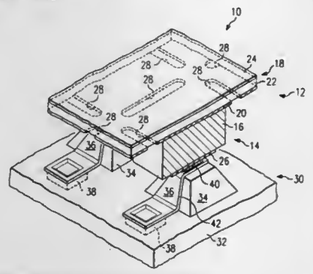
a pressure reducing valve for keeping said cleaning gas supply pipe at a lower pressure than the atmospheric pressure when the cleaning gas is to be supplied to said vacuum processing chamber.

5,647,946

STRUCTURE AND METHOD INCLUDING DRY ETCHING TECHNIQUES FOR FORMING AN ARRAY OF THERMAL SENSITIVE ELEMENTS

James F. Belcher, Plano; Howard R. Beratan, Richardson, and Scott R. Summerfelt, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 367,659, Jan. 3, 1995. This application Jun. 5, 1995, Ser. No. 463,170
Int. Cl.[6] H01L *21/00*
U.S. Cl. 156—345 **12 Claims**



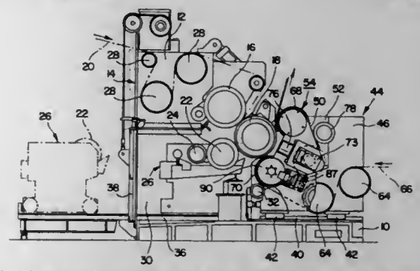
1. A semiconductor structure comprising:
a pyroelectric substrate having an infrared absorber and common electrode assembly attached to one side thereof;
a first layer of electrically conductive contacts disposed on the other side of said substrate to define masked and unmasked regions thereof;
a second layer of electrically conductive contacts disposed on said first layer of contacts;
a radiation etch mask layer that encapsulates the exposed portions of said second layer of contacts;
said radiation etch mask layer formed in part from spun-on silicon oxide;
a dry-etch mask layer that encapsulates the exposed portions of said first layer of contacts and said radiation etch mask layer;
wherein during dry etching of an initial portion of each of said unmasked regions, said dry-etch mask layer protects said radiation-mask layer; and
wherein during irradiation of a remaining portion of each of said unmasked regions, an etchant etches said remaining portions substantially faster than said first layer of contacts and said radiation etch mask layer.

5,647,947

BELT SPEED CONTROLLER IN SINGLE FACER

Toshihiko Yasui, Owariasahi, and Kazuhiro Hatasa, Ena-gun, both of Japan, assignors to Kabushiki Kaisha Isowa, Aichi, Japan

Filed May 5, 1995, Ser. No. 435,216
Claims priority, application Japan, May 16, 1994, 6-126765
Int. Cl.[6] B31F *1/20*
U.S. Cl. 156—361 **3 Claims**



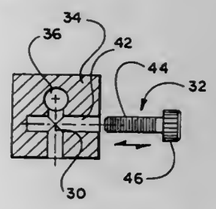
1. A belt speed controller, in a single facer consisting of an upper fluted roll having flutes formed on the circumference thereof; a lower fluted roll, also having on the circumference thereof flutes which are engaged with those of said upper fluted rolls to form a predetermined corrugation on a corrugating medium passed between said upper fluted roll and said lower fluted roll; a gluing mechanism for gluing the crests of said predetermined corrugation in said corrugating medium; and an application mechanism which is disposed adjacent to said lower fluted roll and equipped with an endless belt extended over a plurality of rolls so as to be able to run freely thereby; in which a liner is pressed against the glued crests of said predetermined corrugation of said corrugating medium fed along the circumference of said lower fluted roll to be pasted with said corrugating medium and form a single-faced corrugated board;
characterized in that said speed controller consists of a braking means for braking one of said plurality of rolls over which said endless belt is extended which is located on an upstream side, with respect to the endless belt running direction, of a press contact zone where said endless belt is brought into press contact with said liner, and a control means which actuates said braking means to brake said endless belt via said one of said plurality of rolls.

5,647,948

DEVICE FOR APPLYING AN ADHESIVE SUBSTANCE IN PARTICULAR ON CARPET BOTTOM SUPPORT STRIPS

Georgios Paridis, Garterlaie 40, D-42327 Wuppertal, Germany

Filed Jan. 23, 1995, Ser. No. 376,855
Claims priority, application Germany, Jul. 2, 1994, 9410692 U
Int. Cl.[6] B05C *5/00*
U.S. Cl. 156—578 **12 Claims**



1. Apparatus for applying tracks (**2**) of an adhesive substance to strip-shaped material (**4**), comprising:
means (**14**) for guiding and transporting the material in its longitudinal direction; and

means (**20**) arranged above an approximately horizontal area of movement of the material (**4**) guided and transported by the means (**14**) and operative to apply the adhesive substance to the material, said means (**20**) comprising

a nozzle arrangement having several outlet nozzles (**24**) for the adhesive substance, the outlet nozzles being distributed over the width of the material;

each outlet nozzle (**24**) having an individual supply channel (**30**) for the adhesive substance, and each supply channel (**30**) having a transverse hole (**42**); and

an individual closing element (**32**) operatively associated with each outlet nozzle (**24**);

each closing element (**32**) comprising a plug (**44**) selectively inserted into the transverse hole (**42**) of a corresponding said supply channel (**30**) in operative relation to the supply channel such that the supply channel is closed in the inserted condition of the plug (**44**), whereby each outlet nozzle is selectively activated or deactivated individually as well as independently of the other outlet nozzles (**24**) by means of the closing element (**32**) associated with that outlet nozzle,

so that the number of active outlet nozzles that apply the adhesive substance is selectively altered by operation of the closing elements so as to adapt the apparatus to different material widths.

5,647,949

FOLDER FOR WEB-FED PRINTING PRESSES

Manfred Kepert, Grosskarlbach, Germany, assignor to Albert-Frankenthal Aktiengesellschaft, Frankenthal, Germany

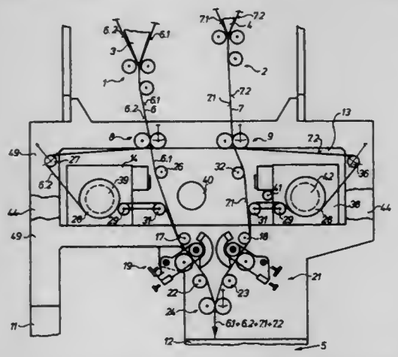
PCT No. PCT/DE93/00718, § 371 Date Feb. 13, 1995, § 102(e) Date Feb. 13, 1995, PCT Pub. No. WO94/04363, PCT Pub. Date Mar. 3, 1994

PCT Filed Aug. 11, 1993, Ser. No. 379,564

Claims priority, application Germany, Aug. 11, 1992, 43 26 855.2; Aug. 13, 1992, 42 26 792.7

Int. Cl.[6] B32B *31/00*

U.S. Cl. 156—578 **5 Claims**



1. A convertible folding apparatus for a web-fed rotary printing press comprising:

a folding apparatus frame;

at least a first linear folding device for receipt of partial paper webs, said at least first linear folding device being fixed on said folding apparatus frame;

a work station on said folding apparatus frame and positioned after, in a direction of web travel, said linear folding device, said work station being adapted to interchangeably receive both transverse gluing and continuous transverse stapling devices;

means for feeding linearly folded and not linearly folded partial paper webs from said at least one linear folding device to said work station;

means on said folding apparatus frame for accomplishing said interchangeable reception and operation of both said interchangeable transverse gluing and continuous transverse stapling devices in said work station; and

coupling devices secured on said folding apparatus frame and engageable with said transverse gluing device and said continuous transverse stapling device interchangeably received in said work station to connect said interchangeably received transverse gluing device and said continuous transverse stapling device to a main drive for said web-fed rotary printing press.

5,647,950

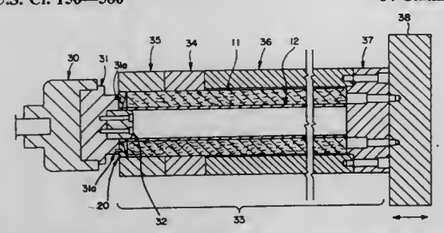
FILTER ASSEMBLY WITH A SPIN WELDED END CAP

Clayton L. Reed; John E. Ryan, Jr., both of Cortland, and Bruce R. Germain, Locke, all of N.Y., assignors to Pall Corporation, East Hills, N.Y.

Division of Ser. No. 197,566, Feb. 17, 1994, abandoned, which is a continuation of Ser. No. 723,258, Jun. 28, 1991, abandoned. This application Mar. 9, 1995, Ser. No. 401,257

Int. Cl.[6] B29C *65/06*

U.S. Cl. 156—580 **64 Claims**



1. A spin welding system for connecting an end cap to an end of a filter element comprising:

an inner retainer having a cylindrical surface;

an outer retainer having a cylindrical surface and coaxially arrangeable with the inner retainer to define an annular space;

a filter element holder including a clamp for holding a filter element;

an end cap holder for holding an end cap in a position opposing an end of a filter element held by the clamp;

a device for producing relative rotational motion between the filter element holder and the end cap holder; and

a mechanism for pressing an end cap held by the end cap holder against an end of a filter element held by the clamp in the annular space defined by the inner and outer retainers, the inner and outer retainers being dimensioned to retain molten material between an end cap and an end of a filter element.

5,647,951

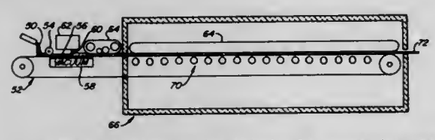
MULTI-PURPOSE WEED SUPPRESSANT AND PLANT GROWTH ENHANCEMENT DEVICE

John Bayer, 19090 4th Ave., Stevinson, Calif. 95374

Division of Ser. No. 538,693, Oct. 3, 1995. This application May 7, 1996, Ser. No. 646,427

Int. Cl.[6] A01G *13/02*

U.S. Cl. 156—62.2 **13 Claims**



1. A method for manufacturing a device for suppressing weeds and enhancing plant growth comprising:

mixing a first fibrous material with a fluid to form a first slurry;

cutting a biodegradable, organic material into a multiplicity of finely chopped pieces;

allowing the finely chopped pieces to decompose;

combining the decomposed finely chopped pieces with a second fibrous material and a fluid to form a second slurry;

wherein the biodegradable, organic material is selected from the group consisting of almond wood chips, straw, manure and leaves;

combining the first slurry with the second slurry to form a first layer substantially comprising the first fibrous material adhered to a second layer substantially comprising the organic material; and

removing a substantial portion of the fluid from the first and second layers to form a solidified ground collar for suppressing weeds and enhancing plant growth.

5,647,952

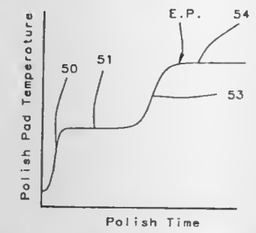
CHEMICAL/MECHANICAL POLISH (CMP) ENDPOINT METHOD

Lai-Juh Chen, Hsin-Chu, Taiwan, assignor to Industrial Technology Research Institute, Hsin-Chu, Taiwan

Filed Apr. 1, 1996, Ser. No. 625,277

Int. Cl.[6] H01L *21/66*

U.S. Cl. 156—636.1 **28 Claims**



1. A method of chemical/mechanical planarization (CMP) of a semiconductor substrate containing layers of different materials comprising:

planarizing the semiconductor substrate by holding the semiconductor substrate on a rotating platen against a rotating polishing pad in the presence of a polishing slurry;

controlling the temperature of the polishing slurry in the temperature range between about 10° to 30° C.;

dispensing said temperature controlled slurry onto said rotating polishing pad;

measuring by infrared detection means the temperature of said rotating polishing pad at a selected polishing pad location which is abrading the surface of said semiconductor substrate; and

detecting an endpoint when a change in temperature of said rotating polishing pad occurs due to removal of a first material and contact by said rotating polishing pad to a second material.

5,647,953

PLASMA CLEANING METHOD FOR REMOVING RESIDUES IN A PLASMA PROCESS CHAMBER

Larry Williams, Milpitas; David R. Pirkle, Soquel; William Harshbarger, and Timothy Ebel, both of San Jose, all of Calif., assignors to LAM Research Corporation, Fremont, Calif.

Filed Dec. 22, 1995, Ser. No. 577,340

Int. Cl.[6] C23C *16/00*

U.S. Cl. 156—643.1 **23 Claims**

1. A plasma cleaning method for removing oxide residues in a plasma process chamber wherein substrates are processed, comprising steps of:

introducing a cleaning gas comprising a fluorine-based gas into the plasma process chamber;

performing a plasma cleaning step by activating the cleaning gas and forming a plasma cleaning gas, contacting interior surfaces of the chamber with the plasma cleaning gas for a time sufficient to remove oxide residues on the interior surfaces;

coating the interior surfaces with silicon dioxide, the coating step being carried out by introducing a coating gas mixture comprising a silicon-containing gas into the chamber, activating the coating gas mixture and forming a plasma coating gas, and contacting the interior surfaces with the plasma coating gas until the interior surfaces are coated with silicon dioxide; and

conditioning uncoated interior surfaces by introducing a conditioning gas comprising a hydrogen-containing gas into the chamber, contacting the interior surfaces with the conditioning gas in a non-plasma state for a time sufficient to remove fluorine from the interior surfaces.

5,647,954

MANUFACTURE OF ETCHED SUBSTRATES SUCH AS INFRARED DETECTORS

Brian Edward Matthews, Hampshire, United Kingdom, assignor to GEC Marconi Limited, Middlesex, England

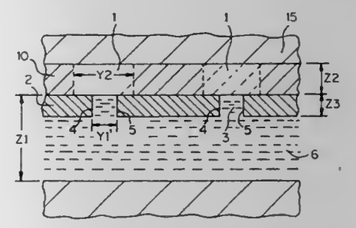
PCT No. PCT/GB93/00393, § 371 Date Oct. 20, 1994, § 102(e) Date Oct. 20, 1994, PCT Pub. No. WO93/17454, PCT Pub. Date Sep. 2, 1993

PCT Filed Feb. 25, 1993, Ser. No. 290,891

Claims priority, application United Kingdom, Feb. 26, 1992, 9204078

Int. Cl.[6] H01L *21/00*

U.S. Cl. 156—644.1 **14 Claims**



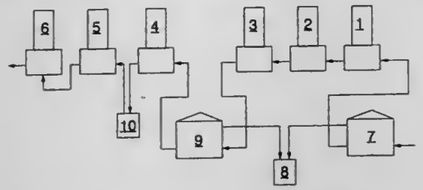
1. A method of etching a substrate to form a narrow trough of predetermined width therein, the method comprising the steps of masking said substrate with a etch resistant having a thickness, said mask including an aperture in register with a location whereat the trough is to be formed, said mask aperture being defined by facing side-walls of height equal to said mask thickness, etching said substrate through said aperture with a non-isotropic liquid etchant providing, adjacent said side-walls, areas of faster etching, and further including the step of forming said mask aperture with said side-walls so spaced that said areas overlap and controlling the thickness of said mask so that said side-walls are of a height sufficient to constrain flow of etchant to ensure said areas of faster etching overlap, and greater than the side-wall spacing.

5,647,955

METHOD OF REDUCING SCALING OF HEAT TRANSFER SURFACES IN AN EVAPORATION PLANT OF A SULPHATE CELLULOSE MILL

Jukka Vaistomaa, Pori; Jarmo Kaila, Helsinki; Jouko Rikkinen, Kangasala, and Matti Knuutila, Pori, all of Finland, assignors to Tampella Power Oy, Tampere, Finland

Filed Oct. 13, 1995, Ser. No. 543,060
Claims priority, application Finland, Oct. 24, 1994, 944996
Int. Cl.[6] D21C *11/04*
U.S. Cl. 162—30.11 5 Claims



1. A method for reducing scaling of heat transfer surfaces in an evaporation plant of a sulphate cellulose mill, the method comprising the steps of:

adding ash containing sodium sulphate and other soluble salts produced in a combustion process of a soda recovery boiler to black liquor in a mixing tank after soap separation from the black liquor but prior to a final evaporation stage of the black liquor, wherein the black liquor has a sufficiently low dry solids content to allow the sodium sulphate and other soluble salts contained in the ash to dissolve completely in the black liquor, wherein the sodium sulphate dissolved in the black liquor reacts with sodium carbonate contained in the black liquor to form Burkeite that is capable of crystallizing when the dry solids content of the black liquor increases which reduces scaling of heat transfer surfaces in the evaporation plant; and

evaporating and burning the ash containing black liquor.

5,647,956

CELLULOSIC, MODIFIED LIGNIN AND CATIONIC POLYMER COMPOSITION AND PROCESS FOR MAKING IMPROVED PAPER OR PAPERBOARD

David L. Elliott, Imperial; Wood E. Hunter, Pittsburgh, and Ronald J. Falcione, Canonsburg, all of Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 479,486, Jun. 7, 1995, Pat. No. 5,501,772, which is a continuation of Ser. No. 69,252, May 28, 1993, abandoned. This application Dec. 4, 1995, Ser. No. 566,634
Int. Cl.[6] D21H *21/10*
U.S. Cl. 162—163 10 Claims

1. An improved paper furnish composition comprising:

(a) an aqueous cellulosic furnish;

(b) a high molecular weight cationic polymer having a weight average molecular weight greater than about 1 million wherein said cationic polymer is a copolymer derived from a cationic monomer that is selected from the group consisting of a methacryloxyethyl trimethyl ammonium chloride, acrylamido propyl trimethyl ammonium chloride, and methacrylamido propyl trimethyl ammonium chloride, and a nonionic monomer that is acrylamide wherein the weight ratio of said cationic monomer:said nonionic monomer is from about 99:1 to 1:99; and

(c) a modified lignin which is a sulfonated lignin having a weight average molecular weight greater than about 10,000, wherein the weight ratio of said cationic polymer:said modified lignin is from about 10:1 to 1:10, on an active basis, wherein said cationic polymer and modified lignin are each present in an amount of at least about 0.1 pounds per ton, based on the dry weight of solids of the aqueous cellulosic furnish, and said improved paper furnish exhibits improved drainage, retention and formation with respect to said aqueous cellulosic furnish.

5,647,957

METHOD OF PREPARING PAPER STRENGTHENED WITH SOLUBILIZED COLLAGEN

Kenneth E. Hughes, Gahanna; David C. Masterson, Grove City; David J. Fink, Shaker Heights; Barbara A. Metz, Baltimore; Gordon E. Pickett, Reynoldsburg; Paul M. Gemmer, Columbus, and Richard S. Brody, Worthington, all of Ohio, assignors to Ranpak Corporation, Concord, Ohio

Division of Ser. No. 250,806, May 27, 1994, which is a continuation-in-part of Ser. No. 78,932, Jun. 16, 1993, Pat. No. 5,316,942. This application Jun. 7, 1995, Ser. No. 485,052
Int. Cl.[6] D21H *17/00;17/22*
U.S. Cl. 162—174 19 Claims

1. A method for making a collagen strengthened cellulosic sheet comprising:

a. mixing a cellulosic material selected from the group consisting of virgin paper pulp, broke, reclaimed newsprint, reclaimed carton container, or a mixture thereof with a solution comprising water, or water and NaOH, and mechanically pulping until a pulp slurry is formed having a consistency of about 3 wt % to 6 wt % based on dry pulp solids;

b. diluting said pulp slurry to a consistency of about 1 wt % to about 3 wt % based on dry pulp solids and adjusting pH to about 3.5 to about 7.0;

c. providing an aqueous ground slurry of insoluble collagen;

d. adjusting the water or solid content of said wet ground slurry whereby said insoluble collagen is at a concentration that promotes substantially maximum soluble collagen concentration and molecular weight in a final product;

e. adjusting the pH of said slurry from step d to obtain activity for a proteolytic enzyme added in step f;

f. adding said proteolytic enzyme to said pH adjusted slurry and reacting at a temperature, T, and for a time, t, effective for forming a solution of high molecular weight soluble collagen from said insoluble collagen particles;

g. controlling said reaction to obtain a high degree of solubilization of collagen and a molecular weight of said soluble collagen where the collagen is capable of binding with cellulosic pulp by simultaneously measuring the concentration and he molecular weight of said soluble collagen, whereby said reaction is complete when said molecular weight and said concentration are substantially maximized;

h. adding additional insoluble collagen with or without additional water to said solution containing high molecular weight soluble collagen in step f and mixing;

i. separating at least some of the solution containing high molecular weight soluble collagen from the insoluble collagen and returning the insoluble collagen to step d, whereby at least a portion of the proteolytic enzyme is recycled, and the separated solution containing high molecular weight soluble collagen is withdrawn;

j. adding said separated solution of step i comprising between about 0.1 dry wt % to about 2 dry wt % soluble collagen, based on dry weight of cellulosic material, to said diluted pulp slurry, and mixing at a shear rate and a time effective for interaction of said diluted pulp slurry solids and soluble collagen, whereby at least a substantial portion of said soluble collagen is bound to said paper pulp to form a collagen-pulp slurry;

k. diluting said collagen-pulp slurry to between about 0.1 dry wt % and 1 dry wt % consistency;

l. forming said collagen-pulp slurry into a sheet; and

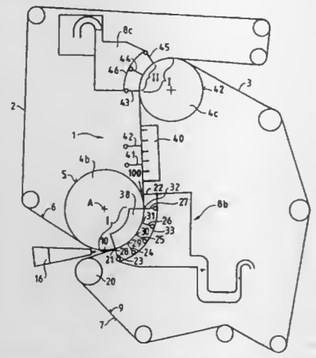
m. drying said sheet.

5,647,958

WIRE PART OF A MACHINE FOR THE MANUFACTURE OF FIBROUS MATERIAL WEBS

Volker Schmidt-Rohr; Hans-Peter Sollinger, both of Heidenheim; Klaus Henseler, Titisee-Neustadt, and Klaus Esslinger, Nattheim, all of Germany, assignors to Voith Sulzer Papiermaschinen GmbH, Heidenheim, Germany

Filed Jun. 6, 1995, Ser. No. 471,010
Claims priority, application Germany, Jun. 16, 1994, 44 20 801.4
Int. Cl.[6] D21F *1/00;9/02*
U.S. Cl. 162—203 37 Claims



1. A method for the operation of a twin wire section of a papermaking machine for producing continuous fibrous material webs, the method comprising the steps of:

(a) providing a support element for supporting both first and second continuous wire belts in a support region of a twin-wire zone of the papermaking making machine, the support element supporting the first wire belt at an inner surface thereof facing toward the support element, and the support element supporting the second wire belt at an outer surface thereof also facing toward the support element;

(b) guiding a fibrous material web between the first and second continuous wire belts in the support region of the twin-wire zone; and

(c) adjusting pressure only in the support region on an inner surface of the second wire belt, said second wire inner surface facing away from the support element, said pressure adjustment controllable between a partial vacuum and an excess pressure in the supporting region.

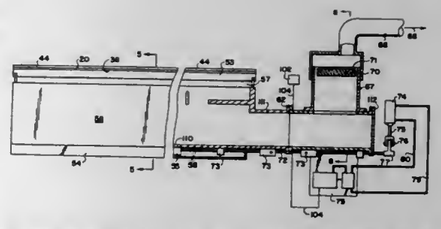
5,647,959

SYSTEM FOR FORMING AND DEWATERING A WEB ON A FOURDRINIER FABRIC

Glauco Corbellini, 33100 Via Carducci 48, Udine, Italy, and Peter A. Rodriguez, 1785 Selva Marina Dr., Atlantic Beach, Fla. 32233

Division of Ser. No. 395,059, Feb. 27, 1995, Pat. No. 5,522,969, which is a division of Ser. No. 116,400, Sep. 3, 1993, Pat. No. 5,393,382, which is a division of Ser. No. 717,880, Jun. 17, 1991, Pat. No. 5,242,547, which is a continuation of Ser. No. 384,744, Jul. 24, 1989, abandoned. This application Jun. 3, 1996, Ser. No. 660,079
Int. Cl.[6] D21F *1/48*
U.S. Cl. 162—351 19 Claims

1. A submerged drainage system in combination with and for removing water from a moving single horizontal Fourdrinier fabric having a drier end downstream of a wetter end, an outer surface, and an inner surface in a paper making process, said system comprising an elongated stationary dewatering meniscus tension unit having a housing with a bottom and an upper drainage surface in continuous sliding contact with said inner surface of said fabric and an aqueous dispersion of paper making fibers supported on said outer surface of said fabric and saturating said fabric through and to said inner surface, said dewatering meniscus tension unit being located below and at the wetter end of said fabric, said dewatering meniscus tension unit having an internal space containing a large volume of water extending to and maintained continuously in contact with said inner surface of said fabric to inhibit passage of air through said aqueous dispersion and formation of a water-to-air meniscus in said fabric, a plurality of passageways from said drainage surface to said internal space of said dewatering meniscus tension unit to conduct water from said outer surface to said inner surface of said fabric and into said internal space, a first elongated passageway extending through said housing adjacent said bottom and located generally transverse and generally coextensive with said fabric for conducting a large amount of water outwardly from said internal space and below said fabric, control means for said dewatering meniscus tension unit structured and arranged to control the level of the large volume of water in said internal space of said dewatering meniscus tension unit and to maintain a constant level of water in continuous contact with said inner surface of said fabric to inhibit formation of a water-to-air meniscus in said fabric, said control means including valve means at said first passageway for controlling the volume of water passing through said first passageway, and means for applying a small vacuum to said internal space of said dewatering meniscus tension unit and the large volume of water therein which modifies the natural tension of meniscus of water to induce drainage of a large amount of water through said fabric from said aqueous dispersion.

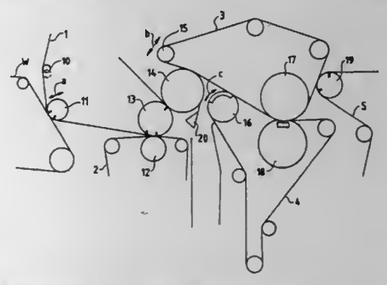


5,647,960

PRESS SECTION AND METHOD FOR STARTING AND OPERATING THEREOF

Gerhard Kotitschke, Steinheim, Germany, assignor to J.M. Voith GmbH, Heidenheim, Germany

Filed Oct. 14, 1994, Ser. No. 323,103
Claims priority, application Germany, Oct. 14, 1993, 43 35 024.0
Int. Cl.[6] D21F *3/04*
U.S. Cl. 162—360.2 11 Claims



1. A press section of a paper machine comprising:

(a) a pick-up roll;

(b) a take-off felt looping about at least the pick-up roll and a connected first pressing element;

(c) a counter element assigned to the first pressing element, said counter element and said first pressing element defining a first press unit;

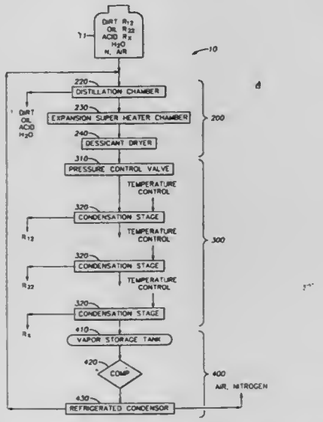
(d) a first pressing felt looping about at least the counter element of the first press unit;
(e) a second pressing element with a smooth roll with a smooth surface, said smooth surfaced roll for directly contacting a web and forming a second press unit with the first pressing element;
(f) a smooth press belt partially looping around a portion the second pressing element;
(g) a third pressing element looped about by the smooth press belt;
(h) a third counter element assigned to the third pressing element, said third counter element and said third pressing element forming a third press unit;
(i) a third pressing felt looping about at least the third counter element; and
(j) a take-off device downstream the third pressing unit with respect to a direction of conveyance of a paper web through the press section, said take-off device lying against the smooth press belt.

5,647,961

REFRIGERANT DECONTAMINATION AND SEPARATION SYSTEM

Spencer G. Lofland, Kilgore, Tex., assignor to Tom Nicol, Grapeland, Tex.

Filed Mar. 17, 1995, Ser. No. 406,384
Int. Cl.[6] B01D *3/42*
U.S. Cl. 203—2 **7 Claims**



1. A method for decontaminating and separating individual refrigerants from a mixture of different types of refrigerants, said mixture of different types of refrigerants being contaminated with solids, liquids and non-condensible gases, wherein said method comprises the steps of:
removing solid and liquid contaminants from the mixture of different types of refrigerants contaminated with liquids and non-condensible gases by first heating and then drying the mixture of different types of refrigerants contaminated with solids, liquids and non-condensible gases;
selectively condensing individual refrigerants, from the mixture of different types of refrigerants in a plurality of condensation stages;
removing non-condensible contaminants from the mixture of different types of refrigerants.

5,647,962

PROCESS FOR THE PREPARATION OF XEROGELS

Rolf-Michael Jansen, Kelkheim, and Andreas Zimmermann, Griesheim, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Filed Jun. 28, 1995, Ser. No. 495,931
Claims priority, application Germany, Jun. 30, 1994, 44 22 912.7
Int. Cl.[6] B01D *3/34;* **C01B** *33/12*
U.S. Cl. 203—57 **10 Claims**

1. A process for the preparation of xerogels, which comprises
a) adjusting an aqueous waterglass solution to a pH≦3.0, using an acid ion exchange resin or a mineral acid,
b) polycondensing the silicic acid produced thereby, by adding a base, to an SiO_2 gel
c) removing the water from the gel obtained in step b) by extractive distillation with an organic solvent which forms with water an azeotrope which separates into two phases on cooling, until the water content of the gel is ≦5% by weight,
d) reacting the gel obtained in step c) with a silylating agent,
e) drying the silylated gel obtained in step d) at pressures and temperatures which are below the critical pressure and/or the critical temperature of the organic solvent used in step c).

5,647,963

ELECTRODE MATERIALS FOR ELECTROCHEMICAL CELLS AND METHOD OF MAKING SAME

Jinshan Zhang, Duluth, and Anaba A. Anani, Norcross, both of Ga., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 20, 1995, Ser. No. 575,653
Int. Cl.[6] G25B *11/12*
U.S. Cl. 204—294 **28 Claims**

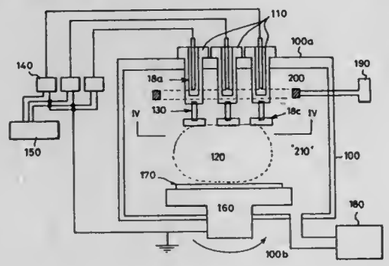
1. An electrode for an electrochemical cell, said electrode consisting of a carbon material, said carbon material being characterized by an X-ray diffraction pattern in which the d-spacing of the (002) plane is between 3.89 Å and 4.20 Å.

5,647,964

DIAMOND FILM SYNTHESIZING APPARATUS AND METHOD THEREOF USING DIRECT CURRENT GLOW DISCHARGE PLASMA ENHANCED CHEMICAL VAPOR DEPOSITION

Jae-Kap Lee; Young-Joon Baik, and Kwang Yong Eun, all of Seoul, Rep. of Korea, assignors to Korea Institute of Science and Technology, Seoul, Rep. of Korea

Filed Jun. 2, 1995, Ser. No. 458,761
Int. Cl.[6] C23C *14/00*
U.S. Cl. 204—298.12 **8 Claims**



1. A diamond film synthesizing apparatus using a direct current glow discharge plasma enhanced chemical vapor deposition, comprising:
a reactor having a head, an upper wall and a bottom wall;
a plurality of spaced apart cathode holders inserted into said upper wall of said reactor;

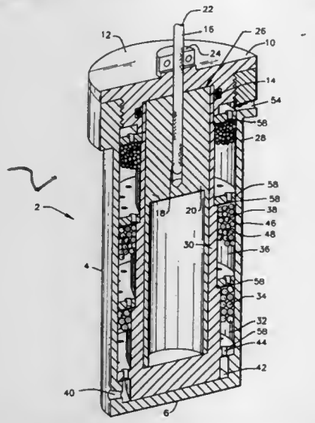
a plurality of cathode connecting rods, each cathode connecting rod connected at a first end thereof to a cathode holder and connected at a second end thereof to a cathode inside the reactor;
an anode inserted into said bottom wall of the reactor and having a substrate attached on a top surface thereof, whereby all the cathodes are spaced apart from the anode inside the reactor; and
a gas supplier connected to one side wall of the reactor having a circular gas supplying tube with a plurality of holes for injecting gas into the reactor.

5,647,965

APPARATUS AND METHOD FOR SEPARATING A CHARGED SUBSTANCE FROM A CONDUCTIVE FLUID

James R. Crose, 5 McCormick La., Chelmsford, Mass. 01824, and Sol L. Berg, 11 Royal Crest Dr., N. Andover, Mass. 01845

Filed Mar. 25, 1994, Ser. No. 218,221
Int. Cl.[6] B01D *35/06;* **B03C** *5/02*
U.S. Cl. 204—572 **24 Claims**



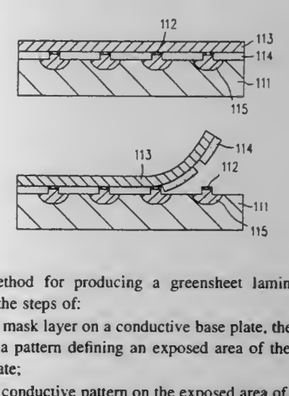
1. A device for removing a charged substance from a conductive fluid containing the same comprising:
(a) channel means for transporting said conductive fluid to a charged substance separation means having an inlet;
(b) charged substance separation means comprising,
at least one chamber defining a passageway for the flow of the conductive fluid from said inlet to an outlet,
electrostatic field generating means for generating an electrostatic field in transverse relationship to the direction of the flow through the passageway of the conductive fluid of sufficient intensity to induce a charge on a charged substance-receiving means and to draw the charged substance out of the direction of the flow of the conductive fluid and to a charged substance-receiving means, said electrostatic field generating means comprising power supply means, and at least first and second electrodes spaced apart from each other and insulation means in proximity to one of said electrodes for insulating the electrodes to an extent sufficient to prevent an electrical current from flowing therebetween, and
a charged substance-receiving means comprising a matrix of members contained within said at least one chamber and capable of being charged by said electrostatic field generating means and packed together with interstitial voids therebetween forming a serpentine pathway for receiving the charged substance from the conductive fluid and for retaining the charged substance thereon, said members comprising a core of an electrically polarizable material and an outer surface of a dielectric material, said charged substance receiving means positioned between said pair of electrodes to thereby produce a fluid having up to all of the charged substance removed therefrom.

5,647,966

METHOD FOR PRODUCING A CONDUCTIVE PATTERN AND METHOD FOR PRODUCING A GREENSHEET LAMINATION BODY INCLUDING THE SAME

Eiichi Uriu, Neyagawa; Osamu Makino, Hirakata; Hironobu Chiba, Itami, and Chisa Yokota, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Oct. 2, 1995, Ser. No. 537,512
Claims priority, application Japan, Oct. 4, 1994, 6-240083
Int. Cl.[6] H05K *3/70;* **C25D** *1/00*
U.S. Cl. 205—78 **21 Claims**



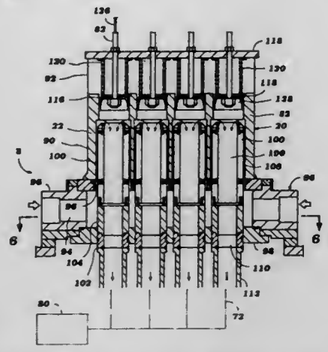
10. A method for producing a greensheet lamination body, comprising the steps of:
forming a mask layer on a conductive base plate, the mask layer having a pattern defining an exposed area of the conductive base plate;
forming a conductive pattern on the exposed area of the conductive base plate by electroforming using a plating liquid which substantially maintains the pattern of the mask layer; and
transferring the conductive pattern onto a first insulation greensheet without removing the mask layer from the conductive base plate;
forming a second insulation greensheet on a surface of the first insulation greensheet having the conductive pattern transferred thereon,
wherein the step of forming the conductive pattern includes a step for forming a conductive body projecting from the mask layer, and
wherein the step of transferring the conductive pattern includes a step for burying the conductive body projecting from the mask layer in the first greensheet.

17. A method for producing a greensheet lamination body according to claim 10, further comprising the steps of:
directly transferring the conductive pattern onto the first insulation greensheet without removing the mask layer;
laminating a third insulation greensheet on a surface of the first insulation greensheet, the surface having the conductive pattern transferred thereon;
directly transferring another conductive pattern onto the third insulation greensheet without removing the mask layer; and
laminating a second insulation greensheet on a surface of the third insulation greensheet, the surface having the another conductive pattern transferred thereon.

5,647,967
PLATING METHOD FOR CYLINDER

Yasuyuki Murase, and Masaaki Isobe, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Shizuoka, Japan

Filed Sep. 1, 1994, Ser. No. 299,838
Claims priority, application Japan, Sep. 2, 1993, 5-218753; Jun. 17, 1994, 6-136022
Int. Cl.[6] C25D *3/12;5/02*
U.S. Cl. 205—131 **7 Claims**



1. A method for forming a plating coating on a circumferential inner surface of a workpiece, comprising the steps of:

(a) placing a hollow electrode having an end within said circumferential inner surface, wherein an inner passage of plating liquid is formed inside said hollow electrode, and an outer passage of plating liquid is formed between said hollow electrode and said circumferential inner surface of said workpiece, said inner passage and said outer passage being communicated via said end of said hollow electrode;

(b) permitting a plating liquid containing nickel and a dispersed substance-forming material, to flow at a flow rate of 1.0–3.0 m/see through said outer passage and said inner passage via said end of said hollow electrode, said plating liquid containing sodium at a concentration of 2–3.5 g/l, and phosphorous at a concentration such that the phosphorus content of a plating coating when formed is 0.5% or more but less than 1.0% by weight of the plating coating; and

(c) impressing a voltage between said circumferential inner surface and said electrode to give an electric current density therebetween sufficient to form on said circumferential inner surface of the workpiece a plating coating containing a dispersed substance and phosphorous, said phosphorous being in an amount of 0.5% or more but less than 1.0% by weight of the plating coating.

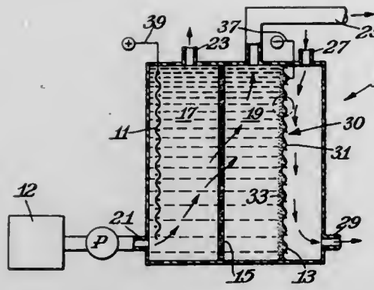
5,647,968
PROCESS FOR MAKING PEROXIDE

Mark E. Fraser, Nashua; Alan S. Woodman, Epping, both of N.H.; Everett B. Anderson, Reading, Mass., and E. Jennings Taylor, Troy, Ohio, assignors to PSI Technology Co., Andover, Mass.

Continuation of Ser. No. 276,178, Jul. 15, 1994, abandoned. This application Apr. 17, 1996, Ser. No. 633,563
Int. Cl.[6] C25B *1/30*
U.S. Cl. 205—466 **10 Claims**

1. A process for producing an alkaline solution containing peroxide ion in an electrochemical cell, said process comprising:

operating said electrochemical cell at a voltage which can vary with the current density but does not exceed about 2 volts for a current density of at least 200 mA/cm^2, said electrochemical cell comprising a partitioning means for partitioning said electrochemical cell into an anode compartment and a cathode compartment; an anode compartment containing an anode and



an aqueous alkaline anolyte; a cathode compartment defining a space containing a generally free-flowing aqueous alkaline catholyte, a gas-diffusion cathode having two major surfaces, said cathode occupying not more than a minor proportion of the volume of said space; the second major surface of said cathode is gas-permeable and is in contact with an oxygen-containing gas, so that the oxygen-containing gas contacts said cathode essentially independently and separately from said generally free-flowing aqueous alkaline electrolyte, said first major surface of said cathode comprising an electrochemically active material, said active material comprising:

a particulate catalyst support material having a surface area, by the B.E.T. method, of about 50 to about 2000 m^2/g,

deposited on the particles of catalyst support material of said active layer, 0.1 to 50 weight-%, based on the weight of the active layer, of a particulate elemental metal comprising gold or gold alloy particles having an average size, measured by transmission electron microscopy, which is greater than about 4 but less than about 20 nanometers; said particulate elemental metal is substantially selectively catalytic for the reduction of oxygen to peroxide ion or hydrogen peroxide;

and electrical leads in electrical contact with said anode and said gas-diffusion cathode;

causing said generally free-flowing catholyte to flow across said first major surface of said cathode;

contacting said second major surface of said cathode with an oxygen-containing gas,

forming a multi-phase interface within said cathode, said interface comprising said active material, said oxygen-containing gas, and said catholyte,

reducing oxygen to peroxide at said multi-phase interface and permitting the resulting peroxide to diffuse into said catholyte, and

withdrawing from said cathode compartment an alkaline solution of peroxide in which the hydroxyl:perhydroxyl ratio does not exceed about 2:1.

5,647,969
METHOD AND SYSTEM FOR REMOVING IONIC SPECIES FROM WATER

Zhenhua Mao, Duluth, Ga., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 10, 1995, Ser. No. 500,300
Int. Cl.[6] C02F *1/461;1/469*
U.S. Cl. 205—743 **8 Claims**

1. A method of purifying water comprising the steps of:

providing a pair of electrodes formed from activated carbon layers substantially parallel to each other with a gap therebetween;

applying a voltage across the pair of activated carbon layers;

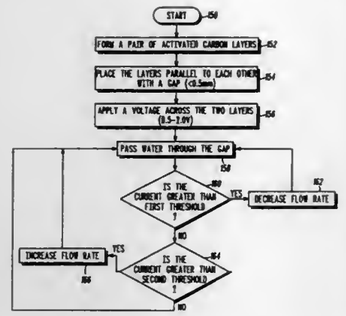
passing raw water at a water flow rate through the gap;

measuring a current through the activated carbon layers;

comparing the measured current to a first threshold;

decreasing the water flow when the current exceeds the threshold;

comparing the measured current to a second threshold; and

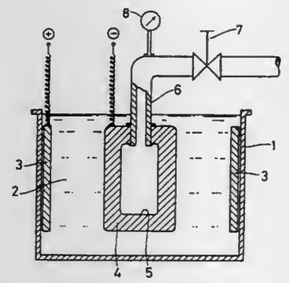


increasing the water flow rate when the current is less than the second threshold.

5,647,970
METHOD OF PRODUCING ULTRAHIGH PRESSURE GAS

Yoshiaki Arata, 247, Aza Shonomoto, Gunge, Mikage-cho, Higashinada-ku, Kobe-shi, Hyogo, Japan

Filed Dec. 27, 1995, Ser. No. 578,933
Claims priority, application Japan, Dec. 27, 1994, 6-324459
Int. Cl.[6] B01D *53/00;53/32*
U.S. Cl. 205—763 **3 Claims**



1. A method of producing a high pressure gas, the method comprising:

surrounding a container with a solution or a gas, said container having walls defining an inner space, wherein said walls are made of a solid material which is permeable to gas elements;

sealing said container so that gas pressure can accumulate in said inner space of said container;

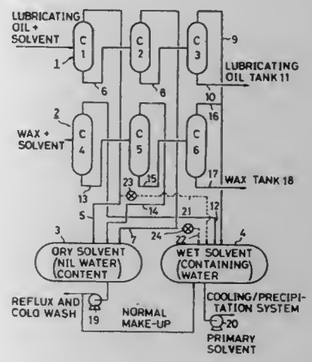
producing an electric field through said container between a pair of electrodes so as to create a solid-gas equilibrium reaction to absorb and dissolve a gas element, contained in said solution or said gas, through said walls and into said sealed inner space by use of electrical energy produced between said electrodes; and

maintaining said reaction so as to increase the concentration of the gas element dissolved in said walls of said container until the pressure of the gas that has penetrated through said container walls into said sealed inner space increases to a level not greater than the pressure resistance of said container.

5,647,971
METHOD AND APPARATUS FOR CHANGING SOLVENT COMPOSITION IN A SOLVENT RECOVERY SYSTEM OF A DEWAXING APPARATUS

Akira Kawamura, Kanagawa-ken; Susumu Suzuki, Yokosuka, and Masahumi Imamura, Yokohama, all of Japan, assignors to Nippon Petroleum Refining Company Limited, Tokyo, Japan

Filed Aug. 23, 1994, Ser. No. 294,706
Claims priority, application Japan, Aug. 27, 1993, 5-212887
Int. Cl.[6] C10G *73/00*
U.S. Cl. 208—33 **1 Claim**



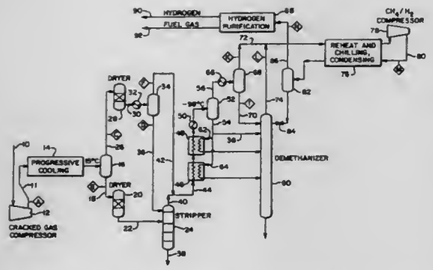
1. In a method of changing the solvent composition in the solvent recovery system of a dewaxing apparatus which is used for manufacturing wax and lubricating oil by mixing a mixed solvent MEK and toluene with stock oil, cooling the mixture and filtering the improvement consisting essentially of a lubricating oil and solvent recovery system, including first and second recovery towers for recovering lubricating oil and solvent, by introducing into said system a lubricating oil which has been mixed with said mixed solvent and evaporating off the solvent from the lubricating oil, and a wax and solvent recovery system for recovering wax and solvent by introducing thereto a wax which has been mixed with said mixed solvent, and evaporating off the solvent from the wax, said method involving increasing or decreasing the concentration of MEK in a wet solvent used as a primary solvent for initially mixing with the stock oil, by introducing a part of a dry solvent from the first and second recovery towers to a wet solvent tank and mixing said part of the dry solvent from the recovery towers of the lubricating oil and solvent recovery system with said wet solvent recovered from the wax and solvent recovery system and which was previously passed to said wet solvent tank, whereby the solvent is changed to possess an optimum MEK/toluene ratio for the stock oil to be treated without the addition of complex apparatus or large scale modification of the equipment.

5,647,972
LOW PRESSURE CHILLING TRAIN FOR OLEFIN PLANTS

Steven I. Kantorowicz, Nutley; Stephen J. Stanley, Matawan, both of N.J.; David M. Wadsworth, Laconia, N.H., and Rene C. L. Warner, Benthuizen, Netherlands, assignors to ABB Lummus Global Inc., Bloomfield, N.J.

Filed Jan. 5, 1995, Ser. No. 369,177
Int. Cl.[6] C07C *7/00*
U.S. Cl. 208—100 **8 Claims**

1. A method of processing, at a relatively low pressure, a cracked gas feedstream containing hydrogen, methane, C_3 to C_5 hydrocarbons and C_6 and heavier hydrocarbons to separate hydrogen and methane and produce a hydrogen stream at a relatively high pressure comprising:



a. compressing said feedstream to a pressure of less than 27 bars;

b. cooling said compressed feedstream to a temperature in the range of 10° to 25° C. thereby forming a first condensed portion and a first vapor portion of said compressed feedstream and separating said first condensed portion and said first vapor portion;

c. drying said first condensed portion and said first vapor portion;

d. cooling said dried first vapor portion to a temperature in the range of −20° to 5° C. thereby forming a second condensed portion and a second vapor portion;

e. feeding said first and second condensed portions to a stripper tower wherein said condensed portions are separated into a stripper bottoms containing essentially all of said C_6 and heavier hydrocarbons and a stripper overhead containing at least a portion of said C_3 to C_5 hydrocarbons;

f. combining said second vapor portion and said stripper overhead to produce a combined vapor stream containing hydrogen, methane and C_3 to C_5 hydrocarbons with essentially no C_6 and heavier hydrocarbons;

g. cooling said combined vapor stream to a temperature range of −110° to −72° C. thereby forming a third condensed portion and a third vapor portion;

h. dividing said third condensed portion into at least two demethanizer feed portions;

i. feeding a first one of said demethanizer feed portions directly to a demethanizer at a selected feed location;

j. heating a second one of said demethanizer feed portions to a temperature higher than said first one of said demethanizer feed portions and feeding into said demethanizer at a feed location below said selected feed location;

k. cooling said third vapor portion to a temperature range of −145° to −120° C. thereby forming a fourth condensed portion and a fourth vapor portion containing essentially only hydrogen, methane and a quantity of C_2 hydrocarbons;

l. feeding said fourth condensed portion to said demethanizer at a feed location above said selected feed location;

m. separating in said demethanizer an overhead containing essentially only hydrogen, methane and a quantity of C_2 hydrocarbons and a bottoms containing C_2 and heavier hydrocarbons;

n. compressing and thereby heating said demethanizer overhead and said fourth vapor portion to a pressure of 25 to 45 bars; and

o. cooling said compressed demethanizer overhead and fourth vapor portion to a temperature in the range of −140° to −100° C. thereby forming a condensed demethanizer reflux and a vapor containing essentially only hydrogen and methane.

5,647,973

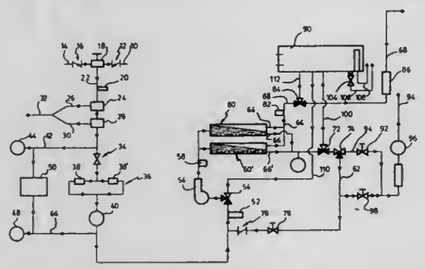
REVERSE OSMOSIS FILTRATION SYSTEM WITH CONCENTRATE RECYCLING CONTROLLED BY UPSTREAM CONDUCTIVITY

Jerry W. Desaulniers, Montreal, Canada, assignor to Master Flo Technology Inc., Brossard, Canada

Continuation of Ser. No. 236,100, May 2, 1994, abandoned. This application Nov. 22, 1995, Ser. No. 561,924

Int. Cl.[6] B01D *61/12*

U.S. Cl. 210—96.2 **4 Claims**



1. A filtration system for a liquid comprising a reverse osmosis unit, a liquid inlet thereto, a permeate outlet and a concentrate outlet, first, second, third and fourth conduits, said reverse osmosis unit constructed and arranged to divide said liquid into a first permeate stream passed through said permeate outlet and a second concentrate stream passed through said concentrate outlet said first conduit extending from a source of liquid upstream of said reverse osmosis unit to said liquid inlet, said second conduit extending from said concentrate outlet to a flow control means adapted to control respective amounts of concentrate flow to said third and fourth conduits, said third conduit being connected to said first conduit, conductivity sensor means on said first conduit to sense conductivity of liquid flowing therethrough, said conductivity sensor means being mounted downstream of a point where said third conduit connects with said first conduit, said sensor means being operatively connected to said flow control means such that amounts of concentrate directed to said third and fourth conduits may be varied in accordance with measurements of said conductivity sensor means.

5,647,974

HEXAGONAL MOLECULAR STRUCTURE WATER MANUFACTURING APPARATUS AND A METHOD THEREOF

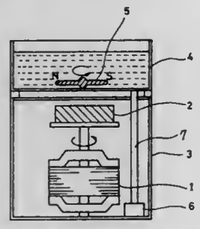
Jin Hak Shim, Busan, and Jun Il Song, Kyungsangnam-Do, both of Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 30, 1994, Ser. No. 366,972

Claims priority, application Rep. of Korea, Jul. 15, 1994, 17121/1994; Oct. 27, 1994, 27646/1994

Int. Cl.[6] C02F *1/48*

U.S. Cl. 210—103 **5 Claims**



1. A hexagonal molecular structure water manufacturing apparatus comprising:

a container for storing water;

a first magnet for rotation in said container for producing upon rotation a hexagonal molecular structure for said water in said container and a second magnet connected to be driven by a motor and magnetically coupled to said first magnet to drive said first magnet;

a weight detection section including a weight detection sensor for detecting a weight of the water in the container and for generating a weight signal corresponding to said detected weight;

a temperature sensing circuit for providing a temperature signal representing the temperature of said water;

a switch circuit for providing a starting signal;

a microcomputer including first means for determining whether or not said temperature signal lies within a predetermined range upon the presence of said starting signal, second means responsive to said first means for determining a time period for rotation of said motor dependent upon the weight of the water in said container when said temperature signal lies within said predetermined range and if the weight of the water in said container is above a predetermined value, and fourth means responsive to said third means for generating a first control signal for a length of time equal to said time period; and

a motor driving section for driving said motor to rotate said first and second magnets in accordance with said first control signal from the forth means of said microcomputer.

5,647,975

DEVICE FOR RECOVERING POLLUTANTS SPILLED ON WATER OR ON THE GROUND

Jean Armand Louis Bronnec, 9, rue Quartier Maitre-Bondon, Brest F-29200, France

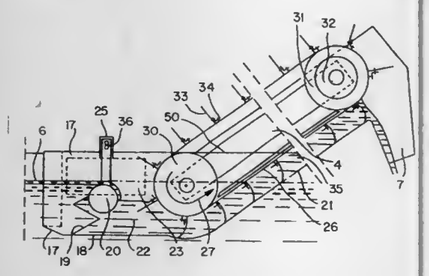
PCT No. PCT/FR95/00585, § 371 Date Jan. 5, 1996, § 102(e) Date Jan. 5, 1996, PCT Pub. No. WO95/30798, PCT Pub. Date Nov. 16, 1995

PCT Filed May 5, 1995, Ser. No. 578,659

Claims priority, application France, May 6, 1994, 94 05590

Int. Cl.[6] E02B *15/04*

U.S. Cl. 210—122 **20 Claims**



1. An apparatus for recovering floating matter comprising:

a recovery compartment for receiving matter to be recovered;

a weir comprising at least one float, the weir capable of being at least partially immersed in the recovery compartment;

an emptying system for the recovery compartment; and

at least one exterior float connected to the weir such that the at least one exterior float may be borne by an exterior water plane exterior to the recovery compartment such that the weir is sensitive both to level variations in the recovery compartment and to relative movements of the exterior water plane.

5,647,976

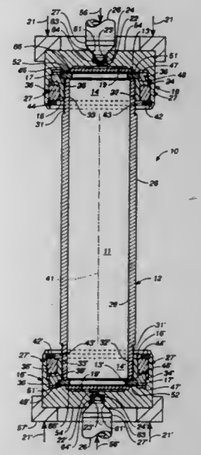
HIGH PRESSURE AND TEMPERATURE CELL FOR SOLVENT EXTRACTION

Norman J. Rothe, Foster City, and Gary L. Gleave, Milpitas, both of Calif., assignors to Dionex Corporation, Sunnyvale, Calif.

Filed Mar. 3, 1995, Ser. No. 398,144

Int. Cl.[6] B01D *11/00*

U.S. Cl. 210—137 **36 Claims**



1. A fluid extraction cell apparatus comprising:

a pressure resistant vessel forming a cavity, and having at least one shoulder portion positioned at a distal end of said vessel to define an opening communicating with said cavity;

an insert member engaging said vessel proximate said shoulder portion for removable mounting thereto;

a seal member positioned proximate said insert member and having a front side positioned for contact with said shoulder portion upon mounting engagement of said insert member with said seal member;

an end cap formed for sliding cooperation with said insert member to enable an interior surface of said end cap to contact a backside of said seal member such that an exterior force applied to said end cap in an inwardly direction toward said shoulder portion causes increasing sealing contact between said seal member and said shoulder portion; and

a securing device for securing said end cap to said insert member.

5,647,977

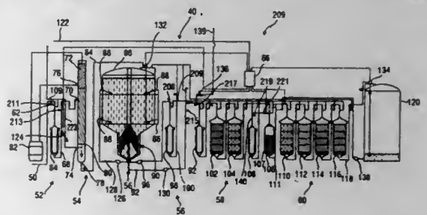
METHOD AND APPARATUS FOR REMOVING CONTAMINANTS FROM INDUSTRIAL WASTE WATER

Johnny Arnaud, Houston, Tex., assignor to Hydrotreat, Inc., Houston, Tex.

Filed Dec. 5, 1994, Ser. No. 349,351

Int. Cl.[6] C02F *9/00;1/24;1/28*

U.S. Cl. 210—167 **23 Claims**



1. A fluid treatment system adapted to remove contaminants from an aqueous fluid, comprising:

an aeration section arranged to receive said aqueous fluid said aeration section comprising an air dispersal assembly for aerating said aqueous fluid and for separating lighter contaminants from said aqueous fluid;

a suspended solids removal section arranged to receive said aqueous fluid from said aeration section, said suspended solids removal section including a mixing vessel for facilitating mixture of the aqueous fluid with flocculating agents and a separation assembly for establishing a laminar flow to promote settling of solid particles; and

a contact media section adapted to receive said aqueous fluid from said solids removal section, said contact media section including a plurality of contact media adapted to contact said fluid, said contact media selected to remove at least one of the contaminants present in said aqueous fluid;

wherein said sections are fluidly coupled together in a sequence.

5,647,978

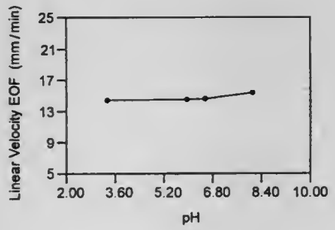
Patent Not Issued For This Number

5,647,979

ONE-STEP PREPARATION OF SEPARATION MEDIA FOR REVERSED-PHASE CHROMATOGRAPHY

Jia-Li Liao, San Pablo, Calif., and Stellan Hjertén, Upsala, Sweden, assignors to Bio-Rad Laboratories, Inc., Hercules, Calif.

Filed Jun. 14, 1996, Ser. No. 666,061
Int. Cl.[6] B01D *15/08*
U.S. Cl. 210—198.2 **31 Claims**



16. A process for the preparation of a separation medium for continuous bed reversed-phase electrochromatography, comprising:

(a) forming a mixture comprising the following components:

(i) a water-soluble monomer selected from the group consisting of vinyl, acrylic and methacrylic monomers,

(ii) a crosslinking agent,

(iii) a water-soluble monomer having a terminal vinyl group and a charged group,

(iv) an alkyl methacrylate, the alkyl group having 3 to 30 carbon atoms, and

(v) a detergent,

in an aqueous medium; and

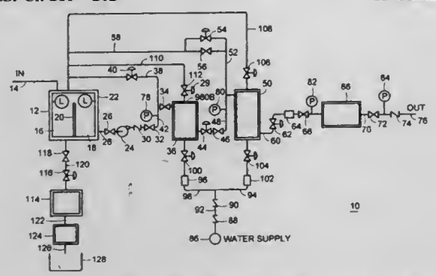
(b) polymerizing components (i), (ii), (iii) and (iv) in said mixture in a one-step reaction.

5,647,980

APPARATUS AND METHOD FOR TREATING WASTE WATER FROM A RESIDENTIAL HOME

Carole M. Smith, 5 Aspen Cir., Framingham, Mass. 01701, and Philip W. Mercer, 102 Ponemah Rd., Amherst, N.H. 03031

Filed Jun. 6, 1994, Ser. No. 254,599
Int. Cl.[6] C02F *9/00*
U.S. Cl. 210—202 **11 Claims**



1. A system for processing raw waste water from a residential home containing coarse and fine materials, the system comprises:

(a) a chamber adapted to receive the waste water, said chamber comprising a setting chamber and a pump chamber, said settling chamber being in communication with said pump chamber, said settling chamber comprising a lower portion and an upper portion and being adapted to allow the coarse and fine materials to settle at said lower portion under the force of gravity, said chamber comprising means to allow the waste water to flow to said pump chamber when the waste water within said settling chamber reaches a specified level;

(b) a coarse filer adapted to remove the coarse materials from the waste water;

(c) means for providing back wash to said coarse filter to clean and remove the coarse material from said coarse filter and means for returning said back wash containing the coarse material to said settling chamber;

(d) a fine filter adapted to remove the fine materials from the waste water;

(e) means for providing back wash to said fine filter to clean and remove the fine material from said fine filter and means for returning said back wash containing the fine material to said settling chamber;

(f) a disinfectant chamber comprising means to disinfect the waste water leaving said coarse filer and said fine filter; and

(g) means for pumping the waste water from said pump chamber through said coarse filter and said fine filter and then to said disinfectant chamber.

5,647,981

DEVICE FOR SEPARATING PHASES OF DIFFERENT DENSITIES AND CONDUCTIVITIES BY ELECTROCOALESCENCE AND CENTRIFUGATION

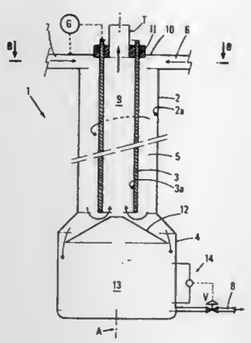
Isabelle Prevost, Conflans Sainte Honorine, and Alexandre Rojey, Rueil Malmaison, both of France, assignors to Institut Francais du Petrole, Rueil Malmaison, France

Filed Mar. 15, 1994, Ser. No. 212,762
Claims priority, application France, Mar. 15, 1993, 93 03112
Int. Cl.[6] B01D *21/26;* **B03C** *5/00*
U.S. Cl. 210—243 **13 Claims**

1. A device for separating a mixture containing at least a continuous phase (I) and at least a conducting dispersed phase (II) comprising particles in the continuous phase, the two phases having different densities, comprising:

at least two substantially cylindrical parts, one part being located inside another part and delimiting an annular zone,

means for introducing the mixture to be separated to a periphery of said one part to produce a rotational motion of the mixture in the annular zone around the one part and to impart a centrifugal force to the mixture,



means for applying between the two substantially cylindrical parts, a potential difference for causing the particles of the dispersed phase (II) to coalesce and to partially separate from the continuous phase due to the centrifugal force in the annular zone,

receiving means for further separating the coalesced particles from the continuous phase (I), and

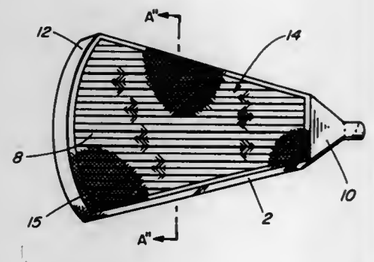
means for discharging the continuous phase (I) and the dispersed phase (II), separately from the device.

5,647,982

VACUUM FILTER ELEMENT

James (Jimmy) Haythornthwaite, 155 Fairhaven Box 763, Hudson, PQ, Canada

Filed May 10, 1995, Ser. No. 438,272
Int. Cl.[6] B01D *29/05*
U.S. Cl. 210—346 **1 Claim**



1. In a filter element for use in a rotating vacuum filter assembly for removing suspended particles from a liquid carrier, the filter element including a frame and a pleated insert for supporting a filter medium, the frame having an inner end, an outer end and intermediate sides defining the perimeter of the filter element and where the inner end is adapted for mounting the frame to a hollow central hub and defines a central passage communicating with a corresponding passage in the hub, the improvement comprising;

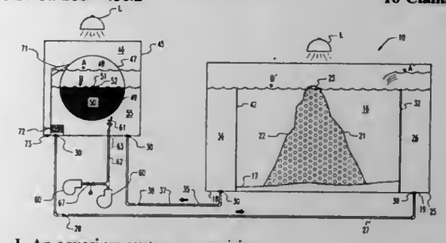
an inwardly facing c-shaped channel on the frame for permitting movement of a fluid around the perimeter of the frame and wherein the pleated insert includes a plurality of opposed and parallel v-shaped channels each having an apex, the pleated insert mounted within the channel of the frame wherein the apex of each channel is attached within the c-shaped channel at each point of overlap between each apex and the c-shaped channel.

5,647,983

AQUARIUM SYSTEM

Christopher A. Limcaco, P.O. Box 153, Greenwood, Ind. 46142

Filed Nov. 3, 1995, Ser. No. 552,915
Int. Cl.[6] C02F *3/02;3/08*
U.S. Cl. 210—416.2 **16 Claims**



1. An aquarium system, comprising:

an inlet conduit;

an aquarium tank defining a first container for water, said tank in fluid communication with said inlet conduit to receive water displaced from said inlet conduit;

an outlet conduit in fluid communication with said tank for receiving water displaced from said tank;

a water treatment unit defining a second container for water, said second container in fluid communication with said inlet conduit and said outlet conduit, and including,

a media wheel rotatably supported in said water treatment unit, said media wheel being divided into two portions, a first portion of said two portions being hollow, and a second portion of said two portions carrying a volume of displacement media, said displacement media being fixed within said second portion so that said media in said second portion is alternately submersible into and raisable out of water contained in said water treatment unit as said media wheel is rotated, said media wheel defining means to alternately

displace a volume of water from said unit to said inlet conduit and into said tank when said displacement media is submersed and

allow the volume of water to flow from said tank to said outlet conduit and into said unit to fill said hollow portion when said displacement media is raised from water in the unit,

to thereby cycle water through the system; and

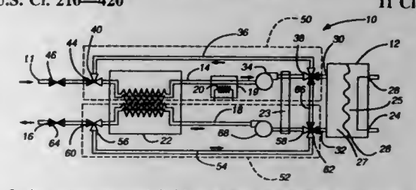
means for rotating said media wheel.

5,647,984

EXTRACORPOREAL FLUID TREATMENT SYSTEMS SELECTIVELY OPERABLE IN A TREATMENT MODE OR A DISINFECTING MODE

Roy S. Hovland, Denver; Byron W. Larson, Arvada, and Jo-Ann B. Maltais, Morrison, all of Colo., assignors to COBE Laboratories, Inc., Arvada, Colo.

Filed Jun. 7, 1995, Ser. No. 477,491
Int. Cl.[6] A61M *1/14;* **B01D** *61/30*
U.S. Cl. 210—420 **11 Claims**

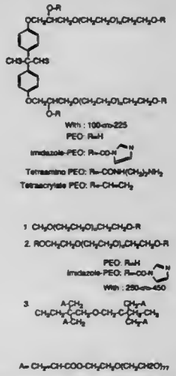


1. An extracorporeal fluid treatment apparatus selectively operable in a treatment mode or a disinfecting mode, said apparatus comprising:

an extracorporeal filtration device defining a chamber in which a body fluid from a patient is treated;

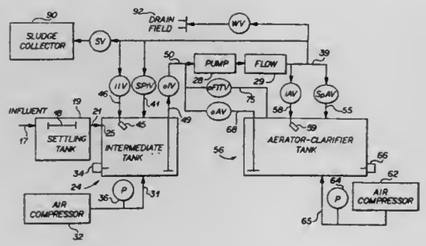
an inlet line for receiving an input fluid;
an input fluid circuit including:
a pre-treatment portion operatively connected to said inlet line for receiving said input fluid wherein said pre-treatment portion is also in selective fluid communication with said filtration device when said apparatus is in treatment mode, said pre-treatment portion having an input collection point and an input return point, said input return point being positioned in said pre-treatment portion upstream of said input collection point; and
an input shunt in selective fluid communication with said pre-treatment portion for selectively receiving said input fluid from said pre-treatment portion at said input collection point and returning said input fluid to said pre-treatment portion at said input return point;
an input pump operatively positioned in said pre-treatment portion;
a heater operatively positioned in said pre-treatment portion;
a drain line for removing an output fluid from said apparatus;
an output fluid circuit including:
a post-treatment portion operatively connected to said drain line and in selective fluid communication with said filtration device when said apparatus is in treatment mode to receive said output fluid therefrom for flow out said drain line, said post-treatment portion having an output collection point and an output return point, said output return point being positioned in said post-treatment portion upstream of said output collection point; and
an output shunt in selective fluid communication with said post-treatment portion for selectively receiving said output fluid from said post-treatment portion at said output collection point and returning said output fluid to said post-treatment portion at said output return point;
an output pump to induce a circulation of said output fluid throughout said output fluid circuit; and
output fluid heating means for heating said output fluid; such that when said apparatus is in disinfecting mode, said input fluid flowing in said input fluid circuit and said output fluid flowing in said output fluid circuit circulate at a sufficiently high temperature and for a sufficiently long period of time to disinfect both of said input and output fluid circuits.

5,647,985
WHOLE BLOOD LEUKODEPLETION AND PLATELET FILTER
Neng S. Ung-Chhun, Lincolnshire, and Richard J. Johnson, Mundelein, both of Ill., assignors to Baxter International Inc., Deerfield, Ill.
Filed Oct. 17, 1994, Ser. No. 323,559
Int. Cl.[6] B01D *39/02; C08J 7/04; C09D 171/02*
U.S. Cl. 210—504 **4 Claims**



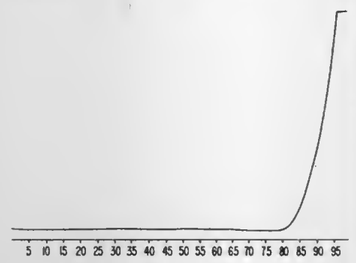
4. Blood cell fractionation means comprising:
a filter matrix having a fibrous structure, and
a coating thereon comprising an isopolymer of a high molecular weight tetraacrylatepolyalkylene oxide, polymerized by exposure to radiation.

5,647,986
APPARATUS AND PROCESS FOR DISTRIBUTED TREATMENT OF WASTEWATER
Dilip Nawathe, 210 Brittany Ct., Duluth, Ga. 30136, and Rocky R. White, P.O. Box 1884, Lilburn, Ga. 30226
Filed Dec. 2, 1994, Ser. No. 348,592
Int. Cl.[6] C02F *3/20*
U.S. Cl. 210—608 **42 Claims**

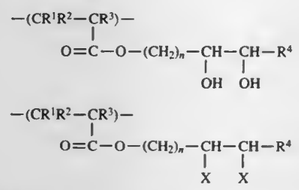


1. A process for aerobic treatment of wastewater containing organic matter, comprising the steps of:
collecting wastewater flowing into a first tank;
aerating the wastewater in the first tank to promote aerobic treatment of organic matter in the wastewater;
when a predetermined amount of wastewater is in the first tank, transferring a batch of wastewater from the first tank to a second tank until a predetermined level of wastewater is reached in the second tank;
aerating the batch of wastewater in the second tank for further aerobic treatment of organic matter remaining therein, while continuing to collect wastewater flowing into the first tank, and then;
clarifying the aerated batch of wastewater in the second tank by allowing the wastewater to settle so that sludge remaining in the wastewater settles to the bottom of the second tank and a clear supernatant liquid from the treated wastewater overlies the settled sludge in that tank;
transferring the clear supernatant liquid from the second tank for dispersal;
transferring the settled sludge from the second tank to the first tank so that the transferred sludge combines with organic matter in the wastewater continuing to enter the first tank, thereby augmenting an aerobic biomass in the first tank; and
adding no wastewater to the second tank during the steps of aerating the batch in the second tank, clarifying the aerated batch, transferring supernatant from the second tank, and transferring sludge from the second tank, whereby the batch of wastewater undergoes treatment in the second tank without disturbance or dilution by incoming wastewater.

5,647,987
ION EXCHANGERS
Egbert Müller, Erzhausen; Roland Gensert, Rödermark, and Peter Poguntke, Otzberg, all of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany
PCT No. PCT/EP94/03168, § 371 Date Apr. 3, 1996, § 102(e) Date Apr. 3, 1996, PCT Pub. No. WO95/09695, PCT Pub. Date Apr. 13, 1995
PCT Filed Sep. 22, 1994, Ser. No. 624,478
Claims priority, application Germany, Oct. 4, 1993, 43 33 821.6
Int. Cl.[6] B01D *15/08*
U.S. Cl. 210—635 **10 Claims**



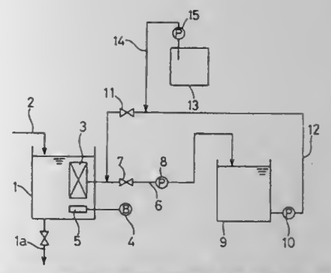
1. A separation material for ion exchange chromatography comprising a hydroxyl-containing base support on the surface of which polymers are covalently bonded, wherein:
a) the base support contains aliphatic hydroxyl groups,
b) the covalently bonded polymers are bonded to the base support via a terminal monomer unit,
c) the polymers contain monomer units of both the formula II and the formula III:



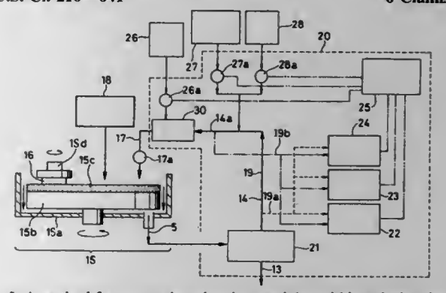
in which
R^1, R^2 and R^3 independently of one another are H or CH_3,
R^4 is H, C_1–C_5-alkyl or C_6–C_{12}-aryl,
n is an integer between 1 and 5,
one radical X is OH and the other radical X is NR^5R^6, $N^+R^5R^6R^7$ or SO_3H, and R^5, R^6 and R^7 independently of one another are C_1–C_4-alkyl, it also being possible for one or both radicals R^5 and R^6 to be H, and
d) the monomer units are linked linearly.

5,647,988
METHOD OF BACK-WASHING SUBMERGED-TYPE CERAMIC MEMBRANE SEPARATION APPARATUS
Toshio Kawanishi; Shigeki Yokoyama; Katsuro Ishihara; Yoshihisa Narukami; Masahiko Shioyama; Mikiharu Tokushima, and Toshiya Ozaki, all of Osaka, Japan, assignors to Kubota Corporation, Japan
Filed Dec. 2, 1994, Ser. No. 349,014
Claims priority, application Japan, May 30, 1994, 6-115783
Int. Cl.[6] B01D *62/02*
U.S. Cl. 210—636 **7 Claims**

1. A method for back-washing a ceramic membrane separation apparatus adapted to be submerged in treatment water contained in a water treatment vessel, said method comprising the step of:
forcibly supplying filtrate from the apparatus and a chemical agent, separately, to filtrate passages in ceramic membrane filters to wash the ceramic membrane filters with the filtrate during a water washing and to wash the ceramic membrane filters with the chemical agent during a chemical washing, wherein the water washing and the chemical washing are carried out on the basis of a predetermined frequency ratio and a predetermined time period, said time period of the water washing being between approximately 0.5 seconds and 60 seconds, in order to forcibly supply the filtrate to the filtrate passages to provide an applied pressure acting on the ceramic membrane filters, and said time period of the chemical washing being between approximately 10 seconds and 300 seconds, in order for the chemical agent to be forcibly supplied to the filtrate passages to thoroughly permeate the ceramic membrane filters.



5,647,989
METHOD FOR RECOVERING ABRASIVE PARTICLES
Yoshihiro Hayashi, Tokyo; Kouichi Yabe, Yokohama, and Tetsuo Mizuniwa, Yokosuka, all of Japan, assignors to Kurita Water Industries Ltd., and NEC Corporation, both of Tokyo, Japan
Filed Oct. 12, 1995, Ser. No. 542,434
Claims priority, application Japan, Oct. 14, 1994, 6-249851
Int. Cl.[6] B01D *61/00*
U.S. Cl. 210—641 **6 Claims**



1. A method for recovering abrasive particles within a desire size range from a spent abrasive suspension obtained from polishing a semiconductor substrate or a surface layer formed on said substrate, said suspension additionally contain coarse impurity particles which are coarser than said desired size range and fine impurity particles which are finer than said desired size range, said method comprising the steps of:
subjecting the spent abrasive suspension to microfiltration using a microfiltration membrane which permits the permeation of a filtrate containing the abrasive particles and the fine impurity particles therethrough and retains the coarse impurity particles on the retentate side thereof;
subjecting the filtrate from the microfiltration to ultrafiltration using an ultrafiltration membrane which allows water and the fine impurity particles to permeate therethrough and retains the abrasive particles on concentrate side thereof;

recovering the abrasive particles from the concentrate side of said ultrafiltration membrane; and

recycling said recovered abrasive particles for polishing said semiconductor substrate.

5,647,990

CENTRIFUGAL METHOD FOR CONCENTRATING MACROMOLECULES FROM A SOLUTION AND DEVICE FOR CARRYING OUT SAID METHOD

Vincenzo Vassarotti, Au Village, Bugnaux sur Bolle, Switzerland

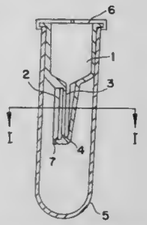
PCT No. PCT/EP94/01701, § 371 Date Jan. 20, 1995, § 102(e) Date Jan. 20, 1995, PCT Pub. No. WO94/27724, PCT Pub. Date Dec. 8, 1994

PCT Filed May 24, 1994, Ser. No. 374,594

Claims priority, application Sweden, May 21, 1993, 9301759

Int. Cl.[6] B01D *21/26;61/00*

U.S. Cl. 210—650 **29 Claims**



1. Method for concentrating macromolecules from a solution by means of spinning a concentrator device in a centrifuge, said device comprising a sample reservoir for receiving a sample to concentrate or purify, filter means for filtering the sample, a centrifuge tube for collecting the filtrate and a particulate concentrate pocket for retention of concentrate, said method comprising the following steps: the liquid sample is put into the sample reservoir, the unit comprising the sample reservoir and the filter means is put into the centrifuge tube for collecting the filtrate so that said filter means and said sample reservoir at least partly are inside said centrifuge tube, the thus created assembly is centrifuged whereby a force vector is created acting on the macromolecules and sweeping the filter surface, the macromoleculres are collected in said particulate concentrate pocket forming a volume of concentrate without contacting the filter surface thereby eliminating the risk of concentration to dryness.

5,647,991

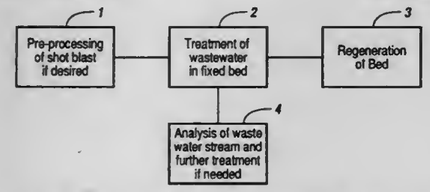
METHOD AND APPARATUS FOR TREATMENT OF CONTAMINATED WATER USING WASTE SHOT BLAST FINES

Edward H. Smith, Dallas, Tex., assignor to Tyler Pipe Company, Birmingham, Ala.

Filed Oct. 11, 1994, Ser. No. 320,866

Int. Cl.[6] C02F *1/42*

U.S. Cl. 210—662 **18 Claims**



1. A method for treating water contaminated with heavy metals selected from the group consisting of cadmium, zinc, copper, mercury, chromium, and lead, comprising the steps of:

collecting shot blast fines generated during the processing of iron containing materials;

pre-processing the fines to obtain a sorbent suitable for use in treating a contaminated water source; and

contacting contaminated water with the sorbent to remove the contaminants.

5,647,992

Patent Not Issued For This Number

5,647,993

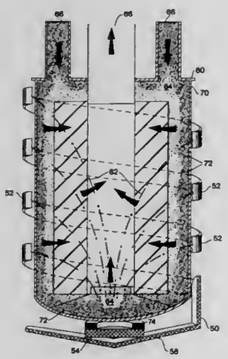
MAGNETIC FILTER ENHANCEMENT APPARATUS AND METHOD

David P. Karp, 2 Orchard Dr., Durham, N.H. 03824

Filed Aug. 14, 1995, Ser. No. 514,607

Int. Cl.[6] B01D *35/06*

U.S. Cl. 210—695 **8 Claims**



8. A method of enhancing magnetic particle filtration in a filter including an elongated filter housing having an inner and an exterior surface, comprising the steps of:

providing a magnet having opposite first and second magnetic poles;

applying said first magnetic pole to a helical path about the exterior surface of said filter housing, wherein said helical path has an axis;

applying said second magnetic pole to the exterior surface of said filter housing at a location substantially on said axis, wherein,

said first and second magnetic poles provide a magnetic field within said filter, and

said magnetic field attracts magnetic particles to the inner surface of said filter in the vicinity of said applied first and second magnetic poles.

5,647,994

METHOD AND APPARATUS FOR SEPARATING MAGNETIC PARTICLES FROM A SOLUTION

Jukka Tuunanen, and Matti Korpela, both of Helsinki, Finland, assignors to Labsystems Oy, Helsinki, Finland

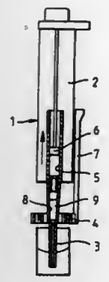
PCT No. PCT/FI94/00275, § 371 Date Dec. 6, 1995, § 102(e) Date Dec. 6, 1995, PCT Pub. No. WO95/00247, PCT Pub. Date Jan. 5, 1995

PCT Filed Jun. 20, 1994, Ser. No. 553,600

Claims priority, application Finland, Jun. 21, 1993, 932866

Int. Cl.[6] B01D *35/06*

U.S. Cl. 210—695 **8 Claims**



1. A method of separating magnetic particles from a first solution containing said particles and of transferring said particles to a second solution comprising the steps of:

providing a tubular member defining a separation chamber serially connected to a jet channel, wherein said jet channel defines a flow port at a free end of said tubular member and said jet channel has a diameter that is less than a diameter of said separation chamber;

providing a magnetic element for generating a magnetic field;

drawing said first solution through said jet channel via said flow port into said separation chamber, said separation chamber being defined by a tubular separation wall of said tubular member having an inner side of which comes into contact with said first solution and an outer side;

disposing said magnetic element at one of a first location adjacent an outer side of said separation wall and a second location within said separation chamber;

activating said magnetic element such that said particles under the influence of said field of said magnetic element will collect on the side of said first solution onto one of the inner side of said separation wall when disposed in said first location and a collection surface of said magnetic element when disposed in said second location;

removing said first solution through the jet channel via said flow port after the step of activating said magnetic element;

drawing said second solution into said container through said flow port via said jet channel after the step of removing said first solution;

deactivating said magnetic element such that the magnetic field of said magnetic element no longer keeps said particles on one of the inner surface of said separation wall when disposed in said first location and on said collection surface when disposed in said second position after the step of drawing said second solution.

5,647,995

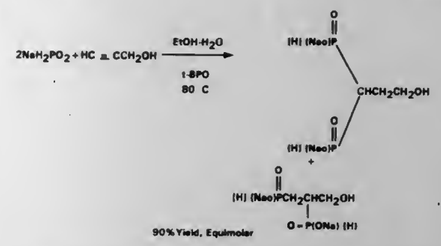
METHOD FOR THE CONTROL OF CALCIUM CARBONATE SCALE USING COMPOUNDS PREPARED FROM ACETYLENIC COMPOUNDS AND INORGANIC PHOSPHITE SALTS AND THEIR DERIVATIVES

James F. Kneller, LeGrange Park; Donald A. Johnson, Batavia; Vytas Narutis, Riverside, and Binaifer S. Khambatta, Orland Park, all of Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Filed Apr. 29, 1994, Ser. No. 235,734

Int. Cl.[6] C02F *5/14*

U.S. Cl. 210—699 **6 Claims**



1. A method for controlling the deposition of calcium carbonate scale on the structural parts of a system exposed to alkaline cooling water containing calcium carbonate under deposit forming conditions, which method comprises adding to said cooling water an effective amount of the polycarboxylic acid-diphosphinate salt adducts and oligomers

made by reacting unsaturated carboxylic acids and salts thereof of chain length not more than 18 carbon atoms with an organic phosphinate having the formula

$$\begin{array}{l} [(NaO)(H)(O)P]_x \\ | \\ RC(H)_w-C(H)_zR' \end{array} \qquad \begin{array}{l} [P(O)(H)(ONa)]_y \\ | \end{array}$$

and mixtures thereof where R and R' are radicals selected from the group consisting of H, alkyl, hydroxyalkyl, alkyl carboxylate, carboxyl, carboxylate, cycloaliphatic and substituted cycloaliphatic, phenyl and substituted phenyl and each do not contain more than 18 carbon atoms, x and y are integers ranging between 0–2 with the sum of x+y being equal to 2, w and z are integers having a value ranging between 0–2 using a free radical initiator.

5,647,996

GROUNDWATER TOTAL CYANIDE TREATMENT METHOD

Albert Yablonsky, Woodsfield; Eugene R. Bolo, St. Clairsville, both of Ohio, and John D. Reggi, Wheeling, W. Va., assignors to Ormet Corporation, Wheeling, W. Va.

Filed Jun. 16, 1995, Ser. No. 491,495

Int. Cl.[6] C02F *1/56*

U.S. Cl. 210—710 **14 Claims**

1. A method for removal of total cyanide including complexed iron cyanide from an aqueous solution using a single reaction tank, said method comprising the steps of:

adding said aqueous solution to the reaction tank;

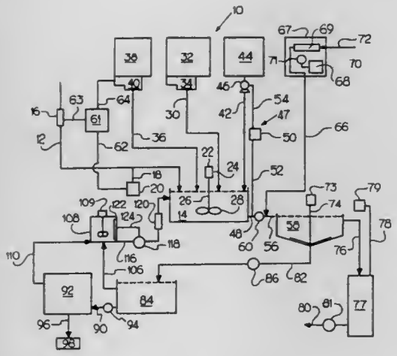
adding lime to said aqueous solution in said reaction tank;

adding ferrous sulfate to said aqueous solution in said reaction tank;

adding an acid to said aqueous solution in said reaction tank to maintain the pH between about 6.5 to 7.0;

mixing said aqueous solution, lime, iron sulfate and acid in said reaction tank for a maximum reaction time of about one hour to produce a coagulated iron cyanide complex precipitate;

transferring the mixture from said reaction tank to a clarifier tank; and



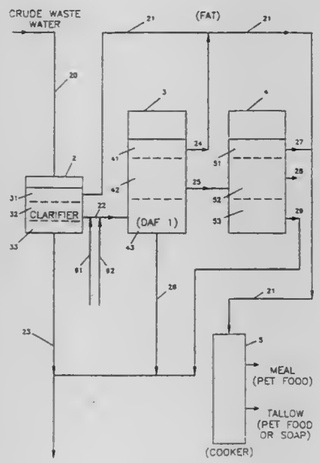
adding a polyelectrolyte solution to said mixture to induce further iron-cyanide complex precipitate coagulation.

5,647,997

WASTE WATER TREATMENT WITH PERACID COMPOSITIONS

Frederick W. Holzhauer; Dana J. Johnson, both of Broomfield, and Terry McAninch, Westminster, all of Colo., assignors to Birko Corporation, Henderson, Colo.

Continuation-in-part of Ser. No. 116,364, Sep. 3, 1993, Pat. No. 5,472,619. This application Dec. 4, 1995, Ser. No. 567,022
Int. Cl.[6] C07F *1/72;1/24;* **B03D** *1/008*
U.S. Cl. 210—721 **15 Claims**



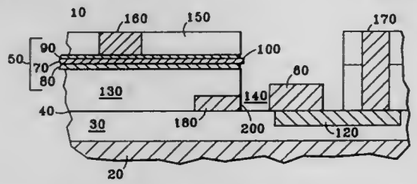
1. A process for the separation and purification of fat-containing waste water by physically separating and oxidizing the waste water, comprising:
adding an effective flocculating and oxidizing amount of a composition comprising:
10–30% wt. peracid precursor
15–70% wt. hydrogen peroxide
1–10% wt. phosphoric acid
bal. water
and recovering at least one fat comprising segment from said waste water.

5,647,998

FABRICATION PROCESS FOR LAMINAR COMPOSITE LATERAL FIELD-EMISSION CATHODE

Michael D. Potter, Grand Isle, Vt., assignor to Advanced Vision Technologies, Inc., Rochester, N.Y.

Filed Jun. 13, 1995, Ser. No. 489,722
Int. Cl.[6] B44C *1/22*
U.S. Cl. 216—24 **28 Claims**



1. A process for fabricating field emission devices of the type having a lateral electron emitter, comprising the steps of:
a) providing a substrate;
b) forming a first insulating layer on said substrate, said first insulating layer having a top major surface;
c) etching a recessed pattern in said top major surface of said first insulating layer;
d) filling said recessed pattern with a conductive material to form a buried conductive layer;
e) polishing said first insulating layer and said conductive material to remove conductive material not in said recessed pattern;
f) depositing a second insulating layer;
g) depositing in sequence
(i) an emitter bottom layer of a first conductive material,
(ii) an emitter top layer of a second conductive material to form a laminar composite emitter layer;
h) patterning and etching said laminar composite emitter layer;
j) depositing a third insulating layer;
k) forming contact holes through selected insulating layers and filling said contact holes with a conductive material;
l) if necessary, removing excess conductive material;
m) forming a trench area having trench sidewalls by selectively and directionally etching through previously formed layers, stopping at said buried conductive layer;
n) etching said laminar composite emitter layer to remove at least an edge portion of one of said emitter top and bottom layers, while leaving at least a salient edge portion of the other of said emitter top and bottom layers;
o) depositing a conformal layer of sacrificial material on said trench sidewalls and forming upper and lower surfaces of said conformal layer;
p) directionally etching said conformal layer to substantially remove said upper and lower surfaces while leaving a thickness of sacrificial material on said trench sidewalls;
q) depositing anode material in said trench; and
r) removing said sacrificial material from said trench sidewalls, thus providing a gap to accommodate electron emission from said laminar composite emitter layer to said anode in said field-emission device.

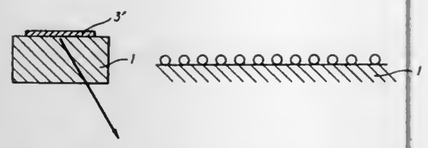
5,647,999

METHOD FOR FINE PATTERNING OF A POLYMERIC FILM

Tetsuya Tada, Tsukuba, and Toshihiko Kanayama, Tsuchiura, both of Japan, assignors to Japan as represented by Director General of Agency of Industrial Science and Technology, Tokyo, Japan

Filed Mar. 20, 1996, Ser. No. 618,606
Claims priority, application Japan, May 15, 1995, 7-115531
Int. Cl.[6] B44C *1/22;* **H01L** *21/00*
U.S. Cl. 216—49 **12 Claims**

1. A method for patterning of a film of a polymeric resin formed on the surface of a substrate which comprises the steps of:



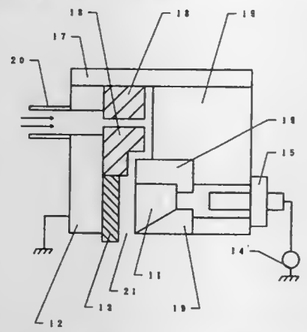
(a) forming, on the surface of a substrate, a thin film of an organic polymeric resin soluble in an organic solvent;
(b) applying a pressure in the range from 0.01 GPa to 30 GPa pattern-wise to the film of the organic polymeric resin on the substrate surface so as to enhance adhesion of the organic polymeric resin to the substrate surface on the pattern-wise areas; and
(c) selectively dissolving away, with the organic solvent, the organic polymeric resin of the film in the areas where the pressure is not applied in step (b).

5,648,000

PLASMA PROCESSING METHOD

Shunpei Yamazaki, Tokyo, and Shigenori Hayashi, Kanagawa, both of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, Japan

Filed Sep. 19, 1994, Ser. No. 308,296
Claims priority, application Japan, Sep. 27, 1993, 5-264351
Int. Cl.[6] H01L *21/3065*
U.S. Cl. 216—67 **16 Claims**



1. A plasma processing method at an atmosphere pressure comprising the steps of:
placing a dielectric substance in a space between a pair of electrodes, wherein the dielectric substance is in contact with one of the electrodes;
supplying a rare gas to the space;
applying power to the electrodes, to produce plasma of the rare gas; and
supplying a reactive gas of oxygen or an oxygen compound to a substrate having an organic substance through the plasma, to remove the organic substance from the substrate,
wherein a concentration of the reactive gas is 3% or less.

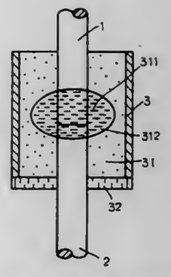
5,648,001

WELDING METHOD AND CLAMPING DEVICE FOR STEEL REINFORCEMENTS

Shun-Cheng Hsieh, No. 14, Lane 145, Hwa-Shing St., Taichung City, Taiwan

Filed Sep. 29, 1995, Ser. No. 606,020
Int. Cl.[6] B23K *25/00*
U.S. Cl. 219—61 **6 Claims**

1. A welding method for steel reinforcements comprising the following steps:



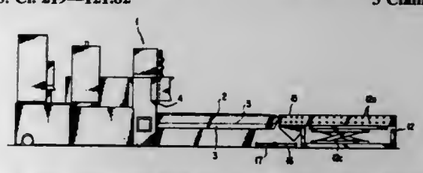
a. an arc striking process wherein an upper steel reinforcement and a lower steel reinforcement are placed adjacent to each other, a solder tank filled with solder is provided at a connection of said upper steel reinforcement and said lower steel reinforcement, said upper steel reinforcement and said lower steel reinforcement are connected to an electric power source, said upper steel reinforcement then being raised to create an electric arc between said upper steel reinforcement and said lower steel reinforcement;
b. an arcing process wherein said electric arc melts solder from said solder tank near an arcing region, thereby forming an electroslag pool, and wherein evaporation of a part of said solder in said electroslag pool will create vapor pressure, thereby forming a gas arc cavity near said arcing region, gas electrolysis in said gas arc cavity sustaining said electric arc;
c. an electroslag process wherein an end of said upper steel reinforcement and an end of said lower steel reinforcement are placed in said electroslag pool, said electric arc is extinguished, said electroslag pool is electrically conductive and continues to conduct electric current, thereby maintaining a welding loop to maintain a temperature of said electroslag pool at approximately 2000° C., said ends of said steel reinforcements form a transitional layer;
d. a compressing process wherein pressure is applied to said ends of said steel reinforcements to form a welding connection while impurities are extruded from said connection to ensure structural strength of said connection.

5,648,002

WORK TRANSFERRING APPARATUS FOR THERMAL CUTTING MACHINE

Kenji Omote, Ishikawa, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

PCT No. PCT/JP93/01663, § 371 Date Apr. 25, 1995, § 102(e) Date Apr. 25, 1995, PCT Pub. No. WO94/11145, PCT Pub. Date May 26, 1994
PCT Filed Nov. 12, 1993, Ser. No. 424,331
Claims priority, application Japan, Nov. 13, 1992, 4-303503
Int. Cl.[6] B23K *26/10;* **B21D** *43/00;* **B23Q** *1/03;1/72*
U.S. Cl. 219—121.82 **3 Claims**



1. A work transferring apparatus for a thermal cutting machine for processing a workpiece placed on a worktable moving freely along an X axis direction by a work head moving freely along a Y axis direction crossing the X axis direction, wherein:
a chain conveyor is mounted at an upper portion of the worktable for transferring the workpiece in and out; a body of the work transferring apparatus, having a plurality of roller conveyors for transferring the workpiece to the chain conveyor, is

arranged in a vicinity of the worktable such that the workpiece can be set freely on one of the roller conveyors; a separating mechanism is mounted between the chain conveyor and the roller conveyor for separating the workpiece, after it is processed, into a product and scrap; and said roller conveyors are disposed in a multi-stage arrangement so as to be movable vertically and so that a plurality of workpieces can be set freely on each of the roller conveyors, respectively.

5,648,003

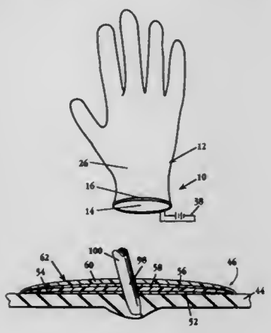
SURGICAL GLOVE THAT PROTECTS AGAINST INFECTION BY PROVIDING HEAT IN RESPONSE TO PENETRATION THEREOF BY A MEDICAL INSTRUMENT AND METHOD THEREFOR

David H. Liang, 970 Altschul Dr., Menlo Park, Calif. 94025, and Hank C. K. Wuh, 33 Third St., Los Altos, Calif. 94022

Filed May 1, 1995, Ser. No. 432,216

Int. Cl.[6] H05B *3/36*

U.S. Cl. 219—211 **18 Claims**



1. A protective device for a hand or finger for use in providing a protective electrical response when the device is punctured by an electrically conductive medical instrument, comprising

a flexible polymeric expanse designed to fit over a hand or finger, at least a portion of said expanse having a multi-layer construction of a thickness and flexibility suitable for use in a surgical glove, said multi-layer construction including

(i) inner and outer, flexible, electrically conductive layers,

(ii) a flexible polymer insulative sheet separating said conductive layers, and

(iii) electrical means operatively connected to said layers for establishing a current between said layers, such that penetration of the outer layer and insulative sheet with said electrically conductive medical instrument is effective to heat a tip region of the instrument to a temperature effective to destroy at least a portion of infectious material present on the tip region.

5,648,004

KIT AND METHOD TO RETROFIT HEATING ELEMENTS FOR CURLING IRON HOLDER

Claudie Simpson, 423 Mahota Dr., San Antonio, Tex. 78227

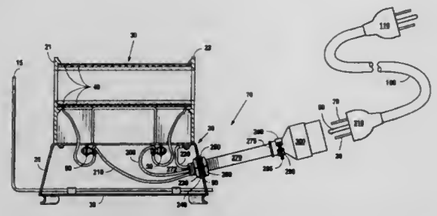
Filed Apr. 19, 1996, Ser. No. 634,851

Int. Cl.[6] A45D *1/20;* **H05B** *1/02*

U.S. Cl. 219—242 **8 Claims**

1. An improved curling iron heating station comprising:

a base supporting a heating coil, said base having a housing with an interior, an exterior, and an opening communicating therebetween, said heating coil having a first end and a second end, said first end of said heating coil and said second end of said heating coil located within said interior of said base;



a high temperature line wire with a first end and a second end, said first end of said high temperature line wire connected to said first end of said heating coil;

a high temperature return wire with a first end and a second end, said first end of said high temperature return wire connected to said second end of said heating coil;

a high temperature ground wire with a first end and a second end, said first end of said high temperature ground wire connected to said base at a point on said interior of said base;

a thermally conductive threaded tube having a proximal end and a distal end,

said proximal end of said threaded tube extending through said opening in said housing,

said proximal end of said threaded tube firstly engaged with and supported by an inner lockwasher and an inner hex nut applied to said threaded tube at a point proximate to said opening and said interior of said base,

said proximal end of said threaded tube secondly engaged with and supported by an outer lockwasher and an outer hex nut applied to said threaded tube at a point proximate to said opening and said exterior of said base, said first and second engagement providing for thermal conductivity between said base and said threaded tube; and

a three-conductor appliance socket having a neck clamping means, a line terminal, a return terminal, and a ground terminal,

said second ends of said high temperature line wire, said high temperature return wire, and said high temperature ground wire passing from said interior of said base, into said proximal end of said threaded tube, out of said distal end of said threaded tube, into said exterior of said base, and through said neck clamping means,

said second end of said high temperature line wire connected to said line terminal of said three-conductor appliance socket, said second end of said high temperature return wire connected to said return terminal of said three-conductor appliance socket, and said second end of said high temperature ground wire connected to said ground terminal of said three-conductor appliance socket, and

said neck clamping means fixedly attaching said three-conductor appliance socket to said distal end of said threaded tube.

5,648,005

MODIFIED QUARTZ PLATE TO PROVIDE NON-UNIFORM LIGHT SOURCE

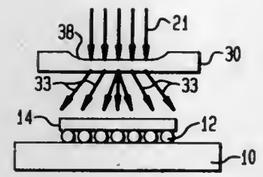
Joshua Monroe Cobb, Millbrook, N.Y., and Peter Kevin Parker, Urbana, Ill., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 477,065, Jun. 7, 1995, Pat. No. 5,532,457, which is a division of Ser. No. 263,977, Jun. 22, 1994. This application Mar. 25, 1996, Ser. No. 618,055

Int. Cl.[6] B23K *1/005;* **F27D** *11/00*

U.S. Cl. 219—411 **9 Claims**

1. An apparatus for removing an electronic component from a substrate or joining an electronic component to a substrate, wherein non-uniform IR radiation is transmitted onto a surface of said electronic component, generating therein uniformly distributed thermal energy which is transmitted through said electronic component, comprising:



(a) an IR source to provide non-uniform IR radiation to said electronic component,

(b) a quartz plate, wherein at least a portion of at least one surface of said quartz plate has a concave surface, and wherein said non-uniform IR radiation is transmitted to a surface of said electronic component only through said concave portion of said quartz plate,

(c) wherein non-uniform IR radiation from said IR source is passed to the upper surface of said electronic component in a non-uniform manner through at least a portion of said concave surface, such that said electronic component transmits said non-uniform IR radiation as uniform thermal energy and wherein said uniform thermal heat reflows the electrical interconnections between said electronic component and said substrate, and thereby said electronic component is either removed from said substrate or Joined to said substrate.

5,648,006

HEATER FOR CHEMICAL VAPOR DEPOSITION EQUIPMENT

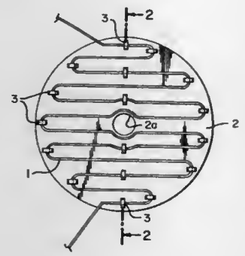
Suk-Ki Min; Moo Sung Kim; Seong-Il Kim, all of Seoul, and Yong Kim, Kyungki-Do, all of Rep. of Korea, assignors to Korea Institute of Science and Technology, Seoul, Rep. of Korea

Filed Feb. 9, 1995, Ser. No. 385,968

Claims priority, application Rep. of Korea, Apr. 27, 1994, 9004/1994

Int. Cl.[6] H05B *3/68*

U.S. Cl. 219—467 **6 Claims**



1. A heater for chemical vapor deposition equipment comprising:

a meandering heating wire, said wire being bent in a plane;

a heater disc, said disc supporting said heating wire thereupon;

a plurality of heating wire fixtures for supporting said heating wire, at spaced points along said wire, on said heater disc while spacing said heating wire from a top surface of said heater disc at a predetermined interval, each said heating wire fixture having a heating wire through hole defined within the said fixture through which said heating wire is enclosed and raised and by which said heating wire is supported; and

a plurality of heat resisting plates for prevention of lateral and downward radiation of heat from said heating wire, said heat resisting plates being placed laterally of and below said heater plate respectively.

5,648,007

METHOD OF PERFORMING ARC WELDING BETWEEN OPTICAL FIBERS

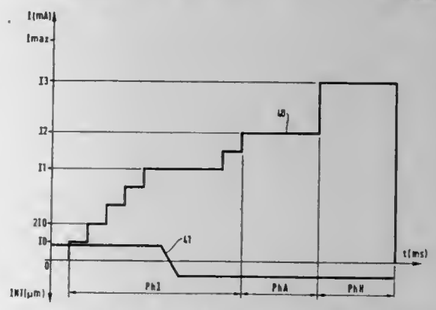
Michel Reslinger, Bondoufle; Daniel Casthelain, Colombes, and Roland Hakoun, Domont, all of France, assignors to Alcatel Cable Interface, Vrigne Aux Bois, France

Filed Apr. 20, 1995, Ser. No. 425,801

Claims priority, application France, Apr. 25, 1994, 94 04955

Int. Cl.[6] B23K *9/095*

U.S. Cl. 219—383 **14 Claims**



1. A method of performing arc welding between optical fibers, for a fusion cycle in which the facing ends of the fibers are fused together, the method comprising the following steps:

a first step of subjecting said ends to a fusion arc and causing said ends to interpenetrate while they are being fused, said first step comprising the steps of:

varying the current of said arc by successive increments;

taking at least one image of the non-externally illuminated ends after each increment;

calculating the brightness of each end based on the image; and

stopping the incrementation and the current control step as soon as the calculated brightness of one of the ends reaches a first predetermined threshold value; and

a second step of taking at least one image of said ends, which are not externally illuminated, calculating an alignment offset between the ends in each image based on the image, and causing the arc fusion to continue as long as the calculated offset remains greater than a predetermined offset threshold.

5,648,008

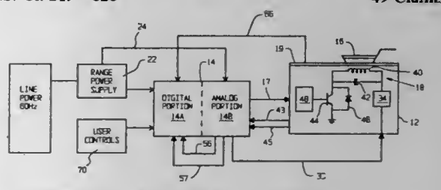
INDUCTIVE COOKING RANGE AND COOKTOP

William D. Barritt, Greenfield, Ind., and Jong Hak Lee, Koyang, Rep. of Korea, assignors to Maytag Corporation, Newton, Iowa

Filed Nov. 23, 1994, Ser. No. 344,505

Int. Cl.[6] H05B *6/08;6/12*

U.S. Cl. 219—626 **49 Claims**



1. An induction cooking apparatus, comprising:

an electrical power source for providing, from an AC powerline, a DC power signal including a plurality of powerline half cycles;

a power inverter circuit, including an L/C network with a work coil coupled to said DC power signal for inducing heating current in metallic cookware and a switching means for intermittently connecting said L/C network with said DC power signal; and

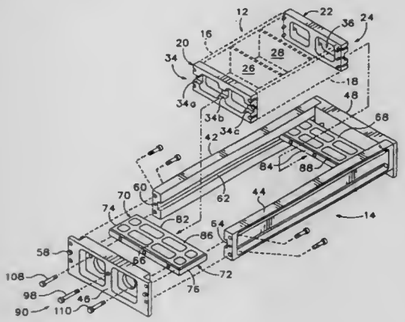
an analog/digital control circuit coupled to said power inverter circuit, said analog/digital circuit including a user input for selecting a cooking temperature to be generated in said cookware, digital means generating a start signal for initiating operation of said power inverter circuit and for generating a stop signal for stopping operation of said power inverter circuit to define a period of operation of said power inverter circuit for generation of said cooking temperature, said digital means being coupled to said user input, and an analog circuit including gate means for generating gating pulses for operation of said power inverter circuit and feedback means coupled with said work coil for generating trigger signals to sustain generation of said gating pulses by said gate means after said power inverter circuit is started by said digital means.

5,648,009

APPARATUS FOR ADJUSTABLY MOUNTING A MOLD BOX

Llewellyn L. Johnston, Vancouver, Wash., assignor to Columbia Machine, Inc., Vancouver, Wash.

Filed Jun. 1, 1995, Ser. No. 458,103
Int. Cl.[6] B28B *7/24*
U.S. Cl. 249—129 **17 Claims**



1. In a machine for forming molded concrete products, a mold box assembly for adjustably mounting a mold box for receiving concrete, the assembly comprising:

a substantially rectangular mold box having a pair of opposed, substantially parallel side plates and a pair of opposed substantially parallel mounting brackets positioned at opposite ends of said side plates;

a support frame, for receiving said mold box, having a pair of opposed, substantially parallel side beams and a pair of opposed, substantially parallel end brackets positioned at opposite ends of the side beams, which together with the side beams form a substantially rectangular frame;

a spacer for adjustably accommodating different-sized mold boxes, disposed intermediate one of the frame end brackets and one of the mold box mounting brackets and moveable therebetween the two; and

a retractor coupled to the spacer to move said spacer to accommodate placement of said mold box in said frame.

5,648,010

LUBRICANT FOR AIR ENTANGLEMENT REPLACEMENT

Charles Gregory Dewitt, Matthews, and Issac Dale Fleming, Charlotte, both of N.C., assignors to Henkel Corporation, Plymouth Meeting, Pa.

Filed Jun. 19, 1995, Ser. No. 491,831
Int. Cl.[6] D06M *13/144;13/184*
U.S. Cl. 252—8.84 **9 Claims**

1. A process of increasing the bundle and fiber-to-fiber cohesion of a polyester textile fiber or yarn material, comprising contacting said polyester textile fiber or yarn material with a lubricant composition consisting of a blend of from about 10 to about 75 weight percent of a waxy fatty lubricant component selected from the group consisting of an ethoxylated ester, ethoxylated fatty alcohol and mixtures thereof, and from about 90 to about 25 weight percent of a polyethylene glycol ester lubricant component having a molecular weight in the range of about 200 to 800 selected from the group consisting of the reaction product of ethylene oxide with an acid selected from pelargonic, caprylic, capric, coconut and mixtures thereof, all weights being based on the weight of said composition.

5,648,011

STRUCTURALLY STABLE GELLED ELECTROLYTES

Peter Miller Blonsky, Meridian, Id., assignor to Micron Communications, Inc., Boise, Id.

Filed Mar. 15, 1995, Ser. No. 407,484
Int. Cl.[6] H01M *6/16;6/18*
U.S. Cl. 252—62.2 **42 Claims**

1. A structurally stable gelled electrolyte which comprises:

a) a base electrolyte containing an ionizable metal salt and an aprotic liquid;

b) an electrically non-conducting solvent gelling agent; and

c) a radiation curable polymer precursor.

5,648,012

PIEZOELECTRIC CERAMIC COMPOSITION

Makoto Higashibeppu; Tomohiro Kawamoto; Tomonori Eguchi; Kenichi Yoshimura; Katsuhiko Onitsuka, and Harumi Hayashi, all of Kokubu, Japan, assignors to Kyocera Corporation, Kyoto, Japan

Filed Dec. 21, 1995, Ser. No. 577,204
Claims priority, application Japan, Dec. 22, 1994, 6-320154; Oct. 31, 1995, 7-283828; Nov. 30, 1995, 7-312539
Int. Cl.[6] C04B *35/49*
U.S. Cl. 252—62.9 PZ **8 Claims**

1. A piezoelectric ceramic composition comprising a perovskite compound which contains, as metal components, Pb, Sr, Zr, Ti, Nb, Cr, Y, Co and at least one element selected from La, Gd, Nd, Sm and Pr, and may further contain Sb or Na, and wherein the composition is expressed in accordance with the following formula:

$$(Pb_{1-x-\alpha-\gamma}Sr_xNa_\alpha M_\gamma)_a[(Nb_bY_cCr_dCo_eSb_\beta)_fTi_gZr_{1-f-g}]O_3$$

wherein M is at least one element selected from La, Gd, Nd, Sm and Pr, and x, y, a, b, c, d, e, f, g, α and β satisfy the following relationships:

$0.005 \leqq x \leqq 0.08$,
$0.002 \leqq y \leqq 0.05$,
$0.95 \leqq a \leqq 1.05$,
$0.47 \leqq b \leqq 0.70$
$0.02 \leqq c \leqq 0.31$
$0.11 \leqq d \leqq 0.42$.
$0.01 \leqq e \leqq 0.12$,
$0.02 \leqq f \leqq 0.15$,
$0.46 \leqq g \leqq 0.52$,

$0 \leqq \alpha \leqq 0.005$,
$0 \leqq \beta \leqq 0.13$, and
$b+c+d+e+\beta=1.00$.

5,648,013

PLASTIC ADDITIVE, PLASTIC COMPOSITION CONTAINING THE ADDITIVE AND PLASTIC MOLDING CONTAINING THE ADDITIVE

Mitsuru Uchida, Chofu, and Tobru Matsumoto, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 172,104, Dec. 23, 1993, abandoned. This application Mar. 8, 1996, Ser. No. 615,020
Claims priority, application Japan, Dec. 24, 1992, 4-344633
Int. Cl.[6] C08J *3/20*
U.S. Cl. 252—62.54 **14 Claims**

1. A plastic additive comprising a thermoplastic polymer, wherein said thermoplastic polymer possesses the characteristics of:

a glass transition temperature of 40° C. to 80° C.;

a number average molecular weight of 50,000 or less; and

a weight average molecular weight at least five times that of the number average molecular weight, and said plastic additive has magnetic particles dispersed therein and said plastic additive has a number average particle diameter of 1 to 10 mm.

5,648,014

ACICULAR MAGNETIC IRON OXIDE PARTICLES AND PROCESS FOR PRODUCING THE SAME

Mitsuaki Hatatani; Osamu Okimoto; Toshitada Shigemura; Yosbifumi Fukuhara, and Hideaki Sadamura, all of Yamaguchi-ken, Japan, assignors to Toda Kogyo Corporation, Japan

Filed Dec. 8, 1995, Ser. No. 569,764
Claims priority, application Japan, Dec. 9, 1994, 6-331654
Int. Cl.[6] C09C *1/22*
U.S. Cl. 252—62.56 **6 Claims**

1. Acicular magnetic iron oxide particles comprising as core particles acicular magnetite particles having 10 to 24% by wight of ferrous ions based on the weight of the core particle;

a magnetite coating which is formed on the surfaces of said acicular magnetite particles by epitaxial growth and which has maghemite at least in a part of the surface of said magnetite coating, the Fe^{2+}/Fe percentage in said magnetite and maghemite coating being 20 to 30% by weight; and

a cobalt-containing oxide layer which is formed on said magnetite coating and which contains cobalt of 1.5 to 2.5% by weight based on the total weight of said acicular magnetic iron oxide particles; and

having a coercive force is 650 to 750 Oe, and a saturation magnetization of 77 to 90 emu/g.

5,648,015

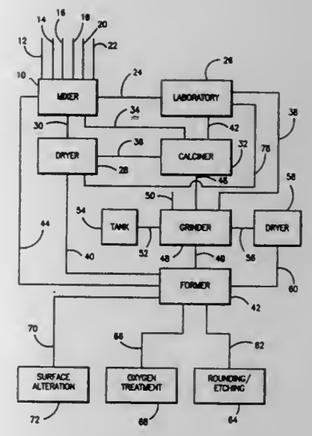
PROCESS FOR PREPARING A FERROMAGNETIC MATERIAL

Steven T. Reczek, Penfield, N.Y., assignor to Ferronics Incorporated, Fairport, N.Y.

Filed Jan. 26, 1995, Ser. No. 378,473
Int. Cl.[6] C04B *35/26*
U.S. Cl. 216—22 **13 Claims**

1. A process for preparing a ferrite, comprising the steps of:

(a) forming a wetted ferrite precursor composition including at least about 50 weight percent of at least one iron compound, wherein substantially all of the particles in such precursor composition are smaller than about 1,000 microns;



(b) drying any portion of the precursor composition having more than approximately 30 percent liquid to form a powder having a moisture content between approximately 0.2 to 1.0 weight percent and an angle of repose of approximately 32 degrees;

(c) calcining the powder until approximately 30 to 60 weight percent of the material has a spinel crystal structure;

(d) forming the powder into a body configuration;

(e) contacting the formed body with a temperature of from about 1,350 to about 1,500 degrees centigrade;

(f) cooling the body from a temperature greater than 1,000 degrees centigrade to a temperature of approximately 700 degrees centigrade while contacting the body with an atmosphere containing less than about 10 volume percent of oxygen;

(g) further cooling the body from the approximate temperature of 700 degrees to a temperature of 200 degrees while contacting the body with an atmosphere containing less than 100 parts per million of oxygen, thereby producing a sintered body with an initial permeability;

(h) changing the initial permeability of the sintered body while simultaneously removing sharp edges present on the sintered body, thereby producing an edge-rounded sintered body; and

(i) contacting the edge-rounded sintered body with an etchant.

5,648,016

AZEOTROPE (LIKE) COMPOSITION WITH FLUOROMETHYL TRIFLUOROMETHYL ETHER AND 1,1-DIFLUOROETHANE

Diana Lynn Klug, Wilmington, Del.; Barbara Haviland Minor, Elkton, Md.; Donna Marie Patron, Newark; Tuneen E. C. Chisolm, New Castle, both of Del., and Allen Capron Sievert, Elkton, Md., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 26,714, Mar. 5, 1993, which is a continuation-in-part of Ser. No. 954,999, Oct. 1, 1992, abandoned, which is a continuation-in-part of Ser. No. 890,508, May 28, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 476,821
Int. Cl.[6] C09K *5/04;* **C11D** *7/26;7/30*
U.S. Cl. 252—67 **3 Claims**

1. An azeotropic or azeotrope-like composition consisting essentially of about 1–99 weight percent fluoromethyl trifluoromethyl ether and about 1–99 weight percent 1,1-difluoroethane wherein after 50 weight percent of the composition has been removed when the temperature has been adjusted to about 25° C., the difference in vapor pressure of the remaining composition and the original composition is less than about 10 percent.

5,648,017

AZEOTROPIC AND AZEOTROPE-LIKE COMPOSITIONS OF 1,1,2,2-TETRAFLUOROETHANE AND (ISO) BUTANE

Philip Lee Bartlett, Wilmington, Del.; Donald Bernard Bivens, Kennett Square, Pa.; Brooks Shawn Lunger, Newark, and Akimichi Yokozeki, Greenville, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 104,384, Aug. 9, 1993, which is a continuation-in-part of Ser. No. 837,416, Feb. 20, 1992, abandoned, which is a division of Ser. No. 676,637, Mar. 28, 1991, Pat. No. 5,182,040. This application Jun. 7, 1995, Ser. No. 477,731

Int. Cl.[6] C09K *5/04;3/30;* **C08J** *9/14;* **C11D** *7/30*

U.S. Cl. 252—67 **13 Claims**

1. An azeotropic or azeotrope-like composition consisting essentially of about 80–95 weight percent 1,1,2,2-tetrafluoroethane and about 5–20 weight percent n-butane; or about 70–95 weight percent 1,1,2,2-tetrafluoroethane and about 5–30 weight percent isobutane; wherein at 14.7 psia, the dew point and bubble point differs by less than or equal to one degree Celsius.

5,648,018

ESTER/POLYOLEFIN REFRIGERATION LUBRICANT

Mahmood Sababi, Baton Rouge, La., assignor to Albemarle Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 371,714, Jan. 12, 1995, abandoned. This application Nov. 13, 1995, Ser. No. 555,938

Int. Cl.[6] C09K *5/04;* **C10M** *129/72*

U.S. Cl. 252—68 **19 Claims**

10. A refrigeration composition comprising (A) a fluorohydrocarbon refrigerant, (B) as a refrigeration lubricant, at least one ester oil whose molecules correspond to the formula ROOC—CH_2CH_2—(ROOC—$CHCH_2)_m$—$C(COOR)_2$—$(CH_2CHCOOR)_2$—CH_2CH_2COOR in which the R's represent alkyl groups of 1–30 carbons, at least 10% of which are alkyl groups of 1–4 carbons; each of m and n is zero or a positive integer; and the sum of m and n in the molecules is an average of 0–30, and (C) as a lubricity improver, about 0.1–20%, based on the combined weights of refrigerant lubricant and lubricity improver, of a hydrogenated oligomer of at least one C_4–C_{20} α-olefin.

5,648,019

THREE COMPONENT POLYOL BLEND FOR USE IN INSULATING RIGID POLYURETHANE FOAMS

Walter R. White, III, Trenton; James A. Mullins, Wyandotte; Thomas B. Lee, Southgate; Keith McLellan, Trenton, and Ronald J. Wierzbicki, Plymouth, all of Mich., assignors to BASF Corporation, Mount Olive, N.J.

Continuation-in-part of Ser. No. 551,507, Nov. 1, 1995, Pat. No. 5,547,998, Ser. No. 551,658, Nov. 1, 1995, Pat. No. 5,523,334, and Ser. No. 548,362, Nov. 1, 1995, Pat. No. 5,525,641. This application Jun. 4, 1996, Ser. No. 658,103

Int. Cl.[6] C08K *3/00;* **C08G** *18/32;18/34*

U.S. Cl. 252—182.24 **13 Claims**

1. A storage stable polyol composition comprising:

a) an aromatic amine initiated polyoxyalkylene polyether polyol having an hydroxyl number of 200 meq polyol/g KOH or more;

b) an aliphatic amine initiated polyoxyalkylene polyether polyol having an hydroxyl number of 200 meq polyol/g KOH or more;

c) an aromatic polyester polyol having an hydroxyl number of 200 meq. polyol/g KOH or more; and

d) a blowing agent selected from the group consisting of cyclopentane, HFC's, HCFC;s and mixtures thereof;

wherein the blowing agent is dissolved in the polyol composition.

5,648,020

OXYGEN SCAVENGING COMPOSITION FOR LOW TEMPERATURE USE

Drew Ve Speer, and William Peyton Roberts, both of Colombia, Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Continuation of Ser. No. 196,744, Feb. 15, 1994, abandoned, which is a continuation of Ser. No. 955,546, Oct. 1, 1992, Pat. No. 5,310,497. This application Dec. 6, 1995, Ser. No. 569,373

Int. Cl.[6] C09K *15/02;15/04*

U.S. Cl. 252—188.28 **10 Claims**

1. An oxygen scavenging composition in the form of a film, said composition comprising

(1) an oxygen scavenging system consisting essentially of

(a) an ethylenically unsaturated hydrocarbon polymer having a weight average molecular weight of at least about 1,000, and a glass transition temperature (Tg) of lower than −15° C., and

(b) from 10 to 10,000 ppm of transition metal in the form of a transition metal salt; and

(2) a photoinitiator or mixtures of photoinitiator;

said composition has an oxygen absorption rate of at least 10 cc O_2 per m^2 per day at a temperature of 4° C. and an oxygen absorption capacity of at least 250 cc oxygen per m^2 per mil thickness.

5,648,021

PHENANTHRENE DERIVATIVES AND THEIR USE IN LIQUID-CRYSTALLINE MIXTURES

Rainer Wingen, Hattersheim, and Barbara Hornung, Hasselroth, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

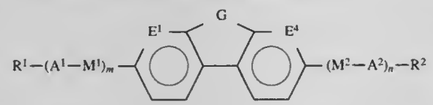
Filed Jan. 13, 1995, Ser. No. 372,568

Claims priority, applicatioo Germany, Jan. 17, 1994, 44 01 004.4

Int. Cl.[6] C09K *19/32;19/34;* **C07D** *239/02;211/70*

U.S. Cl. 252—299.62 **7 Claims**

1. A phenanthrene derivative of the formula (I),



in which the symbols and indices have the following meanings:

E^1 and E^4, independently of one another, are —N—, CF or —CH— with the proviso that at least one of E^1 and E^4 must be —N— or —CF—;

G is the $—CH_2—CH_2—$ or —CH═CH— group;

R^1 and R^2, independently of one another, are hydrogen, —F, or a straight-chain or branched alkyl radical having 1 to 20 carbon atoms (with or without asymmetrical carbon atoms), where one or more $—CH_2—$ groups may also be replaced by —O—, —CO—, —CH═CH—, —C≡C—,



$—Si(CH_3)_2—$,

1,4-phenylene, trans-1,4-cyclohexylene, with the proviso that oxygen atoms must not be bonded directly to one another, or one or more H atoms of the alkyl radical may be substituted by —F, with the proviso that R^1 and R^2 must not both be hydrogen;

M^1 and M^2 are identical or different and are —CO—O—, —O—CO—, $—CH_2—O—$, $—O—CH_2—$, $—CH_2—CH_2—$, —C≡C— or a single bond;

A^1 and A^2 are identical or different and are 1,4-phenylene, in which one or more H atoms may be replaced by F; pyridine-2,5-diyl, in which one or more H atoms may be replaced by F; pyrimidine-2,5-diyl, in which one H atom may be replaced by F; trans-1,4-cyclohexylene, in which one H atom may be replaced by CN; 1,3,4-thiadiazole-2,5-diyl; 1,3-dioxane-2,5-diyl;

n and m are zero or one, but add up to 1 at most.

5,648,022

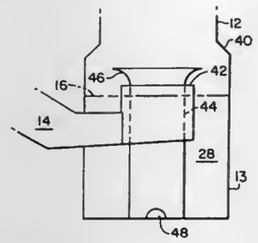
WET FLUE GAS SCRUBBER HAVING AN EVENLY DISTRIBUTED FLUE GAS INLET

Wadie F. Gohara, Barberton; George B. Watson, Alliance; Randy J. Reynolds, and Thomas W. Strock, both of Canton, all of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Division of Ser. No. 388,708, Feb. 14, 1995, Pat. No. 5,558,818. This application Mar. 21, 1996, Ser. No. 620,692

Int. Cl.[6] B01F *3/04*

U.S. Cl. 261—17 **7 Claims**



1. An inlet assembly for an absorption tower of a flue gas desulfurization system comprising:

a flue gas inlet located at the side of the tower;

a tubular well extending partially up from the bottom of the tower;

a circular tube extending partially around said tubular well to form an annular section sealed at one end and circumferentially open at the other end; and

means for communicating flue gas from said inlet to the annular section of said circular tube to provide an even exhaust of the flue to the tower from the open end of said circular tube.

5,648,023

VACUUM RESPONSE TYPE CARBURETOR

Tetsuo Nojima, Hamamatsu, Japan, assignor to Suzuki Kabushiki Kaisha, Japan

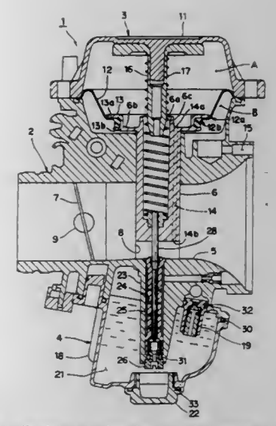
Continuation of Ser. No. 346,409, Nov. 29, 1994, abandoned. This application Aug. 8, 1996, Ser. No. 693,622

Claims priority, application Japan, Nov. 30, 1993, 5-300014

Int. Cl.[6] F02M *9/06*

U.S. Cl. 261—44.4 **17 Claims**

1. In a motorcycle vacuum response type carburetor including a carburetor body having an upper portion, a lower portion, a diaphragm device disposed at the upper portion and having a diaphragm chamber and a diaphragm separating the diaphragm chamber into an upper section and a lower section, a float chamber disposed at the lower portion, a venturi passage extending horizontally through the carburetor body, a guide passage extending through the venturi passage in a vertical direction thereof, the guide passage having an upper end portion in communication with the lower section of the diaphragm chamber, a piston valve movably disposed in the guide passage, the piston valve having a bore and a head portion fixed to a central portion of the diaphragm, and a needle valve for adjusting a jetting amount of a fuel and having an upper portion extending into the bore of the piston valve and a lower portion extending into the float chamber; a first communication passage for communicating the lower section of the diaphragm chamber to the atmosphere; and a second communication passage extending through the piston valve for communicating the upper section of the diaphragm chamber to the venturi passage, the second communication passage having an opening at a lower end thereof which opens from a lower end portion of the piston valve and which is in close proximity to the needle valve and having an opening at an upper end thereof which opens into the upper section of the diaphragm chamber but does not open into the bore of the piston valve; wherein the diaphragm is comprised of hydrogen impregnated nitrile butadiene rubber; and wherein the diaphragm is substantially circular in shape and has an inner peripheral portion, the head portion of the piston valve is connected to the inner peripheral portion of the diaphragm in a liquid-tight manner, the head portion of the piston valve has a recessed portion, and an upper end of the second communication passage opens into the recessed portion.



5,648,024

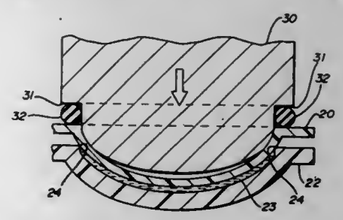
APPARATUS AND METHOD FOR RELEASABLY FUSING MOLD LENS PIECES

Stephen Galas, Jacksonville, Fla., assignor to Johnson & Johnson Vision Products, Inc., Jacksonville, Fla.

Continuation of Ser. No. 285,888, Aug. 4, 1994, abandoned, which is a continuation of Ser. No. 746,396, Aug. 16, 1991, abandoned. This application Mar. 26, 1996, Ser. No. 622,079

Int. Cl.[6] B29D *11/00*

U.S. Cl. 264—1.1 **14 Claims**



1. A method of joining contact lens mold pieces, comprising:

forming first and second mold pieces from materials suitable for ultrasonic welding,

wherein one of said mold pieces has a convex surface portion for shaping a first contact lens surface, and the other of said mold pieces has a concave surface portion for shaping a second contact lens surface, and

wherein the first of said mold pieces includes an annular projection extending completely around the surface portion of said first mold piece;

moving the first and second mold pieces together to form a mold cavity therebetween for molding a contact lens therein, including the step of moving said annular projection into

engagement with the second mold piece along an annular boundary extending completely around the surface portion of the second mold piece;

holding stationary one of the mold pieces, and applying ultrasonic vibrational energy to the other of the mold pieces to fuse the first and second mold pieces together over the complete length of said annular boundary, and

wherein the mold pieces are capable of later being separated.

7. An apparatus for making a contact lens, comprising:

first and second mold pieces made from materials suitable for ultrasonic welding,

wherein one of said mold pieces has a convex surface portion for shaping a first contact lens surface, and the other of said mold pieces has a concave surface portion for shaping a second contact lens surface, and

wherein the first of said mold pieces includes an annular projection extending completely around the surface portion of the first mold piece;

means for supplying a monomer mixture to the concave surface;

means for moving the first and second mold pieces together to form a mold cavity therebetween for molding a contact lens therein, and including means for moving said annular projection into engagement with the second mold piece along an annular boundary extending completely around the surface portion of the second mold piece;

an ultrasonic horn for applying ultrasonic vibrational energy to one of the mold pieces to fuse the first and second mold pieces together over the complete length of said annular boundary; and

means for polymerizing said monomer mixture.

5,648,025

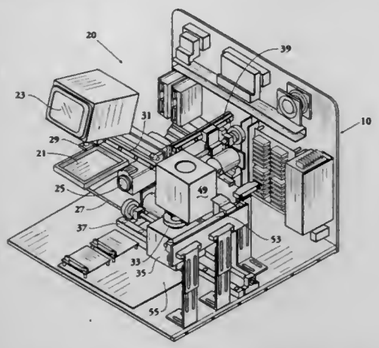
METHOD FOR MAKING LIGHT CURED OPHTHALMIC LENS BLOCKS

Merritt S. Cook, Muskogee; Michael D. James, Ft. Gibson, and Todd R. Strope, Muskogee, all of Okla., assignors to Coburn Optical Industries, Inc., Tulsa, Okla.

Filed Dec. 13, 1995, Ser. No. 571,442

Int. Cl.[6] B29D *11/00*

U.S. Cl. 264—1.36 **16 Claims**



1. A method of applying a block to a blocking surface of an ophthalmic lens comprising the steps of:

filling a mold for the block with adhesive material in a liquid state;

compressing the blocking surface of the lens against the liquid state adhesive material and the mold to spread the adhesive material and fill the voids between the mold and the lens blocking surface; and

curing the adhesive material with light to set the adhesive material in a solid state and to bond the adhesive material to the lens blocking surface and separating the mold from the bonded adhesive material and the lens to thereby form a block on the lens.

5,648,026

MULTIPLE UTILIZATION OF BLOW-MOLD AIR

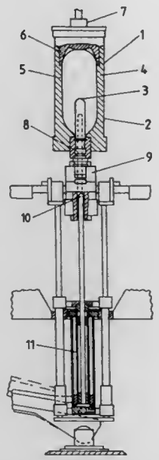
Ronald Weiss, Bargteheide, Germany, assignor to Krupp Corpoplast Maschinenbau GmbH, Germany

Filed Nov. 16, 1994, Ser. No. 340,231

Claims priority, application Germany, Nov. 26, 1993, 43 40 291.7

Int. Cl.[6] B29C *49/16;49/56*

U.S. Cl. 264—37 **9 Claims**



1. A procedure for molding a container from a thermoplastic material in a mold including first and second portions movable between open and closed positions, said procedure including:

forming a moldable object by an injection molding process;

storing said moldable object;

heating said moldable object;

feeding said moldable object into a mold in a blow station;

stretching said moldable object in the direction of a longitudinal axis of said moldable object by use of a stretching rod actuated by a cylinder;

pre-expanding said moldable object within said mold by the addition of a first low pressure air from a first low pressure component;

expanding said moldable object within said mold by the addition of high pressure blow air;

feeding said high pressure blow air to said first low pressure air component during a transition phase and after said moldable object has been formed to the contour of said mold but before said contour has been stabilized by cooling, said first low pressure air component being operable as a low pressure supply;

monitoring the pressure in said first low pressure air component as said high pressure blow air is fed thereto to limit said pressure to a predetermined maximum;

allowing said moldable object to cool to stabilize said contour and thereby form said container;

feeding a portion of said high pressure blow air remaining in said container to a second low pressure air component, said second low pressure air component working at a lower pressure than said first low pressure air component;

thereafter venting said high pressure blow air remaining in said container to atmospbere;

opening said first and second portions of said mold;

removing the molded container from said mold; and

utilizing low pressure air from one of said first and second low pressure air components to carry out a pneumatic working step other than pre-expansion of said moldable object within the mold.

5,648,027

POROUS CARBONACEOUS MATERIAL AND A METHOD FOR PRODUCING THE SAME

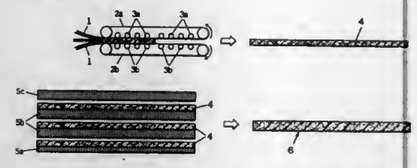
Hiroyuki Tajiri, Kitakatsuragi-gun; Yoshiteru Nakagawa, Yamatokoriyama; Yoshiaki Iwaya, Yasu-gun; Yoshiharu Tanaka, Uji; Keiichi Asami, Kyoto; Katsuyuki Touma, Kitakatsuragi-gun, and Shinji Okumura, Yahata, all of Japan, assignors to Osaka Gas Company Ltd., Osaka-fu, and Unitika Limited, Hyogo-ken, both of Japan

Filed Nov. 1, 1994, Ser. No. 332,063

Claims priority, application Japan, Nov. 1, 1993, 5-297443; Nov. 1, 1993, 5-297444; Apr. 22, 1994, 6-084422

Int. Cl.[6] B29C *65/00*

U.S. Cl. 264—43 **33 Claims**



1. A process for producing a porous composite sheet which comprises

hot-pressing a random web comprising a precursor fiber convertible to carbon fiber and/or a carbon fiber and a carbonizable or graphitizable thermosetting resin while curing of said resin is inhibited to provide a prepreg sheet; and

heating said prepreg sheet at a temperature of the melting point of said thermosetting resin or more under no load, for expansion and complete cure of said resin.

5,648,028

METHOD OF MANUFACTURING A SINTERED COMPOSITE BODY OF SILICON NITRIDE AND SILICON CARBIDE

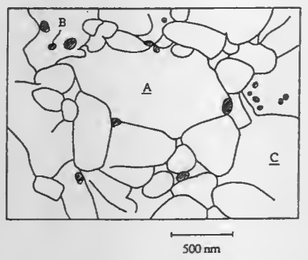
Kazumi Miyake; Kagehisa Hamazaki; Hitoshi Toyoda, and Yoshikatsu Higuchi, all of Saitama-ken, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 30, 1995, Ser. No. 413,445

Claims priority, application Japan, Mar. 30, 1994, 6-084162; Nov. 29, 1994, 6-319037

Int. Cl.[6] B28B *3/00;* **C04B** *33/32*

U.S. Cl. 264—647 **6 Claims**



1. A method of manufacturing a sintered composite body of silicon nitride and silicon carbide, comprising the steps of:

mixing a silicon powder with a carbonaceous powder and a sintering additive, to produce a mixture;

molding said mixture into a molded body;

heat-treating said molded body in an atmosphere containing a nitrogen gas for thereby simultaneously nitriding and carbonizing silicon contained in said molded body; and

subsequently firing the heat treated molded body in a nitrogen gas atmosphere.

5,648,029

METHOD OF MANUFACTURING INSERTS PREFERABLY FOR MACHINING OF HEAT RESISTANT MATERIALS

Marianne Collin, Enskede, Sweden, assignor to Sandvik AB, Sandviken, Sweden

Continuation of Ser. No. 225,042, Apr. 7, 1994, abandoned, which is a division of Ser. No. 857,275, Mar. 25, 1992, Pat. No. 5,346,517. This application Oct. 6, 1995, Ser. No. 540,320

Claims priority, application Sweden, Mar. 25, 1991, 9100895

Int. Cl.[6] C04B *35/01;35/10;* **B28B** *11/00*

U.S. Cl. 264—645 **12 Claims**



1. A method of manufacturing a ceramic cutting tool insert for chip forming machines where the insert has a polygonal or round shape with upper and lower faces and at least one clearance face intersecting said upper and lower faces and defining a cutting edge, said insert comprising 10–40 volume % single crystal whiskers homogeneously and essentially unidirectionally disposed in a ceramic matrix by powder metallurgical methods comprising dispersing a ceramic powder and said whiskers in water or an organic solvent, forming a dried powder by drying said dispersion, forming bound powders by mixing said dried powder with an organic binder system, forming a body by extruding the bound powders into a mold with desired geometry wherein said mold includes a flow channel adapted to provide a specific direction to said whiskers, said mold being oriented such that said single crystal whiskers are oriented either perpendicular to or parallel with said clearance face, and finishing said insert.

5,648,030

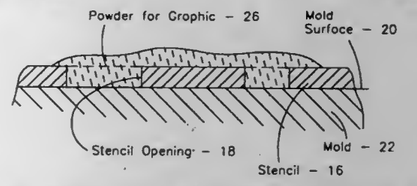
METHOD FOR OBTAINING HIGH DEFINITION GRAPHICS IN SURFACES OF MOLDED PLASTIC OBJECTS

Eric S. Pemberton, Rockwood, and Brent E. Howard, Harriman, both of Tenn., assignors to Dagger, Inc., Harriman, Tenn.

Filed Feb. 1, 1995, Ser. No. 382,143

Int. Cl.[6] B29C *39/12;41/22*

U.S. Cl. 264—71 **11 Claims**



1. A method of forming a high definition graphical design in a surface of a body using plastic powders and a mold having an internal cavity, which comprises the steps:

placing a reusable stencil having openings corresponding to the graphical design against a selected location on an inner surface of the cavity of the mold;

filling the openings in the stencil with a loose first plastic powder of a color for the graphical design;

removing the stencil from the surface of the mold;

covering the loose first plastic powder for the graphical design with a limited amount of a loose second plastic powder of a

color for the body, the second plastic powder being of a same plastic composition as the first plastic powder;

adding over the limited amount of the second plastic powder a quantity of the loose second plastic powder to the mold in a amount sufficient to form the body;

locally heating an exterior of the mold at a position of the first plastic powder and at a position of the limited amount of the second plastic powder to a temperature proximate a transition temperature of the first and second plastic powders to form a skin on at least the first plastic powder to retain the first plastic powder in a position as established by the openings in the stencil;

continuing heating of the mold in its entirety to at least the transition temperature of the first and second plastic powders for a time sufficient to convert the first and second plastic powders to a molten state;

rotating the mold during the continuing heating step to distribute molten second plastic powder over the inner surface of the cavity of the mold to form the body;

cooling the heated mold containing the molded body during continued rotating wherein a high definition graphical design is formed in a surface of the molded body; and

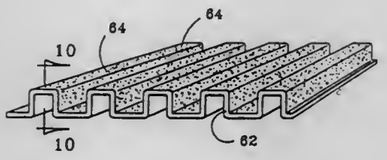
removing the body from the mold.

5,648,031

METHOD OF FORMING ANTISLIP SURFACES ON THERMOFORMED PRODUCTS

Thomas M. Sturtevant, South China, and Edward E. Cullivan, Palermo, both of Me., assignors to Custom Plastics Molding, Inc., Benton, Me.

Filed Jul. 28, 1994, Ser. No. 282,219
Int. Cl.[6] B29C *51/02;51/10*
U.S. Cl. 264—80 **55 Claims**



1. A process for selectively forming an antislip surface on a product thermoformed from a sheet comprising a thermoplastic material, the process comprising:

forming droplets of a polymer;

applying the droplets onto a selected surface area of the sheet to form on the sheet a stippled pattern of non-interconnected bumps of the polymer across the selected surface area leaving the sheet exposed between and completely around individual ones of the bumps;

controlling the density of the droplets so that the bumps cover less than 50% of the selected surface area;

at least partially hardening the bumps that have been formed on the sheet; and

after the step of at least partially hardening the bumps, thermoforming the sheet at a thermoforming temperature, durably bonding the bumps to the sheet, and further hardening the bumps into tough macroscopic asperities causing a relatively higher coefficient of friction over the selected surface area;

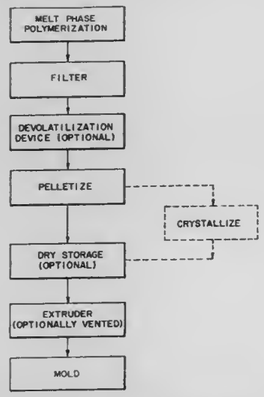
wherein the polymer is selected so that the asperities have a hardness greater than the hardness of the sheet.

5,648,032

PROCESS FOR PRODUCING POLYESTER ARTICLES HAVING LOW ACETALDEHYDE CONTENT

Gregory Wayne Nelson, and Vincent Alvin Nicely, both of Kingsport, Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Aug. 1, 1995, Ser. No. 509,845
Int. Cl.[6] B29C *47/76;47/92*
U.S. Cl. 264—101 **11 Claims**



1. A process for producing molded polyester articles having an acetaldehyde content of less than about 10 ppm comprising the steps of

a) reacting a glycol and a dicarboxylic acid in the melt phase to form a polyester having in I.V. of about 0.65–0.85, said glycol being selected from the class consisting of glycols having 2–10 carbon atoms and said dicarboxylic acid being selected from alkyl dicarboxylic acids having 2–16 carbon atoms and aryl dicarboxylic acids having 8–16 carbon atoms,

b) solidifying and pelletizing said polyester,

c) remelting said polyester to form molten polyester, and

d) forming said molten polyester into shaped articles,

wherein, during step a), step b). step c), step d), or a combination thereof, the polyester is devolatilized by passing a purge agent over said polyester, wherein no solid state polymerization step is performed and wherein no drying step is performed.

5,648,033

METHOD AND APPARATUS FOR RETAINING A FORMED COMPRESSION DOSAGE UNIT WITHIN A DIE CAVITY

Beuford Arlie Bogue, Broad Run, and Garry L. Myers, Reston, both of Va., assignors to Fuisz Technologies Ltd., Chantilly, Va.

Continuation-in-part of Ser. No. 276,244, Jul. 18, 1994, which is a continuation-in-part of Ser. No. 259,496, Jun. 14, 1994, abandoned, and Ser. No. 259,258, Jun. 14, 1994, which is a continuation-in-part of Ser. No. 133,669, Oct. 7, 1993, Pat. No. 5,597,416, and Ser. No. 119,974, Sep. 10, 1993, Pat. No. 5,518,551. This application May 9, 1995, Ser. No. 438,165
Int. Cl.[6] B29C *43/08*
U.S. Cl. 264—109 **19 Claims**

1. An apparatus for forming a tablet from tableting feedstock comprising:

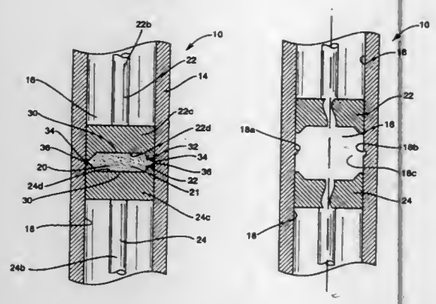
a die including an elongate die cavity for accommodating said feedstock, said die cavity having an inner wall and at least one open end; and

first and second die punches each having a tablet forming die punch surface;

said first die punch being movably positionable within said die cavity and said second die punch being removably insertably positioned within said at least one open end of said die cavity, said die punch surfaces being in facing opposition;

said die punches being relatively movable within said die cavity to compress said tableting feedstock into said tablet between said die punch surfaces and into retentive engagement against said inner wall of said die cavity by said relative movement of said die punches to a tablet forming position;

whereby upon withdrawal of said die punches from said tablet forming position, said tablet remains in said retentive engagement with said die cavity inner wall.

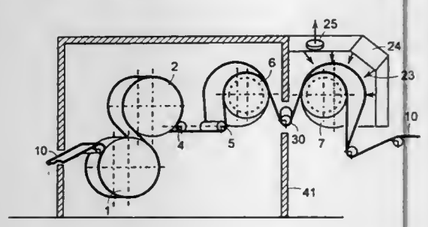


5,648,034

PROCESS OF MAKING CUT, SHAPED BLANKS

Herbert Sybrant van de Velde Keyser, Lochristi, Belgium, assignor to Monsanto Company, St. Louis, Mo.

Filed May 22, 1995, Ser. No. 445,611
Claims priority, application European Pat. Off., Jun. 1, 1994, 94870091
Int. Cl.[6] B29C *55/06*
U.S. Cl. 264—160 **4 Claims**



1. A method for producing cut shaped blanks of thermoplastic material which comprises:

unwinding a continuous length of thermoplastic material (**10**);

heating the thermoplastic material by passing it over one or more heating drums (**1**,**2**);

passing the resulting heated thermoplastic material over a first hot conical drum (**6**) thereby causing stretching and an elastic strain in at least part of the material;

passing the material over a folding bar (**30**) along a path permitting partial recovery of its elastic strain;

passing the material over a cooled second conical drum (**7**); and

further cooling and cutting the resulting stretched material respectively in a cooling and cutting station.

5,648,035

PROCESS FOR PRODUCING FILM

Katsuya Okamoto, Hirakata; Kolchi Abe, Kyoto, and Shoji Nakajima, Otsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Division of Ser. No. 57,642, May 5, 1993. This application Jun. 7, 1995, Ser. No. 482,406
Int. Cl.[6] B29C *55/12*
U.S. Cl. 264—173.16 **18 Claims**

1. A process for producing a polyester film, comprising the steps of:

heat treating at least one surface of a non-stretched film whose major component is a polyester A having a crystallization parameter ΔTcg of not more than 70° C. and which optionally contains particles and accelerating the crystallization of said at least one surface by said heat treatment; and

biaxially stretching said heat treated non-stretched film to form a biaxially stretched film so that protrusions are formed on the surface of said biaxially stretched film corresponding to said at least one surface of said non-stretched film in a number of not less than $5\times10^3/mm^2$, and so that the ratio N_R of said number of protrusions to the number of any particles contained in said surface layer of said biaxially stretched film is not less than 5.

2. A process for producing a laminated polyester film, comprising the steps of:

laminating a layer A whose major component is a polyester A having a crystallization parameter ΔTcg of not more than 70° C. and optionally contains particles on at least one surface of a layer B whose major component is a polyester B to form a non-stretched laminated film;

heat treating the surface of said layer A of said non-stretched laminated film and accelerating the crystallization of a surface of said layer A by said heat treatment; and

biaxially stretching the surface of said layer A of said non-stretched laminated film to produce a biaxially stretched film so that protrusions are formed on the surface of a surface layer of said biaxially stretched film corresponding to the surface of said layer A of said non-stretched laminated film in a number of not less than $5\times10^3/mm^2$, and so that the ratio N_R of said number of protrusions to the number of any particles contained in said surface layer of said biaxially stretched film is not less than 5.

5,648,036

DEVICE AND PROCESS FOR PRODUCING THE CORNERS OF SEALING FRAMES

Siegfried Glang, Hamburg; Werner Grabe, Winsen; Holger Gutschmidt, Neu Wulmstorf, and Jurgen Ludemann, Hamburg, all of Germany, assignors to Phoenix Aktiengesellschaft, Hamburg, Germany

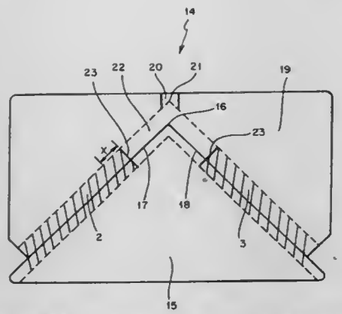
Continuation of Ser. No. 87,738, Jul. 13, 1993, abandoned. This application Sep. 22, 1995, Ser. No. 532,864
Claims priority, application Germany, Jan. 28, 1992, 42 02 225.8
Int. Cl.[6] B29C *45/14;33/00;65/70*
U.S. Cl. 264—261 **12 Claims**

1. Process for the manufacture of the corners of tunnel sealing frames, using a device, comprising the following process steps:

mounting sealing profiles on an inner mold in said device until pins on bridges on said inner mold close all or at least a part of ducts in said profile;

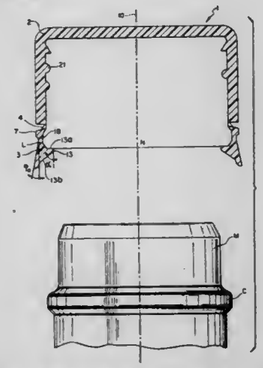
mounting an outer mold in said device for closing of the device, and for creating a mold gap between said inner mold and said outer mold;

introducing a vulcanizable rubber mixture into said mold gap between the inner mold and outer mold via an injection aperture in the outer mold to produce a frame corner;



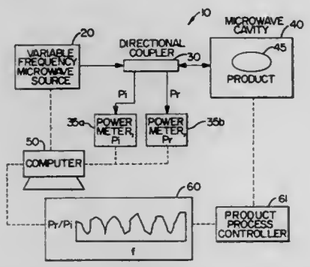
vulcanizing the frame corner by means of heatable molding presses; and
opening the device.

5,648,037
PROCESS FOR MANUFACTURING A CLOSING DEVICE
Alain Franchet, Brasles; Vincent Guerrazzi, Amberieu en Bugey, and Pierre Pellerano, Paris, all of France, assignors to Le Moulage Automatique, Chateau Thierry, France
Filed Jun. 20, 1995, Ser. No. 492,724
Claims priority, application France, Jun. 21, 1994, 94 07566
Int. Cl.[6] B28B *21/42;* B65D *50/00*
U.S. Cl. 264—296 **13 Claims**



1. Process for manufacturing a closing device for a flanged container constituted by a tapped closing portion and a tamper-proof ring joined to a lower part of the closing portion by a breakable connection zone; the ring comprising an annular joining strip with controlled deformation, said ring defined adjacent a lower end of said annular joining strip by an inner annular projection, an upper surface of which is substantially normal to a central axis of the device and a lower surface of which is inclined by an acute angle defined by said axis and a line along said lower surface, and said ring defined adjacent an upper end of said annular joining strip by an outer annular projection, the process comprising moulding, demoulding and ejecting said device parallel to said axis, wherein a preforming of the tamper-proof ring is then effected
by axially introducing in said device a cylindrical mandrel having a diameter which is slightly smaller than an inner diameter of threads of the tapped closing portion, said mandrel being provided with an annular peripheral cam such that the lower surface of the inner annular projection comes into abutment against said cam,
by exerting on one of said device and the mandrel a bearing effort whose force is sufficient to ensure a stroke of the mandrel in the device such that the lower surface is in contact with the cam up to a preforming position of the mandrel which is maintained for a determined time so as to produce an outward bending of the strip with controlled deformation thereof such that upon elimination of said bearing effort a remanent deflection towards said closing portion of the inner annular projection will remain so that said upper surface will remain inclined by an angle defined by a line along said upper surface and a normal to the axis of the device, and
by withdrawing said mandrel and eliminating said bearing effort.

5,648,038
SYSTEMS AND METHODS FOR MONITORING MATERIAL PROPERTIES USING MICROWAVE ENERGY
Zakaryae Fathi, Cary; Richard S. Garard, Chapel Hill; Jiangbua Wei, and Michael L. Hampton, both of Raleigh, all of N.C., assignors to Lambda Technologies, Raleigh, N.C.
Filed Sep. 20, 1995, Ser. No. 531,045
Int. Cl.[6] B29C *71/04;35/08*
U.S. Cl. 264—406 **25 Claims**

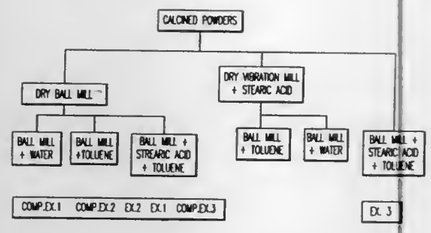


1. A method for monitoring a characteristic of a workpiece, said method comprising the steps of:
positioning the workpiece within a chamber having means for generating variable frequency microwave energy;
sweeping the workpiece with microwave irradiation at a plurality of frequencies;
detecting power reflection for each one of the plurality of microwave frequencies to provide power reflection data; and
comparing the power reflection data to a predetermined set of power reflection data.

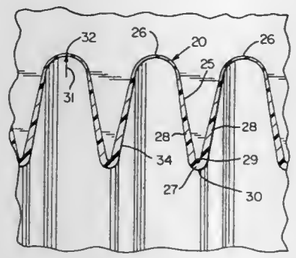
17. A system for microwave processing, said system comprising:
a chamber including means for generating variable frequency microwave energy;
means for positioning a workpiece within said chamber;
means for sweeping the workpiece with a plurality of different microwave frequencies; and
means for monitoring a first characteristic of the workpiece.

5,648,039
PROCESS FOR THE PRODUCTION OF ANISOTROPIC FERRITE MAGNETS
Hitoshi Taguchi; Fumihiko Hirata; Taku Takeishi, and Teruo Mori, all of Chiba, Japan, assignors to TDK Corporation, Tokyo, Japan
Continuation-in-part of Ser. No. 913,706, Jul. 16, 1992, abandoned. This application Jun. 8, 1993, Ser. No. 72,967
Claims priority, application Japan, Apr. 24, 1992, 4-131649; May 29, 1992, 4-164379; Jun. 5, 1992, 4-172069; Mar. 15, 1993, 5-080042
Int. Cl.[6] B28B *3/00*
U.S. Cl. 264—428 **28 Claims**

1. A process for producing an anisotropic ferrite magnet comprising the steps of:
compacting a primary slurry comprising a particulate raw material of a calcined ferrite powder having a mean particle diameter of not more that 1 μm, a non-aqueous solvent, and a surface active agent, in a magnetic field, while removing the non-aqueous solvent from the primary slurry, thereby obtaining a compact and
sintering the compact to produce the magnet,
wherein said magnet has a degree of orientation of 96% or more, as expressed in terms of a ratio of saturation magnetization to residual magnetization.

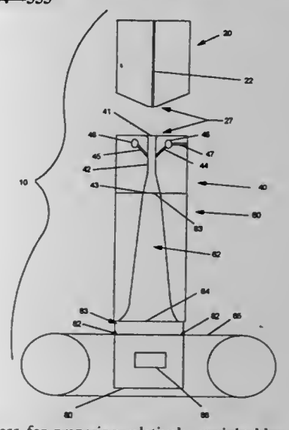


5,648,040
METHOD OF MAKING VACUUM CLEANER HOSE
Keith E. Wood, Asheville; Larry D. Rathbone, Waynesville, both of N.C., and Raymond P. Storti, Jr., Bloomington, Ill., assignors to Dayco Products, Inc.
Division of Ser. No. 119,469, Sep. 10, 1993, Pat. No. 5,492,151. This application Dec. 8, 1995, Ser. No. 569,488
Int. Cl.[6] B29C *43/22;59/00;* D01D *5/20;* B27N *3/08*
U.S. Cl. 264—508 **4 Claims**



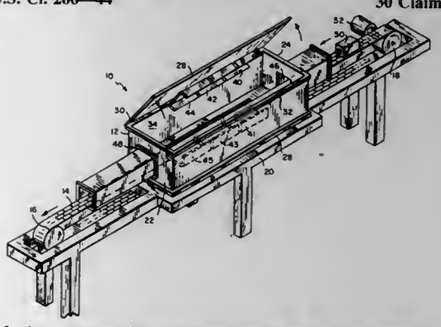
1. In a method of making a vacuum cleaner hose by forming said hose from polymeric material, said hose having opposite ends and a plurality of annular corrugations between said opposite ends thereof, said corrugations comprising a plurality of alternating annular crests and annular valleys that are interconnected together by annular side walls, each of said valleys and each of said crests having an apex and defining a radius of curvature and a wall thickness at the apex thereof, with said wall thickness of each of said valleys being thicker than the wall thickness of each of said crests, each side wall being substantially straight from said radius of curvature of an adjacent valley to said radius of curvature of an adjacent crest; the improvement comprising the steps of forming each of said valleys to be narrower than said crests and with a smaller radius of curvature than said crests, forming each of said valleys to be generally V-shaped and each of said crests to be generally U-shaped, forming each of said valleys with an outside diameter of approximately 1.380 inches and with said smaller radius of curvature being approximately 0.005 of an inch, and wherein each said crest has an outside diameter of approximately 1.800 inches with said radius of curvature thereof being approximately 0.045 of an inch, providing said hose with approximately six of said corrugations per inch of length thereof when said hose is in relaxed condition, and adapting said hose to be stretched in an elongated manner approximately 100 percent thereof from said relaxed condition with an approximately three pound pull thereon.

5,648,041
PROCESS AND APPARATUS FOR COLLECTING FIBERS BLOW SPUN FROM SOLVATED MESOPHASE PITCH
John A. Rodgers, Ooltewah, Tenn.; Joseph A. Perrotto, Landenberg, Pa., and Robert C. Boger, Wilmington, Del., assignors to Conoco Inc., Ponca City, Okla.
Filed May 5, 1995, Ser. No. 436,030
Int. Cl.[6] D01D *5/12;* D01F *9/12*
U.S. Cl. 264—555 **21 Claims**



1. A process for preparing relatively straight blow spun fibers comprising:
blow spinning a fiber using at least one flowing stream of gas;
contacting said fiber with at least one additional flowing stream of gas to place said fiber under tension wherein the velocity of said additional flowing stream of gas is greater than the velocity of said fiber; and,
thermosetting said fiber while under tension.

5,648,042
HIGH-TEMPERATURE BELT FURNACE APPARATUS AND METHOD OF USING SAME
Charles W. Miller, Jr., Williamsville, N.Y., assignor to Centorr/Vacuum Industries, Inc, Nashua, N.H.
Filed Oct. 10, 1995, Ser. No. 541,711
Int. Cl.[6] F27D *3/00*
U.S. Cl. 266—44 **30 Claims**



1. An apparatus for high-temperature material processing of articles weighing about one-half pound or more comprising in combination:
(a) insulated housing means defining an interior compartment, said housing means further comprising inlet and outlet means;
(b) at least a heating zone located in said interior compartment;
(c) continuous belt means consisting essentially of interlocking links of sintered silicon carbide capable of supporting a load

of about one-half pound or more without significant belt distortion at temperatures above about 1200° C., wherein said belt means enters said housing means through said inlet means, passes through said heating zone, and exits said housing means through said outlet means; and

(d) variable-speed drive means for regulating the speed of said belt means.

5,648,043

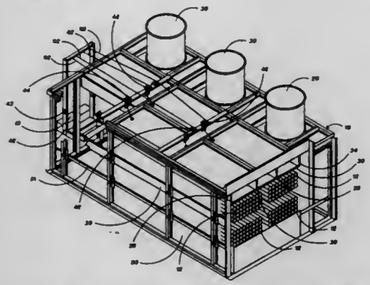
BAFFLING SYSTEM FOR UNIFORMILY COOLING BILLET LOADS

Triantafyllos Mavropoulos, Montreal; Quingxian Jiao, Pierrefonds; Cesur Celik, Pointe-Claire, all of Canada, and Bill McClelland, Dexter, Mo., assignors to Noranda Inc., Toronto, Canada

Filed Jun. 16, 1995, Ser. No. 491,256

Int. Cl.[6] C21D *1/62*

U.S. Cl. 266—259 **13 Claims**



1. A system for automatically laying at least one baffle over a load of billets of metal contained in a cooling chamber for allowing the substantial uniform cooling thereof, the at least one baffle extending throughout the length of the chamber and being perpendicular to cooling air flow, the system comprising:

releasing means coupled to the at least one baffle for moving the at least one baffle to lay it above the billets, whereby upon insertion of a car containing the billets, the releasing means is activated and the at least one baffle is laid and automatically adjusted above the billets to insure substantial uniform dispersion of the cooling air flow, with the proviso that a space between an end of the laid at least one baffle and the billets is substantially the same as the space between two rows of billets.

5,648,044

GRAPHITE STEEL FOR MACHINE STRUCTURAL USE EXHIBITING EXCELLENT FREE CUTTING CHARACTERISTIC, COLD FORGING CHARACTERISTIC AND POST-HARDENING/TEMPERING FATIGUE RESISTANCE

Toshiyuki Hoshino; Takashi Iwamoto; Akihiro Matsuzaki, and Keniti Amano, all of Okayama, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Division of Ser. No. 283,800, Aug. 1, 1994, Pat. No. 5,476,556. This application May 22, 1995, Ser. No. 446,488

Claims priority, application Japan, Aug. 2, 1993, 191398

Int. Cl.[6] C22C *38/02;38/04*

U.S. Cl. 420—99 **8 Claims**

1. A graphite steel for a machine structural use exhibiting excellent free cutting characteristic and cold forging characteristic for use in a hardened/tempered state consisting essentially of:

C: 0.1 wt % to 1.5 wt %;

Si: 0.5 wt % to 2.0 wt %;

Mn: 0.1 wt % to 2.0 wt %;

B: 0.0003 wt % to 0.0150 wt %;

Al: 0.005 wt % to 0.1 wt %;

O≦0.0030 wt %;

P≦0.020 wt %;

S≦0.035 wt %;

N: 0.0015 wt % to 0.0150 wt %; and

a balance consisting of Fe and unavoidable impurities, wherein substantially overall quantity of C is precipitated as graphite and size of the graphite is at most 20 μm.

5,648,045

TIAL-BASED INTERMETALLIC COMPOUND ALLOYS AND PROCESSES FOR PREPARING THE SAME

Naoya Masahashi; Youji Mizuhara, and Munetsugu Matsuo, all of Kawasaki, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Division of Ser. No. 289,973, Aug. 12, 1994, Pat. No. 5,518,690, which is a division of Ser. No. 907,363, Jul. 1, 1992, Pat. No. 5,370,839. This application May 3, 1996, Ser. No. 646,650

Claims priority, application Japan, Jul. 5, 1991, 3-165403; Jul. 5, 1991, 3-165404

Int. Cl.[6] C22C *14/00*

U.S. Cl. 420—418 **4 Claims**



1. A TiAl-based intermetallic compound alloy having superplasticity at plastic working temperatures and containing chromium and consisting essentially of a dual-phase microstructure of γ phase and a 2% to 25% by volume fraction of β phase precipitating at γ grain boundaries, said alloy consisting essentially of a composition whose atomic fraction is expressed as:

$$Ti_aAl_{100-a-b-c}Cr_bX_c$$

X: Nb, Mo, Hf, Ta, W, V

where

47.5≦a≦52

1≦b≦5

0.5≦c≦3

b≧c

2a+b+c≧100.

5,648,046

METHOD AND A SYSTEM FOR DISINFECTING AIR IN AIR CONDITIONING DUCTS

Rene Weibel, Schützenmattstrasse 38, CH-4051 Basel, Switzerland

PCT No. PCT/NL93/00089, § 371 Date Oct. 28, 1994, § 102(e) Date Oct. 28, 1994, PCT Pub. No. WO93/22603, PCT Pub. Date Nov. 11, 1993

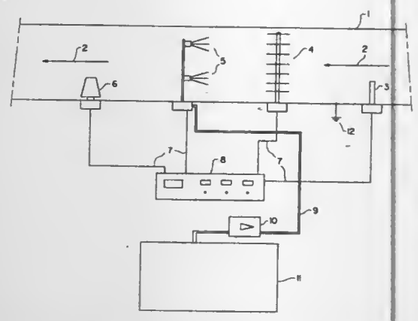
PCT Filed Apr. 28, 1993, Ser. No. 325,418

Claims priority, application Switzerland, Apr. 28, 1992, 1375/92

Int. Cl.[6] F24F *3/16*

U.S. Cl. 422—4 **6 Claims**

1. In a method for disinfecting air in a ventilation duct, wherein a non-poisonous and substantially non-volatile disinfectant is vaporized into the air flowing in the duct as an aerosol by means of microvaporizers, the improvement comprising the steps of: first,



ionizing the air flowing in the duct and thereby producing an ionized air flow with an amount of ozone; second, electrically charging suspended disinfectant particles in the ionized air flow; and maintaining an electrical potential difference between an interior surface of the duct and a plurality of ionization electrodes exposed to the air flow.

5,648,047

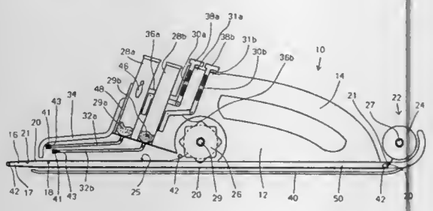
DEVICE FOR COLORIMETRIC DETECTION OF EXPLOSIVES AND NARCOTICS

Nitza Kardish, 3 Shimshon, 64354, and Israel Levy, 2 Kikar Masarick, 64351, both of Tel Aviv, Israel

Filed Mar. 29, 1996, Ser. No. 623,805

Int. Cl.[6] G01N *33/22;21/29*

U.S. Cl. 422—56 **27 Claims**



1. A hand-held device for colorimetric detection of a chemical obtained by sampling a surface of an object for enabling a large number of tests to be successively performed, the hand-held device comprising:

(a) a housing having means for handling and using the hand-held device, said housing including a sapling area and a testing area, said sampling area being formed as a tip, said tip being dimensioned and positioned for permitting the sampling of the surface of the object by wiping the surface of the object;

(b) a roll of substrate for sampling materials suspected as including the chemical from the surface of the object;

(c) a feeding reel being rotatably connected to said housing, said feeding reel accommodating said roll of substrate, said substrate extending at least from said feeding reel to said tip and said testing area;

(d) at least one container for accommodating at least one detecting reagent, wherein said at least one detecting reagent is for the colorimetric detection of the chemical; and

(e) at least one dispensing mechanism for dispensing a predetermined volume of said at least one reagent onto said substrate at said testing area.

5,648,048

WET-TYPE FLUE GAS DESULFURIZATION PLANT

Hiroshi Kuroda, Tokyo; Fumito Nakajima, Kure; Masakatsu Nishimura, Kure; Hiroyuki Kaku, Kure; Shigeru Nozawa, Kure; Shigehito Takamoto, Kure; Takanori Nakamoto, Kure; Hirofumi Kikkawa, Kure; Hiroshi Ishizaka, Kure; Atsushi Katagawa, Kure; Mitsuharu Kou, Tokyo; Masayuki Yamamoto, Kure, and Kunikatsu Yoshida, Kure, all of Japan, assignors to Babcock-Hitachi Kabushiki Kaisha, Japan

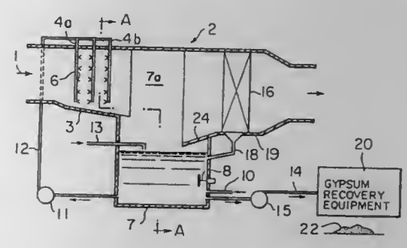
PCT No. PCT/JP94/00583, § 371 Date Mar. 22, 1995, § 102(e) Date Mar. 22, 1995, PCT Pub. No. WO94/23826, PCT Pub. Date Oct. 27, 1994

PCT Filed Apr. 7, 1994, Ser. No. 347,487

Claims priority, application Japan, Apr. 9, 1993, 5-083656; Nov. 11, 1993, 5-282569; Dec. 22, 1993, 5-324264; Dec. 24, 1993, 5-328824

Int. Cl.[6] B01D *47/06*

U.S. Cl. 422—168 **32 Claims**



1. A wet-type flue gas desulfurization plant comprising:

an absorber housing defining a gas flow path therein in a direction which is not vertical and including a central area, an inlet duct upstream from said central area for admission of an exhaust gas containing sulfur oxides and an outlet duct downstream of said central area;

spray means, located within said inlet duct and defining a spraying zone therein, for spraying an absorbing liquid into contact with the exhaust gas, said spray means including plural spray nozzles arrayed within said inlet duct along said gas flow path;

a demister mounted in said outlet duct for removing mist;

a circulation tank for receiving and storing absorbing liquid dropping from the absorber housing and for oxidizing sulfur oxides contained in the stored absorbing liquid with air, while the absorbing liquid is being stored, said central area being that area within said absorber housing located directly above said circulation tank, wherein said inlet duct includes a bottom wall having an inclined portion which is inclined downward toward said circulation tank and which extends along said gas flow path coextensive with said arrayed spray nozzles;

circulating means for returning the stored absorbing liquid to said spray means in the inlet duct of said absorber housing; and

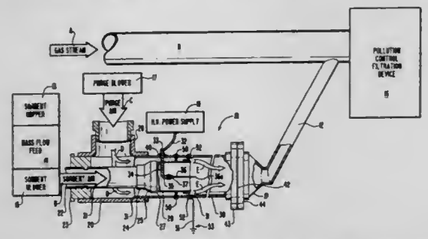
wherein said absorber housing, including the inlet and outlet ducts, is integral with and supported by the circulation tank.

5,648,049

PURGING ELECTROSTATIC GUN FOR A CHARGED DRY SORBENT INJECTION AND CONTROL SYSTEM FOR THE REMEDIATION OF POLLUTANTS IN A GAS STREAM

James T. Jones, Chandler; Larry Kersey, Scottsdale, both of Ariz., and Michael Walters, Fairview, Kans., assignors to Alanco Environmental Resources Corp., Scottsdale, Ariz.

Filed Nov. 29, 1995, Ser. No. 564,654
Int. Cl.[6] B01D *50/00;* **B01J** *8/08;19/08*
U.S. Cl. 422—170 **15 Claims**



1. A purging electrostatic gun for charging and injecting a flow of a sorbent material into a polluted gas stream for passage to an apparatus for removing particulates comprising, a gun housing that includes a purging gun barrel and contains a tube means that connects to a sorbent dispensing means for passing a measured flow of sorbent materials under pressure into said tube means; a straight barrel charging section that is open therethrough and connects on a rear end to said tube means to receive the measured flow of sorbent materials under pressure and has an open forward end; a discharge means mounted across an open forward end of said purging gun barrel for receiving a flow of electrostatically charged sorbent materials that is connected to pass said flow into a pipe wherethrough a polluted gas stream flows, with said pipe connected to a pollution control filtration device means; a charging electrode formed from an electrically conductive material that is centered axially in said barrel charging section, with a forward portion of said charging electrode extending beyond said open forward end of said barrel charging section; means for connecting said charging electrode to a high voltage source; means for controlling the voltage passed from said high voltage source into said charging electrode; a grounding means mounted in said straight barrel and spaced an appropriate radial distance apart from said charging electrode forward portion; and means for providing a flow of purging air under pressure with means for directing said flow of purging air into said gun housing to travel across said grounding means, scouring any sorbent particles therefrom and mixing with said charged sorbent materials.

5,648,050

METAL CARRIER

Toshiki Matsumoto, Kariya; Tetsuya Toyao, Toyoake; Tetsuya Nakamura, Chiryu; Shigeru Maehara, Kariya; Hiromasa Aoki, Nagoya; Tatsuya Fujita; Senta Tojo, both of Kariya; Kinji Hodaira, Okazaki; Takeshi Matsui, Toyohashi, and Yushi Fukuda, Chita-gun, all of Japan, assignors to Nippondenso Co., Ltd., Japan

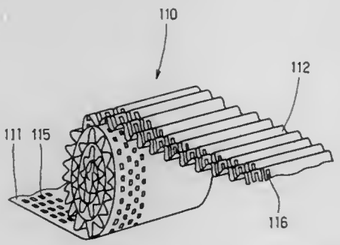
Filed Mar. 16, 1994, Ser. No. 213,806
Claims priority, application Japan, Mar. 17, 1993, 5-56908; Dec. 24, 1993, 5-350447
Int. Cl.[6] F01N *3/28;* **B01J** *35/02*
U.S. Cl. 422—180 **12 Claims**

1. A metal carrier for cleaning an exhaust gas and arranged in the course of an exhaust gas passage of an internal combustion engine, comprising:

at least one flat metal sheet; and

at least one corrugated metal sheet superimposed with said flat metal sheet one over the other and defining a plurality of axial gas passages to allow an exhaust gas to flow axially from an upstream side to a downstream side of said gas passages, said flat metal sheet and said corrugated metal sheet each having an upstream portion and a downstream portion;

wherein both said flat metal sheet and said corrugated metal sheet have slit parts formed from through-holes which are defined solely in said upstream portions of said flat sheet and of said corrugated sheet.

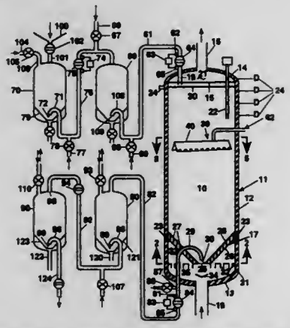


5,648,051

APPARATUS AND METHOD FOR QUENCHING IN HYDROPROCESSING OF A HYDROCARBON FEED STREAM

Harold J. Trimble, Novato; Bruce E. Reynolds, Martinez; Robert W. Bachtel, El Cerrito; Robert J. Klett, San Francisco; David N. Brossard, Oakland, and David E. Earls, Pinole, all of Calif., assignors to Chevron U.S.A. Inc., San Francisco, Calif.

Division of Ser. No. 273,526, Jul. 11, 1994, Pat. No. 5,492,617, which is a continuation-in-part of Ser. No. 215,254, Mar. 21, 1994, Pat. No. 5,409,598, which is a division of Ser. No. 14,847, Feb. 8, 1993, Pat. No. 5,302,357, which is a continuation of Ser. No. 727,656, Jul. 9, 1991, abandoned, which is a division of Ser. No. 381,948, Jul. 19, 1989, Pat. No. 5,076,908. This application Jun. 6, 1995, Ser. No. 468,111
Int. Cl.[6] F28D *21/00;* **B01J** *23/90*
U.S. Cl. 422—207 **18 Claims**



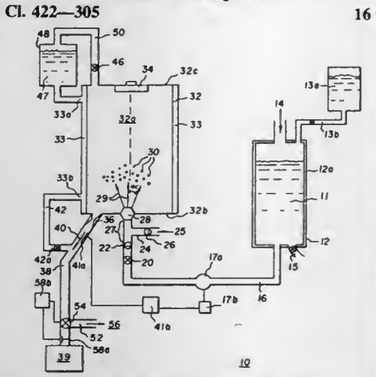
1. An apparatus for quenching in hydroprocessing of a hydrocarbon feed stream comprising a primary quench assembly for transporting a quench medium from a quench medium supply source; a secondary quench assembly secured to and communicating with the primary quench assembly for receiving the transported quench medium from the primary quench assembly and for distributing the received transported quench medium into a catalyst bed, at least one nozzle assembly comprising a lower nozzle section secured to and communicating with said secondary quench assembly, and an upper nozzle section coupled to said lower nozzle section; and a nozzle coupling disconnect clamp means, engaged to the lower nozzle section and to the upper nozzle section, for coupling the lower nozzle section to the upper nozzle section and for facilitating the disconnection of said upper nozzle section from said lower nozzle section; and a support means, coupled to the primary quench assembly and to the secondary quench assembly and to a reactor vessel containing the catalyst bed, for maintaining the primary quench assembly and the secondary quench assembly in a generally stationary posture with respect to the reactor vessel.

5,648,052

LIQUID MONOPROPELLANT GAS GENERATOR

Keith James Schaefer, Nassau, N.Y.; John Mandzy, Pittsfield, Mass.; Andrew Anthony Carlson, North Tonawanda, N.Y.; Crestus Lee Adams, Gaithersburg, Md.; Steven Joseph Brown, Pittsfield, and John Joseph Paul Johnson, Lee, both of Mass., assignors to Martin Marietta Corporation, Bethesda, Md.

Filed May 30, 1995, Ser. No. 452,901
Int. Cl.[6] B01J *7/00*
U.S. Cl. 422—305 **16 Claims**



1. A liquid propellant gas generator, comprising:

a tank for storing a quantity of liquid propellant;

a combustion chamber having an enclosed volume;

an injector for spraying a stream of said liquid propellant into said enclosed volume;

means for connecting said tank to said injector to permit flow of said liquid propellant therebetween;

means for pressurizing said liquid propellant for forced flow through said injector and into said enclosed volume;

an ignitor for initiating combustion of said liquid propellant within said enclosed volume to create combustion gases;

an exhaust nozzle expelling said combustion gases from said enclosed volume to produce a working fluid; and

feedback means, located downstream from said exhaust nozzle, for monitoring at least one of a temperature, pressure, and thrust of said working fluid, and for controlling said liquid propellant pressurizing means to achieve a substantially constant flow of said working fluid from said exhaust nozzle.

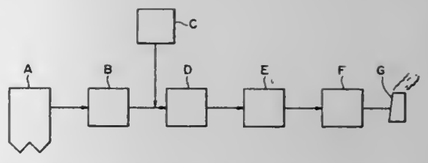
5,648,053

PROCESS FOR REMOVING CARBON DIOXIDE AND NITROGEN OXIDES FROM COMBUSTION GASES

Tomio Mimura; Shigeru Shimojo, both of Osaka; Masaki Iijima, Tokyo, and Shigeaki Mitsuoka, Hiroshima, all of Japan, assignors to The Kansai Electric Power Co. Inc., Osaka, and Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, both of Japan

Filed Oct. 4, 1995, Ser. No. 539,109
Claims priority, application Japan, Dec. 15, 1994, 6-311461
Int. Cl.[6] B01D *47/00*
U.S. Cl. 423—210 **3 Claims**

1. A process for removing both CO_2 and NO_x from combustion gases, comprising the steps of (a) cooling a combustion gas to 50 to 100° C.; (b) adding ozone to the combustion gas so as to oxidize NO in the combustion gas to NO_2; and thereafter, (c) bringing the gas into contact with an aqueous solution of an alcoholic hydroxyl-containing secondary- or tertiary-amine so as to simultaneously remove NO_2 and CO_2 from the combustion gas; wherein substantial removal of the NO_2 takes place in step (c) rather than steps (a) or (b).

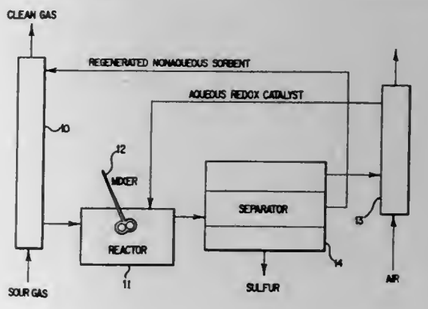


5,648,054

DOUBLE LOOP LIQUID-LIQUID H_2S REMOVAL PROCESS

David W. DeBerry, Austin, Tex., assignor to Gas Research Institute, Chicago, Ill.

Filed Jan. 31, 1995, Ser. No. 381,111
Int. Cl.[6] C01B *17/16*
U.S. Cl. 423—226 **15 Claims**



1. A process for removal of hydrogen sulfide from a hydrogen sulfide-containing gaseous stream comprising:

contacting said hydrogen sulfide-containing gaseous stream with a nonaqueous phase sorbent comprising at least one substantially water-insoluble organic solvent under conditions suitable for forming a hydrogen sulfide-laden sorbent and a clean gaseous stream, thereby forming said hydrogen sulfide-laden sorbent and a clean gaseous stream;

mixing said hydrogen sulfide-laden sorbent with an oxidized aqueous phase redox couple under conditions suitable for forming a mixture comprising sulfur, a regenerated said nonaqueous phase sorbent, and a reduced aqueous phase redox couple, thereby forming said mixture;

separating said sulfur from said mixture; and

extracting said reduced aqueous phase redox couple from said mixture and regenerating said oxidized aqueous phase redox couple.

5,648,055

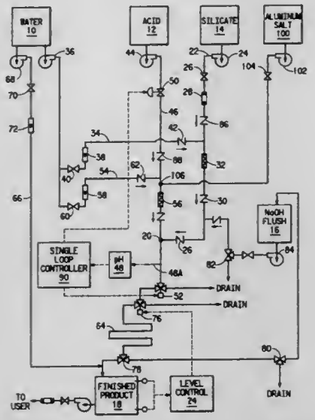
METHOD FOR PREPARING LOW-CONCENTRATION POLYALUMINOSILICATE MICROGELS

Robert Harvey Moffett, Landenberg, Pa., and John Derek Rushmere, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 345,890, Nov. 28, 1994, Pat. No. 5,503,820, which is a continuation-in-part of Ser. No. 166,679, Dec. 16, 1993, abandoned, which is a continuation-in-part of Ser. No. 93,157, Jul. 23, 1993, Pat. No. 5,312,595, which is a division of Ser. No. 887,793, May 26, 1992, Pat. No. 5,279,807. This application Oct. 25, 1995, Ser. No. 548,224

Int. Cl.[6] C01B *33/26*

U.S. Cl. 423—328.1 **5 Claims**



1. A method for continuously preparing a polyaluminosilicate microgel resulting in reduced silica deposition in which the microgel comprises a solution of from 1 to 2 nm diameter silica particles having a surface area of at least about 1000 m^2/g which are linked together into individual chains to form three-dimensional network structures said method comprising:

(a) simultaneously introducing a first stream comprising a water soluble silicate solution and a second stream comprising an acid having a pKa of less than 6 and a solution of an aluminum salt into a mixing zone where the streams converge at an angle of not less than 30 degrees and at a rate sufficient to produce a Reynolds number in the mixing zone of at least about 4000 and a resulting silicate/acid/salt mixture having a silica concentration in the range of from 1 to 6 wt. % and a pH in the range of from 2 to 10.5;

(b) aging the silicate/acid/salt mixture for a period of time sufficient to achieve a partial gelation, but not longer than 15 minutes; and

(c) diluting the aged mixture to a silica concentration of not greater than 2.0 wt. %.

5,648,056

FULLERENE COMPOSITE

Shun-ichiro Tanaka, 1-35-12, Hongo, Seya-ku, Yokohama-shi, Kanagawa-ken, Japan, assignor to Research Development Corporation of Japan, Saitama-ken, and Shun-ichiro Tanaka, Kanagawa-ken, both of Japan

Filed Apr. 25, 1995, Ser. No. 428,313

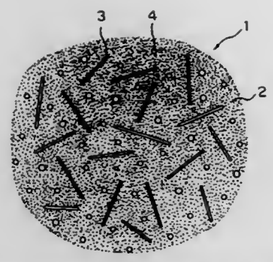
Claims priority, application Japan, Apr. 28, 1994, 6-092381

Int. Cl.[6] D01F *9/12;* **C01B** *31/00*

U.S. Cl. 423—445 B **7 Claims**

1. A fullerene composite comprising:

a matrix predominantly consisting essentially of ultrafine fullerene particles having diameters in the range of from 5 to 50 nm, and



reinforcement composed of carbon nanotubes having diameters in the range of from 2 to 60 nm and lengths in the range of from 0.5 to 5 μm, carbon nanocapsules having diameters in the range of from 50 to 200 nm, and inevitable carbonaceous impurities, said reinforcement being dispersed in said matrix in the range of from 15 to 45% by weight for 100% by weight of said matrix, wherein said composite is a compressed mixture of said ultrafine fullerene particles and said reinforcement.

5,648,057

PROCESS FOR PRODUCING $LIM^{3+}O_2$ OR $LIMN_2O_4$ AND $LINI^{3+}O_2$ FOR USE IN POSITIVE ELECTRODE OF SECONDARY BATTERY

Masami Ueda, Kurobe, and Tatsuo Murakami, Kamiichi-machi, both of Japan, assignors to Fuji Chemical Industry Co., Ltd., Toyama, Japan

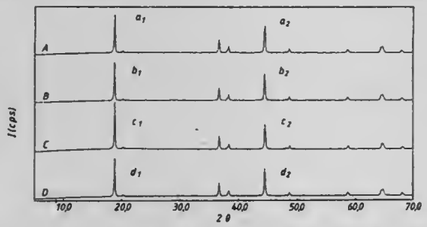
PCT No. PCT/JP94/00530, § 371 Date Apr. 12, 1995, § 102(e) Date Apr. 12, 1995, PCT Pub. No. WO94/22767, PCT Pub. Date Oct. 13, 1994

PCT Filed Mar. 31, 1994, Ser. No. 347,291

Claims priority, application Japan, Apr. 1, 1993, 5-098472; Mar. 28, 1994, 6-080895

Int. Cl.[6] C01G *45/12;51/04;53/04*

U.S. Cl. 423—594 **5 Claims**



1. A process for producing a compound of the formula $LiM^{3+}O_2$, wherein M^{3+} is Ni^{3+} or/and Co^{3+}, or $LiMn_2O_4$, comprising the steps of:

reacting a basic metal salt represented by the formula:

$$M^{2+}(OH)_{2-n\varepsilon}(A^{n-})x \cdot mH_2O \quad (1)$$

wherein M^{2+} is at least one member selected from the group consisting of Ni^{2+}, Co^{2+} and Mn^{2+}, A^{n-} is an n-valent anion, provided that n is 1 to 3, selected from the group consisting of NO_3^-, Cl^-, Br^-, Ch_3COO^-, and CO_3^{2-}, and x and m are positive numbers respectively satisfying $0.03 \leqq x \leqq 0.3$ and $0 \leqq m \leqq 2$,

with an alkaline water-soluble lithium compound in a molar ratio of Li/M^{2+} of 0.3 to 1.3 in an aqueous medium to obtain a slurry,

drying the obtained slurry, and

firing the resultant residue at about 500° C. or higher in an oxidative atmosphere.

5. A compound of the formula $LiNi^{3+}O_2$ for use in a positive electrode of a secondary battery, which contains Ni, at least 97.0%

of which is trivalent, and whose X-ray diffraction pattern shows a ratio of peak intensity relating to crystal face (**003**) to peak intensity relating to crystal face (**104**) of at least 1.3, said crystal face being defined by Miller indicies (hkl).

5,648,058

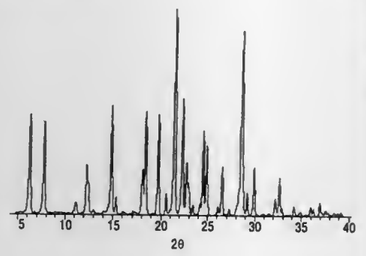
SYNTHESIS OF NOVEL MOLECULAR SIEVES USING A METAL COMPLEX AS A TEMPLATE

Kenneth J. Balkus, Jr., The Colony, and Alexi G. Gabrielov, Plano, both of Tex., assignors to Board of Regents, The Univ. of Texas System, Austin, Tex.

Division of Ser. No. 296,488, Aug. 24, 1994, Pat. No. 5,489,424. This application May 11, 1995, Ser. No. 439,415

Int. Cl.[6] C01B *37/02;37/08*

U.S. Cl. 423—702 **10 Claims**



1. A metal microcrystalline silicoaluminophosphate molecular sieve having a nominal pore diameter greater than about 7.2. A and comprising Al_2O_3 and SiO_2 in a molar ratio of about 2.5 and $(Cp^*_2Co)_2O$ where Cp^*_2Co is bis(pentamethylcyclopentadienyl) cobalt III ion.

5,648,059

METHODS FOR REDUCING NON-TARGET RETENTION OF IMMUNOCONJUGATES AND METABOLITES THEREOF

Mary Ann Gray, Seattle; Don Axworthy, Brier, both of Wash., and David Wilkening, Midland, Mich., assignors to NeoRx Corporation, Seattle, Wash.

Division of Ser. No. 933,608, Aug. 21, 1992, Pat. No. 5,380,513, which is a continuation of Ser. No. 415,055, Sep. 29, 1989, abandoned. This application Nov. 8, 1994, Ser. No. 337,477

Int. Cl.[6] A61K *39/395*

U.S. Cl. 424—1.49 **18 Claims**

1. An improved method of therapeutic treatment of a mammalian subject comprising the administration of a therapeutically effective amount of a therapeutic immunoconjugate wherein the improvement comprises;

additionally administering to said mammalian subject at least one urinary excretion promoting agent which localizes at renal sites and inhibits the retention and reabsorption of said therapeutic immunoconjugate and/or metabolites thereof in the bloodstream of said mammalian subject wherein said at least one urinary excretion promoting agent is administered in an amount effective to reduce non-target retention of active moieties contained in said therapeutic immunoconjugate or metabolites thereof at non-targeted renal sites.

5,648,060

PREORGANIZED HEXADENTATE LIGANDS USEFUL IN RADIOGRAPHIC IMAGING AGENTS

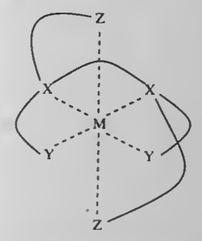
Raghavan Rajagopalan, Maryland Heights; William L. Neumann, Grover, and Dennis L. Nosco, Florissant, all of Mo., assignors to Mallinckrodt Medical, Inc., St. Louis, Mo.

Division of Ser. No. 627,175, Dec. 14, 1990. This application May 26, 1995, Ser. No. 452,470

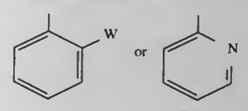
Int. Cl.[6] A61K *51/04;* **C07F** *5/00*

U.S. Cl. 424—1.65 **6 Claims**

1. A radiographic imaging agent comprising a complex having the general formula:



wherein M is a radionuclide and wherein the chemical groups coupling X—X and X—Z comprise (CH_2CH_2 and the chemical groups coupling X—Y comprise CH_2, X is N, Y is O, Z is



where W is



and R^1 and R^2 are hydrogen; and a pharmaceutically acceptable radiological vehicle.

5,648,061

IN VIVO AND IN VITRO MODEL OF CUTANEOUS PHOTOAGING

Eric Bernstein, Wynnewood, and Jouni Uitto, Gladwyne, both of Pa., assignors to Thomas Jefferson University, Philadelphia, Pa.

Filed May 24, 1995, Ser. No. 449,826

Int. Cl.[6] A61K *49/00;* **C12Q** *1/02*

U.S. Cl. 424—9.2 **2 Claims**

1. A method of identifying compounds capable of inhibiting cutaneous photodamage comprising:

(a) applying a test compound to skin of a transgenic mouse capable of expressing a reporter gene regulated by a human elastin promoter;

(b) exposing the transgenic mouse to UVB or UVA radiation; and

(c) measuring expression of the reporter gene to determine human elastin promoter activity in the transgenic mouse.

5,648,062

CONTRAST AGENTS CONSISTING OF GALACTOSE PARTICLES

Jo Klaveness, Oslo; Pål Rongveo, Hellvik, both of Norway, and Lars Stubberud, Södertälje, Sweden, assignors to Nycomed Imaging AS, Oslo, Norway

Division of Ser. No. 256,151, Nov. 1, 1994. This application Jun. 5, 1995, Ser. No. 465,112

Claims priority, application United Kingdom, Jan. 9, 1992, 9200391

The portion of the term of this patent subsequent to Nov. 1, 2014, has been disclaimed.

Int. Cl.[6] A61K *49/00*

U.S. Cl. 424—9.34 18 Claims

1. A contrast agent comprising water-soluble microparticles comprising a carbohydrate in admixture with a non-triglyceride non-surface active material, said contrast agent containing or generating microbubbles of sulphur hexafluoride or fluorinated low molecular weight hydrocarbons, and said non-triglyceride non-surface active material being less water-soluble than said carbohydrate.

5,648,063

STERILE COMPOSITION COMPRISING A CHELATE COMPLEX FOR MAGNETIC RESONANCE IMAGING

Heinz Gries; Douwe Rosenberg; Hanns-Joachim Weinmann; Ulrich Speck; Wolfgang Mutzel; Georg-Alexander Hoyer, all of Berlin; Heinrich Pfeiffer, deceased, late of Berlin, and Franz-Josef Renneke, Nordkirchen, all of Germany, assignors to Schering Aktiengesellschaft, Berlin, Germany

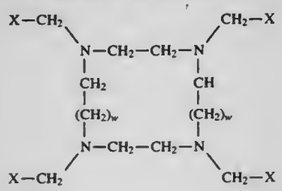
Continuation of Ser. No. 933,918, Aug. 27, 1992, abandoned, which is a continuation of Ser. No. 20,992, Mar. 2, 1987, abandoned, which is a continuation-in-part of Ser. No. 573,184, Jan. 23, 1984, Pat. No. 4,647,447, which is a continuation-in-part of Ser. No. 401,594, Jul. 26, 1982, abandoned. This application Aug. 4, 1993, Ser. No. 101,811

Claims priority, application Germany, Jul. 24, 1981, 31 29 906.7; Jan. 21, 1983, 33 02 410.3; Jan. 11, 1984, 34 01 052.1

Int. Cl.[6] A61B *5/055*

U.S. Cl. 424—9.363 54 Claims

1. A method of performing an NMR diagnostic procedure comprising administering to a patient an effective amount of an NMR diagnostic medium and them exposing the patient to an NMR measurement step to which the diagnostic medium is responsive, thereby imaging at least a portion of the patient's body, wherein the diagnostic medium comprises a physiologically compatible chelate complex of (a) a complexing agent and (b) at least one central paramagnetic ion of an element with an atomic number of 21 to 29, 42, 44 or 58 to 70 chelated therewith, wherein the complexing agent is of the formula



wherein

X is —COOY;

Y is a hydrogen atom, a metal ion equivalent or a physiologically compatible cation of an inorganic or organic base or amino acid; and

w is a number 1, 2 or 3;

provided that at least two of the substituents Y are metal ion equivalents of an element with an atomic number of 21 to 29, 42, 44 or 58 to 83.

5,648,064

ORAL COMPOSITIONS HAVING ACCELERATED TOOTH WHITENING EFFECT

Abdul Gaffar, 89 Carter Rd., Princeton, N.J. 08902, and Sahar Fakhry-Smith, 7 Ryans Ct., Bordentown, N.J. 08505

Filed Jul. 7, 1995, Ser. No. 499,532

Int. Cl.[6] A61K *7/16;7/20*

U.S. Cl. 424—53 14 Claims

1. A method of whitening stained or discolored teeth in the oral cavity which comprises applying to the teeth a two component whitening composition, which will whiten stained or discolored teeth, when applied thereto, the composition being comprised of a first component containing in a vehicle a safe amount of a peroxygen compound effective to whiten teeth, and a second component containing a manganese coordination complex compound in a vehicle, the manganese compound being present in the vehicle in an amount effective to activate the peroxygen compound, the first and second components being maintained separate from each other until dispensed for application to the teeth, dispensing and mixing the separately maintained components so that the manganese compound of the second component interacts with the peroxygen compound of the first component whereby the breakdown of the peroxygen compound and the release of active oxygen is accelerated and then allowing the mixed components to remain on the teeth for a time sufficient to effect rapid whitening thereof.

5,648,065

COSMETIC OR PHARMACEUTICAL COMPOSITION CONTAINING AN EXTRACT OF COLEUS ESQUIROLLII, COLEUS SCUTELLARIOIDES OR COLEUS XANTHANTHUS

Alain Meybeck; Frédéric Bonte, both of Courbevoie, and Marc Dumas, Colombos, all of France, assignors to L.V.M.H. Recherche, Colombes Cedex, France

Division of Ser. No. 199,303, Jul. 15, 1994, Pat. No. 5,505,934. This application Feb. 21, 1996, Ser. No. 604,464

Int. Cl.[6] A61K *7/42*

U.S. Cl. 424—59 2 Claims

1. A method for treating the skin or hair to promote pigmentation thereof comprising applying to said skin or hair to be pigmented a composition comprising an effective amount of a Coleus extract selected from the group consisting of an extract of coleus esquirolii, an extract of coleus scutellarioides, an extract of coleus xanthanthus, and any mixture thereof; and

said composition further comprising an active substance selected from the group consisting of a papilla fibroblast culture supernatant, a keratin hydrolyzate, and a trace element selected from the group consisting of zinc, selenium, and copper.

5,648,066

SOLID SILICONE COMPOSITIONS AND METHODS FOR THEIR PREPARATION AND USE

George J. Stepniewski, Melville, N.Y., assignor to Estee Lauder Companies, Melville, N.Y.

Filed Oct. 3, 1995, Ser. No. 538,550

Int. Cl.[6] A61K *7/00*

U.S. Cl. 424—64 25 Claims

1. A solid silicone composition suitable for topical application to human skin or hair which comprises:

(a) from about 3 to about 20 percent by weight of the total composition of a polyethylene solidifying agent which is a straight-chain homopolymer of polyethylene having an average molecular weight of about 500 or less as measured by vapor pressure osmometry; and

(b) from about 20 to about 97 percent by weight of the total composition of a non-volatile silicone fluid.

5,648,067

COSMETIC DEODORANT PREPARATION CONTAINING DI- OR TRIGLYCERIN ESTERS

Helmut Dillenburg; Gerald Jakobson, both of Rheinberg; Winfried Klein, Hamburg; Werner Siemanowski, Rheinberg; Karlheinz Uhlig, Krefeld, and Florian Wolf, Hamburg, all of Germany, assignors to Beiersdorf Aktiengesellschaft, Hamburg, and Solvay Fluor und Derivate GmbH, Hannover, both of Germany

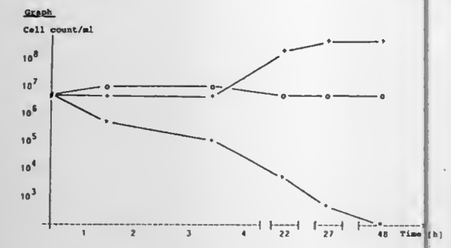
PCT No. PCT/EP93/02767, § 371 Date Aug. 17, 1995, § 102(e) Date Aug. 17, 1995, PCT Pub. No. WO94/09753, PCT Pub. Date May 11, 1994

PCT Filed Oct. 9, 1993, Ser. No. 428,088

Claims priority, application Germany, Nov. 3, 1992, 42 37 081.7

Int. Cl.[6] A61K *7/32*

U.S. Cl. 424—65 11 Claims



1. A method of combatting Gram-positive bacteria, which comprises applying to such bacteria or to a locus from which it is desired to exclude such bacteria an amount effective therefor of at least one monocarboxylic acid ester of di or triglycerol.

5,648,068

Patent Not Issued For This Number

5,648,069

4-[(2-OXO-3-BORNYLIDENE) METHYL]PHENYLTRIMETHYLAMMONIUM METHYL SULFATE IN A PERMANENT HAIR SHAPING COMPOSITION FOR PROTECTION AGAINST THE RAVAGES OF THE WEATHER AND IN PARTICULAR AGAINST LIGHT

Arnaud De Labbey, Aulnay-sous-Bois, and Ly Lan N'guyen, L'Hay-les-Roses, both of France, assignors to L'Oreal, Paris, France

PCT No. PCT/FR92/01223, § 371 Date Aug. 19, 1994, § 102(e) Date Aug. 19, 1994, PCT Pub. No. WO93/12763, PCT Pub. Date Jul. 8, 1993

PCT Filed Dec. 22, 1992, Ser. No. 256,075

Claims priority, application France, Dec. 23, 1991, 91 16019

Int. Cl.[6] A61K *7/09;7/92*

U.S. Cl. 424—70.2 5 Claims

1. In a permanent waving composition consisting essentially of a reduction composition in the form of an aqueous solution having a reducing agent or a fixing composition in the form of an aqueous solution having an oxidation agent, the improvement comprising 1 to 10% by weight, relative to the total weight of the permanent waving composition, of 4-[(2-oxo-3-bornylidene)methyl] phenyltrimethylammoniummethyl sulfate dissolved in the permanent waving composition for protecting the elasticity of hair measured by a wet 15% extension stage from degradation brought about by the successive action of a permanent waving and the ravages of weathering.

5,648,070

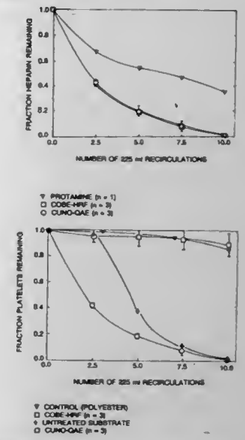
BIOCOMPATIBLE ANION EXCHANGE MATERIALS

Ben F. Brian, III, Golden; Marc Voorhees, Arvada, and Lloyd James Forrestal, Boulder, all of Colo., assignors to Cobe Laboratories, Inc., Lakewood, Colo.

Continuation-in-part of Ser. No. 981,912, Nov. 23, 1992, Pat. No. 5,354,472, and a continuation of Ser. No. 802,185, Dec. 4, 1991, abandoned. This application Sep. 30, 1994, Ser. No. 315,696

Int. Cl.[6] B01D *15/08*

U.S. Cl. 424—78.1 33 Claims



1. A biocompatible anion exchange material, for removal of heparin from a fluid also containing platelets, made from components comprising:

a. a polymeric support having a first reactive group and a second reactive group spaced apart so as to allow for ionic binding of heparin to said anion exchange material without removal of platelets;

b. a quaternary amine moiety covalently bonded to said first reactive group;

c. a polyethylene oxide moiety having between about 10 and about 200 repeating units covalently bonded to said second reactive group;

wherein said quaternary amine and said polyethylene oxide moieties are substantially homogeneously distributed on said support at a molar ratio of charged amine moiety to ethylene oxide repeating unit of between about 0.3:1 and about 450:1.

5,648,071

METHOD OF TREATING TUMORS

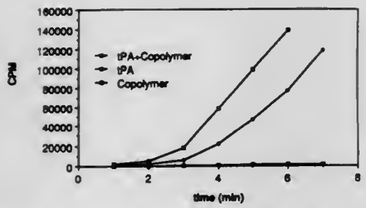
Robert L. Hunter, Tucker, and Alexander Duncan, Dunwoody, both of Ga., assignors to Emory University, Atlanta, Ga.

Continuation of Ser. No. 259,147, Jun. 13, 1994, abandoned, which is a continuation of Ser. No. 131,865, Oct. 5, 1993, abandoned, which is a continuation of Ser. No. 881,203, May 11, 1992, abandoned, which is a continuation of Ser. No. 802,331, Dec. 4, 1991, Pat. No. 5,198,211, which is a continuation of Ser. No. 522,206, May 11, 1990, Pat. No. 5,078,995, which is a continuation of Ser. No. 403,017, Sep. 5, 1989, abandoned, which is a continuation of Ser. No. 303,791, Jan. 30, 1989, abandoned, which is a division of Ser. No. 45,459, May 7, 1987, Pat. No. 4,801,452, which is a continuation of Ser. No. 43,888, Apr. 29, 1987, abandoned, which is a continuation of Ser. No. 863,582, May 15, 1986, abandoned. This application Mar. 24, 1995, Ser. No. 409,549

Int. Cl.[6] A61K *31/74*

U.S. Cl. 424—78.31 23 Claims

1. A method of treating tumors in a human or animal comprising the step of administering to the human or animal with the tumor a



composition comprising a chemotherapeutic agent and a solution comprising an effective concentration of a surface-active copolymer with the following formula:

$$HO(C_2H_4O)_b(C_3H_6O)_a(C_2H_4O)_bH$$

wherein a is an integer such that the hydrophobe represented by (C_3H_6O) has a molecular weight of between approximately 950 to 4000 Daltons, and b is an integer such that the hydrophile portion represented by (C_2H_4O) constitutes between approximately 50% to 90% by weight of the copolymer.

5,648,072

METHODS OF INDUCING GAMMA INTERFERON AND STIMULATING BLOOD CELL POPULATIONS USING NATURAL KILLER STIMULATORY FACTOR

Giorgio Trinchieri, Wynnewood; Bice Perussia, Philadelphia, both of Pa.; Steven C. Clark, Winchester, Mass.; Michiko Kobayashi, Brookline, Mass.; Gordon G. Wong, Jamaica Plain, Mass.; Rodney Hewick, Lexington, Mass., and Stanley F. Wolf, Arlington, Mass., assignors to Genetics Institute, Inc., Cambridge, Mass.

Division of Ser. No. 584,941, Sep. 18, 1990, Pat. No. 5,457,038, which is a continuation-in-part of Ser. No. 307,817, Feb. 7, 1989, abandoned, which is a continuation-in-part of Ser. No. 269,945, Nov. 10, 1988, abandoned. This application Mar. 13, 1995, Ser. No. 402,667

Int. Cl.[6] A61K *45/05;39/00;* **C07K** *1/00;14/00*

U.S. Cl. 424—85.2 **8 Claims**

1. A method for inducing production of gamma interferon comprising administering to a patient an effective amount of a composition comprising a pharmaceutically effective vehicle and natural killer cell stimulatory factor (NKSF), said factor comprising (1) a first subunit having an apparent molecular weight of approximately 40 kD under reducing conditions on SDS PAGE, and (2) a second subunit having an apparent molecular weiaht of approximately 30–35 kD under reducing conditions on SDS PAGE.

5,648,073

Patent Not Issued For This Number

5,648,074

COMPOSITIONS AND METHODS FOR DISINFECTING CONTACT LENSES AND REDUCING PROTEINACEOUS DEPOSIT FORMATION

John Y. Park, Santa Ana; Lin Peng, Tustin, and Anthony J. Dziabo, Lake Forest, all of Calif., assignors to Allergan, Waco, Tex.

Continuation-in-part of Ser. No. 277,718, Jul. 20, 1994, which is a continuation-in-part of Ser. No. 66,746, May 25, 1993, abandoned. This application Dec. 12, 1994, Ser. No. 353,782

Int. Cl.[6] A61K *38/54*

U.S. Cl. 424—94.2 **16 Claims**

1. A composition comprising:

a liquid medium;

chlorine dioxide precursor in said liquid medium in an amount effective, when activated in said liquid medium, to form a chlorine dioxide-containing composition including a contact lens disinfecting amount of chlorine dioxide; and a polyanionic component in said liquid medium in an amount effective, in the chlorine dioxide-containing composition, to reduce the amount of proteinaceous deposit material on a contact lens immersed in the chlorine dioxide-containing composition, provided that said polyanionic component and any precursor thereof do not act to substantially delay the release of another component in the chlorine dioxide-containing composition and any liquid-containing precursor thereof, said polyanionic component comprises a polymeric material having multiple anionic charges, and said composition having a viscosity of less than 50 cps at 25° C.

5,648,075

IODINE BASED GERMICIDAL COMPOSITION

Jack H. Kessler, Southborough, and James C. Richards, Framingham, both of Mass., assignors to Symbollon Corporation, Sudbury, Mass.

Continuation of Ser. No. 324,391, Oct. 17, 1994, abandoned. This application Jul. 19, 1996, Ser. No. 684,334

Int. Cl.[6] A61K *38/44;33/36;* **C12N** *9/96*

U.S. Cl. 424—94.4 **5 Claims**

1. An iodine based germicidal composition for disinfecting pathogenic organisms in or on sensitive biological materials when admixed with an aqueous based medium consisting essentially of a peroxidase selected from the Enzyme Commission No. E.C. 1.11.1.7, a source of hydrogen peroxide and an iodide source in a molar ratio of hydrogen peroxide to iodide of between about 0.5 to 4.0 and having a maximum concentration of hydrogen peroxide at the formation of said admixture of 0.015% such that a plurality of iodine species are formed having a molar ratio of at least 25% and up to 98% free molecular iodine and a free molecular iodine concentration of between 10 and 330 ppm.

5,648,076

INHIBITION OF VASCULAR STENOSIS

Russell Ross; Michael A. Reidy; Elaine W. Raines; Volkhard Lindner, all of Seattle, Wash., and Gordon A. A. Ferns, Brentwood, Great Britain, assignors to Board of Regents of University of Washington, Seattle, Wash.

Continuation of Ser. No. 641,758, Jan. 17, 1991, abandoned. This application Jul. 26, 1994, Ser. No. 281,132

Int. Cl.[6] A61K *39/395;* **C07K** *16/22*

U.S. Cl. 424—145.1 **20 Claims**

1. A method of reducing restenosis in a mammal following angioplasty or endartarectomy comprising administering to said mammal an anti-growth factor antibody in an amount sufficient to reduce restenosis, wherein said antibody is selected from the group consisting of anti-bFGF antibodies, anti-aFGF antibodies and anti-PDGF antibodies, and wherein said antibody inhibits the chemotactic or mitotic activity of the growth factor.

5,648,077

TREATMENT OF PATIENTS INFECTED WITH HEPATITIS B VIRUS WITH A HUMAN MONOCLONAL ANTIBODY

Lars G. Ostberg, Convent Station, N.J., assignor to Sandoz Ltd., Basel, Switzerland

Division of Ser. No. 259,372, Jun. 14, 1994, which is a continuation of Ser. No. 871,426, Apr. 21, 1992, abandoned, which is a continuation-in-part of Ser. No. 676,036, Mar. 27, 1991, abandoned, which is a continuation-in-part of Ser. No. 538,796, Jun. 15, 1990, abandoned, which is a continuation of Ser. No. 192,754, May 11, 1988, abandoned, which is a continuation-in-part of Ser. No. 925,196, Oct. 31, 1986, abandoned, which is a continuation-in-part of Ser. No. 904,517, Sep. 5, 1986, abandoned. This application Jun. 6, 1995, Ser. No. 468,671

Int. Cl.[6] A61K *39/42;39/395*

U.S. Cl. 424—149.1 **8 Claims**

1. A method for treating a patient infected with hepatitis B virus comprising administering to the patient an effective amount of a human monoclonal antibody which inhibits binding of PE1-1 monoclonal antibody (ATCC HB 9234) to the hepatitis B virus surface antigen in vitro, and neutralizes the hepatitis B virus in the patient.

5,648,078

METHOD FOR INHIBITING METASTASIS OF COLON CANCER TO THE LIVER

Junko Hashino; Shinzo Oikawa, both of Kyoto; Hiroshi Nakazato, and Toshihiro Nakanishi, both of Ibaraki, all of Japan, assignors to Suntory Limited, Osaka, Japan

PCT No. PCT/JP93/00182, § 371 Date May 11, 1994, § 102(e) Date May 11, 1994, PCT Pub. No. WO93/16128, PCT Pub. Date Aug. 19, 1993

PCT Filed Feb. 12, 1993, Ser. No. 129,195

Claims priority, application Japan, Feb. 14, 1992, 4-59551

Int. Cl.[6] A61K *39/395;* **C07K** *16/18;16/28;16/30*

U.S. Cl. 424—156.1 **4 Claims**

1. A method for inhibiting the metastasis of colon cancer to the liver in a living body, which comprises:

administering, in advance of cell metastasis, a monoclonal antibody which specifically binds a peptide which comprises at least the peptide sequence of domain N in the glycoprotein of human carcinoembryonic antigen.

5,648,079

HERPES SIMPLEX VIRUS GLYCOPROTEIN B VACCINE

Rae L. Burke, San Francisco; Carol Pachl, Oakland, and Pablo D. T. Valenzuela, San Francisco, all of Calif., assignors to Chiron Corporation, Emeryville, Calif.

Continuation of Ser. No. 138,717, Oct. 18, 1993, abandoned, which is a continuation of Ser. No. 993,415, Dec. 21, 1992, abandoned, which is a division of Ser. No. 587,179, Sep. 20, 1990, Pat. No. 5,244,792, which is a continuation of Ser. No. 921,730, Oct. 20, 1986, abandoned, which is a continuation-in-part of Ser. No. 597,784, Apr. 6, 1984, abandoned. This application Dec. 8, 1994, Ser. No. 351,875

Int. Cl.[6] A61K *39/245*

U.S. Cl. 424—186.1 **13 Claims**

1. A vaccine composition comprising a recombinantly produced glycosylated glycoprotein B (gB) polypeptide of Herpes Simplex Virus (HSV) that has a deletion of all or a portion of the transmembrane anchor region, in combination with a pharmacologically acceptable carrier and an adjuvant.

5,648,080

ANTIGENIC PREPARATIONS AND ISOLATION OF SUCH PREPARATIONS

Pavel Novotny, Beckenham, England, assignor to Evans Medical Limited, England

Continuation of Ser. No. 80,098, Jun. 22, 1993, abandoned, which is a continuation of Ser. No. 830,989, Feb. 4, 1992, abandoned, which is a continuation of Ser. No. 142,261, Jan. 7, 1988, abandoned, which is a continuation of Ser. No. 894,435, Jul. 30, 1986, abandoned, which is a continuation of Ser. No. 729,257, May 1, 1985, abandoned. This application Mar. 21, 1994, Ser. No. 210,458

Claims priority, application United Kingdom, May 12, 1984, 8412207

Int. Cl.[6] A61K *39/00;39/10;39/02*

U.S. Cl. 424—254.1 **28 Claims**

1. A vaccine which comprises a proteinaceous material, which is derived from the outer membrane of *Bordetella pertussis* and is characterized by a relative molecular weight of about 67,000 to about 73,000 as determined by 12% (w/w) polyacrylamide gel electrophoresis and a proline:glutamic acid ratio of about 1:1 as determined by amino acid analysis in a pharmaceutically acceptable carrier or adjuvant.

5,648,081

ACTINOBACILLUS PLEUROPNEUMONIAE SUBUNIT VACCINE

Johannes Franciscus van den Bosch, Boxmeer, Netherlands, assignor to Akzo Nobel N.V., Arnhem, Netherlands

Continuation of Ser. No. 688,790, Apr. 19, 1991, abandoned. This application Jan. 3, 1995, Ser. No. 367,908

Claims priority, application European Pat. Off., Apr. 20, 1990, 90.200989

Int. Cl.[6] A61K *39/102;39/00;39/02;* **C12N** *1/00*

U.S. Cl. 424—255.1 **9 Claims**

1. A parenteral vaccine composition for the protection of pigs against *Actinobacillus pleuropneumoniae* infection, which is essentially free from *A. pleuropneumoniae* cells, comprising an outer-membrane protein preparation of *A. pleuropneumoniae* having a major dominant antigenic protein component of approximately 42 kD measured in SDS-PAGE, and at least one toxin selected from the group consisting of

a hemolysin of *A. pleuropneumoniae* of approximately 105 kD in SDS-PAGE, and

a macrophage toxin of *A. pleuropneumoniae* of approximately 120 kD in SDS-PAGE

and an adjuvant.

5,648,082

POLYAMINO ACID DISPERSANTS

C. Steven Sikes, Mobile, Ala., assignor to University of South Alabama, Mobile, Ala.

Continuation of Ser. No. 114,359, Sep. 1, 1993, abandoned, which is a continuation of Ser. No. 658,659, Feb. 19, 1991, Pat. No. 5,328,690. This application Dec. 15, 1995, Ser. No. 573,120

Int. Cl.[6] A61K *7/06*

U.S. Cl. 424—401 **6 Claims**

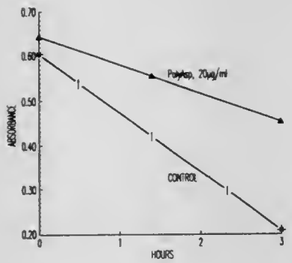
I. A method of stabilizing an aqueous mineral suspension, comprising adding at least one compound having formula (I) or (II) to said suspension:

$$poly(X)_n poly(Y)_m \quad (I)$$

where

each X independently is aspartic acid, glutamic acid, phosphoserine, phosphohomoserine, phosphotyrosine, or phosphothreonine,

each Y independently is alanine, leucine, isoleucine, valine, glycine or other nonpolar, amino acid residues,



n is 2 to 60,
m is 2 to 60, and
n+m is≧5,
and wherein poly $(X)_n$ may contain up to 10% of the Y residues and poly $(Y)_m$ may contain up to 10% of the X residues, and salts thereof; and

$$poly(X')_a poly(Y')_b \quad (II)$$

where
each X' independently is aspartate, glutamate, glutamine, asparagine, or anionic derivatives of these amino acids, or phosphoserine,
each Y' independently is a phosphorylated amino acid such as phosphoserine, phosphohomoserine, phosphotyrosine, phosphothreonine, phosphoglutamine, phosphoasparagine or mixtures of these residues,
a is 2 to 150,
b is 1 to 3, and
a+b is≧5, and
salts of these peptides; wherein said suspension contains at least one mineral.

5,648,083

PERSONAL CARE COMPOSITIONS AND WIPE PRODUCTS CONTAINING THE COMPOSITIONS

Kathleen Clare Blieszner, and George Endell Deckner, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Feb. 10, 1995, Ser. No. 386,973
Int. Cl.[6] A61K *31/74;* **A01N** *25/34*
U.S. Cl. 424—402 **26 Claims**

1. A wet wipe product comprising a substrate and a dilute emulsion composition, said emulsion composition comprising:
(a) at least about 90% by weight water;
(b) about 0.5% to less than 3%, by weight silicone oil; and
(c) a polymeric emulsifier in an amount effective to emulsify said silicone oil in said water, wherein said polymeric emulsifier is a carboxylic acid polymeric emulsifier.

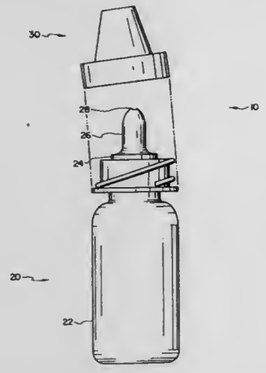
5,648,084

MULTIPLE DOSAGE MEDICINE DROP BOTTLE

Alvin Guttag, Apt. 108, 415 Russell Ave., Gaithersburg, Md. 20877

Continuation-in-part of Ser. No. 224,718, Apr. 8, 1994, which is a continuation-in-part of Ser. No. 853,428, Mar. 18, 1992, Pat. No. 5,346,929, which is a division of Ser. No. 486,217, Feb. 28, 1990, Pat. No. 5,120,089. This application Aug. 23, 1994, Ser. No. 294,400
Int. Cl.[6] A61K *9/00*
U.S. Cl. 424—405 **21 Claims**

1. A multiple dosage plastic medicinal container having an internal surface and an external surface and a relatively large diameter medicine reservoir portion terminating in a relatively



narrow one drop dispensing end portion and a germicide on at least the external surface of said end portion.

5,648,085

REDUCING PESTICIDE RESISTANCE

Christine L. Lanning, Durham; Mohammed B. Abou-Donia, Chapel Hill; Robert L. Fine, and James J. Corcoran, both of Durham, all of N.C., assignors to Duke University, Durham, N.C.

Filed Mar. 15, 1995, Ser. No. 403,963
Int. Cl.[6] A01N *25/00*
U.S. Cl. 424—405 **21 Claims**

1. A pesticide composition for inhibiting the development of pesticide resistance in a target pest population, said composition comprising: (a) an insecticidally active ingredient in an amount sufficient to control a population of a target insect; and (b) an inhibitor for ATP-dependent 15–180 kDa membrane P-glycoprotein selected from the group consisting of a calcium channel blocker, a calmodulin antagonist, tamoxifen, quinine, quinidine, a protein kinase C inhibitor, and a cyclosporin in an amount sufficient to interfere with cellular transport mechanisms that lead to insecticide resistance in said target insect.

5,648,086

STABLE SOLID FORM ANTIMICROBIAL COMPOSITIONS COMPRISING 3-ISOTHIAZOLONES

George Harvey Redlich, Norristown; Gary Lewis Willingham, Glenside, and John Steven Chapman, Ambler, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 784,852, Oct. 30, 1991, which is a continuation-in-part of Ser. No. 625,265, Dec. 10, 1990, abandoned. This application Jun. 6, 1995, Ser. No. 471,888
Int. Cl.[6] A01N *25/08;* **A61K** *31/425*
U.S. Cl. 424—409 **4 Claims**

1. Antimicrobial composition comprising (A) a 3-isothiazolone compound, and (B) a water-soluble polymeric carrier which is solid at room temperature, said carrier functioning to stabilize said 3-isothiazolone against chemical decomposition at room temperature and at applications temperature, said composition being solid at room temperature further including one or more additives selected from the group consisting of deodorant, dye fragrance, sequestrant, tableting aid, surfactant, additional antimicrobial compound, dispersant, antisettling agent, and excipient.

5,648,087

ANAESTHETIC PHARMACEUTICAL COMPOSITION COMPRISING A GENERAL ANAESTHETIC AND SELEGILINE

Patricia Ovaert, Bordeaux, and Eliane Boivin, Pompignac, both of France, assignors to Sanofi Sante Nutrition Animale, Libourne, France

Filed Mar. 4, 1994, Ser. No. 205,489
Claims priority, application France, Mar. 9, 1993, 93 02713; Dec. 22, 1993, 93 15496
Int. Cl.[6] A61F *2/00*
U.S. Cl. 424—423 **5 Claims**

1. A method for the prophylactic treatment of the side-effects due to the administration of a phencyclidine general anesthetic, comprising the intravenous administration to a mammal other than man of 0,015 to 1.25 molar equivalents of an active compound selected from selegiline and one of its pharmaceutically acceptable salts.

5,648,088

BLENDS OF ABSORBABLE POLYOXAESTERS CONTAINING AMINES AND/OR AMIDE GROUPS

Rao S. Bezwada, Whitehouse Station, and Dennis D. Jamiolkowski, Long Valley, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Continuation-in-part of Ser. No. 554,011, Nov. 6, 1995, abandoned, which is a continuation-in-part of Ser. No. 399,308, Mar. 6, 1995, Pat. No. 5,464,929. This application Mar. 5, 1996, Ser. No. 611,529
Int. Cl.[6] A61F *2/00*
U.S. Cl. 424—426 **34 Claims**

1. An aliphatic polyoxaester comprising a first divalent repeating unit of formula I:

$$[O—C(O)—C(R_1)(R_2)—O—(R_3)—O—C(R_1)(R_2)—C(O)—] \quad I$$

and a second repeating unit selected from the group of formulas consisting of:

$$[—O—R_{12}—]_U, \quad XIV$$

wherein R_1 and R_2 are independently hydrogen or an alkyl group containing 1 to 8 carbon atoms; R_3 is an alkylene unit or is an oxyalkylene group of the following formula:

$$—[((CH_2)_C—O—]_D—(CH_2)_E— \quad IV$$

wherein C is an integer in the range of from 2 to about 5, D is an integer in the range of from about 0 to about 2,000, and E is an integer in the range of from about 2 to about 5, except when D is zero in which case E will be an integer from 2 to 12; R_{12} is an alkylene unit containing from 2 to 8 carbon atoms and containing an internal amine (—$N(R_{10})$—) or amide (—$N(R_{11})$—); R_{10} and R_{11} are independently hydrogen or an alloil group containing 1 to 8 carbon atoms; and U is an integer in the range of from 1 to about 2,000.

5,648,089

EXTRACT SOLUTION AND HERBAL MIXTURE FOR TREATMENT OF HEPATITIS

Tarek Shawkat, 4018 Leah La., Mays Landing, N.J. 08330

Filed Jul. 3, 1995, Ser. No. 498,699
Int. Cl.[6] A61K *9/14;9/08*
U.S. Cl. 424—434 **3 Claims**

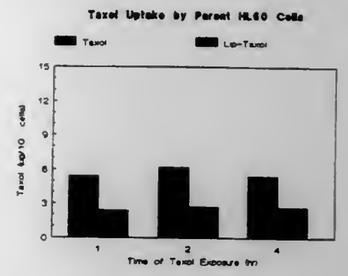
1. An herbal combination for the treatment of viral hepatitis diseases, comprising a mixture for oral administration of the following dried plants in the following ratio, all percentages being percent by weight of the mixture:
(a) 40 percent from the dried fruit of Phyllanthus Embilca L.;
(b) 10 percent from the dried fruit of Terminalia Chebiola RETZ;
(c) 7 percent from the plant Cichorium Intyus L., excluding the roots;
(d) 10 percent from the flower of the plant Carthamus Tincorius L.
(e) 3 percent from the plant Solenostemma Argel Hayne, excluding the roots;
(f) 10 percent from the seeds of Nigella Sativa L.;
(g) 5 percent from the plant Erythraea Centaurium Pers, excluding the roots;
(h) 10 percent from the stem and leaves of the plant Cynara Cardunculus Var. Scoly; and
(i) 5 percent from the rhisome (stems) of Rheuon officinale Baill.

5,648,090

LIPOSOME ENCAPSULATED TOXOL AND A METHOD OF USING THE SAME

Aquilur Rahman, Gaithersburg, Md.; Rafael Rafaeloff, Tel-Aviv, Israel, and Syed Rafat Husain, Gaithersburg, Md., assignors to Georgetown University, Washington, D.C.

Division of Ser. No. 136,090, Oct. 14, 1993, Pat. No. 5,424,073, which is a continuation of Ser. No. 855,667, Mar. 23, 1992, abandoned. This application May 26, 1995, Ser. No. 451,258
Int. Cl.[6] A61K *9/127*
U.S. Cl. 424—450 **11 Claims**



1. A method of modulating multidrug resistance in cancer cells in a mammalian host, comprising administering to said host a pharmaceutical composition comprising:
(i) a therapeutically effective number of liposomes comprising a liposome-forming material, cardiolipin, and an agent selected from the group consisting of taxol, an antineoplastic derivative of taxol, or a mixture thereof; and
(ii) a pharmaceutically acceptable excipient.

5,648,091

STABLE VITAMIN A ENCAPSULATED

Robert Joseph Sarama, Lovelaod; Thomas Joseph Wehmeier, Cincinnati, both of Ohio; Michael Robert Sevenants, Newport, N.Y., and Robert Alan Sanders, Fairfield, Ohio, assignors to The Proctor & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 285,242, Aug. 3, 1994, Pat. No. 5,426,248. This application May 23, 1995, Ser. No. 438,869
Int. Cl.[6] A61K *9/48*
U.S. Cl. 424—451 **19 Claims**

1. A shelf stable, purified vitamin A preparation wherein less than 5% by weight of the vitamin A content of the preparation is beta-ionone and solvents, and wherein less than 5% of the vitamin A is a cis-isomer comprising a mixture of tocopherol and vitamin A, the ratio of tocopherol to vitamin A being from 0.05:1 to 2:1; said vitamin A preparation being encapsulated.

5,648,092

SUCRALFATE CHEWABLE TABLET

Hans Peter Weckenmann, and Hans-Günther Schwamb, both of Darmstadt, Germany, assignors to Merck Patent Gesellschaft Mit Beschrankter Haftung, Darmstadt, Germany

Filed Jul. 19, 1991, Ser. No. 732,523

Claims priority, application Germany, Jul. 19, 1990, 40 22 944.0

Int. Cl.[6] A61K *9/34*

U.S. Cl. 424—464 **13 Claims**

1. A pharmaceutical composition comprising sucralfate and at least one physiologically acceptable gel former, in the form of a chewable tablet or a chewable coated tablet, wherein the amount of said gel former is 0.5–20% (w/w) based on the amount of sucralfate.

5,648,093

PHARMACEUTICAL AND OTHER DOSAGE FORMS

Dilip J. Gole, Ann Arbor, Mich.; R. Saul Levinson, Chesterfield, Mo.; Paul K. Wilkinson, Ann Arbor, and J. Desmond Davies, Grosse Pointe Farms, both of Mich., assignors to Janssen Pharmaceutica Inc., Piscataway, N.J.

DivisIon of Ser. No. 234,295, Apr. 28, 1994, Pat. No. 5,558,880, which is a continuation of Ser. No. 187,786, Jan. 26, 1994, abandoned, which is a continuation of Ser. No. 879,754, May 6, 1992, abandoned, which is a continuation-in-part of Ser. No. 613,087, Nov. 6, 1990, Pat. No. 5,215,756, which is a continuation-in-part of Ser. No. 454,938, Dec. 22, 1989, abandoned. This application May 22, 1995, Ser. No. 447,253

Int. Cl.[6] A61K *9/14*

U.S. Cl. 424—484 **57 Claims**

1. A solid dosage form comprising a porous network of a matrix composition that disperses rapidly in water, the dosage form being prepared by forming a matrix composition dispersion containing from about 0. 1% to about 7.5% of the matrix composition by weight of the dispersion and subjecting the matrix composition dispersion to lyophilization or solid-state dissolution, the matrix composition comprising a matrix forming agent and one or more amino acids having from about 2 to 12 carbon atoms.

5,648,094

Patent Not Issued For This Number

5,648,095

PREPARATION OF MICROPARTICLES

Lisbeth Illum, The Park, United Kingdom, and Olufunmiloyo Lilly Johnson, Cambridge, Mass., assignors to Danbiosyst UK Limited, Nottingham, United Kingdom

PCT No. PCT/GB92/01421, § 371 Date Jul. 8, 1994, § 102(e) Date Jul. 8, 1994, PCT Pub. No. WO93/02712, PCT Pub. Date Feb. 18, 1993

PCT Filed Aug. 3, 1992, Ser. No. 190,022

Claims priority, application United Kingdom, Aug. 1, 1991, 9116610

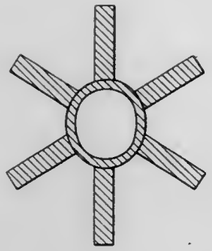
Int. Cl.[6] A61K *9/50;9/66*

U.S. Cl. 424—489 **16 Claims**

1. A double emulsion process for preparing hollow microcapsules, the process comprising

a) combining a volatile oil with an aqueous phase comprising a water soluble material selected from the group consisting of a polyethylene glycol (PEG) conjugate other than PEG conjugated to a water soluble modified starch, a water soluble starch other than hydroxyethyl starch, and a proteinaceous material, to form a primary emulsion,

b) combining the primary emulsion with a second oil, to form a secondary emulsion,



c) maintaining the secondary emulsion under conditions wherein the material forms microcapsules containing a liquid core comprising the volatile oil, and

d) removing at least some of the volatile oil during or after step c), to form hollow microcapsules.

5,648,096

PROCESS FOR THE PRODUCTION OF MICROCAPSULES

Bruno Gander, Immensee, and Hans Peter Merkle, Zürich, both of Switzerland, assignors to Schwarz Pharma AG, Monheim, Germany

Filed Jun. 22, 1994, Ser. No. 264,007

Claims priority, application Switzerland, Oct. 26, 1992, 3319/92-3

Int. Cl.[6] A61K *9/14;9/16;9/50*

U.S. Cl. 424—489 **24 Claims**

1. A method of manufacturing microcapsules containing one or more biodegradable polymers and at least one active material, which method comprises:

(a) dissolving the biodegradable polymer(s) in a non-toxic biodegradable solvent which is selected from esters of a C_1–C_5-alcohol and a C_1–C_5-monocarboxylic acid;

(b) incorporating at least one active material into the solution of the biodegradable polymer(s) obtained in step (a) either in the form of a solution of said active material in said biodegradable solvent; or in the form of a micronized powder of said active material, or in the form of a solution of said active material in an aqueous medium, and

(c) spray drying the solution, suspension or water-in-oil dispersion obtained in step (b).

5,648,097

CALCIUM MINERAL-BASED MICROPARTICLES AND METHOD FOR THE PRODUCTION THEREOF

Elie S. Nuwayser, Wellesley, Mass., assignor to Biotek, Inc., Woburn, Mass.

Filed Oct. 4, 1995, Ser. No. 538,635

Int. Cl.[6] A61K *9/16;47/04;* **A01N** *25/12*

U.S. Cl. 424—489 **14 Claims**

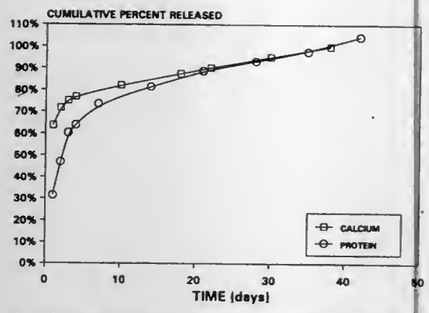
1. A method for producing microparticles comprising the steps of,

(a) mixing an inorganic calcium salt with water to form an inorganic calcium salt slurry,

(b) combining the inorganic calcium salt slurry with a liquid substantially immiscible therewith,

(c) mixing the inorganic calcium salt slurry with the liquid to form an emulsion of inorganic calcium salt slurry particles dispersed in the liquid,

(d) maintaining the emulsion for a period of time sufficient to allow the inorganic calcium salt slurry particles dispersed in the liquid to form hardened microparticles having an exposed surface of the inorganic calcium salt, and



(e) retrieving the hardened microparticles of the inorganic calcium salt from the liquid.

5,648,098

THROMBOLYTIC AGENTS AND METHODS OF TREATMENT FOR THROMBOSIS

Thomas R. Porter, Omaha, Nebr., assignor to The Board of Regents of the University of Nebraska, Lincoln, Nebr.

Filed Oct. 17, 1995, Ser. No. 544,204

Int. Cl.[6] A61K *9/50;* **A61B** *8/00*

U.S. Cl. 424—490 **22 Claims**

1. A method of treating thrombosis in animals comprising the steps of:

introducing a solution consisting essentially of a mixture of dextrose and albumin to said animal by intravenous injection near a thrombus site and thereafter applying ultrasound to said site, said dextrose and albumin mixture comprising a plurality of microbubbles with a diameter of from about 0.1 to 10 microns,

said microbubbles having a protein coated shell and an internal atmosphere comprising a gas which is insoluble in blood.

5,648,099

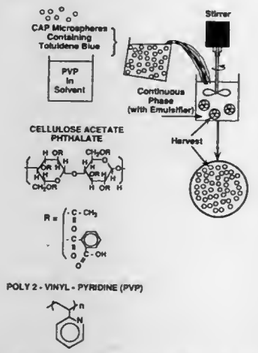
PROCESS FOR MICROENCAPSULATING CELLS

Chris Batich, Gainesville, Fla., and Farid Vaghefi, Foster City, Calif., assignors to University of Florida, Gainesville, Fla.

Division of Ser. No. 880,866, May 11, 1992, Pat. No. 5,286,495. This application Feb. 3, 1994, Ser. No. 192,212

Int. Cl.[6] A61K *9/58;9/62;* **B01J** *13/12*

U.S. Cl. 424—497 **4 Claims**



1. A method for making a microcapsule for administering an active ingredient orally as part of a composition with a high moisture content such that the pH of said composition is about 6.0 to about 8.0; said method comprising a first step of encapsulating said active ingredient in cellulose acetate phthalate and a second step of coating said cellulose acetate phthalate with a layer of polyvinylpyridine to produce a doubly coated polyvinylpyridine-cellulose acetate phthalate-encapsulated active ingredient.

4. A method for administering to a human or animal an active ingredient for adsorption in the intestine of said human or animal, said method comprising administering said active ingredient in a food substance having a pH of about 6.0 to about 8.0 wherein said active ingredient is encapsulated in a first layer which is insoluble at pHs less than 3.0 but soluble in pHs from about 6.0 to about 8.0; said active ingredient being encapsulated in a second layer which surrounds said first layer, wherein said second layer is insoluble in pHs from about 6.0 to about 8.0, wherein said first layer comprises cellulose acetate phthalate and said second layer comprises polyvinylpyridine.

5,648,100

MICROSPHERES USEFUL FOR THERAPEUTIC VASCULAR OCCLUSIONS AND INJECTABLE SOLUTIONS CONTAINING THE SAME

Egisto Boschetti, Croissy-sur-Seine; Michel Brouard, Belloy-en-France; Ludovic Drouet, Bourg-la-Reine; Pierre Girot, Paris; Alexandre Laurent, Courbevoie, and Michel Wassef, Paris, all of France, assignors to Assistance Publique Hopitaux de Paris, Paris, and BioSepra S.A., Villeneuve-la-Garenne Cedex, both of France

Division of Ser. No. 150,148, Mar. 29, 1994. This application Jun. 6, 1995, Ser. No. 471,303

Claims priority, application France, May 29, 1991, 91 06441

Int. Cl.[6] A61K *9/14;9/16;9/50*

U.S. Cl. 424—501 **19 Claims**

1. An injectable solution suitable for the embolization of microspheres, which comprises a microsphere having a diameter ranging between about 10 to about 2000 μm wherein said microsphere comprises a copolymer comprising, in copolymerized form, about 25 to about 98% neutral hydrophilic acrylic monomer by weight, about 2 to about 50% difunctional monomer by weight, about 0 to about 50% by weight of one or more monomers having a cationic charge, and about 1 to about 30% by weight of a functionalized monomer making possible the detection of the microsphere, coated with a cell adhesion promoter.

5,648,101

DRUG DELIVERY OF NITRIC OXIDE

Rashad Tawashi, 66 Hyde Park, Beaconsfield, Quebec, Canada

Filed Nov. 14, 1994, Ser. No. 338,664

Int. Cl.[6] A61K *33/00;33/26;9/02;9/14*

U.S. Cl. 424—718 **13 Claims**

1. A method of delivering NO gas to a desired situs on or in the body of a sentient animal comprising combining, and causing to react, substantially molecularly equivalent amounts of ferrous sulfate and an organic or inorganic nitrite as reactants with moisture present at or adjacent said situs.

5,648,102

VACUUM CALIBRATOR TOOL

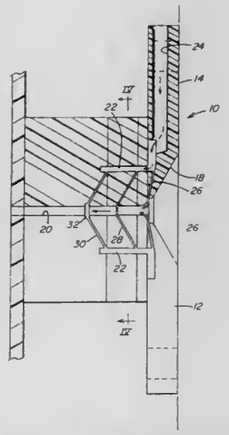
David H. Czarnik, Twining, Mich., assignor to The Conair Group, Inc., Pittsburgh, Pa.

Filed Aug. 7, 1995, Ser. No. 512,139

Int. Cl.[6] B29C *47/90*

U.S. Cl. 425—71 **11 Claims**

1. A vacuum calibrator tool for use with a vacuum chamber for accurately sizing a molten plastic extrudate having an outer surface, said molten plastic extrudate being thereafter cooled and solidified within a water bath in said vacuum chamber, said vacuum calibrator tool comprising:



a tool housing having an extrudate receiving opening formed therethrough the size and shape of said outer surface of said extrudate to be passed through said tool;

said tool housing being attached to an external wall of said vacuum chamber whereby no part of said tool enters into said vacuum chamber and is thereby isolated from said water bath located within said vacuum chamber;

a water chamber formed in said tool housing surrounding said extrudate receiving opening;

a water conduit formed in said tool housing to introduce water into said water chamber;

a first plurality of water passages formed within said tool housing extending radially inwardly form said water chamber to said extrudate receiving opening to introduce water to said extrudate receiving opening where said extrudate first enters said opening;

a second plurality of water passages formed within said tool housing extending radially inwardly from said water chamber to said extrudate receiving opening to introduce water to said extrudate receiving opening at a position further into said extrudate receiving opening than the water introduced by said first plurality of water passages in the direction of movement of said extrudate through said opening;

said first and second plurality of water passages introducing a thin layer of water between said extrudate receiving opening and said extrudate to lubricate said extrudate as it is sized by said vacuum calibrator tool.

5,648,103

EJECTOR APPARATUS

Ryuichi Takanohashi, Chiba, Japan, assignor to Sumitomo Heavy Industries, Ltd., Japan

Filed Feb. 1, 1996, Ser. No. 595,577

Claims priority, application Japan, Feb. 3, 1995, 7-017022

Int. Cl.[6] B29C *45/40*

U.S. Cl. 425—107 **9 Claims**

1. An ejector apparatus comprising:

(a) a movable platen disposed facing a stationary platen and adapted for advancing and retracting movement along tie bars;

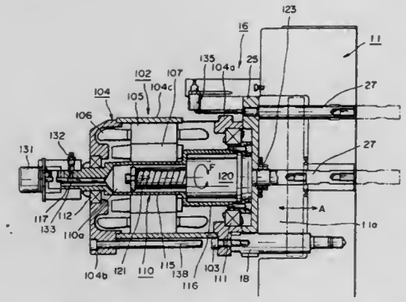
(b) a toggle mechanism disposed between said movable platen and a toggle support so as to advance and retract said movable platen;

(c) a servomotor fixed to said movable platen and including a stator and a rotor;

(d) a hollow shaft fixed to said rotor;

(e) a ball nut fixed to said hollow shaft;

(f) a ball screw shaft which is screw-engaged with said ball nut and is advanced and retracted by rotation of said ball nut;



(g) a cross head connected to said ball screw shaft so as to be advanced and retracted together with said ball screw shaft; and

(h) an ejector pin connected to said cross head.

5,648,104

EXTRUSION DIE

Hobab El-Sobky, Stockport, England, assignor to The University of Manchester Institute of Science and Technology, Manchester, England

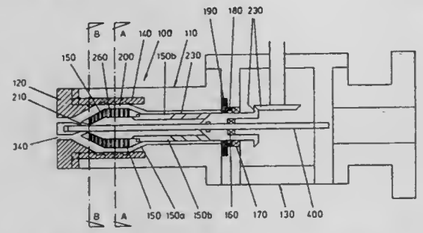
Continuation of Ser. No. 90,030, Aug. 16, 1993, abandoned.

This application May 2, 1995, Ser. No. 434,324

Claims priority, application United Kingdom, Jan. 17, 1991, 9101050

Int. Cl.[6] B29C *47/24*

U.S. Cl. 425—131.1 **16 Claims**



1. An extrusion die apparatus for extruding plastic material along an extrusion axis, the apparatus having a radial direction perpendicular to the extrusion axis, wherein the plastic material contains at least one of fibers and molecules for reinforcing the plastic material, the apparatus comprising:

an orientation control section having a nozzle and a mandrel that extend co-axially with the extrusion axis, the mandrel being positioned within an internal space formed in the nozzle, and spaced apart from the nozzle, the orientation control section having an entrance end and an exit end, such that the plastic material is allowed to flow into the orientation control section from the entrance end and to exit the orientation control section through the exit end, the plastic material flowing through the orientation control section in an extrusion direction, wherein a first portion of the plastic material is allowed to flow through the extrusion die apparatus in a substantially axial direction by flowing within the internal space formed in the nozzle thus imparting an axial component to the fibers;

an open helical channel formed in the nozzle such that a second portion of the plastic material is allowed to flow in a substantially tangential direction to the mandrel thus imparting a tangential component to the fibers, the open helical channel having an entrance opening located at the entrance end of the orientation control section and an exit opening located at the exit end of the orientation control section, such that the second portion of the plastic material is allowed to flow into the helical channel through the entrance opening and is allowed to exit the helical channel through the exit opening; and

substantially radial channels formed within the mandrel that allow a third portion of the plastic material to flow through the mandrel in a substantially radial direction thus imparting a radial component to the fibers.

5,648,105

APPARATUS FOR MAKING A PLURALITY OF OPTICAL RECORD DISC SUBTRATES

Seiki Shimazu; Kenji Yamaga; Yoshimi Sakai; Atsushi Koyama, and Yuichi Namikawa, all of Tokyo, Japan, assignors to TDK Corporation, Tokyo, Japan

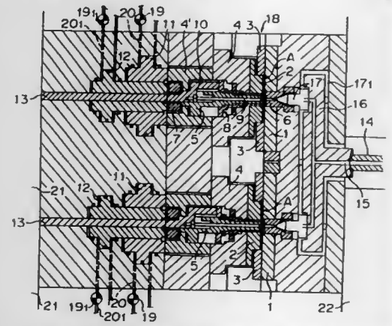
Division of Ser. No. 145,236, Nov. 3, 1993, Pat. No. 5,458,821.

This application Jul. 6, 1995, Ser. No. 499,443

Claims priority, application Japan, Nov. 4, 1992, 4-317916; Feb. 26, 1993, 5-061274; Sep. 27, 1993, 5-260419

Int. Cl.[6] B29C *45/80*

U.S. Cl. 425—139 **7 Claims**



1. An apparatus for making a plurality of optical record disc substrates, the apparatus comprising:

a fixed mold half;

a movable mold half;

a plurality of slidable core bodies which are provided in the movable mold half to form a plurality of cavities between the fixed mold half and the movable mold half; and

a plurality of actuation mechanisms, each actuation mechanism cooperating with a respective one of said plurality of core bodies, each actuation mechanism including a hydraulic cylinder for sliding a respective one of said cooperating core bodies, and a hydraulic control circuit having a hydraulic pressure control valve for controlling the corresponding hydraulic cylinder;

wherein each of the hydraulic control circuits independently control an actuation of the respective core bodies by said actuation mechanisms in a multistage manner by combining a control of a hydraulic pressure supplied to said hydraulic cylinder and a timing of the supply of hydraulic pressure to said hydraulic cylinder.

5,648,106

INJECTION MOLD FOR MOLDING INFORMATION RECORDING DISCS

Kazuki Miyairi, and Akira Iijima, both of Hanishina-gun, Japan, assignors to Nissei Plastic Industrial Co., Ltd., Nagano-ken, Japan

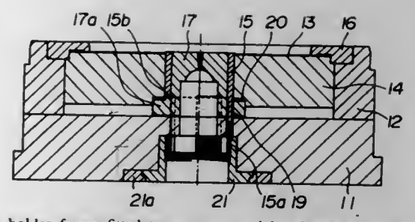
Filed Nov. 28, 1995, Ser. No. 563,440

Claims priority, application Japan, Nov. 30, 1994, 6-321774

Int. Cl.[6] B29C *45/28*

U.S. Cl. 425—186 **1 Claim**

1. An injection mold for molding an information recording disc, said injection mold comprising:



a holder frame fitted to an outer peripheral area of the front surface of a mold fitting plate,

a mirror platen member for a stamper held in the holder frame,

a tubular inner periphery holder fitted into a central hole bored through the mirror platen member and provided with a threaded portion on the outer periphery of said tubular inner periphery holder at and near the leading end,

a pilot bush and a rotatable anchor nut for engagedly holding the inner periphery holder, wherein:

said inner periphery holder is provided with a screw section having a plurality of intermittently disposed threaded portions projecting forwardly from the leading end of said inner periphery holder to form abutting edges between said inner periphery holder and said screw section of said inner periphery holder;

said pilot bush is provided at the leading end of said pilot bush with a locking flange having at areas close to the center of said locking flange through holes for allowing respective threaded portions of said inner periphery holder to run therethrough and project further;

said mold fitting plate is provided in the inside with said rotatable anchor nut so that the inner periphery holder can be firmly secured to the mold fitting plate through screwed engagement of the anchor nut, and the threaded section and said abutting edges of said inner periphery holder can be made to abut the corresponding surface of the locking flange.

5,648,107

POROUS FILM MANUFACTURING APPARATUS

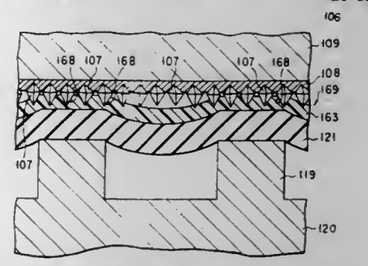
Seiji Kagawa, and Yoichiro Kagawa, both of Kawaguchi, Japan, assignors to Seiji Kagawa, Kawaguchi, Japan

Filed Oct. 6, 1994, Ser. No. 319,177

Claims priority, application Japan, Oct. 15, 1993, 5-258637

Int. Cl.[6] B28B *3/12;11/10*

U.S. Cl. 425—363 **26 Claims**



1. A porous film manufacturing apparatus comprising:

feed means for feeding an elongated film;

a perforating unit including a first block having a surface on which a large number of particles with acute corner portions and a Mohs hardness of not less than five are deposited, a second block having a surface on which a desired protruding pattern is formed, and an elastic organic polymer sheet so arranged as to cover at least said protruding pattern of said second block, said elastic organic polymer sheet contacting said protruding pattern while remaining spaced from said surface of said second block, said first and second blocks

being arranged such that said particle-deposited surface of said first block and said organic polymer sheet oppose each other, one of said first and second blocks is stationary, and the other block is arranged to be movable toward said stationary block; and

pressurizing means for moving said movable block toward said stationary block until a distance between projecting ends of said particles and a surface of a portion of said organic polymer sheet located on said protruding pattern becomes smaller than a thickness of said elongated film fed to a position between said movable and stationary blocks, thereby pressing said acute corner portions of said particles into said elongated film in a region opposing said protruding pattern, wherein the surface of the elongated film contacting the organic polymer sheet is not perforated or substantially impressed by the protruding pattern of the second block.

5,648,108

PRODUCTION SYSTEM FOR AUTOMATIC CASTING OF HOLLOW BODIES, IN PARTICULAR OF CONCRETE

Johannes Hvidegaard, Brenderslev, Denmark, assignor to Pedershaab A/S, Brønderslev, Denmark

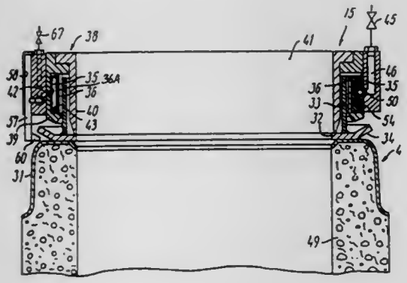
PCT No. PCT/DK93/00415, § 371 Date Aug. 7, 1995, § 102(e) Date Aug. 7, 1995, PCT Pub. No. WO94/13448, PCT Pub. Date Jun. 23, 1994

PCT Filed Dec. 8, 1993, Ser. No. 454,377

Claims priority, application Denmark, Dec. 9, 1992, 1481/92

Int. Cl.[6] B28B *21/06*

U.S. Cl. 425—426 **13 Claims**



1. Apparatus for the casting of a cylindrical hollow body in an upright position comprising an inner cylinder mold, an outer cylindrical mold, means for displacing the outer mold vertically up and down between a lower casting position for casting the hollow body where the outer mold is disposed concentrically around the outside of the inner mold and an upper free position, a bottom ring for supporting and molding a lower end part of the hollow body, a top ring for molding an upper end part of the hollow body, a cylindrical jacket-shaped gripping ring extending vertically upward from the top ring, the lower end of the gripping ring being secured to the top ring and the upper end thereof being free, a gripper for gripping and bringing the top ring into a molding position and retaining the top ring in said molding position during casting of the hollow body, said gripper including a clamping chuck having an opening for receiving said gripping ring, clamping means for clamping the chuck around the gripping ring and means for displacing the clamping chuck vertically up and down between a lower casting position where the top ring is in said molding position and an upper free position, the largest transverse dimension of said clamping chuck being smaller than the internal diameter of the outer mold.

5,648,109

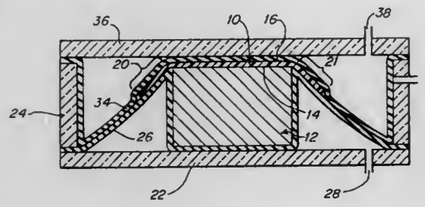
APPARATUS FOR DIAPHRAGM FORMING

Timothy G. Gutowski, Newton, Mass.; Gregory P. Dillon, Erie, Pa.; Sukyoung Chey, and Haorong Li, both of Cambridge, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed May 3, 1995, Ser. No. 433,125

Int. Cl.[6] B29C *70/44*

U.S. Cl. 425—504 **41 Claims**



1. Apparatus for forming an article on a surface of a forming tool, comprising:

a first diaphragm mountable on the apparatus and conformable to a preform to be formed;

a second diaphragm mounted on the apparatus and conformable to a portion of the preform simultaneously with the first diaphragm;

a forming tool having a tool forming surface positionable for receiving a preform to be formed thereon, the apparatus constructed and arranged for securing the preform on the tool forming surface between the first diaphragm and the second diaphragm prior to forming the preform against the tool forming surface when the first diaphragm and second diaphragm are mounted on the apparatus.

5,648,110

FRENCH FRY FORMULATIONS AND METHOD OF MAKING

Yangsheng Wu, Englewood, and John Harold Woerman, Highlands Ranch, both of Colo., assignors to Penwest Foods Co., Englewood, Colo.

Filed Jun. 6, 1995, Ser. No. 465,939

Int. Cl.[6] A23B *7/16;* **A23L** *1/216*

U.S. Cl. 426—102 **3 Claims**

1. An aqueous starch enrobing slurry for coating the outer surface of a potato product having an as is solids content comprising:

not less than about 50% by weight ungelatinized crosslinked potato starch characterized by a viscosity of from 200 to 1100 BU when measured at 9% solids concentration for 15 minutes at 95° C., and from 10 to 25% by weight rice flour and which is substantially free of corn starch.

5,648,111

STARCH AND GRAIN WITH A NOVEL GENOTYPE

Richard Warren Pearlstein, and James Francis Ulrich, both of Newark, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 40,333, Mar. 30, 1993, Pat. No. 5,502,270. This application May 23, 1995, Ser. No. 448,072

Int. Cl.[6] A23L *1/0522*

U.S. Cl. 426—578 **4 Claims**

1. A substantially pure starch extracted from a grain produced by a starch bearing plant in which the genotype of said grain comprises a genome which is homozygous recessive for the waxy gene and the amylose extender gene, and heterozygous for the dull gene.

5,648,112

PROCESS FOR PREPARING CHILLED BEVERAGE PRODUCTS CONTAINING MILK AND A FOOD ACID

David Kee Yang, Cincinnati; Matthew Thomas Heisey, Wyoming, and Raul Victorino Nunes, Loveland, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 28, 1995, Ser. No. 412,490

Int. Cl.[6] A23C *9/00*

U.S. Cl. 426—580 **18 Claims**

1. In a process for preparing chilled or shelf stable smooth beverage products which have a pH ranging from about 3.2 to about 4.5 and which exhibit little or no sedimentation or precipitation over time and which are visually opaque, wherein the beverage products comprise:

a. from about 5 to about 99.8% milk;

b. from about 0.05 to about 0.8% of a food stabilizer; and

c. a food acid;

the improvement which comprises the steps of:

i) mixing the milk with the food stabilizer under high shear conditions to form protein/stabilizer particles having a median particle size of less than about 0.8 microns; and

ii) adding a sufficient amount of the food acid to the protein/stabilizer mixture to adjust the pH of the mixture to from about 3.2 to about 4.5, wherein the mixture is subjected to high shear conditions throughout the addition of the acid, wherein the temperature of the mixture is maintained at from about 4° to about 30° C., and wherein the median particle size of the protein/stabilizer particles is maintained at less than about 0.8 microns throughout the addition of the acid.

5,648,113

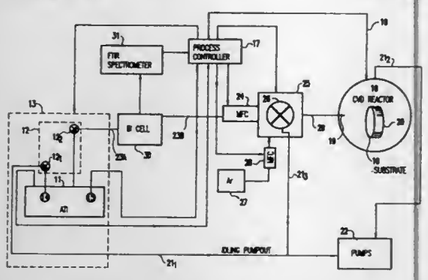
ALUMINUM OXIDE LPCVD SYSTEM

Steven George Barbee, Dutchess County, N.Y.; Jonathan Daniel Chapple-Sokol, Chittenden County, Vt.; Richard Anthony Conti, Westchester County, N.Y.; Richard Hsiao, Santa Clara County, Calif.; James Anthony O'Neill, Rockland County, N.Y.; Narayana V. Sarma, Dutchess County, N.Y.; Donald Leslie Wilson, Orange County, N.Y.; Justin Wai-Chow Wong, Chittenden County, Vt., and Steven Paul Zuhoski, Dallas County, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 30, 1994, Ser. No. 316,311

Int. Cl.[6] C23C *16/52*

U.S. Cl. 427—8 **12 Claims**



1. A method of depositing a dense aluminum oxide upon a substrate comprising the steps of:

a) providing a vacuum processing chamber, the processing chamber having at least one gas injector nozzle for injection of gas into the chamber, a heated susceptor upon which is placed said substrate, and temperature controllable walls;

b) providing a chemical vapor delivery system having a premix chamber connected to the processing chamber, the chemical vapor delivery system controllably generating and delivering a chemical vapor from a source of aluminum tri-isopropoxide (ATI);

c) heating the ATI source to a temperature sufficient to provide a flow of the chemical vapor through the chemical vapor delivery system by direct evaporation of ATI;

d) pumping out said chemical vapor from the ATI source, bypassing the processing chamber, until a predetermined purity of the chemical vapor is detected;

e) controlling the flow of the chemical vapor in the chemical vapor delivery system to the processing chamber at a predetermined flow rate when said predetermined purity is detected;

f) maintaining a process pressure within the processing chamber and the chemical vapor delivery system at a prescribed pressure;

g) mixing a preheated inert gas with the flow of chemical vapor in the premix chamber to produce a gas mixture, the flow of inert gas being mass flow controlled; and

h) injecting the gas mixture into the processing chamber so that the chemical vapor in the gas mixture reacts on the substrate to form an aluminum oxide film thereon.

5,648,114

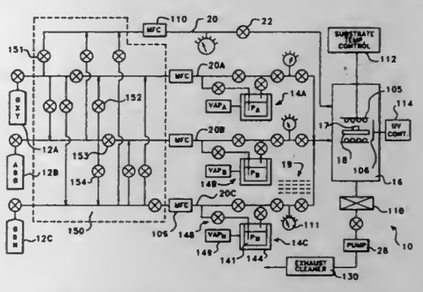
CHEMICAL VAPOR DEPOSITION PROCESS FOR FABRICATING LAYERED SUPERLATTICE MATERIALS

Carlos A. Paz De Araujo, Colorado Springs, Colo.; Hitoshi Watanabe, Tokyo, Japan; Michael C. Scott, Colorado Springs, Colo., and Takashi Mihara, Saitama, Japan, assignors to Symetrix Corporation, Colorado Springs, Colo., and Olympus Optical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 981,133, Nov. 24, 1992, Pat. No. 5,423,285, and Ser. No. 965,190, Oct. 23, 1992, abandoned, each which is a continuation-in-part of Ser. No. 807,439, Dec. 13, 1991, abandoned. This application Jul. 12, 1993, Ser. No. 90,767

Int. Cl.[6] B05D *5/12;* **C23C** *16/00;* **C30B** *28/14*

U.S. Cl. 427—126.3 **16 Claims**



1. A method of fabricating an integrated circuit including a ferroelectric layered superlattice material containing at least three different metals, said layered superlattice material having alternating ferroelectric and non-ferroelectric layers, said method comprising the steps of:

providing a substrate;

depositing on said substrate a film including said at least three different metals in effective amounts for yielding said layered superlattice material containing said at least three different metals, utilizing a chemical vapor deposition process; and

heating said film to crystallize it into a layer of said layered superlattice material containing said at least three different metals in a phase having a higher polarizability than prior to said step of heating said layered superlattice material being less than 1 micron thick.

5,648,115

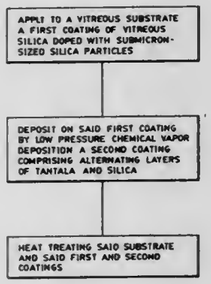
METHOD FOR MAKING A TANTALA/SILICA INTERFERENCE FILTER ON A VITREOUS SUBSTRATE AND AN ELECTRIC LAMP MADE THEREBY

Gautam Bandyopadhyay, Acton; Keith A. Klinedinst, Marlboro, and Silvia E. Lichtenstelger, Acton, all of Mass., assignors to Osram Sylvania Inc., Danvers, Mass.

Division of Ser. No. 348,686, Dec. 2, 1994. This application Aug. 23, 1995, Ser. No. 518,446

Int. Cl.[6] B05D *5/06*

U.S. Cl. 427—107. **9 Claims**



1. Method for making a tantala/silica interference filter on a vitreous substrate, said filter retaining integrity at temperatures in excess of 600° C., said method comprising the steps of:

applying to said vitreous substrate a first coating of vitreous silica doped with submicron-sized particles;

depositing on said first coating by low pressure chemical vapor deposition said filter comprising a second coating comprising alternating layers of tantala and silica; and

heat treating said substrate and said first and second coatings; whereby to bond said filter to said substrate.

5,648,116

METHODS FOR SUPPRESSING DUST EMISSIONS

Donald C. Roe, Burlington, N.J., and Jen-Chi Chen, Morrisville, Pa., assignors to BetzDearborn Inc., Trevose, Pa.

Filed Jan. 17, 1996, Ser. No. 587,441

Int. Cl.[6] B05C *1/16;* **B05D** *5/00;7/00*

U.S. Cl. 427—136 **18 Claims**

1. A method for suppressing the dissemination of fugitive dust particles into the atmosphere from dust producing materials comprising applying to said dust producing materials an effective dust suppressing amount of an aqueous solution of a copolymer of a tannin and a cationic monomer.

5,648,117

POWDER COATING COMPOSITION

Yasushi Shiomi; Akimitsu Uenaka, both of Suita, and Koichi Tsutsui, Kyoto, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Division of Ser. No. 331,956, Oct. 31, 1994, Pat. No. 5,523,349. This application Jun. 7, 1995, Ser. No. 480,324

Claims priority, application Japan, Nov. 8, 1993, 5-278582

Int. Cl.[6] B05D *3/02*

U.S. Cl. 427—195 **8 Claims**

1. A method of coating an aluminum material with a powder coating composition, comprising applying to an aluminum material a powder coating composition comprising:

(A) acrylic resin containing at least 40 percent by weight of a glycidyl-group-containing monomer and having a solubility parameter in the range of 11.0 to 11.6 and a glass transition temperature of at least 20° C.;

(B) a surface modifier consisting of a polymer having a solubility parameter in the range of 10.4 to 11.0; and

(C) polyvalent carboxylic acid,

wherein said surface modifier is is present in an amount of 0.1 to 4 parts by weight with respect to a total content of 100 parts by weight of said acrylic resin (A) and said polyvalent carboxylic acid (C), and

said components (A) and (C) being sufficiently mixed that the amount of carboxyl groups contained in said polyvalent carboxylic acid (C) is at least 0.5 in equivalent ratio to the amount of glycidyl groups in said acrylic resin (A).

5,648,118

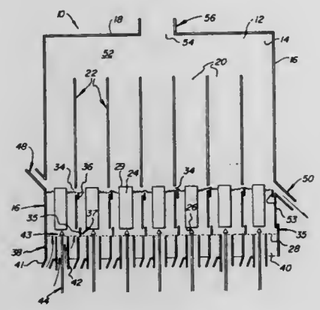
CONTINUOUS MULTI-CELL PROCESS FOR PARTICLE COATING PROVIDING FOR PARTICLE RECIRCULATION IN THE RESPECTIVE CELLS

Erik Liborius, Ellicott City, Md., assignor to Niro A/S, Soeborg, Denmark

Division of Ser. No. 206,174, Mar. 7, 1994, Pat. No. 5,470,387. This application Aug. 23, 1995, Ser. No. 518,313

Int. Cl.[6] B05D *7/00*

U.S. Cl. 427—213 **7 Claims**



1. A process for supplying coatings to discrete particles comprising the steps of:

supplying particulate materials to a substantially closed chamber;

conducting the particles through a plurality of cells within the chamber;

within each cell, circulating the particles between codirectional gas streams defining a high velocity coating zone and a lower velocity subsidence zone in which gas stream velocity is lower than in said high velocity coating zone;

supplying coating materials in a diffused spray to the gas stream in the high velocity coating zone to contact the particles circulating therethrough;

controlling the velocity of the gas streams in the respective zones to recirculate a portion of the particles between the respective zones and discharging the remainder to a succeeding cell; and

discharging coated product from the last cell in the chamber.

5,648,119

PROCESS FOR MAKING DIAMOND COATED TOOLS AND WEAR PARTS

George P. Grab, Greensburg; William M. Melago, Latrobe; Edward J. Oles, Ligonier; Charles Erik Bauer, Greensburg; Aharon Inspektor, Pittsburgh, all of Pa., and Gerald D. Murray, Raleigh, N.C., assignors to Kennametal Inc., Latrobe, Pa.

Division of Ser. No. 159,272, Nov. 30, 1993, Pat. No. 5,585,176. This application May 10, 1995, Ser. No. 438,292

Int. Cl.[6] C23C *16/26*

U.S. Cl. 427—249 **76 Claims**

1. A process for making a diamond coated cutting tool having a tungsten carbide based cemented carbide substrate consisting essentially of tungsten carbide grains and a metallic binder, and said substrate has a rake surface, a flank surface and a cutting edge at the juncture of said rake surface and said flank surface, said process comprising the steps of:

sintering said tungsten carbide based cemented carbide substrate for a time at a temperature and in an atmosphere to produce grain growth at the substrate rake and flank surfaces sufficient to provide said substrate rake surface with a surface roughness, R_a, of greater than 25 microinches, while reducing the concentration of metallic binder on said surface;

and then adherently depositing by vapor deposition a diamond coating onto said substrate rake and flank surfaces;

wherein said diamond coating has an average adhesion strength to said substrate surface of greater than 45 kg, as determined by the Rockwell A indentation technique.

5,648,120

METHOD OF ALUMINIZING, IN PARTICULAR FOR ALUMINIZING ELONGATE METAL CAVITIES

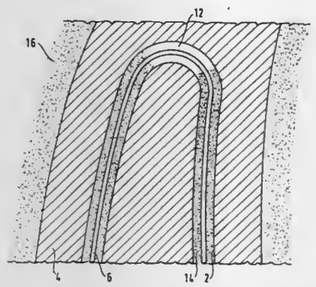
Emile Genieys, Saint Ouen l'Aumone, and Abdelghani Saida, Longevelle-sur-Doubs, both of France, assignors to European Gas Turbines SA, Paris, France

Filed Jun. 7, 1994, Ser. No. 255,740

Claims priority, application France, Jun. 7, 1993, 93 06773

Int. Cl.[6] C21D *8/12*

U.S. Cl. 427—258 **6 Claims**



1. A method of aluminizing, in particular for aluminizing elongate metal cavities by using thermochemical treatment by means of a gaseous halogenated carrier, said method being characterized by the fact that an aluminum donor piece (**6**) based on metallic aluminum is placed so that it extends in the vicinity of the surface to be treated (**2**) and facing said surface prior to said treatment, the method including the following steps:

a halogenated carrier carrying aluminum in a chemically combined form and as a vapor is brought to the vicinity of and in contact with a surface to be treated (**2**) belonging to a metal substrate (**4**) that has a high melting point; and

the surface is heated for a limited time to a treatment temperature that is higher than the melting point of aluminum but that is lower than the melting point of the substrate, that temperature being such that said halogenated carrier decomposes, thereby firstly releasing aluminum atoms onto said surface so that said atoms diffuse into the substrate in the vicinity of the surface, and secondly forming a decomposition residue that remains as a vapor;

wherein prior to the heating step, an aluminum donor piece (**6**) is placed so that it extends facing said surface to be treated, the donor piece containing metallic aluminum and a coating that prevents it from liquefying at said treatment temperature so that the piece offers aluminum atoms to said decomposition residue while remaining solid and in place during said heating step.

5,648,121

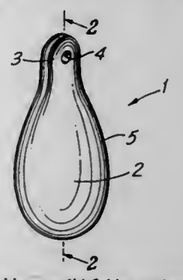
FISHING WEIGHT

Thomas W. Cornell, Jr., and John L. Reinbold, both of c/o C. R. Steel, 377 41 St., Lindenhurst, N.Y. 11757

Division of Ser. No. 84,614, Jul. 1, 1993, abandoned. This application Apr. 11, 1995, Ser. No. 420,017

Int. Cl.[6] B05D *1/04;1/06;5/00*

U.S. Cl. 427—486 **3 Claims**



1. A method of making a solid fishing weight which has a solid interior and an outer surface, the exterior being substantially symmetrical comprising melting a zinc alloy at approximately 800 degrees F., molding the zinc alloy into a weight, electrostatically coating the entire surface of the weight with a coating which is non-corrosive when exposed to water, said protective coating being a powder coating, curing said fishing weight after coating at a temperature between approximately 375 degrees F. and 400 degrees F. for approximately between 15 and 20 minutes, said coating being applied to a thickness of about between 1.5 and 1.7 mm.

5,648,122

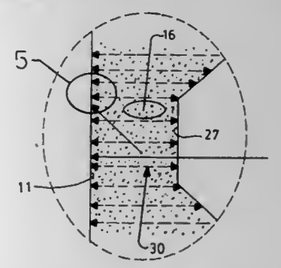
USING ELECTRICAL DISCHARGE SURFACE PREPARATION FOR THERMAL COATINGS

V. Durga Nageswar Rao, Bloomfield Township; Robert Alan Rose, Groose Pointe Park; Robert S. Parsons, Canton, and David Alan Yeager, Plymouth, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Sep. 28, 1994, Ser. No. 314,014

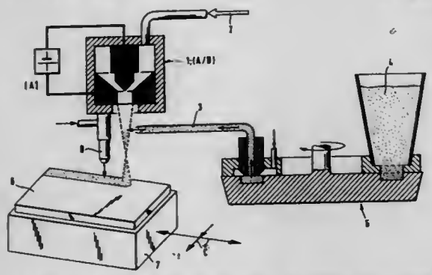
Int. Cl.[6] B05D *3/14*

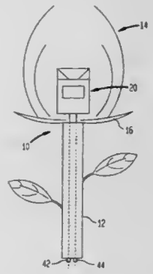
U.S. Cl. 427—444 **8 Claims**



1. A method of preparing an electrically conductive surface for lockably receiving a thermally sprayed coating, comprising:
melting and solidifying at least one globule of said surface by spark erosion, said spark erosion being carried out by
(i) connecting the conductive surface as a cathode in a circuit;
(ii) positioning an anode electrode close to said conductive surface with a gap therebetween of 0.006–0.022 inches;
(iii) filling the gap with a dielectric containing 2–5% by volume of halogenated hydrocarbon that can break down to release nascent halogen atoms for effectively preventing passivation of said surface; and
(iv) imposing a pulsed voltage through said dielectric between said cathode and anode to provide cyclical sparking therebetween that promotes melting and rapid solidification of said at least one globule without removal of metal and releases said nascent halogen, said dielectric being continuously cooled to dissipate the heat of sparking and promote controlled uniform roughening of said surface.

5,648,123
PROCESS FOR PRODUCING A STRONG BOND BETWEEN COPPER LAYERS AND CERAMIC
Heinrich Kühn, Brechen; Ulrich Bos, Hochheim am Main; Carsten Hannss, Nossen, and Karl-Friedrich von Kayser, Schlangenbad, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany
PCT No. PCT/EP93/00675, § 371 Date Sep. 30, 1994, § 102(e) Date Sep. 30, 1994, PCT Pub. No. WO93/20255, PCT Pub. Date Oct. 14, 1993
PCT Filed Mar. 19, 1993, Ser. No. 307,797
Claims priority, application Germany, Apr. 2, 1992, 42 10 900.0
Int. Cl.[6] C23C *4/08*
U.S. Cl. 427—448 **19 Claims**





gripping portion, thereby closing said switch and hence activating said circuit assembly to produce audible sounds.

5,648,130

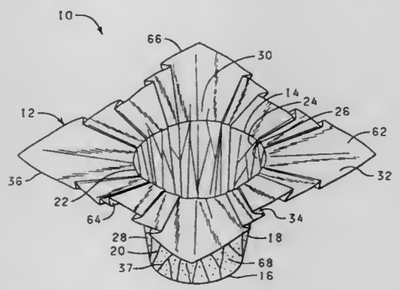
BASKET LINER HAVING A BONDING MATERIAL THEREON AND METHOD

Donald E. Weder, Highland, Ill., assignor to Southpac Trust International, Inc., Oklahoma City, Okla.

Division of Ser. No. 113,873, Aug. 27, 1993, abandoned, which is a continuation-in-part of Ser. No. 968,798, Oct. 30, 1992, Pat. No. 5,369,934, Ser. No. 24,573, Mar. 1, 1993, abandoned, and Ser. No. 781,040, Oct. 21, 1991, abandoned, which is a continuation-in-part of Ser. No. 649,379, Jan. 31, 1991, Pat. No. 5,111,638, which is a continuation of Ser. No. 249,761, Sep. 26, 1988, abandoned, which is a continuation-in-part of Ser. No. 219,083, Jul. 13, 1988, Pat. No. 4,897,031, which is a continuation of Ser. No. 4,275, Jan. 5, 1987, Pat. No. 4,773,182, which is a continuation of Ser. No. 613,080, May 22, 1984, abandoned, said Ser. No. 24,573is a continuation of Ser. No. 464,694, Jan. 16, 1990, Pat. No. 5,208,027, which is a continuation of Ser. No. 219,083, said Ser. No. 968,798is a continuation of Ser. No. 865,563, May 21, 1992, Pat. No. 5,245,814, which is a continuation of Ser. No. 649,379. This application Jun. 5, 1995, Ser. No. 463,906

Int. Cl.[6] A01G *9/02*

U.S. Cl. 428—34.1 **63 Claims**



1. A basket liner assembly, comprising:

a basket having an inner surface; and

a preformed basket liner made by forming at least one sheet of flexible material into a predetermined shape for both lining a basket and receiving an object, wherein the basket liner comprises

a base having a closed lower end and an open upper end and an outer periphery forming an outer surface, the open upper end intersected by an object opening extending therethrough, said object opening forming an inner surface, a bonding material disposed upon a portion of the outer surface,

wherein the sheet of material is selected from the group consisting of polymer film, foil and combinations thereof, the sheet of material being flexible and substantially non-shape sustaining,

wherein folds are formed in both the outer surface of the basket liner and the inner surface of the basket liner, whereby the formed basket liner is flexible and may be substantially flattened and then unflattened to assume the original shape of the formed basket liner without substantial loss of the preformed shape thereby providing the flexible yet shape-sustaining nature of the formed basket liner,

wherein the forming of the sheet of material is accomplished by forming a portion of the sheet of material into a plurality of overlapping folds to form the base of the basket liner, said folds cooperating to retain the basket liner in the formed shape,

wherein the base is able to stand upright on the closed lower end thereof before the liner is disposed in the basket, and

wherein the preformed basket liner is disposed in the basket with the outer surface of the liner adjacent the inner surface of the basket, the preformed basket liner remaining upright when disposed adjacent the inner surface of the basket, the outer surface of the basket liner bondingly engaging at least a portion of the inner surface of the basket.

5,648,131

Patent Not Issued For This Number

5,648,132

COMPOSITE INSULATOR, SEGMENT USED FOR PRODUCING THE SAME AND METHOD OF PRODUCING THE SAME BY USING THE SEGMENT

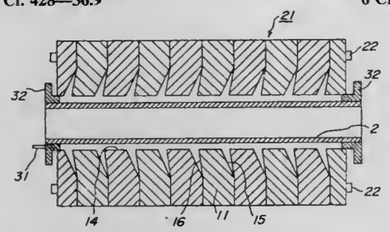
Tetsuhiko Abe, Kasugai; Shigehiko Kunieda, Iwakura; Isao Nakajima, and Yusuke Utsumi, both of Nagoya, all of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Jun. 7, 1995, Ser. No. 477,834

Claims priority, application Japan, Dec. 28, 1994, 6-327684

Int. Cl.[6] B29C *45/03;45/14;45/17;* **H01B** *17/60*

U.S. Cl. 428—36.9 **6 Claims**



1. A polymer composite insulator, comprising:

a core member and a housing member integrally arranged around said core member, said housing member having a trunk portion and a shed portion integrally formed therewith; and

an under rib creepage distance extending means arranged on a lower plane of said shed portion.

3. A segment for producing a polymer composite insulator having a core member and a housing member integrally arranged around the core member, the housing member having an integrally formed trunk portion and shed portion, wherein the shed portion has an under rib creepage distance extending means on a lower plane thereof, comprising:

a pair of segment molds detachably connected at a partition plane having a through-hole at its center portion through which the core member is arranged,

wherein each of said segment molds has an upper plane forming portion arranged at a first end surface for defining an upper plane of the shed portion, and a lower plane forming portion arranged at a second end surface opposite said first end surface for defining the under rib creepage distance extending means on a lower plane of the shed portion, said lower plane forming portion comprising a detachable core having alternating concave and convex portions.

5,648,133

BIAXIALLY ORIENTED CRYSTALLINE RESIN CONTAINER AND PROCESS OF MAKING THE SAME

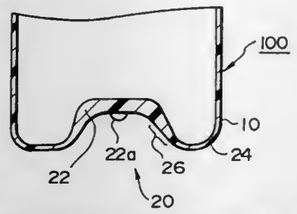
Saburo Suzuki; Hiroyuki Orimoto, both of Ueda, and Fumiya Amari, Komoro, all of Japan, assignors to Nissei ASB Machine Co., Ltd., Nagano-ken, Japan

Filed Sep. 30, 1991, Ser. No. 767,483

Claims priority, application Japan, Oct. 5, 1990, 2-268654

Int. Cl.[6] B29D *22/00*

U.S. Cl. 428—36.92 **5 Claims**



1. A biaxially oriented crystalline resin container comprising a cylindrical side wall and a bottom portion formed on the lower end of said side wall, said bottom portion including:

a central recessed portion containing substantially no crystal and having a first thickness;

an intermediate crystallized portion formed with substantially spherulite crystals, said intermediate portion disposed around the outer periphery of said central recessed portion and having a second thickness thinner than said first thickness; and

a marginal raised portion formed around the outer periphery of said intermediate portion to transit therefrom to said side wall, said marginal raised portion being crystallized by molecular orientation and having a third thickness thinner than said second thickness,

wherein said central recessed portion extends inward and upward from its outer periphery.

5,648,134

THERMAL RECORDING MEDIUM CAPABLE OF KEEPING WIDTH OF MARK TRAIN CONSTANT AND RECORDING METHOD FOR THE SAME

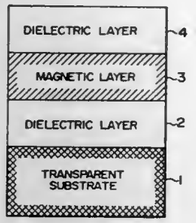
Tsutomu Shiratori, Tokyo, and Hiroshi Yoshida, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 25, 1995, Ser. No. 450,110

Claims priority, application Japan, May 26, 1994, 6-112390

Int. Cl.[6] B32B *3/00*

U.S. Cl. 428—641 **3 Claims**



1. A thermal recording medium comprising:

a recording or erasing region which undergoes a change in state upon heating, wherein said recording or erasing region is formed in a substantially band shape elongated in a recording direction; and

a plurality of helical or concentric tracks, wherein the width of said region in a direction perpendicular to the recording direction is smaller than the width of each of said plurality of tracks in the direction perpendicular to the recording direction.

5,648,135

INFORMATION RECORDING MEDIUM HAVING RECORDING LAYER WITH ORGANIC POLYMER AND DYE CONTAINED THEREIN

Itsuo Watanabe, Shimodate; Atsushi Kuwano, Tsukuba; Jun Taketatsu, Tsukuba; Nobuaki Takane, Tsukuba; Mitsuo Yamada, Shimodate, and Seiji Tai, Hitachi, all of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 926,108, Aug. 5, 1992, Pat. No. 5,464,673. This application Jun. 7, 1995, Ser. No. 487,129

Claims priority, application Japan, Aug. 8, 1991, 3-198174; Aug. 8, 1991, 3-198175; Dec. 26, 1991, 3-345072; Feb. 26, 1992, 4-38283; Apr. 17, 1992, 4-96929; Apr. 23, 1992, 4-103402

Int. Cl.[6] B32B *3/00;* **G11B** *7/24*

U.S. Cl. 428—64.8 **7 Claims**

1. An erasable and rewritable optical information medium comprising:

(A) a substrate;

(B) a recording layer formed on said substrate and comprising a composition containing:

(I) a polymer comprising a diene monomer component, an aromatic-ring-containing vinyl monomer component, or a mixture thereof, and

(II) at least one dye selected from the group consisting of phthalocyanine dyes, tetrapyradinoporphyradine dyes, naphthalocyanine dyes and nickel dithiol complexes; and

(C) a reflective layer formed on said recording layer, said information medium is capable of recording information therein by a change of a state of aggregation of molecules of said dye contained in said recording layer.

5,648,136

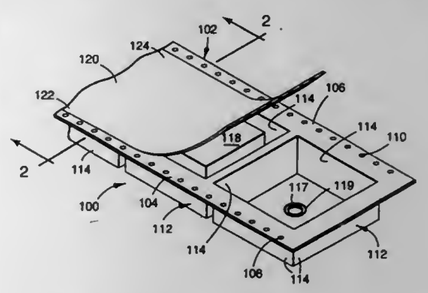
COMPONENT CARRIER TAPE

Gerald C. Bird, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Co., St. Paul, Minn.

Filed Jul. 11, 1995, Ser. No. 500,720

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—76 **30 Claims**



1. A flexible carrier tape for storage and delivery of components by an advancement mechanism, the carrier tape comprising:

(a) a strip portion having a top surface, a bottom surface opposite the top surface;

(b) a plurality of aligned pockets for carrying the components, the pockets being spaced along the strip portion and opening through the top surface thereof, wherein each pocket comprises:

(i) at least one side wall adjoining and extending downwardly from the strip portion; and

(ii) a bottom wall adjoining the at least one side wall to form the pocket; and

(c) a non-pressure sensitive adhesive comprising a thermoplastic elastomer block copolymer on the bottom wall of the pocket for retaining a component in the pocket, wherein the adhesive has a storage modulus at room temperature that is greater than 3×10^5 Pascals.

5,648,137

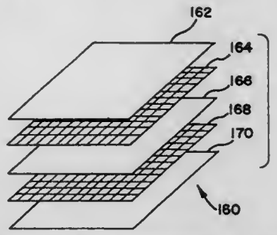
ADVANCED CURED RESIN COMPOSITE PARTS AND METHOD OF FORMING SUCH PARTS

Richard Blackmore, 914 Dell Rd., Northbrook, Ill. 60062

Filed Aug. 8, 1994, Ser. No. 287,120

Int. Cl.[6] B32B *3/06*

U.S. Cl. 428—102 **23 Claims**



1. A high performance composite material part comprising a first layer capable of carrying a heat curable resin, a second electrically conductive layer, a third layer capable of carrying a heat curable resin, a fourth electrically conductive layer, said third layer disposed between said second electrically conductive layer and said fourth electrically conductive layer, and a fifth layer capable of carrying a heat curable resin, said layers connected together and impregnated with a heat curable resin.

5,648,138

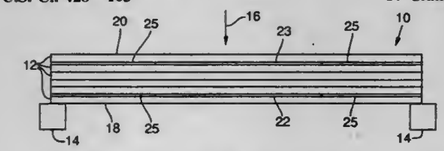
REINFORCED WOOD STRUCTURAL MEMBER

Daniel A. Tingley, 3310 SW. Willamette Ave., Corvallis, Oreg. 97333

Continuation-in-part of Ser. No. 206,411, Mar. 4, 1994, and a continuation-in-part of Ser. No. 37,580, Mar. 24, 1993, Pat. No. 5,362,545. This application Oct. 28, 1994, Ser. No. 330,438

Int. Cl.[6] B32B *5/12*

U.S. Cl. 428—105 **37 Claims**



1. An elongate wood structural member having a longitudinal axis, comprising:

plural elongate wood segments at least one of which having a length extending along the longitudinal axis; and

a synthetic reinforcement having plural synthetic fiber strands held within a resin casing having first and second major surfaces, the synthetic reinforcement being adhered by a non-epoxy adhesive to at least one of the wood segments and each of the major surfaces to which a wood segment is adhered being conditioned to provide for the nonepoxy adhesive an effective bonding interface between the reinforcement and the wood segment, the synthetic reinforcement including a mat of aramid fiber strands overlaying plural non-aramid fiber strands, the aramid fiber strands forming the mat arranged obliquely to the longitudinal axis and the plural non-aramid fiber strands arranged substantially parallel with one another and aligned with the longitudinal axis, the mat being positioned between the plural non-aramid fiber strands and one of the wood segments.

5,648,139

WIRE DRAWING DIES OF POLYCRYSTALLINE CVD DIAMOND WITH BORON DOPANT ATOMS

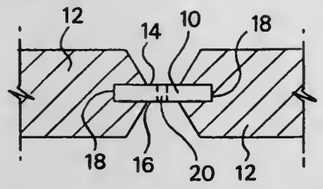
Ricardo Simon Sussmann, c/o Charters, Sunninghill, Berkshire, and Cornelius Phaal, Glade Cottage, St Anne's Glade, Bagshot, Surrey GU19 5EF, both of England

Filed Jan. 10, 1992, Ser. No. 819,441

Claims priority, application United Kingdom, Jan. 11, 1991, 9100631

Int. Cl.[6] B21C *3/02;* **B23B** *27/20*

U.S. Cl. 428—131 **7 Claims**



1. A wire drawing die blank comprising a polycrystalline CVD diamond body comprised of a layer of polycrystalline CVD diamond having a concentration of boron dopant atoms in excess of 1200 ppm, wherein the orientation of the polycrystalline CVD diamond has most of the crystallites aligned with a (111) crystallographic axis in the plane of the layer, and a support to which the polycrystalline CVD diamond body is secured around its periphery.

5,648,140

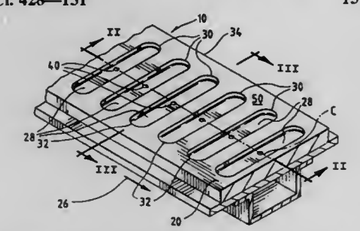
CONVEYOR AND METHOD FOR CONTINUOUS VACUUM LAMINATION

Dennis Henry Vaders, Elkin, N.C., assignor to Masonite Corporation, Chicago, Ill.

Filed Jun. 6, 1995, Ser. No. 470,984

Int. Cl.[6] B65G *17/46;* **B32B** *31/00*

U.S. Cl. 428—131 **15 Claims**



1. An apparatus for the continuous vacuum lamination of an air-permeable substrate to a film disposed on a surface of the substrate, said apparatus comprising a non-permeable conveyor belt having a plurality of channels, said channels disposed along a surface of said conveyor belt and oriented in a direction transverse to a direction of travel of a substrate on said conveyor belt, each channel extending substantially across a width of the conveyor belt in said transverse direction, said conveyor belt further having an aperture extending therethrough at each channel, each aperture being connected to a source of vacuum.

5,648,141

DEBRIDEMENT SPONGE

David E. Butterworth, Colleyvile, Tex.; John Dyer, Randolph, and John W. Kennette, Somerville, both of N.J., assignors to Chicopee, New Brunswick, N.J.

Continuation of Ser. No. 308,108, Apr. 19, 1994, abandoned, which is a continuation of Ser. No. 823,235, Jan. 21, 1992, abandoned. This application Jul. 12, 1995, Ser. No. 501,360

Int. Cl.[6] B32B *3/10*

U.S. Cl. 428—131 **15 Claims**

1. A debridement sponge made from a nonwoven fabric comprising yarn-like strands of fibers selected from the group consisting of hydrophilic fibers and blends of hydrophilic fibers and hydrophobic fibers, said strands being interconnected at multiple junctures to form multiple apertures, wherein each aperture has an area of at least 0.6 square millimeters and wherein said apertures number fewer than 77.5 per square centimeter said fabric having a Calculated Strand Density of at least 0.11 grams per cubic centimeter, said fabric having a Clarity Index of at least 0.4, and said fabric having an Absorbent Capacity of at least 5 grams of an aqueous saline solution per gram of said fabric when compressed under a pressure of 3.3 grams per square centimeter wherein said aqueous saline solution comprises approximately 1.0% by weight of sodium chloride and approximately 0.025% by weight of a xanthene dye.

5,648,142

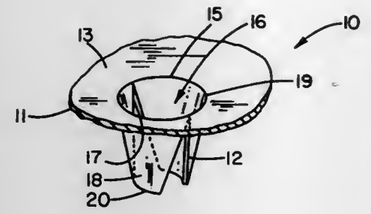
PERFORATED FILMS HAVING CHANNELS WITH CUTOUT PORTIONS CAPABLE OF SPONTANEOUS FLUID INVERSION

Bobby Mal Phillips, Jonesborough, Tenn., assignor to Eastman Chemical Company, Kingsport, Tenn.

Filed Oct. 19, 1995, Ser. No. 545,450

Int. Cl.[6] B32B *3/10;* **A61F** *13/52*

U.S. Cl. 428—132 **12 Claims**



1. A polymeric film made for use in absorbent structures comprising

a planar surface and a plurality of walls;

said planar surface having a frontside, a backside coated with a hydrophilic material and a plurality of apertures;

said plurality of walls extending from the perimeter of said apertures and outwardly from said backside;

said walls and said backside forming a capillary system on said backside;

said walls forming channels connecting said frontside to said capillary system on said backside; and

a plurality of said walls having at least one cut out portion,

whereby a fluid contacting the frontside of the film spontaneously inverts to the capillary system on the backside of the film through the cut out portions of the walls.

5,648,143

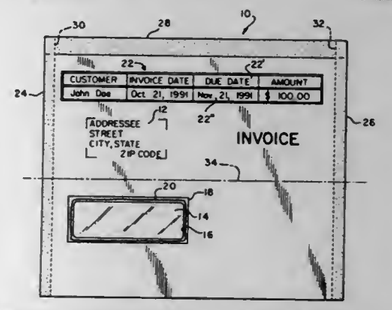
HEAT RESISTANT ADHESIVES FOR ADHERING MAILER WINDOWS

Rajendra Mehta, and Walt Akridge, both of Dayton, Ohio, assignors to The Standard Register Company, Dayton, Ohio

Filed Oct. 28, 1991, Ser. No. 783,533

Int. Cl.[6] B65D *27/04*

U.S. Cl. 428—137 **3 Claims**



1. A mailer or envelope for use in a nonimpact printer having heated fuser rolls, said mailer or envelope containing a window of a transparent polymeric film or glassine which is bonded to said mailer or envelope by a heat and moisture resistant adhesive composition comprising an aqueous-based latex or emulsion of a carboxylated copolymer of ethylene and vinyl acetate, which has been crosslinked by a crosslinking agent selected from the group consisting of phenol formaldehyde adducts, phenol melamine formaldehydes, and water soluble zirconium salts, said adhesive composition providing a bond sufficient to prevent dislodging of said window from said mailer or envelope at temperatures from ambient to about 450° F.

5,648,144

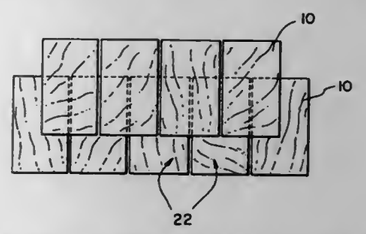
SYNTHETIC SLATE ROOFING MEMBER

Ronald L. Maurer, 5697 N. Pennsylvania St., Indianapolis, Ind. 46220, and Frank C. Cosmas, 6214 Northwood Dr., Carmel, Ind. 46033

Continuation of Ser. No. 314,055, Sep. 28, 1994, abandoned. This application Sep. 30, 1996, Ser. No. 721,752

Int. Cl.[6] E04D *1/14;1/20*

U.S. Cl. 428—141 **10 Claims**



1. A synthetic slate roofing member adapted to be laid on a roof structure, said synthetic slate roofing member comprising:

a solid molded body composed of solid surfacing material having one or more additives or fillers incorporated therein for enhancing properties of said body as a roofing member, said solid surfacing material comprising a material which is cast or extruded, colored throughout and about 98 percent or more de-aired and which comprises a resin selected from the group consisting of polyester, acrylic or a combination thereof, and an inert filler which functions as an extender for the resin and which renders the resin fire-retardant, said solid molded body having a textured front face formed thereon which resembles the appearance of natural slate, including

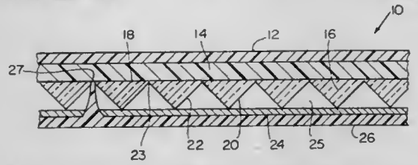
edges whose thickness decreases in a stepwise fashion in the manner of natural slate, and a means for laying said solid molded body on said roof structure, said one or more additives or fillers including a weight-reducing agent incorporated in said solid surfacing material to reduce the weight of said solid molded body, and an inhibitor incorporated in said solid surfacing material to increase the resiliency of said solid molded body.

5,648,145

FIRE-RESISTANT, RETROREFLECTIVE STRUCTURE

David C. Martin, Berlin, Conn., assignor to Reflexite Corporation, Avon, Conn.

Filed Sep. 10, 1993, Ser. No. 119,459
Int. Cl.[6] B32B *3/10;5/30*
U.S. Cl. 428—156 **24 Claims**



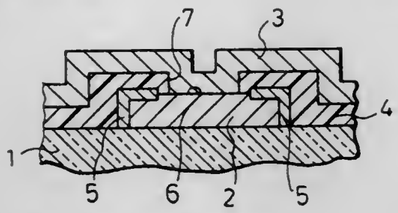
1. A fire-resistant, retroreflective structure, comprising:
a) an array of retroreflective transparent polymer prism elements having a light incident side and a light reflective side;
b) a transparent polymeric film attached to the light incident side of the array of retroreflective elements;
c) a transparent fire-resistant polymer first outerlayer attached to the transparent polymeric film;
d) a flame-retardant layer which is attached to the light reflective side of the array of retroreflective elements; and
e) a second fire-resistant outerlayer attached to the flame-retardant layer.

5,648,146

METALLIC WIRING SUBSTRATE

Masahito Gotou, Tenri; Hirohisa Tanaka, Ikoma-gun, and Toshimasa Hamada, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 19, 1995, Ser. No. 545,145
Claims priority, application Japan, Oct. 24, 1994, 6-258428
Int. Cl.[6] B32B *3/00;* **H01L** *29/04;27/01*
U.S. Cl. 428—209 **6 Claims**



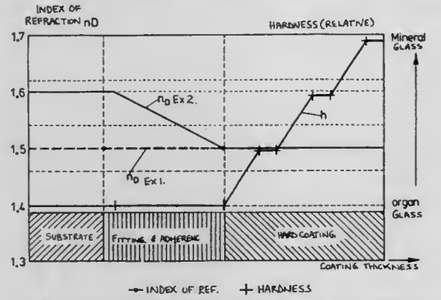
1. A metallic wiring substrate, comprising:
an insulating substrate;
a first metallic layer comprised of an anodic oxide section and a non-anodic-oxide section, said first metallic layer being provided on said insulating substrate; and
a second metallic layer connected to the non-anodic-oxide section of said first metallic layer;
wherein on the surface of said first metallic layer, an outer circumference of the non-anodic-oxide section is surrounded by the anodic oxide section and the non-anodic-oxide section is formed on a portion covered with resist, which was patterned so as to be completely positioned on the surface of the first metallic layer without exceeding the surface of the first metallic layer when the first metallic layer was anodically oxidized, said resist being removed after the first metallic layer is anodically oxidized.

5,648,147

OPTICAL DEVICE AND METHOD FOR COATING AN OPTICAL SUBSTRATE

Roman Bischof, Sulz, Austria; Markus Hofer, Butschwil; Albert Koller, Azmoos, both of Switzerland, and Christian Wohlrab, Feldkirch, Austria, assignors to Balzers Aktiengesellschaft, Balzers, Liechtenstein

Filed Mar. 9, 1995, Ser. No. 401,204
Claims priority, application Switzerland, Sep. 1, 1994, 2679/94
Int. Cl.[6] B32B *27/36*
U.S. Cl. 428—212 **22 Claims**



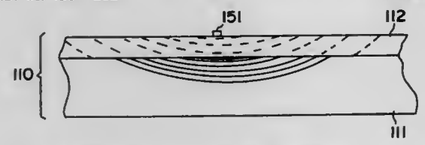
1. Optical device, comprising a carrier substrate consisting of a plastic material with a surface consisting of a material with a predetermined index of refraction and with first mechanical and/or chemical characteristics, said surface of said carrier substrate being coated, the surface of said coating remote from said surface of said substrate having second mechanical and/or chemical characteristics different from said first characteristics, wherein the index of refraction departing from said predetermined index of refraction of said carrier substrate surface material varying steplessly through at least a part of said coating up to the end index of refraction at said surface of said coating.

5,648,148

THERMAL MANAGEMENT OF ELECTRONIC COMPONENTS USING SYNTHETIC DIAMOND

Matthew Simpson, Sudbury, Mass., assignor to Saint Gobain/Norton Industrial Ceramics Corp., Worcester, Mass.

Division of Ser. No. 175,587, Dec. 30, 1993, Pat. No. 5,514,242. This application May 17, 1995, Ser. No. 443,188
Int. Cl.[6] H01L *29/80*
U.S. Cl. 428—212 **8 Claims**



1. A heat-sinked electronic component, comprising:
a first layer of synthetic diamond having a relatively low thermal conductivity;
a second layer of synthetic diamond adjacent said first layer, said second layer of synthetic diamond having a relatively high thermal conductivity, said second layer being thinner than said first layer; and

an electronic component mounted on said second layer of synthetic diamond.

5,648,149

ADHESION OF THERMOSET POLYURETHANE TO RIGID TRANSPARENT SUBSTRATES

Thomas G. Rukavina, Lower Burrell, and John B. Slobodnik, New Kensington, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 219,336, Mar. 29, 1994, abandoned. This application Mar. 6, 1995, Ser. No. 398,931
Int. Cl.[6] B32B *7/02;27/30;27/40*
U.S. Cl. 428—215 **19 Claims**

1. In an aircraft transparency comprising a rigid transparent stretched acrylic substrate having a surface; a thermoset polyurethane film, and means for securing the substrate and the film together, the improvement to the means for securing comprising a primer layer directly adhered to said surface of said substrate, said primer layer comprising a polyvinylpyrrolidone or a copolymer of vinylpyrrolidone and monomer selected from the group consisting of alkylacrylate, alkylmethacrylate, and mixture thereof.

5,648,150

MAGNETIC RECORDING MEDIUM HAVING A BACKCOAT LAYER CONTAINING CARBON BLACK AND PLATELET INORGANIC POWDER

Yasushi Nagayama, Hitachinaka; Osamu Kobayashi, Tomobe-Cho, and Ikuo Matsumoto, Mito, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Sep. 5, 1995, Ser. No. 523,611
Claims priority, application Japan, Sep. 5, 1994, 6-238380
Int. Cl.[6] G11B *5/68*
U.S. Cl. 428—216 **3 Claims**

1. A magnetic recording medium having a magnetic layer formed on one side surface of a non-magnetic support and a back coat layer formed on the other side of the non-magnetic support, the back coat layer being composed of a solid powder and a binder,
wherein a thickness of the back coat layer is 1.0 μm or less, and a total thickness of the magnetic recording medium is 12.5 μm or less;
the solid powder contains platelet inorganic powder and carbon black powder in such a mix rate that the carbon black powder is between 5 and 20 parts by weight, relative to 100 parts by weight of the platelet inorganic powder, an average particle diameter of the platelet inorganic powder lying between 0.5 and 3.0 μm and a platelet aspect ratio of the particle diameter to thickness thereof lying between 30 and 50, and an average particle diameter of the carbon black powder lying between 20 and 300 nm; and
the binder and the platelet inorganic powder are mixed in such a mix rate that the binder is between 15 and 40 parts by weight, relative to 100 parts by weight of the platelet inorganic powder.

5,648,151

POROUS POLYURETHANE SHEET

Akinobu Mizoguchi, Kurashiki; Shinji Nakanishi, Okayama, and Toshiyuki Akasawa, Kurashiki, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Mar. 22, 1995, Ser. No. 408,288
Claims priority, application Japan, Mar. 22, 1994, 6-050524
Int. Cl.[6] B32B *27/40*
U.S. Cl. 428—220 **2 Claims**

1. A porous sheet produced by a process comprising the steps of:
i) impregnating and/or coating a synthetic fibrous substrate structure with a solution of a polyurethane comprising:
a) a soft segment component containing in the same or different soft segments repeating units represented by formula (I), formula (II) and formula (III),



$$-O-R_1-O-CO-O- \quad (I)$$

$$-O-R_2-O-CO-R_3-CO- \quad (II)$$

$$-(O-CH_2-CHR_5)_2-O-CO-R_4-CO- \quad (III)$$

wherein R_1 is a hydrocarbon group having 5 to 6 carbon atoms, R_2 is a tetramethylene group, R_3 and R_4, are each independently an alkylene group having 4 to 8 carbon atoms and R_5 is a hydrogen atom or methyl group,
the ratio between the number of repeating units (I), (II) and (III) and the total number of repeating units (I), (II) and (III) are 0.1 to 0.8, 0.05 to 0.7 and 0.05 to 0.8, respectively, and
b) a hard segment component derived from an aromatic diisocyanate component and ethylene glycol or 1,4-butanediol component; and
ii) wet coagulating said solution.

5,648,152

POLYESTER MONOFILAMENTS EXTRUDED FROM A HIGH TEMPERATURE POLYESTER RESIN BLEND WITH INCREASED RESISTANCE TO HYDROLYTIC AND THERMAL DEGRADATION AND FABRICS THEREOF

Michelle A. Diaz-Kotti, Columbia, and Peter J. Brissette, Blythewood, both of S.C., assignors to Shakespeare Company, Columbia, S.C.

Division of Ser. No. 151,406, Nov. 12, 1993, Pat. No. 5,464,890. This application May 26, 1995, Ser. No. 450,919
Int. Cl.[6] D03D *3/00;* **C08K** *5/29*
U.S. Cl. 442—199 **17 Claims**

1. A fabric comprising:
a plurality of woven polyester monofilaments;
said polyester monofilaments including
from about 45 to about 94 percent by weight of a high temperature polyester resin,
from about 5 to about 50 percent by weight of a PET resin, and
from about 1 to about 5 percent by weight of a hydrolyric stabilizing agent, wherein said monofilament has increased resistance to hydrolyric degradation as compared to monofilaments consisting essentially of polyethylene terephthalate resin and as compared to monofilaments consisting essentially of high temperature polyester resin, and wherein said monofilament has at least as good a resistance to thermal degradation as compared to monofilaments consisting essentially of polyethylene terephthalate resin and increased resistance to thermal degradation as compared to monofilaments consisting essentially of high temperature polyester resin.

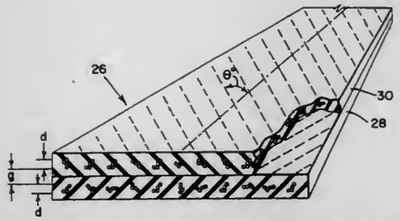
5,648,153

TIRES WITH HIGH STRENGTH REINFORCEMENT

Italo Marziale Sinopoli, Canton; Farrel Bruce Helfer; Dong Kwang Kim, both of Akron; John Gomer Morgan; Robert Martin Shemenski, both of North Canton, all of Ohio; Guy Jeanpierre, Bissen, Luxembourg, and Gia Van Nguyen, Arlon, Belgium, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 937,864, Oct. 13, 1992, which is a continuation-in-part of Ser. No. 496,759, Mar. 21, 1990, now Defensive Publication No. H1333. This application Jun. 7, 1995, Ser. No. 487,351
Int. Cl.[6] B60C *9/00*
U.S. Cl. 428—295.1 **5 Claims**

1. A reinforced layer of elastomer for reinforcement of elastomeric articles having at least one layer of cord spaced in a direction



lateral to the direction of reinforcement, each cord having a diameter in the range of 0.30 mm to 1.6 mm and formed in a single step where all its filaments have the same lay direction, each cord made of steel having at least a cord break load (CBL) defined by the expression:

$$CBL=N(720.4D^2-352.6D^3)CE$$

where CE is the cord efficiency, D is the filament diameter in MM and N is the number of filaments in each cord.

5,648,154

INORGANIC CONSTRUCTIONAL BOARD AND METHOD OF MANUFACTURING THE SAME

Akio Koh; Hisashi Fujiwara; Kiyoshi Kurosaki; Shigezoh Masamoto, and Keiji Shutoh, all of Okayama, Japan, assignors to Daiken Trade & Industry Co., Ltd., Toyama, Japan

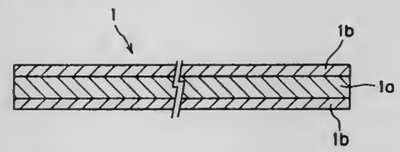
PCT No. PCT/JP92/00970, § 371 Date Feb. 2, 1994, § 102(e) Date Feb. 2, 1994, PCT Pub. No. WO93/03238, PCT Pub. Date Feb. 18, 1993

PCT Filed Jul. 31, 1992, Ser. No. 190,105

Claims priority, application Japan, Aug. 2, 1991, 3-194182; Aug. 2, 1991, 3-194183; Aug. 2, 1991, 3-194184; Aug. 20, 1991, 3-207895; Sep. 5, 1991, 3-225755; Dec. 20, 1991, 3-338368

Int. Cl.[6] B32B *5/22;5/30;31/20*

U.S. Cl. 428—313.7 **17 Claims**



1. An inorganic constructional board having three layer portions comprising:

a middle layer portion having first and second opposite surfaces; and

first and second outer layer portions placed on the first and second opposite surfaces of the middle layer portion, respectively;

the middle layer portion comprising a mixture of an inorganic foamed material of 50–95 wt %, a fibrous material of 1–30 wt % comprising mineral fiber, and an organic binder present in an amount sufficient to integrally bind the inorganic foamed material and fibrous material;

the first and second outer layer portions comprising a mixture of a fibrous material of 20–60 wt % comprising mineral fiber, an inorganic powder material of 40–70 wt %, and an organic binder present in an amount sufficient to integrally bind the fibrous material and inorganic powder material;

wherein the mixture for the middle layer portion is spread and placed in a dry condition on the mixture for the first outer layer portion in a wet condition, while the mixture for the second outer layer portion in a wet condition is placed on the mixture for the middle layer portion in a dry condition, and then the three layer portions are pressed and heated to dry so that the outer layer portions are interlocked with the middle layer portion to obtain an integral construction board.

5,648,155

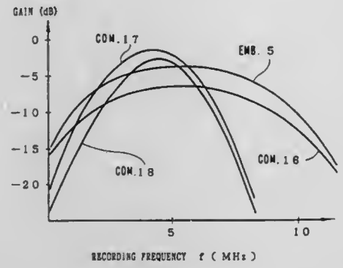
MAGNETIC RECORDING MEDIUM

Kenji Tokui; Yoshiteru Matsubayashi; Masashi Yoshikawa; Jyunji Oshita, all of Mito, and Yuji Ohata, Yamato, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Continuation-in-part of Ser. No. 23,207, Feb. 25, 1993, abandoned. This application Feb. 16, 1995, Ser. No. 389,318

Int. Cl.[6] G11B *5/66;* **B32B** *5/16*

U.S. Cl. 428—323 **11 Claims**



1. A magnetic recording tape having a longitudinal and traversing direction used for a magnetic recording and/or reproducing apparatus comprising:

a non-magnetic substrate;

an under layer provided on the non-magnetic substrate, said under layer containing a composite of flattened magnetic particles and binder, each of said flattened magnetic particles having a planar surface with a first easy axis of magnetization parallel to said planar surface, a major axis defined as a first distance vector having the longest dimension between any pair of parallel tangential lines contacting the periphery of said planar surface and a minor axis defined as a second distance vector having the shortest dimension between any pair of tangential lines contacting the periphery of said planer surface and having a ratio T1 of an average of said major axis to an average of said minor axis being of $1 \leqq T1 \leqq 1.5$ so as to enhance the mechanical strength of the magnetic recording tape in both the traversing and longitudinal directions of said major axis to an average of the thickness of said flattened magnetic particles in the range of $5 \leqq T2 \leqq 10$, said under layer having a Young's modulus of not less than 2.0×10^{10} N/m^2 in the longitudinal direction of said magnetic recording tape and having a coercive force "HCS" as defined in an inequality (1) to enhance electromagnetic transfer characteristics of the magnetic recording tape;

$$1.5\times10^4 A/m < Hcs < 8.0\times10^4 A/m \quad (1)$$

and,

a magnetic layer provided on said under layer for recording signal information, said magnetic layer containing binder and magnetic acicular particles each having a second easy axis of magnetization in the longitudinal direction of said magnetic acicular particles,

wherein each of both, said flattened magnetic particles and said magnetic acicular particles is disposed in said under layer and magnetic layer, respectively, in such a manner that said first easy axis of magnetization and said second easy axis of magnetization are respectively oriented in the longitudinal direction of said magnetic recording tape so as to form magnetic flux coupling between said first and second easy axes of magnetization.

5,648,156

METAL BASE BOARD AND ELECTRONIC EQUIPMENT USING THE SAME

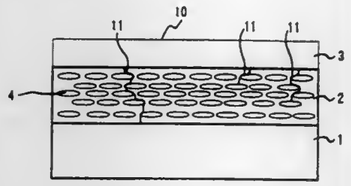
Satoru Hayashi, Nagoya, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 285,699, Aug. 4, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 483,861

Claims priority, application Japan, Aug. 6, 1993, 5-196398

Int. Cl.[6] B32B *5/16*

U.S. Cl. 428—323 **5 Claims**



1. A metal baseboard comprising:

a metallic base section;

a circuit conductor section; and

an insulating section provided between said circuit conductor section and said base section;

said insulating section comprising a polymeric organic electrical insulating material with flaky inorganic fillers comprising a plurality of different raw inorganic filler materials added therein, said flaky inorganic filler materials being disposed in said insulating section in a plurality of strata.

5,648,157

METAL BASE BOARD AND ELECTRONIC EQUIPMENT USING THE SAME

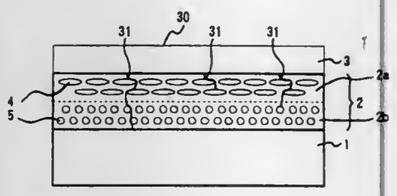
Satoru Hayashi, Nagoya, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 285,699, Aug. 4, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 488,054

Claims priority, application Japan, Aug. 6, 1993, 5-196398

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—323 **3 Claims**



1. A metal base board comprising:

a metallic base section;

a circuit conductor section; and

an insulating section provided between said circuit conductor section and said base section;

said insulating section comprising a first insulating layer made of an organic insulating material with flaky inorganic fillers added therein and a second insulating layer comprising an organic insulating material with granular inorganic filler material added therein, said flaky inorganic fillers being disposed in said insulating section in a stacked and stratified state.

5,648,158

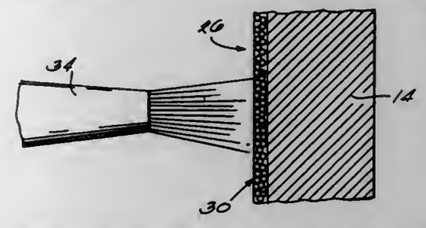
METHOD OF PROTECTING METAL AGAINST CORROSION AND A VEHICLE INCLUDING A STRUCTURAL MEMBER PROTECTED BY THE METHOD IN HIGH TEMPERATURE AREAS

John D. Pfeffer, Brookfield, Wis., assignor to A.O. Smith Corporation, Milwaukee, Wis.

Filed May 24, 1995, Ser. No. 448,959

Int. Cl.[6] B32B *5/16*

U.S. Cl. 428—325 **17 Claims**



1. A vehicle including a structural member treated with a wax coating, the wax coating having imbedded therein refractory materials in areas where the structural member is subjected to high temperatures greater than 180 degrees Fahrenheit, the refractory materials being greater than 400 wire mesh in size and comprising 65 to 90 percent of the combined wax coating and refractory materials by weight.

5,648,159

DRY RESIST

Yoshinori Sato, Yamato, Japan, assignor to Diafoil Hoechst Company, Ltd., Tokyo, Japan

Filed Jun. 12, 1995, Ser. No. 489,579

Claims priority, application Japan, Jun. 14, 1994, 6-132000

Int. Cl.[6] B32B *5/16;27/06*

U.S. Cl. 428—327 **13 Claims**

1. A dry resist comprising:

a biaxially oriented laminated polyester film having a first surface and a second surface opposite said first surface, said first surface provided by a first surface layer containing particles having an average particle diameter of 0.01 to 3.0 μm, said first surface layer having a center line average roughness of 0.005 μm to 0.1 μm and wherein any protuberances on said first surface layer have a maximum height of less than 1.5 μm, and said film has a haze of not more than 1.5%;

a photoresist layer formed on said second surface of said biaxially oriented laminated polyester film; and

a protective film formed on said photoresist layer.

5,648,160

MAGNETIC POWDER, METHOD FOR PRODUCING THE SAME AND USE OF THE SAME

Mikio Kishimoto; Shinichi Kitabata; Hisao Kanzaki, all of Ibaraki; Noriaki Ohtani, Osaka, and Toshinobu Sueyoshi, Kyoto, all of Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

PCT No. PCT/JP95/00731, § 371 Date Mar. 14, 1996, § 102(e) Date Mar. 14, 1996, PCT Pub. No. WO95/28718, PCT Pub. Date Oct. 26, 1995

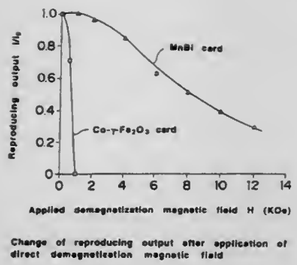
PCT Filed Apr. 14, 1995, Ser. No. 557,174

Claims priority, application Japan, Apr. 14, 1994, 6-101877; Apr. 27, 1994, 6-89910; Jun. 20, 1994, 6-162645; Jul. 25, 1994, 6-192902; Aug. 24, 1994, 6-222418

Int. Cl.[6] G11B *5/706*

U.S. Cl. 428—328 **48 Claims**

1. A magnetic powder comprising MnBi, wherein an average particle size of the magnetic powder is from 0.1 μm to 20 μm; a



Change of reproducing output after application of direct demagnetization magnetic field

(Reproducing output being normalized by output before application of direct demagnetization magnetic field)

coercive force is from 3000 to 15,000 Oe at 300 K. and 50 to 1000 Oe at 80 K. when measured with applying a magnetic field of 16 KOe; an amount of magnetization is from 20 emu/g to 60 emu/g when measured at 300 K. with applying a magnetic field of 16 KOe; a degree of decrease of an amount of magnetization is 40% or less after being maintained in an atmosphere of 60° C. and 90% RH for 7 days; and a content of metal bismuth (Bi) satisfies the following equation:

$$\text{Metal Bi}/(\text{MnBi}+\text{metal Bi})<0.5$$

wherein "metal Bi" means a peak area assigned to the (012) plane in a X-ray diffraction pattern of Bi, and "MnBi" means a peak area assigned to the (101) plane in a X-ray diffraction pattern of MnBi.

5,648,161

MAGNETO-OPTICAL RECORDING MEDIUM HAVING LARGE KERR ROTATIONAL ANGLE IN SHORT WAVELENGTH RANGE

Hiromu Miyazawa; Shoji Hoshina; Satoshi Shimokawato; Masaaki Ichikawa; Masaya Ishida; Takeo Kawase; Toshiaki Mikoshiba; Satoshi Nebashi, and Tatsuya Shimoda, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

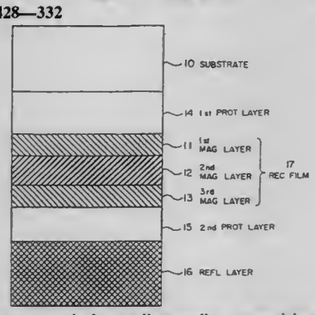
PCT No. PCT/JP92/01528, § 371 Date Jul. 19, 1993, § 102(e) Date Jul. 19, 1993, PCT Pub. No. WO93/10530, PCT Pub. Date May 27, 1993

PCT Filed Nov. 20, 1992, Ser. No. 90,040

Claims priority, application Japan, Nov. 22, 1991, 3-307580; Nov. 22, 1991, 3-307582; Nov. 22, 1991, 3-307583; Nov. 22, 1991, 3-307584; Apr. 16, 1992, 4-096597

Int. Cl.[6] G11B *5/66*

U.S. Cl. 428—332 **9 Claims**



1. A magneto-optical recording medium comprising: at least a first protective layer, a first magnetic layer, a second magnetic layer, a third magnetic layer, a second protective layer and a reflection layer laminated in sequence on a substrate that is transparent to light for magneto-optical recording, wherein:

the first and third magnetic layers each formed of an alloy including a light rare earth element, LR, a heavy rare earth element, HR, and, a transition metal, A, the alloy of the first and third magnetic layers having a composition $LR_xHR_yA_{(100-x-y)}$ where x and y denote atomic percentages,

the second magnetic layer is formed of a rare earth element—transition metal alloy for forming a perpendicular magnetized film;

the first, second and third magnetic layers satisfying the following conditions with respect to Kerr rotational angle when a wavelength range of 400 to 700 nm of light is used for signal reproduction in the magneto-optical recording and for coercivity both at room temperature:

$\theta 1>\theta 2$

$\theta 3>\theta 2$

$Hc1<Hc2$

$Hc3<Hc2$

where θ denotes the Kerr rotational angle, Hc denotes the coercivity, and suffixes 1, 2 and 3 denote the first, second and third magnetic layers, respectively,

the atomic percentages of LR and HR in the alloy of the first and third magnetic layers each satisfying the following conditions:

$10\leqq x<35$ and

$1\leqq y<15$,

and

a total layer thickness of the first, second and third magnetic layer is not more than 400 angstroms.

5,648,162

MAGNETO-OPTICAL RECORDING MEDIUM AND A METHOD OF RECORDING AND/OR REPRODUCING USING THE SAME

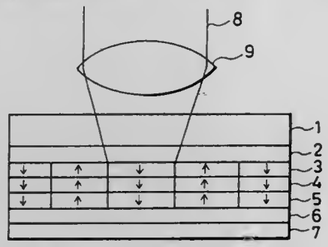
Junji Hirokane; Hiroyuki Katayama; Akira Takahashi, all of Nara, and Kenji Ohta, Kitakatsuragi-gun, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 30, 1993, Ser. No. 177,096

Claims priority, application Japan, Jan. 7, 1993, 5-001375

Int. Cl.[6] G11B *5/66*

U.S. Cl. 428—332 **23 Claims**



1. A magneto-optical recording medium comprising:

a base;

a readout layer formed on said base;

a recording layer formed on said readout layer;

an auxiliary recording layer formed on said recording layer, each of said readout layer, recording layer and auxiliary recording layer comprising an alloy of rare-earth metal exhibiting ferrimagnetism and transition metal,

said alloy composition of each of said readout layer, said recording layer and said auxiliary recording layer being such that said recording layer has a Curie temperature lower than Curie temperatures of said readout layer and said auxiliary recording layer, and said recording layer has a coercive force higher than coercive forces of said readout layer and said auxiliary recording layer at room temperature and that, when a temperature of said recording layer is raised to a temperature approximately equal to its Curie temperature while perpendicularly applying a uniform recording magnetic field to each layer, a sublattice magnetic moment of the rare-earth metal of said readout layer and a sublattice magnetic moment of the rare-earth metal of said auxiliary recording layer are antiparallel to each other.

5,648,163

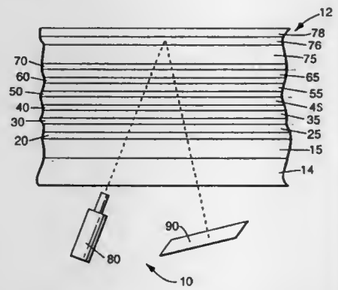
MAGNETO-OPTIC RECORDING MEDIUM HAVING MAGNETO-OPTIC FILM LAYERS SEPARATED BY YTTRIUM OXIDE

Michael B. Hintz, Mahtomedi, Minn., assignor to Imation Corp., St. Paul, Minn.

Filed Sep. 27, 1994, Ser. No. 313,335

Int. Cl.[6] G11B *5/66*

U.S. Cl. 428—332 **12 Claims**



1. A magneto-optic recording medium, comprising a transparent substrate and magneto-optic stack provided thereon, the stack comprising a plurality of layers of a magneto-optic film each having a thickness up to 10 nm, wherein each of the layers of the magneto-optic film is separated from each other by a dielectric layer consisting essentially of YO_x.

5,648,164

RECORDING PAPER AND INK-JET RECORDING PROCESS MAKING USE OF THE SAME

Mamoru Sakaki, Yamato, and Masato Katayama, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 21, 1994, Ser. No. 183,808

Claims priority, application Japan, Jan. 25, 1993, 5-010001

Int. Cl.[6] B32B *29/00*

U.S. Cl. 428—341 **13 Claims**

1. A recording paper comprising a base paper and an ink penetration-retarding agent applied on a surface of the base paper, wherein said recording paper has a water extraction pH of 6 or greater and a surface pH lower than the water extraction pH, and wherein said ink penetration-retarding agent is applied on the surface of the base paper in an amount with respect to said surface of from 0.1 to 3 g/m^2.

5,648,165

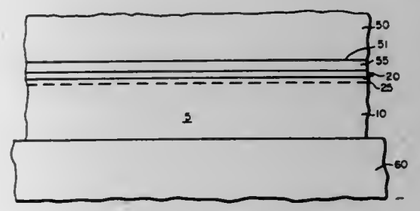
HOT STAMP ARTICLE FOR APPLYING OPTICALLY VARIABLE COATING TO SUBSTRATES

Roger W. Phillips, Santa Rosa, Calif.; Thomas Mayer, Boulder, Colo., and Gary S. Ash, Boston, Mass., assignors to Flex Products, Inc., Santa Rosa, Calif.

Division of Ser. No. 902,693, Jun. 23, 1992, Pat. No. 5,279,657, which is a continuation of Ser. No. 719,166, Jun. 21, 1991, Pat. No. 5,171,363, which is a continuation of Ser. No. 251,034, Sep. 26, 1988, Pat. No. 5,059,245, which is a continuation of Ser. No. 812,814, Dec. 23, 1985, abandoned, which is a continuation-in-part of Ser. No. 567,638, Jan. 3, 1984, abandoned, which is a continuation of Ser. No. 314,695, Oct. 26, 1981, Pat. No. 4,434,010, which is a division of Ser. No. 108,004, Dec. 28, 1979, abandoned. This application Dec. 22, 1993, Ser. No. 171,654

Int. Cl.[6] B32B *7/06;7/10;15/04*

U.S. Cl. 428—346 **1 Claim**



1. An article for applying a color shifting optically variable coating on a surface of a substrate, said article comprising a polymeric flexible web which has a length greater than its width so that it can be roll coated in a vacuum chamber and having at least one surface, a release layer disposed on said one surface of the web and a color shifting optically variable coating formed as an inverted structure on said release layer on said one surface of said web, said color shifting optically variable coating consisting of a semi-opaque metal layer on said release layer, a transparent dielectric layer on the semi-opaque metal layer and a reflecting metal layer on the dielectric layer, said article being bonded to a substrate by the use of a hot stamp adhesive either on said color shifting optically variable coating or on the substrate.

5,648,166

PRESSURE-SENSITIVE ADHESIVES AND TAPE ARTICLES

Wayne K. Dunshee, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 21, 1995, Ser. No. 391,210

Int. Cl.[6] B32B *7/12*

U.S. Cl. 428—355 AC **9 Claims**

1. A pressure-sensitive adhesive coating comprising a blend of A and B component adhesives wherein component A is comprised of an acrylic ester-acrylic acid-macromolecular monomer copolymer adhesive and component B is comprised of an acrylic ester-acrylic acid-hydroxylated ether alkyl acrylate copolymer adhesive and further wherein component A and component B are present in a ratio range of between about 90:10 and 10:90 by weight.

5,648,167

ADHESIVE COMPOSITIONS

Roger Francis Peck, Stansted Mountfitchet, United Kingdom, assignor to Smith & Nephew PLC, England

Continuation of Ser. No. 263,262, Jun. 21, 1994, abandoned, which is a continuation of Ser. No. 924,035, Aug. 21, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 479,559
Claims priority, application United Kingdom, Mar. 29, 1990, 9007100; Apr. 17, 1990, 9008629; Jun. 6, 1990, 9012567
Int. Cl.[6] B32B *7/10;* A61F *13/00*
U.S. Cl. 428—355 AC 10 Claims

1. A medical adhesive product comprising a substrate, a pressure sensitive adhesive on one face of the substrate and a layer of a polymer composition on the surface of the pressure sensitive adhesive wherein said polymer composition has low or no significant tack at temperatures below that of skin temperature but which is a second pressure sensitive adhesive at skin temperature and wherein said polymer composition comprises 50–96% of residues (X), 1–40% of residues (Y) and 1–10 of residues (Z) wherein (X) is an alkyl acrylate or methacrylate having an alkyl portion containing 12–20 carbon atoms, (Y) is a hydrophilic acrylate or methacrylate ester containing an alkoxy group containing 1–4 carbon atoms; and (Z) is a polar acrylate or methacrylate residue.

5,648,168

DUPLEX COATING FOR CORONA ELECTRODES

Russell Bruce Hatch, and Keith Edward Bowen, both of Swindon, England, assignors to Praxair S.T. Technology, Inc., Danbury, Conn.

Continuation of Ser. No. 226,425, Apr. 12, 1994, abandoned, which is a continuation of Ser. No. 885,820, May 20, 1992, abandoned. This application Jan. 18, 1996, Ser. No. 588,475
Int. Cl.[6] B32B *09/00*
U.S. Cl. 428—379 8 Claims

1. A corona apparatus comprising a stationary electrode spaced apart from a roller electrode which defines an air gap between said electrodes; means for inducing a voltage across the electrodes, so that a corona are discharge can be developed in the gap between the stationary electrode and the roller electrode; the improvement wherein the stationary electrode or roller electrode comprises a substrate selected from the group consisting of steel, carbon fibers, glass fibers and aluminum alloys and said substrate coated with an inner layer of copper and a top layer of dielectric inorganic metal compound.

5,648,169

GLASS FIBER SIZE AND MAT

Thomas V. Thimons, Allison Park; Robert G. Swisher, and Yongsheng Hou, both of Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 146,267, Oct. 29, 1993, Pat. No. 5,437,928. This application May 3, 1995, Ser. No. 433,583
Int. Cl.[6] B32B *9/00*
U.S. Cl. 428—391 13 Claims

1. An aqueous peroxide-free size composition for treating glass fibers comprising:

(a) from about 4 to about 32 percent by weight of a reaction product of a polymeric amine and an amine-reactable organosilane;

(b) from about 5 to about 20 percent by weight of a water-dispersible film-forming polymer; and

(c) from about 50 to about 90 percent by weight of emulsified polyolefin.

5,648,170

COATED GRANULAR MAGNETITE PARTICLES AND PROCESS FOR PRODUCING THE SAME

Yoji Okano, Hiroshima; Eiichi Kurita, Yokohama; Kazuo Fujioka; Koso Aoki, both of Hiroshima; Hiromitsu Misawa, Hatsukaichi, and Minoru Kozawa, Higashi-Hiroshima, all of Japan, assignors to Toda Kogyo Corporation, Japan

Filed Apr. 20, 1994, Ser. No. 230,405
Claims priority, application Japan, Apr. 27, 1993, 5-125208; Apr. 27, 1993, 5-125209
Int. Cl.[6] B32B *5/16*
U.S. Cl. 428—403 8 Claims

1. Coated granular magnetite particles having a BET specific surface area of not more than 15 m^2/g, a coercive force of not more than 150 Oe, a residual magnetization of not more than 15 emu/g, a saturation magnetization of not less than 80 emu/g, a change ratio (%) in the Fe^{2+} content of not more than 8% after heating said coated granular magnetite particles at a temperature of 200° C. for 1 hour, and a change in hue of not more than 0.8 after heating said coated granular magnetite particles at a temperature of 200° C. for 1 hour, said particles comprising:

granular magnetite core particles containing 12 to 24 wt % of Fe^{2+} coated with at least one uniform surface coating layer comprising $Zn_xFe_{2+y}O_z$, wherein $0.4 \leqq x \leqq 1$, $x+y=1$, and $4.0 \leqq z \leqq 4.3$, and the amount of Zn is 0.5 to 4.0 mol % based on the total Fe content in said granular magnetite core particle.

5,648,171

EPOXY RESIN MIXTURES CONTAINING PHOSPHORUS ACID/EPOXY RESIN ADDUCTS

Wolfgang von Gentzkow, Kleinsendelbach; Jürgen Huber, Erlangen; Heinrich Kapitza, Fürth; Wolfgang Rogler, Möhrendorf, and Hans-Jerg Kleiner, Kronberg, all of Germany, assignors to Siemens Aktiengesellschaft, München, Germany

PCT No. PCT/EP94/00750, § 371 Date Sep. 14, 1995, § 102(e) Date Sep. 14, 1995, PCT Pub. No. WO94/21706, PCT Pub. Date Sep. 29, 1994
PCT Filed Mar. 10, 1994, Ser. No. 522,333
Claims priority, application Germany, Mar. 15, 1993, 43 08 184.3
Int. Cl.[6] C08G *59/14;59/50;* H05K *1/03*
U.S. Cl. 428—413 17 Claims

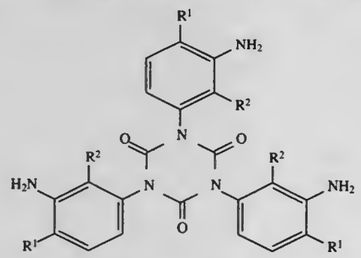
1. An epoxy resin mixture for producing prepregs and composites, comprising:

a phosphorus-modified epoxy resin with an epoxy value of 0.02 to 1 mol/100 g, and an average molecular weight, M_n, of up to 10,000, which is a reaction product of

(A) a polyepoxy compound with at least two epoxy groups per molecule and

(B) at least one compound selected from the group consisting of phosphinic acids, phosphonic acids, pyrophospbonic acids and phosphonic acid monoesters, and

an aromatic polyamine hardener with the following structure:



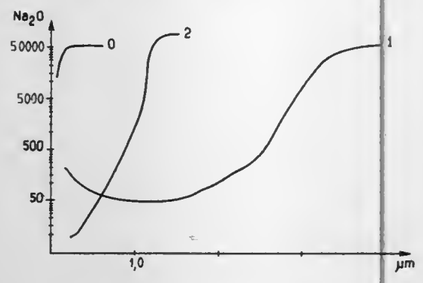
where one of the R^1 and R^2 groups on each of the three aromatic tings denotes a hydrogen and the other is alkyl.

5,648,172

DEALKALINIZATION OF SHEETS OF GLASS WITH LOW ALKALINES CONTENT

Didier Jousse, Saint-Leu La Foret; Pablo Vilato, Paris, and Catherine Geoffroy, Vedene, all of France, assignors to Saint-Gobain Vitrage International, Courbevoie, France

PCT No. PCT/FR93/00950, § 371 Date Sep. 29, 1994, § 102(e) Date Sep. 29, 1994, PCT Pub. No. WO94/07807, PCT Pub. Date Apr. 14, 1994
PCT Filed Sep. 29, 1993, Ser. No. 244,201
Claims priority, application France, Oct. 2, 1992, 92 11661
Int. Cl.[6] B32B *9/00*
U.S. Cl. 428—426 15 Claims



1. A low alkaline oxide and alkaline-earth oxide content borosilicate glass sheet comprising:

at least one face comprising a surface zone within which the alkaline ion content is less than or equal to 500 ppm to a depth of at least 0.2 μm; and

a composition comprising:

sodium oxide;

alkaline oxides other than sodium oxide;

alkaline-earth oxides; and

boron oxide;

wherein the sum of said sodium oxide, said alkaline oxides other than sodium oxide, and said alkaline-earth oxides is less than or equal to 15% by weight of the total glass sheet;

wherein the amount of said sodium oxide is less than or equal to 10% by weight of the total glass sheet;

wherein said boron oxide content is not less than 5% by weight of the total glass sheet; and

wherein said glass sheet has a coefficient of thermal expansion of between $30–50\times10^7$ K^{-1}.

5,648,173

ROOM TEMPERATURE, MOISTURE-CURABLE ABRASION-RESISTANT COATING COMPOSITION HAVING ENHANCABLE WEATHERABILITY

John Donald Blizzard, Bay City, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Jan. 25, 1996, Ser. No. 591,057
Int. Cl.[6] B32B *27/36*
U.S. Cl. 428—446 19 Claims

1. A moisture-curable composition useful for forming an abrasion-resistant coating on a substrate, said composition comprising the following components:

(A) at least one multifunctional acrylate, having a general formula which includes a plurality of functional acrylate groups;

(B) at least one alkoxy-functional organometallic compound selected from the group consisting of 1) organometallic compounds having the empirical formula $M(OR)_4$, wherein M is selected from the group consisting of Si and Ti, and each OR is the same or a different alkoxy group and 2) hydrolyzates of the organometallic compounds of 1);

(C) at least one trialkoxyaminosilane of the general formula

$$(OR)_3Si(QNH)_dQNH_2$$

wherein each OR is as defined above, Q is a divalent hydrocarbon group, which Q groups may be the same or different, and d is 0 or 1;

said at least one multifunctional acrylate (A) and said at least one trialkoxyaminosilane (C) being present in quantities such that the molar ratio of NH_2 groups to functional acrylate groups is at least 10:1; and

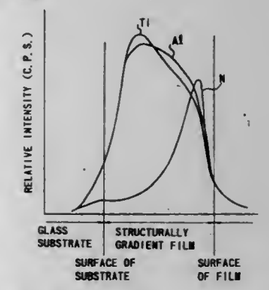
said composition, without additional components added thereto, when moisture-cured, exhibiting a Taber abrasion T-100 number of about 10 or less and a Taber abrasion T-500 number of about 15 or less.

5,648,174

HIGHLY HARD THIN FILM AND METHOD FOR PRODUCTION THEREOF

Hiroshi Yamagata, Toyama-ken; Akihisa Inoue, 11-806, Kawauchijutaku, Mubanchi, Kawauchi; Tsuyoshi Masumoto, 3-8-22, Kamisugi, both of Aoba-ku, Sendai-shi, Miyagi-ken, and Junichi Nagahora, Yokohama, all of Japan, assignors to Yoshida Kogyo K.K., Tokyo; Tsuyoshi Masumoto, and Akihisa Inoue, both of Miyagi-ken, all of Japan

Division of Ser. No. 209,911, Mar. 14, 1994. This application Apr. 12, 1995, Ser. No. 420,606
Claims priority, application Japan, Mar. 15, 1993, 5-78556; Nov. 15, 1993, 5-307097
Int. Cl.[6] C23C *14/00*
U.S. Cl. 428—469 19 Claims



1. A hard thin film consisting of:

a metallic matrix phase having a composition represented by the general formula:

$$Al_aM_b$$

wherein M stands for at least one element selected from the group consisting of Ti, Ta, V, Cr, Zr, Nb, Mo, Hf, W, Mn, Fe, Co, Ni, and Cu and "a" and "b" respectively stand for atomic % in the ranges of $60 \leqq a \leqq 98.5$ and $1.5 \leqq b \leqq 40$, providing a+b=100; and

fine crystalline particles dispersed in said metallic matrix phase, wherein said film is formed by a physical vapor deposition process.

5,648,175

CHEMICAL VAPOR DEPOSITION REACTOR SYSTEM AND INTEGRATED CIRCUIT

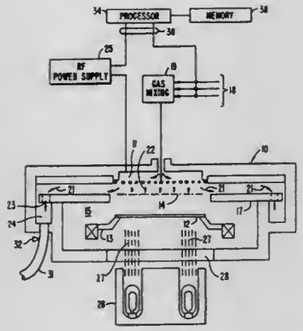
Kathleen Russell, Santa Clara; Stuardo Robles, Sunnyvale; Bang C. Nguyen, Fremont, and Visweswaren Sivaramakrishnan, Cupertino, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Filed Feb. 14, 1996, Ser. No. 601,558
Int. Cl.[6] B32B *9/00;* B05C *11/00*
U.S. Cl. 428—472.3 19 Claims

1. A chemical vapor deposition reactor system comprising:

a housing for forming a vacuum chamber;

a substrate holder, located within said housing, for holding a substrate;



a gas distributor for introducing a process gas into said vacuum chamber to deposit a layer over said substrate;
a gas mixing area, coupled to said gas distributor, in which a plurality of gases intermingle to form said process gas;
a gas distribution system, coupled to said gas mixing area, for introducing said plurality of gases into said gas mixing area;
a heater for heating said substrate;
a vacuum system for pressurizing said vacuum chamber;
an RF power supply to form a plasma from said process gas;
a controller for controlling said gas distribution system, said heater, said RF power supply and said vacuum system; and
a memory, coupled to said controller, comprising a computer-readable medium having a computer-readable program embodied therein for directing operation of said chemical vapor deposition reactor system, said computer-readable program including:
a first set of computer instructions for controlling said heater to heat said substrate to a temperature of between about 400°–500° C.;
a second set of computer instructions for controlling said vacuum system to set and maintain said vacuum chamber at a pressure of between about 1–20 torr;
a third set of computer instructions for controlling said gas distribution system to introduce gases comprising silicon, oxygen, boron, phosphorus and germanium into said gas mixing area; and
a fourth set of computer instructions for controlling said RF power supply to form said plasma.

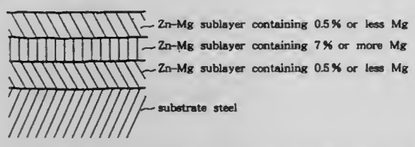
5,648,176
METALLIC HONEYCOMB BODY FOR SUPPORTING CATALYST FOR AUTOMOBILES AND PROCESS FOR PRODUCING THE SAME
Tosbikazu Nakagawa; Yasushi Ishikawa, botb of Tokai; Sadao Tsusbima, Futtsu; Masao Yashiro, and Hitoshi Obta, both of Tokai, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan
PCT No. PCT/JP94/00188, § 371 Date Oct. 13, 1994, § 102(e) Date Oct. 13, 1994, PCT Pub. No. WO95/21695, PCT Pub. Date Aug. 17, 1995
PCT Filed Feb. 8, 1994, Ser. No. 318,716
Int. Cl.[6] B01J *35/04;* **B23K** *35/36;* **B32B** *15/18*
U.S. Cl. 428—593 **14 Claims**

1. A metallic honeycomb body for supporting a catalyst for automobiles, comprising flat foils of a ferritic heat-resisting high alloy steel containing aluminum in an amount sufficient to form a stable Al oxide film and corrugated foils formed by corrugating said flat foil with said flat foils and said corrugated foils being alternately stacked or the flat foil and the corrugated foil being wound up together and joined to each other, wherein joined portions between said flat foil and said corrugated foil formed by melting and solidification are ferritic, and Fe—Cr carbide is precipitated and dispersed within said joined portions;



wherein said joined portions are formed by coating abutting portions of said flat foil and said corrugated foil with an adhesive with carbon powder added to said adhesive in an amount of 0.001 to 0.016 mg/mm^2 (unit area of each joint point) and wherein said carbon powder has a particle diameter of not more than 5 μm.

5,648,177
STEEL SHEET COATED WITN ZN-MG BINARY COATING LAYER EXCELLENT IN CORROSION RESISTANCE AND MANUFACTURING METHOD THEREOF
Yasushi Fukui; Masanori Matsuno; Hiroshi Tanaka; Tadaaki Miono; Kazushi Sakamoto; Yasumi Ariyoshi, and Minoru Saito, all of Sakai, Japan, assignors to Nisshin Steel Co., Ltd., Tokyo, Japan
Filed Feb. 27, 1996, Ser. No. 607,703
Claims priority, application Japan, Feb. 28, 1995, 7-065096; Oct. 18, 1995, 7-294736
Int. Cl.[6] B21D *39/00;* **B32B** *15/00*
U.S. Cl. 428—610 **11 Claims**



1. A steel sheet coated with a Zn—Mg coating layer having a tri-layered structure comprising a first sublayer including a Zn—Mg alloy having a Mg concentration of about 0.5 wt. % or less, a second sublayer including a Zn—Mg alloy having a Mg concentration of about 7 wt. % or more and a third sublayer including a Zn—Mg alloy having a Mg concentration of about 0.5 wt. % or less, wherein the first sublayer, second sublayer and third sublayer are successively laminated on a substrate steel wherein a Zn—Fe or Zn—Fe—Mg alloy layer is formed at a boundary between the substrate steel and the Zn—Mg coating layer.

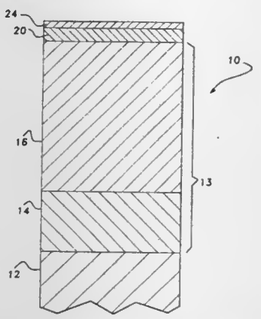
5,648,178
REACTOR SYSTEM STEEL PORTION
John V. Heyse, Crockett, and Alan G. Kunze, El Cerrito, both of Calif., assignors to Chevron Chemical Company, San Ramon, Calif.
Continuation-in-part of Ser. No. 269,764, Jul. 1, 1994, Pat. No. 5,575,902, which is a continuation-in-part of Ser. No. 177,822, Jan. 4, 1994. This application Dec. 28, 1994, Ser. No. 365,855
Int. Cl.[6] B32B *15/18*
U.S. Cl. 428—627 **6 Claims**

1. A steel portion of a reactor system in contact with steam and hydrocarbons, said steel portion having a Group VIB metal protective layer and at least one intermediate, carbide-rich, bonding layer, wherein said protective layer is substantially free of unfilled cracks or Group VIB oxides extending to said bonding layer, wherein the



protective layer is formed by bonding a Group VIB metal layer to steel in the presence of a nitrogen-containing compound at a temperature effective to form the carbide-rich bonding layer and to fill cracks in the Group VIB metal layer with Group VIB metal nitride which effectively seals off and isolates the Group VIB carbide-rich bonding layer from later H_2O/steam attack.

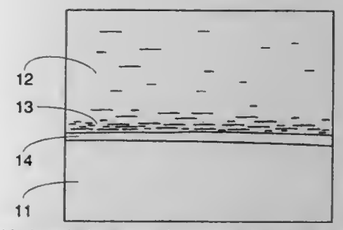
5,648,179
ARTICLE HAVING A DECORATIVE AND PROTECTIVE COATING SIMULATING BRASS
Stephen R. Moysan, III, Douglasville, and Rolin W. Sugg, Reading, both of Pa., assignors to Baldwin Hardware Corporation, Reading, Pa.
Continuation of Ser. No. 447,330, May 22, 1995, abandoned. This application Jun. 21, 1996, Ser. No. 668,296
Int. Cl.[6] B32B *15/04*
U.S. Cl. 428—627 **11 Claims**



1. An article comprising a metallic substrate having disposed on at least a portion of its surface a multi-layer coating simulating brass comprising:
layer comprised of semi-bright nickel;
layer comprised of bright nickel;
layer comprised of tin-nickel; and
a top layer comprised of zirconium compound or titanium compound.

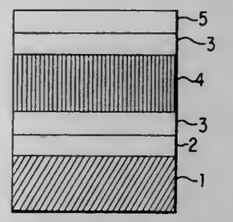
5,648,180
METHOD FOR JOINING CARBON-CARBON COMPOSITES TO METALS
Robert J. Lauf, Oak Ridge; April D. McMillan, and Arthur J. Moorhead, both of Knoxville, all of Tenn., assignors to Lockheed Martin Energy Systems, Inc., Oak Ridge, Tenn.
Filed Mar. 22, 1996, Ser. No. 620,509
Int. Cl.[6] B32B *5/14;15/04;* **B23K** *35/22*
U.S. Cl. 428—634 **5 Claims**

1. A method for making a composite article comprising the steps of:
fabricating a low-density carbon-carbon composite body to a desired size and shape, said body having a density gradient within it such that one region of said body is less than fully dense and a selected surface region of said body is substantially fully dense;



fabricating a metal body of a desired size and shape;
disposing a braze alloy between a selected surface of said metal body and said substantially fully dense surface region of said composite body; and
heating said composite article above the melting temperature of said braze alloy such that said alloy bonds said carbon-carbon composite body and said metal body together, said substantially fully dense surface region of said composite body preventing said alloy from being drawn into said less than fully dense region of said carbon-carbon composite body.

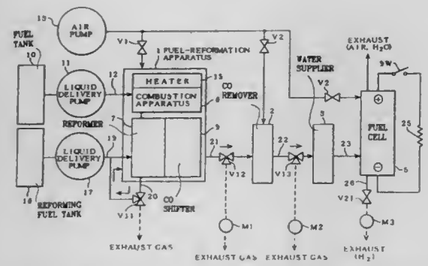
5,648,181
INORGANIC THIN FILM ELECTROLUMINESCENT DEVICE HAVING A LIGHT EMISSION LAYER
Masao Watanabe, Minamiashigara, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 118,199, Sep. 9, 1993, abandoned. This application Nov. 28, 1995, Ser. No. 563,358
Claims priority, application Japan, Sep. 14, 1992, 4-269081
Int. Cl.[6] B32B *18/00*
U.S. Cl. 428—689 **21 Claims**



1. An inorganic thin film electroluminescent device, comprising an inorganic light emission layer, a pair of electrodes and a pair of insulating layers, at least one of the electrodes being optically transparent, the light emission layer being positioned between the pair of insulating layers, each insulating layer being formed on an opposite side of the light emission layer, the pair of insulating layers being positioned between a light emission layer and the pair of electrodes, the light emission layer consisting essentially of inorganic material comprising a matrix of lanthanum fluoride doped with at least one member selected from the group consisting of rare earth element metals and compounds thereof.

5,648,182
FUEL CELL POWER GENERATION SYSTEM
Takeshi Hara; Kenji Kato, both of Aichi-ken, and Noriyuki Takada, Hokkai-do, all of Japan, assignors to Kabusbikikaisha Eqous Research, and Aisin AW Co., Ltd., both of Japan
Filed May 31, 1995, Ser. No. 454,662
Claims priority, application Japan, Aug. 31, 1994, 6-232047
Int. Cl.[6] H01M *8/18;2/00*
U.S. Cl. 429—20 **12 Claims**

1. A fuel cell power generation system comprising:



combustion means for burning a fuel and thereby generating heat and a combustion exhaust gas;

fuel reforming means for reforming a fuel to produce a hydrogen-rich reformed gas, utilizing said combustion exhaust gas as a heat source;

CO removal means for removing carbon monoxide from the hydrogen-rich reformed gas;

detection means for detecting the presence of residual reformed gas in a gas passage through which reformed gas flows;

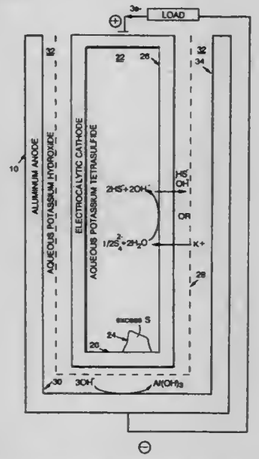
a fuel cell for generating electricity by reacting the reformed hydrogen-rich gas and oxygen; and

gas purge means for purging said reformed gas, remaining in said system upon stopping said generating of electricity, from at least one vessel selected from the group consisting of said fuel reforming means, said CO removal means and said fuel cell, said gas purge means comprising conduit means for feeding the combustion exhaust gas from said combustion means through said one vessel to displace the reformed gas from said one vessel with the combustion exhaust gas until reformed gas is no longer detected by said detection means.

5,648,183
ALUMINUM AND SULFUR ELECTROCHEMICAL BATTERIES AND CELLS

Stuart Licht, Charlton City, and Dharmasena Peramunage, Oxford, both of Mass., assignors to Clark University, Worcester, Mass.

Continuation of Ser. No. 383, Jan. 4, 1993, Pat. No. 5,413,881.
This application May 9, 1995, Ser. No. 437,542
Int. Cl.[6] H01M *4/02*
U.S. Cl. 429—105 **21 Claims**



1. An electrical storage cell comprising two half-cells positioned in electrochemical contact with one another, one of said half-cells comprising an anode comprising aluminum, positioned in contact with a first aqueous, electrically neutral, alkaline solution; and

the remaining half-cell comprising,

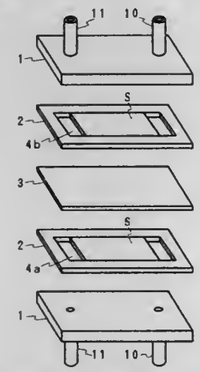
a second aqueous, electrically neutral solution comprising polysulfide anions, said second aqueous solution containing, when said storage cell is fully charged, at least 0.01 moles per kg reducible sulfur; and

a current transferring electrocatalytic electrode positioned in electron-transferring contact with said second aqueous electrically neutral solution said current transferring electrocatalytic electrode comprising a metal, metal chalcogenide or metal oxide, which is insoluble in said second aqueous solution.

5,648,184
ELECTRODE MATERIAL FOR FLOW-THROUGH TYPE ELECTROLYTIC CELL, WHEREIN THE ELECTRODE COMPRISES CARBONACEOUS MATERIAL HAVING AT LEAST ONE GROOVE

Makoto Inoue, and Masaru Kobayashi, both of Ohtsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed Apr. 10, 1996, Ser. No. 629,812
Claims priority, application Japan, Apr. 13, 1995, 7-088061
Int. Cl.[6] H01M *4/62*
U.S. Cl. 429—105 **10 Claims**



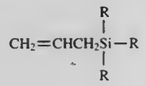
1. An electrode material for a liquid flow-through type electrolytic cell comprising a separator interposed between a pair of collectors counter-opposing each other via a gap, and an electrode material installed in at least one of the flow paths of electrolyte solution formed between said collector and said separator, wherein the electrode material comprises a carbonaceous material sheet having at least one groove.

5,648,185
ALLYL SILANE MONOMERS AND SOLID ELECTROLYTES DERIVED BY POLYMERIZATION THEREOF

Benjamin Chaloner-Gill, Santa Clara, and Neal Golovin, San Jose, both of Calif., assignors to Valence Technology, Inc., Henderson, Nev.

Filed Apr. 19, 1993, Ser. No. 49,203
Int. Cl.[6] H01M *10/26*
U.S. Cl. 429—192 **15 Claims**

1. A compound represented by Formula I:



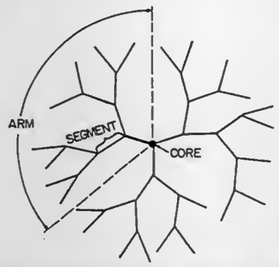
(I)

where R is selected from the group consisting of $-O(CH_2CH_2O)_3CH_3$ and $-O(CH_2CH_2O)Li$.

5,648,186
POLYMER ELECTROLYTES HAVING A DENDRIMER STRUCTURE

Mark L. Daroux, Cleveland Heights; David W. Kurz, Concord; Morton Litt, University Heights; Anastasios Melissaris, Centerville, and Donald G. Pucci, Concord, all of Ohio, assignors to Gould Electronics Inc., Eastlake, Ohio

Continuation of Ser. No. 243,267, May 13, 1994, abandoned.
This application Jun. 6, 1996, Ser. No. 659,775
Int. Cl.[6] H01M *10/40*
U.S. Cl. 429—192 **31 Claims**

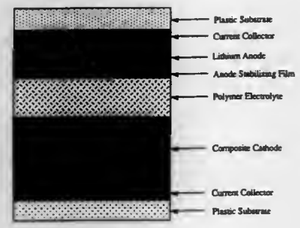


1. An electrolyte for use in electrochemical cells comprising at least one positively charged ionic species dissolved in a macromolecular material, said macromolecular material comprising an oligomer or polymer having a branched dendrimer structure comprising a polymeric or nonpolymeric core with at least three linear or branched polymeric arms attached to and extending from said core with the ratio of the mean molecular weight of an individual arm to the molecular weight of the core being greater than one, and the number of core repeat units per branch point on the core being less than 25.

5,648,187
STABILIZED ANODE FOR LITHIUM-POLYMER BATTERIES

Terje Absjorn Skotheim, Shoreham, N.Y., assignor to Moltech Corporation, Tucson, Ariz.

Continuation of Ser. No. 197,140, Feb. 16, 1994, abandoned.
This application Mar. 19, 1996, Ser. No. 618,111
Int. Cl.[6] H01M *4/02*
U.S. Cl. 429—213 **31 Claims**



1. A battery cell comprising:

(a) a lithium anode;

(b) a non-aqueous organic electrolyte containing a dissolved lithium salt;

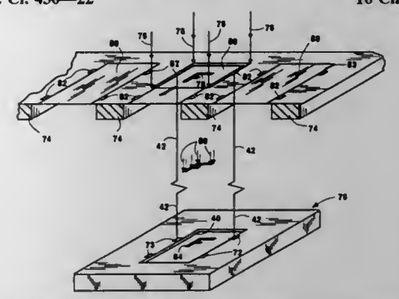
(c) an electrically conducting crosslinked polymer film interposed between the lithium anode and the electrolyte; said electrically conducting crosslinked polymer film being capable of transmitting lithium ions between the lithium anode and the electrolyte; and

(d) a cathode.

5,648,188
REAL TIME ALIGNMENT SYSTEM FOR A PROJECTION ELECTRON BEAM LITHOGRAPHIC SYSTEM

Samuel K. Doran, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 7, 1995, Ser. No. 476,471
Int. Cl.[6] G03F *9/00*
U.S. Cl. 430—22 **16 Claims**



1. A method of aligning an electron beam relative to a workpiece comprising the steps of:

a. providing a source of an electron beam;

b. providing a workpiece fixture for securing a workpiece to be machined by said electron beam;

b. providing an alignment fixture between said electron beam source and said workpiece fixture;

d. providing a source of an alignment beam;

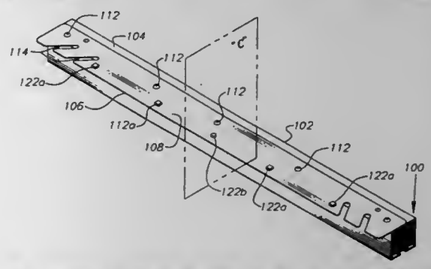
e. impinging said alignment beam against a surface on said alignment fixture to determine the position of said electron beam relative to a workpiece secured in said workpiece fixture; and

f. moving said workpiece fixture and/or alignment fixture relative to said electron beam in response to the position determined in step (e).

5,648,189
PIN REGISTRATION FOR SCREEN PRINTING

Don E. Newman, Wyncote, Pa., assignor to Stretch Devices, Inc., Philadelphia, Pa.

Filed Oct. 27, 1995, Ser. No. 549,590
Int. Cl.[6] G03F *9/00*; **B41C** *1/14*; **B41F** *15/36*
U.S. Cl. 430—22 **13 Claims**



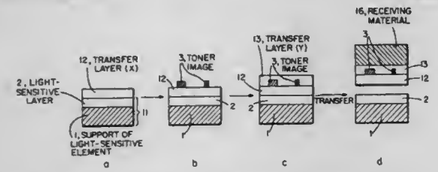
10. A method of placing an image on a screen mesh of a screen printing frame, comprising the following steps:

providing an image film having the image;

providing a light sensitive coating on the screen mesh;

placing the screen printing frame with the screen mesh upon an exposure table;
placing a registration bar having a bar, a plate, and a pair of sets of pins, on an exposure table such that the set of pins which projects downward from a parallel surface of the plate are accepted by an alignment means of the screen printing frame;
placing the image film on top of the screen mesh with the image film having holes receiving the second set of pins which project upward from the other parallel surface of the plate;
compressing the image film and the screen printing frame on the exposure table between a glass table and a vacuum blanket by drawing a vacuum;
exposing the light sensitive coating to the image of the image film;
removing the image film from engagement with the screen printing frame; and
treating the screen fabric to retain the image on the light sensitive coating.

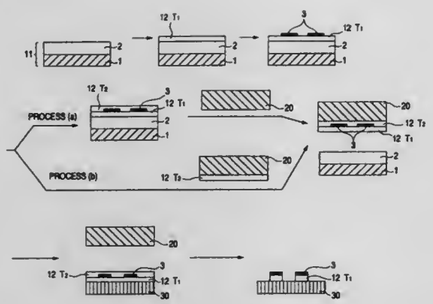
5,648,190
METHOD OF FORMING COLOR IMAGES AND APPARATUS USED THEREFOR
Eiichi Kato; Sadao Osawa, and Yusuke Nakazawa, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
PCT No. PCT/JP94/00847, § 371 Date Mar. 27, 1995, § 102(e) Date Mar. 27, 1995, PCT Pub. No. WO94/28466, PCT Pub. Date Dec. 8, 1994
PCT Filed May 27, 1994, Ser. No. 374,713
Claims priority, application Japan, May 27, 1993, 5-146767
Int. Cl.[6] G03G *13/01;13/14;15/01*
U.S. Cl. 430—47 **6 Claims**



1. A method of forming a color image comprising forming at least one color toner image by an electrophotographic process on a first peelable transfer layer provided on the surface of an electrophotographic light-sensitive element whose surface has releasability, forming a second transfer layer on the toner image and transferring the toner image together with the first transfer layer and the second transfer layer onto a receiving material.

5,648,191
METHOD FOR PREPARATION OF PRINTING PLATE BY ELECTROPHOTOGRAPHIC PROCESS
Eiichi Kato, and Yusuke Nakazawa, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Feb. 22, 1996, Ser. No. 605,440
Claims priority, application Japan, Feb. 24, 1995, 7-060079
Int. Cl.[6] G03G *13/16;13/28*
U.S. Cl. 430—49 **29 Claims**

1. A method for preparation of a printing plate by an electrophotographic process comprising providing a peelable first transfer layer (T_1) containing a resin (A) capable of being removed upon a chemical reaction treatment on an electrophotographic light-sensitive element, forming a toner image on the first transfer layer (T_1) by an electrophotographic process, transferring the toner image to a primary receptor according to either process (a) or process (b) shown below, transferring the toner image together with the first transfer layer (T_1) and the second transfer layer (T_2) from the primary receptor onto a receiving material having a surface capable of providing a hydrophilic surface suitable for



lithographic printing at the time of printing, and removing the whole second transfer layer (T_2) and the first transfer layer (T_1) in the non-image area on the receiving material by the chemical reaction treatment;
process (a):
providing a peelable second transfer layer (T_2) containing a resin (A) capable of being removed upon the chemical reaction treatment on the toner image and the first transfer layer (T_1) in the non-image area and transferring the toner image together with the first transfer layer (T_1) and the second transfer layer (T_2) from the light-sensitive element to the primary receptor,
process (b):
transferring the toner image together with the first transfer layer (T_1) from the light-sensitive element onto a peelable second transfer layer (T_2) containing a resin (A) capable of being removed upon the chemical reaction treatment provided on the primary receptor.

5,648,192
ELECTROPHOTOGRAPHIC TONER
Yoshihisa Kuramae; Kazushige Inoue; Takashi Nagai, and Toru Takatsuna, all of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Japan
Filed Nov. 16, 1995, Ser. No. 559,371
Claims priority, application Japan, Nov. 30, 1994, 6-297502
Int. Cl.[6] G03G *9/087*
U.S. Cl. 430—110 **6 Claims**

1. An electrophotographic toner comprising a fixing resin, and at least a colorant and an electric charge controlling material, which are contained in this fixing resin,
the fixing resin having a bimodal molecular-weight distribution having maximum values at a low molecular weight region where a weight average molecular weight is not more than 20000 and a high molecular weight region where a weight average molecular weight exceeds 20000, respectively; and
the electric charge controlling material being an electric charge controlling resin comprising a polymer which is compatible with the fixing resin, a molecular-weight distribution of the polymer resembling the low molecular weight distribution of a weight-average molecular weight of not more than 20000 in the molecular-weight distribution of the fixing resin, and a group corresponding to a quaternary ammonium salt being introduced into the polymer.

5,648,193
TONER PROCESSES
Raj D. Patel, Oakville; Grazyna E. Kmiecik-Lawrynowicz, Burlington; Guerino G. Sacripante, Oakville, and Daniel A. Foucher, Toronto, all of Canada, assignors to Xerox Corporation, Stamford, Conn.
Filed Jun. 17, 1996, Ser. No. 663,420
Int. Cl.[6] G03G *9/087*
U.S. Cl. 430—137 **31 Claims**

1. A process for the preparation of toner compositions, or particles comprised of
i) flushing a pigment into a sulfonated polyester resin, and which resin has a degree of sulfonation of from between about 2.5 and 20 mol percent;
ii) dispersing the resulting sulfonated pigmented polyester resin into water, which water is at a temperature of from about 40° to about 95° C., by a high speed shearing polytron device operating at speeds of from about 100 to about 5,000 revolutions per minute thereby enabling the formation of stable toner sized submicron particles, and which particles are of a volume average diameter of from about 5 to about 200 nanometers;
iii) allowing the resulting dispersion to cool to from about 5° to about 10° C. below the glass transition temperature of said pigmented sulfonated polyester resin;
iv) adding an alkali metal halide solution, which solution contains from about 0.5 percent to about 5 percent by weight of water, followed by stirring and heating from about room temperature, about 25° C., to a temperature below the resin Tg to induce aggregation of said submicron pigmented particles to obtain toner size particles of from about 3 to about 10 microns in volume average diameter and with a narrow GSD; or stirring and heating to a temperature below the resin Tg, followed by the addition of alkali metal halide solution until the desired toner size of from about 3 to about 10 microns in volume average diameter and with a narrow GSD is achieved; and
v) recovering said toner by filtration and washing with cold water, drying said toner particles by vacuum, and thereafter, optionally blending charge additives and flow additives.

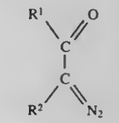
5,648,194
PHOTORESIST COMPOSITION COMPRISING AN ALKALI-SOLUBLE RESIN, A QUINONE DIAZIDE COMPOUND AND A VINYL ETHER
Daniel Y. Pai, Millbury, and Robert E. Hawkins, Upton, both of Mass., assignors to Shipley Company, L.L.C., Marlborough, Mass.
Filed Aug. 3, 1995, Ser. No. 510,709
Int. Cl.[6] G03F *7/023;7/028*
U.S. Cl. 430—165 **16 Claims**

1. A photoresist coating composition comprising an alkali soluble resin, an o-quinonediazide sulfonic acid ester photoactive compound, a vinyl ether compound, and a solvent for said components, said photoactive compound and said vinyl ether being present in a combined concentration sufficient to form a latent, developable image upon exposure to activating radiation and in a ratio that does not exceed 20 parts photoactive compound to 1 part vinyl ether and is not less than 2 parts photoactive compound to 1 part vinyl ether, and said solvent being present in an amount sufficient to form a liquid coating composition.

8. The composition of claim **1** where, on a dry solids basis, the photoactive compound comprises from 5 to 25% by weight of the composition.

5,648,195
RADIATION-SENSITIVE RESIST COMPOSITION COMPRISING A DIAZOKETONE
Michael Sebald, Hessdorf; Siegfried Birkle, Höchstadt; Karin Preissner, Lauf, and Hans-Jürgen Bestmann, Erlangen, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
PCT No. PCT/DE94/00740, § 371 Date Jan. 5, 1996, § 102(e) Date Jan. 5, 1996, PCT Pub. No. WO95/02851, PCT Pub. Date Jan. 26, 1995
PCT Filed Jun. 28, 1994, Ser. No. 571,879
Claims priority, application Germany, Jul. 12, 1993, 43 23 289.2
Int. Cl.[6] G03C *1/52;1/60;* **G03F** *7/40*
U.S. Cl. 430—170 **12 Claims**

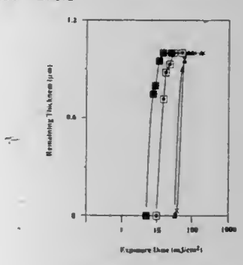
1. A radiation-sensitive resist composition for manufacturing highly resolved relief structures, comprising:
a film-forming base polymer;
a radiation-active component that releases an acid when irradiated;
a solvent; and
a radiation-sensitive ester-former comprising a diazoketone of the following structure:



wherein R^1 is an aliphatic, aromatic, cyclic or heterocyclic hydrocarbon residue, and R^2 is hydrogen (H) or R^1.

6. A method for manufacturing highly resolved relief structures, comprising:
(a) applying to a substrate a radiation-sensitive resist composition according to claim **1**;
(b) drying the resist composition such that a radiation-sensitive resist layer is formed;
(c) patternwise irradiating the resist layer such that a latent image is produced in the resist layer;
(d) treating the irradiated resist layer with a developer; and
(e) drying the treated resist layer, wherein the latent image is converted into a relief pattern.

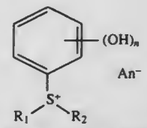
5,648,196
WATER-SOLUBLE PHOTOINITIATORS
Jean M. J. Fréchet, Ithaca, N.Y., and Sang-Yeon Shim, Seoul, Rep. of Korea, assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.
Filed Jul. 14, 1995, Ser. No. 502,400
Int. Cl.[6] G03C *1/492;1/494;5/00;* **C08F** *2/46*
U.S. Cl. 430—270.1 **45 Claims**



Comparison of sensitivities for photoinitiators
Poly(4-hydroxystyrene/styrene/PI(2) = 100/5/10
PEB = 120°C/5min (⊕),
130°C/5min (■)
Poly(4-hydroxystyrene/styrene/PI(5) = 100/5/10
PEB = 120°C/5min (▲),
130°C/5min (×).

1. A negative-tone photoresist comprising a polymer, a crosslinking agent, and a water-soluble photoinitiator comprising a compound of Formula (I):

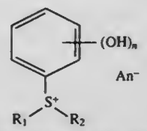
(I)



wherein R1 and R2 are independently selected from C1–C6 alkyl; n is a number from 2 to 5, and An– is an anion, wherein said photoinitiator is soluble in water.

20. A positive-tone photoresist comprising a polymer, a dissolution inhibitor, and a water-soluble photoinitiator comprising a compound of Formula (I):

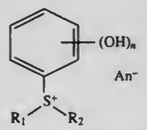
(I)



wherein R1 and R2 are independently selected from C1–C6 alkyl; n is a number from 2 to 5, and An– is an anion, wherein said photoinitiator is soluble in water.

39. A positive-tone photoresist comprising a polymer, and a water-soluble photoinitiator comprising a compound of Formula (I):

(I)



wherein R1 and R2 are independently selected from C1–C6 alkyl; n is a number from 2 to 5, and An– is an anion, wherein said photoinitiator is soluble in water.

5,648,197

OPTICAL DISK

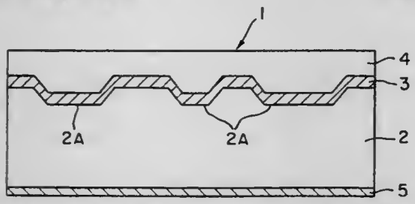
Mikiya Kuroda, Yokohama, Japan, assignor to Victor Company of Japan, LTD., Yokohama, Japan

Filed Jan. 31, 1996, Ser. No. 594,179

Claims priority, application Japan, Jan. 31, 1995, 7-034399

Int. Cl.[6] G11B *7/24*

U.S. Cl. 430—270.11 **3 Claims**



1. An optical disk for recording data thereon as optically readable pits formed thereon and for reading data from the pits by means of a reproducing laser beam, the optical disk comprising:

a substrate formed of a light transmissive material;

a reflective layer formed of a light reflective material and formed on one of the surfaces of the substrate; and

a light absorbing layer formed on the other surface of the substrate on which the reproducing laser beam is projected, the light absorbing layer containing a coloring substance exhibiting light absorption characteristics that are small for the reproducing laser beam but large for a laser beam of a specific light wavelength band shifted from the reproducing laser beam wavelength band to a longer light wavelength side.

5,648,198

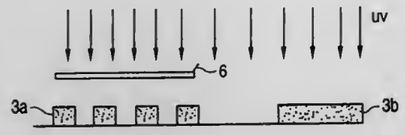
RESIST HARDENING PROCESS HAVING IMPROVED THERMAL STABILITY

Tsuyoshi Shibata, Fishkill, N.Y., assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 13, 1994, Ser. No. 354,921

Int. Cl.[6] G03C *5/00;* **G03F** *7/00*

U.S. Cl. 430—296 **30 Claims**



1. A method for patterning a layer disposed on a semiconductor substrate, said method comprising:

disposing a photoresist on the layer;

forming a pattern in the photoresist, the pattern including at least a first feature having a first width and a second feature having a second width which is greater than the first width;

irradiating the second feature with radiation and not irradiating the first feature with the radiation; and

etching the layer having the photoresist thereon to pattern the layer.

5,648,199

METHOD OF FORMING A RESIST PATTERN UTILIZING AN ACID WATER-SOLUBLE MATERIAL OVERLAYER ON THE RESIST FILM

Shinji Kishimura, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 329,748, Oct. 26, 1994, abandoned. This application Nov. 21, 1995, Ser. No. 561,598

Claims priority, application Japan, Jun. 24, 1994, 6-143131

Int. Cl.[6] G03F *7/30;7/38;7/40*

U.S. Cl. 430—311 **12 Claims**

1. A method of forming a resist pattern comprising the steps of:

forming on a semiconductor substrate a resist film which is developable with an alkali developer and which is subject to chemical change upon receiving light,

forming on said resist film an acid film of an acid water-soluble material, said acid film having a transmittance of at least 70% before and during exposure by said light when the acid film thickness is 1 μm,

providing an image-wise exposure of the light towards the resist film with said acid film therebetween,

removing said acid film,

post-exposure baking said resist film, and

developing said resist film with an alkali developer, whereby a resist pattern is formed.

5,648,200

PROCESS FOR CREATING CIRCUITRY ON THE SURFACE OF A PHOTOIMAGEABLE DIELECTRIC

Raymond Letize, West Haven, and Peter Kukanskis, Woodbury, both of Conn., assignors to MacDermid, Incorporated, Waterbury, Conn.

Continuation of Ser. No. 410,031, Mar. 22, 1995, abandoned. This application Oct. 7, 1996, Ser. No. 726,546

Int. Cl.[6] G03F *7/00*

U.S. Cl. 430—315 **14 Claims**

1. A process for the metallization of a photoimageable dielectric surface, said process comprising contacting said surface with a metallization solution having a pH in the range of 3 to 12 such that a metal film is thereby deposited upon the photoimageable dielectric surface in an adherent fashion.

5,648,201

EFFICIENT CHEMISTRY FOR SELECTIVE MODIFICATION AND METALLIZATION OF SUBSTRATES

Charles S. Dulcey, Washington, D.C.; Timothy S. Koloski; Walter J. Dressick, both of Ft. Washington, Md.; Jeffrey M. Calvert, Alexandria, and Brian M. Peek, Annandale, both of Va., assignors to The United Sates of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 691,565, May 25, 1991, abandoned, and a continuation-in-part of Ser. No. 933,147, Aug. 21, 1992, Pat. No. 5,334,696. This application Dec. 16, 1992, Ser. No. 991,680

Int. Cl.[6] G03C *5/00;1/492;* **B05D** *3/04;1/18*

U.S. Cl. 430—324 **7 Claims**

5. A process for modifying a substrate, comprising the steps of:

a) providing a substrate having benzyl halide or benzyl pseudohalide groups on at least a portion of the substrate, and

b) contacting the benzyl halide or benzyl pseudohalide functionalized substrate with a nucleophilic reagent with the general formula N-R, wherein N is a nucleophilic group and R is a group capable of imparting to the substrate a selected functionality, wherein said functional group R comprises a ligating moiety that is capable of binding an electroless metallization catalyst,

c) contacting the ligand-modified substrate with an electroless metallization catalyst, and

d) contacting the catalyzed substrate with an electroless metallization plating solution, whereby a metal film is deposited on the substrate,

wherein, prior to said step of contacting said substrate with said nucleophilic reagent, at least a portion of said substrate is exposed to sufficient actinic radiation to liberate a selected amount of halide or pseudohalide from said benzyl halide or said benzyl pseudohalide groups, to modify the reactivity of said substrate to said nucleophilic reagent, wherein said amount of actinic radiation is not more than about 100 mJ/cm^2.

5,648,202

METHOD OF FORMING A PHOTORESIST PATTERN USING AN ANTI-REFLECTIVE

Tohru Ogawa, and Tetsuo Gocho, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 175,299, Dec. 29, 1993, Pat. No. 5,472,827, which is a continuation-in-part of Ser. No. 998,743, Dec. 29, 1992, abandoned. This application Sep. 28, 1995, Ser. No. 535,965

Claims priority, application Japan, Dec. 30, 1991, 3-360521; Dec. 30, 1991, 3-360523; Mar. 11, 1992, 4-087911; Mar. 11, 1992, 4-087912; Aug. 20, 1992, 4-244314; Oct. 31, 1992, 4-316073; Dec. 29, 1992, 4-359750

Int. Cl.[6] G03C *1/825;* **G03F** *7/09*

U.S. Cl. 430—325 **12 Claims**

1. A method of forming a photoresist pattern, said method comprising the steps of:

forming a first layer;

forming an anti-reflective layer of an inorganic material composed of Si, O and N on the first layer;

forming a photoresist layer on said anti-reflective layer;

exposing said photoresist layer selectivity by a monochromatic light to form exposed and non-exposed imagewise areas; and

developing said photoresist layer after said exposing to remove some of the imagewise areas of the photoresist layer to uncover portions of the anti-reflective layer,

wherein said anti-reflective layer is formed to minimize standing wave effect in said photoresist layer.

5,648,203

Patent Not Issued For This Number

5,648,204

Patent Not Issued For This Number

5,648,205

PROCESSING METHOD FOR SILVER HALIDE PHOTOGRAPHIC MATERIAL

Eiichi Okutsu, Minami Ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 540,308, Oct. 6, 1995, abandoned. This application Jun. 5, 1996, Ser. No. 659,245

Claims priority, application Japan, Oct. 13, 1994, 6-247937

Int. Cl.[6] G03C *5/305*

U.S. Cl. 430—440 **18 Claims**

1. A processing method for a silver halide photographic material which comprises developing an exposed silver halide photographic material with a developing solution comprising:

(a) an ascorbic acid developing agent,

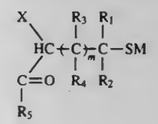
(b) an auxiliary developing agent exhibiting superadditivity,

(c) an alkali agent necessary to maintain the pH from 9.2 to 9.8,

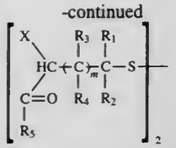
(d) a carbonate in a concentration from 0.30 mol/liter to 0.60 mol/liter, and

(e) a compound represented by formula (I) or (II):

(I)



-continued



(II)

wherein R_1 and R_2 each represents a hydrogen atom, an alkyl group having from 1 to 3 carbon atoms or a phenyl group; R_3 and R_4 each represent a hydrogen atom or an alkyl group having from 1 to 3 carbon atoms; m represents 0, 1 or 2; R_5 represents a hydroxyl group, an amino group or an alkyl group having from 1 to 3 carbon atoms; M represents a hydrogen atom, an alkali metal atom or an ammonium group; and X represents a hydrogen atom, an alkyl group having from 1 to 3 carbon atoms, a sulfonyl group, an amino group, an acylamino group, a dimethylamino group, an alkylsulfonylamino group or an arylsulfonylamino group, said compound represented by formula (I) or (II) being present in a concentration of from 0.01 mmol to 50 mmol per liter of the developing solution;

wherein the composition of the developing solution is maintained by feeding the developing solution with a replenisher for the developing solution at a replenishment rate of 50 to 250 ml per m^2 of the photographic material.

5,648,206

LYOPHILIZATION OF CELLS

Raymond P. Goodrich, Jr., and Christine M. Williams, both of Pasadena, Calif., assignors to Cobe Laboratories, Inc., Lakewood, Colo.

Division of Ser. No. 708,147, May 31, 1991, Pat. No. 5,425,951, which is a division of Ser. No. 378,349, Jul. 11, 1989, Pat. No. 5,045,446, which is a continuation-in-part of Ser. No. 237,583, Aug. 25, 1988, abandoned. This application Mar. 29, 1995, Ser. No. 412,305

The portion of the term of this patent subsequent to Jul. 31, 2010, has been disclaimed.

Int. Cl.[6] A01N *1/02;* **C12N** *5/00*

U.S. Cl. 435—2 **7 Claims**

1. A medium for the lyophilization of cells, comprising:

a monosaccharide which is present in the solution in a concentration of from about 7.0 to 37.5%, and

a polymer having a molecular weight of from about 1K to about 360K which is present in a concentration of from about 0.7%.

5,648,207

Patent Not Issued For This Number

5,648,208

USE OF A COLLAGEN AS SOLID BINDING SUBSTRATE FOR A LIGAND CAPABLE OF REACTING SPECIFICALLY WITH AN ELEMENT TO BE DETECTED IN A BIOLOGICAL MEDIUM, REACTANT AND IMPLEMENTATION

Jean Fourcart, Fimes; Chantal Buffevant, Vernaison, and Alain Huc, Ste. Foy Les Lyon, all of France, assignors to Coletica, Lyon, France

Continuation of Ser. No. 182,099, Mar. 15, 1994, abandoned. This application May 3, 1995, Ser. No. 433,805

Claims priority, application France, Aug. 1, 1991, 91 09819

Int. Cl.[6] C12Q *1/70*

U.S. Cl. 435—5 **37 Claims**

1. A method of detecting the presence or absence of a substance in a biological medium comprising the steps of:

providing a solid binding substrate in particulate form having at least an external surface comprising a crosslinked collagen component selected from the group consisting of crosslinked collagen, crosslinked atelocollagen, and a crosslinked mixture of atelocollagen and a polyholoside,

covalently binding to said crosslinked collagen component a ligand specifically reacting with said substance in the biological medium,

contacting said solid binding substrate with said ligand covalently bound to said crosslinked collagen component, with said biological medium to form a specific complex when said substance is present in said biological medium, and

detecting the presence or absence of said specific complex.

5,648,209

SPECIFIC PEPTIDE FRAGMENT OF THE FELINE IMMUNODEFICIENCY VIRUS (FIV), AND ITS USE AS A DIAGNOSTIC REAGENT

Alexandre Avrameas, Vitry-Sur-Seine; Gianfranco Pancino, Paris; Pierre Sibille, La Varenne; Pierre Sonigo, and Arthur Donny Strosberg, both of Paris, all of France, assignors to Centre National de la Recherche Scientifique-CNRS, Paris Cedex, France

Filed Jun. 7, 1995, Ser. No. 487,485

Claims priority, application France, Jun. 9, 1994, 94 07062

Int. Cl.[6] C12Q *1/70*

U.S. Cl. 435—5 **4 Claims**

1. A peptide derived from feline immunodeficiency virus strain Wo (FIV_{wo}) envelope protein, amino acids 693–703, said peptide having the sequence

Leu-Gly-Cys-Asn-Gln-Asn-Gln-Phe-Phe-Cys-Lys-Val-Pro-Ser-Ala (SEQ ID NO:1).

5,648,210

NUCLEOTIDE SEQUENCES OF GALACTINOL SYNTHASE FROM ZUCCHINI AND SOYBEAN

Phillip S. Kerr; Richard W. Pearlstein, both of Newark; Bruce J. Schweiger, Wilmington, all of Del.; Mary F. Becker-Manley, Beacon, N.Y., and John W. Pierce, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

PCT No. PCT/US92/06057, § 371 Date Aug. 23, 1994, § 102(e) Date Aug. 23, 1994, PCT Pub. No. WO93/02196, PCT Pub. Date Feb. 4, 1993

PCT Filed Jul. 24, 1992, Ser. No. 182,060

Int. Cl.[6] C12Q *1/68;* **C07H** *21/02;21/04;* **C12P** *19/34*

U.S. Cl. 435—6 **7 Claims**

1. An isolated nucleic acid fragment consisting of

a nucleotide sequence that encodes the polypeptide sequence set forth in SEQ ID NO: 5 or SEQ ID NO: 6, said polypeptide sequence encoding a plant galactinol synthase.

5,648,211

STRAND DISPLACEMENT AMPLIFICATION USING THERMOPHILIC ENZYMES

Melinda S. Fraiser, Durham; Catherine A. Spargo, Cary; George Terrance Walker, Chapel Hill, all of N.C.; Mark Van Cleve, San Jose, Calif.; David James Wright, Chapel Hill, N.C., and Michael C. Little, Baltimore, Md., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Apr. 18, 1994, Ser. No. 229,279

Int. Cl.[6] C12Q *1/68;* **C12P** *19/34*

U.S. Cl. 435—6 **18 Claims**

1. A method for amplifying a target sequence comprising:

A) providing a single stranded nucleic acid fragment containing the target sequence, the fragment having a 5' end and a 3' end;

B) binding an amplification primer for SDA to the 3' end of the fragment such that the primer forms a 5' single stranded overhang, the amplification primer comprising a recognition/cleavage site for a thermophilic restriction endonuclease which does not cut the target nucleic acid sequence, and;

C) amplifying the target sequence at 50° C.–60° C. in a reaction comprising the steps of

i) extending the amplification primer on the fragment in the presence of

a) a thermophilic DNA polymerase having a temperature optimum for polymerizing activity of 65° C.–75° C., the polymerase having strand displacing activity and lacking 5'-3' exonuclease activity,

b) deoxynucleoside triphosphates,

c) at least one derivatized deoxynucleoside triphosphate, and

d) a thermophilic restriction endonuclease which nicks the recognition/cleavage site when the site is hemimodified by incorporation of the derivatized deoxynucleoside triphosphate, the endonuclease having a temperature optimum for cleavage of double-stranded DNA of 50° C.–65° C.,

thereby producing a first double stranded product comprising the amplification primer, a first newly synthesized strand complementary to the target sequence, and a double stranded hemimodified restriction endonuclease recognition/cleavage site;

ii) nicking the double stranded hemimodified restriction endonuclease recognition/cleavage site with the restriction endonuclease;

iii) extending from the nick using the DNA polymerase, thereby displacing the first newly synthesized strand from the fragment and generating a second extension product comprising a second newly synthesized strand, and;

iv) repeating the nicking, extending and displacing steps such that the target sequence is amplified.

5,648,212

DETECTION OF INHERITED AND SOMATIC MUTATIONS OF APC GENE IN COLORECTAL CANCER OF HUMANS

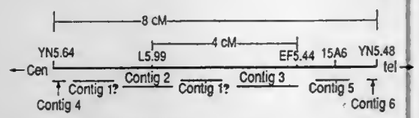
Hans Albertsen, Salt Lake City, Utah; Rakesh Anand, Cheshire, England; Mary Carlson; Joanna Groden, both of Salt Lake City, Utah; Philip John Hedge, Cheshire, England; Geoff Joslyn, Salt Lake City, Utah; Kenneth Kinzler, Baltimore, Md.; Alexander Markham, Cheshire, England; Yusuke Nakamura, Tokyo, Japan; Andrew Thliveris, Salt Lake City, Utah; Bert Vogelstein, Baltimore, Md., and Raymond L. White, Salt Lake City, Utah, assignors to The John Hopkins University, Baltimore, Md.; University of Utah, Salt Lake City, Utah; Japanese Foundation for Cancer Research Cancer Institute, Tokyo, Japan, and Zeneca Limited, Cheshire, England

Division of Ser. No. 741,940, Aug. 8, 1991, Pat. No. 5,352,775. This application Aug. 12, 1994, Ser. No. 289,548

Claims priority, application United Kingdom, Jan. 16, 1991, 9100962; Jan. 16, 1991, 9100963; Jan. 16, 1991, 9100974; Jan. 16, 1991, 9100975

Int. Cl.[6] C07H *21/04;21/02;* **C12P** *19/34;* **C12Q** *1/68*

U.S. Cl. 435—6 **36 Claims**



1. A method of diagnosing or prognosing an APC-gene associated neoplastic tissue of a human, comprising:

comparing (1) APC gene coding sequences or APC mRNA in a tumor tissue isolated from a human, to (2) APC gene coding sequences or APC mRNA in a non-neoplastic tissue of the human; a difference in the APC gene coding sequences or APC mRNA between the two tissues indicating an APC-gene associated neoplasia of the tumor tissue.

5,648,213

COMPOSITIONS AND METHODS FOR USE IN DETECTION OF ANALYTES

M. Parameswara Reddy, Brea, and James C. Sternberg, Fullerton, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Aug. 30, 1994, Ser. No. 298,523

Int. Cl.[6] C12Q *1/68;* **G01N** *33/53;33/574;* **C07H** *21/02*

U.S. Cl. 435—6 **25 Claims**

2. A method for determining concentration of an analyte, comprising:

(a) providing a solution of a first immunoreagent for the analyte comprising a first immunoreactant which binds to the analyte and a first oligonucleotide sequence attached to the first immunoreactant, and a second immunoreagent for the analyte comprising a second immunoreactant which binds to the analyte and a label attached to the second immunoreagent;

(b) bringing the analyte in contact with the solution thereby forming an immunoconjugate;

(c) contacting the solution with a solid support to which is bound a second oligonucleotide sequence complementary to the first oligonucleotide sequence under conditions suitable for hybridization of the first and the second oligonucleotide sequences, thereby forming duplexes; and

(d) determining the concentration of label contained in the duplexes, to provide the concentration of analyte.

5,648,214

HIGH-AFFINITY OLIGONUCLEOTIDE LIGANDS TO THE TACHYKININ SUBSTANCE P

Dan T. Nieuwlandt; Larry Gold, and Matthew Wecker, all of Boulder, Colo., assignors to University Research Corporation, Boulder, Colo.

Continuation-in-part of Ser. No. 714,131, Jun. 10, 1991, Pat. No. 5,475,096, Ser. No. 931,473, Aug. 17, 1992, Pat. No. 5,270,163, Ser. No. 964,624, Oct. 21, 1992, Pat. No. 5,496,938, and Ser. No. 117,911, Sep. 8, 1993, abandoned, said Ser. No. 714,131is a continuation-in-part of Ser. No. 536,428, Jun. 11, 1990, abandoned. This application Sep. 9, 1994, Ser. No. 303,362

Int. Cl.[6] C12Q *1/68;* **C12P** *19/34*

U.S. Cl. 435—6 **9 Claims**

1. A method of identifying nucleic acid ligands to Substance P (SP), comprising:

a) preparing a candidate mixture of nucleic acids;

b) contacting said candidate mixture of nucleic acids with SP, wherein nucleic acids having an increased affinity to SP relative to the candidate mixture may be partitioned from the remainder of the candidate mixture;

c) partitioning the increased affinity nucleic acids from the remainder of the candidate mixture; and

d) amplifying the increased affinity nucleic acids to yield a mixture of nucleic acids enriched for nucleic acids with said increased affinity to SP, whereby nucleic acid ligands of SP may be identified.

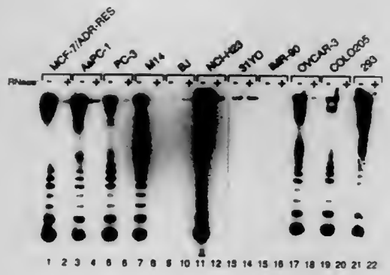
5,648,215
TELOMERASE DIAGNOSTIC METHODS

Michael D. West, San Carlos, Calif.; Jerry Shay, Dallas, and Woodring E. Wright, Arlington, both of Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Continuation-in-part of Ser. No. 255,774, Jun. 7, 1994, which is a continuation-in-part of Ser. No. 151,477, Nov. 12, 1993, and Ser. No. 153,051, Nov. 12, 1993, each which is a continuation-in-part of Ser. No. 60,952, May 13, 1993, which is a continuation-in-part of Ser. No. 38,766, Mar. 24, 1993, Pat. No. 5,489,508, which is a continuation-in-part of Ser. No. 882,438, May 13, 1992, abandoned. This application Sep. 28, 1994, Ser. No. 315,216

Int. Cl.[6] C12Q *1/68;* C12P *19/34*

U.S. Cl. 435—6 12 Claims



1. A method for detecting whether a human breast, prostate, colon, or lung tissue sample contains cancerous cells, said method comprising

(a) preparing a cell extract from said tissue sample;

(b) incubating an aliquot of said cell extract in a reaction mixture comprising a telomerase substrate and a buffer in which telomerase can catalyze the extension of said telomerase substrate;

(c) determining whether said telomerase substrate has been extended in step (b) by addition of telomeric repeat sequences; and

(d) correlating presence of cancerous cells in said sample with the addition of telomeric repeat sequences to said telomerase substrate and absence of cancerous cells in said sample with no addition of telomeric repeat sequences to said telomerase substrate.

5,648,216
METHOD FOR IDENTIFYING CANINE CHROMOSOMES

Bennett Hershfield, Ithaca, N.Y., and Daniel Goldowitz, Memphis, Tenn., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Mar. 27, 1995, Ser. No. 410,977

Int. Cl.[6] C12Q *1/68;* C07H *21/04*

U.S. Cl. 435—6 21 Claims

1. An isolated oligonucleotide consisting of SEQ ID NO:1 or a sequence fully complementary to SEQ ID NO:1.

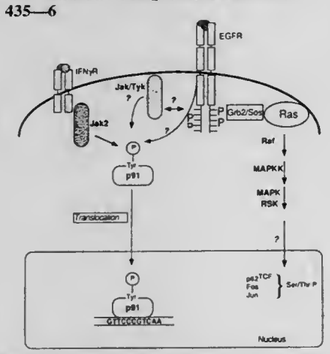
5,648,217
DNA SEQUENCE WHICH BINDS TRANSCRIPTIONAL REGULATORY PROTEINS ACTIVATED IN RESPONSE TO VARIOUS CYTOKINES AND USES THEREOF

David E. Levy, New York, N.Y., assignor to New York University, New York, N.Y.

Division of Ser. No. 394,191, Feb. 24, 1995, which is a continuation of Ser. No. 121,931, Sep. 15, 1993, abandoned. This application Jun. 2, 1995, Ser. No. 458,364

Int. Cl.[6] C12Q *1/68;* G01N *33/53*

U.S. Cl. 435—6 3 Claims



1. A method for detecting the presence in a sample of a transcriptional regulatory protein which binds to an oligonucleotide or to a molecule to which said oligonucleotide is bound, which oligonucleotide

i) has between 11 and about 150 nucleotides,

ii) binds to transcriptional regulatory protein p91 or to a protein to which p91 is bound, and

iii) comprises the nucleotide sequence TTTCCNGGAAA (SEQ ID NO:1), which method comprises:

(a) contacting said sample with said oligonucleotide under conditions wherein said protein binds to said oligonucleotide to form a complex; and

(b) detecting the presence of said protein-oligonucleotide complex,

wherein the presence of said complex indicates the presence of said protein in said sample.

5,648,218
PREPARATION OF PHOTOPROTEIN CONJUGATES AND METHODS OF USE THEREOF

Nancy L. Stults, Duluth, Ga., assignor to SeaLite Sciences, Inc., Norcross, Ga.

Continuation-in-part of Ser. No. 293,648, Aug. 22, 1994, Pat. No. 5,486,455, which is a continuation of Ser. No. 117,116, Aug. 13, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 465,791

Int. Cl.[6] C12Q *1/68;1/70;* G01N *33/53;* C07H *21/04*

U.S. Cl. 435—6 26 Claims

1. A photoprotein-binding reagent conjugate composition comprising a sulfhydryl-activated photoprotein coupled to a maleimide activated binding reagent, said conjugate composition capable of emitting light.

5,648,219
IMMORTALIZED DENDRITIC CELLS

Vivian L. MacKay, and Emma E. Moore, both of Seattle, Wash., assignors to ZymoGenetics, Inc., Seattle, Wash.

Filed Jun. 7, 1995, Ser. No. 479,882

Int. Cl.[6] C12Q *1/68;1/02;* C12N *5/02;15/12*

U.S. Cl. 435—6 15 Claims

4. A method for in vitro assay of antigen-specific responder cell stimulation comprising:

activating JAWS II dendritic cells (ATCC # CRL-11904);

exposing said activated JAWS II dendritic cells to an exogenous antigen, thereby producing antigen-presenting stimulator cells;

inhibiting proliferation of said antigen-presenting stimulator cells by exposure to γ irradiation or to mitomycin C;

combining said antigen-presenting stimulator cells with responder cells; and

measuring activation of the responder cells.

5,648,220
METHODS FOR LABELING INTRACYTOPLASMIC MOLECULES

Diana W. Bianchi, Brookline, and Mary Ann DeMaria, Uxbridge, both of Mass., assignors to New England Medical Center Hospitals, Inc., Boston, Mass.

Filed Feb. 14, 1995, Ser. No. 388,533

Int. Cl.[6] C12N *5/00;* G01N *33/53*

U.S. Cl. 435—7.1 9 Claims

1. A method for isolating a fetal erythroid cell in suspension from a blood sample of a pregnant female, said fetal erythroid cell containing an intracytoplasmic target molecule, said method comprising the steps of:

(a) permeabilizing plasma membrane of said fetal erythroid cell such that (i) a directly or indirectly labeled reagent capable of specifically binding to said intracytoplasmic target molecule can traverse said plasma membrane into the cytoplasm of said fetal erythroid cell, and (ii) substantially all of said intracytoplasmic target molecule and DNA of said fetal erythroid cell remain in said fetal erythroid cell;

(b) contacting said permeabilized fetal erythroid cell with said directly or indirectly labeled reagent; and

(c) isolating said fetal erythroid cell from said blood sample on the basis of detecting said label.

5,648,221
OPTICAL INSPECTION METHOD

Takayuki Suga, Tsukuba, Japan, assignor to Nikon Corporation, Japan

Filed Jun. 14, 1994, Ser. No. 259,770

Claims priority, application Japan, Jun. 14, 1993, 5-141708; Jun. 14, 1993, 5-141709; Jun. 14, 1993, 5-141710

Int. Cl.[6] G01N *33/53;33/569*

U.S. Cl. 435—7.21 19 Claims

1. A method for optically determining the presence or absence of an antigen-antibody reaction comprising:

a first step of mixing an object having an antigen with a photosensitive material that binds to said object;

a second step of mixing a mixture obtained in said first step with an antibody that specifically binds to said antigen; and

a third step of applying an excitation light to a specimen obtained in said second step to emit a photon echo and examining the photon echo to determine the presence or absence of said antigen-antibody reaction.

5,648,222
METHOD FOR PRESERVING CELLS, AND USES OF SAID METHOD

Doris B. Tse, Riverdale, N.Y.; Hui-Min Chung, and Leonardus H. T. Van der Ploeg, both of Scotch Plains, N.J., assignors to The Trustees of Columbia University in the City of New York, New York, N.Y.

Filed Jul. 27, 1994, Ser. No. 281,460

Int. Cl.[6] G01N *33/574*

U.S. Cl. 435—7.23 13 Claims

1. A method for fixing cells which comprises the steps of

(a) suspending the cells while viable in a physiologically-acceptable, isotonic medium; and

(b) contacting the cells so suspended with an amount of a fixative effective to fix the cells at a temperature of from about 0° C. to less than about 10° C. and under sufficiently hypertonic conditions so as to disperse the cells in a single, unagglutinated state; thereby fixing the cells.

2. A method for detecting the presence or amount of preselected cells in a sample wherein the preselected cells specifically possess on their surfaces a moiety recognized by a detectable known ligand which comprises the steps of

(a) separating any cells in the sample;

(b) contacting the cells so separated with the detectable known ligand under conditions which permit the detectable known ligand to specifically form a complex with the moiety recognized thereby, so as to label any cells possessing the moiety on their surfaces if present in the sample with the detectable known ligand;

(c) removing any remaining uncomplexed detectable known ligand;

(d) fixing the resulting cells according to the method of claim 1 so as to thereby fix the cells labeled in step (b); and

(e) detecting the presence of the labelled cells fixed in step (d) by detecting the detectable known ligand so as to thereby detect the presence or amount of the preselected cells in the sample which specifically possess on their surfaces the moiety recognized by the detectable known ligand.

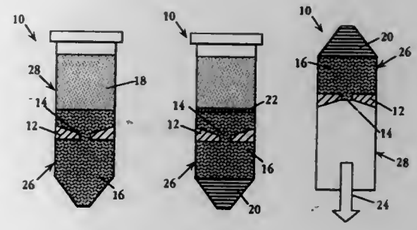
5,648,223
METHODS FOR ENRICHING BREAST TUMOR CELLS

Peter Van Vlasselaer, Sunnyvale, Calif., assignor to Activated Cell Therapy, Inc., Mountain View, Calif.

Filed Aug. 31, 1994, Ser. No. 299,465

Int. Cl.[6] G01N *33/574;* B01L *11/00*

U.S. Cl. 435—7.23 18 Claims



1. A method of enriching breast tumor cells from a cell mixture, comprising:

layering a cell mixture containing the breast tumor cells onto a gradient density solution contained in a centrifuge tube;

said tube having a first closed end defining an inner bottom wall and an opposite open end, an annular member disposed in said tube and defining an opening therethrough, wherein said opening has an area less than the area of a cross section of said tube, said annular member defining a lower portion of the tube extending between said member and said tube bottom wall and an upper portion above said annular member said tube containing a density gradient solution which fills said lower portion and a part of said upper portion to a level above said annular member prior to centrifugation, of said tube;

said density gradient solution having an osmolality of 280±10 mOsm and a specific density within 0.0005 gr/ml of the specific density of said breast tumor cells;

centrifuging said tube at a gravitational force sufficient to pellet cells having specific densities greater than the specific density of the density gradient material in said tube; and

collecting from the upper portion of said tube an enriched population of breast tumor cells.

5,648,224

METHOD OF DETERMINING THE RISK OF BREAST CANCER DEVELOPMENT

Darrow E. Haagensen, Jr., 8120 Timberlake Way, Sacramento, Calif. 95823

Filed Aug. 15, 1995, Ser. No. 515,146

Int. Cl.[6] G01N *33/53;33/574*

U.S. Cl. 435—7.23 **10 Claims**

1. A method of determining the risk of breast cancer development in a subject with active breast gross cystic disease having between one and nine cysts, comprising determining the level of GCDFP-15 in the plasma of said subject at the time of aspirating said cysts, an increased level of GCDFP-15 in the plasma indicating an increased risk of breast cancer development in said subject.

5,648,225

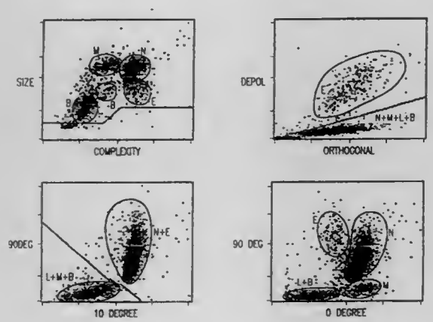
METHOD OF USING A MULTI-PURPOSE REAGENT FOR SUBCLASSIFICATION OF NUCLEATED BLOOD CELLS

Young Ran Kim, Sunnyvale; Johanna Kantor, Palo Alto; James E. Gill, Mountain View, and Sue E. Luptovic, San Jose, all of Calif., assignors to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 23,042, Feb. 25, 1993, abandoned. This application Aug. 25, 1994, Ser. No. 296,379

Int. Cl.[6] G01N *33/49*

U.S. Cl. 435—7.24 **10 Claims**



1. A method for the rapid analysis of nucleated peripheral blood cells from a whole blood comprising the steps of:

forming a mixture by mixing whole blood and a multi-purpose reagent system in the ratio of about 1 part to a range of from about 16 to about 100 parts, wherein said reagent system is suitable for the automated, multi-part differentiation of white blood cells (WBC), WBC immunophenotyping and the detection of nucleated red blood cells, said multipurpose reagent system concurrently lysing red blood cells and fixing white blood cells in a whole blood sample while preserving WBC membranes and surface antigens, said reagent system comprises from about 3 to about 7 gm/L of a non-quaternary ammonium salt, from about 0.04 to about 0.1 percent by volume of a C_1-C_4 aliphatic aldehyde, from about 10 to about 20 mM of a non-phosphate buffer, said non-phosphate buffer being characterized as substantially inert to said aliphatic aldehyde, and water, such that said multi-purpose reagent system is maintained at a pH between about 5.5 to about 7.5 and an osmolality between about 160 to about 310 mOsm per liter;

incubating the mixture at temperatures from about 25° C. to about 46° C. for at least about 10 seconds; and

determining the nucleated peripheral blood cells with an automated electro-optical hematology instrumentation.

5,648,226

ISOLATED PEPTIDES DERIVED FROM TUMOR REJECTION ANTIGENS, AND THEIR USE

Benoit Van den Eynde; Olivier DeBacker, and Thierry Boon-Falleur, all of Brussels, Belgium, assignors to Ludwig Institute for Cancer Research, New York, N.Y.

Continuation-in-part of Ser. No. 250,162, May 27, 1994, which is a continuation-in-part of Ser. No. 96,039, Jul. 22, 1993, abandoned. This application Jan. 10, 1995, Ser. No. 370,648

Int. Cl.[6] G01N *33/574;* **C07K** *14/82;7/00*

U.S. Cl. 435—7.24 **6 Claims**

1. An isolated peptide consisting of from 8 to 16 amino acids and containing SEQ ID NO: 4.

5,648,227

METHOD OF DETECTING MICROORGANISMS

Ole Basbøll, Birkerød, Denmark, assignor to Amdex A/S, Copenhagen, Denmark

PCT No. PCT/DK93/00112, § 371 Date Oct. 14, 1994, § 102(e) Date Oct. 14, 1994, PCT Pub. No. WO93/19372, PCT Pub. Date Sep. 30, 1993

PCT Filed Mar. 25, 1993, Ser. No. 302,828

Claims priority, application Denmark, Mar. 25, 1992, 0395/92

Int. Cl.[6] G01N *33/569;* **C07K** *16/12*

U.S. Cl. 435—7.32 **14 Claims**

1. A method of detecting the presence or absence of a viable microorganism in a sample which has been subjected to a process using an antibody which specifically recognizes and binds viable microorganisms, comprising the steps of: contacting the sample with an antibody which specifically recognizes and binds an indicator epitope found only on a surface of an intact viable microorganism and does not bind dead but intact organisms killed by said process, and subsequently optionally eluting the captured microorganism and/or detecting or identifying said microorganism.

7. A method according to claim 1, wherein said process is heat treatment and the indicator epitope is a heat labile epitope found on the surface of viable Listeria cells.

5,648,228

MEASURING ACTIVITY TOWARD PRODUCTION OF ACTIVATED BLOOD COAGULATION FACTOR XII, PLASMA KALLIKREIN OR BRADYKININ USING RECONSTITUTED KALLIKREIN-KININ SYSTEM

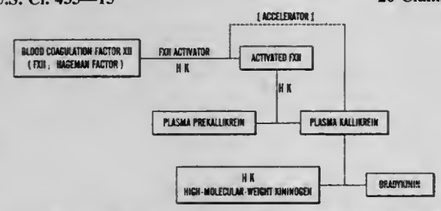
Katsumi Nishikawa, and Hitoshi Kawakubo, both of Katohgun, Japan, assignors to Nippon Zoki Pharmaceutical Co., Ltd., Osaka, Japan

Filed Aug. 4, 1994, Ser. No. 284,972

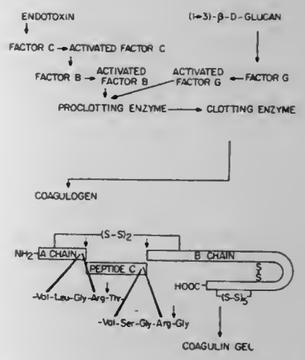
Claims priority, application Japan, Aug. 6, 1993, 5-215178

Int. Cl.[6] C12Q *1/56;* **G01N** *33/86*

U.S. Cl. 435—13 **20 Claims**



1. A method of measuring the activity of a test substance toward the production of blood coagulation factor XII in at active form, plasma kallikrein or bradykinin comprising initiating a series of enzymatic reactions wherein activation of a blood coagulation factor XII which is in an inactive form is an initiating reaction, the series of reactions being initiated in the presence of the test substance in a reconstituted plasma kallikrein-kinin system wherein α_2 macroglobulin, C-1 inhibitor, and kininase are substantially absent, said reconstituted plasma kallikrein-kinin system consisting essentially of: (a) a blood coagulation factor XII which is in an inactive form, (b) plasma prekallikrein, and (c) a high molecular weight:kininogen, then stopping said series of reactions, and quantitatively determining the a mount of blood coagulation factor XII in an active form, plasma kallikrein or bradykinin produced in said series of enzymatic reactions as a measure of the activity of the test substance.



5,648,229

FLUOROGENIC COMPOUNDS AND THEIR USE

Klaus Habenstein, Wetter, Germany, assignor to Behringwerke Aktiengesellschaft, Marburg, Germany

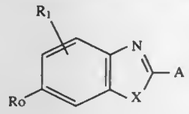
Division of Ser. No. 526,001, May 21, 1990, Pat. No. 5,585,247. This application Jun. 6, 1995, Ser. No. 466,018

Claims priority, application Germany, May 23, 1989, 39 16 729.1

Int. Cl.[6] C12Q *1/34;* **C07D** *275/04*

U.S. Cl. 435—18 **14 Claims**

1. A fluorogenic compound of the formula (I)



(I)

in which

X is S;

R is a radical which can be split off by enzymatically catalyzed hydrolysis;

R_1 is H, C_1- to C_4-alkyl, unsubstituted phenyl, or phenyl which is substituted by 1 to 3 $—CH_3$; and

A is —CN or $—CF_3$, or is an unsubstituted phenyl or naphthyl radical or a phenyl or naphthyl radical substituted by 1 to 3 electronegative groups, or is phenyl substituted by 1 to 3 radicals selected from the group consisting of —CN, $—CF_3$, thiazole and benzothiazole radicals or is an unsubstituted thiazole, oxazole, benzothiazole or benzoxazole radical or a thiazole, oxazole, benzothiazole or benzoxazole radical substituted by 1 to 3 electronegative groups;

said fluorogenic compound being fluorescent after R is split off by enzymatically catalyzed hydrolysis.

5,648,230

ENDOTOXIN STABILIZING AGENT, ENDOTOXIN COMPOSITION AND METHOD FOR ASSAYING ENDOTOXIN

Hiroshi Tamura; Shigenori Tanaka; Jun Aketagawa, and Toshio Oda, all of Tokyo, Japan, assignors to Seikagaku Kogyo Kabushiki Kaisha (Seikagaku Corporation), Tokyo, Japan

Filed Jun. 7, 1995, Ser. No. 474,722

Claims priority, application Japan, Jun. 30, 1994, 6-150190

Int. Cl.[6] C12Q *1/34*

U.S. Cl. 435—18 **11 Claims**

1. An endotoxin stabilizing agent comprising at least one substance selected from the group consisting of aminoalcohols, polyhydric alcohols, nonionic surfactants, polysucroses and chelating agents as an effective ingredient.

5,648,231

MEASUREMENT OF MOLD GROWTH ON AMORPHOUS SUBSTRATES

Bruce Dexter King, Troy, Ill., assignor to Ducoa, L.P., Highland, Ill.

Continuation of Ser. No. 891,337, May 29, 1992, abandoned. This application Feb. 7, 1995, Ser. No. 385,399

Int. Cl.[6] C12Q *1/02;1/18;* **G01N** *33/53;* **C12M** *1/00*

U.S. Cl. 435—34 **19 Claims**

1. A method for determining mold growth on feed, the method comprising:

(1) placing into a closed container a sample of feed containing mold spore, the sample having a moisture content that will support the growth of mold on the sample;

(2) maintaining a substantially constant temperature and a substantially constant relative humidity that will support rapid mold growth in the container, wherein a uniform moisture content is maintained throughout the sample;

(3) periodically refreshing the atmosphere in the container so that concentrations of oxygen and concentrations of carbon dioxide that would impede mold growth are avoided;

(4) periodically withdrawing air from the container and measuring the concentration of at least one metabolic gas, the metabolic gas selected from the group consisting of oxygen and carbon dioxide;

(5) determining from successive measurements a concentration change of at least one metabolic gas in the container; and

(6) correlating the concentration change with the rate of mold growth.

5,648,232

MICROBIOLOGICAL BEST METHOD AND REAGENTS

David James Squirrell, Wiltshire, United Kingdom, assignor to The Secretary of State for Defence in her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, England

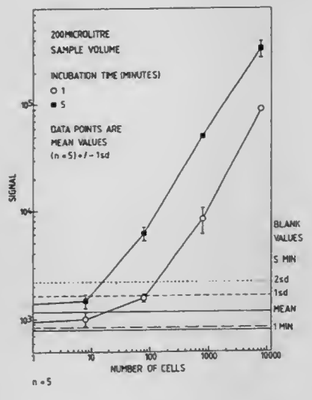
Continuation of Ser. No. 407,889, Mar. 21, 1995, abandoned. This application Apr. 18, 1996, Ser. No. 634,222

Claims priority, application United Kingdom, Jan. 21, 1993, 9301118

Int. Cl.[6] C12Q *1/02;1/66;1/48*

U.S. Cl. 435—34 **45 Claims**

1. A method for determining the presence and/or amount of microorganisms and/of their intracellular material present in a sample wherein the amount of adenylate kinase in the sample is estimated by mixing the sample with adenosine diphosphate (ADP), determining the amount of adenosine triphosphate (ATP)



produced by the sample from this ADP, and relating the amount of ATP so produced to the presence/or amount of microorganisms and/or their intracellular material.

5,648,233

MODIFIED TUMOR CYTOTOXIC FACTOR (TCF) AND DNA ENCODING SUCH

Kyoji Yamaguchi, Oomiya; Nobuyuki Shima, Oyama; Akihiko Murakami, Tochigi; Masaaki Goto, Tochigi; Eisuke Tsuda, Tochigi; Hiroaki Masunaga, Tochigi; Reiko Takahira, Tochigi; Fumiko Oogaki, Utsunomiya; Masatsugu Ueda, and Kanji Higashio, both of Kawagoe, all of Japan, assignors to Snow Brand Milk Products Co., Ltd., Japan

PCT No. PCT/JP93/01905, § 371 Date Sep. 29, 1994, § 102(e) Date Sep. 29, 1994, PCT Pub. No. WO94/14845, PCT Pub. Date Jul. 7, 1994

PCT Filed Dec. 27, 1993, Ser. No. 290,937

Claims priority, application Japan, Dec. 28, 1992, 4-359747

Int. Cl.[6] C12P *21/06;* **C12N** *1/20;* **C07K** *1/00*

U.S. Cl. 435—69.1 **11 Claims**

9. A DNA sequence encoding modified TCF having a deletion of one or more oligosaccharide chains, said DNA sequence comprising a nucleic acid sequence encoding an amino acid sequence wherein at least one of the amino acid residues responsible for binding N-linked oligosaccharide chains is modified such that at least one of the N-linked oligosaccharide chains is prevented from binding to the modified TCF, wherein the amino acid residues responsible for binding the N-linked oligosaccharide chains are selected from the group consisting of asparagine, threonine and serine.

5,648,234

EXPRESSION VECTOR FOR PHYTOLACCA ANTIVIRAL PROTEIN

Young-Ho Moon, Kyunggi-do; Hong-Seob Jeon, Seoul; Kyu-Whan Choi, Seoul; Kwan-Ho Lee, Seoul, and Man-Keun Kim, Seoul, all of Rep. of Korea, assignors to Jinro Limited, Seoul, Rep. of Korea

Continuation of Ser. No. 147,024, Nov. 1, 1993, abandoned. This application Nov. 21, 1994, Ser. No. 342,786

Claims priority, application Rep. of Korea, Jul. 2, 1993, 93-12

Int. Cl.[6] C12N *15/29;1/20;15/63*

U.S. Cl. 435—69.1 **3 Claims**

1. A recombinant expression vector designated pMJ12 which directs the expression of Phytolacca antiviral protein in microorganisms.

5,648,235

METHOD AND MEANS FOR THE PRODUCTION OF GENE PRODUCTS, NOVEL RECOMBINANT DNA VECTORS THEREFOR AND KITS EMPLOYING THEM

Daniel Zurr, Herzliya; Zehava Grossman, Rehovot, and Yaron Nophar, Ramat-gan, all of Israel, assignors to Q.B.1. Enterprises Ltd., Omer, Israel

Continuation-in-part of Ser. No. 84,893, Jun. 29, 1993, abandoned. This application Mar. 8, 1995, Ser. No. 399,580

Claims priority, application Israel, Jul. 3, 1992, 102404

Int. Cl.[6] C12P *21/06;* **C12N** *15/63;5/06;* **C07H** *21/04*

U.S. Cl. 435—69.1 **45 Claims**

23. A method for the extracellular production of a gene product, comprising the steps of:

a) preparing a medium containing a recombinant nucleotide vector or vector system comprising:

(i) a gene encoding a translation initiation factor (TIF) of a eukaryotic translation factor (ETF), preceded by a promoter, wherein the promoter is a weak eukaryotic promoter, wherein the weak eukaryotic promoter is Mini TK or insulin promoter; and

(ii) at least one internal ribosome entry site (IRES) region, followed by a cloning site into which at least one gene encoding a polypeptide to be produced can be inserted, wherein (i) and (ii) may occur on the same or separate vectors;

b) providing in the medium substrates, ribosomes and promotors required for effecting translation;

c) keeping the medium under conditions suitable to promote gene expression; and

d) recovering the desired gene product from the said medium.

5,648,236

Patent Not Issued For This Number

5,648,237

EXPRESSION OF FUNCTIONAL ANTIBODY FRAGMENTS

Paul J. Carter, San Francisco, Calif., assignor to Genentech, Inc., South San Francisco, Calif.

Division of Ser. No. 291,323, Aug. 16, 1994, abandoned, which is a continuation of Ser. No. 762,292, Sep. 19, 1991, abandoned. This application May 3, 1995, Ser. No. 433,781

Int. Cl.[6] C12P *21/06;21/04;21/08;* **C12N** *15/13*

U.S. Cl. 435—69.1 **47 Claims**

1. A method for the production and purification of a Fab' having a hinge region comprising the steps of:

(a) expressing nucleic acid encoding the Fab' in a microbial host cell comprising said nucleic acid such that the Fab' is secreted to the periplasmic space of the host cell; and

(b) recovering the Fab' from said host cell, wherein the amount of Fab' recovered from the host cell is higher than the amount of $F(ab')_2$ recovered from the host cell and the recovered Fab' is able to be covalently bonded to a second Fab' to form a functional $F(ab')_2$.

19. A method for high yield production of an antibody fragment comprising culturing a microbial host cell transformed with nucleic acid encoding the antibody fragment under the transcriptional control of an inducible promoter/operator system, wherein the nucleic acid encoding the antibody fragment is preceded by nucleic acid encoding a signal sequence which directs secretion of the antibody fragment to the periplasmic space of the host cell and whereby expression of the antibody fragment is repressed prior to induction sufficient to permit post-induction antibody fragment levels in the cell culture of about 1 gram to in excess of about 2 grams of antibody fragment per liter of cell culture.

5,648,238

HUMAN PROTEIN KINASE C INHIBITOR HOMOLOG

Janice Au-Young, Berkeley; Phillip R. Hawkins, Mountain View, and Jennifer L. Hillman, San Jose, all of Calif., assignors to Incyte Pharmaceuticals, Inc., Palo Alto, Calif.

Filed Jun. 18, 1996, Ser. No. 666,798

Int. Cl.[6] C12N *15/00;15/12;15/63;15/85*

U.S. Cl. 435—69.2 **5 Claims**

1. A purified polynucleotide encoding a polypeptide having an amino acid sequence shown in SEQ ID NO:2.

5,648,239

HUMAN CAMP-DEPENDENT PROTEIN KINASE INHIBITOR HOMOLOG

Phillip R. Hawkins, Mountain View; Jennifer L. Hillman, San Jose, and Janice Au-Young, Berkeley, all of Calif., assignors to Incyte Pharmaceuticals, Inc., Palo Alto, Calif.

Filed Jun. 21, 1996, Ser. No. 667,679

Int. Cl.[6] C12N *15/00;15/85;15/63;15/11*

U.S. Cl. 435—69.2 **5 Claims**

1. A purified polynucleotide encoding a polypeptide having an amino acid sequence shown in SEQ ID NO:2.

5,648,240

MHC II ANALOG FROM *STAPHYLOCOCCUS AUREUS*

Magnus Hook, Houston, Tex.; Klas Jonsson, Kalmar, Sweden; Joseph M. Patti, Missouri, and Sivashankarappa Gurusiddappa, Houston, both of Tex., assignors to Texas A&M University, College Station, Tex.

Filed May 24, 1994, Ser. No. 248,021

Int. Cl.[6] C12N *15/31;* **C07K** *14/31;* **A61K** *39/085*

U.S. Cl. 435—69.3 **23 Claims**

1. A DNA segment comprising an isolated gene encoding a *Staphylococcus aureus* broad spectrum adhesin that has a molecular weight of about 70 kDa as determined by SDS gel electrophoresis, said adhesin capable of binding fibronectin or vitronectin wherein said adhesin comprises a MHC II mimicking unit of about 30 amino acids.

5,648,241

CONJUGATE VACCINE AGAINST GROUP B STREPTOCOCCUS

James L. Michel, Waban; Dennis L. Kasper, Newton Centre; Frederick M. Ausubel, Newton, and Lawrence C. Madoff, Boston, all of Mass., assignors to The General Hospital Corporation, Charlestown, and Brigham and Women's Hospital, Boston, both of Mass.

Continuation of Ser. No. 968,866, Nov. 2, 1992, abandoned, which is a continuation-in-part of Ser. No. 408,036, Sep. 15, 1989, abandoned. This application Dec. 22, 1994, Ser. No. 363,311

Int. Cl.[6] C12P *21/02;* **C12N** *1/20;15/00;* **C07H** *21/04*

U.S. Cl. 435—69.3 **24 Claims**

1. A purified DNA molecule comprising a DNA sequence encoding a group B Streptococcus α-antigen or antibody eliciting fragment thereof, wherein said antigen or said fragment comprises the sequence of at least one member selected from the group consisting of R_x, $N—R_x$, $R_x—C$ and $N—R_x—C$, wherein X is greater than or equal to 1, where "N" is the N-terminal sequence that precedes the start of the alpha antigen repeating unit sequence that is found in the sequence shown on FIG. 6A–6C (Seq. ID No. 15), with or without the signal sequence, "C" is the 48 amino acid C-terminal anchor sequence as shown on FIGS. 6A–6C (Seq. ID No, 15), "R" is one copy of the 82 amino acids 227–308 of the sequence of FIGS. 6A–6C (Seq. ID No. 15), and "R_x" is "X" number of tandem copies of this repeat, tandemly joined at the carboxyl end of one R unit to the amino terminal end of the adjoining R unit.

5,648,242

METHOD OF PRODUCTION OF BIRCH POLLEN ALLERGEN P14

Rudolf Valenta, Theresienfeld; Michael Duchene, Vienna; Karin Pettenburger, Vienna; Michael Breitenbach, Vienna; Dietrich Kraft, Vienna; Helmut Rumpold, Vienna, and Otto Scheiner, Mariaenzersdorf, all of Austria, assignors to Biomay Produktions - Und Handelsgesellschaft M.B.H., Linz, Austria

Division of Ser. No. 846,992, Jun. 6, 1992, which is a continuation-in-part of Ser. No. 683,832, Apr. 11, 1991, abandoned. This application Jun. 6, 1995, Ser. No. 469,555

Claims priority, application Australia, Aug. 13, 1990, 1685/90

Int. Cl.[6] C12P *21/06;* **C07H** *21/04*

U.S. Cl. 435—69.3 **2 Claims**

1. A method for producing a P14 allergen comprising culturing a host cell transformed with a replicable expression vehicle capable of directing expression of a DNA molecule encoding the amino acid sequence of SEQ ID NO:3.

5,648,243

HUMAN SERUM ALBUMIN EXPRESSION CONSTRUCT

David R. Hurwitz, Wyndmoor; Margret Nathan, West Chester, both of Pa., and Moshe Shani, Mobile Post Modyin, Israel, assignors to Rhone-Poulenc Rorer Pharmaceuticals, Inc., Collegeville, Pa., and Peri Development Applications (1985) Ltd., Israel

Continuation of Ser. No. 737,853, Jul. 31, 1991, abandoned. This application Sep. 21, 1994, Ser. No. 310,356

Int. Cl.[6] C12N *15/14;15/85*

U.S. Cl. 435—69.6 **19 Claims**

1. A DNA construct adapted for the expression of human serum albumin in mammalian cells that do not normally express human serum albumin, comprising a promoter from a mammalian gene and a sequence coding for human serum albumin,

(a) wherein the human serum albumin sequence comprises at least one, but not all, of the introns in the naturally occurring gene encoding the HSA protein;

(b) wherein said introns are selected to provide for expression of HSA in said mammalian cells at levels equal to or greater than levels resulting from the expression of the naturally occurring HSA gene in said mammalian cells; and

(c) wherein said naturally occurring HSA gene encodes the HSA protein and includes exons and introns in their native positional relationships.

8. A method of making human serum albumin in a mammalian cell that does not normally express human serum albumin comprising introducing the DNA construct of claim 1 into the mammalian cell, wherein human serum albumin is expressed in said mammalian cell at levels equal to or greater than levels resulting from the expression of the naturally occurring HSA gene in said mammalian cell.

5,648,244

PRODUCTION, PURIFICATION, CLEAVAGE AND USE OF FUSION PEPTIDES

Athan Kuliopulos, Cambridge, and Christopher T. Walsh, West Newton, both of Mass., assignors to President and Fellows of Harvard College, Cambridge, Mass.

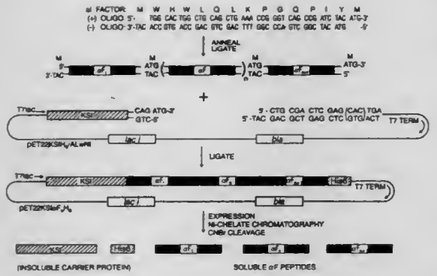
Filed Sep. 27, 1993, Ser. No. 127,692

Int. Cl.[6] C12N *15/09;15/63;15/70;15/62*

U.S. Cl. 435—69.7 **44 Claims**

1. A vector comprising:

nucleic acid encoding a carrier peptide and, at the 3' end of said nucleic acid a unidirectional restriction endonuclease cleavage site, recognized by a restriction endonuclease with the ability



to create a non-palindromic 3-base overhang, wherein said 3-base overhang is a 3' ATG overhang.

5,648,245

METHOD FOR CONSTRUCTING AN OLIGONUCLEOTIDE CONCATAMER LIBRARY BY ROLLING CIRCLE REPLICATION

Andrew Fire, and Si-Qun Xu, both of Baltimore, Md., assignors to Carnegie Institution of Washington, Washington, D.C.

Filed May 9, 1995, Ser. No. 437,538

Int. Cl.[6] C12P *19/34;* **C12N** *15/64;15/66*

U.S. Cl. 435—91.1 **9 Claims**

1. An in vitro method for constructing an oligonucleotide concatamer library, comprising the steps of:

a) generating a population of primer-bridged circular template oligonucleotides by annealing linear primer oligonucleotides to linear template oligonucleotides and ligating said linear template oligonucleotides into circular template oligonucleotides;

b) generating a population of single-stranded oligonucleotide concatamers by rolling circle replication of said primer-bridged circular template oligonucleotides; and

c) generating a population of corresponding double-stranded oligonucleotide concatamers by synthesizing single stranded oligonucleotides which are complementary to said population of single-stranded oligonucleotide concatamers.

5,648,246

PROCESS FOR THE CONTINUOUS PREPARATION OF WORT

Christiaan Willem Versteegh, Delft, Netherlands, assignor to Heineken Technical Services B.V., Amsterdam, Netherlands

Division of Ser. No. 90,066, Sep. 3, 1993, Pat. No. 5,536,650. This application May 23, 1995, Ser. No. 447,741

Claims priority, application Netherlands, Jan. 11, 1991, 9100050

Int. Cl.[6] C12C *1/00;* **C12P** *1/00*

U.S. Cl. 435—93 **19 Claims**

1. A process for the continuous preparation of wort, comprising providing a mixture to a rotating disc contractor, said rotating disc contactor comprising a column provided with a central agitator shaft having discs attached thereto, said mixture comprising water and one or more materials in a first group consisting of unmalted grain, malt, and an enzyme source other than malt, continuously gelatinizing and enzymatically liquefying said mixture in said rotating disc contactor to yield a first product, adding one or more materials in a second group consisting of malt and an enzyme source other than malt to said first product to yield a second product, enzymatically converting said second product, and separating spent grain from mash in a separation unit to provide wort, said materials in said first group and said materials in said second group being capable of passing through screens with a mesh size of from 5 μm to 5 mm.

5,648,247

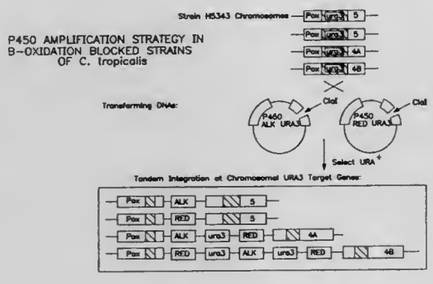
METHOD FOR INCREASING THE OMEGA-HYDROXYLASE ACTIVITY IN CANDIDA TROPICALS

Stephen Picataggio, Santa Rosa; Tracy Rohrer, Cotati, and L. Dudley Eirich, Santa Rosa, all of Calif., assignors to Henkel Corporation, Plymouth Meeting, Pa.

Continuation of Ser. No. 975,154, Nov. 12, 1992, abandoned, which is a continuation of Ser. No. 495,502, Mar. 19, 1990, abandoned. This application Apr. 19, 1995, Ser. No. 425,124

Int. Cl.[6] C12P *7/44;* **C12N** *1/16*

U.S. Cl. 435—142 **74 Claims**



1. A process for increasing the omega-hydroxylase activity in *C. tropicalis* comprising introducing into the genome of said *C. tropicalis* one or more copies of a P450ALK or P450RED gene or a combination thereof.

5,648,248

METHODS FOR PRODUCING DIFFERENTIATED CELLS FROM IMMATURE HEMATOPOIETIC CELLS

Martin Zenke, Schönow, Germany; Guido Boehmelt, North York, Canada; Jaime Madruga, Berlin, Germany, and Paula Enrietto, Stony Brook, N.Y., assignors to Boehringer Ingelheim International GmbH, Germany

Continuation-in-part of Ser. No. 366,797, Dec. 30, 1994, abandoned. This application Jan. 25, 1995, Ser. No. 377,731

Int. Cl.[6] C12N *15/64*

U.S. Cl. 435—172.3 **28 Claims**

1. A method for inducing differentiation of transformed hematopoietic cells during culture, the method comprising:

(a) introducing into the hematopoietic cells an oncogene which expresses an oncoprotein, wherein said oncoprotein transforms immature hematopoietic cells;

(b) culturing the cells in a first culture medium under conditions wherein said oncogene expresses said oncoprotein which promotes cellular growth while at least partially inhibiting cellular differentiation;

(c) deactivating said oncoprotein or expression from said oncogene to induce cellular differentiation; and

(d) culturing the cells in a second culture medium which induces the differentiation of hematopoietic cells.

5,648,249

METHOD OF IMPROVING THE QUALITY OF STORED POTATOES

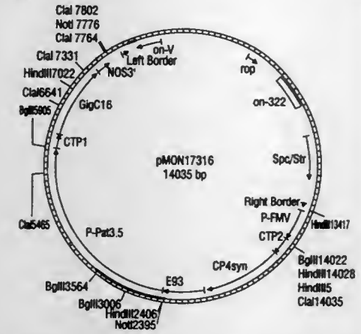
Gerard Francis Barry, St. Louis; Ganesh Murthy Kishore, Chesterfield; David Martin Stark, Fenton, all of Mo., and James Conrad Zalewski, Boise, Id., assignors to Monsato Company, St. Louis, Mo.

PCT No. PCT/US94/05275, § 371 Date Mar. 20, 1995, § 102(e) Date Mar. 20, 1995, PCT Pub. No. WO94/28149, PCT Pub. Date Dec. 8, 1994

Continuation-in-part of Ser. No. 70,155, May 28, 1993, abandoned. This PCT application May 18, 1994, Ser. No. 406,858

Int. Cl.[6] C12N *15/54;15/31;15/62;15/82*

U.S. Cl. 435—172.3 **8 Claims**



1. A method of reducing the level of sugars within potato tubers stored at reduced temperatures comprising providing an increased level of ADPglucose pyrophosphorylase enzyme activity during storage at reduced temperatures by transforming potato plants with a recombinant, double-stranded DNA molecule comprising (a) a promoter which functions in potato tubers to cause the production of an RNA sequence in tubers, (b) a structural DNA sequence that causes the production of an RNA sequence which encodes a fusion polypeptide comprising an amino-terminal plastid transit peptide and a foreign ADPglucose pyrophosphorylase enzyme, and (c) a 3' nontranslated DNA sequence which functions in plant cells to cause transcriptional termination and the addition of polyadenylated nucleotides to the 3' end of the RNA sequence; obtaining tubers from such transformed potato plants; and storing said tubers at reduced temperatures without formation of unacceptably high sugar levels.

5,648,250

TISSUE PLASMINOGEN ACTIVATOR

Mineo Niwa, Muko; Yoshimasa Saito, Osaka; Hitoshi Sasaki, Amagasaki; Masako Hayashi; Jouji Notani, both of Takatsuki, and Masakazu Kobayashi, Ikeda, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Continuation of Ser. No. 238,796, May 6, 1994, abandoned, which is a continuation of Ser. No. 131,672, Oct. 5, 1993, abandoned, which is a continuation of Ser. No. 991,714, Dec. 16, 1992, abandoned, which is a continuation of Ser. No. 879,736, May 6, 1992, abandoned, which is a continuation of Ser. No. 711,410, Jun. 5, 1991, abandoned, which is a continuation of Ser. No. 227,149, Aug. 2, 1988, abandoned. This application Mar. 29, 1995, Ser. No. 412,859

Claims priority, application United Kingdom, Aug. 3, 1987, 8718298; Oct. 26, 1987, 8725052; Nov. 13, 1987, 8726683

Int. Cl.[6] C12N *15/70;15/58;* **C07H** *21/04;* **A61K** *38/49*

U.S. Cl. 435—172.3 **17 Claims**

1. A non-glycosylated tissue plasminogen activator represented by the following amino acid sequence (I) as its primary structure:

180 190
R—GluGlyAsnSerAspCysTyrPheGlyAsnGlySer AlaTyrArgGlyThrHis Ser

-continued

200 210
LeuThrGluSerGlyAlaSerCysLeuProTrpAsnSerMetIleLeuIleGlyLysVal

220 230
TyrThrAlaGlnAsnProSerAlaGlnAlaLeuGlyLeuGlyLysHisAsnTyrCysArg

240 250
AsnProAspGlyAspAlaLysProTrpCysHisValLeuLysAsnArgArgLeuThrTrp

260 270
GluTyrCysAspValProSerCysSerThrCysGlyLeuArgGln—Y—

277 280 290
—X—GlyGlyLeuPheAlaAspIleAlaSerHis ProTrpGlnAlaAlaIle

300 310
PheAlaLysHisArgArgSerProGluArgPheLeuCysGlyGlyIleLeuIleSer

320 330
SerCysTrpIleLeuSerAlaAlaHisCysPheGlnGluArgPheProProHisHisLeu

340 350
ThrValIleLeuGlyArgThrTyrArgValValProGluGluGluGlnLysPheGlu

360 370
ValGluLysTyrIleValHisLysGluPheAspAspAspThrTyrAspAsnAspIleAla

380 390
LeuLeuGlnLeuLysSerAspSerSerArgCysAlaGlnGluSerSerValValArgThr

400 410
ValCysLeuProProAlaAspLeuGlnLeuProAspTrpThrGluCysGluLeuSerGly

420 430
TyrGlyLysHisGluAlaLeuSerProPheTyrSerGluArgLeuLysGluAlaHisVal

440 450
ArgLeuTyrProSerSerArgCysThrSerGlnHisLeuLeuAsnArgThrValThrAsp

460 470
AsnMetLeuCysAlaGlyAspThrArgSerGlyGlyProGlnAlaAsnLeuHisAspAla

480 490
CysGlnGlyAspSerGlyGlyProLeuValCysLeuAsnAspGlyArgMetThrLeuVal

500 510
GlyIleIleSerTrpGlyLeuGlyCysGlyGlnLysAspValProGlyValTyrThrLys

520 527
ValThrAsnTyrLeuAspTrpIleArgAspAsnMetArgPro

wherein R is Ser—,

X is -Lys- and

Y is -TyrSerGlnProGlnPheArgIle- or -TyrSerGlnProGlnPheAspIle-.

5,648,251

METHOD OF TRANSDUCTION OF CELLS WITH RETROVIRAL VECTORS

Hitoshi Kotani, Middletown; Perry Newton, III, Odenton, and Shuyuan Zhang, Gaithersburg, all of Md., assignors to Genetic Therapy, Inc., Gaithersburg, Md.

Division of Ser. No. 180,717, Jan. 12, 1994, abandoned. This application May 26, 1995, Ser. No. 450,914

Int. Cl.[6] C12N *5/10;15/64*

U.S. Cl. 435—172.3 **10 Claims**

1. A method of transducing cells with retroviral vector particles, comprising:

(a) contacting a suspension of said retroviral vector particles with said cells to form a mixture of said retroviral vector particles and said cells; and

(b) centrifuging said mixture for a period of time sufficient to permit transduction.

5,648,252

SUPPORTED POLYIONIC HYDROGELS CONTAINING BIOLOGICALLY ACTIVE MATERIAL

Severian Dumitriu, Sherbrooke, Canada; Itzhak Kahane, Har Adar, and Hilda Guttmann, Jerusalem, both of Israel, assignors to Israel Fiber Institute State of Israel Ministry of Industry and Trade, and Yissum Research Development Company of the University of Jerusalem, both of Jerusalem, Israel

Filed Mar. 22, 1995, Ser. No. 409,264
Claims priority, application Israel, Mar. 22, 1994, 109079
Int. Cl.[6] C12N *11/12;11/10;5/00;* **G01N** *33/544*
U.S. Cl. 435—179 **10 Claims**

1. A supported polyionic hydrogel containing a biologically active material formed by a method comprising the steps:

a) impregnating into a porous support material a solution of an anionic polysaccharide selected from the group consisting of xanthan, dicarboxystarch and dicarboxycellulose, and

b) impregnating into the porous support material from a) a chitosan solution, whereby said anionic polysaccharide and said chitosan react with each other while in contact with and impregnated into said porous support to produce a polyionic hydrogel impregnated into said porous support material,

said biologically active material being in said anionic polysaccharide solution or said chitosan solution or in a separate solution impregnated into said porous support material.

5,648,253

INHIBITOR-RESISTANT UROKINASE

Cha-Mer Wei, Worcester, Mass., assignor to TSI Corporation, Worcester, Mass.

Continuation of Ser. No. 631,673, Dec. 20, 1990, abandoned. This application Sep. 8, 1992, Ser. No. 942,157
Int. Cl.[6] C12N *9/72;15/55;15/79;* **A61K** *38/49*
U.S. Cl. 435—215 **7 Claims**

1. A modified urokinase that cleaves plasminogen, wherein the modified urokinase is encoded by a nucleotide molecule wherein the codons encoding Arg His Arg Gly Gly Ser (SEQ ID NO: 1) at positions **179–184** have been deleted, and wherein the urokinase has a lower binding affinity for plasminogen activator inhibitor-1 than does unmodified urokinase including the amino acid sequence Arg His Arg Gly Gly Ser (SEQ ID NO: 1).

5,648,254

CO-EXPRESSION IN EUKARYOTIC CELLS

Eileen R. Mulvihill, Seattle, Wash., and A. Ashok Kumar, Flemington, N.J., assignors to ZymoGenetics, Inc., Seattle, Wash.

Continuation of Ser. No. 785,865, Oct. 28, 1991, abandoned, which is a continuation of Ser. No. 445,302, Dec. 4, 1989, abandoned, which is a continuation-in-part of Ser. No. 144,357, Jan. 15, 1988, abandoned. This application Jul. 14, 1994, Ser. No. 275,076
Int. Cl.[6] C12N *9/68;5/00;1/16;15/00*
U.S. Cl. 435—217 **15 Claims**

1. A method for producing a protein of interest, comprising;

introducing into a eukaryotic host cell a first DNA sequence encoding plasminogen and at least one additional DNA sequence, said additional DNA sequence encoding a protein which processes or stabilizes the plasminogen selected from the group consisting of alpha-1-antitrypsin variant thereof, and an Argserpin, wherein said DNA sequences are operably linked to transcriptional promoter and terminator sequences;

culturing the host cell under conditions which allow the first DNA sequence and the additional DNA sequence(s) to be expressed; and

isolating the plasminogen from the host cell.

5,648,255

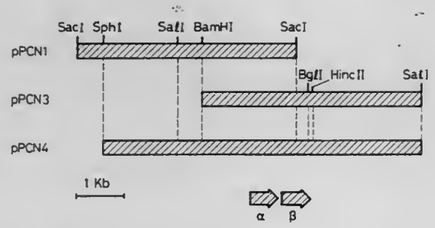
Patent Not Issued For This Number

5,648,256

GENE ENCODING A POLYPEPTIDE HAVING NITRILE HYDRATASE ACTIVITY, A TRANSFORMANT CONTAINING THE GENE AND A PROCESS FOR THE PRODUCTION OF AMIDES USING THE TRANSFORMANT

Hideaki Yamada; Toru Nagasawa, both of Kyoto; Teruhiko Beppu, Tokyo; Sueharu Horinouch, Tokyo, and Makoto Nishiyama, Tokyo, all of Japan, assignors to Nitto Chemical Industry Co., Ltd., Japan

Continuation of Ser. No. 694,746, May 2, 1991, abandoned. This application Apr. 22, 1994, Ser. No. 233,146
Claims priority, application Japan, Feb. 28, 1990, 2-48079
Int. Cl.[6] C12N *9/88;15/60*
U.S. Cl. 435—232 **3 Claims**



I. A method of producing nitrile hydratase which comprises culturing a prokaryotic transformed cell containing a recombinant vector which is plasmid pPCN4 obtained from *E. coli* JM105/pPCN4 having Accession Number FERM BP-2779 and recovering nitrile hydratase from the culture.

5,648,257

Patent Not Issued For This Number

5,648,258

ANTHRAQUINONE INHIBITION OF METHANE PRODUCTION IN A RUMINANT ANIMAL

James Martin Odom, Avondale, Pa., assignor to Bio-Technical Resources, Manitowoc, Wis.

PCT No. PCT/US93/09806, § 371 Date Jul. 24, 1995, § 102(e) Date Jul. 24, 1995, PCT Pub. No. WO94/08738, PCT Pub. Date Apr. 28, 1994
PCT Filed Oct. 20, 1993, Ser. No. 436,378
Int. Cl.[6] A23K *1/18;* **C12N** *1/20;* **C07C** *50/16*
U.S. Cl. 435—252.1 **15 Claims**

1. A method for increasing production of volatile fatty acids and inhibiting methane production in a ruminant animal, the method comprising feeding the ruminant animal an anthraquinone compound.

5,648,259

POLYPEPTIDES HAVING NMDA RECEPTOR ACTIVITY, NUCLEIC ACIDS ENCODING THOSE POLYPEPTIDES AND APPLICATIONS

Jacques Mallet, Paris, and Tania Smirnova, Sceaux, both of France, assignors to Rhone-Poulenc Rorer S.A., Antony, France

PCT No. PCT/FR93/00557, § 371 Date Jan. 27, 1995, § 102(e) Date Jan. 27, 1995, PCT Pub. No. WO93/25679, PCT Pub. Date Dec. 23, 1993
PCT Filed Jun. 11, 1993, Ser. No. 356,397
Claims priority, application France, Jun. 15, 1992, 92 07177
Int. Cl.[6] C07K *14/705;* **C12N** *5/10;15/12*
U.S. Cl. 435—252.3 **16 Claims**

1. An isolated polypeptide comprising a sequence selected from the group consisting of:

(a) SEQ ID No. 2,

(b) SEQ ID No. 4, and

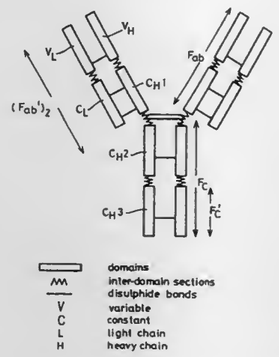
(c) a fragment of (a) or (b) wherein said fragment has NMDA receptor activity.

5,648,260

DNA ENCODING ANTIBODIES WITH ALTERED EFFECTOR FUNCTIONS

Gregory Paul Winter, Cambridge, Great Britain; Alexander Robert Duncan, Wimbledon, United Kingdom, and Dennis Raymond Burton, Sheffield, Great Britain, assignors to Scotgen Biopharmaceuticals Incorporated, Menlo Park, Calif.

Continuation of Ser. No. 208,084, Mar. 9, 1994, which is a continuation of Ser. No. 814,035, Dec. 24, 1991, abandoned, which is a continuation of Ser. No. 303,668, Jan. 18, 1989, abandoned. This application Jun. 7, 1995, Ser. No. 478,825
Claims priority, application United Kingdom, Mar. 18, 1987, 8706425; Aug. 10, 1987, 8718897; Dec. 1, 1987, 8728042; WIPO, Mar. 18, 1988, PCT/GB88/00211
Int. Cl.[6] C12N *15/11;1/20*
U.S. Cl. 435—252.3 **30 Claims**



1. Isolated DNA encoding at least part of a constant region of an immunoglobulin heavy chain in which at least one amino acid selected from the group consisting of amino acid residues 234, 235, 236, 237, 297, 318, 320 and 322 is substituted with an amino acid which is different from that present in an unmodified antibody thereby causing an alteration in an effector function while retaining binding to antigen as compared with the unmodified antibody.

5,648,261

STRAINS OF *PHAFFIA RHODOZYMA* CONTAINING HIGH LEVELS OF ASTAXANTHIN AND LOW LEVELS OF 3-HYDROXY-3',4'-DIDEHYDRO-β, Ψ-CAROTEN-4-ONE (HDCO)

Lex De Boer, Wateringen; Bart Van Heil, Delft, and Andreas Jacobus Johanna Krouwer, Poeldijk, all of Netherlands, assignors to Gist-brocades, N.V., Ma Delft, Netherlands

PCT No. PCT/NL92/00231, § 371 Date Oct. 12, 1993, § 102(e) Date Oct. 12, 1993, PCT Pub. No. WO93/12249, PCT Pub. Date Jun. 24, 1993
PCT Filed Dec. 17, 1992, Ser. No. 107,811
Claims priority, application European Pat. Off., Dec. 17, 1991, 91203312
Int. Cl.[6] C12N *1/16;* **C12P** *23/00*
U.S. Cl. 435—254.2 **9 Claims**

1. A *Phaffia rhodozyma* strain having an intracellular concentration of more than 650 μg astaxanthin per g dry weight and a 3-hydroxy-3',4'-didehydro-β,ψ-caroten-4-one (HDCO) percentage relative to the amount of astaxanthin of less than 5% by weight.

5,648,262

DYE TRANSFER INHIBITION

Ture Damhus; Ole Kirk, both of Copenhagen; Gitte Pedersen, Frederiksberg, all of Denmark; Manuel Garcia Venegas, Cincinnati, Ohio; Bjøorn Eggert Christensen, Holte, and Palle Schneider, Ballerup, both of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark, and Proctor and Gamble Company, Cincinnati, Ohio

Division of Ser. No. 105,222, Aug. 11, 1993, which is a division of Ser. No. 599,331, Oct. 17, 1990, Pat. No. 5,273,896, which is a continuation-in-part of Ser. No. 421,414, Oct. 13, 1989, abandoned. This application May 23, 1995, Ser. No. 448,200
Int. Cl.[6] D06M *16/00*
U.S. Cl. 435—263 **2 Claims**

1. A process for inhibiting the transfer of a textile dye, comprising washing or rinsing a fabric dyed with a textile dye together with another fabric in a wash liquor, wherein the wash liquor comprises an effective amount for inhibiting transfer of the textile dye from the dyed fabric to the other fabric of an enzyme exhibiting oxidase activity on phenolic compounds.

5,648,263

METHODS FOR REDUCING THE HARSHNESS OF A COTTON-CONTAINING FABRIC

Martin Schülein, Copenhagen, and Kirsten Bøegh Levring, Lyngby, both of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

Division of Ser. No. 295,364, Aug. 24, 1994, abandoned, which is a continuation of Ser. No. 409,498, Sep. 13, 1989, abandoned. This application May 30, 1995, Ser. No. 453,606
Claims priority, application Denmark, Mar. 24, 1988, 1634/88; Mar. 24, 1988, 1635/88
Int. Cl.[6] D06M *16/00;* **C11D** *7/42*
U.S. Cl. 435—263 **19 Claims**

I. A method of reducing the rate at which a cotton-containing fabric becomes harsh or of reducing the harshness of a cotton-containing fabric, comprising treating the cotton-containing fabric with an effective amount of a cellulase preparation obtained from a fungus, wherein the cellulase preparation comprises a substantially homogeneous endoglucanase component which:

(a) has a pH optimum of about 7.5–10.0;

(b) exhibits a CMC endoase activity of at least about 10 CMC-endoase units per mg of total protein;

(c) exhibits a CAVU activity of at least about 50% at a pH of 7.0–12.0; and

(d) has essentially no cellobiohydrolase activity;

wherein at least about 50% by weight of the total cellulase content of the cellulase preparation is the endoglucanase component.

5,648,264

THERMOCELLULOLYTIC BACTERIA AND THEIR USES

Shigeru Kume, Fukuoka, Japan, assignor to Gomei Kaisha Nakamura Sangyo, Fukukoka, Japan

PCT No. PCT/JP93/00498, § 371 Date Jun. 30, 1994, § 102(e) Date Jun. 30, 1994, PCT Pub. No. WO94/10290, PCT Pub. Date May 11, 1994

PCT Filed Apr. 16, 1993, Ser. No. 256,254

Claims priority, application Japan, Oct. 30, 1992, 4-315835

Int. Cl.[6] C12N *1/20;9/42;9/52;* **C12P** *39/00*

U.S. Cl. 435—264 **18 Claims**

1. A composition for use in decomposing organic material containing lignin or cellulose and a culture comprising a thermocellulolytic bacterium *Clostridium thermocellum* biovar. Nov. SK522 FERM BP-345 g) capable of solubilizing lignin and fermenting cellulose excellently, having a growth temperature limit of 40°–80° C., and a growth optimum temperature of 65°–72° C.

5,648,265

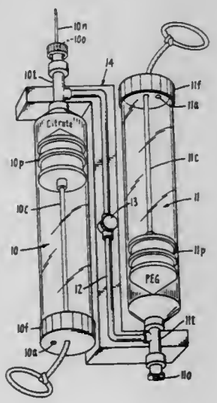
APPARATUS FOR PREPARING FIBRINOGEN ADHESIVE FROM WHOLE BLOOD

Gordon H. Epstein, 135 Kootenai Dr., Fremont, Calif. 94539

Division of Ser. No. 90,587, Jul. 12, 1993, Pat. No. 5,405,607, which is a division of Ser. No. 372,443, Jun. 23, 1989, Pat. No. 5,226,877. This application Jan. 10, 1995, Ser. No. 370,793

Int. Cl.[6] C12M *1/40*

U.S. Cl. 435—294.1 **8 Claims**



1. An apparatus for preparing a fibrinogen adhesive composition from human blood, which apparatus consists essentially of:

a first chamber in fluid communication with a second chamber, means for effecting said fluid communication, and means for interrupting said fluid communication;

means for withdrawing a sample of human blood into said first chamber wherein said first chamber contains an anticoagulant;

said first chamber being configured so as to permit separation of plasma and red blood cells in said blood sample;

a means to dispense said separated plasma from said first chamber to said second chamber free of said red blood cells wherein said second chamber contains a composition consisting essentially of an amount of polyethylene glycol (MW 200–8000) effective to precipitate fibrinogen from said plasma, said second chamber being configured so as to permit separation of the precipitated fibrinogen from the remaining plasma;

means to dispose of said remaining plasma.

5,648,266

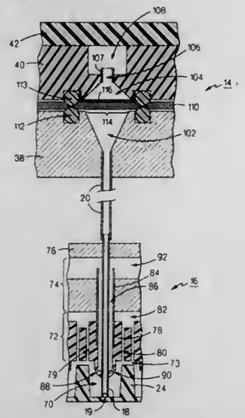
CELL HARVESTER SYSTEM

Thomas W. Astle, 607 Harborview Rd., Orange, Conn. 06477

Filed Feb. 24, 1989, Ser. No. 314,791

Int. Cl.[6] C12M *1/12;1/00*

U.S. Cl. 435—308.1 **5 Claims**



1. In a cell harvester system of the type including means for harvesting samples from a plurality of generally vertical cells on a laboratory tray, each of said plurality of cells having a wall and an upper perimeter, an improvement, comprising:

(a) an open space around the upper perimeter of each said cell above said wall of said cell;

(b) means to provide wash solution to each of said cells; and

(c) means to aspirate said wash liquid from said open space if said wash liquid overflows said cell.

5,648,267

IMPAIRED DOMINANT SELECTABLE MARKER SEQUENCE AND INTRONIC INSERTION STRATEGIES FOR ENHANCEMENT OF EXPRESSION OF GENE PRODUCT AND EXPRESSION VECTOR SYSTEMS COMPRISING SAME

Mitchell E. Reff, San Diego, Calif., assignor to IDEC Pharmaceuticals Corporation, San Diego, Calif.

Continuation-in-part of Ser. No. 977,691, Nov. 13, 1992, abandoned. This application Nov. 3, 1993, Ser. No. 147,696

Int. Cl.[6] C12N *15/63;1/21;5/06;5/10*

U.S. Cl. 435—320.1 **10 Claims**

1. An expression vector which expresses at least one protein of interest in a recombinant host cell wherein said expression vector comprises:

(i) a translationally impaired neomycin phosphotransferase (NEO) dominant selectable marker gene which has been translationally impaired by modification of the region of the NEO gene which includes the NEO translation initiation start codon such that said modified region of the NEO gene which includes the NEO translation initiation start codon has the following nucleotide sequence:

CCA GCA TGG AGG A ATCGAT CC TCC ATG CTT (SEQ ID NO: 17)

which translationally impaired NEO gene is operably linked to a promoter and polyadenylation sequence; and

(ii) at least one heterologous DNA which encodes for at least one protein of interest, wherein said heterologous DNA is operably linked to a promoter and polyadenylation sequence different from the promoter and polydenylation sequence operably linked to the NEO gene, and wherein said heterologous DNA and said promoter and polyadenylation sequence operably linked to said heterologous are inserted into an intronic insertion region contained in the NEO gene.

5,648,268

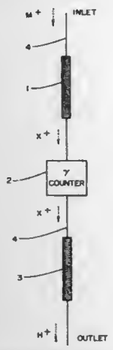
RADIONUCLIDE EXCHANGE DETECTION OF ULTRA TRACE IONIC IMPURITIES IN WATER

John Samuel Batchelder, Somers; Philip Charles Danby Hobbs, Briarcliff Manor; Miro Plechaty, Katonah, all of N.Y., and Keith Randal Pope, Danbury, Conn., assignors to IBM Corporation, Armonk, N.Y.

Filed Dec. 6, 1994, Ser. No. 349,842

Int. Cl.[6] G01N *23/00*

U.S. Cl. 436—57 **22 Claims**



1. A process for monitoring the total concentration of ions of trace metals in a water sample containing a plurality of said metals comprising (a) passing the water sample containing the metal ions through a cation exchange column containing ^{22}Na at a rate effective for sufficient contact between the cation exchange resin and the water to exchange the ^{22}Na for the metal ions in the water, (b) detecting the ^{22}Na in the water that is eluted from the ion exchange column and (c) determining the total metal ion concentration in the water from the amount of ^{22}Na detected.

5,648,269

PH AND PCO_2 SENSING BY LUMINESCENT LIFETIMES AND ENERGY TRANSFER

Joseph R. Lakowicz, 9142 Emerson's Reach, Columbia, Md. 21045, and Henry K. Szmacinski, Baltimore, Md., assignors to Joseph R. Lakowicz, Ellicott City, Md.

Continuation of Ser. No. 186,883, Jan. 26, 1994, abandoned, which is a continuation of Ser. No. 822,234, Jan. 17, 1992, abandoned, which is a continuation-in-part of Ser. No. 694,282, May 3, 1991, abandoned. This application Mar. 14, 1995, Ser. No. 403,554

Int. Cl.[6] G01N *21/64*

U.S. Cl. 436—68 **7 Claims**

1. A method of optically determining concentration of analyte in a sample to be analyzed, said analyte in said sample being hydrogen ions or carbon dioxide, said method comprising the steps of:

contacting an energy transfer donor-acceptor pair with said analyte in said sample to be analyzed, wherein energy transfer between donor and acceptor of the pair is affected by the pH or carbon dioxide concentration of the sample, wherein the donor of the donor-acceptor pair is photoluminescent metal-ligand complex donor, and wherein photoluminescent lifetime of the probe is affected by said analyte;

exciting the sample with radiation;

detecting the resulting emission; and

performing a calculation consisting essentially of calculating apparent luminescence lifetime of the emission to determine the pH or carbon dioxide concentration of the sample, wherein the lifetime is calculated using phase-modulation fluorometry or time-resolved fluorometry.

5,648,270

METHODS OF SENSING WITH FLUORESCENT CONJUGATES OF METAL-CHELATING NITROGEN HETEROCYCLES

Michael A. Kuhn; Richard P. Haugland, and Brian Matthew Hoyland, all of Eugene, Oreg., assignors to Molecular Probes, Inc., Eugene, Oreg.

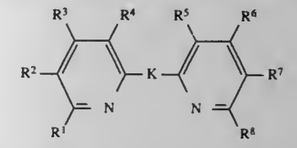
Filed Feb. 6, 1995, Ser. No. 384,945

Int. Cl.[6] G01N *33/20*

U.S. Cl. 436—74 **17 Claims**

1. A method of determining the presence of target ions in a sample, comprising:

a) adding to said sample, in an amount sufficient to generate a detectable fluorescent response to said target ion, a compound containing a metal binding moiety according to the formula



wherein

pyridyl ring substituents R^1, R^2, R^3, R^4, R^5, R^6, R^7, and R^8 are independently H, C_1–C_6 alkyl, C_1–C_6 alkoxy, C_1–$_6$ perfluoroalkyl, halogen, CN, sulfonic acid, salt of sulfonic acid, amino, salt of amino, alkylamino having 1–6 carbons, dialkylamino having 2–12 carbons; carboxy, carboxyalkyl having 2–7 carbons, carboxyalkoxy having 2–7 carbons, carboxyalkylthio having 2–7 carbons, carboxyalkylamino having 2–7 carbons, or a 1-(acyloxy)alkyl ester of any such carboxy, such ester having 2–7 carbons; or aryl, or heteroaryl; or -L-F;

or any two adjacent substituents of R^1, R^2, R^3, R^4, R^5, R^6, R^7, and R^8, taken in combination, form a fused six-membered aromatic ring, such that no more than one fused ring is bound to each pyridyl ring, and where said fused rings are optionally and independently further substituted by C_1–C_6 alkyl, C_1–C_6 alkoxy, C_1–C_6 perfluoroalkyl, CN, sulfonic acid, salt of sulfonic acid, amino, salt of amino, alkylamino having 1–6 carbons, dialkylamino having 2–12 carbons; carboxy, carboxyalkyl having 2–7 carbons, carboxyalkoxy having 2–7 carbons, carboxyalkylthio having 2–7 carbons, or a 1(acyloxy)alkyl ester of any such carboxy, such ester having 2–7 carbons; or -L-F; and

K is a single covalent bond, or

K is $—(CR^{11}{}_2)_a—X_b—(CR^{12}{}_2)_c—$,

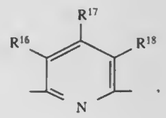
wherein a, b and c are each 0 or 1, provided that when b=1, a+c must equal 0 or 2;

each R^{11} and R^{12} is optionally and independently H, or C_1–C_6 alkyl;

X is O, S, NR^{13}, or $—CR^{14}R^{15}—$, wherein R^{15} is H, C_1–C_6 alkyl, -L-F, or phenyl that is optionally further substituted by C_1–C_6 alkyl, C_1–C_6 alkoxy, NO_2, C_1–C_6 perfluoroalkyl, halogen, CN, sulfonic acid, salt of sulfonic acid, amino, salt of amino, alkylamino having 1–6 carbons, dialkylamino having 2–12 carbons; carboxy, carboxyalkyl having 2–7 carbons, carboxyalkoxy, having 2–7 carbons, carboxyalkylthio having 2–7 carbons, or carboxyalkylamino having 2–7 carbons, or a 1-(acyloxy)alkyl ester of any such carboxy, such ester having 2–7 carbons; or -L-F; R^{14} and R^{15} are independently H, C_1–C_6 alkyl, C_1–C_6 alkoxy, NO_2, C_1–C_6 perfluoroalkyl, halogen, CN, sulfonic acid, salt of sulfonic acid, amino, salt of amino, alkylamino having 1–6 carbons, dialkylamino having 2–12 carbons, carboxy, carboxyalkyl having 2–7 carbons, carboxyalkoxy having 2–7 carbons, carboxyalkylthio having 2–7 carbons, carboxyalkylamino having 2–7 carbons, or a

1-(acyloxy)alkyl ester of any such carboxy, such ester having 2–7 carbons; or -L-F; or

K is



wherein R^{16}, R^{17}, and R^{18} are independently H, C_1–C_6 alkyl, C_1–C_6 alkoxy, NO_2,

C_1–C_6 perfluoroalkyl, halogen, CN, sulfonic acid, salt of sulfonic acid, amino, salt of amino, alkylamino having 1–6 carbons, dialkylamino having 2–12 carbons; carboxy, carboxyalkyl having 2–7 carbons, carboxyalkoxy having 2–7 carbons, carboxyalkylthio having 2–7 carbons, carboxyalkylamino having 2–7 carbons, or a 1-(acyloxy)alkyl ester of any such carboxy, such ester having 2–7 carbons; or aryl, or heteroaryl, or -L-F; or

K is a formal single bond, and R^4 and R^5 when taken in combination are —CR^9=CR^{10}—, forming a phenanthroline moiety, wherein R^9 and R^{10} are independently H, C_1–C_6 alkyl, C_1–C_6 alkoxy, C_1–C_6 perfluoroalkyl, CN, sulfonic acid, salt of sulfonic acid, amino, salt of amino, alkylamino having 1–6 carbons, dialkylamino having 2–12 carbons; carboxy, carboxyalkyl having 2–7 carbons, carboxyalkoxy having 2–7 carbons, carboxyalkylthio having 2–7 carbons, carboxyalkylamino having 2–7 carbons, or a 1-(acyloxy)alkyl ester of any such carboxy, such ester having 2–7 carbons; or -L-F; and the remaining ring substituents R^1, R^2, R^3, R^6, R^7, and R^8 are as defined above;

such that at least one but not more than two substituents on said metal ion-binding moiety is -L-F; wherein each F is independently a fluorophore that is attached to said metal-binding moiety by L, where each L is independently a single bond or a covalent linkage that is 9 or fewer non-hydrogen atoms in length;

b) illuminating said sample to generate said fluorescence response; and

c) observing said sample with means for detecting said fluorescence response, where the fluorescence response indicates the presence of target ions.

5,648,271

METHOD FOR EVAPORATING SOLVENT USING FILTER

Tomas Kempe, Bowie, Md., assignor to Barrskogen, Inc., Bowie, Md.

Continuation-in-part of Ser. No. 209,786, Mar. 11, 1994. This application Jul. 25, 1994, Ser. No. 279,444

Int. Cl.[6] G01N *1/00*

U.S. Cl. 436—178 **13 Claims**

1. A method of evaporating solvent from a sample that comprises solvent and an analyte material, the method comprising the steps of:

a) providing the sample in a unitary closed bottom tube of sufficient volume and dimensions to contain the sample in a lower region while providing a sample-free upper passageway region,

b) providing a cylindrical filter material having a longitudinal dimension capable of allowing flow through of evaporated solvent while preventing the flow through of analyte material;

c) inserting the filter material into a sealed and removable relationship to a predetermined distance into the upper passageway region and positioning an air channeling device through the filter material;

d) positioning the tube into a device capable of drawing a vacuum on the tube and through the upper passageway region; and

e) drawing a vacuum on the tube in order to evaporate solvent through the filter material in a manner which permits flow through of solvent and prevents flow through of analyte material, in order to solidify, dry or precipitate annlyte within the tube, and

air flow is directed through the air channeling device to provide a blow-down evaporative effect.

5,648,272

REAGENTS AND METHODS FOR THE DETECTION AND QUANTIFICATION OF THYROXINE IN FLUID SAMPLES

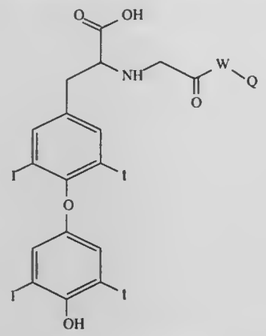
Maciej Adamczyk, Gurnee; Donald D. Johnson, Lindenhurst; Phillip G. Mattingly, Grayslake; Diana E. Clarisse, Naperville; Joan D. Tyner, Beach Park, and Mary M. Perkowitz, Lake Zurich, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 275,064, Jul. 13, 1994, Pat. No. 5,593,896, which is a division of Ser. No. 973,140, Nov. 6, 1992, Pat. No. 5,359,093, which is a continuation-in-part of Ser. No. 859,775, Mar. 30, 1992, Pat. No. 5,352,803. This application May 18, 1995, Ser. No. 443,833

Int. Cl.[6] G01N *33/533*

U.S. Cl. 436—500 **4 Claims**

1. A method of making a labelled reagent of the formula,



wherein Q is a detectable moiety and W is a linking moiety, comprising the steps of:

(a) differentially protecting the carboxylic acid, α-amino and phenolic groups of thyroxine; and

(b) selectively deprotecting the α-amino group of the thyroxine derivative; and

(c) selectively carbalkoxymethylating the α-amino group of the thyroxine derivative; followed by

(d) selectively deprotecting the α-N-carboxymethyl group and the phenolic group of the thyroxine derivative; then

(e) activating the α-N-carboxymethyl group of the thyroxine derivative; next

(f) coupling the activated α-N-carboxymethyl group of the thyroxine derivative of step (e) with a bifunctional linking moiety; then

(g) coupling the thyroxine derivative with a detectable moiety; and finally

(h) deprotecting the carboxylic acid group of the labelled reagent.

5,648,273

HEPATIC GROWTH FACTOR RECEPTOR IS THE MET PROTO-ONCOGENE

Donald P. Bottaro, Kensington; Jeffery S. Rubin, Rockville; Donna Faletto, Frederick; Andrew M.-L. Chan, Rockville, all of Md.; George F. Vande Woude, Berryville, and Stuart A. Aaronson, Great Falls, both of Va., assignors to The United States of America, as represented by the Department of Health and Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 457,556, Dec. 27, 1989, abandoned, and Ser. No. 582,063, Sep. 14, 1990, abandoned. This application Jan. 18, 1991, Ser. No. 642,971

Int. Cl.[6] G01N *33/566*

U.S. Cl. 436—501 **2 Claims**

1. A method for detecting HGF in sample comprising the steps of:

(i) contacting said sample with met proto-oncogene receptor protein under conditions such that binding of HGF present in said sample to said receptor is effected and

(ii) detecting the presence of bound HGF.

5,648,274

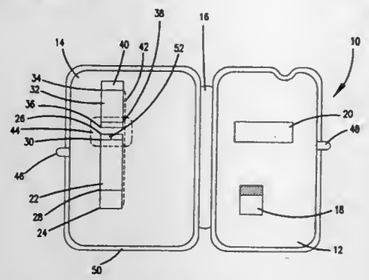
COMPETITIVE IMMUNOASSAY DEVICE

Howard M. Cbandler, Yarmouth, Me., assignor to SmithKline Diagnostics, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 40,430, Mar. 31, 1993, which is a continuation-in-part of Ser. No. 888,831, May 27, 1992, abandoned, which is a continuation of Ser. No. 194,793, Feb. 10, 1994, which is a continuation-in-part of Ser. No. 706,639, May 29, 1991. This application Jun. 2, 1995, Ser. No. 459,466

Int. Cl.[6] G01N *33/558;21/00;31/22*

U.S. Cl. 436—514 **28 Claims**



1. A competitive immunoassay device comprising:

(a) a first opposable component including:

(i) a sample preparation zone including a labeled specific binding partner for an analyte conjugated to a first member of an auxiliary specific binding pair in resolubilizable form; and

(ii) an absorber for absorbing fluid therein separated from the sample preparation zone on the first opposable component; and

(b) a second opposable component hingedly attached to the first opposable component including:

(i) a first chromatographic medium having first and second ends and including thereon:

(A) a first zone of immobilized analyte or analog thereof located closer to the first end of the chromatographic medium than to the second end of the chromatographic medium; and

(B) a second zone of an immobilized molecule which is a second member of the auxiliary specific binding pair with specific affinity for the first member located closer to the second end of the first chromatographic medium than to the first end of the first chromatographic medium;

(ii) a second chromatographic medium having a first end and a second end and including thereon a comparison zone containing a known quantity of the analyte or analog thereof immobilized to the comparison zone, the second chromatographic medium being separated from the first chromatographic medium on the first opposable component; and

(iii) a comparison label zone distinct from the comparison zone and separated from the first and second chromatographic medium including therein a labeled specific binding partner to the analyte or analog thereof in resolubilizable form in operable contact with the second chromatographic medium;

wherein when the first and second opposable components are brought into opposition from a position in which they are not in opposition, the sample preparation zone comes into operable contact with the first end of the first chromatographic medium to apply the sample and the labeled specific binding partner for the analyte conjugated to the first member of the auxiliary specific binding pair to the first chromatographic medium, and the absorber comes into operable contact with the second end of the first chromatographic medium and the second end of the second chromatographic medium to draw fluid through the first and second chromatographic medium from their first end to their second end so that the device gives a detectable comparative indication of the presence of an analyte.

5,648,275

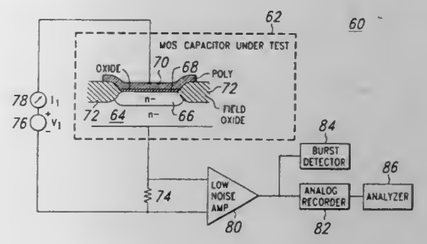
METHOD FOR DETECTING DEFECTS IN SEMICONDUCTOR INSULATORS

Michael C. Smayling, Missouri City, and Klaus A. Anselm, Austin, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 109,202, Aug. 19, 1993. This application Jun. 7, 1995, Ser. No. 482,382

Int. Cl.[6] H01L *21/66*

U.S. Cl. 437—8 **4 Claims**



1. A method for designing an integrated circuit, comprising:

a. selecting a plurality of possible gate and insulator structures;

b. providing at least one semiconductor substrate to be processed;

c. processing the substrate, the processing step including the step of forming at least one of each of the possible insulator structures on the substrate;

d. evaluating each of the possible insulator structures, the step of evaluating comprising:

i. applying a non-destructive voltage across the insulator structure to be evaluated;

ii. measuring currents induced by the voltage;

iii. determining current spectral density of the measured currents; and

iv. detecting the presence of defects in the insulator structure by comparing the current spectral density to a predetermined reference current spectral density for a known defective insulator structure;

e. for each insulator structure, comparing the results from the evaluating step with the results from the evaluating step for the other insulator structures; and

f. Selecting a preferred one of said plurality of possible gate and insulator structures based on said comparing step.

5,648,276

METHOD AND APPARATUS FOR FABRICATING A THIN FILM SEMICONDUCTOR DEVICE

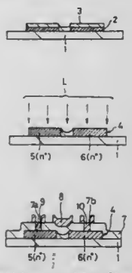
Masaki Hara; Naoki Sano; Toshiyuki Sameshima; Atsushi Kohno; Mitsunobu Sekiya; Yasuhiro Kanaya, and Michihisa Yano, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 26, 1994, Ser. No. 250,679

Claims priority, application Japan, May 27, 1993, 5-148470; Oct. 5, 1993, 5-273051

Int. Cl.[6] H01L *21/336*

U.S. Cl. 437—21 **3 Claims**



1. A method for making a thin film semiconductor device, comprising the steps of:

(a) providing a substrate having a surface;

depositing an a-Si:H,P layer on said surface by plasma CVD;

(c) patterning and etching the a-Si:H,P layer to define a channel region;

(d) depositing an a-Si:H layer thereon;

(e) laser annealing to convert the a-Si:H,P and a-Si:H layers into a first polycrystalline Si layer having defined n^+-type source and drain regions and having a first crystal grain size;

(f) depositing a second a-Si:H layer on said first polycrystalline Si layer;

(g) laser annealing to convert the second a-Si:H and first polycrystalline Si layers into a second polycrystalline Si film having a second crystal grain size larger than said first crystal grain size;

(h) depositing a gate insulating layer thereon;

(i) patterning and etching to form islands;

(j) etching the gate insulating layer to define contact holes;

(k) depositing an electrode layer thereon; and

(l) patterning and etching said electrode layer to define a source electrode, a drain electrode and a gate electrode, wherein each of steps (a)–(l) are performed in a multi-chambered apparatus, without being exposed to outside air.

3. A method for making a thin film semiconductor device, comprising the steps of:

(a) providing a substrate having a surface;

(b) depositing an a-Si:H,P layer on said surface by plasma CVD;

(c) patterning and etching the a-Si:H, P layer to define a channel region;

(d) depositing an a-Si:H layer thereon;

(e) laser annealing to convert the a-Si:H,P and a-Si:H layers into a polycrystalline Si film having defined n^+-type source and drain regions;

(f) depositing a gate insulating layer thereon;

(g) patterning and etching to form islands;

(h) etching the gate insulating layer to define contact holes;

(i) depositing an electrode layer thereon; and

(j) patterning and etching said electrode layer to define a source electrode, a drain electrode and a gate electrode,

(k) depositing an interlayer insulating film on said etched electrode layer;

(l) patterning and etching said interlayer insulating film to form contact holes aligned with said source, drain and gate electrodes;

(m) depositing a second electrode layer thereon; and

(n) patterning and etching said second electrode layer to define an extended source electrode, an extended drain electrode and an extended gate electrode wherein each of steps (a)–(n) are performed in a multi-chambered apparatus, without being exposed to outside air.

5,648,277

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE

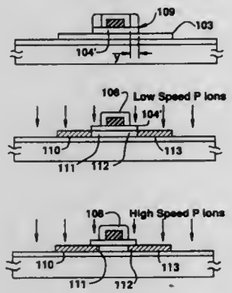
Hongyong Zhang; Naoaki Yamaguchi, and Yasuhiko Takemura, all of Kanagawa, Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Filed Nov. 2, 1994, Ser. No. 334,335

Claims priority, application Japan, Nov. 5, 1993, 5-301174; Nov. 5, 1993, 5-301176

Int. Cl.[6] H01L *21/336*

U.S. Cl. 437—21 **7 Claims**



1. A method of manufacturing a semiconductor device comprising the steps of:

forming a semiconductor layer on an insulating surface;

forming a first insulating film on said semiconductor layer;

forming a gate electrode on said first insulating film;

forming a first anodic oxide film on side surfaces of said gate electrode by applying an electric current to said gate electrode in an electrolyte;

etching said first insulating film in order to thin or remove said insulating film using said first anodic oxide film as a mask, thereby forming a gate insulating film;

removing said first anodic oxide film after said etching; and

introducing ions of an impurity of an N or P type conductivity into a portion of said semiconductor layer using said gate electrode and said gate insulating film as a mask,

wherein said introducing is carried out with at least two different conditions having a higher acceleration voltage and a lower acceleration voltage.

5. A method of manufacturing a semiconductor device comprising the steps of:

forming a semiconductor layer on an insulating surface;

forming an insulating film on an entire surface of said semiconductor layer;

forming a gate electrode on said insulating film;

patterning said insulating film into a gate insulating film in such a manner that said gate insulating film extends beyond side edges of said gate electrode but does not completely cover said semiconductor layer so that portions of said semiconductor layer are exposed; and

introducing one conductivity type impurity ions into said semiconductor layer using said gate electrode and said gate insulating layer as a mask,

wherein a condition of said introducing step is selected so that regions of said semiconductor layer located below extensions of said gate insulating film beyond said gate electrode are added with said impurity at a first concentration while exposed regions of said semiconductor layer are added with said impurity at a second concentration which is different from said first concentration,

wherein said insulating film is patterned by using a mask which is an anodic oxide film formed on side surfaces of said gate electrode.

5,648,278

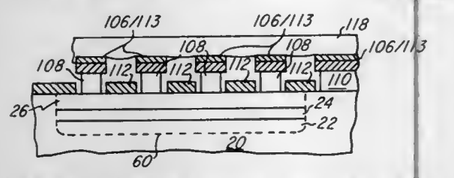
METHOD FOR FABRICATING MICROWAVE HETEROJUNCTION BIPOLAR TRANSISTORS SUITABLE FOR LOW-POWER, LOW-NOISE AND HIGH-POWER APPLICATIONS

Burhan Bayraktaroglu, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 738,691, Jul. 31, 1991, Pat. No. 5,446,294. This application Jun. 7, 1995, Ser. No. 473,164

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—31 **24 Claims**



1. A method of making a microwave beterojunction bipolar transistor suitable for low-power, low-noise and high-power applications, comprising the steps of:

providing a semi-insulating semiconductor substrate;

forming a collector layer of a first conductivity type over said substrate;

forming a base layer of a second conductivity type over said collector layer;

forming an emitter layer of said first conductivity type over said base layer, said emitter layer having a wider energy bandgap than said base layer;

defining an active area in said substrate, said collector layer, said base layer and said emitter layer;

defining a plurality of emitter regions in said emitter layer;

defining at least one base island in said base layer such that boundaries of said at least one base island do not cross boundaries of said active area; and

forming conductive contacts over said at least one base island and over at least one emitter region in said plurality of emitter regions.

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METHOD OF MANUFACTURING BIPOLAR TRANSISTOR HAVING EMITTER REGION AND EXTERNAL BASE REGION FORMED IN SELF ALIGNMENT MANNER

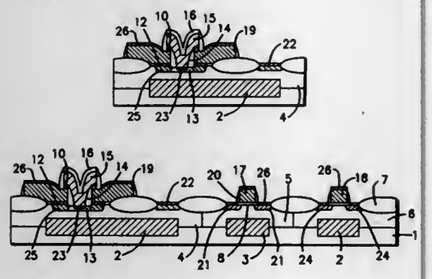
Kiyotaka Imai, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 19, 1995, Ser. No. 491,719

Claims priority, application Japan, Jun. 21, 1994, 6-138844

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—31 **2 Claims**



1. A method of manufacturing a semiconductor device including a bipolar transistor and a first MOS transistor, said method comprising the steps of:

defining in a semiconductor layer a collector region for said bipolar transistor and a substrate region for said first MOS transistor, said collector region having a first portion and a second portion around said first portion;

covering said collector region and said substrate region with an insulating film, said insulating film thereby having a first part on said collector region and a second part on said substrate region;

forming on said insulating film a first polysilicon layer having an opening above said collection region, said opening having a first area;

selectively removing said first part of said insulating film with a second area that is larger than said first area to thereby expose said first and second portions of said collector regions and form a gap between said second portion of said collector region and a part of said first polysilicon layer, said part of said first polysilicon layer having a side surface defining said opening;

filling said gap with a silicon layer;

doping first impurities into said first portion of said collector region to form an intrinsic base region;

forming a side wall spacer on said side surface of said part of said first polysilicon layer to thereby made said opening smaller than said first area;

forming a second polysilicon layer in contact with said side wall spacer and said intrinsic base region, said second polysilicon layer being doped with second impurities;

patterning said first polysilicon layer to form a base electrode and a gate electrode, said base electrode including said part of said first polysilicon layer, said gate electrode being formed on said second part of said insulating film;

doping third impurities into said base electrode and into said substrate region by using said gate electrode as a mask to form impurity doped regions in said substrate region; and

performing an annealing process to have said second impurities diffuse from said second polysilicon layer into said intrinsic base region to form an emitter region therein, have said third impurities diffuse from said base electrode into said collector region through said silicon layer to form an external base region in contact with said intrinsic base region and have said third impurities in said impurity doped regions activate to form source and drain regions for said first MOS transistor.

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METHOD FOR FABRICATING A BIPOLAR TRANSISTOR WITH A BASE LAYER HAVING AN EXTREMELY LOW RESISTANCE

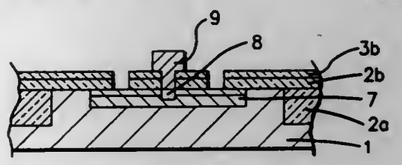
Hirosi Kato, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 26, 1995, Ser. No. 533,850

Claims priority, application Japan, Sep. 26, 1994, 6-229891

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—31 **6 Claims**



1. A method for forming a base region of a bipolar transistor comprising the steps of:

selectively forming a recessed portion having a depth in an upper region of a semiconductor substrate acting as a collector region except for field oxide films selectively formed in said semiconductor substrate, said recessed portion being formed by etching using silicon oxide films and field oxide films as masks where said field oxide films extend over edges of upper portions of said semiconductor substrate; and

selectively forming a base region which comprises a compound semiconductor epitaxial layer in said recessed portion and

said compound semiconductor epitaxial layer having a thickness corresponding to said depth of said recessed portion formed in said semiconductor substrate so that said base region has a top surface positioned at the same level as a top surface of said semiconductor substrate, said base region comprising said compound semiconductor epitaxial layer being formed by the steps of:

depositing an SiGe layer on an entire surface of said substrate so that an SiGe epitaxial layer is grown in said recess portion and an SiGe polycrystalline layer is grown on said silicon oxide film;

depositing a silicon layer on an entire surface of said substrate so that a silicon epitaxial layer is grown on said SiGe epitaxial layer and a polysilicon layer is grown on said silicon oxide film; and

removing said SiGe polycrystalline layer and said polysilicon layer so that said compound semiconductor epitaxial layer remains within said recessed portion.

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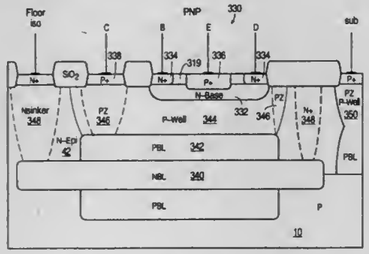
METHOD FOR FORMING AN ISOLATION STRUCTURE AND A BIPOLAR TRANSISTOR ON A SEMICONDUCTOR SUBSTRATE

Richard K. Williams, Cupertino; Hamza Yilmaz, Saratoga; Michael E. Cornell, Campbell, and Jun Wei Chen, Saratoga, all of Calif., assignors to Siliconix incorporated, Santa Clara, Calif.

Continuation of Ser. No. 463,137, Jun. 5, 1995, abandoned, which is a division of Ser. No. 323,950, Oct. 17, 1994, Pat. No. 5,559,044, which is a continuation-in-part of Ser. No. 226,419, Apr. 11, 1994, Pat. No. 5,426,328, which is a continuation of Ser. No. 948,276, Sep. 21, 1992, abandoned. This application May 8, 1996, Ser. No. 647,073

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—33 **3 Claims**



1. A method for forming an isolation structure and a bipolar transistor on a substrate layer, said substrate layer being of a semiconductor material of a first conductivity type, comprising the steps of:

doping a first area on an upper surface of said substrate layer with dopants of a second conductivity type opposite said first conductivity type to form a first buried region;

doping a second area of said upper surface of said substrate layer with dopants of said first conductivity type to form a second buried region, said second area being smaller than said first area, said second area being contained within said first area;

forming an epitaxial layer over said upper surface of said substrate layer, said epitaxial layer being of a semiconductor material of said second conductivity type, said epitaxial layer having an upper surface;

extending a well region of said first conductivity type into said epitaxial layer from said upper surface of said epitaxial layer, said well region being disposed at least partly over said second area, said well region having a bottom surface which contacts said second buried region, said second buried region being formed by said dopants of said first conductivity type which doped said second area;

forming a first contact region of said second conductivity type, more highly doped than said epitaxial layer, extending from said upper surface of said epitaxial layer and contacting said first buried region, wherein said first contact region surrounds said well region;

implanting ions of said second conductivity type into a base region of said well region at a first energy and first dosage to form a base region of said bipolar transistor;

implanting ions of said second conductivity type into said base region at a second energy, less than said first energy, and with a second dosage, greater than said first dosage, to provide a low resistivity surface doping of said base region of said bipolar transistor; and

implanting ions of said second conductivity type into said base region at a third dosage greater than said second dosage to create a base contact region at a top surface of said base region of said bipolar transistor to enable ohmic contact between a metal layer contacting said base contact region and said base region of said bipolar transistor.

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AUTODOPING PREVENTION AND OXIDE LAYER FORMATION APPARATUS

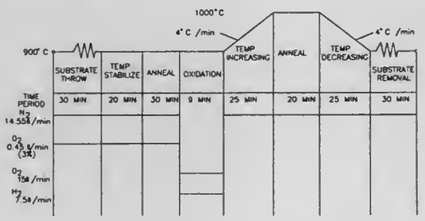
Kenji Yoneda, Kyoto, Japan, assignor to Matsushita Electronics Corporation, Osaka, Japan

Filed May 24, 1993, Ser. No. 66,758

Claims priority, application Japan, Jun. 26, 1992, 4-168774; Jul. 6, 1992, 4-178060

Int. Cl.[6] H01L *21/316*

U.S. Cl. 437—40 **8 Claims**



1. A method of manufacturing a semiconductor device with a gate oxide layer comprising the steps of: preparing a semiconductor substrate, forming a diffusion layer of a high concentration of an impurity or a conductive layer containing a high concentration of an impurity on the semiconductor substrate, forming the gate oxide layer on a surface of the semiconductor substrate and a surface of the impurity diffusion layer or the conductive layer, said forming of the gate oxide layer comprising a first step of introducing the semiconductor substrate into an oxidation apparatus, a second step of keeping the semiconductor substrate at a desired temperature, a third step of annealing the semiconductor substrate at the desired temperature and a fourth step of oxidizing the semiconductor substrate for forming the gate oxide layer, wherein the first, second and third steps are carried out in a mixed atmosphere of oxygen and nitrogen, including 1–5 volume % of oxygen, to form a thin oxide film of a thickness of 3–5 nm prior to the formation of the gate oxide layer, said thin oxide film working as a barrier against external diffusion of the high concentration impurity into the surface of the semiconductor substrate to suppress external or unintentional diffusion of the impurity.

5,648,283

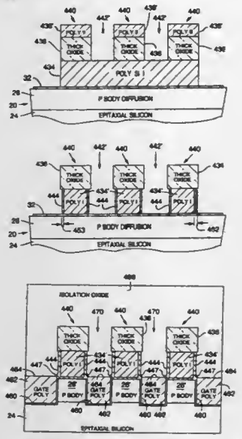
HIGH DENSITY POWER DEVICE FABRICATION PROCESS USING UNDERCUT OXIDE SIDEWALLS

Dah Wen Tsang; Dumitru Sdrulla; Douglas A. Pike, Jr., all of Bend, Oreg.; Theodore O. Meyer, Austin, Tex., and John W. Mosier, II, deceased, late of Bend, Oreg., assignors to Advanced Power Technology, Inc., Bend, Oreg.

Continuation-in-part of Ser. No. 927,169, Aug. 7, 1992, Pat. No. 5,283,201. This application Jan. 31, 1994, Ser. No. 190,325

Int. Cl.[6] H01L *21/265;49/00*

U.S. Cl. 437—40 **34 Claims**



1. A method of making a recessed gate field effect power MOS device, the method comprising:

forming a substrate including a first doped layer of a first dopant polarity defining a drain region and a second doped layer of a second dopant polarity opposite to the first dopant polarity defining a body region adjoining an upper surface of the substrate over the drain region;

forming a lower oxide layer atop the second doped layer;

forming a trenching protective layer including a lower polysilicon layer on the lower oxide layer, an intermediate oxide layer, and an upper polysilicon layer on the intermediate oxide layer;

masking and patterning the trenching protective layer to define an exposed first area and a protected second area of the lower oxide layer on the upper surface of the substrate demarcated by opposite sides of the trenching protective layer in which opposite sides of the lower polysilicon layer and upwardly adjacent sides of the intermediate oxide layer are exposed;

forming undercut oxide sidewalls having inner surfaces contacting the sides of the lower polysilicon layer of the trenching protective layer and outer surfaces spaced from the sides of the lower polysilicon layer to define a thickness of the undercut oxide sidewalls, the sides of the lower polysilicon layer being spaced inward from the upwardly adjacent sides of the intermediate oxide layer by a spacing greater than the thickness of the undercut oxide sidewalls;

etching through the lower oxide layer to expose the upper surface of the substrate in the exposed first area and to form a pair of opposed rims along an intersection of each of the undercut oxide sidewalls and the lower oxide layer, each rim protruding laterally from the outer surface of the undercut oxide sidewall above the upper surface of the substrate;

forming in the upper surface of the substrate, between the opposed rims first trench having sidewalls aligned relative to the outer edges of the opposed rims and extending at least through the second layer defining the body region to a bottom wall spaced to a depth from the upper surface of the substrate;

forming a gate oxide layer on each of the sidewalls of the first trench;

filling the first trench with polysilicon to a level adjoining the opposed rims;

applying a protective layer over the polysilicon filled into the first trench, between the undercut oxide sidewalls and in contact with the outer surfaces of the undercut oxide sidewalls;

removing the trenching protective layer and the lower oxide layer in the protected second area to expose a second area of the upper surface of the substrate between the inner surfaces of the undercut sidewalls;

doping the second area of the upper surface of the substrate adjoining the gate oxide layer on each of the sidewalls of the first trench with dopant of said second dopant polarity to form a source region atop the body region;

forming, in the second area of the substrate spaced from the inner surfaces of the undercut oxide sidewalls, a second trench having sidewalls spaced from the inner surfaces of the undercut oxide sidewalls and extending through the source region to a bottom wall in the body region; and

depositing a source conductive layer in the second trench in contact with the source region and the body region;

the second trench through the source region and the body region defining vertically-oriented source and body layers stacked along the gate oxide layer on opposite sidewalls of the second trench and having a lateral thickness established by the spacing of the inner and outer surfaces of the undercut oxide sidewalls and rims.

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FIELD EFFECT TRANSISTOR INCLUDING SILICON OXIDE FILM AND NITRIDED OXIDE FILM AS GATE INSULATOR FILM AND MANUFACTURING METHOD THEREOF

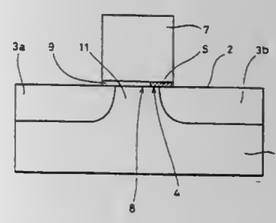
Shigeru Kusunoki, and Masahide Inuishi, both of Hyogo-ken, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 341,952, Nov. 16, 1994, abandoned, which is a division of Ser. No. 930,932, Aug. 18, 1992, Pat. No. 5,369,297. This application May 24, 1996, Ser. No. 653,090

Claims priority, application Japan, Sep. 5, 1991, 3-225686; Dec. 6, 1991, 3-323239; Jul. 3, 1992, 4-176873

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—40 GS **7 Claims**



1. A method of manufacturing a field effect transistor for controlling a flow of carriers by a voltage applied to a gate electrode, said method comprising the following sequential steps:

forming a silicon oxide film on a main surface of a semiconductor substrate;

forming a gate electrode on said silicon oxide film;

nitriding said silicon oxide film located near a side portion of said gate electrode by heating while said silicon oxide film is exposed to a nitriding atmosphere to form a nitrided oxide film; and

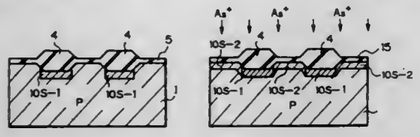
forming a source region and a drain region in said semiconductor substrate with said gate electrode used as a mask.

5,648,285

METHOD FOR MANUFACTURING SEMICONDUCTOR NONVOLATILE MEMORY DEVICE WITH FIELD INSULATING LAYER

Kiyokazu Ishige, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 26, 1995, Ser. No. 533,966
Claims priority, application Japan, Sep. 26, 1994, 6-229921
Int. Cl.[6] H01L *21/8247*
U.S. Cl. 437—43 **6 Claims**



1. A method for manufacturing a semiconductor memory device including a plurality of field areas in parallel with each other along a first direction, a plurality of electrode areas in parallel with each other along a second direction approximately perpendicular to said first direction, a plurality of source areas surrounded by said field areas and said electrode areas, and a plurality of drain areas surrounded by said field areas and said electrode areas, said source areas and said drain areas being alternately arranged with respect to said electrode areas, comprising the steps of:

a) preparing a semiconductor substrate of a first conductivity type;

b) introducing impurities of a second conductivity type opposite to said first conductivity type into said field areas of said semiconductor substrate sandwiched by said source areas;

c) forming a plurality of insulating layers in said field areas of said semiconductor substrate after step b);

d) forming an electrode layer in said electrode area of said semiconductor substrate after step c); and

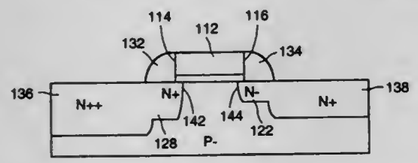
e) introducing impurities of said second conductivity type into said source areas and drain areas of said semiconductor substrate after step d).

5,648,286

METHOD OF MAKING ASYMMETRICAL TRANSISTOR WITH LIGHTLY DOPED DRAIN REGION, HEAVILY DOPED SOURCE AND DRAIN REGIONS, AND ULTRA-HEAVILY DOPED SOURCE REGION

Mark I. Gardner, Cedar Creek; H. Jim Fulford, Jr., and Derick J. Wristers, both of Austin, all of Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Sep. 3, 1996, Ser. No. 711,383
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—44 **18 Claims**



1. A method of making an asymmetrical IGFET, comprising the steps of:

providing a semiconductor substrate;

forming a gate with first and second opposing sidewalls over the substrate;

applying a first ion implantation to implant lightly doped source and drain regions into the substrate;

applying a second ion implantation to convert substantially all of the lightly doped source region into a heavily doped source region without doping the lightly doped drain region;

forming first and second spacers adjacent to the first and second sidewalls, respectively;

applying a third ion implantation to convert a portion of the heavily doped source region outside the first spacer into an ultra-heavily doped source region without doping a portion of the heavily doped source region beneath the first spacer, and to convert a portion of the lightly doped drain region outside the second spacer into a heavily doped drain region without doping a portion of the lightly doped drain region beneath the second spacer; and

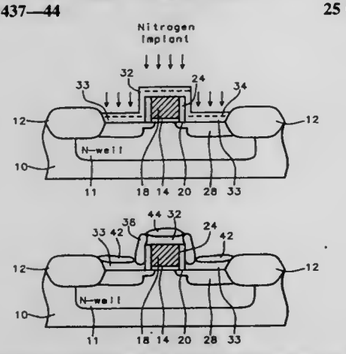
forming a source and a drain, wherein the source includes the heavily doped and ultra-heavily doped source regions, and the drain includes the lightly doped and heavily doped drain regions.

5,648,287

METHOD OF SALICIDATION FOR DEEP QUARTER MICRON LDD MOSFET DEVICES

Chao-Chieh Tsai, Taichung, Taiwan, and Shie-Sen Peng, Los Altos, Calif., assignors to Taiwan Semiconductor Manufacturing Company, Ltd., Hsin-Chu, Taiwan

Filed Oct. 11, 1996, Ser. No. 729,995
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—44 **25 Claims**



1. A method for manufacturing a semiconductor device having a salicide structure, the method comprising the steps of:

a) forming a gate electrode having vertical sidewalls over a semiconductor structure; said semiconductor structure having active regions on opposite sides of said gate electrode;

b) forming lightly doped source/drain regions in said active regions;

c) forming first sidewall spacers on said sidewalls of said gate electrode, said first sidewall spacers having sidewalls;

d) forming highly doped source/drain regions in said active region;

e) depositing an amorphous silicon layer over the resultant surface;

f) patterning said amorphous silicon layer leaving said amorphous silicon layer over said sidewalls of said first sidewall spacers, and leaving said amorphous silicon layer over said highly doped source/drain regions and said gate electrode to form source/drain contact pads and gate contact pads respectively;

g) implanting nitrogen ions into said source/drain contact pads, said gate contact pads and said amorphous silicon layer over said sidewalls of said first sidewall spacers, said nitrogen ions building up on the surface said gate contact pads and said soured drain contact pads forming a nitrogen rich layer, said nitrogen rich layer acting as an oxidation barrier over said gate electrode and said highly doped source/drain regions;

h) oxidizing said amorphous silicon layer forming a second sidewall spacer composed of silicon oxide over said sidewalls

of said first sidewall spacer, and forming an oxynitride layer over said gate contact pad and said source/drain contact pads;

i) removing a part of said oxynitride layer over said amorphous silicon layer;

j) depositing a titanium layer over the resultant surface;

k) performing a first rapid thermal anneal on said semiconductor structure forming titanium silicide contacts on said gate contact pads and said source/drain contact pads; and

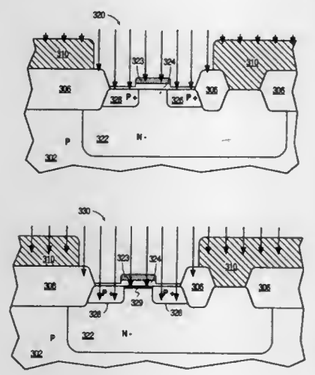
l) removing the remaining titanium layer over said second sidewall spacer.

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THRESHOLD ADJUSTMENT IN FIELD EFFECT SEMICONDUCTOR DEVICES

Richard K. Williams, Cupertino, and Michael E. Cornell, Campbell, both of Calif., assignors to Siliconix incorporated, Santa Clara, Calif.

Continuation of Ser. No. 855,373, Mar. 20, 1992, abandoned.
This application Jul. 27, 1994, Ser. No. 281,314
Int. Cl.[6] H01L *21/265*
U.S. Cl. 437—45 **35 Claims**



1. A method of fabricating a field effect transistor having an adjusted threshold voltage, said method comprising performing the following steps in the order indicated:

(a) providing a substrate which includes a semiconductor material of a first conductivity type;

(b) forming a gate oxide on a surface of said substrate;

(c) forming a gate on a surface of said gate oxide;

(d) performing a first implant of dopant of a second conductivity type so as to form a source region and a drain region in said semiconductor material on opposite sides, respectively, of said gate; and

(e) performing a second implant of dopant of said second conductivity type through said gate and said gate oxide so as to create a threshold adjustment region in said substrate between said source region and said drain region;

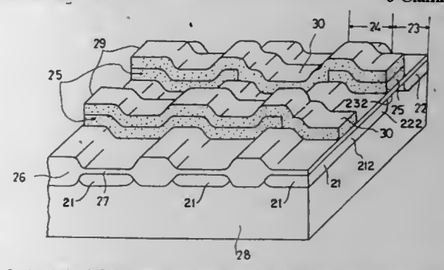
wherein said second implant is performed at a dosage which is lower than, and at an energy which is higher than, said first implant and wherein said first implant is performed at a dosage of from 5×10^{14} to 5×10^{15} atoms/cm^2 and at an energy of from 50 to 120 keV.

5,648,289

METHOD FOR CODING SEMICONDUCTOR READ ONLY MEMORY DEVICE

Soung Hwi Park, Kyungsangbuk-do, Rep. of Korea, assignor to LG Semicon Co., Ltd., Chungcheongbuk-do, Rep. of Korea

Filed May 23, 1995, Ser. No. 447,609
Claims priority, application Rep. of Korea, Jun. 30, 1994, 94-15409
Int. Cl.[6] H01L *21/265;27/00;21/70*
U.S. Cl. 437—48 **6 Claims**



1. A method for coding a semiconductor ROM, comprising the steps of:

forming field regions and active regions on a substrate;

forming a gate insulating layer on the active regions;

forming a polysilicon-gate layer on a portion of the gate insulating layer where an enhancement transistor is to be formed;

carrying out an ion-implementation to form a source and a drain of the enhancement transistor, and to form a source, a drain and a channel region of a depletion transistor by utilizing said polysilicon-gate layer as a mask; and

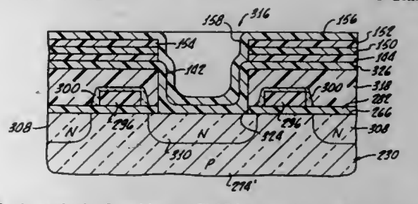
forming a gate line of said enhancement transistor on the polysilicon gate layer, and forming a gate line of said depletion transistor on the gate insulating layer, said gate line of said depletion transistor extending from said gate line of said enhancement transistor.

5,648,290

METHOD OF MAKING A CMOS DYNAMIC RANDOM-ACCESS MEMORY (DRAM)

Abraham Yee, Santa Clara, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Filed Dec. 30, 1994, Ser. No. 366,786
Int. Cl.[6] H01L *21/8242*
U.S. Cl. 437—52 **8 Claims**



1. A method of making a CMOS-technology DRAM having multiple memory cells, each of said multiple memory cells including an FET transistor and a capacitor, said method comprising, in sequence, the steps of:

providing a silicon substrate having a well of selected polarity and a pair of spaced apart source and drain implantations each of like polarity opposite to said selected polarity of said well;

providing first oxide layer over said well;

forming a conductive gate disposed upon said substrate between said source and drain implantations;

forming a hole through said first oxide layer aligning with a selected one of said source and drain implantations and exposing said selected one implantation;

providing a conductive layer of silicon extending through said hole and making electrically conductive contact with said selected one implantation and extending across said oxide layer to define a recess congruent with said hole;

forming a second oxide layer on said conductive layer of silicon to fill recess;

using said second oxide layer to present planar surface; and

forming a plurality of alternating layers of material on said second oxide layer, with at least alternate layers of said plurality of alternating layers of material being conductive;

removing part of said plurality of alternating layers of material in a pattern to form from a remaining part of said plurality of alternating layers of material a capacitor plate structure including a remaining part or each of said plurality of alternating layers of material which are congruent with one another and congruent with said selected one of said source and drain implantations.

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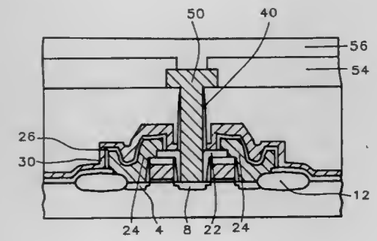
METHOD FOR FABRICATING A BIT LINE OVER A CAPACITOR ARRAY OF MEMORY CELLS

Jan Mye Sung, Pu-Hsin, Taiwan, assignor to Vanguard International Semiconductor Corporation, Hsin-Chu, Taiwan

Filed Jun. 3, 1996, Ser. No. 657,131

Int. Cl.[6] H01L *21/70*

U.S. Cl. 437—52 **21 Claims**



1. A method of fabrication of a bit line over a capacitor of a semiconductor memory cell, providing a drain region between two spaced transfer gates on a substrate, said spaced transfer gates having sources on the sides opposite said drain; said spaced transfer gates having inside sidewalls facing said drain and having outside sidewalls facing said sources; and said spaced transfer gates having top transfer gate surfaces; said substrate having spaced field oxide regions defining active areas containing said source and drains; comprising the steps of:

a) forming a first insulation layer at least over said drain, said inside sidewalls of said transfer gates, and said top gate electrode surfaces;

b) forming storage electrodes over said sources, said outside sidewalls of said transfer gates, and over portions of said top transfer gate surfaces; said storage electrodes forming an electrical connection to said drains;

c) forming a capacitor dielectric layer over said storage electrodes;

d) forming a first conductive layer over at least said capacitor dielectric layer, and said first insulation layer;

e) forming an inter metal dielectric layer over said first conductive layer;

f) forming a first opening in said first inter metal dielectric layer over said drain exposing said first conductive layer over said drain; said first opening defined at least by sidewalls of said inter metal dielectric layer;

g) anisotropically etching said exposed first conductive layer in said first opening; the anisotropic etch exposing said first insulation layer over said drain; the anisotropic etch forming sidewalls in said first conductive layer in said first opening;

h) forming dielectric spacers on the sidewalls of said inter metal dielectric layer and said first conductive layer; and forming a second opening defined by at least said dielectric spacers; and

i) forming a bit line contact plug in said second opening contacting said drain.

5,648,292

METHOD FOR PREVENTING MICROROUGHNESS AND CONTAMINATION DURING CCD MANUFACTURE

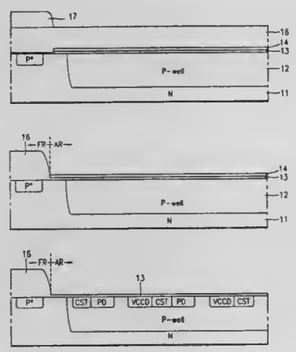
Shang Ho Moon, Seoul, Rep. of Korea, assignor to LG Semicon Co., Ltd., Rep. of Korea

Filed May 2, 1995, Ser. No. 432,715

Claims priority, application Rep. of Korea, May 3, 1994, 9727/1994

Int. Cl.[6] H01L *21/70;27/00;21/302;21/304*

U.S. Cl. 437—53 **16 Claims**



1. A method of fabricating a charge coupled device, the method comprising the steps of:

a) providing a substrate having a first conductivity-type;

b) forming a first insulation layer on the substrate;

c) forming a second insulation layer on the first insulation layer;

d) forming a well in a portion of the substrate, the well having a second conductivity-type opposite to the first conductivity-type;

e) selectively removing a portion of the second insulation layer thereby defining a field region where part of the second insulation layer has been removed and defining an active region where another part of the second insulation layer has not been removed;

f) selectively forming a subregion of the second conductivity-type in the field region;

g) forming a third insulation layer on the field region and the active region;

h) selectively removing the third insulation layer in the active region such that the second insulation layer is exposed,

the second insulation layer acting as a removal-stopper that protects the well thereunder;

i) forming separation regions in the well between what will become photodiode regions corresponding to pixels of the charge coupled device;

j) forming each of the photodiode regions for each of the pixels of the charge coupled device; and

k) forming charge transfer regions to selectively output charges formed at the photodiode regions.

5,648,293

METHOD OF GROWING AN AMORPHOUS SILICON FILM

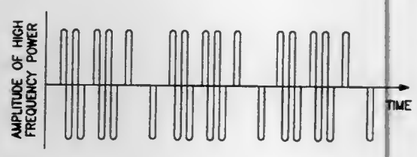
Hiroshi Hayama; Hiroyuki Uchida, and Kazushige Takechi, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jul. 22, 1994, Ser. No. 273,156

Claims priority, application Japan, Jul. 22, 1993, 5-181470; Jul. 26, 1993, 5-183788; Aug. 11, 1993, 5-199402

Int. Cl.[6] H01L *21/02*

U.S. Cl. 437—101 **7 Claims**



1. A method of depositing an amorphous silicon film wherein a discontinuous discharge process having a cyclic frequency of at least 500 Hz and comprising alternate high duty ratio periods and low duty ratio periods is carried out to decompose a silane system gas for a chemical vapor deposition for depositing an amorphous silicon film.

5,648,294

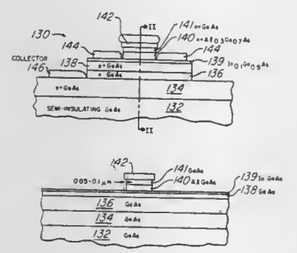
INTEGRATED CIRCUIT AND METHOD

Burhan Bayraktaroglu, Plano, Tex., assignor to Texas Instruments Incorp., Dallas, Tex.

Division of Ser. No. 179,238, Jan. 10, 1994, which is a division of Ser. No. 649,378, Jan. 31, 1991, Pat. No. 5,283,448, which is a continuation of Ser. No. 443,295, Nov. 29, 1989, abandoned. This application Jun. 7, 1995, Ser. No. 473,796

Int. Cl.[6] H01L *21/20*

U.S. Cl. 437—126 **2 Claims**



1. A method of fabrication of a semiconductor device, comprising the steps of:

(a) forming a layered structure with layers corresponding to elements of a device plus an etch stop layer, said etch stop layer of dimensions to avoid disruption of operation of said device;

(b) etching at least one of said layers and stopping said etch on said etch stop layer; said

(c) formation of said elements of said device and wherein:

said layers include $Al_xGal_{1-x}As$ and GaAs;

said etch stop layer includes $In_yGa_{1-y}As$; and

said etching includes plasmas with species derived from BCl_3.

5,648,295

METHOD OF MAKING A SEMICONDUCTOR LASER DEVICE

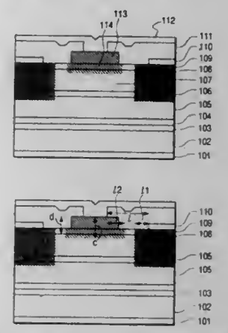
Hiromi Otoma; Nobuaki Ueki; Hideki Fukunaga; Hideo Nakayama; Yasuji Seko, and Mario Fuse, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Division of Ser. No. 523,389, Sep. 5, 1995, Pat. No. 5,588,016. This application Jul. 29, 1996, Ser. No. 687,938

Claims priority, application Japan, Sep. 6, 1994, 6-212650

Int. Cl.[6] H01L *21/20*

U.S. Cl. 437—129 **4 Claims**



1. A method for manufacturing a semiconductor laser device, comprising the steps of:

a) forming a first cladding layer made of semiconductor of a first conductivity type on a substrate;

b) forming a quantum well active layer made of semiconductor on said first cladding layer;

c) forming a second cladding layer layered on said quantum well active layer, said second cladding layer being made of semiconductor material of a second conductivity type that is opposite to said first conductivity type;

d) forming an intermediate layer on said second cladding layer, said intermediate layer being made of semiconductor material of said first conductivity type or nonconductive type semiconductor;

e) forming a contact layer on a part of said intermediate layer, said contact layer being made of semiconductor material of said first conductivity type or nonconductive type semiconductor;

f) forming a first impurity layer at a location deviated sideways from said contact layer, said first impurity layer being made of a first impurity for forming a mixed crystal of said second conductivity type by diffusing said first impurity into said second cladding layer;

g) forming a mixed-crystal by diffusing the first impurity into the structure up to said quantum well active layer after said first impurity layer is formed; and

h) forming a low resistance region of a second conductivity type by diffusing a second impurity, said low resistance region being extended over a range from said contact layer, through said intermediate layer, to part of said second cladding layer, and being isolated from said mixed-crystal region by said intermediate layer.

5,648,296

POST-FABRICATION REPAIR METHOD FOR THIN FILM IMAGER DEVICES

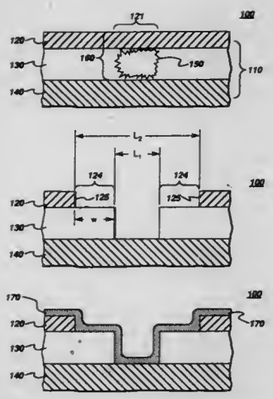
Roger Stephen Salisbury, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jul. 27, 1994, Ser. No. 280,970

Int. Cl.[6] H01L *21/283*

U.S. Cl. 437—173 **9 Claims**

1. A method of repairing a defect in a thin film electronic imager device between an upper conductive layer and an underlying electrically conductive component disposed in in the device so as



to limit electrical leakage between the upper conductive layer and the underlying electrically conductive component, the method comprising the steps of:

removing a first portion of said upper conductive layer at a repair site;

removing a defect region at said repair site in a dielectric layer underlying said upper conductive layer so as to excise said defect;

removing a second portion of said upper conductive layer around the periphery of said defect region so as to form an intermediate step in said dielectric layer between said upper conductive layer and said defect region such that said upper conductive layer is set back from a sidewall defining said defect region, whereby said upper conductive layer is electrically isolated from said underlying electrically conductive component so as to reduce electrical leakage therebetween; and

disposing a passivation layer over said upper conductive layer, said intermediate step in said dielectric layer, and said defect region.

5,648,297

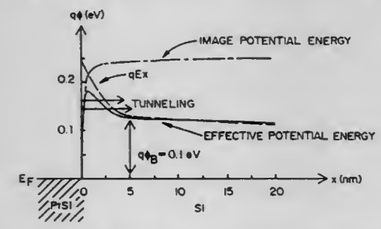
LONG-WAVELENGTH PTSI INFRARED DETECTORS AND METHOD OF FABRICATION THEREOF

True-Lon Lin, Cerritos; Jin S. Park, Gardena; Sarath D. Gunapala, Valencia; Eric W. Jones, Los Angeles, and Hector M. Del Castillo, Pasadena, all of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 342,455, Nov. 17, 1994, abandoned, which is a continuation-in-part of Ser. No. 247,959, May 23, 1994, abandoned. This application May 21, 1996, Ser. No. 646,795

Int. Cl.[6] H01L *31/00;21/44*

U.S. Cl. 437—178 **12 Claims**



1. A method of fabricating a PtSi Schottky infrared detector comprising the steps of:

a) providing a Si substrate;

b) depositing less than 2 nm thick layer of p-doped Si onto said substrate; and

c) depositing a layer of PtSi on said p-doped Si layer by co-evaporating Pt and Si in a 1:1 ratio while the substrate is held at a temperature of about 450 degrees C.

5,648,298

METHODS FOR FORMING A CONTACT IN A SEMICONDUCTOR DEVICE

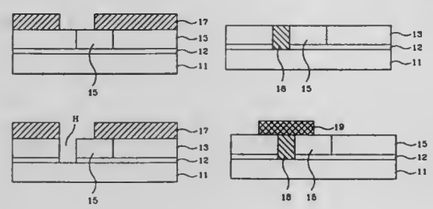
Gyung-Su Cho, Kyoungki-do, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Ichon, Rep. of Korea

Filed Mar. 4, 1996, Ser. No. 610,718

Claims priority, application Rep. of Korea, Mar. 4, 1995, 95-4444; Mar. 4, 1995, 95-4451

Int. Cl.[6] H01L *21/44*

U.S. Cl. 437—187 **15 Claims**



1. A method for forming a contact of a semiconductor device, comprising the steps of:

forming first and second films which are different from each other on a semiconductor substrate, and then forming a first photoresist pattern on the second film;

etching the second film using the first photoresist pattern, and then removing said first photoresist pattern to thereby form a first hole in a remainder of the second film;

forming a third film having an etch rate slower than etch rates of the first and the second films so as to fill the first hole and cover the remainder of the second film;

removing the third film covering the remainder of the second film until exposing said second film and said first hole filled with the third film;

forming a second photoresist pattern in order to expose only a limited area where the remainder of the second film and the first hole filled with the third film are in contact with each other;

etching said third, second and first films using the second photoresist pattern to expose said semiconductor substrate to thereby form a contact hole, and removing the second photoresist pattern;

forming a contact plug in said contact hole; and

forming a metal interconnection line on at least one of said second and third films so as to make contact with said contact plug.

5,648,299

PACKAGED SEMICONDUCTOR DEVICE AND A LEADFRAME THEREFOR

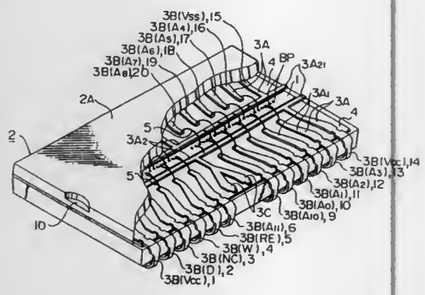
Ichiro Anjoh, Koganei; Gen Murakami, Tama, both of Japan; Michael Anthony Lamson, Van Alstyne, and Katherine Gall Heinen, Dallas, both of Tex., assignors to Hitachi, Ltd., Tokyo, Japan, and Texas Instruments, Inc., Dallas, Tex.

Continuation of Ser. No. 451,267, May 30, 1995, Pat. No. 5,585,665, which is a continuation of Ser. No. 989,956, Dec. 20, 1992, Pat. No. 5,442,233, which is a continuation of Ser. No. 620,206, Nov. 30, 1990, abandoned. This application Jun. 4, 1996, Ser. No. 658,128

Claims priority, application Japan, Dec. 1, 1989, 1-312401

Int. Cl.[6] H01L *21/60*

U.S. Cl. 437—209 **11 Claims**



1. A method of manufacturing a packaged semiconductor device, comprising the steps of:

(a) providing a rectangular shaped semiconductor chip having a main surface with integrated circuits and bonding pads, and providing a lead frame,

said lead frame having:

a pair of outer frames extending in a first direction and being spaced from each other,

a common potential lead arranged between said pair of outer frames and extending in a second direction substantially perpendicular to said first direction,

signal leads arranged between said pair of outer frames and extending in said first direction, each of said signal leads having a first end portion in the vicinity of said common potential lead, and

chip supporting leads connecting said common potential lead with said pair of outer frames, said common potential lead, said chip supporting leads and said pair of outer frames being continuous with one another;

(b) fixing said main surface of said rectangular shaped semiconductor chip to said common potential lead of said lead frame;

(c) electrically connecting said bonding pads with first end portions of said signal leads by bonding wires;

(d) sealing said rectangular shaped semiconductor chip, bonding wires, a part of each of said signal leads and a part of said common potential lead with a resin member; and

(e) cutting said chip supporting leads such that said common potential lead and said pair of outer frames are separated from each other.

5,648,300

METHOD OF MANUFACTURING CANTILEVER DRIVE MECHANISM AND PROBE DRIVE MECHANISM

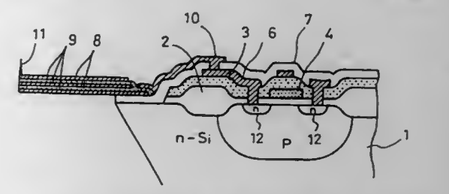
Masaru Nakayama; Osamu Takamatsu, both of Atsugi; Takayuki Yagi, Machida; Keisuke Yamamoto, Yamato; Takehiko Kawasaki, Isehara; Yasuhiro Shimada, and Yoshio Suzuki, both of Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 240,479, May 10, 1994, Pat. No. 5,398,229, which is a division of Ser. No. 951,751, Sep. 28, 1992, Pat. No. 5,334,835. This application Nov. 18, 1994, Ser. No. 344,585

Claims priority, application Japan, Oct. 3, 1991, 3-281891; Aug. 29, 1992, 4-248925

Int. Cl.[6] H01L *21/465*

U.S. Cl. 437—228 **22 Claims**



1. A method of manufacturing a cantilever drive mechanism having a cantilever portion and a circuit portion which is positioned adjacent to the cantilever portion and drives the cantilever portion, formed on a substrate, said method comprising the steps of:

forming the circuit portion on the substrate;

forming a protection layer on the substrate including the circuit portion;

forming the cantilever portion on the protection layer adjacent to the circuit portion;

removing only a portion of the substrate corresponding to the cantilever portion; and

leaving a portion of the protection layer corresponding to the circuit portion and removing a portion of the protection layer corresponding to the cantilever portion.

5,648,301

BIOACTIVE MATERIAL TEMPLATE FOR IN VITRO SYNTHESIS OF BONE TISSUE

Paul Ducheyne, Rosemont; Ahmed El-Ghannam, and Irving Shapiro, both of Philadelphia, all of Pa., assignors to Trustees of the University of Pennsylvania, Philadelphia, Pa.

Division of Ser. No. 278,579, Jul. 21, 1994, which is a continuation of Ser. No. 929,104, Aug. 13, 1992, abandoned. This application Jun. 2, 1995, Ser. No. 459,002

Int. Cl.[6] C03C *3/087;3/097*

U.S. Cl. 501—39 **5 Claims**



1. A porous bioactive substrate comprising a glass having the following composition: 40–60% by weight SiO_2; 10–35% by weight CaO; 5–30% by weight Na_2O; and 0–12% by weight P_2O_5, said substrate having a porosity of from about 10 to about 80% and a pore size of less than about 800 μm, and substantially no crystallization.

5,648,302

SEALING GLASSES FOR TITANIUM AND TITANIUM ALLOYS

Richard K. Brow; Howard L. McCollister; Carol C. Phifer, all of Albuquerque, N. Mex., and Delbert E. Day, Rolla, Mo., assignors to Sandia Corporation, Albuquerque, N. Mex.

Filed Sep. 13, 1996, Ser. No. 713,294

Int. Cl.[6] C03C *3/068;3/15*

U.S. Cl. 501—50 **19 Claims**

1. A sealing-glass composition for forming a glass-to-metal seal with titanium or a titanium alloy, comprising:

40–70 mole-% B_2O_3;

5–30 mole-% BaO;

5–20 mole-% La_2O_3; and

at least one oxide selected from the group consisting of:

Al_2O_3 in the amount of 0–20 mole-%;

CaO in the amount of 0–12 mole-%;

Li_2O in the amount of 0–8 mole-%;

Na_2O in the amount of 0–8 mole-%;

SiO_2 in the amount of 0–8 mole-%; and

TiO_2 in the amount of 0–15 mole-%.

5,648,303

NON-MAGNETIC CERAMICS FOR RECORDING/REPRODUCING HEADS AND METHOD OF PRODUCING THE SAME

Tsunehiko Nakamura, Kokubu, Japan, assignor to Kyocera Corporation, Kyoto, Japan

Filed Feb. 27, 1995, Ser. No. 395,221

Claims priority, application Japan, Feb. 25, 1994, 6-027807; Feb. 25, 1994, 6-027808; Feb. 25, 1994, 6-029864; Apr. 13, 1994, 6-074547

Int. Cl.[6] C04B *35/00*

U.S. Cl. 501—87 **13 Claims**



1. Non-magnetic ceramics for recording/reproducing heads comprising alumina in an amount of from 5 to 35% by volume and silicon carbide in an amount of from 65 to 95% by volume, wherein the ceramic is obtainable by processing under heat and pressure a pre-sintered mold body composed of alumina and silicon carbide and has a Young's modulus of not smaller than 370 GPa and a surface coarseness Ra after milling of not larger than 100 nm.

5,648,304

OXYGEN PERMEABLE MIXED CONDUCTOR MEMBRANES

Terry J. Mazanec, 7168 Selworthy La., Solon, Ohio 44139, and Thomas L. Cable, 10685 Pekin Rd., Newbury, Ohio 44065

Continuation of Ser. No. 311,295, Sep. 23, 1994, abandoned. This application Mar. 13, 1996, Ser. No. 615,580

Int. Cl.[6] C04B *35/26*

U.S. Cl. 501—134 **12 Claims**

1. A composition comprising substantially cubic perovskite structure, substantially stable in air over the temperature range of 25°–950° C., represented by the empirical formula

$$[A_{1-x}A'_x][Co_{1-y-z}B_yB'_z]O_{3-\delta},$$

wherein

A is chosen from the group consisting of Ca, Sr, Ba, and mixtures thereof;

A' is chosen from the group consisting of La, Y, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, Th, U, and mixtures thereof;

B is chosen from the group consisting of Fe, Mn, Cr, V, Ti, and mixtures thereof;

B' is chosen from the group consisting of Cu, Ni, and mixtures thereof;

x is not less than about 0.0001 and not greater than about 0.1;

y is not less than about 0.002 and less than 0.05;

z is not less than about 0.0005 and not greater than about 0.3; and

δ is determined by the valence of the metals.

12. A membrane comprising a composition of substantially cubic perovskite structure, substantially stable in air over the temperature range of 25°–950° C., represented by the empirical formula

$$[A_{1-x}A'_x][Co_{1-y-z}B_yB'_z]O_{3-\delta}$$

wherein

A is chosen from the group consisting of Ca, Sr, Ba, and mixtures thereof;

A' is chosen from the group consisting of La, Y, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, Th, U, and mixtures thereof;

B is chosen from the group consisting of Fe, Mn, Cr, V, Ti, and mixtures thereof;

B' is chosen from the group consisting of Cu, Ni, and mixtures thereof;

x is not less than about 0.0001 and not greater than about 0.1;

y is not less than about 0.002 and less than 0.05;

z is not less than about 0.0005 and not greater than about 0.3; and

δ is determined by the valence of the metals; wherein said membrane has a thickness between about 0.0005 and about 2 mm.

5,648,305

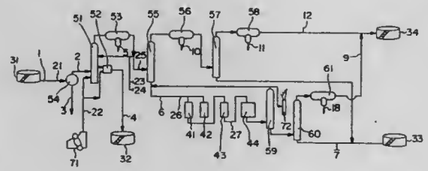
PROCESS FOR IMPROVING THE EFFECTIVENESS OF PROCESS CATALYST

William D. Mansfield, 11543 Blackwater Rd., Baker, La. 70714; Todd L. Foret, 107 N. Morein St., Ville Platte, La. 70586, and Hubert P. Vidrine, Rt. 1, Box 191, Opelousas, La. 70570

Continuation of Ser. No. 252,012, Jun. 1, 1994, abandoned. This application May 24, 1996, Ser. No. 656,004

Int. Cl.[6] B01J *38/50;38/60;* **C10G** *35/04*

U.S. Cl. 502—27 **7 Claims**



1. A process for improving the effectiveness of a refinery process catalyst wherein said process catalyst is a catalyst used in the reformer of a refinery operation which comprises:

adding a reducing agent selected from the group consisting of hydrazine, oximes, hydroxylmines, carbohydrazide, erythorbic acid and mixtures thereof to a refinery process stream which contacts said refinery process catalyst in the reformer of a refinery operation in an mount effective to increase the liquid yield across the reformer.

5,648,306

PROCESS FOR PRODUCING SORBENTS BASED ON SMECTITES TO ABSORB LIQUIDS

Reinhard Hähn, Vilsheim; Otto Haubensak, Brannenburg, and Max Eisgruber, Bruckberg, all of Germany, assignors to Sud-Chemie AG, Munich, Germany

PCT No. PCT/EP94/03723, § 371 Date Oct. 2, 1995, § 102(e) Date Oct. 2, 1995, PCT Pub. No. WO95/13134, PCT Pub. Date May 18, 1995

PCT Filed Nov. 10, 1994, Ser. No. 481,364

Claims priority, application Germany, Nov. 10, 1993, 43 38 362.9

Int. Cl.[6] B01J *21/16;20/00*

U.S. Cl. 502—80 **18 Claims**

1. A process for producing sorbents based on smectites for absorbing liquids, comprising

mixing together

(a) a smectite with a water content of less than about 6% by weight;

(b) a wet mass of fibrous cellulose and inorganic pigments which forms during the treatment of waste water from paper manufacture; and

(c) calcium sulfate, wherein the calcium sulfate is selected from a group consisting of anhydrous calcium sulfate and calcium sulfate hemihydrate, and

compressing and crushing the mixture to form a granular material, wherein the quantitative ratio between the smectite, the wet mass and calcium sulfate is selected such that the water content of the granular material is less than 20% by weight.

5,648,307

METHOD FOR PRODUCTION OF GAS DIFFUSION ELECTRODE

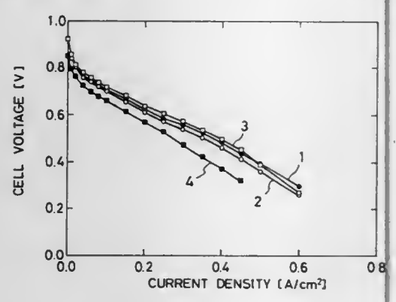
Kazuaki Yasuda; Minoru Mizuhata; Keisuke Oguro, and Hiroyasu Takenaka, all of Ikeda, Japan, assignors to Agency of Industrial Science and Technology, Ministry of International Trade and Industry, Tokyo, Japan

Filed Dec. 1, 1995, Ser. No. 566,156

Claims priority, application Japan, Dec. 5, 1994, 6-330241

Int. Cl.[6] H01M *4/88*

U.S. Cl. 502—101 **5 Claims**



1. A method for the production of a gas diffusion electrode having particles of a platinum group metal deposited on a carbon particles-containing carrier formed in the shape of a sheet, which method comprises oxidizing the surface of a water-repelling carbon particles containing carrier formed in the shape of a sheet with ozone, thereby oxidizing the surface of said sheet and forming a functional group on said surface, then immersing said sheet in a solution containing dissolved platinum group metal complex cations, ion exchanging the hydrogen ions present in said functional group and said platinum group metal complex cations and depositing said platinum group metal complex cations on said carbon sheet, and further reducing said platinum group metal complex cations on the carbon into platinum group metal particles.

5,648,308

PROCESS FOR UPGRADING METALLOCENE CATALYSTS

John Y. Lee, and Steven P. Diefenbach, both of Baton Rouge, La., assignors to Albemarle Corporation, Richmond, Va.

Filed Aug. 10, 1995, Ser. No. 513,653

Int. Cl.[6] C08F *4/64;* **B01J** *31/38*

U.S. Cl. 502—104 **9 Claims**

1. A process for removing inorganic and organic impurities from a metallocene catalyst compound comprising the steps of (a) separating inorganic impurities from said compound by forming a solution of said compound in an organic solvent medium which is substantially a non-solvent for said inorganic impurities, (b) treating the solution of said compound with a particulate absorbing material so as to absorb and remove organic impurities from said solution, and (c) separating the solid material, including said particulate absorbing material, from said solution.

5,648,309

PROCESS FOR THE PREPARATION OF A POLY-1-OLEFIN

Ludwig Böhm, Hattersheim am Main, Germany, assignor to Hoechst Aktiengesellschaft, Germany

Continuation of Ser. No. 279,264, Jul. 21, 1994, abandoned, which is a continuation of Ser. No. 949,528, Nov. 25, 1992, abandoned. This application Mar. 6, 1995, Ser. No. 400,114

Claims priority, application Germany, Jun. 1, 1990, 40 17 661.4

Int. Cl.[6] C08F *4/64*

U.S. Cl. 502—105 **15 Claims**

1. A process for the preparation of a poly-1-olefin by polymerizing a 1-olefin of the formula $R^4CH{=}CH_2$ in which R^4 is hydrogen or an alkyl radical having 1 to 10 carbon atoms, in suspension, in solution or in the gas phase, at a temperature of 20° to 200° C. and under a pressure of 0.5 to 50 bar, in the presence of a catalyst comprising the reaction product of the components comprising a magnesium alcoholate with a transition metal compound (component A) and an organometallic compound of a metal of group I, II or III of the periodic table (component B), which comprises carrying out the polymerization in the presence of a catalyst in which the component A has been prepared by reacting a transition metal compound of titanium, zirconium, vanadium or chromium with a gel-like dispersion containing the magnesium alcoholate in an inert, saturated hydrocarbon, wherein the dispersed magnesium alcoholate has an average particle size of approximately ≦1 μm, wherein said gel-like dispersion containing a dispersed magnesium alcoholate is prepared by suspending the magnesium alcoholate in an inert, saturated hydrocarbon liquid to form a magnesium alcoholate suspension, and subjecting said suspension to dispersing by a high-speed disperser for a period of time sufficient to convert the suspension to a gel-like dispersion.

5,648,310

SPRAY DRIED, FILLED METALLOCENE CATALYST COMPOSITION FOR USE IN POLYOLEFIN MANUFACTURE

Eric Paul Wasserman, Hopewell; Mark Wilton Smale, Bloomsbury; Timothy Roger Lynn, Hackettstown; Robert Converse Brady, III, Morristown, and Frederick John Karol, Belle Mead, all of N.J., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 197,922, Feb. 17, 1994, abandoned, which is a continuation-in-part of Ser. No. 173,626, Dec. 23, 1993, abandoned. This application Jun. 26, 1995, Ser. No. 494,796

Int. Cl.[6] C08F *4/64*

U.S. Cl. 502—120 **8 Claims**

1. A spray dried catalyst composition comprising solid particles, each particle comprising a mixture of:

a) a metallocene catalyst;

b) a cocatalyst capable of activating the metallocene catalyst; and

c) particulate filler material having an average particle size of 0.001 to 0.1 micrometers that is unreactive with the metallocene catalyst and the cocatalyst, wherein the average particle size of the catalyst composition is 5 to 500 micrometers.

5,648,311

CATALYST FOR HYDROREFINING

Wilfried R. Herda, Düsseldorf, and Jürgen Koppe, Schkopau, both of Germany, assignors to Krupp VDM GmbH, Werdohl, Germany

Filed Aug. 14, 1994, Ser. No. 307,861

Claims priority, application Germany, Sep. 24, 1993, 43 32 473.8

Int. Cl.[6] B01J *23/00*

U.S. Cl. 502—315 **6 Claims**

1. A process for making a catalyst for hydrorefining a mixture of hydrocarbons containing heteroatoms, comprising thermally treating a solid material consisting essentially of nickel or a nickel-molybdenum alloy containing more than 30% nickel, the balance being molybdenum, in an air atmosphere at a temperature in the range of 400° to 1200° C. for a period of 0.25 to 10 hours, and thereafter subjecting said thermally treated material to hydrogen activation at a temperature in the range of 200° to 600° C. thereby to produce said hydrorefining catalyst.

5,648,312

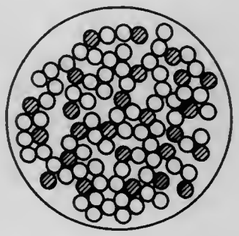
HYDROGENATION CATALYST WITH IMPROVED ATTRITION RESISTANCE AND HEAT DISSIPATION

Luis A. Rivas; Enzo Peluso, both of Miranda; Daisy Rojas, and Juan Jose Garcia, both of Caracas, all of Venezuela, assignors to Intevep, S.A., Caracas, Venezuela

Continuation-in-part of Ser. No. 366,265, Dec. 29, 1994, abandoned. This application Mar. 6, 1995, Ser. No. 399,239

Int. Cl.[6] B01J *21/08;23/76;27/224*

U.S. Cl. 502—325 **17 Claims**



1. A catalyst system for the hydrogenation of CO feedstock to C_2+ hydrocarbons, comprising:

a catalyst support comprising substantially spherical particles consisting of a substantially homogeneous mixture of silica particles and silicon carbide particles wherein the silicon carbide is present in an amount of between about 10% (wt) to about 50% (wt) with respect to the total weight of the at least one substantially spherical particle wherein said spherical particles have a surface area of at least about 30 mm^2/g, an average pore diameter of at least about 150 Å, and a particle size of at least about 0.1 mm; and

a catalytically active metal phase supported on said support and comprising a first metal selected from Group IVb metals, and a second metal selected from Group VIII metals.

5,648,313

METHOD FOR PRODUCTION OF ADSORPTION MATERIAL

Peter Pohl, Quitschenredder 8, 24242 Felde, Germany

PCT No. PCT/DE94/00758, § 371 Date Dec. 26, 1995, § 102(e) Date Dec. 26, 1995, PCT Pub. No. WO95/01836, PCT Pub. Date Jan. 19, 1995

PCT Filed Jul. 1, 1994, Ser. No. 571,837

Claims priority, application Germany, Jul. 8, 1993, 43 22 743.0

Int. Cl.[6] B01J *20/22;* **C02F** *1/42*

U.S. Cl. 502—401 **12 Claims**

1. A method for the production of an adsorption material for the adsorption of heavy metals, hydrocarbons and other harmful substances from waste water, the steps comprising,

(a) crushing a brown algae to form a biomass,

(b) extracting an alginate from the biomass,

(c) crushing the biomass separated from the alginate to reduce particle size to about 5–10 um,

(d) grinding the biomass from (c) in the presence of sea water until a particle size of about 500–1000 μm is achieved,

(e) rinsing the biomass from (d) with seawater and separating a liquid and solid component,

(f) rinsing the solid component from (e) with fresh water and

(g) separating out a remaining solid component and drying the remaining solid component to obtain the adsorption material.

5,648,314

SLOW-DISSOLVING MULTI-FUNCTIONAL SANITIZER AND CLARIFIER

Thomas M. Lachocki, Duluth; Oscar T. Ragin, Stone Mountain, and Presley K. Mitchell, Marietta, all of Ga., assignors to Bio-Lab, Inc., Decatur, Ga.

Filed May 15, 1995, Ser. No. 441,384

Int. Cl.[6] A01N *59/00;59/06;59/14;43/66*

U.S. Cl. 504—151 **28 Claims**

1. A solid, compressed sanitizing and clarifying product for use in water, consisting essentially of:

(a) about 30% to about 98% trichloro-s-triazinetrione;

(b) about 1% to about 50% sodium tetraborate

(c) about 1% to about 50% aluminum sulfate; and

(d) about 0.2% to about 15% glycoluril.

5,648,315

PHENYLSUFONYLUREAS, PROCESSES FOR THEIR-PREPARATION, AND THEIR USE AS HERBICIDES AND PLANT GROWTH REGULATORS

Klaus Lorenz, Weiterstadt; Lothar Willms, Hofheim; Klaus Bauer, Hanau, and Hermann Bieringer, Eppstein, all of Germany, assignors to Hoechst Schering AgrEvo GmbH, Berlin, Germany

Filed Oct. 13, 1994, Ser. No. 322,610

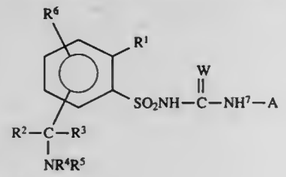
Claims priority, application Germany, Oct. 15, 1993, 43 35 297.9

Int. Cl.[6] C07D *239/69;401/12;403/12;* **A01N** *43/54*

U.S. Cl. 504—214 **9 Claims**

1. A compound of the formula (I) or salts thereof,

(I)



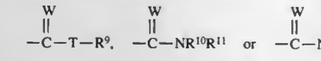
in which

R^1 is CO—Q—R^8,

R^2 and R^3 independently of one another are H or $(C_1–C_4)$alkyl,

R^4 is H, $(C_1–C_4)$alkyl which is unsubstituted or is substituted by one or more radicals from the group consisting of halogen, $(C_1–C_4)$alkoxy, $(C_1–C_4)$alkylthio, $(C_1–C_4)$alkylsulfinyl, $(C_1–C_4)$alkylsulfonyl, [$(C_1–C_4)$alkoxy]carbonyl and CN, or is $(C_3–C_6)$alkenyl which is unsubstituted or is substituted by one or more halogen atoms, or is $(C_3–C_6)$alkynyl which is unsubstituted or is substituted by one or more halogen atoms, or is hydroxyl, $(C_1–C_4)$alkoxy, [$(C_1–C_4)$alkyl]carbonyl or $(C_1–C_4)$alkylsulfonyl, each of the three latter radicals being unsubstituted or substituted in the alkyl moiety by one or more halogen atoms or by $(C_1–C_4)$alkoxy or $(C_1–C_4)$alkylthio, or is phenylsulfonyl in which the phenyl radical is unsubstituted or substituted, and

R^5 is $(C_1–C_4)$alkylsulfonyl or $(C_3–C_6)$alkenylsulfonyl, each of the two latter radicals being unsubstituted or substituted by one or more halogen atoms or by $(C_1–C_4)$alkoxy or $(C_1–C_4)$alkylthio, or is phenylsulfonyl or phenylcarbonyl, the phenyl radical in each of the two latter radicals being unsubstituted or substituted, or is mono- or di-[$(C_1–C_4)$alkyl]aminosulfonyl or [$(C_1–C_6)$alkyl]carbonyl, each of the three latter radicals being unsubstituted or substituted by one or more radicals from the group consisting of halogen, $(C_1–C_4)$alkoxy, $(C_1–C_4)$alkylthio, $(C_1–C_4)$alkylsulfinyl, $(C_1–C_4)$alkylsulfonyl, [$(C_1–C_4)$alkyl]carbonyl, [$(C_1–C_4)$alkoxy]carbonyl and CN, or is formyl, a group of the formula —CO—CO—R' in which R' =H, OH, $(C_1–C_4)$alkoxy or $(C_1–C_4)$alkyl, or is [$(C_3–C_6)$cycloalkyl]carbonyl, [$(C_2–C_6)$alkenyl]carbonyl or [$(C_2–C_6)$alkynyl]carbonyl, each of the three latter radicals being unsubstituted or substituted by one or more halogen atoms, or is a group of the formula



with the exception of the definition R^5=unsubstituted [$(C_1–C_6)$Alkyl]-carbonyl, if the radical of the formula —CR^2R^3—NR^4R^5 is in para-position of the SO_2 group at the phenyl ring; or

R^4 and R^5 together are a chain of the formula $(—CH_2)_m—B^2—$ or $—B^1—(CH_2)_{m1}B^2—$, the chain being unsubstituted or substituted by one or more $(C_1–C_3)$alkyl radicals and m being 3 or 4 or m^1 being 2 or 3, and

W is an oxygen or sulfur atom,

B^1 and B^2 independently of one another are SO_2 or CO,

Q is O, S or —NR^{13},

T is O or S,

R^6 is H, $(C_1–C_4)$alkyl, $(C_1–C_4)$alkoxy, [$(C_1–C_4)$alkyl]carbonyl or [$(C_1–C_4)$alkoxy]carbonyl, each of the 4 latter radicals being unsubstituted or substituted in the alkyl moiety by one or more halogen atoms, or is halogen, NO_2 or CN,

R^7 is H or CH_3,

R^8 is H, $(C_1–C_4)$alkyl, $(C_3–C_4)$alkenyl or $(C_3–C_4)$alkynyl, each of the three latter radicals being unsubstituted or substituted by one or more radicals from the group consisting of halogen, $(C_1–C_4)$alkoxy, $(C_1–C_4)$alkylthio, [$(C_1–C_4)$alkyl]carbonyl and [$(C_1–C_4)$alkoxy]carbonyl,

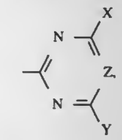
R^9 is $(C_1–C_4)$alkyl, $(C_3–C_4)$alkenyl or $(C_3–C_4)$alkynyl, each of the three latter radicals being unsubstituted or substituted by one or more radicals from the group consisting of halogen, $(C_1–C_4)$alkoxy, $(C_1–C_4)$alkylthio, [$(C_1–C_4)$alkyl]carbonyl and [$(C_1–C_4)$alkoxy]carbonyl,

R^{10} and R^{11} independently of one another are H, $(C_1–C_4)$alkyl, $(C_3–C_4)$alkenyl or $(C_3–C_4)$alkynyl, each of the three latter radicals being unsubstituted or substituted by one or more radicals from the group consisting of halogen, $(C_1–C_4)$alkoxy, $(C_1–C_4)$alkylthio, [$(C_1–C_4)$alkyl]carbonyl and [$(C_1–C_4)$alkoxy]carbonyl,

the radicals R^{12} together with the nitrogen atom are a heterocyclic ring having 5 or 6 ring members, selected from the group consisting of 1-pyrrolidinyl, 1-piperidinyl and 4-morpholinyl, which is unsubstituted or is substituted by $(C_1–C_4)$alkyl,

R^{13} is H, $(C_1–C_4)$alkyl, $(C_3–C_4)$alkenyl or $(C_3–C_4)$alkynyl, each of the three latter radicals being unsubstituted or substituted by one or more radicals from the group consisting of halogen, $(C_1–C_4)$alkoxy and $(C_1–C_4)$alkylthio,

A is a radical of the formula



one of the radicals X and Y is hydrogen, halogen, $(C_1–C_3)$alkyl or $(C_1–C_3)$alkoxy, the two latter radicals being unsubstituted or being mono- or polysubstituted by halogen or monosubstituted by $(C_1–C_3)$alkoxy, and

the other of the radicals X and Y is hydrogen, $(C_1–C_3)$alkyl, $(C_1–C_3)$alkoxy or $(C_1–C_3)$alkylthio, the three latter alkyl-containing radicals being unsubstituted or mono- or polysubstituted by halogen or mono- or disubstituted by $(C_1–C_3)$alkoxy or $(C_1–C_3)$alkylthio, or is a radical of the formula $NR^{14}R^{15}$, $(C_3–C_6)$cycloalkyl, $(C_2–C_4)$alkenyl, $(C_2–C_4)$alkynyl, $(C_3–C_4)$alkenyloxy or $(C_3–C_4)$alkynyloxy,

Z is CH,

R^{14} and R^{15} independently of one another are H, $(C_1–C_3)$alkyl or $(C_3–C_4)$alkenyl.

5,648,316

SUBSTITUTED (1,4) DIOXINO (2,3-F) BENZOIMIDAZOLE DERIVATIVE AND THEIR USE IN PEST CONTROL

Lutz Assmann, Eutin; Albrecht Marhold, Leverkusen; Heinz-Wilhelm Dehne, Bonn; Gerd Hänssler, Leverkusen; Klaus Stenzel, Düsseldorf, and Ulrike Wachendorff-Neumann, Neuwied, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

PCT No. PCT/EP95/01500, § 371 Date Oct. 29, 1996, § 102(e) Date Oct. 29, 1996, PCT Pub. No. WO95/29918, PCT Pub. Date Nov. 9, 1995

PCT Filed Apr. 20, 1995, Ser. No. 737,075

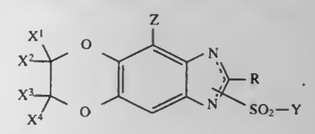
Claims priority, application Germany, May 3, 1994, 44 15 435.6

Int. Cl.[6] A01N *43/90;* **A61K** *31/415;* **C07D** *491/056*

U.S. Cl. 504—276 **6 Claims**

1. Benzimidazole derivatives of the formula

(I)



where

R represents cyano

X^1, X^2, X^3 and X^4 are identical or different and represent halogen;

Y represems alkyl, alkenyl or alkinyl, each of which is optionally substituted by halogen; or represents optionally substituted phenylalkyl, or in each ease optionally substituted cycloalkyl and cycloalkenyl; and

Z represents hydrogen or halogen.

5,648,317

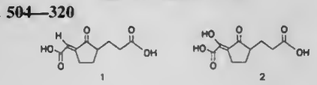
Patent Not Issued For This Number

5,648,318

KETODIACID COMPOUNDS THAT INHIBIT NEMATODE EGG HATCHING

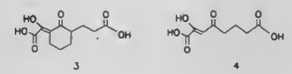
George A. Kraus, and Gregory L. Tylka, both of Ames, Iowa, assignors to Iowa State University Research Foundation, Ames, Iowa

Filed Feb. 10, 1995, Ser. No. 387,108
Int. Cl.[6] A01N *31/00*
U.S. Cl. 504—320 **18 Claims**



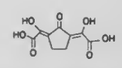
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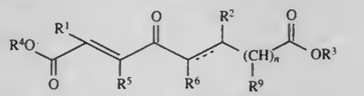
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4



5

1. A method for inhibiting hatching of soybean cyst nematode eggs comprising contacting said eggs with an effective inhibitory amount of a compound of formula (I):



(I)

wherein R^1 is H or OH, R^2 is H or OH, R^3 is H or $(C_1–C_4)$alkyl, R^4 is H or $(C_1–C_4)$alkyl, R^5 and R^6 are individually H, $(C_1–C_5)$alkyl, $C_3–C_6$(cycloalkyl)alkyl, $C_5–C_7$(cycloalkenyl)alkyl, $(C_6–C_{12})$aryl, $(C_7–C_{12})$aralkyl, trans$(C_4–C_5)$alkenyl, allyl or furan-2-ylalkyl or together are $(C_2–C_5)$alkylene, or $(C_3–C_5)$alkylidene or 1,2-phenylene, optionally substituted by OH, $O(C_1–C_3)$alkyl, SH, phenyl or $N(R^7)(R^8)$, wherein R^7 and R^8 are individually H, $(C_1–C_3)$alkyl or phenyl; R^9=H or $(C_1–C_4)$alkyl, n is 0 or 1 and wherein the bond represented by --- is present when n=0 or absent when n=1; or an agronomically-acceptable salt thereof.

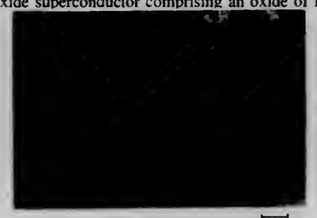
5,648,319

1-2-3 SINGLE CRYSTAL OXIDE SUPERCONDUCTOR CONTAINING 211 PHASE AND PROCESS FOR PREPARATION THEREOF

Mitsuru Morita; Katsuyoshi Miyamoto; Kiyoshi Sawano, and Shouichi Matsuda, all of Kawasaki, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation of Ser. No. 75,577, Jun. 15, 1993, abandoned, which is a division of Ser. No. 635,628, Jan. 2, 1991, Pat. No. 5,262,391. This application Jun. 29, 1995, Ser. No. 496,566
Claims priority, application Japan, May 2, 1989, 1-111892; Sep. 19, 1989, 1-240658
Int. Cl.[6] H01L *39/12;* **C04B** *35/505*
U.S. Cl. 505—230 **1 Claim**

1. An oxide superconductor comprising an oxide of RE (which



represents at least one member selected from the group consisting of rare earth elements including Y), Ba and Cu, wherein said oxide superconductor is formed into a plate or wire comprising a single crystalline structure comprising crystal grains, wherein said single crystalline structure is of 123 phase in which 211 phases are finely dispersed, wherein angle differences between said crystal grains are less than about 20°, and the c-axis of the crystal of the formed body of said crystal grains is uniform within ±30° or within the range of from 60° to 120° to the normal of a plate face or wire face of the formed body.

5,648,320

METHOD OF MANUFACTURING CERAMIC SUPERCONDUCTOR CIRCUIT BOARD

Richard L. Jacobs, 1630 Fiske Pl., Oxnard, Calif. 93030

Division of Ser. No. 173,242, Dec. 23, 1993, Pat. No. 5,504,138, which is a continuation-in-part of Ser. No. 111,711, Aug. 25, 1993, Pat. No. 5,378,737, which is a continuation of Ser. No. 399,699, Aug. 28, 1989, abandoned, which is a continuation of Ser. No. 739,827, May 31, 1985, abandoned, and a continuation-in-part of Ser. No. 699,743, May 14, 1991, abandoned. This application Apr. 14, 1995, Ser. No. 423,655
Int. Cl.[6] H01L *39/24;* **B05D** *3/02*
U.S. Cl. 505—471 **13 Claims**

1. The method of manufacturing a circuit board for a circuit board device comprising a support and an electronic component, including mixing superconductor ceramic particles with reactive precursors for making a thermosetting urethane or acrylic polymer to form a mixture comprising from 40 to 90% by weight superconductor ceramic particles, applying said mixture to said support in a predetermined pattern for connection with said electronic component, and curing said mixture in bonding relation with said support, said reactive precursors providing said thermoset urethane or acrylic polymer having segments which are soft and hard relative to each other for flexibility against debonding in response to expansion and contraction forces experienced during temperature transitions to and from superconducting critical temperature for said superconductor ceramic particles.

5,648,321

PROCESS FOR MANUFACTURING THIN FILMS BY MULTI-LAYER DEPOSITION

Johannes Georg Bednorz, Wolfhausen; Andrei Catana, Preverenges; Jean Pierre Locquet, Kilchberg; Erich Maechler, Siebnen, and Carl Alexander Mueller, Hedingen, all of Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 13, 1993, Ser. No. 120,984
Claims priority, application European Pat. Off., Sep. 11, 1992, 92810699
Int. Cl.[6] B05D *5/12;* **C23C** *14/00;16/00*
U.S. Cl. 505—473 **7 Claims**

1. Process for manufacturing a thin film of a solid compound of a high Tc superconductor from a plurality of base materials by periodic multilayer deposition on a substrate with the layer thickness ratio within each period being selected in accordance with the stoichiometric ratio of said solid compound, comprising the steps of:

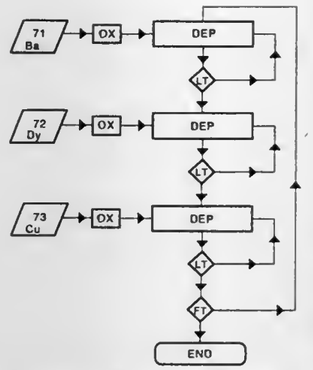
depositing a first layer on said substrate,

depositing a second layer on said first layer;

depositing a third layer on said second layer;

the thickness of the thickest layer of said first layer, said second layer and said third layer is selected from a range between 2 and 20 monolayers;

crystallizing said period of layers at an approximately constant temperature to said compound; and



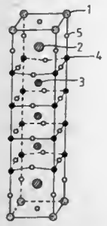
wherein said crystallizing said period of said layers to said compound is completed before depositing the next period of said layers.

5,648,322

TL-BASED SUPERCONDUCTIVE MATERIAL, A SUPERCONDUCTIVE BODY, AND A METHOD OF FORMING SUCH A SUPERCONDUCTIVE MATERIAL OR BODY

Toshiya Doi; Takeshi Ozawa; Kazuhide Tanaka; Toyotaka Yuasa, all of Hitachi; Tomoichi Kamo, and Shinpei Matsuda, both of Toukai-mura, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 858,711, Mar. 27, 1992, Pat. No. 5,462,922. This application May 25, 1995, Ser. No. 450,996
Claims priority, application Japan, Mar. 29, 1991, 3-066001; Jun. 24, 1991, 3-151337
Int. Cl.[6] H01B *12/00;* **C04B** *35/64;35/653*
U.S. Cl. 505—501 **3 Claims**



1. A method of forming a superconductor, comprising:
forming a superconductive material of the formula

$$(Tl_{1-X1-X2}Pb_{X1}Bi_{X2})_\alpha(Sr_{1-X3}Ba_{X3})_\beta Ca_\gamma Cu_\delta O_\xi$$

where

$0 \leqq X1 \leqq 0.8$

$0 \leqq X2 \leqq 0.5$

$0 \leqq X3 \leqq 1.0$

$0.7 \leqq \alpha \leqq 1.5$

$1.4 \leqq \beta \leqq 3.0$

$0.7 \leqq \gamma \leqq 4.5$

$1.4 \leqq \delta \leqq 6$

$4.5 \leqq \xi \leqq 17$

$0 < X1+X2 < 1$;

mixing particles of the superconductive material and particles of at least one non-superconductive material which is isostructural with said superconductive material, in a volume ratio of the non-superconductive material with respect to the superconductive material of a range from 0.01 to 10;

sintering said mixture at a temperature in the range of 600°–990° C. for a time of at least five minutes;

heating said sintered mixture at a temperature in the range of 950° C.–1300° C. for a period ranging from 5 minutes to one hour; and

cooling said sintered mixture to room temperature, thereby to form a superconducting body.

5,648,323

HIGH LATHER CONDITIONING SHAMPOOS WITH IMPROVED DEPOSITION OF INSOLUBLE, DISPERSED PHASE, FLUID CONDITIONING AGENT

Timothy Woodrow Coffindaffer, and Philip Earl Cothran, both of Loveland, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 484,042, Jun. 7, 1995, abandoned, which is a continuation of Ser. No. 89,960, Jul. 12, 1993, abandoned. This application Feb. 21, 1996, Ser. No. 604,204
Int. Cl.[6] C11D *1/10;1/04*
U.S. Cl. 510—122 **20 Claims**

1. High lathering, conditioning shampoo compositions with improved deposition of dispersed phase, nonvolatile fluid conditioning agent, said compositions comprising:

(a) from about 5% to about 29.5%, by weight, of anionic detersive surfactant selected from the group consisting of alkyl sulfates and alkyl ethoxylated sulfates, acids thereof, and mixtures thereof;

(b) from about 0.5% to about 5%, by weight, of N-acylamino acid anionic detersive surfactant or salts thereof;

(c) from about 0.05% to about 10%, by weight, of nonvolatile, water insoluble fluid conditioning agent dispersed in said composition;

(d) from about 0.5% to about 10%, by weight, of crystalline suspending agent for said conditioning agent;

(e) from about 40% to about 89%, by weight, of water;

wherein the total detersive surfactant concentration in said composition is from about 10% to about 30%; the weight ratio of component (b):component (a) is at least about 1:18; and said composition is substantially free of betaine surfactants and alkanol amide foam boosters.

5,648,324

PHOTORESIST STRIPPING COMPOSITION

Kenji Honda, Barrington; Donald F. Perry, North Providence, and Taishih Maw, Cumberland, all of R.I., assignors to OCG Microelectronic Materials, Inc., Norwalk, Conn.

Filed Jan. 23, 1996, Ser. No. 590,005
Int. Cl.[6] C11D *7/32*
U.S. Cl. 510—176 **4 Claims**

1. A photoresist stripper composition comprising:

(a) from about 20 to about 70% by weight of an organic polar solvent having a dipole moment of more than 3.5;

(b) from about 70 to about 20% by weight of an alkanolamine compound; and

(c) from about 0.1 to about 10% by weight of 2,2'-[[(methyl-1H-benzothiazol-1-yl)methyl]imino] bis-ethanol; all percents based on the weight of the stripper composition.

5,648,325

MIXED SOLVENT COMPOSITION WITH 1-H-PERFLUOROHEXANE, METHANOL OR ETHANOL, AND OPTIONALLY A HYDROCARBON

Kenroh Kitamura; Michino Ikehata, both of Yokohama; Masaaki Tsuzaki, Ichihara, and Kazuya Oharu, Yokohama, all of Japan, assignors to AG Technology Co., Ltd., Yokohama, Japan

PCT No. PCT/JP94/01738, § 371 Date Jun. 9, 1995, § 102(e) Date Jun. 9, 1995, PCT Pub. No. WO95/11293, PCT Pub. Date Apr. 27, 1995

PCT Filed Oct. 17, 1994, Ser. No. 448,331

Claims priority, application Japan, Oct. 18, 1993, 5-260188; Oct. 18, 1993, 5-260189

Int. Cl.[6] **C11D** *7/30;7/26;7/50;* **B08B** *3/08*

U.S. Cl. 510—177 **13 Claims**

1. A mixed solvent composition consisting essentially of

a) at least one alcohol selected from methanol and ethanol

b) 1,1,1,2,2,3,3,4,4,5,5,6,6-tridecafluorohexane and

c) a hydrocarbon having a carbon number of at least 5, in a proportion of:

(at least one alcohol selected from methanol and ethanol)/(1,1,1,2,2,3,3,4,4,5,5,6,6-tridecafluorohexane)/(the hydrocarbon having a carbon number of at least 5)=from 1 to 25 wt %/from 50 to 98 wt %/from 1 to 25 wt %.

5,648,326

LAUNDRY PRE-SPOTTER WITH ASSOCIATIVE POLYMERIC THICKENER

John A. Sramek, Racine County, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

Continuation of Ser. No. 245,335, May 17, 1994, abandoned. This application Feb. 12, 1996, Ser. No. 600,561

Int. Cl.[6] **C11D** *3/37;1/72;* **D06M** *15/00;15/263*

U.S. Cl. 510—284 **34 Claims**

1. An aqueous laundry pre-spotter composition free of abrasive materials and comprising:

(a) From about 5.0% to about 30.0% by weight of at least one ethoxylated nonionic surfactant having an average HLB value of from about 8 to about 13;

(b) From about 0.4% to about 2.0% by weight of at least one associative polymeric thickener wherein the composition provides cleaning equivalent to a composition containing about twice the amount of nonionic surfactant by weight and exhibits a viscosity of from about 500 cps to about 100,000 cps at 25° C.; and

(c) Amounts of an alkaline neutralizing agent effective to neutralize the polymer of (b) and adjust the pH of the composition to from 5.5 to 9.5.

18. A method of laundering, comprising the steps of:

(a) applying an effective amount of an aqueous cleaning composition to an article to be laundered, the cleaning composition comprising:

(1) from about 5.0% to about 30% by weight of at least one nonionic surfactant having an HLB value of from about 8 to about 13; and

(2) from about 0.4% to about 2.0% by weight of at least one associative polymeric thickener wherein the composition provides cleaning equivalent to a composition containing about twice the amount of nonionic surfactant by weight and exhibits a viscosity of from about 500 cps to about 100,000 cps at 25° C.;

(3) amounts of an alkaline neutralizing agent effective to neutralize the polymer of (2) and adjust the pH of the composition to from 5.5 to 9.5; and

(b) laundering the article.

5,648,327

STABLE LIQUID DETERGENT COMPOSITIONS COMPRISING A DISPERSIBLE SILICONE-BASED SUDS SUPPRESSOR SYSTEM

Mark A. Smerznak, Cincinnati, Ohio; Roger J. Jones, Jauche, Belgium; Athanasios Surutzidis, Hamilton, Ohio; Andrew A. Fisk, Strombeek-Bever, Belgium; Steven P. Christiano; Gregory G. Bausch, both of Midland, Mich.; Lauren M. Tonge, Sanford, Mich.; Sharon K. McCoy, Gladwin, Mich., and Elizabeth F. Mallen, Brussels, Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 96,345, Jul. 22, 1993, and a continuation-in-part of Ser. No. 262,407, Jun. 20, 1994, abandoned. This application May 4, 1995, Ser. No. 435,952

Int. Cl.[6] **C11D** *1/82;* **B01D** *19/04*

U.S. Cl. 510—340 **20 Claims**

1. An aqueous heavy duty liquid laundry detergent composition having a stable, silicone-based suds suppressor system incorporated thereinto, said composition comprising:

(A) from about 1% to 50% by weight of the composition of a detersive surfactant selected from anionic surfactants, nonionic surfactants, and combinations thereof;

(B) from about 0.001% to 1% by weight of the composition of a silicone-based suds suppressor system which comprises:

I) the reaction product of

a) a non-resinous polyorganosiloxane selected from the group consisting of (i) compounds having the formula $R^1_a(SiO_{(4-a)/2}$ which have a viscosity of 20 to 100,000 centistokes at 25° C., wherein the R^1 groups are the same or different monovalent halogenated or non-halogenated C_1 to C_{10} hydrocarbon groups, and the value of a in said formula is from 1.9 to 2.2; and (ii) compounds having the formula $R^2_bR^3O)_cSiO_{(4-b-c)/2}$ which have a viscosity of 200 to 100 million centistokes at 25° C. wherein R^2 is independently selected from the groups designated for R^1, R^3 is selected from the hydrogen or R^2 and the $—OR^3$ group is present at least at one end of the molecular chain of the polyorganosiloxane, the value of b is between 1.9 and 2.2 and c has a value so as to provide at least one $—OR^3$ group per molecule, said non-resinous polyorganosiloxane comprising from about 3% to 70% by weight of the suds suppressor system;

b) a silicon compound selected from (i) an organosilicon compound of the general formula $R^4_dSiX_{4-d}$ wherein R^4 is a monovalent hydrocarbon group having one to five carbon atoms, X is a hydrolyzable group, selected from $—OR^5$ and $—OR^6OR^7$, in which R^6 is a divalent hydrocarbon group having one to five carbon atoms and R^5 and R^7 are each selected from hydrogen and monovalent hydrocarbon groups having one to five carbon atoms, with the average value of d not exceeding 1, (ii) a partially hydrolyzed condensate of the Compound (i), (iii) a siloxane resin consisting essentially of $(CH_3)_3SiO_{1/2}$ and SiO_2 units and having a $(CH_3)_3SiO_2$ ratio of 0.4/1 to 1.2/1, and (iv) a condensate of the siloxane resin (iii) with an organosilicon compound selected from (i) and (ii), said silicon compound b) comprising from about 0.05% to 20% by weight of the suds suppressor system;

c) a finely divided filler material, comprising from about 0.1% to 20% by weight of said suds suppressor system; and

d) an effective amount of a catalyst to promote the reaction of components a), b), and c); and

II) a nonaqueous liquid continuous phase comprising from about 10% to 80% by weight of said suds suppressor system;

(C) from about 0.0001% to 0.1% by weight of the composition of a moderately hydrophobic particulate silica stabilizing agent which has a methanol wettability of from about 30% to 70% and which is incorporated into said detergent composition separately from suds suppressor system; and

(D) from about 10% to 98.9989% by weight of the composition of water.

5,648,328

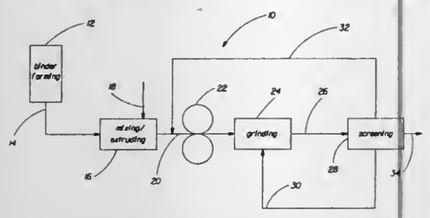
PROCESS FOR PRODUCING A PARTICULATE LAUNDRY ADDITIVE COMPOSITION FOR PERFUME DELIVERY

Adrian J. W. Angell, West Chester; Athanasios Surutzidis, Hamilton; Frank A. Kvietok, and David F. Perkis, both of Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Feb. 6, 1996, Ser. No. 595,887

Int. Cl.[6] **C11D** *11/00;3/50;3/22*

U.S. Cl. 510—441 **15 Claims**



1. A process for producing a particulate laundry additive composition comprising the steps of:

(a) inputting an encapsulating material and porous carrier particles into a mixer, said porous carrier particles having a perfume adsorbed therein;

(b) mixing said porous carrier particles and said encapsulating material so as to form agglomerates containing said porous carrier particles enrobed with said encapsulating material;

(c) cooling said agglomerates to be within a temperature range of from about 20° C. to about 100° C. within about 1 second to about 120 seconds;

(d) grinding said agglomerates to form particles;

(e) separating said particles into undersized particles and oversized particles, wherein said undersized particles have a median particle size of less than about 150 microns and said oversized particles have a median particle size of at least about 1100 microns; and

(f) recycling said undersized particles back to said cooling step and recycling said oversize particle back to said grinding step, the remaining particles thereby forming said particulate laundry additive composition.

5,648,329

HIGH ACTIVE PREMIX BASED ON POLYHYDROXY FATTY ACID AMIDES FOR USE IN DETERGENT COMPOSITIONS

Alan David Blake, Overijse; Jean-Pol Boutique, Genbloux(-Ernage); Jozef Philomena Geudens, Zellik, and Patrick Firmin Delplancke, Zwevegem, all of Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio

PCT No. PCT/US93/09578, § 371 Date Apr. 7, 1995, § 102(e) Date Apr. 7, 1995, PCT Pub. No. WO92/06154, PCT Pub. Date Apr. 16, 1992

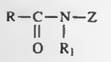
Continuation of Ser. No. 411,716, Apr. 7, 1995, abandoned. This PCT application Oct. 8, 1993, Ser. No. 608,222

Claims priority, application European Pat. Off., Oct. 13, 1992, 92870164

Int. Cl.[6] **C11D** *11/00;1/52;3/04;3/32*

U.S. Cl. 510—535 **1 Claim**

1. A method of making a liquid premix for use in a detergent composition, said liquid premix comprising a solvent selected from the group consisting of propylene glycol, ethanol, and mixtures thereof and at least 40% by weight of polyhydroxy fatty acid amide of the formula:



where R is straight-chain C_7–C_{19} alkyl or alkenyl, R_1 is C_1–C_4 hydrocarbyl and Z is polyhydroxyhydrocarbyl derived from glucose said method comprising adding a borate functional material which is a member selected from the group consisting of borax, boric acid, and the alkali metal or alkanolamine salts of tetraborate or metaborate, in an amount effective to maintain said liquid premix as a stable homogeneous liquid of viscosity below about 20,000 mPas when stored for at least 2 weeks at 20° C.

5,648,330

METHOD AND COMPOSITION FOR TREATING VASCULAR GRAFT OCCLUSION

Michael D. Pierschbacher, San Diego; David S. Lukeman, Oceanside; Soan Cheng, and William S. Craig, both of San Diego, all of Calif., assignors to La Jolla Cancer Research Foundation, San Diego, Calif.

Division of Ser. No. 322,409, Oct. 12, 1994, which is a continuation of Ser. No. 193,903, Feb. 9, 1994, abandoned, which is a continuation of Ser. No. 32,449, Mar. 16, 1993, abandoned, which is a continuation of Ser. No. 860,117, Mar. 30, 1992, abandoned, which is a continuation of Ser. No. 506,444, Apr. 6, 1990, abandoned. This application Jun. 2, 1995, Ser. No. 459,565

Int. Cl.[6] **A61K** *38/00;38/02;* **C07K** *5/00;7/00*

U.S. Cl. 514—11 **3 Claims**

1. A method of treating vascular graft occlusion, comprising administering a therapeutically effective amount of a cyclic, RGD-containing peptide having high affinity for IIb/IIIa and low affinity for the fibronectin and vitronectin receptors.

5,648,331

METHOD OF INHIBITING TISSUE ISCHEMIA AND REPERFUSION INJURY

Basem Koudsi, and Tze-Chein Wun, both of St. Louis, Mo., assignors to G.D. Searle & Co., Chicago, Ill.

Filed Aug. 26, 1994, Ser. No. 297,196

Int. Cl.[6] **C12N** *7/00;9/00*

U.S. Cl. 514—12 **13 Claims**

1. A method for reducing tissue ischemia and reperfusion injury in a mammal caused by ischemia and subsequent reperfusion of blood flow into said tissue, which method comprises perfusing into said tissue an effective amount of tissue factor pathway inhibitor (TFPI).

5,648,332

METHOD OF TREATING DIABETES MELLITUS USING VARIABLE α DOMAIN OF T-CELL RECEPTOR

Hiroshi Watanabe, Hatoyama-machi; Nobuyuki Yamagata, Kawagoe, and Masaru Taniguchi, Chiba, all of Japan, assignors to Hoechst Japan Limited, Tokyo, Japan

PCT No. PCT/IB94/00029, § 371 Date Oct. 20, 1994, § 102(e) Date Oct. 20, 1994, PCT Pub. No. WO94/19470, PCT Pub. Date Sep. 1, 1994

PCT Filed Feb. 22, 1994, Ser. No. 318,881

Claims priority, application Japan, Jul. 20, 1993, 5-179062; Feb. 22, 1994, 5-031501

Int. Cl.[6] **A61K** *38/17*

U.S. Cl. 514—12 **2 Claims**

1. A prophylactic and therapeutic method for the treatment of autoimmune induced insulin dependent diabetes mellitus which comprises administering a prophylactically or therapeutically effective amount of a chimeric protein containing Vα14Jα281, which chimeric protein is formed by fusing the soluble T-cell receptor α-chain Vα14Jα281 produced by a suppressor T-cell to a constant region of immunoglobulin G, to a subject in need of such treatment.

5,648,333

PEPTIDES HAVING BRADYKININ ANTAGONIST ACTION

Stephan Henke, Hofheim am Taunus; Hiristo Anagnostopulos, Wiesbaden; Gerhard Breipohl, Frankfurt am Main; Jochen Knolle, Kriftel; Jens Stechl, Frankfurt am Main; Bernward Schölkens, Kelkeim/Taunus; Hans-Wolfram Fehlhaber, Idstein; Hermann Gerhards, Hofheim am Taunus, and Franz Hock, Dieburg, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Continuation of Ser. No. 236,018, May 2, 1994, which is a continuation of Ser. No. 12,849, Feb. 3, 1993, abandoned, which is a continuation-in-part of Ser. No. 982,052, Nov. 25, 1992, abandoned, Ser. No. 837,090, Feb. 18, 1992, abandoned, and Ser. No. 969,523, Oct. 30, 1992, abandoned, which is a continuation of Ser. No. 841,766, Mar. 2, 1992, abandoned, which is a continuation of Ser. No. 690,297, Apr. 24, 1991, abandoned, which is a continuation-in-part of Ser. No. 565,270, Aug. 10, 1990, abandoned, which is a continuation-in-part of Ser. No. 374,162, Jun. 30, 1989, abandoned, said Ser. No. 982,052is a continuation of Ser. No. 746,149, Aug. 14, 1991, abandoned, which is a continuation-in-part of Ser. No. 374,162, said Ser. No. 837,090is a continuation-in-part of Ser. No. 565,270, and Ser. No. 746,149. This application Jun. 7, 1995, Ser. No. 487,442

Claims priority, application Germany, Nov. 24, 1988, 38 39 581.9; May 19, 1989, 39 16 291.5; Jun. 3, 1989, 39 26 225.8; Aug. 14, 1989, 39 26 822.5; Apr. 26, 1990, 40 13 270.6

Int. Cl.[6] **C07K** *7/18;* **A61K** *38/17*

U.S. Cl. 514—2 **33 Claims**

I. A peptide of the formula I

A-B-C-E-F-K-P-G-M-F (I)

in which

A is a_1, a_2, or a_3, wherein

a_1) is

hydrogen,

$(C_1–C_8)$-alkyl,

$(C_1–C_8)$-alkanoyl,

$(C_1–C_8)$-alkoxycarbonyl or

$(C_1–C_8$-alkylsulfonyl,

in which in each case 1, 2 or 3 hydrogen atoms are optionally replaced by 1, 2 or 3 identical or different radicals selected from

carboxyl,

amino,

$(C_1–C_4)$-alkyl,

$(C_1–C_4)$-alkylamino,

hydroxyl,

$(C_1–C_4)$-alkoxy,

halogen,

di-$(C_1–C_4)$-alkylamino,

carbamoyl,

sulfamoyl,

$(C_1–C_4)$- alkoxycarbonyl,

$(C_6–C_{12})$-aryl, and

$(C_6–C_{12})$-aryl-$(C_1–C_5)$-alkyl,

or in which in each case 1 hydrogen atom is optionally replaced by a radical selected from

$(C_3–C_8)$-cycloalkyl,

$(C_1–C_4)$-alkylsulfonyl,

$(C_1–C_4)$-alkylsulfinyl,

$(C_6–C_{12})$-aryl-$(C_1–C_4)$-alkylsulfonyl

$(C_6–C_{12})$-aryl-$(C_1–C_4)$-alkylsulfinyl,

$(C_6–C_{12})$-aryloxy,

$(C_3–C_9)$-heteroaryl and

$(C_3–C_9)$-heteroaryloxy and

1 or 2 hydrogen atoms are replaced by 1 or 2 identical or different radicals selected from

carboxyl,

amino,

$(C_1–C_4)$-alkylamino,

hydroxyl,

$(C_1–C_4)$-alkoxy,

halogen,

di-$(C_1–C_4)$-alkylamino,

carbamoyl,

sulfamoyl,

$(C_1–C_4)$-alkoxycarbonyl,

$(C_6–C_{12})$-aryl and

$(C_6–C_{12})$-aryl-$(C_1–C_5)$-alkyl, or

a_2) is

$(C_3–C_8)$-cycloalkyl,

carbamoyl, which may be optionally substituted on the nitrogen by $(C_1–C_6)$-alkyl or $(C_6–C_{12})$-aryl,

$(C_6–C_{12})$-aryl,

$(C_7–C_{18})$-aryloyl,

$(C_6–C_{12})$-arylsulfonyl,

$(C_3–C_9)$-heteroaryl or

$(C_3–C_9)$-heteroaryloyl,

wherein for the radicals defined under a_1) and a_2) in each case aryl, heteroaryl, aryloyl, arylsulfonyl, and heteroaryloyl is optionally substituted by 1, 2, 3 or 4 identical or different radicals selected from

carboxyl,

amino,

nitro,

$(C_1–C_4)$-alkylamino,

hydroxyl,

$(C_1–C_4)$-alkyl

$(C_1–C_4)$-alkoxy,

halogen,

cyano,

di-$(C_1–C_4)$-alkylamino,

carbamoyl,

sulfamoyl and

$(C_1–C_4)$-alkoxycarbonyl,

a_3) is a radical of the formula II



(II)

R^1 is defined as A under a_1) or a_2);

R^2 is hydrogen or methyl,

R^3 is hydrogen or $(C_1–C_6)$-alkyl which is optionally monosubstituted by

amino,

substituted amino,

hydroxyl,

carboxyl,

carbamoyl,

guanidino,

substituted guanidino,

ureido,

mercapto,

methylmercapto,

phenyl,

4-chlorophenyl,

4-fluorophenyl,

4-nitrophenyl,

4-methoxyphenyl,

4-hydroxyphenyl,

phthalimido,

4-imidazolyl,

3-indolyl,

2-thienyl,

3-thienyl,

2-pyridyl,

3-pyridyl or

cyclohexyl,

wherein substituted amino is a compound of the formula —NH—A— and substituted guanidino is a compound of the formula —NH—C(NH)—NH—A, in which A is defined under a_1) or a_2);

B is a basic amino acid in the L- or D-configuration, which may be substituted in the side chain;

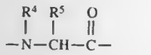
C is a compound of the formula IIIa or IIIb

G'—G'—Gly (IIIa)

G'—NH—$(CH_2)_n$—CO (IIIb)

in which

G' independently of one another is a radical of the formula IV



(IV)

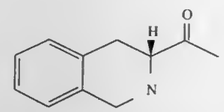
in which

R^4 and R^5 together with the atoms carrying them form a heterocyclic monocyclic, bicyclic or tricyclic ring system having 2 to 15 carbon atoms, and n is 2 to 8;

E is a radical of an aromatic amino acid;

F is a radical of a neutral, acidic or basic, aliphatic or aromatic amino acid which may be substituted in the side chain, or is a direct bond;

P is a radical of the formula V ((D)-Tic);



(V)

G is as defined above for G' or is a direct bond;

F' is a radical of a neutral, acidic or basic aliphatic or aromatic amino acid which may be substituted in the side chain, is a radical —NH—$(CH_2)_n$—, with n=2 to 8, or is a direct bond;

I is —OH, —NH_2 or —NHC_2H_5, wherein I is not directly bonded to P;

K is a radical —NH—$(CH_2)_x$—CO— with x=1–4 or is a direct bond; and

M is as defined for F,

or a physiologically tolerable salt of said peptide.

5,648,334

METHODS OF TREATMENT USING CILIARY NEUROTROPHIC FACTOR

Samuel Davis, New York; Stephen P. Squinto, Irvington; Mark E. Furth, Pelham, and George D. Yancopoulos, Briarcliff Manor, all of N.Y., assignors to Regeneron Pharmaceuticals, Inc., Tarrytown, N.Y.

Division of Ser. No. 1,904, Jan. 7, 1993, abandoned, which is a continuation of Ser. No. 700,677, May 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 676,647, Mar. 28, 1991, Pat. No. 5,426,177, which is a continuation-in-part of Ser. No. 532,285, Jun. 1, 1990, abandoned. This application May 24, 1995, Ser. No. 449,329

Int. Cl.[6] **A61K** *38/17;* **C07K** *14/475*

U.S. Cl. 514—12 **4 Claims**

1. A method of treatment of a neuromuscular or muscle disorder resulting from the loss of axonal contact with the muscle comprising administering an effective amount of CNTF protein suitable to reduce muscle loss.

5,648,335

PREVENTION AND TREATMENT OF PERIPHERAL NEUROPATHY

Michael E. Lewis, West Chester, Pa.; Stuart C. Apfel, West Hempstead, N.Y., and John A. Kessler, New Canaan, Conn., assignors to Cephalon, Inc., West Chester, Pa., and Albert Einstein College of Medicine of Yeshiva Univ., Bronx, N.Y.

Division of Ser. No. 365,796, Dec. 29, 1994, which is a continuation of Ser. No. 51,191, Apr. 16, 1993, Pat. No. 5,420,112, which is a continuation-in-part of Ser. No. 899,070, Jun. 12, 1992, abandoned. This application Jun. 4, 1996, Ser. No. 658,198

Int. Cl.[6] **A61K** *38/00;38/04;38/08;38/02*

U.S. Cl. 514—12 **3 Claims**

1. A method of reducing a hereditary peripheral neuropathy that is not caused by an abnormal insulin level in a mammal, said method comprising

administering a neuropathy-reducing amount of insulin-like growth factor-I (IGF-I) or insulin-like growth factor-III (IGF-III) to said mammal.

5,648,336

BRADYKININ ANTAGONIST PEPTIDES CONTAINING INDANE-SUBSTITUTED AMINO ACIDS

John M. Stewart; Lajos Gera, both of Denver, and Eric T. Whalley. Golden, all of Colo., assignors to University of Colorado, Boulder, Colo.

Filed Nov. 18, 1994, Ser. No. 344,636

Int. Cl.[6] **A61K** *38/00;* **C07K** *7/06;14/00*

U.S. Cl. 514—15 **10 Claims**

1. A bradykinin antagonist of the formula

X-A^0-B^1-C^2-D^3-E^4-F^5-G^6-H^7-J^8-K^9

wherein

X is absent or is Dcg, Sin, Dca, Dpp. Nbc, Nbi, Paa, Pba, Ppa, Bpg, Aaa, Aca, Acetyl, Dhq, Nba, Tba, Cha, Gun, or Cpa;

A^0 s DArg, DLys, Arg, Lys, Aaa, Gun, Dcg, Bpg or is absent;

B^1 is DArg, DLys, Arg or Lys;

C^2 is Pro, DMF, NMF, MPIV, Hyp, Azt, Dhp, Inip, Thz, or Pop;

D^3 is Hyp, Pop, Niga, MPIV, Pro, Azt, Dhp, Inip, or Thz;

E^4 is Gly, Iglb, Nigb, Ala, or Gly;

F^5 is Ser (SO), Leu, Chg, Ile, Val, Alg, Oic, Pop, Nle, Phe, Thi, Cpg or DMF;

G^6 is Ser, HBQ, Cys, or Gly;

H^7 is DLeu, DChg, DIle, DVal, DCpg, DOic, DPop, DNle, DTic or DDMF;

J^8 is Igla, Lys, Niga, Nigb, Leu, Chg, Ile, Val, Cpg, Oic, Pop, Tic, Nbn, or Nle; and

K^9 is Arg or DArg; provided that at least one of F^5, H^7 or J^8 is D- or L-Igla, Iglb, Niga or Nigb.

5,648,337

ANTIHERPES PENTAPEPTIDES

Julian Adams, Ridgefield, Conn.; Pierre Louis Beaulieu, Montreal, Canada; Pierre Lavallée, Rosemere, Canada; Raymond Plante, Laval, Canada, and Sumanas Rakhit, Dollard des Ormeaux, Canada, assignors to Bio-Mega/Boehringer Ingelheim Research Inc., Laval, Canada

Continuation of Ser. No. 915,968, Jul. 16, 1992, abandoned, which is a continuation of Ser. No. 864,736, Apr. 7, 1992, abandoned, which is a continuation of Ser. No. 547,271, Jul. 3, 1990, abandoned. This application Jul. 13, 1993, Ser. No. 90,681

Int. Cl.[6] **A61K** *38/00;* **C07K** *5/00;7/00*

U.S. Cl. 514—17 **6 Claims**

1. A peptide selected from the group consisting of:

DAT—N—Me—Val—Ile—Asn—Asp—Leu—OH

-continued

CH_3CO—(N-phenylethyl—Val)—Ile—Asn—Asp—Leu—OH

$(CH_3)_2CHCH_2CH_2CO$—N—Me—Val—Ile—Asn—Asp—Leu—OH

2-(biphenyl)carbonyl—N—Me—Val—Ile—Asn—Asp—Leu—OH

2-(phenylmethyl)benzoyl—N—Me—Val—Ile—Asn—Asp—Leu—OH

$PhCH_2CH_2CH_2CO$—N—Me—Val—Ile—Asn—Asp—Leu—OH

$PhCH_2CH_2CO$—N—Me—Val—Ile—Asn—Asp—
$NHCH[CH_2CH(CH_3)_2]$-5-1H-tetrazole

and

$PhCH_2CH_2CO$—N—Me—Val—Ile—$NHCH[CH_2$—(5-1H-tetrazolyl)]—CO—Asp—Leu—OH
or a therapeutically acceptable salt thereof.

5,648,338

INHIBITORS AND SUBSTRATES OF THROMBIN

Vijay Vir Kakkar, Bickley; John Joseph Deadman, Sutton; Goran Karl Claeson, London; Leifeng Cheng, Oxford, all of Great Britain; Naoyashi Chino, Osaka, Japan; Said Mobamed Anwar Elgendy, London, and Michael Finbarr Scully, Crays Hill, both of Great Britain, assignors to Thrombosis Research Institute, London, Great Britain

Continuation of Ser. No. 158,046, Nov. 24, 1993, abandoned, which is a continuation of Ser. No. 866,178, Sep. 19, 1992, abandoned. This application Oct. 4, 1994, Ser. No. 317,837

Claims priority, application United Kingdom, Nov. 6, 1990, 9024129.0

Int. Cl.[6] A61K *38/00;* **C07K** *5/00;7/00*

U.S. Cl. 514—18 **29 Claims**

1. A peptide of the formula

$$X—Aa_1—Aa_2—NH—\underset{\displaystyle Y}{\underset{|}{CH}}—Z,$$

wherein
X=H. CH_3 or an N-protecting group;
Y=C_3–C_9 alkyl optionally substituted by C_1–C_4 alkoxy;

$$Z=\underset{\displaystyle R_2}{\underset{|}{B}}—R_1,$$

where R_1 and R_2 taken together represent the residue of a diol;
Aa_1=Dpa, Nal or Dba; and
Aa_2=proline.

5,648,339

HERPOXIN: HERPES VIRUS INHIBITOR AND METHOD

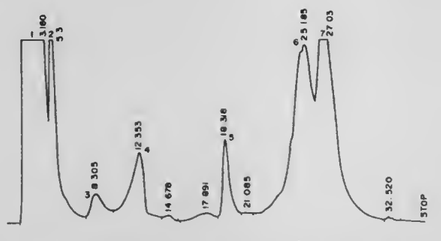
Binie V. Lipps, and Frederick W. Lipps, both of 4509 Mimosa Dr., Bellaire, Tex. 77401

Filed Jul. 25, 1994, Ser. No. 280,157

Int. Cl.[6] A61K *38/16;38/17;35/58*

U.S. Cl. 514—21 **1 Claim**

1. A method
for treating an infection selected from the group consisting of Herpes virus type 1, and Herpes virus type 2, said method
comprising applying topically a Herpes virus inhibitor comprising a first peptide and a second peptide to an area affected by said infection,
wherein said first peptide has a molecular weight of approximately 14,000 Daltons, and
wherein said second peptide has a molecular weight of approximately 15,000 Daltons,



each said first peptide and said second peptide having the first fifteen N-terminal amino acids given by SEQ ID No: 1, wherein each said peptide is in the phospholipase A2 enzyme family and each said peptide is obtained from snake venom from the species Naja n. kaouthia.

5,648,340

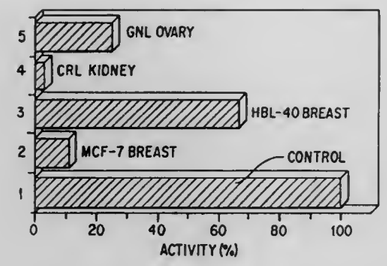
GESTATIONAL AGENTS FOR CONTROLLING CELL PROFLIFERATION

Eytan R. Barnea, 1697 Lark La., Cherry Hill, N.J. 08003-3157

Continuation-in-part of Ser. No. 184,509, Jan. 19, 1994, abandoned, which is a continuation of Ser. No. 785,966, Oct. 31, 1991, abandoned. This application Jan. 17, 1995, Ser. No. 373,082

Int. Cl.[6] A61K *35/54;38/02;* **C07K** *1/14;2/00*

U.S. Cl. 514—21 **2 Claims**



2. A method for inhibiting the proliferation of cancer cells, wherein said cancer cells are selected from the group consisting of breast cancer cells, kidney cancer cells, ovarian cancer cells, and fibrosarcoma cells, comprising exposing said cancer cells to an extract, comprising the steps of:
(a) sonicating, on ice, a mixture of (i) visceral organs or neural organs or a mixture of visceral and neural organs collected from a mammalian embryo and (ii) a physiologically compatible solution;
(b) centrifuging the product of sonication at about 2400 rpm for about ten minutes and collecting the supernatant;
(c) selecting as the extract that portion of the supernatant that has a molecular weight less than about 8,000 daltons;
(d) combining the extract with a suitable pharmaceutical carrier to form a therapeutic composition; and
(e) exposing said cancer cells to an effective inhibitory concentration of the therapeutic composition.

5,648,341

METHOD OF TREATING PULMONARY INFLAMMATION BY CONTINUOUS ADMINISTRATION OF AN ADENOSINE-CONTAINING SOLUTION

Alf Sollevi, Bromma, Sweden, assignor to Item Development AB, Stocksund, Sweden

Filed Oct. 28, 1993, Ser. No. 144,803

Claims priority, application Sweden, Apr. 21, 1993, 9301324

Int. Cl.[6] A61K *31/70*

U.S. Cl. 514—46 **6 Claims**

1. A method for treating a pulmonary inflammatory reaction associated with activation of polymorphonuclear white blood cells in a human patient, comprising the continuous intravenous infusion of adenosine at a rate of 2–50 μg/kg/min.

5,648,342

Patent Not Issued For This Number

5,648,343

METHOD FOR TREATING LPS-MEDIATED DISORDERS

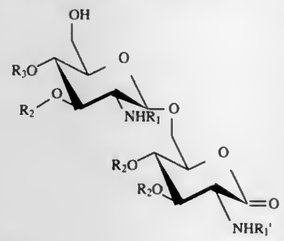
Russell W. Carlson, Athens, Ga., assignor to The University of Georgia Research Foundation, Athens, Ga.

Filed Feb. 28, 1994, Ser. No. 202,968

Int. Cl.[6] A61K *31/70;* **C07H** *3/04;3/06;5/06*

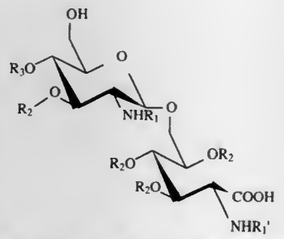
U.S. Cl. 514—53 **7 Claims**

5. A method of treating or preventing a lipopolysaccharide mediated disorder in a subject in need of such treatment or prevention, comprising administering to the subject a lipopolysaccharide mediated disorder inhibiting amount of a compound of formula I:



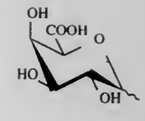
(I)

or formula II:



(II)

wherein, for formulas I and II, R_1 and R_1' are independently H_3C—$(CH_2)_m$—COR_4H—CH_2— CO— where R_4 is H, H_3C—$(CH_2)_{10}$—CO— or H_3C—$(CH_2)_{12}$—CO—, and m is 10, 12 or 14; R_2 is H_3C—$CHOR_5$—$(CH_2)_{25}$—CO— or H_3C—$(CH_2)_nCOR_6H$—CH_2—CO— where R_5 is H or H_3C—$CHOH$—CH_2—CO—, R_6 is H, H_3C—$(CH_2)_{10}$—CO— or H_3C—$(CH_2)_{12}$—CO—, and n is 10, 12 or 14; and R_3 is H, —PO_4 or



where the wavy line represents an alpha or beta alkyl linkage.

5,648,344

METHODS OF TREATING INFLAMMATION USING SELECTION BINDING COMPOUNDS

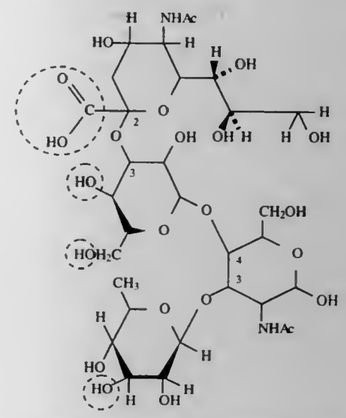
Brian K. Brandley, Alameda; Michael Tiemeyer; Stuart J. Swiedler, both of Oakland; Margaret Moreland, Berkeley; Hans Schweingruber, Mountain View, and Narasinga Rao, Alameda, all of Calif., assignors to Glycomed Incorporated, San Diego, Calif.

Continuation-in-part of Ser. No. 683,458, Apr. 11, 1991, Pat. No. 5,211,937, which is a continuation-in-part of Ser. No. 637,868, Jan. 7, 1991, Pat. No. 5,143,712, which is a continuation-in-part of Ser. No. 613,113, Nov. 15, 1990, abandoned, which is a continuation-in-part of Ser. No. 559,836, Jul. 30, 1990, Pat. No. 5,211,936. This application Jul. 30, 1992, Ser. No. 922,328

Int. Cl.[6] A01N *43/04*

U.S. Cl. 514—61 **4 Claims**

1. A method of treating inflammation in a patient in need thereof comprising:
administering to said patient a therapeutically effective amount of an injectable pharmaceutical composition comprised of:
a pharmaceutically acceptable carrier; and
a compound selected from the group consisting of:
(a) a compound of formula III



(III)

which compound binds to a selectin receptor; and
(b) molecules having hydrogen bond donor groups equivalent to the circled groups of formula III with respect to their ability to form hydrogen bonds with a selectin receptor;
wherein the selectin-binding compound selected from the group consisting and of (a) and (b) is present in the composition in an amount in the range of about 1% to about 95% by weight.

5,648,345

TREATMENT FOR TOXOPLASMOSIS WITH A COMPOSITION COMPRISING A MACROLIDE ANTIBIOTIC AND A SPIROPIPERIDYL DERIVATIVE OF RIFAMYCIN S

Jack S. Remington, Menlo Park, and Fausto G. Araujo, Palo Alto, both of Calif., assignors to Palo Alto Medical Foundation, Palo Alto, Calif.

Continuation of Ser. No. 203,539, Feb. 28, 1994, Pat. No. 5,529,994, which is a continuation-in-part of Ser. No. 57,288, May 5, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 474,998

Int. Cl.[6] A61K *31/33;31/55*

U.S. Cl. 514—183 **8 Claims**

1. A method of reducing the severity of toxoplasmosis resulting from infection of a mammalian host with *Toxoplasma gondii*, which method comprises:

administering to a host in need of said treatment, either after infection or before exposure to said infection, a therapeutically effective amount of a macrolide antibiotic in combination with a therapeutically effective amount of a compound that is a spiropiperidyl derivative of rifamycin S, wherein said derivative comprises an imidazole ring that includes carbons at positions **3** and **4** of the rifamycin ring, the carbon at position **2** of said imidazole ring also being a ring carbon at position **4** of a piperidine ring system, thereby forming a spiropiperidyl ring system, said spiropiperidyl ring system optionally comprising a lower hydrocarbon substituent on the nitrogen of said piperidine.

5,648,346

ANTIMICROBIAL CARBACEPHEM-QUINOLONES

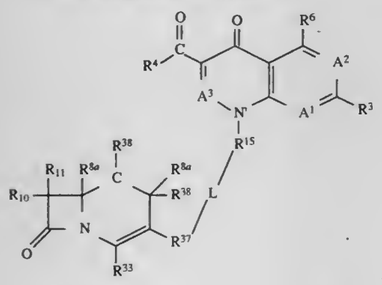
Ronald Eugene White, South Plymouth, and Thomas Prosser Demuth, Jr., Norwich, both of N.Y., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 692,821, Apr. 26, 1991, which is a continuation of Ser. No. 416,645, Oct. 10, 1989, abandoned, which is a continuation-in-part of Ser. No. 261,948, Oct. 24, 1988, abandoned. This application Jun. 7, 1995, Ser. No. 477,724

Int. Cl.[6] C07D *477/06;463/00;* **A61K** *31/435;31/40*

U.S. Cl. 514—210 **39 Claims**

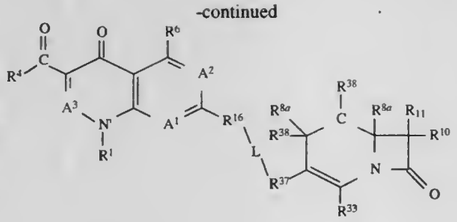
1. A compound having the structure:



(B) (L) (Q)

or

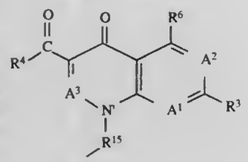
-continued



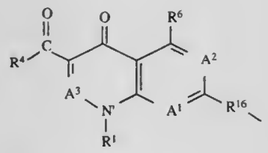
(Q) (L) (B)

wherein

(A) Q is of structure



or



(1) A^1 is N or $C(R^7)$; where

(i) R^7 is hydrogen, hydroxy, alkoxy, nitro, cyano, halogen, C_1–C_8 alkyl, or $N(R^8)(R^9)$, and

(ii) R^8 and R^9 are, independently, R^{8a} where R^{8a} is hydrogen; C_1–C_8 alkyl; C_2–C_8 alkenyl; a 3–9 atom monocyclic or 7–17 atom polycyclic carbocycle; or a 3—9 atom monocyclic or 7–17 atom polycyclic heterocycle; or R^8 and R^9 together form a 3–9 atom monocyclic or 7–17 atom polycyclic heterocycle including the nitrogen to which they are bonded; and wherein said heterocycles have one or more heteroatoms selected from O, N, or S;

(2) A^2 is N or $C(R^2)$; where R^2 is hydrogen or halogen;

(3) A^3 is N or $C(R^5)$; where R^5 is hydrogen or R^5 forms a ring with R^1 or R^4;

(4) R^1 is hydrogen, R^{15}, or when A^3 is $C(R^5)$, R^1 and R^5 may form a ring;

(5) R^3 is hydrogen, halogen or R^{16};

(6) R^{15} is a C_1–C_8 alkyl; a 3–9 atom monocyclic or 7–17 atom polycyclic carbocycle; a 3–9 atom monocyclic or 7–17 atom polycyclic heterocycle; alkoxy; hydroxy; C_2–C_8 alkenyl; arylalkyl; or $N(R^5)(R^9)$; and wherein said arylalkyl is a C_1–C_8 alkyl substituted with an aryl group; wherein said heterocycles have one or more heteroatoms selected from O, N, or S;

(7) R^{16} is a C_1–C_8 alkyl; a 3–9 atom monocyclic or 7–17 atom polycyclic carbocycle; or a 3–9 atom monocyclic or 7–17 atom polycyclic heterocycle; wherein said heterocycles have one or more heteroatoms selected from O, N, or S;

(8) R^4 is hydroxy, or when A^3 is $C(R^5)$, R^4 and R^5 may form a ring; and

(9) R^6 is hydrogen, halogen, nitro, or $N(R^8)(R^9)$;

(b) wherein:

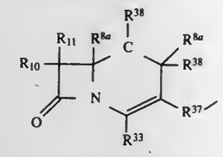
(1) when A^1 is $C(R^7)$, R^1 and R^7 may together form a 3–9 atom monocyclic or 7–17 atom polycyclic heterocycle including N' and A^1; wherein said heterocycles have one or more heteroatoms selected from O, N, or S;

(2) when A^2 is $C(R^2)$, R^2 and R^3 may together form —O—$(CH_2)_n$—O—, where n is an integer from 1 to 4;

(3) when A^3 is $C(R^5)$, R^4 and R^5 may together form a 3–9 atom monocyclic or 7–17 atom polycyclic heterocycle including the carbon atoms to which R^4 and R^5 are bonded and the carbon atom to which said carbon atoms are bonded; and wherein said heterocycles have one or more heteroatoms selected from O, N, or S; and

(4) when A^3 is $C(R^5)$, R^1 and R^5 may together form a 3–9 atom monocyclic or 7–17 atom polycyclic heterocycle including N' and the adjacent carbon to which R^5 is bonded; and wherein said heterocycles have one or more heteroatoms selected from O, N, or S;

(C) B is of structure



and R^{10} is hydrogen; halogen; C_1–C_8 alkyl; C_2–C_8 alkenyl; a 3–8 atom heteroalkyl having 1 or 2 heteroatoms selected from O, N, or S; a 3–9 atom monocyclic or 7–17 atom polycyclic carbocycle; a 3–9 atom monocyclic or 7–17 atom polycyclic heterocycle; R^{8a}—O—; $R^{8a}CH{=}N$—; $(R^8)(R^9)N$—; R^{17}—$C(=CHR^{20})$—C(=O)NH—; R^{17}—C(=NO—R^{19})—C(=O)NH—; or R^{18}—$(CH_2)_m$—C(=O)NH—; and wherein said heterocycles have one or more heteroatoms selected from O, N, or S; and where

(1) m is an integer from 0 to 9;

(2) R^{17} is hydrogen; C_1–C_8 alkyl; C_2–C_8 alkenyl; a 3–8 atom heteroalkyl having 1 or 2 heteroatoms selected from O, N, or S; a 3–8 atom heteroalkenyl having 1 or 2 heteroatoms selected O, N, or S; a 3–9 atom monocyclic or 7–17 atom polycyclic carbocycle; or a 3–9 atom monocyclic or 7–17 atom polycyclic heterocycle; wherein said heterocycles have one or more beteroatoms selected O, N, or S;

(3) R^{18} is R^{17}, Y^1, or $—CH(Y^2)(R^{17})$;

(4) R^{19} is R^{17}; arylalkyl; heteroarylalkyl; $—C(R^{22})(R^{23})COOH$; $—C(=O)O—R^{17}$; or $—C(=O)NH—R^{17}$; wherein said arylalkyl is a C_1–C_8 alkyl substituted with an aryl group and wherein said heteroarylalkyl is a C_1–C_8 alkyl substituted with an aryl group having one or more heteroatoms selected O, N, or S; and

where R^{22} and R^{23} are, independently, R^{17} or together form a 3–9 atom monocyclic or 7–17 atom polycyclic carbocycle or a 3–9 atom monocyclic or 7–17 atom polycyclic heterocycle, including the carbon atom to which R^{22} and R^{23} are bonded; and wherein said heterocycles have one or more heteroatoms selected O, N, or S;

(5) R^{20} is R^{19}, halogen, Y^1, or $—CH(Y^2)(R^{17})$;

(6) Y^1 is $—C(=O)OR^{21}$, $—C(=O)R^{21}$, $—N(R^{24})R^{21}$, $—S(O)_pR^{29}$, or $—OR^{29}$; and Y^2 is Y^1 or —OH, —SH, or $—SO_3H$;

(a) p is an integer from 0 to 2;

(b) R^{24} is hydrogen; C_1–C_8 alkyl; C_2–C_8 alkenyl; a 3–8 atom heteroalkyl having 1 or 2 heteroatoms selected O, N, or S; a 3–8 atom heteroalkenyl comprised of 1 or 2 heteroatoms selected O, N, or S; a 3–9 atom monocyclic or 7–17 atom polycyclic carbocycle; a 3–9 atom monocyclic or 7–17 atom polycyclic heterocycle; $—SO_2H$; $—C(=O)R^{25}$; or, when R^{18} is $—CH(N(R^{24})R^{21})(R^{17})$, R^{24} and R^{21} may together form a 3–9 atom monocyclic or 7–17 atom polycyclic heterocycle; wherein said heterocycles consists of one or more heteroatoms selected from O, N, or S; and

(c) R^{25} is R^{17}; $NH(R^{17})$; $N(R^{17})(R^{26})$; $O(R^{26})$; or $S(R^{26})$; where R^{26} is C_1–C_8 alkyl; C_2–C_8 alkenyl; a 3–9 atom monocyclic or 7–17 atom polycyclic carbocycle; a 3–9 atom monocyclic or a 7–17 atom polycyclic heterocycle; or when R^{25} is $N(R^{17})(R^{26})$, R^{26} and R^{17} may together form a 3–9 atom monocyclic or a 7–17 atom polycyclic heterocycle; wherein said heterocycles have one or more heteroatoms selected from O, N, or S; and

(7) R^{21} is R^{29} or hydrogen; where R^{29} is C_1–C_8 alkyl; C_2–C_8 alkenyl; arylalkyl, consisting of a C_1–C_8 alkyl substituted with an aryl group; a 3–8 atom heteroalkyl, having 1 or 2 heteroatoms selected from O, N, or S; a 3–8 atom heteroalkenyl, having 1 or 2 heteroatoms selected from O, N, or S; heteroarylalkyl, consisting of a C_1–C_8 alkyl substituted with an aryl group substituted with a heteroatom; a 3–9 atom monocyclic or a 7–17 atom polycyclic carbocycle; a 3–9 atom monocyclic or a 7–17 atom polycyclic heterocycle; or, when Y^1 is $N(R^{24})R^{21}$ and R^{21} is R^{29}, R^{21} and R^{24} may together form a 3–9 atom monocyclic or a 7–17 atom polycyclic heterocycle including the nitrogen atom to which R^{24} is bonded; wherein said heterocycles have one or more heteroatoms selected O, N, or S;

(D) R^{11} is hydrogen, halogen, alkoxy, or $R^{27}C(=O)NH$—, where R^{27} is hydrogen or C_1–C_8 alkyl;

(E) R^{33} is H or COOH;

(F) R^{38} is hydrogen, C_1–C_8 alkyl or alkoxy;

(G) R^{37} is nil; C_1–C_8 alkyl; C_2–C_8 alkenyl; a 3–9 atom monocyclic or a 7–17 atom polycyclic carbocycle; or a 3–9 atom monocyclic or a 7–17 atom polycyclic heterocycle; wherein said heterocycles have one or more heteroatoms selected from O, N, or S; and

(H) L links Q to B and is L', $—X^2_t—R^{30}—L'$, or $—X^3_{t-R^{39}}—L'$, where L' ms Q', $—X^2—Q''$, $—X^3—Q''$, $—X^4_t—C(=Y^3)—Z—Q''$, $—C—Z—Q''$, $—X^5_t—PO(Y^4R^{8a})—Z'—Q''$, $—X^5_t—PO(R^{8a})—Z'—Q''$, or $X^5_t—SO_2—Z'—Q''$, $—X^3—Q''$ and $—O—C(=)—Z—Q''$,

where

(1) t and u are, independently, 0 or 1;

(2) R^{39} is C_1–C_8 alkyl; C_2–C_8 alkenyl; a 3–8 atom heteroalkyl having 1 or 2 heteroatoms selected O, N, or S; a 3–8 atom heteroalkenyl having 1 or 2 heteroatoms selected O, N, or S; a 3–9 atom monocyclic or a 7–17 atom polycyclic carbocycle; or a 3–9 atom monocyclic or a 7–17 atom polycyclic heterocycle, wherein said heterocycles have one or more heteroatoms selected O, N, or S;

(3) X^2 is oxygen, or $S(O)_v$, where v is an integer from 0 to 2;

(4) X^3 is nitrogen; $N(R^{40})$; $N^+(R^{41})(R^{42})$; or $R^{43}—N(R^{41})$; and is linked to R^{37} by a single or double bond; where

(a) R^{40} is R^{8a}; $—OR^{8a}$; or $—C(=O)R^{8a}$;

(b) R^{41} and R^{42} are, independently, hydrogen; C_1–C_8 alkyl; C_2–C_8 alkenyl; a 3–9 atom monocyclic or a 7–17 atom polycyclic carbocycle; a 3–9 atom monocyclic or a 7–17 atom polycyclic heterocycle; or, together with Q", form a 3–9 atom monocyclic or a 7–17 atom polycyclic heterocycle as R^{15} or R^{16}; wherein said heterocycles have one or more heteroatoms selected O, N, or S;

(c) R^{43} is $N(R^{41})$, oxygen or sulfur;

(5) X^4 is oxygen, sulfur, NR^{40}, or $R^{43}—NR^{41}$;

(6) X^5 is oxygen or NR^{41};

(7) Y^3 is oxygen, sulfur, NR^{40} or $N^+(R^{41})(R^{42})$;

(8) Y^4 is oxygen or NR^{41};

(9) Z is nil, oxygen, sulfur, nitrogen, NR^{40}, or $N(R^{41})—R^{43}$;

(10) Z' is nil, oxygen, nitrogen, or NR^{41};

(11) Q' is R^{15} or R^{16}; and

(12) Q" is Q'; or together with X^2, X^3, Z or Z', is an R^{15} or R^{16} group;

and pharmaceutically-acceptable salts and biohydrolyzable esters thereof, and hydrates thereof.

5,648,347
ARYLMORPHOLINE, PREPARATION AND USE

Nariman Bomanshaw Mehta, Lady Lake, Fla.; Grady Evan Boswell, Cary, and James Leroy Kelley, Raleigh, both of N.C., assignors to Glaxo Wellcome Inc., Research Triangle Park, N.C.

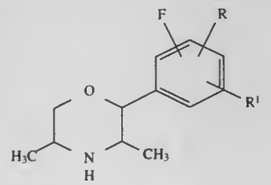
Continuation of Ser. No. 140,010, Oct. 22, 1993, abandoned. This application May 19, 1995, Ser. No. 444,609

Claims priority, application United Kingdom, Apr. 23, 1991, 4108629

Int. Cl.[6] A61K *31/535;* **C07D** *265/30*

U.S. Cl. 514—231.2 **8 Claims**

1. A method for the treatment of depression in a human being, the method comprising administering to the human being an antidepressant effective amount of a compound of the following formula



or a pharmaceutically acceptable salt thereof,

wherein R and R[1] are independently hydrogen or fluorine.

5,648,348
PHOSPHOLIPID ANTIMICROBIAL COMPOSITIONS

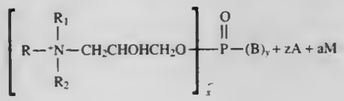
Dennis L. Fost, Ridgewood, and James E. Perella, Upper Saddle River, both of N.J., assignors to Mona Industries, Inc., Paterson, N.J.

Continuation of Ser. No. 74,377, Jun. 11, 1993, abandoned, which is a continuation-in-part of Ser. No. 784,154, Oct. 28, 1991, abandoned. This application Apr. 20, 1995, Ser. No. 425,723

Int. Cl.[6] A61K *31/685;31/66;* **C11D** *3/48*

U.S. Cl. 514—77 **7 Claims**

1. A method for inhibiting microbial growth of a broad spectrum of microorganisms which comprises contacting a substrate subject to attack by microorganisms selected from the group consisting of bacteria, fungi, yeasts and mold with an antimicrobially effective amount of an antimicrobial composition that comprises a mixture of mono-, di- and triesters of phosphoric acid of the formula:



wherein:

x=1, 2, or 3

x+y=3

z=x

a=0 to 2

B=O$^-$or OM

A=Anion

M is a cation

R, R_1 and R_2 are the same or different and are alkyl, hydroxyalkyl, alkyl aryl or alkenyl groups of up to 16 carbon atoms with the proviso that the total carbon atoms in $R+R_1+R_2$ is between 10 and 24.

5,648,349
PLA_2 INHIBITORS

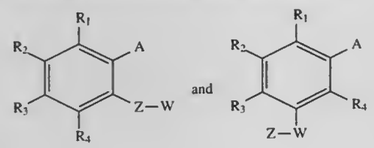
Patrick James Lennon, Clayton, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 259,720, Jun. 14, 1994, Pat. No. 5,434,288, which is a continuation-in-part of Ser. No. 984,022, Dec. 1, 1992, abandoned. This application Apr. 27, 1995, Ser. No. 430,054

Int. Cl.[6] A61K *31/66;* **C07F** *9/38;9/40;9/44*

U.S. Cl. 514—134 **13 Claims**

1. A compound selected from the group consisting of



and

wherein

A is



Z is selected from the group consisting of a direct bond and substituted or unsubstituted alkynyl, alkenyl, alkyl and dienyl groups wherein the substituent is selected from the group consisting of —COR, hydroxyalkyl, —SO_2R and —P(O)(OR)(OR') groups;

W is selected from the group consisting of hydrogen and substituted or unsubstituted alkyl, alkenyl, alkynyl, aryl, alkaryl and heteroaryl groups wherein the substituent is selected from the group consisting of —COR, hydroxy, halogen, trifluoromethyl, —NHCOR, —NR'COR, amino, —NR'SO_2R and —NHSO_2R groups; wherein the sum of the number of carbon atoms in Z and W is 8 to about 20; provided that when Z is a direct bond, W is not aryl;

R_1, R_2, R_3 and R_4 are independently selected from the group consisting of hydrogen, halogen, alkyl, alkenyl, alkynyl, aryl, heteroaryl, alkaryl, alkoxy, thioalkyl, —CHO, —COR, —COOH, —NH_2, —NHR, —NRR', —SH, —OH, —COOR, SO_2R, —SOR, —SO_2OR, —P(O)(OR)(OR') and —OP(O)(OR)(OR');

X is selected from the group consisting of oxygen and sulfur atoms;

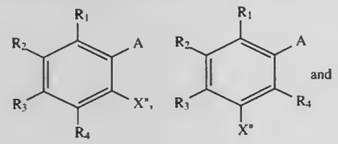
R and R' are independently selected from the group consisting of alkyl, alkenyl, alkynyl, aryl, alkaryl, aralkyl, cycloalkyl, cycloalkenyl and cycloalkynyl groups;

R_6 and R_7 are independently selected from the group consisting of alkyl, alkenyl, alkynyl, alkoxy, aryloxy, hydroxy, amino, alkylamino, —SH, thioalkyl, thioaryl, halogen and —OM

wherein M is a pharmaceutically acceptable cation or R_6 and R_7 can form a cyclic or bicyclic structure;

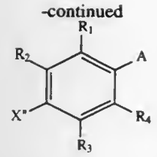
and pharmaceutically acceptable salts thereof and provided that when Z is ethyl, W is not phenyl.

13. A compound selected from the group consisting of



and

-continued



wherein

A is represented by the formula



X" is bromine or iodine; provided that when X" is in the meta or para position with respect to A, X" is iodine;

X is selected from the group consisting of oxygen and sulfur atoms;

R_1, R_2, R_3, and R_4 are independently selected from the group consisting of hydrogen, halogen, alkyl, alkenyl, alkynyl, aryl, heteroaryl, alkaryl, alkoxy, thioalkyl, —CHO, —COR, —COOH, —NH_2, —NHR, —NRR', —SH, —OH, —COOR, —SO_2R, —SOR, —SO_2OR, —P(O)(OR)(OR') and —OP(O)(OR)(OR') groups; wherein R and R' are independently selected from the group consisting of alkyl, alkenyl, alkynyl, aryl, alkaryl, aralkyl, cycloalkyl, cycloalkenyl and cycloalkynyl groups;

R_6 and R_7 are independently selected from the group consisting of hydroxy, alkoxy and —ONa; and pharmaceutically acceptable salts thereof.

5,648,350
DIHYDROTESTOSTERONE FOR USE IN ANDROGENOTHERAPY

Bruno De Lignieres, Draveil, France, assignor to Laboratoires Besins Iscovesco, Paris, France

Division of Ser. No. 553,302, Nov. 21, 1995, abandoned. This application Jul. 8, 1996, Ser. No. 676,455

Claims priority, application France, May 25, 1993, 93 06224

Int. Cl.[6] A61K *31/56*

U.S. Cl. 514—178 **14 Claims**

1. A method for prevention of hyperplasia of the prostate, comprising administering to male patients more than 50 years old, an amount of dihydrotestosterone (DHT) effective to increase a plasmatic content of DHT to a value from about 2.5 to about 10 ng/ml.

5,648,351
USE OF MACROLIDES FOR THE TREATMENT OF CEREBRAL ISCHEMIA

John S. Kelly; Steven P. Butcher, and John Sharkey, all of Edinburgh, United Kingdom, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

PCT No. PCT/JP93/01886, § 371 Date Jun. 29, 1995, § 102(e) Date Jun. 29, 1995, PCT Pub. No. WO94/14443, PCT Pub. Date Jul. 7, 1994

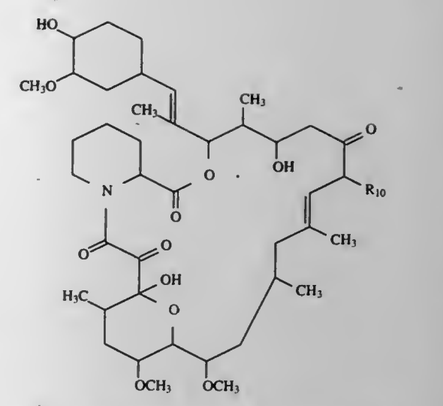
PCT Filed Dec. 24, 1993, Ser. No. 464,815

Claims priority, application United Kingdom, Dec. 29, 1992, 9227055

Int. Cl.[6] A61K *31/33*

U.S. Cl. 514—183 **4 Claims**

1. A method for preventing or treating cerebral ischemic disease, comprising administering to a patient in need thereof, a macrolide compound of the formula:



wherein R^{10} is methyl, ethyl, propyl or allyl, or a pharmaceutically acceptable salt thereof.

5,648,352
PIPERAZINYLCAMPHORSULFONYL OXYTOCIN ANTAGONISTS

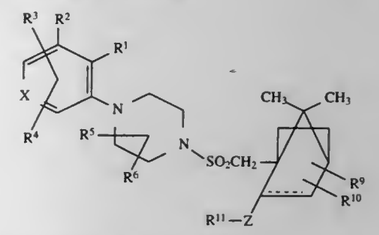
Mark G. Bock, Hatfield; Jill M. Erb, Harleysville; Doug W. Hobbs, Lansdale; James B. Hoffman, King of Prussia; Joseph M. Pawluczyk, Warminster; Debra S. Perlow, East Greenville; Daniel F. Veber, Ambler, and Peter D. Williams, Harleysville, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 179,299, Jan. 10, 1994, abandoned, which is a continuation-in-part of Ser. No. 917,549, Jul. 21, 1992, abandoned, which is a continuation-in-part of Ser. No. 759,242, Sep. 13, 1991, abandoned, and Ser. No. 993,999, Dec. 21, 1992, abandoned, which is a continuation-in-part of Ser. No. 760,271, Sep. 13, 1991, abandoned, and Ser. No. 40,332, Mar. 30, 1993, abandoned, which is a continuation-in-part of Ser. No. 760,270, Sep. 13, 1991, abandoned, and Ser. No. 995,317, Dec. 22, 1992, abandoned, which is a continuation-in-part of Ser. No. 760,422, Sep. 13, 1991, abandoned. This application May 26, 1995, Ser. No. 451,779

Int. Cl.[6] A61K *31/495;* **C07D** *295/26;401/12;405/12*

U.S. Cl. 514—235.8 **17 Claims**

1. A compound of the formula



or a pharmaceutically acceptable salt thereof, wherein

X is —CH=

Z is an optional substituent that, when present, is alkyl;

R^1 is

(1) hydrogen,

(2) alkyl

R^2 is hydrogen;

R^3 and R^4 are independently selected from

(1) hydrogen,

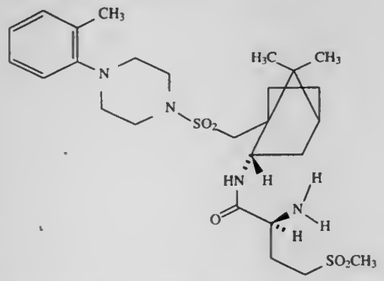
(2) halogen, or

(3) alkyl;

R^5 and R^6 are hydrogen;

R^9 and R^{10} are independently selected from
(1) hydrogen,
(2) hydroxyl and
(3) halogen;
R^{11} is —$N(R^{12})$—CO—R^{13};
R^{12} is
(1) hydrogen, or
(2) unsubstituted or substituted alkyl where said substituent is hydroxyl;
R^{13} is
(1) unsubstituted or substituted phenyl wherein said substituent is one or more of carboxyalkyl or SO_3H,
(2) unsubstituted or substituted heterocyclic ring selected from the group consisting of: pyrrolidinyl, imidazolyl, 1,2,4-triazolyl, tetrahydrofuranyl, thienyl, piperidinyl, piperazinyl, and quinuclidinyl, wherein said substituent for any of said heterocyclic rings are one or more of alkyl, carboxyalkyl, carboxyaralkyl, aralkylcarbonyl, aralkoxycarbonyl, alkoxycarbonyl, alkoxycarbonylalkyl, or oxo
(3) unsubstituted or substituted alkyl, wherein said substituent is one or more of hydroxyl, alkylsulfonyl, acetamidino, formamidino, aminocarbonyl, alkoxycarbonyl, Het, or unsubstituted or substituted amino, wherein said substituent is one or more of alkyl, deuterated alkyl, piperidinyl, Cyc, pyridinyl, tetrahydropyranyl, tetrahydrothiapyranyl, tetrahydrothiapyranyl S-oxide, cyanoalkyl, hydroxyalkyl, alkylcarbonyl, alkylsulfonyl, alkoxycarbonyl, alkoxycarbonylalkyl, aminoalkyl, or substituted alkylcarbonyl, where said substituent is a 5-membered heterocyclic ring having 1 or 2 heteroatoms and where said hetero atom is N, Cyc is defined as unsubstituted or substituted cycloalkyl wherein said substituent is alkoxycarbonyl, carboxyl, hydroxyl, oxo or spiro-dioxolanyl and Het is defined as unsubstituted or substituted heterocyclic rings selected from the group consisting of: pyrrolidinyl, imidazolyl, tetrazolyl, morpholinyl, wherein said substituent for any of said heterocyclic rings are one or more of alkyl, amino, alkoxycarbonyl, alkoxyalkoxyalkyl, alkoxyalkoxyalkoxyalkyl, or oxo.

7. A compound of the formula



or the pharmaceutically acceptable salts thereof.

5,648,353

QUINAZOLINES AND PHTHALAZINES HAVING ADENOSINE UPTAKE INHIBITOR ACTIVITY

Shigeki Fujiwara; Daisuke Machii; Haruki Takai; Hiromi Nonaka, all of Shizuoka; Hiroshi Kase, Koganei; Kozo Yao, Shizuoka; Michiyo Kawakage, Inazawa, all of Japan; Hideaki Kusaka, Pittsburgh, Pa., and Akira Karasawa, Shizuoka, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

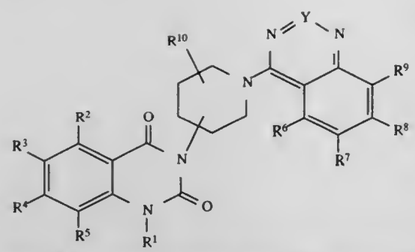
Division of Ser. No. 318,876, Oct. 17, 1994. This application May 22, 1995, Ser. No. 446,235

Claims priority, application Japan, Feb. 18, 1993, 5-028830

Int. Cl.[6] C07D *401/04;* **A61K** *31/50;31/505;31/445*

U.S. Cl. 514—248 **9 Claims**

1. 1,2,3,4-tetrahydro-2,4-dioxoquinazoline derivative represented by formula (I):



(I)

wherein R^1 represents hydrogen, substituted or unsubstituted lower alkyl, alkenyl, or substituted or unsubstituted aralkyl; R^2, R^3, R^4, and R^5 independently represent hydrogen, halogen, amino, mono- or di(lower alkyl)amino, lower alkanoylamino, nitro, cyano, substituted or unsubstituted lower alkyl, hydroxy, lower alkoxy, lower alkylthio, carboxy, lower alkoxycarbonyl, lower alkanoyl, aralkyloxy, or lower alkanoyloxy; R^6, R^7, R^8, and R^9 independently represent hydrogen, hydroxy, substituted or unsubstituted lower alkoxy, or aralkyloxy, or any adjoining two of them are combined to form methylenedioxy; R^{10} represents hydrogen or lower alkyl; and Y is N and Z is C—R^{11} (wherein R^{11} represents hydrogen, substituted or unsubstituted lower alkyl, or halogen),
or a pharmaceutically acceptable salt thereof.

5,648,354

1,2-DITHIINS HAVING ANTIFUNGAL ACTIVITY

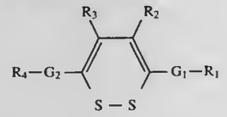
Donald E. Bierer; Jeffrey M. Dener, both of Daly City; Joane Litvak, Oakland, and Larisa G. Dubenko, San Francisco, all of Calif., assignors to Shaman Pharmaceuticals, Inc., South San Francisco, Calif.

Continuation-in-part of Ser. No. 212,096, Mar. 11, 1994, Pat. No. 5,583,235. This application Feb. 28, 1995, Ser. No. 395,777

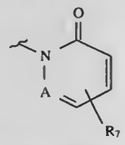
Int. Cl.° C07D *339/08;* **A61K** *31/385*

U.S. Cl. 514—252 **9 Claims**

1. A compound having the formula:

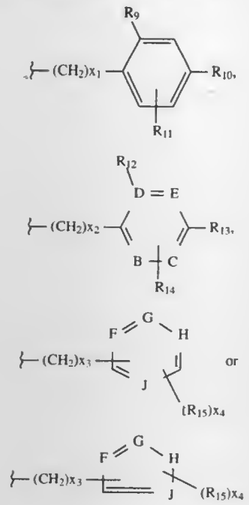


and pharmaceutically acceptable salts thereof, wherein:
R_2 and R_3 are hydrogen;
G_1 and G_2 are independently selected from the group consisting of a C_1–C_{10} alkyl or branched alkyl group and a C_3–C_{10} cycloalkyl group;
R_1 is —OH;
R_4 is selected from the group consisting of, —OR_5, —$O(CO)R_5$, —SR_6 and a pyridone radical of the type:



wherein R_7 is selected from the group consisting of hydrogen, —OH, —SH, —NO_2, —NH_2, halogen, trifluoromethyl, —CHO, —COOH, —$COOR_8$, —OR_8 and SR_8;
A is nitrogen or carbon;
R_8 is an alkyl group of 1 to 6 carbon atoms;

R_5 and R_6 are independently selected from the group consisting of a C_1–C_{20} alkyl group, a C_1–C_{20} alkenyl group, a C_3–C_{10} cycloalkyl group and a radical of the type:



said C_1–C_{20} alkyl and C_1–C_{20} alkenyl group being optionally substituted with one or more C_1–C_{20} alkyl groups;
X_1, X_2, X_3 and X_4 are independently 0–6;
R_9 is selected from the group consisting of hydrogen, a C_1–C_6 alkyl group, a C_2–C_6 alkenyl group, a C_2–C_6 alkynyl group, halogen, trifluoromethyl, trichloromethyl, tribromomethyl, —NO_2, —NH_2, —OH, —SH, —CHO and —COOH;
R_{10} is selected from the group consisting of hydrogen, a C_1–C_6 alkyl group, a C_2–C_6 alkenyl group, a C_2–C_6 alkynyl group, halogen, trifluoromethyl, trichloromethyl, tribromomethyl, —NO_2, —NH_2, —OH, —SH, —CHO, —COOH, —$NR_{16}R_{17}$, —OR_{18}, —SR_{19}, —$COOR_{20}$, phenyl, pyridyl, pyrazinyl, imidazolyl, pyrimidyl, triazyl, triazolyl, thiadiazolyl, tetrazolyl, thiazolyl, thiatriazolyl, pyrrolyl, furanyl, and thiopheneyl; said phenyl, pyridyl, pyrazinyl, imidazolyl, pyrimidyl, triazyl, triazolyl, thiadiazolyl, tetrazolyl, thiazolyl, thiatriazolyl, pyrrolyl, furanyl, and thiopheneyl groups being optionally substituted with one or more halogen, —OCH_3 or C_1–C_6 alkyl groups;
R_{11} is selected from the group consisting of hydrogen, a C_1–C_6 alkyl group, a C_2–C_6 alkenyl group, a C_2–C_6 alkynyl group, halogen, trifluoromethyl, trichloromethyl, tribromomethyl, —NO_2, —NH_2, —OH, —SH, —CHO, —COOH, —$NR_{16}R_{17}$, —OR_{18}, —SR_{19}, —$COOR_{20}$, phenyl, pyridyl, pyrazinyl, imidazolyl, pyrimidyl, triazyl, triazolyl, thiadiazolyl, tetrazolyl, thiazolyl, thiatriazolyl, pyrrolyl, furanyl, and thiopheneyl; said phenyl, pyridyl, pyrazinyl, imidazolyl, pyrimidyl, triazyl, triazolyl, thiadiazolyl, tetrazolyl, thiazolyl, thiatriazolyl, pyrrolyl, furanyl, and thiopheneyl groups being optionally substituted with one or more halogen, —OCH_3 or C_1–C_6 alkyl groups;
R_{12} is selected from the group consisting of hydrogen, a C_1–C_6 alkyl group, a C_2–C_6 alkenyl group, a C_2–C_6 alkynyl group, halogen, trifluoromethyl, trichloromethyl, tribromomethyl, —NO_2, —NH_2, —OH, —SH, —CHO and —COOH;
R_{13} is selected from the group consisting of hydrogen, a C_1–C_6 alkyl group, a C_2–C_6 alkenyl group, a C_2–C_6 alkynyl group, halogen, trifluoromethyl, trichloromethyl, tribromomethyl, —NO_2, —NH_2, —OH, —SH, —CHO, —COOH, —$NR_{16}R_{17}$, —OR_{18}, —SR_{19}, —$COOR_{20}$, phenyl, pyridyl, pyrazinyl, imidazolyl, pyrimidyl, triazyl, triazolyl, thiadiazolyl, tetrazolyl, thiazolyl, thiatriazolyl, pyrrolyl, furanyl, and thiopheneyl groups being optionally substituted with one or more halogen, —OCH_3 or C_1–C_6 alkyl groups;
R_{14} is selected from the group consisting of hydrogen, a C_1–C_6 alkyl group, a C_2–C_6 alkenyl group, a C_2–C_6 alkynyl group, halogen, trifluoromethyl, trichloromethyl, tribromomethyl, —NO_2, —NH_2, —OH, —SH, —CHO, —COOH, —$NR_{16}R_{17}$, —OR_{18}, —SR_{19}, —$COOR_{20}$, phenyl, pyridyl, pyrazinyl, imidazolyl, pyrimidyl, triazyl, triazolyl, thiadiazolyl, tetrazolyl, thiazolyl, thiatriazolyl, pyrrolyl, furanyl, and thiopheneyl groups being optionally substituted with one or more halogen, —OCH_3 or C_1–C_6 alkyl groups;
R_{15} is selected from the group consisting of hydrogen, a C_1–C_6 alkyl group, a C_2–C_6 alkenyl group, a C_2–C_6 alkynyl group, halogen, trifluoromethyl, trichloromethyl, tribromomethyl, —NO_2, —NH_2, —OH, —SH, —CHO, —COOH, —$COOR_{25}$, and phenyl; said phenyl being optionally substituted with one or more halogens, —OCH_3 or C_1–C_6 alkyl groups;
R_{16} and R_{17} are independently a C_1–C_6 alkyl group or form together a ring of 3 to 8 carbon atoms;
R_{18} is selected from the group consisting of a C_1–C_6 alkyl group, a C_2–C_6 alkenyl group, a C_2–C_6 alkynyl group, a C_3–C_8 cycloalkyl group, a phenyl group, an alkyl acyl radical comprising 2 to 6 carbon atoms, and a phenyl acyl radical; said phenyl being optionally substituted with one or more halogens, —OCH_3 or C_1–C_6 alkyl groups;
R_{19} is selected from the group consisting of a C_1–C_6 alkyl group, a C_2–C_6 alkenyl group, a C_2–C_6 alkynyl group, a C_3–C_8 cycloalkyl group, a phenyl group, an alkyl acyl radical comprising 2 to 6 carbon atoms, and a phenyl acyl radical; said phenyl being optionally substituted with one or more halogens, —OCH_3 or C_1–C_6 alkyl groups;
R_{20} is selected from the group consisting of a C_1–C_6 alkyl group, a C_2–C_6 alkenyl group, a C_2–C_6 alkynyl group, a C_3–C_8 cycloalkyl group, a phenyl group, and a benzyl group; said phenyl and benzyl groups being optionally substituted with one or more halogens, —OCH_3 or C_1–C_6 alkyl groups;
R_{24} and R_{22} are independently C_1–C_6 alkyl groups or form together a ring of 3 to 8 carbon atoms;
R_{23} is selected from the group consisting of a C_1–C_6 alkyl group, a C_2–C_6 alkenyl group, a C_2–C_6 alkynyl group, a C_3–C_8 cycloalkyl group, a phenyl group, an alkyl acyl radical comprising 2 to 6 carbon atoms, and a phenyl acyl radical; said phenyl being optionally substituted with one or more halogens, —OCH_3 or C_1–C_6 alkyl groups;
R_{24} is selected from the group consisting of a C_1–C_6 alkyl group, a C_2–C_6 alkenyl group, a C_2–C_6 alkynyl group, a C_3–C_8 cycloalkyl group, a phenyl group, an alkyl acyl radical comprising 2 to 6 carbon atoms, and a phenyl acyl radical; said phenyl being optionally substituted with one or more halogens, —OCH_3 or C_1–C_6 alkyl groups;
R_{25} is selected from the group consisting of a C_1–C_6 alkyl group, a C_2–C_6 alkenyl group, a C_2–C_6 alkynyl group, a C_3–C_8 cycloalkyl group, a phenyl group, and a benzyl group; said phenyl and benzyl groups being optionally substituted with one or more halogens, —OCH_3 or C_1–C_6 alkyl groups;
B, C, D, and E are independently carbon or nitrogen;
F, G, H, and J are independently selected from the group consisting of carbon, nitrogen and sulfur, and
with the proviso that only one of either F, G, H, or J can be sulfur, and with the further proviso that if one of either F, G, H, or J is sulfur, then R_{15} is hydrogen or x_4=0.

5,648,355

METHOD OF TREATMENT OF ENDOGENOUS, PAINFUL GASTROINTESTINAL CONDITIONS OF NON-INFLAMMATORY, NON-ULCERATIVE ORIGIN

Theobaris C. Theoharides, Brookline, Mass., assignor to KOS Pharmaceutical, Inc., Miami, Fla.

Filed Feb. 9, 1994, Ser. No. 193,597
Int. Cl.[6] A61K *31/495;31/42;31/35;31/21*
U.S. Cl. 514—255 **21 Claims**

1. A method of treatment of a patient suffering from an endogenous, painful gastrointestinal condition of non-inflammatory, non-ulcerative origin comprising the step of administering to said patient an effective amount of a mast cell degranulation-blocking agent.

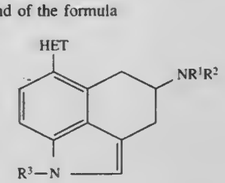
5,648,356

6-HETEROCYCLIC-4-AMINO-1,2,2A,3,4,5-HEXAHYDROBENZ[CD]INDOLES

Richard N. Booher, Indianapolis; David E. Lawhorn, Greenfield; Michael J. Martinelli; Charles J. Paget, Jr., both of Indianapolis, and John M. Schaus, Zionsville, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 263,910, Jun. 20, 1994, which is a division of Ser. No. 954,171, Sep. 30, 1992, Pat. No. 5,347,013, which is a continuation-in-part of Ser. No. 676,679, Mar. 28, 1991, Pat. No. 5,244,911. This application Jun. 2, 1995, Ser. No. 460,579
Int. Cl.[6] A61K *31/495*
U.S. Cl. 514—256 **9 Claims**

1. A compound of the formula



wherein:

R^1 is hydrogen, C_1–C_4 alkyl, C_3–C_4 alkenyl, cyclopropylmethyl, phenyl (C_1–C_4 alkyl), naphthyl (C_1–C_4 alkyl), phenyl (C_1–C_4 alkyl) substituted with one or two substituents selected from the group consisting of C_1–C_3 alkoxy, halo, hydroxy, C_1–C_3 thioalkyl, nitro, C_1–C_3 alkyl or trifluoromethyl, naphthyl (C_1–C_4 alkyl) substituted with one or two substituents selected from the group consisting of C_1–C_3 alkoxy, halo, hydroxy, C_1–C_3 thioalkyl, nitro, C_1–C_3 alkyl or trifluoromethyl, $—(CH_2)_nS(C_1–C_4$ alkyl), $—C(O)R^4$, or $—(CH_2)_nC(O)NR^5R^6$;

R^2 is hydrogen, C_1–C_4 alkyl, cyclopropylmethyl or C_3–C_4 alkenyl;

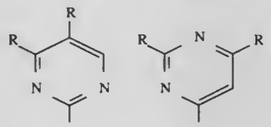
R^3 is hydrogen, C_1–C_4 alkyl or an amino blocking group;

n is 1–4;

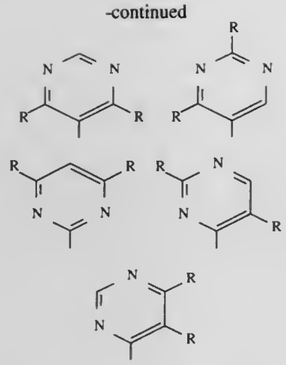
R^4 is hydrogen, C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_1–C_4 alkoxy or phenyl;

R^5 and R^6 are independently hydrogen, C_1–C_4 alkyl, or C_5–C_8 cycloalkyl with the proviso that when one of R^5 or R^6 is a cycloalkyl the other is hydrogen;

HET is a heterocyclic ring selected from the group consisting of



-continued



where R is hydrogen, C_1–C_3 alkyl, halogen, hydroxy, C_1–C_3 alkoxy, C_1–C_3 thioalkyl, NH_2, CN or phenyl; or pharmaceutically acceptable salts thereof.

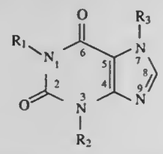
5,648,357

ENATIOMERICALLY PURE HYDROXYLATED XANTHINE COMPOUNDS

James A. Bianco, Seattle; Paul Woodson, Bothell; David Porubek, Edmonds, and Jack Singer, Seattle, all of Wash., assignors to Cell Therapeutics, Inc., Seattle, Wash.

Continuation of Ser. No. 13,977, Feb. 4, 1993, abandoned, which is a continuation-in-part of Ser. No. 926,665, Aug. 7, 1992, abandoned, which is a continuation-in-part of Ser. No. 846,354, Mar. 4, 1992, abandoned. This application Sep. 16, 1994, Ser. No. 307,554
Int. Cl.[6] A61K *31/52*
U.S. Cl. 514—263 **10 Claims**

1. A pharmaceutical composition comprising a compound having a structure:



wherein R_1 is substantially an R enantiomer ω-1 secondary alcohol-substituted alkyl (C_{5-8}), wherein R_2 is alkyl (C_{1-12}) optionally containing one or two nonadjacent oxygen atoms in place of a carbon atom, and R_3 is CH_3 or H, and a buffered pharmaceutically acceptable carrier.

5,648,358

COMPOSITIONS AND METHODS FOR TREATING RESPIRATORY DISORDERS

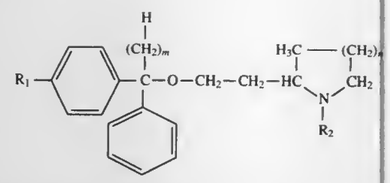
Sekhar Mitra, The Procter & Gamble Company, 8700 Mason-Montgomery Rd., Mason, Ohio 45040

Filed Mar. 5, 1996, Ser. No. 611,533
Int. Cl.[6] A61K *31/52*
U.S. Cl. 514—264 **15 Claims**

1. A composition for providing improved treatment, management or mitigation of cold, cold-like, allergy, sinus and/or flu symptoms by administering a safe and effective amount of a composition comprising:

(a) caffeine; and

(b) a pyrrolidine or piperidine ether antihistaminic agent of the formula:



wherein R_1 is a radical selected from the group consisting of hydrogen, halogen, lower alkyl containing from 1 to 4 carbon atoms and lower alkoxy containing from 1 to 4 carbon atoms, R_2 is a radical selected from the group consisting of lower alkyl containing 1 to 4 carbon atoms, m is an integer from 0, 1, 2 and 3 and n is an integer from 1 to 2, with the proviso that m+n must be at least 2.

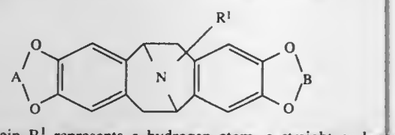
5,648,359

TUMOR NECROSIS FACTOR PRODUCTION INHIBITORS

Naohito Ohashi, Takatsuki; Norio Fujiwara, Toyonaka, both of Japan, and Yutaka Ueda, Brookline, Mass., assignors to Sumitomo Pharmaceuticals Company, Limited, Osaka, Japan

Filed Dec. 28, 1994, Ser. No. 365,427
Claims priority, application Japan, Dec. 28, 1993, 5-350037
Int. Cl.[6] A61K *31/44;31/445;* **C07D** *491/153;491/18*
U.S. Cl. 514—279 **21 Claims**

10. A compound represented by general formula (1):



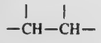
(1)

wherein R^1 represents a hydrogen atom, a straight or branched alkyl group having 1 to 6 carbon atoms, a straight or branched alkenyl group having 2 to 6 carbon atoms, a straight or branched alkanoyl group having 1 to 6 carbon atoms, an aroyl group having not more than 11 carbon atoms, or a group shown by formula:

$$—X^1—(CH_2)_kR^7$$

wherein R^7 represents a halogen atom, a hydroxyl group, a straight or branched alkoxy group having 1 to 6 carbon atoms, a straight or branched alkylthio group having 1 to 6 carbon atoms, a carboxyl group, a straight or branched alkoxycarbonyl group having 2 to 6 carbon atoms, an aryloxycarbonyl group having 7 to 13 carbon atoms, a cyano group, an amino group, an alkylamino group having 1 to 4 carbon atoms, a dialkylamino group having 2 to 8 carbon atoms, a cycloalkyl group having 3 to 7 carbon atoms, or an aromatic hydrocarbon group having not more than 10 carbon atoms; X^1 represents a carbonyl group or a methylene group; k represents 0 or an integer of 1 to 5, provided that when X^1 is a carbonyl group and R^7 is a hydroxyl group or when X^1 is a methylene group and R^7 is a hydroxyl group, an amino group, an alkylamino group or a dialkylamino group, k represents an integer of 1 to 5; and

each of A and B independently represents a methylene group or a group shown by:



wherein each of R^2 and R^3 independently represents a hydrogen atom, an alkoxycarbonyl group, an unsubstituted alkyl group, or an alkyl group having 1 to 3 carbon atoms substituted with a hydroxy group, an amino group, an alkylamino group having 1 to 4 carbon atoms, or a dialkylamino group having 2 to 8 carbon atoms;

provided that when R^1 is a methyl group, A and B are not a methylene group simultaneously;

or a pharmaceutically acceptable salt.

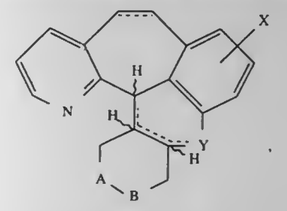
5,648,360

PENTACYCLIC ANTIHISTAMINES

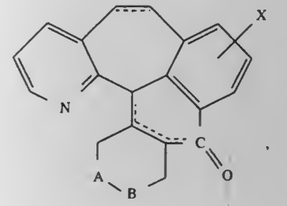
James J. Kaminski, Long Valley; Shing-Chun C. Wong, Union, and Nicholas I. Carruthers, North Plainfield, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

PCT No. PCT/US93/04456, § 371 Date Nov. 14, 1994, § 102(e) Date Nov. 14, 1994, PCT Pub. No. WO93/23400, PCT Pub. Date Nov. 25, 1993
Continuation-in-part of Ser. No. 885,429, May 19, 1992, abandoned. This PCT application May 17, 1993, Ser. No. 335,885
Int. Cl.[6] A61K *31/47*
U.S. Cl. 514—80 **11 Claims**

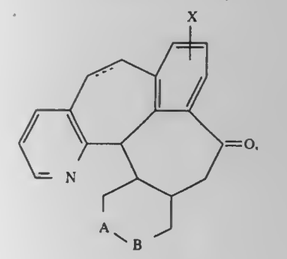
1. A compound represented by the structural formula



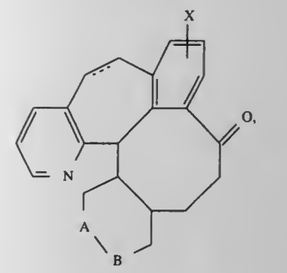
Ia



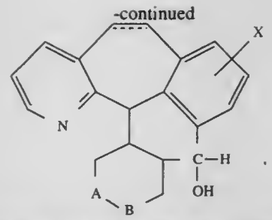
Ic



Ic'



-continued



Ia'

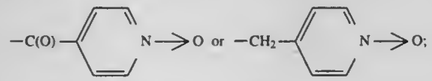
or a pharmaceutically acceptable salt thereof, wherein

X is hydrogen, halo, $-CF_3$ or $-CH_3-$;

Y is $-(CH_2)_n-$, wherein n is 1, 2 or 3;

A is $-N(R)-$ and B is $-CH_2-$, or A is $-CH_2-$ and B is $-N(R)-$;

R is hydrogen, lower alkyl, lower alkanoyl, $-CO_2R^1$,



R^1 is hydrogen, lower alkyl or $-CH_2CCl_3$; and

- - - - represents an optional double bond, with the proviso that the ring containing Y has only one optional double bond.

5,648,361

RAPAMYCIN DERIVATIVES

Dennis Alan Holt, Stow, Mass.; Juan Ignacio Luengo, Audubon, and Leonard Walter Rozamus, Jr., Chestersprings, both of Pa., assignors to SmithKline Beecham Corporation, Philadelphia, Pa.

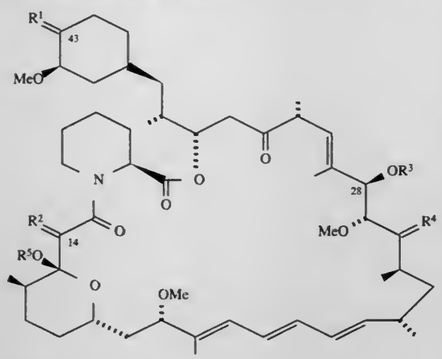
PCT No. PCT/US93/06679, § 371 Date Mar. 15, 1995, § 102(e) Date Mar. 15, 1995, PCT Pub. No. WO94/02485, PCT Pub. Date Feb. 3, 1994

PCT Filed Jul. 16, 1993, Ser. No. 373,181

Int. Cl.[6] A61K *31/395;* **C07D** *498/04*

U.S. Cl. 514—291 **18 Claims**

1. A compound of the formula



wherein:

R^1 is selected from the group consisting of =O, ($-OR_6$, H) and (H,H);

R^2 is selected from the group consisting of =O, (H,H), and (H,OH);

R^3 and R^6 are independently selected from the group consisting of —H, $-C(=O)R^7$, $-C(=O)OR^7$, $-C(=O)NHR^7$, and $-C(=S)OR^7$;

R^4 is selected from the group consisting of =O and (H,OR_6); or R^3 and R^4 can be taken together to form a bridge of the formula $A-C(R^8)(R^9)-O-B$, where A is a bond to the oxygen bonded to the carbon at the 28-position and B is a bond to the carbon at the 30-position;

R^5 is selected from the group consisting of —H and C_1–C_4 alkyl;

R^7 is selected from the group consisting of C_1–C_{10} alkyl, C_3–C_6 cycloalkyl, phenyl and naphthyl optionally substituted by from one to five members selected from the group consisting of C_1–C_6 alkyl, phenyl, naphthyl, hydroxyl, C_1–C_6 alkoxyl, acyloxy, amino, N-acylamino, nitro, cyano and halogen and heterocyclic groups selected from the group consisting of piperidyl, piperidinyl, piperazinyl, pyrimidinyl, pyridazinyl, oxazolyl, furyl, and thienyl optionally substituted in a manner such that carbon atoms attached to a heteroatom are not directly substituted by a heteroatom, by from one to four members selected from the group consisting of C_1–C_6 alkyl, phenyl, naphthyl, hydroxyl, C_1–C_6 alkoxyl, acyloxy, amino, N-acylamino, nitro, and halogen;

R^8 and R^9 are independently selected from the group consisting of H, C_1 to C_6 alkyl, or R^8 and R^9 taken together are =O;

provided that:

(a) when R^4 is =O, then R^2 is (H,OH); and

(b) when R^1 is (—OH, H), R^2 is =O, R^3 is (—H), R^4 is (H, OH), then R^5 is not —H, and all pharmaceutically acceptable salts, hydrates or solvates thereof.

5,648,362

FLUOROALKYLATED AMPHIPHILIC LIGANDS, THEIR METALLIC COMPLEXES AND THEIR USES

Jean G. Riess; Pierre Vierling, both of Falicon, and Nathalie Garelli, Nice, all of France, assignors to Alliance Pharmaceutical Corp., San Diego, Calif.

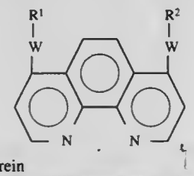
Division of Ser. No. 955,473, Oct. 2, 1992, Pat. No. 5,399,694. This application Jan. 25, 1995, Ser. No. 377,917

Claims priority, application France, Oct. 2, 1991, 91 12130

Int. Cl.[6] A61K *31/435*

U.S. Cl. 514—292 **14 Claims**

1. A fluoroalkylated bidentate aminated ligand corresponding to the formula



[II]

wherein

1) W is a bivalent group chosen from the group consisting of:

a) $-CH_2-$,

b) —O—C(O)—,

c) —C(O)—O—

d) —O—,

e) —C(O)—,

f) $-NR^3-C(O)-$, and

g) $-C(O)-NR^3-$,

wherein R^3 is a hydrogen atom or a linear or branched, saturated or unsaturated hydrocarbon radical, having 1 to 24 carbon atoms;

2) R^1 is a radical selected from the group consisting of:

a) $R_F-(CH_2)_n-(CH=CH)_b-(CH_2)_c-(CH=CH)_d-(CH_2)_e-$

wherein a is a whole number from 0 to 12;

b is a whole number from 0 to 12;

c is a whole number from 0 to 11;

d is a whole number from 0 to 12;

e is a whole number from 0 to 11;

b+d=0 to 12; and

c+e=0 to 11;

b) $R_F-(CH_2CH_2O)_f-CH_2-$

c) $R_F-[CH(CH_3)CH_2O]_f-CH_2-$

d) $R_F-(CH_2CH_2S)_f-CH_2-$

wherein f is a whole number from 1 to 12;

wherein R_F is a branched, cyclic, or linear fluorinated alkyl radical of from 2 to 23 carbon atoms in which 50 to 100% of the hydrogen atoms have been replaced by fluorine atoms, and R_F comprises at least 4 fluorine atoms, and optionally can bear other substituents chosen from Cl and Br;

3) R^2 represents

a) a hydrogen atom,

b) R^1, or

c) a radical selected from the group consisting of:

$R_H-(CH_2)_a-(CH=CH)_b-(CH_2)_c-(CH=CH)_d-(CH_2)_e-$

$R_H-(CH_2CH_2O)_f-CH_2-$

$R_H-(CH(CH_3)CH_2O)_f-CH_2-$, or

$R_H-CH_2CH_2S)_f-CH_2-$

wherein R_H is a hydrogen atom or a saturated or unsaturated, linear or branched hydrocarbon radical of from 1 to 24 carbon atoms, and a, b, c, d, e and f are as defined above.

7. A pharmaceutical composition comprising a preparation comprising a complex according to any one of claims 1 or 2 wherein said preparation comprises a solution, gel, emulsion, microemulsion or dispersion.



5,648,363

N-[(4-HETEROARYL-1-PIPERIDINYL)ALKYL]-1H-BENZ[DE]ISOQUINOLINE-1,3(2H) - DIONES AND RELATED COMPOUNDS AND THEIR THERAPEUTIC UTILITY

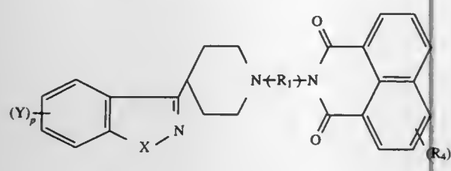
Edward J. Glamkowski, Warren, and Yulin Chiang, Covent Station, both of N.J., assignors to Hoechst Marion Roussel, Inc., Kansas City, Mo.

Division of Ser. No. 329,000, Oct. 25, 1994, which is a continuation-in-part of Ser. No. 144,265, Oct. 28, 1993, abandoned, which is a continuation-in-part of Ser. No. 969,383, Oct. 30, 1992, Pat. No. 5,364,866, which is a continuation-in-part of Ser. No. 788,269, Nov. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 944,705, Sep. 5, 1991, abandoned, which is a continuation of Ser. No. 619,825, Nov. 29, 1990, abandoned, which is a continuation of Ser. No. 456,790, Dec. 29, 1989, abandoned, which is a continuation-in-part of Ser. No. 354,411, May 19, 1989, abandoned. This application Jun. 6, 1995, Ser. No. 466,767

Int. Cl.[6] A61K *31/45;* **C07D** *401/14;413/14;417/14*

U.S. Cl. 514—296 **18 Claims**

1. A compound of the formula:



wherein,

X is —O—, —S—, —NH—, or $-N(R_2)-$;

R_2 is selected from the group consisting of lower alkyl, aryl lower alkyl, aryl, cycloalkyl, aroyl, alkanoyl, alkoxycarbonyl, and phenysulfonyl groups;

aryl is as defined hereinafter;

p is 1 or 2;

Y is hydrogen, lower alkyl, hydroxy, chlorine, fluorine, bromine, iodine, lower alkoxy, trifluoromethyl, nitro, or amino;

R_1 is $-CR_{24}R_{27}-(CR_{23}R_{24})_n-CR_{24}R_{27}-$ where n is 0, 1, 2, or 3; or

$-CHR_{24}-CH=CH-CHR_{24}-$,

$-CHR_{24}-C\equiv C-CHR_{24}-$,

$-CHR_{24}CH=CH-CR_{23}R_{24}-CHR_{24}-$,

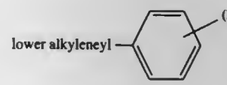
$-CHR_{24}-CR_{23}R_{24}-CH=CH-CHR_{24}-$,

$-CHR_{24}-C\equiv C-CR_{24}R_{24}-CHR_{23}-$, or

$-CHR_{24}-CR_{23}R_{24}-C\equiv C-CHR_{24}-$,

the —CH=CH— bond being cis or trans;

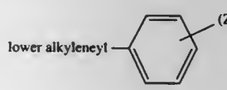
R_{23} is hydrogen, (C_1–C_{18})linear alkyl, phenyl, hydroxy, (C_1–C_{18})alkoxy, aryloxy, aryl (C_1–C_{18})alkyloxy, (C_1–C_{18})alkanoyloxy, hydroxy(C_1–C_6)alkyl, (C_1–C_{18})alkoxy(C_1–C_6)alkyl, phenyl (C_1–C_6)alkoxy, aryl(C_1–C_{18})alkyloxy(C_1–C_6)alkyl, (C_1–C_{18})alkanoyloxy (C_1–C_6)alkyl, or



where

Z_1 is lower alkyl, —OH, lower alkoxy, $-CF_3$, $-NO_2$, $-NH_2$, or halogen, and p is as previously defined;

R_{24} is hydrogen, (C_1–C_{18}) linear alkyl, phenyl, hydroxy(C_1–C_6)alkyl, (C_1–C_{18})alkoxy(C_1–C_6)alkyl, phenyl(C_1–C_6)alkyloxy, aryl(C_1–C_{18})alkyloxy(C_1–C_6)alkyl, (C_1–C_{18})alkanoyloxy(C_1–C_6) alkyl, or



where

Z_1 is as previously defined, and p is as previously defined;

R_{27} is hydrogen or R_{24} and R_{27} taken together with the carbon to which they are attached form C=O or C=S;

R_4 is hydrogen, lower alkyl, lower alkoxy, hydroxy, tri(C_1–C_6)alkylsilyloxy, hydroxy lower alkyl, alkanoyloxy lower alkyl, amino, mono- or dialkylamino, (C_1–C_{18})acyl amino, (C_1–C_{18})alkanoyl, trifluoromethyl, chlorine, fluorine, bromine, nitro, —O—C(=O)— (C_1–C_{18} straight or branched chain) alkyl or —C(=O)-aryl;

aryl is phenyl or



wherein

R_5 is hydrogen, lower alkyl, lower alkoxy, hydroxy, chlorine, fluorine, bromine, iodine, lower monoalkylamino, lower dialkylamino, nitro, cyano, trifluoromethyl, or trifluoromethoxy;

m is 1, 2, or 3;

and, any hydroxyl group attached to an aliphatic or aromatic carbon atom, or any primary or secondary nitrogen atom may be acylated with a (C_4–C_{18})carboxylic acid group, in addition, any nitrogen atom may alternatively be acylated with a (C_4–C_{18})alkoxycarbonyl group;

all geometric, optical, and stereoisomers thereof;

or a pharmaceutically acceptable acid addition salt thereof.

5,648,364

RETROVIRAL PROTEASE INHIBITORS

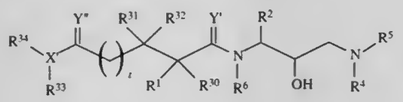
John J. Talley; Daniel P. Getman, both of Chesterfield; Gary A. DeCrescenzo, St. Peters, all of Mo.; Kathryn L. Reed, Raleigh, N.C.; Ko-Chung Lin, St. Louis; John Nicholas Freskos, Clayton, both of Mo.; Michael Clare, Skokie, Ill.; Donald Joseph Rogier, Jr., St. Louis; Robert M. Heintz, Ballwin, both of Mo.; Michael L. Vazquez, Gurnee, and Richard A. Mueller, Glencoe, both of Ill., assignors to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 886,700, May 21, 1992, abandoned. This application Mar. 21, 1995, Ser. No. 408,166

Int. Cl.[6] A61K *31/47*

U.S. Cl. 514—307 **26 Claims**

1. A compound represented by the formula:



or a pharmaceutically acceptable salt, prodrug or ester thereof, wherein

t represents 0 or 1;

R^1 represents hydrogen, $—CH_2SO_2NH_2$, $—CO_2CH_3$, $—CH_2CO_2CH_3$, $—CO_2H$, $—CH_2CO_2H$, $—CH_2CH_2CO_2H$, $—CH_2CH_2CONH_2$, $—CH_2CONH_2$, $—CONH_2$, $—CONHCH_3$, $—CON(CH_3)_2$, $—CH_2CONHCH_3$, $CH_2CHCON(CH_3)_2$, $—CH_2SCH_3$, $—CH_2S(O)CH_3$, $—CH_2S(O)_2CH_3$, alkyl, alkenyl, alkynyl, aralkyl, heteroaralkyl, aminoalkyl, hydroxyalkyl, cyanoalkyl, or cycloalkyl radicals or a side chain or an amino acid selected from the group consisting of asparagine, S-methyl cysteine or the sulfoxide or sulfone derivative thereof, leucine, isoleucine, allo-isoleucine, tert-leucine, alanine, phenylalanine, ornithine, histidine, norleucine, glutamine, valine, threonine, allo-threonine, serine, aspartic acid and beta-cyano alanine;

R^2 represents alkyl, aryl, cycloalkyl, cycloalkylalkyl or aralkyl radicals, which radicals are optionally substituted with a substituent selected from the group consisting of $—NO_2$, $—OR^{15}$, $—SR^{15}$, or halogen radicals, wherein R^{15} represents hydrogen or alkyl radicals;

R^3 represents hydrogen, alkyl, alkenyl, hydroxyalkyl, alkoxyalkyl, cycloalkyl, cycloalkylalkyl, heterocycloalkyl, heteroaryl, heterocycloalkylalkyl, aryl, aralkyl, or heteroaralkyl radicals;

X' represents O, N or $C(R^{17})$ where R^{17} represents hydrogen or alkyl radicals;

Y' and Y" each independently represent O or S;

R^4 and R^5 together with the nitrogen atom to which they are bonded represent a N-heterocyclic moiety;

R^6 represents hydrogen or alkyl radicals;

R^{30}, R^{31} and R^{32} each independently represent a radical as defined for R^1, or one of R^1 and R^{30} together with one of R^{31} and R^{32} and the carbon atoms to which they are attached form a cycloalkyl radical; and

R^{33} and R^{34} each independently represent a radical as defined for R^3, or R^{33} and R^{34} together with X' represent cycloalkyl, aryl, heterocyclyl or heteroaryl radicals, provided that when X' is O, R^{34} is absent.

5,648,365

DIARYLALKYL PIPERIDINES USEFUL AS MULTI-DRUG RESISTANT TUMOR AGENTS

Sai P. Sunkara, San Diego, Calif., and Jules Freedman, Cincinnati, Ohio, assignors to Merrell Pharmaceuticals Inc., Cincinnati, Ohio

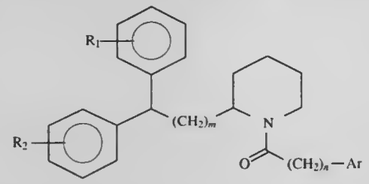
PCT No. PCT/US93/12300, § 371 Date Mar. 11, 1996, § 102(e) Date Mar. 11, 1996, PCT Pub. No. WO94/17040, PCT Pub. Date Aug. 4, 1994

Continuation of Ser. No. 111,027, Aug. 24, 1993, abandoned, which is a continuation of Ser. No. 6,569, Jan. 21, 1993, abandoned. This PCT application Dec. 17, 1993, Ser. No. 481,538

Int. Cl.[6] C07D *211/16;401/06;* **A61K** *31/445;31/40*

U.S. Cl. 514—320 **6 Claims**

1. A method of reversing drug resistance in multi-drug resistant tumors by administering to a patient in need of such treatment an effective amount of a compound of the formula



wherein m is an integer selected from the group consisting of 0, 1 or 2,

n is an integer selected from the group consisting of 0, 1, 2 or 3,

R_1 and R_2 are each independently selected from the group consisting of hydrogen, halogen, C_1–C_4 alkyl or C_1–C_4 alkoxy, and

Ar is phenyl optionally substituted with from 1 to 3 substituents selected from the group consisting of C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 alkylthio, halogen, OCH_2O, CF_3, OCF_3, OH, CN, NO_2, and NH_2; or indolyl.

5,648,366

SUBSTITUTED PYRROLIDIN-3-YL-ALKYL-PIPERIDINES

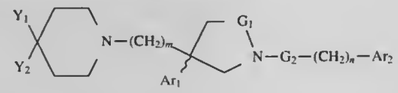
Timothy P. Burkholder, Fairfield; Tieu-Binh Le, Cincinnati; Elizabeth M. Kudlacz, Cincinnati, and George D. Maynard, Cincinnati, all of Ohio, assignors to Merrell Pharmaceuticals Inc., Cincinnati, Ohio

Division of Ser. No. 332,027, Oct. 31, 1994, which is a continuation-in-part of Ser. No. 225,371, Apr. 19, 1994, abandoned, which is a continuation-in-part of Ser. No. 58,606, May 6, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 477,167

Int. Cl.[6] A61K *31/445*

U.S. Cl. 514—326 **15 Claims**

1. A method for treating asthma in a patient in need thereof comprising administering to said patient a therapeutically effective amount of a compound of the formula



wherein

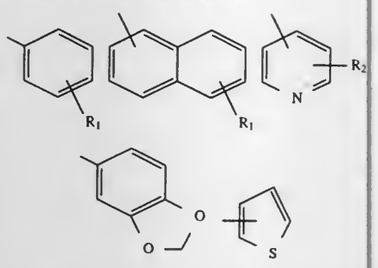
G_1 is $—CH_2—$ or $—C(O)—$;

G_2 is $—CH_2—$ or $—C(O)—$;

m is 2 or 3;

n is 0 or 1;

Ar_1 is a radical chosen from the group:

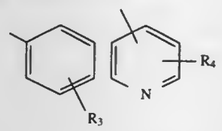


wherein

R_1 is from 1 to 3 substituents each independently chosen from the group consisting of hydrogen, halogen, hydroxy, CF_3, C_1–C_6 alkyl, and C_1–C_6 alkoxy;

R_2 is from 1 to 2 substituents each independently chosen from the group consisting of hydrogen, halogen, C_1–C_6 alkyl, and C_1–C_6 alkoxy;

Ar_2 is a radical chosen from the group



wherein

R_3 is from 1 to 3 substituents each independently chosen from the group consisting of hydrogen, halogen, C_1–C_6 alkoxy, hydroxy, —O—C(O)O— CH_2—CH_3, $—OC(O)CH_3$, $—CF_2H$, $—(CH_2)_qNR_6R_7$, and $—(CH_2)_qNR_8R_9$ wherein q is 2 or 3, R_6 is C_1–C_6 alkyl, R_7 is C_1–C_6 alkyl, R_8 and R_9 taken together with the bonded nitrogen form a morpholine ring, piperidine ring, 4-methylpiperazine ring, or pyrrolidine ring;

R_4 is from 1 to 2 substituents each independently chosen from the group consisting of hydrogen, halogen, C_1–C_6 alkyl, and C_1–C_6 alkoxy;

Y_1 is $—C(O)NHR_5$,—$C(O)NR_6R_7$, or $—C(O)NR_8R_9$

wherein

R_5 is chosen from the group consisting of hydrogen, 3-hydroxy-2-butyryl-C_1–C_6 alkyl ester, 2 -glutaryl-C_1–C_6 alkyl ester, $—(CH_2)_qNR_6R_7$, and $—(CH_2)_qNR_8R_9$;

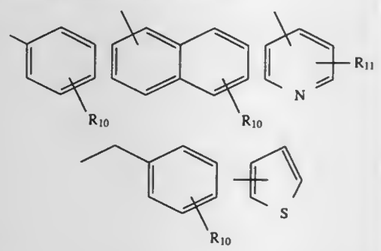
q is 2 or 3;

R_6 is C_1–C_6 alkyl;

R_7 is C_1–C_6 alkyl;

R_8 and R_9 taken together with the bonded nitrogen form a morpholine ring, piperidine ring, 4-methylpiperazine ring, or pyrrolidine ring;

Y_2 is a radical chosen from the group



wherein

R_{10} is from 1 to 3 substituents each independently chosen from the group consisting of hydrogen, halogen, CF_3, C_1–C_6 alkyl, and C_1–C_6 alkoxy;

R_{11} is from 1 to 2 substituents each independently chosen from the group consisting of hydrogen, halogen, C_1–C_6 alkyl, and C_1–C_6 alkoxy;

or stereoisomers, or an N-oxide, or a pharmaceutically acceptable salt thereof.

5,648,367

AMINOALKYLOXIMES

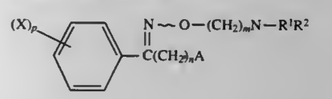
Gregory M. Shutske, Pittstown; Brian S. Freed, Phillipsburg, both of N.J.; John D. Tomer, IV, Perkasie, Pa., and R. Richard L. Hamer, Lebanon, N.J., assignors to Hoechst Marion Roussel, Inc., Cincinnati, Ohio

Division of Ser. No. 285,668, Aug. 3, 1994. This application Jun. 1, 1995, Ser. No. 457,081

Int. Cl.[6] C07D *211/32;40/10;401/06;* **A61K** *31/445*

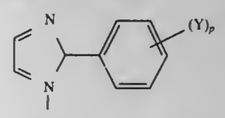
U.S. Cl. 514—330 **9 Claims**

1. A compound of the formula



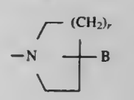
wherein:

a. X is hydrogen, loweralkyl, loweralkoxy, halogen, trifluoromethyl, or a group of the formula

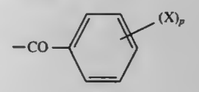


wherein Y is hydrogen or loweralkyl, and p is 1 or 2;

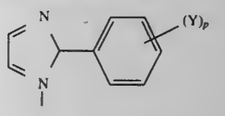
b. A is a group of the formula



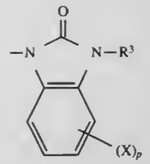
wherein B is a group of the formula



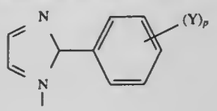
wherein X is hydrogen or loweralkyl, loweralkoxy, halogen, trifluoromethyl, or a group of the formula



wherein Y is hydrogen or loweralkyl, and p is 1 or 2 or a group of the formula

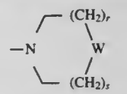


wherein R^3 is hydrogen loweralkyl, X is hydrogen, loweralkyl, loweralkoxy, halogen, trifluoromethyl, or a group of the formula



wherein Y is a hydrogen or loweralkyl, p is 1 or 2, and r is 2;

c. R^1 and R^2 are independently hydrogen or loweralkyl or R^1 and R^2 taken together with the nitrogen atom to which they are attached form a group of the formula



wherein W is CH_2, O or S, r is 1, 2, or 3, and s is 1, 2, or 3;

d. m and n are 2 to 6, inclusive, the geometric and optical isomers thereof; or the pharmaceutically acceptable salts thereof.

5,648,368

FIBRINOGEN RECEPTOR ANTAGONISTS

Melissa S. Egbertson, Ambler; Laura M. Vassallo, Havertown; George D. Hartman; Wasyl Halczenko, both of Lansdale; David B. Whitman, Phoenixville; James J. Perkins, Philadelphia; Amy E. Krause, Blue Bell; Nathan Ihle, Perkasie; David Alan Claremon, Maple Glen; William Hoffman, Lansdale, and Mark E. Duggan, Schwenksville, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

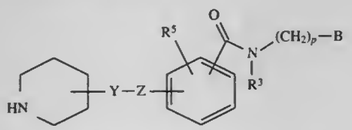
PCT No. PCT/US93/11623, § 371 Date Jun. 1, 1995, § 102(e) Date Jun. 1, 1995, PCT Pub. No. WO94/12181, PCT Pub. Date Jun. 9, 1994

PCT Filed Nov. 29, 1993, Ser. No. 448,347

Int. Cl.[6] A61K *31/445;* **C07D** *211/20;211/26;211/98*

U.S. Cl. 514—331 **13 Claims**

1. A compound of the formula



or its pharmaceutically acceptable salt thereof, where

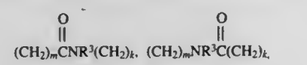
Y, when present, is

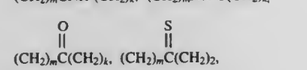
C_{0-8} alkylene,
C_{0-8} alkylene-NR^3-CO-C_{0-8} alkylene,
C_{0-8} alkylene-$CONR^3$-C_{0-8} alkylene,
C_{0-8} alkylene-O-C_{0-8} alkylene,
C_{0-8} alkylene-SO_n-C_{0-8} alkylene,
$(CH_2)_{0-6}$-NR^3-$(CH_2)_{0-6}$,
C_{0-8} alkylene-SO_2-NR^3-C_{0-8} alkylene-,
C_{0-8} alkylene-CO-C_{0-8} alkylene, or
C_{0-8} alkylene-CH(OH)-C_{0-8}-alkylene

where n is an integer from 0–2,

Z, when present, is

$(CH_2)m$, $(CH_2)_mO(CH_2)_k$, $(CH_2)_mNR^3(CH_2)_k$,





$(CH_2)_mSO_2(CH_2)_k$
$(CH_2)_mS(CH_2)_k$, $(CH_2)_mSO(CH_2)_k$,
$(CH_2)_mSO_2NR^3(CH_2)_k$, $(CH_2)_mNR^3SO_2(CH_2)_k$,
$(CH_2)C{=}C(CH_2)_k$, and
$(CH_2)_mCH(OH)(CH_2)_k$

where m and k are integers independently chosen from 0–6;

R^5 is

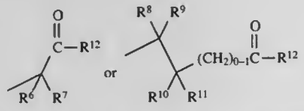
hydrogen,
C_{1-6} alkyl, or
halogen;

R^3 is

hydrogen,
C_{1-10} alkyl,
C_{3-8} cycloalkyl,
aryl C_{0-8} alkylene-,
amino C_{0-8} alkylene-,
C_{1-3} acylamino C_{0-8} alkylene-,
C_{1-6} alkylamino C_{0-8} alkylene-,
C_{1-6} dialkylamino C_{0-8} alkylene-,
C_{1-4} alkoxy C_{0-6} alkylene-,
carboxy C_{0-6} alkylene-,
C_{1-3} alkoxycarbonyl C_{0-6} alkylene-,
carboxy C_{0-6} alkyleneoxy-, or
hydroxy C_{0-6} alkylene-;

p is an integer from 0–6;

B is



wherein R^6, R^7, R^8, R^9, R^{10}, and R^{11} are independently chosen from:

hydrogen, fluoride, hydroxy C_{1-6} alkylene-,
carboxy C_{0-6} alkylene-,
C_{1-8} alkyl, hydroxyl, C_{1-6} alkyloxy,
aryl C_{0-6}alkyleneoxy-,
C_{3-8} cycloalkyl,
aryl C_{0-6} alkylene-, C_{1-6} alkylcarbonyloxy-,
C_{0-6} alkylamino C_{0-6} alkylene-,
aryl C_{0-6} alkyleneamino C_{0-6}alkylene-,
C_{0-6} dialkylamino C_{0-6} alkylene-,
C_{0-6} alkylaminocarbonyloxy,
aryl C_{0-6} alkyleneaminocarbonyloxy-,
C_{1-8} alkylsulfonylamino C_{0-6} alkylene-,
aryl C_{0-6} alkylenesulfonylamino C_{0-6} alkylene-,
C_{1-8} alkyloxycarbonylamino C_{0-8} alkylene-,
aryl C_{0-8} alkyleneoxycarbonylamino C_{0-8} alkylene-,
C_{1-8} alkylcarbonylamino C_{0-6} alkylene-,
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C_{0-8} alkylaminosulfonylamino C_{0-6} alkylene-,
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C_{1-6} alkylsulfonyl C_{0-6} alkylene-,
aryl C_{0-6} alkylenesulfonyl C_{0-6} alkylene-,
C_{1-6} alkylcarbonyl C_{0-6} alkylene-,
aryl C_{0-6} alkylenecarbonyl C_{0-6} alkylene-,
C_{0-8}alkylaminocarbonyl C_{0-8} alkylene-,
aryl C_{0-8} alkyleneaminocarbonyl C_{0-8} alkylene-,
C_{0-8} alkylaminosulfonyl C_{0-8} alkylene-, and

aryl C_{0-8} alkyleneaminosulfonyl C_{0-8} alkylene-,

wherein groups may be unsubstituted or substituted with one or more sustituents selected from R^1 and R^2 which are independently selected from the group consisting of

hydrogen,
C_{1-10} alkyl,
C_{3-8} cycloalkyl,
aryl C_{0-8} alkylene-,
amino C_{0-8} alkylene-,
C_{1-3} acylamino C_{0-8} alkylene-,
C_{1-6} alkylamino C_{0-8} alkylene-,
C_{1-6} dialkylamino C_{0-8} alkylene-,
C_{1-4} alkoxy C_{0-6} alkylene-,
carboxy C_{0-6} alkylene-,
C_{1-3} alkoxycarbonyl C_{0-6} alkylene-,
carboxy C_{0-6} alkyloxy-, or
hydroxy C_{0-6} alkylene-;

and wherein R^{12} is chosen from:

hydroxy,
C_{1-8} alkyloxy-,
aryl C_{0-6} alkyleneoxy-,
C_{1-8} alkylcarbonyloxy C_{1-4} alkyleneoxy-,
aryl C_{1-8} alkylenecarbonyloxy C_{1-4} alkyleneoxy-, and
an L- or D-amino acid joined by an amide linkage and wherein the carboxylic acid moiety of said amino acid is as the free acid or is esterified by C_{1-6} alkyl.

5,648,369

AMINOALKYLPYRIDINE COMPOUNDS WHICH ARE USEFUL AS ANITCONVULSANT DRUGS, EXCITATORY AMINO ACID INHIBITORS AND NMDA SIGMA RECEPTOR ANTAGONISTS

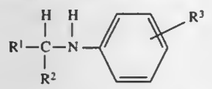
Pankaja K. Kadaba, Lexington, Ky., assignor to University of Kentucky Research Foundation, Lexington, Ky.

Filed Nov. 20, 1991, Ser. No. 793,725

Int. Cl.[6] C07D *213/02;* **A61K** *31/44*

U.S. Cl. 514—357 **22 Claims**

1. A compound of the following formulae:



wherein R^1 is 4-pyridyl, R^2 is hydrogen or methyl and R^3 is p-methyl or p-methoxy.

5,648,370

7-(2-AMINOETHYL) BENZOTHIAZOLONES

Roger V. Bonnert; Roger C. Brown, both of Loughborough; David R. Cheshire, Beeston; Francis Ince, Loughborough, and John Dixon, Great Dalby, all of England, assignors to Astra Pharmaceuticals Limited, Hertfordshire, England

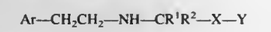
Continuation-in-part of Ser. No. 63,781, May 19, 1993, abandoned. This application Nov. 28, 1994, Ser. No. 348,154

Claims priority, application United Kingdom, Nov. 20, 1990, 9025176; Nov. 20, 1990, 9025178; Nov. 20, 1990, 9025180; May 27, 1992, 9211172; May 19, 1992, 9210632

Int. Cl.[6] A61K *31/425*

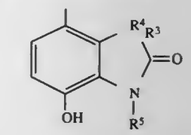
U.S. Cl. 514—367 **13 Claims**

1. Compounds of formula I,



in which

Ar represents a group:



X represents a C_{1-12} alkylene chain interrupted or terminated by one or more groups selected from —SO_n—, —O—, —C(Z)—, CR^6R^7, phenylmethyne, —NR^8—, —CONH—, —NHCO— and —NHCONH—;

Y represents an optionally substituted aryl or cycloalkyl group,

Z represents O or S,

R^1, R^2, R^5 and R^9 each independently represent hydrogen or C_{1-6} alkyl;

R^3 and R^4 together represent —S—, —NR^9— or —CH_2—;

R^6 and R^7 each independently represent hydrogen, C_{1-6} alkyl, fluoro, cyano, or CF_3, provided that at least one of R^6 and R^7 is other than hydrogen;

R^8 represents hydrogen or alkyl C_{1-6} alkyl or when X is interrupted or terminated by more than one —NR^8— group may together with another R^8 group form the chain —CH_2—CH_2—, and

n represent 0, 1 or 2,

and pharmaceutically acceptable derivatives thereof.

5,648,371

Patent Not Issued For This Number

5,648,372

ANTIFUNGAL AGENTS, AND COMPOSITIONS

Toshihiko Naito; Katsura Hata; Yumiko Kaku; Akihiko Tsuruoka; Itaru Tsukada; Manabu Yanagisawa; Toshio Toyosawa, and Kazumasa Nara, all of Ibaraki, Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

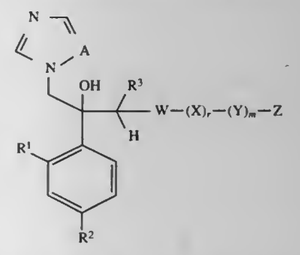
Filed Feb. 1, 1995, Ser. No. 382,158

Claims priority, application Japan, Feb. 7, 1994, 6-033268; Jul. 5, 1994, 6-174894; Aug. 10, 1994, 6-208203; Dec. 9, 1994, 6-306467

Int. Cl.[6] A61K *31/44;31/41;* **C07D** *417/06*

U.S. Cl. 514—383 **4 Claims**

1. A compound represented by the formula:



wherein R^1 and R^2 are identical with or different from each other and denote individually a halogen atom or hydrogen atom;

R_3 means a hydrogen atom or lower alkyl group;

r and m may be identical with or different from each other and stand individually for 0 or 1;

A is N;

W denotes thiazole, azabenzothiazole, 5-azabenzothiazole, 7-benzothiazole or oxazole;

X denotes a non-hetero aromatic ring, imidazole, triazole, tetrazole, pyridine or oxazole, each of which may have one or more substituent groups;

Y denotes a group represented by —S—, >SO, $>SO_2$, >C=S, >C=O, —O—, >N—R^6, >CH—R^6, >C=N—OR^6 or —$(CH_2)_j$—, in which R^6 denotes a hydrogen atom or lower alkyl group, and j denotes an integer of 1–4; and

Z denotes a hydrogen atom, halogen atom, lower alkyl group, halogenated lower alkyl group, lower alkoxy group, halogenated lower alkoxy group, hydroxyl group, thiol group, nitro group, cyano group, lower alkanoyl group, phenyl group which may have one or more substituent groups, phenoxy group which may have one or more substituent groups, pyridyl group which may have one or more substituent groups, imidazolyl group which may have one or more substituent groups, triazolyl group which may have one or more substituent groups, tetrazolyl group which may have one or more substituent groups, or amino group which may have one or more substituent groups,

excluding compounds where R^3 is a methyl group, and Z is a hydrogen atom, methyl group or trifluoro-methyl group when r=m=O,

or a salt thereof.

5,648,373

COA-IT AND PAF INHIBITORS

James David Winkler, Fort Washington, Pa.; Floyd Harold Chilton, III, Pilot Mountain, N.C., and Deirdre Mary Bernadette Hickey, Welwyn, England, assignors to SmithKline Beecham Corporation, Philadelphia, Pa., and The Johns Hopkins University, Baltimore, Md.

Continuation-in-part of Ser. No. 833,850, Feb. 11, 1992, abandoned, Ser. No. 833,877, Feb. 11, 1992, abandoned, Ser. No. 833,878, Feb. 11, 1992, abandoned, Ser. No. 833,879, Feb. 11, 1992, abandoned, Ser. No. 833,880, Feb. 11, 1992, abandoned, and Ser. No. 834,048, Feb. 11, 1992, abandoned. This application Aug. 6, 1993, Ser. No. 102,877

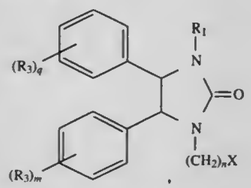
Claims priority, application United Kingdom, Feb. 11, 1992, 9202827

Int. Cl.[6] **A61K** *31/415*

U.S. Cl. 514—398 **30 Claims**

3. A method for treating disease or disorders mediated by the lipid inflammatory mediators, arachidonic acid, its metabolites and/or platelet activating factor (PAF), which method comprising administering to a mammal in need thereof an effective Coenzyme A independent transacylase (CoA-IT) inhibiting amount of a compound of the formula

(I)



wherein

R_1 is hydrogen, C_{1-4}alkyl, optionally substituted phenyl or optionally substituted heteroaryl;

n is 4 to 12;

X is 5-tetrazolyl, SO_3H, $P(O)(OR_2)_2$, $P(O)(OH)_2$, or $P(O)(R_2)(OR_2)$;

R_2 is hydrogen or C_{1-4}alkyl;

R_3 is independently hydrogen, C_{1-4}alkyl, halo substituted C_{1-4}alkyl, halogen, hydroxy or C1–4 alkoxy;

m is a number having a value of 1 to 3;

q is a number having a value of 1 to 3;

or a pharmaceutically acceptable salt thereof.

5,648,374

BENZOSPIROALKENE COMPOUNDS

Alex Cordi, Suresnes; Jean-Michel Lacoste, Sevres; Michel Lauble, Vaucresson; Tony Verbeuren, Vernouillet; Jean-Jacques Descombes, Neuilly-Plaisance, and Mark Millan, Paris, all of France, assignors to ADIR et Compagnie, Courbevole, France

Division of Ser. No. 276,910, Jul. 19, 1994, Pat. No. 5,486,532. This application Apr. 11, 1995, Ser. No. 420,064

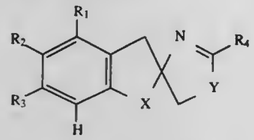
Claims priority, application France, Jul. 20, 1993, 93 08859

Int. Cl.[6] **C07D** *263/28*

U.S. Cl. 514—401 **5 Claims**

1. A compound of formula (I):

(I)



in which:

X represents —CH_2—, —$(CH_2)_2$—, —CH=CH—, —O—CH_2—, —S—CH_2—, —SO—CH_2—, or —SO_2—CH_2—,

Y represents a group —NR_5—,

R_1 represents halogen, linear or branched (C_1–C_6) alkyl which is unsubstituted or substituted with one or more halogen; hydroxyl, or linear or branched (C_1–C_6) alkoxy,

R_2 represents hydrogen or halogen, linear or branched (C_1–C_6) alkyl which is unsubstituted or substituted with one or more halogen; hydroxyl, linear or branched (C_1–C_6) alkoxy, or linear or branched (C_1–C_6) alkylthio,

R_3 represents hydrogen or halogen, linear or branched (C_1–C_6) alkyl which is unsubstituted or substituted with one or more halogen; hydroxyl, linear or branched (C_1–C_6) alkoxy, or linear or branched (C_1–C_6) alkylthio,

R_4 represents hydrogen or amino which is unsubstituted or substituted with one or two linear or branched (C_1–C_6) alkyl;

R_5 represents hydrogen or linear or branched (C_1–C_6) alkyl, or alternatively

R_1 and R_2 form, together with the carbon atoms which bear them, a benzenic ring, on condition that, in this case, X represents —CH_2— or —$(CH_2)_2$,

an optical isomer thereof or an addition salt thereof with a pharmaceutically-acceptable acid, it being understood that by "halogen" is intended fluorine, chlorine, or bromine, and that substituents R_1, R_2, and R_3 cannot include two tertiary butyl substituents on adjacent carbon atoms of the benzene ring.

5,648,375

USE OF HYDROPHOBIC COMPOUNDS AND ANESTHETICS IN COMBINATION WITH ALLOSTERIC HEMOGLOBIN MODIFIERS

Donald J. Abraham, Midlothian, Va., assignor to Virginia Commonwealth University, Richmond, Va.

Continuation-in-part of Ser. No. 374,206, Jan. 18, 1995, and Ser. No. 101,501, Jul. 30, 1993, Pat. No. 5,432,191, which is a continuation-in-part of Ser. No. 6,246, Jan. 19, 1993, Pat. No. 5,290,803, which is a continuation-in-part of Ser. No. 702,947, May 20, 1991, Pat. No. 5,122,539, which is a continuation-in-part of Ser. No. 478,848, Feb. 22, 1990, Pat. No. 5,049,695. This application Jun. 7, 1995, Ser. No. 478,372

Int. Cl.[6] **A61K** *31/40;31/325;* **C07C** *45/00*

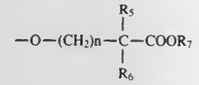
U.S. Cl. 514—421 **7 Claims**

1. A method of allosterically modifying hemoglobin in a patient towards a low oxygen binding states and increasing the delivery of oxygen to said patient, comprising the steps of:

administering an allosteric hemoglobin modifier compound to a patient, wherein said allosteric hemoglobin modifier compound has the structural formula:

R_1—(A)—R_2

where R_1 and R_2 each are a substituted or unsubstituted aromatic or heteroaromatic compounds, or a substituted or unsubstituted alkyl or heteroalkyl ring compound, or a substituted or unsubstituted phthalimide compound, and where R_1 and R_2 may be the same or different, where A is a chemical bridge which includes 3 chemical moieties bonded together between R_1 and R_2, wherein said chemical moieties in A are selected from the group consisting of CO, O, S, SO_2, NH, NR_3 where R_3 is C_{1-6} alkyl group, NR_4 where R_4 includes two carbonyls as part of a phthalimide compound formed with R_1 or R_2, CH_2, CH, and C, and where at least one of R_1 and R_2 is substituted with a compounds having the chemical formula:



where n is zero to five, where R_5 and R_6 are selected from the group consisting of hydrogen, halogen, substituted or unsubstituted C_{1-12} alkyl groups, carboxylic acid and ester groups, substituted or unsubstituted aromatic or heteroaromatic groups, and these moieties may be the same or different, or alkyl moieties of part of an aliphatic ring connecting R_5 and R_6, and where R_7 is a hydrogen, halogen, salt cation, metal, or substituted or unsubstituted C_{1-6} alkyl group; and

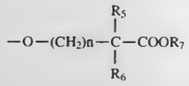
administering a hydrophobic compound to said patient, said two administering steps being performed at approximately the same time.

5. A composition for allosterically modifying hemoglobin, comprising:

an allosteric hemoglobin modifier compound having the structural formula:

R_1—(A)—R_2

where R_1 and R_2 each are a substituted or unsubstituted aromatic or heteroaromatic compounds, or a substituted or unsubstituted alkyl or heteroalkyl ring compound, or a substituted or unsubstituted phthalimide compound, and where R_1 and R_2 may be the same or different, where A is a chemical bridge which includes 3 chemical moieties bonded together between R1 and R2, wherein said chemical moieties in A are selected from the group consisting of CO, O, S, SO_2, NH, NR_3 where R_3 is C_{1-6} alkyl group, NR_4 where R_4 includes two carbonyls as part of a phthalimide compound formed with R_1 or R_2, CH_2, CH, and C, and where at least one of R_1 and R_2 is substituted with a compounds having the chemical formula:



where n is zero to five, where R_5 and R_6 are selected from the group consisting of hydrogen, halogen, substituted or unsubstituted C_{1-12} alkyl groups, carboxylic acid and ester groups, substituted or unsubstituted aromatic or heteroaromatic groups, and these moieties may be the same or different, or alkyl moieties of part of an aliphatic ring connecting R_5 and R_6, and where R_7 is a hydrogen, halogen, salt cation, metal, or substituted or unsubstituted C_{1-6} alkyl group; and

a hydrophobic compound.

5,648,376

IMMUNOSUPPRESSANT DITERPENE COMPOUND

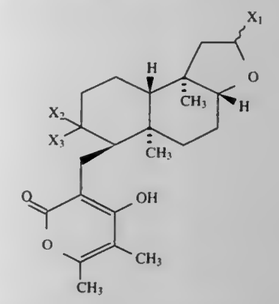
Gary A. Strobel, Bozeman, Mont., and Nathan B. Pliam, Palo Alto, Calif., assignors to Pharmagenesis, Inc., Palo Alto, Calif.

Filed Jan. 19, 1995, Ser. No. 375,362

Int. Cl.[6] **A61K** *31/35;31/34;* **C12P** *17/06;* **C07D** *407/00*

U.S. Cl. 514—451 **11 Claims**

1. A compound having the structure:



or a mirror image thereof, wherein X_1 is 2,2-dimethylvinyl and X_2 and X_3 together are =CH_2; or X_1 is 2,2-dimethyloxiranyl, and X_2 and X_3 together are —O—CH_2—; or X_1 is 1,2-dihydroxy-2-methyl-propyl, X_2 is —CH_2OH, and X_3 is OH; or X_1 is 2-hydroxy-2-methylpropyl, X_2 is H, and X_3 is CH_2OH; or X_1 is COOR, and X_2 and X_3 together are =O, where R is a lower alkyl, phenyl, or benzyl group; or X_1 is 2-methylpropyl, X_2 is H, and X_3 is CH_3.

5,648,377

FORMULATIONS CONTAINING CAROTENOIDS AN PROCAROTENOIDS COMBINED WITH POLYPHENOLS IN THE PREVENTION OF THE DAMAGES DUE TO AN ABNORMAL PRODUCTION OF FREE RADICALS

Ezio Bombardelli, and Paolo Morazzoni, both of Milan, Italy, assignors to Indena S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 243,855, May 17, 1994, abandoned. This application Jun. 5, 1995, Ser. No. 463,129

Claims priority, application Italy, Dec. 21, 1993, MI93A2688

Int. Cl.[6] **A61K** *31/35;31/355*

U.S. Cl. 514—456 **9 Claims**

1. A composition comprising a lipophilic antioxidant in combination with a hydrophilic antioxidant, said lipophilic antioxidant being lycopene, said hydrophilic antioxidant being a procyanidol oligomer extracted from *Vitis vinifera*, said lycopene and said procyanidol oligomer extracted from *Vitis vinifera*, said lycopene and said procyanidol oligomer extracted from *Vitis vinifera* being in a ratio ranging from 1:1 to 1:10, said composition comprising at least one excipient, said composition exerting an antioxidant action greater than the sum of the antioxidant action of said lipophilic antioxidant and said hydrophilic antioxidant.

5,648,378

2-IMINOCHROMENE DERIVATIVES AS INHIBITORS OF PROTEIN TYROSINE KINASE

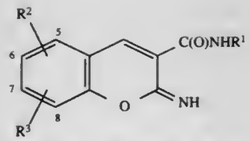
Chi-Kuang Huang, Farmington, Conn., assignor to Research Corporation Technologies, Inc., Tucson, Ariz.

Filed Jun. 7, 1995, Ser. No. 472,192

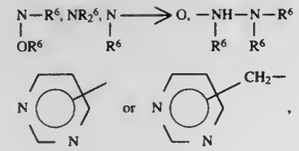
Int. Cl.[6] **C07D** *311/76;* **A61K** *31/35*

U.S. Cl. 514—456 **24 Claims**

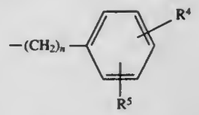
1. A method of inhibiting proliferation of a population of mammalian cells which express protein tyrosine kinase $p60^{c-src}$ comprising contacting said cells with an effective amount of a compound of formula (I)



(I)



wherein R^2 is H, OH, halo or $O(C_1–C_4)$alkyl; R^3 is OH, halo, or $O(C_1–C_4)$alkyl; and R^1 is



wherein n is 0–12; R^4 is H, OH, halo, $O(C_1–C_4)$alkyl, CH_2OH, $CO_2N(R)_2$, wherein each R is H or $(C_1–C_4)$alkyl, or $C(O)R^6$ wherein R^6 is OH or $O(C_1–C_4)$alkyl; and R^5 is OH, halo, $O(C_1–C_4)$alkyl, CH_2OH, $CO_2N(R)_2$, or $C(O)R^6$; or a pharmaceutically acceptable salt thereof, wherein the amount is effective to inhibit said $p60^{c\text{-}src}$.

5,648,379

DERIVATIVES AND ANALOGUES OF 2-DEOXY-2,3-DIDEHYDRO-N-ACETYL NEURAMINIC ACID AND THEIR USE AS ANTIVIRAL AGENTS

Laurence Mark Von Itzstein, North Fitzroy; Wen-Yang Wu, Mount Waverley; Tho Van Phan, Carnegie; Basil Danylec, Box Hill; Betty Jin, Mount Waverly; Peter Malcolm Colman, East Melbourne, and Joseph Noozhumurry Varghese, Brunswick, all of Australia, assignors to Biota Scientific Management Pty., Ltd., Melbourne, Australia

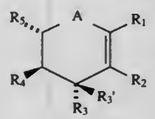
Division of Ser. No. 946,327, Nov. 10, 1992, Pat. No. 5,360,817. This application Oct. 19, 1994, Ser. No. 325,074

Claims priority, application Australia, Apr. 24, 1990, PJ 9800; Oct. 19, 1990, PK 2896; Feb. 11, 1991, PK 4537

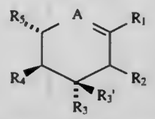
Int. Cl.[6] C07C *309/20*

U.S. Cl. 514—459 **24 Claims**

1. A compound of formula (I) or formula (Ia)



(I)



(Ia)

where in general formula (I), A is oxygen, carbon or sulphur, and in general formula (Ia), A is nitrogen or carbon;

R^1 denotes COOH, $P(O)(OH)_2$, NO_2,SOOH, SO_3H, tetrazol, CH_2CHO, CHO or $CH(CHO)_2$,

R^2 denotes H, OR^6, F, Cl, Br, CN, NHR^6, SR^6 or CH_2X, wherein X is NHR^6, halogen or OR^6 and

R^6 is hydrogen; an acyl group having 1 to 4 carbon atoms; a linear or cyclic alkyl group having 1 to 6 carbon atoms, or a halogen-substituted analogue thereof; an allyl group or an unsubstituted aryl group or an aryl substituted by a halogen, an OH group, an NO_2 group, an NH_2 group or a COOH group,

R^3 and $R^{3'}$ are the same or different, and each denotes hydrogen, CN, NHR^6, N_3, SR^6, =N—OR^6, OR^6, guanidino,

R^4 denotes NHR^6, SR^6, OR^6, $COOR^6$, NO_2, $C(R^6)_3$, CH_2COOR^6, CH_2NO_2 or CH_2NHR^6, and

R^5 denotes CH_2YR^6, $CHYR^6CH_2YR^6$ or $CHYR^6CHYR^6CH_2CN$ $CHYR^6CHYR^6CH_2YR^6$, where Y is O, S, NH or H, and successive Y moieties in an R^5 group are the same or different,

and pharmaceutically acceptable salts or derivatives thereof,

provided that in general formula (I)

(i) when R^3 or $R^{3'}$ is OR^6 or hydrogen, and A is oxygen or sulphur, then said compound cannot have both

(a) an R^2 that is hydrogen and

(b) an R^4 that is O-acyl or NH-acyl, and

(ii) R^6 represents a covalent bond when Y is hydrogen, and that in general formula (Ia),

(i) when R^3 or $R^{3'}$ is OR^6 or hydrogen, and A is nitrogen, then said compound cannot have both

(a) an R^2 that is hydrogen, and

(b) an R^4 that is NH-acyl, and

(ii) R^6 represents a covalent bond when Y is hydrogen.

5,648,380

ANTI-INFLAMMATORY WOUND HEALING COMPOSITIONS AND METHODS FOR PREPARING AND USING SAME

Alain Martin, Ringoes, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 268,429, Jun. 30, 1994, abandoned, which is a continuation-in-part of Ser. No. 53,922, Apr. 26, 1993, abandoned, which is a continuation of Ser. No. 663,500, Mar. 1, 1991, abandoned. This application May 22, 1995, Ser. No. 445,845

Int. Cl.[6] A61K *31/34;31/045;31/355;31/07*

U.S. Cl. 514—461 **20 Claims**

1. A therapeutic anti-inflammatory-wound healing composition which comprises a therapeutically effective amount of an anti-inflammatory agent and a wound healing composition, wherein the wound healing composition comprises:

(a) pyruvate selected from the group consisting of pyruvic acid, pharmaceutically acceptable salts of pyruvic acid, and mixtures thereof;

(b) an antioxidant; and

(c) a mixture of saturated and unsaturated fatty acids wherein the fatty acids are those fatty acids required for the resuscitation of injured mammalian cells; wherein components a, b, and c are present in amounts sufficient to synergistically enhance wound healing.

5,648,381

DERIVATIVES OF INDAN-1,3-DIONE AND INDAN-1,2,3-TRIONE, METHODS OF PREPARING THEM AND THERAPEUTIC USE THEREOF

Michel P. Cugnon de Sevricourt, Moult; Catherine G. Dacquet, Paris; Michel A. Finet, Fresnes; Florence J. Le Marquer; Max F. Robba, both of Paris; Norbert O. Tembo, Cergy St. Christophe; Sylvie J. Yannic-Arnoult, Grigny, and Jean-Luc Torregrosa, Saint-Denis, all of France, assignors to Innothera, Arcueil, France

PCT No. PCT/FR93/00329, § 371 Date Mar. 24, 1994, § 102(e) Date Mar. 24, 1994, PCT Pub. No. WO93/20046, PCT Pub. Date Oct. 14, 1993

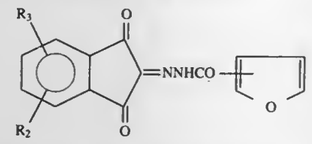
PCT Filed Apr. 1, 1993, Ser. No. 142,478

Claims priority, application France, Apr. 3, 1992, 92 04071

Int. Cl.[6] C07D *213/87*

U.S. Cl. 514—471 **5 Claims**

1. Indan compounds of the formula:



where R_2 and R_3 each independently represent H, $C_1–C_4$ alkoxy or OH.

5,648,382

CYCLOHEXANE COMPOUNDS

David Billington, Birmingham, Great Britain; Isabelle Picard, Paris, France; Ghanem Atassi, Saint-Cloud, France; Alain Pierre, Marly le Roi, France; Michaël Burbridge, Courbevoie, France, and Nicolas Guilbaud, Paris, France, assignors to Adir et Compagnie, Courbevoie, France

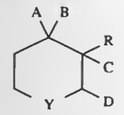
Filed Apr. 29, 1996, Ser. No. 639,419

Claims priority, application France, Apr. 27, 1995, 95 05052

Int. Cl.[6] C07D *303/02;* **A61K** *31/335*

U.S. Cl. 514—475 **11 Claims**

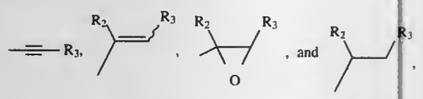
1. A compound selected from those of formula (I):



(I)

wherein:

R is selected from the radicals:



(α) (β) (γ) (δ)

A and B are such that:

A and B, together with the carbon atom carrying them and with —CH_2—O—, form an oxirane ring,

C and D are such that:

C represents hydroxy and D is selected from hydrogen and bromine, or,

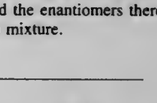
and only when R represents (δ), C represents OR_1 and D is selected from hydrogen and bromine, or,

and only when R represents (δ), C and D each simultaneously represents hydrogen, or

C and D, together with the carbon atoms carrying them and with —O—, form an oxirane ring or, together with the carbon atoms carrying them and with —O—O(O)—O—, form a dioxygenated heterocycle, or C and D together form a bond,

Y is selected from —O(O)— and —$CH(OR_1)$—,

R_1 represents



R_2 is selected from hydrogen, optionally substituted alkyl, and optionally substituted aryl,

R_3 is selected from hydrogen, optionally substituted alkyl, and optionally substituted arylalkyl,

R_4 is selected from optionally substituted alkyl, amino, optionally substituted alkylamino, optionally substituted dialkylamino, optionally substituted aryl, optionally substituted arylalkyl, optionally substituted heteroarylalkyl, and optionally substituted alkenyl,

R_5 represents optionally substituted alkyl,

R_6 is selected from optionally substituted alkyl, optionally substituted aryl, optionally substituted arylalkyl, optionally substituted heteroaryl, and optionally substituted heteroarylalkyl,

it being understood that:

the alkyl chain in the terms "alkyl", "alkylamino", "dialkylamino", "arylalkyl" and "heteroarylalkyl" designates a saturated hydrocarbon chain having 1 to 6 carbon atoms inclusive in straight or branched chain,

the term "aryl" designates a radical selected from phenyl and naphthyl,

the term "heteroaryl" designates a radical selected from pyridyl, quinolyl, isoquinolyl, imidazolyl, indolyl, and isoindolyl,

the term "alkenyl" designates a radical selected from vinyl and isopropenyl,

the term "optionally substituted" associated with the radicals alkyl, alkylamino, dialkylamino, aryl, arylalkyl, heteroaryl, heteroarylalkyl, and alkenyl denotes that those radicals may optionally be substituted, in the acyclic moieties and/or, where applicable, in the cyclic moieties, by one or more chemical entities selected from:

hydroxy,

halogen, selected from fluorine, chlorine, bromine, and iodine,

trihalomethyl,

nitro,

amino, alkylamino, dialkylamino

straight-chained or branched alkoxy having 1 to 6 carbon atoms inclusive,

carboxy,

straight-chained or branched alkoxycarbonyl having 1 to 6 carbon atoms inclusive, and

straight-chained or branched acyl having 1 to 6 carbon atoms inclusive,

and also the geometric isomers thereof, the diastereoisomers thereof and the enantiomers thereof, in pure form or in the form of a mixture.

5,648,383

COMPOSITIONS AND METHODS OF COMBATTING FUNGI

Cosima Nuninger, Morschwiller-le-Bas, France; John Edward Nicholas Goggin, Binningen, and Dino Sozzi, Sissach, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 2, 1995, Ser. No. 460,399

Int. Cl.[6] A01N *37/12;37/44;47/10*

U.S. Cl. 514—491 **11 Claims**

1. A fungicidal two-component composition which comprises synergistic fungicidally effective amounts of metalaxyl, wherein

more than 70% by weight of the metalaxyl is the R-enantiomer (I) and mancozeb) (IIA), wherein the ratio by weight of I:IIA is in the range of 1:3 to 1:100, together with an inert carrier.

5,648,384

ANTI-TUMOR PLATINUM (IV) COMPLEX

Yoshinori Kidani, No. 13-11, Kataseyama 3-chome, Fujisawa-shi, Kanagawa, and Yasunobu Komoda, Kanagawa, both of Japan, assignors to Tanaka Kikinzoku Kogyo K.K., and Yoshinori Kidani, both of Japan

Filed Oct. 4, 1994, Ser. No. 317,919

Claims priority, application Japan, Oct. 4, 1993, 5-271246; Oct. 4, 1993, 5-271247; Nov. 12, 1993, 5-307168

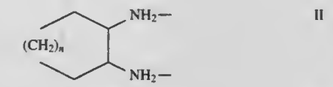
Int. Cl.[6] A61K *31/28;* **C07F** *15/00*

U.S. Cl. 514—492 **8 Claims**

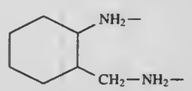
1. An anti-tumor liposoluble halogenated platinum (IV) complex having a Formula I, wherein —A—A— in the Formula I is selected from the group consisting of the diamines of 1,2-cycloalkanediamine of the Formula II wherein n in the Formula II is 1, 2, 3 or 4, and its steric configuration is cis(R,S-), trans-d(1S, 2S-) or trans-1(1R, 2R-), 2-aminomethylcyclohexylamine of the Formula III wherein its steric configuration is cis-1(R,R-), cis-d-(S,S-), trans-1(R,S-) or tran-d(S.R-), 1,1-diaminomethylcyclohexane of the Formula IV, and X designates bromine, iodine or fluorine;



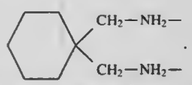
I



II



III



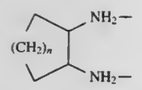
IV

3. An anti-tumor liposoluble platinum (IV) complex of the Formula VI, wherein —A—A— in the Formula VI is selected from the group consisting of the diamines of 1,2-cycloalkanediamine of Formula II as defined in claim **1** wherein n in the Formula II is 1,2,3 or 4, and its steric configuration is cis(R,S-), trans-d(1S,2S-) or trans-1(1R,2R-), 2-aminomethylcyclohexylamine of the Formula III as defined in claim **1** wherein its steric configuration is cis-1(R,R-), cis-d(S,S-), trans-1(R,S-) or trans-d(S,R-), 1,1-diaminomethylcyclohexane of the Formula IV as defined in claim **1**, and —L and —L in the Formula VI designate ligands forming a five or six-membered ring coordinating the platinum (IV) in the form of —O—O— coordination, and X is selected from the group consisting of carbonate, carbamate, sulfate and phosphate:

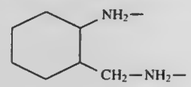


II

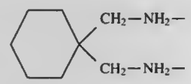
6. An anti-tumor liposoluble platinum (IV) complex having a Formula XI, wherein —A—A— in the Formula XI is selected from the group consisting of the diamines of 1,2-cycloalkanediamine of the Formula II



wherein in the Formula II is 1, 2, 3 or 4, and its steric configuration is cis(R,S-), trans-d(1S,2S-) or trans-1(1R,2R-), 2-aminomethylcyclohexylamine of the Formula III,



wherein its steric configuration is cis-1(R,R-), cis-d(S,S-), trans-1(R,S-) or trans-d(S,R-), 1,1-diaminomethylcyclohexane of the Formula IV,



o-phenylenediamine, ethylenediamine and propylenediamine and B_1 and B_2 in the Formula XI designate a ligand forming a five or six-membered ring coordinating the platinum (IV) in the form of —O—O— coordination, and X is bromine, iodine or fluorine:



XIII

5,648,385

RETINOID-LIKE COMPOUNDS

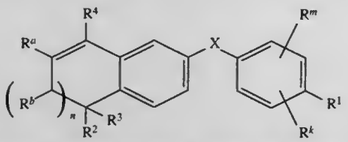
John E. Starrett, Jr., Middletown; Kuo-Long Yu, Hamden, both of Conn.; Muzammil M. Mansuri, Lexington, Mass.; David R. Tortolani, Princeton, N.J., and Peter R. Reczek, East Amherst, N.Y., assignors to Bristol-Myers Squibb Co., Princeton, N.J.

Continuation-in-part of Ser. No. 306,092, Sep. 19, 1994, abandoned, which is a continuation-in-part of Ser. No. 216,740, Mar. 23, 1994, abandoned, which is a continuation-in-part of Ser. No. 176,746, Jan. 3, 1994, abandoned. This application Jun. 5, 1995, Ser. No. 464,186

Int. Cl.[6] A61K *31/215;31/195;31/19*

U.S. Cl. 514—513 **2 Claims**

1. A method of treating rheumatoid arthritis in a mammal comprising administering a therapeutically effective amount of a compound of the formula



I

or a nontoxic pharmaceutically acceptable salt, physiologically hydrolyzable ester or solvate thereof, in which

X is —O—CO—, —NH—CO—, —CS—NH—, —CO—O—, —CO—NH—, —COS—, —SCO—, —SCH_2—, —CH_2—CH_2—, —C≡C—, —CH_2—NH—, —$COCH_2$—, —NHCS—, —CH_2S—, —CH_2O—, —OCH_2—, —$NHCH_2$— or —CR^5=CR^6;

R^m and R^k are independently hydrogen, halogen, C_{1-6}alkyl, hydroxy, C_{1-6}alkyloxy or nitro;

n is zero or one;

R^4 is —$(CH_2)_t$—Y, C_{1-6}alkyl, or C_{3-6}cycloalkyl;

R^1 is —CO_2Z, C_{1-6}alkyl, CH_2OH, —$CONHR^y$, or CHO;

R^2 and R^3 are independently hydrogen or C_{1-6}alkyl;

R^a and R^b are each independently hydrogen or C_{1-6}alkyl; but when n is one, R^a and R^b together can form a radical of the formula



;

Y is naphthyl or phenyl, both radicals can be optionally substituted with one to three same or different C_{1-6}alkyl or halogen;

Z is hydrogen or C_{1-6}alkyl;

R^5, R^6 and R^y are independently hydrogen or C_{1-6}alkyl; and t is zero to six.

5,648,386

SEPARATION OF ENANTIOMERS OF CIMATEROL, (−)-CIMATEROL AND THE USE THEREOF IN PHARMACEUTICAL COMPOSITIONS AND ANIMAL FEEDS

Wolfgang Resemann; Adolf Durr; Gunther Engelhardt, all of Biberach, and John Frances Quirke, Bingerbrück, all of Germany, assignors to Boehringer Ingelheim Vetmedica GmbH, Ingelheim am Rhein, Germany

Division of Ser. No. 166,584, Dec. 14, 1993, Pat. No. 5,395,957, which is a division of Ser. No. 81,996, Jun. 23, 1993, Pat. No. 5,292,753, which is a division of Ser. No. 693,760, Apr. 30, 1991, Pat. No. 5,248,695. This application Nov. 29, 1994, Ser. No. 346,105

Claims priority, application Germany, May 4, 1990, 40 14 252.3

Int. Cl.[6] A61K *31/275;* **C07C** *255/00*

U.S. Cl. 514—524 **15 Claims**

1. A composition for animal husbandry comprising as an active substance (−)-1-(4'-amino-3'-cyanophenyl)-2-isopropylaminoethanol which is substantially optically pure, or a physiologically acceptable acid addition salt thereof, and animal feed.

5,648,387

CARBOXYALKYLETHERS, FORMULATIONS, AND TREATMENT OF VASCULAR DISEASES

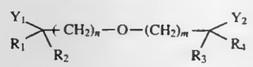
Charles Larry Bisgaier; Paul Leroy Creger; Alan Robert Saltiel, all of Ann Arbor, and Sherrie Rae Tafuri, Dexter, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Mar. 24, 1995, Ser. No. 409,780

Int. Cl.[6] A61K *31/225*

U.S. Cl. 514—547 **21 Claims**

1. A compound of the formula



t

wherein

n and m independently are integers from 4 to 5;

R_1, R_2, R_3, and R_4 independently are C_1-C_6 alkyl, C_2-C_6 alkenyl, C_2-C_6 alkynyl, and R_1 and R_2 together with the carbon to which they are attached, and R_3 and R_4 together with the carbon to which they are attached, independently can complete a carbocyclic ring having from 3 to 6 carbons;

Y_1 and Y_2 independently are COOH, CHO, tetrazole, and $COOR_5$ where R_5 is C_1-C_6 alkyl, C_2-C_6 alkenyl, C_2-C_6 alkynyl;

and where the alkyl, alkenyl, and alkynyl groups may be substituted with one or two groups selected from halo, hydroxy, C_1-C_6 alkoxy, and phenyl, and the pharmaceutically acceptable salts thereof.

5,648,388

METHOD OF USING METHYLLACTIC ACID FOR TREATING WRINKLES

Ruey J. Yu, Ambler, and Eugene J. Van Scott, Abington, both of Pa., assignors to Tristrata Technology, Inc., Wilmington, Del.

Continuation of Ser. No. 135,841, Oct. 7, 1993, which is a continuation of Ser. No. 840,149, Feb. 24, 1992, abandoned, which is a division of Ser. No. 393,749, Aug. 15, 1989, Pat. No. 5,091,171, which is a continuation-in-part of Ser. No. 945,680, Dec. 23, 1986, abandoned. This application Jun. 6, 1995, Ser. No. 471,511

Int. Cl.[6] A61K *31/19;7/48*

U.S. Cl. 514—557 **20 Claims**

1. Method of visibly reducing a human skin wrinkle comprising topically applying to said wrinkle a composition comprising methyllactic acid or a topically effective salt thereof, in an amount and for a period of time sufficient to visibly reduce said wrinkle.

5,648,389

COMPOSITIONS FOR THE TREATMENT OF DERMATOLOGICAL DISORDERS AND METHODS FOR THEIR USE

Eugene H. Gans, and Jonah Shacknai, both of Phoenix, Ariz., assignors to Medicis Pharmaceutical, Inc., Phoenix, Ariz.

Filed Oct. 27, 1995, Ser. No. 549,374

Int. Cl.[6] A01N *37/00*

U.S. Cl. 514—557 **18 Claims**

1. A composition for the treatment of acne, comprising:

(a) a dermatologically absorbable topical antimicrobial, antibiotic, antibacterial or antifungal agent;

(b) a dermatologically absorbable hydroxy acid selected from the group consisting of glycolic acid, salicylic acid and lactic acid;

(c) a dermatologically absorbable, water soluble zinc compound; and

(d) a dermatologically acceptable carrier.

5,648,390

REPELLENTS FOR ANTS

Robert K. Vander Meer; William A. Banks, and Clifford S. Lofgren, all of Gainesville, Fla., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Continuation of Ser. No. 925,685, Aug. 7, 1992, abandoned. This application Aug. 4, 1994, Ser. No. 286,111

Int. Cl.[6] A01N *37/02;37/06;25/00*

U.S. Cl. 514—558 **8 Claims**

6. A method for repelling ants from an object or area comprising treating the object or area with an ant repelling composition comprising

(a) an ant repelling effective amount of a carboxylic acid selected from the group consisting of octanoic acid, 2-methylhexanoic acid, and trans-2-hexenoic acid, and

(b) a carrier material.

5,648,391

METHOD OF USING GALACTURONIC ACID OR GALACTURONOLACTONE FOR TREATING WRINKLES

Ruey J. Yu, Ambler, and Eugene J. Van Scott, Abington, both of Pa., assignors to Tristrata Technology, Inc., Wilmington, Del.

Continuation of Ser. No. 135,841, Oct. 7, 1993, which is a continuation of Ser. No. 840,149, Feb. 24, 1992, abandoned, which is a division of Ser. No. 393,749, Aug. 15, 1989, Pat. No. 5,091,171, which is a continuation-in-part of Ser. No. 945,680, Dec. 23, 1986, abandoned. This application Jun. 6, 1995, Ser. No. 469,812

Int. Cl.[6] A61K *31/19;7/48*

U.S. Cl. 514—557 20 Claims

1. Method of visibly reducing a human skin wrinkle comprising topically applying to said wrinkle a composition comprising galacturonic acid or a topically effective salt thereof, or galacturonolactone in an amount and for a period of time sufficient to visibly reduce said wrinkle.

5,648,392

ANTIMYCOBACTERIAL COMPOUNDS AND METHOD OF USING SAME

James Sacchettini, New Rochelle; John Blanchard, Pelham Manor, and William R. Jacobs, City Island, all of N.Y., assignors to Albert Einstein College of Medicine of Yeshiva University, a Division of Yeshiva University, Bronx, N.Y.

Continuation-in-part of Ser. No. 234,011, Apr. 28, 1994, and a continuation-in-part of Ser. No. 307,376, Sep. 16, 1994, abandoned. This application Feb. 7, 1995, Ser. No. 386,917

Int. Cl.[6] A61K *31/20*

U.S. Cl. 514—560 2 Claims

1. A method for treating *M. tuberculosis* infection in a subject in need of such treatment which comprises administering to the subject an effective amount of a compound having the structure: $RC{\equiv}CCO_2H$, wherein R is an unbranched C9–C30 alkyl, to treat *M. tuberculosis* infection in the subject.

5,648,393

TREATMENT OF MALE IMPOTENCE WITH S-NITROSYLATED COMPOUNDS

Jonathan Stamler, Boston; Joseph Loscalzo, Dedham; Adam Slivka, Randolph; Daniel Simon, Waban; Robert Brown, Natick, and Jeffrey Drazen, Winchester, all of Mass., assignors to Brigham & Women's Hospital, Boston, Mass.

Division of Ser. No. 943,834, Sep. 14, 1992, Pat. No. 5,380,758, which is a continuation-in-part of Ser. No. 804,665, Dec. 11, 1991, abandoned, which is a continuation-in-part of Ser. No. 676,691, Mar. 29, 1991, abandoned. This application Aug. 29, 1994, Ser. No. 297,698

Int. Cl.[6] A61K *31/195;31/13*

U.S. Cl. 514—562 11 Claims

1. A method for the treatment or prevention of impotence in a human male in need thereof, comprising treating or preventing impotence in a human male in need thereof by administering a corpus cavernosum nonvascular smooth muscle relaxing amount of an S-nitrosothiol compound to said human male in need of treatment or prevention of impotence.

5,648,394

TOPICAL COMPOSITION FOR INHIBITING HAIR GROWTH

Brian Alfred Boxall, 51 Chatsworth Avenue, Winnersh, Wokingham, Berkshire RG11 5EU, United Kingdom; Geoffrey Wilfred Amery, 183 Church Road, Earley, Reading, Berkshire RG6 1HN, United Kingdom, and Gurpreet S. Ahluwalia, 8632 Stableview Ct., Gaithersburg, Md. 20882

PCT No. PCT/US93/05068, § 371 Date Sep. 14, 1995, § 102(e) Date Sep. 14, 1995, PCT Pub. No. WO94/21217, PCT Pub. Date Sep. 29, 1994

PCT Filed May 27, 1993, Ser. No. 513,980

Int. Cl.[6] A61K *7/06*

U.S. Cl. 514—564 11 Claims

1. A topical composition for inhibiting mammalian hair growth which comprises about 1 to 20 parts by weight of a water-soluble, hair-growth-inhibiting active agent dispersed in about 99 to 80 parts by weight correspondingly of a vehicle comprising an oil-in-water emulsion of the following components in parts by weight:

Water	78 to 87
Glyceryl Stearate	2.8 to 4.8
PEG-100 Stearate	2.7 to 4.7
Cetearyl Alcohol	1.9 to 3.3
Ceteareth-20	1.6 to 2.7
Mineral Oil	1.7 to 2.7
Stearyl Alcohol	1.0 to 2.0
Dimethicone	0.3 to 1.0

5,648,395

METHOD OF USING TARTARIC ACID FOR TREATING WRINKLES

Ruey J. Yu, Ambler, and Eugene J. Van Scott, Abington, both of Pa., assignors to Tristrata Technology, Inc., Wilmington, Del.

Continuation of Ser. No. 135,841, Oct. 7, 1993, which is a continuation of Ser. No. 840,149, Feb. 24, 1992, abandoned, which is a division of Ser. No. 393,749, Aug. 15, 1989, Pat. No. 5,091,171, which is a continuation-in-part of Ser. No. 945,680, Dec. 23, 1986, abandoned. This application Jun. 6, 1995, Ser. No. 466,739

Int. Cl.[6] A61K *31/19;7/48*

U.S. Cl. 514—574 20 Claims

1. Method of visibly reducing a human skin wrinkle comprising topically applying to said wrinkle a composition comprising tartaric acid or a topically effective salt thereof, in an amount and for a period of time sufficient to visibly reduce said wrinkle.

5,648,396

METHODS FOR TREATING DEPRESSION AND OTHER DISORDERS USING OPTICALLY PURE R (−) FLUOXETINE AND MONOAMINE OXIDASE INHIBITOR

James W. Young, Palo Alto, Calif.; Timothy J. Barberich, Concord, and Martin H. Teicher, Wellesley, both of Mass., assignors to Sepracor Inc., Marlbrough, Mass.

Continuation of Ser. No. 80,374, Jun. 18, 1993, abandoned, which is a continuation-in-part of Ser. No. 650,385, Feb. 4, 1991, abandoned, Ser. No. 793,062, Nov. 15, 1991, abandoned, and Ser. No. 794,264, Nov. 15, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 486,056

Int. Cl.[6] A61K *31/135;31/13*

U.S. Cl. 514—651 7 Claims

1. A method of treating depression in a human which comprises administering to a human in need of antidepressant therapy (a) an effective amount of R(−) fluoxetine or pharmaceutically acceptable salt thereof, substantially free of its S(+) stereoisomer; and (b) a subsequent an effective amount of a monoamine oxidase inhibitor antidepressant.

5,648,397

PHARMACEUTICAL COMPOSITION AND METHODS FOR USING IT

James S. Bass, 12591 McGregor Blvd., Fort Meyers, Fla. 33919

Filed Mar. 20, 1995, Ser. No. 407,451

Int. Cl.[6] A61K *31/13;31/70;31/56*

U.S. Cl. 514—653 16 Claims

1. A pharmaceutical composition intended for the topical application to human skin, comprising

(A) as an effective ingredient, a mixture comprising

(1) an antibiotic medication;

(2) an antihistamine; and

(B) a physiologically acceptable carrier,

wherein the antibiotic is present in a relative amount of 50% to 20% by weight and the antihistamine is present in a relative amount of 50% to 80% said amounts being based upon a total amount of antibiotic and antihistamine.

5,648,398

INSECT REPELLENT LOTIONS AND SPRAYS

Donald T. Beldock, New York, N.Y., and John A. Beldock, Washington, D.C., assignors to Primavera Laboratories, Inc., Rye, N.Y.

Division of Ser. No. 37,260, Mar. 26, 1993, Pat. No. 5,346,922, which is a division of Ser. No. 905,166, Jun. 24, 1992, Pat. No. 5,227,406, which is a continuation of Ser. No. 506,471, Apr. 9, 1990, abandoned. This application Aug. 31, 1994, Ser. No. 298,839

Int. Cl.[6] A01N *31/02;31/04;31/06*

U.S. Cl. 514—703 7 Claims

1. An insect repellent, comprising:

a) a conveying medium constituting up to 99.96% of the insect repellent;

b) between 0.01% and 1% terpineol;

c) between 0.01% and 1% citronella;

d) between 0.01% and 1% rhodinol extra;

e) between 0.01% and 1% geraniol; and

f) a fragrance which substantially masks the odor of said terpineol, said citronella, said rhodinol extra, and said geraniol to humans, but does not substantially reduce the repellency of said insect repellent to insects,

wherein all listed percentages (%) are weight percentages.

5,648,399

LIQUID POLYMER COMPOSITION AND METHOD OF USE

Michael Friedman, and Amnon Sintov, both of Jerusalem, Israel, assignors to Perio Products, Ltd., and Yissum Research Development Company of the Hebrew University of Jerusalem, both of Jerusalem, Israel

Division of Ser. No. 2,481, Jan. 4, 1993, Pat. No. 5,438,076, which is a continuation-in-part of Ser. No. 369,223, Jun. 21, 1989, Pat. No. 5,330,746, which is a continuation-in-part of Ser. No. 189,918, May 3, 1988, abandoned, which is a continuation-in-part of Ser. No. 304,091, Jan. 31, 1989, abandoned. This application Apr. 25, 1995, Ser. No. 428,825

Int. Cl.[6] A61K *6/00*

U.S. Cl. 514—772.6 6 Claims

1. A method of treating fungal diseases in the oral cavity, said method comprising topical application of an efficacious amount of a liquid polymer composition to the teeth, gingival tissues or oral mucosal tissue of an animal or human, said liquid polymer composition consisting essentially of:

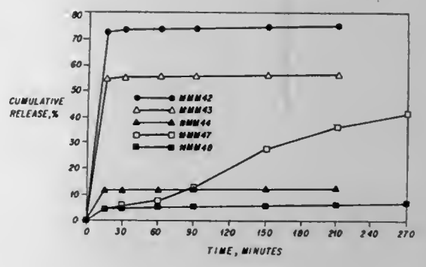
(a) one or more sustained release acrylic polymers;

(b) a pharmacological agent;

(c) a release adjusting agent; and

(d) a pharmaceutically acceptable vehicle;

wherein said sustained release acrylic polymers are selected from the group consisting of:



(1) a methacrylic acid type A copolymer, an anionic copolymer based on methacrylic acid and methylmethacrylate wherein the ratio of free carboxyl groups to the ester groups is approximately 1:1;

(2) a methacrylic acid type B copolymer, an anionic copolymer based on methacrylic acid and methylmethacrylate wherein the ratio of free carboxyl groups to the ester groups is approximately 1:2;

(3) a dimethylaminoethylacrylate/ethylmethacrylate copolymer, a copolymer based on acrylic and methacrylic acid esters with a low content of quaternary ammonium groups wherein the molar ratio of the ammonium groups to the remaining neutral (meth)acrylic acid esters is 1:20; and

(4) an ethyl methacrylate/chlorotrimethylammoniumethyl methacrylate copolymer, a copolymer based on acrylic and methacrylic acid esters with a low content of quaternary ammonium groups wherein the molar ratio of the ammonium groups to the remaining neutral (meth)acrylic acid esters is 1:40;

and wherein said release adjusting agent is selected from the group consisting of: a cross-linking agent, a polysaccharide, a lipid, a non-polysaccharide polyhydroxy compound, a polycarboxylic acid salt, a divalent cation of calcium or strontium, a protein, citric acid, a sodium citrate, sodium docusate, polyoxyethylenesorbitan monooleate, and an amino acid.

5,648,400

PROCESS FOR PRODUCING POLYMERIC ELECTROLYTE COMPLEX AND ION-EXCHANGE RESIN

Takanobu Sugo, Gunma-ken; Satoshi Tanaka, and Tsuyoshi Tsutsui, both of Niigata-ken, all of Japan, assignors to Japan Atomic Energy Research Inst., and Nikki Chemical Co., Ltd., both of Tokyo, Japan

Continuation of Ser. No. 337,452, Nov. 4, 1994, abandoned, and Ser. No. 99,455, Jul. 30, 1993, abandoned. This application Jun. 16, 1995, Ser. No. 491,307

Claims priority, application Japan, Aug. 4, 1992, 4-208043; Aug. 4, 1992, 4-208046

Int. Cl.[6] C08F *8/32;8/36;* B01J *43/00*

U.S. Cl. 521—30 1 Claim

1. An ion exchange resin having a cation exchange group, an anion exchange group and a hydrophilic group produced by exposing a hydrophobic polymeric fabric of polyolefins or halogenated polyolefins to an ionizing radiation and introducing the hydrophilic group and the ion exchange groups into the fabric through co-grafting polymerization of a monomer having a cation exchange group and a monomer having an anion exchange group in the presence of a hydrophilic monomer,

wherein the monomer having an anion exchange group is a vinylbenzyltrimethyl ammonium salt, the monomer having a cation exchange group is a styrenesulfonic acid salt, and the hydrophilic monomer is dimethylacrylamide, and

wherein the fabric is a woven or nonwoven fabric.

5,648,401

FOAMED ARTICLES AND METHODS FOR MAKING SAME

Michael Czapilcki, Rochester, and Thomas Guenther, Romeo, both of Mich., assignors to L & L Products, Inc., Romeo, Mich.

Filed Oct. 9, 1996, Ser. No. 731,102
Int. Cl.[6] C08J *9/08*
U.S. Cl. 521—85 **11 Claims**

1. A method for producing a foamed article, comprising the steps of:
providing an epoxy resin;
providing a filler selected from the group consisting of metal carbonates and metal bicarbonates;
providing phosphoric acid; and
combining said epoxy resin, said filler and said phosphoric acid to form a reactive mixture and allowing said phosphoric acid to catalyze polymerization of said epoxy resin and react with said filler to generate a blowing gas to form voids in said polymerized epoxy resin.

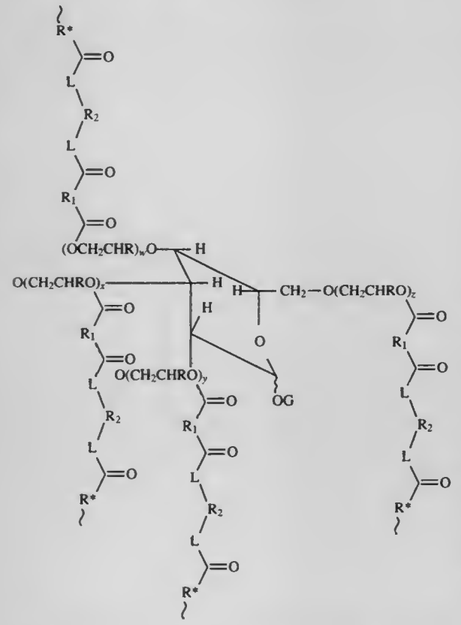
5,648,402

CONTACT LENSES FROM HIGHLY PERMEABLE SILOXANE POLYOL MATERIAL

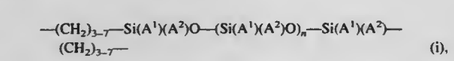
Ivan M. Nunez, 1844 Grassington Way N., Jacksonville, Fla. 32223; Frank F. Molock, 1543 Wildfern Dr., Orange Park, Fla. 32073; Laura D. Elliott, 9480 Princeton Sq. Blvd. #1210, Jacksonville, Fla. 32256; Michele L. Neil, 340 Lolly La., Jacksonville, Fla. 32259, and James D. Ford, 515 Nassau Ct., Orange Park, Fla. 32073

Filed Jun. 1, 1995, Ser. No. 457,832
Int. Cl.[6] C08G *18/61;18/64;* **C07H** *15/08*
U.S. Cl. 523—107 **7 Claims**

1. A soft ophthalmic lens adapted for placement over the cornea or in the eye made from a polymer having repeating units of the following structural formula:

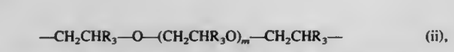


wherein each R is independently hydrogen or methyl; G is an alkyl group containing from 1 to about 7 carbon atoms; each R_1 is independently —NH—D—NH— wherein D is a hydrocarbyl residue containing 4 to 15 carbon atoms and 0, 1 or 2 optionally fused rings which can be saturated or unsaturated; each R_2 is independently a moiety of formula (i) or (ii)



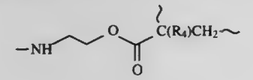
(i),

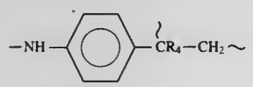
or

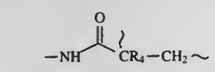


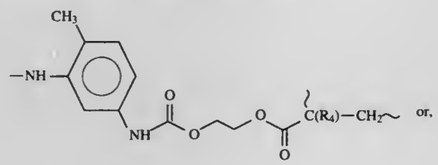
(ii),

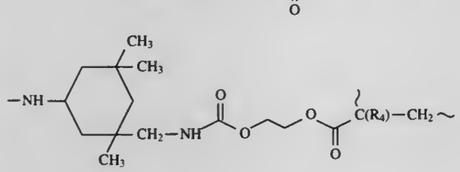
wherein A^1 in each occurrence is an alkyl group containing from 1 to about 3 carbon atoms or benzyl, A^2 in each occurrence is an alkyl group containing from 1 to about 3 carbon atoms, R_3 is hydrogen or methyl; n is from about 10 to about 300, and m is from about 5 to about 100, provided that R_2 in at least one occurrence is a moiety of formula (i);
each —L— is independently —O— or —NH—;
each R* is independently











wherein each R_4 is independently hydrogen or methyl; each of w, x, y and z independently range from 0 to 200, with the proviso that $5 \leqq (w+x+y+z) \leqq 200$.

5,648,403

ANTIMICROBIAL GUTTA PERCHA CONE

Howard Martin, 1106 Spring St., Silver Spring, Md. 20910

Filed Oct. 16, 1995, Ser. No. 543,377
Int. Cl.[6] A61K *6/08*
U.S. Cl. 523—117 **1 Claim**

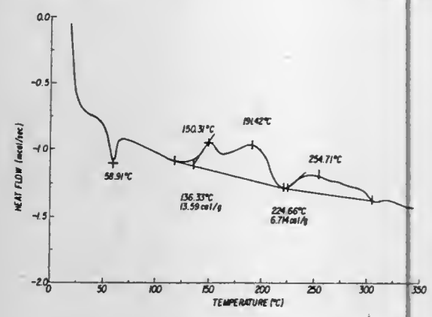
1. A gutta percha cone, comprising:
20% gutta percha;
55–60% zinc oxide;
10% radiopaque agent consisting of barium sulphate;
5–10% antimicrobial agent consisting of triiodomethane;
5% wax or resin.

5,648,404

CURATIVES FOR PHENOLIC NOVOLACS

Arthur Harry Gerber, Louisville, Ky., assignor to Borden Inc., Columbus, Ohio

Filed Apr. 11, 1994, Ser. No. 225,890
Int. Cl.[6] C08K *5/24;5/3492*
U.S. Cl. 523—145 **48 Claims**



1. A refractory composition comprising a mixture of:
A. a particulate refractory aggregate;
B. a phenolic novolac resin in an amount which on curing binds the aggregate; and
C. a triazine resin having a water solubility of less than 15% by weight at 24° C. and a degree of polymerization of about 1 to 2.5 wherein the quantity of triazine resin is about 3 to about 20% based on the weight of the novolac, said triazine resin selected from the group consisting of a (lower) alkoxylated melamine-formaldehyde resin having a formaldehyde-:melamine ratio of at least about 4.3 and at least about 4.3 alkoxymethyl groups per triazine ring.

5,648,405

AQUEOUS INK JET INKS

Shean-Hwa Ma, Chadds Ford, and Walter Raymond Hertler, Kennett Square, both of Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 30, 1992, Ser. No. 998,215
Int. Cl.[6] C03C *17/00*
U.S. Cl. 523—160 **12 Claims**

1. An aqueous ink jet ink composition comprising, by weight percent,
(a) 30 to 95% aqueous carrier medium;
(b) from about 0.1 up to 30% colorant; and
(c) 0.1 to 30% of at least one random polyampholyte containing at least one carboxylic acid group and at least one amine base group, said polyampholyte having a number average molecular weight below 20,000.

5,648,406

TIRE SEALANT AND INFLATOR

Phil Peelor, Akron, Ohio; John Moran, New Berlin, Wis., and Lloyd T. Flanner, Nagshead, N.C., assignors to Specialty Chemical Resources, Inc., Macedonia, Ohio

Continuation-in-part of Ser. No. 150,585, Nov. 10, 1993, Pat. No. 5,338,776, which is a continuation of Ser. No. 837,376, Feb. 14, 1992, abandoned. This application Aug. 15, 1994, Ser. No. 290,340
Int. Cl.[6] C08K *3/36;* **C08L** *15/02*
U.S. Cl. 523—166 **33 Claims**

1. An anhydrous, essentially nonflammable sealant and inflator composition comprising:
10–90 weight percent of a propellant;
90 to 10 weight percent of a solvent;
0.1 to 30 weight percent of a one part air dryable acrylic resin substantially dissolved in said solvent;
said composition for introduction into an interior of a pneumatic tire, whereby said resin forms a coating on the interior surface of said tire through non-foaming evaporation of said solvent.

5,648,407

CURABLE RESIN SOLS AND FIBER-REINFORCED COMPOSITES DERIVED THEREFROM

Douglas P. Goetz; Andrew M. Hine, both of St. Paul; William J. Schultz, Vadnais Heights, and Wendy L. Thompson, Roseville, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 16, 1995, Ser. No. 442,026
Int. Cl.[6] C08K *9/01*
U.S. Cl. 523—213 **35 Claims**

1. A composition comprising (a) a curable resin sol comprising a colloidal dispersion of substantially spherical, substantially inorganic oxide microparticles in a curable resin, said microparticles having surface-bonded organic groups which serve to compatibilize said microparticles and said curable resin; and (b) reinforcing fibers; wherein said composition is essentially volatile-free.

5,648,408

ORGANIC STIR-IN PIGMENTS

Fridolin Bäbler, Hockessin, Del., assignor to Ciba-Geigy Corporation, Tarrytown, N.Y.

Filed Jun. 7, 1995, Ser. No. 475,164
Int. Cl.[6] C08L *1/26*
U.S. Cl. 523—333 **21 Claims**

1. A process for coloring a high-molecular-weight organic material, which comprises:
(i) reducing the particle size of an organic pigment crude to yield an organic stir-in pigment having an average particle size in the range of from 0.1 to 9 μm and a specific surface area in the range of from 6 to 35 m^2/g; and
(ii) uniformly dispersing an effective pigmenting amount of the organic stir-in pigment in the high-molecular-weight organic material by stirring the organic stir-in pigment into a solution or suspension of the high-molecular-weight organic material.

5,648,409

AQUEOUS SELF-DISPERSIBLE EPOXY RESIN BASED ON EPOXY-AMINE ADDUCTS CONTAINING AROMATIC POLYEPOXIDE

Kartar S. Arora, Chalfont; David I. Devore, Langhorne, both of Pa.; Reuben H. Grinstein, Tucson, Ariz.; Grannis S. Johnson, New Hope, Pa.; John G. Papalos, Ledgewood, N.J., and Shailesh Shah, Dresher, Pa., assignors to Henkel Corporation, Plymouth Meeting, Pa.

Filed Dec. 29, 1994, Ser. No. 366,343
Int. Cl.[6] C08K *3/20*
U.S. Cl. 523—404 **23 Claims**

1. A self-dispersing curable epoxy resin composition comprising the addition product of reactants comprising (a) an epoxy resin, (b) from about 0.40 to 0.95 reactive equivalents of a polyhydric phenol per reactive equivalent of said epoxy resin, and (c) from about 0.005 to 0.5 reactive equivalents of an amine-epoxy adduct per reactive equivalent of said epoxy resin said amine-epoxy adduct comprising the addition product of reactants comprising an aromatic polyepoxide and from about 0.3 to 0.9 reactive equivalents of a polyoxyalkyleneamine per reactive equivalent of said aromatic polyepoxide.

5,648,410

AQUEOUS POLYMER DISPERSIONS FOR CLEAR COATS

Hans Dieter Hille, Bergisch Gladbach, and Horst Muller, Cologne, both of Germany, assignors to Bollig & Kemper KG, Cologne, Germany

PCT No. PCT/EP93/03530, § 371 Date Jun. 7, 1995, § 102(e) Date Jun. 7, 1995, PCT Pub. No. WO94/13720, PCT Pub. Date Jun. 23, 1994

PCT Filed Dec. 14, 1993, Ser. No. 448,399

Claims priority, application Germany, Dec. 16, 1992, 42 42 518.2

Int. Cl.[6] C08L *51/08*

U.S. Cl. 523—501 **33 Claims**

1. An aqueous polyester- and acrylate-based polymer dispersion, obtained by free radical-initiated polymerization of from 80 to 20% by weight of at least

(a) one (meth)acrylic acid ester of mono- or polyalcohols, wherein said esters may still contain free hydroxyl groups, and

(b) one ethylenically unsaturated, at least monofunctional acid, with from 20 to 80% by weight of a polyester resin capable of undergoing a free radical-initiated polymerization, containing from 0.2 to 1.5 polymerizable double bonds per molecule and having a molecular weight of from 300 to 5,000, said resin obtained by a polycondensation of at least dihydric polyalcohols with at least dibasic polycarboxylic acids or derivatives thereof in the presence of polyalcohols, containing at least one polymerizable double bond, the amounts employed of (a) and (b) and the polyester resin being such that the resulting polymer has a hydroxyl value (OH value) of from 30 to 200 and an acid value of from 5 to 40.

5,648,411

THERMOPLASTIC BLEND COMPOSITIONS CONTAINING POLYESTER RESINS AND AN ORGANOSULFATE SALT

Robert Russell Gallucci, and Paul Joseph Hans, both of Mt. Vernon, Ind., assignors to General Electric Company, Pittsfield, Mass.

Filed Jun. 7, 1995, Ser. No. 483,022

Int. Cl.[6] C08K *5/41*

U.S. Cl. 524—156 **11 Claims**

1. A thermoplastic composition blend comprising:

(a) from about 20 to about 80 weight percent of a low molecular weight polyester resin having a number average molecular weight of less than 20,000, said low molecular weight polyester resin being obtained by polymerizing a glycol component containing at least 70 mol percent tetramethylene glycol and an acid component containing at least 70 mol percent terephthalic acid;

(b) from about 20 to about 80 weight percent of a high molecular weight polyester resin having a number average molecular weight of greater than 25,000, said high molecular weight polyester resin being obtained by polymerizing a aliphatic or cycloaliphatic diol or mixtures thereof and an aromatic dicarboxylic acid; and

(c) from about 0.01 to about 5 percent of an alkyl or alkaryl sulfate salt of an alkali metal or alkaline earth metal for retention of the viscosity of the said thermoplastic composition blend.

5,648,412

BLOW-MOLDABLE RIGID THERMOPLASTIC POLYURETHANE RESINS

Gary S. Mistry, Sugarland; Kuan J. Wang, Lake Jackson, and Benjamin S. Ehrlich, League City, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 30, 1995, Ser. No. 380,767

Int. Cl.[6] C08K *5/13;* **C08G** *18/24;* **C08L** *75/04*

U.S. Cl. 524—189 **17 Claims**

1. A blow-moldable rigid thermoplastic polyurethane comprising a thermoplastic polyurethane resin having a T_g of greater than about 50° C., an Sn^{+2} catalyst, and a deactivator for the Sn^{+2} catalyst.

5,648,413

STABILIZER FOR CHLORINE-CONTAINING POLYMERS, PROCESS FOR THE PREPARATION THEREOF AND CHLORINE-CONTAINING POLYMER COMPOSITION

Teiji Sato; Toshio Sato; Toshiaki Sugawara; Hiroshi Sawada; Seiji Wakaki; Satoru Ohta, and Masaru Salto, all of Tokyo, Japan, assignors to Mizusawa Industrial Chemicals, Inc., Tokyo, Japan

Filed Jan. 31, 1996, Ser. No. 594,459

Claims priority, application Japan, Feb. 1, 1995, 7-015366

Int. Cl.[6] C08K *13/02;9/06*

U.S. Cl. 524—313 **16 Claims**

1. A process for the preparation of a stabilizer for chlorine-containing polymers which comprises a fat or oil-saponified product composite silicate, comprising:

mixing and reacting;

(1) a composition which contains, on the basis of two components;

(a) 2 to 99% by weight of a siliceous compound selected from the group consisting of silicic acid, silicate, aluminosilicate and acid-treated products thereof, and having reactive silicic acid; and

(b) 1 to 98% by weight of fat or oil; and

(2) a metal reactant which is at least one selected from the group consisting of oxides, hydroxides and reactive salts of a metal of the Group II, IV or V of the Periodic Table, in an amount which is sufficient to saponify the fat or oil and neutralize the reactive silicic acid;

in the presence of water to convert the reactive silicic acid into a silicate of the metal of the Group II, IV or V and carry a saponified product of fat or oil on the siliceous compound; and

heat-treating the obtained product under atmosphere pressure or under reduced pressure at 50° to 300° C.

12. A stabilizer for chlorine-containing polymers comprising a fat or oil-saponified product composite silicate which has an infrared-ray absorption spectrum that indicates no absorption near 1647 cm^{-1} due to O—H bond, and contains, on the basis of three components:

1 to 99% by weight of siliceous compound particles composed chiefly of amorphous or low-crystalline silicate of a metal of the Group II, IV or V of the Period Table;

0.4 to 97% by weight of higher fatty acid salts of the metal; and

0.02 to 60% by weight of glycerin or a glycerin derivative which is glycerin mono- or di-ester, or di-glycerin;

wherein the higher fatty acid salts and the glycerin or the glycerin derivative are held in the pores and on the surfaces of said siliceous compound particles.

15. A stabilizer for chlorine-containing polymers according to claim 12, wherein said alkaline earth metal salt is a calcium salt.

5,648,414

SCREEN PRINTING INK CONTAINING POLYCARBONATE BINDER

Peter Bier, Krefeld; Joachim Wank, Dormagen, and Peter Capellen, Krefeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

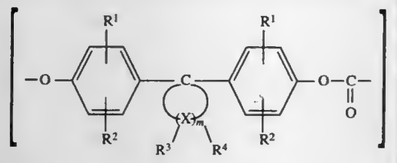
Filed Jun. 8, 1995, Ser. No. 488,685

Claims priority, application Germany, Jun. 20, 1994, 44 21 561.4

Int. Cl.[6] C08K *5/13*

U.S. Cl. 524—323 **4 Claims**

1. screen printing inks containing as binder a thermoplastic aromatic polycarbonate with a molecular weight $\bar{M}_w$ (weight average) of at least 10,000 and which polycarbonate contains bifunctional carbonate structural units corresponding to formula (I):



(I)

in which

R^1 and R^2 independently of one another represent hydrogen, halogen, C_{1-8} alkyl, C_{5-6} cycloalkyl, C_{6-10} aralkyl,

m is an integer of 4 to 7,

R^3 and R^4 may be individually selected for each X and, independently of one another, represent hydrogen or C_{1-6} alkyl and

X represents carbon,

with the proviso that, at least one atom X, R^3 and R^4 are both alkyl, and halogen-free solvents or solvent mixtures.

5,648,415

THERMOPLASTIC COMPOSITION WITH BORON COMPOUND

Theodorus Lambertus Hoeks; Christianus Adrianus Arnoldus Claesen, both of Bergen op Zoom; Johannes Hubertus Gabriel Marie Lohmeijer, Hoogerheide, all of Netherlands, and James Edward Pickett, Schenectady, N.Y., assignors to General Electric Company, Pittsfield, Mass.

Division of Ser. No. 185,725, Jan. 24, 1994, Pat. No. 5,466,733, which is a continuation of Ser. No. 989,734, Dec. 10, 1992, abandoned, which is a continuation of Ser. No. 814,308, Dec. 23, 1991, abandoned, which is a continuation of Ser. No. 511,159, Apr. 19, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 476,828

Claims priority, application Netherlands, May 1, 1989, 8901093

Int. Cl.[6] C08K *3/38*

U.S. Cl. 524—405 **6 Claims**

1. A composition comprising:

(a) at least 20 percent of polyphenylene ether without a plasticizer and

(b) 0.05 to 10 percent by weight of a boron compound based on the weight of the polyphenylene ether;

wherein the smoke density of the composition after 20 minutes as measured according to ASTM E-662 is less than 50 percent of the smoke density of the same composition not containing the boron compound.

5,648,416

CORROSION RESISTANT PAINT

Granville G. Miller, Birmingham, Ala.; Lawrence W. Shacklette, Essex, N.J.; Ronald L. Elsenbaumer, Tarrant, Tex.; Bernhard Wessling, Bargteheide, Germany; Peter Whang, Morris, N.J., and Vaman G. Kulkarni, Mecklenburg, N.C., assignors to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 832,511, Jan. 21, 1992, abandoned. This application May 26, 1995, Ser. No. 452,244

Int. Cl.[6] C08L *65/02;79/04*

U.S. Cl. 524—500 **18 Claims**

1. An improved anti-corrosion paint comprising one or more polymeric binders dispersed in a liquid medium, said improvement comprising an anti-corrosion effective amount of one or more nonconductive conjugated polymers in addition to said polymeric binder wherein said one or more nonconductive conjugated polymer is a conjugated homopolymer or copolymer having an electrical conductivity of less than about 10^{-8} S/cm.

5,648,417

COLOR COATING COMPOSITION

Akira Fushimi, Ikoma; Seigo Miyazoe, Takatsuki; Atsushi Yamada, Yawata, and Yoshitaka Okude, Hirakata, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

PCT No. PCT/JP94/02026, § 371 Date Jul. 29, 1995, § 102(e) Date Jul. 29, 1995, PCT Pub. No. WO95/15362, PCT Pub. Date Jun. 8, 1995

PCT Filed Dec. 1, 1994, Ser. No. 495,545

Claims priority, application Japan, Dec. 3, 1993, 5-303849; Dec. 28, 1993, 5-335044

Int. Cl.[6] C09D *167/00;133/14;* **C08K** *5/19;5/57*

U.S. Cl. 524—513 **30 Claims**

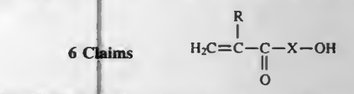
1. A color coating composition comprising:

(1) 10 to 60% by weight of one or more pigment dispersing resins selected from the group consisting of a polyester resin and derivatives thereof which are modified with a basic substance, wherein said resin has an acid value from 5 to 300 mgKOH/g(solid), a hydroxyl value from 5 to 300 mgKOH/g(solid), a number average molecular weight from 400 to 6,000, said polyester resin is prepared from acid component and alcohol component and said acid component contains not more than 25% by weight of an acid having a straight carbon chain with 12 or more carbon atoms based on the total monomer weight of the polyester resin;

(2) 1 to 40% by weight of an aminoplast;

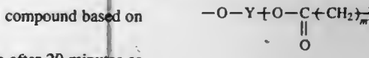
(3) 5 to 60% by weight of a polymer having carboxyl groups and carboxylic ester groups, which is obtained by reacting (i) an acid anhydride-containing polymer obtained by copolymerizing (a) 15 to 40% by weight of an acid anhydride-containing ethylenically unsaturated monomer with (b) 60 to 85 by% weight of other copolymerizable ethylenically unsaturated monomer, with (ii) a hydroxyl group-containing compound having 1 to 12 carbon atoms in the molar ratio of the acid anhydride/the hydroxyl group of 1/10 to 1/1;

(4) 5 to 60% by weight of a polymer having hydroxyl groups and epoxy groups obtained by copolymerizing (i) 5 to 70% by weight of a hydroxyl group-containing ethylenically unsaturated monomer having the structure of the formula (i):

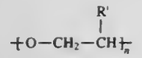


(I)

wherein R represents hydrogen or methyl group, X represents



(Y is a straight or branched alkylene group having 2 to 8 carbon atoms, m is an integer from 3 to 7, and q is an integer from 0 to 4) or



(R' represents hydrogen or methyl group and n is an integer of 2 to 50),

(ii) 10 to 60% by weight of an epoxy group-containing ethylenically unsaturated monomer, and optionally (iii) 0 to 85% by weight of other copolymerizable ethylenically unsaturated monomer, and,

(5) a pigment, and,

(8) a catalyst being a combination of a quaternary ammonium salt and a tin-containing compound, wherein a content of the quaternary ammonium salt is 0.1 to 2.0% by weight based on the solid content the resin composition, a content of the tin-containing compound is 0.05 to 6.0% by weight based on the solid content the resin composition and a weight ratio of the ammonium salt and the tin containing compound is ¼ to 1/0.2, wherein the contents of the components (**1**) to (**4**) are based on the resin solid component in the composition, while the contents of the monomers in the components (**3**) and (**4**) are based on the total monomers of the respective components, a Weight ratio of pigment/resin solid in the composition is from 0.01/1 to 1/1 and the pigment (5) is formulated in the resin composition after it is mixed with the pigment dispersions resin to form a pigment paste.

5,648,418

LOW MOLECULAR WEIGHT COPOLYMER AMIDES

Charles Francis Lences, Parsippany, N.J., assignor to Allied-Signal Inc., Morris Township, N.J.

Continuation of Ser. No. 483,492, Jun. 7, 1995, abandoned, which is a division of Ser. No. 280,292, Jul. 26, 1994, abandoned, which is a continuation of Ser. No. 88,485, Jul. 7, 1993, abandoned, which is a continuation of Ser. No. 938,319, Aug. 31, 1992, abandoned, which is a continuation of Ser. No. 452,527, Dec. 18, 1989, abandoned. This application May 22, 1996, Ser. No. 651,451

Int. Cl.[6] **C08F** *8/32;20/06;* **C08K** *9/04;* **C08L** *23/36*

U.S. Cl. 524—538 **15 Claims**

1. In a method of flushing a pigment, of the type wherein water in an aqueous mass of pigment is flushed with a low molecular weight polymer, the improvement comprising flushing the aqueous mass of pigment with at least one copolymer reaction product of a copolymer acid of an α-olefin and an α,β-ethylenically unsaturated carboxylic acid, the copolymer acid having a number average molecular weight of from about 500 to about 6,000 reacted with from about 0.1 to about 30 weight percent of at least one amino acid compound based on the weight of said reaction product.

5,648,419

RESTRUCTURING SILICONE RUBBER TO PRODUCE FLUID OR GREASE

Steven S. Kendall, Howell, Mich., assignor to Genesee Polymers Corporation, Flint, Mich.

Division of Ser. No. 427,666, Mar. 24, 1995, Pat. No. 5,616,646, which is a division of Ser. No. 335,249, Nov. 7, 1994, abandoned. This application Oct. 7, 1996, Ser. No. 726,772

Int. Cl.[6] **C08L** *83/00*

U.S. Cl. 524—588 **7 Claims**

1. The process of suppressing foam comprising the step of adding silicone rubber to a foaming system.

5,648,420

PROCESS OF PREPARING COPOLYMER LATEX AND USE THEREOF

Wataru Fujiwara; Junkoh Hyoda, both of Niihama; Kenichi Yamazaki, Kobe, and Noriko Kitamura, Osaka, all of Japan, assignors to Sumitomo Dow Limited, Osaka, Japan

Division of Ser. No. 443,035, May 17, 1995, which is a division of Ser. No. 108,596, Sep. 3, 1993. This application Sep. 26, 1995, Ser. No. 534,041

Claims priority, application Japan, Jan. 10, 1992, 4-21955; Jan. 27, 1992, 4-37059; Feb. 3, 1992, 4-47999; Jun. 18, 1992, 4-186054; Jun. 30, 1992, 4-197849

Int. Cl.[6] **C08K** *5/36*

U.S. Cl. 524—750 **4 Claims**

1. A color developing composition for a pressure sensitive copying paper comprising a pigment, a color developer and a copolymer latex as a binder, characterized in that said copolymer latex is a copolymer latex prepared by emulsion copolymerizing a monomer mixture comprising 20 to 60% by weight of 1,3-butadiene, 0 to 20% by weight of acrylonitrile, 1 to 20% by weight of an ethylenically unsaturated carboxylic acid monomer, and 34 to 79% by weight of at least one monomer selected from the group consisting of styrene, methyl methacrylate, β-hydroxyethyl acrylate and acrylamide in the presence of 0.1 to 30 parts by weight per 100 parts by weight of the monomer mixture of cyclohexene.

5,648,421

ISOCYANATE/POLYOL CASTING RESIN

Lothar Thiele, Leichlingen; Hans-Peter Kohlstadt, Velbert; Nicole Schlingloff, Hilden, and Claudia Plutniok, Düsseldorf, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP94/01889, § 371 Date Dec. 14, 1995, § 102(e) Date Dec. 14, 1995, PCT Pub. No. WO95/00568, PCT Pub. Date Jan. 5, 1995

PCT Filed Jun. 9, 1994, Ser. No. 564,065

Claims priority, application Germany, Jun. 18, 1993, 43 20 269.1; Jun. 18, 1993, 43 20 118.0

Int. Cl.[6] **C08K** *3/34*

U.S. Cl. 524—789 **31 Claims**

1. A composition useful as a casting resin, said composition comprising: a polyol, a polyisocyanate, a catalyst, and a suspension aid, wherein said catalyst and said suspension aid are present in the casting resin in such concentrations that, within 10 minutes of mixing, the composition flows downwards a) by at least 15 cm at 25° C. and b) by 3 to 0.3 cm at 130° C.

5,648,422

PROCESS FOR THE (CO)POLYMERIZATION OF OLEFINS

Gianni Collina, Casalecchio di Reno; Tiziano Dall'Occo, Ferrara; Maurizio Galimberti, Milan; Enrico Albizzati, Arona, and Luciano Noristi, Ferrara, all of Italy, assignors to Montell Technology Company bv, Netherlands

Filed Jun. 5, 1995, Ser. No. 461,691

Claims priority, application Italy, Oct. 5, 1994, M194A2028

Int. Cl.[6] **C08F** *210/16*

U.S. Cl. 525—52 **22 Claims**

1. Multistage continuous process for the polymerization of one or more olefins having the formula CH_2=CHR, in which R is hydrogen or R has from 1 to 10 carbon atoms and is an alkyl, cycloalkyl or aryl group, said process comprising:

(A) a first stage of polymerization in which one or more of said olefins are polymerized, in one or more reactors, in the presence of a catalyst comprising the product of reaction between an alkyl-Al compound and a solid component comprising a compound of a transition metal M′ selected from the group consisting of Ti and V, not containing M—π bonds, and a halide of Mg in active form, to produce an olefin homo or copolymer;

(B) a treatment stage in which the product obtained in the first stage of polymerization (A) is, in any order whatever:

(a) brought into contact with a compound capable of deactivating the catalyst present in the stage (A); and

(b) brought into contact with a compound of a transition metal M selected from the group consisting of Ti, Zr, V, or Hf containing at least one M—π bond and optionally with an alkyl-Al compound;

(C) a second stage of polymerization in which one or more of said olefins are polymerized, in one or more reactors, in the presence of the product obtained in treatment stage (B);

and wherein the amount of olefin homo- or copolymer produced in the first stage polymerization (A) and treated in treatment stage (B) is between 10% to 90% by weight of the total amount of polymer produced in stages (A) and (C) combined.

5,648,423

POLYAMIDE RESIN COMPOSITION

Mamoru Kagami; Mutsuhiro Tanaka, and Masahiro Sugi, all of Ichihara, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

PCT No. PCT/JP94/01296, § 371 Date Apr. 5, 1995, § 102(e) Date Apr. 5, 1995, PCT Pub. No. WO95/04781, PCT Pub. Date Feb. 16, 1995

PCT Filed Aug. 4, 1994, Ser. No. 411,597

Claims priority, application Japan, Aug. 5, 1993, 5-194805

Int. Cl.[6] **C08L** *77/00*

U.S. Cl. 525—66 **10 Claims**

1. A polyamide resin composition comprising:

(A) a polyamide resin in an amount of 100 parts by weight, and

(B) a graft-modified ethylene/1-butene random copolymer having a graft quantity of an unsaturated carboxylic acid or its derivative of 0.01 to 10% by weight, in an amount of 5 to 200 parts by weight,

wherein the graft-modified ethylene/1-butene random copolymer (B) is a graft-modified product of an ethylene/1-butene random copolymer having

(a) a 1-butene content of 15 to 25% by mol,

(b) an intrinsic viscosity [η], as measured in decalin at 135° C., of 0.5 to 3.5 dl/g,

(c) a glass transition temperature (Tg) of not higher than −60° C.,

(d) a crystallinity, as measured by X-ray diffractometry, of less than 10%, and

(e) a parameter (B value) indicating randomness of a copolymerized monomer chain distribution, as measured by a ^{13}C-NMR method, of 1.0 to 1.4.

5,648,424

THERMOPLASTIC RESIN COMPOSITION AND MOLDED PRODUCT THEREOF

Chiyo Miwa; Hironari Sano; Koji Nishida, and Yoshihiro Kurasawa, all of Yokkaichi, Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

Continuation of Ser. No. 235,715, Apr. 29, 1994, abandoned. This application Nov. 7, 1995, Ser. No. 553,241

Claims priority, application Japan, Apr. 30, 1993, 5-103978; Jul. 27, 1993, 5-203732

Int. Cl.[6] **C08L** *23/00;71/12*

U.S. Cl. 525—92 D **7 Claims**

1. A molded product of a thermoplastic resin composition which comprises:

(a) 10–85% by volume, based on the total volume of the resin composition, of a non-crystalline thermoplastic resin comprising a polyphenylene ether or a polyphenylene ether and an aromatic vinyl compound polymer; and

(b) 90–15% by volume, based on the total volume of the resin composition, of a polyolefin resin;

wherein said components form:

(A) a structure in which component (a) forms a matrix and component (b) forms a domain, and

(B) a structure in which component (b) forms a matrix and component (a) forms a domain,

wherein (A) and (B) coexist as layers in the thickness direction of the molded product, wherein said product satisfies the following conditions that when the melt shear viscosity ratio (S) of Component (a) to Component (b) at 280° C. and a shear rate of 30 sec^{-1} is larger than the melt shear viscosity ratio (W_1) of component (a) to Component (b) in a sea-sea structure at 280° C. and a shear rate of 30 sec^{-1}, the melt shear viscosity ratio (T) of Component (a) to Component (b) at 300° C. and a shear rate of 300 sec^{-1} is smaller than the melt shear viscosity ratio (W_2) of Component (a) to Component (b) in a sea-sea structure at 300° C. and a shear rate of 300 sec^{-1}; or when S is smaller than W_1, T is larger than W_2.

5,648,425

REMOVEABLE, LOW MELT VISCOSITY ACRYLIC PRESSURE SENSITIVE ADHESIVES

Albert I. Everaerts, Oakdale, and Jeffrey D. Malmer, North St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

PCT No. PCT/US92/11156, § 371 Date Nov. 28, 1994, § 102(e) Date Nov. 28, 1994, PCT Pub. No. WO93/13148, PCT Pub. Date Jul. 8, 1993

Continuation of Ser. No. 816,593, Dec. 31, 1991, abandoned. This PCT application Dec. 21, 1992, Ser. No. 256,252

Int. Cl.[6] **C08F** *8/30*

U.S. Cl. 515—100 **10 Claims**

1. An acrylic pressure-sensitive adhesive comprising the reaction product of:

a.) a mixture of higher and lower alkyl acrylates comprising:

i.) about 10 to about 50% by weight of at least one higher alkyl acrylate having an alkyl group which contains about 18 to about 26 carbon atoms; and

ii.) about 90 to about 50% by weight of at least one lower alkyl acrylate having an alkyl group which contains about 4 to about 12 carbon atoms;

b.) at least one strongly polar monomer copolymerizable with the higher and lower alkyl acrylates present in an amount of up to 5 percent by weight, wherein the sum of a.) and b.) equals 100 percent; and

c.) about 0.05 to about 1.0 percent by weight of the sum of a.) and b.) of a crosslinking agent selected from the group consisting of multifunctional aziridine amides, metal ions, monoethylenically unsaturated aromatic ketones, chromophore-substituted halomethyl-s-triazines, multifunctional acrylates, multifunctional methacrylates, benzophenones, acetophenones, silanes, and mixtures thereof, wherein the adhesive is amorphous and wherein the adhesive is tacky at room temperature.

5,648,426

COMPOSITION AND METHOD FOR IMPACT MODIFICATION OF THERMOPLASTICS

Mikhail Zolotnitsky, Jamison, Pa., assignor to Huls America Inc., Somerset, N.J.

Filed May 5, 1995, Ser. No. 435,176

Int. Cl.[6] **C08L** *83/00*

U.S. Cl. 525—100 **23 Claims**

1. A method for forming a silicone-thermoplastic semi-interpenetrating polymer network comprising:

(a) compounding a first polymeric silicone containing silicone-hydride groups, a second polymeric silicone containing unsaturated groups, and a first thermoplastic;

(b) disposing a catalytically effective amount of a hydrosilation catalyst on the resultant of step (a); and

(c) compounding the resultant of step (b) with a second neat thermoplastic while activating the hydrosilation catalyst.

5,648,427
CURABLE COMPOSITION
Masayuki Fujita, Takago, and Hiroshi Wakabayashi, Kobe, both of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisa, Osaka, Japan
Continuation of Ser. No. 261,250, Jun. 14, 1994, abandoned, which is a continuation of Ser. No. 99,394, Jul. 30, 1993, abandoned, which is a continuation of Ser. No. 903,147, Jun. 24, 1992, abandoned. This application Dec. 20, 1995, Ser. No. 575,466
Claims priority, application Japan, Jun. 25, 1991, 3-152878
Int. Cl.[6] C08L *83/00*
U.S. Cl. 525—104 3 Claims

1. A curable composition which comprises (A) an oxyalkylene polymer having a silicon-containing group with at least one crosslinkable group bonded to a silicon atom and capable of crosslinking by forming a siloxane bond, said crosslinkable group being a member selected from the group consisting of a hydroxyl group and a hydrolyzable group, and (B) hollow microspheres of vinylidene chloride polymer having a true specific gravity of 0.1 g/cm^3 or less.

5,648,428
PROCESS FOR PREPARING AN ISOTACTIC/SYNDIOTACTIC POLYMER BLEND IN A SINGLE REACTOR
Baireddy Raghava Reddy, Baytown, and Edwar Shoukri Shamshoum, Houston, both of Tex., assignors to Fina Technology, Inc., Dallas, Tex.
Division of Ser. No. 54,916, Apr. 28, 1993. This application Jun. 7, 1995, Ser. No. 480,726
Int. Cl.[6] C08F *4/64*
U.S. Cl. 526—116 11 Claims

1. A process of producing a polymer blend in a single reactor comprising:
a) making a syndiospecific metallocene catalyst consisting of:
1) selecting a neutral metallocene compound of the general formula

$$R''(C_5H_4)(C_4H_{4-m}R'_mC_5C_4H_{4-n}\ R'_n)MeQ_p$$

wherein (C_5H_4) is a cyclopentadienyl ring and $(C_4H_{4-m}R'_m C_5C_4H_{4-n}R'_n)$ is a substituted cyclopentadienyl ring wherein (C_5H_4) and $(C_4H_{4-m}R'_mC_5\ C_4H_{4-n}R'_n)$ have bilateral or pseudo-bilateral symmetry; R' is a hydrocarbyl radical having from 1–20 carbon atoms, a halogen, an alkoxy, an alkoxy alkyl or an alkylamino radical, each R' may be the same or different; R" is a structural bridge between the (C_5H_4) and $(C_4H_{4-m}R'_mC_5C_4H_{4-n}\ R'_n)$ rings to impart stereorigidity; Q is a hydrocarbon radical or is a halogen; Me is a Group IIIB, IVB, VB, or VIB metal as positioned in the Periodic Table of Elements; $1 \leqq m \leqq 4$; $0 \leqq n \leqq 4$; and p is the valence of Me minus 2,
2) adding an aluminoxane in solvent to form a syndiospecific metallocene catalyst,
3) extracting solvent to form a solid complex consisting of the metallocene and the aluminoxane,
4) suspending the solid in mineral oil,
b) making a conventional supported Ziegler-Natta catalyst by
1) selecting a transition metal compound of the general formula MR^+_x where M is a Group IIIB, IVB, VB or VIB metal, R^+ is a halogen or a hydrocarboxyl and x is the valence of the metal and
2) adding an aluminum alkyl of the general formula $AlR\#_3$ where R# is an alkyl of from 1–8 carbon atoms and R# may be the same or different to form a conventional supported Ziegler-Natta catalyst
c) mixing the metallocene catalyst in mineral oil and the conventional supported Ziegler-Natta catalyst,
d) introducing the mixture of the metallocene catalyst in mineral oil and the conventional supported Ziegler-Natta catalyst into a polymerization reaction zone containing a monomer under polymerization conditions, and
e) withdrawing a polymer product.

5,648,429
CURABLE FLUOROELASTOMERIC COMPOSITIONS
Graziella Chiodini, Saronno, and Vincenzo Arcella, Novara, both of Italy, assignors to Ausimont S.p.A., Milan, Italy
Filed May 25, 1995, Ser. No. 451,075
Claims priority, application Italy, May 27, 1994, M194A1081
Int. Cl.[6] C08F *8/32*
U.S. Cl. 525—340 16 Claims

1. A curable fluoroelastomeric composition comprising:
A) 100 parts (phr) of a curable fluoroelastomeric copolymer having a content in F<67% by weight and comprising from 40 to 68% by weight of VDF units, from 20 to 50% by weight of HFP units, said copolymer having a number of ionic terminals of at least 0.5 for chain;
B) from 1 to 5 parts (phr) of an adduct between an accelerator and a curing agent, the accelerator being an onio-organic compound having a positive charge, the curing agent being a di-or polyhydroxy or di- or polythiol compound; the adduct being obtained by melting of the reaction product between accelerator and curing agent in a molar ratio from 1:3 to 1:5, or by melting of the adduct mixture having said accelerator and said curing agent in a molar ratio of 1:1 added with excess curing agent to produce a molar ratio of 1:3 to 1:5.

5,648,430
CURABLE FLUOROELASTOMERIC COMPOSITIONS
Graziella Chiodini, Saronno, and Vincenzo Arcella, Novara, both of Italy, assignors to Ausimont S.p.A., Milan, Italy
Filed May 26, 1995, Ser. No. 451,160
Claims priority, application Italy, May 27, 1994, M194A1080
Int. Cl.[6] C08F *8/32*
U.S. Cl. 525—340 18 Claims

1. Curable fluoroelastomeric compositions comprising:
A) 100 parts (phr) copolymers or terpolymers based on VDF having a fluorine content of at least 67% by weight, and being comprised of 30 to 50% by weight of VDF, and 20 to 60% by weight of HFP,
B) from 1 to 5 parts (phr) of an adduct between an accelerator and a curing agent, the accelerator being an onio-organic compound having a positive charge, the curing agent being a di- or polyhydroxy or di- or polythiol compound; the adduct being obtained by melting of the reaction product between said accelerator and said curing agent in a molar ratio of 1:2 to 1:5, or by melting of the adduct mixture having a molar ratio of 1:1 added with excess curing agent to obtain a molar ratio of 1:2 to 1:5.

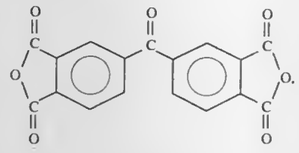
5,648,431
PROCESS FOR THE UTILIZATION OF PLASTICS
Michael Demuth, Wallbergstrasse 2, D-8023 Grosshesselohe, Germany, and Wolfgang Holzapfel, Berchtesgaden, Germany, assignors to Michael Demuth, Grosshesselohe, Germany
Continuation of Ser. No. 39,140, May 26, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 470,158
Claims priority, application Germany, Sep. 27, 1990, 40 30 588.0; Sep. 27, 1990, 40 30 614.3; Sep. 27, 1990, 40 30 639.9; May 10, 1991, 41 15 379.0
Int. Cl.[6] C08L *75/04*
U.S. Cl. 525—415 34 Claims

1. Process for utilizing compact or porous plastics, which comprise polyurethane plastics, without producing any toxic or secondary products, said process consisting essentially of

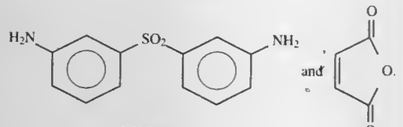
a) swelling the polyurethane plastics in a swelling agent selected from the group consisting of polyols, hydrocarbons, amines, plasticizers, urea, carboxylic acids, esters of fatty acids, native oils, wetting agents, and/or OH functional polymers obtained from either polybutadiene or isoprene at a temperature below the decomposition temperature of the polyurethane plastics while avoiding hydrolytic dissociation to thereby form a gel in which chemical bonds are preserved, wherein the decomposition temperature is a temperature at which hydrolytic dissociation occurs;
b) reducing the gel in size by mechanically granulating the gel into a free flowing gel while avoiding hydrolytic dissociation, wherein the free flowing gel is a granulated gel that can be pumped, poured and metered; and
c) reacting said gel with a diisocyanate to form a new polyurethane plastic.

5,648,432
PROCESS FOR CONTROLLING MORPHOLOGY AND IMPROVING THERMAL-MECHANICAL PERFORMANCE OF HIGH PERFORMANCE INTERPENETRATING AND SEMI-INTERPENETRATING POLYMER NETWORKS
Ruth H. Pater, Yorktown, Va., and Marion G. Hansen, Knoxville, Tenn., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Continuation of Ser. No. 215,792, Mar. 11, 1994, abandoned, which is a continuation-in-part of Ser. No. 679,381, Apr. 2, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 473,605
Int. Cl.[6] C08F *283/04*
U.S. Cl. 525—421 8 Claims

1. A high performance IPN comprising two bismaleimides, wherein one of the bismaleimide components is prepared from the following monomer reactants:

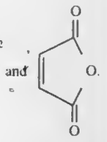


BTDA



3,3'-DDS

and



MA

5,648,433
TERNARY POLYETHERIMIDE/POLYESTER/POLYESTER BLENDS
Christopher E. Scott, Kingsport, Tenn., assignor to Eastman Chemical Company, Kingsport, Tenn.
Continuation of Ser. No. 251,169, May 31, 1994, abandoned. This application Nov. 15, 1995, Ser. No. 558,765
Int. Cl.[6] C08L *79/08*
U.S. Cl. 525—425 22 Claims

1. A visually clear blend of thermoplastic polymers comprising:
(A) a polyetherimide, and
(B) a mixture of polyesters comprising:
(1) a polyester comprising repeat units from:
(a) 2,6-naphthalene dicarboxylic acid and
(b) ethylene glycol, and
(2) a polyester comprising repeat units from:
(a) an acid selected from the group consisting of terephthalic acid, isophthalic acid and mixtures thereof, and
(b) a glycol selected from the group consisting of ethylene glycol, 1,4-cyclohexanedimethanol and mixtures thereof;
wherein the weight percentages of component (B)(1) and the mole percentages of 1,4-cyclohexanedimethanol in component (B)(2) are present in said polyester portion of the blend as follows:
when said 1,4-cyclohexanedimethanol in the glycol portion of component (B)(2) is present at from about 0.0 to 20 mole %, component (B)(1) is present in said polyester portion of the blend in the amount of 5 to 10 weight % or more;
when said 1,4-cyclohexanedimethanol in the glycol portion of component (B)(2) is present at from about 20 to 50 mole %, component (B)(1) is present in said polyester portion of the blend in the amount of 1 to 5 weight % or more; and
when said 1,4-cyclohexanedimethanol in the glycol portion of component (B)(2) is present at from about 50–100 mole %, component (B)(1) is present in said polyester portion of the blend in the amount of Y weight % or more wherein Y=[(0.9)(X)–40] and wherein X represents the mole % of 1,4-cyclohexanedimethanol in the glycol portion of component (B)(2).

5,648,434
SULFONIMIDE CATALYST/CROSSLINKER COMBINATION
Jeno G. Szita, Norwalk; Subban Ramesh, Stamford; William Jacobs, III, Bethel, and John Colin Brogan, Stamford, all of Conn., assignors to Cytec Technology Corp., Wilmington, Del.
Division of Ser. No. 976,916, Nov. 16, 1992, which is a division of Ser. No. 688,022, Apr. 19, 1991, Pat. No. 5,256,493, which is a continuation-in-part of Ser. No. 512,041, Apr. 26, 1990, abandoned. This application Jun. 5, 1995, Ser. No. 462,861
Int. Cl.[6] C08F *20/00*
U.S. Cl. 525—441 25 Claims

1. A catalyst/crosslinker combination which is a mixture comprising:
(i) a particulate sulfonimide cure catalyst, and
(ii) a particulate aminoplast crosslinking agent containing at least two crosslinkable groups,
wherein the particulate sulfonimide cure catalyst is selected from the group consisting of:
(a) a sulfonimide represented by the formula

$$RSO_2NZSO_2R$$

wherein each of the R groups is, independently, selected from the group consisting of
(a1) a linear, branched or cyclic alkyl, fluoroalkyl or N,N-dialkylamino group of 1 to 20 carbon atoms, or mixtures thereof.
(a2) an aryl group of 1 to 20 carbon atoms containing 5 or less aromatic or heterocyclic aromatic rings substituted by R^1, R^2, R^3, R^4 and R^5 groups, wherein R^1, R^2, R^3, R^4 and R^5 groups are the same or different groups selected from the group consisting of hydrogen, fluoro, alkyl, fluoroalkyl, aryl, haloaryl, carboxy, mercapto, vinyl, chloro, bromo, cyano, nitro, sulfonyl, acyl, alkoxycarbonyl, alkoxy, perfluoroalkoxy, hydroxy, amino, acylamino, alkoxycarbonylamino, carbamoyl, aminocarbonyl, N-alkyl aminocarbonyl and N,N-dialkyl aminocarbonyl groups, and

(a3) an aralkyl group wherein the alkyl and the aryl groups have the same meaning as the alkyl and aryl groups (a1) and (a2), and

wherein the Z group is

(a4) hydrogen,

(a5) acyl or

(a6) an alkyl or aralkyl group of 1 to 20 carbon atoms;

(b) a sulfonimide represented by the formula

$$—(R'—SO_2NH—SO_2)—_n$$

wherein n groups of the —(R'—SO_2NH—SO_2)— units may be the same or different, and the R' group in each of the n units is independently selected from the group consisting of

(b1) a linear, branched or cyclic alkylene or fluoroalkylene group of 1 to 20 carbon atoms,

(b2) an arylene group of 1 to 20 carbon atoms containing 5 or less carbocyclic or heterocyclic aromatic rings substituted by R^1, R^2, R^3, R^4 and R^5 groups, wherein R^1, R^2, R^3, R^4 and R^5 groups are the same or different groups selected from the group consisting of hydrogen, fluoro, alkyl, fluoroalkyl, aryl, haloaryl, carboxy, mercapto, vinyl, chloro, bromo, cyano, nitro, sulfonyl, acyl, alkoxycarbonyl, alkoxy, perfluoroalkoxy, hydroxy, amino, acylamino, alkoxycarbonylamino, carbamoyl, aminocarbonyl, N-alkyl aminocarbonyl and N,N-dialkyl aminocarbonyl groups, and

(b3) an aralkylene group wherein the alkylene and the arylene groups have the same meaning as the alkylene and arylene groups (b1) and (b2);

(c) a sulfonimide represented by the formula

$$P—(SO_2NHSO_2R^*)_n$$

wherein P is a polyfunctional group or a polymer of a number average molecular weight greater than 500, R* is an alkyl or aryl group of 1 to 20 carbon atoms, and n is 2 or greater; and

(d) a latent reactive form thereof.

5,648,435

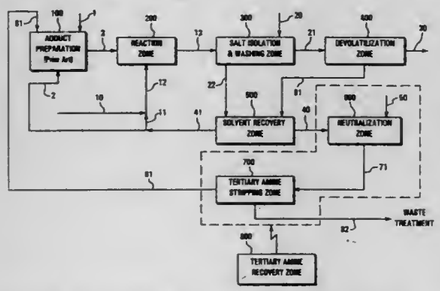
PROCESS FOR PRODUCTION OF MULTICYANATE ESTERS

David W. H. Roth, Jr., Southern Shore, N.C., and Sajal Das, Basking Ridge, N.J., assignors to AlliedSignal Inc., Morristown, N.J.

Continuation-in-part of Ser. No. 379,233, Jan. 27, 1995, Pat. No. 5,483,013, and Ser. No. 488,467, Jun. 7, 1995, Pat. No. 5,504,186, which is a division of Ser. No. 379,233. This application Nov. 17, 1995, Ser. No. 558,218

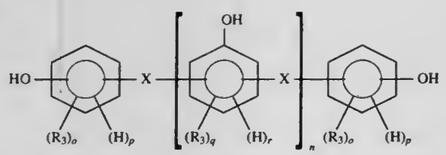
Int. Cl.[6] C08F *283/00;* **C08G** *8/28;* **C08L** *61/00*

U.S. Cl. 525—480 **20 Claims**



1. A process for producing multicyanate esters comprising

a) feeding to a reaction vessel a first feed stream comprising a reaction medium comprising a solvent, an adduct of a tertiary amine and a phenol-formaldehyde oligomer or derivative thereof of the formula:



wherein:

n is a positive whole number equal to or greater than 1;

q and r are the same or different at each occurrence and are whole numbers from 0 to 3, with the proviso that the sum of q and r at each occurrence is equal to 3;

o and p are the same or different at each occurrence and are whole numbers from 0 to 4, with the proviso that the sum of o and p at each occurrence is equal to 4;

—X— is a divalent organic radical; and

R_3 is the same or different at each occurrence and is a substituent other than hydrogen which is unreactive under conditions necessary to completely cure the copolymer;

b) feeding to said reaction vessel a second feedstream comprising a cyanogen halide in a reaction medium comprising a solvent;

c) feeding to said reaction vessel a recycle stream comprising at least one of the following compounds selected from the group consisting of tertiary amine-hydrohalide salt, solvent, impurities, multicyanate ester and mixtures thereof;

d) reacting said first, second, and recycle streams in said reaction vessel under conditions sufficient to form a reaction product stream comprising at least one of the following compounds selected from the group consisting of tertiary amine-hydrohalide salt, solvent, and impurities, and, based upon the total weight of the reaction product stream excluding the weight of said tertiary amine-hydrohalide salt, from about 10 percent to about 40 percent of a multicyanate ester; and

e) removing a portion of said reaction product stream to produce said recycle stream such that the volume ratio of said recycle stream to said product stream is about 100:1 to about 25:1.

5,648,436

HALOGEN-FREE MIXTURE, A SELF-EXTINGUISHING PREPREG CONTAINING THIS MIXTURE AND THE USE OF SUCH A PREPREG

Othmar Janowitz, Vienna, and Peter Walter, Brunn, both of Austria, assignors to Isovolta Osterreichische Isolierstoffwerke Aktiengesellschaft

PCT No. PCT/AT94/00154, § 371 Date Jun. 19, 1995, § 102(e) Date Jun. 19, 1995, PCT Pub. No. WO95/11272, PCT Pub. Date Apr. 27, 1995

PCT Filed Oct. 20, 1994, Ser. No. 454,193

Claims priority, application Austria, Oct. 21, 1993, 2132/93

Int. Cl.[6] C08L *63/04;61/06*

U.S. Cl. 525—481 **21 Claims**

1. A halogen-free resin mixture comprising:

a) 20–60 weight % epoxy resin;

b) 20–60 weight % phenolic novolak hardener; and

c) 5–65 weight % zinc borate as flame retardant.

5,648,437

PROCESS FOR THE MANUFACTURE OF THERMOPLASTIC POLYCARBONATE

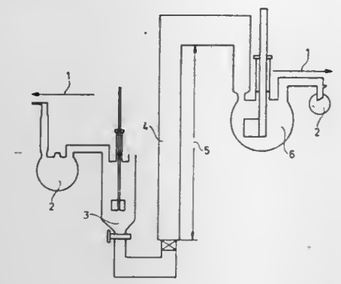
Thomas Fischer, Krefeld; Rolf Bachmann, Gladbach; Uwe Hucks, Alpen; Franz Ferdinand Rhiel, Dormagen, and Steffen Kühling, Meerbusch, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

Filed Mar. 20, 1996, Ser. No. 618,614

Claims priority, application Germany, Mar. 29, 1995, 195 11 483.3

Int. Cl.[6] C08F *2/00*

U.S. Cl. 526—64 **3 Claims**



1. Process for the manufacture of aromatic polycarbonate via an oligocarbonate intermediate having a mean molecular weight M_w of 750 to 10,000 by at least two-stage melt transesterification starting from diphenols and carbonic acid diaryl esters with the use of catalysts at temperatures between 180° C. and 250° C. and pressures of 1 bar to 5 mbar, the method including the step of utilizing at least one continuously operated tubular reactor in the manufacture of the oligocarbonate intermediate, vertically mounting the at least one continuously operated tubular reactor, supplying product to the reactor from below, passing product through the reactor in a product stream, and passing a heating stream through the reactor countercurrent to the product stream, and wherein the melt viscosity of the oligocondensation in the reactor falls in the range from eta_m=1 to 10,000 mPa.s.

5,648,438

PROCESS FOR PRODUCING POLYMERS WITH MULTIMODAL MOLECULAR WEIGHT DISTRIBUTIONS

David T. Henry, Baton Rouge; Doulgas J. McLain, Walker, both of La.; Joseph D. Domine; Aspy Keki Mehta, both of Humble, Tex.; William Joseph Zafian, Pasadena, Tex.; Norbert Baron, Cologne, Germany, and Bernard J. Folie, Rhode-St. Genese, Belgium, assignors to Exxon Chemical Patents, Inc., Wilmington, Del.

Filed Apr. 1, 1994, Ser. No. 221,915

Int. Cl.[6] C08F *2/14*

U.S. Cl. 526—65 **24 Claims**

1. A continuous process, in a single reactor, for catalytically polymerizing monomer feed of at least two olefins having Ziegler-Natta polymerizable bonds which comprises introducing a catalyst which includes a metallocene and monomer feed composition into an upstream reaction zone for polymerization, introducing further catalyst which includes a metallocene into a downstream reaction zone for further polymerization, the peak temperature in the downstream reaction zone being at least 10° C. higher than in the upstream zone, and collecting polymer having at least two fractions, each of which constitute at least 5 wt % of the polymer, of different weight average molecular weight (M_w), with the M_w of the fraction having the greater M_w being at least 50% greater than the M_w of the fraction having the lesser M_w, said polymer having an overall M_w/M_n of at least 2.5 and a uniform composition distribution.

5,648,439

PROCESS FOR PRODUCING POLYOLEFINS

Joseph J. Bergmeister, Bartlesville, Okla.; Scott E. Kufeld, Webster, Tex., and Max P. McDaniel, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 202,302, Feb. 25, 1994, abandoned. This application Jul. 14, 1995, Ser. No. 503,069

Int. Cl.[6] C08F *4/24*

U.S. Cl. 526—96 **24 Claims**

1. A process of producing polyolefins having a multimodal molecular weight distribution comprising polymerizing under polymerization conditions in a polymerization zone at least one olefin in the presence of a dual catalyst system comprising:

a) a chromocene catalyst system comprising chromocene supported on an aluminophosphate support; and

b) a chromium oxide catalyst system comprising chromium oxide supported on an inorganic oxide support; and

recovering a polymer.

5,648,440

CATALYST COMPONENTS FOR POLYMERIZATION OF OLEFINS AND USE THEREOF

Toshihiko Sugano, and Tomohiko Takahama, both of Yokkaichi, Japan, assignors to Mitsubishi Chemical Corporation, Tokyo-to, Japan

Division of Ser. No. 161,464, Dec. 6, 1993, Pat. No. 5,449,650. This application Mar. 1, 1995, Ser. No. 396,644

Claims priority, application Japan, Dec. 8, 1992, 4-328211; Dec. 8, 1992, 4-328225

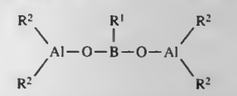
Int. Cl.[6] C08F *4/642*

U.S. Cl. 526—132 **4 Claims**

1. A method of preparing an α-olefin polymer, comprising the step of:

contacting an α-olefin with a catalyst prepared from the combination of the following components (A), (B) and (C), thereby polymerizing said α-olefin:

component (A) which is a compound having the formula:



(I)

wherein R^1 is a hydrocarbon radical having 1 to 10 carbon atoms or a halogen-containing hydrocarbon radical having 1 to 10 carbon atoms, and R^2s are each a hydrogen atom, a halogen atom, a siloxy group, a lower-alkyl-substituted siloxy group or a hydrocarbon radical having 1 to 10 carbon atoms;

component (B) which is a transition-metal compound having at least one conjugated 5-membered cyclic ligand where the transition metal is a member of groups IVB to VIB of the Periodic Table; and

component (C) which is an organoaluminum compound other than the compound defined as component (A).

2. A method of preparing an α-olefin polymer, comprising the step of:

contacting an α-olefin with a catalyst prepared by combining components (A), (B) and (C), thereby polymerizing said α-olefin:

wherein component (A) is a reaction product of

sub-component (i) which is a compound of the formula:

R^1—B—$(OH)_2$ in which R^1 is a hydrocarbon radical of 1 to 10 carbon atoms or a halogen-containing hydrocarbon radical having 1 to 10 carbon atoms, and

sub-component (ii) which is an organoaluminum compound;

component (B) is a transition metal compound having at least one conjugated 5-membered cyclic ligand where the transition metal belongs to one of the Groups IVB to VIB of the Periodic Table; and

component (C) is an organoaluminum compound which does not contain boron in the molecule.

5,648,441

SUBSTRATE AND POLYMERIZABLE MIXTURE, METHOD OF MANUFACTURING OF SAID POLYMERIZABLE MIXTURE, AND METHOD OF MANUFACTURING OF A NON FOGGING OR LOW FOGGING LAYER

Martin Keller, Gersau, and Martin Lenhard, Ittigen, both of Switzerland, assignors to Gurit-Worbla AG, Ittigen, Switzerland

Continuation of Ser. No. 432,760, May 2, 1995, abandoned, which is a continuation of Ser. No. 166,075, Dec. 14, 1993, abandoned. This application Jun. 24, 1996, Ser. No. 669,126

Claims priority, application Switzerland, Dec. 23, 1992, 3917/92

Int. Cl.[6] C08F *30/04*

U.S. Cl. 526—240 **4 Claims**

1. A polymerizable mixture for application to the outer surface of a substrate to produce upon polymerization a non-fogging or low fogging layer on said substrate from said polymerizable mixture, said mixture consisting essentially of:

(1) acrylic acid;

(2) an aromatic or aliphatic polyurethane acrylate or polyester acrylate in an amount of 10 to 60 weight percent of the acrylic acid;

(3) an alkali metal salt of acrylic acid in an amount of 1 to 10 percent by weight based on the acrylic acid; and

(4) a polymerization catalyst.

5,648,442

POLYMERIC SURFACE COATINGS

Roderick W. J. Bowers; Stephen A. Jones, and Peter W. Stratford, all of Middlesex, United Kingdom, assignors to Biocompatibles Limited, Middlesex, United Kingdom

PCT No. PCT/GB92/01215, § 371 Date Mar. 7, 1994, § 102(e) Date Mar. 7, 1994, PCT Pub. No. WO93/01221, PCT Pub. Date Jan. 21, 1993

PCT Filed Jul. 6, 1992, Ser. No. 175,348

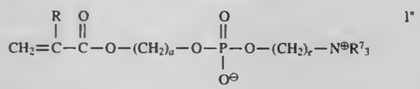
Claims priority, application United Kingdom, Jul. 5, 1991, 9114619; Aug. 8, 1991, 9117170; Apr. 24, 1992, 9208970

Int. Cl.[6] C08F *230/02;226/02*

U.S. Cl. 526—277 **42 Claims**

29. A polymer formed by copolymerising monomers consisting of:

i) a zwitterionic monomer of formula I"



I"

wherein

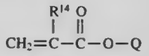
R is hydrogen or methyl,

a is 1 to 6

e is 1 to 4

each R^7 is lower alkyl, and

ii) a comonomer of formula VI"



VI"

R^{14} is hydrogen or methyl;

Q is an alkyl group having 12 to 24 carbon atoms,

said polymer having a molecular weight in the range 20,000 to 1 million, the molar ratio of the zwitterionic monomer of formula I" to the comonomer of formula VI" being in the range (5:95) to (50:50).

5,648,443

CYCLIC OLEFIN COPOLYMERS, COMPOSITIONS AND MOLDED ARTICLES COMPRISING THE COPOLYMERS

Takuji Okamoto; Junichi Matsumoto; Masami Watanabe, and Hiroshi Maezawa, all of Sodegaura, Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

Division of Ser. No. 867,227, Jun. 5, 1992, Pat. No. 5,629,398. This application Jan. 22, 1996, Ser. No. 589,544

Claims priority, application Japan, Oct. 5, 1990, 2-267815; Oct. 12, 1990, 2-274609; Feb. 6, 1991, 3-035050; Mar. 14, 1991, 3-073606; Apr. 5, 1991, 3-099839

Int. Cl.[6] C08F *232/04;232/08;* **C08L** *45/00*

U.S. Cl. 526—281 **16 Claims**

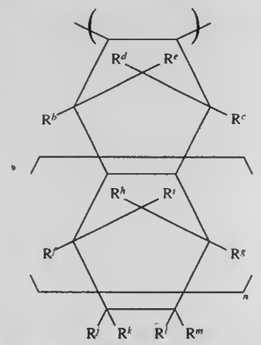
1. A molded article prepared from a cyclic olefin copolymer having the monomer components of:

(1) 80 to 99.9 mol % of the repeating unit [X]:

[X]

wherein R^a is hydrogen or a C_{1-20} hydrocarbon group; and

(2) 0.1 to 20 mol % of the repeating unit [Y]:



[Y]

wherein R^b to R^m, which may be the same or different from each other, are each independently hydrogen, a C_{1-20} hydrocarbon group or a substituent having a halogen atom, oxygen atom or nitrogen atom; R^j or R^k and R^l or R^m may form a ring together, and n is 0 or an integer value;

said cyclic olefin copolymer (1) having an elastic recovery property of at least 30%, as a sheet prepared by molding the copolymer, (2) an intrinsic viscosity of 0.01 to 20 dl/g, (3) a glass transition temperature of less than 30° C., and (4) a tensile modulus of less than 2,000 kg/cm^2, as determined by measurement at room temperature.

5,648,444

HYDROSILATION IN ESTERS WITHOUT HYDROXYL MOIETIES

Paul E. Austin, Williamstown, W. Va.; Kenrick M. Lewis, Rego Park, N.Y.; William E. Crane, Sistersville, and Rudolph A. Cameron, Vienna, both of W. Va., assignors to Witco Corporation, Greenwich, Conn.

Filed Nov. 15, 1995, Ser. No. 559,341

Int. Cl.[6] C08G *77/06*

U.S. Cl. 528—15 **15 Claims**

1. A process for making a polysiloxane polyether copolymer comprising reacting

(a) organohydrogensiloxane;

(b) unsaturated polyoxyalkylene polyethers; and

(c) an ester solvent without hydroxyl moieties;

in the presence of a noble metal hydrosilation catalyst in an inert atmosphere and a temperature which does not exceed the temperature at which the organohydrogensiloxane reacts with the solvent.

5,648,445

LIQUID 1,3-PHENYLENE DIISOCYANATE, 1,1'-BIPHENYL DIISOCYANATE AND 1,1'-OXY-BIS-(ISOCYANATO-BENZENE)

William E. Slack, Moundsville, and Rick L. Adkins, New Martinsville, both of W. Va., assignors to Bayer Corporation, Pittsburgh, Pa.

Filed Dec. 22, 1995, Ser. No. 577,999

Int. Cl.[6] C08G *18/30*

U.S. Cl. 528—49 **19 Claims**

1. A process for the production of a liquid, allophanate-modified diisocyanate having an isocyanate group content of from about 10 to about 45% which is a storage stable liquid at 25° C. comprising

(a) reacting

1) 1,3-phenylene diisocyanate or 1,1'-biphenyl diisocyanate or 1,1'-oxy-bis-(isocyanto benzene) with

2) a mono-alcohol

to form a urethane and

(b) converting urethane groups in the product of (a) to allophanate groups.

5,648,446

DIGUANAMINES AND PREPARATION PROCESS, DERIVATIVES AND USE THEREOF

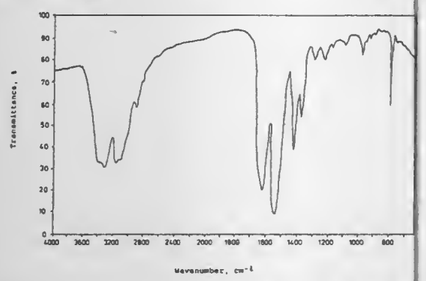
Tetsuya Oishi, Kanagawa-ken; Jin Suzuki, Tokyo; Kouhei Ohkawa, Kanagawa-ken, and Hiroshi Ono, Osaka, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Division of Ser. No. 201,391, Feb. 24, 1994, which is a continuation-in-part of Ser. No. 186,550, Jan. 26, 1994, abandoned, which is a continuation of Ser. No. 983,855, Mar. 2, 1993, abandoned. This application Mar. 30, 1995, Ser. No. 414,011

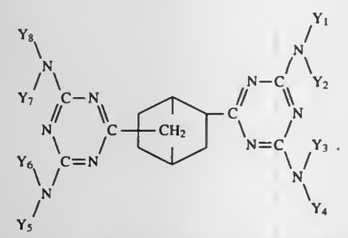
Claims priority, application Japan, Feb. 24, 1993, 5-035198; Feb. 24, 1993, 5-035199; Feb. 24, 1993, 5-035200; Mar. 3, 1993, 5-043048; Mar. 12, 1993, 5-051775; Apr. 14, 1993, 5-087499

Int. Cl.[6] C08G *18/30;12/30*

U.S. Cl. 528—60 **7 Claims**



1. A diguanamine derivative represented by the following formula (11):



(11)

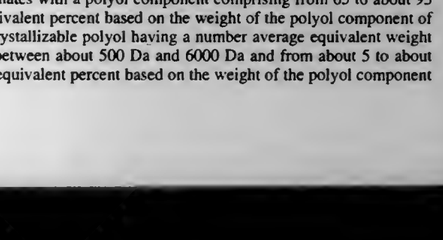
wherein the bonding sites of the 1,3,5-triazin-2-yl groups are the 2,5- or 2,6-positions, and Y_1, Y_2, Y_3, Y_4, Y_5, Y_6, Y_7 and Y_8 are the same or different and individually represent a substituent selected from the group consisting of a hydrogen atom and groups containing at least two carbon atoms, with the proviso that at least one of Y_1, Y_2, Y_3, Y_4, Y_5, Y_6, Y_7 and Y_8 is a group containing at least two carbon atoms, said group being selected from the group consisting of aliphatic groups, alicyclic groups, aromatic groups, heterocyclic groups containing 2 to 30 carbon atoms, groups represented by HO—Y_9— in which Y_9 is a divalent group containing at least 2 carbon atoms, groups represented by the following formula (13):

(13)

wherein Y_{10} is a group selected from the group consisting of ethylene, trimethylene and tetramethylene, m is an integer selected from 1 to 100, and Y_9 has the same meaning as defined above, and groups represented by the following formula (14):

(14)

wherein Y_{10} and m have the same meanings as defined in formula (13), or by the following formula (12):



(12)

wherein the bonding sites of the 1,3,5-triazin-2-yl groups are the 1,2-, 1,3- or 1,4-positions and Y_1, Y_2, Y_3, Y_4, Y_5, Y_6, Y_7 and Y_8 have the same meanings as defined in formula (11) with the proviso that at least one of Y_1, Y_2, Y_3, Y_4, Y_5, Y_6, Y_7 and Y_8 is a group containing at least two carbon atoms, said group being selected from the group consisting of aliphatic groups, alicyclic groups, aromatic groups, heterocyclic groups containing 2 to 30 carbon atoms, groups represented by HO—Y_9— in which Y_9 is a divalent group containing at least 2 carbon atoms, groups represented by the following formula (13):

(13)

wherein Y_{10} is a group selected from the group consisting of ethylene, trimethylene and tetramethylene, m is an integer selected from 1 to 100, and Y_9 has the same meaning as defined above, and groups represented by the following formula (14):

(14)

wherein Y_{10} and m have the same meanings as defined in formula (13).

5,648,447

ELASTOMERIC POLYURETHANES WITH IMPROVED PROPERTIES BASED ON CRYSTALLIZABLE POLYOLS IN COMBINATION WITH LOW MONOL POLYOXPROPYLENE POLYOLS

Stephen D. Seneker, Sissonville; Nigel Barksby, Dunbar, and Bruce D. Lawrey, Charleston, all of W. Va., assignors to ARCO Chemical Technology, L.P., Greenville, Del.

Filed Dec. 22, 1995, Ser. No. 577,959

Int. Cl.[6] C08G *18/10*

U.S. Cl. 528—63 **43 Claims**

1. A polyurethane elastomer comprising the reaction product of a chain extender with an isocyanate-terminated prepolymer prepared by reacting a stoichiometric excess of one or more di- or polyisocyanates with a polyol component comprising from 65 to about 95 equivalent percent based on the weight of the polyol component of a crystallizable polyol having a number average equivalent weight of between about 500 Da and 6000 Da and from about 5 to about 35 equivalent percent based on the weight of the polyol component

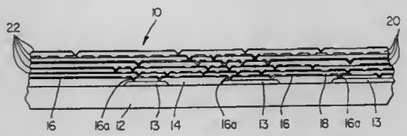
of a low monol polyoxyalkylene diol containing in excess of 70 weight percent oxypropylene moieties, a number average equivalent weight of from about 1000 Da to about 6000 Da, and a level of unsaturation of less than about 0.02 meq/g, said prepolymer having an NCO group content of from about 3 to less than 14 weight percent based on the weight of the prepolymer, at an isocyanate index between about 70 and 130.

5,648,448

METHOD OF PREPARATION OF POLYQUINOLINES

Matthew L. Marrocco, III, Santa Ana, and Ying Wang, Diamond Bar, both of Calif., assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Filed Jun. 6, 1995, Ser. No. 469,993
Int. Cl.[6] C08G *8/02;14/00*
U.S. Cl. 528—125 **20 Claims**



1. A method for preparing a polyquinoline polymer comprising the steps of:
a) providing a monomer comprising two fluoro groups, wherein each fluoro group is activated by a quinoline nucleus;
b) providing a diol monomer present as its bis-oxide salt or in the presence of a base deprotonating the diol; and
c) reacting the monomer comprising two fluoro groups with the diol monomer in a dipolar solvent to thereby form the polyquinoline polymer.

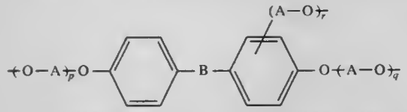
5,648,449

COPOLYESTERS, MOLDED ARTICLES FROM THE SAME AND AROMATIC TRIOLS USED FOR PRODUCING THE SAME

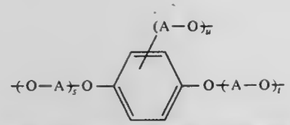
Shinji Tai; Tetsuya Hara; Akira Kageyu, and Tsugunori Kashimura, all of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Jan. 31, 1996, Ser. No. 594,948
Claims priority, application Japan, Jan. 31, 1995, 7-013523; Jan. 31, 1995, 7-032803; Feb. 1, 1995, 7-034710
Int. Cl.[6] C08G *63/18;* **B32B** *1/08;* **C07C** *43/11;* **B29C** *47/00;17/07*
U.S. Cl. 528—193 **20 Claims**

1. A copolyester comprising:
(i) diol units consisting essentially of ethylene glycol units and dicarboxylic acid units consisting essentially of terephthalic acid units,
said copolyester further comprising:
(ii) at least one group of triol units selected from the group consisting of:
(a) triol units (I) each represented by the following formula (I)



wherein A is a group represented by formula $—CH_2CH_2—$ or formula $—CH(CH_3)CH_2—$, B is a divalent hydrocarbon group, a carbonyl group, a sulfonyl group, an oxygen atom or a direct bond (−), and p, q and r are each, independently, an integer of 1 to 8; and
(b) triol units (II) each represented by the following formula (II)



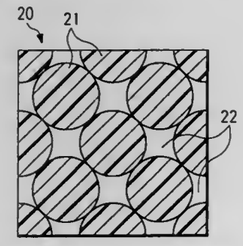
wherein A is a group represented by formula $—CH_2CH_2—$ or formula $—CH(CH_3)CH_2—$, and s, t and u are each, independently, an integer of 1 to 8,
in an amount of about 0.01 to 1 mole % based on the sum of the moles of total diol and said triol units.

5,648,450

SINTERABLE SEMI-CRYSTALLINE POWDER AND NEAR-FULLY DENSE ARTICLE FORMED THEREIN

Elmer Douglas Dickens, Jr., Richfield; Biing Lin Lee, Broadview Heights, both of Ohio; Glenn Alfred Taylor, Houston, Tex.; Angelo Joseph Magistro, Brecksville; Hendra Ng, E. Cleveland, both of Ohio; Kevin P. McAlea, and Paul F. Forderhase, both of Austin, Tex., assignors to DTM Corporation, Austin, Tex.

Continuation-in-part of Ser. No. 298,076, Aug. 30, 1994, Pat. No. 5,527,877, which is a continuation-in-part of Ser. No. 980,004, Nov. 23, 1992, Pat. No. 5,342,919. This application Jun. 17, 1996, Ser. No. 664,356
Int. Cl.[6] C08G *69/14*
U.S. Cl. 528—323 **70 Claims**



1. A method of producing a three-dimensional object, comprising the steps of:
applying a layer of a powder at a target surface, said powder comprised of a semi-crystalline organic polymer, said powder having a melting peak and a recrystallization peak, as shown in differential scanning calorimetry traces, which show little overlap when measured at a scanning rate of 10°–20° C./minute, and wherein said polymer is selected from the group consisting of nylon, polyacetal, polypropylene, polyethylene, and ionomers;
directing energy at selected locations of said layer corresponding to the cross-section of the object to be formed in said layer to sinter said powder thereat; and
repeating said applying and directing steps to form the object in layerwise fashion.

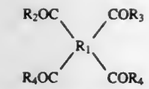
5,648,451

PROCESS FOR PRODUCING PHOTOSENSITIVE RESIN

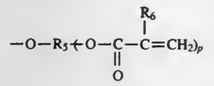
Nobuyuki Sashida; Toshio Banba, and Naoshige Takeda, all of Utsunomiya, Japan, assignors to Sumitomo Bakelite Company Limited, Tokyo, Japan

Filed Oct. 10, 1995, Ser. No. 541,582
Int. Cl.[6] C08G *69/26;73/10*
U.S. Cl. 528—353 **8 Claims**

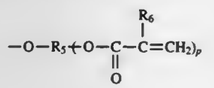
1. A process for producing a photosensitive resin, which comprises reacting a diamine with a tetracarboxylic acid tetraester represented by the formula (1) at a temperature of 0° to 50° C. in an aprotic polar solvent:



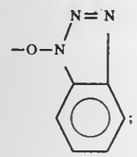
wherein R_1 is a tetravalent organic group; R_2 is a group represented by the formula:



in which R_5 is a divalent to hexavalent organic group, R_6 is H or CH_3 and p is an integer of 1 to 5; R_3 is a group represented by $—OCH_3$, $—OC_2H_5$, $—OC_3H_7$ or the formula:



and R_4 is a group represented by the formula:



and

wherein the tetracarboxylic acid tetraester represented by the formula (1) is obtained by subjecting to addition reaction a tetracarboxylic dianhydride, an alcohol compound represented by the formula R_2H and an alcohol compound represented by the formula R_3H and thereafter subjecting the resulting addition reaction product to dehydration-condensation with 1-hydroxy- 1,2,3,7 benzotriazole using a carbodiimide compound as a condensation agent.

5,648,452

POLYMERIZATION OF BETA-SUBSTITUTED-BETA-PROPIOLACTONES INITIATED BY ALKYLZINC ALKOXIDES

Lee Arnold Schechtman, Fairfield, and Joseph Jay Kemper, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 341,808, Nov. 18, 1994, abandoned, which is a continuation-in-part of Ser. No. 189,015, Jan. 28, 1994, abandoned. This application Jun. 1, 1995, Ser. No. 447,136
Int. Cl.[6] C08G *63/08;63/84*
U.S. Cl. 528—357 **26 Claims**

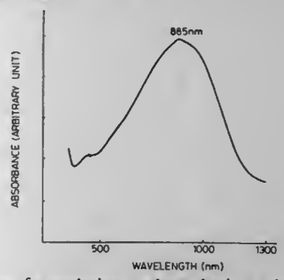
1. A method of preparing a polyester comprising polymerizing at least one β-substituted-β-propiolactone in the presence of an initiating amount of alkylzinc alkoxide for a reaction time and temperature sufficient to produce the polyester, wherein the alkylzinc alkoxide has the structure R^1ZnOR^2wherein R^1 and R^2 are independently a C_1, C_2, C_3, C_4, C_5, C_6, C_7, C_8, C_9, or C_{10} alkyl.

5,648,453

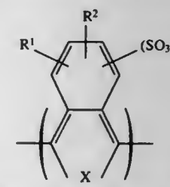
ELECTROCONDUCTIVE POLYMER AND PROCESS FOR PRODUCING THE POLYMER

Yoshihiro Saida; Yoshiaki Ikenoue, both of Chiba, and Reiko Ichikawa, Osaka, all of Japan, assignors to Showa Denko K.K., Tokyo, Japan

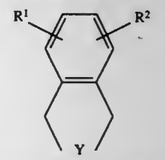
Continuation-in-part of Ser. No. 251,297, May 31, 1994, abandoned, and a continuation-in-part of Ser. No. 985,339, Dec. 4, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 476,977
Claims priority, application Japan, Dec. 4, 1991, 3-348295; Nov. 24, 1992, 4-336672; May 31, 1993, 5-129798
Int. Cl.[6] C08G *75/00;63/91*
U.S. Cl. 528—380 **7 Claims**



1. A process for producing a polymer having a chemical structure represented by the formula (I):



wherein R^1 and R^2 independently represent a hydrogen atom, a linear or branched alkyl or alkoxy group having 1 to 20 carbon atoms, a primary, secondary or tertiary amino group, a trihalomethyl group, a phenyl group or a substituted phenyl group wherein said substituted phenyl group is an alkyl-substituted phenyl group, X represents S, O, Se, Te, or NR^3, R^3 represents a hydrogen atom, a linear or branched alkyl group having 1 to 6 carbon atoms or a substituted or unsubstituted aryl group wherein said substituted aryl group is an alkyl-substituted aryl group, providing that the chain in the alkyl group of R^1, R^2 or R^3 or in the alkoxy group of R^1 or R^2 optionally contains another carbonyl, ether or amide moiety, M represents H^+, an alkali metal ion or a cation and m represents a numerical value in the range between 0.2 to 2;
which process comprises reacting a sulfonating agent with a compound having the formula (IV):



wherein R^1 and R^2 independently represent a hydrogen atom, a linear or branched alkyl or alkoxy group having 1 to 20 carbon atoms, a primary, secondary or tertiary amino group, a trihalomethyl group, a phenyl group or a substituted phenyl group wherein said substituted phenyl group is an alkyl-substituted phenyl group, Y represents S, O, Se, Te, S═O, Te═O or NR^3, R^3 represents a hydrogen atom, a linear or branched alkyl group having 1 to 6 carbon atoms or a substituted or unsubstituted aryl group wherein said substituted aryl

group is an alkyl-substituted aryl group, providing that the chain in the alkyl group of R^1, R^2 or R^3 or in the alkoxy group of R^1 or R^2 optionally contains a carbonyl, ether or amide moiety.

5,648,454

PROCESS FOR PRODUCING HIGH DUCTILE POLYESTERS

Daniel Joseph Brunelle, Burnt Hills, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 14, 1996, Ser. No. 600,643

Int. Cl.[6] C08F *6/00*; C08J *3/00*

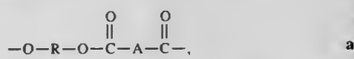
U.S. Cl. 528—491 **15 Claims**

1. A process for producing high ductile and high melting point polyesters comprising the step of contacting:

(a) a macrocyclic copolyester oligomer; and

(b) a polymerization catalyst,

wherein said macrocyclic copolyester oligomer comprises structural units of the formula



and R is a bridging radical selected from the group consisting of an alkylenes, aliphatic groups and aromatic groups, with the proviso that the oligomer comprises structural units with C_4 alkylene bridging radicals and structural units with bridging radicals other than C_4 alkylenes, and have greater than about 2.0 mole percent and less than about 8.0 mole percent of bridging radicals other than C4 alkylenes based on total moles of bridging radicals present in the oligomer, and A is a m- or p-linked aromatic or alicyclic radical.

5,648,455

ANTIBIOTIC WAP-8294A, METHOD FOR PREPARING THE SAME AND ANTIBACTERIAL COMPOSITION

Yoshitami Ohashi; Haruhisa Hirata; Seigo Nakaya; Azusa Katou; Yuji Aiba; Naomi Kokubo; Nobuyuki Suzuki, and Makoto Maeda, all of Tokyo, Japan, assignors to Wakamoto Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Feb. 13, 1995, Ser. No. 387,322

Claims priority, application Japan, Feb. 18, 1994, 6-043314; Apr. 19, 1994, 6-103229; Feb. 2, 1995, 7-016044

Int. Cl.[6] A61K *38/00*

U.S. Cl. 530—300 **12 Claims**

1. An antibiotic WAP-8294A or pharmaceutically acceptable salt thereof having the following physicochemical properties:

(1) Appearance: white powder;

(2) Melting Point: 213°–220° C. (decomposed);

(3) Solubility: soluble in water, methanol, n-butanol, dimethylformamide and dimethylsulfoxide and insoluble in acetone, ethyl acetate and chloroform;

(4) Color Reaction: positive in ninhydrin, Ehrlich, Rydon-Smith, potassium permanganate aqueous solution, sulfuric acid and iodine vapor reactions and exhibiting spots through irradiation with light rays of 254 nm emitted from a UV lamp; negative in Molisch, silver nitrate, ferric chloride and Dragendorff's reactions;

(5) Retention Time in High Performance Liquid Chromatography: 4.0 to 6.1 minutes, 8.0 minutes, 11.1 minutes, 12.5 minutes, 16.5 minutes, 17.9 minutes and 18.8 minutes;

(6) Ultraviolet Absorption Spectrum (in water): λ_{max} : 275 nm, 280 nm, 287 nm;

(7) Infrared Absorption Spectrum (FT-IR, KBr): Characteristic Absorption Spectrum: 3300 cm^{-1}, 1720–1715 cm^{-1}, 1636 cm^{-1}, 1541 cm^{-1}, 1404 cm^{-1}, 1207 cm^{-1}, 1137 cm^{-1};

(8) ^{1}H-NMR Spectrum: (270 MHz, D_2O): There are observed complicated proton signals originated from methyl, methylene, methine, and heterocycles or aromatic rings;

(9) Molecular Weight: 1,400–1,700;

(10) Qualitative Test for Organic Compound (sodium-melting method): The antibiotic is a compound comprising carbon, hydrogen, oxygen and nitrogen elements;

(11) Acid-complete hydrolysis provides, as ninhydrin-positive substances, Asp, Glu, Gly, Leu, Ser, Trp, Orn, N-methylvaline, β-hydroxyaspartic acid and N-methylphenylalanine;

(12) Specific Rotation: $[\alpha]_D^{20}$=+42°(c=0.5, H_2O);

(13) Classification into Base, Acid and Neutral: Amphoteric.

5,648,456

PENTAPEPTIDE ANTIBIOTICS

Adriano Malabarba, Binasco; Romeo Ciabatti, Novate Milanese, and Jürgen Kurt Kettenring, Varese, all of Italy, assignors to Gruppo Lepetit S.p.A., Milano, Italy

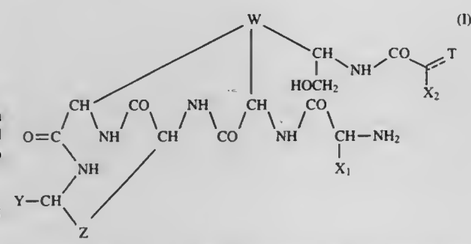
Division of Ser. No. 440,868, May 15, 1995, which is a continuation of Ser. No. 298,237, Aug. 30, 1994, abandoned, which is a continuation of Ser. No. 122,820, Sep. 17, 1993, abandoned, which is a continuation of Ser. No. 961,213, Oct. 15, 1992, abandoned, which is a continuation of Ser. No. 842,799, Feb. 27, 1992, abandoned, which is a continuation of Ser. No. 552,275, Jul. 12, 1990, abandoned. This application May 31, 1995, Ser. No. 454,807

Claims priority, application European Pat. Off., Jul. 18, 1989, 89113132

Int. Cl.[6] C07K *5/00;7/00;16/00;17/00*

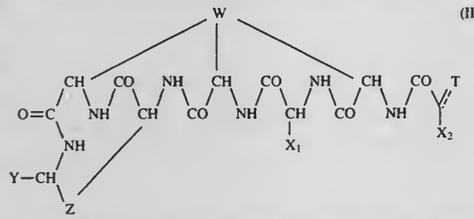
U.S. Cl. 530—317 **14 Claims**

1. A process for preparing a pentapeptide antibiotic of formula (I)



(I)

wherein W, Z, X_1, X_2 and T represents the structural groups present in pentapeptide antibiotics of a dalbaheptide, where Y represents a carboxy acid group, a lower alkyl carboxy ester, or a hydroxymethyl group; the salts of the pentapeptide with acids or bases; or the inner salts of the pentapeptide, which comprises submitting a dalbapeptide antibiotic of formula (II)



(II)

wherein W, Z, X_1, X_2, and T have the same meanings as above and Y represents a carboxy acid group, a lower alkyl carboxy ester, or hydroxy methyl group, to a reductive cleavage with an alkali metal borohydride, preferably selected from sodium borohydride, potassium borohydride and sodium cyanoborohydride, at a temperature between 0° C. and 40° C.

5,648,457

PURIFICATION METHOD FOR HYDROPHOBIC POLYPEPTIDE

Tsunetomo Takei; Toshimitsu Aiba; Kaoru Sakai, all of Tokyo, and Tetsuro Fujiwara, Morioka, all of Japan, assignors to Tokyo Tanabe Company Limited, Tokyo, Japan

Filed Nov. 21, 1994, Ser. No. 343,427

Claims priority, application Japan, Apr. 30, 1993, 5-103957

Int. Cl.[6] C07K *14/00;1/16*

U.S. Cl. 530—324 **28 Claims**

1. Method of purification of hydrophobic polypeptide comprising effecting the purification by high performance liquid chromatography using a mixed solvent as moving phase having from 3 to 10% by volume of trifluoroacetic acid, and polyvinyl alcohol-based column filler.

5,648,458

PEPTIDES AND COMPOUNDS THAT BIND TO ELAM-1

Steven E. Cwirla, Palo Alto; Ronald W. Barrett, Sunnyvale; William J. Dower, Menlo Park, and Christine L. Martens, Portola Valley, all of Calif., assignors to Affymax Technologies N.V., Curacao, Netherlands Antilles

Continuation of Ser. No. 57,295, May 5, 1993, abandoned, which is a continuation-in-part of Ser. No. 881,395, May 6, 1992, abandoned. This application Feb. 16, 1995, Ser. No. 390,156

Int. Cl.[6] A61K *38/00*; C07K *7/08;14/00*

U.S. Cl. 530—324 **14 Claims**

1. A peptide that binds ELAM-1 and which comprises an amino acid sequence $X_1X_2X_3WX_4X_5LWX_6X_7X_8X_9$ (SEQ ID NO: 113), wherein each residue can be independently selected as follows: X_1 is H, E, or D; X_2 is I, M or Nle; X_3 is T or S; X_4 is D, E, or L; X_5 is Q or E; X_6 is N or D; X_7 is L, M, V, or I; X_8 is M or Nle; and X_9 is N, S or Q.

5,648,459

DETERMINED DNA SEQUENCES DERIVED FROM A PAPILLOMAVIRUS GENOME, THEIR USES FOR IN VITRO DIAGNOSTIC PURPOSES AND THE PRODUCTION OF ANTIGENIC COMPOSITIONS

Stewart Cole, Chatillon Sous Bagneux, and Rolf E. Streeck, La Celle St-Cloud, both of France, assignors to Institut Pasteur, Paris, France

Division of Ser. No. 222,569, Mar. 25, 1994, Pat. No. 5,554,538, which is a continuation of Ser. No. 161,239, Nov. 10, 1993, abandoned, which is a continuation of Ser. No. 32,694, Mar. 17, 1993, abandoned, which is a continuation of Ser. No. 908,895, Jul. 8, 1992, abandoned, which is a continuation of Ser. No. 664,503, Mar. 5, 1991, abandoned, which is a continuation of Ser. No. 518,302, May 2, 1990, abandoned, which is a continuation of Ser. No. 128,341, Nov. 20, 1987, abandoned. This application Jun. 6, 1995, Ser. No. 466,711

Claims priority, application United Kingdom, Mar. 21, 1986, 86400609

Int. Cl.[6] C07K *14/025;16/08*; A61K *38/00*; C12N *7/00*

U.S. Cl. 530—324 **8 Claims**

1. A purified peptide obtained from a host cell transformed by a vector comprising a DNA fragment consisting of an open reading frame, which DNA fragment encodes said peptide and has a nucleotide sequence selected from the following group of nucleotide sequences numbered as shown in FIGS. 1*a* and 1*b*:

76–556
543–864
867–2811
2728–3808
3326–3575
3842–4079
4198–5611
5516–7091,

wherein said DNA fragment has been expressed.

5,648,460

Patent Not Issued For This Number

5,648,461

SYNTHETIC ANALOGS OF THROMBOSPONDIN AND THERAPEUTIC USE THEREOF

Jacob Eval, Baltimore; Bruce King Hamilton, Silver Springs, both of Md., and George Paul Tuszynski, Williamstown, N.J., assignors to W.R. Grace & Co.-Conn, New York, N.Y., and The Medical College of Pennsylvania, Philadelphia, Pa.

Division of Ser. No. 450,738, May 25, 1995, abandoned, which is a continuation of Ser. No. 185,614, Jan. 24, 1994, abandoned, which is a division of Ser. No. 24,436, Mar. 1, 1993, abandoned, which is a continuation-in-part of Ser. No. 587,197, Sep. 24, 1990, Pat. No. 5,190,920, and Ser. No. 483,527, Feb. 22, 1990, Pat. No. 5,190,918. This application Jun. 7, 1995, Ser. No. 483,434

Int. Cl.[6] A61K *38/00*; C07K *7/00;7/06*

U.S. Cl. 530—329 **1 Claim**

1. A polypeptide selected from the group consisting of:

CSVTCG	
CSVTCG-NH_2	
CSVTCGF	disulfide linked,
CSTSCG	
CSTSCG-NH_2	
CSTSCG	disulfide linked,
CSTSCG-NH_2	wherein the Cys residues are blocked.
CRVTCG	
CRVTCG	disulfide linked,
CRVTCG-NH_2	
RCRVTCG	disulfide linked,
CSVTCK	
CSVTCR-NH_2	
CSRTCG	
CRVTCG-NH_2	disulfide linked,
CRTSCG-NH_2	
CSTSCR-NH_2	
CRVTC-NH_2	and
CSTSCCSVTCG.	

5,648,462

PEPTIDE PURIFICATION METHOD USING NOVEL LINKER AND SOLID-PHASE LIGAND

Susumu Funakoshi, Otsu, and Hiroyuki Fukuda, Toyonaka, both of Japan, assignors to Setsuko Funakoshi, Otsu, Japan

Continuation of Ser. No. 44,325, Apr. 7, 1993, abandoned. This application Jan. 27, 1995, Ser. No. 379,039

Claims priority, application Japan, Oct. 9, 1990, 2-269640

Int. Cl.[6] A61K *38/04*

U.S. Cl. 530—344 **6 Claims**

1. A method for purifying a peptide produced by solid-phase synthesis, said method comprising the steps of:

a) obtaining a mixture of mature peptides having a free N-terminus amino group and immature end-capped peptides, wherein the peptides are covalently bound to a solid-phase support;

b) contacting the mixture of step (a) with a linker comprising:

(i) a first functional group at one terminus of the linker having the structure —SO_2—CH_2—CH_2—P, wherein P is an acti-

vated carbonate group capable of reacting with the free N-terminal amino group to form a urethane linkage between the linker and the N-terminal amino group, wherein the urethane linkage between the linker and the N-terminal amino group is cleavable upon alkaline conditions but stable under acidic conditions;

(ii) a functional group at the other terminus of the linker which has a protected thiol, wherein the protecting group is acid-labile,

whereby the free N-terminal amino group of the mature peptide selectively reacts with the activated carbonate to form a urethane linkage between the linker and the N-terminal amino group of the mature peptide;

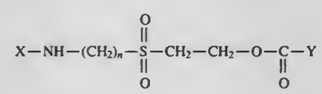
c) subjecting the mixture obtained from step (b) to strong acid to cleave the protecting group from the thiol to yield a free thiol and to cleave the peptides from the solid-phase support;

d) contacting the product of step (c) with a solid support-bound ligand that is capable of forming a stable covalent bond with the free SH on the linker, thereby forming a stable covalent bond between the solid phase ligand and the free thiol on the linker, thereby selectively binding the mature peptides via the free thiol and removing unbound peptides therefrom; and

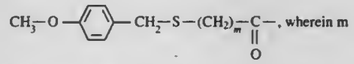
e) cleaving the urethane linkage between the linker and the N-terminal amino group under alkaline conditions.

2. The method of claim 1 wherein said linker has chemical structure (III):

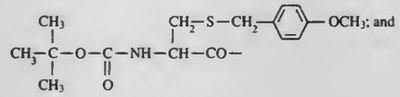
(III)



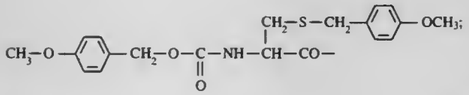
wherein n is an integer from one to four, X is one of



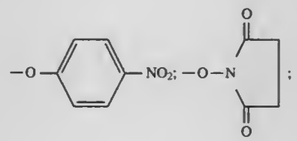
, wherein m represents an integer of one or two;



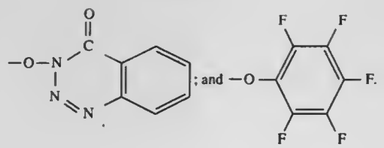
; and



Y is one of



-continued



; and

5,648,463

Patent Not Issued For This Number

5,648,464

HUMAN NOTCH AND DELTA BINDING DOMAINS IN TOPORYTHMIC PROTEINS, AND METHODS BASED THEREON

Spyridon Artavanis-Tsakonas, Hamden; Richard Grant Fehon, New Haven; Ilaria Rebay, New Haven, and Christine Marie Blaumueller, New Haven, all of Conn., assignors to Yale University, New Haven, Conn.

Continuation of Ser. No. 695,189, May 3, 1991, abandoned. This application Jun. 23, 1994, Ser. No. 264,534

Int. Cl.[6] C07K *14/435*

U.S. Cl. 530—350 **83 Claims**

1. A substantially purified protein comprising an amino acid sequence encoded by the DNA sequence depicted in FIG. **19**A (SEQ ID NO:13), **19**B (SEQ ID NO:14) or **19**C (SEQ ID NO:15), which is able to be bound by an antibody to a human Notch protein but not to a Notch protein of another species.

5,648,465

CLONING AND EXPRESSION OF NEUROCAN, A CHONDROITIN SULFATE PROTEOGLYCAN

Richard U. Margolis; Uwe Rauch, and Renee K. Margolis, all of New York, N.Y., assignors to New York University, New York, and The Research Foundation of State University of New York, Albany, both of N.Y.

Continuation of Ser. No. 922,911, Aug. 3, 1992, abandoned. This application Nov. 14, 1994, Ser. No. 340,428

Int. Cl.[6] C07K *14/47;* **C12N** *15/12*

U.S. Cl. 530—350 **4 Claims**

2. An isolated polypeptide having the amino acid sequence of a neurocan protein isolated from a mammal, said amino acid sequence having at least 80% identity to the rat neurocan sequence set forth in SEQ ID NO:49.

5,648,466

METHOD FOR DETECTING BOVINE DIARRHOEA VIRUS INFECTION, NUCLEOTIDE SEQUENCE ENCODING A PROTEIN INDUCED BY THIS VIRUS INFECTION AND RECOMBINANT PRGTEINS AND ANTIGENS RELATING THERETO

Danielle Marie Helene Jeanne Vandenbergh, Cheratte; Corine Martine Therese Gbislaine LeComte, Ocquier, both of Belgium; Gilles-Emile Chappuis, Lyons, and Jean-Jacques Pin, Saint Bonnet de Mure, both of France, assignors to Rhone Merieux, Lyons, France

Division of Ser. No. 417,276, Apr. 5, 1995, which is a continuation of Ser. No. 895,999, Jun. 11, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 467,923

Claims priority, application France, Nov. 6, 1991, 91 07076

Int. Cl.[6] C07H *21/04;* **C07K** *14/00*

U.S. Cl. 530—350 **5 Claims**

1. Nucleotide sequence consisting of SEQ ID No: 1.

5,648,467

NATURAL KILLER CELL STIMULATORY FACTOR

Giorgio Trinchieri, Wynnewood; Bice Perussia, Philadelphia, both of Pa.; Steven C. Clark, Winchester, Mass.; Gordon G. Wong, Jamaica Plain, Mass.; Rodney Hewick, Lexington, Mass.; Michiko Kobayashi, Brookline, Mass., and Stanley F. Wolf, Arlington, Mass., assignors to Genetics Institute, Inc., Cambridge, Mass.

Division of Ser. No. 584,941, Sep. 18, 1990, Pat. No. 5,457,038, which is a continuation-in-part of Ser. No. 307,817, Feb. 7, 1989, abandoned, which is a continuation-in-part of Ser. No. 269,945, Nov. 10, 1988, abandoned. This application Mar. 13, 1995, Ser. No. 403,013

Int. Cl.[6] A61K *38/20;* **C07K** *14/54*

U.S. Cl. 536—351 **10 Claims**

1. An isolated natural killer cell stimulatory factor (NKSF) protein capable of inducing the production of gamma interferon in vitro in human peripheral blood lymphocytes (PBL) and being substantially free from association with other proteinaceous materials, said protein comprising (a) a first subunit having an apparent molecular weight of approximately 40 kD under reducing conditions on SDS PAGE and comprising the amino acid sequence of FIGS. **1**A–1D from amino acids 23 to 328, and (b) a second subunit having an apparent molecular weight of approximately 30–35 kD under reducing conditions on SDS PAGE and comprising the amino acid sequence of FIGS. **2**A–2C from amino acid 57 to 253.

5,648,468

PROCESS FOR IDENTIFYING SEX ASSOCIATED EGG PROTEINS AND METHODS FOR INCREASING THE PROBABILITY THAT THE AVIAN OFFSPRING WILL BE THE DESIRED SEX

Glenn F. Spaulding, 4049 Via Marina, M115, Marina Del Ray, Calif. 90292

Continuation-in-part of Ser. No. 58,230, May 10, 1993, abandoned, which is a continuation-in-part of Ser. No. 490,930, Mar. 9, 1990, abandoned. This application Sep. 22, 1994, Ser. No. 310,439

Int. Cl.[6] C07K *1/00;* **A61K** *35/52*

U.S. Cl. 530—359 **1 Claim**

1. A sex-specific poultry egg yolk protein isolated and identified by two-dimensional electrophoresis, having a molecular weight and isoelectric point determined under denaturing and reducing conditions, and selected from the group consisting of 85 kD and 8.0 pI, 63 kD and 6.4 pI, 57 kID and 6.4 pI, 35 kD and 7.3 pI, 130 kD and 5.0 to 5.9 pI, 30 kD and 6.3 to 6.8 pI, and 29 kD and 7.0 pI.

5,648,469

MONOCLONAL ANTIBODIES REACTIVE WITH TRANSFERRIN RECEPTOR CYTOPLASMIC DOMAIN

Ian S. Trowbridge, San Diego, and Suhaila N. White, Poway, both of Calif., assignors to The Salk Institute for Biological Studies, La Jolla, Calif.

Continuation of Ser. No. 871,105, Apr. 20, 1992, abandoned. This application May 19, 1995, Ser. No. 444,418

Int. Cl.[6] C07K *16/28;14/705;* **C12N** *5/20*

U.S. Cl. 530—388.22 **5 Claims**

1. A hybridoma which produces monoclonal antibodies which bind specifically to the transferrin receptor cytoplasmic domain, wherein the hybridoma has an accession number selected from the group consisting of ATCC HB 11011 and HB 11010.

5,648,470

PHENYLBORONIC ACID COMPLEXING REAGENTS DERIVED FROM AMINOSALICYCLIC ACID

Mark L. Stolowitz, Long Beach, Calif., assignor to Prolinx, Inc., Bothell, Wash.

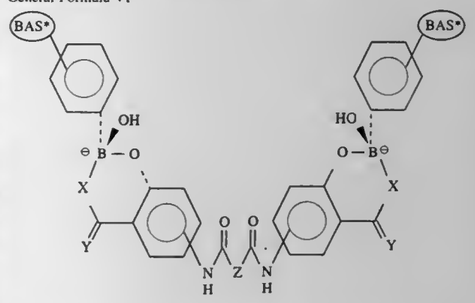
Division of Ser. No. 188,531, Jan. 28, 1994, Pat. No. 5,594,151. This application Jun. 7, 1995, Ser. No. 472,851

Int. Cl.[6] C07F *5/04*

U.S. Cl. 530—391.1 **4 Claims**

1. A bioconjugate having the general formula:

General Formula VI



wherein group X is selected from the group consisting of O, NH, NCH_3, NOH and $NOCH_3$, wherein group Y is selected from the group consisting of O, S, and NH, wherein Group Z is a spacer selected from the group consisting of an alkyl chain of from 1 to 16 carbon equivalents in length and a polyethylene glycol chain, up to 12 carbon equivalents in length, wherein said alkyl chain may contain intermediate amide functionalities, and wherein said Z group may contain a cleavable disulfide bond and wherein BAS* is a bioactive species.

5,648,471

ONE VIAL METHOD FOR LABELING ANTIBODIES WITH TECHNETIUM-99M

Scott Buttram; Richard T. Dean, both of Downingtown; John Lister-James, Glenmoore, and Koon Yan Pak, Norristown, all of Pa., assignors to Centocor, Inc., Malvern, Pa.

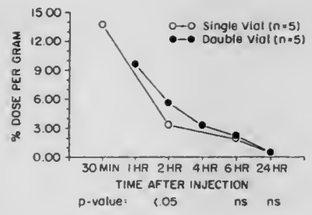
Continuation of Ser. No. 128,328, Dec. 3, 1987, abandoned. This application Mar. 7, 1991, Ser. No. 666,421

Int. Cl.[6] A61K *51/10;* **C07K** *16/00*

U.S. Cl. 424—1.49 **8 Claims**

1. A one vial method for labeling a free-sulfhydryl-containing antibody or antigen-binding fragment thereof with technetium-99m with a labeling yield exceeding 90%, comprising:

a. providing a vial containing a solution of an antibody mixture comprised of;



i. a free sulfhydryl containing antibody or antigen-binding fragment thereof;
ii. an agent for reducing technetium; and
iii. a D-glucaric acid or a salt there of; and

b. adding to the vial a solution of technetium-99m in an oxidized state.

5,648,472

PROCESS FOR PREPARING VIRUS-INACTIVATED IMMUNOGLOBULIN SOLUTIONS

Werner Gehringer, Vienna, Austria, and Patrick Selosse, Bordeaux, France, assignors to Octapharma AG, Glarus, Switzerland

Continuation of Ser. No. 923,446, Aug. 3, 1992, abandoned. This application Oct. 26, 1994, Ser. No. 329,684

Claims priority, application Germany, Aug. 2, 1991, 41 25 625.5

Int. Cl.[6] C07K *16/00;1/14;1/20*

U.S. Cl. 530—412 **9 Claims**

1. A process for preparing an envelope virus-inactivated immunoglobulin solution suitable for intravenous application, comprising treating the immunoglobulin with TNBP and/or TRITON×100, followed by an extraction using biologically compatible vegetable oil, which TNBP and/or TRITON×100 and vegetable oil are subsequently removed by solid-phase extraction on hydrophobic materials.

5,648,473

2'-DEOXY-2', 2'-DIFLUOROPYRIMIDINE NUCLEOSIDES AND 2'-DEOXY-2'-FLUOROPYRIMIDINE NUCLEOSIDES AND INTERMEDIATES

Ta-Sen Chou, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

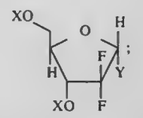
Division of Ser. No. 44,345, Apr. 7, 1993, Pat. No. 5,594,124, which is a continuation-in-part of Ser. No. 902,313, Jun. 22, 1992, abandoned. This application May 30, 1995, Ser. No. 454,447

Int. Cl.[6] C07H *15/00;* **C07G** *3/00*

U.S. Cl. 536—18.4 **9 Claims**

1. An alpha-anomer enriched 2,2-difluorocarbohydrate of the formula

(II)



wherein each X is independently selected from hydroxy protecting groups and Y is selected from the group consisting of trifluoromethanesulfonyloxy, 1,1,1-trifluoroethanesulfonyloxy, octafluorobutanesulfonyloxy and nonafluorobutanesulfonyloxy.

5,648,474

CRYSTALLINE ETOPOSIDE 4'-PHOSPHATE DIETHANOLATE

Denis Favreau, St-Hubert, Canada, assignor to Bristol-Myers Squibb, Princeton, N.J.

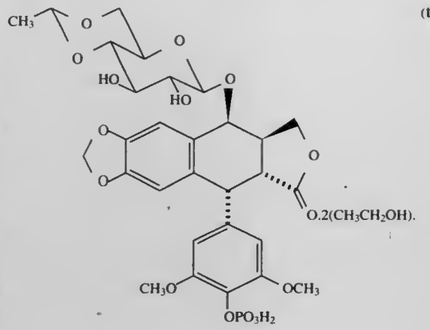
Filed Oct. 8, 1991, Ser. No. 773,056

Int. Cl.[6] A61K *31/70*

U.S. Cl. 536—17.1 **6 Claims**

1. A crystalline etoposide-4'-phosphate diethanolate having the formula

(III)



5,648,475

PROCESS FOR PREPARING ALKYL GLYCOSIDES HAVING A LOW DEGREE OF GLYCOSIDATION

Jürgen Grützke, Bochum, and Stefan Schmidt, Haltern, both of Germany, assignors to Huels Aktiengesellschaft, Marl, Germany

Filed Sep. 7, 1995, Ser. No. 524,530

Claims priority, application Germany, Sep. 7, 1994, 44 31 854.5

Int. Cl.[6] C07H *1/00*

U.S. Cl. 536—18.6 **21 Claims**

1. A process for the preparation of an alkyl glycoside having C_8 to C_{20} alkyl groups and a mean degree of glycosidation of between 1.05 and 1.4, comprising glycosidating by reacting a saccharide syrup having a dextrose equivalent of 90 to 95 with an alcohol, and filtering off oligosaccharide present during the preparation.

5,648,476

Patent Not Issued For This Number

5,648,477

GENETICALLY ENGINEERED PLANT CELLS AND PLANTS EXHIBITING RESISTANCE TO GLUTAMINE SYNTHETASE INHIBITORS, DNA FRAGMENTS AND RECOMBINANTS FOR USE IN THE PRODUCTION OF SAID CELLS AND PLANTS

Jan Leemans, Heusden; Johan Botterman, Zwijnaarde, both of Belgium; Charles Thompson, Grand Lancy/Genege, and Rao Mouva, Geneva, both of Switzerland, assignors to Plant Genetic Systems, N.V., Gent, Belgium

Division of Ser. No. 525,300, May 17, 1990, Pat. No. 5,561,236, which is a continuation of Ser. No. 131,140, Nov. 5, 1987, abandoned. This application Jun. 7, 1995, Ser. No. 477,320

Claims priority, application United Kingdom, Mar. 11, 1986, 86400521; Jan. 21, 1987, 87400141

Int. Cl.[6] C12N *15/11;15/00;* **A01H** *4/00*

U.S. Cl. 536—23.7 **30 Claims**



1. A vector comprising a chimeric gene comprising in sequence:
(a) a promoter recognized by polymerases of a plant cell; and
(b) a DNA fragment encoding a protein with acetyltransferase activity on a glutamine synthetase inhibitor, wherein said protein is capable of inactivating said glutamine synthetase inhibitor in a plant cell.

5,648,478

TISSUE-SPECIFIC ENHANCER ACTIVE IN PROSTATE

Daniel R. Henderson, 769 Garland Dr., Palo Alto, Calif. 94303

Continuation-in-part of Ser. No. 182,247, Jan. 13, 1994. This application Jan. 30, 1995, Ser. No. 380,916

Int. Cl.[6] C07H *21/04;* **C12N** *15/63*

U.S. Cl. 536—241 **5 Claims**

2. An isolated polynucleotide comprising (1) the nucleotide sequence from 503 to 2974 of SEQ ID NO: 1, and (2) the prostate-specific antigen promoter operably linked to a structural gene other than prostate-specific antigen.

5,648,479

Patent Not Issued For This Number

5,648,480

PROCESS FOR MAKING OLIGONUCLEOTIDES HAVING MODIFIED INTERNUCLEOSIDE LINKAGES

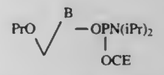
Robert L. Letsinger, Wilmette, Ill., and Sergei M. Gryaznov, San Mateo, Calif., assignors to Northwestern University, Evanston, Ill.

Division of Ser. No. 376,291, Jan. 23, 1995, Pat. No. 5,476,925, which is a continuation of Ser. No. 12,050, Feb. 1, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 467,219

Int. Cl.[6] C07H *21/00*

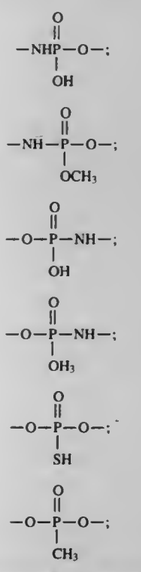
U.S. Cl. 536—25.34 **9 Claims**

1. A process for synthesizing oligonucleotides on a solid support having a linker with a terminal amino group which comprises:
(a) coupling the solid support with an activated nucleoside β-cyanoethyl-N,N-diisopropylphosphoramidite of the formula:



wherein B is a base selected from adenine, thymine, guanine, cytosine and purine; Pr is a suitable hydroxyl protecting group; and CE is cyanoethyl;
(b) oxidizing the resulting immobilized phosphoramidite to give a diester phosphoramidate linkage between the solid support and the nucleoside;
(c) removing the Pr protecting group of the immobilized nucleoside diester phosphoramidate to give a 5'- hydroxy group;
(d) coupling the immobilized nucleoside diester phosphoramidite with an activated nucleoside having a 3'-phosphorus containing group capable of reacting with the 5'-hydroxy; and
(e) repeating steps (c) and (d) until the appropriate oligonucleotide is obtained.

6. The process of claim 1 wherein from 1 to 4 of internucleoside links are selected from the following moieties which are depicted in a 3'→5' orientation:



and wherein the remainder of the internucleoside links are phosphodiester links.

5,648,481

NUCLEIC ACID PROBES FOR THE DETECTION OF SHIGELLA

Kyriaki Parodos, Marlborough, and Janice McCarty, Hyde Park, both of Mass., assignors to Amoco Corporation, Chicago, Ill.

Continuation of Ser. No. 150,764, Nov. 12, 1993, abandoned, which is a continuation of Ser. No. 738,800, Jul. 31, 1991, abandoned. This application Jan. 19, 1995, Ser. No. 375,241

Int. Cl.[6] C07H *21/04*

U.S. Cl. 536—24.32 **50 Claims**

3. A nucleic acid probe for the detection of a member of the genus Shigelia wherein the probe detects at least one untyped isolate or at least one isolate of a serotype of each of the four species of the genus Shigelia and wherein the nucleotide sequence of the probe consists of a specific sequence element, optionally incorporated into a larger non-Shigella sequence for assay purposes, wherein said specific sequence element is selected from the group consisting of:

a) SEQ ID NO: 1;

b) fragments of SEQ ID NO: 1, which are identical over their length to a portion of SEQ ID NO: 1 or are complementary over their length to a portion of a selected strand of SEQ ID NO: 1 and wherein the fragments specifically hybridize to nucleic acid from members of the genus of Shigella and/or enteroinvasive *E. coli;*

c) NT11-2 (SEQ ID NO: 2);

d) fragments of NT11-2, which are identical over their length to a portion of NT11-2 or are complementary over their length to a portion of a selected strand of NT11-2 and wherein the fragments specifically hybridize to nucleic acid from members of the genus of Shigelia and/or enteroinvasive *E. coli;* and

e) an RNA sequence having the sequence of any one of a) through d), wherein U is substituted for T.

43. An isolated, exclusively chromosomal, Shigella specific nucleic acid fragment identified by the steps of:

a) providing fragmented DNA isolated from *Shigella flexneri* as target DNA;

b) providing a competitor mix containing nucleic acid isolated from at least one species of enterovirulent *Escherichia coli* with the proviso that said enterovirulent species is not selected from the group of enteroinvasive *Escherichia coli;*

c) conducting subtractive hybridization between said target DNA and said competitor mix;

d) isolating the portion of target DNA remaining unhybridized in step c) to obtain a fraction enriched for Shige!la specific sequences;

e) hybridizing a portion of said fraction to nucleic acid present in said competitor mix;

f) repeating steps c) through e) substituting said fraction as target DNA in step c), proceeding to step g) when hybridization to competitor nucleic acid in step e) is substantially reduced;

g) using said fraction to obtain one or more clones from a *Shigella flexneri* DNA library;

h) identifying a Shigella specific fragment present in a clone of step g) or subclone thereof by screening for:

(i) hybridization to nucleic acid isolated from one or more organisms selected from the group consisting of *Shigella dysenteriae, Shigella flexneri, Shigella boydii,* and *Shigella sonnei,* and optionally, enteroinvasive *Escherichia coli;* and

(ii) exclusivity towards a panel of exclusivity organisms,

whereby a Shigella specific fragment which is substantially exclusive of non-enteroinvasive *Escherichia coli* Enterobacteriaceae is obtained.

5,648,482

PRIMERS TARGETED TO CYP2D6 GENE FOR DETECTING POOR METABOLIZERS OF DRUGS

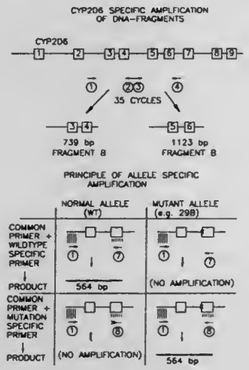
Urs Albert Meyer, Oberwil, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 716,500, Jun. 17, 1991, abandoned. This application Mar. 2, 1994, Ser. No. 204,697

Claims priority, application European Pat. Off., Jun. 22, 1990, 90810467; May 29, 1991, 91108867

Int. Cl.[6] C07H *21/04;* **C12P** *19/34;* **C12Q** *1/68*

U.S. Cl. 536—24.33 **5 Claims**



1. A primer comprising a nucleic acid sequence of 10 to 25 bases, said primer being capable of amplifying by the polymerase chain reaction a nucleic acid sequence of an allele of the CYP2D6 gene coding for the cytochrome P450 isozyme P450IID6, said sequence of said allele having a mutated or wild type sequence, said primer containing at the 3' end at least one base complementary to base number 1062, 1072, 1085, 1749, 1934, 2637 or 4268 of the wild type or mutated CYP2D6 gene sequence and having bases in the 5' direction which are sufficiently complementary to said gene to hybridize therewith.

5,648,483

CONTINUOUS TRANSESTERIFICATION METHOD FOR PREPARING POLYOL POLYESTERS

Eric Paul Granberg; Richard Gerard Schafermeyer, both of Cincinnati, and James Anthony Letton, Forest Park, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 7, 1995, Ser. No. 481,779

Int. Cl.[6] C07H *1/00*

U.S. Cl. 536—119 **19 Claims**

1. A process for preparing a polyol fatty acid polyester, which process comprises the steps of:

A. preparing a fatty add alkyl ester by:

1) contacting a fatty acid source with an intimate mixture of an inert gas and a lower alkyl alcohol at a temperature of between about 20° C. to about 100° C., at a pressure of from about 14 to about 150 psia in the presence of a catalyst;

2) reacting the fatty acid source with the lower alkyl alcohol to form the fatty acid alkyl ester; and

B. transesterifying the fatty acid alkyl ester and a polyol in a solvent-free two-stage process wherein a first stage comprises forming a polyol fatty add partial ester and a lower alkyl alcohol from a reaction mixture containing a polyol and at least a portion of the fatty acid alkyl ester in the presence of an effective mount of a basic catalyst and optionally an effective mount of soap emulsifier, and a second stage comprises forming a highly esterified polyol fatty acid polyester and additional lower alkyl alcohol from a reaction mixture containing the polyol fatty acid partial ester, the remaining portion of the fatty acid alkyl ester and an effective mount of a basic catalyst,

wherein, both stages are conducted in the presence of an inert gas, and the lower alkyl alcobol formed in the first stage and the second stage is removed by and contained in the inert gas, thereby forming the intimate mixture of the inert and the lower alkyl alcohol which is recycled to and used in step (A).

5,648,484

CATALYTIC ENANTIOSELECTIVE SYNTHESIS OF A SPRIOFUSED AZETIDINONE

Guang-Zhong Wu, Somerville, N.J., assignor to Schering Corporation, Kenilworth, N.J.

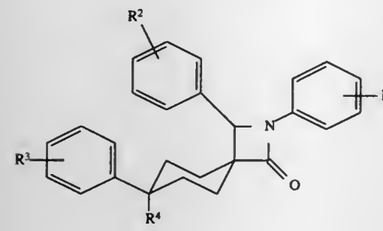
Continuation of Ser. No. 399,859, Mar. 7, 1995, abandoned. This application May 25, 1995, Ser. No. 451,111

Int. Cl.[6] C07D *205/12;317/72;319/08;* **C07F** *7/18*

U.S. Cl. 540—203 **20 Claims**

1. A process for producing a compound of the formula:

(1.0)



wherein:

R^1, R^2 and R^3 are each independently selected from the group consisting of:

(a) H;

(b) halo;

(c) $—OR^5$ wherein R^5 is: H, C_1 to C_6 alkyl, aryl, aralkyl, alkaryl, heteroaryl, C_2 to C_6 alkenyl, C_2 to C_6 alkynyl, C_3 to C_7 cycloalkyl, C_3 to C_7 cycloalkenyl, or $—C(O)R^6$ wherein R^6 is C_1 to C_6 alkyl, aryl, or $—OR^7$ wherein R^7 is C_1 to C_6 alkyl or aryl; and

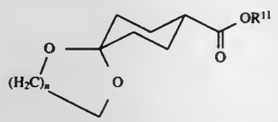
(d) $—C(O)R^8$ wherein R^8 is C_1 to C_6 alkyl, aryl, heteroaryl, aralkyl, cycloalkyl, $—OR^9$ (wherein R^9 is C_1 to C_6 alkyl or aryl), or $—N(R^{10})_2$ (wherein each R^{10} is independently selected from the group consisting of H, C_1 to C_6 alkyl and aryl);

R^4 is H or —OH;

said process comprising:

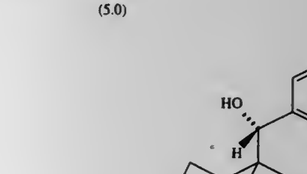
(a) reacting, under an inert atmosphere, in a suitable organic solvent, a compound of formula:

(2.0)



with an enolization base and a silylation reagent to produce a compound of the formula:

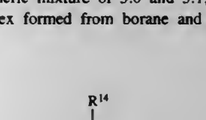
(3.0)



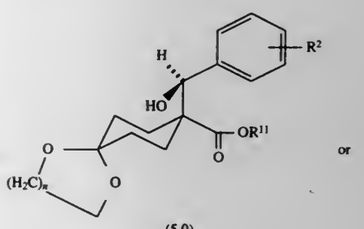
wherein n is 1 or 2, R^{11} is a C_1 to C_4 alkyl group, R^{12} is a C_1 to C_4 alkyl group;

(b) reacting, under an inert atmosphere, in a suitable organic solvent, the compound of Formula 3.0 with a chiral catalyst and a compound of the formula:

(4.0)

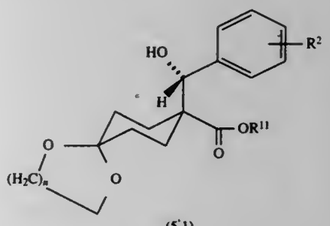


wherein R^2 is defined above, with the proviso that R^2 is not OH, and then reacting the resulting product with a deprotecting reagent to remove the $—Si(R^{12})_3$ protecting group thereby forming a compound of the formula:



or

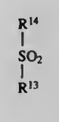
(5.0)



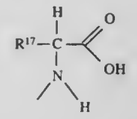
(5.1)

or an enantiomeric mixture of 5.0 and 5.1; said chiral catalyst being a complex formed from borane and a compound of the formula:

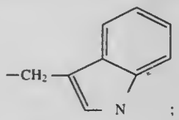
(6.0)



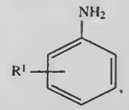
wherein R^{13} is aryl or fused aryl, and R^{14} is



wherein R^{17} is $—CH(CH_3)_2$, $—C(CH_3)_3$, phenyl, benzyl or

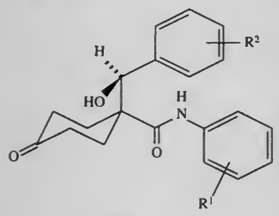


(c) reacting a compound of Formula 5.0 or 5.1 or an enantiomeric mixture of 5.0 or 5.1, in a suitable organic solvent, with a compound of the formula:

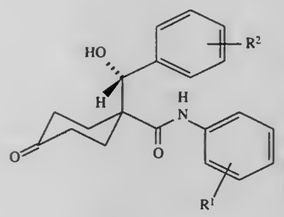


(7.0)

wherein R^1 is as defined above, with the proviso that R^1 is not OH, with a Lewis acid and with a strong acid, to produce a compound of the formula:



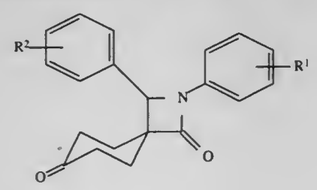
or



(8.0) (8.1)

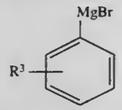
or an enantiomeric mixture of 8.0 or 8.1;

(d) reacting a compound of Formula 8.0 or 8.1 or an enantiomeric mixture of 8.0 and 8.1, in a suitable solvent, with a reagent that converts hydroxy groups into leaving groups, with a strong base, and with a phase transfer catalyst, to produce a compound of the formula:



(9.0)

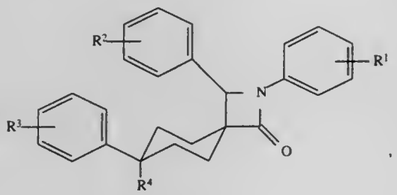
(e) reacting a compound of Formula 9.0, in a suitable solvent, with a compound of the formula:



(10.0)

wherein R^3 is as defined above, with the proviso that R^3 is not OH, to produce a compound of the formula:

(1.0)



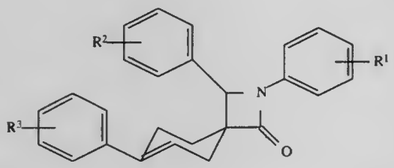
wherein R^4 is a hydroxy group;

with the proviso that R^1, R^2 and R^3 are not —OH;

(f) when R^1, R^2, and/or R^3 in Formula 1.0 in (e) above is $—OR^5$, wherein R^5 is aralkyl, optionally hydrogenating said compound of Formula 1.0 in an appropriate alkanol solvent with a hydrogenation catalyst and a Lewis acid selected from the group consisting of MgX_2, TiX_4, and ZnX_2, wherein X is Cl or Br, thereby converting said $—OR^5$ to —OH; and

(g) optionally converting said —OH R^4 substituent to H by heating a compound of Formula 1.0 (wherein R^4 is —OH) with an acid to produce a dehydrated compound of Formula 1.2:

(1.2)



and then hydrogenating the compound of Formula 1.2 in a C_1 to C_6 alkanol solvent using a hydrogenation catalyst to produce a compound of Formula 1.0 wherein R^4 is H.

5,648,485

β, β-DIHYDROXY MESO-SUBSTITUTED CHLORINS, ISOBACTERIOCHLORINS, AND BACTERIOCHLORINS

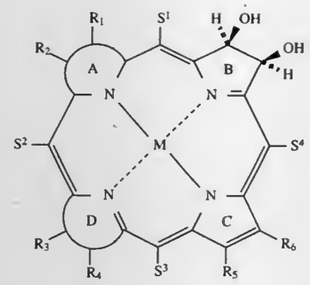
David Dolphin, and Christian Brückner, both of Vancouver, Canada, assignors to University of British Columbia, Vancouver, Canada

Filed Oct. 26, 1994, Ser. No. 329,577

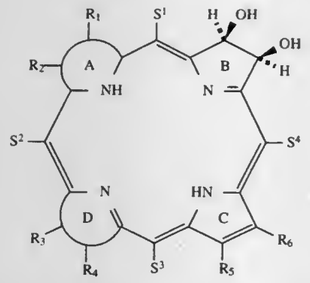
Int. Cl.[6] C07D *487/22*

U.S. Cl. 540—474 **12 Claims**

1. A β,β'-dihydroxy meso-substituted chlorin, bacteriochlorin or isobacteriochlorin compound having the formula (I) or (II):

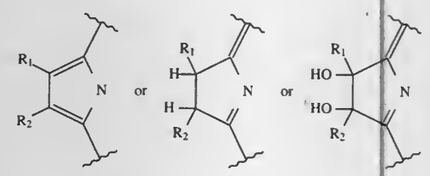


or

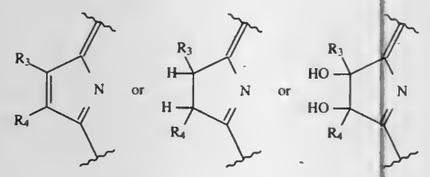


wherein M is a metal selected from the group consisting of Ni(II), Cu(II), Zn, Sn, Ge, Si, Ga, Al, Mn(III), Gd(III), In and Tc;

A is a ring having the structure:



D is a ring having the structure:



R_1 through R_6 are independently a hydrogen atom, a lower alkyl group, a lower alkyl carboxylic acid or acid ester group, keto, hydroxy, nitro, amino, or a group that, taken together with another ring, ring substituent or meso-substituent, forms a fused 5- or 6-membered ring; and

S^1 through S^4 are H, substituted or unsubstituted alkyl groups, substituted or unsubstituted cycloalkyl groups, or substituted or unsubstituted aromatic rings, which may be the same or different, with the proviso that at least one of S^1 through S^4 is not H.

5,648,486

(I) **COMPOUNDS AND METHODS FOR THE TREATMENT OF INFLAMMATORY AND IMMUNE DISORDERS**

Xiong Cai, Allston; Sajjat Hussoin, Lexington; San-Bao Hwang, Wayland; David Killian, Cambridge, all of Mass., and T. Y. Shen, Charlottesville, Va., assignors to CytoMed, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 933,991, Aug. 24, 1992, Pat. No. 5,434,151, which is a division of Ser. No. 912,788, Jul. 13, 1992, Pat. No. 5,358,938. This application May 12, 1993, Ser. No. 62,391

The portion of the term of this patent subsequent to Oct. 12, 2011, has been disclaimed.

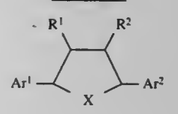
Int. Cl.[6] C07D *333/22;413/00*

U.S. Cl. 544—124 **30 Claims**

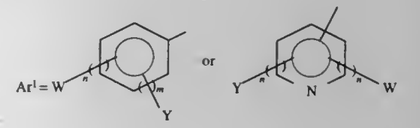
1. A compound of the formula:

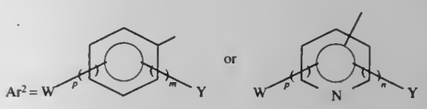
(II)

Formula I



wherein:





wherein:

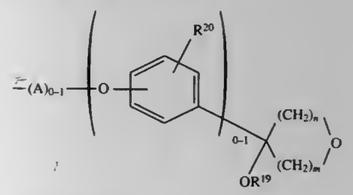
X is O, S, S(O), $S(O)_2$, CR^9NR^{10};

W is independently:

(1) $—AN(R^3)C(O)N(OM)R^4$, $—AN(OM)C(O)(R^3)R^4$, $—AN(R^3)C(O)N(OM)R^4$, $—AN(OM)C(O)R^4$, $—AC(O)N(OM)R^4$, $—N(OM)C(O)N(R^3)R^4$, $—N(R^3)C(O)N(OM)R^4$, $—N(OM)C(O)R^4$, $—C(O)N(OM)R^4$, $—OR^6N(R^5)R^6—(C_5H_4N)R^6R^7$, $—OR^6N(COR^5)R^6—(C_5H_4N)R^6R^7$, $—OR^6OC(O)N(COR^5)R^6—(C_5H_4N)R^6R^7$, $—OR^6O(CO)N(CO_2R^6)R^6(C_5H_4N)R^6R^7$, $—A(C_5H_4N)R^6R^7$, or $—OR^6N(CO_2R^5)R^6—(C_5H_4N)R^6R^7$;

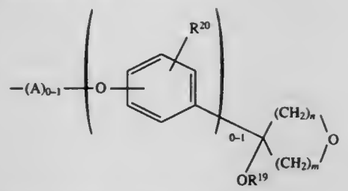
(2) an amidohydroxyurea of the formula: $—N(R^{19})C(O)C(R^{19})_2N(OM)C(O)NHR^{20}$, $—C(O)N(R^{19})C(R^{19})_2N(OM)C(O)NHR^{20}$, $—AN(R^{19})C(O)C(R^{19})_2N(OM)C(O)NHR^{20}$, $—AC(O)N(R^{19})C(R^{19})_2N(OM)C(O)NHR^{20}$, $—NHC(O)N(OM)C(R^{19})_2C(O)N(R^{19})_2$; or, $—NHC(O)N(OM)C(R^{19})_2N(R^{19})C(O)R^{19}$;

(3) an oxalkane of the structure:

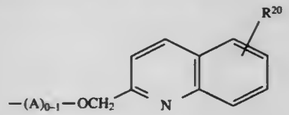


wherein n and m are independently 1–4;

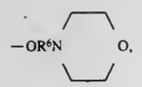
(4) a thioalkane of the structure:



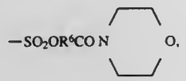
or (5) a quinolyl methoxy of the structure:



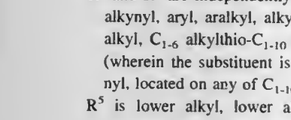
n is 1 or 2;
m is 1, 2 or 3;
p is 0 or 1;
A is alkyl, alkenyl, alkynyl, alkyaryl, aralkyl, halo lower alkyl, halo lower alkyl, halo lower alkynyl, —C_{1-10}alkyl(oxy)C_{1-10}alkyl—, —C_{1-10}alkyl(thio)C_{1-10}alkyl—, —$N(R^3)C(O)$alkyl—, —$N(R^3)C(O)$alkenyl—, —$N(R^3)C(O)$alkynyl—, —$N(R^3)C(O)$(alkyl)oxy(alkyl)—, —$N(R^3)C(O)$(alkyl)thio(alkyl)—, —$N(R^3)C(O)N$(alkyl)—, —$N(R^3)C(O)N$(alkenyl)—, —$N(R^3)C(O)N$(alkynyl)—, —$N(R^3)C(O)N$(alkyl)oxy(alkyl)—, —$N(R^3)C(O)N$(alkyl)thio(alkyl)—, —$N(R^3)C(O_2)$alkyl—, —$N(R^3)C(O_2)$alkenyl—, —$N(R^3)C(O_2)$alkynyl—, —$N(R^3)C(O_2)$(alkyl)oxy(alkyl)—, —$N(R^3)C(O_2)$(alkyl)thio(alkyl)—, —$OC(O_2)$alkyl—, —$OC(O_2)$alkenyl—, —$OC(O_2)$alkynyl—, —$OC(O_2)$(alkyl)oxy(alkyl)—, —$OC(O_2)$(alkyl)thio(alkyl)—, —$N(R^3)C(S)$alkyl—, —$N(R^3)C(S)$alkenyl—, —$N(R^3)C(S)$alkynyl—, —$N(R^3)C(S)$(alkyl)oxy(alkyl)—, —$N(R^3)C(S)$(alkyl)thio(alkyl)—, —$N(R^3)C(S)N$(alkyl)—, —$N(R^3)C(S)N$(alkenyl)—, —$N(R^3)C(S)N$(alkynyl)—, —$N(R^3)C(S)N$(alkyl)oxy(alkyl)—, —$N(R^3)C(S)N$(alkyl)thio(alkyl)—, —$N(R^3)C(S)S$(alkyl)—, —$N(R^3)C(S)S$(alkenyl)—, —$N(R^3)C(S)S$(alkynyl)—, —$N(R^3)C(S)S$(alkyl)oxy(alkyl)—, —$N(R^3)C(S)S$(alkyl)thio(alkyl)—, —$SC(S)S$(alkyl)—, —$SC(S)S$(alkenyl)—, —$SC(S)S$(alkynyl)—, —$SC(S)S$(alkyl)oxy(alkyl)—, and —$SC(S)S$(alkyl)thio(alkyl)—;
M is hydrogen, a pharmaceutically acceptable cation, or a metabolically cleavable leaving group;
Y is independently:
(a) hydrogen;
(b) R^{1-6}, R^8, R^{10}, —OR^3, —OR^{11}, —OR^{12}, R^3S—, R^3S—, R^3SO—, R^5SO—, R^3SO_2—, R^5SO_2—, CF_3O—, CF_3S—, CF_3SO—, —CF_3SO_2—, —OCH_2oxycyclopropyl, —$OCH_2C(O)OR^3$, —OCH_2OR^3, —$OCH_2C(O)R^3$, —OCH_2C_{3-8}cycloalkyl, —$OCH_2CH(R)R^3$, —OCH_2cyclopropyl, —OCH_2-aryl, —$OCH_2CH(OH)CH_2OH$, aryl-CH_2—SO_2—, $(R^3)_2CHCH_2SO_2$—, —$CH_2CH(OH)CH_2OH$, CF_3SO_2—, R^3R^4N—, —$OCH_2CO_2R^3$, —NR^3COR^3, —$OCONH_2$, —$OCONR^3R^4$, —$CONH_2$, —$CONR^3R^4$, —CR^3R^4, —$SO_2NR^3R^4$, —$SONR^3R^4$, —$CH_3OCH_2NR^3R^6$, —SNR^3R^4, —$CO_2R^{3\prime}$, —$NR^3R^4SO_2R^3$, —NR^3R^4SOR, —COR^3, —$CONR^3$, —NO_2, —CN, —$N(R^5)CONR^3R^4$, —$CH_2N(R^5)CONR^3R^4$, —$OR^6NR^3R^4$, —$O(O)CR^5$, —$O(O)CNR^3R^4$,

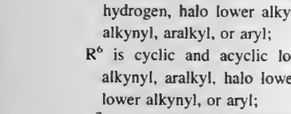


—$SR^6NR^3R^4$, —$S(O)R^6NR^3R^4$, —$SO_2R^6NR^3R^4$,

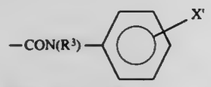


—SR^6OH, —$S(O)R^6OH$, —SO_2R^6OH,
—$OR^6OC(O)N(CO_2R^6)R^4$;
O-alkyl-N-(aryl)-C(O)-heterocycle;

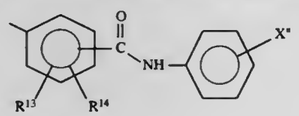




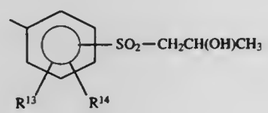
(c) a heterocycle optionally substituted with a group described in Y section (b);
(d)



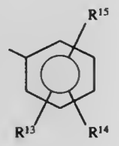
wherein X' is halo, —C(O)aryl, CF_3, OR^3; —NR_3COR^3; —$OCONH_2$; —$CR^3R^3R^4$; —$C(O)R^3$; —CH_2OR^3; —$CH_2CO_2R^3$; —$CH_2OC(O)R^3$; $R^3CH(R^3)CH_2SO_3$—; —$NHCH_2COOR^3$; $N^+R^3R^3R^4R^7$; —$NR^3SO_2R^3$; $C(O)R^3$; NO_2; or CN; or



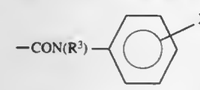
or



or



wherein R^{13}, R^{14} and R^{15} independently represents: BO- wherein B is —CH_2-oxacyclopropyl, —CH_2OR^3, —$CH_2C(O)R^3$, —$CH_2CH(R^3)R^3$, —CH_2Aryl, —$CH_2CH(OH)$—CH_2OH; $R^3C(R^3)_2CH_2SO_2$; or R^{13}-R^{14} or R^{14}-R^{15} are joined together to form a bridge such as —$OCHR^2CHR^2$—$S(O)_n$— wherein n is 0 to 3; or



(d)

where X^n is halo, —C(O)aryl, —CF_3, —OR^3; —CH_2OR^3; —$CH_2CO_2R^3$; —CH_2COR^3; —$NHCH_2COOR^3$; —$N^+R^3R^3R^4R^7$.
R^1 and R^2 are independently hydrogen, halogen, or lower alkyl; —COOH; —$CONR^{16}R^{17}$ wherein R^{16} and R^{17} independently represent C_{1-6} alkyl and hydrogen, —$COOR^3$, alkenyl; —COR^3; —CH_2OR^5; lower alkynyl; —$CH_2NR^4R^3$; —CH_2SR^3; =O; —OR^3; or —NR^3R^4;
R^3 and R^4 are independently cyclic and acyclic alkyl, alkenyl, alkynyl, aryl, aralkyl, alkyaryl, hydrogen, C_{1-6} alkoxy-C_{1-10} alkyl, C_{1-6} alkylthio-C_{1-10} alkyl, and C_{1-10} substituted alkyl (wherein the substituent is independently hydroxy or carbonyl, located on any of C_{1-10});
R^5 is lower alkyl, lower alkenyl, lower alkynyl, hydroxyl, hydrogen, halo lower alkyl, halo lower alkenyl, halo lower alkynyl, aralkyl, or aryl;
R^6 is cyclic and acyclic lower alkyl, lower alkenyl, lower alkynyl, aralkyl, halo lower alkyl, halo lower alkenyl, halo lower alkynyl, or aryl;
R^7 is an organic or inorganic anion;
R^8 is halo alkyl, halo lower alkyl, halo lower alkenyl, halo lower alkynyl, lower alkenyl, lower alkynyl, aralkyl, or aryl;
R^9 is independently hydrogen, halogen, lower alkyl, halo lower alkyl, lower alkenyl, lower alkynyl, —$CONR^3R^4$, —COR^5, —CO_2R^5, —CH_2OR^5, —$CH_2NR^5R^5$, —CH_2SR^5, =O, =NR^5, —NR^3R^4, —$NR^3R^4R^7$, or —OR^5;
R^{10} is —R^3, —R^8, —$C(O)N(OR^3)R^3$, or —OR^3.
R^{11} is phenyl-$S(O)_g$-lower alkyl; $(R^3O)_d$-phenyl-$S(O)_g$-lower alkyl; $(CN)_d$-phenyl-$S(O)_g$-lower alkyl; $(halo)_d$-phenyl-$S(O)_g$-lower alkyl; $(R^3COO)_d$-phenyl-$S(O)_g$-lower alkyl; $(R^3OCO)_d$-phenyl-$S(O)^g$-lower alkyl; $(R^3CO)_d$-phenyl-$S(O)_g$-lower alkyl; $(R^3O)_d$-phenyl-O-lower alkyl; $(CN)_d$-phenyl-O-lower alkyl; $(halo)_d$-phenyl-O-lower alkyl; $(R^3COO)_d$-phenyl-O-lower alkyl; $(R^3OCO)_d$-phenyl-O-lower alkyl; $(R^3R^3N)_d$-phenyl-$S(O)_g$-lower alkyl; or $(R^3CO)_d$-phenyl-O-lower alkyl where d is 1, 2, 3, 4, or 5; and g is 0, 1, or 2;
R^{12} is selected from the group consisting of alkyl; substituted alkyl wherein the substituent is selected from the group consisting of hydroxy and amino; -lower alkyl-O-R^{18}, wherein R^{18} is —$PO_2(OH)^-M^+$ wherein M^+ is a pharmaceutically acceptable cation; —$C(O)(CH_2)_2CO_2^-$ M^+, or —S_3^- M^+; -lower alkylcarbonyl-lower alkyl; -carboxy lower alkyl; -lower alkylamino-lower alkyl; N,N-di-substituted amino lower alkyl—, wherein the substituents each independently represent lower alkyl; pyridyl-lower alkyl; imidazolyl-lower alkyl; imidazolyl-Y-lower alkyl wherein Y is thio or amino; morpholinyl-lower alkyl; pyrrolidinyl-lower alkyl; thiazolinyl-lower alkyl; piperidinyl-lower alkyl; morpholinyl-lower hydroxyalkyl; N-pyrryl; piperazinyl-lower alkyl; N-substituted piperazinyl-lower alkyl, wherein the substituent is lower alkyl; triazolyl-lower alkyl; tetrazolyl-lower alkyl; tetrazolylamino-lower alkyl; and thiazolyl-lower alkyl;
R^{19} is H, lower alkyl, or lower alkenyl; and
R^{20} is H, halogen, lower alkoxy, or lower alkyl.

5,648,487

PROCESS FOR THE PREPARATION OF AMINOTRIAZINE DERIVATIVES

Ernst Beriger, Allschwil, and Haukur Kristinsson, Bottmingen, both of Switzerland, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

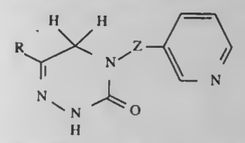
Continuation-in-part of Ser. No. 221,303, Mar. 31, 1994, Pat. No. 5,446,154, which is a division of Ser. No. 991,672, Dec. 16, 1992, Pat. No. 5,324,842, which is a continuation-in-part of Ser. No. 612,753, Nov. 13, 1990, abandoned. This application Jun. 2, 1995, Ser. No. 460,474

Claims priority, application Switzerland, Nov. 15, 1989, 4107/89

Int. Cl.[6] C07D *253/06*

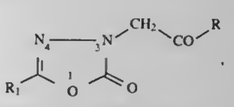
U.S. Cl. 544—182 **13 Claims**

1. A process for the preparation of a compound of the formula



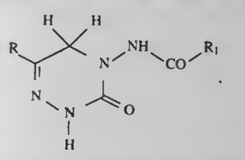
(IV)

wherein R is hydrogen, C_1–C_6alkyl, C_3–C_6cycloalkyl, C_1–C_4alkyl substituted by from 1 to 9 halogen atoms or by from 1 to 3 radicals selected from the group consisting of C_1–C_3alkoxy, C_1–C_3alkylthio and phenyl, phenyl or phenyl substituted by from 1 to 3 radicals selected from the group consisting of halogen, methyl, ethyl, methoxy, methylthio and nitro, and Z is —N=CH— or —NH—CH_2—,
which process comprises reacting with hydrazine hydrate a compound of formula



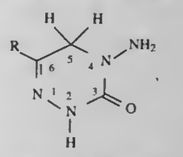
(II)

wherein R_1 is hydrogen, C_1–C_4alkyl, C_3–C_6cycloalkyl, C_1–C_4alkyl substituted by from 1 to 9 chlorine atoms, C_1–C_3alkoxy, C_1–C_3alkylthio, C_1–C_3alkylsulfinyl, C_1–C_3alkylsulfonyl, phenyl, phenyl substituted by from 1 to 3 radicals selected from the group consisting of halogen, methyl, ethyl, methoxy, methylthio and nitro, or pyridyl, converting the resulting compound of the formula



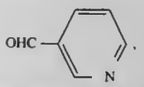
(III)

by acid hydrolysis into a compound of the formula I,



(I)

and reacting the compound of the formula I with the aldehyde of the formula



(V)

into the resulting compound of the formula IV where Z is —N=CH— or further converting by selective reduction the compound of the formula IV where Z is —N=CH— into a compound of the formula IV where Z is —NH—CH_2—.

5,648,488

COMPOSITIONS STABILIZED WITH RED-SHIFTED TRIS-ARYL-S-TRIAZINES

Tyler Arthur Stevenson, Teaneck, N.J., assignor to Ciba-Geigy Corporation, Tarrytown, N.Y.

Continuation-in-part of Ser. No. 281,381, Jul. 27, 1994, Pat. No. 5,556,973. This application Jun. 2, 1995, Ser. No. 463,573

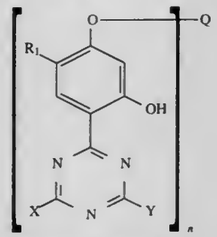
Int. Cl.[6] C07D *251/24;* **C08K** *5/3492*

U.S. Cl. 544—215 **15 Claims**

1. A composition stabilized against the deleterious effects of actinic radiation which comprises

(a) an organic material subject to degradation when exposed to actinic radiation, and

(b) an effective stabilizing mount of a compound of formula V



V

wherein for the compound of formula V:

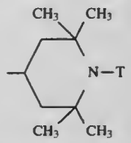
X and Y are the same or different and are phenyl or phenyl substituted by one to three lower alkyl, halogen, hydroxy or alkoxy;

R_1 is straight or branched chain alkyl of 3 to 24 carbon atoms, straight or branched chain alkenyl of 2 to 24 carbon atoms, cycloalkyl of 5 to 12 carbon atoms, halogen, $—SR_3$, $—SOR_3$, or $—SO_2R_3$; said alkyl or cycloalkyl substituted by one to eight halogen, $—R_4$, $—OR_5$, $—N(R_5)_2$, $=NR_5$, =O, $—CON(R_5)_2$, $—COR_5$, $—COOR_5$, $—OCOR_5$, —CN, $—NO_2$, $—SR_5$, $—SOR_5$, $—SO_2R_5$, $—P(O)(OR_5)_2$, morpholinyl, piperidinyl, 2,2,6,6-tetramethylpiperidinyl, piperazinyl or N-methylpiperazinyl groups or combinations thereof; or said alkyl or cycloalkyl interrupted by one to six phenylene, —O—, $—NR_5—$, $—CONR_5—$, —COO—, —OCO—, $—C(R_5)=C(R_5)—$ or —CO— groups or combinations thereof; or said alkyl or cycloalkyl both substituted and interrupted by combinations of the groups mentioned above;

R_3 is alkyl of 1 to 20 carbon atoms, alkenyl of 3 to 18 carbon atoms, cycloalkyl of 5 to 12 carbon atoms, phenylalkyl of 7 to 15 carbon atoms, aryl of 6 to 10 carbon atoms or said aryl substituted by one or two alkyl of 1 to 4 carbon atoms;

R_4 is aryl of 6 to 10 carbon atoms, or said aryl substituted by one to three halogen, alkyl of 1 to 8 carbon atoms, alkoxy of 1 to 8 carbon atoms or combinations thereof; cycloalkyl of 5 to 12 carbon atoms; or phenylalkyl of 7 to 15 carbon atoms, or said phenylalkyl substituted on the phenyl ring by one to three halogen, alkyl of 1 to 8 carbon atoms, alkoxy of 1 to 8 carbon atoms or combinations thereof; or straight or branched chain alkenyl of 2 to 18 carbon atoms;

R_5 is defined as R_4, or R_5 is also hydrogen or straight or branched chain alkyl of 1 to 24 carbon atoms; or R_5 is a group of the formula

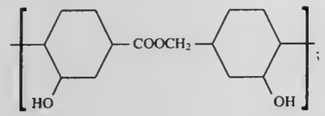


where T is hydrogen, oxyl, hydroxyl, alkyl of 1 to 12 carbon atoms, said alkyl substituted by at least one hydroxyl or lower alkoxy, benzyl or alkanoyl of 2 to 18 carbon atoms;

n=2 to 4;

when n=2, Q is straight or branched chain alkylene of 2 to 16 carbon atoms; or said alkylene substituted by one to eight —OH; or said alkylene interrupted by one to eight —CH=CH— or —O—; or said alkylene both substituted and interrupted by combinations of the groups mentioned above; or Q is xylylene or a group $—CONH-R_8-NHCO—$, $—CH_2CH(OH)CH_2O-R_9-OCH_2CH(OH)CH_2—$, $—CO-R_{10}—CO—$, or $—(CH_2)m-COO-R_{11}-OOC-(CH_2)m—$,

where m=1 to 3; or Q is



R_8 as defined below;

R_9 is alkylene of 2 to 50 carbon atoms; or said alkylene interrupted by 1 to 10 —O—, phenylene, or a group -phenylene-G-phenylene- in which G is —O—, —S—, $—SO_2—$, $—CH_2—$, or $—C(CH_2)_2—$;

R_{10} is alkylene of 2 to 10 carbon atoms, or said alkylene interrupted by 1 to 4 —O—, —S—, or —CH=CH—; or R_{10} is arylene of 6 to 12 carbon atoms;

R_{11} is alkylene of 4 to 20 carbon atoms, or said alkylene interrupted by 1 to 8 —O—;

when n=3, Q is a group $—[(CH_2)_mCOO]_3-R_{12}$ where m=1 to 3 and R_{12} is an alkanetriyl of 3 to 12 carbon atoms; and

when n=4, Q is a group $—[(CH_2)_mCOO]_4—R_{13}$ where m=1 to 3 and R_{13} is an alkanetetryl of 4 to 12 carbon atoms.

5,648,489

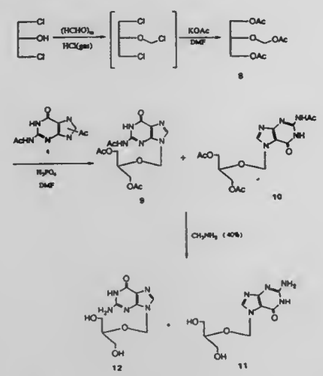
SYNTHESES OF ACYCLIC GUANINE NUCLEOSIDES

Chung K. Chu; Jinfa Du, and Chunguang Wang, all of Athens, Ga., assignors to University of Georgia Research Foundation, Athens, Ga.

Division of Ser. No. 245,024, May 17, 1994. This application Jun. 6, 1995, Ser. No. 466,802

Int. Cl.[6] C07D *473/18;* **E07B** *43/04*

U.S. Cl. 544—276 **2 Claims**



1. A method for the preparation of 9-[(1,3-dihydroxy-2-propoxy)methyl]guanine, comprising the steps of reacting N^2,N^9-diprotected guanine with 2-acetoxymethoxy-1,3-diacetoxypropane in the presence of phosphoric acid or polyphosphoric acid.

5,648,490

PROCESS FOR THE PREPARATION OF 5-FORMYLAMINOPYRIMIDINES

Franz Thalhammer, and Jürgen Graefe, both of Trostberg, Germany, assignors to SKW Trostberg Aktiengesellschaft, Trostberg, Germany

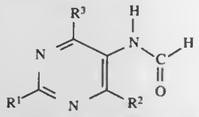
Filed Mar. 28, 1995, Ser. No. 413,132

Claims priority, application Germany, Mar. 28, 1995, 44 10 678.5

Int. Cl.[6] C07D *239/50*

U.S. Cl. 544—320 **21 Claims**

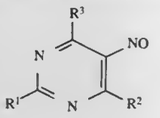
1. A process for the preparation of a 5 -formylamino-pyrimidine of the formula:



(I)

in which R^1, R^2 and R^3 are the same or different and signify H, OH, SH, NH_2, alkylamino, halogen, O-alkyl, S-alkyl, alkyl, aryl, and alkyl is an aliphatic radical containing up to carbon atoms, comprising consisting essentially of:

subjecting a corresponding 5-nitrosopyrimidine of the formula



in which R^1, R^2 and R^3 have the same meaning as above, to a reductive formylation in the presence of a noble metal catalyst, formic acid and of a salt thereof.

5,648,491

PROCESS FOR PRODUCING N-AMINO-1-HYDROXY-ALKYL-IDENE-1,1-BISPHOSPHONIC ACIDS

Richard R. Dauer, Longmont, Colo.; Lisa DiMichele, North Plainfield, N.J.; Mauricio Futran, and Gerard R. Kieczykowski, both of Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

PCT No. PCT/US94/09620, § 371 Date May 20, 1996, § 102(e) Date May 20, 1996, PCT Pub. No. WO95/06052, PCT Pub. Date Mar. 2, 1995

PCT Filed Aug. 24, 1994, Ser. No. 617,851

Int. Cl.[6] C07D *405/06*

U.S. Cl. 546—22 **14 Claims**

1. A process for the continuous preparation of compounds of the structural Formula I

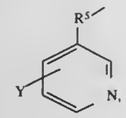


I

wherein Z is selected from the group consisting of:

a) $H_2N—C_{2-5}alkyl—$;

b)



wherein $R^5—$ is C_{1-5}alkyl, and Y is selected from

(i) hydrogen;

(ii) C_{1-5}alkyl;

(iii) R^6O;

(iv) R^6S;

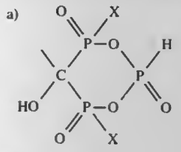
(v) R^6R^6N;

(vi) halogen; R^6 is H or C_{1-5}alkyl; and

c) $C_{2-6}alkyl-(N—CH_3)C_2H_4—$; and

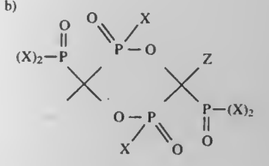
R_1 is a member selected from the group consisting of:

a)



and

b)



and wherein X is —OH or Cl;

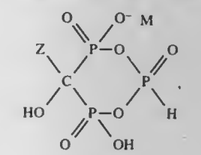
that comprises:

a) continuously mixing a carboxylic acid of formula

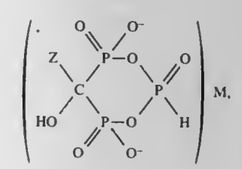
Z—COOH,

wherein Z is as defined previously, with H_3PO_3 and PCl_3 in methanesulfonic acid (MSA), or optionally PCl_3 in MSA; and

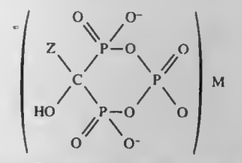
b) continuously adding aqueous base to the overflow mixture containing the compound of Formula I to produce the compounds Of Formula IIa, IIb or IIc; and



IIA



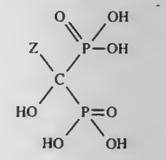
IIB



IIC

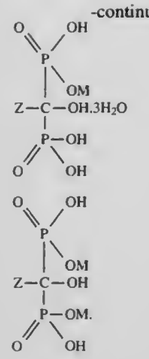
wherein Z is as defined above and M is a monovalent, divalent, or trivalent cation;

c) hydrolyzing the Compounds of IIa, IIb or IIc to produce the compounds of Formula IIA, IIB and IIIC



IIIA

-continued



5,648,492

PROCESS FOR PREPARING ISOQUINOLINE COMPOUNDS

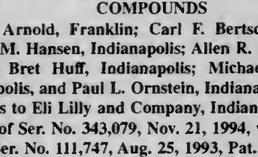
M. Brian Arnold, Franklin; Carl F. Bertsch, Indianapolis; Marvin M. Hansen, Indianapolis; Allen R. Harkness, Indianapolis; Bret Huff, Indianapolis; Michael J. Martinelli, Indianapolis, and Paul L. Ornstein, Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 343,079, Nov. 21, 1994, which is a division of Ser. No. 111,747, Aug. 25, 1993, Pat. No. 5,399,696, which is a division of Ser. No. 939,780, Sep. 3, 1992, Pat. No. 5,284,957. This application Jun. 1, 1995, Ser. No. 456,577

Int. Cl.[6] C07D *215/14*

U.S. Cl. 546—147 **15 Claims**

1. A process for the preparation of a compound of the formula



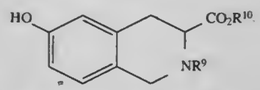
VIIIb

wherein:

R^9 is acyl or alkoxycarbonyl;

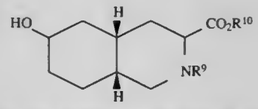
R^{10} is a chiral ammonium group; which comprises the steps of:

(1) reducing a compound of formula



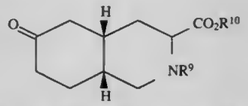
VI

wherein R^9 is as defined previously and R^{10} is C_1–C_6 alkyl or aryl, to produce a compound of the formula



VII

(2) oxidizing said formula VII compound to prepare a compound of formula

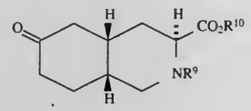


VIII

wherein R^9 is as defined previously and R^{10} is C_1–C_6-alkyl or aryl, which is a mixture of diastereomers;

(3) equilibrating the mixture of diastereomers in the presence of IIIB a strong base;

(4) separating the compound of formula



VIIIb

wherein

R^9 is as defined previously; and

R^{10} is a chiral ammonium group.

5,648,493

PREPARATION OF 7-(3-AMINO- AND 3-AMINO-METHYL-1-PYRROLIDINYL)-3-QUINOLONECARBOXYLIC ACIDS AND -NAPHTHYRIDONECARBOXYLIC ACIDS

Uwe Petersen, Leverkusen; Andreas Krebs, Odenthal; Thomas Schenke, Bergisch-Gladbach; Klaus Grohe; Michael Schriewer, both of Odenthal; Ingo Haller, Wuppertal; Karl Georg Metzger, Wuppertal; Rainer Endermann, Wuppertal, and Hans-Joachim Zeiler, Velbert, all of Germany, assignors to Bayer Aktiengeselischaft, Leverkusen, Germany

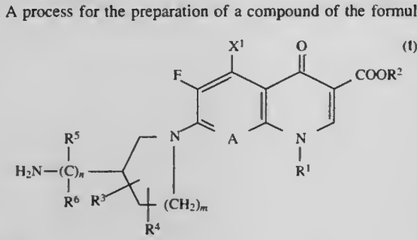
Division of Ser. No. 529,016, May 25, 1990, Pat. No. 5,061,712. This application Jun. 19, 1991, Ser. No. 717,748

Claims priority, application Germany, Jun. 7, 1989, 39 18 544.3

Int. Cl.[6] C07D *215/233;401/04*

U.S. Cl. 546—156 **3 Claims**

1. A process for the preparation of a compound of the formula



(I)

in which

X^1 represents hydrogen, amino, alkylamino having 1 to 4 carbon atoms, dialkylamino having 1 to 3 carbon atoms per alkyl group, hydroxyl, alkoxy having 1 to 4 carbon atoms, mercapto, alkylthio having 1 to 4 carbon atoms, arylthio, halogen or alkyl having 1 to 4 carbon atoms,

R^1 represents straight-chain or branched alkyl having 1 to 5 carbon atoms, which can optionally be substituted by 1 to 3 halogen atoms, or alkenyl having 2 to 4 carbon atoms, cycloalkyl having 3 to 6 carbon atoms, 2-hydroxyethyl, methoxy, amino, methylamino, ethylamino, dimethylamino or phenyl which is optionally substituted by 1 or 2 fluorine atoms,

R^2 represents hydrogen, alkyl having 1 to 4 carbon atoms or (5-methyl-2-oxo-1,3-dioxol-4-yl)-methyl,

R^3 represents hydrogen, C_1–C_3-alkyl, hydroxyl, C_1–C_3-alkoxy, C_1–C_3-alkylthio or halogen,

R^4 represents hydrogen or methyl,

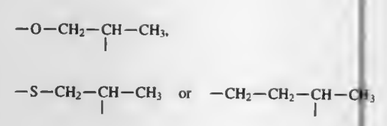
R^5 and R^6 are identical or different and represent hydrogen or methyl,

m represents 0, 1 or 2,

n represents 0 or 1 and

A represents N or C—R^7 wherein

R^7 represents H, halogen, methyl, cyano, nitro, hydroxyl or methoxy, or together with R^1 can also form a bridge having the structure

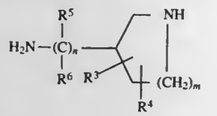


which can have the R- or S-configuration, which comprises condensing an oxo compound of the formula



(V)

with an amino compound of the formula

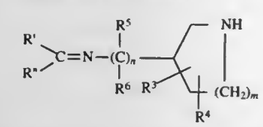


(VI)

in which

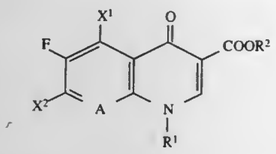
R' represents hydrogen, straight-chain or branched alkyl having 1 to 10 carbon atoms or phenyl, which can optionally be substituted by one to five identical or different substituents from the group consisting of C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_2-alkylthio, hydroxyl, nitro, halogen, carboxyl, C_1–C_4-alkoxycarbonyl, cyano and phenyl, or represents naphthyl, and

R" represents hydrogen, straight-chain or branched alkyl having 1 to 5 carbon atoms or phenyl, wherein R' and R", together with the carbon atom to which they are bonded, can also form a 5- or 6-membered aliphatic ring which is optionally substituted by one or more methyl or ethyl radicals, to produce a compound of the formula



(III)

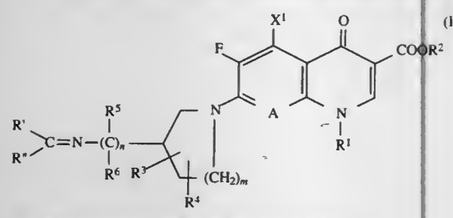
reacting the compound of the formula (III) with a compound of the formula



(II)

in which

X^2 represents halogen, to give a compound of the formula

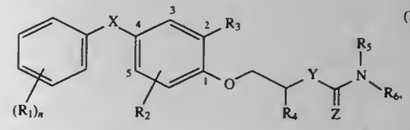


(IV)

and then eliminating the amino-protective group



1. A compound of the formula



(I)

in which

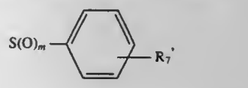
R_1 is halogen, C_1–C_3alkyl, halo-C_1–C_3alkyl, C_1–C_3alkoxy, halo-C_1–C_3alkoxy or cyano and/or two substituents R_1 which are bonded to adjacent C atoms of the phenyl ring together are —O—CH_2—O—;

R_2 is hydrogen, halogen or methyl;

R_3 is fluorine, chlorine, bromine or C_1–C_3alkyl;

R_4 is hydrogen or C_2–C_3alkyl;

either R_5 is hydrogen, C_1–C_4alkyl,



—COCO—R_8, —CO—R_9 or $S(O)_m$—$N(R_{10})$—COO—R_{11} and

R_6 is C_1–C_4alkyl, halo-C_1–C_4alkyl, C_2–C_6alkenyl, halo-C_3–C_4alkenyl, C_3–C_5alkynyl, halo-C_3–C_5alkynyl, C_1–C_3alkoxy,-C_1–C_3alkyl, C_3–C_6-cycloalkyl, unsubstituted phenyl or phenyl which is monosubstituted to trisubstituted by identical or different substituents selected from the group consisting of halogen, C_1–C_4alkyl and C_1–C_4alkoxy;

or R_5 and R_6 together are —$(CH_2)_4$— or —$(CH_2)_5$—;

R_7 is hydrogen, halogen or C_1–C_3alkyl;

R_8 is C_2–C_8alkoxy or —$N(R_{12})_2$;

R_9 is C_2–C_4alkyl, C_3–C_6cycloalkyl, —$N(R_{13})_2$ or C_1–C_4alkoxy;

R_{10} is C_1–C_3alkyl;

R_{11} is C_1–C_6alkyl;

R_{12} radicals independently of one another are C_2–C_8alkyl;

R_{13} radicals independently of one another are C_2–C_4alkyl;

m is the number 0, 1 or 2;

n is the number 0, 1, 2 or 3 where, if n is 2 or 3, the radicals R_1 can be identical or different;

X is O, S, CH_2, CO or —O—CH_2—;

Y is O or S; and

Z is O or S,

with the exception of 1-(2-fluoro-4-phenoxyphenoxy)-2-ethylaminocarbonyloxyethane, in each case in free form or in salt form.

5,648,495

PROCESS FOR THE PREPARATION OF 5-SUBSTITUTED 2-CHLOROPYRIDINES

Klaus Jelich, Overland Park, Kans.; Hans Lindel; Christoph Mannheims, both of Leverkusen, Germany; Reinhard Lantzsch, Wuppertal, Germany, and Walter Merz, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

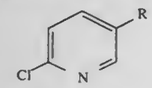
Filed Jan. 11, 1996, Ser. No. 584,867

Claims priority, application Germany, Jan. 19, 1995, 195 01 478.2

Int. Cl.[6] C07D *213/61*

U.S. Cl. 546—250 **4 Claims**

1. Process for the preparation of 5-substituted 2-chloropyridines of the formula (I)

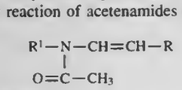


(I)

in which

R represents optionally substituted alkyl or aralkyl,

by reaction of acetenamides of the formula (II)

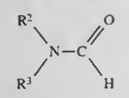


(II)

in which

R has the meaning indicated above

represents C_1–C_4-alkyl or aryl-C_1C_4-alkyl, with Vilsmeier reagent, which is prepared by reaction of dialkylformamides of the formula (III)



(III)

in which

R^2 and R^3 represent straight-chain, branched or cyclic C_4–C_8-alkyl with a chlorinating agent, wherein the chlorinating agent, the dialkylformamide and the acetenamide are added at temperatures between −10° C. and 50° C. into an inert solvent, excess chlorinating agent is removed from the reaction mixture and subsequently the reaction is finished by heating at temperatures between 80° and 160° C.

5,648,496

PROCESS FOR PRODUCING AMINONITROPYRIDINES

Shinzo Seko, and Kunihito Miyake, both of Osaka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

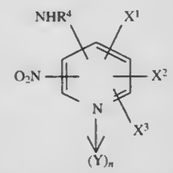
Filed Mar. 28, 1996, Ser. No. 623,039

Claims priority, application Japan, Mar. 28, 1995, 7-069203; Dec. 4, 1995, 7-315234

Int. Cl.[6] C07D *213/73;213/84*

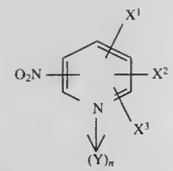
U.S. Cl. 546—307 **15 Claims**

1. A process for producing an aminonitropyridine represented by the formula [1]:



[1]

wherein X^1, X^2, X^3, R^4, Y and n are as defined below, which comprises reacting a nitropyridine represented by the formula [2]:



[2]

wherein X^1, X^2 and X^3 are the same or different and indicate a hydrogen atom, a halogen atom, a nitro group, a cyano group, an aryl group, a heterocycle, an alkyl group, a cycloalkyl group, an alkenyl group; said alkyl group, cycloalkyl group or alkenyl group being unsubstituted or substituted with a halogen atom, an aryl group, an amino group, a hydroxyl group, a carboxyl group or an alkoxyl group; or a group OR^1, SR^1, NR^1R^2, COR^3, $COOR^3$, $CONR^1R^2$, SO_2R^3, SO_3R^3 or $SO_2NR^1R^2$, or when two of X^1, X^2 and X^3 bond at the ortho-position, the two may bond together so that a 5- to 7-membered aromatic or nonaromatic hydrocarbon ring or heterocycle is formed which includes 2 carbon atoms of the pyridine ring; R^1 and R^2 are the same or different and indicate a hydrogen atom, an alkyl group, an alkenyl group; said alkyl group or alkenyl group being unsubstituted or substituted with a halogen atom, an aryl group, an amino group, a hydroxyl group, a carboxyl group or an alkoxyl group; an aryl group or an acyl group; R^3 is a hydrogen atom, an alkyl group, an alkenyl group; said alkyl group or alkenyl group being unsubstituted or substituted with a halogen atom, an aryl group, an amino group, a hydroxyl group, a carboxyl group or an alkoxyl group; or an aryl group; Y is an oxygen atom; and n is 0 or 1, with an O-substituted hydroxylamine represented by the formula [3]:

$$R^4NHOR^5 \qquad [3]$$

wherein R^4 is a hydrogen atom, an alkyl group, a cycloalkyl group or an aralkyl group; and R^5 is an alkyl group or an aralkyl group, or a salt thereof, in the presence of a base and a metal catalyst.

5,648,497

RETROVIRAL PROTEASE INHIBITING COMPOUNDS

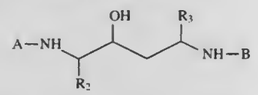
Dale J. Kempf, Libertyville; Daniel W. Norbeck, Lindenhurst; Lynn M. Codacovi, Antioch; Hing L. Sham, Gurnee, and Steven J. Wittenberger, Mundelein, all of Ill., assignors to Abbott Laboraotries, Abbott Park, Ill.

Division of Ser. No. 270,210, Aug. 23, 1994, abandoned, which is a division of Ser. No. 121,673, Sep. 14, 1993, Pat. No. 5,354,866, which is a continuation of Ser. No. 777,626, Oct. 23, 1991, abandoned, which is a continuation-in-part of Ser. No. 746,020, Aug. 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 616,170, Nov. 20, 1990, abandoned, which is a continuation-in-part of Ser. No. 518,730, May 9, 1990, Pat. No. 5,142,056, which is a continuation-in-part of Ser. No. 456,124, Dec. 22, 1989, abandoned, which is a continuation-in-part of Ser. No. 405,604, Sep. 8, 1989, abandoned, which is a continuation-in-part of Ser. No. 355,945, May 23, 1989, abandoned. This application Mar. 24, 1995, Ser. No. 410,623

Int. Cl.[6] C07D *277/30*

U.S. Cl. 548—204 **8 Claims**

1. A compound of the formula:



wherein R_2 and R_3 are independently selected from C_3-to-C_7-cycloalkyl-C_1-to-C_6-alkyl and (C_6-monocyclic or C_9- or C_{10}-bicyclic)aryl-C_1-to-C_6-alkyl; and

(a) A is thiazolyl-C_1-to-C_6-alkyl-R_9—C(O)—NH—CH(R_5)—C(O)— or (substituted-thiazolyl)-C_1-to-C_6-alkyl-R_9—C(O)—NH—CH(R_5)—C(O)— wherein R_9 is —O—, —NH— or —N(C_1-to-C_6-loweralkyl)- and R_5 is C_1-to-C_6-loweralkyl and B is thiazolyl-C_1-to-C_6-alkyl-O—C(O)—, thiazolyl-C_1-to-C_6-alkyl-NH—C(O)—, thiazolyl-C_1-to-C_6-alkyl-N(C_1-to-C_6-loweralkyl)-C(O)—, (substituted-thiazolyl)-C_1-to-C_6-alkyl-O—C(O)—, (substituted-thiazolyl)-C_1-to-C_6-alkyl-NH—C(O)— or (substituted-thiazolyl)-C_1-to-C_6-alkyl-N(C_1-to-C_6-loweralkyl)-C(O)— and wherein at each occurrence substituted-thiazolyl is independently selected from a thiazolyl ring substituted with one or two substituents independently selected from C_1-to-C_6-loweralkyl, hydroxy, halo, amino, C_1-to-C_6-alkylamino, di-C_1-to-C_6-alkylamino, C_1-to-C_6-alkoxy, halo-C_1-to-C_6-alkyl, unsubstituted-C_3-to-C_7-cycloalkyl, unsubstituted (C_6-monocyclic or C_9- or C_{10}-bicyclic)aryl, unsubstituted (C_6-monocyclic or C_9- or C_{10}-bicyclic)aryl-C_1-to-C_6-alkyl, —COOH and —SO_3H; or

(b) A is thiazolyl-C_1-to-C_6-alkyl-O—C(O)—, thiazolyl-C_1-to-C_6-alkyl-NH—C(O)—, thiazolyl-C_1-to-C_6-alkyl-N(C_1-to-C_6-loweralkyl)-C(O)—, (substituted-thiazolyl)-C_1-to-C_6-alkyl-O—C(O)—, (substituted-thiazolyl)-C_1-to-C_6-alkyl-NH—C(O)— or (substituted-thiazolyl)-C_1-to-C_6-alkyl-N(C_1-to-C_6-loweralkyl)-C(O)— and B is thiazolyl-C_1-to-C_6-alkyl-R_9—C(O)—NH—CH(R_5)—C(O)— or (substituted-thiazolyl)-C_1-to-C_6-alkyl-R_9-C(O)—NH—CH(R_5)—C(O)— wherein R_9 is —O—, —NH— or —N(C_1-to-C_6-loweralkyl)- and R_5 is C_1-to-C_6-loweralkyl and wherein at each occurrence substituted-thiazolyl is independently selected from a thiazolyl ring substituted with one or two substituents independently selected from C_1-to-C_6-loweralkyl, hydroxy, halo, amino, C_1-to-C_6-alkylamino, di-C_1-to-C_6-alkylamino, C_1-to-C_6-alkoxy, halo-C_1-to-C_6-alkyl, unsubstituted-C_3-to-C_7-cycloalkyl, unsubstituted (C_6-monocyclic or C_9- or C_{10}-bicyclic)aryl, unsubstituted (C_6-monocyclic or C_9- or C_{10}-bicyclic)aryl-C_1-to-C_6-alkyl, —COOH and —SO_3H;

or a pharmaceutically acceptable salt thereof.

5,648,498

PROCESS FOR THE PREPARATION OF 4-METHYL-5-(2-CHLOROETHYL)-THIAZOLE AND ANALOGUES THEREOF

Endre Pálosi; Dezso Korbonits, both of Budapest; Erzsébet Molnár née Bakó, Szödliget; Ida Szvoboda née Kanzel, Dunakeszi; Gergely Héja, Budapest; Pál Kiss, Budapest; Csaba Gönczi, Budapest; Ferenc Sperber, Budapest; Csaba Huszár, Budapest; György Mihalovics, Budapest; Attila Németh, Göd; Mihály Sütő , Budapest; Károl Gyüre, Fenyveslitke; István Bóné, Budapest; Ferenc Mórász, Budapest; László Ledniczky, Budapest; Erzsébet Szabó née Kardos, Budapest; Péter Győri, Budapest; Erzsébet Szalay, Budapest; Károly Bán, Budapest; Ildikó Buttkai, Budapest; Arpád Kővári, Göd, and Sándor Garaczy, Budapest, all of Hungary, assignors to Astra Aktiebolag, Sodertalje, Sweden

PCT No. PCT/HU92/00042, § 371 Date Jul. 27, 1994, § 102(e) Date Jul. 27, 1994, PCT Pub. No. WO93/09107, PCT Pub. Date May 13, 1993

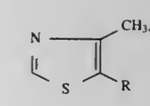
PCT Filed Oct. 30, 1992, Ser. No. 232,207

Claims priority, application Hungary, Oct. 30, 1991, 3402/91; Oct. 30, 1991, 3403/91; Oct. 30, 1991, 3404/91; Apr. 3, 1992, 1124/92; Apr. 3, 1992, 1125/92

Int. Cl.[6] C07D *277/22*

U.S. Cl. 548—202 **18 Claims**

1. A process for the preparation of a compound of the general formula



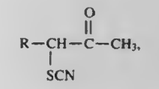
(I)

wherein

R stands for a straight chain C_{2-5}-alkyl group substituted by a chlorine atom in the 2-position,

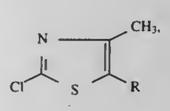
and acid addition salts thereof, comprising reacting a 3-thiocyanato-5-chloro-2-alkanone of the general formula

(IV)



a) in an organic solvent with hydrogen chloride gas to give a 2-chloro-4-methyl-5-(2-chloroalkyl)-thiazole of the general formula

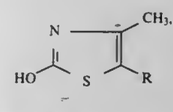
(II)



or

b) with an aqueous mineral acid to give a 2-hydroxy-4 -methyl-5-(2-chloroalkyl)-thiazole of the general formula

(III)



which is treated with a halogenating agent to give a 2-chloro-4-methyl-5-(2-chloroalkyl)-thiazole of the general formula (II),

and then hydrogenating the compound of the general formula (II) in the presence of a metal catalyst in an organic solvent to obtain 4-methyl-5-(2-chloroalkyl)-thiazole of the general formula (I), wherein R is as defined above, and optionally converting the compound of the general formula (I), wherein R is as defined above, or a hydrochloride salt thereof, in a manner known per se, into another acid addition salt or setting free a compound of the general formula (I), wherein R is defined above, from its acid addition salt.

5,648,499

METHOD OF DECOMPOSING HALOGENATED AROMATIC COMPOUNDS

Fumio Tanimoto, Kyoto-hu, and Tsuneo Yano, Saitama-ken, both of Japan, assignors to Mitsui & Co., Ltd., Kyoto-hu; Neos Co., Ltd, Tokyo, and Research Institute for Production Development, Hyogo-ken, all of Japan

PCT No. PCT/JP94/01002, § 371 Date Mar. 23, 1995, § 102(e) Date Mar. 23, 1995, PCT Pub. No. WO95/00207, PCT Pub. Date Jan. 5, 1995

PCT Filed Jun. 23, 1994, Ser. No. 374,580

Claims priority, application Japan, Jun. 24, 1993, 5-204389

Int. Cl.[6] C07D *233/28;233/30*

U.S. Cl. 548—316.4 **8 Claims**

1. A method of decomposing halogenated aromatic compounds, comprising: contacting a heat-resistant alkaline polar solvent

which contains 15 weight % or less of halogenated aromatic compounds with an alkali at a temperature ranging from about 100° C. to about 300° C., and then separating resultant solid contents from said heat-resistant alkaline polar solvent, wherein the halogenated aromatic compounds are polychlorinated biphenyls and said heat-resistant alkaline polar solvent is 1,3-dimethyl-2-imidazolidinone.

5,648,500

PROCESS FOR THE PREPARATION OF SUBSTITUTED 1,2,3,4-TETRAHYDROCARBAZOLES

Heinz Landscheidt, Duisburg; Alexander Klausener; Eberhard Zirngiebl, both of Köln, and Jörg-Dietrich Jentsch, Ruhr, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 29, 1996, Ser. No. 608,869

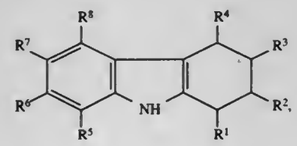
Claims priority, application Germany, Mar. 6, 1995, 195 07 751.2

Int. Cl.[6] C07D *209/88*

U.S. Cl. 548—440 **15 Claims**

1. A process for the preparation of a substituted 1,2,3,4-tetrahydrocarbazole of the formula

(I)

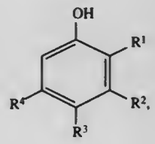


in which

R^1, R^2, R^3 and R^4 independently of one another are selected from hydrogen, C_1–C_4-alkyl, C_3–C_8-cycloalkyl, halogen, hydroxyl, C_1–C_4-alkoxy, C_3–C_8-cycloalkoxy, C_1–C_4-alkylamino, $N(C_1$–C_4-alkyl$)_2$-, NH—C_1–C_4-acyl, COOH, —$COOC_1$–C_4-alkyl and —CH_2—Q, where Q represents hydroxyl, C_1–C_4-alkoxy or NH-C_1–C_4-acyl and where at least one of R^1 to R^4 is other than hydrogen, and in which

R^5, R^6, R^7 and R^8 independently of one another are selected from hydrogen, C_1–C_4-alkyl, halogen or C_1–C_4-alkoxy,

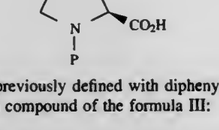
in which a substituted phenol of the formula



in which

R^1, R^2, R^3 and R^4 have the meaning indicated above,

is catalytically hydrogenated in the presence of a catalyst from the series of metals of group VIII B of the Periodic Table of the Elements (Mendeleev) in one or more ethers as solvents, the hydrogenation solution obtained after removal of the catalyst is reacted with a phenylhydrazine of the formula



in which

R^5, R^6, R^7 and R^8 have the meaning indicated above,

and the substituted phenylhydrazone obtained in this process as an intermediate is subjected, after optionally isolating the intermediate, to an intramolecular cyclization under acidic conditions.

5,648,501

PROCESS FOR SYNTHESIZING CARBAPENEM SIDE CHAIN INTERMEDIATES

Karel M. J. Brands, Hoboken, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

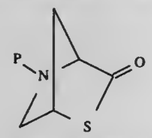
Filed Jul. 22, 1996, Ser. No. 681,025

Int. Cl.[6] C07D *495/08*

U.S. Cl. 548—453 **9 Claims**

1. A process for synthesizing a compound of the formula I:

I

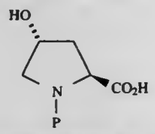


wherein P is a protecting group selected from t-butoxycarbonyl, p-nitrobenzyloxycarbonyl, benzyloxycarbonyl and allyloxycarbonyl;

comprising

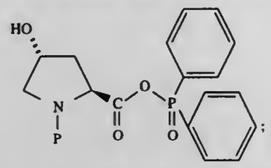
(a) reacting a compound of the formula II:

II



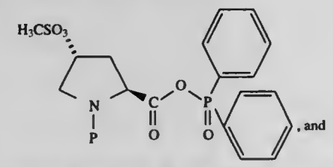
wherein P is as previously defined with diphenylphosphinic chloride to produce a compound of the formula III:

III



(b) reacting compound III with methanesulfonyl chloride to produce a compound of formula IV:

IV



(c) combining compound IV with Na_2S in water to produce a compound of formula I.

5,648,502

REGIOSELECTIVE SYNTHESIS OF 4-CHLORO-2-THIOPHENECARBOXYLIC ACID

Laurence E. Burgess, Gales Ferry, and Gary R. Schulte, Stonington, both of Conn., assignors to Pfizer Inc., New York, N.Y.

PCT No. PCT/US93/08613, § 371 Date Jul. 7, 1995, § 102(e) Date Jul. 7, 1995, PCT Pub. No. WO94/12505, PCT Pub. Date Jun. 9, 1994

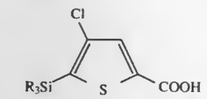
Continuation of Ser. No. 979,983, Nov. 23, 1992, abandoned. This PCT application Sep. 17, 1993, Ser. No. 436,415

Int. Cl.[6] C07F *7/02*

U.S. Cl. 549—4 **10 Claims**

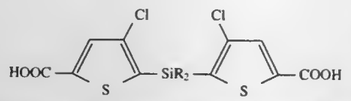
1. A compound having the formula IVa

(IVa)



or IVb

(IVb)



wherein each R group is independently selected from $(C_1$–$C_6)$alkyl, benzyl, and phenyl.

5,648,503

ACETYLENES DISUBSTITUTED WITH A 5 SUBSTITUTED TETRAHYDRONAPHTHYL GROUP AND WITH AN ARYL OR HETEROARYL GROUP HAVING RETINOID-LIKE BIOLOGICAL ACTIVITY

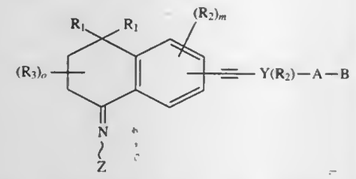
Vidyasagar Vuligonda, Irvine; Richard L. Beard, Newport Beach; Alan T. Johnson, Rancho Santa Margarita; Min Teng, Aliso Viejo; Tae K. Song, Long Beach, and Roshantha A. Chandraratna, Mission Viejo, all of Calif., assignors to Allergan, Waco, Tex.

Division of Ser. No. 366,169, Dec. 29, 1994. This application May 31, 1996, Ser. No. 656,134

Int. Cl.[6] C07D *307/06;309/04;333/08;335/02*

U.S. Cl. 549—13 **12 Claims**

1. A compound of the formula



wherein R_1 is hydrogen or alkyl of 1 to 10 carbons;

R_2 and R_3 are hydrogen, or alkyl of 1 to 6 carbons and the substituted ethynyl group occupies either the 2 or the 3 position of the tetrahydronaphthalene ring;

m is an integer having the value of 0–3;

o is an integer having the value 0–4;

Y is phenyl optionally substituted with one or two R_2 groups;

A is $(CH_2)_n$ where n is 0–5, lower branched chain alkyl having 3–6 carbons, cycloalkyl having 3–6 carbons, alkenyl having 2–6 carbons and 1 or 2 double bonds, alkynyl having 2–6 carbons and 1 or 2 triple bonds;

B is hydrogen, COOH or a pharmaceutically acceptable salt thereof, $COOR_8$, $CONR_9R_{10}$, —CH_2OH, CH_2OR_{11}, CH_2OCOR_{11}, CHO, $CH(OR_{12})_2$, $CHOR_{13}O$, —COR_7, $CR_7(OR_{12})_2$, $CR_7OR_{13}O$, or tri-lower alkylsilyl, where R_7 is an alkyl, cycloalkyl or alkenyl group containing 1 to 5 carbons, R_8 is an alkyl group of 1 to 10 carbons or (trimethylsilyl)alkyl where the alkyl group has 1 to 10 carbons, or a cycloalkyl group of 5 to 10 carbons, or R_8 is phenyl or lower alkylphenyl, R_9 and R_{10} independently are hydrogen, an alkyl group of 1 to 10 carbons, or a cycloalkyl group of 5–10 carbons, or phenyl or lower alkylphenyl, R_{11} is lower alkyl, phenyl or lower alkylphenyl, R_{12} is lower alkyl, and R_{13} is divalent alkyl radical of 2–5 carbons; the wavy line represents a single valence bond around which the configuration can be syn or anti, and

Z is $OC(R_{15})(R_{16})XR_{17}$, where X is O or S; R_{15} is hydrogen or lower alkyl of 1 to 6 carbons, and R_{16} and R_{17} jointly form a ring having a total of 4 to 5 carbons and the X heteroatom.

5,648,504

PROCESS FOR PRODUCING TETRAFLUOROPHTHALIC ANHYDRIDE

Ryuji Seki; Koji Sugimoto, and Seisaku Kumai, all of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Division of Ser. No. 391,060, Feb. 21, 1995, Pat. No. 5,523,476. This application Feb. 13, 1996, Ser. No. 601,157

Claims priority, application Japan, Feb. 23, 1994, 6-25528; Feb. 24, 1994, 6-26897; Mar. 4, 1994, 6-34681

Int. Cl.[6] C07D *307/89*

U.S. Cl. 549—246 **20 Claims**

1. A process for producing tetrafluorophthalic anhydride, which comprises chlorinating tetrachlorophthalic anhydride to

obtain 3,3,4,5,6,7-hexachloro-1-[3H]-isobenzofuranone, then fluorinating it to

obtain 3,4,5,6-tetrafluorophthaloyldifluoride and/or 3,3,4,5,6,7-hexafluoro-1-[3H]-isobenzofuranone, and further reacting the tetrafluorophthalolyldifluoride and/or the hexafluoro-1-[3H]-isobenzofuranone with an inorganic base or an organic acid to obtain tetrafluorophthalic anhydride.

5,648,505

METHOD FOR THE PREPARATION OF A NOVEL C-RING PRECURSOR FOR TAXOIDS AND NOVEL INTERMEDIATES

Zhi-Qiang Xia, NE. 535 Maiden La. 211, Pullman, Wash. 99163; Esko Karvinen, Järvitie 4 E 43, FIN-90550 Oulu, and Ari Koskinen, Lepikkotie 2 A 1, FIN-90460 Oulunsalo, both of Finland

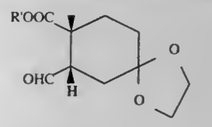
Continuation-in-part of Ser. No. 266,561, Jun. 28, 1994, abandoned. This application May 23, 1995, Ser. No. 447,843

Int. Cl.[6] C07D *317/72*

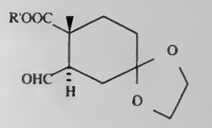
U.S. Cl. 549—333 **14 Claims**

1. A process for the preparation of a compound of the formula (VIII) or (IX) useful as precursor for the C-ring in taxanes

(VIII)



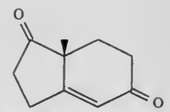
(IX)



wherein R' is a C_1–C_6-alkyl, which process comprises the steps of

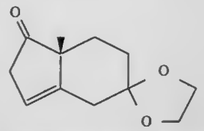
a) ketal protecting the carbonyl group and isomerizing the double bond in a compound of the formula (I)

(I)



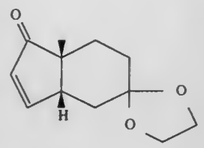
to give a compound of the formula (II)

(II)



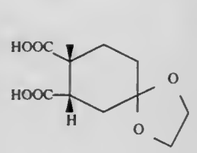
b) treating the compound of formula (II) with diazabicycloundecane in a suitable solvent to give a compound of the formula (III)

(III)



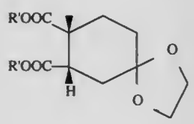
c) either i) ozonolyzing the compound (III) in methanol followed by oxidative work-up with basic hydrogen peroxide, or ii) oxidizing compound (III) with ruthenium tetraoxide of the formula RuO_4 generated in situ from $RuCl_3$, to give the diacid (IV)

(IV)



d) either i) treating the diacid (IV) from step c) with a diazoalkane of the formula R^*CHN_2 where "R" is hydrogen or an alkyl of 1 to 5 carbon atoms in diethylether in the presence of an acid, or ii) alkylating the diacid (IV) with a C_1–C_6-alkyl halide, to give the diester (V)

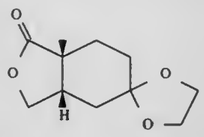
(V)



wherein R_1 is a C_1–C_6-alkyl,

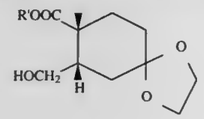
e) reducing the diester of formula (V) with diisobutylaluminumhydride in toluene to give the compound (VI)

(VI)



f) opening the lactone ring of compound (VI) by treating said compound with a basic alcohol of 1 to 5 carbon atoms followed by treatment with a diazoalkane of the formula $R''CHN_2$ where R" is hydrogen or an alkyl of 1 to 5 carbon atoms to give a compound of formula (VII)

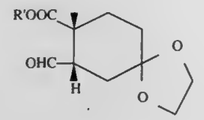
(VII)



and

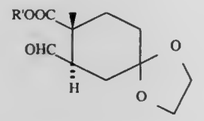
g) subjecting the compound (VII) to Swern oxidation in the presence of oxalyl chloride of the formula $(COCl)_2$ dimethylsulfoxide and triethylamine to give the compound of formula (VIII)

(VIII)



and optionally epimerizing compound (VIII) in the presence of diazobicycloundecane to give a mixture of compound (VIII) and compound (IX)

(IX)



which further is separated into the compound (VIII) and (IX).

5,648,506

WATER-SOLUBLE POLYMERIC CARRIERS FOR DRUG DELIVERY

Neil P. Desai; P. Soon-Shiong, and Paul A. Sandford, all of Los Angeles, Calif., assignors to Vivorx, Inc., Santa Monica, Calif.

Continuation of Ser. No. 893,500, Jun. 4, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 464,270

Int. Cl.[6] C07D *305/14*

U.S. Cl. 549—510 **15 Claims**

1. A taxol derivative having the general formula R_1—T—R_2:

wherein R_1=—X—P or —OH, and R_1 is located on the 2'-carbon of the taxol side chain;

wherein R_1=—X—P or —OH, and R_2 is located on the 7-carbon atom of the ring structure;

but R_1 and R_2 are not simultaneously —OH;

and the drug taxol T, is covalently linked to a water-soluble polymer P, based on polyethylene glycol, through a covalent linking group X,

wherein P is selected from a branched chain polyethylene glycol, a star polyethylene glycol or a branched copolymer of a linear polyethylene glycol and a functional monomer, and

wherein X is selected from ester, diester, urethane, amide, secondary or tertiary amine or ether linking groups.

5,648,507

14α-HYDROXY-4-ANDROSTENE-3,6,17-TRIONE HYDRATE AND PROCESS FOR PRODUCING SAME

Kazuo Ohtsuki; Akikazu Mitsunobu; Yoshihiro Imaizumi, all of Tokyo; Nobuyoshi Honda, and Satoshi Inoue, both of Ishibashi, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, and Snow Brank Milk Products Co., Ltd., Sapporo, both of Japan

Division of Ser. No. 247,778, May 23, 1994. This application May 30, 1995, Ser. No. 453,875

Claims priority, application Japan, May 28, 1993, 5-151320

Int. Cl.[6] C07J *1/00;75/00*

U.S. Cl. 552—615 **2 Claims**

1. A process for producing 14α-hydroxy-4-androstene-3,6,17-trione hydrate crystal having a diffraction pattern where characteristic peaks in crystalline powder X-ray diffraction of characteristic X-ray Cu Kα appear at diffraction angles of 10.7, 14.2, 14.8, 15.7, 16.3 and 17.8 (degree), which comprises suspending in water an anhydride crystal of 14α-hydroxy-4-androstene-3,16,17-trione or 14α-hydroxy-4-androstene-3,6,17-trione hydrate crystal having a diffraction pattern where characteristic peaks in crystalline powder X-ray diffraction of characteristic X-ray Cu Kα appear at diffraction angles of 7.9, 10.7, 14.2, 15.9, and 18.5 (degree).

5,648,508

CRYSTALLINE METAL-ORGANIC MICROPOROUS MATERIALS

Omar M. Yaghi, Phoenix, Ariz., assignor to Nalco Chemical Company, Naperville, Ill.

Filed Nov. 22, 1995, Ser. No. 560,224

Int. Cl.[6] C07F *9/00;13/00;5/00*

U.S. Cl. 556—9 **61 Claims**

1. A method for the preparation of microporous materials which comprises the steps of:

Admixing a solution containing one or more metal ions from the group consisting of:

Mg^{2+}, Ca^{2+}, Sr^{2+}, Ba^{2+}, Sc^{3+}, Y^{3+}, Ti^{4+}, Zr^{4+}, Hf^{4+}, V^{4+}, V^{3+}, V^{2+}, Nb^{3+}, Ta^{3+}, Cr^{3+}, Mo^{3+}, W^{3+}, Mn^{3+}, Mn^{2+}, Re^{3+}, Re^{2+}, Fe^{3+}, Fe^{2+}, Ru^{3+}, Ru^{2+}, Os^{3+}, Os^{2+}, Co^{3+}, C^{2+}, Rh^{2+}, Rh^{+}, Ir^{2+}, Ir^{+}, Ni^{2+}, Ni^{+}, Pd^{2+}, Pd^{+}, Pt^{2+}, Pt^{+}, Cu^{2+}, Cu^{+}, Ag^{+}, Au^{+}, Zn^{2+}, Cd^{2+}, Hg^{2+}, Al^{3+}, Ga^{3+}, In^{3+}, Tl^{3+}, Si^{4+}, Si^{2+}, Ge^{4+}, Ge^{2+}, Sn^{4+}, Sn^{2+}, Pb^{4+}, Pb^{2+}, As^{5+}, As^{3+}, As^{+}, Sb^{5+}, Sb^{3+}, Sb^{+}, and Bi^{5+}, Bi^{3+}, Bi^{+}; along with the corresponding metal salt counteranion, with one or more ligands having at least one of:

an alkyl group substructure, having from 1 to 10 carbon atoms;

an aryl group substructure, having from 1 to 5 phenyl rings;

or, an alkyl or aryl amine substructure, consisting of alkyl groups having from 1 to 10 carbon atoms or aryl groups having from 1 to 5 phenyl rings, said ligand substructure having bound thereto multidentate functional groups, X, which are covalently bound to the substructure of the ligand, wherein X is a functional group selected from the groups consisting of:

CO_2H, CS_2H, NO_2, SO_3H, $Si(OH)_3$, $Ge(OH)_3$, $Sn(OH)_3$, $Si(SH)_4$, $Ge(SH)_4$, $Sn(SH)_4$, PO_3H, AsO_3H, AsO_4H, $P(SH)_3$, $As(SH)_3$; $CH(SH)_2$, $C(SH)_3$, $CH(NH_2)_2$, $C(NH_2)_3$, $CH(OH)_2$, $C(OH)_3$, $CH(CN)_2$, $C(CN)_3$, $CH(RSH)_2$, $C(RSH)_3$, $CH(RNH_2)_2$, $C(RNH_2)_3$, $CH(ROH)_2$, $C(ROH)_3$, $CH(RCN)_2$, $C(RCN)_3$, wherein R is an alkyl group having from 1 to 5 carbon atoms, or an aryl group consisting of 1 to 2 phenyl rings, in the presence of a templating agent, selected from the group consisting of:

a. alkyl amines and their corresponding alkyl ammonium salts, containing linear, branched, or cyclic aliphatic groups, having from 1 to 20 carbon atoms;

b. aryl amines and their corresponding aryl ammonium salts having from 1 to 5 phenyl rings;

c. alkyl phosphonium salts, containing linear, branched, or cyclic aliphatic groups, having from 1 to 20 carbon atoms;

d. aryl phosphonium salts, having from 1 to 5 phenyl rings,

e. alkyl organic acids and their corresponding salts, containing linear, branched, or cyclic aliphatic groups, having from 1 to 20 carbon atoms;

f. aryl organic acids and their corresponding salts, having from 1 to 5 phenyl rings;

g. aliphatic alcohols, containings linear, branched, or cyclic aliphatic groups, having from 1 to 20 carbon atoms;

h. aryl alcohols having from 1 to 5 phenyl rings;

i. inorganic anions from the group consisting of sulfate, nitrate, nitrite, sulfite, bisulfite, phosphate, hydrogen phosphate, dihydrogen phosphate, diphosphate, triphosphate, phosphite, chloride, chlorate, bromide, bromate, iodide, iodate, carbonate, bicarbonate, and the corresponding acids and salts of said inorganic anions;

j. ammonia, carbon dioxide, methane, oxygen, argon, nitrogen, ethylene, hexane, benzene, toluene, xylene, chlorobenzene, nitrobenzene, naphthalene, thiophene, pyridine, acetone, 1,2-dichloroethane, methylenechloride, tetrahydrofuran, ethanolamine, triethylamine,and trifluoromethylsulfonic acid.

12. A method for the preparation of microporous materials which comprises the steps of:

Admixing a solution containing one or more metal ions from the group consisting of:

Sc^{3+}, Ti^{4+}, V^{4+}, V^{3+}, V^{2+}, Cr^{3+}, Mo^{3+}, Mn^{3+}, Mn^{2+}, Fe^{3+}, Fe^{2+}, Ru^{3+}, Ru^{2+}, Os^{3+}, Os^{2+}, Co^{3+}, Co^{2+}, Rh^{2+}, Rh^{+}, Ir^{2+}, Ir^{+}, Ni^{2+}, Ni^{+}, Pd^{2+}, Pd^{+}, Pt^{2+}, Pt^{+}, Cu^{2+}, Cu^{+}, Ag^{+}, Au^{+}, Zn^{2+}, Cd^{2+}, Al^{3+}, Ga^{3+}, In^{3+}, Ge^{4+}, Ge^{2+}, Sn^{4+}, Sn^{2+}, Pb^{4+}, Pb^{2+}, Sb^{5+}, Sb^{3+}, Sb^{+}, and Bi^{5+}, Bi^{3+}, Bi^{+}; along with the corresponding metal salt counteranion with,

one or more ligand substructures being at least one of: methane, tetraphenylmethane, ethylene, tertiary amines, tertiary alkyl mines having from 1 to 3 carbon atoms, tertiary aryl amines having from 1 to 2 phenyl rings, benzene, naphthylene, adamantane, squarane, alkanes having from 2 to 4 carbon atoms, and alkenes having from 2 to 4 carbon atoms, said ligand substructure having bound thereto multidentate functional groups, X, which are covalently bound to the substructure of the ligand, wherein X is a functional group selected from the groups consisting of:

COOH, CSSH, $CH(RSH)_2$, $CH(RNH_2)_2$, $CH(ROH)_2$, and $CH(RCN)_2$, wherein R is H or an alkyl group having from 1 to 3 carbon atoms, or an aryl group consisting of one phenyl ring in the presence of a templating agent, selected from the group consisting of:

a. alkyl amines and their corresponding alkyl ammonium salts, containing linear, branched, or cyclic aliphatic groups, having from 1 to 20 carbon atoms;

b. aryl mines and their corresponding aryl ammonium salts having from 1 to 5 phenyl rings

c. alkyl phosphonium salts, containing linear, branched, or cyclic aliphatic groups, having from 1 to 20 carbon atoms;

d. aryl phosphonium salts, having from 1 to 5 phenyl rings,

e. alkyl organic acids and their corresponding salts, containing linear, branched, or cyclic aliphatic groups, having from 1 to 20 carbon atoms;

f. aryl organic acids and their corresponding salts, having from 1 to 5 phenyl rings;

g. aliphatic alcohols, containings linear, branched, or cyclic aliphatic groups, having from 1 to 20 carbon atoms;

h. aryl alcohols having from 1 to 5 phenyl rings;

i. inorganic anions from the group consisting of: sulfate, nitrate, nitrite, sulfite, bisulfite, phosphate, hydrogen phosphate, dihydrogen phosphate, diphosphate, triphosphate, phosphite, chloride, chlorate, bromide, bromate, iodide, iodate, carbonate, bicarbonate, and the corresponding acids and salts of said inorganic anions;

j. ammonia, carbon dioxide, methane, oxygen, argon, nitrogen, ethylene, hexane, benzene, toluene, xylene, chlorobenzene, nitrobenzene, naphthalene, thiophene, pyridine, acetone, 1,2-dichloroethane, methylenechloride, tetrahydrofuran, ethanolamine, triethylamine,and trifluoromethylsulfonic acid.

23. A method for the preparation of microporous materials which comprises the steps of:

Admixing a solution containing one or more metal ions from the group consisting of:

Sc^{3+}, Ti^{4+}, V^{4+}, V^{3+}, Cr^{3+}, Mo^{3+}, Mn^{3+}, Mn^{2+}, Fe^{3+}, Fe^{2+}, Co^{3+}, Co^{2+}, Ni^{2+}, Ni^{+}, Cu^{2+}, Cu^{+}, Ag^{+}, Zn^{2+}, Cd^{2+}, Al^{3+}, Sn^{4+}, Sn^{2+}, and Bi^{5+}, Bi^{3+}, Bi^{+}; along with the corresponding metal salt counteranion with, one or more ligand substructures being at least one of: methane, tetraphenylmethane, ethylene, benzene, naphthylene, adamantane, and squarane; said ligand substructure having bound thereto multidentate functional groups, X, which are covalently bound to the substructure of the ligand, wherein X is a functional group selected from the groups consisting of:

COOH, CSSH, $CH(RSH)_2$, $CH(RNH_2)_2$, $CH(ROH)_2$, and $CH(RCN)_2$, wherein R is H or methyl or an aryl group consisting of one phenyl ring. in the presence of a ternplating agent, selected from the group consisting of:

a. alkyl amines and their corresponding alkyl ammonium salts, containing linear, branched, or cyclic aliphatic groups, having from 1 to 20 carbon atoms;
b. aryl amines and their corresponding aryl ammonium salts having from 1 to 5 phenyl rings
c. alkyl phosphonium salts, containing linear, branched, or cyclic aliphatic groups, having from 1 to 20 carbon atoms;
d. aryl phosphonium salts, having from 1 to 5 phenyl rings,
e. alkyl organic acids and their corresponding salts, containing linear, branched, or cyclic aliphatic groups, having from 1 to 20 carbon atoms;
f. aryl organic acids and their corresponding salts, having from 1 to 5 phenyl rings;
g. aliphatic alcohols, containings linear, branched, or cyclic aliphatic groups, having from 1 to 20 carbon atoms;
h. aryl alcohols having from 1 to 5 phenyl rings;
i. inorganic anions from the group consisting of: sulfate, nitrate, nitrite, sulfite, bisulfite, phosphate, hydrogen phosphate, dihydrogen phosphate, diphosphate, triphosphate, phosphite, chloride, chlorate, bromide, bromate, iodide, iodate, carbonate, bicarbonate, and the corresponding acids and salts of said inorganic anions; ammonia, carbon dioxide, methane, oxygen, argon, nitrogen, ethylene, hexane, benzene, toluene, xylene, chlorobenzene, nitrobenzene, naphthalene, thiophene, pyridine, acetone, 1,2-dichloroethane, methylene-chloride, tetrahydrofuran, ethanolamine, triethylamine,and trifluoromethylsulfonic acid.

5,648,509

PROCESS FOR THE PREPARATION OF DIESTERS OF PHOSPHONOCARBOXYLIC ACID DERIVATIVES

Salman Dermeik, Augsburg; Martina Waoner, Neusäss; Karl-Heinz Lemmer, Augsburg, and Reinhold Braun, Schwabmünchen, all of Germany, assignors to Ciba-Geigy Corporation, Tarrytown, N.Y.

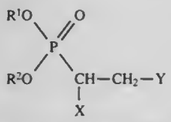
Filed Jul. 27, 1995, Ser. No. 508,145

Claims priority, application Germany, Jul. 29, 1994, 44 26 986.2; Feb. 3, 1995, 195 03 518.6

Int. Cl.[6] C07F *9/02*

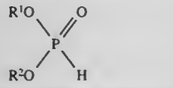
U.S. Cl. 558—137 **8 Claims**

1. A process for the preparation of a phosphono compound of the formula (I)



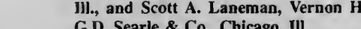
(I)

by reaction of a phosphite of the formula (II)



(II)

with a compound containing a carbon-carbon double bond, of the formula (III)



(III)

in which R^1 and R^2, independently of one another, are an unsubstituted phenyl radical or alkyl radical having 1 to 4 carbon atoms or a phenyl radical or alkyl radical having 1 to 4 carbon atoms which is substituted by one or more chlorine atoms or bromine atoms, in which X is hydrogen or a methyl group and in which Y is $—COOR^1$, $—CONH_2$, $—CONHR^1$, $—CONR^1_2$ or $—C≡N$, wherein the reaction is carried out both in the presence of a basic catalyst of the formula MOR^1, in which M is an alkali metal, and R^1 has the abovementioned meaning, and in the presence of a halide, oxide or hydroxide of a divalent metal.

5,648,510

PROCESS FOR PREPARATION OF DIARYL CARBONATE

Katsumasa Harada; Yoichi Imbe; Keigo Nishihira; Shuji Tanaka; Satoru Fujitsu; Ryoji Sugise; Koichi Kashiwagi, and Toshihiko Sumida, all of Yamaguchi, Japan, assignors to Ube Industries, Ltd., Yamaguchi, Japan

Filed Apr. 3, 1996, Ser. No. 627,897

Claims priority, application Japan, Apr. 4, 1995, 7-078766

Int. Cl.[6] C07C *69/96*

U.S. Cl. 558—274 **16 Claims**

1. A process for preparing a diaryl carbonate which comprises heating a diaryl oxalate in the presence of an organic phosphorous compound to release carbon monoxide therefrom.

5,648,511

METHOD FOR MAKING INTERMEDIATES USEFUL IN THE SYNTHESIS OF RETROVIRAL PROTEASE INHIBITORS

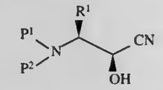
John S. Ng, Chicago; Claire A. Przybyla, Sed Plaines; Richard A. Mueller, Glencoe; Michael L. Vazquez, Gurnee, all of Ill.; Daniel P. Getman, Chesterfield, Mo.; John J. Freskos, Clayton, Mo.; Gary A. DeCrescenzo, St. Peters, Mo.; Deborah E. Bertenshaw, Brentwood, Mo.; Robert M. Heintz, Ballwin, Mo.; Subong Zhang, Des Plaines, Ill.; Chin Liu, Northbrook, Ill., and Scott A. Laneman, Vernon Hills, Ill., assignors to G.D. Searle & Co., Chicago, Ill.

Division of Ser. No. 156,498, Nov. 23, 1993, abandoned, which is a continuation-in-part of Ser. No. 886,558, May 20, 1992, abandoned, which is a continuation-in-part of Ser. No. 789,646, Nov. 14, 1991, abandoned, which is a continuation-in-part of Ser. No. 615,210, Nov. 19, 1990, abandoned. This application May 25, 1995, Ser. No. 452,187

Int. Cl.[6] C07D *253/00*

U.S. Cl. 558—345 **12 Claims**

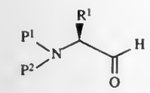
1. A method of diastereoselectively preparing a chiral cyanohydrin compound of formula



wherein P^1 and P^2 are each independently an acyl, aralkyl, alkenyl, silyl, aralkoxycarbonyl, alkoxycarbonyl or cycloalkenylalkyl radical; or P^1, P^2, and nitrogen atom to which they are bonded form a heterocyclic ring system containing said nitrogen atom as a ring member; and

R^1 is an alkyl, aryl, cycloalkyl, cycloalkylalkyl or aralkyl radical, each of which is optionally substituted with alkyl, halo, NO_2, OR^9, or SR^9 radicals, wherein R^9 is hydrogen or an alkyl radical;

said method comprising the steps of diastereoselectively forming said chiral cyanohydrin compound from a chiral aldehyde of the formula:



by reacting the chiral aldehyde with a cyanide salt.

5,648,512

LIPOXIN COMPOUNDS

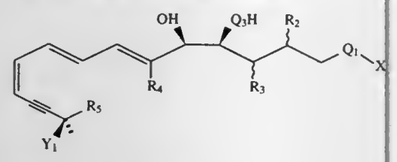
Charles N. Serhan, Boston, Mass., assignor to Brigham & Womens Hospital, Boston, Mass.

Division of Ser. No. 260,030, Jun. 15, 1994, Pat. No. 5,441,951, which is a continuation-in-part of Ser. No. 77,300, Jun. 15, 1993, abandoned. This application May 31, 1995, Ser. No. 453,125

Int. Cl.[6] C07C *321/08;69/66;59/105*

U.S. Cl. 560—9 **5 Claims**

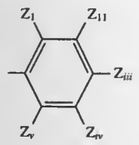
1. A lipoxin having the structural formula:



wherein X is R_1, OR_1, or SR_1;

wherein R_1 is

(i) hydrogen;
(ii) alkyl of 1 to 8 carbons atoms, inclusive, which may be straight chain or branched;
(iii) cycloalkyl of 3 to 10 carbon atoms, inclusive;
(iv) aralkyl of 7 to 12 carbon atoms;
(v) phenyl;
(vi) substituted phenyl



wherein Z_i, Z_{iii}, and Z_v are each independently selected from the group consisting of $—NO_2$, —CN, $—C(=O)—R_1$, hydrogen, and $—SO_3H$;

wherein Z_{ii} and Z_{iv} are each independently selected from the group consisting of halogen, methyl, hydrogen, and hydroxyl;

(vii) detectable label molecule, such as but not limited to fluorescent labels; or
(viii) alkenyl of 2 to 8 carbon atoms, inclusive, straight chain or branched;

wherein Q_1 is (C=O), SO_2 or (C=N);

wherein Q_3 is O, S or NH;

wherein one of R_2 and R_3 is hydrogen and the other is

(a) H;
(b) alkyl of 1 to 8 carbon atoms, inclusive, which may be straight chain or branched;
(c) cycloalkyl of 3 to 6 carbon atoms, inclusive;
(d) alkenyl of 2 to 8 carbon atoms, inclusive, which may be straight chain or branched; or
(e) $R_aQ_2R_b$
wherein Q_2 is —O— or —S—;
wherein R_a is alkylene of 0 to 6 carbons atoms, inclusive, which may be straight chain or branched;
wherein R_b is alkyl of 0 to 8 carbon atoms, inclusive, which may be straight chain or branched;

wherein R_4 is

(a) H;
(b) alkyl of 1 to 6 carbon atoms, inclusive, which may be straight chain or branched;

wherein Y_1 or Y_2 is —OH, methyl, —H or —SH and wherein the other is

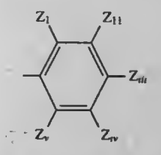
(a) H;
(b) CH_aZ_b
where a+ b=3, a=0 to 3, b=0 to 3 Z is cyano, nitro, or halogen including F, Cl, Br, I;
(c) alkyl of 2 to 4 carbon atoms, inclusive, straight chain or branched;
(d) alkoxy of 1 to 4 carbon atoms, inclusive;

or Y_1 and Y_2 taken together are

(a) =N; or
(b) =O;

wherein R_5 is

(a) alkyl of 1 to 9 carbon atoms which may be straight chain or branched;
(b) $—(CH_2)_n—R_i$
wherein n= 0 to 4 and R_i is
(i) cycloalkyl of 3 to 10 carbon atoms, inclusive;
(ii) phenyl; or
(iii) substituted phenyl



wherein Z_i, Z_{iii}, and Z_v are each independently selected from the group consisting of hydrogen, $—NO_2$, —CN, $—C(=O)—R_1$, methoxy, and $—SO_3H$;

wherein Z_{ii} and Z_{iv} are each independently selected from the group consisting of halogen, methyl, hydrogen, and hydroxyl;

(c) $—R_aQ_aR_b$
wherein Q_a= —O— or —S—; and
wherein R_a is alkylene of 0 to 6 carbons atoms, inclusive, which may be straight chain or branched;
wherein R_b is alkyl of 0 to 8 carbon atoms, inclusive, which may be straight chain or branched;

(d) $—C(R_{iii})(R_{iv})—R_i$
wherein R_{iii} and R_{iv} are selected independently from the group consisting of
(i) H; and
(ii) CH_aZ_b where a+ b= 3, a=0 to 3, b= 0+ 3
wherein any Z is selected from the group consisting of halogen.

(e) haloalkyl of 1 to 8 carbon atoms, inclusive, and 1 to 6 halogen atoms, inclusive, straight chain or branched.

5,648,513

O-ACYL SERINES

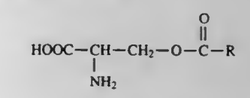
Judith Wolfe Laney, 12018 Auth La., Silver Spring, Md. 20902

Division of Ser. No. 428,706, Apr. 25, 1995, abandoned, which is a division of Ser. No. 118,188, Sep. 9, 1993, Pat. No. 5,431,904. This application Nov. 22, 1995, Ser. No. 562,086

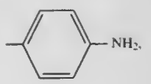
Int. Cl.[6] C07C *229/60;69/84;69/68*

U.S. Cl. 560—49 **6 Claims**

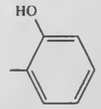
1. A compound of the structure



wherein R is selected from the group consisting of —CH=CH—C_6H_5,



$-CH(OH)CH_3$,



and $-CH(C_2H_5)-(CH_2)_3-CH_3$.

5,648,514

SUBSTITUTED ACETYLENES HAVING RETINOID-LIKE BIOLOGICAL ACTIVITY

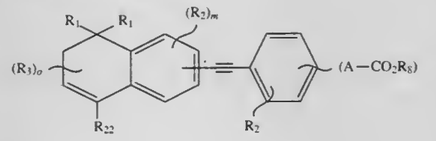
Alan T. Johnson, Rancho Santa Margarita; Min Teng, Aliso Viejo; Vidyasagar Vuligonda, Irvine; Richard L. Beard, Newport Beach; Samuel J. Gillett, Albany; Tien T. Duong, Irvine, and Roshantha A. Chandraratna, Mission Viejo, all of Calif., assignors to Allergan, Waco, Tex.

Filed Dec. 29, 1994, Ser. No. 366,193

Int. Cl.[6] C07C *69/78;63/06*

U.S. Cl. 560—102 **16 Claims**

1. A compound of the formula



wherein

R_1 is hydrogen or alkyl of 1 to 10 carbons;

R_2 and R_3 are hydrogen, or alkyl of 1 to 6 carbons and the substituted ethynyl group occupies either the 2 or the 3 position of the dihydronaphthalene nucleus;

m is an integer having the value of 0–3;

o is an integer having the value 0–3;

A is $(CH_2)_n$ where n is 0–5, lower branched chain alkyl having 3–6 carbons, cycloalkyl having 3–6 carbons, alkenyl having 2–6 carbons and 1 or 2 double bonds, alkynyl having 2–6 carbons and 1 or 2 triple bonds;

R_8 is hydrogen, an alkyl group of 1 to 10 carbons or trimethylsilylalkyl where the alkyl group has 1 to 10 carbons, or a cycloalkyl group of 5 to 10 carbons, or R_8 is phenyl or lower alkylphenyl, and

R_{22} is carbocyclic aryl selected from the group consisting of phenyl, C_1–C_{10} -alkylphenyl, naphthyl, C_1–C_{10}-alkylnaphthyl, phenyl-C_1–C_{10}alkyl, naphthyl-C_1–C_{10}alkyl, C_1–C_{10}-alkenylphenyl having 1 to 3 double bonds, C_1–C_{10}-alkynylphenyl having 1 to 3 triple bonds, phenyl-C_1–C_{10}alkenyl having 1 to 3 double bonds, phenyl-C_1–C_{10}-alkynyl having 1 to 3 triple bonds, or a pharmaceutically acceptable salt of said compound.

5,648,515

UREA AND URETHANE MONOMERS FOR CONTACT LENS MATERIALS

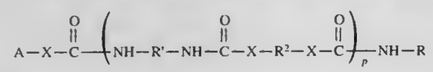
Yu-Chin Lai, Pittsford, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Division of Ser. No. 169,824, Dec. 17, 1993, Pat. No. 5,451,651. This application May 16, 1995, Ser. No. 442,447

Int. Cl.[6] C07C *271/00;275/20;275/22;275/24*

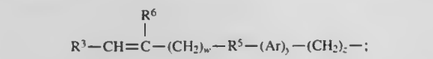
U.S. Cl. 560—115 **7 Claims**

1. A monomer selected from compounds of the general formula:



wherein:

A is an ethylenically unsaturated polymerizable radical of the formula



R^3 is selected from the group consisting of hydrogen, an alkyl radical having 1 to 6 carbon atoms, and an R^4—Y—CO— radical wherein R^4 is an alkyl radical having 1 to 12 carbon atoms and Y is —O—, —S—, or —NH—;

R^5 is selected from the group consisting of —COO—, —OCO—, —CONH—, —NHCO—, —OCO—, —NHCOO— and —OCO—NH—;

R^6 is selected from the group consisting of hydrogen and methyl;

Ar is an aromatic radical having 6 to 12 carbon atoms;

w is 0 or an integer of 1 to 6;

y is 0 or 1; and

z is an integer of 1 to 10;

each X is independently —O— or NH—;

R is a monovalent radical having 5 to 30 carbon atoms selected from the group consisting of branched alkyl, optionally substituted cycloalkyl, optionally substituted alkylcycloalkyl, optionally substituted aryl, and optionally substituted alkylaryl;

each R' is independently a divalent radical having 5 to 30 carbon atoms selected from the group consisting of branched alkylene, optionally substituted cycloalkylene, optionally substituted alkylene-cycloalkylene, optionally substituted arylene, and optionally substituted alkylene-arylene;

each R^2 is independently a divalent organic radical; and

p is 0, 1 or 2.

5,648,516

FUSED CYCLOALKYLIMIDAZOPYRIDINES

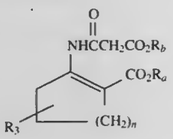
Nick Nikolaides, and John F. Gerster, both of Woodbury, Minn., assignors to Minnesota Mining and Manufacturing Company, St Paul, Minn.

Division of Ser. No. 277,959, Jul. 20, 1994, Pat. No. 5,444,065. This application May 31, 1995, Ser. No. 471,442

Int. Cl.[6] C07C *229/30*

U.S. Cl. 560—125 **1 Claim**

1. A compound of the formula



wherein n is 1, 2, or 3, R_3 is selected from the group consisting of hydrogen, fluoro, chloro, straight chain or branched chain alkyl containing one to about four carbon atoms, and straight chain or branched chain fluoro- or chloroalkyl containing one to about four carbon atoms and at least one fluorine or chlorine atom, R_a is a group that renders the associated ester group susceptible of nucleophilic attack by an anion derived from an active methylene compound, and R_b is a group that renders the associated ester group susceptible of hydrolysis.

5,648,517

PROCESS FOR THE PREPARATION OF DIALKYL MALEATES

Nikolaus Müller, Mouheim; Andreas Gröschl, Leverkusen, both of Germany, and Ingo Janisch, Groton, Mass., assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jun. 2, 1995, Ser. No. 457,711

Claims priority, application Germany, Jul. 4, 1994, 44 23 355.8

Int. Cl.[6] C07C *69/52*

U.S. Cl. 560—205 **11 Claims**

1. Process for the preparation of dialkyl maleates from maleic acid, maleic anhydride or monoalkyl maleates by reaction with C_1–C_8-alcohols in the presence of an acidic catalyst and at boiling heat, wherein the escaping water/alcohol/vapour mixture, together with its condensed phase, said condensed phase comprising 5–90% by weight of the total mixture, is conducted as feed along a hydrophilic membrane at which it is purged of water and the dehydrated alcohol is returned to the reaction mixture.

5,648,518

PROCESS FOR PRODUCING ESTERS OF (METH) ACRYLIC ACID AND POLYHYDRIC ALCOHOLS

Wolfgang Ritter, Haan; Hans-Dieter Sitz, Rommerskirchen, and Ludwig Speitkamp, Duesseldorf, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP89/01548, § 371 Date Aug. 23, 1991, § 102(e) Date Aug. 23, 1991, PCT Pub. No. WO90/07485, PCT Pub. Date Jul. 12, 1990

PCT Filed Dec. 15, 1989, Ser. No. 679,075

Claims priority, application Germany, Dec. 24, 1988, 38 43 930.1

The portion of the term of this patent subsequent to Oct. 27, 2009, has been disclaimed.

Int. Cl.[6] C07C *69/52*

U.S. Cl. 560—224 **21 Claims**

1. In a process for the production of (meth)acrylic acid esters of polyhydric alcohols by reaction of at least one polyhydric alcohol with acrylic acid and/or methacrylic acid in the presence of an acidic esterification catalyst and a polymerization inhibitor comprising a sterically hindered phenolic compound, the improvement wherein the polymerization inhibitor consists of at least one tocopherol.

5,648,519

FRACTIONATION AND PURIFICATION OF AROMATIC POLYAMINE MIXTURES AND THE USE THEREOF

Hartmut Knöfel, Odenthal, and Michael Brockelt, Leverkusen, both of Germany, assignors to Bayer Aktiengesesellschaft, Leverkusen, Germany

Filed Mar. 28, 1996, Ser. No. 623,235

Claims priority, application Germany, Apr. 7, 1995, 195 13 147.9

Int. Cl.[6] C07C *209/86*

U.S. Cl. 560—347 **10 Claims**

1. A process for the fractionation and purification of aromatic polyamine mixtures comprising:

a) mixing the polyamine starting mixture in a first extraction stage with a two-phase system comprising

(i) a hydrophobic solvent phase which consists essentially of hydrophobic solvent and optionally an aromatic auxiliary amine which is substantially insoluble in water and exhibits at normal pressure a boiling point which is at least 20° C. below the boiling point of the lowest-boiling component of the starting mixture and at least 20° C. above the boiling point of the solvent, and optionally polyamine, and

(ii) an aqueous phase consisting essentially of water, a strong acid and auxiliary amine present at least in part in the salt form, and optionally polyamines present at least in part in the salt form,

with said first extraction stage operating on the countercurrent principle, and wherein said polyamine starting mixture is introduced into said first extraction stage with said hydrophobic solvent phase, with a first aqueous phase and a first organic phase exiting said first extraction stage,

b) distilling said first organic phase in a first multi-stage distillation into

i) a first fraction consisting essentially of hydrophobic solvent and optionally auxiliary amine,

ii) a second fraction consisting essentially of auxiliary amine and optionally hydrophobic solvent, and

iii) a distillation residue consisting essentially of a first polyamine fraction,

c) extracting said first aqueous phase in a second extraction stage with a solvent phase consisting essentially of hydrophobic solvent and auxiliary amine, said second extraction stage operating on the countercurrent principle, with i) a second aqueous phase, said second aqueous phase being reduced in polyamine content and ii) a second organic phase exiting said second extraction stage,

d) separating at least a portion of said second organic phase in a second multistage distillation into

i) a first fraction consisting essentially of hydrophobic solvent and optionally proportions of auxiliary amine,

ii) a second fraction consisting essentially of auxiliary amine and optionally proportions of hydrophobic solvent, and

iii) a distillation residue consisting essentially of a second polyamine fraction,

e) extracting at least a portion of said second aqueous phase in a third extraction stage with an organic phase consisting essentially of hydrophobic solvent and optionally auxiliary amine, said third extraction stage operating on the countercurrent principle, with i) a third aqueous phase, said third aqueous phase being reduced in amine content and ii) a third organic phase exiting said third extraction stage,

f) recycling said third aqueous phase as at least a portion of said aqueous phase, and

g) recycling said third organic phase to said second extraction stage as at least a portion of said solvent phase.

5,648,520

FRACTIONATION AND PURIFICATION OF AROMATIC POLYAMINE AND THE USE THEREOF

Hartmut Knöfel, Odenthal, and Michael Brockelt, Leverkusen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 28, 1996, Ser. No. 623,286

Claims priority, application Germany, Apr. 7, 1995, 19513163.0

Int. Cl.[6] C07C *209/86*

U.S. Cl. 560—347 **10 Claims**

1. A process for the fractionation and purification of aromatic polyamine mixtures comprising:

a) mixing the polyamine starting mixture in a first extraction stage with a two-phase system comprising

(i) a hydrophobic solvent phase which consists essentially of hydrophobic solvent and optionally an aromatic auxiliary amine which is substantially insoluble in water and exhibits at normal pressure a boiling point which is at least 20° C. below the boiling point of the lowest-boiling component of the

starting mixture and at least 20° C. above the boiling point of the solvent, and optionally polyamine, and

(ii) an aqueous phase consisting essentially of water, a strong acid and auxiliary amine present at least in part in the salt form, and optionally polyamines present at least in part in the salt form,

with said first extraction stage operating on the countercurrent principle, and wherein said polyamine starting mixture is introduced into said first extraction stage with said aqueous phase, with a first aqueous phase and a first organic phase exiting said first extraction stage,

b) distilling said first organic phase in a first multi-stage distillation into

i) a first, recycled fraction consisting essentially of hydrophobic solvent and optionally auxiliary amine,

ii) a second, recycled fraction consisting essentially of auxiliary amine and optionally hydrophobic solvent, and

iii) a distillation residue consisting essentially of a first polyamine fraction,

c) extracting said first aqueous phase in a second extraction stage with a solvent phase consisting essentially of hydrophobic solvent and auxiliary amine, said second extraction stage operating on the countercurrent principle, with i) a second aqueous phase, said second aqueous phase being reduced in polyamine content and ii) a second organic phase exiting said second extraction stage,

d) separating at least a portion of said second organic phase in a second multi-stage distillation into

i) a first fraction consisting essentially of hydrophobic solvent and optionally proportions of auxiliary amine,

ii) a second fraction consisting essentially of auxiliary amine and optionally proportions of hydrophobic solvent, and

iii) a distillation residue consisting essentially of a second polyamine fraction,

e) extracting at least a portion of said second aqueous phase in a third extraction stage with an organic phase consisting essentially of hydrophobic solvent and optionally auxiliary amine, said third extraction stage operating on the countercurrent principle, with i) a third aqueous phase, said third aqueous phase being reduced in amine content and ii) a third organic phase exiting said third extraction stage,

f) recycling said third aqueous phase as at least a portion of said aqueous phase, and

g) recycling said third organic phase to said second extraction stage as at least a portion of said solvent phase.

5,648,521

PROCESS FOR THE PREPARATION OF AMIDOPEROXYCARBOXYLIC ACIDS

Matthias Löffler, Idstein, Germany, assignor to Hoechst Aktiengesellschaft, Germany

Filed Apr. 25, 1996, Ser. No. 637,479

Claims priority, application Germany, Apr. 27, 1995, 195 15 443.6

Int. Cl.[6] C07C *407/00*

U.S. Cl. 562—3 **10 Claims**

1. A process for the preparation of amidoperoxycarboxylic acids, comprising the process steps:

A) ring opening of the N-acyllactam to give the corresponding amidocarboxylic acid and, subsequently,

B) oxidation of the resulting amidocarboxylic acid to the corresponding amidoperoxycarboxylic acid.

5,648,522

PROCESS FOR THE SYNTHESIS OF FLUORINATED SULPHONIC ACIDS

Sven Ivar Hommeltoft, Hillerød; Ole Ekelund, Lyngby, and John Zavilla, Vedbæk, all of Denmark, assignors to Haldor Topsoe A/S, Lyngby, Denmark

Filed Feb. 5, 1996, Ser. No. 596,568

Claims priority, application Denmark, Feb. 14, 1995, 0168/95

Int. Cl.[6] C07C *309/06*

U.S. Cl. 562—83 **4 Claims**

1. Process for the preparation of a fluorinated sulphonic acid compound by hydrolysis of a corresponding fluorinated sulphonyl fluoride in the presence of a tertiary amine, comprising steps of

(a) recovering a mixture of a salt of hydrolysed fluorinated sulphonyl fluoride with the tertiary amine and an ammonium fluoride salt of the tertiary amine;

(b) reacting the salt mixture with a sulphonyl compound of the general formula $R—SO_2X$, wherein

R=an alkyl group, Cl, F;

and

X=Br, Cl

and exchanging fluoride of the ammonium fluoride salt in the mixture with the X atom of the sulphonyl compound and converting the sulphonyl compound to a sulphonyl fluoride;

(c) distilling off the sulphonyl fluoride from the reacted salt mixture of step (b).

5,648,523

FULLERENE DERIVATIVES AS FREE-RADICAL SCAVENGERS

Long Y. Chiang, 4F, No. 15, Lane 97, Shin-Shen S. Road, Sec. 1, Taipei, Taiwan

Filed Oct. 26, 1995, Ser. No. 547,714

Int. Cl.[6] C07C *309/01*

U.S. Cl. 562—100 **20 Claims**

1. A compound of the following formula:

$F(—X)_m(—Y—Z)_n$

wherein

F is a fullerene core;

each X is independently $—CO_2^-$, $—SO_3^-$, —SH, $—PO_3^-$, $—O—PO_3^{-2}$, $—O—PO(O^-)—O—PO_3^{-2}$, $—O—PO(O^-)—O—PO(O^-)—O—PO_3^{-2}$, or $—O—PO(O^-)—O—CH_2—CH_2—NH_3^+$;

each Y is —A—B—, in which A is independently $—CH_2—$, —O—, —S—, —NH—CO—NH—, or —NH—CO—; and B is independently $—R_a—O—[Si(CH_3)_2—O—]_{1-100}$, C_{1-2000} alkyl, C_{6-40} aryl, C_{7-60} alkylaryl, C_{7-60} arylalkyl, $(C_{1-30}$ alkyl ether$)_{1-100}$, $(C_{6-40}$ aryl ether$)_{1-100}$, $(C_{7-60}$ alkylaryl ether$)_{1-100}$, $(C_{7-60}$ arylalkyl ether$)_{1-100}$, $(C_{1-30}$ alkyl thioether$)_{1-100}$, $(C_{6-40}$ aryl thioether$)_{1-100}$, $(C_{7-60}$ alkylaryl thioether$)_{1-100}$, $(C_{7-60}$ arylalkyl thioether$)_{1-100}$, $(C_{2-50}$ alkyl ester$)_{1-100}$, $(C_{7-60}$ aryl ester$)_{1-100}$, $(C_{8-70}$ alkylaryl ester$)_{1-100}$, $(C_{8-70}$ arylalkyl ester$)_{1-100}$, —R—CO—O—$(C_{1-30}$ alkyl ether$)_{1-100}$, —R—CO—O—$(C_{6-40}$ aryl ether$)_{1-100}$, —R—CO—O—$(C_{7-60}$ alkylaryl ether$)_{1-100}$, —R—CO—O—$(C_{7-60}$ arylalkyl ether$)_{1-100}$, $(C_{4-50}$ alkyl urethane$)_{1-100}$, $(C_{14-60}$ aryl urethane$)_{1-100}$, $(C_{10-80}$ alkylaryl urethane$)_{1-100}$, $(C_{10-80}$ arylalkyl urethane$)_{1-100}$, $(C_{5-50}$ alkyl urea$)_{1-100}$, $(C_{14-60}$ aryl urea$)_{1-100}$, $(C_{10-80}$ alkylaryl urea$)_{1-100}$, $(C_{10-80}$ arylalkyl urea$)_{1-100}$, $(C_{2-50}$ alkyl amide$)_{1-100}$, $(C_{7-60}$ aryl amide$)_{1-100}$, $(C_{8-70}$ alkylaryl amide$)_{1-100}$, $(C_{8-70}$ arylalkyl amide$)_{1-100}$, $(C_{3-30}$ alkyl anhydride$)_{1-100}$, $(C_{8-50}$ aryl anhydride$)_{1-100}$, $(C_{9-60}$ alkylaryl anhydride$)_{1-100}$, $(C_{9-60}$ arylalkyl anhydride$)_{1-100}$, $(C_{2-30}$ alkyl carbonate$)_{1-100}$, $(C_{7-50}$ aryl carbonate$)_{1-100}$, $(C_{8-60}$ alkylaryl carbonate$)_{1-100}$, $(C_{8-60}$ arylalkyl carbonate$)_{1-100}$, $—R_1—O—CO—NH—(R_2$ or Ar—R_2—Ar$)—NH—CO—O—(C_{1-30}$ alkyl ether, C_{6-40} aryl ether, C_{7-60} alkylaryl ether, or C_{7-60} arylalkyl ether$)_{1-100}$, $—R_1—O—CO—NH—(R_2$ or Ar—R_2—Ar$)—NH—CO—O—(C_{2-50}$ alkyl ester, C_{7-60} aryl ester, C_{8-70} alkylaryl ester, or C_{8-70} arylalkyl ester$)_{1-100}$, $—R_3—O—CO—NH—(R_2$ or Ar—R_2—Ar$)—NH—CO—O—$, $—R_1—NH—CO—NH—(R_2$ or Ar—R_2—Ar$)—NH—CO—O—(C_{1-30}$ alkyl ether, C_{6-40} aryl ether, C_{7-60} alkylaryl ether, or C_{7-60} arylalkyl ether$)_{1-100}$, $—R_1—NH—CO—NH—(R_2$ or Ar—R_2—Ar$)—NH—CO—O—(C_{2-50}$ alkyl ester, C_{7-60} aryl ester, C_{8-70} alkylaryl ester, or C_{8-70} arylalkyl ester$)_{1-100}$, $—R_1—NH—CO—NH—(R_2$ or Ar—R_2—Ar$)—NH—CO—O—$, $—R_1—O—CO—NH—(R_2$ or Ar—R_2—Ar$)—NH—CO—NH—(C_{2-50}$ alkyl amide, C_{7-60} aryl amide, C_{8-70} alkylaryl amide, or C_{8-70} arylalkyl amide$)_{1-100}$, or $—R_1—NH—CO—NH—(R_2$ or Ar—R_2—Ar$)—NH—CO—NH—(C_{2-50}$ alkyl amide, C_{7-60} aryl amide, C_{8-70} alkylaryl amide, or C_{8-70} arylalkyl amide$)_{1-100}$;

each Z is —C—D, wherein C is independently —R—, —R—Ar—, —Ar—, or —Ar—R—; and D is independently —OH, —SH, $—SO_3^-$, $—OSO_3^-$, $—CO_2^-$, $—PO_3^-$, $—O—PO_3^{-2}$, $—O—PO(O^-)—O—PO_3^{-2}$, $—O—PO(O^-)—O—PO(O^-)—O—PO_3^{-2}$, $—NH_3^+$, $—NH_2$, $—NH_3^+$, $—N^+H_2R_b$, $—N^+HR_bR_c$, or $—N^+R_bR_cR_d$; and

m is 0–30, n is 0–30, and the sum of m and n is 2– 30;

in which each of R, R_1, R_2, R_3, R_a, R_b, R_c, and R_d is independently C_{1-20} alkyl, and Ar is independently C_{6-40} aryl.

5,648,524

METHOD FOR THE PREPARATION OF 3-BENZYLTHIO-2-ALKYLPROPIONIC ACID AND ITS DERIVATIVES

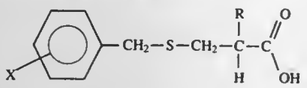
Shin-Shin Wang, Hsinchu, and Hui-Ping Tsai, Changhua Hsien, both of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Dec. 26, 1995, Ser. No. 578,508

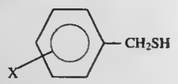
Int. Cl.[6] C07C *321/00*

U.S. Cl. 562—426 **8 Claims**

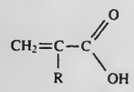
1. A method for the preparation of derivatives of 3-benzylthio-2-alkylpropionic acid of the formula:



wherein X is independently selected from hydrogen, C_1–C_6 alkyl or C_1–C_6 alkoxyl, and R is independently selected from hydrogen or C_1–C_{10} alkyl, comprising: reacting in an aqueous solution including a phase transfer catalyst, a substituted α-toluenethiol of formula:



wherein X is as defined above, with an alkyl acrylic acid of formula:



wherein R is as defined above, said phase transfer catalyst is selected from quaternary ammonium salts and quaternary phosphonium salts.

arylalkyl ester$)_{1-100}$, $—R_1—O—CO—NH—(R_2$ or Ar—R_2—Ar$)—NH—CO—O—(C_{1-30}$ alkyl ether, C_{6-40} aryl ether, C_{7-60} alkylaryl ether, or C_{7-60} arylalkyl ether$)_{1-100}$—CO—NH—(R_2 or Ar—R_2—Ar$)—NH—CO—O—$, $—R_1—O—CO—NH—(R_2$ or Ar—R_2—Ar$)—NH—CO—O—(C_{2-50}$ alkyl ester, C_{7-60} aryl ester, C_{8-70} alkylaryl ester, or C_{8-70} arylalkyl ester$)_{1-100}$, $—R_3—O—CO—NH—(R_2$ or Ar—R_2—Ar$)—NH—CO—O—$, $—R_1—NH—CO—NH—(R_2$ or Ar—R_2—Ar$)—NH—CO—O—(C_{1-30}$ alkyl ether, C_{6-40} aryl ether, C_{7-60} alkylaryl ether, or C_{7-60} arylalkyl ether$)_{1-100}$, $—R_1—NH—CO—NH—(R_2$ or Ar—R_2—Ar$)—NH—CO—O—(C_{2-50}$ alkyl ester, C_{7-60} aryl ester, C_{8-70} alkylaryl ester, or C_{8-70} arylalkyl ester$)_{1-100}$, $—R_1—NH—CO—NH—(R_2$ or Ar—R_2—Ar$)—NH—CO—O—$, $—R_1—O—CO—NH—(R_2$ or Ar—R_2—Ar$)—NH—CO—NH—(C_{2-50}$ alkyl amide, C_{7-60} aryl amide, C_{8-70} alkylaryl amide, or C_{8-70} arylalkyl amide$)_{1-100}$, or $—R_1—NH—CO—NH—(R_2$ or Ar—R_2—Ar$)—NH—CO—NH—(C_{2-50}$ alkyl amide, C_{7-60} aryl amide, C_{8-70} alkylaryl amide, or C_{8-70} arylalkyl amide$)_{1-100}$;

each Z is —C—D, wherein C is independently —R—, —R—Ar—, —Ar—, or —Ar—R—; and D is independently —OH, —SH, $—SO_3^-$, $—OSO_3^-$, $—CO_2^-$, $—PO_3^-$, $—O—PO_3^{-2}$, $—O—PO(O^-)—O—PO_3^{-2}$, $—O—PO(O^-)—O—PO(O^-)—O—PO_3^{-2}$, $—NH_3^+$, $—NH_2$, $—NH_3^+$, $—N^+H_2R_b$, $—N^+HR_bR_c$, or $—N^+R_bR_cR_d$; and

m is 0–30, n is 0–30, and the sum of m and n is 2– 30;

in which each of R, R_1, R_2, R_3, R_a, R_b, R_c, and R_d is independently C_{1-20} alkyl, and Ar is independently C_{6-40} aryl.

5,648,525

METHOD FOR PREPARATION OF HERBICIDE INTERMEDIATES

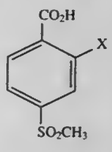
Peter K. Wehrenberg, Daphne, Ala., assignor to Zeneca Limited, London, England

Filed Nov. 2, 1995, Ser. No. 552,028

Int. Cl.[6] C07C *315/00*

U.S. Cl. 562—429 **7 Claims**

1. A method of making a compound of the formula



wherein X is halogen or nitro, comprising the steps of:

a) reacting a 2-(substituted)-4-nitrobenzoic acid with sodium methyl sulfinate; and

b) heating the mixture.

5,648,526

PROCESS FOR THE PREPARATION OF E-PROSTAGLANDINS

Fumie Sato, 1-219, Kugenumahigashi 3-Chome, Fujisawa-shi, Kanagawa 251, Japan; Takehiro Amano, Tokyo, Japan; Kazuya Kameo, Tokyo, Japan; Tohru Tanami, Tokyo, Japan; Masaru Mutoh, Tokyo, Japan; Naoya Ono, Tokyo, Japan, and Jun Goto, Tokyo, Japan, assignors to Taisho Pharmaceutical Co., Ltd., and Fumie Sato, both of Japan

PCT No. PCT/JP93/00115, § 371 Date Jul. 29, 1994, § 102(e) Date Jul. 29, 1994, PCT Pub. No. WO93/16041, PCT Pub. Date Aug. 19, 1993

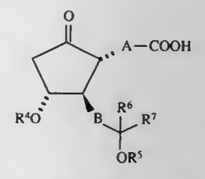
PCT Filed Feb. 2, 1993, Ser. No. 256,924

Claims priority, application Japan, Feb. 5, 1992, 4-020151; Feb. 5, 1992, 4-020264

Int. Cl.[6] C07C *405/00*

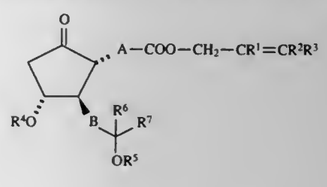
U.S. Cl. 562—503 **10 Claims**

1. A process for preparing an E-prostaglandin represented by the formula:



wherein A, R^6 and R^7 each represent, respectively, an arbitrary group which does not participate in the reaction; B represents a vinylene or ethynylene group; R^4 and R^5 may be the same or different and each represents a hydrogen atom or a protective group for the hydroxyl,

said process comprising reacting an allyl ester of an E-prostaglandin represented by the formula:



wherein R^1 and R^2 are the same or different and each represents a hydrogen atom or a lower alkyl group; R^3 represents a hydrogen atom, a lower alkyl group, an alkenyl group or an aryl group; and A, B, R^4, R^5, R^6 and R^7 are as defined above

with at least one reactant selected from the group consisting of bases and formic acid, in the presence of a zero- or divalent palladium complex or a salt thereof.

5,648,527

SATURATED FLUOROALKYLAMINES AND THEIR DERIVATIVES, AND MIXTURES THEREOF

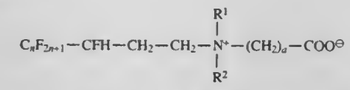
Günter Prossel; Wolfgang Knaup, and Frank Wehowsky, all of Burgkirchen, Germany, assignors to Hoechst Aktiengesellschaft, Germany

Division of Ser. No. 208,004, Mar. 9, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 480,647

Int. Cl.[6] C07C *51/14*

U.S. Cl. 562—517 **2 Claims**

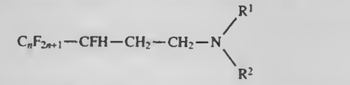
1. A process for the preparation of a carboxyalkylbetaine of the formula (2)



(2)

in which a is 1, 2, 3, or 4, n is an integer from 3 to 17 and R^1 and R^2 are C_1 to C_4 alkyl, C_1 to C_4 hydroxyalkyl or hydrogen, with the proviso that only one the two substituents R^1 and R^2 is hydrogen, said process comprising:

alkylcarboxylating a fluoroalkylamine of the formula (1)



(1)

in which n, R^1 and R^2 are as defined, with a halocarboxylic acid of the formula (2a)



(2a)

in which X is a halogen and a is as defined above, or a salt or C_1- to C_4-alkyl ester of said halocarboxylic acid;

if said alkylcarboxylating step is carried out with a said ester, hydrolyzing the thus-alkylcarboxylated product, and

recovering a said carboxyalkylbetaine of formula (2).

5,648,528

SATURATED FLUOROALKYLAMINES AND THEIR DERIVATIVES, AND MIXTURES THEREOF

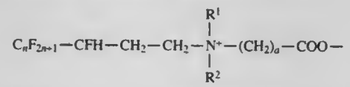
Günter Prossel; Wolfgang Knaup, and Frank Wehowsky, all of Burgkirchen, Germany, assignors to Hoechst Aktiengesellschaft, Germany

Division of Ser. No. 208,004, Mar. 9, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 476,725

Int. Cl.[6] C07C *229/00*

U.S. Cl. 562—574 **2 Claims**

1. Carboxyalkylbetaines of the formula (2) below



(2)

in which a is 1, 2, 3 or 4, n is an integer from 3 to 17 and R^1 and R^2 are C_1 to C_4 alkyl, C_1 to C_4 hydroxyalkyl or hydrogen, with the proviso that only one of the two substituents R^1 and R^2 is hydrogen.

5,648,529

PROCESS FOR THE RECOVERY OF AN ORGANIC ACID FROM THE MANUFACTURE OF A CELLULOSE ESTER

Stephen C. Jones, Charlotte, N.C., and Denis G. Fallon, Rock Hill, S.C., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed May 16, 1995, Ser. No. 442,044

Int. Cl.[6] C07C *51/42*

U.S. Cl. 562—608 **8 Claims**

1. A process for the recovery of the extraction solvent used in recovery of an organic acid, the organic acid being generated from the manufacture of a cellulose ester, comprising the steps of:

removing the acid from the manufacture of the cellulose ester, the acid being in the form of a weak acid stream comprising organic acid and water;

solvent extracting the weak acid stream and thereby forming a first overhead stream and a raffinate stream, the raffinate stream comprising solvent, water, and alcohol, the alcohol being produced in the recovery process by hydrolysis of solvent after the solvent extraction step, the first overhead stream comprising organic acid, the organic acid being recycled into the manufacture of the cellulose ester;

resolving the raffinate stream into a second overhead stream and a bottom stream, the second overhead stream comprising water, alcohol, and solvent;

adding excess organic acid to the second overhead stream to form a feed stream;

catalyzing, via ion exchange resins, the feed stream, and thereby esterifying a portion of alcohol to solvent; and

recycling the last-mentioned solvent into the recovery process.

5,648,530

MANUFACTURE OF CARBONYL FLORIDE

James Lang Webster, 202 N. Hills Dr., Parkersburg, W. Va. 26101

Continuation-in-part of Ser. No. 510,060, Aug. 1, 1995, abandoned, which is a continuation-in-part of Ser. No. 362,355, Dec. 22, 1994, abandoned. This application Dec. 18, 1995, Ser. No. 573,677

Int. Cl.[6] C07C *51/58*

U.S. Cl. 562—849 **19 Claims**

1. Process for the manufacture of COF_2 comprising reacting fluorine-containing compound having a molecular weight greater than 20 with CO and obtaining as a result thereof said COF_2, said reacting being energized by a plasma.

5,648,531

PROCESS FOR PRODUCING ACETIC ANHYDRIDE ALONE OR ACETIC ANHYDRIDE AND ACETIC ACID

Yoshiaki Morimoto; Hiroto Tanigawa, and Kazuyuki Akita, all of Hyogo, Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan

PCT No. PCT/JP94/01354, § 371 Date Mar. 22, 1995, § 102(e) Date Mar. 22, 1995, PCT Pub. No. WO95/05356, PCT Pub. Date Feb. 23, 1995

PCT Filed Aug. 16, 1994, Ser. No. 406,896

Claims priority, application Japan, Aug. 18, 1993, 5-203896

Int. Cl.[6] C07C *51/56;51/54*

U.S. Cl. 562—891 **14 Claims**

1. A process for producing acetic anhydride comprising the steps of:

continuously reacting at least one of dimethyl ether and methyl acetate with carbon monoxide in the presence of a rhodium compound and methyl iodide in a carbonylation reactor to form a resulting liquid reaction mixture; introducing the resulting liquid reaction mixture into an evaporator having a pressure lower than that of the reactor to separate the liquid reaction mixture into a volatile phase containing acetic anhydride, methyl iodide and at least one of unreacted dimethyl ether and unreacted methyl acetate and a nonvolatile phase containing the rhodium compound; recirculating the nonvolatile phase containing the rhodium compound back into the reactor; distilling the volatile phase to obtain a product mixture containing acetic anhydride and a distillate containing methyl iodide and at least one of the unreacted dimethyl ether and unreacted methyl acetate; distilling the distillate to remove acetaldehyde therefrom and form a bottom liquid; recirculating the bottom liquid back into the reactor; and recovering said product mixture containing acetic anhydride.

5,648,532

COMPOSITIONS FOR BORON NEUTRON CAPTURE THERAPY AND METHODS THEREOF

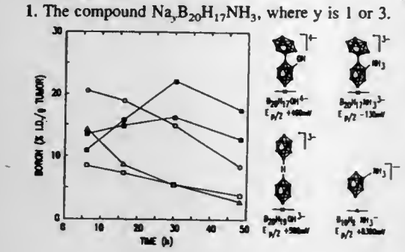
M. Frederick Hawthorne, Encino; Debra Arlene Feakes, and Kenneth John Shelly, both of Los Angeles, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Jun. 3, 1993, Ser. No. 71,702

Int. Cl.[6] C04F *5/02*

U.S. Cl. 564—8 **5 Claims**

1. The compound $Na_yB_{20}H_{17}NH_3$, where y is 1 or 3.



5,648,533

PROCESS OF PRODUCING 2-IMINOTHIAZOLINE DERIVATIVES AND PROCESS OF PRODUCING THEIR INTERMEDIATES

Katuhisa Masumoto, Ibaraki; Toshio Nagatomi, Takarazuka; Akihiko Nakamura, Nishinomiya, and Yoshimi Yamada, Toyono-gun, all of Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka-fu, Japan

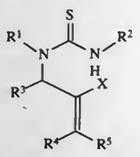
Division of Ser. No. 160,261, Dec. 2, 1993, Pat. No. 5,463,069. This application May 4, 1995, Ser. No. 434,589

Claims priority, application Japan, Dec. 4, 1992, 4-325259; Feb. 5, 1993, 5-018609

Int. Cl.[6] C07C *335/16*

U.S. Cl. 564—20 **5 Claims**

1. A thiourea derivative of the general formula:



(I)

wherein R^1 is a C_6–C_{10} aryl or heteroaryl group unsubstituted or substituted with at least one substituent selected from C_6–C_{10} aryl, nitro, halogen, C_1–C_8 alkyl unsubstituted or substituted with at least one hydrogen atom, and C_1–C_8 alkoxy unsubstituted or substituted with at least one halogen atom; and

wherein R^2 is hydrogen; C_1–C_8 alkyl unsubstituted or substituted with at least one substituent selected from C_1–C_8 alkoxy and C_3–C_8 cycloalkyl; C_3–C_8 cycloalkyl unsubstituted or substituted with at least one substituent selected from C_1–C_8 alkyl, C_1–C_8 alkoxy and C_6–C_{10} aryl; C_6–C_{10} aryl unsubstituted or substituted with at least one substituent selected from C_6–C_{10} aryl, nitro, halogen, C_1– C_8 alkyl and C_1–C_8 alkoxy; C_1–C_8 alkylcarbonyl unsubstituted or substituted with at least one substituent selected from C_1–C_8 alkoxy, C_6–C_{10} aryl and C_3–C_8 cycloalkyl; C_3–C_8 cycloalkylcarbonyl unsubstituted or substituted with at least one substituent selected from C_1–C_8 alkyl, C_1–C_8 alkoxy and C_6–C_{10} aryl; a phenylcarbonyl, α-naphthylcarbonyl or β-naphthylcarbonyl group unsubstituted or substituted with at least one substituent selected from C_1–C_8 alkyl, C_1–C_8 alkoxy and C_6–C_{10} aryl; C_1–C_8 alkoxycarbonyl unsubstituted or substituted with at least one substituent selected from C_1–C_8 alkoxy, C_6–C_{10} aryl and C_3–C_8 cycloalkyl; C_3–C_8 cycloalkyloxycarbonyl unsubstituted or substituted with at least one substituent selected from C_1–C_8 alkyl, C_1–C_8 alkoxy and C_6–C_{10} aryl; or a phenoxycarbonyl, α-naphthoxycarbonyl or β-naphthoxycarbonyl group unsubstituted or substituted with at least one substituent selected from C_6–C_{10} aryl, nitro, halogen, C_1–C_8 alkyl unsubstituted or substituted with at least halogen atom, and C_1–C_8 alkoxy unsubstituted or substituted with at least one halogen atom; and R^3, R^4 and R^5 are the same or different, each of which is hydrogen; C_1–C_8 alkyl unsubstituted or substituted with at least one substituent selected from C_1–C_8 alkoxy, C_3–C_8 cycloalkyl and C_6–C_{10} aryl; or C_6–C_{10} aryl unsubstituted or substituted with at least one substituent selected from C_1–C_8 alkyl, C_1–C_8 alkoxy, C_6–C_{10} aryl, nitro and halogen; said heteroaryl being a member selected from pyridyl, pyrimidinyl, thienyl, imidazolyl, thiazolyl and oxazolyl; and X is halogen.

5,648,534

METHOD OF PRODUCING CIS-1-AMINOINDAN-2-OL

Yoshio Igarashi; Fumihiro Asano; Makoto Shimoyamada; Masayuki Harada; Shigeru Nakano; Ryoji Iwai; Keisuke Yagami, and Yuzi Konno, all of Fukushima, Japan, assignors to Ichikawa Gosei Chemical Co., Ltd., Chiba, Japan

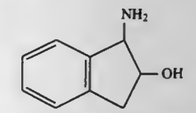
Filed Nov. 30, 1994, Ser. No. 346,746

Claims priority, application Japan, Dec. 1, 1993, 5-301989; Mar. 28, 1994, 6-057649

Int. Cl.[6] C07D *263/52*

U.S. Cl. 564—130 **7 Claims**

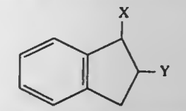
1. A method of producing cis-1-aminoindan- 2-ol expressed by formula (V)



(V)

wherein NH_2 and OH groups are in cis-configuration forming either a racemic body or an optically-active substance; said method comprising the steps of:

reacting 1,2-di-substituted indan expressed by formula (I)



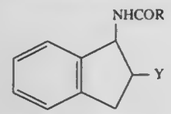
(I)

wherein X is a substituent which can be easily drawn out under an acidic condition to form a carbocation at 1-position of an indan skeleton, said substituent selected from the group consisting of a halogen atom, methoxy, ethoxy, phenoxy, methylcarbonyloxy, ethylcarbonyloxy, phenylcarbonyloxy and hydroxyl group, Y is a halogen atom, and X and Y can be in either cis- or trans-configuration forming either a racemic body or an optically active substance, under said acidic condition attained by using at least one acidic material selected from the group consisting of fuming sulfuric acid, concentrated sulfuric acid, perchloric acid, boron trifluoride, methane sulfonate, zeolite, and ion-exchange resins, with a nitrile expressed by formula (II)



(II)

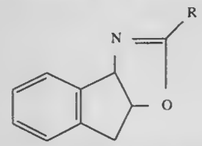
wherein R is phenyl or a lower alkyl group by a Ritter reaction carried out at a temperature between −30° C. to 100° C. to form a trans-amide derivative expressed by formula (III)



(III)

wherein R is phenyl or a lower alkyl group, Y is a halogen atom, and NHCOR group and Y are in trans-configuration forming either a racemic body or an optically-active substance;

subjecting said trans-amide derivative to a ring closure under neutral to acidic conditions in a semi-polar solvent to form a cis-oxazoline derivative expressed by formula (IV)



(IV)

wherein R is phenyl or a lower alkyl group and oxazoline ring is in cis-configuration forming either a racemic body or an optically-active substance; and then

hydrolyzing said cis-oxazoline derivative.

5,648,535

PROCESS FOR PREPARING ACYL AMINOPHENOLS

James A. Foster; Werner H. Mueller; Debra A. Ryan, all of Corpus Christi, Tex., and Hartmut Wiezer, Eppstein/Taunns, Germany, assignors to Hoechst Celanese Corp., Somerville, N.J.

Continuation of Ser. No. 56,555, Apr. 30, 1993, abandoned. This application May 26, 1995, Ser. No. 451,338

Int. Cl.[6] C07C *231/02*

U.S. Cl. 564—144 **31 Claims**

1. A process for producing N-acylaminophenols comprising simultaneously and continuously adding a nitrophenol, an acyl anhydride, and hydrogen to a continuous stirred tank reactor, wherein said acyl anhydride is added at a rate of at least about one equivalent per equivalent of said nitrophenol; hydrogenating said nitrophenol to an aminophenol in the presence of a slurry of a hydrogenation catalyst and concurrently acylating said aminophenol with said acyl anhydride in said reactor to form an N-acylaminophenol product; and continuously withdrawing said product from said reactor.

5,648,536

PROCESS FOR PRODUCING IOVERSOL

Thomas Jeffrey Dunn, 9505 Byrnesville Rd., Cedar Hill, Mo. 63016; David H. White, 877 Gardenway Dr., Ballwin, Mo. 63011; Mills Thomas Kneller, 7314 Colgate Ave., University City, Mo. 63130; Michelle M. Jones, 16212 Copperwood La., Grover, Mo. 63040, and Narciso Ocampo Doran, III, 3766 Vincentian La., Bridgeton, Mo. 63044

Filed Jun. 7, 1995, Ser. No. 482,380

Int. Cl.[6] C07C *233/65;231/02*

U.S. Cl. 564—153 **10 Claims**

1. A process for producing ioversol comprising:

(a) reacting 5-amino-N,N'-bis(2,3-dihydroxypropyl)-2,4,6-triiodoisopthalamide with chloroacetyl chloride in a polar aprotic solvent, or combinations thereof, to produce N,N'-bis[2,3-di(2-chloroacetoxy)propyl]-5-(2-chloroacetamido-2,4,6-triiodoisophthalamide;

(b) reacting the product of (a) with sodium hydroxide to produce N,N'-bis(2,3-dihydroxypropyl)-5-(2-chloroacetamido)- 2,4,6-triiodoisopthalamide;

(c) reacting the product of (b) in water and sodium acetate to produce N,N'-bis(2,3-dihydroxypropyl)-5-glycolamido- 2,4,6-triiodoisopthalamide; and

(d) reacting the product of (c) with an alkylating agent capable of producing a hydroxyethylated product in the presence of a base and water to produce ioversol.

5,648,537

PROCESS FOR THE SYNTHESIS OF SUBSTITUTED CARBODIIMIDES

Patricia Hussenet, Athis Mons; Philippe Le Goff, Strasbourg, and Gérard Sennyey, Saint Aubin, all of France, assignors to Societe Nationale des Poudres et Explosifs, Paris Cedex, France

Filed Jan. 16, 1996, Ser. No. 584,944

Claims priority, application France, Jan. 24, 1995, 95 00748

Int. Cl.[6] C07C *267/00*

U.S. Cl. 564—252 **10 Claims**

1. Process for the synthesis of a disubstituted carbodiimide including a first stage of phosgenation of an N,N'-disubstituted urea in an organic solvent medium, characterized in that, after this first reaction stage ammonia is added to the reaction mixture without preliminary isolation of any intermediate compound.

5,648,538

PROCESS FOR PREPARING DIARYLAMINES FROM ARYLAMINES

Xiusen Liu; Huarong Zhu; Fubin Ai; Lizhi Song; Zhihui Lu, and Xuewei Hou, all of Liaoning, China, assignors to Fushun Research Institute of Petroleum and Petrochemicals, Liaoning, and China Petrochemical Corp., Beijing, both of China

Filed Jun. 29, 1995, Ser. No. 496,520

Claims priority, application China, Jun. 29, 1994, 94107296.7

Int. Cl.[6] C07C *209/00*

U.S. Cl. 564—307 **4 Claims**

1. A process for preparing diarylamines from arylamines, said process comprising reacting a compound of formula (I):

$$(R)_n—Ar—NH_2 \quad (I)$$

with a compound of formula (II):

$$(R_1)_n—Ar—NH_2 \quad (II)$$

in the presence of a solid acid catalyst at a temperature between 250° and 450° C. to obtain a diarylamine compound of formula (III):

$$(R)_n—Ar—NH—Ar—(R_1)_n \quad (III)$$

wherein

R and R_1 are identical or different, and each represents C_{1-12} alkyl, C_{1-12} alkoxy, C_{1-12} alkoxy C_{1-12} alkyl, hydroxy C_{1-12} alkyl, phenyl, phenyl C_{1-12} alkyl, hydroxy, amino or nitro;

Ar represents phenyl;

n represents an integer from 0 to 5, when n is 1, R and R_1 are in the ortho-, meta- or para-position relative to the amino group in Ar; and when n is equal to or greater than 2, R and R_1 respectively represent two or more substituents which are the same or different,

wherein said solid acid catalyst consists of an H-type beta zeolite and an active alumina, the molecular ratio of SiO_2/Al_2O_3 in the H-type beta zeolite is between 20 and 100, and the content of the active alumina is between 10% and 70% (wt).

5,648,539

LOW TEMPERATURE ARYLAMINE PROCESSES

H. Bruce Goodbrand, Hamilton, Canada, assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 29, 1996, Ser. No. 607,953

Int. Cl.[6] C07C *209/10*

U.S. Cl. 564—309 **43 Claims**

1. A process for the preparation of arylamines which comprises the reaction of methyldiphenylamine and diiodobiphenyl in the presence of a ligated copper catalyst, and wherein the ligand is selected from the group consisting of monodentate tertiary amines and bidentate tertiary amines, and which reaction is accomplished at a temperature of from about 120° C. to about 150° C.

5,648,540

AMINE PREPARATION

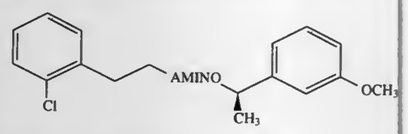
Bradford C. VanWagenen, Salt Lake City, Utah; Steven R. Duff, De Soto; William A. Nelson, Lawrence, both of Kans., and Thomas E. D'Ambra, North Greenbush, N.Y., assignors to NPS Pharmaceuticals, Inc., Salt Lake City, Utah

Division of Ser. No. 276,214, Jul. 15, 1994, Pat. No. 5,504,253. This application May 22, 1995, Ser. No. 446,491

Int. Cl.[6] C07C *209/50;209/52*

U.S. Cl. 564—375 **5 Claims**

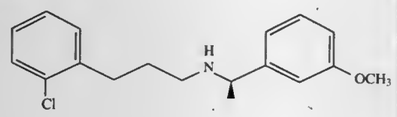
1. A method of making (R)-N-[1-(3-methoxyphenyl)-ethyl]-3-(2-chlorobenzene)propanamine comprising: reducing a compound of the formula:



wherein AMINO is either:



to form



5,648,541

CHIRAL REDUCTIONS OF IMINES LEADING TO THE SYNTHESES OF OPTICALLY ACTIVE AMINES

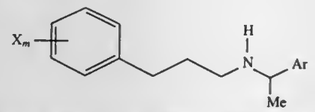
Bradford C. VanWagenen, and Robert M. Barmore, both of Salt Lake City, Utah, assignors to NPS Pharmaceuticals, Inc., Salt Lake City, Utah

Filed Sep. 28, 1995, Ser. No. 535,469

Int. Cl.[6] C07C *209/52*

U.S. Cl. 564—375 **20 Claims**

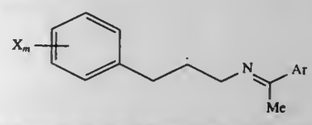
1. A process for preparing an R enantiomer of a compound having a formula (I):



(I)

wherein Me is methyl, Ar is 3-methoxyphenyl, 3-chlorophenyl, or 1-naphthyl, and X is independently selected from the group consisting of H, F, Cl, Br, I, phenyl, CF_3, CF_2H, CFH_2, lower alkyl, O-lower alkyl, OCH_2CF_3, OH, CN, NO_2, C(O)-lower alkyl, C(O)O-lower alkyl, C(O)NH-lower alkyl, C(O)N-lower alkyl$_2$, OC(O)-lower alkyl, and NH—C(O)-lower alkyl, wherein m is an integer between 1 and 5, said process comprising:

asymmetrically and enantioselectively reducing an imine having a formula (II):



(II)

with a reducing agent selected from the group of borane and lithium aluminum hydride modified by a chiral auxiliary agent selected from the group consisting of (S)-(+)-2-(anilinomethyl)pyrrolidine, (1R,2S)-(−)-ephedrine, (1R,2S)-(−)-N-methylephedrine, (S)-(+)-1-(2-pyrrolidinylmethyl)pyrrolidine, (R)-(+)-1,1'-bi-2-naphthol, so as to produce an enantiomeric excess of the R enantiomer of the compound of formula (I) over the S enantiomer of the compound of formula (I).

5,648,542

ARYLAMINE PROCESSES

H. Bruce Goodbrand, Hamilton; Liqin Chen, Mississauga, both of Canada, and Dale S. Renfer, Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 29, 1996, Ser. No. 609,259

Int. Cl.[6] C07C *209/10*

U.S. Cl. 564—405 **41 Claims**

1. A process for the preparation of triarylamines which comprises the reaction of an aniline and a haloaromatic component in the presence of a ligand copper catalyst, and wherein the ligand is selected from the group consisting of monodentate tertiary amines and bidentate tertiary amines, and which reaction is accomplished at a temperature of from about 120° C. to about 150° C.

5,648,543

PROCESS FOR PRODUCING 4-NITROSODIPHENYLAMINES OR THEIR SALTS

Tetsuo Murata; Hiroyuki Takagi, and Yasumi Katayama, all of Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka-fu, Japan

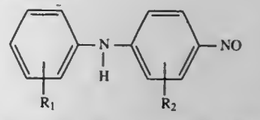
Continuation of Ser. No. 165,653, Dec. 13, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 466,239

Claims priority, application Japan, Dec. 15, 1992, 4-334437; Apr. 28, 1993, 5-102628; Apr. 28, 1993, 5-102629

Int. Cl.[6] C07C *207/00*

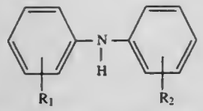
U.S. Cl. 564—410 **22 Claims**

1. A process for producing a 4-nitrosodiphenylamine represented by the formula (2)



(2)

wherein R_1 and R_2 independently represent a hydrogen atom, methyl group, ethyl group, cyclohexyl group, methoxy group, ethoxy group, chlorine atom or bromine atom, or a salt thereof, comprising treating a solution of a diphenylamine represented by the formula (1)



(I)

wherein R_1 and R_2 are as defined above and an aliphatic alcohol in a solvent with (i) a hydrogen halide and (ii) a mixture of nitrogen oxides in this order or at the same time at a temperature from about 0° to 60° C., wherein the atomic ratio of oxygen to nitrogen of the mixture of nitrogen oxides is more than 1.0 and less than 2.0.

5,648,544

PROCESS FOR THE PREPARATION OF 2-AMINOALKANE-1,3-DIOLS

Didier Semeria, Courtry, and Michel Philippe, Wissous, both of France, assignors to L'Oreal, Paris, France

Filed Nov. 29, 1995, Ser. No. 564,739

Claims priority, application France, Nov. 30, 1994, 94 14380

Int. Cl.[6] C07C *209/40*

U.S. Cl. 564—468 **31 Claims**

1. A process comprising the step of:

reducing, in a single step, an alkyl 2-oximino-3-oxoalkanoate of the formula (I):

$$R_1—CO—CNOH—COOR_2 \quad (I)$$

in which R_1 and R_2 represent a saturated or unsaturated linear or branched alkyl radical,

in the presence of at least one hydride, in a solvent, under inert atmosphere, and at a controlled initial temperature for a time sufficient to obtain a 2-aminoalkane-1,3-diol of the formula (II):

$$R_1—CHOH—CHNH_2—CH_2OH \quad (II)$$

or a salt of the 2-aminoalkane-1,3-diol of the formula (II).

5,648,545

PREPARATION OF AMINES FROM NITRILES BY ALKYLATION WITH A NITROGEN COMPOUND IN THE PRESENCE OF A COPPER OXIDE/ZIRCONIUM OXIDE CATALYST

Wolfgang Reif, Frankenthal; Michael Hesse, Schifferstadt; Horst Zimmermann, Mannheim, and Heinz Lingk, Bobenheim-Roxheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Jul. 5, 1995, Ser. No. 494,955

Claims priority, application Germany, Jul. 4, 1994, 44 23 346.9

Int. Cl.[6] C02C *209/48*

U.S. Cl. 564—470 **10 Claims**

1. In a catalytic amination process for the preparation of amines by reacting a nitrile with a nitrogen compound selected from the group consisting of ammonia, primary amines and secondary amines in the presence of hydrogen and at temperatures of from 80° to 250° C. and pressures of from 1 to 400 bar, the improvement which comprises:

carrying out the reaction in the presence of a catalyst consisting essentially of copper oxide and zirconium oxide as the catalytically active components in a ratio by weight of copper oxide (CuO) to zirconium oxide (ZrO_2) of from 30:70 to 70:30.

5,648,546

METHOD FOR MANUFACTURING TERT-BUTYLAMINE

Manfred Bergfeld, Erlenbach-Mechenhard, and Martin Nywlt, Obernburg, both of Germany, assignors to Akzo Nobel, N.V., Velpergwg, Netherlands

Continuation-in-part of Ser. No. 295,877, Sep. 6, 1994, abandoned. This application Nov. 13, 1995, Ser. No. 555,018

Claims priority, application Germany, Mar. 5, 1992, 42 06 992.0

Int. Cl.[6] C07C *209/60*

U.S. Cl. 564—485 **15 Claims**

1. A process for the production of tertiary butylamine having a purity of at least 99.5% and being suited for use without further purification, the process comprising reacting isobutene and ammonia in the gaseous phase above a dealuminized silica alumina catalyst, wherein the catalyst:

a) is used in acid form;

b) has a crystallinity of at least 95%;

c) has an Na_2O content less than 0.2% by weight; and

d) has a ratio of Si:Al greater than 12, and wherein the reaction occurs at a temperature of 200°–350° C., a pressure of 100–250 bar, and has a ratio of educt to catalyst of 5 to 60 moles/kg catalyst per hour.

5,648,547

BIS-PHOSPHEPINES AND PROCESSSES FOR THEIR PREPARATION

Dieter Regnat, Eppstein, Germany, assignor to Hoechst AG, Frankfurt, Germany

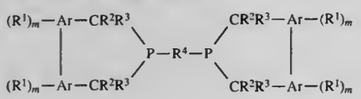
Filed Sep. 21, 1995, Ser. No. 531,470

Claims priority, application Germany, Sep. 23, 1994, 44 33 952.6

Int. Cl.[6] C07F *9/02*

U.S. Cl. 568—12 **6 Claims**

1. A bis-phosphepine of the formula (I):



(I)

where:

Ar—Ar is biphenyl, 1,1'-binaphthyl or 1-phenylnaphthyl,

R^1 independently of one another are F, $(C_1–C_8)$-alkyl or $(C_1–C_8)$-alkoxy,

m is 0, 1, 2, 3 or 4,

R^2 and R^3 independently of one another are H, $(C_1–C_{20})$-alkyl, $(C_6–C_{20})$-aryl, $(C_7–C_{20})$-aralkyl, $(C_7–C_{20})$-alkaryl or $(C_3–C_{20})$-cycloalkyl and

R^4 is $(C_1–C_{10})$-alkylene, it also being possible for the alkylene chain to contain oxygen atoms and

N-alkyl groups, $(C_3–C_{10})$-cycloalkylene, $(C_8–C_{22})$-arylenebisalkyl or $(C_6–C_{10})$-arylene,

the group $CR2R^3$ always being adjacent to the Ar—Ar bond.

5,648,548

OPTICALLY ACTIVE ASYMMETRIC DIPHOSPHINE AND PROCESS FOR PRODUCING OPTICALLY ACTIVE SUBSTANCE IN ITS PRESENCE

Hidemasa Takaya, deceased, late of Shiga; Tetsuo Ota, Kyoto, and Koji Inagaki, Mie, all of Japan, assignors to Takasago International Corporation, Tokyo, Japan

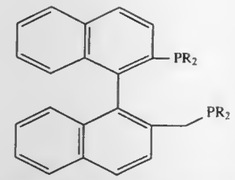
Filed Mar. 13, 1996, Ser. No. 615,001

Claims priority, application Japan, Mar. 14, 1995, 7-080836

Int. Cl.[6] C07F *9/02*

U.S. Cl. 568—17 **3 Claims**

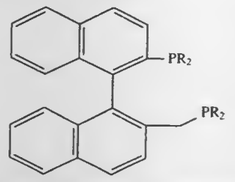
1. An optically active 2-diphenylphosphinomethyl-2' -diphenylphosphinyl-1,1'-binaphthalene derivative represented by the following general formula (I)



(I)

wherein R represents a phenyl group, a tolyl group, an anisyl group or a chlorophenyl group.

2. A process for producing optically active substances which comprises hydrogenating an α-alkylstyrene derivative in the presence of an optically active 2 -diphenylphosphinomethyl-2'-diphenylphosphinyl-1,1' -binaphthalene derivative represented by the following general formula (I):



(I)

wherein R represents a phenyl group, a tolyl group, an anisyl group or a chlorophenyl group, and a transition metal compound.

5,648,549

PROCESS FOR THE PREPARATION OF SECONDARY ARYLPHOSPHINES

Hans-Jerg Kleiner, Kronberg, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt, Germany

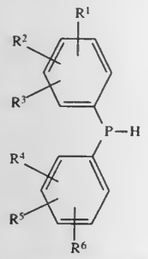
Filed Jul. 15, 1996, Ser. No. 683,532

Claims priority, application Germany, Jul. 17, 1995, 195 26 047.3

Int. Cl.[6] C07F *9/50*

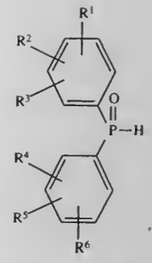
U.S. Cl. 568—17 **19 Claims**

1. A process for the preparation of secondary phosphines of formula (I)



(I)

in which R^1 to R^6 independently of one another are hydrogen, halogen, $(C_1–C_6)$-alkyl or $(C_1–C_6)$-alkoxy, comprising the steps of (a) reacting secondary phosphine oxides of formula (III)



(II)

with Lewis acids as catalysts, at elevated temperature, and (b) distilling off, under reduced pressure, secondary phosphines of formula (I) which are formed by the reaction.

5,648,550

BETA-KETO-ALCOHOLS AND THE PROCESS FOR THE MANUFACTURE THEREOF

Andreas Brüngger, Volketswil; Hansjörg Gründler, Rheinfelden, and Werner Simon, Rieben, all of Switzerland, assignors to Roche Vitamins Inc., Paramus, N.J.

Filed Dec. 6, 1995, Ser. No. 567,818

Claims priority, application Switzerland, Dec. 8, 1994, 3713/94; Oct. 18, 1995, 2952/95

Int. Cl.[6] C07C *45/45*

U.S. Cl. 568—388 **11 Claims**

1. A process for the manufacture of a polyene (di)alcohol of the general formula

$$A—CH=CH—CO—CR^1R^2OH \quad II'$$

or, respectively,

$$HOR^2R^1C—OC—HC=HC—B—CH=CH—CO—CR^1R^2OH \quad II''$$

wherein

R^1 is a $C_{1–6}$-alkyl group and

R^2 is a $C_{1–6}$-alkyl group or a $C_{2–6}$-alkenyl group

or

R^1 and R^2 together form 1,4-tetramethylene or 1,5-pentamethylene, and

A is a monovalent optionally substituted conjugated polyene chain connected at the terminal position of this chain, and B is a divalent optionally substituted conjugated polyene chain connected at the terminal positions of this chain,

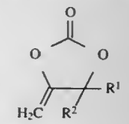
which process comprises reacting an optionally substituted conjugated polyene aldehyde of the general formula

$$A—CHO \quad I'$$

or

$$OHC—B—CHO \quad I''$$

wherein A and B are as above, the formyl group or, respectively, the two formyl groups being situated at the terminal position(s) of the conjugated polyene chain A or B, with cyclocarbonate or a derivative thereof of the general formula



III

wherein

R^1 and R^2 have the significances given above, under basic conditions to form said polyene (di)alcohol.

5,648,551

PROCESS FOR THE PREPARATION OF HALOBENZALDEHYDES

Holger Borchert, Frankfurt; Thomas Gerdau, Eppstein, and Jens Weiguny, Weiterstadt, all of Germany, assignors to Hoechst Aktiengesellschaft, Germany

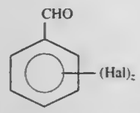
Filed Jan. 26, 1996, Ser. No. 592,069

Claims priority, application Germany, Jan. 30, 1995, 195 02 805.8

Int. Cl.[6] C07C *45/36*

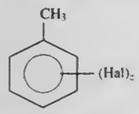
U.S. Cl. 568—431 **21 Claims**

1. A process for the preparation of halobenzaldehydes of the formula (I):



(I)

in which Hal is fluorine, chlorine, bromine or iodine and z=1, 2, 3 or 4, by catalytic gas-phase oxidation of a substituted toluene of the formula (II),



(II)

by oxygen, which comprises carrying out the oxidation in the presence of a catalyst of the formula (III)

$$Me^1_aMe^2_bMe^3_cO_e \quad \text{(III)},$$

in which Me^1 is bismuth or vanadium, Me^2 is at least one of the elements selected from the group consisting of lithium, sodium, potassium, rubidium and cesium, Me^3 is at least one element selected from the group consisting of iron, cobalt, nickel, niobium, molybdenum, arsenic, tin, antimony, tungsten, tantalum, phosphorus, chromium, manganese, palladium, copper, zinc, cerium, silver, boron, samariuan, barium, calcium, magnesium and rhenium, and the letters a, b and c represent an atomic ratio of the respective elements such that when a=1, b has a value in the range from 0.1 to 2 and c has a value in the range from 0.05 to 2, different values for b and c being possible for different elements Me^2 or Me^3.

14. The process as claimed in claim 1, wherein 2-chlorotoluene, 4-chlorotoluene, 4-fluorotoluene or 2-bromotoluene is used.

5,648,552

PROCESS FOR THE PREPARATION OF ISOVANILLIN

Christian Maliverney, Lyons, France, assignor to Rhone-Poulenc Chimie, Courbevoie, France

Filed Oct. 23, 1995, Ser. No. 546,648

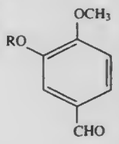
Claims priority, application France, Oct. 24, 1994, 94 12661

Int. Cl.[6] C07C *45/65*

U.S. Cl. 568—433 **24 Claims**

1. Process for the preparation of isovanillin, comprising the steps of:

carrying out a dealkylation, using a strong acid, selectively in the 3-position, of a 3-alkoxy-4-methoxybenzaldehyde of the following formula (I):



(I)

wherein R represents an alkyl or cycloalkyl radical having a number of carbon atoms which ranges between 2 and 8; and

recovering the isovanillin.

5,648,553

METHOD FOR PRODUCING ALDEHYDES

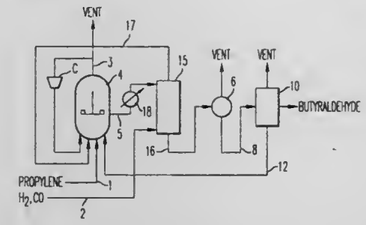
Akio Ueda, and Masaki Nakagawa, both of Okayama, Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

Filed Nov. 8, 1995, Ser. No. 555,073

Claims priority, application Japan, Dec. 9, 1994, 6-306218

Int. Cl.[6] C07C *45/50*

U.S. Cl. 568—454 **10 Claims**



1. A method for producing aldehydes, which comprises reacting an olefin with carbon monoxide and hydrogen in a hydroformylation reaction zone in the presence of a rhodium catalyst having an organophosphorus compound as a ligand, wherein a liquid mixture derived from an effluent from the hydroformylation reaction zone, which contains an unreacted olefin and aldehyde products and contains substantially no rhodium catalyst, is heated and then supplied to a gas-liquid contact zone, where the heated liquid mixture is countercurrently contacted with carbon monoxide and hydrogen, and a gas stream of carbon monoxide and hydrogen containing an unreacted olefin is withdrawn from the gas-liquid contact zone to separate and recover the unreacted olefin, and the recovered unreacted olefin is supplied together with the carbon monoxide and the hydrogen to the hydroformylation reaction zone.

5,648,554

METHOD FOR PRODUCING ALDEHYDES

Tomoyuki Mori; Masaki Takai, and Tomobiko Inoue, all of Okayama, Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

Filed Apr. 10, 1996, Ser. No. 632,356

Claims priority, application Japan, Apr. 12, 1995, 7-086906

Int. Cl.[6] C07C *45/50*

U.S. Cl. 568—454 **13 Claims**

1. A method for producing aldehydes, which comprises reacting an olefinic unsaturated compound with carbon monoxide and hydrogen in a liquid phase in the presence of a Group 8 metal-phosphite complex catalyst, wherein a reaction product solution containing the complex catalyst and a high boiling by-product, obtained by the reaction, is intimately contacted with an extraction solution containing a polar solvent, to have either the complex catalyst or the high boiling by-product extracted selectively, followed by phase separation to separate a layer of the extraction solution from a layer of the reaction product solution.

5,648,555

ALKENES

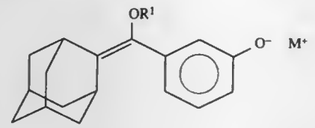
Irena Y. Bronstein, 11 Ivanhoe St., Newtown, Mass. 02158, and Brooks Edwards, 269 Huron Ave., Cambridge, Mass. 01238

Continuation of Ser. No. 948,423, Sep. 22, 1992, which is a continuation of Ser. No. 537,788, Jun. 14, 1990, Pat. No. 5,177,241, which is a continuation of Ser. No. 411,387, Sep. 22, 1989, Pat. No. 4,956,477, which is a division of Ser. No. 367,772, Jul. 17, 1989, abandoned, which is a continuation-in-part of Ser. No. 140,197, Dec. 31, 1987, abandoned, which is a continuation-in-part of Ser. No. 889,825, Jul. 24, 1986, Pat. No. 4,757,859. This application Apr. 12, 1993, Ser. No. 45,136

Int. Cl.[6] C07C *43/00*

U.S. Cl. 568—586 **6 Claims**

1. A compound of the formula



wherein R^1 is C1–C20 alkyl, aryl or aralkyl, and wherein M^+ is an alkali metal cation or a quaternary ammonium cation.

5,648,556

SYNTHESIS OF BIS(2,2-DINITROPROPYL)ACETAL (BDNPA)

R. Scott Hamilton, Bear River City, and Robert B. Wardle, Logan, both of Utah, assignors to Thiokol Corporation, Ogden, Utah

Filed Nov. 14, 1994, Ser. No. 339,138

Int. Cl.[6] C07C *41/50;43/30*

U.S. Cl. 568—590 **20 Claims**

1. A process of synthesizing bis(2,2-dinitropropyl)-acetal (BDNPA) comprising the steps of:

(a) mixing 2,2-dinitropropanol with a stoichiometric excess of an acetaldehyde source to form a reaction solution;

(b) adding an acid catalyst to the reaction solution, wherein said acid catalyst participates in the process as a catalyst or dehydration agent and not as a combinatorial reagent, wherein the reaction solution is maintained at a temperature in the range from about −30° C. to 30° C. during said adding step and wherein the reaction solution is agitated during said adding step;

(c) quenching the reaction solution with water to facilitate removal of soluble reactants and byproducts from the reaction solution;

(d) washing the reaction solution with an aqueous hydroxide solution having a hydroxide ion concentration sufficient to neutralize acid formed during the quenching step and to solubilize unreacted 2,2-dinitropropanol;

(e) extracting BDNPA product with methyl tert-butyl ether (MTBE); and

(f) evaporating the organic solvent to yield usable BDNPA product without further purification, wherein the resulting yield is at least 50% based on the starting quantity of 2,2-dinitropropanol, said evaporating step occurring at a temperature less than 60° C. and at a pressure of less than 150 mm Hg.

5,648,557

POLYETHER LUBRICANTS AND METHOD FOR THEIR PRODUCTION

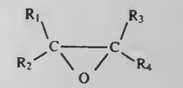
Liwen Wei, Belle Mead, N.J., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed Oct. 27, 1994, Ser. No. 329,913

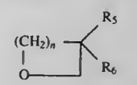
Int. Cl.[6] C07C *43/11;* **C10M** *105/08*

U.S. Cl. 568—617 **5 Claims**

1. A polyoxyalkylene block copolymer liquid lubricant compatible with synthetic hydrocarbon lubricants and mineral oil comprising recurring blocks of recurring alkylene oxide units, said recurring alkylene oxide units comprising the polymeric residue of one or more cyclic ether monomers, said monomers selected from the group having the structures:



wherein R_1, R_2, R_3 and R_4, alike or different, are selected from the group consisting of hydrogen, C_1–C_{20} alkyl, aryl, arylalkyl, and alkoxyalkyl; and



wherein n is an integer from 1 to 8, and R_5 and R_6, alike or different, are selected from the group consisting of hydrogen, C_1–C_{20} alkyl, aryl, arylalkyl, and alkoxyalkyl; said block copolymer having a molecular weight between 250 and 10,000, molecular weight distribution (M_w/M_n) between 1 and 2, viscosity index of 180 to 400, at least 5 weight percent solubility in mineral oil and synthetic oil, and containing less than 2 weight percent cyclic polyoxyalkene oligomer.

5,648,558

METHOD FOR PRODUCING A POLYOXYALKYLENE GLYCOL AND NOVEL METALLO-ALUMINOSILICATE

Masakatsu Hatano; Akio Nakanishi; Yoshio Kabata, all of Yokohama; Masayuki Shirado, Yokkaichi; Hiroshi Takeo, Yokkaichi, and Mitsuharu Kobayashi, Yokohama, all of Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

Filed Mar. 16, 1994, Ser. No. 213,706

Claims priority, application Japan, Mar. 16, 1993, 5-055696; Dec. 22, 1993, 5-324270

Int. Cl.[6] C07C *43/11;67/24;* **C08G** *63/06*

U.S. Cl. 568—618 **21 Claims**

1. A method for producing a polyoxyalkylene glycol, comprising ring opening polymerizing in the liquid phase and in a non-oxidizing atmosphere a cyclic ether in the presence of a zeolite catalyst having a structure selected from the group consisting of the following structure type codes "Atlas of Zeolite Structure Types Third Edition" edited by W. M. Meier and D. H. Olson, 1992; BEA, EMT, ERI, EUO, FAU, HEU, LTA, LTL, MAZ, MOR, MTW, NES, OFF and TON, or selected from MCM-22, ZSM-21, NU3, NU6, NU-85, PSH-3 or MCM-41, the ratio of the catalyst to the liquid phase being within the range of from 0.001 to 50 times by weight.

5,648,559

POLY(OXYPROPYLENE/OXYETHYLENE) RANDOM POLYOLS USEFUL IN PREPARING FLEXIBLE HIGH RESILIENCE FOAM WITH REDUCED TENDENCIES TOWARD SHRINKAGE AND FOAM PREPARED THEREWITH

Stanley L. Hager, Crosslanes, W. Va., assignor to Arco Chemical Technology, L.P., Greenville, Del.

Division of Ser. No. 592,087, Jan. 26, 1996. This application Oct. 21, 1996, Ser. No. 734,561

Int. Cl.[6] C07C *43/11;43/18*

U.S. Cl. 568—620 **8 Claims**

1. A polyol suitable for use in a high resilience foam formulation at levels of greater than about 20 percent of the weight of a polyol component used to prepare said foam while producing a foam with little or no shrinkage, said polyol comprising a polyoxyalkylene polyol prepared at least in part in the presence of a double metal cyanide complex oxyalkylation catalyst and having an unsaturation of less than 0.02 meq/g, wherein said polyoxyalkylene polyol contains less than 35 weight percent of an all polyoxypropylene internal block prepared in the presence of said double metal cyanide complex catalyst, and wherein said polyoxyalkylene polyol has one or more random poly(oxypropylene/oxyethylene) external block(s), each of said external blocks containing minimally 2 weight percent oxyethylene moieties based on the weight of the block(s).

5,648,560

PROCESS FOR PREPARING PERHALOETHERS FROM PERHALOOLEFINS AND NEW PERHALOETHERS SO OBTAINED

Antonio Marraccini; Antonio Pasquale; Tiziana Fiorani, all of Novara, and Walter Navarrini, Milan, all of Italy, assignors to Ausimont S.p.A., Milan, Italy

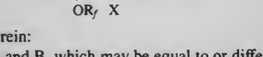
Continuation of Ser. No. 283,614, Aug. 1, 1994, abandoned, which is a continuation of Ser. No. 38,188, Mar. 29, 1993, abandoned, which is a continuation of Ser. No. 722,408, Jun. 20, 1991, abandoned, which is a continuation of Ser. No. 540,639, Jun. 19, 1990, abandoned. This application Dec. 9, 1994, Ser. No. 352,440

Claims priority, application Italy, Jun. 20, 1989, 20917 A/89

Int. Cl.[6] C07C *41/01;43/02*

U.S. Cl. 568—677 **14 Claims**

1. A process for preparing perhaloether compounds with ether end groups having the general formula:



(III)

wherein:

A and B, which may be equal to or different from each other, are R_xO or F, provided that A and B are not simultaneously F, and

R_x is a straight or branched perhaloalkyl radical containing from 1 to 10 carbon atoms;

R_f is a straight or branched perhaloalkyl radical containing from 1 to 10 carbon atoms;

X represents a fluorine atom or a radical R_f;

m is 0 or an integer from 1 to 2;

l is 0 or an integer from 1 to 2 and m+l=2;

said process comprising: reacting at least one fluorooxy compound R_x—OF, wherein R_x is a straight or branched perhaloalkyl radical containing from 1 to 10 carbon atoms, with a perfluoroolefin in a liquid phase, said liquid phase containing the whole amount of perfluoroolefin to be reacted and optionally containing an organic solvent inert to said perfluoroolefin, the temperature of said liquid phase being maintained in the range of from −120° to −30° C., by continuously feeding to the liquid phase a stream of an inert gas and a gaseous stream of said at least one fluorooxy compound, said perfluoroolefin being selected from the group consisting of

a) one perfluoromonoolefin selected from the group consisting of CF_2=CF_2; and R—CF=CF_2 wherein R is a perfluoroalkyl group containing 1 to 4 carbon atoms,

b) one perfluoroalkylvinylether of the formula CF_2=CF—O—R_f, wherein R_f represents a straight or branched perfluoroalkyl group containing from 1 to 10 carbon atoms,

and

c) one perfluoromonoolefin and one perfluoroalkylvinylether as defined above.

5,648,561

PROCESS FOR THE PRODUCTION OF HIGH PURITY AND ULTRAPURE BISPHENOL-A

Qiu Tan; Minhua Zhang; Shenbo Yu; Zongzhang Liu; Shenghua Qian, and Chuanzhao Li, all of Tianjin, China, assignors to China Petro-Chemical Corporation, Beijing, and Tianjin University, Tianjin, both of China

PCT No. PCT/CN94/00011, § 371 Date Oct. 11, 1995, § 102(e) Date Oct. 11, 1995, PCT Pub. No. WO94/19302, PCT Pub. Date Sep. 1, 1994

PCT Filed Feb. 16, 1994, Ser. No. 505,309

Claims priority, application China, Feb. 17, 1993, 93101417.4

Int. Cl.[6] C07C *37/68;39/12*

U.S. Cl. 568—727 **25 Claims**

1. A process for the production of bisphenol-A comprising the steps of (1) reacting excess phenol and acetone in the presence of catalyst, (2) cooling the reaction mixture to form adduct crystals of bisphenol-A with phenol and a first mother liquor, (3) separating the adduct crystals from the first mother liquor and (4) removing phenol from the adduct crystals

wherein in step (1), excess phenol is reacted with acetone in a substantially vertical, multiple stage suspended reactive stripping apparatus comprising

(i) a reactor column which includes a side wall and a bottom,

(ii) a plurality of perforated trays provided in the reactor column,

(iii) a first screen located on each tray,

(iv) a plurality of downcomers interconnecting the trays, each of the downcomers having a second screen connected to the top thereof, the second screen, a portion of each said downcomers, a portion of the side wall of the reactor column and one of the perforated trays with the first screen thereon in combination defining a catalyst chamber, and

(v) a modified strong acid ion-exchange resin catalyst in the form of particulate solid contained within the catalyst chamber, and

wherein all of the phenol necessary for the condensation reaction thereof with acetone is charged to the reactor column from above the uppermost tray, portions of all the required acetone are charged to the tray next to the uppermost tray and at least some of the lower trays, and an inert gaseous stream is upwardly passed through the catalyst chambers to form solid-liquid suspensions and to strip water from the reaction mixture.

5,648,562

OXIDATION PROCESS

Clive A. Henrick, Palo Alto, Calif., assignor to Sandoz Ltd., Basel, Switzerland

Continuation-in-part of Ser. No. 378,292, Jan. 25, 1995, abandoned, which is a continuation-in-part of Ser. No. 285,263, Aug. 3, 1994, abandoned. This application May 30, 1995, Ser. No. 453,841

Int. Cl.[6] C07C *39/24*

U.S. Cl. 568—774 **20 Claims**

1. A process for the preparation of 2,5-dichlorophenol which comprises selectively oxidizing 1,4-dichlorobenzene using peroxide in the presence of a catalyst selected from the group consisting of a secondary synthesized zeolite or zeolite-like metallosilicate; a primary synthesized zeolite-like metallosilicate; and an aluminophosphate based molecular sieve.

5,648,563

RETRO-ALPHA-RETINOL DERIVATIVE AND USES OF RETRO-ALPHA-RETINOL

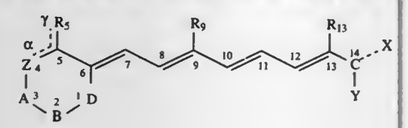
Jochen Buck; Ulrich Hammerling; Fadila Derguini, and Koji Nakanishi, all of New York, N.Y., assignors to Sloan-Kettering Institute for Cancer Research, and The Trustees of Columbia University in the City of New York, both of New York, N.Y.

Continuation-in-part of Ser. No. 682,909, Apr. 9, 1991, Pat. No. 5,521,221. This application Jun. 7, 1995, Ser. No. 481,913

Int. Cl.[6] C07C *35/18;37/68*

U.S. Cl. 568—824 **14 Claims**

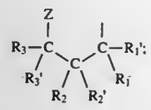
1. A homogeneous retro-retinoid compound having the structure:

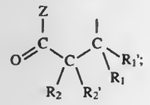


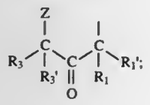
wherein

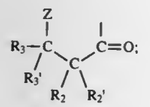


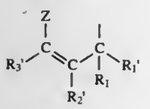
represents:



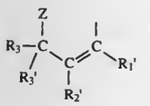








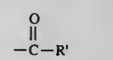
or



R_1, R_1', R_2, R_2', R_3 and R_3 are independently H, halide, C_1–C_5 alkyl or alkyl halide,



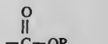
wherein each of R' and R" are independently H or a C_1–C_{20} alkyl group; or —O—R, wherein R is H, a C_1–C_5 alkyl group or has the structure:



wherein R' is a C_1–C_{20} alkyl group;

R_9 and R_{13} are H, a halide, or a C_1–C_5 alkyl or alkyl halide group;

X is —CH_2;

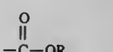


wherein R is H or C_1–C_{20} alkyl; or CH_2OR, wherein R is H, a C_1–C_{20} alkyl or has the structure:



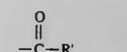
wherein R' is H, a C_1–C_{20} alkyl or alkyl halide, or is —NR'R" wherein each of R' and R" are independently H, or a C_1–C_{20} alkyl group;

the dashed line between C_{14} and X represents a single bond when X is —CH_2OR or



and a double bond when X is —CH_2;

Y is OR, wherein R is H, C_1–C_5 alkyl or alkyl halide, or has the structure:



wherein R' is H, a C_1–C_{20} alkyl or alkyl halide, or is —NR'R" wherein each of R' and R" are independently H, or a C_1–C_{20} alkyl group;

the double bonds between C_6 and C_7, C_8 and C_9, C_{10} and C_{11}, and C_{12} and C_{13} can have Z or E configuration; the absolute configuration at C_{14} is either R or S; and the dashed line at C_5 represents a double bond which can be either α or γ, wherein when the double bond at C_5 is γ R_5 is C_1–C_5 alkylidene or haloalkylidene and Z is C=O or CR_4R_4' where in R_4 and R_4' are independently the same as R_1 and R_1' through R_3 and R_3' defined above; wherein when the double bond at C_5 is α R_5 is C_1–C_5 alkyl or alkylhalide and Z is CR_4' wherein R_4' is the same as defined above.

5,648,564

PROCESS FOR THE FORMATION, ISOLATION AND PURIFICATION OF COMESTIBLE XANTHOPHYLL CRYSTALS FROM PLANTS

Rodney L. Ausich, and David J. Sanders, both of Des Moines, Iowa, assignors to Kemin Industries, Inc., Des Moines, Iowa

Filed Dec. 21, 1995, Ser. No. 576,778

Int. Cl.[6] C07C *35/08*

U.S. Cl. 568—834 **8 Claims**

1. A process for producing xanthophyll crystals from a xanthophyll diester-containing plant oleoresin that comprises the steps of:

(a) admixing the oleoresin with propylene glycol with heating to a temperature of about 50° C. to about 60° C. to form a homogeneous liquid;
(b) admixing an aqueous alkali solution of sodium or potassium hydroxide with said homogeneous liquid to form a saponification reaction mixture that consists essentially of about 35 to about 50 weight percent oleoresin, about 30 to about 45 weight percent propylene glycol, about 5 to about 10 weight percent alkali as potassium hydroxide and about 7 to about 15 weight percent water as initially admixed components, wherein the total weight of said oleoresin plus propylene glycol constitute at least 75 weight percent of said reaction mixture;
(c) maintaining said saponification reaction mixture at a temperature of about 65° C. to about 80° C. for a time period sufficient to saponify the xanthophyll diester and form a saponified reaction mixture containing xanthophyll crystals;
(d) admixing about 3 to about 19 volumes of water at a temperature of about 60° C. to about 80° C. per volume of saponified reaction mixture to form a diluted reaction mixture containing xanthophyll crystals;
(e) gently admixing said diluted reaction mixture until homogeneous;
(f) collecting the xanthophyll crystals from said diluted reaction mixture; and
(g) washing and then drying the collected xanthophyll crystals.

5,648,565

PROCESS FOR THE ADIABATIC PREPARATION OF MONONITROTOLUENES

Bernd-Michael Konig, Düsseldorf; Helmut Judat, Langenfeld, and Heinz Ulrich Blank, Odenthal-Glöbusch, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 265,541, Jun. 24, 1994, abandoned, which is a continuation-in-part of Ser. No. 210,196, Mar. 17, 1994, abandoned. This application Jul. 12, 1996, Ser. No. 679,323

Claims priority, application Germany, Feb. 14, 1994, 44 04 614.6; Mar. 25, 1994, 44 10 417.0

Int. Cl.[6] C07C *205/00*

U.S. Cl. 568—940 **20 Claims**

1. A process for the continuous preparation of mononitrotoluenes by reaction of toluene with an $HNO_3/H_2SO_4/H_2O$ mixture with formation, essentially, of mononitrotoluenes and reaction water, comprising the steps of

a) feeding the reaction participants toluene, HNO_3, H_2SO_4 and H_2O into a continuous tubular reactor equipped with static mixer elements, in which

a1) the amount of HNO_3 is 1–8% by weight, the amount of H_2SO_4 is 58–74% by weight and the amount of H_2O is the remainder to 100% by weight and 100% by weight signifies the sum of $HNO_3+H_2SO_4+H_2O$,

a2) the H_2O is used as such, as dilution H_2O of the HNO_3, as dilution of the H_2SO_4 or in a plurality of the said forms, and

a3) the molar ratio of toluene to HNO_3 is 0.9–1.5,

b) rapidly and intensively mixing the totality of the reaction participants employing a mixing energy of 3 to 40 watts per liter of the total reaction mixture, with at least two redispersions of the total reaction mixture,

c) carrying out the reaction under adiabatic conditions, the reaction participants being fed in at temperatures such that the mixing proceeds in the range of 20°–110° C., and the temperature at the end of the reaction does not exceed 135° C.,

d) separating the reaction mixture, after carrying out the reaction, into an organic and an inorganic phase and

e) working-up the substantially HNO_3-free inorganic phase by distillation with removal of water.

5,648,566

METHYLENEPERFLUOROCYCLOALKANES AND THEIR USE IN THE PRODUCTION OF THERMOPLASTIC FLUORORESINS

Ralf Krüger, Köln; Michael Negele, Solingen; Norbert Lui, Köln, and Albrecht Marhold, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

PCT No. PCT/EP93/03470, § 371 Date May 31, 1995, § 102(e) Date May 31, 1995, PCT Pub. No. WO94/14738, PCT Pub. Date Jul. 7, 1994

PCT Filed Dec. 9, 1993, Ser. No. 446,618

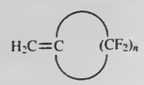
Claims priority, application Germany, Dec. 22, 1992, 42 43 526.9

Int. Cl.[6] C07C *17/02*

U.S. Cl. 570—126 **5 Claims**

1. Methyleneperfluorocycloalkanes of the formula

(I)



wherein n equals 3, 4 or 5.

5,648,567

FLUORO-TRIFLUOROMETHYLBENZOIC ACID DERIVATIVES

Albrecht Marhold, Leverkusen, and Peter Andres, Leichlingen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

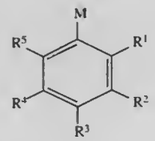
Division of Ser. No. 180,590, Jan. 12, 1994, Pat. No. 5,493,048. This application Aug. 14, 1995, Ser. No. 514,943

Claims priority, application Germany, Jan. 19, 1993, 43 01 245.0

Int. Cl.[6] C07C *19/08*

U.S. Cl. 570—127 **1 Claim**

1. A Compound of the formula



wherein

M represents an alkali metal,

and either

a) R^1 represents F, R^2 represents F, R^3 represents H, R^4 represents H and R^5 represents CF_3

or

b) R^1 represents F, R^2 represents CF_3, R^3 represents F, R^4 represents H and R^5 represents H

or

c) R^1 represents F, R^2 represents CF_3, R^3 represents H, R^4 represents H and R^5 represents F

or

d) R^1 represents F, R^2 represents F, R^3 represents CF_3, R^4 represents H and R^5 represents H

or

e) R^1 represents F, R^2 represents H, R^3 represents CF_3, R^4 represents H and R^5 represents F

or

f) R^1 represents F, R^2 represents F, R^3 represents F, R^4 represents H and R^5 represents CF_3

or

g) R^1 represents F, R^2 represents CF_3, R^3 represents F, R^4 represents H and R^5 represents F

or

h) R^1 represents F, R^2 represents F, R^3 represents H, R^4 represents CF_3 and R^5 represents F

or

i) R^1 represents F, R^2 represents F, R^3 represents F, R^4 represents CF_3 and R^5 represents H

or

k) R^1 represents F, R^2 represents F, R^3 represents CF_3, R^4 represents F and R^5 represents H

or

l) R^1 represents F, R^2 represents F, R^3 represents CF_3, R^4 represents H and R^5 represents F.

5,648,568

METHOD FOR PRODUCING A HYDROFLUOROCARBON

Kazuya Oharu; Ryuji Seki, and Seisaku Kumai, all of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 411,843, Mar. 28, 1995, which is a continuation of Ser. No. 266,471, Jun. 27, 1994, abandoned. This application Jun. 5, 1995, Ser. No. 460,871

Claims priority, application Japan, Jun. 30, 1993, 5-187261; Jul. 9, 1993, 5-194200; Dec. 14, 1993, 5-313243; Mar. 22, 1994, 6-50816

Int. Cl.[6] C07C *19/08*

U.S. Cl. 570—176 **18 Claims**

1. A method for producing a hydrofluorocarbon of the formula H_nR_fH wherein n is 0 or 1, and when n is 0, R_f is a C_{2-12} linear or branched polyfluoroalkyl group, and when n is 1, R_f is a C_{2-12} linear or branched polyfluoroalkylene group, which comprises reacting an iodofluorocarbon of the formula I_nR_fI wherein n and R_f are as defined above, with hydrogen at a temperature of not higher than 450° C. in a gas phase.

5,648,569

PURIFACTION OF PENTAFLUOROETHANES

David Richard Corbin, West Chester, Pa., and Dallas Wesley Reutter, Wilmington, Del., assignors to E. I. Du Poot de Nemours and Company, Wilmington, Del.

Filed Jul. 30, 1996, Ser. No. 688,451

Int. Cl.[6] C07C *17/38*

U.S. Cl. 570—179 **8 Claims**

1. A process for treating a starting mixture of CHF_2CF_3 and $CClF_2CF_3$ to provide a product wherein the mole ratio of CHF_2CF_3 to $CClF_2CF_3$ is increased relative to the mole ratio of CHF_2CF_3 to $CClF_2CF_3$ in the starting mixture, comprising:

contacting said starting mixture with sorbent of carbon nanotubes at a temperature within the range of about −20° C. to 75° C. and a pressure within the range of about 10 kPa to 3000 kPa and for a period of time sufficient to remove a substantial amount of the $CClF_2CF_3$.

5,648,570

PROCESS FOR PREPARING SUBSTITUTED CHLOROAROMATICS

Heinz Landscheidt, Duisburg; Witold Bröda, Neunkirchen-Seelscheid, and Alexander Klausener, Köln, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

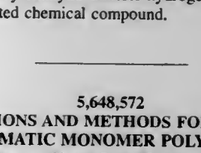
Filed Jun. 21, 1996, Ser. No. 667,533

Claims priority, application Germany, Jun. 29, 1995, 195 23 641.6

Int. Cl.[6] C07C *22/00*

U.S. Cl. 570—201 **12 Claims**

1. A process for preparing a substituted chloroaromatic of the general formula (I)

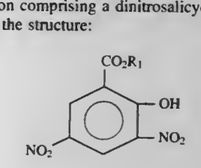


(I)

where

R^1 to R^5 are each, independently of one another, hydrogen, C_1–C_{10}-alkyl, unsubstituted or substituted C_6–C_{10}-aryl or halogen, with at least one of these radicals being different from hydrogen,

in which a substituted phenol of the formula (II)



(II)

where

R^1 to R^5 are as defined for formula (I),

is reacted with dichlorotriphenylphosphorus.

5,648,571

METHODS FOR THE SYNTHESIS OF CHEMICAL COMPOUNDS

Charles J. Rogers, 4191 Miami Trail La., Cincinnati, Ohio 45252, and Alfred Kornel, 3640 Erie Ave., Cincinnati, Ohio 45208

Continuation of Ser. No. 412,789, Mar. 29, 1995, abandoned, which is a division of Ser. No. 191,504, Feb. 4, 1994, Pat. No. 5,478,548. This application Mar. 27, 1996, Ser. No. 622,918

Int. Cl.[6] C07C *17/25*

U.S. Cl. 570—227 **10 Claims**

1. A method for the synthesis of a fully dehalogenated chemical compound by catalytic transfer hydrogenation, comprising (a) providing a mixture of a starting material comprising a halogenated aliphatic compound, a hydrogen donor material comprising a hydrocarbon, and a catalyst selected from the group consisting of a catalytic form of carbon, a polyethylene glycol phase transfer agent, and mixtures thereof; and (b) heating the mixture at a temperature of from 30° to 400° C. in the presence of at least one alkali or alkaline earth metal compound to cause reduction of the starting material by catalytic transfer hydrogenation and form the fully dehalogenated chemical compound.

5,648,572

COMPOSITIONS AND METHODS FOR INHIBITING VINYL AROMATIC MONOMER POLYMERIZATION

Graciela B. Arhancet, Katy; Inge K. Henrici, Spring, and J. Frederick Martin, Conroe, all of Tex., assignors to BetzDearborn Inc., Trevose, Pa.

Filed May 31, 1995, Ser. No. 454,999

Int. Cl.[6] C07C *7/20;15/02;* **C10L** *1/18;1/22*

U.S. Cl. 585—5 **12 Claims**

1. A composition comprising a dinitrosalicyclic acid, derivative or isomer having the structure:

wherein R_1 is H, phenyl, methyl, ethyl, n-propyl, isopropyl, n-butyl and isobutyl and a hydroxylamine compound.

5,648,573

COMPOSITIONS AND METHODS FOR INHIBITING VINYL AROMATIC MONOMER POLYMERIZATION

Graciela B. Arhancet, Katy, and Inge K. Henrici, Spring, both of Tex., assignors to BetzDearborn Inc., Trevose, Pa.

Filed Jun. 12, 1995, Ser. No. 489,904
Int. Cl.[6] C07C *7/20*
U.S. Cl. 585—5 **9 Claims**

1. A method for inhibiting the polymerization of vinyl aromatic monomers comprising adding to said monomers an effective inhibiting amount of a composition comprising a benzoquinone derivative and a hydroxylamine compound wherein the weight ratio of benzoquinone derivative to hydroxylamine compound ranges from about 1:9 to 9:1.

5,648,574

COMPOSITIONS AND METHODS FOR INHIBITING VINYL AROMATIC MONOMER POLYMERIZATION

Graciela B. Arhancet, Katy, and Inge K. Henrici, Spring, both of Tex., assignors to BetzDearborn Inc., Trevose, Pa.

Continuation-in-part of Ser. No. 383,159, Feb. 3, 1995, Pat. No. 5,510,547, which is a continuation-in-part of Ser. No. 118,075, Sep. 8, 1993, Pat. No. 5,396,004, which is a continuation-in-part of Ser. No. 964,321, Oct. 21, 1992, abandoned. This application Mar. 26, 1996, Ser. No. 622,133
Int. Cl.[6] C07C *7/20;* **C09K** *15/16;15/18*
U.S. Cl. 585—5 **10 Claims**

1. A composition comprising a vinyl aromatic monomer, a hydroxylamine compound and a phenylenediamine compound, wherein the weight ratio of said hydroxylamine compound to said phenylenediamine compound in said vinyl aromatic monomer is from 1:9 to 9:1.

5,648,575

METHOD FOR INHIBITING THE PLUGGING OF CONDUITS BY GAS HYDRATES

Ulfert Cornelis Klomp, Amsterdam, Netherlands; Vitold Raimond Kruka, Houston, Tex.; Rene Reijnhart, and Anton Jacobus Weisenborn, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Jan. 10, 1995, Ser. No. 370,954
Int. Cl.[6] C07C *9/00*
U.S. Cl. 585—15 **28 Claims**

1. A method for inhibiting the plugging of a conduit, the conduit containing a flowing mixture comprising an amount of hydrocarbons having from one to five carbons and an amount of water wherein the amounts of hydrocarbons and water could form hydrates at conduit temperatures and pressures, the method comprising the steps of:

adding to the mixture an amount of a hydrate formation inhibitor component of the formula



wherein

R_1 and R_2 are independently chosen from the group consisting of normal and branched alkyls having at least 4 carbon atoms,

R_3 is an organic moiety containing a chain of at least 4 atoms,

X is selected from the group consisting of S, N—R_4, and P—R_4,

R_4 is selected from the group consisting of hydrogen and an organic substituent; and

Y^- is an anion, the amount of the hydrate formation inhibitor effective to inhibit formation of hydrates in the mixture at conduit temperatures and pressures; and

flowing the mixture containing the hydrate formation inhibitor through the conduit.

5,648,576

CATALYTIC HYDROGENATION PROCESS AND A CATALYST FOR USE IN THE PROCESS

Canh Nguyen Than, La Celle Saint Cloud; Blaise Didillon; Patrick Sarrazin, both of Rueil Malmaison, and Charles Cameron, Paris, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Jun. 6, 1995, Ser. No. 466,685
Claims priority, application France, Jun. 9, 1994, 94 07044; Jun. 9, 1994, 94 07045
Int. Cl.[6] C07C *5/09;* **B01J** *21/04;23/58;23/44*
U.S. Cl. 585—260 **16 Claims**

1. A process for the selective hydrogenation in the gas phase of acetylenic hydrocarbons containing 2 or 3 carbon atoms to the corresponding ethylenic hydrocarbons, characterised in that it comprises passing a gaseous feed comprising at least one acetylenic hydrocarbon containing 2 or 3 carbon atoms in the presence of hydrogen over a catalyst in the form of spherules or extrudates containing palladium, at least one metal from group IB of the periodic classification, and alumina, the weight ratio of group IB metal to palladium being 0.05 to 0.25, a proportion of at least 80% of the palladium and at least 80% of the group IB metal being present in a volume at the periphery of the catalyst which is delimited by a spherical or cylindrical surface with radius r_1 corresponding to the average radius of the spherules or extrudates of the catalyst and a spherical or cylindrical surface with radius r_2 at least equal to $0.8r_1$, and said alumina has a specific surface area of 5 to 150 m^2/g, the palladium content is 0.01% to 0.5% by weight; and the group IB metal content is 0.001% to 0.02% by weight.

5,648,577

DISPERSED METAL SULFIDE CATALYSTS FOR HYDROPROCESSING (LAW105)

Teh Chung Ho, Bridgewater; Stuart Leon Soled; Sabato Miseo, both of Pittstown; Gary Brice McVicker, Califon, all of N.J.; Michel Daage, Baton Rouge, La., and Viktor Buchholz, Branchburg, N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Division of Ser. No. 273,664, Jul. 12, 1994. This application Jun. 2, 1995, Ser. No. 460,410
Int. Cl.[6] C07C *5/10*
U.S. Cl. 585—266 **3 Claims**

1. An improved aromatics hydrogenation process comprising contacting an aromatics hydrogenation feed stream, under aromatics hydrogenation conditions, with a catalyst composition prepared by the process comprising:

(a) impregnating an oxide precursor selected from the group consisting of rare earth oxide precursors, yttria precursors and mixtures thereof, onto an inorganic refractory oxide support selected from the group consisting of silica, silica-alumina, zirconia, titania, alumina and mixtures thereof;

(b) drying said support at a temperature of about 100° to about 120° C. followed by calcining said support at a temperature of about 400° to 600° C.;

(c) compositing or depositing on said support of step (b), a catalyst precursor salt represented by the formula $(ML)(MoW_{1-y}O_4)_a$ wherein M comprises Cr and/or one or more divalent promoter metals selected from the group consisting of Mn, Fe, Co, Ni, Cu, Zn and mixtures thereof, wherein y is any value ranging from 0 to 1 L is one or more neutral, nitrogen-containing liquids at least one of which is a chelating polydentate ligand; a=1 when chromium is absent and $0.5 \leqq a \leqq 3$ when Cr is present, and

(d) sulfiding said deposited or composited support of step (c) with an excess amount of sulfur in the form of one or more sulfur beating compounds and at a temperature of a least about 250° C. to form said catalysts.

5,648,578

PREPARATION OF POLYALKYLATED CYCLOPENTADIENES FROM ISOBORNYL CARBOXYLATES

William J. Layman, Orangeburg, S.C., and Gene C. Robinson, Baton Rouge, La., assignors to Albemarle Corporation, Richmond, Va.

Filed Apr. 26, 1995, Ser. No. 428,471
Int. Cl.[6] C07C *13/28;1/20*
U.S. Cl. 585—352 **10 Claims**

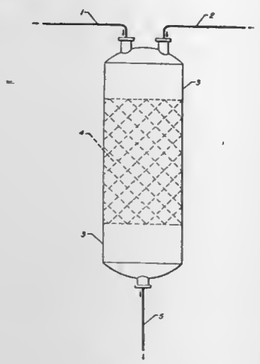
1. A process for the preparation of tetraalkylated cyclopentadienes, said process comprising the steps of (a) pyrolyzing an a isobornyl carboxylate so as to form a mixture of 1,2,3- and 1,2,4-trimethylcyclopentadienes, (b) alkylating said mixture with an alkylating agent so as to form a mixture of alkyltrimethylcyclopentadiene isomers including 1,2,3,4-alkyltrimethylcyclopentadiene and (c) thermally isomerizing the mixture of isomers obtained in step (b) so as to increase the proportion of 1,2,3,4-alkyltrimethylcyclopentadiene in said mixture of isomers.

5,648,579

CONTINUOUS ALKYLATION OF AROMATICS USING SOLID CATALYSTS; PREVENTION OF CATALYST DEACTIVATION USING A PULSED FEED REACTOR

Santi Kulprathipanja, Inverness; Joseph A. Kocal, Gurnee, and Stanley A. Gembicki, Clarendon Hills, all of Ill., assignors to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 126,416, Sep. 27, 1993, abandoned. This application Feb. 21, 1995, Ser. No. 392,006
Int. Cl.[6] C07C *15/067*
U.S. Cl. 585—447 **28 Claims**



1. A method of continuously alkylating an aromatic compound with a linear monoolefin in the presence of a solid acid catalyst while preventing deactivation of said solid acid catalyst by alternating an alkylation mode for a time period t_1 with a flush mode for a time period t_2 in a single catalyst zone over a cycle of periodicity, t_1+t_2: where said alkylation mode comprises flowing at alkylating reaction conditions a mixture of an aromatic compound and at least one linear monoolefin into said catalyst zone, where said flush mode comprises flowing the aromatic compound in the absence of a linear monoolefin into said catalyst zone, and where the periodicity of the complete cycle of alkylation and flush modes is between about 10 minutes and one hour.

9. A continuous process for the alkylation of benzene with linear monoolefins catalyzed by a fixed bed of solid catalyst at alkylation reaction conditions using a single catalyst zone having a first and second terminus, where said solid catalyst becomes deactivated through accumulation of deactivating agents under alkylation reaction conditions, comprising:

flowing a stream of benzene into the first terminus;

periodically flowing a stream of linear monoolefins into the first terminus and interrupting the flow of the benzene stream for at least a portion of the linear monoolefins stream flow;

reacting in the catalyst zone benzene with the linear monoolefins to form alkylated benzenes in a reaction cycle;

withdrawing from the second terminus a stream of alkylated benzenes;

desorbing the deactivating agents from the solid catalyst with the stream of benzene in a flush cycle; and

withdrawing from the second terminus a stream enriched in deactivating agents so as to prevent catalyst deactivation.

5,648,580

SUPPORTED LEWIS ACID CATALYSTS FOR HYDROCARBON CONVERSION REACTIONS

Frank Joung-yei Chen; Christophe Le Deore, both of Edison, N.J.; Roger Spitz, Serezin, and Alan Guyot, Lyons, both of France, assignors to Exxon Chemical Patents Inc., Linden, N.J.

Division of Ser. No. 221,202, Mar. 31, 1994, Pat. No. 5,561,095. This application Sep. 4, 1996, Ser. No. 708,860
Int. Cl.[6] C07C *2/14;2/08*
U.S. Cl. 585—462 **6 Claims**

1. A process for cationically polymerizing olefin monomers, which comprises: contacting olefin monomer under cationic polymerization reaction conditions with a catalytically effective amount of a supported Lewis acid catalyst that is free from added titanium-, vanadium-, hafnium- and zirconium-containing Lewis acids which comprises an inorganic oxide substrate having immobilized thereon a catalytically effective amount of at least one strong Lewis acid selected from the group consisting of the halides, alkyl halides and alkyl compound of aluminum and the halides of boron and at least one weak Lewis acid selected from the group consisting of the halides, alkyl halides and alkyl compounds of magnesium, iron, tin and zinc and wherein the molar ratio of strong Lewis acid to weak Lewis acid is in the range of from about 100:1 to about 1:100.

3. A process for alkylating an aromatic or hydroxy aromatic substrate, which comprises contacting the substrate with an alkylating agent under alkylation conditions with a catalytically effective amount of a supported Lewis acid catalyst that is free from added titanium-, vanadium-, hafnium- and zirconium-containing Lewis acids which comprises an inorganic oxide substrate having immobilized thereon a catalytically effective amount of at least one strong Lewis acid selected from the group consisting of the halides, alkyl halides and alkyl compound of aluminum and the halides of boron and at least one weak Lewis acid selected from the group consisting of the halides, alkyl halides and alkyl compounds of magnesium, iron, tin and zinc and wherein the molar ratio of strong Lewis acid to weak Lewis acid is in the range of from about 100:1 to about 1:100.

5,648,581

METHOD FOR VAPOR PHASE POLYMERIZATION OF ALPHA-OLEFIN

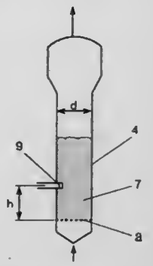
Kunimichi Kubo, Tokyo; Masahiro Niwa, Yokohama; Eiko Kobayashi, Yokosuka, and Mamoru Yoshikawa, Kawasaki, all of Japan, assignors to Nippon Petrochemicals Company, Limited, Tokyo, Japan

Continuation of Ser. No. 174,278, Dec. 28, 1993. This application Feb. 8, 1996, Ser. No. 598,334

Claims priority, application Japan, Dec. 29, 1992, 4-360310

Int. Cl.[6] C07C *2/08;2/22;2/34*

U.S. Cl. 585—501 **19 Claims**



1. A method for polymerizing or copolymerizing at least one α-olefin in a vapor phase condition comprising supplying to a reactor, polymer particles, a catalyst composed of a solid catalyst component containing magnesium and at least one member selected from the group consisting of titanium and vanadium, and an organoaluminum compounds selected from the group consisting of

(i) organoaluminum compounds by general formula:

$$R_mAl(OR')_nH_pX_q$$

wherein each of R and R' is a hydrocarbon group having 1 to 15 carbon atoms, R and R' are either the same or different, X is a halogen atom, m, n, p, and q are, respectively, $0<m\leqq 3$, $0\leqq n<3$, $0\leqq p<3$, and $0\leqq q<3$, and $(m+n+p+q)=3$, and

(ii) alkylated complexes of a metal of group I of the periodic table with aluminum represented by the general formula:

$$MAlR_4$$

wherein M is a metal selected from the group Consisting of Li, Na and K, and R is a hydrocarbon group having 1 to 15 carbon atoms, determining current due to the electric charge transferred from electrified polymer particles to an electrode disposed at a position where sheet-like polymers tend to be produced in the reactor, said transferring being caused as a result of contact of said polymer particles in the reactor with said electrode, and controlling said current such that the mean value or average value of said current obtained by averaging individual current values over a ten minute period is zero or a positive value during polymerization or copolymerization of said α-olefin at a temperature in the range of 10° C. to 200° C. and a pressure up to 70 kg/cm^2-G.

5,648,582

STABLE, ULTRA-LOW RESIDENCE TIME PARTIAL OXIDATION

Lanny D. Schmidt, Minneapolis, Minn., and Daniel A. Hickman, Midland, Mich., assignors to Regents of the University of Minnesota

Continuation of Ser. No. 110,408, Aug. 20, 1993, abandoned. This application Nov. 30, 1995, Ser. No. 564,935

Int. Cl.[6] C07C *4/02;5/42;5/48*

U.S. Cl. 585—652 **14 Claims**

1. A process for catalytic partial oxidation comprising:

a) providing a feed gas mixture consisting essentially of methane and an oxygen-containing gas selected from the group consisting of air, a gas containing a higher molar proportion of oxygen than air and pure oxygen;

b) providing a supported metal catalyst, wherein the metals are one or more selected from the group consisting of rhodium, nickel, and platinum;

c) passing the feed gas mixture over the supported metal catalyst at a space velocity within the range of 800,000 hr^{-1} to 12,000,000 hr^{-1}; and

d) autothermally heating the supported metal catalyst.

5,648,583

PROCESS FOR CONVERTING EXO-ISOMERS OF ALKYL SUBSTITUTED CYCLOPENTADIENES TO ENDO-ISOMERS

John Y. Lee; Meng-Sheng Ao; Stephen E. Belmont, and Lawrence H. Shepherd, Jr., all of Baton Rouge, La., assignors to Albemarle Corporation, Richmond, Va.

Filed Apr. 27, 1995, Ser. No. 429,448

Int. Cl.[6] C07C *5/25;5/23;5/00*

U.S. Cl. 585—664 **14 Claims**

1. A process for converting exo-isomers of polyalkylsubstituted cyclopentadienes to endo-isomers, said process comprising contacting said exo-isomers with an acid under conditions so as to convert at least a portion of said exo-isomers to endo-isomers.

5,648,584

PROCESS FOR ISOMERIZING LINEAR OLEFINS TO ISOOLEFINS

Brendan Dermot Murray, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 465,999, Jun. 6, 1995, abandoned, which is a division of Ser. No. 175,004, Dec. 29, 1993, Pat. No. 5,510,306. This application Jan. 4, 1996, Ser. No. 582,857

Int. Cl.[6] C07C *5/25*

U.S. Cl. 585—666 **6 Claims**

1. A process for structurally isomerizing a linear olefin of at least 4 carbon atoms to its corresponding methyl branched isoolefin comprising contacting at a temperature of from about 200 ° C. to about 650 ° C. a hydrocarbon feed stream containing at least one said linear olefin with an isomerizing catalyst produced by the process which comprises:

(a) mixing

(i) a zeolite powder comprising at least one zeolite with at least one one-dimensional pore structure having a pore size greater than about 0.42 nm to less than about 0.7 nm,

(ii) an alumina-containing binder,

(iii) water, and

(iv) an effective amount of an acid comprising at least one polycarboxylic acid to peptize the zeolite powder, the binder or a mixture thereof thereby producing a mixture;

(b) forming a pellet of said mixture; and

(c) calcining said pellet at a temperature of from about 200 ° C. to about 700 ° C.

5,648,585

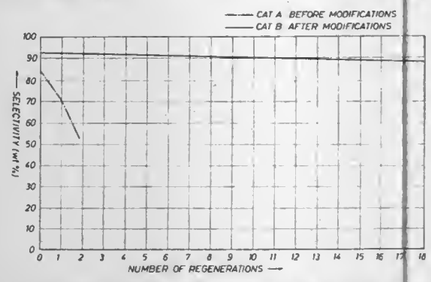
PROCESS FOR ISOMERIZING LINEAR OLEFINS TO ISOOLEFINS

Brendan Dermot Murray, 1118 Stoney Hill Dr., Houston, Tex. 77077; Bruce Herman Charles Winquist, 11202 Coldspring Dr., Houston, Tex. 77043; Donald Henry Powers, 6007 Silent Oaks Dr., Humble, Tex. 77346; Jon Barin Wise, 814 Hyacinth Pl., Missouri City, Tex. 77459, and Richard Brian Halsey, 14445 Wallisville, Houston, Tex. 77049

Filed Dec. 29, 1993, Ser. No. 175,010

Int. Cl.[6] C07C *5/22;5/27*

U.S. Cl. 585—671 **27 Claims**



1. A process for structurally isomerizing a linear olefin of at least 4 carbon atoms to its corresponding methyl branched isoolefin which comprises:

(a) contacting at a temperature of from 200° C. to 650° C. a hydrocarbon feed stream containing at least one said linear olefin with an isomerizing catalyst comprising (i) a hydrogen form of a zeolite having a ferrierite isotypic framework structure, ZSM-22 or ZSM-23, (ii) a binder and (iii) a coke oxidation-promoting metal,

(b) ceasing contact of the feed stream with the catalyst after coke build-up on the surface of the catalyst,

(c) contacting the catalyst from step (b) with an oxygen-containing gas at a temperature of no more than 490° C. a system pressure of greater than 1 atmosphere, and an oxygen partial pressure of from about 0.001 atmosphere to about 40 atmospheres to burn off coke from the catalyst and

(d) repeating steps (a) with the catalyst from step (c).

5,648,586

ALKYLATION WITH SEPARATE ALKYLATION OF ISOBUTANE WITH PENTENES

Vijay R. Sampath, Brea, Calif., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Continuation of Ser. No. 169,580, Dec. 17, 1993, abandoned. This application Sep. 5, 1995, Ser. No. 523,845

Int. Cl.[6] C07C *2/56*

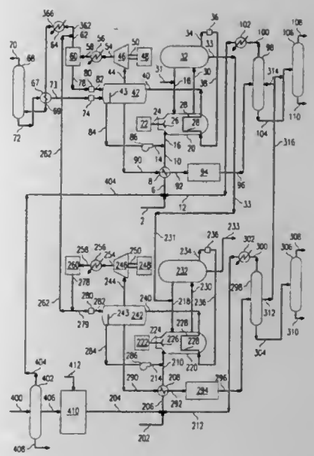
U.S. Cl. 585—716 **8 Claims**

1. A process to produce a high octane alkylate as well as a higher octane isopentane gasoline blend component comprising:

a. reacting isobutane in a first reactor with a feed comprising substantially butenes and lower boiling compounds in the presence of excess isobutane and a sulfuric acid catalyst to form a first product stream comprising a first alkylate, excess isobutane, normal butane and propane;

b. reacting isobutane in a second reactor with a feed comprising substantially pentenes in the presence of excess isobutane and a sulfuric acid catalyst to form a second product stream comprising a high octane second alkylate, excess isobutane, normal butane, propane and a higher octane isopentane gasoline blend component;

c. separating said propane from at least a portion of said first and second product streams in a common depropanizer essentially without combining said first and second product streams, the separation being conducted by forming a first slip stream comprised of propane from the second product stream and directing the first slip stream and at least a portion of the first product stream to the common depropanizer;



d. separating said normal butane from at least a portion of said first and second product streams in a common debutanizer essentially without combining said first and second product streams, the separation being conducted by forming a second slip stream comprised of normal butane from the second product stream and directing the second slip stream and at least a portion of the first product stream to the common debutanizer; and

e. separating and recovering said high octane second alkylate and higher octane isopentane gasoline blend component from said second product stream, the separations being conducted essentially without combining said first product and second product streams.

2. A method to reduce sulfuric acid consumption dudng alkylation in the presence of sulfuric acid of isobutane with an alkylation feed comprising C_4 and lower olefins and further comprising C_5 olefins and a C_5 diolefinic contaminant, said method comprising:

a. separating said alkylation feed into a fraction comprising substantially C_4 and lower olefins and a fraction comprising substantially C_5 olefins and said C_5 diolefinic contaminant;

b. selectively hydrogenating said C_5 diolefinic contaminant of said fraction comprising substantially C_5 olefins and C_5 diolefinic contaminant to form a stream comprising C_5 olefins and reduced content of diolefinic contaminant;

c. alkylating isobutane in the presence of a sulfuric acid catalyst with said stream comprising C_5 olefins and reduced content of diolefinic contaminant in a first reactor to produce a first product stream comprising a first alkylate;

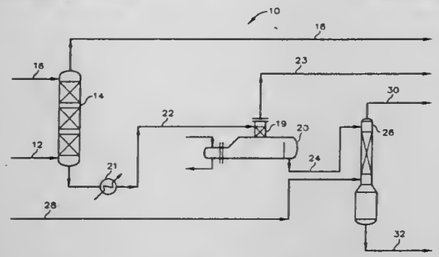
d. separately alkylating isobutane in the presence of a sulfuric acid catalyst with said fraction comprising substantially C_4 and lower olefins in a second reactor to produce a second product stream comprising a second alkylate, at least a portion of the sulfuric acid catalyst used in the second reactor being recovered therefrom after use and recycled to the first reactor for use in alkylation with said stream comprising C_5 olefins and reduced content of C_5 diolefinic contaminant.

5,648,587

METHOD FOR SEPARATING SULFONE FROM A HYDROCARBON STREAM HAVING A CONCENTRATION OF SULFONE PRODUCING A DRY SULFONE PRODUCT

Keith W. Hovis, and Richard L. Anderson, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 4, 1995, Ser. No. 567,010
Int. Cl.[6] C07C *2/62;7/10*
U.S. Cl. 585—724 **12 Claims**



1. A process for separating sulfone from a hydrocarbon stream containing a concentration of a sulfone and for providing a dry sulfone product, said process comprises:

extracting said sulfone from said hydrocarbon stream by contacting said hydrocarbon stream with water to thereby extract at least a portion of said sulfone from said hydrocarbon stream and to provide an extract stream enriched with said sulfone and comprising water and a raffinate stream having a reduced concentration of said sulfone below said concentration of said sulfone in said hydrocarbon stream;

passing said extract stream to an evaporation zone defined by evaporator means for evaporating at least a portion of the water from said extract stream to provide a vaporous solvent stream and liquid solute stream, wherein said vaporous solvent stream comprises water and said liquid solute stream comprises sulfone and water; and

stripping water from said liquid solute stream by utilizing a hot stripping gas in a separation zone defined by stripping means for separating said liquid solute stream into a shipper overhead stream containing water and said hot shipping gas and a shipper bottom stream containing sulfone and less than about 3 weight percent water.

5,648,588

METHOD FOR REMOVING SULFONE AND HYDROGEN FLUORIDE FROM A HYDROCARBON STREAM AND PRODUCING A SULFONE PRODUCT FREE OF HYDROGEN FLUORIDE

Richard L. Anderson, and Bruce B. Randolph, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 8, 1995, Ser. No. 569,625
Int. Cl.[6] C07C *2/62*
U.S. Cl. 585—724 **12 Claims**

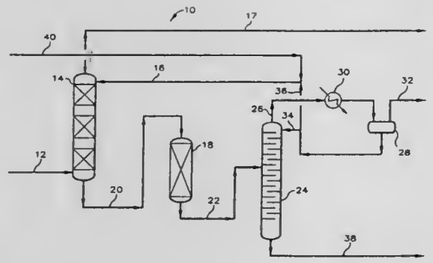
1. A process for separating sulfone and HF from a hydrocarbon stream containing a concentration of sulfone and HF, said process comprises:

extracting sulfone and HF from said hydrocarbon stream by contacting said hydrocarbon stream with a water extractant to thereby extract at least a portion of the sulfone and HF contained in said hydrocarbon stream from said hydrocarbon stream and to provide an extract stream, comprising water and enriched with sulfone and HF, and a raffinate stream having a reduced concentration of sulfone and HF below said concentration of sulfone and HF in said hydrocarbon stream;

contacting said extract stream with a reversible base selected from the group consisting of polyvinylpyridine, amine substituted styrene divinylbenzene copolymer and mixtures thereof under conditions suitable for the removal of at least a portion of the HF in said extract stream to thereby provide a treated extract stream substantially free of HF;

separating said treated extract stream into a water stream, comprising water, and a sulfone stream, comprising sulfone; and

utilizing said water stream as said water extractant.



5,648,589

GROUP VIII METAL CONTAINING TUNGSTEN OXIDE SILICA MODIFIED ZIRCONIA AS ACID CATALYST

Stuart L. Soled, Pittstown; William E. Gates, Lebanon Township, both of N.J., and Enrique Iglesia, Moraga, Calif., assignors to Exxon Research & Engineering Company, Florham Park, N.J.

Division of Ser. No. 143,423, Oct. 26, 1993, Pat. No. 5,422,327, which is a continuation-in-part of Ser. No. 935,800, Aug. 27, 1992, abandoned. This application Apr. 21, 1995, Ser. No. 426,378
Int. Cl.[6] C07C *5/13*
U.S. Cl. 585—734 **3 Claims**

1. A catalytic isomerization process comprising contacting a C_5+ feed, under isomerization conditions, with a catalyst composition consisting of a Group VIII metal and a zirconia support impregnated with tungsten oxide and silica.

5,648,590

LIQUID PHASE ISOMERIZATION OF ALKANES

Chao-Yang Hsu; Vasant K. Patel, both of Media; David H. Vahlsing, Wynnewood, all of Pa.; James T. Wei, Ridgewood, N.J., and Harry K. Myers, Jr., Cochranville, Pa., assignors to Sun Company, Inc. (R&M)

Continuation of Ser. No. 783,064, Oct. 25, 1991, abandoned, which is a continuation-in-part of Ser. No. 694,735, May 2, 1991, abandoned, which is a continuation of Ser. No. 378,334, Jul. 10, 1989, Pat. No. 5,019,671. This application Aug. 17, 1994, Ser. No. 292,164
Int. Cl.[6] C07C *5/13*
U.S. Cl. 585—751 **17 Claims**

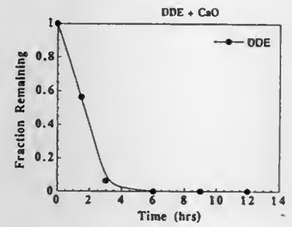
1. The method of isomerizing a feedstock having 4 to 7 carbon atoms per molecule which comprises contacting said feedstock in liquid phase with a solid superacid catalyst comprising sulfated oxide or hydroxide of a metal selected from the group consisting of Group III and Group IV metals, wherein said contacting is carried out at a temperature and pressure suitable for isomerizing said feedstock.

5,648,591

TOXIC MATERIAL DISPOSAL

Peter Donecker, Bentley; Paul Gerard McCormick, Nedlands; Robert Street, Nedlands, and Sally-Anne Rowlands, Nedlands, all of Australia, assignors to University of Western Australia, Perth, Australia

PCT No. PCT/AU93/00660, § 371 Date Aug. 16, 1995, § 102(e) Date Aug. 16, 1995, PCT Pub. No. WO94/14503, PCT Pub. Date Jul. 7, 1994
PCT Filed Dec. 17, 1993, Ser. No. 454,325
Claims priority, application Australia, Dec. 18, 1992, PL6474; May 28, 1993, PL9085
Int. Cl.[6] A62D *3/00*
U.S. Cl. 588—205 **16 Claims**



1. A mechanochemical process for the treatment of a liquid or solid organic toxic material to form a non-toxic end product, the process comprising:

subjecting a solid-solid or liquid-solid mixture of the organic toxic material and a suitable reagent to mechanical activation to increase the chemical reactivity of the reactants such that a chemical reaction occurs during mechanical activation which is accompanied by substantial destruction of the organic toxic material.

5,648,592

METHOD AND APPARATUS FOR TREATING WASTE AND FOR OBTAINING USABLE BY-PRODUCT

Charles L. Pierce, 6713 Lawn Ave., Cleveland, Ohio 44102

Filed May 3, 1994, Ser. No. 237,372
Int. Cl.[6] A62D *3/00*
U.S. Cl. 588—227 **12 Claims**

8. A method of producing a pyroclastic material from waste, comprising the steps of:

introducing waste into a spherical reactor vessel;

heating the waste by exposing it to 20 kW laser radiation to leave a liquid melt;

bombarding the liquid melt with photons from a CO_2 laser to sever molecular bonds in the melt leaving a magma;

initiating a neutronic reaction at a temperature in the range of 3000°–20,000° F. within the spherical reactor vessel to create a plasma field;

adding silica sand to the liquid melt; and

subsequently cooling the magma to leave a hard pyroclastic material having an ordered crystal matrix.

5,648,593

STRESS TOLERANT PYRETHRUM PLANTS

Robert G. McDaniel, Tucson, Ariz., assignor to Arizona Board of Regents, on behalf of the University of Arizona, Tucson, Ariz.

Continuation of Ser. No. 21,308, Feb. 22, 1993, abandoned, which is a continuation-in-part of Ser. No. 680,989, Apr. 5, 1991, abandoned, which is a continuation of Ser. No. 332,611, Mar. 31, 1989, Pat. No. Plant 7,495. This application Oct. 11, 1994, Ser. No. 321,372
Int. Cl.[6] A01H *1/04;4/00;5/02;* **C12N** *5/04*
U.S. Cl. 800—200 **23 Claims**

1. A *Chrysanthemum cinerariaefolium* plant exhibiting environmental stress tolerance to a growing climate characterized by temperature extremes as low as about 17° F. and as high as about 115° F., said plant being capable of producing flowers having an endogenous pyrethrin content of at least 1.5% by weight of dried flowers while being grown under said growing climate.

5,648,594

BIG BEND BLUEBONNET

Tim D. Davis, Plano, and Wayne A. MacKay, El Paso, both of Tex., assignors to The Texas A&M University System, College Station, Tex.

Filed Apr. 19, 1995, Ser. No. 424,922
Int. Cl.[6] A01H *5/00;1/00*
U.S. Cl. 800—200 **8 Claims**

1. A Big Bend Bluebonnet Texas Series of *Lupinus havardii*, consisting of at least three distinct color lines, characterized in having at least 15 racemes per plant; the racemes being at least 12 inches in height and having reduced flower abscission compared to wild-grown plants, and each color line having a uniform color.

5,648,595

SOYBEAN CULTIVAR 89150792

Kevin W. Matson, Ames, Iowa, and Michael J. Lewis, Vicksburg, Mich., assignors to Asgrow Seed Company, Kalamazoo, Mich.

Filed May 10, 1996, Ser. No. 644,489
Int. Cl.[6] A01H *5/00;5/10;* **C12N** *5/04*
U.S. Cl. 800—200 **9 Claims**

1. A soybean seed designated 89150792 deposited as ATCC Accession Number 97547.

2. A soybean plant produced by growing the seed of claim 1.

5,648,596

SOYBEAN CULTIVAR 8967515073

Christopher Tinius, Memphis, Tenn., assignor to Asgrow Seed Company, Kalamazoo, Mich.

Filed May 10, 1996, Ser. No. 644,496
Int. Cl.[6] A01H *5/00;5/10;* **C12N** *5/04*
U.S. Cl. 800—200 **9 Claims**

1. A soybean seed designated 8967515073 deposited as ATCC Accession Number 97558.

2. A soybean plant produced by growing the seed of claim 1.

5,648,597

ALPHA-1-ACID GLYCOPROTEIN TRANSGENIC MICE

Michael J. Dewey, Columbia, S.C., and Heinz Baumann, Buffalo, N.Y., assignors to University of South Carolina, Columbia, S.C., and Health Research, Inc., Buffalo, N.Y.

Filed Apr. 20, 1990, Ser. No. 511,470

Int. Cl.[6] C12N *5/00;15/00*

U.S. Cl. 800—2 **2 Claims**

1. Transgenic mouse or the progeny thereof whose somatic and germline cells contain a stably integrated DNA sequence selected from the 9.5 kilobase NdeI and 10.7 kilobase EcoRI fragments spanning the rat AGP gene which is expressed in the mouse to produce rat alpha-1-acid glycoprotein, wherein levels of rat alpha-1-acid glycoprotein are increased in response to induction by an effective amount of a mediator of inflammation compared to uninduced levels.

5,648,598

ORNAMENTAL CHARACTER OF SCENTED GERANIUMS BY GENETIC TRANSFORMATION

David Alan Tepfer, Paris; Jean-Pierre Damon, Savigneux, both of France, and Alessandro Pellegrinescbi, Rome, Italy, assignors to Institut National de la Recherche Agronomique, Versailles, France

Filed Dec. 20, 1994, Ser. No. 359,874

Int. Cl.[6] A01H *4/00;1/06;* **C12M** *15/00;15/82*

U.S. Cl. 800—205 **11 Claims**

1. A method of genetically modifying a plant of the genus Pelargonium to modify at least one ornamental characteristic of said plant, the method comprising the steps of, transforming a live Pelargonium plant or live tissue thereof with the T-DNA of the R_i plasmid of *Agrobacterium rhizogenes*, and propagating the resulting transformant to obtain a plant for ornamental use.

9. The transformed plants produced by the method of claims 1, 3, 4, 5, 6, or 7 having a modified ornamental characteristic selected from the group consisting of: smaller leaves, more deeply lobed leaves with shorter upturned petioles, increased fragrance correlated with an increase in scent-bearing essential oils, elimination of the trailing habit with a tighter more globular shape plants of reduced stature with increased lateral branching and leaf number, and reduced leaf yellowing.

5,648,599

GENE CONFERRING DISEASE RESISTANCE TO PLANTS BY RESPONDING TO AN AVIRULENCE GENE IN PLANT PATHOGENS

Steven D. Tanksley, Newfield, N.Y., and Gregory B. Martin, West Lafayette, Ind., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Continuation of Ser. No. 111,078, Aug. 24, 1993, abandoned. This application May 22, 1995, Ser. No. 447,185

Int. Cl.[6] A01H *5/00;* **C12N** *5/04;15/29;15/54*

U.S. Cl. 800—205 **29 Claims**

18. A transgenic plant transformed with a gene fragment conferring bacterial disease resistance to plants by responding to an avirulence gene in bacterial plant pathogens, wherein said gene fragment encodes for a plant serine/threonine kinase.

5,648,600

Patent Not Issued For This Number

5,648,601

APPARATUS FOR ANALYZING AIR/FUEL RATIO SENSOR CHARACTERISTICS

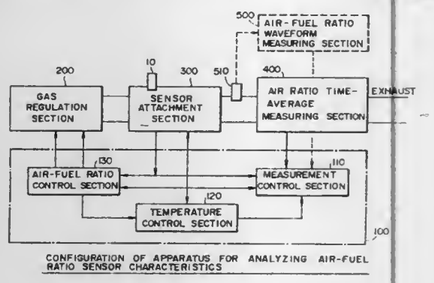
Kazunori Katoh; Haruyoshi Kondo, both of Anjo; Masayuki Matsui, Toyoake; Naoki Katayama, Nagoya; Yasushi Yamada, Nishikamo-gun; Hideaki Takahashi, Nisshin, and Kunio Fukuda, Nagoya, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, and Kabushiki Kaisha Toyota Chuo Kenkyusho, both of Aichi-ken, Japan

Filed Nov. 14, 1995, Ser. No. 557,631

Claims priority, application Japan, Nov. 14, 1994, 6-304355

Int. Cl.[6] G01N *7/00*

U.S. Cl. 73—1 G **28 Claims**



CONFIGURATION OF APPARATUS FOR ANALYZING AIR-FUEL RATIO SENSOR CHARACTERISTICS

1. An apparatus for analyzing air/fuel ratio sensor characteristics, comprising:

sensor attachment means for mounting an air/fuel ratio sensor to be measured;

gas regulation means for supplying a gas to said sensor attachment means, said gas being equivalent to one of an exhaust gas from an engine and one gas component of said exhaust gas;

control means for comparing an output value from said air/fuel ratio sensor and an output reference value from a first reference air/fuel ratio sensor at a stoichiometric air/fuel ratio of said engine to obtain a deviation, obtaining from a history of said deviation over time a composition and a flow rate of the gas for correction, and for controlling said gas regulation means to control an air/fuel ratio of the gas; and

air/fuel ratio measurement means for measuring a time average of the thus controlled air/fuel ratio, said air/fuel ratio measurement means comprising:

a second reference air/fuel ratio sensor for detecting the air/fuel ratio of the gas supplied from said gas regulation means,

first calculation means for determining a flow rate of a supplementary gas to be added to bring the air/fuel ratio of the gas supplied from said gas regulation means to the stoichiometric air/fuel ratio based on an output value of said second reference air/fuel ratio sensor,

supplementary gas control means for controlling the flow rate of the supplementary gas, and

second calculation means for calculating the air/fuel ratio of the gas supplied from said gas regulation means based on the amount of said supplementary gas that is supplied, wherein a characteristic analysis of said air/fuel ratio sensor to be measured is performed based on the air/fuel ratio calculated by said second calculation means.

5,648,602

INTERNAL COMBUSTION ENGINE MISFIRE DETECTION APPARATUS

Atsumi Hoshina, and Satoru Watanabe, both of Kanagawa-ken, Japan, assignors to Unisia Jecs Corporation, Kanagawa-ken, Japan

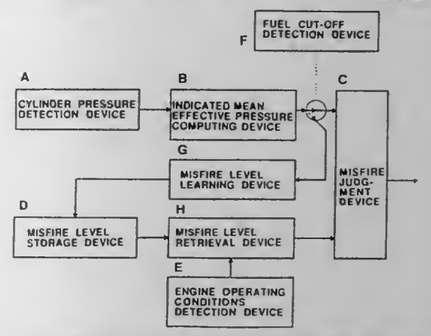
PCT No. PCT/JP94/02087, § 371 Date Aug. 11, 1995, § 102(e) Date Aug. 11, 1995, PCT Pub. No. WO95/16856, PCT Pub. Date Jun. 22, 1995

PCT Filed Dec. 13, 1994, Ser. No. 501,062

Claims priority, application Japan, Dec. 13, 1993, 5-312096

Int. Cl.[6] G01M *15/00*

U.S. Cl. 73—115 **12 Claims**



1. A misfire detection apparatus for an internal combustion engine incorporating; cylinder pressure detection means for detecting engine cylinder pressures, indicated mean effective pressure computing means for computing indicated mean effective pressures by integrating the detected cylinder pressures, and misfire judgment means for judging misfire by comparing the computed indicated mean effective pressure with a misfire level, wherein there is provided;

rewritable misfire level storage means in which is stored misfire levels of indicated mean effective pressure for different engine operating conditions,

engine operating conditions detection means for detecting engine operating conditions,

fuel cut-off detection means for detecting whether or not fuel to the engine is being cut-off,

misfire level learning means for updating, during fuel cut-off, misfire levels corresponding to an actual engine operating condition, based on the indicated mean effective pressures computed by said indicated mean effective pressure computing means, and rewriting the stored values in said storage means, and

misfire level retrieval means for retrieving a misfire level corresponding to an actual engine operating condition from said storage means and supplying this to said misfire judgment means.

5,648,603

METHOD AND APPARATUS FOR STABILIZING A QUANTITATIVE MEASUREMENT GAS TRAP USED IN A DRILLING OPERATION

Scott Alan Hanson, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

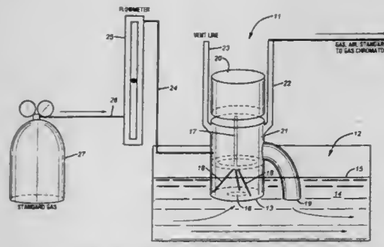
Filed Dec. 4, 1995, Ser. No. 566,805

Int. Cl.[6] E21B *49/00;* **G01N** *1/00*

U.S. Cl. 73—152.02 **8 Claims**

1. In a mud logging system an improved gas trap comprising:

a generally cylindrical housing having a restricted opening bottom end, a closed top end and a restricted opening intermedi-



ate member, said intermediate member having at least four ports;

means for mounting said housing member in a flowing mud receptacle with said housing in a substantially vertical position with said bottom end of said housing extending below the top surface of flowing mud in said receptacle;

motor driven agitator means for agitating mud drawn from said receptacle into said housing to evolve gasses trapped therein into said restricted opening intermediate member;

mud exhaust port means from said restricted opening intermediate member to return mud below the top surface of the mud in said receptacle;

vent line means for admitting substantial gas free air to said intermediate member via a vent pod in said intermediate member;

means for injecting a constant known percentage of standard gas into said restricted opening intermediate member via a standard gas port in said intermediate member; and

means to draw off gas, including said standard gas, from said restricted opening intermediate member via a sample gas port in said intermediate member to a quantitative gas measurement system.

5,648,604

METHOD AND SYSTEM FOR DETERMINING ANEMOBAROCLINOMETRIC PARAMETERS ON BOARD AN AIRCRAFT

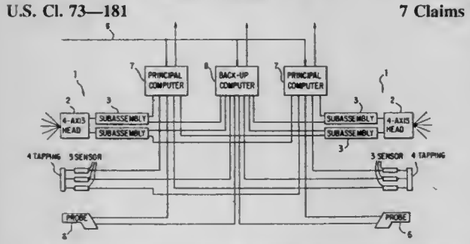
Bertrand Morbieu, Bordeaux, France, assignor to Sextant Avionique, Meudon La Foret, France

Filed Sep. 20, 1995, Ser. No. 531,300

Claims priority, application France, Sep. 22, 1994, 94 11309

Int. Cl.[6] G01C *21/20*

U.S. Cl. 73—181 **7 Claims**



1. A method for determining the anemobaroclinometric parameters on board an aircraft, characterized by the fact that measurements are made of:

an air speed vector (Vp);

a static pressure (Ps); and

an impact temperature (Ti);

wherein additional parameters are calculated on the basis of the aforementioned measurements and wherein said air speed vector Vp is measured by means of Doppler longitudinal anemometry.

5,648,605

FLOWMETER CALIBRATION METHOD

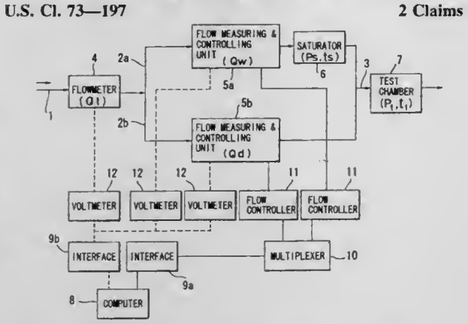
Chiharu Takahashi, Ushiku, Japan, assignor to Agency of Industrial Science & Technology, Ministry of International Trade & Industry, Tokyo, Japan

Filed Aug. 23, 1995, Ser. No. 518,178

Claims priority, application Japan, Aug. 26, 1994, 6-225549

Int. Cl.[6] G01F *25/00*

U.S. Cl. 73—197 **2 Claims**



1. A flowmeter calibration method comprising the steps of:

disposing a first flowmeter on a common flowpath for measuring a flow value of a fluid flowing through said common flowpath;

disposing second flowmeters one on each of a plurality of branch flowpaths in communication with said common flowpath for measuring flow values of fluids flowing through said plurality of branch flowpaths and obtaining a sum of said flow values;

comparing said flow value measured by said first flowmeter with said sum obtained to obtain a first comparison value;

varying a fluid flow through each of said branch flowpaths and measuring each flow value; and

comparing a plurality of flow values thus measured with said flow value measured by said first flowmeter to obtain second comparison values, thereby obtaining a relative instrumental error between said first flowmeter and each of said second flowmeters from said first and second comparison values.

5,648,606

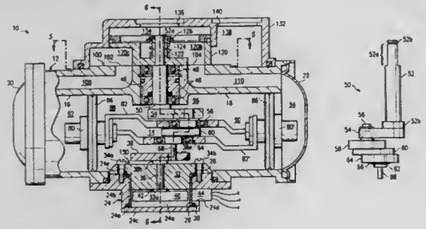
FLUID METER HAVING A CRANKSHAFT WITH TWO ANGULARLY SPACED CRANK PINS RADIALLY OFFSET FROM THE CRANKSHAFT

Robert G. Spalding, Salisbury, Md., assignor to Dresser Industries, Salisbury, Md.

Filed Jul. 5, 1995, Ser. No. 497,930

Int. Cl.[6] G01F *3/08*

U.S. Cl. 73—247 **27 Claims**



1. A fluid meter comprising:

a body having at least one crankcase portion and at least two axially-aligned cylinder portions, each of said at least two cylinder portions having opposing first and second ends, said second ends being in fluid communication with said at least one crankcase portion;

at least one crankshaft rotatably mounted in said at least one crankcase portion, said at least one crankshaft having at least two crank pins angularly spaced substantially sixty degrees apart and radially offset from said at least one crankshaft;

pistons reciprocally mounted in said at least two cylinder portions and drivingly connected to said crank pins so that, upon reciprocating motion of said pistons within said at least two cylinder portions, said pistons reciprocate substantially sixty degrees out of phase and effect rotation of said at least one crankshaft; and

at least one valve coupled to said at least one crankshaft for rotation therewith and defining ports arranged to sequentially register with at least two of said first ends and said at least one crankcase portion when said at least one crankshaft is rotated so that fluid is distributed into and from said cylinders to move said pistons and rotate said at least one crankshaft.

5,648,607

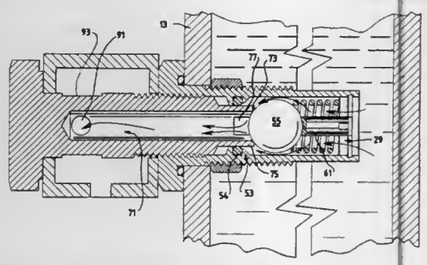
REPLACEABLE SIGHT GAUGE SYSTEM

Mike Wolf, Hamshire, Ill., assignor to Vescor Corporation, South Elgin, Ill.

Filed Sep. 30, 1994, Ser. No. 316,025

Int. Cl.[6] G01F *23/02*

U.S. Cl. 73—332 **16 Claims**



1. A replaceable sight gauge system comprising:

a fluid tank defined by a tank wall, said tank wall having at least one aperture to permit fluid to exit from said fluid tank;

a display gauge having:

(i) a front side;

(ii) a back side;

(iii) an entry passageway passing through said front side to said back side; and

(iv) a fluid container communicating with said entry passageway for receiving a fluid flowing from said entry passageway;

an entry bolt of a size for passing through said aperture formed in said tank wall, said entry bolt having:

(i) a first bolt head disposed at a proximal end of said entry bolt and sized for abutting the outside surface of said tank wall;

(ii) a first fluid passageway extending axially through the entry bolt to permit fluid flow between the exterior and interior of the tank; and

(iii) a valve located in said first fluid passageway for controlling fluid flow therethrough, said valve including a valve seat and a moveable valve cover, said valve cover is movable against said seat to a closed position to prevent fluid flow through said first fluid passageway;

a fastening member securing said entry bolt into a fixed position relative to said tank wall; and

an exit bolt mateable with said entry bolt and sized to pass through said gauge via said entry passageway, said exit bolt being of a length for exposing a proximal end of said exit bolt when it is mated with said entry bolt, said exit bolt having:

(i) a second bolt head sized for abutting the front side of said gauge for securing said gauge between said first and second bolt heads as said exit bolt is mated with said entry bolt;

(ii) a ram member formed at the distal end of said exit bolt and located for engaging said valve cover to open said valve when said exit bolt is mated with said entry bolt to hold said gauge between said first and second bolt heads; and

(iii) a second fluid passageway formed in the interior of said exit bolt and extending between first and second openings, the first opening being formed in said ram member for allowing fluid to flow from said first fluid passageway to said second fluid passageway, and the second opening communicating between the fluid container and the second fluid passageway.

5,648,608

VIBRATING GYROSCOPE DETECTING SYSTEM

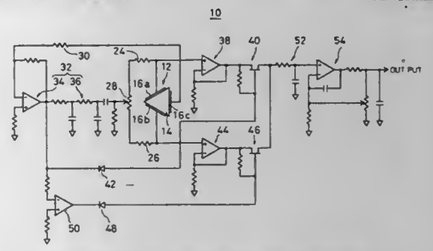
Takeshi Nakamura, Nagaokakyo, Japan, assignor to Murata Manufacturing Co., Ltd., Kyoto-fu, Japan

Filed Mar. 22, 1995, Ser. No. 408,924

Claims priority, application Japan, Mar. 30, 1994, 6-085764

Int. Cl.[6] G01C *19/00;* **G01P** *9/00;3/44;* **H01L** *41/00*

U.S. Cl. 73—504.12 **12 Claims**



1. A vibrating gyroscope detecting system comprising:

a vibrating gyroscope for generating two detecting signals for detecting a rotational angular velocity based upon a vibration of a rod-like vibrator, said vibrating gyroscope including said rod-like vibrator, oscillation means for driving said rod-like vibrator, an output signal feedback means for feeding back a signal from said rod-like vibrator to said oscillation means and detection circuit means for detecting rotational angular velocity; and

two switching circuits, connected to said detection circuit means, for alternately outputting said two detecting signals; wherein

said two switching circuits alternately output said two detecting signals as a composite signal.

5,648,609

Patent Not Issued For This Number

5,648,610

METHOD AND APPARATUS FOR THE CHARACTERIZATION AND CONTROL OF POWDER COMPACTION

Ensio Laine, Allinpolku 5,, FIN-21290 Rusko; Harry Jalonen, Hurtinkatu 11 A 4, FIN-20610 Turku; Arvi Hakanen, Västäräkinpolku 3 C 82, FIN-20610 Turku; Kari Linsaari, Talpiankuja 6 as 12, FIN-20610 Turku, and Juha Jokinen, Jalustinkatu 7 A 1, FIN-20880 Turku, all of Finland

PCT No. PCT/FI93/00462, § 371 Date May 25, 1995, § 102(e) Date May 25, 1995, PCT Pub. No. WO94/11731, PCT Pub. Date May 26, 1994

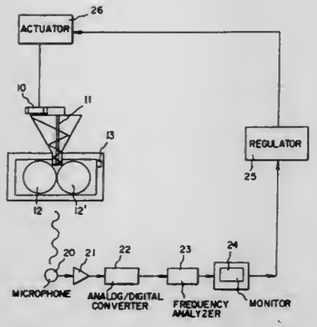
PCT Filed Nov. 9, 1993, Ser. No. 424,350

Claims priority, application Finland, Nov. 13, 1992, 925158

Int. Cl.[6] G01H *11/00*

U.S. Cl. 73—587 **10 Claims**

1. A method for characterizing a compaction result of a powder during a compaction process, said method comprising the steps of:



a) measuring sound emission produced by the process by means of a sensor located in the vicinity of the process and transforming the sound emission into a frequency spectrum in which the sound intensity is presented as a function of frequency;

b) recording an intensity of a frequency band relating to the sound emission arising from the compaction of the powder and integrating the intensity of the frequency band by using a predetermined compressive force and noting the compaction result obtained; and

c) changing the compressive force and repeating steps a) and b) to obtain the compaction result as a function of the intensity of the frequency band relating to the sound emission arising from compaction.

5,648,611

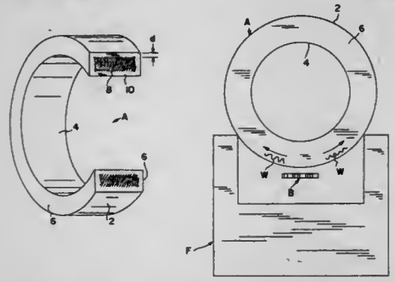
PROCESS FOR MEASURING THE CASE DEPTH OF CASE-CARBURIZED STEEL

Surrendra Singh; Rosendo Fuquen, and David R. Leeper, all of Stark, Ohio, assignors to The Timken Company, Canton, Ohio

Continuation-in-part of Ser. No. 171,815, Dec. 22, 1993, abandoned. This application Aug. 28, 1995, Ser. No. 519,989

Int. Cl.[6] G01N *29/00*

U.S. Cl. 73—598 **12 Claims**



1. A process for nondestructively determining the case depth of a specimen of steel which is case-carburized, so as to have a core and a case of higher carbon content than the core, with the case depth being the distance from a surface of the specimen to a location in the specimen at which a prescribed content of carbon exists in the specimen, said process comprising: launching an acoustic wave along the surface of the specimen at a predetermined frequency such that the acoustic wave passes through the case; measuring the velocity of the acoustic wave in the specimen; and comparing the measured velocity of the acoustic wave with a correlation previously established between velocity and case depth, at the predetermined frequency and for the same type of steel as that of the specimen, to determine the case depth that corresponds to the measured velocity of the acoustic wave.

5,648,612

METHOD OF MEASURING CAVITIES IN FORMED PRODUCT FORMED BY SUPERPLASTIC FORMING

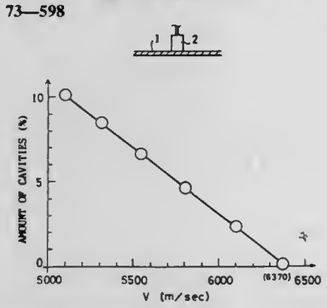
Isao Takikawa, and Tadao Kanno, both of Saitama-ken, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 31, 1996, Ser. No. 594,760

Claims priority, application Japan, Feb. 6, 1995, 7-018063

Int. Cl.[6] G01N *29/18*

U.S. Cl. 73—598 **3 Claims**



1. A method of measuring a concentration of cavities in a formed product formed by superplastic forming based on a propagation velocity of ultrasonic waves in the formed product comprising the steps of:

propagating ultrasonic waves in the formed product;

measuring the propagation velocity of the ultrasonic waves; and

determining the concentration of cavities based on the measured propagation velocity.

5,648,613

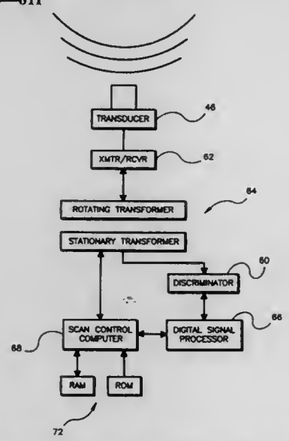
SCAN ASSEMBLY AND METHOD FOR SIGNAL DISCRIMINATION

Karl F. Kiefer, Woodlands, Tex., assignor to Gas Research Institute, Chicago, Ill.

Continuation-in-part of Ser. No. 222,621, Apr. 5, 1994. This application Jul. 3, 1995, Ser. No. 497,901

Int. Cl.[6] G01N *29/06;29/10*

U.S. Cl. 73—611 **11 Claims**



1. A scan assembly for inspecting a downhole gas pipe using an ultrasonic transducer to transmit interrogating pulses into a wall section of said downhole gas pipe and for receiving return signals which are analyzed for evaluating the condition of said downhole gas pipe, comprising:

a discriminator for discriminating between a valid return pulse and noise in the return signal received by said transducer, said discriminator comprising a plurality of comparators which compare the return signal with respective adjustable multiple reference voltage thresholds;

control means for dynamically adjusting said adjustable reference voltage thresholds of said comparators based on the amount of noise and the strength of said return signal; and

analyzer means for analyzing the return signal for indication of an inner surface of said wall section and an outer surface of said wall section so as to indicate the pressure of an imperfection in said wall section.

5,648,614

INTEGRATED CIRCUIT AND SEAL

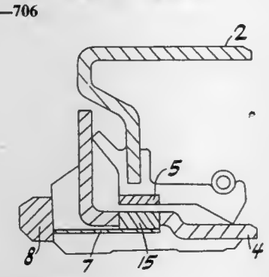
Rainer Martsfeld, Ludwigshafen; Rolf Vogt, Oftersheim; Thomas Kuhlmann, Heidelberg, and Hanno Wentzler, Weinheim, all of Germany, assignors to Firma Carl Freudenberg, Weinheim, Germany

Continuation of Ser. No. 264,535, Jun. 23, 1994, abandoned. This application Aug. 17, 1995, Ser. No. 583,793

Claims priority, application Germany, Jun. 24, 1993, 43 20 939.4

Int. Cl.[6] G01L *7/00*

U.S. Cl. 73—706 **24 Claims**



1. A seal comprising:

a sealing member made of a polymer;

a first, flexible auxiliary element that is immovably affixed to the sealing member, said auxiliary element being selected from the group consisting of a pulse generator and a sensor;

a machine part that is moveable relative to the sealing member;

a second auxiliary element that is immovably affixed to the machine part, said second auxiliary element being selected from the group consisting of a pulse generator and a sensor, and wherein the second auxiliary element is a pulse generator when the first auxiliary element is a sensor and wherein the second auxiliary element is a sensor when the first auxiliary element is a pulse generator;

wherein the first auxiliary element moves with respect to the second auxiliary element whenever the sealing member moves with respect to the machine part.

5,648,615

PRESSURE SENSOR PROVIDING IMPROVED CONNECTION TO A CIRCUIT BOARD

Rainer Jeske, Dettingen; Kurt Weiblen, Metzingen, and Dieter Arand, Reutlingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Sep. 30, 1994, Ser. No. 316,187

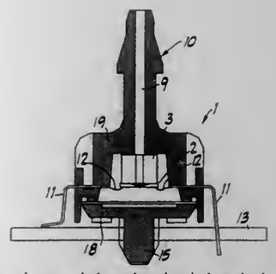
Claims priority, application Germany, Oct. 7, 1993, 43 34 123.3

Int. Cl.[6] G01L *7/00*

U.S. Cl. 73—756 **10 Claims**

1. A pressure sensor for coupling to a circuit board, comprising:

a housing having at least one centering pin, the housing including a pressure inlet opening disposed therethrough and being adapted to be coupled to the circuit board, the at least one centering pin aligning the housing with the circuit board when the housing is connected to the circuit board;



a glass pedestal having a first end and a second end, the first end for coupling to the housing, the glass pedestal further having an orifice disposed therethrough, the orifice being aligned with the housing pressure inlet opening when the glass pedestal first end is coupled to the housing;

a silicon chip having a top side and an underside, the silicon chip top side facing toward the circuit board, the silicon chip underside facing away from the circuit board and being coupled to the glass pedestal second end;

a membrane formed on the silicon chip, the membrane being deformable by pressure introduced into the glass pedestal orifice, the membrane providing a pressure-tight seal with the glass pedestal orifice;

an analyzer, coupled to the silicon chip top side, for detecting deformation of the membrane; and

an electrical connector, coupled to the housing, for electrically connecting the analyzer to the circuit board.

5,648,616

EVALUATION ELECTRONICS OF A CORIOLIS MASS FLOW SENSOR

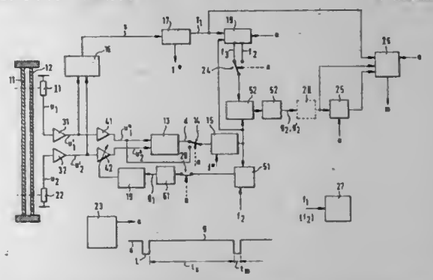
Guido Keel, Basel, Switzerland, assignor to Endress + Hauser Flowtec AG, Reinach, Switzerland

Filed Aug. 14, 1995, Ser. No. 514,914

Claims priority, application European Pat. Off., Aug. 16, 1994, 94112759

Int. Cl.[6] G01F *1/84*

U.S. Cl. 73—861.356 **4 Claims**



1. Evaluation electronics of a Coriolis mass flow sensor having a first measuring tube vibrating at a vibration frequency and a second measuring tube vibrating at the same vibration frequency, the measuring tubes being traversed by a fluid to be measured, and a first electrodynamic transducer and a second electrodynamic transducer being positioned along at least one of the measuring tubes at a distance from each other in the direction of fluid flow, the evaluation electronics comprising:

a first preamplifier for the signal from the first transducer;

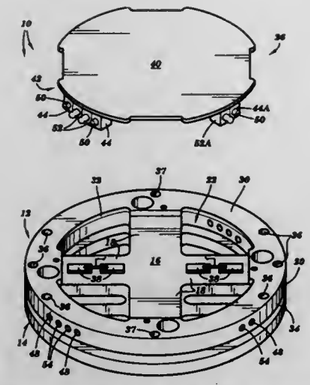
a second preamplifier for the signal from the second transducer;

a first, fixed-gain amplifier for the output signal from the first preamplifier;

a second, variable-gain amplifier for the output signal from the second preamplifier;
a difference stage for the output signals from the two amplifiers;
a changeover switch
whose first input is connected to the output of the difference stage, and
whose second input is connected to the output of the first amplifier;
a variable-cutoff-frequency low-pass filter
whose transmission begins to decrease at the vibration frequency of the measuring tubes, and
whose input is connected to the output of the changeover switch;
a summing/integrating stage for the output signals from the two preamplifiers;
a phase-locked loop
whose input is connected to the output of the summing/integrating stage, and
whose output signal is a first vibration-frequency signal;
a phase-measuring and phase-adding stage
whose first input is supplied with the first vibration-frequency signal,
whose second input is supplied with the output signal from the low-pass filter,
whose first output provides a second vibration-frequency signal shifted in phase by an amount equal to the phase shift of the low-pass filter, and
whose second output provides a third vibration-frequency signal shifted in phase by an amount equal to said phase shift plus 90°;
a first synchronous rectifier clocked by the second vibration-frequency signal and fed with the output signal from the low-pass filter;
a switch having its input connected to the output of the first synchronous rectifier;
an adjustment stage for adjusting the gain of the second amplifier and having its input connected via a first integrator to the output of the switch;
a sequencer which keeps the switch ON during an ON period and the output of the changeover switch connected to the first input of the changeover switch except during a measurement period which is short compared with the ON period and during which the sequencer activates the phase measurement of the phase-measuring and phase-adding stage;
a second synchronous rectifier which is clocked by the second vibration-frequency signal during the measurement period and by the third vibration-frequency signal during the ON period, the second synchronous rectifier being supplied with the output signal from the low-pass filter;
a second integrator having its input connected to the output of the second synchronous rectifier;
a memory stage having its input connected to the output of the second integrator during the measurement period at the most; and
a divide stage
wherein during the ON period
a dividend input is connected to the output of the second integrator,
a first divisor input is connected to the output of the memory stage, and
a second divisor input is connected to the output of the phase-locked loop, and
whose output signal is proportional to mass flow rate.

5,648,617
SINGLE AXIS ROBOT FORCE SENSOR ASSEMBLY
W. Paul Cullen, Scotia; Pamela B. Billings, Ballston Spa, both of N.Y., and John E. Ramming, Woodland, Calif., assignors to Applied Robotics, Inc., Glenville, N.Y.
Filed Aug. 25, 1995, Ser. No. 519,311
Int. Cl.[6] G01L *3/00*
U.S. Cl. 73—862.045 **19 Claims**

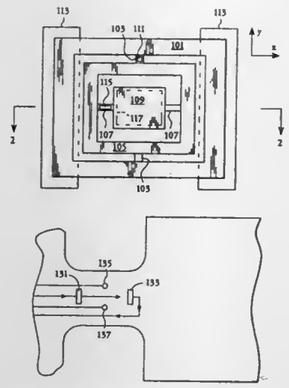
1. A robotic force sensor assembly for sensing forces along a first axis, said force sensor assembly comprising:



a first member having a center hub and a plurality of arms extending radially outward therefrom, said plurality of arms terminating at a peripheral rim of said first member;
strain sensing means mounted to at least one of said plurality of arms so as to detect mechanical deformation of said at least one of said plurality of arms;
a second member joined to said center hub, said first and second members being oriented generally parallel to one another;
a gap extending between said first member and said second member;
a circuit carrying substrate physically incorporatable as part of said force sensor assembly, a circuit of said circuit carrying substrate being electrically connected to said strain sensing means;
a channel formed radially through said peripheral rim of said first member; and
said circuit carrying substrate including an adjustable switch, wherein when said circuit carrying substrate is physically incorporated as a part of said force sensor assembly, said adjustable switch is aligned adjacent to said channel so that said adjustable switch is accessible therethrough.

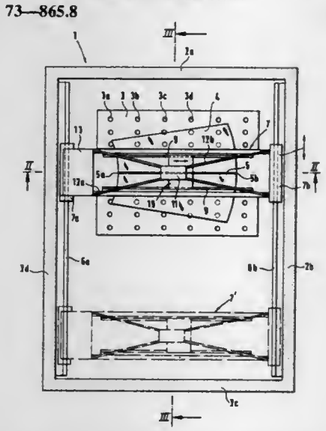
5,648,618
MICROMACHINED HINGE HAVING AN INTEGRAL TORSION SENSOR
Armand P. Neukermans, 3510 Arbutus Ave., Palo Alto, Calif. 94303, and Timothy G. Slater, San Francisco, Calif., assignors to Armand P. Neukermans, Palo Alto, Calif.
Continuation of Ser. No. 208,424, Mar. 8, 1994, Pat. No. 5,488,862, which is a continuation-in-part of Ser. No. 139,397, Oct. 18, 1993. This application Jan. 31, 1996, Ser. No. 595,042
Int. Cl.[6] G01L *3/00*
U.S. Cl. 73—862.08 **14 Claims**

1. A silicon micromachined hinge that includes an integral torsion sensor, said silicon micromachined hinge comprising:
an elongated, single crystal silicon, micromachined bar having a length and a thickness, a major axis disposed along the length of said bar, and major surfaces that are disposed on opposite sides of said bar, that span between opposed ends of said bar, and to which are secured masses that are fabricated integrally with said bar by micromachining, said masses being capable of rotationally twisting said bar in a restorable manner about the major axis;
a four-terminal piezo voltage sensor for sensing torsion in said bar, said four-terminal piezo voltage sensor including:
at least two spaced-apart current electrodes disposed on a first of the major surfaces of said bar for making ohmic contact to an adjacent layer of silicon, said current electrodes being adapted for transmitting an electric current through the silicon; and
at least two spaced-apart voltage sensing electrodes disposed on the first of the major surfaces of said bar along a line



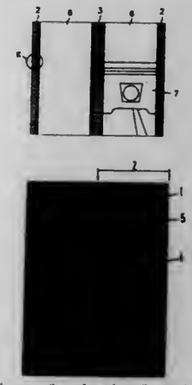
generally perpendicular to electric current flow through the silicon between the current electrodes;
whereby upon application of a torsional force to said bar, by rotation of the masses about the major axis of said bar, concurrently with transmission of electric current between the current electrodes through the adjacent layer of silicon, a voltage, generated by the silicon in response to concurrent application of the torsional force and the electric current flow, appears across the voltage sensing electrodes.

5,648,619
ARRANGEMENT FOR INSPECTION OF WELDED PLATE SECTIONS
Jukka Gustafsson, Mynämäki; Jari Salmi, Raisio, and Heikki Laiho, Turku, all of Finland, assignors to Kvaerner Masa-Yards Oy, Helsinki, Finland
Filed Sep. 19, 1995, Ser. No. 530,082
Claims priority, application Finland, Oct. 19, 1994, 944895
Int. Cl.[6] G01B *11/24*
U.S. Cl. 73—865.8 **18 Claims**



1. An arrangement for inspecting arcuate plate assemblies of aluminum with a thickness of at least 20 mm, for manufacture of large arcuate objects such as LNG tanks, comprising:
a fastening jig for holding a plate assembly that is to be inspected at a predetermined inspection position having first and second opposite sides,
a weld inspection means comprising, at the first side of the inspection position,
a first rail system,
a first carriage mounted on the first rail system for movement therealong, and
a radiation source for X-ray material inspection carried by the first carriage,
and, at the second side of the inspection position,
a second rail system,
a second carriage mounted on the second rail system for movement therealong, and
an imaging means including a video camera for X-ray inspection carried by the second carriage, and
a laser measuring device located at a considerable distance from the predetermined inspection position for measuring the arcuate shape of the plate assembly over substantially its entire area.

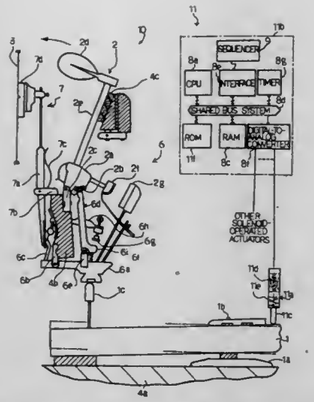
5,648,620
SLIDING SURFACE BEARING
Otto W. Stenzel, Neuhütten; Georg Sick, Felderfing; Eduard Köhler, Neckarsulm; Herbert Möding, Friedrichshall, and Jürgen Niehues, Oedheim, all of Germany, assignors to KS Aluminium-Technologie Aktiengesellschaft, Neckarsulm, Germany
Filed Feb. 24, 1995, Ser. No. 393,745
Claims priority, application Germany, Feb. 25, 1994, 44 06 191.9
Int. Cl.[6] F02F *1/00; 1/24*
U.S. Cl. 75—232 **19 Claims**



1. In a cast sliding surface bearing for guiding and supporting rotating or radically or axially reciprocating machine members (7), which bearing comprises a light alloy matrix (4) which contains a cast-in shaped body (2), which constitutes portions of the sliding surface (6) and is made of a hard material and has open cavities and which contain infiltrated matrix material, the improvement wherein the open cavities of the shaped body (2), which is substantially free of closed cavities, are filled with matrix metal (4) having a substantially low porosity, each of the hard portions of the shaped body which lie in the sliding surface has a size, measured in an axis, of about ≦0.1 mm, and the distance between the hard portions of the shaped body, measured in an axis, is about ≦2 mm.

5,648,621
AUTOMATIC PLAYER PIANO EXACTLY REPRODUCING MUSIC RECORDED ON OTHER MUSICAL INSTRUMENT
Tomoya Sasaki, Shizuoka, Japan, assignor to Yamaha Corporation, Japan
Filed Nov. 30, 1995, Ser. No. 565,390
Claims priority, application Japan, Dec. 1, 1994, 6-298511
Int. Cl.[6] G10C *5/00*
U.S. Cl. 84—171 **10 Claims**

1. An automatic player piano comprising:
an acoustic piano including



a plurality of keys respectively assigned notes of a scale and selectively depressed by a player,

a plurality of hammer assemblies respectively associated with said plurality of keys,

a plurality of strings respectively associated with said plurality of hammer assemblies and generating acoustic sounds respectively having said notes, and

a plurality of key action mechanisms functionally connected between said plurality of keys and said plurality of hammer assemblies and transferring forces exerted on said plurality of keys so as to cause said plurality of hammer assemblies to strike said plurality of strings; and

an electric system including

a plurality of actuators respectively associated with said plurality of keys and selectively energized so as to exert said forces on said plurality of keys instead of said player, and

a controlling unit selectively supplying driving signals to said plurality of actuators for selectively energizing said plurality of actuators, and having

a source of music data information sequentially generating first pieces of music data information indicative of respective keys to be depressed and magnitudes of said forces and second pieces of music data information indicative of said respective keys to be released and decrements of said forces,

a forecasting means enabled with at least two first pieces of music data information both indicative of a certain key of said plurality of keys to be depressed and deciding whether or not one of said plurality of strings associated with said certain key can repeatedly generates the acoustic sound on the basis of the magnitudes of said at least two first pieces of music data information,

a modifying means for changing said magnitudes of said at least two first pieces of music data information when said forecasting means decides that said one of said plurality of strings can not repeatedly generates said acoustic sound, and

a driving signal generating means responsive to said first pieces of music data information for changing said driving signals to respective values corresponding to said magnitudes and said second pieces of music data information for decreasing said magnitudes by said decrements.

5,648,622

PICK FOR A STRINGED MUSICAL INSTRUMENT

David C. Storey, 527 Roy North Rd., Carrollton, Ga. 30117

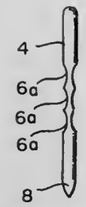
Filed Jan. 18, 1996, Ser. No. 588,509

Int. Cl.[6] G10D *3/16*

U.S. Cl. 84—322 **5 Claims**

1. A pick for a stringed musical instrument, comprising

a generally triangular shaped body having a broad top portion, an intermediate portion and a narrow bottom portion, said



intermediate portion containing a plurality of spaced apertures and having a greater degree of flexure than said top and bottom potions, whereby when said portions are held between the thumb and index finger of a player of the instrument and said bottom portion is used to pluck the strings of the instrument, the player can alter the amount of flexibility for a note by moving the thumb and index finger to grip a selected portion of said pick intermediate portion.

5,648,623

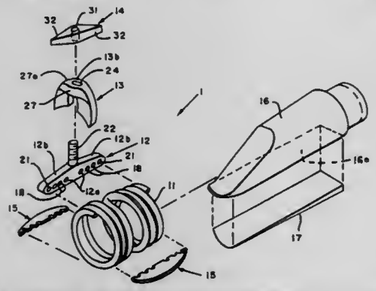
LIGATURE FOR WOODWIND INSTRUMENTS

Steven Silverstein, 307 Call Hollow Rd., Stony Point, N.Y. 10980, and Michael J. Heinrich, 611 N. Midland Ave., Upper Nyack, N.Y. 10960

Filed Oct. 13, 1995, Ser. No. 543,171

Int. Cl.[6] G10D *9/02*

U.S. Cl. 84—383 R **18 Claims**



1. A ligature for securing a reed to a mouthpiece of a woodwind instrument, comprising:

a bridge having a hole and including a surface in bearing engagement with the mouthpiece;

a spiral cord having a plurality of wraps, the spiral cord disposed axially along the mouthpiece with the reed therebetween, the bridge located angularly around the mouthpiece opposite to the reed;

a puller having a plurality of holes, the wraps of the spiral cord passing through the holes in the puller, respectively, the puller including an extension passing through the hole in the bridge;

means operatively connected to the extension of the puller for bearing against the bridge and lifting the puller away from the mouthpiece so that the spiral cord secures the reed to the mouthpiece.

5,648,624

WIND CHIME HAVING A ROTATING STRIKER

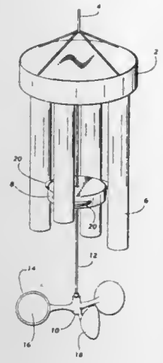
Richard L. Smith, Charleston, S.C., assignor to The Yancy Company, N. Charleston, S.C.

Filed Jul. 19, 1995, Ser. No. 503,915

Int. Cl.[6] G10D *13/08*

U.S. Cl. 84—404 **5 Claims**

1. A wind chime having a rotating striker which is actuated by air currents, comprising:



a. frame;

b. at least one chime which is suspended from said frame;

c. at least one striker;

d. a linkage which is attached to said frame and to said at least one striker;

e. rotating means for causing said linkage to rotate and to wind up as moving air strikes said rotating means, and for causing said striker to rotate and strike said chime, wherein said rotating means is attached to said striker and has a multiplicity of air foils extending therefrom.

5,648,625

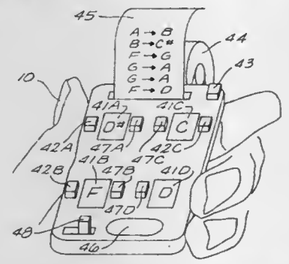
MUSICAL CHORD TRANSPOSER

James O. Reyes, 2791 W. St. Topaz, Tucson, Ariz. 85713

Filed May 10, 1995, Ser. No. 440,690

Int. Cl.[6] G09B *15/02*; **G06C** *29/00*

U.S. Cl. 84—475 **15 Claims**



1. An apparatus for automatically translating musical chords comprising:

a) a display means for communicating information to an operator;

b) a keyboard for operator entry of data having at least three switches; and,

c) a control means for,

1) accepting, via said keyboard, source key data,

2) accepting, via said keyboard, source chord data,

3) based upon said source key data and said source chord data, identifying a target chord,

4) communicating said target chord, via said display means, to an operator, and,

5) scrolling through a predefined list of source key data, source chord data, and target key data based upon activation of each of said at least three switches.

5,648,626

MUSICAL TONE CONTROLLER RESPONSIVE TO PLAYING ACTION OF A PERFORMER

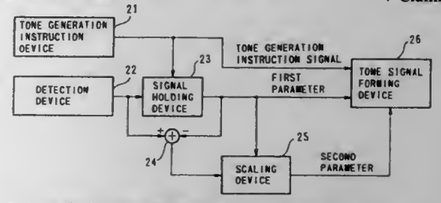
Tetsuo Okamoto, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan

Filed Mar. 18, 1993, Ser. No. 33,022

Claims priority, application Japan, Mar. 24, 1992, 4-065944

Int. Cl.[6] G10H *7/00*

U.S. Cl. 84—600 **7 Claims**



1. A musical tone controlling apparatus comprising:

(a) tone generation instruction means for outputting a tone generation start signal in accordance with a playing action of a performer;

(b) detection means for detecting a movement or a state of said performer's body other than said playing action, and generating a detection signal in accordance with the detected result;

(c) tone parameter generation means for generating a first tonal parameter in accordance with said detection signal when said tone generation start signal is received and for generating a second tonal parameter in accordance with said detection signal after said tone generation start signal has been received; and

(d) tone signal forming means, for forming a musical tone signal responsive to said tone generation start signal, and for controlling the musical tone signal formation in accordance with said first tonal parameter and said second tonal parameter.

5,648,627

MUSICAL PERFORMANCE CONTROL APPARATUS FOR PROCESSING A USER'S SWING MOTION WITH FUZZY INFERENCE OR A NEURAL NETWORK

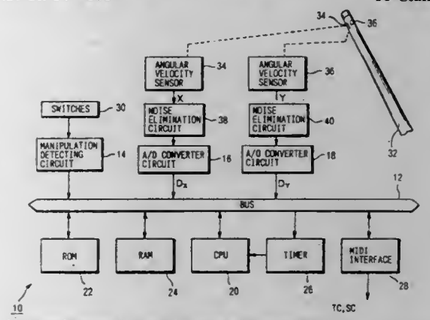
Satoshi Usa, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan

Filed Sep. 20, 1996, Ser. No. 710,706

Claims priority, application Japan, Sep. 27, 1995, 7-273518; Oct. 2, 1995, 7-278327

Int. Cl.[6] G10H *7/00*

U.S: Cl. 84—600 **16 Claims**



1. A performance control apparatus comprising:

sensor means for sensing a swing motion made by a human operator;

detection means for detecting a characteristic point of the swing motion based on an output of the sensor means, wherein the characteristic point of the swing motion is detected using a fuzzy inference process; and

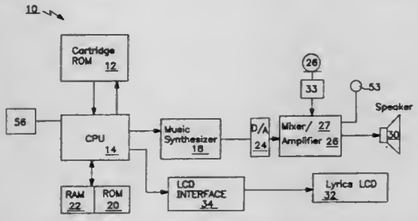
performance control means for controlling a manner of performance based on an output of the detection means.

5,648,628

CARTRIDGE SUPPORTED KARAOKE DEVICE

Tao Fei S. Ng, 34714 Siward Dr., Fremont, Calif. 94555; Kong Wing R. Chow, 2923 Creek Point Dr., San Jose, Calif. 95133, and Cheuk-Wai C. Lau, 40642 Encanto Way, Fremont, Calif. 94539

Filed Sep. 29, 1995, Ser. No. 536,084
Int. Cl.[6] G09B *15/04;* **G10H** *1/36*
U.S. Cl. 84—610 **15 Claims**



1. A karaoke device for presenting a group of musical events which comprises:

means adapted for replaceably connecting a solid state memory cartridge to said device wherein said cartridge has stored therein a succession of commands expressed in a first format;

said succession of commands representing said group of musical events;

a microprocessor having a RAM and adapted for receiving said succession of commands stored in said solid state cartridge;

a ROM connected to said microprocessor and having stored therein a group of subroutines for enabling said microprocessor to instruct a music synthesizer to generate said group of musical events in a second format;

a music synthesizer means connected to said microprocessor for generating said group of musical events expressed as a digital-audio waveform in a second format from said succession of commands in said microprocessor and subroutines stored in said ROM;

a digital to analog convertor means connected to said synthesizer means for converting said digital audio waveform to an analog waveform;

means for connecting said converter means to a speaker to broadcast said analog waveform.

5,648,629

ELECTRONIC MUSICAL INSTRUMENT WITH RESONANCE SOUNDS

Koichi Kozuki, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan

Filed Jun. 27, 1994, Ser. No. 266,021
Claims priority, application Japan, Jun. 29, 1993, 5-159612
Int. Cl.[6] G10H *1/00;1/02*
U.S. Cl. 84—660 **27 Claims**

1. An electronic musical instrument comprising:

a plurality of keys each having a pitch associated therewith;

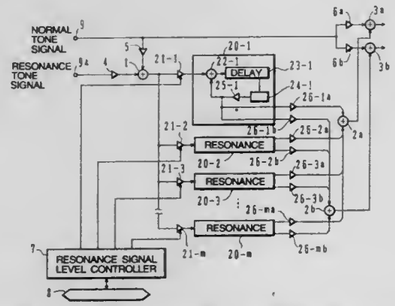
key state detection means for detecting at least a depressed state and a released state of each one of said keys;

at least one pedal;

pedal state detection means for detecting at least a depressed state and a released state of said at least one pedal;

tone signal generating means for selectively generating a plurality of tone signals each having a pitch associated with a depressed key;

mixing means for producing a mixed tone signal by mixing tone signals generated by said tone signal generating means;



a plurality of resonance signal generating means for receiving a mixed tone signal from said mixing means and generating and outputting a plurality of different resonance signals;

input level controlling means for controlling a level of said mixed tone signal, at least one level of said mixed tone signal being input to said plurality of resonance signal generating means; and

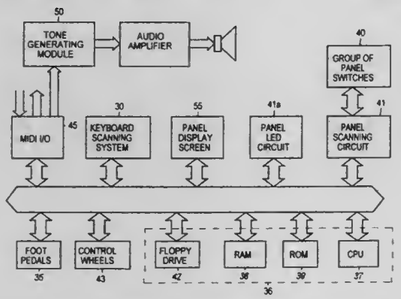
control means for controlling said tone signal generating means to generate a tone signal having a pitch associated with a depressed key when said key state detection means detects depression of one of said plurality of keys, and when said pedal state detection means detects that said at least one pedal is in said released state, said control means controlling said input level controlling means in accordance with a pitch of said one of said plurality of keys such that a level of said mixed tone signal input to at least one of said plurality of resonant signal generating means corresponds to said pitch associated with said depressed key.

5,648,630

SYSTEM FOR TRIGGERING AND MUTING MUSICAL TONES EMPLOYING TWO OF MORE KEYBOARD KEYS WHICH OPERATE INTERACTIVELY

Paul B. Vandervoort, 2875 Idlewild #19, Reno, Nev. 89509

Continuation-in-part of Ser. No. 345,067, Nov. 22, 1994, Pat. No. 5,505,115, which is a continuation-in-part of Ser. No. 191,283, Feb. 3, 1994, abandoned, which is a continuation-in-part of Ser. No. 40,209, Apr. 1, 1993, Pat. No. 5,469,772. This application Aug. 8, 1995, Ser. No. 512,547
Int. Cl.[6] G10H *1/32*
U.S. Cl. 84—719 **49 Claims**



1. A polyphonic electronic musical instrument comprising:

a keyboard;

said keyboard including 24 independently-moving keys arranged in at least two key rows,

24 key velocity sensors, each of said sensors corresponding with one of said keys;

a digital signal processing system receiving key state information from said keyboard; and

a tone generating device capable of simultaneously producing a plurality of independently triggered audio tones, said tone generating device controlled, at least in part, by said processing system; wherein

said 24 keys are grouped into twelve key sets, each of said key sets including two keys occupying different key rows; and

for any one of said keys, said processing system

(a) issues to said tone generating device a note-on/velocity command for a corresponding tone as a result of depression only when the other key within the same set is in rest position, said command including information regarding the velocity at which said key was depressed; and

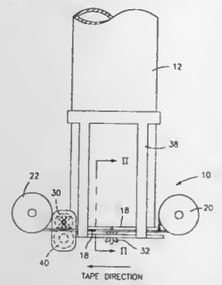
(b) allows said tone generating device to continue production of said corresponding tone as long as either or both keys of the same set are in depressed position.

5,648,631

SPOOLED TAPE SEAL FOR UNDERWATER GUN OPERATION

Ivan N. Kirschner, Portsmouth; Laurence M. Dean, Newport, and Richard B. Philips, Barrington, all of R.I., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 3, 1995, Ser. No. 540,419
Int. Cl.[6] F41C *9/06*
U.S. Cl. 89—1.14 **17 Claims**



1. An underwater weapon comprising:

a tube having an opening therein through which a projectile is discharged;

a tape covering and sealing said opening to prevent the ingress of water, said tape being perforated by discharge of said projectile; and

an advancement means joined in fixed relationship to said tube and joined to said tape for allowing intact tape to cover said opening and replace said perforated tape.

5,648,632

APPARATUS FOR AIMING A WEAPON OF A COMBAT VEHICLE

Wilfried Becker, Celle; Dirk Kilfitt, Velbert, and Hans-Ulrich Desgranges, Celle, all of Germany, assignors to Rheinmetall Industrie Aktiengesellschaft, Ratingen, Germany

Filed Sep. 4, 1996, Ser. No. 697,976
Claims priority, application Germany, Sep. 5, 1995, 19 532 743.8
Int. Cl.[6] F41G *5/06*
U.S. Cl. 89—41.05 **6 Claims**

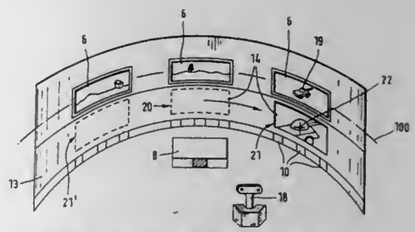
1. A weapon system for a combat vehicle, comprising

(a) a weapon movably mounted on the vehicle;

(b) an electronic weapon control device connected to said weapon;

(c) a weapon operating station for accommodating a gunner;

(d) a plurality of angled mirrors disposed in an array in said weapon operating station to provide a panoramic view for the gunner when situated in said weapon operating station; each said angled mirror providing a section of the panoramic view;



(e) a separate switch associated with each said angled mirror and being connected with said electronic weapon control device;

(f) a camera attached to said weapon to be movable therewith;

(g) a display screen connected with said camera for reproducing an image representing a view seen by the camera;

(h) support means for movably supporting said display screen for travel along said array; and

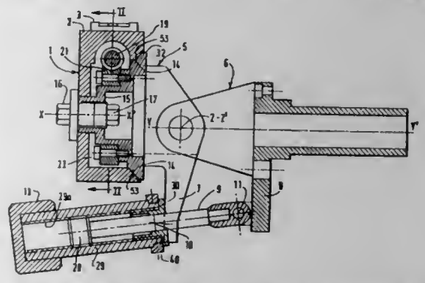
(i) a positioning drive connected to said electronic weapon control device and said display screen whereby upon operation of one of said switches belonging to one of said angled mirrors through which a target is observed, said electronic weapon control device moves said weapon at the target and simultaneously said positioning drive moves said display screen along said array to an immediate vicinity of said one angled mirror.

5,648,633

ELEVATION SIGHT MOUNT FOR A PIECE OF ARTILLERY

Dominique Relange, Soye en Septaine, France, assignor to Giat Industries, Versailles, France

Filed Jul. 6, 1995, Ser. No. 499,102
Claims priority, application France, Jul. 13, 1994, 94 08768
Int. Cl.[6] F41G *3/10*
U.S. Cl. 89—41.11 **8 Claims**



1. An elevation sight mount for supporting a goniometer for a piece of artillery having a barrel so that the goniometer is positioned vertically to enable indication of an elevation laying angle of the barrel, said sight mount comprising:

a fixed element fixed to the barrel of the artillery piece;

a lever part rotatably mounted to said fixed element for rotation about a first axis that is parallel to the barrel of the artillery piece, said lever part including a lever arm;

an adjustable connecting rod for adjusting the rotatable position of said lever part relative to said fixed element, said connecting rod being connected to the lever arm of said lever part through a first hinge pin and a first end of said connecting rod being connected to the fixed element by a second hinge pin, said first and second hinge pins having longitudinal axes that are substantially parallel to the first axis;

a support rotatably mounted to said lever part for rotation about a second axis that is perpendicular to the first axis, said support having two spirit levels which are perpendicular to one another attached thereto; and

wherein a length of said adjustable connecting rod between the first and second hinge pins is adjustable by a first control

button, and wherein rotation of said support with respect to said lever part is controlled by a second control button.

5,648,634

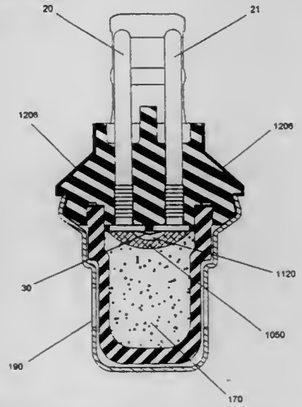
ELECTRICAL INITIATOR

Mark Lucas Avory, Foster City; William David Fahey, Cupertino; Stewart Shannon Fields, Redwood City; Charles Joyce Moore, Jr., Redwood Shores; Charles John Piper, III, Pleasant Hill; David Whang, San Jose; Terry Joseph Pink, Felton; Albert Jiggs Baggett, Jr., San Carlos; Martin Gerald Richman, Salinas, and Lawrence Theodore Weinman, San Ramon, all of Calif., assignors to Quantic Industries, Inc., San Carlos, Calif.

Continuation-in-part of Ser. No. 140,650, Oct. 20, 1993. This application Oct. 19, 1994, Ser. No. 325,859

Int. Cl.[6] F42B *3/18*; **F42C** *19/12*

U.S. Cl. 102—202.1 **10 Claims**



1. An electrical initiator, comprising:

a bridgewire capable of converting electrical energy to thermal energy;

a primer covering the bridgewire;

a flash charge covering the primer; and

an output charge adjacent to the flash charge;

wherein the primer includes

about 1%–7% by weight of a compound selected from the group consisting of a styrene-ethylene-butylene-styrene copolymer, a styrene-ethylene-propylene copolymer, and a multi-arm ethylene-propylene copolymer; and

about 0.5%–4% by weight of a styrene-ethylene-butylene-styrene copolymer functionalized with about 1% succinic anhydride.

5,648,635

EXPENDALBLE CHARGE CASE HOLDER

Norman Gerald Lussier, 203 Oakside Road S.W., Calgary, Alberta, Canada, and Michael Norman Lussier, 206 Mount Lorette Close S.E., Calgary, Alberta, Canada

Filed Aug. 22, 1995, Ser. No. 517,674

Int. Cl.[6] F42B *1/02;3/00*

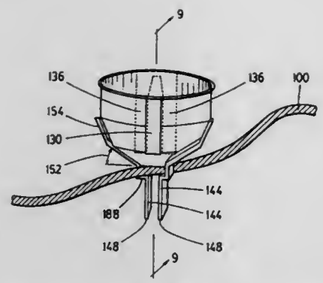
U.S. Cl. 102—307 **37 Claims**

1. An expendable shaped charge holder assembly for a perforating gun, the assembly comprising:

a thin-walled tube having an aperture;

a shaped charge for installation in the tube by insertion through the aperture;

a plurality of fingers unitary with the tube wall protruding into the tube interior with surfaces which together define a cavity for receipt of the case of the charge therein and which engage



the case when brought into abutting contact therewith to support the installed charge in the holder; and

a tab unitary with the tube wall and having an end attached thereto, the tab being bendable by means of a hand-held tool into abutting contact with an upper rim of the case of the installed charge to affix the charge in the tube.

5,648,636

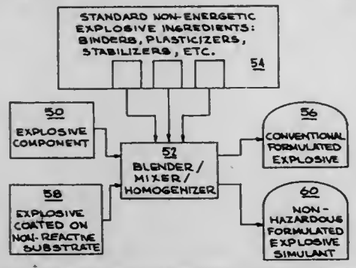
NON-DETONABLE AND NON-EXPLOSIVE EXPLOSIVE SIMULATORS

Randall L. Simpson, and César O. Pruneda, both of Livermore, Calif., assignors to Regents of the University of California, Oakland, Calif.

Continuation-in-part of Ser. No. 221,568, Apr. 1, 1994, Pat. No. 5,413,812, which is a division of Ser. No. 27,366, Mar. 8, 1993, Pat. No. 5,359,936. This application May 9, 1995, Ser. No. 438,003

Int. Cl.[6] F42B *4/18*

U.S. Cl. 102—355 **10 Claims**



1. A non-detonable and non-explodable explosive simulant comprising:

a quantity of an explosive material;

a quantity of a non-explosive material;

said materials being combined in proportions such that the combination is at least one of scent, chemical element, chemical bonding pattern, x-ray absorption, and isotope ratio equivalent to said explosive material, but is not detonable or explodable.

5,648,637

MULTI-DISK SHELL

George D. Clark, III, 700 Bowie Rd., Golden Valley, Ariz. 86413

Filed Oct. 25, 1994, Ser. No. 329,076

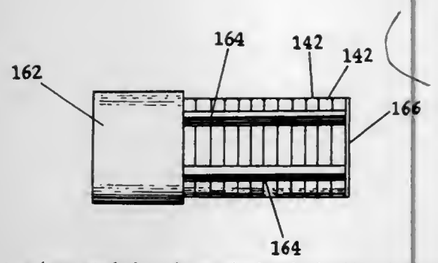
Int. Cl.[6] F42B *5/03;14/06*

U.S. Cl. 102—438 **1 Claim**

1. A shell comprising:

a. a casing having a proximal end, a proximal section, a distal section, a distal end, and an inner diameter;

b. gunpowder contained in the proximal section of said casing;



c. a base attached to the proximal end of said casing and including a primer for percussive ignition of said gunpowder;

d. a plurality of disks that are axially aligned and contained in the distal section of said casing; and

e. a wad comprising

1. a cylindrical base interposed between said powder and said plurality of disks; and

2. at least three arms attached to a top side of the base of said wad, each arm extending between said casing and said plurality of disks and reaching to the distal end of said casing, wherein the at least three arms are V-shaped, and having a vertex of the V-shape in slideable connection to said casing and two extension arms of the V-shape in contact with said plurality of disks.

5,648,638

LOW-TEMPERATURE CURRENT TRANSFER STRUCTURE WITH HEAT EXCHANGER

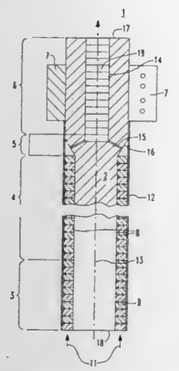
Günter Friesinger, Eggenstein-Leopoldshafen; Reinhard Heller, Ludwigshafen, and Heinrich Katheder, Linkenheim-Hochstetten, all of Germany, assignors to Forschungszentrum Karlsruhe GmbH, Karlsruhe, Germany

Filed Feb. 22, 1994, Ser. No. 199,568

Claims priority, application Germany, Aug. 22, 1991, 41 27 711.2

Int. Cl.[6] H01B *12/00*

U.S. Cl. 174—15.4 **4 Claims**



1. A low-temperature current transfer structure having a cold end for connection to a supercooled superconductive component and a warm end for connection to a current supplying electric bus comprising:

a current conductor extending over a full length of said structure;

a cold end heat transfer region, wherein said current conductor consists of superconductive and normally conductive materials and has a predetermined cross section;

an intermediate heat transfer region adjacent to said cold end heat transfer region, wherein said current conductor has the same cross-section as said current conductor in said cold end heat transfer region and consists of normally conductive material;

a transition region adjacent to said intermediate heat transfer region, wherein said transition region consists of a portion of said conductor having an outside diameter increasing over a predetermined axial length;

a warm end heat transfer region adjacent to said transition region, wherein said conductor has a hollow cylindrical portion with a predetermined wall thickness and consists of normally conductive material;

perforated annular metallic discs arranged coaxially around said conductor in said cold end and said intermediate heat transfer regions in predetermined axially spaced relationship from one another and in good heat transfer contact with an outer wall of said conductor;

perforated metallic discs arranged in said hollow cylindrical portion in axially spaced relationship and in good heat transfer contact with an interior wall of said hollow cylindrical portion;

a tube enveloping said annular metallic discs in said cold end and said intermediate heat transfer regions and providing a coolant path for guiding a coolant through said annular discs along said conductor to said transition region, said transition region having passages for guiding said coolant from said coolant path into said perforated metallic discs of said hollow cylindrical portion, so that said coolant is heated essentially to ambient temperature without formation of condensation or ice on an outer surface of said hollow cylindrical portion; and

an electrical connector connected to an outside of said hollow cylindrical portion in said warm end heat transfer region such that said hollow cylindrical portion extends beyond said electrical connector whereby a connector area will be cooled and the coolant can be heated within said hollow cylindrical portion close to ambient temperature.

5,648,639

GLANDS FOR TERMINATING CABLES AND PIPES

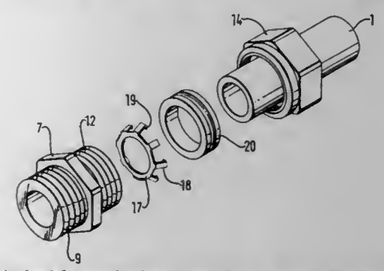
Edward Hand, Stalybridge, England, assignor to Hawke Cable Glands Limited, England

Filed May 16, 1995, Ser. No. 441,727

Claims priority, application United Kingdom, May 21, 1994, 9410200

Int. Cl.[6] H02G *3/18*

U.S. Cl. 174—51 **12 Claims**



1. A gland for terminating a cable or pipe having an electrically conductive sleeve covered by an outer sheath of electrically insulating material comprising an electrically conductive gland body having an axial opening at one end for receiving the cable or pipe, and an electrically conductive earthing ring co-operable with the cable or pipe for push fit reception in said opening on insertion of the cable or pipe in said opening, said earthing ring having at least one contact finger disposed to extend over the outer sheath of the cable or pipe with an inwardly directed projection for piercing the outer sheath and contacting the sleeve for providing an earth connection between said gland body and the cable or pipe, said at least one contact finger being arranged to extend axially and radially outwards of the cable or pipe in an undeformed free state

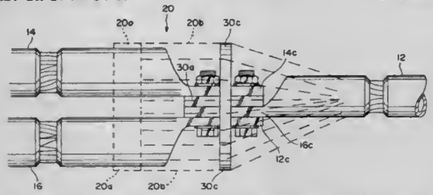
of said earthing ring prior to insertion in said opening and being co-operable with a tapered entry portion of said opening on insertion in said opening to deflect inwardly towards the cable or pipe causing said projection to pierce the outer sheath and contact the sleeve.

5,648,640

RE-INSULATION OF CONDUCTOR JUNCTIONS OF PRIMARY CONDUCTORS

William G. Osborn, Stamford, Conn., assignor to Framatome Connectors USA, Inc., Norwalk, Conn.

Filed Jul. 26, 1995, Ser. No. 507,627
Int. Cl.[6] H01R *4/70*
U.S. Cl. 174—84 R **5 Claims**



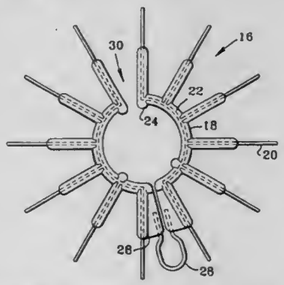
2. A junction of at least three conductors comprising a connector joined to each of said conductors with the connectors being secured to each other and with the joined conductors having opposite sides lying along a common axis, a cage having a transverse header and a plurality of longitudinally extending fingers, the cage being formed by wrapping the transverse header about the connectors on one side of the junction with the fingers extending along the axis of the junction to the other side, across the junction, and terminating with tips of the fingers laying circumferentially about the connectors or conductors on the other side of the junction, a hoop having a central plate affixed to the connectors and a ring affixed to the plate for encircling the connectors inside the cage fingers, the cage and hoop forming a smooth armature for supporting insulating materials applied across the junction.

5,648,641

ELECTROSTATIC ANIMAL BARRIER FOR ELECTRICAL EQUIPMENT

James E. Guthrie, 5105 Sand Rd. SE., Iowa City, Iowa 52240-8220

Continuation of Ser. No. 353,645, Dec. 8, 1994, abandoned, which is a continuation of Ser. No. 24,275, Feb. 26, 1993, abandoned. This application May 21, 1996, Ser. No. 651,033
Int. Cl.[6] H01B *17/00;17/46*
U.S. Cl. 174—139 **5 Claims**



1. A physical and electrostatic animal barrier for use on energized electrical insulators and terminal bushings, comprising:

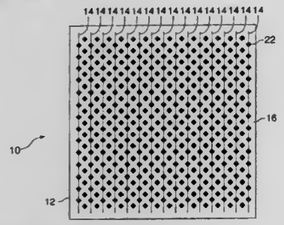
an electrically conducting barrier comprising a generally resilient C-shaped electrostatically chargeable base provided with a plurality of radially extending electrostatically chargeable spokes partially surrounded by an insulating material which also surrounds a portion of the base; wherein said generally resilient C-shaped base includes a pair of generally semicircular sections operatively connected to one another on one end in a resilient fashion to define an expansible opening dimensioned to receive energized bushings and insulators.

5,648,642

OBJECT POSITION DETECTOR

Robert J. Miller, San Jose, and Stephen J. Bisset, Los Altos, both of Calif., assignors to Synaptics, Incorporated, San Jose, Calif.

Continuation of Ser. No. 895,934, Jun. 8, 1992, abandoned. This application Oct. 25, 1994, Ser. No. 329,809
Int. Cl.[6] G08C *21/00*
U.S. Cl. 178—18 **38 Claims**



1. An object proximity sensor, including:

a plurality of spaced-apart conductive sensor pads disposed in a matrix of rows and columns on a substrate;

a plurality of row conductive lines disposed on said substrate and generally aligned with said rows, each of said row conductive lines electrically contacting every second one of said sensor pads in one of said rows;

a plurality of column conductive lines disposed on said substrate, insulated from said row conductive lines and generally aligned with said columns, each of said column conductive lines electrically contacting the ones of said sensor pads in one of said columns which are not contacted by said row conductive lines;

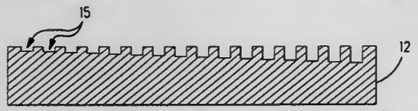
means for placing a step voltage onto each of said row conductive lines one at a time, and for simultaneously sensing the charge injected onto each of said column conductive lines in response to said step voltage placed onto each of said row conductive lines and for producing a set of object-sensed electrical signals related thereto.

5,648,643

ACOUSTIC WAVE TOUCH PANEL WIHT INLAYED, ETCHED ARRAYS AND METHOD OF MAKING THE PANEL

Terence J. Knowles, 7525 Taft Cir., Hanover Park, Ill. 60103, and Charles F. Bremigan, III, Rt. 1, Bx. 189R, Jarrell, Tex. 76537

Filed Jun. 16, 1995, Ser. No. 491,306
Int. Cl.[6] G08C *21/00*
U.S. Cl. 178—19 **30 Claims**



24. A method of making an acoustic wave touch panel having a substrate capable of supporting an acoustic wave for propagation

therein, said substrate being formed of a first material, said method comprising:

removing portions of said substrate in a pattern to form at least one reflective array; and

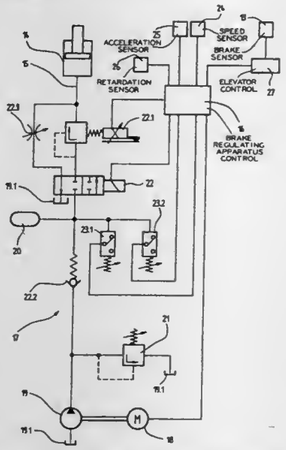
depositing in said array a second material wherein said acoustic wave has a velocity of propagation in said second material that is different than the velocity of propagation of said acoustic wave in said first material.

5,648,644

BRAKE REGULATING APPARATUS FOR AN ELEVATOR CAR

Heinz-Dieter Nagel, Berlin, Germany, assignor to Inventio AG, Hergiswil, Switzerland

Filed Oct. 18, 1994, Ser. No. 324,789
Claims priority, application European Pat. Off., Oct. 18, 1993, 93116780
Int. Cl.[6] B66B *1/32;5/16*
U.S. Cl. 187—288 **20 Claims**



16. An apparatus for applying a regulated braking force to an elevator car comprising:

a fastening housing for attachment to an elevator car;

a brake shoe being retained in said fastening housing;

at least one brake pad for engaging a running surface formed on a guide rail along which the elevator car travels, said brake pad being retained by said brake shoe;

at least one pressure fluid actuated brake actuator mounted in said brake shoe and being coupled to said brake pad for moving said brake pad into engagement with the running surface;

a brake regulating means connected to said brake actuator for selectively applying pressured fluid from a source to said brake actuator whereby a relatively constant regulated braking force is exerted on the elevator car;

a speed sensor connected to said brake regulating means for sensing an actual speed at which the elevator car is travelling;

an acceleration sensor connected to said brake regulating means for sensing an actual acceleration at which the elevator car is travelling; and

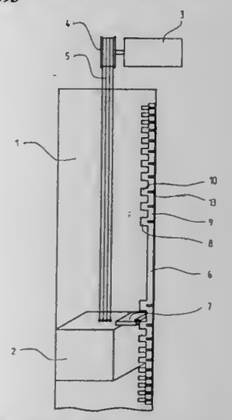
a retardation sensor connected to said brake regulating means for sensing an actual retardation at which the elevator car is travelling during braking whereby said brake regulating means selectively applies the pressured fluid to said brake actuator when the actual speed exceeds a first predetermined value, when the actual acceleration exceeds a second predetermined value, and to maintain the actual retardation at a third predetermined value.

5,648,645

ELEVATOR EXCESS SPEED DETECTOR WITH MULTIPLE LIGHT BARRIER

Christian Arpagaus, Landquart; Bernhard Gerstenkorn, Kierikon, and Daniel Zäch, Trimmis, all of Switzerland, assignors to Inventio AG, Hergiswil, Switzerland

Filed Nov. 20, 1995, Ser. No. 561,088
Claims priority, application Switzerland, Nov. 18, 1994, 03475/94
Int. Cl.[6] B66B *5/06;1/34*
U.S. Cl. 187—393 **15 Claims**



15. An elevator system comprising:

an elevator car movable in an elevator shaft;

a speed measuring strip having an elongated body mounted vertically extending in said elevator shaft, said strip having a vertically extending markings track side-by-side with a vertically extending check track, said markings track having a plurality of vertically spaced apart speed markings thereon and said check track having a plurality of check markings thereon in predetermined positions relative to said speed markings;

a forked light barrier assembly mounted on said elevator car movable in said elevator shaft, said assembly including a pair of legs extending on opposite sides of said speed measuring strip and a plurality of light barriers for transmitting beams of light between said legs;

an excess speed detection circuit connected to said light barriers and being responsive to a detection of said speed markings for generating a open relay signal to stop the car, said excess speed detection circuit being responsive to said speed markings and said check markings for generating said open relay signal when said speed markings and said check markings are not detected in a predetermined order; and

a safety means connected between said car and said excess speed detection circuit and being responsive to said open relay signal for stopping movement of said elevator car in said shaft.

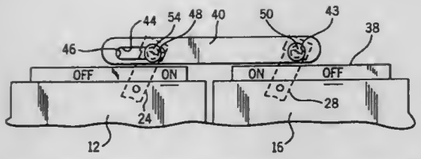
5,648,646

CIRCUIT BREAKER LINKAGE ASSEMBLY

David D. Flegel, Racine, Wis., assignor to Reliance Time Controls, Inc., Racine, Wis.

Filed Jun. 19, 1995, Ser. No. 491,794
Int. Cl.[6] H01H *33/52*
U.S. Cl. 200—50.32 **10 Claims**

1. An interlock for first and second tandemly aligned circuit breaker switches respectively having first and second external operating handles thereon oriented such that the operating handles are disposed away from each other when the switches are OFF and



towards each other when the switches are ON, wherein each handle defines a pair of oppositely facing sides, said interlock comprising:

linkage means for applying a linear force between said first operating handle and said second operating handle, said linkage means comprising first and second link members, each link member being formed with at least one slot and being connected to said first operating handle such that said first link member is disposed adjacent one of said oppositely facing sides of said first handle and said second link member is disposed adjacent the other of said oppositely facing sides of said first handle and being connected to said second operating handle such that said first link member is disposed adjacent one of said oppositely facing sides of said second handle and said second link member is disposed adjacent the other of said oppositely facing sides of said second handle, wherein said link members are constructed and arranged such that pushing said first operating handle from an OFF to an ON position pushes said second operating handle from an ON to an OFF position.

5,648,647

ANTI-FRAUD CREDIT CARD DISPATCH SYSTEM

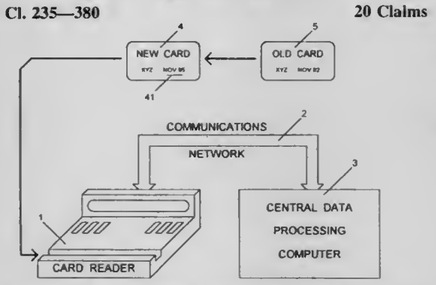
Dieter G. Seiler, P.O. Box 353, Stn. Main, Carleton Place, Canada

PCT No. PCT/CA93/00560, § 371 Date Jun. 22, 1995, § 102(e) Date Jun. 22, 1995, PCT Pub. No. WO94/16415, PCT Pub. Date Jul. 21, 1994

Continuation-in-part of Ser. No. 999,121, Dec. 31, 1992, abandoned. This PCT application Dec. 24, 1993, Ser. No. 464,738

Int. Cl.[6] G06K *5/00*; G06F *17/60*

U.S. Cl. 235—380 **20 Claims**



1. A method for validating a renewal credit card issued to replace an old credit card, both of which credit cards are in the possession of the credit card holder, wherein each credit card bears information identifying the credit card holder, and information distinguishing the renewal credit card from the old credit card, which method comprises the following steps:

(i) tendering, by the credit card holder, the first, of the two, credit cards to a transaction recipient authorized to accept transactions made involving the credit card and having a transaction source location code;

(ii) transferring from the transaction recipient to a computer memory at least some of the information recorded on the first credit card, including at least some of the distinguishing information;

(iii) comparing within the computer the transferred information with the information on record concerning the first credit card, and determining that a computer record for the second credit card exists bearing the same information identifying the credit card holder;

(iv) transferring to the transaction recipient a request for the credit card holder to tender to the transaction recipient the second credit card;

(v) tendering the second credit card to the transaction recipient;

(vi) transferring from the transaction recipient to the computer memory at transaction recipient;

(vi) transferring from the transaction recipient to the computer memory at least some of the information recorded on the second tendered credit card, including at least some of the distinguishing information;

(vii) comparing within the computer the transferred information derived from the second tendered credit card with the information on record, including that the transferred information derived from the second tendered credit card correlates with the information on record for the second credit card, including correct information distinguishing the second credit card tendered in step (v) from the credit card first tendered in step (i);

(viii) determining in the computer that the information transferred in each of steps (ii) and (vi) also jointly satisfies a further security criterion, chosen from at least one member of the group consisting of:

(a) that the sequence of steps starting from step (iv) through the completion of step (vi) collectively take place within a predetermined time period; and

(b) that the information transfers in both step (ii) and step (vi) originate from the same transaction recipient, and include the same transaction source location code; and

(ix) validating the tendered renewal credit card for further subsequent use, and invalidating the old credit card against any further use, by revising the computer memory records to accept only the renewal credit card having its distinguishing information.

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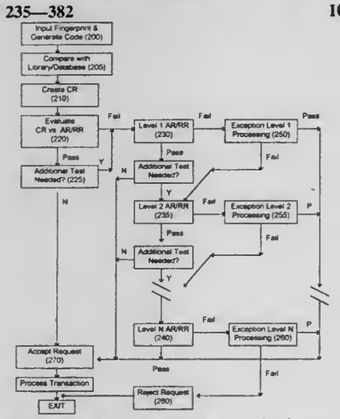
PERSONAL IDENTIFICATION SYSTEM FOR USE WITH FINGERPRINT DATA IN SECURED TRANSACTIONS

Ken W. Chou, Glendora, and Ruey-Long Tang, Hacienda Heights, both of Calif., assignors to Finger Power, Inc., Rosemead, Calif.

Filed Feb. 5, 1996, Ser. No. 596,570

Int. Cl.[6] G06K *5/00*

U.S. Cl. 235—382 **10 Claims**



1. In a transaction-based system for conducting secured-data transactions, comprising:

at least one fingerprint recognition device for recognizing and generating fingerprint data of a requester in a predefined format,

master files and libraries for initially storing a plurality of fingerprint data corresponding to a plurality of users of said system, and

a data processing unit coupled to said master files and libraries for maintaining preestablished criteria maintained in said master files and libraries for said request by comparing said fingerprint data from said requester with a corresponding entry in said master file and libraries using said predetermined criteria, a method of personal identification for said system to conduct secured-data transactions using said fingerprint data of said requester, comprising the steps of:

a) generating and maintaining, for each account, an access file for specifying a plurality of different AR/RR levels with each level corresponding to an acceptable transaction such that a transaction is allowed when an AR level is met, or rejected when it falls below an RR level;

b) receiving fingerprint data of a requester and its accompanying request for a transaction and account information;

c) generating a CR for said requester's fingerprint data;

d) comparing said fingerprint data of said requester with one of said plurality of fingerprint data in said master file pertaining to said account;

e) evaluating said CR of transaction request against said AR/RR, using said access file;

f) if said AR is acceptable for said transaction, granting said request; and if said CR is not acceptable for said transaction, entering at least one exception routine for additional authentication.

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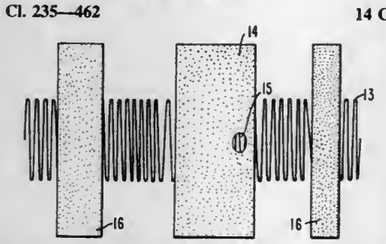
FLYING SPOT OPTICAL SCANNER WITH A HIGH SPEED DITHERING MOTION

Raj Bridgelall, Mount Sinai, and Joseph Katz, Stony Brook, both of N.Y., assignors to Symbol Technologies, Inc., Holtsville, N.Y.

Filed Jul. 28, 1995, Ser. No. 508,628

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—462 **14 Claims**



1. In a scanner for electro-optically reading indicia by sweeping a scan spot of light along a longitudinal axis in a sweeping movement across the indicia, and by detecting light reflected off the indicia to generate an electrical signal indicative of the detected light,

an arrangement for compensating for defects in the indicia that cause reading errors, the arrangement comprising:

means for dithering the scan spot during said sweeping movement by oscillating the scan spot back and forth in opposite directions across said longitudinal axis in a transverse direction generally orthogonal to said longitudinal axis to generate a dithered scan spot that creates high frequency signal components corresponding to said defects in said electrical signal.

5,648,650

OPTICAL BAR CODE READING APPARATUS WITH REGULAR REFLECTION DETECTING CIRCUIT

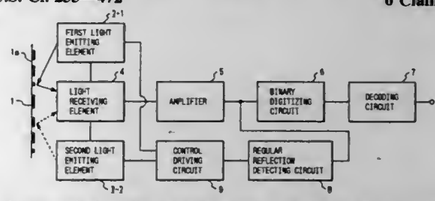
Shin Sugifune; Tsutomu Kanno, and Hajime Nabeya, all of Miyagi-ken, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Aug. 7, 1995, Ser. No. 512,052

Claims priority, application Japan, Sep. 7, 1994, 6-214023

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—472 **6 Claims**



1. An optical reading apparatus for reading a linear recording printed on an information recording surface, the optical reading apparatus comprising:

a plurality of light emitting elements for emitting light beams in different directions toward the information recording surface;

a light receiving element for receiving reflected light from the information recording surface and for generating a recording read signal;

a signal processing section for converting the recording read signal from said light receiving element into a display signal;

a controlling driving section for driving said plurality of light emitting elements; and

a regular reflection detection section for detecting an occurrence of a regular reflection condition from the recording read signal and for transmitting a regular reflection detection signal upon such detection to said driving controlling section;

wherein said driving controlling section terminates driving of a first light emitting element of said plurality of light emitting elements in response to the regular reflection detection signal when the light beam emitted from the first light emitting element causes the occurrence of the regular reflection condition, and drives a second light emitting element of the plurality of light emitting elements, thereby eliminating the occurrence of the regular reflection condition.

5,648,651

CARD FEEDING DEVICE FOR FEEDING CARDS OF VARYING THICKNESS

Makoto Inoue, Tachikawa, Japan, assignor to Kabushiki Kaisha TRD, Tokyo, and Kabushiki Kaisha Hatsuri Kimura, Gifu, both of Japan

Filed Aug. 16, 1995, Ser. No. 515,922

Claims priority, application Japan, Dec. 19, 1994, 6-333830

Int. Cl.[6] G06K *13/00;13/06;13/04*

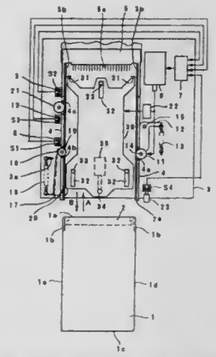
U.S. Cl. 235—475 **13 Claims**

1. A card feeding device for feeding a rectangular card along a card feeding direction that intersects a line across the width of the card at a right angle, the card feeding device comprising:

a guide mechanism for leading guide portions provided at side edges of the card along the card feeding direction;

a drive roller for elastically contacting a first side edge of the card; and

a facing roller positioned opposite to the drive roller for freely and rotatably contacting a second side edge of the card



opposite the first side edge of the card contacted by the drive roller;

wherein an axis of rotation of the drive roller is displaced, in a direction opposite to the card feeding direction, from an axis of rotation of the facing roller, such that the drive roller and the facing roller hold the card and feed the card directly in the card feeding direction.

5,648,652

OPTICAL FOCUS EVALUATION AND FOCUS ADJUSTMENT METHODS, FOCUS EVALUATION AND FOCUS ADJUSTMENT APPARATUS, AND SCREEN APPARATUS

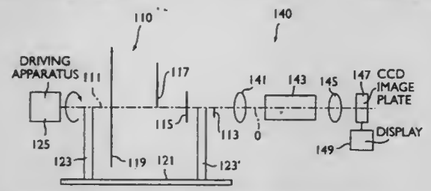
Takaomi Sekiya, and Moriyasu Shirayanagi, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 22, 1994, Ser. No. 310,058

Claims priority, application Japan, Sep. 22, 1993, 5-236526; Sep. 22, 1993, 5-236527; Oct. 22, 1993, 5-265267; Jun. 20, 1994, 6-137448

Int. Cl.[6] G01J *1/20*

U.S. Cl. 250—201.7 **63 Claims**



1. An optical focus evaluation method comprising:

forming an edge image through an optical system under examination on light receiving means;

sampling a distribution of light intensity for an image formed on said light receiving means in a direction substantially perpendicular to said edge image;

calculating a line spread function by differentiating said distribution of light intensity in a sampling direction; and

calculating a plurality of edge image evaluation values based on said line spread function,

wherein the plurality of edge image evaluation values comprise a width of said line spread function which includes a distance between two points on a line spread function curve, one of said points located on each side of a peak.

5,648,653

OPTICAL FILTER HAVING ALTERNATELY LAMINATED THIN LAYERS PROVIDED ON A LIGHT RECEIVING SURFACE OF AN IMAGE SENSOR

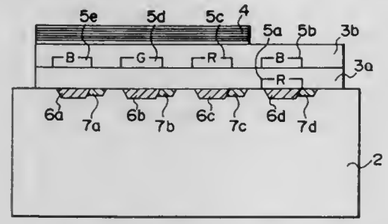
Junichi Sakamoto; Seitoku Tsukamoto; Mitsuharu Sawamura, all of Yokohama, and Motomu Fukasawa, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 18, 1994, Ser. No. 324,707

Claims priority, application Japan, Oct. 22, 1993, 5-286291; Oct. 22, 1993, 5-286292

Int. Cl.[6] H01L *27/00;* **H04N** *1/46*

U.S. Cl. 250—208.1 **11 Claims**



1. An image sensor comprising:

a first plurality of sensor arrays arranged side by side including a plurality of first photoelectric conversion elements for color separating and converting an optical signal in the visible region into an electrical signal;

a second plurality of sensor arrays arranged side by side including a plurality of second photoelectric conversion elements for color separating and converting the optical signal in the invisible region into an electrical signal, said first plurality of sensor arrays and second plurality of sensor arrays being arranged side by side with one another;

a color separation filter formed on said first photoelectric conversion elements to separate the optical signal in the visible region; and

an invisible-light shielding filter, formed on said first photoelectric conversation elements, to shield the optical signal in the invisible region, said invisible-light shielding filter comprising a plurality of layers consisting of dielectric layers and metal layers, said invisible-light shielding filter being formed as a common layer with said color separation filter on said first plurality of sensor arrays.

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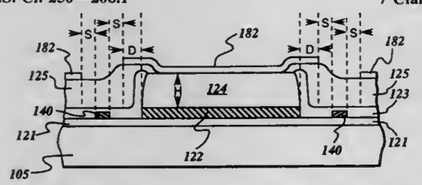
FLAT PANEL IMAGING DEVICE WITH PATTERNED COMMON ELECTRODE

George Edward Possin, Niskayuna, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 21, 1995, Ser. No. 576,324

Int. Cl.[6] H01J *40/14*

U.S. Cl. 250—208.1 **7 Claims**



1. A flat panel radiation imaging device for generating images with reduced image artifacts during read-out of the imager, the imaging device comprising:

a pixel array disposed on a substrate, said pixel array comprising a plurality of pixels disposed in an imaging array pattern comprising rows and columns, each of said pixels comprising a photosensor coupled to a thin film transistor (TFT);

said pixel array further comprising a plurality of address lines disposed in said imaging array pattern, said address lines comprising a plurality of scan lines disposed in rows oriented along a first axis and a plurality of data lines disposed in respective columns oriented along a second axis;

a low capacitive-coupling common electrode disposed over said pixel array, said low capacitive-coupling common electrode comprising a plurality of common electrode column segments oriented along said second axis, each of said common electrode column segments corresponding to a respective column of photosensors in said imaging array pattern, each of said common electrode column segments further being disposed so as to have a non-zero setoff distance from data lines adjacent to said columns of photosensors.

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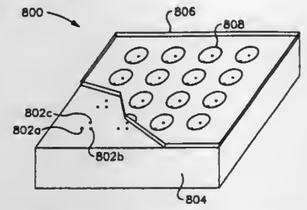
SENSING DEVICE FOR CAPTURING A LIGHT IMAGE

Michael D. Rostoker, San Jose, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Continuation of Ser. No. 287,204, Aug. 8, 1994, Pat. No. 5,519,205, which is a continuation of Ser. No. 17,202, Feb. 11, 1993, abandoned, which is a continuation-in-part of Ser. No. 954,958, Sep. 30, 1992, abandoned. This application Dec. 26, 1995, Ser. No. 578,746

Int. Cl.[6] H01J *40/14*

U.S. Cl. 250—208.1 **30 Claims**



1. An electronic device for generating a signal indicative of an image to be captured comprising:

a hollow housing;

means defining an opening in said housing for admitting light indicative of the image to be captured;

image sensor means formed on a semiconductor substrate and supported within said housing in a light path followed by the light within the housing for generating a potential difference upon incidence of light indicative of the image to be captured;

lens means disposed between said means defining an opening and said image sensor means in said light path for blocking and passing light to permit said image sensor means to produce at least one pixel indicative of said image to be captured;

display means having a transparent state and an opaque state disposed between said lens means and said image sensor means for helping to control the blocking and passing of light incident upon said image sensor means.

5,648,656

SYSTEM TO OPTIMIZE ARTIFICIAL LIGHTING LEVELS WITH INCREASING DAYLIGHT LEVEL

Simon H.A. Begemann; Gerrit J. Van Den Beld, and Ariadne D. Tenner, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 13, 1995, Ser. No. 556,364

Claims priority, application European Pat. Off., Nov. 11, 1994, 94203297

Int. Cl.[6] H01J *40/14*

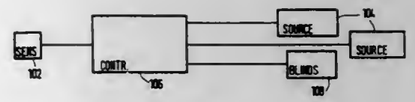
U.S. Cl. 250—214 AL **4 Claims**

1. An artificial lighting system comprising:

a daylight sensor for sensing a level of daylight;

artificial light source means for providing a level of artificial light;

a controller for control of the level of artificial light depending on the sensed level of daylight;



characterized in that

the system further comprises daylight control means for controlling the amount of daylight; and

the controller is operative to decrease the level of artificial light with increasing level of daylight sensed by the daylight sensor when the level of daylight is below a pre-determined threshold and to reduce the amount of daylight through control of the daylight control means when the level of daylight is above the pre-determined threshold.

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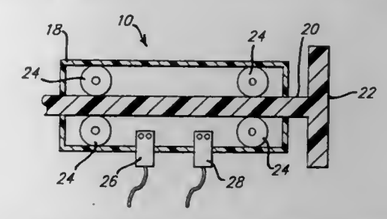
SENSOR FOR MEASURING A MOVEMENT CHARACTERISTIC OF AN OBJECT

Srinivasan Sundararajan, Belleville; Karin H. Przybylo, West Bloomfield, and Jerome P. Teevens, Plymouth, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Feb. 6, 1996, Ser. No. 597,136

Int. Cl.[6] G01D *5/34*

U.S. Cl. 250—231.1 **20 Claims**



1. An apparatus for measuring a characteristic of movement of an object comprising:

an emitter emitting electromagnetic radiation;

a rod having a graduated scale with a plurality of first regions and second regions for reflecting electromagnetic radiation from said emitter, said first regions and said second regions reflecting different levels of electromagnetic radiation, said rod having a contact surface for operatively contacting said object;

a detector for receiving said electromagnetic radiation directed at said scale, said detector generating an output voltage corresponding to the level of reflected radiation from said scale.

5,648,658

APPARATUS AND METHOD FOR GENERATING POSITION-DEPENDENT SIGNALS USING A SCANNING PLATE HAVING A PLURALITY OF DIFFERENTLY CONFIGURED SCANNING REGIONS

Wolfgang Holzapfel, Obing, and Walter Huber, Traunstein, both of Germany, assignors to Johannes Heidenhain GmbH, Traunreut, Germany

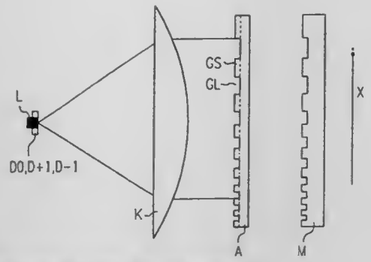
Filed Feb. 23, 1995, Ser. No. 392,594

Claims priority, application Germany, Feb. 23, 1994, 44 05 843.8; Sep. 7, 1994, 44 31 899.5

Int. Cl.[6] H01J *3/14;5/16;* **G01B** *11/02*

U.S. Cl. 250—237 G **36 Claims**

1. An apparatus for generating position dependent signals comprising:



a light source having a spectral width $\Delta\lambda$;

a scale with an amplitude or phase grating;

at least one scanner plate that scans the scale in a measuring direction wherein the scanner plate is spaced from the scale by a scanning distance wherein the at least one scanner plate has a plurality of differently configured first and second regions (CS, GL), disposed alternatingly each side by side in the measuring direction, which form a phase grating in the measuring direction,

wherein at least the first regions (GS) have a phase grating crosswise to the measuring direction, whose division lines extend at an angle other than 90° to the measuring direction, and light from the light source is split by the first and second regions into transversely differently inclined partial beams, and these partial beams strike the scale in order to generate a plurality of partial beams diffracted in the measuring direction, which are made to interfere and are aimed at detectors in order to generate the position-dependent signals.

5,648,659

METHOD FOR THE ACQUISITION, IN NUCLEAR MEDICINE, OF A SCATTER IMAGE

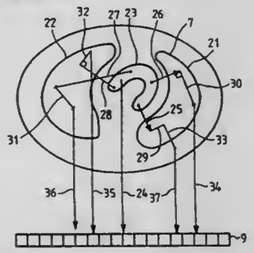
Michel Bourguignon, Sceaux, and Christian Pare, Plaisir, both of France, assignors to Sopha Medical, Buc Cedex, France

Filed Jun. 5, 1995, Ser. No. 461,620

Claims priority, application France, Jun. 15, 1994, 94 07332

Int. Cl.[6] G01T *1/166*

U.S. Cl. 250—363.04 **22 Claims**



1. A method for the acquisition, in nuclear medicine, of a scatter image of a patient's body wherein said method comprises the following steps:

the patient's body is placed in a nuclear medicine machine,

an irradiating marker emitting radioactive rays in a given first energy range E is injected into the patient's body,

a detection is carried out, with a detector of the machine, of the radiation emitted from within the patient's body by said marker and that has a second energy range of 0.75 E to 0.35 E, and

a conversion of said detected radiation in said second energy range into said image.

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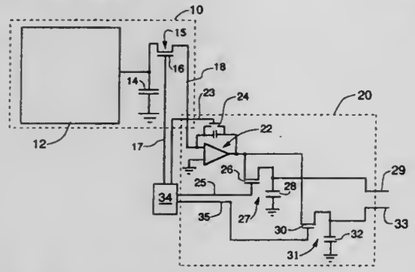
METHOD AND APPARATUS FOR REDUCING NOISE IN A RADIATION CAPTURE DEVICE

Denny Lap Yen Lee, West Chester, Pa.; Eugene Francis Palecki, Wilmington, Del., and Cornell Lee Williams, Pennsauken, N.J., assignors to Sterling Diagnostic Imaging, Inc., Newark, Del.

Filed Jan. 5, 1996, Ser. No. 583,256

Int. Cl.[6] H01L *27/146*

U.S. Cl. 250—370.09 **37 Claims**



25. A detector comprising an event detection element, a read-out module connected thereto, and a control signal source connected to both the detection element and the read-out module, wherein:

1) the detection element comprises:

a sensor,

a charge accumulator, and

a read-out switch;

2) the read-out module comprises:

an integrating amplifier having an input terminal, an output terminal, and a reset/enable switch,

a first sample and hold circuit for selectively sampling and holding a first output of said amplifier, and

a subtraction circuit connected to the amplifier output terminal and the first sample and hold circuit for subtracting the first output of the integrating amplifier in said sample and hold circuit from a subsequent output of said amplifier; and

3) the control signal source comprises.

a control signal generator for generating and applying in the following order:

i) an enable signal for setting said enable/reset switch in the enable position to begin integrating charges appearing at the input of said integrating amplifier to generate an output proportional to said charges,

ii) a first sampling signal for actuating said first sample and hold circuit to sample the integrating amplifier output a first time and hold said first output, and

iii) a readout signal for actuating the read-out switch.

5,648,661

INTEGRATED CIRCUIT WAFER COMPRISING UNSINGULATED DIES, AND DECODER ARRANGEMENT FOR INDIVIDUALLY TESTING THE DIES

Michael D. Rostoker; Carlos Dangelo; James Koford, all of San Jose, and Edwin Fulcher, Palo Alto, all of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Continuation of Ser. No. 979,169, Jan. 13, 1993, abandoned, which is a division of Ser. No. 908,668, Jul. 2, 1992, abandoned. This application Sep. 14, 1994, Ser. No. 306,147

The portion of the term of this patent subsequent to Jul. 2, 2012, has been disclaimed.

Int. Cl.[6] H01L *23/58;27/10;23/528*

U.S. Cl. 257—48 **10 Claims**

1. An integrated circuit wafer, comprising:

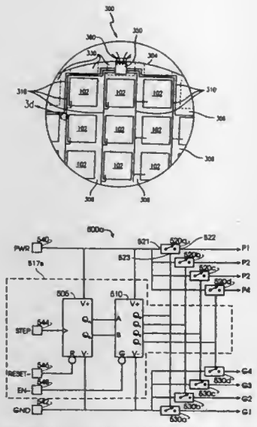
a plurality of unsingulated dies formed on die sites formed by scribe lines on the wafer respectively;

a plurality of electronic switches provided on the die sites respectively, each switch having a test signal input, a test signal output that is connected to the die, and an address decoder having an address input;

a test signal line that is commonly connected to the test signal inputs of the electronic switches;

an address signal line that is commonly connected to the address signal inputs of the decoders; and

an address signal generator for applying a multi-bit address signal having a plurality of unique values corresponding to the decoders respectively to the address signal line, each decoder responding to the address signal of the unique value by causing the test signal output to be connected to the test signal input of the respective electronic switch, the address signal generator comprising a counter, a count of which constitutes the address signal.



5,648,662

ELECTRO-OPTICAL DEVICE WITH AMORPHOUS AND CRYSTALLINE SHIFT REGISTERS

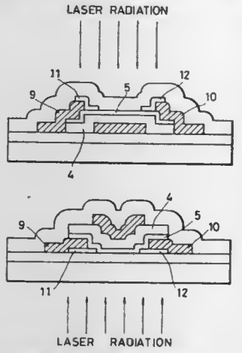
Hongyong Zhang, and Naoto Kusumoto, both of Kanagawa, Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, Japan

Continuation of Ser. No. 895,029, Jun. 8, 1992, abandoned. This application Jun. 15, 1994, Ser. No. 260,751

Claims priority, application Japan, Jun. 19, 1991, 3-174541

Int. Cl.[6] H01L *29/04;31/036;31/0376;* **G02F** *1/1343*

U.S. Cl. 257—59 **14 Claims**



1. An image forming device comprising:

a substrate having a pixel area and a peripheral area;

a plurality of pixel TFTs provided in the pixel area of said substrate for selecting pixels; and

a peripheral circuit including at least one shift register provided in the peripheral area of said substrate for driving said pixel TFTs,

wherein said peripheral circuit further includes a redundant shift register connected in parallel with said at least one shift register and has substantially the same circuit structure as said at least one shift register and wherein said at least one shift register comprises crystalline TFTs while said redundant shift register comprises amorphous TFTs.

5,648,663

SEMICONDUCTOR STRUCTURE HAVING TRANSISTOR AND OTHER ELEMENTS ON A COMMON SUBSTRATE AND PROCESS FOR PRODUCING THE SAME

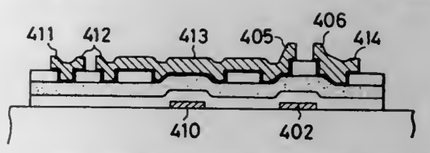
Nobuko Kitahara, Tama; Tetsuya Kaneko, Atsugi; Takashi Enomoto, Tokyo, and Hideyuki Suzuki, Honjo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 167,117, Dec. 16, 1993, abandoned, which is a continuation of Ser. No. 855,484, Mar. 23, 1992, abandoned, which is a continuation of Ser. No. 523,310, May 21, 1990, abandoned, which is a continuation of Ser. No. 210,205, Jun. 20, 1988, abandoned, which is a continuation of Ser. No. 892,087, Aug. 1, 1986, abandoned. This application Jun. 7, 1995, Ser. No. 476,283

Claims priority, application Japan, Aug. 5, 1985, 60-171141; Jun. 30, 1986, 61-153280; Jun. 30, 1986, 61-153282

Int. Cl.[6] H01L *29/04;31/036;31/0376;31/20*

U.S. Cl. 257—59 **20 Claims**



1. An image reading device comprising a substrate, a photosensor portion having a pair of electrodes and a transistor portion for signal transfer,

said photosensor portion comprising a first insulating layer provided on said substrate and a first semiconductor layer provided on said first insulating layer,

said transistor portion comprising a gate electrode provided on said substrate, a second insulating layer provided on said gate electrode, a second semiconductor layer provided on said second insulating layer and source and drain electrodes electrically connected to said second semiconductor layer; and

a third insulating layer of an electrically insulating material disposed on said first semiconductor layer of the photosensor portion and said second semiconductor layer of the transistor portion,

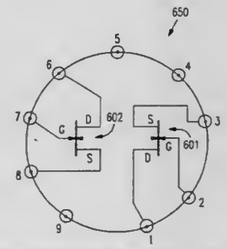
said first insulating layer of said photosensor portion, said second insulating layer of said transistor portion being constituted of a common insulating layer, said first semiconductor layer of said photosensor portion, said second semiconductor layer of said transistor portion being constituted of a common semiconductor layer, the common insulating layer being coextensive with the common semiconductor layer and the third insulating layer having the same shape as the common semiconductor layer.

5,648,664

BIFET VACUUM TUBE REPLACEMENT STRUCTURE

J. Kirkwood H. Rough, 264 S. 14th St., San Jose, Calif. 95112; Adrian I. Cogan, 1174 Hyde Ave., San Jose, Calif. 95129, and Neill R. Thornton, 39450 Albany Common #W, Fremont, Calif. 94538

Filed Jan. 20, 1995, Ser. No. 376,188
Int. Cl.[6] H01L *29/74;29/80*
U.S. Cl. 257—135 **10 Claims**



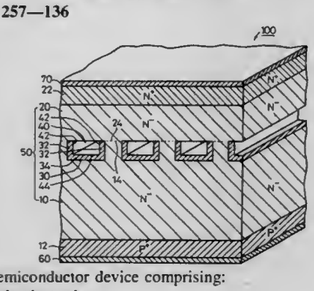
1. A vacuum tube replacement structure comprising:
a first cathode pin;
a first plate pin;
a first grid pin; and
a first BIFET having a gate of a first conductivity type, a drain, and a source in a layer of a second conductivity type opposite to said first conductivity type;
wherein said gate includes a pocket of said second conductivity type so that said pocket, said gate, and said layer form a structure having said second conductivity type, said first conductivity type, and said second conductivity type, respectively;
said drain is connected to said first plate pin;
said source is connected to said first cathode pin; and
said pocket in said gate is coupled to said first grid pin.

5,648,665

SEMICONDUCTOR DEVICE HAVING A PLURALITY OF CAVITY DEFINED GATING REGIONS AND A FABRICATION METHOD THEREFOR

Yoshio Terasawa, Hitachinaka, Japan, assignor to NGK Insulators, Ltd., Japan

Filed Apr. 26, 1995, Ser. No. 430,805
Claims priority, application Japan, Apr. 28, 1994, 6-092478
Int. Cl.[6] H01L *29/74*
U.S. Cl. 257—136 **10 Claims**



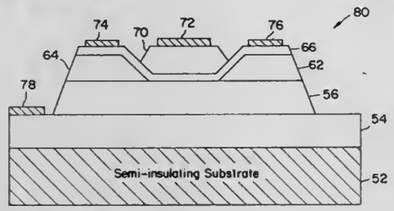
1. A semiconductor device comprising:
an anode electrode;
a cathode electrode;
semiconductor substrate disposed between said anode electrode and said cathode electrode;
gate means disposed in said semiconductor substrate for controlling a current flowing between said anode electrode and said cathode electrode;
said semiconductor substrate having a plurality of cavities defined therein, said cavities each having side walls and a bottom surface, said gate means comprising a plurality of gating regions each defined inside a respective cavity and disposed in said semiconductor substrate, said gating regions each comprising a layer deposited along at least said side walls of each respective cavity,
wherein one of said cathode electrode and said anode electrode is disposed above said semiconductor substrate and has a surface area extending over an entirety of said gate means and each of said gating regions, and wherein at least a portion of each of said cavities remains unfilled thereby defining gaps within each of said cavities.

5,648,666

DOUBLE-EPITAXY HETEROJUNCTION BIPOLAR TRANSISTORS FOR HIGH SPEED PERFORMANCE

Liem Thanh Tran, Torrance; Dwight Christopher Streit, Seal Beach, and Aaron Kenji Oki, Torrance, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Apr. 13, 1994, Ser. No. 227,148
Int. Cl.[6] H01L *29/73;29/70*
U.S. Cl. 257—197 **9 Claims**



1. A bipolar transistor comprising:
a substrate;
a collector layer including at least a first collector layer and a second collector layer in contact with each other, said first collector layer forming an intrinsic collector region and the combination of said first collector layer and said second collector layer forming an extrinsic collector region, wherein the intrinsic collector region is defined by a removed portion of the second collector layer such that the extrinsic collector region has a greater thickness than the intrinsic collector region;
a base layer formed over the intrinsic collector region and the extrinsic collector region; and
an emitter layer formed over the intrinsic collector region.

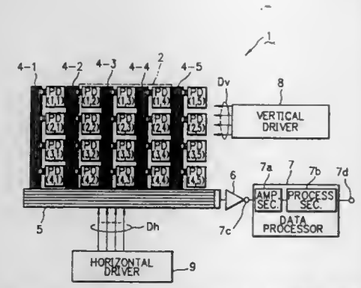
5,648,667

IMAGE PICKUP DEVICE WITH AND IMAGE PICKUP METHOD BY USE OF TWO-DIMENSIONALLY ARRANGED SENSORS HAVING SENSITIVITIES DIFFERENT IN CERTAIN DIRECTION OF ARRANGEMENT

Kazuo Konuma, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 6, 1995, Ser. No. 471,186
Claims priority, application Japan, Jun. 14, 1994, 6-131513
Int. Cl.[6] H01L *27/148;29/768*
U.S. Cl. 257—233 **7 Claims**

1. An image pickup device of a solid state type, comprising:
a first photo-sensing element having a first photo-sensing characteristic for sensing a first flux of light to generate a first charge signal consisting of a first quantity of charges;
a second photo-sensing element having a second photo-sensing characteristic for sensing a second flux of light substantially equivalent to said first flux of light to generate a second charge signal consisting of a second quantity of charges different from said first quantity of charges;



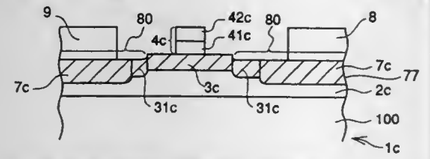
a third photo-sensing element having a third photo-sensing characteristic for sensing a third flux of light substantially equivalent to said first flux of light to generate a third charge signal consisting of a third quantity of charges substantially equivalent to said first quantity of charges;
a fourth photo-sensing element having a fourth photo-sensing characteristic for sensing a fourth flux of light substantially equivalent to said first flux of light to generate a fourth charge signal consisting of a fourth quantity of charges substantially equivalent to said second quantity of charges;
a first charge transfer circuit for receiving said first and second charge signals in parallel from said first and second photo-sensing elements, as a first data, and for serially transferring therealong said first data so that said first charge signal follows said second charge signal;
a second charge transfer circuit for receiving said third and fourth charge signals in parallel from said third and fourth photo-sensing elements, as a second data, and for serially transferring therealong said second data so that said third charge signal follows said fourth charge signal; and
a third charge transfer circuit for receiving said second charge signal in said first data and said fourth charge signal in said second data in parallel from said first and second charge transfer circuits, as a third data, and serially transferring therealong said third data so that said fourth charge signal follows said second charge signal, and for receiving said first charge signal in said first data and said third charge signal in said second data in parallel from said first and second charge transfer circuits, as a fourth data, and serially transferring therealong said fourth data so that said third charge signal follows said first charge signal.

5,648,668

HIGH BREAKDOWN VOLTAGE FIELD EFFECT TRANSISTOR

Nobuyuki Kasai, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 31, 1995, Ser. No. 550,627
Claims priority, application Japan, Nov. 1, 1994, 6-268592; Jun. 15, 1995, 7-148731
Int. Cl.[6] H01L *31/0328;29/80;29/76*
U.S. Cl. 257—280 **1 Claim**



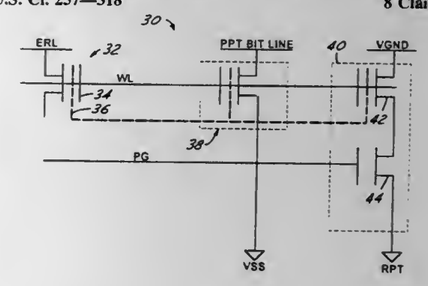
1. Field effect transistor structures comprising:
a semiconductor substrate;
at least one first unit semiconductor device on the substrate having a first drain electrode, a first source electrode, and a first gate electrode disposed between the first drain electrode and the first source electrode, closer to the first source electrode than to the first drain electrode, and a semiconductor layer on a surface region of the semiconductor substrate of the first unit semiconductor device, the semiconductor layer including:
a first concentration region including dopant impurities selected from the group consisting of donors and acceptors in a first concentration and having a portion on which the first gate electrode having a first length is disposed;
a drain side second concentration region including dopant impurities producing the same conductivity type as the dopant impurities included in the first concentration region in a second concentration, larger than the first concentration, and disposed adjacent the first concentration region at a drain side end of the first concentration region, spaced apart from the gate electrode, and having a second length toward the drain electrode;
a source side second concentration region including dopant impurities producing the same conductivity type as the dopant impurities included in the first concentration region in the second concentration and disposed adjacent the first concentration region, at a source side end of the first concentration region, spaced apart from the gate electrode, and having a third length toward the source electrode;
a drain side third concentration region including dopant impurities producing the same conductivity type as the dopant impurities included in the first concentration region in a third concentration larger than the second concentration and disposed adjacent the drain side second concentration region at a drain side end of the drain side second concentration region; and
a source side third concentration region including dopant impurities producing the same conductivity type as the dopant impurities included in the first concentration region in the third concentration and disposed adjacent the source side second concentration region at a source side end of the source side second concentration region wherein the drain electrode is disposed on a portion of the drain side third concentration region and the source electrode is disposed on a portion of the source side third concentration region; and
at least one second unit semiconductor device on the substrate and having a second drain electrode, a second source electrode, and a second gate electrode disposed between the second drain electrode and the second source electrode, equally distant from the second source electrode and from the second drain electrode.

5,648,669

HIGH SPEED FLASH MEMORY CELL STRUCTURE AND METHOD

Rakesh Balraj Sethi, Campbell; Christopher S. Norris, Morgan Hill, and Genda J. Hu, Sunnyvale, all of Calif., assignors to Cypress Semiconductor, San Jose, Calif.

Filed May 26, 1995, Ser. No. 452,217
Int. Cl.[6] H01L *29/788;29/76*
U.S. Cl. 257—318 **8 Claims**



1. A memory cell for storing binary data having two possible states suitable for use in a programmable logic array (PLA), comprising:

EPROM read means for determining said state of said cell, said EPROM read means including an EPROM read transistor having a floating gate chargeable to correspond to one of said two states and a control gate coupled to an input term, said EPROM read transistor having first source and drain regions forming a first channel therebetween;

an erase node coupled with an erase line sharing said floating gate and said control gate with said EPROM read transistor for erasing said cell by removing charge from said floating gate through a tunnel dielectric, said erase node further including means proximate said tunnel dielectric for reducing a backbias threshold effect;

said backbias reducing means being responsive to a first signal on said erase line during a programming mode to improve program coupling,

said backbias reducing means being responsive to a second signal on said erase line during a read mode to improve read coupling.

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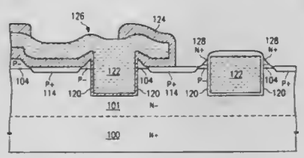
TRENCH MOS-GATED DEVICE WITH A MINIMUM NUMBER OF MASKS

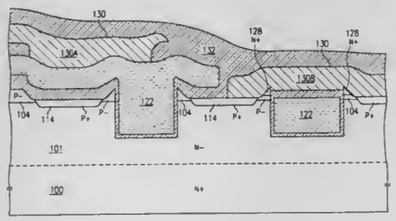
Richard A. Blanchard, Los Altos, Calif., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Jun. 7, 1995, Ser. No. 474,711

Int. Cl.[6] H01L *29/76;29/94*

U.S. Cl. 257—329 **4 Claims**





1. A power transistor device, comprising:

a network of trenches extending into monocrystalline semiconductor material from a first surface thereof;

a first-conductivity-type source diffusion in said semiconductor material at some locations of said first surface thereof adjacent to said trenches, and a second-conductivity-type channel diffusion in said semiconductor material below said source diffusion; and

an insulated conductive gate mesh inlaid into said network of trenches, and capacitively coupled to control conduction through said channel diffusions along sidewalls of said trenches;

said first surface of said semiconductor material being depressed at locations away from said trenches.

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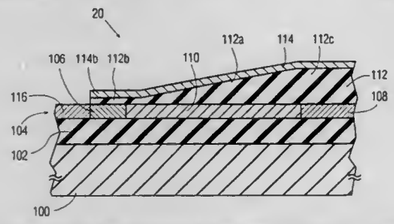
LATERAL THIN-FILM SOI DEVICES WITH LINEARLY-GRADED FIELD OXIDE AND LINEAR DOPING PROFILE

Steven L. Merchant, Phoenix, Ariz., assignor to U S Philips Corporation, New York, N.Y.

Filed Dec. 13, 1995, Ser. No. 571,486

Int. Cl.[6] H01L *29/78*

U.S. Cl. 257—347 **7 Claims**



1. A lateral thin-film Silicon-On-Insulator (SOI) device comprising a semiconductor substrate, a thin buried oxide insulating layer on said substrate, and a lateral semiconductor device provided in a thin semiconductor film on said thin buried oxide, said thin semiconductor film comprising a first region of a first conductivity type, a second region of a second conductivity type opposite to that of the first and spaced apart from said first region by a lateral drift region of said second conductivity type having a substantially linear lateral doping profile, a top oxide insulating layer over said thin semiconductor film and having a substantially linearly-graded portion over a major portion of said lateral drift region which increases in thickness from adjacent said first region to adjacent said second region, and a conductive field plate on at least said linearly-graded portion of said top oxide insulating layer.

5,648,672

SEMICONDUCTOR DEVICE WITH OUTER DIFFUSION LAYER

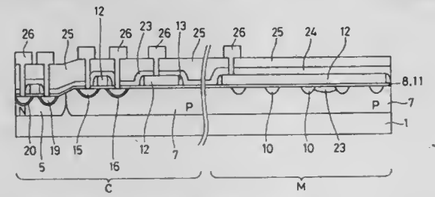
Masahiro Hasegawa, Fukuyama, and Junichi Tanimoto, Ikoma, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 19, 1995, Ser. No. 529,977

Claims priority, application Japan, May 24, 1995, 7-125175

Int. Cl.[6] H01L *29/76*

U.S. Cl. 257—372 **4 Claims**



1. A semiconductor device comprising:

a semiconductor substrate formed with at least one well containing impurity ions of one of a first conductivity type and a second conductivity type;

a plurality of transistors each having a gate insulation film formed on the well, a gate electrode formed on the gate insulation film and a pair of diffusion layers formed in the well; and

an outer diffusion layer of the same conductivity type as that of the well and self-aligned with each of the diffusion layers in an outer periphery thereof within the well;

said outer diffusion layer having an impurity concentration sufficient to provide a desired junction breakdown voltage and having substantially the same width as that of a depletion layer to be generated when an operational voltage is applied to the corresponding transistor;

said impurity of the well being set for a concentration such that a threshold voltage of a parasitic transistor appearing below the gate electrode connecting adjacent transistors is higher than a power supply voltage, whereby the adjacent transistors are isolated from each other.

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SEMICONDUCTOR DEVICE HAVING METAL SILICIDE FILM ON IMPURITY DIFFUSED LAYER OR CONDUCTIVE LAYER

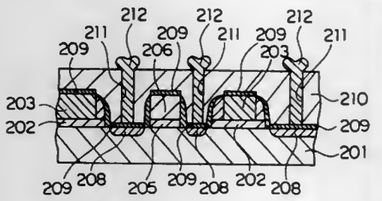
Hiroyasu Yasuda, Tokyo, Japan, assignor to Nippon Steel Corporation, Tokyo, Japan

Filed Dec. 27, 1995, Ser. No. 580,460

Claims priority, application Japan, Dec. 28, 1994, 6-338738

Int. Cl.[6] H01L *29/167;29/207;29/227*

U.S. Cl. 257—382 **6 Claims**



1. A semiconductor device comprising:

a semiconductor substrate;

an insulating film patterned on said semiconductor substrate;

a conductor patterned on said insulating film;

an impurity diffused layer containing an impurity and nitrogen and formed in said semiconductor substrate at least on both sides of said conductor;

a sidewall insulating film containing a nitride film and formed on side walls of said conductor; and

a metal silicide film formed at least on said impurity diffused layer wherein:

said semiconductor substrate comprises a first well region including an impurity of a first conductivity type and a second well region including an impurity of a second conductivity type each respectively formed therein;

said insulating film includes a first and a second insulating film formed on said first and second well regions, respectively;

said conductor includes first and second gate electrodes formed on said first and second gate insulating films respectively; and

said impurity diffused layer includes a first impurity diffused layer containing nitrogen and an impurity of the second conductivity type and formed in portions of said first well region on both sides of said first gate electrode and a second impurity diffused layer containing nitrogen and an impurity of the first conductivity type and formed in portions of said second well region on both sides of said second gate electrode.

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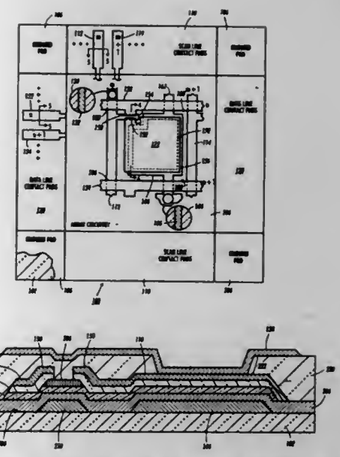
ARRAY CIRCUITRY WITH CONDUCTIVE LINES, CONTACT LEADS, AND STORAGE CAPACITOR ELECTRODE ALL FORMED IN LAYER THAT INCLUDES HIGHLY CONDUCTIVE METAL

Richard L. Weisfield, Los Altos; Nizar S. Kheraj, San Jose, and Mai T. Nguyen, Palo Alto, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 7, 1995, Ser. No. 474,845

Int. Cl.[6] H01L *31/119;31/0224;* **G01T** *1/24*

U.S. Cl. 257—428 **26 Claims**



1. A product comprising:

a substrate with a surface at which circuitry can be formed;

array circuitry formed at the surface of the substrate, the array circuitry comprising:

N conductive lines extending across the surface of the substrate, where N is an integer greater than one; and

along each of the N conductive lines, one or more units of cell circuitry; each unit of cell circuitry comprising:

a switching element; the switching element comprising first and second conductive channel leads, a channel extending between the first and second conductive channel leads, and first and second contact leads; the first and second conductive channel leads and the channel comprising semiconductor material; the first and second contact leads comprising highly conductive metal; the second contact lead being electrically connected to the second conductive channel lead and the first contact lead being electrically connected between the first conductive channel lead and the conductive line so that the channel provides an electrical connection between the second contact lead and the conductive line when the channel is in a conductive state;

a capacitive element having a first electrode, a second electrode, and a capacitor dielectric between the first and second electrodes; the second electrode being electrically connected to the second contact lead; and

a conductive element electrically connected to the second electrode;

the array circuitry further comprising:

a first patterned conductive layer that includes the first electrode of each unit of cell circuitry;

a first insulating layer; the capacitor dielectric of each unit of cell circuitry including a part of the first insulating layer; the capacitor dielectric covering the first electrode;

a second patterned conductive layer that comprises highly conductive metal other than indium tin oxide; the second patterned conductive layer including the N conductive lines and the first and second contact leads and the second electrode of each unit of cell circuitry; the second contact lead and the second electrode being joined in the second patterned conductive layer; the second electrode covering the capacitor dielectric;

a second insulating layer that extends over the second electrode of each unit of cell circuitry; the second insulating layer covering the second electrode except in an exposed part of the second electrode; the second insulating layer having an opening defined therein over the exposed part; and

a third patterned conductive layer over the second insulating layer; the third patterned conductive layer being a layer of indium tin oxide; the third patterned conductive layer including the conductive element of each unit of cell circuitry; the conductive element extending over the second

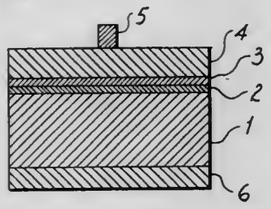
electrode; the conductive element contacting the exposed part of the second electrode so that the conductive element is electrically connected to the second contact lead through the second electrode.

5,648,675

SEMICONDUCTOR DEVICE WITH HETEROJUNCTION

Norihiro Terada, Nara-ken, and Yasuki Harada, Hyogo-ken, both of Japan, assignors to Sanyo Electric Co., Ltd., Osaka-fu, Japan

Filed Aug. 29, 1995, Ser. No. 521,114
Claims priority, application Japan, Sep. 2, 1994, 6-209750
Int. Cl.[6] H01L *31/075*
U.S. Cl. 257—458 **11 Claims**



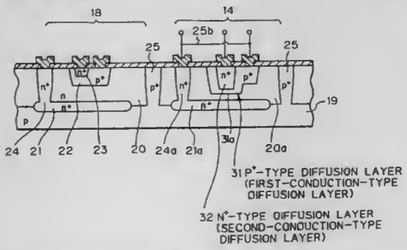
1. A semiconductor device comprising:
a crystalline semiconductor layer of a crystalline silicon semiconductor of one conductivity type;
a substantially intrinsic amorphized first amorphous semiconductor layer of an amorphous silicon semiconductor or a microcrystalline silicon semiconductor having dopant of the same kind and substantially the same amount as that in said crystalline silicon semiconductor and located on one surface of the crystalline semiconductor layer; and
a deposited second amorphous semiconductor layer of an amorphous silicon semiconductor or a microcrystalline silicon semiconductor on said first amorphous semiconductor layer.

5,648,676

SEMICONDUCTOR DEVICE WITH PROTECTIVE ELEMENT

Takashi Iwai, Hachioji, and Motoo Nakano, Yokohama, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 312,050, Sep. 23, 1994, abandoned, which is a continuation of Ser. No. 757,184, Sep. 10, 1991, abandoned. This application Jan. 23, 1996, Ser. No. 591,955
Claims priority, applicatioo Japan, Sep. 10, 1990, 2-239350; Mar. 18, 1991, 3-052496
Int. Cl.[6] H01L *29/00*
U.S. Cl. 257—500 **12 Claims**



1. A semiconductor device having an internal circuit and a protective element, comprising:
a semiconductor substrate, of a first conductivity type, having an upper main surface;
a semiconductor layer, of a second conductivity type opposite to the first conductivity type, formed on the upper main surface of the semiconductor substrate and defining an interface therebetween, and having an upper main surface;
the internal circuit comprising a vertical bipolar transistor formed in a corresponding, first region of the semiconductor layer and having an emitter diffusion layer which extends into the semiconductor layer from the upper main surface thereof and into the first region to a first depth therewithin;
the protective element being formed in a corresponding second region of the semiconductor layer, displaced from and electrically isolated from the first region thereof in which the internal circuit is formed, and comprising:
a first diffusion layer of the first conductivity type which extends into the semiconductor layer, from the upper main surface thereof and within the corresponding second region, to a second depth therewithin, and
a second diffusion layer of the second conductivity type, formed in the first diffusion layer and extending from the upper main surface of the semiconductor layer into the first diffusion layer to a depth less than the second depth, at least a part thereof extending to a third depth which is greater than the first depth;
first and second buried, diffused regions formed on the upper main surface of the substrate at respective first and second portions of the interface thereof with, and corresponding to, the first and second regions of the semiconductor layer in which the internal circuit and the protective element, respectively, are formed;
an isolation region of the first conductivity type extending from the upper main surface of the semiconductor layer to the upper main surface of the substrate and disposed between, and thereby electrically isolating, the first and second regions of the semiconductor layer;
a doped region of the second conductivity type extending from the upper main surface of the semiconductor layer and within the second region to the second buried diffusion layer;
respective electrodes connected to the doped region of the second conductivity type and to the first and second diffusion layers, at the respective surfaces thereof exposed at the upper main surface of the semiconductor layer within the second region;
an electrical interconnection between the respective electrodes connected to, and electrically short-circuiting, the doped region of the second conductivity type and the first diffusion layer;
a terminal; and
a resistance element having first and second ends and electrically connected at the first end to at least one of the second region of the semiconductor layer, the first diffusion layer and the second diffusion layer of the protective element and at the second end to the terminal.

5,648,677

Patent Not Issued For This Number

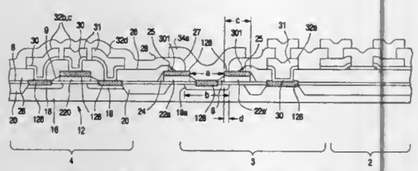
5,648,678

PROGRAMMABLE ELEMENT IN BARRIER METAL DEVICE

Patrick A. Begley, W. Melbourne; John T. Gasner, Palm Bay; Lawrence G. Pearce, Palm Bay; Choong S. Rhee, Palm Bay; Jeanne M. McNamara, Palm Bay; John J. Hackenberg, Palm Bay, and Donald F. Hemmenway, Melbourne, all of Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Sep. 21, 1994, Ser. No. 310,280
Int. Cl.[6] H01L *29/00*
U.S. Cl. 257—529 **19 Claims**

1. An integrated circuit comprising:
a substrate of semiconductor material having a surface with a programmable device formed in said surface, said programmable device having first and second surface contact regions



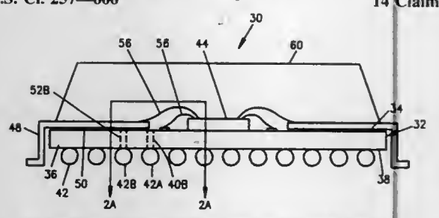
in the surface of the substrate and spaced from each other for receiving metal contacts;
a first layer of dielectric insulation over said surface;
a first aperture in said first dielectric layer, said first aperture aligned with said first surface contact region;
a first metal contact having a barrier layer disposed in said first aperture and contacting said first surface contact region;
a second dielectric layer over said device and said first metal contact;
a second aperture extending through said first and second dielectric layers and aligned with said second surface contact region;
a second, migratory metal contact in said second aperture, the metal of said second metal contact in direct contact with said semiconductor substrate for migrating into said surface of said semiconductor substrate and through said programmable device when a predetermined current passes through said two metal contacts and said programmable device.

5,648,679

TAPE BALL LEAD INTEGRATED CIRCUIT PACKAGE

Satya Chillara, and Shahram Mostafazadeh, both of San Jose, Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 406,726, Mar. 20, 1995, Pat. No. 5,569,955, which is a continuation-in-part of Ser. No. 307,270, Sep. 16, 1994, Pat. No. 5,442,230. This application Aug. 4, 1995, Ser. No. 511,395
Int. Cl.[6] H01L *23/02*
U.S. Cl. 257—666 **14 Claims**



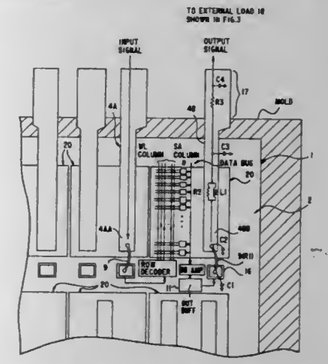
1. An integrated circuit package assembly comprising:
a) a dielectric flex tape substrate having a horizontal top surface, a horizontal bottom surface, a plurality of contact terminals on the bottom surface of said flex tape substrate, a plurality of terminal pads on the top surface of said flex tape substrate, and a plurality of traces, each of said traces electrically connecting a respective one of said contact terminals on the bottom of said substrate to an associated one of said terminal pads on the top surface of said substrate;
b) an integrated circuit die supported by said top surface of said flex tape substrate, said integrated circuit die including a plurality of input/output terminals;
c) a plurality of electrically conductive leads supported by the top surface of said flex tape substrate and electrically isolated from said traces of said flex tape substrate, said electrically conductive leads being adapted to electrically connect certain ones of said plurality of input/output terminals of said integrated circuit die to external electrical elements;
d) an array of electrically conductive contacts attached to said contact terminals on the bottom surface of said flex tape substrate, said contacts being adapted to electrically connect certain other ones of said plurality of input/output terminals of said integrated circuit die to external electrical elements;
e) a first array of bonding wires electrically connecting said certain ones of said plurality of input/output terminals of said integrated circuit die to associated ones of said electrically conductive leads supported on said top surface of said flex tape substrate;
f) a second array of bonding wires electrically connecting said certain other ones of said plurality of input/output terminals of said integrated circuit die to associated ones of said terminal pads on said top surface of said flex tape substrate; and
g) an encapsulating material integrally formed around and encapsulating at least the top surface of said flex tape substrate, said integrated circuit die, portions of said electrically conductive leads, and said first and second arrays of bonding wires.

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LEAD-ON-CHIP SEMICONDUCTOR DEVICE

Junji Ogawa, and Masato Takita, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 224,196, Apr. 7, 1994, abandoned, which is a continuation of Ser. No. 948,039, Sep. 21, 1992, abandoned. This application Sep. 29, 1995, Ser. No. 536,674
Claims priority, application Japan, Sep. 20, 1991, 3-241045
Int. Cl.[6] H01L *23/495*
U.S. Cl. 257—666 **20 Claims**



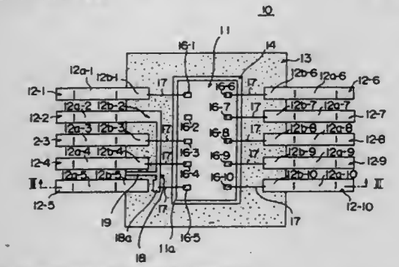
17. A lead-on-chip semiconductor device, having an input transistor for receiving data from an external source and an output buffer used for transmitting data out of said lead-on-chip semiconductor device, said lead-on-chip semiconductor device comprising:
a first bonding pad being coupled to the input transistor and being positioned on a middle area of an element-formation surface of said lead-on-chip semiconductor device;
a second bonding pad being coupled to the output buffer and being positioned along an outer periphery of the element-formation surface;
a first inner lead, a tip portion of said first inner lead being positioned adjacent to said first bonding pad on the element-formation surface so as to be electrically connected to said first bonding pad;
a second inner lead, a tip portion of said second inner lead being positioned adjacent to said second bonding pad on the element-formation surface so as to be electrically connected to said second bonding pad;
wherein a length of the second inner lead from the second bonding pad to the outer periphery of the element-formation surface is shorter than a length of the first inner lead from the first bonding pad to the outer periphery of the element-formation surface, such that a parasitic impedance of the second inner lead used for transmitting data out of said lead-on-chip semiconductor device is smaller than a parasitic impedance of the first inner lead used for receiving data from the external source.

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SEMICONDUCTOR DEVICE HAVING A SUPPORTING LEAD TO SUPPORT A BYPASS LEAD PORTION

Akira Takashima, Kawasaki; Hiroshi Yoshimura, Kagoshima, and Kosuke Otokita, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 19, 1996, Ser. No. 588,911
Claims priority, application Japan, Jul. 25, 1995, 7-189568
Int. Cl.[6] H01L *23/495*
U.S. Cl. 257—666 **9 Claims**



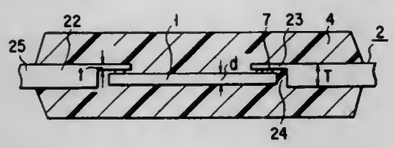
1. A semiconductor device comprising:
a semiconductor chip having electrode pads on the semiconductor chip, said electrode pads including a predetermined electrode;
a plurality of leads having inner lead portions and outer lead portions, said inner lead portions electrically connected to the electrode pads, and said outer lead portions serving as external terminals of said semiconductor chip, said leads including a predetermined lead electrically connected to said predetermined electrode;
a resin package which encloses the semiconductor chip and partially encloses the leads;
a bypass lead portion which electrically connects one of the leads, not adjacent to the predetermined electrode, to a location adjacent to the predetermined electrode, said bypass lead portion being enclosed in said resin package; and
at least one supporting lead which supports said bypass lead portion such that said supporting lead prevents a deformation of said bypass lead portion, said supporting lead being enclosed in the resin package.

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RESIN-SEALED SEMICONDUCTOR DEVICE AND LEAD FRAME USED IN A RESIN-SEALED SEMICONDUCTOR DEVICE

Tsutomu Nakazawa, and Yumi Inoue, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 12, 1995, Ser. No. 542,027
Claims priority, application Japan, Oct. 15, 1994, 6-275970
Int. Cl.[6] H01L *23/495*
U.S. Cl. 257—673 **6 Claims**



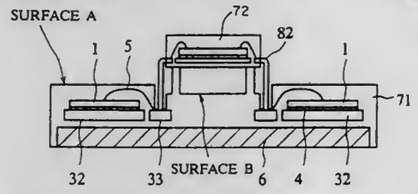
1. A resin-sealed semiconductor device comprising:
a semiconductor chip on which a plurality of connection electrodes are formed;
leads respectively connected to said plurality of connection electrodes of said semiconductor chip, said leads including a plurality of inner leads respectively connected to said plurality of connection electrodes and a plurality of outer leads having first ends connected to the inner leads and second ends connected to an external device, distal ends of said inner leads having cut-off thin portions, which define a recess for holding said semiconductor chip; and
a resin sealing material for covering said plurality of inner leads and said semiconductor chip,
wherein a thickness T of said inner leads, a thickness t of the cut-off thin portions at the distal ends of said inner leads, and a thickness d of said semiconductor chip have a relationship d<T−t.

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SEMICONDUCTOR DEVICE IN WHICH A FIRST RESIN-ENCAPSULATED PACKAGE IS MOUNTED ON A SECOND RESIN-ENCAPSULATED PACKAGE

Wataru Takahashi, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 12, 1994, Ser. No. 288,781
Claims priority, application Japan, Aug. 13, 1993, 5-220521
Int. Cl.[6] H01L *25/04;25/10*
U.S. Cl. 257—685 **9 Claims**



8. A semiconductor device comprising:
a first resin package having a plurality of a semiconductor elements resin-encapsulated therein;
support means which is protected from the first resin package; and
a second resin package having at least one semiconductor element resin-encapsulated therein, the second resin package being disposed over the first resin package by way of the support means for supporting the second resin package,
wherein the first resin package has a lead insertion hole so that a lead extending from the second resin package is electrically connected to the first resin package, and the top surface of the support means is in contact with the bottom face of the second resin package so that there is provided a space between the first and second resin packages to buffer heat generated by the semiconductor elements in the first resin package, wherein a shape of the first resin package includes a concave portion in an area on which the second resin package is mounted and the first resin package includes plural lead insertion holes provided on the surface of the first resin package surrounding said concave portion.

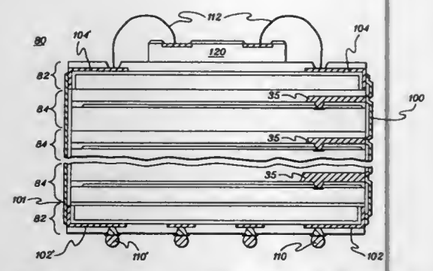
5,648,684

ENDCAP CHIP WITH CONDUCTIVE, MONOLITHIC L-CONNECT FOR MULTICHIP STACK

Claude Louis Bertin, South Burlington; Wayne John Howell, Williston, and Howard Leo Kalter, Colchester, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 26, 1995, Ser. No. 506,939
Int. Cl.[6] H01L *23/02*
U.S. Cl. 257—685 **20 Claims**

1. A carrierless endcap chip a multichip stack, said stack including multiple integrated circuit chips laminated together such that at least one principal surface of each integrated circuit chip contacts a principal surface of an adjacent integrated circuit chip in the multichip stack, said endcap chip comprising:



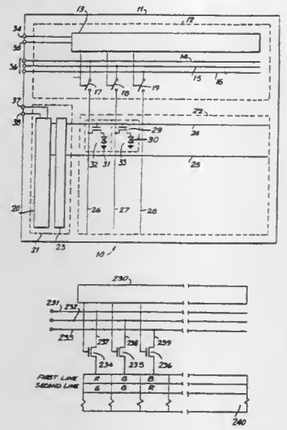
a substrate of semiconductor material having an upper surface, a lower surface and an edge surface, said edge surface extending in a plane substantially orthogonal to a plane containing said upper surface, and said lower surface contacting a principal surface of an adjacent integrated circuit chip of said stack; and
a conductive, monolithic L-connect integral with the substrate and having a first leg extending at least partially over said upper surface of said substrate and a second leg extending at least partially over said edge surface of said substrate, said second leg having a substantially planar outer surface, wherein when said endcap chip is employed as an end chip within said multichip stack, said conductive, monolithic L-connect electrically interconnects metal on an end face of said multichip stack and metal on a side face of said multichip stack, said side face being parallel to said edge surface of said substrate, and said end face being defined by the upper surface of said substrate.

5,648,685

ACTIVE MATRIX ASSEMBLY WITH LINES OF EQUAL RESISTANCE

Toshiyuki Misawa, and Hiroyuki Oshima, both of Nagano-ken, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 402,376, Mar. 13, 1995, which is a continuation of Ser. No. 142,892, Oct. 25, 1993, abandoned, which is a continuation of Ser. No. 924,695, Jul. 31, 1992, abandoned, which is a division of Ser. No. 351,758, May 15, 1989, Pat. No. 5,250,931. This application May 11, 1995, Ser. No. 439,411
Claims priority, application Japan, May 17, 1988, 63-119919
Int. Cl.[6] H01L *29/41;27/02*
U.S. Cl. 257—775 **5 Claims**



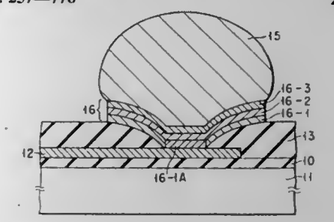
1. An active matrix assembly for an electro-optical device comprising:
a picture element matrix formed over a substrate, the picture element matrix including a plurality of source lines and a plurality of picture elements coupled to the plurality of source lines;
a source line driving circuit coupled to the picture element matrix through the plurality of source lines, the source line driving circuit comprising a plurality of signal buses through a plurality of connecting lines, wherein a width and a length of at least one of the plurality of connecting lines is different from a width and a length of another of the plurality of connecting lines and the plurality of connecting lines have substantially equal resistances.

5,648,686

CONNECTING ELECTRODE PORTION IN SEMICONDUCTOR DEVICE

Naohiko Hirano; Kazuhide Doi; Masayuki Miura; Takashi Okada, and Yoichi Hiruta, all of Kashiwa, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 26, 1995, Ser. No. 506,930
Claims priority, application Japan, Jul. 27, 1994, 6-175448
Int. Cl.[6] H01L *23/48*
U.S. Cl. 257—778 **22 Claims**



1. A semiconductor device to be mounted on a circuit board by flip chip bonding, comprising:
a semiconductor chip;
an Al layer formed on the semiconductor chip and serving as a lead-out electrode;
an insulating layer formed on the semiconductor chip and the Al layer and having an opening formed in that portion thereof which is located on the Al layer, thereby exposing a portion of the Al layer;
a multi-level layer formed on the exposed portion of the Al layer and on that portion of the insulating layer which is located along the edge of the opening; and
a metallic nitride layer provided between a first-level metal layer included in the multi-level metal layer and the insulating layer so as to be selectively formed on that portion of the insulating layer which is located along the edge of the opening;
wherein at least a portion of said first-level metal layer is in direct contact with said Al layer.

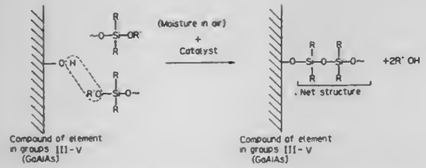
5,648,687

RESIN FOR SEALING COMPOUND SEMICONDUCTOR, SEMICONDUCTOR DEVICE, AND PROCESS FOR MANUFACTURING IT

Yoshihiko Matsuo, Kashiba; Kazuo Kusuda, Siki-gun; Naoki Sata, Kitakatsuragi-gun; Toshihumi Yoshikawa, Nara, and Tsuneo Matsumura, Shiki-gun, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 8, 1994, Ser. No. 207,165
Claims priority, application Japan, Apr. 30, 1993, 5-104799
Int. Cl.[6] H01L *23/28*
U.S. Cl. 257—787 **5 Claims**

1. A resin for sealing a compound semiconductor which contains, as a matrix, a siloxane compound for producing a silicone



resin by addition reaction and which has a group comprising the bond of an organic group and an oxy group,

wherein said group comprising the bond of the organic group and the oxy group is an alkoxy group bonding to a terminal of the molecule of the siloxane compound, and

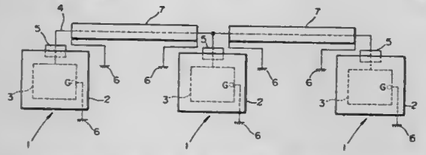
the content of said alkoxy group is in the range of from 0.1 to 10% by weight.

5,648,688

AUTOMOBILE MULTIPLEX COMMUNICATION WIRING STRUCTURE INCLUDING SHIELD

Yuji Nagatani, and Hiroshi Hashimoto, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 3, 1996, Ser. No. 582,418
Claims priority, application Japan, Apr. 27, 1995, 7-103501
Int. Cl.[6] H04J *15/00*
U.S. Cl. 307—10.1 **1 Claim**



1. A wiring structure for an automobile multiplex communication system, comprising:

a plurality of control units mounted on an automobile body, said control units having respective circuits and respective connectors connected thereto;

communication signal lines connected to said circuits through said respective connectors for multiplex communications between said control units; and

shield means for covering said communication signal lines between said control units;

said shield means being electrical separate from said connectors and having respective ends positioned closely to the connector, said ends being grounded directly to a conductor of the automobile body which is outside of said control units.

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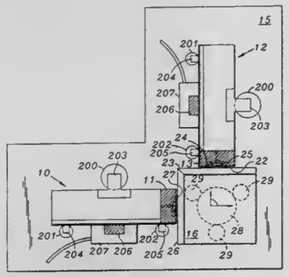
5,648,690

MOTOR SYSTEM GENERATING ORTHOGONAL MOVEMENT IN A SINGLE PLANE

Walter E. Hinds, 1358 Schuyler Rd., Beverly Hills, Calif. 90210

Filed Mar. 15, 1995, Ser. No. 404,349
Int. Cl.[6] F16M *11/12*
U.S. Cl. 310—12 **53 Claims**

49. A motor system for generating compound orthogonal motion comprising:



a first motor directed for effecting movement of a first element in a first of two orthogonal directions,

a second motor directed for effecting movement of a second element in the second of the orthogonal directions,

a planar base for locating the first motor and second motor relative to each other so that the elements are movable in a single plane in their respective orthogonal directions relative to each other and over the base,

a shuttle reactive with the two elements such that movement of the elements effects compound orthogonal movement of the shuttle, and

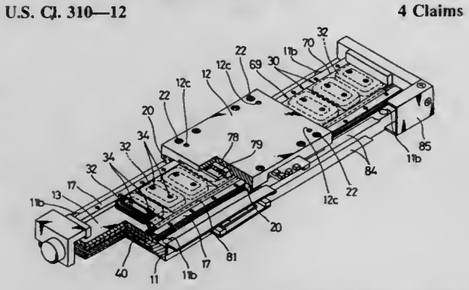
a non-mechanically coupled bearing between each element and the shuttle such that angular movement of the shuttle relative to the elements is controllable.

5,648,691

LINEAR DIRECT CURRENT MOTOR

Seiji Takei, Kanagawa, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan

Filed Jun. 5, 1995, Ser. No. 462,892
Claims priority, application Japan, Jul. 29, 1994, 6-197333
Int. Cl.[6] H02K *41/02*
U.S. Cl. 310—12 **4 Claims**



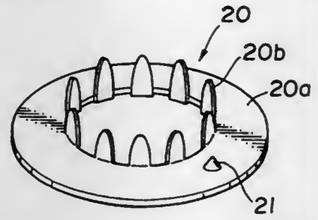
1. A linear direct current motor equipped with: a field magnet in which P number of poles (P being an integer of at least 2) are arranged and magnetized so that they are sequentially different; a group of armature coils wound so that the open angle width of the conductors contributing to thrust is roughly 2n−1 times (where n is an integer of at least 1) the magnetic pole width of said field magnet, which relatively drive said field magnet by being arranged so as to oppose said field magnet and supplying excitation current; and, magnetic pole discrimination elements, provided corresponding to each said armature coil, which perform discrimination of the magnetic poles of said field magnet; wherein, the endmost magnetic poles of said field magnet are non-detected magnetic poles with respect to said magnetic pole discrimination elements.

5,648,692

STATOR YOKE AND METHOD OF PRODUCING SAME

Kazuyuki Watanabe, Hamamatsu; Hirofumi Nakano, Toyohashi; Masakuni Kamiya; Kazutaka Honma, both of Hamamatsu; Takayuki Matsui, and Akito Suzuki, both of Kosai, all of Japan, assignors to FDK Corporation, Tokyo, Japan

Filed Jun. 20, 1995, Ser. No. 492,885
Claims priority, application Japan, Jun. 24, 1994, 6-164818
Int. Cl.[6] H02K *37/14;1/02*
U.S. Cl. 310—49 R **12 Claims**



1. A stator yoke for a stepping motor wherein said stepping motor has a rotor portion having a multi-polarized permanent magnet, a stator yoke portion having a plurality of comb tooth-like pole portion, an excited coil means provided around said comb tooth-like pole portion of said stator yoke portion, and a frame yoke encasing therein said stator yoke portion and said excited coil means,

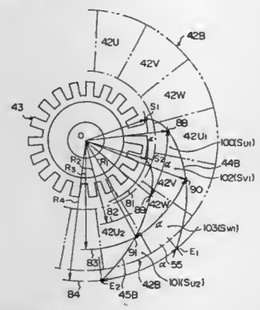
wherein at least a part of said stator yoke is made of a ferrite type Fe-Cr type alloy.

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DISK DRIVING MOTOR WITH LOW NOISE LEAD WIRE ARRANGEMENT FOR FREQUENCY GENERATOR

Noriyuki Katoh, Tokyo; Takahiro Sakaguchi, Kokubunji, and Koukichi Okada, Kawasaki, all of Japan, assignors to Teac Corporation, Japan

Filed Nov. 30, 1995, Ser. No. 564,966
Claims priority, application Japan, Dec. 2, 1994, 6-299403
Int. Cl.[6] H02K *21/24;29/00*
U.S. Cl. 310—67 R **3 Claims**



1. A motor comprising:

a stator comprising a substrate and a ring-like stator winding provided on said substrate for producing a rotating magnetic field for driving the motor, said stator winding comprising a plurality of circumferentially adjacent phase coils, said ring-like stator winding defining a center on said substrate for said stator;

a generally annular frequency generating pattern provided on said substrate within said ring-like stator winding;

a rotor facing said stator winding across an axial air gap, said rotor comprising a plurality of circumferentially adjacent magnetic segments grouped into adjacent pairs of S-pole and N-pole magnetic segments; and

two lead lines, each of said lead lines having a first end connected to said frequency generator pattern and a second end located at the periphery of said ring-like stator winding, said first ends of said lead lines being connected to said frequency generator pattern at circumferentially spaced locations on said frequency generator pattern, said second ends being at locations that are circumferentially spaced with respect to the periphery of said ring-like stator winding, said lead lines extending along paths between said first and second ends that traverse said phase coils of said stator winding and lie generally parallel to said substrate, the location of said second end of each of said lead lines being circumferentially displaced with respect to the connection of said first end of that lead line to said frequency generator pattern and being displaced out of radial alignment with said first end, and

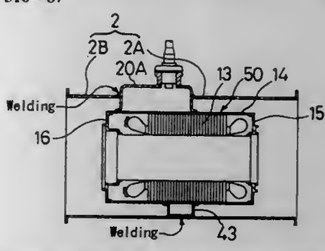
wherein said paths of said lead lines are formed such that a constant, circumferentially measured, separation angle exists between said two lead lines, said constant, circumferentially measured separation angle being measured circumferentially between any pair of points comprised of a point on one of said lead lines and a point on the other of said lead lines, said points being located at the same radial distance from said center, said separation angle being that obtained by multiplying an integer and the angle occupied by an adjacent pair of S-pole and N-pole magnet segments of said rotor, and being such that substantially equal areas of each of the traversed phase coils are found in the area between the two lead lines.

5,648,694

MOTOR STATOR ASSEMBLY AND FULL-CIRCUMFERENTIAL FLOW PUMP EMPLOYING SUCH MOTOR STATOR ASSEMBLY

Makoto Kobayashi; Masakazu Yamamoto, and Yoshio Miyake, all of Fujisawa, Japan, assignors to Ebara Corporation, Tokyo, Japan

Filed Oct. 13, 1994, Ser. No. 322,425
Claims priority, application Japan, Oct. 13, 1993, 5-280111; Oct. 13, 1993, 5-280112; Dec. 28, 1993, 5-350995
Int. Cl.[6] H02K *15/14;* **F04D** *13/00*
U.S. Cl. 310—87 **15 Claims**



1. A motor stator assembly for use in a full-circumferential flow pump comprising:

a stator;

an outer frame casing encasing said stator;

an outer cylinder made of sheet metal disposed around said outer frame casing with an annular space defined therebetween, liquid handled by said pump being introduced into said annular space; and

a cable housing for housing leads of said stator, said housing being hermetically welded to said outer frame casing and said outer cylinder;

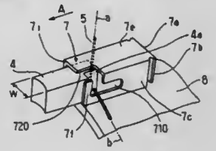
wherein said cable housing has a receptacle-like body having an open end and a bottom, said open end is welded to said outer frame casing, and said bottom has a hole for taking out leads of said stator, said cable housing having a dimension larger than that of said hole in at least one direction within said annular space.

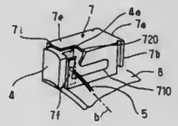
5,648,695

BRUSH APPARATUS FOR ELECTRIC ROTATING MACHINE

Mineo Yamaguchi, and Keiji Hashimoto, both of Kosai, Japan, assignors to Asmo Co., Ltd., Kosai, Japan

Filed May 22, 1995, Ser. No. 445,522
Claims priority, application Japan, Sep. 30, 1994, 6-237399
Int. Cl.[6] H02K *13/00;* **H01R** *39/38*
U.S. Cl. 310—242 **1 Claim**





1. A brush apparatus comprising:
a brush having a rear end portion and a front end portion;
a pigtail fixed to said brush to be held by the brush;
a brush holder having an opening portion at a front end portion and receiving said brush through said opening portion of said front end portion;
spring means held in said brush holder and pressing said brush holder toward an outside of said front end portion of said brush holder; and
a substrate holding said brush holder, wherein:
said rear end portion of the brush is formed with a pigtail take-out portion that is narrower in width than the front end portion of said brush with said pigtail being fixed to said take-out portion;
said brush holder has a stopper piece formed at a wall portion of said front end portion;
said brush holder has a first slit formed to extend parallel to a longitudinal direction of said brush at a position adjoining said stopper piece;
said brush holder has a second slit opening at said front end portion on a different surface from a surface forming said first slit;
said first slit and said second slit are connected at a portion at a side of a more rear end portion of said brush holder than said stopper piece, and
said first slit and said second slit are so constructed that, when said brush is inserted into said brush holder, said pigtail passes through said second slit and then, said pigtail is inserted into said first slit to contact said stopper piece.

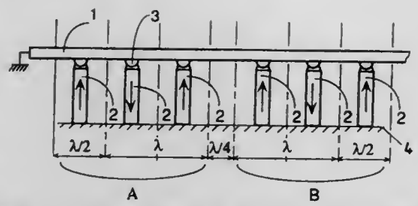
5,648,696

PIEZOELECTRIC MOTOR WITH PROGRESSIVE WAVE

Ronan Le Letty, Combrit; Frank Claeyssen; Nicholas Lhermet, both of Meylan; Paul Gonnard, Villeurbanne; Marie-Madeleine Guillemot-Amadei, Villeurbanne, and Laurent Lebrun, Villeurbanne, all of France, assignors to Figest B.V., Netherlands

PCT No. PCT/EP94/02732, § 371 Date Jan. 31, 1996, § 102(e) Date Jan. 31, 1996, PCT Pub. No. WO95/05682, PCT Pub. Date Feb. 23, 1995
PCT Filed Aug. 17, 1994, Ser. No. 591,459
Claims priority, application France, Aug. 18, 1993, 93 10086
Int. Cl.[6] H01L *41/08*
U.S. Cl. 310—323 **11 Claims**

1. A traveling-wave piezoelectric motor comprising a stator (**1**; **27**, **28**) consisting of an annular body, two groups (A, B; A', B') of piezoelectric elements (**2**; **29**) dispersed around the stator, in permanent contact with the stator and excited by an alternating current with a $\pi/2$ phase shift between the groups so as to produce, at the surface of the stator, a traveling wavelike deformation, and a rotor



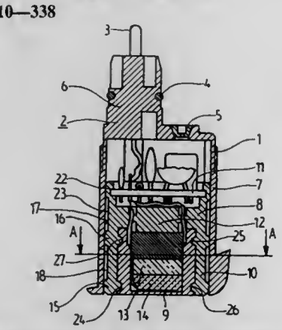
(**20**, **21**) in the form of a disc held elastically in contact with the stator for the rotational driving thereof by the traveling wave produced on the stator, wherein the piezoelectric elements are mutually independent polarized ceramic bars (**2**; **29**) arranged perpendicularly to the stator, that is to say parallel to the axis of the motor, and each connected to the stator by an articulation (**3**; **14**).

5,648,697

PRESSURE SEALED TRANSDUCER FOR AUTOMOTIVE VEHICLES

Jurgen Pirrung, Erligheim; Reinhard Stumpe, Neuhausen, and Gerhard Grohmann, Asperg, all of Germany, assignors to ITT Automotive Europe GmbH, Frankfurt, Germany

PCT No. PCT/EP94/02573, § 371 Date Feb. 27, 1996, § 102(e) Date Feb. 27, 1996, PCT Pub. No. WO95/06937, PCT Pub. Date Mar. 9, 1995
PCT Filed Aug. 3, 1994, Ser. No. 602,851
Claims priority, application Germany, Aug. 28, 1993, 43 29 055.8
Int. Cl.[6] H01L *41/08*
U.S. Cl. 310—338 **9 Claims**



1. A transducer of the type including a diaphragm and a diaphragm retainer which carries an oscillator wherein said diaphragm retainer is mounted into the opening of a plug made of an elastic material such that the bottom of the diaphragm retainer provides ease of access, and the plug is mounted into an open end of a housing, comprising at least two spaced circumferential projections extending from said plug, wherein said projections form walls of a first circumferential chamber.

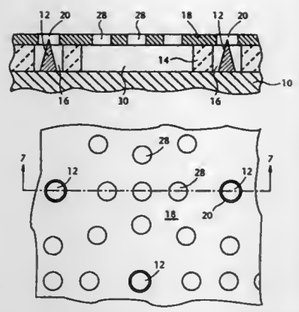
5,648,698

FIELD EMISSION COLD CATHODE ELEMENT HAVING EXPOSED SUBSTRATE

Hideo Makishima; Keizo Yamada, and Hironori Imura, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Division of Ser. No. 225,976, Apr. 12, 1994, Pat. No. 5,559,390. This application Jun. 2, 1995, Ser. No. 460,065
Claims priority, application Japan, Apr. 13, 1993, 5-085825
Int. Cl.[6] H01J *1/30*
U.S. Cl. 313—309 **8 Claims**

1. A field emission cold cathode element, comprising:
a substrate having a conducting surface;



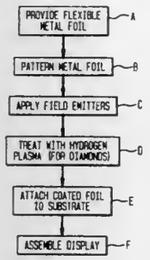
a plurality of emitter electrodes each of which stands on said surface of the substrate and has a sharp-pointed tip;
a dielectric layer which is formed only on limited regions of said surface of the substrate so as to expose the substrate surface in other regions and formed with a plurality of holes such that the emitter electrodes stand in the holes, respectively; and
a gate electrode layer which is formed on the dielectric layer so as to extend above the exposed regions of the substrate surface and formed with a plurality of apertures which are right above and contiguous to the respective holes in the dielectric layer, the gate electrode layer being further formed with a plurality of holes in the regions above the exposed regions of the substrate surface.

5,648,699

FIELD EMISSION DEVICES EMPLOYING IMPROVED EMITTERS ON METAL FOIL AND METHODS FOR MAKING SUCH DEVICES

Sungho Jin, Millington; Gregory Peter Kochanski, Dunellen, and Wei Zhu, North Plainfield, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Nov. 9, 1995, Ser. No. 555,594
Int. Cl.[6] H01J *1/30;9/02*
U.S. Cl. 313—309 **11 Claims**



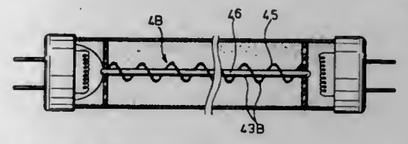
1. A method for making a field emission device comprising a plurality of substrate supported emitter cathodes comprising the steps of:
providing a sheet flexible metal foil;
pattering said sheet into a plurality of cathode regions while maintaining structural integrity of said sheet;
adhering a coating of field emitting material to said patterned sheet;
adhering said coated sheet an insulating substrate; and
finishing said field emission device.

5,648,700

FLUORESCENT LAMP DEVICE

Michael Yi Chu, 7F, No. 249, Sec. 1, Ta-An Rd., and David Yu Chu, 5F, No. 17, Alley 4, Lane 217, sec. 3, Chung-Hsiao E. Rd., both of Taipei City, Taiwan

Filed Aug. 14, 1995, Ser. No. 514,608
Int. Cl.[6] H01J *1/62;63/04;17/04;61/04*
U.S. Cl. 313—493 **2 Claims**



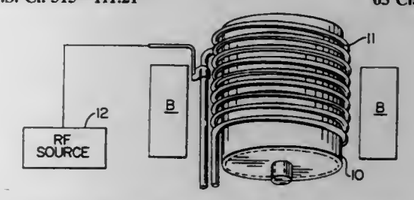
1. A fluorescent lamp device, comprising:
a transparent sealed container filled with a working gas, said transparent sealed container is an elongated cylindrical tube having two opposed ends;
electron emitting means extending into said container and being operable to emit electrons which interact with said working gas to generate short-wave ultraviolet energy, said electron emitting means including a pair of electrodes installed respectively at said two opposed ends of said container; and
a light emitting member disposed in said container and made of an insulator material, said light emitting member having an external surface coated with a layer of fluorescent material that converts the ultraviolet energy into visible light, wherein said light emitting member is an elongated member extending between said electrodes of said electron emitting means, wherein said elongated member is a rod having a plurality of insulator threads wound thereon, said rod and said insulator threads being coated with a layer of fluorescent material.

5,648,701

ELECTRODE DESIGNS FOR HIGH PRESSURE MAGNETICALLY ASSISTED INDUCTIVELY COUPLED PLASMAS

William M. Hooke; Brian R. Stoner; Steven P. Bozeman; Roy E. Fauber, all of Chapel Hill, N.C.; Tobin L. Munsat, Princeton, N.J., and Sean Washburn, Chapel Hill, N.C., assignors to The University of North Carolina at Chapel Hill, Chapel Hill, and Kobel Steel USA, Inc., Research Triangle Park, both of N.C.

Continuation-in-part of Ser. No. 938,796, Sep. 1, 1992, abandoned. This application Jun. 28, 1994, Ser. No. 267,562
Int. Cl.[6] H01J *7/24*
U.S. Cl. 315—111.21 **63 Claims**



1. A method of controlling an inductively coupled plasma comprising applying an external magnetic field other than the field associated with the induction field to an inductively coupled plasma while maintaining the gas pressure of the plasma high enough so that the collision frequencies of the plasma particles are substantially greater than the induction frequency applied to the plasma.

5,648,702

DIMMING CONTROL CIRCUIT HAVING FEEDBACK FREQUENCY CONTROL

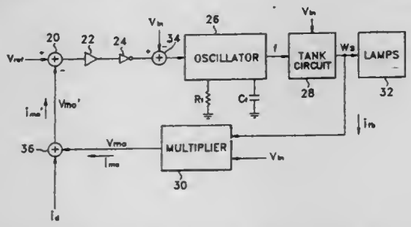
Nak-choon Choi, and Kyung-ha Jee, both of Buchon, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Nov. 13, 1995, Ser. No. 556,695

Claims priority, application Rep. of Korea, Dec. 22, 1994, 94-35976

Int. Cl.[6] H05B *37/02*

U.S. Cl. 315—224 **5 Claims**



1. A feedback dimming control circuit for controlling the luminance of a plurality of lamps, the circuit comprising:

a multiplier receiving and multiplying a feedback signal and an input voltage to generate a first output signal;

a first subtracter generating an error signal by subtracting the first output signal from a reference voltage;

a second subtracter subtracting a signal responsive to the error signal from the input voltage to generate a second output signal;

an oscillator generating a periodic signal in response to the second output signal; and,

a tank resonating in response to the periodic signal, generating the feedback signal, and supplying power to the plurality of lamps.

5,648,703

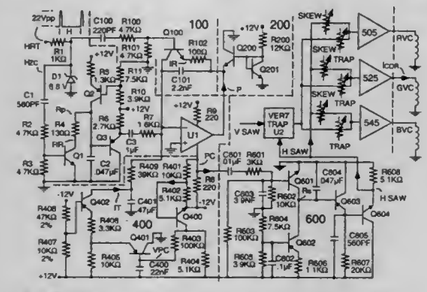
DEFLECTION CORRECTION SIGNAL TIMING

John Barrett George, Carmel, Ind., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Continuation-in-part of Ser. No. 351,906, Dec. 8, 1994, Pat. No. 5,497,055. This application Apr. 21, 1995, Ser. No. 426,597

Int. Cl.[6] G09G *1/04*

U.S. Cl. 315—371 **13 Claims**



1. A deflection correction waveform generator, comprising:

means for generating a parabolically shaped signal responsive to a horizontal retrace pulse;

means for controlling said generating means to maintain a predetermined horizontal time relationship between said parabolically shaped signal and said horizontal retrace pulse; and,

a sawtooth shaped signal generator coupled to an output signal of said control means and generating responsive thereto a sawtooth shaped signal having a predetermined horizontal phase relative to said horizontal retrace pulse said sawtooth shaped signal being coupled to provide a corrective deflection current.

5,648,704

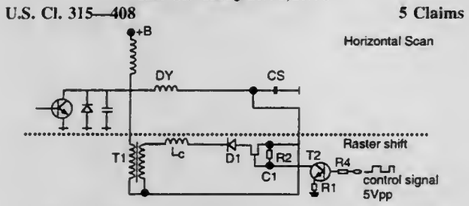
METHOD AND APPARATUS FOR DIGITAL CONTROL OF RASTER SHIFT IN CRT DISPLAYS

Peter Krause, Singapore, Singapore, assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Jul. 21, 1995, Ser. No. 505,134

Int. Cl.[6] H01J *29/70;29/76*

U.S. Cl. 315—408 **5 Claims**



1. For use in a video display monitor having a horizontal deflection circuit including a horizontal deflection coil across which is generated a periodic retrace voltage, raster shift apparatus for shifting a display image on a CRT screen of the display monitor by establishing a controlled DC current in the horizontal deflection coil comprising:

a storage capacitor;

means responsive to said retrace voltage for charging said storage capacitor to a charging voltage; and

switching means responsive to a raster shift control signal for applying said charging voltage to said horizontal deflection coil to cause a controlled DC current to flow in said deflection coil; and

a controller for generating as said raster shift control signal a pulse width modulated signal.

5,648,705

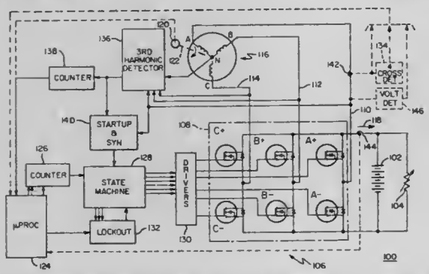
MOTOR VEHICLE ALTERNATOR AND METHODS OF OPERATION

Daryl Steven Sitar, Huntington Woods; Paul Theodore Momcilovich, Carleton; MD Abul Masrur, W. Bloomfield; Feng Liang, Canton; Garold Paul Myers, Northville, and Shahram Zarei, Farmington Hills, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Sep. 5, 1995, Ser. No. 523,761

Int. Cl.[6] H02P *9/00;* **H02M** *7/219*

U.S. Cl. 318—145 **6 Claims**



1. An alternator mechanically driven to generate a dc power at a dc output comprising:

a three phase stator winding having three output connections;

a rotor magnetically coupled to said stator winding and mechanically driven to generate a back electromotive force in said stator winding and thereby produce three phase power at said three output connections of said stator winding;

apparatus for determining the position of said back electromotive force in said stator winding comprising a first detector for measuring current in one phase of said three phase stator winding and a second detector for measuring voltage of said one phase of said three phase stator winding;

a full wave controlled rectifier bridge connected between said three output connections of said stator winding and said dc output; and

a controller responsive to said back electromotive force in said stator winding for controlling said full wave controlled rectifier bridge to control phase shift between said back electromotive force in said stator winding and phase voltages at said three output connections of said stator winding.

5. A method of operating an alternator to generate dc power at a dc output, said alternator including a three phase stator winding having three output connections and a rotor magnetically coupled to said stator winding and mechanically driven to generate a back electromotive force in said stator winding and thereby produce three phase power at said three output connections of said stator winding, said method comprising the steps of:

determining the position of said back electromotive force in said stator winding comprises the steps of:

measuring current in one phase of said three phases; and

measuring voltage of said one phase of said three phases;

connecting a full wave controlled rectifier bridge between said three output connections of said stator winding and said dc output; and

controlling said full wave controlled rectifier bridge to control phase shift between said back electromotive force in said stator winding and phase voltages at said three output connections of said stator winding in response to said back electromotive force in said stator winding.

5,648,706

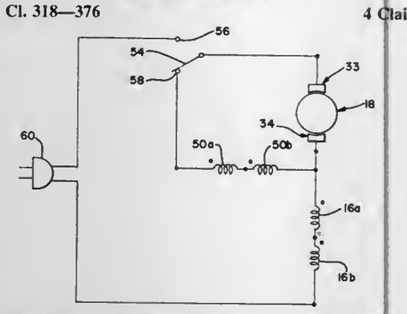
ELECTRIC BRAKE FOR COMMUTATED MOTOR

Gary C. Polk, Hawthorn Woods, and Peter Domeny, Northbrook, both of Ill., assignors to S-B Power Tool Company, Chicago, Ill.

Filed Sep. 28, 1995, Ser. No. 535,866

Int. Cl.[6] H02P *3/14*

U.S. Cl. 318—376 **4 Claims**



1. A device powered by a universal electric motor for moving a working element comprising:

(a) a stator including field windings;

(b) an armature having windings and being rotatably mounted within said stator and a commutator mounted for rotation with said armature;

(c) at least a pair of brushholders containing respective brushes in physical contact with said commutator;

(d) at least one of said brushholders containing means to push its associated brush away from the commutator when said brush has worn to a predetermined extent;

(e) means constituting a regenerative brake circuit connected to said field and armature windings which, when activated, will establish a regenerative direct current flow across said commutator and brushes; and

(f) switch means alternately operable between a first position wherein said motor is energized and said brake circuit is deactivated and a second position wherein said motor is deenergized and said brake circuit is activated.

5,648,707

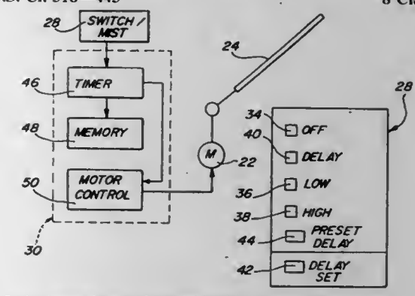
INTERMITTENT WINDSHIELD WIPER SYSTEM

James E. Salliotte, Woodhaven, Mich., assignor to United Technologies Automotive, Inc., Dearborn, Mich.

Filed Jul. 21, 1995, Ser. No. 505,687

Int. Cl.[6] H02P *1/04*

U.S. Cl. 318—443 **8 Claims**



1. An intermittent windshield wiper system comprising:

at least one windshield wiper motor and wiper;

a wiper control module for controlling said wiper motor;

a wiper switch including an input setting for allowing an operator to set a time delay between actuations of said wiper by said windshield wiper motor, said input setting being first actuated to start a period of time and said input setting being then actuated a second time to end said period of time, said time delay being defined by said period of time between said first and second actuations, said control module including means for recording said time delay and controlling said wiper motor to repeatedly actuate said wiper with a time interval between said actuations set by said operator-set time delay; and

said input setting including a delay set button actuated for both said first and said second actuations, said button also activating another wiper function when not setting said time period, said wiper switch further comprising an off setting, a plurality of continuous, variable wiper speed settings, and one or more preset delay settings for allowing said operator to choose from one or more preset time delays of said wiper by said motor.

5,648,708

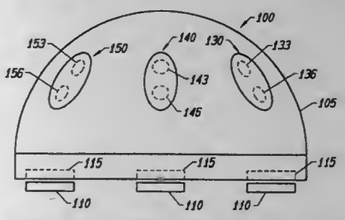
FORCE ACTUATED MACHINE CONTROLLER

Douglas J. Littlejohn, Squaw Valley, Calif., assignor to Power Concepts, Inc., Fresno, Calif.

Filed May 19, 1995, Ser. No. 444,458

Int. Cl.[6] G01L *5/16;* **A61G** *5/04*

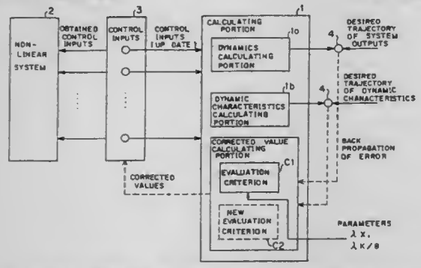
U.S. Cl. 318—488 **24 Claims**



1. An apparatus for controlling a direction and a speed in which a motive device propels a machine, said apparatus comprising:

(a) a plurality of force sensors for detecting a translational component of an applied force and for detecting a rotational component of said applied force;
(b) force transfer means formed of a rigid single moving part having a base surface coupled to said plurality of force sensors, for receiving said applied force and transferring said applied force to said plurality of force sensors; and
(c) a motive control circuit, coupled to said plurality of force sensors, for controlling the direction and the speed at which the motive device propels the machine in response to said detected translational component of said applied force and said detected rotational component of said applied force.

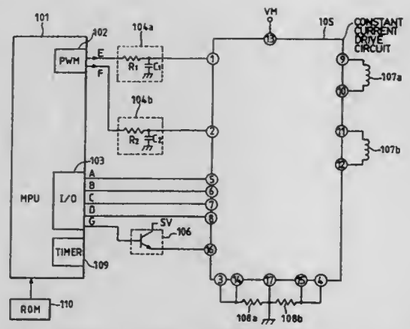
5,648,709
CONTROL METHOD AND CONTROL APPARATUS FOR CONTROLLING OUTPUT PATH AND DYNAMIC CHARACTERISTICS OF A NON-LINEAR SYSTEM
Yoshiharu Maeda, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Filed Apr. 17, 1995, Ser. No. 422,826
Claims priority, application Japan, Apr. 18, 1994, 6-078814
Int. Cl.[6] G05B *17/00;* **G06F** *15/00*
U.S. Cl. 318—568.17 **20 Claims**



1. A control apparatus for controlling output values and dynamic characteristics of a non-linear system that vary corresponding to a control input, comprising:
output calculating means for inputting the control input and outputting a first output value based on dynamics of the non-linear system;
dynamic characteristics output means for inputting the control input and outputting a second output value corresponding to part of the dynamic characteristics of the non-linear system; and
updating means for updating the control input so that the first output value of said output calculating means attains a desired output value and the second output value of said dynamic characteristics output means attains a desired dynamic characteristics value.

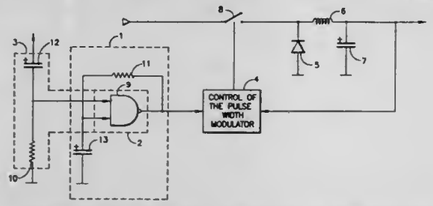
5,648,710
SYSTEM FOR CONTROLLING DRIVE OF STEPPING MOTOR
Tetsuhito Ikeda, Machida, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 14, 1995, Ser. No. 557,271
Claims priority, application Japan, Nov. 16, 1994, 6-307006; Aug. 25, 1995, 7-240777
Int. Cl.[6] H02P *8/36*
U.S. Cl. 318—685 **14 Claims**

1. A drive control system for a stepping motor comprising:
a stepping motor;
pulse signal generating means for generating a pulse signal;
converting means for converting a voltage level of the pulse signal generated by said pulse signal generating means into a smooth and substantially continuous reference voltage; and



drive means for exciting an excitation coil in said stepping motor by an electric current set according to the reference voltage from said converting means, said drive means comprising inhibiting means for maintaining the set electric current while comparing the reference voltage with a detection voltage obtained in correspondence to the set current in a comparator, and inhibiting the comparator from producing an output until the reference voltage reaches a specified voltage.

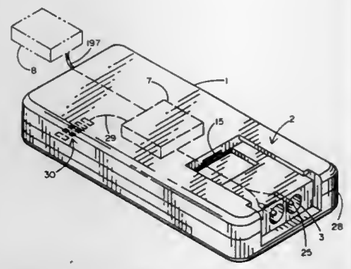
5,648,711
METHOD AND SWITCHING ARRANGEMENT FOR IDENTIFYING THE CHARGER OF RECHARGABLE BATTERIES OF PORTABLE DEVICES
Kalle Hakkarainen, Salo, Finland, assignor to Nokia Mobile Phones Ltd., Salo, Finland
Filed May 4, 1995, Ser. No. 434,934
Claims priority, application Finland, May 16, 1994, 942271
Int. Cl.[6] H01M *10/44*
U.S. Cl. 320—2 **13 Claims**



1. Identification apparatus for identifying a charger device for rechargeable batteries of portable electronic devices, comprising a charger device for providing a charging voltage, a low pass filter coupling means connected between the charger device and for coupling the charging voltage of the charger accessory to the electronic device, and modulation means for modulating a signal on the coupling means to provide an identification signal in accordance with identity data for the charger device.

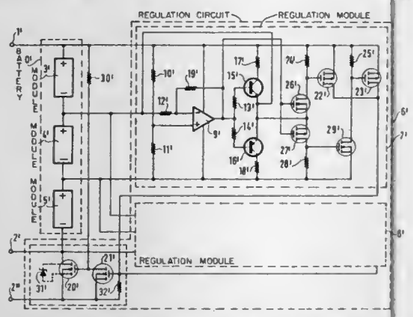
5,648,712
UNIVERSALLY INTERCHANGEABLE AND MODULAR POWER SUPPLY WITH INTEGRATED BATTERY CHARGER
Stan S. Hahn, Moraga, Calif., assignor to Asian Micro Sources, Inc., Moraga, Calif.
Filed Aug. 29, 1995, Ser. No. 521,113
Int. Cl.[6] H01M *10/46*
U.S. Cl. 320—2 **10 Claims**

1. An apparatus for both charging a battery and supplying power to an electrical device, said apparatus comprising:
an electrical circuit including power supply circuitry,
a casing providing a housing for said electrical circuit,



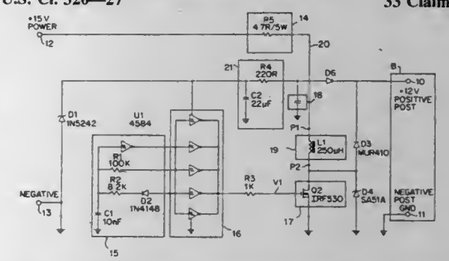
plug means for receiving and forwarding electrical current, including input and output ends, said input end connectable to a source of electrical current, said plug means capable of accommodating a plurality of distinct electrical current source physical configurations at said input end,
current receiving means for detachably connecting said electrical circuit to said plug means output end, said plug means detachably mounted to said current receiving means via said output end,
first current supplying means for detachably connecting said electrical circuit to a first electrical device,
second current supplying means for detachably connecting said electrical circuit to a rechargeable battery, and
fastening means integral with said casing, for releasably attaching the rechargeable battery to said casing and placing the rechargeable battery in electrical communication with said second current supplying means and said electrical circuit, wherein said first electrical device and said rechargeable battery may be simultaneously connected to said electrical circuit.

5,648,713
MODULAR REGULATOR CIRCUIT, FOR A MODULAR ELECTRICAL STORAGE CELL BATTERY, HAVING A NUMBER OF MODULES DEPENDENT ON THE NUMBER OF MODULES OF THE BATTERY
Jean Claude Mangez, La Rochelle, France, assignor to SAFT, Romainville, France
Filed Jun. 1, 1995, Ser. No. 456,303
Claims priority, application France, Jul. 4, 1994, 94 08211
Int. Cl.[6] H01M *10/46*
U.S. Cl. 320—6 **5 Claims**



1. A regulator circuit for a battery of electrical storage cells, and in particular for a battery whose voltage is a function of its state of charge and which is constituted by "n" identical modules ("n" being an integer) connected in series between end terminals of the battery, the circuit comprising "n−1" regulation modules each respectively associated with two series-connected modules of the battery, each regulation module including regulator means for bringing the voltage across the terminals of each of the two series-connected battery modules with which it is associated to a common value by diverting current taken from the terminals of that one of the modules which provides the greater voltage until said greater voltage is reduced to the same value as the voltage present across the terminals of the module that has the smaller voltage.

5,648,714
METHOD AND DEVICE FOR CHARGING AND CONDITIONING BATTERIES
Douglas F. Eryou, and Vladimir Federman, both of Winnipeg, Canada, assignors to 3266991 Manitoba Ltd., Winnipeg, Canada
Filed Nov. 30, 1994, Ser. No. 352,040
Int. Cl.[6] H02J *7/16;* **H01M** *10/44*
U.S. Cl. 320—27 **33 Claims**

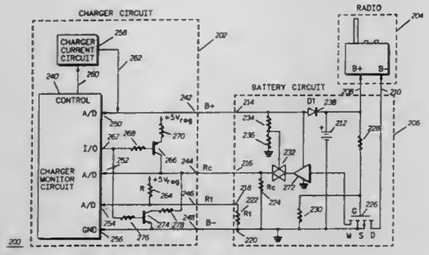


11. A method for conditioning plates of a battery having at least one electrolytic cell, a positive connection terminal and a negative connection terminal connected across the at least one cell, the method comprising connecting a first connector to the positive terminal, connecting a second connector to the negative terminal such that a substantially constant voltage is applied across the first and second connectors, providing an inductance coil, providing switch means for controlling passage of current through the inductance coil, initially closing the switch to cause a current to flow through the inductance coil and then opening the switch to cause the current in the inductance coil to flow to the positive terminal.

33. A device for conditioning a battery, comprising:
a circuit for generating a substantially square wave timing signal;
a switch operable to close and open responsive to the timing signal;
a charge storage device connected at a node in series with the switch between a power source and ground, the charge storage device storing charge from the power source when the switch is closed and generating a current pulse discharge from the charge storage device at the node when the switch is opened;
means for connecting the node to the battery for application of a train of the discharged current pulses to the battery; and
a voltage sensing circuit connected to the battery for sensing the application of a trickle charging current to the battery, the voltage sensing circuit including means for activating the square wave circuit and causing the generation of the train of discharged current pulsed responsive to sensing the application of the trickle charging current to the battery.

5,648,715
METHOD AND APPARATUS FOR CURRENT COMPENSATION OF A BATTERY IN A CHARGER
Joseph Patino, Pembroke Pines, and Robert B. Ford, Tamarac, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Nov. 24, 1995, Ser. No. 562,487
Int. Cl.[6] H01M *10/44;10/46*
U.S. Cl. 320—22 **6 Claims**

1. A method of charging a battery powered radio in a charger, comprising the steps of:
sensing the presence of the battery;



determining the capacity of the battery;

charging the battery in response to the capacity with a predetermined charge rate;

determining a current drain presented by the radio on the battery; compensating the charge rate in response to the determined current drain; and

switching off the current drain presented by the radio on the battery once the battery drops to a predetermined voltage threshold.

3. A charging system for a battery powered portable radio having a portable radio portion coupled to a battery, comprising:

a charger, comprising:

a charging terminal, a capacity sensing terminal, a temperature sensing terminal, and a ground terminal;

a microcontroller; and

first and second switching devices operatively biased from the microcontroller for selectively switching a pull up load or a pull down load to the capacity sensing terminal respectively;

a battery, comprising:

first, second, third, and fourth battery contacts for mating with the charging terminal, the capacity sensing terminal, the temperature sensing terminal, and the ground terminal respectively;

at least one battery cell having a positive and negative terminal, the negative terminal being coupled to the fourth contact;

a thermistor coupled between the third and fourth contact;

a capacity resistor coupled between the second and fourth contact;

a diode having an anode and a cathode, the anode coupled to the first contact and the cathode coupled to the positive terminal of the at least one battery cell;

a current sensing device operatively biased between the positive terminal of the at least one battery cell and ground, the current sensing device mirroring a predetermined portion of the portable radio current; and

a third switching device operatively biased from the positive terminal of the at least one battery cell, said third switching device providing the predetermined portion of mirrored current to the second contact when the pull down load is selectively switched to the capacity sense terminal, and said third switching device switching out the predetermined portion of mirrored current from the second contact when the pull up load is selectively switched to the capacity sense terminal.

5,648,716

POWER CONTROL CIRCUIT FOR A BATTERY CHARGER

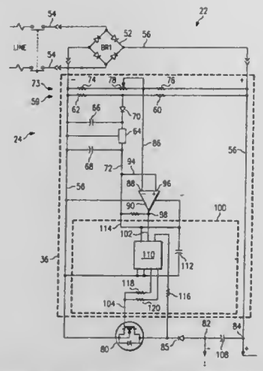
Roger S. Devilbiss, 4401 Caruth Blvd., Dallas, Tex. 75225, and Tony M. Quisenberry, 67 Remington Dr., Highland Village, Tex. 75067

Division of Ser. No. 402,196, Mar. 10, 1995, Pat. No. 5,528,485, which is a continuation-in-part of Ser. No. 330,424, Oct. 28, 1994, Pat. No. 5,566,062, which is a continuation of Ser. No. 212,147, Mar. 14, 1994, Pat. No. 5,371,665. This application Mar. 19, 1996, Ser. No. 618,508

Int. Cl.[6] **H02H** *7/06;* **H02M** *7/04*

U.S. Cl. 320—32 **7 Claims**

1. A battery charger to supply a constant power to a battery while charging the battery, said battery charger comprising:



rectifying means for producing rectified alternating current when receiving an input of alternating current;

comparator means having an inverting input, a non-inverting input and an output;

means for providing a predetermined voltage to the inverting input of said comparator means from said rectified alternating current;

means for providing a predetermined DC voltage to the non-inverting input of said comparator;

a constant power regulator with an output to be connected to the battery;

switching means operatively connected between said constant power regulator and said rectified alternating current; and

control means operatively coupled between said switching means and the output of said comparator means, said control means activates said switch means for a predetermined time, determined by the output from said comparator, to allow the rectified alternating current to reach a desired voltage across said constant power regulator at which time said control means deactivates said switch means, wherein the value of the desired voltage is determined by the voltages input to the comparator means.

5,648,717

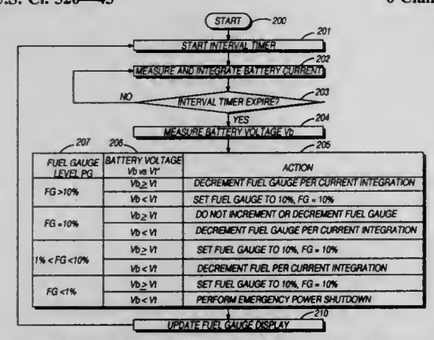
BATTERY CHARGE GAUGE WITH CURRENT INTEGRATOR AND METHOD FOR GUAGING BATTERY CHARGE

Bob Uskali, Schaumburg, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 22, 1995, Ser. No. 577,402

Int. Cl.[6] **H01M** *10/44;10/46*

U.S. Cl. 320—43 **6 Claims**



1. A method for gauging battery charge comprising the steps of:

integrating current flowing from a battery;

counting a counter in response to the step of integrating;

measuring voltage across the battery; and

comparing measured voltage with a voltage threshold and resetting the counter to a predetermined value when the measured voltage crosses the voltage threshold.

6. A battery charge gauge comprising:

a current integrator for integrating current flowing from a battery;

a counter responsive to the current integrator for counting a value representative of battery charge;

a voltage measurement element for measuring voltage across the battery to provide a measured voltage;

a comparator for comparing the measured voltage with a threshold; and

a counter resetting element for resetting the counter to a calibration value when the measured voltage crosses the threshold.

5,648,718

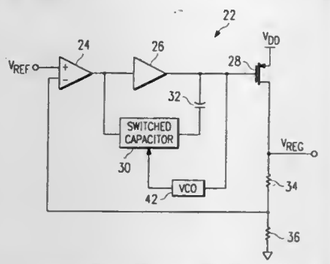
VOLTAGE REGULATOR WITH LOAD POLE STABILIZATION

William Ernest Edwards, St. Paul, Minn., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Sep. 29, 1995, Ser. No. 536,436

Int. Cl.[6] **G05F** *1/40;1/44;* **H03F** *1/36;3/52*

U.S. Cl. 323—274 **27 Claims**



1. A voltage regulator circuit having an error amp, an amplifier, a pass transistor, and a feedback circuit, wherein the amplifier further comprises:

a compensation capacitor coupled to the amplifier; and

a switched capacitor having a clock input coupled to an output of the amplifier, the switched capacitor operable to vary the zero of the voltage regulator as a function of the current draw on the voltage regulator output.

5,648,719

MAGNETIC SENSOR WITH CHARACTERISTICS THAT ARE CHANGEABLE BY AN EXTERNAL MAGNETIC DEVICE

Timothy A. Christensen, Stephenson County; Wayne L. Ehlers, Carroll County; Kenneth L. Eichholz, Jr., and Thomas A. Fletcher, both of Stephenson County, all of Ill., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 19, 1992, Ser. No. 901,363

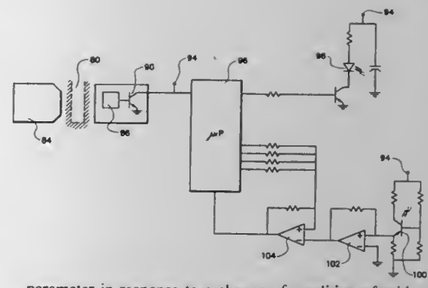
Int. Cl.[6] **G01B** *7/14*

U.S. Cl. 324—207.26 **6 Claims**

1. An electronic device, comprising:

a housing;

an electronic circuit disposed within said housing and configured to respond to a preselected stimulus according to a first operational parameter, said circuit comprising a component operatively associated with said circuit to change said first operating parameter of said circuit to a second operating parameter in response to a change of condition of said component, said component being magnetically sensitive, said condition being changeable in response to a change in the magnetic field proximate said component;



a magnet disposed within said housing proximate said component, said magnet being spaced apart from said component by a preselected gap; and

a depression formed in a wall of said housing and extending into said preselected gap, said depression being shaped to receive a magnetic object therein, said magnetic object being external to said housing and being disposable between said magnet and said component and within said preselected gap to affect the magnetic flux of said magnet proximate said component.

5,648,720

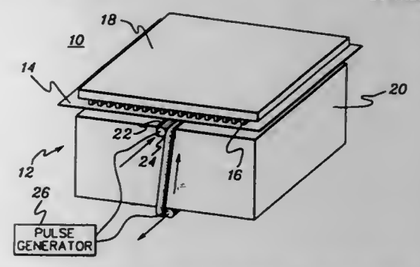
APPARATUS AND METHOD FOR PRODUCING A MAGNETIC IMAGE OF A CONDUCTIVE PATTERN USING EDDY CURRENTS

Edward John Yarmchuk, Somers, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 25, 1993, Ser. No. 36,773

Int. Cl.[6] **G01R** *33/12;* **G01N** *27/82*

U.S. Cl. 324—213 **21 Claims**



1. An apparatus for providing a fine line resistance image of a conductive pattern comprising:

means for applying a rapidly varying magnetic field to said conductive pattern such that eddy currents are induced in said conductive pattern and the eddy currents produce a secondary magnetic field in the vicinity of the conductive pattern, strength variations of the secondary magnetic field being indicative of line resistance of said conductive pattern and being dominant over any other local magnetic field variations; and

a magnetic recording medium disposed in close proximity to said conductive pattern for directly capturing an image of said secondary magnetic field.

5,648,721

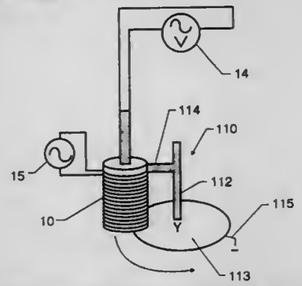
ROTATING FLUX-FOCUSING EDDY CURRENT PROBE FOR FLAW DETECTION

Russell A. Wincheski, Williamsburg; James P. Fulton, Hampton, both of Va.; Shridhar C. Nath, Gaithersburg, Md.; John W. Simpson, Tabb, and Min Namkung, Yorktown, both of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation-in-part of Ser. No. 134,444, Oct. 12, 1993, abandoned. This application Nov. 22, 1994, Ser. No. 343,740

Int. Cl.[6] G01N *27/90;* **G01R** *33/12*

U.S. Cl. 324—240 **5 Claims**



1. A flux-focusing eddy current probe for non-destructive evaluation of an electrically conductive material surrounding circular inhomogeneities comprising:

(a) an excitation coil for inducing eddy currents within the electrically conductive material, said excitation coil having windings wherein said excitation coil's longitudinal axis is perpendicular to the surface of the electrically conductive material, said excitation coil having a first end and a second end;

(b) a pick-up coil surrounded by said windings of said excitation coil, said pick-up coil having a first end and a second end, said first end of said pick-up coil and said first end of said excitation coil being in coplanar alignment with one another, said pick-up coil being of a height that is no more than one-half the height of said excitation coil;

(c) a flux focusing lens formed as a cylinder of conducting material high in magnetic permeability, said cylinder having an open first end and a closed second end, said cylinder being concentric with and disposed between said excitation coil and said pick-up coil such that said open first end terminates in co-planar alignment with said first end of said excitation coil and said first end of said pick-up coil, said flux focusing lens preventing magnetic coupling between said excitation coil and said pick-up coil when said probe is placed above an unflawed electrically conductive material and said flux focusing lens producing high flux density at the outer edge of said pick-up coil; and

(d) rotator means for rotating the probe about the circular inhomogeneity such that the center of the probe remains a constant distance from the center of the circular inhomogeneity.

5,648,722

APPARATUS AND METHOD FOR DETERMINING THE STATE OF AN ELECTRICAL SWITCH WITHIN AN HVAC SYSTEM

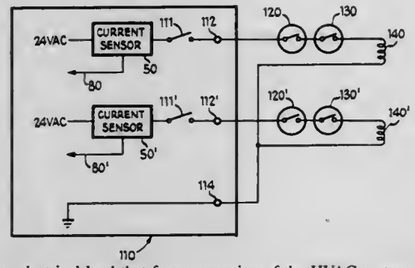
Nir Merry, Albany, and Jack Francis Hammons, Walnut Creek, both of Calif., assignors to Gas Research Institute, Chicago, Ill.

Filed Jul. 28, 1995, Ser. No. 508,599

Int. Cl.[6] G01R *31/02*

U.S. Cl. 324—417 **13 Claims**

1. An apparatus for determining a state of system, the apparatus comprising:



an electrical load that forms a portion of the HVAC system;

a first switch having an electrically closed state and an electrically open state connected in series with the electrical load, the state of the first switch being controlled by conditions in the HVAC system directly associated with the electrical load;

means electrically coupled in series with the first switch for providing electrical current;

means electrically coupled in series with the current providing means, electrical load, and first switch for detecting current flow, and, in turn, providing a signal indicative of the state of the HVAC system.

5,648,723

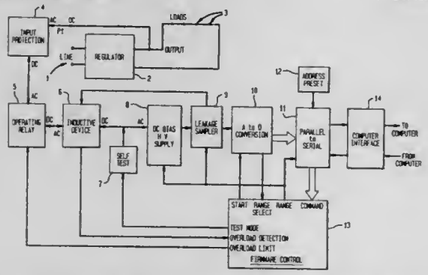
METHOD AND APPARATUS FOR SEPARATING AND ANALYZING COMPOSITE AC/DC WAVEFORMS

Harold Richard Williams, Columbus, Ohio, assignor to ADB-Alnaco, Inc., Columbus, Ohio

Filed May 9, 1994, Ser. No. 239,812

Int. Cl.[6] G01R *31/14*

U.S. Cl. 324—509 **7 Claims**



2. An AC electrical circuit containing a ground fault condition detection circuitry, comprising:

a. an AC electrical circuit adapted to conduct an AC signal;

b. an inductive device in electrical contact with said AC electrical circuit, said inductive device comprising:

i. an inductive coil having an input pole and an output pole, said inductive coil having a capacitor connected to said output pole so as to load said inductive coil, said input pole connected to said AC electrical circuit so as to receive said AC signal and provide AC current flow through said inductive coil;

ii. a driver winding, having a pair of terminals, coupled to said inductive coil so as to sense said AC current flow through said inductor coil;

iii. a sampling resistor connected to one of said driver winding terminals so as to detect said AC current flow in the form of a voltage across said sampling resistor;

iv. signal processing circuitry comprising:

(1) an inverting amplifier coupled to said sampling resistor so as to amplify said voltage; and

(2) a phase shifter coupled to said inverting amplifier so as to shift the phase of said voltage; and

v. a power amplifier coupled to said signal processing circuitry and also coupled to the other of said driver winding terminals;

vi. a DC voltage source connected to said output pole of said inductive coil; and

vii. a DC current measuring device adapted to measure DC current flowing to said circuit from said DC voltage source so as to determine the presence of a ground fault condition in said circuit.

5,648,724

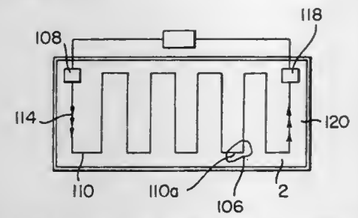
METALLIC TIME-DOMAIN REFLECTOMETRY ROOF MOISTURE SENSOR

Norbert E. Yankielun, Lebanon, N.H., and Stephen N. Flanders, Norwich, Vt., assignors to U.S. Army Corps of Engineers as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 8, 1996, Ser. No. 598,312

Int. Cl.[6] G01N *27/00;* **G01R** *31/11*

U.S. Cl. 324—533 **8 Claims**



1. Apparatus for detecting moisture in a roof, comprising:

(a) electrical pulse generating means for transmitting and receiving a series of electrical pulses;

(b) a transmission line arranged within the roof and connected with said pulse generating means, said transmission line having first and remote ends and including a medium having a dielectric constant which changes when exposed to moisture; and

(c) signal analyzing means connected with said pulse generating means for interpreting said series of electrical pulses transmitted along said transmission line, whereby when said transmission line is exposed to moisture, a portion of said electrical pulses transmitted along said transmission line is analyzed by said signal analyzing means thereby allowing the presence and location of the moisture in the roof to be determined.

5,648,725

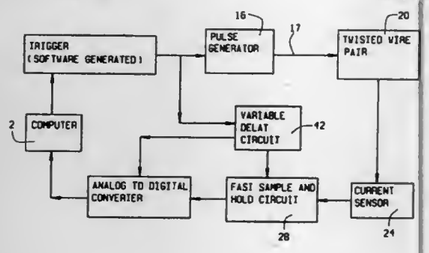
PULSE WIDTH MODULATION SIMULATOR FOR TESTING INSULATING MATERIALS

Vojislav V. Divljakovic, and Joseph A. Kline, both of St. Charles, Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Sep. 12, 1995, Ser. No. 526,264

Int. Cl.[6] G01R *31/28;31/12;31/02;27/18*

U.S. Cl. 324—551 **16 Claims**



1. A device for testing magnet wire, comprising:

a test specimen of wire;

a pulse generator operatively connected to the test specimen;

a computer operative connected to the pulse generator, the computer including a memory and a program in the memory, the program enabling an operator to provide input test parameters and permitting the collection and analyzing of data, said input test parameters being adjustable in at least the range of about a frequency between 60 and 20,000 Hz, and a voltage amplitude being adjustable in a range of 1,000 to 5,000 volts peak to peak;

a collection device for monitoring voltage pulses;

means for comparing the voltage waveform across the test specimen and providing an indication when a preselected voltage deviation occurs;

a collection device for monitoring current flow through the test specimen; and

means for monitoring the change in the amplitude of the current and providing an indication when a predetermined value is reached.

5,648,726

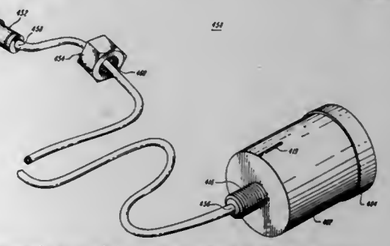
REMOTELY ACCESSIBLE ELECTRICAL FAULT DETECTION

Anh V. Le, Pembroke, Mass., and Jeffrey S. Kilber, Hazen, N. Dak., assignors to Pacific Scientific Company, Weymouth, Mass.

Filed Apr. 21, 1995, Ser. No. 425,879

Int. Cl.[6] H01H *31/02*

U.S. Cl. 324—555 **27 Claims**



1. A remotely accessible outdoor electrical fault detection system for a utility cabinet enclosing at least one network for performing an electrical fault detection measurement, the cabinet having an external wall with an aperture, said system comprising

a weather-resistant housing having a mounting fitting adapted for mounting to the aperture of the external wall,

a circuit for electrical connection to the fault detection network and mounted inside said weather-resistant housing, said circuit including at least one of a transmitter and a receiver, and

an antenna located inside said weather-resistant housing and coupled to said circuit, for communicating between a location outside the cabinet and said circuit.

5,648,727

CAPACITIVE LEVEL SENSING PIPETTE PROBE

William T. Tyberg, Spring Valley, N.Y., and John W. Jones, Gwynedd, United Kingdom, assignors to DPC Cirrus Inc., Randolph, N.J.

Filed Oct. 24, 1995, Ser. No. 547,553

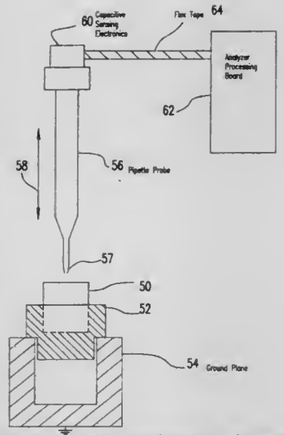
Int. Cl.[6] B01L *3/02;* **G01F** *23/24*

U.S. Cl. 324—677 **11 Claims**

1. A capacitive fluid level sensing probe for raising and lowering into a vessel containing a fluid in an automated immunoassay analyzer, said probe comprising:

a hollow shaft;

a tip for drawing a fluid sample for an immunoassay into said hollow shaft, said tip having an electrically conductive portion; and



fluid level sensing circuitry positioned to raise and lower with said probe, said fluid level sensing circuitry being in electrical contact with said tip for sensing a capacitive change when said tip contacts the fluid.

5,648,728

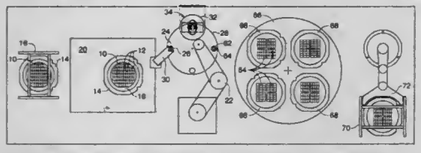
METHOD AND APPARATUS FOR POSITIONING A WORKPIECE

Robert L. Canella, Meridian, Id., assignor to Micron Electronics, Inc., Nampa, Id.

Continuation of Ser. No. 205,678, Mar. 1, 1994, Pat. No. 5,510,723. This application Apr. 23, 1996, Ser. No. 636,449

Int. Cl.[6] G01R *1/00;1/04;* **B07C** *5/344*

U.S. Cl. 324—755 **17 Claims**



1. An apparatus for positioning a workpiece, comprising:

a pedestal comprising a first portion having a first width, a second portion having a second width greater than said first width, and a chamfered portion interposed between said first and second portions;

a support having a hole therein which receives said pedestal, said support further having a chamfered portion;

a base for urging said chamfered portion of said pedestal away from said chamfered portion of said support.

5,648,729

BOARD POSITIONING METHOD AND APPARATUS OF THE METHODS

Hiroshi Yamauchi, Hirakata; Shoriki Narita, Kadoma, and Hideo Hongo, Yokohama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed May 5, 1995, Ser. No. 435,616

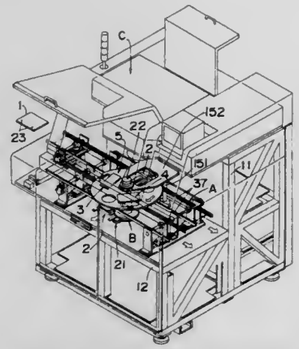
Claims priority, application Japan, May 6, 1994, 6-094557

Int. Cl.[6] G01R *31/02*

U.S. Cl. 324—758 **4 Claims**

1. A board positioning method for use in positioning different types of boards, said method comprising the steps of:

locating a board of a particular type in a specified position in a work station having a plurality of board positioning stations supported by a movable support member;



selecting one of the plurality of board positioning stations in accordance with the particular type of board located in said specified position; and

moving the plurality of board positioning stations by operation of the support member until said selected positioning station is in a position aligned with the specified position of the board so that said selected positioning station confronts the board.

5,648,730

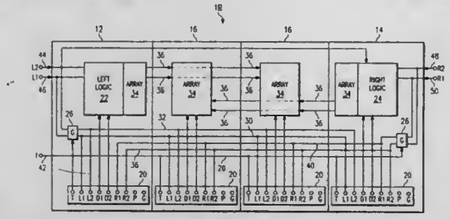
LARGE INTEGRATED CIRCUIT WITH MODULAR PROBE STRUCTURES

Rohit L. Bhuva, Plano; Bao Tran, Richardson; James L. Conner, Rowlett; Michael Overlaur, Plano, and Tracy S. Paulsen, Rowlett, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 30, 1994, Ser. No. 347,021

Int. Cl.[6] G01R *31/28*

U.S. Cl. 324—763 **10 Claims**



1. A semiconductor integrated circuit comprised of a plurality of interconnected circuit modules, each said module having a circuit section and a dedicated testing pad section coupled to said circuit section, said integrated circuit having a control circuit connected to both a first said testing pad section of a first said module and to said circuit section of a second said module, said control circuit facilitating operation of said second module circuit section to test said first module circuit section from said first testing pad section.

5,648,731

METHOD OF CHECKING SOLAR PANEL CHARACTERISTICS IN AN OPERATING SOLAR ELECTRICAL SYSTEM

Darwin Kent Decker, Hacienda Heights, and Charles B. Loftis, Jr., Redondo Beach, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Division of Ser. No. 60,103, May 11, 1993, Pat. No. 5,530,335. This application Feb. 5, 1996, Ser. No. 596,842

Int. Cl.[6] G01R *31/26*

U.S. Cl. 324—767 **3 Claims**

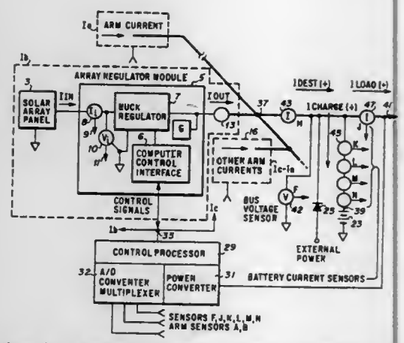
1. The method of determining the voltage and current characteristics of a solar panel and variable transconductance device combinations from amongst a plurality of such combinations in and during operation of a solar powered power supply system that produces and supplies electrical power to a load via a bus, said load including a rechargable battery and said bus being clamped to a bus voltage, Vbus, each of such solar panel and variable transconductance device combinations being connected to deliver electrical power to said load, comprising the steps of:

selecting one solar panel and variable transconductance device combination for test from amongst said plurality of such solar panel and variable transconductance device combinations;

prescribing in sequence each of a plurality of duty cycles from a plurality of test duty cycle values and adjusting said variable transconductance device to each selected duty cycle in said sequence, and at least one of said plurality of duty cycles being equal to zero per cent and at least one other of said plurality of duty cycles being equal to one-hundred per cent;

measuring electrical current generated by and the electrical voltage at the output of said solar panel in said solar panel and variable transconductance device under test at each said plurality of duty cycles to produce a series of values of voltage and current in respect of each respective duty cycle; and

determining from said series of values each of the solar panel's open circuit voltage, Voc; the solar panels short circuit current, Isc, when clamped to a bus voltage, Vbus; the maximum power point voltage, Vmp; the maximum power point current, Imp; and the ratio of Vmp to Voc, Ratio.



5,648,732

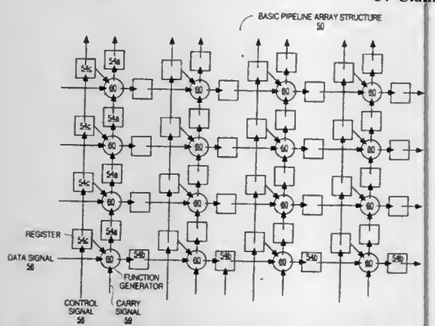
FIELD PROGRAMMABLE PIPELINE ARRAY

Robert G. Duncan, Castroville, Calif., assignor to Xilinx, Inc., San Jose, Calif.

Filed Oct. 4, 1995, Ser. No. 539,289

Int. Cl.[6] H03K *19/177*

U.S. Cl. 326—40 **37 Claims**



1. A programmable logic device comprising a pipeline array of registers and function generators, wherein said registers and function generators associated with propagation of data are arranged along a line in a first direction and said registers and function generators associated with propagation of control signals are arranged along a line in a second direction orthogonal to the first direction, each of said function generators being operatively connected by routing resources to at least two of said registers within said pipeline array.

5,648,733

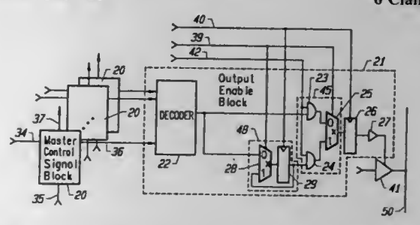
SCAN COMPATIBLE 3-STATE BUS CONTROL

Frank Worrell, San Jose, and Darren Jones, Mountain View, both of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed Nov. 1, 1995, Ser. No. 548,369

Int. Cl.[6] H03K *19/0175*

U.S. Cl. 326—86 **6 Claims**



1. In an integrated circuit device having a bus, said bus having a plurality of signal lines, each signal line connected to a plurality of driver circuits for driving digital signals onto said signal line, each driver circuit having a control terminal for enabling and disabling said driver circuit responsive to signals at said control terminal, control circuitry for said driver circuits comprising

a plurality of master control signal logic blocks, each block having a first input terminal receiving a scan signal, a second input terminal receiving a control signal from a remainder of the integrated circuit, a first output terminal connected in a scan chain and a second output terminal, said control signal logic block selectively passing said scan signal or said control signal to said second output terminal responsive to a scan control signal, and selectively passing said signal at said second output terminal to said first output terminal at a clock signal or holding a signal at said second output terminal responsive to a stall control signal; and

an output enable logic block for each driver circuit, each output enable block having a plurality of first input terminals, each first input terminal connected to said second output terminal of one of said control signal blocks, and an output terminal connected to said control terminal of said driver circuit, said output enable logic block decoding control signals at said first input terminals to generate an enable/disable signal and selectively passing said enable/disable signal to said output terminal or holding a signal at said output terminal responsive to said clock signal and to said stall control signal.

5,648,734

BUFFER CIRCUIT AND BIAS CIRCUIT

Tetsuya Tanabe, and Satoru Tanoi, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Dec. 4, 1995, Ser. No. 566,955

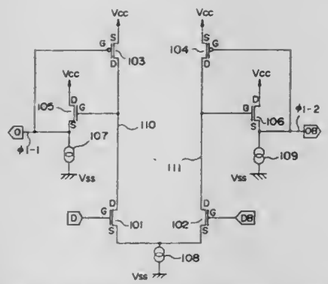
Claims priority, application Japan, Dec. 26, 1994, 6-322327

Int. Cl.[6] H03K *19/0948;19/017*

U.S. Cl. 326—115 **15 Claims**

15. A buffer comprising:

input means, including a pair of transistors, for receiving complementary first and second input signals;



output means, including a pair of transistors, coupled to the input means, for outputting complementary first and second output signals corresponding to the respective complementary first and second input signals; and

feedback means, including a pair of transistors, coupled to the input means and the output means for feeding back a portion of the respective output signals;

wherein, the input means, the output means and the feedback means are configured to compensate for variations in threshold voltages of the transistors.

5,648,735

COMPARATOR WITH A PREDETERMINED OUTPUT STATE IN DROPOUT

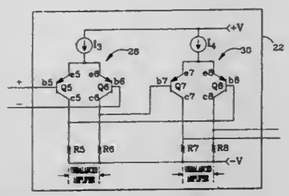
Derek F. Bowers, Sunnyvale, and James J. Ashe, Saratoga, both of Calif., assignors to Analog Devices, Inc., Norwood, Mass.

Filed Apr. 23, 1996, Ser. No. 636,719

Int. Cl.[6] H03K *5/22;* **H03L** *5/00*

U.S. Cl. 327—65 **19 Claims**





2. A comparator, comprising:

a differential input stage including a plurality of unbalanced differential amplifiers and having noninverting and inverting inputs, substantially zero input offset and a differential output, said differential output connected to produce an offset whenever a part of the differential input stage enters dropout,

an output stage having hysteresis connected to receive the output of the differential input stage, the offset of the differential input stage being of sufficient magnitude and having the proper sense to force the output of the comparator to a predetermined state, and

positive and negative supply inputs for said input and output stages.

5,648,736

FREQUENCY CONVERTING CIRCUIT

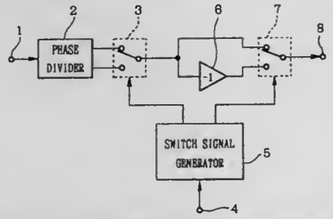
Yukinobu Ishigaki, Miura, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Jul. 7, 1995, Ser. No. 499,169

Claims priority, application Japan, Jul. 8, 1994, 6-180758; Aug. 8, 1994, 6-205955

Int. Cl.[6] H03C *1/60;* **H03K** *7/00*

U.S. Cl. 327—113 **16 Claims**



1. A frequency converting circuit for generating one of a sum and a difference of frequencies of a first input signal and a second input signal, comprising:

phase division means for outputting a plurality of channel signals having different phases from each other by dividing a phase of the first input signal into a plurality of different phases;

switch signal generating means for generating from said second input signal, a plurality of different switch signals which correspond in number to a number of the plurality of channel signals, the plurality of different switch signals having different phases from each other; and

switch means including a plurality of switches corresponding in number to the number of the plurality of channel signals, said plurality of switches being respectively supplied with said plurality of channel signals, and being respectively supplied with said plurality of different switch signals, said plurality of switches being activated by responding respectively to said plurality of different switch signals so as to pass said plurality of channel signals to an output terminal of said frequency converting circuit.

5,648,737

METHOD OF SETTING THE POLARITY OF A DIGITAL SIGNAL, AND INTEGRATED CIRCUITS IMPLEMENTING THE METHOD

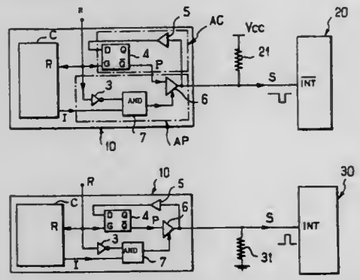
Vianney Andrieu, Paris, France, assignor to Alcatel Radiotelephone, Paris, France

Continuation of Ser. No. 214,561, Mar. 18, 1994, abandoned. This application Dec. 26, 1995, Ser. No. 578,396

Claims priority, application France, Mar. 19, 1993, 93 03209

Int. Cl.[6] H03K *5/13*

U.S. Cl. 327—256 **10 Claims**



1. A method of setting the polarity of a digital signal provided at an output of a first integrated circuit and supplied to an input of a second integrated circuit, the input of said second integrated circuit requiring a predetermined polarity which can be positive or negative, said digital signal being representative of a data signal, the method comprising the steps of:

initiating a polarity acquisition stage;

storing the predetermined polarity of the input of said second integrated circuit in a polarity memory which is connected to the input of said second integrated circuit;

inputting the stored predetermined polarity to said first integrated circuit;

generating within said first integrated circuit a polarity signal based on the stored predetermined polarity;

after said polarity acquisition stage, generating said data signal; and

producing, from said polarity signal and said data signal, said digital signal having the predetermined polarity, so that when said predetermined polarity is positive, the polarity of said digital signal is set to positive, and when said predetermined polarity is negative, the polarity of said digital signal is set to negative.

5,648,738

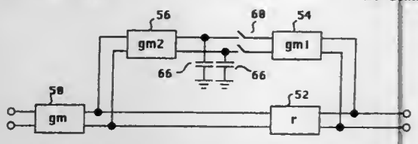
READ CHANNEL HAVING AUTO-ZEROING AND OFFSET COMPENSATION, AND POWER-DOWN BETWEEN SERVO FIELDS

David R. Welland, Austin, Tex., and William G. Bliss, Thornton, Colo., assignors to Cirrus Logic, Inc., Fremont, Calif.

Filed Nov. 1, 1994, Ser. No. 333,488

Int. Cl.[6] H03L *5/00*

U.S. Cl. 327—307 **26 Claims**



1. In a read channel integrated circuit having a signal path for receiving and processing an analog read signal from a storage device, a method of reducing offsets caused by elements of the read channel integrated circuit comprising the steps of:

zeroing the analog read signal applied to the signal path at a first location in the read channel integrated circuit signal path;

coupling a signal from a second location to an integrating storage means, said second location being in the signal path further along the signal path than the first location, and feeding back the signal stored in the integrating storage means to the signal path at a location between the first and the second locations;

decoupling the signal at the second location from the integrating storage means; and,

removing the zeroing of the analog read signal applied to the signal path.

5,648,739

SWITCHING DEVICE HAVING A POLARITY REVERSAL PROTECTION SYSTEM

Michael Walther, and Gerhard Siese, both of Ludwigsburg, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Sep. 18, 1995, Ser. No. 529,480

Claims priority, application Germany, Sep. 16, 1994, 44 32 957.1

Int. Cl.[6] H02H *9/00;* **H03K** *17/08*

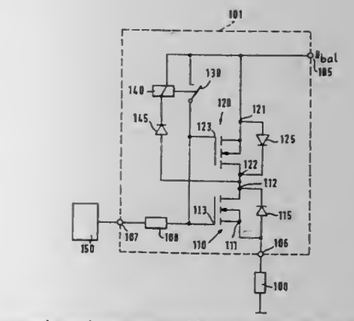
U.S. Cl. 327—330 **4 Claims**

1. A switching device comprising:

a first connection;

a second connection;

a first transistor connected to the second connection;



a second transistor connected in series between the first connection and the first transistor;

a control connection for receiving a control signal, at least one of the first and second transistors being controlled as a function of the control signal, wherein the second transistor is operated inversely with respect to the first transistor, wherein each of the first and second transistors has at least a first terminal, a second terminal, and a third terminal, wherein the first terminal of the first transistor is coupled to a load through the second connection, wherein the first terminal of the second transistor is coupled to a supply voltage through the first connection, wherein the second terminal of the first transistor is coupled to the second terminal of the second transistor through a common connection point, wherein the common connection point is coupled to the first connection through a resistance element; and

a switching element having at least a first terminal and a second terminal, the first terminal of the switching element being coupled to the first connection, and the second terminal of the switching element being coupled to the third terminal of at least one of the first and second transistors, the switching element driving at least one of the first and second transistors as a function of a flow of current through the resistance element such that at least one of the first and second transistors interrupts the flow of current, in a case of polarity reversal.

5,648,740

SWITCHING ARRANGEMENT WITH COMBINED ATTENUATION AND SELECTION STAGE

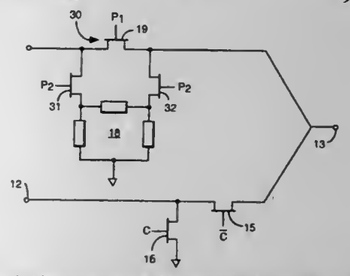
Liam Michael Devlin, and Brian Jeffrey Buck, both of Northampton, United Kingdom, assignors to GEC-Marconi Limited, United Kingdom

Filed Oct. 5, 1995, Ser. No. 538,968

Claims priority, application United Kingdom, Nov. 3, 1994, 9422186

Int. Cl.[6] H03K *17/693*

U.S. Cl. 327—408 **9 Claims**



1. A switching arrangement for establishing any one of a plurality of selectable signal paths between a corresponding plurality of first ports and a common port, and for providing attenuation in at

least one of said signal paths, each path in which attenuation is to be provided comprising:

a) a series switching element connected between a relevant first port and said common port, said series switching element having first and second signal terminals and a control terminal;

b) an impedance network having an input terminal and an output terminal;

c) first and second further switching elements each having first and second signal terminals and a control terminal; and

d) a control means connected to said control terminals of said series and further switching elements,

said first signal terminals of said first and second further switching elements being connected to said first and second signal terminals, respectively, of said series switching element, and

said second signal terminals of said first and second further switching elements being connected to said input terminal and said output terminal, respectively, of said impedance network,

said control means being configured to enable a selection of any one of all of the following states:

i) a substantially zero-attenuation state, in which said series switching element is switched into a conducting state, and said further switching elements are switched into a non-conducting state;

ii) an isolation state, in which said series and further switching elements are switched into a non-conducting state; and

iii) a finite attenuation state, in which said series switching element is switched into a non-conducting state, and said further switching elements are switched into a conducting state.

5,648,741

CIRCUIT HAVING OVERALL TRANSFER FUNCTION PROVIDING TEMPERATURE COMPENSATION

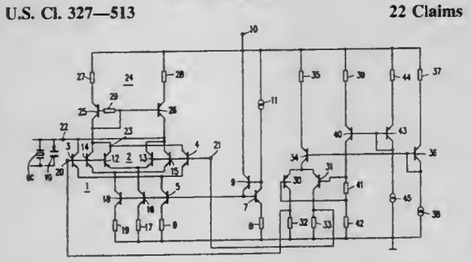
Andreas Wichern, Hamburg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 8, 1995, Ser. No. 435,056

Claims priority, application Germany, May 13, 1994, 44 16 981.7

Int. Cl.[6] H03F *3/45*

U.S. Cl. 327—513 **22 Claims**



1. A circuit arrangement comprising:

an input arranged to receive an input signal (U20),

an output for providing an output signal (U22),

said circuit having an overall transfer function defined as the ratio between the output signal (U22) and the input signal (U20) and obtained by adding individual transfer functions of at least two differential amplifiers with different slopes in their linear ranges and/or different limit values in their saturation ranges and/or different zero points, said individual transfer functions being added alternately with positive and negative signs in a manner such that, at least a part of said overall transfer function corresponds at least substantially to a function of at least the third degree.

5,648,742

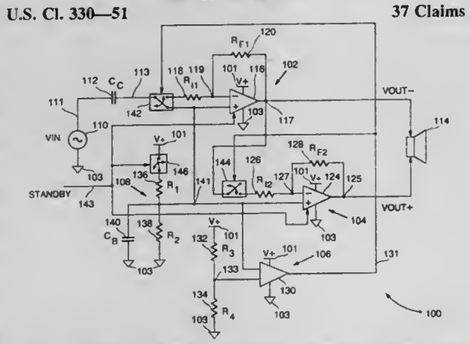
AMPLIFIER CIRCUIT WITH REDUCED TURN-ON AND TURN-OFF TRANSIENTS

Parviz Ghaffaripour, Saratoga, and Sai L. Ting, San Jose, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Oct. 23, 1995, Ser. No. 546,910

Int. Cl.[6] H03F *1/14*

U.S. Cl. 330—51 **37 Claims**



1. An apparatus including an amplifier circuit for operating with a single power supply and controllable modes of operation to reduce turn-on and turn-off transients, said amplifier circuit comprising:

a first amplifier for biasing between a power supply voltage and a circuit ground and operating in a first plurality of modes of operation and in accordance therewith providing a first output signal, wherein said first amplifier comprises a differential amplifier, and wherein a first one of said first plurality of modes of operation includes receiving a first reference voltage having a value between said power supply voltage and said circuit ground and in accordance therewith said first output signal is substantially equal to said first reference voltage, and wherein a second one of said first plurality of modes of operation includes receiving said first reference voltage and a first input signal and in accordance therewith said first output signal is substantially equal to a sum of said first reference voltage and a multiple of said first input signal; and

a controller, coupled to said first amplifier, for receiving said first reference voltage and a second reference voltage and in accordance therewith establishing said first plurality of modes of operation of said first amplifier;

wherein during a first time period in which said first amplifier is biased between said power supply voltage and said circuit ground said first amplifier operates in one of said first and second ones of said first plurality of modes of operation, and during a second time period, subsequent to said first time period, said first amplifier operates in another of said first and second ones of said first plurality of modes operation.

5,648,743

AMPLIFYING CIRCUIT FOR AN INTEGRATED CIRCUIT WITH LOW-NOISE CHARACTERISTIC

Setsuya Nagaya, Sapporo; Hideo Sugawara, and Tominaga Watanabe, both of Kawasaki, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

PCT No. PCT/JP94/00478, § 371 Date Feb. 16, 1995, § 102(e) Date Feb. 16, 1995, PCT Pub. No. WO95/05027, PCT Pub. Date Feb. 16, 1995

PCT Filed Mar. 25, 1994, Ser. No. 387,734

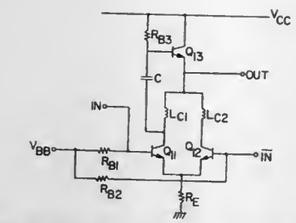
Claims priority, application Japan, Aug. 10, 1993, 5-218070

Int. Cl.[6] H03F *3/45*

U.S. Cl. 330—252 **14 Claims**

12. A transistor differential amplifier circuit comprising;

a differential pair including first and second transistors, first and second inductors connected to collectors of the first and



second transistors and a constant current source connected commonly to emitters of the first and second transistors, a third transistor, an emitter of which is connected to a connection point of the first and second inductors,

a first condenser connected between the collector of the first transistor and a base of the third transistor; and

a voltage source connected to the collector of the third transistor, an output being outputted from the emitter of the third transistor.

5,648,744

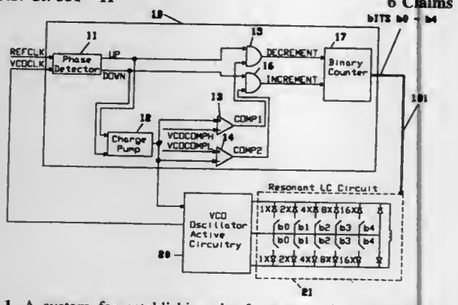
SYSTEM AND METHOD FOR VOLTAGE CONTROLLED OSCILLATOR AUTOMATIC BAND SELECTION

Jaideep Prakash, Dallas, and Robert Rudolf Rotzoll, Allen, both of Tex., assignors to Microtune, Inc., Plano, Tex.

Filed Dec. 22, 1995, Ser. No. 579,069

Int. Cl.[6] H03L *7/099;7/10*

U.S. Cl. 331—11 **6 Claims**



1. A system for establishing the frequency of a voltage controlled oscillator operating within one of a plurality of narrowly defined frequency bands, said system operable to control the selection of the frequency band based upon the frequency of a reference signal, said system comprising:

a resonant circuit for establishing a stable output frequency of the voltage controlled oscillator, said resonant circuit having a plurality of selectable elements which operate to establish the set point for the stable output frequency;

selection control circuitry for selecting said elements of said resonant circuit, said selection circuitry including:

means for monitoring the phase between the reference signal and an output signal of the voltage controlled oscillator and for providing an imbalance signal when an imbalance is determined;

means responsive to the imbalance signal for determining whether a selectable element increase or a selectable element decrease is necessary to change said frequency band in order to correct said imbalance, and for providing an element increase signal or an element decrease signal; and

means, including a binary counter, and controlled by said element increase signal or said element decrease signal, for changing an existing setting of the currently enabled selectable elements.

5,648,745

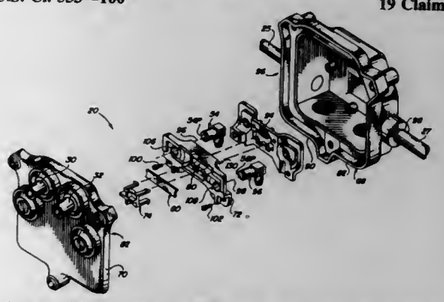
NON-INTERRUPTIBLE TAP AND METHOD

Bart Fredrick Spriester, Duluth, and James Lawrence Dale, Lawrenceville, both of Ga., assignors to Scientific-Atlanta, Inc., Norcross, Ga.

Filed Mar. 21, 1995, Ser. No. 408,605

Int. Cl.[6] H03H *7/00*

U.S. Cl. 333—100 **19 Claims**



1. A tap for distributing an RF signal onto a network media to subscribers, the tap comprising:

an input terminal coupled to said network media to which said RF signal is fed;

an output terminal through which the RF signal is passed;

a plurality of RF output connectors;

a circuit, removably engagable with said input and output terminal, operative to distribute the RF signal on the input terminal to the output connectors, wherein the circuit has a pair of receptacles that engage with the input and output terminals as the circuit engages with the input and output terminals; and

a switch means for ensuring an electrical connection is maintained between said input terminal and said output terminal while said circuit is disengaged from said terminals to prevent the interruption of signals to subscribers by electrically short circuiting said input terminal to said output terminal before said circuit is disengaged from said input terminal, and for removing the electrical short circuit between said input terminal and said output terminal when said circuit is engaged with said input terminal.

5,648,746

STACKED DIEZOELECTRIC RESONATOR LADDER-TYPE FILTER WITH AT LEAST ONE WIDTH-EXPANSION MODE RESONATOR

Hiroaki Kaida, Nagaokakyo, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed Aug. 8, 1994, Ser. No. 287,530

Claims priority, application Japan, Aug. 17, 1993, 5-203426; Sep. 2, 1993, 5-218585; Sep. 30, 1993, 5-244569; Sep. 30, 1993, 5-244570; Oct. 1, 1993, 5-247182; Dec. 16, 1993, 5-316282

Int. Cl.[6] H03H *9/54*

U.S. Cl. 333—189 **21 Claims**

1. A ladder-type filter comprising:

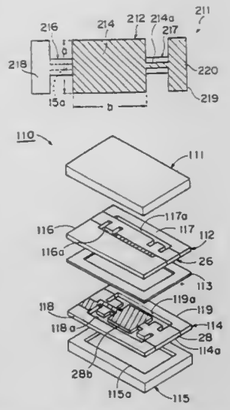
at least one series resonator forming a series arm and at least one parallel resonator forming a parallel arm,

at least two of said series and parallel resonators being stacked on each other,

at least one of said series and parallel resonators including a substantially rectangular plate type piezoelectric vibrator having a ratio b/a being set in a range of ±10% from the following value:

$$b/a=n(-1.47\sigma+1.88)$$

wherein a and b respectively represent lengths of shorter and longer sides of said piezoelectric vibrator, σ represents the



Poisson's ratio of the material forming said piezoelectric vibrator and n represents an integer.

5,648,747

PLANAR FILTER HAVING AN OVERCOUPLING STRIPLINE AN INTEGRAL MULTIPLE OF A HALF WAVELENGTH IN LENGTH

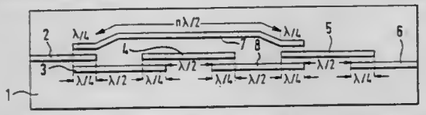
Wolfgang Grothe, Talstrasse 15, 75233 Tiefenbronn; Matthias Klauda, Geisbergstrasse 3, 91056 Erlangen; Stefan Mueller, Laerholzstrasse 17/19, 44801 Bochum, and Claus Schmidt, Alte Stuttgarter Strasse 78, 71106 Magstadt, all of Germany

Filed Feb. 6, 1996, Ser. No. 595,908

Claims priority, application Germany, Mar. 15, 1995, 195 09 251.1

Int. Cl.[6] H01P *1/203*

U.S. Cl. 333—204 **7 Claims**



1. A planar filter, comprising a substrate; a plurality of striplines arranged next to one another on said substrate; and an overcoupling stripline which couples to one another two of said striplines which are not immediately neighboring, said overcoupling stripline having a length which is an integral multiple of a half wave-length of a center frequency of the filter.

5,648,748

IMPEDANCE CONVERTING DEVICE CAPABLE OF READILY ADJUSTING AN IMPEDANCE CONVERTING CHARACTERISTIC WITH AN ELECTROMAGNETIC SHIELDING EFFECT

Masatosi Isida, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

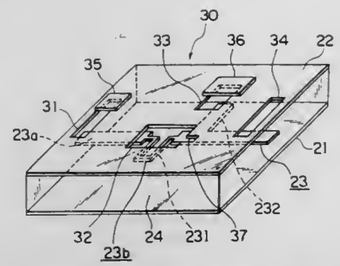
Filed Oct. 18, 1995, Ser. No. 544,872

Claims priority, application Japan, Oct. 18, 1994, 6-252365

Int. Cl.[6] H01P *5/04*

U.S. Cl. 333—246 **14 Claims**

1. An impedance converting device comprising a tri-plate structure having a first grounded conductor member, a second grounded conductor member disposed apart from said first grounded conductor member to form a space between said first and said second



grounded conductor members, and a line conductor member located in said space for allowing a signal to pass therethrough, said line conductor member generating an electric flux in accordance with said signal and having an inductive reactance element and a capacitive reactance element separate from said inductive reactance element, said impedance converting device further comprising:

varying means for varying a reactance of said line conductor, said varying means comprising a window sections formed in at least one of said first and said second grounded conductor members at a predetermined location of the at least one of said first and said second grounded conductor members,

wherein said predetermined location is a location at which said window sections corresponds to at least one of said inductive reactance element and said capacitive reactance element;

wherein said window sections has a window form of a predetermined area and said varying means further comprises altering means for altering said predetermined area into an altered area; and

wherein said altering means comprises an additional window sections connected to said window sections for altering said predetermined area into said altered area greater than said predetermined area.

5,648,749

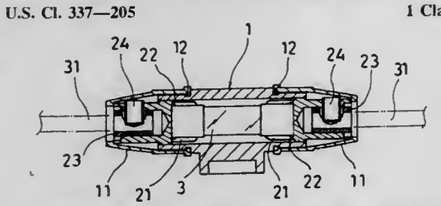
CARTRIDGE FUSE MOUNTING STRUCTURE

Kuang Ts'an Lin, and Shih-Tsung Liang, both of No. 10, Lane 31, Ta-Feng St., Lu-Chu Hsiang, Taoyuan County, Taiwan

Filed Sep. 19, 1995, Ser. No. 530,028

Int. Cl.[6] H01H *85/02;85/50;* **H01R** *13/68*

U.S. Cl. 337—205 **1 Claim**



1. A cartridge fuse mounting structure comprising a fuse holder, a cartridge fuse mounted inside said fuse holder, two cylindrical fuse connectors respectively connected to two opposite ends of said cartridge fuse, two electric wires respectively connected to said cylindrical fuse connectors by a respective wire binding clamp, and two end caps respectively mounted around said electric wires and respectively fastened to two opposite ends of said fuse holder, wherein each cylindrical fuse connector has an inside annular groove, which receives one end of said cartridge fuse, a split coupling tube at one end clamped on one end of said cartridge fuse, and a radial screw hole at an opposite end mounted with a tightening up screw, which holds down the respective wire binding clamp and the respective electric wire.

5,648,750

SURFACE-MOUNT TYPE MICROMINIATURE ELECTRIC CURRENT FUSE

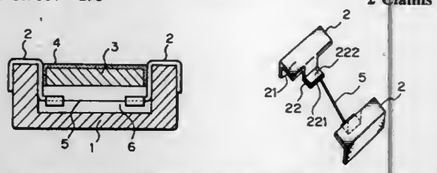
Yasutada Yuza, and Yuichi Sato, both of Tochigi-ken, Japan, assignors to Soc Corporation, Tokyo, Japan

Filed Feb. 6, 1996, Ser. No. 596,010

Claims priority, application Japan, Aug. 30, 1995, 7-221651

Int. Cl.[6] H01H *85/00*

U.S. Cl. 337—295 **2 Claims**



1. A surface-mount type microminiature electric current fuse comprising:

a body having a substantially rectangular parallelepiped box like configuration having two opposing shorter side walls, two opposing longer side walls and a bottom part, said body being made of a heat resistant, electrically insulating material and having resting portions, each of which extends from the inner surface of each of said longer side walls of said body toward a space defined in said body and forming a stepped portion relative to the top surfaces of said longer side walls;

a fusible wire;

a pair of metallic electrodes including respective integral metallic sheets and disposed at said shorter side walls of said body; and

a lid portion made of a heat resistant and electrically insulating material, the cross-section of said lid portion having a convex shape to be fitted in an opening of said body; and wherein

each of said pair of metallic electrodes includes a saddle part having a saddle shape to be fitted onto the top surface of both side surfaces of the respective said shorter side wall of said body, and a fusible wire gripping part extending from the end portion of said saddle part at the side facing said space of said body into said space with the width of said fusible wire gripping part being narrower than the width of said end portion of said saddle part when said saddle part of said metallic electrode is fitted onto said shorter side wall of said body;

each said fusible wire gripping part has a first sheet portion extending within said space, and a second sheet portion which is bent and extends from said first sheet portion in a direction different from the direction of said first sheet portion extending into said space and cooperates with said first sheet portion so as to grip the end of said fusible wire;

said pair of metallic electrodes gripping the opposite ends of said fusible wire with said fusible wire gripping part are respectively disposed at the shorter side walls of said body so that the opposite ends of said fusible wire are gripped by said fusible wire gripping parts so as to extend said fusible wire through said space of said body;

said lid portion is pressed to such an extend that the flat surface of said lid portion is sunken to a location slightly lower relative to the top surfaces of said longer side walls of said body, and flat planes of the convex portion of said lid portion are respectively placed on the upper surfaces of said resting portions of said body while an adhesive is applied so that said space of said body is sealed and said lid portion is fixed to said body; and

each of said pair of metallic electrodes is sandwiched and fixed by a respective inner surface of said shorter side wall and a respective end surface of said lid portion in the longitudinal direction.

5,648,751

DRUG PREPARATION TRAY

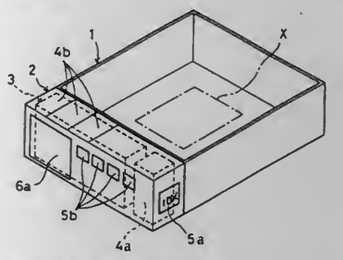
Shoji Yuyama, and Tsuyoshi Kodama, both of Toyonaka, Japan, assignors to Kabushiki Kaisha Yuyama Seisakusho, Osaka, Japan

Filed Dec. 20, 1994, Ser. No. 359,638

Claims priority, application Japan, Nov. 7, 1994, 6-272037

Int. Cl.[6] G08B *1/00*

U.S. Cl. 340—309.15 **8 Claims**



1. A drug preparation tray comprising:

a box-shaped tray having a drug accommodation area; and,

a display apparatus mounted to said tray;

said display apparatus comprising (a) a control unit, (b) an input unit for receiving and supplying to said control unit data indicative of a patient name or code and kinds of drugs which are associated with the patient name or code and which are to be externally prepared and placed in the drug accommodation area of said tray, (c) a display unit connected to said control unit, and (d) a plurality of switches connected to said control unit and respectively corresponding to said kinds of drugs which are to be externally prepared;

said control unit including (a) means for displaying said data supplied from said input unit on said display unit, and (b) means for controlling said display unit in response to the operation of each of said plurality of switches to indicate on said display unit that a kind of drugs corresponding to a corresponding one of said switches has been placed in the drug accommodation area of said tray.

5,648,752

DART GAME ELECTRONIC SCOREKEEPING DEVICE

Kip R. Alfrey, 824 Pricewood Ct., Anderson, Ind. 46013

Filed Jul. 10, 1995, Ser. No. 500,107

Int. Cl.[6] G08B *23/00;* **F41J** *5/00*

U.S. Cl. 340—323 R **2 Claims**

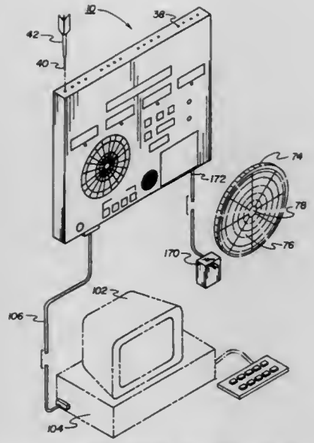
2. A dart game electronic scorekeeping device comprising:

a case having an upper surface and a periphery formed of a pair of opposed side edges, an upper edge, and a lower edge;

game switch selection means extended through the case for allowing selection of a particular dart game by a player;

a keypad switching matrix extended from the upper surface of the case and formed with plurality of keys arranged in a configuration to resemble a dart board and with each of the keys sized to represent a specific scoring space on the dart board, each key of the keypad switching matrix actuateable by the player for transmitting point values indicative of the scoring space on the dart board where a dart of the player impinged during the particular dart game;

computation means coupled to the game switch selection means and the keypad switching matrix and with the computation means receiving the point values attained by the player during play to generate score values; and



display means extended through the upper surface of the case and coupled to the computation means for displaying the score values of the player;

a housing having a compartment formed therein and an opening for allowing access to the compartment;

the case being disposed within the compartment of the housing and removably hingeably coupled thereto; and

arm extension means coupled between the case and the housing with the arm extension means extendable for allowing the case to be positioned at an angle with respect to the housing and with the arm extension means further retractable for allowing the case to be positioned within the compartment.

5,648,753

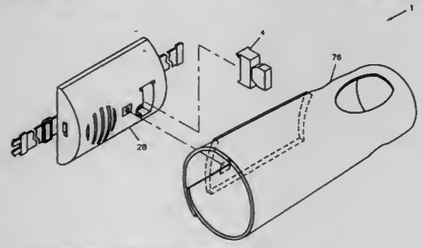
INTERCHANGEABLE SOUND EFFECT DEVICE

Frank A. Martin, 3821 Thrush Way, Santa Clara, Calif. 95051

Filed Nov. 22, 1994, Ser. No. 343,668

Int. Cl.[6] G08B *3/00*

U.S. Cl. 340—324.1 **26 Claims**



1. A sound effect device comprising:

an actuator means for selecting a sound effect and producing a signal indicative of the selected sound effect, said actuator means being housed in a wearable article to be worn by a user,

a sound effect storage means for storing at least one prerecorded sound effect,

a playback means for receiving said signal from said actuator means and for accessing and playing back the selected sound effect from said sound effect storage means in response to said signal,

and an audio amplifier and speaker means for amplifying and audibly emitting the selected sound effect.

5,648,754

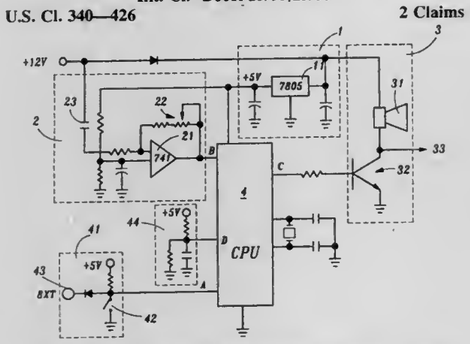
WIRELESS CAR SECURITY SYSTEM

Shih Ming Hwang, 1F., 10, Lane 31, Chung Teh St.,, Taipei, Taiwan

Filed Nov. 14, 1995, Ser. No. 558,698

Int. Cl.[6] B60R *25/10;25/00*

U.S. Cl. 340—426 **2 Claims**



1. A car security system, for a car having a car battery, comprising:

a power stabilizing circuit means for providing working DC power for said security system;

an alarm disabling means for disabling the security system under the control of an authorized user;

a signal-amplifying circuit means connected to the car battery for detecting voltage changes in the car battery and for generating an amplified signal, said signal-amplifying means including a coupling capacitor connected between the battery and a signal amplifying circuit for blocking DC signals and ensuring that the amplified signal is representative of voltage changes;

an alarm circuit means including a buzzer which emits an alarm sound;

a microprocessor means connected to the signal-amplifying circuit means and to the alarm circuit means for receiving the amplified signal from the signal-amplifying circuit means, for evaluating the amplified signal and comparing the signal to microprocessor-stored characteristics indicative of the opening of a car door, and for activating the alarm circuit means when said amplified signal is evaluated as corresponding to opening of said car door and the security system is not disabled;

wherein, when said car door is opened, a characteristic voltage change signal of the battery is produced, having specific characteristics recognizable by the microprocessor means as indicating the opening of said car door, and if the security system has not been disabled, the microprocessor means upon identifying the signal as the opening of said car door activates the alarm circuit means to cause the buzzer to emit said alarm sound.

5,648,755

DISPLAY SYSTEM

Wataru Yagihashi, Kanagawa Pref., Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Dec. 29, 1994, Ser. No. 368,201

Claims priority, application Japan, Dec. 29, 1993, 5-354612

Int. Cl.[6] B60Q *1/00;* **G08B** *25/00*

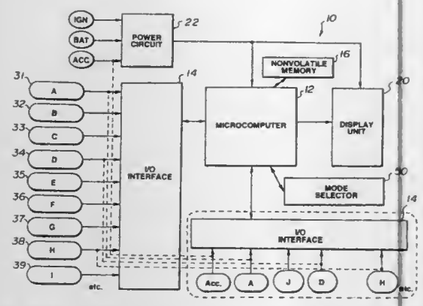
U.S. Cl. 340—439 **11 Claims**

1. A display system for use with an automotive vehicle, comprising:

a display unit having a predetermined area;

sensor means for sensing information related to the automotive vehicle; and

a control unit operatively connected to said sensor means and said display unit,



the control unit having stored therein a plurality of predetermined indication modes which specify different combinations of scales on which all indicators are displayed within said predetermined area, respectively,

the control unit being operative to select based on the sensed information such one of the plurality of predetermined indication modes in which only those indicators which the driver needs or should recognize are displayed in relatively larger scale; and

the control unit being operative to cause the display to display all of the indicators in accordance with what is specified by the selected indication mode.

5,648,756

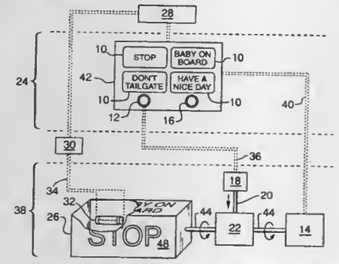
THIRD BRAKE LIGHT AND ILLUMINATED MESSAGE COMBINATION

Shlomo Zadok, 739 N. Occidental Blvd. #6, Los Angeles, Calif. 90026

Filed Dec. 16, 1994, Ser. No. 358,194

Int. Cl.[6] B60Q *1/26*

U.S. Cl. 340—468 **9 Claims**



1. A third brake light and illuminated message combination for installation in a vehicle comprising:

a. a closed hollow light box in the shape of a prismatoid rotatable about its longitudinal axis having on its lateral circumference a plurality of transparent facets;

b. transparent strips carrying predetermined messages replaceably mounted one on each transparent facet;

c. a lighting means located within the light box to illuminate only one of the message-bearing facets to be visible from outside the vehicle the lighting means comprises a plurality of lamps attached to a stationary reflector within the light box, said reflector directing illumination only toward the rear of the vehicle through a message-bearing translucent facet in the display position;

d. a rotation means for rotating the light box, capable of placing a selected transparent message-bearing facet in proper display position for illumination by the lighting means the rotation means comprises an electromagnetic solenoid actuating a ratchet assembly which has a plurality of steps equal to the plurality of transparent facets, fastened to a shaft which rotates the light box about its longitudinal axis, said solenoid also comprising a manual override useful for rotating transparent facets when replacing transparent message strips;

e. a remote control means for actuating the light box rotation means and for indicating which message-bearing transparent facet is in the display position; and

f. a power means for energizing the rotation means and remote control means, and for energizing the lighting means, said lighting means being activated only when the vehicle brakes are applied.

5,648,757

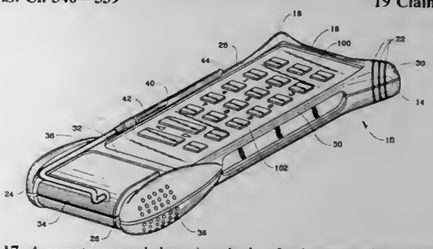
REMOTE CONTROL PROTECTIVE HOLDER AND DETECTION DEVICE

Salvatore J. Vernace; Vincent Vernace, both of 890 Nafa Dr., Boca Raton, Fla. 33487, and Giuseppe Lombardo, Via Bartolomeo Perestello 5, Palermo, Italy

Filed Oct. 24, 1994, Ser. No. 328,252

Int. Cl.[6] G08B *1/08;* **H04N** *5/44*

U.S. Cl. 340—539 **19 Claims**



17. A remote control detection device for incorporation with a remote control device comprising: a first means for producing a first signal by selectively receiving an electromagnetic field transmitted by a conventional television; a means for amplifying said first signal; a second means for producing a second signal by sensing motion of said remote control device; a means for generating an audio signal based upon said first and second signals.

5,648,758

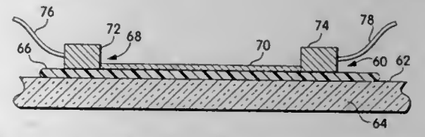
PRE-ASSEMBLED GLASS BREAKAGE DETECTOR APPLIQUE

Robert F. Tweadey, II, Farmington Hills, and Kenneth J. Gajewski, Woodhaven, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 3, 1995, Ser. No. 552,409

Int. Cl.[6] G08B *13/04*

U.S. Cl. 340—550 **18 Claims**



9. A method of making a glazing pane security system comprising the steps of:

pre-assembling a glass breakage detector applique comprising a carrier substrate and an electrical circuit subassembly carried by the carrier substrate, the electrical circuit subassembly comprising an electrically conductive fragile film and first and second electrical connector means at spaced locations on the fragile film for attachment to first and second electrical leads, respectively; and

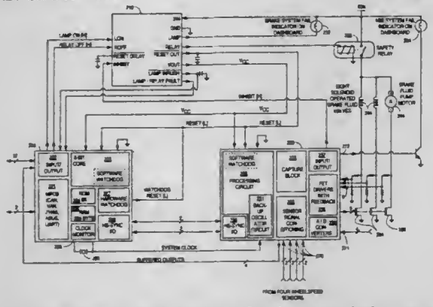
then applying the electrical circuit subassembly to a surface of the glazing pane and connecting first and second electrical leads from continuity loss detection circuitry to the first and second electrical connectors, respectively.

5,648,759

FAILSAFE VOLTAGE REGULATOR WITH WARNING SIGNAL DRIVER

Roger L. Miller, and Timothy T. Regan, both of San Jose, Calif., assignors to National Semiconductor Corporation, Del.

Filed Feb. 2, 1994, Ser. No. 190,812
Int. Cl.[6] G08B *21/00*
U.S. Cl. 340—660 **18 Claims**



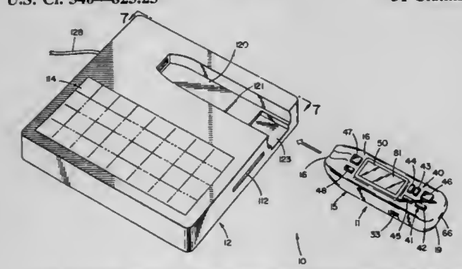
1. An integrated circuit having a first input terminal, a second input terminal, a third input terminal, a first output terminal, a second output terminal, and a third output terminal, comprising:
- a voltage regulator coupled to the first input terminal and coupled to the first output terminal, the voltage regulator providing on the first output terminal an output voltage within a second predetermined voltage range if an input voltage on the first input terminal is within a first predetermined voltage range;
- a device driver coupled to the second input terminal and to the second output terminal, wherein placing a digital logic level on the second input terminal prevents current flow through the second output terminal; and
- a warning signal driver which generates a warning signal on the third output terminal if the output voltage is not within the second predetermined voltage range, the warning signal driver being powered by energy from a current flowing into the first input terminal, the third input terminal being capable of carrying a voltage different from a voltage carried on the first output terminal, wherein placing a digital logic level on the third input terminal enables current flow through the third output terminal.

5,648,760

PORTABLE MESSAGING AND SCHEDULING DEVICE WITH HOMEBASE STATION

Rajendra Kumar, Akron, Ohio, assignor to Khyber Technologies Corporation, Fairlawn, Ohio

Continuation of Ser. No. 805,302, Dec. 10, 1991, abandoned. This application Apr. 4, 1994, Ser. No. 223,464
Int. Cl.[6] H04Q *1/00*
U.S. Cl. 340—825.25 **31 Claims**



1. A portable device for recording and selective playback of messages, comprising:

audio input means for receiving and digitally recording an audio message and generating a representative audio message signal;

virtual image scanner for scanning a strip of printed material and generating a representative scanning message signal;

processor means for controlling the receipt and digital storage of said audio message signal and said scanning message signal, and non-sequentially selectively recalling for playback said audio message signal and said scanning message signal;

audio output means for receiving and playback of said recalled audio message signal;

display means for receiving and playback of said recalled scanning message signal; and

a handheld housing for carrying said audio input means, said scanning means, said writing means, said processor means, said audio output means and said display means.

23. A personal organizer and messaging device, comprising a unit dimensioned for handheld grasping and carrying substantially within a shirt pocket including:
- a virtual image scanner adapted to scan a strip of printed material and create a signal;
- a processor for controlling the receipt of said signal, storing said signal, and non-sequentially selectively recalling said signal; and
- display means for receiving information from said processor and from said virtual image scanner.

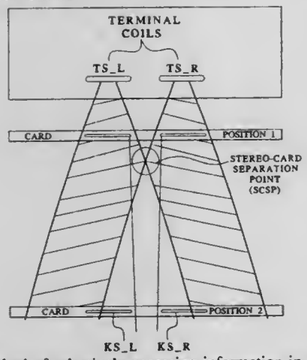
27. A portable device for message organization, comprising:
- input means for receiving a first user inputted message in one of visual, auditory or tactile formats;
- output means for furnishing a second message in one of visual, auditory or tactile formats;
- processor means for linking the first message to the second message;
- monitoring means for monitoring for the playback of the first message; and playback means for playing back said output means to furnish said linked second message upon the playback of the first message.

5,648,761

CARD WITH INHIBIT GIVEN REMOTE INTERROGATION

Hans-Diedrich Kreft, Dassendorf; Holger Mackenthun, Hamburg, and Michael Iloff, Stuttgart, all of Germany, assignors to Angewandte Digital Electronik GmbH, Dassendorf, Germany

Filed Aug. 15, 1994, Ser. No. 290,374
Claims priority, application Germany, Aug. 15, 1993, 43 27 334.3
Int. Cl.[6] G06F *7/04*
U.S. Cl. 340—825.31 **18 Claims**



1. A method of selectively accessing information in a data card comprising the steps of:
- transmitting first and second signals from corresponding first and second transmitter elements of a terminal;

generating first and second received signals at corresponding first and second reception elements on a data card;

determining a distance between the card and the terminal based on a phase difference of said first and second received signals; and

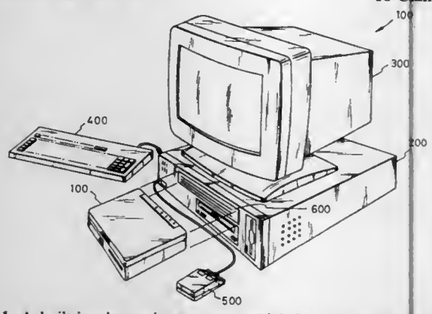
selectively accessing information in the data card based on a result of said step of determining a distance.

5,648,762

BUILT-IN ELECTRONIC APPARATUS AND DEVICE-DETACHING METHOD THEREFOR

Akira Ichimura, Kawasaki, and Masao Ishizaki, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 1, 1995, Ser. No. 382,196
Claims priority, application Japan, Feb. 4, 1994, 6-012699
Int. Cl.[6] H04Q *1/00*
U.S. Cl. 340—825.31 **18 Claims**



1. A built-in electronic apparatus which has a first electronic device and a second electronic device different from said first electronic device, said first electronic device being attachable to and detachable from said second electronic device, said apparatus comprising:
- instruction means for instructing detachment of said first electronic device from said second electronic device;
- password-input instruction means for instructing input of a password, in response to a detachment instruction issued by said instruction means;
- judgment means for judging whether or not the password, inputted in response to an instruction by said password-input instruction means, is appropriate;
- lock means for physically locking the connection between said first and second electronic devices;
- lock releasing means for releasing a lock status where said first and second electronic devices are physically locked by said lock means, if said judgment means judges that the password is appropriate.

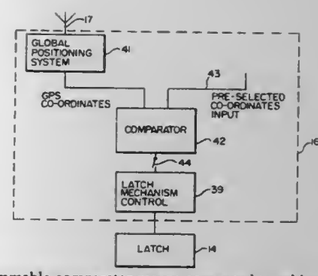
5,648,763

METHOD AND APPARATUS FOR GLOBAL POSITION RESPONSIVE SECURITY SYSTEM

George E. Long, Monroe, Wash., assignor to Trimble Navigation, Ltd., Sunnyvale, Calif.

Filed Oct. 5, 1992, Ser. No. 956,372
Int. Cl.[6] H04Q *1/00*
U.S. Cl. 340—825.49 **16 Claims**

1. In a security system for a mobile unit, said mobile unit including enabling signal responsive security apparatus for actuation to perform a predetermined function only at a preset geographical location, the combination comprising;
- a navigational system associated with said mobile unit for receiving geographic position information from an existing external navigational transmitter representative of the geographic position of said mobile unit, and



programmable comparator means connected to said navigational system for receiving geographic position information therefrom and comparing said received information with stored preset geographic position information,

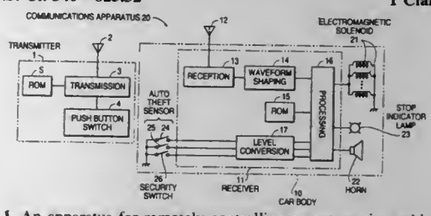
said comparator including means to produce a security system enabling signal when said preset position information matches said received geographic position information in a predetermined manner.

5,648,764

APPARATUS FOR REMOTELY CONTROLLING A DOOR LOCKING STATE AND THEFT PREVENTION ALARM STATE OF AN AUTOMOBILE

Shinji Nose, Kobe, and Masahiko Enoki, Takasago, both of Japan, assignors to Fujitsu Ten Limited, Kobe, Japan

Continuation of Ser. No. 566,231, Aug. 9, 1990, abandoned. This application Jul. 31, 1992, Ser. No. 921,618
Claims priority, application Japan, Aug. 9, 1989, 1-207312; Aug. 9, 1989, 1-207313
Int. Cl.[6] H04Q *9/00*
U.S. Cl. 340—825.32 **1 Claim**



1. An apparatus for remotely controlling an automotive vehicle provided with a transmitting apparatus, having a transmission button, for repeatedly transmitting a communication data which includes a synchronization data and an identification data upon manipulation of the transmission button, and a theft preventing apparatus for controlling respective parts of the vehicle upon receipt of the communication data transmitted from the transmitting apparatus, said control apparatus comprising:
- means for discriminating whether the synchronizing data and the identification data included in the received communication data respectively match prestored synchronizing data and prestored identification data stored in a memory in advance;
- means for controlling a locking and unlocking of doors of the vehicle when the discrimination means discriminates that synchronizing data and the identification data respectively match the prestored synchronizing data and prestored identification data;
- means for determining whether continuous reception of the communication data has been effected in which the communication data is continuously repeatedly received for more than a predetermined period of time; and
- means for actuating an alarming theft prevention apparatus provided in the vehicle when the determining means determines that the continuous reception has been effected,

the determining means setting a respective determination basis for each of the synchronization data and the identification

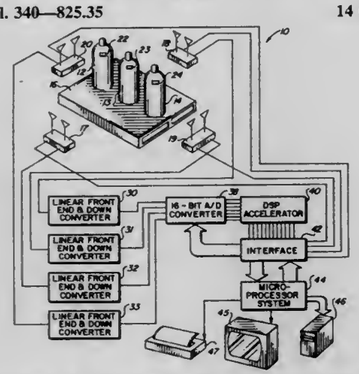
data, each determination basis defining a degree of coincidence between received and prestored data, repeatedly comparing the synchronization data and the identification data included in the communication data with the prestored synchronization data and the prestored identification data, respectively, and determining that the continuous reception of the communication data has been effected when the determination basis of the synchronization data and the determination basis of the identification data are each satisfied during the predetermined period of time.

5,648,765

TAG TANSPONDER SYSTEM AND METHOD TO IDENTIFY ITEMS FOR PURPOSES SUCH AS LOCATING, IDENTIFYING, COUNTING, INVENTORYING, OR THE LIKE

Michael S. Cresap, 1294 Dorothy Rd., Crownsville, Md. 21032, and Edward G. Plant, Jr., 7892 Americana Cir. Apt. 201, Glen Burnie, Md. 21060

Filed Mar. 8, 1995, Ser. No. 401,132
Int. Cl.[6] G01S *13/75*
U.S. Cl. 340—825.35 **14 Claims**



1. A system for identifying individual ones of a plurality of items, each having an associated transponder that transmits an information encoded signal in response to a query signal, at least some of said information encoded signals possibly occurring at least in part simultaneously, comprising:

a first receiver for receiving the information encoded signals from at least some of said transponders, and

a signal processor for identifying a strongest information encoded signal within the received signals, recording the identified strongest information signal, subtracting the identified strongest information signal from the received signals, and iterating the identifying, recording, and subtracting steps until all of the signals that can be identified are recorded.

5,648,766

CIRCUIT WITH SUPPLY VOLTAGE OPTIMIZER

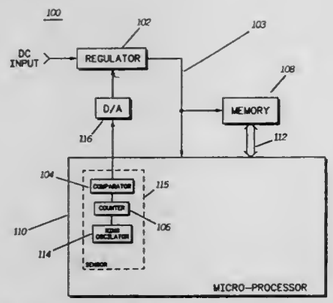
Robert E. Stengel, Ft. Lauderdale, and David L. Muri, Sunrise, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 812,926, Dec. 24, 1991, abandoned. This application Dec. 8, 1994, Ser. No. 352,302
Int. Cl.[6] G08C *19/04*
U.S. Cl. 340—870.39 **6 Claims**

1. An electronic device, comprising:

a regulator for producing an operating voltage;

a semiconductor device having a minimum operating voltage and including:



a ring oscillator having an operating frequency which frequency depends on the operating voltage;

a counter for counting the operating frequency of the ring oscillator;

a comparator for comparing the operating frequency of the ring oscillator with a pre-determined frequency, which frequency represents the minimum operating voltage;

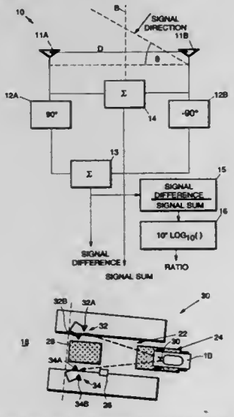
feedback means coupled to the comparator and the regulator for adjusting the operating voltage of the regulator until the frequency of the ring oscillator is substantially equal to the pre-determined frequency in order to establish the minimum operating voltage of the semiconductor.

5,648,767

TRANSPONDER DETECTION SYSTEM AND METHOD

Roger J. O'Connor, Dove Canyon, and Robert C. Knittle, Fullertoo, both of Calif., assignors to Hughes Aircraft, Los Angeles, Calif.

Filed Nov. 30, 1994, Ser. No. 346,730
Int. Cl.[6] G08G *1/00*
U.S. Cl. 340—928 **21 Claims**



1. A transponder detection system for detecting the presence of a transponder-equipped vehicle at a detection zone, a transponder transmitting RF signals, comprising:

an antenna array comprising a plurality of antenna elements defining an array boresight, said boresight intersecting said detection zone;

receiver means coupled to said antenna array and responsive to transponder transmissions for providing an array sum signal that represents a sum of signal contributions from each antenna element of said antenna array, and an array difference signal that represents a difference of signal contributions from said each antenna element of said antenna array; and

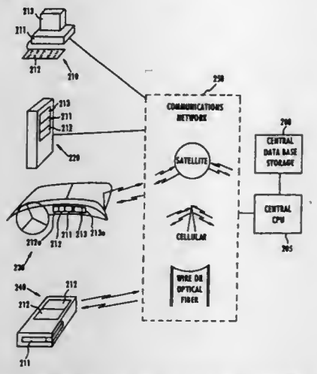
processing means responsive to said array sum and difference signals to determine whether the transponder is located within the detection zone, said processing means comprising means responsive to said array sum signal to determine whether a valid transponder signal has been received by the system, the means responsive to said difference signal to determine whether said transponder is located within the detection zone.

5,648,768

SYSTEM AND METHOD FOR IDENTIFYING, TABULATING AND PRESENTING INFORMATION OF INTEREST ALONG A TRAVEL ROUTE

Thomas Tracy Bouve, Alexandria, Va., assignor to Mapsys, Inc., Alexandria, Va.

Filed Dec. 30, 1994, Ser. No. 366,642
Int. Cl.[6] G08G *1/123*
U.S. Cl. 340—988 **14 Claims**



1. A system for identifying and presenting information relating to travel within a geographic region, comprising:

means for storing (i) a plurality of travel routes within said geographic region and (ii) a plurality of different types of travel information associated with said plurality of travel routes;

means for inputting a first geographic location representing a start of travel location and a second geographic location representing an end of travel location within said geographic region, and for selecting at least one type of travel information from said stored plurality of different types of travel information;

a processing unit for (i) retrieving at least one travel route between said inputted first geographic location and said inputted second geographic location, from said stored plurality of travel routes, (ii) retrieving travel information of the selected at least one type corresponding to said retrieved at least one travel route, from said stored plurality of different types of travel information, (iii) calculating mileage and travel time indicators from said first geographic location which locate the retrieved travel information with respect to the retrieved at least one travel route and (iv) tabulating retrieved travel routes so as to determine travel routes most often retrieved and retrieved types of travel information so as to determine types of travel information most often selected; and

means for presenting said retrieved (i) at least one travel route and (ii) travel information to a user of the system;

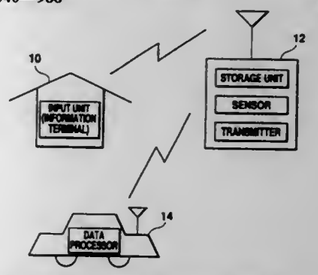
wherein said means presents said mileage and travel time indicators to the user.

5,648,769

VEHICLE DATA PROCESSING SYSTEM WHICH CAN COMMUNICATE WITH INFORMATION CENTER

Koji Sato; Makoto Morita, both of Mishima, and Masafumi Kizu, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed May 18, 1995, Ser. No. 443,801
Claims priority, application Japan, Oct. 6, 1994, 6-242591
Int. Cl.[6] G08G *1/123*
U.S. Cl. 340—988 **6 Claims**



1. A vehicle data processing system comprising:

an on-vehicle data processor having a data receiving portion for receiving data to be processed;

an off-vehicle input unit separated independently from the data processor;

a data storage unit for storing data inputted into the data input unit;

a sensor unit for sensing the starting of the data processor; and

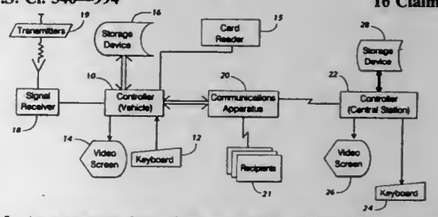
a data transmitter for transmitting the data stored in the data storage unit to the data processor when the starting of the data processor is sensed by the sensor unit, wherein said data storage unit, sensor unit and data transmitter are disposed within an information center, said data processor includes a transmitter for transmitting a start signal to the information center when said data processor is started, and said dam processor transmits the start signal to the information center when the engine of the vehicle is started or when the driver side door of the vehicle is opened.

5,648,770

APPARATUS AND METHOD OF NOTIFYING A PARTY OF A PENDING DELIVERY OR PICKUP

John Ross, Marietta, Ga., assignor to Worldwide Notification Systems, Inc., Atlanta, Ga.

Continuation of Ser. No. 307,032, Sep. 16, 1994, Pat. No. 5,444,444, which is a continuation of Ser. No. 62,405, May 14, 1993, abandoned. This application Apr. 6, 1995, Ser. No. 417,947
Int. Cl.[6] G08G *1/123*
U.S. Cl. 340—994 **16 Claims**



1. An apparatus located on a mobile vehicle for providing separate notices to each of a plurality of parties of a pending delivery/pickup of a different item, each said item being uniquely associated with one of said parties, said apparatus comprising:

a satellite receiver for receiving positioning signals from a plurality of satellites;

a storage device for storing the location of each said party;

a processor electrically connected to said storage device and said satellite receiver, said processor programmed to perform the following steps for each said item:

a) determining a current location of the mobile vehicle based upon the received positioning signals:

b) selecting an item;

c) comparing the current location of the mobile vehicle to the location of the party associated with said selected item;

a communicator operating under control of the processor for automatically communicating, based upon said step of comparing, a signal via a cellular communications network from the mobile vehicle to each said party to notify each said party of the pending delivery/pickup of the item uniquely associated with that party.

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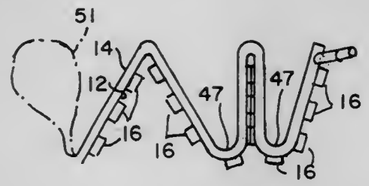
WRIST REST BAG FOR FLEXIBLE KEYBOARD

Donald N. Halgren, 35 Central St., Manchester, Mass. 01944, and Robert J. Crowley, 64 Puritan La., Sudbury, Mass. 01776

Continuation of Ser. No. 98,851, Jul. 29, 1993, Pat. No. 5,459,461. This application Aug. 18, 1995, Ser. No. 445,357

Int. Cl.[6] H03K *17/94*

U.S. Cl. 341—22 **20 Claims**



1. A keyboard for generating electrical signals from a plurality of keys on said keyboard; said keyboard including:

a compressible wrist rest cushion articularly arranged adjacent said keyboard to permit a user to rest the user's wrists while inputting data into said keyboard; said wrist rest cushion comprising an elongated pressurizable bag inflated with a fluid; and said wrist rest bag being attached to a front portion of said keyboard.

5,648,772

CONTROL CONSOLE FOR A PROGRAM-CONTROLLED MACHINE TOOL

Wilfried Friedrich, Seeg, and Manfred Kuisel, Jungholz, both of Germany, assignors to Deckel Maho GmbH, Pfrenten, Germany

Filed Jan. 11, 1996, Ser. No. 585,241

Claims priority, application Germany, Jan. 11, 1995, 295 00 386.3

Int. Cl.[6] H03K *17/94*

U.S. Cl. 341—22 **14 Claims**

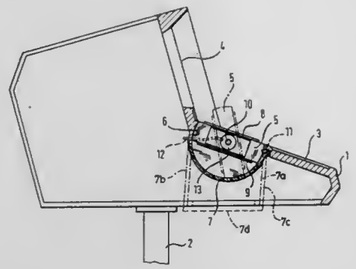
1. A control console for a program-controlled machine tool, the console comprising:

a base;

a control console housing mounted on said base;

an ergonomically arranged, fixed first control panel mounted on a control surface of said housing, said first control panel comprising a main keyboard and having a plurality of basic function keys for controlling basic machine tool operations;

a display screen mounted to said housing; and



a plurality of separate selectively accessible, movable second control panels interchangeably provided on a frame in a recess located in the control surface of said control console housing between said display screen and said main keyboard, said second control panels having a set of special function keys for controlling special machine tool operations, the functional elements of said special function keys of said second control panels being connectable to associated elements in the control console by means of electric connectors;

whereby said display screen, main keyboard and second control panels are ergonomically arranged in said housing for ease of operation and enabling operational control from a single forward looking position.

5,648,773

DATA COMPRESSION TRANSMISSION SYSTEM

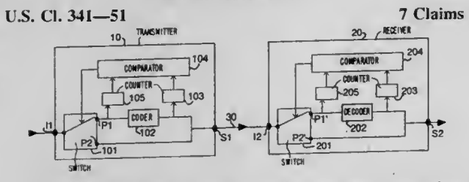
Jean-Yves Guy, Bois D'Arcy, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 14, 1995, Ser. No. 490,483

Claims priority, application France, Jun. 15, 1994, 94 07306

Int. Cl.[6] H03M *7/30*

U.S. Cl. 341—51 **7 Claims**



1. A data transmission system comprising at least a transmitter and a receiver, each of which comprise switch means for switching between (i) a first mode of operation according to which transmitted or received data are encoded or decoded, respectively, to compress or decompress the transmitted or received data, respectively, and (ii) a second mode of operation according to which data are transmitted or received directly without encoding or decoding, wherein further said transmitter and said receiver are synchronized and still further each comprise evaluation means for evaluating an obtained compression rate, wherein each said switch means is configured for switching from the first mode of operation to the second mode of operation in response to an evaluation by the evaluation means of a compression rate obtained of a predetermined number of data and a determination based thereon that compression is no longer sufficiently effective for transmission and reception, respectively, whereby said transmitter and said receiver can each independently switch from the first mode of operation to the second mode of operation, synchronously with each other, without the need to send an indication from one to the other of such change of mode of operation.

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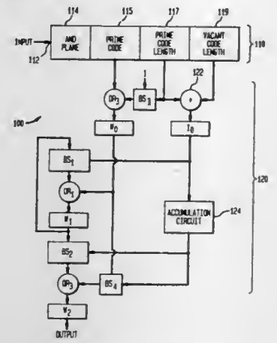
VARIABLE LENGTH CODING WITH THREE-FIELD CODES

Hsun-Chang Hsieh, Hsinchu, Taiwan, assignor to Industrial Technology Research Institute, Chutung, Taiwan

Filed May 8, 1995, Ser. No. 437,011

Int. Cl.[6] H03M *7/40*

U.S. Cl. 341—67 **7 Claims**



1. A method for encoding a sequence of fixed length source symbols comprising:

a) in an encoder, converting a fixed length source symbol into a prime code, a prime code length and a vacant code length, using a code table which assigns a predetermined prime code, prime code length and vacant code length to each distinct fixed length source symbol, and

b) in said encoder, converting said prime code, said prime code length and said vacant code length into a predetermined variable length code.

5,648,775

HIGH SPEED VARIABLE LENGTH CODE DECODING APPARATUS

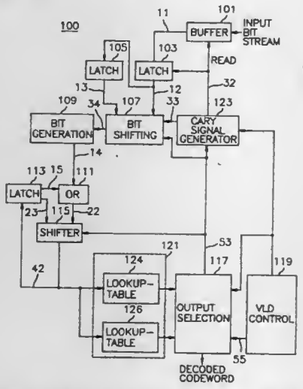
Gyu-Seok Kim, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Nov. 17, 1995, Ser. No. 560,088

Claims priority, application Rep. of Korea, Nov. 17, 1994, 94-30161

Int. Cl.[6] H03M *7/40*

U.S. Cl. 341—67 **2 Claims**



1. A variable length code decoding apparatus for decoding, at a fixed clock rate, sequential variable length codewords supplied from an input buffer which stores an input bit stream to be decoded in fixed length segments having a length equal to a longest length of the variable length codewords, said apparatus comprising:

first and second bit storage means, in response to a read signal, for storing consecutively two fixed length segments from the input buffer;

a bit shifting means connected to the first and the second bit storage means and having an output window for providing an M-bit window output sequence of the two fixed length segments, M being a number varying from 0 to one-half of the longest length of the variable length codewords and the output window being shifted in direct response to a position control signal and a codeword length signal, wherein the position control signal indicates a bit position in the two fixed length segments from which the window output sequence begins and the codeword length signal indicates how many bits are to be included in the window output sequence;

a bit generation means for generating an N-bit output sequence by using the window output sequence as low-order bits of the N-bit output sequence, N being one-half of the longest length of the variable length codewords;

a decoding sequence generation means connected to the bit generation means for producing a decoding output sequence of the two fixed length segments in response to the codeword length signal;

a memory means coupled to the decoding sequence generation means and having a number of lookup-tables for producing fixed length codewords in response to a variable length codeword that begins at the first bit position of the decoding output sequence and for producing codeword lengths corresponding to the decoded variable length codewords;

a control means for generating an output selection signal and a clock signal;

a selection means for selecting an output codeword and a codeword length among the produced fixed length codewords and codeword lengths corresponding to the decoded variable length codewords, in response to the clock signal and the output selection signal;

a carry signal generation means for generating the position control signal represented by adding "1" to a previously accumulated codeword length, and for accumulating the selected codeword length with the previously accumulated codeword length, the generation means generating the read signal to retrieve a next fixed length segment stored in the input buffer when the previously accumulated codeword length is greater than one-half of the longest length of the variable length codewords, the next fixed length segment being stored the first bit storage means and the fixed length segment previously stored in the first bit storage means being transferred to the second bit storage means.

5,648,776

SERIAL-TO-PARALLEL CONVERTER USING ALTERNATING LATCHES AND INTERLEAVING TECHNIQUES

Albert X. Widmer, Katonah, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 30, 1993, Ser. No. 56,148

Int. Cl.[6] H03M *9/00*

U.S. Cl. 341—100 **13 Claims**

1. A structure comprising:

a bit stream having a bit rate;

a first clock at half said bit rate;

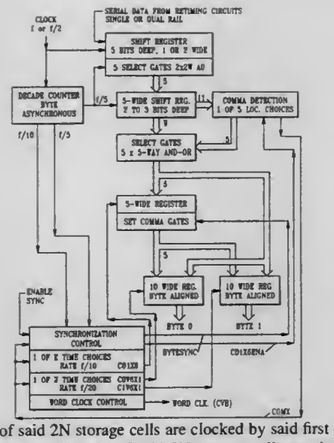
a second clock at half said bit rate;

said first clock selects a first group of N bits from said bit stream;

said second clock selects a second group of N bits from said bit stream;

said first clock is out of phase with respect to said second clock so that the first group of N bits and said second group of N bits are alternately selected from said bit stream;

first means for storing said first group of N bits and said second group of N bits comprising 2N storage cells, a first set of N



cells of said 2N storage cells are clocked by said first clock, a second group N cells of said 2N storage cells are docked by said second clock;

means clocked by said first clock for placing said first group of N bits into said first means for storing N bits of said bit stream by initially placing the first bit of said first group of N bits into one cell of said first group of N cells;

means for sequentially transferring each of said first group of N bits from said one cell of said first group of N cells to a cell from said second group of N cells and sequentially therefrom to another cell of said first group of N cells, such sequential transfer from a cell of said first group of N cells to a cell from said second group of N cells being repeated until said first group of N bits are stored in said first storage location in said first group of N cells;

means clocked by said second clock for placing said second group of N bits into said first means for storing N bits of said bit stream by initially placing the first bit of said second group of N bits into one cell of said second group of N cells;

means for sequentially transferring each of said second group of N bits from said one cell of said second group of N cells to a cell from said first group of N cells and sequentially therefrom to another cell of said second group of N cells, such sequential transfer from a cell of said second group of N cells to a cell from said first group of cells being repeated until said second group of N bits are stored in said first storage location in said second group of N cells;

means for transferring said first group of N bits in unison from said first means for storing into a second means for storing clocked by a third clock;

said third clock is substantially congruent with said second clock except that after each phase of said third clock there is missing N-1 pulses of said second clock;

means for transferring said second group of N bits in unison from said first means for storing into said second means for storing clocked by a fourth clock;

said second group of N bits being transferred from said first means for storing to said second means for storing N bits of said bit stream after said first group of N bits are transferred from said first means for storing to said second means for storing;

said fourth clock is substantially identical to said third clock but delayed with respect to said third clock by N bit intervals and its pulses are substantially congruent with said first clock;

means for transferring said first group of N bits from said second means for storing substantially in unison to a third means for storing having N cells;

means for transferring, substantially in unison, said first group of N bits from said third means for storing to a first group of N cells of a fourth means for storing having 2N cells;

means for transferring said second group of N bits, substantially in unison, from said second means for storing to a second group of N cells of said fourth means for storing;

means for maintaining said first group of N bits in said third for means for storing for more than N bit intervals of said bit stream so that said transfer of said first group of N bits to said fourth means for storage is substantially in unison with said transfer of said second group of N bits from said second means for storing to said fourth storage means.

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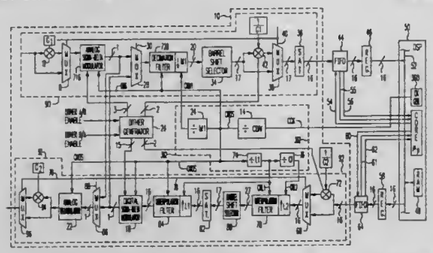
DATA CONVERTER WITH FIFO

Laurence Edward Bays, Allentown; Richard Muscavage, Gilbertsville, and Steven Robert Norsworthy, Emmaus, all of Pa., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 16, 1993, Ser. No. 168,447

Int. Cl.[6] H03M *1/20*

U.S. Cl. 341—110 **27 Claims**



1. Apparatus for converting a signal from one form to another, comprising:

a converter for converting a signal having a first form to a signal having a second form, one of said forms being analog and the other of said forms being digital;

a storage register for receiving and temporarily storing digital data samples, the digital data samples transferable out of the storage register in the same sequence as the digital data samples were received;

a digital processor coupled to the storage register, the digital processor adapted to provide a sampling rate conversion, the digital processor interruptible to transfer digital data samples either to or from the storage register; and

a depth flag, the depth flag set to a preselected depth value, a digital processor interrupt being generated upon the number of digital data samples stored in the storage register equaling the pre-selected depth flag value, whereby the number of digital processor interrupts to transfer a given number of digital data samples is reduced.

5,648,778

STEREO AUDIO CODEC

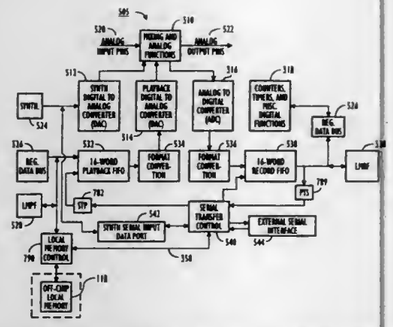
Alfredo R. Linz; Carlin Dru Cabler; Glen W. Brown, and Martin P. Soques, all of Austin, Tex., assignors to Advanced Micro Devices, Inc., Austin, Tex.

Continuation of Ser. No. 333,467, Nov. 2, 1994, Pat. No. 5,589,830. This application Jul. 17, 1996, Ser. No. 683,754

Int. Cl.[6] H03M *1/00*

U.S. Cl. 341—110 **10 Claims**

1. A monolithic audio control circuit of the type including a plurality of analog inputs and outputs, analog signal mixing capability, digital-to-analog conversion circuitry, and analog-to-digital conversion circuitry, comprising:



a record signal path, including a plurality of analog input signals and an analog-to-digital conversion circuit;

a playback signal path, including a digital input signal and a digital-to-analog conversion circuit;

on-chip FIFO memory for storing digital audio data samples to be input to said digital-to-analog conversion circuit and data samples output from said analog-to-digital conversion circuit; and

a logic control circuit for independently controlling the sampling rate of said playback signal path digital-to-analog conversion circuit and said record signal path analog-to-digital conversion circuit.

5,648,779

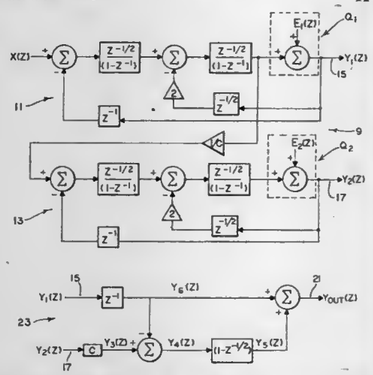
SIGMA-DELTA MODULATOR HAVING REDUCED DELAY FROM INPUT TO OUTPUT

Carlin Dru Cabler, Austin, Tex., assignor to Advanced Micro Devices, Inc., Austin, Tex.

Filed Dec. 9, 1994, Ser. No. 352,665

Int. Cl.[6] H03M *3/02*

U.S. Cl. 341—143 **11 Claims**



7. A fourth-order sigma-delta modulator system comprising:

a first second-order sigma-delta modulator having an input and an output;

a second second-order sigma-delta modulator having an input and an output;

a post-quantization network having a first network input connected to said output of said first modulator and a second network input connected to said output of said second modulator; and

wherein said first and second modulators each include a first and a second integration stage, wherein each said integration stage includes an integrator having a ½ unit delay associated therewith.

5,648,780

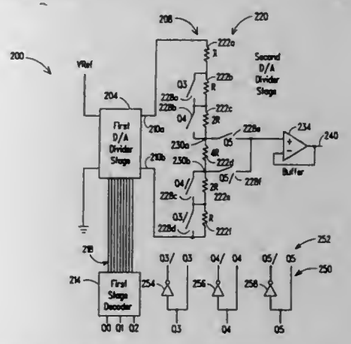
DIGITAL TO ANALOG CONVERTER

Robert Alan Neidorff, Bedford, N.H., assignor to Unitrode Corporation, Merrimack, N.H.

Filed Sep. 28, 1995, Ser. No. 536,621

Int. Cl.[6] H03M *1/78*

U.S. Cl. 341—154 **14 Claims**



12. A digital to analog converter comprising:

a first stage having a pair of input nodes and a pair of output nodes and converting a corresponding plurality of most significant bits of a digital word into an analog voltage, wherein said first stage comprises:

(a) a first resistor ladder coupled across said pair of input nodes and comprising a plurality of matched resistors; and

(b) a first plurality of switches coupled between said first resistor ladder and said pair of output nodes and controlled by a first plurality of switch control signals;

a second stage having a pair of input nodes provided by said pair of output nodes of said first stage and a pair of output nodes for converting a corresponding plurality of least significant bits of said digital word into an analog voltage, wherein said second stage comprises:

(a) a second resistor ladder coupled across said pair of input nodes of said second stage and comprising a plurality of binary weighted resistors; and

(b) a second plurality of switches including a first portion of switches coupled between said second resistor ladder and said pair of output nodes of said second stage and a second portion of switches coupled across selected ones of said binary weighted resistors of said second resistor ladder, wherein said second plurality of switches are controlled by a second plurality of switch control signals;

a decoder responsive to said most significant bits of said digital word for providing said first plurality of switch control signals; and

a logic circuit responsive to said least significant bits of said digital word for providing said second plurality of switch control signals.

5,648,781

METHOD AND APPARATUS FOR REMOTELY CONTROLLING ELECTRICAL APPLIANCES USING A TRACKBALL AND DISPLAY

Eun-suk Choi, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

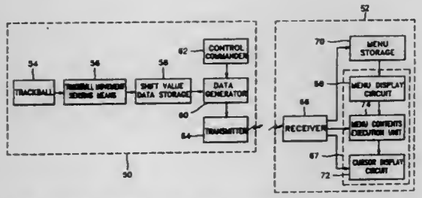
Filed Oct. 20, 1995, Ser. No. 546,135

Claims priority, application Rep. of Korea, Oct. 22, 1994, 94-27076

Int. Cl.[6] G08C *19/12*

U.S. Cl. 341—176 **6 Claims**

1. A remote control for controlling one or more electrical appliances, wherein icons associated with respective control functions are displayed on a display screen, said remote control comprising:



a trackball for controlling the movement of a pointer on the screen relative to a predetermined initial position of the pointer on the screen to select a displayed icon;

a trackball movement sensing means for sensing a shift value of the movement of said trackball along X-Y coordinates relative to the predetermined initial position of the pointer;

a shift value data storage unit for storing shift value data corresponding to the movement of said trackball relative to the initial pointer position;

a command means for selecting the control function corresponding to the icon where the pointer is located when said command means is activated;

data generating means, responsive to said command means, for generating data corresponding to the stored shift value of said trackball received from said shift value data storage unit when said command means is activated; and

transmitting means for coding and transmitting the data from said data generating means to a receiver.

5,648,782

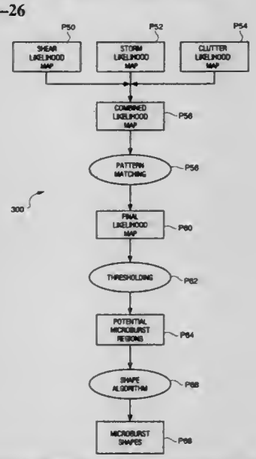
MICROBURST DETECTION SYSTEM

Eugene David Albo, and Robert Kent Goodrich, both of Boulder, Colo., assignors to University Corporation for Atmospheric Research, Boulder, Colo.

Filed Oct. 3, 1995, Ser. No. 539,014

Int. Cl.[6] G01S *13/95*

U.S. Cl. 342—26 **20 Claims**



1. A method for identifying a presence and locus of wind shear in a predefined area, said method comprising the steps of:

generating data indicative of said wind shear using a weather radar system; and

converting said data from said weather radar system into a quantified likelihood of said presence and locus of said wind shear.

5,648,783

Patent Not Issued For This Number

5,648,784

PROCEDURE FOR CONTROLLING A SCANNING ANTENNA

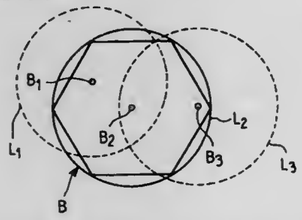
Francois-Xavier Benedicto Ruiz, Noordwijk; Mario Lopriore, Oegstgeest, and Luigi Bella, Noordwijk aan Zee, all of Netherlands, assignors to Agence Spatiale Europeenne, Paris, France

Continuation of Ser. No. 44,484, Apr. 9, 1993, abandoned. This application Feb. 12, 1996, Ser. No. 600,279

Claims priority, application France, Apr. 9, 1992, 92 04343

Int. Cl.[6] H01Q *3/22*

U.S. Cl. 342—373 **17 Claims**



1. A procedure for controlling a scanning antenna which transmits or receives at least one beam in a tracking direction of said scanning antenna, wherein said beam encompasses a particular nominal coverage zone centered on said tracking direction, wherein said particular nominal coverage zone is one of a plurality of nominal coverage zones, and wherein said procedure comprises the steps of:

synchronizing a scanning operation of said scanning antenna with data packets transmitted or received by said scanning antenna; and

aiming said beam sequentially in different directions of transmission or reception of said data packets, wherein said beam is aimed in synchronism with said transmission or reception of at least some of said data packets,

wherein said nominal coverage zones correspond to said different directions and at least partially intersect so as to define a nominal synchronization zone in such a way that:

a) any receiving station in said nominal synchronization zone can receive said at least some of said data packets transmitted by said scanning antenna when said any receiving station is located in said particular nominal coverage zone and such that synchronization between said any receiving station and said reception of said at least some of said data packets is maintained when said any receiving station is located in said nominal synchronization zone but is not receiving said at least some of said data packets; or

b) any transmitting station, which is located in said nominal synchronization zone, is capable of transmitting said at least some of said data packets to said scanning antenna and said scanning antenna is capable of receiving said at least some of said data packets transmitted by said any transmitting station when said any transmitting station is located in said particular nominal coverage zone and such that synchronization between said any transmitting station and said transmission of said at least some of said data packets is maintained when said any transmitting station is located in said nominal synchronization zone but is not transmitting said at least some of said data packets.

5,648,785

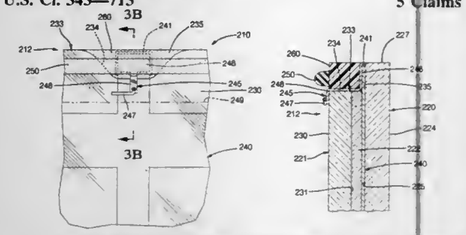
VEHICLE WINDOW WITH ANTENNA CONNECTION APPARATUS

Louis Leonard Nagy; Douglas Courtney Martin, both of Warren, and Michael Jerome Lewis, Southfield, all of Mich., assignors to General Motors Corporation, Detroit, Mich., and Delco Electronics Corp., Kokomo, Ind.

Continuation-in-part of Ser. No. 445,884, May 22, 1995, Pat. No. 5,528,314. This application Mar. 4, 1996, Ser. No. 610,656

Int. Cl.[6] H01Q *1/32*

U.S. Cl. 343—713 **5 Claims**



1. A vehicle having a window opening with a window therein, the window comprising, in combination:

an outer glass layer having a first surface on the outside of the vehicle, a second surface, and peripheral edge;

an inner glass layer having a first surface adjacent the interior of the vehicle, a second surface, and peripheral edge having a notch portion defining an exposed area of the second surface of the outer glass layer;

an antenna comprising an electrically conductive material on the second surface of the outer glass layer, the antenna having a connecting strip portion projecting onto the exposed area;

a connector member having a connecting patch electrically coupled to the connecting strip portion of the antenna in the exposed area and a feed portion extending away from the peripheral edge of the outer glass layer and across and over the peripheral edge of the inner glass layer to the first surface thereof;

an insulating member covering the connecting strip portion of the antenna and the connector member in the exposed area and having a surface essentially flush with the first surface of the inner glass layer; and

a sealing strip extending across the first surface of the inner glass layer and the insulating member, the sealing strip being physically separated and electrically insulated from the antenna and connector member by the insulating member.

5,648,786

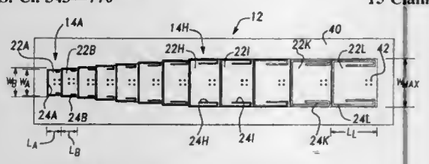
CONFORMAL LOW PROFILE WIDE BAND SLOT PHASED ARRAY ANTENNA

Hsin-Hsien Chung, and Jeffrey A. Douglass, both of San Diego, Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Nov. 27, 1995, Ser. No. 562,533

Int. Cl.[6] H01Q *13/10;11/10*

U.S. Cl. 343—770 **15 Claims**



1. A cavity-backed slot antenna comprising:

a first array of conductive cavities extending from a first end to a second end, each of said first array of conductive cavities having inner conductive walls, said first array of conductive cavities having a length and a width of the cavities increasing in size from said first end toward said second end in accordance with a log-periodic scale;

a second array of conductive cavities at said second end, said second array of conductive cavities having substantially the same width;

a top conductive surface provided above the conductive cavities;

an array of slots formed in the top conductive surface and at least a portion of each of the slots is provided in close proximity to at least one of the inner conductive walls of the conductive cavities, said slots increasing in effective length from said first end toward said second end; and

feed means for communicating with the first array of conductive cavities.

5,648,787

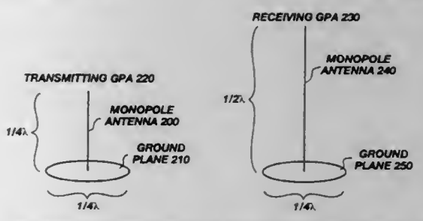
PENETRATING MICROWAVE RADAR GROUND PLANE ANTENNA

Rolando B. Ogot, San Diego, and Mark Gaspar, Glendale, both of Calif., assignors to Patriot Scientific Corporation, Poway, Calif.

Filed Nov. 29, 1994, Ser. No. 346,438

Int. Cl.[6] H01Q *21/00*

U.S. Cl. 343—826 **24 Claims**



1. An antenna system having a first ground plane antenna for transmitting short pulse duration radar signals of a predetermined radio frequency, and a second ground plane antenna positioned so as to receive backscatter from a transmitted signal of the first ground plane antenna, wherein the system is designed to reduce a trailing resonance signal from the first ground plane antenna, said device comprising:

a first ground means for establishing a ground plane for the first ground plane antenna;

a first transmitting antenna element extending substantially orthogonally from the ground plane of the first ground means, the first transmitting antenna element having an approximate length which is unequal to and a multiple of an associated first receiving antenna element to thereby reduce a trailing resonance signal from the first transmitting antenna element;

a radio frequency signal transmission means coupled to the first transmitting antenna element for applying a signal thereto;

a second ground means for establishing a ground plane for the second ground plane antenna;

the associated first receiving antenna element extending substantially orthogonally from the ground plane of the second ground means, the associated first receiving antenna element having an approximate length which is unequal to and a multiple of the first transmitting antenna element to thereby reduce the trailing resonance signal therefrom;

a signal processing means coupled to the first receiving antenna element for processing signals received therefrom; and

orienting means for positioning the first transmitting antenna to direct the transmitted signal at a predetermined location, and for positioning the first receiving antenna to receive backscatter from the predetermined location.

5,648,788

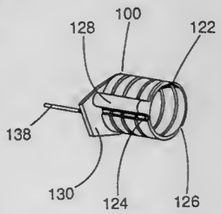
MOLDED CELLULAR ANTENNA COIL

Thomas C. Bumsted, Elgin, Ill., assignor to D & M Plastics Corporation, Burlington, Ill.

Division of Ser. No. 415,336, Apr. 3, 1995, Pat. No. 5,596,797. This application Apr. 23, 1996, Ser. No. 636,241

Int. Cl.[6] H01Q *1/36;1/40*

U.S. Cl. 343—895 **5 Claims**



1. An antenna for a wireless communication device having a precise dimension, comprising:

(a) a coil having a precise dimension;

(b) an encapsulating material holding the coil in the precise dimension;

(c) the encapsulating material being a thermoplastic resin;

(d) the antenna being suitable for use in at least one wireless communication device;

(e) the antenna having a hollow, cylindrical shape formed the encapsulating material around the coil;

(f) the coil having a top end and a bottom end;

(g) the antenna having a platform substantially perpendicular to the cylindrical shape at the bottom end;

(h) a tang extending from the bottom end;

(i) the encapsulating material having at least one radially spaced groove parallel to a central axis of the cylindrical shape; and

(j) a molding ridge parallel to the at least one radially spaced groove.

5,648,789

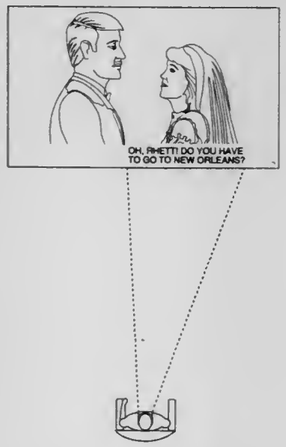
METHOD AND APPARATUS FOR CLOSED CAPTIONING AT A PERFORMANCE

Robert L. Beadles, Durham, N.C., and John E. D. Ball, Vienna, Va., assignors to National Captioning Institute, Inc., Vienna, Va.

Filed Oct. 2, 1991, Ser. No. 769,849

Int. Cl.[6] G08G *3/02*

U.S. Cl. 345—8 **53 Claims**



1. An apparatus for providing a display of a sequence of alphanumeric characters in the field of view of a person, said person comprising a member of an audience, said apparatus comprising:

means for encoding a signal for transmission representing the written equivalent of spoken dialogue;

means for synchronizing said signal to the spoken dialogue;

circuit means for transmitting the encoded signal representing the written equivalent of the spoken dialogue;

circuit means for receiving and decoding the encoded signal representing the written equivalent of the spoken dialogue; and

means for projecting a display image into said field of view to indicate at least one line of alphanumeric characters, said line of sufficient length to represent at least several words,

wherein said encoding means, said synchronizing means, and said circuit means for transmitting are at a location other than the location of said person, and wherein said circuit means for receiving and decoding, and said projecting means, are at the location of said person and are adapted to be worn by said person.

5,648,790

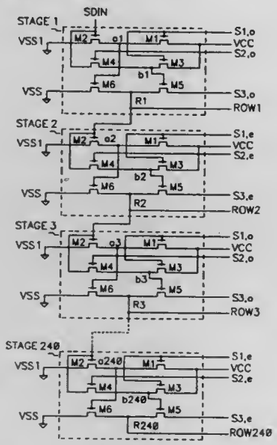
DISPLAY SCANNING CIRCUIT

Sywe N. Lee, Taipei, Taiwan, assignor to Prime View International Co., Hsinchu, Taiwan

Filed Nov. 29, 1994, Ser. No. 350,066

Int. Cl.[6] G09G *3/36*

U.S. Cl. 345—58 **15 Claims**



1. A circuit for use with a liquid crystal display (LCD) wherein said LCD display contains a matrix of picture elements (pixel) arranged in a first number of pixel columns and second number of rows on a substrate, said circuit comprising:

a plurality of row select driver circuits corresponding to said number of pixel rows for electrically energizing said pixel rows, said row select driver circuits being deposited on the LCD display substrate, wherein an output of each of said row select driver circuits is electrically connected to a corresponding pixel row and to a succeeding row select driver circuit as an activating input; and

switching means external to the LCD display and having leads electrically connected to said row select driver circuits for providing:

first three clock signals S1,o; S2,o; S3,o to all odd-numbered rows having a period twice as long as the horizontal scanning time of the display,

second three clock signals S1,e; S2,e; S3,e to all even-numbered rows lagging said first three clock signals respectively by said horizontal scanning time,

a shift-in clock signal SDIN coupled to only the input terminal of first row select driver circuit,

said first three clock signals, second three clock signals and said shift-in clock signals causing an output signal from each row select driver circuit such that each pixel row is sequentially energized.

5,648,791

LIQUID CRYSTAL DISPLAY CONTROL SYSTEM INCLUDING STORAGE MEANS AND D/A CONVERTERS

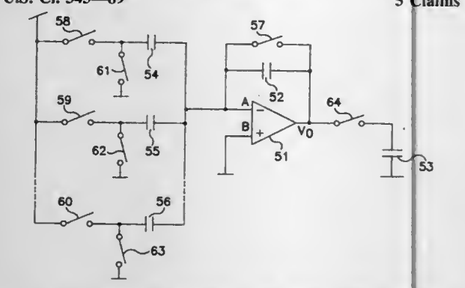
Yoshito Date, Hyogo-ken; Shoichi Takeshita, Kyoto; Tetsuro Ohmori, Hirakata; Junji Nakatsuka, Osaka, and Yoshio Imamura, Shiga-ken, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 391,616, Feb. 21, 1995, Pat. No. 5,453,757, which is a continuation of Ser. No. 872,820, Apr. 24, 1992, abandoned. This application May 31, 1995, Ser. No. 455,348

Claims priority, application Japan, Apr. 26, 1991, 3-097063; Jun. 27, 1991, 3-156821; Jul. 22, 1991, 3-180828; Jul. 30, 1991, 3-189913; Aug. 5, 1991, 3-195191

Int. Cl.[6] G09G *3/36*

U.S. Cl. 345—89 **5 Claims**



1. A DA converter for a liquid crystal display control system of a liquid crystal display, the DA converter comprising:

a. input means for entering an n-bit digital signal of information where n is a positive integer,

b. a capacitor group including n capacitors,

c. a group of first switches for controlling charge and discharge of said n capacitors; said group of first switches containing a plurality of switch sets, each of said switch sets connected to a respective one of said n capacitors of said capacitor group to be turned on or off depending on bit information contained in said n-bit digital signal,

d. an amplifier for generating an output voltage proportional to the voltage generated by the electric charges of the capacitor charged according to said bit information of said n-bit digital signal out of said capacitors in said capacitor group, said amplifier including (1) an inverting input terminal, (2) a negative feed back capacitor having (a) a first electrode coupled to said inverting input terminal and (b) a second electrode, (3) an output terminal, (4) a non-inverting input terminal, and (5) means for selectively connecting said second electrode to said output terminal and said non-inverting input terminal, and

e. a second switch connected between said liquid crystal display and the output terminal of said amplifier, where the charging action on said capacitor group and the output action of analog signals are determined to be repeated periodically, and said second switch is set in an OFF state in the charging action so as to separate said liquid crystal display from said output terminal of said amplifier.

5,648,792

LIQUID CRYSTAL DISPLAY DEVICE HAVING A THIN FILM

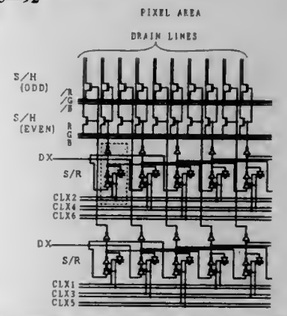
Toshihiro Sato; Hiroko Hayata; Yuichi Numata; Takuo Kaitoh; Jun Ishikawa, and Shigeo Shimomura, all of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 1, 1995, Ser. No. 396,604

Claims priority, application Japan, Mar. 14, 1994, 6-69127

Int. Cl.[6] G09G *3/36*

U.S. Cl. 345—92 **8 Claims**



1. A liquid crystal display device having a thin film transistor comprising:

an insulating substrate;

scanning lines, signal lines and pixels formed over said substrate;

a scanning line drive circuit which is formed over said substrate and simultaneously selects two neighboring scanning lines while changing the combination thereof for each of the fields; and

a signal line drive circuit which is formed over said substrate and outputs such signals that a signal written into pixels corresponding to one of said selected scanning lines has a polarity opposite to that of a signal written into pixels corresponding to the other of said selected scanning lines.

5,648,793

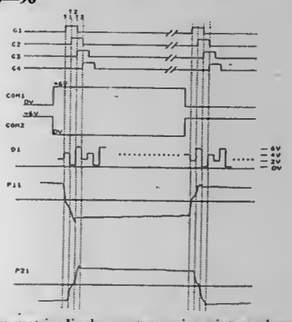
DRIVING SYSTEM FOR ACTIVE MATRIX LIQUID CRYSTAL DISPLAY

Yen-Chen Chen, Hsinchu, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Jan. 8, 1992, Ser. No. 818,132

Int. Cl.[6] G09G *3/36*

U.S. Cl. 345—96 **9 Claims**



1. An active matrix display system using picture elements (pixel) arranged in a X–Y matrix with m rows and n columns, comprising:

means for displaying a particular one of said pixels using X–Y coincident addressing of data signals and drive signals,

a plurality of column electrodes having said data signals impressed,

a plurality of row electrodes having said drive signals impressed,

said drive signals sequentially scanning one of said rows to apply said data signals on said column electrodes to display pixels where said data signals and said drive signals are coincident,

a plurality of switches, each having an input electrode, an output electrode and a control electrode, placed at cross-points of the column electrodes and the row electrodes,

said switches having said row electrodes as said control electrodes, said column electrodes as said input electrodes of said switches, and said pixels connected to the output electrodes of said switches,

said data signals having first polarities on odd-numbered said rows, and said data signals having polarities opposite to said first polarities on even-numbered rows.

5,648,794

DISPLAY DEVICE

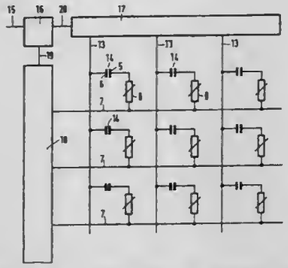
Siebe Jelsma, and Karel E. Kuijk, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 16, 1995, Ser. No. 405,066

Claims priority, application European Pat. Off., Mar. 23, 1994, 94200754

Int. Cl.[6] G09G *3/36*

U.S. Cl. 345—98 **21 Claims**



1. A display device comprising an electro-optical display medium between two supporting plates and provided with row and column electrodes, which device comprises a plurality of facing first and second picture electrodes located on the supporting plates and defining pixels in the electro-optical display medium, each pixel being connected to a row or column electrode via a non-linear two-pole element, the display device being further provided with drive means for applying selection and data voltages to the row and column electrodes, respectively, in order to bring a selected pixel to a given state of light transmissivity, the drive means for each pixel being provided with means for charging the pixel by means of a non-linear switching element to a first auxiliary voltage beyond or on the edge of the voltage range to be used for picture display, and means for charging the pixel by means of the same non-linear switching element from the first auxiliary voltage to a voltage having the same sign and a smaller amplitude associated with an arbitrary state of light transmissivity, characterized in that the drive means are provided with means for limiting the maximum ratio between the charge transport for pixels having an arbitrary light transmissivity and the charge transport for pixels having an extreme light transmissivity during a full drive cycle to a value smaller than

$$\frac{C_{pmax}}{C_{pmin}},$$

in which C_{pmax} and C_{pmin} are the maximum and minimum values between which the capacitance of a capacitor associated with the pixel varies during operation.

5,648,795

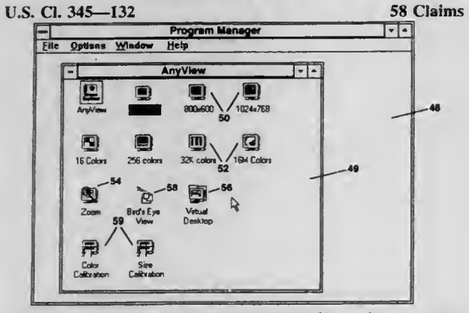
METHOD OF RESETTING A COMPUTER VIDEO DISPLAY MODE

Scott D. Vouri, Petaluma, and Paul Jerome Higgins, Sebastopol, both of Calif., assignors to Binar Graphics, Inc., San Rafael, Calif.

Continuation of Ser. No. 23,945, Feb. 26, 1993, Pat. No. 5,420,605. This application Sep. 30, 1994, Ser. No. 315,586

Int. Cl.[6] G09G *3/00*

U.S. Cl. 345—132 **58 Claims**



1. A screen display mode changer suitable for use in a computer system that includes a display monitor including a screen, a display driver arranged to control a characteristic of images displayed on the screen, the display driver being arranged to support a plurality of different display modes, and a processing arrangement suitable for executing a designated windowing based operating system including USER and GDI data segments and executing a designated graphical user interface (GUI) based application program on the designated operating system, the screen display mode changer comprising:

means for setting operating system display characteristic variables in the USER and GDI data segments to values that are appropriate for a requested display mode that is requested while the windowing based operating system and the designated GUI based application program arranged to run on the windowing based operating system are open and controlling the contents of a window visible on the screen;

means for setting display driver display characteristic variables of the display driver to values that are appropriate for the requested display mode, wherein the display driver works with but is independent of the designated operating system and the designated application program;

means for setting a hardware mode to a mode that is appropriate for the requested display mode; and

means for refreshing the screen to cause the screen to display the window in the requested display mode;

wherein the operating system display characteristic variable setting means, the display driver display characteristic setting means and the hardware mode setting means are each capable of performing their designated functions without requiring that either the selected application program or the selected operating system be exited.

5,648,796

METHOD AND DEVICE FOR GENERATING GREY LEVELS IN A PASSIVE MARTIX LIQUID CRYSTAL DISPLAY SCREEN

Alain Boursier, Le Mans; Rémy De Crouychanel, Rueil Malmaison, and Louis Giron, Mulsanne, all of France, assignors to U.S. Philips Corporation, New York, N.Y.

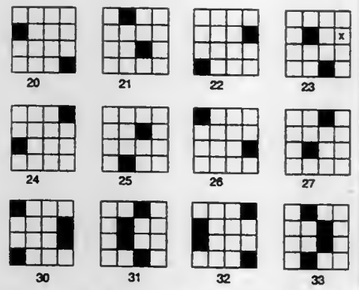
Continuation of Ser. No. 237,482, May 3, 1994, abandoned. This application Oct. 30, 1995, Ser. No. 549,890

Claims priority, application France, May 5, 1993, 93 05366

Int. Cl.[6] G09G *5/10*

U.S. Cl. 345—149 **9 Claims**

1. A method of generating a visual appearance of different grey levels in a liquid crystal display screen having a passive matrix of



pixels having only an active or an inactive state for each pixel, a surface having an apparent grey level being obtained by activating a given proportion of pixels, and the screen being virtually divided into blocks of pixels all having the same dimension, wherein patterns of active or inactive dots are defined in advance, each dot corresponding to a pixel, each pattern representing a block and corresponding to one of the grey levels due to the face that it has a number of active dots corresponding to this grey level, the active or inactive state of a pixel contained in a block of the image being displayed corresponding to the active or the inactive state of the dot which, in a pattern corresponding to the grey level desired for said pixel, has the same position as the pixel in the block comprising this pixel, a set comprising a limited number of basic pattern is defined in advance, each pattern of a set comprising a number of active pixels per pattern equal to a power of two (one, two, four, eight), while the basic patterns have such a composition that each position of an active pixel is exclusively utilized in a single one of the basic patterns of the set, and a pattern for generating a grey level not provided in a single pattern of the set of patterns is constructed by superimposing several patterns of this set.

5,648,797

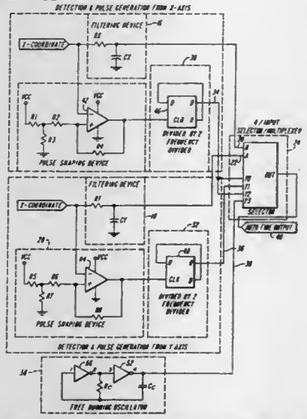
TRIGGERING CIRCUIT FOR USE WITH COMPUTER GAME JOYSTICK

Hang-Yick Lam, Kowloon, Hong Kong, assignor to STD Electronic International Ltd, Hong Kong

Filed May 31, 1995, Ser. No. 456,910

Int. Cl.[6] G06F *3/033*

U.S. Cl. 345—161 **7 Claims**



1. Apparatus for generating a pulsed triggering signal for use with a computer game system including a joystick, said apparatus comprising detection means for detecting a coordinate signal between a joystick output port and a game input port of a computer, and pulse generation means for generating a pulsed triggering signal responsive to said detected coordinate signal.

5,648,798

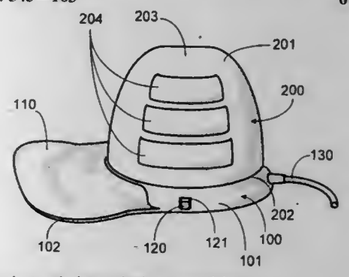
UNIVERSAL ERGONOMIC COMPUTER MOUSE/ TRACKBALL

Daniel T. Hamling, 5036 Bela Dr., San Jose, Calif. 95129

Filed Feb. 13, 1995, Ser. No. 387,405

Int. Cl.[6] G09G *5/08*

U.S. Cl. 345—163 **6 Claims**



1. An electronic input device comprising:

a housing, wherein said housing has an upper portion and a lower portion and the sides of said housing are substantially vertical,

a mounting means, wherein said mounting means is disposed to rotatably support said upper portion on top of said lower portion,

a roller ball rotatably mounted in said lower portion, wherein said roller ball protrudes through an opening in said lower portion,

at least one button extending substantially horizontally along the side of said upper portion,

a first sensing means coupled to said roller ball, wherein said first sensing means translates movement of said roller ball into a first set of communication signals, and

a second sensing means coupled to said at least one button, wherein said second sensing means translates activation of said at least one button into a second set of communication signals; and

said housing being shaped to fit comfortably in the natural curvature of a user's right or left hand with the user's palm in close proximity to the side of said housing such that the palm is substantially vertical, said at least one button being accessible to at least one finger or thumb of the user's hand, and said upper portion being rotatable with respect to said lower portion along an axis substantially parallel to the user's palm to position said at least one button according to the needs of the user.

5,648,799

LOW-POWER-CONSUMPTION MONITOR STANDBY SYSTEM

Dan Kiklnis, Sunnyvale, Calif., assignor to Elonex I.P. Holdings, Ltd., London, United Kingdom

Continuation of Ser. No. 319,256, Oct. 6, 1994, abandoned, which is a continuation of Ser. No. 141,413, Oct. 22, 1993, Pat. No. 5,389,952, which is a continuation of Ser. No. 984,370, Dec. 2, 1992, abandoned. This application Feb. 7, 1996, Ser. No. 591,775

Int. Cl.[6] G09G *5/00;5/12;* **H04N** *5/63*

U.S. Cl. 345—212 **174 Claims**

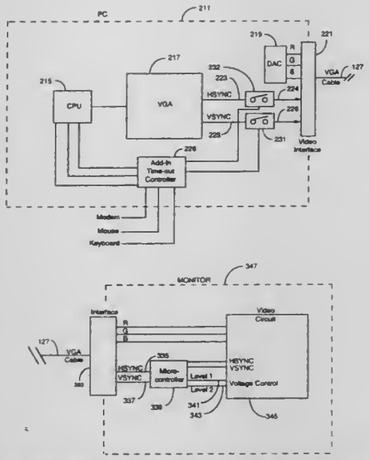
1. In a computer having a central processing unit (CPU), a memory, input apparatus, a display monitor, and a video adapter for providing several signals to the display monitor to provide an image on the display monitor, a power management system for managing power usage by the display monitor, comprising:

a timer for detecting periods of inactivity of the input apparatus;

a signal interrupter; and

a power manager circuit in the display monitor;

wherein, after passage of a pre-stored time period of inactivity of the input apparatus, the timer signals the signal interrupter



to interrupt one of the several signals to the display monitor as a power management command, and the power management circuit in the display monitor causes the display monitor to assume either one of at least two reduced-power states in response to the power management command.

5,648,800

METHOD AND APPARATUS FOR RECORDING WITH VARYING RECORDING SPEEDS

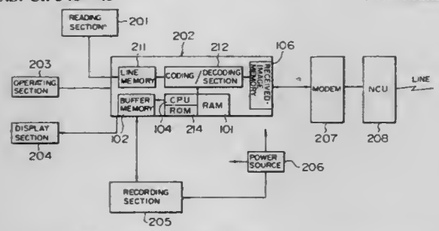
Tomoyuki Takeda, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 8, 1993, Ser. No. 2,020

Claims priority, application Japan, Jan. 13, 1992, 4-003623

Int. Cl.[6] G01D *9/28;9/36;* **H04N** *1/21*

U.S. Cl. 346—45 **20 Claims**



1. A recording apparatus comprising:

storage means for storing recording data corresponding to input image data;

recording means for recording an image on a recording medium on a basis of the recording data stored in said storage means, said recording means being operable at more than one recording speed, wherein said recording means performs recording of portions of the recording data stored in said storage means while other portions of the recording data are being stored in said storage means;

detecting means for detecting an amount of recording data stored in said storage means and not yet recorded; and

control means communicating with said recording means and said storage means for changing a recording speed of said recording means interrelatedly with the amount of the recording data not yet recorded, detected by said detecting means.

5,648,801

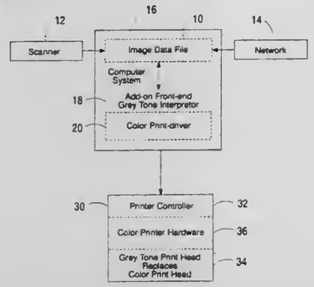
GRAYSCALE PRINTING SYSTEM

Gary Scott Beardsley, Morgan Hill; Gary Scott Keller, and Francis Chee-Shuen Lee, both of San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 16, 1994, Ser. No. 357,475

Int. Cl.[6] B41J *2/205;2/21*

U.S. Cl. 347—15 **7 Claims**



1. A printing system for printing color and greyscale images based, respectively, on color and grey tone image information, the system comprising:

an image processing and printing system having respective primary color information inputs, and a printer driver including respective multiple channels, for a set of respective primary colors;

a front-end color interpreter having:

(i) means for converting color image information into respective bodies of image information for respective primary colors, and

(ii) means for coupling color image information to respective ones of the primary color information inputs of the image processing and printing system:

a front-end grey tone interpreter having:

(i) means for converting grey tone image information into respective bodies of image information for respective grey tone levels, and

(ii) means for coupling the respective bodies of image information to respective ones of the primary color information inputs of the image processing and printing system:

the front-end color interpreter and the front-end grey tone interpreter being interchangeably couplable to the image processing and printing system:

a color print head having:

(i) a plurality of inputs for coupling to the image processing and printing system and for receiving respective bodies of image information for respective primary colors therefrom, and

(ii) means for printing respective primary colors based on the received respective bodies of image information for respective primary colors; and

a greyscale print head having:

(i) a plurality of inputs for coupling to the image processing and printing system and for receiving respective bodies of image information for respective grey tone levels therefrom, and

(ii) means for printing respective grey tone levels based on the received respective bodies of image information for respective grey tone levels;

the color print head and the greyscale print head being interchangeably couplable to the image processing and printing system.

5,648,802

CAP FOR AN INK JET RECORDING HEAD

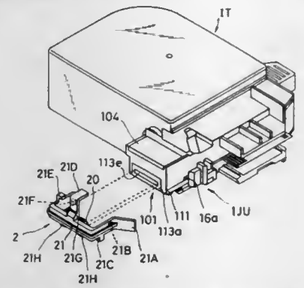
Tsutomu Abe, Isehara, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 820,488, Jan. 14, 1992, abandoned. This application Feb. 23, 1995, Ser. No. 393,251

Claims priority, application Japan, Jan. 18, 1991, 3-004707

Int. Cl.[6] B41J *2/165*

U.S. Cl. 347—29 **28 Claims**



1. A cap which can be installed in an ink jet recording head for sealing a plurality of ink ejection orifices of said ink jet recording head, said plurality of ink ejection orifices being arranged in a line, said cap comprising:

an elastic member having a projecting portion with a strip like shape to press a face of the ink jet recording head at which face said plurality of ink ejection orifices are disposed; and

a holder having an engage portion for engaging with the ink jet recording head so as to hold and fix said elastic member so that said projecting portion presses said face, and positioning said projecting portion so that a longitudinal direction of said projecting portion lies along a direction of the line in which said plurality of ink ejection orifices are arranged,

wherein when said projecting portion is pressed against said face, said projecting portion elastically deforms following a profile of said face to seal said plurality of ink ejection orifices.

5,648,803

INK JET RECORDER CAPABLE OF RELIABLY SEALING INK JET NOZZLE

Kazuya Koyama; Norihiro Ochi; Kohji Tsurui, and Hisashi Yoshimura, all of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 5, 1995, Ser. No. 464,561

Claims priority, application Japan, Jul. 28, 1994, 6-176596

Int. Cl.[6] B41J *2/165*

U.S. Cl. 347—30 **11 Claims**

1. An ink jet recorder comprising:

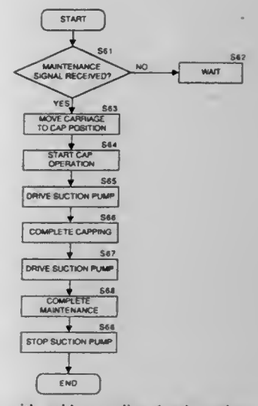
a recording head portion having a jet nozzle for jetting ink; and

sealing means for sealing said jet nozzle, thereby preventing evaporation of water being contained in said ink in said jet nozzle and an ink passage communicating with said jet nozzle,

said sealing means including:

a cap portion being formed by an elastic body for sealing said jet nozzle said cap portion including an interior, and

suction means for starting suction of the interior of said cap portion immediately before said cap portion comes into



contact with said recording head portion, so that air is prevented from entering the jet nozzle.

5,648,804

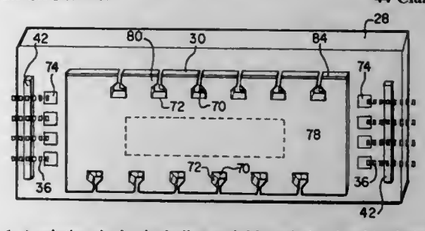
COMPACT INKJET SUBSTRATE WITH CENTRALLY LOCATED CIRCUITRY AND EDGE FEED INK CHANNELS

Brian J. Keefe; Steven W. Steinfield; Winthrop D. Childers, all of San Diego, Calif.; Paul H. McClelland, Monmouth, and Kenneth E. Trueba, Corvallis, both of Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 179,866, Jan. 11, 1994, which is a continuation of Ser. No. 862,068, Apr. 2, 1992, Pat. No. 5,278,584. This application Oct. 6, 1994, Ser. No. 319,405

Int. Cl.[6] B41J *2/14*

U.S. Cl. 347—47 **44 Claims**



1. A printing device including an inkjet printhead, said printhead comprising:

a substrate including

an elongated edge portion including a plurality of ink firing chambers each having a firing element therein, as well as an ink feed channel;

a truncated end portion; and

a central interior portion having circuitry components for selectively actuating the firing elements in said firing chambers; and

mounting means for fixedly attaching said substrate to form said printhead;

wherein said elongated edge portion includes a first column of firing chambers extending in a longitudinal direction along a first edge of said substrate, and a second column of firing chambers extending in the longitudinal direction along a second edge of said substrate opposite said first edge;

wherein said ink feed channel includes a first ink feed slot communicating with said first column of firing chambers and a second ink feed slot communicating with said second column of firing chambers;

wherein said first and second ink feed slots extend from an underside of said substrate around said respective edges of

said substrate to said first column and said second column of firing chambers, respectively.

5,648,805

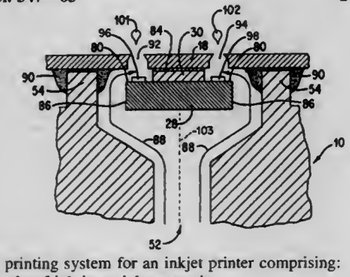
INKJET PRINTHEAD ARCHITECTURE FOR HIGH SPEED AND HIGH RESOLUTION PRINTING

Brian J. Keefe, La Jolla; May Fong Ho, La Mesa; Kenneth J. Courian, San Diego; Steven W. Steinfield, San Diego; Winthrop D. Childers, San Diego, all of Calif.; Ellen R. Tappon; Kenneth E. Trueba, both of Corvallis, Oreg.; Terri I. Chapman, Escondido, Calif.; William R. Knight, and Jules G. Moritz, both of Corvallis, Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 179,866, Jan. 11, 1994, which is a continuation of Ser. No. 862,086, Apr. 2, 1992, Pat. No. 5,278,584. This application Oct. 6, 1994, Ser. No. 319,896

Int. Cl.[6] **G01D** *15/18*

U.S. Cl. 347—65 **20 Claims**



1. A printing system for an inkjet printer comprising:

a supply of ink in an ink reservoir;

a printhead substrate having a top surface and an opposing bottom surface, and having a first outer edge along a periphery of said substrate;

a printhead nozzle member having a plurality of ink orifices formed therein, said nozzle member being positioned to overlie said top surface of said substrate;

a plurality of ink ejection elements formed on said top surface of said substrate, each of said ink ejection elements being located proximate to an associated one of said orifices for causing a portion of said ink to be expelled from said associated orifice; and

a fluid channel, communicating with said ink reservoir, leading to each of said orifices and said ink ejection elements, said fluid channel allowing said ink to flow from said ink reservoir, along a portion of said bottom surface of said substrate, around said first outer edge of said substrate, and to said top surface of said substrate so as to be proximate to said orifices and said ink ejection elements, wherein said fluid channel includes ink channels formed over said top surface of said substrate for directing ink to each of said ink ejection elements.

5,648,806

STABLE SUBSTRATE STRUCTURE FOR A WIDE SWATH NOZZLE ARRAY IN A HIGH RESOLUTION INKJET PRINTER

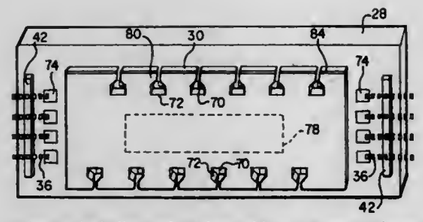
Steven W. Steinfield, San Diego; Brian J. Keefe, LaJolla; Winthrop D. Childers, San Diego; Donald G. Harris, Escondido, and Majid Azmoon, Poway, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 145,261, Dec. 29, 1993, and Ser. No. 179,866, Jan. 11, 1994, Pat. No. 5,625,396, which is a continuation of Ser. No. 862,068, Apr. 2, 1992, Pat. No. 5,278,584. This application Oct. 6, 1994, Ser. No. 319,894

Int. Cl.[6] **B41J** *2/05*

U.S. Cl. 347—87 **18 Claims**

1. A printhead having an array of ink nozzles aligned respectively over a plurality of firing chambers, comprising:



a substrate including end portions with one or more columns of firing chambers located on said substrate between said end portions, with said firing chambers extending in a longitudinal direction along at least one outer edge of said substrate and spaced less than 1/300th of an inch apart in said longitudinal direction so as to eject droplets of ink on a medium at a dots per inch resolution of less than 1/300th of an inch in said longitudinal direction as said printhead scans across said medium in a direction perpendicular to said longitudinal direction;

ink channel means connecting an ink reservoir with said firing chambers, for passing ink from an underside of said substrate around an outer edge of said substrate to said firing chambers; and

a support structure for supporting said substrate in a fixed position.

5,648,807

INK JET RECORDING APPARATUS HAVING AN ANTISMEAR SHEET DEFORMATION DISCHARGE SYSTEM

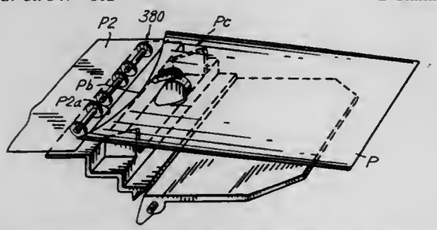
Kazuo Saito; Masayuki Kumazaki; Michiyo Ichikawa, and Seiichi Hirano, all of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Sep. 9, 1993, Ser. No. 119,012

Claims priority, application Japan, Sep. 10, 1992, 4-242228; Sep. 10, 1992, 4-242229; Sep. 10, 1992, 4-242230; Oct. 6, 1992, 4-267621; Oct. 8, 1992, 4-270561; Oct. 8, 1992, 4-270562; Oct. 8, 1992, 4-270563; Oct. 8, 1992, 4-270567

Int. Cl.[6] **B41J** *2/01*

U.S. Cl. 347—102 **2 Claims**



1. A method of discharging paper, comprising the steps of:

transporting the paper printed by a printing section having an ink jet head in a flat state as seen in a discharging direction;

discharging the paper while forcibly urging the paper in a concave shape in which a printed surface is concave as seen in the discharging direction;

holding a trailing end of the paper intact in the concave shape upon completion of a discharging operation; and

thereafter canceling the holding of the paper in said concave shape by allowing a leading end of ensuing paper to be brought into contact with the trailing end of the paper.

5,648,808

AUTOMATIC SHEET FEEDING APPARATUS

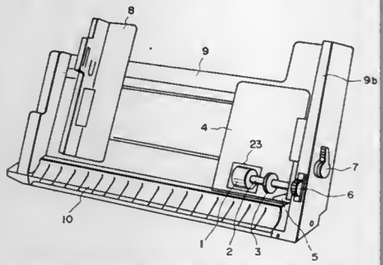
Haruyuki Yanagi, Yokohama; Shinnosuke Taniishi, Kawasaki; Tetsuo Suzuki, Yokobama; Junichi Asano, Kawasaki; Soichi Hiramatsu, Yokohama; Takashi Nojima, Tokyo, and Satoshi Saikawa, Inagi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 8, 1992, Ser. No. 894,997

Claims priority, application Japan, Jun. 10, 1991, 3-137837; Jun. 10, 1991, 3-137838; Jul. 26, 1991, 3-187656

Int. Cl.[6] **B41J** *2/01*

U.S. Cl. 347—104 **25 Claims**



1. An automatic sheet feeding apparatus comprising:

sheet supporting means for supporting sheets thereon, having a first position on a first side of a centerline of said sheet supporting means in a sheet feeding direction and a second position on a second side of the centerline opposite to the first side;

a sheet supply member disposed at the first position on the first side of the centerline of said sheet supporting means, for feeding out the sheets from said sheet supporting means in a sheet feeding direction;

a separating claw for separating the sheets fed by said sheet supply member one by one by regulating one front corner on the first side of the sheets; and

skew-feed correction means disposed downstream of said sheet supply member for correcting a skew-feed of the sheets caused by disposition of said sheet supply member and said separating claw on the first side of the centerline, by applying a resisting force to a leading end of the sheets fed by said sheet supply member, wherein a sheet supply member and a separating claw are positioned only on the first side and the second side is without a sheet supply member and separating claw.

5,648,809

COLOR IMAGE CONTROL APPARATUS HAVING PHOTOSENSITIVE BODY AND INTERMEDIATE TRANSFER BODY

Takeshi Kato; Hiroyuki Tadokoro, and Nobuaki Fukasawa, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 16, 1994, Ser. No. 291,543

Claims priority, application Japan, Aug. 20, 1993, 5-206061

Int. Cl.[6] **B41J** *2/385*

U.S. Cl. 347—115 **3 Claims**

1. A color printer comprising:

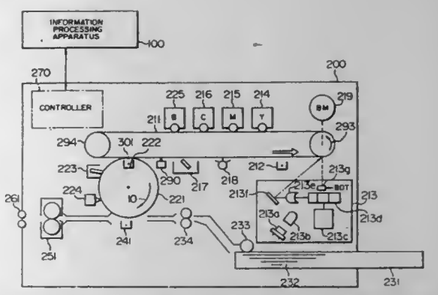
video signal generation means for generating image data;

light emission control means responsive to a video signal to control light emission of a laser beam source in accordance with a color of toner to be used;

exposure means including a rotary polygon mirror for scanning a laser beam from said laser beam source in the raster direction of a recording medium and a lens;

photodetection means for detecting that the scanned laser beam reaches a predetermined position and generating a printing synchronization signal;

a photosensitive member on which an electrostatic latent image is formed by said exposure means;



photosensitive member drive means for driving said photosensitive member;

developing means for developing the electrostatic latent image formed on said photosensitive member to form a toner image;

an intermediate transfer member which is partly in contact with said photosensitive member and to which toner images of different colors formed on said photosensitive member are transferred one by one to form color toner images; transfer means for collectively transferring the color toner images formed on said intermediate transfer member to a recording paper;

convey means for conveying said recording paper; and control means for controlling respective means to execute a printing processing,

wherein said color printer comprises area setting means responsive to said video signal and a length of the recording paper in the convey direction to set areas at which electrostatic latent images are formed on said photosensitive member in respect of toner images of respective colors.

5,648,810

PRINTER WHICH PRINTS WITH A RESOLUTION EXCEEDING LED HEAD RESOLUTION

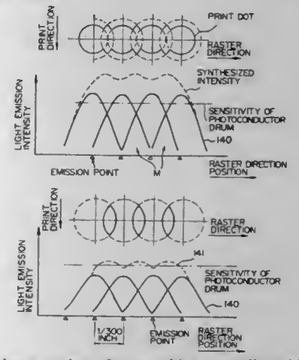
Jiro Tanuma; Katsuyuki Ito; Shinichi Katakura; Nobuo Wakasugi; Kazuhiko Nagaoka, and Toshikaru Ito, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Jul. 2, 1992, Ser. No. 907,643

Claims priority, application Japan, Jul. 5, 1991, 3-165872; Oct. 1, 1991, 3-253967

Int. Cl.[6] **B41J** *2/385;2/47;2/435;* **H04N** *1/23*

U.S. Cl. 347—130 **10 Claims**



3. A non-impact printer for use with a controller which emits to the printer a control signal and a video signal which includes a series of sets of bit data, comprising:

a photoconductor drum;

a printing head having a plurality of optical devices which emit light that impinges on the photoconductor drum in a row of

overlapping light dots if all of the optical devices are driven, the number of optical devices in the printing head being less than the number of bit data in one of the sets of bit data, the video signal resolution representing more pixels than can be printed at one time by the printing head; and

printing control means, responsive to the control signal and the video signal, for actuating the printing head to expose the photoconductor drum to light dots along basic raster lines and additional raster lines which alternate in a sequence, the printing control means including energy setting means for setting a first printing head drive energy for the optical devices when the drum is exposed along the basic raster lines and for setting a second printing head drive energy when the drum is exposed along the additional raster lines, the first printing head drive energy being larger than the second printing head drive energy.

5,648,811

POSTAGE METER

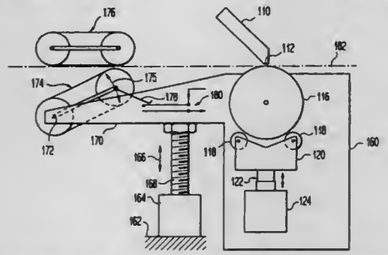
Wolfgang Thiel; Stephan Günther; Wolfgang von Inten; Heinz Rehberg; Wolfgang Muhl, all of Berlin, and Dieter Wölm, Gross Schulzendorf, all of Germany, assignors to Francotyp-Postalia Aktiengesellschaft & Co., Birkenwerder, Germany

Filed Aug. 18, 1993, Ser. No. 108,987

Claims priority, application Germany, Aug. 28, 1992, 42 28 765.0; European Pat. Off., Aug. 11, 1993, 93112895

Int. Cl.[6] B41J *11/14;11/20*

U.S. Cl. 347—220 **24 Claims**



1. A postage meter with a base, and an electrothermal printing device by means of which value indications and/or graphics can be printed by the transfer in a graphic forming distribution of color particles from a carrier web on to a postage item while the postage item and carrier web together move past the printing device at a predetermined speed, wherein said printing device comprises:

a thermal print head fixed relative to said base and having a printing ledge for heating said carrier web in correspondence to said graphic forming distribution as said postage item and web are moved past the printing device,

a counterpressure element positioned opposite to the thermal print head so that said postage item and said carrier web pass between said thermal print head and said counterpressure element,

means supporting said counterpressure element for movement toward and away from said thermal print head

motorized means associated with said supporting means for moving said counterpressure element toward and away from said print head,

motorized means for driving said counterpressure element to transmit movement in a transport direction to the postage items passing between said print head and said counterpressure element, and

means for causing said print head and counterpressure element to apply a substantially uniform pressure between a postage item and the carrier web independent of differences in the thicknesses of the postage items and uneven stuffing of the postage item in the direction perpendicular to said transport direction.

5,648,812

PRINTING APPARATUS WHICH OUTPUTS A PRINT-READY SIGNAL FOR MANUALLY INSERTED PAPER

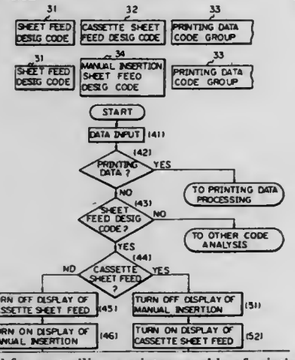
Masaru Igarashi, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 782,763, Oct. 22, 1991, abandoned, which is a continuation of Ser. No. 268,209, Nov. 7, 1988, abandoned, which is a division of Ser. No. 73,307, Jul. 13, 1987, Pat. No. 4,786,920, which is a continuation of Ser. No. 677,515, Dec. 3, 1984, abandoned. This application Mar. 29, 1994, Ser. No. 219,740

Claims priority, application Japan, Dec. 6, 1983, 58-229147; Dec. 6, 1983, 58-229148

Int. Cl.[6] B41J *13/00*

U.S. Cl. 347—262 **11 Claims**



1. A method for controlling a printer capable of printing on both a manually-inserted sheet and a sheet fed from within a sheet cassette, the method comprising the steps of:

receiving data from a data source, the received data including print data and instruction data which indicates whether to print on a manually-inserted sheet or a sheet from within the sheet cassette;

a first discriminating step of discriminating whether or not data received in the receiving step is the instruction data;

a second discriminating step of discriminating whether the instruction data indicates to print on a manually-inserted sheet or a sheet from within the sheet cassette;

a third discriminating step of discriminating whether or not data received in the receiving step is the print data; and

controlling the printer so as to print an image corresponding to the print data on the sheet fed in accordance with the discrimination in said second discriminating step.

5,648,813

GRAPHICAL-INTERACTIVE-SCREEN DISPLAY APPARATUS AND PERIPHERAL UNITS

Hidekazu Tanigawa, Hirakata; Masaki Mukai, Izumisano; Takashi Ohtsu, Yawata; Yoshio Nakano, Takatsuki, and Seiji Tsuji, Osaka, all of Japan, assignors to Matsushita Electric Industrial co. Ltd., Osaka-Fu, Japan

Filed Oct. 20, 1994, Ser. No. 326,758

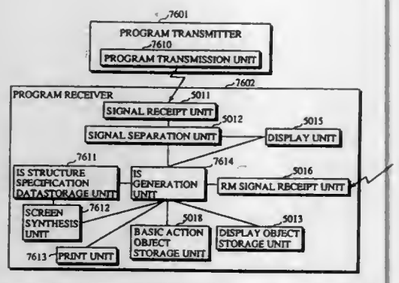
Claims priority, application Japan, Oct. 20, 1993, 5-262348; Nov. 10, 1993, 5-281016; May 26, 1994, 6-112718

Int. Cl.[6] H04N *7/087*

U.S. Cl. 348—10 **10 Claims**

10. A program receiver for displaying a graphical interactive picture by receiving a program transmitted from a program transmitter, said program receiver comprising:

storage means for storing a plurality of basic picture elements in advance, said plurality of basic picture elements being figures composing the graphical interactive picture manipulated by a user and said basic picture elements being composed of file names identifying each basic picture element and bit map data for each basic picture element;



signal receipt means for receiving a signal transmitted from said program transmitter, said signal being a multiplex signal including a program and data specifying a structure of the graphical interactive picture;

signal separation means for separating the signal received by said signal receipt means into a program signal and a graphical-interactive-picture-structure specification data signal;

first graphical interactive picture generation means for generating the graphical interactive picture by combining the basic picture elements stored in said storage means based on the graphical-interactive-picture-structure specification data signal from said signal separation means, said first graphical interactive picture generation means comprising:

a receipt-decode unit for receiving the graphical interactive-picture-structure specification data signal from said signal separation means to decode the same;

a data division unit for dividing the decoded graphical-interactive-picture-structure specification data from said receipt-decode unit into a first graphical-interactive-picture-structure specification data and a second graphical-interactive-picture structure specification data, said first graphical interactive-picture-structure specification data excluding a synthesis instruction, said second graphical-interactive-picture-structure specification data including the synthesis instruction, the graphical interactive-picture-structure specification data being composed of a panel object definition including a plurality pieces of panel object information, an action definition including a plurality pieces of action information, a shape definition including a plurality pieces of shape information, and synthesis direction data including a synthesis command in case of the second graphical-interactive-picture-structure specification data;

a first graphical-interactive-picture-structure specification data storage unit for storing the first graphical-interactive-picture-structure specification data;

a second graphical-interactive-picture-structure specification data storage unit for storing the second graphical-interactive-picture-structure specification data;

a graphical interactive picture synthesis unit for synthesizing the first graphical-interactive-picture structure specification data in said first graphical interactive-picture-structure specification data storage unit and the second graphical-interactive-picture structure specification data in said second graphical interactive-picture-structure specification data storage unit in accordance with the synthesis command of the synthesis direction data stored in said second graphical-interactive-picture-structure specification data storage unit;

a graphical-interactive-picture-structure specification data update unit for updating the first graphical-interactive-picture-structure specification data in said first graphical-interactive-picture structure specification data storage unit with the synthesized graphical-interactive-picture-structure specification data from said graphical interactive picture synthesis unit;

a first process unit for retrieving updated graphical-interactive-picture-structure specification data from said first graphical-interactive-picture structure specification data storage unit, and for extracting the basic picture elements corresponding to the file names by referring to the shape information in said storage means to place the extracted basic picture elements by referring to the panel object information; and

a first display control unit for controlling said display means to display the basic picture elements placed by said first process unit as an updated graphical interactive picture;

display means for displaying the graphical interactive picture generated by said first graphical interactive picture generation means;

interactive manipulation means for inputting manipulation to the graphical interactive picture displayed by said display means;

basic action storage means for storing a content of an action for updating the graphical-interactive-picture-structure specification data; and

second graphical interactive picture generation means for retrieving the content of the action from said basic action storage means based on action information directing an update of the graphical interactive picture upon receipt of the input manipulation from said interactive manipulation means to update the graphical-interactive-picture-structure specification data to generate an updated graphical interactive picture.

5,648,814

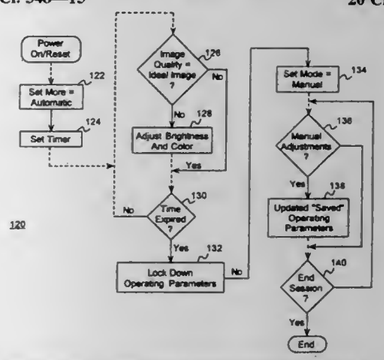
METHOD AND APPARATUS FOR OPTIMIZING CAMERA FUNCTION FOR VIDEO CONFERENCING SYSTEMS

Bill Munson, Portland, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Sep. 27, 1995, Ser. No. 534,473

Int. Cl.[6] H04N *5/232*

U.S. Cl. 348—15 **20 Claims**



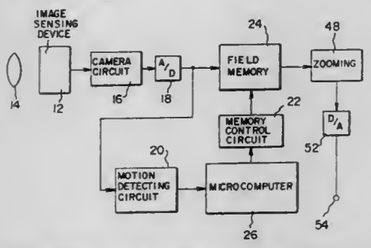
16. An apparatus comprising a camera function having a microcontroller that starts operation of the camera at power on and reset using a set of last used operating parameters and in a first automatic mode wherein the

microcontroller continuously make adjustments to video images for brightness and color balance for a predetermined amount of time, and then switches to a second manual mode wherein the microcontroller ceases to make any adjustment to video images for brightness and color balance unless a user intervenes and instructs the camera function to do so directly.

5,648,815
VIDEO CAMERA WITH ELECTRONIC PICTURE STABILIZER

Akira Toba, Osaka, Japan, assignor to Sanyo Electric Co., Ltd., Moriguchi, Japan

Division of Ser. No. 266,536, Jun. 27, 1994, Pat. No. 5,563,652. This application Jun. 7, 1995, Ser. No. 475,171
Claims priority, application Japan, Jun. 28, 1993, 5-156752; Jul. 29, 1993, 5-187895; Oct. 20, 1993, 5-262269
Int. Cl.[6] H04N *5/228*
U.S. Cl. 348—208 **12 Claims**



1. A video camera with electronic picture stabilizer which evaluates a whole motion vector by utilizing portion motion vectors of a plurality of detection areas defined within an image field, comprising:

averaging means for determining an average vector that is a mean value of the portion motion vectors;

dispersion calculating means for determining a dispersion by adding absolute values of differences between the portion motion vectors and the average vector to each other to obtain an addition result, and by dividing the addition result by the number of the absolute values;

comparing means for comparing the dispersion with a predetermined threshold value; and

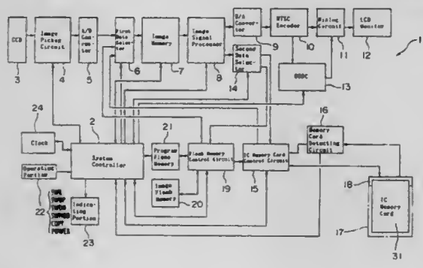
whole motion vector detecting means for detecting the whole motion vector in accordance with a first method in response to a first comparison result and in accordance with a second method, different from the first method, in response to a second comparison result; wherein

said whole motion vector detecting means detects a whole motion vector in accordance with the first method by selecting a minimum portion motion vector of all of the portion motion vectors.

5,648,816
STILL VIDEO CAMERA INCLUDING DETACHABLY ATTACHABLE EXTERNAL MEMORY

Yoshio Wakui, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 31, 1996, Ser. No. 594,806
Claims priority, application Japan, Jan. 31, 1995, 7-036087; Jan. 31, 1995, 7-036088; Jan. 31, 1995, 7-036089
Int. Cl.[6] H04N *5/76*
U.S. Cl. 348—233 **19 Claims**



1. A still video camera comprising:

an image pickup device;

a non-volatile memory, incorporated in said camera, in which an image taken by said image pickup device can be recorded or an image recorded therein can be erased;

an external memory, which is detachably attached to said camera, and which can store therein said image taken by said image pickup device;

connecting means to which said external memory is electrically connected; and,

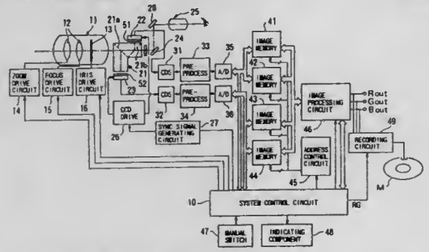
recording means for recording image signals of said image taken by said image pickup device in either said non-volatile memory or said external memory,

wherein said recording means records said image signals in said external memory when said external memory is connected to said connecting means.

5,648,817
DUAL TYPE IMAGING DEVICE HAVING MULTIPLE LIGHT SENSITIVE ELEMENTS

Harumi Aoki; Nobuhiro Tani, and Keiji Sawanobori, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 115,142, Sep. 2, 1993, Pat. No. 5,418,564. This application Jan. 17, 1995, Ser. No. 373,773
Claims priority, application Japan, Sep. 4, 1992, 4-262810; Sep. 16, 1992, 4-272343; Sep. 16, 1992, 4-272344
Int. Cl.[6] H04N *9/09*
U.S. Cl. 348—264 **12 Claims**



1. A dual type imaging device, comprising:

a first imaging device having a first color filter in which four light-sensitive elements are arranged in a 2×2 matrix, provide output signals and include at least two light-sensitive elements which are sensitive to complementary colors different from each other, said first imaging device outputting pixel signals (VA, i, j), (VA, i+1, j), (VA, i, j+1), VA, i+1), (VA, i, j+2), (VA, i+1, j+2), (VA, i, j+3), (VA, i+1, j+3) corresponding to said light-sensitive elements, wherein the parameter "i" indicates a horizontal direction, and the parameter "j" indicates a vertical direction;

a second imaging device having a second color filter in which four light-sensitive elements are arranged in a 2×2 matrix, provide output signals and include at least two light-sensitive elements which are sensitive to complementary colors different from each other, said second imaging device outputting pixel signals (VB, i, j), (VB, i+1, j), (VB, i, j+1), (VB, i+1, j+1), (VB, i, j+2), (VB, i+1, j+2), (VB, i, j+3), (VB, i1, j+3) corresponding to said light-sensitive elements, wherein the parameter "i" indicates a horizontal direction, and the parameter "j" indicates a vertical direction; and

means for sensing an R-signal, a G-signal, and a B-signal by superimposing all output signals from said four light-sensitive elements of said first imaging device on all output signals from said four light-sensitive elements of said second imaging device in a predetermined manner,

wherein said R-signal, said G-signal and said B-signal of said number "i" pixel are obtained as follows:

$$Ri,k=(VA,i,j+VA,i,j+1)-\alpha(VB,i,j,+1),$$

$$Ri,k-1=(VB,i,j+2+VA,i,j+3)-\alpha(VA,i,j+2+VB,i,j+3),$$

$$Bi,k=(VA,i,j,+1)-\beta(VB,i,j+VA,i,j+1),$$

$$Bi,k+1=(VB,i,j+2+VB,i,j3)-\beta(VA,i,j+2VA,i,j+3),$$

$$Gi,k=(VA,i,j+VA,i,j+1+VB,i,j+VB,i,j+1)-pRi,k-qBi,k$$

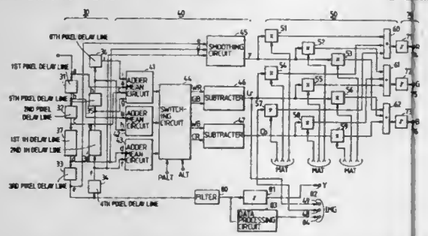
$$Gi,k+1=(VB,i,j+2+VA,i,j+3+VA,i,j2+VB,i,j+3)-pRi,k+1-qBi,k+1,$$

wherein α and β are coefficients, and "p" and "q" are adjusted to a proper value in accordance with a luminance component.

5,648,818
IMAGE PICKUP APPARATUS HAVING COLOR SEPARATION MATRIX

Tsutomu Fukatsu, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 6, 1993, Ser. No. 132,195
Claims priority, application Japan, Oct. 9, 1992, 4-297729; Dec. 25, 1992, 4-346725
Int. Cl.[6] H04N *3/14;9/73*
U.S. Cl. 348—273 **1 Claim**



1. A solid-state image pickup apparatus having (a) color filters for transmitting different color lights, which filters are sequentially arranged on photosensitive devices in a solid-state image pickup device, (b) means for forming an object image onto the solid-state image pickup device, and (c) means for executing arithmetic operating processes to multiply predetermined arithmetic operation coefficients to output signals corresponding to the different color lights of the solid-state image pickup device, thereby obtaining primary color components, said apparatus comprising:

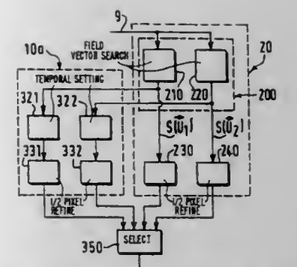
arithmetic operation coefficient adjusting means for projecting color compositions of the solid-state image pickup device into a space that is not independent to each of the primary color component signals and incorporating adjustment coefficients and, after that, for again projecting the color compositions into the primary color component space, and for adjusting the arithmetic operation coefficients by magnitudes of the adjustment coefficients.

5,648,819
MOTION ESTIMATION USING HALF-PIXEL REFINEMENT OF FRAME AND FIELD VECTORS

Lionel Tranchard, Maisons-Alfort, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 29, 1995, Ser. No. 413,061
Claims priority, application France, Mar. 30, 1994, 94 03772; Sep. 21, 1994, 94 11284
Int. Cl.[6] H04N *7/32*
U.S. Cl. 348—416 **7 Claims**

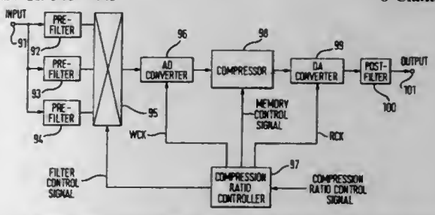
1. A method of estimating motion between pictures composed of two interlaced fields divided into blocks of pixels, which method comprises a step of searching for a motion vector which is most representative of the motion between two pictures, referred to as an optimum frame vector, and a step of searching for a motion vector which is most representative of the motion between two fields, referred to as an optimum field vector, the step of searching for the optimum field vector comprising, in parallel, two sub-steps each comprising, in series, a search for the field vector by way of block matching and a refinement of the field vector search to within half a pixel, the method characterized in that the step of searching for the optimum frame vector is performed subsequent to the parallel searches for the field vector and successively comprises a sub-step of temporally setting half a frame period based on each field vector obtained by clock matching, a sub-step of refining the frame vector search to within half a pixel and sub-step of selecting an overall optimum motion vector in accordance with a given criterion.



5,648,820
TIME-BASE CONVERSION SYSTEM

Hideyuki Naka; Kazuo Konishi, and Kazuyuki Ooishi, all of Kanagawa-ken, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 26, 1995, Ser. No. 427,959
Claims priority, application Japan, Apr. 27, 1994, 6-089825
Int. Cl.[6] H04N *7/01*
U.S. Cl. 348—445 **8 Claims**



1. A time-base conversion system for an aspect ratio conversion system that is based on an input video signal, the time-base conversion system comprising:

a first convertor for converting an analog video signal into a digital video signal,

a clock for generating a read clock signal and a write clock signal based on a horizontal synchronizing signal, a frequency of the read clock remaining constant,

a second convertor for converting an aspect ratio of the digital video signal from an existing aspect ratio to a desired aspect ratio by changing a frequency of the write clock signal,

at least one aliasing error removing filter having multiple frequency characteristics for removing error related to aliasing error introduced by the first convertor during the conversion of the analog video signal into the digital video signal, and

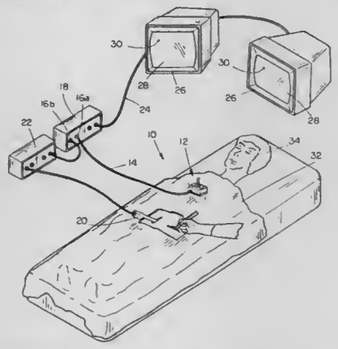
a filter frequency characteristic selecting device for selecting an optimum frequency characteristic of the at least one aliasing error removing filter, the optimum frequency characteristic being selected based on the desired aspect ratio.

5,648,821

REMOTE CURSOR CONTROL APPARATUS

Ricky C. Becker, 916 N. 39th St., Grand Forks, N. Dak. 58203

Filed Sep. 29, 1993, Ser. No. 128,862
Int. Cl.[6] H04N *05/945*
U.S. Cl. 348—601 **13 Claims**



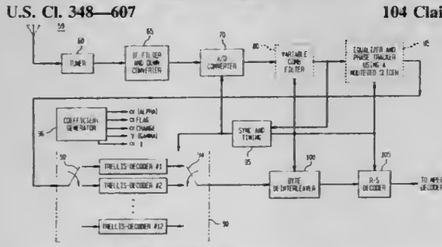
1. In combination:
a video camera electrically connected to a video monitor to display video received by the camera;
a cursor generating means electrically connected to said monitor to overlay a cursor indicator on the video display, said cursor indicator being operable independently of the video display on the monitor;
a cursor control apparatus located remotely from the monitor and generating means and in operable communication therewith;
operable control means on said cursor control apparatus, operable to cause movement of the cursor on the video display independent of the video display; and
said cursor control apparatus having a resilient, flexible covering over the control means of a material which is sterilizable and permits operation of the control means.

5,648,822

METHOD AND APPARATUS FOR COMBATING CO-CHANNEL NTSC INTERFERENCE USING A VARIABLE-COMB FILTER FOR DIGITAL TV TRANSMISSION

Samir N. Hulyalkar, White Plains, N.Y., assignor to Philips Electronics North America Corporation, New York, N.Y.

Filed May 19, 1995, Ser. No. 444,484
Int. Cl.[6] H04N *5/21*
U.S. Cl. 348—607 **104 Claims**



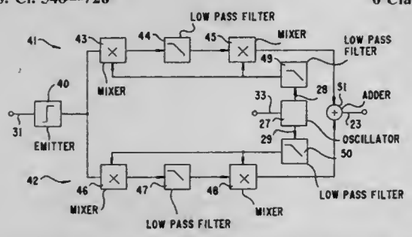
1. A co-channel interference filter for use in a television receiver, the television receiver receiving a signal transmitted from a transmitter, the received signal having an encoded digital television signal component, a co-channel interference component, and a noise component, wherein the encoded digital television signal component is characterized as an N-level vestigial sideband (VSB) signal of Reed-Solomon (R-S) encoded, byte interleaved and trellis encoded symbols $c_{k,\,i}$ (for i=1 to 12), where N corresponds to a number of levels, and wherein each symbol $c_{k,\,i}$ is derived from original symbol bits $a_{k,\,i}{}^1$ and $a_{k,\,i}{}^2$ (for i=1 to 12), corresponding to a most-significant symbol bit and a least significant symbol bit, respectively, said co-channel interference filter comprising:
means for generating a characteristic coefficient α in response to the received signal, wherein α is dependent upon an amount of the co-channel interference and noise components present in the received signal at a prescribed time, and wherein α comprises a value in the range of $0 \leqq \alpha \leqq 1$;
variable comb filter means for filtering the received signal and providing a filtered output signal, said variable comb filter means having a characteristic response of $1-\alpha D^*$, wherein D* represents a delay of twelve VSB symbol intervals, and wherein the filtered output signal comprises an intersymbol interference (ISI) component;
means for equalizing and phase tracking the filtered output signal of said variable comb filter means, said equalizing and phase tracking means outputting an effective output signal represented by an expression $d_{k,\,i}=c_{k,\,i}-\alpha c_{k-1,\,i}$ (for i=1 to 12), where $c_{k,\,i}$ and $c_{k-1,\,i}$ correspond to an instantaneous symbol and a delayed symbol, respectively; and
means, responsive to α, for trellis decoding the output signal $d_{k,\,i}$ of said equalizing and phase tracking means, said trellis decoding means providing a trellis decoded output signal of symbol bits $\hat{a}_{k,\,i}{}^1$ and $\hat{a}_{k,\,i}{}^2$ of trellis decoded symbols, corresponding to the original symbol bits $a_{k,\,i}{}^1$ and $a_{k,\,i}{}^2$, respectively, and removing the ISI component introduced by the variable comb filter means.

5,648,823

CIRCUIT CONFIGURATION FOR INTERMEDIATE FREQUENCY DEMODULATION AND DEVICE FOR VIDEO SIGNAL PROCESSING INCLUDING THE CIRCUIT

Richard Stepp, and Hans Fiesel, both of München, Germany, assignors to Siemens Aktiengesellschaft AG, Munich, Germany

Filed Jul. 31, 1995, Ser. No. 509,411
Claims priority, application Germany, Jul. 29, 1994, 44 27 018.6
Int. Cl.[6] H04N *5/455*
U.S. Cl. 348—726 **6 Claims**



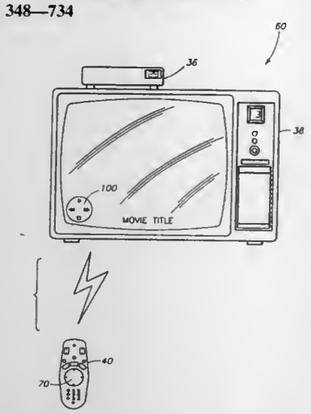
1. A circuit configuration for intermediate frequency demodulation for a video signal processing device, comprising:
a first filter with a bandpass characteristic for receiving an input signal at an intermediate frequency and for generating a video signal in an IF position;
a second filter with a bandpass characteristic for receiving the input signal and for generating a video carrier signal;
a mixer of a demodulator for converting the video signal in the IF position into a base band;
an oscillator for receiving the video carrier signal and for generating both a reference signal being frequency-coupled to the video carrier signal and a reference signal being phase offset from it by 90°;
a first and a second mixer each receiving a reference signal and supplying an output signal;
said first mixer receiving the video signal in the IF position;
a filter with a low pass characteristic carrying the output signal of said first mixer to said second mixer;
a third and a fourth mixer each receiving the reference signal being phase offset by 90° and supplying output signals;
said third mixer receiving the video signal in the IF position;
a further filter with a low pass characteristic carrying the output signal of said third mixer to said fourth mixer;
the output signals of said second and said fourth mixers being added together and delivered to said mixer of a demodulator; and
all of said filters being dimensioned to each be essentially permeable only to an equisignal component.

5,648,824

VIDEO CONTROL USER INTERFACE FOR CONTROLLING DISPLAY OF A VIDEO

Matthew W. Dunn, Seattle; Joseph H. Matthews, III, Redmond, and Edwin Thorne, III, Seattle, all of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Continuation of Ser. No. 412,294, Mar. 28, 1995, Pat. No. 5,517,257. This application Feb. 6, 1996, Ser. No. 597,174
Int. Cl.[6] H04V *5/445*
U.S. Cl. 348—734 **10 Claims**



1. In a system for controlling video on a display using a remote controller, a video control user interface to create for depiction on the display an icon that represents a unitary multi-function actuator on the remote controller and multiple symbols indicative of shuttle controls which are arranged relative to the icon on the display to provide a visual map of the shuttle controls onto the unitary multi-function actuator.

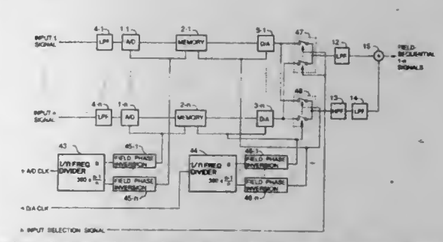
5,648,825

PHASE INVERSION CONTROL PULSE GENERATING CIRCUIT

Akira Kanai, Amagasaki; Masaki Yamakawa, Nagaokakyo; Shoichi Sugihara, Nagaokakyo; Masaharu Hayakawa, Nagaokakyo; Kiyotaka Yamamoto; Masafumi Kodama, both of Amagasaki, and Akiko Maeno, Nagaokakyo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 87,384, Jul. 8, 1993, Pat. No. 5,574,516. This application Jun. 5, 1995, Ser. No. 462,888
Claims priority, application Japan, Jul. 8, 1992, 4-180993; Jul. 17, 1992, 4-190955; Aug. 27, 1992, 4-228428; Nov. 25, 1992, 4-314691; Dec. 4, 1992, 4-325318; Mar. 22, 1993, 5-061834
Int. Cl.[6] H04N *9/12*
U.S. Cl. 348—743 **10 Claims**

1. A phase inversion circuit for a video signal processor having a memory, fields of data being written into said memory at a first rate and read from said memory at a second rate higher than said first rate, said video signal processor generating a passing-over pulse when an address for reading data from said memory passes over an address for writing data to said memory, and each field of data being written into said memory during one field, said write field being divided into a predetermined number of intervals, said circuit comprising:
a first input receiving said passing-over pulse;
a second input receiving an even interval selection signal which indicates when a current interval is an even interval;
control pulse generating means for generating a phase inversion control pulse based on signals received at said first and second input; and
inversion means for inverting at least a write clock pulse based on said phase inversion control pulse.

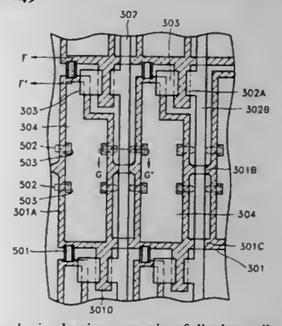


5,648,826

REPARABLE DISPLAY DEVICE MATRIX HAVING SCANNING LINE REPAIR CONDUCTIVE LAYERS OR PIXEL ELECTRODE MULTIPLE DESTRUCTION-PREVENTION NOTCHES

Jun-ho Song; Yong-quk Pae, both of Kyungki-do, and Wun-yong Park, Seoul, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Division of Ser. No. 205,299, Feb. 3, 1994, Pat. No. 5,532,853. This application Aug. 7, 1995, Ser. No. 511,989
Claims priority, application Rep. of Korea, Mar. 4, 1993, 93-3209
Int. Cl.[6] G02F *1/136;1/1333;1/1343;* **H01L** *21/26*
U.S. Cl. 349—49 **18 Claims**



6. A display device having a matrix of display cells, comprising;
a plurality of scanning line electrodes arranged in rows, each one of the plurality of scanning line electrodes comprising a row-wise plurality of additional capacitance portions connected one to another by a first connection portion and by a second connection portion;
an insulating layer formed over the plurality of scanning line electrodes;
a plurality of pixel electrodes formed on the insulating layer, each pixel electrode in the plurality of pixel electrodes formed in association with one additional capacitance portion of one scanning line electrode and having multiple destruction-prevention notches formed adjacent to respective second connection portions of additional capacitance portions adjacent to the associated additional capacitance portion; and

a plurality of data line electrodes formed on the insulating layer and orthogonally disposed relative to the plurality scanning line electrodes.

5,648,827

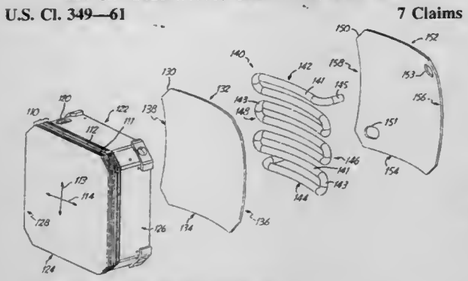
BACKLIGHTING SYSTEM FOR LIQUID CRYSTAL DISPLAYS HAVING A NON-PLANAR FLUORESCENT LAMP

James E. Shaw, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Jun. 22, 1995, Ser. No. 493,759

Int. Cl.[6] G02F *1/1335;* **G01D** *11/28;* **F21S** *5/00*

U.S. Cl. 349—61 **7 Claims**



1. A liquid crystal display comprising:

a liquid crystal matrix having a matrix periphery and a matrix central region;

said matrix periphery including a matrix first side, a matrix second side, a matrix third side and a matrix fourth side;

said matrix central region disposed interior of said matrix periphery, a lamp having a lamp periphery and a lamp central region;

said lamp periphery including a lamp first side, a lamp second side, a lamp third side and a lamp fourth side;

said lamp central region disposed interior of said lamp periphery; and,

said lamp disposed about said matrix such that an average perpendicular distance measured from said matrix, around the matrix periphery, to the lamp is less than an average perpendicular distance from the matrix central region to the lamp.

5,648,828

LIQUID CRYSTAL DISPLAY APPARATUS HAVING A PIXEL WITH AREAS OF DIFFERENT ORIENTATION IN WHICH A SPACER HAS A CYLINDRICAL PROFILE FOR ORIENTING

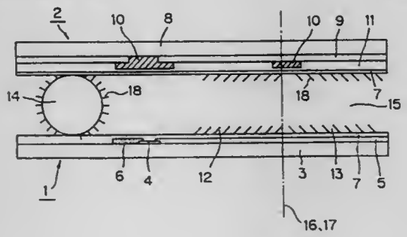
Michiaki Sakamoto, and Tatsuo Onozawa, both of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed Aug. 2, 1995, Ser. No. 510,199

Claims priority, application Japan, Aug. 4, 1994, 6-202844

Int. Cl.[6] G02F *1/1333;1/1337;1/1339*

U.S. Cl. 349—110 **2 Claims**



1. A liquid crystal display apparatus of the orientation dividing type, comprising:

a plurality of picture elements each divided into a plurality of areas having different orientation directions of liquid crystal and wherein a pair of transparent substrates, on which electrodes constituting the picture elements are formed, are disposed in an opposing relationship to each other with a spacer interposed therebetween for keeping a gap between said transparent substrates fixed and liquid crystal filling the gap, the surface of said spacer is processed by orientation processing by which said liquid crystal is oriented perpendicularly to the surface of said spacer or in parallel to said transparent substrates, said spacer has a cylindrical profile, and the orientation processing is a process of providing axial grooves on a cylindrical face of said spacer.

5,648,829

METHOD FOR FABRICATING A LIQUID CRYSTAL DISPLAY INCLUDING IRRADIATING AN ALIGNMENT FILM WITH UV LIGHT

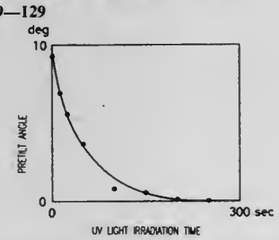
Wataru Yano, Yohkaichi, Japan, assignor to Kyocera Corporation, Kyoto, Japan

Filed Feb. 3, 1995, Ser. No. 384,128

Claims priority, application Japan, Feb. 15, 1994, 6-018083

Int. Cl.[6] G02F *1/1337;1/141*

U.S. Cl. 349—129 **2 Claims**



1. A method for fabricating a liquid crystal display device, comprising:

forming on a first glass substrate a first transparent electrode and a first alignment film comprising an organic material,

subjecting the first alignment film to rubbing,

locally irradiating the first alignment film with ultraviolet light after subjecting the first alignment film to rubbing to thereby form a region for keeping liquid crystal at a high pretilt angle and a region for keeping liquid crystal at a low pretilt angle,

forming on a second glass substrate a second transparent electrode and a second alignment film comprising an organic material,

subjecting the second alignment film to rubbing,

locally irradiating the second alignment film with ultraviolet light after subjecting the second alignment film to rubbing to thereby form a region for keeping liquid crystal at a high pretilt angle and a region for keeping liquid crystal at a low pretilt angle,

bonding the first substrate to a second glass substrate having a region for keeping liquid crystal at a high pretilt angle and a region for keeping liquid crystal at a low pretilt angle, the first and second substrates being arranged so that the region for keeping liquid crystal at a high pretilt angle of the first substrate is substantially opposite the region for keeping liquid crystal at a low pretilt angle of the second substrate, and

introducing liquid crystal between the first and second substrates, wherein the ultraviolet light defines an integral quantity of light not lower than 1000 mJ/cm^2.

5,648,830

LIQUID CRYSTAL DEVICE HAVING COMPOSITION OF AT LEAST TWO SMECTIC COMPOUNDS AND ONE CHOLESTERIC COMPOUND

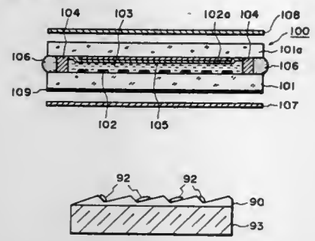
Kazuharu Katagiri, Tama; Kazuo Yoshinaga, Machida; Shinjiro Okada, Isehara, and Junichiro Kanbe, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 178,827, Jan. 7, 1994, abandoned, which is a division of Ser. No. 863,781, Apr. 6, 1992, Pat. No. 5,301,049, which is a continuation-in-part of Ser. No. 251,028, Sep. 26, 1988, Pat. No. 5,120,466, which is a continuation of Ser. No. 750,295, Jul. 1, 1985, abandoned. This application Apr. 19, 1995, Ser. No. 424,047

Claims priority, application Japan, Jul. 13, 1984, 59-146211; Jul. 14, 1984, 59-146498; Sep. 12, 1984, 59-190789; Sep. 12, 1984, 59-190790; Sep. 14, 1984, 59-192920

Int. Cl.[6] G02F *1/13;1/141*

U.S. Cl. 349—168 **4 Claims**



1. A display apparatus, comprising:

(a) a display panel comprising a group of scanning electrodes, a group of data electrodes intersecting the scanning electrodes, and a liquid crystal composition disposed between the scanning electrodes and the data electrodes so as to form a matrix of pixels at the intersections of the scanning electrodes and the data electrodes; said liquid crystal composition comprising a mixture of two or more compounds each showing smectic phase and at least one compound showing cholesteric phase, said liquid crystal composition showing smectic A phase and chiral smectic C phase on temperature decrease, said liquid crystal composition placed in the chiral smectic phase assuming one of two orientation states depending on a polarity of a voltage applied thereto; and

(b) a voltage application means for:

applying to a selected scanning electrode a first pulse of one polarity and a second pulse of an opposite polarity, and

applying voltages to the pixels on the selected scanning electrode receiving the first and second pulses to place the pixels in one or the other of said two orientation states, respectively, and applying to the pixels on non-selected scanning electrodes voltages that maintain those pixels in preexisting orientation states.

5,648,831

ASYMMETRICAL EYEWEAR

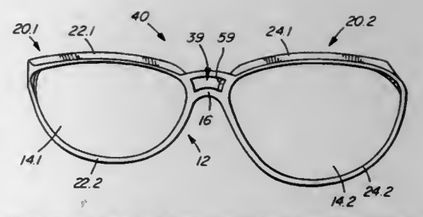
Brent R. Martin, and Sean G. Sullivan, both of North Vancouver, Canada, assignors to Sentinel Importing Corporation, North Vancouver, Canada

Filed Jun. 7, 1995, Ser. No. 477,349

Int. Cl.[6] G02C *11/02;5/14*

U.S. Cl. 351—51 **26 Claims**

15. Eyewear comprising a frame for housing a pair of lenses therein, the frame having a bridge portion for resting on a user's nose and a pair of temple members for locating the frame in position on the head of a user, said frame being non-planar for extending at least partially around the side of a user's face and wherein one of said temple members is longer than the other one of said temple members.



5,648,832

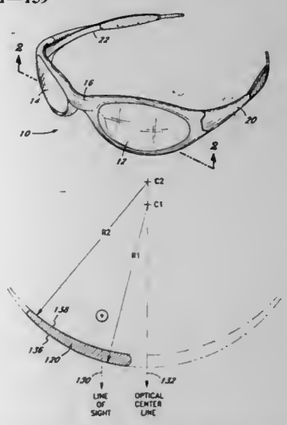
DECENTERED NONCORRECTIVE LENS FOR EYEWEAR

Malcolm Neal Houston, Foothill Ranch, Calif.; James H. Jannard, Eastsound, Wash., and Carlos D. Reyes, Mission Viejo, Calif., assignors to Oakley, Inc., Irvine, Calif.

Filed Dec. 5, 1995, Ser. No. 567,434

Int. Cl.[6] G02C *7/02*

U.S. Cl. 351—159 **12 Claims**



1. An eyeglass lens, for use in noncorrective dual lens eyewear, in combination with a frame to support the lens in the path of a wearer's normal line of sight, comprising:

a lens body;

a front surface and a rear surface on the lens body, defining a lens thickness therebetween;

the front surface conforming substantially to a portion of the surface of a first sphere having a first center;

the rear surface conforming substantially to a portion of the surface of a second sphere having a second center;

said first center and said second center offset from one another to taper said lens thickness;

wherein said lens is mounted in the frame such that an optical centerline drawn through said first and second centers is spaced from and maintained substantially parallel with the wearer's normal line of sight in each of a horizontal plane and a vertical plane.

5,648,833

MOTORIZED INSTRUMENT FOR THE EXAMINATION OF HUMAN EYES

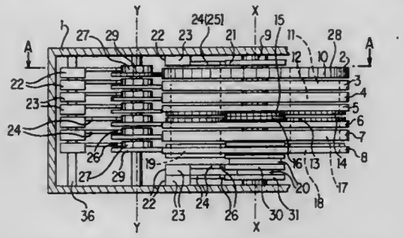
Manfred Doms, and Ulrich Fischer, both of Saalfeld, Germany, assignors to Block Medizintechnik GmbH, Saalfeld, Germany

Filed Jul. 13, 1995, Ser. No. 502,223

Claims priority, application Germany, Jul. 19, 1994, 44 25 443.1

Int. Cl.[6] A61B *3/02*

U.S. Cl. 351—235 **14 Claims**



1. A motorized instrument for the examination of human eyes, comprising:

an instrument body having two apertures defining two observation channels;

a plurality of disk-shaped mounts for supporting optical members alignable with said two observation members, said disk-shaped mounts being rotatably supported on said instrument body about at least one axis;

piezoelectric motors, each of said piezoelectric motors being arranged adjacent to a respective disk-shaped mount of said disk-shaped mounts and coupled to rotate said respective disk-shaped mount in the plane of said respective disk-shaped mount;

each of said piezoelectric motors having a base secured to said instrument body and a circulating driven face; and

said driven face being coupled to said respective disk-shaped mount and being arranged on a driven member small compared to said piezoelectric motor.

5,648,834

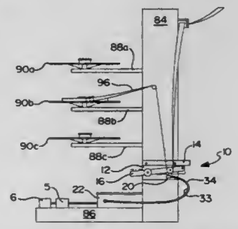
FILM TENSION SENSING DEVICE

Dean J. Kitchen, 6606 Deer Ridge Dr., Clarkston, Mich. 48348

Filed Feb. 9, 1996, Ser. No. 598,813

Int. Cl.[6] G03B *1/54;21/00*

U.S. Cl. 396—128 **17 Claims**



1. A film tension sensing device for use with a platter feed film projector system, comprising:

(a) means for mounting the device to the platter feed film projector system;

(b) means for sensing the beginning of a period of excessive film tension; and

(c) means for measuring the period of excessive film tension and comparing the period with a pre-determined period.

5,648,835

OPTICAL SYSTEM FOR MONITOR CAMERAS TO BE MOUNTED ON VEHICLES

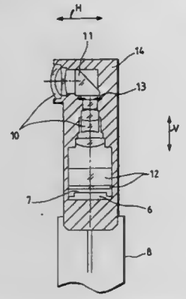
Tsutomu Uzawa, Saitama-ken, Japan, assignor to Olympus Optical Co., Ltd., Tokyo-to, Japan

Division of Ser. No. 124,592, Sep. 21, 1993, Pat. No. 5,448,319. This application Apr. 7, 1995, Ser. No. 418,456

Claims priority, application Japan, Sep. 22, 1992, 4-252520; Oct. 30, 1992, 4-314445

Int. Cl.[6] G03B *29/00;* **G02B** *17/00*

U.S. Cl. 396—429 **3 Claims**



1. A photographic lens system comprising, in order from the object side: a first lens component having a negative refractive power and a second lens component having a positive refractive power; wherein said first lens component consists only of a single negative lens element, and said second lens component consists of a negative meniscus lens element and a biconvex lens element disposed in this order or the reverse order, and wherein said photographic lens system satisfies the following conditions (2), (3) and (4):

$$\nu_1 > 40 \quad (2)$$

$$\nu_{2p} - \nu_{2n} > 10 \quad (3)$$

$$(n_{2n} - n_{2p}) \times \{2/(|r_{2n}| + |r_{2p}|)\} \times f > 0.48 \quad (4)$$

wherein the reference symbol ν_1 represents an Abbe's number of the negative lens element of said first lens component, the reference symbols ν_{2p} and ν_{2n} designate Abbe's numbers of tbe positive lens element and the negative lens element of said second lens component respectively, the reference symbols n_{2p} and n_{2n} represent refractive indices of the positive lens element and the negative lens element, respectively, of the second lens component, the reference symbols r_{1p} and $|r_{2n}$ denote radii of curvature on surfaces of the positive lens element and the negative lens element respectively of said second lens component which are opposed to each other (a radius of curvature $r_{1p}=|r_{2n}$ on a cemented surface in a case where said second lens component is configured as a cemented doublet), and the reference symbol f represents a focal length of said photographic lens system as a whole.

5,648,836

OPTICAL APPARATUS WITH CONTROL DEVICE FOR CONTROLLING MOVABLE OPTICAL MEMBER

Shigeki Sato; Masaharu Eguchi, both of Kanagawa-ken, and Yoshihiko Konno, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 14, 1994, Ser. No. 196,317

Claims priority, application Japan, Feb. 18, 1993, 5-029010; Jul. 14, 1993, 5-196907

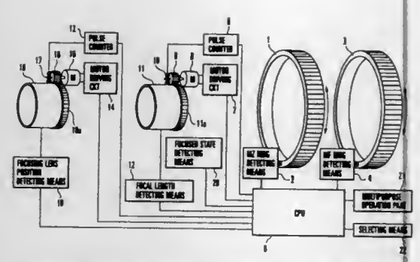
Int. Cl.[6] G03B *3/10*

U.S. Cl. 396—86 **27 Claims**

18. An optical apparatus comprising:

a) a movable optical member;

b) driving means for causing said optical member to move;



c) a manual operation member capable of being operated to be moved;

d) first detecting means for detecting at least an operating speed of said manual operation member;

e) second detecting means for detecting a focal length of said optical apparatus;

f) third detecting means for detecting a distance to an object of shooting; and

g) control means for causing said driving means to act on the basis of an output of said first detecting means, said control means being arranged to receive outputs of said second detecting means and said third detecting means and to vary an action of said driving means according to changes of the focal length and the distance.

5,648,837

SUPPORT SYSTEM FOR PAPER MAGAZINE

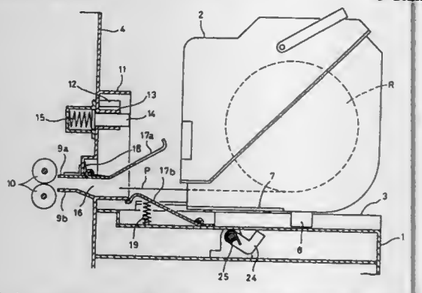
Masayuki Tamai, Wakayama, Japan, assignor to Noritsu Koki Co., Ltd., Wakayama, Japan

Filed Nov. 10, 1994, Ser. No. 339,252

Claims priority, application Japan, Nov. 10, 1993, 5-281184

Int. Cl.[6] G03B *1/00;27/46*

U.S. Cl. 355—72 **6 Claims**



1. A support system for supporting a paper magazine, comprising:

an enclosure having a support surface for supporting a paper magazine, said support surface having a front end;

a paper magazine having a top side, a bottom side and a front side, a paper outlet in a lower portion of said front side, and cam engaging projection mounted on said bottom side;

a paper feeder mechanism disposed at said front end of said support surface, said paper feeder mechanism having a paper inlet at a lower portion of said front end;

an upper paper guide and a lower paper guide both vertically pivotally mounted over said support surface in front of and on opposite sides of said paper inlet of said paper feeder mechanism, both said upper paper guide and said lower paper guide having respective springs biasing said upper paper guide and said lower paper guide toward the horizontal plane of said paper inlet;

a pair of magazine guides on said support surface for guiding said bottom side of said paper magazine;

a lock cam mounted between said pair of magazine guides and below said support surface for swinging movement between an engaged position in which said lock cam engages said cam engaging projection of said paper magazine and a disengaged position in which said lock cam is disengaged from said cam engaging projection, said lock cam comprising a spring urging said lock cam toward said engaged position so as to bias said cam engaging projection of said paper magazine toward said paper feeder mechanism in said engaged position;

a lever holding mechanism for holding said lock cam in said disengaged position; and

a swing arm, engageable by said paper magazine, having a swing arm spring biasing said swing arm to a first position and being moveable by said paper magazine to a second position against the biasing force of said swing arm spring, wherein said swing arm is engageable with said lever holding mechanism to release said lock cam from being held in said disengaged position upon movement of said swing arm from said first to said second positions.

5,648,838

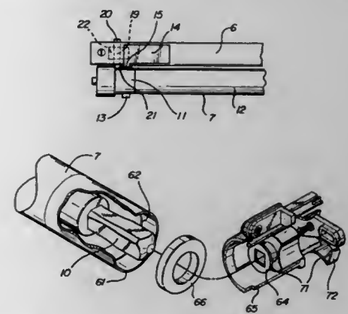
METHOD AND APPARATUS FOR ELECTRICALLY CONNECTING A DEVELOPER ROLLER TO A BIAS SOURCE

Steven Bruce Michlin, 5310 Bentley Suite 105, West Bloomfield, Mich. 48322, and Herbert J. Mader, Kansas City, Kans., assignors to Steven Bruce Michlin

Filed Nov. 1, 1994, Ser. No. 333,128

Int. Cl.[6] G03G *15/04;15/08*

U.S. Cl. 399—119 **29 Claims**



1. A toner cartridge assembly comprising:

a toner cartridge housing;

a developer roller rotatably supported by said housing and including a toner-receiving region and a non-toner-receiving region;

an electrically conductive doctor blade supported by said housing parallel to said toner-receiving region of said developer roller and spaced from said developer roller;

an electrically conductive bias voltage connector mounted on said doctor blade and contacting the surface of said non-toner-receiving region of said developer roller without contacting said toner-receiving region of said developer roller;

said bias voltage connector including a thickness;

said bias voltage connector being sandwiched between said doctor blade and said non-toner-receiving region of said developer roller creating a space between said doctor blade and said toner-receiving region of said developer roller equal to said thickness of said bias voltage connector, whereby said thickness of said bias voltage connector can be selected to

create a desired gap between said doctor blade and said toner-receiving region of said developer roller to optimize the performance of said doctor blade and said developer roller.

5,648,839

IMAGE FORMING APPARATUS

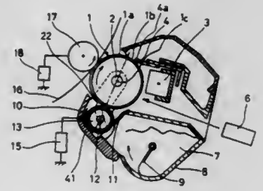
Toshiharu Koshino, Kadoma; Kazumasa Hayashi, Osaka; Hiroshi Komakine, Moriguchi; Kenji Asakura, Katano, and Katsutoshi Ogawa, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

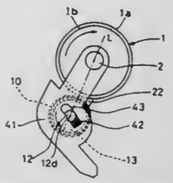
Filed Apr. 17, 1995, Ser. No. 422,891

Claims priority, application Japan, Apr. 27, 1994, 6-089586

Int. Cl.[6] G03G *15/09*

U.S. Cl. 399—271 **35 Claims**





1. An image forming apparatus comprising:

an image holder which is rotatable around a rotation axis thereof and capable of holding a pattern of electric charge corresponding to a picture image on a surface thereof;

a magnetic developer;

a developing electrode which faces said surface of said image holder with a predetermined gap, is rotatable around a rotation axis thereof, and reciprocally movable in a predetermined direction;

pressing means for supplying a pressing force to said developing electrode in said predetermined direction;

gap restricting means provided between said image holder and said developing electrode for restricting a distance between surfaces of said image holder and said developing electrode in said gap to a predetermined value;

first magnetic field generating means which is coaxially provided on said rotation axis of said developing electrode and is not rotatable about said rotation axis of said developing electrode;

electric field generating means for generating an electric field in a developing nip part of said image holder and said developing electrode; and

a housing which supports each of the respective rotation axis of said image holder and said developing electrode;

wherein a first center shaft is coaxially disposed on said rotation axis of said developing electrode, at least one end of said first center shaft is engaged with a first center shaft guide groove, said first magnetic generating means is fixed on said first center shaft, and rotation of said first center shaft is restricted by a first rotation restricting means.

5,648,840

IMAGE FORMING APPARATUS INCLUDING TONER CONVEYANCE APPARATUS

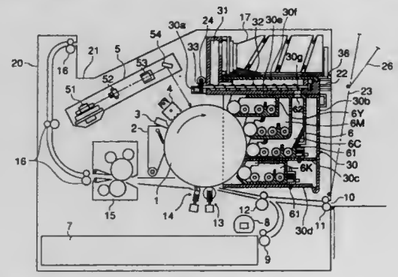
Yoshikazu Ikunami, and Kazuyoshi Kimura, both of Hachioji, Japan, assignors to Konica Corporation, Japan

Filed Nov. 8, 1995, Ser. No. 555,092

Claims priority, application Japan, Nov. 14, 1994, 6-279068; Nov. 15, 1994, 6-280468

Int. Cl.[6] G03G *15/00;15/01*

U.S. Cl. 399—262 **9 Claims**



9. An image forming apparatus comprising:

(a) a plurality of toner storage devices for storing different toner;

(b) a developing unit integrally containing a plurality of developing devices;

(c) each said toner storage device being associated with one of said developing devices; and

(d) a toner conveyance device associated with each said toner storage device for conveying toner from said toner storage device to the developing device associated with said toner storage device,

wherein through-holes are formed in the developing unit, and an upper portion of each of the through-holes is connected with each of the plurality of toner conveyance devices in such a manner that an upper opening of each of the through-holes is opposed to an ejection port of each of the plurality of toner conveyance devices, so that toner drops from each of the plurality of toner conveyance devices into each of the through-holes and is guided to each of the plurality of developing devices,

and further comprising a carriage for supporting the developing unit,

wherein the plurality of toner conveyance devices are provided on the carriage,

and wherein the developing unit is detachably attachable to the carriage.

5,648,841

APPARATUS FOR FORMING FIXED IMAGES HAVING ENCAPSULATED TONER

Shin-ichiro Yasuda, Osaka; Kuniyasu Kawabe, and Mitsuhiro Sasaki, both of Wakayama, all of Japan, assignors to Kao Corporation, Tokyo, Japao

Division of Ser. No. 111,739, Aug. 25, 1993, Pat. No. 5,463,454, which is a continuation of Ser. No. 890,268, May 29, 1992, abandoned. This application Nov. 14, 1994, Ser. No. 339,692

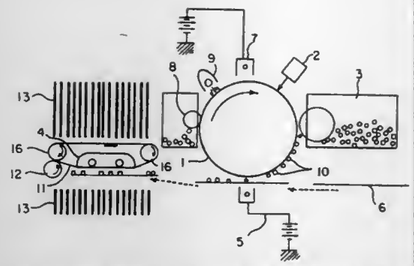
Claims priority, application Japan, May 30, 1991, 3-155300; May 30, 1991, 3-155301

Int. Cl.[6] G03B *22/00*

U.S. Cl. 399—134 **2 Claims**

1. An apparatus for fixing a shell encapsulated toner on a recording medium in an imagewise configuration, comprising, in combination:

(a) a system of providing a shell encapsulated toner image on a surface of a recording medium thereby producing a toner image-bearing surface;



(b) a recording medium conveying zone, defining a conveying route through which said recording medium supporting said toner image passes;

(c) an endless film disposed around a pair of holding rollers juxtapositioned to said recording medium conveying zone;

(d) a heater disposed adjacent said endless film wherein at least a part of said endless film is positioned between said heater and said recording medium conveying zone, said heater preheating said shell encapsulated toner image through said endless film as said recording medium supporting said toner image passes through said recording medium conveying zone, said toner image-bearing surface of said recording medium facing said endless film; and

(e) a fixing roller located downstream to where said toner image passes said heater for fixing said preheated toner image with pressure to said recording medium, said fixing roller contacting a backside of said recording medium opposite said toner images-bearing surface.

5,648,842

METHODS AND SYSTEMS FOR CLEANING RESIDUAL TONER FROM IMAGE-DEVELOPING DEVICE

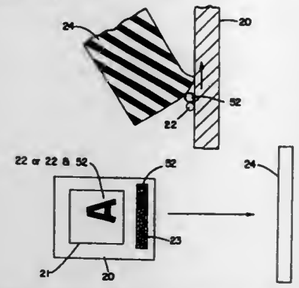
Takeyoshi Sekine, Tokyo; Hiroshi Yamasita; Hiroyuki Fushimi, both of Numazu; Makoto Ohsaki, Yokohama; Kouta Fujimdri, Tokyo; Yasunori Kawaishi, Narashino, and Jun Okamoto, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jan. 16, 1996, Ser. No. 585,630

Claims priority, application Japan, Jan. 21, 1995, 7-026130

Int. Cl.[6] G03G *21/00*

U.S. Cl. 355—350 **39 Claims**



1. A method of cleaning toner on a surface of an image forming device after development by a cleaning blade, the toner including first toner and second toner, comprising the steps of:

a) developing an image according to the toner including at least the first toner placed on a first area of the surface of the image forming device;

b) transferring the toner in the first area to an image carrying medium;

c) placing the second toner on the cleaning blade which contacts the surface of the image forming device; and

d) removing the first toner remained on the surface after said step b) by the cleaning blade treated with the second toner in said step c), wherein the second toner provides a substantially effective seal between the surface of the developing device and the cleaning blade so as to facilitate the first toner to depart from the surface of the image forming device.

5,648,843

AUTOMATIC DUPLEX IMAGE FORMING APPARATUS HAVING AN ADJUSTING DRIVING MECHANISM

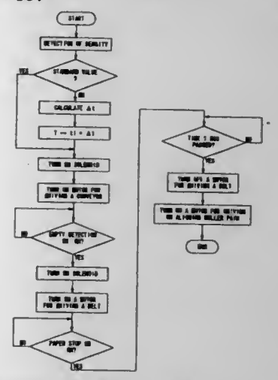
Takeshi Eguchi, Saitama-ken, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 8, 1996, Ser. No. 598,438

Claims priority, application Japan, Mar. 22, 1995, 7-062492

Int. Cl.[6] G03G *15/00*

U.S. Cl. 399—364 **20 Claims**



1. An image forming apparatus comprising:

means for forming an image on an image receiving medium which has a first and a second surface;

roller means for conveying the image receiving medium on which the image was formed on the first surface to the image forming means again, the roller means contacting at least the first surface of the image receiving medium;

means for driving the roller means;

means for detecting the density of the image formed on the first surface of the image receiving medium; and

means for adjusting the driving conditions of the roller means by the driving means according to the image density detected by the detecting means.

5,648,844

LASER LIQUID LEVEL GAUGE WITH DIFFUSER

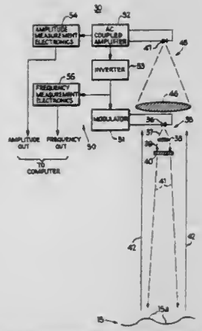
Reece Robert Clark, Redwood City, Calif., assignor to Midland Manufacturing Corp., Skokie, Ill.

Filed Nov. 20, 1995, Ser. No. 559,837

Int. Cl.[6] G01C *03/08;* **G01F** *23/00*

U.S. Cl. 356—5.09 **18 Claims**

1. In an apparatus for measuring the level of a light-reflective fluid boundary in a vessel, including a transmitter for transmitting an optical measurement signal toward the fluid boundary, a receiver for detecting a reflection of the signal from the fluid boundary, and control circuitry for modulating the transmitted measurement signal and processing the received reflections for



determining distance between the transmitter and the fluid boundary as a function of a parameter of the modulation, the improvement comprising: a diffuser disposed between the transmitter and the fluid boundary for diverging the optical measurement signal.

5,648,845

APPARATUS FOR VERIFYING THE PERFORMANCE OF OPTICAL FIBRE MEASUREMENT EQUIPMENT

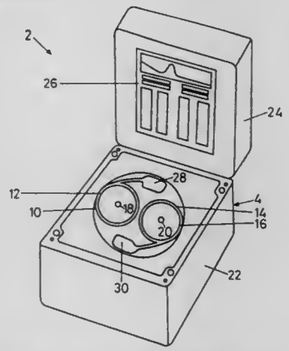
Neil Richard Haigh, Eastham, and Charles Edward Jones, West Molesey, both of United Kingdom, assignors to The Secretary of State for Trade and Industry, London, England

Filed Sep. 6, 1995, Ser. No. 524,071

Claims priority, application United Kingdom, Sep. 7, 1994, 9418055

Int. Cl.[6] G01N *21/15;* **B65D** *85/04*

U.S. Cl. 356—73.1 **7 Claims**



1. Apparatus for verifying the performance of optical fibre measurement equipment, which apparatus comprises a housing, a length of optical fibre in a main storage compartment, a first compartment containing a first end of the optical fibre that is in the main storage compartment, and a second compartment containing a second end of the optical fibre that is in the main storage compartment, and the appratus being one in which the optical fibre is stored under substantially zero tension, the first end of the optical fibre is a source end of the optical fibre, the second end of the optical fibre is a detector end of the optical fibre, the length of the optical fibre in the main storage compartment is wound in a circle, the first end of the optical fibre in the first compartment is wound in a circle, the second end of the optical fibre in the second compartment is wound in a circle, and the circle in the main storage compartment is larger than the two circles in the first and the second compartments.

5,648,846

APPARATUS AND METHOD FOR THE GEOMETRIC MEASUREMENT OF A VEHICLE

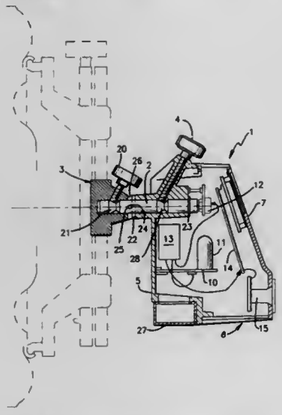
Denis Douine, Lagny sur Marne; Michel Galland, Lognes; Alain Percbat, Noisy-le-Grand, and René Rouchaville, Vaires-sur-Marne, all of France, assignors to Muller Bem, Chartres, France

Continuation of Ser. No. 320,242, Oct. 11, 1994, abandoned. This application Sep. 27, 1996, Ser. No. 718,695

Claims priority, application France, Oct. 11, 1993, 93 12059; Oct. 20, 1993, 93 12526

Int. Cl.[6] G01B *11/26;5/24*

U.S. Cl. 356—139.09 **24 Claims**



1. Apparatus for the geometric inspection of a vehicle, comprising an interactive display panel adapted to guide an operator according to instructions emitted by a first electronic card for processing signals from measurement means and computing values from said signals, said measurement means including:

first means for measuring the orientation of a vehicle wheel in the horizontal plane,

second means for measuring the rotational angle of the wheel about its axis,

third means for measuring inclinations in a first vertical plane perpendicular to, and in a second vertical plane parallel to, the wheel; said third means being connected to a second electronic card;

said measurement means emitting electrical signals representative of indications correlated with the physical parameters to be detected for the geometrical inspection of the vehicle;

said measurement means being contained in a casing with an axle protruding from the casing, said axle being mounted for rotation in the casing and engaging with its protruding end and being fixed to a support element secured to the wheel of the vehicle to be inspected;

wherein said first means is in the form of a camera block comprising one linear optical detector and means for defining an image from an external source upon said linear optical detector; said second means is a rotational potentiometer having a rotational axis disposed substantially coaxial and substantially coincident with said axle for following the wheel in its rotational movement about its axis; and said third means is a biaxial inclinometer for measuring the inclinations in the first and second vertical planes and being mounted on said second electronic card.

5,648,847

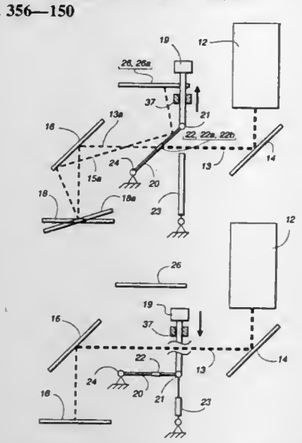
METHOD AND APPARATUS FOR NORMALIZING A LASER BEAM TO A REFLECTIVE SURFACE

Peter Ebbing, 847 Riverside Dr., Los Altos, Calif. 94024

Continuation of Ser. No. 210,634, Mar. 18, 1994, abandoned, which is a continuation of Ser. No. 823,808, Jan. 16, 1992, abandoned. This application Mar. 7, 1995, Ser. No. 400,469

Int. Cl.[6] G01B *1/00;11/30*

U.S. Cl. 356—150 **41 Claims**



20. Apparatus for normalizing a light beam with respect to a reflective surface, comprising:

a light source for generating said light beam;

a mirror mounted to permit movement of said mirror to a first position and to a second position;

said mirror having an aperture through which, when said mirror is positioned in said first position, said light beam passes as the light beam propagates from said light source toward said reflective surface, said light beam reflects from the reflective surface to produce a reflected light beam, said reflected light beam propagates to said mirror, where, if the light beam is not orthogonal to the reflective surface, the reflected light beam reflects from the mirror onto a target; and

said second position places said mirror outside of a propagation path of said light beam.

5,648,848

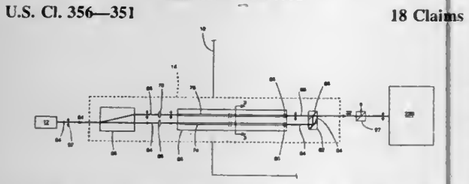
BEAM DELIVERY APPARATUS AND METHOD FOR INTERFEROMETRY USING ROTATABLE POLARIZATION CHUCKS

Arun A. Aiyer, Fremont, Calif., assignor to Nikon Precision, Inc., Belmont, Calif.

Filed Feb. 1, 1995, Ser. No. 381,734

Int. Cl.[6] B01B *9/02*

U.S. Cl. 356—351 **18 Claims**



1. A method of providing illumination to an interferometer including the steps:

generating an initial beam having a first beam component and a second beam component;

splitting the initial beam to separate the first and second components into spatially separate first and second paths;

positioning in the first path a first flexible polarization preserving fiber having an inlet end and an outlet end;

positioning in the second path a second flexible polarization preserving fiber having an inlet end and an outlet end;

projecting the first beam component into the inlet end of the first fiber;

transmitting the first beam component through the first fiber;

projecting the second beam component into the inlet end of the second fiber;

transmitting the second beam component through the second fiber;

emitting the first beam component from the outlet end of the first fiber, the emitted first beam component having a first polarization;

emitting the second beam component from the outlet end of the second fiber, the emitted first component having a second polarization orthogonal to the first polarization;

calibrating the relative polarization of the first and second beam components by rotating the outlet end of at least one of the fibers; and

recombining the first and second components into a single resulting beam for transmission to an interferometer.

5,648,849

METHOD OF AND DEVICE FOR IN SITU REAL TIME QUANTIFICATION OF THE MORPHOLOGY AND THICKNESS OF A LOCALIZED AREA OF A SURFACE LAYER OF A THIN LAYER STRUCTURE DURING TREATMENT OF THE LATTER

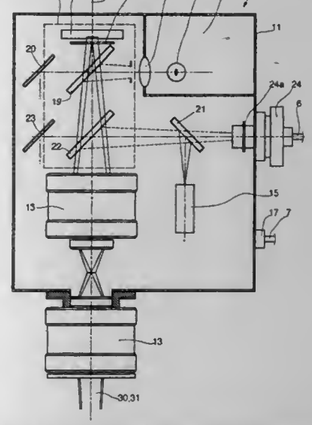
Jean Canteloup, Monthlery, and Jacky Mathias, Jargeau, both of France, assignors to Sofie, Arpajon, France

Filed Apr. 5, 1995, Ser. No. 418,137

Claims priority, application France, Apr. 5, 1994, 94 03981

Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—357 **9 Claims**



1. A method of in situ real time observation of the morphology and thickness of a localized area of a surface layer of a thin layer structure sample enclosed in a vacuum treatment chamber including a window on a top wall, said localized area including a specific analysis area, which method comprises the following steps:

directing an illumination light beam in a predetermined spectrum and at least one laser beam onto said localized area, said beams following a common optical path centered on the optical axis of the objective of a video camera, said video camera containing a matrix sensor, and passing through said window of said treatment chamber to impinge on said localized area, and said laser beam having a predetermined wavelength;

directing the light beam reflected by said localized area and following said common optical path firstly to the matrix sensor of said video camera via a filter to show a monochromatic map of said localized area by differential interferometry, said filter having a characteristic wavelength close to said wavelength of said laser beam, and secondly to a monochromator via a selector diaphragm, a fiber optic cable and an analyzer slit at the monochromator entry. in succession;

delimiting said specific analysis area by means of the aperture of said selector diaphragm to exclude in said localized area the parts that are not representative of said surface layer of said sample for the purposes of analysis;

measuring a thickness of said surface layer in said specific analysis area by spectral analysis, wherein a first intensity of said reflected light beam directed secondly to said monochrometer is measured with said monochrometer at a plurality of wavelengths such that a number of interference maxima and minima are determined between a first measurement wavelength end and a second measurement wavelength end such that spectral analysis provides a measure of said thickness of said surface layer in said specific analysis area; and

measuring a rate of change of said thickness of said surface layer in said specific analysis area, wherein a second intensity of said reflected light beam directed firstly to said matrix sensor is measured at a plurality of times such that differential interferometry with a predetermined narrow wavelength region provides a measure of the rate of change of said thickness of said surface layer in said specific analysis area.

5,648,850

METHOD AND DEVICE FOR QUALITY CONTROL OF OBJECTS WITH POLARIZED LIGHT

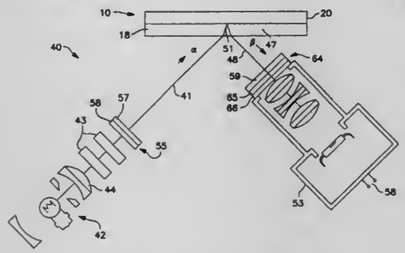
Norbert Basler; Jürgen Klicker, both of Hoisdorf, and Dietmar Ley, Ahrensburg, all of Germany, assignors to Basler GmbH, Ahrensburg, Germany

Filed Sep. 21, 1995, Ser. No. 531,692

Claims priority, application Germany, Sep. 27, 1994, 44 34 473.2

Int. Cl.[6] G01N *21/21*

U.S. Cl. 356—369 **11 Claims**



1. A method for optically detecting a double refraction phenomenon in an optical disc or the like which has a transparent layer, the double refraction phenomenon being caused by internal stresses within the optical disc, comprising the steps of:

projecting a light beam onto the optical disc such that said light beam is reflected by the optical disc, said light beam having at least one wavelength range thereof elliptically polarized by a first phase de!ay plate before being projected onto the optical disc;

filtering said light beam with a polarization device after said light beam is reflected by the optical disc; and

exposing said light beam to a photosensitive receiver after said light beam is filtered by said polarization device;

wherein said polarization device filters a polarized part of said light beam which corresponds in polarization to that of said light beam projected onto the optical disc;

wherein said polarization device comprises a second phase delay plate and a linear polarization filter; and

wherein said polarization device is arranged with respect to said light beam such that said light beam is transmitted through said polarization device only if the transparent layer of the optical disc is essentially flawless without any double refraction phenomenons;

whereby said light beam exposed to said photosensitive receiver which indicates a lack of a double refraction phenomenon is useable to simultaneously detect for other error phenomenon in the optical disc.

5,648,851

DEVICE FOR DETERMINING THE POSITION OF A BODY TO BE POSITIONED WITH RESPECT TO A REFERENCE BODY

Helmut Kellner, Moormerland, Germany, assignor to E.M.S. Technik GmbH, Leer, Germany

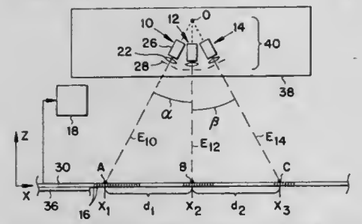
PCT No. PCT/DE94/00230, § 371 Date Sep. 14, 1995, § 102(e) Date Sep. 14, 1995, PCT Pub. No. WO94/21984, PCT Pub. Date Sep. 29, 1994

PCT Filed Mar. 1, 1994, Ser. No. 522,347

Claims priority, application Germany, Mar. 17, 1993, 43 08 456.7

Int. Cl.[6] G01B *11/14*

U.S. Cl. 356—375 **21 Claims**



1. A device for determining the position of a body to be positioned relative to a reference body, comprising:

a body bearing a graduated scale including optical samplers;

a reference body including at least three projectors which form projection angles to one another and the optical axes of which form at least one projection center, said at least three projectors projecting at least three projected light marks on said graduated scale of said body; and

means for trigonometrically calculating the coordinates of said at least one projection center from the projection angles between said at least one projection center and at least three projected light marks as well as from a spacing distance between said at least three projected light marks as acquired by said optical samplers.

5,648,852

LASER BEAM TYPE DISTANCE MEASURING DEVICE

Masahiko Kato, Akikawa; Hiroshi Matsuzaki, Hachioji, and Tadashi Adachi, Sayama, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, and Olympus Optical Co., Ltd., Tokyo, both of Japan

Filed Oct. 20, 1995, Ser. No. 546,176

Claims priority, application Japan, Oct. 20, 1994, 6-255487

Int. Cl.[6] G01B *11/14*; G01C *3/08*

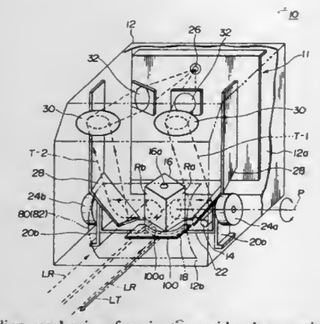
U.S. Cl. 356—375 **10 Claims**

1. A laser beam type distance measuring device comprising:

a laser beam emitter;

a returning laser beam detector;

a polygon mirror rotated about a first axis for reflecting a going laser beam from said laser beam emitter toward a remote object and reflecting a returning laser beam from said object toward a given optical track along which said returning laser beam travels to said returning laser beam detector;



a nodding mechanism for pivoting said polygon mirror about a second axis which is perpendicular to said first axis;

a case housing at least said polygon mirror, said case having a window opening through which said going and returning laser beams pass;

an outwardly swelled transparent cover covering said window opening in such a manner that a depressed inner surface thereof faces toward said polygon mirror in said case; and

a shielding plate installed in said case near said polygon mirror to prevent said going laser beam from entering said given optical track.

5,648,853

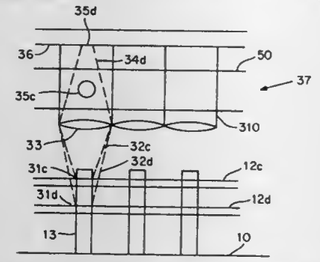
SYSTEM FOR INSPECTING PIN GRID ARRAYS

Howard Stern, Greenlawn, and William E. Yonescu, Smithtown, both of N.Y., assignors to Robotic Vision Systems, Inc., Hauppauge, N.Y.

Continuation of Ser. No. 164,417, Dec. 9, 1993, abandoned. This application May 18, 1995, Ser. No. 444,258

Int. Cl.[6] G01B *11/00*

U.S. Cl. 356—394 **25 Claims**



1. Apparatus for inspecting straightness of an array of pins comprising:

means for illuminating said array of pins with an encompassing thin beam of light;

photo sensitive surface means for reporting the locations of images incident thereon; means for collecting diffuse illumination reflected from said pins at a plane of intersection of said thin beam of light with said pins without obscuration of any pin by any of the other pins;

means for imaging surfaces of said array of pins illuminated by said beam of light onto said photosensitive surface means;

means for moving said array of pins relative to said beam of light and means for imaging; and

means for moving said means for imaging and photo sensitive means relative to said array of pins for producing a full contour image of each entire pin; images of said pins being obtained in three dimensions along the entire length of the pin; optical elements for intercepting said thin beam of light and diverging said beam of light to provide an effect that said beam of light emanates from an array of contiguous light sources located adjacent said optical elements for reducing shadowing effects of adjacent pins, each of said pins having a tip, said diffuse illumination only being radiated at substantially 90 degrees to said beam of light and being directed at said photo sensitive means when said plane intersects a pin below the tip of the pin, said diffuse illumination having a substantially lower intensity than the light intensity reflected from the tip; unobscured images of pins in inner rows of pins being obtainable from said diffuse reflected intensity.

5,648,854

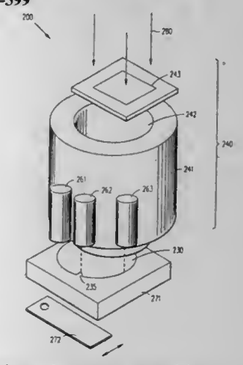
ALIGNMENT SYSTEM WITH LARGE AREA SEARCH FOR WAFER EDGE AND GLOBAL MARKS

John H. McCoy, San Carlos, and Kyochi Suwa, San Mateo, both of Calif., assignors to Nikon Corporation, Tokyo, Japan

Filed Apr. 19, 1995, Ser. No. 425,131

Int. Cl.[6] G01B *11/00*

U.S. Cl. 356—399 **32 Claims**



1. A wafer lithography system, comprising:

a projection lens assembly;

an x-y stage which moves a wafer from a first position where the wafer is loaded on the x-y stage to a second position where the projection lens assembly projects light onto the wafer;

a plurality of microscopes, each microscope being fixedly mounted to the projection lens assembly and having an object area including a portion of the wafer when the wafer is in the first position; and

an image processor which searches a first image formed by the microscope and determines a displacement required to move the wafer to the second position.

5,648,855

METHOD AND APPARATUS FOR VARYING-SPEED REPRODUCTION OF DIGITAL VIDEO SIGNALS

Naofumi Yanagihara, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 29, 1995, Ser. No. 520,839

Claims priority, application Japan, Sep. 6, 1994, 6-212755

Int. Cl.[6] H04N *5/76*; G11B *15/18*; *15/46*

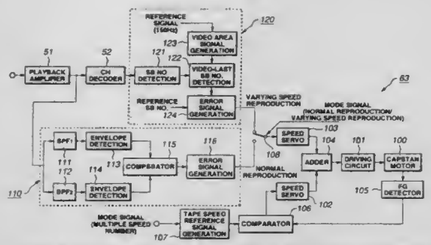
U.S. Cl. 386—80 **5 Claims**

1. A method for varying speed reproduction of digital video signals comprising the steps of:

running a magnetic tape having digital video signals recorded on inclined tracks thereof at a speed different from the normal running speed;

detecting the number of a pre-set one of sync blocks reproduced by each tracing by a rotary magnetic head; and

reproducing digital video signals from said magnetic tape in a phase-locked state by applying phase servo to a tape running



system using the difference between the sync block number and the target sync block number as the phase error.

5,648,856

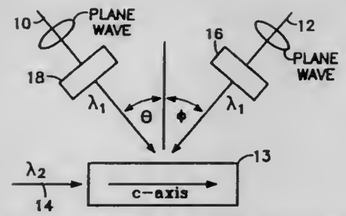
METHOD FOR OPTICALLY FIXING HOLOGRAMS IN PHOTOREFRACTIVE MATERIALS AND A READ/WRITE MEMORY BASED THEREON

Harold M. Stoll, Rancho Palos Verdes, Calif., assignor to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Apr. 10, 1995, Ser. No. 419,322

Int. Cl.[6] G02B *1/02;5/00;1/04*

U.S. Cl. 359—7 **13 Claims**



1. A method for optically fixing holograms in photorefractive crystalline materials comprising the steps of:

providing a crystal of photorefractive material in which holograms can be created by the redistribution of electrons and fixed by the redistribution of positive ions bound within said crystal,

forming a hologram (light interference pattern) in said material in which electrons are redistributed therein and cause variations of the electric fields in said crystal defining said hologram,

illuminating the material with light of a frequency in an absorption band of the ionic bond and having sufficient energy to cause the positive ions to be redistributed into new locations to neutralize the electric field variations caused by the electrons, whereat said positive ions remain fixed, forming a protonic grating in response to the electric fields.

5,648,857

MANUFACTURING METHOD FOR HOLOGRAM WHICH CAN PREVENT THE FORMATION OF GHANT HOLOGRAMS DUE TO NOISE LIGHT

Hiroshi Ando; Teiyuu Kimura, both of Nagoya; Minako Sugiura, Anjo, and Yoshikatsu Ichikawa, Hazu-gun, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Feb. 16, 1995, Ser. No. 389,321

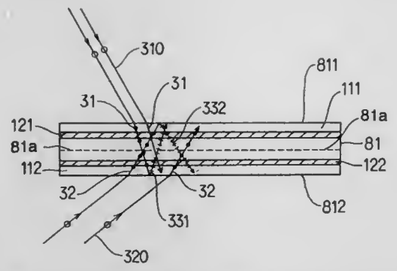
Claims priority, application Japan, Feb. 18, 1994, 6-45019

Int. Cl.[6] G03H *1/20;* **G02B** *5/30*

U.S. Cl. 359—12 **9 Claims**

1. A manufacturing method for a hologram, comprising the steps of:

providing a quarter-wave plate on at least one surface of a substrate for hologram formation, said substrate having a hologram photosensitive layer;



irradiating said substrate with circularly polarized light via said quarter-wave plate, whereby said circularly polarized light is converted into one of P-polarized light and S-polarized light; and

causing two luminous fluxes, both of which are one of P-polarized and S-polarized in association with said converted light to be irradiated from two directions with respect to said substrate to thereby form an interference fringe on said hologram photosensitive layer of said substrate.

5,648,858

LIQUID CRYSTAL DISPLAY WHICH SUPPRESSES INTERFERENCE FRINGES

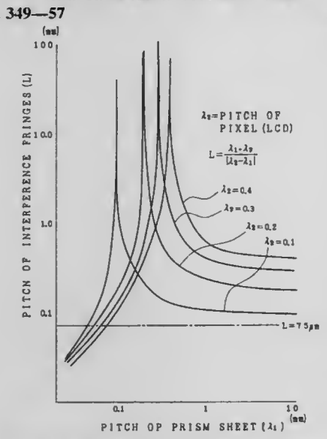
Katsuhiko Shibata, Mobara; Yoshio Toriyama, Nagara; Naoto Kobayashi, and Shiro Ueda, both of Mobara, all of Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Device Engineering Co., Ltd., Chiba-ken, both of Japan

Filed Jul. 21, 1993, Ser. No. 94,303

Claims priority, application Japan, Jul. 22, 1992, 4-195338

Int. Cl.[6] G02F *1/1335;* **F21V** *7/04*

U.S. Cl. 349—57 **20 Claims**



1. A liquid crystal display device comprising:

a liquid crystal display panel having a plurality of pixels arrayed on a transparent substrate with a pitch λ2 (mm);

a back light arranged below said liquid crystal display panel;

a prism plate having a plurality of stripe grooves provided between said liquid crystal display panel and said back light;

wherein said stripe grooves have a pitch λ_1 (mm) and said pixels have said pitch λ_2 (mm) in substantially the same direction as the direction of said pitch λ_1; and

the liquid crystal display device is constructed to satisfy a relation of $\lambda_1 \leqq 0.075\lambda_2/(\lambda_2+0.075)$.

5,648,859

LIQUID CRYSTAL MICROPRISM ARRAY, FREE-SPACE OPTICAL INTERCONNECTOR, AND OPTICAL SWITCH

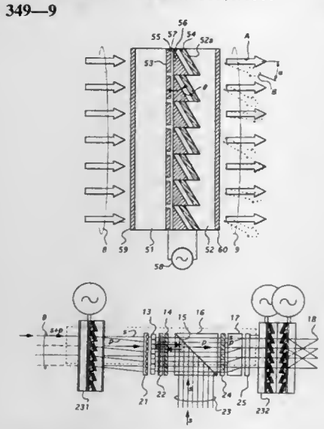
Katsuhiko Hirabayashi, Tokyo; Tsuyoshi Yamamoto, Iruma; Masayasu Yamaguchi, Funabashi, and Hirofumi Yamazaki, Hachioji, all of Japan, assignors to Nippon Telephone & Telegraph Corp., Tokyo, Japan

Filed Jul. 27, 1994, Ser. No. 281,268

Claims priority, application Japan, Jul. 28, 1993, 5-186164; Jun. 8, 1994, 6-126636

Int. Cl.[6] G02F *1/1333;1/1335*

U.S. Cl. 349—9 **19 Claims**



1. A liquid crystal microprism array comprising:

a first transparent substrate;

a transparent electrode divided into a plurality of electrode segments on a first surface of said first transparent substrate;

an alignment layer on a first surface of said first transparent substrate to cover said transparent electrode;

a second transparent substrate having a first surface facing said first surface of said first transparent substrate;

a transparent electrode on a first surface of said second transparent substrate;

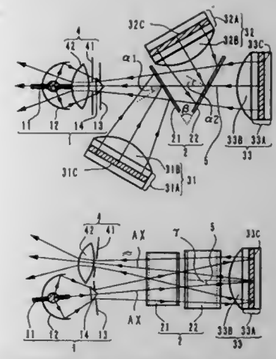
an alignment layer on a first surface of said second transparent substrate to cover said transparent electrode;

a power supply for placing a voltage between said transparent electrodes;

a plurality of grooves formed on said first surface of said second transparent substrate;

a plurality of spaces divided by ridges of said grooves; and

a liquid crystal layer sandwiched by said first and second transparent substrates.



two color separating and synthesizing means being angularly arranged in a horizontal plane at an angle in a range of 40° to 70° with respect to each other and each disposed at respective incident angles α1, α2 with respect to said optical axis, wherein α1 and α2 are in a range of 20° to 35°, said two color separating and synthesizing means each separating at least one color from said light to form respectively a first color light, a second color light, and a third color light;

a light modulation system configured to modulate, reflect and condense, respectively, each of the first, second and third color lights, said light modulating system comprising three optical elements each of which comprises,

a liquid crystal optical element configured to modulate incident light to produce a modulated light, said liquid crystal optical element comprising,

a front substrate having a transparent front electrode,

a back substrate having a back electrode, and

a liquid crystal and solidified matrix composite layer disposed between said front substrate and said back substrate and comprising a nematic liquid crystal dispersed and held in a solidified matrix,

a reflection layer configured to reflect said modulated light with an incident angle, γ, in a range of 1° to 20°, and

a condenser lens configured to converge the modulated light reflected by said reflection layer,

wherein said three optical elements respectively modulate, converge and output the first, second and third color lights; and

a light projection optical system which projects the first, second, and third color lights in at least one of a look-up projection angle or a look-down projection angle with respect to said horizontal plane.

5,648,860

PROJECTION TYPE COLOR LIQUID CRYSTAL OPTICAL APPARATUS

Yoshiharu Ooi; Tsuneo Wakabayashi; Shigeyuki Serizawa; Yoshiyuki Sonda; Masaya Kunigita, and Yoshinori Hirai, all of Yokohama, Japan, assignors to AG Technology Co., Ltd., Yokohama, Japan

Continuation-in-part of Ser. No. 133,222, Oct. 7, 1993. This application Feb. 18, 1994, Ser. No. 198,275

Claims priority, application Japan, Oct. 9, 1992, 4-298019; Oct. 9, 1992, 4-298020; Feb. 18, 1993, 5-52920; Apr. 14, 1993, 5-111043

Int. Cl.[6] G02F *1/1335;* **H04N** *9/31*

U.S. Cl. 349—10 **13 Claims**

1. A projection type color liquid crystal optical apparatus, comprising:

a light source system which produces light along an optical axis;

a color separating and synthesizing optical system comprising,

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5,648,861

SPATIAL LIGHT MODULATOR HAVING A GERMANIUM OXIDE LIGHT SHIELDING LAYER CONTAINING ADDITIVE MATERIAL OR LAMINATED WITH SiO_2

Hiroyuki Natsuhori, Kamakura, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Jan. 31, 1996, Ser. No. 595,029

Claims priority, application Japan, Jan. 31, 1995, 7-034400

Int. Cl.[6] G02F *1/1333;1/133*

U.S. Cl. 349—116 **7 Claims**

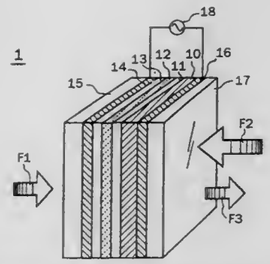
1. A spatial light modulator comprising:

a first transparent electrode;

a photoconductive layer formed on the first transparent electrode;

a light shielding layer formed on the photoconductive layer, the light shielding layer being made of a germanium oxide containing oxygen from 25 to 50 at % which is defined as an atomic ratio of oxygen to the germanium oxide;

a light reflecting layer formed on the light shielding layer;



a photomodulation layer formed on the light reflecting layer; and

a second transparent electrode formed on the photomodulation layer.

5,648,862

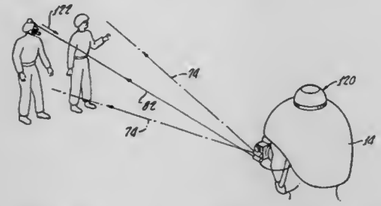
NIGHT VISION DEVICE WITH AUDIO COMMUNICATION AND IDENTIFICATION FACILITY

Larry D. Owen, Phoenix, Ariz., assignor to Litton Systems, Inc., Woodland Hills, Calif.

Filed Jul. 27, 1994, Ser. No. 281,442

Int. Cl.[6] H04B *10/00*

U.S. Cl. 359—153 **17 Claims**



1. A night vision device for receiving non-image information from a source in a night-time scene, said night vision device comprising:

an image intensifier having a field of view and receiving low-level light from said night-time scene, said image intensifier providing to a user of said night vision device a visible image replicating the night-time scene including said source while in said field of view;

receiver means for receiving a light beam carrying non-image information from said source while within said field of view, and for responsively providing an output response to said user.

5,648,863

OPTICAL COMMUNICATION SYSTEM

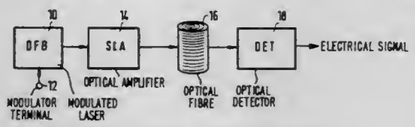
Coen T.H.F. Liedenbaum, Eindhoven, Netherlands, assignor to U.S. Phillips Corporation, New York, N.Y.

Filed Sep. 15, 1995, Ser. No. 529,186

Claims priority, application European Pat. Off., Sep. 15, 1994, 94202661

Int. Cl.[6] H04B *10/00;10/02*

U.S. Cl. 359—154 **5 Claims**



1. An optical communication system comprising:

a light source;

means for modulating the light source in response to an electrical digital signal to provide a digitally modulated light signal having pulses extending between a low level and a high level;

an optical amplifier coupled to the light source to receive and amplify the modulated light signal, which amplifier has an output overshoot characteristic when overdriven into saturation;

an optical channel over which the amplified light signal from the amplifier is transmitted; and

an optical detector for converting a light signal received from the optical channel into an electrical signal;

characterized in that

the light source and the means for modulating the light source together provide an electro-optical transfer function which results in pulse shortening of the modulated light signal,

the high level pulses of the modulated light signal overdrive the optical amplifier into saturation, and

the digital signal has a bit period T and the output overshoot of the amplifier matches the pulse shortening of the modulated light signal caused by the electro-optical transfer function,

whereby the intensity integral of a high level pulse of the amplified light signal over the bit period T is substantially the same for an isolated bit as for successive bits in a bit stream.

5,648,864

OPTICAL SCANNER

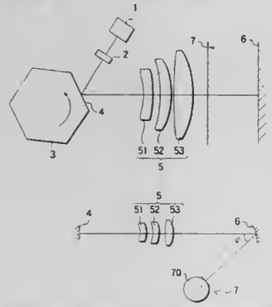
Akihisa Itabashi, Mitaka, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Feb. 23, 1996, Ser. No. 606,350

Claims priority, application Japan, Mar. 23, 1995, 7-063930

Int. Cl.[6] G02B *26/08*

U.S. Cl. 359—205 **6 Claims**



1. An optical scanner in which a parallel light beam from a light source device is formed by an image forming element as a linear image extending in a main scan-corresponding direction and is deflected at an equal angular velocity by a rotary polygon mirror having a deflecting reflecting face in the vicinity of said linear image; and

the deflected light beam is converged as a light spot on a scanned face by an image forming optical system for an equal speed scan to perform an optical scanning operation at an equal speed;

the optical scanner being constructed such that said image forming optical system for an equal speed scan has an fθ lens having an fθ function in the main scan-corresponding direction and converging the deflected light beam onto the scanned face in the main scan-corresponding direction;

the image forming optical system also has a concave reflecting mirror having positive refracting power only in a cross scan-corresponding direction and converging the deflected light beam onto the scanned face in the cross scan-corresponding direction in cooperation with said fθ lens;

a radius of curvature of said concave reflecting mirror in the cross scan-corresponding direction is increased from a central region thereof toward both end portions of the concave reflecting mirror in a longitudinal direction thereof in accordance with a predetermined formula of the second degree at a deflection angle θ of the deflected light beam deflected by said rotary polygon mirror; and

a portion of the concave reflecting mirror minimizing said curvature radius is shifted by a predetermined distance in a predetermined direction from the position of an optical axis of the fθ lens in the main scan-corresponding direction so as to correct field curvature in a cross scanning direction along an effective scanning region.

5,648,865

SCANNING OPTICAL SYSTEM

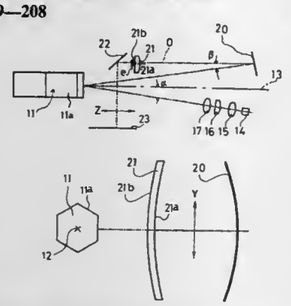
Takashi Iizuka, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 23, 1994, Ser. No. 362,980

Claims priority, application Japan, Dec. 27, 1993, 5-333189; Aug. 31, 1994, 6-207183

Int. Cl.[6] G02B *26/08*

U.S. Cl. 359—208 **20 Claims**



1. A scanning optical system comprising:

a light deflector rotating about a rotational axis perpendicular to a main scanning direction;

a laser beam emitter for emitting a laser beam which scans a scanning surface along said main scanning direction and for making said laser beam incident upon said light deflector at a first angle;

a curved mirror having a curvature at least along said main scanning direction for reflecting said laser beam, deflected by said light deflector, at a second angle with respect to said laser beam incident upon said curved mirror; and,

an anamorphic lens disposed between said curved mirror and said scanning surface,

wherein said anamorphic lens comprises a first surface having an aspherical cross section, at least along said main scanning direction, and a second surface having a second aspherical surface which has no rotation axis,

wherein a radius of curvature of said second aspherical surface along a sub-scanning direction perpendicular to said main scanning direction away from an optical axis is independent of a shape of said second aspherical surface along said main scanning direction,

wherein said laser beam emitter emits said laser beam towards said rotational axis

further wherein said first and second angles are measured on a sub-scanning plane which extends in said sub-scanning direction and includes said optical axis.

5,648,866

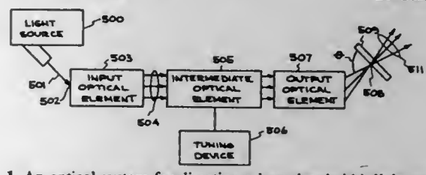
OPTIMIZED ACHROMATIC PHASE-MATCHING SYSTEM AND METHOD

Rick Trebino; Ken DeLong, both of Livermore, and Carl Hayden, Pleasanton, all of Calif., assignors to Sandia Corporation, Albuquerque, N. Mex.

Filed Jun. 12, 1995, Ser. No. 489,473

Int. Cl.[6] G02F *1/35*

U.S. Cl. 359—326 **20 Claims**



1. An optical system for directing a large bandwidth light pulse having a plurality of light rays onto a nonlinear optical medium, the optical system comprising:

an input optical element arranged to receive the light pulse at a position x on the input optical element;

an output optical element arranged to direct an output light pulse onto the nonlinear optical medium at an angle Θ with respect to an optical axis of the nonlinear optical medium; and

one or more intermediate optical elements arranged between the input optical element and the output optical element to direct light output from the input optical element onto the output optical element, wherein

the angle Θ is substantially independent of the position x such that dΘ/dx is approximately zero, and

at least one of the input, output and intermediate optical elements are adjustable such that the group-velocity dispersion dt/dv of the light pulse as it passes through the optical system is tuned to a desired value, where v represents a frequency of a light ray in the light pulse and t represents a propagation time of the light ray passing through the optical system, and such that each light ray enters the nonlinear optical medium at an incidence angle which is equal to a phase matching angle of the nonlinear optical medium for the frequency of that light ray.

5,648,867

LENS SYSTEM AND PHOTOGRAPHIC COPIER FOR ROTATING IMAGES

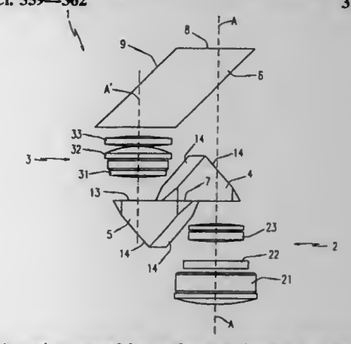
Walter Hellriegel, and Eberhard Dietzsch, both of Jena, Germany, assignors to Agfa-Gevaert AG, Leverkusen, Germany

Filed Sep. 5, 1995, Ser. No. 524,292

Claims priority, application Germany, Sep. 21, 1994, 44 33 713.2; Feb. 21, 1995, 195 05 944.1

Int. Cl.[6] G02B *5/20;17/00;23/00;* **G03B** *27/74*

U.S. Cl. 359—362 **37 Claims**



18. A copier, comprising a first positioning arrangement for positioning masters at a first location; a second positioning

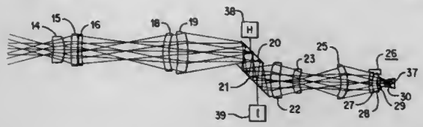
arrangement for positioning copy material at a second location; and a lens system for projecting images of the masters to said second location, said lens system including first lens means, second lens means, and prism means between said first lens means and said second lens means, said first lens means having negative refractive power and said second lens means having positive refractive power, wherein said first lens means, said second lens means and said prism means together have a predetermined focal length, said first lens means having a first optical axis, and said second lens means having a second optical axis, said first lens means and said second lens means being arranged so that a path extending along said first optical axis from said first lens means to a first location between said first lens means and said second lens means, from said first location substantially linearly to a second location between said first lens means and said second lens means, and from said second location along said second optical axis to said second lens means has a length at least 1.2 times said predetermined focal length.

5,648,868

SECOND GENERATION FLIR NV-81

John M. Hall, Alexandria; Richard A. Wright, Stafford, and Philip Perconti, Woodbridge, all of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 12, 1995, Ser. No. 440,399
Int. Cl.[6] G02B *17/00;5/08;* **G01J** *5/02;* **H04N** *3/08*
U.S. Cl. 359—364 **7 Claims**



1. A GEN II FLIR (with TDI and interlace) for a Pilot's Night Vision System having a closed cylindrical housing with a plane circular floor and a dormer-like vestibule apertured to define a optical input window in an input plane normal to said floor as used in the U.S. Army's Apache and Commanche type helicopter, which housing encloses and supports; a dewar, the optical axis of said FLIR between said input window and said dewar, and a series of far infrared (mirror and lens) elements along said optical axis (and a sensor array at the output end of said optical axis); said far infrared elements, comprising:

five mirrors mounted in a series within said housing along said optical axis to fold the said optical axis into five segments that sequentially traverse the length width and depth of said housing and thereby occupy less than half of the volume of said housing, the first mirror and segment being adjacent said input window;

a first set of objective lens elements mounted on said optical axis between the first and second mirrors of said series;

a second set of relay lens elements mounted between the second and third mirrors of said series;

a third set of first image reducing lens elements mounted between the fourth and fifth mirrors of said series;

a separate image reducing lens and a fourth set of eyepiece lens elements mounted between said fifth mirror and said dewar;

a detector element comprising a two dimensional staggered TDI array of far-infrared sensors mounted at the end of the fifth segment of said optical axis in said dewar:

a first remotely actuated motorized mounting means attached to said housing to rotate said first mirror of said mirrors about a first axis parallel to said input plane and said floor, so as to simulate head movements of the user;

a second motorized mounting means attached to said housing adjusted to angularly vibrate said third mirror about a second axis at the field scan frequency of said FLIR with sufficient amplitude to accomodate the TDI properties of said array; and

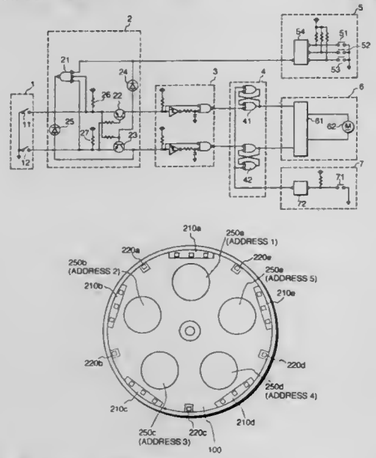
a third motorized mounting means attached to said housing adjusted to angularly vibrate said fourth mirror about a third axis at a fraction of the frequency and amplitude of said first mounting means to interlace at least two successive fields, said second and third axes being normal to each other with one of said second and third axes being parallel to said floor.

5,648,869

MICROSCOPE

Chikaya Ikoh, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Aug. 2, 1995, Ser. No. 510,265
Claims priority, application Japan, Aug. 5, 1994, 6-204596
Int. Cl.[6] G02B *7/02;21/00*
U.S. Cl. 359—368 **10 Claims**



1. A microscope comprising:

a revolver on which are mounted at least three objective lenses having different magnifications;

a driving device for revolving said revolver to dispose the objective lenses selectively in an optical path of said microscope;

an operating device capable of producing drive commands for causing said driving device to switch the objective lens disposed in the optical path; and

means for preventing execution of a specified drive command to switch the objective lens disposed in the optical path from one having a minimum magnification to one having a maximum magnification among said objective lenses.

5,648,870

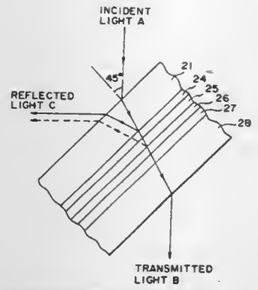
DICHROIC MIRROR AND PROJECTOR HAVING THE SAME

Hideaki Mistutake, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 735,283, Jul. 24, 1991, abandoned. This application Aug. 16, 1994, Ser. No. 291,343
Claims priority, application Japan, Jul. 26, 1990, 2-196370; Feb. 19, 1991, 3-45424
Int. Cl.[6] G02B *5/28;5/30;27/28*
U.S. Cl. 359—487 **44 Claims**

1. A dichroic mirror for reflecting a red beam, comprising:

a substrate; and



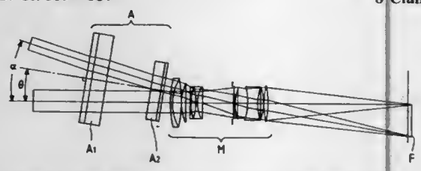
a multilayered film formed on said substrate, said multilayered film being constituted by a first dichroic reflecting layer, an intermediate layer, and a second dichroic reflecting layer in the order named from the incident side of the red beam, said first dichroic reflecting layer having a smaller reflection range of a P-polarized component of the beam than that of an S-polarized component thereof, said intermediate layer rotating, through substantially 90°, at least part of a beam of the P-polarized component of the beam passing through said first dichroic reflecting layer, said second dichroic reflecting layer having short-wavelength characteristics of the reflection range of the S-polarized component of the red beam to be almost equal to short-wavelength characteristics of the reflection range of the S-polarized component in said first dichroic reflecting layer, and said second dichroic reflecting layer reflecting the at least part of the beam whose polarization plane is rotated by said intermediate layer.

5,648,871

PROJECTION APPARATUS UTILIZING AN ANAMORPHIC OPTICAL SYSTEM

Atsushi Okuyama, Tokyo; Hideo Yokota, Yokohama, and Katsumi Azusawa, Konosu, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 905,104, Jun. 26, 1992, abandoned. This application Jan. 18, 1995, Ser. No. 375,505
Claims priority, application Japan, Jun. 28, 1991, 3-158478; Sep. 30, 1991, 3-278792; Nov. 8, 1991, 3-321263
Int. Cl.[6] G02B *27/64*
U.S. Cl. 359—557 **8 Claims**



1. A projection apparatus for producing an enlarged projection of an original image onto the surface of a screen, comprising:

master lens means, having an optical axis and being capable of zooming along the optical axis, for projecting the original image;

auxiliary lens means disposed on the screen side of said master lens and having an optical axis that is capable of being inclined with respect to the optical axis of said master lens means; and

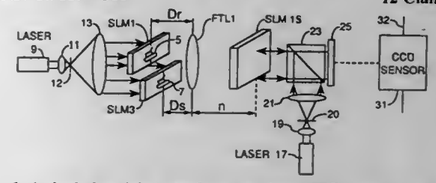
means for varying an inclination of said auxiliary lens means relative to the optical axis of said master lens means in response to a zooming of said master lens means.

5,648,872

SINGLE LENS JOINT TRANSFORM CORRELATOR UTILIZING A FRESNEL ZONE PLATE SIGNAL

Thomas J. Grycewicz, Belmont, Mass., assignor to The United States of America As Represented By The Secretary Of The Air Force, Washington, D.C.

Filed Sep. 29, 1995, Ser. No. 536,809
Int. Cl.[6] G02B *27/46;* **G06K** *9/58*
U.S. Cl. 359—560 **12 Claims**



1. A single lens joint transform correlator (JTC) comprising:

(a) Fourier transform means for producing an interference pattern between Fourier transforms of a reference image and an input image in a transform plane;

(b) joint image positioning means for positioning said reference image a first optical distance from said Fourier transform means and for positioning said input image a second optical distance from said Fourier transform means different from said first distance for producing a chirp encoded joint power spectrum at said transform plane which includes an encoded lens signal therein; and

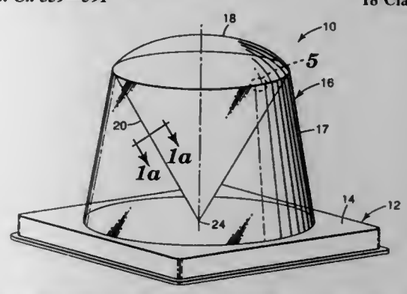
(c) correlation output detector means positioned in a focal plane of said encoded lens signal for producing a correlation signal indicative of the degree of match between said input image and said reference image, without the need for providing an inverse Fourier transform means.

5,648,873

PASSIVE SOLAR COLLECTOR

Paul A. Jaster, Arden Hills, Minn., and Mark Joseph O'Neill, Keller, Tex., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 30, 1996, Ser. No. 655,578
Int. Cl.[6] G02B *17/00*
U.S. Cl. 359—591 **18 Claims**



1. An apparatus for directing sunlight through an aperture in a structure toward a target area, comprising:

passive reflector means for reflecting sunlight toward said target area, said passive reflector means having an upper portion that extends through an arc having a radius of curvature R_1 and a lower portion that extends through an arc having a radius of curvature R_2, less than R_1,

light spreading means displaced from said passive reflector means for spreading light reflected from said passive reflector means; and

support means for holding said passive reflector means in a fixed spatial relationship with said light spreading means such that a first portion of the sunlight incident on said apparatus is

reflected from said passive reflector means toward said light spreading means and through said aperture.

5,648,874

OPTICAL APPARATUS

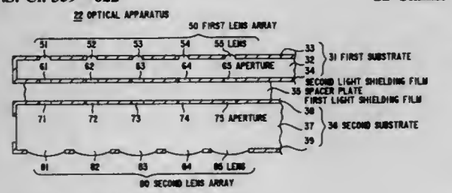
Ippei Sawaki; Michio Miura; Yoshiro Ishikawa, and Fumitaka Abe, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 27, 1995, Ser. No. 495,171

Claims priority, application Japan, Jun. 29, 1994, 6-147361; May 31, 1995, 7-133931; Jun. 12, 1995, 7-144763

Int. Cl.[6] G02B *27/10*

U.S. Cl. 359—622 **22 Claims**



1. An optical apparatus comprising:

a first lens array consisted of a plurality of lens to form a reduced image in reversed orientation;

a second lens array consisted of a plurality of lens, arranged at positions corresponding to respective lens in the first lens array, and forming an erected equal magnification image from the reduced image by expanding the reduced image in the given magnification; and

at least one light shielding film arranged between the first lens array and the second lens array and having through openings for passing light discharged from respective lens of the first lens array at positions corresponding to respective lens of the first lens array.

5,648,875

OPTICAL SCANNNG SYSTEM HAVING ERROR CORRECTION

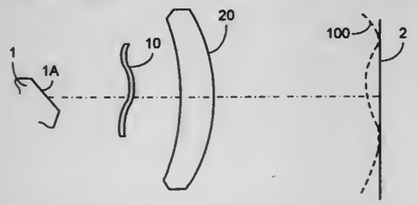
Tetsurou Okamura, Nagano-ken, Japan, assignor to Sankyo Seiki Mfg. Co., Ltd., Nagano-ken, Japan

Filed Jul. 27, 1994, Ser. No. 280,890

Claims priority, application Japan, Aug. 11, 1993, 5-199694

Int. Cl.[6] G02B *3/00;26/08*

U.S. Cl. 359—662 **6 Claims**



1. An anamorphic optical scanning system which exhibits an f_θ function in a main scanning parallel direction and in which a deflecting reflection facet position and a surface-to-be-scanned position are substantially in geometric optical conjugation in a sub scanning parallel direction comprising:

two or more lenses, only one of said two or more lenses being a corrector lens which corrects curvature of field of said sub scanning parallel direction;

said corrector lens being (a) made of plastic so as to (b) have a substantive power only in said sub scanning parallel direction, said corrector lens being (c) curved along its longitudinal direction so as to correct curvature of field in said sub scanning parallel direction; and

said corrector lens having (d) a cross-sectional configuration taken in a plane which is parallel to a central optical axis and perpendicular to said main scanning parallel direction which is substantially constant along the longitudinal direction of said corrector lens.

5,648,876

LENS BARREL WITH REDUCED PARTS FOR FIXING INTERLOCKING KEY TO ROTARY MEMBER

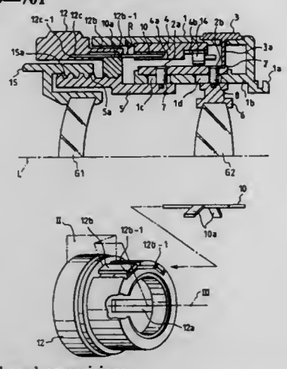
Hiroshi Tanioka, Kashiwa, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Dec. 8, 1995, Ser. No. 569,686

Claims priority, application Japan, Apr. 26, 1995, 7-101845

Int. Cl.[6] G02B *15/14*

U.S. Cl. 359—701 **4 Claims**



1. A lens barrel comprising:

an interlocking key member, extending in an optical-axis direction, for transferring a rotary force for moving an optical system; and

a rotary member serving to hold said interlocking key member and rotating about the optical axis;

said rotary member having an inserted portion into which said interlocking key member is inserted and an engagement portion for regulating a movement of said interlocking key member in the optical-axis direction, and

said interlocking key member having an engaged portion to engage said engagement portion when inserted into said inserted portion of said rotary member.

5,648,877

OBJECTIVE DIAPHRAGM

Markus Schnitzlein, Radolfzell, Germany, assignor to Computergesellschaft Constance, Constance, Germany

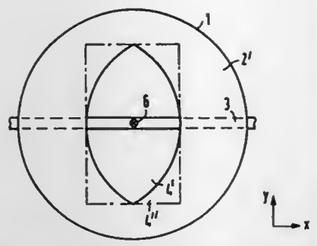
Filed Dec. 3, 1993, Ser. No. 161,922

Claims priority, application Germany, Dec. 3, 1992, 42 40 734.6

Int. Cl.[6] G02B *26/08*

U.S. Cl. 359—739 **8 Claims**

1. An objective diaphragm for imaging an image original to be scanned line-by-line onto an optical CCD sensor line, comprising a



diaphragm aperture having a greater expanse orthogonally relative to said CCD sensor line than parallel to said CCD sensor line.

5,648,878

INTEGRALLY DRIVEN THREE BEAM-TYPE PROJECTION APPARATUS

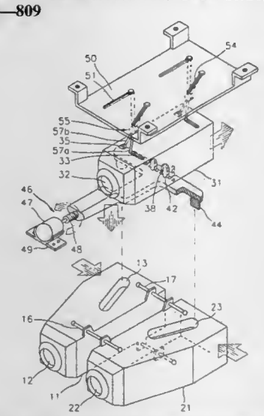
Jun-Hyun Park, Seoul, Rep. of Korea, assignor to Daewood Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Mar. 28, 1996, Ser. No. 623,574

Claims priority, application Rep. of Korea, Mar. 31, 1995, 95-7421

Int. Cl.[6] G02B *3/00;27/00;* **G03B** *21/26;3/00*

U.S. Cl. 359—809 **9 Claims**



1. A three beam-type projection apparatus comprising:

a pair of first and second projectors having a first and a second projecting lenses in front of said first and second projectors respectively, said first projector having a first guiding groove formed therein of a predetermined shape, said second projector having a second guiding groove formed therein of a predetermined shape, said first and second projectors being connected with each other through a plurality of guiding rods;

a third projector having a third projecting lens in front of said third projector, being placed in parallel with, but separated from a central line between said first and second projectors, and being provided with an inserting hole formed on a portion of said third projector facing said first and second projectors;

a guiding plate combined with said first, second and third projectors by being inserted into said first and second guiding grooves formed on said first and second projectors and into said inserting hole formed on the facing portion of said third projector, said guiding plate being transported forward and backward by a driving means;

a fixing plate fixed on an inner portion of a housing, said fixing plate being provided at one side thereof with a parallel guiding hole formed along a longitudinal direction of said third projector and being provided at the other side thereof with an inclined guiding hole formed with a predetermined inclination for guiding transportation of said third projector; and

a cross link provided between said fixing plate and said third projector to combine said fixing plate and said third projector, said cross link being operable to fold and unfold when said third projector is transported.

5,648,879

METHOD OF AND APPARATUS FOR CONTROLLING THE PHASE OF A VIDEO SIGNAL

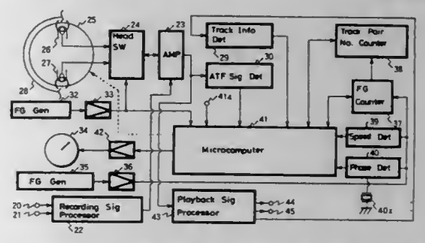
Akira Takano, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 6, 1995, Ser. No. 553,932

Claims priority, application Japan, Nov. 7, 1994, 6-272526

Int. Cl.[6] G11B *15/52*

U.S. Cl. 360—73.11 **12 Claims**



1. A method of controlling the phase of a video signal in a playback apparatus or a recording/playback apparatus for reproducing a signal recorded on a magnetic tape with a rotary head and effecting a playback process on the reproduced signal, comprising the steps of:

counting pulses of a capstan motor frequency signal from a frequency generator which outputs a frequency signal depending on the rotation of a capstan motor for transporting the magnetic tape, in every N tracks, for producing group count data representing a count of groups each composed of N tracks;

extracting group number data allotted to every N tracks from a reproduced signal which is produced when the signal recorded on the magnetic tape is reproduced by the rotary head when the rotary head is locked in phase with a reference signal;

producing shift quantity data representative of a shift quantity by which the rotary head is to be shifted to a target phase lock position with respect to the magnetic tape, based on a value indicated by said group count data and a value indicated by said group number data;

generating a capstan motor drive signal for energizing the capstan motor to rotate at a speed depending on a value indicated by the shift quantity data;

supplying the capstan motor drive signal to the capstan motor and detecting whether the number of pulses of the capstan motor frequency signal from the frequency generator falls within a target value or not; and

supplying a capstan motor frequency signal representing a standard speed to the capstan motor if the number of pulses of the capstan motor frequency signal falls within the target value.

5,648,880

VIDEO CASSETTE PLAYER WITH ROTARY DRUM ROTATED BY A CAPSTAN MOTOR

Hee-Sung Yoon, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Jan. 11, 1996, Ser. No. 585,073

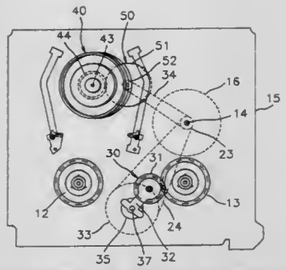
Claims priority, application Rep. of Korea, Mar. 29, 1995, 95-5863

Int. Cl.[6] G11B *15/28;5/52*

U.S. Cl. 360—96.4 **4 Claims**

1. A video cassette player comprising:

a main base;



a head drum assembly mounted to the main base, the head drum assembly including a rotary drum, a stationary drum, a rotating shaft and a driven gear, wherein the rotary drum and the driven gear are fixed to upper and lower portion of the rotating shaft, respectively, and rotating therewith;

a capstan motor provided with a capstan shaft, the capstan motor mounted on the main base such that the capstan shaft is rotatable;

a driving pulley fixed to the capstan shaft, rotating therewith;

supply and take-up reel tables rotatably mounted on the main base;

an idler assembly provided with a bracket, a hinge shaft, an idle gear, an intermediate gear and a first driven pulley, wherein the hinge shaft is mounted to the main base, the first driven pulley and the intermediate gear are, in turn, secured to the hinge shaft, one end portion of the bracket is pivotably fixed to the hinge shaft, the idle gear is rotatably fixed to the other end portion of the bracket, engaged with and rotated through the intermediate gear in response to a rotation of the first driven pulley, and the idle gear is engaged with either the supply reel table or the take-up reel table depending on a rotational direction of the capstan motor;

a driving gear assembly including a shaft, a driving gear and a second driven pulley, wherein the shaft is rotatably fixed to the main base, the driving gear and the second driven pulley are, in turn, fixed to the shaft, the driving gear being engaged with the driven gear of the head drum assembly; and

first and second belts for simultaneously transmitting a rotational force of the capstan motor to the first driven pulley and the second driven pulley, the first belt coupling the driving pulley and the first driven pulley, the second belt coupling the driving pulley and the second driven pulley.

5,648,881

DISK DRIVING MOTOR AND CHUCKING MECHANISM FOR DISK DRIVE APPARATUS

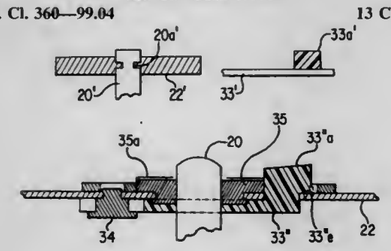
Hideya Yokouchi, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo-to, Japan

Division of Ser. No. 233,890, Apr. 26, 1994, which is a continuation-in-part of Ser. No. 894,839, Jun. 8, 1992, Pat. No. 5,311,383. This application Apr. 23, 1996, Ser. No. 636,301

Claims priority, application Japan, Jun. 24, 1991, 3-151254; Jun. 24, 1991, 3-151525; Apr. 24, 1992, 4-131553

Int. Cl.[6] G11B *5/016*

U.S. Cl. 360—99.04 **13 Claims**



1. In a disk driving motor having a rotatable spindle for insertion through a central hole of a disk hub of a disk which is to be rotated by the disk driving motor, the disk hub having a drive hole offset from the central hole, said disk driving motor comprising:

a rotary member attached to the spindle for rotation with the spindle; and

a chucking mechanism including a chucking lever pivotally attached to said rotary member and a drive pin made of plastic and located near one end of said chucking lever.

5,648,882

FRONT STRUCTURE FOR MAGNETIC RECORDING SYSTEM

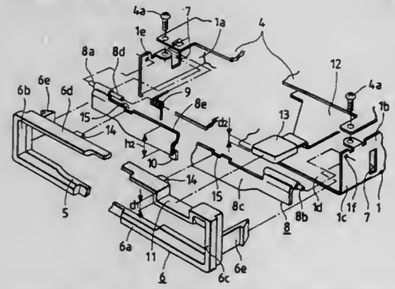
Yoshinori Tangi; Yoshihiro Okano, and Tsuneo Uwabo, all of Tokyo, Japan, assignors to Mitsumi Electric Company, Ltd., Tokyo, Japan

Filed Jun. 23, 1994, Ser. No. 264,324

Claims priority, application Japan, Jun. 30, 1993, 5-041369; Jun. 30, 1993, 5-041370; Jun. 30, 1993, 5-041371; Jun. 30, 1993, 5-041372; Jun. 30, 1993, 5-041373

Int. Cl.[6] G11B *33/02*

U.S. Cl. 360—99.06 **13 Claims**



1. A front structure for a magnetic recording device comprising:

a main chassis having a front portion;

a front frame secured to said front portion of said main chassis;

the front frame comprising resin and having a disk insertion opening and a back side;

a front door for closing the disk insertion opening, the front door being pivotally supported by the main chassis and positioned on said back side of the front frame; and

a stopper projection, coupled to said front door, for limiting pivotal motion of said front door,

said front frame including an upper side portion and at least one back projection projecting rearwardly from the back of said upper edge portion of said front frame and said front door includes an upper edge, and said back projection is positioned on said upper edge of the front door, thereby avoiding deformation of the upper side portion of said front frame due to an external force,

said front door includes an upper edge, a lower edge and at least one notch formed on said upper edge for receiving said at least one back projection, and wherein said front frame includes an upper side portion and lower portion having an upper surface,

wherein when said front door is closed over said disk insertion opening, said lower edge of said front door contacts said upper surface of said lower portion of said front frame, thereby avoiding deformation of said upper side portion of said front frame due to an external force.

5,648,883

DISC DRIVE HAVING POSITIONAL SHIFT ADJUSTMENT

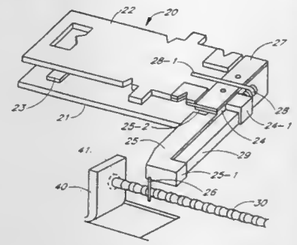
Hiroshi Sampei; Kouichi Hosoya; Kenji Katoh; Masashi Sato, all of Yamagata; Mitsutoshi Ohizumi, Tendou; Koichi Seno, Tendou; Hisateru Komatsu, Tendou; Takashi Watanabe, Tendou; Makoto Konno, Tendou, and Akira Shibata, Yamagata, all of Japan, assignors to Mitsumi Electric Co., Ltd., Tokyo, Japan

Filed Dec. 14, 1994, Ser. No. 355,606

Claims priority, application Japan, Jun. 10, 1994, 6-129356; Jul. 29, 1994, 6-197785

Int. Cl.[6] G11B *5/55*

U.S. Cl. 360—106 **11 Claims**



1. A disc drive, comprising:

a frame having a disc holder for rotatably driving a disc;

a head for reading information recorded in said disc;

a head carriage provided on said frame, said head carriage being movable in a predetermined radial direction of said disc;

a rotation shaft extending in parallel with said predetermined radial direction;

a driving means for moving said head carriage in said radial direction by engaging one part of said head carriage with said rotation shaft; and

an adjustment means for adjusting the positional shift of said head due to a deformation of said head carriage caused by a change of ambient temperature, said adjustment means including a carriage arm and an adjustment member mechanically fixed with each other, said adjustment member having a different thermal expansion coefficient from that of said carriage arm, and said carriage arm being extended, in a direction perpendicular to said radial direction, from the rear portion of said head carriage toward said rotation shaft.

5,648,884

MAGNETIC HEAD WITH AN UNDERLYING LONGITUDINAL MULTILAYER MAGNETORESISTOR

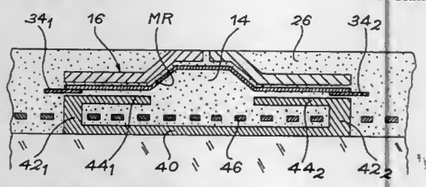
Jean-Pierre Lazzari, Coremc, France, assignor to Commissariat a L'Energie Atomique, Paris, and Silmag, Grenoble Cedex, both of France

Filed Aug. 21, 1995, Ser. No. 517,372

Claims priority, application France, Sep. 13, 1994, 94 10897

Int. Cl.[6] G11B *5/39*

U.S. Cl. 360—113 **5 Claims**



1. A magnetic head comprising:

an insulating portion having an insulating ridge section wherein said insulating ridge section has a flat apex and two inclined sides;

a multilayer magnetoresistor element operating in a longitudinal mode having a magnetoresistor ridged portion which surmounts said ridge section of said insulating portion, said multi-magnetoresistive layer further comprising two flat portions, each one of said flat portions being on a respective side of said ridge portion;

a magnetic layer covering said magnetoresistor element including two pole pieces separated by an amagnetic head gap position above said flat apex of said ridge section;

a thin insulating layer separating said magnetoresistor element from said magnetic layer whereby said magnetoresistor element is positioned between said magnetic layer and said insulating portion.

5,648,885

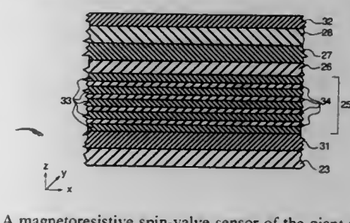
GIANT MAGNETORESISTIVE EFFECT SENSOR, PARTICULARLY HAVING A MULTILAYERED MAGNETIC THIN FILM LAYER

Koichi Nishioka, Takefu; Hideo Fujiwara, Tokyo, and Takayuki Iseki, Kanagawa-ken, all of Japan, assignors to Hitachi, Ltd., Tokyo; Victor Company of Japan, Ltd., Yokohama, both of Japan, and University of Alabama, Tuscaloosa, Ala.

Filed Aug. 31, 1995, Ser. No. 522,084

Int. Cl.[6] G11B *5/39*

U.S. Cl. 360—113 **56 Claims**



1. A magnetoresistive spin-valve sensor of the giant magnetoresistive type, comprising:

a first magnetic thin film layer of substantially ferromagnetic material;

a second magnetic thin film layer of substantially ferromagnetic material;

a non-magnetic thin film layer of non-magnetic metallic material sandwiched between said first and second magnetic thin film layers;

a thin film layer of anti-ferromagnetic material adjacent to said second magnetic thin film layer and in exchange coupling at adjacent surfaces with said second magnetic thin film layer to fix a magnetization orientation of said second magnetic thin film layer along a substantially fixed first direction;

said first magnetic thin film layer having a magnetization orientation that is in a second direction that is freely movable relative to said first direction in response to externally applied magnetic fields to be sensed, for thereby changing resistance of the layers to a passage of an electric sensing current in proportion to a first power of cosine of an angle θ between said first direction and said second direction;

said first magnetic thin film layer, said second magnetic thin film layer, said thin film layer of anti-ferromagnetic material and said non-magnetic thin film layer each having a same crystal structure and a same crystal plane orientation; and

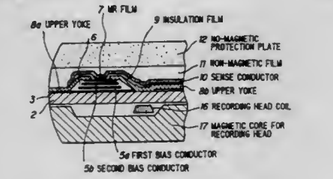
said first magnetic thin film layer comprising a plurality of magnetic thinner film layers of ferromagnetic material with the same crystal plane orientation from one of said magnetic thinner films to another, and an interlayer between each adjacent ones of said magnetic thinner film layers providing a discontinuity in single-crystal epitaxial growth between each of said magnetic thinner film layers.

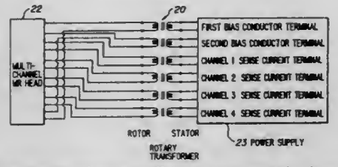
5,648,886

MAGNETO-RESISTANCE EFFECT TYPE MAGNETIC HEAD DEVICE

Tomio Kobayashi, Kanagawa, and Hideo Suyama, Miyagi, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 20, 1995, Ser. No. 530,992
Claims priority, application Japan, Sep. 22, 1994, 6-254590
Int. Cl.[6] G11B *5/39*
U.S. Cl. 360—113 **10 Claims**





1. A magneto-resistance effect type magnetic head device mounted on a rotating drum, for sensing magnetic signals from a magnetic recording medium moving past said rotating drum, the device having a magneto-resistive element, a bias conductor magnetically coupled to said magneto-resistive element, and a sense conductor electrically connected to said magneto-resistive element, comprising:

a rotary transformer having a first rotor channel connected to rotate with said drum and electrically connected to said bias conductor, and a second rotor channel connected to rotate with said drum and electrically connected to said sense conductor;

a stationary stator having a first stator channel magnetically coupled to said first rotor channel, and a second stator channel magnetically coupled to said second rotor channel; and

a power supply for applying an alternating current having a frequency lower than the frequency of a recording signal to at least one of said first and second stator channels said second stator channel producing a waveform from said sense conductor responsive to a variable external magnetic field produced by said magnetic recording medium moving past said magneto-resistive element.

5,648,887

ELECTRIC CURRENT LIMITING DEVICE FOR WINCH RESPONSIVE TO MULTIPLE DEVICE STATES

Richard S. Herndon, Albany; Jeffrey E. Paulson, Portland, and Robert C. Proebstel, Albany, all of Oreg., assignors to Warn Industries, Inc., Milwaukie, Oreg.

Filed Jun. 9, 1994, Ser. No. 257,654
Int. Cl.[6] H02H *7/08*
U.S. Cl. 361—31 **22 Claims**

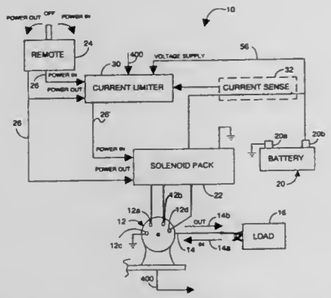
1. A winch system for applying a force to a load, comprising:

a motor drawing energy during normal operation, said normal operation including an initial first magnitude energy draw and a subsequent second magnitude energy draw;

an energy sensing device detecting a magnitude of energy drawn by said motor;

a shut-off device selectively halting operation of said motor;

a control device operating said shut-off device and monitoring said energy sensing device, said control device activating said shut-off device during an initial inrush interval of normal operation when said motor draws energy in excess of a first magnitude threshold and during a subsequent interval of



operation after said initial inrush interval is complete when said motor draws energy in excess of a second magnitude threshold; and

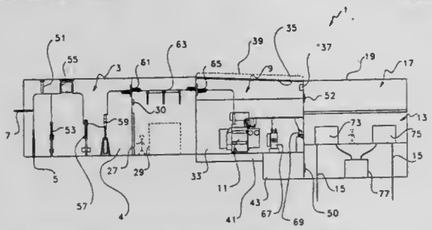
at least one of said first and second magnitude thresholds being adjustable during said normal operation in response to a change in operating voltage.

5,648,888

POWER DISTRIBUTION SUBSTATION

Jacques Le Francois, St-Hyacinthe; Mathias Kolos, Beaconsfield, and Denis Guenette, St-Mathieu de Beloeil, all of Canada, assignors to Hydro-Quebec, Montreal, Canada

Filed Dec. 27, 1995, Ser. No. 578,898
Int. Cl.[6] H02B *5/04*
U.S. Cl. 361—603 **17 Claims**



1. A power distribution substation, comprising:

a high-voltage unit divided into cells, each cell containing incoming connection equipment connected by high voltage cables to a power source having a voltage between 60 kV and 245 kV;

a transformer yard having at least one transformer connected to said incoming connection equipment;

a mid-voltage unit containing outgoing connection equipment connected to said at least one transformer and linked to output power lines for power distribution to a consumption pool under a voltage lower than or equal to 36 kV; and

a control room containing a substation command and control system;

said high voltage and mid-voltage units, said transformer yard and said control room being located in one building under a same roof;

wherein:

said incoming connection equipment, said at least one transformer and the outgoing connection equipment are located on a same level inside said building;

said substation includes an access passage that forms an integral part of said building, said passage being designed to insure direct and level access for a motorized vehicle to the cells of said high-voltage unit, the transformer yard and the mid-voltage unit;

the roof over said transformer yard is provided with means to open and close said roof to allow cooling of said at least one

transformer and recuperation of heat generated by said at least one transformer; and

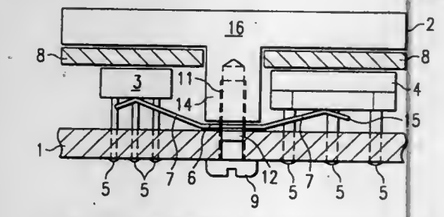
the cells of the high-voltage unit are provided with transparent rolling doors giving a visual access to said incoming connection equipment, and with means to limit access to said cells when the incoming connection equipment within said cells are under power.

5,648,889

ATTACHMENT DEVICE FOR SEMICONDUCTOR CIRCUIT ELEMENTS

Hans Ludwig Bosli, Schwerzenbach, Switzerland, assignor to Melcher, AG, Uster, Switzerland

PCT No. PCT/CH94/00076, § 371 Date Sep. 15, 1995, § 102(e) Date Sep. 15, 1995, PCT Pub. No. WO94/29901, PCT Pub. Date Dec. 22, 1994
PCT Filed Apr. 18, 1994, Ser. No. 379,666
Claims priority, application Switzerland, Jun. 7, 1993, 1698/93
Int. Cl.[6] H05K *7/20*
U.S. Cl. 361—704 **11 Claims**



1. A device for the attachment of semiconductor control and circuit elements (hereafter: semiconductor (**3**, **4**)) and for the dissipation of their heat loss for the assembly on circuit boards (**1**), said device comprised of a cooling element (**2**) and a spring element (**15**) pressing the semiconductors (**3**, **4**) to the cooling element

wherein said cooling element (**2**) consists of a rib (**14**) perpendicular to the circuit board (**1**) with said rib supporting a crossplate (**16**) arranged in a perpendicular manner to said and parallel to said circuit board (**1**),

wherein said rib (**14**) of the cooling element (**2**) is equipped with threaded openings (**11**) for the installation of screws (**9**) which secure the rib (**14**) to the circuit board (**1**),

wherein a spring element (**15**) is present consisting of a base plate (**6**) and spring tabs (**7**) extending from this plate,

wherein said base plate (**6**) of the spring element (**15**) is inserted in between the circuit board (**1**) and the rib (**14**) and fastened by said screws (**9**), for this purpose the base plate (**6**) is equipped with openings (**10**) that are flush with the threaded openings (**11**),

wherein said spring tabs (**7**) have a shape and preload that presses against the surface of the crossplate (**16**) facing the circuit board side,

wherein the surface of said crossplate (**16**) facing the circuit board is flat and of such a size that a semiconductor (**4**) of the housing type TO **247** can be inserted between the surface of the crossplate (**16**) facing the circuit board and the spring tab (**7**) without overlapping on either side,

wherein an electrical insulation element with good heat conductivity in form of a platelet (**8**) is present that is inserted between the surface of the crossplate (**16**) facing the circuit board and the semiconductor (**3**, **4**) and is fastened together with said semiconductor by means of said spring tabs (**7**),

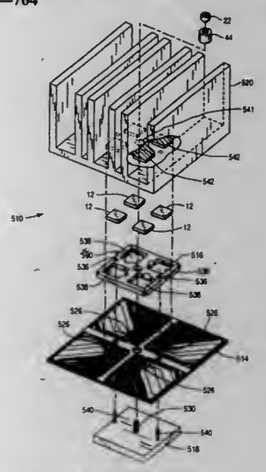
wherein said base plate (**6**) has an angled tab (**12**) on each side that will each fit in an opening (**13**) on the circuit board (**1**) and ensure the precise positioning of the base plate.

5,648,890

UPGRADABLE MULTI-CHIP MODULE

Mike C. Loo, San Jose, and Alfred S. Conte, Hollister, both of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Division of Ser. No. 310,159, Sep. 21, 1994, and a continuation-in-part of Ser. No. 99,740, Jul. 30, 1993, abandoned. This application Sep. 22, 1995, Ser. No. 532,950
Int. Cl.[6] H05K *7/20*
U.S. Cl. 361—704 **10 Claims**



1. A semiconductor assembly comprising:

a plurality of semiconductor packages having a first plurality of cushioned electrical contacts;

a substrate having a second plurality of electrical contacts, said semiconductor package being removably placed on top of said substrate;

an alignment member having apertures configured to removably cooperate with said semiconductor packages and said substrate for maintaining alignment between said first and second plurality of electrical contacts;

a heat sink configured to dissipate thermal energy produced by said semiconductor packages;

a base member configured to cooperate with said heat sink to apply pressure between said first and second plurality of electrical contacts thereby forming a corresponding plurality of electrical connections between said first and second plurality of electrical contacts;

a centrally-located solitary fastener configured to removably couple said heat sink to said base member and configured to provide said pressure; and

wherein said solitary fastener includes a threaded portion, a spring washer assembly and a nut.

5,648,891

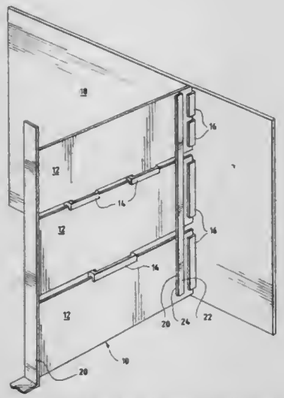
CIRCUIT BOARD ASSEMBLY

Lawrence Gierut, Lockport, Ill., assignor to Rockwell International Corp., Seal Beach, Calif.

Filed Aug. 23, 1995, Ser. No. 518,371
Int. Cl.[6] H01R *23/70;13/62*
U.S. Cl. 361—788 **3 Claims**

1. A circuit board assembly, comprising:

a plurality of circuit board subassemblies having means for releasably electrically and mechanically connecting the subassemblies into a general configuration of a plane, and said



subassemblies having means for electrically and mechanically interconnecting the subassemblies into a system back plane, including at least one interlocking bracket for the subassemblies for stability of the interconnected subassemblies, said bracket interconnecting a plurality of generally planar subassemblies.

5,648,892

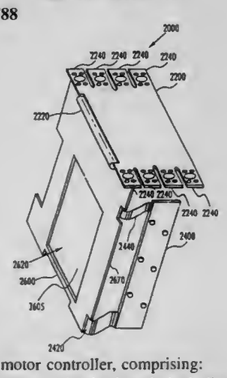
WIRELESS CIRCUIT BOARD SYSTEM FOR A MOTOR CONTROLLER

Christopher J. Wieloch, Brookfield; Thomas E. Babinski, Kenosha, both of Wis.; John C. Mather, Cedar Rapids, Iowa; Gerard A. Woychik, Waukesha, and Steven R. McLaughlin, Muskego, both of Wis., assignors to Allen-Bradley Company, Inc., Milwaukee, Wis.

Filed Sep. 29, 1995, Ser. No. 536,224

Int. Cl.[6] H05K *7/20*

U.S. Cl. 361—788 **17 Claims**



1. A wireless motor controller, comprising:

a power substrate circuit board including semiconductor switches;

a capacitor circuit board including a plurality storage capacitors coupled between a positive bus and a negative bus situated on the capacitor circuit board; and

a first circuit board mechanically and electrically coupled to at least one of the power substrate circuit board and the capacitor circuit board, the positive bus and the negative bus on the capacitor circuit board being electrically coupled to the power substrate circuit board via a connection of solely printed wire circuit board conductors, whereby parasitic inductive effects are reduced as compared with a conductor arrangement in a conventional motor controller system.

5,648,893

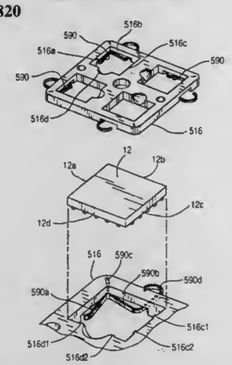
UPGRADABLE MULTI-CHIP MODULE

Mike C. Loo, San Jose, and Alfred S. Conte, Hollister, both of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Continuation-in-part of Ser. No. 99,740, Jul. 30, 1993, abandoned. This application Sep. 21, 1994, Ser. No. 310,136

Int. Cl.[6] H05K *7/00*

U.S. Cl. 361—820 **18 Claims**



1. An alignment member for aligning a semiconductor package to a substrate, said semiconductor package and substrate having a first and second plurality of electrical contacts, respectively, said alignment member comprising:

an aperture for removably orienting said semiconductor package over said substrate; and

a biasing element having a first portion adapted to be wedged between a first edge of said semiconductor package and a first wall of said aperture far pressing said first edge against said first wall thereby maintaining alignment between said first and second plurality of electrical contacts, and wherein said biasing element includes an attachment coupled to said first portion and extending outside the alignment member, for precompressing said biasing element thereby allowing the semiconductor package to be inserted easily into said aperture.

5,648,894

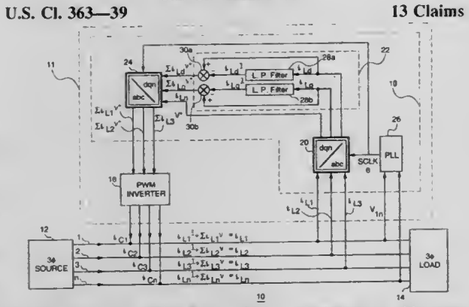
ACTIVE FILTER CONTROL

Rik Wivina Anna Adelson DeDoncker, Schenectady, and Paul Michael Szczesny, Burnt Hills, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 30, 1994, Ser. No. 315,473

Int. Cl.[6] H02M *1/12*

U.S. Cl. 363—39 **13 Claims**



1. Apparatus for controlling a device coupled to provide compensating currents to a three-phase power distribution system having a fundamental frequency of operation, said system including three main power transmission lines and a neutral line, said control apparatus comprising:

first transform means for transforming a first set of signals, each signal thereof representing load current in a respective one of said main transmission lines, into a second set of signals which includes active and reactive components of current in said main transmission lines;

filter means for receiving said active and reactive components for removing therefrom components at said fundamental frequency to provide harmonic active and reactive components; and

second transform means for receiving said harmonic active and reactive components and a signal representing neutral line current for performing a reverse transform operation thereon so as to provide a set of harmonic command signals, said harmonic command signals being collectively disposed to drive said device to generate line harmonic and neutral unbalance compensating currents for application to corresponding main power lines of said three-phase system.

5,648,895

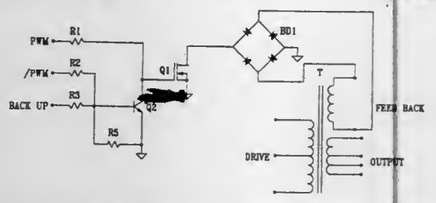
FLYBACK AND CHARGING CIRCUITRY FOR AN UNINTERRUPTIBLE POWER SUPPLY SYSTEM

Gordon Chen, Hsin Tien, Taiwan, assignor to Sysgration Ltd., Taipei Hsieng, Taiwan

Filed Dec. 19, 1995, Ser. No. 574,893

Int. Cl.[6] H02M *3/335*

U.S. Cl. 363—131 **4 Claims**



1. An active flyback circuit for an uninterruptible power system, which comprises:

a DC power source;

a flyback transformer having a drive coil connected to the DC power supply, an output coil, and a feedback coil;

a full-wave bridge rectifier connected to the feedback coil of the transformer;

a MOSFET having terminals connected to conduct energy discharged from said feedback coil via said full-wave rectifier in response to a pulse width modulated input control signal applied to a control terminal of the MOSFET;

wherein the stored energy in said feedback coil discharges through said MOSFET in response to switching of the MOSFET by said control signal, thereby reducing energy losses through the MOSFET during flyback and eliminating the need for advance charging during a flyback cycle.

5,648,896

INVERTER DEVICE USING CAPACITANCE FOR CONTROLLING WAVEFORM SLEW DURING VOLTAGE POLARITY TRANSITIONS

Yehoshua Mandelcorn, Dallas, Tex., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Aug. 4, 1995, Ser. No. 511,389

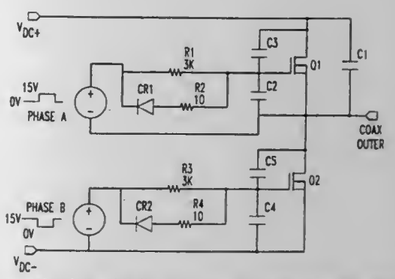
Int. Cl.[6] H02M *7/537*

U.S. Cl. 363—132 **4 Claims**

1. A voltage polarity switching circuit, comprising:

an input for accepting a DC voltage and an output for supplying a low frequency alternating voltage;

a switching circuit including a plurality of power switching devices operating in pairs for inverting the DC voltage supplied at the input wherein:



a first pair of the plurality of power switching devices conducts in a first phase while a second pair of the plurality of power switching devices does not conduct, and

the second pair conducts and the first pair does not conduct in a second phase; the DC voltage being converted into an alternating voltage by alternatively enabling the first and second pairs to conduct; and

circuitry to control a voltage waveform transition from the conducting one of the first and second pairs to the non-conducting one of the first and second pairs, comprising:

first and second capacitors connecting first and second main path conduction terminals to a control terminal, respectively, and

a drive signal to the control terminal supplied through a drive circuit having a directional determined current impedance to enhance turn off of the conducting one of the first and second pairs and to gradually turn on the non-conducting one of the first and second pairs, wherein the newly turned on, previously non-conducting pair actively transitions the voltage from one potential to another potential.

5,648,897

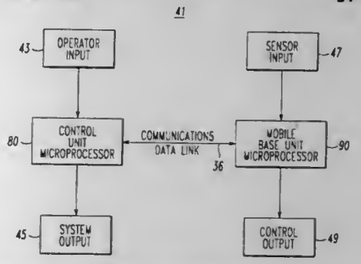
SYSTEM FOR CONTROLLING A REMOTE UNIT

Darren Johnson; Jeffrey Baldwin; Maxson Eddy, all of Madison, and Patrick Stogner, Huntsville, all of Ala., assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Continuation of Ser. No. 231,725, Apr. 22, 1994, abandoned. This application Jul. 25, 1996, Ser. No. 687,281

Int. Cl.[6] G05B *9/02*

U.S. Cl. 364—188 **24 Claims**



1. A remote control system, comprising:

an unmanned vehicle;

a hand portable operator control unit for controlling said unmanned vehicle and being located apart therefrom, said control unit being packaged in a relatively small light weight suitcase sized storage unit including a bottom storage portion and a cover therefor;

a user input subsystem in said operator control unit including a plurality of liquid crystal display switches for generating user commands, said switches including a plurality of switches for sending the user commands to the unmanned vehicle, a plurality of camera control switches for sending camera commands to the unmanned vehicle,

said user input subsystem further including, switch controller for receiving the user commands, camera commands, and motor commands and sending appropriate commands to the unmanned vehicle, a vehicle speed and direction controller for controlling movements of the unmanned vehicle,

a control subsystem responsive to the commands from the user input subsystem including a first control subsystem for the operator control unit and a second control subsystem for the unmanned vehicle, the first and second control subsystems respectively including a first and a second microprocessor having means for bidirectionally transmitting and receiving information via a communication subsystem,

said first microprocessor further including means for reconfiguring selected ones of said plurality of liquid crystal display switches so as to display different legends and control different devices;

said communication subsystem including first and second communications units coupled to the first and second microprocessors for exchanging information between the portable operator control unit and the unmanned vehicle, said first communications unit further including a video subsystem including a flat liquid crystal display (LCD) video monitor located on said cover of the storage unit for displaying an area in the vicinity of the unmanned vehicle, including connections for a portable battery, coupled to means for receiving video signals from at least one video camera located on the unmanned vehicle;

an actuator subsystem in the unmanned vehicle coupled to the second microprocessor of the second control subsystem for controlling a set of vehicle drive motors in response to control signals from the control subsystem;

a sensor subsystem coupled to the first microprocessor of the first control subsystem for providing sensor information generated at the unmanned vehicle to the control subsystem;

a feedback display subsystem including a liquid crystal display (LCD) status display located in said bottom storage portion of the storage unit and a controller coupled to the control subsystem for displaying said sensor information on said status display; and,

a power supply unit for providing power to the control system and including said portable battery.

5,648,898

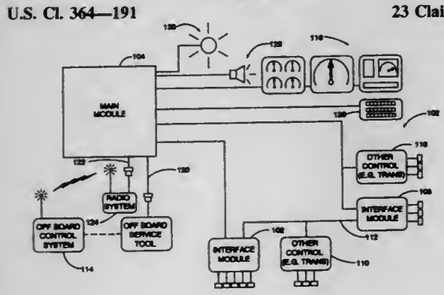
METHOD FOR PROGRAMMING A VEHICLE MONITORING AND CONTROL SYSTEM

Amy L. Moore-McKee, Varna; J. Martin Hadank, Dunlap; Stephen J. Jackson; Sysounanh M. Pradaxay, both of Peoria, all of Ill., and Kenneth J. McGuire, Garner, N.C., assignors to Caterpillar Inc., Peoria, Ill.

Filed Dec. 19, 1994, Ser. No. 359,317

Int. Cl.[6] G05B *19/42*

U.S. Cl. 364—191 **23 Claims**



1. In a programming unit for a storage-programmable state control with a memory device, in which is stored a control task created with a software tool in the form of an action-time diagram, which is displayable on a display device and describes input and output signals of a technical process to be controlled in the form of binary and/or analog signals, a method for creating a control program having control and status codes to solve the control task starting out from an instantaneous state, the method comprising steps of:

a) searching for instants ti at which signal level transitions of the input signals occur;

b) searching for a signal level value of the input signal exhibiting the level transition determined at any one time at an instant ti+Δta, wherein Δta is a first specifiable time span;

c) searching for signal level values of the remaining input signals at an instant ti−Δtb, wherein Δtb is a second specifiable time span;

d) searching for signal level values of the output signals at the instant ti+Δta;

e) generating an input vector from the signal level values of the input signals that were searched for;

5,648,899

PROGRAMMING MACHINE

Volker Hallwirth, St. Georgen, Germany, assignor to Siemens Aktlengesseischaft, Germany

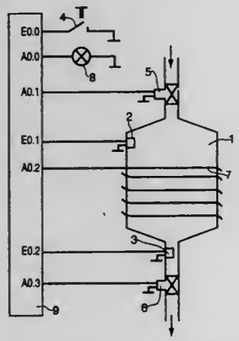
PCT No. PCT/DE93/00981, § 371 Date Apr. 19, 1995, § 102(e) Date Apr. 19, 1995, PCT Pub. No. WO94/09414, PCT Pub. Date Apr. 28, 1994

PCT Filed Oct. 13, 1993, Ser. No. 416,877

Claims priority, application Germany, Oct. 20, 1992, 42 35 342.4

Int. Cl.[6] G06F *19/00*

U.S. Cl. 364—191 **4 Claims**



1. A method of operating a computer to automatically produce control software for an information manager on a machine, the information manager having a microprocessor, the control software being adapted to run on the microprocessor to display information relating to the machine, the method including the steps of:

(1) as a function of operator input, defining a set of information manager specifications, wherein said set of information manager specifications includes a primary machine parameter to be sensed by the information manager, an event and corresponding action, wherein said event is a function of said primary machine parameter; and

(2) producing control software to operate the information manager as specified by said specifications and to perform Said action if said one event occurs.

f) generating a control data vector from the signal level values of the output signals that were searched for; and

g) allocating the input vector to a sequential follow-up up state at the instant ti+Δta.

5,648,900

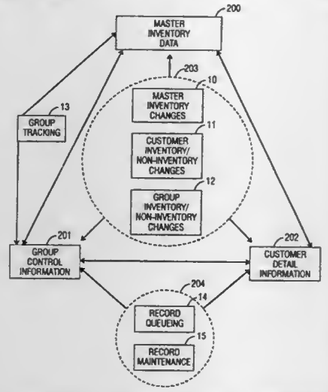
METHOD AND APPARATUS FOR CONTROLLING AND MONITORING GROUP TRAVEL RELATED SERVICES

James D. Bowen, Aurora; Allyson J. Henry, Highlnds, both of Colo.; Mark J. Meier, Carrollton, Tex.; Linda S. Postlethwait, Englewood, and Steven W. Schrimp, Denver, both of Colo., assignors to Galileo International Partnership, Rosemont, Ill.

Filed Feb. 20, 1991, Ser. No. 657,730

Int. Cl.[6] G06F *17/60*

U.S. Cl. 395—205 **14 Claims**



14. A computerized reservation system for managing group travel related services and for automatically updating modifications to group travel related data, comprising:

means for storing a master inventory of travel related services;

means for storing a plurality of passenger name records;

means for creating a plurality of group control records, each group control record being indicative of a particular group inventory of travel related services and group related passenger name records that are a subset of said plurality of passenger name records for customers that reserve said travel related services from said particular group inventory:

means for storing said plurality of group control records;

means for cross referencing group travel related data in said group related passenger name records, said group control records, and said master inventory to provide cross referencing data among the three;

remote computer controlled means, connected to each of said means for storing and responsive to said means for cross referencing group travel related data, for automatically updating group travel related data in each of said group control records and said respective subset of group related passenger name records responsive to changes to data in said master inventory, for automatically updating group travel related data in said master inventory and respective subsets of group related passenger name records responsive to changes to data in each of said plurality of group records, and for automatically updating group travel related data in said master inventory and respective group control records responsive to changes to data in said plurality of subsets of group related passenger name records; and

a plurality of local computer controlled means in electronic communication with said remote computer controlled means for making group reservations and modifying said group travel related data.

5,648,901

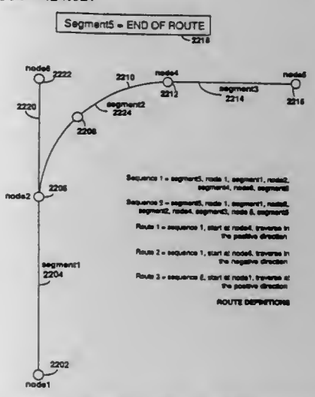
SYSTEM AND METHOD FOR GENERATING PATHS IN AN AUTONOMOUS VEHICLE

Adam J. Gudat, Edelstein, Ill.; Dong Hun Shin; William L. Whittaker, both of Pittsburgh, Pa.; Karl W. Kleimenhagen, Peoria, Ill.; Sanjiv J. Singh, Pittsburgh, Pa.; Dana A. Christensen, Peoria, Ill.; Carl A. Kemner, Peoria Heights, Ill.; Walter J. Bradbury, Peoria, Ill.; Craig L. Koehrsen, Peoria, Ill.; Christos T. Kyrtsos, Peoria, Ill.; Norman K. Lay, Peoria, Ill.; Joel L. Peterson, Peoria, Ill.; Larry E. Schmidt, Peoria, Ill.; Darrell E. Stafford, Dunlap, Ill.; Louis J. Weinbeck, Peoria, Ill., and Lonnie J. Devier, Pittsburgh, Pa., assignors to Caterpillar Inc., Peoria, Ill.

Division of Ser. No. 487,980, Feb. 5, 1990. This application May 1, 1995, Ser. No. 432,396

Int. Cl.[6] G06G *7/70*

U.S. Cl. 364—424.027 **18 Claims**



1. In a system for enabling a vehicle to traverse a predetermined route, a system for generating a path for the vehicle to track comprising:

means for storing route data for the predetermined route, said route data identifying a plurality of path segments forming the predetermined route and a plurality of nodes located along the predetermined route at the beginning and the end of the predetermined route and between adjacent path segments, said path segments representing a plurality of postures of the vehicle, wherein each of said plurality of postures includes a position, a heading, and a curvature for the vehicle along the predetermined route;

means for storing said plurality of path segments and said plurality of nodes as compressed path data, said compressed path data representing said plurality of path segments and said plurality of nodes as a function, wherein said function is continuous in posture, said compressed path data reducing an amount of storage required for the predetermined route;

means for retrieving said compressed path data associated with the predetermined route; and

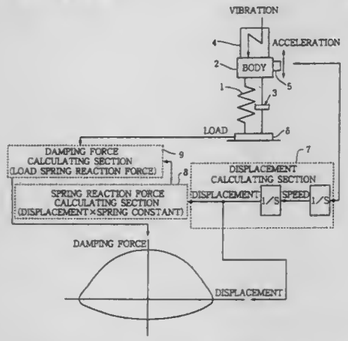
means for generating a series of postures from said retrieved compressed path data for the vehicle to track thereby allowing the vehicle to traverse the predetermined route.

5,648,902

METHOD FOR MEASURING A DAMPING FORCE OF A SHOCK ABSORBER IN A SUSPENSION SYSTEM FOR A MOTOR VEHICLE AND A MEASURING SYSTEM THEREOF

Hiromoto Honda, Tokyo, Japan, assignor to HND Co., Ltd., Tokyo, Japan

Filed Jun. 28, 1995, Ser. No. 495,903
Claims priority, application Japan, Jul. 27, 1994, 6-175181
Int. Cl.[6] G01M *17/04*
U.S. Cl. 364—424.034 **4 Claims**



4. A system for individually measuring a damping force of a shock absorber provided in a suspension system corresponding to a spring provided for each of wheels of a motor vehicle, said system comprising:

vibrator means mounted on a body of the motor vehicle for vibrating the body in a vertical direction;

acceleration detector means mounted on the body for detecting vibrating acceleration of the body;

load detector means disposed under the wheel for detecting load transmitted to the wheel; and

calculator means for calculating a damping force of the shock absorber responsive to signals from the vibrator means and the detector means,

the calculator means comprising a displacement calculator for calculating a displacement of the body responsive to the vibrating acceleration; a spring reaction force calculator for calculating a spring reaction force of the spring in accordance with the displacement and a spring constant of the spring; and a damping force calculator for calculating the damping force in accordance with the load and the spring reaction force.

5,648,903

FOUR WHEEL STEERING CONTROL UTILIZING FRONT/REAR TIRE LONGITUDINAL SLIP DIFFERENCE

Michael Kenneth Liubakka, Livonia, Mich., assignor to Ford Global Technologies, Inc., Dearborn, Mich.

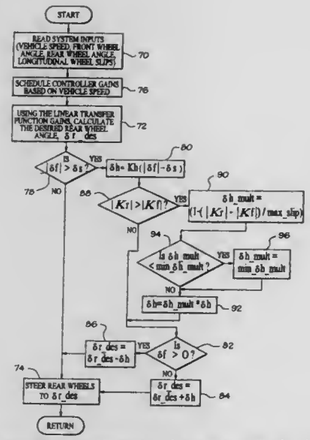
Filed Jul. 10, 1995, Ser. No. 500,670
Int. Cl.[6] B62D *6/00*
U.S. Cl. 364—424.051 **7 Claims**

1. A method of improving vehicle handling for use with a vehicle having manually operable front steerable wheels and electronically controlled rear steerable wheels, the front and rear steerable wheels each including a tire, said method comprising the steps of:

calculating a desired rear steer angle based on vehicle speed and front wheel angle during operation in a linear region of the tires;

determining if the vehicle is operating in a nonlinear region of the front tires;

calculating a handling term if the vehicle is operating in the nonlinear region of the froot tires;



determining if the magnitude of average rear tire longitudinal slip is greater than the magnitude of average front tire longitudinal slip;

adjusting the handling term to compensate for reduced rear cornering force if the magnitude of the average rear tire longitudinal slip is greater than the magnitude of the average front tire longitudinal slip;

modifying the desired rear steer angle based on the handling term to obtain a modified desired rear steer angle; and

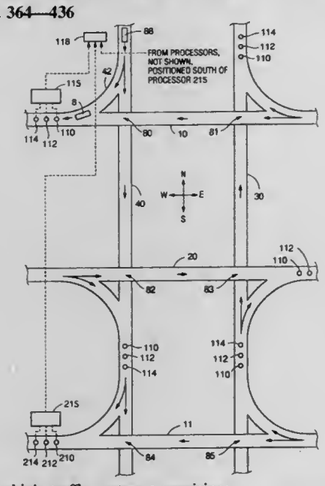
steering the rear steerable wheels toward the modified desired steer angle.

5,648,904

VEHICLE TRAFFIC SYSTEM AND METHOD

Ed Scott, Anaheim Hills, Calif., assignor to Sony Corporation, Tokyo, Japan, and Sony Trans Com Inc., N.J.

Continuation of Ser. No. 232,712, Apr. 25, 1994, abandoned.
This application Dec. 6, 1995, Ser. No. 567,857
Int. Cl.[6] G08G *1/042;* **G06G** *7/76*
U.S. Cl. 364—436 **8 Claims**



1. A vehicle traffic system comprising:

a plurality of intersecting one-way streets which form a grid, each intersection of the one-way streets being in the form of an overpass; and

a plurality of one-way ramps, each ramp providing a path for a vehicle moving along one of the one-way streets to make a single type of turn onto another one of the one-way streets forming an overpass intersection with the one of the one-way streets, each ramp providing a path for the same type of turn as provided by all of the other ramps;

a traffic monitoring subsystem, wherein the traffic monitoring subsystem includes:

a first velocity sensor station mounted along a first one of the one-way streets,

first processing means for processing output signals from the velocity sensor station to generate a first velocity signal indicative of an average speed of at least one vehicle translating past the velocity sensor station;

a second velocity sensor station mounted along a second one of the one-way streets, where the second one of the one-way streets does not intersect the first one of the one-way streets;

second processing means for processing output signals from the second velocity sensor station to generate a second velocity signal indicative of an average speed of at least one vehicle moving past the second velocity sensor station, wherein the first processing means is programmed for generating a first display signal for controlling display of a representation of the first velocity signal, and the second processing means is programmed for generating a second display signal for controlling display of a representation of the second velocity signal; and

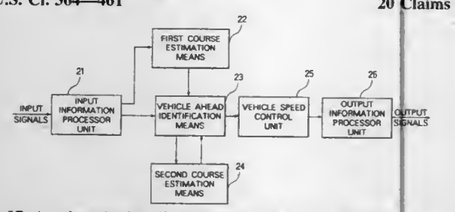
a display device for receiving the first display signal and the second display signal, and displaying in response the representation of the first velocity signal and the representation of the second velocity signal.

5,648,905

TRAVELING CONTROL SYSTEM FOR MOTOR VEHICLE

Tomoji Izumi, Hatsukaichi; Kenji Shimizu, Higashi-Hiroshima; Yoshiaki Sugamoto, Hatsukaichi; Kazuyoshi Okuda, Kubo-Machi; Satoru Ando, Higashi-Hiroshima; Toshihiro Ishihara, Sakamachi; Takahiro Inada, Higashi-Hiroshima, and Tsunehisa Okuda, Hiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Dec. 1, 1994, Ser. No. 353,207
Claims priority, application Japan, Dec. 7, 1993, 5-306454
Int. Cl.[6] G06G *7/78*
U.S. Cl. 364—461 **20 Claims**



17. An obstacle detection system for a motor vehicle comprising:

detecting means for detecting objects as obstacles which exist in front of the motor vehicle;

first course estimation means for estimating a first course on which the motor vehicle will travel;

identification means for identifying a first target vehicle among the objects on the first course detected by the detecting means; and

second course estimation means for estimating, based on traveling orientations of the first target vehicle, a second course on which the motor vehicle will travel at least while the first target vehicle is outside of the first course;

said identification means identifying a second target vehicle as the obstacle, said second target vehicle being a vehicle currently preceding the motor vehicle among vehicles which travel on one of the first and second courses while the first target vehicle is outside of the first course;

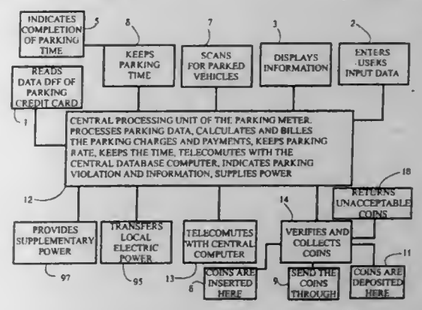
wherein said identification means identifies the second target vehicle among the vehicles on the second course from a time when the first target vehicle leaves the first course to a predetermined time and identifies the second target vehicle among the vehicles on the first course when the first target vehicle does not return back to the first course and the predetermined time has passed, and said second course estimation means estimates the second course based on the second target vehicle identified.

5,648,906

NETWORKED COMPUTERIZED PARKING SYSTEM OF NETWORKED COMPUTERIZED PARKING METERS AND A METHOD OF OPERATING SAID SYSTEM

Fardosht Amirpanahi, 1138 Mariner Cove, Sugarland, Tex. 77478

Filed Jul. 31, 1995, Ser. No. 508,394
Int. Cl. G06F *19/00;* **C07F** *17/24;* **C07B** *15/02*
U.S. Cl. 364—464.28 **14 Claims**



1. A networked computerized parking system of networked computerized parking meters connected via a number of electric-transferring cables to a local power source and connected via a number of fiber optic network connections to a number of other networked computerized parking meters and to a central database computer, with each networked computerized parking meter having a number of essential components comprising:

(a) a main body mounted on and connected to a base, said main body comprising a top, a front surface, and a tightly-fastened, removable back surface for facilitating service work, and said base comprising a bottom;

(b) a mother board, having a front and a back, positioned inside the main body, with the number of electric-transferring cables and the number of fiber optic network connections connected to the back of the mother board and leading downwards to exit from the bottom of the networked computerized parking meter and with a number of rechargeable batteries connected to the mother board as a supplementary power source;

(c) a motion detector, with a front placed on a section of the front surface of the networked computerized parking meter and with a back connected to a portion of the front of the mother board via motion detector cable, for detecting both arrival time and departure time of a vehicle;

(d) a liquid crystal display (LCD) screen located inside the networked computerized parking meter, with a front occupying a section of the front surface of the networked computerized parking meter and a back connected to a portion of the front of the mother board via ribbon cable, said LCD screen indicating information comprising any remaining, unused parking time, identification data related to any parking time card being used, parking rate and any amount of parking time allowed;

(e) a numeric code pad, with a front and a back, said front of the numeric code pad, comprising ten numeric buttons from "0" to "9", an "ENTER" button and a "CANCEL" button, said numeric code pad occupying a section of the front surface of the networked computerized parking meter, and said back of

the numeric code pad connected via ribbon cable to a portion of the front of the mother board; and

(f) a magnetic strip reader, with a back connected via ribbon cable to a portion of the front of the mother board and with a front, said magnetic strip reader being located in front of the mother board, being positioned inside the networked computerized parking meter, and having a card insertion opening extending from the front of the magnetic strip reader towards the front surface of the networked computerized parking meter and creating an opening for insertion of parking charge cards;

such that:

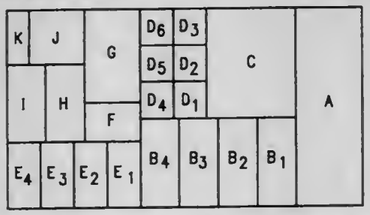
parking charge cards are charged for used parking time only, and the motion detector terminates use of the parking charge cards upon removal of the vehicle.

5,648,907

PRODUCTION METHOD FOR HANDLING PLATES CUT OUT OF A PLATE BLANK FOR FURTHER PRODUCTION

Jorma Taijonlahti, Kangasto, and Lauri Kohtamäki, Kauhava, both of Finland, assignors to Lillbackan Konepaja Oy, Kauhava, Finland

Continuation of Ser. No. 717,897, Jun. 19, 1991, Pat. No. 5,317,516. This application May 9, 1994, Ser. No. 239,556
Claims priority, application Finland, Jun. 19, 1990, 903072
Int. Cl.[6] G06F *19/00*
U.S. Cl. 364—468.02 **26 Claims**



1. A system for handling plates cut from a plate blank comprising:

a cutting mechanism for cutting a plate blank into plates having different predetermined sizes or shapes;

conveyor means being operated during said cutting operation for receiving and transporting said plates successively cut from said plate blank to an unloading location;

unloading and sorting means for vertically placing cut plates of the same size or shape onto the same location on a carrier at said unloading location; and

computer means for controlling the operation of said cutting mechanism, said conveyor means and said unloading and sorting means as a flexible production system by using said operated conveyor means as a buffer conveyor storage for compensating momentary differences in the operating speeds of said cutting mechanism and said unloading and sorting means.

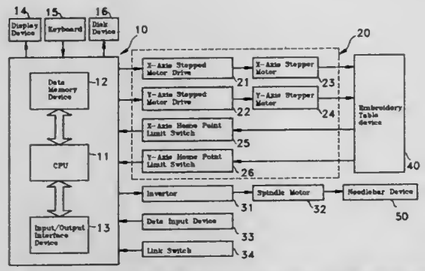
5,648,908

COMPUTER-AIDED EMBROIDERY MACHINE FOR PATTERN AND DATA PREPARING AND TESTING AND METHOD OF USING THE SAME

Jin-Lung Chirn; Wen-Chin Cheng, both of Hsinchu, and Han-Chieb Chang, Taipei, all of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Jan. 31, 1995, Ser. No. 381,564
Int. Cl.[6] G06F *19/00;* **D05B** *21/00*
U.S. Cl. 364—470.06 **10 Claims**

1. A computer-aided embroidery machine for preparation and testing of a pattern having a predetermined size comprising:



(a) means for comparing the size of said pattern with an embroidery table device to determine if an intended embroidery operation will exceed a defined boundary of said embroidery table device;

(b) means for determining an embroidery frame; and

(c) means for providing a completed simulation and a trial embroidering process within said embroidery frame without actually lowering a needlebar for testing the validity of a pattern layout;

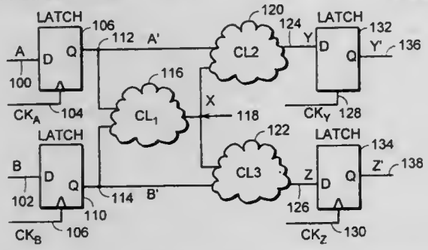
(d) wherein said pattern layout includes multiple copies of said pattern, and one copy of said pattern is displayed in full shape while the remaining copies of said pattern are displayed by contour in broken lines.

5,648,909

STATIC TIMING VERIFICATION IN THE PRESENCE OF LOGICALLY FALSE PATHS

Larry L. Biro, Oakham; Joel J. Grodstein, Arlington; Jeng-Wei Pan, Westborough, and Nicholas L. Rethman, Hudson, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 318,002, Sep. 30, 1994, abandoned, which is a continuation of Ser. No. 897,789, Jun. 12, 1992, abandoned. This application Jun. 12, 1995, Ser. No. 490,439
Int. Cl.[6] G06F *15/00;* **G06G** *7/48*
U.S. Cl. 364—488 **7 Claims**



2. A computer method for improving design of a circuit through static analysis of a computer stored model of said circuit, said circuit having a logic exclusivity path, the method comprising the steps of:

receiving at a computer information describing said logic exclusivity path,

determining a true path parallel to said logic exclusivity path, and

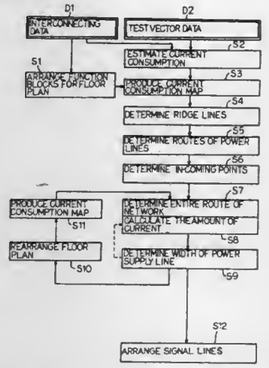
analyzing said model of said circuit by substituting said true path for said logic exclusivity path during said analysis.

5,648,910

METHOD OF AUTOMATICALLY OPTIMIZING POWER SUPPLY NETWORK FOR SEMI-CUSTOM MADE INTEGRATED CIRCUIT DEVICE

Soichi Ito, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 3, 1993, Ser. No. 25,837
Claims priority, application Japan, Mar. 10, 1992, 4-051179
Int. Cl.[6] G06F *17/50;* **G06T** *7/60*
U.S. Cl. 364—490 **6 Claims**



1. A method for optimizing a power supply network incorporated in a semiconductor integrated circuit device fabricated on a semiconductor chip, said power supply network having at least one loop, said method comprising the steps of:

a) preparing a data base including pieces of interconnecting data each indicative of a set of signals supplied to one of a plurality of function blocks available for said semiconductor integrated circuit device, and pieces of test vector data respectively associated with said pieces of interconnecting data and each indicative of a variation of said set of signals;

b) estimating electric power consumptions for predetermined function blocks selected from said plurality of function blocks, said estimation being made through a simulation on a basis of said pieces of interconnecting data and said pieces of test vector data for said predetermined function blocks;

c) arranging images respectively indicative of said predetermined function blocks in an image indicative of a major surface of said semiconductor chip for producing a floor plan, said major surface having a central area for said predetermined function blocks and a peripheral area surrounding said central area;

d) producing a power consumption map by inserting contour lines into said floor plan, said contour lines respectively indicative of magnitudes of power consumption determined on a basis of the estimated power consumptions;

e) determining routes of power supply lines passing through local maximum values of said estimated power consumptions or through neighborhoods thereof, one of said routes being looped;

f) determining in-coming points on the boundary between said central area and said peripheral area, external electric power being supplied through said in-coming points to a power supply network;

g) determining an entire route of said power supply network;

h) determining a width of each power supply line forming a part of said power supply network on a basis of an amount of estimated current passing therethrough, a width of branching power supply line being less than a width of a power supply line from which it is branched; and

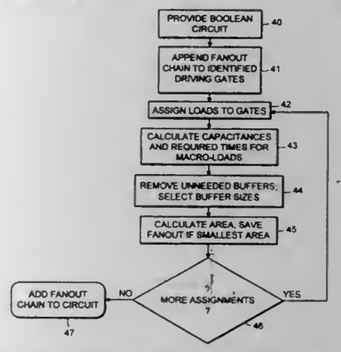
i) repeating steps g) and h) when one of the power supply lines of said power supply network is not feasible.

5,648,911

METHOD OF MINIMIZING AREA FOR FANOUT CHAINS IN HIGH-SPEED NETWORKS

Joel Joseph Grodstein, 118 Rhinecliff St., Arlington, Mass. 02174; Kolar L. Kodandapani, 2 Adin Dr., Shrewsbury, Mass. 01545, and Hervé Touati, 59 A Avenue de Colmar, 92500 Rueil-Malmaison, France

Continuation of Ser. No. 171,075, Dec. 21, 1993, abandoned. This application Aug. 30, 1996, Ser. No. 707,042
Int. Cl.[6] H03K *19/20*
U.S. Cl. 364—490 **5 Claims**



1. A method for providing a fanout network to drive a plurality of signals in an integrated circuit, each of said signals driving a plurality of loads, said method comprising the steps of:

coupling, to each one of said signals, a fixed number of a plurality of series coupled inverters;

at each signal, assigning each one said associated plurality of loads be coupled to an output of one of said plurality of inverters; and

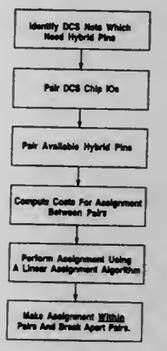
mapping each of said plurality of inverters to a gate in a library of gates to provide a fanout network.

5,648,912

INTERCONNECTION RESOURCE ASSIGNMENT METHOD FOR DIFFERENTIAL CURRENT SWITCH NETS

Vinod Narayanan, Fishkill; Philip S. Honsinger, Poughkeepsie, both of N.Y., and Lok Tin Liu, Berkeley, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 12, 1993, Ser. No. 44,872
Int. Cl.[6] G06F *17/50*
U.S. Cl. 364—491 **19 Claims**



1. An interconnection resource assignment method for assigning interconnection resources to input/output connection points on differential current switch logic elements comprising the steps of:

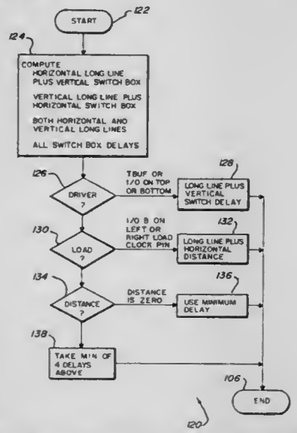
(a) identifying all differential current switch input/output connection points requiring interconnection;
(b) pairing the identified differential current switch input/output connection points;
(c) representing the paired differential current switch input/output connection points as a single point;
(d) identifying available interconnection resources;
(e) pairing the identified interconnection resources by pairing a first interconnection resource with a second interconnection resource located within a predetermined distance from the first interconnection resource, and then repeating the same pairing procedure until each interconnection resource has been paired with another interconnection resource;
(f) representing the paired interconnection resources as a single resource;
(g) assigning each input/output connection point representing a point pair to a corresponding interconnection resource representing a resource pair according to an optimizing assignment algorithm suitable for single input/output connection point to single interconnection resource assignments; and
(h) assigning each individual interconnection resource in a pair to a specific one of the input/output connection points in the corresponding assigned point pair.

5,648,913

FREQUENCY DRIVEN LAYOUT SYSTEM AND METHOD FOR FIELD PROGRAMMABLE GATE ARRAYS

David Wayne Bennett, Louisville; Eric Ford Dellinger; Walter A. Manaker, Jr., both of Boulder; Carl M. Stern, Boulder; William R. Troxel, Longmont, and Jay Thomas Young, Louisville, all of Colo., assignors to Xilinx, Inc., San Jose, Calif.

Division of Ser. No. 38,792, Mar. 29, 1993, abandoned. This application Feb. 6, 1995, Ser. No. 383,647
Int. Cl.[6] G06F *17/50*
U.S. Cl. 364—491 **14 Claims**



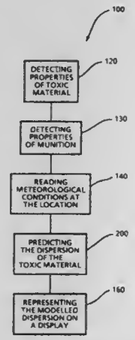
8. A method for establishing a predicted routing delay of an electronic circuit connection between a driver and a load element to be constructed from a programmable logic device having a plurality of programmable logic cells and a number of heterogeneous routing resources including at least a first and a second type of interconnect having respective predetermined delays thereof, said method comprising the steps of:
estimating a first routing delay based upon a possible routing of said electronic circuit connection utilizing a calculated number of horizontally disposed ones of said first interconnects and a calculated number of vertically disposed ones of said second interconnects;
estimating a second routing delay based upon a possible routing of said electronic circuit connection utilizing a calculated number of vertically disposed ones of said first interconnects and a calculated number of horizontally disposed ones of said second interconnects;
estimating a third routing delay based upon a possible routing of said electronic circuit connection utilizing a calculated number of horizontally and vertically disposed ones of said first interconnects;
estimating a fourth routing delay based upon a possible routing of said electronic circuit connection utilizing a calculated number of horizontally and vertically disposed ones of said second interconnects; and
determining a least routing delay of said first, second, third and fourth routing delays; and
utilizing said least routing delay as said predicted routing delay between said driver and load elements.

5,648,914

METHOD OF DEFENDING AGAINST CHEMICAL AND BIOLOGICAL MUNITIONS

Timothy J. Bauer, Great Mills, Md.; Roger L. Gibbs, Dahlgren, and Paul R. Kirk, Fredericksburg, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 30, 1992, Ser. No. 906,390
Int. Cl.[6] G06F *17/00*
U.S. Cl. 364—496 **4 Claims**



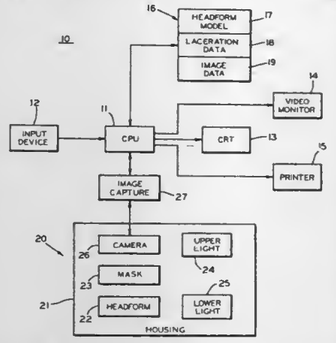
I. A method of predicting the dispersion of a toxic munition having a toxic material for airborne release, comprising the steps of:
detecting the physical properties of the toxic material;
identifying a particular toxic agent;
detecting the physical properties of the munition;
reading meteorological conditions at the release location of the toxic munition;
initializing the detected physical properties of the toxic material, the detected physical properties of the toxic munition, and the read meteorological conditions as input signals for a central processing unit;
predicting transport and diffusion of the airborne toxic material through analysis of the physical properties of the toxic material and of the meteorological conditions including time of day, temperature, wind speed, wind direction, cloud cover, and air turbulence stability;
calculating deposition and primary dosage of the toxic material;
calculating liquid persistence and secondary vapor dosage of the toxic material; and
representing graphically, using a two-dimensional hazard footprint, the predicted transport and diffusion, the calculated deposition and primary dosage, and the calculated liquid persistence and secondary vapor dosage on a display monitor of a personal computer.

5,648,915

SOFT TISSUE DAMAGE ASSESSMENT SYSTEM

Richard A. McKinney, Clarksville, Va.; Donald R. Myers, Cary, N.C.; Barbara J. McKinney, Clarksville, Va.; David B. Moody, Cary, N.C.; Joseph G. Smrcka, deceased, late of Westport, Conn.; John J. Smrcka, executor, Dallas, Tex.; Joshua Y. Zhu, Walled Lake, and Daniel P. Weeder, Westland, both of Mich., assignors to Triangle research & Development Corporation, N.C.

Filed Nov. 20, 1995, Ser. No. 560,904
Int. Cl.[6] G01B *3/10;* **G01M** *7/00*
U.S. Cl. 364—507 **20 Claims**



11. A system for measuring lacerations in a simulated human skin comprising:
a mask formed of an opaque material simulating human skin and having an outer surface in a shape simulating a human face;
a headform formed of a rigid transparent material and having an outer surface in a shape of said mask for releasably retaining said mask on said outer surface of said headform;
a light source positioned behind said outer surface of said headform for transmitting light through said headform and through any laceration in said mask;
a camera means for viewing said outer surface of said mask and for generating an output signal representing an image of at least a portion said outer surface of said mask;
a housing enclosing said headform, said light source and said camera for preventing light exterior to said housing from being viewed by said camera;
a computer means connected to said camera and responsive to said output signal for detecting a laceration in said mask, for determining a location of said laceration on said outer surface of said mask, for measuring said laceration and for assigning an injury criteria to said laceration; and
an output means connected to said computer means for displaying said location of said laceration and said assigned injury criteria.

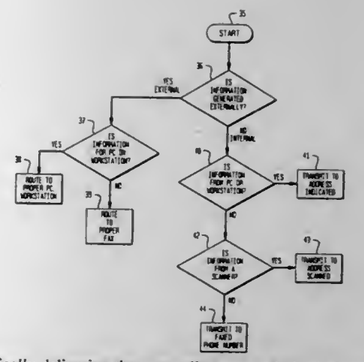
5,648,916

INTERNAL MAIL DISTRIBUTION SYSTEM

Flavio M. Manduley, Woodbury, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Aug. 10, 1995, Ser. No. 513,469
Int. Cl.[6] G06F *19/00;* **G07B** *17/00*
U.S. Cl. 364—514 A **16 Claims**

I. A method for distributing physically generated and electronically generated mail, said method including the steps of:
receiving externally generated physical mail;
sorting the externally generated physical mail to determine which mail is going to be electronically transferred and which mail is going to be physically delivered;
converting the externally generated physical mail that was sorted to be electronically transferred into an electronic format;
transmitting the externally generated physical mail in a electronic format;
converting the externally generated physical mail in an electronic format into a human recognizable format;



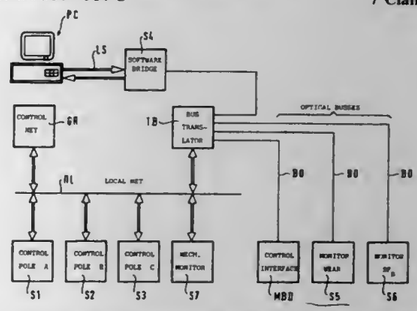
physically delivering the externally generated physical mail that was sorted to be physically delivered;
receiving externally generated electronic mail;
routing the electronically generated electronic mail;
creating internal electronic mail;
routing internal electronic mail;
determining which internally generated physical mail is going to be electronically transferred and which mail is going to be physically delivered;
converting the internally generated physical mail that was determined to be electronically transferred into an electronic format;
transmitting the internally generated physical mail that was determined to be electronically transferred into a electronic format;
converting the internally generated physical mail that was determined to be physically transferred into a human recognizable format; and
processing the internally generated physical mail that was determined to be physically transferred.

5,648,917

SELF-MONITORING CIRCUIT, ESPECIALLY FOR ELECTRICAL EQUIPMENT, AND IN PARTICULAR FOR A HIGH TENSION SF_6 CIRCUIT BREAKER

Gérard Ebersohl, La Mulatiere, and Olfa Chetay, Venissieux, both of France, assignors to Gec Alsthom T&D SA, Paris, France

Filed Sep. 28, 1995, Ser. No. 535,827
Claims priority, application France, Sep. 29, 1994, 94 11638
Int. Cl.[6] H01H *73/00*
U.S. Cl. 364—514 C **7 Claims**



I. A circuit for self-monitoring of equipment including a plurality of transducers for measuring operating parameters of said equipment, said measuring transducers providing data to a multiprocessor system comprising stations interconnected by a local network under the control of a network controller and constituting a distributed database that is refreshed periodically at given rates, the system being capable of receiving instructions from a higher

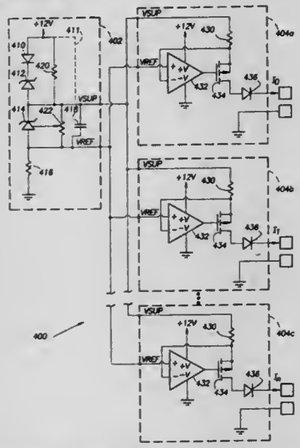
level and of delivering responses thereto, said higher level including a computer connected by a serial link to a bridge itself connected to said network, wherein said bridge is a microcontroller which is connected to said network and which is referred to as a terminal, said terminal interchanging data with the stations via first messages corresponding to requests issued by the terminal and received by all of the stations in determined memory zones referred to as first dedicated zones, and second messages corresponding to response from the interrogated stations and received by said terminal in determined memory zones, referred to as second dedicated zones.

5,648,918

CALIBRATION OF A PLURALITY OF EXCITATION SOURCES FOR AN INSTRUMENTATION SYSTEM

Evan A. Hubbard, Austin, Tex., assignor to National Instruments Corporation, Austin, Tex.

Filed Jun. 2, 1995, Ser. No. 458,974
Int. Cl.[6] G01C *25/00*
U.S. Cl. 364—571.01 **19 Claims**



1. An excitation system for an instrumentation system for providing a plurality of excitation signals, comprising:

an adjustable reference source having a variable input for providing an adjustable reference signal within a predetermined range, wherein said adjustable reference signal comprises a DC electrical signal; and

a plurality of excitation sources, each having an input for receiving said adjustable reference signal and an output for providing a calibrated excitation signal corresponding to said adjustable reference signal.

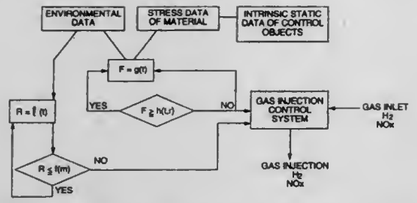
5,648,919

MAINTENANCE SYSTEMS FOR DEGRADATION OF PLANT COMPONENT PARTS

Kiyoshi Yamauchi; Takenori Shindo, both of Kure, and Shigeo Hattori, Hitachi, all of Japan, assignors to Babcock-Hitachi Kabushiki Kaisha, and Hitachi, Ltd., both of Tokyo, Japan

Filed Feb. 14, 1994, Ser. No. 195,021
Claims priority, application Japan, Feb. 15, 1993, 5-025633; Feb. 19, 1993, 5-030863; Feb. 22, 1993, 5-032059
Int. Cl.[6] G05B *17/00*
U.S. Cl. 364—578 **9 Claims**

1. A system of preventive maintenance for plant component parts, which are maintained by controlling the degrees of various influencing factors on degradation at the positions thereof, comprising the steps of:



making a position of each of said plant component parts an evaluation system;

obtaining a correlation between the parameters for determining the transition probability distribution of degradation phenomena;

making the degree of influencing factor constant by aiming at an arbitrary influencing factor with respect to each of various influencing factors of said degradation phenomena;

giving the aimed arbitrary influencing factor as a variable, selecting one of the parameters for said transition probability distribution, and representing the selected parameter as a first function;

determining reference degrees of various influencing factors and setting the transition probability distribution of said degradation phenomena when the variables of various influencing factors are said reference degrees as a reference system;

knowing a value of said selected parameter for determining the transition probability distribution of the reference system;

computing a ratio between said first function and the value of said selected parameter in the reference system to give a function of the subdivided index of degradation of the aimed influencing factor;

multiplying a product of said subdivided index of degradation of various influencing factors by a unit conversion and a coefficient for reliability to define the product as an index of degradation for expressing a possibility for the generation of said phenomena;

using the correlation between the index of degradation and said selected parameter for determining the transition probability distribution of the degradation phenomena in many systems of said degradation phenomena;

determining the value of said selected parameter for determining the transition probability distribution of the degradation phenomena from the variables of the degrees of the influencing factors on the degradation phenomena in an evaluation system;

using said correlation between the parameters for determining the transition probability of said degradation phenomena;

determining the value of the other parameter in the transition probability distribution of the degradation phenomena from the value of said selected parameter for determining the transition probability distribution of the degradation phenomena in the evaluation system;

estimating the transition probability distribution of the degradation phenomena in the evaluation system; and

predicting by a computational equation the possibilities of the degradation phenomena at the positions of said plant component parts to be the evaluation system.

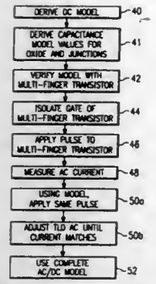
5,648,920

METHOD AND APPARATUS FOR DERIVING TOTAL LATERAL DIFFUSION IN METAL OXIDE SEMICONDUCTOR TRANSISTORS

Charvaka Duvvury, and Janet L. Wise, both of Plano, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 22, 1994, Ser. No. 343,403
Int. Cl.[6] G06F *17/50*
U.S. Cl. 364—578 **20 Claims**

1. A method of deriving lateral diffusion in transistors, comprising:



establishing a DC model for the transistors, the model allowing for input of an estimate of the lateral diffusion;

isolating a gate of a test transistor;

applying a voltage pulse to a drain of the test transistor;

measuring a drain current of the test transistor;

using the DC model, generating a modelled current of a model transistor under substantially the same conditions as that of the test transistor;

comparing the measured drain current with the modelled current; and

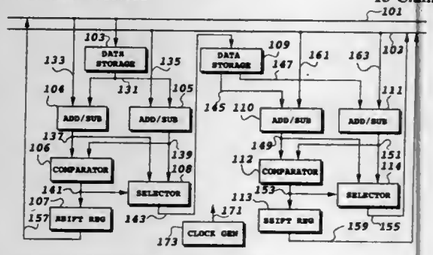
adjusting the estimate of lateral diffusion input to the DC model until the modelled current is substantially the same as the measured drain current, the value of the estimate of lateral diffusion that results in substantially the same current being substantially the correct value of the lateral diffusion.

5,648,921

DIGITAL OPERATIONAL CIRCUIT WITH PATHMETRICS CALCULATING STEPS SIMPLIFIED

Satoru Araki; Yoshihito Shimazaki, and Kenichiro Hosoda, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Jun. 27, 1995, Ser. No. 495,271
Claims priority, application Japan, Jul. 4, 1994, 6-152379
Int. Cl.[6] G06F *7/38;11/10*
U.S. Cl. 364—715.011 **13 Claims**



1. Digital operational circuitry comprising:

a first adder/subtractor for receiving first and second input data and adding the first and second input data to develop first resultant data;

a second adder/subtractor for receiving the first input data and third input data and adding the first and third input data to develop second resultant data;

a first comparator operative in response to the first and second resultant data for comparing likelihood of the first and second resultant data to develop first data;

a first selector operative in response to the first data for selecting either of the first and second resultant data to develop second data;

a first storage circuit for storing the second data;

a third adder/subtractor for receiving the second data from said first storage circuit and the third input data and adding the second data and the third input data to develop third resultant data;

a fourth adder/subtractor for receiving the second data from said first storage circuit and fourth input data and adding the second data and the fourth input data to develop fourth resultant data;

a second comparator operative in response to the third and fourth resultant data for comparing likelihood of the third and fourth resultant data to develop third data; and

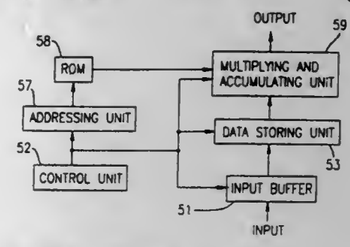
a second selector operative in response to the third data for selecting either of the third and fourth resultant data to develop fourth data.

5,648,922

DIGITAL FILTER

Dong Hwan Han, Seoul, Rep. of Korea, assignor to LG Semicon Co., Ltd., Cheongju, Rep. of Korea

Filed Apr. 14, 1995, Ser. No. 422,413
Claims priority, application Rep. of Korea, Apr. 14, 1994, 7862/1994
Int. Cl.[6] G06F *17/10*
U.S. Cl. 364—724.12 **3 Claims**



1. A digital filter, comprising:

a control unit for outputting a control signal;

an input buffer for buffering a data inputted in accordance with said control signal and for outputting the buffered data;

a data storing unit for storing a data outputted from said input buffer in accordance with a control signal applied thereto;

a ROM (Read Only Memory) having a filter coefficient stored therein, the filter coefficient being a matrix rearrangement of multi-stage coefficients, and having a zero coefficient;

an addressing unit for addressing an address of said filter coefficient stored in said ROM; and

a multiplying and accumulating unit for convoluting the data outputted from said data storing unit and the ROM.

5,648,923

NYQUIST FILTER FOR USE IN A JOINT VSB/QAM DEMODULATOR

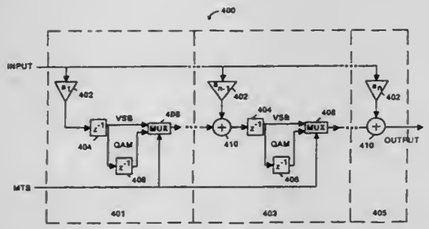
Frank A. Lane, Medford Lakes, and Joshua L. Koslov, Hopewell, both of N.J., assignors to Hitachi America, Ltd., Tarrytown, N.Y.

Filed Mar. 2, 1995, Ser. No. 397,441
Int. Cl.[6] G06F *17/10*
U.S. Cl. 364—724.16 **11 Claims**

1. A method of implementing a filter capable of operating in two different modes of operation, comprising the steps of:

providing a plurality of N filter cells, each of the N filter cells including first and second unit delay elements, where N is a positive integer greater than one, each of the N filter cells having a signal path through which a signal supplied to the filter cell passes;

arranging the first unit delay element of each of the N filter cells to be in the signal path of the filter cell; and



selectively inserting the second unit delay element of each of the N filter cells into the signal path of the N filter cells in response to a single control signal used to control the N filter cells to operate in the same mode of operation at any given time.

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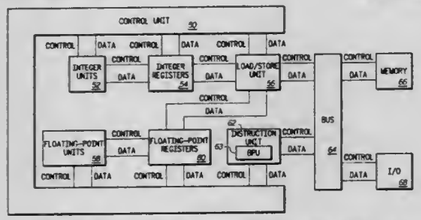
METHOD AND APPARATUS FOR FINDING ARCTANGENTS

Roger A. Smith, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 18, 1995, Ser. No. 424,033

Int. Cl.[6] G06F *7/548*

U.S. Cl. 364—729 **30 Claims**



1. A method for determining an Arctangent of an Input Operand "S" ($\tan^{-1}$ (S)), wherein:

the Input Operand S is represented as a floating point number having a sign portion ("G"), an exponent portion ("E"), and a fraction portion ("F"),

said method comprising the steps of:

a) issuing control signals to extract into a First Integer Register a first specified number bits from the least significant portion of exponent (E) and a second specified number of bits from the most significant portion of the fraction (F) to form an Index ("i"); and

b) in at least some instances, computing the Arctangent utilizing a Normal Operand Routine comprising the substeps of:

1) issuing control signals to a Data Processor to utilize the Index (i) stored in the First Integer Register to index into a Table of Polynomial Coefficients stored in a Memory, wherein:

said Polynomial Coefficient Table contains a plurality of Polynomial Coefficient Table Entries,

each said Polynomial Coefficient Table Entry comprises a plurality of Polynomial Coefficients ("C_i^j"),

said indexing into the Polynomial Coefficient Table identifies one of the plurality of Polynomial Coefficient Table Entries;

2) issuing control signals to the Data Processor to utilize the Index (i) stored in the First Integer Register to index into a Table containing Reference Values (S_i);

3) issuing control signals to a Floating Point Unit to compute a difference ("|S|–S_i") between an absolute value of the Input Operand (S) and the Reference Value (S_i); and

4) issuing control signals to the Floating Point Unit to compute an Arctangent result by performing floating point additions and multiplications utilizing said difference (|S|–S_i) and the coefficients (C_i^j), comprised in the identified Polynomial Coefficient Table Entry.

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OPTIMIZED OPERAND FORMATTING SAME

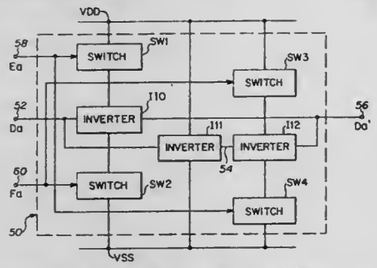
Joël Curtet, Fontaine, and Fankwo Tsang, Grenoble, both of France, assignors to SGS-Thomson Microelectronics S.A., Saint Genis, France

Filed Feb. 28, 1995, Ser. No. 395,564

Claims priority, application France, Feb. 28, 1994, 94 02283

Int. Cl.[6] G06F *7/52*

U.S. Cl. 364—284.04 **9 Claims**



1. A digital operand formatting stage comprising:

a first inverting means having a supply side, a ground side, an input and an output;

a second inverting means having a supply side, a ground side, an input connected to the input of said first inverting means, and an output;

a third inverting means having a supply side, a ground side, an input that is connected to the output of said second inverting means and an output that is connected to the output of said first inverting means; and,

a general switching means for switching at least one of said first inverting means, said second inverting means and said third inverting means.

5,648,926

SILICON NEURON

Rodney James Douglas, and Michelle Anne Mahowald, both of Oxford, United Kingdom, assignors to Medical Research Council, London, England

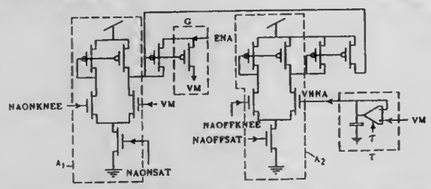
PCT No. PCT/GB92/02043, § 371 Date Oct. 13, 1994, § 102(e) Date Oct. 13, 1994, PCT Pub. No. WO93/09513, PCT Pub. Date May 13, 1993

PCT Filed Nov. 5, 1992, Ser. No. 211,956

Claims priority, application United Kingdom, Nov. 6, 1991, 9123583

Int. Cl.[6] G06G *7/00*

U.S. Cl. 364—807 **16 Claims**



1. An integrated circuit comprising a plurality of differential pairs of CMOS transistors, the gate voltage of a first one of each pair of transistors being settable to set a threshold value corresponding to an activation threshold of an ion channel in a biological neuron and the gate voltage of the second one of each pair of transistors being representative of an incoming membrane potential, ligand concentration or ion concentration of a biological neuron, each differential pair of CMOS transistors thereby providing a sigmoidal output representative of an ionic conductance across a neural membrane when the gate voltage of the second transistor exceeds the threshold value set by the gate voltage of the first transistor, wherein the plurality of differential pairs of CMOS transistors are interdependent and produce a combined output which emulates the functional characteristics of a biological neuron.

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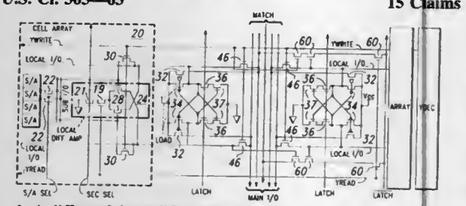
DIFFERENTIAL AMPLIFIER IN A MEMORY DATA PATH

Hiep Van Tran, Carrollton, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 246,913, May 20, 1994, Pat. No. 5,418,737, which is a continuation of Ser. No. 583,521, Sep. 17, 1990, abandoned. This application Mar. 1, 1995, Ser. No. 397,006

Int. Cl.[6] B11C *5/06*

U.S. Cl. 365—63 **15 Claims**



1. A differential amplifier comprising:

a. true and inverted control nodes receiving respective true and inverted data signals from sense amplifiers in an array of memory cells;

b. true and inverted drive nodes, electrically separate from the control nodes, receiving a pre-charge to a high voltage, the drive nodes carrying respective true and inverted data signals;

c. only one pair of cross-coupled transistors each transistor having a gate and source-drain leads, the gate of one transistor being connected to the true control node and the gate of the other transistor being connected to the inverted control node, one source-drain lead of each transistor being connected to a reference node, the other source-drain lead of the one transistor being connected to the inverted drive node and the other source-drain lead of the other transistor being connected to the true drive node, the pair of transistors conducting pre-charge from only one of the drive nodes to the reference node to form true and inverted data signals on the drive nodes; and

d. a switch connecting the reference node to a reference voltage node.

5,648,928

ALIGNMENT STRUCTURE OF A MAIN AMPLIFIER IN A MEMORY DEVICE

Oh Sang Yoon, Seoul, and Yong Soo Kim, Kyungki-Do, both of Rep. of Korea, assignors to LG Semicon Co., Ltd., Cheongju, Rep. of Korea

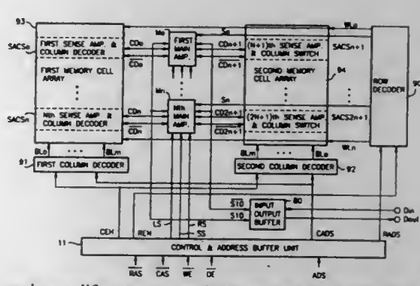
Filed Dec. 19, 1995, Ser. No. 574,490

Claims priority, application Rep. of Korea, Oct. 12, 1995, 35148/1995

Int. Cl.[6] G11C *5/06*

U.S. Cl. 365—63 **11 Claims**

1. An alignment structure of a main amplifier in a memory device in which when first and second memory cell arrays including a plurality of sense amplifiers and a plurality of column switches are referenced, column decoders connected to the first and second memory cell arrays are aligned at an outside of the first and second memory cell arrays, and main amplifiers amplifying data provided from the sense amplifiers and the column switches are aligned between the first and second memory cell arrays, wherein the main amplifiers are respectively selected by a row decoder arranged at an outside of the first and second memory cell arrays, and sense and amplify data outputted from the first and second memory cell arrays in accordance with left and right sense signals and a short signal applied from control and address buffer means.



5,648,929

FLASH MEMORY CARD

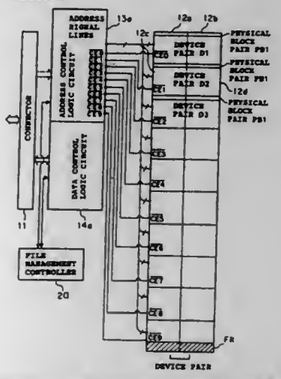
Taiyuu Miyamoto, Hyogo, Japan, assignor to Mitsubishi Electric Semiconductor Software Co., Ltd., Hyogo, and Mitsubishi Denki Kabushiki Kaisha, Tokyo, both of Japan

Filed Jul. 21, 1995, Ser. No. 505,541

Claims priority, application Japan, Mar. 23, 1995, 7-064001

Int. Cl.[6] G11C *13/00*

U.S. Cl. 365—185.04 **15 Claims**



1. A flash memory card having a plurality of flash memory devices each of which is divided into a plurality of physical blocks, comprising:

a connector for connecting said flash memory card to an external device;

a data control logic circuit for controlling a transfer of data between the outside of said flash memory card and the plurality of flash memory devices through said connector and respectively transmitting block erase commands to the flash memory devices including the physical blocks to be erased when the block erase commands associated with a plurality of consecutive logic blocks are inputted via said connector; and

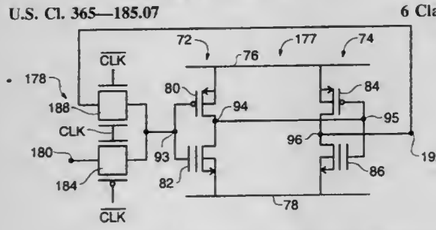
an address control logic circuit for managing addresses for the plurality of consecutive logic blocks inputted via said connector so as to disperse into the plurality of flash memory devices by assigning the addresses to their corresponding addresses for the physical blocks of the plurality of flash memory devices and for respectively transmitting chip enable signals to at least two device pairs of the plurality of flash memory devices including the physical blocks to be erased in such a manner that when the block erase commands are externally inputted via said connector, a period in which said at least two device pairs are simultaneously busy, exists.

5,648,930

NON-VOLATILE MEMORY WHICH IS PROGRAMMABLE FROM A POWER SOURCE

Todd A. Randazzo, Colorado Springs, Colo., assignor to Symbios Logic Inc., Fort Collins, Colo.

Filed Jun. 28, 1996, Ser. No. 674,593
Int. Cl.[6] G11C *16/06*
U.S. Cl. 365—185.07 **6 Claims**



1. A programmable non-volatile memory cell integrally connected to a sequential logic element in an semiconductor integrated circuit to establish a predetermined programmed non-volatile initial state of the memory cell and a predetermined operating state of the sequential logic element related to the non-volatile initial state of the memory cell as a result of an initial application of an operating voltage to the integrated circuit, the integrated circuit having power busses connected to the memory cell and the sequential logic element and between which the operating voltage is supplied, the integrated circuit selectively supplying a programming voltage of a magnitude greater than the operating voltage on the power busses to program selectively the non-volatile state of the memory cell, the integrated circuit also supplying a clock signal which alternates between high and low levels on a periodic basis in cycles, the memory cell comprising:

first and second inverters connected between the power busses, each inverter including an input terminal and an output terminal and a non-volatile element connected to the input and output terminals and to the power busses, each non-volatile element capable of being programmed to a predetermined non-volatile conductive state upon the application of the programming voltage between the power buses when a signal is applied to the input terminal of the inverter of which the non-volatile element is a part;

the output terminal of the first inverter connected to the input terminal of the second inverter to force the second inverter into an opposite conductive state from the conductive state of the first inverter; and

a multiplexer having first and second input/output terminals and a common terminal, the multiplexer alternately connecting the first and second input/output terminals to the common terminal in response to the clock signal;

the sequential logic circuit connected to the first input/output terminal of the multiplexer;

the common terminal of the multiplexer connected to the input terminal of the first inverter;

the second input/output terminal of the multiplexer connected to the output terminal of the second inverter;

the multiplexer responding to one cycle of the clock signal to connect a signal from the sequential logic element to the input terminal of the first inverter;

the first and second inverters establishing conductive states according to the signal from the sequential logic element;

the multiplexer responding to the next cycle of the clock signal to connect a signal from the output terminal of the second inverter to the input terminal of the first inverter and to thereby latch the inverters into the conductive states established by the signal from the sequential logic element applied to the first inverter during the preceding cycle of the clock signal;

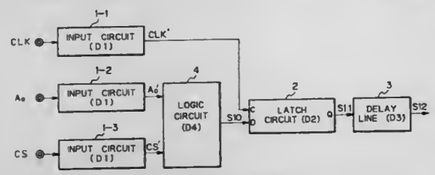
the latched conductive states of the inverters establishing predetermined stable input signals to the first and second inverters while the programming voltage is applied to the power busses and also establishing a stable output signal from the memory cell after the initial application of power without ancillary circuitry of the integrated circuit to access and select the memory cell for programming or to establish the predetermined non-volatile initial state.

5,648,931

HIGH SPEED SYNCHRONOUS LOGIC DATA LATCH APPARATUS

Takashi Obara, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 27, 1995, Ser. No. 494,998
Claims priority, application Japan, Jun. 27, 1994, 6-165813
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—189.05 **17 Claims**



1. A logic data latch apparatus comprising:

a clock signal input circuit for receiving a clock signal;

at least two logic signal input circuits for receiving logic signals;

a logic circuit, connected to outputs of said logic signal input circuits, for performing a logic operation upon said logic signals; and

a latch circuit, connected to said clock signal input circuit and said logic circuit, for latching an output signal of said logic circuit in synchronization with said clock signal,

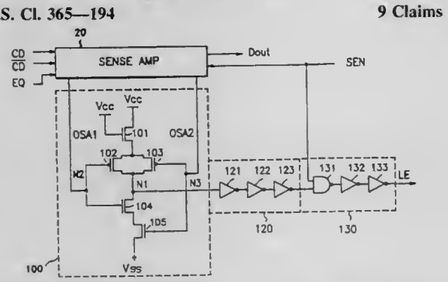
wherein a set up time of said logic signals with respect to said clock signal is larger than a delay time of said logic circuit.

5,648,932

OUTPUT CONTROL CIRCUIT FOR SEMICONDUCTOR MEMORY

Hee-bok Kang, Daejon, Rep. of Korea, assignor to LG Semicon Co., Ltd., Choongchungbook-do, Rep. of Korea

Filed Dec. 29, 1995, Ser. No. 581,221
Claims priority, application Rep. of Korea, Nov. 24, 1995, 43559/1995
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—194 **9 Claims**



1. An output control circuit for a semiconductor memory wherein a sense amplifier output control circuit is directed to equalizing voltage of both output nodes of an internal amplifying unit to a certain state in accordance with an equalizing signal, and wherein said internal amplifying unit amplifies a cell data and a not-cell data outputted from a cell array block in accordance with a sense amplifier enable signal, comprising:

sense amplifier output detecting means for initializing and enabling a sense amplifier to have a certain state when said sense amplifier is in an equalizing state in accordance with voltage applied thereto and for detecting whether voltage levels of both output nodes of the internal amplifying means are different;

delay means for delaying an output signal of said sense amplifier output detecting means for a predetermined time; and

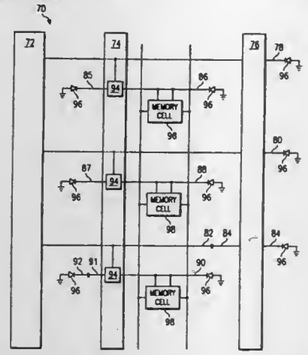
output control means for outputting an output signal of said delay means when the sense amplifier is enabled.

5,648,933

STRUCTURE FOR DESELECTING BROKEN SELECT LINES IN MEMORY ARRAYS

William Carl Slemmer, Dallas, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Continuation-in-part of Ser. No. 69,025, May 28, 1993, Pat. No. 5,465,233. This application Jul. 31, 1995, Ser. No. 509,211
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—200 **24 Claims**



1. Memory array circuitry for selecting a portion of a memory array, comprising:

a plurality of memory cells;

a plurality of select lines which select a portion of the memory cells in the memory array when set to a select voltage level and which deselect a portion of the memory array when set to a deselect voltage level, each select line having a first end and a second end, with the first end of the select line connected to a driver; and

a plurality of non-linear devices, with a non-linear device of the plurality of non-linear devices connected to the second end of each of the select lines which holds the select line to the deselect voltage level if the select line is broken.

5,648,934

ON-CHIP MEMORY REDUNDANCY CIRCUITRY FOR PROGRAMMABLE NON-VOLATILE MEMORIES, AND METHODS FOR PROGRAMMING SAME

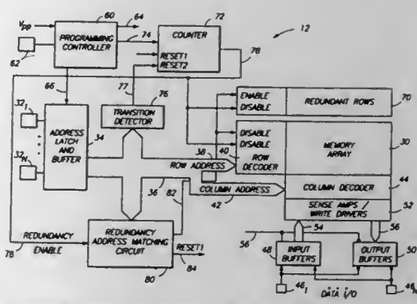
James E. O'Toole, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 387,244, Feb. 13, 1995, Pat. No. 5,513,144. This application Feb. 5, 1996, Ser. No. 596,528
Int. Cl.[6] G11C *29/00*
U.S. Cl. 365—200 **24 Claims**

1. A programmable non-volatile memory device comprising:

a memory array of selectable memory cells;

a controller programming a selected one of the memory cells with data, the controller repeatedly attempting to program the selected memory cell in the event that the data is not validly written into the selected memory cell; and



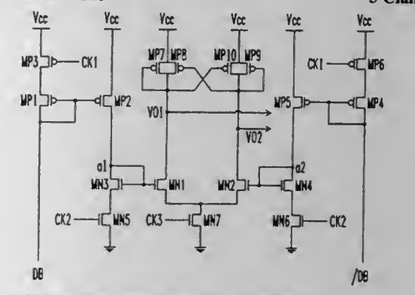
a counter counting the number of attempts the controller makes to program the selected memory cell.

5,648,935

SENSE AMPLIFIER

Yo Hwan Koh; Chan Kwang Park, and Jeung Won Suh, all of Bubal-eub, Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Kyoungki-do, Rep. of Korea

Filed May 22, 1995, Ser. No. 445,747
Claims priority, application Rep. of Korea, May 23, 1994, 94-11173
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—205 **3 Claims**



1. A data bus line sense amplifier comprising:

first current amplification means for amplifying true data on a true data bus line in response to first and second control signals and transferring the amplified true data to a first node;

second current amplification means for amplifying complementary data on a complementary data bus line in response to the first and second control signals and transferring the amplified complementary data to a second node; and

third current amplification means for sensing and amplifying a current difference between said first and second nodes in response to a third control signal, said third current amplification means having a differential amplification structure.

5,648,936

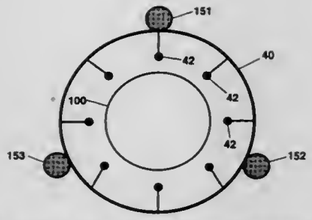
METHOD FOR ACOUSTIC NEAR FIELD SCANNING USING CONFORMAL ARRAYAL

Joseph A. Clark, and Michael A. Sartori, both of Arlington, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 30, 1995, Ser. No. 497,589
Int. Cl.[6] H04B *17/00*
U.S. Cl. 367—13 **27 Claims**

1. Method for scanning the acoustic near field of a structure having a circumferential surface about its longitudinal axis, comprising:

providing a frame for said structure;



engaging at least one array of acoustic measurement devices with respect to said frame whereby each said array is approximately conformal with respect to said surface in the circumferential direction and is movable in the longitudinal direction;

at least twice positioning each said array; and

measuring said acoustic near field upon each said positioning of each said array.

5,648,937

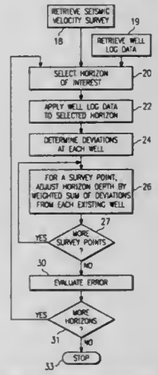
METHOD AND APPARATUS FOR CORRELATING GEOLOGICAL STRUCTURE HORIZONS FROM VELOCITY DATA TO WELL OBSERVATIONS

Bruce S. Campbell, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jan. 18, 1995, Ser. No. 375,553

Int. Cl.[6] G01V *1/36;1/40*

U.S. Cl. 367—27 **24 Claims**



1. A method of operating a computer to correlate a seismic survey corresponding to a survey region of the earth to physical measurements from a plurality of well locations of the survey region, comprising the steps of:

retrieving, from computer memory, seismic data representations corresponding to a first horizon in the seismic survey of the survey region, and including horizon depth values for the first horizon at a plurality of survey points in the survey region;

retrieving, from computer memory, data representations of physical depth measurements of a first geological interface corresponding to the first horizon, said physical depth measurements taken at the plurality of well locations of the survey region;

determining, for each well location, a deviation value between the physical depth measurement of the first geological interface and a horizon depth for the first horizon thereat; and

for a first one of the plurality of survey points located at a distance from each of the plurality of well locations, adjusting the horizon depth value by a difference value based upon an average of the deviation for each of the plurality of well locations weighted by its distance from the first one of the plurality of survey points.

5,648,938

SEISMIC DATA ACQUISITION

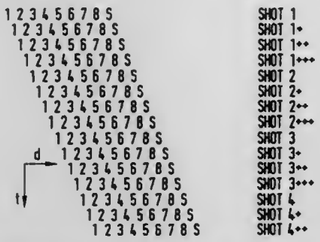
Helmut Jakubowicz, Surrey, England, assignor to Ensign Geophysics Limited, Surrey, England

Filed Oct. 5, 1994, Ser. No. 318,335

Claims priority, application United Kingdom, Oct. 6, 1993, 9320540

Int. Cl.[6] G01V *1/20;1/28*

U.S. Cl. 367—56 **28 Claims**



1. A system for acquiring and processing seismic data, comprising: source-means for generating a plurality of discrete sound excitations, receiver-means for receiving and recording as data sound waves generated by reflection of said sound excitations from subsurface interfaces, and means for processing the recorded data to remove therefrom differences between high and low velocity sound waves in accordance with source and receiver-means separation to generate sets of actual said data each said set containing data relating to a respective one of a plurality of specific subsurface reflection points, to order the actual data sets generated in accordance with the receiver and source-means separation, to process each actual data set to generate additional data intermediate the recorded actual data of that actual data set, and to re-order each actual data set with the generated additional data for the same actual data set in accordance with receiver and source-means separation.

5,648,939

METHOD OF SEISMIC PROCESSING

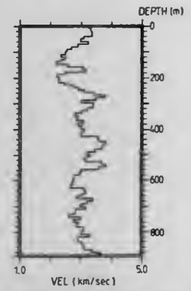
Per Gunnar Folstad, and Michael A. Schoenberg, both of Cambridge, England, assignors to Schlumberger Technology Corporation, Sugar Land, Tex.

Filed Mar. 24, 1993, Ser. No. 36,614

Claims priority, application United Kingdom, Mar. 27, 1992, 9206681

Int. Cl.[6] G01V *1/32*

U.S. Cl. 367—73 **19 Claims**



1. A method of making a synthetic seismogram from input data relating to properties of earth formations sampled at n vertically spaced sampling points, comprising:

defining n substantially horizontally extending fine layers corresponding to the n sampling points, where the properties of the formation of each of the n fine layers are defined as the properties of the formation at the corresponding sampling point;

defining a seismic signal having a predetermined dominant wavelength;

constructing an equivalent model by defining m equivalent horizontally extending layers, where m is substantially smaller than n and the vertical thickness of the thickest of the equivalent layers is no greater than on the order of one-tenth the dominant wavelength, and generating equivalent formation properties for each equivalent layer by combining the sampled formation properties of the fine layers within the respective equivalent layer; and

deriving from the equivalent model and the seismic signal a synthetic seismogram.

5,648,940

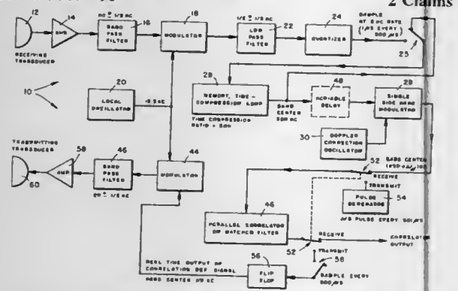
PULSE CODED SONAR HAVING IMPROVED DOPPLER DETERMINATION FEATURE

John M. McCool, Altadena, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 23, 1968, Ser. No. 701,812

Int. Cl.[6] G01S *15/00*

U.S. Cl. 367—90 **2 Claims**



1. For use in connection with a broad-band, pulse code sonar, the method of processing pulse code echoes to determine the doppler of a return echo; comprising the steps of:

(a) sampling and time compressing the signal during return echo periods,

(b) storing the time compressed sample,

(c) successively reading out the time compressed sample and hetrodyning each successive read-out with a discretely different doppler compensation frequency signal, and

(d) passing the successively hetrodyned read-outs through an "on line" correlation detection device for detecting a correctly compensated pulse code echo.

5,648,941

TRANSDUCER BACKING MATERIAL

Robert W. King, Lexington, Mass., assignor to Hewlett-Packard Company, Palo Alto, Calif.

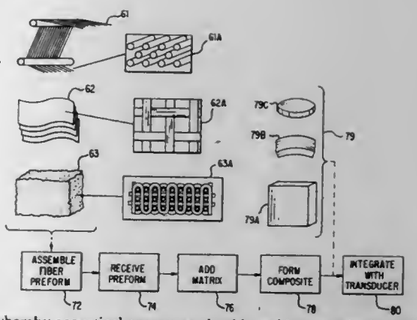
Filed Sep. 29, 1995, Ser. No. 536,763

Int. Cl.[6] H04R *1/28*

U.S. Cl. 367—176 **20 Claims**

1. A backing material for use in an electroacoustic transducer, comprising:

a composite formed of a fibrous preform and a matrix, wherein the preform includes fibers arranged in spaced relationship so as to define a plurality of voids, and wherein said voids being substantially filled by said matrix,



whereby acoustical energy received by said composite is subject to scattering by said fibers and attenuation in said plurality of voids.

5,648,942

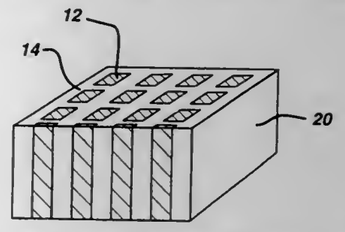
ACOUSTIC BACKING WITH INTEGRAL CONDUCTORS FOR AN ULTRASONIC TRANSDUCER

Harry A. Kunkel, III, State College, Pa., assignor to Advanced Technology Laboratories, Inc., Bothell, Wash.

Filed Oct. 13, 1995, Ser. No. 542,582

Int. Cl.[6] H04R *17/00;* **H01L** *41/00*

U.S. Cl. 367—176 **16 Claims**



1. A composite acoustic backing for an ultrasonic transducer array of piezoelectric elements, comprising:

regions of a first composite material which is electrically conductive and relatively attenuative to acoustic energy, said regions being relatively acoustically and electrically isolated from each other and acoustically and electrically coupled to individual elements of the array to provide electrical paths between said elements and an external surface of said backing; and

regions of a second material which is electrically nonconductive and attenuative to acoustic energy, said regions of second material providing acoustic and electrical isolation between said regions of said first composite material.

5,648,943

DISK RECORDING/REPRODUCTION DEVICE OF REDUCED THICKNESS WITH DRIVING MECHANISM FOR MOVING HEADS PARALLEL TO THE DISK FACE

Yoshiyuki Omi, Higashihiroshima; Seiichi Fujii, Hirosbima; Sadao Uchiyama, Higashihiroshima; Shigeki Tsuji, Higashihiroshima; Masanobu Katsuki, Higashihiroshima, and Yoshio Katayama, Higashihiroshima, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

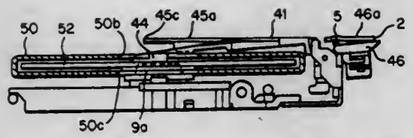
Filed May 31, 1995, Ser. No. 455,397

Claims priority, application Japan, Oct. 3, 1994, 6-238873

Int. Cl.[6] G11B *11/00;33/02;5/00*

U.S. Cl. 369—13 **9 Claims**

1. A disk recording/reproduction device comprising:



a recording medium comprising a disk having at least one recording face thereon and a protective case for accommodating the disk;

loading means for guiding the recording medium from a first position located outside the disk recording/reproduction device in a first direction in a substantially linear manner, guiding the recording medium to a second position located inside the disk recording/reproduction device, and thereafter guiding the recording medium in a second direction substantially perpendicular to the first direction from the second position to a third position, wherein the first position allows the recording medium to be inserted and taken out and the third position allows information to be recorded on the recording face of the disk;

a pickup for radiating a laser light beam on the recording face of the disk;

pickup driving means for moving the pickup in parallel to the recording face of the disk;

a magnetic head opposing the pickup with the recording medium interposed therebetween and the magnetic head moving in parallel to the recording face of the disk in an integral manner with the pickup such that the pickup and the magnetic head always oppose each other; and

head position switching means for moving the magnetic head so as to detach from the recording face and positioning the magnetic head in either a recordable position or a stand-by position in a selective manner;

wherein the disk recording/reproduction device further comprises position retention means for locating the recording medium in a fourth position present between the second position and the third position;

the magnetic head moves to the recordable position when the recording medium is in the third position, the magnetic head and the pickup thus recording information on the recording face of the disk; and

the magnetic head and the pickup are provided in such a manner such that the pickup driving means moves the magnetic head and the pickup together between a position opposing the protective case of the recording medium and a retracted position away from the position opposing the protective case, and when the recording medium is retained in the fourth position, the magnetic head and the pickup are moved from the position opposing the protective case to the retracted position and from the retracted position to the position opposing the protective case.

5,648,944

RECORDING/REPRODUCING APPARATUS THAT UTILIZES THE SERVO CLOCK SIGNALS TO FORM READ AND WRITE CLOCK SIGNALS WITH DIFFERENT FREQUENCIES

Kiyoshi Ohmori, Kanagawa; Tetsu Watanabe, Tokyo; Katsuhiro Seo, Tokyo, and Junichi Kudo, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

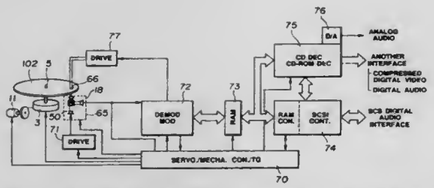
Continuation of Ser. No. 480,559, Jun. 7, 1995, abandoned, which is a continuation of Ser. No. 248,624, May 24, 1994, abandoned, which is a continuation of Ser. No. 888,982, May 26, 1992, abandoned. This application Jun. 12, 1996, Ser. No. 662,268

Claims priority, application Japan, May 28, 1991, 3-152415

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—13 **7 Claims**

1. A magneto-optical disc recording and reproducing apparatus comprising:



signal recording and reproducing means including optical means for radiating a light beam onto a magneto-optical disc housed within a disc cartridge and for receiving light returning from the disc, the disc having a signal recording region divided from an inner periphery to an outer periphery into a plurality of concentric signal recording zones, each signal recording zone having a plurality of information elements formed on the signal recording region with a substantially equal line recording density so that the number of information elements storable per track increases from zone to zone from the inner periphery to the outer periphery, whereby the information elements are reproduced at increasing frequencies from the innermost zone to the outermost zone, and a plurality of servo clock signals formed in the zones, whereby the servo clock signals recorded at different radial distances from the center of the disc are reproduced at a substantially constant frequency;

magnetic field generating means for applying a magnetic field when information signals are being recorded on the disc;

rotating driving means for rotatably driving the disc at a substantially constant angular velocity;

loading means for loading the disc cartridge onto the signal recording and reproducing means and for unloading the disc cartridge from the signal recording and reproducing means, and

controlling means for controlling the signal recording and reproducing means and for converting the substantially constant frequency reproduced from the servo clock signals for use as plural channel clock frequencies for reproducing and recording signals in the signal recording zones, each signal recording zone having one corresponding channel clock frequency, such that the channel clock frequencies of signal recording zones located at larger radial distances from the center of the disc are higher than channel clock frequencies of signal recording zones located at smaller radial distances from the center of the disc.

5,648,945

OPTICAL INFORMATION RECORDING/REPRODUCING APPARATUS

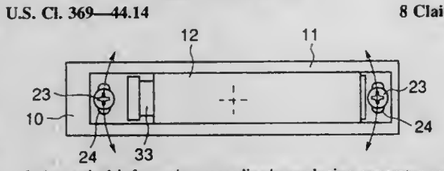
Ryuichi Iwanaga, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 20, 1995, Ser. No. 492,692

Claims priority, application Japan, Jun. 21, 1994, 6-138640

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—44.14 **8 Claims**



1. An optical information recording/reproducing apparatus comprising:

a light source unit for emitting a plurality of light beams, for information recording and/or reproduction, toward an optical information recording medium;

an optical head on which said light source unit is mounted;

a frame of the apparatus on which said optical head is mounted; and

an adjusted mechanism for adjusting the positional relationship of the a plurality of light beams relative to the optical information recording medium, said adjusting mechanism being formed at the mounting portion of said apparatus at which said optical head is mounted to said frame.

5,648,946

OPTICAL PICK-UP APPARATUS WITH HOLOGRAPHIC OPTICAL ELEMENT TO DIFFRACT BOTH FORWARD AND RETURN LIGHT BEAMS

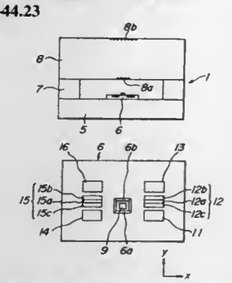
Takeshi Yamazaki, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 17, 1994, Ser. No. 341,087

Claims priority, application Japan, Apr. 28, 1992, 4-110022

Int. Cl.[6] G11B *7/09*

U.S. Cl. 369—44.23 **10 Claims**



1. An optical pick-up apparatus for recording and/or reading information on and/or from an optical record medium, said apparatus comprising:

a semiconductor substrate having a surface;

a semiconductor laser provided on said surface of semiconductor substrate and emitting a laser beam;

diffraction grating means for dividing said laser beam into a single main beam for recording and/or reading information on and/or from an optical record medium and first and second sub-beams for detecting a tracking error;

a converging optical system for projecting said main beam and first and second sub-beams emanating from said diffraction grating means onto said optical record medium as fine beam spots and receiving the main beam and first and second sub-beams reflected by said optical record medium;

a hologram means for diffracting the main beam and first and second sub-beams reflected by said optical record medium and received by said converging optical system into ±1-order main beams, ±1-order first sub-beams and ±1-order second sub-beams and giving said +1-order main beam and first and second sub-beams and said −1-order main beam and first and second sub-beams focal powers in opposite directions; and

a photodetecting means including first and second photodetectors receiving said ±1-order main beams, third and fourth photodetectors receiving ±1-order first sub-beams and fifth and sixth photodetectors receiving ±1-order second sub-beams; wherein the optical pick-up apparatus is constructed to satisfy a condition:

$$NA \cdot d < L \cdot \beta$$

wherein L (in mm) is a distance between a spot of the main beam and a spot of one of the first and second sub-beams on the optical record medium, NA is a numerical aperture of said converging optical system on a side of the semiconductor laser, β is a magnification of said converging optical system viewed from the optical record medium to the semi-conductor laser and d is a deviation of focal points of the +1-order and −1-order main beams viewed along an optical axis.

5,648,947

OPTICAL DISK DEVICE HAVING TRACK JUMPING CONTROL

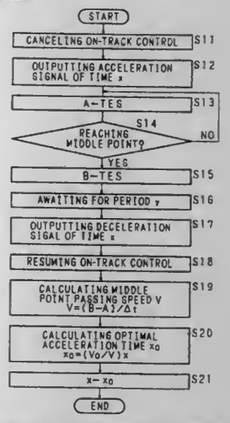
Shingo Hamaguchi, and Eiji Yabuki, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 24, 1995, Ser. No. 410,340

Claims priority, application Japan, Aug. 9, 1994, 6-187092

Int. Cl.[6] G11B *7/085*

U.S. Cl. 369—44.28 **7 Claims**



1. An optical disk device in which an optical disk having a spirally formed recording track is irradiated with a light beam and a beam irradiating position on said optical disk is moved from one recording track to an adjacent recording track at every rotation of said optical disk, comprising:

a movable optical head for emitting the light beam;

jump signal generating means for generating a jump signal including an acceleration signal for accelerating said optical head, a deceleration signal corresponding to said acceleration signal, and a halt period between said acceleration signal and said deceleration signal;

jump detecting means for detecting a moving state of the beam irradiating position moved in response to said jump signal; and

a jump controller for correcting an output time of said acceleration signal and said deceleration signal based on a detection result obtained by said jump detecting means.

5,648,948

APPARATUS FOR RECORDING AND REPRODUCING A FREQUENCY BANDWIDTH CODED DIGITAL AUDIO SIGNAL

Naoto Itoh; Yoshihisa Nagai, and Satoru Nomura, all of Yamanashi, Japan, assignors to Pioneer Electronic Corporation, Yamanashi, and Pioneer Electronic Corporation, Tokyo, both of Japan

Filed Sep. 30, 1992, Ser. No. 953,972

Claims priority, application Japan, Mar. 4, 1992, 4-047136

Int. Cl.[6] G11B *7/00*

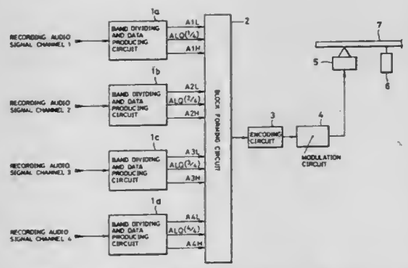
U.S. Cl. 369—48 **4 Claims**

1. A method for recording digital audio signals on a recording medium, comprising the steps of:

receiving an original digital audio signal having a plurality of different frequency bands;

converting original digital audio signals into separate channels, each channel containing a different group of band digital data for each frequency band of said original digital audio signals;

dividing each of said band digital data groups in each of said



channels along a time base, thereby obtaining a plurality of band subblocks obtained from said original digital audio signals;

combining said ones of said band subblocks existing in a same time zone among said band subblocks, thereby obtaining an information data section composed of a plurality of said combined subblocks;

producing a header section including identification data blocks indicative of each of said frequency bands of each subblock combined and included in said information data section;

combining said subblocks of said information data section and said identification data blocks of said header section, thereby producing a block including a header section and an information data section obtained from said original digital audio signal; and

recording said block on said recording medium.

5,648,949

METHOD AND APPARATUS FOR INFORMATION REPRODUCTION AT VARIABLE REFERENCE LEVEL

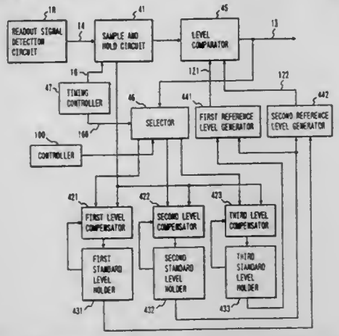
Harukazu Miyamoto; Hisataka Sugiyama, both of Kodaira, and Kiyoshi Matsumoto, Chiba, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 8, 1996, Ser. No. 597,408

Claims priority, application Japan, Feb. 13, 1995, 7-023737

Int. Cl.[6] G11B *5/09*

U.S. Cl. 369—59 **18 Claims**



1. An information reproduction method for obtaining digital data having n+1 values comprising the steps of comparing a variable readout signal with n reference levels (n is a positive integer), providing n+1 standard levels to correspond to n+1 pieces of digital data, selecting one of the standard levels that corresponds to the digital data obtained from a level of said variable readout signal at a predetermined timing, changing said selected one of the standard levels in dependence upon the level of said variable readout signal at said predetermined timing, and changing said reference levels in accordance with the change of said selected one of the standard levels.

5,648,950

HOLOGRAM INTEGRATED WITH A BEAM SPLITTER TO SEPARATE A PLURALITY OF POLARIZED REFLECTED LIGHT BEAMS

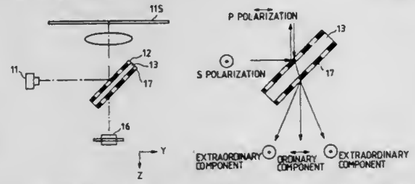
Tadashi Takeda, and Yoshio Hayashi, both of Nagano, Japan, assignors to Kabushiki Kaisha Sankyo Seiki Seisakusho, Nagano, Japan

Filed Oct. 25, 1995, Ser. No. 548,133

Claims priority, application Japan, Oct. 25, 1994, 6-284128; Oct. 26, 1994, 6-286052

Int. Cl.[6] G11B *7/135;11/10*

U.S. Cl. 369—110 **8 Claims**



1. An optical pickup system with which light emitted from a source to illuminate a magnetooptical recording medium is reflected so as to read information signals comprising:

a beam splitter;

a photodetector;

a hologram device for splitting the emerging light from said source into a plurality of beams, said hologram device being an integral part of the entrance surface of said beam splitter; and

a polarizing separation device of a diffraction type for separating the reflected light from said magnetooptical recording medium into an ordinary and an extraordinary component, said polarizing separation device being an integral part of the surface of said beam splitter and being disposed on a side of said beam splitter which is closer to said photodetector.

5,648,951

MOVABLE OPTICAL HEAD INTEGRALLY INCORPORATED WITH OBJECTIVE LENS AND HOLOGRAM ELEMENT

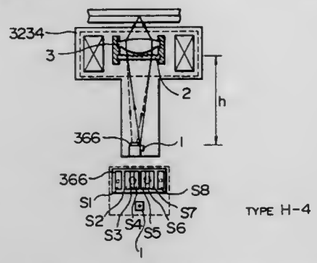
Makoto Kato, Nishinomiya; Yoshiaki Komma, Kyoto; Shinichi Kadowaki, Hirakata; Yoshikazu Hori, Kobe; Seiji Nishino, Osaka, and Tetsuo Saimi, Hirakata, all of Japan, assignors to Matsushita Electic Industrial Co. Ltd., Osaka, Japan

Continuation of Ser. No. 158,368, Nov. 29, 1993, abandoned, which is a continuation of Ser. No. 681,928, Apr. 8, 1991, abandoned. This application Apr. 3, 1995, Ser. No. 415,764

Claims priority, application Japan, Apr. 12, 1990, 2-097164; Jun. 19, 1990, 2-161760; Sep. 4, 1990, 2-234879

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—112 **16 Claims**



1. A movable optical pick-up head apparatus of integrated lens and hologram type, comprising:

a light radiation source;

an imaging optics means having an optical axis;

a hologram element including a diffraction optical element on which two different kinds of blazed patterns are formed alternately in an even number, greater than or equal to four, of regions which are arranged in parallel with one another so as to be successively adjacent to one another but which do not overlap with one another, for producing a zero order diffraction component beam from a beam emitted from said light radiation source, said imaging optics means receiving said zero order diffraction component beam so as to converge said zero order diffraction component beam into a spot on a memory medium and further receiving a reflected beam from the spot, and for producing a pair of first order diffraction component beams having focused points which have different distances from said hologram element along said optical axis, from said reflected beam transmitted from said imaging optic means, said first order diffraction component beams being deflected from said optical axis of said imaging optics means;

at least one pair of optical detection means having beam receiving surfaces which are located on a single plane which is disposed between said focused points, said plane being orthogonal to said optical axis, said pair of first order diffraction component beams impinging on respective ones of said beam receiving surfaces of said at least one pair of optical detection means with spot sizes which are substantially equal to each other if said imaging optics means focuses said zero order diffraction component beam into said spot on said memory medium, for differentially obtaining a focusing error signal corresponding to a difference between said spot sizes of said pair of first order diffraction component beams on said beam receiving surfaces of said at least one pair of optical detection means when said imaging optics means does not focus said zero order diffraction component beam into said spot on said memory medium; and

an actuator means for driving said imaging optics means in accordance with said focusing error signal from said optical detection means so as to allow said imaging optics means to focus said zero order diffraction component beam into said spot on said memory medium so that said spot can scan precisely said memory medium.

5,648,952

PHASE-CHANGE OPTICAL DISC RECORDING METHOD AND APPARATUS, AND INFORMATION RECORDING APPARATUS AND RECORDING PRE-COMPENSATION METHOD

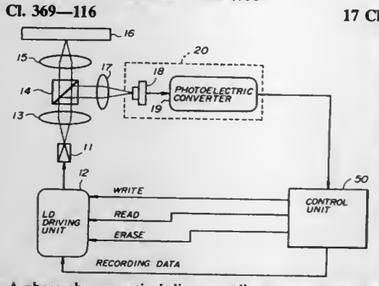
Hiroshi Maegawa, and Ikuo Aoki, both of Yokohama, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 26, 1995, Ser. No. 536,833

Claims priority, application Japan, Sep. 28, 1994, 6-232830; Oct. 27, 1994, 6-263339

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—116 **17 Claims**



16. A phase-change optical disc recording system, comprising:

light-emitting means for emitting light onto a phase-change optical disc;

control means for performing a trial writing operation on said phase-change optical disc using said light-emitting means having write and erase light-emitting powers, which together are varied according to predetermined variation ratios respectively; and

reproducing means for reproducing signals relevant to said trial writing operation from said disc;

said control means determining optimum ones of the write and erase light-emitting powers using the thus-reproduced signals.

5,648,953

SUB-QUE CODE DATA READ CIRCUIT FOR COMPACT DISC REPRODUCTION APPARARTUS

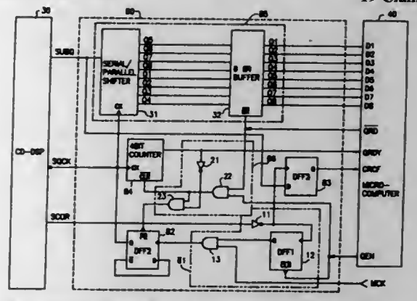
Dae Young Kim, Seoul, Rep. of Korea, assignor to LG Electronics Inc., Seoul, Rep. of Korea

Filed Sep. 15, 1995, Ser. No. 528,982

Claims priority, application Rep. of Korea, Sep. 17, 1994, 23817/1994

Int. Cl.[6] G11B *7/00;20/10*

U.S. Cl. 369—124 **19 Claims**



14. A data reading method for a compact disc reading apparatus including a digital signal processor outputting serial sub-que code data and a microprocessor, the method comprising the steps of:

generating a second clock signal according to a synchronous signal output from the digital signal processor and an enable signal output from the microcomputer;

converting the serial sub-que code data output from the digital signal processor into parallel byte data according to the second clock signal; and

outputting an error flag signal from the sub-que code data output from the digital signal processor to the microprocessor.

5,648,954

OPTICAL DISK USING LAND AND GROOVE TRACKS

Isao Satoh, Neyagawa, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 8, 1994, Ser. No. 255,648

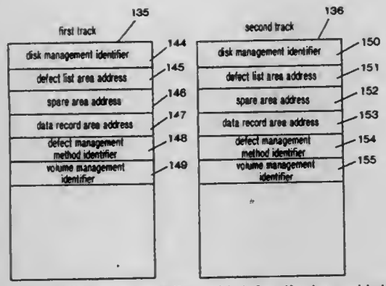
Claims priority, application Japan, Jun. 8, 1993, 5-137089; Jun. 10, 1993, 5-138793

Int. Cl.[6] G11B *7/24*

U.S. Cl. 369—275.1 **7 Claims**

1. An information recording/reproduction method by which information is recorded onto and/or reproduced from an optical disk comprising a first track in which information is recorded into and/or reproduced from a groove, and a second track in which information is recorded onto and/or reproduced from a land sandwiched by said first track, said first and second tracks being formed on the same recording plane, wherein

one defect list area in which a defect list including a defective sector address of a defective sector and an alternate sector address is to be recorded is formed in one of said first and second tracks, and, when a defective sector is detected in said first or second track, a defect-alternation process is conducted



while additionally recording said defect list into said defect list area.

5,648,955

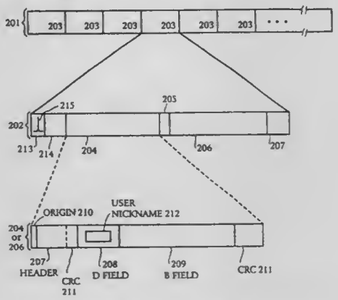
METHOD FOR POWER CONTROL IN A TDMA SPREAD SPECTRUM COMMUNICATION SYSTEM

Ryan N. Jensen, Colorado Springs; Logan Scott, Breckenridge, and Claude M. Williams, Colorado Springs, all of Colo., assignors to Omnipoint Corporation, Colorado Springs, Colo.

Continuation of Ser. No. 284,053, Aug. 1, 1994, which is a continuation-in-part of Ser. No. 215,306, Mar. 21, 1994, abandoned, which is a continuation-in-part of Ser. No. 146,496, Nov. 1, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 480,898

Int. Cl.[6] H04J *3/16*

U.S. Cl. 370—252 **30 Claims**



1. In a time division multiple access communication system having a base station and a plurality of user stations, a method for closed loop power control comprising the steps of

transmitting with a power level, in a designated minor time frame of a major time frame, a pulse signal from a user station to a base station,

receiving said pulse signal at said base station,

measuring an indication of link quality based on said pulse signal,

transmitting, in said designated minor time frame of said major time frame and following said pulse signal, a first spread spectrum signal from said base station to said user station, said first spread spectrum signal comprising a power adjustment command,

receiving said first spread spectrum signal at said user station,

adjusting said power level at said user station in response to said power adjustment command,

transmitting, in said designated minor time frame of said major time frame and following said first spread spectrum signal, a second spread spectrum signal from said user station to said base station, and

receiving said second spread spectrum signal at said base station.

5,648,956

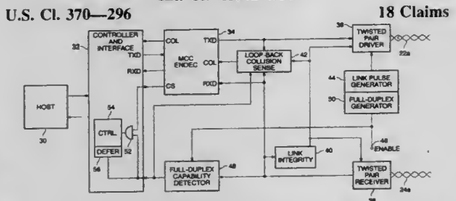
APPARATUS AND METHOD FOR FULL-DUPLEX ETHERNET COMMUNICATIONS

Namakkal S. Sambamurthy; Woo-Ping Lai, both of San Jose, and John P. VanGilder, Sunnyvale, all of Calif., assignors to Seeq Technology, Incorporated, Fremont, Calif.

Continuation of Ser. No. 227,851, Apr. 15, 1994, Pat. No. 5,504,738, which is a continuation of Ser. No. 966,978, Oct. 27, 1992, Pat. No. 5,311,114. This application Dec. 27, 1995, Ser. No. 579,570

Int. Cl.[6] H04B *1/38*

U.S. Cl. 370—296 **18 Claims**



5. A method of establishing communication on an ethernet local area network, said method comprising the steps of:

transmitting a link-integrity signal, said link-integrity signal being downward compatible with a half-duplex capability of an ethernet transceiver, from a first node on the network, said link-integrity signal comprising an indicator of a type of communication capability;

receiving said link-integrity signal at a second node on the network; and

transmitting a capability signal from said second node, responsive to said indicator.

5,648,957

DISTRIBUTOR EMPLOYING CONTROLLED SWITCHING ELEMENTS

Byoung ki Lee, Seoul, and Jung-kyu Lee, 312-605, Chookong Apartment, Sanggye-Dong, Nohwon-Ku, Seoul, both of Rep. of Korea, assignors to Byoung-Ki Lee; Jung-Kyu Lee, and Gold Star Information & Communications, Ltd., Seoul, Rep. of Korea

Filed Feb. 15, 1995, Ser. No. 388,973

Claims priority, application Rep. of Korea, May 6, 1994, 9956

Int. Cl.[6] H04L *12/56*

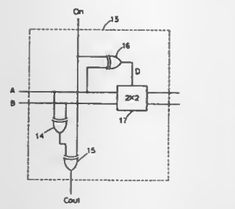
U.S. Cl. 370—355 **10 Claims**

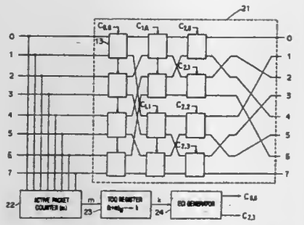
1. A distributor concentrating and outputting active packets among N input packets comprising: controlled switching element-based network comprising log N switching stages, each switching stage having N/2 control switching elements for switching channels of two input packets in accordance with external control input values received through an external control input port;

first switching stage from an output port of the controlled switching element-based network which receives each external control input value through external control input ports having a 2^0 switching element as one unit;

second switching stage from the output port of the controlled switching element-based network which receives each external control input value through external control input ports having 2^1 switching elements as one unit;

last switching stage from the output port of the controlled switching element-based network which receives each external control input value through external control input ports having 2^M (M being a natural number) switching elements as one unit;





active packet counting means counting and generating an output signal representing the number of said active packets inputted to said controlled switching element-based network;

tail-of-queue register storing an output vector value k mapping said active packet signals, outputting the value k in each time slot, and updating the value k in modulo-N operation when the output signal of said active packet counting means is inputted; and

external control input generating means inputting the output vector value k which is the output signal of said tail-of-queue register, and generating an external control input value corresponding to the output vector value k providing to said controlled switching element in controlled switching element-based network.

5,648,958

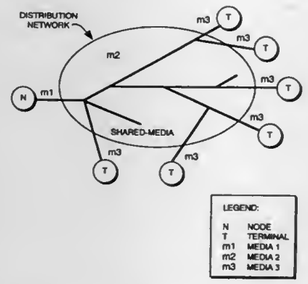
SYSTEM AND METHOD FOR CONTROLLING ACCESS TO A SHARED CHANNEL FOR CELL TRANSMISSION IN SHARED MEDIA NETWORKS

Raymond C. Counterman, Canton, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Apr. 5, 1995, Ser. No. 417,294

Int. Cl.[6] H04J *3/16*

U.S. Cl. 370—458 **20 Claims**



1. A system for controlling access to a shared channel for cell transmission in a shared medium network, wherein the shared medium distribution portion of said network extends from a node to a plurality of terminals within a community, having a tree-and-branch bus topology, comprising:

a downstream broadcast channel from said node to all terminals on said distribution network;

a shared upstream channel, separate from said downstream broadcast channel, from all of said terminals to said node;

a network controller at said node for central control of access of media transmissions from said terminals over said upstream channel;

media access control protocols residing in said controller and in said terminals;

an asynchronous transmission mode (ATM) network element at said node having ATM shared channel protocols to provide dynamic bandwidth allocation of said upstream channel; and

means to grant access to said shared upstream channel to any of said terminals utilizing a plurality of multiplexing modes of operation.

5,648,959

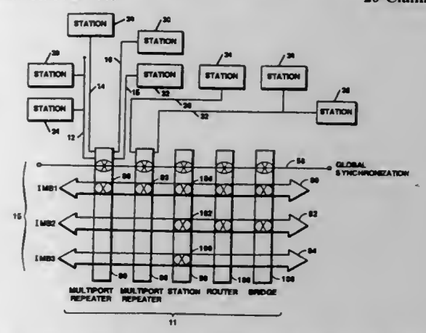
INTER-MODULE INTERCONNECT FOR SIMULTANEOUS USE WITH DISTRIBUTED LAN REPEATERS AND STATIONS

Nicholas Ilyadis, Pepperell, Mass., and Richard Graham, Derry, N.H., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jul. 1, 1994, Ser. No. 270,072

Int. Cl.[6] H04L *12/413*

U.S. Cl. 370—445 **20 Claims**



1. A bus system by which a plurality of repeater and station modules in a communications network can transmit data and state information over a backplane at full data rates comprising:

a global synchronizing mechanism, the global synchronization mechanism providing synchronization of data and state information transmitted over the backplane;

a plurality of independent channels for data transmission;

means for connecting the plurality of repeater and station modules to the global synchronizing mechanism and to the plurality of independent channels, the connecting means further comprising;

means for acquiring a first channel by a first repeater module and indicating an acquisition to a plurality of repeater and station modules attached to the first channel;

means for passing data from the first repeater module to the plurality of repeater and station modules attached to the first channel;

means for detecting a bus collision on the first channel; and

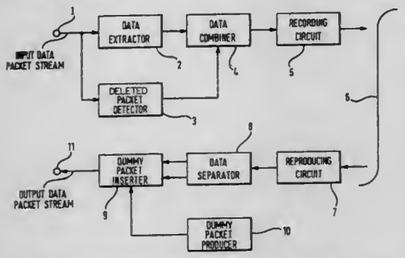
means for announcing in response to the means for detecting a plurality of conditions between the first repeater module and the plurality of repeater and station modules on the first channel, each of the plurality of conditions indicating collision and state information.

5,648,960

RECORDING/REPRODUCING APPARATUS FOR DATA PACKET STREAM

Yoshihisa Sakazaki, and Shuji Abe, both of Kanagawa-ken, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 7, 1995, Ser. No. 554,777
Claims priority, application Japan, Nov. 7, 1994, 6-272621
Int. Cl.[6] H04L *12/56*
U.S. Cl. 370—498 **22 Claims**



1. A recording/reproducing apparatus for a data packet stream comprising:

extracting means for extracting data packets of a selected type from an input packet train that includes different types of data packets that have been time-division multiplexed together;

recording means for recording the extracted data packets;

reproducing means for reproducing the extracted data packets that have been recorded by the recording means;

dummy packet producing means for producing dummy packets that correspond to the data packets that have not been extracted by the extracting means; and

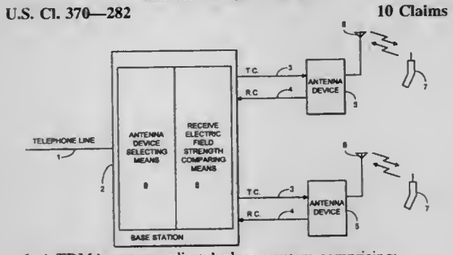
output means for outputting an output data packet train, which is produced by combining the extracted data packets that have been reproduced by the reproducing means and the dummy packets in accordance with the order in which the different types of data packets are positioned within the input packet train.

5,648,961

RADIO TELEPHONE SYSTEM AND ANTENNA DEVICE AND BASE STATION FOR THE SAME

Takamasa Ebihara, Tokyo, Japan, assignor to Meisei Electric Co., Ltd., Tokyo, Japan

Filed Nov. 1, 1995, Ser. No. 551,558
Claims priority, application Japan, Nov. 21, 1994, 6-286665
Int. Cl.[6] H04J *3/16;3/06*
U.S. Cl. 370—282 **10 Claims**



1. A TDMA system radio telephone system comprising:

a base station having a transmit/receive operation;

an antenna being installed at a location away from said base station, said antenna having a transmit/receive operation;

an antenna device being provided between said base station and said antenna;

separate transmission lines for transferring a send signal and a receive signal between said antenna device and said base station, said send and receive signal establishing a control channel and a speech channel, and said control channel having prearranged slots therein;

said control channel being continuously monitored by the antenna device while said speech channel is being set; and

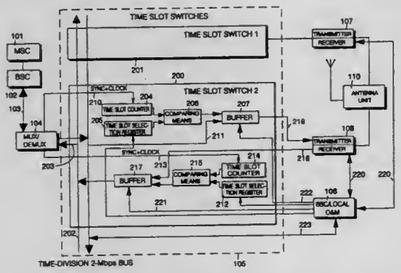
means for synchronizing transmit/receive switching of said antenna in said antenna device with the transmit/receive operation at said base station in accordance with the receiving timing of a particular slot of the control channel.

5,648,962

BASE STATION IN A CELLULAR RADIO SYSTEM AND A CELLULAR RADIO SYSTEM

Mirja Pirinen, Oulu, Finland, assignor to Nokia Telecommunications OY, Espoo, Finland

PCT No. PCT/FI94/00207, § 371 Date Apr. 10, 1996, § 102(e) Date Apr. 10, 1996, PCT Pub. No. WO95/01496, PCT Pub. Date Jan. 12, 1995
PCT Filed May 24, 1994, Ser. No. 553,338
Claims priority, application Finland, May 25, 1993, 932373
Int. Cl.[6] H04B *7/26*
U.S. Cl. 370—338 **14 Claims**



1. A base station for a cellular radio system which has a plurality of switching centres and plurality of base stations connected thereto by respective base station controllers through time-division respective telecommunication links, and an operations and maintenance centre, the base station comprising:

a plurality of transceiver units,

a time-division bus providing respective time slots for the base station,

a multiplexer/demultiplexer means for multiplexing said telecommunication links and for demultiplexing data to be sent from said time-division bus of said base station to said telecommunication links,

at least one switching means for selectively switching respective of the transceiver units to respective of the telecommunication links,

the switching means being a time slot switch comprising:

a time slot counter for synchronizing the time slot switch with the time slots of the time-division bus,

a time slot selection register responsive to operations and maintenance information including time slot selection data for time slot-specific storing and reading of said time slot selection data,

a comparing means for comparing the time slot selection data contained in the time slot selection register with the state of the time slot counter at a given point of time in such a manner that the time slot selection data is compared with the state of the time slot counter and, responsive to the result of this comparison, the date contained in a respective time slot on a respective of said telecommunication links or at a respective one of the transceiver units is transmitted forward,

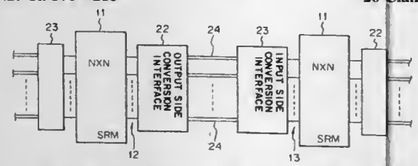
a buffer means responsive to the data supplied by the comparing means for storing data contained on the respective one of said telecommunication links and for feeding the data into a respective one of the transceiver units, and for feeding data contained at a respective one of said transceiver units into the desired time slot on the respective one of said telecommunication links.

5,648,963

INPUT AND OUTPUT SIDE CONVERSION INTERFACES FOR AN ATM EXCHANGE

Hiroshi Miyake; Yasuhiro Aso, and Shuji Yoshimura, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Oct. 7, 1992, Ser. No. 957,173
Claims priority, application Japan, Oct. 7, 1991, 3-259096
Int. Cl.[6] H04C *11/16*
U.S. Cl. 370—218 **26 Claims**



1. An exchange comprising a self-routing module, provided with a plurality of outgoing lines and a plurality of incoming lines, and for switching fixed length packets having a control information from the incoming lines to the outgoing lines through a route which is determined by the control information of the fixed length packets wherein;

the self-routing module includes a plurality of sub-self-routing modules arranged in a cascade connection, each sub-self-routing module having a plurality of output lines and a plurality of input lines where a number of output lines or input lines being less than or equal to a number of outgoing lines or incoming lines, respectively;

output side conversion interfaces and input side conversion interfaces, respectively, provided at an output side and an input side of the sub-self-routing modules both for connection of adjoining sub-self-routing modules; and

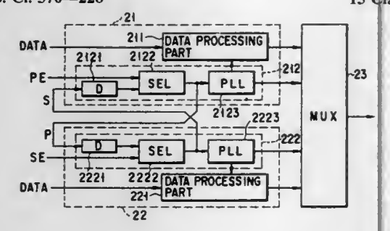
optical fiber cables to connect the output side interfaces and input side interfaces facing thereto.

5,648,964

MASTER-SLAVE MULTIPLEX COMMUNICATION SYSTEM AND PLL CIRCUIT APPLIED TO THE SYSTEM

Yoshio Inagaki, Tokyo; Masayuki Takami, Yamato; Masahiro Kataoka, and Taro Shibagaki, both of Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 5, 1995, Ser. No. 523,360
Claims priority, application Japan, Sep. 9, 1994, 6-216157; Nov. 2, 1994, 6-269710; Jan. 31, 1995, 7-013739; Jan. 31, 1995, 7-014555; Jan. 31, 1995, 7-014642
Int. Cl.[6] H04L *7/08*
U.S. Cl. 370—228 **13 Claims**



10. A PLL circuit comprising:

clock generation means for generating a clock signal and making variable a frequency thereof according to a control signal;

phase comparison means for phase comparing the clock signal generated in the clock generation means with a reference clock signal, and producing a phase difference signal thereof;

a loop filter for integrating the phase difference signal obtained by the phase comparison means, and producing a voltage control signal to said clock generation means;

a buffer circuit which taking the output voltage of said loop filter as a reference, produces a voltage equal in direct-current to the output voltage by response characteristics delayed behind the response characteristics of said loop filter, said buffer circuit comprising,

a low-pass filter for extracting a low band component of the output voltage of said loop filter, and

a voltage follower circuit for amplifying and outputting the output voltage of the low-pass filter, so that time response characteristics are determined by said low-pass filter and a gain is determined by said voltage follower circuit; and

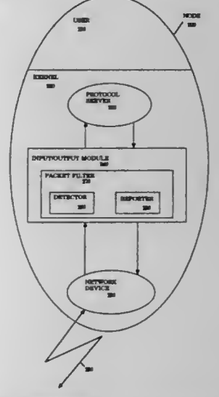
a limit circuit which is interposed between an output terminal of the buffer circuit and an output terminal of said loop filter, and which when a voltage difference between both the output terminals becomes a specified voltage or more, limits the output voltage of said loop filter to the specified value.

5,648,965

METHOD AND APPARATUS FOR DYNAMIC DISTRIBUTED PACKET TRACING AND ANALYSIS

Moti N. Thadani, Santa Clara; Jose M. Bernabeu-Auban; Yousef A. Khalidi, both of Sunnyvale; Vladimir Matena, Redwood City, and Kenneth W. Shirriff, Mountain View, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Jul. 7, 1995, Ser. No. 499,275
Int. Cl.[6] H04L *12/26;* **H04J** *3/14*
U.S. Cl. 370—241 **16 Claims**



1. A packet filter comprising:

a remotely-programmable packet criterion detector, located in a first node, to detect receipt of a trace packet, the trace packet meeting a criterion programmed by a remote controller located in a second node; and

a reporter to report the detection of the trace packet to a packet information collector said packet information collector receiving and storing a report of the detection of the trace packet.

5,648,966

METHOD OF SENDING AN ALARM TO A NETWORK MANAGEMENT STATION WHEN AN UNUSUAL EVENT OCCURS IN A MANAGED NETWORK STATION

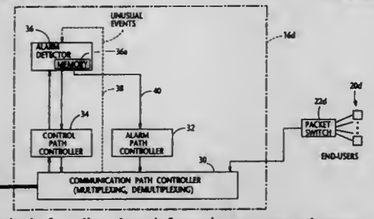
Kenji Kondo; Atsushi Kara, and Akifumi Yonehara, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Sep. 21, 1995, Ser. No. 531,947

Claims priority, application Japan, Sep. 21, 1994, 6-225443

Int. Cl.[6] H04L *12/26*

U.S. Cl. 370—245 **12 Claims**



1. A method of sending alarm information to a network management station from at least one of a plurality of network stations wherein an unusual event has occurred, said plurality of network stations being located in a wide area network and being managed by said network management station by way of a control path, said method comprising the steps of:

(a) detecting an occurrence of an unusual event in said at least one of said plurality of network stations;

(b) generating alarm information in said at least one of said plurality of network stations, said alarm information including address information for specifying said at least one of said plurality of network stations; and

(c) sending said alarm information using an alarm path, which is dedicated to transmission of said alarm information, to said network management station.

5,648,967

METHOD AND ARRANGEMENT FOR TRANSMITTING INFORMATION IN A DIGITAL RADIO SYSTEM

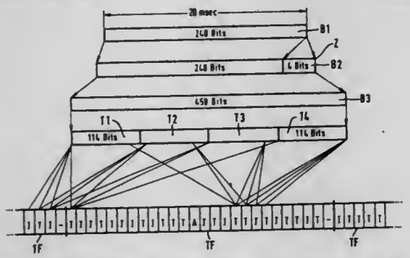
Egon Schulz, Munich, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 6, 1995, Ser. No. 399,037

Claims priority, application Germany, Mar. 7, 1994, 44 07 530.8

Int. Cl.[6] H04J *3/02*

U.S. Cl. 370—328 **18 Claims**



18. A mobile station for transmission of information in a digital radio communication system, comprising:

a transmission side of the mobile station for digitally coding information items assigned to a subscriber of the digital radio communication system block-by-block; and

said transmission side in the mobile station having means for dividing each block into a plurality of further blocks and for allocating each further block to respective time-slots of a time-slot frame composed of a plurality of time-slots and for transmitting the further blocks in the time-slots for reception at a reception side where the blocks are recovered.

5,648,968

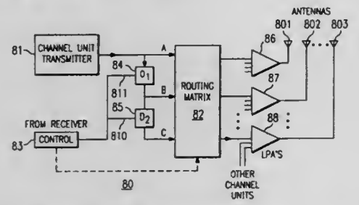
NARROW BEAM ANTENNA SYSTEMS WITH ANGULAR DIVERSITY

Douglas O. Reudink, Bellevue, Wash., assignor to Metawave Communications Corporation, Redmond, Wash.

Continuation-in-part of Ser. No. 488,793, Jun. 8, 1995, Pat. No. 5,563,610. This application Aug. 28, 1995, Ser. No. 520,316

Int. Cl.[6] H04J *13/00*

U.S. Cl. 370—335 **22 Claims**



1. A transmission system comprising:

a plurality of substantially collocated antennas each having a narrow beam associated therewith, said antennas disposed to provide angular diversity among said beams wherein said beams are substantially non-overlapping;

a transmit signal for broadcasting over a selected subset of said antennas;

means for creating at least a second signal from said transmit signal, said second signal delayed from said transmit signal; and

means for changeably directing said transmit signal to a first selected one of said subset of antennas, and for changeably directing said second delayed signal to a second selected other of said subset of antennas.

5,648,969

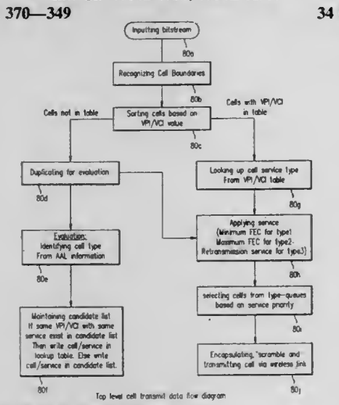
RELIABLE ATM MICROWAVE LINK AND NETWORK

Eliezer Pasternak, Palo Alto, and Gideon BenEfraim, Cupertino, both of Calif., assignors to Netro Corporation, Palo Alto, Calif.

Filed Feb. 13, 1995, Ser. No. 388,110

Int. Cl.[6] H04B *7/24;* **H04L** *12/66*

U.S. Cl. 370—349 **34 Claims**



1. A digital radio link including:

an input circuit for ATM or equivalent cells from a digital access unit;

a cell processing circuit, connected to said input circuit, that encapsulates said input cells with at least error check bits so that a detected error can identify a specific cell or group of cells;

a digital transmission circuit connected to said processing circuit for transmitting said encapsulated cells via a wireless link;

a reception circuit for receiving encapsulated cells;

a cell decapsulation and error detection circuit connected to said reception circuit; and

a cell output circuit for connecting said decapsulation circuit to a digital access unit.

5,648,970

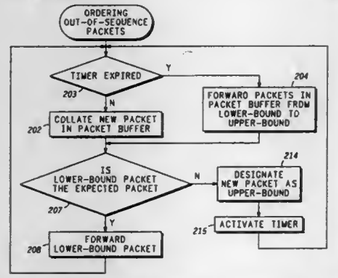
METHOD AND SYSTEM FOR ORDERING OUT-OF-SEQUENCE PACKETS

Vijay Kapoor, Phoenix, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 4, 1996, Ser. No. 606,471

Int. Cl.[6] H04L *12/56*

U.S. Cl. 370—394 **17 Claims**



1. In a packet switched network, a method for ordering a plurality of packets arriving out-of-sequence from a lower service and forwarding said plurality of packets to an upper service without accumulating delay introduced by late or dropped packets, said method comprising the steps of:

when a propagation toleration timer having an expiration exceeding a maximum propagation duration of any of said plurality of packets in said packet switched network continues unexpired, collating a new packet received from said lower service in a packet buffer according to a sequence identifier contained in said new packet, said packet buffer having a lower-bound defining a position of one of said plurality of packets yet to be forwarded and having an earliest sequence identifier of said plurality of packets in said packet buffer;

while said earliest sequence identifier corresponds with an expected sequence identifier, forwarding one of said plurality of packets at said lower-bound, of said packet buffer to said upper service;

when said earliest sequence identifier does not correspond with said expected sequence identifier, designating a position of said new packet in said packet buffer as an upper-bound of said packet buffer, and activating said propagation toleration timer; and

when said propagation toleration timer expires, forwarding inclusively each of said plurality of packets from said lower-bound to said upper-bound of said packet buffer to said upper service.

5,648,971

COMMUNICATION APPARATUS PROVIDING IMPROVED INFORMATION ON THE STATES OF DATA CHANNELS

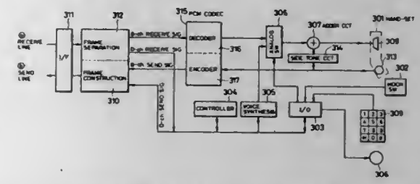
Yukihiko Ogata, Kawasaki, and Takuji Nakatsuma, Machida, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 369,271, Jan. 5, 1995, which is a continuation of Ser. No. 968,466, Oct. 29, 1992, abandoned, which is a continuation of Ser. No. 582,785, Sep. 17, 1990, abandoned, which is a continuation of Ser. No. 151,309, Feb. 1, 1988, abandoned. This application Jun. 7, 1995, Ser. No. 476,027

Claims priority, application Japan, Feb. 10, 1987, 62-29034; Feb. 10, 1987, 62-29037; Feb. 10, 1987, 62-29038; Feb. 13, 1987, 62-31191; Feb. 13, 1987, 62-31192; Feb. I4, 1987, 62-31868

Int. Cl.[6] H04Q *11/04;* **H04M** *11/00*

U.S. Cl. 370—421 **44 Claims**



1. A communication apparatus communicating via a digital communication line which has a control channel and a plurality of data channels, comprising:

conversion means for converting digital voice data from the data channels of the digital communication line to analog voice signals;

output means for outputting the analog voice signals as audible tones,

discriminating means for discriminating states of the plurality of data channels on the basis of signals of the control channel, and

generating means for generating analog voice signals indicating the states of the plurality of data channels in accordance with a discrimination result by said discriminating means, and for causing said output means to output the analog voice signals indicating the states of the plurality of data channels as audible tones.

5,648,972

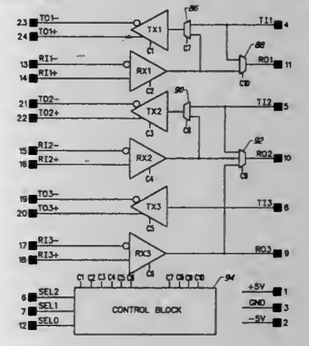
V.35 INTEGRATED CIRCUIT TRANSCEIVER WITH DIAGNOSTICS LOOPBACK

Al Gharakhanian, Redwood Shores, Calif., assignor to Exar Corporation, Fremont, Calif.

Filed Jul. II, 1995, Ser. No. 500,758

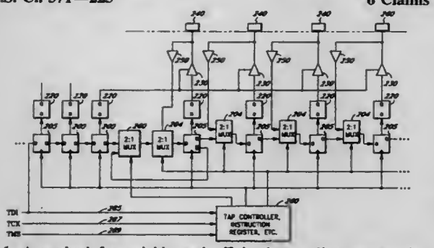
Int. Cl.[6] G01R *31/28*

U.S. Cl. 371—20.5 **8 Claims**



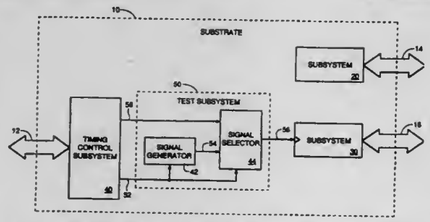
1. An integrated circuit transceiver on a single substrate for synchronous data transmissions, said transceiver being configurable for either DTE or DCE mode, comprising:
a first transmitter having an input and a differential output for coupling to a first differential transmission line;
a first receiver having a differential input for coupling to a second differential transmission line and having an output;
a control circuit for generating a plurality of control signals, including a DCE diagnostics loopback mode control signal and a DTE diagnostics loopback mode control signal;
first switching means for coupling said first receiver output to said first transmitter input in response to said DCE diagnostics loopback mode control signal or said DTE diagnostics loopback mode control signal;
a second transmitter having an input and a differential output;
a second receiver having a differential input for coupling to a third differential transmission line and having an output;
second switching means for connecting said output of said second receiver to said input of said second transmitter in response to said DCE diagnostics loopback mode signal or said DTE diagnostics loopback mode control signal;
a third receiver having differential inputs for coupling to a fourth differential transmission line in a DTE configuration, and having an output;
third switching means for connecting said output of said third receiver to both a transmit clock I/O and a receive clock I/O in response to said DTE diagnostics loopback mode control signal; and
fourth switching means for opening a connection between a transmit clock echo input pin and said second transmitter input in response to said DTE diagnostics loopback mode control signal.

5,648,973
I/O TOGGLE TEST METHOD USING JTAG
L. Randall Mote, Jr., Laguna Hills, Calif., assignor to AST Research, Inc., Irvine, Calif.
Filed Feb. 6, 1996, Ser. No. 596,043
Int. Cl.[6] G01R *31/28*
U.S. Cl. 371—223 **6 Claims**



1. A method for quickly and efficiently toggling output pins under test on an integrated circuit, wherein each of said output pins is coupled to a corresponding boundary scan latch, and each of said boundary scan latches is coupled to a corresponding boundary scan shift register element, and wherein said output pins are further in electrical communication with a test circuit, said method comprising the steps of:
parallel loading, via said output pins, a first test vector from the test circuit into said boundary scan shift register elements as a first test pattern;
placing said test circuit in a high impedance state;
driving said first test pattern onto said output pins from said boundary scan latches in response to said first test vector;
parallel loading said first test pattern into said boundary scan shift register elements from said output pins;
driving a second test pattern onto said output pins from said boundary scan latches, wherein said second test pattern is the complement of said first test pattern;
parallel loading said second test pattern into said boundary scan shift register elements from said output pins; and
driving a third test pattern onto said output pins from said boundary scan latches, wherein said third test pattern is the complement of said second test pattern.

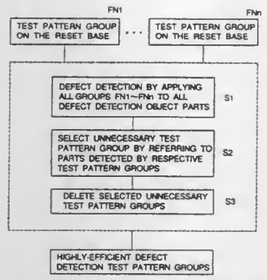
5,648,974
SYSTEM HAVING MULTIPLE SUBSYSTEMS AND TEST SIGNAL SOURCE RESIDENT UPON COMMON SUBSTRATE
Charles L. Ingalls, and Mark R. Thomann, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.
Continuation of Ser. No. 443,818, May 18, 1995, Pat. No. 5,499,250, which is a continuation of Ser. No. 989,403, Dec. 11, 1992, Pat. No. 5,442,642. This application Dec. 14, 1995, Ser. No. 572,117
Int. Cl.[6] H04B *15/00*
U.S. Cl. 371—22.5 **49 Claims**



1. A system formed on a substrate, the system interfacing with an off-substrate functional tester during a first test, the system comprising:
a first electrical subsystem which interfaces to the functional tester during the first test;
a second subsystem for performing, during the first test, an operation independent of operation and current state of the first subsystem;
a test signal source which generates a first signal during the first test, of the first and second subsystems only the second subsystem receiving the first signal during the first test; and
wherein the first subsystem, second subsystem and test signal source are resident to the substrate.

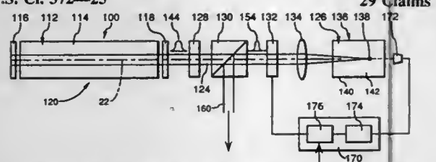
5,648,975
METHOD AND DEVICE FOR GENERATING TEST PATTERNS FOR TESTING INTEGRATED CIRCUIT
Chikahiro Deguchi, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Continuation of Ser. No. 236,031, May 2, 1994, abandoned. This application Feb. 1, 1996, Ser. No. 595,508
Claims priority, application Japan, Aug. 10, 1993, 5-198203
Int. Cl.[6] G01R *31/3181*
U.S. Cl. 371—27 **8 Claims**

1. A method of selecting test patterns of a plurality of groups of test patterns for testing parts of an integrated circuit, the integrated circuit being resettable to initial settings, said method comprising the steps of:
(a) applying the plurality of groups of test patterns to the parts of the integrated circuit so that one group of test patterns is applied each time the integrated circuit is reset to determine parts of the integrated circuit detected by the plurality of groups of test patterns;
(b) identifying unnecessary groups of test patterns among the plurality of groups of test patterns by referring to the parts detected by the plurality of groups of test patterns; and
(c) deleting said identified unnecessary groups of test patterns from the plurality of groups of test patterns, the remaining



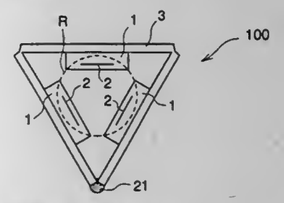
groups of test patterns forming a set of test patterns for testing the integrated circuit, wherein the step (b) comprises the steps of
(b-1) determining whether there are any respective parts of the integrated circuit detected by only one of the groups of test patterns,
(b-2) when the step (b-1) determines that there are respective parts which are detected by only one of the groups of test patterns, identifying as necessary each of said groups of test patterns detecting a part determined in step (b-1) and identifying as unnecessary each group of test patterns detecting a part of the integrated circuit which is detected by a group of test patterns identified as necessary,
(b-3) determining, before the step (b-1), whether there are any groups of test patterns which cannot detect any part of the integrated circuits, and
(b-4) when the step (b-3) determines that there is a group of test patterns, identifying as unnecessary each group of test patterns determined in step (b-3) to be unable to detect a part.

5,648,976
LASER WITH VARIABLE PULSE LENGTH
Jerome Franck, Washington, D.C., and Wolfgang Riede, Muehlacker, Germany, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Feb. 17, 1995, Ser. No. 390,596
Claims priority, application Germany, Apr. 27, 1994, 44 14 585.3
Int. Cl.[6] H01S *3/10*
U.S. Cl. 372—25 **29 Claims**



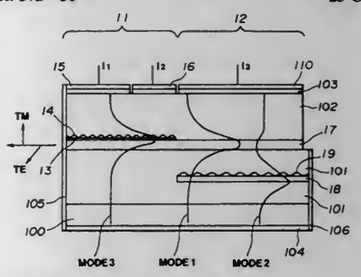
1. A device for generation of short laser pulses including a laser oscillator which produces a first laser pulse; a pulse compressing element, which retroreflects said first laser pulse by a stimulated Brillouin scattering as a temporally shortened laser pulse; a first ray path into which said laser oscillator and said pulse compressing element are arranged and along which said first laser pulse emitted by said laser oscillator, travels to said pulse compressing element; the improvement comprising,
a) a reflecting branch into which said temporally shortened retroreflected laser pulse enters after having left said pulse compressing element, said reflecting branch retroreflecting said temporally shortened laser pulse again back to said pulse compressing element for further temporal reduction by using a reflecting element and
b) an outcoupling element positioned in a reflecting ray path between said reflecting element and said pulse compressing element, which outcouples said shortened laser pulse from said reflecting ray path.

5,648,977
LASER ARRAY DEVICE AND METHOD OF FABRICATING THE DEVICE
Yasunori Miyazaki, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 10, 1995, Ser. No. 541,298
Claims priority, application Japan, Oct. 11, 1994, 6-245442
Int. Cl.[6] H01S *3/04;3/00;* **H01L** *33/00*
U.S. Cl. 372—36 **17 Claims**



1. A semiconductor laser array device comprising:
a foldable submount having a length and a width and folded along a plurality of generally parallel lines transverse to the length to form, in cross-section, the shape of a regular polygon, the polygon having sides corresponding to respective surfaces of said folded submount; and
a plurality of semiconductor lasers, each semiconductor laser having an uppermost layer and a lowermost layer, the lowermost layer of each semiconductor laser being mounted on a respective side of and inside the polygon.

5,648,978
OSCILLATION POLARIZATION MODE SELECTIVE SEMICONDUCTOR LASER, MODULATION METHOD THEREFOR AND OPTICAL COMMUNICATION SYSTEM USING THE SAME
Hajime Sakata, Atsugi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 28, 1995, Ser. No. 579,730
Claims priority, application Japan, Jan. 4, 1995, 7-015540; Jan. 4, 1995, 7-015542
Int. Cl.[6] H01S *3/19;3/10;* **H04B** *10/00;* **G02B** *6/26*
U.S. Cl. 372—50 **25 Claims**



1. A semiconductor laser comprising:
a semiconductor laser structure, including an active layer, in which light in both of two mutually-perpendicular polarization modes can be excited;
first and second reflecting means for reflecting the light waves, at least one of said first and second reflecting means compris-

ing a distributed reflector which determines first and second reflection wavelengths for the two mutually-perpendicular polarization modes;

coupling means for coupling said semiconductor laser structure and said first and second reflecting means for either of the respective light waves in the two mutually-perpendicular polarization modes at first and second coupling wavelengths, which substantially coincide with the first and second reflection wavelengths, respectively, so that either of the light of the respective two mutually-perpendicular polarization modes at the first and second reflection wavelengths is selectively propagated along a cavity comprised of said semiconductor laser structure and said first and second reflecting means; and

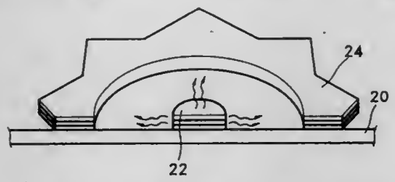
control means for controlling said coupling means so that said coupling means selects one of the two mutually-perpendicular polarization modes at the first and second coupling wavelengths to cause the light to oscillate in one of the two mutually-perpendicular polarization modes at the first and second reflection wavelengths.

5,648,979

ASSEMBLY OF VCSEL LIGHT SOURCE AND VCSEL OPTICAL DETECTOR

Jong-kuk Mun, Kyungki-do; Yong-hee Lee, Daejeon; Eun-kyung Lee, Seoul, and Kyung-ho Ha, Daejeon, all of Rep. of Korea, assignors to Samsung Electronics Co. Ltd., Kyungki-do, Rep. of Korea

Filed Dec. 29, 1995, Ser. No. 581,259
Int. Cl.[6] H01S *3/19;3/08;* **H01L** *27/15*
U.S. Cl. 372—50 **2 Claims**



1. An assembly of a VCSEL light source and a VCSEL optical detector, comprising a semiconductor substrate, a light source comprising at least one P-layer and at least one N-layer stacked on said semiconductor substrate for emitting light in vertical and lateral directions and an optical detector for monitoring light stacked around said light source for receiving the light laterally emitted from said light source,

wherein the structure of said optical detector comprises at least one P-layer and at least one N-layer stacked, the inner surface thereof adjacent to said light source is cylindrical, and the outer surface thereof is approximately polygonal having a plurality of peaks and valleys, whereby said peaks and valleys increase the VCSEL optical detector's light absorption level.

5,648,980

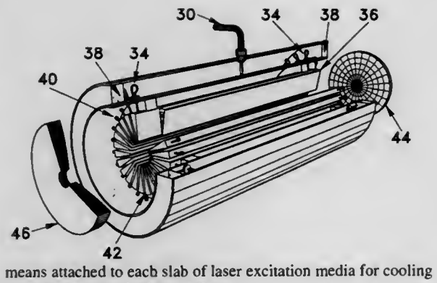
EXCITATION SYSTEM FOR MULTI-CHANNEL LASERS

Herb Joseph John Seguin, 12639 - 52 Ave., Edmonton, Alberta, Canada

Continuation-in-part of Ser. No. 489,555, Jun. 12, 1995, which is a continuation-in-part of Ser. No. 167,648, Dec. 14, 1993, abandoned. This application Dec. 6, 1995, Ser. No. 567,932
Int. Cl.[6] H01S *3/08*
U.S. Cl. 372—92 **3 Claims**

1. A laser system comprising:

plural slabs of laser excitation media, each slab being elongated in a first direction and forming a slab gain channel, the plural slabs of laser excitation media forming an array of gain channels for forming multiple beamlets of laser optical light;



means attached to each slab of laser excitation media for cooling of the laser excitation media;

optical extraction means attached to each slab of laser excitation media for extraction of optical energy from the slabs of laser excitation media;

a source of laser excitation energy for exciting the laser excitation media; and

a resonant cavity circumvolving said array of gain channels;

means for pumping laser excitation energy from the source of excitation energy into the resonant cavity;

a plurality of coupling means for low impedance output of laser excitation energy from the resonant cavity to each of the each of the slabs of laser excitation media;

multiple conical reflective optical elements with short focal length, serving as an azimuthal array of cylindrical expanding mirrors, one for each beamlet;

multiple conical reflective optical elements with longer focal length but same focal point as the short focal length conical mirrors, and serving as an azimuthal array of cylindrical collimating mirrors, one for each beamlet; and

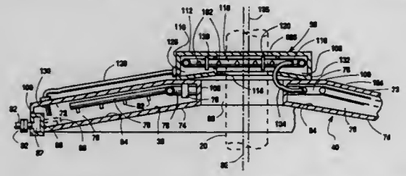
an azimuthally continuous axicon system, comprised of two axially-concentric and mutually opposing reflective mirror surfaces, serving as a radial compactor and re-collimator for the multiple uniformly azimuthally distributed, aspect-ratio-compensated beamlets.

5,648,981

COOLING SYSTEM FOR A TWO COMPONENT FURNACE ROOF

Frank Henry Miner, Jr., North Olmsted, and Mark Thomas Arthur, Lakewood, both of Ohio, assignors to UCAR Carbon Technology Corporation, Danbury, Conn.

Filed Nov. 22, 1994, Ser. No. 343,249
Int. Cl.[6] F27D *1/02*
U.S. Cl. 373—74 **4 Claims**



1. A cover assembly for an electric arc furnace, said cover assembly comprising a lower cover and an upper cover, said lower cover overlying the electric arc furnace and defining an inner opening in said lower cover through which an electrode extends vertically downward into said electric furnace; said lower cover comprising a bottom wall, an upstanding peripheral wall, an upstanding inner wall and a top wall defining an enclosed space, said top wall of the lower cover having a flat shelf-like portion spaced inwardly from said upstanding peripheral wall and surrounding said inner opening in said lower cover, said moveable upper cover being slidably seated upon said flat shelf-like portion; first spray means comprising a plurality of tubes coupled to spray

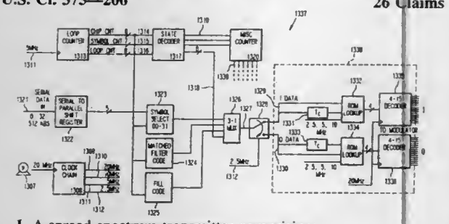
nozzles disposed within said enclosed space of the lower cover; inlet means in the form of a header conduit in said enclosed space in said lower cover surrounding said inner opening for bringing a coolant to the tubes and spray nozzles in said enclosed space of the lower cover with the spray nozzles arranged to direct a spray of coolant onto at least the bottom wall of the lower cover; outlet means for removing the coolant from the enclosed space of the lower cover; said upper cover comprising an upwardly tapered bottom wall, an upstanding peripheral wall, an upstanding inner wall defining an inner opening in said upper cover through which an electrode extends vertically downward into said electric furnace; and a top wall defining an enclosed annular space for said upper cover; second spray means comprising a plurality of tubes coupled to spray nozzles disposed within said enclosed annular space of said upper cover; inlet means in the form of a header conduit in said enclosed annular space of said upper cover surrounding said inner opening for bringing a coolant to the tubes and spray nozzles in the enclosed annular space of said upper cover and said spray nozzles arranged to direct a spray of coolant onto at least the bottom wall of the upper cover; outlet means for removing the coolant from the enclosed space in the upper cover; said inner opening of said upper cover defining an opening; hose means connecting said header conduits of said first and second spray means so that said header conduit of said second spray means receives coolant from said header conduit of said first spray means; outlet means for removing coolant by gravity flow from the enclosed space of the upper cover; hose means connecting the outlet means of the upper cover with the outlet means of the lower cover; the lowermost portion of the upwardly tapered bottom wall of the upper cover resting slidably on the flat shelf-like portion of the top wall of the lower cover and being slidably moveable thereon in all directions.

5,648,982

SPREAD SPECTRUM TRANSMITTER

Randy Durrant, Colorado Springs, and Mark Burbach, Peyton, both of Colo., assignors to Omnipoint Corporation, Colorado Springs, Colo.

Filed Sep. 9, 1994, Ser. No. 304,091
Int. Cl.[6] H04B *1/707*
U.S. Cl. 375—206 **26 Claims**



1. A spread spectrum transmitter comprising:

a plurality of tables for storing chip sequences, said plurality of tables comprising a first table for table storing chip sequences, each code sequence corresponding to a unique series of data bits, a second table for storing a matched filter code, and a third table for storing at least one fill code,

a multiplexer for selecting among an output from each of said plurality of tables and combining said chip sequences into a unified chip sequence,

a switch for separating said unified chip sequence into an odd chip sequence and an even chip sequence,

a waveform generator for generating a first sinusoidal waveform from said odd chip sequence and generating a second sinusoidal waveform from said even chip sequence, and

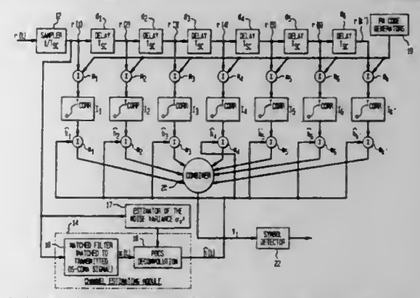
means for combining said first and second sinusoidal waveforms into a continuous phase modulated signal and transmitting said continuous phase modulated signal.

5,648,983

CDMA RAKE RECEIVER WITH SUB-CHIP RESOLUTION

Zoran Kostic, and Gordana Pavlovic, both of Tinton Falls, N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Apr. 24, 1995, Ser. No. 427,519
Int. Cl.[6] H04B *1/707*
U.S. Cl. 375—206 **5 Claims**



1. A spread spectrum receiver for use in a direct sequence, code division multiple access (DS-CDMA) communication system in which a given CDMA signature sequence is assigned to said receiver and to a source synchronized with the receiver and wherein the system has a predetermined symbol transmission rate $1/T_b$, a processing gain, and a corresponding chip rate $1T_c$ determined by the processing gain and symbol transmission rate, said receiver comprising:

means for sampling an incoming analog signal including a transmitted symbol and propagating in said DS-CDMA system to thereby produce an incoming sampled signal, said incoming analog signal having a plurality of both main and multipath return signals of varying signal strengths;

a tapped delay line for receiving said incoming sampled signal and having a plurality of taps for producing a set of sampled outputs produced by said sampling means, said delay line having a number of taps that exceeds T_b/T_c;

a pseudo-noise code generator for generation an apropriate pseudo-noise waveform for multiplication with each sampled output; and

demodulating means for demodulating said incoming sampled signal to generate a detected symbol which estimates the transmitted symbol.

5,648,984

MULTIDIRECTIONAL REPEATER FOR DATA TRANSMISSION BETWEEN ELECTRICALLY ISOLATED AND/OR PHYSICALLY DIFFERENT SIGNAL TRANSMISSION MEDIA

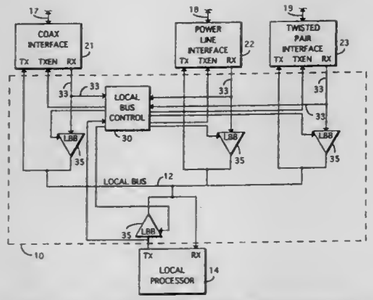
Robert S. Kroninger, Phoenix, Ariz., and Clifton C. Powers, Raleigh, N.C., assignors to Alcatel Networks Systems, Inc., Richardson, Tex.

Filed Aug. 10, 1994, Ser. No. 288,392
Int. Cl.[6] H04B *3/36*
U.S. Cl. 375—211 **17 Claims**

1. A multidirectional repeater for signal transmission between a plurality of signal transmission media which are the same or physically different from one another, said plurality of signal transmission media being electrically isolated from one another, a common protocol and data rate being used across said plurality of signal transmission media, the multidirectional repeater comprising:

a signal transmission bus;

a plurality of switching means, each one of said plurality of switching means being connected between a corresponding one of said plurality of signal transmission media and said signal transmission bus;



control means responsive to data signals being present on one of said plurality of signal transmission media for providing a receive enable signal to a corresponding one of said plurality of switching means, said control means being response to the absence of said data signals on said one of said plurality of signal transmission means for removing said receive enable signal;

wherein said corresponding one of said plurality of switching means is responsive to said receive enable signal for providing a signal path for transmission of said data signals between said corresponding one of said plurality of signal transmission media and said signal transmission bus, and wherein said corresponding one of said plurality of switching means is responsive to said receive enable signal not being provided by said control means for preventing transmission of said data signals between said corresponding one of said plurality of signal transmission media and said signal transmission bus; and

a plurality of interface means each having a receive terminal, a transmit terminal and a transmit enable terminal, each interface means being connected between a respective one of said plurality of switching means and a respective one of said plurality of signal transmission media via said receive terminal, each interface means being connected between said signal transmission bus and said respective one of said plurality of signal transmission media via said transmit terminal, and each transmit enable terminal being connected to said control means, said receive terminal providing said data signals from said respective one of said plurality of signal transmission media to said signal transmission bus via said respective one of said plurality of switching means, said transmit terminal transmitting said data signals from said signal transmission bus to said respective one of said plurality of signal transmission media when said transmit terminal is enabled, and said transmit enable terminal being responsive to a transmit enable signal provided by said control means for enabling said transmit terminal.

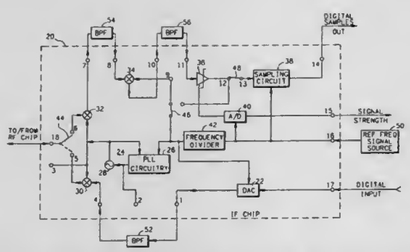
5,648,985

UNIVERSAL RADIO ARCHITECTURE FOR LOW-TIER PERSONAL COMMUNICATION SYSTEM

Bjorn E. Bjerede, La Jolla, Calif.; Joseph T. Lipowski, Boxborough, Mass.; Benny Madsen; Sheldon L. Gilbert, both of San Diego, Calif., and James E. Petranovich, Encinitas, Calif., assignors to Rockwell Semiconductor Systems, Inc., Newport Beach, Calif.

Filed Nov. 30, 1994, Ser. No. 348,359
Int. Cl.[6] H04B *1/38*
U.S. Cl. 375—219 **19 Claims**

12. An intermediate frequency (IF) integrated circuit chip for use in a radio communication system in which a modulated digital input signal is processed for transmission and a signal received from an antenna is processed to provide a demodulated output signal, wherein the modulation of the digital input signal is either quadrature phase shift keying (QPSK) or frequency shift keying (FSK), wherein the chip is adapted for processing a digital input



signal to convert the digital input signal into an analog input signal and to provide the input signal at an intermediate frequency and for processing a received signal at the intermediate frequency to down convert the frequency thereof and to provide an output signal from the down-converted received signal, the chip comprising

means for providing the input signal at said intermediate frequency when the modulation of the digital input signal is QPSK modulated and for providing the input signal at said intermediate frequency when the modulation of the digital input signal is FSK modulated;

means for sampling the down-converted received signal to provide said output signal when the down-converted received signal is QPSK modulated and for demodulating the down-converted received signal to provide said output signal when the down-converted received signal is FSK modulated; and

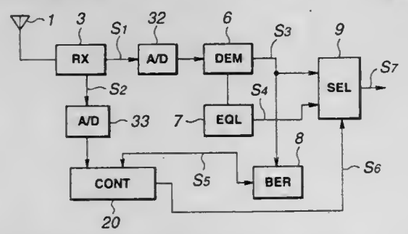
switches and terminals for enabling the IF chip to be connected for said processing by the IF chip of QPSK-modulated signals or to be connected for said processing by the IF chip of FSK-modulated signals.

5,648,986

RECEIVER IN DIGITAL RADIO COMMUNICATION DEVICE WITH SELECTIVE EQUALIZATION

Kaoru Tatsumi, Sagamihara, and Kazuo Yamamoto, Hachioji, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

PCT No. PCT/JP94/00988, § 371 Date Dec. 19, 1995, § 102(e) Date Dec. 19, 1995, PCT Pub. No. WO95/01035, PCT Pub. Date Jan. 5, 1995
PCT Filed Jun. 21, 1994, Ser. No. 564,239
Claims priority, application Japan, Jun. 21, 1993, 5-149543
Int. Cl.[6] H03D *3/22;* **H04L** *27/22*
U.S. Cl. 375—229 **11 Claims**



1. A digital radio communication device, comprising:

digital demodulation means for digitally demodulating a received modulated signal and outputting a digitally demodulated signal;

equalization means for performing waveform equalization on the output of the digital demodulation means;

error estimation means for estimating an output error rate of the digital demodulation means;

received signal level detection means for detecting a received signal level of the received modulated signal;

characteristics holding means for holding characteristics pertaining to an error rate of the output of the digital demodulation means with respect to a received field strength; and

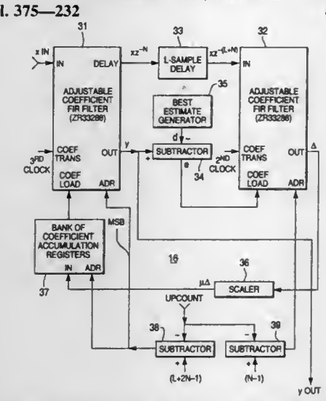
selection control means for judging whether delay of the received signal is present or not on the basis of a relationship between the estimated output error rate with respect to the received signal level detected by the received signal level detection means and the error rate of the output of the digital demodulation means when taking as a reference level, the received signal level detected by the received signal level detection means in the characteristics held in the characteristics holding means and, selecting the output of either one of the equalization means and the digital demodulation means as demodulated data in accordance with a judgment result.

5,648,987

RAPID-UPDATE ADAPTIVE CHANNEL-EQUALIZATION FILTERING FOR DIGITAL RADIO RECEIVERS, SUCH AS HDTV RECEIVERS

Jian Yang, Norwood, Mass.; Chandrakant Bhailalbhai Patel, Hopewell, N.J.; Tianmin Liu, Lawrenceville, N.J., and Allen Le Roy Limberg, Ringoes, N.J., assignors to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Mar. 24, 1994, Ser. No. 216,936
Int. Cl.[6] H04L *27/01;* **H04N** *5/21*
U.S. Cl. 375—232 **47 Claims**



1. A digital radio receiver for recovering digital samples of a modulating signal, in response to a received carrier wave modulated in accordance with a digital signal, which modulating signal is at times subject to undesirable amounts of multipath distortion, in combination with a channel-equalization filter comprising:

first and second finite-impulse-response (FIR) filters, each having a respective input port to which digital samples of said modulating signal are applied, each having a respective output port, and each being of an N-tap type, the taps of which are adaptively weighted, said first FIR filter responding to said modulating signal applied to its said input port to generate at its output port an output signal of said channel-equalization filter, and said second FIR filter responding to said modulating signal applied to its said input port to generate at its output port corrections for updating the tap weights of said first FIR filter;

a digital comparator connected for comparing samples of said first FIR filter response to corresponding samples of an ideal response, thereby to generate updated tap weights of said second FIR filter;

a bank of coefficient accumulation registers for respectively accumulating the corrections for updating the tap weights of said first FIR filter, as those corrections are generated at the output port of said second FIR filter, with the previous values of the corresponding tap weights of said first FIR filter, thereby to generate updated tap weights of said first FIR filter;

means for applying said updated tap weights of said first FIR filter to said first FIR filter; and

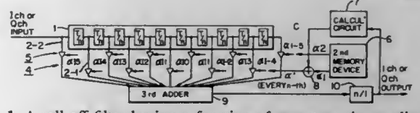
means for delaying the corrections for updating the tap weights of said first FIR filter, as those corrections are generated at the output port of said second FIR filter, the resulting delayed corrections for updating the tap weights of said first FIR filter being supplied to said bank of coefficient accumulation registers for respective accumulation with corresponding ones of the tap weights of said first FIR filter as previously temporarily stored within said bank of coefficient accumulation registers.

5,648,988

COMMUNICATION SYSTEM INCLUDING A DIGITAL ROLL-OFF FILTER

Takanori Iwamatsu, and Norihide Mitsuta, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Continuation of Ser. No. 122,530, Sep. 28, 1993, Pat. No. 5,495,501. This application Dec. 15, 1995, Ser. No. 573,075
Claims priority, application Japan, Sep. 2, 1992, 4-233956; Sep. 7, 1992, 4-237847; WIPO, Sep. 1, 1993, PCT/JP93/01236
Int. Cl.[6] H03H *7/30;7/40*
U.S. Cl. 375—232 **14 Claims**



1. A roll-off filter having a function of an automatic equalizer, formed of two finite impulse response type digital filters of which one is input with an I channel signal and another is input with a Q channel signal orthogonal with each other, demodulated from a quadrature amplitude modulation signal formed of a pulse train sampled n times from a pulse signal having a pulse spacing T where n is an integer greater than or equal to 1, said roll-off filter comprising:

a delay line (**1**) comprising a series connection of an even number of delay elements (**1**-D) each having a delay time T/n;

branch lines led out from an input terminal to the first delay element of said delay line (**1**), nodes between adjacent two of said delay elements, and an output terminal of the last delay element of said delay line (**1**);

a first group of multipliers (**4**) each serially connected with each of a first group (**2**-**1**) of said branch lines, said first group of branch lines being led out from a central one of said nodes and the n-th node counted from said central node;

a second group of multipliers (**5**) each serially connected with each of a second group (**2**-**2**) of said branch lines, said second group of branch lines being led out from all the others of said nodes than those connected with said first group of multipliers (**4**);

a third group of multipliers (**3**) each serially connected with each of a third group (**2**-**3**) of branch lines led out from those nodes which are connected with said first group of branch lines (**2**-**1**);

a memory device (**6**) for storing and outputting a first group and a second group of tap rating ratios (α**1**, α**2**) to determine a roll-off filter frequency characteristic of the roll-off filter, said second group tap rating ratios (α**2**) being input to said second group of multipliers (**5**), respectively;

a calculation circuit (**7**) for monitoring an output signal of the roll-off filter, calculating according to a predetermined algorithm and outputting a third and a fourth group of tap rating ratios (C', C), each of said third group tap rating ratios (C') being input to each of said third group of multipliers (**3**), said predetermined algorithm being such that said third and fourth tap rating ratios (C', C) are optimum for the roll-off filter to output pulses of good shape;

a first adder (**8**) for adding each of said second group tap rating ratios (C) with respective one of said first group tap rating

ratios (α1), an output (α2) of said first adder being input to said first group of multipliers (4), respectively; and

a second adder (9i) for summing outputs from said first and second group of multipliers and outputs of said third group of multipliers of the opposite channel roll-off filter,

wherein an output of said second adder is the output of said roll-off filter.

5,648,989

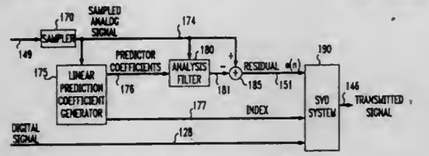
LINEAR PREDICTION FILTER COEFFICIENT QUANTIZER AND FILTER SET

Kenneth David Ko, Clearwater, Fla., assignor to Paradyne Corporation, Largo, Fla.

Filed Dec. 21, 1994, Ser. No. 360,906

Int. Cl.[6] H04K *1/02;* **H04L** *25/03;25/49*

U.S. Cl. 375—296 **26 Claims**



1. A method for use in a communications device comprising the steps of:

generating discrete-time sampled values of a signal;

generating a set of normalized autocorrelation coefficients from the sampled values; and

selecting a set of quantized prediction coefficients as a function of normalized autocorrelation coefficients without determining a set of non-quantized prediction coefficients.

5,648,990

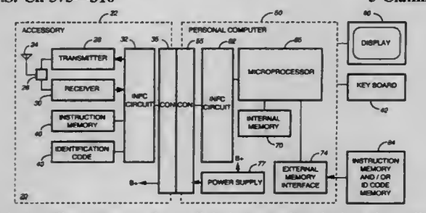
RADIO ACCESSORY FOR COMMUNICATING WITH A PROGRAMMABLE COMPUTING DEVICE AND METHOD THEREFOR

Douglas R. Kraul, Parkland; Michael J. DeLuca, Boca Raton, and Bryant Wilder, Boynton Beach, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 1, 1995, Ser. No. 432,349

Int. Cl.[6] H04B *7/00*

U.S. Cl. 375—316 **5 Claims**



1. A radio accessory for a digital computing device, the radio accessory comprising:

a housing;

a radio frequency receiver located within said housing for receiving a radio frequency signal comprising modulated symbols organized in accordance with a predetermined signaling protocol for communicating message information;

said radio frequency receiver further for demodulating the modulated symbols for generating demodulated symbols organized in accordance with the predetermined signaling protocol;

an interface circuit located within said housing and coupled to said radio frequency receiver for digitizing the demodulated symbols thereby producing digitized symbols organized in accordance with the predetermined signaling protocol;

a connector affixed to said housing for removably coupling the radio accessory to a corresponding connector affixed to the digital computing device, said connector for communicating the digitized symbols to the digital computing device for processing by the digital computing device in accordance with the predetermined signaling protocol to recover the message information;

a first storage media located within said housing of the radio accessory for storing instructions for the digital computing device, said instructions controlling processing by the digital computing device to decode the digitized symbols in accordance with the predetermined signaling protocol to recover the message information; and

a second storage media not located within said housing, for storing additional instructions controlling processing by the digital computing device to decode the digitized symbols in accordance with a modification of the predetermined signaling protocol.

5,648,991

SAMPLING PHASE SYNCHRONIZING APPARATUS AND BIDIRECTIONAL MAXIMUM LIKELIHOOD SEQUENCE ESTIMATION SCHEME THEREFORE

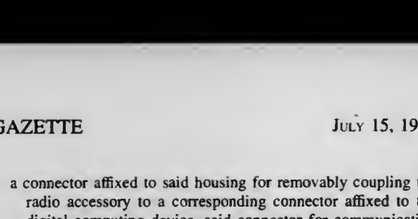
Minoru Namekata, and Junzo Murakami, both of Kawasaki, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 16, 1995, Ser. No. 389,581

Claims priority, application Japan, Feb. 16, 1994, 6-018778; Jun. 23, 1994, 6-140616

Int. Cl.[6] H04L *27/06*

U.S. Cl. 375—341 **9 Claims**



1. A bidirectional maximum likelihood sequence estimation system applied to a TDMA communication which performs transmission/reception in units of slots, comprising:

a forward maximum likelihood sequence estimation processor which operates from a beginning of an assigned slot forward along a time base direction, to estimate an absolute value of a forward channel impulse response from a received signal sequence;

a backward maximum likelihood sequence estimation processor which operates from an end of the assigned slot backward along the time base direction, to estimate an absolute value of a backward channel impulse response from a delayed received signal sequence obtained by delaying the received signal sequence by at least one slot time;

a communication quality estimation processor for receiving the absolute value of the forward channel impulse response and the absolute value of the backward channel impulse response and for estimating forward and backward communication qualities; and

a selector for selecting one of estimated sequences of the forward and backward maximum likelihood sequence estimation processors in accordance with an estimation result of the communication quality estimation processor;

each of the forward and backward maximum likelihood sequence estimation processors comprising:

a Viterbi algorithm processor for estimating a transmitted signal sequence from the received signal on the basis of the estimated channel impulse response;

an estimated received signal calculation processor for calculating an estimated received signal at time k on the basis of a training signal sequence or the transmitted signal sequence estimated by said Viterbi algorithm process, and a channel impulse response estimated at time k−1;

an error signal formation processor for forming an error signal between the received signal at time k and the estimated received signal at time k; and

a channel impulse response estimation processor for estimating a channel impulse response at time k using an adaptive algorithm on the basis of the error signal,

wherein the selector selects the estimation process result with a higher communication quality in units of slots or in units of symbols constituting the slot in accordance with the communication quality estimation processor, and the backward maximum likelihood sequence estimation processor does not perform a backward process when the communication quality does not decay during a forward process, but executes the backward process only when the communication quality decays during the forward process.

5,648,992

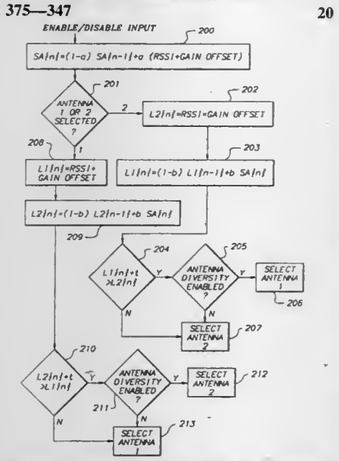
MULTIPLE ANTENNA HOME BASE FOR DIGITAL CORDLESS TELEPHONES

David Wright, Utica, N.Y.; James E. Petranovich, Encinitas, Calif.; Rex L. Baker, San Diego, Calif., and Neal K. Riedel, Encinitas, Calif., assignors to Rockwell Semiconductor Systems, Inc., Newport Beach, Calif.

Continuation of Ser. No. 129,562, Sep. 30, 1993, abandoned. This application Aug. 19, 1996, Ser. No. 699,217

Int. Cl.[6] H04B *7/08;17/02*

U.S. Cl. 375—347 **20 Claims**



11. A method of using antenna diversity in a communications system having at least two antennas for receiving a transmitted signal and only one receiver chain for downconverting and demodulating received signals, signals being transmitted in successive bursts, comprising the steps of:

selecting a received signal associated with one of said antennas and defining the same as a selected received signal;

determining the signal strength of said selected received signal and defining the same as a selected signal strength;

estimating signal strengths of received signals associated with said antennas not associated with said elected received signal and defining them as estimated signal strengths; and

comparing said selected signal strength with said estimated signal strengths to determine whether a different one of said received signals should be selected during a next successive burst,

whereby said selecting step during the next successive burst is carried out in response to said comparison.

5,648,993

METHOD AND APPARATUS FOR SYNCHRONIZING MODEM TRANSMISSION BY CONTROLLING A MEASURED PHASE DIFFERENCE BETWEEN AN INTERNAL TIMING SIGNAL AND A TRANSMISSION TIMING SIGNAL

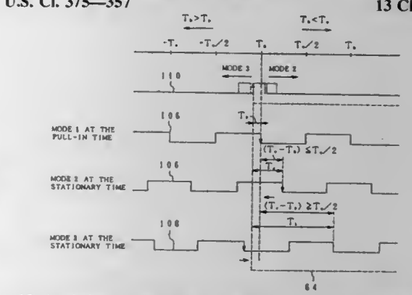
Noboru Kawada, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 3, 1993, Ser. No. 160,917

Claims priority, application Japan, Dec. 16, 1992, 4-334835

Int. Cl.[6] H04L *7/04*

U.S. Cl. 375—357 **13 Claims**



13. A relative synchronizing method for a modem, comprising:

producing a change point signal indicating change points of a transmission timing signal;

producing an internal timing signal;

detecting, upon receipt of a request to transmit, a phase difference from a first change point of the internal timing signal to a first change point of the transmission timing signal as a reference phase difference;

obtaining, in a stationary communicating state, a second phase difference from a subsequent, second change point of the internal timing signal to a subsequent, second change point of the transmission timing signal as a measured phase difference;

controlling the measured phase difference to coincide with the reference phase difference.

5,648,994

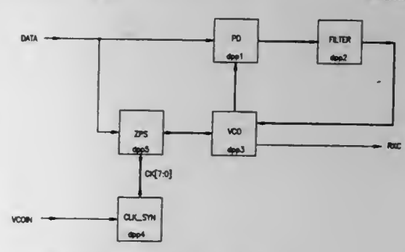
DIGITAL PHASE-LOCKED LOOP

Ron Kao, Saratoga, Calif., assignor to Lite-On Communications Corp., Taipei, Taiwan, and Lite-On Communications, Inc., Milpitas, Calif.

Filed Sep. 14, 1995, Ser. No. 528,226

Int. Cl.[6] H03D *3/24*

U.S. Cl. 375—376 **6 Claims**



1. A digital phase-locked loop comprising:

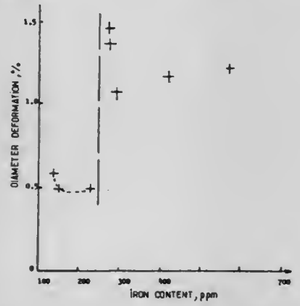
a clock-generation circuit that generates a set of working clocks;
a zero-phase start circuit that generates a set of reference clocks by using high frequency sampling to detect a transmission data level to initially lock the phase of said transmission data quickly;
a digital phase-error detecting circuit that detects a phase bias between said transmission data and said reference clocks by means of high frequency clock sampling on the data to generate a phase error using a bound window as a reference bound to detect a distance between the data transitions and the reference defined by the window;
an adaptive error-filtering circuit including a digital accumulator/counter that averages phase errors to generate error-adjusting signals; and
a Recovered Clock adjusting circuit that adjusts a Recovered Clock RXC to lock the phase between said transmission data and said RXC in accordance with said error adjusting signals by selecting from a plurality of different clock phases according to the error adjusting signals.

5,648,995

METHOD OF MANUFACTURING A TUBE FOR A NUCLEAR FUEL ASSEMBLY, AND TUBES OBTAINED THEREBY

Jean-Paul Mardon, Caluire; Jean Sevenat, Saint-Brevin-les-Pins, and Daniel Charquet, Ugine Cedex, all of France, assignors to Framatome, Courbevole, France

Filed Dec. 27, 1995, Ser. No. 579,372
Claims priority, application France, Dec. 29, 1994, 94 15874
Int. Cl.[6] G21C *3/07*
U.S. Cl. 376—261 **9 Claims**



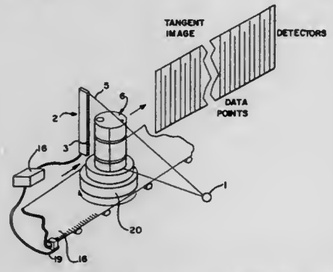
1. A method of manufacturing a tube for constituting at least an outer part of a sheath of a nuclear fuel rod or a guide tube of a nuclear fuel assembly, comprising the steps of:
(a) forming a bar of an alloy of zirconium containing 50 ppm to 250 ppm iron, 0.8% to 1.3% by weight niobium, less than 1600 ppm oxygen, less than 200 ppm carbon, and less than 120 ppm silicon;
(b) heating the bar to between 1000° C. and 1200° C. and quenching the bar in water;
(c) extruding a blank from said bar after heating said bar to the range 600° C. to 800° C.;
(d) cold rolling said blank in at least four passes to obtain a tube, with intermediate heat treatments in the range 560° C. to 620° C.; and
(e) performing a final heat treatment in the range 560° C. to 620° C.,
all of the heat treatments being performed under an inert atmosphere or under a vacuum.

5,648,996

TANGENTIAL COMPUTERIZED TOMOGRAPHY SCANNER

Nand K. Gupta, Libertyville, Ill., assignor to Omega International Technology, Inc., Lakemoor, Ill.

Filed Aug. 4, 1995, Ser. No. 511,111
Int. Cl.[6] G21K *5/10*
U.S. Cl. 378—4 **31 Claims**



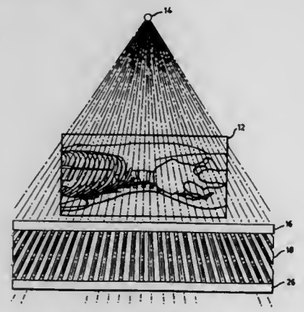
1. A tangential computed tomography scanner for scanning an object having an axis and at least one cross-section perpendicular to said axis, said scanner comprising:
an energy source adapted to emit penetrating energy;
a detector array having a plurality of detectors positioned in an elongated array, said detector array adapted to receive a planar beam of said penetrating energy from said source, said array oriented such that said planar beam lies generally parallel to said axis of said object and generally perpendicular to said cross-section of said object;
a drive device adapted to translate one of said beam and said object relative to the other of said beam and said object along a path substantially perpendicular to the plane of said beam, and also adapted to rotate said object about said axis concurrently with said translation.

5,648,997

APPARATUS AND METHOD FOR REMOVING SCATTER FROM AN X-RAY IMAGE

Yong-Sheng Chao, Storrs, Conn., assignor to Advanced Optical Technologies, Inc., East Hartford, Conn.

Filed Dec. 29, 1995, Ser. No. 580,602
Int. Cl.[6] H05G *1/64*
U.S. Cl. 378—98.4 **37 Claims**



1. A two-dimensional x-ray imaging system for taking images of a subject, said system comprising:

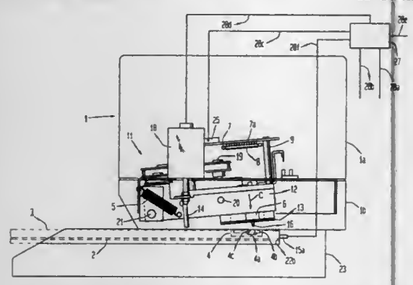
(a) in physical sequence from front to back, an x-ray source, a front two-dimensional x-ray detector assembly, a collimator, and a rear two-dimensional x-ray detector assembly, said subject being located between said x-ray source and said front detector assembly;
(b) said x-ray source adapted to emit x-rays for passage through said subject;
(c) said x-rays including primary x-rays having their direction of travel unaltered by interaction with said subject;
(d) said x-rays including scatter x-rays having their direction of travel altered by interaction with said subject;
(e) said front detector assembly receiving said primary x-rays and said scatter x-rays;
(f) said collimator being adjacent to said front detector assembly, said collimator permitting the passage of a portion of said primary x-rays and blocking the passage of the remainder of said primary x-rays and said scatter x-rays; and
(g) said rear detector assembly being adjacent to said collimator, said rear detector receiving only said portion of said primary x-rays passing through said collimator.

5,648,998

CAMERA THAT PROJECTS DATA

Walter Bauer, Munich, and Eberhard Werner, Peiting, both of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Apr. 11, 1995, Ser. No. 420,225
Claims priority, application Germany, May 11, 1994, 44 16 736.9
Int. Cl.[6] G03B *42/04*
U.S. Cl. 378—166 **11 Claims**



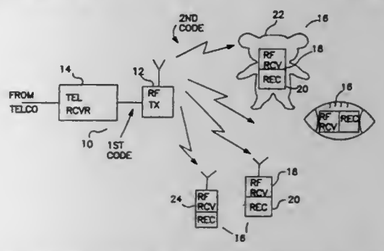
1. In a camera that projects data onto an X-ray film that is accommodated in a light tight cassette, wherein the data is imaged onto the film by means of light projected along a row and through an open window in the cassette, the improvement comprising (a) means for releasably securing the X-ray cassette relative to the camera in at least one of the directions that are parallel and perpendicular to the row, (b) light sealing means for covering the cassette surface surrounding the window to prevent entry of ambient light upon receipt of a control signal, said light sealing means being operative independently from said securing means, (c) window opening means for opening the window upon receipt of a control signal, said window opening means being operative independently of said securing means, (d) a plurality of sensors for sensing when the cassette is in the proper position for data projection, and (e) control means, responsive to said sensors, for actuating said securing means, for actuating said light sealing means and said window opening means and for initiating the data projection when the cassette is in the proper position and said window is open.

5,648,999

REMOTE RECORDING DEVICE AND METHOD

Scott Douglas Easterling, Malabar; John C. Lee Voelkel, Palm Bay; Michael Gene Moeller, Satellite Beach, and Michael J. Lynch, Merritt Island, all of Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Aug. 30, 1994, Ser. No. 297,858
Int. Cl.[6] H04M *11/00*
U.S. Cl. 455—412 **28 Claims**



1. A system for remotely recording voice messages received at a telephone receiver in a recorder contained within a child's toy, the system comprising:
a telephone receiver having an interface with a public telephone system, said telephone receiver comprising,
means for identifying first tone codes received at said telephone receiver when said telephone receiver is off hook, and
an RF transmitter activated by a predetermined one of said first tone codes for transmitting for a predetermined time period after activation voice messages being received at said telephone receiver; and
at least one recorder remote from said telephone receiver and contained within a child's toy, each said recorder comprising,
an RF receiver for receiving said voice messages from said RF transmitter,
means for identifying second tone codes received at said telephone receiver over said public telephone system and transmitted from said RF transmitter to said RF receiver, and
a memory device for recording said voice messages activated by a predetermined one of said second tone codes for recording said voice messages, said memory device having means for selective playback of recorded ones of said voice messages.

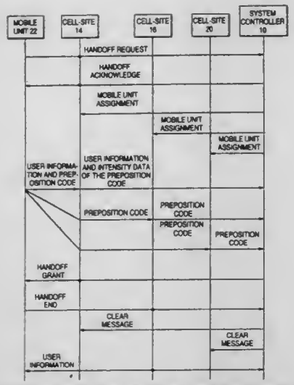
5,649,000

METHOD AND SYSTEM FOR PROVIDING A DIFFERENT FREQUENCY HANDOFF IN A CDMA CELLULAR TELEPHONE SYSTEM

Dong-Wook Lee; Myoung-Jin Kim, and Yeoung-Jee Chung, all of Daejeon, Rep. of Korea, assignors to Electronics & Telecommunications Research Institute, Daejeon-shi, Rep. of Korea

Filed Dec. 12, 1994, Ser. No. 354,436
Claims priority, application Rep. of Korea, Nov. 16, 1994, 94-30100
Int. Cl.[6] H04Q *7/22;7/24*
U.S. Cl. 455—436 **4 Claims**

1. A CDMA cellular telephone communication system having a mobile unit communicating to a source cell-site, a system controller for directing communications between said mobile unit and said cell-site, wherein the mobile unit requires a communication transfer from the source cell-site to a target cell-site selected from a number of proximal cell-sites, said source cell-site communicating user information with said mobile unit through a predetermined frequency channel different from a primary frequency channel, said proximal cell-sites not using said predetermined frequency channel, said communication system comprising:
control means, at the mobile unit, for determining if the mobile unit is to initiate a different frequency handoff based upon a comparison of intensity of pilot signals received from said



source cell-site and said proximal cell-sites with a threshold value, for limiting a user data rate, and for controlling a data positioning device and a frequency synthesizer to operate in the different frequency handoff;

means, at the mobile unit, for deciding a transmitting position of said user information data to be transferred to said source cell-site and a different frequency handoff preposition code under control of the control means;

means, at the mobile unit, for modulating the data and said different frequency handoff preposition code with different frequencies;

means, at the cell-site, for demodulating said user information data if the cell site is in a normal mode or measuring intensity of said different frequency handoff preposition code if the cell site is in the different frequency handoff mode from said mobile unit;

channel control means, at the cell-site, for notifying said means for demodulating a receiving position of received data or for measuring intensity of a different frequency preposition code;

means, at the system controller, for receiving the different frequency handoff request from said mobile unit, determining the different frequency handoff, controlling said source cell-site and the cell-sites in a range around said source cell-site to measure the intensity of the received different frequency handoff preposition code, selecting the target cell-site on a basis of measurements of said intensities from said cell-sites, and cutting off a call between the mobile unit and the proximal cell-sites except the target cell-site when in said handoff mode.

5,649,001

METHOD AND APPARATUS FOR ADAPTING A COMMUNICATION INTERFACE DEVICE TO MULTIPLE NETWORKS

Nicholas A. Thomas, Salt Lake City; John Evans, Riverton; Richard Bentley, South Jordan, and Mark L. Gray, West Valley City, all of Utah, assignors to U.S. Robotics Mobile Communications Corp., Salt Lake City, Utah

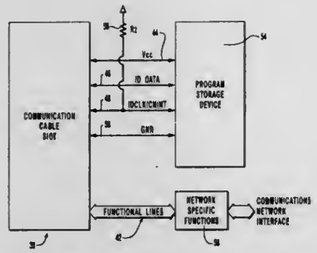
Filed Mar. 24, 1995, Ser. No. 410,328

Int. Cl.[6] H04M *11/00*

U.S. Cl. 379—93.07 **16 Claims**

1. A communication adapter cable for operatively interfacing a communication interface device to a given communication network, the communication cable comprising:

a) a universal connector means having a plurality of electrical leads for operatively and detachably connecting to the communication interface device;



b) a network connector means, electricaly connected to at least one of the plurality of electrical leads, for operatively and detachably connecting to the given communication network;

c) program storage means, electrically connected to at least one of the plurality of electrical leads, for storing a plurality of operating values corresponding to operative characteristics of the given communication network; and

d) a means for transferring the operating values from the storage means to the communication interface device through at least one of the plurality of electrical leads to reconfigure the communication interface device.

5,649,002

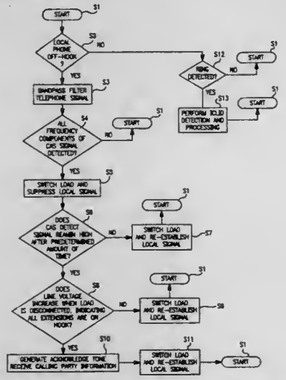
METHOD AND APPARATUS FOR DETECTING A TELEPHONE CPE ALERTING SIGNAL

Robert H. Brady, Brookfield; David Zielski, Cheshire; William L. Nutter, Danbury, all of Conn., and Alexander J. Marra, New City, N.Y., assignors to Colonial Data Technologies Corp., New Milford, Conn.

Filed Dec. 13, 1994, Ser. No. 357,172

Int. Cl.[6] H04M *3/42;1/56*

U.S. Cl. 379—142 **44 Claims**



32. A method of detecting, at a user's location adjacent a telephone or integral with the telephone, a valid incoming CAS (Customer Premises Equipment Alerting Signal) on a transmission channel, comprising the steps of:

receiving at the user's location an incoming signal including the CAS;

processing the incoming signal to detect the CAS; and

verifying that the detected CAS is a valid CAS a predetermined time period after the CAS is detected.

5,649,003

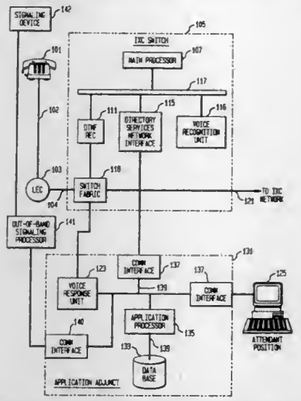
METHOD IN A COMMUNICATIONS SYSTEMS FOR PROVIDING AN OUT-OF-BAND SIGNALING RESPONSE BASED ON PREDETERMINED CONDITIONS

Peter Kapsales, Woodinville, Wash., and Barry S. Selp, New Providence, N.J., assignors to AT&T, Middletown, N.J.

Filed Feb. 27, 1995, Ser. No. 395,009

Int. Cl.[6] G08B *13/00;* **H04M** *11/00*

U.S. Cl. 379—201 **11 Claims**



1. A method for use in a communication system for supplying to a first party, connected to a central platform, one or more messages transmitted as an out-of-band signal in response to predetermined trigger conditions, the method comprising the steps of:

storing information identifying said trigger conditions at said central platform,

periodically accessing said stored information to determine the necessity to initiate the transmission of said out-of-band signal,

formulating a particular message to be transmitted as an out-of-band signal in response to access of said stored information, and

transmitting said particular message as an out-of-band signal to said first party,

wherein said stored information identifying said trigger conditions includes predetermined schedule changes previously defined by said first party, wherein there is further included the step of adding predetermined characters to said message prior to transmitting said message as an out-of-band signal to said first party, said predetermined characters being added to said message in a predetermined order in accordance with a type of message to be transmitted, and wherein said transmitting step includes the steps of initiating a page as said out-of-band signal, and sending said page to said first party.

5,649,004

PRIVATE BRANCH EXCHANGE

Toshihiko Ikeno, Yokohama, and Nobuhiro Ikeda, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 54,321, Apr. 28, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 467,071

Claims priority, application Japan, Apr. 28, 1992, 4-136343; Apr. 28, 1992, 4-136349

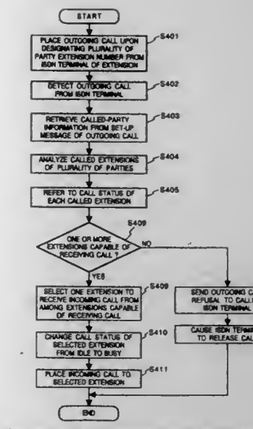
Int. Cl.[6] H04M *3/54;3/50*

U.S. Cl. 379—212 **12 Claims**

4. A private branch exchange comprising:

first interface means for interfacing a plurality of extension terminals;

second interface means for interfacing a digital terminal and communicating signals with said digital terminal in accordance with a predetermined procedure, said digital terminal being connected as an extension terminal;



transmitting means for transmitting a first message to said digital terminal via said second interface means, the first message being for initially informing said digital terminal of an incoming call addressed to said digital terminal and establishing a communication link with said digital terminal, the transmission being in response to the incoming call addressed to said digital terminal;

receiving means for receiving a second message in which transfer address information indicating a plurality of extension terminals can be set from said digital terminal after transmitting the first message, the second message being a response signal corresponding to the first message;

analyzing means for analyzing the second message and thereby determining whether or not transfer address information indicating the plurality of extension terminals is set in the second message; and

transferring means for transferring the incoming call to one of said plurality of extension terminals designated in the transfer address information of the second message in accordance with a determination by said analyzing means.

5,649,005

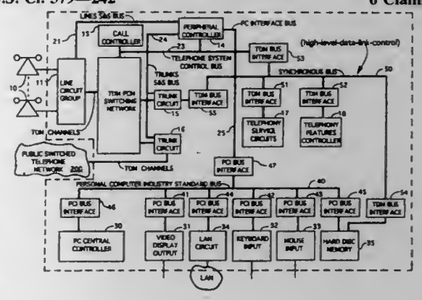
PC WITH TELEPHONY EXCHANGE FUNCTION

John Cornelius Lynch; Tod Allen Rikley; Peter Tarle; David Ward; Metodej Valentik, and André Michael Cyr, all of Belleville, Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Jul. 7, 1995, Ser. No. 499,440

Int. Cl.[6] H04M *3/00*

U.S. Cl. 379—242 **6 Claims**



1. A communications system for providing telephone communication between a plurality of telephone users, said system comprising a telephony control unit integrated in a personal computer;

said personal computer having a personal computer industry (PCI) local bus, a synchronous bus, a central processor connected to said PCI local bus via a first PCI bus interface, and memory means connected to said PCI local bus via a second PCI bus interface and connected to said synchronous bus via a first time division multiplex (TDM) bus interface;

said telephony control unit having a switching network for routing calls between said telephone users, said switching network connected to a call controller and to a peripheral controller, said call controller connected to said synchronous bus via a second TDM bus interface, said peripheral controller connected to said PCI local bus via a third PCI bus interface;

wherein said call controller accesses synchronous telephony signalling from said memory means and said peripheral controller accesses asynchronous call routing data from said memory means.

5,649,006

COMMUNICATION APPARATUS HAVING FUNCTION OF GENERATING CALLING SIGNAL

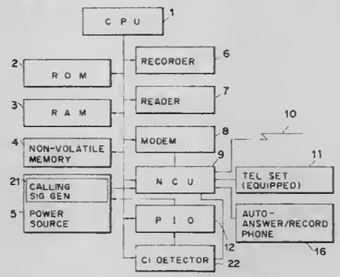
Shigeru Koizumi, Urawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 931,973, Aug. 19, 1992, abandoned. This application Aug. 8, 1994, Ser. No. 286,991

Claims priority, application Japan, Aug. 22, 1991, 3-235558

Int. Cl.[6] H04M *1/00;11/00*

U.S. Cl. 379—373 **7 Claims**



1. An image communication apparatus comprising:

image processing means for processing image data, said image processing means including circuits for communicating the image data and for outputting the image data;

DC power supplying means for supplying, to said image processing means, a DC power to drive said image processing means, said DC power supplying means including calling signal generating means for generating a calling signal having an ON period and an OFF period and regulator means for supplying, to said image processing means, a regulated DC power to drive said image processing means;

control means for outputting a control signal for controlling said DC power supplying means; and

conversion means for electrically-isolatingly supplying the control signal outputted from said control means to said calling signal generating means.

5,649,007

TELEPHONE SET OF DISTINCTIVE RINGING TYPE CAPABLE OF GENERATING DIFFERENT CALLING SOUNDS AFTER THE TELEPHONE SET IS CONNECTED TO REMOTE CALLING PARTY

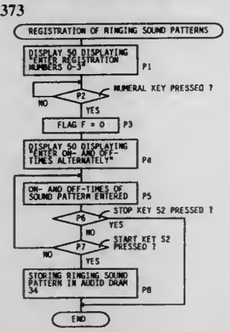
Makoto Yamada, Gifu, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Nov. 29, 1994, Ser. No. 350,151

Claims priority, application Japan, Dec. 7, 1993, 5-306904

Int. Cl.[6] H04M *1/00*

U.S. Cl. 379—373 **10 Claims**



10. A telephone set of distinctive ringing type of a called party capable of generating calling sounds corresponding to call signals which have respective different patterns calling respective telephone numbers of said telephone set and which are received from a telephone exchange through a telephone line, said telephone set comprising:

a call signal pattern data memory for storing call signal pattern data sets representative of said different patterns of said call signals, respectively;

pattern detecting means for detecting the pattern of said call signals received from said telephone exchange before the telephone set is connected through said telephone line to a remote calling party, said pattern detecting means determining the pattern of said received call signals by comparing the pattern of said received call signals with different patterns represented by said call signal pattern data sets stored in said call signal pattern data memory;

a first sound pattern data memory for storing first pattern data sets representative of different patterns of said calling sounds which correspond to said different patterns of said respective call signals;

a second sound pattern data memory for storing second pattern data sets representative of respective patterns of calling sounds which correspond to respective pattern designating signals received from said remote calling party after the telephone set is connected to said remote calling party; and

sound generating means, operable after the telephone set is connected to said remote calling party, for generating the calling sounds, wherein the sound generating means generates calling sounds according to one of said first pattern data sets which corresponds to the pattern of said received call signals, as determined by said pattern detecting means, when no pattern designating signal is received by the telephone set after the telephone set has been connected to the remote calling party, and wherein if one of said pattern designating signals is received from said remote calling party, said sound generating means retrieves, from said second sound pattern data memory, one of said second pattern data sets which represents one of said patterns of calling sounds which corresponds to the pattern designating signal which has been received from said remote calling party after the telephone set is connected to said remote calling party, said first sound generating means generating calling sounds according to the pattern represented by the second pattern data set retrieved from said second sound pattern data memory, in place of the pattern represented by the first pattern data set which corresponds to the pattern of the received call signals, as determined by said pattern detecting means.

5,649,008

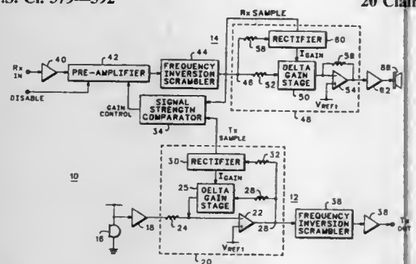
CIRCUIT AND METHOD OF REDUCING SIDETONE IN A RECEIVE SIGNAL PATH

Scott K. Bader, Gilbert; Richard E. Hester, Phoenix; Michael L. Gomez, Tempe, all of Ariz., and James S. Mielke, Wanconda, Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 2, 1994, Ser. No. 284,950

Int. Cl.[6] H04M *9/08*

U.S. Cl. 379—392 **20 Claims**



19. A method of varying gain in the receive signal path of a telecommunication system, comprising the steps of:

compressing the dynamic amplitude range of a transmit signal and providing a transmit sample signal proportional to said transmit signal;

decompressing the dynamic amplitude range of a receive signal and providing a receive sample signal proportional to said receive signal;

providing a gain control signal having a first state when said transmit signal **15** less than a predetermined threshold established by said receive signal, said gain control signal having a second state when said transmit signal is more than said predetermined threshold; and

reducing sidetone signals in the receive signal path in response to said second state of said gain control signal.

5,649,009

DIFFERENTIAL LONGITUDINAL AMPLIFIER FOR A SUBSCRIBER LINE INTERFACE CIRCUIT

Leonel Ernesto Enriquez, Melbourne Beach, and Gabriel Julio Uscategui, West Melbourne, both of Fla., assignors to Harris Corporation, Melbourne, Fla.

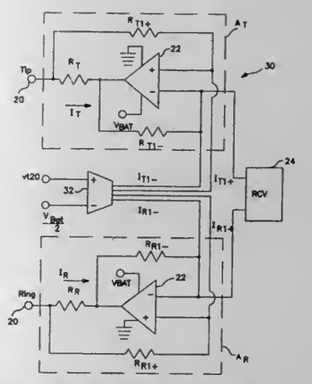
Filed Nov. 14, 1994, Ser. No. 340,342

Int. Cl.[6] H04M *19/00*

U.S. Cl. 379—399 **20 Claims**

1. A circuit for sensing and compensating for longitudinal currents in a subscriber loop of a telephone system, wherein a tip terminal of the subscriber loop is connected to a first current amplifier and a ring terminal of the subscriber loop is connected to a second current amplifier, the circuit comprising:

a longitudinal amplifier for sensing a voltage difference between a reference voltage, $V_{BAT}/2$, and a longitudinal voltage, vt20, in the subscriber loop, and for providing two current differences of opposite polarity to each of the first and second current amplifiers,



the magnitudes of said current differences being provided to each of the first and second current amplifiers being substantially equal and proportional to said voltage difference.

5,649,010

SEND FILTER FOR AN ECHO CANCELER

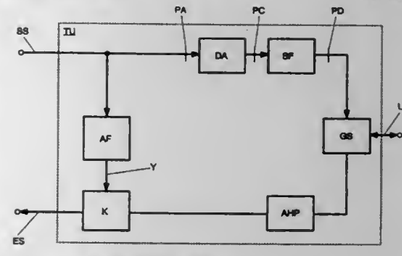
Peter Gysel, Zurich; Bruno Wenger, Au/zh; August Kaelin, Bonstetten, and Daniel Mueller, Zurich, all of Switzerland, assignors to Siemens Schweiz AG, Zurich, Switzerland

Filed Jul. 19, 1995, Ser. No. 504,110

Claims priority, application Switzerland, Jul. 20, 1994, 02 298/94

Int. Cl.[6] H04M *9/00*

U.S. Cl. 379—406 **6 Claims**



1. A circuit arrangement comprised of:

a send path carrying a send signal;

a receiving path carrying a received signal;

an adaptive filter;

a compensator in the received path;

a digital/analog converter;

a transmission unit; and

a transmission line attached to the transmission unit,

wherein over the transmission line at least the send signal, the received signal and echo signal portions are transmitted, with the send path and the received path being connected with the transmission unit; with the send signal, for the estimation of the echo signal, being transmitted to the adaptive filter,

wherein the estimated digital echo signal is transmitted to the compensator for the reduction of the echo signal portion in the received path, with the send signal being impressed upon the digital/analog converter and a send filter being interposed in the send path, between the digital/analog converter and the transmission unit,

wherein the adaptive filter is comprised of at least an FIR (Finite Impulse Response) filter portion, with the FIR filter portion being of the storage compensation type.

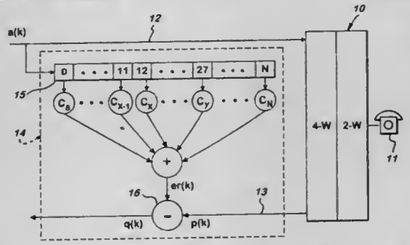
wherein the adaptive filter is additionally comprised of an IIR (Infinite Impulse Response) filter portion, and
wherein the send filter has a transfer function $T(s)=T_1(s)*T_2(s)$, wherein:

$$T_1(s) = 0.3940 * \frac{s^2 + 1.1834*10^6*s + 2.4134*10^{13}}{s^2 + 4.9598*10^6*s + 1.3263*10^{13}}$$

and

$$T_2(s) = \frac{1}{0.3940} * \frac{6.1007*10^{12}}{s^2 + 5.2757*10^6*s + 1.1154*10^{13}}.$$

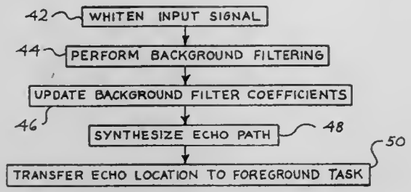
5,649,011
METHOD FOR THE ADAPTIVE CONTROL OF A DIGITAL ECHO CANCELLER IN A TELECOMMUNICATION SYSTEM
Giovanni Garofalo, Lisse, Netherlands, and Lars Svenkerud, Halden, Norway, assignors to Agence Spatiale Europeenne, France
Filed Nov. 29, 1994, Ser. No. 346,091
Claims priority, application France, Dec. 2, 1993, 9314440
Int. Cl.[6] H04M *1/00*
U.S. Cl. 379—410 **1 Claim**



1. A method for the adaptive control of a digital filter in a digital echo canceller connected to up and down telecommunication links, said digital filter having a plurality of delay cell taps the method comprising the steps of:
(a) setting the digital filter to zero,
(b) sending a test signal through the down telecommunication link,
(c) adjusting the filter taps until the echo signal in the up telecommunication link is less than a predetermined stored reference level,
(d) removing the test signal,
(e) fixing the filter taps,
(f) determining the number of filter taps having signal samples nearing zero or the number of filter taps having significant signal samples, and
(g) eliminating the taps having non-significant signal samples for operation of the digital echo canceller.

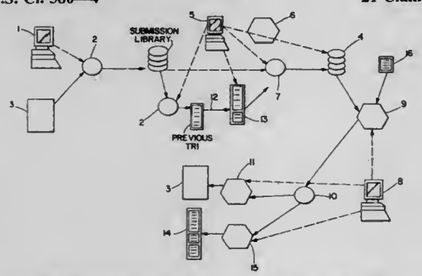
5,649,012
METHOD FOR SYNTHESIZING AN ECHO PATH IN AN ECHO CANCELLER
Prabhat K. Gupta, and Sanjay Gupta, both of Germantown, Md., assignors to Hughes Electronics, Los Angeles, Calif.
Filed Sep. 15, 1995, Ser. No. 529,042
Int. Cl.[6] H04B *3/23*
U.S. Cl. 379—410 **19 Claims**

1. A method for synthesizing an echo path in an echo canceller comprising the steps of:
obtaining far end and near end signal samples at the echo canceller from a far end signal and a near end signal;
performing a background task on said far end and near end signal samples to locate an echo and determine a length of the echo;



transferring the echo length and location to a foreground task; and
performing said foreground task on said far end and near end signal samples to eliminate the echo from the near end signal samples whereby the echo location and length determined in the background task are used to guide the foreground task in filtering out the echo in the near end signal; and
wherein the step of performing the background task includes the step of processing a set of filter tap values associated with the background task using first and second different processing methods to locate the echo and determine the length of the echo.

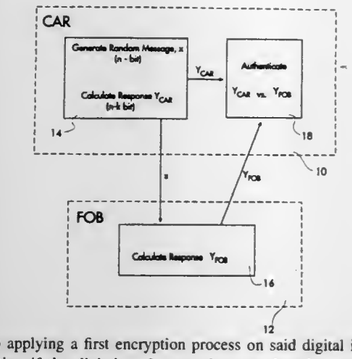
5,649,013
ROYALTY TRACKING METHOD AND APPARATUS
Kent D. Stuckey, Columbus, Ohio; Douglas P. Chinnock, Tucson, Ariz., and Jon L. Roberts, McLean, Va., assignors to CompuServe Incorporated, Columbus, Ohio
Filed Dec. 23, 1994, Ser. No. 363,747
Int. Cl.[6] H04L *9/00*
U.S. Cl. 380—4 **21 Claims**



1. A method for tracking an information file through file transfers, comprising:
a) inserting a tracking tag into an unused portion of the information file, the tracking tag including data regarding the current possessor of the information file;
b) adding data regarding a recipient and an information file transfer to the tracking tag; and
c) transferring the information file to the recipient.

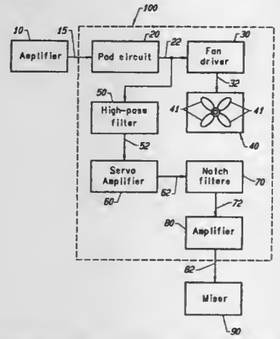
5,649,014
PSEUDORANDOM COMPOSITION-BASED CRYPTOGRAPHIC AUTHENTICATION PROCESS
Philip J. Koopman, Jr., Hebron; Alan M. Finn, Amston, and Robert E. LaBarre, Willington, all of Conn., assignors to United Technologies Automotive, Inc., Dearborn, Mich.
Division of Ser. No. 294,147, Aug. 22, 1994. This application Oct. 2, 1995, Ser. No. 537,487
Int. Cl.[6] H04K *1/00*
U.S. Cl. 380—28 **26 Claims**

1. A method of encrypting digital information comprising:
representing said digital information as a set of binary digits, N;
(a) testing one of the binary digits to determine if the digit is a 1 or a 0;



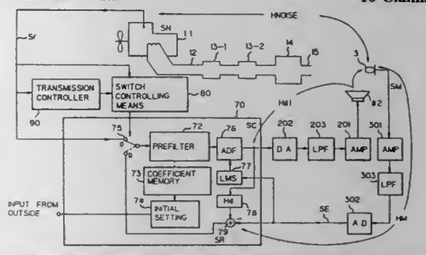
(b) applying a first encryption process on said digital information if the digit is a 1 to produce an altered set of digital information;
(c) applying a second encryption process on said digital information if the digit is a 0 to produce an altered set of digital information;
(d) replacing said digital information with said altered set of digital information;
(e) repeating steps (a) through (d), testing a different one of said binary digits in performing step (a).

5,649,015
SPEAKER SIMULATOR
Thomas L. Paddock, Cupertino, and Robert H. Weir, Mill valley, both of Calif., assignors to Midnite Kitty, Inc., San Rafael, Calif.
Continuation-in-part of Ser. No. 110,914, Aug. 24, 1993. This application Sep. 15, 1995, Ser. No. 529,884
Int. Cl.[6] H03G *3/00*
U.S. Cl. 381—61 **8 Claims**



1. A speaker simulator for producing distortion of a musical input signal, comprising:
a pad circuit for producing a reduced power signal from said musical input signal directed to said pad circuit;
a fan driver circuit for transforming said reduced power signal to a fan driver signal;
a cooling fan powered by said fan driver signal, said cooling fan forcing air across said pad circuit to cool said pad circuit, said cooling fan providing an impedance dependent on a present value of said reduced power signal and a history of said reduced power signal such that said reduced power signal is distorted.

5,649,016
AUTOMATIC SOUND CONTROLLING METHOD AND APPARATUS FOR IMPROVING ACCURACY OF PRODUCING A CANCELING SOUND
Masaaki Nagami, Akashi, and Kazuya Sako, Kakogawa, both of Japan, assignors to Fujitsu Ten Limited, Kobe, Japan
Continuation of Ser. No. 915,136, Jul. 20, 1992, Pat. No. 5,404,409. This application Sep. 21, 1994, Ser. No. 309,638
Claims priority, application Japan, Jul. 31, 1991, 3-191902; Oct. 31, 1991, 3-286417
Int. Cl.[6] A61F *11/06;* **H03B** *29/00*
U.S. Cl. 381—71.5 **10 Claims**



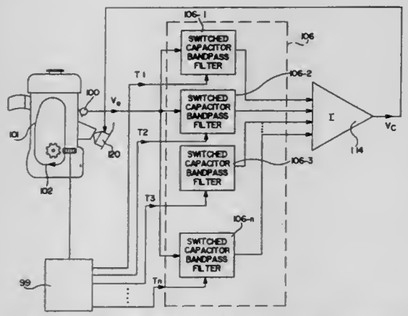
2. An automatic sound controlling apparatus for improving accuracy of producing a canceling sound comprising:
a sound making device for outputting a compensating sound in a canceling space to cancel undesired sound from a sound-producing source;
a sound receiving device for producing an error signal that represents a difference between said compensating sound and said undesired sound;
an adaptive filter that forms a compensating signal for attenuation of said undesired sound, said compensating signal being based on said error signal produced from said sound receiving device and being supplied to the sound making device; and
a prefilter provided for said adaptive filter, said prefilter equalizing frequency characteristics of at least one of a main muffler and a submuffler before forming said compensating signal.

5,649,017

Patent Not Issued For This Number

5,649,018
HYBRID ANALOG/DIGITAL VIBRATION CONTROL
Carl S. Gifford, Gilbert, Ariz.; Owen Jones, Alreford Colchester, and Michael Charles John Trinder, East Bereholt, Colchester, both of England, assignors to Noise Cancellation Technologies, Inc., Linthicum, Md.
Continuation of Ser. No. 45,486, Apr. 7, 1993, abandoned. This application Jan. 30, 1995, Ser. No. 380,789
Int. Cl.[6] A61F *11/06;* **H03B** *29/00*
U.S. Cl. 381—71.14 **2 Claims**

1. An active feedback noise cancellation system, comprising:
a sensor for detecting a residual vibration having a periodic component and generating a residual signal according to said detected residual vibration;
a control circuit connected to said sensor for receiving said residual signal from said sensor, wherein said control circuit includes a filter with operating parameters for transmitting a portion of said residual signal;
an actuator connected to said control circuit for receiving said transmitted portion of said residual signal and generating a canceling vibration according to said filtered residual signal; and
a means for testing said noise cancellation system connected to said sensor; wherein said filter is tuned to the frequency of



said periodic component so that said periodic component of said residual signal is transmitted to said actuator; and

further wherein said filter being a switched capacitor bandpass filter and wherein said filter comprises an integrator connected in series with a second order high-pass filter.

5,649,019

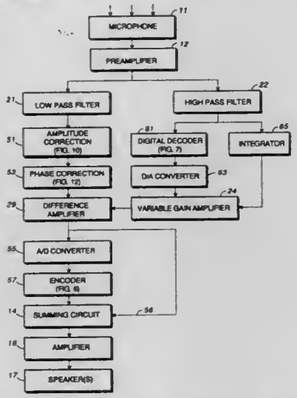
DIGITAL APPARATUS FOR REDUCING ACOUSTIC FEEDBACK

Samuel L. Thomasson, 1038 E. Hearn Way, Gilbert, Ariz. 85234

Continuation-in-part of Ser. No. 120,187, Sep. 13, 1993, Pat. No. 5,412,734. This application May 1, 1995, Ser. No. 432,094

Int. Cl.[6] H04R *27/00*

U.S. Cl. 381—83 **19 Claims**



1. A method for reducing acoustic feedback, said method comprising the steps of:

projecting a composite acoustic signal having a baseband audio component and a pulse width modulated component;

sensing said composite acoustic signal and converting said composite acoustic signal into an electrical signal having a baseband audio component and a pulse width modulated component;

separating said baseband audio component from said pulse width modulated component;

producing a reconstructed baseband audio component from said pulse width modulated component; and

subtracting said reconstructed baseband audio component from said baseband audio component.

5,649,020

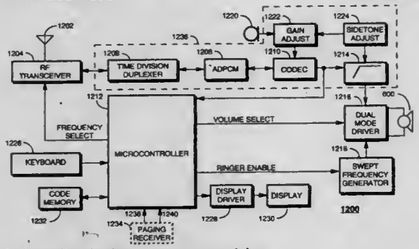
ELECTRONIC DRIVER FOR AN ELECTROMAGNETIC RESONANT TRANSDUCER

George W. McClurg, Boynton Beach; Gary Lee Pace, Boca Raton; Charles W. Mooney, Lake Worth, and John M. McKee, Hillsboro Beach, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation-in-part of Ser. No. 297,730, Aug. 29, 1994. This application Jul. 24, 1995, Ser. No. 506,304

Int. Cl.[6] H04R *25/00*

U.S. Cl. 381—151 **16 Claims**



1. A tactile alerting system, comprising:

a tactile alerting device comprising a non-linear, hardening spring resonant armature system including a plurality of planar non-linear spring members which are coupled to a magnetic motional mass suspended thereby within an electromagnetic driver for generating an electromagnetic field;

a swept frequency signal generator comprising

a ramp generator for generating a control voltage which periodically varies in a sequence of steps of increasing amplitude over a predetermined period of time, and

a voltage controlled oscillator, coupled to said ramp generator and responsive to the control voltage generated, for generating a swept frequency output signal; and

a tactile alerting device driver, having an input coupled to said swept frequency signal generator, and an output coupled to said electromagnetic driver for generating a swept frequency electromagnetic field in response to the swept frequency output signal,

whereby movement of said magnetic motional mass generated by the swept frequency electromagnetic field is transformed through said plurality of planar non-linear spring members and said electromagnetic driver into tactile energy thereby generating a tactile alert.

5,649,021

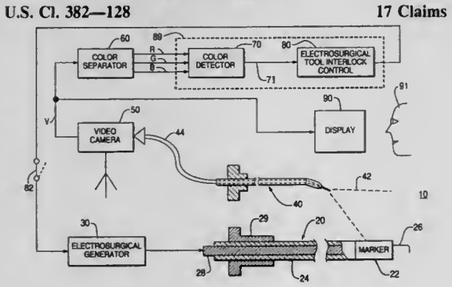
METHOD AND SYSTEM FOR OBJECT DETECTION FOR INSTRUMENT CONTROL

James R. Matey, Mercerville; John G. Aceti, Cranbury, and Timothy A. Pletcher, East Hampton, all of N.J., assignors to David Sarnoff Research Center, Inc., Princeton, N.J.

Filed Jun. 7, 1995, Ser. No. 472,832

Int. Cl.[6] G06K *9/62*

U.S. Cl. 382—128 **17 Claims**



1. Apparatus for controlling a device, said apparatus comprising:

a marker having a predetermined color and being applied to the device to form a marked device;

an imager which generates imager signals representing a color image of a region proximate to the imager;

a detector which processes the imager signals to detect a range of colors, which includes the predetermined color, in the image represented by the signals and for providing an output signal representing instances of imager signals in the detected color range;

detection means for processing the output signal of the color detector to provide an indication of whether the output signal of the color detector conforms to the marked device, thereby to indicate whether the marked device is included in the color image represented by the imager signals; and

control means responsive to the detection means for disabling the marked device whenever the detection means indicates that the marked device is not in the color image, and for allowing the marked device to be enabled whenever the detection means indicates that the marked device is in the color image.

5,649,022

PATTERN CHECKING METHOD AND CHECKING APPARATUS

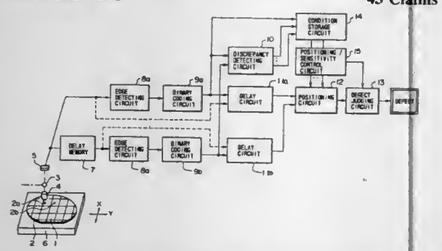
Shunji Maeda, Yokohama; Hitoshi Kubota, Fujisawa; Hiroshi Makihira, and Takashi Hiroi, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 27, 1992, Ser. No. 888,494

Claims priority, application Japan, May 27, 1991, 3-120913; Jun. 27, 1991, 3-181540

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—141 **43 Claims**



1. A pattern checking method, wherein one pattern and a reference pattern are scanned by an image sensor functioning as a pattern detector so that two-dimensional images of said one and reference patterns are continuously obtained by moving the patterns relative to the sensor, wherein each of said patterns is divided into a plurality of areas each including a plurality of pixels, wherein pixels of an image of one of said plurality of areas of said one pattern is detected and said detected image is positioned with respect to pixels of an image of one of said plurality of areas of said reference pattern, and wherein pixels of the positioned images are compared with each other, whereby a discrepancy between these positioned images is judged as a defect, comprising the step of:

(a) comparing pixels of an image of one area of said one pattern with pixels of an image of one area of said reference pattern which corresponds to said one area of said one pattern to obtain a result of comparison;

(b) storing said result of comparison into a memory, said result of comparison including positional shift amount information;

(c) comparing pixels of an image of another area of said one pattern with pixels of an image of another area of said reference pattern which corresponds to said another area of said one pattern to obtain a positional shift amount between images of corresponding portions of said another area of said one and reference patterns;

(d) correcting said positional shift amount based on said result of comparison stored in said memory;

(e) positioning both of said images of said another area of said one and reference patterns based on said corrected positional shift amount; and

(f) comparing said positioned images of said another area of said one and reference patterns with each other to determine a discrepancy between said compared positioned images as a defect.

5,649,023

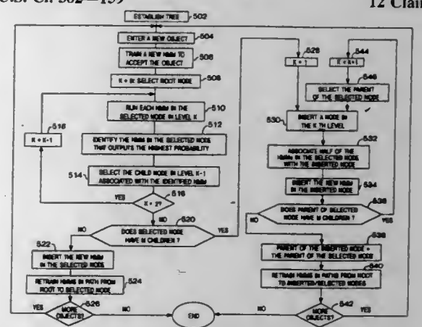
METHOD AND APPARATUS FOR INDEXING A PLURALITY OF HANDWRITTEN OBJECTS

Daniel Barbará , Princeton; Walid Aref, New Brunswick; Ibrahim Kamel, Monmouth Junction, and Padmavathi Vallabhaneni, Princeton, all of N.J., assignors to Panasonic Technologies, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 300,795, Sep. 2, 1994, Pat. No. 5,528,701, and Ser. No. 324,231, Oct. 17, 1994, Pat. No. 5,524,240, which is a continuation-in-part of Ser. No. 248,392, May 24, 1994, abandoned. This application Mar. 27, 1995, Ser. No. 410,812

Int. Cl.[6] G06K *9/62*

U.S. Cl. 382—159 **12 Claims**



1. A method for indexing a plurality of handwritten objects in a database, the method comprising the steps of:

(a) generating a B-tree data structure of order m, where m is an integer, the B-tree having a plurality of nodes divided into a plurality of levels ordinally numbered 0th through n^{th}, each node in the 0th level being a leaf, each node in the 1th level having at least m/2 leaves as children;

(b) assigning each one of the handwritten objects to a respective leaf;

(c) associating a respectively different hidden Markov model (HMM) with each respective child of each of the nodes in the 1th to n^{th} levels, each one of the nodes in the 1th to n^{th} levels containing the respective HMMs associated with the children of the one node;

(d) training each HMM in each one of the nodes in the 1th level to accept the handwritten object assigned to the leaf that is the child with which the HMM is associated; and

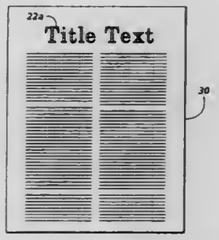
(e) training the respective HMMs in each node in a path from a root node of the B-tree to one of the nodes in the 1th level, so that each HMM associated with any of nodes in the path accepts all of the handwritten objects in the leaves of a subtree that has as a root the respective child with which the HMM is associated, wherein step (e) is executed each time an object is added to the database.

5,649,024

METHOD FOR COLOR HIGHLIGHTING OF BLACK AND WHITE FONTS

Alan Goldsmith, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 17, 1994, Ser. No. 340,942
Int. Cl.[6] G06K 9/00
U.S. Cl. 382—170 4 Claims



1. In a reproduction method for printing reproductions of a black and white only original document on a digital printer capable of color printing with selected black and white text portions of said original document being printed in a highlight color in said reproductions, wherein said black and white only original document uses at least two different black and white text fonts, the improvement comprising:

forming an electronic image of said black and white only original document;

selecting at least one special black and white font used in said black and white only original document;

automatically electronically searching said electronic image of said black and white only original document to find and electronically designate occurrences of said same selected special font to be reproduced in a highlight color by electronically providing a color printing control associated therewith;

printing said electronic image of said black and white only original document with said digital printer automatically controlled by said color printing control so that said occurrences of said selected special black and white font are printed in said highlight color, by automatically replacing said black and white in said selected special font with said highlight color, with text in said other font printed in black and white, to provide reproductions with automatic color highlighting of only said selected special font, without requiring manual designations of coordinate locations therefor;

wherein said black and white only original document comprises a preexisting physical hardcopy document, and said forming of an electronic image thereof includes scanning said original document on an electronic image scanner to provide an electronic document scan, and transferring said electronic document scan to a user interface terminal programmed with image processing software to form said electronic image of said black and white only original document;

wherein a preprinting step includes variable operator preprogramming of software to recognize said special font in said black and white document, and, upon said recognition of said special font in said black and white document, to automatically generate color printing instructions associated with said recognized special font so that said special font will print in color on said color printer; and

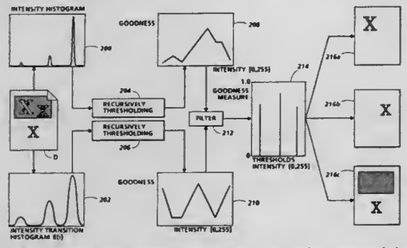
wherein said scanned special font being automatically identified to be reproduced in a highlight color is automatically identified by being identified as substantially larger area font letters in comparison to the font in which other portions of said document is printed, which special font is found to be occurring near the beginning of said document.

5,649,025

MULTITHRESHOLDING FOR DOCUMENT IMAGE SEGMENTATION

Shriram V. S. Revankar, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 3, 1995, Ser. No. 383,330
Int. Cl.[6] G06T 5/40
U.S. Cl. 382—171 3 Claims



1. A document processing system, for converting scanned document signals received at n intensity levels where n is finite and small compared to the number of possible intensity levels, and a significant portion of the document is rendered at each intensity level, to a plurality of bimodal signals each retaining information content represented by the difference between two intensity levels, comprising:

a document signal input, receiving and storing scanned document signals at n intensity levels;

a programmable image processor operating on the stored scanned document signals to reduce n intensity levels to a bimodal signal, including:

an intensity histogram signal generator, responsive to a received image signal to generate a histogram mapping a population of intensity signals to each possible system intensity signal level;

an intensity transition histogram signal generator, responsive to a received image signal to generate a histogram mapping a population of changes in intensity signals between adjacent pixels to each possible change in system intensity signal level;

a thresholding processor, operating on each histogram signal to determine an optimum threshold level for the histogram represented thereby, said thresholding processor recursively operating on successively smaller portions of each histogram, the portions determined by a threshold value determined for a previous operation, if any, until a predetermined number of iterations is reached;

a filter operative on the threshold values to select a number thereof optimally converting scanned document signals received at n intensity levels to a plurality of bimodal signals each retaining information content represented by the difference between two intensity levels

a thresholding circuit, receiving as inputs the stored scanned document signals at n intensity levels, comparing the signals to each threshold, and outputting a number of sets of signals, each set corresponding to one threshold level; and

an output device, requiring bimodal signals.

5,649,026

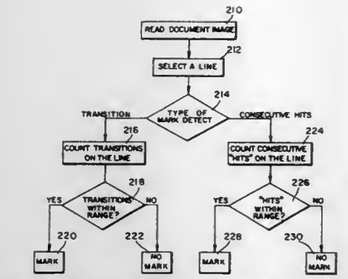
APPARATUS FOR DETECTING MARKS ON DOCUMENTS

William L. Heins, III, Medford, N.J., assignor to Opex Corporation, Moorestown, N.J.

Filed Nov. 21, 1994, Ser. No. 342,897
Int. Cl.[6] G06K 9/34
U.S. Cl. 382—175 26 Claims

1. An apparatus for sorting a document having a mark from a group of documents comprising:

(a) a document transport for conveying the documents along a selected path of movement;



(b) an image scanner positioned along the selected path for reading an image at a selected area on the documents, the image scanner providing density levels at discrete areas within the selected area on the documents;

(c) an image processor responsive to the image scanner for determining a set of density levels corresponding to the discrete areas along a selected line through the selected area;

(d) a transition detector for determining density level transitions between discrete areas along the selected line; and

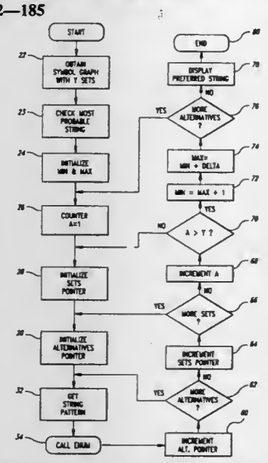
(e) a gate along the path of movement responsive to the image processor for sorting the document to a selected location when a number of the density level transitions exceeds a selected transition threshold.

5,649,027

RECOGNITION OF HANDWRITTEN WORDS

Milind Vasudeo Mahajan, and Shishir Pardikar, both of Redmond, Wash., assignors to Microsoft Corporation, Redmond, Wash.

Continuation of Ser. No. 919,218, Jul. 24, 1992, abandoned.
This application May 31, 1994, Ser. No. 252,056
Int. Cl.[6] G06K 9/18;9/00
U.S. Cl. 382—185 34 Claims



10. A method of recognizing words from handwritten characters using a computer dictionary and a computer recognizer, the recognizer producing a set of one or more alternatives for each character in a handwritten word, with at least one set having plural alternatives, each alternative having a probability of corresponding to the character ranging from a highest probability alternative to a lowest probability alternative, comprising:

looking up in the computer dictionary a sequence of strings, each string having one alternative from each set and being looked up as a unit, the looking up proceeding in a defined order based on the probabilities of the alternatives, the defined order being such that strings with high probability alternatives are looked up before strings with low probability alternatives; and

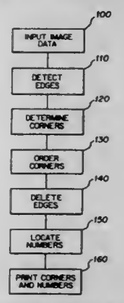
if one of the strings is found in the dictionary, outputting the string found in the dictionary.

5,649,028

CONNECT-THE-DOTS DRAWING PRODUCTION DEVICE

Steven J. Hollinger, 50 Melcher St., Boston, Mass. 02210

Filed Oct. 20, 1994, Ser. No. 326,641
Int. Cl.[6] G06K 9/48
U.S. Cl. 382—199 12 Claims



1. Apparatus for processing an image to automatically produce a connect-the-dots drawing based upon the image, comprising:

memory storing image data representing the image;

edge means for detecting edges in said image data;

point means for determining corner points on said detected edges;

ordering means for ordering said corner points and associating ordered numbers with said corner points according to the ordering of said corner points;

printing means for printing dots at positions on a medium representing relative positions of said corner points and printing said numbers on the medium at locations near respective dots representing associated corner points.

5,649,029

MPEG AUDIO/VIDEO DECODER

David E. Galbi, 1063 Morse Ave., #19-301, Sunnyvale, Calif. 94089

Continuation-in-part of Ser. No. 288,652, Aug. 10, 1994, abandoned, which is a continuation of Ser. No. 890,732, May 28, 1992, abandoned, which is a continuation-in-part of Ser. No. 669,818, Mar. 15, 1991, abandoned. This application Sep. 23, 1994, Ser. No. 311,659
Int. Cl.[6] G06K 9/36
U.S. Cl. 382—233 5 Claims

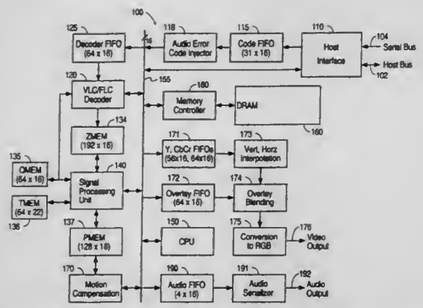
1. An integrated audio/video decoder comprising:

an internal memory;

means for alternately writing a block of audio data to the internal memory then writing a block of video data to the internal memory; and

a signal processing unit which alternately decodes audio data from the internal memory then decodes video data from the internal memory, wherein:

the internal memory comprises a first memory unit, a second memory unit, a third memory unit, and a fourth memory unit, all connected to the signal processing unit;



when decoding audio data, the first memory unit contains components of encoded frequency domain sound samples, the second memory unit contains data used to decode subband audio data, the third memory unit contains components of the time domain audio vectors, and the fourth memory unit contains (a) decoded components of frequency domain vectors of sound samples, (b) an accumulation of time-domain vectors of sound samples, or (c) sound amplitude values; and

when decoding video data, the first memory unit contains data used to dequantize DCT coefficients, the second memory unit contains quantized DCT coefficients, the third memory unit contains error terms, and the fourth memory unit contains intermediate values of the quantized DCT coefficients.

5,649,030

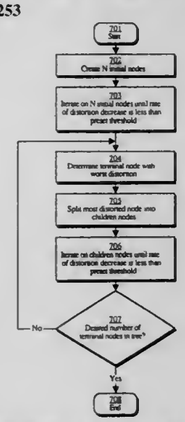
VECTOR QUANTIZATION

James Oliver Normile, Sunnyvale, and Katherine Shu-Wei Wang, San Jose, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 938,959, Sep. 1, 1992, abandoned. This application Mar. 15, 1995, Ser. No. 405,448

Int. Cl.[6] H04N *7/12*

U.S. Cl. 382—253 **41 Claims**



1. An automatic method in an encoding device of vector quantization of an image comprising the following steps:

a. initializing N initial nodes in a vector quantizer tree in a dynamic storage device of said encoding device;

b. sampling a vector from said image;

c. determining a node in said vector quantizer tree which is a best representative sample of the vector sampled from said image;

d. associating the vector with said node in said vector quantizer tree in said dynamic storage device;

e. sampling a next vector from said image;

f. repeating steps c–f until there are no more vectors to be sampled from said image, said next vector becoming said vector;

g. determining which of the nodes in said tree is the most distorted node in said tree;

h. splitting said most distorted node into two children nodes in said dynamic storage device;

i. associating a first portion of the vectors associated with said most distorted node with a first of said children nodes in said dynamic storage device, and a second portion of the vectors associated with said most distorted node with a second of said children nodes in said dynamic storage device;

j. determining a current error of the two children nodes compared to the first and second portions of the vectors;

k. if the change in error between the current error and a previous error is less than an error threshold then proceeding to step l otherwise determining new values of said first and second children, and proceeding to step i, said current error becoming said previous error;

l. repeating steps g through l until the number of terminal nodes in said vector quantizer tree has reached a desired population; and

m. associating indices with each of the terminal nodes in said vector quantizer tree in said dynamic storage device.

5,649,031

IMAGE INFORMATION PROCESSOR FOR PRODUCING HIGH-QUALITY OUTPUT IMAGE

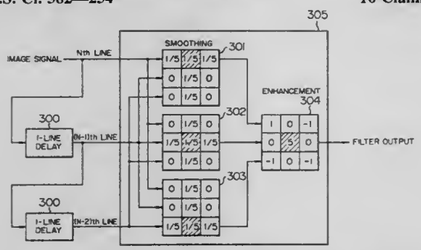
Toshiaki Nakamura; Keisuke Nakashima, both of Hitachi; Kouzou Nakamura, Hitachiota; Shinichi Shinoda, and Tatsuki Inuzuka, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 31, 1993, Ser. No. 41,411

Claims priority, application Japan, Mar. 31, 1992, 4-076546

Int. Cl.[6] G06K *9/40*

U.S. Cl. 382—254 **10 Claims**



1. An image information processor for producing a high-quality image for use in a system wherein image information obtained by scanning original matter is improved in image quality, said image information processor comprising a filter which includes:

enhancement filter coefficients having an enhancement peak for enhancing edge areas in a scanning direction or a traverse direction thereof; and

smoothing filter coefficients having a smoothing peak for smoothing edge areas in a slant direction across said scanning direction, the image information obtained by scanning said original matter being processed by said filter;

wherein filter processing in accordance with both of said enhancement filter coefficients and said smoothing filter coefficients is performed simultaneously.

5,649,032

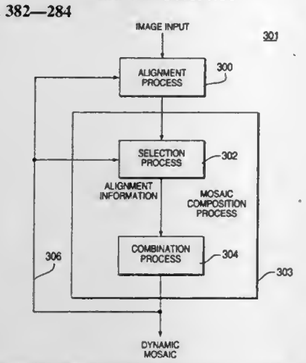
SYSTEM FOR AUTOMATICALLY ALIGNING IMAGES TO FORM A MOSAIC IMAGE

Peter J. Burt, Princeton; Michal Irani, Princeton Junction; Stephen Charles Hsu, East Windsor; Padmanabhan Anandan, Lawrenceville, all of N.J., and Michael W. Hansen, New Hope, Pa., assignors to David Sarnoff Research Center, Inc., Princeton, N.J.

Filed Nov. 14, 1994, Ser. No. 339,491

Int. Cl.[6] G06K *9/36*

U.S. Cl. 382—284 **30 Claims**



1. A system for automatically generating a mosaic from a single sequence of images comprising:

means for automatically aligning image information in each of said images in said single sequence of images with common image information in at least one other image in said single sequence of images;

means, connected to said aligning means, for composing said aligned images into a mosaic.

5,649,033

IMAGE PROCESSING APPARATUS OUTPUTTING DESIRED IMAGE IRRESPECTIVE OF DIRECTIONS OF ORIGINAL AND OUTPUT PAPER

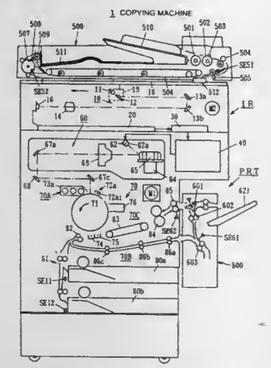
Takeshi Morikawa, Toyokawa, and Munehiro Nakatani, Toyohashi, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sep. 17, 1993, Ser. No. 123,442

Claims priority, application Japan, Sep. 18, 1992, 4-250207; Sep. 18, 1992, 4-250208; Sep. 18, 1992, 4-250209; Mar. 3, 1993, 5-042434

Int. Cl.[6] G06K *9/32*

U.S. Cl. 382—297 **6 Claims**



1. An image processing apparatus, comprising:

an image reader which reads out an original at a predetermined position to output image data of the original;

a reversing path which reverses said original having a first side read out at said predetermined position and feeds said original to said predetermined position in order to read out a second side which is a back side of said first side, wherein said image reader outputs first image data corresponding to said first side and second image data corresponding to said second side;

a mode selector which selects a duplex mode, printing said first and second image data onto both sides of one paper sheet, and a one side mode printing said first image data onto one side of one paper sheet and printing said second image data onto one side of another paper sheet; and

an image rotator which rotates by 180° one of said first and second image data with respect to the other thereof when said one side mode is selected and inhibits rotating of said first and second image data when said duplex mode is selected.

5,649,034

METHOD AND DEVICE FOR SMOOTHING AN ENLARGED IMAGE

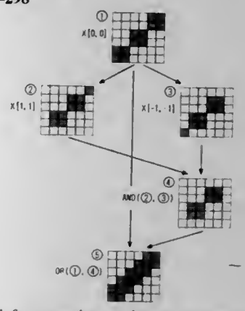
Kenichi Sonobe, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed May 6, 1993, Ser. No. 57,574

Claims priority, application Japan, May 11, 1992, 4-117418

Int. Cl.[6] G06K *9/32*

U.S. Cl. 382—298 **10 Claims**



1. A method for operating an image processor to smooth an enlarged image, comprising the steps of:

inputting an original enlarged image obtained by enlarging an original image m times (m is an integral number which satisfies the condition that m≧2) in main and subsidiary scanning directions;

moving said original enlarged image in a first direction along an inclined line formed by connecting adjoining pixels with one another to thereby generate a first image;

moving said original enlarged image in a second direction opposite to said first direction along said inclined line to thereby generate a second image;

performing an AND operation between said first and second images; and

performing an OR operation between an image resulting from said AND operation and said original enlarged image.

5,649,035

FIBER OPTIC STRAIN GAUGE PATCH

Bernd Dieter Zimmerman, Inman, S.C.; Gershon Yaniv, Scottsdale, Ariz.; Ken-An Lou, Phoenix, Ariz.; Dirk Jeffery Hardtmann, Phoenix, Ariz., and Donald Clark Stevens, Phoenix, Ariz., assignors to Simula Inc., Phoenix, Ariz.

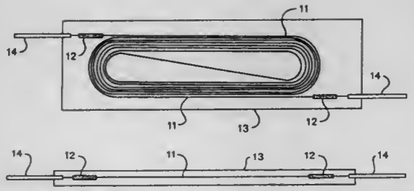
Filed Nov. 3, 1995, Ser. No. 552,692

Int. Cl.[6] G02B *6/00;* **G01B** *11/16;* **G01L** *1/24*

U.S. Cl. 385—13 **49 Claims**

1. A fiber optic strain gauge patch comprising:

(a) a first layer of protective carrier material;



(b) an optical fiber having a first end and a second end, formed in a plurality of loops, and disposed onto the first layer of protective carrier material;

(c) a first reflective marker in the optical fiber in proximity to the first end of the optical fiber;

(d) a second reflective marker in the optical fiber in proximity to the second end of the optical fiber; and

(e) a second layer of protective carrier material disposed onto the optical fiber,

wherein the first and second layers of protective carrier material hold the optical fiber in position with respect to the first and second layers of protective carrier material.

5,649,036

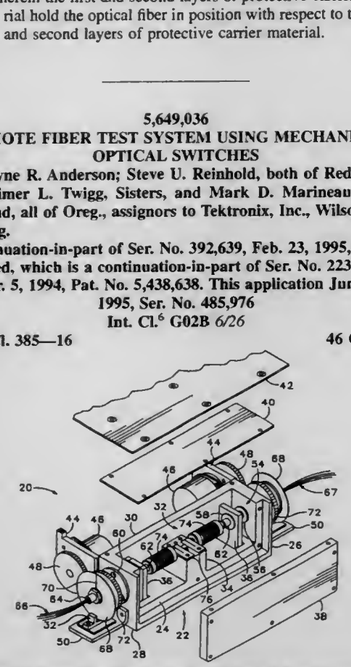
REMOTE FIBER TEST SYSTEM USING MECHANICAL OPTICAL SWITCHES

Duwayne R. Anderson; Steve U. Reinhold, both of Redmond; Lorimer L. Twigg, Sisters, and Mark D. Marineau, Redmond, all of Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

Continuation-in-part of Ser. No. 392,639, Feb. 23, 1995, abandoned, which is a continuation-in-part of Ser. No. 223,298, Apr. 5, 1994, Pat. No. 5,438,638. This application Jun. 7, 1995, Ser. No. 485,976

Int. Cl.[6] G02B *6/26*

U.S. Cl. 385—16 **46 Claims**



1. A remote fiber test system having at least a first measurement test instrument for testing an optical fiber link having optical transmission fibers and an optical test fiber comprising:

at least a first optical switch for remotely connecting the measurement test instrument to one end of the optical fiber link, the optical switch including:

at least a first optical transmission path rotating about a first independent and offset rotational axis for positioning the first optical transmission path on a first closed curve with the first optical transmission path being coupled to the measurement test instrument;

at least a second optical transmission path rotating about a second independent and offset rotational axis for positioning the second optical transmission path on a second closed curve with the second optical transmission path being coupled to the optical fiber link, the first and second optical transmission paths being in opposing relationship forming an optical interface, with the closed curves of the optical transmission paths being laterally offset from each other for establishing intersecting points on the closed curves;

first and second mounting members for holding the respective first and second optical transmission paths with the first mounting member having a rotational axis axially aligned with the first independent and offset rotational axes and the second mounting member having a rotational axis axially aligned with the second independent and offset rotational axis, the first and second optical transmission paths being positioned off of the respective rotational axes of the mounting members;

means for storing angular coordinates representative of the intersecting points of the first and second closed curves of the respective first and second optical transmission paths; and

means for axially aligning the first and second optical transmission paths at one of the intersecting points on the closed curves for coupling the measurement test instrument to the optical fiber link using drive motors coupled to the respective mounting members and responsive to the angular coordinates for selectively rotating the first and second optical transmissions paths relative to each other about their respective independent and offset rotational axes.

5,649,037

OPTICAL WAVEGUIDE COMPONENT AND A LIGHT SIGNAL PROCESSING METHOD USING THE SAME

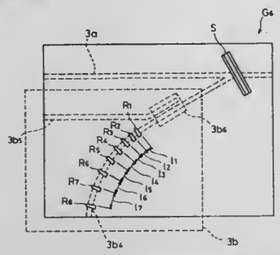
Isao Ohyama; Shiro Nakamura; Takeo Shimizu; Hisaharu Yanagawa, all of Tokyo, and Hideyuki Iwata, Mito, all of Japan, assignors to The Furukawa Electric Co., Ltd., and Nippon Telegraph and Telephone Corporation, both of Tokyo, Japan

Filed Aug. 3, 1995, Ser. No. 509,759

Claims priority, application Japan, Aug. 12, 1994, 6-211810; Sep. 20, 1994, 6-224812

Int. Cl.[6] G02B *6/28*

U.S. Cl. 385—24 **11 Claims**



1. An optical waveguide component comprising:

at least one main waveguide through which signal light and regenerating light propagate, and a branch waveguide branching from said at least one main waveguide, said at least one main waveguide and said branch waveguide being formed on a common substrate;

a filter element, disposed at a branch portion where said branch waveguide branches from said at least one main waveguide, for reflecting said regenerating light to send said regenerating light to said branch waveguide; and

a plurality of reflecting elements, each having two reflecting faces, arranged in an extending direction of said branch waveguide and intersecting said branch waveguide, for reflecting said regenerating light;

one reflecting face of said two reflecting faces being a face for reflecting said regenerating light to said filter element, and the other reflecting face of said two reflecting faces being a face for reflecting said regenerating light in a direction deviating from a light axis direction of said branch waveguide.

5,649,038

MULTIFERRULE FOR CONNECTING OPTICAL FIBERS TOGETHER, A CONNECTOR CONSTITUTING AN APPLICATION THEREOF, AND A METHOD OF MANUFACTURING THE MULTIFERRULE

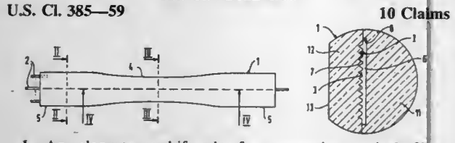
Jean-Yves Boniort, Limours; Claude Brehm, Montrouge; André Tardy, Egly; Roland Hakoun, Domont; Jean-Francois Bourhis, Taverny, and Bertrand Joly, Sevres, all of France, assignors to Alcatel Cable Interface, Vrigne aux Bois, France

Filed Feb. 2, 1996, Ser. No. 595,532

Claims priority, application France, Feb. 3, 1995, 95 01275

Int. Cl.[6] G02B *6/38*

U.S. Cl. 385—59 **10 Claims**



1. An elongate multiferrule for connecting optical fibers together, the multiferrule including a substantially coplanar series of parallel longitudinally-extending internal capillary channels, and in which each channel has end portions that open out in two opposite end faces of the multiferrule, for the purpose of receiving, via its respective ends, two of said fibers that are to be connected together, and having transverse dimensions, at least in its end portions, defined to leave substantial clearance for the fibers, the multiferrule further including a middle zone of necking in which the corresponding middle portions of said channels have reduced transverse dimensions leaving only minimal clearance for the fibers, to enable two fibers received in each channel to be put into contact and connected directly one to the other.

5,649,039

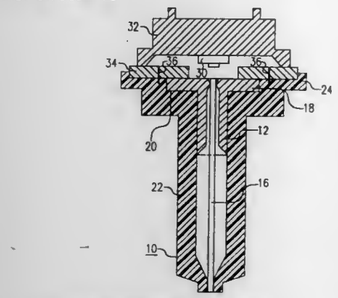
OPTICAL FIBER FERRULE ASSEMBLY

Albert Michael Benzoni, Lower Macungie Township; Yang Choong Chen, Whitehall Township, and Mindaugas Fernand Dautartas, Alburtis, all of Pa., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 788,961, Nov. 7, 1991, abandoned. This application Aug. 6, 1992, Ser. No. 926,555

Int. Cl.[6] G02B *6/36*

U.S. Cl. 385—78 **3 Claims**



1. An optical subassembly comprising

an active optical device mounted on a support substrate;

an optical fiber for communicating with said active optical device; and

a ferrule for encasing the optical fiber and coupling said optical fiber to said active optical device

CHARACTERIZED IN THAT

the ferrule comprises

an inner sleeve including a central bore for receiving the optical fiber, said central bore comprising a necked-down region for securing said optical fiber, said inner sleeve further comprising a flanged end portion for facilitating physical contact between the optical device support substrate and said ferrule, including a washer disposed to contact said flanged end portion of said inner sleeve, with said support substrate being laser welded to said washer; and

an outer housing including a central bore for mating with said inner sleeve such that said inner sleeve is located within the outer housing central bore.

5,649,040

SPLICING AGED OPTICAL FIBERS

Göran Ljungqvist, Stockholm; Magnus Johansson, Lund, and Leif Stensland, Järfälla, all of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

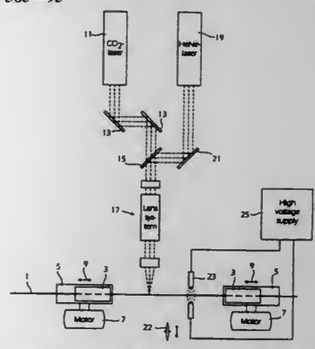
PCT No. PCT/SE95/00339, § 371 Date Jun. 21, 1996, § 102(e) Date Jun. 21, 1996, PCT Pub. No. WO95/27225, PCT Pub. Date Oct. 12, 1995

PCT Filed Mar. 30, 1995, Ser. No. 553,540

Claims priority, application Sweden, Mar. 30, 1994, 9401077

Int. Cl.[6] G02B *6/36*

U.S. Cl. 385—95 **9 Claims**



1. A method for splicing an aged silica optical fiber to another optical fiber, characterized in

that a polymer protective sleeve on the aged fiber is removed over a segment at an end of the fiber for exposing the surface of the silica fiber cladding,

that the surface of at least a portion of the segment of the aged fiber, where the cladding is exposed, is heated to a high temperature in the vicinity of the melt temperature of the material in the silica fiber cladding,

that the fiber is cut off at a place within the segment to produce an end surface,

that this end surface is placed adjacent to an end surface of another optical fiber and

that these end surfaces are optically coupled to each other.

5,649,041

CABLE UTILIZING WETTED SUPERABSORBENT POWDER OR WATER SOLUBLE ADHESIVE

Clinton E. Clyburn, III, and Anne G. Bringuier, both of Taylorsville, N.C., assignors to Siecor Corporation, Hickory, N.C.

Filed Nov. 13, 1995, Ser. No. 556,357

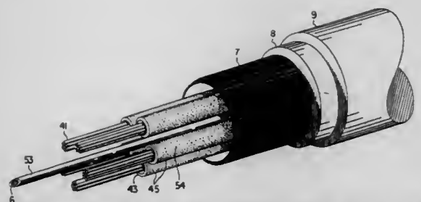
Int. Cl.[6] G02B *6/44*

U.S. Cl. 385—109 **13 Claims**

1. A method for inserting a water-absorptive powder into a cable containing a longitudinally extending telecommunication element, comprising:

providing a longitudinally extending telecommunication element;

providing a longitudinally extending substrate element having a surface;



wetting said surface of the substrate element with a non-hydrophobic liquid;

applying water-absorptive powder to said wetted substrate element surface, thereby forming a layer comprising wetted water-absorptive powder on said substrate element surface; and,

forming an outer sheath around said telecommunication element and said substrate element surface and said layer.

5,649,042

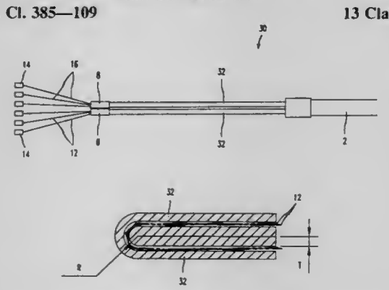
PRE-CONNECTORIZED LOOSE TUBE CABLE

Masami Saito, Carrollton, Ga., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 11, 1995, Ser. No. 570,144

Int. Cl.[6] G02B *6/44*

U.S. Cl. 385—109 **13 Claims**



1. A pre-connectorized loose tube optical fiber cable for reducing fiber breakage, comprising:

a flexible tube;

a plurality of optical fibers passing through said flexible tube; and

an outer sheath surrounding a portion of each of said plurality of optical fibers and having a diameter larger than the diameter of said flexible tube;

wherein said flexible tube extends from an end of said outer sheath and has a wall thickness which is greater than a minimum bend radius for said optical fibers, whereby said optical fibers do not break when said flexible tube is bent to any angle up to one hundred eighty degrees.

5,649,043

OPTICAL FIBER CABLE HAVING TRUNCATED TRIANGULAR PROFILE TUBES

Michael L. Adams, Hickory, N.C.; David A. Keller, St. Christophe, France, and Jörgen Påborn, Sexdrega, Sweden, assignors to Alcatel NA Cable Systems, Inc., Claremont, N.C.

Filed Jul. 25, 1995, Ser. No. 506,542

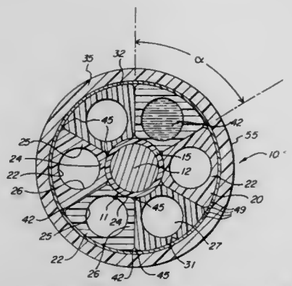
Int. Cl.[6] G02B *6/44*

U.S. Cl. 385—110 **18 Claims**

1. An optical fiber cable, comprising:

a central member;

a plurality of tubes surrounding said central member,



each one of said plurality of tubes having a generally truncated isosceles triangular shaped profile, each one of said plurality of tubes including:

a base of the triangular shaped profile having a curvature corresponding to an inside surface of said sheath;

a top of the triangular shaped profile opposite and generally parallel to said base, said top having a curvature corresponding to an outside diameter of said central member;

a pair of side walls interconnecting said base and said top; and

a central passage within said tube, wherein said base, top and side walls cooperate to form said central passage; and

a sheath encircling said plurality of tubes and said central member.

5,649,044

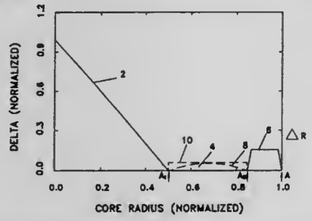
DISPERSION SHIFTED OPTICAL WAVEGUIDE

Venkata A. Bhagavatula, Big Flats, N.Y., assignor to Corning Incorporated, Cornnig, N.Y.

Filed Nov. 21, 1995, Ser. No. 562,231

Int. Cl.[6] G02B *6/18*

U.S. Cl. 385—124 **15 Claims**



1. A dispersion shifted single mode optical waveguide fiber comprising:

a core region having a refractive index profile comprising three segments,

a first segment, having a first point on the waveguide fiber centerline, a last point at radius A_1, a maximum refractive index n_1 and index difference $\Delta_1\%$, and an alpha profile, wherein alpha is one,

a second segment, having a first point immediately after radius A_1, a last point at radius A_2, and a maximum refractive index n_2 and index difference $\Delta_2\%$, and,

a third segment, having a first point immediately after radius A_2, a last point at radius A, and a maximum refractive index n_3 and index difference $\Delta_3\%$;

a clad layer surrounding said core region, said clad layer having a maximum refractive index n_c;

wherein, $n_1>n_3>n_2\geqq n_c$, A_1/A is in the range of about 0.40 to 0.60, A_2/A is in the range of about 0.78 to 0.88; and $\Delta_3\%/\Delta_1\%$ is in the range of about 0.16 to 0.39;

said single mode optical waveguide having a zero dispersion wavelength in the range 1520 nm to 1600 nm and a total dispersion slope $\leqq 0.095$ ps/nm^2-km.

5,649,045

POLYMIDE OPTICAL WAVEGUIDE STRUCTURES

Douglas E. Fjare, and David A. Wargowski, both of Naperville, Ill., assignors to Amoco Corporation, Chicago, Ill.

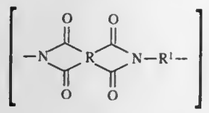
Filed Dec. 13, 1995, Ser. No. 571,448

Int. Cl.[6] G02B *6/00*

U.S. Cl. 385—145 **26 Claims**

1. A planar optical waveguide comprising:

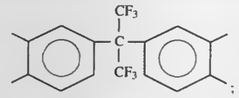
(a) a core for light transmission therethrough comprising a polyimide having repeating units of the formula (I):



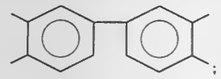
(I)

wherein

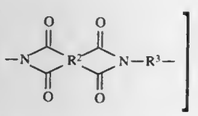
R comprises from about 0 to about 100 mole percent



and from about 100 to about 0 mole percent;



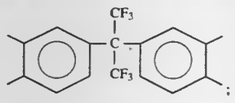
(b) a cladding comprising a polyimide having repeating units of the formula (II):



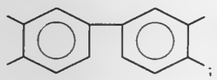
(II)

wherein

R^2 comprises from about 0 to about 100 mole percent



from about 100 to about 0 mole percent



wherein R^1 and R^3 are independently selected from divalent hydrocarbon radicals; wherein the refractive index of the core is greater than the refractive index of the cladding; and wherein the difference between the birefringence of the core and the birefringence of the cladding is less than the difference between the TM refractive index of the core and the TM refractive index of the cladding, with the proviso that the core polyimide (I) and the cladding polyimide (II) are different and that at least one of the core polyimide (I) and the cladding polyimide (II) is a copolymer containing at least about 1 mole percent 3,3',4,4'-tetracarboxybiphenyl dianhydride moiety.

5,649,046

VIDEO PROCESSING SYSTEM WITH RANDOM ACCESS FRAMESTORE FOR VIDEO EDITING

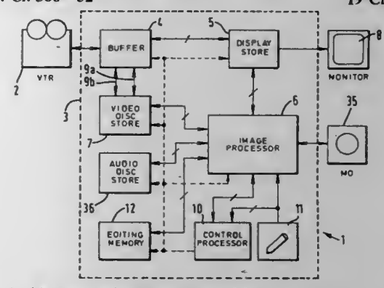
Ian Malcolm Stewart, Ashmore Green, and Timothy John Beckwith, Reading, both of England, assignors to Quantel Limited, Newbury, England

Filed Dec. 3, 1993, Ser. No. 162,445

Claims priority, application United Kingdom, Dec. 7, 1992, 9225575; Aug. 10, 1993, 9316626

Int. Cl.[6] H04N *5/93;7/30*

U.S. Cl. 386—52 **19 Claims**



1. A video processing system comprising:

a bulk store for storing digital video data representing one or more initial video clips each comprising a plurality of individually accessible video frames and set-up data associated with the video frames;

a random access store for storing data defining a plurality of video frames such that each stored frame of data is randomly accessible, said random access store having a data compressor for compressing digital video data from the bulk store and a data decompressor for decompressing the compressed digital video data;

an editing memory for storing set-up data, the editing memory and the random access store being connected with the bulk store for the transfer of data therebetween;

a user operable input device;

a processor responsive to the user operable input device for producing and storing in the editing memory set-up data which identifies video frame locations and defines the manner in which video data for a new video clip is created by the processor from video data representing one or more selected frames in the one or more initial video clips, for selecting from the random access store for each video frame in the new video clip data representing one or more frames and effecting a modification to the selected data to produce for display at video rate video data representing the new video frame, and for causing storage in the bulk store of the set-up data from the editing memory in association with at least the initial video data necessary to produce the new video clip such that the video data representing each selected initial frame of the initial video clips need only be stored once in the bulk store.

5,649,047

PICTURE REPRODUCTION APPARATUS AND PICTURE DECODING APPARATUS

Toshiya Takahashi, Takatsuki, and Tatsushi Bannal, Sakai, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 3, 1994, Ser. No. 254,037

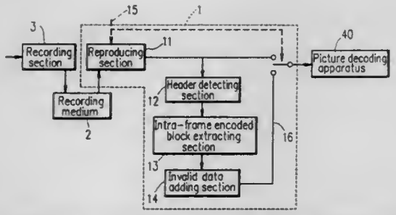
Claims priority, application Japan, Jun. 3, 1993, 5-133132; Dec. 13, 1993, 5-342391

Int. Cl.[6] H04N *5/783;5/92*

U.S. Cl. 386—111 **4 Claims**

1. A picture reproduction apparatus comprising:

reproducing means for reproducing compressed image data from a recording medium, the compressed image data including an



intra-frame encoded data and a header having information for the intra-frame encoded data;

header extracting means for detecting and extracting the header from the reproduced image data;

intra-frame encoded data extracting means for extracting the intra-frame encoded data from the reproduced image data by using the information of the extracted header; and

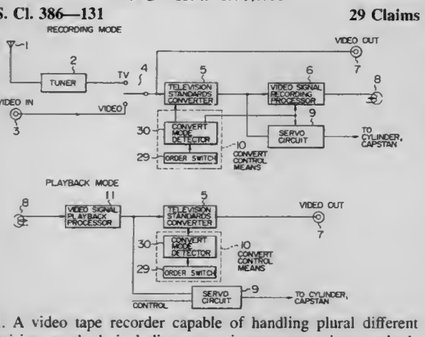
invalid data adding means for adding invalid data to the extracted intra-frame encoded data, thereby producing a trick-play compressed image data, and for outputting the trick-play compressed image data into a picture decoding apparatus during a trick-play mode.

5,649,048

VIDEO TAPERECORDER WITH TELEVISION STANDARDS CONVERTER

Masao Tomita, Neyagawa; Takuya Otsuki, Hirakata, and Sakon Nagasaki, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 451,241, Dec. 15, 1989, abandoned.
This application Jun. 20, 1994, Ser. No. 262,374
Claims priority, application Japan, Dec. 23, 1988, 63-326631; Jan. 30, 1989, 1-020026; Mar. 10, 1989, 1-058366; Mar. 10, 1989, 1-058367; Mar. 17, 1989, 1-067008; Mar. 17, 1989, 1-067009; Apr. 27, 1989, 1-108823
Int. Cl.[6] H04N *5/91;7/01*
U.S. Cl. 386—131 **29 Claims**



1. A video tape recorder capable of handling plural different television standards including respective representative standards using respective luminance and chrominance signals having respective different field frequencies and different numbers of horizontal scanning lines, comprising:

a video signal processing means comprising recording means and reproducing means including tape drive means and a rotary head for recording on and reproducing from a record tape video signals in plural television standards selectively,

a television standards converter employing at least one field memory and a plurality of line memories, that are controlled by a memory control circuit and are provided a write clock signal by a write clock generator based upon a synchronization signal of an input video signal and a read clock signal by a read clock generator, to perform plural conversion operations, between said representative standards, selectively to convert one video signal in one of said television standards into another video signal in another one of said television standards which is different from said one of said television standards, by converting a first field frequency and a first horizontal scanning frequency of said one video signal to a second field frequency and a second horizontal scanning frequency of said another video signal;

convert control means for controlling the conversion operation of the television standards converter to operate in (i) a recording mode to convert an input video signal in a first one of said television standards into a second one of said television standards and to provide the converted input video signal to said video signal processing means for recording on the record tape and (ii) a reproducing mode to convert a reproduced video signal that is reproduced from the record tape by said video signal processing means in a third one of said television standards into a fourth one of said television standards and to output the converted reproduced video signal, said recording means being able to record said corresponding converted video signal when said corresponding converted video signal has either a same or a different field frequency and either a same or a different number of horizontal scanning lines than said first input video signal;

detector means for detecting, in said reproducing mode, a control signal recorded on said record tape, said control signal indicating a particular one which is said third one of said plural television standards in which video signals are recorded on said record tape, said detector means providing an output indicating said particular one of said television standards; and

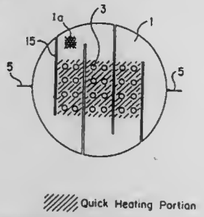
servo control means for controlling said tape drive means to control a playback speed of said record tape and for controlling a rotational speed of said rotary head in accordance with said output of said detector means indicating said particular one of said television standards.

5,649,049

HONEYCOMB HEATER HAVING LARGE HYDRAULIC DIAMETER ORIFICES TO NARROW CURRENT FLOW

Fumio Abe, Handa; Tomoharu Kondo, Toki, and Keiji Noda, Nagoya, all of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Dec. 12, 1994, Ser. No. 354,437
Claims priority, application Japan, Dec. 14, 1993, 5-313755
Int. Cl.[6] F24H *1/10;* **F01N** *3/10*
U.S. Cl. 392—494 **6 Claims**



1. A honeycomb heater, comprising:

a honeycomb structure including a plurality of partition walls comprised of a conductive material, said partition walls forming a plurality of passages extending substantially parallel to a gas flow direction, said honeycomb structure having a first end providing a gas inlet and a second end providing a gas outlet, and a plurality of orifices extending through the honeycomb structure, the orifices having a hydraulic diameter that is larger than a hydraulic diameter of the passages, said orifices being arranged to narrow a current flow path through the honeycomb heater thereby forming a first portion of the honeycomb heater that is adapted to locally heat more quickly than a second portion of the honeycomb heater; and

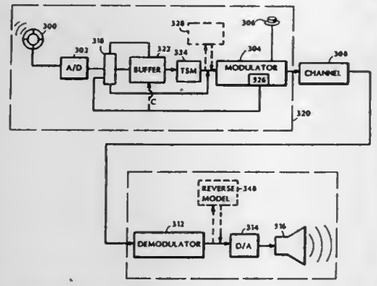
at least two electrodes connected to the honeycomb structure for flowing current through the honeycomb structure.

5,649,050

APPARATUS AND METHOD FOR MAINTAINING DATA RATE INTEGRITY OF A SIGNAL DESPITE MISMATCH OF READINESS BETWEEN SEQUENTIAL TRANSMISSION LINE COMPONENTS

John C. Hardwick, Somerville, and Jae S. Lim, Winchester, both of Mass., assignors to Digital Voice Systems, Inc., Burlington, Mass.

Filed Mar. 15, 1993, Ser. No. 31,534
Int. Cl.[6] G10L *3/02*
U.S. Cl. 395—2.12 **25 Claims**



1. An apparatus for minimizing the effects of mismatch between the data rate states of at least first and second transceiver components in a signal transmission line for transmitting an original time varying data signal, said apparatus comprising:

a. a buffer means for storing signal components, located between said first and second transceivers; and

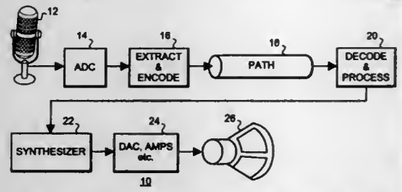
b. a data rate matching means for receiving a signal at a data rate that matches the data rate state of said first transceiver component and transmitting a signal at a data rate that matches the data rate state of said second transceiver component.

5,649,051

CONSTANT DATA RATE SPEECH ENCODER FOR LIMITED BANDWIDTH PATH

Joseph Harvey Rothweiler, 5167 Ilchester Rd., Ellicott City, Md. 21043; John Charles Carmody, 9425 Dunloggin Rd., Ellicott City, Md. 21042, and Srinivas Nandkumar, 10320 Hickory Ridge #834, Columbia, Md. 21044

Filed Jun. 1, 1995, Ser. No. 486,130
Int. Cl.[6] G10L *9/00*
U.S. Cl. 395—2.31 **17 Claims**



1. A method for transmitting information with a fluctuating frequency spectrum over a limited-data-rate signal path, comprising the steps of:

dividing said information into intervals:

providing memorized frequency spectra identifiable by codewords of the same bit size;

for each of said intervals, comparing the frequency spectrum of said information with said memorized frequency spectra, for selecting one of said codewords which represents that one memorized frequency spectrum which most closely represents the frequency spectrum of said information, to thereby form a selected codeword representative of a single interval;

for each of a first plurality of said intervals taken as a set, comparing said frequency spectrum of said information in said set with said memorized frequency spectra, for selecting one of said codewords which represents that one memorized frequency spectrum which most closely represents the frequency spectrum of said information in said first plurality of intervals taken as the set, to thereby form a selected codeword representative of first plural intervals;

placing at least some of said selected codewords in a first-in, first-out buffer;

reading said codewords from said buffer at a predetermined bit rate;

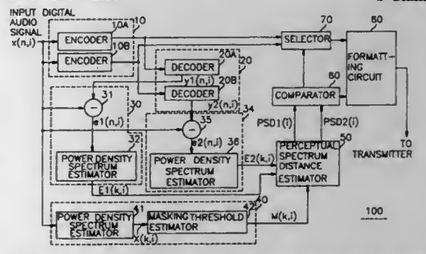
monitoring the ullage of said buffer, and, in said placing step, (a) tending to place in said buffer those of said selected codewords representative of plural intervals when said buffer tends to be full, and (b) tending to place in said buffer those of said selected codewords representative of a single interval when said buffer tends to be empty, whereby said buffer tends not to overflow or empty.

5,649,052

ADAPTIVE DIGITAL AUDIO ENCODING SYSTEM

Jong-Il Kim, Incheon, Rep. of Korea, assignor to Daewoo Electronics Co Ltd., Seoul, Rep. of Korea

Filed Dec. 29, 1994, Ser. No. 366,144
Claims priority, application Rep. of Korea, Jan. 18, 1994, 94-758
Int. Cl.[6] G10L *3/02;9/00*
U.S. Cl. 395—2.35 **1 Claim**



1. A system for adaptively encoding an input digital audio signal having a plurality of frames, which comprises:

M number of encoding means arranged in parallel for encoding the input digital audio signal in a current frame, respectively;

M number of decoding means arranged in parallel for decoding each of the encoded digital audio signals;

first estimation means for estimating a power density spectrum of a difference signal between the input digital audio signal and each of the decoded digital audio signals;

second estimation means for estimating a power density spectrum of the input digital audio signal in the current frame and for determining a masking threshold thereof based on the power density spectrum of the input digital audio signal;

third estimation means for deriving a set of perceptual spectrum distances based on the power density spectrum of each of the difference signals and the masking threshold; and

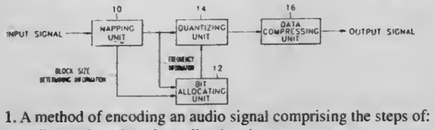
means for selecting an encoded digital audio signal having a smallest perceptual spectrum distance.

5,649,053

METHOD FOR ENCODING AUDIO SIGNALS

Sang-Wook Kim, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Rep. of Korea

Filed Jul. 15, 1994, Ser. No. 275,452
Int. Cl.[6] G10L *3/02;9/00*
U.S. Cl. 395—2.38 4 Claims



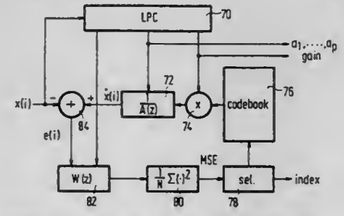
1. A method of encoding an audio signal comprising the steps of:
sampling a time-domain audio signal;
converting said sampled audio signal into a frequency-domain signal divided into a plurality of critical bands;
allocating to each critical band the number of quantization bits allowing the NMR (noise-to-mask ratio) for the corresponding critical band to be minimum;
quantizing a frequency-domain-signal by the allocated number of quantization bits;
wherein in said bit allocating step, quantization bits are allocated according to the weight of critical bands in the order from the critical band having the highest frequency to the one having the lowest frequency and the number of quantization bits allocated to an arbitrary critical band is determined by the weight of said critical band among the critical bands which are equal to or below said critical band.

5,649,054

METHOD AND APPARATUS FOR CODING DIGITAL SOUND BY SUBTRACTING ADAPTIVE DITHER AND INSERTING BURIED CHANNEL BITS AND AN APPARATUS FOR DECODING SUCH ENCODING DIGITAL SOUND

Arnoldus W. J. Oomen; Marc E. Groenewegen; Robbert G. Van Der Waal, and Raymond N. J. Veldhuis, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 21, 1994, Ser. No. 361,083
Claims priority, application European Pat. Off., Dec. 23, 1993, 93203652
Int. Cl.[6] G10L *3/02*
U.S. Cl. 395—2.38 11 Claims



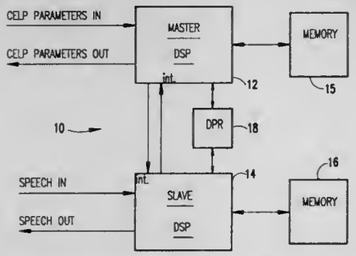
1. A method for encoding a sound representation received as a stream of multibit input samples, comprising:
constituting a finite length sequence of said input samples and in said sequence determining an instantaneous non-uniform audibility threshold-versus-frequency characteristic;
subtracting a shaped noise signal from said input samples to produce processing samples;
dynamically ignoring processing sample bits below a bit level associated to said characteristic, through subtracting a dither signal (v) and subsequent quantizing by a variable number of b bits below said bit level, but retaining at least all processing sample bits above said bit level;
replacing such ignored processing sample bits by said dither signal as buried channel bits featuring an adjustable number of b bits per said processing sample; and
outputting upgraded samples (y) comprising non-ignored processing sample bits and buried channel bits;
wherein said noise signal is produced through shape-filtering by a noise shaping filter on a dither-determined difference between said upgraded samples and said processing samples, which shape-filtering amends a received difference signal towards said instantaneous threshold-versus-frequency characteristic.

5,649,055

VOICE ACTIVITY DETECTOR FOR SPEECH SIGNALS IN VARIABLE BACKGROUND NOISE

Prabhat K. Gupta; Shrirang Jangi, both of Germantown, Md.; Allan B. Lamkin, Arlington, Va.; W. Robert Kepley, III, and Adrian J. Morris, both of Gaithersburg, Md., assignors to Hughes Electronics, Los Angeles, Calif.

Continuation of Ser. No. 38,734, Mar. 26, 1993, Pat. No. 5,459,814. This application Sep. 29, 1995, Ser. No. 536,507
Int. Cl.[6] G10L *9/00*
U.S. Cl. 395—2.42 20 Claims



1. A method of detecting voice activity in received voice signal samples including background noise, comprising the steps of:
deriving voice signal parameters from the voice signal samples, wherein the voice signal parameters include an average signal level, calculated as a short-term average energy of the voice signal samples, and a slope, calculated as an absolute value of a change in the average signal level;
comparing the voice signal parameters with voice signal parameter thresholds and setting a Voice Activity Detection (VAD) flag according to the results of the comparisons;
updating the voice signal parameter thresholds at a first frequency to ensure rapid tracking of the background noise if the VAD flag is not set; and
updating the voice signal parameter thresholds at a second slower frequency for slower tracking of the background noise if the VAD flag is set.

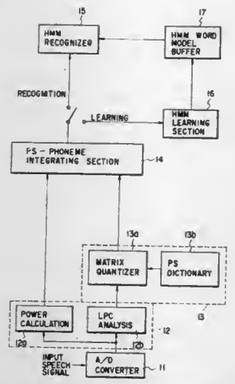
5,649,056

SPEECH RECOGNITION SYSTEM AND METHOD WHICH PERMITS A SPEAKER'S UTTERANCE TO BE RECOGNIZED USING A HIDDEN MARKOV MODEL WITH SUBSEQUENT CALCULATION REDUCTION

Tsuneo Nitta, Yokobama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 854,032, Mar. 19, 1992, abandoned. This application Feb. 14, 1994, Ser. No. 195,845
Claims priority, application Japan, Mar. 22, 1991, 3-058797
Int. Cl.[6] G10L *5/00*
U.S. Cl. 395—2.65 6 Claims

1. A speech recognition system comprising:
sound analyzing means for sound analyzing an input speech signal to obtain a plurality of two-dimensional feature parameters;



a phonetic segment dictionary for storing a plurality of types of phonetic segments including continuant segments, consonant segments, and boundary segments;
means, coupled to the sound analyzing means and the phonetic segment dictionary, for matrix-quantizing the plurality of two-dimensional features parameters obtained by the sound analyzing means using the plurality of types of phonetic segments stored in the phonetic segment dictionary to obtain a phonetic segment similarity vector sequence;
means for generating a phonemic feature vector sequence, wherein the phonemic feature vector sequence is comprised of elements, wherein each element represents similarity of the input to a stored phonetic segment;
verifying means, coupled to the generating means, for verifying the phonemic feature vector sequence obtained by the generating means by comparing the phonemic feature vector sequence with a previously stored continuous hidden markov model (HHM); and
means for recognizing speech based on a result of verifying the phonemic feature vector sequence.

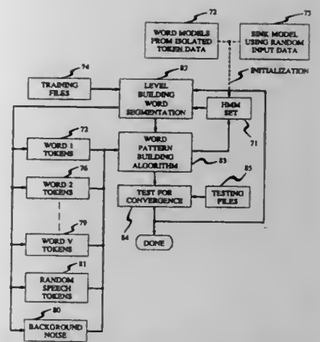
5,649,057

SPEECH RECOGNITION EMPLOYING KEY WORD MODELING AND NON-KEY WORD MODELING

Chin-Hui Lee, New Providence; Lawrence Richard Rabiner, Berkeley Heights, and Jay Gordon Wilpon, Warren, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Division of Ser. No. 132,430, Oct. 6, 1993, Pat. No. 5,509,104, which is a continuation of Ser. No. 977,743, Nov. 16, 1992, abandoned, which is a continuation of Ser. No. 835,006, Feb. 12, 1992, abandoned, which is a continuation of Ser. No. 625,773, Dec. 7, 1990, abandoned, which is a continuation of Ser. No. 353,283, May 17, 1989, abandoned. This application Jan. 16, 1996, Ser. No. 586,413
Int. Cl.[6] G10L *9/00*
U.S. Cl. 395—2.65 7 Claims

1. A method for generating a sink model for use in a speech recognition system, said method comprising the steps of
obtaining a first extraneous sound training token,
obtaining a second extraneous sound training token, said first and second extraneous sound training tokens being other than repetitions of a particular one vocabulary item, and



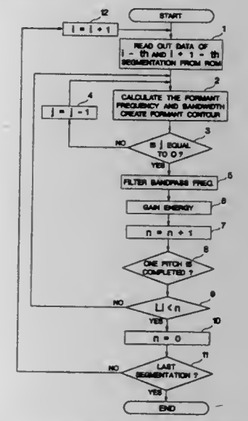
generating said sink model in response to a plurality of extraneous sound training tokens which includes said first and second extraneous sound training tokens.

5,649,058

SPEECH SYNTHESIZING METHOD ACHIEVED BY THE SEGMENTATION OF THE LINEAR FORMANT TRANSITION REGION

Yoon-Keun Lee, Seoul, Rep. of Korea, assignor to Gold Star Co., Ltd., Seoul, Rep. of Korea

Continuation of Ser. No. 952,136, Sep. 28, 1992, abandoned, which is a continuation of Ser. No. 677,245, Mar. 29, 1991, abandoned. This application May 2, 1994, Ser. No. 236,150
Claims priority, application Rep. of Korea, Mar. 31, 1990, 4442/1990
Int. Cl.[6] G10L *7/02;9/02*
U.S. Cl. 395—2.77 16 Claims



1. A method for synthesizing speech through a synthesizer system including a personal computer (PC), a PC interface, a speech synthesizer, a digital-to-analog (D/A) converter, a keyboard, a memory, and a speaker, the method comprising the steps of:
(a) segmenting linear Formant information, corresponding to phoneme information, into linear Formant transition region segments;
(b) storing Formant frequency information and Formant bandwidth information for points of transition between consecutive ones of the linear Formant transition region segments of step (a), and lengths of the linear Formant transition region

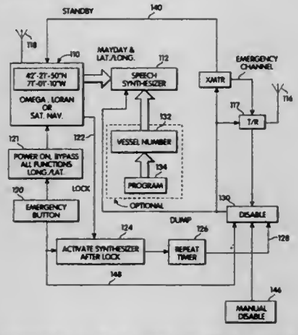
segments established by the segmenting in step (a), into a data base in a memory, for each phoneme information;
(c) inputting information subsequent to the storing in step (b), the input information designating speech sound to be synthesized;
(d) reading out stored Formant frequency information, Formant bandwidth information and length of the linear Formant transition region segments corresponding to the input information of step (c), from the data base stored in the memory;
(e) calculating a digital Formant contour, by linearly interpolating between the read out Formant frequency information and Formant bandwidth information corresponding to first and second consecutive points of transition corresponding to one of the linear Formant transition region segments of step (d), the interpolating being calculated over the read out length of the first linear Formant transition region segment;
(f) filtering the digital Formant contour, through a plurality of bandpass filters classified by a characteristic Formant, to produce a digital speech signal representative of a filtered glottal pulse; and
(g) converting the digital speech signal representative of the filtered glottal pulse into an analog speech signal through the D/A converter and outputting the analog speech signal.

5,649,059

ALPHA-NUMERIC VERBAL SCROLL TECHNIQUE FOR USE IN AN EMERGENCY LOCATION SYSTEM

Robert K. Tendler, Chestnut Hill, Mass., and Donald Korte, Bellair Beach, Fla., assignors to Tendler Cellular, Inc., Boston, Mass.

Continuation of Ser. No. 87,139, Jul. 2, 1993, abandoned, which is a continuation of Ser. No. 703,906, May 22, 1991, abandoned. This application Sep. 13, 1995, Ser. No. 527,588
Int. Cl.[6] G10L *3/00*
U.S. Cl. 395—2.84 **3 Claims**



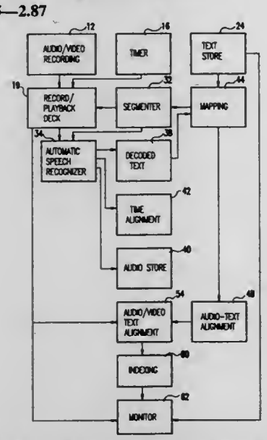
1. In an emergency location system in which a verbal emergency message is broadcast by a transceiver in response to actuation of said system: means for user entry of identification characters corresponding to a unique user identification code; and means for verbalizing and broadcasting said characters with said verbal emergency message to establish the origin and user entry means including a non-volatile memory for storing characters, said user entry means including a system requiring user-entry of alpha-numeric characters in a computer memory for later use in the operation of the system, said system having associated with it a speaker for projecting audio information to a user, means for entering said alpha-numeric characters in said memory comprising:
means including a switch and said speaker for generating an audible series of alpha/numeric characters one at a time at the user's option and pace with each switch activation to be loaded into said memory, said audible series of alpha/numeric characters being provided one at a time at the user designated pace and in an order corresponding to alphabetic/numeric ordering to produce a verbal scroll thereof;
means operable by the user of said system upon hearing the individual characters generated by said system, and operable during the audible sequence for selecting an audible character at the time it is audibilized, the selecting of an audible character constituting a character selection; and,
means for entering that digital alpha/numeria character corresponding to said selected audible character into said computer memory.

5,649,060

AUTOMATIC INDEXING AND ALIGNING OF AUDIO AND TEXT USING SPEECH RECOGNITION

Hamed A. Ellozy, Bedford Hills; Dimitri Kanevsky, Ossining; Michelle Y. Kim, Scarsdale; David Nahamoo; Michael Alan Picheny, both of White Plains, and Wlodek Wlodzimierz Zadrozny, Mohegan Lake, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 138,949, Oct. 18, 1993, abandoned. This application Oct. 23, 1995, Ser. No. 547,113
Int. Cl.[6] G10L *9/00*
U.S. Cl. 395—2.87 **8 Claims**



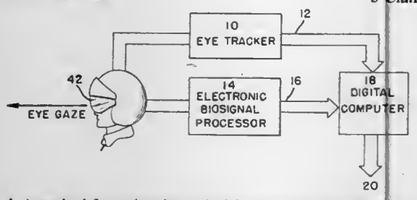
1. An apparatus for indexing an audio recording comprising:
an acoustic recorder for storing an ordered series of acoustic information signal units representing sounds generated from spoken words, said acoustic recorder having a plurality of recording locations, each recording location storing at least one acoustic information signal unit;
a timer connected to said acoustic recorder for time stamping said acoustic information signal units;
a speech recognizer connected to said acoustic recorder for generating an ordered series of recognized words having a high conditional probability of occurrence given the occurrence of the sounds represented by the acoustic information signal units from said acoustic recorder, each recognized word corresponding to at least one acoustic information signal unit and comprising a series of one or more characters, each recognized word having a context of at least one preceding or following recognized word;
a time alignment device connected to said speech recognizer and receiving time stamps of said acoustic information signal units for aligning said acoustic information signal units according to respective time stamps of said acoustic information signal units;
a text storage device for storing a transcript of text of the spoken words corresponding to ordered series of acoustic information signal units stored on said acoustic recorder;
mapping means connected to said text storage device for determining a size of an acoustic information signal unit to be passed to said speech recognizer from said acoustic recorder, said mapping means generating an ordered series of index words, said ordered series of index words comprising a representation of at least some of the spoken words represented by the acoustic information signal units, each index word having a context of at least one preceding or following index word and comprising a series of one or more characters;
a segmenter controlled by said mapping means for controlling playback of acoustic information signal units to said speech recognizer; and
alignment means connected to said acoustic recorder and to said mapping means for comparing the ordered series of recognized words with the ordered series of index words to pair recognized words and index words which are the same word and which have matching contexts, a recognized word being the same as an index word when both words comprise the same series of characters, a context of a target recognized word comprises the number of other recognized words preceding and following the target recognized word in the ordered series of recognized words, a context of a larger index word comprises the number of other index words preceding and following the target index word in the ordered series of index words, and the context of a recognized word matches the context of an index word if the context of the target recognized word is within a selected threshold value of the context of the target index word, said alignment means tagging each paired index word with the recording location of the acoustic information signal unit corresponding to the recognized word paired with the index word.

5,649,061

DEVICE AND METHOD FOR ESTIMATING A MENTAL DECISION

Christopher C. Smyth, Fallston, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 11, 1995, Ser. No. 439,392
Int. Cl.[6] A61B *3/14;5/05*
U.S. Cl. 395—20 **5 Claims**



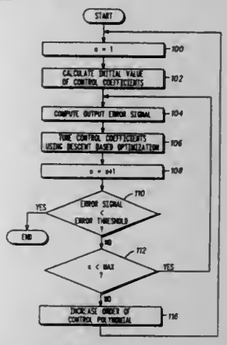
4. A method for estimating a decision making process of selecting a workspace item for task implementation from an ocular gaze of a viewer alone, comprising:
computing a task-selection level for an ocular point of regard from a corresponding eye fixation duration and single event transient evoked potential including the steps of:
measuring cerebral and extracerebral signals from body portions of the viewer to establish record file for EHG, EMG, and EOG;
computing signals from the cerebral and extracerebral signals using a plurality of filters;
isolating the electroencephalogramic signals for a fixation duration of each interest and disinterest designation by the viewer;
estimating the average evoked potentials for the interest and disinterest designations using the electroencephalgramic signals;
refining the average evoked potentials using filtering techniques;
computing a transient evoked potential of each designation by the viewer using filter modeling techniques;
computing a parametric representation of the transient evoked potential;
training an artificial neural network using gaze fixation properties and parametric representation of the transient evoked potential to estimate the decision making process of the viewer; and
b) determining that a selection decision is made for task implementation, if the computed task-selection level exceeds a threshold established by an artificial neural network.

5,649,062

AUTO-TUNING CONTROLLER AND METHOD OF USE THEREFOR

Dan Teng, Wheeling, and Shay-Ping T. Wang, Long Grove, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 30, 1994, Ser. No. 268,395
Int. Cl.[6] G06F *15/18*
U.S. Cl. 395—22 **33 Claims**



1. In a controller, having a control input, for controlling a system to a desired output, the controlled system having a time dependent system output, a controller operation based on a polynomial function having an order, a plurality of control coefficients and a corresponding plurality of polynomial terms, a method for tuning the control coefficients, the method comprising:
a) calculating an initial value for each of the plurality of control coefficients by fitting the polynomial function to a plurality of control transfer characteristic data;
b) computing, over time, an output error signal based on the difference between the system output and the desired output; and
c) tuning the values of the plurality of control coefficients using a descent-based optimization method to control the output error signal;
d) comparing the output error signal to an error threshold; and
e) increasing the order of the polynomial expression if the output error signal exceeds the error threshold by adding at least one new polynomial term and a corresponding at least one new control coefficient.

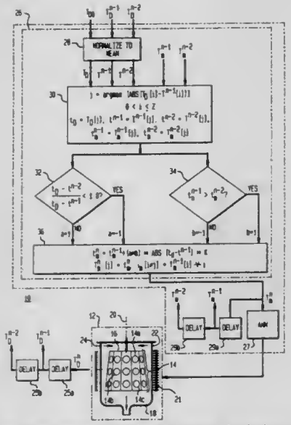
5,649,063

FEEDBACK PROCESS CONTROL USING A NEURAL NETWORK PARAMETER ESTIMATOR

Chinmoy Bhusan Bose, Green Brook, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 134,703, Oct. 12, 1993, abandoned. This application Dec. 16, 1994, Ser. No. 358,049
Int. Cl.[6] G06F *15/18*
U.S. Cl. 395—22 **6 Claims**

1. A method for achieving feedback control of a physical process having a plurality of inputs and outputs for causing each process output to have an actual value that more closely approximates a desired value therefor, the method comprising the steps of:
(a) generating the desired value for each process output;
(b) measuring the actual value for each process output;
(c) comparing each actual process output value to the corresponding desired value for that process output to determine



which process output exhibits a greatest deviation of its actual value from its corresponding desired value;

(d) generating an estimated process output value for that process output having the greatest deviation of its actual value from its corresponding desired value, the estimated process output value being generated in accordance with: (i) a difference between the actual value of each process output and the corresponding desired value for that process output, (ii) a trend in the actual value of each process output, and (iii) a trend in the estimated process output value;

(e) generating a process control vector signal in accordance with the estimated process output value by applying the estimated process output value to a neural network that represents an inverse model of the physical process; and

(f) controlling the physical process in accordance with the process control vector signal to cause the process output to more closely approximate their corresponding desired values.

5,649,064

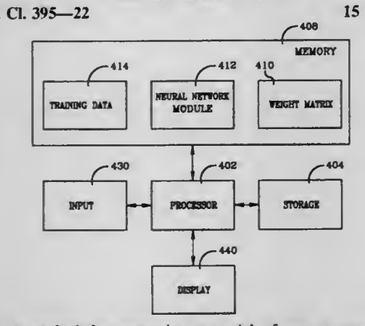
SYSTEM AND METHOD FOR MODELING THE FLOW PERFORMANCE FEATURES OF AN OBJECT

Charles Jorgensen, Los Altos, and James Ross, Oakland, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 19, 1995, Ser. No. 446,071

Int. Cl.[6] G06F *15/18*

U.S. Cl. 395—22 **15 Claims**



1. A method for generating a model of one or more flow performance features of an object in a flowing medium having a plurality of geometric configurations, the method comprising the steps of:

(a) forming a neural network comprising:

a plurality of input nodes associated with the geometric configurations of an object,

a plurality of hidden nodes,

one or more output nodes associated with the flow performance features of the object, and

a weight matrix for defining connections between the input nodes and the hidden nodes, connections between the hidden nodes and the output nodes, and weight values associated with each connection,

(b) forming a test database, coupled to the neural network, comprising a plurality of test input signals and corresponding test output signals, the test input signals associated with the geometric configurations of the object and the test output signals associated with the flow performance features of the object, the test input signals associated with the input nodes and the test output signals associated with the output nodes, said weight values being modified as a function of said test input signals;

(c) solving for a search direction to obtain one of said flow performance features comprising the steps of:

(i) initializing a parameter vector representative of a weight value of said one of said flow performance features;

(ii) selecting a random predictor value for said one of said flow performance features and having an error cost function with a gradient; and

(iii) iterating the parameter vector and random predictor value to determine said search direction, said determination being satisfied when qualifying one of the conditions selected from the group comprising: (1) the gradient of the error cost function is near zero, (2) the error cost function is below a predetermined value, and (3) a predetermined number of iterating of the parameter vector and random predictor value has been accomplished.

5,649,065

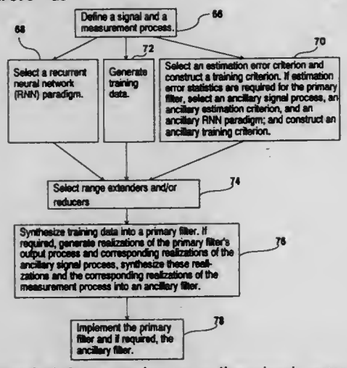
OPTIMAL FILTERING BY NEURAL NETWORKS WITH RANGE EXTENDERS AND/OR REDUCERS

James Ting-Ho Lo, Ellicott City, and Lei Yu, Adelphi, both of Md., assignors to Maryland Technology Corporation, Ellicott City, Md.

Continuation-in-part of Ser. No. 68,176, May 28, 1993, Pat. No. 5,408,424. This application Aug. 9, 1993, Ser. No. 104,488

Int. Cl.[6] G06F *15/18*

U.S. Cl. 395—23 **94 Claims**



1. A method for processing an m-dimensional vector-valued measurement process to estimate an n-dimensional vector-valued signal process, said method comprising the steps of:

(1) selecting a recurrent neural network paradigm;

(2) selecting an estimation error criterion;

(3) generating training data comprising realizations of said signal process and corresponding realizations of said measurement process;

(4) constructing a training criterion;

(5) selecting at least one range transformer;

(6) synthesizing said training data into a primary filter, which comprises a recurrent neural network of said recurrent neural network paradigm and said at least one range transformer;

(7) implementing said primary filter; and

(8) receiving one measurement vector of said measurement process at a time at at least one input terminal of the implementation of said primary filter and producing an estimate of one signal vector of said signal process at a time at at least one output terminal of the implementation of said primary filter.

5,649,066

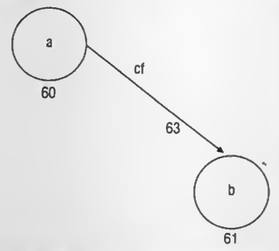
METHOD AND APPARATUS FOR REFINEMENT OF LEARNING IN EXPERT NETWORKS

Robert Christopher Lacher, Tallahassee; Susan Irene Hruska, Quincy, and David Carl Kunicky, Tallahassee, all of Fla., assignors to The Florida State University for and on behalf of the Florida Board of Regents, Tallahassee, Fla.

Continuation of Ser. No. 189,270, Jan. 31, 1994, abandoned, which is a continuation of Ser. No. 816,560, Jan. 3, 1992, abandoned. This application Mar. 29, 1995, Ser. No. 412,616

Int. Cl.[6] G06F *15/18*

U.S. Cl. 395—23 **6 Claims**



1. A machine having a memory which contains data representing an acyclic event-driven neural network,

said acyclic event-driven neural network having a plurality of nodes, each of said nodes being encoded in the form of an artificial neural object, said plurality of nodes including one or more input nodes and one or more output nodes, wherein each one of said plurality of nodes has encoded therein a respective weight vector value W and an internal state value y,

said a cyclic neural network being operated in accordance with a method comprising:

(a) processing an example input signal E by said input nodes so that an output signal, z, is generated at said output nodes;

(b) assigning an error value to each one of said plurality of nodes in said neural network according to an error equation;

(c) encoding a respective new weight vector value, W^{new}, in each one of said plurality of nodes in said neural network based on said error value, wherein the new weight vector value for a specified one of said plurality of nodes is defined by the equation:

$$W^{new}=W+\Delta W,$$

where W is the weight vector value of said specified node prior to application of said example input signal E and ΔW is a vector pointing in the negative direction of the gradient of the error equation,

the negative of the gradient of the error equation, $-\nabla E$, is calculated according to the gradient equation:

$$-\nabla E = 2e\frac{\partial F}{\partial w_i} f(y),$$

i represents an integer value greater than zero and less than or equal to the number of nodes connected to provide input to said specified node in said neural network,

e=I−z, wherein I represents an ideal output signal associated with said example input signal E for said specified node,

$\partial F/\partial w_i$ is calculated according to the equation:

$$\frac{\partial F}{\partial w_i}=\begin{cases}\dfrac{x_i}{1+x_i w_i}\ \dfrac{1+y^+}{1-y^-}, & \text{if } y^+ \leqq |y^-| \text{ and } i \in N,\\ \dfrac{x_i}{1-x_i w_i}\ \dfrac{1+y^+}{1-y^-}, & \text{if } y^+ \leqq |y^-| \text{ and } i \in P,\\ \dfrac{x_i}{1+x_i w_i}\ \dfrac{1+y^-}{1-y^+}, & \text{if } y^+ \leqq |y^-| \text{ and } i \in N,\\ \dfrac{x_i}{1-x_i w_i}\ \dfrac{1+y^-}{1-y^+}, & \text{if } y^+ \leqq |y^-| \text{ and } i \in P,\end{cases}$$

x_i is defined as an input value for the ith input into said specified node,

w_i is defined as a weighted input value for the ith input into said specified node,

y^+ is generated according to the equation:

$$y^+ = 1 - \prod_{i \in P}(1 - x_i w_i),$$

y^- is generated according to the equation:

$$y^- = -1 + \prod_{i \in N}(1 - x_i w_i),$$

where P is the set of inputs to said specified node with a positive weight value and N is the set of inputs to said specified node with a negative weight value,

f'(y) is calculated according to the equation:

$$f'(y)=\begin{cases}0, & \text{if } y<0.2\\ 1, & \text{otherwise}\end{cases}; \text{ and}$$

(d) replacing the encoded representation of the weight vector value W of each one of said plurality of nodes in said neural network with a value encoding each node's new weight vector value W^{new}.

5,649,067

NEURAL DEVICE AND METHOD OF CONSTRUCTING THE DEVICE

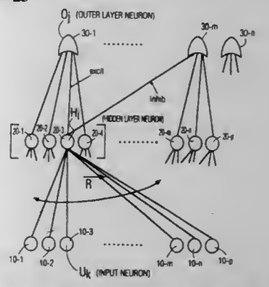
Philippe Gentric, Issy Les Moulineaux, and Joël Minot, Charenton, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 449,465, May 24, 1995, which is a continuation of Ser. No. 165,282, Dec. 10, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 464,923

Claims priority, application France, Dec. 16, 1992, 92 15190

Int. Cl.[6] G06E *1/00;3/00;* **G06F** *15/18*

U.S. Cl. 395—23 **13 Claims**



1. A neural device produced according to a method of constructing a neural device for classification of objects, said neural device being trained using a set of learning samples of objects having known classes, each object to be classified being defined by an

input vector which is represented by a point in hyperspace, said neural device comprising:

a layer of input neurons, each of which corresponds to one of the dimensions of the hyperspace;

a layer of hidden neurons having inputs, the inputs being connected exclusively to the input neurons, and activation of each hidden neuron being based on coordinates of a respective reference point of the hyperspace; and

a layer of output neurons, each of which corresponds to a respective class of the objects;

said method comprising:

a) starting from a neural device without a hidden neuron;

b) choosing an arbitrary sample from said set of learning samples;

c) subsequently placing a first hidden neuron in the device, while defining the respective reference point associated with said first neuron as the point in hyperspace representing the sample;

d) establishing an excitatory connection of positive weight between said first neuron and the output neuron corresponding to a class of the sample;

e) taking a new sample from said set of learning samples;

f) applying the new sample to the device for classification;

g) if, as a result of step f), a response of the device to the new sample does not give a correct classification, introducing into the device a new hidden neuron, corresponding to the new sample, by:

I) defining the respective reference point associated with the new hidden neuron as being the point representing the new sample and;

II) establishing an excitatory connection of positive weight between the new hidden neuron and the output neuron corresponding to the class of the new sample;

h) if the response does give the correct classification, skipping step g);

i) treating all remaining samples according to steps f), g) and h) until no samples remain in said set of learning samples; and

j) defining groups of neurons, with a neuron that is representative of each group, as the new hidden neurons are introduced, according to the following process:

I) determining, for each respective new hidden neurons of the new hidden neurons, whether the respective new hidden neuron forms part of a previously defined group;

II) in response to a positive result from the determining step, incorporating the respective hidden neuron into the group of which the respective new hidden neuron forms a part; and

III) in response to a negative result from the determining step, forming a new group for which the respective new hidden neurons constitutes a representative neuron, the first neuron thus being defined as being representative of a first group.

5,649,068

PATTERN RECOGNITION SYSTEM USING SUPPORT VECTORS

Bernard Boser; Isabelle Guyon, both of Berkely, Calif., and Vladimir Vapnik, Middletown, N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

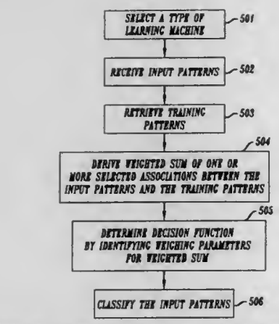
Continuation of Ser. No. 97,785, Jul. 27, 1993, abandoned. This application May 16, 1996, Ser. No. 648,641

Int. Cl.[6] G06E *1/00;3/00;* **G06F** *15/16*

U.S. Cl. 395—23 **10 Claims**

1. A method of classifying at a computer system input patterns received from an input device, the method comprising the steps of:

a) determining a decision surface for classifying said input patterns, said determination of said decision surface being performed by i) deriving at said computer system a weighted sum of one or more selected associations of one of said input patterns with a training pattern from a predetermined set of training patterns contained in a storage device of said computer system, said one or more associations being selected such that said decision surface belongs to a subset with a smallest possible Vapnik-Chervonenkis dimension and ii) identifying at said computer system a number of adjustable



parameters for said weighted sum, said adjustable parameters being identified such that said computer system can complete correct classification of said training patterns by performing a number of operations that is proportional to the number of adjustable parameters and the number of input patterns while leaving an optimal margin between said training patterns and said decision surface; and

b) classifying each input pattern into one of two classes depending on which side of said determined decision surface said each input pattern falls.

5,649,069

NEURAL NET HAVING A NEURAL PROCESSOR WITH DISTRIBUTED SYNAPTIC CELLS

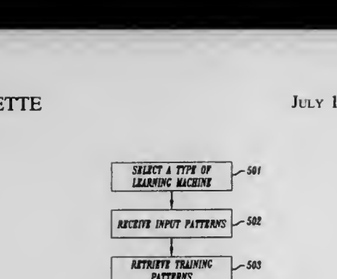
Jean Gobert, Mabons-Alfort, France, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 405,567, Mar. 16, 1995, which is a continuation of Ser. No. 23,548, Feb. 26, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 487,616

Claims priority, application France, Feb. 26, 1992, 92 02250

Int. Cl.[6] G06F *15/18*

U.S. Cl. 395—27 **1 Claim**



1. A neural net comprising:

a neural processor functioning as neurons interconnected by respective synapses, each synapse forming a part of a particular neuron to evaluate an effect of a respective source neuron on the particular neuron, the particular neuron communicating with a respective destination neuron, said neural processor comprising:

(a) at least one concatenation of respective uniform programmable synaptic cells, the concatenation having an entry and an exit, the concatenation forming a data path between the entry and the exit, the respective uniform programmable synaptic cells each acting as a single one of the respective synapses, the uniform programmable synaptic cells in the concatenation being programmable to form at least one group of cells, said one group of cells forming a single neuron, a number of cells in the at least one group also being programmable, each synapse being operative for

selectively modifying data in the data path, each uniform programmable synaptic cell having:

(1) a respective data input and a respective data output, the data input of each next one of the cells being connected to the data output of a preceding one of the cells, whereby data is transferred between cells along the concatenation;

(2) a respective calculation unit for performing a respective calculation on data received by the data input and producing selectively modified data at the data output; and

(3) a respective memory, coupled to the respective calculation unit, for storing data received by the data input or produced as modified data by the calculation unit;

(b) bus means for communicating addressed programming instructions to the cells, the cells being connected in parallel to the bus means; and

(c) control means for supplying the addressed programming instructions to control the cells via the bus means in order to select at least one particular one of the cells for at least one of the following operations:

(1) loading a data item received at the respective data entry to the respective memory;

(2) controlling the respective calculation unit to create a respective product by multiplying the data item by a respective synaptic coefficient and storing the product in the respective memory; and

(3) accumulating products which are produced in a plurality of selected cells by transferring a preceding partial sum of products of preceding selected cells to a next one of the selected cells, adding the product stored in the respective memory of the next one of the selected cells to the preceding partial sum to create a next partial sum and providing the next partial sum to the data output of the next selected cell, any non-selected cell being rendered transparent.

5,649,070

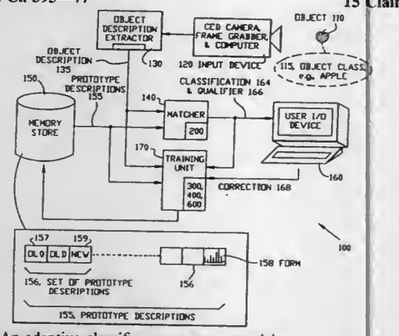
LEARNING SYSTEM WITH PROTOTYPE REPLACEMENT

Jonathan Hudson Connell, Cortlandt-Manor, N.Y.; Rakesh Mohan, Stamford, Conn., and Rudolf Maarten Bolle, Bedford Hills, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 17, 1995, Ser. No. 394,525

Int. Cl.[6] G06F *17/00*

U.S. Cl. 395—77 **15 Claims**



1. An adaptive classifier apparatus comprising:

means for scanning a test object and outputting a parameter signal representing a scanned physical parameter of the test object;

means for receiving said parameter signal and for generating a test feature data based on said parameter signal;

means for retrievably storing a first plurality of a prototype feature data and a second plurality of a prototype feature data;

classifying means for comparing said test feature data to each of said first plurality and to each of said second plurality of prototype feature data and for generating a classifier data indicating which of said first plurality and said second plurality has a prototype feature data comparing closest to said test feature data;

means for generating an event signal associated with said generating a classifier data;

means for generating a usefulness data corresponding to each of said first plurality and said second plurality of prototype feature data, said usefulness data representing a frequency and recency relative to said event signal that its associated prototype feature datum is the prototype feature datum comparing closest with the test feature;

means for modifying said stored first plurality of prototype feature data and said stored second plurality of prototype feature data based on said usefulness data.

5,649,071

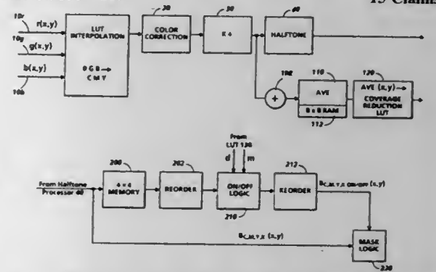
IMAGE PROCESSING METHOD TO REDUCE MARKING MATERIAL COVERAGE IN SEQUENTIAL COLOR PRINTING PROCESSES

R. Victor Klassen, Webster, and Steven J. Harrington, Holley, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 26, 1994, Ser. No. 313,520

Int. Cl.[6] G06K *15/00;* **H04N** *1/46*

U.S. Cl. 395—109 **15 Claims**



1. A method for using continuous tone data for processing a color image to reduce an amount of marking material used for reproduction at a printer which serially prints colorant separations, the color image including a plurality of separations each defined by contone pixels, including the steps of:

receiving the color image to be reproduced;

preparing the color image for printing, by generating a set of continuous tone colorant separations, suitable for driving a printer to reproduce the color image;

from the plurality of contone colorant separations, serially preparing a halftoned set of colorant separations;

for the set of contone colorant separations, summing the pixel values at corresponding locations in each colorant separation therein, to determine marking material coverage;

comparing desired marking material coverage with measured marking material coverage to derive a turn-OFF ratio, where the turn-OFF ratio represents a fraction of pixels to be turned OFF in the first set of colorant separations;

setting a fraction of pixels to OFF in the halftoned set of colorant separations, in accordance with the turn-OFF ratio; and

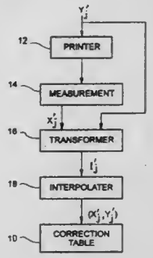
outputting the altered halftoned set of colorant separations to a printer.

5,649,072

ITERATIVE TECHNIQUE FOR REFINING COLOR CORRECTION LOOK-UP TABLES

Thyagarajan Balasubramanian, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 7, 1995, Ser. No. 472,080
Int. Cl.[6] G06K *15/00;* **G03F** *3/08;* **H04N** *1/46*
U.S. Cl. 395—109 **8 Claims**



6. A method of color printing comprising:
(a) generating a color transformation between a first set of first color space values and a first set of second color space values;
(b) interpolating the corresponding first and second color space values to provide the color transformation between an enlarged set of first color space values and an enlarged set of second color space values;
(c) creating a color correction table from the enlarged set of first color space values and the enlarged set of second color space values, which table provides a transformation between the first and second color spaces;
(d) addressing the interpolated color correction table with the first set of second color space values to retrieve a second set of first color space values;
(e) comparing the first set of first color space values and the second set of first color space values to generate a set of error values indicative of a deviation between the first and second sets of first color space values;
(f) interpolating the set of error values to generate an enlarged set of error values;
(g) modifying the color correction table with the enlarged set of error values;
(h) addressing the color correction table with a series of second color space values that represent a picture to retrieve a series of first color space values; and,
(i) supplying the series of first color space values to a printer to cause the printer to print the picture; and
(j) iteratively repeating steps (d)–(g) until the error values are minimized.

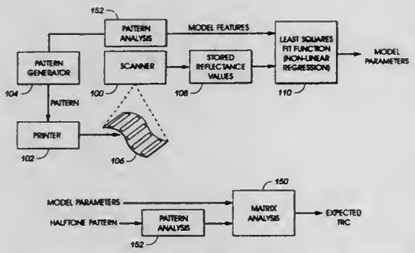
5,649,073

AUTOMATIC CALIBRATION OF HALFTONES

Keith T. Knox, Rochester, N.Y.; Charles M. Hains, Altadena, Calif., and Gaurav Sharma, Raleigh, N.C., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 28, 1995, Ser. No. 579,962
Int. Cl.[6] H04N *1/405*
U.S. Cl. 395—109 **11 Claims**

1. A calibration system, for calibrating a printer response to gray images directed thereto, including
a test pattern, stored in a memory, providing a plurality of sample samples of combinations of printed spots, printable on a media by said printer;
a gray measuring device, to derive a gray measurement of said samples of printed spots;
a calibration processor:



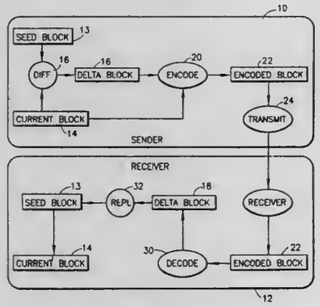
correlating said gray measurement with a combination of spots having a particular spatial relationship, and deriving parameters describing said printer response to said combination, and
generating from said parameters at least one non-linear gray image correction function, said gray image correction function including a set of correction values selected in accordance with said described printer response; and
a calibration memory, storing said generated gray image correction; and
means to apply said gray image correction stored in said calibration memory to calibrate a printer using a halftone pattern.

5,649,074

RASTER IMAGE DATA COMPRESSION METHOD AND SYSTEM

Patrick E. Welborn, Lake Oswego, Oreg., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 31, 1995, Ser. No. 382,470
Int. Cl.[6] G06K *15/00*
U.S. Cl. 395—114 **9 Claims**



1. A method for data handling comprising the steps of:
storing a current block of data segments;
determining whether each data segment in said current block of data segments is same as or different from a seed value; and
producing a compressed version of said current block of data segments, said compressed version including command segments and contiguous data segments from said current block of data segments, each command segment having an encoding identifier, an offset count and a data segment replacement count, said offset count and data segment replacement count each having a maximum value that can be represented thereby,
said producing step responding to a determination that a data segment from said current block is different from said seed value and is followed by a series of contiguous data segments in said current block that are different from said seed value, a count of said series of contiguous data segments exceeding said maximum value of said data segment replacement count, by causing (i) a first command segment to manifest a data segment replacement count of said maximum value and an offset count of zero, and (ii) said first command segment to be followed by at least one contiguous data segment from said series,
said producing step causing said first command segment to manifest a first encoding identifier, followed by only one said contiguous data segment from said series, if said series of contiguous data segments in said current block are identical; and
said producing step further causing, if a remaining number of said contiguous data segments from said series exceeds said maximum value of said data segment replacement count, said one said contiguous data segment from said series to be followed by a second command segment manifesting said first encoding identifier, an offset count of zero, a data segment replacement count exhibiting said maximum value and by at least one said contiguous data segment from said series.

5,649,075

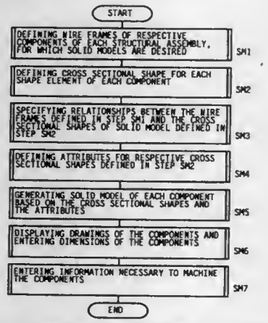
Patent Not Issued For This Number

5,649,076

METHOD OF GENERATING OR MODIFYING SOLID MODEL OF AN OBJECT ACCORDING TO CROSS-SECTIONAL SHAPES AND A PREDETERMINED RELATIONSHIP AND APPARATUS SUITABLE FOR PRACTICING THE METHOD

Koichi Nishizaka, Toyota; Akihiko Higashi, Hiroshima, and Jun Mukai, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Aug. 5, 1994, Ser. No. 286,570
Claims priority, application Japan, Aug. 6, 1993, 5-196340; Dec. 24, 1993, 5-328984
Int. Cl.[6] G06T *17/40*
U.S. Cl. 395—119 **8 Claims**



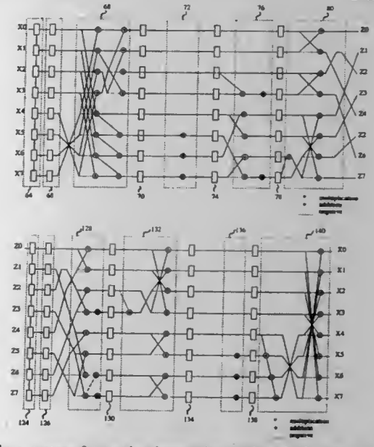
1. A method of modifying solid models of a plurality of designated components, which have already been generated by a solid generating apparatus wherein a solid modeler automatically generates solid models representative of a plurality of components according to cross sectional shapes of the components and attributes associated with said cross sectional shapes, said cross sectional shapes and attributes defining said solid models of said components, said method comprising the steps of:
preparing a plurality of shape data files storing respective shape data sets representative of shapes of said plurality of designated components;
storing a predetermined relationship between said shape data sets and said cross sectional shapes or said attributes, or between said shape data sets and said cross sectional shapes and said attributes;
manually changing the shape data sets representative of all of said designated components successively, so that said solid modeler automatically modifies the already generated solid models of said designated components;
automatically changing said cross sectional shapes or said attributes of said designated components, or said cross sectional shapes and said attributes of all of said designated components, on the basis of the changed shape data sets of said designated components, and according to said predetermined relationship;
automatically activating said solid modeler to modify the already generated solid models of all of said designated components successively at one time, on the basis of said cross sectional shapes and said attributes at least one of which has been changed.

5,649,077

MODULARIZED ARCHITECTURE FOR RENDERING SCALED DISCRETE COSINE TRANSFORM COEFFICIENTS AND INVERSE THEREOF FOR RAPID IMPLEMENTATION

Bill Ngoc On, and Mandayam A. Narasimhan, both of Singapore, Singapore, assignors to Institute of Microelectronics, National University of Singapore, Chai Chee Industrial Park, Singapore

Continuation of Ser. No. 220,116, Mar. 30, 1994, abandoned. This application Apr. 15, 1996, Ser. No. 632,713
Int. Cl.[6] G06T *1/20*
U.S. Cl. 395—119 **2 Claims**



1. In a system for storing image data and retrieving the same, a modularized architecture for rendering scaled discrete cosine transform coefficients of a group of N× N signal samples, said architecture adapted for rapid implementation comprising:
a first dimension processing unit for receiving digitized image data and generating a N series of first dimensional transforms along a first orthogonal direction, said first dimension processing unit further comprising a first pipelined stage, a second pipelined stage, a third pipelined stage, a fourth pipelined stage, and a plurality of registers coupled before said first stage and between first and second, second and third, and third and fourth stages, said first stage containing seven adders and six subtractors but no multipliers, said second stage containing three multipliers but no adders or subtractors, said third stage containing three adders, two subtractors and two multipliers, and said fourth stage containing five adders and four subtractors but no multipliers;
at least one memory unit for receiving said first dimensional transforms from said first dimension processing; and
a second dimensional processing unit coupled at its input to the output of said memory unit for receiving said first dimen-

sional transforms from said first dimensional processing unit for generating a second another N series of second dimensional transforms along the other orthogonal direction, said second dimensional processing unit further comprising a first pipelined stage, a second pipelined stage, a third pipelined stage, a fourth pipelined stage, and a plurality of registers coupled before said first stage, and a between first and second, second and third, and third and fourth stages, said first stage containing seven adders and six subtractors but no multipliers, said second stage containing three multipliers but no adders or subtractors, said third stage containing three adders, two subtractors and two multipliers, and said fourth stage containing five adders and four subtractors but no multipliers:

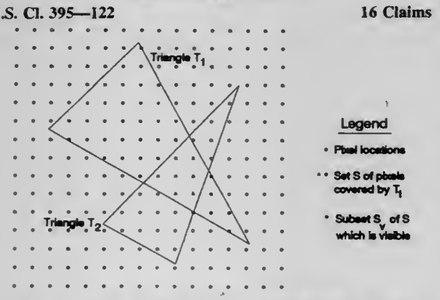
whereby said system for image storage and retrieval may compress image data in real time and yet run with a processor having 1/N clock speed.

5,649,078

EFFICIENT TWO-PASS RASTERIZATION SCHEME UTILIZING VISIBILITY INFORMATION

John Alan Gerth, Danbury, Conn.; Shawn Anthony Hall, Pleasantville, and William Louis Luken, Yorktown Heights, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 22, 1995, Ser. No. 408,513
Int. Cl.[6] G06T *15/00*
U.S. Cl. 395—122 **16 Claims**



1. In a computer graphics system wherein objects are represented by one or more primitives, a method of rasterizing the primitives for display comprising the following steps applied to each primitive T in succession:

first, in a test mode of operation,

identifying a first sequence of pixels that cover the primitive T,

selecting in succession a test pixel from said first sequence of pixels, and, for the test pixel,

performing a visibility test to determine if the primitive T is visible at the test pixel, and

branching to a normal mode of operation if it is determined that the primitive T is visible at the test pixel,

wherein, in said test mode of operation, shading calculations are not performed for the test pixel; and

second, in the normal mode of operation, if and only if branched to from the test mode of operation,

identifying a second sequence of pixels that cover the primitive T,

for each given pixel with the second sequence of pixels,

performing shading calculations to compute color of the primitive T at the given pixel within the second sequence of pixels,

performing a visibility test to determine if the primitive T is visible at the given pixel within the second sequence of pixels, and

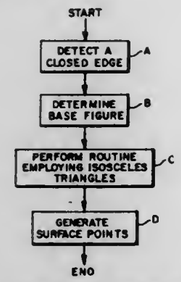
if the primitive T is visible at the given pixel within the second sequence of pixels, writing the computed color to a frame buffer for display.

5,649,079

COMPUTERIZED METHOD USING ISOSCELES TRIANGLES FOR GENERATING SURFACE POINTS

David I. Holmes, P.O. Box 323, Uncasvile, Conn. 06382

Filed Feb. 28, 1994, Ser. No. 202,385
Int. Cl.[6] G06T *15/00*
U.S. Cl. 395—123 **15 Claims**



1. A computerized method for generating boundary surface points, comprising:

providing an electronic computer, the electronic computer including a memory having stored therein instructions and data for performing steps (a)–(j);

performing the steps (a)–(j) by means of executing the instructions and data within the computer;

(a) detecting a closed edge;

(b) determining a base figure having edges forming corners coincident with the closed edge;

(c) generating, after performing said step (b) of determining a base figure, first, second, third and fourth isosceles triangles having: (i) peak points coincident with points on the closed edge, and (ii) bases colinear and equal to edges of the base figure to form a closed loop on the base figure, and (iii) heights extending from the bases to the peak points;

(d) determining two line segments connecting the peak points of the first and third and the peak points of the second and the fourth isosceles triangles;

(e) determining a location vector orthogonal to middle points of the two line segments;

(f) calculating a first ratio equal to a sum of the heights of first and third isosceles triangles divided by a sum of the heights of the second and fourth isosceles triangles;

(g) locating a set point to a first location on the location vector, the first location being outside of a plane in which at least two edges of the base figure lie;

(h) projecting a plurality of line segments from the set point to the peak points of the first, second, third and fourth isosceles triangles;

(i) calculating a second ratio having a numerator equal to a height of a fifth isosceles triangle whose peak point is formed by the set point and whose base is formed by one of the two line segments, and having a denominator equal to a height of a sixth isosceles triangle whose peak point is formed by the set point and whose base is formed by the other of the two line segments;

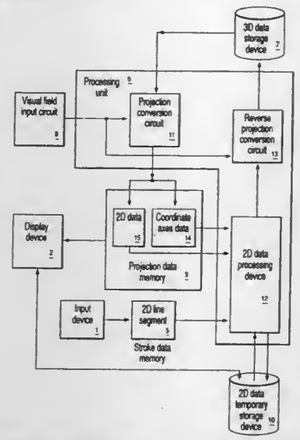
(j) relocating the set point on the location vector to a new location where the second ratio equals a reciprocal of the first ratio, and then generating a boundary surface point at the new location, and wherein each isosceles triangle of said method has two respectively congruent legs, each respectively congruent leg being unequal to the respective base.

5,649,080

APPARATUS AND METHOD FOR CONVERTING LINE SEGMENT DATA TO THREE-DIMENSIONAL DATA

Hiroshi Minakata, Tokyo, Japan, assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 67,772, May 26, 1993, abandoned.
This application Jun. 7, 1995, Ser. No. 476,291
Claims priority, application Japan, Jun. 5, 1992, 4-169997
Int. Cl.[6] G06T *11/80*
U.S. Cl. 395—127 **5 Claims**



1. Apparatus for automatically converting two-dimensional (2D) line segment data to three-dimensional (3D) data, comprising:

means for entering into said apparatus 2D line segments each having 2D line segment data;

means for storing 2D line segment data;

means for storing a plurality of line segments having 3D data;

means for converting 3D line segment data to 2D by projecting 3D line segment data onto a 2D projection plane;

means for testing each entered 2D line segment for proximity to one of Said line segments with 3D data;

means for automatically converting said entered 2D line segment data to 3D data by reverse projection based only on the relative position of said 2D line segment data to 2D data of a line segment that has associated 3D data, if said entered 2D segment is proximate to one of said line segments with 3D data, said proximity begin at any point along said line segment;

means for storming 3D data for said entered 2D line segment;

means for retesting each of said line segments having stored 2D line segment data after each entry to determine whether a proximate line sequent with 3D data has been stored.

5,649,081

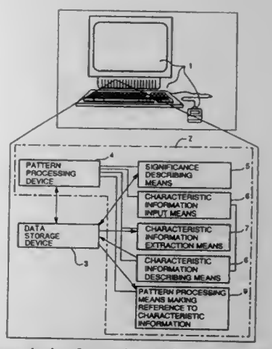
METHOD AND APPARATUS FOR PATTERN DATA PROCESSING

Norihiro Nakajima; Hiroshi Arai; Ichiro Harashima; Yoshiaki Shinotsuka, all of Hitachi; Tomotoshi Ishida; Motomi Odamura, both of Katsuta; Shigeru Arai, Yokohama, and Takeo Yamada, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 943,027, Sep. 10, 1992, abandoned.
This application Feb. 2, 1995, Ser. No. 384,466
Claims priority, application Japan, Sep. 10, 1991, 3-230423
Int. Cl.[6] G06T *17/50*
U.S. Cl. 395—130 **20 Claims**

1. A pattern data processing device, comprising:

an information input/output device for inputting/outputting pattern data of pattern elements included in a pattern;



a data storage device for storing said pattern data input by said information input/output device; and

an information processing device including pattern processing means for processing said pattern, based on said pattern data stored in said data storage device;

wherein said pattern data includes a set of coordinate data of a plurality of points which describe said pattern elements and characteristic information for defining special pattern features of said pattern elements of at least one of said points within said coordinate data; and

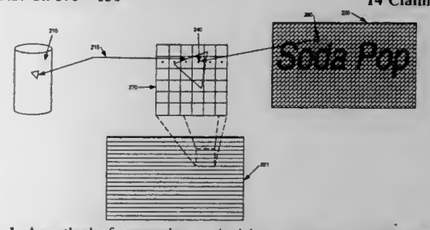
said pattern processing means processing said pattern by using said characteristic information as a restricting condition.

5,649,082

EFFICIENT METHOD AND APPARATUS FOR DETERMINING TEXTURE COORDINATES FOR LINES AND POLYGONS

Derrick R. Burns, San Mateo, Calif., assignor to Silicon Graphics, Inc., Mountain View, Calif.

Filed Mar. 20, 1995, Ser. No. 408,928
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—130 **14 Claims**



1. A method of generating a pixel in a computer system, said computer system including a processor and a memory, said memory including a first polygon and a texture map, said method comprising the steps of:

accessing a first point on said first polygon;

determining a first line segment within a predetermined error of a known relationship between pixels of said polygon and location of said texture map; and

determining whether a next line segment causes less than said predetermined error, said next line segment being longer than said first line segment in one direction;

if said next line segment causes less than said predetermined error, then determining whether a new next line segment causes less than said predetermined error, and

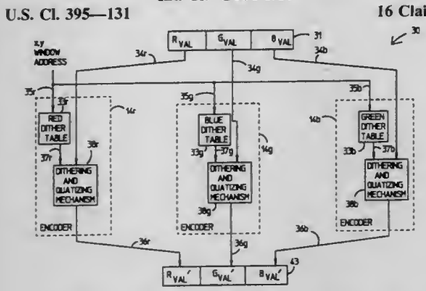
otherwise, accessing a texel in said texture map at a location corresponding to said first point and said first line segment, and generating said pixel from said texel.

5,649,083

SYSTEM AND METHOD FOR DITHERING AND QUANTIZING IMAGE DATA TO OPTIMIZE VISUAL QUALITY OF A COLOR RECOVERED IMAGE

Anthony C. Barkans, and David L. McAllister, both of Fort Collins, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 15, 1994, Ser. No. 228,472
Int. Cl.[6] G06T *5/20*
U.S. Cl. 395—131 **16 Claims**



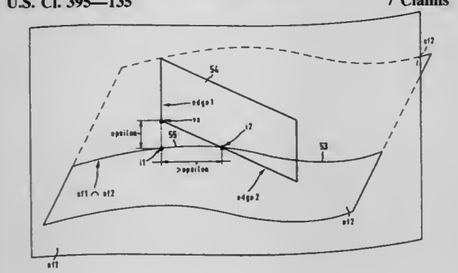
1. A system for dithering and quantizing image data, comprising:
dithering means for providing a dither noise value;
comparator means for comparing a color value corresponding with the image data with a predetermined cutoff value;
aliasing means for aliasing the color value with other color values below said predetermined cutoff value when the color value is less than said predetermined cutoff value to derive an aliased color value;
offset means for modifying the dither noise value when the color value is greater than said predetermined cutoff value to derive a modified dither noise value;
adder means for generating a dithered color value, said adder means for mathematically combining said dither noise value with said aliased color value and for mathematically combining said modified dither noise value with said color value;
clamping means for insuring that said dithered color value resides within a predetermined color range; and
quantizing means for quantizing said dithered color value to derive a dithered and quantized color value for storage in memory.

5,649,084

METHOD FOR PERFORMING BOOLEAN OPERATIONS ON GEOMETRIC OBJECTS IN A COMPUTER-AIDED DESIGN SYSTEM

Peter Ernst, Sindelfingen, Germany, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 25, 1995, Ser. No. 377,852
Claims priority, application European Pat. Off., Apr. 28, 1994, 94106673
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—135 **7 Claims**



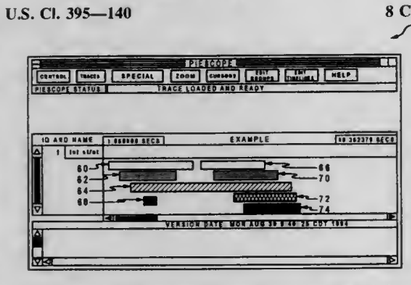
1. A method for performing Boolean operations on geometric objects in a computer-aided design system for generating a modified geometric object, wherein a face of a first geometric object and a face of a second geometric object are intersected to generate a graph edge forming an edge of the modified geometric object, comprising the steps of:
a) intersecting an edge of the first geometric object with a surface containing a face of the second geometric object for producing intersection points,
b) intersecting a surface containing a face of the first geometric object with said surface containing a face of the second geometric object for producing intersection tracks,
c) determining if distances between the intersection points and the intersection tracks are smaller than a resolution value (epsilon), respectively,
d) correcting the spatial positions of the intersection points, if the distances determined in step c) are larger than the resolution value (epsilon), respectively.

5,649,085

METHOD AND SYSTEM FOR STORING AND DISPLAYING SYSTEM OPERATION TRACES WITH ASYNCHRONOUS EVENT-PAIRS

Theodore Franklin Lehr, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 9, 1994, Ser. No. 353,009
Int. Cl.[6] G06T *11/00*
U.S. Cl. 395—140 **8 Claims**



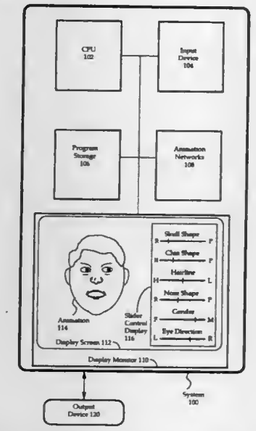
1. A method of displaying system operation trace information within a display device of a computer, comprising:
displaying a window within said display device;
displaying an axis within said window having points along said axis which correspond to time;
displaying graphical objects in relation to said axis which correspond to selected event-pairs within said system operation, such that a position of a graphical object in relation to said axis is indicative of a starting and an ending time of an event-pair corresponding to that graphical object, wherein a relative position of any two of said graphical objects is indicative of a nesting relationship therebetween; and
in response to a new event-pair having a starting time nested within a prior event-pair, said starting time preceding an ending time of a third event-pair having a nesting depth identical to said new event-pair, automatically displaying a graphical object representing said new event-pair adjacent to a graphical object representing said prior event-pair such that said graphical object representing said new event-pair is not visually obscured by a graphical object representing said third event-pair.

5,649,086

SYSTEM AND METHOD FOR PARAMETER-BASED IMAGE SYNTHESIS USING HIERARCHICAL NETWORKS

Russell Belfer, Palo Alto; Chie-Jin Cheng, Cupertino; Steve Librande, Milpitas; Va-On Tam, Sam Mateo, and Bin Zhang, Milpitas, all of Calif., assignors to nFX Corporation, Cambridge, Mass.

Filed Mar. 8, 1995, Ser. No. 401,023
Int. Cl.[6] G06T *11/00*
U.S. Cl. 395—141 **11 Claims**



1. A method of using a computer to synthesize an object, the object including a plurality of components, each component being capable of description by a plurality of known characteristics, the method comprising:
forming a plurality of child networks from said components responsive to corresponding ones of said known characteristics;
forming a parent network superordinate to said child networks, said parent network including a parameter, the parent network being hierarchically related to said child networks such that a change in said parameter of said parent network corresponds to changes in said corresponding ones of said known characteristics;
associating with said parameter a first parameter state and a second parameter state;
associating with each of said known characteristics a first characteristic state corresponding to said first parameter state and a second characteristic state corresponding to said second parameter state;
providing a user interface allowing user selection of a desired parameter state, said desired parameter state being bounded by said first parameter state and said second parameter state; and
synthesizing said object responsive to the desired parameter state by generating a set of desired object characteristics from said first characteristic states, said second characteristic states, and said desired parameter state.

5,649,087

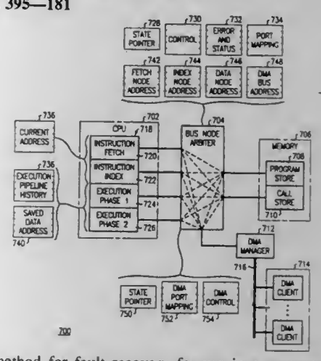
Patent Not Issued For This Number

5,649,088

SYSTEM AND METHOD FOR RECORDING SUFFICIENT DATA FROM PARALLEL EXECUTION STAGES IN A CENTRAL PROCESSING UNIT FOR COMPLETE FAULT RECOVERY

Richard Stephen Hauck, St. Charles; David Arthur Welch, Bristol, and Michael James Will, Naperville, all of Ill., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 346,155, Dec. 27, 1994, abandoned. This application Aug. 12, 1996, Ser. No. 695,543
Int. Cl.[6] G07F *11/00*
U.S. Cl. 395—181 **3 Claims**



1. A method for fault recovery for use in a computer system comprising a memory, a DMA manager, and a central processing unit having a plurality of stages of processing, said stages operating on a stream of instructions at the same time in a pipelined manner, said central processing unit having a plurality of CPU queues, each of said queues recording instructions, operations and effects, said computer system further including a bus node arbiter for coordinating memory accesses by said central processing unit and said DMA manager, said bus node arbiter having a plurality of queues, each of said bus node arbiter queues recording data regarding memory accesses, said method comprising the steps of:
encountering a fault in said computer system;
completing processing of all instructions and then halting processing in all stages of processing;
reconstructing said instruction stream in said CPU and said memory accesses using said instructions, operations and effects from said plurality of queues;
correlating said memory accesses from said CPU with memory accesses from said DMA manager such that all shared accesses to said memory are reconstructed from a finite period prior to said fault to the beginning of memory accesses for effecting fault recovery; and
resuming processing in all of said plurality of stages with the instruction that had encountered the fault.

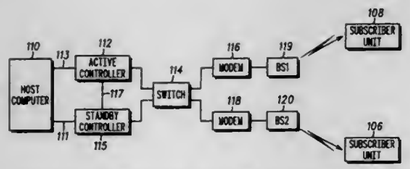
5,649,089

METHOD AND APPARATUS FOR MAINTAINING A REDUNDANT DATABASE SYSTEM

William Kilner, Monroe, Wash., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 30, 1994, Ser. No. 346,718
Int. Cl.[6] G06F *11/08;17/30*
U.S. Cl. 395—182.04 **9 Claims**

1. In a data base comprising a plurality of records, each record having an associated checksum, a method of making changes to the data base including the steps of:
providing a cumulative checksum for the data base,
incorporating uniquely and reversibly each record checksum for each record into a cumulative checksum for the data base;
changing the record from an old record to a new record and changing its associated checksum from an old checksum value to a new checksum value and



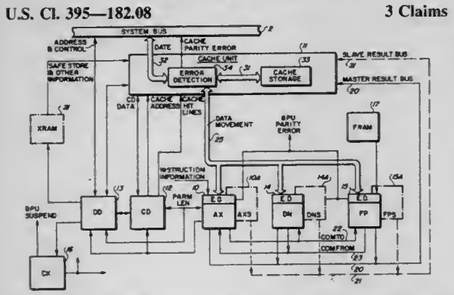
substantially simultaneously reversing the incorporation of the old checksum value from the cumulative checksum and incorporating the new checksum value into the cumulative checksum.

5,649,090

FAULT TOLERANT MULTIPROCESSOR COMPUTER SYSTEM

David S. Edwards; William A. Shelly; Jiuyih Chang, all of Phoenix; Minoru Inoshita, Glendale, and Leonard G. Trubisky, Scottsdale, all of Ariz., assignors to Bull hn Information Systems Inc., Billerica, Mass.

Filed May 31, 1991, Ser. No. 708,965
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—182.08 **3 Claims**



1. In a fault tolerant multiprocessor computer system including:

A) a plurality of central processing units with each central processing unit (CPU) including a store-into cache unit;

B) a main memory;

C) a system control unit,

D) a system bus coupling the plurality of CPU's to each other and to the system control unit; and

E) a memory bus coupling said system control unit to the main memory unit; said system control unit incorporating error detection and correction means for correcting a parity error in a block of data written into main memory from a store-into cache of a CPU transmitted therethrough; wherein the improvements comprise:

F) each of the CPUs including means for issuing a siphon command to another CPU, the CPU issuing a siphon command, hereafter a requesting CPU, and the CPU to which the siphon command is issued, hereafter a sending CPU; a siphon command received by a sending CPU causing the sending CPU to read an identified block of data from the store-into cache of the sending CPU, said identified block of data being written into the store-into cache of the requesting CPU;

G) providing the store-into cache unit of each of the CPUs with cache parity error detection means for detecting a parity error in a block of data read out of the store-into cache of a sending CPU, for producing a parity error signal if a parity error is detected in a block of data read out of the store-into cache unit of a sending CPU, for transmitting said identified block of data to the requesting CPU via the system bus, and for transmitting a parity error signal when produced via the system bus to the requesting CPU with said identified block of data; the requesting CPU upon the receipt of a parity error signal from the sending CPU suspending operation; and

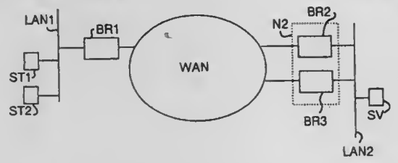
H) error recovery control means responsive to a parity error signal produced by the cache parity error detection means of the store-into cache unit of the sending CPU in response to the issuance of a siphon command by the requesting CPU for issuing to the sending CPU a swap command, the swap command causing the sending CPU to write the block of data identified by the siphon command which contains a parity error into main memory through the system control unit, said system control unit correcting the parity error in the identified block of data transmitted by the system control unit to main memory, hereafter a corrected block of data, prior to the corrected block of data being written into main memory, for reading the corrected block of data from main memory, for writing the corrected block of data into the store-into cache unit of the requesting CPU, and restarting the requesting CPU.

5,649,091

LOCAL AREA NETWORK REDUNDANT PIECES OF INTERCONNECTION EQUIPMENT A FALSE PHYSICAL ADDRESS AND A LOGICAL ADDRESS IN COMMON TO FORM A UNIQUE ENTITY

Abdelhamid Ould-Ali, Palaiseau; Nicolas Geffroy, Chatenay Malabry, and Alain Burgain, Paris, all of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 13, 1995, Ser. No. 489,868
Claims priority, application France, Jun. 15, 1994, 94 07310
Int. Cl.[6] G01F *13/00*
U.S. Cl. 395—182.09 **14 Claims**



1. A local area network interconnection system comprising:

at least two local area networks interconnected via a wide area network; and

interconnection nodes being formed by at least two redundant pieces of interconnection equipment, each piece of interconnection equipment having a specific physical address,

wherein said redundant pieces of interconnection equipment have a false physical address and a logical address in common to form a unique entity with respect to stations of the local area network to which they are connected, the unique entity comprising at a given instant at least one piece of interconnection equipment called an active piece of interconnection equipment which ensures a function of bridge/router, and one other piece of interconnection equipment called a stand-by piece of interconnection equipment which is intended to ensure support to the active piece of interconnection equipment,

wherein said redundant pieces of interconnection equipment further comprise monitoring means for monitoring their respective states by exchanges therebetween of frames called monitoring frames on the respective local area network, and

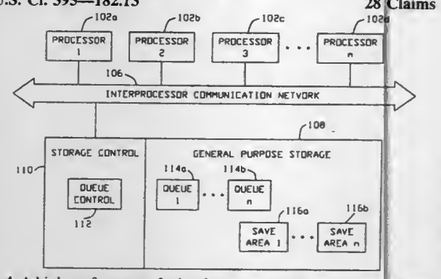
wherein said monitoring frames are frames of the data link layer defined by the OSI 802.2 standard, and are carried in data fields of frames of the physical layer which are circulating on said respective local area network.

5,649,092

FAULT TOLERANT APPARATUS AND METHOD FOR MAINTAINING ONE OR MORE QUEUES THAT ARE SHARED BY MULTIPLE PROCESSORS

Ferris T. Price, deceased, late of Mayer; Eugene A. Rodl, Minneapolis, and Marvin W. Theis, Plymouth, all of Minn., assignors to Unisys Corporation, Blue Bell, Pa.

Continuation of Ser. No. 230,961, Apr. 21, 1994, abandoned.
This application Jan. 11, 1996, Ser. No. 583,765
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—182.13 **28 Claims**



4. A high performance fault tolerant queuing system comprising:

an interprocessor communication network;

a first processor coupled to said interprocessor communication network, wherein said first processor generates a get-queue request to dequeue an item from a queue, processes said item received from said get-queue request, said get-queue request including a first processor save-address;

a secured processor coupled to said interprocessor communication network, wherein said second processor generates a get-queue request to dequeue an item from said queue, processes said item received from said get-queue request, said get-queue request including a second processor save-address;

put means coupled to said interprocessor communication network for generating put-queue requests to enqueue items in said queue;

an addressable memory, wherein said queue is stored in said addressable memory; storage control coupled to said interprocessor communication network and interfaced with said addressable memory for providing access to said addressable memory for said first processor, said second processor, and said put means;

wherein said storage control includes queue control responsive to said get-queue requests, said put-queue requests;

wherein said queue control includes

save means responsive to a get-queue request for saving an item, after said item is dequeued from said queue, at a save-address specified in said get-queue request, whereby items removed from said queue are recoverable; and

wherein said first processor includes

first detection means for detecting whether said second processor has stopped processing; and

first recovery means responsive to said first detection means for reading a queue item stored at a save-address associated with said second processor and completing processing of said queue item stored at said save-address associated with said second processor.

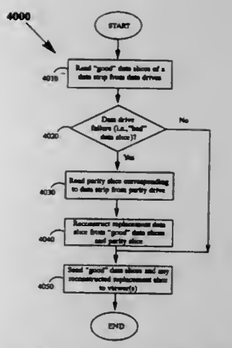
5,649,093

SERVER DISK ERROR RECOVERY SYSTEM

James G. Hanko, Redwood City, and Gerard A. Wall, San Jose, both of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed May 22, 1995, Ser. No. 445,820
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—182.04 **22 Claims**

1. A method of detecting and correcting errors in a mass storage system including a processor, a cluster of data drives and a parity drive, wherein data is stored as a plurality of data strips in said cluster of data drives, each said data strip including a plurality of contiguous data slices logically distributed across said cluster of data drives, and wherein a plurality of parity slices, each parity slice corresponding to each said data strip, are stored in said parity drive, the method including the steps of:



retrieving one said data strip from sad cluster of data drives;

detecting a data drive failure affecting an erroneous one of said data slices of said one data strip;

retrieving one of said parity slices corresponding to said one data strip from said parity drive;

reconstructing a corrected data slice from said one data strip and said one parity slice, said corrected data slice for replacing said one erroneous data slice; and wherein

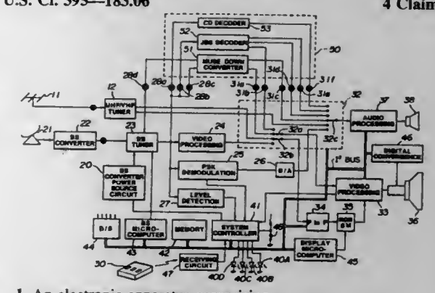
said data slices of said one data strip have been distributed among different zones of said data drives so that the average retrieval rate of said data slices approximates the access rate associated with intermediate, zone of said data drives.

5,649,094

SELF-SERVICE DIAGNOSTIC UNIT FOR PLURAL FUNCTIONAL DEVICES

Toshihide Hayashi, Kanagawa, and Koki Tsumori, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 935,974, Aug. 27, 1992, abandoned.
This application Jun. 13, 1996, Ser. No. 662,961
Claims priority, application Japan, Sep. 9, 1991, 3-255880
Int. Cl.[6] G06F *11/30;13/12*
U.S. Cl. 395—183.06 **4 Claims**



1. An electronic apparatus comprising:

a plurality of devices for executing individual functions,

an inner bus connected to said devices,

a system controller connected to each of said functional devices by way of said inner bus for transmitting control data to said devices for operating said devices in their normal mode of operation and for periodically transmitting control data from

said system controller over said bus to said devices for operating said devices in a testing mode of operation, said devices producing response data over said bus in response to receiving said control data, said system controller checking for malfunctions in each of the devices based on said response data and outputting the results of checking for malfunctions of the devices upon request, and

a display for displaying the results of said check of the malfunctions of each of the devices outputted by said system controller.

5,649,095

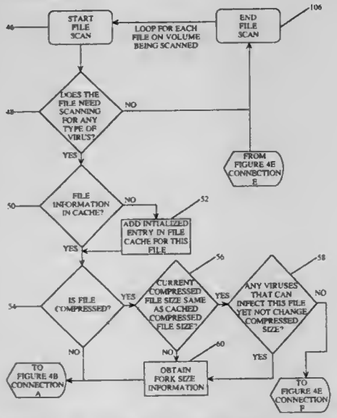
METHOD AND APPARATUS FOR DETECTING COMPUTER VIRUSES THROUGH THE USE OF A SCAN INFORMATION CACHE

Paul D. Cozza, HC 61, Box 023A, Damariscotta, Me. 04543

Continuation-in-part of Ser. No. 938,374, Aug. 31, 1992, Pat. No. 5,473,769, which is a continuation-in-part of Ser. No. 860,048, Mar. 30, 1992, Pat. No. 5,502,815. This application Oct. 4, 1993, Ser. No. 131,333

Int. Cl.[6] G06F *7/02*

U.S. Cl. 395—183.15 **12 Claims**



1. A method for increasing the speed at which a computer, which has files including more than one fork, scans for the presence of a computer virus, said method comprising the steps of:

creating a scan information cache on a non-volatile storage medium;

gathering identifying information, which includes at least one length of some portion of a file, about an initial state of said file;

storing said identifying information in said scan information cache;

gathering current state information, which includes at least one length of some portion of said file, about a current state of said file;

determining how said identifying information stored in said scan information cache differs from said current state information thereby indicating a presence or absence of one or more subsets of computer viruses, said one or more subsets each including one or more viruses which affect state information of said file in certain characteristic manners;

scanning said file for one or more of said subsets of computer viruses of a type of computer viruses that are determined to be present.

5,649,096

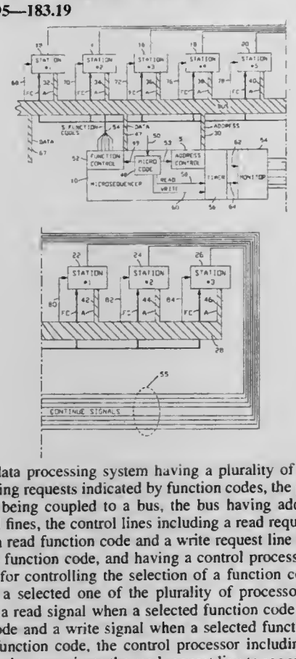
BUS REQUEST ERROR DETECTION

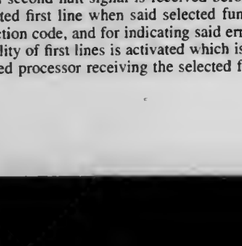
Joseba Mirena Desubijana, Minneapolis; Wayne Alan Michaelson, Circle Pines, and Howard Huy Phung Tran, Woodbury, all of Minn., assignors to Unisys Corporation, Blue Bell, Pa.

Continuation of Ser. No. 155,352, Nov. 22, 1993, abandoned. This application Aug. 2, 1995, Ser. No. 510,283

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—183.19 **5 Claims**





1. In a data processing system having a plurality of processors for processing requests indicated by function codes, the plurality of processors being coupled to a bus, the bus having address, data, and control fines, the control lines including a read request line for providing a read function code and a write request line for providing a write function code, and having a control processor coupled to the bus for controlling the selection of a function code and an address of a selected one of the plurality of processors, and for generating a read signal when a selected function code is the read function code and a write signal when a selected function code is the write function code, the control processor including function control circuitry to activate the read request line to request retrieval of data from a selected processor when a selected function code is the read function code and to activate the write request line to request storage of data to a selected processor when a selected function code is the write function code, and address control circuitry to activate the address lines addressing a selected processor, a bus request error detection system comprising:

a plurality of first lines, each of the first lines coupled to an associated one of the plurality of processors tin a first end, each of said plurality of first lines being activated by said associated one of the plurality of processors when selected associated one of the plurality of processors is finished processing a read request or a write request;

first and second halt lines;

timing means coupled to the address control circuitry and said first and second halt lines for receiving the read signal and for providing a first halt signal tin said first halt line in response thereto after a first duration has elapsed, and for receiving the write signal and for providing a second halt signal on said second halt line in response thereto after a second duration has elapsed, said first duration being longer than said second duration; and

monitor means coupled to said first and second halt lines and to each one of the plurality of first lines on a second end for continuously monitoring the state of said plurality of the first lines and indicating an error when said first halt signal is received before activation of said first line when said selected function code is a read function code, for indicating said error when said second halt signal is received before activation of said selected first line when said selected function code is a write function code, and for indicating said error when one of said plurality of first lines is activated which is not coupled to the selected processor receiving the selected function code.

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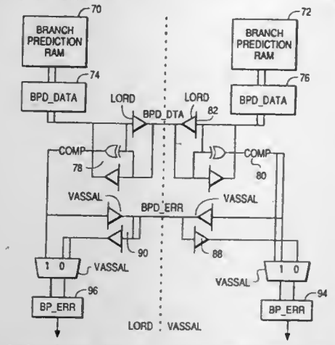
SYNCHRONIZING A PREDICTION RAM

Timothy B. Brodnax, Austin, Tex.; Bryan K. Bullis, Woodbridge, Va.; Steven A. King, Herndon, Va.; Robert L. Schoenike, Warrenton, Va., and Daniel L. Stanley, Manassas, Va., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 240,290, May 9, 1994, abandoned, which is a continuation of Ser. No. 783,060, Oct. 25, 1991, abandoned. This application May 24, 1996, Ser. No. 653,136

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—185.07 **8 Claims**



1. A fault tolerant data processing system employing a Lock-Step-Compare scheme including lord and vassal processing units, comprising:

initialization means for initializing contents of first and second branch prediction memories in the lord and vassal processing units, respectively, to at least one known value, the contents of the first and second branch prediction memories being:

for predicting an instruction to be executed as a result of a conditional branch instruction, wherein the predicting is before the conditional branch instruction is executed; and

addressed by addresses, so that for any first address, content of the first branch prediction memory addressed by the first address is equal to content of the second branch prediction memory addressed by the first address;

error detection means for detecting a memory upset after the initializing, in response to content of the second branch prediction memory addressed by a second address being unequal to content of the first branch prediction memory addressed by the second address; and

changing means for changing content of at least the second branch prediction memory in response to the detecting of the memory upset, so that content of the second branch prediction memory addressed by the second address is equal to content of the first branch prediction memory addressed by the second address.

5,649,098

METHODS AND APPARATUS FOR DISABLING A WATCHDOG FUNCTION

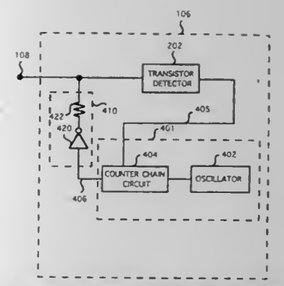
Sui Ping Shieh, Los Altos, and Dana William Davis, San Jose, both of Calif., assignors to Maxim Integrated Products, Sunnyvale, Calif.

Filed Nov. 14, 1995, Ser. No. 557,848

Int. Cl.[6] G01R *31/28;* **G06F** *11/00*

U.S. Cl. 395—185.08 **17 Claims**

1. A method for disabling a watchdog function of a watchdog circuit when a watchdog input pin of said watchdog circuit fails to receive an externally pulsed signal having a first predefined period, said watchdog circuit, while said watchdog function is enabled, generates a watchdog fault condition if said externally pulsed signal is not received at said watchdog input pin by the end of a predefined watchdog timeout period, said method comprising:



providing a pulse generation circuit for generating a pulsed signal having a second predefined period, said second predefined period being shorter than said watchdog timeout period; and

coupling a drive circuit to said pulse generation circuit and said watchdog input pin, said drive circuit providing an internally pulsed signal to said watchdog input pin at a predefined current level, responsive to said pulsed signal from said pulse generation circuit, said predefined current level being sufficient to pull said watchdog input pin to a potential level of said internally pulsed signal when said watchdog input pin does not receive said externally pulsed signal, said predefined current level being incapable of pulling said conductor to said potential level of said internally pulsed signal when said watchdog input pin receives said externally pulsed signal.

5,649,099

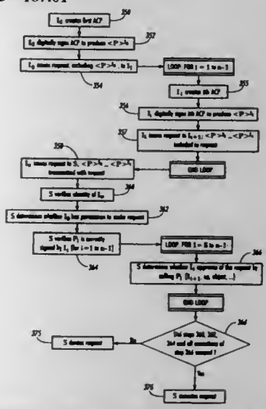
METHOD FOR DELEGATING ACCESS RIGHTS THROUGH EXECUTABLE ACCESS CONTROL PROGRAM WITHOUT DELEGATING ACCESS RIGHTS NOT IN A SPECIFICATION TO ANY INTERMEDIARY NOR COMPRISING SERVER SECURITY

Marvin M. Theimer; David A. Nichols, both of Mountain View, and Douglas B. Terry, San Carlos, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 4, 1993, Ser. No. 71,649

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—187.01 **36 Claims**



1. In a computing system comprising a server, a client, and at least one intermediary, a method of processing an ultimate request to the server, the ultimate request being delivered to the server as the final request in a chain comprising at least two linked requests, the client and all the intermediaries each being associated with one linked request of the chain, the intermediary that delivers the

ultimate request to the server being the final intermediary in the chain and being designated as the requestor, the method comprising the steps of:

using the requestor to present to the server the ultimate request in conjunction with at least one executable access control program comprising at least one sequence of computer program instructions, the access control program being executable by a processor to express a specification of a set of access rights;

using the server to execute each access control program thus presented, each access control program being executed in a manner such that said access control program is prevented from compromising server security; and

if and only if the execution of each access control program thus presented is successful, using the server to execute the ultimate request in a manner consistent with the set of access rights, any access rights not in the set of access rights not being delegated to any intermediary nor being granted by the server.

5,649,100

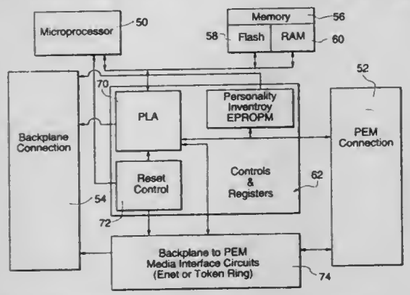
NETWORK BACKPLANE INTERFACE HAVING A NETWORK MANAGEMENT SECTION FOR MANAGING AND CONFIGURING NETWORKS ON THE BACKPLANE BASED UPON ATTRIBUTES ESTABLISHED IN A PARAMETER TABLE

Thomas F. Ertel, Westboro; David B. Aronoff, Lexington; Steven L. Gardner, Worcester; Ronald M. Parker, Acton, all of Mass.; Dean A. Warren, New Boston, N.H., and Edward S. Baxter, Cherry Valley, Mass., assignors to 3Com Corporation, Santa Clara, Calif.

Filed Aug. 25, 1994, Ser. No. 296,028

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200.1 **16 Claims**



6. A local area network backplane interface, comprising:

a concentrator backplane operating one or more local area access methods;

a module for connection to said backplane for providing a local area network function, said module generating operating parameter signals;

common interface means for establishing a connection between said module and said backplane, including control means for exchanging information between said module and said interface means with a first mailbox for reading information signals including operating parameters from said module and writing information signals to said interface means and a second mailbox for reading information from said interface means and writing information to said mailbox;

parameter table means for listing operating parameters of said module, received as information signals, said operating parameters for determining management of said module for connection of said module to said backplane;

backplane to module media interface circuit means for transferring data packets between said module and said backplane; and

network management means for managing said concentrator backplane including managing connections to said concentrator backplane, said network management means for configuring one or more networks on said backplane and managing said module, based on management attributes established in said parameter table.

5,649,101

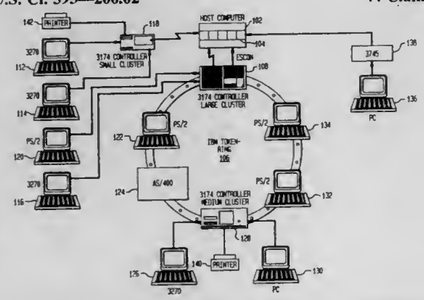
SYSTEM AND METHOD FOR IMPROVING 3270 DATA STREAM PERFORMANCE BY REDUCING TRANSMISSION TRAFFIC

James Merwin Mathewson, II, Chapel Hill, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 116,640, Dec. 3, 1993, abandoned. This application Dec. 8, 1995, Ser. No. 569,322

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200.02 **44 Claims**



1. In a networked system including a primary logical unit and a secondary logical unit, wherein a data stream, having an augmented 3270 data stream architecture, is passed between said primary logical unit and said secondary logical unit to transmit data and information, wherein said data stream includes an enhanced buffer control order designating a desired buffer address that is a specific number of address locations from a current buffer address for providing improved 3270 data stream performance with reduced transmission traffic, said system comprising:

generating means, operably connected to said primary logical unit, for generating said buffer control order, said generating means concatenating a buffer control order code indicating a type of buffer control order with a buffer control order address, said buffer control address including an increment value to designate a number of buffer locations from a current buffer address to said desired buffer address, wherein said increment value is a 6-bit increment value configured to designate said desired buffer address when said desired buffer address is within 64 buffer locations of said current buffer address; and

execution means, operably connected to said secondary logical unit, for executing said buffer control order.

5,649,102

DISTRIBUTED SHARED DATA MANAGEMENT SYSTEM FOR CONTROLLING STRUCTURED SHARED DATA AND FOR SERIALIZING ACCESS TO SHARED DATA

Masabiko Yamauchi, Kokubunji; Satoshi Yoshizawa, Kawasaki; Hideki Murayama, Kunitachi; Takehisa Hayashi, Sagamihara; Akira Kito, Ebina; Hiroshi Yashiro; Tsutomu Goto, both of Kokubunji; Kimitoshi Yamada, Hadano, and Toru Horimoto, Atsugi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

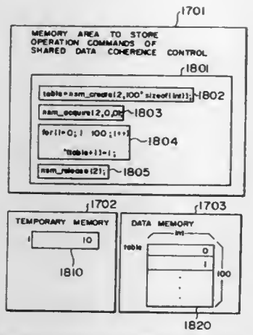
Filed Nov. 25, 1994, Ser. No. 348,099

Claims priority, application Japan, Nov. 26, 1993, 5-296300; Nov. 30, 1993, 5-299383; Oct. 7, 1994, 6-243677

Int. Cl.[6] G06F *15/16*

U.S. Cl. 345—200.03 **22 Claims**

11. A distributed shared memory management system for a computer system having a plurality of computers interconnected by a network, each computer having an independent address space



and logically sharing data physically distributed to a storage of each computer, wherein:

each computer running a program for reading and changing said shared data comprises a coherence control designation means for designating to enter a mutual exclusion state in which plural computers cannot change said logically single shared data, coherence control release means for designating a release of said mutual exclusion state, and coherence control execution means for reflecting the contents of said shared data which has changed between the operations by said coherence control designation means and said coherence control release means, upon said logically single shared data in another computer;

at least one of the plurality of computers comprises request message queue means for storing a coherence control request message issued by said coherence control execution means when said coherence control designation means is executed;

said coherence control designation means includes means for designating an order of reading and changing said shared data; and

said request message queue means includes counter means for storing a current state regarding the control of the order of reading and changing said shared data and means for storing a value regarding the control of the order of reading and changing said shared data.

5,649,103

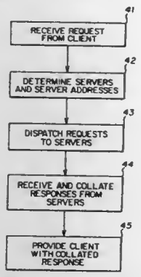
METHOD AND APPARATUS FOR MANAGING MULTIPLE SERVER REQUESTS AND COLLATING REPONSES

Utpal Datta, Bedford, and Mark Wagner, Merrimack, both of N.H., assignors to Cabletron Systems, Inc., Del.

Filed Jul. 13, 1995, Ser. No. 502,163

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200.03 **18 Claims**



1. In a network including a plurality of servers and clients, a method for receiving a request from a client and providing a collated response comprising the steps of:

receiving a request from a client including a domain of interest, the domain of interest having a set of associated servers;

mapping the domain of interest to a corresponding server address for each of the associated servers;

dispatching the request simultaneously to each of the associated servers;

receiving at least one response from the associated servers;

generating a collated response from the at least one response; and

providing the client with the collated response.

5,649,104

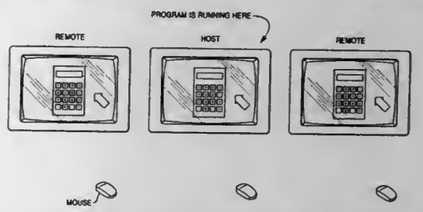
SYSTEM FOR ALLOWING USER OF ANY COMPUTER TO DRAW IMAGE OVER THAT GENERATED BY THE HOST COMPUTER AND REPLICATING THE DRAWN IMAGE TO OTHER COMPUTERS

Allison A. Carleton, Lisle; Catherine M. FitzPatrick, Winfield; Theresa M. Pommier, Westmont, and Krista S. Schwartz, Batavia, all of Ill., assignors to NCR Corporation, Dayton, Ohio

Filed Mar. 19, 1993, Ser. No. 35,092

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200.04 **10 Claims**



7. A system comprising multiple computers, capable of linking together, one of which is a host computer which runs a host program, comprising:

a) means for allowing a user of any computer to issue commands to the host program which produces an image on the host computer, and copying the image on displays of other computers;

b) means for allowing a user of any computer to draw, on the display of the user's computer, an image over that generated by the host program, by another program running on the user's computer; and

c) means for replicating said image on other computers.

5,649,105

COLLABORATIVE WORKING IN A NETWORK

Barry Keith Aldred; Gordon William Bonsall, both of Winchester; Howard S. Lambert, Southampton, and Harry David Mitchell, Richmond-upon-Thames, all of United Kingdom, assignors to IBM Corp., Armonk, N.Y.

PCT No. PCT/GB93/02315, § 371 Date Jun. 27, 1994, § 102(e) Date Jun. 27, 1994, PCT Pub. No. WO94/11814, PCT Pub. Date May 26, 1994

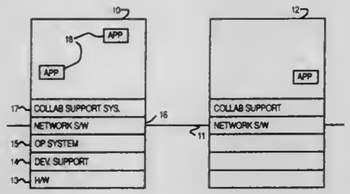
PCT Filed Nov. 10, 1993, Ser. No. 256,211

Claims priority, application United Kingdom, Nov. 10, 1992, 9223521

Int. Cl.[6] G06F *15/16*

U.S. Cl. 395—200.04 **20 Claims**

1. A programmable workstation for collaborative working in a network of workstations forming the nodes of the network, the



network being connected by physical links for the transmission of data between nodes;

the workstation comprising an operating system;

a network control program layer, running on the operating system, for controlling physical routing of data between nodes; and

a collaborative application support program layer for interfacing with application programs running on the workstation and responsive to predetermined application program calls to create a logical network model of a collaborative environment comprising sharing sets of application programs, which share data and resources within and across nodes, and logical dedicated data channels connecting members of a sharing set of application programs, each data channel being defined by a sending port and a receiving porteach associated with an application program, the collaborative application support program layer being adapted to cooperate with the network control program layer to establish the physical links necessary to implement the logical network model in a physical network, transparently to the application programs wherein logical data channels have both a channel type and a channel set name, channels of the same type and set name in the same sharing set of applications forming a channel set in which data received over any channel of the set is dependent on data on other channels of the set in accordance with predetermined properties associated with the channel type.

1. A parallel computer which allows for selective construction of clusters during operation of the parallel computer, comprising:

(a) a plurality of processors, each running an operating program and each processor capable of accessing a respective memory, coupled to the processor, at an arbitrary timing according to the operating program, for processing information;

(b) a data transfer means for interconnecting the plurality of processors so that data can be transferred between the plurality of processors, the data transfer means including a plurality of cluster buses, each cluster bus including at least one sub-cluster bus, each sub-cluster bus being coupled to at least two of the plurality processors;

(c) a selector means, coupling the plurality of processors and the sub-cluster buses, for selectively connecting each processor to one of the sub-cluster buses to which it is coupled, wherein each group of processors connected to one of the sub-cluster buses forms a cluster.

5,649,107

TRAFFIC STATISTICS PROCESSING APPARATUS USING MEMORY TO INCREASE SPEED AND CAPACITY BY STORING PARTIALLY MANIPULATED DATA

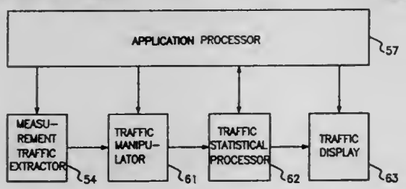
Myeong Suk Kim; Suk Chun Song; Tae Woon Kang, and Mun Kee Choi, all of Daejeon, Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, Daejeon, and Korea Telecommunications Authority, Seoul, both of Rep. of Korea

Filed Nov. 29, 1994, Ser. No. 346,079

Claims priority, application Rep. of Korea, Nov. 29, 1993, 1993-25731

Int. Cl.[6] G06F *13/38;* **H04L** *12/56*

U.S. Cl. 395—200.11 **2 Claims**



1. A high speed traffic statistics processing apparatus using memory, comprising:

a measured traffic extracting means which generates a cell arrival signal if an address information of measured data is the same as a cell header information received, after comparison of the two informations and outputs decoder information using a decoder when there are several measured traffics;

a traffic manipulating means which maps time information and number information of traffics into the address of memory and the measured data information of the memory by mapping the time information between cell arrivals of said measured traffic extracting means into the information address of the memory and increasing data information within the address;

a traffic statistical processing means which periodically reads out information manipulated at said traffic manipulating means and obtains various kinds of statistical data;

a traffic display means which executes a function of graphic user interface (GUI) by displaying various kinds of characteristic data on traffics obtained from said traffic statistical processing means through a monitor using graphics interfaced with users; and

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5,649,106

PARALLEL COMPUTER WITH RECONSTRUCTION OF PROCESSOR CLUSTERS

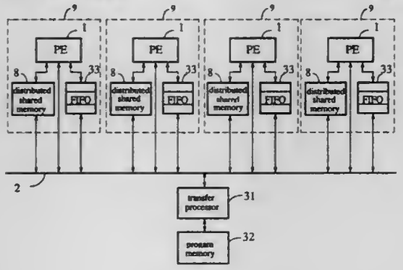
Shingo Tsujimichi, and Michimasa Kondo, both of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 376,283, Jan. 20, 1995, abandoned, which is a continuation of Ser. No. 840,872, Feb. 25, 1992, abandoned. This application May 2, 1996, Ser. No. 641,947

Claims priority, application Japan, Mar. 14, 1991, 3-049565; Jun. 11, 1991, 3-139065

Int. Cl.[6] G06F *15/163;17/00*

U.S. Cl. 395—200.08 **14 Claims**



an application processing means which executes a function of overall control by accepting from outside and sending to each appropriate functional means respectively general information of the measured traffics such as VPI/VCI information or speed information of a traffic.

5,649,108

COMBINED PROGRESSIVE AND SOURCE ROUTING CONTROL FOR CONNECTION-ORIENTED COMMUNICATIONS NETWORKS

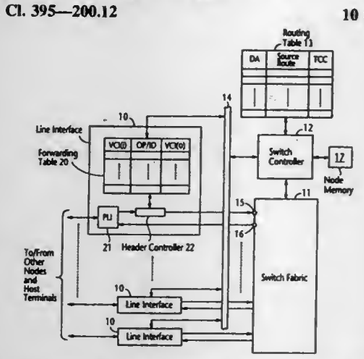
Ethan Spiegel, and Tutomu Murase, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Nov. 30, 1994, Ser. No. 351,073

Claims priority, application Japan, Nov. 30, 1993, 5-300252

Int. Cl.[6] G06F *13/14*

U.S. Cl. 395—200.12 **10 Claims**



1. In a connection-oriented communications network including a plurality of network nodes interconnected by links, each of said network nodes functioning as a source node, an intermediate node or a destination node, a method comprising the steps of:

a) selecting, at a source node, a route therefrom to a destination node and establishing a connection from the source node to an intermediate node on the route;

b) extending the connection from the intermediate node along the route if there is an acceptable link in the selected route;

c) selecting, at said intermediate node, a first route section including one or more intermediate nodes therefrom to said destination node if there is no acceptable link in the route selected by the step (a);

d) determining, at said intermediate node, whether a total cost of links from said source node to said destination node via said first route section is more or less than a cost threshold and extending said connection from the intermediate node along said first route section if said total cost is less than the cost threshold and there is an acceptable link in the first route section;

e) cranking the connection from the intermediate node back to an adjacent upstream node if said total cost is more than the cost threshold and there is no acceptable link in the first route section;

f) selecting, at said upstream node, a second route section including one or more intermediate nodes therefrom to said destination node and determining whether a total cost of links from said source node to said destination node via the second route section is more or less than said cost threshold;

g) extending the connection from the upstream node along the second route section if the total cost of the step (f) is less than the cost threshold and there is an acceptable link in the second route section; and

h) clearing the connection if the total cost of the step (f) is more than the cost threshold or there is no acceptable link in the second route section and repeating the steps (a) to (g).

5,649,109

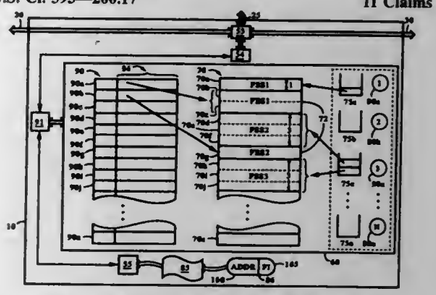
APPARATUS AND METHOD FOR MAINTAINING FORWARDING INFORMATION IN A BRIDGE OR ROUTER USING MULTIPLE FREE QUEUES HAVING ASSOCIATED FREE SPACE SIZES

Martin Edward Griesmer, Arlington; Parayath Gopal Krishnakumar, West Newton, and David Benson, Acton, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Oct. 22, 1992, Ser. No. 965,121

Int. Cl.[6] G06F *15/16*

U.S. Cl. 395—200.17 **11 Claims**



1. In apparatus for maintaining frame forwarding information in a bridge or a router, comprising:

a forwarding table having zero or more forwarding entry sets of different sizes, and zero or more free space segments, each said free space segment having a size;

a hash table having a plurality of hash table entries, each one of said plurality of hash table entries pointing to one of said one or more forwarding entry sets of different sizes, each one of said plurality of hash table entries containing the size of said one of said one or more forwarding entry sets;

a plurality of free queues, each one of said plurality of free queues having an associated free space segment size, and zero or more queue elements indicating those of said free space segments having said size equal to said associated free space segment size; and

a forwarding entry adding process, responsive to an input, said input containing an address and forwarding information, for determining a new forwarding entry set size, said new forwarding entry set size equal to a size of a forwarding entry plus a size contained in one of said plurality of hash table entries, said one of said plurality of hash table entries indexed by a value of a hash index field of an output of a hash function applied to said address contained in said input, and for selecting a non-empty free queue having associated free space segment size greater than or equal to said new forwarding entry get size, and for writing a new forwarding entry set to one of said free space segments indicated by a queue element from said non-empty free queue, said new forwarding entry set having a forwarding entry containing said forwarding information contained in said input.

5,649,110

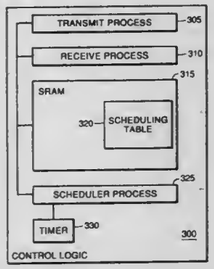
TRAFFIC SHAPING SYSTEM WITH VIRTUAL CIRCUIT TABLE TIME STAMPS FOR ASYNCHRONOUS TRANSFER MODE NETWORKS

Michael Ben-Nun, Derech Hahoresh 34/2, Ramot, Jerusalem, Israel; Simoni Ben-Michael, 13/3 Mitzpe st., Givat Zeev, Israel; Mosbe De-Leon, Gan Rehavia, Entrance C, Apartment 5, Jerusalem, Israel; Peter John Roman, 89 Front St., Hopkinton, Mass. 01748; Kadangode K. Ramakrishnan, 11 Michael Rd., Maynard, Mass. 01754, and G. Paul Koning, 7 Oak Dr., Wilton, N.H. 03086

Filed Nov. 7, 1994, Ser. No. 335,281

Int. Cl.[6] G06F *3/00*

U.S. Cl. 395—200.19 **23 Claims**



1. A system for controlling the transmission of cells from a network node, comprising:

a virtual circuit table having one or more entries, each entry corresponding with a virtual circuit established with said network node, each entry having a first Cell Rate Accumulator field and a Time Stamp field, said Time Stamp field storing a time at which said virtual circuit table entry was last written;

a schedule table having one or more entries, each entry having a first Cell Rate Accumulator field and a first Predetermined Value field;

schedule table loading means for determining a virtual circuit on which a packet is to be transmitted, calculating a time elapsed since a last previous write of a virtual circuit table entry corresponding with said virtual circuit, said time elapsed equal to the current time minus the value of said Time Stamp field, adding said time elapsed to the value of said first Cell Rate Accumulator field in said virtual circuit table entry corresponding with said virtual circuit, and storing the result of said addition into said first Cell Rate Accumulator field of a schedule table entry;

scanning means for periodically incrementing said first cell Rate Accumulator field in said schedule table entry; and

transmitting means, responsive to said scanning means, for transmitting a cell on said virtual circuit when the value of said first Cell Rate Accumulator field value is greater than or equal to the value of said first Predetermined Value field.

5,649,111

DATA PORT EXPANDER

Rudolf Eugene Rehquate, Raleigh; Thomas Edward Stammely, Cary, both of N.C., and Jeffrey Matthew Stoltz, Bristol, Pa., assignors to International Business Machines Corporation, Armonk, N.Y.

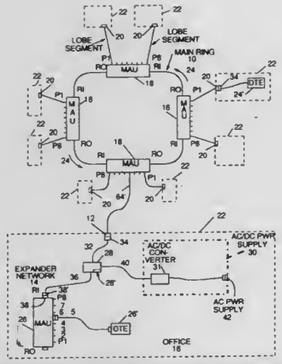
Continuation of Ser. No. 98,678, Jul. 28, 1993, abandoned. This application Dec. 18, 1995, Ser. No. 573,902

Int. Cl.[6] G06F *3/00;* **H04J** *3/02*

U.S. Cl. 395—200.2 **10 Claims**

1. A data port expander for connecting multiple stations to any single lobe segment of a local area network (LAN) comprising:

a multi-port access unit having a housing in which a port for connecting the any single lobe segment is provided and a plurality of switching modules are mounted with each one of the plurality of switching modules for operatively coupling to



a computing device which transmits and receives information from the local area network and said each one of the plurality of switching modules responsive to a control signal generated by said computing device to switch from a first state to a second state if the computing device wants to be inserted into the local area network; and

a phantom current generator for generating a DC signal within the multi-port access attachment unit; said phantom current generator operating with the plurality of switching modules to form a closed loop in which the DC signal circulates within the phantom current generator and the multi-port access attachment unit and not exiting the port onto said single lobe segment if the plurality of switching modules are set in the first state or providing the DC signal to be transmitted on said single lobe segment to activate a remote switch wherein a computing device connected to said multi-port access attachment means communicates with other devices in the network if one of the plurality of switching modules is set in the second state.

5,649,112

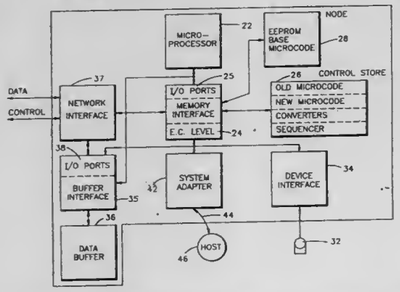
METHOD AND APPARATUS FOR MODIFYING MICROCODE IN A DISTRIBUTED NODAL NETWORK WHILE THE NETWORK CONTINUES OPERATION

John D. Yeager, San Jose; Lawrence Y. Ho, Morgan Hill; Chester R. Stevens, San Jose; James T. Brady, San Jose, and David T. Wang, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 241,901, May 11, 1994, abandoned. This application Jan. 30, 1996, Ser. No. 593,551

Int. Cl.[6] G06F *15/177;13/42*

U.S. Cl. 395—200.1 **9 Claims**



1. A method for updating a current version of control code in multiple nodes in a computing system while said computing system remains in operation, said computing system operable when a

node is removed therefrom, said multiple nodes interconnected by a communications network, each node including a processor, memory, a current version of a control code and a first engineering change level (ECL) value for said current control code, said method comprising the steps of:

a isolating a first node from other nodes in said computing system;

b after said isolating step (a), installing in memory in said first node and operating a new version of control code having a second ECL value and a converter code module, said converter code module operating in conjunction with said processor in said first node to perform a first interface function and a second interface function during communications between said first node and a second node, said first interface function at least enabling communication between current versions of said control code, and said second interface function enabling communication between a current version of said control code and a new version of said control code;

c coupling said first node to other nodes in said computing system;

d operating said first node to perform an action which requires communications with said second node, said converter code module in said first node determining an ECL value stored in said second node and, if ECL values in said first and second nodes match, communicating with said second node through use of said first interface function, and if ECL values in said first and second nodes do not match, communicating with said second node through use of said second interface function which enables said current version of said control code to operate in conjunction with said new version of said control code.

5,649,113

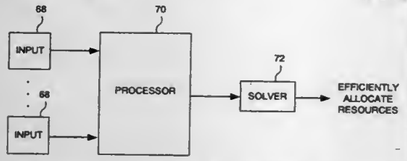
METHOD AND SYSTEM FOR TRANSLATING AN OPTIMIZATION PROBLEM FOR USE IN EFFICIENT RESOURCE ALLOCATION

Jianhua Zhu, Lafayette, and Yuping Qiu, Louisville, both of Colo., assignors to U S WEST Technologies, Inc., Boulder, Colo.

Filed Oct. 12, 1994, Ser. No. 321,950

Int. Cl.[6] G06F *17/60*

U.S. Cl. 395—207 **6 Claims**



1. In a method of processing and expanding index variables listed in an objective function and at least one constraint relationship into standard linear programming format to obtain a solution in determining efficient resource allocation utilizing a corresponding solver, of the type wherein the index variables and their properties are defined and transferred to a symbol table during a syntax analysis phase, portions of the symbol table relating to the index variables requiring expansion are transferred to a plurality of temporary data records containing information stored in the symbol table, and the temporary data records are linked in a forward order during expansion, wherein the improvement comprises:

generating an index link record for each of the index variables so as to eliminate the need for the symbol table and the plurality of temporary data records;

linking the index link records of the index variables requiring expansion in a reverse order of the order listed in the objective function and the at least one constraint relationship into an expanded form so as to reduce the number of traversals performed during expansion processing, the index link records having a pointer for identifying the next index variable requiring expansion; and

allocating the resource based on the expanded form.

5,649,114

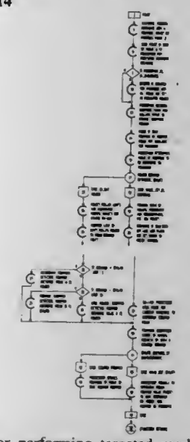
METHOD AND SYSTEM FOR SELECTIVE INCENTIVE POINT-OF-SALE MARKETING IN RESPONSE TO CUSTOMER SHOPPING HISTORIES

David W. Deaton, and Rodney G. Gabriel, both of Abilene, Tex., assignors to Credit Verification Corporation, Abilene, Tex.

Continuation of Ser. No. 139,983, Oct. 20, 1993, abandoned, which is a continuation-in-part of Ser. No. 96,921, Jul. 23, 1993, which is a continuation-in-part of Ser. No. 63,413, May 17, 1993, Pat. No. 5,621,812, which is a continuation of Ser. No. 886,383, May 19, 1992, abandoned, which is a continuation-in-part of Ser. No. 826,255, Jan. 24, 1992, abandoned, which is a continuation of Ser. No. 345,475, May 1, 1989, abandoned. This application Jun. 1, 1995, Ser. No. 457,299

Int. Cl.[6] G06F *17/60*

U.S. Cl. 395—214 **23 Claims**



1. A method for performing targeted marketing on shopping customers with a computer having a processor and memory, the method comprising the steps of:

entering into the memory selected indicia from an identification presented by customers for use as unique customer identification codes in response to presentation of customers' identification at a point-of-sale;

entering into the memory at the point-of-sale data relating to customers' shopping transactions, including data relating to a plurality of different products purchased by a specific customer;

creating a database of a store's customers' shopping transactions and identification codes in response to said identification and said data, including information regarding products more frequently purchased than others of said plurality of different products purchased by said specific customer and stored in the memory;

applying with the processor a value formula to said database of previously purchased products and shopping transaction data in order to determine a value for said more frequently purchased products for use as promotions, said value formula being variable and based on individual customers' prior purchase volumes in said store;

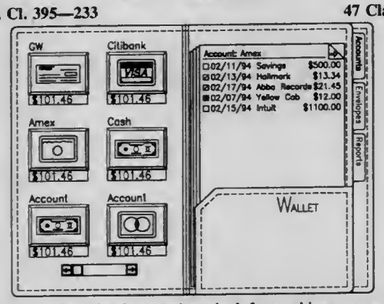
generating with the processor a first signal in response to entry of identification codes of customers whose prior transactions at the store meet predetermined shopping history criteria; and

in response to said first signal, effecting a first sales promotion to customers who meet said predetermined shopping history criteria, said sales promotion being related to at least one of said more frequently previously purchased than others of said plurality of different products purchased by said specific customer and the value of said sales promotion determined by said value formula.

5,649,115
TRACKING METHOD AND APPARATUS

Joseph Alton Schrader, Mountain View; Lun-Shin Yuen, Palo Alto; Martin Oishi Gates, Sunnyvale, and Robert Milton Schulman, Atherton, all of Calif., assignors to Intuit, Inc., Menlo Park, Calif.

Filed Jun. 2, 1994, Ser. No. 252,670
Int. Cl.[6] G06F *3/147*
U.S. Cl. 395—233 **47 Claims**



1. A computer implemented method for tracking transactions with a computer including a processor for executing code, input/output devices for transfer of data, a display for displaying data and a memory for storing account data for a plurality of accounts, each account having a plurality of fields for the account data, comprising:

storing each of a plurality of transaction images in association with an account store for an account, each account store associated with at least one entry sequence defining a sequence of inputs to a subset of fields of the account,

displaying the plurality of transaction images on said display,

receiving a user input selecting one of said images by an input to an input/output device, and

executing an entry sequence for the account store associated with the selected transaction image for entry of transaction data into the subset of fields defined by the entry sequence.

5,649,116
INTEGRATED DECISION MANAGEMENT SYSTEM

Randal A. McCoy, Sugar Hill, and Beverly Kennedy, Alpharetta, both of Ga., assignors to Servantis Systems, Inc., Norcross, Ga.

Filed Mar. 30, 1995, Ser. No. 415,231
Int. Cl.[6] G06G *7/52*
U.S. Cl. 395—238 **44 Claims**

1. A system for managing a plurality of accounts, each account having an associated account exposure, comprising:

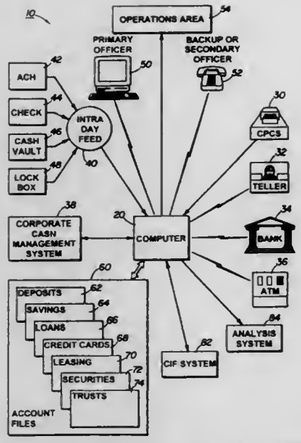
a. means for submitting a transaction for application to a selected account of a plurality of related accounts;

b. monitoring means, responsive to said submitting means, for determining a combined exposure of said plurality of related accounts associated with the selected account that would result from the submission of a transaction;

c. means, responsive to said monitoring means, for authorizing said transaction when the combined exposure determined by said monitoring means is less than a first predetermined limit and for denying a submitted transaction when the combined exposure would exceed said first predetermined limit if the transaction were to be authorized;

d. means, responsive to said monitoring means, for alerting a first officer when the combined exposure determined by said monitoring means would exceed a second predetermined limit if the transaction were to be authorized; and

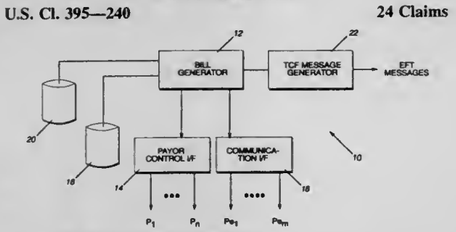
e. means for receiving from said first officer an authorization indicia to said authorizing means and for causing, upon said authorizing means receiving said indicia, said authorizing means to authorize a previously denied transaction.



5,649,117
SYSTEM AND METHOD FOR PAYING BILLS AND OTHER OBLIGATIONS INCLUDING SELECTIVE PAYOR AND PAYEE CONTROLS

George W. Landry, Cincinnati, Ohio, assignor to Midwest Payment Systems, Cincinnati, Ohio

Filed Jun. 3, 1994, Ser. No. 253,364
Int. Cl.[6] G06F *17/60*
U.S. Cl. 395—240 **24 Claims**



1. A bill paying system comprising:

storage for payee information for each of a plurality of payees;

storage for payor information for each of a plurality of payors, said payor information for each said payor including child payee information identifying said payees authorized to receive a transfer of funds from said payor and control parameters, said control parameters being established by said payors for controlling transfers of funds between said payor establishing said control parameters and more than one of said payees and for controlling multiple transfers between said payor establishing said control parameters and one of said payees authorized to receive a transfer of funds from said payor establishing said control parameters;

a bill generator for generating bill records from said child payee information of said payor information for at least one of said payors, said generated bill records corresponding to said control parameters established by said one of said payors;

a Transfer Communication Facilitater (TCF) message generator for generating at a time corresponding to said control parameters Electronic Funds Transfer (EFT) messages corresponding to said generated bill records to effect said transfer of funds corresponding to said generated bill records;

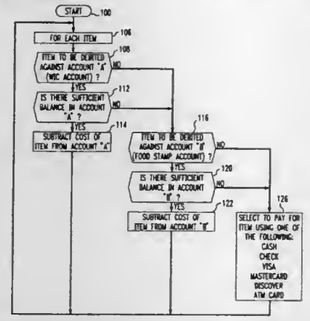
an electronic communication interface for receiving Electronic Data Interchange (EDI) forms from said payees, said EDI forms including a payorID and bill data; and

said system modifying said child payee information of said payor information for a payor identified by said payorID within a received EDI form with said bill data in said EDI form received from at least one of said payees, whereby said bill records subsequently generated by said bill generator correspond to said modified child payee information.

5,649,118
SMART CARD WITH MULTIPLE CHARGE ACCOUNTS AND PRODUCT ITEM TABLES DESIGNATING THE ACCOUNT TO DEBIT

William Reid Carlisle, Morristown; Lydia Anne Curtis, Bridgewater; Kathleen M. Murphy, Bedminster, and Richard John Skibo, Skillman, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation-in-part of Ser. No. 112,487, Aug. 27, 1993, abandoned. This application May 27, 1994, Ser. No. 250,144
Int. Cl.[6] G06F *17/60;* **G06G** *7/52*
U.S. Cl. 395—241 **6 Claims**

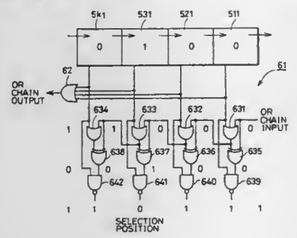


1. A method of programming a smart card including the step of downloading into the smart card a plurality of application identifiers, each application identifier associating an item table identifier with any of a plurality of accounts stored on the smart card, the item table identifier uniquely specifying an item table including a list of consumer items.

5,649,119
DATA QUEUING APPARATUS

Harufusa Kondoh, Hyogo; Hideaki Yamanaka, Kanagawa; Masahiko Ishiwaki, and Hiromi Notani, both of Hyogo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 28, 1994, Ser. No. 365,637
Claims priority, application Japan, Dec. 28, 1993, 5-337107; Sep. 6, 1994, 6-212950
Int. Cl.[6] G06F *5/01;13/00*
U.S. Cl. 395—250 **25 Claims**



1. A data queuing apparatus, comprising

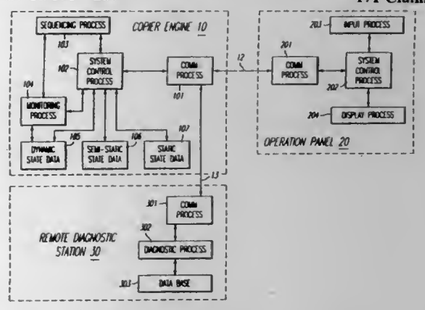
a plurality of stages of cascade-connected data queuing portions, each including a plurality of data shift means each shifting while holding data, a plurality of destination indicating bit storing means provided corresponding to said respective data shift means for storing destination indicating bits indicative of destinations of said data, and searching means for searching said plurality of destination indicating bits and for outputting the searched data; wherein

each data queuing portion receives data and destination indicating bit from a succeeding stage, and when a preceding stage is empty, outputs the data and the destination indicating bit to said empty preceding stage.

5,649,120
METHOD AND APPARATUS FOR CONTROLLING AND COMMUNICATING WITH BUSINESS OFFICE DEVICES

Tetsuro Motoyama, San Jose, Calif., assignor to Ricoh Company, Ltd., Tokyo, Japan, and Ricoh Corporation, San Jose, Calif.

Continuation of Ser. No. 562,192, Nov. 22, 1995, Pat. No. 5,568,618, which is a continuation of Ser. No. 473,780, Jun. 6, 1995, Pat. No. 5,544,289, which is a continuation of Ser. No. 426,679, Apr. 24, 1995, Pat. No. 5,537,554, which is a continuation of Ser. No. 282,168, Jul. 28, 1994, Pat. No. 5,412,779, which is a continuation of Ser. No. 902,462, Jun. 19, 1992, abandoned, which is a continuation of Ser. No. 549,278, Jul. 6, 1990, abandoned. This application Aug. 15, 1996, Ser. No. 698,068
Int. Cl.[6] G06F *3/00;* **G03G** *15/00*
U.S. Cl. 395—280 **171 Claims**



1. A business office device, comprising:

an engine for performing mechanical functions in response to a command from a separate device;

a memory for storing static state data of the engine;

means for transmitting the static state data to the separate device;

means for receiving data from the separate device which has been transmitted from the separate device after the means for transmitting transmits the static state data; and

means for processing the data received by the means for receiving and for controlling the business office device in response to the processing.

5,649,121

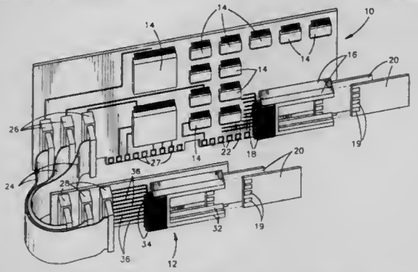
METHOD AND APPARATUS FOR PROVIDING A REMOTELY LOCATED OUTRIGGER CARD ELECTRICALLY COUPLED TO A CONTROL CARD

Mark Budman, Vestal, N.Y.; Daniel Joseph Hunt, Cary, N.C.; Mark Joseph Kuzawinski, Maine, N.Y., and David Earl Riehm, Raleigh, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 339,455, Nov. 14, 1994, abandoned. This application Jun. 28, 1996, Ser. No. 674,614

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—281 **8 Claims**



I. A computer system, comprising:

(i) a housing providing and interior space containing a system bus and a memory bus connected by a bus converter card, said bus converter card comprising a first connecting portion connected to said system bus and a second connecting portion connected to said memory bus, said bus converter card further comprising active logic components for converting communications between said system bus and said memory bus, said second connecting portion including a first adapter having a first set of memory card receiving slots for receiving a first plurality of memory cards installed therein, said first set of memory cards disposed entirely within said interior space of said housing;

(ii) a flexible cable of predetermined length having a first end extending from said second connecting portion of said bus converter card and a second end opposite said first end, said flexible cable disposed entirely within said interior space of said housing; and

(iii) an extender card connected to said second end of said flexible cable and disposed entirely within said interior space of said housing, said extender card including a second adapter having a second set of memory card receiving slots aligned with an opening in said housing for receiving a second plurality of memory cards installed therein through said opening, said extender card including circuit traces for carrying electrical signals over said memory bus, said electrical signals including signal, power and ground lines, said extender card further including a plurality of capacitors connected directly between selected signal lines and said ground line, the capacitance value of said capacitors being dependent upon said predetermined length of said flexible cable and a type of memory card received within said extender card adapter slots.

5,649,122

UNIVERSAL ASYNCHRONOUS RECEIVER/ TRANSMITTER WITH PROGRAMMABLE XON/XOFF CHARACTERS

Glenn A. Wegner, and Art Khachaturian, both of San Jose, Calif., assignors to Startech Semiconductor, Inc., San Jose, Calif.

Filed Jun. 24, 1994, Ser. No. 261,637

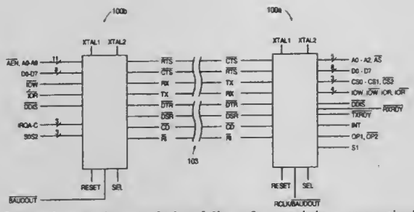
Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—285 **7 Claims**

1. A programmable circuit for flow control, comprising:

a receive signal line for receiving serial data input;

a transmit signal line for providing serial data output;



first and second control signal lines for receiving, respectively, first and second control signals;

third and fourth control signal lines for providing, respectively, third and fourth control signals;

a first register containing a first set of two user-programmable characters, said first set of two user-programmable characters forming a first two-character control sequence, said two-character control sequence representing a command to suspend data transmission of serial data;

a second register containing a second set of two user-programmable characters, said second set of two user-programmable characters forming a second two-character control sequence, said second two-character control Sequence representing a command to resume transmission of serial data; and

a control circuit, coupled to said receive signal line, said transmit signal line, said first, second, third and fourth control signal lines, and said first and second registers, for (i) transmitting said first set of two user-programmable characters as said first two-character control sequence on said transmit signal line, when said first control signal is received on said first control signal line; (ii) transmitting said second set of two user-programmable characters as said second two-character control sequence on said transmit signal line, when said second control signal is received on said second control signal line; (iii) asserting said third control signal, when said first set of two user-programmable characters are received in said first two-character control sequence on said receive signal line; and (iv) asserting said fourth control signal, when said second set of two user-programmable characters are received in said second two-character control sequence on said receive signal line.

5,649,123

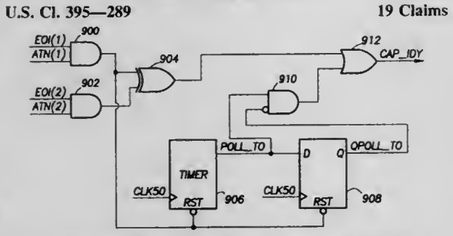
GPIB SYSTEM WITH IMPROVED PARALLEL POLL RESPONSE DETECTION

Robert C. Kowert, Pflugerville, Tex., assignor to National Instruments Corporation, Austin, Tex.

Filed Jun. 7, 1995, Ser. No. 472,626

Int. Cl.[6] G06F *13/22*

U.S. Cl. 395—289 **19 Claims**



1. A parallel poll detection system for capturing signals of a GPIB in response to a parallel poll command, comprising:

command logic for detecting the assertion and subsequent deassertion of a parallel poll command and correspondingly causing the GPIB signals to be captured both upon assertion and deassertion of said parallel poll command; and

a timer circuit coupled to said command logic for causing the GPIB signals to be captured a predetermined time after said parallel poll command is asserted.

5,649,124

Patent Not Issued For This Number

5,649,125

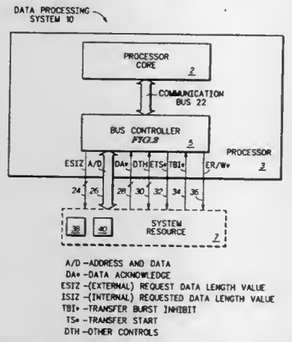
METHOD AND APPARATUS FOR ADDRESS EXTENSION ACROSS A MULTIPLEXED COMMUNICATION BUS

Donald L. Tietjen; Frank C. Galloway; David M. Menard; Ronny L. Arnold, and Nancy G. Woodbridge, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 30, 1995, Ser. No. 550,311

Int. Cl.[6] G06F *13/40*

U.S. Cl. 395—306 **21 Claims**



1. A method for providing valid addresses across a multiplexed communication bus, the method comprising the steps of:

initiating a first data transfer, the first data transfer having an address value and at least one data value, the address value including an address extension value, the address extension value having an address extension length;

providing an address extension control signal to a bus controller;

in response to receipt of the address extension control signal, allocating a portion of the multiplexed communication bus for the address extension length;

providing the address value during an address phase of the first data transfer;

providing the address extension value during a first data phase of the data transfer; and

transferring a first data value across the multiplexed communication bus during the first data phase of the data transfer.

5,649,126

PARALLEL SIGNAL BUS WITH REDUCED MILLER EFFECT CAPACITANCE

William L. Lynch, Palo Alto, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Dec. 4, 1995, Ser. No. 566,842

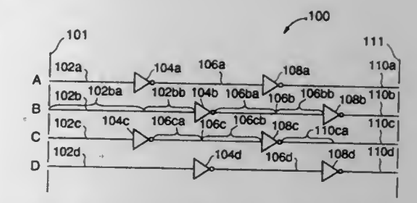
Int. Cl.[6] G06F *13/40*

U.S. Cl. 395—306 **15 Claims**

1. An apparatus including a parallel signal bus for conveying a plurality of logic signals with reduced Miller effect capacitance, said parallel signal bus comprising:

a first plurality of logic signal paths each one of which includes a first conductor having a first conductor length; and

a second plurality of logic signal paths, wherein individual ones of said first and second pluralities of logic signal paths are



adjacent and substantially parallel to one another, and wherein each one of said second plurality of logic signal paths includes:

a second conductor having a second conductor length,

a first logic inverter having an input terminal connected to an end of said second conductor and having an output terminal, and

a third conductor having a third conductor length and one end connected to said first logic inverter output terminal,

wherein said second and third conductor lengths are approximately equal to one another and a sum of said second and third conductor lengths is approximately equal to said first conductor length.

5,649,127

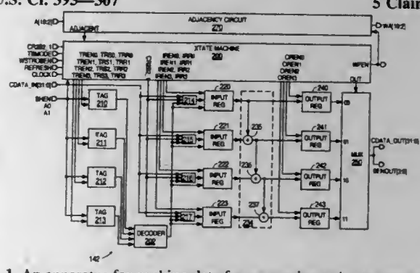
METHOD AND APPARATUS FOR PACKING DIGITAL DATA

Chia-Lun Hang, Fremont, Calif., assignor to Samsung Semiconductor, Inc., San Jose, Calif.

Filed May 4, 1994, Ser. No. 238,273

Int. Cl.[6] G06F *13/38*

U.S. Cl. 395—307 **5 Claims**



1. An apparatus for packing data for successive write accesses to a memory in accordance with addresses on an address bus, comprising:

a tag memory having inputs coupled to low order bits of the address bus and having respective outputs to provide low order address bits for each of the successive write accesses;

a decoder having inputs coupled to the outputs of the tag memory and outputs to indicate which byte fields of the successive write accesses are valid;

an input data memory;

a plurality of steering circuits having data inputs coupled to a data bus and control inputs coupled to the decoder outputs, and outputs coupled to the input data memory to direct data from each successive transfer into bit positions of respective entries of the input data memory;

an output data memory distinct from the input data memory;

an encoding circuit having inputs coupled to the outputs of the input data memory, and outputs coupled to the output data memory to direct progressively combined data from the input data memory to respective entries of the output data memory; and

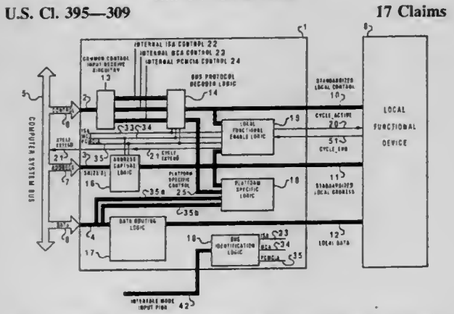
a multiplexer having inputs coupled to outputs of the output data memory, and

an output to furnish a selected one of the multiplexer inputs.

5,649,128
MULTIPLE BUS INTERFACE ADAPTER FOR CONNECTION TO A PLURALITY OF COMPUTER BUS ARCHITECTURES

Lee F. Hartley, Toronto, Canada, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 1, 1994, Ser. No. 332,962
Claims priority, application Canada, Nov. 22, 1993, 2109682
Int. Cl.[6] G06F *13/40*
U.S. Cl. 395—309 17 Claims



1. A multiple bus interface adapter for connection to the bus of a data processing device, the multiple bus interface adapter comprising:

common interface means for connection to any of several data processing device bus architectures for operation therewith, wherein said common interface means includes;

(a) control interface means for accepting control signals from the bus of said data processing device;

(b) address interface means for accepting address signals from said data processing device;

(c) data interface means for accepting data signals from said data processing device;

bus identifier means for identifying the bus architecture of said data processing device;

bus protocol decoder means responsive to said bus identifier means, said bus protocol decoder means deriving its input from said control interface means and being adapted to produce as an output standardized local control signals, wherein said standardized local control signals are derived from said control signals of said data processing device and are usable by a plurality of local functional devices; and

a standardized local control signal output connectable to a selected local functional device among said plurality of local functional devices.

5,649,129
GPIB SYSTEM INCLUDING CONTROLLER AND ANALYZER

Robert C. Kowert, Pflugerville, Tex., assignor to National Instruments Corporation, Austin, Tex.

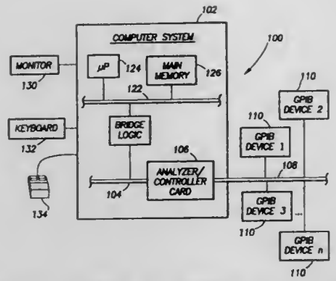
Filed Jun. 7, 1995, Ser. No. 475,067
Int. Cl.[6] G06F *13/42*
U.S. Cl. 395—309 20 Claims

1. A circuit card for connecting to an IEEE 488 bus, comprising:

an IEEE 488 connector for coupling to the IEEE 488 bus;

an IEEE 489 controller, comprised on said circuit card, for performing IEEE 488 controller functions on said IEEE 488 bus, wherein said IEEE 488 controller is configured for addressing devices on said IEEE 488 bus as talkers or listeners;

an IEEE 488 analyzer, comprised on said circuit card, for sampling and analyzing the IEEE 488 bus, wherein said IEEE 488 analyzer and said IEEE 488 controller are both coupled to said IEEE 488 connector, and wherein said IEEE 488 analyzer operates independently of and concurrently with said IEEE 488 controller; and

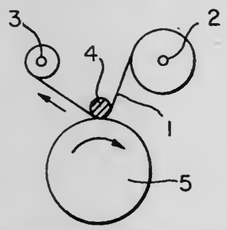


a host system connection for interfacing said circuit card to a host system, wherein said IEEE 488 controller and said IEEE 488 analyzer are configured to communicate with the host system through said host system connection.

5,649,130
CLEANING SHEET, A CLEANING MEMBER AND A CLEANING APPARATUS FOR A FUSER ROLL

Masahiro Nakajima; Hiroshi Ito, and Hiroshi Tanaka, all of Shiga, Japan, assignors to Japan Vilene Company, Ltd., Tokyo, Japan

Filed Aug. 9, 1996, Ser. No. 694,933
Claims priority, application Japan, Aug. 11, 1995, 7-227368
Int. Cl.[6] G03G *15/20;15/22*
U.S. Cl. 399—327 10 Claims



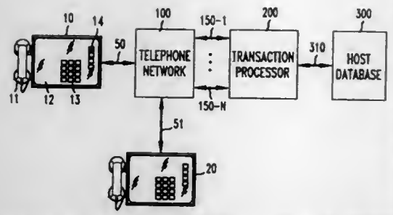
1. A cleaning sheet for a fuser roll, wherein an average diameter of fibers constituting said cleaning sheet is not more than 14 μm; a layer containing not less than 30% by weight of softening fibers which soften at a temperature higher than an ambient temperature of the fuser roll, but lower than a temperature which is 100° C. higher than a surface temperature of said fuser roll is contained; and said cleaning sheet is bonded with adhesive fibers having a fiber diameter of not more than 20 μm.

5,649,131
COMMUNICATIONS PROTOCOL

Chaim M. Ackerman, Lakewood; Alan L. Glasser, Manalapan, and Reuben Klein, East Brunswick, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 30, 1992, Ser. No. 257,215
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—335 10 Claims

4. A method of operating a host processor communicating with a terminal device, said method comprising the steps of



assigning an identifier to a respective one of a plurality of predefined presentation data types, said host being the originator of said identifier and said presentation data types,

transmitting said identifier and its respective presentation data type to said device, and

responsive to a manipulation of said respective presentation data type at said terminal device, transmitting to said processor said identifier and data representative of said manipulation,

further transmitting to said device at least a first datum,

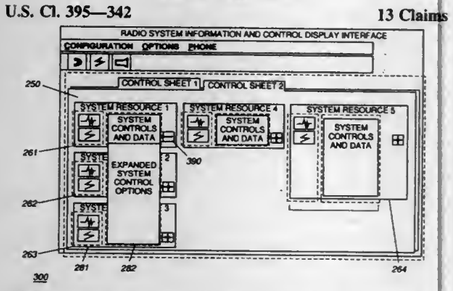
wherein said data representative of said manipulation includes said first datum and wherein said respective presentation data type is representative of one of a plurality of different object types, and

presenting said first datum as a default data entry value for said one object type.

5,649,132
METHOD AND APPARATUS FOR A RADIO COMMUNICATION SYSTEM CONTROL INTERFACE

Arthur L. Fumarolo, Schaumburg; Dana Schwartz, Highland Park; Jennifer E. Chisik, Vernon Hills, and Heidi A. Hattendorf, Lake Zurich, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 3, 1995, Ser. No. 415,977
Int. Cl.[6] B06F *3/00*
U.S. Cl. 395—342 13 Claims



1. A method of operating a display interface for control of a radio communication system comprising the steps of:

forming, on the display interface, a plurality of radio system control panels each having a critical display area and a non-critical display area;

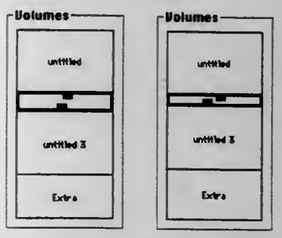
displaying the plurality of radio system control panels within predefined borders when in a first operating mode, and to have portions expanding beyond the predefined borders when in a second operating mode; and

automatically restricting arrangement of the plurality of radio system control panels to a relative pattern such that a radio system control panel operating in the second operating mode never covers the critical display area of another radio system control panel of the plurality of radio system control panels.

5,649,133
METHOD FOR COLLISION AVOIDANCE FOR USER INTERFACE FOR OBJECT WITH MULTIPLE HANDLES

Louis M. Arquié, San Jose, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Jun. 13, 1995, Ser. No. 489,851
Int. Cl.[6] G06F *3/00*
U.S. Cl. 395—348 5 Claims



1. A collision avoidance system for controlling the position of handles used to manipulate a graphical object, said system comprising

a graphical object with a first and a second portion which can be brought into close proximity,

a first handle for controlling the position of said first portion, said first handle at a primary position relative to and associated with said first portion,

a second handle for controlling the position of said second portion, said second handle at a primary position relative to and associated with said second portion,

a proximity detection mechanism for detecting when said first handle and said second handle would touch if brought too closely together,

a displacement mechanism for moving said first handle away from its primary position when the proximity detection mechanism detects a potential collision.

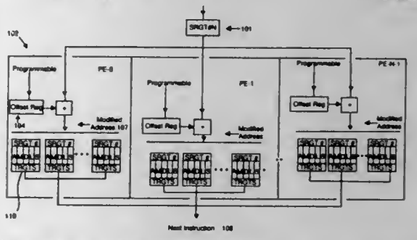
5,649,134

Patent Not Issued For This Number

5,649,135
PARALLEL PROCESSING SYSTEM AND METHOD USING SURROGATE INSTRUCTIONS

Gerald G. Pechanek, Cary; Clair John Glossner, Durham; Larry D. Larsen, Raleigh, all of N.C., and Stamatis Vassiliadis, Zoetermeer, Netherlands, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 17, 1995, Ser. No. 373,128
Int. Cl.[6] G06F *9/355*
U.S. Cl. 395—396 23 Claims



21. A data processing system, comprising:

a memory means, for storing a first type primary instruction which, when executed performs an operation, a second type primary instruction, which provides an address pointer, and a

first and second alternate instructions stored at first and second locations accessed by first and second address pointers, respectively;

said memory means further storing a segment delimiter instruction and a first and second simplex instructions, each of said alternate instructions having a first slot portion capable of storing said first simplex instruction and a second slot portion capable of storing said second simplex instruction;

a first processor element coupled to said memory means, the first processor element having a first unique offset value, for executing said instructions;

said first processor element including an instruction decode, for processing said first type primary instruction to perform an operation;

said instruction decode of said first processor element processing said first unique offset value thereof with said second type primary instruction to generate a first address pointer to a first alternate instruction in said memory means; and in response thereto said memory means outputting said first alternate instruction to said first processor element;

said instruction decode of said first processor element processing said first unique offset value thereof with said segment delimiter instruction to insert said first simplex instruction in said first slot portion and said second simplex instruction in said second slot portion of said first alternate instruction;

a second processor element coupled to said memory means, the second processor element having a second unique offset value, for executing said instructions;

said second processor element including an instruction decode, for processing said first type primary instruction to perform an operation;

said instruction decode of said second processor element processing said second unique offset value thereof with said second type primary instruction to generate a second address pointer to a second alternate instruction in said memory means, and in response thereto said memory means outputting said second alternate instruction to said second processor element;

said instruction decode of said second processor element processing said second unique offset value thereof with said segment delimiter instruction to insert said first simplex instruction in said first slot portion and said second simplex instruction in said second slot portion of said second alternate instruction;

whereby an instruction broadcast from said memory means, can selectively control diverse operations in said first and second processor elements.

5,649,136

PROCESSOR STRUCTURE AND METHOD FOR MAINTAINING AND RESTORING PRECISE STATE AT ANY INSTRUCTION BOUNDARY

Gene W. Shen, Mountain View; John Szeto, Oakland; Niteen A. Patkar, Sunnyvale, all of Calif., and Michael C. Shebanow, Plano, Tex., assignors to Hal Computer Systems, Inc., Campbell, Calif.

Continuation of Ser. No. 398,299, Mar. 3, 1995, abandoned, which is a continuation of Ser. No. 390,885, Feb. 14, 1995, abandoned. This application Jun. 7, 1995, Ser. No. 483,958

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—591 **18 Claims**

1. In a processor having means for issuing instructions, means for executing instructions, and a memory store for storing data within said processor, a method of restoring a prior machine state in a processor at any instruction boundary upon detecting a condition requiring processor state restoration; said method comprising the steps of:

allocating an instruction serial number for each issued instruction;

storing machine state information in a checkpoint within a data store in said processor prior to execution only for a first predetermined set of executable instructions that alter machine state, said predetermined set of executable instructions that alter machine state being fewer than the set of all of the executable instructions that alter machine state implemented within said processor;

identifying the instruction causing said fault, and if multiple exceptions or faults occurred simultaneously then identifying the in order sequentially earliest instruction causing a fault or exception;

if said earliest faulting instruction is a checkpointed instruction, then restoring said machine state information stored prior to execution of said faulting instruction and decrementing the processor program counter to the instruction serial number of said faulting instruction to restore said prior machine state;

if one of said predetermined executable instructions for which a machine state information has been stored is sequentially interposed between said faulting instruction and the last issued instruction, then (i) first, backing-up said processor to the closest checkpoint to said faulting instruction sequentially after said faulting instruction, and (ii) second, backstepping said processor to restore processor state to the state that existed just prior to execution of said faulting instruction by updating register resources and (iii) decrementing the processor program counter to the instruction serial number of said faulting instruction.

5,649,137

METHOD AND APPARATUS FOR STORE-INTO-INSTRUCTION-STREAM DETECTION AND MAINTAINING BRANCH PREDICTION CACHE CONSISTENCY

John G. Favor, San Jose; Korbin Van Dyke, Fremont, and David R. Stiles, Sunnyvale, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 326,409, Oct. 20, 1994, Pat. No. 5,511,175. This application Jan. 3, 1996, Ser. No. 582,294

Int. Cl.[6] G06F *9/38;9/42*

U.S. Cl. 395—383 **2 Claims**

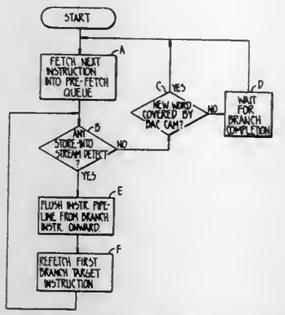
1. An apparatus comprising:

an instruction pipeline for overlapping execution of a plurality of sequential instructions;

first and second prefetch buffers for holding, when active, a plurality of instructions, queued for possible execution by said pipeline;

an address storage holding a first and second address values that identify first and second blocks of addresses including said plurality of instructions held in said first and second prefetch buffer;

comparator coupled to said address storage and said pipeline; and



a controller configured to invalidate a first instruction already provided to the instruction pipeling when a subsequent instruction attempts to change said first instruction, with an error signal being generated when said comparator detects that a third address value from said pipeline is for a store operation and corresponds to one of said first and second address values, said controller, in response flushing and restarting at least a portion of said instruction pipeline.

5,649,138

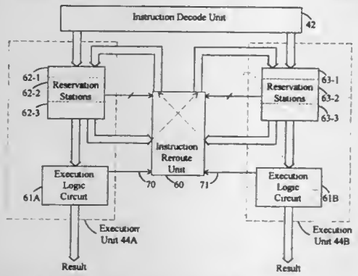
TIME DEPENDENT REROUTING OF INSTRUCTIONS IN PLURALITY OF RESERVATION STATIONS OF A SUPERSCALAR MICROPROCESSOR

Mark A. Ireton, Austin, Tex., assignor to Advanced Micro Devices, Sunnyvale, Calif.

Filed Jan. 4, 1996, Ser. No. 583,193

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—393 **14 Claims**



1. A superscalar microprocessor comprising:

a first execution logic circuit configured to execute a predetermined set of instructions;

a first reservation station unit coupled to said first execution logic circuit and configured to store a pending instruction to be executed by said first execution logic circuit;

a second execution logic circuit configured to execute said predetermined set of instructions;

a second reservation station unit coupled to said second execution logic circuit; and

an instruction reroute unit coupled to said first and second execution logic units and to said first and second reservation station units and configured to reroute said pending instruction to be executed by said first logic unit to said second reservation station unit in response to said instruction reroute unit determining that said pending instruction must wait for more than a predetermined number of clock cycles before said pending instruction can begin execution within said first execution logic unit.

5,649,139

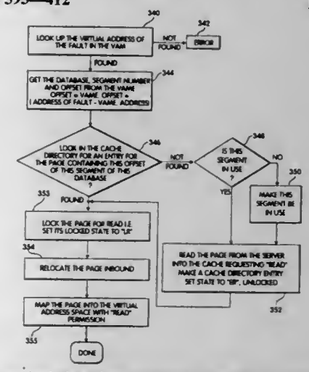
METHOD AND APPARATUS FOR VIRTUAL MEMORY MAPPING AND TRANSACTION MANAGEMENT IN AN OBJECT-ORIENTED DATABASE SYSTEM

Daniel L. Weinreb, Arlington, and Sam J. Haradhvala, Weston, both of Mass., assignors to Object Design, Inc., Burlington, Mass.

Division of Ser. No. 674,874, Mar. 22, 1991, Pat. No. 5,426,747. This application May 31, 1995, Ser. No. 456,237

Int. Cl.[6] G06F *12/00*

U.S. Cl. 395—412 **108 Claims**



38. A method for virtual memory mapping and transaction management for a database system having at least one permanent storage means for storing data in at least one database, a virtual memory system defining a virtual address space and including at least one cache memory for temporarily storing data addressed by physical addresses and means for mapping virtual addresses to physical addresses, and a processing unit, the processing unit including means for requesting data utilizing a virtual address to access said data in the at least one cache memory, said method comprising the steps of:

detecting, using the virtual memory system, when access to data requested by the means for requesting is not permitted at the virtual address utilized by the means for requesting,

determining if the requested data is in the at least one cache memory in response to a detection that access to the requested data is not permitted,

transferring the requested data from the at least one permanent storage means to the at least one cache memory, when the requested data is not in the at least one cache memory,

instructing the means for mapping to map the virtual address of the requested data to the physical address of the requested data in the at least one cache memory, and

permitting access to the requested data.

5,649,140

SYSTEM FOR USE IN TRANSLATING VIRTUAL ADDRESSES INTO ABSOLUTE ADDRESSES

Karl Jean Duvalsaint, Hyde Park; Mark Steven Farrell, Pleasant Valley; Barry Watson Krumm, Poughkeepsie, all of N.Y.; Donald William McCauley, Austin, Tex., and Charles Franklin Webb, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

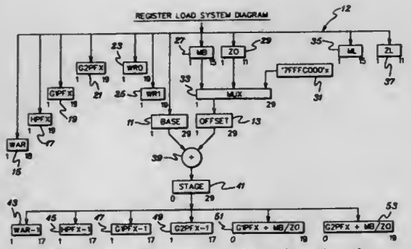
Filed Mar. 31, 1995, Ser. No. 414,671

Int. Cl.[6] G06F *9/26;9/34;12/00;12/02*

U.S. Cl. 395—413 **15 Claims**

1. A system, in a processor, for use in translating a virtual address to an absolute address, said processor operating according to a clock, said system comprising:

a plurality of registers wherein said plurality of registers comprises a plurality of first registers and a plurality of corresponding minus one registers, said plurality of minus one



registers for storing parameter values of one less than corresponding values in the corresponding ones of said plurality of first registers;

means for loading said plurality of registers with a first set of address translation parameters;

an adder for adding a translation table origin ("tto") to an offset, an output of said adder comprising a base-plus-offset value; and

a logic circuit coupled to and operative with said adder for determining at least a portion of an address of a translation table entry ("atte") and for performing at least one of windowing, prefixing, zoning and memory begin, said logic circuit using said base-plus-offset value and one or more of said first set of address translation parameters from said plurality of registers during said determining and said performing, wherein a latency of said system from a presentation of said tto to said adder to an output of said portion of said atte from said logic circuit is at most one clock cycle of said clock of said processor.

5,649,141

MULTIPROCESSOR SYSTEM FOR LOCALLY MANAGING ADDRESS TRANSLATION TABLE

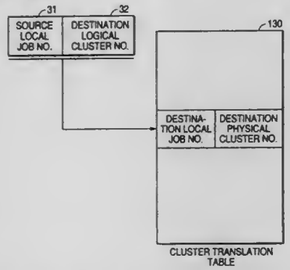
Takeshi Yamazaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 30, 1995, Ser. No. 497,447

Claims priority, application Japan, Jun. 30, 1994, 6-149440

Int. Cl.[6] G06F *12/10*

U.S. Cl. 395—416 **5 Claims**



1. A multiprocessor system comprising a plurality of clusters each having a memory and at least one processor, and a network for connecting said plural clusters with each other, wherein:

a first cluster includes cluster translating means for translating a virtual address corresponding to a first memory access request issued from a processor in the first cluster into an intermediate address, and for sending a second memory access request, based on the intermediate address, via said network to a second cluster when the intermediate address corresponds to said second cluster; and

said second cluster includes address translating means for producing a physical address from the intermediate address corresponding to said second memory access request issued from said first cluster, thereby accessing to a memory in the second cluster designated by said produced physical address, and wherein:

said virtual address includes a source local job number allocated to a job executed by said processor in said first cluster, a destination logical cluster number, and a logical address;

said intermediate address includes a destination local job number, a destination physical cluster number, and the logical address;

said cluster translating means generates the destination local job number and the destination physical cluster number from the source local job number and the destination logical cluster number, said first cluster sending the second memory access request to said second cluster when a cluster designated by the destination physical cluster number corresponds to said second cluster;

said network transfers the second memory access request issued from said first cluster to said second cluster in accordance with the destination physical cluster number of said second cluster; and

said address translating means produces a physical address from both of the destination local job number in said second cluster and the logical address within said second cluster, thereby accessing to said memory in the second cluster designated by said produced physical address.

5,649,142

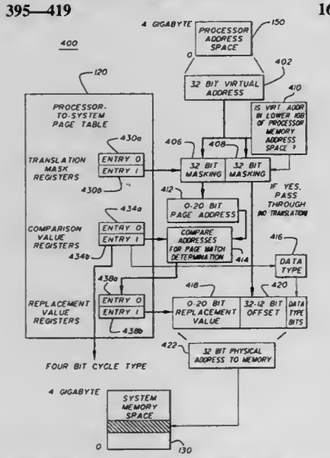
METHOD AND APPARATUS FOR TRANSLATING ADDRESSES USING MASK AND REPLACEMENT VALUE REGISTERS AND FOR ACCESSING A SERVICE ROUTINE IN RESPONSE TO A PAGE FAULT

Gary Lavelle, Newtown, Pa.; Louis A. Lippincott, Roebling, N.J.; Kevin Harney, Brooklyn, N.Y., and Dinesh G. Rao, Rancho Cordova, Calif., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 999,490, Dec. 31, 1992, abandoned, which is a continuation-in-part of Ser. No. 926,742, Aug. 6, 1992, abandoned, which is a continuation-in-part of Ser. No. 782,332, Oct. 24, 1991, Pat. No. 5,361,370. This application Jun. 7, 1995, Ser. No. 476,061

Int. Cl.[6] G06F *12/10;13/00*

U.S. Cl. 395—419 **16 Claims**



1. An apparatus for translating a first address in a first address space to a second address in a second address space, comprising:

(a) a processor;

(b) a page table having a translation mask register, a comparison value register, and a replacement value register; and

(c) a comparator coupled to the comparison value register and to the replacement value register; wherein:

the first address comprises a first subaddress and a second subaddress, the first subaddress comprising a subset of the bits of the first address and the second subaddress comprising remaining bits of the first address;

the first subaddress masked with a mask value stored in the mask register is compared by the comparator with successive comparison values stored in the comparison value register until a match comparison value is found; and

if a match comparison value is found, then a replacement value in the replacement value register corresponding to the match comparison value is concatenated with the second subaddress to provide the second address;

otherwise, if a match comparison value is not found, then a fault interrupt is generated to interrupt the translation and the processor accesses a service routine in accordance with the fault interrupt.

5,649,143

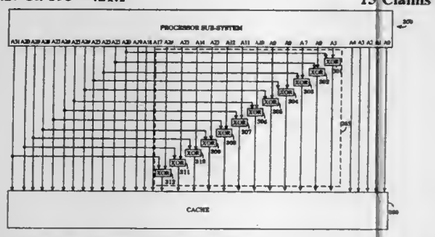
APPARATUS AND METHOD FOR PROVIDING A CACHE INDEXING SCHEME LESS SUSCEPTIBLE TO CACHE COLLISIONS

Bodo K. Parady, Danville, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Jun. 2, 1995, Ser. No. 459,755

Int. Cl.[6] G06F *12/00*

U.S. Cl. 395—421.1 **15 Claims**



1. A microprocessor system comprising:

a bus;

a memory sub-system coupled to said bus, said memory sub-system including a cache element which includes cache memory having a plurality of cache lines each indexed by a set address;

a processor sub-system coupled to said bus, said processor sub-system transfers a memory address, including a set address and a tag address, to the cache element in order to request access to one of said plurality of cache lines; and

logic circuitry coupled to the cache element and the processor sub-system, said logic circuitry includes a plurality of logic gates arranged in parallel so that each of the logic gates receives as input a bit of the tag address and a corresponding bit of the set address so that the plurality of logic gates collectively produce an output result, said logic circuitry performs an indexing scheme in which the set address of the memory address is offset in order to produce an indexed set address, said indexing scheme being equivalent to performing a modulo operation on the memory address using a Mersenne pseudo-prime number as a modulus.

5,649,144

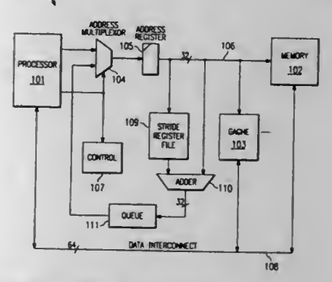
APPARATUS, SYSTEMS AND METHODS FOR IMPROVING DATA CACHE HIT RATES

Gary B. Gostin; Gregory D. Brinson, both of Plano; Todd H. Beck, Garland, and David L. Trawick, Plano, all of Tex., assignors to Hewlett-Packard Co., Palo Alto, Calif.

Continuation of Ser. No. 258,790, Jun. 13, 1994, abandoned. This application Aug. 29, 1996, Ser. No. 705,023

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—421.1 **20 Claims**



1. A system comprising:

means for generating a memory address;

means for generating offset register selection information;

means for storing said memory address and said generated offset selection information;

means for presenting said stored memory address to a cache to retrieve corresponding data from said cache when said corresponding data is encached therein;

means for presenting said stored memory address to a main memory to retrieve said corresponding data therefrom when said corresponding data is not encached in said cache;

means for adding an offset value contained in said selected offset register to said memory address to obtain a prefetch address;

means for presenting said prefetch address to a main memory to retrieve corresponding prefetch data stored in said main memory; and

means for storing said prefetch data retrieved from the main memory in said cache.

5,649,145

DATA PROCESSOR PROCESSING A JUMP INSTRUCTION

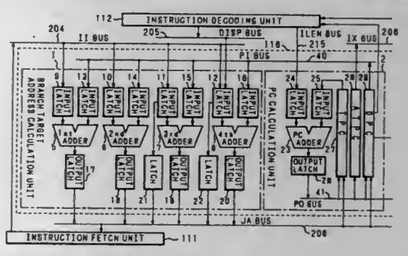
Masahito Matsuo, and Toyohiko Yoshida, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 10,085, Jan. 27, 1993, Pat. No. 5,485,587. This application Sep. 29, 1995, Ser. No. 537,001

Claims priority, application Japan, Feb. 7, 1992, 4-226695

Int. Cl.[6] G06F *9/30;9/32*

U.S. Cl. 395—421.03 **2 Claims**



1. A data processor for processing a jump instruction specifying the jump target address by either of a plural number of addressing

modes including, a PC relative mode for specifying an address by a displacement from the instruction address, and an absolute mode for specifying an address by an absolute address, comprising;

a memory for storing instructions;

an instruction fetch unit for fetching the instructions from said memory;

an instruction decoding unit for decoding the instructions fetched by said instruction fetch unit, dividing one instruction into one or more plural number of unit processing codes and processing one or a plural number of unit processing codes by one decoding processing;

an instruction execution unit for executing the instructions on the basis of the instruction decoding result by said instruction decoding unit;

a program counter for holding an address of the unit processing code decoded in said instruction decoding unit;

a branch target address calculation unit for calculating a first address in parallel with decoding of a first unit processing code in said instruction decoding unit, by adding a value of said displacement field of said PC relative mode of said first unit processing code inputted from said instruction fetch unit, an address of a second unit processing code decoded immediately before said first unit processing code, the address of a second unit processing code being inputted from said program counter, and a code length of said second unit processing code inputted from said instruction decoding unit, said branch target address calculation unit starting calculation of first address before the instruction including first unit processing code is identified as said jump instruction specifying the jump target address in said PC relative mode;

cut-out means for obtaining a second address by cutting out the absolute address field of said absolute mode of said first unit processing code inputted from said instruction fetch unit, in parallel with decoding of said first unit processing code in said instruction decoding unit, said cut-out means starting cut-out operation before the instruction including said first unit processing code is identified as said jump instruction specifying the jump target address is said absolute mode; and

transferring means for selectively transferring said first address calculated in said branch target address calculation unit, and said second address obtained by said cut-out means to the instruction fetch unit; wherein

when it is clear that the instruction including said first unit processing code is the jump instruction where the jump target address is specified in said PC relative mode,

said branch target address calculation unit transfers said first address to said instruction fetch unit via said transferring means, and

said instruction fetch unit fetches an instruction of said first address transferred from said branch target address calculation unit, and

when it is clear that said instruction including said first unit processing code is the jump instruction where the jump target address is specified in said absolute mode,

said cut-out means transfers said second address to said instruction fetch unit via said transferring means, and

said instruction fetch unit fetches an instruction of said second address transferred from said cut-out means.

5,649,146

MODULO ADDRESSING BUFFER

Marc Riou, Saint Egreve, France, assignor to SGS - Thomson Microelectronics S.A., Gentilly, France

Filed Mar. 30, 1995, Ser. No. 413,709

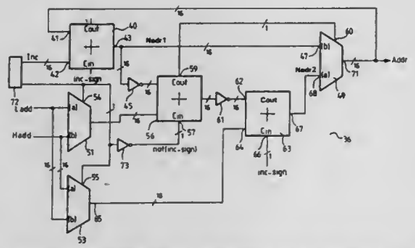
Claims priority, application France, Mar. 31, 1994, 94 03861

Int. Cl.[6] G06F *9/26;12/00*

U.S. Cl. 395—421.07 **15 Claims**

1. A circuit for incrementing a current address of a circular buffer in an electronic memory by an increment to produce a next address including:

an adder circuit for adding said current address to said increment and producing a first provisional next address;



a circuit which causes said next address to be a base address plus an overshoot when said first provisional next address passes a limit address by a number equal to said overshoot, wherein said adder circuit includes first, second and third adders,

said first adder adds said current address, and said increment to produce said first provisional next address,

said second adder adds or subtracts, depending on the polarity of said increment, said first provisional next address and said limit address and produces a difference value and a signal indicating the passing of said limit address by said first provisional next address,

said third adder adds or subtracts, depending on the polarity of said increment, said difference value and said base addresses to produce a second provisional next address;

a selection circuit for selecting as said next address one of said first or second provisional next addresses, the selection being made upon the polarity of the difference between said first provisional next address and said limit address.

5,649,147

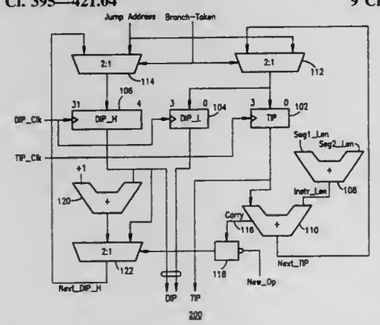
CIRCUIT FOR DESIGNATING INSTRUCTION POINTERS FOR USE BY A PROCESSOR DECODER

Christopher E. Phillips, and Mario Nemirovsky, both of San Jose, Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed May 26, 1995, Ser. No. 451,495

Int. Cl.[6] G06F *12/04*

U.S. Cl. 395—421.04 **9 Claims**



1. A circuit for designating the values of an M bit first pointer and of an N+M bit second pointer, comprising:

a first register circuit network which holds the M bit first pointer;

a second register circuit network which holds an M bit portion of the N+M bit second pointer;

a third register circuit network which holds the remaining N bit portion of the N+M bit second pointer;

a combiner circuit network connected to receive the M bit first pointer from the first register circuit network and that combines the received M bit first pointer with an externally provided data element length value to generate a new M bit first pointer, said combiner circuit network including a carry generator that selectively generates a carry signal;

first means for providing the new M bit first pointer for loading into the first register circuit network and for loading into the second register circuit network as the M bit portion of the N+M bit portion of the second pointer;

second means connected to receive the remaining N bit portion of the N+M bit second pointer from the third register circuit network and for selectively providing, in response to the carry signal, one of the received remaining N bit portion and a modified remaining N bit portion as a new remaining N bit portion and for loading the new remaining N bit portion into the third register circuit network.

5,649,148

FAST DIGITAL SIGNAL PROCESSOR INTERFACE USING DATA INTERCHANGING BETWEEN TWO MEMORY BANKS

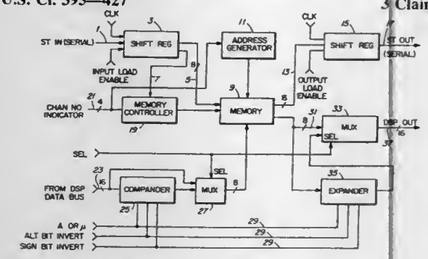
Paul A. Gresham, Arnprior, Canada, assignor to Mitel Corporation, Kanata, Canada

Filed May 21, 1993, Ser. No. 65,533

Claims priority, application Canada, Oct. 8, 1992, 2080159

Int. Cl.[6] G06F *12/00;* **H04Q** *11/04*

U.S. Cl. 395—427 **3 Claims**



1. A digital signal processor (DSP) interface comprising:

(a) a memory containing a pair of memory banks

(b) means connected to the memory for receiving an input signal and for storing the input signal in a first one of said pair of memory banks,

(c) means connects to the memory for receiving a signal from a digital signal processor (DSP) and for storing the signal from the DSP in a second one of said pair of memory banks,

(d) means connects to the memory for logically interchanging contents of said pair of memory banks,

(e) means connected to the memory for reading said first one of said pair of memory banks and converting data read from the first one of said pair of memory banks to an output signal,

(f) means for reading the second one of said pair of memory banks and providing a signal for input to the DSP,

(g) the storing means further comprises an input shift register for receiving a serial input signal having plurality of channels, the input shift register containing sufficient storage for one of the channels and providing a parallel input signal to the memory, each of the channel banks having sufficient capacity to store one of each of the channels of a frame at a memory location corresponding to a channel time thereof,

(h) means for selectively expanding the output signal of one of the memory banks after reading the memory,

(i) an output shifter register having similar capacity as said input shifter register, and having means for receiving an output from one of the memory banks on a channel by channel basis and for outputting a serial signal on a serial output bus,

(j) means for receiving an output signal of the other of said pair of memory banks and for providing a DSP signal on a DSP parallel output bus.

5,649,149

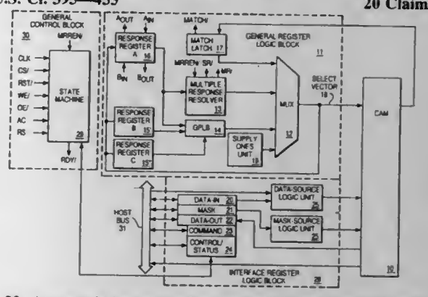
INTEGRATED CONTENT ADDRESSABLE MEMORY ARRAY WITH PROCESSING LOGICAL AND A HOST COMPUTER INTERFACE

Charles D. Stormon, Syracuse, N.Y.; Abhijeet Chavan, Ann Arbor, Mich.; Nikos B. Troullinos, Syracuse, N.Y., and Raymond M. Leong, Los Altos, Calif., assignors to Cypress Semiconductor Corporation, San Jose, Calif.

Filed Aug. 1, 1994, Ser. No. 284,347

Int. Cl.[6] G06F *12/02;13/00*

U.S. Cl. 395—435 **20 Claims**



20. An associative processing memory system for concurrent data searching and concurrent data processing comprising:

a content addressable memory (CAM) array having a plurality of CAM words;

a general register logic block which generates a select vector, said general register logic block coupled to said CAM array comprising:

a multiplexer which selects one of a plurality of input devices and passes an output, representing said select vector, of one of said plurality of input devices, said multiplexer coupled to said CAM array,

at least one response register which stores search results and is one of a source and a destination of a logic operation, said at least one response register coupled to said CAM array, and

said plurality of input devices comprising:

a match storage circuit which stores search results from said CAM array, said match storage circuit coupled to said multiplexer,

a prioritizer which prioritizes said at least one response register, said prioritizer coupled to said multiplexer and to said at least one response register,

a general purpose logic block which performs a Boolean operation on the contents of said at least one response register, said general purpose logic block coupled to said multiplexer, and

a reference value unit which supplies reference values to said multiplexer, said reference value unit coupled to said multiplexer; and

an interface register logic block coupled to said CAM array, said interface register logic block comprising:

a first register which stores an input data pattern, said input data pattern being stored for either of a write operation and a search operation,

a second register which stores a mask pattern,

a third register which stores an output data pattern, said third register coupled to said CAM array,

a fourth register which stores an instruction,

a fifth register which stores control and status information,

a first logic unit which selects a data pattern from the group of sources consisting of said first register, and a predetermined data pattern and transmits said selected data pattern to said CAM array, wherein said first logic unit coupled to said first register and to said CAM array, and

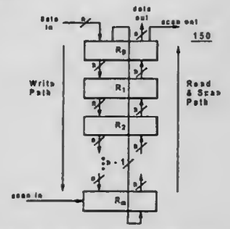
a second logic unit which selects a mask pattern from the group of sources consisting of said second register and an internally generated mask pattern, and which transmits said selected mask pattern to said CAM array, said second logic unit coupled to said mask register and to said CAM array.

5,649,150

SCANNABLE LAST-IN-FIRST-OUT REGISTER STACK

Mark Eric Pedersen, Burlington, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 12, 1995, Ser. No. 420,962
Int. Cl.[6] G06F *13/00;11/00*
U.S. Cl. 395—437 **10 Claims**



1. A last-in-first-out register stack, comprising:

a plurality of registers arranged in a stack, each register having a plurality of bit locations, wherein the plurality of registers includes a top register and a bottom register;

each bit location in a register within the plurality of registers and located between the top register and the bottom register being in communication with a corresponding bit location in an adjacent register located above the register and a corresponding bit location in an adjacent register located below the register;

each bit location in the top register being in communication with an offset bit location in the bottom register except for the last bit location in the top register, the last bit location in the top register having a scan output; and

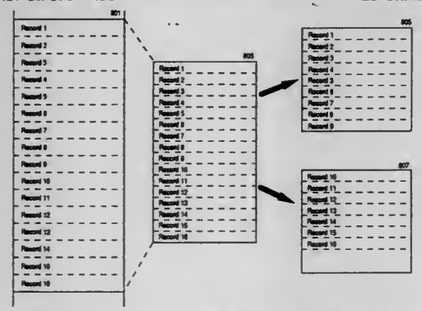
a first bit location in the bottom register having an input for receiving data.

5,649,151

EFFICIENT METHOD AND APPARATUS FOR ACCESS AND STORAGE OF COMPRESSED DATA

Ke-Chiang Chu, Saratoga, and Calvin K. Y. Lum, Sunnyvale, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 905,984, Jun. 29, 1992, abandoned. This application May 26, 1995, Ser. No. 451,618
Int. Cl.[6] G06F *12/08*
U.S. Cl. 395—438 **21 Claims**



1. An improved method of data storage and access in a storage medium divisible into separately addressable segments, said improved data storage and access method comprising the following steps:

a) dividing an uncompressed data file into logical blocks of a predetermined size;

b) obtaining a compression ratio of said uncompressed data file;

c) allocating as many said storage medium segments as indicated by said compression ratio and said storage medium segment size;

d) compressing each said logical block of said data file;

e) storing each said compressed logical block of said data file into said allocated storage medium segments;

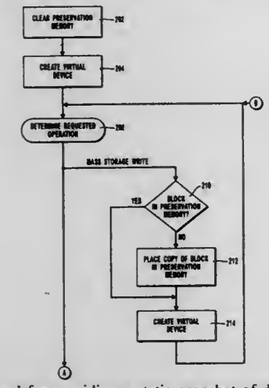
f) for each said uncompressed logical block of said data file, mapping said uncompressed logical block of said data file to said storage medium segments containing said compressed logical block of said uncompressed logical block of said data file, said mapping providing an access correlation between each said uncompressed logical block of said data file and each said storage medium segment containing said compressed logical block of each said uncompressed logical block of said data file.

5,649,152

METHOD AND SYSTEM FOR PROVIDING A STATIC SNAPSHOT OF DATA STORED ON A MASS STORAGE SYSTEM

Richard S. Ohran, Provo, and Michael R. Ohran, Orem, both of Utah, assignors to Vinca Corporation, Orem, Utah

Filed Oct. 13, 1994, Ser. No. 322,697
Int. Cl.[6] G06F *12/00;12/08*
U.S. Cl. 395—441 **25 Claims**



1. A method for providing a static snapshot of data used by a computer configuration including:

a digital computer executing the steps of the method;

a mass storage system connected to said digital computer, said mass storage system storing blocks of data each located at a unique mass storage write address; and

a preservation memory connected to said digital computer and used for storing a copy of any of said blocks of data, each of said copies being associated with one of said unique addresses;

the method comprising the steps of:

(A) clearing said preservation memory so that no copies of blocks of data are in said preservation memory;

(B) creating a virtual device;

(C) whenever a write operation to said mass storage system occurs, and said write operation specifies one of said unique write addresses for receiving at that unique address of the mass storage system a new block of data to be written to said mass storage system, then

(1) if and only if there is not already found within the preservation memory a copy of a block of data associated with said unique mass storage write address, then placing in said preservation memory a copy of the block of data located in said mass storage system at said unique mass storage write address prior to writing the new block of data in said mass storage system at that same address; and

(2) writing said new block of data to said mass storage system at the location specified by said unique mass storage write address only after the preceding step (1) has been performed at least once for a given unique mass storage write address; and

(D) whenever a read operation to said virtual device occurs, and said read operation specifies a virtual device read address, then

(1) if there is not a copy of a block of data associated with said virtual device read address in said preservation memory, then returning in response to said read operation said block of data associated with said virtual read address from said mass storage system; and

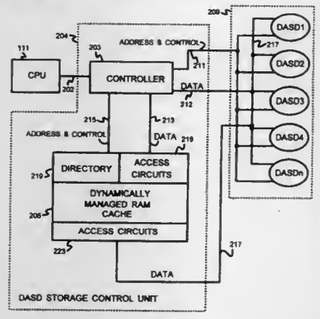
(2) if there is a copy of a block of data associated with said virtual device read address in said preservation memory, then returning in response to said read operation said copy of the block of data associated with said virtual device read address in said preservation memory.

5,649,153

AGGRESSIVE ADAPTION ALGORITHM FOR SELECTIVE RECORD CACHING

Bruce McNutt, Gilroy; Ruth Enid Azevedo, San Jose; Gary E. Morain, San Jose, and Barrie N. Harding, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 19, 1995, Ser. No. 492,430
Int. Cl.[6] G06F *12/02*
U.S. Cl. 395—445 **9 Claims**



110

DYNAMIC CACHE MANAGEMENT

1. A method for dynamically switching between record caching and tracking caching, wherein a cache management system includes a cache, and at least one band for storing tracks of data in the form of records, and wherein a request is made for a record associated with a particular track from the cache, the method comprising the steps of:

a) compiling cache statistics that quantify both temporal and spacial locality of the data by

a1) maintaining a first count of how many times the cache does not contain records from the track,

a2) maintaining a second count of how many times the cache contains records from the track other than the requested record,

a3) maintaining a third count of how many times the requested record is in the cache, and is the first or only record from the track that is in the cache, and

a4) maintaining a fourth count of how many times the requested record is in the cache and follows at least one other record from the track;

b) calculating a plurality of metrics from the cache statistics by

b1) calculating a first fraction of requests that resulted in cache hits,

b2) calculating a second fraction of requests for which records from the track are in cache, and

b3) calculating a third fraction of requests other than first record hits for which records from the track are contained in the cache; and

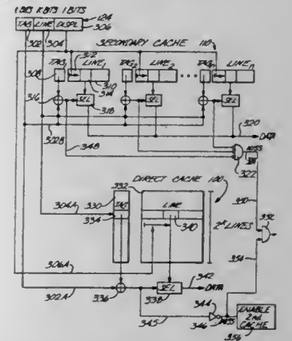
c) assigning a cache mode to the bands based on predetermined relationships among the plurality of metrics, the cache mode including a track mode, a record mode, and an uncached mode.

5,649,154

CACHE MEMORY SYSTEM HAVING SECONDARY CACHE INTEGRATED WITH PRIMARY CACHE FOR USE WITH VLSI CIRCUITS

Rajendra Kumar, Sunnyvale, and Paul G. Emerson, San Jose, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 282,691, Jul. 29, 1994, abandoned, which is a continuation-in-part of Ser. No. 842,907, Feb. 27, 1992, abandoned. This application Oct. 23, 1995, Ser. No. 547,047
Int. Cl.[6] G06F *12/08*
U.S. Cl. 395—449 **24 Claims**



13. In a multilevel cache memory system that includes plural instruction buffers,

bitlines connected to the instruction buffers,

an array of substantially identical memory cells arranged in lines and columns, the array being divided into a primary store and a secondary store, the primary store including the memory cells in first ones of the lines, the secondary store including the memory cells in second ones of the lines, the memory cells in each one of the columns in the primary store and the memory cells in the one of the columns in the secondary store being coupled to a common one of the bitlines,

a direct-mapped primary cache including the primary store, and primary comparing means for comparing an address input to the primary cache with address data stored in the primary cache,

a fully-associative secondary cache including the secondary store and secondary comparing means for comparing the address input to the secondary cache with address data stored in the secondary cache,

a write instruction bus coupled to the primary cache for loading the primary cache with instructions, and

a read instruction bus coupled to the instruction buffers for transferring instructions from the primary cache to an execution unit in a microprocessor,

a data processing method comprising steps of:

(a) providing an address input to the primary comparing means and the secondary comparing means;

(b) using the primary comparing means, testing whether the address input matches the address data stored in the primary cache, and generating a primary cache hit signal in response to a match;

(c) using the secondary comparing means, concurrently with step (b), testing whether the address input matches the address data stored in the secondary cache, and generating a secondary cache hit signal in response to a match; and

(d) selectively loading instructions to the read instruction bus from one of the primary cache and the secondary cache in response to steps (b) and (c).

5,649,155

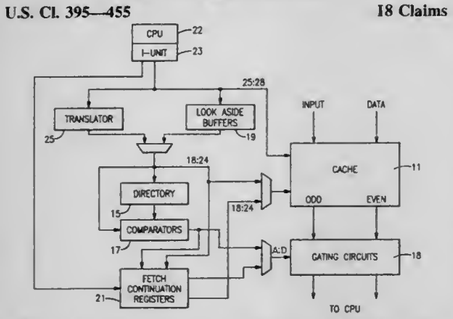
CACHE MEMORY ACCESSED BY CONTINUATION REQUESTS

Barry Watson Krumm; Steven Tyler Comfort, both of Poughkeepsie; Jin Ji, Brewster; John Stephen Liptay, Rhinebeck; Charles Franklin Webb, Poughkeepsie; David Man Chow Wong, Poughkeepsie, and Steven QiHong Ying, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 31, 1995, Ser. No. 414,176

Int. Cl.[6] G06F *12/08;12/04*

U.S. Cl. 395—455 **18 Claims**



9. A cache memory system comprising a cache memory for storing lines of data, a directory for storing an entry identifying each of the lines of data stored in said cache memory, and access means to receive and respond to a logical request to search said directory and said cache memory, said logical request containing a fetch address for selecting data in said cache memory if the line containing said data is in said cache memory, said access means searching said directory to determine whether or not the line of the selected data is identified in said directory and if the line of the selected data is identified in said directory to read out the selected data from said cache memory, a fetch continuation register, logical request responsive means responsive to a logical request containing an address for selecting data determined by said access means to be in a line of data stored in said cache memory to store address data identifying the position of such line of data in said fetch continuation register, and continuation request responsive means to receive a continuation request for selecting data in a line stored in said cache memory identified by the address data in said fetch continuation register and responsive to the address data in said fetch continuation register to read out the selected data, said continuation request responsive means reading out selected data from the same line in said cache memory from which selected data was read by said access means in response to a logical request in response to which said logical request responsive means stored the bin number and line position identification in said fetch continuation register, whereby the selected data can be read from said cache memory in response to a continuation request without searching said directory.

5,649,156

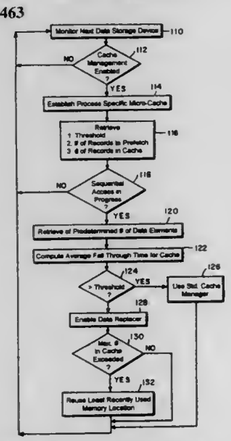
CACHE MANAGEMENT SYSTEM UTILIZING A CACHE DATA REPLACER RESPONSIVE TO CACHE STRESS THRESHOLD VALUE AND THE PERIOD OF TIME A DATA ELEMENT REMAINS IN CACHE

Natan Vishlitzky, and Haim Kopylovitz, both of Brookline, Mass., assignors to EMC Corporation, Hopkinton, Mass.

Continuation-in-part of Ser. No. 893,509, Jun. 4, 1992, Pat. No. 5,381,539. This application Dec. 12, 1994, Ser. No. 353,923

Int. Cl.[6] G06F *12/08*

U.S. Cl. 395—463 **18 Claims**



1. A cache management system comprising:

a cache memory including a cache memory section for storing data elements which have been written to at least one longer term dam storage device;

a time indexer, for providing a time indication;

an index, responsive to said time indication and to said cache memory, for maintaining a cache index of data elements which are stored in said cache memory section, the cache index including a time indication associated with each data element maintained in said cache index by said index; and

a cache manager, for placing data elements into and removing data elements from said cache memory section, said cache manager responsive to said time indication associated with each data element stored in said cache memory section, for determining an average period of time that elapses between at least one data element being inserted into said cache memory section and said at least one data element being removed from said cache memory section; and

said cache manager further including a cache data replacer, responsive to a predetermined cache stress threshold value slid to said determined average period of time for requesting replacement of at least one data element stored in said cache memory section if said determined average period of time that elapses is less than said cache memory stress threshold value.

5,649,157

MEMORY CONTROLLER WITH PRIORITY QUEUES

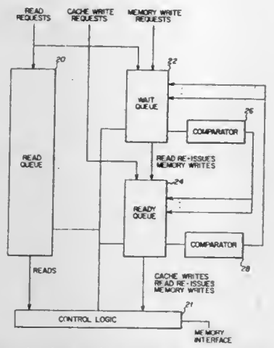
James B. Williams, Lowell, Mass., assignor to Hewlett-Packard Co., Palo Alto, Calif.

Filed Mar. 30, 1995, Ser. No. 413,672

Int. Cl.[6] G06F *13/18*

U.S. Cl. 395—478 **19 Claims**

1. A memory controller for controlling access to a main memory from at least one processor having a local cache, the memory controller comprising:



a read queue, having an input that receives read requests from the at least one processor and an output that provides the read requests in an order in which the read requests are received by the read queue;

a wait queue, having an input that receives memory write requests and the read requests from the at least one processor and an output that provides the memory write requests and the read requests in an order in which the memory write requests and the read requests are received by the wait queue;

a ready queue, having an input that receives ready requests including cache write requests from the at least one processor and memory write requests and read requests from the output of the wait queue, the ready queue having an output that provides the ready requests in an order in which the ready requests were received by the ready queue; and

a control circuit, coupled to the read queue, the wait queue, and the ready queue, including circuitry that:

processes read requests from the read queue;

transfers ready requests from the wait queue to the ready queue until a read request corresponding to a currently processed read request is reached;

identifies conflicts of the currently processed read request with requests in the ready queue to determine valid data; and

returns the valid data to the at least one processor in response to read requests.

5,649,158

METHOD FOR INCREMENTALLY ARCHIVING PRIMARY STORAGE TO ARCHIVE STORAGE BY UTILIZING BOTH A PARTITION ARCHIVE STATUS ARRAY AND A PARTITION MAP

Jonathan Ellsworth Lahr; Gerald Francis McBrearty; Johnny Meng-Han Shieh, and Leonard Barry Tropiano, all of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 23, 1995, Ser. No. 392,586

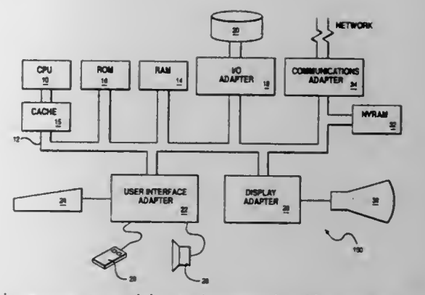
Int. Cl.[6] G06F *12/16;11/20*

U.S. Cl. 395—488 **1 Claim**

1. A computer-implemented method for directing a computer system to incrementally archive primary storage to archive storage, the primary storage being divided into a plurality of partitions, at least one the partitions having contents stored therein, comprising the steps of:

in response to receiving a full backup request from user controls, scanning a partition map having a plurality of array entries, each array entry indicating either an invalid entry, or a location on the archive storage where a corresponding partition is or should be stored;

for each partition having an array entry indicating where a corresponding partition is or should be stored, copying the partition to the location indicated by the array entry;



in response to receiving an incremental archive request from user controls, scanning a partition archive status array having a plurality of entries, each entry indicating whether a corresponding partition has been modified since a previous archive;

if a first entry indicates a modified partition, setting the first entry to an archive status;

if the modified partition has an entry in the partition map indicating where the modified partition is or should be stored in the archive storage, storing the contents of the modified partition in the archive storage at the location indicated by the entry;

if the modified partition has an invalid entry in the partition map, creating an entry in the partition map indicating an archive partition for storing a copy of the modified partition; and

storing a copy of the contents of the modified partition to the archive partition.

5,649,159

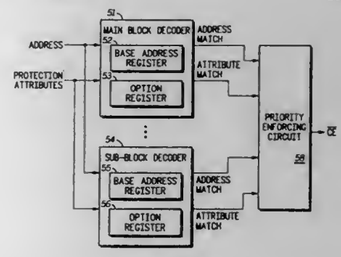
DATA PROCESSOR WITH A MULTI-LEVEL PROTECTION MECHANISM, MULTI-LEVEL PROTECTION CIRCUIT, AND METHOD THEREFOR

Chinh H. Le, and James B. Eifert, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 298,868, Aug. 31, 1994. This application May 22, 1995, Ser. No. 445,817

Int. Cl.[6] G06F *12/14*

U.S. Cl. 395—490 **15 Claims**



13. A method for providing multi-level protection for a data processor, comprising the steps of:

defining a first region of addresses (**41**) and a first programmable protection attribute associated with said first region of addresses;

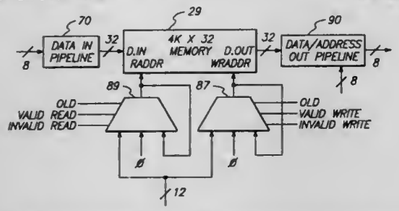
defining a second region of addresses (**42**) and a second programmable protection attribute associated with said second region of addresses, whereby said second region of addresses (**42**) at least partially overlaps said first region of addresses (**41**);

receiving an input address having a corresponding input attribute;

detecting a first address match if said input address is within said first region of addresses (**41**);

detecting a second address match if said input address is within said second region of addresses (**42**);
detecting a first attribute match if an input attribute matches said first programmable protection attribute;
detecting a second attribute match if said input attribute matches said second programmable protection attribute;
activating an enable signal in response to a detection of only one of said first and second address matches and a detection of a corresponding one of said first and second attribute matches; and
keeping said enable signal inactive in response to a detection of both said first and second address matches and a failure to detect said second attribute match.

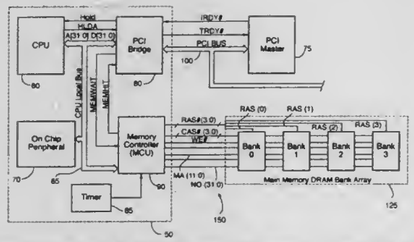
5,649,160
NOISE REDUCTION IN INTEGRATED CIRCUITS AND CIRCUIT ASSEMBLIES
Alan G. Corry, Santa Clara; Graham Y. Mostyn, Saratoga, and Jean-Yves Michel, Santa Clara, all of Calif., assignors to MicroUnity Systems Engineering, Inc., Sunnyvale, Calif.
Filed May 23, 1995, Ser. No. 447,565
Int. Cl.[6] G06F *12/00*
U.S. Cl. 395—494 **6 Claims**



1. A data processing apparatus in which switching noise generated by the apparatus is caused to have a predetermined periodicity, thereby allowing the effects of such noise to be mitigated, the apparatus comprising:
a data device;
control means including first means responsive to a signal from said data device for producing a first control pulse and second means for, without any signal from said data device, producing a second control pulse, said first and second control pulses being non-overlapping in time; and
transaction processing means operatively connected to said data device via a data bus, said transaction processing means being responsive to said first control pulse for performing transaction processing in which valid data is exchanged with said data device, and being responsive to said second control pulse for performing transaction processing in which no valid data is exchanged with any data device;
wherein said control means produces one of said first control pulse and said second control pulse during each time interval in a sequence of regular, equal time intervals.

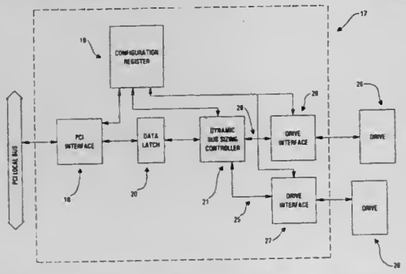
5,649,161
PREPAGING DURING PCI MASTER INITIATED WAIT CYCLES
Victor F. Andrade, and Kelly M. Horton, both of Austin, Tex., assignors to Advanced Micro Devices, Sunnyvale, Calif.
Continuation of Ser. No. 261,486, Jun. 17, 1994, abandoned. This application Sep. 26, 1996, Ser. No. 721,211
Int. Cl.[6] G06F *12/00*
U.S. Cl. 395—494 **28 Claims**

2. A method for optimizing the transfer of data between system memory and a PCI Master device, wherein said PCI Master connects to a PCI bridge through a PCI bus, and the PCI bridge resides on a CPU local bus, and the system memory connects to a memory



controller through a memory bus, said memory controller also residing on the CPU local bus, comprising the steps of:
(a) asserting ownership of the PCI bus by the PCI Master;
(b) driving an address signal on the PCI bus by the PCI Master;
(c) generating an address strobe signal on the CPU local bus by the PCI bridge and driving said address signal on the CPU local bus;
(d) generating a memory wait signal by the PCI bridge to indicate the inability of the PCI Master to immediately complete a data phase of a transaction;
(e) providing said memory wait signal to said memory controller;
(f) decoding the address signal by the memory controller;
(g) opening an appropriate page in the system memory by said memory controller while said memory wait signal is asserted and before said PCI Master is ready to complete the data transaction;
(h) deasserting the wait signal in response to an indication that the PCI Master is ready to complete the data phase; and
(h) completing the data transaction by the memory controller.

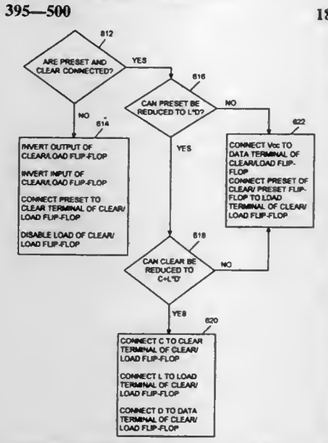
5,649,162
LOCAL BUS INTERFACE
Dean A. Klein, Lake City, and Daniel P. Wilde, Red Wing, both of Minn., assignors to Micron Electronics, Inc., Nampa, Id.
Filed May 24, 1993, Ser. No. 66,400
Int. Cl.[6] G06F *13/42*
U.S. Cl. 395—500 **5 Claims**



1. A device for connecting a plurality of data storage devices to a local bus of a personal computer, comprising:
(a) local bus connection means for connecting the device directly to a local bus, the local bus including a data bus;
(b) address decode means for decoding an address from the local bus connection means;
(c) data latching means for latching data being received from or sent to the local bus,
wherein the data latching means is capable of accepting data coming from the local bus at a higher rate than the storage devices are capable of accepting data, and
wherein the data latching means makes the local bus available for another purpose before the data is fully written to the storage devices during a write operation; and

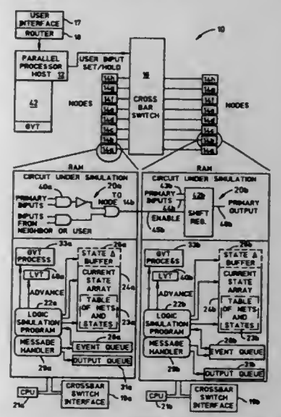
(d) a dynamic bus sizing controller that carries out write operations by partitioning a unit of data from the local bus into at least a first smaller unit of data and a second smaller unit of data, and then communicates the first smaller unit of data to a data storage port on a first data storage device and the second smaller unit of data to a data storage port on a second data storage device in a non-sequential manner, and
wherein the dynamic bus sizing controller carries out read operations by combining a first unit of data from the data storage port on the first data storage device and a second unit of data from the data storage port on the first storage device into a combined unit of data that can be placed on the local bus connection means.

5,649,163
METHOD OF PROGRAMMING AN ASYNCHRONOUS LOAD STORAGE DEVICE USING A REPRESENTATION OF A CLEAR/PRESET STORAGE DEVICE
Bruce B. Pedersen, Santa Clara, Calif., assignor to Altera Corporation, San Jose, Calif.
Continuation of Ser. No. 968,598, Oct. 29, 1992, abandoned. This application Oct. 6, 1994, Ser. No. 319,333
Int. Cl.[6] G06F *9/455*
U.S. Cl. 395—500 **18 Claims**



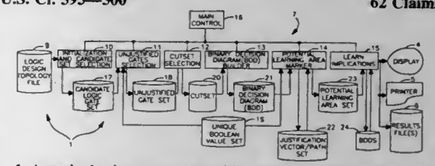
1. In a computer system having a processor and a memory, a method of converting a data representation of a first data storage circuit, said first data storage circuit having an asynchronous preset input terminal and an asynchronous clear input terminal, into a data representation of a second data circuit, said second data storage circuit having an asynchronous load input terminal, an asynchronous clear input terminal, and an asynchronous data input terminal, the method comprising the steps of:
storing the data representation of the first data storage circuit in said memory;
using the processor to determine the first input signals connected to the asynchronous preset input terminal and the asynchronous clear input terminal of the first data storage circuit;
using the processor to compare the first input signals against a set of predetermined input signal characteristics; and
using the processor in response thereto to define a set of second input signals for at least said asynchronous load input terminal and said asynchronous clear input terminal of the second data storage circuit wherein the second input signals are logical combinations of the first input signals and logical constants thereby providing said data representation of the second data storage circuit.

5,649,164
SETS AND HOLDS IN VIRTUAL TIME LOGIC SIMULATION FOR PARALLEL PROCESSORS
Philip Lee Childs, Raleigh, N.C., and Joseph Francis Skovira, Binghamton, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 30, 1994, Ser. No. 367,390
Int. Cl.[6] G06F *9/455*
U.S. Cl. 395—500 **8 Claims**



1. A distributed virtual time logic simulator for simulating a circuit, said simulator comprising:
a plurality of processing nodes;
a plurality of logic simulation program means, for executing on respective ones of said processing nodes, to simulate respective elements of the circuit, each of said logic simulation program means for executing in response to events occurring at a local virtual time, including means for receiving an input from or supplying an output to another of said processing nodes;
user means for providing user inputs to said processing nodes;
a plurality of forward simulation means in respective ones of said processing nodes for setting and holding respective elements of the circuit in response to events denoting setting ("set events") and holding ("hold events") in respective user inputs; and
a release means for receiving a user-initiated release which releases circuit elements that have been held in response to a holding event.

5,649,165
TOPOLOGY-BASED COMPUTER-AIDED DESIGN SYSTEM FOR DIGITAL CIRCUITS AND METHOD THEREOF
Jawahar Jain, Santa Clara, and Rajarshi Mukherjee, San Jose, both of Calif., assignors to Fujitsu Limited, Kawasaki, Japan
Continuation-in-part of Ser. No. 382,222, Jan. 31, 1995, abandoned. This application Mar. 3, 1995, Ser. No. 399,707
Int. Cl.[6] G06F *17/50;9/455*
U.S. Cl. 395—500 **62 Claims**



1. A method using a computer-aided design system for determining logical interdependencies between points in a digital circuit

topology, such a topology comprising a set of primary outputs and a set of primary inputs both interconnected with logic gates, the logic gates being interconnected by wires, each such point comprising a location on a wire carrying a signal asserted into or from one of the logic gates, comprising the steps of:

storing a representation of such topology in a storage device in the computer-aided design system;

selecting a cutset in the topology comprising the logic gates falling in a fan-in of the logic gates leading to a target one of the logic gates;

building a decision diagram for the logic gates in the cutset leading from the target logic gate;

marking the logic gates in a potential learning area in the topology comprising the step of extracting justification vectors from the decision diagram for a predetermined Boolean value of the target logic gate; and

determining such logical interdependencies and storing a representation of the logical interdependencies in a storage device in the computer-aided design system comprising the step of performing Boolean operations between the decision diagram and a plurality of other decision diagrams for the logic gates in the potential learning area.

5,649,166

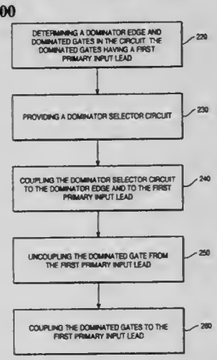
DOMINATOR SELECTION METHOD FOR REDUCING POWER CONSUMPTION IN A CIRCUIT

Alexander Saldanha, El Cerrito, and Patrick McGeer, Orinda, both of Calif., assignors to Cadence Design Systems, Inc., San Jose, Calif.

Filed Apr. 24, 1995, Ser. No. 427,051

Int. Cl.[6] G06F *17/50*

U.S. Cl. 395—500 **27 Claims**



1. A method for reducing power consumed in a circuit, the circuit having at least a first and a second primary input lead, a plurality of gates, and a plurality of edges, the method comprising the steps of:

determining a dominator edge and dominated gates in the circuit, the dominated gates coupled to the first primary input lead and to edges of the plurality of edges dominated by the dominator edge;

providing a dominator selector circuit to the circuit;

coupling the dominator selector circuit to the dominator edge and to the first primary input lead;

uncoupling the dominated gates from the first primary input lead; and

coupling the dominated gates to the dominator selector circuit.

5,649,167

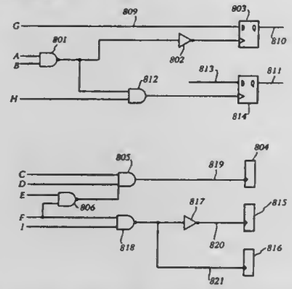
METHODS FOR CONTROLLING TIMING IN A LOGIC EMULATION SYSTEM

Nang-Ping Chen, Cupertino; Robert J. Ko, Saratoga; Jeong-Tyng Li, Cupertino; Thomas B. Huang, San Jose, and Ming-Yang Wang, Lafayette, all of Calif., assignors to Quickturn Design Systems, Inc., Mountain View, Calif.

Continuation of Ser. No. 829,181, Jan. 31, 1994, Pat. No. 5,475,830. This application Jun. 7, 1995, Ser. No. 472,531

Int. Cl.[6] H03K *17/28*

U.S. Cl. 395—500 **1 Claim**



1. A method for implementing a netlist description of an integrated circuit in a plurality of reprogrammable logic circuits comprising the steps of:

analyzing the netlist description to find a first storage instance and a second storage instance having a data path structure between them and being clocked by different clock signals;

implementing said first and said second storage instances respectfully in a first and a second of the plurality of reprogrammable logic circuits; and

implementing said data path structure in a third of the plurality of reprogrammable logic circuits in order create a predetermined amount of delay in said data path structure between said first and second storage instance.

5,649,168

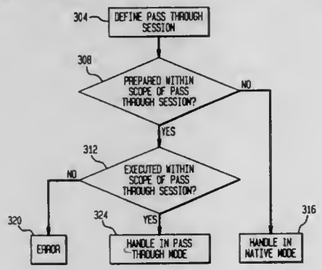
COMPUTER PROGRAM PRODUCT FOR A QUERY PASS THROUGH IN A HETEROGENEOUS DISTRIBUTED DATA BASE ENVIRONMENT

Caroline Josette Huang, San Jose, and Yun Wang, Saratoga, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 310,799, Sep. 29, 1994. This application Jun. 7, 1995, Ser. No. 475,841

Int. Cl.[6] G06F *13/14;15/16*

U.S. Cl. 395—500 **24 Claims**



1. A program storage device readable by a machine, embodying a program of instructions executable by the machine to perform method steps for performing pass through in a multi-system environment, said method steps comprising the steps of:

defining a scope of a pass through session using an initiate statement to establish said pass through session and a reset statement to terminate said pass through session;

handling a statement in a pass through mode if said statement falls within said scope of said pass through session; and

handling said statement in a native mode if said statement is outside of said scope of said pass through session;

wherein statements received subsequent to said initiate statement and prior to said reset statement are handled in said pass through mode; and

wherein said statement is not processed by said machine in pass through mode.

5,649,169

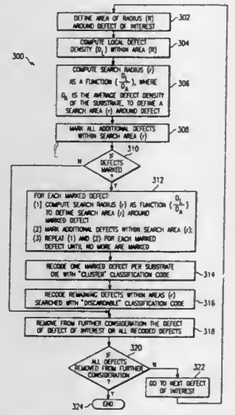
METHOD AND SYSTEM FOR DECLUSTERING SEMICONDUCTOR DEFECT DATA

Alan Berezin, and Reuben Quintanilla, both of Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jun. 20, 1995, Ser. No. 492,803

Int. Cl.[6] H01L *29/38*

U.S. Cl. 395—500 **33 Claims**



1. A method for assigning classification codes to data associated with points on a substrate, the method comprising:

determining the local density of said points within a preselected area of said substrate and determining the average density of all of said points on said substrate;

defining a search area around one of said points, said search area having a radius proportional to the ratio of said local density to said average density;

marking said points within said search area, and for each said marked point, defining a new search area around said marked point, said new search area having a radius proportional to the ratio of said local density to said average density, marking additional said points within said new search area, and repeating said new search area defining and said additional point marking until no further ones of said points are marked; and

assigning at least one of said marked points with a first classification code and assigning the remaining said points within said search area and said new search areas with a second classification code.

5,649,170

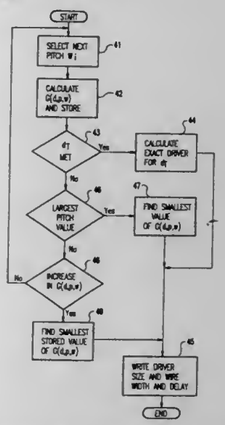
INTERCONNECT AND DRIVER OPTIMIZATION FOR HIGH PERFORMANCE PROCESSORS

Barbara Alane Chappell, Portland, Oreg.; Parsotam Trikam Patel; Phoung Kim Phan, both of Austin, Tex., and George Anthony Sai Halasz, Mount Kisco, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1995, Ser. No. 497,175

Int. Cl.[6] H03H *11/26*

U.S. Cl. 395—500 **9 Claims**



1. A computer-implemented method for determining an optimal design for wiring interconnect and driver power for a designed target delay at a chip floor planning stage in the design of very large scale integrated circuits comprising the steps of:

arriving at a decrease slope value

$$\frac{\frac{\Delta d}{d}}{\frac{\Delta p}{p}}$$

based on a decrease from an ideal slope value where wire resistance is assumed to be zero and delay is that of a critical or desired delay for a given circuit technology;

finding a set of parameters w, for wire width, p, for driver power, and d, for delay, based on said decrease slope value

$$\frac{\frac{\Delta d}{d}}{\frac{\Delta p}{p}};$$

generating a function G(d,p,w) which mathematically weights the advantage of decreasing delay, d, against the disadvantages of power expenditure, p, due to increasing driver size and wiring track expenditure, w, due to the use of wider than minimum size wire widths;

for a given slope decrease, finding delays for all allowed wire sizes for a few selected nets of the circuit and adjusting the slope decrease, a target delay and a maximum allowed wire width until for the few selected nets the target delay, driver size and wire width are judged satisfactory; and

adjusting weights in the function G(d,p,w) such that for the few selected nets, the function G(d,p,w) has a minimum just at those delays, driver sizes and wire widths judged satisfactory.

5,649,171

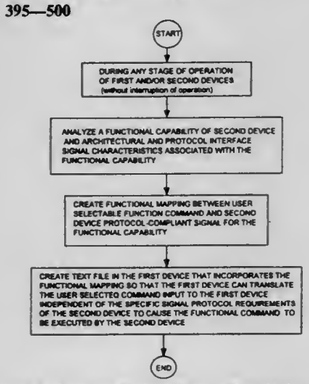
ON-LINE VIDEO EDITING SYSTEM

Ian Craven, Belmont; Bruce Logan Hill; Lance E. Kelson, both of Redwood City; Robert Rose, San Jose, and Stephen J. Rentmeesters, Dublin, all of Calif., assignors to Accom, Inc., Menlo Park, Calif.

Continuation of Ser. No. 781,481, Oct. 21, 1991, abandoned, which is a continuation-in-part of Ser. No. 684,700, Apr. 12, 1991, abandoned. This application Sep. 20, 1995, Ser. No. 531,095

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—500 **7 Claims**



1. A method of universally interfacing a first device, executably responsive to user selected command signals, to a second device, that upon receipt of data and control signals from the first device is functionally responsive to second device protocol-compliant command signals that uniquely specify each second device functional capability, to allow an external user of the first device to functionally control the second device with inputs to said first device even if a user-selected command is not defined by a unique second device protocol command signal, the method comprising:

during any stage of operation of said first device and said second device without interruption of operation of said first device and said second device:

analyzing at least one functional capability of the second device including analyzing the architectural and protocol interface requirements for said at least one functional capability to identify the particular data and control signals that said second device requires to execute said functional capability;

creating a functional mapping between at least one user selectable function command and at least one second device protocol-compliant signal of said at least one functional capability of the second device;

said functional mapping comprising data identifying user command and at least one second device protocol-compliant signal which when received by said second device results in execution of said identified user command; and

creating, within the first device, a text file accessible to the first device, including said functional mapping between said user selectable function and said second device protocol signal for said at least one functional capability, said text file enabling the first device to translate a user selected command input to said first device into at least one second device protocol-compliant signal that causes the second device to perform the user selected function;

said steps of analyzing, creating a functional mapping, and creating a text file permitting the user to input a functional command to the first device, independent of a specific signal protocol requirement of the second device to cause the functional command to be executed by said second device.

5,649,172

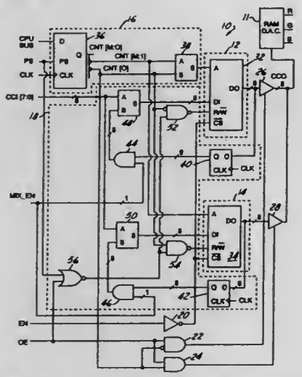
COLOR MIXING DEVICE USING A HIGH SPEED IMAGE REGISTER

Alex Tang, Hsin-Chu, Taiwan, assignor to United Microelectronics Corp., Hsinchu, Taiwan

Filed Apr. 28, 1995, Ser. No. 430,647

Int. Cl.[6] G06T *1/60*

U.S. Cl. 395—508 **11 Claims**



1. An image register for processing image data associated with a range of addresses including even addresses and odd addresses wherein said image data includes a color code portion, comprising:

a first memory means for storing said image data associated with said even addresses;

a second memory means for storing said image data associated with said odd addresses;

address means for addressing said first and second memory means in accordance with an even state and an odd state of said register; and,

processing means coupled to said first and second memory means for simultaneously writing image data having a modified color code portion into said first memory means and reading stored image data from said second memory means during said even state, and for simultaneously reading stored image data from said first memory means and writing image data having said modified color code portion into said second memory means during said odd state, and for selectively summing, in response to a mix signal, said color code portion of input image data and said color code portion of stored image data to define said image data having said modified color code portion,

whereby image data associated with consecutive even and odd addresses are operated on in parallel to thereby improve processing speed.

5,649,173

HARDWARE ARCHITECTURE FOR IMAGE GENERATION AND MANIPULATION

Derek Lentz, Los Gatos, Calif., assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Mar. 6, 1995, Ser. No. 413,983

Int. Cl.[6] G06F *12/00*

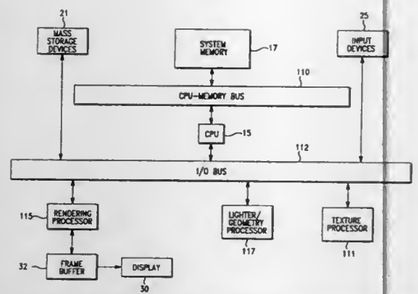
U.S. Cl. 395—513 **19 Claims**

1. Apparatus for processing and facilitating display of images stored as pixmaps, the apparatus comprising:

a. a central processing unit (CPU);

b. a system memory including stored instructions for operating the CPU;

c. a frame buffer for storing a pixmap comprising displayable pixel data;



d. a rendering processor operatively connected to the frame buffer and responsive to commands issued by the CPU, for scan-converting primitives into pixel data and storing the data in the frame buffer;

e. a CPU-memory bus for facilitating data exchange between the CPU and (i) the system memory, and (ii) at least one mass storage device; and

f. an I/O bus for facilitating data exchange between the CPU and the rendering processor,

the CPU operating in accordance with instructions fetched from the system memory over the CPU-memory bus to generate output primitives and texel commands, and to transfer the primitives and texel commands over the I/O bus to the rendering processor; and the rendering processor being configured to generate pixel memory addresses, refine pixel data by linear interpolation, and execute the texel commands, and

the rendering processor including means for implicitly specifying execution of operations associated with the primitives in response to loading of primitives into the implicitly specifying means, wherein the implicitly specifying means comprises a plurality of self-actuating registers, each associated with an operation and independently addressable by the CPU, for receiving data from the I/O bus and, upon such receipt, causing the rendering processor to perform the associated operation on the data.

5,649,174

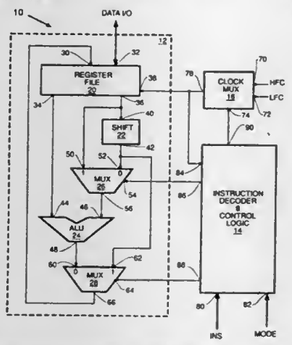
MICROPROCESSOR WITH INSTRUCTION-CYCLE VERSUS CLOCK-FREQUENCY MODE SELECTION

Kenneth A. Dockser, San Jose, Calif., assignor to VLSI Technology Inc., San Jose, Calif.

Filed Dec. 9, 1994, Ser. No. 353,480

Int. Cl.[6] G06F *1/08;9/30*

U.S. Cl. 395—556 **10 Claims**



1. A microprocessor system comprising:

clock means for selecting between a relatively high frequency clock signal and a relatively low frequency clock signal;

a first operator unit for executing a first operation, said first operator unit having a first input and a first output;

a second operator unit for executing a second operation, said second operator unit having a second input and a second output;

register means for storing values, said register means having a register input and a register output;

routing means for determining the coupling among said register means and said operator units; and

an instruction decoder for decoding a set of instructions including a first instruction calling for sequential execution of said first operation and said second operation, said instruction decoder being coupled to said clock means and said routing means, said instruction decoder having selectable alternative single-cycle and dual-cycle modes, said instruction decoder

when decoding said first instruction in said single-cycle mode causing

said clock means to select said relatively low frequency clock signal, and

said routing means to couple said register output to said first input, said first output to said second input, and said second output to said register input, and

when decoding said first instruction in said dual-cycle mode causing

said clock means to select said relatively high frequency clock signal,

said routing means to couple said register output to said first input and said first output to said register input during a first instruction cycle, and

said routing means to couple said register output to said second input and said second output to said register input during a second instruction cycle.

5,649,175

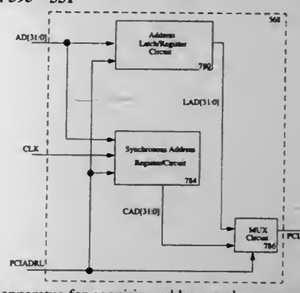
METHOD AND APPARATUS FOR ACQUIRING BUS TRANSACTION ADDRESS AND COMMAND INFORMATION WITH NO MORE THAN ZERO-HOLD-TIME AND WITH FAST DEVICE ACKNOWLEDGEMENT

Hemanth G. Kanekal, San Jose, and Thomas C. Yip, Los Gatos, both of Calif., assignors to Cirrus Logic, Inc., Fremont, Calif.

Filed Aug. 10, 1995, Ser. No. 513,375

Int. Cl.[6] G06F *13/38*

U.S. Cl. 395—551 **22 Claims**



1. An apparatus for acquiring address and command information from a synchronous bus transaction which operates at no more than zero hold-time over a substantial duration of said synchronous bus transaction, comprising:

first signal synchronizing means for generating a synchronous enable signal by synchronizing a bus transaction request signal with a system clock signal;

transparent register means coupled to a system bus and said first signal generating means, said transparent register means being responsive to a predetermined logic state of said synchronous enable signal for immediately making available and acquiring valid address and command information provided by said bus transaction;

synchronous register means coupled to said system bus, said synchronous register means being responsive to a predetermined edge of said system clock signal and said synchronous enable signal for alternately acquiring valid address and command information provided by said bus transaction; and

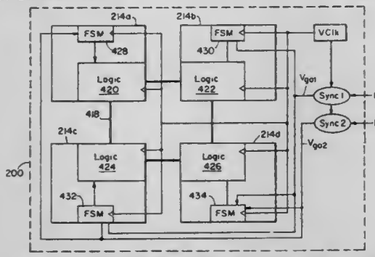
multiplexing means coupled to said transparent register means and said synchronous register means for selecting between acquired valid address and command information from said transparent register means and said alternately acquired valid address and command information from said synchronous register means as an output.

5,649,176

TRANSITION ANALYSIS AND CIRCUIT RESYNTHESIS METHOD AND DEVICE FOR DIGITAL CIRCUIT MODELING

Charles W. Selvidge, Charlestown, and Matthew L. Dahl, Cambridge, both of Mass., assignors to Virtual Machine Works, Inc., Cambridge, Mass.

Filed Aug. 10, 1995, Ser. No. 513,605
Int. Cl.[6] G06F *1/12*
U.S. Cl. 395—551 **50 Claims**



1. A method of configuring a configurable logic system to operate in an environment, the logic system generating output signals to the environment in response to at least one environmental timing signal and environmental data signals provided from the environment, the method comprising:

defining an internal clock signal;

configuring the logic system to perform logic operations for generating the output signals in response to the environmental data signals and the internal clock signal; and

configuring the logic system to have a controller for coordinating operation of the logic operations in response to the internal clock signal and the environmental timing signal.

5,649,177

CONTROL LOGIC FOR VERY FAST CLOCK SPEEDS

Lyle Edwin Grosbach, Rochester; David John Krolak, Dodge Center, and David Wayne Marquart, Rochester, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 80,609, Jun. 21, 1993. This application Nov. 28, 1995, Ser. No. 563,561
Int. Cl.[6] G06F *1/10*
U.S. Cl. 395—560 **21 Claims**

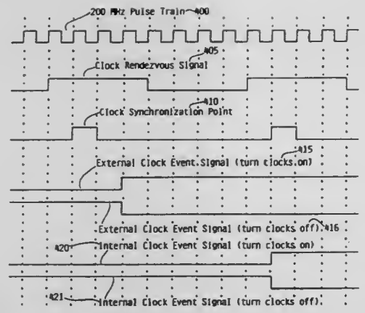
1. A digital system comprising:

clock generating means for producing a master clock pulse train signal, said master clock pulse train being comprised of a series of clock pulses;

clock control logic means for producing a clock rendezvous signal;

external clock event generating means for producing an external clock event signal;

an external timing bus carrying said master clock pulse train signal, said clock rendezvous signal and said external clock event signal;



a plurality of timing dependent components, at least two of said timing dependent components being situated within said digital system such that they are not subject to single cycle control, said at least two of said timing dependent components comprising:

a plurality of mutually interconnected digital logic circuits for executing predetermined functions in response to said master clock pulse train signal; and

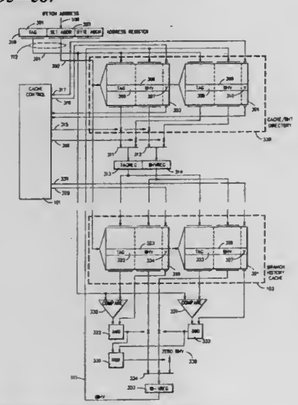
a gating mechanism, said gating mechanism having means coupled to said external timing bus for receiving said master clock pulse train and said clock rendezvous signal and means for generating a clock synchronization point signal, said clock rendezvous signal, said external clock event signal, and said clock rendezvous signal being used by said gating mechanism to allow and block said master clock pulse train signal from accessing said at least two of said timing dependent components on the same pulse of said master clock pulse train.

5,649,178

APPARATUS AND METHOD FOR STORING AND INITIALIZING BRANCH PREDICTION WITH SELECTIVE INFORMATION TRANSFER

Bartholomew Blaner, Underhill Center, Vt., and Stamatis Vassiliadis, Zoetermeer, Netherlands, assignors to International Business Machines, Corporation, Armonk, N.Y.

Filed Jun. 7, 1995, Ser. No. 474,017
Int. Cl.[6] G06F *9/42*
U.S. Cl. 395—587 **5 Claims**



1. A digital computer system including:

a first storage mechanism for storing data to be processed and for storing branch prediction information for branch instructions included in said data;

a second storage mechanism coupled to said first storage mechanism through a register for receiving said branch prediction information from said first storage mechanism, including means for storing said branch prediction information, for retrieving said stored branch prediction information, and for transmitting said stored branch prediction information to said first storage mechanism, and

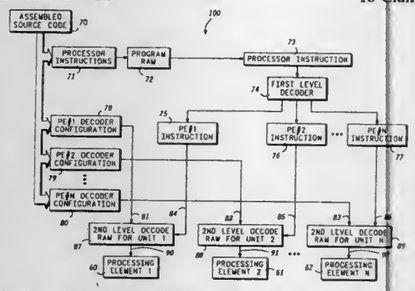
means for selecting among valid branch prediction information to be transferred from said first storage mechanism to said second storage mechanism.

5,649,179

DYNAMIC INSTRUCTION ALLOCATION FOR A SIMD PROCESSOR

Mark Evan Steenstra, Mesa, Ariz.; John Bartholomew Gehman, Jr., Trophy Club, Tex., and Ascencion Chapapro Acosta, Jr., Mesa, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 19, 1995, Ser. No. 444,637
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—598 **18 Claims**



1. A method of dynamically allocating a processing element instruction to a processing element in a single instruction multiple data (SIMD) processor, comprising the steps of:

parsing a source code instruction for the SIMD processor into components applicable to the processing element instruction;

assembling the components into a control specification for the processing element;

updating an instruction decoder configuration according to the control specification if necessary for the processing element; and

determining the processing element instruction for the processing element.

5,649,180

METHOD FOR GENERATING HIERARCHICAL SPECIFICATION INFORMATION FROM SOFTWARE

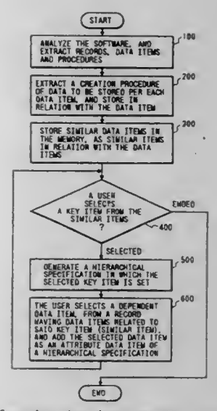
Hirofumi Danno, Yamato; Ichiro Naito, Shibuya-ku, and Gunji Tsukuda, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 14, 1994, Ser. No. 339,467
Claims priority, application Japan, Nov. 19, 1993, 5-290467
Int. Cl.[6] G06F *17/00*
U.S. Cl. 395—601 **15 Claims**

1. A method for generating hierarchical specification information from software by using a processing device, comprising;

a first step for analyzing at least one program;

a second step of extracting procedure information which creates a value for at least one data item included in the program from the analyzed information and storing it in relation to the data item;



a third step of storing data items sharing a used area or data items which transfer data as similar items by relating them to each other;

a fourth step of storing at least one similar item for identifying another hierarchical specification as a key item; and,

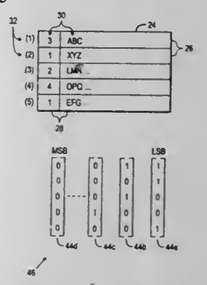
a fifth step of storing another similar item as an attribute data item, storing a creation procedure for the data item related to said similar item or a service procedure which is a reference procedure, and generating a hierarchical specification consisting of said stored key item, said attribute data item, and said service procedure.

5,649,181

METHOD AND APPARATUS FOR INDEXING DATABASE COLUMNS WITH BIT VECTORS

Clark French, Pepperell, and Peter W. White, Andover, both of Mass., assignors to Sybase, Inc., Emeryville, Calif.

Continuation of Ser. No. 48,637, Apr. 16, 1993, abandoned. This application Apr. 3, 1996, Ser. No. 627,060
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—603 **45 Claims**



35. In a database system comprising a database storing information in a database table as a sequence of data records arranged in row and column format, an improved method for indexing said database table, the method comprising:

selecting a particular column of the database table to index, said particular column representing a particular category of information for which each data record stores a data value, each data value representing information in the database stored as a sequence of bit values, each bit value having a particular bit position in said sequence of bit values; and

creating an index for said particular column comprising a plurality of bit vectors by performing substeps of:

(i) determining a maximum number of bit positions employed in said sequence of bit values for storing information for said particular column,

(ii) initializing a sequence of bit vectors based on said determined maximum number of bit positions, so that each bit vector is associated with a particular one of said bit positions employed, and

(iii) copying data values stored for said particular column by said sequence of data records into said sequence of bit vectors, so that for each particular bit position at each particular data record any bit value stored thereat is copied into the bit vector associated with that bit position, the bit value being copied into a particular bit position of the bit vector which corresponds to position of the particular data record relative to other data records in said sequence of data records.

5,649,182

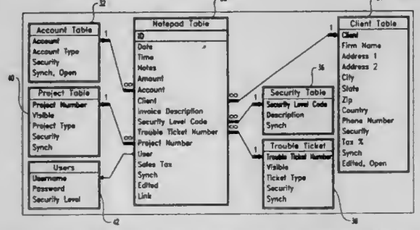
APPARATUS AND METHOD FOR ORGANIZING TIMELINE DATA

Carl A. Reitz, 8820 Deer Run Dr., Indianapolis, Ind. 46256

Filed Mar. 17, 1995, Ser. No. 405,733

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—607 **38 Claims**



12. A method of organizing data with a computer having a processor, means for entering the data, a database for storing the data, and means for displaying the data, the method comprising the steps of:

(1) entering the data into the computer database;

(2) entering a user specifiable calendar date of data creation to be associated with the data entry into the computer database;

(3) repeating steps (1) and (2) for data associated with a plurality of calendar dates; and

(4) processing and displaying the data such that each of the plurality of data entries is sequentially organized by its associated user specifiable calendar date of data creation.

5,649,183

METHOD FOR COMPRESSING FULL TEXT INDEXES WITH DOCUMENT IDENTIFIERS AND LOCATION OFFSETS

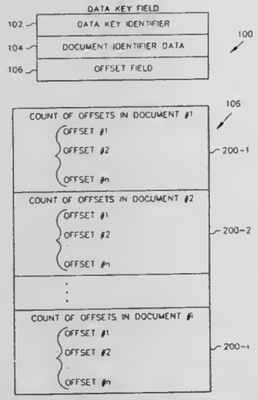
Brian Thomas Berkowitz, Bellevue, and Max Loell Benson, Redmond, both of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed Dec. 8, 1992, Ser. No. 986,754

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—606 **16 Claims**

1. A method for compressing index data of a type for providing a content index for a storage volume wherein the storage volume has a plurality of documents stored thereon, each document having a unique document identifier, the content index providing information indicating a number of occurrences and locations within the storage volume for a plurality of data keys, said method comprising the steps of:



(a) providing document identifier data including a set of document identifiers that indicates a corresponding set of documents in which a target data key appears wherein the target data key is a particular one of the plurality of data keys and the document identifiers in the set of document identifiers have values within a range from a minimum document identifier MinDoc to a maximum document identifier MaxDoc, the document identifier data being compressed according to the following substeps:

(i) selecting a value M to partition the range of document identifiers into first and second groups wherein document identifiers having values less than M are associated with the first group and document identifiers having values greater than M are associated with the second group;

(ii) providing a first document identifier data bit that indicates whether the difference between the number of document identifiers associated with the first group and the number of document identifiers associated with the second group is greater than one;

(iii) providing a second document identifier data bit that indicates whether the number of document identifiers associated with the first group is greater than the number of document identifiers associated with the second group;

(iv) providing a difference data key to indicate the difference between the number of document identifiers associated with the first group and the number of document identifiers associated with the second group;

(v) selecting new values for MaxDoc, MinDoc, and M to define a new partition and repeating steps a(i)–(iv); and

(vi) repeating steps a(i)–(v) until all document identifiers have been encoded; and

(b) providing a plurality of data key offset value sets wherein each data key offset value set includes a plurality of data key offset values for indicating location offset values between successive occurrences of the target data key within a particular document, each data key offset value set being compressed according to the following substeps:

(i) selecting a data key offset value and a base data key offset value length having a number N of data bits;

(ii) selecting a remainder indicator value that can be represented by data bits and that is greater than a maximum number that can be represented by N-r data bits wherein r is a predetermined constant having a value less than N;

(iii) determining whether the selected data key offset value is greater than the remainder indicator value and, if so, performing steps (b)(iv)–(vii), and, if not, using N data bits to represent the data key offset value and performing step (b)(viii);

(iv) using the lower order N-r data bits of the data key offset value and setting the higher order r data bits to indicate that a remainder exists;

(v) subtracting one from the remaining higher order data bits to determine the next s bits of the encoding, wherein s is a predetermined constant and using the next s bits as the encoding;

(vi) determining whether all data bits of the data key offset value have been encoded and, if not, performing step (b)(vii), and, if so providing a marker to indicate that the data key offset value is completely encoded and performing step (b)(viii);

(vii) adding a marker bit to indicate that additional higher order data bits remain, incrementing s by a predetermined value t and performing step (b)(v); and

(viii) selecting a next data key offset value and repeating steps (b)(iii)–(vii) until all data key offset values in the data key offset value set have been represented in step (b)(iii) or encoded in steps (b)(iv)–(vii).

5,649,184

SYMMETRIC/ASYMMETRIC SHARED PROCESSING OPERATION IN A TIGHTLY COUPLED MULTIPROCESSOR

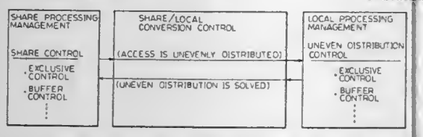
Katsumi Hayashi, Mishima; Masaaki Mitani; Yutaka Sekine, both of Numazu; Tomohiro Hayashi, Mishima; Kazuhiko Saito, and Yoshinori Shimogai, both of Numazu, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 20, 1990, Ser. No. 495,982

Claims priority, application Japan, Mar. 20, 1989, 1-068814; Mar. 20, 1989, 1-068815

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—608 **6 Claims**



1. A data base processing system in a multiprocessor system including a plurality of processor modules, each having a local memory and connected to each other through a high speed bus line, and a shared memory connected to said plurality of processor modules through said high speed bus line, said data base processing system comprising:

storage means provided in the shared memory for storing data base management information representing either an object of a shared processing operation or an object of a local processing operation for resources;

access management means provided in each of the plurality of processor modules for requesting access to the data base management information under both the shared processing operation and the local processing operation, the shared processing operation being symmetrically performed, and the local processing operation being asymmetrically performed in each of the processor modules; and

control means provided in each of the plurality of processor modules for controlling a shared/local conversion to manage an access state for each of the resources; when a frequency of access is unevenly distributed to a particular processor module, the resource becomes the object of the local processing operation at said particular processor module; and when the frequency of access is not unevenly distributed to a particular processor module, the resource is determined as the object of the shared processing operation.

5,649,185

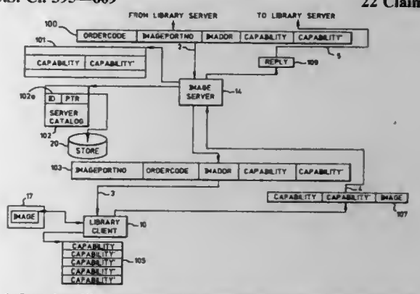
METHOD AND MEANS FOR PROVIDING ACCESS TO A LIBRARY OF DIGITIZED DOCUMENTS AND IMAGES

James J. Antognini, White Plains, N.Y.; Robert Michael Cubert, Sacramento, Calif.; Henry Martin Gladney, Saratoga, Calif.; David Burns Hildebrand, Jr., San Jose, Calif.; Steven Fletcher Horne, Auburn, Calif., and Robert Walter Schmiedeskamp, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 663,096, Mar. 1, 1991, abandoned. This application Apr. 5, 1995, Ser. No. 417,486

Int. Cl.[6] G06F *15/40*

U.S. Cl. 395—609 **22 Claims**



1. In a data library system for controlling user access to a library of images, an image being a data representation of a document or a portion of a document, the system including at least one processor coupled to a client store, a library server coupled to an access control store, a library storage resource to hold the library of images, and one or more image servers coupled to the library storage resource for storage or retrieval of images, a method for transferring an image between a client process executing on the processor and the library storage resource,

the library server maintaining in the access control store means for authenticating user identities and a catalog of the images stored in the library storage resource, the catalog containing entries each identifying an image and an associated image server controlling the library storage resource storing the image,

the data library system further including a message-passing communication facility connecting the processor, the library server, and the image servers for message-based communication, and

the library storage resource further including means for validating the access control store authority associated with the library server,

the method including the steps of:

the processor providing a first message from the client process to the library server, the first message including a new authenticating token, an associated request for transferring a requested image between the client process and the library and a name of an associated image port at the processor through which the requested image is to be transferred; in response to receipt by the library server of the first message,

the library server using the authenticating means in the access control store to verify the new authenticating token,

the library server using the catalog in the access control store to identify an associated image server with access to a library storage resource for storing the requested image, and

the library server providing a second message from the library server to the associated image server, the second message including an image copy identifier unique to this request, a command for setting up transfer of the requested image between the client process and the library storage resource,

and the name of the associated image port; in response to receipt by the associated image server of the second message,

the associated image server using the validating means in the library storage resource and the unique image copy identifier to verify the authority of the library server to control the requested image, and

the associated image server providing through the associated image port a third message to the processor for the client process including a command for transferring the requested image between the client process and the library storage resource through the associated image port; and in response to receipt by the processor of the third message,

the processor and the associated image server transferring the requested image between the associated image port and the library storage resource under control of the associated image server.

5,649,186

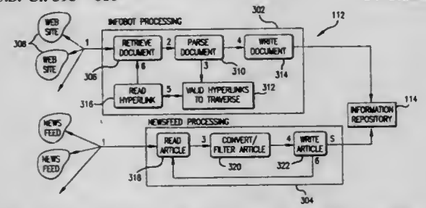
SYSTEM AND METHOD FOR A COMPUTER-BASED DYNAMIC INFORMATION CLIPPING SERVICE

Gregory J. Ferguson, Hunt Valley, Md., assignor to Silicon Graphics Incorporated, Mountain View, Calif.

Filed Aug. 7, 1995, Ser. No. 511,832

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—610 **14 Claims**



1. A computer-based method providing a dynamic information clipping service, comprising the steps of:

at an end-user site,

(1) permitting an end-user to create a template of topics of interest via a graphical user interface; and

(2) transmitting said template to a central site for processing;

at said central site,

(1) collecting information relating to a particular base of knowledge using an infobot responsive to Uniform Resource Locators to traverse hyperlinks associated with said base of knowledge;

(2) parsing and indexing said information;

(3) storing said parsed and indexed information in an information repository;

(4) processing said template, wherein said processing includes

(a) parsing said template,

(b) collecting command-strings relating to said topics of interest found within said parsed template,

(c) querying said information repository using said collected command-strings to generate query results,

(d) sorting said query results, and

(e) creating a Hypertext Mark-up Language (HTML) page using said sorted query results; and

(5) making said page available to the end-user for viewing, wherein said page represents a custom network-based newspaper.

5,649,187

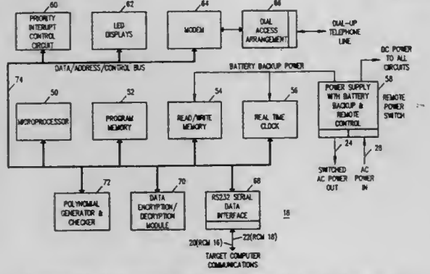
METHOD AND APPARATUS FOR REMOTELY CONTROLLING AND MONITORING THE USE OF COMPUTER SOFTWARE

Gary D. Hornbuckle, Pebble Beach, Calif., assignor to SofTel, Inc., San Francisco, Calif.

Continuation of Ser. No. 344,173, Nov. 23, 1994, abandoned, which is a continuation of Ser. No. 50,749, Apr. 20, 1993, Pat. No. 5,388,211, which is a continuation of Ser. No. 883,818, May 14, 1992, abandoned, which is a continuation of Ser. No. 345,083, Apr. 28, 1989, abandoned. This application Sep. 29, 1995, Ser. No. 537,030

Int. Cl.[6] G06F *13/00;15/177*

U.S. Cl. 395—610 **14 Claims**



1. A method of renting an application program for use on a customer computer, comprising the steps of:

encrypting a key module of the program, the program being inoperable without the key module;

storing the program in the customer computer;

retrieving the program when it is desired to run the program;

upon retrieval of the program, automatically decrypting the key module to permit use of the program; and

during use of the program on the customer computer, recording accounting data representative of the use to facilitate transactions based on the use.

5,649,188

ELECTRONIC FILING APPARATUS WHICH ALLOWS INFORMATION TO BE RETRIEVED BASED ON A BOX, A DATE, OR A CARD ASSOCIATED WITH THE INFORMATION

Keiichi Nomura, Kawasaki; Hirofumi Endo, Fujisawa; Yasuhiro Ii, Yakohama; Yuko Ogasawara, Yokohama; Mitsuhiro Kawai, Atsugi; Yasuyoshi Onoue; Masahiro Kurita, both of Yokohama; Akira Imai, Kawasaki, and Mitsuaki Takeuchi, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Aug. 19, 1993, Ser. No. 108,403

Claims priority, application Japan, Aug. 20, 1992, 4-244246; Oct. 2, 1992, 4-265162

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—611 **22 Claims**

1. An electronic filing apparatus, comprising:

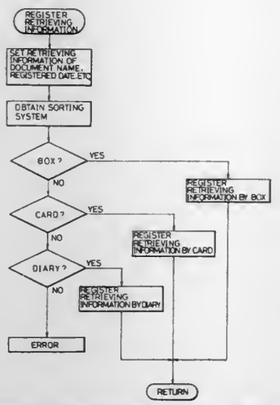
information reading means for reading a document and image information;

registering means for sorting the read information provided by the information reading means and registering the sorted information in a memory medium;

retrieving means for retrieving the registered information; and

display means for displaying the read information provided by the information reading means, information to be registered by said registering means, the registered information provided by said registering means, and the retrieved information provided by said retrieving means,

the registering means including:



first information control means for sorting the read information provided by said information reading means into at least one of a plurality of boxes;

second information control means for sorting the read information provided by said information reading means by calendar information including year, month, and day;

third information control means for sorting the read information provided by said information reading means onto at least one of a plurality of information cards; and

selection means for selecting said first, second and third information control means in accordance with a user request,

wherein the read information provided by said information reading means is registered irrespective of a selecting state of said selective means by associating said first, second and third information control means with each other.

5,649,189

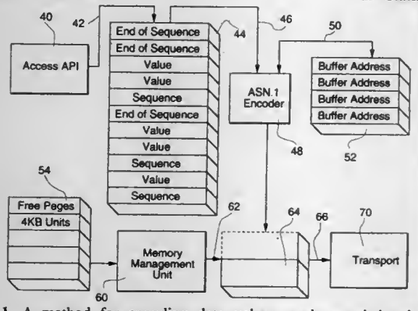
METHOD AND APPARATUS FOR SINGLE PASS DATA ENCODING OF BINARY WORDS USING A STACK FOR WRITING IN REVERSE ORDER

John Cook, Southborough, Mass., assignor to 3Com Corporation, Santa Clara, Calif.

Filed Nov. 29, 1995, Ser. No. 564,630

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—612 **19 Claims**



1. A method for encoding data values, each encoded value including a type portion, a length portion and a data portion, comprising the steps of:

encoding each data value into an encoded portion in a binary format;

writing the encoded portion in reverse order by first writing a last encoded portion into an end position of the data portion;

noting an ending index, upon starting said step of writing and noting starting index upon ending said step of writing; and

determining a length of said data portion based on a difference between said starting index and said ending index.

5,649,190

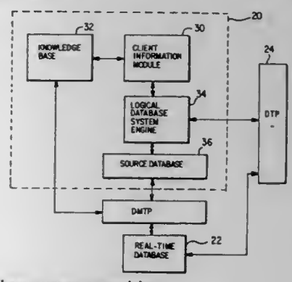
MULTI-MODEL DATABASE SYSTEM FOR DYNAMIC CREATION AND MAINTENANCE OF COMPLEX OBJECTS IN A REAL TIME ENVIRONMENT

Jamshid Sharif-Askary, Palm Bay; Shashi Garje; Vijay Rohela, both of Melbourne; Ashok I. Roy, Palm Bay, and Irahim Yaseen, Melbourne, all of Fla., assignors to Harris Corporation, Melbourne, Fla.

Continuation of Ser. No. 260,299, Jun. 14, 1994, abandoned. This application Feb. 5, 1996, Ser. No. 596,691

Int. Cl.[6] G06F *15/00;17/28*

U.S. Cl. 395—612 **12 Claims**



1. A database system comprising:

a logical database;

a knowledge base containing knowledge regarding semantic and syntactic constraints of data relationships of data contained in the logical database, said syntactic and semantic constraints provide rules for when and how data entered by a user is not acceptable, and ensuring syntactic and semantic validity of contents of the logical database and defining a behavior of said database;

a client information module coupled between the logical database and the knowledge base, the client information module providing a dynamic interface between the user of the database system and allowing use of the logical database according to the knowledge contained in the knowledge base, as well as generating information for the user by combining information from different objects of the logical database; and

wherein the client interface module includes a dynamic view manager that forms a user interface and through which a user dynamically defines views, whereby real-time changes can be made to different objects.

5,649,191

INFORMATION SEARCHING APPARATUS FOR MANAGING AND RETRIEVING DOCUMENT DATA STORED IN A STORAGE UNIT

Toshinori Hirano, Chikushino; Nobuyuki Baba, Fukuoka; Yutaka Takahashi, Kawasaki, and Isao Inagawa, Yamato, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, and Fuji Photo Film Co., Ltd., Kanagawa-ken, both of Japan

Filed Apr. 27, 1993, Ser. No. 52,987

Claims priority, application Japan, Apr. 30, 1992, 4-111128

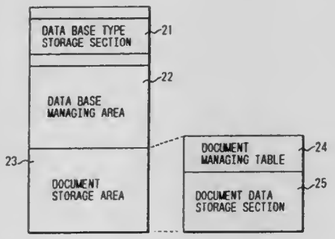
Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—613 **2 Claims**

1. An information searching apparatus comprising:

first storage means for storing data representing documents;

second storage means for storing data representing classification labels, data representing hierarchy relations, and data repre-



senting corresponding relations, the classification labels being associated to the documents, the hierarchy relations representing relations between the classification labels, the corresponding relations representing correspondence relations between the data representing the documents and the data representing the classification labels;

selecting means for selecting one of a tree type classification system comprising a plurality of hierarchies and a box type classification system comprising a single hierarchy as a selected classification system;

changing means for changing a form of visualizing the classification labels based on the hierarchy relations in response to the selected classification system, the form being determined by the classification system;

visualizing means for displaying the classification labels in the form; and

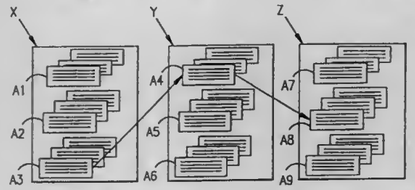
retrieving means for retrieving the data representing the document based on the corresponding relations.

5,649,192

SELF-ORGANIZED INFORMATION STORAGE SYSTEM

Robert Bruce Stucky, San Jose, Calif., assignor to General Electric Company, San Jose, Calif.

Filed Jan. 15, 1993, Ser. No. 4,010
Int. Cl.[6] G06F *17/30;17/21*
U.S. Cl. 395—614 **6 Claims**



1. A system for producing a document containing a selected plurality of document statements therein from data stored in computer memory, comprising:

means for storing a first table comprising a multiplicity of sets of data, each set of data of said first table comprising a self-contained information object stored independently of each other and representing a document statement to be included in a document to be produced and a corresponding unique identifier code identifying the information object;

means for storing a second table comprising a multiplicity of sets of data, each set of data of said second table comprising one of said identifier codes, an object class code indicating the class of objects to which the information object identified by said corresponding identifier code belongs, and document hierarchy data for indicating a hierarchical ordering of the document statement representing the information object identified by said corresponding identifier code relative to other document statements to be included in the document to be produced; and

means for constructing a document consisting of a plurality of document statements arranged in hierarchical ordering and representing information objects selected from said first table in accordance with a desired object class code and ordered in accordance with said document hierarchy data as stored in the data sets of said second table,

wherein said second table includes a first multiplicity of data sets containing identifier codes for superior information objects which may occupy a highest hierarchical ordering level in said document to be produced and a second multiplicity of data sets containing identifier codes for subordinate information objects which occupy any one of a plurality of successively lower hierarchical ordering levels in said document to be produced, said document hierarchy data for each data set of said first multiplicity including a first field containing an indicator that the corresponding superior information object occupies the highest hierarchical ordering level and a second field containing the ranking of the corresponding superior information object in relation to all other superior information objects to be included in said document to be produced, and said document hierarchy data for each data set of said second multiplicity including a first field containing the identifier code of the superior information object on a next higher hierarchical ordering level under which the corresponding subordinate information object is subsumed and a second field containing the ranking of the corresponding subordinate information object in relation to all other subordinate information objects subsumed under the same superior information object,

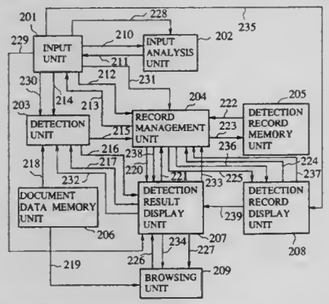
whereby said system allows a multiplicity of document statements to be stored as self-contained object data independently of each other in computer memory and a document to be constructed of a selected plurality of such document statements which are arranged in sequence therein in accordance with their respectively indicated document hierarchical ordering level and ranking on each such level.

5,649,193

DOCUMENT DETECTION SYSTEM USING DETECTION RESULT PRESENTATION FOR FACILITATING USER'S COMPREHENSION

Kazuo Sumita; Hideki Hirakawa; Seiji Miike, all of Kanagawa-ken, and Yumi Mizutani, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 212,146, Mar. 14, 1994, abandoned. This application Nov. 17, 1995, Ser. No. 560,512
Claims priority, application Japan, Mar. 12, 1993, 5-079149
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—614 **21 Claims**



4. A document detection system, comprising:

document memory means for storing a plurality of documents;

input means for entering user's input, the user's input requesting a document detection to be carried out in the documents stored in the document memory means;

input analysis means for analyzing the user's input entered by the input means to extract keywords and viewpoints from the user's input, each viewpoint indicating a context in which a keyword is used in the user's input, and for constructing a detection command from the keywords and the viewpoints extracted from the user's input;

detection means for detecting those documents stored in the document memory means which match with the detection command constructed by the input analysis means as detected documents of a detection result;

distance calculation means for calculating distances of the detected documents detected by the detection means with respect to the detection command, for each viewpoint; and

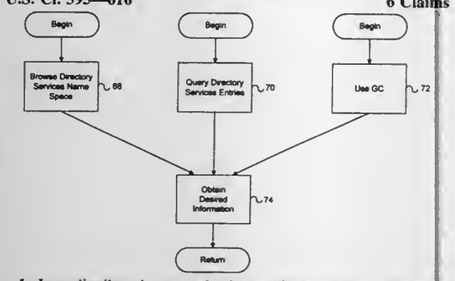
detection result display means for presenting a detection result display indicating the detection result obtained by the detection means, in a multi-dimensional display formed by setting different viewpoints to respective axes with the detection command as an origin and using the distances of the detected documents for said each viewpoint calculated by the distance calculation means as coordinates of the detected documents with respect to each axis representing said each viewpoint.

5,649,194

UNIFICATION OF DIRECTORY SERVICE WITH FILE SYSTEM SERVICES

Arnold Miller; Yuval Neeman, both of Bellevue; Aaron M. Contorer, Kirkland; Pradyumna K. Misra, Issaquah; Michael R. C. Seaman, Kirkland, and Darryl E. Rubin, Redmond, all of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Division of Ser. No. 175,063, Dec. 29, 1993. This application Jun. 2, 1995, Ser. No. 459,809
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—616 **6 Claims**



1. In a distributed system having a distributed set of storage devices and a distributed file system, a method comprising the steps of:

storing directory service entries in the storage devices as objects such that each directory service entry is encapsulated in a separate object having properties;

storing files in the storage devices as objects having properties;

providing a querying mechanism in the distributed file system;

using the querying mechanism to perform a first query of properties on the directory service entries; and

using the querying mechanism to perform a second query of properties on the files.

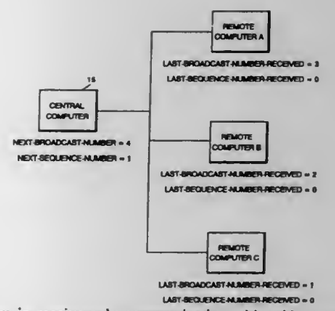
5,649,195

SYSTEMS AND METHODS FOR SYNCHRONIZING DATABASES IN A RECEIVE-ONLY NETWORK

Roderick Keith Scott, Durham, and Ling-Ching Wang Tai, Cary, both of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 22, 1995, Ser. No. 446,996
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—617 **20 Claims**

1. A method for synchronizing databases among a central computer having a master database therein, and a plurality of remote computers in receive-only communication with said central computer, each of said remote computers having therein a replica of said master database, said database synchronizing method comprising the steps of:



storing a plurality of changes to said master database, which occur during a predetermined time period, in a file which is external to said master database;

assigning a same next-broadcast-number to each of the changes in the file, and assigning a sequential next-sequence-number to a respective one of the changes in the file;

broadcasting each of the changes in the file to each of said plurality of remote computers which are in receive-only communication with said central computer, including the same next-broadcast-number and the sequential next-sequence-numbers;

receiving, at each of said plurality of remote computers which are in receive-only communication with said central computer, the broadcast changes in the file including the same next-broadcast-number and the sequential next-sequence-numbers; and

updating the replica of said master database at each of said plurality of remote computers, which are in receive-only communication with said central computer, based upon the same next-broadcast-number and the sequential next-sequence-number assigned to each change in the received changes.

5,649,196

SYSTEM AND METHOD FOR DISTRIBUTED STORAGE MANAGEMENT ON NETWORKED COMPUTER SYSTEMS USING BINARY OBJECT IDENTIFIERS

James R. Woodhill, Houston; Louis R. Woodhill, Richmond; William Russell More, Jr., and Jay Harris Berlin, both of Houston, all of Tex., assignors to Legent Corporation, Pittsburgh, Pa.

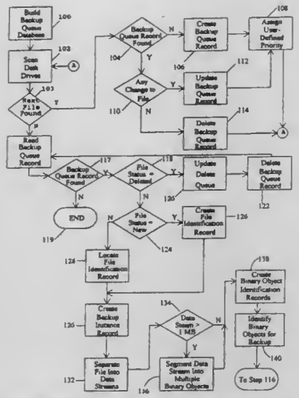
Continuation of Ser. No. 85,596, Jul. 1, 1993, abandoned. This application Nov. 9, 1995, Ser. No. 555,376
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—620 **18 Claims**

1. A system for distributed management of the storage space and data on a networked computer system wherein the networked computer system includes at least two storage devices for storing data files, said distributed storage management system comprising:

means for selectively copying data files stored on one of the storage devices to another of the storage devices;

means for dividing each data file into one or more binary objects of a predetermined size;

means for calculating a current value for a binary object identifier for each binary object within a file, said calculation of said binary object identifier being based upon the actual data contents of the associated binary object, said calculated binary object identifier being saved as the name of the associated binary object;



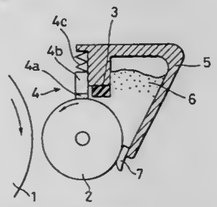
means for comparing said current name of a particular binary object to one or more previous names of said binary object; means for storing said current name of said binary object; and means for controlling said means for selectively copying binary objects in response to said means for comparing.

5,649,197

DEVELOPMENT APPARATUS INCLUDING NONMAGNETIC SINGLE-COMPONENT DEVELOPER GUIDE MEMBER

Hideaki Fujita, Tenri, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 19, 1996, Ser. No. 582,342
Claims priority, application Japan, Jan. 20, 1995, 7-007738
Int. Cl.[6] G03G *21/00*
U.S. Cl. 399—260 **13 Claims**



2. A development apparatus comprising:

a developer carrier for transporting a nonmagnetic single-component developer by carrying the nonmagnetic single-component developer on a surface thereof;

a regulating member for forming a thin layer of the nonmagnetic single-component developer on the surface of said developer carrier by regulating an amount of the nonmagnetic single-component developer to be transported by said developer carrier; and

a developer guide member for guiding the nonmagnetic single-component developer to said regulating member so as to increase developer pressure to be applied to said developer carrier by the nonmagnetic single-component developer transported to said regulating member, said developer guide member being disposed out of contact with said developer carrier at a position proximate to an upstream side of said regulating member with respect to a moving direction of said developer carrier,

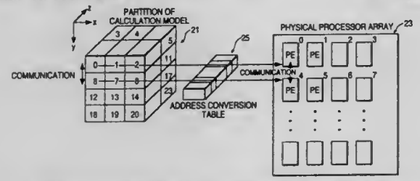
said developer guide member being formed by an elastic material.

5,649,198

MAPPING CALCULATION UNITS BY DIVIDING A CALCULATION MODEL WHICH CAN BE CALCULATED IN PARALLEL ON AN APPLICATION PROGRAM

Kazuya Shibata; Masahide Fujisaki; Hiroyuki Kanazawa, and Motoi Okuda, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 108,546, Aug. 19, 1993, abandoned. This application Sep. 16, 1996, Ser. No. 714,527
Claims priority, application Japan, Feb. 19, 1993, 5-030971
Int. Cl.[6] G06F *9/40;15/16*
U.S. Cl. 395—670 **31 Claims**



1. A method of mapping an N-dimensional calculation model in a parallel computer, the parallel computer including a plurality of processors for implementing parallel processing in a parallel fashion by transferring data and information among the processors from one to another through communication means, said method comprising the steps of:

a) dividing the N-dimensional calculation model into a plurality of calculation units each having an identification code;

b) establishing an address conversion table that indicates the location of the processors assigned to said calculation units;

c) mapping the calculation units into the processors through an address conversion table; and

d) implementing interprocessor communication by the identification codes assigned to the calculation units.

5,649,199

Patent Not Issued For This Number

5,649,200

DYNAMIC RULE-BASED VERSION CONTROL SYSTEM

David B. Leblang, Wayland; Larry W. Allen, Cambridge; Robert P. Chase, Jr., Newton; Bryan P. Douros, Framingham; David E. Jabs, Sudbury; Gordon D. McLean, Jr., Brookline, and Debra A. Minard, Newton Upper Falls, all of Mass., assignors to Atria Software, Inc., Lexington, Mass.

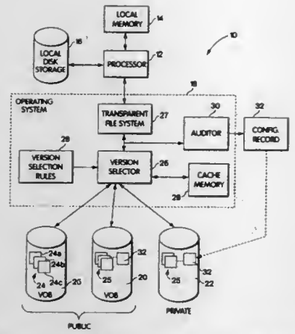
Continuation of Ser. No. 2,231, Jan. 8, 1993, abandoned. This application Dec. 2, 1996, Ser. No. 759,838
Int. Cl.[6] G06F *3/00*
U.S. Cl. 395—703 **51 Claims**

1. A data processing system for controlling versions of objects, comprising

a storage device for storing a plurality of versions of a set of objects,

a processor for executing instructions and for retrieving a specific version of one or more target objects from and storing each version of such target objects to the storage device during a process, and

an object version selector (i) which evaluates version selection rules by performing one or more queries on each target object during the process without requiring prior knowledge of each target object, and (ii) which provides the processor with access only to a specific version of such target object as determined by version selection rules during the process.

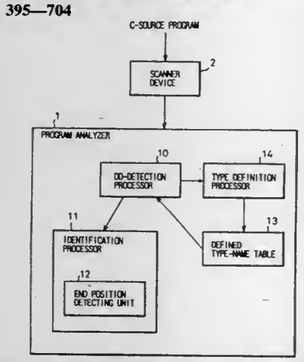


5,649,201

PROGRAM ANALYZER TO SPECIFY A START POSITION OF A FUNCTION IN A SOURCE PROGRAM

Yohtaro Kitadate, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 136,122, Oct. 14, 1993, abandoned. This application Oct. 29, 1996, Ser. No. 739,215
Claims priority, application Japan, Oct. 14, 1992, 4-275614
Int. Cl.[6] G06F *9/45*
U.S. Cl. 395—704 **16 Claims**



1. A program analyzer which receives a C-source program formed by a unit of a character or a token, referred to as a character/token, and determines whether a part of the C-source program is a declaration or a function definition, said program analyzer comprising:

a DD-detection processor for detecting a direct declarator or the character/token ";" in the outside of the characters/tokens "{" and "}" of the part of the C-source program, and

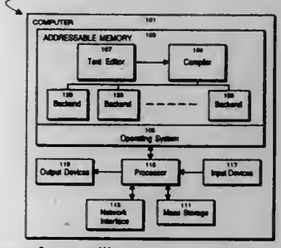
an identification processor for identifying the part of the C-source program based on a result of the detection by the DD-detection processor, by determining the part of the C-source program as the declaration when the DD-detection processor detects the character/token ";", determining the part of the C-source program as the declaration when the DD-detection processor detects the direct declarator and further detects that the next character/token of the direct declarator is one of the characters/tokens "=", "," and ";", and determining the part of the C-source program as the function definition when the DD-detection processor detects the direct declarator and further detects that the next character/token of the direct declarator is not one of the characters/tokens "=", "," and ";", to thereby determine a start position of the function definition in the C-source program.

5,649,202

COMPILER WITH GENERIC FRONT END AND DYNAMICALLY LOADABLE BACK ENDS

Jacob Y. Levy, Los Altos; Swee Boon Lim, Mountain View; Donald J. Kretsch, Cupertino; Wesley E. Mitchell, Sunnyvale, and Benjamin Lerner, Palo Alto, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Mar. 29, 1995, Ser. No. 412,546
Int. Cl.[6] G06F *9/445;9/45*
U.S. Cl. 395—705 **7 Claims**



1. An apparatus for compiling a source code file and producing variable target outputs therefrom, comprising:

a front end that accepts the source code file and produces therefrom an abstract syntax tree that represents the syntactic structure of the source code file, the abstract syntax tree having at least one abstract syntax tree node;

at least one back end that produces an associated back end tree from the abstract syntax tree, and further produces from the back end tree a target output, the back end tree having at least one back end tree node attached to an abstract syntax tree node; and,

a generic back end that controls and sequences execution of the at least one back end to produce an associated back end tree from the at least one back end, wherein each back end is independent of the generic back end and is dynamically loaded by the apparatus during execution; and wherein each back end further comprises:

an add operation, invocable by the generic back end, that adds zero or more back end nodes to a back end tree.

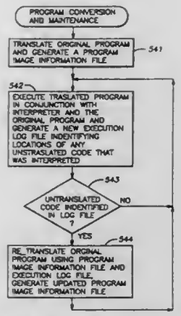
5,649,203

TRANSLATING, EXECUTING, AND RE-TRANSLATING A COMPUTER PROGRAM FOR FINDING AND TRANSLATING PROGRAM CODE AT UNKNOWN PROGRAM ADDRESSES

Richard Lee Sites, Menlo Park, Calif., assignor to Digital Equipment Corporation, Maynard, Mass.

Division of Ser. No. 666,196, Mar. 7, 1991, Pat. No. 5,507,030. This application Dec. 29, 1995, Ser. No. 580,686
Int. Cl.[6] G06F *8/00*
U.S. Cl. 395—709 **17 Claims**

1. A method of operating a digital computer for translating and re-translating an original computer program from one computer program language to another computer program language, said original computer program language including program instructions at respective program addresses in said original computer program, the program addresses of some of said program instructions being unknown when translating said original computer program because said program instructions include execution transfer instructions specifying transfers of program execution to respective computed destination addresses that are computed during program execution, said method comprising the steps of:



(a) translating a portion of the instructions in said original computer program to provide a translated computer program, said portion of the instructions including at least one of said execution transfer instructions, and translating said one of said execution transfer instructions as a call to an interpreter program for interpreting instructions in said computer program beginning at a computed destination address of said one of said execution transfer instructions;

(b) executing said translated program together with said interpreter program, and when said interpreter program is called to interpret said original program beginning at said computer destination address of said one of said execution transfer instructions, recording an indication of a value of said computed destination address; and

(c) re-translating said original computer program including previously untranslated instructions that begin at the value of said computed destination address indicated by the recorded indication to provide a re-translated computer program, further comprising the steps of:

(d) re-executing said re-translated computer program together with said interpreter program, and whenever said interpreter program is called to interpret said original computer program beginning at a computed destination address of said one of said execution transfer instructions, recording an indication of value of said computed destination address; and then

(e) testing whether an indication of a value of a computed destination address was recorded during the re-execution of said re-translated computer program together with said interpreter program, and upon finding that an indication of a value of a computed destination was so recorded, re-translating said original computer program including previously-untranslated instructions that begin at the value of the computed destination address indicated by the indication recorded during the re-execution of said re-translated computer program, and upon finding that an indication of a value of a computed destination was not so recorded, not again re-translating said original computer program before re-executing a re-translation of said original computer program.

5,649,204

METHOD AND APPARATUS FOR CONSOLIDATING SOFTWARE MODULE LINKAGE INFORMATION USED FOR STARTING A MULTI-MODULE PROGRAM

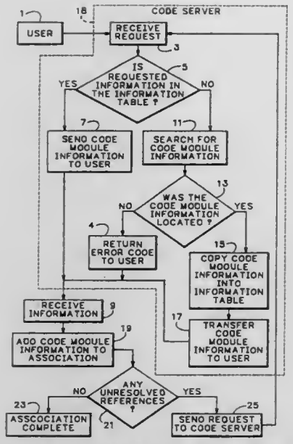
Stephen F. B. Pickett, Vancouver, Canada, assignor to REC Software, Inc., Vancouver, Canada

Filed Aug. 22, 1991, Ser. No. 748,462

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—710 **22 Claims**

1. A method of providing information to an operating system program that is executing on a computer for forming an association for a multi-module program which includes an embedded reference to a discrete module, said method comprising the steps of:



(a) receiving in a code server from said operating system program, at a point prior to execution-time of said multi-module program being associated, a protocol request associated with said discrete module;

(b) searching a module information table for module information in response to said protocol request associated with said discrete module;

(c) in response to finding said module information in said module information table, reading said module information;

(d) providing said module information in a protocol response to said operating system program; and

(e) forming said association of said multi-module program in said operating system program.

5,649,205

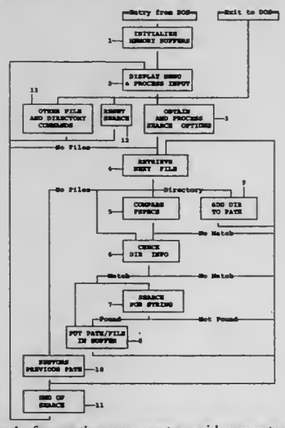
FILE RETRIEVAL SYSTEM

Augusto Baronio Martins, 777-58 San Antonio Rd., Palo Alto, Calif. 94303

Filed Jul. 7, 1989, Ser. No. 376,682

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—712 **20 Claims**



1. A method of operating a computer, said computer comprising a dick storage system, main memory and a plurality of external file commands processors, to retrieve files from one or more directories and its associated sub-directories stored on one or more disks

which comprise said disk storage system, based on search options supplied by an user of said computer and making the retrieved files available as a list of said files to said user for further processing by other file commands or processors on said computer, comprising the stops of:

(a) retrieving files based on the following:

(1) the files' specification;

(2) directory information about said files;

(3) searching through the contents of said files for a predetermined string;

(b) storing the retrieved files as a list of files in the main memory of the computer, said list comprising the file specific at of each retrieved file and, optionally, directory information about said file;

(c) displaying said list to said user;

(d) said user selecting and submitting any of said files in said list to any file command or processor on said computer;

(e) repeating step (d) as often as desired by said user so that files from the same list may be submitted to same or different file command or processor on said computer.

5,649,206

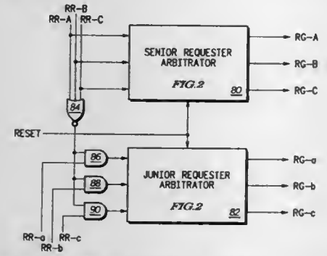
PRIORITY ARBITRATION PROTOCOL WITH TWO RESOURCE REQUESTER CLASSES AND SYSTEM THEREFOR

Michael S. Allen, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 116,633, Sep. 7, 1993, abandoned. This application Jun. 15, 1995, Ser. No. 482,955

Int. Cl.[6] G06F *13/14*

U.S. Cl. 395—729 **1 Claim**



1. A priority arbitration system for granting use of a shared resource to a selected one of a first plurality of resource users or to a selected one of a second plurality of resource users, each one of the first plurality of resource users asserting a differing one of a first plurality of resource request signals when requesting use of the shared resource, each one of the second plurality of resource users asserting a differing one of a second plurality of resource request signals when requesting use of the shared resource, each one of the second plurality of resource users de-asserting a differing one of a second plurality of resource request signals when not requesting use of the shared resource, the arbitration protocol system comprising:

first priority arbitration circuitry for receiving a first plurality of resource request signals, the first arbitration circuitry granting use of a shared resource to a selected one of the first plurality of resource users according to a first priority arbitration protocol if at least one of the first plurality of resource request signals is asserted, the first priority arbitration circuitry comprising:

first pointer circuitry specifying one of the first plurality of resource users, the first pointer circuitry, sequentially specifying each of the first plurality of resource users according to a first predetermined order, the first pointer circuitry receiving a plurality of resource grant signals, the first pointer circuitry specifying a first selected one of the first plurality of resource users responsive to the first predetermined order and to the plurality of resource grant signals;

first circuitry coupled to the first pointer circuitry, the first circuitry generating a first one of the plurality of resource grant signals, the first circuitry asserting the first one of the plurality of resource grant signals if (1) the first one of the first plurality of resource request signals is asserted and (2) either (i) the first pointer circuitry specifies the first one of the first plurality of resource users, or (ii) the second one of the first plurality of resource request signals is not asserted and the first pointer circuitry specifies the second one of the first plurality of resource users, or (iii) the third one of the first plurality of resource request signals is not asserted and the first pointer circuitry specifies the third one of the first plurality of resource users;

second circuitry coupled to the first pointer circuitry, the second circuitry generating a second one of the plurality of resource grant signals, the second circuitry asserting the second one of the first plurality of resource grant signals if (1) the second one of the first plurality of resource request signals is asserted and (2) either (i) the first pointer circuitry specifies the second one of the first plurality of resource users, or (ii) the first one of the first plurality of resource request signals is not asserted and the first pointer circuitry specifies the first one of the first plurality of resource users, or (iii) the first one of the first plurality of resource request signals is not asserted, the third one of the first plurality of resource request signals is not asserted and the first pointer circuitry specifies the third one of the first plurality of resource users;

third circuitry coupled to the first pointer circuitry, the third circuitry generating a third one of the plurality of resource grant signals, the third circuitry asserting the third one of the plurality of resource grant signals if (1) the third one of the first plurality of resource request signals is asserted and (2) either (i) the first pointer circuitry specifies the third one of the first plurality of resource users, or (ii) neither the first one or the second one of the first plurality of resource request signals is asserted;

second priority arbitration circuitry for receiving a second plurality of resource request signals, the second arbitration circuitry granting use of the shared resource to a selected one of the second plurality of resource users according to a second priority arbitration protocol, the second priority arbitration circuitry comprising:

second pointer circuitry specifying one of the second plurality of resource users, the second pointer circuits sequentially specifying each of the second plurality of resource users according to a second predetermined order, the second pointer circuitry receiving the plurality of resource grant signals, the second pointer circuitry specifying a first selected one of the second plurality of resource users responsive to the second predetermined order and to the plurality of resource grant signals;

fourth circuitry coupled to the second pointer circuitry, the fourth circuitry generating a fourth one of the plurality of resource grant signals, the fourth circuitry asserting the fourth one of the plurality of resource grant signals if (1) none of the first, second, or third resource grant signals are asserted, (2) the first one of the second plurality of resource request signals is asserted and (3) either (i) the second pointer circuitry specifies the first one of the second plurality of resource users, or (ii) the second one of the second plurality of resource request signals is not asserted and the second pointer circuitry specifies the second one of the second plurality of resource users, or (iii) the third one of the second plurality of resource request signals is not asserted and the second pointer circuitry specifies the third one of the second plurality of resource users;

fifth circuitry coupled to the second pointer circuitry, the fifth circuitry generating a fifth one of the plurality of resource grant signals, the fifth circuitry asserting the fifth one of the plurality of resource grant signals if (1) none of the first, second, or third resource grant signals are asserted, (2) the second one of the second plurality of resource request signals is asserted and (3) either (i) the second pointer circuitry specifies the second one of the second plurality of

resource users, or (ii) the first one of the second plurality of resource request signals is not asserted and the second pointer circuitry specifies the first one of the second plurality of resource users, or (iii) the first one of the second plurality of resource request signals is not asserted, the third one of the second plurality of resource request signals is not asserted and the second pointer circuitry specifies the third one of the second plurality of resource users; and

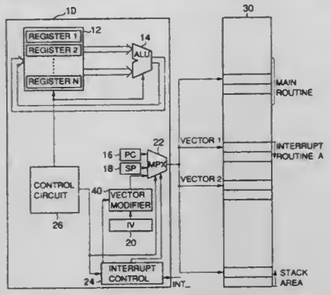
sixth circuitry coupled to the second pointer circuitry, the sixth circuits generating a sixth one of the plurality of resource grant signals, the sixth circuitry asserting the sixth one of the plurality of resource grant signals if (1) none of the first, second, or third resource grant signals are asserted, (2) the third one of the second plurality of resource request signals is asserted and (3) either (i) the second pointer circuitry specifies the third one of the second plurality of resource users, or (ii) neither the first one or the second one of the second plurality of resource request signals is asserted.

5,649,207

MICROPROCESSOR UNIT HAVING INTERRUPT MECHANISM

Hiroshi Suzuki, Chiba, and Yasuo Yamada, Tokyo, both of Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan

Filed Dec. 1, 1994, Ser. No. 348,373
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—733 **4 Claims**



1. A microprocessor unit for executing a plurality of commands sequentially and for branching to an interrupt process upon receipt of an interrupt, said microprocessor unit comprising:

a program counter pointing to an address having the command to be executed next, said address being contiguous to the address where the command currently executed exists;

an interrupt mechanism for saving the content of said program counter into a stack upon receipt of an interrupt and for branching to an interrupt process thereafter; and

a branching destination selecting mechanism for selecting, upon receipt of at least one predetermined interrupt, a branching in accordance with the kind of command being executed when said predetermined interrupt is received,

wherein the branching destination selecting mechanism selects a branching destination such that a sequence of commands located in memory contiguously to the interrupt process is executed immediately before execution of the interrupt process and

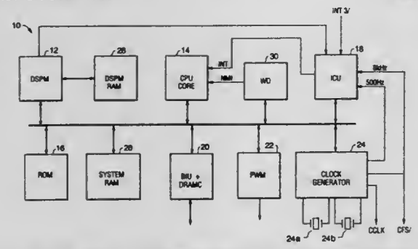
wherein said branching destination corresponds to the kind of command being executed where said predetermined interrupt is received.

5,649,208

MECHANISM FOR HANDLING NON-MASKABLE INTERRUPT REQUESTS RECEIVED FROM DIFFERENT SOURCES

Gideon Intrater, Tel-Aviv; Oved Oz, Cfar Saba, and Meir Tsadik, Hod Hasharon, all of Israel, assignors to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 307,406, Sep. 16, 1994, abandoned, which is a continuation of Ser. No. 67,545, May 26, 1993, abandoned, which is a division of Ser. No. 806,082, Dec. 6, 1991, abandoned. This application Nov. 3, 1995, Ser. No. 553,012
Int. Cl.[6] G06F *9/46;13/24*
U.S. Cl. 395—735 **2 Claims**



1. An integrated circuit data processing system that includes a central processing unit, the central processing unit comprising:

means for processing a first non-maskable interrupt (NMI) request received by the data processing system on a first NMI request line; and

means for processing a second NMI request received by the data processing system on a second NMI request line different from the first NMI request line and within a predefined time period after receipt of the first NMI request;

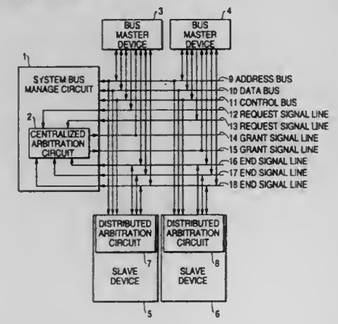
whereby both the first and the second NMI requests are serviced by the data processing system even if the second NMI request is received prior to completion of processing of the first NMI request, and so long as the second NMI request is received within said predetermined time period before NMI status register is read and cleared.

5,649,209

BUS COUPLING INFORMATION PROCESSING SYSTEM FOR MULTIPLE ACCESS TO SYSTEM BUS

Masakazu Umetsu, Tokyo; Masami Katagiri, and Yoshihiro Hoshizawa, both of Yamagata, all of Japan, assignors to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 187,542, Jan. 28, 1994, abandoned. This application Sep. 10, 1996, Ser. No. 713,289
Claims priority, application Japan, Jan. 29, 1993, 5-014184
Int. Cl.[6] G06F *12/00*
U.S. Cl. 395—739 **5 Claims**



1. A bus coupling information processing system, comprising:

bus master devices for issuing processing requests;

slave devices for performing processing according to said processing requests;

system buses, including a data bus for transferring data and end signal lines indicating end of processing at said slave devices, for coupling said bus master devices to said slave devices; and

system bus manage means for managing said system buses and arbitrating said processing requests from said bus master devices,

wherein each bus master device, when issuing a processing request to one of said slave devices, selectively designates one of said end signal lines as a designated end signal line, and said slave device, upon completion of processing according to said processing request, activates said designated end signal line when no other end signal line is active,

wherein each slave device includes a distributed arbitration section for monitoring status of said end signal lines and for arbitrating said end signal lines so that only one end signal line is active, and

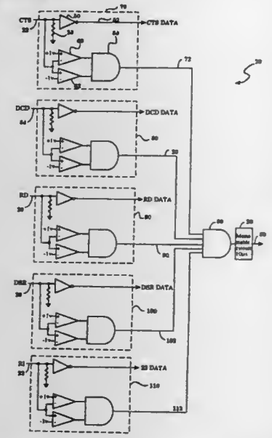
wherein said system bus manage means includes a centralized arbitration section for arbitrating said processing requests from said bus master devices and granting a processing request when said data bus is not busy and no end signal lines are active.

5,649,210

COMMUNICATION INTERFACE CIRCUIT HAVING NETWORK CONNECTION DETECTION CAPABILITY

Charles M. Allen, Sunnyvale, Calif., assignor to Maxim Integrated Products, Sunnyvale, Calif.

Filed Sep. 29, 1994, Ser. No. 315,130
Int. Cl.[6] G06F *1/32*
U.S. Cl. 395—750 **27 Claims**



21. A method for interfacing two communications systems comprising the steps of:

a) detecting the presence of a signal that is at a level associated with an Invalid logic signal;

b) providing a Master Invalid signal in response to step a); and

c) generating a Stabilized Master Invalid signal in response to step b), said generating step includes the steps of

c.1) asserting said Stabilized Master Invalid signal if said Master Invalid signal remains in the invalid state for a predetermined period of time, and alternatively

c.2) deasserting said Stabilized Master Invalid signal if said Master Invalid signal remains in the invalid state for less than said predetermined period of time.

5,649,211

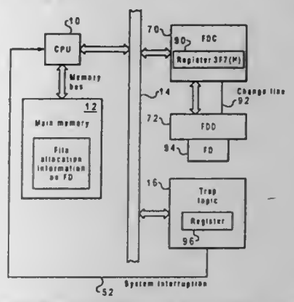
Patent Not Issued For This Number

5,649,212

INFORMATION PROCESSING SYSTEM HAVING A FLOPPY DISK DRIVE WITH DISK PROTECTION DURING A RESUME MODE

Tateo Kawamura, Sagamihara, and Susumu Shimotono, Hadano, both of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 279,970, Jul. 25, 1994, abandoned. This application Jan. 11, 1996, Ser. No. 584,994
Claims priority, application Japan, Jul. 26, 1993, 5-184169
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—750 **7 Claims**



1. In an information processing system including a CPU, a main memory, a floppy disk controller (FDC), and a floppy disk drive (FDD), a change line being provided between said FDC and said FDD for monitoring attachment/detachment of a floppy disk to/from said FDD, the status of said change line being reflected by a flag value in a status register in said FDC, the flag status being used to determine the validity of the file allocation information that has been stored via said FDC to said main memory, said information processing system comprising:

a means for entering a low power-consumption mode by turning off the power to said FDC and FDD upon the occurrence of a first predetermined condition;

a means for entering a normal operation mode, during which said FDC and FDD are powered-on, upon the occurrence of a second predetermined condition; and

a means for protecting said floppy disk at the first access after the transition from said low power-consumption mode to said normal operation mode, regardless of whether said floppy disk was in said FDD when said low power-consumption mode was entered, by asserting that said floppy disk has been removed.

5,649,213

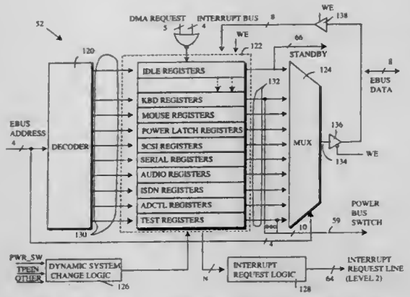
METHOD AND APPARATUS FOR REDUCING POWER CONSUMPTION IN A COMPUTER SYSTEM

Steven M. Kurihara, Palo Alto, and Mark W. Insley, Sunnyvale, both of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Continuation of Ser. No. 179,433, Jan. 10, 1994, abandoned. This application Apr. 22, 1996, Ser. No. 636,010
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—750 **19 Claims**

1. A computer system with power management comprising:

a central processing unit, said central processing unit having an active mode wherein it is responsive to external events, and a standby mode wherein power is maintained to said central processing unit and said central processing unit is in a low



power state and is not responsive to said external events, said central processing unit operative such that whenever said central processing unit has completed a series of basic housekeeping functions and a next operation to be performed by said central processing unit is a no operation idle step, said central processing unit sets a condition indicating that said central processing unit is currently not required; and

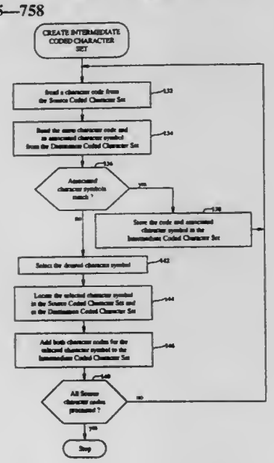
a power management circuit coupled to said central processing unit, said power management circuit being operative to monitor for said external events when said central processing unit is in said standby mode, and to cause said central processing unit to enter said active mode upon the detection of an external event, said power management circuit being operative to force said central processing unit into said standby mode in response to the condition indicating that said central processing unit is currently not required, said power management circuit being operative to control power applied to at least one peripheral device.

5,649,214

METHOD AND APPARATUS FOR CONTINUED USE OF DATA ENCODED UNDER A FIRST CODED CHARACTER SET WHILE DATA IS GRADUALLY TRANSLITERATED TO A SECOND CODED CHARACTER SET

Kelsey L. Bruso, Minneapolis, and Robert Dean Vavra, Roseville, both of Minn., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Sep. 20, 1994, Ser. No. 309,995
Int. Cl.[6] G06F *17/21*
U.S. Cl. 395—758 **14 Claims**



1. In a data processing system for providing access to a data file, wherein the data file initially contains character codes encoded under a first coded-character-set, a computer implemented method for gradually transliterating character codes in the data file to a second coded-character-set, wherein the first coded-character-set consists of a first set of character code/character symbol pairs and the second coded-character-set consists of a second set of character code/character symbol pairs, the method comprising the steps of:

(a) creating an intermediate coded-character-set, wherein said intermediate coded-character-set includes predetermined first coded-character-set character code/character symbol pairs and predetermined second coded-character-set character code/character symbol pairs, wherein each of said predetermined second coded-character-set character code/character symbol pairs has a character symbol that is in one of said predetermined first coded-character-set character code/character symbol pairs and the associated character code from the second coded-character-set is not equal to the first coded-character-set character code associated with the character symbol, whereby the character symbols in said predetermined second coded-character-set character code/character symbol pairs are represented by two character codes in said intermediate-coded-character-set;

(b) writing said second coded-character-set input character codes without change in the data file for second coded-character-set input character codes that are to be written in the data file, whereby the data file may contain character codes encoded under the first coded-character-set and character codes encoded under the second coded-character-set; and

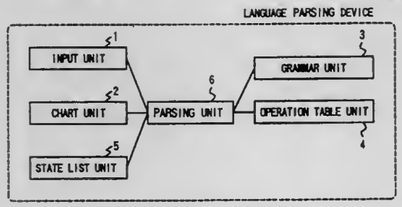
(c) selectively transliterating first coded-character-set character codes that are read from the data file for output using said intermediate-coded-character-set, to second coded-character-set character codes when second coded-character-set character codes are required for output.

5,649,215

LANGUAGE PARSING DEVICE AND METHOD FOR SAME

Hideo Itoh, Tokyo, Japan, assignor to Ricbo Company, Ltd., Tokyo, Japan

Filed Jan. 12, 1995, Ser. No. 371,798
Claims priority, application Japan, Jan. 13, 1994, 6-002102
Int. Cl.[6] G06F *17/27*
U.S. Cl. 395—759 **7 Claims**



1. A method for parsing of a language defined by context free grammar, said method comprising the steps of:

extracting groups corresponding to words of a sentence in an order of word arrangement of said sentence, each of said groups being formed by a terminal symbol, a start-position number, and an end-position number of a corresponding one of said words;

creating a state list by using said groups, said context free grammar, and an LR table derived from said context free grammar, said state list corresponding to position numbers indicating positions of said words and including state numbers indicating state of said parsing; and

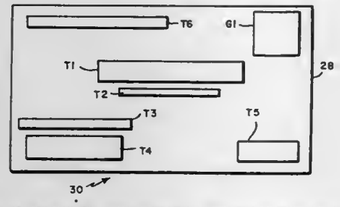
carrying out said parsing while creating said state list.

5,649,216

METHOD AND APPARATUS FOR AUTOMATED LAYOUT OF TEXT AND GRAPHIC ELEMENTS

Jonathan D. Sieber, Wayland, Mass., assignor to Joseph S. Sieber, Weston, Mass.

Continuation of Ser. No. 504,691, Jul. 20, 1995, abandoned, which is a continuation of Ser. No. 62,463, May 14, 1993, abandoned, which is a continuation-in-part of Ser. No. 702,052, May 17, 1991, abandoned. This application Jun. 4, 1996, Ser. No. 658,976
Int. Cl.[6] G06F *3/14*
U.S. Cl. 395—767 **67 Claims**



1. An apparatus for automatically generating a layout of text elements and artwork on a greeting card in response to action by a user, the apparatus comprising:

a. memory means for storing a plurality of artwork specifications, each artwork specification comprising user-defined information describing a piece of artwork and a plurality of constraints describing the layout of text elements in relation to the piece of artwork;

b. first means, coupled to the memory means, for selecting one of the artwork specifications;

c. second means for selecting, by the user, the text elements of the greeting card; and

d. means, responsive to the first means and second means, for manipulating the text elements and the artwork specification to automatically generate a greeting card layout in accordance with the plurality of constraints of the selected artwork specification, wherein when the plurality of constraints cannot be simultaneously satisfied, at least one of the information describing a piece of artwork and the text elements are modified automatically to be respectively different from the user-defined information previously stored and the text elements as selected by the user; and

e. means for displaying the generated page layout.

5,649,217

SWITCHING SYSTEM HAVING CONTROL CIRCUIT AND PLURAL BUFFER MEMORIES FOR DATA EXCHANGE IN ASYNCHRONOUS TRANSFER MODE

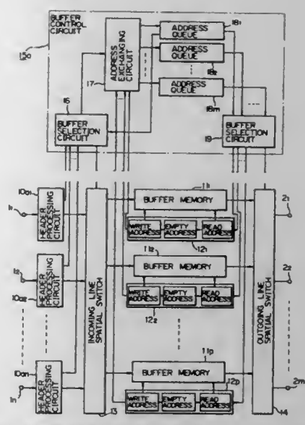
Hideaki Yamanaka; Kazuyoshi Oshima, and Setsuko Miura, all of Kanagawa-ken, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 601,992, Oct. 23, 1990, abandoned. This application Sep. 2, 1993, Ser. No. 116,215
Claims priority, application Japan, Oct. 23, 1989, 1-275645; Mar. 2, 1990, 2-51120; Jul. 6, 1990, 2-178993
Int. Cl.[6] G06F *3/00*; H01J *3/00*
U.S. Cl. 395—872 **28 Claims**

1. An asynchronous transfer mode cell switching apparatus for exchanging asynchronous transfer mode cells between a plurality of input lines for receiving cells and a plurality of output lines, each cell including a data portion and a header portion including destination information indicating an output line, the asynchronous transfer mode cell switching apparatus comprising:

a plurality of buffer memories in which received cells are stored and from which the received cells are read selectively;

an input spatial switch for selectively connecting one of said input lines to one of said buffer memories;



an output spatial switch for selectively connecting one of said buffer memories to one of said output lines; and

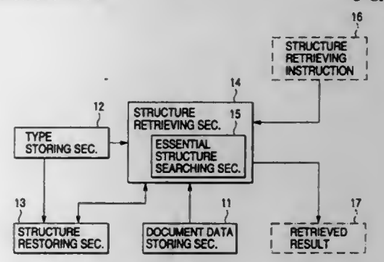
a buffer control circuit for controlling said input spatial switch to select a buffer memory in which a received cell is to be stored and for controlling said output spatial switch in accordance with the destination information included in the header portion of received cells.

5,649,218

DOCUMENT STRUCTURE RETRIEVAL APPARATUS UTILIZING PARTIAL TAG-RESTORED STRUCTURE

Kazuo Saito, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jul. 18, 1995, Ser. No. 503,691
Claims priority, application Japan, Jul. 19, 1994, 6-187866
Int. Cl.[6] G06F *17/30;17/21*
U.S. Cl. 395—774 **3 Claims**



1. A structure retrieval apparatus comprising:

data storing means for storing data which incorporates tags each discriminating a portion of the data to express a structure of the data, part of the tags being omissible;

type storing means for storing a pattern of the data structure expressed by the tags;

essential structure searching means for identifying a minimum necessary range of the data in which range omitted tags should be restored, based on a structure retrieving instruction including an object structure;

structure restoring means for restoring the omitted tags in the minimum necessary range to thereby produce a partial retrieved data; and

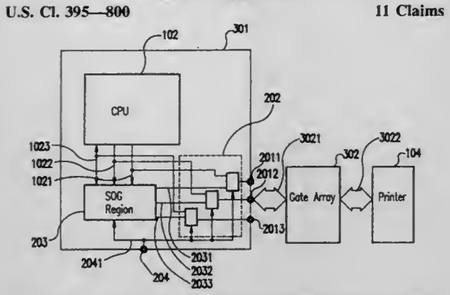
structure retrieving means for retrieving a tag of the object structure from the partial retrieved data.

5,649,219

MICROCOMPUTER HAVING A REGION DEFINABLE BY USER

Osamu Matsushima, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 149,198, Nov. 9, 1993, abandoned. This application Sep. 4, 1996, Ser. No. 708,884
Claims priority, application Japan, Nov. 10, 1992, 4-299427
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—800 **11 Claims**



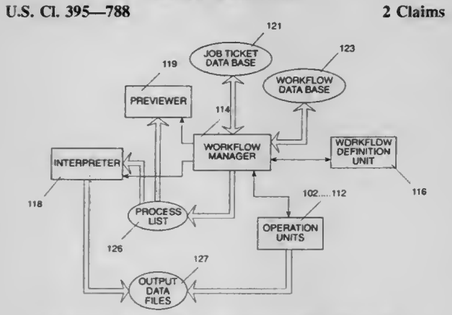
1. A microcomputer for controlling a peripheral device, comprising:
a central processing unit (CPU) producing a plurality of command signals at CPU output nodes;
a sea of gate (SOG) region performing a data processing operation in response to said plurality of command signals and producing a plurality of processed data signals at SOG output nodes;
a plurality of external terminals; and
a selector for coupling one of said CPU output nodes and said SOG output nodes to said plurality of external terminals, said selector responding to a mode signal to select said plurality of processed data signals to appear at said plurality of external terminals when said mode signal is in a first state to control the peripheral device, and to select said plurality of command signals to appear at said plurality of external terminals when said mode signal is in a second state to facilitate a debugging operation of said SOG region.

5,649,220

SYSTEM AND METHOD FOR ARTWORK DESIGN AND PRODUCTION

Hanan Yosefi, Ganei Tikva, Israel, assignor to Scitex Corporation Ltd., Israel

Filed Sep. 9, 1993, Ser. No. 120,204
Claims priority, applicatioo Israel, Aug. 24, 1993, 106792
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—788 **2 Claims**



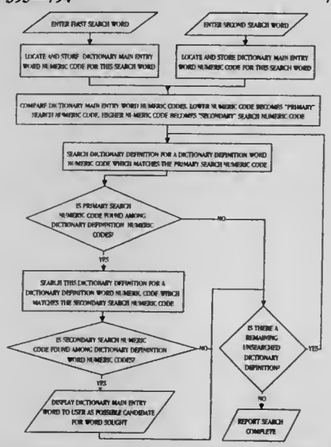
1. An artwork design and production system comprising:
a plurality of operation units each of which performs at least one of a multiplicity of different artwork preparation tasks and an artwork preparation administrator, the art work preparation administrator comprising:
a workflow definition unit including a user-interface for receiving a user-defined workflow including selected artwork preparation tasks and the order of operation thereof, said user initiating a first cycle of operation of said operation units performing said selected artwork preparation tasks which process a first version of a digital representation of said artwork, thereby producing a second version of said digital representation and an actual workflow;
means for initiating operation of operation units performing said selected artwork preparation tasks; and
an artwork workflow manager operative upon receiving an indication from said user viewing said second version of said digital representation, said artwork workflow manager automatically analyzes said actual workflow and determines whether to initiate a second cycle of operation more efficiently than said first cycle.

5,649,221

REVERSE ELECTRONIC DICTIONARY USING SYNONYMS TO EXPAND SEARCH CAPABILITIES

H. Vance Crawford, Traver Hollow Rd., P.O. Box 36, Boiceville, N.Y. 12412, and Joel Crawford, Utrechtsestraat 77-3, 1017 VJ Amsterdam, Netherlands

Filed Sep. 14, 1995, Ser. No. 528,359
Int. Cl.[6] G06F *3/14;17/21*
U.S. Cl. 395—794 **7 Claims**



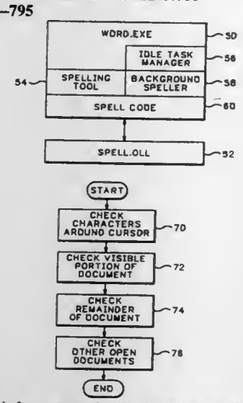
1. An improved computer implemented reverse electronic dictionary of the type wherein one or more search words are entered to retrieve a word sought, the improvements comprising:
a wide database of synonyms compartmented into synonym groups which are associated with each main entry and definition word, said synonym groups being formed through the cooperation of a thesaurus with a dictionary, and each of said synonym groups being assigned a numeric code to assist in the retrieval process such that when the search words are entered their numeric codes are located and thereafter the dictionary definitions are searched for definitions containing those numeric codes, the words having definitions containing those numeric codes being displayed as candidate words, said synonym groups thereby enabling a wider variation of the search words entered to retrieve the word sought, and
said numeric codes being assigned to said synonym groups by frequency of occurrence to shorten search time.

5,649,222

METHOD FOR BACKGROUND SPELL CHECKING A WORD PROCESSING DOCUMENT

Alex Mogilevsky, Redmond, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Filed May 8, 1995, Ser. No. 437,949
Int. Cl.[6] G06F *17/00*
U.S. Cl. 395—795 **24 Claims**



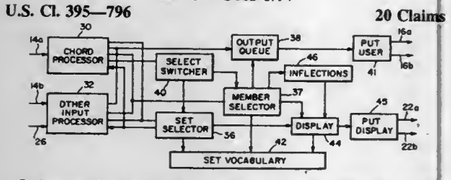
1. A method for automatically checking spelling in a word processing document comprising the steps of:
(a) storing spelling status data to monitor spelling status of ranges of characters in the word processing document;
(b) automatically spell checking words in the word processing document during idle periods in editing the word processing document; and
(c) if an edit to the word processing document changes one or more characters in the document, then updating the spelling status data corresponding to the one or more characters.

5,649,223

WORD BASED TEXT PRODUCING SYSTEM

Alfred B. Freeman, 420 Tibbetts Hill Rd., Goffstown, N.H. 03045

Continuation-in-part of Ser. No. 440,994, Nov. 22, 1989, abandoned, which is a continuation-in-part of Ser. No. 392,727, Aug. 11, 1989, abandoned, and Ser. No. 288,011, Dec. 21, 1988, abandoned. This application Dec. 17, 1991, Ser. No. 808,843
Int. Cl.[6] G06F *3/14*
U.S. Cl. 395—796 **20 Claims**



8. A method for inputting data items to a data handling system performed by computer apparatus including a data processing unit, a memory, a display, and an input means including a moveable element and a set of single motion patterns each having a shape and a direction, said method comprising the steps of:
a) storing a set of said data items in memory;
b) assigning each data item to one of said patterns;
c) displaying the data items in positions about a reference position to associate the data items with the patterns to which they are assigned;
d) moving the element in a pattern to which a wanted data item is assigned;
d2) sensing the position of said element at periodic intervals;
e) determining the pattern executed by movement of said element from the sensed successive positions of said element; and
f) inputting the data item assigned to the pattern determined to have been executed to the data handling system.

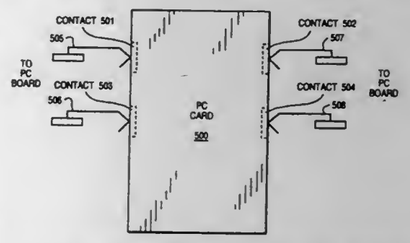
14. A method for supplying words to a text handling system with fewer inputs than the number of letters of said words performed by computer apparatus including a text handling system, a memory, a display, and a set of input means assigned to letters of the alphabet, said method comprising the steps of:
a) arranging a vocabulary of words in first through Nth pluralities of word sets, wherein each of the word sets of said first plurality consist of words sharing a single starting letter, wherein each of the word sets of the Nth plurality consist of words sharing N starting letters;
b) storing each of said word sets in said memory for access by input of the letter string shared by the word set;
c) inputting one or more starting letters of a wanted word one at a time in turn by operation of the assigned input means;
d) accessing the word set for each starting letter string inputted, whereby successive letter inputs access sucessively higher order word sets;
e) temporarily assigning each of the words of the currently accessed word set to an input means;
f) displaying the words of the currently accessed word set with each of the words shown associated with its assigned input means;
g) selecting a wanted word from the currently displayed word set responsive to operation of its assigned input means; and
h) outputting the selected word responsive to operation of an input means.

5,649,224

INTEGRATED CIRCUIT CARD HAVING CONTACTS ALONG THE SIDE RAILS AND METHOD FOR TRANSFERRING INFORMATION USING THE CONTACTS

David C. Scheer, Pollock Pines, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Jan. 26, 1993, Ser. No. 9,135
Int. Cl.[6] G06F *13/40;* **G11B** *5/012;* **H05K** *1/14*
U.S. Cl. 395—800 **13 Claims**



1. A PCMCIA card for use in a computer system, wherein the computer system includes at least one circuit board, said card comprising:
a circuit board assembly having a plurality of circuit components to perform a designated function;
a PCMCIA connector coupled to the circuit board assembly to transfer a plurality of signals between the circuit board assembly and said at least one circuit board;
a card housing coupled to the circuit board assembly and the PCMCIA connector and adhering to the PCMCIA standard,

the card housing providing a support structure for the circuit board assembly and the PCMCIA connector, such that the circuit board assembly and the PCMCIA connector are held in place for connection in the computer system, wherein the card housing comprises a plurality of flat side rails; and

a substantially flat contact area coupled to extending along, and flush with a substantially outermost edge of one of the plurality of flat side rails to route a signal between the circuit board assembly and said at least one circuit board in the computer system when the PCMCIA connector is coupled to a first external receptacle in the computer system, such that said contact area provides signal propagation between the card and the computer system.

5,649,225

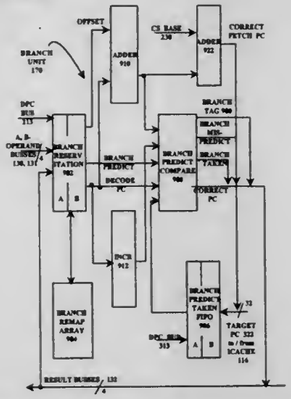
RESYNCHRONIZATION OF A SUPERSCALAR PROCESSOR

Scott A. White, and Michael D. Goddard, both of Austio, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jun. 1, 1994, Ser. No. 252,308

Int. Cl.[6] G06F *9/30*

U.S. Cl. 395—800 **42 Claims**



1. A method of operating a pipeline processor comprising the steps of:

determining an in-order sequence of instruction fetching;

fetching the instructions in-order;

queuing the fetched instructions in-order;

speculatively executing the instructions out-of-order to generate results;

retiring executed instruction results in-order;

tracking the retiring of executed instruction results;

predefining a resynchronization condition;

detecting the predefined resynchronization condition as an instruction is executed; and

resynchronizing the processor on retiring of the result of an instruction for which the resynchronization condition is detected, the resynchronization operation including the steps of:

flushing the queue of fetched instructions; and

redirecting the in-order sequence of instruction fetching to an instruction point based on the tracking of retired instruction results.

5,649,226

PROCESSOR HAVING MULTIPLE INSTRUCTION REGISTERS

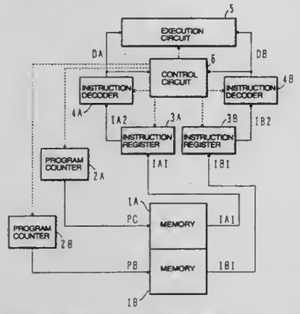
Shunsuke Kamijo, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 23, 1994, Ser. No. 347,090

Claims priority, application Japan, Dec. 28, 1993, 5-352824

Int. Cl.[6] G06F *9/38*

U.S. Cl. 395—800 **9 Claims**



1. A processor comprising for each i that is 1 to n, n being an integer greater than or equal to 2:

an i-th program counter;

i-th memory means for being addressed with an output from said i-th program counter;

an i-th instruction register for holding an output from said i-th memory means; and

an i-th instruction decoder for fetching and decoding an output from said i-th instruction register;

said processor further comprising:

an execution circuit for selecting one of the outputs from said 1-st to n-th instruction decoders and for executing processing based upon the selected output; and

a control circuit for inducing said execution circuit to select and execute said outputs from said 1-st to n-th instruction decoders sequentially, for inducing said i-th instruction decoder to fetch the output from said i-th instruction register after said execution circuit selects the output of said i-th instruction decoder, for inducing said i-th program counter to update after said i-th instruction decoder fetches, and for inducing said i-th instruction register to hold said output from said i-th memory means after said update;

wherein a program is stored in said 1-st to n-th memory means in units of one word in the order of said 1-st memory means to n-th memory means.

5,649,227

SYSTEM FOR SUPPORTING A CONVERSION BETWEEN ABSTRACT SYNTAX AND TRANSFER SYNTAX

Akibiro Anezaki, Tokyo, and Yasutaka Ushijima, Fukuoka, both of Japan, assignors to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 882,593, May 13, 1992, abandoned. This application Dec. 27, 1994, Ser. No. 364,427

Claims priority, application Japan, May 15, 1991, 3-141074

Int. Cl.[6] H03M *7/00*

U.S. Cl. 395—800 **4 Claims**

3. A method of converting between an abstract syntax and a transfer syntax, comprising the steps of:

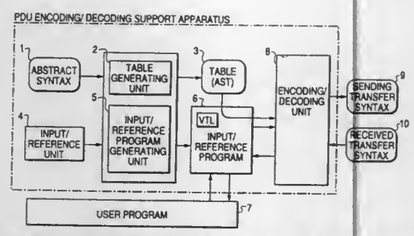
generating a first table containing a processable data structure by converting an input abstract syntax to the processable data structure;

inputting a data value corresponding to the abstract syntax;

generating an input/reference program containing the data value;

providing an encoding request from a user program;

storing in a second table, in response to the encoding request, an identifier which indicates correspondence between the



abstract syntax in the first table and the data value generated by the input/reference program, a data length of the data value, and the data value; and

encoding a sending transfer syntax based on the data structure from the first table and the corresponding data value, data length and identifier from the second table.

5,649,228

Patent Not Issued For This Number

5,649,229

PIPELINE DATA PROCESSOR WITH ARITHMETIC/ LOGIC UNIT CAPABLE OF PERFORMING DIFFERENT KINDS OF CALCULATIONS IN A PIPELINE STAGE

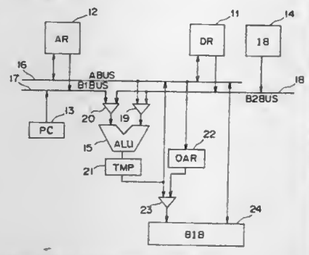
Toshimichi Matsuzaki, Minoh; Nobuo Higaki, Osaka, and Masashi Deguchi, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 994,989, Dec. 22, 1992, abandoned. This application Apr. 10, 1995, Ser. No. 419,957

Claims priority, application Japan, Dec. 25, 1991, 3-342629

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—800 **5 Claims**



1. A pipelined data processor comprising:

a data register for retaining data to be processed, which outputs retained data at a rate of two times per one pipeline cycle,

an address register for retaining addresses of memory accessing, which outputs retained addresses at a rate of two times per one pipeline cycle,

a program counter for retaining prefetch addresses contained in a program to be executed, which outputs retained prefetch addresses at a rate of two times per one pipeline cycle,

an instruction buffer for retaining a plurality of instructions prefetched from a memory which outputs a part or all of retained instructions at a rate of two times per pipeline cycle,

an arithmetic/logic unit for executing an arithmetic or logic operation in a first half of one pipeline cycle and an addition operation in a latter half of one pipeline cycle,

a first bus connected to said data register and said address register for transferring data to be written into and data read out from said data register or said address register,

a second bus connected to said address register and said program counter for transferring contents of said address register and said program counter,

a third bus connected to said data register and said instruction buffer for transferring contents of said data register and said instruction buffer,

a first register connected to said arithmetic/logic unit for retaining results output from said arithmetic/logic unit, which outputs a result obtained in a first half of one pipeline cycle by said arithmetic/logic operation unit to said first bus in a latter half of said one pipeline cycle and a result obtained on a latter half of said one pipeline cycle by said arithmetic/logic unit to a bus control means in a first half of a following pipeline cycle,

a second register connected to said first bus for retaining contents transferred through said first bus in a latter half of one pipeline cycle, and

said bus control means for determining an operand address for accessing the memory by selecting one of said first and second registers,

wherein said arithmetic/logic unit executes a calculation, in the first half of one pipeline cycle, using source data obtained by selecting either one of said second and third buses and destination data obtained by selecting said first bus and outputs results of said calculation to said first bus, and in the latter half of each pipeline cycle, executes an arithmetic calculation for calculating an operand address using a base address of the operand address obtained from contents of said second bus and an off-set of the operand address obtained from contents of said third bus and outputs the operand address to said first register, and wherein said bus control means selects contents of said first register if said arithmetic/logic unit calculates an operand address in the later half of each pipeline cycle, and otherwise selects the contents of said second register to access an operand.

5,649,230

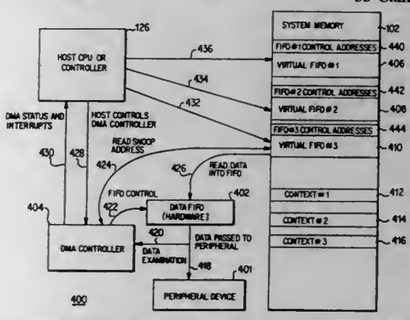
SYSTEM FOR TRANSFERRING DATA USING VALUE IN HARDWARE FIFO'S UNUSED DATA START POINTER TO UPDATE VIRTUAL FIFO'S START ADDRESS POINTER FOR FAST CONTEXT SWITCHING

Derek J. Lentz, Los Gatos, Calif., assignor to Seiko Epson Corporation, Japan

Continuation of Ser. No. 862,623, Mar. 31, 1992, Pat. No. 5,444,853. This application Jun. 7, 1995, Ser. No. 487,993

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—872 **33 Claims**



1. A virtual FIFO peripheral interface system for use with a host processor and a peripheral processor in connection with queuing control and transfer of data from the host processor to a peripheral, comprising:

(a) at least one virtual FIFO data structure located in a memory for storing data;

(b) a control addresses block associated with said at least one virtual FIFO data structure for indicating the location of data stored within said at least one virtual FIFO data structure;

(c) a hardware FIFO coupled between said at least one virtual FIFO data structure and the peripheral; and

(d) a direct memory access (DMA) controller, coupled between said at least one virtual FIFO structure and said hardware FIFO, wherein,

said DMA controller transfers data from said at least one virtual FIFO data structure to said hardware FIFO in response to the host processor; and

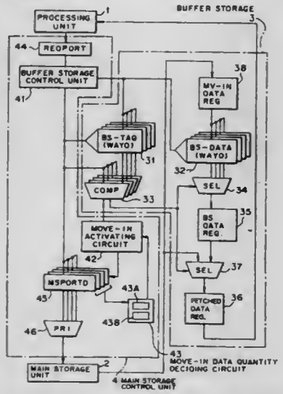
the peripheral processor transfers at least a portion of said data from said hardware FIFO for use by the peripheral and tracks the memory location of unused data remaining in said hardware FIFO by keeping an unused data start pointer for determining the memory location of said unused data remaining in said hardware FIFO; and wherein the peripheral processor manages a start address pointer in said control addresses block by writing a new start address pointer each time a block of data is transferred from a selected virtual FIFO structure to said hardware FIFO and by updating said start address pointer in said control addresses block based on the value of said unused data start pointer at the time of a context switch.

5,649,231

STORAGE CONTROL METHOD AND APPARATUS HAVING A BUFFER STORAGE FOR TRANSFERRING VARIABLE AMOUNTS OF DATA TO A MAIN STORAGE BASED ON CURRENT SYSTEM LOAD

Yukihiko Kitano, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 21, 1994, Ser. No. 327,848
Claims priority, application Japan, Jan. 25, 1994, 6-006158
Int. Cl.[6] G06F *13/24*
U.S. Cl. 395—879 **4 Claims**



1. A storage control method in an information processing system having a main storage unit with ports, a processing unit operating on the basis of data in said main storage unit and a buffer storage holding a copy of a part of said data in the main storage unit, said method comprising the steps of:

detecting a load on said main storage unit prior to moving a block of said data from said main storage unit to said buffer storage, wherein the load is determined by a number of the ports in use;

altering a quantity of the data in the block to be moved from said main storage unit to said buffer storage so as to reduce the quantity of the data when the detected load on said main storage unit is large; and

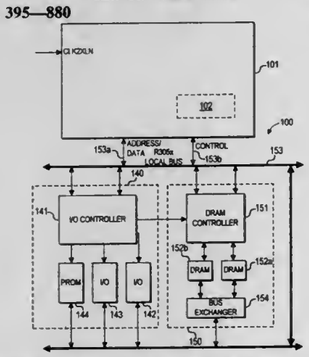
resuming move-in of a remaining portion of the block of said data from said main storage unit to said buffer storage when the load on said main storage unit becomes small.

5,649,232

STRUCTURE AND METHOD FOR MULTIPLE-LEVEL READ BUFFER SUPPORTING OPTIMAL THROTTLED READ OPERATIONS BY REGULATING TRANSFER RATE

Philip A. Bourekas, San Jose; Avigdor Willenz, Campbell; Yeshayahu Mor, Cupertino, and Scott Revak, Castro Valley, all of Calif., assignors to Integrated Device Technology, Inc., Santa Clara, Calif.

Continuation of Ser. No. 717,776, Jun. 14, 1991, abandoned. This application Apr. 13, 1995, Ser. No. 422,673
Int. Cl.[6] G06F *13/14*
U.S. Cl. 395—880 **14 Claims**



1. A structure for receiving a plurality of memory words from a memory, comprising:

a buffer for receiving said plurality of memory words one memory word at a time and for outputting said plurality of memory words one memory word at a time in response to a control signal, said buffer receiving an enable signal from said memory, said enable signal, when asserted, indicating a memory word ready to be received by said buffer; and

a processor operating at a predetermined clock rate receiving an acknowledgement signal from said memory, said acknowledgement signal, when asserted, indicating that said processor can begin to empty said plurality of memory words from said buffer at said predetermined clock rate without wait cycles, said memory generating said acknowledgement signal prior to completing transfer of all of said plurality of memory words into said buffer, said processor generating, upon receiving said asserted acknowledgement signal, said control signal to enable said buffer to output said memory words.

5,649,233

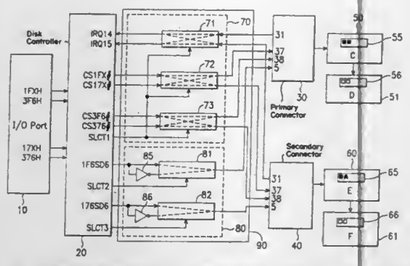
APPARATUS FOR FLEXIBLY SELECTING PRIMARY AND SECONDARY CONNECTORS AND MASTER AND SLAVE CASCADED DISK DRIVES OF AN IDE INTERFACE

Zhi-Hsien Chen, Hsinchu Hsien, Taiwan, assignor to United Microelectronics Corporation, Hsinchu, Taiwan

Filed Aug. 18, 1995, Ser. No. 516,742
Int. Cl.[6] G06F *13/40;13/42*
U.S. Cl. 395—800 **13 Claims**

1. An apparatus for selecting a primary connector and a secondary connector from among a first connector and a second connector, and for selecting a master drive and a slave drive from among a first IDE drive device and a second IDE drive device included within each of two cascades, one of said two cascades being connected to said first connector and another of said two cascades being connected to said second connector, said apparatus comprising:

primary/secondary configuration logic means electrically connected to said first connector and said second connector for selectively configuring said first connector and said second connector as one of said primary connector and said second-



ary connector respectively and said secondary connector and said primary connector respectively;

master/slave configuration logic means electrically connected to said first connector and said second connector for selectively configuring said first IDE drive device and said second IDE drive device in each of said two cascades as one of said master drive and said slave drive respectively and said slave drive and said master drive respectively; and

configuration selection signaling means connected to said primary/secondary configuration logic means and said master/slave configuration logic means for instructing said primary/secondary logic means to selectively configure said first connector and said second connector as one of said primary connector and said secondary connector respectively and said secondary connector and said primary connector respectively, and for instructing said master/slave configuration logic means to selectively configure said first IDE drive device and said second IDE drive device in each of said plurality of cascades as one of said master drive and said slave drive respectively and said slave drive and said master drive respectively, said configuration selection signaling means being responsive to a setting of one of at least one mechanical switch and at least one configuration register.

5,649,234

METHOD AND APPARATUS FOR ENCODING GRAPHICAL CUES ON A COMPACT DISC SYNCHRONIZED WITH THE LYRICS OF A SONG TO BE PLAYED BACK

Walt Klappert, Topanga; Max Garbutt, Westlake Village, and Michael Lehman, Carmel, all of Calif., assignors to Time Warner Interactive Group, Inc., Burbank, Calif.

Filed Jul. 7, 1994, Ser. No. 271,184
Int. Cl.[6] G06F *15/00;* **G09B** *5/00*
U.S. Cl. 395—806 **2 Claims**

1. A system for encoding graphical cues on a compact disc, said graphical cues for displaying in association with corresponding text encoded on the compact disc, said system comprising:

a) a computer (**56**) including:

i) a hand manipulable device for inputting and pointing (**36**),

ii) a keyboard for entering textual data;

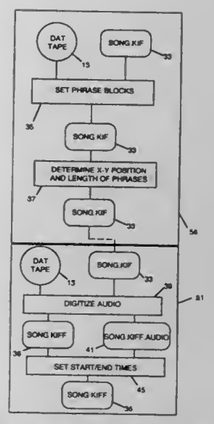
ii) a storage medium (**19,23,25,33,49,51,57**),

iii) a first video display and a second video display (**40,42**),

iv) processing means for processing data input from said hand manipulable device, said keyboard and said storage medium and storing the processed data on said storage medium and displaying predetermined portions of the processed data on at least one of said first and second video displays,

wherein results produced by said processing means stored on said storage medium include a first file (**25**) containing a line by line coded representation of text strings of lyrics corresponding to lyrics of a song to be sung;

b) extraction means (**31**) for instructing said processing means to process said first file by inserting screen breaks after a predetermined number of lines of text strings and producing a resulting second file (**33**);



c) set phrase block means (**35**) for instructing said processing means to process said second file (**33**) to define a plurality of phrase blocks by inserting carriage return and linefeed characters after each string of syllables in said lyrics that are sung without a break or pause;

d) set XY position and length of phrase block means (**37**) for instructing said processing means to process said second file, including said defined plurality of phrase blocks, to determine for each of said phrase blocks its length in characters and its starting point relative to a coordinate system on a graphic playback screen (**46**) for the compact disc;

e) means (**44**) for digitizing audio signals corresponding to scratch vocals;

f) means (**45**) for setting start times and end times for each of said phrase blocks to be displayed relative to a start time for each song processed, wherein said start and end time setting means provides an operator with a visual cue as to the location of sounds being played back corresoonding to said phrase blocks as a vertical line (**53**) on a monitor (**50**), which vertical line moves from left to right through a displayed waveform corresponding to the sound being played back;

g) means for adding to said set start times and end times said start time and a vocal start time for each song processed;

h) subcode file build means (**53**) for instructing said processing means to create a subcode file (**57**) containing for each song processed packs of data representing the graphical cues including XOR packs which cause the text strings of lyrics to change color, said packs placed in the subcode file relative to the time when the graphical cue appears on said graphic playback screen.

5,649,235

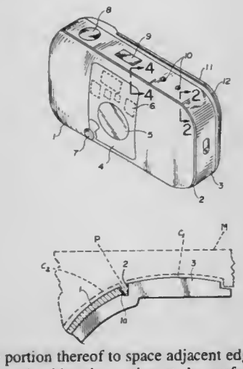
CAMERA WITH MOLDED RESIN AND LEATHER EXTERIOR

Hiroyuki Ando, Hachioji, and Kazuo Yamamoto, Tama, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 7, 1995, Ser. No. 524,801
Claims priority, application Japan, Sep. 21, 1994, 6-227102
Int. Cl.[6] G03B *17/02*
U.S. Cl. 396—6 **23 Claims**

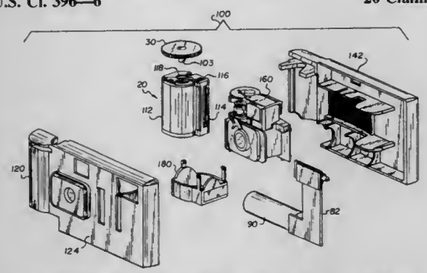
1. A camera having an exterior component, the exterior component comprising:

a leather portion made of a leather material; and resin portion made of a resin material, wherein the leather portion and the resin portion are integrally formed into one piece, and a groove having a depth which extends in a direction substantially perpendicular to a surface of the exterior component is formed in a boundary portion between in edge of the leather portion and the resin portion of the exterior component in a



surface portion thereof to space adjacent edges of said leather portion and said resin portion at the surface of the exterior component from one another.

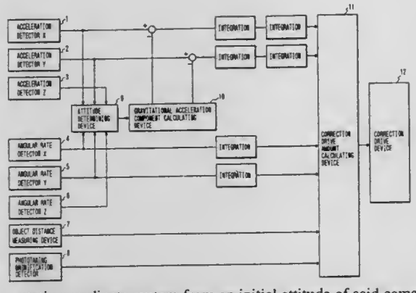
5,649,236
RECYCLABLE CAMERA
Edward Norman Balling, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 22, 1996, Ser. No. 620,429
Int. Cl.[6] G03B *17/02*
U.S. Cl. 396—6 **20 Claims**



1. A camera comprising: a front cover, a rear cover attached to said front cover, and a photographic module assembly sandwiched between said front and rear covers, said photographic module assembly including a taking lens, said camera having means for defining a film cartridge chamber, a film roll chamber and an exposure chamber between said film cartridge chamber and said film roll chamber, said photographic module assembly having means for defining only one of said chambers, and said front and rear covers including means for defining the other two chambers.

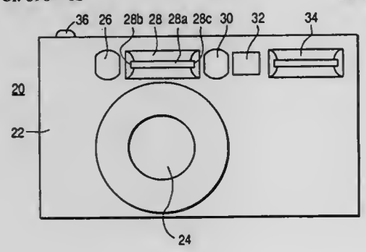
5,649,237
IMAGE MOVEMENT CORRECTION OF CAMERA
Mitsuhiro Okazaki, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan
Filed Dec. 14, 1994, Ser. No. 355,475
Claims priority, application Japan, Dec. 14, 1993, 5-342631; Dec. 12, 1994, 6-307684
Int. Cl.[6] G03B *17/00*
U.S. Cl. 396—55 **10 Claims**

1. An image correcting camera comprising:
an acceleration detecting device to detect accelerations in three directions of X-, Y- and Z-axes acting on said camera;
an angular rate detecting device to detect angular rates around said three axes acting on said camera;
an attitude determining device to calculate a coordinate transformation matrix between a camera coordinate system and a static coordinate system from an initial attitude of said camera with respect to said static coordinate system and said angular rates around said three axes;



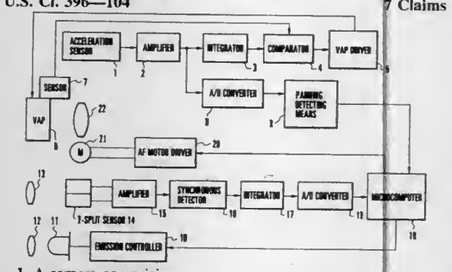
a gravitational acceleration component calculating device to calculate gravitational acceleration components in said camera coordinate system by the use of said coordinate transformation matrix;
an object distance measuring device to measure the distance between said camera and an object;
a photographing magnification detector to detect a photographing magnification of said camera;
a correction drive amount calculating device to calculate an amount of movement of an image based on respective displacements in the X- and Y-axis directions or the three axial directions calculated by eliminating said gravitational acceleration components from said respective accelerations in the X- and Y-axis directions or the three axial directions, respective rotation angles around the X- and Y-axes or the three axes calculated from said respective angular rates around the X- and Y-axes or the three axes, the distance between said camera and said object, and said photographing magnification, and to calculate an amount of drive of a correcting lens and/or an image pick-up surface so as to cancel said amount of movement of said image; and
a correction drive device to drive said correcting lens and/or said image pick-up surface.

5,649,238
CAMERA HAVING BUILT-IN FLASH LIGHT EMITTING DEVICE FOR IMPROVING PICTURE QUALITY AND METHOD THEREOF
Hiroshi Wakabayashi, Yokohama; Hiroshi Terunuma, Ichikawa; Daiki Tsukahara, Hiratsuka, and Shuji Iijima, Yokohama, all of Japan, assignors to Nikon Corporation, Tokyo, Japan
Continuation of Ser. No. 308,216, Sep. 19, 1994, abandoned, which is a continuation of Ser. No. 120,347, Sep. 14, 1993, abandoned. This application Sep. 6, 1996, Ser. No. 709,115
Claims priority, application Japan, Sep. 14, 1992, 4-269126; Feb. 25, 1993, 5-059321
Int. Cl.[6] G03B *15/02*
U.S. Cl. 396—61 **20 Claims**



1. A camera having a built-in flash light emitting system, for taking a photograph of a subject, the camera comprising:
a lens having an optical axis;
a first flash light emitting unit intersected by a perpendicular plane defined by said optical axis and a first line perpendicular to both said optical axis and a long dimension of a photographic image frame;
a second flash light emitting unit located at a front surface of the camera, and spaced away from said perpendicular plane;
a distance determining unit to determine a distance of the subject from the camera; and
wherein said first flash light emitting unit and said second flash light emitting unit simultaneously emit light only when said distance determining unit determines that the subject is closer to the camera than a first prescribed distance.

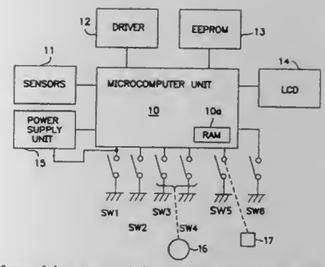
5,649,239
CAMERA CONTROLLING FOCUS ACCORDING TO PANNING
Yasuhiro Tamekuni, Kanagawa-ken, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 21, 1994, Ser. No. 262,985
Claims priority, application Japan, Jun. 30, 1993, 5-161215
Int. Cl.[6] G03B *13/00*
U.S. Cl. 396—104 **7 Claims**



1. A camera comprising:
focus adjusting means for performing focus adjustment of an objective lens;
panning detecting means;
controlling means for controlling the focus adjustment of the objective lens on the basis of a detection signal provided by said panning detecting means; and
discriminating means for discriminating a panning speed on the basis of the detection signal provided by said panning detecting means, said controlling means controlling a speed of the focus adjustment of the objective lens in accordance with the panning speed discriminated by said discriminating means.

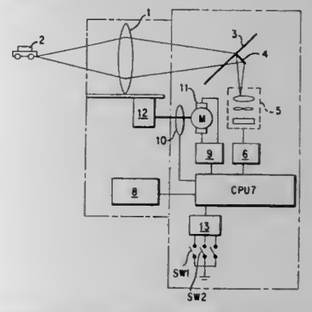
5,649,240
CAMERA HAVING A DEVICE FOR SETTING PLURAL MODES OF CAMERA OPERATION WITH A SINGLE OPERATING MEMBER
Takashi Saegusa, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan
Filed Apr. 30, 1996, Ser. No. 649,835
Claims priority, application Japan, Jun. 13, 1995, 7-146097
Int. Cl.[6] G03B *13/36*
U.S. Cl. 396—124 **16 Claims**

1. A camera, comprising:
a focus detection device to detect a focus adjustment state of a photographic lens, the focus detection device being operable in a plurality of modes including a first focus detection region mode in which focus detection of the photographic lens is performed in a first focus detection region of a photographic picture plane, and a second focus detection region mode of operation in which focus detection of the photographic lens is performed in a second focus detection region of the photographic picture plane, the second focus detection region being narrower than the first focus detection region;



a focus adjustment device to perform focus adjustment of the photographic lens based on detection results of the focus detection device, the focus adjustment device being operable in a plurality of modes including a first drive mode wherein focus adjustment movement is inhibited after the photographic lens is focused, and a second drive mode wherein focus adjustment movement is continued after focusing the photographic lens;
a mode data setting device to set a mode value corresponding to a combination of a focus detection region mode of operation and a focus adjustment device mode of operation, wherein the mode data setting device sets respective mode values corresponding to each combination of modes of operation of the focus detection device and focus adjustment device; and
a control unit to control the focus detection device and focus adjustment device to operate in the focus detection region mode of operation and focus adjustment device mode of operation corresponding to the mode value set by the mode data setting device.

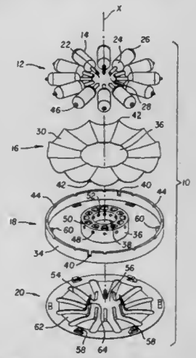
5,649,241
AUTOFOCUS ADJUSTMENT DEVICE
Toshimi Watanabe, Kanagawa, Japan, assignor to Nikon Corporation, Tokyo, Japan
Filed Jun. 29, 1995, Ser. No. 496,666
Claims priority, application Japan, Sep. 7, 1994, 6-213408
Int. Cl.[6] G03B *7/08;3/00*
U.S. Cl. 396—153 **21 Claims**



1. An autofocus adjustment device for an optical device including a phototaking lens, said device comprising:
a focus detection device to determine focus detection results for said phototaking lens; and
a confidence value calculation device to calculate a confidence value associated with said focus detection results to determine whether said confidence value exceeds a predetermined value, wherein said confidence value calculation device includes a plurality of confidence value calculation units, each confi-

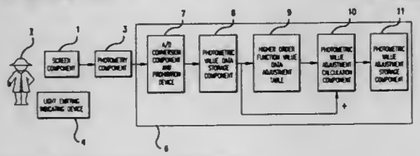
dence value calculation unit calculating a separate confidence value by a separate calculation method, wherein each of the confidence values is indicative of a subject condition, and wherein each of the confidence values is based on previous and present focus detection results.

5,649,242
MULTI-LAMP FLASH WHEEL AND CAMERA
Michael Joseph O'Brien, Rochester; Robert Cooper Bryant, Honeoyle Falls, and Richard Alexander Colleluori, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed May 2, 1996, Ser. No. 642,138
Int. Cl.[6] G03B *15/04;* F21K *5/00*
U.S. Cl. 396—191 **9 Claims**



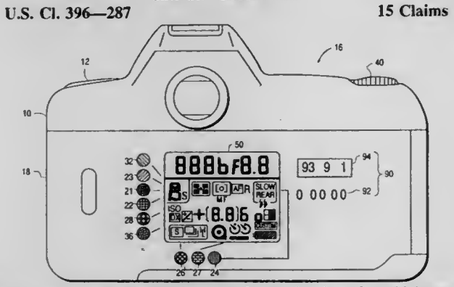
1. A multi-lamp flash wheel comprising:
a circular array of flash lamps arranged radially with respective ignition ends of said lamps closer to one another than respective opposite ends of the lamps, and each one of said lamps having an ignition stem projecting from said ignition end of the lamp to be struck to ignite the lamp; and
a one-piece striker ring located behind said circular array of flash lamps, and having respective striker fingers extending radially over said lamps for striking said ignition stems of the lamps.

5,649,243
PHOTOMETRIC DEVICE AND METHOD
Makoto Matsuzaki, Kanagawa-ken, and Yoshiharu Inoue, Tokyo, both of Japan, assignors to Nikon Corporation, Tokyo, Japan
Filed Jnn. 6, 1995, Ser. No. 468,666
Claims priority, application Japan, Sep. 7, 1994, 6-214093
Int. Cl.[6] G03B *7/08;7/099*
U.S. Cl. 396—233 **20 Claims**



1. A photometric device comprising:
a screen component to transmit a luminous flux from a subject field;
a light emitting indicating device that is placed in the vicinity of said screen component to indicate light emitting photographic information;
a photometry component to receive the luminous flux from the subject field and from said light emitting indicating device, to determine a first photometric value of the subject field by photoelectric conversion of said received luminous flux, and to output said first photometric value; and
an adjustment device to receive said output first photometric value and to determine a second photometric value based on a higher order function of said output first photometric value to compensate for the luminance effect of said light emitting indicating device on said first photometric value.

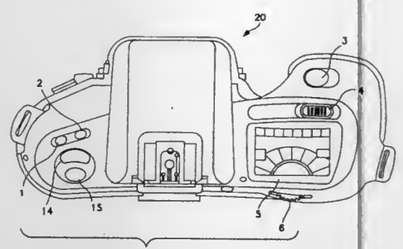
5,649,244
MULTI-FUNCTION CAMERA HAVING COLOR COORDINATED OPERATIONAL MODES AND MANIPULATION MEMBERS
Shigemasa Sato, Yokohama; Ken Moro, and Nobuya Kawahata, both of Yokosuka, all of Japan, assignors to Nikon Corporation, Tokyo, Japan
Continuation of Ser. No. 389,163, Feb. 15, 1995, abandoned. This application Jun. 18, 1996, Ser. No. 668,367
Claims priority, application Japan, Feb. 15, 1994, 6-018623; Sep. 7, 1994, 6-214109
Int. Cl.[6] G03B *17/18*
U.S. Cl. 396—287 **15 Claims**



1. A camera having a plurality of operational modes which are individually selectable, the camera comprising:
a plurality of switches positioned on an exterior surface of the camera, each of said switches corresponding to and selecting an operational mode, each of said switches having a color which corresponds to the operational mode;
a modification switch which modifies a content associated with the selected operational mode; and
a display unit having a plurality of regions, each region having a color which respectively corresponds to one of the plurality of operational modes and the color of the respective switches.

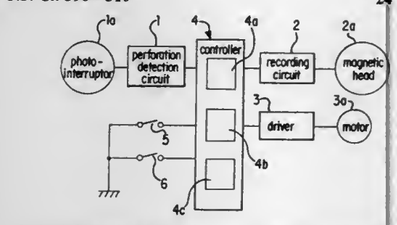
5,649,245
CAMERA SETTING AND DISPLAY DEVICE
Yoshiharu Inoue, and Kimio Uematsu, both of Tokyo, Japan, assignors to Nikon Corporation, Tokyo, Japan
Filed Sep. 7, 1995, Ser. No. 524,910
Claims priority, application Japan, Sep. 7, 1994, 6-214122; Aug. 31, 1995, 7-223013
Int. Cl.[6] G03B *17/18*
U.S. Cl. 396—291 **17 Claims**

1. A camera setting and display device comprising:
a display panel to display a plurality of photographic information sections and an identification information section, wherein each photographic information section has a plurality of selectable display symbols and the identification information section has a plurality of identification symbols;
a plurality of setting members which cooperate to select a display symbol from each photographic information section and to group the selected display symbols as a set;
a storage device to store the set of selected display symbols in a corresponding storage area; and



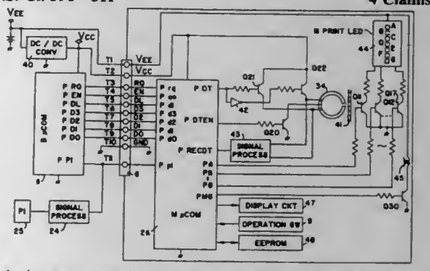
a control device to control the identification information section of said display panel to display an identification symbol corresponding to the set of selected display symbols and to change the identification symbol when a display symbols of the set of selected display symbols is changed by said setting members.

5,649,246
INFORMATION PROCESSING DEVICE AND METHOD
Hideo Hibino; Hisashi Okutsu; Norikazu Yokonuma, all of Kanagawa-ken, and Kazuyuki Kazami, Tokyo-to, all of Japan, assignors to Nikon Corporation, Tokyo, Japan
Filed Oct. 17, 1995, Ser. No. 544,293
Claims priority, application Japan, Oct. 26, 1994, 6-262278
Int. Cl.[6] G03B *17/24;1/18*
U.S. Cl. 396—310 **24 Claims**



1. An information processing device for recording images on a film having frames comprising:
feeding means for feeding the film in a feed path;
film position detection means for detecting position information relating to a position of the film in the feed path;
recording means for magnetically recording information on the film; and
control means for controlling the feeding means and the recording means based on the detected position information from the film position detection means, wherein the control means comprises
a) feed control means for controlling feeding of the film by the feeding means based upon the position information detected by the film position detection means, and
b) recording control means for controlling magnetic recording by the recording means,
so that after an image is recorded on a frame of the film, the film is fed so that the next movement of the film is in a first direction, and is then fed continuously in a second direction opposite to the first direction to feed a next, unexposed frame of film into a recording position for recording an image, wherein a) information is magnetically recorded on the film while the film is fed continuously in the second direction, b) the next, unexposed frame of film is moved in the second direction into the recording position, and c) the continuous movement of the film in the second direction is consecutive with the movement of the film in the first direction.

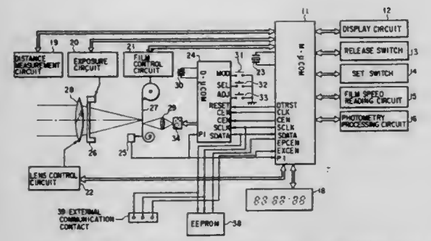
5,649,247
APPARATUS FOR RECORDING INFORMATION OF CAMERA CAPABLE OF OPTICAL DATA RECORDING AND MAGNETIC DATA RECORDING
Junichi Itoh; Keiji Kunishige, both of Hachioji; Koji Mizobuchi, Sagamihara; Yoshiaki Kobayashi, Hachioji; Toshiaki Ishimaru, Hino; Akira Watanabe, Akikawa, and Yasunobu Otsuka, Hino, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 474,434, Jun. 7, 1995, abandoned, which is a continuation of Ser. No. 209,761, Mar. 11, 1994, Pat. No. 5,526,078. This application Sep. 30, 1996, Ser. No. 723,379
Claims priority, application Japan, Mar. 15, 1993, 5-54365
Int. Cl.[6] G03B *17/24*
U.S. Cl. 396—311 **4 Claims**



4. A camera capable of receiving a film having a magnetic recording portion and an optical recording portion, the camera comprising:
magnetic recording means for recording data on the magnetic recording portion of the film during the feeding of the film;
optical recording means for recording data on the optical recording portion of the film during the feeding of the film;
data generating means responsive to a photographing operation for generating a plurality of data corresponding to an exposed frame of the film;
first memory means for storing the plurality of data;
second memory means for storing a part of the plurality of data;
magnetic recording control means for transmitting the data stored in the first memory means to the magnetic recording means to record the plurality of data on the magnetic recording portion of the film; and
optical recording control means for transmitting the data stored in the second memory means to the optical recording means to record the part of the plurality of data on the optical recording portion of the film.

5,649,248
DATA IMPRINTING/RECORDING APPARATUS FOR CAMERA
Yoshiaki Kobayashi, and Takashi Suzuki, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Jun. 16, 1995, Ser. No. 490,655
Claims priority, application Japan, Jun. 20, 1994, 6-137156
Int. Cl.[6] G03B *17/24*
U.S. Cl. 396—318 **24 Claims**

1. A data imprinting apparatus for a camera, comprising:
a main microcomputer for controlling an operation of said camera;
a data microcomputer having a temporary memory, said data microcomputer controlling imprinting of data onto a surface of a film;
a communication line for performing communication between said main microcomputer and said data microcomputer;
imprinting means connected to said data microcomputer and having a plurality of light-emitting segments for respectively forming one numeral, one letter or one symbol, said imprinting means imprinting at least one of a numeral, a character,



and a symbol on the surface of said film by combining one or more of said light-emitting segments; and

an electrically rewritable nonvolatile memory coupled to said main microcomputer for storing pattern data necessary to imprint said at least one of the numeral, the character, and the symbol using said light-emitting segments of said imprinting means,

wherein said main microcomputer includes means for transmitting the pattern data to said temporary memory in said data microcomputer via said communication line, and

said data microcomputer includes means for controlling said imprinting means to imprint said at least one of the numeral, the character, and the symbol as data on the surface of said film using the pattern data stored in said temporary memory.

5,649,249

CAMERA WITH EXPOSED FRAME DETECTOR

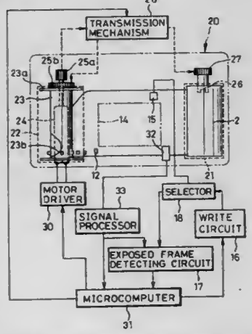
Yutaka Yoshida, Saitama, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 100,321, Aug. 2, 1993, abandoned. This application Nov. 30, 1994, Ser. No. 352,676

Claims priority, application Japan, Jul. 31, 1992, 4-205690

Int. Cl.[6] G03B *17/24*

U.S. Cl. 396—319 **10 Claims**



1. A camera to be used with a photographic film cartridge, said photographic film cartridge having a film spool for winding a photographic film in the cartridge, said photographic film being formed with a magnetic recording layer having an area for each frame on which information is adapted to be written, said camera comprising:

a film supply chamber in which said photographic film cartridge is loaded;

a film take-up chamber for winding said photographic film in said photographic film cartridge about a take-up spool rotatably mounted in said film take-up chamber;

means defining an exposure position disposed between said film supply chamber and said film take-up chamber, whereby frames of said photographic film can be successively exposed in said exposure position;

film moving means for moving said photographic film lengthwise between said cartridge and said take-up spool, said film moving means comprising power means to rotate said film spool in a direction to push said photographic film out of said cartridge;

a magnetic head for contacting said magnetic recording layer and for detecting a mere presence of said information without reading said information, while said photographic film is moving lengthwise;

judging means for inspecting a signal from said magnetic head, judging a frame to have been exposed when the mere presence of said information is detected, and generating a first signal;

a film sensor for generating a second signal when said photographic film is transported by one frame, and control means for detecting a next-usable unexposed frame beside a last exposed frame responsive to the generation of said first and said second signals and for controlling said film moving means to position said next-usable unexposed frame in said exposure position; and

wherein said judging means includes a band amplifier for amplifying a signal component within a specific wavelength band from a signal from said magnetic head, a window comparator for generating a signal when a signal from said band amplifier exceeds a predetermined signal level range, an integrator for integrating a signal from said window comparator, a delay circuit for delaying a signal from said film sensor, and a flip-flop for sampling an output of said integrator at the time of a signal from said delay circuit.

5,649,250

IMAGE RECORDING AND REPRODUCING SYSTEM

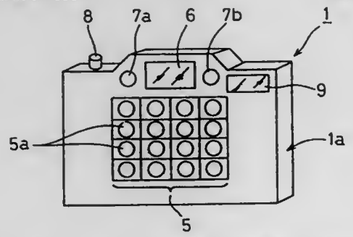
Gen Sasaki, Toyonaka, Japan, assignor to Minolta Co., Ltd., Osaka, Japan

Filed Jun. 6, 1995, Ser. No. 469,467

Claims priority, application Japan, Jun. 9, 1994, 6-127366

Int. Cl.[6] G03B *35/08*

U.S. Cl. 396—333 **18 Claims**



1. An image recording and reproducing system comprising:

a recording device, which records an image of an object on a recording medium, including:

a plurality of taking lenses, each of said plurality of taking lenses having the same field of view and taking the same objective field as the others of said plurality of taking lenses, wherein a plurality of images taken by said plurality of taking lenses are recorded on the recording medium; and

a reproducing device, which reproduces a picture of the object based on the plurality of images recorded on the recording medium, including:

pick up means for picking up the plurality of images recorded on the recording medium; and

converting means for converting the plurality of images picked up by said pick up means into a picture of the object to be reproduced.

5,649,251

CAMERA

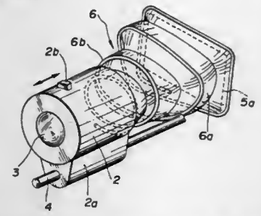
Tatsuya Suzuki, Tokyo, and Yasuo Yamazaki, Hino, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 16, 1994, Ser. No. 357,105

Claims priority, application Japan, Dec. 22, 1993, 5-325317

Int. Cl.[6] G03B *17/04*

U.S. Cl. 396—341 **13 Claims**



1. A camera in which a space between an aperture opening formed in a camera body and a movable lens barrel including a photographing lens built therein is shielded against light in a light-tight manner, comprising:

light-shield means disposed to couple the aperture opening of said camera body and said lens barrel to each other, said light-shield means having bellows including a plurality of folding parts joined together and being extensible and contractible in unison with movement of said lens barrel; and

wire-like shape retaining means disposed in said folded parts in said bellows, preventing said bellows from collapsing and from thereby interfering with a flux of photographing light upon its flexion.

5,649,252

CAMERA WITH DEVICE FOR IDENTIFYING USED FILM MAGAZINE

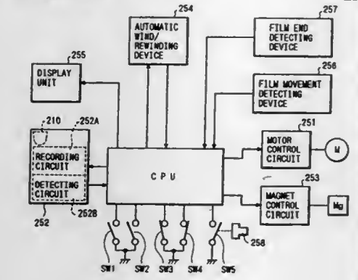
Tsugio Takahashi; Hitoshi Aoki; Yoshio Imura, all of Tokyo; Hidenori Miyamoto; Daiki Tsukahara, both of Kawasaki; Noriyasu Kotani, Okegawa; Hideya Inoue, Yokohama, and Jun Nagai, Chigasaki, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Division of Ser. No. 351,145, Nov. 30, 1994, abandoned, which is a continuation of Ser. No. 247,342, May 23, 1994, abandoned, which is a continuation of Ser. No. 141,694, Oct. 26, 1993, abandoned, which is a continuation of Ser. No. 961,345, Oct. 15, 1992, abandoned, which is a division of Ser. No. 747,458, Aug. 12, 1991, Pat. No. 5,159,365, which is a continuation of Ser. No. 465,310, Jan. 12, 1990, abandoned, which is a continuation of Ser. No. 321,793, Mar. 10, 1989, abandoned. This application May 25, 1995, Ser. No. 451,064

Claims priority, application Japan, Mar. 15, 1988, 63-60916

Int. Cl.[6] G03B *17/00*

U.S. Cl. 396—389 **25 Claims**



1. A camera in which can be inserted a film unit having film, a container for accommodating said film, and an information recording part capable of recording information therein, comprising:

a film transporting device which performs a first transporting operation by which an unexposed frame of said film in said container is electrically transported outside said container to bring said unexposed frame to an exposure position, and a second transporting operation by which said film transported outside said container by said first transporting operation is electrically transported back into said container;

an information recording portion which records in said information recording part information for discrimination between exposed and unexposed frames;

an information detecting portion to detect said information in said information recording part when said film is re-inserted into said camera; and

a prevention portion, which is electrically connected to said information detecting portion and responsive to said information detecting portion, to prevent re-exposure of exposed frames of said film when said film unit is reinserted.

5,649,253

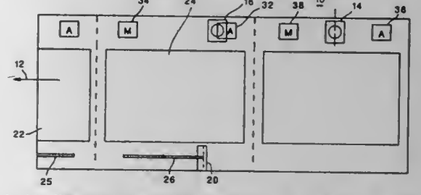
SELF CALIBRATION CIRCUIT FOR A CAMERA

J. David Cocca, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 31, 1995, Ser. No. 414,087

Int. Cl.[6] G03B *19/02;17/24*

U.S. Cl. 396—392 **13 Claims**



1. A calibration method for calibrating, in a camera, an event detection circuit for detecting a time varying event from the magnitude of an analog output signal of a sensor relative to a threshold analog value, the camera including an digital-to-analog converter therein, the method comprising the steps of:

in a calibration mode:

operating said sensor to provide a test analog output signal in response to a test condition representative of the detection of an event;

operating said digital-to-analog converter in the camera to derive a sequence of analog thresholds;

comparing said sequence of analog thresholds with said test output analog signal to determine a calibrated analog threshold uniquely associated with said sensor

converting said calibrated analog threshold to a digital threshold value; and

storing the digital threshold value in camera memory; and

in a normal operating mode:

selecting and operating the sensor to provide a sensor analog output signal having a magnitude varying as a function of the time varying event to be detected;

retrieving the stored digital threshold value;

converting the stored digital threshold value into said calibrated analog threshold; and

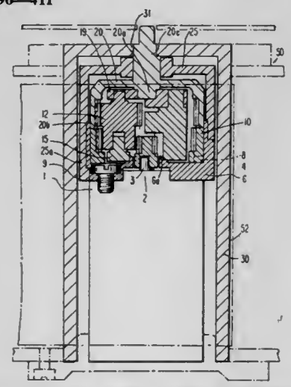
comparing said sensor analog output signal to the calibrated analog threshold and providing an event detection output signal when said sensor analog output signal matches said analog threshold.

5,649,254

FILM WINDING MECHANISM FOR A CAMERA

Ryosuke Mori; Kazunori Miyashita, and Minoru Tanaka, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Division of Ser. No. 910,180, Jul. 13, 1992, Pat. No. 5,366,423. This application Nov. 21, 1994, Ser. No. 342,957
Claims priority, application Japan, Nov. 14, 1990, 2-307840
Int. Cl.[6] G03B *1/18*
U.S. Cl. 396—411 **2 Claims**



1. A camera comprising a film winder, said film winder including an internal gear rotatably mounted within said camera, said internal gear being a reduction member, an output shaft formed on said internal gear to rotate therewith; a cylinder coupled to said internal gear; at least one planet gear meshing with said internal gear, and a sun gear meshing with said at least one planetary gear, said motor being directly coupled to said sun gear, said internal gear being disposed within said cylinder and said output shaft being coaxial with said cylinder so that film is captured by said cylinder and wound thereabout as said cylinder rotates; and a holder member, said at least one planet gear being supported in part by said holder member, at least two columns extending axially from said holder member, and at least one column beam extending radially across said sun gear and mechanically coupled to said first column and said second column.

5,649,255

VIDEO SURVEILLANCE CAMERA RELEASE AND REMOVAL MECHANISM

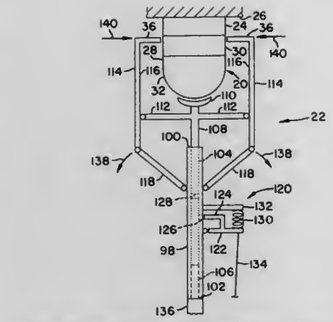
Steven W. Schieltz, Boca Raton, Fla., assignor to Sensormatic Electronics Corporation, Deerfield Beach, Fla.

Filed Sep. 25, 1995, Ser. No. 533,081
Int. Cl.[6] G03B *29/00*
U.S. Cl. 396—427 **36 Claims**

1. Apparatus for releasably locking a surveillance camera assembly housing to a base for said housing, comprising:

first means provided on said housing for engaging a tool used for removing said housing from said base, said first means including a plurality of apertures in said housing provided spaced apart from each other at respective positions on said housing, each of said apertures for receiving a respective portion of said tool; and

second means mounted on at least one of said housing and said base for releasably securing said housing to said base, said second means including a plurality of lock members provided



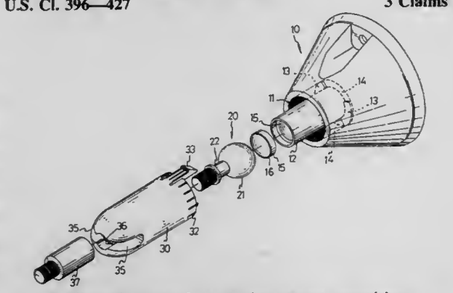
on said base at respective positions corresponding to the positions of said apertures on said housing.

5,649,256

ADJUSTABLE MEANS FOR A MONITOR CAMERA

Tien-chi Wen, Shinjuang, Taiwan, assignor to Fifty Cycle Video Laser Device Co. Ltd., Talpei, Taiwan

Filed May 29, 1996, Ser. No. 654,572
Int. Cl.[6] G03B *29/00*
U.S. Cl. 396—427 **3 Claims**



1. An adjustable means for a monitor camera comprising:

a body having an opening with a plurality of ridges on an inner peripheral side wall, a plurality of ribs formed integrally with said peripheral side wall and a plurality of slots defined between said ribs;

a cylindrical projection having two distal ends one of which is connected with said ribs of said body and the other projects out from said opening and having a seat thereon;

a cushion being configured to mate with said seat and having a rough concave;

a spherical body being configured to mate with said cushion and having a link extending axially therefrom;

a hollow cylindrical cover comprising a plurality of barbs extending outward and fitted into said slots of said body to firmly secure said cylindrical cover with said body, a plurality of second ridges defined integrally with a peripheral side wall of said cylindrical cover and an arcuate hole permitting said link of said spherical body to move latitudinally.

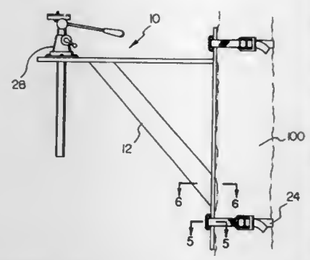
5,649,257

TREE MOUNTED CAMERA SUPPORT

Scott A. Kempka, 1771 Badger St., Green Bay, Wis. 54303

Filed Nov. 3, 1995, Ser. No. 553,052
Int. Cl.[6] G03B *29/00*
U.S. Cl. 396—428 **1 Claim**

1. A tree mounted camera support for strapping to a tree for supporting a highly adjustable camera support thereon comprising, in combination:



a tree support portion comprised of a planar vertical portion, a horizontal portion and a diagonal support portion, the horizontal portion extending outwardly from an upper portion of the vertical portion, the diagonal support portion extending from a lower portion of the vertical portion to an outer portion of the horizontal portion, the vertical portion having a pair of ring supports secured to the upper portion and the lower portion thereof;

a pair of adjustable straps extending through the pair of ring supports for securement of the tree support portion to a trunk of a tree;

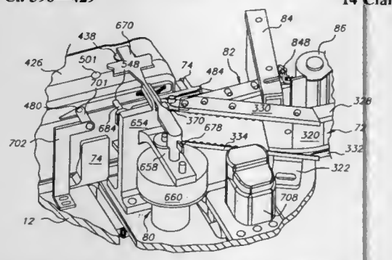
an adjustable camera support comprising a shaft portion extending through a distal end of the horizontal portion of the tree support portion, an end portion of the shaft portion adjustably received through a crank portion secured on the distal end of the horizontal portion, the crank portion having a crank handle for vertical adjustment of the shaft portion, the shaft portion having a plurality of teeth disposed thereon whereby rotation of the crank portion via the crank handle facilitates engagement with the plurality of teeth for raising or lowering of the shaft portion with respect to the tree support portion, a swivel mechanism secured to the end portion of the shaft portion, the swivel mechanism having a handle extending outwardly therefrom for horizontal adjustment of the swivel mechanism, a camera mounting portion secured to the swivel mechanism.

5,649,258

APPARATUS FOR ACTUATING AND TESTING A CAMERA

William Andrew Bergstresser, Prattsburgh; Eric Peschan Hochreiter, Bergen; Dennis Roland Zander, Penfield, and Bradley S. Bush, Hilton, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 8, 1995, Ser. No. 569,054
Int. Cl.[6] G03B *17/00;29/00*
U.S. Cl. 396—429 **14 Claims**



1. Apparatus for actuating and testing a camera of a type including a shutter trigger button and externally accessible means for moving film within the camera along a film guide track between an unexposed film chamber and an exposed film chamber, said apparatus comprising:

a support frame;

a nest supported by said frame;

means supported by said frame for depressing the shutter trigger button to actuate and test the shutter mechanism of the camera; and

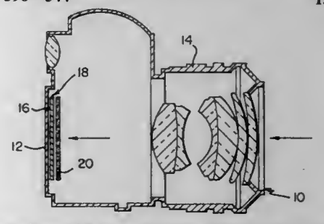
camera drive means supported by said frame for engaging and operating the means for moving of the camera to drive exposed film from the exposed film chamber to the unexposed film chamber and then to drive exposed film from the unexposed film chamber along the film guide track and out of the camera.

5,649,259

IMAGE MODIFIERS FOR USE IN PHOTOGRAPHY

Steven H. L. Hylén, 67 Catamount Rd., Fairfield, Conn. 06430

Filed Sep. 12, 1995, Ser. No. 526,990
Int. Cl.[6] G03B *11/00*
U.S. Cl. 396—544 **15 Claims**



I. An attachment for a camera for altering the collective light of an image prior to said image being recorded onto film, said camera having a lens aperture, a frame of film located at a film plane, and a lens, said attachment comprising:

a transparent modifier positionable adjacent to said film plane; and

means for distorting light, said distortion means being located on and formed integral with a surface of said transparent modifier, said distortion means being transparent so that light from said image is distorted at said focal plane thereby creating a distorted image which is recorded by said film;

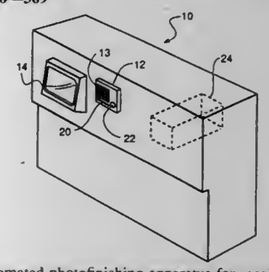
wherein said camera includes a shutter being operational within a film gate and wherein said transparent modifier is a semi-rigid plate and is sized and-shaped to fit within said film gate between said shutter and said film.

5,649,260

AUTOMATED PHOTOFINISHING APPARATUS

Richard Bruce Wheeler, Webster, and Daniel Michael Pagano, Henrietta, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 21, 1995, Ser. No. 576,721
Int. Cl.[6] G03D *13/00*
U.S. Cl. 396—569 **40 Claims**



1. An automated photofinishing apparatus for receiving exposed film, processing the exposed film, printing the processed film so as to produce prints, and dispensing of the prints and processed film to a customer, comprising:

means for delivering to the apparatus an exposed strip of film, said film having a first unexposed area and a second exposed area containing images;
means for applying a reference exposure onto said first unexposed area;
means for processing said exposed film so as to develop the images on a second area of the film and said reference exposure on said first area;
means for scanning said first and second areas so as to obtain information regarding the photometric balance of the film;
means for printing said film in accordance with said information data received from said means for scanning;
means for processing said prints; and
means for delivering said prints to said customer.

5,649,261

APPARATUS FOR TREATING PHOTOGRAPHIC ORIGINALS WITH A TREATMENT LIQUID

Reiner Schlickhoff, Kamen, Germany; Giovanni Mento, Savona, Italy, and Heinz-Guenter Moebius, Duisburg, Germany, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

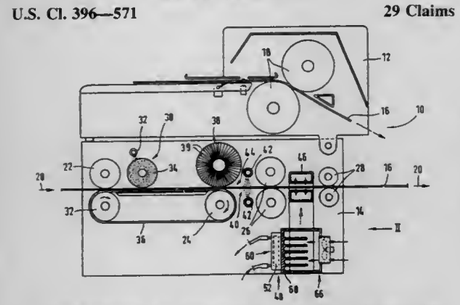
PCT No. PCT/EP94/00707, § 371 Date Nov. 13, 1995, § 102(e) Date Nov. 13, 1995, PCT Pub. No. WO94/20885, PCT Pub. Date Sep. 15, 1994

PCT Filed Mar. 8, 1994, Ser. No. 505,355

Claims priority, application Germany, Mar. 10, 1993, 9303488 U

Int. Cl.[6] G03D *13/00*

U.S. Cl. 396—571 **29 Claims**



1. An apparatus for treating a photographic original with a treatment liquid, particularly for developing an exposed proof provided with a visible light absorbing composition, in particular color particles, comprising
a transport means (**22–28,36**) for transporting the original (proof **16**) along a transport path (**20**),
a treatment liquid dispenser unit (**30,32**) for applying treatment liquid to the original (proof **16**), and
a tempering device (**48**) for tempering the treatment liquid to be supplied to the treatment liquid dispenser unit (**30,32**) through a conduit (**50**),
characterized in
that the tempering device (**48**) comprises at least one Peltier element (**52**) provided with two tempering faces (**62,64**),
that a supply voltage of reversible polarity can be applied to the Peltier element (**52**), wherein, in dependence on the polarity of the supply voltage, the first tempering face (**62**) can be heated and the second tempering face (**64**) can be cooled, or the first tempering face (**62**) can be cooled and the second tempering face (**64**) can be heated, and
that at least the first tempering face (**62**) of the Peltier element (**52**) can be thermally contacted with the treatment liquid to be supplied to the treatment liquid dispenser unit (**30,32**).

5,649,262

FILM CLEANING APPARATUS AND METHOD

Michael Albert Chapman Walker, Fairview, Southill Rd, Chislehurst, Kent BR7 5EE, and Terence Andrew Watts, London, both of United Kingdom, assignors to Michael Albert Chapman Walker, Kent, United Kingdom

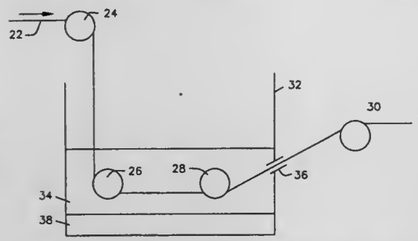
PCT No. PCT/GB94/00853, § 371 Date Oct. 23, 1995, § 102(e) Date Oct. 23, 1995, PCT Pub. No. WO94/25902, PCT Pub. Date Nov. 10, 1994

PCT Filed Apr. 22, 1994, Ser. No. 537,885

Claims priority, application United Kingdom, Apr. 24, 1993, 9308538

Int. Cl.[6] G03D *5/00*

U.S. Cl. 396—606 **37 Claims**



1. A film cleaning apparatus, comprising a container provided with means (**32,34,26,28,30,32**) for exposing the surface of the film (**22**) to mercury (**34**) which effects removal of contamination therefrom.

5,649,263

PHOTOGRAPHIC PROCESSING APPARATUS

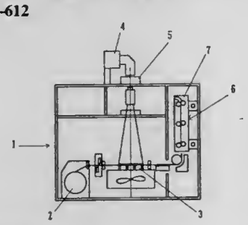
Masayuki Kojima, Wakayama, Japan, assignor to Noritsu Koki Co., Ltd., Wakayama, Japan

Filed Dec. 26, 1995, Ser. No. 579,576

Claims priority, application Japan, Dec. 26, 1994, 6-337212; Dec. 26, 1994, 6-337213; Dec. 26, 1994, 6-337214

Int. Cl.[6] G03D *3/08*

U.S. Cl. 396—612 **3 Claims**



1. A photographic processing apparatus comprising:
a printer section having a conveying path;
a printing paper developing apparatus having a conveying path;
a printing paper transport apparatus having a mechanism which holds printing paper received from said printer section, slides the printing paper to said printing paper developing section, and delivers the printing paper thereto; and
wherein the printing paper conveying paths of said printing section and said printing paper developing apparatus are substantially in parallel but with opposite printing paper forward conveying directions, and the printing paper held by said printing paper transport apparatus is slid in a direction substantially perpendicular to the forward conveying directions of the printing paper conveying paths.

5,649,264

DEVELOPING UNIT HAVING OPTICAL DETECTION OF A RESIDUAL QUANTITY OF DEVELOPER IN A DEVELOPER CONTAINER

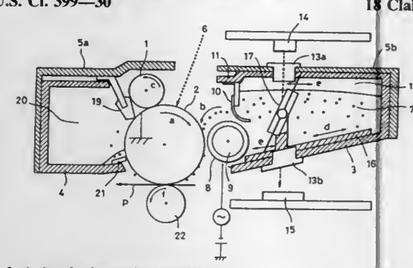
Akira Domon, Kawasaki; Keiji Okano, Tokyo; Masahide Kinoshita, Yokohama, and Yasushi Shimizu, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 15, 1994, Ser. No. 340,413

Claims priority, application Japan, Nov. 18, 1993, 5-311073

Int. Cl.[6] G03G *15/08*

U.S. Cl. 399—30 **18 Claims**



1. A developing unit comprising:
a developer container for accommodating a developer;
a first window portion which is formed in an upper portion of said developer container and through which light passes;
a second window portion which is formed in a lower portion of said developer container and through which light passes;
a first wiping member for wiping said first window portion;
a second wiping member for wiping said second window portion; and
a holding member for holding said first wiping member and said second wiping member at opposite ends of said holding member;
wherein said holding member performs a reciprocating operation with respect to a supporting point and the reciprocating operation is less than 180°.

5,649,265

IMAGE FORMING APPARATUS AND METHOD HAVING A TEMPERATURE SENSOR WHICH IS USED IN BOTH CONTACT AND SEPARATION POSITIONS

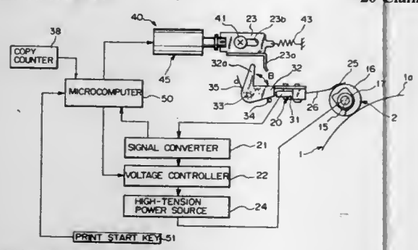
Takeshi Tabuchi, Kawaguchi, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 2, 1995, Ser. No. 537,441

Claims priority, application Japan, Sep. 30, 1994, 6-236598

Int. Cl.[6] G03G *21/00;15/02*

U.S. Cl. 399—44 **20 Claims**



1. An apparatus comprising:
a photoconductive element;
a contact member in contact with the photoconductive element;
a voltage source for supplying a voltage to the contact member;
a temperature sensor which contacts the contact member when the temperature sensor is in a first position relative to the contact member, and is separated from the contact member when in a second position relative to the contact member, the temperature sensor having an output corresponding to a sensed temperature; and
control means for controlling the voltage from the voltage source in response to the output of the temperature sensor when the temperature sensor is in the first and second positions.

5,649,266

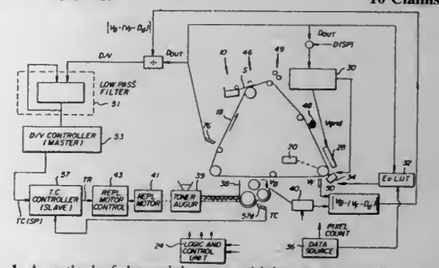
IN-STATION CALIBRATION OF TONER CONCENTRATION MONITOR AND REPLENISHER DRIVE

Allen Joseph Rushing, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 18, 1996, Ser. No. 635,867

Int. Cl.[6] G03G *15/10*

U.S. Cl. 399—59 **10 Claims**



1. A method of determining a sensitivity parameter of a toner monitor that forms a part of an electrostatographic recording apparatus having a development station that includes a mixture of a toner material in a toner developer composition wherein concentration of the toner material in the composition tends to change with use of the apparatus in making copies or prints, the method comprising:
(a) providing in the development station a known weight or concentration of toner material as an initial condition of weight or concentration of toner material;
(b) generating a first signal representing a first output voltage of the toner monitor for the initial condition of weight or concentration of toner material;
(c) operating the electrostatographic recording apparatus in a recording mode wherein the predetermined weight or concentration of toner material in the development station is reduced by a predetermined amount;
(d) generating a second signal representing a second output voltage of the toner monitor for the recording mode; and
(e) calculating a sensitivity parameter of the toner monitor in response to the first signal and the second signal.

5,649,267

METHOD OF FORMING A DRUM ASSEMBLY FOR USE IN A PRINTER AND THE DRUM ASSEMBLY MADE THEREBY

Ronny Jean Valentine Aerens, Belsele; Etienne Marie De Cock; Lucien Amede De Schamphelaere, both of Edegem; Peter Alexander Roger Steylaerts, Lier, and Erik Gabriel Gerardus Van Weverberg, Mortsel, all of Belgium, assignors to Xeikon N.V., Mortsel, Belgium

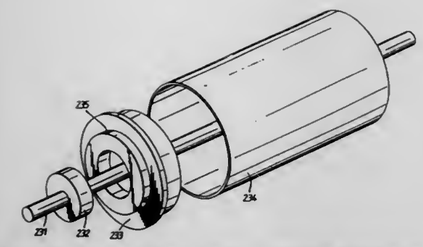
Division of Ser. No. 257,111, Jun. 8, 1994, Pat. No. 5,499,093. This application Nov. 7, 1995, Ser. No. 554,513

Claims priority, application European Pat. Off., Jun. 18, 1993, 93304773

Int. Cl.[6] G03G *21/00*

U.S. Cl. 399—159 **12 Claims**

1. A method of forming a drum assembly for use as a rotatable endless surface means onto which a toner image can be formed in an electrostatographic single-pass multiple station printer, said



drum assembly comprising a hollow, cylindrical drum having a photoconductive surface layer and, at each end of said drum, a flange and a shaft having a collar fixed thereon which is sized to fit with clearance inside said flange and which is secured thereto by adjustable fixing screws, each of said flanges being over-sized with respect to the internal diameter of said drum, the method comprising:

cooling each of said flanges,

inserting the cooled flanges into said drum, and

adjusting said fixing screws to minimize the eccentricity of said drum assembly.

5,649,268

CHARGING DEVICE HAVING A VOLTAGE WITH A SUPERIMPOSING COMPONENT MODE HAVING A DC COMPONENT AND AN OSCILLATION COMPONENT AND A DC COMPONENT MODE

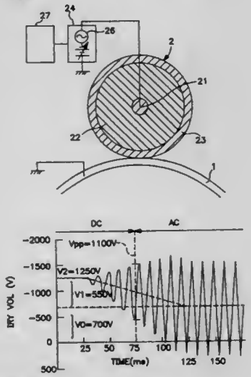
Youichirou Maebashi, Kawasaki, and Hiroshi Sasame, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 19, 1995, Ser. No. 543,872

Claims priority, application Japan, Oct. 19, 1994, 6-280040; May 31, 1995, 7-134181; Oct. 13, 1995, 7-265463

Int. Cl.[6] G03G *15/02*

U.S. Cl. 399—168 **13 Claims**



10. A charging device comprising:

a member to be charged; and

a charging member for charging said member to be charged, said charging member being contactable to said member to be charged and being supplied with a voltage,

wherein upon switching of said voltage from a DC component mode to a superimposing component mode of a DC component and an oscillation component, said DC component is decreased, and a peak-to-peak voltage of said oscillation component is increased in a period, and

wherein the increase of the oscillation component is started after a predetermined time period elapses from starting the decrease of said DC component.

5,649,269

IMAGE RECORDING APPARATUS HAVING A MASK MEMBER MOVING TOGETHER WITH AN EXPOSURE UNIT

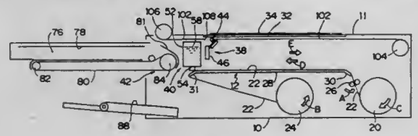
Atsuhiro Doi; Hiroyuki Kohda, and Kohji Uchida, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

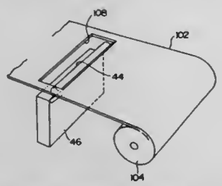
Filed Feb. 7, 1996, Ser. No. 598,007

Claims priority, application Japan, Feb. 10, 1995, 7-023215; Dec. 22, 1995, 7-335260

Int. Cl.[6] G03B *27/50*

U.S. Cl. 399—207 **15 Claims**





1. An image recording apparatus in which an image on an original document is copied onto a photosensitive material by exposure, and the photosensitive material and an image receiving material are superposed on each other for heat development/transfer, thereby obtaining an image on the image receiving material, said image recording apparatus comprising:

a stage for holding the photosensitive material;

a document table for holding a first original document such that the first original document faces the photosensitive material on said stage;

an exposure unit having an LED light source and operative to move between said stage and said document table along them, so that light emitted from the LED light source and reflected by the first original document on said document table is irradiated onto the photosensitive material on said stage for scanning exposure;

a mask member operative to move together with said exposure unit and disposed to be present between said document table and said stage on forward and backward sides of said exposure unit in the direction of movement thereof so as to prevent external light entering through said document table from reaching said stage; and

a superposing unit operative to move between said stage and said document table along them so as to superpose the image receiving material onto the photosensitive material.

5,649,270

DEVELOPER CONTAINER WITH LOW SHUTTER OPENING/CLOSING RESISTANCE

Kazuhiko Omata, Satte; Toshiaki Nagashima, and Kyota Miyazaki, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 16, 1995, Ser. No. 543,619

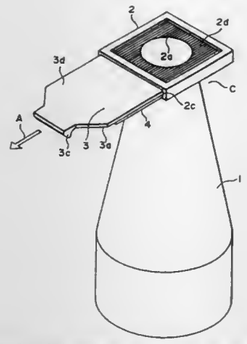
Claims priority, application Japan, Oct. 18, 1994, 6-278465

Int. Cl.[6] G03G *15/08*

U.S. Cl. 399—262 **19 Claims**

1. A developer container comprising:

a container portion having an opening through which developer is supplied in or out;



a shutter member for opening an closing the opening;

slide-guide means for guiding said shutter member;

a recess on a surface of said slide-guide means on which said shutter member slides,

wherein said recess permits air flow.

5,649,271

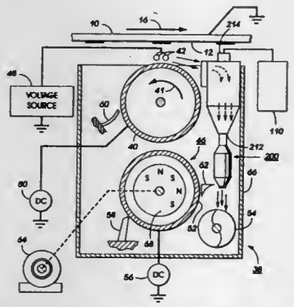
AIR HANDLING SYSTEM FOR A DEVELOPMENT HOUSING

Daniel M. Bray, Rochester, N.Y.; Kim M. Thomas, Morrison, Colo.; Gerald A. Domoto, Briarcliff Manor, and Michael J. Savino, Tappan, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 27, 1996, Ser. No. 671,390

Int. Cl.[6] G03G *15/095*

U.S. Cl. 399—264 **12 Claims**



7. An apparatus for developing a latent image recorded on a surface, comprising:

a housing having a supply of toner therein;

a donor member arranged in said housing to transport toner to a development zone adjacent the surface; and

means for detaching toner from said donor member and produce a toner cloud in the development zone; and

an air handling system, associated with said housing, for collecting stray toner particles emitted from said housing, said air handling system including a separator for separating toner by size.

5,649,272

DEVELOPING CARTRIDGE AND IMAGE FORMING APPARATUS HAVING THE SAME

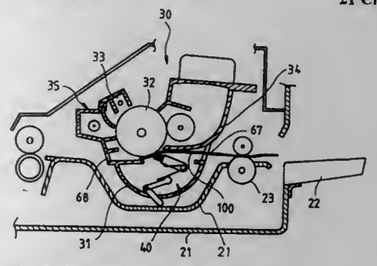
Young-Jun Kwon, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Nov. 7, 1995, Ser. No. 551,816

Claims priority, application Rep. of Korea, Nov. 8, 1994, 29178/1994

Int. Cl.[6] G03G *15/16*

U.S. Cl. 399—318 **21 Claims**



1. A developing cartridge, comprising:

a photosensitive drum;

a developing unit for providing toner to an electrostatic latent image formed on an outer surface of said photosensitive drum to generate a toner image; and

a transfer unit comprised of a brush having a main body with fibers extending from said main body for transferring said toner image from said outer surface of said photosensitive drum onto paper as said paper passes between said transfer unit and said photosensitive drum, said photosensitive drum, said developing unit and said transfer unit being combined as a unitary structure, said main body rotating in a first direction and enabling said fibers to engage said outer surface of said photosensitive drum in response to installation of said developing cartridge within an image forming apparatus.

5,649,273

BELT-TYPE FIXING DEVICE HAVING AN IRREGULAR SURFACE CONTOUR

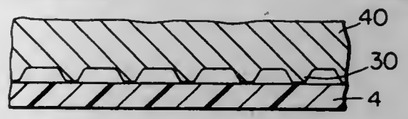
Ryuuichi Shimizu, Hitachiota; Tsuneaki Kawanishi, Ibaraki-ken; Toshiya Satoh, Hitachi; Teruaki Mitsuya, and Takashi Suzuki, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., and Hitachi Koki Co., Ltd., both of Tokyo, Japan

Continuation of Ser. No. 517,706, Aug. 22, 1995, Pat. No. 5,519,479, which is a continuation of Ser. No. 313,801, Sep. 28, 1994, Pat. No. 5,508,138, which is a continuation of Ser. No. 883,363, May 15, 1992, Pat. No. 5,363,180. This application Mar. 6, 1996, Ser. No. 611,850

Claims priority, application Japan, May 17, 1991, 3-112924

Int. Cl.[6] G03G *15/20*

U.S. Cl. 399—329 **1 Claim**



1. In an electrophotographic apparatus for transferring a toner image formed on a photosensitive body to a recording paper and fixing the toner image transferred to the recording paper by means of a fixing device, which is composed of a belt-type heating member and a pressing roller between which said recording paper with toner image to be fixed is pressed to provide a recorded image, the improvement wherein said belt-type heating member

comprises a metallic endless belt having irregularities on its upper surface, a surface roughness of said irregularities ranging between 10 and 45 μm, when measured by ten-point averaging method, and a protective layer of an elastic material covering said metallic endless belt and having a flat surface, the contour of said irregularities appearing on the surface of said belt-type heating member when pressure is applied to said belt-type heating member by said pressing roller.

5,649,274

ELECTROPHOTOGRAPHIC PRINTER USING A CONTINUOUS-FORM RECORDING SHEET

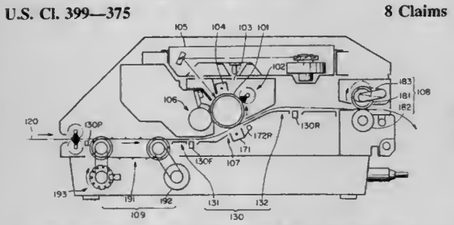
Ryoji Honda, Asaka; Masahiro Kita, Tokyo; Ikuo Negoro, Sakado; Tomoyuki Nishikawa, Matsudo; Takaaki Yano; Tatsuya Yoshida, both of Saitama-ken; Shoji Kamasako, Tsurugashima-machi; Tsutomu Sato, Tokyo, and Kiyoshi Negishi, Tsurugashima-machi, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 889,146, May 27, 1992, Pat. No. 5,565,972, which is a continuation-in-part of Ser. No. 750,281, Aug. 27, 1991, abandoned, which is a continuation of Ser. No. 535,477, Jun. 11, 1990, Pat. No. 5,063,416, said Ser. No. 889,146is a continuation-in-part of Ser. No. 854,007, Mar. 19, 1992, which is a continuation of Ser. No. 611,836, Nov. 13, 1990, abandoned. This application Jun. 20, 1996, Ser. No. 670,257

Claims priority, application Japan, Jun. 13, 1989, 1-149976; Nov. 10, 1989, 1-293712; Apr. 20, 1990, 2-105642; Apr. 26, 1990, 2-111210

Int. Cl.[6] G03G *21/00*

U.S. Cl. 399—375 **8 Claims**



1. An electrophotographic printer capable of printing on a plurality of types of continuous-form recording sheets, each of said types of recording sheets having a plurality of printing segments on which an image is to be formed, each of said segments defined by a plurality of perforations provided on each said continuous-form recording sheet at a predetermined interval, the printing segments of each type of recording sheet having different lengths, feeding means for feeding said continuous-form recording sheets along a predetermined feeding path, forming means for forming an image on each said continuous-form recording sheet, and fixing means for fixing the images formed by said forming means on said continuous-form recording sheet, said printing device further comprising:

discriminating means for determining whether the formation of an image on said continuous-form recording sheet has been completed;

controlling means for controlling said feeding means in order to feed said continuous-form recording sheets wherein a segment portion on which an image has not been formed will be located at said fixing means when forward feeding of a sheet on which image fixing has been completed has terminated, said controlling means further comprising means for controlling said feeding means so that a leading end of a successive segment on which an image has not been formed will be positioned adjacent to said forming means when movement of said continuous-form recording sheet is restarted.

5,649,275

IMAGE FORMING APPARATUS

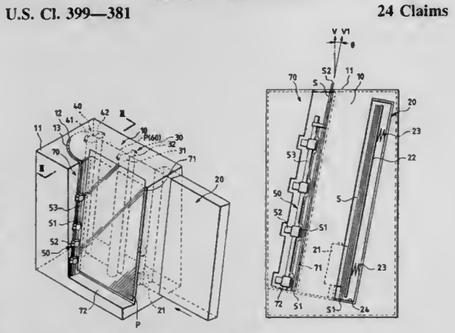
Satoshi Kaneta, Nagano, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Mar. 1, 1996, Ser. No. 609,386

Claims priority, application Japan, Mar. 1, 1995, 7-066958

Int. Cl.[6] G03G *15/00*

U.S. Cl. 399—381 **24 Claims**



1. An image forming apparatus comprising:

image forming means for forming an image on a sheet;

paper feeding means for feeding the sheet to said image forming means;

paper discharging means for discharging the sheet having the image formed thereon by said image forming means; and

a sheet guide for guiding the sheet;

wherein said image forming means, said paper feeding means, said paper discharging means and said sheet guide are all slanted from the vertical direction.

5,649,276

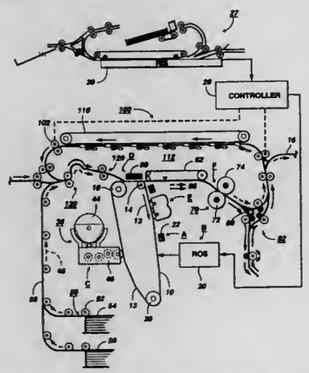
USE OF CONICAL DRIVE ROLLS IN A STALLED ROLL REGISTRATION SUBSYSTEM TO PREVENT CREASING

Lisbeth S. Quesnel, Pittsford, and Frank C. Darling, Jr., Wolcott, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 24, 1995, Ser. No. 427,363

Int. Cl.[6] G03G *15/00*

U.S. Cl. 399—390 **8 Claims**



1. An apparatus for registering a sheet in a path, comprising:

an idler member located in the path; and

a drive member in circumferential contact along substantially its entire length with said idler member to form a nip therebetween, said drive member being non-cylindrical, so that the effective velocity of said drive member at a first edge and a second edge of the sheet path, which first edge and second edge are toward an outer portion of the sheet path, is greater than an effective velocity of the drive member at a location between said first edge and said second edge at a location toward a center of the sheet path.

5,649,277

PROCESS AND APPARATUS FOR THE FREE-FORMING MANUFACTURE OF THREE DIMENSIONAL COMPONENTS OF PREDETERMINED SHAPE

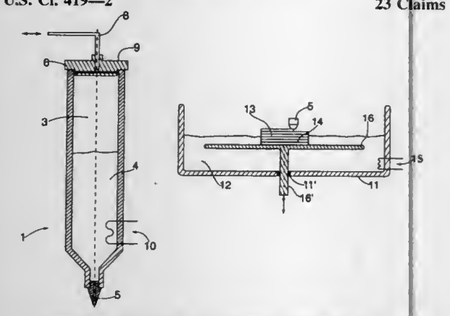
Mathias Greul, Bremen; Ewald Staskewitsch, Osterholz-Schambeck; Wilhelm Steger, Stuttgart; Theo Pintat, Ritterbude; Martin Geiger, Stuttgart, and Klaus Melchior, Besigheim, all of Germany, assignors to Fraunhofer-Gesellschaft Zur Foerderung Der Angewandten Forschung E.V., Muenchen, Germany

Filed Jun. 13, 1994, Ser. No. 258,670

Claims priority, application Germany, Jun. 9, 1993, 43 19 128.2

Int. Cl.[6] B22F *1/00;3/10;7/02*

U.S. Cl. 419—2 **23 Claims**



1. Apparatus for the free-forming manufacture of three-dimensional components, comprising:

a process chamber having first and second ends;

a nozzle at a first end of said process chamber;

said nozzle being adapted for the discharge of at least one of a molten material and a powdered material therethrough;

means for generating a temperature inside said process chamber at which a starting material is plasticize;

means for producing a pressure sufficient to discharge said plasticize or molten material through said nozzle;

means for programming said nozzle to discharge said plasticize or molten material for deposit; and

means for receiving said plasticize or molten material.

5,649,278

ALUMINUM NITRIDE, ALUMINUM NITRIDE CONTAINING SOLID SOLUTIONS AND ALUMINUM NITRIDE COMPOSITES PREPARED BY COMBUSTION SYNTHESIS

Stephen D. Dunmead; William G. Moore; Kevin E. Howard, all of Midland, and Kevin C. Morse, Montrose, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

PCT No. PCT/US94/00925, § 371 Date Sep. 26, 1995, § 102(e) Date Sep. 26, 1995, PCT Pub. No. WO94/22786, PCT Pub. Date Oct. 13, 1994

PCT Filed Jan. 27, 1994, Ser. No. 532,729

Int. Cl.[6] B22F *1/00*

U.S. Cl. 419—2 **21 Claims**

1. A method for preparing a product that is aluminum nitride, a composite of aluminum nitride and a transition metal boride or transition metal carbide, or a solid solution of aluminum nitride and at least one other ceramic material by combustion synthesis comprising:

a) igniting, in the presence of gaseous nitrogen at a pressure of from 0.75 to 30 atmospheres (0.075 to 3 MPa), a particulate material that is (1) a metal selected from aluminum and aluminum alloys, when producing aluminum nitride; or (2) a metal selected from aluminum and aluminum alloys in admixture with carbon when producing aluminum nitride platelets; or (3) a metal selected from aluminum and aluminum alloys in admixture with a combination of a first transition metal, a nonmetallic component selected from carbon and boron, and a second transition metal, the first and second transition metals being different metals selected from titanium, zirconium, hafnium, vanadium, niobium, tantalum, chromium, molybdenum and tungsten, when producing composites of aluminum nitride and a transition metal boride or carbide wherein the transition metal boride or carbide is in the form of whiskers; or (4) an admixture of a metal selected from aluminum and aluminum alloys and a ceramic material or ceramic material precursor selected from (i) at least one ceramic material selected from of silicon carbide (SiC), aluminum oxide (Al_2O_3) and silica (SiO_2) or (ii) a combination of silicon nitride (Si_3N_4) and Al_2O_3, and, optionally, one or more of SiC and SiO_2, or (iii) a particulate combination of silicon and carbon, when producing a solid solution, the particulate material having a bulk density and an aluminum metal content sufficient to establish and maintain a self-propagating combustion wave that passes through the admixture; and

b) allowing the combustion wave to pass through substantially all of the admixture to convert at least 75 percent by weight of the aluminum in the particulate material to aluminum nitride or an aluminum nitride solid solution, except when making aluminum nitride platelets, in which case at least 10 percent by weight of the aluminum in the particulate material is converted to aluminum nitride.

5,649,279

CEMENTED CARBIDE WITH BINDER PHASE ENRICHED SURFACE ZONE

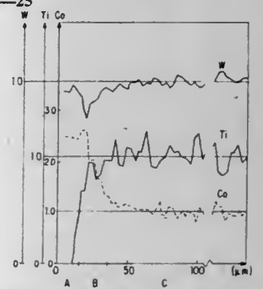
Per Gustafson, Huddinge; Leif Akesson, Alvsjo, and Ake Ostlund, Taby, all of Sweden, assignors to Sandvik AB, Sandviken, Sweden

Division of Ser. No. 159,257, Nov. 30, 1993, Pat. No. 5,451,469. This application Nov. 17, 1994, Ser. No. 343,921

Claims priority, application Sweden, Dec. 18, 1992, 9203851

Int. Cl.[6] B22F *3/00*

U.S. Cl. 419—25 **3 Claims**



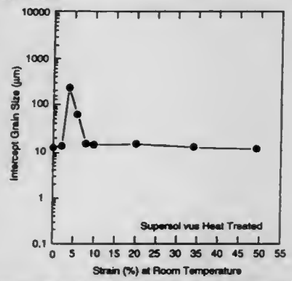
1. A method of manufacturing binder phase enriched cemented carbide comprising sintering a presintered or green cemented carbide body containing nitrogen and carbon in an inert atmosphere or in vacuum, 15 to 180 min at 1380°–1520° C., followed by slow cooling, 20°–100° C./h, through the solidification region, 1300°–1220° C.

5,649,280

METHOD FOR CONTROLLING GRAIN SIZE IN NI-BASE SUPERALLOYS

Charles Philip Blankenship; Michael Francis Henry, both of Niskayuna, N.Y.; Eric Scott Huron, Westchester, Ohio, and John Michael Hyzak, Shrewsbury, Mass., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 2, 1996, Ser. No. 581,783
Int. Cl.[6] B22F *3/24;* **C22C** *1/04*
U.S. Cl. 419—25 **20 Claims**



1. A method of making an article having a controlled grain size from a Ni-base superalloy, comprising the steps of:

providing a Ni-base superalloy having a recrystallization temperature, a γ' solvus temperature and a microstructure comprising a mixture of γ and γ' phases, wherein the γ' phase occupies at least 30% by volume of the Ni-base superalloy;

working the superalloy at preselected working conditions, comprising a working temperature less than the γ' solvus temperature and a strain rate greater than a predetermined strain rate, ϵ_{min} sufficiently to store a predetermined minimum amount of retained strain, ϵ_{min}, per unit of volume throughout the superalloy, to form an article, wherein ϵ_{min} is sufficient to promote subsequent recrystallization of a uniform grain size microstructure throughout the article;

subsolvus annealing the article at a subsolvus temperature for a time sufficient to cause recrystallization of a uniform grain size throughout the article; and

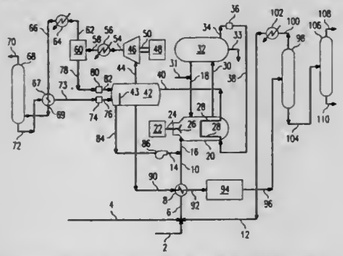
cooling the article from the subsolvus annealing temperature at a predetermined rate in order to cause the precipitation of γ'.

5,649,281

ALKYLATION WITH SEPARATE ALKYLATION OF ISOBUTANE WITH PENTENES

Vijay R. Sampath, Brea, Calif., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Division of Ser. No. 169,850, Dec. 17, 1993, abandoned. This application Jul. 17, 1995, Ser. No. 440,275
Int. Cl.[6] B01J *10/00;19/00*
U.S. Cl. 422—189 **8 Claims**



1. A combination of alkylation apparatus comprising:

a. a first reactor for reacting isobutane with a first feed comprising substantially butenes and lower boiling compounds in the presence of excess isobutane and sulfuric acid catalyst to form a first reactor effluent comprising a first spent acid, a first alkylate, excess isobutane, normal butane and propane;

b. a first acid decanter in fluid communication with the first reactor through a first conduit which conveys the first reactor effluent to the first acid decanter, which decanter separates said first reactor effluent into a first hydrocarbon phase and a first acid recycle phase;

c. a first flash drum in fluid communication with the first acid decanter through a second conduit which conveys the first hydrocarbon phase to the first flash drum, which drum separates the first hydrocarbon phase into a first isobutane recycle stream, a first alkylate-containing stream, and a first mixed hydrocarbon slip stream comprised of propane and higher hydrocarbons;

d. a first deisobutanizer in fluid communication with the first flash drum through a third conduit which conveys the first alkylate-containing stream to the first deisobutanizer, which deisobutanizer separates the first alkylate-containing stream into a second isobutane recycle stream and a first alkylate-rich intermediate product;

e. a second reactor for reacting isobutane with a second feed comprising substantially pentenes in the presence of excess isobutane and sulfuric acid catalyst to form a second reactor effluent comprising a second spent acid, a second alkylate, excess isobutane, normal butane, and propane;

f. a second acid decanter in fluid communication with the second reactor through a fourth conduit which conveys the second reactor effluent to the second acid decanter, which decanter separates the second reactor effluent into a second hydrocarbon phase and a second acid recycle phase;

g. a second flash drum in fluid communication with the second acid decanter through a fifth conduit which conveys the second hydrocarbon phase to the second flash drum, which drum separates said second hydrocarbon phase into a third isobutane recycle stream, a second alkylate-containing stream, and a second mixed hydrocarbon slip stream comprised of propane and higher hydrocarbons;

h. a second deisobutanizer in fluid communication with the second flash drum through a sixth conduit which conveys the second alkylate-containing stream to the second deisobutanizer, which deisobutanizer separates the second alkylate-containing stream into a fourth isobutane recycle stream and a second alkylate-rich intermediate product, the second deisobutanizer also producing a n-butane rich slid stream;

i. a common depropanizer in fluid communication with (1) the first flash drum through a seventh conduit which conveys the first mixed hydrocarbon slip stream to the common depropanizer, and (2) the second flash drum through an eighth conduit which conveys the second mixed hydrocarbon slip stream from the second flash drum to the common depropanizer, the common depropanizer separating the first mixed hydrocarbon slip stream and the second mixed hydrocarbon slip stream into a propane-rich product and a fifth isobutane recycle stream;

j. a common debutanizer in fluid communication with (1) the first deisobutanizer through a ninth conduit which conveys the first alkylate-rich intermediate product to the common debutanizer, and (2) the second deisobutanizer through a tenth conduit which conveys the n-butane rich slip stream from the second deisobutanizer to the common debutanizer, the common debutanizer separating the first alkylate-rich intermediate product and the n-butane rich slip stream into a n-butane and lighter hydrocarbon product and a first alkylate product; and

k. a depentanizer in fluid communication with the second deisobutanizer through an eleventh conduit which receives the second alkylate-rich intermediate product and separates said intermediate product into a higher octane blending product comprised of isopentane, and a second alkylate product.

5,649,282

HEAT PROTECTION ELEMENT CONSISTING OF A QUASICRYSTALLINE ALUMINUM ALLOY

Jean-Marie Dubois, Pompey; Pierre Archambault, Nancy, and Bernard Colleret, Jarville, all of France, assignors to Centre National de la Recherche Scientifique, Paris, France

Division of Ser. No. 98,317, Aug. 9, 1993, Pat. No. 5,571,344.
This application Sep. 26, 1995, Ser. No. 533,756
Claims priority, application France, Dec. 20, 1991, 91 15866
Int. Cl.[6] C23C *4/08;4/06*
U.S. Cl. 428—548 **21 Claims**

1. A composite structure comprising a substrate and a heat protection element deposited on the substrate, wherein the heat protection element consists essentially of a quasicrystalline aluminum alloy consisting essentially of one or a number of quasicrystalline phases which are either a quasicrystalline phase in the strict sense or approximating phases, wherein said quasicrystalline phases exhibit a thermal diffusivity, measured at ambient temperature, lower than 2.5×10^{-6} m^2/s, and a thermal diffusivity measured in the temperature range 650°–750° C. which does not exceed the thermal diffusivity measured at ambient temperature by more than a factor of 3, and wherein said quasicrystalline aluminum alloy consists essentially of:

$Al_aCu_bFe_cX_dJ_eI_g$, wherein X represents at least one element selected from B, C, P, S, and Ge; wherein J represents at least one element selected from V, Mo, Ti, Zr, Nb, Cr, Mn, Ru, Rh, Ni, Mg, W, Hf, Ta and the rare earths; wherein I represents impurities; and wherein $0\leq g\leq 2$, $14\leq b\leq 30$, $7\leq c\leq 20$, $1\leq d\leq 5$, $21\leq b+c+e\leq 45$, and a+b+c+e+g=100 atom %,

wherein the heat protection element deposited on the substrate comprises at least 80% by volume of at least one quasicrystalline phase.

20. A method for manufacturing a composite structure comprising coating a substrate with a heat protection element, wherein the heat protection element consists essentially of a quasicrystalline aluminum alloy consisting essentially of one or a number of quasicrystalline phases which are either a quasicrystalline phase in the strict sense or approximating phases, wherein said quasicrystalline phases exhibit a thermal diffusivity, measured at ambient temperature, lower than 2.5×10^{-6} m^2/s, and a thermal diffusivity measured in the temperature range 650°–750° C. which does not exceed the thermal diffusivity measured at ambient temperature by more than a factor of 3, and wherein said quasicrystalline aluminum alloy consists essentially of:

$Al_aCu_bFe_cX_dJ_eI_g$, wherein X represents at least one element selected from B, C, P, S, and Ge; wherein J represents at least one element selected from V, Mo, Ti, Zr, Nb, Cr, Mn, Ru, Rh, Ni, Mg, W, Hf, Ta and the rare earths; wherein I represents impurities; and wherein $0\leq g\leq 2$, $14\leq b\leq 30$, $7\leq c\leq 20$, $1\leq d\leq 5$, $21\leq b+c+e\leq 45$, and a+b+c+e+g=100 atom %,

wherein the heat protection element deposited on the substrate comprises at least 80% by volume of at least one quasicrystalline phase.

5,649,283

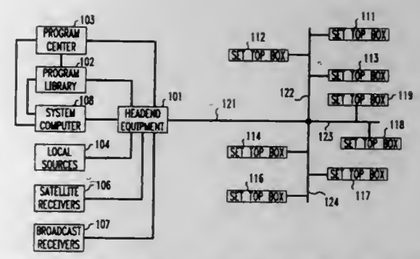
PROGRAM VERIFICATION FOR CABLE TELEVISION AT A CONSUMER LOCATION

Bruce I. Galler, Boulder; Jamie C. Su, and Stephanie M. Zwolinski, both of Westminster, all of Colo., assignors to Lucent Tecbnologies Inc., Murray Hill, N.J.

Filed Sep. 28, 1995, Ser. No. 535,417
Int. Cl.[6] H04N *7/173*
U.S. Cl. 455—2 **18 Claims**

1. An apparatus for assuring accurate transmission of video programs from a video switching system to customer sites via a transmission system where the video switching system is controlled by a system computer and each customer site has a service controller for receiving video programs for play back on a video set, comprising:

means for storing video information in the video switching system;



means for selecting a video program from the stored video information in the video switching system;

means in the switching system for transmitting the selected video program to a customer site via the transmission system after a predefined amount of time has lapsed;

means in the switching system for transmitting information defining the predefined amount of time and program identification information to the customer site via the transmission system before the transmission of the selected video program;

means in the service controller for capturing video frame information from the transmitted selected video program after the lapse of the predefined amount of time;

means in the service controller for matching the transmitted program identification information with the captured video frame information; and

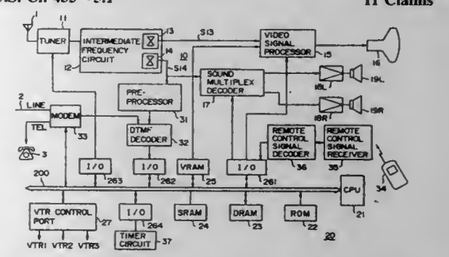
means in the service controller for transmitting an error message to the switching system upon the transmitted program identification information not matching the captured video frame information.

5,649,284

MULTIPLEX BROADCASTING SYSTEM

Hitoshi Yoshinobu, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 13, 1994, Ser. No. 355,132
Claims priority, application Japan, Dec. 17, 1993, 5-344233; Dec. 24, 1993, 5-347327
Int. Cl.[6] H04N *7/173*
U.S. Cl. 455—5.1 **11 Claims**



3. A multiplex broadcast signal receiver for receiving multiplex broadcast signals each produced by multiplexing a main broadcast audio signal, and second broadcast information composed of multifrequency signals each of a combination of one tone in a first frequency group of audio bands unrelated with each other in articulation and one tone in a second frequency group of audio bands unrelated with each other in articulation, said multiplex broadcast signal receiver comprising:

decoding means for continuously monitoring the audio signal included in the received multiplex broadcast signal, detecting the multifrequency signals, and decoding the detected multifrequency signals to identify the combination of the multifrequency signals;

receiving means for receiving the output of the decoding means as second broadcast information; and

storage means for storing the second broadcast information received by the receiving means.

5,649,285

TRANSMISSION OF TUNING DATA OF BROADCASTING TRANSMITTERS TO A RECEIVER TO FACILITATE AUTOMATED SET-UP OF THE RECEIVER BASED ON RECEIVABLE TRANSMITTERS IN A RECEPTION AREA

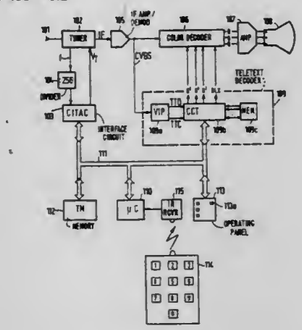
Hugh Cautley, Vienna, Austria, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 16, 1995, Ser. No. 405,067

Claims priority, application European Pat. Off., Mar. 23, 1994, 94104597; Apr. 21, 1994, 94201103

Int. Cl.[6] H04N *7/10*

U.S. Cl. 455—6.2 **10 Claims**



1. A device for transmitting tuning data of broadcasting transmitters to a receiver, said device comprising:

means for generating, for a plurality of reception areas, a tuning data packet comprising tuning data of the transmitters which are receivable in each of said areas;

means for generating a reference packet identifying the corresponding tuning data packet for each one of the plurality of reception areas; and

means for transmitting said tuning data packets and said reference packet, characterized in that the reference packet for each reception area comprises the tuning data of a transmitter which is receivable only in said area using said tuning data.

5,649,286

METHOD FOR MANAGING THE REGISTRATION OF A WIRELESS UNIT

Melvin Duane Frerking, Norcross, Ga., assignor to BellSouth Corporation, Atlanta, Ga.

Filed Nov. 14, 1994, Ser. No. 339,302

Int. Cl.[6] H04Q *7/22*

U.S. Cl. 455—435 **16 Claims**

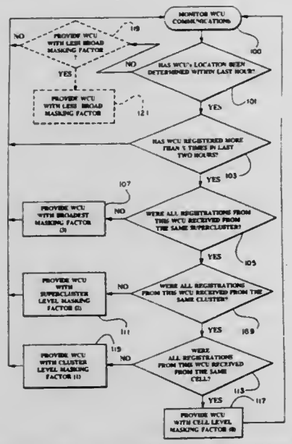
1. A method of operating a wireless communication unit in a wireless communication system servicing a geographic area divided into cells, each cell having a base station, comprising the steps of:

receiving a control signal from a base station in a first cell, wherein said control signal of said first cell comprises an identification signal unique to said first cell;

applying a masking factor to said identification signal of said first cell to provide a portion of said identification signal;

registering said wireless communication unit in said first cell;

receiving a control signal from a base station in a second cell, wherein said control signal of said second cell comprises an identification signal unique to said second cell;



determining a portion of said identification signal of said second cell, said portion of said identification signal of second cell corresponding to said portion of said identification signal of said first cell;

performing a comparison between said control signal of said first cell and said control signal of said second cell;

determining on the basis of said comparison whether said first cell and said second cell exist in a preselected relationship; and

if said preselected relationship is present, then registering said wireless communication unit in said second cell.

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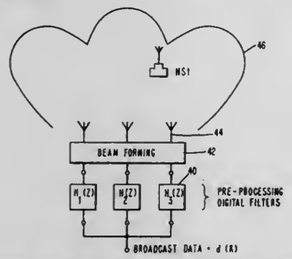
ORTHOGONALIZING METHODS FOR ANTENNA PATTERN NULLFILLING

Ulf Göran Forssén, Satlsjö-Boo, and Stig Roland Bodin, Spånga, both of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Mar. 29, 1995, Ser. No. 412,921

Int. Cl.[6] H04B *7/26;* **H04Q** *7/30*

U.S. Cl. 370—312 **13 Claims**



7. A pseudo-omni site for use in a cellular communication system for transmitting signals to and receiving signals from a plurality of mobile stations, comprising:

a plurality of transceiver means for processing information;

a receive antenna arrangement for receiving signals;

a transmit antenna arrangement for transmitting signals in a pseudo-omni antenna pattern;

a coupling means for connecting said plurality of transceivers to said receive and transmit antenna arrangements;

means for diversity combining signals received from said receive antenna arrangement;

digital filters for orthogonalizing signals to be transmitted to said mobile stations so as to prevent nulls from occurring in the antenna pattern.

5,649,288

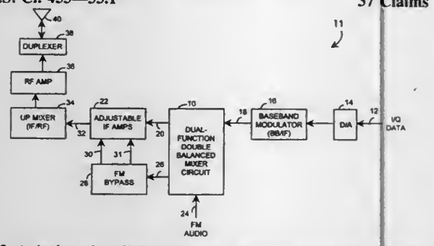
DUAL-FUNCTION DOUBLE BALANCED MIXER CIRCUIT

John P. De Loe, Jr., Decatur, Ga., and He Feng Wang, Saitama, Japan, assignors to OKI telecom, Suwanee, Ga.

Continuation of Ser. No. 249,261, May 25, 1994. This application Jun. 6, 1995, Ser. No. 468,019

Int. Cl.[6] H04Q *7/00;9/00*

U.S. Cl. 455—33.1 **37 Claims**



3. A dual-mode cellular telephone transmission circuit comprising:

a double balanced mixer including

a first signal input and a second signal input,

at least one signal output,

at least one oscillator input,

an internal oscillation amplifier, and

means for mixing signals from said first signal input and said oscillator input during a digital communication mode to output on said signal output a signal including a frequency sum signal and a frequency difference signal of the signals from said first signal input and said oscillator input and, alternately, for passing signals from said oscillator input through to said signal output during a frequency modulation communication mode responsive to said second signal input being grounded;

a selective grounding network coupled to said second signal input for grounding said second signal input during the frequency modulation communication mode to unbalance said double balanced mixer;

an inductor-capacitor tank including

a phase lock loop control input,

a frequency modulated audio signal input,

an output coupled to said oscillator input of said double balanced mixer,

means for cooperating with said internal oscillation amplifier through said oscillator input to create and sustain an oscillation signal, and

means for modulating the oscillation signal with a frequency modulated audio signal received through said frequency modulated audio signal input; and

a phase lock loop frequency synthesizer coupled to said inductor-capacitor tank for controlling a frequency of the oscillation signal, said phase lock loop frequency synthesizer including

a phase detector output coupled to said phase lock loop control input of said inductor-capacitor tank, and

a loop input coupled to said output of said inductor-capacitor tank.

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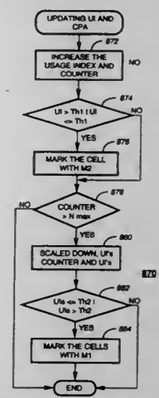
FLEXIBLE MOBILITY MANAGEMENT IN A TWO-WAY MESSAGING SYSTEM AND METHOD THEREFOR

Zhonghe Wang, Lake Worth, and Robert John Schwendeman, Pompano Beach, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 10, 1995, Ser. No. 500,280

Int. Cl.[6] H04Q *7/00*

U.S. Cl. 455—31.3 **20 Claims**



1. A method for managing communication of messages to message subscriber units in a two-way messaging system comprising steps of:

providing a plurality of message subscriber units which are subscribed to receive messages in a messaging system coverage area, each of said message subscriber units receiving a message and transmitting a response signal upon reception of a message;

storing in a system controller, customer paging area data for each message subscriber unit, said customer paging area data for each message subscriber unit comprising a preferred cell list of cell identifiers which define a customer paging area for each message subscriber unit that comprises predetermined ones of a plurality of cells in a messaging system coverage area where a message subscriber unit is most receiving messages;

receiving at the system controller a message request including a message for transmission to a particular message subscriber unit;

determining in which cell the particular message subscriber unit is located based on customer paging area data for the particular message subscriber unit stored in the system controller;

transmitting the message for the particular message subscriber unit in a particular cell based on said step of determining;

transmitting a response signal from the particular message subscriber unit when the particular message subscriber unit receives the message; and

updating the customer paging area data for each message subscriber unit by adding and deleting cells from the customer paging area for each message subscriber unit according to a mobility pattern of each message subscriber unit in the messaging system coverage area, the step of updating comprises steps of:

generating a usage index associated with each cell for each message subscriber unit, the usage index representing a number of message receiving events by a message subscriber unit in a cell;

increasing the usage index for each cell for each message subscriber unit in response to an occurrence of a message receiving event in a cell by each message subscriber unit;

comparing the usage index with a first predetermined threshold after the step of increasing; and

marking a cell with an addition mark which is to be added to the preferred cell list when its usage index exceeds the first

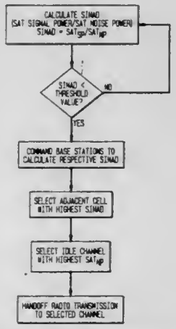
predetermined threshold which before the step of increasing was less that the first predetermined threshold.

5,649,290

HANDOVER METHOD BASED UPON CHANNEL QUALITY

Robert Chuenlin Wang, Mendham Township, Morris County, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 14, 1994, Ser. No. 355,890
Int. Cl.[6] H04Q *7/00;9/00*
U.S. Cl. 370—332 **7 Claims**



6. A method of allocating channels to mobile terminals traveling within a cellular network having a plurality of adjoining cells, each of said cells having therein a base station and a multiplicity of channels for call allocation, each base station having a signal processing unit for generating and monitoring a baseband voice/data signal having a supervisory audio tone (SAT) superimposed thereon, said method comprising the steps of:

a) calculating the SAT signal power to SAT noise power ratio for an ongoing radio transmission between a mobile terminal and a base station;

b) determining whether the ratio between the SAT signal power and the SAT noise power is below a predetermined threshold value;

c) commanding each base station adjacent to the base station in communication with the mobile terminal to determine the SAT signal power to SAT noise power ratio for the mobile terminal;

d) selecting the adjacent cell having the highest determined SAT signal power to SAT noise power ratio as a target cell for receiving the ongoing radio transmission;

e) selecting an idle channel within the target cell having the highest SAT noise power; and

f) handing-over the ongoing radio transmission to the selected idle channel within the target cell.

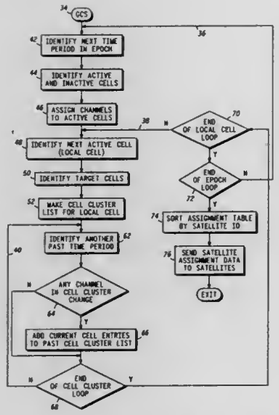
5,649,291

COMMUNICATION SYSTEM AND METHOD USING SUBSCRIBER UNITS TO EVALUATE HAND-OFF CANDIDATES

Daniel Richard Tayloe, Phoenix, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 28, 1995, Ser. No. 431,005
Int. Cl.[6] H04Q *7/00*
U.S. Cl. 370—332 **11 Claims**

1. A method for operating a subscriber unit in a cellular communication system that requests a hand-off from a local cell to a candidate target cell, each cell having a broadcast channel associated therewith, said broadcast channel comprised of a frequency and time-slot, and wherein each of said cells periodically change



either the frequency and/or time-slot of said associated broadcast channel, said method comprising the steps of:

said subscriber unit receiving a first list of candidate target cells during momentary periods of silence during voice communication, said first list including a cell identifier (ID) and said broadcast channel for each candidate target cell;

on a regular basis, measuring, for each candidate target cell of said first list, an instantaneous signal strength of the associated broadcast channel;

receiving a second list of candidate target cells during subsequent momentary periods of silence during voice communication, said second list including a cell identifier (ID) and said broadcast channel for each candidate target cell, some candidate target cells of said second list having a same cell ID as candidate target cells of said first list but having different broadcast channels, said broadcast channel of some of said candidate target cells changing in between the steps of receiving said first and second lists of candidate target cells;

linking candidate target cells of said first and second lists having the same cell ID and different broadcast channels;

repeating the measuring step for each candidate target cell of said second list, and for said linked candidate target cells measuring said instantaneous signal strength of the different associated broadcast channel;

determining an average signal strength of the broadcast channel for each candidate target cell of said first and second lists, said average signal strength based on subsequent of said instantaneous signal strength measurements; and

for the linked candidate target cells, selecting the greatest one of the instantaneous signal strengths for use in the averaging step.

5,649,292

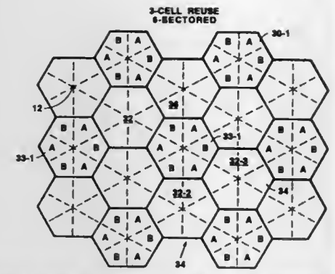
OBTAINING IMPROVED FREQUENCY REUSE IN WIRELESS COMMUNICATION SYSTEMS

John R. Doner, Sebastian, Fla., assignor to AirNet Communications Corporation, Melbourne, Fla.

Filed Oct. 31, 1994, Ser. No. 331,455
Int. Cl.[6] H04Q *7/36*
U.S. Cl. 455—447 **14 Claims**

1. A cellular communication system consisting of a plurality of cells, the plurality of cells being located substantially adjacent to one another, with each cell containing a plurality of antennas centrally located in the cell and radiating into sixty-degree (60°) sectors of the cell, to thereby provide six sectors per cell, the system comprising:

means for grouping available frequencies into at least six groups, with the assignment of frequencies to frequency



groups being exclusive such that any one available frequency is only assigned to one group;

means for providing uniform reuse of the at least six frequency groups in the cells by selecting two and only two frequency groups of the at least six frequency groups to be used in at least one of the cells so that only two frequency groups are used in any given cell, to thereby form sets of homologous cells having the same two frequency groups assigned thereto;

means for assigning the two frequency groups in at least one of the homologous cells to alternate sectors in each cell, such that no two adjacent sectors in the same cell are assigned the same one of the two frequency groups, and such that all frequencies of a group are used in one of the alternating sectors; and

means for determining when a mobile unit in one of the sectors is requesting access to the system and if so, whether the mobile unit is located in an inner portion or outer portion of the sector; and

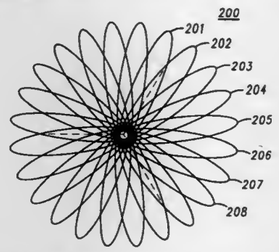
means for assigning a frequency to the mobile unit from the frequency group assigned to the sector depending upon whether the mobile unit is located in the inner or the outer portion of the sector.

5,649,293

METHOD FOR ASSIGNING SUBSCRIBERS BETWEEN NARROWBEAM SECTORS

John Douglas Reed, Arlington, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 25, 1995, Ser. No. 450,057
Int. Cl.[6] H04Q *7/22*
U.S. Cl. 455—453 **19 Claims**



1. A method for load-sharing between a plurality of sectors of a base station, comprising:

(a) monitoring a loading level for each sector of the plurality of sectors of the base station;

(b) in response to a first sector's loading level exceeding a predetermined threshold, selecting a first subscriber, communicating via the first sector, that is located closer to the base station than a second subscriber communicating via the first sector; and

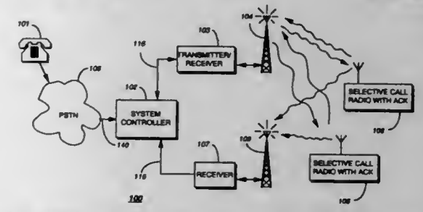
(c) off-loading the first subscriber to a further sector of the base station for communications with the first subscriber.

5,649,294

METHOD AND APPARATUS FOR DELIVERING GLOBAL EVENT INFORMATION IN A RADIO COMMUNICATION SYSTEM

Douglas I. Ayerst, Delray Beach, and Morris Moore, Wellington, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 7, 1995, Ser. No. 418,733
Int. Cl.[6] H04B *7/00*
U.S. Cl. 455—38.1 **18 Claims**



1. A method used in a system controller for efficiently communicating global information to a plurality of radios in a radio communication system in which each of said plurality of radios is in a receive state during a synchronization portion of one or more predetermined periods of a plurality of transmission cycles and in which each of said plurality of radios is not necessarily in a receive state during a first predetermined period of each of the plurality of transmission cycles, the method comprising the steps of:

determining a global event occurrence and global event information associated with the global event occurrence, wherein the global event information is for communication to the plurality of radios;

including a global event indicator in the synchronization portion of each of a plurality of periods, including the one or more predetermined periods, which are for transmission in a first transmission cycle, and wherein the global indicator indicates that the plurality of radios are to be set in the receive state during the first predetermined period of the second transmission cycle;

transmitting the plurality of periods during the first transmission cycle;

including the global event information in the first predetermined period which is for transmission in a second transmission cycle which is subsequent to the first transmission cycle; and

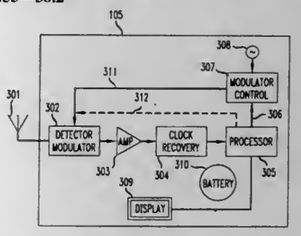
transmitting the first predetermined period in the second transmission cycle.

5,649,295

DUAL MODE MODULATED BACKSCATTER SYSTEM

R. Anthony Shober, Red Bank; Giovanni Vannucci, Middletown Township, and Gregory Alan Wright, Colts Neck, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jun. 19, 1995, Ser. No. 492,173
Int. Cl.[6] H04B *1/40;1/59*
U.S. Cl. 455—38.2 **26 Claims**



11. A tag for use in a radio communication system comprising means for receiving said first modulated signal,

means for decoding said first modulated signal to obtain said first information signal, said first information signal indicating in which of multiple response modes a receiving tag should respond,

backscatter modulator means for modulating the reflection of said first modulated signal using a second information signal whose content, data rate, or modulation is determined by said first information signal, thereby forming a reflected second modulated signal.

5,649,296

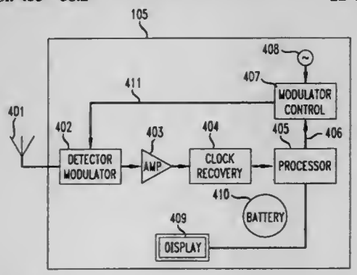
FULL DUPLEX MODULATED BACKSCATTER SYSTEM

John Austin MacLellan, Aberdeen; R. Anthony Shober, Red Bank; Giovanni Vannucci, Middletown, and Gregory Alan Wright, Colts Neck, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jun. 19, 1995, Ser. No. 492,174

Int. Cl.[6] H04B *1/40;1/59*

U.S. Cl. 455—38.2 **22 Claims**



20. A tag for use in a radio communication system, comprising

means for receiving a first modulated signal at an antenna, and

backscatter modulator means for modulating the reflection of said first modulated signal from the antenna using a second information signal, thereby forming a second modulated signal which is the reflected first modulated signal which has been further modulated by the second information signal during a period of time when the first information signal is present on the first modulated signal.

5,649,297

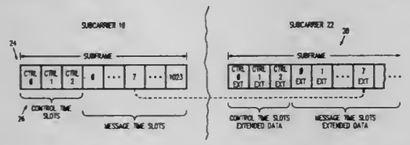
TRANSMITTING DIGITAL DATA USING MULTIPLE SUBCARRIERS

Daniel J. Park, Portland, Oreg., assignor to Seiko Communications Holding N.V., Netherlands Antilles

Filed Oct. 21, 1994, Ser. No. 327,256

Int. Cl.[6] H04Q *07/08*

U.S. Cl. 455—45 **19 Claims**



1. A radio paging system wherein paging messages are transmitted from an FM transmitter to paging receivers via signals carried on an FM baseband radio signal, comprising:

a first subcarrier containing both a first portion of the message and control data, the control data identifying the message with a given paging receiver; and

a second subcarrier containing a second portion of said message directed to the given paging receiver, the second portion of the message identified by the paging receiver according to the control data in the first subcarrier thereby increasing the proportion of message data transmitted in the second subcarrier.

5,649,298

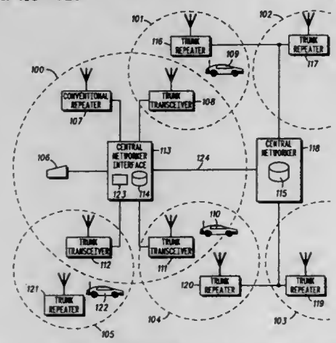
METHOD AND APPARATUS OF INTER-OPERABILITY BETWEEN CONVENTIONAL AND TRUNKED COMMUNICATIONS SYSTEM

Sewim Fewsi Ablay, Hoffman Estates, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 991,908, Dec. 17, 1992, abandoned. This application Feb. 3, 1995, Ser. No. 383,540

Int. Cl.[6] H04Q *7/20*

U.S. Cl. 455—520 **9 Claims**



1. In a wide area communication network that comprises a plurality of trunking sites operably coupled together via a central networker, a method for connecting a conventional communication system to the wide area communication network, the method comprises the steps of:

a) providing a communication link between the conventional communication system and the central networker;

b) generating, within the central networker, a database for storage of location information pertaining to communication units associated with the conventional communication system, wherein the communication units communicate with the conventional communication system when operating within a conventional coverage area of the conventional communication system and communicate with the wide area communication network when operating within a trunked coverage area of the wide area communication network; and

c) entering, within the central networker, the location information into the database.

5,649,299

APPARATUS AND METHOD FOR ADAPTING A DIGITAL RADIOTELEPHONE SYSTEM TO INCREASED SUBSCRIBER TRAFFIC

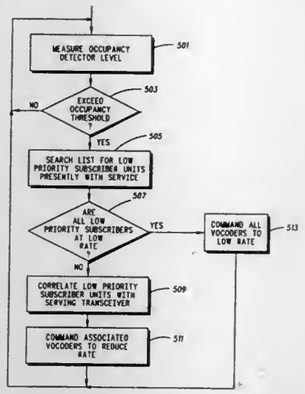
John W. Battin, North Barrington, Ill.; Charles N. Lynk, Jr., Bedford, and Kevin M. Laird, Haltom City, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 27, 1993, Ser. No. 144,166

Int. Cl.[6] H04Q *7/32*

U.S. Cl. 455—62 **3 Claims**

2. A digital radiotelephone system including a fixed station having a radio transceiver and a first vocoder to convert a first analog signal to a digital signal at a first predetermined data rate, for transmitting to and receiving from a radio coverage area to provide service to a plurality of subscriber units within the radio coverage area, each subscriber unit employing a second vocoder to



convert a second analog signal to a digital signal at the first predetermined data rate, comprising:

a first group of subscriber units predeterminedly assigned a priority level;

a system occupancy detector, coupled to the radio transceiver, which provides an output signal related to a number of the plurality of subscriber units actively receiving service from the digital radiotelephone system in the radio coverage area;

a subscriber priority list and list scanner which selects said first group of subscriber units; and

a threshold detector which monitors said output signal and generates an instruction to at least one of the first and second vocoders of a selected first priority subscriber unit to change from the first predetermined data rate to a second predetermined data rate.

5,649,300

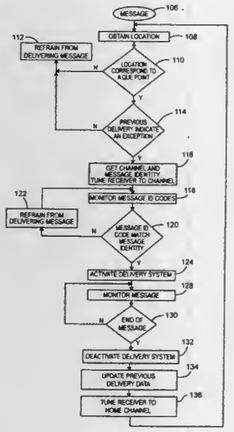
MESSAGE DELIVERY SYSTEM AND METHOD THEREFOR

Jerome F. Snyder, and Francis G. Fuson, both of Las Vegas, Nev., assignors to Rotec, A Nevada General Partnership, Las Vegas, Nev.

Filed Apr. 13, 1994, Ser. No. 227,070

Int. Cl.[6] H04B *1/00;7/00*

U.S. Cl. 455—517 **24 Claims**



1. A method for distributing messages through a mobile unit, said method comprising the steps of:

a) obtaining a current location for said mobile unit, said mobile unit being capable of traveling within an area along a substantially unspecified route;

b) determining, in response to said location, a message identity;

c) detecting a beginning of message code;

d) activating a message delivery system in response to said beginning of message code;

e) delivering a message corresponding to said message identity;

f) detecting an end of message code; and

g) deactivating said message delivery system in response to said end of message code.

5,649,301

MOBILE COMMUNICATION METHOD FOR CONTROLLING ORIGINATION OR TERMINATION OF A CALL IN A DESIRED NETWORK

Masami Yabusaki, Iruma; Yasuo Maruyama, Yokosuka; Shoichi Hirata, Tokorozawa; Hiroshi Nakamura, Iruma; Yasuyuki Uchiyama, Chofu; Hiroshi Tsukahara, Tokorozawa, and Eriko Takemoto, Tottori, all of Japan, assignors to NTT Mobile Communications Network, Inc., Tokyo, Japan

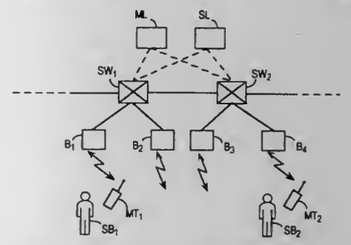
PCT No. PCT/JP93/01496, § 371 Date Jun. 17, 1994, § 102(e) Date Jun. 17, 1994, PCT Pub. No. WO94/09600, PCT Pub. Date Apr. 28, 1994

PCT Filed Oct. 18, 1993, Ser. No. 244,944

Claims priority, application Japan, Oct. 19, 1992, 4-279909; Oct. 21, 1992, 4-282896; Oct. 27, 1992, 4-288763; Feb. 10, 1993, 5-022748; Mar. 5, 1993, 5-044237; May 24, 1993, 5-121050

Int. Cl.[6] H04B *7/24*

U.S. Cl. 455—433 **8 Claims**



8. A mobile communication control method wherein each of plural communication networks accommodates a switching center and a plurality of communicatioo terminals, including plural mobile units, of different communication capabilities and, when receiving a terminating call for a mobile unit in each network, the switching center obtains mobile location information of said mobile unit by reference to a mobile unit location register and alerts said mobile unit; said method comprising the steps of:

(A) registering, from each communication terminal, a terminal class, indicating the communication capability of said each communication terminal, in a mobile unit location register in correspondence to said each communication terminal;

(B) registering in a subscriber location register, in correspondence to each of a plurality of subscribers, an identifying number of a mobile unit which receives a call for each subscriber; and

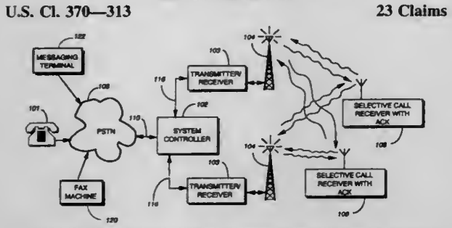
(C) when receiving a terminating call for said each subscriber, said switching center detects said registered mobile unit identifying number by reference to said subscriber location register and a visited area of said mobile unit and the terminal class thereof by reference to said mobile unit location register and alerts said mobile unit according to said terminal class.

5,649,302

METHOD AND APPARATUS FOR IDENTIFYING AN INBOUND MESSAGE IN A RADIO COMMUNICATION SYSTEM

Douglas Irvin Ayerst, Delray Beach; Malik Khan, Lake Worth, and Michael James Rudowicz, Delray Beach, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 27, 1994, Ser. No. 364,343
Int. Cl.[6] H04B *7/26*
U.S. Cl. 370—313 **23 Claims**



1. A method for use in a radio communication system having a synchronous outbound signaling protocol, the method comprising, within a system controller, the steps of:

scheduling an outbound selective call address and an outbound message, wherein each is scheduled at a position within a transmission cycle of the synchronous outbound signaling protocol which is uniquely identifiable;

storing the outbound selective call address and the outbound message, and storing the position of a predetermined one of the outbound selective call address and the outbound message; and

transmitting the outbound selective call address and the outbound message within the transmission cycle,

wherein the method further comprises, within a selective call transceiver having at least one embedded selective call address, the steps of:

receiving the transmission cycle;

generating within the selective call transceiver an inbound address when the outbound selective call address matches a predetermined portion of one of the at least one embedded selective call address, the inbound address being determined from the position within the transmission cycle of the predetermined one of the outbound selective call address and the outbound message;

including the inbound address in an inbound message when the inbound message is transmitted within a predetermined response period after the outbound message is received; and

transmitting the inbound message, and

wherein the method further comprises, within the system controller, the steps of:

receiving the inbound message; and

identifying the inbound message based on the inbound address included in the inbound message and the position within the transmission cycle which is stored in said step of storing.

5,649,303

METHOD AND APPARATUS FOR REDUCING INTERFERENCE AMONG COMMUNICATION SYSTEMS

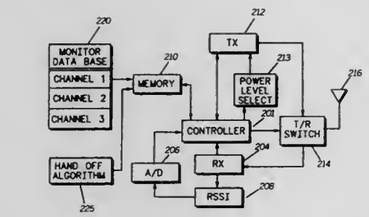
Garry C. Hess, Elgin, and Karen A. Brailean, Park Ridge, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 300,612, Sep. 2, 1994, abandoned. This application Apr. 10, 1996, Ser. No. 629,455
Int. Cl.[6] H04B *17/02*
U.S. Cl. 455—63 **8 Claims**

8. A method, comprising the steps of:

providing a communication unit which transmits signals on a first frequency used by a first communication system;

providing the communication unit with a list of communication channels for monitoring, the list of communication channels



including a control channel used by a second communication system operating independently from the first communication system;

monitoring, by the communication unit, the control channel for communication activity which indicate potential communication on a second frequency with which the communication unit would interfere if transmitting on the first frequency; and

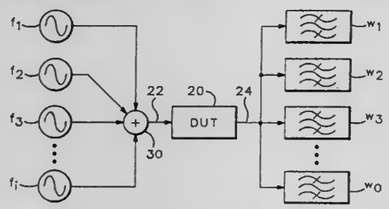
automatically taking action with respect to subsequent transmissions of signals on the first frequency in order to reduce the likelihood of interference between the first and second independent communication systems, in response to communication activity on the control channel.

5,649,304

METHOD AND APPARATUS FOR COMMUNICATING AUXILIARY INFORMATION IN A MEASUREMENT SIGNAL

Richard C. Cabot, Lake Oswego, Oreg., assignor to Audio Precision, Inc., Beaverton, Oreg.

Continuation of Ser. No. 86,550, Jul. 1, 1993, abandoned, which is a continuation of Ser. No. 764,142, Sep. 20, 1991, abandoned. This application Apr. 7, 1995, Ser. No. 419,058
Int. Cl.[6] H04B *17/00*
U.S. Cl. 455—67.4 **12 Claims**



1. A method for communicating auxiliary information, such as the identity of persons, places and things, in conjunction with measuring the signal transfer characteristics of a signal transfer device under test, said device under test having an input and an output, comprising the steps of:

(a) defining a plurality of unique combinations of substantially sinusoidal test signals selected so as to determine the signal transfer characteristics of said device under test and to represent said auxiliary information, wherein said auxiliary information comprises the identity of the source of said test signals;

(b) applying one of said unique combinations of test signals to the input of said device under test;

(c) measuring the spectral characteristics of the output of said device under test to determine the signal transfer characteristics of said device under test; and

(d) extracting said auxiliary information from the output of said device under test by identifying which of said unique combinations of test signals is present at the output of said device under test.

5,649,305

MEMORY CALL ORIGINATION SYSTEM FOR AUTOMATICALLY ORIGINATING A CALL TO A CALLING PARTY

Toshio Yoshida, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 28, 1994, Ser. No. 365,310
Claims priority, application Japan, Dec. 28, 1993, 5-335279
Int. Cl.[6] H04B *1/38*
U.S. Cl. 455—70 **9 Claims**



9. A method for controlling a communication device which receives a channel signal including a first identification number of a destination and a second identification number of a calling station in a common control channel to set a communication channel between said calling station and said destination, and which receives a first speech signal in a speech channel, said communication device having a memory call origination, the method comprising the steps of:

detecting whether or not said first identification number included in said common control channel coincides with an assigned number;

extracting said second identification number from said control channel signal;

storing said second identification number temporarily when said first identification number coincides with said assigned number;

recording said first speech signal included in said communication channel and a second speech signal supplied by a callee of said communication device in response to a record command signal; and

transferring said second identification number stored temporarily to another memory in response to said record command signal.

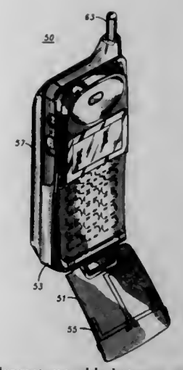
5,649,306

PORTABLE RADIO HOUSING INCORPORATING DIVERSITY ANTENNA STRUCTURE

Louis Jay Vannatta, Crystal Lake; Kirk W. Dailey, Chicago, and Randall S. Vaas, Lake Zurich, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 16, 1994, Ser. No. 308,054
Int. Cl.[6] H04B *7/04*
U.S. Cl. 455—575 **14 Claims**

1. A diversity antenna structure for a radio having radio circuitry operative in a radio communication system, the radio having a first movable housing element and a second housing element, the first



movable housing element movable between an extended position and a closed position and a substantial portion of the radio circuitry disposed within the second housing element, said antenna structure comprising:

a first antenna disposed in the first movable housing element and operative when the first movable housing element is in the extended position;

a second antenna disposed in the second housing element and operative when the first movable housing element is in the closed position;

a third antenna disposed in the second housing element, and operative when the first movable housing element is in the extended position and when the first movable housing element is in the closed position; and

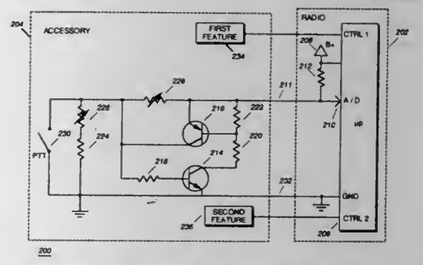
a first switch device operatively coupled to the first housing element, said first antenna, said second antenna, and the radio circuitry, said switch device selectively coupling one of said first antenna and said second antenna to the radio circuitry, wherein said switch device is responsive to the position of said first movable housing element for switching in said first antenna when the first housing element is in the extended position and for switching in said second antenna when the first housing element is the closed position.

5,649,307

METHOD AND APPARATUS FOR OPTION CONTROL IN A RADIO ACCESSORY

Joseph Patino, Pembroke Pines, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 28, 1995, Ser. No. 506,984
Int. Cl.[6] H04B *1/38*
U.S. Cl. 455—575 **10 Claims**



1. A method of controlling first and second accessory features between an accessory and a radio:

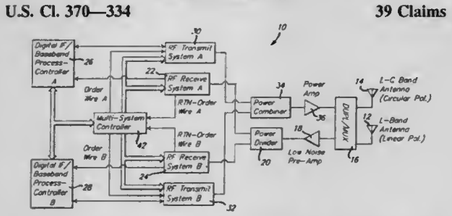
providing an A/D line between the accessory and the radio;
monitoring the A/D line from the radio;
depressing a push-to-talk (PTT) switch at the accessory to provide a first voltage range to the A/D line;
releasing the PTT switch at the accessory to provide a second voltage range to the A/D line;
adjusting a first accessory feature by varying a voltage within the first voltage range; and
adjusting a second accessory feature by varying a voltage within the second voltage range.

5,649,308

MULTIFORMAT AUTO-HANDOFF COMMUNICATIONS HANDSET

Scott Andrews, Long Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Continuation of Ser. No. 48,045, Apr. 12, 1993, abandoned. This application Nov. 2, 1995, Ser. No. 556,863
Int. Cl.[6] H04B *1/38*
U.S. Cl. 370—334 **39 Claims**



1. A multiformat auto-bandoff communications handset to support communications and handoffs between multiple signal formats at multiple carrier frequencies, said multiformat auto-handoff communications handset comprising:

antenna means for receiving and transmitting the multiple signal formats at the multiple carrier frequencies, said antenna means for simultaneously receiving a first RF receive signal and a second RF receive signal and for simultaneously transmitting a first RF transmit signal and a second RF transmit signal;

first broadband RF receive means for down converting the first RF receive signal into a first IF receive signal, said first broadband RF receive means including a first quadrature LO generator operable to produce a first pair of quadrature signals substantially 90° out of phase of each other over a frequency range of between about 800 MHz to 2.4 GHz, first broadband RF transmit means for up converting a first IF transmit signal into the first RF transmit signal, and first IF processor means for demodulating multiple signal formats of the first IF receive signal and for modulating multiple signal formats of the first IF transmit signal;

second broadband RF receive means for down converting the second RF receive signal into a second IF receive signal, said second broadband RF receive means including a second quadrature LO generator operable to produce a second pair of quadrature signals substantially 90° out of phase of each other over a frequency range of between about 800 MHz to 2.4 GHz, second broadband RF transmit means for up converting a second IF transmit signal into the second RF transmit signal, and second IF processor means for demodulating multiple signal formats of the second IF receive signal and for modulating multiple signal formats of the second IF transmit signal; and

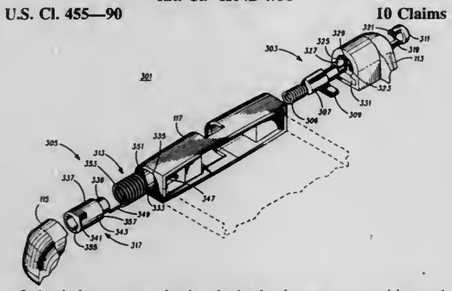
multisystem controller means for initiating and completing handoffs between the multiple signal formats at the multiple carrier frequencies.

5,649,309

WIRELESS COMMUNICATION DEVICE HAVING AN AXIALLY ALIGNED COVER RELEASE MECHANISM

Scott Robert Wilcox, Palatine; Brian Jon Hassemer, Gurnee, and Stephen John Gaynes, Wonder Lake, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 18, 1995, Ser. No. 443,938
Int. Cl.[6] H04B *1/38*
U.S. Cl. 455—90 **10 Claims**



1. A wireless communication device having an open position and a closed position, the wireless communication device comprising:

a cover provided with a first cavity;

a body provided with a second cavity;

a hinge joining the cover and the body along an axis, the hinge including,

a leaf spring located in the second cavity and fixed to the body, the leaf spring having a bump; and

a cam located the first cavity and the second cavity and rotatably fixed to the cover, the cam having a surface in rotatably slideable contact with the leaf spring and the second cavity, the cam further having a short lobe and a long lobe located on the surface;

wherein the short lobe and the bump secure the cover in the closed position, and the long lobe and the bump hold the cover in the open position; and

an opening mechanism aligned along the axis and in contact with the cover and the body, wherein the opening mechanism urges the cover from the closed position.

5,649,310

SIGNAL TRANSLATION AND AMPLIFICATION SYSTEM INCLUDING A THERMAL RADIATION PANEL COUPLED THERETO

Randall D. Tyner, Mountainview; Donald C. Briggs, Cupertino; Daniel E. Collins, Redwood City, and William R. Avellino, Los Altos Hills, all of Calif., assignors to Space Systems/Loral, Inc., Palo Alto, Calif.

Filed Jun. 15, 1994, Ser. No. 259,987
Int. Cl.[6] H04B *7/185;* **H01J** *23/033;25/34*
U.S. Cl. 455—129 **14 Claims**

6. An RF signal translation and amplification system, comprising:

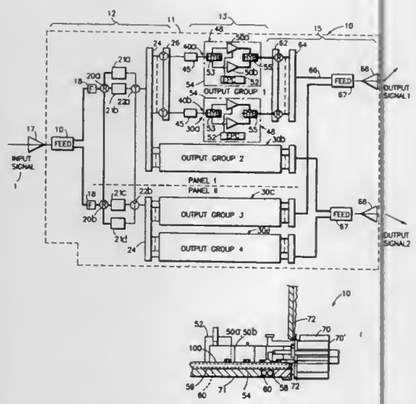
at least one receive antenna for receiving RF energy transmissions, said at least one receive antenna having an output coupled to an input of individual ones of a pair of traveling wave tubes (TWTs), each of said individual ones of said pair of TWTs comprising a respective radiator component that is thermally coupled to a collector of the corresponding TWT for providing a primary path of radiating heat into space;

at least one transmit antenna for transmitting amplified RF energy transmissions, said at least one transmit antenna having an input respectively coupled to a corresponding output of individual ones of said pair of TWTs;

one electronic power conditioner (EPC) module having outputs respectively coupled to individual ones of said pair of TWTs; and

a support assembly to which at least said individual ones of said pair of TWTs and said EPC are mounted, said support assembly comprising a radiator panel that is thermally coupled along a first major surface thereof to said individual ones of said pair of TWTs and to said EPC for providing a separate path of transferring thermal energy therefrom, said radiator panel comprising thermal transfer means for transferring the thermal energy from said first major surface to a second, opposite major surface whereat the thermal energy is radiated into space; wherein

said thermal transfer means is comprised of a first plurality of embedded heat pipes disposed within a first plane and in a parallel relationship with respect to one another, and a second plurality of embedded heat pipes disposed within a second plane that is parallel to the first plane and in a parallel relationship with respect to one another and in an orthogonal relationship to said first plurality of embedded heat pipes, wherein each embedded heat pipe contains a respective plurality of coolant fluid-containing channels.

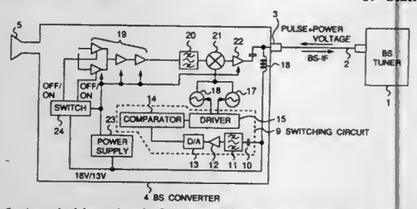


5,649,311

SWITCHING CIRCUIT FOR A SATELLITE BROADCASTING CONVERTER CAPABLE OF ASSURING A HIGH SENSITIVITY

Junichi Somei, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 5, 1995, Ser. No. 464,560
Claims priority, application Japan, Apr. 25, 1995, 7-099285
Int. Cl.[6] H04B *1/18;3/44*
U.S. Cl. 455—188.1 **19 Claims**



1. A switching circuit for a satellite broadcasting converter for switching between a plurality of local oscillators which have respective different oscillation frequencies, the plurality of local oscillators being provided in the satellite broadcasting converter and being switched according to a pulse signal transmitted from a satellite broadcasting tuner, the pulse signal including a frequency band switching pulse signal selectively superimposed on a power voltage, comprising:

a filter circuit, coupled to the pulse signal from the satellite broadcasting tuner, for extracting only a frequency component of the frequency band switching pulse signal and outputting an extracted pulse signal;

an amplifier circuit, coupled to said filter circuit, for amplifying the extracted pulse signal and outputting an amplified pulse signal;

a rectifying circuit, coupled to said amplifier circuit, for rectifying the amplified pulse signal;

a comparator circuit, coupled to said rectifying circuit, for comparing a DC voltage output by said rectifying circuit with a reference voltage and outputting a comparison signal representing whether or not the frequency band switching pulse signal is superimposed on the power voltage; and

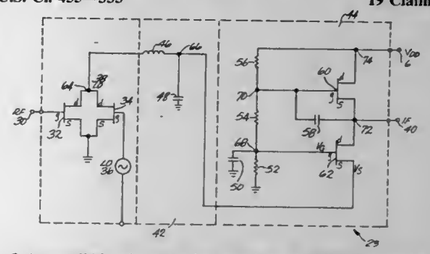
a drive circuit, coupled to said comparator circuit, for driving a respective one of the plurality of local oscillators having a respective oscillation frequency selected in accordance with the comparison indicative of a result of comparison by said comparator circuit.

5,649,312

MMIC DOWNCONVERTER FOR A DIRECT BROADCAST SATELLITE LOW NOISE BLOCK DOWNCONVERTER

Wayne Kennan, Palo Alto, Calif., assignor to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 14, 1994, Ser. No. 337,842
Int. Cl.[6] H04B *1/28*
U.S. Cl. 455—333 **19 Claims**



1. A monolithic microwave integrated circuit (MMIC) downconverter for providing lower frequency output signals derived from radio frequency input signals, comprising:

a mixer circuit for producing sum and difference frequency signals from an oscillator signal and a radio frequency signal from the input signals;

a low pass filter for selecting an intermediate frequency signal from one of the sum and difference frequency signals; and

an active load and amplifier circuit for amplifying the intermediate frequency signal for the output signal, the active load and amplifier circuit providing both a DC bias current passing through the active load and amplifier and the mixer circuit and a DC bias voltage to the mixer circuit while maintaining the DC bias voltage substantially insensitive to the DC current through the active load and amplifier circuit.

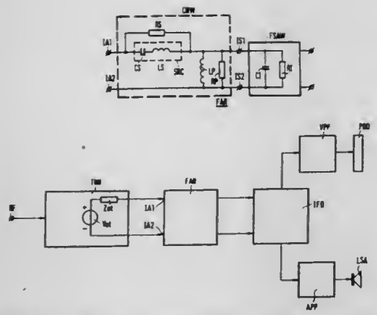
5,649,313

TELEVISION RECEIVER WITH SAW FILTER COUPLING UTILIZING A SERIES RESONANCE NETWORK AND ADDITIONAL RESISTOR

Peter J. H. Rutten, and Eduard F. Stikvoort, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 19, 1995, Ser. No. 574,799
Claims priority, application European Pat. Off., Dec. 23, 1994, 94203747
Int. Cl.[6] H04B *1/16;* **H03H** *9/64*
U.S. Cl. 455—339 **7 Claims**

1. A receiver comprising:



a tuner for converting a reception signal into an intermediate frequency signal;

a filter arrangement for filtering the intermediate frequency signal to obtain a filtered intermediate frequency signal; and

a demodulation section for providing a baseband signal in response to the filtered intermediate frequency signal;

characterized in that the filter arrangement comprises:

a surface acoustic wave filter with two input terminals;

an inductor coupled between the two input terminals;

a series resonance network coupled to transfer the intermediate frequency signal to at least one of the two input terminals; and

a resistor coupled between the two input terminals.

5,649,314

SELECTIVE RADIO PAGING RECEIVER WITH BATTERY SAVING OPERATION

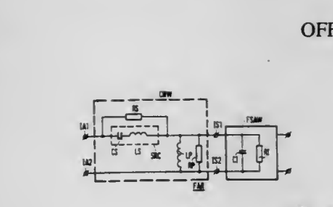
Kazumori Yamada, Shizuoka, and Masahiro Matai, Tokyo, both of Japan, assignors to NEC Corporation, Japan

Filed Apr. 13, 1995, Ser. No. 421,068

Claims priority, application Japan, Apr. 13, 1994, 6-073681

Int. Cl.[6] H04B *1/10*

U.S. Cl. 455—343 **10 Claims**



1. A selective radio paging receiver comprising:

local oscillation means for generating a local oscillation signal;

frequency conversion means for mixing a radio paging signal and said local oscillation signal to convert said radio paging signal into a low frequency signal;

wave shaper means for binary-coding said low frequency signal and thereby converting it into a digital signal;

power supply timing signal generating means for regularly generating a power supply timing signal defining a battery saving period;

battery saving means for terminating power supply at least for said local oscillation means, said frequency conversion means and said wave-shaper means during said battery saving period defined by said power supply timing signal, said battery saving means including:

first power supply circuit responsive to occurrence of said power supply timing signal to supply a predetermined first voltage to said local oscillation means for a given period, wherein said first power supply circuit supplies the power of said first voltage to said local oscillation means after a predetermined time from the occurrence of said power supply timing signal; and

second power supply circuit for supplying a power of a second voltage lower than said first voltage to said local oscillation means, frequency conversion means and wave shaper means for a period form expiration of said given period to termination of said power supply timing signal.

5,649,315

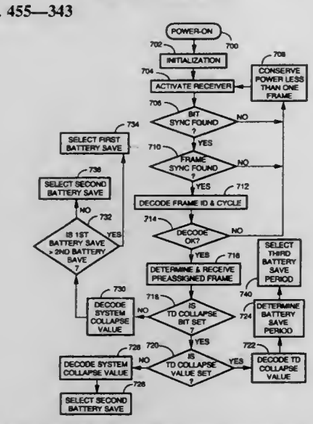
METHOD FOR SELECTING BETWEEN FIRST, SECOND AND THIRD BATTERY SAVING PERIODS IN A SELECTIVE CALL

Eric Thomas Eaton, Lake Worth, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 21, 1995, Ser. No. 531,505

Int. Cl.[6] H04B *1/16*

U.S. Cl. 455—343 **12 Claims**



1. In a selective call receiver for conserving power having a first battery saving period, a method for selecting battery saving periods, comprising the steps of:

receiving and obtaining synchronization to selective call signals having a multiplicity of frames;

determining a first occurrence of a preassigned frame of the multiplicity of frames;

receiving the preassigned frame of the multiplicity of frames, each of the multiplicity of frames has a system collapse value for designating a second battery saving period, and a TD collapse bit and a TD collapse value for designating third battery saving period;

decoding the TD collapse bit, the TD collapse value and the system collapse value being transmitted in the selective call signals;

calculating the third battery saving period from the TD collapse value; and

selecting between the second battery saving period and the third battery saving period in response to the TD collapse value and the TD collapse bit.

5,649,316

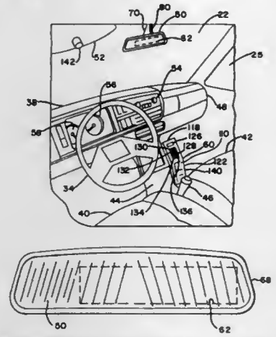
IN-VEHICLE ANTENNA

Dennis C. Prudhomme, Bloomingdale, and Eugene Propp, Evanston, both of Ill., assignors to Elden, Inc., Elmhurst, Ill.

Filed Mar. 17, 1995, Ser. No. 406,111

Int. Cl.[6] H05K *11/02*

U.S. Cl. 455—345 **11 Claims**



1. A cellular telephone system for use in vehicles, comprising:

a vehicle antenna-housing connected to a vehicle;

a telephone antenna secured to and encased and positioned within and surrounded by the vehicle antenna-housing;

said telephone antenna having substantially planar aligned outwardly-diverging telephone antenna sections, each telephone antenna section having a cross section increasing stepwise towards a central portion of the telephone antenna;

a cellular telephone having a transceiver comprising a handset;

a power supply comprising a vehicle battery connected to the cellular telephone; and

a coaxial cable for connecting the telephone antenna to the cellular telephone.

5,649,317

MOBILE RADIO RECEIVER

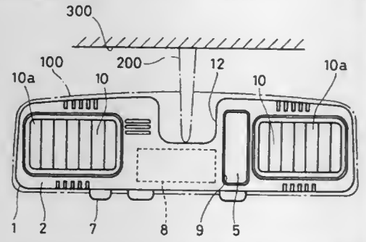
Tadaoki Suzuki, Tokyo, Japan, assignor to Nippon Celint Company, Ltd., Tokyo, Japan

Filed Apr. 18, 1995, Ser. No. 423,694

Claims priority, application Japan, Apr. 25, 1994, 6-004372 U

Int. Cl.[6] H04B *1/06*; H05K *11/02*

U.S. Cl. 455—345 **3 Claims**



1. A mobile radio receiver for attachment to a rear view mirror of a vehicle wherein the rearview mirror has a planar front side having a mirror and a planar reverse side oppositely facing the front side, the receiver comprising:

a case incorporating a radio receiving section, a reception circuit section, a reception display section, and a power supply battery and having outer dimensions no greater than outer dimensions of the mirror of the front side of the rearview mirror;

mounting members arranged such that said case is detachably mounted and fixed on said rearview mirror such that the outer dimensions do not extend beyond the outer dimensions of the mirror on the front side of the rearview mirror; and

a solar panel arranged on said case such that a light-receiving surface of said solar panel is set at a predetermined position on a front side of said case wherein said radio receiving section is arranged on the front side of said case and designed to receive a radio wave from the front side of said case.

5,649,318

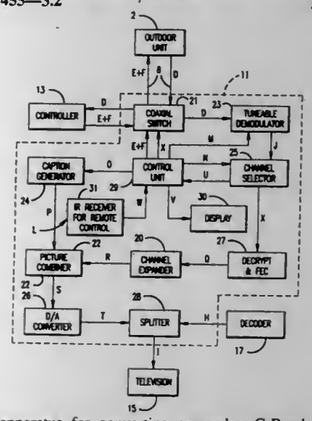
APPARATUS FOR CONVERTING AN ANALOG C-BAND BROADCAST RECEIVER INTO A SYSTEM FOR SIMULTANEOUSLY RECEIVING ANALOG AND DIGITAL C-BAND BROADCAST TELEVISION SIGNALS

Bruce B. Lusignan, Palo Alto, Calif., assignor to Terrastar, Inc., Chicago, Ill.

Filed Mar. 24, 1995, Ser. No. 409,981

Int. Cl.[6] H04N *5/262*

U.S. Cl. 455—3.2 **31 Claims**



1. An apparatus for converting an analog C-Band broadcast receiving system into a system for simultaneously receiving analog C-Band broadcast television signals and digital C-Band broadcast television signals, in which the analog C-Band broadcast receiving system includes an antenna, and an analog receiver for converting the received signal to a television ready signal selected by a user, the apparatus being coupled between the antenna and the analog receiver and between the analog receiver and a video device, said apparatus comprising:

a) a control unit having a digital operating mode and an analog operating mode, receiving a mode command from the user for switching the apparatus into either the analog operating mode for receiving the analog C-Band broadcast television signals or into the digital operating mode for receiving the digital C-Band broadcast television signals, receiving a digital channel selection command from the user indicating which digital television channel should be output in the digital operating mode, outputting a digital channel selection signal, and outputting a transponder selection signal;

b) a switch having an input being coupled to the antenna for receiving the signal, having a first output being coupled to said analog receiver, having a second output, having a control input being coupled to the control unit, whereby the control unit controls the switch via the control input so that the received signal is output to the second output in the digital operating mode and the received signal is output to the first output in the analog operating mode;

c) a demodulator being coupled to the second output of the switch, receiving the received signal in the digital operating mode, receiving the transponder selection signal from the

control unit, and demodulating a bit sequence from the received signal at a carrier frequency specified by the transponder selection signal;

d) a channel selector receiving the bit sequence from the demodulator, receiving the digital channel selection signal from the control unit, and demultiplexing the bit sequence to form a selected compressed digital television signal;

e) a channel expander receiving the selected compressed digital television channel and decompressing the selected compressed digital television signal to form a selected digital television signal;

f) a digital-to-analog converter receiving the selected digital television signal and converting the selected digital television signal into an analog television-ready signal; and

g) an output coupler being coupled to the video device, receiving the analog television-ready signal from the digital-to analog converter in the digital operating mode, and receiving an additional analog television-ready signal from said analog receiver in the analog operating mode, and outputting the analog television-ready signal from the digital-to analog converter in the digital operating mode and outputting the additional analog television-ready signal in the analog operating mode.

5,649,319

RECEIVER WITH AUTOMATIC TUNING FUNCTION

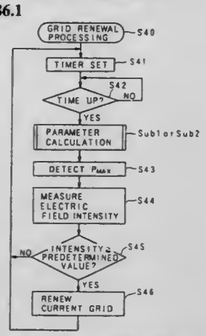
Toshiyuki Kimura; Yutaro Ishikawa; Shinichi Abe; Kazuhiro Kamiya, and Takashi Miyake, all of Kawagoe, Japan, assignors to Pioneer Electronic Corporation, Tokyo-to, Japan

Division of Ser. No. 402,813, Mar. 13, 1995, Pat. No. 5,584,061. This application May 28, 1996, Ser. No. 654,191

Claims priority, application Japan, Mar. 14, 1994, 6-42862; Jan. 18, 1995, 7-6042

Int. Cl.[6] H04B *1/16*

U.S. Cl. 455—186.1 **7 Claims**



1. A receiver with automatic tuning function comprising:

means for dividing an area where broadcasting stations exist into a plurality of blocks and storing block information relating to the blocks;

means for storing station information relating to each of the broadcasting stations located in the block in association with the block information of the block;

means for storing block information of a current block and blocks surrounding the current block;

means for selecting one of the plurality of broadcasting stations located in the current block by referring to the station information associated with the block information of the current block;

means for receiving electric wave from the broadcasting station selected;

means for judging receiving condition of the electric wave and outputting a judgement signal; and

means for renewing the current block, comprising

means for allowing said receiving means to receive electric waves from all of the broadcasting stations located in the current block and the surrounding blocks and allowing said judging means to output judgement signals for all of the broadcasting stations; and

means coupled to said judging means for detecting which block, out of the current block and the surrounding blocks, is in a best receiving condition based on the judgement signals and for utilizing the detected block as a new current block.

5,649,320

AUTOMATIC FREQUENCY CONTROL LOOP AND TEMPERATURE COMPENSATION FOR A RECEIVER

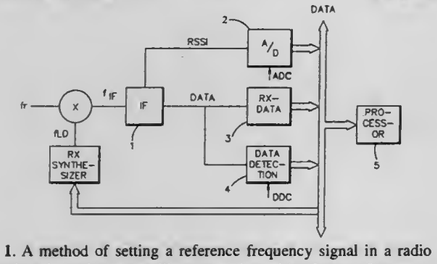
Veijo Korhonen, and Tero Ojanperä, both of Oulu, Finland, assignors to Nokia Mobile Phones Ltd., Salo, Finland

Continuation of Ser. No. 386,212, Feb. 9, 1995, abandoned, which is a continuation of Ser. No. 21,210, Feb. 23, 1993, abandoned. This application Oct. 15, 1996, Ser. No. 730,182

Claims priority, application Finland, Mar. 9, 1992, 921026

Int. Cl.[6] H04B *1/26*

U.S. Cl. 455—196.1 **14 Claims**



1. A method of setting a reference frequency signal in a radio receiver in which an oscillator supplies said reference frequency signal to a synthesizer, and the synthesizer adjusts the receiver to a frequency channel in response to said reference frequency signal, comprising the steps of:

a) incrementally scanning a plurality of frequency increments which span said frequency channel,

b) determining within each increment whether or not a signal indicative of a strength of a received signal frequency is greater than a predetermined threshold, and when a strength indicative signal is detected to be greater than said predetermined threshold and the corresponding received signal frequency is determined to have modulated data thereon, locking on to said corresponding received signal frequency,

c) adjusting the frequency of said reference frequency signal in accordance with ambient temperature information and said corresponding received signal frequency, and

d) maintaining the adjusted frequency of said reference frequency signal substantially constant.

5,649,321

METHOD AND APPARATUS FOR DETERMINING AUDIO BAND ENERGY OF A SQUELCH CIRCUIT INPUT SIGNAL

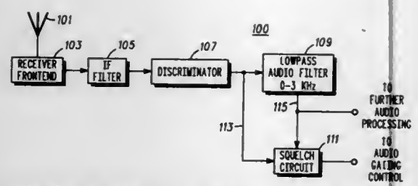
Jane Ann Kellenberger, Bloomingdale, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 5, 1995, Ser. No. 435,359

Int. Cl.[6] H04B *1/10*

U.S. Cl. 455—221 **19 Claims**

1. In a squelch circuit of a communications receiver, a method for determining energy in an audio band of an input signal to the squelch circuit, the method comprising the steps of:



estimating an energy of the input signal in the audio band to produce a first audio energy estimate;

estimating an energy of the input signal in a first portion of the audio band to produce a second audio energy estimate;

when the second audio energy estimate is at least a predetermined proportion of the first audio energy estimate, increasing the first audio energy estimate to produce an updated audio energy estimate; and

when the second audio energy estimate is less than the predetermined proportion of the first audio energy estimate, setting the updated audio energy estimate equal to the first audio energy estimate.

5,649,322

PROCESS FOR THE PREPARATION OF C_1-C_4-ALKYL NITRITES

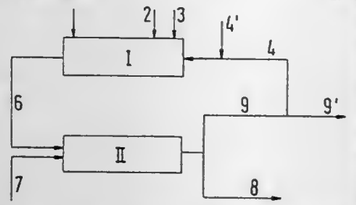
Heinz Landscheidt, Duisburg; Paul Wagner, Düsseldorf; Zoltan Kricsfalussy, Leverkusen, and Alexander Klausener, Köln, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 203,975, Mar. 1, 1994, abandoned. This application Dec. 11, 1995, Ser. No. 571,625

Claims priority, application Germany, Mar. 8, 1993, 43 07 193.7

Int. Cl.[6] C07C *203/02*

U.S. Cl. 558—488 **19 Claims**



1. A process for the preparation of a C_1–C_4-alkyl nitrite by reaction of a C_1–C_4-alkanol with nitrogen oxide and oxygen, in a reactor designed as a scrubber column, at 10° to 150° C. and 0.5 to 6 bar, and at a reaction time of 1 to 500 seconds, wherein the nitrogen oxide and oxygen is fed into the lower part of the reactor, said nitrogen oxide being nitrogen monoxide either alone or in combination with a member selected from the group consisting of N_2O_3, NO_2, N_2O_4 and mixtures thereof, wherein the NO fed is in an amount that is more than 50% of the nitrogen oxide, based on the total gram atoms of Nitrogen in said nitrogen oxide, and wherein said nitrogen oxide is undiluted or diluted with one or more inert gases, the proportion of said inert gas or gases being 0–90% by volume of all gases used, the amount of oxygen being 0.15– 0.3 moles per mole of NO which exceeds the number of moles of NO_2, each mole of dinitrogen tetroxide being counted as two moles of nitrogen dioxide for the purpose of calculating said amounts, and wherein the total amount of C_1–C_4-alkanol used is 0.8 to 2 moles per gram atom of nitrogen in the nitrogen oxide, part of which is used in the lower part of the reactor and part of which is used at the reactor head, wherein said alkanol used at the lower part of the reactor is atomized using an inert gas, the oxygen or both, and is in an amount of 5 to 60% of the total amount of alkanol used, while the remainder of said alkanol is used at the reactor head.

5,649,323

COMPOSITION AND PROCESS FOR THE ENCAPSULATION AND STABILIZATION OF RADIOACTIVE HAZARDOUS AND MIXED WASTES

Paul D. Kalb, 21 Barnes Road, Wading River, N.Y. 11792, and Peter Colombo, 44 N. Pinelake Dr., Patchogue, N.Y. 11772

Filed Jan. 17, 1995, Ser. No. 375,387

Int. Cl.[6] G21F *9/00*

U.S. Cl. 588—8 **10 Claims**

1. A composition which prevents leaching of radioactive, hazardous and mixed waste comprising:

(a) dry waste including radioactive, hazardous and mixed waste having a particle size reduced to not greater than 3,000 microns present in said composition in an amount of from about 10% to about 70% by weight;

(b) a non-biodegradable thermoplastic polymer present in said composition in an amount from about 30% to about 90% by weight; and

(c) an anhydrous, anti-leaching additive capable of forming a precipitate with a component of said dry waste said additive present in said composition in an amount up to about 10% by weight.

5,649,324

PLANT AND PROCESS FOR INCINERATING EXPLOSIVES

John Anthony Fairweather, Nussdorf, Austria; Walter Schulze, Holzminden, Germany, and Markus Laffer, Wimmis, Switzerland, assignors to Bowas-Induplan chemie ges. m.b.h, Salzburg, Austria

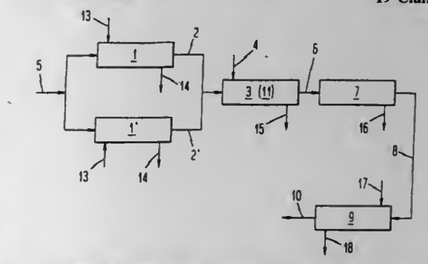
PCT No. PCT/EP92/01415, § 371 Date Dec. 13, 1993, § 102(e) Date Dec. 13, 1993, PCT Pub. No. WO93/00557, PCT Pub. Date Jan. 7, 1993

PCT Filed Jun. 23, 1992, Ser. No. 157,078

Claims priority, application Germany, Jun. 26, 1991, 41 21 133.2

Int. Cl.[6] A62D *3/00*

U.S. Cl. 588—202 **19 Claims**



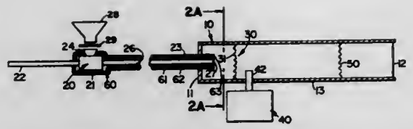
1. A method of deflagrating explosives, wherein the explosives are burnt up in a first deflagration reactor and the flue gases resulting during deflagration are mixed with fresh air fed into the first deflagration reactor, thereby being cooled, to produce a first gas mixture, said first gas mixture then being discharged from the first deflagration reactor, wherein the improvement comprises supplying the first gas mixture (2) discharged from the first deflagration reactor (1) to the combustion chamber (3) of a furnace (11) for the combustion of fuels (4).

5,649,325

APPARATUS AND METHOD FOR BURNING ENERGETIC MATERIAL

Millard M. Garrison, Edina, and Paul L. Miller, Minnetonka, both of Minn., assignors to Alliant Techsystems, Inc., Edina, Minn.

Division of Ser. No. 89,240, Jul. 9, 1993, Pat. No. 5,593,301.
This application May 26, 1995, Ser. No. 451,557
Int. Cl.[6] A62D *3/00*
U.S. Cl. 588—202 **14 Claims**



1. A method for burning combustible material in a burner, the burner having a combustion chamber with an intake end and an exhaust end, means for injecting the combustible material into the chamber, means for igniting the combustible material within the chamber, and means for providing a variance in pressure in the chamber between the intake end and the ignition means, the method comprising the step of:

injecting the combustible material into the intake end of the chamber at a velocity greater than the flame propagation rate of the combustible material, and igniting the combustible material in the chamber, whereby a flame front is generated and held substantially stationary in the chamber adjacent the pressure variance means.

DESIGNS

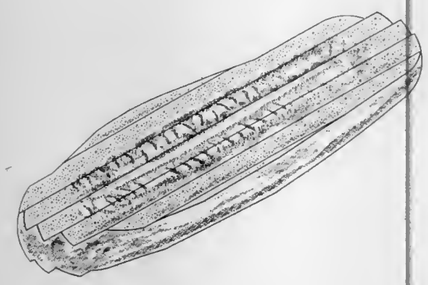
JULY 15, 1997

380,885

PICKLE SLICE

Steven J. Goll, McFarland, Wis., assignor to Oscar Mayer Foods Corporation, Madison, Wis.

Filed Apr. 10, 1995, Ser. No. 37,326
Term of patent 14 years
LOC (6) Cl. 01 - *02*
U.S. Cl. DI—125



380,886

SHAPED PASTA

T. W. Hauser, Eboli, Italy, and Lorenzo Panattoni, Winterthur, Switzerland, assignors to Societe des Produits Nestle S.A., Vevey, Switzerland

Filed Jun. 22, 1995, Ser. No. 40,566
Claims priority, application Hague Agreement, Dec. 23, 1994, DM031619
Term of patent 14 years
LOC (6) Cl. 01 - *01*
U.S. Cl. D1—126



380,887

HAT

Charles Durodola, 1319-B McCllough St., Huntsville, Ala. 35801

Filed May 3, 1995, Ser. No. 38,461
Term of patent 14 years
LOC (6) Cl. 02 - *03*
U.S. Cl. D2—874



380,888

SHOE

Steve McDonald, Portland, Oreg., assignor to Patagonia, Incorporated, Ventura, Calif.

Filed Oct. 4, 1995, Ser. No. 44,978
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—907



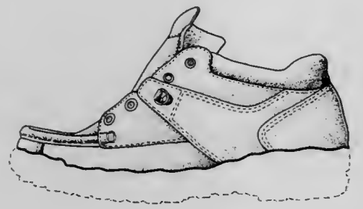
380,889
PAIR OF SHOE SOLES
John S. Earle, Portland, Oreg., assignor to Adidas AG, Germany
Filed Sep. 26, 1995, Ser. No. 44,515
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—957



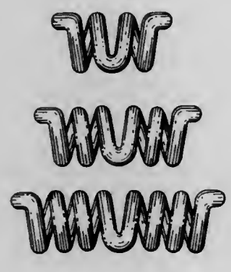
380,890
SHOE UPPER
Martin F. Donnell, Newtonville, Mass., assignor to Reebok International Ltd., Stoughton, Mass.
Filed May 18, 1995, Ser. No. 39,012
Term of patent 14 years
U.S. Cl. D2—969



380,891
SHOE UPPER
Mike Brooks, Nelsonville; Edgar H. Simpson; Theodore A. Kastner, both of Lancaster, and Diana A. Wurfbain, Athens, all of Ohio, assignors to Rocky Shoes & Boots, Inc., Nelsonville, Ohio
Filed May 21, 1996, Ser. No. 54,739
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—969



380,892
SPEED LACE
Rui Paracho, Peabody, Mass., assignor to Fila U.S.A., Inc., Hunt Valley, Md.
Filed May 22, 1996, Ser. No. 54,815
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—978



380,893
CRUTCH CUSHION
Joanne Doby Sigsworth, 4713 Dreyfous Ave., Metairie, La. 70006
Filed Oct. 5, 1995, Ser. No. 46,565
Term of patent 14 years
LOC (6) Cl. 03 - *04*
U.S. Cl. D3—8



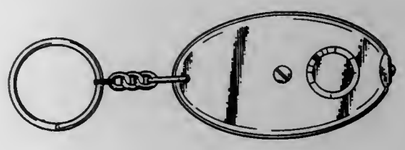
380,894
AXILLARY SUPPORT FOR AN AXILLARY CLUTCH
Anthony D. Stefanelli, Belvidere, and Theodore P. Woerner, Jr., Palatine, both of Ill., assignors to The Second Power, Inc., Belvidere, Ill.
Filed Apr. 9, 1996, Ser. No. 52,818
Term of patent 14 years
LOC (6) Cl. 03 - *03*
U.S. Cl. D3—8



380,895
KEYCHAIN TRANSMITTER CASE
Philip Y. W. Tsui, Mississauga, Canada, assignor to Capital Prospect Ltd., Hong Kong
Filed Dec. 21, 1995, Ser. No. 48,169
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—208



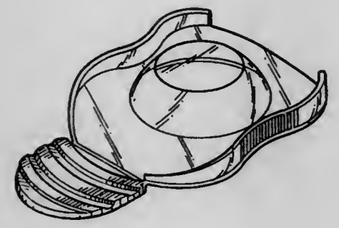
380,896
COMBINED TORCH AND KEY RING
Patrick A.B. Grant, Flichity, United Kingdom, assignor to Grants of Dalvey Limited, Ross-Shire, United Kingdom
Filed Feb. 28, 1996, Ser. No. 50,877
Claims priority, application United Kingdom, Sep. 6, 1995, 2050181
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—208



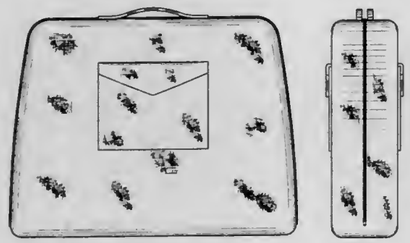
380,897
CARRIER FOR PORTABLE TELEPHONE AND TOOL
Linda Frank, 5784 Heights Rd., Santa Rosa, Calif. 95404
Filed Dec. 26, 1995, Ser. No. 48,302
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—218



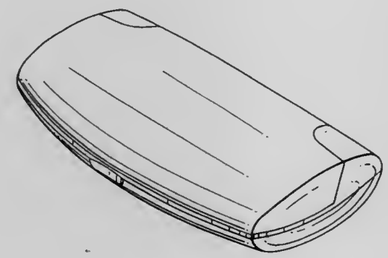
380,898
CONTACT LENS STORAGE CONTAINER
Francis John Lovell, 8 Square De Clignancourt, Paris 75018, France
Continuation of Ser. No. 23,871, Jun. 2, 1994, abandoned.
This application Jan. 26, 1995, Ser. No. 46,776
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—264



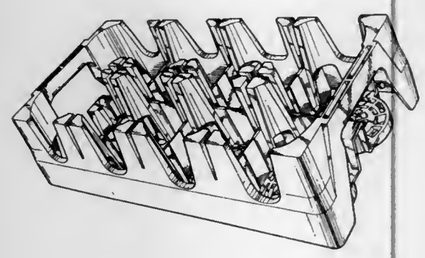
380,899
ZIPPERED LOUNGE CHAIR CARRYING CASE
Martha L. Hockaday, 3084 Purdom Dr., Jacksonville, Fla. 32223
Filed Mar. 4, 1996, Ser. No. 51,159
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—289



380,900
CONTAINER
Michael Thomas Pearson, and Kishen Gohil, both of Surrey, Great Britain, assignors to Unipath Limited, Hampshire, Great Britain
Filed Mar. 22, 1995, Ser. No. 36,576
Claims priority, application United Kingdom, Sep. 23, 1994, 2042111
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—294



380,901
STACKABLE BOTTLE CASE
William P. Apps, Alpharetta, and Gerald R. Koefelda, Atlanta, both of Ga., assignors to Rehrig-Pacific Company, Inc., Los Angeles, Calif.
Continuation-in-part of Ser. No. 34,317, Feb. 1, 1995, which is a continuation-in-part of Ser. No. 919,376, Jul. 29, 1992, Pat. No. 5,529,176, and a continuation-in-part of Ser. No. 18,317, Feb. 3, 1994, Pat. No. Des. 361,431. This application Apr. 13, 1995, Ser. No. 37,469
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—311



380,902
ANTI-FLEX DEVICE FOR SUITCASES HAVING DEFORMABLE SIDEWALLS
Steve Frank Smilanick, 318 Zola Ave., Roseville, Calif. 95678
Filed Feb. 13, 1995, Ser. No. 34,770
Term of patent 14 years
LOC (6) Cl. 03 - *99*
U.S. Cl. D3—319



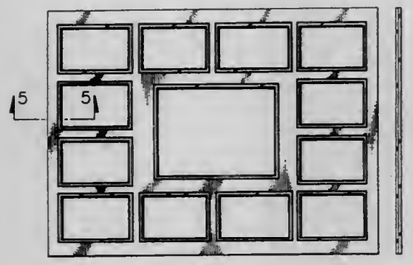
380,903
TOOTHBRUSH
Robert Moskovich, East Brunswick, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.
Continuation-in-part of Ser. No. 406,333, Mar. 22, 1995, and a continuation-in-part of Ser. No. 36,342, Mar. 22, 1995, and a continuation-in-part of Ser. No. 36,341, Mar. 22, 1995. This application Apr. 19, 1995, Ser. No. 37,441
The portion of the term of this patent subsequent to Jun. 11, 2010, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 04 - *02*
U.S. Cl. D4—104



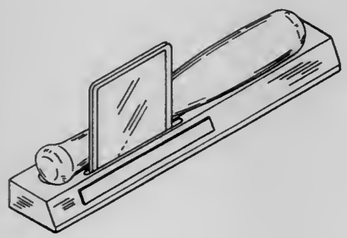
380,904
PORTION OF THE TOP SURFACE OF A SHIRRED TEXTILE FABRIC
Wilbur Schebler, Batesville, Ind., assignor to Batesville Casket Company, Inc., Batesville, Ind.
Filed Feb. 3, 1995, Ser. No. 34,399
Term of patent 14 years
LOC (6) Cl. 05 - *05*
U.S. Cl. D5—52



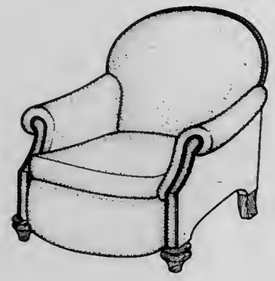
380,905
PHOTOGRAPHIC FRAME
Richard Key, and Eleanor Boose, both of 1557 Venice, Dearborn, Mich. 48124
Filed Nov. 8, 1995, Ser. No. 46,142
Term of patent 14 years
LOC (6) Cl. 06 - *07*
U.S. Cl. D6—302



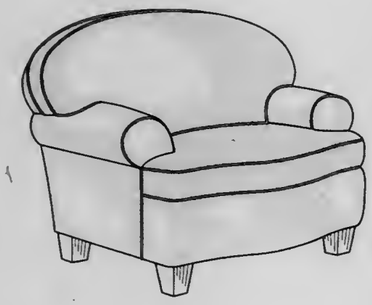
380,906
DISPLAY STAND
Kennon A. White, Advance, N.C., assignor to Season Ticket Collectibles, Inc., Winston-Salem, N.C.
Filed Mar. 6, 1996, Ser. No. 51,230
Term of patent 14 years
LOC (6) Cl. 06 - *07*
U.S. Cl. D6—303



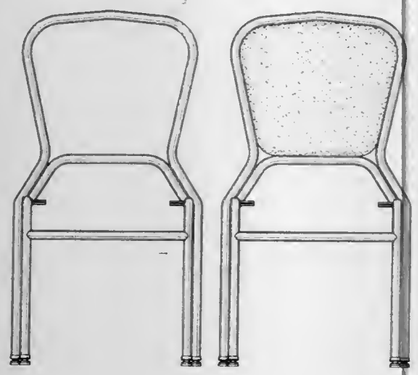
380,907
CHAIR
David Paul Chandler, Jamestown, N.C., assignor to Henredon Furniture Industries, Inc., Morganton, N.C.
Filed Jan. 22, 1996, Ser. No. 49,295
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—334



380,908
CHAIR
Erela M. Gleason, Atherton, Calif., assignor to Summer Hill Ltd., Redwood City, Calif.
Filed Jan. 29, 1996, Ser. No. 49,564
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—334



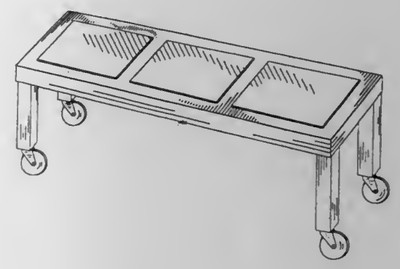
380,909
CHAIR FRAME
Peter Barile, Morristown, Tenn., assignor to Shelby Williams Industries, Inc., Morristown, Tenn.
Continuation-in-part of Ser. No. 40,704, Jun. 23, 1995, Pat. No. Des. 371,010. This application Feb. 16, 1996, Ser. No. 50,390
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—334



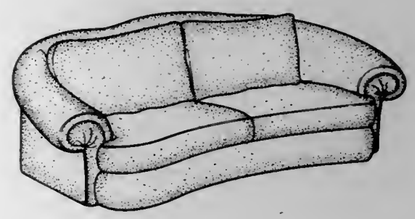
380,910
CHAIR
John C. LeSourd, Bellevue; Michael C. Goode, Kirkland; Curtis L. Ohrt, Redmond, and Terrence J. Kelly, Woodinville, all of Wash., assignors to Allegro Innovations, Inc., Woodinville, Wash.
Filed Oct. 6, 1995, Ser. No. 46,576
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—338



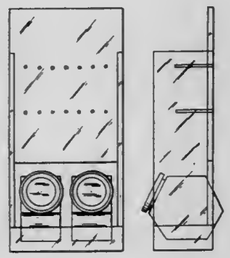
380,911
BENCH
Glendon Robert Good, 2000 Second St., Berkeley, Calif. 94710
Filed Feb. 2, 1996, Ser. No. 50,582
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—349



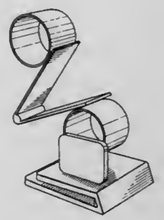
380,912
SEAT
Robert A. Gera, Glencoe, Ill., assignor to Universal Furniture Industries, Inc., High Point, N.C.
Filed Sep. 21, 1995, Ser. No. 44,267
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—381

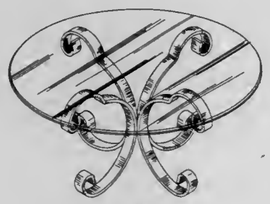


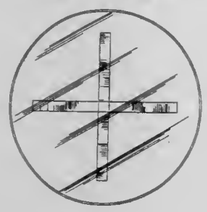
380,913
TUB/CARD DISPLAY STAND
Burton Kozak, 1300 N. Lake Shore Dr. , #28C, Chicago, Ill. 60610
Filed Sep. 18, 1995, Ser. No. 44,106
Term of patent 14 years
LOC (6) Cl. 06 - *06*
U.S. Cl. D6—449



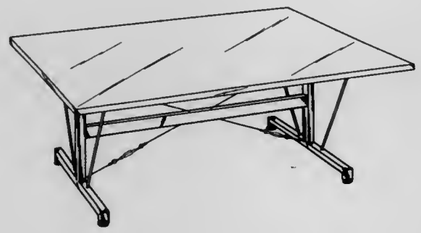
380,914
DISPLAY STAND FOR WRIST WATCHES
Alain Dostie, Ile Bizard, and Allan Sandler, Dollard des Ormeaux, both of Canada, assignors to Algar Plastics (Canada) Ltd., St.-Laurent, Canada
Filed Feb. 13, 1996, Ser. No. 50,778
Term of patent 14 years
LOC (6) Cl. 06 - *99*
U.S. Cl. D6—466





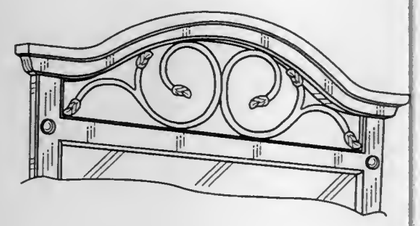


380,915
DECORATIVE TABLE
John Y. Dadabay, 2415 Mountain View Dr., Boise, Id. 83706
Filed Mar. 5, 1996, Ser. No. 51,208
Term of patent 14 years
LOC (6) Cl. 06 - *03*
U.S. Cl. D6—480

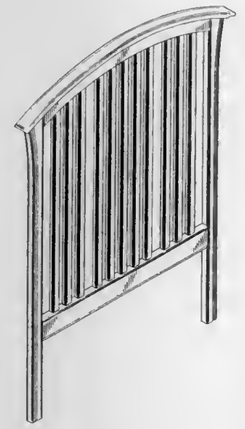


380,916
TABLE
Rory Rehmert, Birmingham, Ala., assignor to Meadowcraft, Inc., Birmingham, Ala.
Filed May 16, 1994, Ser. No. 23,001
Term of patent 14 years
LOC (6) Cl. 06 - *03*
U.S. Cl. D6—488

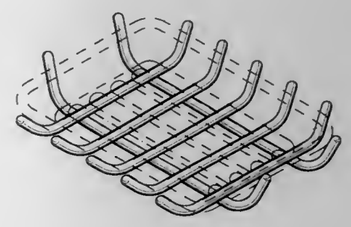
380,917
CASEGOODS HEADER
H. Thomas Keller, and Scott Risdon, both of High Point, N.C., assignors to Vaughan Furniture Company, Galax, Va.
Division of Ser. No. 30,024, Oct. 20, 1994. This application Oct. 31, 1995, Ser. No. 42,769
Term of patent 14 years
LOC (6) Cl. 06 - *06*
U.S. Cl. D6—491



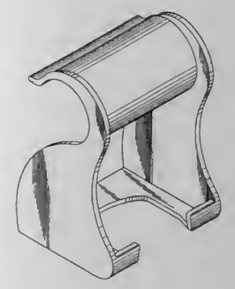
380,918
CRIB ENDBOARD
Merlin A. Brunner, Appleton, and Harvey J. Draheim, Weyauwega, both of Wis., assignors to Simmons Juvenile Products Company, Inc., New London, Wis.
Filed May 29, 1996, Ser. No. 55,093
Term of patent 14 years
LOC (6) Cl. 06 - *06*
U.S. Cl. D6—508



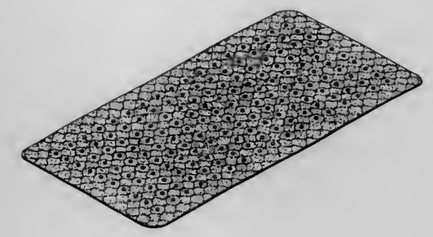
380,919
SOAP DISH
Sheldon H. Goodman, 30905 Stratford, Solon, Ohio 44139, and Harold A. Goodman, Orange Village, Ohio, assignors to Sheldon H. Goodman, Solon, Ohio
Filed Mar. 6, 1996, Ser. No. 51,241
Term of patent 14 years
LOC (6) Cl. 07 - *07*
U.S. Cl. D6—537



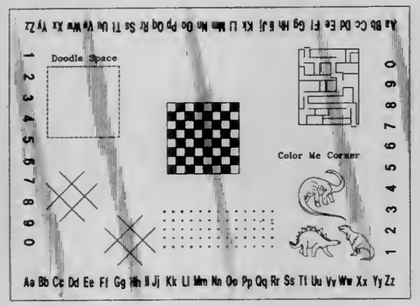
380,920
BASEBALL BAT HOOK
Michael G. Uffner, and Torrence Anderson, both of Naperville, Ill., assignors to Suncast Corporation, Batavia, Ill.
Filed Mar. 5, 1996, Ser. No. 51,176
Term of patent 14 years
LOC (6) Cl. 08 - *08*
U.S. Cl. D6—552



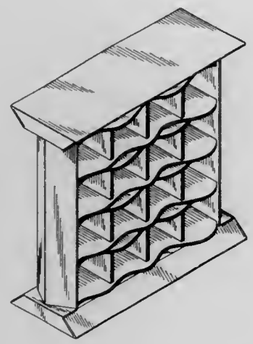
380,921
MAGNETIC MATTRESS PAD
Ray S. Ruscitti, 465 W. Dominion Dr. Apt. 1504, Wood Dale, Ill. 60191
Filed Feb. 20, 1996, Ser. No. 50,441
Term of patent 14 years
LOC (6) Cl. 06 - *09*
U.S. Cl. D6—596



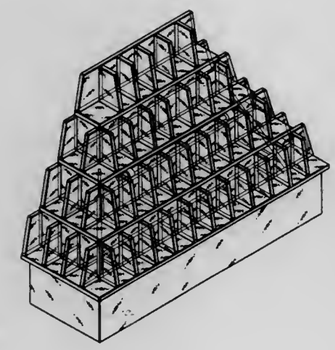
380,922
PLASTIC PLAYTIME TABLECLOTH
Thomas A. Perrotti, and Kathleen M. Reaney, both of 305 New Jersey Ave., Union, N.J. 07083
Filed Sep. 26, 1995, Ser. No. 44,512
Term of patent 14 years
LOC (6) Cl. 06 - *13*
U.S. Cl. D6—618



380,923
COMPACT DISC HOLDER
George Goguen, Cambridge, Mass., assignor to The American Corplexx Company, Inc., Boston, Mass.
Filed Jan. 22, 1996, Ser. No. 49,262
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—629



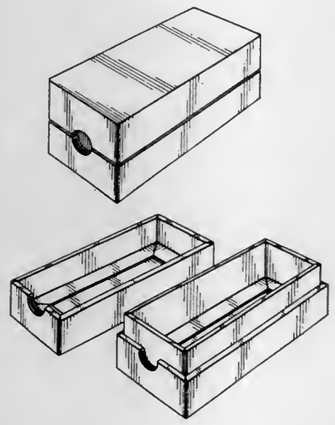
380,924
COMPACT DISC DISPLAY
Beatrix Sternelle, Katharinenstrasse 8, 59348 Lüdinghausen, Germany
Division of Ser. No. 30,210, Oct. 24, 1994, Pat. No. Des. 376,508. This application Apr. 30, 1996, Ser. No. 53,813
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—630



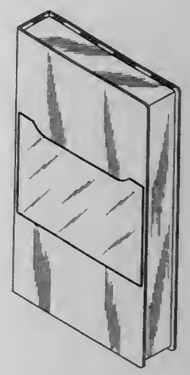
380,925
RACK FOR COMPACT DISKS
Abel Chu, No. 20, Lane 16, Kuohua St., Chiayi City, Taiwan
Filed May 28, 1996, Ser. No. 54,969
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—630



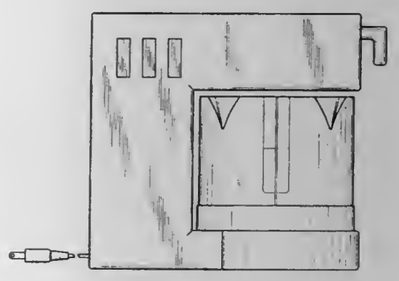
380,926
STORAGE BOX PRIMARILY FOR COMPUTER DISCS
Eric G. Goodburn, 73 Christchurch Close, Edgbaston, Birmingham, United Kingdom; Andrew Kleanthous, 26, Chelsea Close, Harborne, Birmingham, United Kingdom, and Justin F. Reynolds, 2, Avenue Road, Kings Heath, Birmingham, United Kingdom
Filed Jan. 12, 1995, Ser. No. 33,410
Claims priority, application United Kingdom, Jul. 14, 1994, 2040308
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—632



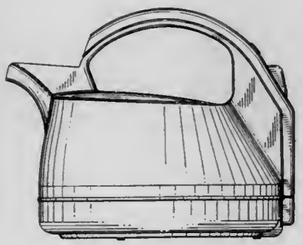
380,927
VIDEO CASE WITH ADVERTISING POUCH FOR COUPONS
Tony Dewayne Williams, and Carla Tracy Williams, both of 2468 Spring Vale Rd., Jacksonville, Fla. 32246
Filed Dec. 22, 1995, Ser. No. 48,238
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—632



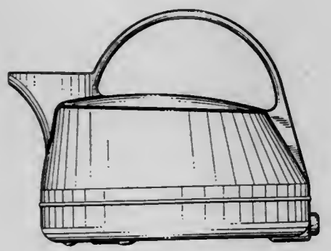
380,928
DOUBLE DOSE COFFEE MAKER
Steve E. Trybus, 7 Sunnyhill Dr., Beaver Falls, Pa. 15010
Filed Jan. 29, 1996, Ser. No. 49,558
Term of patent 14 years
LOC (6) Cl. 07 - *02*
U.S. Cl. D7—309



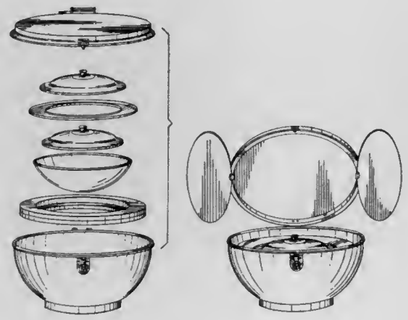
380,929
ELECTRIC KETTLE
David K. Wheeler, Gananoque, Canada, assignor to Black & Decker Inc., Newark, Del.
Filed Jun. 10, 1996, Ser. No. 55,616
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—322



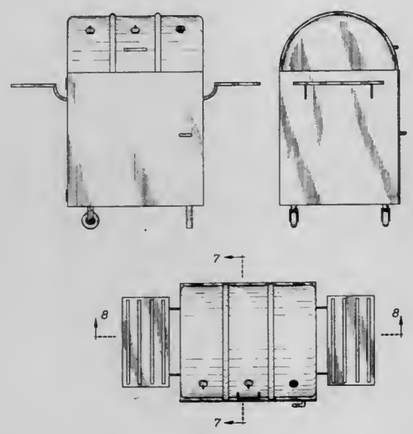
380,930
ELECTRIC KETTLE
David K. Wheeler, Gananoque, Canada, assignor to Black & Decker Inc., Newark, Del.
Filed Jun. 10, 1996, Ser. No. 55,635
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—322



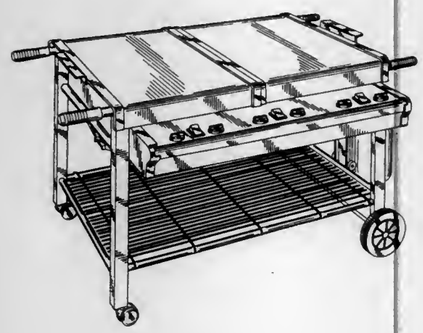
380,931
PORTABLE SOLAR OVEN
Bert Lane, 3675 N. Country Club La., Apt. #208, North Miami, Fla. 33180
Filed Jan. 3, 1996, Ser. No. 48,539
Term of patent 14 years
LOC (6) Cl. 07 - *02*
U.S. Cl. D7—324



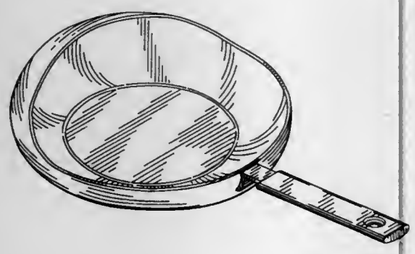
380,932
HEAVY-DUTY COMBINATION SMOKER/GRILL
William P. Duray, 671 Meadow Lane Dr., Richmond Heights, Ohio 44143
Filed Sep. 21, 1995, Ser. No. 44,241
Term of patent 14 years
U.S. Cl. D7—334



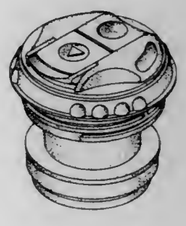
380,933
BARBECUE GRILL
Erich J. Schlosser, Barrington; J. Michael Alden, Palatine; Robert T. Stephen, Barrington, and James C. Stephen, Arlington Heights, all of Ill., assignors to Weber-Stephen Products Co., Palatine, Ill.
Continuation of Ser. No. 38,410, May 5, 1995. This application Jan. 16, 1996, Ser. No. 49,066
Term of patent 14 years
LOC (6) Cl. 07 - *02*
U.S. Cl. D7—334



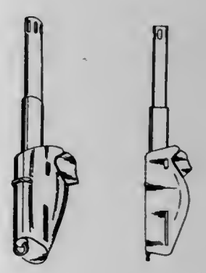
380,934
FRYING PAN
David Alarid, Jr., 1028 N. Fickett St., Los Angeles, Calif. 90033
Filed May 17, 1996, Ser. No. 54,623
Term of patent 14 years
LOC (6) Cl. 07 - *02*
U.S. Cl. D7—354



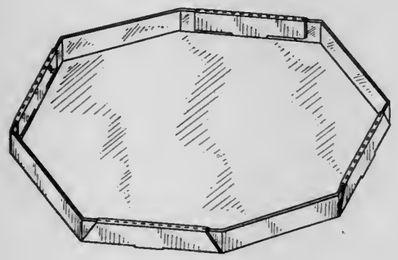
380,935
CAP FOR A DRINK CONTAINER
Nobuyuki Enomoto, Kyoto, Japan, assignor to Nippon Sanso Corporation, Tokyo, Japan
Filed Mar. 29, 1996, Ser. No. 52,438
Claims priority, application Japan, Oct. 4, 1995, 7-29668
Term of patent 14 years
LOC (6) Cl. 07 - *99*
U.S. Cl. D7—392.1



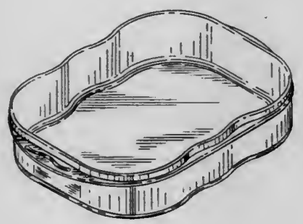
380,936
IGNITER
Kun-Chung Hsu, Shin Chuang, Taiwan, assignor to Chien Sheng Machine Industrial Co., Ltd., Taipei Hsien, Taiwan
Filed May 21, 1996, Ser. No. 54,737
Term of patent 14 years
LOC (6) Cl. 07 - *99*
U.S. Cl. D7—416



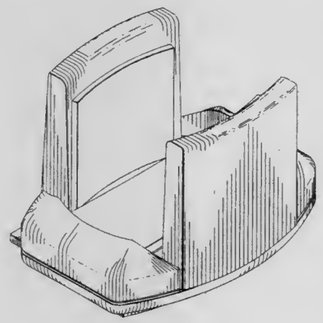
380,937
OVENABLE FOOD TRAY
Alan Beckerman, and Beth Ann Brady, both of Allegheny County, Pa., assignors to Package Products, Inc., Pittsburgh, Pa.
Filed Oct. 10, 1995, Ser. No. 45,140
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—552



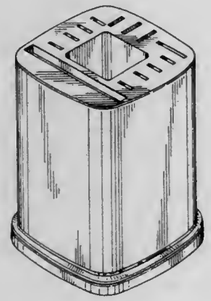
380,938
BREAD TRAY
Erik D. W. Indekeu, Borgerhout, Belgium, assignor to Dart Industries Inc., Orlando, Fla.
Filed Jan. 11, 1996, Ser. No. 53,894
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—554



380,939
CUP HOLDER
Herbert Richter, Drosselweg 8, 75331 Engelbrand, Germany
Filed Jul. 22, 1996, Ser. No. 57,254
Term of patent 14 years
LOC (6) Cl. 07 - *06*
U.S. Cl. D7—619



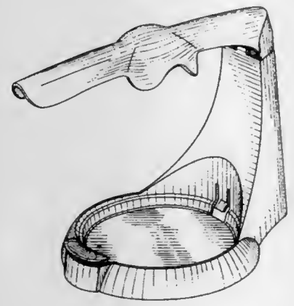
380,940
KITCHEN CADDY
Jamie C. Conner, c/o Source Manufacturing Co., Inc., 191 Post Rd. West, Westport, Conn. 06880
Filed May 29, 1996, Ser. No. 55,095
Term of patent 14 years
LOC (6) Cl. 07 - *06*
U.S. Cl. D7—640



380,941
FOOD PRESS
Hon Nam Wong, 2od Floor, Blocks F & G, Phase 2,Superluck Industrial Centre, 57 Sha Tsui Road, Tsuen Wan, New Territories, Hong Kong, assignor to Hon Nam Wong, and Chu Leung Wong, both of Hong Kong, Hong Kong
Filed Feb. 29, 1996, Ser. No. 50,924
Term of patent 14 years
LOC (6) Cl. 07 - *04*
U.S. Cl. D7—665



380,942
PRESS LEVER FOR CITRUS PRESS
Donald Thackray, Groningen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Apr. 4, 1996, Ser. No. 52,599
Claims priority, application Hague Agreement, Dec. 18, 1995, DMA/003178
Term of patent 14 years
LOC (6) Cl. 07 - *04*
U.S. Cl. D7—666



380,943
CHOPPER
Hon Nam Wong, 2nd Floor, Block F & G, Phase 2, Superluck Industrial Centre, 57 Sha Tsui Road, Tsuen Wan, New Territories, Hong Kong, assignor to Hon Nam Wong, and Chu Leung Wong, both of Hong Kong, Hong Kong
Filed Feb. 29, 1996, Ser. No. 50,913
Term of patent 14 years
LOC (6) Cl. 07 - *06*
U.S. Cl. D7—693



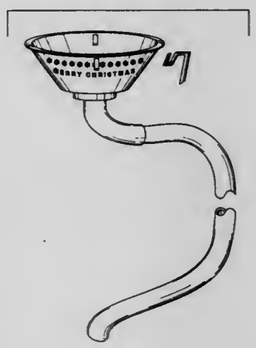
380,944
CUTTING BOARD
James C. Nielsen, P.O. Box 234, LaConner, Wash. 98257
Filed Sep. 12, 1995, Ser. No. 43,797
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—698



380,945
PORTABLE MEAL CARRIER
Myrna R. Alegria, 23351 Via Ronda, and Myronel Coddington, 14052 La Chiquita Dr., both of Mission Viejo, Calif. 92691
Filed Oct. 25, 1995, Ser. No. 45,660
Term of patent 14 years
LOC (6) Cl. 11 - *02*
U.S. Cl. D7—709



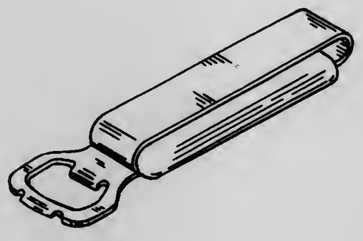
380,946
TREE WATERING DEVICE
David A. Peaphon, 2391 N. Berkshire St., Saginaw, Mich. 48603
Filed Jun. 23, 1995, Ser. No. 40,685
Term of patent 14 years
LOC (6) Cl. 08 - *01*
U.S. Cl. D8—1



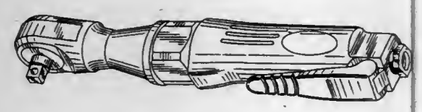
380,947
EDGING ANCHOR
William E. Adams, Portersville, Pa., assignor to Adams Mfg. Corp., Portersville, Pa.
Filed Dec. 22, 1995, Ser. No. 48,193
Term of patent 14 years
LOC (6) Cl. 08 - *01*
U.S. Cl. D8—1



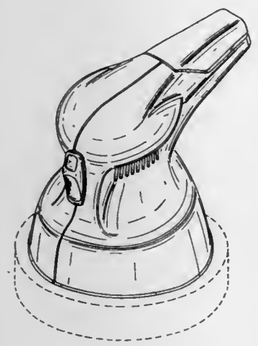
380,948
BOTTLE OPENER
Gregory D. Smith, 1602 Hardie Rd., Greensboro, N.C. 27403
Filed Sep. 29, 1995, Ser. No. 44,717
Term of patent 14 years
LOC (6) Cl. 07 - *99*
U.S. Cl. D8—33



380,949
RATCHET WRENCH
Eric Sung, Ta-Li, Taiwan, assignor to K.K.U. Limited, Tokyo, Japan
Filed Oct. 24, 1995, Ser. No. 45,584
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—61



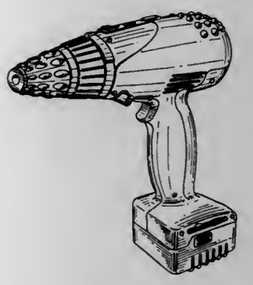
380,950
POLISHER HOUSING
Paul Gildersleeve, Lutherville, Md.; John W. Goodin, Coto de Caza, Calif.; Mark W. Le Beau, Logan, Utah; James D. Marshall, Brockville, and James Schmidt, Whitby, both of Canada, assignors to Black & Decker Inc., Newark, Del.
Continuation of Ser. No. 42,435, Aug. 10, 1995. This application Jan. 22, 1996, Ser. No. 49,289
Term of patent 14 years
LOC (6) Cl. 08 - *01*
U.S. Cl. D8—62



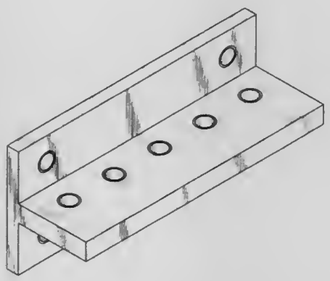
380,951
TELEPHONE WIRE INSTALLATION TOOL
Edward J. Zoiss, Moorpark, Calif., assignor to Harris Corporation, Melbourne, Fla.
Filed Jun. 20, 1995, Ser. No. 40,665
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—68



380,952
CORDLESS DRILL
Young Ghil Kim, Seoul, Rep. of Korea, assignor to LG Industrial Systems Co., Ltd., Seoul, Rep. of Korea
Filed Aug. 28, 1995, Ser. No. 43,378
Claims priority, application Rep. of Korea, Feb. 28, 1995, 95-3417
Term of patent 14 years
LOC (6) Cl. 08 - *01*
U.S. Cl. D8—68



380,953
DOWELING JIG
Floyd Norgaard, 11111 Bluff Rd., Banning, Calif. 92220
Filed May 28, 1996, Ser. No. 54,968
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—71



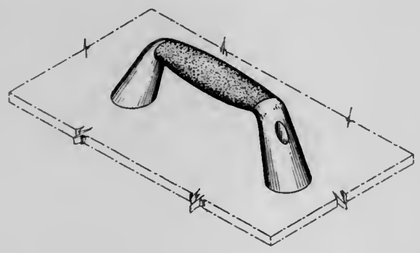
380,954
TELESCOPIC PEN SHAPED MAGNETIC MULTI-PURPOSE SCREW DRIVER
Andrzej Pawlak, 72 Biruta St., New Britain, Conn. 06053
Filed Jan. 26, 1996, Ser. No. 49,472
Term of patent 14 years
LOC (6) Cl. 08 - *04*
U.S. Cl. D8—87



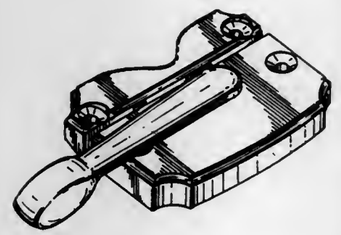
380,955
DOOR HANDLE
Marcel Landry, 735, Notre-Dame Sud, C.P. 315, Robertsonville, Québec, Canada; Renaud Fortier, 111, rue Notre-Dame, Thetford-Mines, Québec, Canada, and Réal Courchesne, 307, rue Ste-Julie, Thetford-Mines, Québec, Canada
Filed Aug. 3, 1995, Ser. No. 42,179
Claims priority, application Canada, May 15, 1995, 1995-1061
Term of patent 14 years
LOC (6) Cl. 08 - *06*
U.S. Cl. D8—306



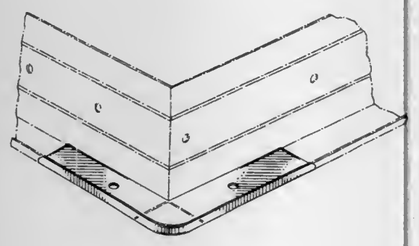
380,956
GRAB HANDLE
Matthew J. Collins, Kingsham, United Kingdom, assignor to Southco, Inc., Concordville, Pa.
Filed Sep. 22, 1995, Ser. No. 44,322
Term of patent 14 years
LOC (6) Cl. 08 - *06*
U.S. Cl. D8—316



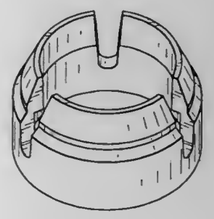
380,957
SASH LOCK
Harold H. Evans, Hudson, Wis.; Jeffrey T. McNamara, Woodbury, Minn., and Franz Werner Jans, Offenbach, Germany, assignors to Andersen Corporation, Bayport, Minn.
Continuation of Ser. No. 44,924, Oct. 3, 1995, abandoned.
This application Apr. 26, 1996, Ser. No. 53,708
Term of patent 14 years
LOC (6) Cl. 08 - *07*
U.S. Cl. D8—337



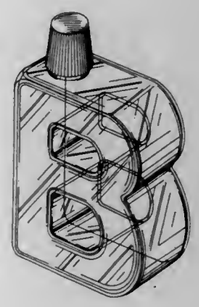
380,958
BACKLESS CORNER SUPPORT
Harold W. Beard, Jr., P.O. Box 5485, Carefree, Ariz. 85377
Filed Oct. 27, 1995, Ser. No. 45,739
Term of patent 14 years
LOC (6) Cl. 08 - *08*
U.S. Cl. D8—349



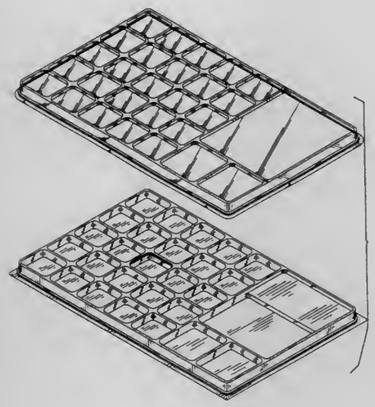
380,959
TOLERANCE RING
Colin Andrew Mitchell, Northamptonshire, England, assignor to The Torrington Company, Torrington, Conn.
Filed Feb. 15, 1996, Ser. No. 50,346
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—354



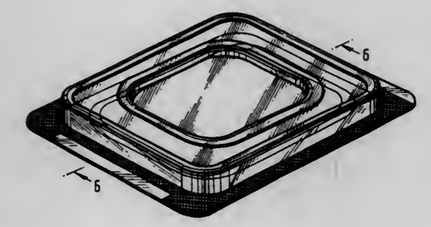
380,960
BOTTLE
Roger D. Blotsky, 16121 W. Trocar Ave., Goodyear, Ariz. 85338
Filed Oct. 16, 1995, Ser. No. 45,274
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—333



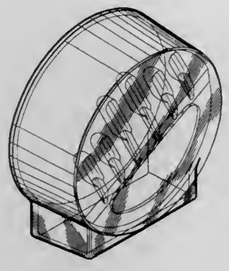
380,961
PARTITIONED CONTAINER
Peter G. Schnack, 357 Sutton Pl., Santa Rosa, Calif. 95407
Filed Mar. 21, 1995, Ser. No. 36,468
The portion of the term of this patent subsequent to Aug. 22, 2009, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 09 - *03*
U.S. Cl. D9—347



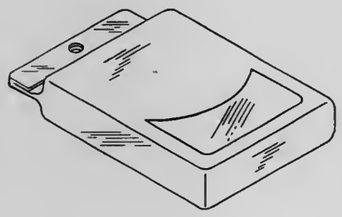
380,962
PACKAGE
David Trigger, Shouldham, England, assignor to Ethical Pharmaceuticals Limited, United Kingdom
Filed Jun. 20, 1995, Ser. No. 40,659
Claims priority, application United Kingdom, Dec. 21, 1994, 2044041
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—415



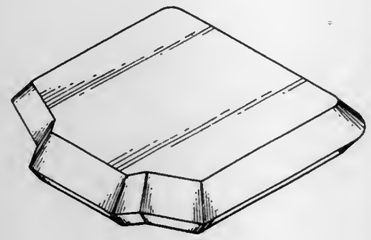
380,963
PACKAGING FOR CABLES
Noel Lee, Daly City, Calif., assignor to Monster Cable International, Ltd., Hamilton, Bermuda
Division of Ser. No. 36,673, Mar. 24, 1995, Pat. No. Des. 372,193. This application Mar. 5, 1996, Ser. No. 51,215
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—415



380,964
FOOD PACKAGE
Diane M. Miller, 31 Watling Way, Columbus, Miss. 39701; Monica Abner, Rte. 5, Box 98, West Point, Miss. 39773, and Frank C. Melio, 46 W. Cottonwood La., Columbus, Miss. 39701
Filed Mar. 28, 1996, Ser. No. 52,383
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—415



380,965
COVERED FOOD CONTAINER
John D. Correli, 8459 Holly Dr., Canton, Mich. 48187
Continuation-in-part of Ser. No. 37,581, Apr. 17, 1995. This application May 16, 1996, Ser. No. 54,523
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—430



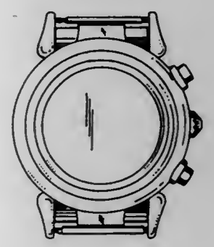
380,966
BOTTLE
John S. Frazer, Barnegat Light, N.J., assignor to Botanicus, Inc., Gaithersburg, Md.
Filed Nov. 14, 1995, Ser. No. 46,396
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—560



380,967
WATCH CASE
Pierre Ludvig, St Nom-la-Breteche, France, assignor to Titan International Marketing Ltd., London, United Kingdom
Filed Jun. 6, 1995, Ser. No. 39,837
Claims priority, application United Kingdom, Apr. 26, 1995, 2047014
Term of patent 14 years
LOC (6) Cl. 10 - *02*
U.S. Cl. D10—30



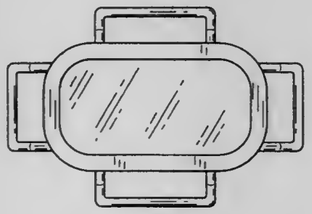
380,968
CHRONOGRAPH CASE
Gabriel Feuvrier, La Chaux-de-Fonds, Switzerland, assignor to Kelek S.A., La Chaux-de-Fonds, Switzerland
Filed Sep. 27, 1995, Ser. No. 44,626
Claims priority, application WIPO, Mar. 28, 1995, DM/033131
Term of patent 14 years
LOC (6) Cl. 10 - *02*
U.S. Cl. D10—30



380,969
WATCH BEZEL AND CASING
John T. Houlihan, Southbury, Conn., assignor to Timex Corporation, Middlebury, Conn.
Filed Apr. 12, 1996, Ser. No. 52,985
Term of patent 14 years
LOC (6) Cl. 10 - *02*
U.S. Cl. D10—30



380,970
WATCHCASE FOR A SHOE
Keith Phillips, and Sylvia Phillips, both of 303 SE. 5th, Pryor, Okla. 74361
Filed Apr. 15, 1996, Ser. No. 53,125
Term of patent 14 years
LOC (6) Cl. 10 - *02*
U.S. Cl. D10—30



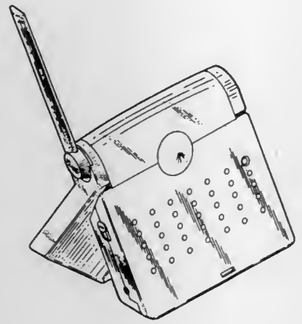
380,971
WRIST WATCH
Barbara Giardiello, Naples, Italy, assignor to Artime SA, Neuchatel, Switzerland
Filed Oct. 24, 1995, Ser. No. 45,599
Claims priority, application Hague Agreement, Apr. 26, 1995, DMA/002911
Term of patent 14 years
LOC (6) Cl. 10 - *02*
U.S. Cl. D10—39



380,972
BATHROOM SCALE
Patrick Juteau, Rumilly, France, assignor to Tefal S.A., Rumilly, France
Filed Apr. 30, 1996, Ser. No. 53,803
Claims priority, application France, Oct. 31, 1995, 95 5959
Term of patent 14 years
LOC (6) Cl. 10 - *04*
U.S. Cl. D10—92

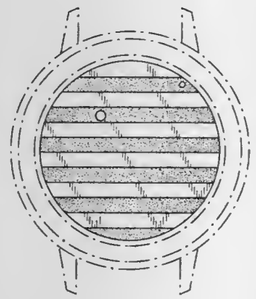


380,973
BABY MONITOR TRANSMITTER
Michael D. Arney, Needham; Carl L. Madore, Allston; Elizabeth P. Goodrich, Roslindale, all of Mass.; Theodore B. Freese, Westminster, and Neil P. Zeller, Littleton, both of Colo., assignors to Gerry Baby Products Company, Thornton, Colo.
Filed Nov. 3, 1995, Ser. No. 45,953
Term of patent 14 years
LOC (6) Cl. 10 - *05*
U.S. Cl. D10—104

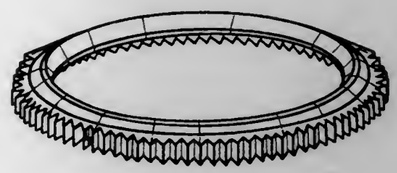


380,974
Patent Not Issued For This Number

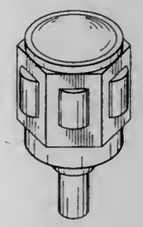
380,975
TIMEPIECE FACE
Philip Luchun, 533 8th St., Brooklyn, N.Y. 11215
Filed Oct. 22, 1993, Ser. No. 14,430
Term of patent 14 years
LOC (6) Cl. 10 - *02*
U.S. Cl. D10—126



380,976
BEZEL FOR A WATCH
John T. Houlihan, Southbury, Conn., assignor to Timex Corporation, Middlebury, Conn.
Filed Apr. 12, 1996, Ser. No. 52,982
Term of patent 14 years
LOC (6) Cl. 10 - *02*
U.S. Cl. D10—128



380,977
WATCH CROWN
Tom Kartsotis, Dallas; Suzanne M. Amundsen, McKinney; Timothy G. Hale, Garland, all of Tex., and Hiroshi Nakahara, Chiba, Japan, assignors to Fossil, Inc., Richardson, Tex.
Filed Jul. 7, 1995, Ser. No. 41,182
Term of patent 14 years
LOC (6) Cl. 10 - *07*
U.S. Cl. D10—131



380,978
EARRING
Randy P. Matye, 6102 Ridge Vale, San Antonio, Tex. 78250
Filed Dec. 22, 1994, Ser. No. 32,655
Term of patent 14 years
LOC (6) Cl. 11 - *01*
U.S. Cl. D11—44

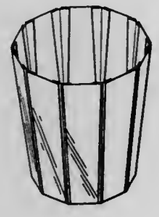


380,979
PENDANT
Paul Perlmutter, 115-27 Mayfair Rd., Kew Gardens, N.Y. 11418
Filed Oct. 2, 1995, Ser. No. 44,837
Term of patent 14 years
LOC (6) Cl. 11 - *01*
U.S. Cl. D11—79

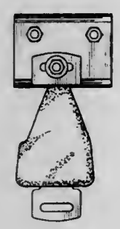


380,980
Patent Not Issued For This Number

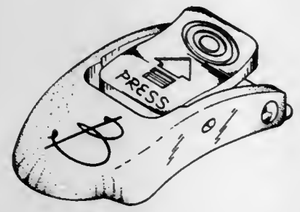
380,981
FLOWER POT COVER
Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Southpac Trust International, Inc., Oklahoma City, Okla.
Continuation-in-part of Ser. No. 808,562, Dec. 16, 1991, Pat. No. Des. 361,297, which is a continuation-in-part of Ser. No. 710,272, Jun. 4, 1991, Pat. No. Des. 365,302, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, Ser. No. 411,249, Sep. 22, 1989, Pat. No. Des. 358,113, Ser. No. 411,247, Sep. 22, 1989, abandoned, and Ser. No. 411,245, Sep. 22, 1989, abandoned. This application Jul. 12, 1995, Ser. No. 41,390
The portion of the term of this patent subsequent to Jul. 18, 2009, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 11 - *02*
U.S. Cl. D11—164



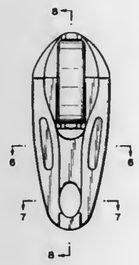
380,982
RELEASABLE BUCKLE FOR ATTACHING A PORTABLE TOOL TO A BELT
Joseph C. Nicholl, 118 Angle In, Farmingdale, N.J. 07727
Filed Dec. 20, 1995, Ser. No. 48,092
Term of patent 14 years
LOC (6) Cl. 02 - *07*
U.S. Cl. D11—216



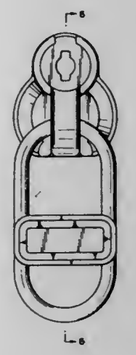
380,983
CLAMPING FASTENER
Chiang-Li Lu, 6, Jia Fu Zhuang 5 Lin, Xi An Village, Da An, Taichung Shien, Taiwan
Filed Apr. 9, 1996, Ser. No. 55,721
Term of patent 14 years
LOC (6) Cl. 02 - *07*
U.S. Cl. D11—216



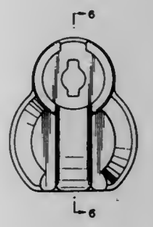
380,984
SLIDE FASTENER
Hiroshi Mizuno, Toyama, Japan, assignor to YKK Corporation, Tokyo, Japan
Filed Dec. 13, 1995, Ser. No. 47,859
Claims priority, application Japan, Jun. 15, 1995, 7-17078
Term of patent 14 years
LOC (6) Cl. 02 - *07*
U.S. Cl. D11—221



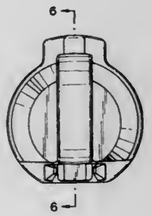
380,985
SLIDE FASTENER
Hiroshi Mizuno, Toyama, Japan, assignor to YKK Corporation, Tokyo, Japan
Filed Mar. 25, 1996, Ser. No. 52,161
Claims priority, application Japan, Sep. 26, 1995, 7-28570
Term of patent 14 years
LOC (6) Cl. 02 - *07*
U.S. Cl. D11—221



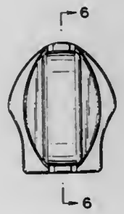
380,986
SLIDE FASTENER SLIDER
Hiroshi Mizuno, Toyama, Japan, assignor to YKK Corporation, Tokyo, Japan
Filed Mar. 25, 1996, Ser. No. 52,162
Claims priority, application Japan, Sep. 26, 1995, 7-28571
Term of patent 14 years
LOC (6) Cl. 02 - *07*
U.S. Cl. D11—221



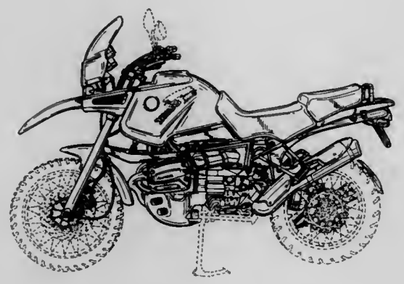
380,987
SLIDE FASTENER SLIDER
Hiroaki Izumi, Kurobe, Japan, assignor to YKK Corporation, Tokyo, Japan
Filed Mar. 25, 1996, Ser. No. 52,163
Claims priority, application Japan, Sep. 26, 1995, 7-28573
Term of patent 14 years
LOC (6) Cl. 02 - *07*
U.S. Cl. D11—221



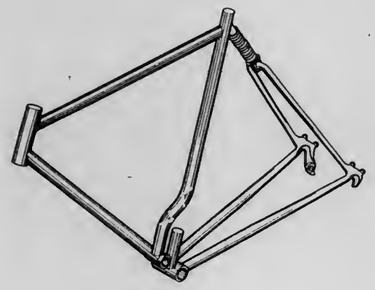
380,988
SLIDE FASTENER SLIDER
Hiroshi Mizuno, Toyama, Japan, assignor to YKK Corporation, Tokyo, Japan
Filed Apr. 30, 1996, Ser. No. 53,809
Claims priority, application Japan, Oct. 31, 1996, 7-32810
Term of patent 14 years
LOC (6) Cl. 02 - *07*
U.S. Cl. D11—221



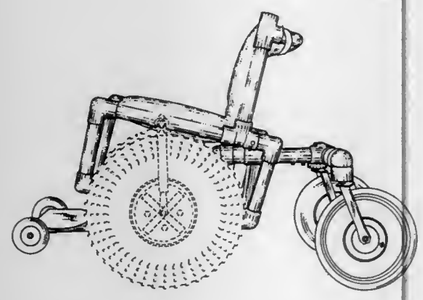
380,989
MOTORCYCLE BODY
Karl-Heinz Abe, Steinebach/Woerthsee, and Klaus Volker Gevert, Munich, both of Germany, assignors to Bayerische Motoren Werke AG, Munich, Germany
Filed Jan. 18, 1994, Ser. No. 17,570
Claims priority, application Germany, Jul. 15, 1993, 93 05 599.4
Term of patent 14 years
LOC (6) Cl. 12 - *11*
U.S. Cl. D12—110



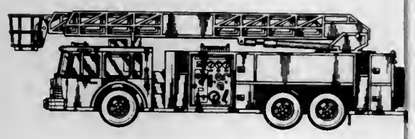
380,990
BICYCLE FRAME
Percy Chien, No. 4, Shen Lih St., Tu Chen Industrial Zone, Tu Chen City, Taipei Hsien, Taiwan
Filed May 14, 1996, Ser. No. 54,472
Term of patent 14 years
LOC (6) Cl. 12 - *11*
U.S. Cl. D12—111



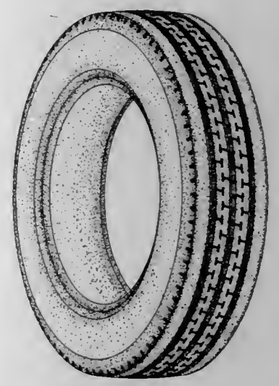
380,991
ALL-TERRAIN WHEELCHAIR
Micheal S. Deming, 141 W. Pinestead Rd., Pensacola, Fla. 32503
Filed Apr. 18, 1995, Ser. No. 37,759
Term of patent 14 years
LOC (6) Cl. 12 - *12*
U.S. Cl. D12—131



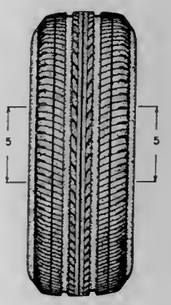
380,992
TOY FIRE TRUCK
John C. McDaniel, 23 Metcalf St., Worcester, Mass. 01609
Filed Dec. 5, 1995, Ser. No. 47,464
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—133



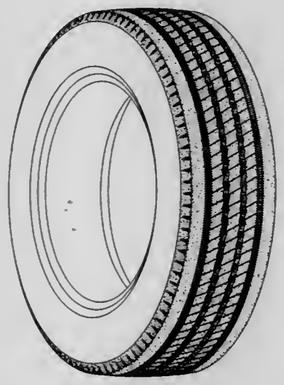
380,993
TIRE
Patrick Lurois, and Susan Marie Nelson, both of Greenville, S.C., assignors to Michelin Recherche et Technique S.A., Granges-Paccot, Switzerland
Filed Apr. 17, 1995, Ser. No. 38,484
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—141



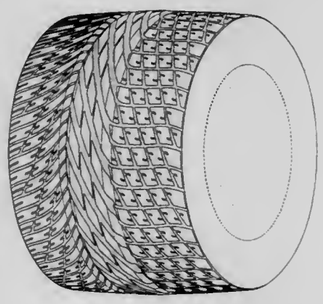
380,994
AUTOMOBILE TIRE
Hisaya Morishita; Junichi Ohtani; Tetsuya Kuze; Toshihiko Suzuki, all of Hiratsuka; Izumi Kuramochi, and Hiroshi Tokizaki, both of Tokyo, all of Japan, assignors to The Yokohama Rubbe Co., Ltd., Tokyo, Japan
Filed Oct. 17, 1995, Ser. No. 45,582
Claims priority, application Japan, May 17, 1995, 7-13511
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—141



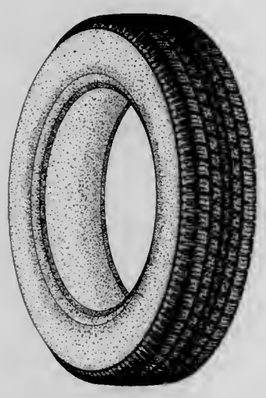
380,995
TIRE
Paul Phillip Grosskopf, Greenville, S.C., assignor to Michelin Recherche et Technique S.A., Granges-Paccot, Switzerland
Filed Aug. 28, 1995, Ser. No. 43,385
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—143



380,996
TIRE TREAD
Randall Raymond Brayer, North Canton, Ohio; Maurice Graas, Reichlange, Luxembourg; Warren Lee Croyle, Wadsworth, Ohio; Douglas Ashley Swift, Hudson, Ohio, and John Janis Taube, Tallmadge, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Division of Ser. No. 5,768, Mar. 11, 1993, Pat. No. Des. 355,154. This application Nov. 21, 1994, Ser. No. 31,305
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—146



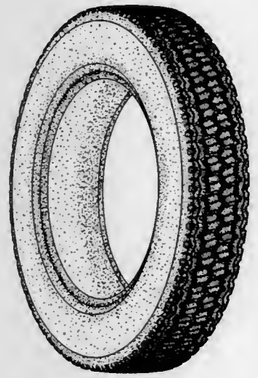
380,997
TIRE
Miroslav Manestar, Barberton, Ohio, assignor to Michelin Recherche et Technique S.A., Granges-Paccot, Switzerland
Filed May 8, 1995, Ser. No. 38,588
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—146



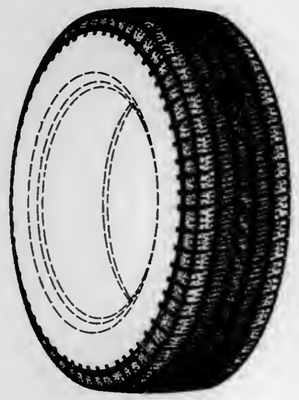
380,998
TIRE TREAD
Timothy J. Lassan, Kent; Bill J. Wallet, Marshallville, and Joseph F. Molnar, Wadsworth, all of Ohio, assignors to Bridgestone/Firestone, Inc., Akron, Ohio
Filed Apr. 24, 1996, Ser. No. 53,540
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—146



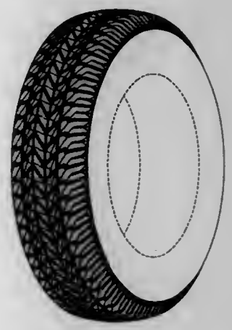
380,999
TIRE
Patrick Lurois, and Susan Marie Nelson, both of Greenville, S.C., assignors to Michelin Recherche et Technique S.A., Granges-Paccot, Switzerland
Filed Apr. 17, 1995, Ser. No. 37,588
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147



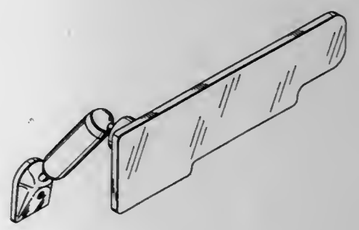
381,000
TIRE TREAD
Timothy Andrew White, Greer, S.C., assignor to Michelin Recherche et Technique S.A., Granges-Paccot, Switzerland
Filed May 22, 1995, Ser. No. 39,156
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147



381,001
TIRE TREAD
John Steven Attinello, Hartville, Ohio, and Kevin Alan Reid, Asheville, N.C., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Feb. 29, 1996, Ser. No. 50,892
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147



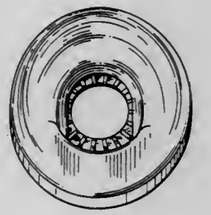
381,002
VEHICLE VISOR ASSEMBLY
Maynard E. Nelson, 160 S. Estates Dr., Salina, Kans. 67401
Filed May 8, 1996, Ser. No. 54,184
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—191



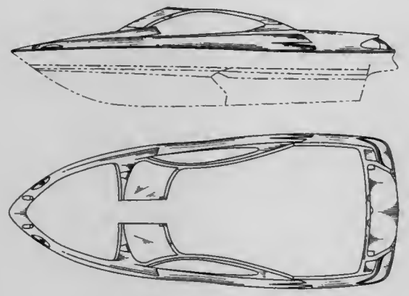
381,003
LICENSE PLATE FRAME
Ming Lih Chiou, No. 165, Chou Kung Street, Yung Kang, Tainan, Taiwan
Filed Sep. 15, 1995, Ser. No. 44,042
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—193



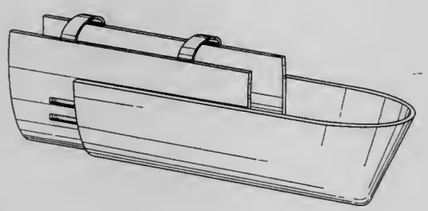
381,004
SHROUD FOR A FILLER NECK CROWN ASSEMBLY
Dean C. Foltz, Shelbyville, Ind., assignor to Stant Manufacturing Inc., Connersville, Ind.
Filed Apr. 21, 1995, Ser. No. 37,868
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—197



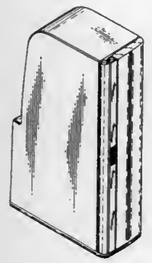
381,005
BOAT SUPERSTRUCTURE
David T. Livingston, 4445 - 54th Ave. SW., Seattle, Wash. 98116
Filed Apr. 10, 1996, Ser. No. 52,944
Term of patent 14 years
LOC (6) Cl. 12 - *06*
U.S. Cl. D12—318



381,006
WINDSHIELD VISOR EXTENSION
Clifford E. Tuday, 3423 Reynoldswood Dr., Tampa, Fla. 33618
Filed Mar. 26, 1996, Ser. No. 52,230
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—417



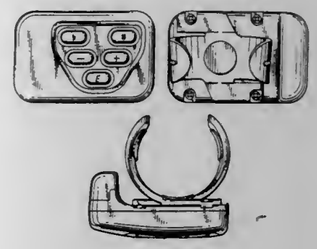
381,007
VEHICLE CABINET
Ferdinand F. Hellhake, Beaverton; Mark S. Hurayt, Aloha, and Joachim Paschke, Portland, all of Oreg., assignors to Freightliner Corporation, Portland, Oreg.
Filed Apr. 9, 1996, Ser. No. 52,804
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—423



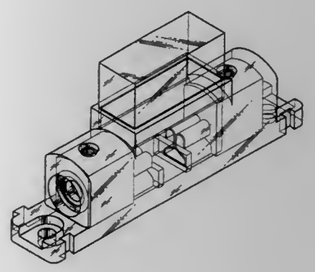
381,008
FIBER-OPTIC CABLE
Natan E. Parsons, 71 Babcock Rd., Brookline, Mass. 02146, and Joel S. Novak, 11 Raynor Rd., Sudbury, Mass. 01776
Filed Dec. 19, 1995, Ser. No. 48,056
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—153



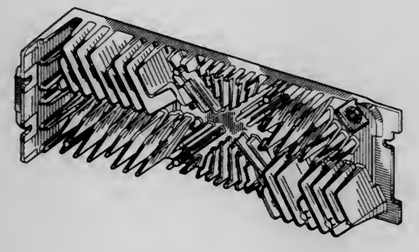
381,009
REMOTE CONTROLLER FOR SOUND EFFECTS
Eiro Nagata, Tokyo, Japan, assignor to Sega Enterprises, Ltd., Tokyo, Japan
Filed Nov. 30, 1995, Ser. No. 47,318
Claims priority, application Japan, Jun. 1, 1995, 7-15533
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—168



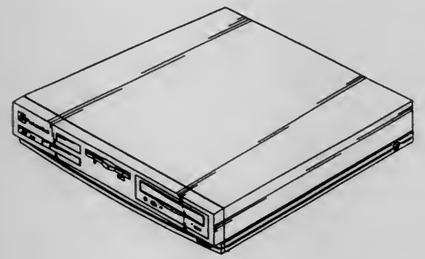
381,010
ELECTRICAL FUSE BLOCK
Micah S. Ansley, Belleair Beach, Fla., assignor to AAMP of Florida, Inc., Clearwater, Fla.
Filed Jun. 15, 1995, Ser. No. 40,317
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—178



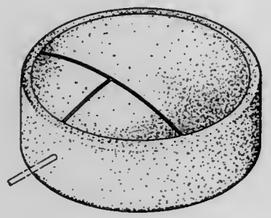
381,011
HEAT SINK
Robert B. Widmayer, Harvard, and Kenneth W. Larson, Elmhurst, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Continuation-in-part of Ser. No. 39,970, Jun. 7, 1995, abandoned, which is a division of Ser. No. 28,537, Sep. 19, 1994, Pat. No. Des. 367,469. This application Mar. 15, 1996, Ser. No. 51,688
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—179



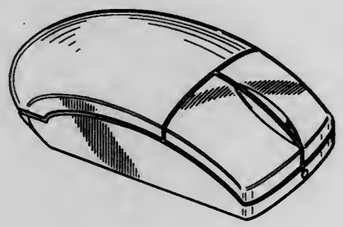
381,012
DESKTOP COMPUTER
Hartmut H. Esslinger, Los Gatos; Mark Friesen, Palo Alto, and Gadi Amit, Mountain View, all of Calif., assignors to Packard Bell Electronics, Inc., Westlake Village, Calif.
Filed Jun. 1, 1995, Ser. No. 39,625
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—100



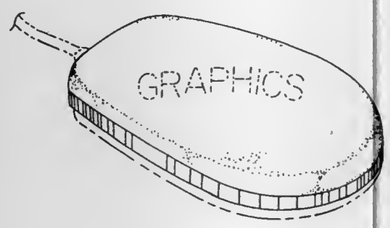
381,013
COMPUTER MOUSE
Najmuddin Allana, 412 S. Spalding Dr., Beverly Hills, Calif. 90012, and Jimmy L. Nguyen, 175 Wilton Dr., Apt. 1, Campbell, Calif. 95008
Filed Mar. 22, 1996, Ser. No. 52,064
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—114



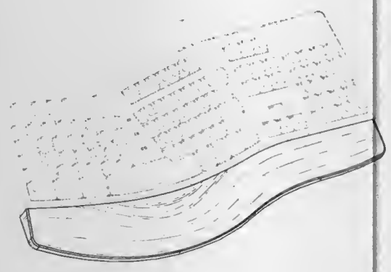
381,014
COMPUTER MOUSE
Herbert Kraus, Cypress, and Thomas Overthun, San Francisco, both of Calif., assignors to Alps Electric (USA) Inc., San Jose, Calif.
Filed Mar. 22, 1996, Ser. No. 52,100
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—114



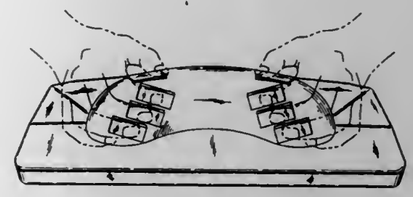
381,015
COMPUTER MOUSE COVER
Richard Q. Morrison, and Phillip J. Morrison, both of 625 Resolano Dr., Pacific Palisades, Calif. 90272
Filed Mar. 27, 1996, Ser. No. 52,270
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—114



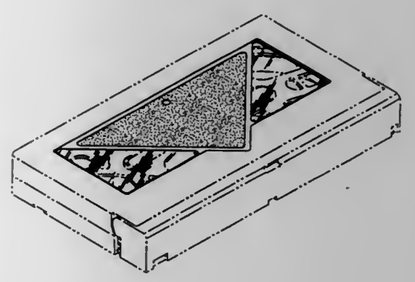
381,016
PALM REST PORTION FOR A KEYBOARD
Mike M. Paull; Steven T. Kaneko, both of Seattle; Thomas E. Davies, Jr., Snohomish, all of Wash.; Jan Hippen, and Penelope Cheng Yao, both of Potland, Oreg., assignors to Microsoft Corporation, Redmond, Wash.
Continuation of Ser. No. 44,052, Sep. 15, 1995, which is a division of Ser. No. 19,133, Feb. 23, 1994, Pat. No. Des. 362,432, which is a continuation-in-part of Ser. No. 10,111, Jun. 25, 1993, Pat. No. Des. 357,476, and a continuation-in-part of Ser. No. 10,112, Jun. 25, 1993, Pat. No. Des. 357,011. This application Mar. 28, 1996, Ser. No. 52,741
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—114



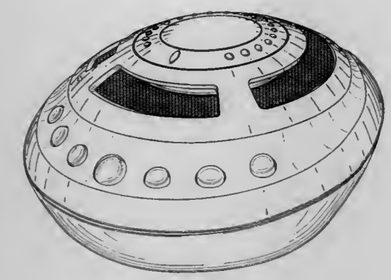
381,017
ERGONOMIC EIGHT KEY CHORD KEYBOARD
James W. Burrell, IV, 2342 Kline Ct., Union, N.J. 07083
Filed Jun. 2, 1995, Ser. No. 39,700
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—115



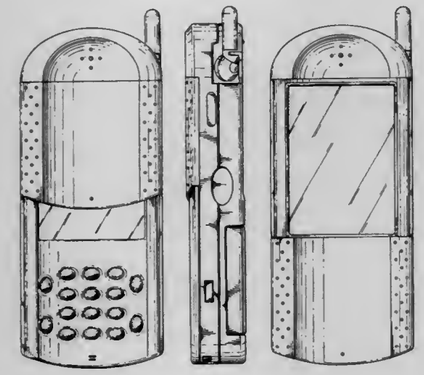
381,018
WINDOW AND LABEL AREA OF A TOP SURFACE FOR A VIDEOCASSETTE
John A. Bailey, Woodbury; Glenn A. Bloomer, Maplewood; Gregory H. Johnson, Oakdale, all of Minn., and Donald J. Staufenberg, Dublin, Ohio, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Apr. 5, 1994, Ser. No. 20,923
Term of patent 14 years
LOC (6) Cl. 14 - *99*
U.S. Cl. D14—121



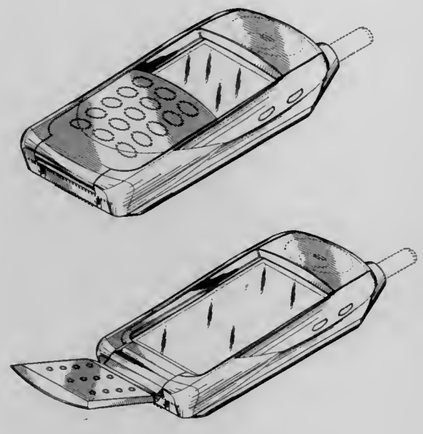
381,019
ENVIRONMENTAL SOUND MACHINE
Ronald L. Muller, Norwalk, and Duane D. Adams, Deep River, both of Conn., assignors to Philips Electronics North America Corporation, New York, N.Y.
Filed May 2, 1996, Ser. No. 53,956
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—124



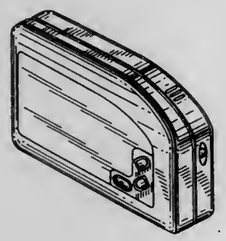
381,020
TELEPHONE WITH SLIDABLE COVER
Daniel K. Harden, and Hiro Teranishi, both of Sunnyvale, Calif., assignors to Mitsubishi Electronics America, Inc., Cypress, Calif.
Filed Jan. 19, 1996, Ser. No. 49,178
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—138



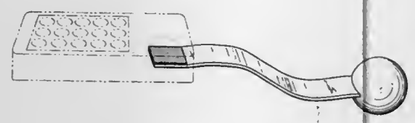
381,021
PORTABLE RADIO COMMUNICATION DEVICE
Daniel L. Williams, Vernon Hills, and Bradley K. Lohrding, Wheeling, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Mar. 13, 1996, Ser. No. 51,574
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—138



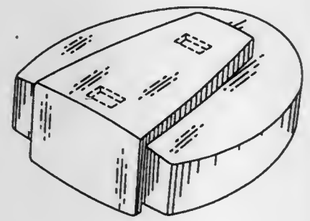
381,022
PAGER
Jouko Tattari, Helsinki, Finland, assignor to Nokia Mobile Phones Limited, Salo, Finland
Filed May 18, 1995, Ser. No. 39,285
Claims priority, application Finland, Nov. 22, 1994, 800/94
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—191



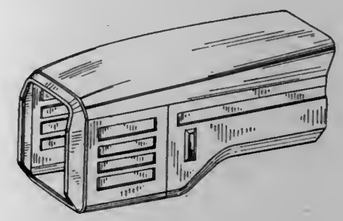
381,023
HAND-HELD INSTRUMENT LOCATOR
Thomas A. Accardo, 109 Cambridge St., Winchester, Mass. 01890
Filed Apr. 14, 1995, Ser. No. 37,509
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—218



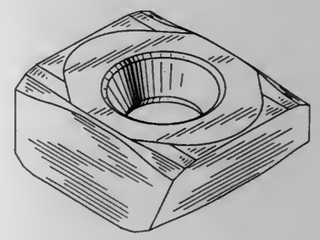
381,024
DIRECTIONAL MICROPHONE
Gregory S. Hinzmann; Mark Starr Kimbrough, both of Austin, Tex.; Jeffrey Phillip McAteer, Fishers, and Christopher T. Welsh, Noblesville, both of Ind., assignors to Lucent Technologies Inc., Murray Hill, N.J.
Filed Jun. 28, 1995, Ser. No. 40,833
Term of patent 14 years
LOC (6) Cl. 14 - *01*
U.S. Cl. D14—225



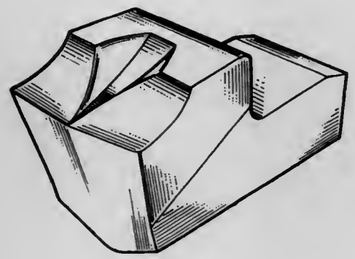
381,025
TRACTOR HOOD
Alain Bataille, Therdonne, France, assignor to Massey Ferguson S.A., Beauvais, France
Filed Jun. 29, 1995, Ser. No. 40,904
Claims priority, application United Kingdom, Dec. 30, 1994, 2044183
Term of patent 14 years
LOC (6) Cl. 15 - *03*
U.S. Cl. D15—31



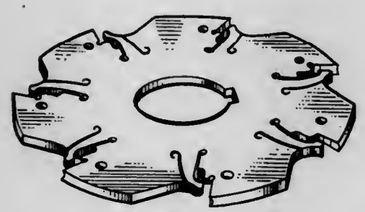
381,026
MILLING CUTTER INSERT FOR FINE MILLING
Ingemar Hessman, and Stefan Roman, both of Sandviken, Sweden, assignors to Sandvik AB, Sandviken, Sweden
Filed Aug. 18, 1994, Ser. No. 27,321
Term of patent 14 years
LOC (6) Cl. 15 - *09*
U.S. Cl. D15—139



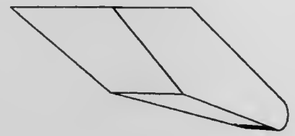
381,027
CUTTING INSERT
Wlajko Mihic, Gävle, Sweden, assignor to Mircona Aktiebolag, Gävle, Sweden
Filed Sep. 20, 1995, Ser. No. 44,218
Claims priority, application Sweden, Mar. 30, 1995, 95-0685
Term of patent 14 years
LOC (6) Cl. 15 - *99*
U.S. Cl. D15—139



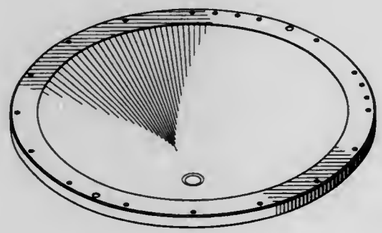
381,028
SIDE MILLING CUTTER
Wlajko Mihic, Gävle, Sweden, assignor to Mircona Aktiebolag, Gavle, Sweden
Filed Sep. 20, 1995, Ser. No. 44,219
Claims priority, application Sweden, Mar. 22, 1995, 95-0598
Term of patent 14 years
LOC (6) Cl. 15 - *99*
U.S. Cl. D15—139



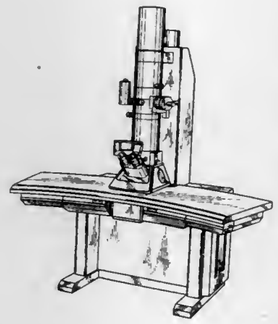
381,029
CUTTING INSERT
Kenneth E. Bartlett, 1514 Young St., Henderson, Ky. 47601
Filed May 10, 1996, Ser. No. 54,207
Term of patent 14 years
LOC (6) Cl. 15 - *09*
U.S. Cl. D15—139



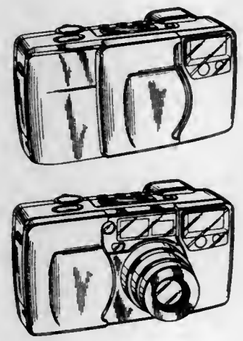
381,030
SPUTTERING TARGET
Avi Tepman, 21610 Rainbow Dr., Cupertino, Calif. 95014
Filed Nov. 21, 1995, Ser. No. 47,081
Term of patent 14 years
LOC (6) Cl. 15 - *09*
U.S. Cl. D15—144



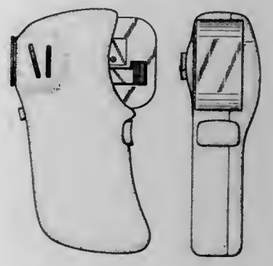
381,031
ELECTRON MICROSCOPE
Tomoyuki Miyata, Mitaka; Atsushi Katayama, Kokubunji; Daiji Tsubol, Kodaira; Hiroyuki Kobayashi, Mito; Hisashi Sato; Sadao Terakado, both of Hitachinaka, all of Japan, and Peter Hohmann, Kirchseeon, Germany, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jul. 27, 1995, Ser. No. 41,935
Term of patent 14 years
LOC (6) Cl. 16 - *01*
U.S. Cl. D16—131



381,032
35 MM CAMERA
Takeshi Matushita, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 7, 1996, Ser. No. 55,574
Claims priority, application Japan, Dec. 8, 1995, 7-37238
Term of patent 14 years
LOC (6) Cl. 16 - *01*
U.S. Cl. D16—209



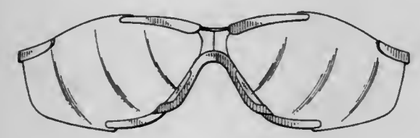
381,033
HAND-HELD FILMSTRIP VIEWER
Allan B. Schwartzberg, 1121 E. 4th St., Brooklyn, N.Y. 11230
Filed Apr. 22, 1996, Ser. No. 52,957
Term of patent 14 years
LOC (6) Cl. 16 - *02*
U.S. Cl. D16—225



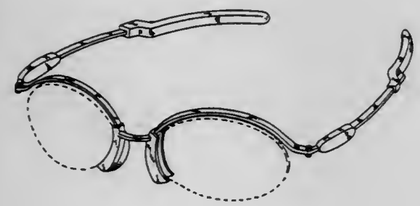
381,034
PROTECTIVE GOGGLES
Klaus Wiedner, Fürth, Germany, assignor to UVEX Winter Optik GmbH, Fürth, Germany
Filed Aug. 24, 1995, Ser. No. 43,045
Claims priority, application WIPO, Mar. 17, 1995, DM 032448
Term of patent 14 years
LOC (6) Cl. 16 - *06*
U.S. Cl. D16—312



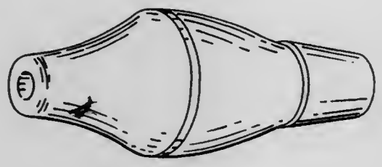
381,035
EYEWEAR LENS FRONT
Henri Brune, Lentilly, France, and Simon M. Conway, Lima, N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.
Continuation-in-part of Ser. No. 30,411, Oct. 28, 1994, Pat. No. Des. 367,492. This application Oct. 12, 1995, Ser. No. 45,209
The portion of the term of this patent subsequent to Feb. 27, 2010, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 16 - *06*
U.S. Cl. D16—314



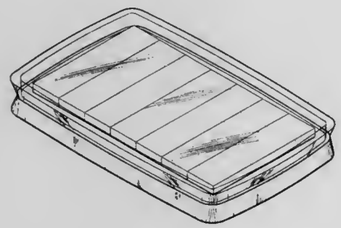
381,036
FRAME FOR SUNGLASSES
Hidehito Kimura, Higashiosaka, Japan, assignor to OGK Hanbai Co, Ltd., Osaka, Japan
Filed Jan. 22, 1996, Ser. No. 49,266
Term of patent 14 years
LOC (6) Cl. 16 - *06*
U.S. Cl. D16—315



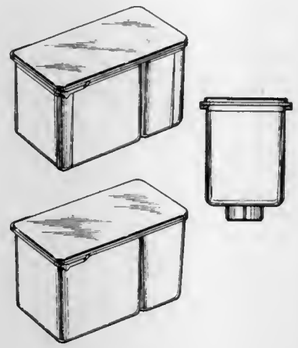
381,037
SOUND ARRESTER FOR WIND INSTRUMENT
Shinji Hamanaga, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan
Filed Oct. 23, 1995, Ser. No. 45,510
Claims priority, application Japan, Apr. 24, 1995, 7-11513
Term of patent 14 years
LOC (6) Cl. 17 - *02*
U.S. Cl. D17—13



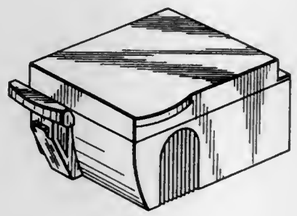
381,038
COMBINED STAMP PAD AND CONTAINER
Rira Yasoshima, Tokyo, Japan, assignor to Tsukineko, Inc., Redmond, Wash.
Filed Jun. 6, 1995, Ser. No. 39,823
Term of patent 14 years
LOC (6) Cl. 19 - *02*
U.S. Cl. D18—17



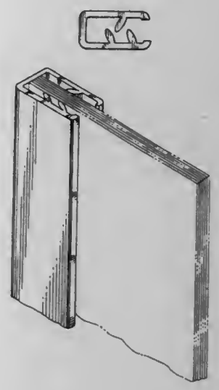
381,039
INK CARTRIDGE FOR PRINTER
Satoshi Shinada; Takao Kobayashi; Seiji Mochizuki, and Satoshi Fujioka, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan
Filed Apr. 24, 1995, Ser. No. 37,895
Claims priority, application Japan, Oct. 24, 1994, 6-32357; Mar. 31, 1995, 7-9088
Term of patent 14 years
LOC (6) Cl. 18 - *02*
U.S. Cl. D18—56



381,040
INK CARTRIDGE FOR PRINTER
Naoki Tashiro, Kawasaki; Toshihiko Ujita, Yamato; Teruo Arashima, Kawasaki; Yuji Hamasaki, Sagamihara; Hisashi Yamamoto, Hiratsuka, and Wataru Takahashi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 4, 1995, Ser. No. 42,272
Claims priority, application Japan, Feb. 6, 1995, 7-2777
The portion of the term of this patent subsequent to Dec. 3, 2010, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 18 - *02*
U.S. Cl. D18—56



381,041
BINDER SPINE
Anthony J. Lammers, Gates Mills, and Daniel J. Kump, Mentor, both of Ohio, assignors to Fasteners For Retail, Inc., Cleveland, Ohio
Filed Oct. 5, 1995, Ser. No. 44,987
Term of patent 14 years
LOC (6) Cl. 19 - *04*
U.S. Cl. D19—32



381,042
BINGO DAUBER BOTTLE
Brynda Roche, 77 Groveland Rd., Sherwood Park, AB, Canada
Filed Mar. 5, 1996, Ser. No. 51,186
Term of patent 14 years
LOC (6) Cl. 19 - *06*
U.S. Cl. D19—51



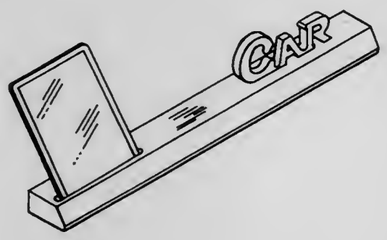
381,043
WRITING UTENSIL
Tsuyoshi Hasegawa, Tokyo, Japan, assignor to Tombow Pencil Co. Ltd., Tokyo, Japan
Filed Apr. 10, 1996, Ser. No. 53,322
Claims priority, application Germany, Nov. 22, 1995, M 95 09 510.1
Term of patent 14 years
LOC (6) Cl. 19 - *06*
U.S. Cl. D19—51



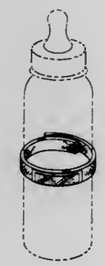
381,044
COMBINED DESK SET AND BUSINESS CARD HOLDER
Darrell Larm, 47-410 Hui Io St., Kaneohe, Hi. 96744
Filed Feb. 12, 1996, Ser. No. 50,190
Term of patent 14 years
LOC (6) Cl. 19 - *06*
U.S. Cl. D19—82



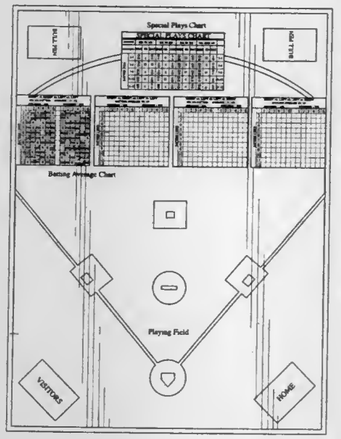
381,045
DISPLAY STAND
Kennon A. White, Advance, N.C., assignor to Season Ticket Collectibles, Inc., Winston-Salem, N.C.
Filed Mar. 6, 1996, Ser. No. 51,309
Term of patent 14 years
LOC (6) Cl. 20 - *03*
U.S. Cl. D20—19



381,046
IDENTIFICATION BRACELET FOR A BABY BOTTLE
Roxanne B. Hiers, and Hubert G. Lovelady, both of 8919 Deer Park, San Antonio, Tex. 78251
Filed Nov. 24, 1995, Ser. No. 46,989
Term of patent 14 years
LOC (6) Cl. 19 - *08*
U.S. Cl. D20—22



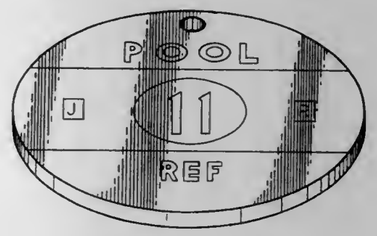
381,047
GAME BOARD
James Gessner, 1909 Rolling Green Cir., Sarasota, Fla. 34240
Filed Aug. 25, 1995, Ser. No. 43,097
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—28



381,048
JOYSTICK
Lan-Yan Lee, Fanling, Hong Kong, assignor to Esel International Company Limited
Filed Jan. 22, 1996, Ser. No. 49,249
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—48



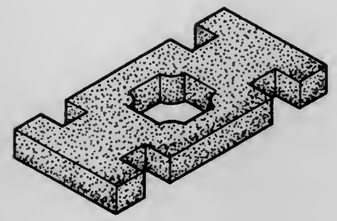
381,049
MARKER FOR INDICATING ORDER OF PLAY
John Rocheleau, 1030 Meadowside Street, Sudbury, Ontario, Canada
Filed Feb. 3, 1995, Ser. No. 34,408
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—53



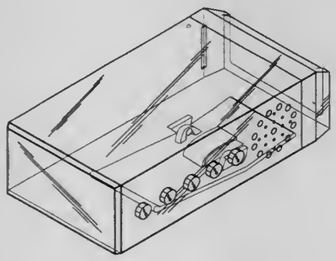
381,050
FRONT SURFACE FOR A JIGSAW PUZZLE
Suzanne Simpson, Greenwich, Conn., and Ofer Nissim, Pound Ridge, N.Y., assignors to Knox Security Engineering Corporation, Stamford, Conn.
Filed Dec. 19, 1995, Ser. No. 50,551
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—104



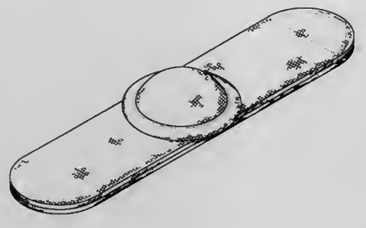
381,051
CONSTRUCTIONAL TOY PIECE
Yu Zheng, 1065 Howard Ave., Covina, Calif. 91722
Filed May 21, 1996, Ser. No. 54,901
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—108



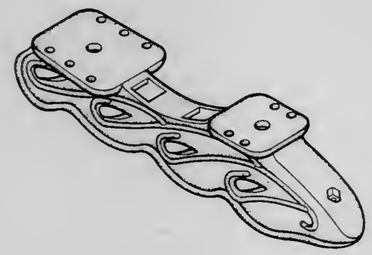
381,052
TOY COMMUNICATOR
Thomas E. Conwell, Highland Park, Ill., assignor to Confectionery and Novelty Design International, Northbrook, Ill.
Filed Feb. 27, 1995, Ser. No. 35,385
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—111



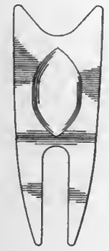
381,053
ADJUSTABLE WEIGHT STRAP
Mark C. Bleiwcis, Fairlawn, Ohio, assignor to Fitness Quest Inc., Canton, Ohio
Filed Feb. 20, 1996, Ser. No. 51,843
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—196



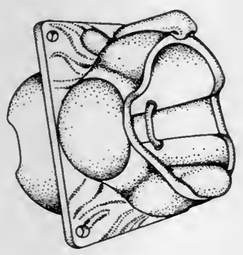
381,054
SHOE BASE FOR IN-LINE ROLLER SKATE
Ching-Hwo Cheng, 26 Lane 93, Changlwu Road, Changhwa County, Taiwan
Filed Jan. 18, 1996, Ser. No. 49,147
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—226



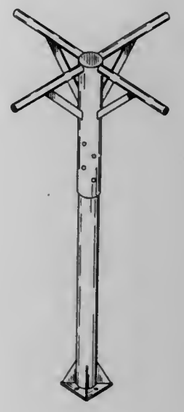
381,055
MULTI-PURPOSE GOLF TOOL
Mark C. Jones, 5717 NE. 232nd Ave., and Louie Steinhauer, 7304 NE. 182nd Ave., both of Vancouver, Wash. 98682
Filed Aug. 2, 1995, Ser. No. 42,144
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—234



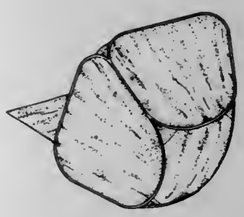
381,056
LION HEAD PLAY TUNNEL
Mitchell L. Wilgus, Farmington, Mo., assignor to Iron Mountain Forge Corporation, Farmington, Mo.
Filed Oct. 5, 1995, Ser. No. 45,020
Term of patent 14 years
LOC (6) Cl. 21 - *03*
U.S. Cl. D21—240



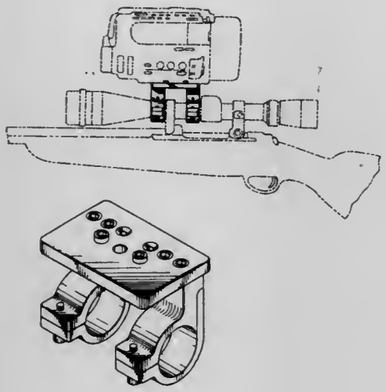
381,057
ADJUSTABLE COLUMN FOR CHILDREN'S PLAYGROUND EQUIPMENT
Grant M. Strawcutter; James O. Dunn, Jr., and Jonathan E. Brooks, all of Charlotte, N.C., assignors to Soft Play, Inc., Charlotte, N.C.
Filed Nov. 21, 1995, Ser. No. 46,934
Term of patent 14 years
LOC (6) Cl. 21 - *03*
U.S. Cl. D21—242



381,058
SUNSHADE DEVICE
Hans Lowenthal, London, United Kingdom, assignor to Jacpaq Limited, England
Filed May 23, 1996, Ser. No. 54,828
Claims priority, application United Kingdom, Nov. 29, 1995, 2052373; Nov. 29, 1995, 2052374; Nov. 29, 1995, 2056177
Term of patent 14 years
LOC (6) Cl. 21 - *04*
U.S. Cl. D21—253



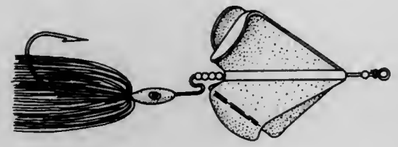
381,059
VIDEO CAMERA MOUNTING DEVICE
Craig B. Simpson, and Craig Adamson, both of 748 N. 300 West, Mapleton, Utah 84664
Filed May 10, 1996, Ser. No. 54,231
Term of patent 14 years
LOC (6) Cl. 22 - *01*
U.S. Cl. D22—110



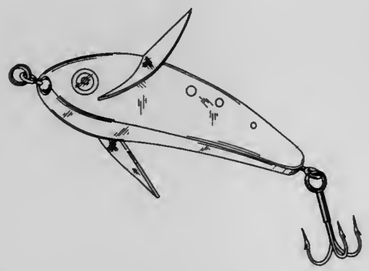
381,060
KNIFE
William F. Moran, Braddock Heights, Md., assignor to Spyderco, Inc., Golden, Colo.
Filed May 29, 1996, Ser. No. 55,104
Term of patent 14 years
LOC (6) Cl. 22 - *02*
U.S. Cl. D22—118



381,061
SPINNER FISHING LURE
Charles William "Bill" Graham, Oklahoma City, Okla., assignor to Topper Lure Company, Incorporated, Perry, Okla.
Filed May 17, 1995, Ser. No. 39,102
Term of patent 14 years
LOC (6) Cl. 22 - *05*
U.S. Cl. D22—129



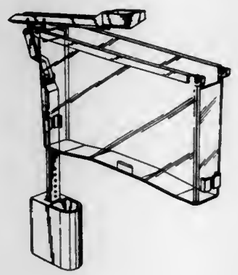
381,062
FISHING LURE
Jep Hansen, and Percy O. Agloinga, Jr., both of P.O. Box 1948, Soldotna, Ak. 99669
Filed Oct. 2, 1995, Ser. No. 44,859
Term of patent 14 years
LOC (6) Cl. 22 - *05*
U.S. Cl. D22—133



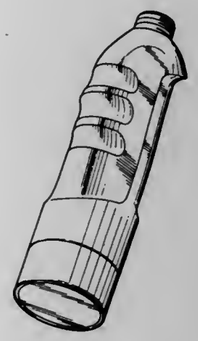
381,063
FISH HOOK REMOVER
Melvin Miller, P.O. Box 25, Owensville, Ohio 45160
Filed May 15, 1996, Ser. No. 54,590
Term of patent 14 years
LOC (6) Cl. 22 - *05*
U.S. Cl. D22—149



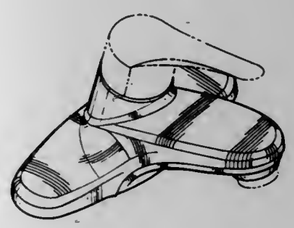
381,064
FLUID DISPENSER
Aubrey L. Dixon, London, England, assignor to Chambermaid Limited, Hertford, England
Filed Sep. 13, 1995, Ser. No. 43,815
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—208



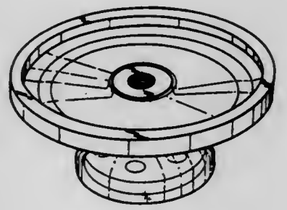
381,065
SPRAY HEAD FOR WASHING DISHES
Philippe Chretien, Dietlikon, Switzerland, assignor to KWC AG, Unterkulm, Switzerland
Filed Feb. 14, 1995, Ser. No. 34,851
Claims priority, application Hague Agreement, Sep. 16, 1994, DM/030 705
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—213



381,066
FAUCET BODY
Loran R. Hill, Indianapolis, and Anthony G. Spangler, Greensburg, both of Ind., assignors to Masco Corporation of Indiana, Indianapolis, Ind.
Filed Jul. 18, 1994, Ser. No. 25,958
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—238



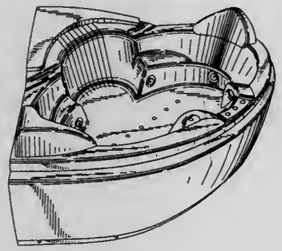
381,067
VALVE MEMBRANE
Charles Willy Karmalm, Nödinge, Sweden, assignor to Aktiebolaget Wi-Ka Mekaniska Verkstad, Sweden
Filed Mar. 7, 1994, Ser. No. 19,625
Claims priority, application Sweden, Sep. 8, 1993, 931979
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—249



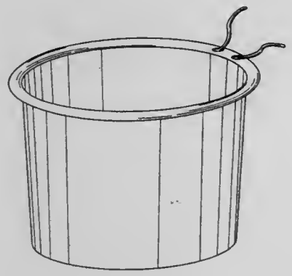
381,068
GUTTER FILTER
Michael Laurence Herdman, 21 Telstar Place, Auckland, New Zealand
Filed Jul. 12, 1995, Ser. No. 41,381
Claims priority, application Australia, Jan. 19, 1995, 148/95
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—267



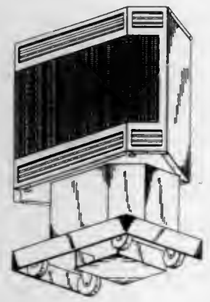
381,069
WHIRLPOOL BATHTUB
Marc Sadler, Treviso, Italy, assignor to Domino S.p.A., Spilimergo, Italy
Filed Apr. 2, 1996, Ser. No. 52,657
Term of patent 14 years
LOC (6) Cl. 23 - *02*
U.S. Cl. D23—280.1



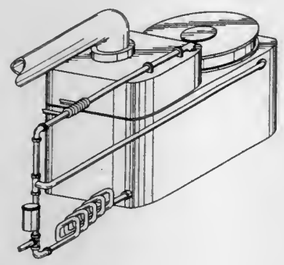
381,070
DISPOSABLE POTTY CHAIR LINER
Dianne M. Deniakis, and Michael N. Deniakis, both of 7775 Venice Dr., Warren, Ohio 44484
Filed Nov. 16, 1995, Ser. No. 46,830
Term of patent 14 years
LOC (6) Cl. 02 - *01*
U.S. Cl. D23—299



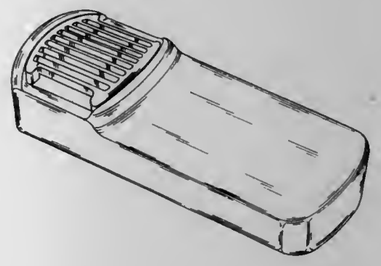
381,071
PORTABLE FIREPLACE
Dudley D. Hussong, Lakefield, Minn., assignor to Hussong Manufacturing Co., Inc., Lakefield, Minn.
Filed Nov. 17, 1995, Ser. No. 46,527
Term of patent 14 years
LOC (6) Cl. 23 - *03*
U.S. Cl. D23—317



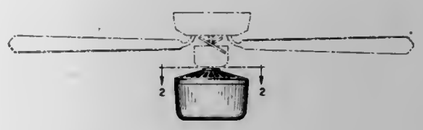
381,072
VAPOR FUEL SYSTEM UNIT
Brian T. Pendleton, P.O. Box 80864, Fairbanks, Ak. 99708
Filed Dec. 8, 1995, Ser. No. 47,623
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—360



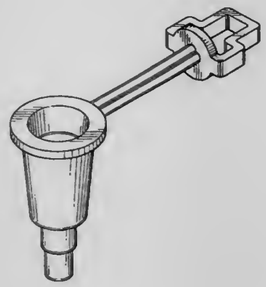
381,073
HEATED DEVICE FOR DISPENSING VOLATILE SUBSTANCES
Scott W. Demarest; Paul E. Furner, both of Caledonia, Wis., and James V. Bonnema, Middleton, Mass., assignors to S. C. Johnson & Son, Inc., Racine, Wis.
Filed Jul. 11, 1995, Ser. No. 41,276
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—366



381,074
CEILING FAN HEATER
Kosta L. Pelonis, Taipei, Taiwan, assignor to Pelonis USA, Ltd., Malvern, Pa.
Filed Mar. 18, 1996, Ser. No. 51,757
Term of patent 14 years
LOC (6) Cl. 23 - *03*
U.S. Cl. D23—336



381,075
TUBING ADAPTER
Edgar Gilberto Manosalva, Worthington; Donald Jay Goldhardt, Grove City, and Lawrence Edward Zimmer, Dublin, all of Ohio, assignors to Abbott Laboratories, Abbott Park, Ill.
Filed Aug. 16, 1995, Ser. No. 42,654
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—112

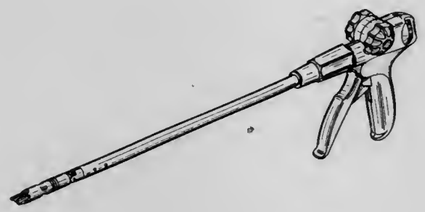


381,076
MANIPULATION HANDLE
Peter Thornton, Los Altos; Tracy D. Maahs, San Jose, and Miriam H. Taimisto, Anaheim Hills, all of Calif., assignors to Heart Rhythm Technologies, Inc., Temecula, Calif.
Filed May 2, 1995, Ser. No. 38,300
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—138



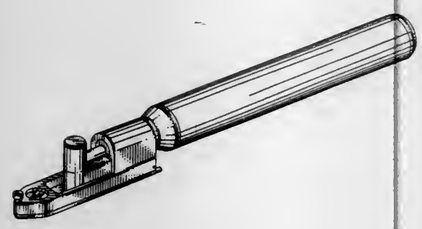


381,077
MULTIFUNCTIONAL SURGICAL STAPLING INSTRUMENT
John V. Hunt, Cincinnati, Ohio, assignor to Ethicon Endo-Surgery, Cincinnati, Ohio
Filed Oct. 25, 1994, Ser. No. 30,286
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—145



381,078
DISPOSABLE SURGICAL STAB WOUND CLOSURE INSTRUMENT
William J. Christy, 1324 Sunset Dr., Winter Park, Fla. 32789
Filed Oct. 18, 1995, Ser. No. 45,398
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—145

381,079
REFRACTIVE SURGERY INSTRUMENT
Russell G. Koepnick, 4435 N. 78th St. #113A, Scottsdale, Ariz. 85251
Filed Jul. 26, 1995, Ser. No. 41,905
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—146



381,080
COMBINED METALLIC SKULL BASE SURGICAL IMPLANT AND BONE FLAP FIXATION PLATE
Kenji Ohata, 1-5-7, Asahi-Machi, Abeno-Ku, Osaka 545, Japan
Filed Apr. 21, 1995, Ser. No. 37,859
Term of patent 14 years
LOC (6) Cl. 24 - *03*
U.S. Cl. D24—155



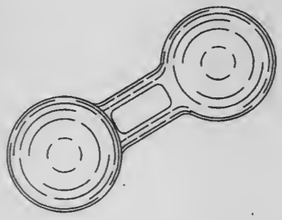
381,081
BELT FOR PROTECTING LOINS
Tadahisa Okada, 12-21, Hachiman-cho 3-chome, Higashi-Kurume-shi, Tokyo, Japan
Filed Mar. 3, 1995, Ser. No. 36,619
Term of patent 14 years
LOC (6) Cl. 24 - *04*
U.S. Cl. D24—190



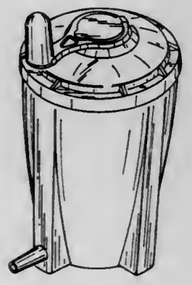
381,082
BABY BOTTLE HOLDER
Mark Starner, 22 Pourthouse Square Ste. 502, Nockville, Md. 20850
Filed Feb. 21, 1995, Ser. No. 35,153
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D24—199



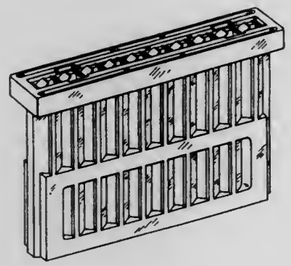
381,083
BACK MASSAGER
Aleksandar Ratajac, 5182 Biltmore St., San Diego, Calif. 92117
Filed Feb. 12, 1996, Ser. No. 50,221
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D24—211



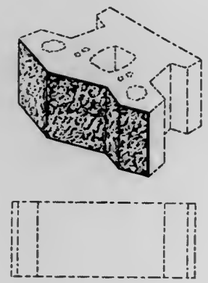
381,084
CEMENT MIXER
Ronald J. Vish, Somerville, Mass., assignor to Smith & Nephew Richards Inc., Memphis, Tenn.
Filed May 19, 1995, Ser. No. 39,389
Term of patent 14 years
LOC (6) Cl. 15 - *04*
U.S. Cl. D24—220



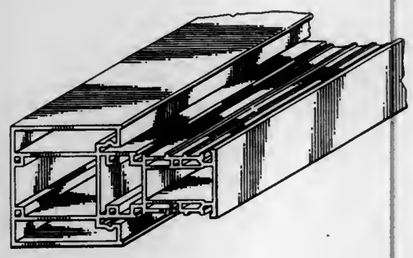
381,085
MULTIPLE MEDICAMENT IMPLANT CARTRIDGE FOR ANIMAL TREATMENT
Guy Fekete, Versailles, France, assignor to Roussel UCLAF, Paris, France
Filed Aug. 8, 1994, Ser. No. 26,850
Claims priority, application France, Feb. 8, 1994, 94 0677
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—226



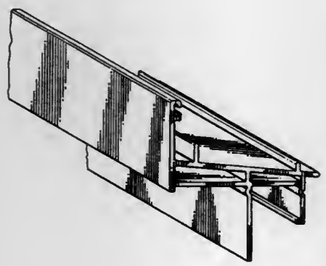
381,086
FRONT FACE OF A RETAINING WALL BLOCK
Paul J. Forsberg, Wayzata, Minn., assignor to Keystone Retaining Wall Systems, Inc., Bloomington, Minn.
Filed May 3, 1995, Ser. No. 38,326
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—113



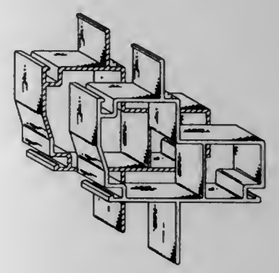
381,087
DOOR JAMB
Tony DiGiorgio, Woodbridge, Canada, assignor to Dominon Plastics Inc., Woodbridge, Canada
Filed Nov. 13, 1995, Ser. No. 46,335
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—123



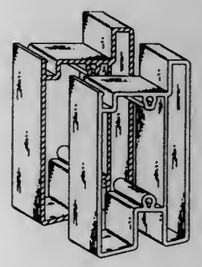
381,088
WINDOW SILL
Tony DiGiorgio, Woodbridge, Canada, assignor to Dominion Plastics Inc., Woodbridge, Canada
Filed Oct. 18, 1995, Ser. No. 45,364
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—124



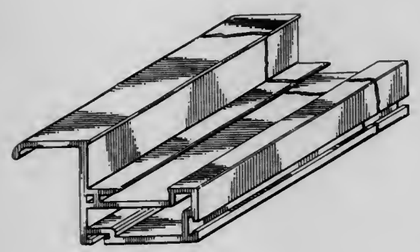
381,089
WINDOW COMPONENT EXTRUSION
Teresa A. Oliver, Kent, Wash., assignor to Mikron Industries, Inc., Kent, Wash.
Filed Dec. 1, 1995, Ser. No. 47,343
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—124



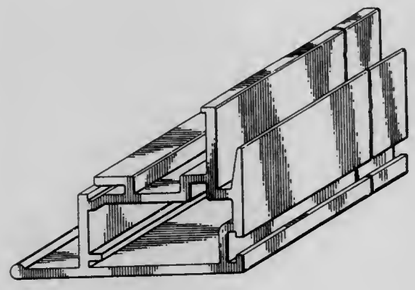
381,090
WINDOW COMPONENT EXTRUSION
Robert B. Jarrell, Seattle, Wash., assignor to Mikron Industries, Inc., Kent, Wash.
Filed Dec. 1, 1995, Ser. No. 47,380
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—124



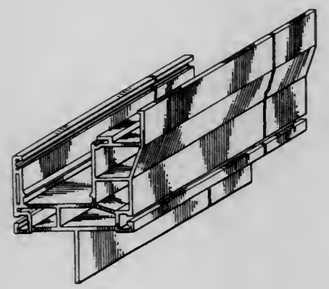
381,091
LITE RAIL SASH
Tony DiGiorgio, Woodbridge, Canada, assignor to Dominion Plastics Inc., Woodbridge, Canada
Filed May 30, 1996, Ser. No. 55,150
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—124



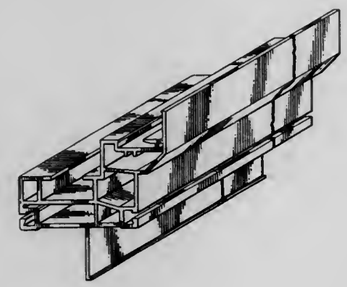
381,093
MEETING RAIL
Tony DiGiorgio, Woodbridge, Canada, assignor to Dominion Plastics Inc., Woodbridge, Canada
Filed Jun. 3, 1996, Ser. No. 55,310
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—124



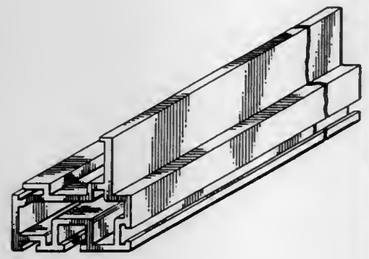
381,092
SLIDER MAIN FRAME
Tony DiGiorgio, Woodbridge, Canada, assignor to Dominion Plastics Inc., Woodbridge, Canada
Filed Jun. 3, 1996, Ser. No. 55,278
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—124



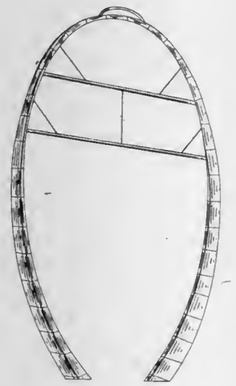
381,094
FRAME
Tony DiGiorgio, Woodbridge, Canada, assignor to Dominion Plastics Inc., Woodbridge, Canada
Filed Jun. 3, 1996, Ser. No. 55,313
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—124



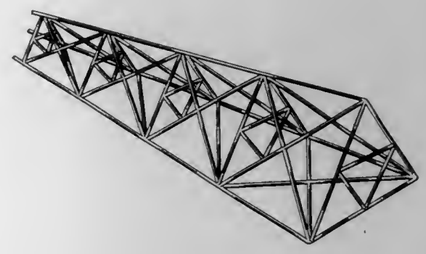
381,095
SASH
Tony DiGiorgio, Woodbridge, Canada, assignor to Dominion Plastics Inc., Woodbridge, Canada
Filed Jun. 3, 1996, Ser. No. 55,314
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—124



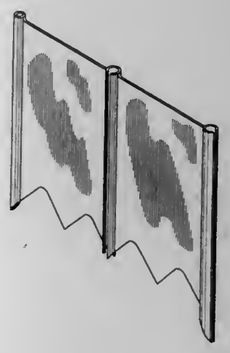
381,096
PYLON
Roger Tallon, Paris, France, assignor to Electricite de France, Paris, France
Filed Sep. 25, 1995, Ser. No. 44,425
Claims priority, application France, Mar. 23, 1995, 951745
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—127



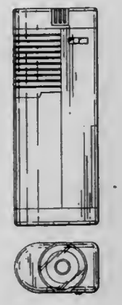
381,097
TAPERED GIRDER
Ally O. Hing, P.O. Box A, Superior, Ariz. 85273
Filed May 28, 1996, Ser. No. 54,985
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—132



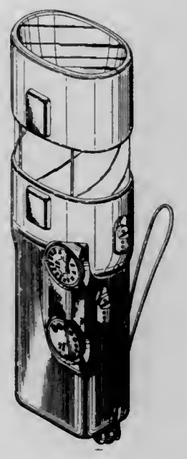
381,098
LAWN EDGE
G. Thomas Gay, 3275 Georgian Ct., Erie, Pa. 16506, assignor to G. Thomas Gay, and Joyce E. Gay, both of Erie, Pa.
Filed Nov. 16, 1995, Ser. No. 46,503
Term of patent 14 years
LOC (6) Cl. 25 - *99*
U.S. Cl. D25—164



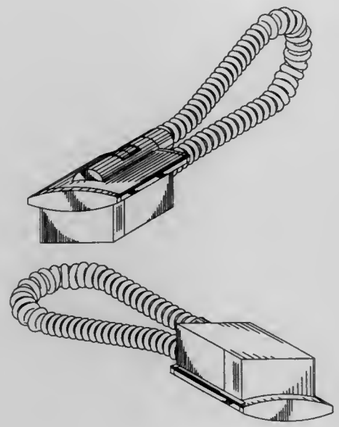
381,099
MINIATURE LANTERN
John Se-Kit Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Hong Kong, Hong Kong
Filed Jul. 30, 1996, Ser. No. 57,689
Claims priority, application United Kingdom, Feb. 21, 1996, 2054325
Term of patent 14 years
LOC (6) Cl. 26 - *02*
U.S. Cl. D26—37



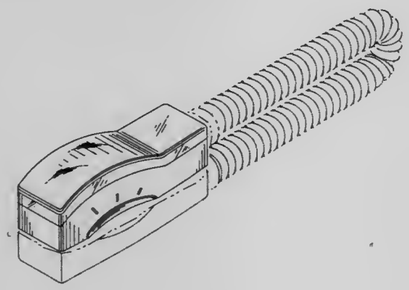
381,100
COMBINED FLASHLIGHT, RADIO AND WARNING LIGHT
David Fink, Suffolk County, N.Y., assignor to Windsor Industries, Inc., Farmingdale, N.Y.
Filed Mar. 4, 1996, Ser. No. 52,571
Term of patent 14 years
LOC (6) Cl. 26 - *02*
U.S. Cl. D26—38



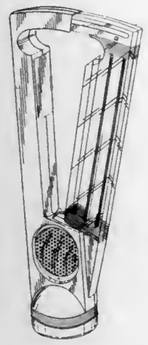
381,101
FLEXIBLE FLASHLIGHT
Daniel Haberstich, Rocky Hill; Robert Marvin, Farmington, and David W. Kaiser, North Haven, all of Conn., assignors to Black & Decker Inc., Newark, Del.
Filed Feb. 21, 1995, Ser. No. 35,083
Term of patent 14 years
LOC (6) Cl. 26 - *02*
U.S. Cl. D26—43



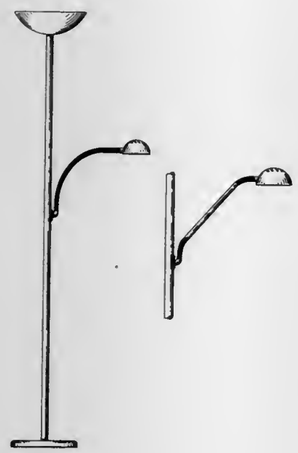
381,102
HEAD FOR A FLEXIBLE FLASHLIGHT
David W. Kaiser, North Haven, and Patrick B. Nolan, Westport, both of Conn., assignors to Black & Decker Inc., Newark, Del.
Filed Apr. 17, 1995, Ser. No. 37,584
Term of patent 14 years
LOC (6) Cl. 26 - *02*
U.S. Cl. D26—43



381,103
COMBINED FLASHLIGHT AND FLUORESCENT LAMP
Albert Yiu Kwong Wan, Tsuen Wam, Hong Kong, assignor to Fee Tat Holdings (H.K.) Limited, Aberdeen, Hong Kong
Filed May 3, 1995, Ser. No. 38,302
Term of patent 14 years
LOC (6) Cl. 26 - *02*
U.S. Cl. D26—46



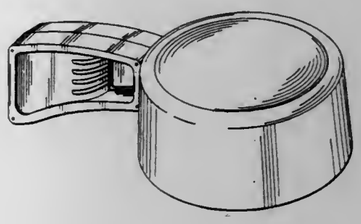
381,104
TORCHIERE LAMP WITH A UNIVERSAL FLEX TASK LIGHT
Clark Linstone, Pasadena, Calif., assignor to Lamps Plus, Inc., Chatsworth, Calif.
Filed Nov. 8, 1995, Ser. No. 46,182
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—62



381,105
COMBINED TORCHIERE WITH TASK LIGHTS AND TABLE
Dennis K. Swanson, Woodland Hills, Calif., assignor to Lamps Plus, Inc., Chatsworth, Calif.
Filed Jan. 31, 1996, Ser. No. 49,793
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—63



381,106
PARKING LOT LUMINAIRE
Bonnie J. Brohard, Hebron; Herbert A. Fouke, Newark, and Peter A. Koloski, Columbus, all of Ohio, assignors to Holophane Corporation, Newark, Ohio
Filed Aug. 30, 1995, Ser. No. 43,838
Term of patent 14 years
LOC (6) Cl. 26 - *03*
U.S. Cl. D26—67

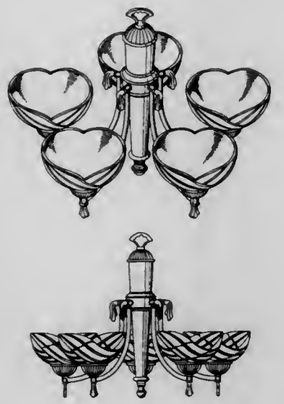


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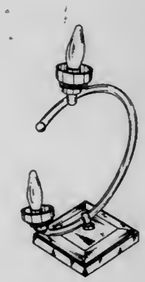
381,107

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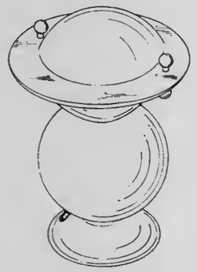
381,108
CEILING LAMP
Keen Hsu, Taichung, Taiwan, assignor to Bright Yin Huey Co., Ltd., Taichung, Taiwan
Filed Jan. 30, 1996, Ser. No. 49,734
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—84



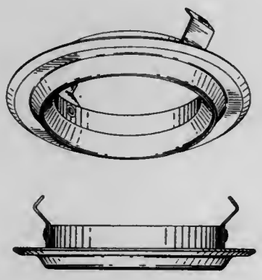
381,109
LAMP
Kuang-Ting Wang, 2F., No. 23-3, Alley 160, Lane Yi Pen, Du Hsing Rd., Panchiao City, Taipei Hsien, Taiwan
Filed Jan. 11, 1996, Ser. No. 48,844
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—107



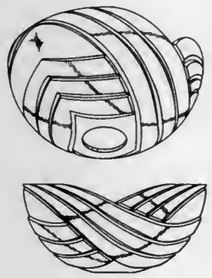
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Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—110



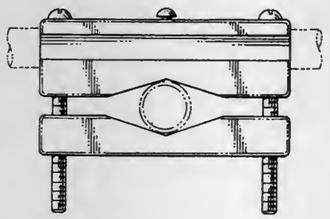
381,111
TRIM FOR EMBEDDED LIGHT FIXTURE
Michel Lecluze, 1009, rue du Parc Industriel, St-Jean-Chrysostome, Québec , Canada
Filed May 6, 1996, Ser. No. 54,036
Term of patent 14 years
LOC (6) Cl. 26 - *99*
U.S. Cl. D26—118



381,112
LAMP SHADE
Keen Hsu, Taichung, Taiwan, assignor to Bright Yin Huey Co., Ltd., Taichung, Taiwan
Filed Jan. 30, 1996, Ser. No. 49,733
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—134



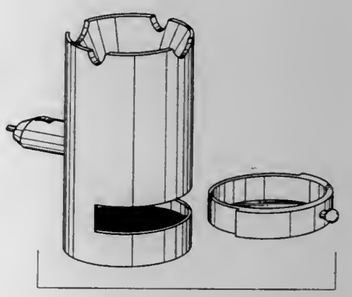
381,113
TUBE GRIPPER CLAMP FOR EXHIBIT LAMPS
Bernard Safyan, 6667 Maryland Dr., Los Angeles, Calif. 90048
Filed Sep. 27, 1995, Ser. No. 44,635
Term of patent 14 years
LOC (6) Cl. 26 - *99*
U.S. Cl. D26—140



381,114
WORKLIGHT COMPRISING TWIN HALOGEN FLOODLIGHTS AND AN ADJUSTABLE STAND
Zhiwei David Xu, Greensboro, N.C., assignor to Regent Lighting Corporation, Burlington, N.C.
Continuation of Ser. No. 32,625, Dec. 22, 1994, abandoned.
This application Dec. 18, 1995, Ser. No. 48,029
Term of patent 14 years
LOC (6) Cl. 26 - *99*
U.S. Cl. D26—140



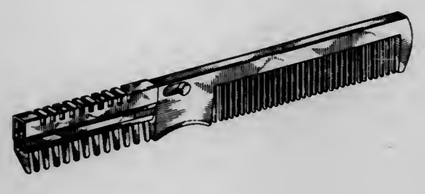
381,115
SMOKE FILTERING ASH TRAY
Brian Dicicco, 1400 N. Elm Ave., Apt. 6, Denton, Tex. 76201
Filed Jan. 25, 1996, Ser. No. 49,513
Term of patent 14 years
LOC (6) Cl. 27 - *03*
U.S. Cl. D27—125



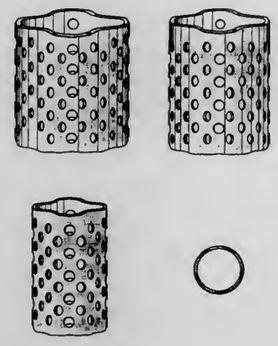
381,116
TOBACCO WATER PIPE
Rodney R. Richards, 3310 W. Bell Rd., No. 101, Phoenix, Ariz. 85023
Filed Jul. 24, 1995, Ser. No. 41,756
Term of patent 14 years
LOC (6) Cl. 27 - *02*
U.S. Cl. D27—162



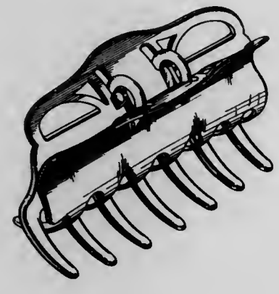
381,117
HAIR CUTTING COMB
Jeremy Cheung, 8112 W. 3rd. St., Los Angeles, Calif. 90048
Filed Aug. 7, 1995, Ser. No. 42,335
Term of patent 14 years
LOC (6) Cl. 28 - *02*
U.S. Cl. D28—25



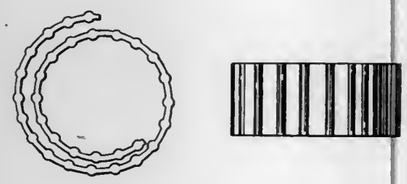
381,118
HAIR ROLLER
Katharina K. Ehrhardt, and Karl M. Dietz, both of 647 Raymond Ave., #3, Santa Monica, Calif. 90405
Filed Jan. 16, 1996, Ser. No. 49,083
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—37



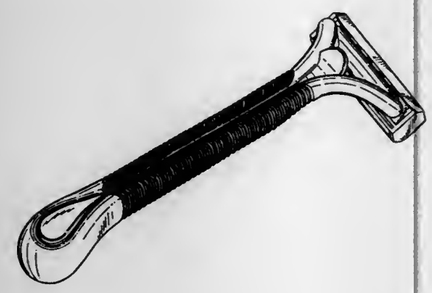
381,119
HAIR CLIP
Wen-Hsiung Chang, No. 32, Lane 232, Chung Shan Road, Tainan, Taiwan
Filed Nov. 28, 1995, Ser. No. 47,156
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—40



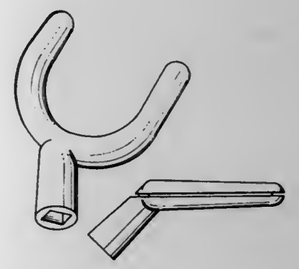
381,120
DECORATIVE, SPIRAL ACCESSORY FOR USE WITH CLOTH COVERED HAIR BINDERS
Christine L. Barker, 401 Buckminster Dr. #T2, Norwood, Mass. 02062
Filed Jan. 30, 1996, Ser. No. 49,726
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—41



381,121
RAZOR
Jill Marie Shurtleff, 846 E. 4th St., South Boston, Mass. 02127, and Tzu-Jun Yen, 26 Linden Pl. #3, Brookline, Mass. 02146
Filed May 15, 1996, Ser. No. 54,579
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—46



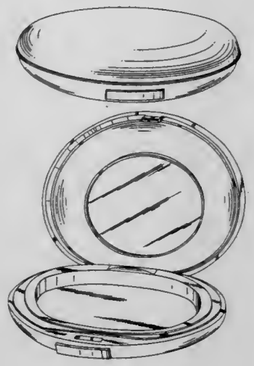
381,122
STRING-HOLDER FOR TEETH CLEANER
Kyosuke Ando, Green Helghts 6-7-501, 550 Nagasawa, Yokosuka, Kanagawa-ken, Japan
Filed Nov. 30, 1995, Ser. No. 47,250
Claims priority, application Japan, Jul. 5, 1995, 7-19137
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—64



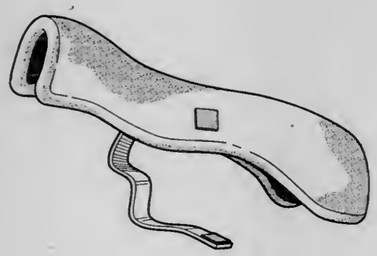
381,123
HAIR COLORING EASEL
Dennis Gledd, 395 S. Topanga Canyon Blvd., Topanga, Calif. 90290
Division of Ser. No. 32,596, Dec. 26, 1994. This application Mar. 19, 1996, Ser. No. 51,824
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—73



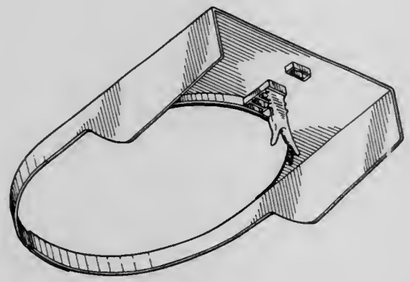
381,124
COSMETIC COMPACT
Longin Blachut, Lugano, Switzerland, assignor to Techpack-Laffon GmbH, Munich, Germany
Filed Oct. 29, 1993, Ser. No. 14,722
Claims priority, application Italy, Apr. 29, 1993, MI930 000258
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—78



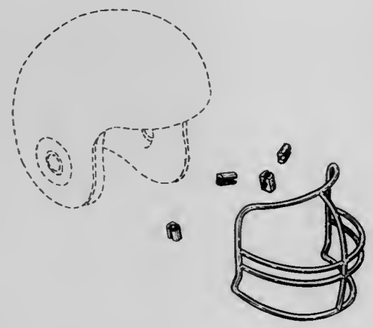
381,125
REMOVABLE SHOULDER PADDING APPARATUS
Glen R. Weiler, P.O. Box 93, West Leyden, N.Y. 13489
Filed Oct. 30, 1995, Ser. No. 46,732
Term of patent 14 years
LOC (6) Cl. 02 - *07*
U.S. Cl. D29—100



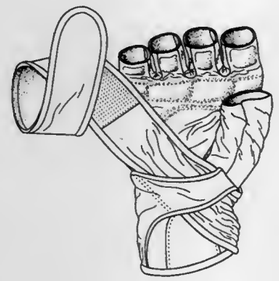
381,126
ANTI-GLARE EYE SHIELD
James S. Quaresima, Hampton Bays, N.Y., assignor to Vi-Zor Corp., Hampton Bays, N.Y.
Filed Nov. 3, 1995, Ser. No. 45,949
Term of patent 14 years
LOC (6) Cl. 29 - *02*
U.S. Cl. D29—109



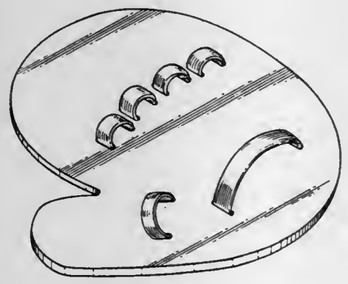
381,127
RELEASABLE FACE MASK FOR HELMETS
Wayne E. Rothwell, 3206 Keays Ave., Middletown, Ohio 45044
Filed May 24, 1995, Ser. No. 39,221
Term of patent 14 years
LOC (6) Cl. 29 - *02*
U.S. Cl. D29—111



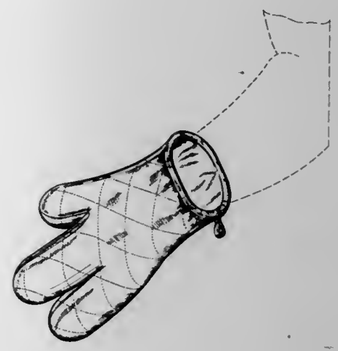
381,128
WEIGHT LIFTING GLOVE
Charles A. Caswell, and Richard K. Davis, both of Altus, Okla., assignors to OK-1 Manufacturing Company, Altus, Okla.
Filed May 18, 1995, Ser. No. 38,995
Term of patent 14 years
LOC (6) Cl. 29 - *02*
U.S. Cl. D29—113



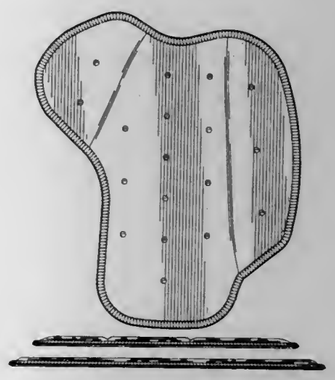
381,129
BASEBALL GLOVE TRAINING DEVICE
Elbert B. Lawrence, 202 River Oaks Dr., W. Monroe, La. 71291
Filed Jun. 16, 1995, Ser. No. 40,383
Term of pateot 14 years
LOC (6) Cl. 29 - *02*
U.S. Cl. D29—115



381,130
OVEN MITT
Robin J. Anderson, 2814 W. Glen Dr., No. 31, Falls Church, Va. 22046
Filed Sep. 29, 1995, Ser. No. 44,819
Term of patent 14 years
LOC (6) Cl. 06 - *13*
U.S. Cl. D29—119



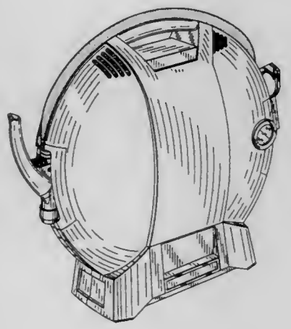
381,131
SHIN GUARD
Jeffrey E. Duback, Davidson, and Eric D. Vaughter, Charlotte, both of N.C., assignors to Parker Medical Associates, Charlotte, N.C.
Filed May 30, 1996, Ser. No. 55,124
Term of patent 14 years
LOC (6) Cl. 29 - *02*
U.S. Cl. D29—120



381,132
PALM PAD FOR A GLOVE FOR PREVENTION OF CARPAL TUNNEL SYNDROME
John J. Fabry, Green Bay, Wis., assignor to Fabry Glove & Mitten Co., Green Bay, Wis.
Filed Sep. 8, 1995, Ser. No. 43,621
The portion of the term of this patent subsequent to Jun. 3, 2011, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 29 - *02*
U.S. Cl. D29—123



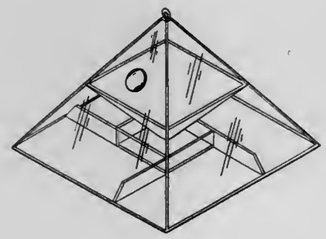
381,133
FIRE EXTINGUISHER
Manfred Schulte-Frankenfeld, Gutersloh, Germany, assignor to Gloria-Werke H. Schulte-Frankenfeld GmbH & Co., Wadersloh, Germany
Filed Sep. 13, 1995, Ser. No. 43,855
Claims priority, application Germany, Apr. 4, 1995, M 95 02 858.7
Term of patent 14 years
LOC (6) Cl. 29 - *01*
U.S. Cl. D29—125



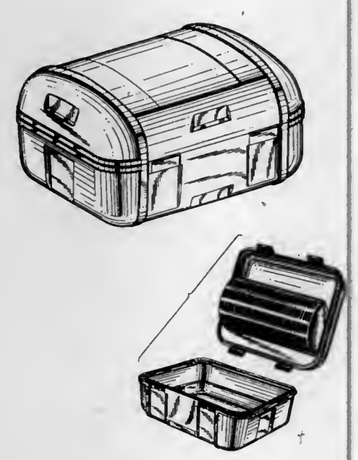
381,134
HORSE GATE
Pamela J. Alford, Rte. 2, Box 1775, and Richard D. Jackson, P.O. Box 119, both of Marble Hill, Mo. 63764
Filed Oct. 13, 1995, Ser. No. 45,250
Term of patent 14 years
LOC (6) Cl. 30 - *02*
U.S. Cl. D30—119



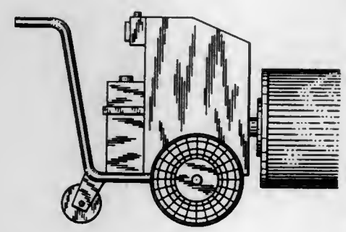
381,135
BIRD FEEDER
Eugene Hochlan, Jr., 1100 S. 20th St., Council Bluffs, Iowa 51501
Filed Jul. 10, 1995, Ser. No. 41,223
Term of patent 14 years
LOC (6) Cl. 30 - *03*
U.S. Cl. D30—124



381,136
LITTER BOX
Alan Francis Savicki, South Windsor, Conn., assignor to First Brands Corporation, Danbury, Conn.
Filed Feb. 23, 1996, Ser. No. 50,714
Term of patent 14 years
LOC (6) Cl. 30 - *99*
U.S. Cl. D30—161



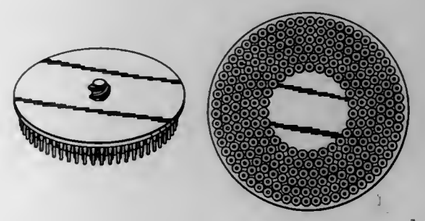
381,137
WHEEL CLEANER FOR AUTOMOTIVE VEHICLES
Jorma Jala, 4100 Galt Ocean Dr., Unit 1402, Fort Lauderdale, Fla. 33308
Filed Apr. 12, 1996, Ser. No. 53,333
Term of patent 14 years
LOC (6) Cl. 15 - *05*
U.S. Cl. D32—4



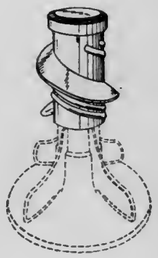
381,138
VEHICULAR MOUNTED SHOE CLEANING BRUSH
Thomas Taylor, 1905 2nd St., Barnwell, S.C. 29812-1706
Filed Jun. 26, 1995, Ser. No. 40,758
Term of patent 14 years
LOC (6) Cl. 15 - *05*
U.S. Cl. D32—14.1



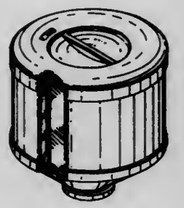
381,139
MOLDED ABRASIVE BRUSH
David E. Johnson, Ames, Iowa; Richard M. Pihl, Cottage Grove, Minn., and David C. Roeker, Hudson, Wis., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.
Filed Apr. 28, 1995, Ser. No. 38,187
Term of patent 14 years
LOC (6) Cl. 15 - *05*
U.S. Cl. D32—25



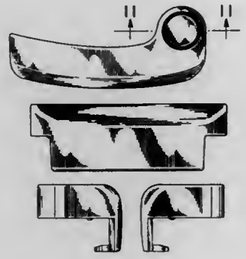
381,140
AGITATOR FOR AUTOMATIC WASHER
Robert J. Pinkowski, Baroda, and Raymond A. Kaczmarek, Livonia, both of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.
Filed Jun. 3, 1994, Ser. No. 23,961
Term of patent 14 years
LOC (6) Cl. 15 - *05*
U.S. Cl. D32—26



381,141
CAPSULE FOR SOLID DETERGENT
Eric Balz, Eagan, Minn., assignor to Ecolab Inc., St. Paul, Minn.
Filed Oct. 31, 1994, Ser. No. 30,468
Term of patent 14 years
LOC (6) Cl. 15 - *05*
U.S. Cl. D32—30



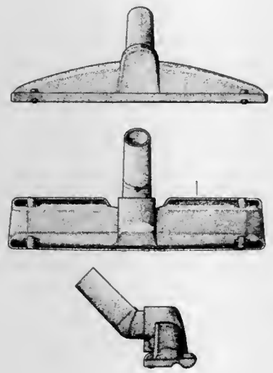
381,142
VACUUM CLEANER LATCH
Darwin T. McKnight, Louisville, and David W. Moine, North Canton, both of Ohio, assignors to The Hoover Company, North Canton, Ohio
Filed Feb. 22, 1993, Ser. No. 5,070
Term of patent 14 years
LOC (6) Cl. 15 - *05*
U.S. Cl. D32—31



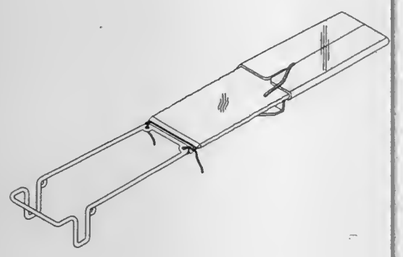
381,143
UPPER PORTION OF AN UPRIGHT VACUUM CLEANER
Gregory W. Luebbering, Bloomington, Ill., assignor to White Consolidated Industries, Inc., Cleveland, Ohio
Filed Jan. 13, 1995, Ser. No. 33,486
Term of patent 14 years
LOC (6) Cl. 15 - *05*
U.S. Cl. D32—31



381,144
VACUUM CLEANER NOZZLE
David W. Moine, North Canton, and Richard R. Tucker, Canton, both of Ohio, assignors to The Hoover Company, North Canton, Ohio
Filed Mar. 25, 1996, Ser. No. 52,113
Term of patent 14 years
LOC (6) Cl. 15 - *05*
U.S. Cl. D32—32



381,145
FRUIT CLEANER
James W. Jimison, 360 Fulton St., Palo Alto, Calif. 94301
Continuation-in-part of Ser. No. 80,660, Jun. 18, 1993, abandoned. This application Apr. 5, 1995, Ser. No. 37,145
Term of patent 14 years
LOC (6) Cl. 08 - *99*
U.S. Cl. D32—35



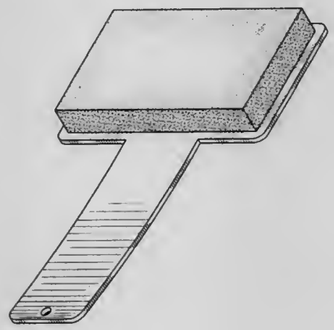
381,146
TOILET PLUNGER
George Tash, 5777 Balcolm Canyon, Somis, Calif. 93021
Filed Apr. 24, 1996, Ser. No. 53,541
Term of patent 14 years
LOC (6) Cl. 08 - *99*
U.S. Cl. D32—35



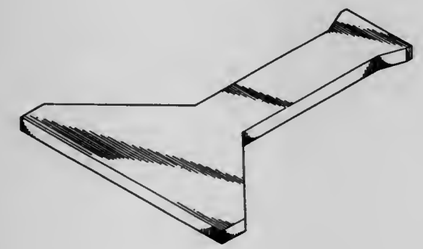
381,147
TOILET PLUNGER
George Tash, 5777 Balcolm Canyon, Somis, Calif. 93021
Filed Apr. 26, 1996, Ser. No. 53,641
Term of patent 14 years
LOC (6) Cl. 08 - *99*
U.S. Cl. D32—35



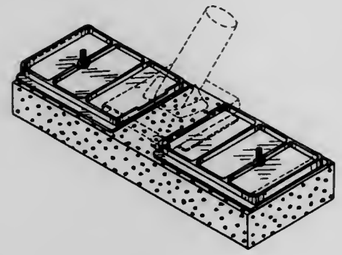
381,148
VEHICLE DASHBOARD PROTECTANT APPLICATOR
John Fred McCall, 413 W. Washington St., Samson, Ala. 36477
Filed Dec. 28, 1995, Ser. No. 48,408
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D32—440



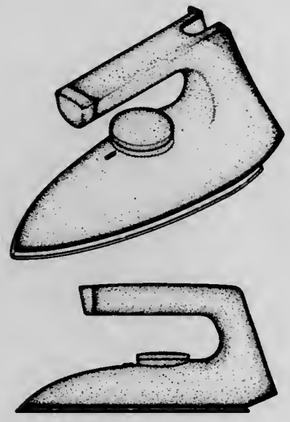
381,149
ICE SCRAPER
Henry Casabilanca Mayo, 2634 N. Richmond St., Arlington, Va. 22207
Filed Jun. 5, 1995, Ser. No. 39,733
Term of patent 14 years
LOC (6) Cl. 07 - *05*
U.S. Cl. D32—49



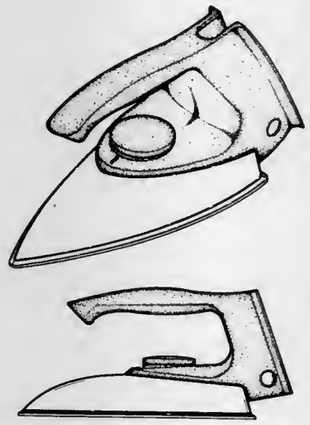
381,150
SPONGE MOP HEAD
Enzo Berti, Venice, Italy, assignor to The Libman Company, Arcola, Ill.
Filed Sep. 22, 1995, Ser. No. 44,321
Term of patent 14 years
LOC (6) Cl. 04 - *01*
U.S. Cl. D32—50



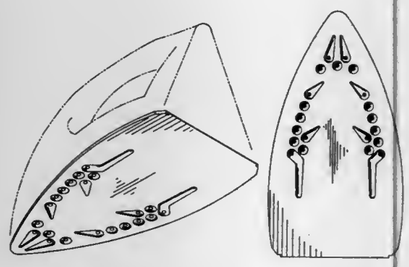
381,151
ELECTRIC IRON
Yu-Yuan Lin, P.O. Box 1032, Tainan, Taiwan
Filed Apr. 15, 1996, Ser. No. 53,149
Term of patent 14 years
LOC (6) Cl. 07 - *05*
U.S. Cl. D32—69



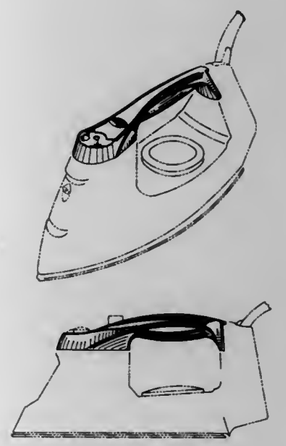
381,152
ELECTRIC IRON
Yu-Yuan Lin, P.O. Box 1032, Tainan, Taiwan
Filed Apr. 15, 1996, Ser. No. 53,151
Term of patent 14 years
LOC (6) Cl. 07 - *05*
U.S. Cl. D32—69



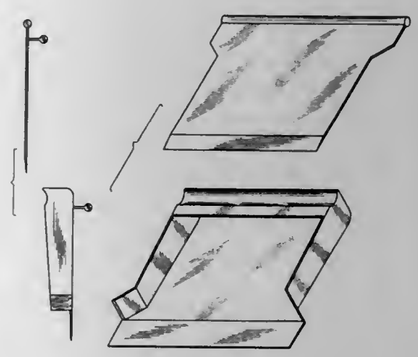
381,153
SOLEPLATE FOR A STEAM IRON
Michael J. Loomis, Watertown, Conn., assignor to Black & Decker Inc., Newark, Del.
Filed Nov. 27, 1995, Ser. No. 47,117
Term of patent 14 years
LOC (6) Cl. 07 - *05*
U.S. Cl. D32—71



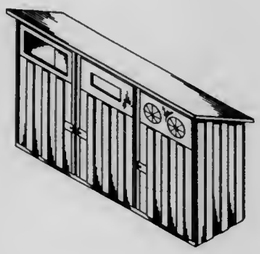
381,154
HANDLE FOR AN ELECTRIC IRON
Michael J. Loomis, Watertown, Conn., assignor to Black & Decker Inc., Newark, Del.
Filed Oct. 13, 1995, Ser. No. 45,224
Term of patent 14 years
LOC (6) Cl. 07 - *05*
U.S. Cl. D32—72



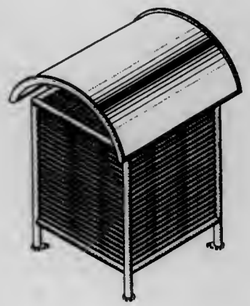
381,155
TWO PIECE CLEANING TOOL FOR LIFTING AND DISPOSAL OF WET AND DRY SPILLS
Cameron A. Powers, 934 Greenleaf Ave., Burlington, Wash. 98233
Filed Apr. 15, 1996, Ser. No. 53,177
Term of patent 14 years
LOC (6) Cl. 07 - *05*
U.S. Cl. D32—74



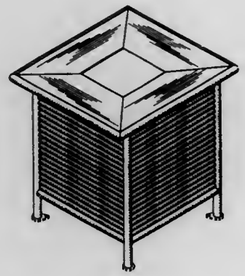
381,156
RECYCLING BIN
Roger A. Kent, Oakville, Canada, assignor to Total Waste Handling Solutions, Inc., Oakville, Canada
Filed Aug. 15, 1995, Ser. No. 42,626
The portion of the term of this patent subsequent to Jun. 3, 2011, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 09 - *09*
U.S. Cl. D34—1



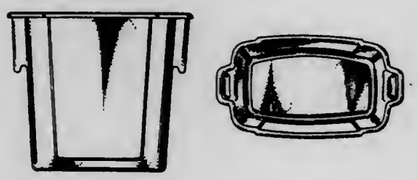
381,157
TRASH RECEPTACLE
Brian J. Kane, San Francisco, Calif., assignor to Landscape Forms, Inc., Kalamazoo, Mich.
Filed Mar. 1, 1996, Ser. No. 51,014
Term of patent 14 years
LOC (6) Cl. 09 - *09*
U.S. Cl. D34—1



381,158
TRASH RECEPTACLE
Brian J. Kane, San Francisco, Calif., assignor to Landscape Forms, Inc., Kalamazoo, Mich.
Filed Mar. 1, 1996, Ser. No. 51,054
Term of patent 14 years
LOC (6) Cl. 09 - *09*
U.S. Cl. D34—1



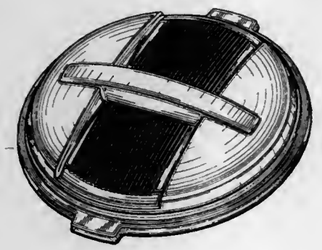
381,159
REFUSE RECEPTACLE DESIGNED TO HOLD RECYCLED PLASTIC BAGS AS INNER LINERS
Richard Hampton, 1130 Kingston Dr., La Habra, Calif. 90631
Filed Mar. 14, 1996, Ser. No. 51,605
Term of patent 14 years
LOC (6) Cl. 09 - *09*
U.S. Cl. D34—1



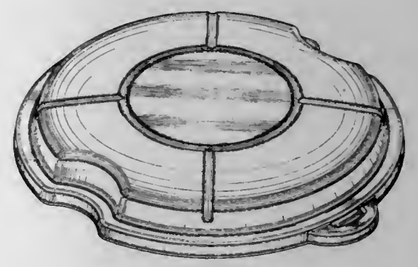
381,160
FOUR WHEELED CONTAINER WITH LATERALLY AFFIXED LIFTING BRACKET
Norman C. Lee, Greensboro, N.C., assignor to Compagnie Plastic Omnium, Lyons, France
Filed Jan. 5, 1995, Ser. No. 33,118
The portion of the term of this patent subsequent to Nov. 12, 2010, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 09 - *09*
U.S. Cl. D34—5



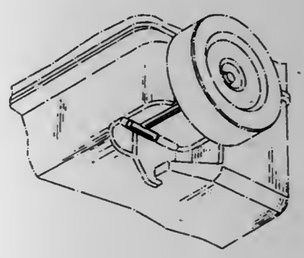
381,161
LID FOR REFUSE CONTAINER
Peter M. Berend, Wooster, and Stephen P. Casteel, Wadsworth, both of Ohio, assignors to Rubbermaid Incorporated, Wooster, Ohio
Filed Feb. 20, 1996, Ser. No. 50,467
Term of patent 14 years
LOC (6) Cl. 09 - *09*
U.S. Cl. D34—11



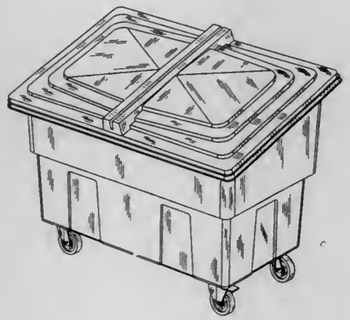
381,162
REFUSE CONTAINER LID
Peter M. Berend, Wooster; Stephen P. Casteel, Wadsworth; Charles W. Craft, Apple Creek, all of Ohio, and Richard O'Grady, Southington, Conn., assignors to Rubbermaid Incorporated, Wooster, Ohio
Filed Apr. 17, 1996, Ser. No. 53,217
Term of patent 14 years
LOC (6) Cl. 09 - *09*
U.S. Cl. D34—11



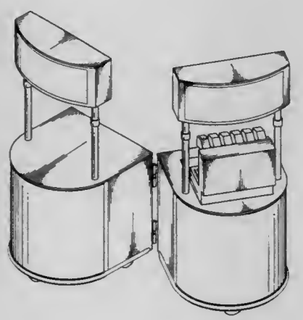
381,163
WHEELED REFUSE CONTAINER AXLE
Norman C. Lee, Greensboro, N.C., assignor to Compagnie Plastic Omnium, Lyons, France
Filed Jun. 6, 1995, Ser. No. 39,888
Term of patent 14 years
LOC (6) Cl. 09 - *09*
U.S. Cl. D34—10



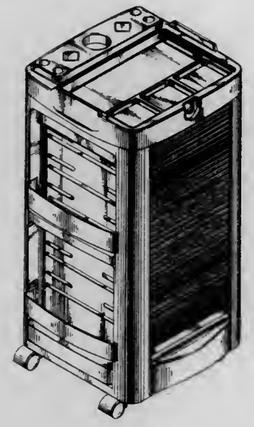
381,164
UTILITY TRUCK
J. Timothy Prout, Winston-Salem; Todd E. Wright, and Smith E. Trent, III, both of Statesville, all of N.C., assignors to Toter, Inc., Statesville, N.C.
Filed Sep. 29, 1995, Ser. No. 44,696
Term of patent 14 years
LOC (6) Cl. 12 - *02*
U.S. Cl. D34—19



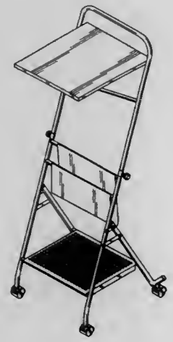
381,165
MOBILE MODULAR RETAIL CART
John A. Mates; John F. Van Schaik, both of Kirkland, and Paul J. Biondolillo, Seattle, all of Wash., assignors to JM1 Sales Corp., Woodinville, Wash.
Filed Sep. 29, 1995, Ser. No. 44,816
Term of patent 14 years
LOC (6) Cl. 12 - *02*
U.S. Cl. D34—20



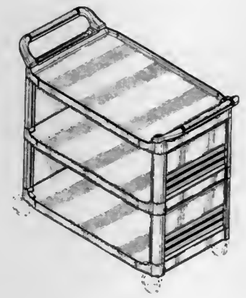
381,166
ROLLING UTILITY CART
Claudio Bonazza, Mission Viejo, Calif., assignor to Venice Trading Co., Inc., Costa Mesa, Calif.
Filed May 20, 1996, Ser. No. 54,717
Term of patent 14 years
LOC (6) Cl. 12 - *02*
U.S. Cl. D34—20



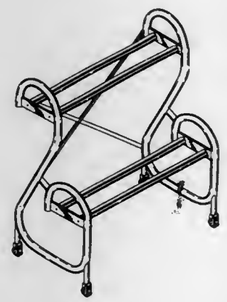
381,167
SALESMEN DESK
Robert Wang, Memphis, Tenn., assignor to Wang's International, Inc., Memphis, Tenn.
Filed Jul. 7, 1995, Ser. No. 41,189
Term of patent 14 years
LOC (6) Cl. 12 - *02*
U.S. Cl. D34—21



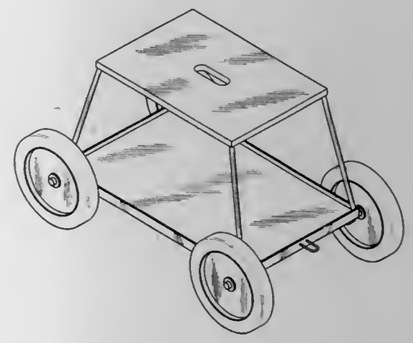
381,168
CART
Paul E. Delmerico, Winchester, Va.; Brad Forrest, Cary, N.C.; Brian Leonard, Durham, N.C., and Joel Wittkamp, Raleigh, N.C., assignors to Rubbermaid Commercial Products Inc., Winchester, Va.
Filed Dec. 5, 1995, Ser. No. 47,473
Term of patent 14 years
LOC (6) Cl. 12 - *02*
U.S. Cl. D34—21



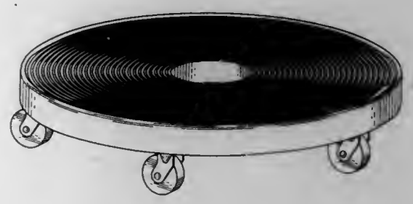
381,169
STAND
Steven A. Kovens, Owings Mills, and Dennis Barber, Hampstead, both of Md., assignors to Parkway Machine Corporation, Timonium, Md.
Filed May 21, 1996, Ser. No. 54,753
Term of patent 14 years
LOC (6) Cl. 12 - *02*
U.S. Cl. D34—21



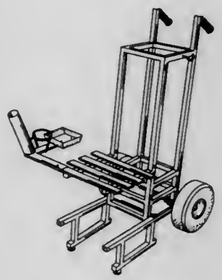
381,170
GARDEN DOLLY
Emmitt Dawkins, 2414 Bells Rd., Richmond, Va. 23234
Filed Apr. 1, 1996, Ser. No. 52,619
Term of patent 14 years
LOC (6) Cl. 12 - *02*
U.S. Cl. D34—23



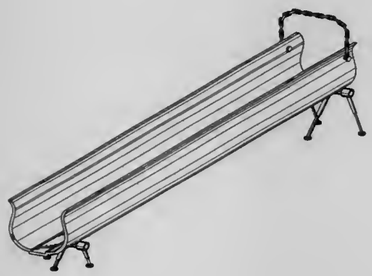
381,171
BEER KEG DOLLY
Harold G. Culverson, 4111 N. Golden State #104, Fresno, Calif. 93727
Filed May 22, 1996, Ser. No. 54,796
Term of patent 14 years
LOC (6) Cl. 12 - *02*
U.S. Cl. D34—23



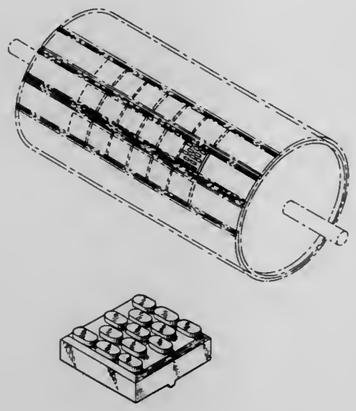
381,172
FISHING EQUIPMENT CART WITH SEAT
James M. Jackson, and James W. Jackson, both of 5780 Maxwell Rd., Autryville, N.C. 28318
Filed Dec. 4, 1995, Ser. No. 47,434
Term of patent 14 years
LOC (6) Cl. 12 - *02*
U.S. Cl. D34—24



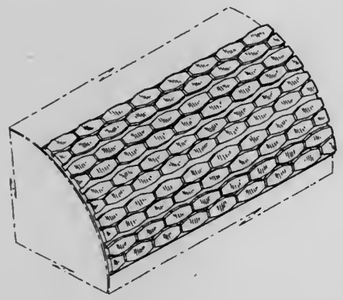
381,173
RECREATIONAL VEHICLE WASTE DISPOSAL CHUTE
Larry J. Franklin, 365 Lipizzan La., Reno, Nev. 89506
Filed Sep. 29, 1995, Ser. No. 44,767
Term of patent 14 years
LOC (6) Cl. 12 - *05*
U.S. Cl. D34—28



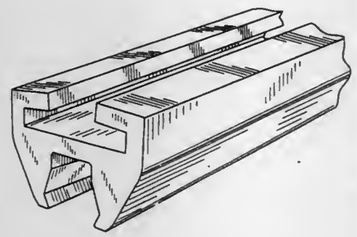
381,174
PULLEY LAGGING BLOCK
Richard D. Stoll, Huntington, W. Va., assignor to Richwood Industries, Inc., Huntington, W. Va.
Filed Sep. 29, 1995, Ser. No. 44,764
Term of patent 14 years
LOC (6) Cl. 12 - *05*
U.S. Cl. D34—29



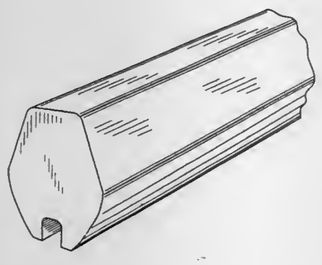
381,175
LAGGING TREAD FOR A PULLEY
Richard D. Stoll, Huntington, W. Va., assignor to Richwood Industries, Inc., Huntington, W. Va.
Filed Oct. 31, 1995, Ser. No. 45,863
Term of patent 14 years
LOC (6) Cl. 12 - *05*
U.S. Cl. D34—29



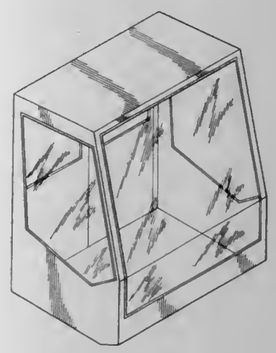
381,176
EXTRUDED BLOCK
John R. Patois, Wayne, N.J., and Jack D. Warren, Oshkosh, Wis., assignors to J & J Container Handling Systems, Little Falls, N.J.
Filed Nov. 28, 1995, Ser. No. 47,185
Term of patent 14 years
LOC (6) Cl. 12 - *05*
U.S. Cl. D34—29



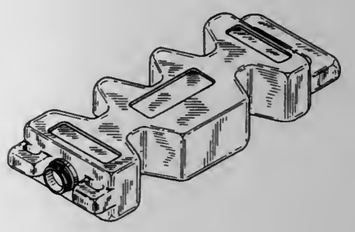
381,177
CONVEYOR BELT
John R. Patois, Wayne, N.J., and Jack D. Warren, Oshkosh, Wis., assignors to J & J Container Handling Systems, Little Falls, N.J.
Filed Nov. 28, 1995, Ser. No. 47,187
Term of patent 14 years
LOC (6) Cl. 12 - *05*
U.S. Cl. D34—29



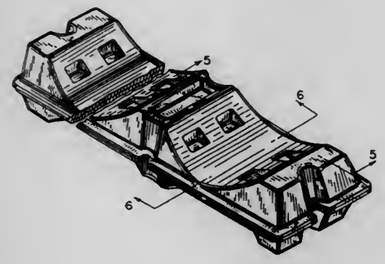
381,178
OPERATOR CAB FOR A CRANE
Thomas Feider; Norbert Lenius, both of Sturgeon Bay; Edward Lazzeroni, and Ronald Dir, both of Racine, all of Wis., assignors to Marine Travelift, Inc., Sturgeon Bay, Wis.
Filed May 26, 1995, Ser. No. 39,359
Term of patent 14 years
LOC (6) Cl. 12 - *05*
U.S. Cl. D34—33



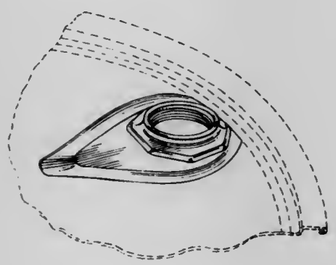
381,179
BOOM AND MAST SUPPORT
Borge Hestehave, Alta Loma, and Kjeld Hestehave, Upland, both of Calif., assignors to Bomatic, Inc., Ontario, Calif.
Filed Feb. 2, 1996, Ser. No. 49,905
Term of patent 14 years
LOC (6) Cl. 12 - *05*
U.S. Cl. D34—36



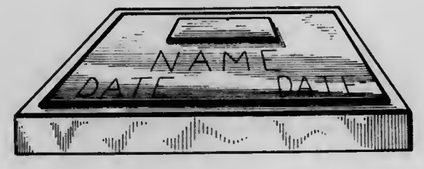
381,180
ROLL SUPPORT
Herbert H. Schueneman, Monterey, Calif.; Robb A. Warren, Appleton, Wis.; Richard M. Butler, Menasha, Wis., and Cary M. Dean, Milwaukee, Wis., assignors to Great Northern Corporation, Appleton, Wis.
Filed Jul. 10, 1995, Ser. No. 41,230
Term of patent 14 years
LOC (6) Cl. 09 - *08*
U.S. Cl. D34—38



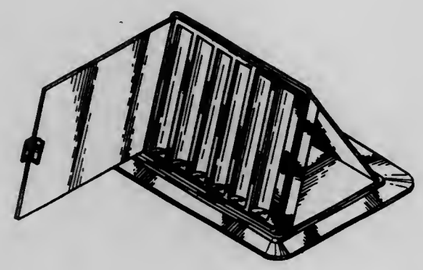
381,181
DRAIN OUTLET HOLE AND RESIDUE DRAIN
Davis B. Dwinell, Carol Stream, Ill., assignor to American Flange & Manufacturing Co., Inc., Carol Stream, Ill.
Continuation-in-part of Ser. No. 1,350, Nov. 12, 1992, abandoned. This application Feb. 28, 1995, Ser. No. 35,672
Term of patent 14 years
LOC (6) Cl. 09 - *02*
U.S. Cl. D34—39



381,182
HORIZONTAL GRAVE MARKER
Raymond C. Whited, 501 Pine Alley, Pulaski, Va. 24301
Filed Jul. 24, 1995, Ser. No. 41,755
Term of patent 14 years
LOC (6) Cl. 25 - *03*
U.S. Cl. D99—17



381,183
COMMUNION BREAD DISPENSER
Samuel Richitt, and Grace Richitt, both of 4239 Trammell Ave., Macon, Ga. 31206
Filed Nov. 7, 1995, Ser. No. 46,104
Term of patent 14 years
LOC (6) Cl. 99 - *00*
U.S. Cl. D99—25



381,184
SUCTION CRUCIFIXION
Nicholas J. Monahan, 156 S. Hayworth Ave., Los Angeles, Calif. 90048
Filed Jul. 7, 1995, Ser. No. 41,171
Term of patent 14 years
LOC (6) Cl. 11 - *02*
U.S. Cl. D99—27



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1997
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LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 15th DAY OF JULY, 1997

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A.O. Smith Corporation: *See—*
Pfeffer, John D., 5,648,158, Cl. 428-325.000.

A-Z Terminal Corporation: *See—*
Monday, John W.; Ottaviani, Joseph C.; and Smith, Leonard R., 5,647,906, Cl. 118-70.000.

Aaronson, Stuart A.: *See—*
Bottaro, Donald P.; Rubin, Jeffery S.; Faletto, Donna; Chan, Andrew M.-L.; Vande Woude, George F.; and Aaronson, Stuart A., 5,648,273, Cl. 436-501.000.

AB Volvo: *See—*
Axbrink, Göran; and Håkansson, Nils-Olof, 5,647,325, Cl. 123-496.000.
Sarakinis, Georgios, 5,647,222, Cl. 62-129.000.

ABB Lummus Global Inc.: *See—*
Kantorowicz, Steven I.; Stanley, Stephen J.; Wadsworth, David M.; and Warner, Rene C. L., 5,647,972, Cl. 208-100.000.

Abbey Etna Machine Company: *See—*
Ruple, Lewis H.; and Taber, Susan J., 5,647,241, Cl. 72-178.000.

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Kempf, Dale J.; Norbeck, Daniel W.; Codacovi, Lynn M.; Sham, Hing L.; and Wittenberger, Steven J., 5,648,497, Cl. 548-204.000.

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Kim, Young Ran; Kantor, Johanna; Gill, James E.; and Luptovic, Sue E., 5,648,225, Cl. 435-7.240.

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Sawaki, Ippei; Miura, Michio; Ishikawa, Yoshiro; and Abe, Fumitaka, 5,648,874, Cl. 359-622.000.

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Kimura, Toshiyuki; Ishikawa, Yutaro; Abe, Shinichi; Kamiya, Kazuhiro; and Miyake, Takashi, 5,649,319, Cl. 455-186.100.

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Abe, Takeo; and Kawamura, Shoji, to France Bed Co., Ltd. Water mattress apparatus and a water bag used for the water mattress apparatus. 5,647,077, Cl. 5-685.000.

Abe, Tetsuhiko; Kunieda, Shigehiko; Nakajima, Isao; and Utsumi, Yusuke, to NGK Insulators, Ltd. Composite insulator, segment used for producing the same and method of producing the same by using the segment. 5,648,132, Cl. 428-36.900.

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Kasahara, Keiji, 5,647,157, Cl. 40-79.200.

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Lanning, Christine L.; Abou-Donia, Mohammed B.; Fine, Robert L.; and Corcoran, James J., 5,648,085, Cl. 424-405.000.

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ABT, Inc.: *See—*
Gunter, Charles E., 5,647,689, Cl. 405-36.000.
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Accom, Inc.: *See—*
Craven, Ian; Hill, Bruce Logan; Kelson, Lance E.; Rose, Robert; and Rentmeesters, Stephen J., 5,649,171, Cl. 395-500.000.

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Matey, James R.; Aceti, John G.; and Pletcher, Timothy A., 5,649,021, Cl. 382-128.000.

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Schaefer, Keith James; Mandzy, John; Carlson, Andrew Anthony; Adams, Crestus Lee; Brown, Steven Joseph; and Johnson, John Joseph Paul, 5,648,052, Cl. 422-305.000.

Adams, Daniel O.: *See—*
Lafontaine, Daniel M.; Adams, Daniel O.; and Humphrey, John W., 5,647,847, Cl. 604-96.000.

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Williams, Harold Richard, 5,648,723, Cl. 324-509.000.

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Sulosky, William P.; and Beach, Wayne H., 5,647,641, Cl. 299-39.800.

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Proulx, Sylvester Eugene, 5,647,264, Cl. 83-840.000.

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Andrade, Victor F.; and Horton, Kelly M., 5,649,161, Cl. 395-494.000.
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Berezin, Alan; and Quintanilla, Reuben, 5,649,169, Cl. 395-500.000.
Cabler, Carlin Dru, 5,648,779, Cl. 341-143.000.
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Gardner, Mark I.; Fulford, H. Jim, Jr.; and Wristers, Derick J., 5,648,286, Cl. 437-44.000.
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Chao, Yong-Sheng, 5,648,997, Cl. 378-98.400.

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Tsang, Dah Wen; Sdrulla, Dumitru; Pike, Douglas A., Jr.; Meyer, Theodore O.; Mosier, John W., II, deceased, 5,648,283, Cl. 437-40.000.

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Kunkel, Harry A., III, 5,648,942, Cl. 367-176.000.

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Potter, Michael D., 5,647,998, Cl. 216-24.000.

Aerens, Ronny Jean Valentine; De Cock, Etienne Marie; De Schamphelaere, Lucien Amede; Steylaerts, Peter Alexander Roger; and Van Weverberg, Erik Gabriel Gerardus, to Xeikon N.V. Method of forming a drum assembly for use in a printer and the drum assembly made thereby. 5,649,267, Cl. 399-159.000.

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Cwirla, Steven E.; Barrett, Ronald W.; Dower, William J.; and Martens, Christine L., 5,648,458, Cl. 530-324.000.

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Kitamura, Kenroh; Ikehata, Michino; Tsuzaki, Masaaki; and Oharu, Kazuya, 5,648,325, Cl. 510-177.000.
Ooi, Yoshiharu; Wakabayashi, Tsuneo; Serizawa, Shigeyuki; Sonda, Yoshiyuki; Kunigita, Masaya; and Hirai, Yoshinori, 5,648,860, Cl. 349-10.000.

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Takahashi, Chiharu, 5,648,605, Cl. 73-197.000.
Yasuda, Kazuaki; Mizuhata, Minoru; Oguro, Keisuke; and Takenaka, Hiroyasu, 5,648,307, Cl. 502-101.000.

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Doner, John R., 5,649,292, Cl. 455-447.000.

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Hara, Takeshi; Kato, Kenji; and Takada, Noriyuki, 5,648,182, Cl. 429-20.000.

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Smithson, Alan George; Aiston, Brian Edward; Harte, Joseph Patrick; and Williamson, Kenneth, 5,647,553, Cl. 242-381.100.

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Akasawa, Toshiyuki: *See—*
Mizoguchi, Akinobu; Nakanishi, Shinji; and Akasawa, Toshiyuki, 5,648,151, Cl. 428-220.000.

Akesson, Leif: *See—*
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Aketagawa, Jun: *See—*
Tamura, Hiroshi; Tanaka, Shigenori; Aketagawa, Jun; and Oda, Toshio, 5,648,230, Cl. 435-18.000.

Akiba, Masaru; Nakagawa, Masayuki; Tsurufuji, Tomoyoshi; Sunaga, Shunji; and Ito, Koichi, to Daiwa Seiko, Inc. Fishing rod with inserted fishline. 5,647,162, Cl. 43-24.000.

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Akridge, Walt: *See—*
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Akzo Nobel, N.V.: *See—*
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Layman, William J.; and Robinson, Gene C., 5,648,578, Cl. 585-352.000.
Lee, John Y.; and Diefenbach, Steven P., 5,648,308, Cl. 502-104.000.
Lee, John Y.; Ao, Meng-Sheng; Belmont, Stephen E.; and Shepherd, Lawrence H., Jr., 5,648,583, Cl. 585-664.000.
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Lewis, Michael E.; Apfel, Stuart C.; and Kessler, John A., 5,648,335, Cl. 514-12.000.

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Sacchettini, James; Blanchard, John; and Jacobs, William R., 5,648,392, Cl. 514-560.000.

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Overton, Bob J.; Roach, Robert L.; and Lopez, Adolphe R., 5,647,884, Cl. 65-533.000.

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Wieloch, Christopher J.; Babinski, Thomas E.; Mather, John C.; Woychik, Gerard A.; and McLaughlin, Steven R., 5,648,892, Cl. 361-788.000.

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Allen, Michael S., to Motorola, Inc. Priority arbitration protocol with two resource requester classes and system therefor. 5,649,206, Cl. 395-729.000.

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Park, John Y.; Peng, Lin; and Dziabo, Anthony J., 5,648,074, Cl. 424-94.200.
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Lences, Charles Francis, 5,648,418, Cl. 524-538.000.

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Amdex A/S: *See—*
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Hovis, Keith W.; and Anderson, Richard L., 5,648,587, Cl. 585-724.000.

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Andrade, Victor F.; and Horton, Kelly M., to Advanced Micro Devices. Prepaging during PCI master initiated wait cycles. 5,649,161, Cl. 395-494.000.

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Andres, Peter: *See—*
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Keogh, John Vincent; Batterham, Robin John; and Andrews, Barry Stuart, 5,647,888, Cl. 75-443.000.

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Bhuva, Rohit L.; Tran, Bao; Conner, James L.; Overlaur, Michael; and Paulsen, Tracy S., to Texas Instruments Incorporated. Large integrated circuit with modular probe structures. 5,648,730, Cl. 324-763.000.

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Biagiotti, Guglielmo. Clamp for holding logs during the production of toilet paper rolls or the like. 5,647,259, Cl. 83-458.000.

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Bianco, James A.; Woodson, Paul; Porubek, David; and Singer, Jack, to Cell Therapeutics, Inc. Enatiomerically pure hydroxylated xanthine compounds. 5,648,357, Cl. 514-263.000.

Bienert, Herbert; Egner-Walter, Bruno; and Fink, Andreas, to ITT Automotive Europe GmbH. Wiper arm. 5,647,680, Cl. 403-263.000.

Bier, Peter; Wank, Joachim; and Capellen, Peter, to Bayer Aktiengesellschaft. Screen printing ink containing polycarbonate binder. 5,648,414, Cl. 524-323.000.

Bierer, Donald E.; Dener, Jeffrey M.; Litvak, Joane; and Dubenko, Larisa G., to Shaman Pharmaceuticals, Inc. 1,2-dithiins having antifungal activity. 5,648,354, Cl. 514-252.000.

Bieringer, Hermann: *See*—
Lorenz, Klaus; Willms, Lothar; Bauer, Klaus; and Bieringer, Hermann, 5,648,315, Cl. 504-214.000.

Billings, Pamela B.: *See*—
Cullen, W. Paul; Billings, Pamela B.; and Ramming, John E., 5,648,617, Cl. 73-862.045.

Billings, Patricia; and Michalski, Susan, to Earth Products Limited. Fire resistant building panel. 5,647,180, Cl. 52-268.000.

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Binar Graphics, Inc.: *See*—
Vouri, Scott D.; and Higgins, Paul Jerome, 5,648,795, Cl. 345-132.000.

Binks Manufacturing Company: *See*—
Diana, Michael J., 5,647,542, Cl. 239-690.000.

Bio-Lab, Inc.: *See*—
Lachocki, Thomas M.; Ragin, Oscar T.; and Mitchell, Presley K., 5,648,314, Cl. 504-151.000.

Bio-Mega/Boehringer Ingelheim Research Inc.: *See*—
Adams, Julian; Beaulieu, Pierre Louis; Lavallée, Pierre; Plante, Raymond; and Rakhit, Sumanas, 5,648,337, Cl. 514-17.000.

Bio-Rad Laboratories, Inc.: *See*—
Liao, Jia-Li; and Hjertén, Stellan, 5,647,979, Cl. 210-198.200.

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Odom, James Martin, 5,648,258, Cl. 435-252.100.

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Bowers, Roderick W. J.; Jones, Stephen A.; and Stratford, Peter W., 5,648,442, Cl. 526-277.000.

Biomay Produktions - Und Handelsgesellschaft M.B.H.: *See*—
Valenta, Rudolf; Duchene, Michael; Pettenburger, Karin; Breitenbach, Michael; Kraft, Dietrich; Rumpold, Helmut; and Scheiner, Otto, 5,648,242, Cl. 435-69.300.

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Biota Scientific Management Pty., Ltd.: *See*—
Von Itzstein, Laurence Mark; Wu, Wen-Yang; Van Phan, Tho; Danylec, Basil; Jin, Betty; Colman, Peter Malcolm; and Varghese, Joseph Noozhumurry, 5,648,379, Cl. 514-459.000.

Biotek, Inc.: *See*—
Nuwayser, Elie S., 5,648,097, Cl. 424-489.000.

Bird, Gerald C., to Minnesota Mining and Manufacturing Co. Component carrier tape. 5,648,136, Cl. 428-76.000.

Birkle, Siegfried: *See*—
Sebald, Michael; Birkle, Siegfried; Preissner, Karin; and Bestmann, Hans-Jürgen, 5,648,195, Cl. 430-170.000.

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Holzhauer, Frederick W.; Johnson, Dana J.; and McAninch, Terry, 5,647,997, Cl. 210-721.000.

Biro, Larry L.; Grodstein, Joel J.; Pan, Jeng-Wei; and Rethman, Nicholas L., to Digital Equipment Corporation. Static timing verification in the presence of logically false paths. 5,648,909, Cl. 364-488.000.

Bischof, Roman; Hofer, Markus; Koller, Albert; and Wohlrab, Christian, to Balzers Aktiengesellschaft. optical device and method for coating an optical substrate. 5,648,147, Cl. 428-212.000.

Bisgaier, Charles Larry; Creger, Paul Leroy; Saltiel, Alan Robert; and Tafuri, Sherrie Rae, to Warner-Lambert Company. Carboxyalkylethers, formulations, and treatment of vascular diseases. 5,648,387, Cl. 514-547.000.

Bisset, Stephen J.: *See*—
Miller, Robert J.; and Bisset, Stephen J., 5,648,642, Cl. 178-18.000.

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Bivens, Steven L., to Illinois Tool Works Inc. Latch mechanism. 5,647,578, Cl. 267-34.000.

Bjerede, Bjorn E.; Lipowski, Joseph T.; Madsen, Benny; Gilbert, Sheldon L.; and Petranovich, James E., to Rockwell Semiconductor Systems, Inc. Universal radio architecture for low-tier personal communication system. 5,648,985, Cl. 375-219.000.

Black & Decker Inc.: *See*—
Dassoulas, Stephen C., 5,647,133, Cl. 30-392.000.
deBlois, Bryan P.; and Bensussen, Bernard L., 5,647,091, Cl. 15-323.000.

Black, Robin: *See*—
Gilbert, Stephen; Chow, Donald; Black, Robin; and Armstrong, Gordon, 5,647,872, Cl. 606-61.000.

Blackmore, Richard. Advanced cured resin composite parts and method of forming such parts. 5,648,137, Cl. 428-102.000.

Blake, Alan David; Boutique, Jean-Pol; Geudens, Jozef Philomena; and Delplancke, Patrick Firmin, to Procter & Gamble Company, The. High active premix based on polyhydroxy fatty acid amides for use in detergent compositions. 5,648,329, Cl. 510-535.000.

Blake, Joseph W., III; and Spitz, Robert M. Method and means for treating female urinary incontinence. 5,647,836, Cl. 600-30.000.

Blalock, Guy, to Micron Technology, Inc. Plasma reactors. 5,647,913, Cl. 118-723.001.

Blanchard, John: *See*—
Sacchettini, James; Blanchard, John; and Jacobs, William R., 5,648,392, Cl. 514-560.000.

Blanchard, Richard A., to SGS-Thomson Microelectronics, Inc. Trench MOS-gated device with a minimum number of masks. 5,648,670, Cl. 257-329.000.

Blaner, Bartholomew; and Vassiliadis, Stamatis, to International Business Machines, Corporation. Apparatus and method for storing and initializing branch prediction with selective information transfer. 5,649,178, Cl. 395-587.000.

Blank, Heinz Ulrich: *See*—
Konig, Bernd-Michael; Judat, Helmut; and Blank, Heinz Ulrich, 5,648,565, Cl. 568-940.000.

Blankenship, Charles Philip; Henry, Michael Francis; Huron, Eric Scott; and Hyzak, John Michael, to General Electric Company. Method for controlling grain size in Ni-base superalloys. 5,649,280, Cl. 419-25.000.

Blasch Precision Ceramics, Inc.: *See*—
Rexford, Donald G.; and Bolebruch, Jeffrey J., 5,647,432, Cl. 165-134.100.

Blaszczyk, Curt H.: *See*—
Buckley, James A.; Blaszczyk, Curt H.; and Dimsey, James J., 5,647,459, Cl. 188-72.900.

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Artavanis-Tsakonas, Spyridon; Fehon, Richard Grant; Rebay, Ilaria; and Blaumueller, Christine Marie, 5,648,464, Cl. 530-350.000.

Blieszner, Kathleen Clare; and Deckner, George Endell, to Procter & Gamble Company, The. Personal care compositions and wipe products containing the compositions. 5,648,083, Cl. 424-402.000.

Bliss, William G.: *See*—

Welland, David R.; and Bliss, William G., 5,648,738, Cl. 327-307.000.

Blizzard, John Donald, to Dow Corning Corporation. Room temperature, moisture-curable abrasion-resistant coating composition having enhancable weatherability. 5,648,173, Cl. 428-446.000.

Blizzard, Ronald H.; Schell, Cynthia T.; Skruch, Harry J.; and Stallings, Robert L., to United States of America, Navy. Method and apparatus for heated, pressure-swing high pressure air dehydration. 5,647,891, Cl. 95-99.000.

Block Medizintechnik GmbH: *See*—
Doms, Manfred; and Fischer, Ulrich, 5,648,833, Cl. 351-235.000.

Blonsky, Peter Miller, to Micron Communications, Inc. Structurally stable gelled electrolytes. 5,648,011, Cl. 252-62.200.

Bloomer, William E. Camera fixture for stereoscopic imagery and method of using same. 5,647,838, Cl. 600-111.000.

Board of Regents of University of Washington: *See*—
Ross, Russell; Reidy, Michael A.; Raines, Elaine W.; Lindner, Volkhard; and Ferns, Gordon A. A., 5,648,076, Cl. 424-145.100.

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Balkus, Kenneth J., Jr.; and Gabrielov, Alexi G., 5,648,058, Cl. 423-702.000.

Board of Regents, The University of Texas System: *See*—
West, Michael D.; Shay, Jerry; and Wright, Woodring E., 5,648,215, Cl. 435-6.000.

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Heintzmann, Peter; and Guse, Kuno, 5,647,640, Cl. 299-1.600.

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Bodeau, Loren Keith: *See*—
Collins, Richard J.; and Bodeau, Loren Keith, 5,647,427, Cl. 164-459.000.

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Schnatz, Jürgen; and Ruggaber, Willi, 5,647,560, Cl. 244-3.150.

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Forssén, Ulf Göran; and Bodin, Stig Roland, 5,649,287, Cl. 370-312.000.

Boehmelt, Guido: *See*—
Zenke, Martin; Boehmelt, Guido; Madruga, Jaime; and Enrietto, Paula, 5,648,248, Cl. 435-172.300.

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Zenke, Martin; Boehmelt, Guido; Madruga, Jaime; and Enrietto, Paula, 5,648,248, Cl. 435-172.300.

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Resemann, Wolfgang; Durr, Adolf; Engelhardt, Gunther; and Quirke, John Frances, 5,648,386, Cl. 514-524.000.

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Fischer, John Robert, 5,647,239, Cl. 72-60.000.

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Linick, James, 5,647,558, Cl. 244-3.110.

Boger, Robert C.: *See*—
Rodgers, John A.; Perrotto, Joseph A.; and Boger, Robert C., 5,648,041, Cl. 264-555.000.

Bogue, Beuford Arlie; and Myers, Garry L., to Fuisz Technologies Ltd. Method and apparatus for retaining a formed compression dosage unit within a die cavity. 5,648,033, Cl. 264-109.000.

Böhm, Ludwig, to Hoechst Aktiengesellschaft. Process for the preparation of a poly-1-olefin. 5,648,309, Cl. 502-105.000.

Boivin, Eliane: *See*—
Ovaert, Patricia; and Boivin, Eliane, 5,648,087, Cl. 424-423.000.

Böldt, Frank; Schulze, Ingo; Moschütz, Harald; and Röhl, Marianne, to Bosch-Siemens Hausgeraete GmbH. Automatically controlled washing machine. 5,647,232, Cl. 68-12.020.

Bolebruch, Jeffrey J.: *See*—
Rexford, Donald G.; and Bolebruch, Jeffrey J., 5,647,432, Cl. 165-134.100.

Bolieau, Donald J., to Morton International, Inc. Tether attachment apparatus for air bag cover. 5,647,607, Cl. 280-728.200.

Bolle, Rudolf Maarten: *See*—
Connell, Jonathan Hudson; Mohan, Rakesh; and Bolle, Rudolf Maarten, 5,649,070, Cl. 395-77.000.

Bollig & Kemper KG: *See*—
Hille, Hans Dieter; and Muller, Horst, 5,648,410, Cl. 523-501.000.

Bolo, Eugene R.: *See*—
Yablonsky, Albert; Bolo, Eugene R.; and Reggi, John D., 5,647,996, Cl. 210-710.000.

Bombardelli, Ezio; and Morazzoni, Paolo, to Indena S.p.A. Formulations containing carotenoids an procarotenoids combined with polyphenols in the prevention of the damages due to an abnormal production of free radicals. 5,648,377, Cl. 514-456.000.

Bommer, Juergen; Schill, Eduard; and Waible, Siegfried, to ITT Automotive Europe GmbH. Wiper with a wind guide device. 5,647,088, Cl. 15-250.201.

Bonar Plastics, Inc.: *See*—
Cali, John J.; and Raz, Richard L., 5,647,732, Cl. 417-360.000.

Bond, Curtis J., to Liqui-Box Corporation. Collapsed bag with evacuation channel form unit. 5,647,511, Cl. 222-105.000.

Bóné, István: *See*—
Pálosi, Endre; Korbonits, Dezso; Molnár née Bakó, Erzsébet; Szvoboda née Kanzel, Ida; Héja, Gergely; Kiss, Pál; Gönczi, Csaba; Sperber, Ferenc; Huszár, Csaba; Mihalovics, György; Németh, Attila; Sütö, Mihály; Gyüre, Károl; Bóné, István; Mórász, Ferenc; Ledniczky, László; Szabó née Kardos, Erzsébet; Györi, Péter; Szalay, Erzsébet; Bán, Károly; Buttkai, Ildikó; Kövári, Árpád; and Garaczy, Sándor, 5,648,498, Cl. 548-202.000.

Boniort, Jean-Yves; Brehm, Claude; Tardy, André; Hakoun, Roland; Bourhis, Jean-Francois; and Joly, Bertrand, to Alcatel Cable Interface. Multiferrule for connecting optical fibers together, a connector constituting an application thereof, and a method of manufacturing the multiferrule. 5,649,038, Cl. 385-59.000.

Bonnert, Roger V.; Brown, Roger C.; Cheshire, David R.; Ince, Francis; and Dixon, John, to Astra Pharmaceuticals Limited. 7-(2-aminoethyl) benzothiazolones. 5,648,370, Cl. 514-367.000.

Bonsall, Gordon William: *See*—
Aldred, Barry Keith; Bonsall, Gordon William; Lambert, Howard S.; and Mitchell, Harry David, 5,649,105, Cl. 395-200.040.

Bonte, Frédéric: *See*—
Meybeck, Alain; Bonte, Frédéric; and Dumas, Marc, 5,648,065, Cl. 424-59.000.

Booher, Richard N.; Lawhorn, David E.; Martinelli, Michael J.; Paget, Charles J., Jr.; and Schaus, John M., to Eli Lilly and Company. 6-heterocyclic-4-amino-1,2,2a,3,4,5-hexahydrobenz[CD]indoles. 5,648,356, Cl. 514-256.000.

Boon-Falleur, Thierry: *See*—
Van den Eynde, Benoit; DeBacker, Olivier; and Boon-Falleur, Thierry, 5,648,226, Cl. 435-7.240.

Booras, Peter T., to American Wholesale Beverage Co., Inc. Cart. 5,647,600, Cl. 280-47.350.

Borchert, Holger; Gerdau, Thomas; and Weiguny, Jens, to Hoechst Aktiengesellschaft. Process for the preparation of halobenzaldehydes. 5,648,551, Cl. 568-431.000.

Borden Inc.: *See*—
Gerber, Arthur Harry, 5,648,404, Cl. 523-145.000.

Borg-Warner Automotive, Inc.: *See*—
McDonald, Randy; and Hanlon, Tom, 5,647,812, Cl. 474-111.000.
Miller, Terry L., 5,647,334, Cl. 123-520.000.
Mott, Philip J., 5,647,811, Cl. 474-91.000.

Bos, Ulrich: *See*—
Kühn, Heinrich; Bos, Ulrich; Hannss, Carsten; and von Kayser, Karl-Friedrich, 5,648,123, Cl. 427-448.000.

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Böldt, Frank; Schulze, Ingo; Moschütz, Harald; and Röhl, Marianne, 5,647,232, Cl. 68-12.020.

Boschetti, Egisto; Brouard, Michel; Drouet, Ludovic; Girot, Pierre; Laurent, Alexandre; and Wassef, Michel, to Assistance Publique Hopitaux de Paris; and BioSepra S.A. Microspheres useful for therapeutic vascular occlusions and injectable solutions containing the same. 5,648,100, Cl. 424-501.000.

Bose, Chinmoy Bhusan, to Lucent Technologies Inc. Feedback process control using a neural network parameter estimator. 5,649,063, Cl. 395-22.000.

Boser, Bernard; Guyon, Isabelle; and Vapnik, Vladimir, to Lucent Technologies Inc. Pattern recognition system using support vectors. 5,649,068, Cl. 395-23.000.

Bosli, Hans Ludwig, to Melcher, AG. Attachment device for semiconductor circuit elements. 5,648,889, Cl. 361-704.000.

Boswell, Grady Evan: *See*—
Mehta, Nariman Bomanshaw; Boswell, Grady Evan; and Kelley, James Leroy, 5,648,347, Cl. 514-231.200.

Bottaro, Donald P.; Rubin, Jeffery S.; Faletto, Donna; Chan, Andrew M.-L.; Vande Woude, George F.; and Aaronson, Stuart A., to United States of America, Health and Human Services. Hepatic growth factor receptor is the MET proto-oncogene. 5,648,273, Cl. 436-501.000.

Botterman, Johan: *See*—
Leemans, Jan; Botterman, Johan; Thompson, Charles; and Mouva, Rao, 5,648,477, Cl. 536-23.700.

Bouldin, Brett: *See*—
Owens, Steve; Bouldin, Brett; and Elliott, Gary, 5,647,435, Cl. 166-250.010.

Bouras, Carlos E.: *See*—
La, Duong; Ciardella, Robert L.; Babiarz, Alec J.; and Bouras, Carlos E., 5,647,509, Cl. 222-55.000.

Bourbeau, Roger R.; and Morrow, David L., to Ben Hughes Communication Products Company. Cable terminating tool. 5,647,119, Cl. 29-751.000.

Bourekas, Philip A.; Willenz, Avigdor; Mor, Yeshayahu; and Revak, Scott, to Integrated Device Technology, Inc. Structure and method for multiple-level read buffer supporting optimal throttled read operations by regulating transfer rate. 5,649,232, Cl. 395-880.000.

Bourguignon, Michel; and Pare, Christian, to Sopha Medical. Method for the acquisition, in nuclear medicine, of a scatter image. 5,648,659, Cl. 250-363.040.

Bourhis, Jean-Francois: *See*—
Boniort, Jean-Yves; Brehm, Claude; Tardy, André; Hakoun, Roland; Bourhis, Jean-Francois; and Joly, Bertrand, 5,649,038, Cl. 385-59.000.

Bourlon, Philippe: *See*—
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Boursier, Alain; De Crouychanel, Rémy; and Giron, Louis, to U.S. Philips Corporation. Method and device for generating grey levels in a passive martix liquid crystal display screen. 5,648,796, Cl. 345-149.000.

Boutique, Jean-Pol: *See—*
Blake, Alan David; Boutique, Jean-Pol; Geudens, Jozef Philomena; and Delplancke, Patrick Firmin, 5,648,329, Cl. 510-535.000.

Bouve, Thomas Tracy, to Mapsys, Inc. System and method for identifying, tabulating and presenting information of interest along a travel route. 5,648,768, Cl. 340-988.000.

Bowas-induplan chemie ges. m.b.h: *See—*
Fairweather, John Anthony; Schulze, Walter; and Laffer, Markus, 5,649,324, Cl. 588-202.000.

Bowen, James D.; Henry, Allyson J.; Meier, Mark J.; Postlethwait, Linda S.; and Schrimp, Steven W., to Galileo International Partnership. Method and apparatus for controlling and monitoring group travel related services. 5,648,900, Cl. 395-205.000.

Bowen, Keith Edward: *See—*
Hatch, Russell Bruce; and Bowen, Keith Edward, 5,648,168, Cl. 428-379.000.

Bowerman, Ward E.; and Sacchettini, Paolo, to Zexel Torsen Inc. Differential with bias control. 5,647,815, Cl. 475-249.000.

Bowers, Derek F.; and Ashe, James J., to Analog Devices, Inc. Comparator with a predetermined output state in dropout. 5,648,735, Cl. 327-65.000.

Bowers, Roderick W. J.; Jones, Stephen A.; and Stratford, Peter W., to Biocompatibles Limited. Polymeric surface coatings. 5,648,442, Cl. 526-277.000.

Bowlen, Donald R. Motorcycle towing device. 5,647,719, Cl. 414-462.000.

Boxall, Brian Alfred; Amery, Geoffrey Wilfred; and Ahluwalia, Gurpreet S. Topical composition for inhibiting hair growth. 5,648,394, Cl. 514-564.000.

Boyd, Leslie Samuel; and Kopetzky, Robert Thomas, to European Components Co. Limited. Vehicle safety belt system. 5,647,611, Cl. 280-801.100.

Boyle, Patrick E. Apparatus for selectively flushing a toilet with either a full or partial tank of water. 5,647,067, Cl. 4-325.000.

Bozeman, Steven P.: *See—*
Hooke, William M.; Stoner, Brian R.; Bozeman, Steven P.; Fauber, Roy E.; Munsat, Tobin L.; and Washburn, Sean, 5,648,701, Cl. 315-111.210.

Bradbury, Walter J.: *See—*
Gudat, Adam J.; Shin, Dong Hun; Whittaker, William L.; Kleimenhagen, Karl W.; Singh, Sanjiv J.; Christensen, Dana A.; Kemner, Carl A.; Bradbury, Walter J.; Koehrsen, Craig L.; Kyrtsos, Christos T.; Lay, Norman K.; Peterson, Joel L.; Schmidt, Larry E.; Stafford, Darrell E.; Weinbeck, Louis J.; and Devier, Lonnie J., 5,648,901, Cl. 364-424.027.

Braddick, Britt O., to TIW Corporation. Whipstock and starter mill. 5,647,436, Cl. 166-298.000.

Braddick, Britt O.; and Rives, Allen Kent, to TIW Corporation. Thru tubing tool and method. 5,647,437, Cl. 166-382.000.

Brady, James T.: *See—*
Yeager, John D.; Ho, Lawrence Y.; Stevens, Chester R ; Brady, James T.; and Wang, David T., 5,649,112, Cl. 395-200.100.

Brady, Robert Converse, III: *See—*
Wasserman, Eric Paul; Smale, Mark Wilton; Lynn, Timothy Roger; Brady, Robert Converse, III; and Karol, Frederick John, 5,648,310, Cl. 502-120.000.

Brady, Robert H.; Zielski, David; Nutter, William L.; and Marra, Alexander J., to Colonial Data Technologies Corp. Method and apparatus for detecting a telephone CPE alerting signal. 5,649,002, Cl. 379-142.000.

Brailean, Karen A.: *See—*
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Brancaleoni, Romolo: *See—*
Baumgartner, Alain; and Brancaleoni, Romolo, 5,647,518, Cl. 224-164.000.

Brandley, Brian K.; Tiemeyer, Michael; Swiedler, Stuart J.; Moreland, Margaret; Schweingruber, Hans; and Rao, Narasinga, to Glycomed Incorporated. Methods of treating inflammation using selection binding compounds. 5,648,344, Cl. 514-61.000.

Brands, Karel M. J., to Merck & Co., Inc. Process for synthesizing carbapenem side chain intermediates. 5,648,501, Cl. 548-453.000.

BRATEC, Baumgartner & Brancaleoni: *See—*
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Braun Aktiengesellschaft: *See—*
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Braun, Reinhold: *See—*
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Bray, Daniel M.; Thomas, Kim M.; Domoto, Gerald A.; and Savino, Michael J., to Xerox Corporation. Air handling system for a development housing. 5,649,271, Cl. 399-264.000.

Brazell, Kenneth M.; and Everts, Robert G., to Ryobi Outdoor Products. Fence adjustment mechanism. 5,647,258, Cl. 83-438.000.

Brehm, Claude: *See—*
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Breipohl, Gerhard: *See—*
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Breitenbach, Michael: *See—*
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Bremigan, Charles F., III: *See—*
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Brenco Leisure Products: *See—*
Nettles, Robert, 5,647,568, Cl. 248-316.200.

Brennan, Dennis. Crutch beverage holder. 5,647,519, Cl. 224-407.000.

Brenner, John A.: *See—*
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Adamczyk, Maciej; Johnson, Donald D.; Mattingly, Phillip G.; Clarisse, Diana E.; Tyner, Joan D.; and Perkowitz, Mary M., 5,648,272, Cl. 436-500.000.

Clark, Brian K.: *See*—
Miller, Roy R.; and Clark, Brian K., 5,647,473, Cl. 198-461.200.

Clark, George D., III. Multi-disk shell. 5,648,637, Cl. 102-438.000.

Clark, Joseph A.; and Sartori, Michael A., to United States of America, Navy. Method for acoustic near field scanning using conformal arrayal. 5,648,936, Cl. 367-13.000.

Clark, Michael R.; and Lainhart, Gregory C., to Sargent & Greenleaf, Inc. Tamper-evident electronic combination lock having integral bearing/retaining member. 5,647,235, Cl. 70-278.000.

Clark, Reece Robert, to Midland Manufacturing Corp. Laser liquid level gauge with diffuser. 5,648,844, Cl. 356-5.090.

Clark- Reliance Corporation: *See*—
Brown, David E.; Colman, Mark A.; and Kett, Michael J., 5,647,656, Cl. 362-32.000.

Clark, Steven C.: *See*—
Trinchieri, Giorgio; Perussia, Bice; Clark, Steven C.; Kobayashi, Michiko; Wong, Gordon G.; Hewick, Rodney; and Wolf, Stanley F., 5,648,072, Cl. 424-85.200.
Trinchieri, Giorgio; Perussia, Bice; Clark, Steven C.; Wong, Gordon G.; Hewick, Rodney; Kobayashi, Michiko; and Wolf, Stanley F., 5,648,467, Cl. 536-351.000.

Clark University: *See*—
Licht, Stuart; and Peramunage, Dharmasena, 5,648,183, Cl. 429-105.000.

Clarke, John M.; and Hackett, David E., to Caterpillar Inc. Valving for dual compression/expansion engine and method of assembling the same. 5,647,307, Cl. 123-42.000.

Clearwater, Inc.: *See*—
Smith, Kevin W.; and Persinski, Leonard J., 5,647,900, Cl. 106-285.000.

Cline, Richard W.: *See*—
Zeng, Haishan; Cline, Richard W.; MacAulay, Calum E.; and Jaggi, Bruno W., 5,647,368, Cl. 128-665.000.

Cline, Roger M., to Cline, Roger M. Through-roof fittings. 5,647,178, Cl. 52-219.000.

Clyburn, Clinton E., III; and Bringuier, Anne G., to Siecor Corporation. Cable utilizing wetted superabsorbent powder or water soluble adhesive. 5,649,041, Cl. 385-109.000.

Cobb, Joshua Monroe; and Parker, Peter Kevin, to International Business Machines Corporation. Modified quartz plate to provide non-uniform light source. 5,648,005, Cl. 219-411.000.

Cobb, Robert E.: *See*—
Butler, James R., Jr.; Butler, Cynthia M.; and Cobb, Robert E., 5,647,388, Cl. 137-1.000.

Cobe Laboratories, Inc.: *See*—
Brian, Ben F., III; Voorhees, Marc; and Forrestal, Lloyd James, 5,648,070, Cl. 424-78.100.
Goodrich, Raymond P., Jr.; and Williams, Christine M., 5,648,206, Cl. 435-2.000.
Hovland, Roy S.; Larson, Byron W.; and Maltais, Jo-Ann B., 5,647,984, Cl. 210-420.000.

Coburn Optical Industries, Inc.: *See*—
Cook, Merritt S.; James, Michael D.; and Strope, Todd R., 5,648,025, Cl. 264-1.360.

Cocca, J. David, to Eastman Kodak Company. Self calibration circuit for a camera. 5,649,253, Cl. 396-392.000.

Codacovi, Lynn M.: *See*—
Kempf, Dale J.; Norbeck, Daniel W.; Codacovi, Lynn M.; Sham, Hing L.; and Wittenberger, Steven J., 5,648,497, Cl. 548-204.000.

Coffindaffer, Timothy Woodrow; and Cothran, Philip Earl, to Procter & Gamble Company, The. High lather conditioning shampoos with improved deposition of insoluble, dispersed phase, fluid conditioning agent. 5,648,323, Cl. 510-122.000.

Cogan, Adrian I.: *See*—
Rough, J. Kirkwood H.; Cogan, Adrian I.; and Thornton, Neill R., 5,648,664, Cl. 257-135.000.

Cohen, Eric S. Garment pin. 5,647,099, Cl. 24-3.300.

Cohen, Justin R. Method of simulating pictures for infants and very young children. 5,647,796, Cl. 463-1.000.

Cole, Larry: *See*—
Marik, Greg; Henderson, Jessica; and Cole, Larry, 5,647,613, Cl. 285-195.000.

Cole, Stewart; and Streeck, Rolf E., to Institut Pasteur. Determined DNA sequences derived from a papillomavirus genome, their uses for in vitro diagnostic purposes and the production of antigenic compositions. 5,648,459, Cl. 530-324.000.

Coleman, John Russell, to General Motors Corporation. Master cylinder reservoir assembly. 5,647,212, Cl. 60-562.000.

Coletica: *See*—
Fourcart, Jean; Buffevant, Chantal; and Huc, Alain, 5,648,208, Cl. 435-5.000.

Colla, Gregory-Alan: *See*—
Weismann, Dieter; Colla, Gregory-Alan; and Fiebelkron, Dirk, 5,647,351, Cl. 128-204.210.

Colleluori, Richard Alexander: *See*—
O'Brien, Michael Joseph; Bryant, Robert Cooper; and Colleluori, Richard Alexander, 5,649,242, Cl. 396-191.000.

Colleret, Bernard: *See*—
Dubois, Jean-Marie; Archambault, Pierre; and Colleret, Bernard, 5,649,282, Cl. 428-548.000.

Collin, Marianne, to Sandvik AB. Method of manufacturing inserts preferably for machining of heat resistant materials. 5,648,029, Cl. 264-645.000.

Collina, Gianni; Dall'Occo, Tiziano; Galimberti, Maurizio; Albizzati, Enrico; and Noristi, Luciano, to Montell Technology Company bv. Process for the (co)polymerization of olefins. 5,648,422, Cl. 525-52.000.

Collins, Daniel E.: *See*—
Tyner, Randall D.; Briggs, Donald C.; Collins, Daniel E.; and Avellino, William R., 5,649,310, Cl. 455-129.000.

Collins, Richard J.; and Bodeau, Loren Keith, to Wagstaff, Inc. Non-ferrous metal casting mold table system. 5,647,427, Cl. 164-459.000.

Collins, Richard M. Reflection eliminator. 5,647,629, Cl. 296-97.200.

Collins, Walter W. Knife and sheath with twist release mechanism. 5,647,130, Cl. 30-151.000.

Colman, Mark A.: *See*—
Brown, David E.; Colman, Mark A.; and Kett, Michael J., 5,647,656, Cl. 362-32.000.

Colman, Peter Malcolm: *See*—
Von Itzstein, Laurence Mark; Wu, Wen-Yang; Van Phan, Tho; Danylec, Basil; Jin, Betty; Colman, Peter Malcolm; and Varghese, Joseph Noozhumurry, 5,648,379, Cl. 514-459.000.

Colombo, Peter: *See*—
Kalb, Paul D.; and Colombo, Peter, 5,649,323, Cl. 588-8.000.

Colonial Data Technologies Corp.: *See*—
Brady, Robert H.; Zielski, David; Nutter, William L.; and Marra, Alexander J., 5,649,002, Cl. 379-142.000.

Color Prelude, Inc.: *See*—
Gunderman, Anthony J.; Moir, David; and O'Connell, Robert M., 5,647,941, Cl. 156-277.000.

Columbia Machine, Inc.: *See*—
Johnston, Llewellyn L., 5,648,009, Cl. 249-129.000.

Comau S.p.A.: *See*—
Zampini, Antonio, 5,647,243, Cl. 72-452.600.

Comfort, Steven Tyler: *See*—

Krumm, Barry Watson; Comfort, Steven Tyler; Ji, Jin; Liptay, John Stephen; Webb, Charles Franklin; Wong, David Man Chow; and Ying, Steven QiHong, 5,649,155, Cl. 395-455.000.

Commissariat a L'Energie Atomique: *See—*
Lazzari, Jean-Pierre, 5,648,884, Cl. 360-113.000.

CompuServe Incorporated: *See—*
Stuckey, Kent D.; Chinnock, Douglas P.; and Roberts, Jon L., 5,649,013, Cl. 380-4.000.

Computergesellschaft Constance: *See—*
Schnitzlein, Markus, 5,648,877, Cl. 359-739.000.

Conair Group, Inc., The: *See—*
Czarnik, David H., 5,648,102, Cl. 425-71.000.

Connecteurs Cinch: *See—*
Duclos, Jean-Louis; and Rognerud, David, 5,647,776, Cl. 439-752.000.

Connell, Jonathan Hudson; Mohan, Rakesh; and Bolle, Rudolf Maarten, to International Business Machines Corporation. Learning system with prototype replacement. 5,649,070, Cl. 395-77.000.

Conner, Edward L., to Ohio Machinery Co. Portable crusher for concrete. 5,647,545, Cl. 241-79.000.

Conner, James L.: *See—*
Bhuva, Rohit L.; Tran, Bao; Conner, James L.; Overlaur, Michael; and Paulsen, Tracy S., 5,648,730, Cl. 324-763.000.

Conoco Inc.: *See—*
Rodgers, John A.; Perrotto, Joseph A.; and Boger, Robert C., 5,648,041, Cl. 264-555.000.

Conrad, Hans-Rolf; and Junk, Dieter, to Voith Sulzer Finishing GmbH. Winding roller support device for web material. 5,647,555, Cl. 242-547.000.

Conrad, Lucas Jones: *See—*
Lovette, James Edward; Conrad, Lucas Jones; Crook, John Edward; Grubbs, Robert Eugene; and Detwiler, Wayne David, 5,647,382, Cl. 131-291.000.

Consolidated Papers Inc.: *See—*
Damrau, Wayne A.; and Mayer, Michael A., 5,647,909, Cl. 118-416.000.

Conte, Alfred S.: *See—*
Loo, Mike C.; and Conte, Alfred S., 5,648,890, Cl. 361-704.000.
Loo, Mike C.; and Conte, Alfred S., 5,648,893, Cl. 361-820.000.

Conti, Paolo, to Golden Lady S.p.A. Device for closing the initial end of a knined article such as a sock or other. 5,647,229, Cl. 66-58.000.

Conti, Richard Anthony: *See—*
Barbee, Steven George; Chapple-Sokol, Jonathan Daniel; Conti, Richard Anthony; Hsiao, Richard; O'Neill, James Anthony; Sarma, Narayana V.; Wilson, Donald Leslie; Wong, Justin Wai-Chow; and Zuhoski, Steven Paul, 5,648,113, Cl. 427-8.000.

Contorer, Aaron M.: *See—*
Miller, Arnold; Neeman, Yuval; Contorer, Aaron M.; Misra, Pradyumna K.; Seaman, Michael R. C.; and Rubin, Darryl E., 5,649,194, Cl. 395-616.000.

Cook, John, to 3Com Corporation. Method and apparatus for single pass data encoding of binary words using a stack for writing in reverse order. 5,649,189, Cl. 395-612.000.

Cook, Joseph S., Jr., to United States of America, National Aeronautics and Space Administration. Bevel gear driver and method having torque limit selection. 5,647,254, Cl. 81-475.000.

Cook, Merritt S.; James, Michael D.; and Strope, Todd R., to Coburn Optical Industries, Inc. Method for making light cured ophthalmic lens blocks. 5,648,025, Cl. 264-1.360.

Coomer, Sven. Prosthesis shoe insert for propulsive conditioning. 5,647,147, Cl. 36-93.000.

Corbellini, Glauco; and Rodriguez, Peter A. System for forming and dewatering a web on a Fourdrinier fabric. 5,647,959, Cl. 162-351.000.

Corbin, David Richard; and Reutter, Dallas Wesley, to Du Pont de Nemours, E. I., and Company. Purifaction of pentafluoroethanes. 5,648,569, Cl. 570-179.000.

Corcoran, James J.: *See—*
Lanning, Christine L.; Abou-Donia, Mohammed B.; Fine, Robert L.; and Corcoran, James J., 5,648,085, Cl. 424-405.000.

Corcoran, Paul T.: *See—*
Burdick, J. Scott; Corcoran, Paul T.; Gudat, Adam J.; Herold, Robert A.; and Szentes, John F., 5,647,439, Cl. 172-4.500.

Cordi, Alex; Lacoste, Jean-Michel; Laubie, Michel; Verbeuren, Tony; Descombes, Jean-Jacques; and Millan, Mark, to ADIR et Compagnie. Benzospiroalkene compounds. 5,648,374, Cl. 514-401.000.

Corle, Daryl Richard, to Lucent Technologies Inc. Pneumatic cylinder clamping device. 5,647,581, Cl. 269-32.000.

Cornell, Michael E.: *See—*
Williams, Richard K.; Yilmaz, Hamza; Cornell, Michael E.; and Chen, Jun Wei, 5,648,281, Cl. 437-33.000.
Williams, Richard K.; and Cornell, Michael E., 5,648,288, Cl. 437-45.000.

Cornell Research Foundation, Inc.: *See—*
Fréchet, Jean M. J.; and Shim, Sang-Yeon, 5,648,196, Cl. 430-270.100.
Hershfield, Bennett; and Goldowitz, Daniel, 5,648,216, Cl. 435-6.000.
Tanksley, Steven D.; and Martin, Gregory B., 5,648,599, Cl. 800-205.000.

Cornell, Thomas W., Jr.; and Reinbold, John L. Fishing weight. 5,648,121, Cl. 427-486.000.

Corning Incorporated: *See—*
Bhagavatula, Venkata A., 5,649,044, Cl. 385-124.000.

Corry, Alan G.; Mostyn, Graham Y.; and Michel, Jean-Yves, to MicroUnity Systems Engineering, Inc. Noise reduction in integrated circuits and circuit assemblies. 5,649,160, Cl. 395-494.000.

Cosmas, Frank C.: *See—*
Maurer, Ronald L.; and Cosmas, Frank C., 5,648,144, Cl. 428-141.000.

Cothran, Philip Earl: *See—*
Coffindaffer, Timothy Woodrow; and Cothran, Philip Earl, 5,648,323, Cl. 510-122.000.

Counihan, James. Resilient flooring. 5,647,183, Cl. 52-403.100.

Counterman, Raymond C., to GTE Laboratories Incorporated. System and method for controlling access to a shared channel for cell transmission in shared media networks. 5,648,958, Cl. 370-458.000.

Courian, Kenneth J.: *See—*
Keefe, Brian J.; Ho, May Fong; Courian, Kenneth J.; Steinfield, Steven W.; Childers, Winthrop D.; Tappon, Ellen R.; Trueba, Kenneth E.; Chapman, Terri I.; Knight, William R.; and Moritz, Jules G., 5,648,805, Cl. 347-65.000.

Covington, Cecil E.: *See—*
Sehgal, Ajay; Covington, Cecil E.; Yuce, Mithat; and Marshall, Bryan W., 5,647,726, Cl. 416-145.000.

Cox, Stephen F.: *See—*
Wetmore, Kenneth H.; Kormanyos, Kenneth R.; and Cox, Stephen F., 5,647,833, Cl. 588-252.000.

Cozza, Paul D. Method and apparatus for detecting computer viruses through the use of a scan information cache. 5,649,095, Cl. 395-183.150.

CRA Services Limited: *See—*
Keogh, John Vincent; Batterham, Robin John; and Andrews, Barry Stuart, 5,647,888, Cl. 75-443.000.

Craft, Robert B.; Chene, William R.; Bailey, Robert J.; and Liliensteins, Ivars, to Eaton Corporation. Reverse idler shaft and washer assembly. 5,647,246, Cl. 74-467.000.

Craig, William S.: *See—*
Pierschbacher, Michael D.; Lukeman, David S.; Cheng, Soan; and Craig, William S., 5,648,330, Cl. 514-11.000.

Crane, William E.: *See—*
Austin, Paul E.; Lewis, Kenrick M.; Crane, William E.; and Cameron, Rudolph A., 5,648,444, Cl. 528-15.000.

Craven, Ian; Hill, Bruce Logan; Kelson, Lance E.; Rose, Robert; and Rentmeesters, Stephen J., to Accom, Inc. On-line video editing system. 5,649,171, Cl. 395-500.000.

Crawford, H. Vance; and Crawford, Joel. Reverse electronic dictionary using synonyms to expand search capabilities. 5,649,221, Cl. 395-794.000.

Crawford, Joel: *See—*
Crawford, H. Vance; and Crawford, Joel, 5,649,221, Cl. 395-794.000.

Credit Verification Corporation: *See—*
Deaton, David W.; and Gabriel, Rodney G., 5,649,114, Cl. 395-214.000.

Cree, James William: *See—*
Osborn, Thomas Ward, III; Schmitz, Deborah Catherine; Cree, James William; and Elder, Melisse Noel, 5,647,862, Cl. 604-378.000.

Creger, Paul Leroy: *See—*
Bisgaier, Charles Larry; Creger, Paul Leroy; Saltiel, Alan Robert; and Tafuri, Sherrie Rae, 5,648,387, Cl. 514-547.000.

Cresap, Michael S.; and Plant, Edward G., Jr. Tag tansponder system and method to identify items for purposes such as locating, identifying, counting, inventorying, or the like. 5,648,765, Cl. 340-825.350.

Crisp, Gary M.: *See—*
Kuennen, Larry E.; Madron, Ronald G.; and Crisp, Gary M., 5,647,287, Cl. 110-170.000.

Crook, John Edward: *See—*
Lovette, James Edward; Conrad, Lucas Jones; Crook, John Edward; Grubbs, Robert Eugene; and Detwiler, Wayne David, 5,647,382, Cl. 131-291.000.

Crook, Robert Sydney, to Taghulk Pty Limited. Receptacle for ashes of deceased. 5,647,108, Cl. 27-1.000.

Crose, James R.; and Berg, Sol L. Apparatus and method for separating a charged substance from a conductive fluid. 5,647,965, Cl. 204-572.000.

Crowley, Robert J.: *See—*
Halgren, Donald N.; and Crowley, Robert J., 5,648,771, Cl. 341-22.000.

Cubert, Robert Michael: *See—*
Antognini, James J.; Cubert, Robert Michael; Gladney, Henry Martin; Hildebrand, David Burns, Jr.; Horne, Steven Fletcher; and Schmiedeskamp, Robert Walter, 5,649,185, Cl. 395-609.000.

Cugnon de Sevricourt, Michel P.; Dacquet, Catherine G.; Finet, Michel A.; Le Marquer, Florence J.; Robba, Max F.; Tembo, Norbert O.; Yannic-Arnoult, Sylvie J.; and Torregrosa, Jean-Luc, to Innothera. Derivatives of indan-1,3-dione and indan-1,2,3-trione, methods of preparing them and therapeutic use thereof. 5,648,381, Cl. 514-471.000.

Cullen, W. Paul; Billings, Pamela B.; and Ramming, John E., to Applied Robotics, Inc. Single axis robot force sensor assembly. 5,648,617, Cl. 73-862.045.

Cullivan, Edward E.: *See—*
Sturtevant, Thomas M.; and Cullivan, Edward E., 5,648,031, Cl. 264-80.000.

Cummins Engine Company, Inc.: *See—*
Yen, B. M.; Peters, Lester L.; Perr, J. P.; Ghuman, A. S.; and Ashwill, Dennis, 5,647,536, Cl. 239-90.000.

Curtet, Joël; and Tsang, Fankwo, to SGS-Thomson Microelectronics S.A. Optimized operand formatting same. 5,648,925, Cl. 364-284.040.

Curtis, Lydia Anne: *See—*
Carlisle, William Reid; Curtis, Lydia Anne; Murphy, Kathleen M.; and Skibo, Richard John, 5,649,118, Cl. 395-241.000.

Cushman, Paul W. Bolt with removable head. 5,647,710, Cl. 411-397.000.

Custom Plastics Molding, Inc.: *See—*
Sturtevant, Thomas M.; and Cullivan, Edward E., 5,648,031, Cl. 264-80.000.

Cutrer, L. Michael, to North American Scientific. Needle for imaging and sampling. 5,647,374, Cl. 128-749.000.

Cwirla, Steven E.; Barrett, Ronald W.; Dower, William J.; and Martens, Christine L., to Affymax Technologies N.V. Peptides and compounds that bind to ELAM-1. 5,648,458, Cl. 530-324.000.

Cypress Semiconductor: *See—*
Sethi, Rakesh Balraj; Norris, Christopher S.; and Hu, Genda J., 5,648,669, Cl. 257-318.000.

Cypress Semiconductor Corporation: *See—*
Stormon, Charles D.; Chavan, Abhijeet; Troullinos, Nikos B.; and Leong, Raymond M., 5,649,149, Cl. 395-435.000.

Cyr, André Michael: *See—*
Lynch, John Cornelius; Rikley, Tod Allen; Tarle, Peter; Ward, David; Valentik, Metodej; and Cyr, André Michael, 5,649,005, Cl. 379-242.000.

Cytec Technology Corp.: *See—*
Szita, Jeno G.; Ramesh, Subban; Jacobs, William, III; and Brogan, John Colin, 5,648,434, Cl. 525-441.000.

CytoMed, Inc.: *See—*
Cai, Xiong; Hussoin, Sajjat; Hwang, San-Bao; Killian, David; and Shen, T. Y., 5,648,486, Cl. 544-124.000.

Czaplicki, Michael; and Guenther, Thomas, to L & L Products, Inc. Foamed articles and methods for making same. 5,648,401, Cl. 521-85.000.

Czarnik, David H., to Conair Group, Inc., The. Vacuum calibrator tool. 5,648,102, Cl. 425-71.000.

D & M Plastics Corporation: *See—*
Bumsted, Thomas C., 5,648,788, Cl. 343-895.000.

Daage, Michel: *See—*
Ho, Teh Chung; Soled, Stuart Leon; Miseo, Sabato; McVicker, Gary Brice; Daage, Michel; and Buchholz, Viktor, 5,648,577, Cl. 585-266.000.

Dacquet, Catherine G.: *See—*
Cugnon de Sevricourt, Michel P.; Dacquet, Catherine G.; Finet, Michel A.; Le Marquer, Florence J.; Robba, Max F.; Tembo, Norbert O.; Yannic-Arnoult, Sylvie J.; and Torregrosa, Jean-Luc, 5,648,381, Cl. 514-471.000.

Daewoo Electronics Co Ltd.: *See—*
Kim, Jong-Il, 5,649,052, Cl. 395-2.350.

Daewoo Electronics Co., Ltd.: *See—*
Kim, Gyu-Seok, 5,648,775, Cl. 341-67.000.
Yoon, Hee-Sung, 5,648,880, Cl. 360-96.400.

Daewood Electronics Co., Ltd.: *See—*
Park, Jun-Hyun, 5,648,878, Cl. 359-809.000.

Dagger, Inc.: *See—*
Pemberton, Eric S.; and Howard, Brent E., 5,648,030, Cl. 264-71.000.

Dahl, Matthew L.: *See—*
Selvidge, Charles W.; and Dahl, Matthew L., 5,649,176, Cl. 395-551.000.

Daicel Chemical Industries, Ltd.: *See—*
Morimoto, Yoshiaki; Tanigawa, Hiroto; and Akita, Kazuyuki, 5,648,531, Cl. 562-891.000.

Daiken Trade & Industry Co., Ltd.: *See—*
Koh, Akio; Fujiwara, Hisashi; Kurosaki, Kiyoshi; Masamoto, Shigezon; and Shutoh, Keiji, 5,648,154, Cl. 428-313.700.

Daikin Industries, Ltd.: *See—*
Wada, Kunihide; and Tamakoshi, Koichiro, 5,647,223, Cl. 62-175.000.

Dailey, Kirk W.: *See—*
Vannatta, Louis Jay; Dailey, Kirk W.; and Vaas, Randall S., 5,649,306, Cl. 455-575.000.

Daimler-Benz AG: *See—*
Greiner, Ralph; Melchiorre, Michele; and Stückrad, Björn, 5,647,544, Cl. 241-17.000.

Dainippon Screen Mfg. Co., Ltd.: *See—*
Sugimoto, Kenji; Hiraoka, Nobuyasu; Fujita, Mitsuhiro; and Ohtani, Masami, 5,647,083, Cl. 15-77.000.

Dais, Brian C.: *See—*
Porchia, Jose; and Dais, Brian C., 5,647,100, Cl. 24-30.50R.

Daiwa Seiko, Inc.: *See—*
Akiba, Masaru; Nakagawa, Masayuki; Tsurufuji, Tomoyoshi; Sunaga, Shunji; and Ito, Koichi, 5,647,162, Cl. 43-24.000.

Dale, James Lawrence: *See—*
Spriester, Bart Fredrick; and Dale, James Lawrence, 5,648,745, Cl. 333-100.000.

Daleboot USA: *See—*
Dalebout, Melvin W., 5,647,149, Cl. 36-117.100.

Dalebout, Melvin W., to Daleboot USA. Sport boot inner liner. 5,647,149, Cl. 36-117.100.

Dallas Semiconductor Corporation: *See—*
McLellan, Neil; Strittmatter, Mike; Hundt, Joseph Patrick; Sells, Christopher M.; and Scherpenberg, Francis A., 5,647,121, Cl. 29-840.000.

Dall'Occo, Tiziano: *See—*
Collina, Gianni; Dall'Occo, Tiziano; Galimberti, Maurizio; Albizzati, Enrico; and Noristi, Luciano, 5,648,422, Cl. 525-52.000.

Damadian, Raymond V., to Fonar Corporation. Magnetic resonance imaging method and apparatus for guiding invasive therapy. 5,647,361, Cl. 128-683.200.

Damasky, Joachim; Decker, Detlef; Flottmeyer, Hubert; Fockers, Willi; Helfmeier, Ulrich; Jost, Franz-Gerhard; Kabst, Juergen; Vogt, Heinrich; and Woerdenweber, Burkard, to Hella KG Hueck & Co. Light system for an interior of a motor vehicle. 5,647,657, Cl. 362-32.000.

D'Ambra, Thomas E.: *See—*
VanWagenen, Bradford C.; Duff, Steven R.; Nelson, William A.; and D'Ambra, Thomas E., 5,648,540, Cl. 564-375.000.

D'Amelio, Frank D.; Rebert, Carl J.; and Hancock, Kenneth C., to Circon Corporation. Endoscope having a distally heated distal lens. 5,647,840, Cl. 600-169.000.

Damhus, Ture; Kirk, Ole; Pedersen, Gitte; Venegas, Manuel Garcia; Christensen, Bjøorn Eggert; and Schneider, Palle, to Novo Nordisk A/S; and Proctor and Gamble Company. Dye transfer inhibition. 5,648,262, Cl. 435-263.000.

Damman, Alex Scott; Thomas, David James; Winters, Mark Thomas; Rhule, Daniel Allen; and Shepherd, Jeffrey Alan, to General Motors Corporation. Air bag module with extruded housing. 5,647,608, Cl. 280-728.200.

Damon, Jean-Pierre: *See—*
Tepfer, David Alan; Damon, Jean-Pierre; and Pellegrineschi, Alessandro, 5,648,598, Cl. 800-205.000.

Damrau, Wayne A.; and Mayer, Michael A., to Consolidated Papers Inc. Apparatus for applying coating to paper web including successive doctoring steps. 5,647,909, Cl. 118-416.000.

Dana Corporation: *See—*
Easley, Paul D., 5,647,683, Cl. 403-359.000.
Gall, Ray A.; and Aiken, Albert, 5,647,799, Cl. 464-128.000.
Krisher, James A., 5,647,814, Cl. 475-230.000.
Warnke, James William; and Ingalsbe, Steven Lee, 5,647,800, Cl. 464-144.000.

Danbiosyst UK Limited: *See—*
Illum, Lisbeth; and Johnson, Olufunmiloyo Lilly, 5,648,095, Cl. 424-489.000.

Danfoss A/S: *See—*
Valbjørn, Anders; Plauborg, Erik; and Zenker, Siegfried, 5,647,394, Cl. 137-501.000.

Dangelo, Carlos: *See—*
Rostoker, Michael D.; Dangelo, Carlos; Koford, James; and Fulcher, Edwin, 5,648,661, Cl. 257-48.000.

Danno, Hirofumi; Naito, Ichiro; and Tsukuda, Gunji, to Hitachi, Ltd. Method for generating hierarchical specification information from software. 5,649,180, Cl. 395-601.000.

Dansk Industri Syndikat A/S: *See—*
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Dresser-Rand Company: *See—*
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Kerr, Phillip S.; Pearlstein, Richard W.; Schweiger, Bruce J.; Becker-Manley, Mary F.; and Pierce, John W., 5,648,210, Cl. 435-6.000.
Klug, Diana Lynn; Minor, Barbara Haviland; Patron, Donna Marie; Chisolm, Tuneen E. C.; and Sievert, Allen Capron, 5,648,016, Cl. 252-67.000.
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Duesler, Brad J., to Food Concepts, Inc. Support structure and assembly method for food court systems. 5,647,648, Cl. 312-108.000.

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Dunn, Thomas Jeffrey; White, David H.; Kneller, Mills Thomas; Jones, Michelle M.; and Doran, Narciso Ocampo, III. Process for producing ioversol. 5,648,536, Cl. 564-153.000.

Dunshee, Wayne K., to Minnesota Mining and Manufacturing Company. Pressure-sensitive adhesives and tape articles. 5,648,166, Cl. 428-355.0AC.

Duong, Tien T.: *See—*
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Resemann, Wolfgang; Durr, Adolf; Engelhardt, Gunther; and Quirke, John Frances, 5,648,386, Cl. 514-524.000.

Durrant, Randy; and Burbach, Mark, to Omnipoint Corporation. Spread spectrum transmitter. 5,648,982, Cl. 375-206.000.

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DynaProducts Inc.: *See—*
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Dziabo, Anthony J.: *See—*
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E.M.S. Technik GmbH: *See—*
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E. R. Squibb & Sons, Inc.: *See—*

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Earls, David E.: *See—*
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Earth Products Limited: *See—*
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Easley, Paul D., to Dana Corporation. Axle and tube yoke attachment. 5,647,683, Cl. 403-359.000.

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Nelson, Gregory Wayne; and Nicely, Vincent Alvin, 5,648,032, Cl. 264-101.000.
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Scott, Christopher E., 5,648,433, Cl. 525-425.000.

Eastman Kodak Company: *See—*
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Bergstresser, William Andrew; Hochreiter, Eric Peschan; Zander, Dennis Roland; and Bush, Bradley S., 5,649,258, Cl. 396-429.000.
Cocca, J. David, 5,649,253, Cl. 396-392.000.
O'Brien, Michael Joseph; Bryant, Robert Cooper; and Colleluori, Richard Alexander, 5,649,242, Cl. 396-191.000.
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Wheeler, Richard Bruce; and Pagano, Daniel Michael, 5,649,260, Cl. 396-569.000.

Eaton Corporation: *See—*
Craft, Robert B.; Chene, William R.; Bailey, Robert J.; and Lilensteins, Ivars, 5,647,246, Cl. 74-467.000.

Eaton, Eric Thomas, to Motorola, Inc. Method for selecting between first, second and third battery saving periods in a selective call. 5,649,315, Cl. 455-343.000.

Eaton, Rodney L.: *See—*
Snell, William M.; Kaliszewski, Thomas S.; and Eaton, Rodney L., 5,647,464, Cl. 192-4.00A.

Ebara Corporation: *See—*
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Kobayashi, Makoto; Yamamoto, Masakazu; and Miyake, Yoshio, 5,648,694, Cl. 310-87.000.

Ebbing, Peter, to Applied Materials, Inc. Method and apparatus for normalizing a laser beam to a reflective surface. 5,648,847, Cl. 356-150.000.

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Williams, Larry; Pirkle, David R.; Harshbarger, William; and Ebel, Timothy, 5,647,953, Cl. 156-643.100.

Ebersohl, Gérard; and Chetay, Olfa, to Gec Alsthom T&D SA. Self-monitoring circuit, especially for electrical equipment, and in particular for a high tension SF_6 circuit breaker. 5,648,917, Cl. 364-514.00C.

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ECC International Inc.: *See—*
Wu, Kuan-Ting, 5,647,902, Cl. 106-464.000.

Echols, James F., to BetzDearborn Inc. Recovery of tube cleaners. 5,647,428, Cl. 165-95.000.

Eclipse, Inc.: *See—*
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Eddy, Maxson: *See—*
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Edele, Reinhard; and Schmid, Eckhardt, to ITT Automotive Europe GmbH. Wiper arrangement with a rotatable wiper arm in addition to the reciprocating movement. 5,647,085, Cl. 15-250.210.

Edge Technology Corporation: *See—*
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Edwards, Brooks: *See—*
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Egashira, Noboru: *See—*
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Egbertson, Melissa S.; Vassallo, Laura M.; Hartman, George D.; Halczenko, Wasyl; Whitman, David B.; Perkins, James J.; Krause, Amy E.; Ihle, Nathan; Claremon, David Alan; Hoffman, William; and Duggan, Mark E., to Merck & Co., Inc. Fibrinogen receptor antagonists. 5,648,368, Cl. 514-331.000.

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Eguchi, Takeshi, to Kabushiki Kaisha Toshiba. Automatic duplex image forming apparatus having an adjusting driving mechanism. 5,648,843, Cl. 399-364.000.

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Ehlers, Wayne L.: *See—*
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Ehrlich, Benjamin S.: *See—*
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Eichholz, Kenneth L., Jr.: *See—*
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Eirich, L. Dudley: *See—*
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Ekelund, Ole: *See—*
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Elden, Inc.: *See—*
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Elder, Melisse Noel: *See—*
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Electronics and Telecommunications Research Institute: *See—*
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El-Ghannam, Ahmed: *See—*
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Eli Lilly and Company: *See—*
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Elliott, David L.; Hunter, Wood E.; and Falcione, Ronald J., to Calgon Corporation. Cellulosic, modified lignin and cationic polymer composition and process for making improved paper or paperboard. 5,647,956, Cl. 162-163.000.

Elliott, Gary: *See—*
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Elliott, Laura D.: *See—*
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Elonex I.P. Holdings, Ltd.: *See—*
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EMC Corporation: *See—*
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Emerson Electric Co.: *See—*

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Endress + Hauser Flowtec AG: *See*—
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Engel, Gregory J.; Hennessey, Robert D.; LaRocque, Timothy G.; and Peterson, Terence A., to Tennant Company. Sweeper with dual seal filter. 5,647,093, Cl. 15-352.000.

Engelhardt, Gunther: *See*—
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ENPAC Corporation: *See*—
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Enrietto, Paula: *See*—
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Enriquez, Leonel Ernesto; and Uscategui, Gabriel Julio, to Harris Corporation. Differential longitudinal amplifier for a subscriber line interface circuit. 5,649,009, Cl. 379-399.000.

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Entropic Systems, Inc.: *See*—
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Environamics Corporation: *See*—
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EOS GmbH Electro Optical Systems: *See*—
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Epstein, Michael, to Yeda Research and Development Company Limited. Solar energy gasification of solid carbonaceous material in liquid dispersion. 5,647,877, Cl. 48-210.000.

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Fine, Robert L.: *See*—
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First Brands Corporation: *See*—
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Osborn, William G., 5,648,640, Cl. 174-84.00R.
France Bed Co., Ltd.: *See—*
Abe, Takeo; and Kawamura, Shoji, 5,647,077, Cl. 5-685.000.
Franchet, Alain; Guerrazzi, Vincent; and Pellerano, Pierre, to Le Moulage Automatique. Process for manufacturing a closing device. 5,648,037, Cl. 264-296.000.
Franck, Jerome; and Riede, Wolfgang, to United States of America, Air Force. Laser with variable pulse length. 5,648,976, Cl. 372-25.000.
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Thiel, Wolfgang; Günther, Stephan; von Inten, Wolfgang; Rehberg, Heinz; Muhl, Wolfgang; and Wölm, Dieter, 5,648,811, Cl. 347-220.000.
Fraser, Mark E.; Woodman, Alan S.; Anderson, Everett B.; and Taylor, E. Jennings, to PSI Technology Co. Process for making peroxide. 5,647,968, Cl. 205-466.000.
Fraunhofer-Gesellschaft Zur Foerderung Der Angewandten Forschung E.V.: *See—*
Greul, Mathias; Staskewitsch, Ewald; Steger, Wilhelm; Pintat, Theo; Geiger, Martin; and Melchior, Klaus, 5,649,277, Cl. 419-2.000.
Fréchet, Jean M. J.; and Shim, Sang-Yeon, to Cornell Research Foundation, Inc. Water-soluble photoinitiators. 5,648,196, Cl. 430-270.100.
Fred M. Velepec Co., Inc.: *See—*
Velepec, Fredric A., 5,647,700, Cl. 407-34.000.
Freed, Brian S.: *See—*
Shutske, Gregory M.; Freed, Brian S.; Tomer, John D., IV; and Hamer, R. Richard L., 5,648,367, Cl. 514-330.000.
Freedman, Jules: *See—*
Sunkara, Sai P.; and Freedman, Jules, 5,648,365, Cl. 514-320.000.
Freeman, Alfred B. Word based text producing system. 5,649,223, Cl. 395-796.000.
French, Clark; and White, Peter W., to Sybase, Inc. Method and apparatus for indexing database columns with bit vectors. 5,649,181, Cl. 395-603.000.
French, Robin A., to Watkins Manufacturing Corp. Pump shroud apparatus for portable spas. 5,647,736, Cl. 417-423.140.
Frerking, Melvin Duane, to BellSouth Corporation. Method for managing the registration of a wireless unit. 5,649,286, Cl. 455-435.000.
Freskos, John J.: *See—*
Ng, John S.; Przybyla, Claire A.; Mueller, Richard A.; Vazquez, Michael L.; Getman, Daniel P.; Freskos, John J.; DeCrescenzo, Gary A.; Bertenshaw, Deborah E.; Heintz, Robert M.; Zhang, Suhong; Liu, Chin; and Laneman, Scott A., 5,648,511, Cl. 558-345.000.
Freskos, John Nicholas: *See—*
Talley, John J.; Getman, Daniel P.; DeCrescenzo, Gary A.; Reed, Kathryn L.; Lin, Ko-Chung; Freskos, John Nicholas; Clare, Michael; Rogier, Donald Joseph, Jr.; Heintz, Robert M.; Vazquez, Michael L.; and Mueller, Richard A., 5,648,364, Cl. 514-307.000.
Friedman, Michael; and Sintov, Amnon, to Perio Products, Ltd.; and Hebrew University of Jerusalem, Yissum Research Development Company of the. Liquid polymer composition and method of use. 5,648,399, Cl. 514-772.600.
Friedrich, Wilfried; and Kuisel, Manfred, to Deckel Maho GmbH. Control console for a program-controlled machine tool. 5,648,772, Cl. 341-22.000.
Friesinger, Günter; Heller, Reinhard; and Katheder, Heinrich, to Forschungszenlrum Karlsruhe GmbH. Low-temperature current transfer structure with heat exchanger. 5,648,638, Cl. 174-15.400.
Fritze, Joachim: *See—*
Eykmann, Rudolf; Fritze, Joachim; Uhrig, Birgit; Schödel, Dieter; and Burckhardt, Holger, 5,647,856, Cl. 604-181.000.
Froment, Jean-Paul: *See—*
Palau, Joseph; and Froment, Jean-Paul, 5,647,402, Cl. 139-1.00R.
Fry, Rupert J.: *See—*
Polgar, Gary E.; Kempf, Randy Joe; and Fry, Rupert J., 5,647,775, Cl. 439-752.000.
Frysinger, Eric T.; and Pirello, Joe, to Newell Operating Company. Method and apparatus for shipping knobbed glass cookware covers. 5,647,284, Cl. 108-55.100.
Fuderer, Miha; and Groen, Johannes P., to U.S. Philips Corporation. Correction of read-gradient polarity in EPI and grase MRI. 5,647,362, Cl. 128-653.200.
Fuentes, Alejandro; and Gomez, Arturo. Drafting instrument with electronically controllable scale. 5,647,135, Cl. 33-494.000.
Fuertes, Patrick; Lambin née DelMotte, Anne; and Dreux, Jean-Louis, to Roquette Freres. Composition and process for sizing paper. 5,647,898, Cl. 106-162.100.
Fuisz Technologies Ltd.: *See—*
Bogue, Beuford Arlie; and Myers, Garry L., 5,648,033, Cl. 264-109.000.
Fuji Chemical Industry Co., Ltd.: *See—*
Ueda, Masami; and Murakami, Tatsuo, 5,648,057, Cl. 423-594.000.
Fuji Electric Co., Ltd, The: *See—*
Kawaguchi, Yoshihiro; Ohno, Masayuki; Nishioka, Yutaka; In, Michinobu; Kakiuchi, Hiroyuki; and Iwamoto, Shozo, 5,647,220, Cl. 62-89.000.
Fuji Kogyo Co., Ltd.: *See—*
Ishizawa, Seiya, 5,647,418, Cl. 144-208.900.
Fuji Photo Film Co., Ltd.: *See—*
Doi, Atsuhiro; Kohda, Hiroyuki; and Uchida, Kohji, 5,649,269, Cl. 399-207.000.
Hase, Akihiko; Wakabayashi, Akira; Kambara, Takayuki; Shimizu, Makoto; and Ichikawa, Haruo, 5,647,113, Cl. 29-407.050.
Hirano, Toshinori; Baba, Nobuyuki; Takahashi, Yutaka; and Inagawa, Isao, 5,649,191, Cl. 395-613.000.
Kato, Eiichi; Osawa, Sadao; and Nakazawa, Yusuke, 5,648,190, Cl. 430-47.000.
Kato, Eiichi; and Nakazawa, Yusuke, 5,648,191, Cl. 430-49.000.
Okutsu, Eiichi, 5,648,205, Cl. 430-440.000.
Takatori, Tetsuya, 5,647,552, Cl. 242-348.400.
Yoshida, Yutaka, 5,649,249, Cl. 396-319.000.
Fuji Xerox Co., Ltd.: *See—*
Otoma, Hiromi; Ueki, Nobuaki; Fukunaga, Hideki; Nakayama, Hideo; Seko, Yasuji; and Fuse, Mario, 5,648,295, Cl. 437-129.000.
Saito, Kazuo, 5,649,218, Cl. 395-774.000.
Sonobe, Kenichi, 5,649,034, Cl. 382-298.000.
Watanabe, Masao, 5,648,181, Cl. 428-689.000.
Fujii, Seiichi: *See—*
Omi, Yoshiyuki; Fujii, Seiichi; Uchiyama, Sadao; Tsuji, Shigeki; Katsuki, Masanobu; and Katayama, Yoshio, 5,648,943, Cl. 369-13.000.
Fujikoshi Kakai Kogyo Kabushiki Kaisha: *See—*
Kitta, Satoru; and Furukawa, Masanori, 5,647,789, Cl. 451-41.000.
Fujimdri, Kouta: *See—*
Sekine, Takeyoshi; Yamasita, Hiroshi; Fushimi, Hiroyuki; Ohsaki, Makoto; Fujimdri, Kouta; Kawaishi, Yasunori; and Okamoto, Jun, 5,648,842, Cl. 355-350.000.
Fujioka, Kazuo: *See—*
Okano, Yoji; Kurita, Eiichi; Fujioka, Kazuo; Aoki, Koso; Misawa, Hiromitsu; and Kozawa, Minoru, 5,648,170, Cl. 428-403.000.
Fujisaki, Masahide: *See—*
Shibata, Kazuya; Fujisaki, Masahide; Kanazawa, Hiroyuki; and Okuda, Motoi, 5,649,198, Cl. 395-670.000.
Fujisawa Pharmaceutical Co., Ltd.: *See—*
Kelly, John S.; Butcher, Steven P.; and Sharkey, John, 5,648,351, Cl. 514-183.000.
Niwa, Mineo; Saito, Yoshimasa; Sasaki, Hitoshi; Hayashi, Masako; Notani, Jouji; and Kobayashi, Masakazu, 5,648,250, Cl. 435-172.300.
Fujita, Hideaki, to Sharp Kabushiki Kaisha. Development apparatus including nonmagnetic single-component developer guide member. 5,649,197, Cl. 399-260.000.
Fujita, Kenjiro; Usuki, Katsutoshi; and Tashiro, Tetsuya, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Speed change control method for an automatic transmission. 5,647,819, Cl. 477-140.000.
Fujita, Masayuki; and Wakabayashi, Hiroshi, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisa. Curable composition. 5,648,427, Cl. 525-104.000.
Fujita, Mitsuhiro: *See—*
Sugimoto, Kenji; Hiraoka, Nobuyasu; Fujita, Mitsuhiro; and Ohtani, Masami, 5,647,083, Cl. 15-77.000.
Fujita, Tatsuya: *See—*
Matsumoto, Toshiki; Toyao, Tetsuya; Nakamura, Tetsuya; Maehara, Shigeru; Aoki, Hiromasa; Fujita, Tatsuya; Tojo, Senta; Hodaira, Kinji; Matsui, Takeshi; and Fukuda, Yushi, 5,648,050, Cl. 422-180.000.
Fujitsu Limited: *See—*
Deguchi, Chikahiro, 5,648,975, Cl. 371-27.000.
Hamaguchi, Shingo; and Yabuki, Eiji, 5,648,947, Cl. 369-44.280.
Hayashi, Katsumi; Mitani, Masaaki; Sekine, Yutaka; Hayashi, Tomohiro; Saito, Kazuhiko; and Shimogai, Yoshinori, 5,649,184, Cl. 395-608.000.
Iwai, Takashi; and Nakano, Motoo, 5,648,676, Cl. 257-500.000.
Iwamatsu, Takanori; and Mitsuta, Norihide, 5,648,988, Cl. 375-232.000.
Jain, Jawahar; and Mukherjee, Rajarshi, 5,649,165, Cl. 395-500.000.
Kamijo, Shunsuke, 5,649,226, Cl. 395-800.000.
Kawada, Noboru, 5,648,993, Cl. 375-357.000.
Kennan, Wayne, 5,649,312, Cl. 455-333.000.
Kitadate, Yohtaro, 5,649,201, Cl. 395-704.000.
Kitano, Yukihiko, 5,649,231, Cl. 395-879.000.
Maeda, Yoshiharu, 5,648,709, Cl. 318-568.170.
Miyake, Hiroshi; Aso, Yasuhiro; and Yoshimura, Shuji, 5,648,963, Cl. 370-218.000.
Nagaya, Setsuya; Sugawara, Hideo; and Watanabe, Tominaga, 5,648,743, Cl. 330-252.000.
Ogawa, Junji; and Takita, Masato, 5,648,680, Cl. 257-666.000.
Sawaki, Ippei; Miura, Michio; Ishikawa, Yoshiro; and Abe, Fumitaka, 5,648,874, Cl. 359-622.000.
Shibata, Kazuya; Fujisaki, Masahide; Kanazawa, Hiroyuki; and Okuda, Motoi, 5,649,198, Cl. 395-670.000.
Takashima, Akira; Yoshimura, Hiroshi; and Otokita, Kosuke, 5,648,681, Cl. 257-666.000.
Yokogawa, Miyuki; Yamamura, Naoya; Kamon, Hidetomo; Tanaka, Kiyotaka; Hashimoto, Yoshiyuki; Ohnaka, Katsufumi; Matsuzaki, Noriaki; and Asahara, Takahiro, 5,647,717, Cl. 414-273.000.
Fujitsu, Satoru: *See—*
Harada, Katsumasa; Imbe, Yoichi; Nishihira, Keigo; Tanaka, Shuji; Fujitsu, Satoru; Sugise, Ryoji; Kashiwagi, Koichi; and Sumida, Toshihiko, 5,648,510, Cl. 558-274.000.
Fujitsu Ten Limited: *See—*
Nagami, Masaaki; and Sako, Kazuya, 5,649,016, Cl. 381-71.500.
Nose, Shinji; and Enoki, Masahiko, 5,648,764, Cl. 340-825.320.
Fujiwara, Hideo: *See—*
Nishioka, Koichi; Fujiwara, Hideo; and Iseki, Takayuki, 5,648,885, Cl. 360-113.000.
Fujiwara, Hisashi: *See—*
Koh, Akio; Fujiwara, Hisashi; Kurosaki, Kiyoshi; Masamoto, Shigezoh; and Shutoh, Keiji, 5,648,154, Cl. 428-313.700.
Fujiwara, Norio: *See—*
Ohashi, Naohito; Fujiwara, Norio; and Ueda, Yutaka, 5,648,359, Cl. 514-279.000.
Fujiwara, Shigeki; Machii, Daisuke; Takai, Haruki; Nonaka, Hiromi; Kase, Hiroshi; Yao, Kozo; Kawakage, Michiyo; Kusaka, Hideaki; and Karasawa, Akira, to Kyowa Hakko Kogyo Co., Ltd. Quinazolines and phthalazines having adenosine uptake inhibitor activity. 5,648,353, Cl. 514-248.000.
Fujiwara, Tetsuro: *See—*
Takei, Tsunetomo; Aiba, Toshimitsu; Sakai, Kaoru; and Fujiwara, Tetsuro, 5,648,457, Cl. 530-324.000.

Fujiwara, Wataru; Hyoda, Junkoh; Yamazaki, Kenichi; and Kitamura, Noriko, to Sumitomo Dow Limited. Process of preparing copolymer latex and use thereof. 5,648,420, Cl. 524-750.000.
Fukasawa, Motomu: *See—*
Sakamoto, Junichi; Tsukamoto, Seitoku; Sawamura, Mitsuharu; and Fukasawa, Motomu, 5,648,653, Cl. 250-208.100.
Fukasawa, Nobuaki: *See—*
Kato, Takeshi; Tadokoro, Hiroyuki; and Fukasawa, Nobuaki, 5,648,809, Cl. 347-115.000.
Fukatsu, Tsutomu, to Canon Kabushiki Kaisha. Image pickup apparatus having color separation matrix. 5,648,818, Cl. 348-273.000.
Fukuda, Eiji, to Yazaki Corporation. Locking structure of short-circuit contact for connectors. 5,647,762, Cl. 439-489.000.
Fukuda, Hiroyuki: *See—*
Funakoshi, Susumu; and Fukuda, Hiroyuki, 5,648,462, Cl. 530-344.000.
Fukuda, Kunio: *See—*
Katoh, Kazunori; Kondo, Haruyoshi; Matsui, Masayuki; Katayama, Naoki; Yamada, Yasushi; Takahashi, Hideaki; and Fukuda, Kunio, 5,648,601, Cl. 73-1.00G.
Fukuda, Yushi: *See—*
Matsumoto, Toshiki; Toyao, Tetsuya; Nakamura, Tetsuya; Maehara, Shigeru; Aoki, Hiromasa; Fujita, Tatsuya; Tojo, Senta; Hodaira, Kinji; Matsui, Takeshi; and Fukuda, Yushi, 5,648,050, Cl. 422-180.000.
Fukuhara, Yoshifumi: *See—*
Hatatani, Mitsuaki; Okimoto, Osamu; Shigemura, Toshitada; Fukuhara, Yoshifumi; and Sadamura, Hideaki, 5,648,014, Cl. 252-62.560.
Fukui, Toyoakira; and Kurokawa, Yoshio, to Tsubakimoto Chain Co. Frictional type connector for connecting a rotator to a shaft. 5,647,685, Cl. 403-370.000.
Fukui, Wataru; and Koezuka, Yasukazu, to Mitsubishi Denki Kabushiki Kaisha. Internal combustion engine control apparatus. 5,647,322, Cl. 123-414.000.
Fukui, Yasushi; Matsuno, Masanori; Tanaka, Hiroshi; Miono, Tadaaki; Sakamoto, Kazushi; Ariyoshi, Yasumi; and Saito, Minoru, to Nisshin Steel Co., Ltd. Steel sheet coated with Zn-Mg binary coating layer excellent in corrosion resistance and manufacturing method thereof. 5,648,177, Cl. 428-610.000.
Fukunaga, Hideki: *See—*
Otoma, Hiromi; Ueki, Nobuaki; Fukunaga, Hideki; Nakayama, Hideo; Seko, Yasuji; and Fuse, Mario, 5,648,295, Cl. 437-129.000.
Fukuoka Kagaku Ltd.: *See—*
Fukuoka, Masahiro, 5,647,633, Cl. 297-217.700.
Fukuoka, Masahiro, to Fukuoka Kagaku Ltd. Apparatus for vibrating seats. 5,647,633, Cl. 297-217.700.
Fukutani, Hideshi, to Matsushita Electric Industrial Co., Ltd. Memory disk driving apparatus. 5,647,672, Cl. 384-100.000.
Fulcher, Edwin: *See—*
Rostoker, Michael D.; Dangelo, Carlos; Koford, James; and Fulcher, Edwin, 5,648,661, Cl. 257-48.000.
Fulford, H. Jim, Jr.: *See—*
Gardner, Mark I.; Fulford, H. Jim, Jr.; and Wristers, Derick J., 5,648,286, Cl. 437-44.000.
Fulton, James P.: *See—*
Wincheski, Russell A.; Fulton, James P.; Nath, Shridhar C.; Simpson, John W.; and Namkung, Min, 5,648,721, Cl. 324-240.000.
Fultz, William: *See—*
McGill, Patrick D.; and Fultz, William, 5,647,903, Cl. 106-492.000.
Fumarolo, Arthur L.; Schwartz, Dana; Chisik, Jennifer E.; and Hattendorf, Heidi A., to Motoroia, Inc. Method and apparatus for a radio communication system control interface. 5,649,132, Cl. 395-342.000.
Funakoshi, Susumu; and Fukuda, Hiroyuki, to Setsuko Funakoshi. Peptide purification method using novel linker and solid-phase ligand. 5,648,462, Cl. 530-344.000.
Funke, Peter: *See—*
Hundertmark, Volker; Funke, Peter; and Mehl, Dietholf, 5,647,481, Cl. 206-219.000.
Fuquen, Rosendo: *See—*
Singh, Surrendra; Fuquen, Rosendo; and Leeper, David R., 5,648,611, Cl. 73-598.000.
Furnace Techno Co., Ltd.: *See—*
Bunya, Shunzo; Kaji, Hitoshi; and Hirose, Yasuo, 5,647,741, Cl. 432-180.000.
Furth, Mark E.: *See—*
Davis, Samuel; Squinto, Stephen P.; Furth, Mark E.; and Yancopoulos, George D., 5,648,334, Cl. 514-12.000.
Furukawa Electric Co., Ltd., The: *See—*
Ohyama, Isao; Nakamura, Shiro; Shimizu, Takeo; Yanagawa, Hisaharu; and Iwata, Hideyuki, 5,649,037, Cl. 385-24.000.
Furukawa, Masanori: *See—*
Kitta, Satoru; and Furukawa, Masanori, 5,647,789, Cl. 451-41.000.
Fuse, Mario: *See—*
Otoma, Hiromi; Ueki, Nobuaki; Fukunaga, Hideki; Nakayama, Hideo; Seko, Yasuji; and Fuse, Mario, 5,648,295, Cl. 437-129.000.
Fushimi, Akira; Miyazoe, Seigo; Yamada, Atsushi; and Okude, Yoshitaka, to Nippon Paint Co., Ltd. Color coating composition. 5,648,417, Cl. 524-513.000.
Fushimi, Hiroyuki: *See—*
Sekine, Takeyoshi; Yamasita, Hiroshi; Fushimi, Hiroyuki; Ohsaki, Makoto; Fujimdri, Kouta; Kawaishi, Yasunori; and Okamoto, Jun, 5,648,842, Cl. 355-350.000.
Fushun Research Institute of Petroleum and Petrochemicals: *See—*
Liu, Xiusen; Zhu, Huarong; Ai, Fubin; Song, Lizhi; Lu, Zhihui; and Hou, Xuewei, 5,648,538, Cl. 564-307.000.
Fuson, Francis G.: *See—*
Snyder, Jerome F.; and Fuson, Francis G., 5,649,300, Cl. 455-517.000.
Futran, Mauricio: *See—*
Dauer, Richard R.; DiMichele, Lisa; Futran, Mauricio; and Kieczykowski, Gerard R., 5,648,491, Cl. 546-22.000.
FuturVision - Machine & Designs, Inc.: *See—*
Miller, Daniel Corrigan, Sr., 5,647,161, Cl. 43-21.200.
G.D. Searle & Co.: *See—*
Koudsi, Basem; and Wun, Tze-Chein, 5,648,331, Cl. 514-12.000.
Ng, John S.; Przybyla, Claire A.; Mueller, Richard A.; Vazquez, Michael L.; Getman, Daniel P.; Freskos, John J.; DeCrescenzo, Gary A.; Bertenshaw, Deborah E.; Heintz, Robert M.; Zhang, Suhong; Liu, Chin; and Laneman, Scott A., 5,648,511, Cl. 558-345.000.
G.D Societa' Per Azioni: *See—*
Minarelli, Alessandro; and Osti, Roberto, 5,647,190, Cl. 53-446.000.
G.D S.p.A.: *See—*
Gigante, Antonio; and Portaro, Antonio, 5,647,697, Cl. 406-83.000.
G.M. Pfaff Aktiengesellschaft: *See—*
Hanus, Helfried; Winkler, Uwe; and Grossman, Dieter, 5,647,291, Cl. 112-278.000.
Gabriel, Rodney G.: *See—*
Deaton, David W.; and Gabriel, Rodney G., 5,649,114, Cl. 395-214.000.
Gabrielli, Andrea; and Marega, Antonello, to TECNICA Spa. Tongue for internal shoes of ski boots. 5,647,146, Cl. 36-54.000.
Gabrielov, Alexi G.: *See—*
Balkus, Kenneth J., Jr.; and Gabrielov, Alexi G., 5,648,058, Cl. 423-702.000.
Gaertner, Franz. Take-over apparatus. 5,647,475, Cl. 198-465.400.
Gaffar, Abdul; and Fakhry-Smith, Sahar. Oral compositions having accelerated tooth whitening effect. 5,648,064, Cl. 424-53.000.
Gajewski, Kenneth J.: *See—*
Tweadey, Robert F., II; and Gajewski, Kenneth J., 5,648,758, Cl. 340-550.000.
Galas, Stephen, to Johnson & Johnson Vision Products, Inc. Apparatus and method for releasably fusing mold lens pieces. 5,648,024, Cl. 264-1.100.
Galbi, David E. MPEG audio/video decoder. 5,649,029, Cl. 382-233.000.
Galileo International Partnership: *See—*
Bowen, James D.; Henry, Allyson J.; Meier, Mark J.; Postlethwait, Linda S.; and Schrimp, Steven W., 5,648,900, Cl. 395-205.000.
Galimberti, Maurizio: *See—*
Collina, Gianni; Dall'Occo, Tiziano; Galimberti, Maurizio; Albizzati, Enrico; and Noristi, Luciano, 5,648,422, Cl. 525-52.000.
Gall, Ray A.; and Aiken, Albert, to Dana Corporation. Bearing cap for universal joint having anti-rotation protrusions. 5,647,799, Cl. 464-128.000.
Galland, Michel: *See—*
Douine, Denis; Galland, Michel; Perchat, Alain; and Rouchaville, René, 5,648,846, Cl. 356-139.090.
Galler, Bruce I.; Su, Jamie C.; and Zwolinski, Stephanie M., to Lucent Technologies Inc. Program verification for cable television at a consumer location. 5,649,283, Cl. 455-2.000.
Galloway, Frank C.: *See—*
Tietjen, Donald L.; Galloway, Frank C.; Menard, David M.; Arnold, Ronny L.; and Woodbridge, Nancy G., 5,649,125, Cl. 395-306.000.
Gallucci, Robert Russell; and Hans, Paul Joseph, to General Electric Company. Thermoplastic blend compositions containing polyester resins and an organosulfate salt. 5,648,411, Cl. 524-156.000.
Gander, Bruno; and Merkle, Hans Peter, to Schwarz Pharma AG. Process for the production of microcapsules. 5,648,096, Cl. 424-489.000.
Gandre, Jerry D.: *See—*
Mills, R. Steven; Gandre, Jerry D.; Sands, Steve L.; and Khadem, Gita P., 5,647,748, Cl. 439-81.000.
Gans, Eugene H.; and Shacknai, Jonah, to Medicis Pharmaceutical, Inc. Compositions for the treatment of dermatological disorders and methods for their use. 5,648,389, Cl. 514-557.000.
Gantner, Gebhard; Dengg, Franz; Ofner, Peter; and Münzenberger, Herbert, to Hilti Aktiengesellschaft. Pipe clamp lock. 5,647,563, Cl. 248-74.100.
Garaczy, Sándor: *See—*
Pálosi, Endre; Korbonits, Dezso; Molnár née Bakó, Erzsébet; Szvoboda née Kanzel, Ida; Héja, Gergely; Kiss, Pál; Gönczi, Csaba; Sperber, Ferenc; Huszár, Csaba; Mihalovics, György; Németh, Attila; Sütő, Mihály; Gyüre, Károl; Bóné, István; Mórász, Ferenc; Ledniczky, László; Szabó née Kardos, Erzsébet; Győri, Péter; Szalay, Erzsébet; Bán, Károly; Buttkai, Ildikó; Kővári, Árpád; and Garaczy, Sándor, 5,648,498, Cl. 548-202.000.
Garard, Richard S.: *See—*
Fathi, Zakaryae; Garard, Richard S.; Wei, Jianghua; and Hampton, Michael L., 5,648,038, Cl. 264-406.000.
Garbutt, Max: *See—*
Klappert, Walt; Garbutt, Max; and Lehman, Michael, 5,649,234, Cl. 395-806.000.
Garcia, Al: *See—*
Vanell, James; and Garcia, Al, 5,647,911, Cl. 118-715.000.
Garcia, Juan Jose: *See—*
Rivas, Luis A.; Peluso, Enzo; Rojas, Daisy; and Garcia, Juan Jose, 5,648,312, Cl. 502-325.000.

Gardner, Mark I.; Fulford, H. Jim, Jr.; and Wristers, Derick J., to Advanced Micro Devices, Inc. Method of making asymmetrical transistor with lightly doped drain region, heavily doped source and drain regions, and ultra-heavily doped source region. 5,648,286, Cl. 437-44.000.
Gardner, Richard K.; Wieland, Roger D.; and Jermeay, Mark D., to Ingersoll-Rand Company. Reciprocating pump with simplified seal replacement. 5,647,737, Cl. 417-454.000.
Gardner, Steven L.: *See—*
Ertel, Thomas F.; Aronoff, David B.; Gardner, Steven L.; Parker, Ronald M.; Warren, Dean A.; and Baxter, Edward S., 5,649,100, Cl. 395-200.100.
Garelli, Nathalie: *See—*
Riess, Jean G.; Vierling, Pierre; and Garelli, Nathalie, 5,648,362, Cl. 514-292.000.
Garje, Shashi: *See—*
Sharif-Askary, Jamshid; Garje, Shashi; Rohela, Vijay; Roy, Ashok I.; and Yaseen, Irahim, 5,649,190, Cl. 395-612.000.
Garofalo, Giovanni; and Svenkerud, Lars, to Agence Spatiale Europeenne. Method for the adaptive control of a digital echo canceller in a telecommunication system. 5,649,011, Cl. 379-410.000.
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Kiefer, Karl F., 5,648,613, Cl. 73-611.000.
Merry, Nir; and Hammons, Jack Francis, 5,648,722, Cl. 324-417.000.
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Stucky, Robert Bruce, 5,649,192, Cl. 395-614.000.
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Coleman, John Russell, 5,647,212, Cl. 60-562.000.
Damman, Alex Scott; Thomas, David James; Winters, Mark Thomas; Rhule, Daniel Allen; and Shepherd, Jeffrey Alan, 5,647,608, Cl. 280-728.200.
Grochowski, Edwin Thomas, 5,647,597, Cl. 277-8.000.
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Borchert, Holger; Gerdau, Thomas; and Weiguny, Jens, 5,648,551, Cl. 568-431.000.

Gerhards, Hermann: *See*—
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Gernhardt, Paul; and Krzyzanowski, Serge, to Leviton Manufacturing Co., Inc. Electrical rocker switch. 5,647,479, Cl. 200-557.000.

Gerow, Jay E., to ZDI Gaming. Method, apparatus and pull-tab gaming set for use in a progressive pull-tab game. 5,647,592, Cl. 273-139.000.

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Gerth, John Alan; Hall, Shawn Anthony; and Luken, William Louis, to International Business Machines Corporation. Efficient two-pass rasterization scheme utilizing visibility information. 5,649,078, Cl. 395-122.000.

Gervais, Steve. Universal snow plow mounting frame assembly. 5,647,153, Cl. 37-231.000.

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Ghaffaripour, Parviz; and Ting, Sai L., to National Semiconductor Corporation. Amplifier circuit with reduced turn-on and turn-off transients. 5,648,742, Cl. 330-51.000.

Gharakhanian, Al, to Exar Corporation. V.35 integrated circuit transceiver with diagnostics loopback. 5,648,972, Cl. 371-20.500.

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Gielkens, Marc: *See*—
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Gierut, Lawrence, to Rockwell International Corp. Circuit board assembly. 5,648,891, Cl. 361-788.000.

Giesler, Dennis C., to Parker-Hannifin Corporation. Fluid coupler for use in the transfer of liquefied gases. 5,647,398, Cl. 137-614.030.

Gifford, Carl S.; Jones, Owen; and Trinder, Michael Charles John, to Noise Cancellation Technologies, Inc. Hybrid analog/digital vibration control. 5,649,018, Cl. 381-71.140.

Gigante, Antonio; and Portaro, Antonio, to G.D S.p.A. Method and device for feeding packets of cigarettes pneumatically. 5,647,697, Cl. 406-83.000.

Gilbert, Scott Robert, to Professional Package Company. Flat trapezoidal container of brightly printed thermally sealable film. 5,647,168, Cl. 47-72.000.

Gilbert, Sheldon L.: *See*—
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Gilmour, Daniel A.: *See*—
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Girot, Pierre: *See*—
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Glamkowski, Edward J.; and Chiang, Yulin, to Hoechst Marion Roussel, Inc. N-[(4-heteroaryl-1-piperidinyl)alkyl]-1H-benz[de]isoquinoline-1,3(2H) - diones and related compounds and their therapeutic utility. 5,648,363, Cl. 514-296.000.

Glang, Siegfried; Grabe, Werner; Gutschmidt, Holger; and Ludemann, Jurgen, to Phoenix Aktiengesellschaft. Device and process for producing the corners of sealing frames. 5,648,036, Cl. 264-261.000.

Glasser, Alan L.: *See*—
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Glaxo Wellcome Inc.: *See*—
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Gleasman, Keith E.: *See*—
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Gleasman, Vernon E.; and Gleasman, Keith E., to Torvec, Inc. Variable-angle gears. 5,647,802, Cl. 464-159.000.

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Goble, Nigel Mark; and Goble, Colin Charles Owen, to Gyrus Medical Limited. Electrosurgical apparatus. 5,647,869, Cl. 606-37.000.

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Goebels, André, to Hubner Gummi-und Kunststoff GmbH. Flexible sheating for connecting corridors. 5,647,282, Cl. 105-18.000.

Goetz, Douglas P.; Hine, Andrew M.; Schultz, William J.; and Thompson, Wendy L., to Minnesota Mining and Manufacturing Company. Curable resin sols and fiber-reinforced composites derived therefrom. 5,648,407, Cl. 523-213.000.

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Gohara, Wadie F.; Watson, George B.; Reynolds, Randy J.; and Strock, Thomas W., to Babcock & Wilcox Company, The. Wet flue gas scrubber having an evenly distributed flue gas inlet. 5,648,022, Cl. 261-17.000.

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Gold, Peter. Spare wheel carrier-mounted rear window wiper. 5,647,086, Cl. 15-250.310.

Gold Star Co., Ltd.: *See*—
Lee, Yoon-Keun, 5,649,058, Cl. 395-2.770.

Gold Star Information & Communications, Ltd.: *See*—
Lee, Byoung ki; and Lee, Jung-kyu, 5,648,957, Cl. 370-355.000.

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Gole, Dilip J.; Levinson, R. Saul; Wilkinson, Paul K.; and Davies, J. Desmond, to Janssen Pharmaceutica Inc. Pharmaceutical and other dosage forms. 5,648,093, Cl. 424-484.000.

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Gonnard, Paul: *See*—
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Good, Bradley W.: *See*—
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Goodbrand, H. Bruce, to Xerox Corporation. Low temperature arylamine processes. 5,648,539, Cl. 564-309.000.

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Goodrich, Raymond P., Jr.; and Williams, Christine M., to Cobe Laboratories, Inc. Lyophilization of cells. 5,648,206, Cl. 435-2.000.

Goodrich, Robert Kent: *See*—
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van der Meer, Alex; and Maxwell, Paul Bryan, 5,647,926, Cl. 152-209.00R.

Gordin, Myron K., to Musco Corporation. High efficiency, highly controllable lighting apparatus and method. 5,647,661, Cl. 362-283.000.

Gorney, William D. Switchable blade spinner fishing lure for muskellunge and northern pike. 5,647,163, Cl. 43-42.130.

Gostin, Gary B.; Brinson, Gregory D.; Beck, Todd H.; and Trawick, David L., to Hewlett-Packard Co. Apparatus, systems and methods for improving data cache hit rates. 5,649,144, Cl. 395-421.100.

Goto, Jun: *See*—
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Goto, Mitsuo; Uzawa, Kunihiko; Itakura, Masahiro; and Hijino, Masamichi, to Olympus Optical Co., Ltd. Nonaqueous solvent regenerating method for use in cleaning. 5,647,914, Cl. 134-10.000.

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Grab, George P.; Melago, William M.; Oles, Edward J.; Bauer, Charles Erik; Inspektor, Aharon; and Murray, Gerald D., to Kennametal Inc. Process for making diamond coated tools and wear parts. 5,648,119, Cl. 427-249.000.

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Martin, Russ; Martin, Ray; and McMahon, Mike, 5,647,699, Cl. 407-33.000.

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White, William, Jr.; Esch, Robert E.; and Richardson, John A., 5,647,371, Cl. 128-743.000.

Gregory, Steven: *See*—
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Greul, Mathias; Staskewitsch, Ewald; Steger, Wilhelm; Pintat, Theo; Geiger, Martin; and Melchior, Klaus, to Fraunhofer-Gesellschaft Zur Foerderung Der Angewandten Forschung E.V. Process and apparatus for the free-forming manufacture of three dimensional components of predetermined shape. 5,649,277, Cl. 419-2.000.

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Grothe, Wolfgang; Klauda, Matthias; Mueller, Stefan; and Schmidt, Claus. Planar filter having an overcoupling stripline an integral multiple of a half wavelength in length. 5,648,747, Cl. 333-204.000.

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Groves, Bryan H. Decorative window well shield. 5,647,154, Cl. 40-584.000.

Grubbs, Robert Eugene: *See—*
Lovette, James Edward; Conrad, Lucas Jones; Crook, John Edward; Grubbs, Robert Eugene; and Detwiler, Wayne David, 5,647,382, Cl. 131-291.000.

Grundke, Edgar; and Kusch, Hans-Jürgen, to Heidelberger Druckmaschinen AG. Plate-cylinder bearing arrangement. 5,647,673, Cl. 384-519.000.

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Letsinger, Robert L.; and Gryaznov, Sergei M., 5,648,480, Cl. 536-25.340.

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Counterman, Raymond C., 5,648,958, Cl. 370-458.000.

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Guerrazzi, Vincent: *See—*
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Gunderman, Anthony J.; Moir, David; and O'Connell, Robert M., to Color Prelude, Inc. Method of making a lipstick sampler. 5,647,941, Cl. 156-277.000.

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Gunter, Charles E., to ABT, Inc. Edge adapter for athletic playing surface and associated method. 5,647,692, Cl. 405-119.000.

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Guntert, Ronald M.; and Cape, William R., 5,647,688, Cl. 404-101.000.

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Gupta, Nand K., to Omega International Technology, Inc. Tangential computerized tomography scanner. 5,648,996, Cl. 378-4.000.

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Gupta, Prabhat K.; Jangi, Shrirang; Lamkin, Allan B.; Kepley, W. Robert, III; and Morris, Adrian J., to Hughes Electronics. Voice activity detector for speech signals in variable background noise. 5,649,055, Cl. 395-2.420.

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Guy, Jean-Yves, to U.S. Philips Corporation. Data compression transmission system. 5,648,773, Cl. 341-51.000.

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Győri, Péter: *See—*
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Hager, Stanley L., to Arco Chemical Technology, L.P. Poly(oxypropylene/oxyethylene) random polyols useful in preparing flexible high resilience foam with reduced tendencies toward shrinkage and foam prepared therewith. 5,648,559, Cl. 568-620.000.

Hähn, Reinhard; Haubensak, Otto; and Eisgruber, Max, to Sud-Chemie AG. Process for producing sorbents based on smectites to absorb liquids. 5,648,306, Cl. 502-80.000.

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Håkansson, Nils-Olof: *See—*
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Hakkarainen, Kalle, to Nokia Mobile Phones Ltd. Method and switching arrangement for identifying the charger of rechargable batteries of portable devices. 5,648,711, Cl. 320-2.000.

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Haldor Topsoe A/S: *See—*
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Hamer, R. Richard L.: *See—*
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Helms, Charles R., to Double "H" Plastics, Inc. Composite lid for container. 5,647,501, Cl. 220-780.000.

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Arora, Kartar S.; Devore, David I.; Grinstein, Reuben H.; Johnson, Grannis S.; Papalos, John G.; and Shah, Shailesh, 5,648,409, Cl. 523-404.000.
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Ernst, Peter, 5,649,084, Cl. 395-135.000.
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Hinds, Walter E. Motor system generating orthogonal movement in a single plane. 5,648,690, Cl. 310-12.000.

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Hirabayashi, Katsuhiko; Yamamoto, Tsuyoshi; Yamaguchi, Masayasu; and Yamazaki, Hirofumi, to Nippon Telephone & Telegraph Corp. Liquid crystal microprism array, free-space optical interconnector, and optical switch. 5,648,859, Cl. 349-9.000.

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Hirano, Seiichi: *See*—
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Watanabe, Itsuo; Kuwano, Atsushi; Taketatsu, Jun; Takane, Nobuaki; Yamada, Mitsuo; and Tai, Seiji, 5,648,135, Cl. 428-64.800.

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Ho, May Fong: *See*—
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Ho, Teh Chung; Soled, Stuart Leon; Miseo, Sabato; McVicker, Gary Brice; Daage, Michel; and Buchholz, Viktor, to Exxon Research and Engineering Company. Dispersed metal sulfide catalysts for hydroprocessing (LAW105). 5,648,577, Cl. 585-266.000.
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Prossel, Günter; Knaup, Wolfgang; and Wehowsky, Frank, 5,648,528, Cl. 562-574.000.
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Foster, James A.; Mueller, Werner H.; Ryan, Debra A.; and Wiezer, Hartmut, 5,648,535, Cl. 564-144.000.
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Houpt, Ronald A.; Huey, Larry J.; and Lin, David C. K., to Owens Corning Fiberglas Technology Inc. Apparatus for making hollow multi-component insulation fibers. 5,647,883, Cl. 65-494.000.
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Hsu, Chao-Yang; Patel, Vasant K.; Vahlsing, David H.; Wei, James T.; and Myers, Harry K., Jr., to Sun Company, Inc. (R&M). Liquid phase isomerization of alkanes. 5,648,590, Cl. 585-751.000.
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Sethi, Rakesh Balraj; Norris, Christopher S.; and Hu, Genda J., 5,648,669, Cl. 257-318.000.
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Gupta, Prabhat K.; and Gupta, Sanjay, 5,649,012, Cl. 379-410.000.
Gupta, Prabhat K.; Jangi, Shrirang; Lamkin, Allan B.; Kepley, W. Robert, III; and Morris, Adrian J., 5,649,055, Cl. 395-2.420.
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Hughes, Kenneth E.; Masterson, David C.; Fink, David J.; Metz, Barbara A.; Pickett, Gordon E.; Gemmer, Paul M.; and Brody, Richard S., to Ranpak Corporation. Method of preparing paper strengthened with solubilized collagen. 5,647,957, Cl. 162-174.000.
Hull, Harold L.; and Burnett, William G. Navigator display plotter and method of use. 5,647,156, Cl. 40-661.000.
Hull, Harold L.; and Harmon, Stanley D. Shelf and clothes hanger pole support bracket. 5,647,490, Cl. 211-90.010.
Huls America Inc.: *See*—
Zolotnitsky, Mikhail, 5,648,426, Cl. 525-100.000.
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Hupp, Jack T. Mold device for forming concrete border stones. 5,647,571, Cl. 249-2.000.
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Hussenet, Patricia; Le Goff, Philippe; and Sennyey, Gérard, to Societe Nationale des Poudres et Explosifs. Process for the synthesis of substituted carbodiimides. 5,648,537, Cl. 564-252.000.
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Hwang, Haksun; Cheon, Inki; Lee, Sang Jig; Koh, Pohyoung; Park, Hyeoksoo; and Choi, Sungwoo, to LG Electronics Inc. Tension arm driving apparatus for video cassette tape recorder. 5,647,548, Cl. 242-338.000.
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Hwang, Shih Ming. Wireless car security system. 5,648,754, Cl. 340-426.000.
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Morrill, Charles D., 5,647,572, Cl. 251-1.300.
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Arnaud, Johnny, 5,647,977, Cl. 210-167.000.
Hylén, Steven H. L. Image modifiers for use in photography. 5,649,259, Cl. 396-544.000.
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Cho, Gyung-Su, 5,648,298, Cl. 437-187.000.
Koh, Yo Hwan; Park, Chan Kwang; and Suh, Jeung Won, 5,648,935, Cl. 365-205.000.
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Miyazawa, Hiromu; Hoshina, Shoji; Shimokawato, Satoshi; Ichikawa, Masaaki; Ishida, Masaya; Kawase, Takeo; Mikoshiba, Toshiaki; Nebashi, Satoshi; and Shimoda, Tatsuya, 5,648,161, Cl. 428-332.000.
Ichikawa, Michiyo: *See*—
Saito, Kazuo; Kumazaki, Masayuki; Ichikawa, Michiyo; and Hirano, Seiichi, 5,648,807, Cl. 347-102.000.
Ichikawa, Reiko: *See*—
Saida, Yoshihiro; Ikenoue, Yoshiaki; and Ichikawa, Reiko, 5,648,453, Cl. 528-380.000.
Ichikawa, Shozou; and Matsuura, Naoya, to Molex Incorporated. Electrical connector assembly with biased guide means. 5,647,758, Cl. 439-362.000.
Ichikawa, Toshiro; Kobayashi, Yoshiyuki; and Nakamura, Hideaki, to Unisia Jecs Corporation. Actuating apparatus applicable to actuation of valve used for controlling engine idling revolution. 5,647,321, Cl. 123-399.000.
Ichikawa, Yoshikatsu: *See*—
Ando, Hiroshi; Kimura, Teiyuu; Sugiura, Minako; and Ichikawa, Yoshikatsu, 5,648,857, Cl. 359-12.000.
Ichimura, Akira; and Ishizaki, Masao, to Canon Kabushiki Kaisha. Built-in electronic apparatus and device-detaching method therefor. 5,648,762, Cl. 340-825.310.
Ideal-Standard GmbH: *See*—
Bergmann, Konrad, 5,647,537, Cl. 239-383.000.
IDEC Pharmaceuticals Corporation: *See*—
Reff, Mitchell E., 5,648,267, Cl. 435-320.100.
Idemitsu Kosan Co., Ltd.: *See*—
Okamoto, Takuji; Matsumoto, Junichi; Watanabe, Masami; and Maezawa, Hiroshi, 5,648,443, Cl. 526-281.000.
Igarashi, Masaru, to Canon Kabushiki Kaisha. Printing apparatus which outputs a print-ready signal for manually inserted paper. 5,648,812, Cl. 347-262.000.
Igarashi, Yoshio; Asano, Fumihiro; Shimoyamada, Makoto; Harada, Masayuki; Nakano, Shigeru; Iwai, Ryoji; Yagami, Keisuke; and Konno, Yuzi, to Ichikawa Gosei Chemical Co., Ltd. Method of producing cis-1-aminoindan-2-ol. 5,648,534, Cl. 564-130.000.
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Soled, Stuart L.; Gates, William E.; and Iglesia, Enrique, 5,648,589, Cl. 585-734.000.
Ihle, Nathan: *See*—
Egbertson, Melissa S.; Vassallo, Laura M.; Hartman, George D.; Halczenko, Wasyl; Whitman, David B.; Perkins, James J.; Krause, Amy E.; Ihle, Nathan; Claremon, David Alan; Hoffman, William; and Duggan, Mark E., 5,648,368, Cl. 514-331.000.
Ii, Yasuhiro: *See*—
Nomura, Keiichi; Endo, Hirofumi; Ii, Yasuhiro; Ogasawara, Yuko; Kawai, Mitsuhiro; Onoue, Yasuyoshi; Kurita, Masahiro; Imai, Akira; and Takeuchi, Mitsuaki, 5,649,188, Cl. 395-611.000.
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Miyairi, Kazuki; and Iijima, Akira, 5,648,106, Cl. 425-186.000.
Iijima, Hitoshi: *See*—
Takeshita, Michimasa; Yoshida, Takayuki; Tanimura, Yoshiaki; Iijima, Hitoshi; Gotoh, Takashi; and Yumikura, Tsuneo, 5,647,431, Cl. 165-119.000.
Iijima, Masaki: *See*—
Mimura, Tomio; Shimojo, Shigeru; Iijima, Masaki; and Mitsuoka, Shigeaki, 5,648,053, Cl. 423-210.000.
Iijima, Shuji: *See*—

Wakabayashi, Hiroshi; Terunuma, Hiroshi; Tsukahara, Daiki; and Iijima, Shuji, 5,649,238, Cl. 396-61.000.
Iizuka, Takashi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Scanning optical system. 5,648,865, Cl. 359-208.000.
Ikeda, Kenichi: *See*—
Ohara, Tomomi; Hachisuka, Hisao; Xu, Ping; Shimazu, Akira; and Ikeda, Kenichi, 5,647,894, Cl. 96-13.000.
Ikeda, Nobuhiro: *See*—
Ikeno, Toshihiko; and Ikeda, Nobuhiro, 5,649,004, Cl. 379-212.000.
Ikeda, Tatehiko; Enomoto, Haruomi; and Shimazu, Tomoaki, to Kao Corporation. Tape cassette having reduced drop-out error by selected sizing of gaps between a clamper and an engagement cavity in the hub. 5,647,551, Cl. 242-345.000.
Ikeda, Tetsuhito, to Canon Kabushiki Kaisha. System for controlling drive of stepping motor. 5,648,710, Cl. 318-685.000.
Ikegami, Masashi; Matsuhashi, Toshihiko; Yamaue, Yoshiya; Tanaka, Takashi; Hayashi, Katsunori; and Takaoka, Daizo, to Sanyo Electric Co., Ltd. Electric working apparatus supplied with electric power through power supply cord. 5,647,554, Cl. 242-390.900.
Ikehata, Michino: *See*—
Kitamura, Kenroh; Ikehata, Michino; Tsuzaki, Masaaki; and Oharu, Kazuya, 5,648,325, Cl. 510-177.000.
Ikeno, Toshihiko; and Ikeda, Nobuhiro, to Canon Kabushiki Kaisha. Private branch exchange. 5,649,004, Cl. 379-212.000.
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Saida, Yoshihiro; Ikenoue, Yoshiaki; and Ichikawa, Reiko, 5,648,453, Cl. 528-380.000.
Ikoh, Chikaya, to Nikon Corporation. Microscope. 5,648,869, Cl. 359-368.000.
Ikumi, Tohru: *See*—
Ishikawa, Satoshi; Suzuki, Nobuhiko; and Ikumi, Tohru, 5,647,753, Cl. 439-689.000.
Ikunami, Yoshikazu; and Kimura, Kazuyoshi, to Konica Corporation. Image forming apparatus including toner conveyance apparatus. 5,648,840, Cl. 399-262.000.
Illies, Thomas H.: *See*—
Garske, Stephen J.; and Illies, Thomas H., 5,647,082, Cl. 15-21.200.
Illinois Tool Works Inc.: *See*—
Bivens, Steven L., 5,647,578, Cl. 267-34.000.
Illum, Lisbeth; and Johnson, Olufunmiloyo Lilly, to Danbiosyst UK Limited. Preparation of microparticles. 5,648,095, Cl. 424-489.000.
Iloff, Michael: *See*—
Kreft, Hans-Diedrich; Mackenthun, Holger; and Iloff, Michael, 5,648,761, Cl. 340-825.310.
Ilyadis, Nicholas; and Graham, Richard, to Digital Equipment Corporation. Inter-module interconnect for simultaneous use with distributed LAN repeaters and stations. 5,648,959, Cl. 370-445.000.
Imai, Akira: *See*—
Nomura, Keiichi; Endo, Hirofumi; Ii, Yasuhiro; Ogasawara, Yuko; Kawai, Mitsuhiro; Onoue, Yasuyoshi; Kurita, Masahiro; Imai, Akira; and Takeuchi, Mitsuaki, 5,649,188, Cl. 395-611.000.
Imai, Kiyotaka, to NEC Corporation. Method of manufacturing bipolar transistor having emitter region and external base region formed in self alignment manner. 5,648,279, Cl. 437-31.000.
Imaizumi, Yoshihiro: *See*—
Ohtsuki, Kazuo; Mitsunobu, Akikazu; Imaizumi, Yoshihiro; Honda, Nobuyoshi; and Inoue, Satoshi, 5,648,507, Cl. 552-615.000.
Imamaki, Teruo, to Brother Kogyo Kabushiki Kaisha. Stamp cartridge for use in a stamp unit. 5,647,273, Cl. 101-125.000.
Imamura, Masahumi: *See*—
Kawamura, Akira; Suzuki, Susumu; and Imamura, Masahumi, 5,647,971, Cl. 208-33.000.
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Date, Yoshito; Takeshita, Shoichi; Ohmori, Tetsuro; Nakatsuka, Junji; and Imamura, Yoshio, 5,648,791, Cl. 345-89.000.
Imamura, Yuji, to Murata Kikai Kabushiki Kaisha. Fiber spinning method and apparatus utilizing a twisting guide. 5,647,197, Cl. 57-328.000.
Imation Corp.: *See*—
Hintz, Michael B., 5,648,163, Cl. 428-332.000.
Imbe, Yoichi: *See*—
Harada, Katsumasa; Imbe, Yoichi; Nishihira, Keigo; Tanaka, Shuji; Fujitsu, Satoru; Sugise, Ryoji; Kashiwagi, Koichi; and Sumida, Toshihiko, 5,648,510, Cl. 558-274.000.
Imonex Services Inc.: *See*—
Bruner, Philemon L.; and Bugge, David C., 5,647,470, Cl. 194-347.000.
Imura, Hironori: *See*—
Makishima, Hideo; Yamada, Keizo; and Imura, Hironori, 5,648,698, Cl. 313-309.000.
Imura, Yoshio: *See*—
Takahashi, Tsugio; Aoki, Hitoshi; Imura, Yoshio; Miyamoto, Hidenori; Tsukahara, Daiki; Kotani, Noriyasu; Inoue, Hideya; and Nagai, Jun, 5,649,252, Cl. 396-389.000.
In, Michinobu: *See*—
Kawaguchi, Yoshihiro; Ohno, Masayuki; Nishioka, Yutaka; In, Michinobu; Kakiuchi, Hiroyuki; and Iwamoto, Shozo, 5,647,220, Cl. 62-89.000.
Ina Walzlager Schaeffler KG: *See*—
Metten, Norbert; and Pfann, Heinz, 5,647,675, Cl. 384-620.000.
Inaba, Yoshiharu: *See*—
Nakagawa, Takeo; Tsuru, Hideaki; Inaba, Yoshiharu; Taira, Takayuki; and Muranaka, Masaki, 5,647,410, Cl. 141-67.000.
Inada, Takahiro: *See*—
Izumi, Tomoji; Shimizu, Kenji; Sugamoto, Yoshiaki; Okuda, Kazuyoshi; Ando, Satoru; Ishihara, Toshihiro; Inada, Takahiro; and Okuda, Tsunehisa, 5,648,905, Cl. 364-461.000.
Inagaki, Koji: *See*—
Takaya, Hidemasa, deceased; Ota, Tetsuo; and Inagaki, Koji, 5,648,548, Cl. 568-17.000.
Inagaki, Yoshio; Takami, Masayuki; Kataoka, Masahiro; and Shibagaki, Taro, to Kabushiki Kaisha Toshiba. Master-slave multiplex communication system and PLL circuit applied to the system. 5,648,964, Cl. 370-228.000.
Inagawa, Isao: *See*—
Hirano, Toshinori; Baba, Nobuyuki; Takahashi, Yutaka; and Inagawa, Isao, 5,649,191, Cl. 395-613.000.
Ince, Francis: *See*—
Bonnert, Roger V.; Brown, Roger C.; Cheshire, David R.; Ince, Francis; and Dixon, John, 5,648,370, Cl. 514-367.000.
Incyte Pharmaceuticals, Inc.: *See*—
Au-Young, Janice; Hawkins, Phillip R.; and Hillman, Jennifer L., 5,648,238, Cl. 435-69.200.
Hawkins, Phillip R.; Hillman, Jennifer L.; and Au-Young, Janice, 5,648,239, Cl. 435-69.200.
Indena S.p.A.: *See*—
Bombardelli, Ezio; and Morazzoni, Paolo, 5,648,377, Cl. 514-456.000.
Industrial Technology Research Institute: *See*—
Chen, Lai-Juh, 5,647,952, Cl. 156-636.100.
Chen, Yen-Chen, 5,648,793, Cl. 345-96.000.
Chirn, Jin-Lung; Cheng, Wen-Chin; and Chang, Han-Chieh, 5,648,908, Cl. 364-470.060.
Hsieh, Hsun-Chang, 5,648,774, Cl. 341-67.000.
Wang, Shin-Shin; and Tsai, Hui-Ping, 5,648,524, Cl. 562-426.000.
Ingalls, Charles L.; and Thomann, Mark R., to Micron Technology, Inc. System having multiple subsystems and test signal source resident upon common substrate. 5,648,974, Cl. 371-22.500.
Ingalsbe, Steven Lee: *See*—
Warnke, James William; and Ingalsbe, Steven Lee, 5,647,800, Cl. 464-144.000.
Ingersoll-Rand Company: *See*—
Gardner, Richard K.; Wieland, Roger D.; and Jermeay, Mark D., 5,647,737, Cl. 417-454.000.
Johnson, Jay T., 5,647,880, Cl. 55-310.000.
Johnson, Jay T., 5,647,893, Cl. 95-284.000.
Jones, William Leslie, 5,647,447, Cl. 175-300.000.
Innothera: *See*—
Cugnon de Sevricourt, Michel P.; Dacquet, Catherine G.; Finet, Michel A.; Le Marquer, Florence J.; Robba, Max F.; Tembo, Norbert O.; Yannic-Arnoult, Sylvie J.; and Torregrosa, Jean-Luc, 5,648,381, Cl. 514-471.000.
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Edwards, David S.; Shelly, William A.; Chang, Jiuyih; Inoshita, Minoru; and Trubisky, Leonard G., 5,649,090, Cl. 395-182.080.
Inoue, Akihisa: *See*—
Yamagata, Hiroshi; Inoue, Akihisa; Masumoto, Tsuyoshi; and Nagahora, Junichi, 5,648,174, Cl. 428-469.000.
Inoue, Hideya: *See*—
Takahashi, Tsugio; Aoki, Hitoshi; Imura, Yoshio; Miyamoto, Hidenori; Tsukahara, Daiki; Kotani, Noriyasu; Inoue, Hideya; and Nagai, Jun, 5,649,252, Cl. 396-389.000.
Inoue, Kazushige: *See*—
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Inoue, Makoto; and Kobayashi, Masaru, to Toyo Boseki Kabushiki Kaisha. Electrode material for flow-through type electrolytic cell, wherein the electrode comprises carbonaceous material having at least one groove. 5,648,184, Cl. 429-105.000.
Inoue, Makoto, to Kabushiki Kaisha TRD; and Kabushiki Kaisha Hatsuri Kimura. Card feeding device for feeding cards of varying thickness. 5,648,651, Cl. 235-475.000.
Inoue, Satoshi: *See*—
Ohtsuki, Kazuo; Mitsunobu, Akikazu; Imaizumi, Yoshihiro; Honda, Nobuyoshi; and Inoue, Satoshi, 5,648,507, Cl. 552-615.000.
Inoue, Tomohiko: *See*—
Mori, Tomoyuki; Takai, Masaki; and Inoue, Tomohiko, 5,648,554, Cl. 568-454.000.
Inoue, Yoshiharu; and Uematsu, Kimio, to Nikon Corporation. Camera setting and display device. 5,649,245, Cl. 396-291.000.
Inoue, Yoshiharu: *See*—
Matsuzaki, Makoto; and Inoue, Yoshiharu, 5,649,243, Cl. 396-233.000.
Inoue, Yumi: *See*—
Nakazawa, Tsutomu; and Inoue, Yumi, 5,648,682, Cl. 257-673.000.
Insight, Inc.: *See*—
Fantone, Stephen D.; Gelardi, Anthony L.; Gelardi, John A.; and Fitzsimmons, William T., 5,647,151, Cl. 40-454.000.
Insley, Mark W.: *See*—
Kurihara, Steven M.; and Insley, Mark W., 5,649,213, Cl. 395-750.000.
Insley, Thomas J.; McCoy, Kay M.; and Tamaki, Cynthia Y., to Minnesota Mining and Manufacturing Company. Flexible pressure vessels for and method of transporting hazardous materials. 5,647,480, Cl. 206-204.000.
Inspektor, Aharon: *See*—
Grab, George P.; Melago, William M.; Oles, Edward J.; Bauer, Charles Erik; Inspektor, Aharon; and Murray, Gerald D., 5,648,119, Cl. 427-249.000.

Institut Francais du Petrole: *See*—
Nguyen Than, Canh; Didillon, Blaise; Sarrazin, Patrick; and Cameron, Charles, 5,648,576, Cl. 585-260.000.
Prevost, Isabelle; and Rojey, Alexandre, 5,647,981, Cl. 210-243.000.

Institut National de la Recherche Agronomique: *See*—
Tepfer, David Alan; Damon, Jean-Pierre; and Pellegrineschi, Alessandro, 5,648,598, Cl. 800-205.000.

Institut Pasteur: *See*—
Cole, Stewart; and Streeck, Rolf E., 5,648,459, Cl. 530-324.000.

Institute of Microelectronics, National University of Singapore: *See*—
On, Bill Ngoc; and Narasimhan, Mandayam A., 5,649,077, Cl. 395-119.000.

Instrumentarium Oy: *See*—
Niemi, Hannes; and Hyvönen, Markku, 5,647,352, Cl. 128-204.280.

Integrated Device Technology, Inc.: *See*—
Bourekas, Philip A.; Willenz, Avigdor; Mor, Yeshayahu; and Revak, Scott, 5,649,232, Cl. 395-880.000.

Integrated Liner Technologies, Inc.: *See*—
Gee, Alan R.; Delaney, William R.; and Petrosino, Paul M., 5,647,939, Cl. 156-272.600.

Intel Corporation: *See*—
Lavelle, Gary; Lippincott, Louis A.; Harney, Kevin; and Rao, Dinesh G., 5,649,142, Cl. 395-419.000.
Munson, Bill, 5,648,814, Cl. 348-15.000.
Scheer, David C., 5,649,224, Cl. 395-800.000.

Inter-Wood-Maschinen GmbH & Co., KG: *See*—
Schaefer, Karl; and Schaefer, Gerd, 5,647,417, Cl. 144-172.000.

International Business Machines Corporation: *See*—
Antognini, James J.; Cubert, Robert Michael; Gladney, Henry Martin; Hildebrand, David Burns, Jr.; Horne, Steven Fletcher; and Schmiedeskamp, Robert Walter, 5,649,185, Cl. 395-609.000.
Barbee, Steven George; Chapple-Sokol, Jonathan Daniel; Conti, Richard Anthony; Hsiao, Richard; O'Neill, James Anthony; Sarma, Narayana V.; Wilson, Donald Leslie; Wong, Justin Wai-Chow; and Zuhoski, Steven Paul, 5,648,113, Cl. 427-8.000.
Beardsley, Gary Scott; Keller, Gary Scott; and Lee, Francis Chee-Shuen, 5,648,801, Cl. 347-15.000.
Bednorz, Johannes Georg; Catana, Andrei; Locquet, Jean Pierre; Maechler, Erich; and Mueller, Carl Alexander, 5,648,321, Cl. 505-473.000.
Bertin, Claude Louis; Howell, Wayne John; and Kalter, Howard Leo, 5,648,684, Cl. 257-685.000.
Blaner, Bartholomew; and Vassiliadis, Stamatis, 5,649,178, Cl. 395-587.000.
Brodnax, Timothy B.; Bullis, Bryan K.; King, Steven A.; Schoenike, Robert L.; and Stanley, Daniel L., 5,649,097, Cl. 395-185.070.
Budman, Mark; Hunt, Daniel Joseph; Kuzawinski, Mark Joseph; and Riehm, David Earl, 5,649,121, Cl. 395-281.000.
Chappell, Barbara Alane; Patel, Parsotam Trikam; Phan, Phoung Kim; and Sai Halasz, George Anthony, 5,649,170, Cl. 395-500.000.
Childs, Philip Lee; and Skovira, Joseph Francis, 5,649,164, Cl. 395-500.000.
Cobb, Joshua Monroe; and Parker, Peter Kevin, 5,648,005, Cl. 219-411.000.
Connell, Jonathan Hudson; Mohan, Rakesh; and Bolle, Rudolf Maarten, 5,649,070, Cl. 395-77.000.
Doran, Samuel K., 5,648,188, Cl. 430-22.000.
Duvalsaint, Karl Jean; Farrell, Mark Steven; Krumm, Barry Watson; McCauley, Donald William; and Webb, Charles Franklin, 5,649,140, Cl. 395-413.000.
Ellozy, Hamed A.; Kanevsky, Dimitri; Kim, Michelle Y.; Nahamoo, David; Picheny, Michael Alan; and Zadrozny, Wlodek Wlodzimierz, 5,649,060, Cl. 395-2.870.
Gerth, John Alan; Hall, Shawn Anthony; and Luken, William Louis, 5,649,078, Cl. 395-122.000.
Grosbach, Lyle Edwin; Krolak, David John; and Marquart, David Wayne, 5,649,177, Cl. 395-560.000.
Hartley, Lee F., 5,649,128, Cl. 395-309.000.
Huang, Caroline Josette; and Wang, Yun, 5,649,168, Cl. 395-500.000.
Kawamura, Tateo; and Shimotono, Susumu, 5,649,212, Cl. 395-750.000.
Krumm, Barry Watson; Comfort, Steven Tyler; Ji, Jin; Liptay, John Stephen; Webb, Charles Franklin; Wong, David Man Chow; and Ying, Steven QiHong, 5,649,155, Cl. 395-455.000.
Lahr, Jonathan Ellsworth; McBrearty, Gerald Francis; Shieh, Johnny Meng-Han; and Tropiano, Leonard Barry, 5,649,158, Cl. 395-488.000.
Lehr, Theodore Franklin, 5,649,085, Cl. 395-140.000.
Mathewson, James Merwin, II, 5,649,101, Cl. 395-200.020.
McNutt, Bruce; Azevedo, Ruth Enid; Morain, Gary E.; and Harding, Barrie N., 5,649,153, Cl. 395-445.000.
Minakata, Hiroshi, 5,649,080, Cl. 395-127.000.
Narayanan, Vinod; Honsinger, Philip S.; and Liu, Lok Tin, 5,648,912, Cl. 364-491.000.
Pechanek, Gerald G.; Glossner, Clair John; Larsen, Larry D.; and Vassiliadis, Stamatis, 5,649,135, Cl. 395-396.000.
Pedersen, Mark Eric, 5,649,150, Cl. 395-437.000.
Rehquate, Rudolf Eugene; Stammely, Thomas Edward; and Stoltz, Jeffrey Matthew, 5,649,111, Cl. 395-200.200.
Scott, Roderick Keith; and Tai, Ling-Ching Wang, 5,649,195, Cl. 395-617.000.
Widmer, Albert X., 5,648,776, Cl. 341-100.000.
Yarmchuk, Edward John, 5,648,720, Cl. 324-213.000.
Yeager, John D.; Ho, Lawrence Y.; Stevens, Chester R.; Brady, James T.; and Wang, David T., 5,649,112, Cl. 395-200.100.

International Plant Breeding AG: *See*—
Holtkamp, Reinhold, Jr., 5,647,170, Cl. 47-81.000.

Intevep, S.A.: *See*—
Rivas, Luis A.; Peluso, Enzo; Rojas, Daisy; and Garcia, Juan Jose, 5,648,312, Cl. 502-325.000.

Intrater, Gideon; Oz, Oved; and Tsadik, Meir, to National Semiconductor Corporation. Mechanism for handling non-maskable interrupt requests received from different sources. 5,649,208, Cl. 395-735.000.

Intuit, Inc.: *See*—
Schrader, Joseph Alton; Yuen, Lun-Shin; Gates, Martin Oishi; and Schulman, Robert Milton, 5,649,115, Cl. 395-233.000.

Inuishi, Masahide: *See*—
Kusunoki, Shigeru; and Inuishi, Masahide, 5,648,284, Cl. 437-40.0GS.

Inuzuka, Tatsuki: *See*—
Nakamura, Toshiaki; Nakashima, Keisuke; Nakamura, Kouzou; Shinoda, Shinichi; and Inuzuka, Tatsuki, 5,649,031, Cl. 382-254.000.

Inventio AG: *See*—
Arpagaus, Christian; Gerstenkorn, Bernhard; and Zäch, Daniel, 5,648,645, Cl. 187-393.000.
Nagel, Heinz-Dieter, 5,648,644, Cl. 187-288.000.

Iowa State University Research Foundation: *See*—
Kraus, George A.; and Tylka, Gregory L., 5,648,318, Cl. 504-320.000.

Irani, Michal: *See*—
Burt, Peter J.; Irani, Michal; Hsu, Stephen Charles; Anandan, Padmanabhan; and Hansen, Michael W., 5,649,032, Cl. 382-284.000.

Ireton, Mark A., to Advanced Micro Devices. Time dependent rerouting of instructions in plurality of reservation stations of a superscalar microprocessor. 5,649,138, Cl. 395-393.000.

Iscovich, Angel. Body fluid containment bag. 5,647,670, Cl. 383-33.000.

Iseki, Takayuki: *See*—
Nishioka, Koichi; Fujiwara, Hideo; and Iseki, Takayuki, 5,648,885, Cl. 360-113.000.

Ishibashi, Toshiyuki: *See*—
Kitazawa, Atsunori; Ishibashi, Toshiyuki; and Akioka, Koji, 5,647,886, Cl. 75-235.000.

Ishida, Masaya: *See*—
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Ishida, Tomotoshi: *See*—
Nakajima, Norihiro; Arai, Hiroshi; Harashima, Ichiro; Shinotsuka, Yoshiaki; Ishida, Tomotoshi; Odamura, Motomi; Arai, Shigeru; and Yamada, Takeo, 5,649,081, Cl. 395-130.000.

Ishigaki, Yukinobu, to Victor Company of Japan, Ltd. Frequency converting circuit. 5,648,736, Cl. 327-113.000.

Ishige, Kiyokazu, to NEC Corporation. Method for manufacturing semiconductor nonvolatile memory device with field insulating layer. 5,648,285, Cl. 437-43.000.

Ishihara, Katsuro: *See*—
Kawanishi, Toshio; Yokoyama, Shigeki; Ishihara, Katsuro; Narukami, Yoshihisa; Shioyama, Masahiko; Tokushima, Mikiharu; and Ozaki, Toshiya, 5,647,988, Cl. 210-636.000.

Ishihara, Toshihiro: *See*—
Izumi, Tomoji; Shimizu, Kenji; Sugamoto, Yoshiaki; Okuda, Kazuyoshi; Ando, Satoru; Ishihara, Toshihiro; Inada, Takahiro; and Okuda, Tsunehisa, 5,648,905, Cl. 364-461.000.

Ishii, Kozo: *See*—
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Ishikawa, Jun: *See*—
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Ishikawa, Kunihiko: *See*—
Kubota, Ken; Ishikawa, Kunihiko; and Hiramoto, Noboru, 5,647,143, Cl. 34-410.000.

Ishikawa, Satoshi; Suzuki, Nobuhiko; and Ikumi, Tohru, to Yazaki Corporation. Electrical connection device between handle and steering column. 5,647,753, Cl. 439-689.000.

Ishikawa, Yasushi: *See*—
Nakagawa, Toshikazu; Ishikawa, Yasushi; Tsushima, Sadao; Yashiro, Masao; and Ohta, Hitoshi, 5,648,176, Cl. 428-593.000.

Ishikawa, Yoshiro: *See*—
Sawaki, Ippei; Miura, Michio; Ishikawa, Yoshiro; and Abe, Fumitaka, 5,648,874, Cl. 359-622.000.

Ishikawa, Yutaro: *See*—
Kimura, Toshiyuki; Ishikawa, Yutaro; Abe, Shinichi; Kamiya, Kazuhiro; and Miyake, Takashi, 5,649,319, Cl. 455-186.100.

Ishimaru, Toshiaki: *See*—
Itoh, Junichi; Kunishige, Keiji; Mizobuchi, Koji; Kobayashi, Yoshiaki; Ishimaru, Toshiaki; Watanabe, Akira; and Otsuka, Yasunobu, 5,649,247, Cl. 396-311.000.

Ishiwaki, Masahiko: *See*—
Kondoh, Harufusa; Yamanaka, Hideaki; Ishiwaki, Masahiko; and Notani, Hiromi, 5,649,119, Cl. 395-250.000.

Ishiwata, Hiroshi: *See*—
Kubo, Ken-ichi; Matsubara, Jun; and Ishiwata, Hiroshi, 5,647,323, Cl. 123-450.000.

Ishizaka, Hiroshi: *See*—

Kuroda, Hiroshi; Nakajima, Fumito; Nishimura, Masakatsu; Kaku, Hiroyuki; Nozawa, Shigeru; Takamoto, Shigehito; Nakamoto, Takanori; Kikkawa, Hirofumi; Ishizaka, Hiroshi; Katagawa, Atsushi; Kon, Mitsuharu; Yamamoto, Masayuki; and Yoshida, Kunikatsu, 5,648,048, Cl. 422-168.000.

Ishizaki, Masao: *See*—
Ichimura, Akira; and Ishizaki, Masao, 5,648,762, Cl. 340-825.310.

Ishizawa, Seiya, to Fuji Kogyo Co., Ltd. Debarking tooth of a debarking machine. 5,647,418, Cl. 144-208.900.

Ishizawa, Yoshinori, to Hitachi Koki Co., Ltd. Driver blade for a percussion tool. 5,647,525, Cl. 227-113.000.

Ishizeki, Kazunori: *See*—
Ohki, Hisatomo; Nakamura, Shigemi; Ishizeki, Kazunori; and Yanagawa, Akira, 5,647,349, Cl. 128-203.150.

Isida, Masatosi, to NEC Corporation. Impedance converting device capable of readily adjusting an impedance converting characteristic with an electromagnetic shielding effect. 5,648,748, Cl. 333-246.000.

Isobe, Masaaki: *See*—
Murase, Yasuyuki; and Isobe, Masaaki, 5,647,967, Cl. 205-131.000.

Isovolta Osterreichische Isolierstoffwerke Aktiengesellschaft: *See*—
Janowitz, Othmar; and Walter, Peter, 5,648,436, Cl. 525-481.000.

Israel Fiber Institute State of Israel Ministry of Industry and Trade: *See*—
Dumitriu, Severian; Kahane, Itzhak; and Guttmann, Hilda, 5,648,252, Cl. 435-179.000.

Itabashi, Akihisa, to Ricoh Company, Ltd. Optical scanner. 5,648,864, Cl. 359-205.000.

Itakura, Masahiro: *See*—
Goto, Mitsuo; Uzawa, Kunihiko; Itakura, Masahiro; and Hijino, Masamichi, 5,647,914, Cl. 134-10.000.

Itano, Masaaki: *See*—
Ouki, Yasuhiro; Kanaya, Miharu; Hayashi, Hiroko; Takemoto, Kiyohiko; and Itano, Masaaki, 5,647,897, Cl. 106-31.490.

Item Development AB: *See*—
Sollevi, Alf, 5,648,341, Cl. 514-46.000.

Ito, Chitoshi; Hirono, Kazuhisa; Niwa, Akihiko; and Nakagawa, Sachiko, to Brother Kogyo Kabushiki Kaisha. Document processing device having ruling function. 5,647,676, Cl. 400-65.000.

Ito, Hiroshi: *See*—
Nakajima, Masahiro; Ito, Hiroshi; and Tanaka, Hiroshi, 5,649,130, Cl. 399-327.000.

Ito, Katsuyuki: *See*—
Tanuma, Jiro; Ito, Katsuyuki; Katakura, Shinichi; Wakasugi, Nobuo; Nagaoka, Kazuhiko; and Ito, Toshikaru, 5,648,810, Cl. 347-130.000.

Ito, Koichi: *See*—
Akiba, Masaru; Nakagawa, Masayuki; Tsurufuji, Tomoyoshi; Sunaga, Shunji; and Ito, Koichi, 5,647,162, Cl. 43-24.000.

Ito, Soichi, to NEC Corporation. Method of automatically optimizing power supply network for semi-custom made integrated circuit device. 5,648,910, Cl. 364-490.000.

Ito, Toshikaru: *See*—
Tanuma, Jiro; Ito, Katsuyuki; Katakura, Shinichi; Wakasugi, Nobuo; Nagaoka, Kazuhiko; and Ito, Toshikaru, 5,648,810, Cl. 347-130.000.

Itoh, Hideo, to Richo Company, Ltd. Language parsing device and method for same. 5,649,215, Cl. 395-759.000.

Itoh, Junichi; Kunishige, Keiji; Mizobuchi, Koji; Kobayashi, Yoshiaki; Ishimaru, Toshiaki; Watanabe, Akira; and Otsuka, Yasunobu, to Olympus Optical Co., Ltd. Apparatus for recording information of camera capable of optical data recording and magnetic data recording. 5,649,247, Cl. 396-311.000.

Itoh, Naoto; Nagai, Yoshihisa; and Nomura, Satoru, to Pioneer Electronic Corporation; and Pioneer Electronic Corporation. Apparatus for recording and reproducing a frequency bandwidth coded digital audio signal. 5,648,948, Cl. 369-48.000.

Itou, Yukio: *See*—
Yamagishi, Ryoji; and Itou, Yukio, 5,647,469, Cl. 194-200.000.

ITT Automotive Europe GmbH: *See*—
Bienert, Herbert; Egner-Walter, Bruno; and Fink, Andreas, 5,647,680, Cl. 403-263.000.
Bommer, Juergen; Schill, Eduard; and Waible, Siegfried, 5,647,088, Cl. 15-250.201.
Edele, Reinhard; and Schmid, Eckhardt, 5,647,085, Cl. 15-250.210.
Pirrung, Jurgen; Stumpe, Reinhard; and Grohmann, Gerhard, 5,648,697, Cl. 310-338.000.
Volz, Peter; and Zaviska, Dalibor, 5,647,644, Cl. 303-119.200.

ITT Flygt AB: *See*—
Narholm, Roland I. G.; and Stjerna, Per G. L., 5,647,666, Cl. 366-285.000.

ITW Limited: *See*—
Green, Michael Cameron; Palmer, Anthony James; and Hall, Alan, 5,647,679, Cl. 400-232.000.

Iwai, Ryoji: *See*—
Igarashi, Yoshio; Asano, Fumihiro; Shimoyamada, Makoto; Harada, Masayuki; Nakano, Shigeru; Iwai, Ryoji; Yagami, Keisuke; and Konno, Yuzi, 5,648,534, Cl. 564-130.000.

Iwai, Takashi; and Nakano, Motoo, to Fujitsu Limited. Semiconductor device with protective element. 5,648,676, Cl. 257-500.000.

Iwamatsu, Takanori; and Mitsuta, Norihide, to Fujitsu Limited. Communication system including a digital roll-off filter. 5,648,988, Cl. 375-232.000.

Iwamoto, Shozo: *See*—
Kawaguchi, Yoshihiro; Ohno, Masayuki; Nishioka, Yutaka; In, Michinobu; Kakiuchi, Hiroyuki; and Iwamoto, Shozo, 5,647,220, Cl. 62-89.000.

Iwamoto, Takashi: *See*—
Hoshino, Toshiyuki; Iwamoto, Takashi; Matsuzaki, Akihiro; and Amano, Keniti, 5,648,044, Cl. 420-99.000.

Iwanaga, Ryuichi, to Canon Kabushiki Kaisha. Optical information recording/reproducing apparatus. 5,648,945, Cl. 369-44.140.

Iwata, Hideyuki: *See*—
Ohyama, Isao; Nakamura, Shiro; Shimizu, Takeo; Yanagawa, Hisaharu; and Iwata, Hideyuki, 5,649,037, Cl. 385-24.000.

Iwaya, Yoshiaki: *See*—
Tajiri, Hiroyuki; Nakagawa, Yoshiteru; Iwaya, Yoshiaki; Tanaka, Yoshiharu; Asami, Keiichi; Touma, Katsuyuki; and Okumura, Shinji, 5,648,027, Cl. 264-43.000.

Izumi, Tomoji; Shimizu, Kenji; Sugamoto, Yoshiaki; Okuda, Kazuyoshi; Ando, Satoru; Ishihara, Toshihiro; Inada, Takahiro; and Okuda, Tsunehisa, to Mazda Motor Corporation. Traveling control system for motor vehicle. 5,648,905, Cl. 364-461.000.

Izumida, Hiromu; Murabe, Kaoru; Nishioka, Takao; Yamakawa, Akira; and Matsunuma, Kenji, to Sumitomo Electric Industries, Ltd. Combination of adjusting shim and cam. 5,647,313, Cl. 123-90.510.

J.M. Voith GmbH: *See*—
Kottitschke, Gerhard, 5,647,960, Cl. 162-360.200.

J. van Walraven B.V.: *See*—
Van Walraven, Jan, 5,647,564, Cl. 248-74.200.

Jabs, David E.: *See*—
Leblang, David B.; Allen, Larry W.; Chase, Robert P., Jr.; Douros, Bryan P.; Jabs, David E.; McLean, Gordon D., Jr.; and Minard, Debra A., 5,649,200, Cl. 395-703.000.

Jackson, Stephen J.: *See*—
Moore-McKee, Amy L.; Hadank, J. Martin; Jackson, Stephen J.; Pradaxay, Sysounanh M.; and McGuire, Kenneth J., 5,648,898, Cl. 364-191.000.

Jacob, Werner, to Lohr & Bromkamp GmbH. Constant velocity joint. 5,647,801, Cl. 464-145.000.

Jacobs, Richard L. Method of manufacturing ceramic superconductor circuit board. 5,648,320, Cl. 505-471.000.

Jacobs, William, III: *See*—
Szita, Jeno G.; Ramesh, Subban; Jacobs, William, III; and Brogan, John Colin, 5,648,434, Cl. 525-441.000.

Jacobs, William R.: *See*—
Sacchettini, James; Blanchard, John; and Jacobs, William R., 5,648,392, Cl. 514-560.000.

Jacobsen, Stephen C.; and Davis, Clark C., to Sarcos Group. Volumetric shaft/valve. 5,647,575, Cl. 251-325.000.

Jacobson, John D., to Newcomb Spring Corporation. Pitch tool holder. 5,647,240, Cl. 72-135.000.

Jaggi, Bruno W.: *See*—
Zeng, Haishan; Cline, Richard W.; MacAulay, Calum E.; and Jaggi, Bruno W., 5,647,368, Cl. 128-665.000.

Jain, Jawahar; and Mukherjee, Rajarshi, to Fujitsu Limited. Topology-based computer-aided design system for digital circuits and method thereof. 5,649,165, Cl. 395-500.000.

Jakobson, Gerald: *See*—
Dillenburg, Helmut; Jakobson, Gerald; Klein, Winfried; Siemanowski, Werner; Uhlig, Karlheinz; and Wolf, Florian, 5,648,067, Cl. 424-65.000.

Jakubowicz, Helmut, to Ensign Geophysics Limited. Seismic data acquisition. 5,648,938, Cl. 367-56.000.

Jalonen, Harry: *See*—
Laine, Ensio; Jalonen, Harry; Hakanen, Arvi; Linsaari, Kari; and Jokinen, Juha, 5,648,610, Cl. 73-587.000.

Jambor, Arno; Guertler, Dieter; and Muehlhausen, Mark, to Mercedes-Benz AG. Motor vehicle having an at least partially retractable roof. 5,647,630, Cl. 296-108.000.

James, Laurence H., to James, Laurence H. Cable fastener. 5,647,104, Cl. 24-68.00S.

James, Michael D.: *See*—
Cook, Merritt S.; James, Michael D.; and Strope, Todd R., 5,648,025, Cl. 264-1.360.

James, Travis L.: *See*—
Augustyn, Craig L.; Giannetti, Richard; James, Travis L.; Muscarella, Stephen B.; Pascoe, Philip T.; Snyder, Francis J.; and VanBork, Erik C., 5,647,733, Cl. 417-360.000.

Jameson, Howard E.: *See*—
Sears, Merle D.; and Jameson, Howard E., 5,647,742, Cl. 432-247.000.

Jamieson, Donald R.; VanderPlaat, Peter G.; Poe, Jimmy R.; Holman, Richard T.; and Ramos, Claudia M., to Lennox Industries Inc. Gas operated fireplace assembly. 5,647,342, Cl. 126-512.000.

Jamiolkowski, Dennis D.: *See*—
Bezwada, Rao S.; and Jamiolkowski, Dennis D., 5,648,088, Cl. 424-426.000.

Jangi, Shrirang: *See*—
Gupta, Prabhat K.; Jangi, Shrirang; Lamkin, Allan B.; Kepley, W. Robert, III; and Morris, Adrian J., 5,649,055, Cl. 395-2.420.

Jani, Bhargav; Chipps, Fredrick; and Haney, Joe, to Gates Corporation, The. Polyfluorocarbon/elastomer laminates. 5,647,400, Cl. 138-126.000.

Janisch, Ingo: *See*—
Müller, Nikolaus; Gröschl, Andreas; and Janisch, Ingo, 5,648,517, Cl. 560-205.000.

Jannard, James H.: *See*—
Houston, Malcolm Neal; Jannard, James H.; and Reyes, Carlos D., 5,648,832, Cl. 351-159.000.

Janowitz, Othmar; and Walter, Peter, to Isovolta Osterreichische Isolierstoffwerke Aktiengesellschaft. Halogen-free mixture, a self-extinguishing prepreg containing this mixture and the use of such a prepreg. 5,648,436, Cl. 525-481.000.

Jansen, Rolf-Michael; and Zimmermann, Andreas, to Hoechst Aktiengesellschaft. Process for the preparation of xerogels. 5,647,962, Cl. 203-57.000.

Janssen Pharmaceutica Inc.: *See*—
Gole, Dilip J.; Levinson, R. Saul; Wilkinson, Paul K.; and Davies, J. Desmond, 5,648,093, Cl. 424-484.000.

Japan as represented by Director General of Agency of Industrial Science and Technology: *See*—
Tada, Tetsuya; and Kanayama, Toshihiko, 5,647,999, Cl. 216-49.000.

Japan Atomic Energy Research Inst.: *See*—
Sugo, Takanobu; Tanaka, Satoshi; and Tsutsui, Tsuyoshi, 5,648,400, Cl. 521-30.000.

Japan Hayes Ltd.: *See*—
Kubota, Ken; Ishikawa, Kunihiko; and Hiramoto, Noboru, 5,647,143, Cl. 34-410.000.

Japan Vilene Company, Ltd.: *See*—
Nakajima, Masahiro; Ito, Hiroshi; and Tanaka, Hiroshi, 5,649,130, Cl. 399-327.000.

Japanese Foundation for Cancer Research Cancer Institute: *See*—
Albertsen, Hans; Anand, Rakesh; Carlson, Mary; Groden, Joanna; Hedge, Philip John; Joslyn, Geoff; Kinzler, Kenneth; Markham, Alexander; Nakamura, Yusuke; Thliveris, Andrew; Vogelstein, Bert; and White, Raymond L., 5,648,212, Cl. 435-6.000.

Jaster, Paul A.; and O'Neill, Mark Joseph, to Minnesota Mining and Manufacturing Company. Passive solar collector. 5,648,873, Cl. 359-591.000.

Jatco Corporation: *See*—
Yamauchi, Yasuhiro, 5,647,467, Cl. 192-87.110.

Jay, Dave: *See*—
Hellén, Göran; and Jay, Dave, 5,647,316, Cl. 123-299.000.

Jay, Eric C.; and Dinsmoor, John C., III, to Jay Medical Ltd. Seating and back systems for a wheelchair. 5,647,637, Cl. 297-354.120.

Jay Medical Ltd.: *See*—
Jay, Eric C.; and Dinsmoor, John C., III, 5,647,637, Cl. 297-354.120.

Jeanpierre, Guy: *See*—
Sinopoli, Italo Marziale; Helfer, Farrel Bruce; Kim, Dong Kwang; Morgan, John Gomer; Shemenski, Robert Martin; Jeanpierre, Guy; and Nguyen, Gia Van, 5,648,153, Cl. 428-295.100.

Jee, Kyung-ha: *See*—
Choi, Nak-choon; and Jee, Kyung-ha, 5,648,702, Cl. 315-224.000.

Jelich, Klaus; Lindel, Hans; Mannheims, Christoph; Lantzsch, Reinhard; and Merz, Walter, to Bayer Aktiengesellschaft. Process for the preparation of 5-substituted 2-chloropyridines. 5,648,495, Cl. 546-250.000.

Jelsma, Siebe; and Kuijk, Karel E., to U.S. Philips Corporation. Display device. 5,648,794, Cl. 345-98.000.

Jensen, Eric Lee; and Kruckemeyer, William Charles, to General Motors Corporation. Adjustable piston valve damper. 5,647,461, Cl. 188-322.150.

Jensen, Robert M., to American Standard Inc. Toilet flushing device with water saving features. 5,647,068, Cl. 4-415.000.

Jensen, Ryan N.; Scott, Logan; and Williams, Claude M., to Omnipoint Corporation. Method for power control in a TDMA spread spectrum communication system. 5,648,955, Cl. 370-252.000.

Jensen, Wayne E., to B & J Manufacturing Company. Tire rasp blade. 5,647,698, Cl. 407-29.120.

Jentsch, Jörg-Dietrich: *See*—
Landscheidt, Heinz; Klausener, Alexander; Zirngiebl, Eberhard; and Jentsch, Jörg-Dietrich, 5,648,500, Cl. 548-440.000.

Jeon, Hong-Seob: *See*—
Moon, Young-Ho; Jeon, Hong-Seob; Choi, Kyu-Whan; Lee, Kwan-Ho; and Kim, Man-Keun, 5,648,234, Cl. 435-69.100.

Jerabek, Elihu C.: *See*—
Iacovangelo, Charles D.; and Jerabek, Elihu C., 5,647,878, Cl. 51-295.000.

Jermeay, Mark D.: *See*—
Gardner, Richard K.; Wieland, Roger D.; and Jermeay, Mark D., 5,647,737, Cl. 417-454.000.

Jeske, Rainer; Weiblen, Kurt; and Arand, Dieter, to Robert Bosch GmbH. Pressure sensor providing improved connection to a circuit board. 5,648,615, Cl. 73-756.000.

Ji, Jin: *See*—
Krumm, Barry Watson; Comfort, Steven Tyler; Ji, Jin; Liptay, John Stephen; Webb, Charles Franklin; Wong, David Man Chow; and Ying, Steven QiHong, 5,649,155, Cl. 395-455.000.

Jiao, Quingxian: *See*—
Mavropoulos, Triantafyllos; Jiao, Quingxian; Celik, Cesur; and McClelland, Bill, 5,648,043, Cl. 266-259.000.

Jin, Betty: *See*—
Von Itzstein, Laurence Mark; Wu, Wen-Yang; Van Phan, Tho; Danylec, Basil; Jin, Betty; Colman, Peter Malcolm; and Varghese, Joseph Noozhumurry, 5,648,379, Cl. 514-459.000.

Jin, Sungho; Kochanski, Gregory Peter; and Zhu, Wei, to Lucent Technologies Inc. Field emission devices employing improved emitters on metal foil and methods for making such devices. 5,648,699, Cl. 313-309.000.

Jinro Limited: *See*—
Moon, Young-Ho; Jeon, Hong-Seob; Choi, Kyu-Whan; Lee, Kwan-Ho; and Kim, Man-Keun, 5,648,234, Cl. 435-69.100.

Johannes Heidenhain GmbH: *See*—
Holzapfel, Wolfgang; and Huber, Walter, 5,648,658, Cl. 250-237.00G.

Johansson, Magnus: *See*—
Ljungqvist, Göran; Johansson, Magnus; and Stensland, Leif, 5,649,040, Cl. 385-95.000.

John Hopkins University, The: *See*—
Albertsen, Hans; Anand, Rakesh; Carlson, Mary; Groden, Joanna; Hedge, Philip John; Joslyn, Geoff; Kinzler, Kenneth; Markham, Alexander; Nakamura, Yusuke; Thliveris, Andrew; Vogelstein, Bert; and White, Raymond L., 5,648,212, Cl. 435-6.000.

Johner, Gerhard; Hasenzahl, Stefan; and Kern, Juergen, to Heidelberger Druckmaschinen AG. Printing machine roller and method of production thereof. 5,647,279, Cl. 101-401.100.

Johns Hopkins University, The: *See*—
Winkler, James David; Chilton, Floyd Harold, III; and Hickey, Deirdre Mary Bernadette, 5,648,373, Cl. 514-398.000.

Johnson, Alan T.; Teng, Min; Vuligonda, Vidyasagar; Beard, Richard L.; Gillett, Samuel J.; Duong, Tien T.; and Chandraratna, Roshantha A., to Allergan. Substituted acetylenes having retinoid-like biological activity. 5,648,514, Cl. 560-102.000.

Johnson, Alan T.: *See*—
Vuligonda, Vidyasagar; Beard, Richard L.; Johnson, Alan T.; Teng, Min; Song, Tae K.; and Chandraratna, Roshantha A., 5,648,503, Cl. 549-13.000.

Johnson & Johnson Vision Products, Inc.: *See*—
Galas, Stephen, 5,648,024, Cl. 264-1.100.

Johnson, Calvin D., Sr. Outboard motor support. 5,647,781, Cl. 440-53.000.

Johnson, Dana J.: *See*—
Holzhauer, Frederick W.; Johnson, Dana J.; and McAninch, Terry, 5,647,997, Cl. 210-721.000.

Johnson, Darren; Baldwin, Jeffrey; Eddy, Maxson; and Stogner, Patrick, to Northrop Grumman Corporation. System for controlling a remote unit. 5,648,897, Cl. 364-188.000.

Johnson, Donald A.: *See*—
Kneller, James F.; Johnson, Donald A.; Narutis, Vytas; and Khambatta, Binaifer S., 5,647,995, Cl. 210-699.000.

Johnson, Donald D.: *See*—
Adamczyk, Maciej; Johnson, Donald D.; Mattingly, Phillip G.; Clarisse, Diana E.; Tyner, Joan D.; and Perkowitz, Mary M., 5,648,272, Cl. 436-500.000.

Johnson, Grannis S.: *See*—
Arora, Kartar S.; Devore, David I.; Grinstein, Reuben H.; Johnson, Grannis S.; Papalos, John G.; and Shah, Shailesh, 5,648,409, Cl. 523-404.000.

Johnson, James T.; and Kolstrom, Frank E., to United States of America, Navy. Tool and system for machining a round strand. 5,647,265, Cl. 83-861.000.

Johnson, Jay Gregory: *See*—
Olsen, James M.; and Johnson, Jay Gregory, 5,647,854, Cl. 604-174.000.

Johnson, Jay T., to Ingersoll-Rand Company. Pressure relief valve with filter. 5,647,880, Cl. 55-310.000.

Johnson, Jay T., to Ingersoll-Rand Company. Method for filtering lubricant from a lubricant/compressed gas mixture flowed through a pressure relief valve in a compressor. 5,647,893, Cl. 95-284.000.

Johnson, John Joseph Paul: *See*—
Schaefer, Keith James; Mandzy, John; Carlson, Andrew Anthony; Adams, Crestus Lee; Brown, Steven Joseph; and Johnson, John Joseph Paul, 5,648,052, Cl. 422-305.000.

Johnson, Olufunmiloyo Lilly: *See*—
Illum, Lisbeth; and Johnson, Olufunmiloyo Lilly, 5,648,095, Cl. 424-489.000.

Johnson, Richard D.; and Reineking, Jerry R., to Kohler Co. Engine breather device with cooling baffle. 5,647,337, Cl. 123-572.000.

Johnson, Richard J.: *See*—
Ung-Chhun, Neng S.; and Johnson, Richard J., 5,647,985, Cl. 210-504.000.

Johnston, Gary Lawrence. Stationary exercise apparatus. 5,647,821, Cl. 482-57.000.

Johnston, Llewellyn L., to Columbia Machine, Inc. Apparatus for adjustably mounting a mold box. 5,648,009, Cl. 249-129.000.

Jokinen, Juha: *See*—
Laine, Ensio; Jalonen, Harry; Hakanen, Arvi; Linsaari, Kari; and Jokinen, Juha, 5,648,610, Cl. 73-587.000.

Joly, Bertrand: *See*—
Boniort, Jean-Yves; Brehm, Claude; Tardy, André; Hakoun, Roland; Bourhis, Jean-Francois; and Joly, Bertrand, 5,649,038, Cl. 385-59.000.

Jones, Charles Edward: *See*—
Haigh, Neil Richard; and Jones, Charles Edward, 5,648,845, Cl. 356-73.100.

Jones, Dale Richard: *See*—
Sawert, Ulf; Jones, Grady Donald, Sr.; Jones, Dale Richard; Kuehnemund, Bruce Albert; and Dockery, Randall Lee, 5,647,330, Cl. 123-509.000.

Jones, Darren: *See*—
Worrell, Frank; and Jones, Darren, 5,648,733, Cl. 326-86.000.

Jones, Eric W.: *See*—
Lin, True-Lon; Park, Jin S.; Gunapala, Sarath D.; Jones, Eric W.; and Del Castillo, Hector M., 5,648,297, Cl. 437-178.000.

Jones, Gary Wayne; and Sune, Ching-Tzong, to MCNC. Methods of making vertical microelectronic field emission devices. 5,647,785, Cl. 445-24.000.

Jones, Grady Donald, Sr.: *See*—
Sawert, Ulf; Jones, Grady Donald, Sr.; Jones, Dale Richard; Kuehnemund, Bruce Albert; and Dockery, Randall Lee, 5,647,330, Cl. 123-509.000.

Jones, James T.; Kersey, Larry; and Walters, Michael, to Alanco Environmental Resources Corp. Purging electrostatic gun for a charged dry sorbent injection and control system for the remediation of pollutants in a gas stream. 5,648,049, Cl. 422-170.000.

Jones, John W.: *See*—
Tyberg, William T.; and Jones, John W., 5,648,727, Cl. 324-677.000.

Jones, Michelle M.: *See*—
Dunn, Thomas Jeffrey; White, David H.; Kneller, Mills Thomas; Jones, Michelle M.; and Doran, Narciso Ocampo, III, 5,648,536, Cl. 564-153.000.

Jones, Owen: *See*—
Gifford, Carl S.; Jones, Owen; and Trinder, Michael Charles John, 5,649,018, Cl. 381-71.140.

Jones, Roger J.: *See*—
Smerznak, Mark A.; Jones, Roger J.; Surutzidis, Athanasios; Fisk, Andrew A.; Christiano, Steven P.; Bausch, Gregory G.; Tonge, Lauren M.; McCoy, Sharon K.; and Mallen, Elizabeth F., 5,648,327, Cl. 510-340.000.

Jones, Stephen A.: *See*—
Bowers, Roderick W. J.; Jones, Stephen A.; and Stratford, Peter W., 5,648,442, Cl. 526-277.000.

Jones, Stephen C.; and Fallon, Denis G., to Hoechst Celanese Corporation. Process for the recovery of an organic acid from the manufacture of a cellulose ester. 5,648,529, Cl. 562-608.000.

Jones, William Leslie, to Ingersoll-Rand Company. Bit retention device for a bit and chuck assembly of a down-the-hole percussive drill. 5,647,447, Cl. 175-300.000.

Jonsson, Klas: *See*—
Hook, Magnus; Jonsson, Klas; Patti, Joseph M.; and Gurusiddappa, Sivashankarappa, 5,648,240, Cl. 435-69.300.

Jordan, Mark P. Suspension alignment device. 5,647,606, Cl. 280-661.000.

Jorgensen, Charles; and Ross, James, to United States of America, National Aeronautics and Space Administration. System and method for modeling the flow performance features of an object. 5,649,064, Cl. 395-22.000.

Jørgensen, Ole, to Meadox Medicals, Inc. High strength low compliance composite balloon for balloon catheters. 5,647,848, Cl. 604-96.000.

Joslin, Edward G.; and Selzer, James. Safety helmet visor. 5,647,066, Cl. 2-424.000.

Joslyn, Geoff: *See*—
Albertsen, Hans; Anand, Rakesh; Carlson, Mary; Groden, Joanna; Hedge, Philip John; Joslyn, Geoff; Kinzler, Kenneth; Markham, Alexander; Nakamura, Yusuke; Thliveris, Andrew; Vogelstein, Bert; and White, Raymond L., 5,648,212, Cl. 435-6.000.

Josoff, Peter Larry, to Lucent Technologies Inc. Method for twisting a pair of moving strands. 5,647,195, Cl. 57-67.000.

Jost, Franz-Gerhard: *See*—
Damasky, Joachim; Decker, Detlef; Flottmeyer, Hubert; Fockers, Willi; Helfmeier, Ulrich; Jost, Franz-Gerhard; Kabst, Juergen; Vogt, Heinrich; and Woerdenweber, Burkard, 5,647,657, Cl. 362-32.000.

Jostlein, Hans, to Universities Research Association, Inc. Automatic ball bar for a coordinate measuring machine. 5,647,136, Cl. 33-502.000.

Jousse, Didier; Vilato, Pablo; and Geoffroy, Catherine, to Saint-Gobain Vitrage International. Dealkalinization of sheets of glass with low alkalines content. 5,648,172, Cl. 428-426.000.

Judat, Helmut: *See*—
Konig, Bernd-Michael; Judat, Helmut; and Blank, Heinz Ulrich, 5,648,565, Cl. 568-940.000.

Juhasz, Paul Robert, to Ski-Shocks, Inc. Ski device. 5,647,353, Cl. 280-602.000.

Juki American, Inc.: *See*—
Morgulis, Lazar A.; and Zimmerman, Charles, 5,647,292, Cl. 112-470.170.

Julius, Robert P., to Nice-Pak Products, Inc. Readily openable pop-up dispenser for moist tissues. 5,647,506, Cl. 221-46.000.

Junginger, Erich: *See*—
Schnaibel, Eberhard; Junginger, Erich; and Schneider, Erich, 5,647,669, Cl. 374-144.000.

Jungkunz, Clemens; Steidl, Siegbert; Wohld, Dietrich; Berghs, Andre; and Troendle, Hans-Peter, to Siemens Aktiengesellschaft. Process for suppressing the influence of roll eccentricities. 5,647,237, Cl. 72-9.200.

Jungkunz, Clemens: *See*—
Steidl, Siegbert; Jungkunz, Clemens; and Berger, Klaus, 5,647,238, Cl. 72-10.100.

Junk, Dieter: *See*—
Conrad, Hans-Rolf; and Junk, Dieter, 5,647,555, Cl. 242-547.000.

Jurik, Ladislav: *See*—
Towers, Bill Eugene; Jurik, Ladislav; and Weinbrenner, Richard Larry, 5,647,702, Cl. 408-150.000.

Kővári, Arpád: *See*—
Pálosi, Endre; Korbonits, Dezso; Molnár née Bakó, Erzsébet; Szvoboda née Kanzel, Ida; Héja, Gergely; Kiss, Pál; Gönczi, Csaba; Sperber, Ferenc; Huszár, Csaba; Mihalovics, György; Németh, Attila; Sütő, Mihály; Gyüre, Károl; Bóné, István; Mórász, Ferenc; Ledniczky, László; Szabó née Kardos, Erzsébet; Győri, Péter; Szalay. Erzsébet; Bán, Károly; Buttkai, Ildikó; Kővári, Arpád; and Garaczy, Sándor, 5,648,498, Cl. 548-202.000.

Kabata, Yoshio: *See*—
Hatano, Masakatsu; Nakanishi, Akio; Kabata, Yoshio; Shirado, Masayuki; Takeo, Hiroshi; and Kobayashi, Mitsuharu, 5,648,558, Cl. 568-618.000.

Kabst, Juergen: *See*—
Damasky, Joachim; Decker, Detlef; Flottmeyer, Hubert; Fockers, Willi; Helfmeier, Ulrich; Jost, Franz-Gerhard; Kabst, Juergen; Vogt, Heinrich; and Woerdenweber, Burkard, 5,647,657, Cl. 362-32.000.

Kabushiki Kaisha Hatsuri Kimura: *See*—
Inoue, Makoto, 5,648,651, Cl. 235-475.000.

Kabushiki Kaisha Honda Lock: *See*—
Kurita, Tsutomu, 5,647,117, Cl. 29-622.000.

Kabushiki Kaisha Hosokawaseisakusho: *See*—
Hosokawa, Toshihiro, 5,647,808, Cl. 473-349.000.

Kabushiki Kaisha Isowa: *See*—
Yasui, Toshihiko; and Hatasa, Kazuhiro, 5,647,947, Cl. 156-361.000.

Kabushiki Kaisha Komatsu Seisakusho: *See*—
Omote, Kenji, 5,648,002, Cl. 219-121.820.
Shimomura, Masumi, 5,647,705, Cl. 409-132.000.

Kabushiki Kaisha Nippon Conlux: *See*—
Yamagishi, Ryoji; and Itou, Yukio, 5,647,469, Cl. 194-200.000.

Kabushiki Kaisha Sankyo Seiki Seisakusho: *See*—
Takeda, Tadashi; and Hayashi, Yoshio, 5,648,950, Cl. 369-110.000.

Kabushiki Kaisha Shinkawa: *See*—
Kobaru, Tetsuya, 5,647,740, Cl. 432-122.000.

Kabushiki Kaisha Tokyo Kikai Seisakusho: *See*—
Shiba, Noriyuki, 5,647,582, Cl. 270-8.000.

Kabushiki Kaisha Toshiba: *See*—
Eguchi, Takeshi, 5,648,843, Cl. 399-364.000.
Hirano, Naohiko; Doi, Kazuhide; Miura, Masayuki; Okada, Takashi; and Hiruta, Yoichi, 5,648,686, Cl. 257-778.000.
Inagaki, Yoshio; Takami, Masayuki; Kataoka, Masahiro; and Shibagaki, Taro, 5,648,964, Cl. 370-228.000.
Kuriyama, Toru; Ohtani, Yasumi; Chandratilleke, Rohana; Yoshino, Tatsuya; and Kobayashi, Takayuki, 5,647,218, Cl. 62-6.000.
Morishita, Mimpei, 5,647,477, Cl. 198-619.000.
Naka, Hideyuki; Konishi, Kazuo; and Ooishi, Kazuyuki, 5,648,820, Cl. 348-445.000.
Nakazawa, Tsutomu; and Inoue, Yumi, 5,648,682, Cl. 257-673.000.
Namekata, Minoru; and Murakami, Junzo, 5,648,991, Cl. 375-341.000.
Nitta, Tsuneo, 5,649,056, Cl. 395-2.650.
Sakazaki, Yoshihisa; and Abe, Shuji, 5,648,960, Cl. 370-498.000.
Shibata, Tsuyoshi, 5,648,198, Cl. 430-296.000.
Sumita, Kazuo; Hirakawa, Hideki; Miike, Seiji; and Mizutani, Yumi, 5,649,193, Cl. 395-614.000.
Takahashi, Wataru, 5,648,683, Cl. 257-685.000.
Tatsumi, Kaoru; and Yamamoto, Kazuo, 5,648,986, Cl. 375-229.000.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See*—
Katoh, Kazunori; Kondo, Haruyoshi; Matsui, Masayuki; Katayama, Naoki; Yamada, Yasushi; Takahashi, Hideaki; and Fukuda, Kunio, 5,648,601, Cl. 73-1.00G.

Kabushiki Kaisha TRD: *See*—
Inoue, Makoto, 5,648,651, Cl. 235-475.000.

Kabushiki Kaisha Yuyama Seisakusho: *See*—
Yuyama, Shoji; and Kodama, Tsuyoshi, 5,648,751, Cl. 340-309.150.

Kabushikikaisha Eqous Research: *See*—
Hara, Takeshi; Kato, Kenji; and Takada, Noriyuki, 5,648,182, Cl. 429-20.000.

Kabusiki Kaisha IPC: *See*—
Yokoyama, Michihiro, 5,647,125, Cl. 29-893.340.

Kadaba, Pankaja K., to University of Kentucky Research Foundation. Aminoalkylpyridine compounds which are useful as anitconvulsant drugs, excitatory amino acid inhibitors and NMDA sigma receptor antagonists. 5,648,369, Cl. 514-357.000.

Kadowaki, Shin-ichi: *See*—
Kato, Makoto; Komma, Yoshiaki; Kadowaki, Shin-ichi; Hori, Yoshikazu; Nishino, Seiji; and Saimi, Tetsuo, 5,648,951, Cl. 369-112.000.

Kadziauskas, Kenneth E.: *See*—
Christ, F. Richard; Fischer, Erick F.; and Kadziauskas, Kenneth E., 5,647,409, Cl. 141-27.000.

Kaelin, August: *See*—
Gysel, Peter; Wenger, Bruno; Kaelin, August; and Mueller, Daniel, 5,649,010, Cl. 379-406.000.

Kagami, Mamoru; Tanaka, Mutsuhiro; and Sugi, Masahiro, to Mitsui Petrochemical Industries, Ltd. Polyamide resin composition. 5,648,423, Cl. 525-66.000.

Kagawa, Seiji; and Kagawa, Yoichiro, to Seiji Kagawa. Porous film manufacturing apparatus. 5,648,107, Cl. 425-363.000.

Kagawa, Yoichiro: *See*—
Kagawa, Seiji; and Kagawa, Yoichiro, 5,648,107, Cl. 425-363.000.

Kageyu, Akira: *See*—
Tai, Shinji; Hara, Tetsuya; Kageyu, Akira; and Kashimura, Tsugunori, 5,648,449, Cl. 528-193.000.

Kahane, Itzhak: *See*—
Dumitriu, Severian; Kahane, Itzhak; and Guttmann, Hilda, 5,648,252, Cl. 435-179.000.

Kaida, Hiroaki, to Murata Manufacturing Co., Ltd. Stacked diezoelectric resonator ladder-type filter with at least one width expansion mode resonator. 5,648,746, Cl. 333-189.000.

Kaigler, William J.: *See*—

Starr, John R.; Starr, Eric W.; Kaigler, William J.; Pujol, John Raymond; DeVinney, Patrick; and Serowski, Andrew. 5,647,355, Cl. 128-205.240.

Kaila, Jarmo: *See*—
Vaistomaa, Jukka; Kaila, Jarmo; Rikkinen, Jouko; and Knuutila, Matti, 5,647,955, Cl. 162-30.110.

Kaiser, Robert, to Entropic Systems, Inc. Automatic precision cleaning apparatus with continuous on-line monitoring and feedback. 5,647,386, Cl. 134-113.000.

Kaitoh, Takuo: *See*—
Sato, Toshihiro; Hayata, Hiroko; Numata, Yuichi; Kaitoh, Takuo; Ishikawa, Jun; and Shimomura, Shigeo, 5,648,792, Cl. 345-92.000.

Kaji, Hitoshi: *See*—
Bunya, Shunzo; Kaji, Hitoshi; and Hirose, Yasuo, 5,647,741, Cl. 432-180.000.

Kajuch, Pete, to Master Lock Company. Adjustable backset spring latch and deadlocking latch. 5,647,617, Cl. 292-1.500.

Kakiuchi, Hiroyuki: *See*—
Kawaguchi, Yoshihiro; Ohno, Masayuki; Nishioka, Yutaka; In, Michinobu; Kakiuchi, Hiroyuki; and Iwamoto, Shozo, 5,647,220, Cl. 62-89.000.

Kakkar, Vijay Vir; Deadman, John Joseph; Claeson, Goran Karl; Cheng, Leifeng; Chino, Naoyashi; Elgendy, Said Mohamed Anwar; and Scully, Michael Finbarr, to Thrombosis Research Institute. Inhibitors and substrates of thrombin. 5,648,338, Cl. 514-18.000.

Kaku, Hiroyuki: *See*—
Kuroda, Hiroshi; Nakajima, Fumito; Nishimura, Masakatsu; Kaku, Hiroyuki; Nozawa, Shigeru; Takamoto, Shigehito; Nakamoto, Takanori; Kikkawa, Hirofumi; Ishizaka, Hiroshi; Katagawa, Atsushi; Kon, Mitsuharu; Yamamoto, Masayuki; and Yoshida, Kunikatsu, 5,648,048, Cl. 422-168.000.

Kaku, Yumiko: *See*—
Naito, Toshihiko; Hata, Katsura; Kaku, Yumiko; Tsuruoka, Akihiko; Tsukada, Itaru; Yanagisawa, Manabu; Toyosawa, Toshio; and Nara, Kazumasa, 5,648,372, Cl. 514-383.000.

Kalb, Paul D.; and Colombo, Peter. Composition and process for the encapsulation and stabilization of radioactive hazardous and mixed wastes. 5,649,323, Cl. 588-8.000.

Kalin, Gerald James, to Becton, Dickinson and Company. Self-contained safety syringe. 5,647,849, Cl. 604-111.000.

Kaliszewski, Thomas S.: *See*—
Snell, William M.; Kaliszewski, Thomas S.; and Eaton, Rodney L., 5,647,464, Cl. 192-4.00A.

Kalter, Howard Leo: *See*—
Bertin, Claude Louis; Howell, Wayne John; and Kalter, Howard Leo, 5,648,684, Cl. 257-685.000.

Kamasako, Shoji: *See*—
Honda, Ryoji; Kita, Masahiro; Negoro, Ikuo; Nishikawa, Tomoyuki; Yano, Takaaki; Yoshida, Tatsuya; Kamasako, Shoji; Sato, Tsutomu; and Negishi, Kiyoshi, 5,649,274, Cl. 399-375.000.

Kamashita, Tomoko: *See*—
Nishimura, Takeshi; Kamashita, Tomoko; Wada, Masaru; Nagata, Teruyuki; Tanabe, Yoshimitsu; Hasegawa, Kiyoharu; and Nakatsuka, Masakatsu, 5,647,896, Cl. 106-31.180.

Kamat, Asha Balkrishna: *See*—
Kamat, Balkrishna Dattatray; and Kamat, Asha Balkrishna, 5,647,593, Cl. 273-261.000.

Kamat, Balkrishna Dattatray; and Kamat, Asha Balkrishna. Easy chess-like game. 5,647,593, Cl. 273-261.000.

Kambara, Takayuki: *See*—
Hase, Akihiko; Wakabayashi, Akira; Kambara, Takayuki; Shimizu, Makoto; and Ichikawa, Haruo, 5,647,113, Cl. 29-407.050.

Kamel, Ibrahim: *See*—
Barbará , Daniel; Aref, Walid; Kamel, Ibrahim; and Vallabhaneni, Padmavathi, 5,649,023, Cl. 382-159.000.

Kameo, Kazuya: *See*—
Sato, Fumie; Amano, Takehiro; Kameo, Kazuya; Tanami, Tohru; Mutoh, Masaru; Ono, Naoya; and Goto, Jun, 5,648,526, Cl. 562-503.000.

Kameya, Toru; Shimizu, Hisanori; Takano, Katsuaki; and Shimamura, Mitsuru, to Taiyo Steel Co., Ltd. Process for manufacturing a surface-treated metal sheet of high durability. 5,648,126, Cl. 427-536.000.

Kamijo, Shunsuke, to Fujitsu Limited. Processor having multiple instruction registers. 5,649,226, Cl. 395-800.000.

Kaminishizono, Takahiro; and Akimoto, Takeshi, to NEC Corporation. Plasma processing apparatus. 5,647,912, Cl. 118-719.000.

Kaminski, Christopher, to Whitaker Corporation, The. Lamp bulb holder and a method of assembling a lamp bulb holder. 5,647,761, Cl. 439-419.000.

Kaminski, James J.; Wong, Shing-Chun C.; and Carruthers, Nicholas I., to Schering Corporation. Pentacyclic antihistamines. 5,648,360, Cl. 514-80.000.

Kamiya, Kazuhiro: *See*—
Kimura, Toshiyuki; Ishikawa, Yutaro; Abe, Shinichi; Kamiya, Kazuhiro; and Miyake, Takashi, 5,649,319, Cl. 455-186.100.

Kamiya, Masakuni: *See*—
Watanabe, Kazuyuki; Nakano, Hirofumi; Kamiya, Masakuni; Honma, Kazutaka; Matsui, Takayuki; and Suzuki, Akito, 5,648,692, Cl. 310-49.00R.

Kamo, Tomoichi: *See*—
Doi, Toshiya; Ozawa, Takeshi; Tanaka, Kazuhide; Yuasa, Toyotaka; Kamo, Tomoichi; and Matsuda, Shinpei, 5,648,322, Cl. 505-501.000.

Kamon, Hidetomo: *See*—
Yokogawa, Miyuki; Yamamura, Naoya; Kamon, Hidetomo; Tanaka, Kiyotaka; Hashimoto, Yoshiyuki; Ohnaka, Katsufumi; Matsuzaki, Noriaki; and Asahara, Takahiro, 5,647,717, Cl. 414-273.000.

Kanaboshi, Akihiro: *See*—
Taguchi, Yutaka; Eda, Kazuo; Kanaboshi, Akihiro; Ogura, Tetsuyoshi; and Tomita, Yoshihiro, 5,647,932, Cl. 156-154.000.

Kanai, Akira; Yamakawa, Masaki; Sugihara, Shoichi; Hayakawa, Masaharu; Yamamoto, Kiyotaka; Kodama, Masafumi; and Maeno, Akiko, to Mitsubishi Denki Kabushiki Kaisha. Phase inversion control pulse generating circuit. 5,648,825, Cl. 348-743.000.

Kanaya, Miharu: *See*—
Ouki, Yasuhiro; Kanaya, Miharu; Hayashi, Hiroko; Takemoto, Kiyohiko; and Itano, Masaaki, 5,647,897, Cl. 106-31.490.

Kanaya, Yasuhiro: *See*—
Hara, Masaki; Sano, Naoki; Sameshima, Toshiyuki; Kohno, Atsushi; Sekiya, Mitsunobu; Kanaya, Yasuhiro; and Yano, Michihisa, 5,648,276, Cl. 437-21.000.

Kanayama, Toshihiko: *See*—
Tada, Tetsuya; and Kanayama, Toshihiko, 5,647,999, Cl. 216-49.000.

Kanazawa, Hiroyuki: *See*—
Shibata, Kazuya; Fujisaki, Masahide; Kanazawa, Hiroyuki; and Okuda, Motoi, 5,649,198, Cl. 395-670.000.

Kanbe, Junichiro: *See*—
Katagiri, Kazuharu; Yoshinaga, Kazuo; Okada, Shinjiro; and Kanbe, Junichiro, 5,648,830, Cl. 349-168.000.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisa: *See*—
Fujita, Masayuki; and Wakabayashi, Hiroshi, 5,648,427, Cl. 525-104.000.

Kanekal, Hemanth G.; and Yip, Thomas C., to Cirrus Logic, Inc. Method and apparatus for acquiring bus transaction address and command information with no more than zero-hold-time and with fast device acknowledgement. 5,649,175, Cl. 395-551.000.

Kaneko, Masamichi: *See*—
Konno, Hidetoshi; Kaneko, Masamichi; and Satoyoshi, Junichi, 5,647,500, Cl. 220-269.000.

Kaneko, Tetsuya: *See*—
Kitahara, Nobuko; Kaneko, Tetsuya; Enomoto, Takashi; and Suzuki, Hideyuki, 5,648,663, Cl. 257-59.000.

Kaneko, Yoshio, to Nifco, Incorporated. Hinged container cap. 5,647,498, Cl. 220-263.000.

Kaneta, Satoshi, to Seiko Epson Corporation. Image forming apparatus. 5,649,275, Cl. 399-381.000.

Kanevsky, Dimitri: *See*—
Ellozy, Hamed A.; Kanevsky, Dimitri; Kim, Michelle Y.; Nahamoo, David; Picheny, Michael Alan; and Zadrozny, Wlodek Wlodzimierz, 5,649,060, Cl. 395-2.870.

Kang, Hee-bok, to LG Semicon Co., Ltd. Output control circuit for semiconductor memory. 5,648,932, Cl. 365-194.000.

Kang, Tae Woon: *See*—
Kim, Myeong Suk; Song, Suk Chun; Kang, Tae Woon; and Choi, Mun Kee, 5,649,107, Cl. 395-200.110.

Kanno, Tadao: *See*—
Takikawa, Isao; and Kanno, Tadao, 5,648,612, Cl. 73-598.000.

Kanno, Tsutomu: *See*—
Sugifune, Shin; Kanno, Tsutomu; and Nabeya, Hajime, 5,648,650, Cl. 235-472.000.

Kansai Electric Power Co. Inc., The: *See*—
Mimura, Tomio; Shimojo, Shigeru; Iijima, Masaki; and Mitsuoka, Shigeaki, 5,648,053, Cl. 423-210.000.

Kantor, Johanna: *See*—
Kim, Young Ran; Kantor, Johanna; Gill, James E.; and Luptovic, Sue E., 5,648,225, Cl. 435-7.240.

Kantorowicz, Steven I.; Stanley, Stephen J.; Wadsworth, David M.; and Warner, Rene C. L., to ABB Lummus Global Inc. Low pressure chilling train for olefin plants. 5,647,972, Cl. 208-100.000.

Kanzaki, Hisao: *See*—
Kishimoto, Mikio; Kitahata, Shinichi; Kanzaki, Hisao; Ohtani, Noriaki; and Sueyoshi, Toshinobu, 5,648,160, Cl. 428-328.000.

Kanzaki Kokyukoki Mfg. Co. Ltd.: *See*—
Okada, Hideaki; and Nemoto, Shusuke, 5,647,249, Cl. 74-606.00R.

Kao, Chin-Hai; and Tang, Horng-Yi, to National Science Council. Method for stripping non-superconductive AG-based sheath formed on a wire. 5,647,116, Cl. 29-599.000.

Kao Corporation: *See*—
Ikeda, Tatehiko; Enomoto, Haruomi; and Shimazu, Tomoaki, 5,647,551, Cl. 242-345.000.
Yasuda, Shin-ichiro; Kawabe, Kuniyasu; and Sasaki, Mitsuhiro, 5,648,841, Cl. 399-134.000.

Kao, Kuo-Ming. Easily assembled and environmentally protective storage container. 5,647,649, Cl. 312-261.000.

Kao, Ron, to Lite-On Communications Corp.; and Lite-On Communications, Inc. Digital phase-locked loop. 5,648,994, Cl. 375-376.000.

Kapitza, Heinrich: *See*—
von Gentzkow, Wolfgang; Huber, Jürgen; Kapitza, Heinrich; Rogler, Wolfgang; and Kleiner, Hans-Jerg, 5,648,171, Cl. 428-413.000.

Kapoor, Vijay, to Motorola, Inc. Method and system for ordering out-of-sequence packets. 5,648,970, Cl. 370-394.000.

Kapsales, Peter; and Seip, Barry S., to AT&T. Method in a communications systems for providing an out-of-band signaling response based on predetermined conditions. 5,649,003, Cl. 379-201.000.

Kara, Atsushi: *See*—

Kondo, Kenji; Kara, Atsushi; and Yonehara, Akifumi, 5,648,966, Cl. 370-245.000.

Karale, Edward A.: *See*—
Haas, Orville A.; and Karale, Edward A., 5,647,765, Cl. 439-609.000.

Karasawa, Akira: *See*—
Fujiwara, Shigeki; Machii, Daisuke; Takai, Haruki; Nonaka, Hiromi; Kase, Hiroshi; Yao, Kozo; Kawakage, Michiyo; Kusaka, Hideaki; and Karasawa, Akira, 5,648,353, Cl. 514-248.000.

Kardish, Nitza; and Levy, Israel. Device for colorimetric detection of explosives and narcotics. 5,648,047, Cl. 422-56.000.

Karol, Frederick John: *See*—
Wasserman, Eric Paul; Smale, Mark Wilton; Lynn, Timothy Roger; Brady, Robert Converse, III; and Karol, Frederick John, 5,648,310, Cl. 502-120.000.

Karp, David P. Magnetic filter enhancement apparatus and method. 5,647,993, Cl. 210-695.000.

Karrer, Friedrich, to Ciba-Geigy Corporation. Carbamic acid derivatives. 5,648,494, Cl. 546-194.000.

Karvinen, Esko: *See*—
Xia, Zhi-Qiang; Karvinen, Esko; and Koskinen, Ari, 5,648,505, Cl. 549-333.000.

Kasahara, Keiji, to Abisare Co., Ltd. Tension panel. 5,647,157, Cl. 40-79.200.

Kasai, Nobuyuki, to Mitsubishi Denki Kabushiki Kaisha. High breakdown voltage field effect transistor. 5,648,668, Cl. 257-280.000.

Kase, Hiroshi: *See*—
Fujiwara, Shigeki; Machii, Daisuke; Takai, Haruki; Nonaka, Hiromi; Kase, Hiroshi; Yao, Kozo; Kawakage, Michiyo; Kusaka, Hideaki; and Karasawa, Akira, 5,648,353, Cl. 514-248.000.

Kashima, Keiji; and Yoshida, Naoki, to Tosoh Corporation. Back lighting device. 5,647,655, Cl. 362-31.000.

Kashimura, Tsugunori: *See*—
Tai, Shinji; Hara, Tetsuya; Kageyu, Akira; and Kashimura, Tsugunori, 5,648,449, Cl. 528-193.000.

Kashiwagi, Koichi: *See*—
Harada, Katsumasa; Imbe, Yoichi; Nishihira, Keigo; Tanaka, Shuji; Fujitsu, Satoru; Sugise, Ryoji; Kashiwagi, Koichi; and Sumida, Toshihiko, 5,648,510, Cl. 558-274.000.

Kasper, Dennis L.: *See*—
Michel, James L.; Kasper, Dennis L.; Ausubel, Frederick M.; and Madoff, Lawrence C., 5,648,241, Cl. 435-69.300.

Kasper, Kazmier J., to Algonquin Industries, Inc. Apparatus for dispensing tickets, cards and the like from a stack. 5,647,507, Cl. 221-151.000.

Kass, John J.; and McCoy, Richard, to Reese Products, Inc. Spring bar with integral hanger. 5,647,603, Cl. 280-406.100.

Kassman, Jerrold Samuel: *See*—
Winter, John Duckett; Stevenson, John Saunders; Kassman, Jerrold Samuel; Wiese, Harry Clarence; Richter, George Neal; Kocsis, Lisa Marie; and Salvaleon, Rinaldo Ibbarola, 5,647,876, Cl. 48-197.00R.

Kastrup, Eberhard; Nöltge, Thomas; and Meacci, Giorgio, to Dürkopp Adler AG. Thread-cutting mechanism for eyelet-button hole sewing machine. 5,647,290, Cl. 112-66.000.

Katagawa, Atsushi: *See*—
Kuroda, Hiroshi; Nakajima, Fumito; Nishimura, Masakatsu; Kaku, Hiroyuki; Nozawa, Shigeru; Takamoto, Shigehito; Nakamoto, Takanori; Kikkawa, Hirofumi; Ishizaka, Hiroshi; Katagawa, Atsushi; Kon, Mitsuharu; Yamamoto, Masayuki; and Yoshida, Kunikatsu, 5,648,048, Cl. 422-168.000.

Katagiri, Kazuharu; Yoshinaga, Kazuo; Okada, Shinjiro; and Kanbe, Junichiro, to Canon Kabushiki Kaisha. Liquid crystal device having composition of at least two smectic compounds and one cholesteric compound. 5,648,830, Cl. 349-168.000.

Katagiri, Masami: *See*—
Umetsu, Masakazu; Katagiri, Masami; and Hoshizawa, Yoshihiro, 5,649,209, Cl. 395-739.000.

Katakura, Shinichi: *See*—
Tanuma, Jiro; Ito, Katsuyuki; Katakura, Shinichi; Wakasugi, Nobuo; Nagaoka, Kazuhiko; and Ito, Toshikaru, 5,648,810, Cl. 347-130.000.

Kataoka, Iwao, to H.H.H. Manufacturing Co. Chain lever hoist. 5,647,576, Cl. 254-352.000.

Kataoka, Masahiro: *See*—
Inagaki, Yoshio; Takami, Masayuki; Kataoka, Masahiro; and Shibagaki, Taro, 5,648,964, Cl. 370-228.000.

Katayama, Hiroyuki: *See*—
Hirokane, Junji; Katayama, Hiroyuki; Takahashi, Akira; and Ohta, Kenji, 5,648,162, Cl. 428-332.000.

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Kishimoto, Mikio; Kitahata, Shinichi; Kanzaki, Hisao; Ohtani, Noriaki; and Sueyoshi, Toshinobu, to Hitachi Maxell, Ltd. Magnetic powder, method for producing the same and use of the same. 5,648,160, Cl. 428-328.000.

Kishimura, Shinji, to Mitsubishi Denki Kabushiki Kaisha. Method of forming a resist pattern utilizing an acid water-soluble material overlayer on the resist film. 5,648,199, Cl. 430-311.000.

Kishore, Ganesh Murthy: *See*—
Barry, Gerard Francis; Kishore, Ganesh Murthy; Stark, David Martin; and Zalewski, James Conrad, 5,648,249, Cl. 435-172.300.

Kiss, Pál: *See*—
Pálosi, Endre; Korbonits, Dezso; Molnár née Bakó, Erzsébet; Szvoboda née Kanzel, Ida; Héja, Gergely; Kiss, Pál; Gönczi, Csaba; Sperber, Ferenc; Huszár, Csaba; Mihalovics, György; Németh, Attila; Sütő, Mihály; Gyüre, Károl; Bóné, István; Mórász, Ferenc; Ledniczky, László; Szabó née Kardos, Erzsébet; Győri, Péter; Szalay, Erzsébet; Bán, Károly; Buttkai, Ildikó; Kővári, Arpád; and Garaczy, Sándor, 5,648,498, Cl. 548-202.000.

Kita, Kazuhiko; and Nagahama, Hidenobu, to YKK Corporation. High strength, rapidly solidified alloy. 5,647,919, Cl. 148-437.000.

Kita, Masahiro: *See*—
Honda, Ryoji; Kita, Masahiro; Negoro, Ikuo; Nishikawa, Tomoyuki; Yano, Takaaki; Yoshida, Tatsuya; Kamasako, Shoji; Sato, Tsutomu; and Negishi, Kiyoshi, 5,649,274, Cl. 399-375.000.

Kitadate, Yohtaro, to Fujitsu Limited. Program analyzer to specify a start position of a function in a source program. 5,649,201, Cl. 395-704.000.

Kitahara, Nobuko; Kaneko, Tetsuya; Enomoto, Takashi; and Suzuki, Hideyuki, to Canon Kabushiki Kaisha. Semiconductor structure having transistor and other elements on a common substrate and process for producing the same. 5,648,663, Cl. 257-59.000.

Kitahata, Shinichi: *See*—
Kishimoto, Mikio; Kitahata, Shinichi; Kanzaki, Hisao; Ohtani, Noriaki; and Sueyoshi, Toshinobu, 5,648,160, Cl. 428-328.000.

Kitamura, Kenroh; Ikehata, Michino; Tsuzaki, Masaaki; and Oharu, Kazuya, to AG Technology Co., Ltd. Mixed solvent composition with 1-H-perfluorohexane, methanol or ethanol, and optionally a hydrocarbon. 5,648,325, Cl. 510-177.000.

Kitamura, Noriko: *See*—
Fujiwara, Wataru; Hyoda, Junkoh; Yamazaki, Kenichi; and Kitamura, Noriko, 5,648,420, Cl. 524-750.000.

Kitano, Yukihiko, to Fujitsu Limited. Storage control method and apparatus having a buffer storage for transferring variable amounts of data to a main storage based on current system load. 5,649,231, Cl. 395-879.000.

Kitazawa, Atsunori; Ishibashi, Toshiyuki; and Akioka, Koji, to Seiko Epson Corporation. Magnetic powder, permanent magnet produced therefrom and process for producing them. 5,647,886, Cl. 75-235.000.

Kitchen, Dean J. Film tension sensing device. 5,648,834, Cl. 396-128.000.

Kito, Akira: *See*—

Yamauchi, Masahiko; Yoshizawa, Satoshi; Murayama, Hideki; Hayashi, Takehisa; Kito, Akira; Yashiro, Hiroshi; Goto, Tsutomu; Yamada, Kimitoshi; and Horimoto, Toru, 5,649,102, Cl. 345-200.030.

Kitta, Satoru; and Furukawa, Masanori, to Fujikoshi Kakai Kogyo Kabushiki Kaisha. Polishing machine and a method of polishing a work. 5,647,789, Cl. 451-41.000.

Kivits, Petrus Franciscus; and Tuyn, Roberto, to Buhrs-Zaandam B.V. Folding element suitable for use in a packaging apparatus, packaging apparatus comprising such folding element, and method for the use thereof. 5,647,192, Cl. 53-450.000.

Kizu, Masafumi: *See*—
Sato, Koji; Morita, Makoto; and Kizu, Masafumi, 5,648,769, Cl. 340-988.000.

Klappert, Walt; Garbutt, Max; and Lehman, Michael, to Time Warner Interactive Group, Inc. Method and apparatus for encoding graphical cues on a compact disc synchronized with the lyrics of a song to be played back. 5,649,234, Cl. 395-806.000.

Klassen, R. Victor; and Harrington, Steven J., to Xerox Corporation. Image processing method to reduce marking material coverage in sequential color printing processes. 5,649,071, Cl. 395-109.000.

Klauda, Matthias: *See*—
Grothe, Wolfgang; Klauda, Matthias; Mueller, Stefan; and Schmidt, Claus, 5,648,747, Cl. 333-204.000.

Klausener, Alexander: *See*—
Landscheidt, Heinz; Klausener, Alexander; Zirngiebl, Eberhard; and Jentsch, Jörg-Dietrich, 5,648,500, Cl. 548-440.000.
Landscheidt, Heinz; Broda, Witold; and Klausener, Alexander, 5,648,570, Cl. 570-201.000.
Landscheidt, Heinz; Wagner, Paul; Kriesfalussy, Zoltan; and Klausener, Alexander, 5,649,322, Cl. 558-488.000.

Klaveness, Jo; Rongved, Pål; and Stubberud, Lars, to Nycomed Imaging AS. Contrast agents consisting of galactose particles. 5,648,062, Cl. 424-9.340.

Kleimenhagen, Karl W.: *See*—
Gudat, Adam J.; Shin, Dong Hun; Whittaker, William L.; Kleimenhagen, Karl W.; Singh, Sanjiv J.; Christensen, Dana A.; Kemner, Carl A.; Bradbury, Walter J.; Koehrsen, Craig L.; Kyrtsos, Christos T.; Lay, Norman K.; Peterson, Joel L.; Schmidt, Larry E.; Stafford, Darrell E.; Weinbeck, Louis J.; and Devier, Lonnie J., 5,648,901, Cl. 364-424.027.

Klein, Dean A.; and Wilde, Daniel P., to Micron Electronics, Inc. Local bus interface. 5,649,162, Cl. 395-500.000.

Klein, Reuben: *See*—
Ackerman, Chaim M.; Glasser, Alan L.; and Klein, Reuben, 5,649,131, Cl. 395-335.000.

Klein, Winfried: *See*—
Dillenburg, Helmut; Jakobson, Gerald; Klein, Winfried; Siemanowski, Werner; Uhlig, Karlheinz; and Wolf, Florian, 5,648,067, Cl. 424-65.000.

Kleiner, Hans-Jerg, to Hoechst Aktiengesellschaft. Process for the preparation of secondary arylphosphines. 5,648,549, Cl. 568-17.000.

Kleiner, Hans-Jerg: *See*—
von Gentzkow, Wolfgang; Huber, Jürgen; Kapitza, Heinrich; Rogler, Wolfgang; and Kleiner, Hans-Jerg, 5,648,171, Cl. 428-413.000.

Kleinfeld, Frederick Henry: *See*—
Burkhard, Harley David; and Kleinfeld, Frederick Henry, 5,647,465, Cl. 192-4.00A.

Kleinfelder, Wilhelm, to Europa Carton Aktiengesellschaft. Packaging for a compact disc from a blank of foldable sheet material. 5,647,482, Cl. 206-308.100.

Klett, Robert J.: *See*—
Trimble, Harold J.; Reynolds, Bruce E.; Bachtel, Robert W.; Klett, Robert J.; Brossard, David N.; and Earls, David E., 5,648,051, Cl. 422-207.000.

Klicker, Jürgen: *See*—
Basler, Norbert; Klicker, Jürgen; and Ley, Dietmar, 5,648,850, Cl. 356-369.000.

Kline, Joseph A.: *See*—
Divljakovic, Vojislav V.; and Kline, Joseph A., 5,648,725, Cl. 324-551.000.

Kline, Kevin B.; and Gregory, Steven, to Lawler Manufacturing. Thermostatic control valve system for use in emergency shower and eyewash systems. 5,647,531, Cl. 236-12.140.

Klinedinst, Keith A.: *See*—
Bandyopadhyay, Gautam; Klinedinst, Keith A.; and Lichtensteiger, Silvia E., 5,648,115, Cl. 427-107.000.

Klöckner-Humboldt-Deutz AG: *See*—
Preuss, Rolf; and Vonnahme, Josef, 5,647,320, Cl. 123-372.000.

Klomp, Ulfert Cornelis, Kruka, Vitold Raimond; Reijnhart, Rene; and Weisenborn, Anton Jacobus, to Shell Oil Company. Method for inhibiting the plugging of conduits by gas hydrates. 5,648,575, Cl. 585-15.000.

Klug, Diana Lynn; Minor, Barbara Haviland; Patron, Donna Marie; Chisolm, Tuneen E. C.; and Sievert, Allen Capron, to Du Pont de Nemours, E. I., and Company. Azeotrope (like) composition with fluoromethyl trifluoromethyl ether and 1,1-difluoroethane. 5,648,016, Cl. 252-67.000.

Kmiecik-Lawrynowicz, Grazyna E.: *See*—
Patel, Raj D.; Kmiecik-Lawrynowicz, Grazyna E.; Sacripante, Guerino G.; and Foucher, Daniel A., 5,648,193, Cl. 430-137.000.

Knaup, Wolfgang: *See*—
Prossel, Günter; Knaup, Wolfgang; and Wehowsky, Frank, 5,648,528, Cl. 562-574.000.
Prossel, Günter; Knaup, Wolfgang; and Wehowsky, Frank, 5,648,527, Cl. 562-517.000.

Kneller, James F.; Johnson, Donald A.; Narutis, Vytas; and Khambatta, Binaifer S., to Nalco Chemical Company. Method for the control of calcium carbonate scale using compounds prepared from acetylenic compounds and inorganic phosphite salts and their derivatives. 5,647,995, Cl. 210-699.000.

Kneller, Mills Thomas: *See*—
Dunn, Thomas Jeffrey; White, David H.; Kneller, Mills Thomas; Jones, Michelle M.; and Doran, Narciso Ocampo, III, 5,648,536, Cl. 564-153.000.

Knickerbocker, David F. Marble mat. 5,647,595, Cl. 273-118.00R.

Knight, William R.: *See*—
Keefe, Brian J.; Ho, May Fong; Courian, Kenneth J.; Steinfield, Steven W.; Childers, Winthrop D.; Tappon, Ellen R.; Trueba, Kenneth E.; Chapman, Terri I.; Knight, William R.; and Moritz, Jules G., 5,648,805, Cl. 347-65.000.

Knips, Stephan: *See*—
Grotjahn, Ulrich; Knips, Stephan; Koch, Guenter; Missy, Stephan; Plodek, Bernd; and Zimmer, Rainer, 5,647,207, Cl. 60-300.000.

Knittle, Robert C.: *See*—
O'Connor, Roger J.; and Knittle, Robert C., 5,648,767, Cl. 340-928.000.

Knöfel, Hartmut; and Brockelt, Michael, to Bayer Aktiengesesellschaft. Fractionation and purification of aromatic polyamine mixtures and the use thereof. 5,648,519, Cl. 560-347.000.

Knöfel, Hartmut; and Brockelt, Michael, to Bayer Aktiengesellschaft. Fractionation and purification of aromatic polyamine and the use thereof. 5,648,520, Cl. 560-347.000.

Knolle, Jochen: *See*—
Henke, Stephan; Anagnostopulos, Hiristo; Breipohl, Gerhard; Knolle, Jochen; Stechl, Jens; Schölkens, Bernward; Fehlhaber, Hans-Wolfram; Gerhards, Hermann; and Hock, Franz, 5,648,333, Cl. 514-2.000.

Knowles, Terence J.; and Bremigan, Charles F., III. Acoustic wave touch panel wiht inlayed, etched arrays and method of making the panel. 5,648,643, Cl. 178-19.000.

Knox, Keith T.; Hains, Charles M.; and Sharma, Gaurav, to Xerox Corporation. Automatic calibration of halftones. 5,649,073, Cl. 395-109.000.

Knuutila, Matti: *See*—
Vaistomaa, Jukka; Kaila, Jarmo; Rikkinen, Jouko; and Knuutila, Matti, 5,647,955, Cl. 162-30.110.

Ko, Kenneth David, to Paradyne Corporation. Linear prediction filter coefficient quantizer and filter set. 5,648,989, Cl. 375-296.000.

Ko, Robert J.: *See*—
Chen, Nang-Ping; Ko, Robert J.; Li, Jeong-Tyng; Huang, Thomas B.; and Wang, Ming-Yang, 5,649,167, Cl. 395-500.000.

Kobaru, Tetsuya, to Kabushiki Kaisha Shinkawa. Lead frame baking oven. 5,647,740, Cl. 432-122.000.

Kobayashi, Eiko: *See*—
Kubo, Kunimichi; Niwa, Masahiro; Kobayashi, Eiko; and Yoshikawa, Mamoru, 5,648,581, Cl. 585-501.000.

Kobayashi, Makoto; Yamamoto, Masakazu; and Miyake, Yoshio, to Ebara Corporation. Motor stator assembly and full-circumferential flow pump employing such motor stator assembly. 5,648,694, Cl. 310-87.000.

Kobayashi, Masakazu: *See*—
Niwa, Mineo; Saito, Yoshimasa; Sasaki, Hitoshi; Hayashi, Masako; Notani, Jouji; and Kobayashi, Masakazu, 5,648,250, Cl. 435-172.300.

Kobayashi, Masaru: *See*—
Inoue, Makoto; and Kobayashi, Masaru, 5,648,184, Cl. 429-105.000.

Kobayashi, Michiko: *See*—
Trinchieri, Giorgio; Perussia, Bice; Clark, Steven C.; Kobayashi, Michiko; Wong, Gordon G.; Hewick, Rodney; and Wolf, Stanley F., 5,648,072, Cl. 424-85.200.
Trinchieri, Giorgio; Perussia, Bice; Clark, Steven C.; Wong, Gordon G.; Hewick, Rodney; Kobayashi, Michiko; and Wolf, Stanley F., 5,648,467, Cl. 536-351.000.

Kobayashi, Mitsuharu: *See*—
Hatano, Masakatsu; Nakanishi, Akio; Kabata, Yoshio; Shirado, Masayuki; Takeo, Hiroshi; and Kobayashi, Mitsuharu, 5,648,558, Cl. 568-618.000.

Kobayashi, Naoto: *See*—
Shibata, Katsuhiko; Toriyama, Yoshio; Kobayashi, Naoto; and Ueda, Shiro, 5,648,858, Cl. 349-57.000.

Kobayashi, Osamu: *See*—
Nagayama, Yasushi; Kobayashi, Osamu; and Matsumoto, Ikuo, 5,648,150, Cl. 428-216.000.

Kobayashi, Takayuki: *See*—
Kuriyama, Toru; Ohtani, Yasumi; Chandratilleke, Rohana; Yoshino, Tatsuya; and Kobayashi, Takayuki, 5,647,218, Cl. 62-6.000.

Kobayashi, Tomio; and Suyama, Hideo, to Sony Corporation. Magneto-resistance effect type magnetic head device. 5,648,886, Cl. 360-113.000.

Kobayashi, Yoshiaki; and Suzuki, Takashi, to Olympus Optical Co., Ltd. Data imprinting/recording apparatus for camera. 5,649,248, Cl. 396-318.000.

Kobayashi, Yoshiaki: *See*—
Itoh, Junichi; Kunishige, Keiji; Mizobuchi, Koji; Kobayashi, Yoshiaki; Ishimaru, Toshiaki; Watanabe, Akira; and Otsuka, Yasunobu, 5,649,247, Cl. 396-311.000.

Kobayashi, Yoshiyuki: *See*—
Ichikawa, Toshiro; Kobayashi, Yoshiyuki; and Nakamura, Higeaki, 5,647,321, Cl. 123-399.000.

Kobel Steel USA, Inc.: *See*—

Hooke, William M.; Stoner, Brian R.; Bozeman, Steven P.; Fauber, Roy E.; Munsat, Tobin L.; and Washburn, Sean, 5,648,701, Cl. 315-111.210.

Kocal, Joseph A.: *See*—
Kulprathipanja, Santi; Kocal, Joseph A.; and Gembicki, Stanley A., 5,648,579, Cl. 585-447.000.

Koch, Guenter: *See*—
Grotjahn, Ulrich; Knips, Stephan; Koch, Guenter; Missy, Stephan; Plodek, Bernd; and Zimmer, Rainer, 5,647,207, Cl. 60-300.000.

Kochanski, Gregory Peter: *See*—
Jin, Sungho; Kochanski, Gregory Peter; and Zhu, Wei, 5,648,699, Cl. 313-309.000.

Kocsis, Lisa Marie: *See*—
Winter, John Duckett; Stevenson, John Saunders; Kassman, Jerrold Samuel; Wiese, Harry Clarence; Richter, George Neal; Kocsis, Lisa Marie; and Salvaleon, Rinaldo Ibbarola, 5,647,876, Cl. 48-197.00R.

Kodama, Masafumi: *See*—
Kanai, Akira; Yamakawa, Masaki; Sugihara, Shoichi; Hayakawa, Masaharu; Yamamoto, Kiyotaka; Kodama, Masafumi; and Maeno, Akiko, 5,648,825, Cl. 348-743.000.

Kodama, Tsuyoshi: *See*—
Kato, Hiroaki; Yashiro, Hidekatsu; and Kodama, Tsuyoshi, 5,647,326, Cl. 123-500.000.
Yuyama, Shoji; and Kodama, Tsuyoshi, 5,648,751, Cl. 340-309.150.

Kodandapani, Kolar L.: *See*—
Grodstein, Joel Joseph; Kodandapani, Kolar L.; and Touati, Hervé, 5,648,911, Cl. 364-490.000.

Koehler, David R.: *See*—
Robinson, Wilfred; and Koehler, David R., 5,647,561, Cl. 244-158.00R.

Koehrsen, Craig L.: *See*—
Gudat, Adam J.; Shin, Dong Hun; Whittaker, William L.; Kleimenhagen, Karl W.; Singh, Sanjiv J.; Christensen, Dana A.; Kemner, Carl A.; Bradbury, Walter J.; Koehrsen, Craig L.; Kyrtsos, Christos T.; Lay, Norman K.; Peterson, Joel L.; Schmidt, Larry E.; Stafford, Darrell E.; Weinbeck, Louis J.; and Devier, Lonnie J., 5,648,901, Cl. 364-424.027.

Koenig & Bauer Aktiengesellschaft: *See*—
Röder, Klaus Walter; and Ruckmann, Wolfgang Günter, 5,647,547, Cl. 242-160.100.

Koenig & Bauer-Albert Aktiengesellschaft: *See*—
Lupa, Jürgen; and Müller, Rolf, 5,647,275, Cl. 101-216.000.

Koerber, Clement J.: *See*—
Foster, Leslie Dale; Koerber, Clement J.; and Ruehl, John Walter, 5,647,491, Cl. 211-113.000.

Koezuka, Yasukazu: *See*—
Fukui, Wataru; and Koezuka, Yasukazu, 5,647,322, Cl. 123-414.000.

Koford, James: *See*—
Rostoker, Michael D.; Dangelo, Carlos; Koford, James; and Fulcher, Edwin, 5,648,661, Cl. 257-48.000.

Kogel, Jessica Elzea: *See*—
Drew, Sharon M.; Bruns, Jeffrey C.; and Kogel, Jessica Elzea, 5,647,895, Cl. 106-15.050.

Koh, Akio; Fujiwara, Hisashi; Kurosaki, Kiyoshi; Masamoto, Shigezoh; and Shutoh, Keiji, to Daiken Trade & Industry Co., Ltd. Inorganic constructional board and method of manufacturing the same. 5,648,154, Cl. 428-313.700.

Koh, Pohyoung: *See*—
Hwang, Haksun; Cheon, Inki; Lee, Sang Jig; Koh, Pohyoung; Park, Hyeoksoo; and Choi, Sungwoo, 5,647,548, Cl. 242-338.000.

Koh, Yo Hwan; Park, Chan Kwang; and Suh, Jeung Won, to Hyundai Electronics Industries Co., Ltd. Sense amplifier. 5,648,935, Cl. 365-205.000.

Kohda, Hiroyuki: *See*—
Doi, Atsuhiro; Kohda, Hiroyuki; and Uchida, Kohji, 5,649,269, Cl. 399-207.000.

Kohler Co.: *See*—
Johnson, Richard D.; and Reineking, Jerry R., 5,647,337, Cl. 123-572.000.

Köhler, Eduard: *See*—
Stenzel, Otto W.; Sick, Georg; Köhler, Eduard; Möding, Herbert; and Niehues, Jürgen, 5,648,620, Cl. 75-232.000.

Kohls, John: *See*—
Scott, Ernest D.; Tedder, Donald L.; Scott, Gregory W.; Kohls, John; and Kohls, Richard, 5,647,407, Cl. 140-123.500.

Kohls, Richard: *See*—
Scott, Ernest D.; Tedder, Donald L.; Scott, Gregory W.; Kohls, John; and Kohls, Richard, 5,647,407, Cl. 140-123.500.

Kohlstadt, Hans-Peter: *See*—
Thiele, Lothar; Kohlstadt, Hans-Peter; Schlingloff, Nicole; and Plutniok, Claudia, 5,648,421, Cl. 524-789.000.

Kohno, Atsushi: *See*—
Hara, Masaki; Sano, Naoki; Sameshima, Toshiyuki; Kohno, Atsushi; Sekiya, Mitsunobu; Kanaya, Yasuhiro; and Yano, Michihisa, 5,648,276, Cl. 437-21.000.

Kohno, Hiromasa; and Kurio, Masaru, to Terumo Kabushiki Kaisha. Measuring apparatus. 5,647,359, Cl. 128-634.000.

Kohno, Toshiaki, to Whitaker Corporation, The. Short-circuit connector. 5,647,754, Cl. 439-188.000.

Kohtamäki, Lauri: *See*—
Taijonlahti, Jorma; and Kohtamäki, Lauri, 5,648,907, Cl. 364-468.020.

Koiso, Mazakazu: *See*—
Atoh, Kiyoshi; Doi, Etsuro; Mochizuki, Shoichi; and Koiso, Mazakazu, 5,647,749, Cl. 439-79.000.

Koito Manufacturing Co., Ltd.: *See*—
Mori, Hideshi, 5,647,659, Cl. 362-66.000.

Koizumi, Shigeru, to Canon Kabushiki Kaisha. Communication apparatus having function of generating calling signal. 5,649,006, Cl. 379-373.000.

Kojima, Masayuki, to Noritsu Koki Co., Ltd. Photographic processing apparatus. 5,649,263, Cl. 396-612.000.

Kokubo, Naomi: *See*—
Ohashi, Yoshitami; Hirata, Haruhisa; Nakaya, Seigo; Katou, Azusa; Aiba, Yuji; Kokubo, Naomi; Suzuki, Nobuyuki; and Maeda, Makoto, 5,648,455, Cl. 530-300.000.

Kolb, Hartmut: *See*—
Scheurenbrand, Dieter; Kolb, Hartmut; and Weil, Manfred, 5,647,335, Cl. 123-520.000.

Koller, Albert: *See*—
Bischof, Roman; Hofer, Markus; Koller, Albert; and Wohlrab, Christian, 5,648,147, Cl. 428-212.000.

Koller, Harald: *See*—
Lehmler, Hans-Friedrich; Koller, Harald; Gustafson, Jukka; and Heino, Kalevi, 5,647,706, Cl. 409-138.000.

Kolos, Mathias: *See*—
Le Francois, Jacques; Kolos, Mathias; and Guenerie, Denis, 5,648,888, Cl. 361-603.000.

Koloski, Timothy S.: *See*—
Dulcey, Charles S.; Koloski, Timothy S.; Dressick, Walter J.; Calvert, Jeffrey M.; and Peek, Brian M., 5,648,201, Cl. 430-324.000.

Kolstrom, Frank E.: *See*—
Johnson, James T.; and Kolstrom, Frank E., 5,647,265, Cl. 83-861.000.

Komakine, Hiroshi: *See*—
Koshino, Toshiharu; Hayashi, Kazumasa; Komakine, Hiroshi; Asakura, Kenji; and Ogawa, Katsutoshi, 5,648,839, Cl. 399-271.000.

Komatsu, Hisateru: *See*—
Sampei, Hiroshi; Hosoya, Kouichi; Katoh, Kenji; Sato, Masashi; Ohizumi, Mitsutoshi; Seno, Koichi; Komatsu, Hisateru; Watanabe, Takashi; Konno, Makoto; and Shibata, Akira, 5,648,883, Cl. 360-106.000.

Komma, Yoshiaki: *See*—
Kato, Makoto; Komma, Yoshiaki; Kadowaki, Shin-ichi; Hori, Yoshikazu; Nishino, Seiji; and Saimi, Tetsuo, 5,648,951, Cl. 369-112.000.

Komoda, Yasunobu: *See*—
Kidani, Yoshinori; and Komoda, Yasunobu, 5,648,384, Cl. 514-492.000.

Kon, Mitsuharu: *See*—
Kuroda, Hiroshi; Nakajima, Fumito; Nishimura, Masakatsu; Kaku, Hiroyuki; Nozawa, Shigeru; Takamoto, Shigehito; Nakamoto, Takanori; Kikkawa, Hirofumi; Ishizaka, Hiroshi; Katagawa, Atsushi; Kon, Mitsuharu; Yamamoto, Masayuki; and Yoshida, Kunikatsu, 5,648,048, Cl. 422-168.000.

Kondo, Haruyoshi: *See*—
Katoh, Kazunori; Kondo, Haruyoshi; Matsui, Masayuki; Katayama, Naoki; Yamada, Yasushi; Takahashi, Hideaki; and Fukuda, Kunio, 5,648,601, Cl. 73-1.00G.

Kondo, Kenji; Kara, Atsushi; and Yonehara, Akifumi, to NEC Corporation. Method of sending an alarm to a network management station when an unusual event occurs in a managed network station. 5,648,966, Cl. 370-245.000.

Kondo, Michimasa: *See*—
Tsujimichi, Shingo; and Kondo, Michimasa, 5,649,106, Cl. 395-200.080.

Kondo, Tomoharu: *See*—
Abe, Fumio; Kondo, Tomoharu; and Noda, Keiji, 5,649,049, Cl. 392-494.000.

Kondoh, Harufusa; Yamanaka, Hideaki; Ishiwaki, Masahiko; and Notani, Hiromi, to Mitsubishi Denki Kabushiki Kaisha. Data queuing apparatus. 5,649,119, Cl. 395-250.000.

Koneke, Hans: *See*—
Fillios, Augustus; Koneke, Walter; Koneke, Hans; and Fillios, George, 5,647,492, Cl. 211-123.000.

Koneke, Walter: *See*—
Fillios, Augustus; Koneke, Walter; Koneke, Hans; and Fillios, George, 5,647,492, Cl. 211-123.000.

Konica Corporation: *See*—
Ikunami, Yoshikazu; and Kimura, Kazuyoshi, 5,648,840, Cl. 399-262.000.

Konig, Bernd-Michael; Judat, Helmut; and Blank, Heinz Ulrich, to Bayer Aktiengesellschaft. Process for the adiabatic preparation of mononitrotoluenes. 5,648,565, Cl. 568-940.000.

Koning, G. Paul: *See*—
Ben-Nun, Michael; Ben-Michael, Simoni; De-Leon, Moshe; Roman, Peter John; Ramakrishnan, Kadangode K.; and Koning, G. Paul, 5,649,110, Cl. 395-200.190.

Konishi, Kazuo: *See*—
Naka, Hideyuki; Konishi, Kazuo; and Ooishi, Kazuyuki, 5,648,820, Cl. 348-445.000.

Konno, Hidetoshi; Kaneko, Masamichi; and Satoyoshi, Junichi, to Tetra Laval Holdings & Finance S.A. Pull-tab for liquid container. 5,647,500, Cl. 220-269.000.

Konno, Makoto: *See*—

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Beriger, Ernst; and Kristinsson, Haukur, 5,648,487, Cl. 544-182.000.

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Wegdam, Hendricus Johannes; and Krollmann, Klaus Werner, 5,647,457, Cl. 187-250.000.

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De Boer, Lex; Van Hell, Bart; and Krouwer, Andreas Jacobus Johanna, 5,648,261, Cl. 435-254.200.

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Jensen, Eric Lee; and Kruckemeyer, William Charles, 5,647,461, Cl. 188-322.150.

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Weiss, Ronald, 5,648,026, Cl. 264-37.000.

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McDaid, Cornelius, 5,647,520, Cl. 224-425.000.

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Gernhardt, Paul; and Krzyzanowski, Serge, 5,647,479, Cl. 200-557.000.

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Stenzel, Otto W.; Sick, Georg; Köhler, Eduard; Möding, Herbert; and Niehues, Jürgen, 5,648,620, Cl. 75-232.000.

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Hida, Masato; and Kuboi, Sadao, 5,647,755, Cl. 439-328.000.

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Kawanishi, Toshio; Yokoyama, Shigeki; Ishihara, Katsuro; Narukami, Yoshihisa; Shioyama, Masahiko; Tokushima, Mikiharu; and Ozaki, Toshiya, 5,647,988, Cl. 210-636.000.

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Ohmori, Kiyoshi; Watanabe, Tetsu; Seo, Katsuhiro; and Kudo, Junichi, 5,648,944, Cl. 369-13.000.

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Tsubaki, Takeshi; Watanabe, Katsuya; Takesue, Hidenori; Sato, Yoshiaki; Kudo, Katsuyoshi; and Nawata, Makoto, 5,647,944, Cl. 156-345.000.

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Martsfeld, Rainer; Vogt, Rolf; Kuhlmann, Thomas; and Wentzler, Hanno, 5,648,614, Cl. 73-706.000.

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Miller, Granville G.; Shacklette, Lawrence W.; Elsenbaumer, Ronald L.; Wessling, Bernhard; Whang, Peter; and Kulkarni, Vaman G., 5,648,416, Cl. 524-500.000.

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Oharu, Kazuya; Seki, Ryuji; and Kumai, Seisaku, 5,648,568, Cl. 570-176.000.
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Mulvihill, Eileen R.; and Kumar, A. Ashok, 5,648,254, Cl. 435-217.000.

Kumar, Rajendra, to Khyber Technologies Corporation. Portable messaging and scheduling device with homebase station. 5,648,760, Cl. 340-825.250.

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Abe, Tetsuhiko; Kunieda, Shigehiko; Nakajima, Isao; and Utsumi, Yusuke, 5,648,132, Cl. 428-36.900.

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Stommes, Wallace F.; Kunz, Ross S.; Beckman, Bryan A.; and Kunz, Christopher J., 5,647,396, Cl. 137-554.000.

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Kunze, Alan G.: *See*—
Heyse, John V.; and Kunze, Alan G., 5,648,178, Cl. 428-627.000.

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Kuramae, Yoshihisa; Inoue, Kazushige; Nagai, Takashi; and Takatsuna, Toru, to Mita Industrial Co., Ltd. Electrophotographic toner. 5,648,192, Cl. 430-110.000.

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Tai, Shinji; Hara, Tetsuya; Kageyu, Akira; and Kashimura, Tsugunori, 5,648,449, Cl. 528-193.000.

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Miwa, Chiyo; Sano, Hironari; Nishida, Koji; and Kurasawa, Yoshihiro, 5,648,424, Cl. 525-92.00D.

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Kurio, Masaru: *See*—
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Hayashi, Yoshihiro; Yabe, Kouichi; and Mizuniwa, Tetsuo, 5,647,989, Cl. 210-641.000.

Kuriyama, Toru; Ohtani, Yasumi; Chandratilleke, Rohana; Yoshino, Tatsuya; and Kobayashi, Takayuki, to Kabushiki Kaisha Toshiba. Cooling system having plural cooling stages in which refrigerate-filled chamber type refrigerators are used. 5,647,218, Cl. 62-6.000.

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Matsumoto, Hiroshige; Takahashi, Makoto; and Kuroda, Hitoshi, 5,647,288, Cl. 110-228.000.

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Daroux, Mark L.; Kurz, David W.; Litt, Morton; Melissaris, Anastasios; and Pucci, Donald G., 5,648,186, Cl. 429-192.000.

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Grundke, Edgar; and Kusch, Hans-Jürgen, 5,647,673, Cl. 384-519.000.

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Kusuda, Kazuo: *See*—
Matsuo, Yoshihiko; Kusuda, Kazuo; Sata, Naoki; Yoshikawa, Toshihumi; and Matsumura, Tsuneo, 5,648,687, Cl. 257-787.000.

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Budman, Mark; Hunt, Daniel Joseph; Kuzawinski, Mark Joseph; and Riehm, David Earl, 5,649,121, Cl. 395-281.000.

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Pálosi, Endre; Korbonits, Dezso; Molnár née Bakó, Erzsébet; Szvoboda née Kanzel, Ida; Héja, Gergely; Kiss, Pál; Gönczi, Csaba; Sperber, Ferenc; Huszár, Csaba; Mihalovics, György; Németh, Attila; Sütő, Mihály; Gyüre, Károl; Bóné, István; Mórász, Ferenc; Ledniczky, László; Szabó née Kardos, Erzsébet; Győri, Péter; Szalay, Erzsébet; Bán, Károly; Buttkai, Ildikó; Kővári, Árpád; and Garaczy, Sándor, 5,648,498, Cl. 548-202.000.

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Matsushima, Osamu, to NEC Corporation. Microcomputer having a region definable by user. 5,649,219, Cl. 395-800.000.

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Kato, Makoto; Komma, Yoshiaki; Kadowaki, Shin-ichi; Hori, Yoshikazu; Nishino, Seiji; and Saimi, Tetsuo, 5,648,951, Cl. 369-112.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Date, Yoshito; Takeshita, Shoichi; Ohmori, Tetsuro; Nakatsuka, Junji; and Imamura, Yoshio, 5,648,791, Cl. 345-89.000.
Fukutani, Hideshi, 5,647,672, Cl. 384-100.000.
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Matsuzaki, Toshimichi; Higaki, Nobuo; and Deguchi, Masashi, 5,649,229, Cl. 395-800.000.
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Taguchi, Yutaka; Eda, Kazuo; Kanaboshi, Akihiro; Ogura, Tetsuyoshi; and Tomita, Yoshihiro, 5,647,932, Cl. 156-154.000.
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Tomita, Masao; Otsuki, Takuya; and Nagasaki, Sakon, 5,649,048, Cl. 386-131.000.
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Yamauchi, Hiroshi; Narita, Shoriki; and Hongo, Hideo, 5,648,729, Cl. 324-758.000.

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Matsuzaki, Noriaki: *See—*
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Maxim Integrated Products: *See—*
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Maynard, Alfred Charles, to Martin Marietta Corporation. High pressure fluid valve assembly. 5,647,573, Cl. 251-94.000.

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Mazanec, Terry J.; and Cable, Thomas L. Oxygen permeable mixed conductor membranes. 5,648,304, Cl. 501-134.000.

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McAninch, Terry: *See—*
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McBrayer, Michael Sean: *See—*
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McCarty, Donald L. Tumescence sustaining applicator. 5,647,837, Cl. 600-38.000.

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McClellan, Gordon L. Backup protection device. 5,647,621, Cl. 293-117.000.

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McClure, Richard C.: *See*—
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McClurg, George W.; Pace, Gary Lee; Mooney, Charles W.; and McKee, John M., to Motorola, Inc. Electronic driver for an electromagnetic resonant transducer. 5,649,020, Cl. 381-151.000.

McCollister, Howard L.: *See*—
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McCool, John M., to United States of America, Navy. Pulse coded sonar having improved doppler determination feature. 5,648,940, Cl. 367-90.000.

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McDaid, Cornelius, to Kryptonite Corporation. Bicycle lock bracket with splines. 5,647,520, Cl. 224-425.000.

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McDaniel, Robert G., to University of Arizona, Arizona Board of Regents, on behalf of the. Stress tolerant pyrethrum plants. 5,648,593, Cl. 800-200.000.

McDevitt, Robert F. Dual shaft golf club. 5,647,806, Cl. 473-252.000.

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Meacci, Giorgio: *See*—
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Meade, John C.: *See*—
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Badoz, Jean-Marie, 5,647,745, Cl. 433-126.000.

Micron Communications, Inc.: *See*—
Blonsky, Peter Miller, 5,648,011, Cl. 252-62.200.

Micron Electronics, Inc.: *See*—
Canella, Robert L., 5,648,728, Cl. 324-755.000.
Klein, Dean A.; and Wilde, Daniel P., 5,649,162, Cl. 395-500.000.

Micron Technology, Inc.: *See*—
Ball, Michael B.; and Fogal, Rich, 5,647,528, Cl. 228-180.500.
Blalock, Guy, 5,647,913, Cl. 118-723.001.
Ingalls, Charles L.; and Thomann, Mark R., 5,648,974, Cl. 371-22.500.
O'Toole, James E., 5,648,934, Cl. 365-200.000.

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Berkowitz, Brian Thomas; and Benson, Max Loell, 5,649,183, Cl. 395-606.000.
Dunn, Matthew W.; Matthews, Joseph H., III; and Thorne, Edwin, III, 5,648,824, Cl. 348-734.000.
Mahajan, Milind Vasudeo; and Pardikar, Shishir, 5,649,027, Cl. 382-185.000.
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MicroSurge, Inc.: *See*—
Levine, Andy H.; Meade, John C.; and Lichtman, Philip R., 5,647,871, Cl. 606-45.000.

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Prakash, Jaideep; and Rotzoll, Robert Rudolf, 5,648,744, Cl. 331-11.000.

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Corry, Alan G.; Mostyn, Graham Y.; and Michel, Jean-Yves, 5,649,160, Cl. 395-494.000.

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Clark, Reece Robert, 5,648,844, Cl. 356-5.090.

Midnite Kitty, Inc.: *See*—
Paddock, Thomas L.; and Weir, Robert H., 5,649,015, Cl. 381-61.000.

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Meissner, David C., 5,647,887, Cl. 75-436.000.

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Lightcap, Donald Victor, Jr., 5,647,899, Cl. 106-244.000.

Midwest Payment Systems: *See*—
Landry, George W., 5,649,117, Cl. 395-240.000.

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Bader, Scott K.; Hester, Richard E.; Gomez, Michael L.; and Mielke, James S., 5,649,008, Cl. 379-392.000.

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Paz De Araujo, Carlos A.; Watanabe, Hitoshi; Scott, Michael C.; and Mihara, Takashi, 5,648,114, Cl. 427-126.300.

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Snmita, Kazuo; Hirakawa, Hideki; Miike, Seiji; and Mizutani, Yumi, 5,649,193, Cl. 395-614.000.

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Miyazawa, Hiromu; Hoshina, Shoji; Shimokawato, Satoshi; Ichikawa, Masaaki; Ishida, Masaya; Kawase, Takeo; Mikoshiba, Toshiaki; Nebashi, Satoshi; and Shimoda, Tatsuya, 5,648,161, Cl. 428-332.000.

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Michioka, Hirofumi; Yamamoto, Masahiro; Hayasaki, Koichi; and Mikoshiba, Yoshinori, 5,647,816, Cl. 475-285.000.

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Cordi, Alex; Lacoste, Jean-Michel; Laubie, Michel; Verbeuren, Tony; Descombes, Jean-Jacques; and Millan, Mark, 5,648,374, Cl. 514-401.000.

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Miller, Robert J.; and Bisset, Stephen J., to Synaptics, Incorporated. Object position detector. 5,648,642, Cl. 178-18.000.

Miller, Roger L.; and Regan, Timothy T., to National Semiconductor Corporation. Failsafe voltage regulator with warning signal driver. 5,648,759, Cl. 340-660.000.

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Miller, Terry L., to Borg-Warner Automotive, Inc. Fuel vapor recovery system control valve. 5,647,334, Cl. 123-520.000.

Miller, Warren H.: *See—*
Beaudreau, Cherilyn M.; Bailey, David C.; Holmes, Jon E.; and Miller, Warren H., 5,647,584, Cl. 271-122.000.

Milleron, Norman. Hydraulic combustion accumulator. 5,647,734, Cl. 417-380.000.

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Milliken, Les; and Milliken, K. Blair, 5,647,176, Cl. 52-63.000.

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Willbanks, Charles Everage, 5,647,403, Cl. 139-59.000.

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Green, David T.; Palmer, Mitchell J.; Milliman, Keith L.; Savage, Robert C.; McClure, Richard C.; and Heaton, Lisa W., 5,647,526, Cl. 227-175.200.

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Minakata, Hiroshi, to International Business Machines Corporation. Apparatus and method for converting line segment data to three-dimensional data. 5,649,080, Cl. 395-127.000.

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Leblang, David B.; Allen, Larry W.; Chase, Robert P., Jr.; Douros, Bryan P.; Jabs, David E.; McLean, Gordon D., Jr.; and Minard, Debra A., 5,649,200, Cl. 395-703.000.

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Miner, Frank Henry, Jr.; and Arthur, Mark Thomas, to UCAR Carbon Technology Corporation. Cooling system for a two component furnace roof. 5,648,981, Cl. 373-74.000.

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Minich, Steven E.: *See—*
Scheer, Peter L.; Raman, Venkat A.; and Minich, Steven E., 5,647,767, Cl. 439-620.000.

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Feldmann, William G.; Scherbenske, Vernon J.; and Henning, Craig M., 5,647,853, Cl. 604-155.000.

Minnesota Mining and Manufacturing: *See—*
Twigg, Richard Dean; and Mitchem, Steven Dale, 5,647,756, Cl. 439-331.000.

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Bird, Gerald C., 5,648,136, Cl. 428-76.000.
Dunshee, Wayne K., 5,648,166, Cl. 428-355.0AC.
Everaerts, Albert I.; and Malmer, Jeffrey D., 5,648,425, Cl. 515-100.000.
Goetz, Douglas P.; Hine, Andrew M.; Schultz, William J.; and Thompson, Wendy L., 5,648,407, Cl. 523-213.000.
Insley, Thomas I.; McCoy, Kay M.; and Tamaki, Cynthia Y., 5,647,480, Cl. 206-204.000.
Jaster, Paul A.; and O'Neill, Mark Joseph, 5,648,873, Cl. 359-591.000.
Nikolaides, Nick; and Gerster, John F., 5,648,516, Cl. 560-125.000.
Schlickhoff, Reiner; Mento, Giovanni; and Moebius, Heinz-Guenter, 5,649,261, Cl. 396-571.000.
Zhang, Zhiqun; and Winters, John C., 5,647,881, Cl. 55-382.000.

Minolta Camera Kabushiki Kaisha: *See—*
Morikawa, Takeshi; and Nakatani, Munehiro, 5,649,033, Cl. 382-297.000.

Minolta Co., Ltd.: *See—*
Sasaki, Gen, 5,649,250, Cl. 396-333.000.

Minor, Barbara Haviland: *See—*
Kling, Diana Lynn; Minor, Barbara Haviland; Patron, Donna Marie; Chisolm, Tuneen E. C.; and Sievert, Allen Capron, 5,648,016, Cl. 252-67.000.

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Miono, Tadaaki: *See—*
Fukui, Yasushi; Matsuno, Masanori; Tanaka, Hiroshi; Miono, Tadaaki; Sakamoto, Kazushi; Ariyoshi, Yasumi; and Saito, Minoru, 5,648,177, Cl. 428-610.000.

Misawa, Hiromitsu: *See—*
Okano, Yoji; Kurita, Eiichi; Fujioka, Kazuo; Aoki, Koso; Misawa, Hiromitsu; and Kozawa, Minoru, 5,648,170, Cl. 428-403.000.

Misawa, Toshiyuki; and Oshima, Hiroyuki, to Seiko Epson Corporation. Active matrix assembly with lines of equal resistance. 5,648,685, Cl. 257-775.000.

Mischker, Rolf: *See—*
Steiner, Erwin; and Mischker, Rolf, 5,647,109, Cl. 28-263.000.

Miseo, Sabato: *See—*
Ho, Teh Chung; Soled, Stuart Leon; Miseo, Sabato; McVicker, Gary Brice; Daage, Michel; and Buchholz, Viktor, 5,648,577, Cl. 585-266.000.

Misoph, Helmut: *See—*
Romer, Rudolf; Wollmann, Gerd; and Misoph, Helmut, 5,647,559, Cl. 244-3.130.

Misra, Pradyumna K.: *See—*
Miller, Arnold; Neeman, Yuval; Contorer, Aaron M.; Misra, Pradyumna K.; Seaman, Michael R. C.; and Rubin, Darryl E., 5,649,194, Cl. 395-616.000.

Missy, Stephan: *See—*
Grotjahn, Ulrich; Knips, Stephan; Koch, Guenter; Missy, Stephan; Plodek, Bernd; and Zimmer, Rainer, 5,647,207, Cl. 60-300.000.

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Turchan, Manuel C.; and Mistry, Pravin, 5,648,127, Cl. 427-596.000.

Mistutake, Hideaki, to Canon Kabushiki Kaisha. Dichroic mirror and projector having the same. 5,648,870, Cl. 359-487.000.

Mita Industrial Co., Ltd.: *See—*
Kuramae, Yoshihisa; Inoue, Kazushige; Nagai, Takashi; and Takatsuna, Toru, 5,648,192, Cl. 430-110.000.

Mitani, Masaaki: *See—*
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Mitchell, Harry David: *See—*
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Mitchell, Presley K.: *See—*
Lachocki, Thomas M.; Ragin, Oscar T.; and Mitchell, Presley K., 5,648,314, Cl. 504-151.000.

Mitchell, Wesley E.: *See—*
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Mitchem, Steven Dale: *See—*
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Mitel Corporation: *See—*
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Mitra, Sekhar. Compositions and methods for treating respiratory disorders. 5,648,358, Cl. 514-264.000.

Mitsubishi Chemical Corporation: *See—*
Hatano, Masakatsu; Nakanishi, Akio; Kabata, Yoshio; Shirado, Masayuki; Takeo, Hiroshi; and Kobayashi, Mitsuharu, 5,648,558, Cl. 568-618.000.
Miwa, Chiyo; Sano, Hironari; Nishida, Koji; and Kurasawa, Yoshihiro, 5,648,424, Cl. 525-92.00D.
Mori, Tomoyuki; Takai, Masaki; and Inoue, Tomohiko, 5,648,554, Cl. 568-454.000.
Sugano, Toshihiko; and Takahama, Tomohiko, 5,648,440, Cl. 526-132.000.
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Mitsubishi Denki Kabushiki Kaisha: *See—*
Fukui, Wataru; and Koezuka, Yasukazu, 5,647,322, Cl. 123-414.000.
Hayashi, Satoru, 5,648,156, Cl. 428-323.000.

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Kanai, Akira; Yamakawa, Masaki; Sugihara, Shoichi; Hayakawa, Masaharu; Yamamoto, Kiyotaka; Kodama, Masafumi; and Maeno, Akiko, 5,648,825, Cl. 348-743.000.
Kasai, Nobuyuki, 5,648,668, Cl. 257-280.000.
Kishimura, Shinji, 5,648,199, Cl. 430-311.000.
Kondoh, Harufusa; Yamanaka, Hideaki; Ishiwaki, Masahiko; and Notani, Hiromi, 5,649,119, Cl. 395-250.000.
Kusunoki, Shigeru; and Inuishi, Masahide, 5,648,284, Cl. 437-40.0GS.
Matsuo, Masahito; and Yoshida, Toyohiko, 5,649,145, Cl. 395-421.030.
Miyamoto, Taiyuu, 5,648,929, Cl. 365-185.040.
Miyazaki, Yasunori, 5,648,977, Cl. 372-36.000.
Takeshita, Michimasa; Yoshida, Takayuki; Tanimura, Yoshiaki; Iijima, Hitoshi; Gotoh, Takashi; and Yumikura, Tsuneo, 5,647,431, Cl. 165-119.000.
Tsujimichi, Shingo; and Kondo, Michimasa, 5,649,106, Cl. 395-200.080.
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Yamanaka, Hideaki; Oshima, Kazuyoshi; and Miura, Setsuko, 5,649,217, Cl. 395-872.000.

Mitsubishi Electric Semiconductor Software Co., Ltd.: *See—*
Miyamoto, Taiyuu, 5,648,929, Cl. 365-185.040.

Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See—*
Fujita, Kenjiro; Usuki, Katsutoshi; and Tashiro, Tetsuya, 5,647,819, Cl. 477-140.000.

Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Mimura, Tomio; Shimojo, Shigeru; Iijima, Masaki; and Mitsuoka, Shigeaki, 5,648,053, Cl. 423-210.000.

Mitsui & Co., Ltd.: *See—*
Tanimoto, Fumio; and Yano, Tsuneo, 5,648,499, Cl. 548-316.400.

Mitsui Petrochemical Industries, Ltd.: *See—*
Kagami, Mamoru; Tanaka, Mutsuhiro; and Sugi, Masahiro, 5,648,423, Cl. 525-66.000.
Odagawa, Kenji; and Watanabe, Hiroshi, 5,647,921, Cl. 148-561.000.

Mitsui Toatsu Chemicals, Inc.: *See—*
Nishimura, Takeshi; Kamashita, Tomoko; Wada, Masaru; Nagata, Teruyuki; Tanabe, Yoshimitsu; Hasegawa, Kiyoharu; and Nakatsuka, Masakatsu, 5,647,896, Cl. 106-31.180.
Oishi, Tetsuya; Suzuki, Jin; Ohkawa, Kouhei; and Ono, Hiroshi, 5,648,446, Cl. 528-60.000.

Mitsumi Electric Co., Ltd.: *See—*
Sampei, Hiroshi; Hosoya, Kouichi; Katoh, Kenji; Sato, Masashi; Ohizumi, Mitsutoshi; Seno, Koichi; Komatsu, Hisateru; Watanabe, Takashi; Konno, Makoto; and Shibata, Akira, 5,648,883, Cl. 360-106.000.
Tangi, Yoshinori; Okano, Yoshihiro; and Uwabo, Tsuneo, 5,648,882, Cl. 360-99.060.

Mitsunobu, Akikazu: *See—*
Ohtsuki, Kazuo; Mitsunobu, Akikazu; Imaizumi, Yoshihiro; Honda, Nobuyoshi; and Inoue, Satoshi, 5,648,507, Cl. 552-615.000.

Mitsuoka, Shigeaki: *See—*
Mimura, Tomio; Shimojo, Shigeru; Iijima, Masaki; and Mitsuoka, Shigeaki, 5,648,053, Cl. 423-210.000.

Mitsuta, Norihide: *See—*
Iwamatsu, Takanori; and Mitsuta, Norihide, 5,648,988, Cl. 375-232.000.

Mitsuya, Teruaki: *See—*
Shimizu, Ryuuichi; Kawanishi, Tsuneaki; Satoh, Toshiya; Mitsuya, Teruaki; and Suzuki, Takashi, 5,649,273, Cl. 399-329.000.

Miura, Masanobu, to Takiron Co., Ltd. Displaying apparatus with light-shielding grating. 5,647,152, Cl. 40-541.000.

Miura, Masayuki: *See—*
Hirano, Naohiko; Doi, Kazuhide; Miura, Masayuki; Okada, Takashi; and Hiruta, Yoichi, 5,648,686, Cl. 257-778.000.

Miura, Michio: *See—*
Sawaki, Ippei; Miura, Michio; Ishikawa, Yoshiro; and Abe, Fumitaka, 5,648,874, Cl. 359-622.000.

Miura, Setsuko: *See—*
Yamanaka, Hideaki; Oshima, Kazuyoshi; and Miura, Setsuko, 5,649,217, Cl. 395-872.000.

Miwa, Akihiko: *See—*
Tsubouchi, Kaoru; and Miwa, Akihiko, 5,647,462, Cl. 188-356.000.

Miwa, Chiyo; Sano, Hironari; Nishida, Koji; and Kurasawa, Yoshihiro, to Mitsubishi Chemical Corporation. Thermoplastic resin composition and molded product thereof. 5,648,424, Cl. 525-92.00D.

Miwa, Hirohide, to Miwa Science Laboratory Inc. Recirculating type cleaner. 5,647,092, Cl. 15-346.000.

Miwa Science Laboratory Inc.: *See—*
Miwa, Hirohide, 5,647,092, Cl. 15-346.000.

Miyairi, Kazuki; and Iijima, Akira, to Nissei Plastic Industrial Co., Ltd. Injection mold for molding information recording discs. 5,648,106, Cl. 425-186.000.

Miyake, Hiroshi; Aso, Yasuhiro; and Yoshimura, Shuji, to Fujitsu Limited. Input and output side conversion interfaces for an ATM exchange. 5,648,963, Cl. 370-218.000.

Miyake, Kazumi; Hamazaki, Kagehisa; Toyoda, Hitoshi; and Higuchi, Yoshikatsu, to Honda Giken Kogyo Kabushiki Kaisha. Method of manufacturing a sintered composite body of silicon nitride and silicon carbide. 5,648,028, Cl. 264-647.000.

Miyake, Kunihito: *See—*
Seko, Shinzo; and Miyake, Kunihito, 5,648,496, Cl. 546-307.000.

Miyake, Takashi: *See—*
Kimura, Toshiyuki; Ishikawa, Yutaro; Abe, Shinichi; Kamiya, Kazuhiro; and Miyake, Takashi, 5,649,319, Cl. 455-186.100.

Miyake, Yoshio: *See—*
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Miyamoto, Harukazu; Sugiyama, Hisataka; and Matsumoto, Kiyoshi, to Hitachi, Ltd. Method and apparatus for information reproduction at variable reference level. 5,648,949, Cl. 369-59.000.

Miyamoto, Hidenori: *See—*
Takahashi, Tsugio; Aoki, Hitoshi; Imura, Yoshio; Miyamoto, Hidenori; Tsukahara, Daiki; Kotani, Noriyasu; Inoue, Hideya; and Nagai, Jun, 5,649,252, Cl. 396-389.000.

Miyamoto, Katsuyoshi: *See—*
Morita, Mitsuru; Miyamoto, Katsuyoshi; Sawano, Kiyoshi; and Matsuda, Shouichi, 5,648,319, Cl. 505-230.000.

Miyamoto, Taiyuu, to Mitsubishi Electric Semiconductor Software Co., Ltd.; and Mitsubishi Denki Kabushiki Kaisha. Flash memory card. 5,648,929, Cl. 365-185.040.

Miyashita, Kazunori: *See—*
Mori, Ryosuke; Miyashita, Kazunori; and Tanaka, Minoru, 5,649,254, Cl. 396-411.000.

Miyata, Naohiko; Momota, Masashi; and Shimada, Kazuyuki, to Asahi Intell Co. Ltd. Manufacturing process of coil. 5,647,127, Cl. 29-896.900.

Miyawaki, Yoichi: *See—*
Kato, Kazuhiro; Miyawaki, Yoichi; and Tanaka, Hirohisa, 5,647,647, Cl. 303-122.090.

Miyazaki, Kyota: *See—*
Omata, Kazuhiko; Nagashima, Toshiaki; and Miyazaki, Kyota, 5,649,270, Cl. 399-262.000.

Miyazaki, Nobutaka: *See—*
Sumida, Takashi; and Miyazaki, Nobutaka, 5,647,550, Cl. 242-343.200.

Miyazaki, Yasunori, to Mitsubishi Denki Kabushiki Kaisha. Laser array device and method of fabricating the device. 5,648,977, Cl. 372-36.000.

Miyazawa, Hiromu; Hoshina, Shoji; Shimokawato, Satoshi; Ichikawa, Masaaki; Ishida, Masaya; Kawase, Takeo; Mikoshiba, Toshiaki; Nebashi, Satoshi; and Shimoda, Tatsuya, to Seiko Epson Corporation. Magneto-optical recording medium having large kerr rotational angle in short wavelength range. 5,648,161, Cl. 428-332.000.

Miyazoe, Seigo: *See—*
Fushimi, Akira; Miyazoe, Seigo; Yamada, Atsushi; and Okude, Yoshitaka, 5,648,417, Cl. 524-513.000.

Mizobe, Tatsutoshi: *See—*
Matsumoto, Akio; Mizobe, Tatsutoshi; Ishii, Kozo; and Shinozuka, Hiroshi, 5,647,820, Cl. 477-155.000.

Mizobuchi, Koji: *See—*
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Mizoguchi, Akinobu; Nakanishi, Shinji; and Akasawa, Toshiyuki, to Kuraray Co., Ltd. Porous polyurethane sheet. 5,648,151, Cl. 428-220.000.

Mizuguchi, Koichi: *See—*
Morikiyo, Akira; Mizuguchi, Koichi; Kawano, Susumu; Umezawa, Kenji; and Kato, Koji, 5,647,474, Cl. 198-465.100.

Mizuhara, Youji: *See—*
Masahashi, Naoya; Mizuhara, Youji; and Matsuo, Munetsugu, 5,648,045, Cl. 420-418.000.

Mizuhata, Minoru: *See—*
Yasuda, Kazuaki; Mizuhata, Minoru; Oguro, Keisuke; and Takenaka, Hiroyasu, 5,648,307, Cl. 502-101.000.

Mizuniwa, Tetsuo: *See—*
Hayashi, Yoshihiro; Yabe, Kouichi; and Mizuniwa, Tetsuo, 5,647,989, Cl. 210-641.000.

Mizusawa Industrial Chemicals, Inc.: *See—*
Sato, Teiji; Sato, Toshio; Sugawara, Toshiaki; Sawada, Hiroshi; Wakaki, Seiji; Ohta, Satoru; and Saito, Masaru, 5,648,413, Cl. 524-313.000.

Mizutani, Yumi: *See—*
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Mobil Oil Corporation: *See—*
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Mochizuki, Shoichi: *See—*
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Möding, Herbert: *See—*
Stenzel, Otto W.; Sick, Georg; Köhler, Eduard; Möding, Herbert; and Niehues, Jürgen, 5,648,620, Cl. 75-232.000.

Moebius, Heinz-Guenter: *See—*
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Moeller, Michael Gene: *See—*
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Moffett, Robert Harvey; and Rushmere, John Derek, to Du Pont de Nemours, E. I., and Company. Method for preparing low-concentration polyaluminosilicate microgels. 5,648,055, Cl. 423-328.100.

Mogilevsky, Alex, to Microsoft Corporation. Method for background spell checking a word processing document. 5,649,222, Cl. 395-795.000.

Mohan, Rakesh: *See—*
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Moir, David: *See—*
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Molecular Probes, Inc.: *See—*
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Molex Incorporated: *See—*
Ichikawa, Shozou; and Matsuura, Naoya, 5,647,758, Cl. 439-362.000.
Martucci, Roberto; and Zuin, Gianni, 5,647,772, Cl. 439-748.000.
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Molnár née Bakó, Erzsébet: *See—*
Pálosi, Endre; Korbonits, Dezso; Molnár née Bakó, Erzsébet; Szvoboda née Kanzel, Ida; Héja, Gergely; Kiss, Pál; Gönczi, Csaba; Sperber, Ferenc; Huszár, Csaba; Mihalovics, György; Németh, Attila; Sütő, Mihály; Gyüre, Károl; Bóné, István; Mórász, Ferenc; Ledniczky, László; Szabó née Kardos, Erzsébet; Győri, Péter; Szalay, Erzsébet; Bán, Károly; Buttkai, Ildikó; Kővári, Arpád; and Garaczy, Sándor, 5,648,498, Cl. 548-202.000.
Molock, Frank F.: *See—*
Nunez, Ivan M.; Molock, Frank F.; Elliott, Laura D.; Neil, Michele L.; and Ford, James D., 5,648,402, Cl. 523-107.000.
Moltech Corporation: *See—*
Skotheim, Terje Absjorn, 5,648,187, Cl. 429-213.000.
Momcilovich, Paul Theodore: *See—*
Sitar, Daryl Steven; Momcilovich, Paul Theodore; Masrur, MD Abul; Liang, Feng; Myers, Garold Paul; and Zarei, Shahram, 5,648,705, Cl. 318-145.000.
Momota, Masashi: *See—*
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Mona Industries, Inc.: *See—*
Fost, Dennis L.; and Perella, James E., 5,648,348, Cl. 514-77.000.
Monday, John W.; Ottaviani, Joseph C.; and Smith, Leonard R., to A-Z Terminal Corporation; and Smith, Leonard. Pipe cleaning machine. 5,647,906, Cl. 118-70.000.
Monoura, Shuji: *See—*
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Monsanto Company: *See—*
Lennon, Patrick James, 5,648,349, Cl. 514-134.000.
Miller, Granville G.; Shacklette, Lawrence W.; Elsenbaumer, Ronald L.; Wessling, Bernhard; Whang, Peter; and Kulkarni, Vaman G., 5,648,416, Cl. 524-500.000.
Talley, John J.; Getman, Daniel P.; DeCrescenzo, Gary A.; Reed, Kathryn L.; Lin, Ko-Chung; Freskos, John Nicholas; Clare, Michael; Rogier, Donald Joseph, Jr.; Heintz, Robert M.; Vazquez, Michael L.; and Mueller, Richard A., 5,648,364, Cl. 514-307.000.
van de Velde Keyser, Herbert Sybrant, 5,648,034, Cl. 264-160.000.
Monsato Company: *See—*
Barry, Gerard Francis; Kishore, Ganesh Murthy; Stark, David Martin; and Zalewski, James Conrad, 5,648,249, Cl. 435-172.300.
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Montell Technology Company bv: *See—*
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Moody, David B.: *See—*
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Moody, John W., to Pontiac Coil, Inc. Shifter interlock for an automatic transmission. 5,647,818, Cl. 477-99.000.
Moon, Shang Ho, to LG Semicon Co., Ltd. Method for preventing microroughness and contamination during CCD manufacture. 5,648,292, Cl. 437-53.000.
Moon, Young-Ho; Jeon, Hong-Seob; Choi, Kyu-Whan; Lee, Kwan-Ho; and Kim, Man-Keun, to Jinro Limited. Expression vector for Phytolacca antiviral protein. 5,648,234, Cl. 435-69.100.
Mooney, Charles W.: *See—*
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Avory, Mark Lucas; Fahey, William David; Fields, Stewart Shannon; Moore, Charles Joyce, Jr.; Piper, Charles John, III; Whang, David; Pink, Terry Joseph; Baggett, Albert Jiggs, Jr.; Richman, Martin Gerald; and Weinman, Lawrence Theodore, 5,648,634, Cl. 102-202.100.
Moore, Emma E.: *See—*
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Moore, Morris: *See—*
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Moore, William G.: *See—*
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Moore-McKee, Amy L.; Hadank, J. Martin; Jackson, Stephen J.; Pradaxay, Sysounanh M.; and McGuire, Kenneth J., to Caterpillar Inc. Method for programming a vehicle monitoring and control system. 5,648,898, Cl. 364-191.000.
Moorhead, Arthur J.: *See—*
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Mor, Yeshayahu: *See—*
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Morain, Gary E.: *See—*
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Moran, Steven M., to Mattel, Inc. Composite bodyboard with increased strength and bonding characteristics. 5,647,784, Cl. 441-65.000.
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Moreland, Margaret: *See—*
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Morgulis, Lazar A.; and Zimmerman, Charles, to Juki American, Inc. Sewing apparatus with turntable for holding fabric. 5,647,292, Cl. 112-470.170.
Mori, Hideshi, to Koito Manufacturing Co., Ltd. Vehicular headlamp having improved orthogonal conversion gear mechanism. 5,647,659, Cl. 362-66.000.
Mori, Hiroshi: *See—*
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Mori, Ryosuke; Miyashita, Kazunori; and Tanaka, Minoru, to Seiko Epson Corporation. Film winding mechanism for a camera. 5,649,254, Cl. 396-411.000.
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Mori, Tomoyuki; Takai, Masaki; and Inoue, Tomohiko, to Mitsubishi Chemical Corporation. Method for producing aldehydes. 5,648,554, Cl. 568-454.000.
Morikawa, Takeshi; and Nakatani, Munehiro, to Minolta Camera Kabushiki Kaisha. Image processing apparatus outputting desired image irrespective of directions of original and output paper. 5,649,033, Cl. 382-297.000.
Morikiyo, Akira; Mizuguchi, Koichi; Kawano, Susumu; Umezawa, Kenji; and Kato, Koji, to Tsubakimoto Chain Co. Structure for preventing position deviation of a truck loaded on a traverser. 5,647,474, Cl. 198-465.100.
Morimoto, Yoshiaki; Tanigawa, Hiroto; and Akita, Kazuyuki, to Daicel Chemical Industries, Ltd. Process for producing acetic anhydride alone or acetic anhydride and acetic acid. 5,648,531, Cl. 562-891.000.
Morishita, Mimpei, to Kabushiki Kaisha Toshiba. Magnetic non-contact transport system. 5,647,477, Cl. 198-619.000.
Morita, Makoto: *See—*
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Morita, Mitsuru; Miyamoto, Katsuyoshi; Sawano, Kiyoshi; and Matsuda, Shouichi, to Nippon Steel Corporation. 1-2-3 single crystal oxide superconductor containing 211 phase and process for preparation thereof. 5,648,319, Cl. 505-230.000.
Morita, Tamao, to Tarmo Co., Ltd. Weight reduced magnetic fastener. 5,647,101, Cl. 24-303.000.
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Keefe, Brian J.; Ho, May Fong; Courian, Kenneth J.; Steinfield, Steven W.; Childers, Winthrop D.; Tappon, Ellen R.; Trueba, Kenneth E.; Chapman, Terri I.; Knight, William R.; and Moritz, Jules G., 5,648,805, Cl. 347-65.000.
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Morse, Kevin C.: *See—*
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Morton International, Inc.: *See—*
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Böldt, Frank; Schulze, Ingo; Moschütz, Harald; and Röhl, Marianne, 5,647,232, Cl. 68-12.020.
Mosier, John W., II, deceased (by Molly P. Mosier, executrix): *See—*
Tsang, Dah Wen; Sdrulla, Dumitru; Pike, Douglas A., Jr.; Meyer, Theodore O.; Mosier, John W., II, deceased, 5,648,283, Cl. 437-40.000.
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Mostafazadeh, Shahram: *See—*
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Motorola, Inc.: *See—*
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Ayerst, Douglas Irvin; Khan, Malik; and Rudowicz, Michael James, 5,649,302, Cl. 370-313.000.
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Fumarolo, Arthur L.; Schwartz, Dana; Chisik, Jennifer E.; and Hattendorf, Heidi A., 5,649,132, Cl. 395-342.000.
Greenwood, Jonathon G.; Lance, James G., Jr.; and Doot, Robert Kenneth, 5,647,123, Cl. 29-840.000.
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Kilner, William, 5,649,089, Cl. 395-182.040.
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Reed, John Douglas, 5,649,293, Cl. 455-453.000.
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Steenstra, Mark Evan; Gehman, John Bartholomew, Jr.; and Acosta, Ascencion Chapapro, Jr., 5,649,179, Cl. 395-598.000.
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Tietjen, Donald L.; Galloway, Frank C.; Menard, David M.; Arnold, Ronny L.; and Woodbridge, Nancy G., 5,649,125, Cl. 395-306.000.
Uskali, Bob, 5,648,717, Cl. 320-43.000.
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Motoyama, Tetsuro, to Ricoh Company, Ltd.; and Ricoh Corporation. Method and apparatus for controlling and communicating with business office devices. 5,649,120, Cl. 395-280.000.
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Mottola, Jim: *See—*
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Roth, Robert; Lampropoulos, Fred P.; Mottola, Jim; Nelson, Arlin Dale; and Foote, Jerrold L., 5,647,860, Cl. 604-264.000.
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Müller, Nikolaus; Gröschl, Andreas; and Janisch, Ingo, to Bayer Aktiengesellschaft. Process for the preparation of dialkyl maleates. 5,648,517, Cl. 560-205.000.
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Mun, Jong-kuk; Lee, Yong-hee; Lee, Eun-kyung; and Ha, Kyung-ho, to Samsung Electronics Co. Ltd. Assembly of VCSEL light source and VCSEL optical detector. 5,648,979, Cl. 372-50.000.
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Muranaka, Masaki: *See*—
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Murase, Tutomu: *See*—
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Murase, Yasuyuki; and Isobe, Masaaki, to Yamaha Hatsudoki Kabushiki Kaisha. Plating method for cylinder. 5,647,967, Cl. 205-131.000.

Murata Kikai Kabushiki Kaisha: *See*—
Imamura, Yuji, 5,647,197, Cl. 57-328.000.

Murata Manufacturing Co., Ltd.: *See*—
Kaida, Hiroaki, 5,648,746, Cl. 333-189.000.
Nakamura, Takeshi, 5,648,608, Cl. 73-504.120.

Murata, Tetsuo; Takagi, Hiroyuki; and Katayama, Yasumi, to Sumitomo Chemical Company, Limited. Process for producing 4-Nitrosodiphenylamines or their salts. 5,648,543, Cl. 564-410.000.

Murayama, Hideki: *See*—
Yamauchi, Masahiko; Yoshizawa, Satoshi; Murayama, Hideki; Hayashi, Takehisa; Kito, Akira; Yashiro, Hiroshi; Goto, Tsutomu; Yamada, Kimitoshi; and Horimoto, Toru, 5,649,102, Cl. 345-200.030.

Muri, David L.: *See*—
Stengel, Robert E.; and Muri, David L., 5,648,766, Cl. 340-870.390.

Murphy, Kathleen M.: *See*—
Carlisle, William Reid; Curtis, Lydia Anne; Murphy, Kathleen M.; and Skibo, Richard John, 5,649,118, Cl. 395-241.000.

Murray, Brendan Dermot, to Shell Oil Company. Process for isomerizing linear olefins to isoolefins. 5,648,584, Cl. 585-666.000.

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Murray, Dick A.: *See*—
Sullaway, Bobby L.; Rogers, Henry E.; and Murray, Dick A., 5,647,434, Cl. 166-242.800.

Murray, Gerald D.: *See*—
Grab, George P.; Melago, William M.; Oles, Edward J.; Bauer, Charles Erik; Inspektor, Aharon; and Murray, Gerald D., 5,648,119, Cl. 427-249.000.

Muscarella, Stephen B.: *See*—
Augustyn, Craig L.; Giannetti, Richard; James, Travis L.; Muscarella, Stephen B.; Pascoe, Philip T.; Snyder, Francis J.; and VanBork, Erik C., 5,647,733, Cl. 417-360.000.

Muscavage, Richard: *See*—
Bays, Laurence Edward; Muscavage, Richard; and Norsworthy, Steven Robert, 5,648,777, Cl. 341-110.000.

Musco Corporation: *See*—
Gordin, Myron K., 5,647,661, Cl. 362-283.000.

Mutch, William Alan C.; and Lefevre, Gerald Robin, to University Of Manitoba. Control of life support systems. 5,647,350, Cl. 128-204.210.

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Sato, Fumie; Amano, Takehiro; Kameo, Kazuya; Tanami, Tohru; Mutoh, Masaru; Ono, Naoya; and Goto, Jun, 5,648,526, Cl. 562-503.000.

Mutzel, Wolfgang: *See*—
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Mycock, John C.: *See*—
McKenna, John D.; Appell, Kenneth W.; Mycock, John C.; and Szalay, Joseph F., 5,647,892, Cl. 95-110.000.

Myers, Donald R.: *See*—
McKinney, Richard A.; Myers, Donald R.; McKinney, Barbara J.; Moody, David B.; Smrcka, Joseph G., deceased; Smrcka, John J., executor; Zhu, Joshua Y.; and Weeder, Daniel P., 5,648,915, Cl. 364-507.000.

Myers, Garold Paul: *See*—
Sitar, Daryl Steven; Momcilovich, Paul Theodore; Masrur, MD Abul; Liang, Feng; Myers, Garold Paul; and Zarei, Shahram, 5,648,705, Cl. 318-145.000.

Myers, Garry L.: *See*—
Bogue, Beuford Arlie; and Myers, Garry L., 5,648,033, Cl. 264-109.000.

Myers, Harry K., Jr.: *See*—
Hsu, Chao-Yang; Patel, Vasant K.; Vahlsing, David H.; Wei, James T.; and Myers, Harry K., Jr., 5,648,590, Cl. 585-751.000.

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Sugifune, Shin; Kanno, Tsutomu; and Nabeya, Hajime, 5,648,650, Cl. 235-472.000.

Nabity, Stephen W. Roller cutting machine. 5,647,260, Cl. 83-522.120.

Nagahama, Hidenobu: *See*—
Kita, Kazuhiko; and Nagahama, Hidenobu, 5,647,919, Cl. 148-437.000.

Nagahora, Junichi: *See*—
Yamagata, Hiroshi; Inoue, Akihisa; Masumoto, Tsuyoshi; and Nagahora, Junichi, 5,648,174, Cl. 428-469.000

Nagai, Jun: *See*—
Takahashi, Tsugio; Aoki, Hitoshi; Imura, Yoshio; Miyamoto, Hidenori; Tsukahara, Daiki; Kotani, Noriyasu; Inoue, Hideya; and Nagai, Jun, 5,649,252, Cl. 396-389.000.

Nagai, Takashi: *See*—
Kuramae, Yoshihisa; Inoue, Kazushige; Nagai, Takashi; and Takatsuna, Toru, 5,648,192, Cl. 430-110.000.

Nagai, Yoshihisa: *See*—
Itoh, Naoto; Nagai, Yoshihisa; and Nomura, Satoru, 5,648,948, Cl. 369-48.000.

Nagami, Masaaki; and Sako, Kazuya, to Fujitsu Ten Limited. Automatic sound controlling method and apparatus for improving accuracy of producing a canceling sound. 5,649,016, Cl. 381-71.500.

Nagamoto, Itsushi, to Yamaha Corporation. Golf club. 5,647,807, Cl. 473-305.000.

Nagaoka, Kazuhiko: *See*—
Tanuma, Jiro; Ito, Katsuyuki; Katakura, Shinichi; Wakasugi, Nobuo; Nagaoka, Kazuhiko; and Ito, Toshikaru, 5,648,810, Cl. 347-130.000.

Nagasaki, Sakon: *See*—
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Nagasawa, Toru: *See*—
Yamada, Hideaki; Nagasawa, Toru; Beppu, Teruhiko; Horinouch, Sueharu; and Nishiyama, Makoto, 5,648,256, Cl. 435-232.000.

Nagashima, Toshiaki: *See*—
Omata, Kazuhiko; Nagashima, Toshiaki; and Miyazaki, Kyota, 5,649,270, Cl. 399-262.000.

Nagata, Atsushi, to Toyoda Gosei Co., Ltd. Steering wheel with air bag device. 5,647,610, Cl. 280-731.000.

Nagata, Teruyuki: *See*—
Nishimura, Takeshi; Kamashita, Tomoko; Wada, Masaru; Nagata, Teruyuki; Tanabe, Yoshimitsu; Hasegawa, Kiyoharu; and Nakatsuka, Masakatsu, 5,647,896, Cl. 106-31.180.

Nagatani, Yuji; and Hashimoto, Hiroshi, to Honda Giken Kogyo Kabushiki Kaisha. Automobile multiplex communication wiring structure including shield. 5,648,688, Cl. 307-10.100.

Nagatomi, Toshio: *See*—
Masumoto, Katuhisa; Nagatomi, Toshio; Nakamura, Akihiko; and Yamada, Yoshimi, 5,648,533, Cl. 564-20.000.

Nagaya, Setsuya; Sugawara, Hideo; and Watanabe, Tominaga, to Fujitsu Limited. Amplifying circuit for an integrated circuit with low-noise characteristic. 5,648,743, Cl. 330-252.000.

Nagayama, Yasushi; Kobayashi, Osamu; and Matsumoto, Ikuo, to Victor Company of Japan, Ltd. Magnetic recording medium having a backcoat layer containing carbon black and platelet inorganic powder. 5,648,150, Cl. 428-216.000.

Nagel, Heinz-Dieter, to Inventio AG. Brake regulating apparatus for an elevator car. 5,648,644, Cl. 187-288.000.

Nagori, Vinod: *See*—
Tovey, H. Jonathan; Nagori, Vinod; and Korishch, Marina, 5,647,372, Cl. 128-749.000.

Nagy, Louis Leonard; Martin, Douglas Courtney; and Lewis, Michael Jerome, to General Motors Corporation; and Delco Electronics Corp. Vehicle window with antenna connection apparatus. 5,648,785, Cl. 343-713.000.

Nahamoo, David: *See*—
Ellozy, Hamed A.; Kanevsky, Dimitri; Kim, Michelle Y.; Nahamoo, David; Picheny, Michael Alan; and Zadrozny, Wlodek Wlodzimierz, 5,649,060, Cl. 395-2.870.

Naito, Ichiro: *See*—
Danno, Hirofumi; Naito, Ichiro; and Tsukuda, Gunji, 5,649,180, Cl. 395-601.000.

Naito, Toshihiko; Hata, Katsura; Kaku, Yumiko; Tsuruoka, Akihiko; Tsukada, Itaru; Yanagisawa, Manabu; Toyosawa, Toshio; and Nara, Kazumasa, to Eisai Co., Ltd. Antifungal agents, and compositions. 5,648,372, Cl. 514-383.000.

Naka, Hideyuki; Konishi, Kazuo; and Ooishi, Kazuyuki, to Kabushiki Kaisha Toshiba. Time-base conversion system. 5,648,820, Cl. 348-445.000.

Nakagawa, Kazuo: *See*—
Nakazono, Daisuke; Monoura, Shuji; and Nakagawa, Kazuo, 5,647,535, Cl. 239-7.000.

Nakagawa, Masaki: *See*—
Ueda, Akio; and Nakagawa, Masaki, 5,648,553, Cl. 568-454.000.

Nakagawa, Masayuki: *See*—
Akiba, Masaru; Nakagawa, Masayuki; Tsurufuji, Tomoyoshi; Sunaga, Shunji; and Ito, Koichi, 5,647,162, Cl. 43-24.000.

Nakagawa, Sachiko: *See*—
Ito, Chitoshi; Hirono, Kazuhisa; Niwa, Akihiko; and Nakagawa, Sachiko, 5,647,676, Cl. 400-65.000.

Nakagawa, Takeo; Tsuru, Hideaki; Inaba, Yoshiharu; Taira, Takayuki; and Muranaka, Masaki, to Fanuc, Ltd. Powder molding machine and method for filling molding materials into a die cavity thereof. 5,647,410, Cl. 141-67.000.

Nakagawa, Toshikazu; Ishikawa, Yasushi; Tsushima, Sadao; Yashiro, Masao; and Ohta, Hitoshi, to Nippon Steel Corporation. Metallic honeycomb body for supporting catalyst for automobiles and process for producing the same. 5,648,176, Cl. 428-593.000.

Nakagawa, Yoshiteru: *See*—
Tajiri, Hiroyuki; Nakagawa, Yoshiteru; Iwaya, Yoshiaki; Tanaka, Yoshiharu; Asami, Keiichi; Touma, Katsuyuki; and Okumura, Shinji, 5,648,027, Cl. 264-43.000.

Nakai, Ryusuke: *See*—
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Nakajima, Fumito: *See*—
Kuroda, Hiroshi; Nakajima, Fumito; Nishimura, Masakatsu; Kaku, Hiroyuki; Nozawa, Shigeru; Takamoto, Shigehito; Nakamoto, Takanori; Kikkawa, Hirofumi; Ishizaka, Hiroshi; Katagawa, Atsushi; Kon, Mitsuharu; Yamamoto, Masayuki; and Yoshida, Kunikatsu, 5,648,048, Cl. 422-168.000.

Nakajima, Isao: *See*—
Abe, Tetsuhiko; Kunieda, Shigehiko; Nakajima, Isao; and Utsumi, Yusuke, 5,648,132, Cl. 428-36.900.

Nakajima, Masahiro; Ito, Hiroshi; and Tanaka, Hiroshi, to Japan Vilene Company, Ltd. Cleaning sheet, a cleaning member and a cleaning apparatus for a fuser roll. 5,649,130, Cl. 399-327.000.

Nakajima, Norihiro; Arai, Hiroshi; Harashima, Ichiro; Shinotsuka, Yoshiaki; Ishida, Tomotoshi; Odamura, Motomi; Arai, Shigeru; and Yamada, Takeo, to Hitachi, Ltd. Method and apparatus for pattern data processing. 5,649,081, Cl. 395-130.000.

Nakajima, Shoji: *See*—
Okamoto, Katsuya; Abe, Koichi; and Nakajima, Shoji, 5,648,035, Cl. 264-173.160.

Nakajima, Yuki, to Nissan Motor Co., Ltd. Engine air-fuel ratio controller. 5,647,324, Cl. 123-491.000.

Nakamoto, Takanori: *See*—
Kuroda, Hiroshi; Nakajima, Fumito; Nishimura, Masakatsu; Kaku, Hiroyuki; Nozawa, Shigeru; Takamoto, Shigehito; Nakamoto, Takanori; Kikkawa, Hirofumi; Ishizaka, Hiroshi; Katagawa, Atsushi; Kon, Mitsuharu; Yamamoto, Masayuki; and Yoshida, Kunikatsu, 5,648,048, Cl. 422-168.000.

Nakamura, Akihiko: *See*—
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Nakamura, Hideaki: *See*—
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Nakamura, Hiroshi: *See*—
Yabusaki, Masami; Maruyama, Yasuo; Hirata, Shoichi; Nakamura, Hiroshi; Uchiyama, Yasuyuki; Tsukahara, Hiroshi; and Takemoto, Eriko, 5,649,301, Cl. 455-433.000.

Nakamura, Kouzou: *See*—
Nakamura, Toshiaki; Nakashima, Keisuke; Nakamura, Kouzou; Shinoda, Shinichi; and Inuzuka, Tatsuki, 5,649,031, Cl. 382-254.000.

Nakamura, Shigemi: *See*—
Ohki, Hisatomo; Nakamura, Shigemi; Ishizeki, Kazunori; and Yanagawa, Akira, 5,647,349, Cl. 128-203.150.

Nakamura, Shiro: *See*—
Ohyama, Isao; Nakamura, Shiro; Shimizu, Takeo; Yanagawa, Hisaharu; and Iwata, Hideyuki, 5,649,037, Cl. 385-24.000.

Nakamura, Takeshi, to Murata Manufacturing Co., Ltd. Vibrating gyroscope detecting system. 5,648,608, Cl. 73-504.120.

Nakamura, Tetsuya: *See*—
Matsumoto, Toshiki; Toyao, Tetsuya; Nakamura, Tetsuya; Maehara, Shigeru; Aoki, Hiromasa; Fujita, Tatsuya; Tojo, Senta; Hodaira, Kinji; Matsui, Takeshi; and Fukuda, Yushi, 5,648,050, Cl. 422-180.000.

Nakamura, Toshiaki; Nakashima, Keisuke; Nakamura, Kouzou; Shinoda, Shinichi; and Inuzuka, Tatsuki, to Hitachi, Ltd. Image information processor for producing high-quality output image. 5,649,031, Cl. 382-254.000.

Nakamura, Tsunehiko, to Kyocera Corporation. Non-magnetic ceramics for recording/reproducing heads and method of producing the same. 5,648,303, Cl. 501-87.000.

Nakamura, Yusuke: *See*—
Albertsen, Hans; Anand, Rakesh; Carlson, Mary; Groden, Joanna; Hedge, Philip John; Joslyn, Geoff; Kinzler, Kenneth; Markham, Alexander; Nakamura, Yusuke; Thliveris, Andrew; Vogelstein, Bert; and White, Raymond L., 5,648,212, Cl. 435-6.000.

Nakanishi, Akio: *See*—
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Nakanishi, Koji: *See*—
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Nakanishi, Shinji: *See*—
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Nakanishi, Toshihiro: *See*—
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Nakano, Hirofumi: *See*—
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Nakano, Motoo: *See*—
Iwai, Takashi; and Nakano, Motoo, 5,648,676, Cl. 257-500.000.

Nakano, Shigeru: *See*—
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Nakano, Yoshio: *See*—
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Nakashima, Keisuke: *See*—
Nakamura, Toshiaki; Nakashima, Keisuke; Nakamura, Kouzou; Shinoda, Shinichi; and Inuzuka, Tatsuki, 5,649,031, Cl. 382-254.000.

Nakatani, Munehiro: *See*—
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Nakatsuka, Junji: *See*—
Date, Yoshito; Takeshita, Shoichi; Ohmori, Tetsuro; Nakatsuka, Junji; and Imamura, Yoshio, 5,648,791, Cl. 345-89.000.

Nakatsuka, Masakatsu: *See*—
Nishimura, Takeshi; Kamashita, Tomoko; Wada, Masaru; Nagata, Teruyuki; Tanabe, Yoshimitsu; Hasegawa, Kiyoharu; and Nakatsuka, Masakatsu, 5,647,896, Cl. 106-31.180.

Nakatsuma, Takuji: *See*—
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Nakaya, Seigo: *See*—
Ohashi, Yoshitami; Hirata, Haruhisa; Nakaya, Seigo; Katou, Azusa; Aiba, Yuji; Kokubo, Naomi; Suzuki, Nobuyuki; and Maeda, Makoto, 5,648,455, Cl. 530-300.000.

Nakayama, Hideo: *See*—
Otoma, Hiromi; Ueki, Nobuaki; Fukunaga, Hideki; Nakayama, Hideo; Seko, Yasuji; and Fuse, Mario, 5,648,295, Cl. 437-129.000.

Nakayama, Masaru; Takamatsu, Osamu; Yagi, Takayuki; Yamamoto, Keisuke; Kawasaki, Takehiko; Shimada, Yasuhiro; and Suzuki, Yoshio, to Canon Kabushiki Kaisha. Method of manufacturing cantilever drive mechanism and probe drive mechanism. 5,648,300, Cl. 437-228.000.

Nakazato, Hiroshi: *See*—
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Nakazawa, Tsutomu; and Inoue, Yumi, to Kabushiki Kaisha Toshiba. Resin-sealed semiconductor device and lead frame used in a resin-sealed semiconductor device. 5,648,682, Cl. 257-673.000.

Nakazawa, Yusuke: *See*—
Kato, Eiichi; Osawa, Sadao; and Nakazawa, Yusuke, 5,648,190, Cl. 430-47.000.
Kato, Eiichi; and Nakazawa, Yusuke, 5,648,191, Cl. 430-49.000.

Nakazono, Daisuke; Monoura, Shuji; and Nakagawa, Kazuo, to Honda Giken Kogyo Kabushiki Kaisha. Method of metallic painting. 5,647,535, Cl. 239-7.000.

Nalco Chemical Company: *See*—
Kneller, James F.; Johnson, Donald A.; Narutis, Vytas; and Khambatta, Binaifer S., 5,647,995, Cl. 210-699.000.
Yaghi, Omar M., 5,648,508, Cl. 556-9.000.

Namekata, Minoru; and Murakami, Junzo, to Kabushiki Kaisha Toshiba. Sampling phase synchronizing apparatus and bidirectional maximum likelihood sequence estimation scheme therefore. 5,648,991, Cl. 375-341.000.

Namikawa, Akihito: *See*—
Yoshida, Satohisa; Namikawa, Akihito; Ogura, Kenji; and Enomoto, Masayoshi, 5,647,612, Cl. 285-13.000.

Namikawa, Yuichi: *See*—
Shimazu, Seiki; Yamaga, Kenji; Sakai, Yoshimi; Koyama, Atsushi; and Namikawa, Yuichi, 5,648,105, Cl. 425-139.000.

Namkung, Min: *See*—
Wincheski, Russell A.; Fulton, James P.; Nath, Shridhar C.; Simpson, John W.; and Namkung, Min, 5,648,721, Cl. 324-240.000.

Nanami, Masayoshi, to Sanshin Kogyo Kabushiki Kaisha. Manifold and water trap system for marine engine. 5,647,779, Cl. 440-38.000.

Nandkumar, Srinivas: *See*—
Rothweiler, Joseph Harvey; Carmody, John Charles; and Nandkumar, Srinivas, 5,649,051, Cl. 395-2.310.

Nara, Kazumasa: *See*—
Naito, Toshihiko; Hata, Katsura; Kaku, Yumiko; Tsuruoka, Akihiko; Tsukada, Itaru; Yanagisawa, Manabu; Toyosawa, Toshio; and Nara, Kazumasa, 5,648,372, Cl. 514-383.000.

Narasimhan, Mandayam A.: *See*—
On, Bill Ngoc; and Narasimhan, Mandayam A., 5,649,077, Cl. 395-119.000.

Narayanan, Vinod; Honsinger, Philip S.; and Liu, Lok Tin, to International Business Machines Corporation. Interconnection resource assignment method for differential current switch nets. 5,648,912, Cl. 364-491.000.

Narholm, Roland I. G.; and Stjerna, Per G. L., to ITT Flygt AB. Mixer installation device. 5,647,666, Cl. 366-285.000.

Narita, Shoriki: *See*—
Yamauchi, Hiroshi; Narita, Shoriki; and Hongo, Hideo, 5,648,729, Cl. 324-758.000.

Narukami, Yoshihisa: *See*—
Kawanishi, Toshio; Yokoyama, Shigeki; Ishihara, Katsuro; Narukami, Yoshihisa; Shioyama, Masahiko; Tokushima, Mikiharu; and Ozaki, Toshiya, 5,647,988, Cl. 210-636.000.

Narutis, Vytas: *See*—
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Nash, Burlyn Dean: *See*—

Messuri, Dominic Anthony; and Nash, Burlyn Dean, 5,647,768, Cl. 439-620.000.

Nastech Europe Limited: *See—*
Hancock, Michael Thomas; and Wormall, David Thomas, 5,647,686, Cl. 403-373.000.

Nasterlack, Joachim: *See—*
Fichtner, Karl Heinz; and Nasterlack, Joachim, 5,647,405, Cl. 140-92.100.

Nath, Shridhar C.: *See—*
Wincheski, Russell A.; Fulton, James P.; Nath, Shridhar C.; Simpson, John W.; and Namkung, Min, 5,648,721, Cl. 324-240.000.

Nathan, Margret: *See—*
Hurwitz, David R.; Nathan, Margret; and Shani, Moshe, 5,648,243, Cl. 435-69.600.

National Captioning Institute, Inc.: *See—*
Beadles, Robert L.; and Ball, John E. D., 5,648,789, Cl. 345-8.000.

National Instruments Corporation: *See—*
Hubbard, Evan A., 5,648,918, Cl. 364-571.010.
Kowert, Robert C., 5,649,123, Cl. 395-289.000.
Kowert, Robert C., 5,649,129, Cl. 395-309.000.

National Research Council of Canada: *See—*
Puchala, Ryszard J., 5,647,445, Cl. 175-296.000.

National Science Council: *See—*
Kao, Chin-Hai; and Tang, Horng-Yi, 5,647,116, Cl. 29-599.000.
Yeh, Ching-Fa; and Fan, Tso-Hung, 5,648,128, Cl. 427-601.000.

National Semiconductor Corporation: *See—*
Chillara, Satya; and Mostafazadeh, Shahram, 5,648,679, Cl. 257-666.000.
Ghaffaripour, Parviz; and Ting, Sai L., 5,648,742, Cl. 330-51.000.
Intrater, Gideon; Oz, Oved; and Tsadik, Meir, 5,649,208, Cl. 395-735.000.
Miller, Roger L.; and Regan, Timothy T., 5,648,759, Cl. 340-660.000.
Phillips, Christopher E.; and Nemirovsky, Mario, 5,649,147, Cl. 395-421.040.

Natsuhori, Hiroyuki, to Victor Company of Japan, Ltd. Spatial light modulator having a germanium oxide light shielding layer containing additive material or laminated with SiO_2. 5,648,861, Cl. 349-116.000.

Nauchno-Inzhenerny Tsentr "Infomir": *See—*
Andreev, Alexandr Anatolievich; and Bukovsky, Vyacheslav Evgenievich, 5,647,885, Cl. 71-28.000.

Navarrini, Walter: *See—*
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Navistar International Transportation Corp.: *See—*
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Navy, The United Sates of America as represented by the Secretary of the: *See—*
Dulcey, Charles S.; Koloski, Timothy S.; Dressick, Walter J.; Calvert, Jeffrey M.; and Peek, Brian M., 5,648,201, Cl. 430-324.000.

Nawata, Makoto: *See—*
Tsubaki, Takeshi; Watanabe, Katsuya; Takesue, Hidenori; Sato, Yoshiaki; Kudo, Katsuyoshi; and Nawata, Makoto, 5,647,944, Cl. 156-345.000.

Nawathe, Dilip; and White, Rocky R. Apparatus and process for distributed treatment of wastewater. 5,647,986, Cl. 210-608.000.

NCR Corporation: *See—*
Carleton, Allison A.; FitzPatrick, Catherine M.; Pommier, Theresa M.; and Schwartz, Krista S., 5,649,104, Cl. 395-200.040.

NDD Medizintechnik GmbH: *See—*
Harnoncourt, Karl, 5,647,370, Cl. 128-725.000.

Nebashi, Satoshi: *See—*
Miyazawa, Hiromu; Hoshina, Shoji; Shimokawato, Satoshi; Ichikawa, Masaaki; Ishida, Masaya; Kawase, Takeo; Mikoshiba, Toshiaki; Nebashi, Satoshi; and Shimoda, Tatsuya, 5,648,161, Cl. 428-332.000.

NEC Corporation: *See—*
Anezaki, Akihiro; and Ushijima, Yasutaka, 5,649,227, Cl. 395-800.000.
Hayama, Hiroshi; Uchida, Hiroyuki; and Takechi, Kazushige, 5,648,293, Cl. 437-101.000.
Hayashi, Yoshihiro; Yabe, Kouichi; and Mizuniwa, Tetsuo, 5,647,989, Cl. 210-641.000.
Imai, Kiyotaka, 5,648,279, Cl. 437-31.000.
Ishige, Kiyokazu, 5,648,285, Cl. 437-43.000.
Isida, Masatosi, 5,648,748, Cl. 333-246.000.
Ito, Soichi, 5,648,910, Cl. 364-490.000.
Kaminishizono, Takahiro; and Akimoto, Takeshi, 5,647,912, Cl. 118-719.000.
Kato, Hirosi, 5,648,280, Cl. 437-31.000.
Kondo, Kenji; Kara, Atsushi; and Yonehara, Akifumi, 5,648,966, Cl. 370-245.000.
Konuma, Kazuo, 5,648,667, Cl. 257-233.000.
Makishima, Hideo; Yamada, Keizo; and Imura, Hironori, 5,648,698, Cl. 313-309.000.
Matsushima, Osamu, 5,649,219, Cl. 395-800.000.
Obara, Takashi, 5,648,931, Cl. 365-189.050.
Oyachi, Kenji, 5,647,527, Cl. 228-180.500.
Sakamoto, Michiaki; and Onozawa, Tatsuo, 5,648,828, Cl. 349-110.000.
Spiegel, Ethan; and Murase, Tutomu, 5,649,108, Cl. 395-200.120.
Umetsu, Masakazu; Katagiri, Masami; and Hoshizawa, Yoshihiro, 5,649,209, Cl. 395-739.000.
Yamada, Kazumori; and Matai, Masahiro, 5,649,314, Cl. 455-343.000.
Yamazaki, Takeshi, 5,649,141, Cl. 395-416.000.
Yoshida, Toshio, 5,649,305, Cl. 455-70.000.

Needle Doctor, Inc., The: *See—*
Young, James R.; and Messer, Randy, 5,647,289, Cl. 112-10.000.

Neely, Ronald E.: *See—*
Penswick, Laurence B.; and Neely, Ronald E., 5,647,217, Cl. 62-6.000.

Neeman, Yuval: *See—*
Miller, Arnold; Neeman, Yuval; Contorer, Aaron M.; Misra, Pradyumna K.; Seaman, Michael R. C.; and Ruhin, Darryl E., 5,649,194, Cl. 395-616.000.

Neff, Gregor N. Trellis. 5,647,166, Cl. 47-45.000.

Negele, Michael: *See—*
Krüger, Ralf; Negele, Michael; Lui, Norbert; and Marhold, Albrecht, 5,648,566, Cl. 570-126.000.

Negishi, Kiyoshi: *See—*
Honda, Ryoji; Kita, Masahiro; Negoro, Ikuo; Nishikawa, Tomoyuki; Yano, Takaaki; Yoshida, Tatsuya; Kamasako, Shoji; Sato, Tsutomu; and Negishi, Kiyoshi, 5,649,274, Cl. 399-375.000.

Negoro, Ikuo: *See—*
Honda, Ryoji; Kita, Masahiro; Negoro, Ikuo; Nishikawa, Tomoyuki; Yano, Takaaki; Yoshida, Tatsuya; Kamasako, Shoji; Sato, Tsutomu; and Negishi, Kiyoshi, 5,649,274, Cl. 399-375.000.

Neidorff, Robert Alan, to Unitrode Corporation. Digital to analog converter. 5,648,780, Cl. 341-154.000.

Neifert, Leonard: *See—*
Smart, Michael; Ricker, Mark; and Neifert, Leonard, 5,647,587, Cl. 271-223.000.

Neil, Michele L.: *See—*
Nunez, Ivan M.; Molock, Frank F.; Elliott, Laura D.; Neil, Michele L.; and Ford, James D., 5,648,402, Cl. 523-107.000.

Nelson, Arlin Dale: *See—*
Lampropoulos, Fred P.; Mottola, Jim; Nelson, Arlin Dale; Foote, Jerrold L.; and Roth, Robert, 5,647,859, Cl. 604-264.000.
Roth, Robert; Lampropoulos, Fred P.; Mottola, Jim; Nelson, Arlin Dale; and Foote, Jerrold L., 5,647,860, Cl. 604-264.000.

Nelson, Gregory Wayne; and Nicely, Vincent Alvin, to Eastman Chemical Company. Process for producing polyester articles having low acetaldehyde content. 5,648,032, Cl. 264-101.000.

Nelson, Michael C. Water flow control device for rotary sprinkler. 5,647,541, Cl. 239-590.500.

Nelson, William A.: *See—*
VanWagenen, Bradford C.; Duff, Steven R.; Nelson, William A.; and D'Ambra, Thomas E., 5,648,540, Cl. 564-375.000.

Németh, Attila: *See—*
Pálosi, Endre; Korbonits, Dezso; Molnár née Bakó, Erzsébet; Szvoboda née Kanzel, Ida; Héja, Gergely; Kiss, Pál; Gönczi, Csaba; Sperber, Ferenc; Huszár, Csaba; Mihalovics, György; Németh, Attila; Sütő, Mihály; Gyüre, Károl; Bóné, István; Mórász, Ferenc; Ledniczky, László; Szabó née Kardos, Erzsébet; Györi Péter; Szalay, Erzsébet; Bán, Károly; Buttkai, Ildikó; Kővári, Árpád; and Garaczy, Sándor, 5,648,498, Cl. 548-202.000.

Nemeth, Steve J., Jr.: *See—*
Ritt, Robert T.; Nemeth, Steve J., Jr.; and Roslund, Richard N., Jr., 5,647,638, Cl. 297-411.360.

Nemirovsky, Mario: *See—*
Phillips, Christopher E.; and Nemirovsky, Mario, 5,649,147, Cl. 395-421.040.

Nemoto, Shusuke: *See—*
Okada, Hideaki; and Nemoto, Shusuke, 5,647,249, Cl. 74-606.00R.

NeoRx Corporation: *See—*
Gray, Mary Ann; Axworthy, Don; and Wilkening, David, 5,648,059, Cl. 424-1.490.

Neos Co., Ltd: *See—*
Tanimoto, Fumio; and Yano, Tsuneo, 5,648,499, Cl. 548-316.400.

Nessel, Edward H. Hand propulsion aid for swimmers. 5,647,783, Cl. 441-58.000.

Nestec S.A.: *See—*
Bertrand, Francis-Victor; and Mange, Christian, 5,647,905, Cl. 118-16.000.

Netro Corporation: *See—*
Pasternak, Eliezer; and BenEfraim, Gideon, 5,648,969, Cl. 370-349.000.

Nettles, Robert, to Brenco Leisure Products. Apparatus for retaining pliable material. 5,647,568, Cl. 248-316.200.

Neuberger, Wolfgang; Cecchetti, Walter; and Morello, Carol, to CeramOptec Industries, Inc. Laser assisted device and method for resectoscopes. 5,647,867, Cl. 606-15.000.

Neukermans, Armand P.; and Slater, Timothy G., to Neukermans, Armand P. Micromachined hinge having an integral torsion sensor. 5,648,618, Cl. 73-862.080.

Neumann, William L.: *See—*
Rajagopalan, Raghavan; Neumann, William L.; and Nosco, Dennis L., 5,648,060, Cl. 424-1.650.

Nevin, Monique A. Hemi-wheeled walker. 5,647,602, Cl. 280-87.021.

New England Medical Center Hospitals, Inc.: *See—*
Bianchi, Diana W.; and DeMaria, Mary Ann, 5,648,220, Cl. 435-7.100.

New Holland North America, Inc.: *See—*
Magrini, Sergio, 5,647,247, Cl. 74-471.0XY.

New York Air Brake Corporation: *See—*
Lumbis, Anthony W.; and Stevens, Dale R., 5,647,562, Cl. 246-167.00R.

New York University: *See—*

Levy, David E., 5,648,217, Cl. 435-6.000.
Margolis, Richard U.; Rauch, Uwe; and Margolis, Renee K., 5,648,465, Cl. 530-350.000.

Newcomb Spring Corporation: *See—*
Jacobson, John D., 5,647,240, Cl. 72-135.000.

Newell Operating Company: *See—*
Frysinger, Eric T.; and Pirello, Joe, 5,647,284, Cl. 108-55.100.

Newman, Don E., to Stretch Devices, Inc. Pin registration for screen printing. 5,648,189, Cl. 430-22.000.

Newton, Perry, III: *See—*
Kotani, Hitoshi; Newton, Perry, III; and Zhang, Shuyuan, 5,648,251, Cl. 435-172.300.

nFX Corporation: *See—*
Belfer, Russell; Cheng, Chie-Jin; Librande, Steve; Tam, Va-On; and Zhang, Bin, 5,649,086, Cl. 395-141.000.

Ng, Hendra: *See—*
Dickens, Elmer Douglas, Jr.; Lee, Biing Lin; Taylor, Glenn Alfred; Magistro, Angelo Joseph; Ng, Hendra; McAlea, Kevin P.; and Forderhase, Paul F., 5,648,450, Cl. 528-323.000.

Ng, John S.; Przybyla, Claire A.; Mueller, Richard A.; Vazquez, Michael L.; Getman, Daniel P.; Freskos, John J.; DeCrescenzo, Gary A.; Bertenshaw, Deborah E.; Heintz, Robert M.; Zhang, Suhong; Liu, Chin; and Laneman, Scott A., to G.D. Searle & Co. Method for making intermediates useful in the synthesis of retroviral protease inhibitors. 5,648,511, Cl. 558-345.000.

Ng, Tao Fei S.; Chow, Kong Wing R.; and Lau, Cheuk-Wai C. Cartridge supported karaoke device. 5,648,628, Cl. 84-610.000.

NGK Insulators, Ltd.: *See—*
Abe, Fumio; Hashimoto, Shigeharu; and Ogawa, Masato, 5,647,203, Cl. 60-274.000.
Abe, Fumio; Kondo, Tomoharu; and Noda, Keiji, 5,649,049, Cl. 392-494.000.
Abe, Tetsuhiko; Kunieda, Shigehiko; Nakajima, Isao; and Utsumi, Yusuke, 5,648,132, Cl. 428-36.900.
Terasawa, Yoshio, 5,648,665, Cl. 257-136.000.

Nguyen, Bang C.: *See—*
Russell, Kathleen; Robles, Stuardo; Nguyen, Bang C.; and Sivaramakrishnan, Visweswaren, 5,648,175, Cl. 428-472.300.

Nguyen, Gia Van: *See—*
Sinopoli, Italo Marziale; Helfer, Farrel Bruce; Kim, Dong Kwang; Morgan, John Gomer; Shemenski, Robert Martin; Jeanpierre, Guy; and Nguyen, Gia Van, 5,648,153, Cl. 428-295.100.

Nguyen, Hung Thai, to Whitaker Corporation, The. Modular connector assembly having removable contacts. 5,647,766, Cl. 439-620.000.

N'guyen, Ly Lan: *See—*
De Labbey, Arnaud; and N'guyen, Ly Lan, 5,648,069, Cl. 424-70.200.

Nguyen, Mai T.: *See—*
Weisfield, Richard L.; Kheraj, Nizar S.; and Nguyen, Mai T., 5,648,674, Cl. 257-428.000.

Nguyen Than, Canh; Didillon, Blaise; Sarrazin, Patrick; and Cameron, Charles, to Institut Francais du Petrole. Catalytic hydrogenation process and a catalyst for use in the process. 5,648,576, Cl. 585-260.000.

Nice-Pak Products, Inc.: *See—*
Julius, Robert P., 5,647,506, Cl. 221-46.000.

Nicely, Vincent Alvin: *See—*
Nelson, Gregory Wayne; and Nicely, Vincent Alvin, 5,648,032, Cl. 264-101.000.

Nichols, David A.: *See—*
Theimer, Marvin M.; Nichols, David A.; and Terry, Douglas B., 5,649,099, Cl. 395-187.010.

Nickell, Craig Alan; Durden, Vincent Edwin; and Derby, Norman C., to Super Sack Mfg. Corp. Apparatus for manufacturing baffle liners. 5,647,832, Cl. 493-217.000.

Niehues, Jürgen: *See—*
Stenzel, Otto W.; Sick, Georg; Köhler, Eduard; Möding, Herbert; and Niehues, Jürgen, 5,648,620, Cl. 75-232.000.

Niemi, Hannes; and Hyvönen, Markku, to Instrumentarium Oy. Arrangement in connection with a ventilator. 5,647,352, Cl. 128-204.280.

Nieuwlandt, Dan T.; Gold, Larry; and Wecker, Matthew, to University Research Corporation. High-affinity oligonucleotide ligands to the tachykinin substance P. 5,648,214, Cl. 435-6.000.

Nifco, Incorporated: *See—*
Kaneko, Yoshio, 5,647,498, Cl. 220-263.000.

Nigbur, Mark R. Limb protector. 5,647,062, Cl. 2-16.000.

Nikki Chemical Co., Ltd.: *See—*
Sugo, Takanobu; Tanaka, Satoshi; and Tsutsui, Tsuyoshi, 5,648,400, Cl. 521-30.000.

Nikolaides, Nick; and Gerster, John F., to Minnesota Mining and Manufacturing Company. Fused cycloalkylimidazopyridines. 5,648,516, Cl. 560-125.000.

Nikon Corporation: *See—*
Hibino, Hideo; Okutsu, Hisashi; Yokonuma, Norikazu; and Kazami, Kazuyuki, 5,649,246, Cl. 396-310.000.
Ikoh, Chikaya, 5,648,869, Cl. 359-368.000.
Inoue, Yoshiharu; and Uematsu, Kimio, 5,649,245, Cl. 396-291.000.
Matsuzaki, Makoto; and Inoue, Yoshiharu, 5,649,243, Cl. 396-233.000.
McCoy, John H.; and Suwa, Kyochi, 5,648,854, Cl. 356-399.000.
Okazaki, Mitsuhiro, 5,649,237, Cl. 396-55.000.
Saegusa, Takashi, 5,649,240, Cl. 396-124.000.
Sato, Shigemasa; Moro, Ken; and Kawahata, Nobuya, 5,649,244, Cl. 396-287.000.
Suga, Takayuki, 5,648,221, Cl. 435-7.210.
Takahashi, Tsugio; Aoki, Hitoshi; Imura, Yoshio; Miyamoto, Hidenori; Tsukahara, Daiki; Kotani, Noriyasu; Inoue, Hideya; and Nagai, Jun, 5,649,252, Cl. 396-389.000.
Tanioka, Hiroshi, 5,648,876, Cl. 359-701.000.
Wakabayashi, Hiroshi; Terunuma, Hiroshi; Tsukahara, Daiki; and Iijima, Shuji, 5,649,238, Cl. 396-61.000.
Watanabe, Toshimi, 5,649,241, Cl. 396-153.000.

Nikon Precision, Inc.: *See—*
Aiyer, Arun A., 5,648,848, Cl. 356-351.000.

Niles Parts Co., Ltd.: *See—*
Hirai, Hideo, 5,647,478, Cl. 200-303.000.

Nippon Celiot Company, Ltd.: *See—*
Suzuki, Tadaoki, 5,649,317, Cl. 455-345.000.

Nippon Kayaku Kabushiki Kaisha: *See—*
Ohtsuki, Kazuo; Mitsunobu, Akikazu; Imaizumi, Yoshihiro; Honda, Nobuyoshi; and Inoue, Satoshi, 5,648,507, Cl. 552-615.000.

Nippon Paint Co., Ltd.: *See—*
Fushimi, Akira; Miyazoe, Seigo; Yamada, Atsushi; and Okude, Yoshitaka, 5,648,417, Cl. 524-513.000.
Shiomi, Yasushi; Uenaka, Akimitsu; and Tsutsui, Koichi, 5,648,117, Cl. 427-195.000.

Nippon Paper Industries Co., Ltd.: *See—*
Hoshino, Mitsuhide; Umeda, Yasushi; and Takano, Masahide, 5,647,935, Cl. 156-231.000.

Nippon Petrochemicals Company, Limited: *See—*
Kubo, Kunimichi; Niwa, Masahiro; Kobayashi, Eiko; and Yoshikawa, Mamoru, 5,648,581, Cl. 585-501.000.

Nippon Petroleum Refining Company Limited: *See—*
Kawamura, Akira; Suzuki, Susumu; and Imamura, Masahumi, 5,647,971, Cl. 208-33.000.

Nippon Soken, Inc.: *See—*
Enomoto, Shigeiku; and Gotoh, Moriyasu, 5,647,327, Cl. 123-502.000.

Nippon Steel Corporation: *See—*
Kawana, Akifumi; Oba, Hiroshi; Ochiai, Ikuo; and Nishida, Seiki, 5,647,918, Cl. 148-320.000.
Masahashi, Naoya; Mizuhara, Youji; and Matsuo, Munetsugu, 5,648,045, Cl. 420-418.000.
Matsumoto, Hiroshige; Takahashi, Makoto; and Kuroda, Hitoshi, 5,647,288, Cl. 110-228.000.
Morita, Mitsuru; Miyamoto, Katsuyoshi; Sawano, Kiyoshi; and Matsuda, Shouichi, 5,648,319, Cl. 505-230.000.
Nakagawa, Toshikazu; Ishikawa, Yasushi; Tsushima, Sadao; Yashiro, Masao; and Ohta, Hitoshi, 5,648,176, Cl. 428-593.000.
Yasuda, Hiroyasu, 5,648,673, Cl. 257-382.000.

Nippon Telegraph and Telephone Corporation: *See—*
Ohyama, Isao; Nakamura, Shiro; Shimizu, Takeo; Yanagawa, Hisaharu; and Iwata, Hideyuki, 5,649,037, Cl. 385-24.000.

Nippon Telephone & Telegraph Corp.: *See—*
Hirabayashi, Katsuhiko; Yamamoto, Tsuyoshi; Yamaguchi, Masayasu; and Yamazaki, Hirofumi, 5,648,859, Cl. 349-9.000.

Nippon Thompson Co., Ltd.: *See—*
Takei, Seiji, 5,647,245, Cl. 74-424.80B.
Takei, Seiji, 5,648,691, Cl. 310-12.000.

Nippon Wiperblade Co., Ltd.: *See—*
Arai, Masaru, 5,647,087, Cl. 15-250.460.

Nippon Zoki Pharmaceutical Co., Ltd.: *See—*
Nishikawa, Katsumi; and Kawakubo, Hitoshi, 5,648,228, Cl. 435-13.000.

Nippondenso Co., Ltd.: *See—*
Ando, Hiroshi; Kimura, Teiyuu; Sugiura, Minako; and Ichikawa, Yoshikatsu, 5,648,857, Cl. 359-12.000.
Matsumoto, Toshiki; Toyao, Tetsuya; Nakamura, Tetsuya; Maehara, Shigeru; Aoki, Hiromasa; Fujita, Tatsuya; Tojo, Senta; Hodaira, Kinji; Matsui, Takeshi; and Fukuda, Yushi, 5,648,050, Cl. 422-180.000.
Yamamoto, Takahiko; Mori, Hiroshi; Tanaka, Masakazu; Saito, Makoto; and Mabuchi, Mamoru, 5,647,206, Cl. 60-297.000.
Yoshida, Satohisa; Namikawa, Akihito; Ogura, Kenji; and Enomoto, Masayoshi, 5,647,612, Cl. 285-13.000.

Niro A/S: *See—*
Andersen, Poul Rasmus; and Hansen, Ove Emil, 5,647,142, Cl. 34-373.000.
Liborius, Erik, 5,648,118, Cl. 427-213.000.

Nishida, Koji: *See—*
Miwa, Chiyo; Sano, Hironari; Nishida, Koji; and Kurasawa, Yoshihiro, 5,648,424, Cl. 525-92.00D.

Nishida, Seiki: *See—*
Kawana, Akifumi; Oba, Hiroshi; Ochiai, Ikuo; and Nishida, Seiki, 5,647,918, Cl. 148-320.000.

Nishihira, Keigo: *See—*
Harada, Katsumasa; Imbe, Yoichi; Nishihira, Keigo; Tanaka, Shuji; Fujitsu, Satoru; Sugise, Ryoji; Kashiwagi, Koichi; and Sumida, Toshihiko, 5,648,510, Cl. 558-274.000.

Nishikawa, Katsumi; and Kawakubo, Hitoshi, to Nippon Zoki Pharmaceutical Co., Ltd. Measuring activity toward production of activated blood coagulation factor XII, plasma kallikrein or bradykinin using reconstituted kallikrein-kinin system. 5,648,228, Cl. 435-13.000.

Nishikawa, Tomoyuki: *See—*
Honda, Ryoji; Kita, Masahiro; Negoro, Ikuo; Nishikawa, Tomoyuki; Yano, Takaaki; Yoshida, Tatsuya; Kamasako, Shoji; Sato, Tsutomu; and Negishi, Kiyoshi, 5,649,274, Cl. 399-375.000.

Nishimura, Masakatsu: *See—*

Kuroda, Hiroshi; Nakajima, Fumito; Nishimura, Masakatsu; Kaku, Hiroyuki; Nozawa, Shigeru; Takamoto, Shigehito; Nakamoto, Takanori; Kikkawa, Hirofumi; Ishizaka, Hiroshi; Katagawa, Atsushi; Kon, Mitsuharu; Yamamoto, Masayuki; and Yoshida, Kunikatsu, 5,648,048, Cl. 422-168.000.

Nishimura, Takeshi; Kamashita, Tomoko; Wada, Masaru; Nagata, Teruyuki; Tanabe, Yoshimitsu; Hasegawa, Kiyoharu; and Nakatsuka, Masakatsu, to Mitsui Toatsu Chemicals, Inc. Color-developing agents and color-developing sheets. 5,647,896, Cl. 106-31.180.

Nishino, Seiji: *See*—
Kato, Makoto; Komma, Yoshiaki; Kadowaki, Shin-ichi; Hori, Yoshikazu; Nishino, Seiji; and Saimi, Tetsuo, 5,648,951, Cl. 369-112.000.

Nishioka, Koichi; Fujiwara, Hideo; and Iseki, Takayuki, to Hitachi, Ltd.; Victor Company of Japan, Ltd.; and University of Alabama. Giant magnetoresistive effect sensor, particularly having a multilayered magnetic thin film layer. 5,648,885, Cl. 360-113.000.

Nishioka, Takao: *See*—
Izumida, Hiromu; Murabe, Kaoru; Nishioka, Takao; Yamakawa, Akira; and Matsunuma, Kenji, 5,647,313, Cl. 123-90.510.

Nishioka, Yutaka: *See*—
Kawaguchi, Yoshihiro; Ohno, Masayuki; Nishioka, Yutaka; In, Michinobu; Kakinchi, Hiroyuki; and Iwamoto, Shozo, 5,647,220, Cl. 62-89.000.

Nishiyama, Makoto: *See*—
Yamada, Hideaki; Nagasawa, Toru; Beppu, Teruhiko; Horinouch, Sueharu; and Nishiyama, Makoto, 5,648,256, Cl. 435-232.000.

Nishizaka, Koichi; Higashi, Akihiko; and Mukai, Jun, to Toyota Jidosha Kabushiki Kaisha. Method of generating or modifying solid model of an object according to cross-sectional shapes and a predetermined relationship and apparatus suitable for practicing the method. 5,649,076, Cl. 395-119.000.

Nissan Motor Co., Ltd.: *See*—
Kato, Masahiko; Matsuzaki, Hiroshi; and Adachi, Tadashi, 5,648,852, Cl. 356-375.000.
Kimura, Satoshi, 5,647,310, Cl. 123-90.600.
Michioka, Hirofumi; Yamamoto, Masahiro; Hayasaki, Koichi; and Mikoshiba, Yoshinori, 5,647,816, Cl. 475-285.000.
Nakajima, Yuki, 5,647,324, Cl. 123-491.000.
Satoh, Shigeki, 5,647,579, Cl. 267-140.140.
Yagihashi, Wataru, 5,648,755, Cl. 340-439.000.

Nissei ASB Machine Co., Ltd.: *See*—
Orimoto, Hiroyuki; and Okuda, Yoji, 5,647,495, Cl. 215-42.000.
Suzuki, Saburo; Orimoto, Hiroyuki; and Amari, Fumiya, 5,648,133, Cl. 428-36.920.

Nissei Plastic Industrial Co., Ltd.: *See*—
Miyairi, Kazuki; and Iijima, Akira, 5,648,106, Cl. 425-186.000.

Nisshin Steel Co., Ltd.: *See*—
Fukui, Yasushi; Matsuno, Masanori; Tanaka, Hiroshi; Miono, Tadaaki; Sakamoto, Kazushi; Ariyoshi, Yasumi; and Saito, Minoru, 5,648,177, Cl. 428-610.000.

Nitta, Tsuneo, to Kabushiki Kaisha Toshiba. Speech recognition system and method which permits a speaker's utterance to be recognized using a hidden markov model with subsequent calculation reduction. 5,649,056, Cl. 395-2.650.

Nitto Chemical Industry Co., Ltd.: *See*—
Yamada, Hideaki; Nagasawa, Toru; Beppu, Teruhiko; Horinouch, Sueharu; and Nishiyama, Makoto, 5,648,256, Cl. 435-232.000.

Nitto Denko Corporation: *See*—
Obara, Tomomi; Hachisuka, Hisao; Xu, Ping; Shimazu, Akira; and Ikeda, Kenichi, 5,647,894, Cl. 96-13.000.

Niwa, Akihiko: *See*—
Ito, Chitoshi; Hirono, Kazuhisa; Niwa, Akihiko; and Nakagawa, Sachiko, 5,647,676, Cl. 400-65.000.

Niwa, Masahiro: *See*—
Kubo, Kunimichi; Niwa, Masahiro; Kobayashi, Eiko; and Yoshikawa, Mamoru, 5,648,581, Cl. 585-501.000.

Niwa, Mineo; Saito, Yoshimasa; Sasaki, Hitoshi; Hayashi, Masako; Notani, Jouji; and Kobayashi, Masakazu, to Fujisawa Pharmaceutical Co., Ltd. Tissue plasminogen activator. 5,648,250, Cl. 435-172.300.

Noble, Ryun Bates. Wheel hub. 5,647,643, Cl. 301-110.500.

Nobori, Masakatsu, to Totaku Industries, Inc. Reinforcing-thread-buried resin pipe. 5,647,401, Cl. 138-126.000.

Noda, Keiji: *See*—
Abe, Fumio; Kondo, Tomoharu; and Noda, Keiji, 5,649,049, Cl. 392-494.000.

Noga Engineering Ltd.: *See*—
Hirsch, Naftali, 5,647,131, Cl. 30-317.000.

Noise Cancellation Technologies, Inc.: *See*—
Gifford, Carl S.; Jones, Owen; and Trinder, Michael Charles John, 5,649,018, Cl. 381-71.140.

Nojima, Takashi: *See*—
Yanagi, Haruyuki; Taniishi, Shinnosuke; Suzuki, Tetsuo; Asano, Junichi; Hiramatsu, Soichi; Nojima, Takashi; and Saikawa, Satoshi, 5,648,808, Cl. 347-104.000.

Nojima, Tetsuo, to Suzuki Kabushiki Kaisha. Vacuum response type carburetor. 5,648,023, Cl. 261-44.400.

Nokia Mobile Phones Ltd.: *See*—
Hakkarainen, Kalle, 5,648,711, Cl. 320-2.000.
Korhonen, Veijo; and Ojanperä, Tero, 5,649,320, Cl. 455-196.100.

Nokia Telecommunications OY: *See*—
Pirinen, Mirja, 5,648,962, Cl. 370-338.000.

Nöltge, Thomas: *See*—
Kastrup, Eberhard; Nöltge, Thomas; and Meacci, Giorgio, 5,647,290, Cl. 112-66.000.

Nomura, Keiichi; Endo, Hirofumi; Ii, Yasuhiro; Ogasawara, Yuko; Kawai, Mitsuhiro; Onoue, Yasuyoshi; Kurita, Masahiro; Imai, Akira; and Takeuchi, Mitsuaki, to Ricoh Company, Ltd. Electronic filing apparatus which allows information to be retrieved based on a box, a date, or a card associated with the information. 5,649,188, Cl. 395-611.000.

Nomura, Satoru: *See*—
Itoh, Naoto; Nagai, Yoshihisa; and Nomura, Satoru, 5,648,948, Cl. 369-48.000.

Nonaka, Hiromi: *See*—
Fujiwara, Shigeki; Machii, Daisuke; Takai, Haruki; Nonaka, Hiromi; Kase, Hiroshi; Yao, Kozo; Kawakage, Michiyo; Kusaka, Hideaki; and Karasawa, Akira, 5,648,353, Cl. 514-248.000.

Nophar, Yaron: *See*—
Zurr, Daniel; Grossman, Zehava; and Nophar, Yaron, 5,648,235, Cl. 435-69.100.

Noranda Inc.: *See*—
Mavropoulos, Triantafyllos; Jiao, Quingxian; Celik, Cesur; and McClelland, Bill, 5,648,043, Cl. 266-259.000.

Norbeck, Daniel W.: *See*—
Kempf, Dale J.; Norbeck, Daniel W.; Codacovi, Lynn M.; Sham, Hing L.; and Wittenberger, Steven J., 5,648,497, Cl. 548-204.000.

Nordica S.p.A.: *See*—
Romanato, Mariarosa; and Perotto, Riccardo, 5,647,150, Cl. 36-117.100.

Noristi, Luciano: *See*—
Collina, Gianni; Dall'Occo, Tiziano; Galimberti, Maurizio; Albizzati, Enrico; and Noristi, Luciano, 5,648,422, Cl. 525-52.000.

Noritsu Koki Co., Ltd.: *See*—
Kojima, Masayuki, 5,649,263, Cl. 396-612.000.
Tamai, Masayuki, 5,648,837, Cl. 355-72.000.

Norman, Lars: *See*—
Härdig, Lars; and Norman, Lars, 5,647,301, Cl. 119-217.000.

Normile, James Oliver; and Wang, Katherine Shu-Wei, to Apple Computer, Inc. Vector quantization. 5,649,030, Cl. 382-253.000.

Norris, Christopher S.: *See*—
Sethi, Rakesh Balraj; Norris, Christopher S.; and Hu, Genda J., 5,648,669, Cl. 257-318.000.

Norseman Marine Products, Inc.: *See*—
Hansen, William M., 5,647,297, Cl. 114-283.000.

Norsworthy, Steven Robert: *See*—
Bays, Laurence Edward; Muscavage, Richard; and Norsworthy, Steven Robert, 5,648,777, Cl. 341-110.000.

North American Capital L.L.C.: *See*—
Emigh, Jonathan D.; Porter, Raymond P.; and Qutub, Motaz M., 5,647,583, Cl. 270-52.040.

North American Plastic Manufacturing Company: *See*—
Laperriere, Robert E.; Lequeux, Michel Louis Armand G.; and Price, Richard W., 5,647,118, Cl. 29-715.000.

North American Scientific: *See*—
Cutrer, L. Michael, 5,647,374, Cl. 128-749.000.

Northern Telecom Limited: *See*—
Lynch, John Cornelius; Rikley, Tod Allen; Tarle, Peter; Ward, David; Valentik, Metodej; and Cyr, André Michael, 5,649,005, Cl. 379-242.000.

Northrop Grumman Corporation: *See*—
Johnson, Darren; Baldwin, Jeffrey; Eddy, Maxson; and Stogner, Patrick, 5,648,897, Cl. 364-188.000.
Stoll, Harold M., 5,648,856, Cl. 359-7.000.

Northwest International Development Corporation: *See*—
Anderson, Ronald A., 5,647,160, Cl. 43-10.000.

Northwestern University: *See*—
Letsinger, Robert L.; and Gryaznov, Sergei M., 5,648,480, Cl. 536-25.340.

Nosco, Dennis L.: *See*—
Rajagopalan, Raghavan; Neumann, William L.; and Nosco, Dennis L., 5,648,060, Cl. 424-1.650.

Nose, Shinji; and Enoki, Masahiko, to Fujitsu Ten Limited. Apparatus for remotely controlling a door locking state and theft prevention alarm state of an automobile. 5,648,764, Cl. 340-825.320.

Notani, Hiromi: *See*—
Kondoh, Harufusa; Yamanaka, Hideaki; Ishiwaki, Masahiko; and Notani, Hiromi, 5,649,119, Cl. 395-250.000.

Notani, Jouji: *See*—
Niwa, Mineo; Saito, Yoshimasa; Sasaki, Hitoshi; Hayashi, Masako; Notani, Jouji; and Kobayashi, Masakazu, 5,648,250, Cl. 435-172.300.

Novick, Michael A.; and Dufour, Charles H., to Heidelberg Harris Inc.; and Heidelberger Druckmaschinen AG. Method and apparatus for decelerating a flat product. 5,647,586, Cl. 271-182.000.

Novo Nordisk A/S: *See*—
Damhus, Ture; Kirk, Ole; Pedersen, Gitte; Venegas, Manuel Garcia; Christensen, Bjoorn Eggert; and Schneider, Palle, 5,648,262, Cl. 435-263.000.
Schülein, Martin; and Levring, Kirsten Boegh, 5,648,263, Cl. 435-263.000.

Novotny, Pavel, to Evans Medical Limited. Antigenic preparations and isolation of such preparations. 5,648,080, Cl. 424-254.100.

Nozawa, Shigeru: *See*—

Kuroda, Hiroshi; Nakajima, Fumito; Nishimura, Masakatsu; Kaku, Hiroyuki; Nozawa, Shigeru; Takamoto, Shigehito; Nakamoto, Takanori; Kikkawa, Hirofumi; Ishizaka, Hiroshi; Katagawa, Atsushi; Kon, Mitsuharu; Yamamoto, Masayuki; and Yoshida, Kunikatsu, 5,648,048, Cl. 422-168.000.

NPS Pharmaceuticals, Inc.: *See*—
VanWagenen, Bradford C.; Duff, Steven R.; Nelson, William A.; and D'Ambra, Thomas E., 5,648,540, Cl. 564-375.000.
VanWagenen, Bradford C.; and Barmore, Robert M., 5,648,541, Cl. 564-375.000.

NSK-Warner K.K.: *See*—
Umezawa, Shigeki, 5,647,466, Cl. 192-70.140.

NTN Corporation: *See*—
Ohashi, Izumi; and Yamashita, Atsushi, 5,647,674, Cl. 384-580.000.

NTT Mobile Communications Network, Inc.: *See*—
Yabusaki, Masami; Maruyama, Yasuo; Hirata, Shoichi; Nakamura, Hiroshi; Uchiyama, Yasuyuki; Tsukahara, Hiroshi; and Takemoto, Eriko, 5,649,301, Cl. 455-433.000.

Nuding, Erich: *See*—
Höhne, Hubertus; Demmig, Albrecht; and Nuding, Erich, 5,647,280, Cl. 104-124.000.

Numata, Yuichi: *See*—
Sato, Toshihiro; Hayata, Hiroko; Numata, Yuichi; Kaitoh, Takuo; Ishikawa, Jun; and Shimomura, Shigeo, 5,648,792, Cl. 345-92.000.

Nunes, Raul Victorino: *See*—
Yang, David Kee; Heisey, Matthew Thomas; and Nunes, Raul Victorino, 5,648,112, Cl. 426-580.000.

Nunez, Ivan M.; Molock, Frank F.; Elliott, Laura D.; Neil, Michele L.; and Ford, James D. Contact lenses from highly permeable siloxane polyol material. 5,648,402, Cl. 523-107.000.

Nuninger, Cosima; Goggin, John Edward Nicholas; and Sozzi, Dino, to Ciba-Geigy Corporation. Compositions and methods of combatting fungi. 5,648,383, Cl. 514-491.000.

Nuova Roj Electrotex S.r.l.: *See*—
Maina, Bruno; and Bertolone, Roberto, 5,647,404, Cl. 139-452.000.

Nutter, William L.: *See*—
Brady, Robert H.; Zielski, David; Nutter, William L.; and Marra, Alexander J., 5,649,002, Cl. 379-142.000.

Nuwayser, Elie S., to Biotek, Inc. Calcium mineral-based microparticles and method for the production thereof. 5,648,097, Cl. 424-489.000.

Nyberg, Leif; Nyberg, Peter; and Robertsson, Bengt-Olov. Method and a device for improving combustion processes. 5,647,304, Cl. 123-1.00A.

Nyberg, Peter: *See*—
Nyberg, Leif; Nyberg, Peter; and Robertsson, Bengt-Olov, 5,647,304, Cl. 123-1.00A.

Nycomed Imaging AS: *See*—
Klaveness, Jo; Rongveo, Pål; and Stubberud, Lars, 5,648,062, Cl. 424-9.340.

Nywlt, Martin: *See*—
Bergfeld, Manfred; and Nywlt, Martin, 5,648,546, Cl. 564-485.000.

Oakley, Inc.: *See*—
Houston, Malcolm Neal; Jannard, James H.; and Reyes, Carlos D., 5,648,832, Cl. 351-159.000.

Oba, Hiroshi: *See*—
Kawana, Akifumi; Oba, Hiroshi; Ochiai, Ikuo; and Nishida, Seiki, 5,647,918, Cl. 148-320.000.

Obara, Takashi, to NEC Corporation. High speed synchronous logic data latch apparatus. 5,648,931, Cl. 365-189.050.

Object Design, Inc.: *See*—
Weinreb, Daniel L.; and Haradhvala, Sam J., 5,649,139, Cl. 395-412.000.

O'Brien, Michael Joseph; Bryant, Robert Cooper; and Colleluori, Richard Alexander, to Eastman Kodak Company. Multi-lamp flash wheel and camera. 5,649,242, Cl. 396-191.000.

OCG Microelectronic Materials, Inc.: *See*—
Honda, Kenji; Perry, Donald F.; and Maw, Taishih, 5,648,324, Cl. 510-176.000.

Ochi, Norihiro: *See*—
Koyama, Kazuya; Ochi, Norihiro; Tsurui, Kohji; and Yoshimura, Hisashi, 5,648,803, Cl. 347-30.000.

Ochiai, Ikuo: *See*—
Kawana, Akifumi; Oba, Hiroshi; Ochiai, Ikuo; and Nishida, Seiki, 5,647,918, Cl. 148-320.000.

O'Connell, Robert M.: *See*—
Gunderman, Anthony J.; Moir, David; and O'Connell, Robert M., 5,647,941, Cl. 156-277.000.

O'Connor, Roger J.; and Knittle, Robert C., to Hughes Aircraft. Transponder detection system and method. 5,648,767, Cl. 340-928.000.

Octapharma AG: *See*—
Gehringer, Werner; and Selosse, Patrick, 5,648,472, Cl. 530-412.000.

Oda, Toshio: *See*—
Tamura, Hiroshi; Tanaka, Shigenori; Aketagawa, Jun; and Oda, Toshio, 5,648,230, Cl. 435-18.000.

Odagawa, Kenji; and Watanabe, Hiroshi, to Mitsui Petrochemical Industries, Ltd. Process for producing and amorphous alloy resin. 5,647,921, Cl. 148-561.000.

Odamura, Motomi: *See*—
Nakajima, Norihiro; Arai, Hiroshi; Harashima, Ichiro; Shinotsuka, Yoshiaki; Ishida, Tomotoshi; Odamura, Motomi; Arai, Shigeru; and Yamada, Takeo, 5,649,081, Cl. 395-130.000.

Odebrecht, Wolfgang: *See*—
Kelz, Michael; and Odebrecht, Wolfgang, 5,647,534, Cl. 237-12.30B.

Odom, James Martin, to Bio-Technical Resources. Anthraquinone inhibition of methane production in a ruminant animal. 5,648,258, Cl. 435-252.100.

Ofner, Peter: *See*—
Gantner, Gebhard; Dengg, Franz; Ofner, Peter; and Münzenberger, Herbert, 5,647,563, Cl. 248-74.100.

Ogasawara, Yuko: *See*—
Nomura, Keiichi; Endo, Hirofumi; Ii, Yasuhiro; Ogasawara, Yuko; Kawai, Mitsuhiro; Onoue, Yasuyoshi; Kurita, Masahiro; Imai, Akira; and Takeuchi, Mitsuaki, 5,649,188, Cl. 395-611.000.

Ogata, Masaharu: *See*—
Yasuda, Akira; Takayama, Hideaki; and Ogata, Masaharu, 5,647,274, Cl. 101-126.000.

Ogata, Yukihiko; and Nakatsuma, Takuji, to Canon Kabushiki Kaisha. Communication apparatus providing improved information on the states of data channels. 5,648,971, Cl. 370-421.000.

Ogawa, Junji; and Takita, Masato, to Fujitsu Limited. Lead-on-chip semiconductor device. 5,648,680, Cl. 257-666.000.

Ogawa, Katsutoshi: *See*—
Koshino, Toshiharu; Hayashi, Kazumasa; Komakine, Hiroshi; Asakura, Kenji; and Ogawa, Katsutoshi, 5,648,839, Cl. 399-271.000.

Ogawa, Masao; Sako, Hiroyuki; Kawaguchi, Kenji; and Toriyama, Masayuki, to Honda Giken Kogyo Kabushiki Kaisha. Cooling system included in a battery charger for an electric vehicle. 5,647,450, Cl. 180-220.000.

Ogawa, Masato: *See*—
Abe, Fumio; Hashimoto, Shigeharu; and Ogawa, Masato, 5,647,203, Cl. 60-274.000.

Ogawa, Tohru; and Gocho, Tetsuo, to Sony Corporation. Method of forming a photoresist pattern using an anti-reflective. 5,648,202, Cl. 430-325.000.

Ogot, Rolando B.; and Gaspar, Mark, to Patriot Scientific Corporation. Penetrating microwave radar ground plane antenna. 5,648,787, Cl. 343-826.000.

Ogura, Kenji: *See*—
Yoshida, Satohisa; Namikawa, Akihito; Ogura, Kenji; and Enomoto, Masayoshi, 5,647,612, Cl. 285-13.000.

Ogura, Tetsuyoshi: *See*—
Taguchi, Yutaka; Eda, Kazuo; Kanaboshi, Akihiro; Ogura, Tetsuyoshi; and Tomita, Yoshihiro, 5,647,932, Cl. 156-154.000.

Oguro, Keisuke: *See*—
Yasuda, Kazuaki; Mizuhata, Minoru; Oguro, Keisuke; and Takenaka, Hiroyasu, 5,648,307, Cl. 502-101.000.

Ohara, Tomomi; Hachisuka, Hisao; Xu, Ping; Shimazu, Akira; and Ikeda, Kenichi, to Nitto Denko Corporation. Gas separating composite membrane and process for producing the same. 5,647,894, Cl. 96-13.000.

Oharu, Kazuya; Seki, Ryuji; and Kumai, Seisaku, to Asahi Glass Company Ltd. Method for producing a hydrofluorocarbon. 5,648,568, Cl. 570-176.000.

Oharu, Kazuya: *See*—
Kitamura, Kenroh; Ikehata, Michino; Tsuzaki, Masaaki; and Oharu, Kazuya, 5,648,325, Cl. 510-177.000.

Ohashi, Izumi; and Yamashita, Atsushi, to NTN Corporation. Retainer for needle roller bearing. 5,647,674, Cl. 384-580.000.

Ohashi, Naohito; Fujiwara, Norio; and Ueda, Yutaka, to Sumitomo Pharmaceuticals Company, Limited. Tumor necrosis factor production inhibitors. 5,648,359, Cl. 514-279.000.

Ohashi Technica, Inc.: *See*—
Yokoyama, Michihiro, 5,647,125, Cl. 29-893.340.

Ohashi, Yoshitami; Hirata, Haruhisa; Nakaya, Seigo; Katou, Azusa; Aiba, Yuji; Kokubo, Naomi; Suzuki, Nobuyuki; and Maeda, Makoto, to Wakamoto Pharmaceutical Co., Ltd. Antibiotic WAP-8294A, method for preparing the same and antibacterial composition. 5,648,455, Cl. 530-300.000.

Ohata, Yuji: *See*—
Tokui, Kenji; Matsubayashi, Yoshiteru; Yoshikawa, Masashi; Oshita, Jyunji; and Ohata, Yuji, 5,648,155, Cl. 428-323.000.

Ohio Machinery Co.: *See*—
Conner, Edward L., 5,647,545, Cl. 241-79.000.

Ohizumi, Mitsutoshi: *See*—
Sampei, Hiroshi; Hosoya, Kouichi; Katoh, Kenji; Sato, Masashi; Ohizumi, Mitsutoshi; Seno, Koichi; Komatsu, Hisateru; Watanabe, Takashi; Konno, Makoto; and Shibata, Akira, 5,648,883, Cl. 360-106.000.

Ohkawa, Kouhei: *See*—
Oishi, Tetsuya; Suzuki, Jin; Ohkawa, Kouhei; and Ono, Hiroshi, 5,648,446, Cl. 528-60.000.

Ohki, Hisatomo; Nakamura, Shigemi; Ishizeki, Kazunori; and Yanagawa, Akira, to Unisia Jecs Corporation; and Dott Limited Company. Medicine administering inhaling device. 5,647,349, Cl. 128-203.150.

Ohkubo, Masashi; and Machida, Hideo, to Zexel Corporation. Fault compensation method and fault compensation apparatus for air conditioner. 5,647,794, Cl. 454-121.000.

Ohmori, Kiyoshi; Watanabe, Tetsu; Seo, Katsuhiro; and Kudo, Junichi, to Sony Corporation. Recording/reproducing apparatus that utilizes the servo clock signals to form read and write clock signals with different frequencies. 5,648,944, Cl. 369-13.000.

Ohmori, Tetsuro: *See*—
Date, Yoshito; Takeshita, Shoichi; Ohmori, Tetsuro; Nakatsuka, Junji; and Imamura, Yoshio, 5,648,791, Cl. 345-89.000.

Ohnaka, Katsufumi: *See*—
Yokogawa, Miyuki; Yamamura, Naoya; Kamon, Hidetomo; Tanaka, Kiyotaka; Hashimoto, Yoshiyuki; Ohnaka, Katsufumi; Matsuzaki, Noriaki; and Asahara, Takahiro, 5,647,717, Cl. 414-273.000.

Ohno, Masayuki: *See*—
Kawaguchi, Yoshihiro; Ohno, Masayuki; Nishioka, Yutaka; In, Michinobu; Kakiuchi, Hiroyuki; and Iwamoto, Shozo, 5,647,220, Cl. 62-89.000.
Ohran, Michael R.: *See*—
Ohran, Richard S.; and Ohran, Michael R., 5,649,152, Cl. 395-441.000.
Ohran, Richard S.; and Ohran, Michael R., to Vinca Corporation. Method and system for providing a static snapshot of data stored on a mass storage system. 5,649,152, Cl. 395-441.000.
Ohsaki, Makoto: *See*—
Sekine, Takeyoshi; Yamasita, Hiroshi; Fushimi, Hiroyuki; Ohsaki, Makoto; Fujimdri, Kouta; Kawaishi, Yasunori; and Okamoto, Jun, 5,648,842, Cl. 355-350.000.
Ohta, Hitoshi: *See*—
Nakagawa, Toshikazu; Ishikawa, Yasushi; Tsushima, Sadao; Yashiro, Masao; and Ohta, Hitoshi, 5,648,176, Cl. 428-593.000.
Ohta, Kenji: *See*—
Hirokane, Junji; Katayama, Hiroyuki; Takahashi, Akira; and Ohta, Kenji, 5,648,162, Cl. 428-332.000.
Ohta, Satoru: *See*—
Sato, Teiji; Sato, Toshio; Sugawara, Toshiaki; Sawada, Hiroshi; Wakaki, Seiji; Ohta, Satoru; and Saito, Masaru, 5,648,413, Cl. 524-313.000.
Ohtani, Masami: *See*—
Sugimoto, Kenji; Hiraoka, Nobuyasu; Fujita, Mitsuhiro; and Ohtani, Masami, 5,647,083, Cl. 15-77.000.
Ohtani, Noriaki: *See*—
Kishimoto, Mikio; Kitahata, Shinichi; Kanzaki, Hisao; Ohtani, Noriaki; and Sueyoshi, Toshinobu, 5,648,160, Cl. 428-328.000.
Ohtani, Yasumi: *See*—
Kuriyama, Toru; Ohtani, Yasumi; Chandratilleke, Rohana; Yoshino, Tatsuya; and Kobayashi, Takayuki, 5,647,218, Cl. 62-6.000.
Ohtsu, Takashi: *See*—
Tanigawa, Hidekazu; Mukai, Masaki; Ohtsu, Takashi; Nakano, Yoshio; and Tsuji, Seiji, 5,648,813, Cl. 348-10.000.
Ohtsuki, Kazuo; Mitsunobu, Akikazu; Imaizumi, Yoshihiro; Honda, Nobuyoshi; and Inoue, Satoshi, to Nippon Kayaku Kabushiki Kaisha; and Snow Brank Milk Products Co., Ltd. 14α-hydroxy-4-androstene-3,6,17-trione hydrate and process for producing same. 5,648,507, Cl. 552-615.000.
Ohyama, Isao; Nakamura, Shiro; Shimizu, Takeo; Yanagawa, Hisaharu; and Iwata, Hideyuki, to Furukawa Electric Co., Ltd., The; and Nippon Telegraph and Telephone Corporation. Optical waveguide component and a light signal processing method using the same. 5,649,037, Cl. 385-24.000.
Oida, Kazuhiko; and Nakai, Ryusuke, to Sumitomo Electric Industries, Ltd. Epitaxy for growing compound semiconductors and an InP substrate for epitaxial growth. 5,647,917, Cl. 148-33.400.
Oikawa, Shinzo: *See*—
Hashino, Junko; Oikawa, Shinzo; Nakazato, Hiroshi; and Nakanishi, Toshihiro, 5,648,078, Cl. 424-156.100.
Oishi, Tetsuya; Suzuki, Jin; Ohkawa, Kouhei; and Ono, Hiroshi, to Mitsui Toatsu Chemicals, Inc. Diguanamines and preparation process, derivatives and use thereof. 5,648,446, Cl. 528-60.000.
Ojanperä, Tero: *See*—
Korhonen, Veijo; and Ojanperä, Tero, 5,649,320, Cl. 455-196.100.
Okada, Hideaki; and Nemoto, Shusuke, to Kanzaki Kokyukoki Mfg. Co. Ltd. Axle driving apparatus. 5,647,249, Cl. 74-606.00R.
Okada, Koukichi: *See*—
Katoh, Noriyuki; Sakaguchi, Takahiro; and Okada, Koukichi, 5,648,693, Cl. 310-67.00R.
Okada, Shinjiro: *See*—
Katagiri, Kazuharu; Yoshinaga, Kazuo; Okada, Shinjiro; and Kanbe, Junichiro, 5,648,830, Cl. 349-168.000.
Okada, Takashi: *See*—
Hirano, Naohiko; Doi, Kazuhide; Miura, Masayuki; Okada, Takashi; and Hiruta, Yoichi, 5,648,686, Cl. 257-778.000.
Okamoto, Jun: *See*—
Sekine, Takeyoshi; Yamasita, Hiroshi; Fushimi, Hiroyuki; Ohsaki, Makoto; Fujimdri, Kouta; Kawaishi, Yasunori; and Okamoto, Jun, 5,648,842, Cl. 355-350.000.
Okamoto, Katsuya; Abe, Koichi; and Nakajima, Shoji, to Toray Industries, Inc. Process for producing film. 5,648,035, Cl. 264-173.160.
Okamoto, Takuji; Matsumoto, Junichi; Watanabe, Masami; and Maezawa, Hiroshi, to Idemitsu Kosan Co., Ltd. Cyclic olefin copolymers, compositions and molded articles comprising the copolymers. 5,648,443, Cl. 526-281.000.
Okamoto, Tetsuo, to Yamaha Corporation. Musical tone controller responsive to playing action of a performer. 5,648,626, Cl. 84-600.000.
Okamura, Tetsurou, to Sankyo Seiki Mfg. Co., Ltd. Optical scannng system having error correction. 5,648,875, Cl. 359-662.000.
Okano, Keiji: *See*—
Domon, Akira; Okano, Keiji; Kinoshita, Masahide; and Shimizu, Yasushi, 5,649,264, Cl. 399-30.000.
Okano, Yoji; Kurita, Eiichi; Fujioka, Kazuo; Aoki, Koso; Misawa, Hiromitsu; and Kozawa, Minoru, to Toda Kogyo Corporation. Coated granular magnetite particles and process for producing the same. 5,648,170, Cl. 428-403.000.
Okano, Yoshihiro: *See*—
Tangi, Yoshinori; Okano, Yoshihiro; and Uwabo, Tsuneo, 5,648,882, Cl. 360-99.060.
Okazaki, Mitsuhiro, to Nikon Corporation. Image movement correction of camera. 5,649,237, Cl. 396-55.000.
Oki, Aaron Kenji: *See*—
Tran, Liem Thanh; Streit, Dwight Christopher; and Oki, Aaron Kenji, 5,648,666, Cl. 257-197.000.
Oki Electric Industry Co., Ltd.: *See*—
Araki, Satoru; Shimazaki, Yoshihito; and Hosoda, Kenichiro, 5,648,921, Cl. 364-715.011.
Tanabe, Tetsuya; and Tanoi, Satoru, 5,648,734, Cl. 326-115.000.
Tanuma, Jiro; Ito, Katsuyuki; Katakura, Shinichi; Wakasugi, Nobuo; Nagaoka, Kazuhiko; and Ito, Toshikaru, 5,648,810, Cl. 347-130.000.
OKI telecom: *See*—
De Loe, John P., Jr.; and Wang, He Feng, 5,649,288, Cl. 455-33.100.
Okimoto, Osamu: *See*—
Hatatani, Mitsuaki; Okimoto, Osamu; Shigemura, Toshitada; Fukuhara, Yoshifumi; and Sadamura, Hideaki, 5,648,014, Cl. 252-62.560.
Oklahoma Gas and Electric Company: *See*—
Kuennen, Larry E.; Madron, Ronald G.; and Crisp, Gary M., 5,647,287, Cl. 110-170.000.
Oktay, Sevgin; and Peterson, George Paul. Coupled, flux transformer heat pipes. 5,647,429, Cl. 165-104.260.
Okuda, Kazuyoshi: *See*—
Izumi, Tomoji; Shimizu, Kenji; Sugamoto, Yoshiaki; Okuda, Kazuyoshi; Ando, Satoru; Ishihara, Toshihiro; Inada, Takahiro; and Okuda, Tsunehisa, 5,648,905, Cl. 364-461.000.
Okuda, Motoi: *See*—
Shibata, Kazuya; Fujisaki, Masahide; Kanazawa, Hiroyuki; and Okuda, Motoi, 5,649,198, Cl. 395-670.000.
Okuda, Tsunehisa: *See*—
Izumi, Tomoji; Shimizu, Kenji; Sugamoto, Yoshiaki; Okuda, Kazuyoshi; Ando, Satoru; Ishihara, Toshihiro; Inada, Takahiro; and Okuda, Tsunehisa, 5,648,905, Cl. 364-461.000.
Okuda, Yoji: *See*—
Orimoto, Hiroyuki; and Okuda, Yoji, 5,647,495, Cl. 215-42.000.
Okude, Yoshitaka: *See*—
Fushimi, Akira; Miyazoe, Seigo; Yamada, Atsushi; and Okude, Yoshitaka, 5,648,417, Cl. 524-513.000.
Okumura, Shinji: *See*—
Tajiri, Hiroyuki; Nakagawa, Yoshiteru; Iwaya, Yoshiaki; Tanaka, Yoshiharu; Asami, Keiichi; Touma, Katsuyuki; and Okumura, Shinji, 5,648,027, Cl. 264-43.000.
Okutsu, Eiichi, to Fuji Photo Film Co., Ltd. Processing method for silver halide photographic material. 5,648,205, Cl. 430-440.000.
Okutsu, Hisashi: *See*—
Hibino, Hideo; Okutsu, Hisashi; Yokonuma, Norikazu; and Kazami, Kazuyuki, 5,649,246, Cl. 396-310.000.
Okuyama, Atsushi; Yokota, Hideo; and Azusawa, Katsumi, to Canon Kabushiki Kaisha. Projection apparatus utilizing an anamorphic optical system. 5,648,871, Cl. 359-557.000.
Oles, Edward J.: *See*—
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Olney, Roland John: *See*—
Gutkowski, Thaddeus Edward; and Olney, Roland John, 5,647,827, Cl. 482-124.000.
Olsen, James M.; and Johnson, Jay Gregory, to SIMS Deltec, Inc. Base plate for a drug pump. 5,647,854, Cl. 604-174.000.
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Ando, Hiroyuki; and Yamamoto, Kazuo, 5,649,235, Cl. 396-6.000.
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Uzawa, Tsutomu, 5,648,835, Cl. 396-429.000.
Yamazaki, Takeshi, 5,648,946, Cl. 369-44.230.
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Hayashi, Shinji; and Omae, Hiroshi, 5,647,179, Cl. 52-235.000.
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Gupta, Nand K., 5,648,996, Cl. 378-4.000.
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Durrant, Randy; and Burbach, Mark, 5,648,982, Cl. 375-206.000.
Jensen, Ryan N.; Scott, Logan; and Williams, Claude M., 5,648,955, Cl. 370-252.000.
Omote, Kenji, to Kabushiki Kaisha Komatsu Seisakusho. Work transferring apparatus for thermal cutting machine. 5,648,002, Cl. 219-121.820.
On, Bill Ngoc; and Narasimhan, Mandayam A., to Institute of Microelectronics, National University of Singapore. Modularized architecture for rendering scaled discrete cosine transform coefficients and inverse thereof for rapid implementation. 5,649,077, Cl. 395-119.000.

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O'Neill, Mark Joseph: *See*—
Jaster, Paul A.; and O'Neill, Mark Joseph, 5,648,873, Cl. 359-591.000.
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Higashibeppu, Makoto; Kawamoto, Tomohiro; Eguchi, Tomonori; Yoshimura, Kenichi; Onitsuka, Katsuhiko; and Hayashi, Harumi, 5,648,012, Cl. 252-62.9PZ.
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Oishi, Tetsuya; Suzuki, Jin; Ohkawa, Kouhei; and Ono, Hiroshi, 5,648,446, Cl. 528-60.000.
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Sato, Fumie; Amano, Takehiro; Kameo, Kazuya; Tanami, Tohru; Mutoh, Masaru; Ono, Naoya; and Goto, Jun, 5,648,526, Cl. 562-503.000.
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Nomura, Keiichi; Endo, Hirofumi; Ii, Yasuhiro; Ogasawara, Yuko; Kawai, Mitsuhiro; Onoue, Yasuyoshi; Kurita, Masahiro; Imai, Akira; and Takeuchi, Mitsuaki, 5,649,188, Cl. 395-611.000.
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Sakamoto, Michiaki; and Onozawa, Tatsuo, 5,648,828, Cl. 349-110.000.
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Yamaguchi, Kyoji; Shima, Nobuyuki; Murakami, Akihiko; Goto, Masaaki; Tsuda, Eisuke; Masunaga, Hiroaki; Takahira, Reiko; Oogaki, Fumiko; Ueda, Masatsugu; and Higashio, Kanji, 5,648,233, Cl. 435-69.100.
Ooi, Yoshiharu; Wakabayashi, Tsuneo; Serizawa, Shigeyuki; Sonda, Yoshiyuki; Kunigita, Masaya; and Hirai, Yoshinori, to AG Technology Co., Ltd. Projection type color liquid crystal optical apparatus. 5,648,860, Cl. 349-10.000.
Ooishi, Kazuyuki: *See*—
Naka, Hideyuki; Konishi, Kazuo; and Ooishi, Kazuyuki, 5,648,820, Cl. 348-445.000.
Oomen, Arnoldus W. J.; Groenewegen, Marc E.; Van Der Waal, Robbert G.; and Veldhuis, Raymond N. J., to U.S. Philips Corporation. Method and apparatus for coding digital sound by subtracting adaptive dither and inserting buried channel bits and an apparatus for decoding such encoding digital sound. 5,649,054, Cl. 395-2.380.
Opex Corporation: *See*—
Heins, William L., III, 5,649,026, Cl. 382-175.000.
Orbine, Stephen A., III: *See*—
Petrucelli, Steven P.; Welkowitz, Walter; Liss, Lisa K.; Smith, Alan M.; and Orbine, Stephen A., III, 5,647,369, Cl. 128-672.000.
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Suzuki, Saburo; Orimoto, Hiroyuki; and Amari, Fumiya, 5,648,133, Cl. 428-36.920.
Ormet Corporation: *See*—
Yablonsky, Albert; Bolo, Eugene R.; and Reggi, John D., 5,647,996, Cl. 210-710.000.
Ornstein, Paul L.: *See*—
Arnold, M. Brian; Bertsch, Carl F.; Hansen, Marvin M.; Harkness, Allen R.; Huff, Bret; Martinelli, Michael J.; and Ornstein, Paul L., 5,648,492, Cl. 546-147.000.
Osada, Hatsuo: *See*—
Matsuse, Kimihiro; Lee, Hideki; Osada, Hatsuo; and Tanaka, Sumi, 5,647,945, Cl. 156-345.000.
Osaka Gas Company Ltd.: *See*—
Tajiri, Hiroyuki; Nakagawa, Yoshiteru; Iwaya, Yoshiaki; Tanaka, Yoshiharu; Asami, Keiichi; Touma, Katsuyuki; and Okumura, Shinji, 5,648,027, Cl. 264-43.000.
Osawa, Sadao: *See*—
Kato, Eiichi; Osawa, Sadao; and Nakazawa, Yusuke, 5,648,190, Cl. 430-47.000.
Osborn, Thomas Ward, III; Schmitz, Deborah Catherine; Cree, James William; and Elder, Melisse Noel, to Procter & Gamble Company, The. Absorbent article with means for directional fluid distribution. 5,647,862, Cl. 604-378.000.
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Osendorf, Richard J.; and Lee, David W., to Donaldson Company, Inc. Respirator cartridge with sealing fit test structure and method of use. 5,647,356, Cl. 128-206.170.
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Misawa, Toshiyuki; and Oshima, Hiroyuki, 5,648,685, Cl. 257-775.000.
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Yamanaka, Hideaki; Oshima, Kazuyoshi; and Miura, Setsuko, 5,649,217, Cl. 395-872.000.
Oshita, Jyunji: *See*—
Tokui, Kenji; Matsubayashi, Yoshiteru; Yoshikawa, Masashi; Oshita, Jyunji; and Ohata, Yuji, 5,648,155, Cl. 428-323.000.
Osram Sylvania Inc.: *See*—
Bandyopadhyay, Gautam; Klinedinst, Keith A.; and Lichtensteiger, Silvia E., 5,648,115, Cl. 427-107.000.
Ostberg, Lars G., to Sandoz Ltd. Treatment of patients infected with hepatitis B virus with a human monoclonal antibody. 5,648,077, Cl. 424-149.100.
Osti, Roberto: *See*—
Minarelli, Alessandro; and Osti, Roberto, 5,647,190, Cl. 53-446.000.
Ostlund, Ake: *See*—
Gustafson, Per; Akesson, Leif; and Ostlund, Ake, 5,649,279, Cl. 419-25.000.
Ota, Tetsuo: *See*—
Takaya, Hidemasa, deceased; Ota, Tetsuo; and Inagaki, Koji, 5,648,548, Cl. 568-17.000.
Otokita, Kosuke: *See*—
Takashima, Akira; Yoshimura, Hiroshi; and Otokita, Kosuke, 5,648,681, Cl. 257-666.000.
Otoma, Hiromi; Ueki, Nobuaki; Fukunaga, Hideki; Nakayama, Hideo; Seko, Yasuji; and Fuse, Mario, to Fuji Xerox Co., Ltd. Method of making a semiconductor laser device. 5,648,295, Cl. 437-129.000.
O'Toole, James E., to Micron Technology, Inc. On-chip memory redundancy circuitry for programmable non-volatile memories, and methods for programming same. 5,648,934, Cl. 365-200.000.
Otsuka, Yasunobu: *See*—
Itoh, Junichi; Kunishige, Keiji; Mizobuchi, Koji; Kobayashi, Yoshiaki; Ishimaru, Toshiaki; Watanabe, Akira; and Otsuka, Yasunobu, 5,649,247, Cl. 396-311.000.
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Tomita, Masao; Otsuki, Takuya; and Nagasaki, Sakon, 5,649,048, Cl. 386-131.000.
Ottaviani, Joseph C.: *See*—
Monday, John W.; Ottaviani, Joseph C.; and Smith, Leonard R., 5,647,906, Cl. 118-70.000.
Ou, Knight-Tian: *See*—
Chen, Chien-Feng; Hsu, Jun-Sheng; Pan, Shih-Ming; and Ou, Knight-Tian, 5,647,626, Cl. 294-87.100.
Ou, Nian-hua: *See*—
Vaders, Dennis H.; and Ou, Nian-hua, 5,647,934, Cl. 156-219.000.
Oudang, Erry P.: *See*—
Spitzbarth, Joachim Kurt Friedrich, 5,647,208, Cl. 60-371.000.
Ouki, Yasuhiro; Kanaya, Miharu; Hayashi, Hiroko; Takemoto, Kiyohiko; and Itano, Masaaki, to Seiko Epson Corporation. Ink composition for ink jet recording. 5,647,897, Cl. 106-31.490.
Ould-Ali, Abdelhamid; Geffroy, Nicolas; and Burgain, Alain, to U.S. Philips Corporation. Local area network redundant pieces of interconnection equipment a false physical address and a logical address in common to form a unique entity. 5,649,091, Cl. 395-182.090.
Ovaert, Patricia; and Boivin, Eliane, to Sanofi Sante Nutrition Animale. Anaesthetic pharmaceutical composition comprising a general anaesthetic and selegiline. 5,648,087, Cl. 424-423.000.
Overlaur, Michael: *See*—
Bhuva, Rohit L.; Tran, Bao; Conner, James L.; Overlaur, Michael; and Paulsen, Tracy S., 5,648,730, Cl. 324-763.000.
Overton, Bob J.; Roach, Robert L.; and Lopez, Adolphe R., to Alcatel NA Cable Systems, Inc. Apparatus for reducing deformation of a coating on a coated optical fiber. 5,647,884, Cl. 65-533.000.
Owen, Larry D., to Litton Systems, Inc. Night vision device with audio communication and identification facility. 5,648,862, Cl. 359-153.000.
Owens Corning Fiberglas Technology Inc.: *See*—
Houpt, Ronald A.; Huey, Larry J.; and Lin, David C. K., 5,647,883, Cl. 65-494.000.
Owens, Steve; Bouldin, Brett; and Elliott, Gary, to PES, Inc. Containment of downhole electronic systems. 5,647,435, Cl. 166-250.010.
Oyachi, Kenji, to NEC Corporation. Method of determining order of wire-bonding. 5,647,527, Cl. 228-180.500.
Oz, Oved: *See*—
Intrater, Gideon; Oz, Oved; and Tsadik, Meir, 5,649,208, Cl. 395-735.000.
Ozaki, Toshiya: *See*—
Kawanishi, Toshio; Yokoyama, Shigeki; Ishihara, Katsuro; Narukami, Yoshihisa; Shioyama, Masahiko; Tokushima, Mikiharu; and Ozaki, Toshiya, 5,647,988, Cl. 210-636.000.
Ozawa, Takeshi: *See*—
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Påborn, Jörgen: *See*—
Adams, Michael L.; Keller, David A.; and Påborn, Jörgen, 5,649,043, Cl. 385-110.000.
Pace, Gary Lee: *See*—
McClurg, George W.; Pace, Gary Lee; Mooney, Charles W.; and McKee, John M., 5,649,020, Cl. 381-151.000.
Pachl, Carol: *See*—
Burke, Rae L.; Pachl, Carol; and Valenzuela, Pablo D. T., 5,648,079, Cl. 424-186.100.
Pacific Precision Metals, Inc.: *See*—
Kim, Young R., 5,647,651, Cl. 312-291.000.
Pacific Scientific Company: *See*—
Le, Anh V.; and Kilber, Jeffrey S., 5,648,726, Cl. 324-555.000.
Paddock, Thomas L.; and Weir, Robert H., to Midnite Kitty, Inc. Speaker simulator. 5,649,015, Cl. 381-61.000.
Padilla Julio, Roberto: *See*—

Assis Mascarenhas de Oliveira, Carlos Henrique; Bruno, Leonardo; Padilla Julio, Roberto; Maselli, Alberto; and Moraes Mesiano, Ivan Jerônimo, 5,647,512, Cl. 222-108.000.

Pae, Yong-quk: *See*—
Song, Jun-ho; Pae, Yong-quk; and Park, Wun-yong, 5,648,826, Cl. 349-49.000.

Pagano, Daniel Michael: *See*—
Wheeler, Richard Bruce; and Pagano, Daniel Michael, 5,649,260, Cl. 396-569.000.

Paget, Charles J., Jr.: *See*—
Booher, Richard N.; Lawhorn, David E.; Martinelli, Michael J.; Paget, Charles J., Jr.; and Schaus, John M., 5,648,356, Cl. 514-256.000.

Pai, Daniel Y.; and Hawkins, Robert E., to Shipley Company, L.L.C. Photoresist composition comprising an alkali-soluble resin, a quinone diazide compound and a vinyl ether. 5,648,194, Cl. 430-165.000.

Pak, Koon Yan: *See*—
Buttram, Scott; Dean, Richard T.; Lister-James, John; and Pak, Koon Yan, 5,648,471, Cl. 424-1.490.

Palau, Joseph; and Froment, Jean-Paul, to Staubli Faverges. Enclosed support beam and lubrication system for loom drawing apparatus. 5,647,402, Cl. 139-1.00R.

Palecki, Eugene Francis: *See*—
Lee, Denny Lap Yen; Palecki, Eugene Francis; and Williams, Cornell Lee, 5,648,660, Cl. 250-370.090.

Pall Corporation: *See*—
Reed, Clayton L.; Ryan, John E., Jr.; and Germain, Bruce R., 5,647,950, Cl. 156-580.000.

Palmer, Anthony James: *See*—
Green, Michael Cameron; Palmer, Anthony James; and Hall, Alan, 5,647,679, Cl. 400-232.000.

Palmer, Matthew A.: *See*—
Slater, Charles R.; Palmer, Matthew A.; Kortenbach, Jurgen Andrew; McBrayer, Michael Sean; and Gottlieb, Saul, 5,647,115, Cl. 29-557.000.

Palmer, Mitchell J.: *See*—
Green, David T.; Palmer, Mitchell J.; Milliman, Keith L.; Savage, Robert C.; McClure, Richard C.; and Heaton, Lisa W., 5,647,526, Cl. 227-175.200.

Palo Alto Medical Foundation: *See*—
Remington, Jack S.; and Araujo, Fausto G., 5,648,345, Cl. 514-183.000.

Pálosi, Endre; Korbonits, Dezso; Molnár née Bakó, Erzsébet; Szvoboda née Kanzel, Ida; Héja, Gergely; Kiss, Pál; Gönczi, Csaba; Sperber, Ferenc; Huszár, Csaba; Mihalovics, György; Németh, Attila; Süto, Mihály; Gyüre, Károl; Boné, István; Mórász, Ferenc; Ledniczky, László; Szabó née Kardos, Erzsébet; Györi, Péter; Szalay, Erzsébet; Bán, Károly; Buttkai, Ildikó; Kövári, Arpád; and Garaczy, Sándor, to Astra Aktiebolag. Process for the preparation of 4-methyl-5-(2-chloroethyl)-thiazole and analogues thereof. 5,648,498, Cl. 548-202.000.

Paltieli, Yoav, to Ultra-Guide Ltd. Articulated needle guide for ultrasound imaging and method of using same. 5,647,373, Cl. 128-749.000.

Pan, Jeng-Wei: *See*—
Biro, Larry L.; Grodstein, Joel J.; Pan, Jeng-Wei; and Rethman, Nicholas L., 5,648,909, Cl. 364-488.000.

Pan, Shih-Ming: *See*—
Chen, Chien-Feng; Hsu, Jun-Sheng; Pan, Shih-Ming; and Ou, Knight-Tian, 5,647,626, Cl. 294-87.100.

Panasonic Technologies, Inc.: *See*—
Barbará , Daniel; Aref, Walid; Kamel, Ibrahim; and Vallabhaneni, Padmavathi, 5,649,023, Cl. 382-159.000.

Pancino, Gianfranco: *See*—
Avrameas, Alexandre; Pancino, Gianfranco; Sibille, Pierre; Sonigo, Pierre; and Strosberg, Arthur Donny, 5,648,209, Cl. 435-5.000.

Panescu, Dorin: *See*—
Kordis, Thomas F.; Panescu, Dorin; and Whayne, James G., 5,647,870, Cl. 606-41.000.

Papalos, John G.: *See*—
Arora, Kartar S.; Devore, David I.; Grinstein, Reuben H.; Johnson, Grannis S.; Papalos, John G.; and Shah, Shailesh, 5,648,409, Cl. 523-404.000.

Par Aide Products Co.: *See*—
Garske, Stephen J.; and Illies, Thomas H., 5,647,082, Cl. 15-21.200.

Parady, Bodo K., to Sun Microsystems, Inc. Apparatus and method for providing a cache indexing scheme less susceptible to cache collisions. 5,649,143, Cl. 395-421.100.

Paradyne Corporation: *See*—
Ko, Kenneth David, 5,648,989, Cl. 375-296.000.

Paramest, Sam. Bucket extractor device. 5,647,272, Cl. 99-495.000.

Pardikar, Shishir: *See*—
Mahajan, Milind Vasudeo; and Pardikar, Shishir, 5,649,027, Cl. 382-185.000.

Pare, Christian: *See*—
Bourguignon, Michel; and Pare, Christian, 5,648,659, Cl. 250-363.040.

Paridis, Georgios. Device for applying an adhesive substance in particular on carpet bottom support strips. 5,647,948, Cl. 156-578.000.

Park, Chan Kwang: *See*—
Koh, Yo Hwan; Park, Chan Kwang; and Suh, Jeung Won, 5,648,935, Cl. 365-205.000.

Park, Daniel J., to Seiko Communications Holding N.V. Transmitting digital data using multiple subcarriers. 5,649,297, Cl. 455-45.000.

Park, Hyeoksoo: *See*—
Hwang, Haksun; Cheon, Inki; Lee, Sang Jig; Koh, Pohyoung; Park, Hyeoksoo; and Choi, Sungwoo, 5,647,548, Cl. 242-338.000.

Park, Jin S.: *See*—
Lin, True-Lon; Park, Jin S.; Gunapala, Sarath D.; Jones, Eric W.; and Del Castillo, Hector M., 5,648,297, Cl. 437-178.000.

Park, John Y.; Peng, Lin; and Dziabo, Anthony J., to Allergan. Compositions and methods for disinfecting contact lenses and reducing proteinaceous deposit formation. 5,648,074, Cl. 424-94.200.

Park, Jun-Hyun, to Daewood Electronics Co., Ltd. Integrally driven three beam-type projection apparatus. 5,648,878, Cl. 359-809.000.

Park, Shin Hwa: *See*—
Kim, Tai Woung; Kim, Young Gil; and Park, Shin Hwa, 5,647,922, Cl. 148-620.000.

Park, Soung Hwi, to LG Semicon Co., Ltd. Method for coding semiconductor read only memory device. 5,648,289, Cl. 437-48.000.

Park, Wun-yong: *See*—
Song, Jun-ho; Pae, Yong-quk; and Park, Wun-yong, 5,648,826, Cl. 349-49.000.

Parker & Harper Companies, Inc.: *See*—
Holloway, David G., 5,647,389, Cl. 137-15.000.

Parker-Hannifin Corporation: *See*—
Giesler, Dennis C., 5,647,398, Cl. 137-614.030.

Parker, Peter Kevin: *See*—
Cobb, Joshua Monroe; and Parker, Peter Kevin, 5,648,005, Cl. 219-411.000.

Parker, Ronald M.: *See*—
Ertel, Thomas F.; Aronoff, David B.; Gardner, Steven L.; Parker, Ronald M.; Warren, Dean A.; and Baxter, Edward S., 5,649,100, Cl. 395-200.100.

Parodos, Kyriaki; and McCarty, Janice, to Amoco Corporation. Nucleic acid probes for the detection of shigella. 5,648,481, Cl. 536-24.320.

Parsons, Kevin L., to Armament Systems and Procedures, Inc. Rapid mount connecting system for baton accessories. 5,647,591, Cl. 463-47.400.

Parsons, Robert S.: *See*—
Rao, V. Durga Nageswar; Rose, Robert Alan; Parsons, Robert S.; and Yeager, David Alan, 5,648,122, Cl. 427-444.000.

Pasanen, Pertti. Shock damper for a boat. 5,647,296, Cl. 114-279.000.

Pascoe, Philip T.: *See*—
Augustyn, Craig L.; Giannetti, Richard; James, Travis L.; Muscarella, Stephen B.; Pascoe, Philip T.; Snyder, Francis J.; and VanBork, Erik C., 5,647,733, Cl. 417-360.000.

Pasquale, Antonio: *See*—
Marraccini, Antonio; Pasquale, Antonio; Fiorani, Tiziana; and Navarrini, Walter, 5,648,560, Cl. 568-677.000.

Pasternak, Eliezer; and BenEfraim, Gideon, to Netro Corporation. Reliable ATM microwave link and network. 5,648,969, Cl. 370-349.000.

Patel, Chandrakant Bhailalbhai: *See*—
Yang, Jian; Patel, Chandrakant Bhailalbhai; Liu, Tianmin; and Limberg, Allen Le Roy, 5,648,987, Cl. 375-232.000.

Patel, Parsotam Trikam: *See*—
Chappell, Barbara Alane; Patel, Parsotam Trikam; Phan, Phoung Kim; and Sai Halasz, George Anthony, 5,649,170, Cl. 395-500.000.

Patel, Raj D.; Kmiecik-Lawrynowicz, Grazyna E.; Sacripante, Guerino G.; and Foucher, Daniel A., to Xerox Corporation. Toner processes. 5,648,193, Cl. 430-137.000.

Patel, Vasant K.: *See*—
Hsu, Chao-Yang; Patel, Vasant K.; Vahlsing, David H.; Wei, James T.; and Myers, Harry K., Jr., 5,648,590, Cl. 585-751.000.

Pateman, Richard, to Perkins Limited. Assembly of auxiliary apparatus for an internal combustion engine. 5,647,306, Cl. 123-41.330.

Pater, Ruth H.; and Hansen, Marion G., to United States of America, National Aeronautics and Space Administration. Process for controlling morphology and improving thermal-mechanical performance of high performance interpenetrating and semi-interpenetrating polymer networks. 5,648,432, Cl. 525-421.000.

Patino, Joseph; and Ford, Robert B., to Motorola, Inc. Method and apparatus for current compensation of a battery in a charger. 5,648,715, Cl. 320-22.000.

Patino, Joseph, to Motorola, Inc. Method and apparatus for option control in a radio accessory. 5,649,307, Cl. 455-575.000.

Patkar, Niteen A.: *See*—
Shen, Gene W.; Szeto, John; Patkar, Niteen A.; and Shebanow, Michael C., 5,649,136, Cl. 395-591.000.

Patriot Scientific Corporation: *See*—
Ogor, Rolando B.; and Gaspar, Mark, 5,648,787, Cl. 343-826.000.

Patron, Donna Marie: *See*—
Klug, Diana Lynn; Minor, Barbara Haviland; Patron, Donna Marie; Chisolm, Tuneen E. C.; and Sievert, Allen Capron, 5,648,016, Cl. 252-67.000.

Patti, Joseph M.: *See*—
Hook, Magnus; Jonsson, Klas; Patti, Joseph M.; and Gurusiddappa, Sivashankarappa, 5,648,240, Cl. 435-69.300.

Paulsen, Tracy S.: *See*—
Bhuva, Rohit L.; Tran, Bao; Conner, James L.; Overlaur, Michael; and Paulsen, Tracy S., 5,648,730, Cl. 324-763.000.

Paulson, Jeffrey E.: *See*—
Herndon, Richard S.; Paulson, Jeffrey E.; and Proebstel, Robert C., 5,648,887, Cl. 361-31.000.

Pavlovic, Gordana: *See*—
Kostic, Zoran; and Pavlovic, Gordana, 5,648,983, Cl. 375-206.000.

Pawluczyk, Joseph M.: *See*—

Bock, Mark G.; Erb, Jill M.; Hobbs, Doug W.; Hoffman, James B.; Pawluczyk, Joseph M.; Perlow, Debra S.; Veber, Daniel F.; and Williams, Peter D., 5,648,352, Cl. 514-235.800.

Payne, Thomas Roy; Rice, Steven Andrew; and Wead, William Waters, to General Electric Company. Appliance electronic control system with programmable parameters including programmable and reconfigurable fuzzy logic controller. 5,647,231, Cl. 68-12.010.

Paz De Araujo, Carlos A.; Watanabe, Hitoshi; Scott, Michael C.; and Mihara, Takashi, to Symetrix Corporation; and Olympus Optical Co., Ltd. Chemical vapor deposition process for fabricating layered superlattice materials. 5,648,114, Cl. 427-126.300.

Pearce, Lawrence G.: *See*—
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Pearlstein, Richard Warren; and Ulrich, James Francis, to Du Pont de Nemours, E. I., and Company. Starch and grain with a novel genotype. 5,648,111, Cl. 426-578.000.

Pearson-Falcon, Susana. Pet food bowl, 5,647,299, Cl. 119-61.000.

Pechanek, Gerald G.; Glossner, Clair John; Larsen, Larry D.; and Vassiliadis, Stamatis, to International Business Machines Corporation. Parallel processing system and method using surrogate instructions. 5,649,135, Cl. 395-396.000.

Peck, Roger Francis, to Smith & Nephew PLC. Adhesive compositions. 5,648,167, Cl. 428-355.0AC.

Pedersen, Bruce B., to Altera Corporation. Method of programming an asynchronous load storage device using a representation of a clear/preset storage device. 5,649,163, Cl. 395-500.000.

Pedersen, Gitte: *See*—
Damhus, Ture; Kirk, Ole; Pedersen, Gitte; Venegas, Manuel Garcia; Christensen, Bjoorn Eggert; and Schneider, Palle, 5,648,262, Cl. 435-263.000.

Pedersen, Mark Eric, to International Business Machines Corporation. Scannable last-in-first-out register stack. 5,649,150, Cl. 395-437.000.

Pedershaab A/S: *See*—
Hvidegaard, Johannes, 5,648,108, Cl. 425-426.000.

Peek, Brian M.: *See*—
Dulcey, Charles S.; Koloski, Timothy S.; Dressick, Walter J.; Calvert, Jeffrey M.; and Peek, Brian M., 5,648,201, Cl. 430-324.000.

Peelor, Phil; Moran, John; and Flanner, Lloyd T., to Specialty Chemical Resources, Inc. Tire sealant and inflator. 5,648,406, Cl. 523-166.000.

Pekar, Robert W., to Dielectrics Industries. Control panel for an inflatable structure. 5,647,078, Cl. 5-706.000.

Pellegrineschi, Alessandro: *See*—
Tepfer, David Alan; Damon, Jean-Pierre; and Pellegrineschi, Alessandro, 5,648,598, Cl. 800-205.000.

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Peluso, Enzo: *See*—
Rivas, Luis A.; Peluso, Enzo; Rojas, Daisy; and Garcia, Juan Jose, 5,648,312, Cl. 502-325.000.

Pemberton, Eric S.; and Howard, Brent E., to Dagger, Inc. Method for obtaining high definition graphics in surfaces of molded plastic objects. 5,648,030, Cl. 264-71.000.

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Sinovas, Rosa Maria; Safont, Vicente; Peñaranda, Mariano; and Golob, Hans-Jürgen, 5,647,546, Cl. 241-292.100.

Peng, Lin: *See*—
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Peng, Shie-Sen: *See*—
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Penswick, Laurence B.; and Neely, Ronald E., to Stirling Technology Company. Stirling cycle cryogenic cooler. 5,647,217, Cl. 62-6.000.

Penwest Foods Co.: *See*—
Wu, Yangsheng; and Woerman, John Harold, 5,648,110, Cl. 426-102.000.

Peramunage, Dharmasena: *See*—
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Perchat, Alain: *See*—
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Perconti, Philip: *See*—
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Perella, James E.: *See*—
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Peri Development Applications (1985) Ltd.: *See*—
Hurwitz, David R.; Nathan, Margret; and Shani, Moshe, 5,648,243, Cl. 435-69.600.

Perio Products, Ltd.: *See*—
Friedman, Michael; and Sintov, Amnon, 5,648,399, Cl. 514-772.600.

Perkins, James J.: *See*—
Egbertson, Melissa S.; Vassallo, Laura M.; Hartman, George D.; Halczenko, Wasyl; Whitman, David B.; Perkins, James J.; Krause, Amy E.; Ihle, Nathan; Claremon, David Alan; Hoffman, William; and Duggan, Mark E., 5,648,368, Cl. 514-331.000.

Perkins, Julian, to Hatteras Hammocks, Inc. Table for hammock stand. 5,647,075, Cl. 5-127.000.

Perkins Limited: *See*—
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Perkis, David F.: *See*—
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Brewster, Blair Meloy, 5,647,107, Cl. 24-713.600.

Perotto, Riccardo: *See*—
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Perr, J. P.: *See*—
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Perrotto, Joseph A.: *See*—
Rodgers, John A.; Perrotto, Joseph A.; and Boger, Robert C., 5,648,041, Cl. 264-555.000.

Perry, Donald F.: *See*—
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Persinski, Leonard J.: *See*—
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Perussia, Bice: *See*—
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PES, Inc.: *See*—
Owens, Steve; Bouldin, Brett; and Elliott, Gary, 5,647,435, Cl. 166-250.010.

Pesquié , Jean. Variable game board having reversible pawns. 5,647,594, Cl. 273-282.100.

Peters, Lester L.: *See*—
Yen, B. M.; Peters, Lester L.; Perr, J. P.; Ghuman, A. S.; and Ashwill, Dennis, 5,647,536, Cl. 239-90.000.

Petersen, Uwe; Krebs, Andreas; Schenke, Thomas; Grohe, Klaus; Schriewer, Michael; Haller, Ingo; Metzger, Karl Georg; Endermann, Rainer; and Zeiler, Hans-Joachim, to Bayer Aktiengesellschaft. Preparation of 7-(3-amino- and 3-amino-methyl-1-pyrrolidinyl)-3-quinolonecarboxylic acids and -naphthyridonecarboxylic acids. 5,648,493, Cl. 546-156.000.

Peterson, George Paul: *See*—
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Peterson, Joel L.: *See*—
Gudat, Adam J.; Shin, Dong Hun; Whittaker, William L.; Kleimenhagen, Karl W.; Singh, Sanjiv J.; Christensen, Dana A.; Kemner, Carl A.; Bradbury, Walter J.; Koehrsen, Craig L.; Kyrtsos, Christos T.; Lay, Norman K.; Peterson, Joel L.; Schmidt, Larry E.; Stafford, Darrell E.; Weinbeck, Louis J.; and Devier, Lonnie J., 5,648,901, Cl. 364-424.027.

Peterson, Terence A.: *See*—
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Petranovich, James E.: *See*—
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Petrosino, Paul M.: *See*—
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Petrucelli, Steven P.; Welkowitz, Walter; Liss, Lisa K.; Smith, Alan M.; and Orbine, Stephen A., III, to Rutgers University. Apparatus and methods for the noninvasive measurment of cardiovascular system parameters. 5,647,369, Cl. 128-672.000.

Pettenburger, Karin: *See*—
Valenta, Rudolf; Duchene, Michael; Pettenburger, Karin; Breitenbach, Michael; Kraft, Dietrich; Rumpold, Helmut; and Scheiner, Otto, 5,648,242, Cl. 435-69.300.

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Pfeffer, John D., to A.O. Smith Corporation. Method of protecting metal against corrosion and a vehicle including a structural member protected by the method in high temperature areas. 5,648,158, Cl. 428-325.000.

Pfeiffer, Brigitte, executrix: *See*—
Gries, Heinz; Rosenberg, Douwe; Weinmann, Hanns-Joachim; Speck, Ulrich; Mutzel, Wolfgang; Hoyer, Georg-Alexander; Pfeiffer, Heinrich, deceased; and Renneke, Franz-Josef, 5,648,063, Cl. 424-9.363.

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Pfeiffer, Heinrich, deceased (by Brigitte Pfeiffer, executrix): *See*—
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Pfizer Inc.: *See*—
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Phaal, Cornelius: *See*—
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Phan, Phoung Kim: *See*—
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Pharmagenesis, Inc.: *See*—
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Phifer, Carol C.: *See*—
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Philippe, Michel: *See*—
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Philips Electronics North America Corporation: *See*—
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Philips, Richard B.: *See*—
Kirschner, Ivan N.; Dean, Laurence M.; and Philips, Richard B., 5,648,631, Cl. 89-1.140.
Phillips, Bobby Mal, to Eastman Chemical Company. Perforated films having channels with cutout portions capable of spontaneous fluid inversion. 5,648,142, Cl. 428-132.000.
Phillips, Christopher E.; and Nemirovsky, Mario, to National Semiconductor Corporation. Circuit for designating instruction pointers for use by a processor decoder. 5,649,147, Cl. 395-421.040.
Phillips Petroleum Company: *See*—
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Bergmeister, Joseph J.; Kufeld, Scott E.; and McDaniel, Max P., 5,648,439, Cl. 526-96.000.
Hovis, Keith W.; and Anderson, Richard L., 5,648,587, Cl. 585-724.000.
Phillips, Roger W.; Mayer, Thomas; and Ash, Gary S., to Flex Products, Inc. Hot stamp article for applying optically variable coating to substrates. 5,648,165, Cl. 428-346.000.
Phoenix Aktiengesellschaft: *See*—
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Phytotronics, Inc.: *See*—
Butler, James R., Jr.; Butler, Cynthia M.; and Cobb, Robert E., 5,647,388, Cl. 137-1.000.
Piazza, John. Beverage can assembly with straw retention means. 5,647,499, Cl. 220-269.000.
Picard, Isabelle: *See*—
Billington, David; Picard, Isabelle; Atassi, Ghanem; Pierre, Alain; Burbridge, Michaël; and Guilbaud, Nicolas, 5,648,382, Cl. 514-475.000.
Picataggio, Stephen; Rohrer, Tracy; and Eirich, L. Dudley, to Henkel Corporation. Method for increasing the omega-hydroxylase activity in candida tropicals. 5,648,247, Cl. 435-142.000.
Picheny, Michael Alan: *See*—
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Pickett, Gordon E.: *See*— .
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Pickett, Stephen F. B., to REC Software, Inc. Method and apparatus for consolidating software module linkage information used for starting a multi-module program. 5,649,204, Cl. 395-710.000.
Pierce, Charles L. Method and apparatus for treating waste and for obtaining usable by-product. 5,648,592, Cl. 588-227.000.
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Pierre, Alain: *See*—
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Pierschbacher, Michael D.; Lukeman, David S.; Cheng, Soan; and Craig, William S., to La Jolla Cancer Research Foundation. Method and composition for treating vascular graft occlusion. 5,648,330, Cl. 514-11.000.
Pike, Douglas A., Jr.: *See*—
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Pink, Terry Joseph: *See*—
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Pintat, Theo: *See*—
Greul, Mathias; Staskewitsch, Ewald; Steger, Wilhelm; Pintat, Theo; Geiger, Martin; and Melchior, Klaus, 5,649,277, Cl. 419-2.000.
Piock, Walter; Wirth, Martin; and Fraidl, Günter Karl, to AVL Gesellschaft Für Verbrennungskraftmaschinen Und Messtechnik m.b.H. Prof.Dr.Dr.h.c. Hans List. Device for introducing fuel into a combustion chamber of an internal combustion engine. 5,647,336, Cl. 123-532.000.
Pioneer Electronic Corporation: *See*—
Itoh, Naoto; Nagai, Yoshihisa; and Nomura, Satoru, 5,648,948, Cl. 369-48.000.
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Pires, Paul B.; and Higashi, Wayne K., to Epilogics, Inc. Linear one way movement device and passenger seat assembly using the device. 5,647,628, Cl. 296-68.100.
Pirinen, Mirja, to Nokia Telecommunications OY. Base station in a cellular radio system and a cellular radio system. 5,648,962, Cl. 370-338.000.
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Pirrung, Jurgen; Stumpe, Reinhard; and Grohmann, Gerhard, to ITT Automotive Europe GmbH. Pressure sealed transducer for automotive vehicles. 5,648,697, Cl. 310-338.000.
Pitney Bowes Inc.: *See*—
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Plant, Edward G., Jr.: *See*—
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Plant Genetic Systems, N.V.: *See*—
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Plass, Ronald A.: *See*—
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Pleasant, Ronald E. Method of providing a barrier to substantially block the flow of liquid in a mold insert. 5,647,114, Cl. 29-525.110.
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Pletcher, Timothy A.: *See*—
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Pohang Iron & Steel Co., Ltd.: *See*—
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Pohl, Peter. Method for production of adsorption material. 5,648,313, Cl. 502-401.000.
Pokras, Norman M. Method and apparatus for vibrating an injection device. 5,647,851, Cl. 604-131.000.
Polgar, Gary E.; Kempf, Randy Joe; and Fry, Rupert J., to Molex Incorporated. Electrical connector with terminal locking means. 5,647,775, Cl. 439-752.000.

Polk, Gary C.; and Domeny, Peter, to S-B Power Tool Company. Electric brake for commutated motor. 5,648,706, Cl. 318-376.000.
Pomezia S.R.L.: *See*—
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Porchia, Jose; and Dais, Brian C., to Dowbrands L.P. Closure member for a reclosable thermoplastic bag. 5,647,100, Cl. 24-30.50R.
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Porter, Thomas R., to University of Nebraska, The Board of Regents of the. Thrombolytic agents and methods of treatment for thrombosis. 5,648,098, Cl. 424-490.000.
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Positive Position Inc.: *See*—
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Possin, George Edward, to General Electric Company. Flat panel imaging device with patterned common electrode. 5,648,654, Cl. 250-208.100.
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Potter, Michael D.; and Mathews, Cherie B. Collapsible infant stroller adapter. 5,647,601, Cl. 280-47.380.
Potter, Michael D., to Advanced Vision Technologies, Inc. Fabrication process for laminar composite lateral field-emission cathode. 5,647,998, Cl. 216-24.000.
Poulin, Jean-Paul, to Positive Position Inc. Multiple-axis machining apparatus. 5,647,707, Cl. 409-189.000.
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Powers, Clifton C.: *See*—
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Powers, Donald Henry: *See*—
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Pozek, Juraj. Method and apparatus for a theft resistant fastener. 5,647,253, Cl. 81-125.000.
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Prakash, Jaideep; and Rorzoll, Robert Rudolf, to Microtune, Inc. System and method for voltage controlled oscillator automatic band selection. 5,648,744, Cl. 331-11.000.
Prather, Richard R.: *See*—
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Praxair S.T. Technology, Inc.: *See*—
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Presser, Dwight W.; Bruck, Stephen C.; and Monsrud, Lon L., to Douglas & Lomason Company. Child restraint seat. 5,647,634, Cl. 297-238.000.
Preuss, Rolf; and Vonnahme, Josef, to Klöckner-Humboldt-Deutz AG. Method and device for assembling an injection pump element. 5,647,320, Cl. 123-372.000.
Prevost, Isabelle; and Rojey, Alexandre, to Institut Francais du Petrole. Device for separating phases of different densities and conductivities by electrocoalescence and centrifugation. 5,647,981, Cl. 210-243.000.
PRI Automation, Inc.: *See*—
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Lee, Sywe N., 5,648,790, Cl. 345-58.000.
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Allen, Patrick Jay; Bross-Kelly, Beverly Jean; Viltro, Louis John; Vinnage, William Robert, Jr.; and Weirich, David Michael, 5,647,864, Cl. 604-391.000.
Angell, Adrian J. W.; Surutzidis, Athanasios; Kvietok, Frank A.; and Perkis, David F., 5,648,328, Cl. 510-441.000.
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Blieszner, Kathleen Clare; and Deckner, George Endell, 5,648,083, Cl. 424-402.000.
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Granberg, Eric Paul; Schafermeyer, Richard Gerard; and Letton, James Anthony, 5,648,483, Cl. 536-119.000.
Hammons, John L.; Hennessy, Shannon J.; and Martin, Alvin D., Jr., 5,647,863, Cl. 604-378.000.
Horrell, Robin S., 5,647,413, Cl. 141-108.000.
Osborn, Thomas Ward, III; Schmitz, Deborah Catherine; Cree, James William; and Elder, Melisse Noel, 5,647,862, Cl. 604-378.000.
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White, Ronald Eugene; and Demuth, Thomas Prosser, Jr., 5,648,346, Cl. 514-210.000.
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Gilbert, Scott Robert, 5,647,168, Cl. 47-72.000.
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Stolowitz, Mark L., 5,648,470, Cl. 530-391.100.
Prompac Industries, Inc.: *See*—
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Q.B.I. Enterprises Ltd.: *See—*
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QQC, Inc.: *See—*
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Quintanilla, Reuben: *See—*
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Resemann, Wolfgang; Durr, Adolf; Engelhardt, Gunther; and Quirke, John Frances, 5,648,386, Cl. 514-524.000.

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Ra, Corky. Coin operated vending machine coin safe. 5,647,471, Cl. 194-350.000.

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Rabito, Carlos A.; and Moore, Richard H., to General Hospital Corporation, The. Ambulatory clearance function monitor. 5,647,363, Cl. 128-659.000.

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Ragin, Oscar T.: *See—*
Lachocki, Thomas M.; Ragin, Oscar T.; and Mitchell, Presley K., 5,648,314, Cl. 504-151.000.

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Ross, Russell; Reidy, Michael A.; Raines, Elaine W.; Lindner, Volkhard; and Ferns, Gordon A. A., 5,648,076, Cl. 424-145.100.

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Ramesh, Subban: *See—*
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Jamieson, Donald R.; VanderPlaat, Peter G.; Poe, Jimmy R.; Holman, Richard T.; and Ramos, Claudia M., 5,647,342, Cl. 126-512.000.

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Rattray, Alan A.; Kirkconnell, Carl S.; Soloski, Steven C.; Price, Kenneth D.; and Russo, Samuel C., to Hughes Electronics. Cooling system using a pulse-tube expander. 5,647,219, Cl. 62-6.000.

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Rautenberg, Horst, to Windmöller & Hölscher. Tearing-off roller pair. 5,647,524, Cl. 225-106.000.

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Raz, Richard L.: *See—*
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RCA Thomson Licensing Corp.: *See—*
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Rebert, Carl J.: *See—*
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REC Software, Inc.: *See—*
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Reczek, Peter R.: *See—*
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Reczek, Steven T., to Ferronics Incorporated. Process for preparing a ferromagnetic material. 5,648,015, Cl. 216-22.000.

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Reddy, Baireddy Raghava; and Shamshoum, Edwar Shoukri, to Fina Technology, Inc. Process for preparing an isotactic/syndiotactic polymer blend in a single reactor. 5,648,428, Cl. 526-116.000.

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Redlich, George Harvey; Willingham, Gary Lewis; and Chapman, John Steven, to Rohm and Haas Company. Stable solid form antimicrobial compositions comprising 3-isothiazolones. 5,648,086, Cl. 424-409.000.

Reed, Clayton L.; Ryan, John E., Jr.; and Germain, Bruce R., to Pall Corporation. Filter assembly with a spin welded end cap. 5,647,950, Cl. 156-580.000.

Reed, John Douglas, to Motorola, Inc. Method for assigning subscribers between narrowbeam sectors. 5,649,293, Cl. 455-453.000.

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Regal Electronics, Inc.: *See—*
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Regan, Timothy T.: *See—*
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Regeneron Pharmaceuticals, Inc.: *See—*
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Reggi, John D.: *See—*
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Reif, Wolfgang; Hesse, Michael; Zimmermann, Horst; and Lingk, Heinz, to BASF Aktiengesellschaft. Preparation of amines from nitriles by alkylation with a nitrogen compound in the presence of a copper oxide/zirconium oxide catalyst. 5,648,545, Cl. 564-470.000.

Reijnhart, Rene: *See—*
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Reinbold, John L.: *See—*
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Reinhard, Alfred. Device for the storage of cassettes. 5,647,487, Cl. 211-40.000.

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Reudink, Douglas O., to Metawave Communications Corporation. Narrow beam antenna systems with angular diversity. 5,648,968, Cl. 370-335.000.

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Revak, Scott: *See—*
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Rexford, Donald G.; and Bolebruch, Jeffrey J., to Blasch Precision Ceramics, Inc. Ceramic ferrule and ceramic ferrule refractory wall for shielding tube sheet/boiler tube assembly of heat exchanger. 5,647,432, Cl. 165-134.100.

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Reyes, James O. Musical chord transposer. 5,648,625, Cl. 84-475.000.

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Rhone Merieux: *See—*
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Rhone-Poulenc Rorer Pharmaceuticals, Inc.: *See—*
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Rhule, Daniel Allen: *See—*
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Richard, Russell. Tennis ball belt. 5,647,523, Cl. 224-684.000.

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Saito, Masaru: *See*—
Sato, Teiji; Sato, Toshio; Sugawara, Toshiaki; Sawada, Hiroshi; Wakaki, Seiji; Ohta, Satoru; and Saito, Masaru, 5,648,413, Cl. 524-313.000.

Saito, Minoru: *See*—
Fukui, Yasushi; Matsuno, Masanori; Tanaka, Hiroshi; Miono, Tadaaki; Sakamoto, Kazushi; Ariyoshi, Yasumi; and Saito, Minoru, 5,648,177, Cl. 428-610.000.

Saito, Tetsushi, to Yamaha Hatsudoki Kabushiki Kaisha. Lubricating arrangement for engine. 5,647,315, Cl. 123-196.0AB.

Saito, Yoshimasa: *See*—
Niwa, Mineo; Saito, Yoshimasa; Sasaki, Hitoshi; Hayashi, Masako; Notani, Jouji; and Kobayashi, Masakazu, 5,648,250, Cl. 435-172.300.

Saitoh, Shinya: *See*—
Horiutchi, Akiyo; and Saitoh, Shinya, 5,647,790, Cl. 451-47.000.

Sakaguchi, Takahiro: *See*—
Katoh, Noriyuki; Sakaguchi, Takahiro; and Okada, Koukichi, 5,648,693, Cl. 310-67.00R.

Sakai, Kaoru: *See*—
Takei, Tsunetomo; Aiba, Toshimitsu; Sakai, Kaoru; and Fujiwara, Tetsuro, 5,648,457, Cl. 530-324.000.

Sakai Medical Co., Ltd.: *See*—
Suzuki, Hajime; and Sekiguchi, Yasuo, 5,647,071, Cl. 4-555.000.

Sakai, Yoshimi: *See*—
Shimazu, Seiki; Yamaga, Kenji; Sakai, Yoshimi; Koyama, Atsushi; and Namikawa, Yuichi, 5,648,105, Cl. 425-139.000.

Sakaki, Mamoru; and Katayama, Masato, to Canon Kabushiki Kaisha. Recording paper and ink-jet recording process making use of the same. 5,648,164, Cl. 428-341.000.

Sakamoto, Junichi; Tsukamoto, Seitoku; Sawamura, Mitsuharu; and Fukasawa, Motomu, to Canon Kabushiki Kaisha. Optical filter having alternately laminated thin layers provided on a light receiving surface of an image sensor. 5,648,653, Cl. 250-208.100.

Sakamoto, Kazushi: *See*—
Fukui, Yasushi; Matsuno, Masanori; Tanaka, Hiroshi; Miono, Tadaaki; Sakamoto, Kazushi; Ariyoshi, Yasumi; and Saito, Minoru, 5,648,177, Cl. 428-610.000.

Sakamoto, Michiaki; and Onozawa, Tatsuo, to NEC Corporation. Liquid crystal display apparatus having a pixel with areas of different orientation in which a spacer has a cylindrical profile for orienting. 5,648,828, Cl. 349-110.000.

Sakata, Hajime, to Canon Kabushiki Kaisha. Oscillation polarization mode selective semiconductor laser, modulation method therefor and optical communication system using the same. 5,648,978, Cl. 372-50.000.

Sakazaki, Yoshihisa; and Abe, Shuji, to Kabushiki Kaisha Toshiba. Recording/reproducing apparatus for data packet stream. 5,648,960, Cl. 370-498.000.

Sako, Hiroyuki: *See*—
Ogawa, Masao; Sako, Hiroyuki; Kawaguchi, Kenji; and Toriyama, Masayuki, 5,647,450, Cl. 180-220.000.

Sako, Kazuya: *See*—
Nagami, Masaaki; and Sako, Kazuya, 5,649,016, Cl. 381-71.500.

Sakurai, Kunihiko: *See*—
Katsuoka, Seiji; Sakurai, Kunihiko; and Togawa, Tetsuji, 5,647,792, Cl. 451-285.000.

Salber, Wolfgang; Esch, Thomas; and Schebitz, Michael, to FEV Motorentechnik GmbH & Co. Kommanditgesellschaft. Four-stroke Otto engine having hybrid control. 5,647,312, Cl. 123-90.160.

Saldanha, Alexander; and McGeer, Patrick, to Cadence Design Systems, Inc. Dominator selection method for reducing power consumption in a circuit. 5,649,166, Cl. 395-500.000.

Salisbury, Roger Stephen, to General Electric Company. Post-fabrication repair method for thin film imager devices. 5,648,296, Cl. 437-173.000.

Salk Institute for Biological Studies, The: *See*—
Trowbridge, Ian S.; and White, Suhaila N., 5,648,469, Cl. 530-388.220.

Salliotte, James E., to United Technologies Automotive, Inc. Intermittent windshield wiper system. 5,648,707, Cl. 318-443.000.

Salmi, Jari: *See*—
Gustafsson, Jukka; Salmi, Jari; and Laiho, Heikki, 5,648,619, Cl. 73-865.800.

Salomon S.A.: *See*—
Arduin, Joël, 5,647,605, Cl. 280-602.000.

Saltiel, Alan Robert: *See*—
Bisgaier, Charles Larry; Creger, Paul Leroy; Saltiel, Alan Robert; and Tafuri, Sherrie Rae, 5,648,387, Cl. 514-547.000.

Salvaleon, Rinaldo Ibbarola: *See*—
Winter, John Duckett; Stevenson, John Saunders; Kassman, Jerrold Samuel; Wiese, Harry Clarence; Richter, George Neal; Kocsis, Lisa Marie; and Salvaleon, Rinaldo Ibbarola, 5,647,876, Cl. 48-197.00R.

Salvatini, Benjamin: *See*—
Hakamiun, Reza; Ellis, Craig D.; Salvatini, Benjamin; Brenner, John A.; Ascheraft, David N.; Chambers, Kenith W.; and Glover, Stephen E., 5,647,079, Cl. 5-713.000.

Samaddar, Sumitro: *See*—
Bani-Hashemi, Ali Reza; Samaddar, Sumitro; and Hentschel, Dietmar, 5,647,360, Cl. 128-653.100.

Sambamurthy, Namakkal S.; Lai, Woo-Ping; and VanGilder, John P., to Seeq Technology, Incorporated. Apparatus and method for full-duplex ethernet communications. 5,648,956, Cl. 370-296.000.

Sameshima, Toshiyuki: *See*—
Hara, Masaki; Sano, Naoki; Sameshima, Toshiyuki; Kohno, Atsushi; Sekiya, Mitsunobu; Kanaya, Yasuhiro; and Yano, Michihisa, 5,648,276, Cl. 437-21.000.

Sampath, Vijay R., to Atlantic Richfield Company. Alkylation with separate alkylation of isobutane with pentenes. 5,648,586, Cl. 585-716.000.

Sampath, Vijay R., to Atlantic Richfield Company. Alkylation with separate alkylation of isobutane with pentenes. 5,649,281, Cl. 422-189.000.

Sampei, Hiroshi; Hosoya, Kouichi; Katoh, Kenji; Sato, Masashi; Ohizumi, Mitsutoshi; Seno, Koichi; Komatsu, Hisateru; Watanabe, Takashi; Konno, Makoto; and Shibata, Akira, to Mitsumi Electric Co., Ltd. Disc drive having positional shift adjustment. 5,648,883, Cl. 360-106.000.

SamSung Electronics Co., Ltd.: *See*—
Cheong, Sang-Won, 5,647,585, Cl. 271-171.000.
Choi, Eun-suk, 5,648,781, Cl. 341-176.000.
Choi, Nak-choon; and Jee, Kyung-ha, 5,648,702, Cl. 315-224.000.
Kim, Sang-Wook, 5,649,053, Cl. 395-2.380.
Kwon, Young-Jun, 5,649,272, Cl. 399-318.000.
Mun, Jong-kuk; Lee, Yong-hee; Lee, Eun-kyung; and Ha, Kyung-ho, 5,648,979, Cl. 372-50.000.
Song, Jun-ho; Pae, Yong-quk; and Park, Wun-yong, 5,648,826, Cl. 349-49.000.
Yang, Jian; Patel, Chandrakant Bhailalbhai; Liu, Tianmin; and Limberg, Allen Le Roy, 5,648,987, Cl. 375-232.000.

Samsung Semiconductor, Inc.: *See*—
Hang, Chia-Lun, 5,649,127, Cl. 395-307.000.

Sanden Corporation: *See*—
Hashimoto, Kenji; and Mabe, Atsushi, 5,647,395, Cl. 137-517.000.
Sasaki, Kenichi, 5,647,433, Cl. 165-148.000.

Sanders, David J.: *See*—
Ausich, Rodney L.; and Sanders, David J., 5,648,564, Cl. 568-834.000.

Sanders, James Edward: *See*—
McHugh, Donald Raymond; and Sanders, James Edward, 5,647,788, Cl. 451-21.000.

Sanders, Robert Alan: *See*—
Sarama, Robert Joseph; Wehmeier, Thomas Joseph; Sevenants, Michael Robert; and Sanders, Robert Alan, 5,648,091, Cl. 424-451.000.

Sandford, Paul A.: *See*—
Desai, Neil P.; Soon-Shiong, P.; and Sandford, Paul A., 5,648,506, Cl. 549-510.000.

Sandia Corporation: *See*—
Brow, Richard K.; McCollister, Howard L.; Phifer, Carol C.; and Day, Delbert E., 5,648,302, Cl. 501-50.000.
Trebino, Rick; DeLong, Ken; and Hayden, Carl, 5,648,866, Cl. 359-326.000.

Sandoz Ltd.: *See*—
Henrick, Clive A., 5,648,562, Cl. 568-774.000.
Ostberg, Lars G., 5,648,077, Cl. 424-149.100.

Sands, Steve L.: *See*—
Mills, R. Steven; Gandre, Jerry D.; Sands, Steve L.; and Khadem, Gita P., 5,647,748, Cl. 439-81.000.

Sandvik AB: *See*—
Collin, Marianne, 5,648,029, Cl. 264-645.000.
Gustafson, Per; Akesson, Leif; and Ostlund, Ake, 5,649,279, Cl. 419-25.000.

Sankyo Seiki Mfg. Co., Ltd.: *See*—
Okamura, Tetsurou, 5,648,875, Cl. 359-662.000.

Sano, Hironari: *See*—
Miwa, Chiyo; Sano, Hironari; Nishida, Koji; and Kurasawa, Yoshihiro, 5,648,424, Cl. 525-92.00D.

Sano, Naoki: *See*—
Hara, Masaki; Sano, Naoki; Sameshima, Toshiyuki; Kohno, Atsushi; Sekiya, Mitsunobu; Kanaya, Yasuhiro; and Yano, Michihisa, 5,648,276, Cl. 437-21.000.

Sanofi Sante Nutrition Animale: *See*—
Ovaert, Patricia; and Boivin, Eliane, 5,648,087, Cl. 424-423.000.

Sanshin Kogyo Kabushiki Kaisha: *See*—
Nanami, Masayoshi, 5,647,779, Cl. 440-38.000.

Sanyo Electric Co., Ltd.: *See*—
Ikegami, Masashi; Matsuhashi, Toshihiko; Yamaue, Yoshiya; Tanaka, Takashi; Hayashi, Katsunori; and Takaoka, Daizo, 5,647,554, Cl. 242-390.900.
Terada, Norihiro; and Harada, Yasuki, 5,648,675, Cl. 257-458.000.
Toba, Akira, 5,648,815, Cl. 348-208.000.

Sara Lee Corporation: *See*—
Foster, Wayne G.; Everhart, John R.; Rosenquist, Joel C.; and Thompson, Ken J., 5,647,517, Cl. 223-2.000.

Sarakinis, Georgios, to AB Volvo. Method and device for diagnosis of the refrigerant quantity in an air conditioning system. 5,647,222, Cl. 62-129.000.

Sarama, Robert Joseph; Wehmeier, Thomas Joseph; Sevenants, Michael Robert; and Sanders, Robert Alan, to Proctor & Gamble Company, The. Stable vitamin A encapsulated. 5,648,091, Cl. 424-451.000.

Sarcos Group: *See*—
Jacobsen, Stephen C.; and Davis, Clark C., 5,647,575, Cl. 251-325.000.

Sargent & Greenleaf, Inc.: *See*—
Clark, Michael R.; and Lainhart, Gregory C., 5,647,235, Cl. 70-278.000.

Sarma, Narayana V.: *See*—
Barbee, Steven George; Chapple-Sokol, Jonathan Daniel; Conti, Richard Anthony; Hsiao, Richard; O'Neill, James Anthony; Sarma, Narayana V.; Wilson, Donald Leslie; Wong, Justin Wai-Chow; and Zuboski, Steven Paul, 5,648,113, Cl. 427-8.000.

Sarrazin, Patrick: *See*—
Nguyen Than, Canh; Didillon, Blaise; Sarrazin, Patrick; and Cameron, Charles, 5,648,576, Cl. 585-260.000.

Sartori, Michael A.: *See*—
Clark, Joseph A.; and Sartori, Michael A., 5,648,936, Cl. 367-13.000.

Sasai, Osamu; Kawase, Hajime; Wada, Yasunori; and Tsutsui, Shinsuke, to Sumitomo Wiring Systems, Ltd. Connector assembly for a retainer, a method for producing the same, and a molding die for producing the same. 5,647,777, Cl. 439-752.000.

Sasaki, Gen, to Minolta Co., Ltd. Image recording and reproducing system. 5,649,250, Cl. 396-333.000.

Sasaki, Hitoshi: *See*—
Niwa, Mineo; Saito, Yoshimasa; Sasaki, Hitoshi; Hayashi, Masako; Notani, Jouji; and Kobayashi, Masakazu, 5,648,250, Cl. 435-172.300.

Sasaki, Kenichi, to Sanden Corporation. Heat exchanger. 5,647,433, Cl. 165-148.000.

Sasaki, Kyoichi; and Shimada, Masaki, to Toshiba Kikai Kabushiki Kaisha. Process for preparation of corrosion-resistant and wear-resistant alloy. 5,647,920, Cl. 148-512.000.

Sasaki, Mitsuhiro: *See*—
Yasuda, Shin-ichiro; Kawabe, Kuniyasu; and Sasaki, Mitsuhiro, 5,648,841, Cl. 399-134.000.

Sasaki, Tomoya, to Yamaha Corporation. Automatic player piano exactly reproducing music recorded on other musical instrument. 5,648,621, Cl. 84-171.000.

Sasame, Hiroshi: *See*—
Maebashi, Youichirou; and Sasame, Hiroshi, 5,649,268, Cl. 399-168.000.

Sashida, Nobuyuki; Banba, Toshio; and Takeda, Naoshige, to Sumitomo Bakelite Company Limited. Process for producing photosensitive resin. 5,648,451, Cl. 528-353.000.

Sata, Naoki: *See*—
Matsuo, Yoshihiko; Kusuda, Kazuo; Sata, Naoki; Yoshikawa, Toshihumi; and Matsumura, Tsuneo, 5,648,687, Cl. 257-787.000.

Sato, Fumie; Amano, Takehiro; Kameo, Kazuya; Tanami, Tohru; Mutoh, Masaru; Ono, Naoya; and Goto, Jun, to Taisho Pharmaceutical Co., Ltd.; and Sato, Fumie. Process for the preparation of E-prostaglandins. 5,648,526, Cl. 562-503.000.

Sato, Hiroshi: *See*—
Homma, Akira; Homma, Susumu; Sato, Hiroshi; and Hiroi, Hisao, 5,647,804, Cl. 472-90.000.

Sato, Koji; Morita, Makoto; and Kizu, Masafumi, to Toyota Jidosha Kabushiki Kaisha. Vehicle data processing system which can communicate with information center. 5,648,769, Cl. 340-988.000.

Sato, Masashi: *See*—
Sampei, Hiroshi; Hosoya, Kouichi; Katoh, Kenji; Sato, Masashi; Ohizumi, Mitsutoshi; Seno, Koichi; Komatsu, Hisateru; Watanabe, Takashi; Konno, Makoto; and Shibata, Akira, 5,648,883, Cl. 360-106.000.

Sato, Shigeki; Eguchi, Masaharu; and Konno, Yoshihiko, to Canon Kabushiki Kaisha. Optical apparatus with control device for controlling movable optical member. 5,648,836, Cl. 396-86.000.

Sato, Shigemasa; Moro, Ken; and Kawahata, Nobuya, to Nikon Corporation. Multi-function camera having color coordinated operational modes and manipulation members. 5,649,244, Cl. 396-287.000.

Sato, Teiji; Sato, Toshio; Sugawara, Toshiaki; Sawada, Hiroshi; Wakaki, Seiji; Ohta, Satoru; and Saito, Masaru, to Mizusawa Industrial Chemicals, Inc. Stabilizer for chlorine-containing polymers, process for the preparation thereof and chlorine-containing polymer composition. 5,648,413, Cl. 524-313.000.

Sato, Toshihiro; Hayata, Hiroko; Numata, Yuichi; Kaitoh, Takuo; Ishikawa, Jun; and Shimomura, Shigeo, to Hitachi, Ltd. Liquid crystal display device having a thin film. 5,648,792, Cl. 345-92.000.

Sato, Toshio: *See*—
Sato, Teiji; Sato, Toshio; Sugawara, Toshiaki; Sawada, Hiroshi; Wakaki, Seiji; Ohta, Satoru; and Saito, Masaru, 5,648,413, Cl. 524-313.000.

Sato, Tsutomu: *See*—
Honda, Ryoji; Kita, Masahiro; Negoro, Ikuo; Nishikawa, Tomoyuki; Yano, Takaaki; Yoshida, Tatsuya; Kamasako, Shoji; Sato, Tsutomu; and Negishi, Kiyoshi, 5,649,274, Cl. 399-375.000.

Sato, Yoshiaki: *See*—
Tsubaki, Takeshi; Watanabe, Katsuya; Takesue, Hidenori; Sato, Yoshiaki; Kudo, Katsuyoshi; and Nawata, Makoto, 5,647,944, Cl. 156-345.000.

Sato, Yoshinori, to Diafoil Hoechst Company, Ltd. Dry resist. 5,648,159, Cl. 428-327.000.

Sato, Yuichi: *See*—
Yuza, Yasutada; and Sato, Yuichi, 5,648,750, Cl. 337-295.000.

Satoh, Isao, to Matsushita Electric Industrial Co., Ltd. Optical disk using land and groove tracks. 5,648,954, Cl. 369-275.100.

Satoh, Shigeki, to Nissan Motor Co., Ltd. Control type vibro-isolating support. 5,647,579, Cl. 267-140.140.

Satoh, Toshiya: *See*—
Shimizu, Ryuuichi; Kawanishi, Tsuneaki; Satoh, Toshiya; Mitsuya, Teruaki; and Suzuki, Takashi, 5,649,273, Cl. 399-329.000.

Satoyoshi, Junichi: *See*—
Konno, Hidetoshi; Kaneko, Masamichi; and Satoyoshi, Junichi, 5,647,500, Cl. 220-269.000.

Saul, Gilbert D. Respiratory stimulator & methods of use. 5,647,345, Cl. 128-201.230.

Saunders, William T., to Weirton Steel Corporation. Fabricating one-piece can bodies with controlled side wall elongation. 5,647,242, Cl. 72-349.000.

Savage, Robert C.: *See*—
Green, David T.; Palmer, Mitchell J.; Milliman, Keith L.; Savage, Robert C.; McClure, Richard C.; and Heaton, Lisa W., 5,647,526, Cl. 227-175.200.

Savino, Michael J.: *See*—
Bray, Daniel M.; Thomas, Kim M.; Domoto, Gerald A.; and Savino, Michael J., 5,649,271, Cl. 399-264.000.

Sawada, Hiroshi: *See*—
Sato, Teiji; Sato, Toshio; Sugawara, Toshiaki; Sawada, Hiroshi; Wakaki, Seiji; Ohta, Satoru; and Saito, Masaru, 5,648,413, Cl. 524-313.000.

Sawaki, Ippei; Miura, Michio; Ishikawa, Yoshiro; and Abe, Fumitaka, to Fujitsu Limited. Optical apparatus. 5,648,874, Cl. 359-622.000.

Sawamura, Mitsuharu: *See*—
Sakamoto, Junichi; Tsukamoto, Seitoku; Sawamura, Mitsuharu; and Fukasawa, Motomu, 5,648,653, Cl. 250-208.100.

Sawano, Kiyoshi: *See*—
Morita, Mitsuru; Miyamoto, Katsuyoshi; Sawano, Kiyoshi; and Matsuda, Shouichi, 5,648,319, Cl. 505-230.000.

Sawanobori, Keiji: *See*—
Aoki, Harumi; Tani, Nobuhiro; and Sawanobori, Keiji, 5,648,817, Cl. 348-264.000.

Sawdon, Edwin G., to BTM Corporation. Gripper. 5,647,625, Cl. 294-86.400.

Sawers, Ulf; Jones, Grady Donald, Sr.; Jones, Dale Richard; Kuehnemund, Bruce Albert; and Dockery, Randall Lee, to General Motors Corporation. Fuel sender for motor vehicle. 5,647,330, Cl. 123-509.000.

Scarberry, Eugene N.: *See*—

Barnett, Shari S.; Handke, Patrick M.; Sabo, Kristine K.; and Scarberry, Eugene N., 5,647,357, Cl. 128-206.240.

Scaringe, Robert P.; and Grzyll, Lawrence R., to Mainstream Engineering Corporation. Phase change apparatus for animal parts, human body parts, body fluids and culture. 5,647,226, Cl. 62-457.200.

Schaefer, Gerd: *See*—
Schaefer, Karl; and Schaefer, Gerd, 5,647,417, Cl. 144-172.000.

Schaefer, Karl; and Schaefer, Gerd, to Inter-Wood-Maschinen GmbH & Co., KG. Long-timber chipping machine. 5,647,417, Cl. 144-172.000.

Schaefer, Keith James; Mandzy, John; Carlson, Andrew Anthony; Adams, Crestus Lee; Brown, Steven Joseph; and Johnson, John Joseph Paul, to Martin Marietta Corporation. Liquid monopropellant gas generator. 5,648,052, Cl. 422-305.000.

Schafermeyer, Richard Gerard: *See*—
Granberg, Eric Paul; Schafermeyer, Richard Gerard; and Letton, James Anthony, 5,648,483, Cl. 536-119.000.

Schaus, John M.: *See*—
Booher, Richard N.; Lawhorn, David E.; Martinelli, Michael J.; Paget, Charles J., Jr.; and Schaus, John M., 5,648,356, Cl. 514-256.000.

Schebitz, Michael: *See*—
Salber, Wolfgang; Esch, Thomas; and Schebitz, Michael, 5,647,312, Cl. 123-90.160.

Schechtman, Lee Arnold; and Kemper, Joseph Jay, to Procter & Gamble Company, The. Polymerization of beta-substituted-beta-propiolactones initiated by alkylzinc alkoxides. 5,648,452, Cl. 528-357.000.

Schectman, Leonard A. Flexible reach tool. 5,647,622, Cl. 294-19.100.

Scheer, David C., to Intel Corporation. Integrated circuit card having contacts along the side rails and method for transferring information using the contacts. 5,649,224, Cl. 395-800.000.

Scheer, Peter L.; Raman, Venkat A.; and Minich, Steven E., to Whitaker Corporation, The. Electrical connector jack assembly for signal transmission. 5,647,767, Cl. 439-620.000.

Scheiner, Otto: *See*—
Valenta, Rudolf; Duchene, Michael; Pettenburger, Karin; Breitenbach, Michael; Kraft, Dietrich; Rumpold, Helmut; and Scheiner, Otto, 5,648,242, Cl. 435-69.300.

Schell, Cynthia T.: *See*—
Blizzard, Ronald H.; Schell, Cynthia T.; Skruch, Harry J.; and Stallings, Robert L., 5,647,891, Cl. 95-99.000.

Schenke, Thomas: *See*—
Petersen, Uwe; Krebs, Andreas; Schenke, Thomas; Grohe, Klaus; Schriewer, Michael; Haller, Ingo; Metzger, Karl Georg; Endermann, Rainer; and Zeiler, Hans-Joachim, 5,648,493, Cl. 546-156.000.

Scherbenske, Vernon J.: *See*—
Feldmann, William G.; Scherbenske, Vernon J.; and Henning, Craig M., 5,647,853, Cl. 604-155.000.

Schering Aktiengesellschaft: *See*—
Gries, Heinz; Rosenberg, Douwe; Weinmann, Hanns-Joachim; Speck, Ulrich; Mutzel, Wolfgang; Hoyer, Georg-Alexander; Pfeiffer, Heinrich, deceased; and Renneke, Franz-Josef, 5,648,063, Cl. 424-9.363.

Schering Corporation: *See*—
Kaminski, James J.; Wong, Shing-Chun C.; and Carruthers, Nicholas I., 5,648,360, Cl. 514-80.000.
Wu, Guang-Zhong, 5,648,484, Cl. 540-203.000.

Scherpenberg, Francis A.: *See*—
McLellan, Neil; Strittmatter, Mike; Hundt, Joseph Patrick; Sells, Christopher M.; and Scherpenberg, Francis A., 5,647,121, Cl. 29-840.000.

Scheurenbrand, Dieter; Kolb, Hartmut; and Weil, Manfred, to Mercedes-Benz AG. Motor vehicle fuel supply system with fuel tank deventilating device. 5,647,335, Cl. 123-520.000.

Schieltz, Steven W., to Sensormatic Electronics Corporation. Video surveillance camera release and removal mechanism. 5,649,255, Cl. 396-427.000.

Schill, Eduard: *See*—
Bommer, Juergen; Schill, Eduard; and Waible, Siegfried, 5,647,088, Cl. 15-250.201.

Schittny, Thomas: *See*—
Mettner, Michael; Schuelke, Armin; Doering, Christian; and Schittny, Thomas, 5,647,574, Cl. 251-129.060.

Schlichter, Stefan: *See*—
Leifeld, Ferdinand; and Schlichter, Stefan, 5,647,098, Cl. 19-159.00A.

Schlickhoff, Reiner; Mento, Giovanni; and Moebius, Heinz-Guenter, to Minnesota Mining and Manufacturing Company. Apparatus for treating photographic originals with a treatment liquid. 5,649,261, Cl. 396-571.000.

Schlingloff, Nicole: *See*—
Thiele, Lothar; Kohlstadt, Hans-Peter; Schlingloff, Nicole; and Plutniok, Claudia, 5,648,421, Cl. 524-789.000.

Schlumberger Technology Corporation: *See*—
Folstad, Per Gunnar; and Schoenberg, Michael A., 5,648,939, Cl. 367-73.000.

Schlüter, Peter: *See*—
Kaub, Manfred; Lange, Hans-Christoph; and Schlüter, Peter, 5,647,213, Cl. 60-578.000.

Schmett, Michael: *See*—
Groenewold, Vera; and Schmett, Michael, 5,647,841, Cl. 601-114.000.

Schmid, Eckhardt: *See*—
Edele, Reinhard; and Schmid, Eckhardt, 5,647,085, Cl. 15-250.210.

Schmidt, Claus: *See*—
Grothe, Wolfgang; Klauda, Matthias; Mueller, Stefan; and Schmidt, Claus, 5,648,747, Cl. 333-204.000.

Schmidt, Gerhard: *See*—
Ritter, Klaus; Ritter, Gerhard; and Schmidt, Gerhard, 5,647,110, Cl. 29-33.00K.

Schmidt, Lanny D.; and Hickman, Daniel A., to University of Minnesota, Regents of the, Stable, ultra-low residence time partial oxidation. 5,648,582, Cl. 585-652.000.

Schmidt, Larry E.: *See*—
Gudat, Adam J.; Shin, Dong Hun; Whittaker, William L.; Kleimenhagen, Karl W.; Singh, Sanjiv J.; Christensen, Dana A.; Kemner, Carl A.; Bradbury, Walter J.; Koehrsen, Craig L.; Kyrtsos, Christos T.; Lay, Norman K.; Peterson, Joel L.; Schmidt, Larry E.; Stafford, Darrell E.; Weinbeck, Louis J.; and Devier, Lonnie J., 5,648,901, Cl. 364-424.027.

Schmidt, Stefan: *See*—
Grützke, Jürgen; and Schmidt, Stefan, 5,648,475, Cl. 536-18.600.

Schmidt-Rohr, Volker; Sollinger, Hans-Peter; Henseler, Klaus; and Esslinger, Klaus, to Voith Sulzer Papiermaschinen GmbH. Wire part of a machine for the manufacture of fibrous material webs. 5,647,958, Cl. 162-203.000.

Schmiedeskamp, Robert Walter: *See*—
Antognini, James J.; Cubert, Robert Michael; Gladney, Henry Martin; Hildebrand, David Burns, Jr.; Hörne, Steven Fletcher; and Schmiedeskamp, Robert Walter, 5,649,185, Cl. 395-609.000.

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Sherwin-Williams Company, The: *See—*
Erste, Marijan F.; and Beres, Robert S., 5,647,408, Cl. 141-20.000.
Shiao, Hsuan-Sen. Telescopic shaft magnetic retriever. 5,647,623, Cl. 294-65.500.
Shiba, Noriyuki, to Kabushiki Kaisha Tokyo Kikai Seisakusho. Rotary press with a plurality of rolls of paper and printing method using such a rotary press. 5,647,582, Cl. 270-8.000.
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Inagaki, Yoshio; Takami, Masayuki; Kataoka, Masahiro; and Shibagaki, Taro, 5,648,964, Cl. 370-228.000.
Shibata, Akira: *See—*
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Shibata, Katsuhiko; Toriyama, Yoshio; Kobayashi, Naoto; and Ueda, Shiro, to Hitachi, Ltd.; and Hitachi Device Engineering Co., Ltd. Liquid crystal display which suppresses interference fringes. 5,648,858, Cl. 349-57.000.
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Shieh, Johnny Meng-Han: *See—*
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Hatatani, Mitsuaki; Okimoto, Osamu; Shigemura, Toshitada; Fukunara, Yoshifumi; and Sadamura, Hideaki, 5,648,014, Cl. 252-62.560.
Shih, Edward: *See—*
Yang, Chang-Wen, 5,647,646, Cl. 303-115.200.
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Yamaguchi, Kyoji; Shima, Nobuyuki; Murakami, Akihiko; Goto, Masaaki; Tsuda, Eisuke; Masunaga, Hiroaki; Takahira, Reiko; Oogaki, Fumiko; Ueda, Masatsugu; and Higashio, Kanji, 5,648,233, Cl. 435-69.100.
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Shimada, Yasuhiro: *See—*
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Shimazaki, Yoshihito: *See—*
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Shimazu, Akira: *See—*
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Shimek, Daniel Curtis: *See—*
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Shimek, Ronald John; and Shimek, Daniel Curtis, to Heat-n-Glow. Convertible dual direct-vented fireplace. 5,647,340, Cl. 126-85.00B.
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Shimizu, Kenji: *See—*
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Shimizu, Makoto: *See—*
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Shimizu, Ryuuichi; Kawanishi, Tsuneaki; Satoh, Toshiya; Mitsuya, Teruaki; and Suzuki, Takashi, to Hitachi, Ltd.; and Hitachi Koki Co., Ltd. Belt-type fixing device having an irregular surface contour. 5,649,273, Cl. 399-329.000.
Shimizu, Takeo: *See—*
Ohyama, Isao; Nakamura, Shiro; Shimizu, Takeo; Yanagawa, Hisaharu; and Iwata, Hideyuki, 5,649,037, Cl. 385-24.000.
Shimizu, Yasushi: *See—*
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Shimogai, Yoshinori: *See—*
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Shimokawato, Satoshi: *See—*
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Shimomura, Masumi, to Kabushiki Kaisha Komatsu Seisakusho. Crankshaft miller and method of use thereof. 5,647,705, Cl. 409-132.000.
Shimomura, Shigeo: *See—*
Sato, Toshihiro; Hayata, Hiroko; Numata, Yuichi; Kaitoh, Takuo; Ishikawa, Jun; and Shimomura, Shigeo, 5,648,792, Cl. 345-92.000.
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Shin, Dong Hun: *See—*
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Shinabarger, Joe E. Noise suppressor apparatus. 5,647,377, Cl. 128-864.000.
Shindo, Takenori: *See—*
Yamauchi, Kiyoshi; Shindo, Takenori; and Hattori, Shigeo, 5,648,919, Cl. 364-578.000.
Shinoda, Shinichi: *See—*
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Shinozuka, Hiroshi: *See—*
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Shiomi, Yasushi; Uenaka, Akimitsu; and Tsutsui, Koichi, to Nippon Paint Co., Ltd. Powder coating composition. 5,648,117, Cl. 427-195.000.
Shioyama, Masahiko: *See—*
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Shipley Company, L.L.C.: *See—*
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Shipp, Anthony D. Animal dental hygiene device. 5,647,302, Cl. 119-709.000.
Shirado, Masayuki: *See—*
Hatano, Masakatsu; Nakanishi, Akio; Kabara, Yoshio; Shirado, Masayuki; Takeo, Hiroshi; and Kobayashi, Mitsuharu, 5,648,558, Cl. 568-618.000.
Shiratori, Tsutomu; and Yoshida, Hiroshi, to Canon Kabushiki Kaisha. Thermal recording medium capable of keeping width of mark train constant and recording method for the same. 5,648,134, Cl. 428-641.000.
Shirayanagi, Moriyasu: *See—*
Sekiya, Takaomi; and Shirayanagi, Moriyasu, 5,648,652, Cl. 250-201.700.
Shirriff, Kenneth W.: *See—*
Thadani, Moti N.; Bernabeu-Auban, Jose M.; Khalidi, Yousef A.; Matena, Vladimir; and Shirriff, Kenneth W., 5,648,965, Cl. 370-241.000.
Shober, R. Anthony; Vannucci, Giovanni; and Wright, Gregory Alan, to Lucent Technologies Inc. Dual mode modulated backscatter system. 5,649,295, Cl. 455-38.200.
Shober, R. Anthony: *See—*
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Shop Vac Corporation: *See—*
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Showa Denko K.K.: *See—*
Saida, Yoshihiro; Ikenoue, Yoshiaki; and Ichikawa, Reiko, 5,648,453, Cl. 528-380.000.
Shu, Kuo Fen. Socket structure used for decoration light bulbs. 5,647,771, Cl. 439-699.200.
Shulman, Michael Y.; Chan, Yook K.; Skoczylas, Henry F.; Hickey, Suzanne V.; and Katzenberger, Nicholas K. Female receptacle and premold therefor. 5,647,751, Cl. 439-106.000.
Shute, Bruce W., to Westinghouse Air Brake Company. Spring-type railroad brake shoe locking key. 5,647,460, Cl. 188-243.000.
Shutoh, Keiji: *See—*
Koh, Akio; Fujiwara, Hisashi; Kurosaki, Kiyoshi; Masamoto, Shigezoh; and Shutoh, Keiji, 5,648,154, Cl. 428-313.700.
Shutske, Gregory M.; Freed, Brian S.; Tomer, John D., IV; and Hamer, R. Richard L., to Hoechst Marion Roussel, Inc. Aminoalkyloximes. 5,648,367, Cl. 514-330.000.

Sibille, Pierre: *See*—
Avrameas, Alexandre; Pancino, Gianfranco; Sibille, Pierre; Sonigo, Pierre; and Strosberg, Arthur Donny, 5,648,209, Cl. 435-5.000.

Sick, Georg: *See*—
Stenzel, Otto W.; Sick, Georg; Köhler, Eduard; Möding, Herbert; and Niehues, Jürgen, 5,648,620, Cl. 75-232.000.

Siebenwurst, Robert; Kuhn, Hans; and Tews, Bernhard, to Siemens Aktiengesellschaft. Liquid ring machine having pivoted outer housing. 5,647,728, Cl. 417-68.000.

Sieber, Jonathan D., to Sieber, Joseph S. Method and apparatus for automated layout of text and graphic elements. 5,649,216, Cl. 395-767.000.

Sieber, Joseph S.: *See*—
Sieber, Jonathan D., 5,649,216, Cl. 395-767.000.

Siecor Corporation: *See*—
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Siemanowski, Werner: *See*—
Dillenburg, Helmut; Jakobson, Gerald; Klein, Winfried; Siemanowski, Werner; Uhlig, Karlheinz; and Wolf, Florian, 5,648,067, Cl. 424-65.000.

Siemens Aktiengesellschaft: *See*—
Jungkunz, Clemens; Steidl, Siegbert; Wohld, Dietrich; Berghs, Andre; and Troendle, Hans-Peter, 5,647,237, Cl. 72-9.200.
Schulz, Egon, 5,648,967, Cl. 370-328.000.
Sebald, Michael; Birkle, Siegfried; Preissner, Karin; and Bestmann, Hans-Jürgen, 5,648,195, Cl. 430-170.000.
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Wier, Manfred; Treinies, Stefan; and Ketterer, Alexander, 5,647,205, Cl. 60-274.000.
von Gentzkow, Wolfgang; Huber, Jürgen; Kapitza, Heinrich; Rogler, Wolfgang; and Kleiner, Hans-Jerg, 5,648,171, Cl. 428-413.000.

Siemens Aktiengesellschaft AG: *See*—
Stepp, Richard; and Fiesel, Hans, 5,648,823, Cl. 348-726.000.

Siemens Aktiengesselschaft: *See*—
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Siemens Automotive S.A.: *See*—
Atanasyan, Alain Antranik, 5,647,204, Cl. 60-274.000.

Siemens Corporate Research, Inc.: *See*—
Bani-Hashemi, Ali Reza; Samaddar, Sumitro; and Hentschel, Dietmar, 5,647,360, Cl. 128-653.100.

Siemens Medical Systems, Inc.: *See*—
Abboud, William J., 5,647,365, Cl. 128-661.010.
Weng, Lee, 5,647,366, Cl. 128-661.090.

Siemens Schweiz AG: *See*—
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Siemsns Aktiengesellschaft: *See*—
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Siese, Gerhard: *See*—
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Sievert, Allen Capron: *See*—
Klug, Diana Lynn; Minor, Barbara Haviland; Patron, Donna Marie; Chisolm, Tuneen E. C.; and Sievert, Allen Capron, 5,648,016, Cl. 252-67.000.

Sikes, C. Steven, to University of South Alabama. Polyamino acid dispersants. 5,648,082, Cl. 424-401.000.

Silicon Graphics, Inc.: *See*—
Burns, Derrick R., 5,649,082, Cl. 395-130.000.
Ferguson, Gregory J., 5,649,186, Cl. 395-610.000.

Siliconix incorporated: *See*—
Williams, Richard K.; Yilmaz, Hamza; Cornell, Michael E.; and Chen, Jun Wei, 5,648,281, Cl. 437-33.000.
Williams, Richard K.; and Cornell, Michael E., 5,648,288, Cl. 437-45.000.

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Lazzari, Jean-Pierre, 5,648,884, Cl. 360-113.000.

Silsby, Winfield F., Jr. Door handle protective device. 5,647,248, Cl. 74-558.500.

Silverstein, Steven; and Heinrich, Michael J. Ligature for woodwind instruments. 5,648,623, Cl. 84-383.00R.

Simon, Daniel: *See*—
Stamler, Jonathan; Loscalzo, Joseph; Slivka, Adam; Simon, Daniel; Brown, Robert; and Drazen, Jeffrey, 5,648,393, Cl. 514-562.000.

Simon, Werner: *See*—
Brüngger, Andreas; Gründler, Hansjörg; and Simon, Werner, 5,648,550, Cl. 568-388.000.

Simpson, Claudie. Kit and method to retrofit heating elements for curling iron holder. 5,648,004, Cl. 219-242.000

Simpson, John W.: *See*—
Wincheski, Russell A.; Fulton, James P.; Nath, Shridhar C.; Simpson, John W.; and Namkung, Min, 5,648,721, Cl. 324-240.000.

Simpson, Matthew, to Saint Gobain/Norton Industrial Ceramics Corp. Thermal management of electronic components using synthetic diamond. 5,648,148, Cl. 428-212.000.

Simpson, Randall L.; and Pruneda, César O., to University of California, Regents of the. Non-detonable and non-explosive explosive simulators. 5,648,636, Cl. 102-355.000.

SIMS Deltec, Inc.: *See*—
Olsen, James M.; and Johnson, Jay Gregory, 5,647,854, Cl. 604-174.000.

Simula Inc.: *See*—
Zimmerman, Bernd Dieter; Yaniv, Gershon; Lou, Ken-An; Hardtmann, Dirk Jeffery; and Stevens, Donald Clark, 5,649,035, Cl. 385-13.000.

Singer, Jack: *See*—
Bianco, James A.; Woodson, Paul; Porubek, David; and Singer, Jack, 5,648,357, Cl. 514-263.000.

Singer, Richard E.: *See*—
Foutz, George W.; and Singer, Richard E., 5,647,425, Cl. 164-54.000.

Singh, Sanjiv J.: *See*—
Gudat, Adam J.; Shin, Dong Hun; Whittaker, William L.; Kleimenhagen, Karl W.; Singh, Sanjiv J.; Christensen, Dana A.; Kemner, Carl A.; Bradbury, Walter J.; Koehrsen, Craig L.; Kyrtsos, Christos T.; Lay, Norman K.; Peterson, Joel L.; Schmidt, Larry E.; Stafford, Darrell E.; Weinbeck, Louis J.; and Devier, Lonnie J., 5,648,901, Cl. 364-424.027.

Singh, Surrendra; Fuquen, Rosendo; and Leeper, David R., to Timken Company, The. Process for measuring the case depth of case-carburized steel. 5,648,611, Cl. 73-598.000.

Singvogel, Armin: *See*—
Lakhani, Mukund; Brokelmann, Jörg; and Singvogel, Armin, 5,647,354, Cl. 128-205.130.

Sinn, Scott G.: *See*—
Feucht, Dennis D.; Sinn, Scott G.; and Faletti, James J., 5,647,318, Cl. 123-322.000.

Sinopoli, Italo Marziale; Helfer, Farrel Bruce; Kim, Dong Kwang; Morgan, John Gomer; Shemenski, Robert Martin; Jeanpierre, Guy; and Nguyen, Gia Van, to Goodyear Tire & Rubber Company, The. Tires with high strength reinforcement. 5,648,153, Cl. 428-295.100.

Sinovas, Rosa Maria; Safont, Vicente; Peñaranda, Mariano; and Golob, Hans-Jürgen, to Braun Aktiengesellschaft. Stabmixer. 5,647,546, Cl. 241-292.100.

Sintov, Amnon: *See*—
Friedman, Michael; and Sintov, Amnon, 5,648,399, Cl. 514-772.600.

Sippel, David J. Shipping and storage rack. 5,647,493, Cl. 211-194.000.

Sitar, Daryl Steven; Momcilovich, Paul Theodore; Masrur, MD Abul; Liang, Feng; Myers, Garold Paul; and Zarei, Shahram, to Ford Motor Company. Motor vehicle alternator and methods of operation. 5,648,705, Cl. 318-145.000.

Sites, Richard Lee, to Digital Equipment Corporation. Translating, executing, and re-translating a computer program for finding and translating program code at unknown program addresses. 5,649,203, Cl. 395-709.000.

Sitz, Hans-Dieter: *See*—
Ritter, Wolfgang; Sitz, Hans-Dieter; and Speitkamp, Ludwig, 5,648,518, Cl. 560-224.000.

Sivaramakrishnan, Visweswaren: *See*—
Russell, Kathleen; Robles, Stuardo; Nguyen, Bang C.; and Sivaramakrishnan, Visweswaren, 5,648,175, Cl. 428-472.300.

Skaggs, Roger Dean. Drill bit having a plurality of teeth. 5,647,448, Cl. 175-421.000.

Ski-Shocks, Inc.: *See*—
Juhasz, Paul Robert, 5,647,353, Cl. 280-602.000.

Skibo, Richard John: *See*—
Carlisle, William Reid; Curtis, Lydia Anne; Murphy, Kathleen M.; and Skibo, Richard John, 5,649,118, Cl. 395-241.000.

Skoczylas, Henry F.: *See*—
Shulman, Michael Y.; Chan, Yook K.; Skoczylas, Henry F.; Hickey, Suzanne V.; and Katzenberger, Nicholas K., 5,647,751, Cl. 439-106.000.

Skotheim, Terje Absjorn, to Moltech Corporation. Stabilized anode for lithium-polymer batteries. 5,648,187, Cl. 429-213.000.

Skovira, Joseph Francis: *See*—
Childs, Philip Lee; and Skovira, Joseph Francis, 5,649,164, Cl. 395-500.000.

Skruch, Harry J.: *See*—
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SKW Trostberg Aktiengesellschaft: *See*—
Thalhammer, Franz; and Graefe, Jürgen, 5,648,490, Cl. 544-320.000.

Slack, William E.; and Adkins, Rick L., to Bayer Corporation. Liquid 1,3-phenylene diisocyanate, 1,1'-biphenyl diisocyanate and 1,1'-oxy-bis-(isocyanato-benzene). 5,648,445, Cl. 528-49.000.

Slat, William A.: *See*—
Young, William C.; Slat, William A.; and Darr, Richard C., 5,647,516, Cl. 222-529.000.

Slater, Charles R.; Palmer, Matthew A.; Kortenbach, Jurgen Andrew; McBrayer, Michael Sean; and Gottlieb, Saul, to Symbiosis Corporation. Method for forming a jaw assembly for an endoscopic bioptome. 5,647,115, Cl. 29-557.000.

Slater, Timothy G.: *See*—
Neukermans, Armand P.; and Slater, Timothy G., 5,648,618, Cl. 73-862.080.

Slemmer, William Carl, to SGS-Thomson Microelectronics, Inc. Structure for deselecting broken select lines in memory arrays. 5,648,933, Cl. 365-200.000.

Slingo, Inc.: *See*—
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Slivka, Adam: *See*—
Stamler, Jonathan; Loscalzo, Joseph; Slivka, Adam; Simon, Daniel; Brown, Robert; and Drazen, Jeffrey, 5,648,393, Cl. 514-562.000.

Sloan-Kettering Institute for Cancer Research: *See*—
Buck, Jochen; Hammerling, Ulrich; Derguini, Fadila; and Nakanishi, Koji, 5,648,563, Cl. 568-824.000.

Slobodnik, John B.: *See*—
Rukavina, Thomas G.; and Slobodnik, John B., 5,648,149, Cl. 428-215.000.

Smale, Mark Wilton: *See*—
Wasserman, Eric Paul; Smale, Mark Wilton; Lynn, Timothy Roger; Brady, Robert Converse, III; and Karol, Frederick John, 5,648,310, Cl. 502-120.000.

Smart, Michael; Ricker, Mark; and Neifert, Leonard, to Bell & Howell Phillipsburg Company. Document set accumulator having guide elements with compressible O-rings for tool-less adjustment. 5,647,587, Cl. 271-223.000.

Smayling, Michael C.; and Anselm, Klaus A., to Texas Instruments Incorporated. Method for detecting defects in semiconductor insulators. 5,648,275, Cl. 437-8.000.

Smedley, William H.: *See*—
Haber, Terry M.; Smedley, William H.; and Foster, Clark B., 5,647,845, Cl. 604-32.000.

Smerznak, Mark A.; Jones, Roger J.; Surutzidis, Athanasios; Fisk, Andrew A.; Christiano, Steven P.; Bausch, Gregory G.; Tonge, Lauren M.; McCoy, Sharon K.; and Mallen, Elizabeth F., to Procter & Gamble Company, The. Stable liquid detergent compositions comprising a dispersible silicone-based suds suppressor system. 5,648,327, Cl. 510-340.000.

Smirnova, Tania: *See*—
Mallet, Jacques; and Smirnova, Tania, 5,648,259, Cl. 435-252.300.

Smith, Alan M.: *See*—
Petrucelli, Steven P.; Welkowitz, Walter; Liss, Lisa K.; Smith, Alan M.; and Orbine, Stephen A., III, 5,647,369, Cl. 128-672.000.

Smith & Nephew, Inc.: *See*—
Davidson, James A., 5,647,858, Cl. 604-264.000.

Smith & Nephew plc: *See*—
Kininmonth, Julia; and Evans, John Christopher, 5,647,842, Cl. 602-76.000.
Peck, Roger Francis, 5,648,167, Cl. 428-355.0AC.

Smith, Carole M.; and Mercer, Philip W. Apparatus and method for treating waste water from a residential home. 5,647,980, Cl. 210-202.000.

Smith, Edward H., to Tyler Pipe Company. Method and apparatus for treatment of contaminated water using waste shot blast fines. 5,647,991, Cl. 210-662.000.

Smith, Kevin W.; and Persinski, Leonard J., to Clearwater, Inc. Preparation of hydrocarbon gels from ferric sources, polycarboxylic acid compounds, and optional amines, in combination with phosphate esters. 5,647,900, Cl. 106-285.000.

Smith, Lawrence G., to Travelers Express Company, Inc. Apparatus for dispensing documents having monetary value. 5,647,677, Cl. 400-70.000.

Smith, Leonard: *See*—
Monday, John W.; Ottaviani, Joseph C.; and Smith, Leonard R., 5,647,906, Cl. 118-70.000.

Smith, Leonard R.: *See*—
Monday, John W.; Ottaviani, Joseph C.; and Smith, Leonard R., 5,647,906, Cl. 118-70.000.

Smith, Raub Warfield, to General Electric Co. Combined-cycle with multi-pressure reheat system. 5,647,199, Cl. 60-39.020.

Smith, Richard L., to Yancy Company, The. Wind chime having a rotating striker. 5,648,624, Cl. 84-404.000.

Smith, Roger A., to Motorola, Inc. Method and apparatus for finding arctangents. 5,648,924, Cl. 364-729.000.

SmithKline Beecham Corporation: *See*—
Holt, Dennis Alan; Luengo, Juan Ignacio; and Rozamus, Leonard Walter, Jr., 5,648,361, Cl. 514-291.000.
Winkler, James David; Chilton, Floyd Harold, III; and Hickey, Deirdre Mary Bernadette, 5,648,373, Cl. 514-398.000.

SmithKline Diagnostics, Inc.: *See*—
Chandler, Howard M., 5,648,274, Cl. 436-514.000.

Smiths Industries PLC: *See*—
Turnbull, Christopher Stratton, 5,647,344, Cl. 128-201.130.

Smithson, Alan George; Aiston, Brian Edward; Harte, Joseph Patrick; and Williamson, Kenneth, to AlliedSignal Ltd. Lifting reel assembly web clamping retractor. 5,647,553, Cl. 242-381.100.

Smrcka, John J., executor: *See*—
McKinney, Richard A.; Myers, Donald R.; McKinney, Barbara J.; Moody, David B.; Smrcka, Joseph G., deceased; Smrcka, John J., executor; Zhu, Joshua Y.; and Weeder, Daniel P., 5,648,915, Cl. 364-507.000.

Smrcka, Joseph G., deceased: *See*—
McKinney, Richard A.; Myers, Donald R.; McKinney, Barbara J.; Moody, David B.; Smrcka, Joseph G., deceased; Smrcka, John J., executor; Zhu, Joshua Y.; and Weeder, Daniel P., 5,648,915, Cl. 364-507.000.

Smyth, Christopher C., to United States of America, Army. Device and method for estimating a mental decision. 5,649,061, Cl. 395-20.000.

Smyth, James G. Floating sub-frame for roof curbs and method of installation. 5,647,175, Cl. 52-58.000.

Snell, William M.; Kaliszewski, Thomas S.; and Eaton, Rodney L., to Chrysler Corporation. Releasable lock mechanism for gear shift lever. 5,647,464, Cl. 192-4.00A.

Snow Brand Milk Products Co., Ltd.: *See*—
Yamaguchi, Kyoji; Shima, Nobuyuki; Murakami, Akihiko; Goto, Masaaki; Tsuda, Eisuke; Masunaga, Hiroaki; Takahira, Reiko; Oogaki, Fumiko; Ueda, Masatsugu; and Higashio, Kanji, 5,648,233, Cl. 435-69.100.

Snow Brank Milk Products Co., Ltd.: *See*—
Ohtsuki, Kazuo; Mitsunobu, Akikazu; Imaizumi, Yoshihiro; Honda, Nobuyoshi; and Inoue, Satoshi, 5,648,507, Cl. 552-615.000.

Snyder, Francis J.: *See*—
Augustyn, Craig L.; Giannetti, Richard; James, Travis L.; Muscarella, Stephen B.; Pascoe, Philip T.; Snyder, Francis J.; and VanBork, Erik C., 5,647,733, Cl. 417-360.000.

Snyder, Jerome F.; and Fuson, Francis G., to Rotec, A Nevada General Partnership. Message delivery system and method therefor. 5,649,300, Cl. 455-517.000.

So, Hidetoshi; and Hashihiro, Shinji, to Precision Fukuhara Works, Ltd. Needle selection mechanism for circular knitting machine. 5,647,230, Cl. 66-224.000.

Soc Corporation: *See*—
Yuza, Yasutada; and Sato, Yuichi, 5,648,750, Cl. 337-295.000.

Societe Nationale des Poudres et Explosifs: *See*—
Hussenet, Patricia; Le Goff, Philippe; and Sennyey, Gérard, 5,648,537, Cl. 564-252.000.

Sofie: *See*—
Canteloup, Jean; and Mathias, Jacky, 5,648,849, Cl. 356-357.000.

SofTel, Inc.: *See*—
Hornbuckle, Gary D., 5,649,187, Cl. 395-610.000.

Sofy, Hugh M., to HMS, Mfg. Co. Rotating Christmas tree stand. 5,647,569, Cl. 248-522.000.

Soled, Stuart L.; Gates, William E.; and Iglesia, Enrique, to Exxon Research & Engineering Company. Group VIII metal containing tungsten oxide silica modified zirconia as acid catalyst. 5,648,589, Cl, 585-734.000.

Soled, Stuart Leon: *See*—
Ho, Teh Chung; Soled, Stuart Leon; Misco, Sabato; McVicker, Gary Brice; Daage, Michel; and Buchbolz, Viktor, 5,648,577, Cl. 585-266.000.

Sollevi, Alf, to Item Development AB. Method of treating pulmonary inflammation by continuous administration of an adenosine-containing solution. 5,648,341, Cl. 514-46.000.

Sollinger, Hans-Peter: *See*—
Schmidt-Rohr, Volker; Sollinger, Hans-Peter; Henseler, Klaus; and Esslinger, Klaus, 5,647,958, Cl. 162-203.000.

Soloski, Steven C.: *See*—
Rattray, Alan A.; Kirkconnell, Carl S.; Soloski, Steven C.; Price, Kenneth D.; and Russo, Samuel C., 5,647,219, Cl. 62-6.000.

Solvay Fluor und Derivate GmbH: *See*—
Dillenburg, Helmut; Jakobson, Gerald; Klein, Winfried; Siemanowski, Werner; Uhlig, Karlheinz; and Wolf, Florian, 5,648,067, Cl. 424-65.000.

Somei, Junichi, to Sharp Kabushiki Kaisha. Switching circuit for a satellite broadcasting converter capable of assuring a high sensitivity. 5,649,311, Cl. 455-188.100.

Sonda, Yoshiyuki: *See*—
Ooi, Yoshiharu; Wakabayashi, Tsuneo; Serizawa, Shigeyuki; Sonda, Yoshiyuki; Kunigita, Masaya; and Hirai, Yoshinori, 5,648,860, Cl. 349-10.000.

Sone, Seijiro: *See*—
Matsumura, Yasuo; Hashiba, Kazuo; and Sone, Seijiro, 5,647,314, Cl. 123-184.570.

Song, Jun Il: *See*—
Shim, Jin Hak; and Song, Jun Il, 5,647,974, Cl. 210-103.000.

Song, Jun-ho; Pae, Yong-quk; and Park, Wun-yong, to Samsung Electronics Co., Ltd. Reparable display device matrix having scanning line repair conductive layers or pixel electrode multiple destruction-prevention notches. 5,648,826, Cl. 349-49.000.

Song, Lizhi: *See*—
Liu, Xiusen; Zhu, Huarong; Ai, Fubin; Song, Lizhi; Lu, Zhihui; and Hou, Xuewei, 5,648,538, Cl. 564-307.000.

Song, Suk Chun: *See*—
Kim, Myeong Suk; Song, Suk Chun; Kang, Tae Woon; and Choi, Mun Kee, 5,649,107, Cl. 395-200.110.

Song, Tae K.: *See*—
Vuligonda, Vidyasagar; Beard, Richard L.; Johnson, Alan T.; Teng, Min; Song, Tae K.; and Chandraratna, Roshantha A., 5,648,503, Cl. 549-13.000.

Sonigo, Pierre: *See*—
Avrameas, Alexandre; Pancino, Gianfranco; Sibille, Pierre; Sonigo, Pierre; and Strosberg, Arthur Donny, 5,648,209, Cl. 435-5.000.

Sonobe, Kenichi, to Fuji Xerox Co., Ltd. Method and device for smoothing an enlarged image. 5,649,034, Cl. 382-298.000.

Sony Corporation: *See*—
Hara, Masaki; Sano, Naoki; Sameshima, Toshiyuki; Kobno, Atsushi; Sekiya, Mitsunobu; Kanaya, Yasuhiro; and Yano, Michihisa, 5,648,276, Cl. 437-21.000.
Hayashi, Toshihide; and Tsumori, Koki, 5,649,094, Cl. 395-183.060.
Kobayashi, Tomio; and Suyama, Hideo, 5,648,886, Cl. 360-113.000.
Ogawa, Tohru; and Gocho, Tetsuo, 5,648,202, Cl. 430-325.000.
Ohmori, Kiyoshi; Watanabe, Tetsu; Seo, Katsuhiro; and Kudo, Junichi, 5,648,944, Cl. 369-13.000.
Scott, Ed, 5,647,505, Cl. 221-2.000.
Scott, Ed, 5,648,904, Cl. 364-436.000.
Takano, Akira, 5,648,879, Cl. 360-73.110.

Vanell, James; and Garcia, Al, 5,647,911, Cl. 118-715.000.
Yanagihara, Naofumi, 5,648,855, Cl. 386-80.000.
Yoshinobu, Hitoshi, 5,649,284, Cl. 455-5.100.

Sony Trans Com Inc.: *See—*
Scott, Ed, 5,647,505, Cl. 221-2.000.
Scott, Ed, 5,648,904, Cl. 364-436.000.

Soon-Shiong, P.: *See—*
Desai, Neil P.; Soon-Shiong, P.; and Sandford, Paul A., 5,648,506, Cl. 549-510.000.

Sopha Medical: *See—*
Bourguignon, Michel; and Pare, Christian, 5,648,659, Cl. 250-363.040.

Soques, Martin P.: *See—*
Linz, Alfredo R.; Cabler, Carlin Dru; Brown, Glen W.; and Soques, Martin P., 5,648,778, Cl. 341-110.000.

Sours, Cynthia R.: *See—*
White, John N., Jr.; and Sours, Cynthia R., 5,647,074, Cl. 4-664.000.

Southpac Trust International, Inc.: *See—*
Weder, Donald E.; and Straeter, William F., 5,647,188, Cl. 53-397.000.
Weder, Donald E.; and Straeter, William F., 5,647,189, Cl. 53-399.000.
Weder, Donald E.; and Straeter, Joseph G., 5,647,193, Cl. 53-465.000.
Weder, Donald E., 5,648,130, Cl. 428-34.100.

Sozzi, Dino: *See—*
Nuninger, Cosima; Goggin, John Edward Nicholas; and Sozzi, Dino, 5,648,383, Cl. 514-491.000.

Space Systems/Loral, Inc.: *See—*
Tyner, Randall D.; Briggs, Donald C.; Collins, Daniel E.; and Avellino, William R., 5,649,310, Cl. 455-129.000.

Spagna, Stefano: *See—*
Sager, Ronald E.; and Spagna, Stefano, 5,647,228, Cl. 62-656.000.

Spal Indústria Brasileira de Bebidas S/A: *See—*
Assis Mascarenhas de Oliveira, Carlos Henrique; Bruno, Leonardo; Padilla Julio, Roberto; Maselli, Alberto; and Moraes Mesiano, Ivan Jerônimo, 5,647,512, Cl. 222-108.000.

Spalding, Robert G., to Dresser Industries. Fluid meter having a crankshaft with two angularly spaced crank pins radially offset from the crankshaft. 5,648,606, Cl. 73-247.000.

Spargo, Catherine A.: *See—*
Fraiser, Melinda S.; Spargo, Catherine A.; Walker, George Terrance; Van Cleve, Mark; Wright, David James; and Little, Michael C., 5,648,211, Cl. 435-6.000.

Spathias, Adonis: *See—*
Dobbs, Douglas B.; and Spathias, Adonis, 5,647,539, Cl. 239-504.000.

Spaulding, Glenn F. Process for identifying sex associated egg proteins and methods for increasing the probability that the avian offspring will be the desired sex. 5,648,468, Cl. 530-359.000.

Specialty Chemical Resources, Inc.: *See—*
Peelor, Phil; Moran, John; and Flanner, Lloyd T., 5,648,406, Cl. 523-166.000.

Speck, Ulrich: *See—*
Gries, Heinz; Rosenberg, Douwe; Weinmann, Hanns-Joachim; Speck, Ulrich; Mutzel, Wolfgang; Hoyer, Georg-Alexander; Pfeiffer, Heinrich, deceased; and Rennecke, Franz-Josef, 5,648,063, Cl. 424-9.363.

Spectrum Solutions, Ltd.: *See—*
Steele, Robin S.; and Stenger, Jennifer L., 5,647,503, Cl. 220-589.000.

Speer, Drew Ve; and Roberts, William Peyton, to W. R. Grace & Co.-Conn. Oxygen scavenging composition for low temperature use. 5,648,020, Cl. 252-188.280.

Speitkamp, Ludwig: *See—*
Ritter, Wolfgang; Sitz, Hans-Dieter; and Speitkamp, Ludwig, 5,648,518, Cl. 560-224.000.

Spence, John R. Therapeutic apparatus for exercising the human knee. 5,647,823, Cl. 482-91.000.

Spencer, Graham Thornton; Fisher, Margaret Ann; and Webber, James Lloyd, to General Motors Corporation. Inflatable restraint cushion. 5,647,609, Cl. 280-730.200.

Sperber, Ferenc: *See—*
Pálosi, Endre; Korbonits, Dezso; Molnár née Bakó, Erzsébet; Szvoboda née Kanzel, Ida; Héja, Gergely; Kiss, Pál; Gönczi, Csaba; Sperber, Ferenc; Huszár, Csaba; Mihalovics, György; Németh, Attila; Sütő, Mihály; Gyüre, Károl; Bóné, István; Mórász, Ferenc; Ledniczky, László; Szabó née Kardos, Erzsébet; Győri, Péter; Szalay, Erzsébet; Bán, Károly; Butkai, Ildikó; Kővári, Árpád; and Garaczy, Sándor, 5,648,498, Cl. 548-202.000.

Sperber, Henry. Loose material combining and depositing apparatus. 5,647,696, Cl. 406-56.000.

Spiegel, Ethan; and Murase, Tutomu, to NEC Corporation. Combined progressive and source routing control for connection-oriented communications networks. 5,649,108, Cl. 395-200.120.

Spitz, Robert M: *See—*
Blake, Joseph W., III; and Spitz, Robert M, 5,647,836, Cl. 600-30.000.

Spitz, Roger: *See—*
Chen, Frank Joung-yei; Le Deore, Christophe; Spitz, Roger; and Guyot, Alan, 5,648,580, Cl. 585-462.000.

Spitzbarth, Joachim Kurt Friedrich, to Oudang, Erry P. Hydraulic pumping unit. 5,647,208, Cl. 60-371.000.

Spivey, Martin P.: *See—*
McMurtry, David R.; Harding, Andrew J.; Lummes, Stephen E.; Spivey, Martin P.; and Sullivan, Jonathan S., 5,647,137, Cl. 33-572.000.

Spriester, Bart Fredrick; and Dale, James Lawrence, to Scientific-Atlanta, Inc. Non-interruptible tap and method. 5,648,745, Cl. 333-100.000.

Squicciarini, Gaetano. Set of casting elements for the realization of gypsum models for dental prosthesis, and casting systems employing said elements. 5,647,744, Cl. 433-34.000.

Squinto, Stephen P.: *See—*
Davis, Samuel; Squinto, Stephen P.; Furth, Mark E.; and Yancopoulos, George D., 5,648,334, Cl. 514-12.000.

Squirrell, David James, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in her Britannic Majesty's Government of the. Microbiological best method and reagents. 5,648,232, Cl. 435-34.000.

Sramek, John A., to S. C. Johnson & Son, Inc. Laundry pre-spotter with associative polymeric thickener. 5,648,326, Cl. 510-284.000.

Stafford, Darrell E.: *See—*
Gudat, Adam J.; Shin, Dong Hun; Whittaker, William L.; Kleimenhagen, Karl W.; Singh, Sanjiv J.; Christensen, Dana A.; Kemner, Carl A.; Bradbury, Walter J.; Koehrsen, Craig L.; Kyrtsos, Christos T.; Lay, Norman K.; Peterson, Joel L.; Schmidt, Larry E.; Stafford, Darrell E.; Weinbeck, Louis J.; and Devier, Lonnie J., 5,648,901, Cl. 364-424.027.

Staggs, William A.: *See—*
Chatrathi, Srikrishna; Staggs, William A.; and Lombardo, Anthony J., 5,647,438, Cl. 169-58.000.

Stallings, Robert L.: *See—*
Blizzard, Ronald H.; Schell, Cynthia T.; Skruch, Harry J.; and Stallings, Robert L., 5,647,891, Cl. 95-99.000.

Stamler, Jonathan; Loscalzo, Joseph; Slivka, Adam; Simon, Daniel; Brown, Robert; and Drazen, Jeffrey, to Brigham & Women's Hospital. Treatment of male impotence with s-nitrosylated compounds. 5,648,393, Cl. 514-562.000.

Stammely, Thomas Edward: *See—*
Rehquate, Rudolf Eugene; Stammely, Thomas Edward; and Stoltz, Jeffrey Matthew, 5,649,111, Cl. 395-200.200.

Stamper, James D. Folding knife, 5,647,129, Cl. 30-139.000.

Standard Register Company, The: *See—*
Mehta, Rajendra; and Akridge, Walt, 5,648,143, Cl. 428-137.000.

Stanley, Daniel L.: *See—*
Brodnax, Timothy B.; Bullis, Bryan K.; King, Steven A.; Schoenike, Robert L.; and Stanley, Daniel L., 5,649,097, Cl. 395-185.070.

Stanley, Stephen J.: *See—*
Kantorowicz, Steven I.; Stanley, Stephen J.; Wadsworth, David M.; and Warner, Rene C. L., 5,647,972, Cl. 208-100.000.

Stanton, Robert P. Portable computerized pari-mutuel sports entertainment system. 5,647,795, Cl. 463-1.000.

Starace, Jeremia Patrick: *See—*
Drach, Robert George; and Starace, Jeremia Patrick, 5,647,760, Cl. 439-395.000.

Stark, David Martin: *See—*
Barry, Gerard Francis; Kishore, Ganesh Murthy; Stark, David Martin; and Zalewski, James Conrad, 5,648,249, Cl. 435-172.300.

Stark, Jürgen; and Strunk, Steffen, to Dorma GmbH + Co. KG. Operating method for the operation of a revolving door. 5,647,173, Cl. 49-506.000.

Starr, Eric W.: *See—*
Starr, John R.; Starr, Eric W.; Kaigler, William J.; Pujol, John Raymond; DeVinney, Patrick; and Serowski, Andrew, 5,647,355, Cl. 128-205.240.

Starr, John R.; Starr, Eric W.; Kaigler, William J.; Pujol, John Raymond; DeVinney, Patrick; and Serowski, Andrew, to Respironics, Inc. Automatic safety valve for respiratory equipment which is counter-balanced and self-adjusting. 5,647,355, Cl. 128-205.240.

Starrett, John E., Jr.; Yu, Kuo-Long; Mansuri, Muzammil M.; Tortolani, David R.; and Reczek, Peter R., to Bristol-Myers Squibb Co. Retinoid-like compounds. 5,648,385, Cl. 514-513.000.

Startech Semiconductor, Inc.: *See—*
Wegner, Glenn A.; and Khachaturian, Art, 5,649,122, Cl. 395-285.000.

Staskewitsch, Ewald: *See—*
Greul, Mathias; Staskewitsch, Ewald; Steger, Wilhelm; Pintat, Theo; Geiger, Martin; and Melchior, Klaus, 5,649,277, Cl. 419-2.000.

STATOMAT Spezialmaschinen GmbH: *See—*
Fichtner, Karl Heinz; and Nasterlack, Joachim, 5,647,405, Cl. 140-92.100.

Stauber, Hans-Ulrich; and Gruninger, Baptist, to Ferag AG. Process and device for measuring the thickness of printed products on moving supports. 5,647,588, Cl. 271-259.000.

Staubli Faverges: *See—*
Palau, Joseph; and Froment, Jean-Paul, 5,647,402, Cl. 139-1.00R.

STD Electronic International Ltd: *See—*
Lam, Hang-Yick, 5,648,797, Cl. 345-161.000.

Stechl, Jens: *See—*
Henke, Stephan; Anagnostopulos, Hiristo; Breipohl, Gerhard; Knolle, Jochen; Stechl, Jens; Schölkens, Bernward; Fehlhaber, Hans-Wolfram; Gerhards, Hermann; and Hock, Franz, 5,648,333, Cl. 514-2.000.

Steele, Robin S.; and Stenger, Jennifer L., to Spectrum Solutions, Ltd. Tank for storing pressurized gas. 5,647,503, Cl. 220-589.000.

Steenstra, Mark Evan; Gehman, John Bartholomew, Jr.; and Acosta, Ascencion Chapapro, Jr., to Motorola, Inc. Dynamic instruction allocation for a SIMD processor. 5,649,179, Cl. 395-598.000.

Steer, Graham Emery: *See—*
Steer, Peter L.; Hollands, Keith G. M.; Steer, Graham Emery; Plass, Ronald A.; and Barratt, Howard, 5,647,861, Cl. 604-342.000.

Steer, Peter L.; Hollands, Keith G. M.; Steer, Graham Emery; Plass, Ronald A.; and Barratt, Howard, to E. R. Squibb & Sons, Inc. Ostomy coupling. 5,647,861, Cl. 604-342.000.

Steger, Wilhelm: *See—*
Greul, Mathias; Staskewitsch, Ewald; Steger, Wilhelm; Pintat, Theo; Geiger, Martin; and Melchior, Klaus, 5,649,277, Cl. 419-2.000.

Steidl, Siegbert; Jungkunz, Clemens; and Berger, Klaus, to Siemens Aktiengesellschaft. Method for suppressing the influence of roll eccentricities on a control for a rolling-stock thickness in a roll stand. 5,647,238, Cl. 72-10.100.

Steidl, Siegbert: *See—*
Jungkunz, Clemens; Steidl, Siegbert; Wohld, Dietrich; Bergas, Andre; and Troendle, Hans-Peter, 5,647,237, Cl. 72-9.200.

Steiner, Erwin; and Mischker, Rolf, to American Suessen Corporation. Yarn texturing device including a stuffer box channel with circumferetially closed cross section. 5,647,109, Cl. 28-263.000.

Steinfield, Steven W.; Keefe, Brian J.; Childers, Winthrop D.; Harris, Donald G.; and Azmoon, Majid, to Hewlett-Packard Company. Stable substrate structure for a wide swath nozzle array in a high resolution inkjet printer. 5,648,806, Cl. 347-87.000.

Steinfield, Steven W.: *See—*
Keefe, Brian J.; Steinfield, Steven W.; Childers, Winthrop D.; McClelland, Paul H.; and Trueba, Kenneth E., 5,648,804, Cl. 347-47.000.
Keefe, Brian J.; Ho, May Fong; Courian, Kenneth J.; Steinfield, Steven W.; Childers, Winthrop D.; Tappon, Ellen R.; Trueba, Kenneth E.; Chapman, Terri I.; Knight, William R.; and Moritz, Jules G., 5,648,805, Cl. 347-65.000.

Stengel, Robert E.; and Muri, David L., to Motorola, Inc. Circuit with supply voltage optimizer. 5,648,766, Cl. 340-870.390.

Stenger, Jennifer L.: *See—*
Steele, Robin S.; and Stenger, Jennifer L., 5,647,503, Cl. 220-589.000.

Stensland, Leif: *See—*
Ljungqvist, Göran; Johansson, Magnus; and Stensland, Leif, 5,649,040, Cl. 385-95.000.

Stenzel, Klaus: *See—*
Assmann, Lutz; Marhold, Albrecht; Dehne, Heinz-Wilhelm; Hänssler, Gerd; Stenzel, Klaus; and Wachendorff-Neumann, Ulrike, 5,648,316, Cl. 504-276.000.

Stenzel, Otto W.; Sick, Georg; Köhler, Eduard; Möding, Herbert; and Niehues, Jürgen, to KS Aluminium-Technologie Aktiengesellschaft. Sliding surface bearing. 5,648,620, Cl. 75-232.000.

Stephan, Craig Hammann: *See—*
Liang, Feng; and Stephan, Craig Hammann, 5,647,311, Cl. 123-90.110.

Stepniewski, George J., to Estee Lauder Companies. Solid silicone compositions and methods for their preparation and use. 5,648,066, Cl. 424-64.000.

Stepp, Richard; and Fiesel, Hans, to Siemens Aktiengesellschaft AG. Circuit configuration for intermediate frequency demodulation and device for video signal processing including the circuit. 5,648,823, Cl. 348-726.000.

Sterling Diagnostic Imaging, Inc.: *See—*
Lee, Denny Lap Yen; Palecki, Eugene Francis; and Williams, Cornell Lee, 5,648,660, Cl. 250-370.090.

Sterling, John E., Jr., to Guyan Machinery Co. Quick release clamp. 5,647,102, Cl. 24-494.000.

Stern, Carl M.: *See—*
Bennett, David Wayne; Dellinger, Eric Ford; Manaker, Walter A., Jr.; Stern, Carl M.; Troxel, William R.; and Young, Jay Thomas, 5,648,913, Cl. 364-491.000.

Stern, Howard; and Yonescu, William E., to Robotic Vision Systems, Inc. System for inspecting pin grid arrays. 5,648,853, Cl. 356-394.000.

Stemberg, James C.: *See—*
Reddy, M. Parameswara; and Stemberg, James C., 5,648,213, Cl. 435-6.000.

Stevens, Chester R.: *See—*
Yeager, John D.; Ho, Lawrence Y.; Stevens, Chester R.; Brady, James T.; and Wang, David T., 5,649,112, Cl. 395-200.100.

Stevens, Dale R.: *See—*
Lumbis, Anthony W.; and Stevens, Dale R., 5,647,562, Cl. 246-167.00R.

Stevens, Donald Clark: *See—*
Zimmerman, Bernd Dieter; Yaniv, Gershon; Lou, Ken-An; Hardtmann, Dirk Jeffery; and Stevens, Donald Clark, 5,649,035, Cl. 385-13.000.

Stevens, Kenneth A.: *See—*
Daugherty, Jonathan M.; and Stevens, Kenneth A., 5,647,650, Cl. 312-265.100.

Stevenson, John Saunders: *See—*
Winter, John Duckett; Stevenson, John Saunders; Kassman, Jerrold Samuel; Wiese, Harry Clarence; Richter, George Neal; Kocsis, Lisa Marie; and Salvaleon, Rinaldo Ibbarola, 5,647,876, Cl. 48-197.00R.

Stevenson, Tyler Arthur, to Ciba-Geigy Corporation. Compositions stabilized with red-shifted tris-aryl-s-triazines. 5,648,488, Cl. 544-215.000.

Steward, Ronald L. Folding article of furniture. 5,647,285, Cl. 108-119.000.

Stewart, Ian Malcolm; and Beckwith, Timothy John, to Quantel Limited. Video processing system with random access framestore for video editing. 5,649,046, Cl. 386-52.000.

Stewart, John M.; Gera, Lajos; and Whalley, Eric T., to University of Colorado. Bradykinin antagonist peptides containing indane-substituted amino acids. 5,648,336, Cl. 514-15.000.

Stewart, John S. Cutterhead inserts for an industrial woodworking machine. 5,647,419, Cl. 144-230.000.

Steylaerts, Peter Alexander Roger: *See—*
Aerens, Ronny Jean Valentine; De Cock, Etienne Marie; De Schamphelaere, Lucien Amede; Steylaerts, Peter Alexander Roger; and Van Weverberg, Erik Gabriel Gerardus, 5,649,267, Cl. 399-159.000.

Stikvoort, Eduard F.: *See—*
Rutten, Peter J. H.; and Stikvoort, Eduard F., 5,649,313, Cl. 455-339.000.

Stiles, David R.: *See—*
Favor, John G.; Van Dyke, Korbin; and Stiles, David R., 5,649,137, Cl. 395-383.000.

Still, Ed; and McRae, David. Apparatus for cleaning exterior or hoses, pipes, etc., 5,647,084, Cl. 15-104.920.

Stir-Melter, Inc.: *See—*
Wetmore, Kenneth H.; Kormanyos, Kenneth R.; and Cox, Stephen F., 5,647,833, Cl. 588-252.000.

Stirling Technology Company: *See—*
Penswick, Laurence B.; and Neely, Ronald E., 5,647,217, Cl. 62-6.000.

Stjerna, Per G. L.: *See—*
Narholm, Roland I. G.; and Stjerna, Per G. L., 5,647,666, Cl. 366-285.000.

Stogner, Patrick: *See—*
Johnson, Darren; Baldwin, Jeffrey; Eddy, Maxson; and Stogner, Patrick, 5,648,897, Cl. 364-188.000.

Stokes, Mitchell O.: *See—*
Sharifi, Mehran; Stokes, Mitchell O.; and Foss, David T., 5,647,215, Cl. 60-737.000.

Stoll, Harold M., to Northrop Grumman Corporation. Method for optically fixing holograms in photorefractive materials and a read/write memory based thereon. 5,648,856, Cl. 359-7.000.

Stolowitz, Mark L., to Prolinx, Inc. Phenylboronic acid complexing reagents derived from aminosalicyclic acid. 5,648,470, Cl. 530-391.100.

Stoltz, Jeffrey Matthew: *See—*
Rehquate, Rudolf Eugene; Stammely, Thomas Edward; and Stoltz, Jeffrey Matthew, 5,649,111, Cl. 395-200.200.

Stolz, Marcel, to Grapha-Holding AG. Method of attaching a cover to the spine of a book block formed of bound printed sheets. 5,647,715, Cl. 412-1.000.

Stommes, Wallace F.; Kunz, Ross S.; Beckman, Bryan A.; and Kunz, Christopher J., to StoneL Corporation. Modular valve position indicator. 5,647,396, Cl. 137-554.000.

Stone, Thomas R., to Quantum Corporation. Expandable gasket for a head disk assembly of a disk drive. 5,647,255, Cl. 83-19.000.

StöneL Corporation: *See—*
Stommes, Wallace F.; Kunz, Ross S.; Beckman, Bryan A.; and Kunz, Christopher J., 5,647,396, Cl. 137-554.000.

Stoner, Brian R.: *See—*
Hooke, William M.; Stoner, Brian R.; Bozeman, Steven P.; Fauber, Roy E.; Munsat, Tobin L.; and Washburn, Sean, 5,648,701, Cl. 315-111.210.

Storey, David C. Pick for a stringed musical instrument. 5,648,622, Cl. 84-322.000.

Stork Screens B.V.: *See—*
van der Meulen, Antonius Maria, 5,647,907, Cl. 118-100.000.

Stormon, Charles D.; Chavan, Abhijeet; Troullinos, Nikos B.; and Leong, Raymond M., to Cypress Semiconductor Corporation. Integrated content addressable memory array with processing logical and a host computer interface. 5,649,149, Cl. 395-435.000.

Storti, Raymond P., Jr.: *See—*
Wood, Keith E.; Rathbone, Larry D.; and Storti, Raymond P., Jr., 5,648,040, Cl. 264-508.000.

Straeter, Joseph G.: *See—*
Weder, Donald E.; and Straeter, Joseph G., 5,647,193, Cl. 53-465.000.

Straeter, William F.: *See—*
Weder, Donald E.; and Straeter, William F., 5,647,188, Cl. 53-397.000.
Weder, Donald E.; and Straeter, William F., 5,647,189, Cl. 53-399.000.

Stratford, Peter W.: *See—*
Bowers, Roderick W. J.; Jones, Stephen A.; and Stratford, Peter W., 5,648,442, Cl. 526-277.000.

Streeck, Rolf E.: *See—*
Cole, Stewart; and Streeck, Rolf E., 5,648,459, Cl. 530-324.000.

Street, Robert: *See—*
Donecker, Peter; McCormick, Paul Gerard; Street, Robert; and Rowlands, Sally-Anne, 5,648,591, Cl. 588-205.000.

Streit, Dwight Christopher: *See—*
Tran, Liem Thanh; Streit, Dwight Christopher; and Oki, Aaron Kenji, 5,648,666, Cl. 257-197.000.

Stretch Devices, Inc.: *See—*
Newman, Don E., 5,648,189, Cl. 430-22.000.

Strittmatter, Mike: *See—*
McLellan, Neil; Strittmatter, Mike; Hundt, Joseph Patrick; Sells, Christopher M.; and Scherpenberg, Francis A., 5,647,121, Cl. 29-840.000.

Strobel, Gary A.; and Pliam, Nathan B., to Pharmagenesis, Inc. Immunosuppressant diterpene compound. 5,648,376, Cl. 514-451.000.

Strock, Thomas W.: *See—*
Gohara, Wadie F.; Watson, George B.; Reynolds, Randy J.; and Strock, Thomas W., 5,648,022, Cl. 261-17.000.

Strope, Todd R.: *See—*
Cook, Merritt S.; James, Michael D.; and Strope, Todd R., 5,648,025, Cl. 264-1.360.

Strosberg, Arthur Donny: *See—*
Avrameas, Alexandre; Pancino, Gianfranco; Sibille, Pierre; Sonigo, Pierre; and Strosberg, Arthur Donny, 5,648,209, Cl. 435-5.000.

Strunk, Steffen: *See—*
Stark, Jürgen; and Strunk, Steffen, 5,647,173, Cl. 49-506.000.

Stubberud, Lars: *See—*
Klaveness, Jo; Rongved, Pål; and Stubberud, Lars, 5,648,062, Cl. 424-9.340.

Stuckey, Kent D.; Chinnock, Douglas P.; and Roberts, Jon L., to CompuServe Incorporated. Royalty tracking method and apparatus. 5,649,013, Cl. 380-4.000.

Stückrad, Björn: *See—*
Greiner, Ralph; Melchiorre, Michele; and Stückrad, Björn, 5,647,544, Cl. 241-17.000.

Stucky, Robert Bruce, to General Electric Company. Self-organized information storage system. 5,649,192, Cl. 395-614.000.

Stueble, Helmut, to LTG Lufttechnische GmbH. Air handling apparatus and method for textile machines. 5,647,889, Cl. 95-20.000.

Stults, Nancy L., to SeaLite Sciences, Inc. Preparation of photoprotein conjugates and methods of use thereof. 5,648,218, Cl. 435-6.000.

Stumpe, Reinhard: *See—*
Pirrung, Jurgen; Stumpe, Reinhard; and Grohmann, Gerhard, 5,648,697, Cl. 310-338.000.

Sturtevant, Thomas M.; and Cullivan, Edward E., to Custom Plastics Molding, Inc. Method of forming antislip surfaces on thermoformed products. 5,648,031, Cl. 264-80.000.

Su, Jamie C.: *See—*
Galler, Bruce J.; Su, Jamie C.; and Zwolinski, Stephanie M., 5,649,283, Cl. 455-2.000.

Sud-Chemie AG: *See—*
Hähn, Reinhard; Haubensak, Otto; and Eisgruber, Max, 5,648,306, Cl. 502-80.000.

Sueyoshi, Toshinobu: *See—*
Kishimoto, Mikio; Kitahata, Shinichi; Kanzaki, Hisao; Ohtani, Noriaki; and Sueyoshi, Toshinobu, 5,648,160, Cl. 428-328.000.

Suga, Takayuki, to Nikon Corporation. Optical inspection method. 5,648,221, Cl. 435-7.210.

Sugamoto, Yoshiaki: *See—*
Izumi, Tomoji; Shimizu, Kenji; Sugamoto, Yoshiaki; Okuda, Kazuyoshi; Ando, Satoru; Ishihara, Toshihiro; Inada, Takahiro; and Okuda, Tsunehisa, 5,648,905, Cl. 364-461.000.

Sugano, Toshihiko; and Takahama, Tomohiko, to Mitsubishi Chemical Corporation. Catalyst components for polymerization of olefins and use thereof. 5,648,440, Cl. 526-132.000.

Sugawara, Hideo: *See—*
Nagaya, Setsuya; Sugawara, Hideo; and Watanabe, Tominaga, 5,648,743, Cl. 330-252.000.

Sugawara, Toshiaki: *See—*
Sato, Teiji; Sato, Toshio; Sugawara, Toshiaki; Sawada, Hiroshi; Wakaki, Seiji; Ohta, Satoru; and Saito, Masaru, 5,648,413, Cl. 524-313.000.

Sugg, Rolin W.: *See—*
Moysan, Stephen R., III; and Sugg, Rolin W., 5,648,179, Cl. 428-627.000.

Sugi, Masahiro: *See—*
Kagami, Mamoru; Tanaka, Mutsuhiro; and Sugi, Masahiro, 5,648,423, Cl. 525-66.000.

Sugifune, Shin; Kanno, Tsutomu; and Nabeya, Hajime, to Alps Electric Co., Ltd. Optical bar code reading apparatus with regular reflection detecting circuit. 5,648,650, Cl. 235-472.000.

Sugihara, Shoichi: *See—*
Kanai, Akira; Yamakawa, Masaki; Sugihara, Shoichi; Hayakawa, Masaharu; Yamamoto, Kiyotaka; Kodama, Masafumi; and Maeno, Akiko, 5,648,825, Cl. 348-743.000.

Sugimoto, Hiroaki: *See—*
Sumiya, Yoshiro; and Sugimoto, Hiroaki, 5,647,925, Cl. 152-209.00R.

Sugimoto, Kenji; Hiraoka, Nobuyasu; Fujita, Mitsuhiro; and Ohtani, Masami, to Dainippon Screen Mfg. Co., Ltd. Apparatus for cleaning substrates and methods for attaching/detaching and cleaning brushes of such apparatus. 5,647,083, Cl. 15-77.000.

Sugimoto, Koji: *See—*
Seki, Ryuji; Sugimoto, Koji; and Kumai, Seisaku, 5,648,504, Cl. 549-246.000.

Sugise, Ryoji: *See—*
Harada, Katsumasa; Imbe, Yoichi; Nishihira, Keigo; Tanaka, Shuji; Fujitsu, Satoru; Sugise, Ryoji; Kashiwagi, Koichi; and Sumida, Toshihiko, 5,648,510, Cl. 558-274.000.

Sugiura, Minako: *See—*
Ando, Hiroshi; Kimura, Teiyuu; Sugiura, Minako; and Ichikawa, Yoshikatsu, 5,648,857, Cl. 359-12.000.

Sugiyama, Hisataka: *See—*
Miyamoto, Harukazu; Sugiyama, Hisataka; and Matsumoto, Kiyoshi, 5,648,949, Cl. 369-59.000.

Sugo, Takanobu; Tanaka, Satoshi; and Tsutsui, Tsuyoshi, to Japan Atomic Energy Research Inst.; and Nikki Chemical Co., Ltd. Process for producing polymeric electrolyte complex and ion-exchange resin. 5,648,400, Cl. 521-30.000.

Suh, Jeung Won: *See—*
Koh, Yo Hwan; Park, Chan Kwang; and Suh, Jeung Won, 5,648,935, Cl. 365-205.000.

Sullaway, Bobby L.; Rogers, Henry E.; and Murray, Dick A., to Halliburton Company. Floating apparatus for well casing. 5,647,434, Cl. 166-242.800.

Sullivan, Jonathan S.: *See—*
McMurtry, David R.; Harding, Andrew J.; Lummes, Stephen E.; Spivey, Martin P.; and Sullivan, Jonathan S., 5,647,137, Cl. 33-572.000.

Sullivan, Sean G.: *See—*
Martin, Brent R.; and Sullivan, Sean G., 5,648,831, Cl. 351-51.000.

Sullivan, Stephen T. Infusion sleeve for wine barrels. 5,647,268, Cl. 99-277.100.

Sulosky, William P.; and Beach, Wayne H., to Kennametal Inc.; and Advanced Cutting Systems Corp. Bar for a road milling drum. 5,647,641, Cl. 299-39.800.

Sumida, Takashi; and Miyazaki, Nobutaka, to Hitachi Maxell, Ltd. Tape cartridge reel lock mechanism. 5,647,550, Cl. 242-343.200.

Sumida, Toshihiko: *See—*
Harada, Katsumasa; Imbe, Yoichi; Nishihira, Keigo; Tanaka, Shuji; Fujitsu, Satoru; Sugise, Ryoji; Kashiwagi, Koichi; and Sumida, Toshihiko, 5,648,510, Cl. 558-274.000.

Sumita, Kazuo; Hirakawa, Hideki; Miike, Seiji; and Mizutani, Yumi, to Kabushiki Kaisha Toshiba. Document detection system using detection result presentation for facilitating user's comprehension. 5,649,193, Cl. 395-614.000.

Sumitomo Bakelite Company Limited: *See—*
Sashida, Nobuyuki; Banba, Toshio; and Takeda, Naoshige, 5,648,451, Cl. 528-353.000.

Sumitomo Chemical Co., Ltd.: *See—*
Masumoto, Katuhisa; Nagatomi, Toshio; Nakamura, Akihiko; and Yamada, Yoshimi, 5,648,533, Cl. 564-20.000.
Murata, Tetsuo; Takagi, Hiroyuki; and Katayama, Yasumi, 5,648,543, Cl. 564-410.000.
Seko, Shinzo; and Miyake, Kunihito, 5,648,496, Cl. 546-307.000.

Sumitomo Dow Limited: *See—*
Fujiwara, Wataru; Hyoda, Junkoh; Yamazaki, Kenichi; and Kitamura, Noriko, 5,648,420, Cl. 524-750.000.

Sumitomo Electric Industries, Ltd.: *See—*
Izumida, Hiromu; Murabe, Kaoru; Nishioka, Takao; Yamakawa, Akira; and Matsunuma, Kenji, 5,647,313, Cl. 123-90.510.
Kato, Kazuhiro; Miyawaki, Yoichi; and Tanaka, Hirohisa, 5,647,647, Cl. 303-122.090.
Oida, Kazuhiko; and Nakai, Ryusuke, 5,647,917, Cl. 148-33.400.

Sumitomo Heavy Industries, Ltd.: *See—*
Horiuchi, Akiyo, 5,647,703, Cl. 409-48.000.
Horiutchi, Akiyo; and Saitoh, Shinya, 5,647,790, Cl. 451-47.000.
Takanohashi, Ryuichi, 5,648,103, Cl. 425-107.000.

Sumitomo Pharmaceuticals Company, Limited: *See—*
Ohashi, Naohito; Fujiwara, Norio; and Ueda, Yutaka, 5,648,359, Cl. 514-279.000.

Sumitomo Rubber Industries, Ltd.: *See—*
Suzuki, Shigehiko, 5,647,929, Cl. 152-530.000.

Sumitomo Wiring Systems, Ltd.: *See—*
Sasai, Osamu; Kawase, Hajime; Wada, Yasunori; and Tsutsui, Shinsuke, 5,647,777, Cl. 439-752.000.

Sumiya, Yoshiro; and Sugimoto, Hiroaki, to Toyo Tire & Rubber Co., Ltd. Pneumatic tire for heavy-loaded vehicles, with resistance to river wear. 5,647,925, Cl. 152-209.00R.

Summerfelt, Scott R.: *See—*
Belcher, James F.; Beratan, Howard R.; and Summerfelt, Scott R., 5,647,946, Cl. 156-345.000.

Sun Company, Inc. (R&M): *See—*
Hsu, Chao-Yang; Patel, Vasant K.; Vahlsing, David H.; Wei, James T.; and Myers, Harry K., Jr., 5,648,590, Cl. 585-751.000.

Sun Microsystems, Inc.: *See—*
Hanko, James G.; and Wall, Gerard A., 5,649,093, Cl. 395-182.040.
Kurihara, Steven M.; and Insley, Mark W., 5,649,213, Cl. 395-750.000.
Levy, Jacob Y.; Lim, Swee Boon; Kretsch, Donald J.; Mitchell, Wesley E.; and Lerner, Benjamin, 5,649,202, Cl. 395-705.000.
Loo, Mike C.; and Conte, Alfred S., 5,648,890, Cl. 361-704.000.
Loo, Mike C.; and Conte, Alfred S., 5,648,893, Cl. 361-820.000.
Lynch, William L., 5,649,126, Cl. 395-306.000.
Parady, Bodo K., 5,649,143, Cl. 395-421.100.
Thadani, Moti N.; Bernabeu-Auban, Jose M.; Khalidi, Yousef A.; Matena, Vladimir; and Shirriff, Kenneth W., 5,648,965, Cl. 370-241.000.

Sunaga, Shunji: *See—*
Akiba, Masaru; Nakagawa, Masayuki; Tsurufuji, Tomoyoshi; Sunaga, Shunji; and Ito, Koichi, 5,647,162, Cl. 43-24.000.

Sundararajan, Srinivasan; Przybylo, Karin H.; and Teevens, Jerome P., to Ford Motor Company. Sensor for measuring a movement characteristic of an object. 5,648,657, Cl. 250-231.100.

Sune, Ching-Tzong: *See—*
Jones, Gary Wayne; and Sune, Ching-Tzong, 5,647,785, Cl. 445-24.000.

Sung, Jan Mye, to Vanguard International Semiconductor Corporation. Method for fabricating a bit line over a capacitor array of memory cells. 5,648,291, Cl. 437-52.000.

Sunkara, Sai P.; and Freedman, Jules, to Merrell Pharmaceuticals Inc. Diarylalkyl piperidines useful as multi-drug resistant tumor agents. 5,648,365, Cl. 514-320.000.

Suntory Limited: *See—*
Hashino, Junko; Oikawa, Shinzo; Nakazato, Hiroshi; and Nakanishi, Toshihiro, 5,648,078, Cl. 424-156.100.

Super Sack Mfg. Corp.: *See—*
Nickell, Craig Alan; Durden, Vincent Edwin; and Derby, Norman C., 5,647,832, Cl. 493-217.000.

Superior Modular Products Incorporated: *See—*
Arnold, Richard W.; and Woodrum, Richard E., 5,647,763, Cl. 439-540.100.

Suppelsa, Anthony J.: *See—*
Liebman, Henry F.; Suppelsa, Anthony J.; and Canter, Hal R., 5,647,529, Cl. 228-222.000.

Surutzidis, Athanasios: *See—*
Angell, Adrian J. W.; Surutzidis, Athanasios; Kvietok, Frank A.; and Perkis, David F., 5,648,328, Cl. 510-441.000.
Smerznak, Mark A.; Jones, Roger J.; Surutzidis, Athanasios; Fisk, Andrew A.; Christiano, Steven P.; Bausch, Gregory G.; Tonge, Lauren M.; McCoy, Sharon K.; and Mallen, Elizabeth F., 5,648,327, Cl. 510-340.000.

Sussmann, Ricardo Simon; and Phaal, Cornelius. Wire drawing dies of polycrystalline CVD diamond with boron dopant atoms. 5,648,139, Cl. 428-131.000.

Sütő, Mihály: *See—*
Pálosi, Endre; Korbonits, Dezso; Molnár née Bakó, Erzsébet; Szvoboda née Kanzel, Ida; Héja, Gergely; Kiss, Pál; Gönczi, Csaba; Sperber, Ferenc; Huszár, Csaba; Mihalovics, György; Németh, Attila; Sütő, Mihály; Gyüre, Károl; Bóné, István; Mórász, Ferenc; Ledniczky, László; Szabó née Kardos, Erzsébet; Győri, Péter; Szalay, Erzsébet; Bán, Károly; Buttkai, Ildikó; Kővári, Árpád; and Garaczy, Sándor, 5,648,498, Cl. 548-202.000.

Sutor, James J., to Seradyn, Inc. Process for preparing magnetically responsive microparticles. 5,648,124, Cl. 427-475.000.

Suwa, Kyochi: *See—*
McCoy, John H.; and Suwa, Kyochi, 5,648,854, Cl. 356-399.000.

Suyama, Hideo: *See—*
Kobayashi, Tomio; and Suyama, Hideo, 5,648,886, Cl. 360-113.000.

Suzuki, Akito: *See—*
Watanabe, Kazuyuki; Nakano, Hirofumi; Kamiya, Masakuni; Honma, Kazutaka; Matsui, Takayuki; and Suzuki, Akito, 5,648,692, Cl. 310-49.00R.

Suzuki, Hajime; and Sekiguchi, Yasuo, to Sakai Medical Co., Ltd. Bathing apparatus. 5,647,071, Cl. 4-555.000.

Suzuki, Hideyuki: *See—*
Kitahara, Nobuko; Kaneko, Tetsuya; Enomoto, Takashi; and Suzuki, Hideyuki, 5,648,663, Cl. 257-59.000.

Suzuki, Hiroshi; and Yamada, Yasuo, to Kawasaki Steel Corporation. Microprocessor unit having interrupt mechanism. 5,649,207, Cl. 395-733.000.

Suzuki, Jin: *See—*
Oishi, Tetsuya; Suzuki, Jin; Ohkawa, Kouhei; and Ono, Hiroshi, 5,648,446, Cl. 528-60.000.

Suzuki Kabushiki Kaisha: *See—*
Nojima, Tetsuo, 5,648,023, Cl. 261-44.400.

Suzuki Motor Corporation: *See—*
Mukai, Takeshi, 5,647,333, Cl. 123-519.000.

Suzuki, Nobuhiko: *See—*
Ishikawa, Satoshi; Suzuki, Nobuhiko; and Ikumi, Tohru, 5,647,753, Cl. 439-689.000.

Suzuki, Nobuyuki: *See—*
Ohashi, Yoshitami; Hirata, Haruhisa; Nakaya, Seigo; Katou, Azusa; Aiba, Yuji; Kokubo, Naomi; Suzuki, Nobuyuki; and Maeda, Makoto, 5,648,455, Cl. 530-300.000.

Suzuki, Saburo; Orimoto, Hiroyuki; and Amari, Fumiya, to Nisser ASB Machine Co., Ltd. Biaxially oriented crystalline resin container and process of making the same. 5,648,133, Cl. 428-36.920.

Suzuki, Shigehiko, to Sumitomo Rubber Industries, Ltd. Pneumatic motorcycle tire for improved cornering and straight running stability. 5,647,929, Cl. 152-530.000.

Suzuki, Susumu: *See—*
Kawamura, Akira; Suzuki, Susumu; and Imamura, Masanumi, 5,647,971, Cl. 208-33.000.

Suzuki, Tadaoki, to Nippon Celint Company, Ltd. Mobile radio receiver. 5,649,317, Cl. 455-345.000.

Suzuki, Takashi: *See—*
Kobayashi, Yoshiaki; and Suzuki, Takashi, 5,649,248, Cl. 396-318.000.
Shimizu, Ryuuichi; Kawanishi, Tsuneaki; Satoh, Toshiya; Mitsuya, Teruaki; and Suzuki, Takashi, 5,649,273, Cl. 399-329.000.

Suzuki, Tatsuya; and Yamazaki, Yasuo, to Olympus Optical Co., Ltd. Camera. 5,649,251, Cl. 396-341.000.

Suzuki, Tetsuo: *See—*
Yanagi, Haruyuki; Taniishi, Shinnosuke; Suzuki, Tetsuo; Asano, Junichi; Hiramatsu, Soichi; Nojima, Takashi; and Saikawa, Satoshi, 5,648,808, Cl. 347-104.000.

Suzuki, Yoshio: *See—*
Nakayama, Masaru; Takamatsu, Osamu; Yagi, Takayuki; Yamamoto, Keisuke; Kawasaki, Takehiko; Shimada, Yasuhiro; and Suzuki, Yoshio, 5,648,300, Cl. 437-228.000.

Svehaug, Oswald C. Suspended sphere novelty. 5,647,488, Cl. 211-69.500.

Svenkerud, Lars: *See—*
Garofalo, Giovanni; and Svenkerud, Lars, 5,649,011, Cl. 379-410.000.

Swanson, Mark S., to Walbro Corporation. Liquid cooled fuel pump and vapor separator. 5,647,331, Cl. 123-516.000.

Swiedler, Stuart J.: *See—*
Brandley, Brian K.; Tiemeyer, Michael; Swiedler, Stuart J.; Moreland, Margaret; Schweingruber, Hans; and Rao, Narasinga, 5,648,344, Cl. 514-61.000.

Swinger, Casimir A. Corneal surgery using laser, donor corneal tissue and synthetic material. 5,647,865, Cl. 606-5.000.

Swisher, Robert G.: *See—*
Thimons, Thomas V.; Swisher, Robert G.; and Hou, Yongsheng, 5,648,169, Cl. 428-391.000.

Sybase, Inc.: *See—*
French, Clark; and White, Peter W., 5,649,181, Cl. 395-603.000.

Symbios Logic Inc.: *See—*
Randazzo, Todd A., 5,648,930, Cl. 365-185.070.

Symbiosis Corporation: *See—*
Slater, Charles R.; Palmer, Matthew A.; Kortenbach, Jurgen Andrew; McBrayer, Michael Sean; and Gottlieb, Saul, 5,647,115, Cl. 29-557.000.

Symbol Technologies, Inc.: *See—*
Bridgelall, Raj; and Katz, Joseph, 5,648,649, Cl. 235-462.000.

Symbollon Corporation: *See—*
Kessler, Jack H.; and Richards, James C., 5,648,075, Cl. 424-94.400.

Symetrix Corporation: *See—*
Paz De Araujo, Carlos A.; Watanabe, Hitoshi; Scott, Michael C.; and Mihara, Takashi, 5,648,114, Cl. 427-126.300.

Synaptics, Incorporated: *See—*
Miller, Robert J.; and Bisset, Stephen J., 5,648,642, Cl. 178-18.000.

Sysgration Ltd.: *See—*
Chen, Gordon, 5,648,895, Cl. 363-131.000.

System Kurandt GmbH: *See—*
Kurandt, Fritz, 5,647,589, Cl. 271-280.000.

Szabó née Kardos, Erzsébet: *See—*
Pálosi, Endre; Korbonits, Dezso; Molnár née Bakó, Erzsébet; Szvoboda née Kanzel, Ida; Héja, Gergely; Kiss, Pál; Gönczi, Csaba; Sperber, Ferenc; Huszár, Csaba; Mihalovics, György; Németh, Attila; Sütő, Mihály; Gyüre, Károl; Bóné, István; Mórász, Ferenc; Ledniczky, László; Szabó née Kardos, Erzsébet; Győri, Péter; Szalay, Erzsébet; Bán, Károly; Buttkai, Ildikó; Kővári, Árpád; and Garaczy, Sándor, 5,648,498, Cl. 548-202.000.

Szalay, Erzsébet: *See—*
Pálosi, Endre; Korbonits, Dezso; Molnár née Bakó, Erzsébet; Szvoboda née Kanzel, Ida; Héja, Gergely; Kiss, Pál; Gönczi, Csaba; Sperber, Ferenc; Huszár, Csaba; Mihalovics, György; Németh, Attila; Sütő, Mihály; Gyüre, Károl; Bóné, István; Mórász, Ferenc; Ledniczky, László; Szabó née Kardos, Erzsébet; Győri, Péter; Szalay, Erzsébet; Bán, Károly; Buttkai, Ildikó; Kővári, Árpád; and Garaczy, Sándor, 5,648,498, Cl. 548-202.000.

Szalay, Joseph F.: *See—*
McKenna, John D.; Appell, Kenneth W.; Mycock, John C.; and Szalay, Joseph F., 5,647,892, Cl. 95-110.000.

Szczesny, Paul Michael: *See—*
DeDoncker, Rik Wivina Anna Adelson; and Szczesny, Paul Michael, 5,648,894, Cl. 363-39.000.

Szentes, John F.: *See—*
Burdick, J. Scott; Corcoran, Paul T.; Gudat, Adam J.; Herold, Robert A.; and Szentes, John F., 5,647,439, Cl. 172-4.500.

Szeto, John: *See—*
Shen, Gene W.; Szeto, John; Patkar, Niteen A.; and Shebanow, Michael C., 5,649,136, Cl. 395-591.000.

Szita, Jeno G.; Ramesh, Subban; Jacobs, William, III; and Brogan, John Colin, to Cytec Technology Corp. Sulfonimide catalyst/crosslinker combination. 5,648,434, Cl. 525-441.000.

Szmacinski, Henry K.: *See—*
Lakowicz, Joseph R.; and Szmacinski, Henry K., 5,648,269, Cl. 436-68.000.

Szvoboda née Kanzel, Ida: *See—*
Pálosi, Endre; Korbonits, Dezso; Molnár née Bakó, Erzsébet; Szvoboda née Kanzel, Ida; Héja, Gergely; Kiss, Pál; Gönczi, Csaba; Sperber, Ferenc; Huszár, Csaba; Mihalovics, György; Németh, Attila; Sütő, Mihály; Gyüre, Károl; Bóné, István; Mórász, Ferenc; Ledniczky, László; Szabó née Kardos, Erzsébet; Győri, Péter; Szalay, Erzsébet; Bán, Károly; Buttkai, Ildikó; Kővári, Árpád; and Garaczy, Sándor, 5,648,498, Cl. 548-202.000.

Taber, Susan J.: *See—*
Ruple, Lewis H.; and Taber, Susan J., 5,647,241, Cl. 72-178.000.

Tabuchi, Takeshi, to Ricoh Company, Ltd. Image forming apparatus and method having a temperature sensor which is used in both contact and separation positions. 5,649,265, Cl. 399-44.000.

Tada, Tetsuya; and Kanayama, Toshihiko, to Japan as represented by Director General of Agency of Industrial Science and Technology. Method for fine patterning of a polymeric film. 5,647,999, Cl. 216-49.000.

Tadokoro, Hiroyuki: *See—*
Kato, Takeshi; Tadokoro, Hiroyuki; and Fukasawa, Nobuaki, 5,648,809, Cl. 347-115.000.

Tafuri, Sherrie Rae: *See—*
Bisgaier, Charles Larry; Creger, Paul Leroy; Saltiel, Alan Robert; and Tafuri, Sherrie Rae, 5,648,387, Cl. 514-547.000.

Taghulk Pty Limited: *See—*
Crook, Robert Sydney, 5,647,108, Cl. 27-1.000.

Taguchi, Hitoshi; Hirata, Fumihiko; Takeishi, Taku; and Mori, Teruo, to TDK Corporation. Process for the production of anisotropic ferrite magnets. 5,648,039, Cl. 264-428.000.

Taguchi, Naoto, to Yazaki Corporation. Lever-type connector. 5,647,752, Cl. 439-157.000.

Taguchi, Yutaka; Eda, Kazuo; Kanabosbi, Akihiro; Ogura, Tetsuyoshi; and Tomita, Yoshihiro, to Matsushita Electric Industrial Co., Ltd. Method of processing a piezoelectric device. 5,647,932, Cl. 156-154.000.

Tai, Ling-Ching Wang: *See—*
Scott, Roderick Keith; and Tai, Ling-Ching Wang, 5,649,195, Cl. 395-617.000.

Tai, Seiji: *See—*

Watanabe, Itsuo; Kuwano, Atsushi; Taketatsu, Jun; Takane, Nobuaki; Yamada, Mitsuo; and Tai, Seiji, 5,648,135, Cl. 428-64.800.

Tai, Shinji; Hara, Tetsuya; Kageyu, Akira; and Kashimura, Tsugunori, to Kuraray Co., Ltd. Copolyesters, molded articles from the same and aromatic triols used for producing the same. 5,648,449, Cl. 528-193.000.

Taijonlahti, Jorma; and Kohtamäki, Lauri, to Lillbackan Konepaja Oy. Production method for handling plates cut out of a plate blank for further production. 5,648,907, Cl. 364-468.020.

Taira, Takayuki: *See*—
Nakagawa, Takeo; Tsuru, Hideaki; Inaba, Yoshiharu; Taira, Takayuki; and Muranaka, Masaki, 5,647,410, Cl. 141-67.000.

Taisho Pharmaceutical Co., Ltd.: *See*—
Sato, Fumie; Amano, Takehiro; Kameo, Kazuya; Tanami, Tohru; Mutoh, Masaru; Ono, Naoya; and Goto, Jun, 5,648,526, Cl. 562-503.000.

Taiwan Semiconductor Manufacturing Company, Ltd.: *See*—
Chen, Chien-Feng; Hsu, Jun-Sheng; Pan, Shih-Ming; and Ou, Knight-Tian, 5,647,626, Cl. 294-87.100.
Tsai, Chao-Chieh; and Peng, Shie-Sen, 5,648,287, Cl. 437-44.000.

Taiyo Steel Co., Ltd.: *See*—
Kameya, Toru; Shimizu, Hisanori; Takano, Katsuaki; and Shimamura, Mitsuru, 5,648,126, Cl. 427-536.000.

Tajima, Makoto, to Calsonic Corporation. Electronic component cooling unit. 5,647,430, Cl. 165-104.330.

Tajiri, Hiroyuki; Nakagawa, Yoshiteru; Iwaya, Yoshiaki; Tanaka, Yoshiharu; Asami, Keiichi; Touma, Katsuyuki; and Okumura, Shinji, to Osaka Gas Company Ltd.; and Unitika Limited. Porous carbonaceous material and a method for producing the same. 5,648,027, Cl. 264-43.000.

Takada, Noriyuki: *See*—
Hara, Takeshi; Kato, Kenji; and Takada, Noriyuki, 5,648,182, Cl. 429-20.000.

Takagi, Hiroyuki: *See*—
Murata, Tetsuo; Takagi, Hiroyuki; and Katayama, Yasumi, 5,648,543, Cl. 564-410.000.

Takahama, Tomohiko: *See*—
Sugano, Toshihiko; and Takahama, Tomohiko, 5,648,440, Cl. 526-132.000.

Takahashi, Akira: *See*—
Hirokane, Junji; Katayama, Hiroyuki; Takahashi, Akira; and Ohta, Kenji, 5,648,162, Cl. 428-332.000.

Takahashi, Chiharu, to Agency of Industrial Science & Technology, Ministry of International Trade & Industry. Flowmeter calibration method. 5,648,605, Cl. 73-197.000.

Takahashi, Hideaki: *See*—
Katoh, Kazunori; Kondo, Haruyoshi; Matsui, Masayuki; Katayama, Naoki; Yamada, Yasushi; Takahashi, Hideaki; and Fukuda, Kunio, 5,648,601, Cl. 73-1.00G.

Takahashi, Makoto: *See*—
Matsumoto, Hiroshige; Takahashi, Makoto; and Kuroda, Hitoshi, 5,647,288, Cl. 110-228.000.

Takahashi, Toshiya; and Bannai, Tatsushi, to Matsushita Electric Industrial Co., Ltd. Picture reproduction apparatus and picture decoding apparatus. 5,649,047, Cl. 386-111.000.

Takahashi, Tsugio; Aoki, Hitoshi; Imura, Yoshio; Miyamoto, Hidenori; Tsukahara, Daiki; Kotani, Noriyasu; Inoue, Hideya; and Nagai, Jun, to Nikon Corporation. Camera with device for identifying used film magazine. 5,649,252, Cl. 396-389.000.

Takahashi, Wataru, to Kabushiki Kaisha Toshiba. Semiconductor device in which a first resin-encapsulated package is mounted on a second resin-encapsulated package. 5,648,683, Cl. 257-685.000.

Takahashi, Yutaka: *See*—
Hirano, Toshinori; Baba, Nobuyuki; Takahashi, Yutaka; and Inagawa, Isao, 5,649,191, Cl. 395-613.000.

Takahira, Reiko: *See*—
Yamaguchi, Kyoji; Shima, Nobuyuki; Murakami, Akihiko; Goto, Masaaki; Tsuda, Eisuke; Masunaga, Hiroaki; Takahira, Reiko; Oogaki, Fumiko; Ueda, Masatsugu; and Higashio, Kanji, 5,648,233, Cl. 435-69.100.

Takai, Haruki: *See*—
Fujiwara, Shigeki; Machii, Daisuke; Takai, Haruki; Nonaka, Hiromi; Kase, Hiroshi; Yao, Kozo; Kawakage, Michiyo; Kusaka, Hideaki; and Karasawa, Akira, 5,648,353, Cl. 514-248.000.

Takai, Masaki: *See*—
Mori, Tomoyuki; Takai, Masaki; and Inoue, Tomohiko, 5,648,554, Cl. 568-454.000.

Takamatsu, Osamu: *See*—
Nakayama, Masaru; Takamatsu, Osamu; Yagi, Takayuki; Yamamoto, Keisuke; Kawasaki, Takehiko; Shimada, Yasuhiro; and Suzuki, Yoshio, 5,648,300, Cl. 437-228.000.

Takami, Masayuki: *See*—
Inagaki, Yoshio; Takami, Masayuki; Kataoka, Masahiro; and Shibagaki, Taro, 5,648,964, Cl. 370-228.000.

Takamoto, Shigehito: *See*—
Kuroda, Hiroshi; Nakajima, Fumito; Nishimura, Masakatsu; Kaku, Hiroyuki; Nozawa, Shigeru; Takamoto, Shigehito; Nakamoto, Takanori; Kikkawa, Hirofumi; Ishizaka, Hiroshi; Katagawa, Atsushi; Kon, Mitsuharu; Yamamoto, Masayuki; and Yoshida, Kunikatsu, 5,648,048, Cl. 422-168.000.

Takane, Nobuaki: *See*—
Watanabe, Itsuo; Kuwano, Atsushi; Taketatsu, Jun; Takane, Nobuaki; Yamada, Mitsuo; and Tai, Seiji, 5,648,135, Cl. 428-64.800.

Takano, Akira, to Sony Corporation. Method of and apparatus for controlling the phase of a video signal. 5,648,879, Cl. 360-73.110.

Takano, Katsuaki: *See*—
Kameya, Toru; Shimizu, Hisanori; Takano, Katsuaki; and Shimamura, Mitsuru, 5,648,126, Cl. 427-536.000.

Takano, Masahide: *See*—
Hoshino, Mitsuhide; Umeda, Yasushi; and Takano, Masahide, 5,647,935, Cl. 156-231.000.

Takanohashi, Ryuichi, to Sumitomo Heavy Industries, Ltd. Ejector apparatus. 5,648,103, Cl. 425-107.000.

Takaoka, Daizo: *See*—
Ikegami, Masashi; Matsuhashi, Toshihiko; Yamaue, Yoshiya; Tanaka, Takashi; Hayashi, Katsunori; and Takaoka, Daizo, 5,647,554, Cl. 242-390.900.

Takasago International Corporation: *See*—
Takaya, Hidemasa, deceased; Ota, Tetsuo; and Inagaki, Koji, 5,648,548, Cl. 568-17.000.

Takashima, Akira; Yoshimura, Hiroshi; and Otokita, Kosuke, to Fujitsu Limited. Semiconductor device having a supporting lead to support a bypass lead portion. 5,648,681, Cl. 257-666.000.

Takatori, Tetsuya, to Fuji Photo Film Co., Ltd. Photo film cassette. 5,647,552, Cl. 242-348.400.

Takatsuna, Toru: *See*—
Kuramae, Yoshihisa; Inoue, Kazushige; Nagai, Takashi; and Takatsuna, Toru, 5,648,192, Cl. 430-110.000.

Takaya, Hidemasa, deceased (by Miyoko Takaya, Chikako Takaya, Haruko Takaya, legal heirs); Ota, Tetsuo; and Inagaki, Koji, to Takasago International Corporation. Optically active asymmetric diphosphine and process for producing optically active substance in its presence. 5,648,548, Cl. 568-17.000.

Takaya, Miyoko, Chikako Takaya, Haruko Takaya, legal heirs: *See*—
Takaya, Hidemasa, deceased; Ota, Tetsuo; and Inagaki, Koji, 5,648,548, Cl. 568-17.000.

Takayama, Hideaki: *See*—
Yasuda, Akira; Takayama, Hideaki; and Ogata, Masaharu, 5,647,274, Cl. 101-126.000.

Takechi, Kazushige: *See*—
Hayama, Hiroshi; Uchida, Hiroyuki; and Takechi, Kazushige, 5,648,293, Cl. 437-101.000.

Takeda, Naoshige: *See*—
Sashida, Nobuyuki; Banba, Toshio; and Takeda, Naoshige, 5,648,451, Cl. 528-353.000.

Takeda, Tadashi; and Hayashi, Yoshio, to Kabushiki Kaisha Sankyo Seiki Seisakusho. Hologram integrated with a beam splitter to separate a plurality of polarized reflected light beams. 5,648,950, Cl. 369-110.000.

Takeda, Tomoyuki, to Canon Kabushiki Kaisha. Method and apparatus for recording with varying recording speeds. 5,648,800, Cl. 346-45.000.

Takei, Seiji, to Nippon Thompson Co., Ltd. Drive apparatus having a ball screw using ultrasonic motors concentric with its nuts. 5,647,245, Cl. 74-424.80B.

Takei, Seiji, to Nippon Thompson Co., Ltd. Linear direct current motor. 5,648,691, Cl. 310-12.000.

Takei, Tsunetomo; Aiba, Toshimitsu; Sakai, Kaoru; and Fujiwara, Tetsuro, to Tokyo Tanabe Company Limited. Purification method for hydrophobic polypeptide. 5,648,457, Cl. 530-324.000.

Takeishi, Taku: *See*—
Taguchi, Hitoshi; Hirata, Fumihiko; Takeishi, Taku; and Mori, Teruo, 5,648,039, Cl. 264-428.000.

Takemoto, Eriko: *See*—
Yabusaki, Masami; Maruyama, Yasuo; Hirata, Shoichi; Nakamura, Hiroshi; Uchiyama, Yasuyuki; Tsukahara, Hiroshi; and Takemoto, Eriko, 5,649,301, Cl. 455-433.000.

Takemoto, Kiyohiko: *See*—
Ouki, Yasuhiro; Kanaya, Miharu; Hayashi, Hiroko; Takemoto, Kiyohiko; and Itano, Masaaki, 5,647,897, Cl. 106-31.490.

Takemura, Yasuhiko: *See*—
Zhang, Hongyong; Yamaguchi, Naoaki; and Takemura, Yasuhiko, 5,648,277, Cl. 437-21.000.

Takenaka, Hiroyasu: *See*—
Yasuda, Kazuaki; Mizuhata, Minoru; Oguro, Keisuke; and Takenaka, Hiroyasu, 5,648,307, Cl. 502-101.000.

Takeo, Hiroshi: *See*—
Hatano, Masakatsu; Nakanishi, Akio; Kabata, Yoshio; Shirado, Masayuki; Takeo, Hiroshi; and Kobayashi, Mitsuharu, 5,648,558, Cl. 568-618.000.

Takeshita, Michimasa; Yoshida, Takayuki; Tanimura, Yoshiaki; Iijima, Hitoshi; Gotoh, Takashi; and Yumikura, Tsuneo, to Mitsubishi Denki Kabushiki Kaisha. Air conditioner and heat exchanger used therefor. 5,647,431, Cl. 165-119.000.

Takeshita, Shoichi: *See*—
Date, Yoshito; Takeshita, Shoichi; Ohmori, Tetsuro; Nakatsuka, Junji; and Imamura, Yoshio, 5,648,791, Cl. 345-89.000.

Takesue, Hidenori: *See*—
Tsubaki, Takeshi; Watanabe, Katsuya; Takesue, Hidenori; Sato, Yoshiaki; Kudo, Katsuyoshi; and Nawata, Makoto, 5,647,944, Cl. 156-345.000.

Taketatsu, Jun: *See*—
Watanabe, Itsuo; Kuwano, Atsushi; Taketatsu, Jun; Takane, Nobuaki; Yamada, Mitsuo; and Tai, Seiji, 5,648,135, Cl. 428-64.800.

Takeuchi, Kinihiko, to Yazaki Corporation. Electrical connection box. 5,647,769, Cl. 439-621.000.

Takeuchi, Mitsuaki: *See*—
Nomura, Keiichi; Endo, Hirofumi; Ii, Yasuhiro; Ogasawara, Yuko; Kawai, Mitsuhiro; Onoue, Yasuyoshi; Kurita, Masahiro; Imai, Akira; and Takeuchi, Mitsuaki, 5,649,188, Cl. 395-611.000.

Takigen Manufacturing Co. Ltd.: *See*—
Takimoto, Kazuhide, 5,647,095, Cl. 16-112.000.

Takikawa, Isao; and Kanno, Tadao, to Honda Giken Kogyo Kabushiki Kaisha. Method of measuring cavities in formed product formed by superplastic forming. 5,648,612, Cl. 73-598.000.

Takimoto, Kazuhide, to Takigen Manufacturing Co. Ltd. Folding handle assembly. 5,647,095, Cl. 16-112.000.

Takiron Co., Ltd.: *See*—
Miura, Masanobu, 5,647,152, Cl. 40-541.000.

Takita, Masato: *See*—
Ogawa, Junji; and Takita, Masato, 5,648,680, Cl. 257-666.000.

Talley, John J.; Getman, Daniel P.; DeCrescenzo, Gary A.; Reed, Kathryn L.; Lin, Ko-Chung; Freskos, John Nicholas; Clare, Michael; Rogier, Donald Joseph, Jr.; Heintz, Robert M.; Vazquez, Michael L.; and Mueller, Richard A., to Monsanto Company. Retroviral protease inhibitors. 5,648,364, Cl. 514-307.000.

Tam, Va-On: *See*—
Belfer, Russell; Cheng, Chie-Jin; Librande, Steve; Tam, Va-On; and Zhang, Bin, 5,649,086, Cl. 395-141.000.

Tamai, Masayuki, to Noritsu Koki Co., Ltd. Support system for paper magazine. 5,648,837, Cl. 355-72.000.

Tamaki, Cynthia Y.: *See*—
Insley, Thomas J.; McCoy, Kay M.; and Tamaki, Cynthia Y., 5,647,480, Cl. 206-204.000.

Tamakoshi, Koichiro: *See*—
Wada, Kunihide; and Tamakoshi, Koichiro, 5,647,223, Cl. 62-175.000.

Tamekuni, Yasuhiro, to Canon Kabushiki Kaisha. Camera controlling focus according to panning. 5,649,239, Cl. 396-104.000.

Tampella Power Oy: *See*—
Vaistomaa, Jukka; Kaila, Jarmo; Rikkinen, Jouko; and Knuutila, Matti, 5,647,955, Cl. 162-30.110.

Tamura, Hiroshi; Tanaka, Shigenori; Aketagawa, Jun; and Oda, Toshio, to Seikagaku Kogyo Kabushiki Kaisha (Seikagaku Corporation). Endotoxin stabilizing agent, endotoxin composition and method for assaying endotoxin. 5,648,230, Cl. 435-18.000.

Tan, Qiu; Zhang, Minhua; Yu, Shenbo; Liu, Zongzhang; Qian, Shenghua; and Li, Chuanzhao, to China Petro-Chemical Corporation; and Tianjin University. Process for the production of high purity and ultrapure bisphenol-A. 5,648,561, Cl. 568-727.000.

Tanabe, Tetsuya; and Tanoi, Satoru, to Oki Electric Industry Co., Ltd. Buffer circuit and bias circuit. 5,648,734, Cl. 326-115.000.

Tanabe, Yoshimitsu: *See*—
Nishimura, Takeshi; Kamashita, Tomoko; Wada, Masaru; Nagata, Teruyuki; Tanabe, Yoshimitsu; Hasegawa, Kiyoharu; and Nakatsuka, Masakatsu, 5,647,896, Cl. 106-31.180.

Tanaka, Hirohisa: *See*—
Gotou, Masahito; Tanaka, Hirohisa; and Hamada, Toshimasa, 5,648,146, Cl. 428-209.000.
Kato, Kazuhiro; Miyawaki, Yoichi; and Tanaka, Hirohisa, 5,647,647, Cl. 303-122.090.

Tanaka, Hiroshi: *See*—
Fukui, Yasushi; Matsuno, Masanori; Tanaka, Hiroshi; Miono, Tadaaki; Sakamoto, Kazushi; Ariyoshi, Yasumi; and Saito, Minoru, 5,648,177, Cl. 428-610.000.
Nakajima, Masahiro; Ito, Hiroshi; and Tanaka, Hiroshi, 5,649,130, Cl. 399-327.000.

Tanaka, Kazuhide: *See*—
Doi, Toshiya; Ozawa, Takeshi; Tanaka, Kazuhide; Yuasa, Toyotaka; Kamo, Tomoichi; and Matsuda, Shinpei, 5,648,322, Cl. 505-501.000.

Tanaka Kikinzoku Kogyo K.K.: *See*—
Kidani, Yoshinori; and Komoda, Yasunobu, 5,648,384, Cl. 514-492.000.

Tanaka, Kiyotaka: *See*—
Yokogawa, Miyuki; Yamamura, Naoya; Kamon, Hidetomo; Tanaka, Kiyotaka; Hashimoto, Yoshiyuki; Ohnaka, Katsufumi; Matsuzaki, Noriaki; and Asahara, Takahiro, 5,647,717, Cl. 414-273.000.

Tanaka, Masakazu: *See*—
Yamamoto, Takahiko; Mori, Hiroshi; Tanaka, Masakazu; Saito, Makoto; and Mabuchi, Mamoru, 5,647,206, Cl. 60-297.000.

Tanaka, Minoru: *See*—
Mori, Ryosuke; Miyashita, Kazunori; and Tanaka, Minoru, 5,649,254, Cl. 396-411.000.

Tanaka, Mutsuhiro: *See*—
Kagami, Mamoru; Tanaka, Mutsuhiro; and Sugi, Masahiro, 5,648,423, Cl. 525-66.000.

Tanaka, Satoshi: *See*—
Sugo, Takanobu; Tanaka, Satoshi; and Tsutsui, Tsuyoshi, 5,648,400, Cl. 521-30.000.

Tanaka, Shigenori: *See*—
Tamura, Hiroshi; Tanaka, Shigenori; Aketagawa, Jun; and Oda, Toshio, 5,648,230, Cl. 435-18.000.

Tanaka, Shuji: *See*—
Harada, Katsumasa; Imbe, Yoichi; Nishihira, Keigo; Tanaka, Shuji; Fujitsu, Satoru; Sugise, Ryoji; Kashiwagi, Koichi; and Sumida, Toshihiko, 5,648,510, Cl. 558-274.000.

Tanaka, Shun-ichiro, to Research Development Corporation of Japan; and Tanaka, Shun-ichiro. Fullerene composite. 5,648,056, Cl. 423-445.00B.

Tanaka, Sumi: *See*—
Matsuse, Kimihiro; Lee, Hideki; Osada, Hatsuo; and Tanaka, Sumi, 5,647,945, Cl. 156-345.000.

Tanaka, Takashi: *See*—
Ikegami, Masashi; Matsuhashi, Toshihiko; Yamaue, Yoshiya; Tanaka, Takashi; Hayashi, Katsunori; and Takaoka, Daizo, 5,647,554, Cl. 242-390.900.

Tanaka, Yoshiharu: *See*—
Tajiri, Hiroyuki; Nakagawa, Yoshiteru; Iwaya, Yoshiaki; Tanaka, Yoshiharu; Asami, Keiichi; Touma, Katsuyuki; and Okumura, Shinji, 5,648,027, Cl. 264-43.000.

Tanami, Tohru: *See*—
Sato, Fumie; Amano, Takehiro; Kameo, Kazuya; Tanami, Tohru; Mutoh, Masaru; Ono, Naoya; and Goto, Jun, 5,648,526, Cl. 562-503.000.

Tang, Alex, to United Microelectronics Corp. Color mixing device using a high speed image register. 5,649,172, Cl. 395-508.000.

Tang, Horng-Yi: *See*—
Kao, Chin-Hai; and Tang, Horng-Yi, 5,647,116, Cl. 29-599.000.

Tang, Hung Ming; and Chen, Plato. Cap sharpener for clutch-type pencil. 5,647,138, Cl. 30-454.000.

Tang, Ruey-Long: *See*—
Chou, Ken W.; and Tang, Ruey-Long, 5,648,648, Cl. 235-382.000.

Tangi, Yoshinori; Okano, Yoshihiro; and Uwabo, Tsuneo, to Mitsumi Electric Company, Ltd. Front structure for magnetic recording system. 5,648,882, Cl. 360-99.060.

Tani, Nobuhiro: *See*—
Aoki, Harumi; Tani, Nobuhiro; and Sawanobori, Keiji, 5,648,817, Cl. 348-264.000.

Tanigawa, Hidekazu; Mukai, Masaki; Ohtsu, Takashi; Nakano, Yoshio; and Tsuji, Seiji, to Matsushita Electric Industrial co. Ltd. Graphical-interactive-screen display apparatus and peripheral units. 5,648,813, Cl. 348-10.000.

Tanigawa, Hiroto: *See*—
Morimoto, Yoshiaki; Tanigawa, Hiroto; and Akita, Kazuyuki, 5,648,531, Cl. 562-891.000.

Taniguchi, Akihiko; and Toyoda, Masashi, to Sharp Kabushiki Kaisha. Image forming apparatus with fan cooling. 5,647,727, Cl. 417-32.000.

Taniguchi, Masaru: *See*—
Watanabe, Hiroshi; Yamagata, Nobuyuki; and Taniguchi, Masaru, 5,648,332, Cl. 514-12.000.

Taniishi, Shinnosuke: *See*—
Yanagi, Haruyuki; Taniishi, Shinnosuke; Suzuki, Tetsuo; Asano, Junichi; Hiramatsu, Soichi; Nojima, Takashi; and Saikawa, Satoshi, 5,648,808, Cl. 347-104.000.

Tanimoto, Fumio; and Yano, Tsuneo, to Mitsui & Co., Ltd.; Neos Co., Ltd; and Research Institute for Production Development. Method of decomposing halogenated aromatic compounds. 5,648,499, Cl. 548-316.400.

Tanimoto, Junichi: *See*—
Hasegawa, Masahiro; and Tanimoto, Junichi, 5,648,672, Cl. 257-372.000.

Tanimura, Yoshiaki: *See*—
Takeshita, Michimasa; Yoshida, Takayuki; Tanimura, Yoshiaki; Iijima, Hitoshi; Gotoh, Takashi; and Yumikura, Tsuneo, 5,647,431, Cl. 165-119.000.

Tanioka, Hiroshi, to Nikon Corporation. Lens barrel with reduced parts for fixing interlocking key to rotary member. 5,648,876, Cl. 359-701.000.

Tanksley, Steven D.; and Martin, Gregory B., to Cornell Research Foundation, Inc. Gene conferring disease resistance to plants by responding to an avirulence gene in plant pathogens. 5,648,599, Cl. 800-205.000.

Tanoi, Satoru: *See*—
Tanabe, Tetsuya; and Tanoi, Satoru, 5,648,734, Cl. 326-115.000.

Tanuma, Jiro; Ito, Katsuyuki; Katakura, Shinichi; Wakasugi, Nobuo; Nagaoka, Kazuhiko; and Ito, Toshikaru, to Oki Electric Industry Co., Ltd. Printer which prints with a resolution exceeding led head resolution. 5,648,810, Cl. 347-130.000.

Tappon, Ellen R.: *See*—
Keefe, Brian J.; Ho, May Fong; Courian, Kenneth J.; Steinfield, Steven W.; Childers, Winthrop D.; Tappon, Ellen R.; Trueba, Kenneth E.; Chapman, Terri J.; Knight, William R.; and Moritz, Jules G., 5,648,805, Cl. 347-65.000.

Tarbox, Robert S., Jr. Golf teeing device. 5,647,805, Cl. 473-137.000.

Tardy, André: *See*—
Boniort, Jean-Yves; Brehm, Claude; Tardy, André; Hakoun, Roland; Bourhis, Jean-Francois; and Joly, Bertrand, 5,649,038, Cl. 385-59.000.

Tarle, Peter: *See*—
Lynch, John Cornelius; Rikley, Tod Allen; Tarle, Peter; Ward, David; Valentik, Metodej; and Cyr, André Michael, 5,649,005, Cl. 379-242.000.

Tarlow, Kenneth: *See*—
Ronci, Michael; and Tarlow, Kenneth, 5,647,508, Cl. 222-23.000.

Tarmo Co., Ltd.: *See*—
Morita, Tamao, 5,647,101, Cl. 24-303.000.

Tashiro, Tetsuya: *See*—
Fujita, Kenjiro; Usuki, Katsutoshi; and Tashiro, Tetsuya, 5,647,819, Cl. 477-140.000.

Tatsumi, Kaoru; and Yamamoto, Kazuo, to Kabushiki Kaisha Toshiba. Receiver in digital radio communication device with selective equalization. 5,648,986, Cl. 375-229.000.

Tawashi, Rashad. Drug delivery of nitric oxide. 5,648,101, Cl. 424-718.000.

Tayloe, Daniel Richard, to Motorola, Inc. Communication system and method using subscriber units to evaluate hand-off candidates. 5,649,291, Cl. 370-332.000.

Taylor, Attalee Snarr: *See*—
Tran, Mai Loan Thi; Bright, Edward John; and Taylor, Attalee Snarr, 5,647,750, Cl. 439-72.000.

Taylor, Darel: *See*—
Onders, James P.; and Taylor, Darel, 5,647,415, Cl. 141-331.000.

Taylor, E. Jennings: *See*—
Fraser, Mark E.; Woodman, Alan S.; Anderson, Everett B.; and Taylor, E. Jennings, 5,647,968, Cl. 205-466.000.

Taylor, Glenn Alfred: *See*—
Dickens, Elmer Douglas, Jr.; Lee, Biing Lin; Taylor, Glenn Alfred; Magistro, Angelo Joseph; Ng, Hendra; McAlea, Kevin P.; and Forderhase, Paul F., 5,648,450, Cl. 528-323.000.

Taylor, Ronald T.: *See*—
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TDK Corporation: *See*—
Shimazu, Seiki; Yamaga, Kenji; Sakai, Yoshimi; Koyama, Atsushi; and Namikawa, Yuichi, 5,648,105, Cl. 425-139.000.
Taguchi, Hitoshi; Hirata, Fumihiko; Takeishi, Taku; and Mori, Teruo, 5,648,039, Cl. 264-428.000.

Teac Corporation: *See*—
Katoh, Noriyuki; Sakaguchi, Takahiro; and Okada, Koukichi, 5,648,693, Cl. 310-67.00R.

Techtow, Daniel J.: *See*—
Gullett, David F.; Taylor, Ronald T.; and Techtow, Daniel J., 5,647,504, Cl. 220-612.000.

TECNICA Spa: *See*—
Gabrielli, Andrea; and Marega, Antonello, 5,647,146, Cl. 36-54.000.

Tedder, Donald L.: *See*—
Scott, Ernest D.; Tedder, Donald L.; Scott, Gregory W.; Kohls, John; and Kohls, Richard, 5,647,407, Cl. 140-123.500.

Teevens, Jerome P.: *See*—
Sundararajan, Srinivasan; Przybylo, Karin H.; and Teevens, Jerome P., 5,648,657, Cl. 250-231.100.

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Young, James W.; Barberich, Timothy J.; and Teicher, Martin H., 5,648,396, Cl. 514-651.000.

Tektronix, Inc.: *See*—
Anderson, Duwayne R.; Reinhold, Steve U.; Twigg, Lorimer L.; and Marineau, Mark D., 5,649,036, Cl. 385-16.000.

Teledyne Industries, Inc.: *See*—
Buescher, Conor, 5,647,923, Cl. 148-672.000.

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Forssén, Ulf Göran; and Bodin, Stig Roland, 5,649,287, Cl. 370-312.000.
Ljungqvist, Göran; Johansson, Magnus; and Stensland, Leif, 5,649,040, Cl. 385-95.000.

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Cugnon de Sevricourt, Michel P.; Dacquet, Catherine G.; Finet, Michel A.; Le Marquer, Florence J.; Robba, Max F.; Tembo, Norbert O.; Yannic-Arnoult, Sylvie J.; and Torregrosa, Jean-Luc, 5,648,381, Cl. 514-471.000.

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Johnson, Alan T.; Teng, Min; Vuligonda, Vidyasagar; Beard, Richard L.; Gillett, Samuel J.; Duong, Tien T.; and Chandraratna, Roshantha A., 5,648,514, Cl. 560-102.000.
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Engel, Gregory J.; Hennessey, Robert D.; LaRocque, Timothy G.; and Peterson, Terence A., 5,647,093, Cl. 15-352.000.

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Begemann, Simon H.A.; Van Den Beld, Gerrit J.; and Tenner, Ariadne D., 5,648,656, Cl. 250-214.0AL.

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Terada, Norihiro; and Harada, Yasuki, to Sanyo Electric Co., Ltd. Semiconductor device with heterojunction. 5,648,675, Cl. 257-458.000.

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Lusignan, Bruce B., 5,649,318, Cl. 455-3.200.

Terry, Douglas B.: *See*—
Theimer, Marvin M.; Nichols, David A.; and Terry, Douglas B., 5,649,099, Cl. 395-187.010.

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Kohno, Hironasa; and Kurio, Masaru, 5,647,359, Cl. 128-634.000.

Terunuma, Hiroshi: *See*—
Wakabayashi, Hiroshi; Terunuma, Hiroshi; Tsukahara, Daiki; and Iijima, Shuji, 5,649,238, Cl. 396-61.000.

Tetra Laval Holdings & Finance S.A.: *See*—
Konno, Hidetoshi; Kaneko, Masamichi; and Satoyoshi, Junichi, 5,647,500, Cl. 220-269.000.

Tews, Bernhard: *See*—
Siebenwurst, Robert; Kuhn, Hans; and Tews, Bernhard, 5,647,728, Cl. 417-68.000.

Texaco Inc.: *See*—
Hanson, Scott Alan, 5,648,603, Cl. 73-152.020.
Winter, John Duckett; Stevenson, John Saunders; Kassman, Jerrold Samuel; Wiese, Harry Clarence; Richter, George Neal; Kocsis, Lisa Marie; and Salvaleon, Rinaldo Ibbarola, 5,647,876, Cl. 48-197.00R.

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Hook, Magnus; Jonsson, Klas; Patti, Joseph M.; and Gurusiddappa, Sivashankarappa, 5,648,240, Cl. 435-69.300.

Texas A&M University System, The: *See*—
Davis, Tim D.; and MacKay, Wayne A., 5,648,594, Cl. 800-200.000.

Texas Instruments Incorp.: *See*—
Bayraktaroglu, Burhan, 5,648,294, Cl. 437-126.000.

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Anjoh, Ichiro; Murakami, Gen; Lamson, Michael Anthony; and Heinen, Katherine Gail, 5,648,299, Cl. 437-209.000.
Bayraktaroglu, Burhan, 5,648,278, Cl. 437-31.000.
Belcher, James F.; Beratan, Howard R.; and Summerfelt, Scott R., 5,647,946, Cl. 156-345.000.
Bhuva, Rohit L.; Tran, Bao; Conner, James L.; Overlaur, Michael; and Paulsen, Tracy S., 5,648,730, Cl. 324-763.000.
Chan, Min Yu; and Goh, Jing Sua, 5,647,124, Cl. 29-840.000.
Duvvury, Charvaka; and Wise, Janet L., 5,648,920, Cl. 364-578.000.
Smayling, Michael C.; and Anselm, Klaus A., 5,648,275, Cl. 437-8.000.
Tran, Hiep Van, 5,648,927, Cl. 365-63.000.

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Haak, Ronald P.; Gyory, J. Richard; and Theeuwes, Felix, 5,647,844, Cl. 604-20.000.

Theimer, Marvin M.; Nichols, David A.; and Terry, Douglas B., to Xerox Corporation. Method for delegating access rights through executable access control program without delegating access rights not in a specification to any intermediary nor comprising server security. 5,649,099, Cl. 395-187.010.

Theis, Marvin W.: *See*—
Price, Ferris T., deceased; Rodi, Eugene A.; and Theis, Marvin W., 5,649,092, Cl. 395-182.130.

Theoharides, Theoharis C., to KOS Pharmaceutical, Inc. Method of treatment of endogenous, painful gastrointestinal conditions of non-inflammatory, non-ulcerative origin. 5,648,355, Cl. 514-255.000.

Thiel, Wolfgang; Günther, Stephan; von Inten, Wolfgang; Rehberg, Heinz; Muhl, Wolfgang; and Wölm, Dieter, to Francotyp-Postalia Aktiengesellschaft & Co. Postage meter. 5,648,811, Cl. 347-220.000.

Thiele Kaolin Company: *See*—
Drew, Sharon M.; Bruns, Jeffrey C.; and Kogel, Jessica Elzea, 5,647,895, Cl. 106-15.050.

Thiele, Lothar; Kohlstadt, Hans-Peter; Schlingloff, Nicole; and Plutniok, Claudia, to Henkel Kommanditgesellschaft auf Aktien. Isocyanate/polyol casting resin. 5,648,421, Cl. 524-789.000.

Thiessen, Volker, to Cattin Machines S.A. Apparatus for the heating or cooling of plate-like or sheet-like flat glass. 5,647,882, Cl. 65-348.000.

Thimons, Thomas V.; Swisher, Robert G.; and Hou, Yongsheng, to PPG Industries, Inc. Glass fiber size and mat. 5,648,169, Cl. 428-391.000.

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Hamilton, R. Scott; and Wardle, Robert B., 5,648,556, Cl. 568-590.000.

Thliveris, Andrew: *See*—
Albertsen, Hans; Anand, Rakesh; Carlson, Mary; Groden, Joanna; Hedge, Philip John; Joslyn, Geoff; Kinzler, Kenneth; Markham, Alexander; Nakamura, Yusuke; Thliveris, Andrew; Vogelstein, Bert; and White, Raymond L., 5,648,212, Cl. 435-6.000.

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Ingalls, Charles L.; and Thomann, Mark R., 5,648,974, Cl. 371-22.500.

Thomas & Betts Corporation: *See*—
Marik, Greg; Henderson, Jessica; and Cole, Larry, 5,647,613, Cl. 285-195.000.

Thomas, David James: *See*—
Damman, Alex Scott; Thomas, David James; Winters, Mark Thomas; Rhule, Daniel Allen; and Shepherd, Jeffrey Alan, 5,647,608, Cl. 280-728.200.

Thomas Jefferson University: *See*—
Bernstein, Eric; and Uitto, Jouni, 5,648,061, Cl. 424-9.200.

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Bray, Daniel M.; Thomas, Kim M.; Domoto, Gerald A.; and Savino, Michael J., 5,649,271, Cl. 399-264.000.

Thomas, Nicholas A.; Evans, John; Bentley, Richard; and Gray, Mark L., to U.S. Robotics Mobile Communications Corp. Method and apparatus for adapting a communication interface device to multiple networks. 5,649,001, Cl. 379-93.070.

Thomasson, Samuel L. Digital apparatus for reducing acoustic feedback. 5,649,019, Cl. 381-83.000.

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Leemans, Jan; Botterman, Johan; Thompson, Charles; and Mouva, Rao, 5,648,477, Cl. 536-23.700.

Thompson, Joseph F., to Allegiance Corporation. Surgical drape with elasticized cuff having fenestration and slit. 5,647,376, Cl. 128-853.000.

Thompson, Ken J.: *See*—
Foster, Wayne G.; Everhart, John R.; Rosenquist, Joel C.; and Thompson, Ken J., 5,647,517, Cl. 223-2.000.

Thompson, Wendy L.: *See*—
Goetz, Douglas P.; Hine, Andrew M.; Schultz, William J.; and Thompson, Wendy L., 5,648,407, Cl. 523-213.000.

Thomson Consumer Electronics, Inc.: *See*—
George, John Barrett, 5,648,703, Cl. 315-371.000.

Thorne, Edwin, III: *See*—
Dunn, Matthew W.; Matthews, Joseph H., III; and Thorne, Edwin, III, 5,648,824, Cl. 348-734.000.

Thornton, Neill R.: *See*—
Rough, J. Kirkwood H.; Cogan, Adrian I.; and Thornton, Neill R., 5,648,664, Cl. 257-135.000.

Thrombosis Research Institute: *See*—
Kakkar, Vijay Vir; Deadman, John Joseph; Claeson, Goran Karl; Cheng, Leifeng; Chino, Naoyashi; Elgendy, Said Mohamed Anwar; and Scully, Michael Finbarr, 5,648,338, Cl. 514-18.000.

Thyssen Industrie AG: *See*—
Webel, Achim, 5,647,262, Cl. 83-823.000.

Tianjin University: *See*—
Tan, Qiu; Zhang, Minhua; Yu, Shenbo; Liu, Zongzhang; Qian, Shenghua; and Li, Chuanzhao, 5,648,561, Cl. 568-727.000.

Tiemeyer, Michael: *See*—
Brandley, Brian K.; Tiemeyer, Michael; Swiedler, Stuart J.; Moreland, Margaret; Schweingruber, Hans; and Rao, Narasinga, 5,648,344, Cl. 514-61.000.

Tietjen, Donald L.; Galloway, Frank C.; Menard, David M.; Arnold, Ronny L.; and Woodbridge, Nancy G., to Motorola, Inc. Method and apparatus for address extension across a multiplexed communication bus. 5,649,125, Cl. 395-306.000.

Tilley, Martin C. Tined, front-end big bale loader. 5,647,716, Cl. 414-111.000.

Tilton, Danny Eugene, Sr. Web tension regulator for printing machine. 5,647,276, Cl. 101-219.000.

Timberjack, Inc.: *See*—
Wildey, Allan J., 5,647,263, Cl. 83-835.000.

Time Warner Interactive Group, Inc.: *See*—
Klappert, Walt; Garbutt, Max; and Lehman, Michael, 5,649,234, Cl. 395-806.000.

Timken Company, The: *See*—
Singh, Surrendra; Fuquen, Rosendo; and Leeper, David R., 5,648,611, Cl. 73-598.000.

Ting, Sai L.: *See*—
Ghaffaripour, Parviz; and Ting, Sai L., 5,648,742, Cl. 330-51.000.

Tingley, Daniel A. Reinforced wood structural member. 5,648,138, Cl. 428-105.000.

Tinius, Christopher, to Asgrow Seed Company. Soybean cultivar 8967515073. 5,648,596, Cl. 800-200.000.

Tippins, George W., to Tippins Incorporated. Method of rolling light gauge hot mill band on a hot reversing mill. 5,647,236, Cl. 72-8.800.

Tippins Incorporated: *See*—
Tippins, George W., 5,647,236, Cl. 72-8.800.

TIW Corporation: *See*—
Braddick, Britt O., 5,647,436, Cl. 166-298.000.
Braddick, Britt O.; and Rives, Allen Kent, 5,647,437, Cl. 166-382.000.

Toba, Akira, to Sanyo Electric Co., Ltd. Video camera with electronic picture stabilizer. 5,648,815, Cl. 348-208.000.

Toda Kogyo Corporation: *See*—
Hatatani, Mitsuaki; Okimoto, Osamu; Shigemura, Toshitada; Fukuhara, Yoshifumi; and Sadamura, Hideaki, 5,648,014, Cl. 252-62.560.
Okano, Yoji; Kurita, Eiichi; Fujioka, Kazuo; Aoki, Koso; Misawa, Hiromitsu; and Kozawa, Minoru, 5,648,170, Cl. 428-403.000.

Togao, Kazuhiko, to Yugengaisha Hotarl. Health equipment. 5,647,830, Cl. 482-146.000.

Togawa, Tetsuji: *See*—
Katsuoka, Seiji; Sakurai, Kunihiko; and Togawa, Tetsuji, 5,647,792, Cl. 451-285.000.

Tojo, Senta: *See*—
Matsumoto, Toshiki; Toyao, Tetsuya; Nakamura, Tetsuya; Maehara, Shigeru; Aoki, Hiromasa; Fujita, Tatsuya; Tojo, Senta; Hodaira, Kinji; Matsui, Takeshi; and Fukuda, Yushi, 5,648,050, Cl. 422-180.000.

Tokui, Kenji; Matsubayashi, Yoshiteru; Yoshikawa, Masashi; Oshita, Jyunji; and Ohata, Yuji, to Victor Company of Japan, Ltd. Magnetic recording medium. 5,648,155, Cl. 428-323.000.

Tokushima, Mikiharu: *See*—
Kawanishi, Toshio; Yokoyama, Shigeki; Ishihara, Katsuro; Narukami, Yoshihisa; Shioyama, Masahiko; Tokushima, Mikiharu; and Ozaki, Toshiya, 5,647,988, Cl. 210-636.000.

Tokushu Paper Mfg. Co., Ltd.: *See*—
Hanaya, Morimasa, 5,647,141, Cl. 34-115.000.

Tokyo Electric Power, Co. Inc.: *See*—
Kawaguchi, Yoshihiro; Ohno, Masayuki; Nishioka, Yutaka; In, Michinobu; Kakiuchi, Hiroyuki; and Iwamoto, Shozo, 5,647,220, Cl. 62-89.000.

Tokyo Electron Limited: *See*—
Matsuse, Kimihiro; Lee, Hideki; Osada, Hatsuo; and Tanaka, Sumi, 5,647,945, Cl. 156-345.000.

Tokyo Tanabe Company Limited: *See*—
Takei, Tsunetomo; Aiba, Toshimitsu; Sakai, Kaoru; and Fujiwara, Tetsuro, 5,648,457, Cl. 530-324.000.

Tom Nicol: *See*—
Lofland, Spencer G., 5,647,961, Cl. 203-2.000.

Tomer, John D., IV: *See*—
Shutske, Gregory M.; Freed, Brian S.; Tomer, John D., IV; and Hamer, R. Richard L., 5,648,367, Cl. 514-330.000.

Tomita, Masao; Otsuki, Takuya; and Nagasaki, Sakon, to Matsushita Electric Industrial Co., Ltd. Video taperecorder with television standards converter. 5,649,048, Cl. 386-131.000.

Tomita, Yoshihiro: *See*—
Taguchi, Yutaka; Eda, Kazuo; Kanaboshi, Akibiro; Ogura, Tetsuyoshi; and Tomita, Yoshihiro, 5,647,932, Cl. 156-154.000.

Tonge, Lauren M.: *See*—
Smerznak, Mark A.; Jones, Roger J.; Surutzidis, Athanasios; Fisk, Andrew A.; Christiano, Steven P.; Bausch, Gregory G.; Tonge, Lauren M.; McCoy, Sharon K.; and Mallen, Elizabeth F., 5,648,327, Cl. 510-340.000.

Toray Industries, Inc.: *See*—
Okamoto, Katsuya; Abe, Koichi; and Nakajima, Shoji, 5,648,035, Cl. 264-173.160.

Toriyama, Masayuki: *See*—
Ogawa, Masao; Sako, Hiroyuki; Kawaguchi, Kenji; and Toriyama, Masayuki, 5,647,450, Cl. 180-220.000.

Toriyama, Yoshio: *See*—
Shibata, Katsuhiko; Toriyama, Yoshio; Kobayashi, Naoto; and Ueda, Shiro, 5,648,858, Cl. 349-57.000.

Torregrosa, Jean-Luc: *See*—
Cugnon de Sevricourt, Michel P.; Dacquet, Catherine G.; Finet, Michel A.; Le Marquer, Florence J.; Robba, Max F.; Tembo, Norbert O.; Yannic-Arnoult, Sylvie J.; and Torregrosa, Jean-Luc, 5,648,381, Cl. 514-471.000.

Tortolani, David R.: *See*—
Starrett, John E., Jr.; Yu, Kuo-Long; Mansuri, Muzammil M.; Tortolani, David R.; and Reczek, Peter R., 5,648,385, Cl. 514-513.000.

Torvec, Inc.: *See*—
Gleasman, Vernon E.; and Gleasman, Keith E., 5,647,802, Cl. 464-159.000.

Toshiba Kikai Kabushiki Kaisha: *See*—
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Tosoh Corporation: *See*—
Kashima, Keiji; and Yoshida, Naoki, 5,647,655, Cl. 362-31.000.

Totaku Industries, Inc.: *See*—
Nobori, Masakatsu, 5,647,401, Cl. 138-126.000.

Toth, John J.; and McNealy, Richard, to Aluminum Company of America. Dry bulk pressure differential container with external frame support. 5,647,514, Cl. 222-181.300.

Touati, Hervé: *See*—
Grodstein, Joel Joseph; Kodandapani, Kolar L.; and Touati, Hervé, 5,648,911, Cl. 364-490.000.

Touma, Katsuyuki: *See*—
Tajiri, Hiroyuki; Nakagawa, Yoshiteru; Iwaya, Yoshiaki; Tanaka, Yoshiharu; Asami, Keiichi; Touma, Katsuyuki; and Okumura, Shinji, 5,648,027, Cl. 264-43.000.

Tovey, H. Jonathan; Nagori, Vinod; and Korishch, Marina, to United States Surgical Corporation. Specimen retrieval pouch and method for use. 5,647,372, Cl. 128-749.000.

Towers, Bill Eugene; Jurik, Ladislav; and Weinbrenner, Richard Larry, to Brunswick Bowling & Billiards Corporation. Apparatus for drilling variable size holes in bowling ball. 5,647,702, Cl. 408-150.000.

Toyao, Tetsuya: *See*—
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Toyo Boseki Kabushiki Kaisha: *See*—
Inoue, Makoto; and Kobayashi, Masaru, 5,648,184, Cl. 429-105.000.

Toyo Tire & Rubber Co., Ltd.: *See*—
Sumiya, Yoshiro; and Sugimoto, Hiroaki, 5,647,925, Cl. 152-209.00R.

Toyoda Gosei Co., Ltd.: *See*—
Nagata, Atsushi, 5,647,610, Cl. 280-731.000.

Toyoda, Hitoshi: *See*—
Miyake, Kazumi; Hamazaki, Kagehisa; Toyoda, Hitoshi; and Higuchi, Yoshikatsu, 5,648,028, Cl. 264-647.000.

Toyoda, Masashi: *See*—
Taniguchi, Akihiko; and Toyoda, Masashi, 5,647,727, Cl. 417-32.000.

Toyosawa, Toshio: *See*—
Naito, Toshihiko; Hata, Katsura; Kaku, Yumiko; Tsuruoka, Akihiko; Tsukada, Itaru; Yanagisawa, Manabu; Toyosawa, Toshio; and Nara, Kazumasa, 5,648,372, Cl. 514-383.000.

Toyota Jidosha Kabushiki Kaisha: *See*—
Buma, Shuuichi, 5,647,580, Cl. 267-64.170.
Hyodo, Yoshihiko; and Matsuoka, Hiroki, 5,647,332, Cl. 123-519.000.
Katoh, Kazunori; Kondo, Haruyoshi; Matsui, Masayuki; Katayama, Naoki; Yamada, Yasushi; Takahashi, Hideaki; and Fukuda, Kunio, 5,648,601, Cl. 73-1.00G.
Nishizaka, Koichi; Higashi, Akihiko; and Mukai, Jun, 5,649,076, Cl. 395-119.000.

Sato, Koji; Morita, Makoto; and Kizu, Masafumi, 5,648,769, Cl. 340-988.000.
Toyox Co., Ltd.: *See*—
Asakura, Sachio, 5,647,614, Cl. 285-252.000.
Tran, Bao: *See*—
Bhuva, Rohit L.; Tran, Bao; Conner, James L.; Overlaur, Michael; and Paulsen, Tracy S., 5,648,730, Cl. 324-763.000.
Tran, Hiep Van, to Texas Instruments Incorporated. Differential amplifier in a memory data path. 5,648,927, Cl. 365-63.000.
Tran, Howard Huy Phung: *See*—
Desubijana, Joseba Mirena; Michaelson, Wayne Alan; and Tran, Howard Huy Phung, 5,649,096, Cl. 395-183.190.
Tran, Liem Thanh; Streit, Dwight Christopher; and Oki, Aaron Kenji, to TRW Inc. Double-epitaxy heterojunction bipolar transistors for high speed performance, 5,648,666, Cl. 257-197.000.
Tran, Mai Loan Thi; Bright, Edward John; and Taylor, Attalee Snarr, to Whitaker Corporation, The. Socket for a tape carrier package. 5,647,750, Cl. 439-72.000.
Tranchard, Lionel, to U.S. Philips Corporation. Motion estimation using half-pixel refinement of frame and field vectors. 5,648,819, Cl. 348-416.000.
Transferia Systems B.V.: *See*—
van der Sloot, Bart; and van Oostueen, Hendrikus Johannes, 5,647,458, Cl. 188-41.000.
Travelers Express Company, Inc.: *See*—
Smith, Lawrence G., 5,647,677, Cl. 400-70.000.
Trawick, David L.: *See*—
Gostin, Gary B.; Brinson, Gregory D.; Beck, Todd H.; and Trawick, David L., 5,649,144, Cl. 395-421.100.
Trebino, Rick; DeLong, Ken; and Hayden, Carl, to Sandia Corporation. Optimized achromatic phase-matching system and method. 5,648,866, Cl. 359-326.000.
Treinies, Stefan: *See*—
Wier, Manfred; Treinies, Stefan; and Ketterer, Alexander, 5,647,205, Cl. 60-274.000.
Triangle research & Development Corporation: *See*—
McKinney, Richard A.; Myers, Donald R.; McKinney, Barbara J.; Moody, David B.; Smrcka, Joseph G., deceased; Smrcka, John J., executor; Zhu, Joshua Y.; and Weeder, Daniel P., 5,648,915, Cl. 364-507.000.
Trimble, Harold J.; Reynolds, Bruce E.; Bachtel, Robert W.; Klett, Robert J.; Brossard, David N.; and Earls, David E., to Chevron U.S.A. Inc. Apparatus and method for quenching in hydroprocessing of a hydrocarbon feed stream. 5,648,051, Cl. 422-207.000.
Trimble Navigation, Ltd.: *See*—
Long, George E., 5,648,763, Cl. 340-825.490.
Trimmer Trap, Inc.: *See*—
Bellis, William B., Jr., 5,647,489, Cl. 211-70.600.
Trinchieri, Giorgio; Perussia, Bice; Clark, Steven C.; Kobayashi, Michiko; Wong, Gordon G.; Hewick, Rodney; and Wolf, Stanley F., to Genetics Institute, Inc. Methods of inducing gamma interferon and stimulating blood cell populations using natural killer stimulatory factor. 5,648,072, Cl. 424-85.200.
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Trinder, Michael Charles John: *See*—
Gifford, Carl S.; Jones, Owen; and Trinder, Michael Charles John, 5,649,018, Cl. 381-71.140.
Tristrata Technology, Inc.: *See*—
Yu, Ruey J.; and Van Scott, Eugene J., 5,648,388, Cl. 514-557.000.
Yu, Ruey J.; and Van Scott, Eugene J., 5,648,391, Cl. 514-557.000.
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Gibbons, Robert A., 5,647,441, Cl. 172-439.000.
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Keefe, Brian J.; Steinfield, Steven W.; Childers, Winthrop D.; McClelland, Paul H.; and Trueba, Kenneth E., 5,648,804, Cl. 347-47.000.
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Buck, Jochen; Hammerling, Ulrich; Derguini, Fadila; and Nakanishi, Koji, 5,648,563, Cl. 568-824.000.
Tse, Doris B.; Chung, Hui-Min; and Van der Ploeg, Leonardus H. T., 5,648,222, Cl. 435-7.230.
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Andrews, Scott, 5,649,308, Cl. 370-334.000.
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Fukui, Toyoakira; and Kurokawa, Yoshio, 5,647,685, Cl. 403-370.000.
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Sasai, Osamu; Kawase, Hajime; Wada, Yasunori; and Tsutsui, Shinsuke, 5,647,777, Cl. 439-752.000.
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Hwang, Jong-Liang, 5,647,177, Cl. 52-79.500.
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Tuyn, Roberto: *See*—
Kivits, Petrus Franciscus; and Tuyn, Roberto, 5,647,192, Cl. 53-450.000.
Tweadey, Robert F., II; and Gajewski, Kenneth J., to Ford Motor Company. Pre-assembled glass breakage detector applique. 5,648,758, Cl. 340-550.000.
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Anderson, Duwayne R.; Reinhold, Steve U.; Twigg, Lorimer L.; and Marineau, Mark D., 5,649,036, Cl. 385-16.000.
Twigg, Richard Dean; and Mitchem, Steven Dale, to Minnesota Mining and Manufacturing. Integrated circuit test socket having toggle clamp lid. 5,647,756, Cl. 439-331.000.
Tyberg, William T.; and Jones, John W., to DPC Cirrus Inc. Capacitive level sensing pipette probe. 5,648,727, Cl. 324-677.000.
Tyler Pipe Company: *See*—
Smith, Edward H., 5,647,991, Cl. 210-662.000.
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Kraus, George A.; and Tylka, Gregory L., 5,648,318, Cl. 504-320.000.
Tyner, Joan D.: *See*—
Adamczyk, Maciej; Johnson, Donald D.; Mattingly, Phillip G.; Clarisse, Diana E.; Tyner, Joan D.; and Perkowitz, Mary M., 5,648,272, Cl. 436-500.000.
Tyner, Randall D.; Briggs, Donald C.; Collins, Daniel E.; and Avellino, William R., to Space Systems/Loral, Inc. Signal translation and amplification system including a thermal radiation panel coupled thereto. 5,649,310, Cl. 455-129.000.
TZN Forschungs und Entwicklungszentrum Unterluss GmbH: *See*—
Romer, Rudolf; Wollmann, Gerd; and Misoph, Helmut, 5,647,559, Cl. 244-3.130.
U S Philips Corporation: *See*—
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U S WEST Technologies, Inc.: *See*—
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Ube Industries, Ltd.: *See*—
Harada, Katsumasa; Imbe, Yoichi; Nishihira, Keigo; Tanaka, Shuji; Fujitsu, Satoru; Sugise, Ryoji; Kashiwagi, Koichi; and Sumida, Toshihiko, 5,648,510, Cl. 558-274.000.
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Uchida, Hiroyuki: *See*—
Hayama, Hiroshi; Uchida, Hiroyuki; and Takechi, Kazushige, 5,648,293, Cl. 437-101.000.
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Uchida, Mitsuru; and Matsumoto, Tohru, to Canon Kabushiki Kaisha. Plastic additive, plastic composition containing the additive and plastic molding containing the additive. 5,648,013, Cl. 252-62.540.
Uchiyama, Sadao: *See*—
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Uehara, Hirokazu; Egashira, Noboru; and Tsuruta, Seiji, to Unisia Jecs Corporation. Decompression braking apparatus for diesel engine. 5,647,319, Cl. 123-322.000.
Ueki, Nobuaki: *See*—
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Uematsu, Kimio: *See*—
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Uenaka, Akimitsu: *See*—
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Uglene, Wendell Vaughn; and Mah, Donald, to M.E.T.A. Research Inc. Inflatable neck seal. 5,647,059, Cl. 2-2.150.
Uhlig, Karlheinz: *See*—
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Uitto, Jouni: *See*—
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Ulrich, James Francis: *See*—
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Ultra-Guide Ltd.: *See*—
Paltieli, Yoav, 5,647,373, Cl. 128-749.000.
Ultra-Scan Corporation: *See*—
Schneider, John K.; Marshall, Gerald F; and Vassallo, Andrew D., 5,647,364, Cl. 128-660.090.
Umeda, Yasushi: *See*—
Hoshino, Mitsuhide; Umeda, Yasushi; and Takano, Masahide, 5,647,935, Cl. 156-231.000.
Umetsu, Masakazu; Katagiri, Masami; and Hoshizawa, Yoshihiro, to NEC Corporation. Bus coupling information processing system for multiple access to system bus. 5,649,209, Cl. 395-739.000.
Umezawa, Kenji: *See*—
Morikiyo, Akira; Mizuguchi, Koichi; Kawano, Susumu; Umezawa, Kenji; and Kato, Koji, 5,647,474, Cl. 198-465.100.
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Umezawa, Yujiro, to Bridgestone Corporation. Heavy duty pneumatic tires with reduced belt weight. 5,647,928, Cl. 152-527.000.
Ung-Chhun, Neng S.; and Johnson, Richard J., to Baxter International Inc. Whole blood leukodepletion and platelet filter. 5,647,985, Cl. 210-504.000.
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McHugh, Donald Raymond; and Sanders, James Edward, 5,647,788, Cl. 451-21.000.
Union Carbide Chemicals & Plastics Technology Corporation: *See*—
Wasserman, Eric Paul; Smale, Mark Wilton; Lynn, Timothy Roger; Brady, Robert Converse, III; and Karol, Frederick John, 5,648,310, Cl. 502-120.000.
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Hoshina, Atsumi; and Watanabe, Satoru, 5,648,602, Cl. 73-115.000.
Ichikawa, Toshiro; Kobayashi, Yoshiyuki; and Nakamura, Hideaki, 5,647,321, Cl. 123-399.000.
Ohki, Hisatomo; Nakamura, Shigemi; Ishizeki, Kazunori; and Yanagawa, Akira, 5,647,349, Cl. 128-203.150.
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Bruso, Kelsey L.; and Vavra, Robert Dean, 5,649,214, Cl. 395-758.000.
Desubijana, Joseba Mirena; Michaelson, Wayne Alan; and Tran, Howard Huy Phung, 5,649,096, Cl. 395-183.190.
Price, Ferris T., deceased; Rodi, Eugene A.; and Theis, Marvin W., 5,649,092, Cl. 395-182.130.

United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in her Britannic Majesty's Government of the: *See—*
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United Microelectronics Corporation: *See—*
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Vander Meer, Robert K.; Banks, William A.; and Lofgren, Clifford S., 5,648,390, Cl. 514-558.000.
Air Force: *See—*
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Army: *See—*
Guazzoni, Guido E., 5,647,916, Cl. 136-253.000.
Hall, John M.; Wright, Richard A.; and Perconti, Philip, 5,648,868, Cl. 359-364.000.
Mason, George L., 5,647,927, Cl. 152-415.000.
Smyth, Christopher C., 5,649,061, Cl. 395-20.000.
Yankielun, Norbert E.; and Flanders, Stephen N., 5,648,724, Cl. 324-533.000.
Health and Human Services: *See—*
Bottaro, Donald P.; Rubin, Jeffery S.; Faletto, Donna; Chan, Andrew M.-L.; Vande Woude, George F.; and Aaronson, Stuart A., 5,648,273, Cl. 436-501.000.
National Aeronautics and Space Administration: *See—*
Cook, Joseph S., Jr., 5,647,254, Cl. 81-475.000.
Jorgensen, Charles; and Ross, James, 5,649,064, Cl. 395-22.000.
Lin, True-Lon; Park, Jin S.; Gunapala, Sarath D.; Jones, Eric W.; and Del Castillo, Hector M., 5,648,297, Cl. 437-178.000.
Pater, Ruth H.; and Hansen, Marion G., 5,648,432, Cl. 525-421.000.
Wincheski, Russell A.; Fulton, James P.; Nath, Shridhar C.; Simpson, John W.; and Namkung, Min, 5,648,721, Cl. 324-240.000.
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Blizzard, Ronald H.; Schell, Cynthia T.; Skruch, Harry J.; and Stallings, Robert L., 5,647,891, Cl. 95-99.000.
Clark, Joseph A.; and Sartori, Michael A., 5,648,936, Cl. 367-13.000.
Garrett, Steven L., 5,647,216, Cl. 62-6.000.
Johnson, James T.; and Kolstrom, Frank E., 5,647,265, Cl. 83-861.000.
Kirschner, Ivan N.; Dean, Laurence M.; and Philips, Richard B., 5,648,631, Cl. 89-1.140.
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U.S. Philips Corporation: *See—*
Begemann, Simon H.A.; Van Den Beld, Gerrit J.; and Tenner, Ariadne D., 5,648,656, Cl. 250-214.0AL.
Boursier, Alain; De Crouychanel, Rémy; and Giron, Louis, 5,648,796, Cl. 345-149.000.
Cautley, Hugh, 5,649,285, Cl. 455-6.200.
Fuderer, Miha; and Groen, Johannes P., 5,647,362, Cl. 128-653.200.
Gentric, Philippe; and Minot, Joël, 5,649,067, Cl. 395-23.000.
Gobert, Jean, 5,649,069, Cl. 395-27.000.
Guy, Jean-Yves, 5,648,773, Cl. 341-51.000.
Jelsma, Siebe; and Kuijk, Karel E., 5,648,794, Cl. 345-98.000.
Kunze, Norbert; Müller, Dieter; and Gielkens, Marc, 5,647,549, Cl. 242-338.400.
Launay, François; and Venambre, Jacques, 5,647,122, Cl. 29-840.000.
Oomen, Arnoldus W. J.; Groenewegen, Marc E.; Van Der Waal, Robbert G.; and Veldhuis, Raymond N. J., 5,649,054, Cl. 395-2.380.
Ould-Ali, Abdelhamid; Geffroy, Nicolas; and Burgain, Alain, 5,649,091, Cl. 395-182.090.
Rutten, Peter J. H.; and Stikvoort, Eduard F., 5,649,313, Cl. 455-339.000.
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U.S. Phillips Corporation: *See—*
Liedenbaum, Coen T.H.F., 5,648,863, Cl. 359-154.000.

U.S. Robotics Mobile Communications Corp.: *See—*
Thomas, Nicholas A.; Evans, John; Bentley, Richard; and Gray, Mark L., 5,649,001, Cl. 379-93.070.

United States Surgical Corporation: *See—*
Green, David T.; Palmer, Mitchell J.; Milliman, Keith L.; Savage, Robert C.; McClure, Richard C.; and Heaton, Lisa W., 5,647,526, Cl. 227-175.200.
Tovey, H. Jonathan; Nagori, Vinod; and Korisheh, Marina, 5,647,372, Cl. 128-749.000.

United Technologies Automotive, Inc.: *See—*
Koopman, Philip J., Jr.; Finn, Alan M.; and LaBarre, Robert E., 5,649,014, Cl. 380-28.000.
Salliotte, James E., 5,648,707, Cl. 318-443.000.

Unitika Limited: *See—*
Tajiri, Hiroyuki; Nakagawa, Yoshiteru; Iwaya, Yoshiaki; Tanaka, Yoshiharu; Asami, Keiichi; Touma, Katsuyuki; and Okumura, Shinji, 5,648,027, Cl. 264-43.000.

Unitrode Corporation: *See—*
Neidorff, Robert Alan, 5,648,780, Cl. 341-154.000.

Universities Research Association, Inc.: *See—*
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University Corporation for Atmospheric Research: *See—*
Albo, Eugene David; and Goodrich, Robert Kent, 5,648,782, Cl. 342-26.000.

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Nishioka, Koichi; Fujiwara, Hideo; and Iseki, Takayuki, 5,648,885, Cl. 360-113.000.

University of Arizona, Arizona Board of Regents, on behalf of the: *See—*
McDaniel, Robert G., 5,648,593, Cl. 800-200.000.

University of British Columbia: *See—*
Dolphin, David; and Brückner, Christian, 5,648,485, Cl. 540-474.000.

University of California, Regents of the: *See—*
Christensen, Richard M., 5,647,933, Cl. 156-197.000.
Hawthorne, M. Frederick; Feakes, Debra Arlene; and Shelly, Kenneth John, 5,648,532, Cl. 564-8.000.
Simpson, Randall L.; and Pruneda, César O., 5,648,636, Cl. 102-355.000.

University of Colorado: *See—*
Stewart, John M.; Gera, Lajos; and Whalley, Eric T., 5,648,336, Cl. 514-15.000.

University of Florida: *See—*
Batich, Chris; and Vaghefi, Farid, 5,648,099, Cl. 424-497.000.

University of Georgia Research Foundation, The: *See—*
Carlson, Russell W., 5,648,343, Cl. 514-53.000.
Chu, Chung K.; Du, Jinfa; and Wang, Chunguang, 5,648,489, Cl. 544-276.000.

University of Jerusalem, Yissum Research Development Company of the: *See—*
Dumitriu, Severian; Kahane, Itzhak; and Guttmann, Hilda, 5,648,252, Cl. 435-179.000.

University of Kentucky Research Foundation: *See—*
Kadaba, Pankaja K., 5,648,369, Cl. 514-357.000.

University of Manchester Institute of Science and Technology, The: *See—*
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University Of Manitoba: *See—*
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University of Minnesota, Regents of the: *See—*
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University of Nebraska, The Board of Regents of the: *See—*
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University of North Carolina at Chapel Hill, The: *See—*
Hooke, William M.; Stoner, Brian R.; Bozeman, Steven P.; Fauber, Roy E.; Munsat, Tobin L.; and Washburn, Sean, 5,648,701, Cl. 315-111.210.

University of Pennsylvania, Trustees of the: *See—*
Ducheyne, Paul; El-Ghannam, Ahmed; and Shapiro, Irving, 5,648,301, Cl. 501-39.000.

University of South Alabama: *See—*
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Albertsen, Hans; Anand, Rakesh; Carlson, Mary; Groden, Joanna; Hedge, Philip John; Joslyn, Geoff; Kinzler, Kenneth; Markham, Alexander; Nakamura, Yusuke; Thliveris, Andrew; Vogelstein, Bert; and White, Raymond L., 5,648,212, Cl. 435-6.000.

University of Western Australia: *See—*
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University Research Corporation: *See—*
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Uriu, Eiichi; Makino, Osamu; Chiba, Hironobu; and Yokota, Chisa, to Matsushita Electric Industrial Co., Ltd. Method for producing a conductive pattern and method for producing a greensheet lamination body including the same, 5,647,966, Cl. 205-78.000.

Usa, Satoshi, to Yamaha Corporation. Musical performance control apparatus for processing a user's swing motion with fuzzy inference or a neural network, 5,648,627, Cl. 84-600.000.

Uscategui, Gabriel Julio: *See—*
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Ushijima, Yasutaka: *See—*

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Uskali, Bob, to Motorola, Inc. Battery charge gauge with current integrator and method for guaging battery charge, 5,648,717, Cl. 320-43.000.

Usuki, Katsutoshi: *See—*
Fujita, Kenjiro; Usuki, Katsutoshi; and Tashiro, Tetsuya, 5,647,819, Cl. 477-140.000.

Utsumi, Yusuke: *See—*
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Uwabo, Tsuneo: *See—*
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Uzawa, Tsutomu, to Olympus Optical Co., Ltd. Optical system for monitor cameras to be mounted on vehicles, 5,648,835, Cl. 396-429.000.

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Vaders, Dennis H.; and Ou, Nian-hua, to Masonite Corporation. Methods of making wood composite products, 5,647,934, Cl. 156-219.000.

Vaders, Dennis Henry, to Masonite Corporation. Conveyor and method for continuous vacuum lamination, 5,648,140, Cl. 428-131.000.

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Vahlsing, David H.: *See—*
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Vaistomaa, Jukka; Kaila, Jarmo; Rikkinen, Jouko; and Knuutila, Matti, to Tampella Power Oy. Method of reducing scaling of heat transfer surfaces in an evaporation plant of a sulphate cellulose mill, 5,647,955, Cl. 162-30.110.

Valbjørn, Anders; Plauborg, Erik; and Zenker, Siegfried, to Danfoss A/S. Control valve, 5,647,394, Cl. 137-501.000.

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Chaloner-Gill, Benjamin; and Golovin, Neal, 5,648,185, Cl. 429-192.000.

Valenta, Rudolf; Duchene, Michael; Pettenburger, Karin; Breitenbach, Michael; Kraft, Dietrich; Rumpold, Helmut; and Scheiner, Otto, to Biomay Produktions - Und Handelsgesellschaft M.B.H. Method of production of birch pollen allergen P14, 5,648,242, Cl. 435-69.300.

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Valenzuela, Pablo D. T.: *See—*
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Valeo: *See—*
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Vallabhaneni, Padmavathi: *See—*
Barbará , Daniel; Aref, Walid; Kamel, Ibrahim; and Vallabhaneni, Padmavathi, 5,649,023, Cl. 382-159.000.

VanBork, Erik C.: *See—*
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Mesrobian, Hrair-George O.; and Roemer, Frederick D., 5,647,843, Cl. 604-8.000.

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Begemann, Simon H.A.; Van Den Beld, Gerrit J.; and Tenner, Ariadne D., 5,648,656, Cl. 250-214.0AL.

Vandenbergh, Danielle Marie Helene Jeanne; LeComte, Corine Martine Therese Ghislaine; Chappuis, Gilles-Emile; and Pin, Jean-Jacques, to Rhone Merieux. Method for detecting bovine diarrhoea virus infection, nucleotide sequence encoding a protein induced by this virus infection and recombinant proteins and antigens relating thereto, 5,648,466, Cl. 530-350.000.

van den Bosch, Johannes Franciscus, to Akzo Nobel N.V. Actinobacillus pleuropneumoniae subunit vaccine, 5,648,081, Cl. 424-255.100.

Van den Eynde, Benoit; DeBacker, Olivier; and Boon-Falleur, Thierry, to Ludwig Institute for Cancer Research. Isolated peptides derived from tumor rejection antigens, and their use, 5,648,226, Cl. 435-7.240.

Van Den Langenbergh, Koen L.E.: *See—*
de Schaetzen, Serge L.G.M.G.; and Van Den Langenbergh, Koen L.E., 5,647,494, Cl. 215-249.000.

van der Meer, Alex; and Maxwell, Paul Bryan, to Goodyear Tire & Rubber Company, The. Winter automobile or light truck tire, 5,647,926, Cl. 152-209.00R.

Vander Meer, Robert K.; Banks, William A.; and Lofgren, Clifford S., to United States of America, Agriculture. Repellents for ants, 5,648,390, Cl. 514-558.000.

van der Meulen, Antonius Maria, to Stork Screens B.V. Squeegee assembly in particular intended for coating substantially cylindrical objects with a liquid or pasty material, 5,647,907, Cl. 118-100.000.

VanderPlaat, Peter G.: *See—*
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Van der Ploeg, Leonardus H. T.: *See—*
Tse, Doris B.; Chung, Hui-Min; and Van der Ploeg, Leonardus H. T., 5,648,222, Cl. 435-7.230.

van der Sloot, Bart; and van Oostueen, Hendrikus Johannes, to Transferia Systems B.V. Magnetic rail brake device, 5,647,458, Cl. 188-41.000.

Vandervoort, Paul B. System for triggering and muting musical tones employing two of more keyboard keys which operate interactively, 5,648,630, Cl. 84-719.000.

Van Der Waal, Robbert G.: *See—*
Oomen, Arnoldus W. J.; Groenewegen, Marc E.; Van Der Waal, Robbert G.; and Veldhuis, Raymond N. J., 5,649,054, Cl. 395-2.380.

van de Velde Keyser, Herbert Sybrant, to Monsanto Company. Process of making cut, shaped blanks, 5,648,034, Cl. 264-160.000.

Vande Woude, George F.: *See—*
Bottaro, Donald P.; Rubin, Jeffery S.; Faletto, Donna; Chan, Andrew M.-L.; Vande Woude, George F.; and Aaronson, Stuart A., 5,648,273, Cl. 436-501.000.

Van Dyke, Korbin: *See—*
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Vanell, James; and Garcia, Al, to Sony Corporation; and Materials Research Corp, Gas diffuser plate assembly and RF electrode, 5,647,911, Cl. 118-715.000.

VanGilder, John P.: *See—*
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Vanguard International Semiconductor Corporation: *See—*
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van Heiningen, Arjan Peter: *See—*
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Van Hell, Bart: *See—*
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Vannatta, Louis Jay; Dailey, Kirk W.; and Vaas, Randall S., to Motorola, Inc. Portable radio housing incorporating diversity antenna structure, 5,649,306, Cl. 455-575.000.

Vannucci, Giovanni: *See—*
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Shober, R. Anthony; Vannucci, Giovanni; and Wright, Gregory Alan, 5,649,295, Cl. 455-38.200.

Van Oort, Michiel M., to Glaxo Wellcome Inc. Medicament carrier for dry powder inhalator, 5,647,347, Cl. 128-203.150.

van Oostueen, Hendrikus Johannes: *See—*
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Van Phan, Tho: *See—*
Von Itzstein, Laurence Mark; Wu, Wen-Yang; Van Phan, Tho; Danylec, Basil; Jin, Betty; Colman, Peter Malcolm; and Varghese, Joseph Noozhumurry, 5,648,379, Cl. 514-459.000.

Van Scott, Eugene J.: *See—*
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Yu, Ruey J.; and Van Scott, Eugene J., 5,648,391, Cl. 514-557.000.
Yu, Ruey J.; and Van Scott, Eugene J., 5,648,395, Cl. 514-574.000.

Van Vlasselaer, Peter, to Activated Cell Therapy, Inc. Methods for enriching breast tumor cells, 5,648,223, Cl. 435-7.230.

VanWagenen, Bradford C.; Duff, Steven R.; Nelson, William A.; and D'Ambra, Thomas E., to NPS Pharmaceuticals, Inc. Amine preparation, 5,648,540, Cl. 564-375.000.

VanWagenen, Bradford C.; and Barmore, Robert M., to NPS Pharmaceuticals, Inc. Chiral reductions of imines leading to the syntheses of optically active amines, 5,648,541, Cl. 564-375.000.

Van Walraven, Jan, to J. van Walraven B.V. Method for fastening a pipe in a vertical position to a wall, 5,647,564, Cl. 248-74.200.

Van Weverberg, Erik Gabriel Gerardus: *See—*
Aerens, Ronny Jean Valentine; De Cock, Etienne Marie; De Schamphelaere, Lucien Amede; Steylaerts, Peter Alexander Roger; and Van Weverberg, Erik Gabriel Gerardus, 5,649,267, Cl. 399-159.000.

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Vassallo, Andrew D.: *See—*
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Vassallo, Laura M.: *See—*
Egbertson, Melissa S.; Vassallo, Laura M.; Hartman, George D.; Halczenko, Wasyl; Whitman, David B.; Perkins, James J.; Krause, Amy E.; Ihle, Nathan; Claremon, David Alan; Hoffman, William; and Duggan, Mark E., 5,648,368, Cl. 514-331.000.

Vassarotti, Vincenzo. Centrifugal method for concentrating macromolecules from a solution and device for carrying out said method. 5,647,990, Cl. 210-650.000.

Vassiliadis, Stamatis: *See*—
Blaner, Bartholomew; and Vassiliadis, Stamatis, 5,649,178, Cl. 395-587.000.
Pechanek, Gerald G.; Glossner, Clair John; Larsen, Larry D.; and Vassiliadis, Stamatis, 5,649,135, Cl. 395-396.000.

Vaudolon, Jean-Pierre. Stuffing box seal having braided packings and lip seal rings in combination with a shaft sleeve. 5,647,598, Cl. 277-59.000.

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Bruso, Kelsey L.; and Vavra, Robert Dean, 5,649,214, Cl. 395-758.000.

Vazquez, Michael L.: *See*—
Ng, John S.; Przybyla, Claire A.; Mueller, Richard A.; Vazquez, Michael L.; Getman, Daniel P.; Freskos, John J.; DeCrescenzo, Gary A.; Bertenshaw, Deborah E.; Heintz, Robert M.; Zhang, Suhong; Liu, Chin; and Laneman, Scott A., 5,648,511, Cl. 558-345.000.
Talley, John J.; Getman, Daniel P.; DeCrescenzo, Gary A.; Reed, Kathryn L.; Lin, Ko-Chung; Freskos, John Nicholas; Clare, Michael; Rogier, Donald Joseph, Jr.; Heintz, Robert M.; Vazquez, Michael L.; and Mueller, Richard A., 5,648,364, Cl. 514-307.000.

Veber, Daniel F.: *See*—
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Vector Oil Tool Ltd.: *See*—
Wenzel, Kenneth Hugo, 5,647,446, Cl. 175-297.000.

Veenhof, Willem D., to Martin Engineering Company. Conveyor belt scraper blade. 5,647,476, Cl. 198-497.000.

Veldhuis, Raymond N. J.: *See*—
Oomen, Arnoldus W. J.; Groenewegen, Marc E.; Van Der Waal, Robbert G.; and Veldhuis, Raymond N. J., 5,649,054, Cl. 395-2.380.

Velepec, Fredric A., to Fred M. Velepec Co., Inc. Double bevel cutting edge router bit with multiple guide wheels. 5,647,700, Cl. 407-34.000.

Venambre, Jacques: *See*—
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Venegas, Manuel Garcia: *See*—
Damhus, Ture; Kirk, Ole; Pedersen, Gitte; Venegas, Manuel Garcia; Christensen, Bjøorn Eggert; and Schneider, Palle, 5,648,262, Cl. 435-263.000.

Ventritex, Inc.: *See*—
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Vernace, Salvatore J.; Vernace, Vincent; and Lombardo, Giuseppe. Remote control protective holder and detection device. 5,648,757, Cl. 340-539.000.

Vernace, Vincent: *See*—
Vernace, Salvatore J.; Vernace, Vincent; and Lombardo, Giuseppe, 5,648,757, Cl. 340-539.000.

Verrangia, Thomas V., to L'Oreal S.A. Display system for hair swatches. 5,647,485, Cl. 206-733.000.

Versteegh, Christiaan Willem, to Heineken Technical Services B.V. Process for the continuous preparation of wort. 5,648,246, Cl. 435-93.000.

Vescor Corporation: *See*—
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Victor Company of Japan, Ltd.: *See*—
Ishigaki, Yukinobu, 5,648,736, Cl. 327-113.000.
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Nagayama, Yasushi; Kobayashi, Osamu; and Matsumoto, Ikuo, 5,648,150, Cl. 428-216.000.
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Nishioka, Koichi; Fujiwara, Hideo; and Iseki, Takayuki, 5,648,885, Cl. 360-113.000.
Tokui, Kenji; Matsubayashi, Yoshiteru; Yoshikawa, Masashi; Oshita, Jyunji; and Ohata, Yuji, 5,648,155, Cl. 428-323.000.

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Vierling, Pierre: *See*—
Riess, Jean G.; Vierling, Pierre; and Garelli, Nathalie, 5,648,362, Cl. 514-292.000.

Vilasi, Joseph. Expandable inter vivos tube. 5,647,358, Cl. 128-207.140.

Vilato, Pablo: *See*—
Jousse, Didier; Vilato, Pablo; and Geoffroy, Catherine, 5,648,172, Cl. 428-426.000.

Villalpando, Pete L.: *See*—
Campbell, Michael L.; Daugherty, John R.; and Villalpando, Pete L., 5,647,380, Cl. 128-98.000.

Villata, Gino; and Giroire, Jean-Pierre, to Valeo. Clutch mechanism, notably for a motor vehicle. 5,647,468, Cl. 192-89.230.

Villemure, Alain, to Domtar Inc. Assembly of packaged reams and method therefor. 5,647,191, Cl. 53-447.000.

Viltro, Louis John: *See*—
Allen, Patrick Jay; Bross-Kelly, Beverly Jean; Viltro, Louis John; Vinnage, William Robert, Jr.; and Weirich, David Michael, 5,647,864, Cl. 604-391.000.

Vinca Corporation: *See*—
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Virginia Commonwealth University: *See*—
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Virtual Machine Works, Inc.: *See*—
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Visger, Patrick; and Sefton, Robert T. In-line roller skate braking mechanism. 5,647,599, Cl. 280-11.200.

Vishlitzky, Natan; and Kopylovitz, Haim, to EMC Corporation. Cache management system utilizing a cache data replacer responsive to cache stress threshold value and the period of time a data element remains in cache. 5,649,156, Cl. 395-463.000.

Vivorx, Inc.: *See*—
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VLSI Technology Inc.: *See*—
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Vogelstein, Bert: *See*—
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Voith Sulzer Finishing GmbH: *See*—
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Voith Sulzer Papiermaschinen GmbH: *See*—
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Schmidt-Rohr, Volker; Sollinger, Hans-Peter; Henseler, Klaus; and Esslinger, Klaus, 5,647,958, Cl. 162-203.000.

Volz, Peter; and Zaviska, Dalibor, to ITT Automotive Europe GmbH. Solenoid valve, especially for hydraulic brake systems with slip control. 5,647,644, Cl. 303-119.200.

von Gentzkow, Wolfgang; Huber, Jürgen; Kapitza, Heinrich; Rogler, Wolfgang; and Kleiner, Hans-Jerg, to Siemens Aktiengesellschaft. Epoxy resin mixtures containing phosphorus acid/epoxy resin adducts. 5,648,171, Cl. 428-413.000.

von Inten, Wolfgang: *See*—
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Von Itzstein, Laurence Mark; Wu, Wen-Yang; Van Phan, Tho; Danylec, Basil; Jin, Betty; Colman, Peter Malcolm; and Varghese, Joseph Noozhumurry, to Biota Scientific Management Pty., Ltd. Derivatives and analogues of 2-deoxy-2,3-didehydro-n-acetyl neuraminic acid and their use as antiviral agents. 5,648,379, Cl. 514-459.000.

von Kayser, Karl-Friedrich: *See*—
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Vonnahme, Josef: *See*—
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Voorhees, Marc: *See*—
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Vouri, Scott D.; and Higgins, Paul Jerome, to Binar Graphics, Inc. Method of resetting a computer video display mode. 5,648,795, Cl. 345-132.000.

Vuligonda, Vidyasagar; Beard, Richard L.; Johnson, Alan T.; Teng, Min; Song, Tae K.; and Chandraratna, Roshantha A., to Allergan. Acetylenes disubstituted with a 5 substituted tetrahydronaphthyl group and with an aryl or heteroaryl group having retinoid-like biological activity. 5,648,503, Cl. 549-13.000.

Vuligonda, Vidyasagar: *See*—
Johnson, Alan T.; Teng, Min; Vuligonda, Vidyasagar; Beard, Richard L.; Gillett, Samuel J.; Duong, Tien T.; and Chandraratna, Roshantha A., 5,648,514, Cl. 560-102.000.

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W.R. Grace & Co.-Conn.: *See*—
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Yu, Shenbo: *See*—
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Yu, Sheng-Chung. Rinsing apparatus. 5,647,070, Cl. 4-420.400.
Yuasa, Toyotaka: *See*—
Doi, Toshiya; Ozawa, Takeshi; Tanaka, Kazuhide; Yuasa, Toyotaka; Kamo, Tomoichi; and Matsuda, Shinpei, 5,648,322, Cl. 505-501.000.
Yuce, Mithat: *See*—
Sehgal, Ajay; Covington, Cecil E.; Yuce, Mithat; and Marshall, Bryan W., 5,647,726, Cl. 416-145.000.
Yuen, Lun-Shin: *See*—
Schrader, Joseph Alton; Yuen, Lun-Shin; Gates, Martin Oishi; and Schulman, Robert Milton, 5,649,115, Cl. 395-233.000.
Yugengaisha Hotarl: *See*—
Togao, Kazuhiko, 5,647,830, Cl. 482-146.000.
Yumikura, Tsuneo: *See*—
Takeshita, Michimasa; Yoshida, Takayuki; Tanimura, Yoshiaki; Iijima, Hitoshi; Gotoh, Takashi; and Yumikura, Tsuneo, 5,647,431, Cl. 165-119.000.
Yuyama, Sboji; and Kodama, Tsuyoshi, to Kabushiki Kaisha Yuyama Seisakusho. Drug preparation tray. 5,648,751, Cl. 340-309.150.
Yuza, Yasutada; and Sato, Yuichi, to Soc Corporation. Surface-mount type microminiature electric current fuse. 5,648,750, Cl. 337-295.000.
Zäch, Daniel: *See*—
Arpagaus, Christian; Gerstenkorn, Bernhard; and Zäch, Daniel, 5,648,645, Cl. 187-393.000.
Zadok, Shlomo. Third brake light and illuminated message combination. 5,648,756, Cl. 340-468.000.
Zadrozny, Wlodek Wlodzimierz: *See*—
Ellozy, Hamed A.; Kanevsky, Dimitri; Kim, Michelle Y.; Nahamoo, David; Picheny, Michael Alan; and Zadrozny, Wlodek Wlodzimierz, 5,649,060, Cl. 395-2.870.
Zafian, William Joseph: *See*—
Henry, David T.; McLain, Doulgas J.; Domine, Joseph D.; Mehta, Aspy Keki; Zafian, William Joseph; Baron, Norbert; and Folie, Bernard J., 5,648,438, Cl. 526-65.000.
Zaias, Nardo; and Mehl, Thomas L., Sr. Method of hair depilation. 5,647,866, Cl. 606-9.000.
Zalewski, James Conrad: *See*—
Barry, Gerard Francis; Kishore, Ganesh Murthy; Stark, David Martin; and Zalewski, James Conrad, 5,648,249, Cl. 435-172.300.
Zalewski, Kenneth E.; and Guichard, Gary D., to Chrysler Corporation. Dual-hinged center console. 5,647,652, Cl. 312-324.000.
Zampini, Antonio, to Comau S.p.A. Device for hemming elements of pressed sheet metal. 5,647,243, Cl. 72-452.600.
Zander, Dennis Roland: *See*—
Bergstresser, William Andrew; Hochreiter, Eric Peschan; Zander, Dennis Roland; and Bush, Bradley S., 5,649,258, Cl. 396-429.000.
Zarei, Shahram: *See*—
Sitar, Daryl Steven; Momcilovich, Paul Theodore; Masrur, MD Abul; Liang, Feng; Myers, Garold Paul; and Zarei, Shahram, 5,648,705, Cl. 318-145.000.
Zavilla, John: *See*—
Hommeltoft, Sven Ivar; Ekelund, Ole; and Zavilla, John, 5,648,522, Cl. 562-83.000.
Zaviska, Dalibor: *See*—
Volz, Peter; and Zaviska, Dalibor, 5,647,644, Cl. 303-119.200.
ZDI Gaming: *See*—
Gerow, Jay E., 5,647,592, Cl. 273-139.000.
Zebuhr, William H., to DynaProducts Inc. Automated dental cleaner. 5,647,385, Cl. 132-322.000.
Zeiler, Hans-Joachim: *See*—
Petersen, Uwe; Krebs, Andreas; Schenke, Thomas; Grohe, Klaus; Schriewer, Michael; Haller, Ingo; Metzger, Karl Georg; Endermann, Rainer; and Zeiler, Hans-Joachim, 5,648,493, Cl. 546-156.000.
Zeneca Limited: *See*—
Albertsen, Hans; Anand, Rakesh; Carlson, Mary; Groden, Joanna; Hedge, Philip John; Joslyn, Geoff; Kinzler, Kenneth; Markham, Alexander; Nakamura, Yusuke; Thliveris, Andrew; Vogelstein, Bert; and White, Raymond L., 5,648,212, Cl. 435-6.000.
Wehrenberg, Peter K., 5,648,525, Cl. 562-429.000.
Zeng, Haishan; Cline, Richard W.; MacAulay, Calum E.; and Jaggi, Bruno W., to Xillix Technologies Corp. Imaging system for detecting diseased tissue using native fluorsecence in the gastrointestinal and respiratory tract. 5,647,368, Cl. 128-665.000.
Zenke, Martin; Boehmelt, Guido; Madruga, Jaime; and Enrietto, Paula, to Boehringer Ingelheim International GmbH. Methods for producing differentiated cells from immature hematopoietic cells. 5,648,248, Cl. 435-172.300.
Zenker, Siegfried: *See*—
Valbjørn, Anders; Plauborg, Erik; and Zenker, Siegfried, 5,647,394, Cl. 137-501.000.
Zexel Corporation: *See*—
Kato, Hiroaki; Yashiro, Hidekatsu; and Kodama, Tsuyoshi, 5,647,326, Cl. 123-500.000.
Kubo, Ken-ichi; Matsubara, Jun; and Ishiwata, Hiroshi, 5,647,323, Cl. 123-450.000.
Ohkubo, Masashi; and Machida, Hideo, 5,647,794, Cl. 454-121.000.
Onozawa, Motoyuki, 5,647,731, Cl. 417-295.000.
Zexel Torsen Inc.: *See*—
Bowerman, Ward E.; and Sacchettini, Paolo, 5,647,815, Cl. 475-249.000.
Zhang, Bin: *See*—
Belfer, Russell; Cheng, Chie-Jin; Librande, Steve; Tam, Va-On; and Zhang, Bin, 5,649,086, Cl. 395-141.000.
Zhang, Hong: *See*—
Schnaibel, Eberhard; Schneider, Erich; and Zhang, Hong, 5,647,668, Cl. 374-144.000.
Zhang, Hongyong; Yamaguchi, Naoaki; and Takemura, Yasuhiko, to Semiconductor Energy Laboratory Co., Ltd. Method of manufacturing a semiconductor device. 5,648,277, Cl. 437-21.000.
Zhang, Hongyong; and Kusumoto, Naoto, to Semiconductor Energy Laboratory Co., Ltd. Electro-optical device with amorphous and crystalline shift registers. 5,648,662, Cl. 257-59.000.
Zhang, Jinshan; and Anani, Anaba A., to Motorola, Inc. Electrode materials for electrochemical cells and method of making same. 5,647,963, Cl. 204-294.000.
Zhang, Minhua: *See*—
Tan, Qiu; Zhang, Minhua; Yu, Shenbo; Liu, Zongzhang; Qian, Shenghua; and Li, Chuanzhao, 5,648,561, Cl. 568-727.000.
Zhang, Shuyuan: *See*—
Kotani, Hitoshi; Newton, Perry, III; and Zhang, Shuyuan, 5,648,251, Cl. 435-172.300.
Zhang, Suhong: *See*—
Ng, John S.; Przybyla, Claire A.; Mueller, Richard A.; Vazquez, Michael L.; Getman, Daniel P.; Freskos, John J.; DeCrescenzo, Gary A.; Bertenshaw, Deborah E.; Heintz, Robert M.; Zhang, Suhong; Liu, Chin; and Laneman, Scott A., 5,648,511, Cl. 558-345.000.
Zhang, Zhiqun; and Winters, John C., to Minnesota Mining and Manufacturing Company. Shock resistant high efficiency vacuum cleaner filter bag. 5,647,881, Cl. 55-382.000.
Zhu, Huarong: *See*—
Liu, Xiusen; Zhu, Huarong; Ai, Fubin; Song, Lizhi; Lu, Zhihui; and Hou, Xuewei, 5,648,538, Cl. 564-307.000.
Zhu, Jianhua; and Qiu, Yuping, to U S WEST Technologies, Inc. Method and system for translating an optimization problem for use in efficient resource allocation. 5,649,113, Cl. 395-207.000.
Zhu, Joshua Y.: *See*—
McKinney, Richard A.; Myers, Donald R.; McKinney, Barbara J.; Moody, David B.; Smrcka, Joseph G., deceased; Smrcka, John J., executor; Zhu, Joshua Y.; and Weeder, Daniel P., 5,648,915, Cl. 364-507.000.
Zhu, Wei: *See*—
Jin, Sungho; Kochanski, Gregory Peter; and Zhu, Wei, 5,648,699, Cl. 313-309.000.
Ziadi, Bouchaib. Fiber-optic lighting system. 5,647,658, Cl. 362-62.000.
Ziegler, Byron J.; and Belliveau, Richard S. Apparatus for cooling a light beam. 5,647,662, Cl. 362-294.000.
Zielski, David: *See*—
Brady, Robert H.; Zielski, David; Nutter, William L.; and Marra, Alexander J., 5,649,002, Cl. 379-142.000.
Zienkiewicz, John W.; and Roberts, Bradley M., to Gemcor Engineering Corp. Automatic sealant application apparatus and method. 5,647,111, Cl. 29-34.00B.
Zijlstra, Dirk Stewart: *See*—
Desrosiers, André; and Zijlstra, Dirk Stewart, 5,647,416, Cl. 141-351.000.
Zilber, Paul: *See*—
Macri, Vincent J.; Magaw, Robert O.; and Zilber, Paul, 5,647,747, Cl. 434-247.000.
Zimmer, Inc.: *See*—
Atkinson, Robert W., 5,647,852, Cl. 604-151.000.
Zimmer, Rainer: *See*—
Grotjahn, Ulrich; Knips, Stephan; Koch, Guenter; Missy, Stephan; Plodek, Bernd; and Zimmer, Rainer, 5,647,207, Cl. 60-300.000.
Zimmerman, Bernd Dieter; Yaniv, Gershon; Lou, Ken-An; Hardtmann, Dirk Jeffery; and Stevens, Donald Clark, to Simula Inc. Fiber optic strain gauge patch. 5,649,035, Cl. 385-13.000.
Zimmerman, Charles: *See*—
Morgulis, Lazar A.; and Zimmerman, Charles, 5,647,292, Cl. 112-470.170.
Zimmermann, Andreas: *See*—
Jansen, Rolf-Michael; and Zimmermann, Andreas, 5,647,962, Cl. 203-57.000.
Zimmermann, Horst: *See*—
Reif, Wolfgang; Hesse, Michael; Zimmermann, Horst; and Lingk, Heinz, 5,648,545, Cl. 564-470.000.
Zimgiebl, Eberhard: *See*—
Landscheidt, Heinz; Klausener, Alexander; Zimgiebl, Eberhard; and Jentsch, Jörg-Dietrich, 5,648,500, Cl. 548-440.000.
Zolotnitsky, Mikhail, to Huls America Inc. Composition and method for impact modification of thermoplastics. 5,648,426, Cl. 525-100.000.
Zuhoski, Steven Paul: *See*—

Barbee, Steven George; Chapple-Sokol, Jonathan Daniel; Conti, Richard Anthony; Hsiao, Richard; O'Neill, James Anthony; Sarma, Narayana V.; Wilson, Donald Leslie; Wong, Justin Wai-Chow; and Zuboski, Steven Paul, 5,648,113, Cl. 427-8.000.
Zuin, Gianni: *See*—
Martucci, Roberto; and Zuin, Gianni, 5,647,772, Cl. 439-748.000.
Zukerman, Charles. Solar energy panel. 5,647,915, Cl. 136-251.000.
Zurr, Daniel; Grossman, Zehava; and Nophar, Yaron, to Q.B.I. Enterprises Ltd. Method and means for the production of gene products, novel recombinant DNA vectors therefor and kits employing them. 5,648,235, Cl. 435-69.100.
Zwijnenberg, Lambertus Herman; and Driessen, Bernardus Jozef. Stepping plunger for air-activated dispensing system. 5,647,515, Cl. 222-389.000.
Zwolinski, Stephanie M.: *See*—
Galler, Bruce I.; Su, Jamie C.; and Zwolinski, Stephanie M., 5,649,283, Cl. 455-2.000.
ZymoGenetics, Inc.: *See*—
MacKay, Vivian L.; and Moore, Emma E., 5,648,219, Cl. 435-6.000.
Mulvihill, Eileen R.; and Kumar, A. Ashok, 5,648,254, Cl. 435-217.000.
3266991 Manitoba Ltd.: *See*—
Eryou, Douglas F.; and Federman, Vladimir, 5,648,714, Cl. 320-27.000.
3Com Corporation: *See*—
Cook, John, 5,649,189, Cl. 395-612.000.
Ertel, Thomas F.; Aronoff, David B.; Gardner, Steven L.; Parker, Ronald M.; Warren, Dean A.; and Baxter, Edward S., 5,649,100, Cl. 395-200.100.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 15th DAY OF JULY, 1997

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Bansal, Rajeev: *See—*
Mashikian, Matthew S.; Northrop, Robert B.; Bansal, Rajeev; and Palmieri, Francesco, Re. 35,561, Cl. 324-520.000.

Brother Kogyo Kabushiki Kaisha: *See—*
Hirono, Kazuhisa; Ooshio, Yasuyo; and Ito, Takashi, Re. 35,562, Cl. 400-3.000.

Hirono, Kazuhisa; Ooshio, Yasuyo; and Ito, Takashi, to Brother Kogyo Kabushiki Kaisha. Tape printer having spacing function. Re. 35,562, Cl. 400-3.000.

Ito, Takashi: *See—*
Hirono, Kazuhisa; Ooshio, Yasuyo; and Ito, Takashi, Re. 35,562, Cl. 400-3.000.

Kuntz, Alan J.: *See—*
Simonelli, James K.; and Kuntz, Alan J., Re. 35,560, Cl. 210-741.000.

Lagreca, Graziano. Bag filtering unit for the dehydration of sludges with a supported vibrating device. Re. 35,559, Cl. 210-232.000.

Mashikian, Matthew S.; Northrop, Robert B.; Bansal, Rajeev; and Palmieri, Francesco, to University of Connecticut, The. Method and apparatus for the detection and location of faults and partial discharges in shielded cables. Re. 35,561, Cl. 324-520.000.

Northrop, Robert B.: *See—*
Mashikian, Matthew S.; Northrop, Robert B.; Bansal, Rajeev; and Palmieri, Francesco, Re. 35,561, Cl. 324-520.000.

Ooshio, Yasuyo: *See—*
Hirono, Kazuhisa; Ooshio, Yasuyo; and Ito, Takashi, Re. 35,562, Cl. 400-3.000.

Palmieri, Francesco: *See—*
Mashikian, Matthew S.; Northrop, Robert B.; Bansal, Rajeev; and Palmieri, Francesco, Re. 35,561, Cl. 324-520.000.

Simonelli, James K.; and Kuntz, Alan J., to Vesper Corporation. Fluid strainer and method of converting the same between motorized and manual modes with pressure-sensitive switch. Re. 35,560, Cl. 210-741.000.

University of Connecticut, The: *See—*
Mashikian, Matthew S.; Northrop, Robert B.; Bansal, Rajeev; and Palmieri, Francesco, Re. 35,561, Cl. 324-520.000.

Vesper Corporation: *See—*
Simonelli, James K.; and Kuntz, Alan J., Re. 35,560, Cl. 210-741.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Bliss, Gary S., to Dowbrands L.P. Carrier puck. B1 5,479,762, Cl. 53-490.000.

Caldwell Manufacturing Company: *See—*
Westfall, Norman R., B1 5,463,793, Cl. 16-197.000.

Cauffiel, Ford B. TV table. B1 5,293,825, Cl. 108-49.000.

Cherukuri, Subraman R.; Wong, Lucy L.; Orlandi, Daniel A.; and Faust, Steven M., to Warner-Lambert Company. Chewing gum composition with improved physical stability. B1 4,933,188, Cl. 426-3.000.

CorTrak Medical, Inc.: *See—*
Hildebrand, Keith R., B1 5,419,763, Cl. 604-54.000.

Dowbrands L.P.: *See—*
Bliss, Gary S., B1 5,479,762, Cl. 53-490.000.

Eilertson, Donald M. Self-propelled stump cutter. B1 4,690,183, Cl. 144-24.120.

Faust, Steven M.: *See—*
Cherukuri, Subraman R.; Wong, Lucy L.; Orlandi, Daniel A.; and Faust, Steven M., B1 4,933,188, Cl. 426-3.000.

Gaul, Kimberley A.; and Jensen, Judith M., to Minnesota Mining and Manufacturing Company. Method of removing caulk. B1 5,360,489, Cl. 134-42.000.

Hildebrand, Keith R., to CorTrak Medical, Inc. Prostatic drug-delivery catheter. B1 5,419,763, Cl. 604-54.000.

Holzer, Michael, Jr., to S-B Power Tool Company. Automatic shaft lock. B1 5,016,501, Cl. 81-57.110.

Jensen, Judith M.: *See—*
Gaul, Kimberley A.; and Jensen, Judith M., B1 5,360,489, Cl. 134-42.000.

Kemp, Richard A.: *See—*
Wilson, Stanley E.; and Kemp, Richard A., B1 5,498,676, Cl. 526-122.000.

Minnesota Mining and Manufacturing Company: *See—*
Gaul, Kimberley A.; and Jensen, Judith M., B1 5,360,489, Cl. 134-42.000.

Orlandi, Daniel A.: *See—*
Cherukuri, Subraman R.; Wong, Lucy L.; Orlandi, Daniel A.; and Faust, Steven M., B1 4,933,188, Cl. 426-3.000.

Pennington, Leslie H. System for sparging ground water contaminants. B1 5,425,598, Cl. 405-128.000.

S-B Power Tool Company: *See—*
Holzer, Michael, Jr., B1 5,016,501, Cl. 81-57.110.

Tristrata Incorporated: *See—*
Yu, Ruey J.; and Van Scott, Eugene J., B1 5,385,938, Cl. 514-557.000.
Yu, Ruey J.; and Van Scott, Eugene J., B1 5,389,677, Cl. 514-557.000.

Tristrata Technology, Inc.: *See—*
Yu, Ruey J.; and Van Scott, Eugene J., B1 5,091,171, Cl. 424-642.000.
Yu, Ruey J.; and Van Scott, Eugene J., B1 5,422,370, Cl. 514-557.000.
Yu, Ruey J.; and Van Scott, Eugene J., B1 5,547,988, Cl. 514-557.000.

Union Carbide Chemicals & Plastics Technology Corporation: *See—*
Wilson, Stanley E.; and Kemp, Richard A., B1 5,498,676, Cl. 526-122.000.

Van Scott, Eugene J.: *See—*
Yu, Ruey J.; and Van Scott, Eugene J., B1 5,091,171, Cl. 424-642.000.
Yu, Ruey J.; and Van Scott, Eugene J., B1 5,385,938, Cl. 514-557.000.
Yu, Ruey J.; and Van Scott, Eugene J., B1 5,389,677, Cl. 514-557.000.
Yu, Ruey J.; and Van Scott, Eugene J., B1 5,422,370, Cl. 514-557.000.
Yu, Ruey J.; and Van Scott, Eugene J., B1 5,547,988, Cl. 514-557.000.

Warner-Lambert Company: *See—*
Cherukuri, Subraman R.; Wong, Lucy L.; Orlandi, Daniel A.; and Faust, Steven M., B1 4,933,188, Cl. 426-3.000.

Westfall, Norman R., to Caldwell Manufacturing Company. Sash shoe system for curl spring window balance. B1 5,463,793, Cl. 16-197.000.

Wilson, Stanley E.; and Kemp, Richard A., to Union Carbide Chemicals & Plastics Technology Corporation. Process for olefin polymerization. B1 5,498,676, Cl. 526-122.000.

Wong, Lucy L.: *See—*
Cherukuri, Subraman R.; Wong, Lucy L.; Orlandi, Daniel A.; and Faust, Steven M., B1 4,933,188, Cl. 426-3.000.

Yu, Ruey J.; and Van Scott, Eugene J., to Tristrata Technology, Inc. Amphoteric compositions and polymeric forms of alpha hydroxyacids, and their therapeutic use. B1 5,091,171, Cl. 424-642.000.

Yu, Ruey J.; and Van Scott, Eugene J., to Tristrata Incorporated. Method of using glycolic acid for treating wrinkles. B1 5,385,938, Cl. 514-557.000.

Yu, Ruey J.; and Van Scott, Eugene J., to Tristrata, Incorporated. Method of treating wrinkles using glycalic acid. B1 5,389,677, Cl. 514-557.000.

Yu, Ruey J.; and Van Scott, Eugene J., to Tristrata Technology, Inc. Method of using 2-hydroxypropanoic acid (lactic acid) for the treatment of wrinkles. B1 5,422,370, Cl. 514-557.000.

Yu, Ruey J.; and Van Scott, Eugene J., to Tristrata Technology, Inc. Alleviating signs of dermatological aging with glycolic acid, lactic acid or citric acid. B1 5,547,988, Cl. 514-557.000.

LIST OF DESIGN PATENTEES

AAMP of Florida, Inc.: *See—*
Ansley, Micah S., 381,010, Cl. D13-178.000.

Abbott Laboratories: *See—*
Manosalva, Edgar Gilberto; Goldhardt, Donald Jay; and Zimmer, Lawrence Edward, 381,075, Cl. D24-112.000.

Abe, Karl-Heinz; and Gevert, Klaus Volker, to Bayerische Motoren Werke AG. Motorcycle body. 380,989, Cl. D12-110.000.

Abner, Monica: *See—*
Miller, Diane M.; Abner, Monica; and Mello, Frank C., 380,964, Cl. D9-415.000.

Accardo, Thomas A. Hand-held instrument locator. 381,023, Cl. D14-218.000.

Adams, Duane D.: *See—*
Muller, Ronald L.; and Adams, Duane D., 381,019, Cl. D14-124.000.

Adams Mfg. Corp.: *See—*
Adams, William E., 380,947, Cl. D8-1.000.

Adams, William E., to Adams Mfg. Corp. Edging anchor. 380,947, Cl. D8-1.000.

Adamson, Craig: *See—*
Simpson, Craig B.; and Adamson, Craig, 381,059, Cl. D22-110.000.

Adidas AG: *See—*
Earle, John S., 380,889, Cl. D2-957.000.

Agloinga, Percy O., Jr.: *See—*
Hansen, Jep; and Agloinga, Percy O., Jr., 381,062, Cl. D22-133.000.

Aktiebolaget Wi-Ka Mekaniska Verkstad: *See—*
Karmalm, Charles Willy, 381,067, Cl. D23-249.000.

Alarid, David, Jr. Frying pan. 380,934, Cl. D7-354.000.

Alden, J. Michael: *See—*
Schlosser, Erich J.; Alden, J. Michael; Stephen, Robert T.; and Stephen, James C., 380,933, Cl. D7-334.000.

Alegria, Myrna R.; and Coddington, Myronel. Portable meal carrier. 380,945, Cl. D7-709.000.

Alford, Pamela J.; and Jackson, Richard D. Horse gate. 381,134, Cl. D30-119.000.

Algar Plastics (Canada) Ltd.: *See—*
Dostie, Alain; and Sandler, Allan, 380,914, Cl. D6-466.000.

Allana, Najmuddin; and Nguyen, Jimmy L. Computer mouse. 381,013, Cl. D14-114.000.

Allegro Innovations, Inc.: *See—*
LeSourd, John C.; Goode, Michael C.; Ohrt, Curtis L.; and Kelly, Terrence J., 380,910, Cl. D6-338.000.

Alps Electric (USA) Inc.: *See—*
Kraus, Herbert; and Overthun, Thomas, 381,014, Cl. D14-114.000.

American Corplexx Company, Inc., The: *See—*
Goguen, George, 380,923, Cl. D6-629.000.

American Flange & Manufacturing Co., Inc.: *See—*
Dwinell, Davis B., 381,181, Cl. D34-39.000.

Amit, Gadi: *See—*
Esslinger, Hartmut H.; Friesen, Mark; and Amit, Gadi, 381,012, Cl. D14-100.000.

Amundsen, Suzanne M.: *See—*
Kartsotis, Tom; Amundsen, Suzanne M.; Hale, Timothy G.; and Nakahara, Hiroshi, 380,977, Cl. D10-131.000.

Andersen Corporation: *See—*
Evans, Harold H.; McNamara, Jeffrey T.; and Jans, Franz Werner, 380,957, Cl. D8-337.000.

Anderson, Robin J. Oven mitt. 381,130, Cl. D29-119.000.

Anderson, Torrence: *See—*
Uffner, Michael G.; and Anderson, Torrence, 380,920, Cl. D6-552.000.

Ando, Kyosuke. String-holder for teeth cleaner. 381,122, Cl. D28-64.000.

Ansley, Micah S., to AAMP of Florida, Inc. Electrical fuse block. 381,010, Cl. D13-178.000.

Apps, William P.; and Koefelda, Gerald R., to Rehrig-Pacific Company, Inc. Stackable bottle case. 380,901, Cl. D3-311.000.

Arashima, Teruo: *See—*
Tashiro, Naoki; Ujita, Toshihiko; Arashima, Teruo; Hamasaki, Yuji; Yamamoto, Hisashi; and Takahashi, Wataru, 381,040, Cl. D18-56.000.

Arney, Michael D.; Madore, Carl L.; Goodrich, Elizabeth P.; Freese, Theodore B.; and Zeller, Neil P., to Gerry Baby Products Company. Baby monitor transmitter. 380,973, Cl. D10-104.000.

Artime SA: *See—*
Giardiello, Barbara, 380,971, Cl. D10-39.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Matushita, Takeshi, 381,032, Cl. D16-209.000.

Attinello, John Steven; and Reid, Kevin Alan, to Goodyear Tire & Rubber Company, The. Tire tread. 381,001, Cl. D12-147.000.

Bailey, John A.; Bloomer, Glenn A.; Johnson, Gregory H.; and Staufenberg, Donald J., to Minnesota Mining and Manufacturing Company. Window and label area of a top surface for a videocassette. 381,018, Cl. D14-121.000.

Balz, Eric, to Ecolab Inc. Capsule for solid detergent. 381,141, Cl. D32-30.000.

Barber, Dennis: *See—*
Kovens, Steven A.; and Barber, Dennis, 381,169, Cl. D34-21.000.

Barile, Peter, to Shelby Williams Industries, Inc. Chair frame. 380,909, Cl. D6-334.000.

Barker, Christine L. Decorative, spiral accessory for use with cloth covered hair binders. 381,120, Cl. D28-41.000.

Bartlett, Kenneth E. Cutting insert. 381,029, Cl. D15-139.000.

Bataille, Alain, to Massey Ferguson S.A. Tractor hood. 381,025, Cl. D15-31.000.

Batesville Casket Company, Inc.: *See—*
Schebler, Wilbur, 380,904, Cl. D5-52.000.

Bausch & Lomb Incorporated: *See—*
Brune, Henri; and Conway, Simon M., 381,035, Cl. D16-314.000.

Bayerische Motoren Werke AG: *See—*
Abe, Karl-Heinz; and Gevert, Klaus Volker, 380,989, Cl. D12-110.000.

Beard, Harold W., Jr. Backless corner support. 380,958, Cl. D8-349.000.

Beckerman, Alan; and Brady, Beth Ann, to Package Products, Inc. Ovenable food tray. 380,937, Cl. D7-552.000.

Berend, Peter M.; and Casteel, Stephen P., to Rubbermaid Incorporated. Lid for refuse container. 381,161, Cl. D34-11.000.

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NOTE—First number, class; second number, subclass; third number, patent number

CLASS 2

2.15 5,647,059
9 5,647,060
11 5,647,061
16 5,647,062
21 5,647,063
195.5 5,647,064
403 5,647,065
424 5,647,066

CLASS 4

325 5,647,067
415 5,647,068
420.2 5,647,069
420.4 5,647,070
555 5,647,071
574.1 5,647,072
657 5,647,073
664 5,647,074

CLASS 5

127 5,647,075
631 5,647,076
685 5,647,077
706 5,647,078
713 5,647,079

CLASS 7

103 5,647,080

CLASS 8

111 5,647,875

CLASS 14

71.7 5,647,081

CLASS 15

21.2 5,647,082
77 5,647,083
104.92 5,647,084
250.201 5,647,088
250.21 5,647,085
250.31 5,647,086
250.46 5,647,087
302 5,647,089
322 5,647,090
323 5,647,091
346 5,647,092
352 5,647,093

CLASS 16

93 R 5,647,094
112 5,647,095
115 5,647,096
197 B1 5,463,793

CLASS 19

159 A 5,647,097
5,647,098

CLASS 24

3.3 5,647,099
30.5 R 5,647,100
68 S 5,647,104
303 5,647,101
494 5,647,102
618 5,647,103
691 5,647,105
704.1 5,647,106
713.6 5,647,107

CLASS 27

1 5,647,108

CLASS 28

263 5,647,109

CLASS 29

33 K 5,647,110
34 B 5,647,111
268 5,647,112
407.05 5,647,113
525.11 5,647,114
557 5,647,115
599 5,647,116
622 5,647,117
715 5,647,118
751 5,647,119
840 5,647,121
5,647,122
5,647,123
5,647,124
893.34 5,647,125
894.322 5,647,126
896.62 5,647,128
896.9 5,647,127

CLASS 30

139 5,647,129
151 5,647,130
317 5,647,131
337 5,647,132
392 5,647,133
454 5,647,138

CLASS 33

355 R 5,647,134
494 5,647,135
502 5,647,136
572 5,647,137
608 5,647,139

CLASS 34

58 5,647,140
115 5,647,141
373 5,647,142
410 5,647,143
414 5,647,144

CLASS 36

28 5,647,145
54 5,647,146
93 5,647,147
115 5,647,148
117.1 5,647,149
5,647,150

CLASS 37

231 5,647,153

CLASS 40

79.2 5,647,157
454 5,647,151
541 5,647,152
584 5,647,154
603 5,647,155
661 5,647,156

CLASS 42

70.07 5,647,158

CLASS 43

1 5,647,159
10 5,647,160
21.2 5,647,161
24 5,647,162
42.13 5,647,163
139 5,647,164

CLASS 47

2 5,647,165
45 5,647,166
72 5,647,168
78 5,647,169
81 5,647,170

CLASS 48

197 R 5,647,876
210 5,647,877

CLASS 49

502 5,647,171
504 5,647,172
506 5,647,173

CLASS 51

295 5,647,878
307 5,647,879

CLASS 52

36.3 5,647,174
58 5,647,175
63 5,647,176
79.5 5,647,177
219 5,647,178
235 5,647,179
268 5,647,180
282.1 5,647,181
287.1 5,647,182
403.1 5,647,183
592.1 5,647,184
604 5,647,185
653.1 5,647,186

CLASS 53

397 5,647,188
399 5,647,189
446 5,647,190
447 5,647,191
450 5,647,192
465 5,647,193
490 B1 5,479,762

CLASS 55

310 5,647,880
382 5,647,881

CLASS 56

328.1 5,647,194

CLASS 57

67 5,647,195
301 5,647,196
328 5,647,197

CLASS 59

86 5,647,198

CLASS 60

39.02 5,647,199
39.17 5,647,200
258 5,647,201
266 5,647,202
274 5,647,203
5,647,204
5,647,205
297 5,647,206
300 5,647,207
371 5,647,208
413 5,647,209
477 5,647,210
484 5,647,211
562 5,647,212
578 5,647,213
737 5,647,215

CLASS 62

6 5,647,216
5,647,217
5,647,218
5,647,219
89 5,647,220
116 5,647,221
129 5,647,222
175 5,647,223
197 5,647,224
434 5,647,225
457.2 5,647,226
624 5,647,227
656 5,647,228

CLASS 65

348 5,647,882
494 5,647,883
533 5,647,884

CLASS 66

58 5,647,229
224 5,647,230

CLASS 68

12.01 5,647,231
12.02 5,647,232

CLASS 70

93 5,647,233
256 5,647,234
278 5,647,235

CLASS 71

28 5,647,885

CLASS 72

8.8 5,647,236
9.2 5,647,237
10.1 5,647,238
60 5,647,239
135 5,647,240
178 5,647,241
349 5,647,242
452.6 5,647,243

CLASS 73

1 G 5,648,601
115 5,648,602
152.02 5,648,603
181 5,648,604
197 5,648,605
247 5,648,606
332 5,648,607
504.12 5,648,608
587 5,648,610
598 5,648,611
5,648,612
611 5,648,613
706 5,648,614
756 5,648,615
861.356 5,648,616
862.045 5,648,617
862.08 5,648,618
865.8 5,648,619

CLASS 74

89.17 5,647,244
424.8 B 5,647,245
467 5,647,246
471 XY 5,647,247
558.5 5,647,248
606 R 5,647,249

CLASS 75

232 5,648,620
235 5,647,886
436 5,647,887
443 5,647,888

CLASS 76

83 5,647,250

CLASS 81

3.2 5,647,251
57.11 B1 5,016,501
62 5,647,252
125 5,647,253
475 5,647,254

CLASS 83

19 5,647,255
140 5,647,256
332 5,647,257
438 5,647,258
458 5,647,259
522.12 5,647,260
649 5,647,261
823 5,647,262
835 5,647,263
840 5,647,264
861 5,647,265

CLASS 84

171 5,648,621
322 5,648,622
383 R 5,648,623
404 5,648,624
475 5,648,625
600 5,648,626
5,648,627
610 5,648,628
660 5,648,629
719 5,648,630

CLASS 89

1.14 5,648,631
41.05 5,648,632
41.11 5,648,633

CLASS 92

71 5,647,266
140 5,647,267

CLASS 95

20 5,647,889
69 5,647,890
99 5,647,891
110 5,647,892
284 5,647,893

CLASS 96

13 5,647,894

CLASS 99

277.1 5,647,268
279 5,647,269
327 5,647,270
422 5,647,271
495 5,647,272

CLASS 101

125 5,647,273
126 5,647,274
216 5,647,275
219 5,647,276
226 5,647,277
368 5,647,278
401.1 5,647,279

CLASS 102

202.1 5,648,634
307 5,648,635
355 5,648,636
438 5,648,637

CLASS 104

124 5,647,280
168 5,647,281

CLASS 105

18 5,647,282
167 5,647,283

CLASS 106

15.05 5,647,895
31.18 5,647,896
31.49 5,647,897
162.1 5,647,898
244 5,647,899
285 5,647,900
311 5,647,901
464 5,647,902
492 5,647,903

CLASS 108

49 B1 5,293,825
55.1 5,647,284
119 5,647,285
144 5,647,286

CLASS 110

170 5,647,287
228 5,647,288

CLASS 112

10 5,647,289
66 5,647,290
278 5,647,291
470.17 5,647,292
5,647,293

CLASS 114

123 5,647,294
230 5,647,295
279 5,647,296
283 5,647,297

CLASS 117

32 5,647,904

CLASS 118

16 5,647,905
70 5,647,906
100 5,647,907
308 5,647,908
416 5,647,909
710 5,647,910
715 5,647,911
719 5,647,912
723 1 5,647,913

CLASS 119

57.8 5,647,298
61 5,647,299
173 5,647,300
217 5,647,301
709 5,647,302
864 5,647,303

CLASS 123

1 A 5,647,304
41.15 5,647,305
41.33 5,647,306
42 5,647,307
56.2 5,647,308
58.8 5,647,309
90.11 5,647,311
90.16 5,647,312
90.51 5,647,313
90.6 5,647,310
184.57 5,647,314
196 AB 5,647,315
299 5,647,316
5,647,317
322 5,647,318
5,647,319
372 5,647,320
399 5,647,321
414 5,647,322
450 5,647,323
491 5,647,324
496 5,647,325
500 5,647,326
502 5,647,327
509 5,647,328
5,647,329
5,647,330
516 5,647,331
519 5,647,332
5,647,333
520 5,647,334
5,647,335
532 5,647,336
572 5,647,337

CLASS 124

75 5,647,338

CLASS 126

41 R 5,647,339
85 B 5,647,340
512 5,647,341
5,647,342
619 5,647,343

CLASS 128

98 5,647,380
201.13 5,647,344
201.23 5,647,345
202.22 5,647,346
203.15 5,647,347
5,647,349
204.21 5,647,350
5,647,351
204.28 5,647,352
205.13 5,647,354
205.24 5,647,355
206.17 5,647,356
206.24 5,647,357
207.14 5,647,358
634 5,647,359
653.1 5,647,360
5,647,663
653.2 5,647,362
659 5,647,363
660.09 5,647,364
661.01 5,647,365
661.09 5,647,366
662.06 5,647,367
665 5,647,368
672 5,647,369
683.2 5,647,361
725 5,647,370
743 5,647,371
749 5,647,372
5,647,373
5,647,374
781 5,647,375
853 5,647,376
864 5,647,377
876 5,647,378
897 5,647,379

CLASS 131

235.1 5,647,381
291 5,647,382
331 5,647,383

CLASS 132

105 5,647,384
322 5,647,385

CLASS 134

10 5,647,914
42 B1 5,360,489
113 5,647,386

CLASS 136

251 5,647,915
253 5,647,916

CLASS 137

1 5,647,387
5,647,388
15 5,647,389
68.12 5,647,390
93 5,647,391
207 5,647,392
360 5,647,393
501 5,647,394
517 5,647,395

554 5,647,396
559 5,647,397
614.03 5,647,398
637.3 5,647,399

CLASS 138

126 5,647,400
5,647,401

CLASS 139

1 R 5,647,402
59 5,647,403
452 5,647,404

CLASS 140

92.1 5,647,405
112 5,647,406
123.5 5,647,407

CLASS 141

20 5,647,408
27 5,647,409
67 5,647,410
83 5,647,411
86 5,647,412
108 5,647,413
231 5,647,414
331 5,647,415
351 5,647,416

CLASS 144

24.12 B1 4,690,183
172 5,647,417
208.9 5,647,418
230 5,647,419
286.1 5,647,420

CLASS 148

33.4 5,647,917
320 5,647,918
437 5,647,919
512 5,647,920
561 5,647,921
620 5,647,922
672 5,647,923

CLASS 149

24 5,647,924

CLASS 152

209 R 5,647,925
5,647,926
415 5,647,927
527 5,647,928
530 5,647,929

CLASS 156

62.2 5,647,951
73.5 5,647,930
73.6 5,647,931
154 5,647,932
197 5,647,933
219 5,647,934
231 5,647,935
253 5,647,937
269 5,647,938
272.6 5,647,939
273.9 5,647,940
277 5,647,941
281 5,647,942
310 5,647,943
345 5,647,944
5,647,945
5,647,946
361 5,647,947
578 5,647,948
5,647,949
580 5,647,950
636.1 5,647,952
643.1 5,647,953
644.1 5,647,954

CLASS 160

120 5,647,421
176.1 5,647,422
206 5,647,423

CLASS 162

30.11 5,647,955
163 5,647,956
174 5,647,957
203 5,647,958
351 5,647,959
360.2 5,647,960

CLASS 164

18 5,647,424
54 5,647,425
348 5,647,426
459 5,647,427

CLASS 165

95 5,647,428
104.26 5,647,429
104.33 5,647,430
119 5,647,431
134.1 5,647,432
148 5,647,433

CLASS 166

242.8 5,647,434
250.01 5,647,435
298 5,647,436
382 5,647,437

CLASS 169

58 5,647,438

CLASS 172

4.5 5,647,439
311 5,647,440
439 5,647,441

CLASS 173

28 5,647,442

CLASS 174

15.4 5,648,638
51 5,648,639
84 R 5,648,640
139 5,648,641

CLASS 175

5 5,647,443
209 5,647,444
296 5,647,445
297 5,647,446
300 5,647,447
421 5,647,448
434 5,647,449

CLASS 178

18 5,648,642
19 5,648,643

CLASS 180

220 5,647,450

CLASS 182

45 5,647,451
117 5,647,452
129 5,647,453
133 5,647,454
153 5,647,455

CLASS 184

15.2 5,647,456

CLASS 187

250 5,647,457
288 5,648,644
393 5,648,645

CLASS 188

41 5,647,458
72.9 5,647,459
243 5,647,460
322.15 5,647,461
356 5,647,462

CLASS 191

45 R 5,647,463

CLASS 192

4 A 5,647,464
5,647,465
70.14 5,647,466
87.11 5,647,467
89.23 5,647,468

CLASS 194

200 5,647,469
347 5,647,470
350 5,647,471

CLASS 198

443 5,647,472
461.2 5,647,473
465.1 5,647,474
465.4 5,647,475
497 5,647,476
619 5,647,477

CLASS 200

50.32 5,648,646
303 5,647,478
557 5,647,479

CLASS 203

2 5,647,961
57 5,647,962

CLASS 204

294 5,647,963
298.12 5,647,964
572 5,647,965

CLASS 205

78 5,647,966
131 5,647,967
466 5,647,968
743 5,647,969
763 5,647,970

CLASS 206

204 5,647,480
219 5,647,481
308.1 5,647,482
427 5,647,483
576 5,647,484
733 5,647,485

CLASS 208

33 5,647,971
100 5,647,972

CLASS 210

96.2 5,647,973
103 5,647,974
122 5,647,975
137 5,647,976
167 5,647,977
198.2 5,647,979
202 5,647,980
232 Re.35,559
243 5,647,981
346 5,647,982
416.2 5,647,983
420 5,647,984
504 5,647,985
608 5,647,986
635 5,647,987
636 5,647,988
641 5,647,989
650 5,647,990
662 5,647,991
695 5,647,993
5,647,994
699 5,647,995
710 5,647,996
721 5,647,997
741 Re.35,560

CLASS 211

26.1 5,647,486
40 5,647,487
69.5 5,647,488
70.6 5,647,489
90.01 5,647,490
113 5,647,491
123 5,647,492
194 5,647,493

CLASS 215

42 5,647,495
249 5,647,494

CLASS 216

22 5,648,015
24 5,647,998
49 5,647,999
67 5,648,000

CLASS 219

61 5,648,001
121.82 5,648,002
211 5,648,003
242 5,648,004
383 5,648,007
411 5,648,005
467 5,648,006
626 5,648,008

CLASS 220

257 5,647,497
263 5,647,498
269 5,647,499
5,647,500
481 5,647,502
589 5,647,503
612 5,647,504
780 5,647,501

CLASS 221

2 5,647,505
46 5,647,506
151 5,647,507

CLASS 222

23 5,647,508
55 5,647,509
94 5,647,510
105 5,647,511
108 5,647,512
134 5,647,513
181.3 5,647,514
389 5,647,515
529 5,647,516

CLASS 223

2 5,647,517

CLASS 224

164 5,647,518
407 5,647,519
425 5,647,520
534 5,647,521
651 5,647,522
684 5,647,523

CLASS 225

106 5,647,524

CLASS 227

113 5,647,525
175.2 5,647,526

CLASS 228

180.5 5,647,527
5,647,528
222 5,647,529

CLASS 235

380 5,648,647
382 5,648,648
462 5,648,649
472 5,648,650
475 5,648,651

CLASS 236

12.14 5,647,530
5,647,531
495 5,647,532

CLASS 237

2 B 5,647,533
12.3 B 5,647,534

CLASS 239

7 5,647,535
90 5,647,536
383 5,647,537
405 5,647,538
504 5,647,539
533.2 5,647,540
590.5 5,647,541
690 5,647,542
706 5,647,543

CLASS 241

17 5,647,544
79 5,647,545
292.1 5,647,546

CLASS 242

160.1 5,647,547
338 5,647,548
338.4 5,647,549
343.2 5,647,550
345 5,647,551
348.4 5,647,552
381.1 5,647,553
390.9 5,647,554
547 5,647,555
554.6 5,647,556
607.1 5,647,557

CLASS 244

3.11 5,647,558
3.13 5,647,559
3.15 5,647,560
158 R 5,647,561

CLASS 246

167 R 5,647,562

CLASS 248

74.1 5,647,563
74.2 5,647,564
168 5,647,565
220.21 5,647,566
237 5,647,567
316.2 5,647,568
522 5,647,569
638 5,647,570

CLASS 249

2 5,647,571
129 5,648,009

CLASS 250

201.7 5,648,652
208.1 5,648,653
5,648,654
5,648,655
214 AL 5,648,656
231.1 5,648,657
237 G 5,648,658
363.04 5,648,659
370.09 5,648,660

CLASS 251

1.3 5,647,572
94 5,647,573
129.06 5,647,574
325 5,647,575

CLASS 252

8.84 5,648,010
62.2 5,648,011
62.54 5,648,013
62.56 5,648,014
62.9 PZ 5,648,012
67 5,648,016
5,648,017
68 5,648,018
182.24 5,648,019
188.28 5,648,020
299.62 5,648,021

CLASS 254

352 5,647,576
378 5,647,577

CLASS 257

48 5,648,661
59 5,648,662
5,648,663
5,648,664
135 5,648,665
136 5,648,666
197 5,648,667
233 5,648,668
280 5,648,669
318 5,648,670
329 5,648,671
347 5,648,672
372 5,648,673
382 5,648,674
428 5,648,675
458 5,648,676
500 5,648,678
529 5,648,679
666 5,648,680
5,648,681
5,648,682
673 5,648,683
685 5,648,684
5,648,685
775 5,648,686
778 5,648,687
787

CLASS 261

17 5,648,022
44.4 5,648,023

CLASS 264

1.1 5,648,024
1.36 5,648,025
37 5,648,026
43 5,648,027
71 5,648,030
80 5,648,031
101 5,648,032
109 5,648,033
160 5,648,034
173.16 5,648,035
261 5,648,036
296 5,648,037
406 5,648,038
428 5,648,039
508 5,648,040
555 5,648,041
645 5,648,029
647 5,648,028

CLASS 266

44 5,648,042
259 5,648,043

CLASS 267

34 5,647,578
64.17 5,647,580
140.14 5,647,579

CLASS 269

32 5,647,581

CLASS 270

8 5,647,582
52.04 5,647,583

CLASS 271

122 5,647,584
171 5,647,585
182 5,647,586
223 5,647,587
259 5,647,588
280 5,647,589

CLASS 273

118 R 5,647,595
139 5,647,592
261 5,647,593
282.1 5,647,594
383 5,647,596

CLASS 277

8 5,647,597
59 5,647,598

CLASS 280

11.2 5,647,599
47.35 5,647,600
47.38 5,647,601
87.021 5,647,602
406.1 5,647,603
492 5,647,604
602 5,647,353
5,647,605
661 5,647,606
728.2 5,647,607
5,647,608
730.2 5,647,609
731 5,647,610
801.1 5,647,611

CLASS 285

13 5,647,612
195 5,647,613
252 5,647,614

CLASS 289

2 5,647,615
17 5,647,616

CLASS 292

1.5 5,647,617
19 5,647,618
288 5,647,619
317 5,647,620

CLASS 293

117 5,647,621

CLASS 294

19.1 5,647,622
27.1 5,647,624
65.5 5,647,623
86.4 5,647,625
87.1 5,647,626
96 5,647,627

CLASS 296

68.1 5,647,628
97.2 5,647,629
108 5,647,630
146.6 5,647,631

CLASS 297

109 5,647,632
217.7 5,647,633
238 5,647,634
284.11 5,647,635
344.21 5,647,636
354.12 5,647,637
411.36 5,647,638
467 5,647,639

CLASS 299

1.6 5,647,640
39.8 5,647,641

CLASS 301

5.21 5,647,642
110.5 5,647,643

CLASS 303

115.2 5,647,646
119.2 5,647,644
5,647,645
122.09 5,647,647

CLASS 307

10.1 5,648,688

CLASS 310

12 5,648,690
5,648,691
49 R 5,648,692
67 R 5,648,693
87 5,648,694
242 5,648,695
323 5,648,696
338 5,648,697

CLASS 312

108 5,647,648
261 5,647,649
265.1 5,647,650
291 5,647,651
324 5,647,652

CLASS 313

309 5,648,698
402 5,647,653

493 5,648,700

CLASS 315

111.21 5,648,701
224 5,648,702
371 5,648,703
408 5,648,704

CLASS 318

145 5,648,705
376 5,648,706
443 5,648,707
488 5,648,708
568.17 5,648,709
685 5,648,710

CLASS 320

2 5,648,711
5,648,712
6 5,648,713
22 5,648,715
27 5,648,714
32 5,648,716
43 5,648,717

CLASS 323

274 5,648,718

CLASS 324

207.26 5,648,719
213 5,648,720
240 5,648,721
417 5,648,722
509 5,648,723
520 Re.35,561
533 5,648,724
551 5,648,725
555 5,648,726
677 5,648,727
755 5,648,728
758 5,648,729
763 5,648,730
767 5,648,731

CLASS 326

40 5,648,732
86 5,648,733
115 5,648,734

CLASS 327

65 5,648,735
113 5,648,736
256 5,648,737
307 5,648,738
330 5,648,739
408 5,648,740
513 5,648,741

CLASS 330

51 5,648,742
252 5,648,743

CLASS 331

11 5,648,744

CLASS 333

100 5,648,745
189 5,648,746
204 5,648,747
246 5,648,748

CLASS 337

205 5,648,749
295 5,648,750

CLASS 340

309.15 5,648,751
323 R 5,648,752
324.1 5,648,753
426 5,648,754
439 5,648,755
468 5,648,756
539 5,648,757
550 5,648,758
660 5,648,759
825.25 5,648,760
825.31 5,648,761
5,648,762
825.32 5,648,764
825.35 5,648,765
825.49 5,648,763
870.39 5,648,766
928 5,648,767
988 5,648,768
5,648,769
994 5,648,770

CLASS 341

22 5,648,771
5,648,772
51 5,648,773
67 5,648,774
5,648,775
100 5,648,776
110 5,648,777
5,648,778
143 5,648,779
154 5,648,780
176 5,648,781

CLASS 342

26 5,648,782
373 5,648,784

CLASS 343

713 5,648,785
770 5,648,786
826 5,648,787
895 5,648,788

CLASS 345

8 5,648,789
58 5,648,790
89 5,648,791
92 5,648,792
96 5,648,793
98 5,648,794
132 5,648,795
149 5,648,796
161 5,648,797
163 5,648,798
200.03 5,649,102
212 5,648,799

CLASS 346

45 5,648,800

CLASS 347

15 5,648,801
29 5,648,802
30 5,648,803
47 5,648,804
65 5,648,805
87 5,648,806
102 5,648,807
104 5,648,808
115 5,648,809
130 5,648,810
220 5,648,811
262 5,648,812

CLASS 348

10 5,648,813
15 5,648,814
208 5,648,815
233 5,648,816
264 5,648,817
273 5,648,818
416 5,648,819
445 5,648,820
601 5,648,821
607 5,648,822
726 5,648,823
734 5,648,824
743 5,648,825

CLASS 349

9 5,648,859
10 5,648,860
49 5,648,826
57 5,648,858
61 5,648,827
110 5,648,828
116 5,648,861
129 5,648,829
168 5,648,830

CLASS 351

51 5,648,831
159 5,648,832
235 5,648,833

CLASS 353

27 R 5,647,654

CLASS 355

72 5,648,837
350 5,648,842

CLASS 356

5.09 5,648,844
73.1 5,648,845
139.09 5,648,846
150 5,648,847
351 5,648,848
357 5,648,849
369 5,648,850
375 5,648,851
5,648,852
394 5,648,853
399 5,648,854

CLASS 359

7 5,648,856
12 5,648,857
153 5,648,862
154 5,648,863
205 5,648,864
208 5,648,865
326 5,648,866
362 5,648,867
364 5,648,868
368 5,648,869
487 5,648,870
557 5,648,871
560 5,648,872
591 5,648,873
622 5,648,874
662 5,648,875
701 5,648,876
739 5,648,877
809 5,648,878

CLASS 360

73.11 5,648,879
96.4 5,648,880
99.04 5,648,881
99.06 5,648,882
106 5,648,883
113 5,648,884
5,648,885
5,648,886

CLASS 361

31 5,648,887
603 5,648,888
704 5,648,889
5,648,890
788 5,648,891
5,648,892
820 5,648,893

CLASS 362

31 5,647,655
32 5,647,656
5,647,657
62 5,647,658
66 5,647,659
249 5,647,660
283 5,647,661
294 5,647,662
308 5,647,664

CLASS 363

39 5,648,894
131 5,648,895
132 5,648,896

CLASS 364

188 5,648,897
191 5,648,898
5,648,899
284.04 5,648,925
424.027 5,648,901
424.034 5,648,902
424.051 5,648,903
436 5,648,904
461 5,648,905
464.28 5,648,906
468.02 5,648,907
470.06 5,648,908
488 5,648,909
490 5,648,910
5,648,911
491 5,648,912
5,648,913
496 5,648,914
507 5,648,915
514 A 5,648,916
514 C 5,648,917
571.01 5,648,918
578 5,648,919
5,648,920
715.011 5,648,921
724.12 5,648,922
724.16 5,648,923
729 5,648,924
807 5,648,926

CLASS 365

63 5,648,927
5,648,928
185.04 5,648,929
185.07 5,648,930
189.05 5,648,931
194 5,648,932
200 5,648,933
5,648,934
205 5,648,935

CLASS 366

196 5,647,665
285 5,647,666

CLASS 367

13 5,648,936
27 5,648,937
56 5,648,938
73 5,648,939
90 5,648,940
176 5,648,941
5,648,942

CLASS 369

13 5,648,943
5,648,944
44.14 5,648,945
44.23 5,648,946
44.28 5,648,947
48 5,648,948
59 5,648,949
110 5,648,950
112 5,648,951
116 5,648,952
124 5,648,953
275.1 5,648,954

CLASS 370

218 5,648,963
228 5,648,964
241 5,648,965
245 5,648,966
252 5,648,955
282 5,648,961
296 5,648,956
312 5,649,287
313 5,649,302
328 5,648,967
332 5,649,290
5,649,291
334 5,649,308
335 5,648,968
338 5,648,962
349 5,648,969
355 5,648,957
394 5,648,970
421 5,648,971
445 5,648,959
458 5,648,958
498 5,648,960

CLASS 371

20.5 5,648,972
22.5 5,648,974
27 5,648,975
223 5,648,973

CLASS 372

25 5,648,976
36 5,648,977
50 5,648,978
5,648,979
92 5,648,980

CLASS 373

74 5,648,981

CLASS 374

57 5,647,667
144 5,647,668
5,647,669

CLASS 375

206 5,648,982
5,648,983
211 5,648,984
219 5,648,985
229 5,648,986
232 5,648,987
5,648,988
296 5,648,989
316 5,648,990
341 5,648,991
347 5,648,992
357 5,648,993
376 5,648,994

CLASS 376

261 5,648,995

CLASS 378

4 5,648,996
98.4 5,648,997
166 5,648,998

CLASS 379

93.07 5,649,001
142 5,649,002
201 5,649,003
212 5,649,004
242 5,649,005
373 5,649,006
5,649,007
5,649,008
399 5,649,009
406 5,649,010
410 5,649,011
5,649,012

CLASS 380

4 5,649,013
28 5,649,014

CLASS 381

61 5,649,015
71.14 5,649,018
71.5 5,649,016
83 5,649,019
151 5,649,020

CLASS 382

128 5,649,021
141 5,649,022
159 5,649,023
170 5,649,024
171 5,649,025
175 5,649,026
185 5,649,027
199 5,649,028
233 5,649,029
253 5,649,030
254 5,649,031
284 5,649,032
297 5,649,033
298 5,649,034

CLASS 383

33 5,647,670
210 5,647,671

CLASS 384

100 5,647,672
519 5,647,673
580 5,647,674
620 5,647,675

CLASS 385

13 5,649,035
16 5,649,036
24 5,649,037
59 5,649,038
78 5,649,039
95 5,649,040
109 5,649,041
5,649,042
110 5,649,043
124 5,649,044
145 5,649,045

CLASS 386

52 5,649,046
80 5,648,855
111 5,649,047
131 5,649,048

CLASS 392

494 5,649,049

CLASS 395

2.12 5,649,050
2.31 5,649,051
2.35 5,649,052
2.38 5,649,053
5,649,054
2.42 5,649,055
2.65 5,649,056
5,649,057
206 5,649,058
2.77 5,649,059
2.84 5,649,060
2.87 5,649,061
20 5,649,062
22 5,649,063
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23 5,649,065
5,649,066
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5,649,068
27 5,649,069
77 5,649,070
109 5,649,071
5,649,072
5,649,073
114 5,649,074
119 5,649,076
5,649,077
122 5,649,078
123 5,649,079
127 5,649,080
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5,649,082
131 5,649,083
135 5,649,084
140 5,649,085
141 5,649,086
181 5,649,088
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182.08 5,649,090
182.09 5,649,091
182.13 5,649,092
183.06 5,649,094
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183.19 5,649,096
185.07 5,649,097
185.08 5,649,098
187.01 5,649,099
200.02 5,649,101
200.03 5,649,103
200.04 5,649,104
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200.11 5,649,107
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200.19 5,649,110
200.2 5,649,111
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214 5,649,114
233 5,649,115
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342 5,649,132
348 5,649,133
383 5,649,137
393 5,649,138
396 5,649,135
412 5,649,139
413 5,649,140
416 5,649,141
419 5,649,142
421.03 5,649,145
421.04 5,649,147
421.07 5,649,146
421.1 5,649,143
5,649,144
427 5,649,148
435 5,649,149
437 5,649,150
438 5,649,151
441 5,649,152
445 5,649,153
449 5,649,154
455 5,649,155
463 5,649,156
478 5,649,157
488 5,649,158
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494 5,649,160
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500 5,649,162
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508 5,649,172
513 5,649,173
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556 5,649,174
560 5,649,177
587 5,649,178
591 5,649,136
598 5,649,179
601 5,649,180
603 5,649,181
606 5,649,183
607 5,649,182
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613 5,649,191
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617 5,649,195
620 5,649,196
670 5,649,198
703 5,649,200
704 5,649,201
705 5,649,202
709 5,649,203
710 5,649,204
712 5,649,205
729 5,649,206

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733 5,649,207
735 5,649,208
739 5,649,209
750 5,649,210
5,649,212
5,649,213
758 5,649,214
759 5,649,215
767 5,649,216
774 5,649,218
788 5,649,220
794 5,649,221
795 5,649,222
796 5,649,223
800 5,649,219
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5,649,227
5,649,229
5,649,233
806 5,649,234
872 5,649,217
5,649,230
879 5,649,231
880 5,649,232

CLASS 396

6 5,649,235
5,649,236
55 5,649,237
61 5,649,238
86 5,648,836
104 5,649,239
124 5,649,240
128 5,648,834
153 5,649,241
191 5,649,242
233 5,649,243
287 5,649,244
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310 5,649,246
311 5,649,247
318 5,649,248
319 5,649,249
333 5,649,250
341 5,649,251
389 5,649,252
392 5,649,253
411 5,649,254
427 5,649,255
5,649,256
428 5,649,257
429 5,648,835
5,649,258
544 5,649,259
569 5,649,260
571 5,649,261
606 5,649,262
612 5,649,263

CLASS 399

30 5,649,264
44 5,649,265
59 5,649,266
119 5,648,838
134 5,648,841
159 5,649,267
168 5,649,268
207 5,649,269
260 5,649,197
262 5,648,840
5,649,270
264 5,649,271
271 5,648,839
318 5,649,272
327 5,649,130
329 5,649,273
364 5,648,843
375 5,649,274
381 5,649,275
390 5,649,276

CLASS 400

3 Re.35,562
65 5,647,676
70 5,647,677
208 5,647,678
232 5,647,679

CLASS 403

263 5,647,680
270 5,647,681
297 5,647,682
359 5,647,683
370 5,647,684
5,647,685
373 5,647,686
403 5,647,687

CLASS 404

101 5,647,688

CLASS 405

36 5,647,689
50 5,647,690
74 5,647,691
119 5,647,692
128 B1 5,425,598
229 5,647,693
259.4 5,647,694
284 5,647,695

CLASS 406

56 5,647,696
83 5,647,697

CLASS 407

29.12 5,647,698
33 5,647,699
34 5,647,700
113 5,647,701

CLASS 408

150 5,647,702

CLASS 409

48 5,647,703
131 5,647,704
132 5,647,705
138 5,647,706
189 5,647,707

CLASS 410

47 5,647,708

CLASS 411

20 5,647,709
397 5,647,710
400 5,647,711
404 5,647,712
509 5,647,713

CLASS 412

1 5,647,714
5,647,715

CLASS 414

111 5,647,716
273 5,647,717
416 5,647,718
462 5,647,719
490 5,647,720
686 5,647,721
687 5,647,722
735 5,647,723
744.5 5,647,724
799 5,647,725

CLASS 416

145 5,647,726

CLASS 417

32 5,647,727
68 5,647,728
273 5,647,729
274 5,647,730
295 5,647,731
360 5,647,732
5,647,733
380 5,647,734
423.13 5,647,735
423.14 5,647,736
454 5,647,737

CLASS 419

2 5,649,277
5,649,278
25 5,649,279
5,649,280

CLASS 420

99 5,648,044
418 5,648,045

CLASS 422

4 5,648,046
56 5,648,047
168 5,648,048
170 5,648,049
180 5,648,050
189 5,649,281
207 5,648,051
305 5,648,052

CLASS 423

210 5,648,053
226 5,648,054
328.1 5,648,055
445 B 5,648,056
594 5,648,057
702 5,648,058

CLASS 424

1.49 5,648,059
5,648,471
1.65 5,648,060
9.2 5,648,061
9.34 5,648,062
9.363 5,648,063
53 5,648,064
59 5,648,065
64 5,648,066
65 5,648,067
70.2 5,648,069
78.1 5,648,070
78.31 5,648,071
85.2 5,648,072
94.2 5,648,074
94.4 5,648,075
145.1 5,648,076
149.1 5,648,077
156.1 5,648,078
186.1 5,648,079
254.1 5,648,080
255.1 5,648,081
401 5,648,082
402 5,648,083
405 5,648,084
5,648,085
409 5,648,086
423 5,648,087
426 5,648,088
434 5,648,089
450 5,648,090
451 5,648,091
464 5,648,092
484 5,648,093
489 5,648,095
5,648,096
5,648,097
490 5,648,098
497 5,648,099
501 5,648,100
642 B2 5,091,171
718 5,648,101

CLASS 425

71 5,648,102
107 5,648,103
131.1 5,648,104
139 5,648,105
186 5,648,106
363 5,648,107
426 5,648,108
504 5,648,109

CLASS 426

3 B1 4,933,188
102 5,648,110
578 5,648,111
580 5,648,112

CLASS 427

8 5,648,113
107 5,648,115
126.3 5,648,114
136 5,648,116
195 5,648,117
213 5,648,118
249 5,648,119
258 5,648,120
444 5,648,122
448 5,648,123
475 5,648,124
486 5,648,121
534 5,648,125
536 5,648,126
596 5,648,127
601 5,648,128

CLASS 428

24 5,648,129
34.1 5,648,130
36.9 5,648,132
36.92 5,648,133
64.8 5,648,135
76 5,648,136
102 5,648,137
105 5,648,138
131 5,648,139
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132 5,648,142
137 5,648,143
141 5,648,144
156 5,648,145
209 5,648,146
212 5,648,147
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215 5,648,149
216 5,648,150
220 5,648,151
295.1 5,648,153
313.7 5,648,154
323 5,648,155
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325 5,648,158
327 5,648,159
328 5,648,160
332 5,648,161
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341 5,648,164
346 5,648,165
355 AC 5,648,166
5,648,167
379 5,648,168
391 5,648,169
403 5,648,170
413 5,648,171
426 5,648,172
446 5,648,173
469 5,648,174
472.3 5,648,175
548 5,649,282
593 5,648,176
610 5,648,177
627 5,648,178
5,648,179
634 5,648,180
641 5,648,134
689 5,648,181

CLASS 429

20 5,648,182
105 5,648,183
5,648,184
192 5,648,185
5,648,186
213 5,648,187

CLASS 430

22 5,648,188
5,648,189
47 5,648,190
49 5,648,191
110 5,648,192
137 5,648,193
165 5,648,194
170 5,648,195
270.1 5,648,196
270.11 5,648,197
296 5,648,198
311 5,648,199
315 5,648,200
324 5,648,201
325 5,648,202
440 5,648,205

CLASS 431

255 5,647,738
352 5,647,739

CLASS 432

122 5,647,740
180 5,647,741
247 5,647,742

CLASS 433

23 5,647,743
34 5,647,744
126 5,647,745
226 5,647,746

CLASS 434

247 5,647,747

CLASS 435

2 5,648,206
5 5,648,208
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6 5,648,210
5,648,211
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7.1 5,648,220
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7.23 5,648,222
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7.24 5,648,225
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7.32 5,648,227
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34 5,648,231
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69.1 5,648,233
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69.2 5,648,238
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69.3 5,648,240
5,648,241
5,648,242
69.6 5,648,243
69.7 5,648,244
91.1 5,648,245
93 5,648,246
142 5,648,247
172.3 5,648,248
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179 5,648,252
215 5,648,253
217 5,648,254
232 5,648,256
252.1 5,648,258
252.3 5,648,259
5,648,260
254.2 5,648,261
263 5,648,262
5,648,263
264 5,648,264
294.1 5,648,265
308.1 5,648,266
320.1 5,648,267

CLASS 436

57 5,648,268
68 5,648,269
74 5,648,270
178 5,648,271
500 5,648,272
501 5,648,273
514 5,648,274

CLASS 437

8 5,648,275
21 5,648,276
5,648,277
31 5,648,278
5,648,279
5,648,280
33 5,648,281
40 5,648,282
5,648,283
40 GS 5,648,284
43 5,648,285
44 5,648,286
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45 5,648,288
48 5,648,289
52 5,648,290
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53 5,648,292
101 5,648,293
126 5,648,294
129 5,648,295
173 5,648,296
178 5,648,297
187 5,648,298
209 5,648,299
228 5,648,300

CLASS 439

72 5,647,750
79 5,647,749
81 5,647,748
106 5,647,751
157 5,647,752
188 5,647,754
328 5,647,755
331 5,647,756
352 5,647,757
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362 5,647,758
395 5,647,760
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689 5,647,753
699.2 5,647,771
748 5,647,772
752 5,647,773
5,647,774
5,647,775
5,647,776
5,647,777
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CLASS 440

38 5,647,779
53 5,647,780
5,647,781
102 5,647,782

CLASS 441

58 5,647,783
65 5,647,784

CLASS 442

199 5,648,152

CLASS 445

24 5,647,785

CLASS 446

85 5,647,786
175 5,647,787

CLASS 451

21 5,647,788
41 5,647,789
47 5,647,790
49 5,647,791
285 5,647,792

CLASS 454

70 5,647,793
121 5,647,794

CLASS 455

2 5,649,283
3.2 5,649,318
5.1 5,649,284
6.2 5,649,285
31.3 5,649,289
33.1 5,649,288
38.1 5,649,294
38.2 5,649,295
5,649,296
45 5,649,297
62 5,649,299
63 5,649,303
67.4 5,649,304
70 5,649,305
90 5,649,309
129 5,649,310
186.1 5,649,319
188.1 5,649,311
196.1 5,649,320
221 5,649,321
333 5,649,312
339 5,649,313
343 5,649,314
5,649,315
345 5,649,316
5,649,317
412 5,648,999
433 5,649,301
435 5,649,286
436 5,649,000
447 5,649,292
453 5,649,293
517 5,649,300
520 5,649,298
575 5,649,306
5,649,307

CLASS 463

1 5,647,795
5,647,796
19 5,647,798
47.4 5,647,591

CLASS 464

128 5,647,799
144 5,647,800
145 5,647,801
159 5,647,802

CLASS 470

67 5,647,803

CLASS 472

90 5,647,804

CLASS 473

137 5,647,805
252 5,647,806
305 5,647,807
349 5,647,808
594 5,647,809
601 5,647,590

CLASS 474

14 5,647,810
91 5,647,811
111 5,647,812
135 5,647,813

CLASS 475

230 5,647,814
249 5,647,815
285 5,647,816
294 5,647,817

CLASS 477

99 5,647,818

140 5,647,819
155 5,647,820

CLASS 482

57 5,647,821
60 5,647,822
91 5,647,823
92 5,647,824
96 5,647,825
111 5,647,826
124 5,647,827
132 5,647,828
142 5,647,829
146 5,647,830

CLASS 492

38 5,647,831

CLASS 493

217 5,647,832

CLASS 501

39 5,648,301
50 5,648,302
87 5,648,303
134 5,648,304

CLASS 502

27 5,648,305
80 5,648,306
101 5,648,307
104 5,648,308
105 5,648,309
120 5,648,310
315 5,648,311
325 5,648,312
401 5,648,313

CLASS 504

151 5,648,314
214 5,648,315
276 5,648,316
320 5,648,318

CLASS 505

230 5,648,319
471 5,648,320
473 5,648,321
501 5,648,322

CLASS 510

122 5,648,323
176 5,648,324
177 5,648,325
284 5,648,326
340 5,648,327
441 5,648,328
535 5,648,329

CLASS 514

2 5,648,333
11 5,648,330
12 5,648,331
5,648,332
5,648,334
5,648,335
15 5,648,336
17 5,648,337
18 5,648,338
21 5,648,339
5,648,340
46 5,648,341
53 5,648,343
61 5,648,344
77 5,648,348
80 5,648,360
134 5,648,349
178 5,648,350
183 5,648,345
5,648,351
210 5,648,346
231.2 5,648,347
235.8 5,648,352
248 5,648,353
252 5,648,354
255 5,648,355
256 5,648,356
263 5,648,357
264 5,648,358
279 5,648,359
291 5,648,361
292 5,648,362
296 5,648,363
307 5,648,364
320 5,648,365
326 5,648,366
330 5,648,367
331 5,648,368
357 5,648,369
367 5,648,370
383 5,648,372
398 5,648,373
401 5,648,374
421 5,648,375
451 5,648,376
456 5,648,377
5,648,378
459 5,648,379
461 5,648,380
471 5,648,381
475 5,648,382
491 5,648,383
492 5,648,384
513 5,648,385
524 5,648,386
547 5,648,387
557 5,648,388
5,648,389
5,648,391
B1 5,385,938
B1 5,389,677
B1 5,422,370
B1 5,547,988
558 5,648,390
560 5,648,392
562 5,648,393
564 5,648,394
574 5,648,395
651 5,648,396
653 5,648,397
703 5,648,398
772.6 5,648,399

CLASS 515

100 5,648,425

CLASS 521

30 5,648,400
85 5,648,401

CLASS 523

107 5,648,402
117 5,648,403
145 5,648,404
160 5,648,405
166 5,648,406
213 5,648,407
333 5,648,408
404 5,648,409
501 5,648,410

CLASS 524

156 5,648,411
189 5,648,412
313 5,648,413
323 5,648,414
405 5,648,415
500 5,648,416
513 5,648,417
538 5,648,418
588 5,648,419
750 5,648,420
789 5,648,421

CLASS 525

52 5,648,422
66 5,648,423
92 D 5,648,424
100 5,648,426
104 5,648,427
340 5,648,429
5,648,430
415 5,648,431
421 5,648,432
425 5,648,433
441 5,648,434
480 5,648,435
481 5,648,436

CLASS 526

64 5,648,437
65 5,648,438
96 5,648,439
116 5,648,428
122 B1 5,498,676
132 5,648,440
240 5,648,441
277 5,648,442
281 5,648,443

CLASS 528

15 5,648,444
49 5,648,445
60 5,648,446
63 5,648,447
125 5,648,448
193 5,648,449
323 5,648,450
353 5,648,451
357 5,648,452
380 5,648,453
491 5,648,454

CLASS 530

300 5,648,455
317 5,648,456
324 5,648,457
5,648,458
5,648,459
329 5,648,461
344 5,648,462
350 5,648,464
5,648,465
5,648,466
359 5,648,468
388.22 5,648,469
391.1 5,648,470
412 5,648,472

CLASS 536

17.1 5,648,474
18.4 5,648,473
18.6 5,648,475
23.7 5,648,477
24.32 5,648,481
24.33 5,648,482
25.34 5,648,480
119 5,648,483
241 5,648,478
351 5,648,467

CLASS 540

203 5,648,484
474 5,648,485

CLASS 544

124 5,648,486
182 5,648,487
215 5,648,488
276 5,648,489
320 5,648,490

CLASS 546

22 5,648,491
147 5,648,492
156 5,648,493
194 5,648,494
250 5,648,495
307 5,648,496

CLASS 548

202 5,648,498
204 5,648,497
316.4 5,648,499
440 5,648,500
453 5,648,501

CLASS 549

4 5,648,502
13 5,648,503
246 5,648,504
333 5,648,505
510 5,648,506

CLASS 552

615 5,648,507

CLASS 556

9 5,648,508

CLASS 558

137 5,648,509
274 5,648,510
345 5,648,511
488 5,649,322

CLASS 560

9 5,648,512
49 5,648,513
102 5,648,514
115 5,648,515
125 5,648,516
205 5,648,517
224 5,648,518
347 5,648,519
5,648,520

CLASS 562

3 5,648,521
83 5,648,522
100 5,648,523
426 5,648,524
429 5,648,525
503 5,648,526
517 5,648,527
574 5,648,528
608 5,648,529
849 5,648,530
891 5,648,531

CLASS 564

8 5,648,532
20 5,648,533
130 5,648,534
144 5,648,535
153 5,648,536
252 5,648,537
307 5,648,538
309 5,648,539
375 5,648,540
5,648,541
405 5,648,542
410 5,648,543
468 5,648,544
470 5,648,545
485 5,648,546

CLASS 568

12 5,648,547
17 5,648,548
5,648,549
388 5,648,550
431 5,648,551
433 5,648,552
454 5,648,553
5,648,554
586 5,648,555
590 5,648,556
617 5,648,557
618 5,648,558
620 5,648,559
677 5,648,560
727 5,648,561
774 5,648,562
824 5,648,563
834 5,648,564
940 5,648,565

CLASS 570

126 5,648,566
127 5,648,567
176 5,648,568
179 5,648,569
201 5,648,570
227 5,648,571

CLASS 585

5 5,648,572
5,648,573
5,648,574
15 5,648,575
260 5,648,576
266 5,648,577
352 5,648,578
447 5,648,579
462 5,648,580
501 5,648,581
652 5,648,582
664 5,648,583
666 5,648,584
671 5,648,585
716 5,648,586
724 5,648,587
5,648,588
734 5,648,589
751 5,648,590

CLASS 588

8 5,649,323
202 5,649,324
5,649,325
205 5,648,591
227 5,648,592
252 5,647,833

CLASS 600

23 5,647,834
27 5,647,835
30 5,647,836
38 5,647,837
111 5,647,838
169 5,647,840

CLASS 601

114 5,647,841

CLASS 602

76 5,647,842

CLASS 604

8 5,647,843
20 5,647,844
32 5,647,845
54 B1 5,419,763
93 5,647,846
96 5,647,847
5,647,848
111 5,647,849
116 5,647,850
131 5,647,851
151 5,647,852
155 5,647,853
174 5,647,854
175 5,647,855
181 5,647,856
264 5,647,857
5,647,858
5,647,859
5,647,860
342 5,647,861
378 5,647,862
5,647,863
391 5,647,864

CLASS 606

5 5,647,865
9 5,647,866
15 5,647,867
21 5,647,868
37 5,647,869
41 5,647,870
45 5,647,871
61 5,647,872
5,647,873
72 5,647,874

CLASS 800

2 5,648,597
200 5,648,593
5,648,594
5,648,595
5,648,596
205 5,648,598
5,648,599

CLASSIFICATION OF DESIGNS

D1— 125 380,885
126 380,886
D2— 874 380,887
907 380,888
957 380,889
969 380,890
978 380,892
D3— 8 380,893
380,894
208 380,895
380,896
218 380,897
264 380,898
289 380,899
294 380,900
311 380,901
319 380,902
D4— 104 380,903
D5— 52 380,904
D6— 302 380,905
303 380,906
334 380,907
380,908
380,909
338 380,910
349 380,911
381 380,912
449 380,913
466 380,914
480 380,915
488 380,916
491 380,917
508 380,918
537 380,919
552 380,920
596 380,921
618 380,922
629 380,923
630 380,924
632 380,926
380,927
D7— 309 380,928
322 380,929
380,930
324 380,931
334 380,932
380,933
354 380,934
392.1 380,935
416 380,936
552 380,937
554 380,938
619 380,939
640 380,940
665 380,941
666 380,942
693 380,943
698 380,944
380,925
709 380,945
D8— 1 380,946
380,947
33 380,948
61 380,949
62 380,950
68 380,951
380,952
71 380,953
87 380,954
306 380,955
316 380,956
337 380,957
349 380,958
354 380,959
D9— 333 380,960
347 380,961
415 380,962
380,963
380,964
430 380,965
560 380,966
D10— 30 380,967
380,968
380,969
380,970
39 380,971
92 380,972
104 380,973
126 380,975
128 380,976
131 380,977
D11— 44 380,978
79 380,979
164 380,981
216 380,982
380,983
221 380,984
380,985
380,986
D12— 110 380,989
111 380,990
131 380,991
141 380,993
380,994
143 380,995
146 380,996
380,997
380,998
147 380,999
380,987
380,988

D13—	153	381,008		56	381,039		280.1	381,069		38	381,100		123	381,132		381,162
	168	381,009			381,040		299	381,070		43	381,101		125	381,133	19	381,164
	178	381,010	D19—	32	381,041		317	381,071			381,102	D30—	119	381,134	20	381,165
	179	381,011		51	381,042		336	381,074		46	381,103		124	381,135		381,166
D14—	100	381,012			381,043		360	381,072		62	381,104		161	381,136	21	381,167
	114	381,013		82	381,044		366	381,073		63	381,105	D32—	4	381,137		381,168
		381,014	D20—	19	381,045	D24—	112	381,075		67	381,106		14.1	381,138		381,169
		381,015		22	381,046		138	381,076		84	381,108		25	381,139	23	381,170
		381,016	D21—	28	381,047		145	381,077		107	381,109		26	381,140		381,171
	115	381,017		48	381,048			381,078		110	381,110		30	381,141	24	381,172
	121	381,018		53	381,049		146	381,079		118	381,111		31	381,142	28	381,173
	124	381,019		104	381,050		155	381,080		134	381,112			381,143	29	381,174
	138	381,020		108	381,051		190	381,081		140	381,113		32	381,144		381,175
		381,021		111	381,052		199	381,082			381,114		35	381,145		381,176
	191	381,022		133	380,992		211	381,083	D27—	125	381,115			381,146		381,177
	218	381,023		196	381,053		220	381,084		162	381,116			381,147	33	381,178
	225	381,024		226	381,054		226	381,085	D28—	25	381,117		49	381,149	36	381,179
D15—	31	381,025		234	381,055	D25—	113	381,086		37	381,118		50	381,150	38	381,180
	139	381,026		240	381,056		123	381,087		40	381,119		69	381,151	39	381,181
		381,027		242	381,057		124	381,088		41	381,120			381,152	D99—	17 381,182
		381,028		253	381,058			381,089		46	381,121		71	381,153	25	381,183
		381,029	D22—	110	381,059			381,090		64	381,122		72	381,154	27	381,184
	144	381,030		118	381,060			381,091		73	381,123		74	381,155		
D16—	131	381,031		129	381,061			381,092		78	381,124		440	381,148		
	209	381,032		133	381,062			381,093	D29—	100	381,125	D34—	1	381,156		
	225	381,033		149	381,063			381,094		109	381,126			381,157		
	312	381,034	D23—	208	381,064			381,095		111	381,127			381,158		
	314	381,035		213	381,065		127	381,096		113	381,128			381,159		
	315	381,036		238	381,066		132	381,097		115	381,129		5	381,160		
D17—	13	381,037		249	381,067		164	381,098		119	381,130		10	381,163		
D18—	17	381,038		267	381,068	D26—	37	381,099		120	381,131		11	381,161		

CLASSIFICATION OF PLANTS

P.—	40.1	9,959		9,962		54.1	9,965		73.2	9,968		87.6	9,969		
		9,960		9,963			9,966		87.12	9,970					
	41.1	9,961	43.2	9,964			9,967			9,971					

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

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Georgia	13	New Hampshire	33	Washington	53
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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 :	5,647,821		5,647,391		5,648,074		5,648,655		5,649,029	08 :	5,647,062
	5,648,082		5,647,409		5,648,079		5,648,661		5,649,030		5,647,072
	5,648,416		5,647,414		5,648,125		5,648,664		5,649,064		5,647,145
	5,648,525		5,647,456		5,648,165		5,648,666		5,649,068		5,647,400
	5,648,897		5,647,471		5,648,175		5,648,669		5,649,082		5,647,421
04 :	5,647,060		5,647,476		5,648,178		5,648,670		5,649,086		5,647,627
	5,647,258		5,647,488		5,648,185		5,648,674		5,649,093		5,647,637
	5,647,380		5,647,502		5,648,206		5,648,679		5,649,098		5,647,696
	5,647,561		5,647,505		5,648,213		5,648,690		5,649,099		5,647,984
	5,647,911		5,647,509		5,648,215		5,648,708		5,649,112		5,647,997
	5,648,049		5,647,519		5,648,223		5,648,712		5,649,115		5,648,070
	5,648,389		5,647,521		5,648,224		5,648,722		5,649,120		5,648,110
	5,648,508		5,647,539		5,648,225		5,648,731		5,649,122		5,648,114
	5,648,593		5,647,541		5,648,237		5,648,732		5,649,126		5,648,214
	5,648,625		5,647,577		5,648,238		5,648,733		5,649,127		5,648,336
	5,648,637		5,647,583		5,648,239		5,648,735		5,649,133		5,648,491
	5,648,671		5,647,616		5,648,247		5,648,742		5,649,136		5,648,782
	5,648,862		5,647,628		5,648,265		5,648,753		5,649,137		5,648,900
	5,648,970		5,647,651		5,648,267		5,648,756		5,649,143		5,648,913
	5,648,984		5,647,670		5,648,281		5,648,759		5,649,147		5,648,930
	5,649,008		5,647,688		5,648,287		5,648,767		5,649,151		5,648,955
	5,649,018		5,647,695		5,648,288		5,648,786		5,649,153		5,648,982
	5,649,019		5,647,734		5,648,290		5,648,787		5,649,154		5,649,083
	5,649,090		5,647,736		5,648,297		5,648,795		5,649,160		5,649,113
	5,649,179		5,647,780		5,648,320		5,648,798		5,649,163		5,649,283
	5,649,291		5,647,784		5,648,330		5,648,799		5,649,165	09 :	Re.35,561
05 :	5,647,444		5,647,809		5,648,344		5,648,801		5,649,166		5,647,091
	5,647,765		5,647,829		5,648,345		5,648,804		5,649,167		5,647,104
06 :	5,647,069		5,647,837		5,648,354		5,648,805		5,649,168		5,647,118
	5,647,080		5,647,838		5,648,365		5,648,806		5,649,171		5,647,119
	5,647,140		5,647,840		5,648,396		5,648,832		5,649,173		5,647,240
	5,647,148		5,647,844		5,648,448		5,648,844		5,649,174		5,647,329
	5,647,169		5,647,845		5,648,458		5,648,847		5,649,175		5,647,372
	5,647,182		5,647,851		5,648,468		5,648,848		5,649,187		5,647,506
	5,647,194		5,647,853		5,648,469		5,648,854		5,649,192		5,647,514
	5,647,201		5,647,857		5,648,470		5,648,856		5,649,202		5,647,526
	5,647,219		5,647,868		5,648,478		5,648,866		5,649,203		5,647,590
	5,647,227		5,647,870		5,648,503		5,648,890		5,649,205		5,647,720
	5,647,228		5,647,876		5,648,506		5,648,893		5,649,210		5,647,836
	5,647,255		5,647,890		5,648,514		5,648,904		5,649,213		5,648,145
	5,647,268		5,647,924		5,648,532		5,648,940		5,649,224		5,648,200
	5,647,269		5,647,933		5,648,562		5,648,956		5,649,230		5,648,266
	5,647,277		5,647,938		5,648,586		5,648,965		5,649,232		5,648,337
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